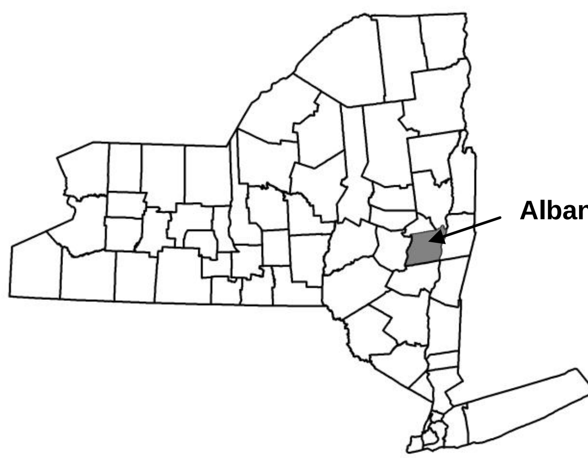
FLOOD INSURANCE STUDY

VOLUME 1 OF 2

ALBANY COUNTY, NEW YORK

(ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER
ALBANY, CITY OF	360001
ALTAMONT, VILLAGE OF	360002
BERNE, TOWN OF	360003
BETHLEHEM, TOWN OF	361540
COEYMANS, TOWN OF	360005
COHOES, CITY OF	360006
COLONIE, TOWN OF	360007
COLONIE, VILLAGE OF	365377
GREEN ISLAND, VILLAGE OF	360009
GUILDERLAND, TOWN OF	360010
KNOX, TOWN OF	360011
MENANDS, VILLAGE OF	360012
NEW SCOTLAND, TOWN OF	360013
RAVENA, VILLAGE OF	361346
RENSSELAERVILLE, TOWN OF	360014
VOORHEESVILLE, VILLAGE OF	360015
WATERVLIET, CITY OF	360016
WESTERLO, TOWN OF	360017



PRELIMINARY
March 1, 2012

EFFECTIVE:

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
36001CV001A

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) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

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

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone(s)	**New Zone**
A1 through A30	AE
B	X (shaded)
C	X

Initial Countywide FIS Report Effective Date:

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FLOOD INSURANCE STUDY
ALBANY COUNTY, NEW YORK
(ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) revises and supersedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs) in the geographic area of Albany County, NY, including the Towns of Berne, Bethlehem, Coeymans, Colonie, Guilderland, Knox, New Scotland, Rensselaerville, and Westerlo; the Villages of Altamont, Colonie, Green Island, Menands, Ravena, and Voorheesville; and the Cities of Albany, Cohoes, and Watervliet (hereinafter referred to collectively as Albany County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Albany County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and 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 those on which these Federally-supported studies are based. These criteria take precedence over the minimum Federal criteria for purposes of regulating development in the floodplain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3 (d). In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgments

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

This study was prepared to include all jurisdictions within Albany County. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is provided below:

Albany, City of: The hydrologic and hydraulic analyses for the October 1979 study were prepared by the U.S. Department of the Interior, Geological Survey for the Federal Insurance Administration, under the Inter-Agency Agreement No. IAA-H-9-77, Project Order No. 11, Amendment No. 2. This work, which was completed in April, 1978, covered all significant flooding sources in the City of Albany.

Altamont, Village of: The hydrologic and hydraulic analyses for the February 1983 study were prepared by LMS/Jackson Associates for the Federal Emergency Management Agency (FEMA), under

Contract No. H-4736. The original study was completed in April 1980.

Bethlehem, Town of: The hydrologic and hydraulic analyses in the April 1984 study represent a revision of the original analyses by LMS/Jackson Associates for the FEMA, under Contract No. H-4736. The original study was completed in April 1980. This revised study was also prepared by LMS/Jackson Associates under agreement with the FEMA. The revised study was completed in June 1983.

Coeymans, Town of: The hydrologic and hydraulic analyses for the August 1989 study were prepared by McCoy-Jackson Associates for the FEMA, under Contract No. EMW-84-C-1603. This work was completed in June 1987.

Cohoes, City of: The hydrologic and hydraulic analyses for the June 1979 study were performed by the U.S. Geological Survey, for the Federal Insurance Administration, under the Inter-Agency Agreement No. IAA-H-17-75, Project Order No. 16. This work, which was completed in January 1978, covered all significant flooding sources affecting the City of Cohoes.

Colonie, Town of: The hydrologic and hydraulic analyses for the March 1979 study were prepared by the U.S. Geological Survey for the Federal Insurance Administration, under the Inter-Agency Agreements IAA-H-17-15, Project Order No. 11 and IAA-H-8-76, Project Order No. 1 and Amendment No. 1. This work, which was completed in April 1976, covered all significant flooding sources in the Town of Colonie.

The majority of cross sections and planimetric work maps, surveyed by the photogrammetric method, were collected and compiled by Hansa Engineering Corporation, San Francisco, California, under a subcontract from the U.S. Geological Survey.

Green Island, Village of: The hydrologic and hydraulic analyses for the December 1979 study were performed by the U.S. Geological Survey, for the Federal Insurance Administration, under Inter-Agency Agreement No. H-9-77, Project Order No. 11. This work, which was completed in July 1978, covered all significant flooding sources affecting the Village of Green Island.

Guilderland, Town of: The hydrologic and hydraulic analyses for the July 1982 study were prepared by LMS/Jackson Associates for the FEMA, under Contract No. H-4736. This work was completed in April 1980.

Menands, Village of: The hydrologic and hydraulic analyses for the September 1979 study were prepared by the U.S. Geological Survey for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-9-77, Project Order No. 11 and Amendment No. 2. This work, which was completed in

April 1978, covered all significant flooding sources affecting the Village of Menands.

New Scotland, Town of: The hydrologic and hydraulic analyses for the June 1982 study were prepared by LMS/Jackson Associates for the FEMA, under Contract No. H-4736. This work was completed in April 1980.

Voorheesville, Village of: The hydrologic and hydraulic analyses for the June 1982 study were prepared by LMS/Jackson Associates for the FEMA under Contract No. H-4736. This work was completed in April 1980.

Watervliet, City of: The hydrologic and hydraulic analyses for the July 1979 study were prepared by the U.S. Geological Survey for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-9-77, Project Order No. 11 and Amendment No. 2. This work, which was completed in April 1978, covered all significant flooding sources affecting the City of Watervliet.

Westerlo, Town of: The hydrologic and hydraulic analyses for the August 1989 study were prepared by McCoy-Jackson Associates for the FEMA, under Contract No. EMW-84-C-1603. This work was completed in June 1987.

There are no previous FISs or FIRMs for the Village of Colonie and no previous FISs for the Towns of Berne, Knox and Rensselaerville and the Village of Ravena; therefore, the previous authority and acknowledgement information for these communities is not included in this FIS. These communities may not appear in the Community Map History table (Section 6.0).

The NYSDEC and FEMA entered into a Cooperative Technical Partners (CTP) Agreement to collaboratively produce this countywide FIS. Revised hydrologic and hydraulic analyses for all approximate studies and for detailed studies on the Normans Kill, Tributary 10 to Normans Kill, Tributary 1 to Tributary 10 to Normans Kill, Patroon Creek, Dry River, Coeymans Creek, Hannacrois Creek, Tributary 1 to Hannacrois Creek, Krum Kill, and Tributary 4 to Bozen Kill were prepared by Gomez and Sullivan Engineers, P.C. and PAR Government Services for the NYSDEC. This work was completed in December 2011.

The digital base map information shown on the FIRMs was provided by the NYSDEC. This information was derived from the New York State Office of Cyber Security & Critical Infrastructure Coordination from aerial photography published in November 2007.

The projection used for the preparation of the digital FIRMs was Universal Transverse Mercator (UTM), Zone 18. The horizontal datum was NAD 83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM 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 FIRMs.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer's (CCO) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the detailed study.

The dates of the initial and final CCO meetings held for prior FISs for the incorporated communities within Albany County, are shown in Table 1.

TABLE 1 - INITIAL AND FINAL CCO MEETING DATES

Community Name	Initial CCO Meeting	Second CCO Meeting	Final CCO Meeting
Albany, City of	October 1976		March 13, 1979
Altamont, Village of	March 1978		January 5, 1982
Bethlehem, Town of	March 1978		August 10, 1982
Coeymans, Town of	March 1984		September 8, 1988
Cohoes, City of	January 10, 1975	October 29, 1975	November 14, 1978
Colonie, Town of	January and June 1975		August 16, 1977
Green Island, Village of	October 1976		March 26, 1979
Guilderland, Town of	March 1978		January 28, 1982
Menands, Village of	October 1976		April 2, 1979
New Scotland, Town of	March 1978		January 5, 1982
Voorheesville, Village of	March 1978		January 5, 1982
Watervliet, City of	October 1976		January 22, 1979
Westerlo, Town of	March 1984		September 9, 1988

Initial CCO meetings for this countywide FIS were held in March 2007 with representatives of the NYSDEC and local officials from all the communities in the county, except the Village of Altamont and the City of Watervliet.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic areas of Albany County, NY.

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

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Basic Creek	First Branch Mohawk River
Black Creek	Second Branch Mohawk River
Bozen Kill	Third Branch Mohawk River
Tributary 4 to Bozen Kill	Fifth Branch Mohawk River
Tributary 5 to Bozen Kill	Normans Kill
Coeymans Creek	Tributary 10 to Normans Kill
Delphus Kill	Tributary 1 to Tributary 10 to Normans Kill
Dry River	Onesquethaw Creek
Eight Mile Creek	Patroon Creek
Feuri Spruyt	Salt Kill
Hannacrois Creek	Sand Creek
Tributary 1 to Hannacrois Creek	Shaker Creek
Hudson River	State Basin
Kromma Kill	Vloman Kill
Krum Kill	Vly Creek
Lisha Kill	Watervliet Reservoir
Tributary 8 to Lisha Kill	
Mohawk River	

As part of this countywide FIS, updated analyses were included for the flooding sources shown in Table 3, "Scope of Revision."

TABLE 3 - SCOPE OF REVISION

Stream	Limits of Revised or New Detailed Study
Tributary 4 to Bozen Kill	From its confluence with Bozen Kill to the Village of Altamont corporate limits
Coeymans Creek	From its confluence with the Hudson River to the downstream face of the railroad culvert in the Town of Coeymans and from the Town of Bethlehem / Town of Coeymans corporate limits (approximately 330 feet downstream of Pictuay Road) to the confluence of Onesquethaw Creek
Dry River	From its confluence with the Hudson River to the upstream face of the culvert at Twelfth Avenue
Hannacrois Creek	From its confluence with the Hudson River to the Albany County boundary
Tributary 1 to Hannacrois Creek	From its confluence with Hannacrois Creek to the downstream face of the I-87 culvert crossing in the Village of Ravena

TABLE 3 – SCOPE OF REVISION (CONTINUED)

Krum Kill	From its confluence with Normans Kill to downstream face of the Western Avenue culvert crossing in the Town of Guilderland
Normans Kill	From its confluence with the Hudson River to approximately 3,252 feet upstream of River Road on the City of Albany / Town of Bethlehem boundary and from approximately 2,380 feet upstream of the abandoned railroad bridge on the City of Albany / Town of Bethlehem boundary to the confluence of Krum Kill
Tributary 10 to Normans Kill	From its confluence with Normans Kill to approximately 10,584 feet upstream of its confluence with Normans Kill
Tributary 1 to Tributary 10 to Normans Kill	From its confluence with Tributary 10 to Normans Kill to approximately 240 feet downstream of Hanley Lane in the Town of Guilderland
Patroon Creek	From its confluence with the Hudson River to the downstream face of the railroad crossing in the City of Albany

The areas studied by detailed methods were selected with priority given to all flood hazard areas and areas of projected development and proposed construction. For this countywide study, eight stream segments were studied by limited detailed methods, and 53 streams were studied by approximate methods. Section 3.2 provides a comprehensive definition of limited detailed and approximate flood hazard designations.

Table 4, "Stream Name Changes," lists streams that have names in this countywide FIS other than those used in the previously printed FISs for the communities in which they are located.

TABLE 4 – STREAM NAME CHANGES

Community	Old Name	New Name
Altamont, Village of	Altamont Tributary 1	Tributary 4 to Bozen Kill
Altamont, Village of	Altamont Tributary 2	Tributary 5 to Bozen Kill

2.2 County Description

Albany County is located in eastern New York approximately 135 miles north of the New York City metropolitan area. It is bordered on the north by Schenectady and Saratoga Counties, on the south by Greene County, on the east by Rensselaer County, and on the west by Schoharie County. Albany County has the Hudson River as its eastern county line.

The largest city in Albany County is the county seat, the City of Albany, with a population of 97,856. The total 2010 Census population of Albany County is 304,204 (U.S. Census Bureau, 2010).

The climate in south-east New York is humid continental, characterized by short, mild summers and long, cold winters. The varied terrain induces numerous microclimates with variations in temperature, wind channeling, vertical currents, relative humidity, and precipitation. The mean temperature is 21.7 degrees Fahrenheit (°F) in January and 70.8°F in July. The annual precipitation is approximately 39 inches. The average annual snowfall is typically between 40 and 50 inches (USA.com, 2012).

The Hudson River, with a length of 306 miles and a drainage area of approximately 8,476 square miles, is one of the principal rivers in the State of New York. The river flows from the Adirondack Mountains to New York City. Within Albany County, the Hudson River is part of the New York State Barge Canal System. The navigation pool formed by the Federal Dam at Troy (approximately 3,400 feet downstream from Cohoes) is maintained at an elevation of approximately 14 feet. There are no provisions for regulating flood stages at this dam.

The Mohawk River channel upstream from the New York State Dam lies in a deep gorge. The channel gradient is steep; water surface drops from an elevation of approximately 135 feet at the upstream corporate limits to 49 feet at the New York State Dam, 1.5 miles downstream. Cohoes Falls accounts for nearly 70 feet of this drop. A 5,000-foot long power canal flows along the southwestern bank, terminating at a generating plant approximately 1,000 feet downstream from the falls.

Downstream from the New York State Dam, the steep channel gradient continues, and the channel of the Mohawk River splits into four major branches. The First and Second Branches Mohawk River surround Simmons Island and merge to form the Fifth Branch Mohawk River. Van Schaick Island is surrounded by the Third Branch Mohawk River on the north, the Second and Fifth Branches Mohawk River on the west and south, and the Hudson River on the east.

A dam, no longer used for waterpower, spans the First Branch Mohawk River, approximately 300 feet south of Ontario Street. A natural waterfall is at the head of the Third Branch Mohawk River. None of the dams on the Mohawk River have provisions for regulating flood stages.

Rolling terrain, sloping generally downward toward the east and not exceeding 320 feet in elevation, characterizes the northwestern part of the City of Cohoes. The south bank of the Mohawk River downstream from the Cohoes Falls is a cliff over 80 feet high. A more moderate drop in elevation continues along the north-south City of Cohoes corporate limits approximately 0.5 mile west of the Fifth Branch Mohawk River. East of this area, the land slopes steadily downward to the flat flood plain adjacent to the Fifth Branch Mohawk River.

Other major streams in Albany County are Normans Kill, Bozen Kill, Coeymans Creek, Hannacrois Creek, Catskill Creek, Fox Creek, Onsequetha Creek and Basic Creek. Normans Kill flows south through the Town of Guilderland to Watervliet Reservoir. It then flows southwest through the Town of Guilderland to the confluence of Vly Creek where it has a drainage area of approximately 132 square miles. It continues through the Town of New Scotland and the Town of Bethlehem to its confluence with the Hudson

River. Bozen Kill flows east through the Town of Guilderland to Watervliet Reservoir. At its confluence with the reservoir, Bozen Kill has a drainage area of approximately 52 square miles. Coeymans Creek flows in a southern direction to its confluence with the Hudson River. The creek has an average slope of 100 feet per mile and a drainage area of 48.1 square miles at the Conrail culvert. The Hannacrois Creek flows in a southern direction to its confluence with the Hudson River. The creek has an average slope of 50 feet per mile and a drainage area of 55.0 square miles at the Town of Coeymans-Town of New Baltimore (Greene County) corporate limits. Catskill Creek flows south through the Town of Rennselaerville and out of the county at which point it has a drainage area of 77.5 square miles. Fox Creek flows west through the Town of Berne and the Township of Knox to the county boundary at which point it has a drainage area of 73.8 square miles. Onesquethaw Creek flows southeast through the Towns of New Scotland and Bethlehem to its confluence with Coeymans Creek where it has a drainage area of 29.8 square miles. Basic Creek flows south through the Town of Westerlo to the county boundary at which point it has a drainage area of 26 square miles.

2.3 Principal Flood Problems

The past history of flooding within Albany County indicates that flooding may occur during any season of the year. The majority of major floods have occurred during February, March, April and May, and are usually the results of spring rains and snowmelt. The most significant of these events occurred on January 19-20, 1996 due to heavy rainfall and unseasonably warm weather. Late summer flooding is also a possibility due to thunderstorms and tropical storms/hurricanes carrying abundant amounts of rain as they travel up the Atlantic coastline. Such events include September 17, 1999 (Hurricane Floyd) and August 28-29, 2011 (Hurricane Irene).

There have been a number of major floods on the Hudson River in the past century. The five worst floods occurred in February 1900, March 1902, March 1913, March 1936, and January 1949. The river elevations associated with these events at the City of Albany gaging station are 20.4 feet, 19.0 feet, 21.4 feet, 17.9 feet, and 17.5 feet, respectively. The estimated return periods for floods of these magnitudes are 80 years, 50 years, 120 years, 35 years, and 30 years, respectively.

These floods caused extensive damage to property within the City of Albany. During the flood of March 1902, the Hudson River rose to cover a large part of the city’s east side. As a result of this flood, 109 wholesale houses, 95 stores, and 123 other places of business were closed. In addition, 67 factories were shut down, some with as much as 8 feet of water in their buildings.

During the flood of March 1936, water was up to the Federal Post Office and Court House, located in the southeast corner of Broadway and Maiden Lane in the City of Albany. The floodwater also inundated the intersection of Franklin and Arch Streets, in the southeastern part of the City of Albany.

Floods that occur on Normans Kill are contained within the main channel except in some reaches, where floodwaters inundate low-lying areas adjacent to the stream. Within recent history, two floods occurred on Normans Kill, one in October 1955 and another in September 1960. The 1955 flood had a recurrence interval of 75-years and the 1960 flood had a recurrence interval of slightly less than 75-years.

USGS gage No. 01359902, located north of the Coeymans-Bethlehem corporate limits on Coeymans Creek, had 10 years of record from 1968 to 1977. The gage had a drainage area of 35.1 square miles and experienced its maximum flood event in 1973 with a peak discharge of 3,240 cfs. Feuri Spruyt and Hannacrois Creek are ungagged.

The location of the City of Cohoes at the confluence of the Hudson and Mohawk Rivers makes the entire eastern part of the city subject to flooding whenever major flood occurs on either stream. For example, the peak discharges during the March 1977 flood on the Hudson River (above the confluence with the Mohawk River) and Mohawk River had recurrence intervals on the order of 10 and 25 years, respectively. Backwater created by the larger Mohawk River flood contributed to the overflow of the Hudson River's banks along the eastern side of Van Schaick Island.

The worst flood of recent times in the City of Cohoes was in March 1936. The discharge of Hudson River below the Mohawk River confluence had a recurrence interval on the order of 100 years. The discharge of Mohawk River during this flood was slightly less than that of a 50-year flood.

Other damaging floods in Cohoes occurred in 1913, 1914, 1938, 1949, 1960, 1964 and 1977.

West of Salt Kill's most downstream crossing of the City of Cohoes – Town of Colonie corporate limits, there is an active quarry adjacent to the stream. Even during minor floods, the water level in the stream exceeds a low divide between the stream and the quarry, and water overflows into the normally dry quarry, effectively limiting stream discharges downstream of the quarry.

On the Hudson River, floodwaters back up into culverts under Highway I-787 along the right bank and cause flooding in low lying areas. This flood hazard area lies between I-787 and State Highway 32, and is within the corporate limits of the Town of Colonie. Similar flooding along I-787 occurs from Albany to Cohoes.

During the flood of March 19, 1936, the Hudson River at Troy attained a peak discharge of 215,000 cfs, the greatest discharge observed since the construction of the dam at Great Sacandaga Lake in 1930.

Flood problems occur on the Mohawk River in the Town of Colonie when it overflows its banks and inundates the natural flood plains. Most flooding problems occur upstream from U.S. Highway 9, and occasionally occur as a result of an ice jam or release of storage behind ice jams. The floods of march 1964 and December 1973 are examples of this. The highest stage of record at Schenectady resulted from an ice jam during the flood of March 1913.

In the Town of Colonie there are essentially no flood problems on the entire reach of Delphus Kill because the flood plain is deep, and narrow, and undeveloped. Only two crossings are affected by overflow, Pollock Road and U.S. highway 9. At U.S. Highway 9 the overflow is shallow. There are a few backwater ponds, but they are of insignificant size.

Kromma Kill overflows its left bank just upstream from Spring Street in the Town of Colonie, causing overland flow and shallow flooding in the parking lot across from Allegheny Ludlum Steel Company and in some residential dwellings. Overland flow continues both north and south on Lincoln Avenue. At the Delaware and Hudson Railroad, the entire flow of Kromma Kill enters an underground conduit and reemerges 0.1 mile upstream from the downstream Town of Colonie corporate limit.

In its upstream reach during 100- and 500-year frequency floods, Lisha Kill spreads over a large area extending from Cordell Road to the Conrail crossing. However, this area is largely undeveloped and has only a few residential structures. The width of the floodplain, combined with that of a meandering streambed, causes minor flooding at a few residences in the downstream reach as well. In two downstream locations – between Albany Street and State Highway 5 and between Colonie Golf Course and Consaul Road – the 100- and 500-year frequency floods present minor notable flooding problems.

As with Lisha Kill, flood boundaries of the upstream reach of Lisha Kill Tributary spread over a large area, but, unlike Lisha Kill, the tributary's flooding area is more developed. From State Highway 5 to 0.2 miles downstream from Overland Street in the Town of Colonie, high water on Lisha Kill Tributary inundates three roads and causes partial inundation problems for some buildings.

On Sand Creek the flood problems occur in the lower reach of the study area, where the creek flows under Everett Road in the Town of Colonie. This causes backwater ponding and results in minor property damage to local residents.

Except for road overflow at almost every crossing, the only flood problem area on Shaker Creek in the Town of Colonie is at the Albany County Airport. Here the 100- and 500-year frequency floods inundate extensive areas of the airport's parking lot and also some of its runways. Also, one small building associated with the Ann Lee Nursing Home is subject to flooding. For the remainder of the reach, flood boundaries are well confined by the natural topography and there is little flood danger at the sparsely populated downstream end.

Low-lying areas in the Village of Green Island are subject to periodic flooding caused by overflow of the Hudson and Mohawk Rivers. Winter-spring flooding, as a result of snowmelt and/or rainfall, is frequently aggravated by ice jams.

A culvert under Dyke Avenue in the Village of Green Island is plugged on the north side, effectively preventing rising water in the Fifth Branch Mohawk River and entering the State Basin. However, during floods of and exceeding a 50-year recurrence interval on the Mohawk River, water will overtop Dyke Avenue, and the State Basin will carry the overflow of the Fifth Branch Mohawk River.

Normally, the State Basin receives flow only from local drainage, including flow from the Salt Kill which empties into the State Basin in the City of Cohoes. Heavy summer thunderstorms or rain and snowmelt periods in winter and spring have caused flooding on the Salt Kill, and thus the State Basin. Debris jams at culverts or in the stream channel sometimes worsen flooding problems along the State Basin.

Three of the worst floods for the Village of Green Island were due to flooding of the Hudson River in March 1913, March 1936, and January 1949. The river elevations associated with these events at a point just below the Troy Lock and Dam are 28.4 feet, 26.1 feet, and 23.8 feet, respectively. The estimated return periods for floods of these magnitudes are greater than 100 years, 35 years, and 20 years, respectively. The Village of Green Island suffered extensive damage from the floods of 1913 and 1936. The discharge of the Mohawk River during this flood was slightly less than that of a 50-year flood. These floods and the floods of 1857, 1886, and 1902 caused considerable damage to buildings and homes within the village. No high-water marks from the 1857, 1886 or 1902 floods were available at the Troy Lock Dam.

Flood elevations that occur on the State Basin are often increased by backwater from flooding on the Hudson River. A sudden downpour, however, can cause flooding of the basin independent of the Hudson or Mohawk Rivers.

2.4 Flood Protection Measures

Some protection from flooding on the Hudson River at the City of Albany is afforded by the reservoirs at Great Sacandaga Lake and Indian Lake. However, flood stages estimated using gage data recorded during the operation of Sacandaga Reservoir (1931-1975) were very similar to flood stages estimated using the total gage record (1910-1975). A number of smaller reservoirs in the Hudson River basin, used primarily for water supply and power generation have only an incidental effect on lowering flood elevations. Watervliet Reservoir on Normans Kill, used mainly for water supply, is not considered a flood control structure because of its limited flood storage capacity.

Several small reservoirs, used primarily for water supply and power generation, have a negligible effect on flood elevations in the Town of Bethlehem. Watervliet Reservoir, located on Normans Kill and used mainly for water supply, is not considered a flood control structure due to its limited storage capacity.

There are no flood protection measures located within the Town of Coeymans. The Alcove Reservoir is regulated by a fixed spillway and has only a small capability to attenuate peak flood flows.

Unintentional flood protection in the area of Salt Kill in the City of Cohoes and the Village of Green Island is provided by the quarry owned by the Norlite Corporation. Floodwaters exceeding the low divide between the quarry and Salt Kill spill into the quarry, effectively limiting the flow in the stream downstream of the quarry to its bankfull capacity.

A system of dikes and a pump station are located at the intersection of I-787 and NYS Route 7, which may provide some flood protection.

In March 1973, the City of Cohoes enacted an ordinance giving the building inspector the responsibility for requiring that all new construction in flood hazard areas be built according to specifications designed to minimize flood damage.

On the Mohawk and Hudson Rivers in the Town of Colonie, no improvements have been made other than the periodic dredging of several sections of the channel for navigational purposes. No flood protection measures have been taken on Delphus Kill. On Kromma Kill, installation of an underground conduit from downstream on Lincoln Avenue to upstream of the Tri-City Twin Drive-In, combined with dredging in the drive-in's parking lots, contains flow in these areas. No flood protection measures have been taken on Lisha Kill; however, dredging has been done to channelize flow on Lisha Kill Tributary from midreach to the upstream study limit. Two improvements have been made on Shaker Creek at River Road – a new culvert and a channel relocation. Dry River has a flood-detention reservoir 0.7 mile upstream from Booth Road. Finally, the Town of Colonie has decided to clean and remove deposits from the flood detention reservoir (upstream from Russel Road) on Sand Creek, and also to repair its earth dam and stone spillway.

A smaller number of reservoirs in the Village of Menands and the City of Watervliet are used primarily for water supply and power generation, and have only an incidental effect on lowering flood elevations.

There are no flood protection measures located within the Town of Westerlo. The Basic Creek Reservoir was formed with a fixed concrete spillway and is used for water supply purposes only.

Non-structural measures of flood protection are being utilized in the Villages of Altamont and Voorheesville as well as the Towns of Bethlehem, Coeymans, Guilderland, New Scotland and Westerlo to aid in the prevention of future flood damage. These measures are in the form of land use regulations which control building within areas that have a high risk of flooding.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods 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 that 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-, or 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 that equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

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

For each community within Albany County that had a previously printed FIS Report, the hydrologic analyses described in those reports have been compiled by stream and are summarized below.

Precountywide Analyses

Tributary 4 to Bozen Kill and Tributary 5 to Bozen Kill

In the Town of Guilderland and Village of Altamont, the hydrologic analyses of Tributary 4 to Bozen Kill and Tributary 5 to Bozen Kill were prepared using the rational method. This method developed peak flows for selected recurrence intervals using parameters of basin size, time of concentration and rainfall intensity (FEMA, 1983; 1982a).

Basic Creek and Eightmile Creek

The study streams within the Town of Westerlo are large, rural basins. A nearby stream, Coeymans Creek, had 10 years of systematic gage data; both Basic Creek and Eightmile Creek are ungaged. Two regional analyses were considered for use in computing peak discharges. An USACE regional frequency analysis used gage data throughout the upper Delaware and Hudson River basins to formulate regression equations for computing peak discharges for ungaged streams (USACE, 1974b). The parameters of drainage area, mean annual flood peak, standard deviation and skew were used in the regression equations. A USGS regional frequency analysis used gage data throughout New York State to formulate regression equations using the parameters of drainage area, average basin slope, and mean annual precipitation (USGS, 1979a). These results were compared with flows computed by a log-Pearson Type III analysis of USGS gage data (USGS, 1979b). An average of the two methods gave results that matched the gaged flows. The average of the two methods was used to compute peak discharges for Basic Creek and Eightmile Creek (FEMA, 1989b).

Black Creek

The hydrologic analysis of Black Creek was prepared using the USACE HEC Regional Frequency study (USACE, 1974b). These flows were then subjected to a storage-routing procedure using the HEC-1 computer program (USACE, 1973b). The area along Black Creek extending approximately 5,000 feet upstream of the U.S. Military Reservation railroad yard serves as a retention basin, greatly reducing downstream flows (FEMA, 1982a).

Bozen Kill

The hydrologic analysis for Bozen Kill was prepared using the USACE HEC Regional Frequency study (USACE, 1974b) (FEMA, 1982a).

Coeymans Creek

For Coeymans Creek in the Town of Coeymans, two regional analyses were considered for use in computing peak discharges. An USACE regional frequency analysis used gage data throughout the upper Delaware and Hudson River basins to formulate regression equations for computing peak discharges for ungaged streams (USACE, 1974b). The parameters of drainage area, mean annual flood peak, standard deviation and skew were used in the regression equations. A USGS regional frequency analysis used gage data throughout New York State to formulate regression equations using the parameters of drainage area, average basin slope, and mean annual precipitation (USGS, 1979a). These results were compared with flows computed by a log-Pearson Type III analysis of USGS gage data. An average of the two methods gave results that matched the gaged flows. Therefore, the average of the two methods was used to compute peak discharges on Coeymans Creek (FEMA, 1989a).

Delphus Kill

In the Town of Colonie, flood frequency relationships for Delphus Kill (ungaged) were developed from a rainfall frequency-runoff relationship developed by the SCS (USDA, 1975; 1973). The rainfall frequency data were developed by the U.S. National Weather Service (US Department of Commerce, 1961). Discharges for the 500-year floods were determined by straight-line extrapolation of a probability-log graph of flood discharges computed for frequencies up to 100 years (FEMA, 1979f).

Dry River

In the Town of Colonie, flood frequency relationships for Dry River (ungaged) were developed from a rainfall frequency-runoff relationship developed by the SCS (USDA, 1975; 1973). The rainfall frequency data were developed by the U.S. National Weather Service (USDOC, 1961). Discharges for the 500-year floods were determined by straight-line extrapolation of a probability-log graph of flood discharges computed for frequencies up to 100 years (FEMA, 1979f).

Feuri Spruyt

For Feuri Spruyt in the Town of Coeymans, two regional analyses were considered for use in computing peak discharges. An USACE regional frequency analysis used gage data throughout the upper Delaware and Hudson River basins to formulate regression equations for computing peak discharges for ungaged streams (USACE, 1974b). The parameters of drainage area, mean annual flood peak, standard deviation and skew were used in the regression equations. A USGS regional frequency analysis used gage data throughout New York State to formulate regression equations using the parameters of drainage area, average basin slope, and mean annual precipitation (USGS, 1979). These results were compared with flows computed by a log-Pearson Type III analysis of USGS gage data (USGS, 1979b). An average of the two methods gave results that matched the gaged flows. The average of the two methods was used to compute peak discharges for Feuri Spruyt (FEMA, 1989a; 1989b).

Hannacrois Creek

For Hannacrois Creek in the Towns of Coeymans and Westerlo, two regional analyses were considered for use in computing peak discharges. An USACE regional frequency analysis used gage data throughout the upper Delaware and Hudson River basins to formulate regression equations for computing peak discharges for ungaged streams (USACE, 1974b). The parameters of drainage area, mean annual flood peak, standard deviation and skew were used in the regression equations. A USGS regional frequency analysis used gage data throughout New York State to formulate regression equations using the parameters of drainage area, average basin slope, and mean annual precipitation. These results were compared with flows computed by a log-Pearson Type III analysis of USGS gage data (USGS, 1979a). An average of the two methods gave results that matched the gaged flows. The average of the two methods was used to compute peak discharges for Hannacrois Creek (FEMA, 1989a; 1989b).

Hudson River

Hydrologic analyses were carried out to establish peak discharge-frequency relationships and peak elevation-frequency relationships for the Hudson River. The previous analyses are summarized from upstream to downstream along the Hudson River.

For the City of Cohoes, the principal sources of data were USGS gaging stations on the Hudson River at Green Island (No. 01358000, 1946-1975) and at Mechanicville (No. 01335500, 1888-1956). Values of the 10-, 2-, 1-, and 0.2-percent annual chance flood at the two Hudson River gaging stations were derived from a log-Pearson Type III distribution of the annual peak flow data (USGS, 1976b). A discharge-drainage area relationship between the two gages was used to obtain the frequency-discharge relationship for the Hudson River (FEMA, 1979e).

The gaging station records obtained from the Hudson and Mohawk Rivers indicate that, while both streams tend to flood at the same time, the time of maximum discharge and the recurrence intervals of the discharges are usually not the same on both streams for a given hydrologic event. In addition, major flooding on one stream produced a backwater effect on the other in the area near the confluence of the Mohawk River with the Hudson River. To determine the maximum backwater effect that these streams have upon each other for flood of each frequency studied, it was necessary to determine which combination of discharges from the Hudson and Mohawk Rivers would create the highest water surface elevations at any point in the study area (FEMA, 1979e).

For the Town of Colonie, the flood frequency relationships for the Hudson River were developed from a log-Pearson Type III frequency analysis (USGS, 1967) of USGS Gage 01358000 (Hudson River at Green Island) which had 30 years of continuous record. Also, a stage-flood frequency relationship for the Hudson River estuary was developed from a log-Pearson Type III frequency analysis (USGS, 1976b) at two sites: (1) USGS Gage 01359159 (Hudson River at Albany) for the period of record 1839 to 1976, and (2) the USGS gaging station on the Hudson River below Troy Lock and Dam operated by USACE for the period 1916 to 1976 (FEMA, 1979f).

For the Village of Green Island, City of Albany, Village of Menands, and City of Watervliet, downstream of the Troy Lock and Dam, the Hudson River is an estuary. Water-surface elevations during floods are not a function of discharge alone, but a complex function of discharge, flood volume, tide levels and wind effects. An analysis was conducted to treat their combined effect.

For this previous analysis, the USGS Gaging Station 01359139 (Hudson River at Albany) was the principal source of data. Annual peak stage data from 1910 to 1975 were provided by the USACE Troy office. The data were first analyzed with a historic peak from 1856 included to give a period of record of 117 years. However, it was determined that flood stages prior to 1910 were greatly affected by ice jams. It was evident that these stages would have been significantly reduced if ice would not have obstructed the flow. The fact that flood stages after 1910 were much less affected by ice jams can be attributed to the construction and operation of the canal and barge system along the Hudson River. Therefore, the historical peak stages were not used in the peak elevation-frequency analysis (FEMA, 1979f).

Instead, the period of record was appropriately extended. Excluding peak stages affected by ice jams, the 1913 peak flood stage was the highest since at least 1857. Therefore, it was assigned as the largest flood of record to give a historic period of 117 years. Since the 1913 event additional flood mitigation measures have become available including Hudson River –Black River Regulating Districts' use of Sacandaga Reservoir to control flood flows. However these flood protection measures have not been incorporated into this hydrologic analysis. Values of the 10-, 2-, 1-, and 0.2-percent annual chance floods at the two Hudson River gaging stations were derived from a log-Pearson Type III distribution of the annual peak stage data (USGS, 1976b) (FEMA, 1979a; 1979b; 1979c; 1979d).

For the Town of Bethlehem, the hydrologic analyses of the Hudson River were prepared using transposed gage data. A log-Pearson Type III flood frequency analysis on data from USGS Gage 01358000 (Hudson River at Green Island) to compute discharges for the selected recurrence intervals. These peak discharges were then transposed downstream to the Town of Bethlehem using the ratio of the drainage areas raised to the 0.75 power (FEMA, 1984a).

Within the Town of Coeymans, the Hudson River is an estuary. High tides produce higher flood elevations than fluvial flows, so peak discharges were not computed on the Hudson River. Peak elevation-frequency relationships were performed for the Hudson River south of the Bethlehem-Coeymans corporate limits. Stage-frequency relationship was established using information available from the USACE (USACE, 1975). An analysis of stage-frequency relationships at Albany, Catskill and Spuyten Duyvil indicated that the straight-lining method would not represent true conditions at intermediate locations. The rising and falling of the mean tides have been found to correlate with the width of the river. Hence, the expectation of a similar effect on high river stages led to the establishment of maximum and minimum slopes of water-surface profiles between Spuyten Duyvil and Catskill (FEMA, 1979g; 1989a).

Kromma Kill

In the Town of Colonie, flood frequency relationships for Kromma Kill (ungaged) were developed from a rainfall frequency-runoff relationship developed by the SCS (USDA, 1975, 1973). The rainfall frequency data were developed by the U.S. National Weather Service (US Department of Commerce, 1961). Discharges for the 500-year floods were determined by straight-line extrapolation of a probability-log graph of flood discharges computed for frequencies up to 100 years (FEMA, 1979f).

Krum Kill

In the Town of Bethlehem, the hydrologic analysis of Krum Kill was prepared by a storage-routing procedure using the HEC-1 computer program (USACE, 1973b). Backwater profiles to yield stage-discharge relationships necessary for this analysis were prepared using the HEC-2 computer program (USACE, 1973a). Storage volume to yield stage-storage relationships were computed from planimetered measurements of topographic maps compiled from aerial photographs (Avia Air Maps, 1978). This process included the routing, lagging, and summation of hydrographs from various sub-basins in the area studied (FEMA, 1984a).

Lisha Kill and Lisha Kill Tributary

In the Town of Colonie, flood frequency relationships for Lisha Kill and Lisha Kill Tributary (both ungaged) were developed from a rainfall frequency-runoff relationship developed by the SCS (USDA, 1975, 1973). The rainfall frequency data were developed by the U.S. National Weather Service (USDOC, 1961). Discharges for the 500-year floods were determined by straight-line extrapolation of a probability-log graph of flood discharges computed for frequencies up to 100 years. Discharge of the 500-year flood on Lisha Kill reflects upper basin storage and, therefore, has a lower discharge than can be expected from a straight-line extrapolation (FEMA, 1979f).

Mohawk River

The principal sources of data for the Mohawk River was USGS Gage No. 01357500 (Mohawk River at Cohoes), with a period of record from 1917-1975. The flood frequency relationship for the Mohawk River was developed from a log-Pearson Type III frequency analysis. (USGS, 1976b). Study of the plotting positions for the four highest annual peaks during the period of record indicated that the discharges from the computed curve were too low; therefore, a graphical extension of the frequency curve above the 10-year frequency was used (FEMA, 1979f; 1979e; 1979a).

The gaging station records obtained from the Hudson and Mohawk Rivers indicate that, while both streams tend to flood at the same time, the time of maximum discharge and the recurrence intervals of the discharges are usually not the same on both streams for a given hydrologic event. In addition, major flooding on one stream produced a backwater effect on the other in the area near the confluence of the Mohawk River with the Hudson River. To determine the maximum backwater effect that these streams have upon each other for flood of each frequency studied, it was necessary to determine which combination of discharges from the Hudson and Mohawk Rivers would create the highest water surface elevations at any point in the study area (FEMA, 1979e).

<u>Third, Fourth and Fifth Branches Mohawk River</u>

Flow distribution in the Third, Fourth and Fifth Branches Mohawk River was estimated from the results of current meter discharge measurements in and near the study area during the floods of February 25, 1975 and March 15, 1977. The February 1975 flood had a discharge of 74,200 cfs at the Cohoes gaging station (recurrence interval of approximately 8 years). The March 1977 flood had a discharge of 112,000 cfs at the Cohoes gaging station (recurrence interval of approximately 25 years) (FEMA, 1979a; 1979e).

<u>Normans Kill</u>

In the Town of Guilderland, upstream of Watervliet Reservoir, the hydrologic analysis of Normans Kill was prepared using the USACE Regional Frequency Study (USACE, 1974b). For Normans Kill in the Towns of Guilderland and New Scotland, downstream of Watervliet Reservoir, the hydrologic analysis was prepared using transposed gage data. A log-Pearson Type III flood frequency analysis was performed based on data from the USGS Gage No. 01359528 (Normans Kill Near Westmere), to compute peak discharges for selected recurrence intervals. These peak discharges were then transposed upstream using the ratio of the drainage areas raised to the 0.78 power in Guilderland and to the 0.75 power in New Scotland (FEMA, 1982a; 1982b).

For Normans Kill along the City of Albany/Town of Bethlehem boundary, data from USGS Gage No. 01359528 (Normans Kill Near Westmere), located northwest of the City of Albany, and with a period of record from 1968 to 1977, plus an adjustment of the October 16, 1955 and September 12, 1960 flood discharges at Karlsfeld, west of the City of Albany, were used to compute the discharge-frequency relationship. A log-Pearson Type III method was developed for the Westmere gage. These peak discharges were then transposed downstream using the ratio of the drainage areas raised to the 0.78 power (USGS, 1968) (FEMA, 1984a; 1979b).

<u>Onesquethaw Creek</u>

In the Towns of New Scotland and Bethlehem, the hydrologic analysis of Onesquethaw Creek was prepared using transposed gage data. A log-Pearson Type III flood frequency analysis on data from USGS Gage 01359902 (Coeymans Creek near Selkirk) to compute discharges for the selected recurrence intervals. These peak discharges were then transposed upstream using the ratio of the drainage areas raised to the 0.75 power. Peak discharges were also computed using the USACE Regional Frequency Study (USACE, 1974b). These regional peaks were modified by graphical adjustment to account for gaged data (FEMA, 1984a; 1982b).

Salt Kill

Initial discharges for Salt Kill were computed using a rainfall-runoff relationship developed by the US Soil Conservation Service (US Department of Agriculture, 1975; 1973; 1972), and rainfall frequency estimates developed by the U.S. Weather Bureau (US Department of Commerce, 1961). The flow rates were routed through the pool created by the railroad embankment, 200 upstream from the detailed study limit. At the Norlite Corporation Quarry, also upstream of the study area, stage-discharge relationships were developed in the Salt Kill channel, and for the low divide separating the stream from the quarry, to make the final determination of flow in the detailed study area of Salt Kill (FEMA, 1979e).

Sand Creek

In the Town of Colonie, flood frequency relationships for Sand Creek (ungaged) were developed from a rainfall frequency-runoff relationship developed by the SCS (USDA, 1975; 1973). The rainfall frequency data were developed by the U.S. National Weather Service (USDOC, 1961). Discharges for the 500-year floods were determined by straight-line extrapolation of a probability-log graph of flood discharges computed for frequencies up to 100 years (FEMA, 1979f).

Shaker Creek

In the Town of Colonie, flood frequency relationships for Shaker Creek (ungaged) were developed from a rainfall frequency-runoff relationship developed by the SCS (USDA, 1975, 1973). The rainfall frequency data were developed by the U.S. National Weather Service (USDOC, 1961). Discharges for the 500-year floods were determined by straight-line extrapolation of a probability-log graph of flood discharges computed for frequencies up to 100 years (FEMA, 1979f).

State Basin

The discharges used for the State Basin were adopted from the FIS for the Village of Green Island (FEMA, 1979a). The Village of Green Island's FIS indicates that a frequency-discharge relationship for State Basin was used and was adopted from the FIS for City of Cohoes. However, the City of Cohoes FIS (1979e) did not provide information on the hydrologic analysis for State Basin.

Vloman Kill

In the Town of Bethlehem, the hydrologic analysis of Vloman Kill was prepared using the USACE HEC Regional Frequency study (USACE, 1974b). This statistical analysis developed peak discharge for selected recurrence intervals based on the parameters of basin size, mean annual flood peak, standard deviation and skew coefficient (FEMA, 1984a).

Vly Creek

The hydrologic analysis of Vly Creek required two methods of computation to derive the peak discharges. In the Village of Voorheesville, and in the Town of New Scotland downstream of the confluence with Tributary C, the USACE Regional Frequency Study was used. This statistical method developed peak discharges for selected recurrence intervals based upon the parameters such as basin size, mean annual flood peak, standard deviation and skew coefficient (USACE, 1974b)(FEMA, 1982b; 1982c).

In the Town of New Scotland upstream of the confluence with Station 23.000 Tributary, where the discharge area is too small to use the USACE Regional Frequency Study, the rational method was used, and utilized the parameters of basin size, time of concentration and rainfall intensity (FEMA, 1982b).

Revised Countywide Analyses

Detailed and Limited Detailed Studies

The majority of streamflow within Albany County is unregulated. Hydrologic analyses were completed to establish peak discharge-frequency relationships for each flooding source studied by detailed and limited detailed study methods. For these studies, discharges were nominated at the same nomination locations provided in the effective Flood Insurance Studies (FIS) for the Albany County communities, at tributary confluences, and other locations where appropriate.

Methods for nominating discharges for the detailed and limited detailed study streams included gage analysis, use of the USGS 2006 New York State regional regression equations, NRCS TR-55 runoff analysis, the rational method, or a combination of these methods. Newly-calculated discharges were compared to the effective FIS discharges where they exist. The decision to revise a discharge value or reuse the effective value was based on standard practices described in Appendix C of FEMA Guidelines and Specifications for Flood Hazard Mapping Partners (Section C.1.2.1 under the heading "Determining Statistical Significance"). In addition, per FEMA guidelines (Section C.1.2.2), proposed discharge values for detailed stream segments will be compatible with those in the effective analyses at the limits of detailed study

For the detailed study streams having a gage record of sufficient length (minimum 10 years of record [USGS, 1982]), a discharge-frequency gage analysis methodology was used to nominate discharges. This methodology utilized a log-Pearson Type III analysis (LP III) for the available records in accordance with USGS Bulletin 17B (USGS, 1982). In rural and unregulated flow situations, the gage analysis was weighted with the 2006 New York State regional regression equations in accordance with the USGS Scientific Investigations Report (SIR) 2006-5112 "Magnitude and Frequency of Floods in New York" (Lumia, 2006). For the regulated, rural streams, only the regulated years of record were used to nominate discharges using a log-Pearson Type III manual probability plot. The regression equations were not used for regulated streams.

For ungaged streams, discharges were nominated using the regional regression equation method in accordance with the USGS Scientific Investigations Report 2006-5112 "Magnitude and Frequency of Floods in New York" (Lumia, 2006). This method related peak discharge to drainage area and several other parameters based on watershed basin characteristics, within a number of hydrologic regions in New York State.

The Albany County watersheds fall within USGS Regions 2 and 3 for New York State. The Region 2 regression equation parameters include drainage area, basin storage, basin lag factor, and mean annual runoff. The regression equations were used for nomination points having drainage areas as small as 1.93 square miles (mi^2), as this is the lower limit for the area parameter in the Region 2 regression equations (maximum area is 996 mi^2) (Lumia, 2006). The Region 3 regression equation parameters include drainage area, basin lag factor, mean annual runoff, and seasonal maximum snow depth. For studies in Region 3 the regression equations were used for nominating flows in basins as small as 0.41 mi^2, the lower limit for the Region 3 regression equations (maximum area is 3480 mi^2) (Lumia, 2006).

The Region 2 and Region 3 regression analysis parameter values were obtained by running the New York Flood Frequency Tool (NYFFT) (Lumia, 2006). The NYFFT utilized the USGS 30-meter DEM to delineate basins, and compute drainage area and basin lag factor. The NYFFT has associated databases which were used to calculate mean annual runoff and seasonal maximal snow depth based on New York State hydrologic region. Basin storage and urbanization were calculated by the NYFFT based upon the multi-resolution land characteristics (MRLC) dataset.

For areas with over 15% urban development, an urban adjustment was applied to the regression equation-derived discharges, in accordance with USGS Water-Supply Paper 2207 (USGS, 1983).

For nomination points with a drainage area between the regional regression analysis lower area limit and 200 acres, TR-55 runoff analysis was utilized to calculate peak discharges; for nomination points with drainage area below 200 acres, the rational method was used to calculate peak discharges. Because the New York 500-year 24-hour precipitation design storm criteria are not published, the 500-year discharge (0.2-percent annual chance) could not be calculated using TR-55. Instead, for the TR-55 nomination points, the 0.2-percent annual chance discharge was calculated by extrapolation of the 50-, 10-, 2-, and 1-percent annual chance discharges using a discharge/log-probability plot.

Table 5 provides the discharges utilized for detailed studies; Table 6 provides the discharges for the limited detailed studies completed as part of this county-wide FIS. The specific hydrologic analyses conducted for each of the detailed and limited detailed study streams are provided below.

Blockhouse Creek

Blockhouse Creek was restudied as a limited detailed study. For the first Blockhouse Creek nomination point upstream of the confluence with Hunger Kill (located in an approximate study reach), discharges for Blockhouse Creek were computed using the 2006 New York regional regression equations for Region 2 (Lumia 2006). Because the Blockhouse Creek drainage basin was 28% urbanized, an urban adjustment (BDF of 2) was applied to the regression equation derived discharges (USGS, 1983). USGS Gage No. 01359513 is located upstream of this study but within the area limit (50% to 150%) for downstream nomination points; therefore the regression equation-derived discharges were weighted with the gage analysis derived discharges. Lastly, the discharges computed upstream of the Hunger Kill confluence were transferred downstream to the Blockhouse Creek nomination points in the limited detailed study reach using a drainage area–discharge relationship.

Bozen Kill Tributary 4

For this revised detailed study, discharges for Bozen Kill Tributary 4 were computed using TR-55 runoff analysis because the drainage basins for the nomination points were below the area limit of the Region 2 2006 New York regional regression equations (Lumia, 2006).

Coeymans Creek

For this revised detailed study, new discharges were considered for two study sections of Coeymans Creek, including the Town of Bethlehem reach from State Route 396 downstream to the municipal boundary with the Town of Coeymans and the reach in the Town of Coeymans from the railroad bridge downstream of Route 9W downstream to the Hudson River. The reach between these two new detailed study reaches (from the Town of Bethlehem/Coeymans boundary downstream to the railroad bridge) was studied as a Redelineation study and utilized the existing FIS discharges.

For the revised detailed studies, discharges were first calculated using the 2006 USGS New York regional regression equations (Lumia 2006). The regression-derived discharge values were then weighted with gage analysis results from USGS Gage No. 01359902 (Coeymans Creek near Selkirk – 12 years of peak flow records), in accordance with the procedures specified by USGS Scientific Investigations Report (SIR) 2006-5112 "Magnitude and Frequency of Floods in New York" (Lumia, 2006). It was found that the previously published FIS discharges fell within the 50% confidence interval of the new discharges; therefore the previously published FIS discharges were retained and utilized for the new hydraulic study.

Dry River

The new Dry River study included both detailed and limited detail reaches in the Town of Colonie and City of Watervliet. For this new hydrology study, discharges for nomination points on Dry River were first computed using the 2006 New York regional regression equations (Lumia 2006). Based on the level of urbanization of the Dry River drainage area (38% to 52% urbanized for the several basins), an urban adjustment (BDF of 4 to 6) was applied to the peak flows based on the USGS/Sauer method (USGS 1983).

However, the regression analysis-derived discharges for Dry River exceeded the estimated capacity of culverts running under the City of Watervliet. This discharge estimation methodology did not consider the effects of the flood control/storage structures on these streams. Specifically, both the Upper and Lower Dams attenuate discharges on Dry River.

To incorporate the impacts of the two control structures on Dry River discharges, a TR-55 flow routing analysis was conducted. This analysis modeled outflow for the design storms from the two-dam system assuming that the upper dam discharge pipe was open and the lower discharge pipe was closed, and that the lower dam was at spillway crest (worst case scenario).

Data from existing engineering reports were incorporated into the TR-55 analysis (Ivan Zdrahal, 2001; J. Kenneth Fraser, 2008; 2001). These model runs produced a reservoir stage which reached 1.3 feet above the lower dam spillway crest for the 1- percent annual chance flood, and 1.5 feet above crest for the 500-year storm. Under both the 1- and 0.2-percent annual chance flood, the reservoir stage did not reach spillway crest at the upper dam.

Except for the most upstream nomination point, the nominated discharges for Dry River are based on the TR-55 routing analysis. This analysis also indicated that the 1- and 0.2-percent annual chance storm flows under the worst case scenario will remain in culvert from the start of the Dry River conduit to the confluence with the Hudson River. Discharges for the most upstream nomination point (upstream of the upper dam) are based on a regression analysis, with an urban adjustment applied.

Hannacrois Creek

For this revised detailed study, discharges for Hannacrois Creek were computed using the 2006 New York regional regression equations. USGS Gage No. 01359924 (Hannacrois Creek near New Baltimore – 12 years of peak flow records) was not utilized as the gage-derived discharges were found to be inconsistent with the previously published FIS discharges in the Town of Coeymans (FEMA, 1989a). It was found that the previously published FIS discharges fell within the 50% confidence interval of the new regression-derived discharges; therefore the previously published FIS discharges in the Town of Coeymans were retained and utilized for the new hydraulic study. The discharge at the most downstream nomination point reported in the Town of Coeymans FIS (FEMA, 1989a) was applied downstream to two new nomination points between the most downstream FIS nomination point and the Hudson River.

Hannacrois Creek Tributary

Hannacrois Creek Tributary in the Village of Ravena was previously studied as an approximate study. In the Town of Coeymans, this tributary was not previously studied. Localized flooding has been documented in the I-87, CSX railroad, South Clement Avenue and Harris Street areas due to undersized culverts. Additionally, upstream of I-87 to the upstream end of the limited detailed study, Hannacrois Creek Tributary has several reaches of piped underground flow.

The new Hannacrois Creek Tributary study included both detailed and limited detailed reaches. For this new study, discharges for Hannacrois Creek Tributary were computed using either TR-55 runoff analysis or the rational method (method based on basin area). The regional regression analysis was not used because the drainage basins for the nomination points were below the area limit of the 2006 New York regional regression equations for Region 2.

Discharges for the two most upstream nomination points on Hannacrois Creek Tributary were determined by the rational method. Discharges from the downstream side of the railroad embankment to the confluence with Hannacrois Creek were calculated by TR-55 run-off/routing analysis.

Based on the limited culvert capacity under I-87 and the railroad, a TR-55 flow routing analysis was conducted to determine discharges downstream of the railroad embankment and I-87. The TR-55 analysis consisted of 1) generating an input hydrograph for upstream of the railroad using the same basin parameters derived or used for the TR-55 peak discharge calculations (24-hour precipitation, basin area, curve number and time of concentration); 2) routing the 10%, 2%, 1% and 0.2 % input hydrographs through the railroad embankment; 3) adding runoff from the area between I-87 and the railroad to the routed discharge from the railroad embankment; and 4) routing the railroad discharge plus runoff through the I-87 culvert. Discharges from the railroad embankment downstream to the confluence with Hannacrois Creek were revised based on the TR-55 flow routing analysis.

Hunger Kill

In the Town of Guilderland FIS (FEMA 1982), the Hunger Kill was previously studied downstream of Western Avenue using approximate methods. The reach upstream of Western Avenue was not previously studied.

For this new limited detailed study, discharges for Hunger Kill upstream of Western Avenue were computed using the 2006 New York regional regression equations (Lumia 2006). Based on the level of urbanization of the Hunger Kill drainage basins, an urban adjustment (BDF of 1 to 2) was applied to the peak flows based on the USGS/Sauer method (USGS 1983).

Downstream of Western Avenue, a gage analysis of USGS Gage No. 01359513 (Hunger Kill at Guilderland - 10 years of peak flow records) was weighted with the regression equation values for nomination points within 50% to 150% of the gage area, in accordance with the procedures specified by USGS Scientific Investigations Report (SIR) 2006-5112 “Magnitude and Frequency of Floods in New York” (Lumia, 2006).

Krum Kill

For this new detailed study, discharges for Krum Kill were first computed using the 2006 New York regional regression equations (Lumia 2006). Based on the level of urbanization of the Krum Kill drainage basins (52% to 61% urbanized for the several basins), an urban adjustment (BDF of 4 to 7) was applied to the peak flows based on the USGS/Sauer method (USGS 1983). It was found that the previously published FIS discharges fell within the 50% confidence interval of the new regression-derived discharges; therefore the previously published FIS discharges in the Town of Bethlehem were retained and utilized for the new hydraulic study.

For the most upstream nomination point on Krum Kill, TR-55 runoff analysis was used to develop peak discharges because the drainage area of this nomination point was below the area limit of the 2006 New York regional regression equations for Region 2 (Lumia 2006).

Normans Kill

The new Normans Kill study included both detailed and limited detailed reaches. For this revised study, gage analyses were conducted for USGS Gage No. 01359528 (Normans Kill at Albany - 35 years of peak flows) and Gage No. 01359519 (Normans Kill Near Westmere - 28 years of peak flows) in accordance with the Bulletin 17B guidelines. Although USGS Gage No. 01359519 is located on Normans Kill upstream of the detailed study reach, several nomination points within the detailed study reach were within 150% of the gaged area; therefore, this gage was included in the hydrologic analysis.

For nomination points between the two gages, discharges were calculated by a two gage weighting process. For discharges downstream of USGS Gage No. 01359528, discharges were calculated first at the gage by weighting the gage analysis-derived discharges with the discharges derived using the USGS 2006 regression equations (Lumia, 2006), and then transferred downstream of the gage based on a drainage area-discharge relationship.

Normans Kill Tributary 10

Normans Kill Tributary 10 in the Town of Guilderland was not previously studied. For this new detailed hydrology study, discharges for the Normans Kill Tributary 10 were computed using either TR-55 runoff analysis or the rational method (method based on basin area) because the drainage basins for the nomination points were below the area limit of the Region 2 2006 New York regional regression equations.

Normans Kill Tributary 10-1

Normans Kill Tributary 10-1 in the Town of Guilderland was not previously studied. For this new detailed study, discharges for the Normans Kill Tributary 10-1 were computed using either TR-55 runoff analysis or the rational method (method based on basin area) because the drainage basins for the nomination points were below the area limit of the Region 2 2006 New York regional regression equations.

Onesquethaw Creek

Onesquethaw Creek was studied in conjunction with the Coeymans Creek study. Onesquethaw Creek in the Town of Bethlehem upstream of an abandoned rail grade was previously studied by approximate methods. For this new limited detail study, discharges for Onesquethaw Creek were computed using the 2006 New York regional regression equations (with no urban adjustment). USGS Gage No. 01359902 (Coeymans Creek near Selkirk - 12 years of record) is located downstream of the study section, but within the area limit for gage influence (less than 150%). The gage analysis-derived discharges were weighted with discharges derived using the USGS 2006 regression equations in accordance with the procedures specified by USGS Scientific Investigations Report (SIR) 2006-5112 “Magnitude and Frequency of Floods in New York” (Lumia, 2006). It was found that the previously published FIS discharges fell within the 50% confidence interval of the new discharges; therefore the previously published FIS discharges were retained and utilized for the new hydraulic study.

Patroon Creek

Patroon Creek in the City of Albany was previously studied by approximate methods. For this new detailed study, discharges for Patroon Creek in the City of Albany were computed using the 2006 New York regional regression equations (Lumia 2006). Based on the level of urbanization of the Patroon Creek drainage basins (33% to 63% urbanized for the several basins), an urban adjustment (BDF of 6) was applied to the peak flows based on the USGS/Sauer method (USGS 1983). A gage on Patroon Creek at Northern

Boulevard was not used in determining peak flow nominations because of a limited split record.

Phillipin Kill

A downstream portion of Phillipin Kill in the Town of Bethlehem was previously studied using approximate methods, while the upstream portion was not previously studied. In the Town of New Scotland, Phillipin Kill was not previously studied.

For this new limited detailed study, discharges for Phillipin Kill downstream of Delaware Avenue were computed using the 2006 New York regional regression equations. Based on the level of urbanization of the Phillipin Kill drainage basins, an urban adjustment (BDF of 2) was applied to the peak flows based on the USGS/Sauer method (USGS 1983).

For two nomination points on Phillipin Kill upstream of Delaware Avenue, discharges were computed using TR-55 runoff analysis because the drainage basins for the nomination points were below the area limit of the Region 2 2006 New York regional regression equations.

Vloman Kill

Vloman Kill in the Town of Bethlehem and a portion of Vloman Kill in the Town of New Scotland was previously studied using approximate methods. The upstream portion in the Town of New Scotland was not previously studied.

For this new limited detailed study, discharges for all but one of the Vloman Kill nomination points were computed using the 2006 New York regional regression equations. For the most upstream nomination point, discharges were computed using the rational method because the drainage basin for this nomination point was below the area limit of the Region 2 2006 New York regional regression equations.

TABLE 5 - SUMMARY OF DISCHARGES - DETAILED STUDIES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
BASIC CREEK					
At downstream corporate limits[1]	24.8	1,100	2,030	2,620	4,260
Upstream of confluence of Wolf Fly Creek[1]	18.0	860	1,590	2,060	3,350
Approximately 1,000 feet downstream of Basic Creek Reservoir Dam[1]	16.3	800	1,480	1,910	3,110
Upstream of confluence with Basic Creek Reservoir	14.5	990	1,770	2,200	3,490
Approximately 0.5 mile downstream of Lobdell Mill Road	12.5	890	1,580	1,970	3,120
Approximately 460 feet upstream of Lobdell Mill Road	11.2	820	1,460	1,810	2,880
Approximately 100 feet downstream of County Route 401	10.6	780	1,400	1,740	2,760
Approximately 1360 feet upstream of County Route 1	5.96	480	890	1,120	1,820
Approximately 0.9 mile upstream of County Route 1	3.81	340	640	800	1,300
Approximately 1.0 mile upstream of County Route 1	3.36	310	580	730	1,190
Approximately 1.0 mile downstream of State Route 85	2.93	280	520	660	1,070
BLACK CREEK					
At confluence with Bozen Kill[1]	19.3	876	1,217	1,482	2,392
Approximately 3,000 feet upstream of Weaver Road[1]	17.1	758	1,022	1,238	2,043
At Frederick Drive[1]	16.5	725	967	1,173	1,945
Downstream of Military Reservation Railroad downstream crossing[1]	16.1	703	933	1,131	1,879
At Military Reservation Railroad downstream crossing	15.0	1,042	1,846	2,278	3,598
BOZEN KILL					
At confluence with Watervliet Reservoir	52.1	2,836	4,734	5,717	8,612
BOZEN KILL TRIBUTARY 4					
At confluence with Bozen Kill	1.47	550	926	980	1,350
Approximately 2,750 feet upstream of State Route 146	0.86	393	664	712	960
At Lark Street Bridge	0.7	291	357	423	542
At Severson Avenue	0.4	173	216	245	316

[1] Peak Discharges may be affected by upstream control.

TABLE 5 - SUMMARY OF DISCHARGES - DETAILED STUDIES (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs)			
		10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
BOZEN KILL TRIBUTARY 5					
At confluence with Bozen Kill	2.0	501	655	770	1,002
At Lincoln Avenue Bridge	1.6	473	599	725	914
Approximately 500 feet upstream of railroad bridge	1.3	404	530	606	782
COEYMANS CREEK					
At confluence with Hudson River	51.34	4,232	6,970	8,364	12,218
Approximately 2,400 feet upstream of River Road	50.45	4,181	6,889	8,268	12,083
Upstream of I-87	49.91	4,150	6,840	8,210	12,000
Approximately 5,400 feet upstream of I-87	48.06	3,901	6,252	7,442	10,729
Approximately 1,250 feet downstream of Old Ravena Road	45.89	3,609	5,562	6,540	9,239
At railroad culvert	45.60[1]	3,570	5,470	6,420	9,040
Approximately 100 feet downstream of Kruger Road bridge	43.4	3,300	5,060	5,940	8,370
At USGS Gage 01359902	32.69	2,810	4,320	5,070	7,140
Approximately 1,900 feet upstream of Pictuay Road	31.37	2,730	4,186	4,917	6,924
DELPHUS KILL					
At confluence with Mohawk River	2.06	470	750	870	1,200
DRY RIVER					
At confluence with Hudson River	4.41	521	696	787	930
Upstream of 23rd St and confluence with Mannville Tributary	3.01	231	311	323	385
EIGHTMILE CREEK					
At downstream corporate limits	11.5	850	1,510	1,880	2,930
Approximately 1,815 feet downstream of Pine Valley Road	9.15	720	1,270	1,580	2,470
Approximately 300 feet downstream of County Route 405	8.14	660	1,170	1,450	2,260
Approximately 300 feet downstream of second County Route 402 crossing	6.97	580	1,040	1,290	2,010

[1] Drainage Area recomputed since prior analysis.

TABLE 5 - SUMMARY OF DISCHARGES - DETAILED STUDIES (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
FEURI SPRUYT					
Upstream Town of Coeymans corporate limits	2.98	270	530	680	1,190
Approximately 270 downstream of Biers Road culvert	2.6	240	480	610	1,070
Approximately 1,100 feet upstream of Biers Road culvert	2.23	220	430	550	960
Approximately 2,130 feet upstream of Biers Road culvert	1.88	190	380	480	840
Approximately 0.85 mile upstream of Biers Road culvert	1.55	170	330	420	730
HANNACROIS CREEK					
At confluence with Hudson River	65.57	3,070	5,470	6,810	10,700
Upstream of confluence with Hannacrois Creek Tributary	64.55	3,070	5,470	6,810	10,700
At upstream Town of Coeymans-Town of New Baltimore (Greene County) corporate limits	55.0	3,070	5,470	6,810	10,700
Approximately 1,570 feet downstream of downstream State Route 143 crossing	49.0	2,820	5,020	6,250	9,810
Approximately 2,170 feet downstream of Tompkins Road	41.8	2,500	4,450	5,540	8,710
Approximately 0.95 mile downstream of downstream County Route 111 crossing	36.8	2,270	4,050	5,040	7,920
At Alcove Reservoir Dam	33.2	2,100	3,750	4,660	7,300
At Town of Westerlo boundary	17.5	1,230	2,160	2,670	4,090
Upstream of confluence with Silver Creek	13.1	990	1,740	2,150	3,290
Approximately 0.4 mile downstream of County Route 312	11.2	880	1,550	1,910	2,930
Approximately 200 feet downstream of Tan Hollow Road	9.76	790	1,390	1,720	2,640
Approximately 1,830 feet upstream of Tan Hollow Road	4.28	390	710	890	1,430
Approximately 1,100 feet upstream of Dunbar Hollow Road	3.79	360	650	810	1,310
Approximately 0.5 mile upstream of Dunbar Hollow Road	2.91	290	530	670	1,070

TABLE 5 - SUMMARY OF DISCHARGES - DETAILED STUDIES (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs)			
		10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
HANNACROIS CREEK TRIBUTARY					
At confluence with Hannacrois Creek	0.86	275	373	401	460
At Frangella Drive	0.74	210	274	293	332
Downstream of I-87	0.58	106	119	123	132
HUDSON RIVER					
At Town of Bethlehem – Town of Coeymans Corporate Limits	8,476	140,555	175,998	189,700	219,280
At Green Island Gaging Station	8,090	142,000	195,000	218,000	277,000
Town of Colonie boundary	8,090	148,000	195,000	216,000	267,000
Above confluence with Fifth Branch Mohawk River	(1)	118,000	162,000	181,000	229,000
Above confluence with Third Branch Mohawk River	(1)	104,000	143,000	160,000	202,000
Above confluence with Fourth Branch Mohawk River	4,620	72,000	101,000	112,000	140,000
KROMMA KILL					
At Village of Menands-Town of Colonie boundary	3.54	430	710	840	1,200
KRUM KILL					
At confluence with Normans Kill(2)	5.49	456	505	531	556
Approximately 2,500 feet upstream of Normans Kill(2)	5.13(3)	456	505	531	556
Upstream of State Highway 85(2)	4.94(3)	538	603	628	654
Upstream of I-87	3.88(3)	853	1,191	1,450	1,775
Upstream of Russell Road	3.55(3)	758	1,058	1,288	1,577
Approximately 700 feet upstream of Cross Street	2.06	456	704	837	1,163
Upstream of McKown Road	1.52	408	588	792	1,010
LISHA KILL					
At Albany County boundary	13.9	900	1,800	2,200	3,500
LISHA KILL TRIBUTARY					
At confluence with Lisha Kill	1.79	550	770	850	1,100

(1) A drainage area value is not appropriate at this location because each branch of the Mohawk River downstream of the New York State Dam carries only a portion of the total Mohawk River discharge (FEMA, 1979e).

(2) Peak Discharges may be affected by upstream control.

(3) Drainage Area recomputed since prior analysis.

TABLE 5 - SUMMARY OF DISCHARGES - DETAILED STUDIES (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
MOHAWK RIVER					
At Cohoes Gaging Station	3,456	87,000	140,000	160,000	200,000
At Fourth Branch Mohawk River	(1)	39,200	63,000	72,000	90,000
At Fifth Branch Mohawk River	(1)	30,400	49,000	56,000	70,000
At Third Branch Mohawk River	(1)	17,400	28,000	32,000	40,000
At Second Branch Mohawk River	(1)	16,700	27,000	30,800	38,500
At First Branch Mohawk River	(1)	13,700	22,000	25,200	31,500
NORMANS KILL					
At confluence with Hudson River	180.39	8,973	13,363	15,525	21,493
Upstream of River Road	178.45	8,905	13,267	15,415	21,346
Approximately 4,100 feet upstream of I-87	174.37	8,763	13,064	15,183	21,033
At USGS Gage 01359528	172.83	8,710	12,987	15,095	20,914
Normanside Country Club Access Road	171.66	8,552	12,776	14,885	20,585
Approximately 1,500 feet upstream of Normanside Club Access Rd	169.37	8,237	12,345	14,459	19,905
Upstream of McCormack Rd	168.68	8,146	12,226	14,342	19,709
At USGS gage at State Farm Road	131	7,168	10,680	12,405	17,049
At Watervliet Reservoir Dam	113.1	6,392	9,523	11,062	15,203
At State Route 158 Bridge	55.7	3,102	5,335	6,671	10,608
Upstream of confluence with Indian House Creek	51.3	2,906	5,016	6,283	10,025
NORMANS KILL TRIBUTARY 10					
At confluence with Normans Kill	1.60	500	875	931	1,280
Upstream of confluence with Normans Kill Tributary 10-1	0.35	212	298	318	384
NORMANS KILL TRIBUTARY 10-1					
At confluence with Normans Kill Tributary 10	0.85	303	549	582	810
ONESQUETHAW CREEK					
At State Route 396 bridge	31.0(2)	2,730	4,186	4,917	6,924
Upstream of confluence of unnamed tributary	27.9	2,370	3,633	4,267	6,010
80,500 feet upstream of mouth	10.5	1,030	1,809	2,264	3,595
Upstream of confluence with Tributary 1	7.8	776	1,376	1,729	2,767
Upstream of confluence with Tributary 2	5.2	571	1,022	1,290	2,083

(1) A drainage area value is not appropriate at this location because each branch of the Mohawk River downstream of the New York State Dam carries only a portion of the total Mohawk River discharge (FEMA, 1979e).

(2) Drainage Area recomputed since prior analysis.

TABLE 5 - SUMMARY OF DISCHARGES - DETAILED STUDIES (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
PATROON CREEK					
At confluence with Hudson River	14.26	1,838	2,797	3,350	4,686
SALT KILL					
At State Highway 787	2.61	190	240	270	300
SAND CREEK					
At City of Albany-Town of Colonie boundary	2.68	510	800	930	1,300
SHAKER CREEK					
At confluence with Mohawk River	12.2	820	1,600	2,000	3,500
STATE BASIN					
At Salt Kill	3.30	190	240	270	300
At Mohawk River Overflow (Fifth Branch Mohawk River)	(1)	0	740	6,400	19,000
VLOMAN KILL					
19,500 feet upstream of mouth	24.2	1,688	3,264	4,283	7,420
Upstream of Dowers Kill	18.8	1,378	2,700	3,561	6,236
VLY CREEK					
At confluence with Normans Kill	16.5	1,203	2,245	2,903	4,948
Upstream of confluence with Tributary A	13.5	1,024	1,929	2,505	4,307
At State Route 85A	12.3	950	1,798	2,339	4,037
Upstream of confluence with Tributary B	9.5	772	1,480	1,935	3,374
Upstream of confluence with Tributary C	2.42	559	698	838	1,164
At Tygert Road Bridge	1.39	481	615	695	909

(1) A drainage area value is not appropriate at this location because each branch of the Mohawk River downstream of the New York State Dam carries only a portion of the total Mohawk River discharge (FEMA, 1979e).

TABLE 6 - SUMMARY OF DISCHARGES - LIMITED DETAILED STUDIES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
BLOCKHOUSE CREEK					
At confluence with Normans Kill	13.01	1,860	2,959	3,565	5,071
DRY RIVER					
Upstream of 12th Avenue Bridge(1)	2.99	231	311	323	385
Approximately 3000 feet upstream of 12th Avenue Bridge(1)	2.80	240	323	336	401
Approximately 4800 feet upstream of 12th Avenue Bridge	2.70	442	678	800	1,107
HANNACROIS CREEK TRIBUTARY					
Upstream of I-87(1)	0.58	135	159	166	200
Upstream of railroad embankment	0.57	367	556	628	830
Upstream of Wendell Street	0.22	131	177	194	237
Upstream of Camille Drive	0.06	56	73	81	97
HUNGER KILL					
At confluence with Blockhouse Creek(1)	8.09	526	997	1,235	1,866
At USGS Gage 01359513	8.07	522	991	1,228	1,857
Upstream of Winding Brook Drive(1)	7.79	554	1,029	1,270	1,908
Approximately 300 feet upstream of Western Avenue(1)	4.73	733	1,164	1,397	1,978
Approximately 3600 feet upstream of Western Avenue	3.97	682	1,082	1,289	1,824
Upstream of East Old State Road	3.28	581	920	1,097	1,554
NORMANS KILL					
Approximately 1500 feet downstream of Southern Blvd	178.26	8,899	13,258	15,404	21,331
Upstream of I-87	178.13	8,894	13,251	15,397	21,321
Approximately 3,200 feet upstream of I-87	174.83	8,779	13,087	15,209	21,068
ONESQUETHAW CREEK					
At abandoned railroad bridge	26.94	2,370	3,633	4,267	6,010
Approximately 3,500 feet upstream of Old Quarry Road	25.95	2,370	3,633	4,267	6,010
PHILLIPIN KILL					
Upstream of confluence with Vloman Kill	7.44	1,108	1,741	2,090	2,945
Upstream of Fairlawn Drive	7.11	1,077	1,699	2,034	2,884
Approximately 1,500 feet downstream of Feura Bush Road	4.77	788	1,253	1,503	2,132

(1) Peak Discharges may be affected by upstream control.

TABLE 6 - SUMMARY OF DISCHARGES - LIMITED DETAILED STUDIES (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (square miles)	PEAK DISCHARGES (cfs) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
PHILLIPIN KILL (continued)					
Approximately 1,600 feet upstream of Van Dyke Road	3.51	613	979	1,173	1,671
Upstream of Delaware Avenue	1.71	531	760	968	1,220
Approximately 3,800 feet upstream of Orchard Street	0.92	388	561	722	920
VLOMAN KILL					
Approximately 3,100 feet upstream of Creble Road	21.29	2,143	3,536	4,233	6,136
Approximately 8,600 feet upstream of Creble Road	20.47	2,060	3,400	4,070	5,900
Upstream of Creble Road	20.05	2,018	3,330	3,986	5,779

Redelineation Studies

A number of study streams were identified as detailed studies in which the existing studies were reused. These studies were designated as Redelineation of Detailed floodplain studies. No new hydrologic analyses were performed for reaches with the Redelineation designation; instead, the existing discharge nominations and water surface elevations were utilized and remapped onto the new elevation model.

Table 5 provides the discharges utilized for detailed and Redelineation studies completed as part of this county-wide FIS.

Stillwater Elevations

A lake study was conducted for Alcove Reservoir, on Hannacrois Creek in the Town of Coeymans. The reservoir area was not mapped in the effective FIS. However, Hannacrois Creek was previously studied using detailed methods, starting just above the Alcove Reservoir spillway and extending downstream. That study included discharges at the reservoir's dam location, a BFE on the reservoir surface, and profiles for the four modeled floods extending onto the reservoir itself.

For this new lake study, flooding on the reservoir was mapped using water surface elevations consistent with the Redelineation study of Hannacrois Creek at the spillway. New discharge nominations were not calculated for this lake study.

The Hudson River was studied as a Redelineation study from the downstream county boundary to the upstream county boundary. Water surface elevations were utilized from the effective FIS reports, and converted from the NGVD 29 to NAVD 88 vertical datum (FEMA, 1989a; 1979a; 1979b; 1979c; 1979d).

Table 7 provides the Stillwater elevations used for the revised studies of Hudson River and Alcove Reservoir.

TABLE 7 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (FEET NAVD 88) 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
ALCOVE RESERVOIR				
At dam outlet	618.8	619.5	620.0	621.0
HUDSON RIVER				
At staff gage just below Troy Lock and Dam	21.3	25.9	27.6	31.3
At Town of Coeymans downstream boundary	10.3	13.9	15.7	19.7

Discharge Nomination for Approximate Studies

For approximate studies, discharges were determined at the downstream end of each study and at major tributary confluences. 1-percent-annual-chance peak discharges were calculated using the 2006 New York regional regression equations. Based on the amount of urbanization in a drainage basin, the 2006 New York Regression Equations were adjusted, if necessary, using the USGS/Sauer method (USGS, 1983). The urbanization assessment utilized orthoimagery, the MRLS data set, and USGS mapping.

For streams located in New York State Hydrologic Region 2 (Lumia, 2006), the 2006 New York regional regression equations were used for nomination points having drainage areas as small as 1.93 mi^2, as this is the lower limit for the area parameter in the Region 2 regression equations (Lumia, 2006). For nomination points with drainage areas below 1.93 mi^2, either TR-55 runoff analysis or the rational method was used. For studies in Region 3 the regression equations were used for nominating flows in basins as small as 0.41 mi^2, the lower limit for the Region 3 regression equations (maximum area is 3480 mi^2) (Lumia, 2006).

For nomination points with drainage area below the regional regression analysis lower area limit, the rational method was used to calculate peak discharges.

Consideration of Studies in Adjoining Counties

Several stream segments studied for Albany County pass into a neighboring county. For those stream segments that adjoin recently updated studies in Schoharie County or Greene County, consistency among the flood mapping was investigated. Accordingly, an additional discharge nomination was computed at the Albany County border, where applicable. This additional estimate was used to compare to the discharge values provided in the adjoining studies. The values from the adjoining study were transposed to the county border, if necessary.

3.2 Hydraulics Analyses

Precountywide Analyses

Prior to this countywide Flood Insurance Study, detailed hydraulic analyses were performed for past Flood Insurance Studies in the Towns of Bethlehem, Coeymans, Colonie, Guilderland, New Scotland, Westerlo, the Villages of Altamont and Voorheesville and the Cities of Albany, Cohoes and Green Island. The detailed studies performed for these town and city studies were redelineated and included in this countywide study.

In the Towns of Coeymans and Westerlo, cross sections for the backwater analyses of the streams studied by detailed methods were from aerial photographs at a scale of 1:9,600, and topographic maps at a scale of 1:4,800 with a contour interval of 4 feet (Geomaps, 1985a and 1985b). In the Towns of Bethlehem, Guilderland and New Scotland and the Villages of Altamont and Voorheesville, cross sections for the backwater analyses of the streams studied by detailed methods were obtained from aerial photographs flown in February 1978 at a scale of 1 inch = 800 feet (Avis, 1978). Cross sections of the Mohawk and Hudson Rivers in the City of Cohoes and the Village of Green Island were obtained from topographic maps (NYSDOT, 1973 and USDOI, 1954). Below-water sections were obtained by field measurement. In the City of Albany and the Towns of Green Island and Coeymans, cross sections for the State Basin and the Hudson River downstream of the Troy Lock and Dam were obtained from aerial photographs taken in April 1977, at a scale of 1:4,800 (Tallamy, 1977). The below-water cross sections for the Hudson River were obtained from the U.S. Army Corps of Engineers (USACE, 1968a). All bridges, dams and culverts were field surveyed to obtain elevation data and structural geometry. In the Town of Colonie, cross sections were developed by photogrammetry and field surveys and were drawn at close intervals above and below bridges and culverts to aid in computing the significant backwater effects of the structures.

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 (Table 11), selected cross-section locations are also shown on the Flood Insurance Rate Map (Exhibit 2).

For the Towns of Bethlehem, Coeymans, Westerlo, Guilderland, New Scotland and the Villages of Altamont and Voorheesville, water-surface elevations of floods of the selected recurrence intervals were computed through the use of the COE HEC-2 step-backwater computer program (USACE, 1973a, 1973b, and 1974a). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

In the Town of Colonie, water-surface elevations were determined by: (1) the USGS E-431 step-backwater computer program (USDOI, 1976), (2) the slope-conveyance method (USDOI, 1967), (3) critical depth computations (USDOI, 1968), (4) historical data (USACE, 1968b and USDOI, 1975), (5) flood routing (USDOI, 1960), (6) the flow-over-the-dam method (USDOI, 1967), and (7) the USGS A-526 culvert computer program (USDOI, 1968).

In the City of Cohoes and the Village of Green Island, water-surface profiles for the Mohawk and Hudson Rivers were developed using the U.S. Geological Survey E-431 and J-635 computer programs (USDOI, 1976 and Shearman, 1977, respectively). Backwater computations started at the Hudson River gaging station at Green Island using the stage-discharge rating at the gage. The step-backwater models of the Mohawk and Hudson Rivers upstream of the Troy Lock and Dam were calibrated to high-water marks and stage readings obtained from the March 1977 flood. In the Village of Green Island, the E-431 and J-635 computer programs, supplemented with culvert computations, were used in computing profiles for the State Basin (Bodhaine, 1968).

In the City of Cohoes, hydraulic computations for the Hudson River and Mohawk River channels downstream from the New York State Dam were begun at the Hudson River gaging station at Green Island. Starting water-surface elevations here were taken from the stage-discharge rating of the gage. Starting water-surface elevations at the New York State Dam were computed by the flow-over-the-dam method (Hulsing, 1968).

Channel roughness factors (Manning's "n") used in the hydraulic computations for the streams studied by detailed methods were chosen by engineering judgment and based on filed observations of the streams and floodplain areas. The Town of Colonie estimated roughness coefficients by field inspection and aerial photographs at each cross section (Cruikshank, 1975). An "n" value of 0.015 was used for concrete structures and 0.024 was used for corrugated metal pipes. A weighted average "n" value was used for bridges with steel decks, concrete abutments and ineffective flow was disregarded by using extremely high "n" values. The acceptability of all assumed hydraulic factors were checked by calibrating computed flood profiles to known historic flood profiles.

Although the flood elevations in the Town of Colonie are often raised by ice jams during spring thaws, the hydraulic analyses for the study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are valid only if the hydraulic structures in general remain unobstructed and dams and other flood control structures operate properly and do not fail.

The hydraulic analyses for this study 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.

Basic Creek

The detailed study for the Basic Creek was performed for the Town of Westerlo Flood Insurance Study (1989). Along certain portions of Basic Creek, a profile base line is shown on the Flood Insurance Rate Maps (Exhibit 2) to represent channel distances as indicated on the flood profiles and floodway data tables.

Starting water-surface elevations for Basic Creek were determined using the slope/area method.

Black Creek

The detailed study for the Black Creek was performed for the Town of Guilderland Flood Insurance Study (1982). Starting water-surface elevations for Black Creek were started at the confluence with Normans Kill using the slope/area method.

Bozen Kill

The detailed study for the Bozen Kill was performed for the Town of Guilderland Flood Insurance Study (1982). Starting water-surface elevations for Bozen Kill were started at the confluence with Watervliet Reservoir at critical depth.

Tributary 4 to Bozen Kill

The detailed study for Tributary 4 to Bozen Kill was performed for the Village of Altamont Flood Insurance Study (1983). Starting water-surface elevations were taken at critical depth 600 feet downstream of the Town of Altamont corporate limits.

The lower reaches of Tributary 4 to Bozen Kill assumed subcritical and supercritical flow patterns and that the 100-year flood elevations could not accurately be determined because of sheet flow diverting from the streams. These areas were therefore designated as areas of shallow flooding.

Tributary 5 to Bozen Kill

The detailed study for Tributary 5 to Bozen Kill was performed for the Village of Altamont Flood Insurance Study (1983). Starting water-surface elevations were taken at critical depth at the confluence with Bozen Kill.

The lower reaches of Tributary 5 to Bozen Kill assumed subcritical and supercritical flow patterns and that the 100-year flood elevations could not accurately be determined because of sheet flow diverting from the streams. These areas were therefore designated as areas of shallow flooding.

Coeymans Creek

The detailed study for the Coeymans Creek was performed for the Town of Coeymans Flood Insurance Study (1989). Coeymans Creek was started at normal depth utilizing the slope/area method.

Delphus Kill

The detailed study for the Delphus Kill was performed for the Town of Colonie Flood Insurance Study (1979).

Starting elevations for Delphus Kill were based on backwater elevations of the selected recurrence intervals from Mohawk River, which creates a pond at the mouth of the Kill. Water-surface profiles upstream from this major pond were developed by E-431 step-backwater analysis, A-526 culvert analysis, and critical depth computations. At U.S. Highway 9, flood routing was applied which resulted in a discharge cutback (USDOI, 1970).

Eightmile Creek

The detailed study for the Eightmile Creek was performed for the Town of Westerlo Flood Insurance Study (1989). Starting water-surface elevations for Eightmile Creek were determined using the slope/area method.

Feuri Spruyt

The detailed study for the Feuri Spruyt was performed for the Town of Colonie Flood Insurance Study (1979). Feuri Spruyt is a steeper stream and was started at a critical depth.

Hannacrois Creek

Detailed studies for Hannacrois Creek were performed for both the Town of Coeymans Flood Insurance Study (1989) and the Town of Westerlo Flood Insurance Study (1989). In the Town of Coeymans, Hannacrois Creek was started at normal depth utilizing the slope/area method. In the Town of Westerlo, Hannacrois Creek was started at critical depth.

Hudson River

The Hudson River is an estuary, where water-surface elevations are not a function of discharge alone. For this reason, a step-backwater analysis was not used to compute the water-surface profiles.

In the Town of Colonie, starting elevations were determined using the USGS E-431 step-backwater computer program based on stage-frequency elevations of gaging station no. 01359139 on the Hudson River at Albany. The flood profiles of the selected recurrence intervals were calibrated to the model, which was developed from historical high-water marks of the 1936, 1948 and 1960 floods. The resulting profile compare favorably with discharges known as historical floods. It verifies the water-surface elevations of the respective flood frequencies, within tolerable accuracy, at the gaging station below Troy Lock and Dam operated by the USACE.

In the Village of Green Island the influence of the Hudson River on water levels in the State Basin was the determining factor for all profiles for the entire study reach, as in no portion of the study reach did the natural basin floods produce higher profiles. For the Hudson River downstream of the Troy Lock and Dam along the Village of Green Island and in the Village of Menands, the profiles were developed from elevation-frequency data along the estuary for 10-, 2-, 1- and 0.2-percent annual chance recurrence intervals. The elevation-frequency data at the Albany gaging station, located on the west side of the Hudson River approximately 6.8 miles downstream of the recently collapsed Green Island Bridge, were used by the Village of Green Island and the Cities of Albany and Watervliet to determine the elevation-frequency relationship on the estuary. The downstream source of elevation-frequency data for the study area below the Troy Lock and Dam was the Flood Insurance Study for the Town of Colonie (USHUD, 1979), approximately 4.5 miles upstream of the Albany gaging station. The gage is located 146 miles upstream from the Hudson’s mouth. At the Troy Lock and Dam, approximately 7.8 miles upstream of the Albany gage, elevation-frequency data were obtained from historic high-water marks (of known frequency) from the 1913, 1936, 1949 and 1977 floods on the Hudson River estuary. Flood profiles for the study reach of the selected recurrence intervals were estimated from the elevation-frequency relationships at the limits of the reach and the historic profiles.

In the Town of Coeymans tidal elevations on the Hudson River were taken from the Flood Insurance Studies for the Towns of Bethlehem and Schodack (FEMA 1984a and 1984b). In the City of Watervliet and the Village of Menands, cross sections for the Hudson River analyses were obtained from aerial photographs taken in April 1977, and mapped at a scale of 1.0 inch equals 400 feet, with a contour interval of 4 feet (USDOI, 1977).

In the City of Cohoes, channel “n” values ranged from 0.032 to 0.039 on the Hudson River and overbank “n” values ranged from 0.040 to 0.120. Backwater from the Hudson River influences water levels in the downstream reaches of the major channels of Mohawk River during floods of the selected recurrence intervals. There is only a minor effect on upstream reaches, due to steep channel gradients. For the streams studied by approximate methods, a regional drainage area-flood depth relationship was used to estimate the 100-year flood elevations.

In the Town of Bethlehem, cross sections for the heavier backwater analyses of the streams studied by detailed methods were obtained from aerial photogrammetry using photographs taken in February 1978 (Avis, 1978).

For the Hudson River in the Town of Bethlehem, a log-Pearson Type III analysis of elevation data was performed on data from the Albany tidal gage. Starting water-surface elevations for the Hudson River at the southern Town of Bethlehem corporate limits were adjusted until resulting upstream water-surface elevations matched the log-Pearson elevation for each occurrence interval. Flood elevations for the streams studied by approximate methods were determined by normal depth calculations.

<u>Kromma Kill</u>

The detailed study for Kromma Kill was performed for the Town of Colonie Flood Insurance Study (1979). Starting elevations for Kromma Kill were computed by the slope-conveyance method for the E-431 step-backwater computer program and were used to develop profiles for the reach downstream of the underground conduit outlet. The A-526 culvert program was used to compute flows through the underground conduit and the culvert at Spring Street.

At the cross-section upstream of Spring Street, the channel of the Kill does not have the capacity to carry flood flows. Because the flood stage exceeds the lowest point on the left bank of the stream, the flow-over-the-dam method (USDOI, 1967) was used to determine the amount of flow that is diverted over the bank. This diverted discharge causes overland flow (shallow flooding) and loss of water to the adjacent basin. For the remaining reach of the detailed study, E-431 step-backwater analysis was used.

<u>Lisha Kill</u>

The detailed study for the Lisha Kill was performed for the Town of Colonie Flood Insurance Study (1979). The USGS E-431 step-backwater program was used in determining water-surface elevations of Lisha Kill within the Town of Colonie study area. At culvert sites, water-surface elevations at approach cross sections were determined through the use of the USGS A-526 culvert program. Where applicable, the flow-over-the-road method was used in determining water surface elevations. At the cross section upstream of dams, a flow-over-the-dam method (USDOI, 1967) was used to determine starting elevation for step-backwater analysis.

Upstream from Conrail on the Kill, a culvert with limited flow capacity results in significant water storage. Flood waters were routed through this storage area (Posey, 1969) based on simulated hydrographs (USDA, 1973). The resulting outflow hydrograph, accounting for storage, significantly reduce peak outflow discharges downstream from this storage area.

Tributary 8 to Lisha Kill

The detailed study for Tributary 8 to Lisha Kill was performed for the Town of Colonie Flood Insurance Study (1979). Tributary 8 to Lisha Kill exhibits both supercritical flow and subcritical flow in the lower stream reach. At naturally constricted sections where critical or supercritical flows occur, critical-depth computations were used to determine water-surface elevations. In the upper stream reach, upstream from 0.3 mile above the mouth, water-surface elevations were determined through the use of the USGS E-431 step-backwater computer program. Water-surface elevations were determined through the use of the USGS A-526 computer program and, where applicable, the flow-over-the-road method (USDOI, 1967).

Most cross sections for Tributary 8 to Lisha Kill were extracted from contour maps of the Town of Colonie (Cruikshank, 1971). The planimetric work map for Tributary 8 to Lisha Kill was converted from New York State Department of Transportation contour maps (NYSDOT, 1962). However, some of the cross sections on these streams were collected and compiled by USGS personnel using ground-surveying methods. Contour maps furnished by Albany County Airport were used as a guide in the delineation of the 100- and 500-year flood in the proximity of the airport (Albany, 1960).

Mohawk River

In the Town of Colonie, starting elevations at the Niagara Mohawk Dam and the Crescent Dam were based on flow-over-the-dam equations (USDOI, 1967), plans, and geometry provided by the New York State Department of Transportation. Starting elevations used at the Crescent Dam hydraulically concur with known stage-discharge relationships upstream at Route 9. Throughout the study reach, consideration was given to high-water marks resulting from recent floods.

At Cohoes Falls, water-surface elevations were derived from critical depth computations.

For the City of Cohoes, flow distribution in the major channels near the mouth of the Mohawk River was estimated from current meter measurements made during the floods of February 25, 1975 (74,000 cfs) and March 15, 1977 (112,000 cfs). The percentages thus obtained of the total Mohawk River discharge in each channel were checked for agreement with depth-area curves of the control cross sections near the heads of three channels. Refined estimates of flow distribution in the three minor channels near the head of the Fourth Branch Mohawk River (located in Town of Waterford) and in the First Branch Mohawk River and Second Branch Mohawk River were based on relative channel sizes. No profiles were developed in the area just downstream of the New York State Dam. The streambed in this area slopes steeply downward toward the southeast, and definition of profiles is questionable. The general relationships of elevations at the heads of the various channels were documented by field measurements made during a low water condition and by field observation during the March 1977 flood.

Backwater from the Hudson River influences water levels in the downstream reaches of Mohawk River during floods of the selected recurrence intervals. There is only a minor effect on upstream reaches, due to steep channel gradients.

First, Second and Third Branches of the Mohawk River

Flow distribution in the major channels near the mouth of the Mohawk River was estimated from current meter measurements made during the floods of February 25, 1975 (74,000 cfs) and March 15, 1977 (112,000 cfs). The percentages thus obtained of the total Mohawk River discharge in each channel were checked for agreement with depth-area curves of the control cross sections near the heads of three channels. Refined estimates of flow distribution in the three minor channels near the head of the Fourth Branch Mohawk River (located in Town of Waterford) and in the First Branch Mohawk River and Second Branch Mohawk River were based on relative channel sizes. No profiles were developed in the area just downstream of the New York State Dam. The streambed in this area slopes steeply downward toward the southeast, and definition of profiles is questionable. The general relationships of elevations at the heads of the various channels were documented by field measurements made during a low-water condition and by field observation during the March 1977 flood.

Fifth Branch of the Mohawk River

Flow distribution in the major channels near the mouth of the Mohawk River was estimated from current meter measurements made during the floods of February 25, 1975 (74,000 cfs) and March 15, 1977 (112,000 cfs). The percentages thus obtained of the total Mohawk River discharge in each channel were checked for agreement with depth-area curves of the control cross sections near the heads of three channels. Refined estimates of flow distribution in the three minor channels near the head of the Fourth Branch Mohawk River (located in Town of Waterford) and in the First Branch Mohawk River and Second Branch Mohawk River were based on relative channel sizes. No profiles were developed in the area just downstream of the New York State Dam. The streambed in this area slopes steeply downward toward the southeast, and definition of profiles is questionable. The general relationships of elevations at the heads of the various channels were documented by field measurements made during a low-water condition and by field observation during the March 1977 flood.

The amount of flow leaving the Fifth Branch Mohawk River and entering the State Basin was estimated by the flow-around-islands method (Davidian, 1975).

Backwater from the Hudson River influences the water level in the Fifth Branch Mohawk River during floods of the selected recurrence intervals.

Normans Kill

Detailed studies for Normans Kill were performed for the Town of Guilderland Flood Insurance Study (1982), the Town of New Scotland Flood Insurance Study (1982) and the Town of Bethlehem Flood Insurance Study (1984).

For the Town of Guilderland study, the starting water-surface elevations for Normans Kill started at the corporate limits and were taken from the Flood Insurance Study for the Town of New Scotland (FEMA, 1982b), while those for the Town of New Scotland study were taken from the (then unpublished) Flood Insurance Study for the Town of Bethlehem (FEMA, 1984a) and the Town of Bethlehem used the Flood Insurance study for the City of Albany (FEMA, 1979b).

Onesquethaw Creek

Detailed studies for Onesquethaw Creek were performed for the Town of New Scotland Flood Insurance Study (1982) and the Town of Bethlehem Flood Insurance Study (1984).

Starting water-surface elevations for Onesquethaw Creek were taken at critical depth several hundred feet downstream of the beginning of the both detailed studies.

Salt Kill

The detailed study for the Salt Kill was performed for the City of Cohoes Flood Insurance Study (1979). Cross sections of Salt Kill were obtained by field methods. Hudson River backwater and overflow of the Fifth Branch of the Mohawk River into the State Basin over Dyke Avenue determine water levels during floods equal to and exceeding a 50-year recurrence interval in the downstream reaches of Salt Kill.

Sand Creek

The detailed study for the Sand Creek was performed for the Town of Colonie Flood Insurance Study (1979). Starting elevations for Sand Creek were determined by the USGS A-526 culvert computer program for the culvert at the downstream study limit. The study reach contains culverts with high road embankments. The limited culvert conveyance and high embankments cause a series of ponding conditions occupying most of the reach.

Water-surface elevations of the selected recurrence intervals for Sand Creek were determined by the following methods: the E-431 step-backwater computer program, slope-conveyance, flood routing (USDOI, 1960), flow-over-the-dam (USDOI, 1967), and the A-526 culvert computer program.

Shaker Creek

The detailed study for the Shaker Creek was performed for the Town of Colonie Flood Insurance Study (1979). For Shaker Creek, the flood levels of the selected recurrence intervals from Mohawk River were used as starting elevations. The creek study reach is divided into two parts by Albany County Airport Runway 10. The downstream part contains culverts with limited conveyance and low road embankments, except for Mill Road and State Highway 7 which have high road embankments. For the downstream section, the profiles were developed by the following methods: the E-431 step-backwater computer program from the mouth to 0.5 mile above the mouth, and from Farm Road to Airport Runway 10; critical-depth computations from 0.5 mile above the mouth of Farm Road; flood routing at State Highway 7 (USDOI, 1960); and flow-over-dam (USDOI, 1967) and the A-526 culvert program at each crossing.

The upstream part of Shaker Creek has culverts with limited conveyance and high road embankments, except for a dam which has a low road embankment created by State Highway 155. Water-surface elevations in the upstream part were determined by the E-431 step-backwater for the entire reach, where applicable. Flood routing (USDOI, 1960) was used at Airport Terminal Road, and Ann Lee Home Road. The A-526 culvert program, and flow-over-dam (USDOI, 1967) was employed at each crossing.

State Basin

In the Village of Green Island, preliminary profiles for the State Basin were developed for two sources of flooding, one of which being Hudson River backwater and overflow from the Fifth Branch Mohawk River. Starting elevations were determined from the Hudson River profiles.

Vlomen Kill

The detailed study for the Vloman Kill was performed for the Town of Colonie Flood Insurance Study (1979). Starting water-surface elevations for the Vloman Kill were taken at critical depth several hundred feet downstream of the beginning of the detailed study.

Vly Creek

Detailed studies for Vly Creek were performed for the Town of Guilderland Flood Insurance Study (1982), the Town of New Scotland Flood Insurance Study (1982) and the Village of Voorheesville Flood Insurance Study (1982). In the Towns of Guilderland and New Scotland, starting water-surface elevations for Vly Creek were started at the confluence with Normans Kill using the slope/area method. In the Town of Voorheesville, starting water surface elevations for Vly Creek were taken from the Flood Insurance Study for the Town of New Scotland (FEMA, 1982b).

Revised Countywide Analyses

Analyses of the hydraulic characteristics of flooding from the stream 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 Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data Table in this FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

In this countywide analysis, water surface elevations for floods of the selected recurrence intervals for detailed, limited detail, and approximate studies were computed using the USACE Hydrologic Engineering Center River Analysis System (HEC-RAS) river modeling software program (Version 4.0). The HEC-RAS model for each flooding source is based on cross section geometry generated using manual and semi-automated methods derived from GIS techniques and data.

Cross section elevations were extracted from a Digital Terrain Model (DTM). The DTM was generated by combining overbank elevation data from an aerial Light Detection and Ranging (LiDAR) survey with data from a traditional field survey of the stream channel and the immediate overbank areas. For detailed studies, cross sections were field surveyed at close intervals just upstream and downstream of bridges, culverts, dams, and other hydraulic obstructions, at natural control sections along the stream length, and at significant changes in ground relief, land use, or land cover. Detailed structural geometry for bridges and culverts was also obtained from NYSDOT as-built drawings where they were available.

A stream centerline was located using geographically rectified aerial photography and the DTM. The centerline served as a base line to define hydraulic model distances along the stream channel as indicated on the Flood Profile and the Floodway Data Table. Selected cross sections used in the detailed hydraulic analysis are located on the Flood Profiles (Exhibit 1) and on the FIRM and are relative to distances along this base line.

Roughness factors (Manning's "n") used in the hydraulic model were chosen by engineering judgment and are based on field observations and semi-automated methods supported by GIS-based techniques. Table 8 provides a summary of the Manning's "n" values used in the hydraulic computations for the channel and overbank areas.

TABLE 8 - MANNING'S "N" VALUES

Flooding Source	Channel "n" Values	Overbank "n" Values
Basic Creek	0.030 – 0.045	0.050 – 0.090
Black Creek	0.030	0.050
Bozen Kill	0.020 – 0.030	0.050
Tributary 4 to Bozen Kill	0.020 – 0.060	0.030 – 0.100
Tributary 5 to Bozen Kill	0.020 – 0.030	0.050
Coeymans Creek	0.015 – 0.100	0.030 – 0.100
Delphus Kill	0.028 – 0.050	0.035 – 0.065
Eight Mile Creek	0.030 – 0.040	0.060 – 0.120
Feuri Spruyt	0.028 – 0.040	0.060 – 0.120
Hannacrois Creek	0.015 – 0.055	0.040 – 0.150
Tributary 1 to Hannacrois Creek	0.030 – 0.045	0.045 – 0.080
Hudson River	0.030 – 0.050	0.030 – 0.120
Kromma Kill	0.030 – 0.040	0.028 – 0.065
Krum Kill	0.030 – 0.055	0.030 – 0.110
Lisha Kill	0.030 – 0.070	0.028 – 0.090
Tributary 8 to Lisha Kill	0.028 – 0.040	0.030 – 0.060
Mohawk River	0.026 – 0.055	0.030 – 0.100
First Branch Mohawk River	0.028 – 0.055	0.040 – 0.060
Second Branch Mohawk River	0.028 – 0.055	0.040 – 0.060
Third Branch Mohawk River	0.028 – 0.055	0.040 – 0.060
Fifth Branch Mohawk River	0.028 – 0.055	0.040 – 0.060
Normans Kill	0.025 – 0.100	0.030 – 0.100
Tributary 10 to Normans Kill	0.050 – 0.060	0.100
Tributary 1 to Tributary 10 to Normans Kill	0.050 – 0.070	0.110
Onesquethaw Creek	0.020 – 0.050	0.030 - 0.050
Patroon Creek	0.018 – 0.055	0.020 – 0.060
Salt Kill	0.032 – 0.040	0.040 – 0.060
Sand Creek	0.028 – 0.055	0.030 – 0.065
Shaker Creek	0.030 – 0.055	0.032 – 0.075
State Basin	0.017 – 0.040	0.045 – 0.075
Vloman Kill	0.030 - 0.050	0.030 - 0.050
Vly Creek	0.020 - 0.030	0.050 – 0.090

In accordance with FEMA's Guidelines and Specifications, starting water surface elevations for the hydraulic models were determined using normal depth. For reaches where the hydraulic analysis indicated supercritical flow conditions, critical depth was assumed for the flood elevations.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Tributary 4 to Bozen Kill

Prior to this countywide analysis, Tributary 4 to Bozen Kill was not studied within the Town of Guilderland. This new detailed study covers the portion of the stream that are within the Town of Guilderland; from its confluence with Bozen Kill upstream approximately 1.55 miles to the Town of Guilderland / Village of Altamont corporate limits.

Coeymans Creek

Prior to this countywide analysis, Coeymans Creek was studied by approximate methods in the Town of Bethlehem and by approximate and detailed methods in the Town of Coeymans. This new detailed study covers the portions of the stream that were previously studied by approximate methods; from the confluence of Coeymans Creek with the Hudson River approximately 4.76 miles upstream to the downstream face of the railroad crossing in the Town of Coeymans and from the Town of Coeymans / Town of Bethlehem corporate limits approximately 1.17 miles upstream to the confluence of Onesquethaw Creek.

Dry River

Prior to this countywide analysis, Dry River was not studied. The portion of Dry River that is conveyed by the Dry River Conduit was studied from its outfall at the Hudson River upstream approximately 0.95 miles to the entrance to the conduit at the City of Watervliet / Town of Colonie corporate limits. All flows studied were found to be conveyed by the conduit.

Hannacrois Creek

Prior to this countywide analysis, the portion of Hannacrois Creek within the Town of Coeymans was studied by approximate methods. This new detailed study covers the approximately 1.12 miles from the confluence of Hannacrois Creek with the Hudson River to the Albany County boundary.

Tributary 1 to Hannacrois Creek

Prior to this countywide analysis, Tributary 1 to Hannacrois Creek was not studied in the Town of Coeymans and was studied by approximate methods in the Village of Ravena. This new detailed study covers the approximately 0.80 miles of Tributary 1 to Hannacrois Creek from its confluence with Hannacrois Creek to the downstream face of the I-87 culvert crossing in the Village of Ravena. There is an approximately 1,670 foot long culvert within the upper portion of this study that does not adequately convey the flows studied; an additional hydraulic model was developed to study and map the flows which surcharge the culvert.

Krum Kill

Prior to this countywide analysis, Krum Kill was previously studied by approximate methods in the City of Albany, detailed methods in the Town of Bethlehem and was not studied in the Town of Guilderland. This new detailed study covers approximately 3.90 miles of Krum Kill from its confluence with Normans Kill to the downstream face of the Western Avenue culvert crossing in the Town of Guilderland. The revised study shows significantly lower flood elevations than the prior FIS in the area of State Route 85, this is due to a significant increase in the slope of the culvert under State Route 84, which reduces the backup of water behind the road emabankment.

Normans Kill

Prior to this countywide analysis, Normans Kill was previously studied by detailed and approximate methods in the City of Albany, and detailed and approximate methods in the Town of Bethlehem. This new / revised detailed study covers approximately 1.93 miles of Normans Kill from its confluence with the Hudson River to approximately 3,252 feet upstream of River Road on the City of Albany / Town of Bethlehem boundary and approximately 4.68 miles from approximately 2,380 feet upstream of the abandoned railroad bridge on the City of Albany / Town of Bethlehem boundary to the confluence of Krum Kill.

Tributary 10 to Normans Kill

Prior to this countywide analysis, Tributary 10 to Normans Kill was not studied. This new detailed study covers approximately 2.00 miles of Tributary 10 to Normans Kill from its confluence with Normans Kill. The upper portion of this study contains two ponds formed by beaver dams; the study did not consider the flooding effects of the beaver dams, the stream is modeled under unobstructed conditions.

Tributary 1 to Tributary 10 to Normans Kill

Prior to this countywide analysis, Tributary 1 to Tributary 10 to Normans Kill was not studied. This new detailed study covers approximately 1.12 miles of Tributary 1 to Tributary 10 to Normans Kill from its confluence with Tributary 10 to Normans Kill to approximately 240 feet downstream of Hanley Lane in the Town of Guilderland. There is an approximately 360 foot long culvert within the lower portion of this study that does not adequately convey the flows studied; an additional hydraulic model was developed to study and map the flows which surcharge the culvert.

Patroon Creek

Prior to this countywide analysis, Patroon Creek was studied by approximate methods. This new detailed study covers the portion of Patroon Creek from its confluence with the Hudson River approximately 0.99 miles upstream to the railroad crossing The lower portion of Patroon Creek is typically conveyed through an approximately 2,100 foot long culvert to the Hudson River that culvert does not adequately convey the flows studied; an additional hydraulic model was developed to study and map the flows which surcharge the culvert. Surcharge from the culvert flows Southeast through the City of Albany and into the Hudson River at the Interstate 787 underpass near the intersection of North Ferry Street and Water Street.

As discussed previously, certain flooding sources were studied using limited detailed and approximate methods. These methods are discussed below.

Limited Detail "Enhanced Approximate Floodplains": This category is assigned to areas where "unnumbered" A-zones are shown on the effective maps, and communities have requested new/upgraded studies, but the level of projected development does not warrant a detailed study. It is also applied to lakes that do not have level gauge data, and will be included in a hydraulic model. The level of effort includes collection of orthophotos, LIDAR and limited survey of structures, nomination of flow rates, and the development of HEC-RAS hydraulic models.

For the purposes of this document, "limited survey" refers to the survey of man-made hydraulic obstructions, such as dams, bridges and culverts, and to the survey of the outlet channels of lakes with natural outlet controls. The purpose of collecting "limited survey" is to enhance the accuracy of the hydraulic model thus allowing the development and publication of "Advisory Base Flood Elevations (BFEs)." Engineering drawing plans and Department of Transportation (DOT) hydraulic studies may be substituted for limited survey, where appropriate and available.

Descriptions of the stream reaches studied by limited detailed methods are as follows.

Blockhouse Creek

Prior to this countywide analysis, Blockhouse creek was studied by approximate methods. This new limited detailed study covers the approximately 0.36 miles of Blockhouse Creek from its confluence with Normans Kill to the confluence of Hunger Kill.

Dry River

Prior to this countywide analysis, Dry River was not studied in the Town of Colonie. This new limited detailed study covers the approximately 2.62 miles from the upstream end of the Dry River conduit at the Town of Colonie / City of Watervliet corporate limits to the Swatling Road crossing.

Tributary 1 to Hannacrois Creek

Prior to this countywide analysis, Tributary 1 to Hannacrois Creek was studied by approximate methods in the Village of Ravena and was not studied in the Town of Coeymans. This new limited detailed study covers the approximately 1.41 miles of Tributary to Hannacrois Creek from the I-87 crossing to the Albany County boundary. This portion of Tributary 1 to Hannacrois Creek contains two long culverts which do not adequately convey the flow modeled, an additional hydraulic model was developed to study and map the flows which surcharge the culverts.

Hunger Kill

Prior to this countywide analysis, a portion of Hunger Kill in the Town of Guilderland was studied by approximate methods. This new limited detailed study covers the approximately 5.05 miles of Hunger Kill from its confluence with Blockhouse Creek to the East Lydius Street crossing in the Town of Guilderland.

Normans Kill

Prior to this countywide analysis, this portion of Normans Kill was previously studied by approximate methods in the City of Albany and the Town of Bethlehem. This new limited detailed study covers approximately 0.95 miles of Normans Kill approximately

3,252 feet upstream of River Road on the City of Albany / Town of Bethlehem boundary to approximately 2,380 feet upstream of the abandoned railroad bridge on the City of Albany / Town of Bethlehem boundary.

Onesquethaw Creek

Prior to this countywide analysis, this portion of Onesquethaw Creek was previously studied by approximate methods in the Town of Bethlehem. This new limited detailed study covers approximately 2.62 miles of Onesquethaw Creek from the limit of the existing detailed study in the Town of Bethlehem (approximately 3,990 feet upstream of South Albany Road) to the Town of Bethlehem / Town of New Scotland corporate limits.

Phillipin Kill

Prior to this countywide analysis, an approximately 0.75 mile reach of Phillipin Kill from its confluence with Vloman Kill in the Town of Bethlehem was studied by approximate methods, the remainder of Phillipin Kill was not previously studied. This new limited detailed study covers approximately 8.01 miles of Phillipin Kill from its confluence with Vloman Kill to approximately 1,360 feet upstream of the New Scotland Road crossing in the Town of New Scotland.

Vloman Kill

Prior to this countywide analysis, this portion of Vloman Kill in the Town of Bethlehem was studied by approximate methods. This new limited detailed study covers approximately 3.87 miles of Vloman Kill from the limit of the existing detailed study in the Town of Bethlehem (approximately 3,005 feet upstream of Elm Avenue) to the confluence of Phillipin Kill.

For each of the streams studied by limited detailed methods, cross sections were identified that represent the flood profile for the stream. The computed flood elevations for the 1% Annual Chance Flood at those cross sections are used as Advisory Base Flood Elevations for the streams. Table 9 contains the Advisory Base Flood Elevations for the streams studied by limited detailed methods.

***Approximate* (A) "A-Zones":** - This category is assigned where "unnumbered" A-zones are shown on the effective maps, but the anticipated level of development does not warrant the collection of field survey; or where communities have requested an approximate study where there was currently no study at all. The desktop analysis approach to be applied to approximate studies is defined in Appendix C, Section 4.3 of the Guidelines and Specifications for Flood Hazard Mapping Partners. The level of effort includes orthophoto collection, LIDAR and stream breakline collection, use of engineering drawing plans and DOT studies (where appropriate and available), nomination of flow rates, and the development of HEC-RAS hydraulic models.

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA

Cross Section Number	Stream Distance	Flood Discharge (cfs)	1% Annual Chance Advisory Base Flood Elevation (Feet NAVD 88)	FIRM Panel Number
BLOCKHOUSE CREEK				
1	922[1]	3,565	136.5	0166
DRY RIVER				
1	200[2]	336[4]	45.1	0202
2	884[2]	336[4]	65.6	0202
3	1,187[2]	336[4]	76.3	0202
4	1,329[2]	336[4]	107.1	0202
5	2,909[2]	336[4]	107.1	0202
6	3,414[2]	336[4]	112.0	0202
7	3,907[2]	336[4]	118.6	0202
8	4,983[2]	336[4]	130.0	0202
9	5,611[2]	800	191.3	0201
10	9,147[2]	800	191.3	0201
11	10,477[2]	800	196.2	0201
12	11,481[2]	800	201.0	0201
13	12,788[2]	800	211.1	0201
14	13,365[2]	800	219.5	0201
TRIBUTARY 1 TO HANNACROIS CREEK				
1	0[3]	166[4]	160.8	0431
2	394[3]	166[4]	160.9	0431
3	654[3]	166[4]	163.4	0431
4	792[3]	142[4]	178.4	0431
5	1,450[3]	628	179.0	0431
6	2,010[3]	628	186.2	0431
7	2,529[3]	628	193.6	0427
8	3,040[3]	628	209.0	0429
9	3,201[3]	194	214.9	0429
10	3,788[3]	194	222.1	0429
11	4,529[3]	194	230.6	0429
12	5,004[3]	194	234.1	0429
13	5,262[3]	194	236.4	0429
14	5,539[3]	194	272.6	0429
15	5,635[3]	194	284.9	0429
16	6,231[3]	81	296.3	0429
17	7,449[3]	81	310.9	0429

[1] Feet above confluence with Normans Kill
[2] Feet above 12th Avenue
[3] Feet above I-87
[4] Flood Discharge may be affected by upstream control

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA (CONTINUED)

Cross Section Number & Stream Distance		Flood Discharge (cfs)	1% Annual Chance Advisory Base Flood Elevation (Feet NAVD 88)	FIRM Panel Number
HUNGER KILL				
1	792[1]	1,235[5]	141.8	0158
2	1,561[1]	1,235[5]	145.3	0158
3	2,466[1]	1,228[5]	145.7	0158
4	6,313[1]	1,270[5]	157.1	0158
5	8,544[1]	1,270[5]	156.8	0158
6	10,025[1]	1,270[5]	173.8	0158
7	13,525[1]	1,397	195.6	0158
8	16,831[1]	1,289	207.0	0156
9	20,934[1]	1,097	223.7	0156
10	24,159[1]	1,097	244.7	0156
11	25,803[1]	1,097	255.4	0156
NORMANS KILL				
1	3,252[2]	15,404	26.2	0194
2	4,668[2]	15,397	72.8	0194
3	6,093[2]	15,397	75.5	0193
4	8,243[2]	15,209	78.8	0193
ONESQUETHAW CREEK				
1	400[3]	4,267	181.5	0311
2	2,815[3]	4,267	202.4	0311
3	4,510[3]	4,267	216.1	0311
4	6,054[3]	4,267	228.6	0311
5	7,296[3]	4,267	241.2	0311
6	7,757[3]	4,267	250.4	0311
7	9,023[3]	4,267	262.1	0311
8	10,711[3]	4,267	281.5	0311
9	12,671[3]	4,267	298.3	0292
PHILLIPIN KILL				
1	825[4]	2,090	130.6	0304
2	5,642[4]	2,090	136.9	0304
3	6,776[4]	2,090	141.1	0304
4	7,666[4]	2,034	151.6	0304
5	14,307[4]	1,503	151.7	0303
6	17,131[4]	1,503	152.6	0303

[1] Feet above confluence with Blockhouse Creek
[2] Feet above River Road
[3] Feet above Railroad Culvert
[4] Feet above confluence with Vloman Kill
[5] Flood Discharge may be affected by upstream control

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA (CONTINUED)

Cross Section Number	Stream Distance	Flood Discharge (cfs)	1% Annual Chance Advisory Base Flood Elevation (Feet NAVD 88)	FIRM Panel Number
PHILLIPIN KILL (CONTINUED)				
7	19,253[1]	1,503	154.0	0301
8	20,077[1]	1,503	160.0	0301
9	23,508[1]	1,173	160.4	0301
10	26,735[1]	1,173	163.7	0301
11	28,311[1]	1,173	169.0	0301
12	29,269[1]	968	190.2	0301
13	33,324[1]	968	190.3	0282
14	35,609[1]	968	191.3	0282
15	38,916[1]	722	203.0	0282
16	40,810[1]	722	212.0	0169
17	41,910[1]	722	227.4	0169
VLOMAN KILL				
1	3,527[2]	4,878	125.8	0312
2	7,920[2]	4,878	127.3	0312
3	10,963[2]	4,859	128.5	0312
4	12,411[2]	4,859	131.5	0312
5	16,775[2]	4,859	132.4	0304
6	19,890[2]	4,859	133.3	0304
7	21,048[2]	4,759	133.5	0304
8	23,051[2]	4,759	134.4	0304

[1] Feet above confluence with Vloman Kill
[2] Feet above Elm Avenue

3.3 Vertical Datum

All FIS reports 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 FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities may be referenced to

NGVD 29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities.

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

In converting data from prior FIS reports and FIRMS, a stream by stream conversion factor was applied. Table 10 lists the conversion factor (from NGVD 29 to NAVD 88) used for each stream as well as the minimum and maximum conversion factor found for that stream and the maximum offset from the average.

TABLE 10 – STREAM BY STREAM ELEVATION DATUM CONVERSIONS

Stream Name	**Minimum Conversion**	**Maximum Conversion**	**Average Conversion**	**Maximum Offset**
Basic Creek	-0.57	-0.67	-0.64	0.07
Black Creek	-0.55	-0.58	-0.57	0.02
Bozen Kill	-0.55	-0.55	-0.55	0.00
Tributary 4 to Bozen Kill	-0.53	-0.55	-0.54	0.01
Tributary 5 to Bozen Kill	-0.53	-0.55	-0.55	0.02
Coeymans Creek	-0.74	-0.75	-0.74	0.01
Delphus Kill	-0.63	-0.64	-0.63	0.01
Eightmile Creek	-0.61	-0.62	-0.62	0.01
Feuri Spruyt	-0.68	-0.69	-0.68	0.01
Fifth Branch Mohawk River	-0.73	-0.73	-0.72	0.01
First Branch Mohawk River	-0.72	-0.73	-0.72	0.01
Hannacrois Creek (Downstream of Alcove Reservoir)	-0.70	-0.76	-0.71	0.05
Hannacrois Creek (Upstream of Alcove Reservoir)	-0.61	-0.67	-0.64	0.03
Hudson River	-0.70	-0.77	-0.73	0.04
Kroma Kill	-0.74	-0.76	-0.75	0.01
Lisha Kill	-0.56	-0.56	-0.56	0.00
Tributary 8 to Lisha Kill	-0.55	-0.56	-0.55	0.01
Mohawk River	-0.58	-0.72	-0.66	0.08
Normans Kill	-0.55	-0.62	-0.59	0.04

TABLE 10 – STREAM BY STREAM ELEVATION DATUM CONVERSIONS (CONTINUED)

Onesquethaw Creek (Town of Bethlehem)	-0.72	-0.74	-0.73	0.01
Onesquethaw Creek (Town of New Scotland)	-0.56	-0.62	-0.59	0.03
Salt Kill	-0.74	-0.75	-0.75	0.02
Sand Creek	-0.64	-0.66	-0.65	0.01
Second Branch Mohawk River	-0.72	-0.73	-0.72	0.01
Shaker Creek	-0.58	-0.61	-0.58	0.03
State Basin	-0.74	-0.76	-0.75	0.02
Third Branch Mohawk River	-0.70	-0.72	-0.72	0.02
Vloman Kill	-0.74	-0.74	-0.74	0.01
Vly Creek	-0.56	-0.60	-0.60	0.04

The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 102.4 feet will appear as 102 on the FIRM and a BFE elevation of 102.6 feet will appear as 103. The elevations shown on the Flood Profiles and supporting data tables are shown at a minimum to the nearest 0.1 feet. Therefore, users who wish to convert elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown of the Flood Profiles and supporting data tables in this FIS report.

For more information on NAVD 88, see the FEMA publication entitled 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 in Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

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 the FIS report and FIRM for this county. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent annual-chance flood elevations and delineations of the 1- and 0.2-percent annual-chance floodplain boundaries and 1-percent annual-chance floodways to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data Table and Summary of Stillwater Elevations Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using a Digital Elevation Model prepared from LiDAR data provided by the NYSDEC.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE); and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 0.1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the maps scale and/or lack of detailed topographic data.

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

4.2 Floodways

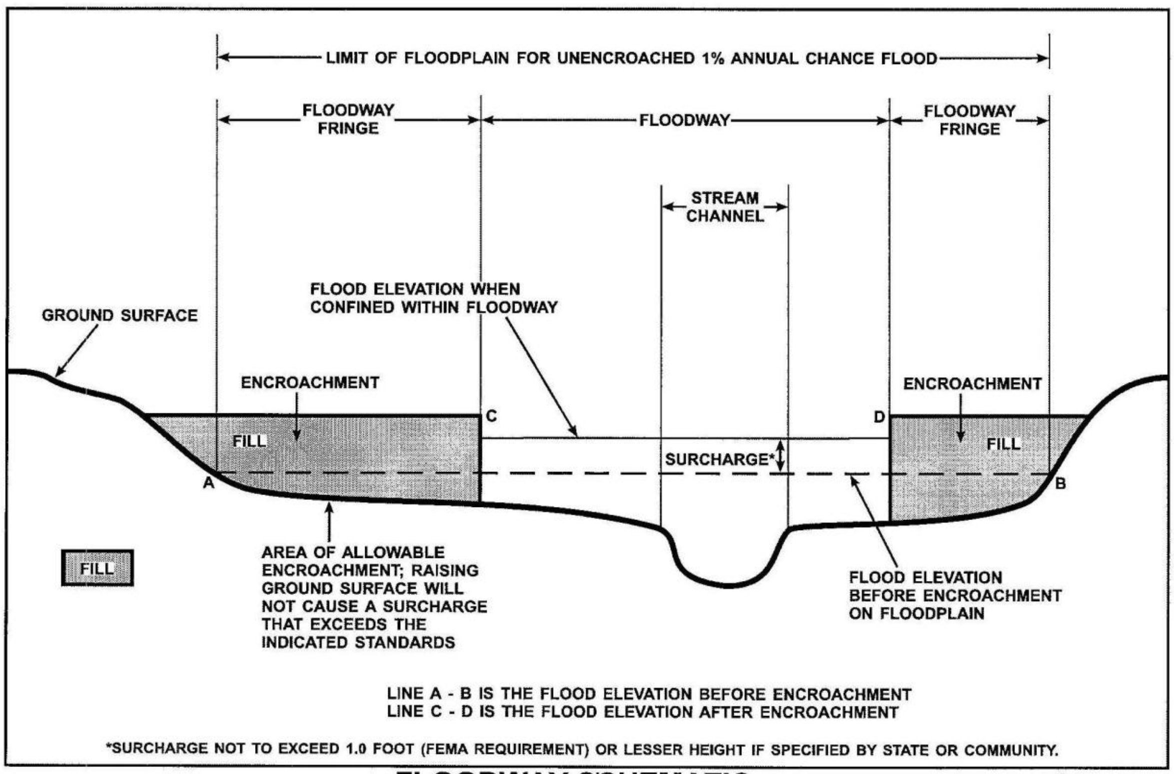
Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum standards of FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study 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 report and on the FIRM 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 have been tabulated for selected cross sections (Table 11). The computed floodway is shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent-annual-chace floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

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 11, “Floodway Data.” 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 11 for certain downstream cross sections are lower than the regulatory flood elevations in that area, which must take into account the 0.1-percent-annual-chance flooding due to backwater from other sources.

The area between the floodway and the 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the 1-percent-annual chance flood 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

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Basic Creek								
A	400[1]	136	539	4.9	769.3	769.3	770.2	0.9
B	2,000[1]	133	541	4.8	785.1	785.1	785.9	0.8
C	3,900[1]	126	334	6.2	808.2	808.2	809.2	1.0
D	5,280[1]	43	191	10.8	829.4	829.4	829.4	0.0
E	6,600[1]	118	316	6.5	851.3	851.3	851.9	0.6
F	8,100[1]	65	261	7.9	873.2	873.2	873.2	0.0
G	9,700[1]	43	244	8.4	885.0	885.0	885.9	0.9
H	11,800[1]	72	313	6.6	906.4	906.4	906.9	0.5
I	13,800[1]	80	457	4.5	923.5	923.5	924.0	0.5
J	15,050[1]	240	1,127	1.8	925.2	925.2	926.0	0.8
K	16,100[1]	261	1,468	1.4	925.9	925.9	926.9	1.0
L	17,600[1]	156	642	3.0	926.6	926.6	927.6	1.0
M	23,500[1]	290	1,375	1.6	941.0	941.0	941.9	0.9
N	25,500[1]	441	1,675	1.3	944.7	944.7	945.7	1.0
O	27,400[1]	78	290	7.6	961.2	961.2	962.0	0.8
P	29,400[1]	59	251	8.8	985.7	985.7	985.7	0.0
Q	31,500[1]	78	338	6.5	1013.4	1013.4	1014.1	0.7
R	33,300[1]	83	272	7.2	1043.0	1043.0	1043.0	0.0
S	35,100[1]	88	253	7.2	1085.5	1085.5	1086.4	0.9
T	37,100[1]	52	301	6.0	1110.1	1110.1	1110.5	0.4
U	39,100[1]	109	774	2.3	1125.1	1125.1	1126.1	1.0
V	41,000[1]	149	719	2.5	1126.9	1126.9	1127.9	1.0
W	42,600[1]	40	212	8.2	1131.3	1131.3	1132.3	1.0
X	44,800[1]	48	192	9.1	1149.0	1149.0	1149.0	0.0
Y	46,200[1]	148	303	3.7	1158.8	1158.8	1159.8	1.0
Z	47,000[1]	41	143	7.9	1166.1	1166.1	1166.8	0.7
AA	49,100[1]	33	117	6.8	1191.5	1191.5	1192.5	1.0
AB	51,400[1]	36	97	7.5	1233.0	1233.0	1233.8	0.8
AC	53,200[1]	31	87	7.6	1273.8	1273.8	1274.2	0.4
AD	55,320[1]	45	335	2.0	1323.3	1323.3	1324.0	0.7
AE	56,800[1]	38	118	5.6	1339.5	1339.5	1340.5	1.0

[1] Feet above county boundary

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BASIC CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Basic Creek (cont.)								
AF	57,800[1]	21	76	8.7	1353.4	1353.4	1353.4	0.0
Black Creek								
A	820[2]	81	175	8.5	290.0	290.0	290.0	0.0
B	3,700[2]	61	284	5.2	306.0	306.0	306.4	0.4
C	9,235[2]	70	479	3.1	310.6	310.6	311.3	0.7
D	14,895[2]	58	359	3.5	314.1	314.1	314.7	0.6
E	18,095[2]	76	413	2.7	317.0	317.0	317.9	0.9
F	22,445[2]	62	405	2.8	320.7	320.7	320.9	0.2
G	26,075[2]	480	2,871	0.8	322.3	322.3	322.8	0.5
H	29,520[2]	514	4,599	0.5	324.5	324.5	325.4	0.9
I	34,060[2]	272	1,320	1.7	324.9	324.9	325.9	1.0
Bozen Kill								
A	3,205[3]	339	1,237	4.6	265.5	265.5	266.5	1.0
B	4,145[3]	131	632	9.1	268.7	268.7	269.0	0.3
C	5,345[3]	165	748	7.6	275.5	275.5	275.8	0.3
D	6,775[3]	144	1,117	5.1	283.6	283.6	284.5	0.9
Tributary 4 to Bozen Kill								
A	665[2]	33	116	8.4	324.5	324.5	325.1	0.6
B	2,950[2]	114	362	2.7	345.5	345.5	346.5	1.0
C	4,542[2]	38	139	7.1	357.0	357.0	357.8	0.8
D	5,816[2]	99	283	3.5	365.7	365.7	366.6	0.9
E	7,220[2]	48	102	7.0	379.8	379.8	380.5	0.7
F	7,990[2]	53	144	4.9	387.3	387.3	387.9	0.6

[1] Feet above county boundary
[2] Feet above confluence with Bozen Kill
[3] Feet above confluence with Watervliet Reservoir/Normans Kill

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BASIC CREEK – BLACK CREEK – BOZEN KILL – TRIBUTARY 4 TO BOZEN KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Coeymans Creek								
A	1,937[1]	112	878	9.5	15.7	11.7[2]	11.7	0.0
B	2,496[1]	70	595	14.1	38.0	38.0	39.0	1.0
C	2,918[1]	83	829	10.1	64.6	64.6	64.6	0.0
D	4,212[1]	54	924	9.1	69.4	69.4	69.7	0.3
E	8,105[1]	149	1,692	4.9	72.9	72.9	73.8	0.9
F	11,581[1]	385	4,455	1.8	75.9	75.9	76.7	0.8
G	13,446[1]	217	2,265	3.6	76.2	76.2	77.1	0.9
H	15,835[1]	424	4,682	1.6	77.1	77.1	78.0	0.9
I	18,325[1]	318	3,073	2.4	77.8	77.8	78.7	1.0
J	20,342[1]	319	2,614	2.9	78.8	78.8	79.6	0.8
K	24,006[1]	309	3,721	1.7	85.2	85.2	86.1	0.8
L	30,139[1]	245	1,155	5.1	87.2	87.2	87.3	0.1
M	31,063[1]	138	779	6.5	89.6	89.6	90.5	0.9
N	31,869[1]	106	832	6.1	91.2	91.2	91.9	0.7
O	32,974[1]	82	632	8.0	94.5	94.5	95.2	0.7
P	33,186[1]	240	1,016	5.0	95.0	95.0	95.6	0.8
Q	33,449[1]	371	1,932	2.6	97.3	97.3	97.9	0.6
R	34,616[1]	264	1,004	5.1	99.9	99.9	100.4	0.5
S	35,514[1]	113	611	8.1	103.7	103.7	104.3	0.6
T	36,470[1]	88	706	7.0	107.8	107.8	108.4	0.6
U	37,780[1]	146	566	8.7	111.7	111.7	112.4	0.7
V	38,736[1]	85	560	8.8	118.4	118.4	119.4	1.0
W	39,099[1]	197	1,084	4.5	121.0	121.0	121.1	0.1
Delphus Kill								
A – J[3]								
K	4,425[4]	33	76	9.2	202.2	202.2	202.2	0.0
L	4,695[4]	40	106	6.6	205.2	205.2	205.2	0.0
M	4,915[4]	40	111	6.3	207.0	207.0	207.2	0.2
N	5,205[4]	34	89	7.9	209.1	209.1	210.0	0.9

[1] Feet above confluence with Hudson River
[2] Elevation computed without consideration of backwater effects from Hudson River
[3] Floodway not computed because of ponding conditions
[4] Feet above confluence with Mohawk River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

COEYMANS CREEK – DELPHUS KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Delphus Kill (cont.)								
O	5,495[1]	40	115	6.1	212.2	212.2	212.3	0.1
P	5,815[1]	40	96	7.3	216.9	216.9	216.9	0.0
Q	6,285[1]	40	105	6.7	222.5	222.5	222.5	0.0
R	6,615[1]	40	125	5.6	225.0	225.0	225.2	0.2
S	6,975[1]	40	125	5.6	226.4	226.4	226.8	0.4
T	7,325[1]	63	98	7.1	228.4	228.4	229.0	0.6
U	7,535[1]	42	82	8.5	231.9	231.9	231.9	0.0
V	7,955[1]	40	117	6.0	235.7	235.7	236.0	0.3
W	8,045[1]	50	348	1.6	242.2	242.2	242.2	0.0
X	8,275[1]	50	342	1.7	242.2	242.2	242.2	0.0
Y	8,535[1]	50	268	2.1	242.2	242.2	242.2	0.0
Z	8,735[1]	50	277	2.1	242.2	242.2	242.2	0.0
AA	9,175[1]	43	105	5.4	242.2	242.2	242.5	0.3
AB	9,525[1]	50	226	2.5	243.2	243.2	243.6	0.4
AC[2]								
AD	10,255[1]	40	166	3.4	245.6	245.6	245.6	0.0
AE	10,795[1]	40	157	3.6	246.1	246.1	246.2	0.1
AF	11,385[1]	24	97	5.9	247.1	247.1	247.3	0.2
AG	11,675[1]	40	171	2.3	248.2	248.2	248.3	0.1
AH	12,105[1]	40	84	2.0	248.6	248.6	248.7	0.1
AI	12,415[1]	19	37	4.5	249.4	249.4	249.4	0.0
AJ	12,685[1]	20	28	6.1	251.8	251.8	251.8	0.0
AK	13,065[1]	20	64	2.4	253.4	253.4	253.5	0.1
AL	13,255[1]	10	20	7.7	253.8	253.8	253.8	0.0
AM	13,495[1]	20	43	3.5	256.2	256.2	256.2	0.0
Eightmile Creek								
A	15,490[3]	80	609	3.1	960.4	960.4	961.3	0.9
B	16,890[3]	249	1,139	1.7	960.9	960.9	961.8	0.9
C	18,390[3]	74	276	5.7	974.8	974.8	975.6	0.8
D	19,790[3]	67	355	4.4	994.5	994.5	995.0	0.5

[1] Feet above confluence with Mohawk River
[2] Cross Section AC data not provided in Town of Colonie FIS Report (March 1979)
[3] Feet above confluence with Ten Mile Creek

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

DELPHUS KILL – EIGHTMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eightmile Creek (cont.)								
E	21,290[1]	79	233	6.8	1,008.5	1,008.5	1,009.0	0.5
F	22,190[1]	148	328	4.8	1,023.3	1,023.3	1,024.3	1.0
G	22,860[1]	71	223	7.1	1,036.7	1,036.7	1,037.4	0.7
H	24,440[1]	77	243	6.0	1,067.7	1,067.7	1,067.7	0.0
I	25,940[1]	76	270	5.4	1,100.1	1,100.1	1,100.1	0.0
J	27,190[1]	64	201	7.2	1,129.7	1,129.7	1,129.7	0.0
K	27,590[1]	40	162	9.0	1,141.0	1,141.0	1,141.2	0.2
L	28,540[1]	73	470	3.1	1,145.4	1,145.4	1,146.0	0.6
M	29,440[1]	97	261	5.5	1,158.6	1,158.6	1,159.6	1.0
N	30,840[1]	65	211	6.9	1,193.0	1,193.0	1,193.3	0.3
O	32,440[1]	33	190	6.8	1,222.2	1,222.2	1,222.2	0.0
P	33,000[1]	96	225	5.7	1,227.9	1,227.9	1,228.0	0.1
Q	33,840[1]	164	717	1.8	1,229.2	1,229.2	1,229.6	0.4
R	34,490[1]	75	197	6.6	1,230.0	1,230.0	1,230.4	0.4
S	34,990[1]	81	199	6.5	1,237.8	1,237.8	1,237.8	0.0
T	36,490[1]	70	205	6.3	1,266.4	1,266.4	1,266.4	0.0
Feuri Spruyt								
A	500[2]	55	203	3.4	411.0	411.0	411.8	0.8
B	1,500[2]	54	217	3.1	436.8	436.8	437.7	0.9
C	2,500[2]	70	211	2.9	451.9	451.9	452.9	1.0
D	3,500[2]	31	110	5.6	461.9	461.9	462.6	0.7
E	4,600[2]	22	66	8.3	476.0	476.0	476.5	0.5
F	5,500[2]	29	81	5.9	489.0	489.0	490.0	1.0
G	6,500[2]	23	77	6.3	503.1	503.1	504.0	0.9
H	7,500[2]	18	58	7.2	518.1	518.1	518.7	0.6
I	8,200[2]	17	60	7.1	530.6	530.6	531.4	0.8

[1] Feet above confluence with Ten Mile Creek
[2] Feet upstream of the Coeymans/New Scotland town boundary

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTMILE CREEK – FEURI SPRUYT

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hannacrois Creek								
A	953[1]	387	1,775	3.8	15.4	2.5[2]	3.4	0.9
B	1,381[1]	150	659	10.3	15.4	3.9[2]	4.0	0.1
C	1,902[1]	231	1,722	4.0	15.4	6.7[2]	7.0	0.3
D	2,445[1]	131	1,034	6.6	15.4	7.5[2]	7.9	0.4
E	2,702[1]	190	1,013	6.7	15.4	8.7[2]	8.9	0.2
F	3,137[1]	104	987	6.9	15.4	11.0[2]	11.1	0.1
G	3,502[1]	89	736	9.3	15.4	11.5[2]	11.7	0.2
H	4,309[1]	124	824	8.3	16.1	16.1	17.0	0.9
I	5,142[1]	140	1,088	6.3	24.8	24.8	25.1	0.3
J	5,666[1]	80	727	9.4	25.9	25.9	26.3	0.4
K	130[3]	193	1,496	4.6	309.7	309.7	310.5	0.8
L	1,850[3]	358	2,805	2.4	311.3	311.3	312.1	0.8
M	3,850[3]	674	5,119	1.3	312.4	312.4	313.3	0.9
N	5,950[3]	652	2,533	2.7	315.5	315.5	316.4	0.9
O	7,500[3]	287	1,025	6.1	319.7	319.7	319.7	0.0
P	8,850[3]	188	1,058	5.9	325.6	325.6	326.1	0.5
Q	11,050[3]	443	1,600	3.9	331.4	331.4	332.4	1.0
R	13,250[3]	380	1,125	4.9	343.6	343.6	344.6	1.0
S	14,500[3]	89	561	9.9	351.2	351.2	351.9	0.7
T	16,750[3]	250	862	6.4	372.5	372.5	372.8	0.3
U	18,350[3]	237	924	6.0	383.7	383.7	384.7	1.0
V	19,890[3]	111	554	10.0	395.8	395.8	395.8	0.0
W	21,520[3]	241	871	6.4	411.7	411.7	412.5	0.8
X	22,950[3]	119	853	6.5	425.2	425.2	426.2	1.0
Y	24,850[3]	311	1,176	4.3	439.9	439.9	440.9	1.0
Z	26,350[3]	122	644	7.8	458.8	458.8	458.8	0.0
AA	28,350[3]	186	1,109	4.5	483.6	483.6	484.6	1.0
AB	30,650[3]	99	573	8.8	512.6	512.6	512.6	0.0
AC	32,450[3]	83	550	8.5	553.6	553.6	553.6	0.0

[1] Feet above confluence with Hudson River

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

[3] Feet above county boundary (approximately 4,275 ft downstream of Marshall Road)

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

HANNACROIS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hannacrois Creek (cont.)								
AD	34,230[1]	109	605	7.7	604.2	604.2	604.2	0.0
AE	52,901[1]	66	418	6.4	633.8	633.8	634.0	0.2
AF	55,301[1]	53	310	6.9	721.0	721.0	721.7	0.7
AG	56,701[1]	147	549	3.9	727.7	727.7	728.4	0.7
AH	58,401[1]	136	649	3.3	734.0	734.0	734.9	0.9
AI	60,201[1]	62	354	6.1	747.2	747.2	747.2	0.0
AJ	62,201[1]	454	1,093	2.0	753.2	753.2	754.2	1.0
AK	63,401[1]	123	377	5.1	764.4	764.4	765.3	0.9
AL	64,401[1]	48	207	9.2	772.1	772.1	773.1	1.0
AM	66,001[1]	45	244	7.8	785.8	785.8	786.7	0.9
AN	67,601[1]	38	259	7.4	796.2	796.2	797.1	0.9
AO	69,051[1]	215	698	2.7	805.7	805.7	806.3	0.6
AP	70,201[1]	40	185	9.3	816.2	816.2	816.3	0.1
AQ	72,001[1]	36	125	7.1	839.2	839.2	839.9	0.7
AR	73,451[1]	29	119	7.5	857.0	857.0	857.6	0.6
AS	74,101[1]	108	668	1.3	863.6	863.6	864.4	0.8
AT	75,551[1]	189	419	1.9	868.2	868.2	869.2	1.0
AU	76,601[1]	86	215	3.1	876.1	876.1	877.0	0.9
AV	77,701[1]	222	351	1.9	882.9	882.9	883.9	1.0
Tributary 1 to Hannacrois Creek								
A	553[2]	18	47	8.5	70.2	70.2	70.3	0.1
B	1,609[2]	13	41	9.8	128.9	128.9	129.0	0.1
C	2,445[2]	17	108	3.7	141.7	141.7	142.5	0.8
D	2,977[2]	79	216	1.0	149.8	149.8	150.1	0.3
E	4,012[2]	62	116	1.9	155.8	155.8	156.1	0.3
Hudson River								
A	25,180[1]	NA	48,012	4.0	17.5	17.5	18.0	0.5
B	34,780[1]	NA	46,191	4.1	17.8	17.8	18.5	0.7

[1] Feet above county boundary
[2] Feet above confluence with Hannacrois Creek

NA indicates no data available

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

HANNACROIS CREEK – TRIBUTARY 1 TO HANNACROIS CREEK – HUDSON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hudson River (cont.)								
C	45,880[1]	NA	42,786	4.4	18.2	18.2	18.8	0.6
D	51,760[1]	NA	39,162	4.8	18.4	18.4	19.2	0.8
E	57,530[1]	NA	45,929	4.1	18.8	18.8	19.7	0.9
F	93,119[1]	1,040[2]	33,300	6.5	23.3	23.3	24.0	0.7
G	94,309[1]	950[2]	33,200	6.5	23.5	23.5	24.1	0.6
H	94,839[1]	950[2]	30,800	7.0	23.5	23.5	24.2	0.7
I	113,839[1]	575	29,120	7.5	28.6	28.6	28.6	0.0
J	114,671[1]	450	24,565	8.9	29.0	29.0	29.0	0.0
K	115,695[1]	600	26,933	8.1	29.4	29.4	29.7	0.3
L	116,752[1]	650	33,600	5.4	30.5	30.5	30.7	0.2
M	117,770[1]	625	32,000	5.7	30.7	30.7	31.0	0.3
N	118,853[1]	505	31,200	5.8	31.0	31.0	31.2	0.2
O	119,895[1]	460	26,100	6.9	31.2	31.2	31.4	0.2
P	120,225[1]	425	24,200	7.5	31.2	31.2	31.5	0.3
Q	120,989[1]	400	25,100	7.2	31.9	31.9	32.1	0.2
R	121,695[1]	425	26,600	6.8	32.3	32.3	32.4	0.1
S	122,626[1]	400	26,300	6.9	32.4	32.4	32.6	0.2
T	123,510[1]	380	23,900	7.6	32.5	32.5	32.7	0.2
U	124,408[1]	380	24,000	7.6	32.7	32.7	32.9	0.2
Krum Kill								
A	999[3]	27	139	3.8	115.4	101.0[4]	101.6	0.6
B	2,637[3]	18	74	7.2	115.4	104.4[4]	104.9	0.5
C	6,250[3]	28	362	1.7	130.5	130.5	130.5	0.0
D	8,373[3]	33	239	2.6	131.0	131.0	131.6	0.6
E	9,651[3]	45	509	1.2	143.6	143.6	143.6	0.0
F	13,112[3]	60	758	1.9	159.3	159.3	159.6	0.3
G	13,912[3]	110	1,085	1.3	159.4	159.4	160.0	0.6
H	15,082[3]	128	1,612	0.8	168.2	168.2	169.1	0.9
I	17,796[3]	33	153	5.5	171.6	171.6	172.4	0.8
J	19,491[3]	73	404	2.0	189.6	189.6	190.6	1.0

[1] Feet above county boundary
[2] Floodway extends beyond the county boundary
[3] Feet above confluence with Normans Kill
[4] Elevation computed without consideration of backwater effects from Hudson River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

HUDSON RIVER – KRUM KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Lisha Kill								
A	550	140	650	3.5	270.0	270.0	270.9	0.9
B	1,080	220	910	2.5	270.5	270.5	271.5	1.0
C	1,680	220	900	2.5	271.0	271.0	272.0	1.0
D	2,010	220	830	2.7	271.5	271.5	272.5	1.0
E	2,660	200	780	2.7	272.5	272.5	273.3	0.8
F	3,170	200	800	2.6	273.2	273.2	274.0	0.8
G	3,640	200	600	3.5	274.1	274.1	274.8	0.7
H	3,960	120	510	4.1	275.3	275.3	275.8	0.5
I	4,250	120	580	3.5	276.1	276.1	276.9	0.8
J	4,380	220	1,170	1.8	277.8	277.8	277.8	0.0
K	4,820	220	830	2.5	277.9	277.9	278.1	0.2
L	5,200	220	1,050	2.0	278.0	278.0	278.5	0.5
M	5,600	220	900	2.3	278.3	278.3	278.8	0.5
N	5,950	160	550	3.8	278.8	278.8	279.4	0.6
O	6,340	220	1,010	2.0	279.8	279.8	280.2	0.4
P	7,100	300	1,200	1.7	280.2	280.2	280.8	0.6
Q	7,350	300	800	3.0	280.5	280.5	281.1	0.6
R	7,530	300	680	3.0	281.4	281.4	281.6	0.2
S	7,790	300	390	4.3	282.0	282.0	282.4	0.4
T	8,260	160	329	5.2	284.4	284.4	285.0	0.6
U	8,340	150	620	2.8	287.2	287.2	287.2	0.0
V	8,650	89	300	5.8	287.5	287.5	287.5	0.0
W	9,040	143	380	4.5	289.5	289.5	289.6	0.1
X	9,650	160	560	3.0	291.1	291.1	291.4	0.3
Y	10,280	150	540	3.1	292.0	292.0	292.7	0.7
Z	10,680	120	470	3.6	293.7	293.7	294.3	0.6
AA	10,860	150	1,020	1.7	296.9	296.9	297.0	0.1
AB	11,160	200	1,130	0.9	297.0	297.0	297.1	0.1
AC	11,410	150	930	1.1	297.0	297.0	297.1	0.1
AD	11,740	150	660	1.5	297.0	297.0	297.2	0.2
AE	11,930	150	590	1.7	297.1	297.1	297.3	0.2

[1] Feet above county boundary

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

LISHA KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Lisha Kill (cont.)								
AF	12,110[1]	100	440	2.3	299.9	299.9	299.9	0.0
AG	12,440[1]	100	680	1.5	300.0	300.0	300.1	0.1
AH	13,130[1]	100	350	2.9	300.1	300.1	300.4	0.3
AI	13,460[1]	100	280	3.6	300.9	300.9	301.5	0.6
AJ	13,570[1]	120	730	1.4	312.8	312.8	312.8	0.0
AK	14,120[1]	100	610	1.7	312.8	312.8	312.9	0.1
AL	14,390[1]	100	480	2.1	312.9	312.9	313.0	0.1
AM	14,720[1]	100	420	2.4	313.1	313.1	313.5	0.4
AN	15,080[1]	100	380	2.6	313.6	313.6	314.1	0.5
AO	15,360[1]	100	340	3.0	314.1	314.1	314.6	0.5
AP	15,620[1]	100	290	3.5	315.0	315.0	315.5	0.5
AQ	15,760[1]	130	290	0.7	315.3	315.3	315.9	0.6
AR	15,970[1]	50	230	0.9	318.3	318.3	318.3	0.0
AS	16,290[1]	50	230	0.9	318.3	318.3	318.3	0.0
AT	17,080[1]	50	200	1.0	318.4	318.4	318.9	0.5
AU	17,210[1]	300	1,850	0.5	323.2	323.2	323.2	0.0
AV	17,560[1]	300	1,775	0.5	323.2	323.2	323.2	0.0
AW	17,820[1]	300	1,700	0.5	323.2	323.2	323.2	0.0
AX	18,190[1]	300	710	1.3	323.2	323.2	323.2	0.0
AY	18,890[1]	250	480	1.9	323.4	323.4	323.7	0.3
AZ	19,380[1]	250	310	2.9	324.4	324.4	324.7	0.3
BA	19,850[1]	250	500	1.8	325.7	325.7	326.0	0.3
BB	20,320[1]	200	360	2.5	326.3	326.3	326.7	0.4
BC	20,520[1]	200	370	1.2	326.4	326.4	327.0	0.6
BD	21,180[1]	200	150	3.1	327.3	327.3	327.7	0.4
BE	21,880[1]	200	320	1.4	328.8	328.8	328.9	0.1
BF	22,260[1]	184	290	1.5	329.1	329.1	329.2	0.1
Tributary 8 to Lisha Kill								
A-J [2]								
K	1,950[3]	30	160	5.3	332.0	332.0	332.1	0.1

[1] Feet above county boundary
[2] Floodway not computed due to excessive velocities
[3] Feet above confluence with Lisha Kill

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

LISHA KILL – TRIBUTARY 8 TO LISHA KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 8 to Lisha Kill (cont.)								
L	2,200[1]	30	140	6.1	332.1	332.1	332.5	0.4
M	2,540[1]	30	140	6.0	333.0	333.0	333.5	0.5
N	2,770[1]	30	120	7.0	334.1	334.1	334.2	0.1
O	2,925[1]	30	130	6.0	334.9	334.9	334.9	0.0
P	3,145[1]	30	110	7.0	334.9	334.9	335.3	0.4
Q	3,460[1]	80	180	4.4	336.4	336.4	336.6	0.2
R	3,845[1]	80	220	3.6	337.0	337.0	337.5	0.5
S	4,090[1]	50	190	4.1	337.2	337.2	338.2	1.0
T	4,280[1]	50	190	4.1	337.4	337.4	338.4	1.0
U	4,465[1]	50	200	2.3	337.8	337.8	338.8	1.0
V	4,620[1]	50	200	2.4	337.9	337.9	338.9	1.0
W	4,685[1]	20	80	5.7	338.6	338.6	338.9	0.3
X	4,770[1]	20	110	4.6	338.6	338.6	339.3	0.7
Y	4,895[1]	20	90	5.0	339.4	339.4	339.4	0.0
Z	5,070[1]	20	90	5.3	339.5	339.5	339.8	0.3
AA	5,255[1]	20	70	6.5	339.9	339.9	340.5	0.6
AB	5,360[1]	20	80	5.9	340.3	340.3	341.2	0.9
AC	5,490[1]	20	80	6.3	340.7	340.7	341.7	1.0
AD	5,545[1]	20	90	5.1	341.7	341.7	342.2	0.5
AE	5,620[1]	20	90	5.4	341.7	341.7	341.9	0.2
AF	5,935[1]	20	90	6.3	342.0	342.0	342.2	0.2
AG	6,115[1]	20	70	7.1	343.9	343.9	344.2	0.3
Mohawk River								
A	40[2]	850[3]	14,900	10.8	53.4	53.4	53.4	0.0
B	510[2]	500[3]	12,200	13.1	54.7	54.7	54.7	0.0
C	1,260[2]	460[3]	12,600	12.7	63.9	63.9	63.9	0.0
D	1,360[2]	480[3]	12,800	12.5	64.6	64.6	64.6	0.0

[1] Feet above confluence with Lisha Kill
[2] Feet above New York State Dam
[3] Floodway width extends beyond county boundary

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

TRIBUTARY 8 TO LISHA KILL – MOHAWK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mohawk River (cont.)								
E	1,870[1]	540[2]	14,300	11.2	65.3	65.3	65.3	0.0
F	2,480[1]	480[2]	11,100	14.4	65.9	65.9	65.9	0.0
G	3,320[1]	300[2]	9,040	17.7	67.8	67.8	67.8	0.0
H	4,000[1]	380[2]	12,300	13.0	71.5	71.5	71.5	0.0
I	4,550[1]	380[2]	12,000	13.3	72.2	72.2	72.2	0.0
J	5,070[1]	550[2]	10,200	15.7	73.9	73.9	73.9	0.0
K	5,750[1]	320[2]	8,430	19.0	141.3	141.3	141.3	0.0
L	6,410[1]	660[2]	18,200	8.8	147.3	147.3	147.3	0.0
M	7,650[1]	870[2]	18,800	8.5	148.0	148.0	148.0	0.0
N	8,490[1]	1,150[2]	13,810	11.6	148.4	148.4	148.4	0.0
O	9,370[1]	1,300[2]	29,540	5.4	164.3	164.3	164.3	0.0
P	10,400[1]	810[2]	14,040	11.4	164.3	164.3	164.3	0.0
Q	11,450[1]	700[2]	12,780	12.5	164.5	164.5	164.5	0.0
R	12,390[1]	1,030[2]	19,320	8.3	164.9	164.9	164.9	0.0
S	13,610[1]	2,440[2]	43,900	3.6	191.8	191.8	191.8	0.0
T	13,970[1]	2,820[2]	42,900	3.7	191.8	191.8	191.8	0.0
U	14,510[1]	2,840[2]	52,000	3.1	192.0	192.0	192.0	0.0
V	15,580[1]	1,770[2]	43,200	3.7	192.0	192.0	192.0	0.0
W	16,520[1]	2,260[2]	50,800	3.2	192.2	192.2	192.2	0.0
X	17,310[1]	2,810[2]	53,700	3.0	192.2	192.2	192.2	0.0
Y	18,310[1]	2,870[2]	50,600	3.2	192.3	192.3	192.3	0.0
Z	19,250[1]	1,840[2]	43,100	3.7	192.4	192.4	192.4	0.0
AA	20,260[1]	1,510[2]	32,400	4.9	192.4	192.4	192.4	0.0
AB	21,170[1]	1,180[2]	28,700	5.6	192.6	192.6	192.6	0.0
AC	22,440[1]	2,280[2]	40,800	3.9	193.3	193.3	193.3	0.0
AD	23,660[1]	2,230[2]	35,400	4.5	193.3	193.3	193.3	0.0
AE	24,490[1]	2,270[2]	35,300	4.5	193.5	193.5	193.5	0.0
AF	25,110[1]	2,330[2]	38,100	4.2	193.6	193.6	193.6	0.0
AG	26,220[1]	2,210[2]	40,700	3.9	193.8	193.8	193.8	0.0
AH	27,240[1]	1,930[2]	41,600	3.8	193.9	193.9	193.9	0.0
AI	27,680[1]	2,060[2]	34,300	4.7	193.9	193.9	193.9	0.0
AJ	28,760[1]	1,300[2]	31,000	5.2	194.0	194.0	194.0	0.0

[1] Feet above New York State Dam
[2] Floodway width extends beyond county boundary

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

MOHAWK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mohawk River (cont.)								
AK	29,550[1]	1,750[2]	34,000	4.7	194.1	194.1	194.1	0.0
AL	30,190[1]	1,620[2]	33,500	4.8	194.1	194.1	194.1	0.0
AM	31,070[1]	2,610[2]	45,700	3.5	194.4	194.4	194.4	0.0
AN	32,410[1]	2,650[2]	48,700	3.3	194.5	194.5	194.5	0.0
AO	33,510[1]	2,400[2]	44,300	3.6	194.5	194.5	194.5	0.0
AP	33,830[1]	1,230[2]	26,800	6.0	194.5	194.5	194.5	0.0
AQ	34,920[1]	630[2]	18,700	8.5	194.5	194.5	194.5	0.0
AR	35,770[1]	510[2]	14,800	10.8	194.5	194.5	194.5	0.0
AS	36,460[1]	520[2]	16,400	9.8	195.2	195.2	195.2	0.0
AT	37,410[1]	850[2]	19,800	8.1	196.1	196.1	196.1	0.0
AU	38,690[1]	1,390[2]	30,800	5.2	197.0	197.0	197.0	0.0
AV	39,660[1]	1,630[2]	33,900	4.7	197.3	197.3	197.3	0.0
AW	40,290[1]	1,670[2]	30,200	5.3	197.3	197.3	197.3	0.0
AX	41,420[1]	1,560[2]	31,400	5.1	197.6	197.6	197.6	0.0
AY	42,510[1]	1,400[2]	30,600	5.2	197.8	197.8	197.8	0.0
AZ	43,630[1]	2,170[2]	36,400	4.4	198.0	198.0	198.0	0.0
BA	44,950[1]	2,140[2]	37,300	4.3	198.3	198.3	198.3	0.0
BB	46,000[1]	2,670[2]	42,300	3.8	198.6	198.6	198.6	0.0
First Branch of Mohawk River								
A	360[3]	310	4,880	5.2	35.0	35.0	35.4	0.4
B	710[3]	310	4,410	5.7	35.0	35.0	35.6	0.6
C	1,140[3]	340	4,000	6.3	35.2	35.2	35.8	0.6
D	1,180[3]	290	2,960	8.5	35.3	35.3	35.8	0.5
E	1,310[3]	230	2,910	8.7	35.4	35.4	35.9	0.5
F	1,440[3]	160	1,920	13.1	35.4	35.4	35.9	0.5
G	1,790[3]	200	2,590	9.7	39.3	39.3	39.3	0.0
H	1,990[3]	340	3,040	8.3	40.2	40.2	40.2	0.0

[1] Feet above New York State Dam
[2] Floodway width extends beyond county boundary
[3] Feet above confluence with Fifth Branch of Mohawk River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

MOHAWK RIVER – FIRST BRANCH OF MOHAWK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Second Branch of Mohawk River								
A	380[1]	400	6,470	4.8	34.9	34.9	35.4	0.5
B	880[1]	360	5,210	5.8	35.0	35.0	35.5	0.5
C	1,320[1]	370	5,090	6.0	35.3	35.3	35.7	0.4
D	1,770[1]	320	3,080	10.0	35.8	35.8	36.2	0.4
E	2,120[1]	420	5,070	6.1	38.6	38.6	38.7	0.1
Third Branch of Mohawk River								
A	520[2]	210[4]	7,640	4.2	33.0	32.2[3]	32.5	0.3
B	745[2]	160[4]	6,560	4.9	33.0	32.2[3]	32.5	0.3
C	970[2]	30[4]	5,130	6.2	33.0	32.5[3]	33.1	0.6
D	1,304[2]	180[4]	7,560	4.2	33.0	33.0	33.5	0.5
E	2,294[2]	290[4]	12,900	2.5	33.1	33.1	33.8	0.7
F	3,004[2]	230[4]	10,200	3.1	33.1	33.1	33.8	0.7
G	3,524[2]	180[4]	6,090	5.3	33.2	33.2	33.8	0.6
H	4,084[2]	100[4]	4,810	6.7	33.5	33.5	34.1	0.6
I	4,274[2]	180[4]	3,150	10.2	34.0	34.0	34.6	0.6
J	4,384[2]	190[4]	3,460	9.2	35.2	35.2	35.5	0.3
K	4,814[2]	170[4]	4,160	7.7	37.2	37.2	37.3	0.1
Fifth Branch of Mohawk River								
A	694[2]	390	7,950	7.0	29.9	29.8[3]	30.2	0.4
B	1,384[2]	500	9,800	5.7	30.9	30.9	31.4	0.5
C	2,074[2]	650	11,800	4.8	31.1	31.1	31.7	0.6
D	2,564[2]	550	9,390	6.0	31.1	31.1	31.8	0.7
E	3,084[2]	590	10,700	5.2	31.4	31.4	32.1	0.7
F	3,854[2]	710	12,800	4.4	31.7	31.7	32.4	0.7
G	4,274[2]	890	15,000	3.7	31.8	31.8	32.5	0.7
H	5,174[2]	610	9,020	6.2	31.9	31.9	32.6	0.7
I	5,884[2]	520	7,880	7.1	32.3	32.3	32.9	0.6

[1] Feet above confluence with Fifth Branch of Mohawk River
[2] Feet above confluence with Hudson River
[3] Elevation computed without consideration of backwater effects from Hudson River
[4] Floodway width extends beyond county boundary

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SECOND BRANCH OF MOHAWK RIVER – THIRD BRANCH OF MOHAWK RIVER – FIFTH BRANCH OF MOHAWK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Fifth Branch of Mohawk River (cont.)								
J	6,444[1]	440	6,700	8.4	32.8	32.8	33.2	0.4
K	6,874[1]	440	7,010	8.0	34.0	34.0	34.3	0.3
L	7,214[1]	530	8,360	6.7	34.5	34.5	34.8	0.3
Normans Kill								
A	990[1]	192	2,217	7.0	18.6	8.2[2]	8.4	0.2
B	1,970[1]	204	2,597	6.0	18.6	9.7[2]	10.1	0.4
C	4,028[1]	180	2,443	6.4	18.6	11.2[2]	11.6	0.4
D	6,250[1]	154	2,296	6.8	18.6	12.7[2]	13.1	0.4
E	7,113[1]	176	2,393	6.5	18.6	13.8[2]	14.0	0.2
F	9,057[1]	133	1,528	10.1	18.6	16.5[2]	16.5	0.0
G	9,769[1]	188	1,659	9.3	22.2	22.2	22.9	0.7
H	15,930[1]	170	3,234	4.7	78.9	78.9	79.8	0.9
I	19,369[1]	168	1,689	9.0	80.0	80.0	81.0	1.0
J	21,763[1]	131	1,542	9.9	100.9	100.9	101.2	0.3
K	24,599[1]	120	1,871	8.1	105.0	105.0	105.9	0.9
L	26,718[1]	134	1,973	7.7	107.5	107.5	108.4	0.9
M	28,798[1]	135	2,515	6.0	109.3	109.3	110.1	0.8
N	31,909[1]	176	3,115	4.6	111.2	111.2	112.0	0.8
O	35,102[1]	235	3,326	4.4	112.6	112.6	113.5	0.9
P	38,103[1]	221	3,039	4.7	113.9	113.9	114.8	0.9
Q	39,698[1]	160	2,602	5.5	115.2	115.2	115.6	0.4
R	40,613[1]	246	3,628	4.1	117.3	117.3	118.2	0.9
S	46,133[1]	358	5,412	2.8	119.0	119.0	120.0	1.0
T	50,033[1]	462	6,211	2.4	119.4	119.4	120.4	1.0
U	54,713[1]	404	5,147	2.9	120.1	120.1	121.0	0.9
V	58,133[1]	856	6,977	2.1	121.0	121.0	121.9	0.9

[1] Feet above confluence with Hudson River
[2] Elevation computed without consideration of backwater effects from Hudson River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

FIFTH BRANCH OF MOHAWK RIVER – NORMANS KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Normans Kill (Cont.)								
W	62,333[1]	180	2,743	5.4	122.7	122.7	123.6	0.9
X	66,213[1]	191	3,086	4.8	124.1	124.1	125.0	0.9
Y	70,733[1]	653	9,432	1.5	125.6	125.6	126.5	0.9
Z	75,693[1]	881	8,856	1.6	125.8	125.8	126.7	0.9
AA	80,513[1]	1,125	7,981	1.7	126.1	126.1	127.0	0.9
AB	82,683[1]	340	2,824	4.9	126.5	126.5	127.3	0.8
AC	88,443[1]	493	4,696	3.0	133.2	133.2	134.0	0.8
AD	93,383[1]	290	1,728	7.2	139.3	139.3	140.0	0.7
AE	98,033[1]	192	1,405	8.8	157.8	157.8	158.8	1.0
AF	101,563[1]	329	2,688	4.6	173.7	173.7	174.6	0.9
AG	105,773[1]	90	951	13	182.1	182.1	182.9	0.8
AH	108,953[1]	230	1,999	6.2	190.8	190.8	191.2	0.4
AI	110,413[1]	694	6,254	2.0	192.3	192.3	192.8	0.5
AJ	113,993[1]	539	4,362	2.8	194.1	194.1	194.7	0.6
AK	118,623[1]	138	1,308	9.5	201.5	201.5	202.3	0.8
AL	119,803[1]	195	2,868	4.3	237.3	237.3	238.2	0.9
AM	132,423[1]	113	1,048	6.4	267.7	267.7	267.9	0.2
AN	136,383[1]	248	1,775	3.8	270.9	270.9	271.8	0.9
AO	141,173[1]	288	1,764	3.6	274.9	274.9	275.7	0.8
Tributary 10 to Normans Kill								
A	314[2]	21	141	6.6	125.7	114.0[3]	114.2	0.2
B	1,117[2]	20	126	7.4	125.7	121.0[3]	121.6	0.6
C	1,408[2]	81	392	2.4	128.5	128.5	129.0	0.5
D	2,155[2]	70	331	2.8	130.5	130.5	131.4	0.9
E	3,134[2]	75	255	3.7	134.2	134.2	134.5	0.3
F	4,271[2]	15	136	6.8	137.7	137.7	138.0	0.3
G	5,292[2]	21	133	7.0	142.6	142.6	142.8	0.2
H	6,794[2]	15	107	3.0	160.1	160.1	160.1	0.0
I	7,833[2]	11	50	6.4	167.6	167.6	167.7	0.1
J	9,128[2]	13	38	8.5	179.8	179.8	180.0	0.2
K	9,963[2]	93	75	4.3	194.9	194.9	194.9	0.0

[1] Feet above confluence with Hudson River
[2] Feet above confluence with Normans Kill
[3] Elevation computed without consideration of backwater effects from Normans Kill

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

NORMANS KILL – TRIBUTARY 10 TO NORMANS KILL

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 1 to Tributary 10 to Normans Kill								
A	84[1]	41	341	1.8	161.3	161.3	162.2	0.9
B	551[1]	40	248	3.3	161.8	161.8	162.6	0.8
C	1,040[1]	124	2,434	0.2	184.9	184.9	185.8	0.9
D	2,160[1]	95	1,228	0.5	184.9	184.9	185.8	0.9
E	3,076[1]	30	225	2.6	185.0	185.0	185.9	0.9
F	4,092[1]	13	64	9.1	191.0	191.0	191.0	0.0
G	5,066[1]	16	88	6.6	200.8	200.8	201.4	0.6
Onesquethaw Creek								
A	910[2]	140	538	9.1	121.8	121.8	122.7	0.9
B	2,620[2]	100	505	8.4	134.1	134.1	135.1	1.0
C	4,710[2]	80	416	10.3	150.3	150.3	151.0	0.7
D	8,070[2]	83	429	10.0	175.3	175.3	176.3	1.0
E	52,940[2]	41	186	12.2	597.0	597.0	597.0	0.0
F	54,060[2]	170	403	5.6	612.8	612.8	613.3	0.5
G	56,240[2]	36	191	11.8	640.9	640.9	641.5	0.6
H	59,090[2]	35	208	8.3	760.5	760.5	761.5	1.0
I	62,440[2]	41	179	9.6	802.4	802.4	802.6	0.2
J	65,360[2]	36	188	9.2	849.3	849.3	850.2	0.9
K	67,620[2]	25	113	11.4	903.6	903.6	904.6	1.0
Patroon Creek								
A	2,822[3]	20	274	12.3	40.2	40.2	40.2	0
B	3,705[3]	62	353	9.5	48.7	48.7	48.7	0
C	4,918[3]	38	238	14.1	69.2	69.2	69.2	0

[1] Feet above confluence with Tributary 10 to Normans Kill
[2] Feet above State Route 396/confluence with Coeymans Creek
[3] Feet above confluence with Hudson River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

TRIBUTARY 1 TO TRIBUTARY 10 TO NORMANS KILL – ONESQUETHAW CREEK – PATROON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Salt Kill								
A	600[1]	27	73	3.7	28.6	20.6[2]	20.7	0.1
B	715[1]	18	50	5.4	28.6	21.8[2]	21.9	0.1
C	950[1]	39	89	3.0	28.6	22.3[2]	22.3	0.0
D	1,490[1]	47	108	2.5	28.6	23.2[2]	23.2	0.0
E	1,720[1]	38	73	3.7	28.6	23.7[2]	23.7	0.0
F	1,940[1]	30	71	3.8	28.6	24.3[2]	24.4	0.1
G	2,070[1]	35	139	2.0	29.6	29.6	29.6	0.0
H	2,150[1]	18	35	7.8	29.6	29.6	29.6	0.0
I	2,320[1]	37	140	1.9	32.4	32.4	32.4	0.0
J	2,360[1]	24	71	3.8	32.4	32.4	32.4	0.0
K	2,420[1]	34	87	3.1	34.1	34.1	34.1	0.0
L	2,540[1]	30	104	2.6	34.3	34.3	34.3	0.0
M	2,790[1]	16	33	8.2	37.5	37.5	37.5	0.0
N	2,830[1]	103	126	2.1	43.6	43.6	43.6	0.0
O	2,920[1]	103	140	1.9	43.7	43.7	43.7	0.0
Shaker Creek								
A	1,290[4]	100	1,700	1.2	199.1	199.1	199.1	0.0
B	1,410[4]	100	970	1.8	199.1	199.1	199.1	0.0
C	1,850[4]	100	670	2.5	199.1	199.1	199.1	0.0
D	2,270[4]	100	600	2.8	199.1	199.1	199.2	0.1
E	2,680[4]	100	420	4.0	199.1	199.1	199.5	0.4
F	3,380[4]	100	430	4.0	199.4	199.4	200.2	0.8
G	3,550[4]	100	530	3.2	199.8	199.8	200.5	0.7
H	3,880[4]	148	540	3.2	199.8	199.8	200.8	1.0
I-U[3]								
V	7,920[4]	100	490	3.4	248.1	248.1	248.1	0.0
W	8,080[4]	100	540	3.2	248.1	248.1	248.4	0.3
X	8,660[4]	100	640	2.6	248.4	248.4	248.6	0.2
Y	9,000[4]	100	570	3.0	248.4	248.4	248.7	0.3
Z	9,200[4]	100	600	2.8	248.4	248.4	249.0	0.6
AA	9,490[4]	100	630	2.7	248.4	248.4	249.2	0.8
AB	9,780[4]	100	620	2.1	248.4	248.4	249.4	1.0

[1] Feet upstream of Tibbits Avenue
[2] Elevation computed without consideration of backwater effects from State Basin
[3] Floodway not computed for Cross Sections I – U due to excessive velocities
[4] Feet above confluence with Mohawk River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SALT KILL – SHAKER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Shaker Creek (cont.)								
AC	10,110[1]	100	490	2.6	248.4	248.4	249.4	1.0
AD	10,270[1]	100	740	1.9	251.6	251.6	251.6	0.0
AE	10,470[1]	100	740	1.9	251.6	251.6	251.6	0.0
AF	10,680[1]	100	710	2.0	251.6	251.6	251.6	0.0
AG	11,170[1]	100	650	2.2	251.6	251.6	251.6	0.0
AH	11,630[1]	100	600	2.3	251.6	251.6	251.6	0.0
AI	12,200[1]	100	690	2.0	251.6	251.6	251.6	0.0
AJ	12,530[1]	100	460	3.0	251.6	251.6	251.6	0.0
AK	12,640[1]	100	600	2.3	251.6	251.6	251.6	0.0
AL	13,030[1]	100	420	3.3	251.6	251.6	251.7	0.1
AM	13,450[1]	100	360	3.8	251.6	251.6	252.0	0.4
AN	13,730[1]	100	410	3.4	251.8	251.8	252.3	0.5
AO	14,100[1]	100	360	3.8	252.1	252.1	252.8	0.7
AP	14,570[1]	100	350	4.0	252.7	252.7	253.6	0.9
AQ	14,920[1]	100	490	2.9	253.1	253.1	254.1	1.0
AR	15,020[1]	150	520	2.7	253.9	253.9	253.9	0.0
AS	15,300[1]	150	590	2.4	254.2	254.2	254.2	0.0
AT	17,380[1]	150	550	2.5	255.9	255.9	256.8	0.9
AU	17,870[1]	142	450	3.1	257.0	257.0	257.7	0.7
AV	18,230[1]	150	480	2.9	258.0	258.0	258.2	0.2
AW	18,350[1]	200	930	1.5	259.0	259.0	259.0	0.0
AX	18,620[1]	200	980	1.4	259.0	259.0	259.0	0.0
AY	19,020[1]	200	710	2.0	259.0	259.0	259.0	0.0
AZ	19,460[1]	150	440	3.2	259.2	259.2	259.5	0.3
BA	19,800[1]	66	250	5.6	260.1	260.1	260.4	0.3
BB	20,350[1]	95	350	4.0	262.5	262.5	262.5	0.0
BC	20,610[1]	71	310	4.5	263.0	263.0	263.0	0.0
BD	20,970[1]	87	360	3.9	263.6	263.6	263.6	0.0
BE	21,480[1]	104	450	3.1	264.4	264.4	264.4	0.0

[1] Feet above confluence with Mohawk River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SHAKER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Shaker Creek (cont.)								
BF	22,040[1]	69	340	2.6	264.9	264.9	264.9	0.0
BG	22,430[1]	62	300	2.9	265.1	265.1	265.2	0.1
BH	23,050[1]	69	340	2.6	265.5	265.5	265.5	0.0
BI-BT[2]								
BU	27,230[1]	450	1,970	0.4	275.1	275.1	275.1	0.0
BV	27,450[1]	550	2,380	0.3	275.1	275.1	275.1	0.0
BW	27,850[1]	400	1,730	0.4	275.1	275.1	275.1	0.0
BX	28,230[1]	200	520	1.4	275.1	275.1	275.1	0.0
BY	28,570[1]	200	340	2.2	275.4	275.4	275.4	0.0
BZ	29,040[1]	200	510	1.4	275.8	275.8	275.8	0.0
CA	29,490[1]	100	270	2.7	276.3	276.3	276.3	0.0
CB	29,770[1]	100	310	2.4	276.4	276.4	276.6	0.2
State Basin								
A	828[3]	36	115	2.3	25.9	5.3[4]	5.3	0.0
B	1,388[3]	52	108	25	26.1	6.1[4]	6.5	0.0
C	1,768[3]	26	73	3.7	26.1	7.2[4]	7.2	0.0
D	1,938[3]	25	61	4.4	26.2	7.3[4]	7.3	0.0
E	2,418[3]	35	101	2.7	26.2	8.6[4]	8.6	0.0
F	2,748[3]	46	130	2.1	26.3	8.9[4]	8.9	0.0
G	2,928[3]	46	145	1.9	26.3	9.4[4]	9.4	0.0
H	3,218[3]	33	109	2.5	26.4	9.5[4]	9.5	0.0
I	4,138[3]	51	135	2.0	26.6	10.2[4]	10.3	0.1
J	4,948[3]	24	56	4.8	26.8	10.8[4]	10.8	0.0
K	5,828[3]	31	96	2.8	27.0	13.3[4]	13.3	0.0
L	6,638[3]	53	177	1.5	27.1	13.8[4]	13.8	0.0

[1] Feet above confluence with Mohawk River
[2] Cross Section Data not included in Town of Colonie FIS
[3] Feet above confluence with Hudson River
[4] Elevation computed without consideration of backwater effects from Hudson River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

SHAKER CREEK – STATE BASIN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Vloman Kill								
A	-2,140[1]	322	2,484	1.7	116.9	116.9	117.6	0.7
B	-540[1]	121	835	5.1	117.0	117.0	117.7	0.7
C	790[1]	292	2,046	1.7	119.7	119.7	120.4	0.7
D	1,660[1]	170	1,470	2.4	120.0	120.0	120.7	0.7
E	2,740[1]	217	1,672	2.1	122.3	122.3	123.0	0.7
F	4,940[1]	173	1,941	1.8	122.6	122.6	123.5	0.9
Vly Creek								
A	720[2]	139	424	6.8	126.7	126.5[3]	127.5	1.0
B	2,500[2]	59	301	9.7	146.0	146.0	146.6	0.6
C	6,220[2]	34	218	13.3	209.2	209.2	209.8	0.6
D	9,660[2]	91	557	5.2	295.1	295.1	295.9	0.8
E	12,820[2]	45	263	9.5	308.8	308.8	309.7	0.9
F	14,700[2]	72	607	4.1	324.2	324.2	324.2	0.0
G	16,540[2]	55	386	6.5	326.6	326.6	327.5	0.9
H	17,830[2]	232	1,741	1.4	330.6	330.6	331.3	0.7
I	20,860[2]	178	1,030	2.3	333.2	333.2	334.1	0.9
J	24,040[2]	161	691	2.8	340.7	340.7	341.5	0.8
K	25,440[2]	181	427	2.0	342.1	342.1	343.0	0.9
L	28,040[2]	199	320	2.6	344.8	344.8	345.8	1.0
M	31,240[2]	247	1,096	0.6	350.1	350.1	351.1	1.0
N	34,240[2]	138	203	3.4	357.2	357.2	358.0	0.8

[1] Feet above US Route 9W
[2] Feet above confluence with Normans Kill

[3] Elevation computed without consideration of backwater effects from Normans Kill

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

VLOMAN KILL – VLY CREEK

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. These zones are as follows:

Zone A

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

Zone AE

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

Zone AO

Zone AO is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot base flood depths derived from the detailed hydraulic analyses are shown within this zone.

Zone X

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

6.0 FLOOD INSURANCE RATE MAP

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

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

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

The current FIRM presents flooding information for Albany County, New York. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone incorporated community. Historical data relating to the maps prepared for each community are presented in Table 12, “Community Map History.”

7.0 OTHER STUDIES

Because it is based on more up-to-date analyses, this FIS supersedes the previously printed FISs for the communities within Albany County.

This is a multi-volume FIS. Each volume may be revised separately, in which case it supersedes the previously printed volume. Users should refer to the Table of Contents in Volume 1 for the current effective date of each volume; volumes bearing these dates contain the most up to date flood hazard data.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Albany, City of	May 3, 1974	December 31, 1976	April 15, 1980	April 15, 1980
Altamont, Village of	April 12, 1974	May 21, 1976	August 15, 1983	August 15, 1983
Berne, Town of	June 28, 1974	May 21, 1976	August 1, 1987	August 1, 1987
Bethlehem, Town of	May 31, 1974	September 3, 1976	June 15, 1983	April 17, 1984
Coeymans, Town of	June 28, 1974	June 28, 1974	August 3, 1989	August 3, 1989
Cohoes, City of	October 5, 1973	June 11, 1976	December 4, 1979	December 4, 1979
Colonie, Town of	September 20, 1974	January 28, 1978	September 5, 1979	September 5, 1979
Green Island, Village of	February 1, 1974	February 1, 1974	June 4, 1980	June 4, 1980
Guilderland, Town of	February 6, 1976		January 6, 1983	January 6, 1983
Knox, Town of	October 22, 1976	October 22, 1976	August 13, 1982	August 13, 1982
Menands, Village of	February 1, 1974		March 18, 1980	March 18, 1980
New Scotland, Town of	May 10, 1974	May 10, 1974	December 1, 1982	December 1, 1982
Ravena, Village of	October 22, 1976		April 2, 1982	April 2, 1982
Rensselaerville, Town of	December 6, 1974	December 6, 1974	August 27, 1982	August 27, 1982
Voorheesville, Village of	April 12, 1974	April 12, 1974	December 1, 1982	December 1, 1982
Watervliet, City of	February 1, 1974		January 2, 1980	January 2, 1980
Westerlo, Town of	June 14, 1974		August 3, 1989	August 3, 1989

TABLE 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Flood Insurance and Mitigation Division, Federal Emergency Management Agency, 26 Federal Plaza, Rm. 1337, New York, NY 10278-0002.

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20. Federal Emergency Management Agency (FEMA). June 1, 1982c. Flood Insurance Study, Village of Voorheesville, Albany County, New York.

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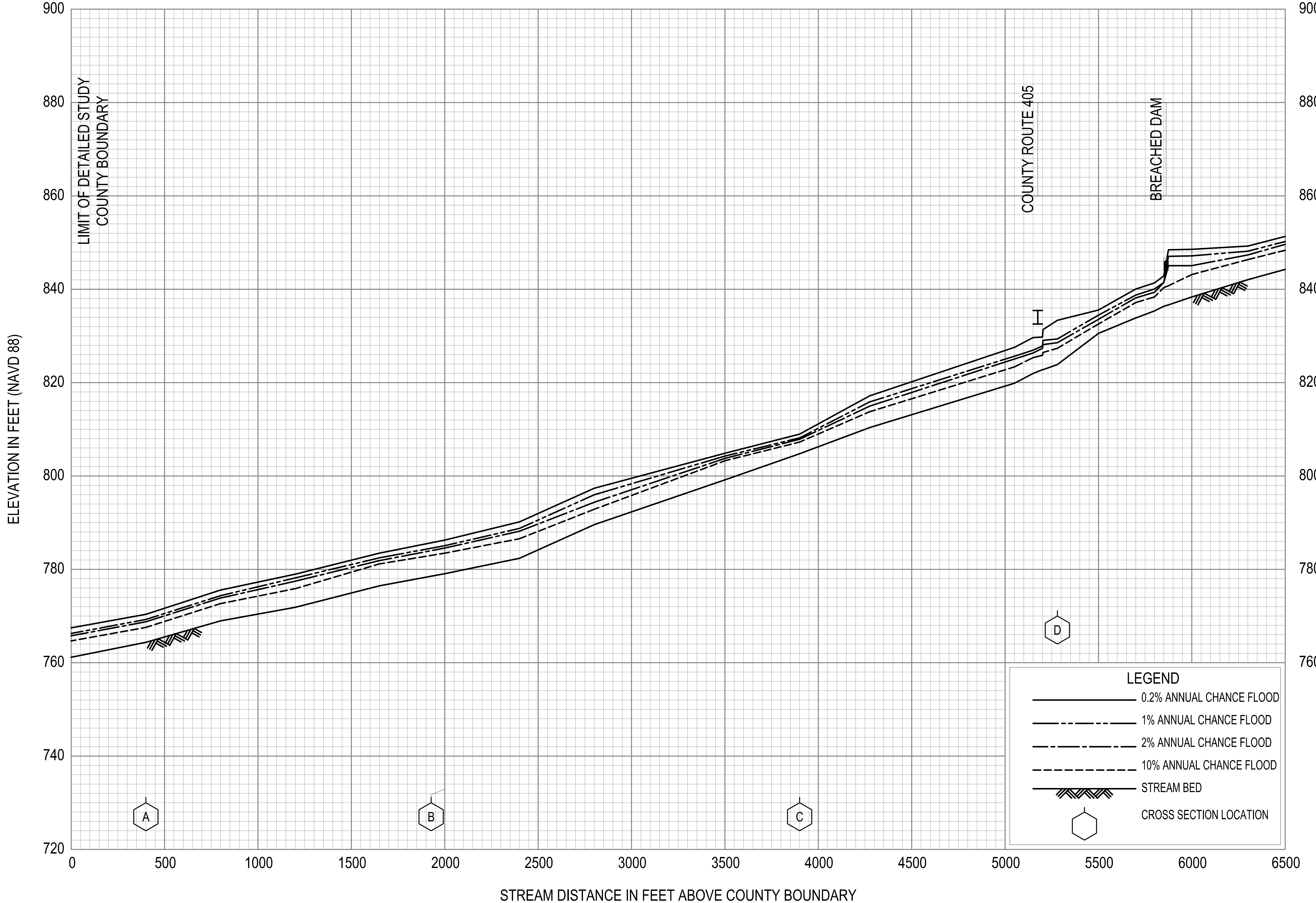


FLOOD PROFILES

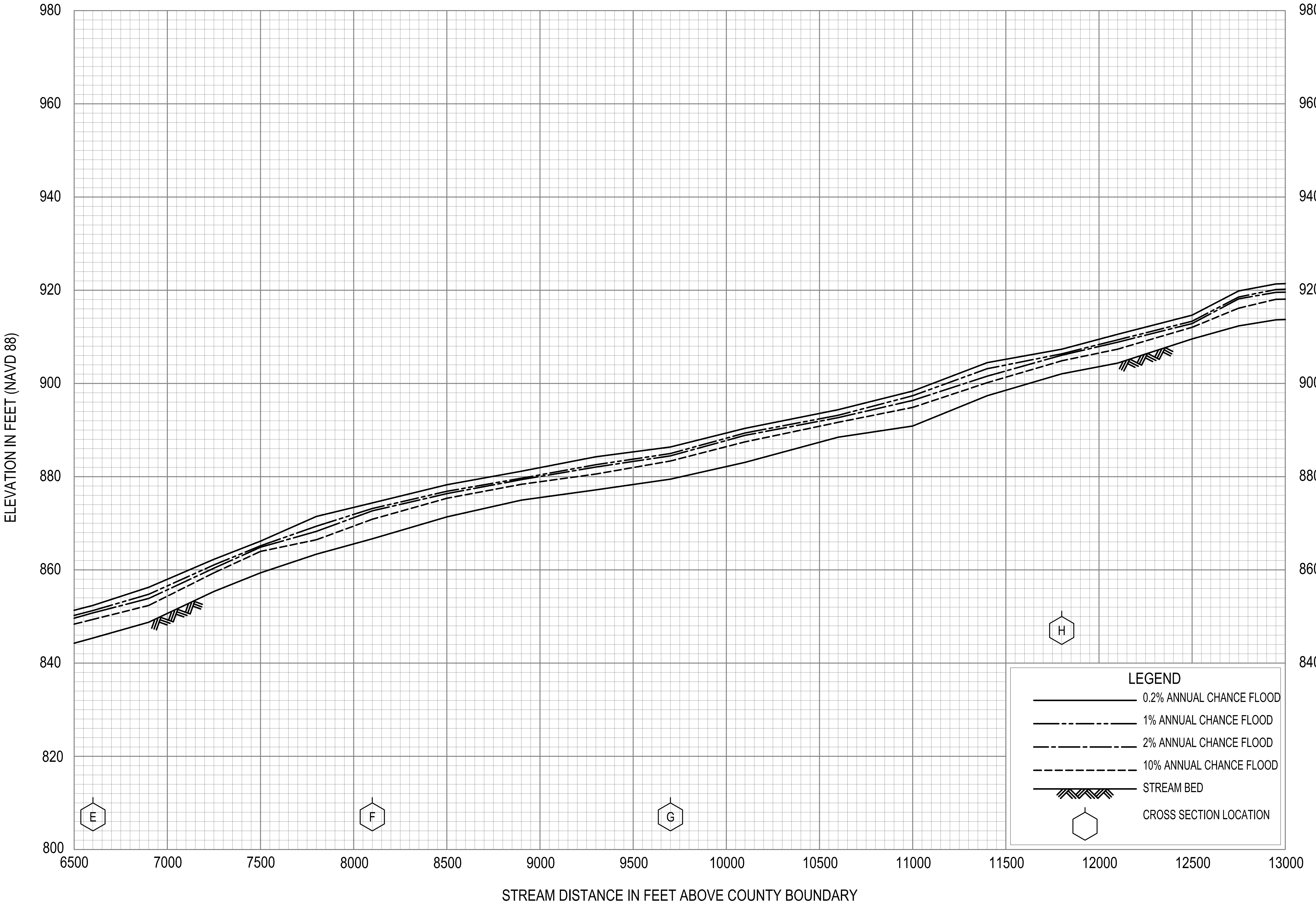
BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

01P



FLOOD PROFILES

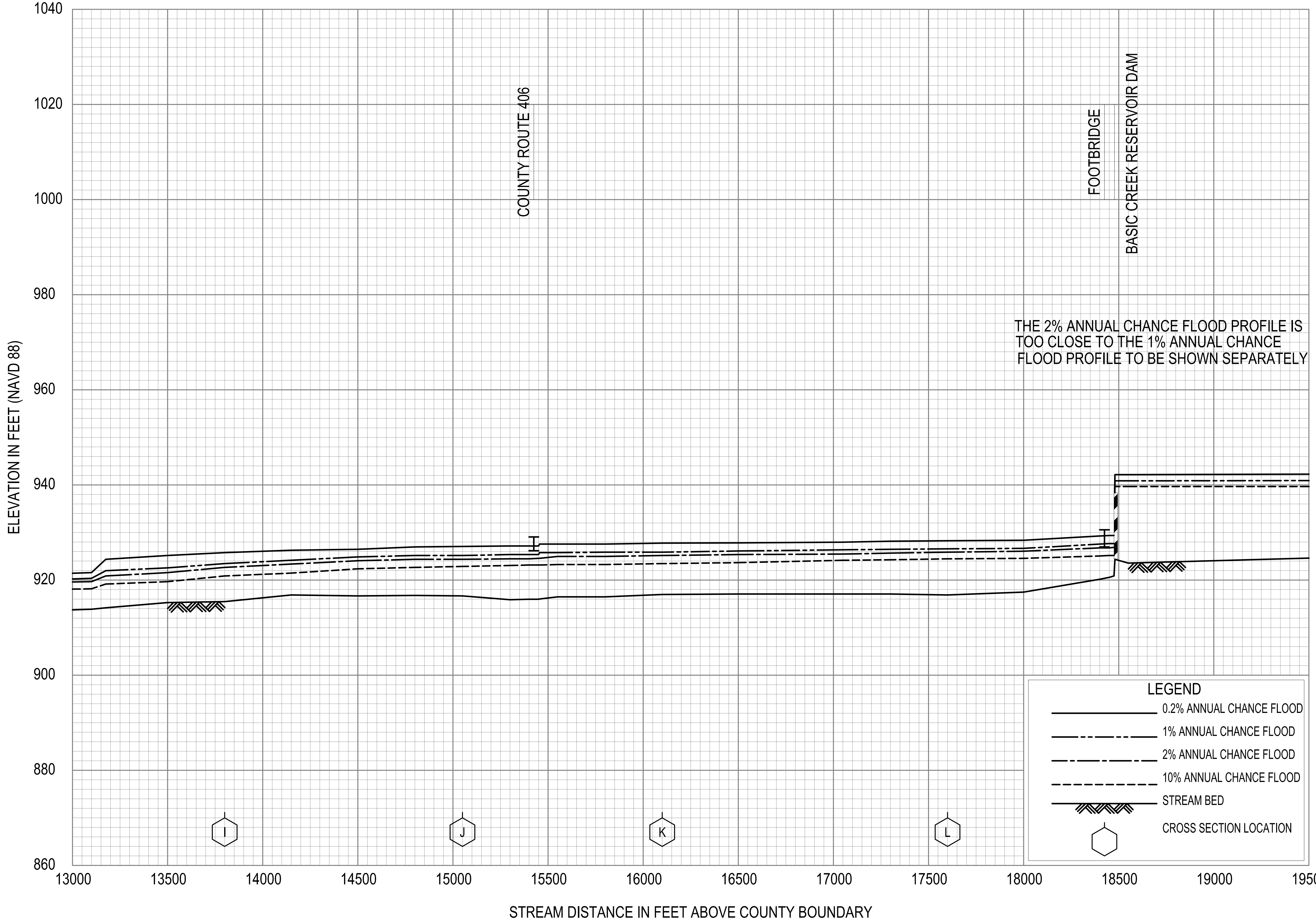
BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

02P



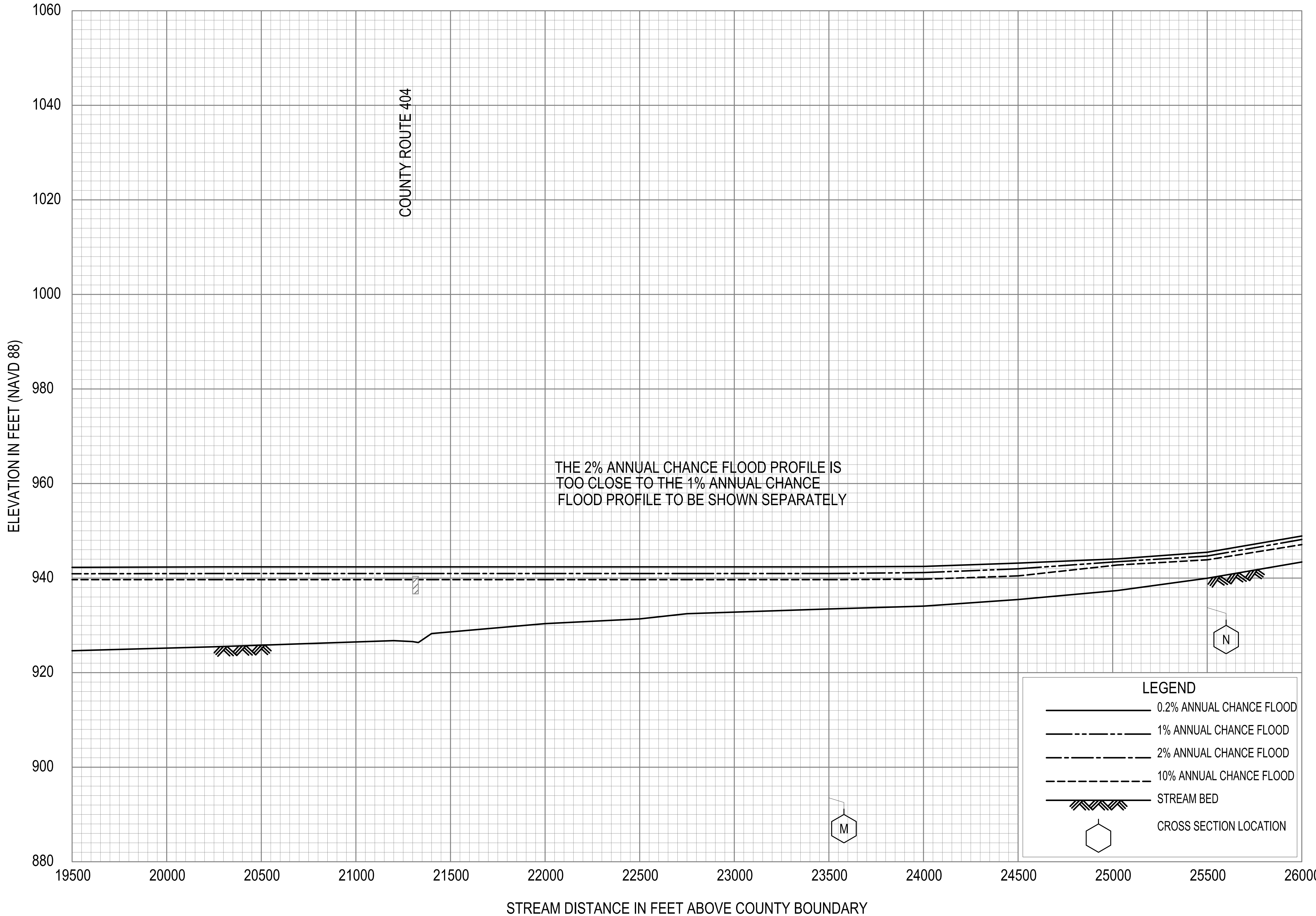
FLOOD PROFILES

BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



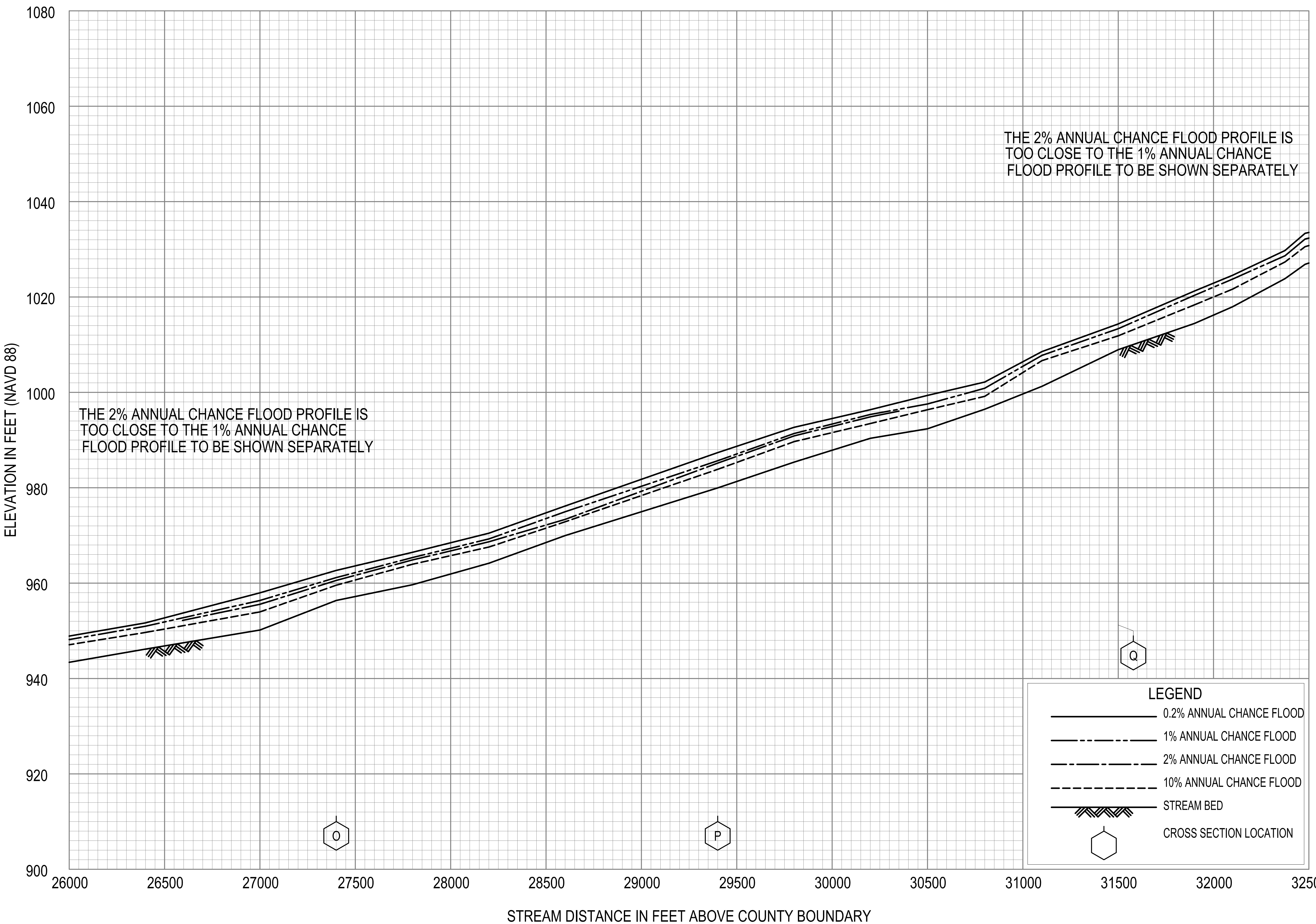
FLOOD PROFILES

BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



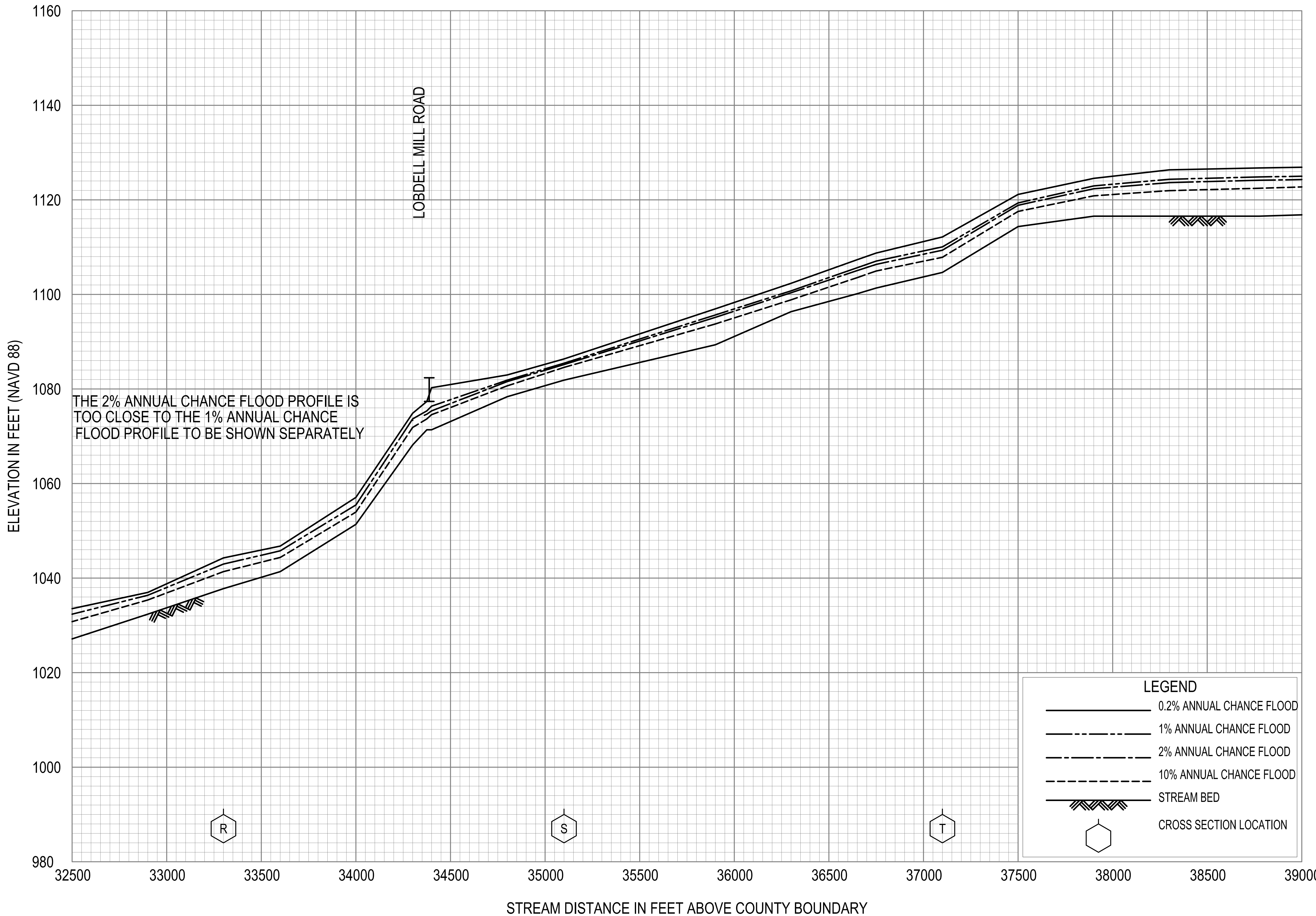
FLOOD PROFILES

BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



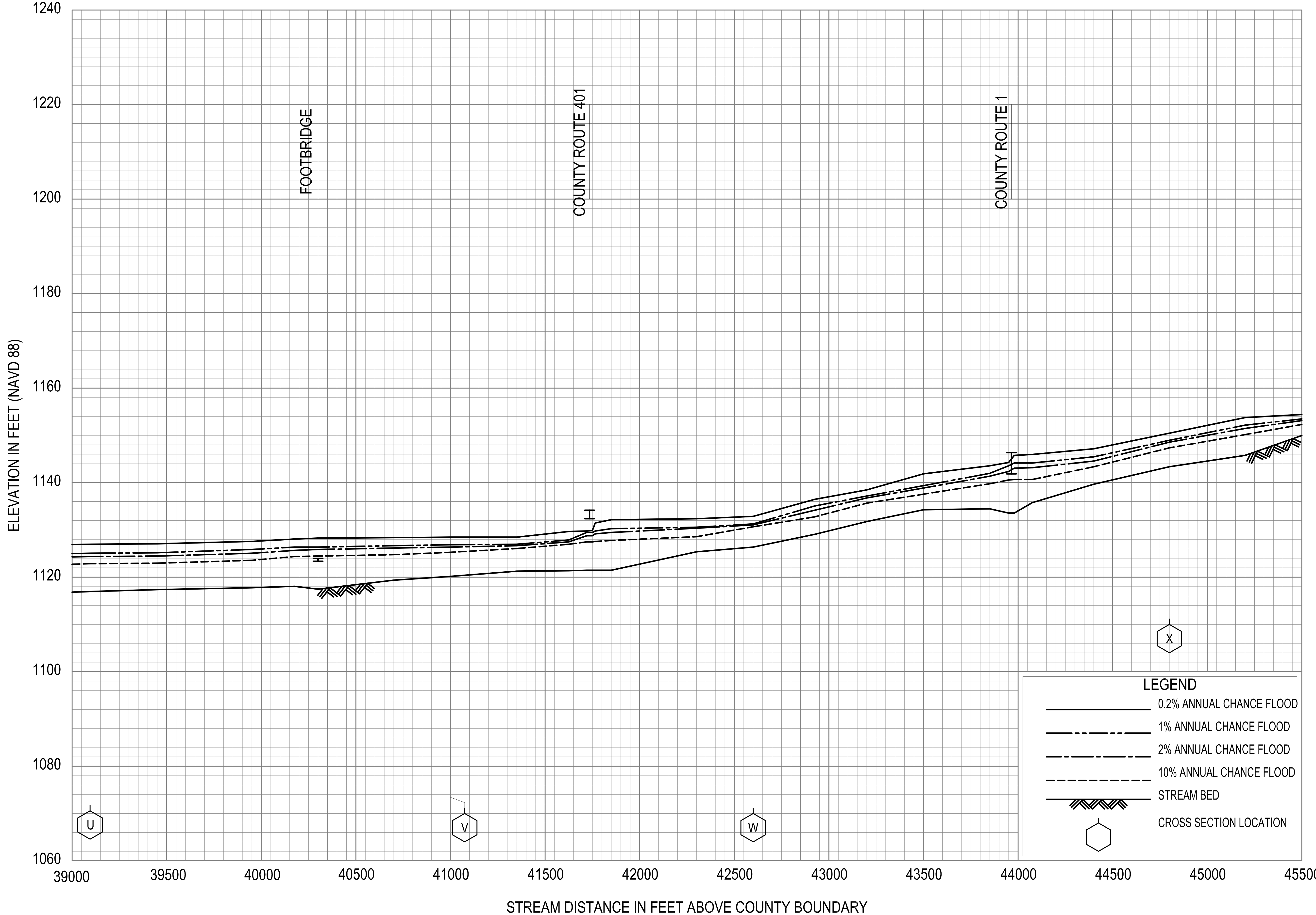
FLOOD PROFILES

BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



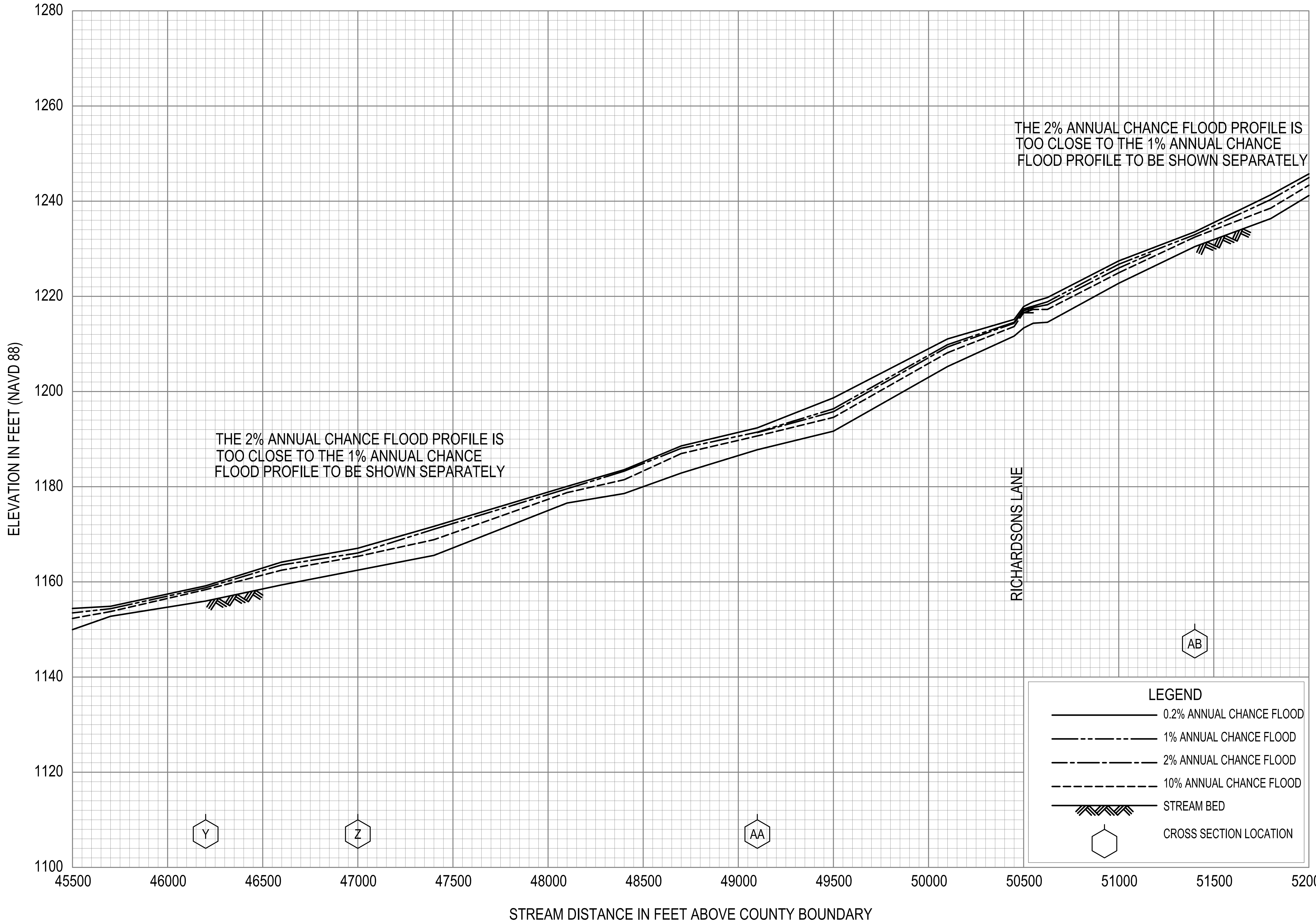
FLOOD PROFILES

BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



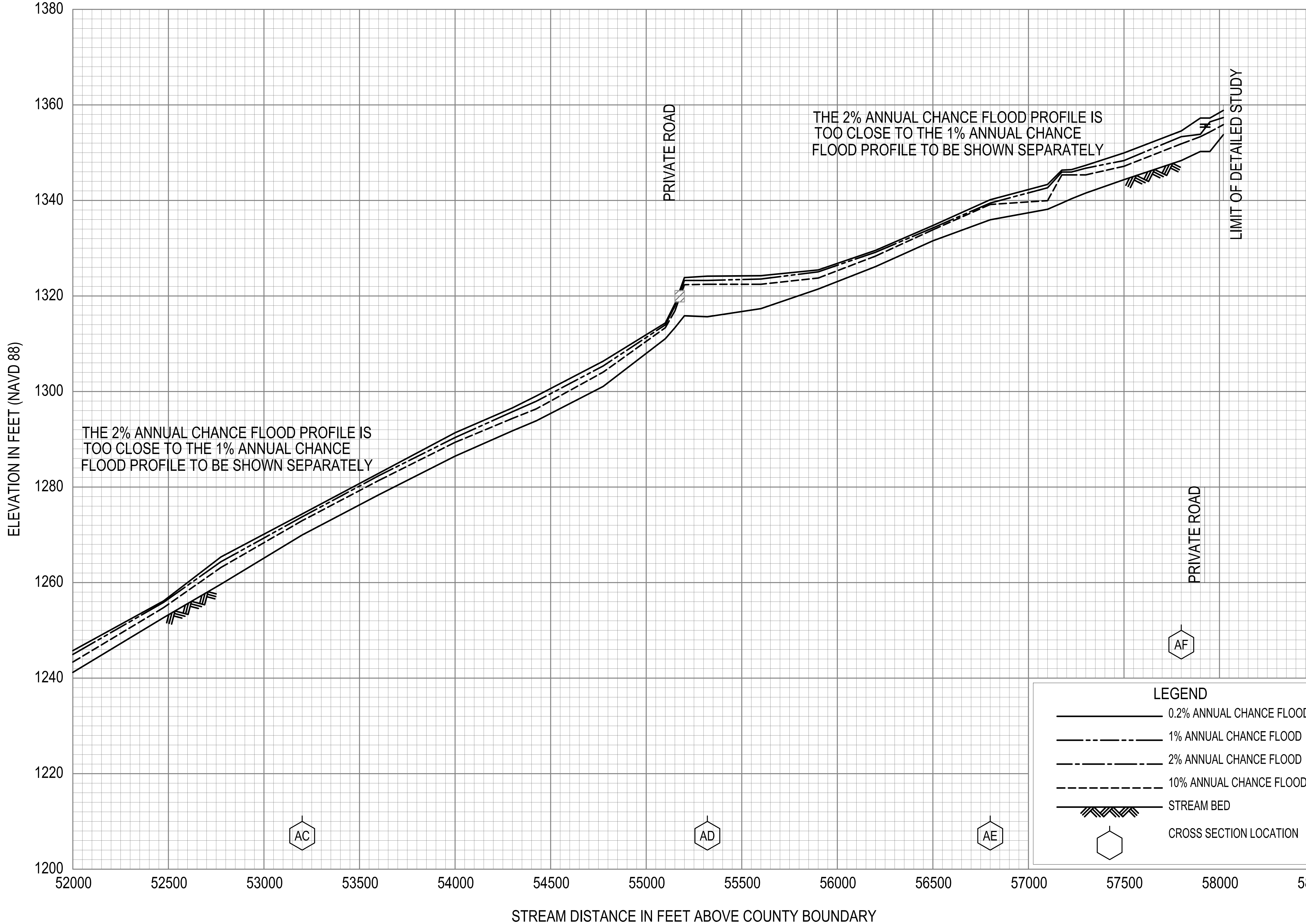
FLOOD PROFILES

BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

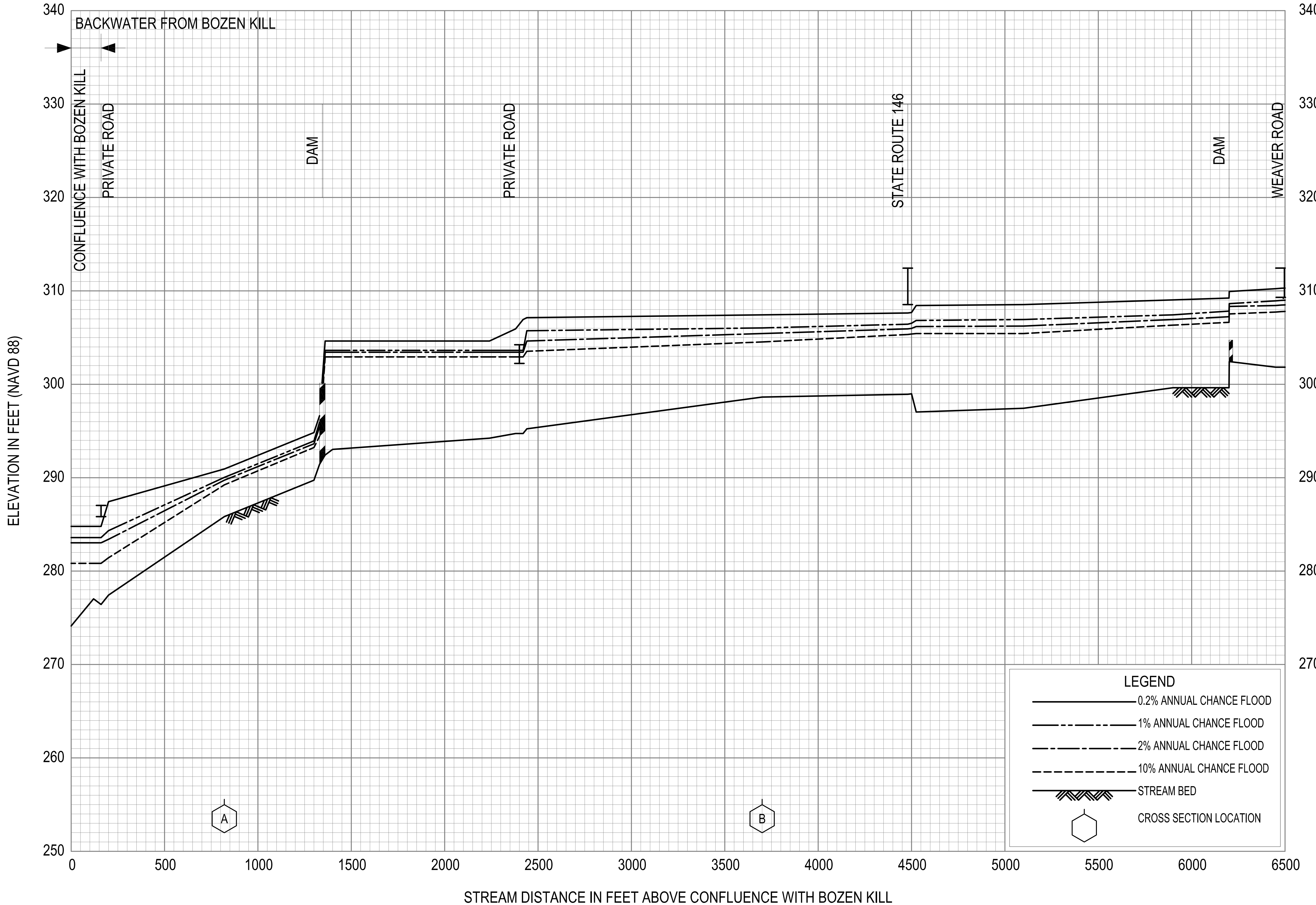
BASIC CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

09P



FLOOD PROFILES

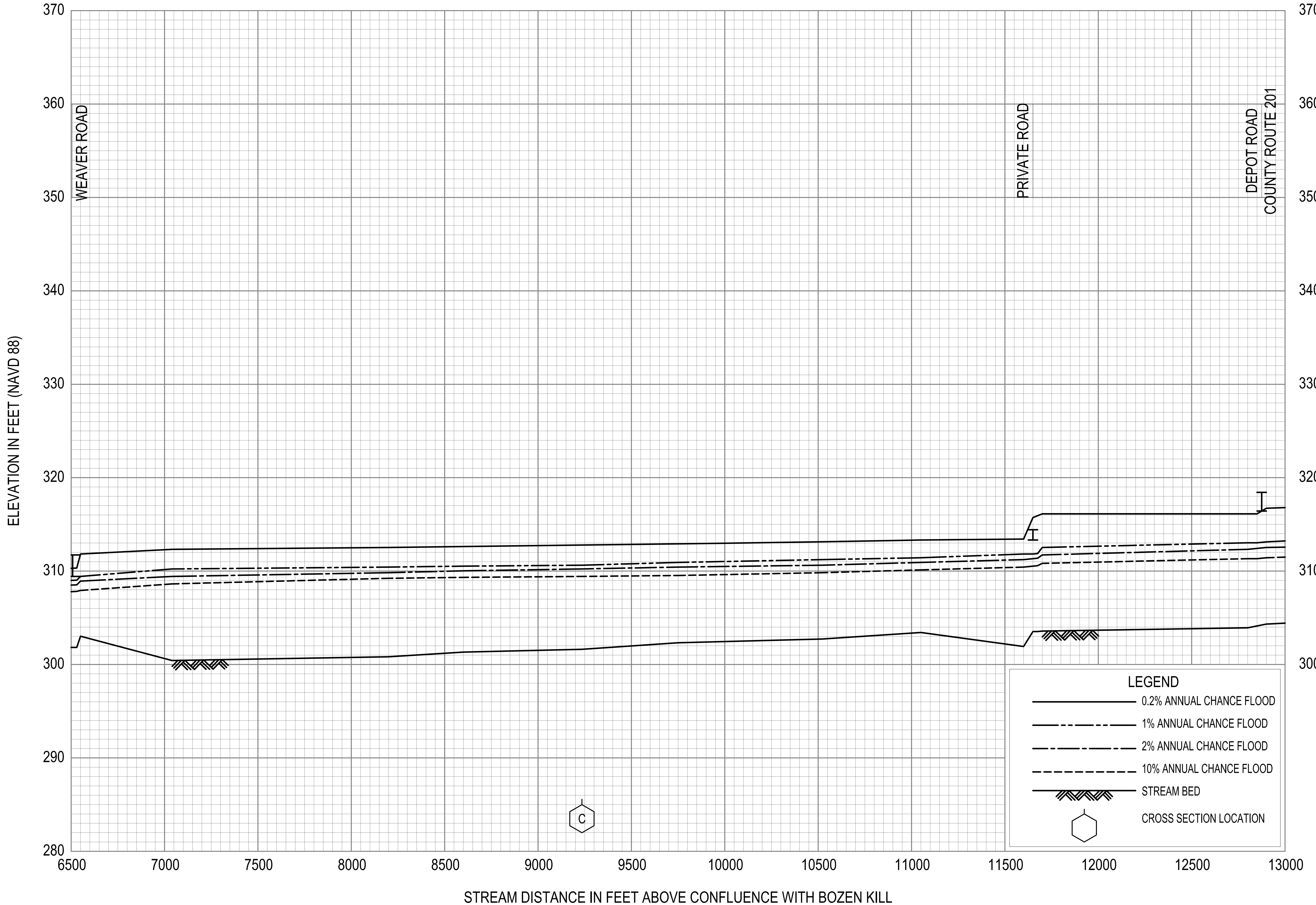
BLACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

10P



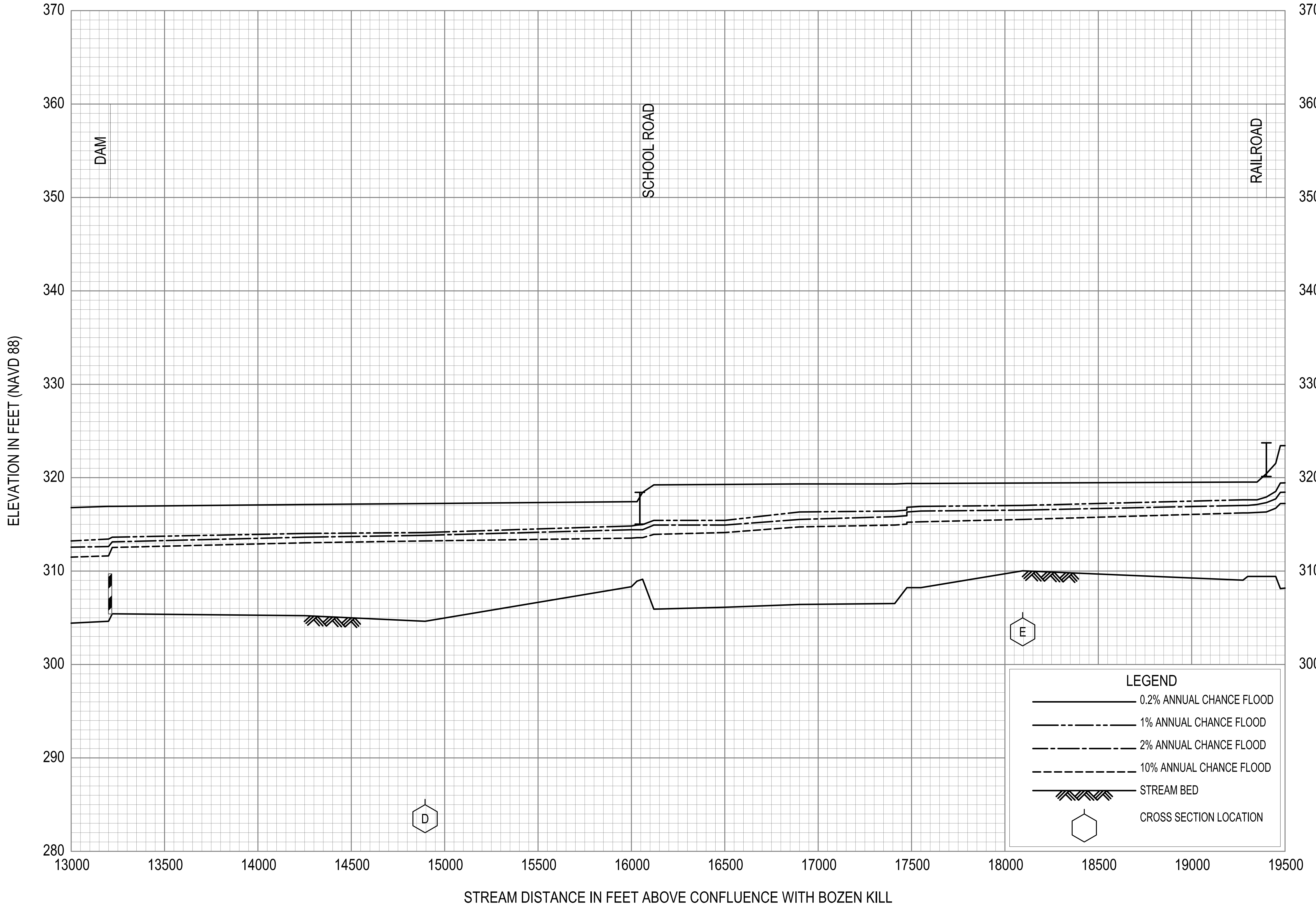
FLOOD PROFILES

BLACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



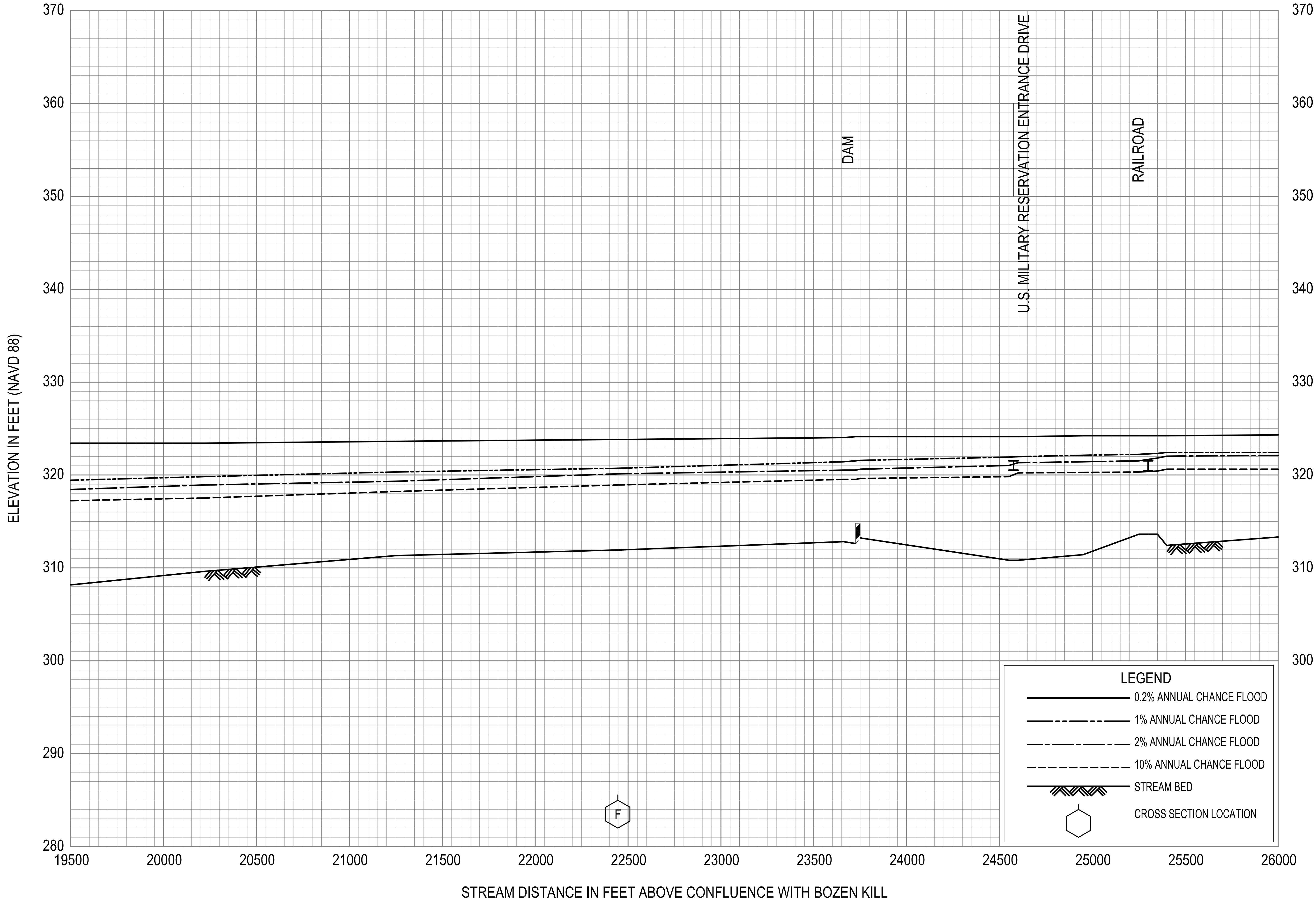
FLOOD PROFILES

BLACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

BLACK CREEK

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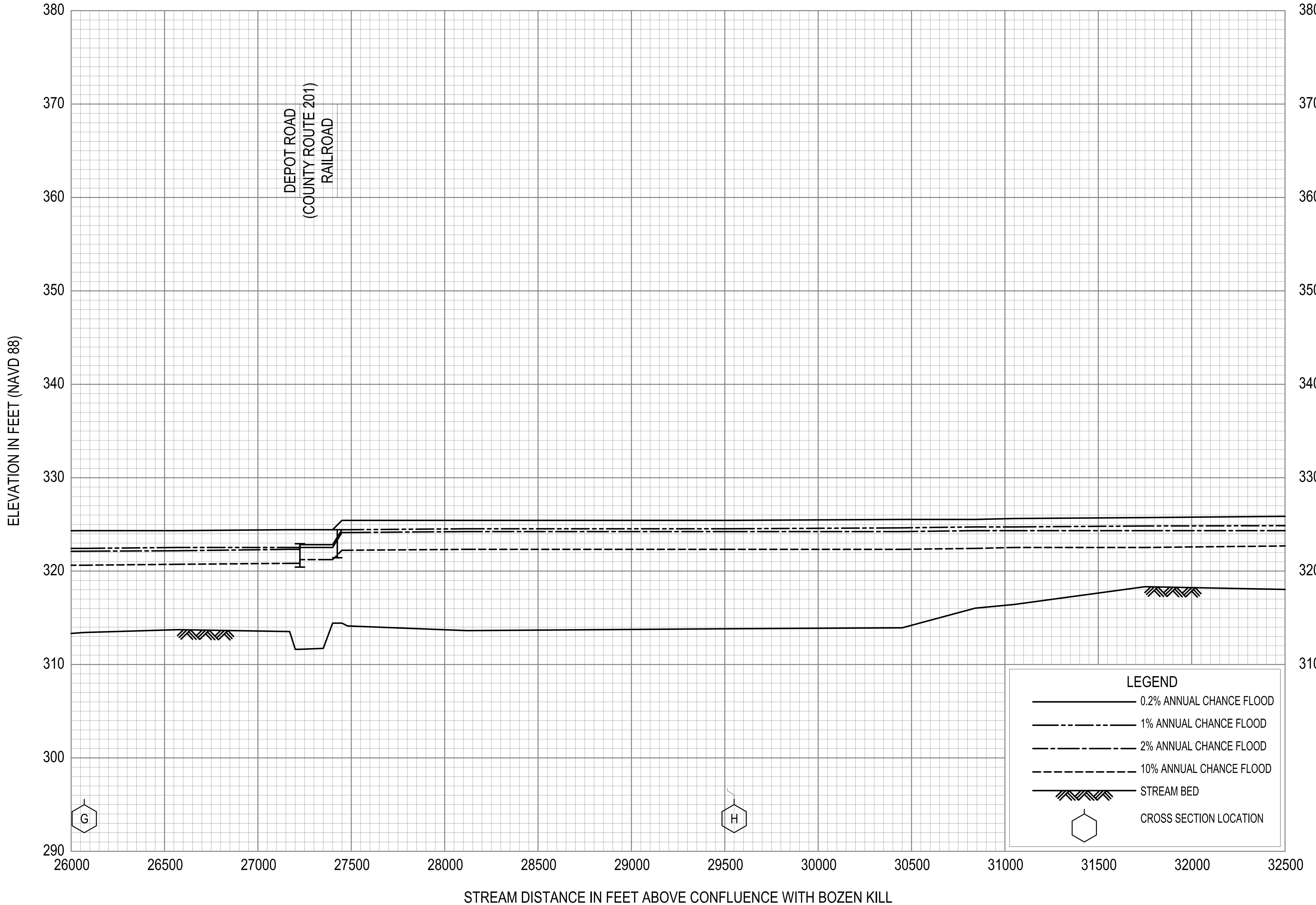
ALBANY COUNTY, NY

(ALL JURISDICTIONS)



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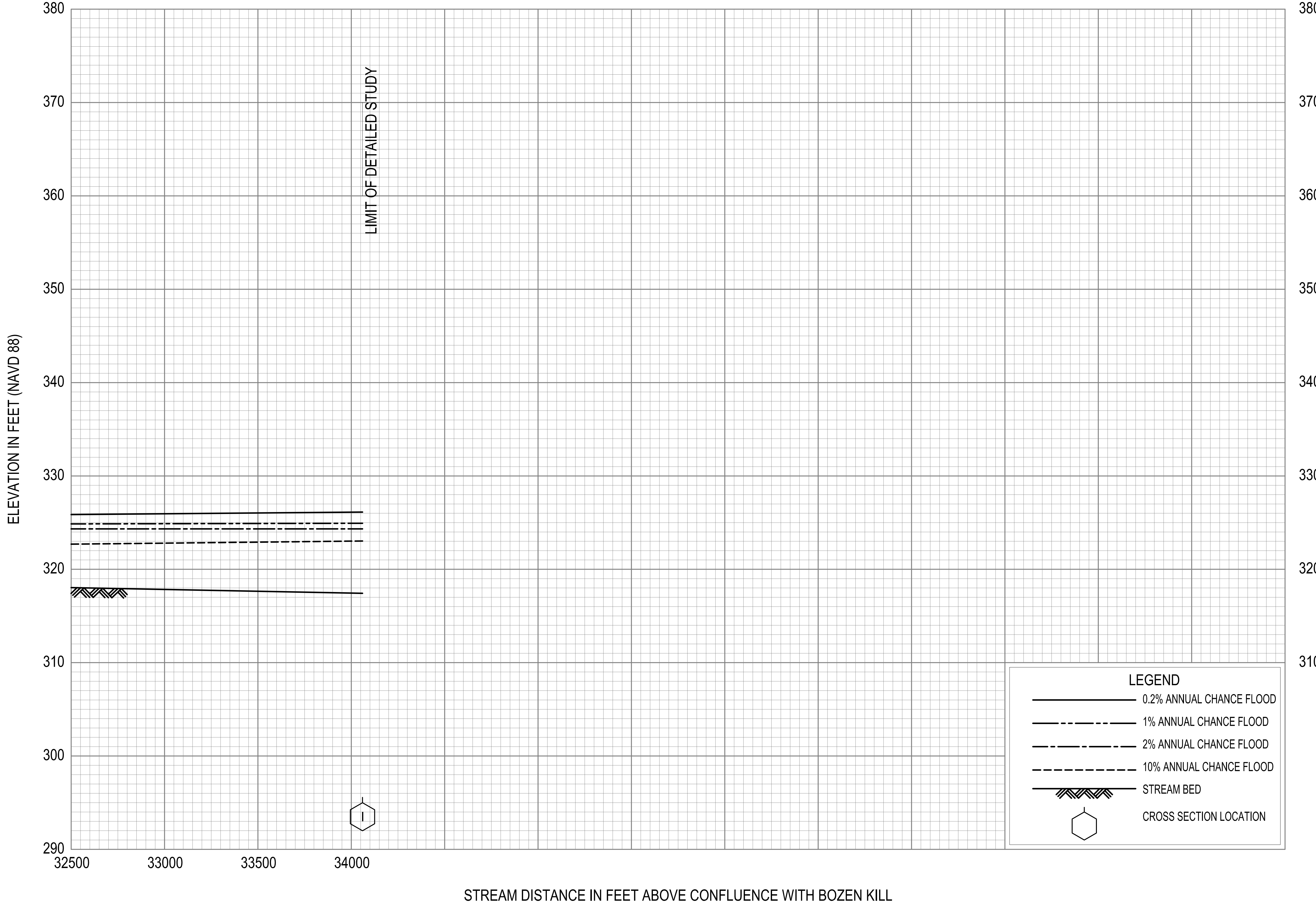
BLACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



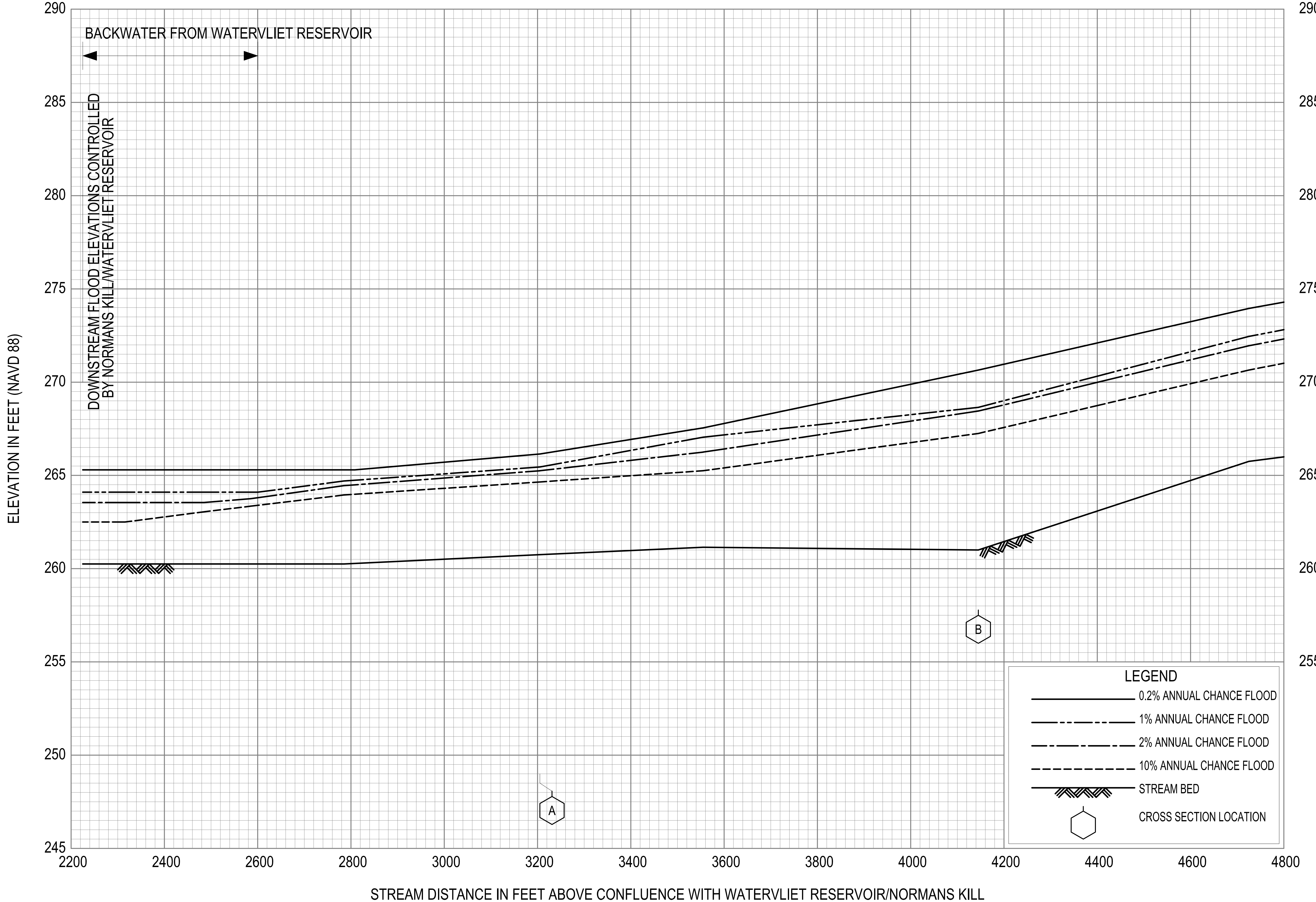
FLOOD PROFILES

BLACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



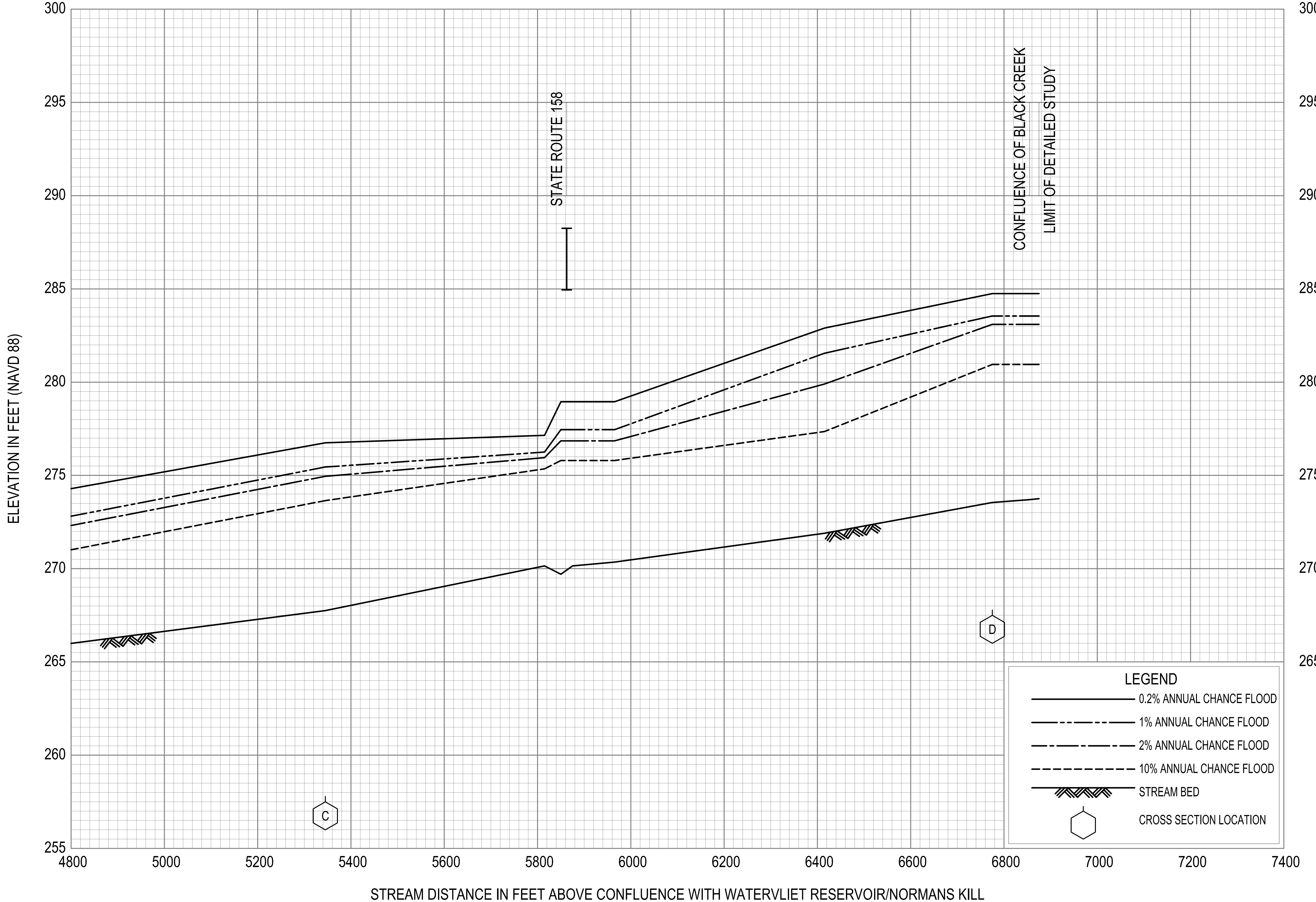
FLOOD PROFILES

BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

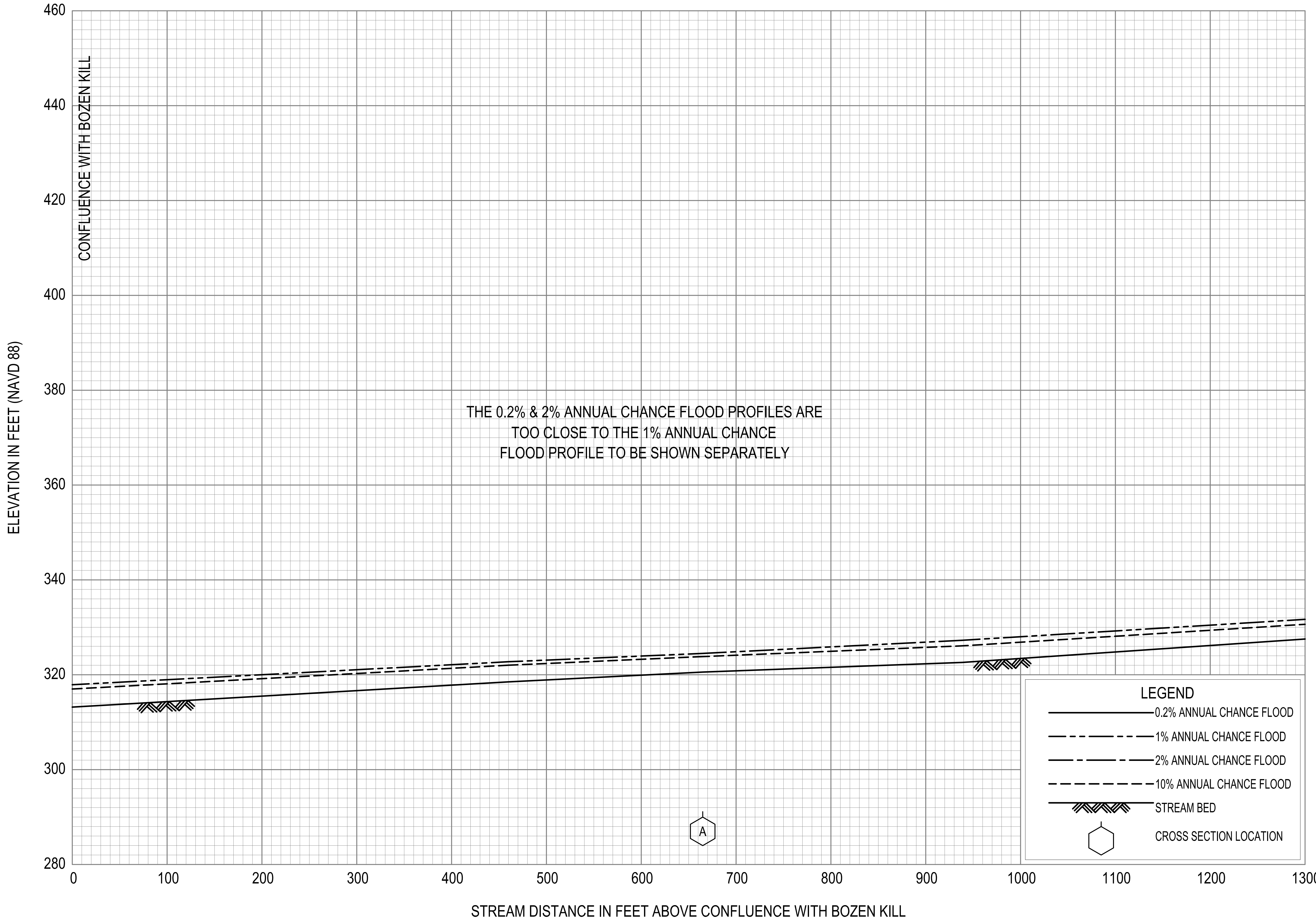
BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

17P



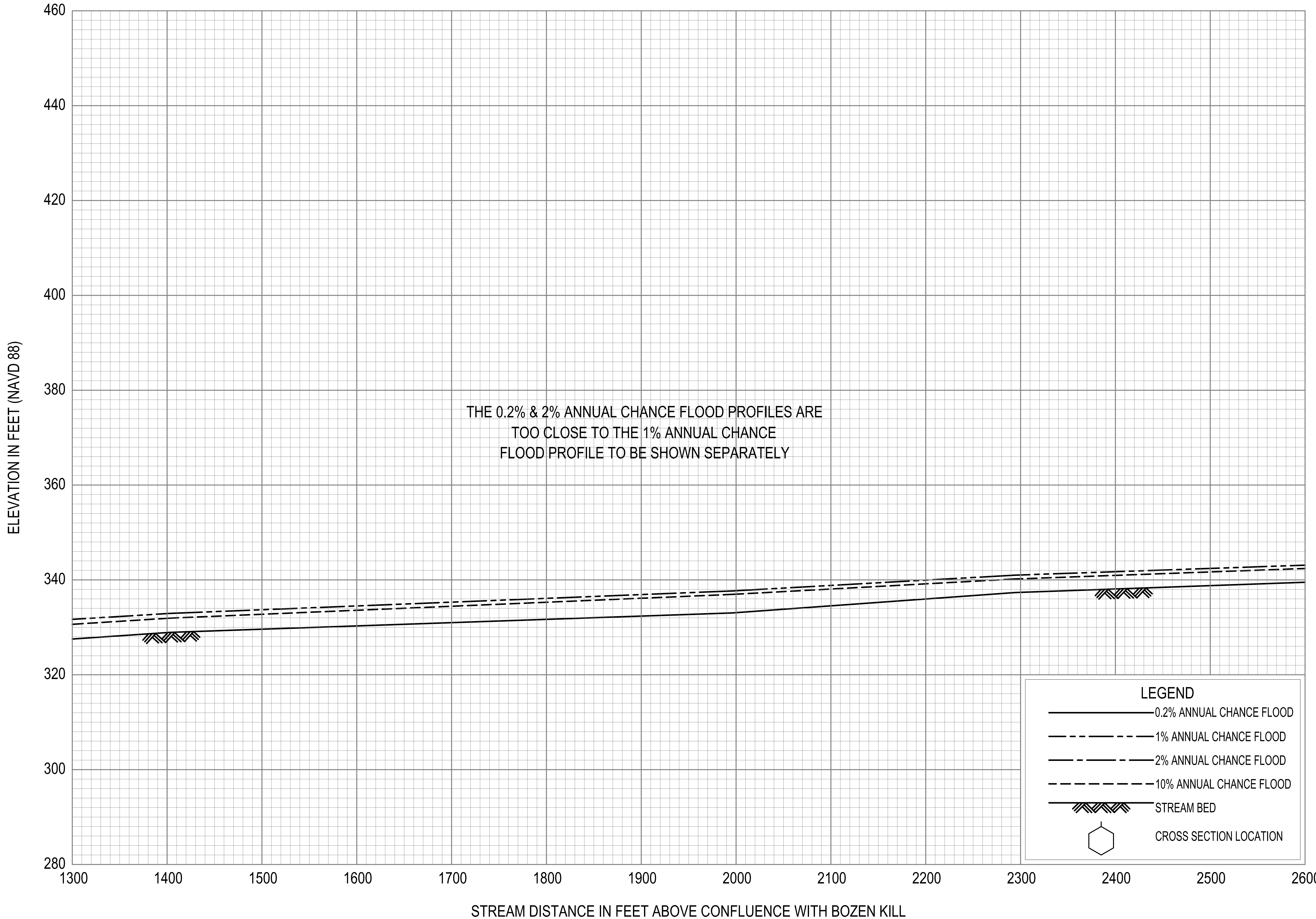
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



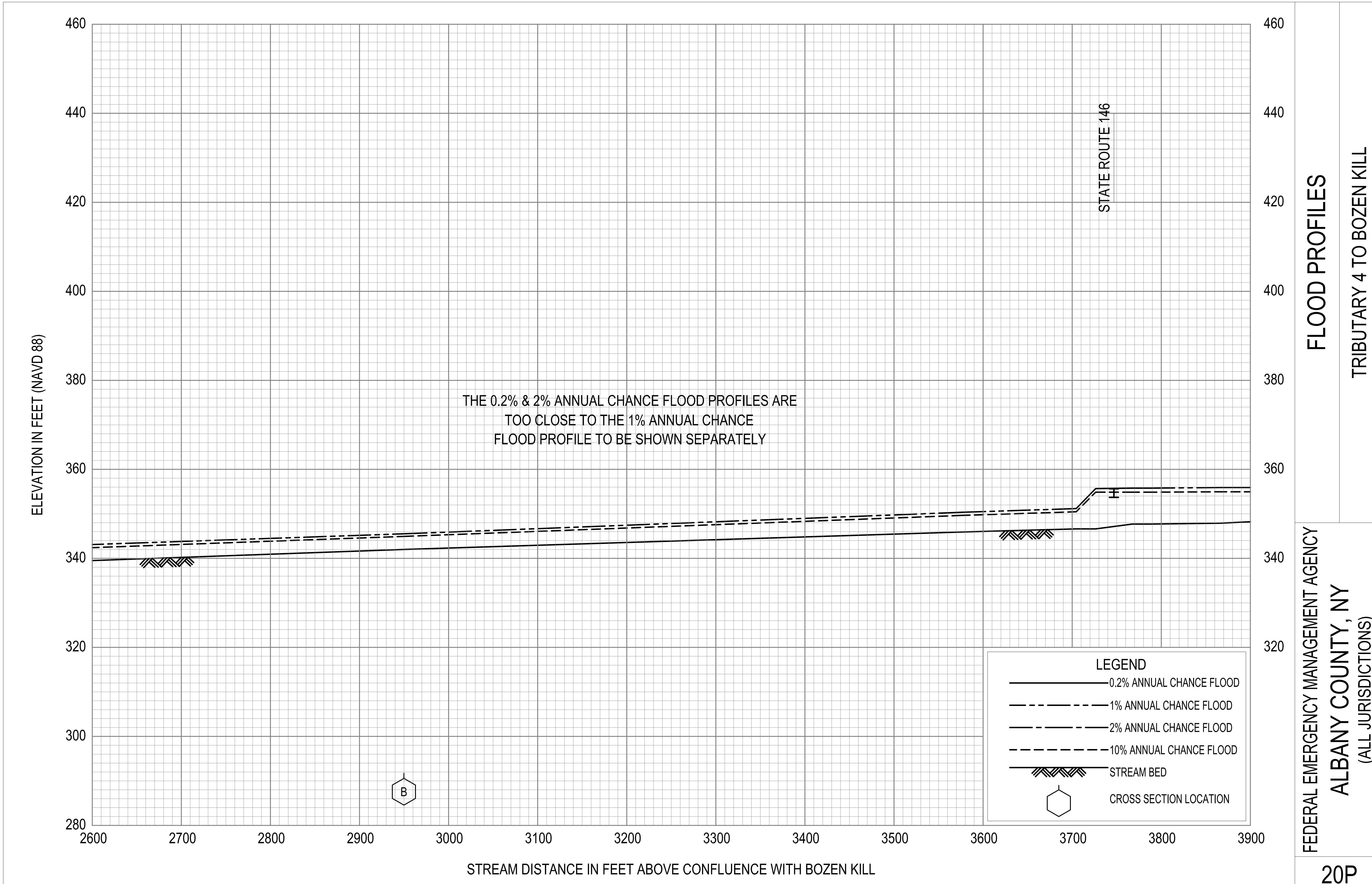
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

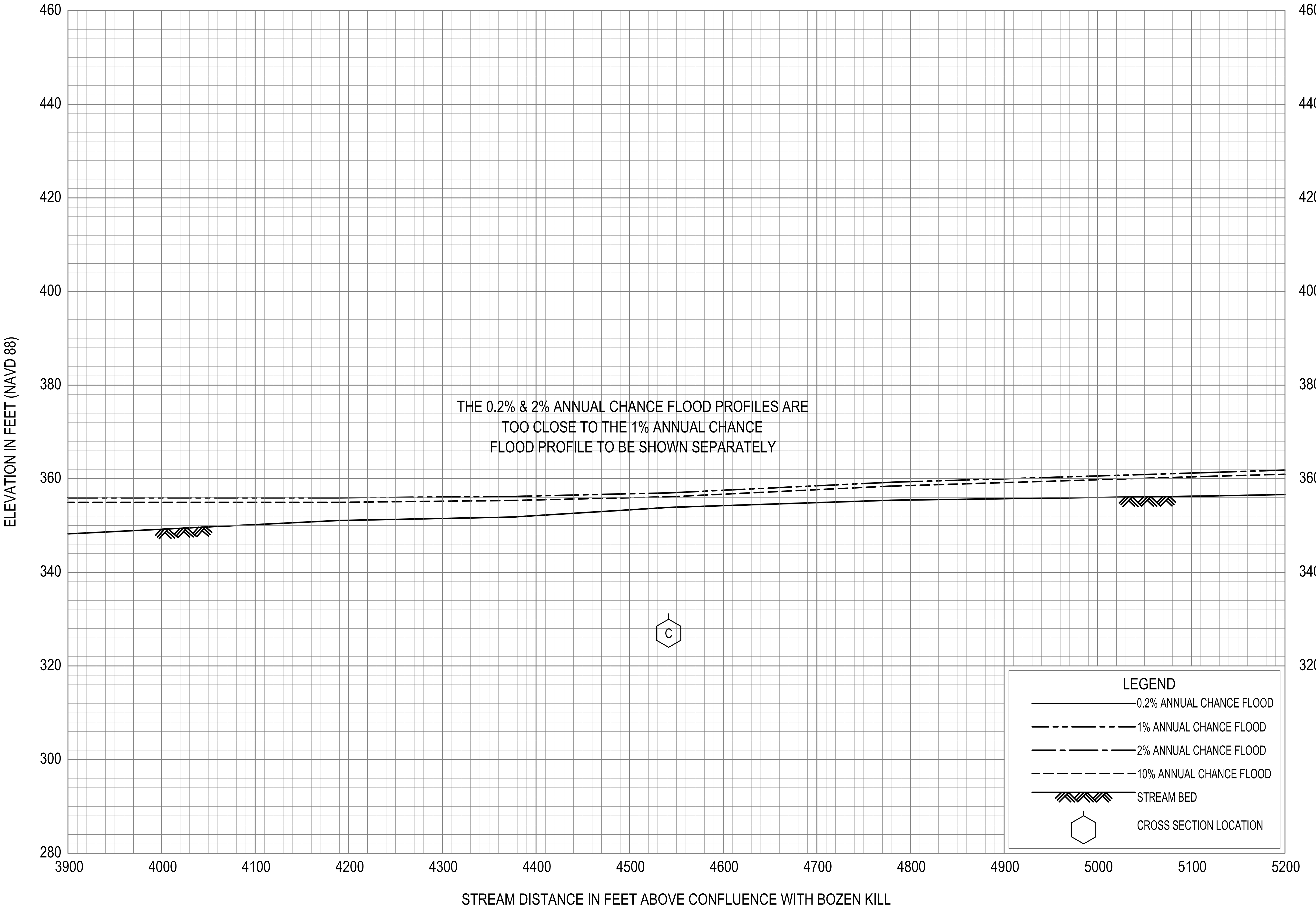
FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



ELEVATION IN FEET (NAVD 88)
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BOZEN KILL
460
440
420
400
380
360
340
320
300
280
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
STATE ROUTE 146
THE 0.2% & 2% ANNUAL CHANCE FLOOD PROFILES ARE
TOO CLOSE TO THE 1% ANNUAL CHANCE
FLOOD PROFILE TO BE SHOWN SEPARATELY
B
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
TRIBUTARY 4 TO BOZEN KILL
FEDERAL EMERGENCY MANAGEMENT AGENCY
ALBANY COUNTY, NY
(ALL JURISDICTIONS)



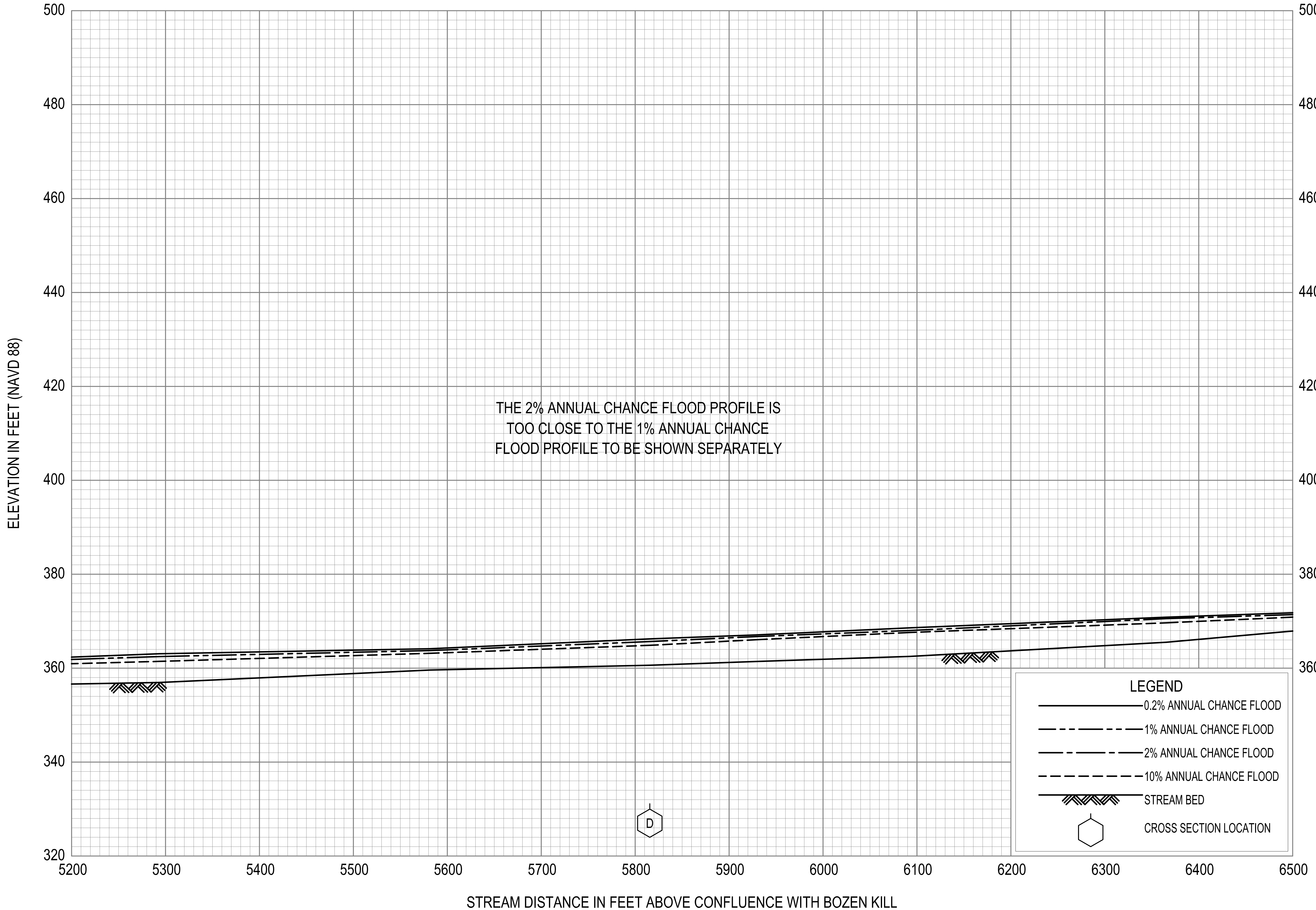
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



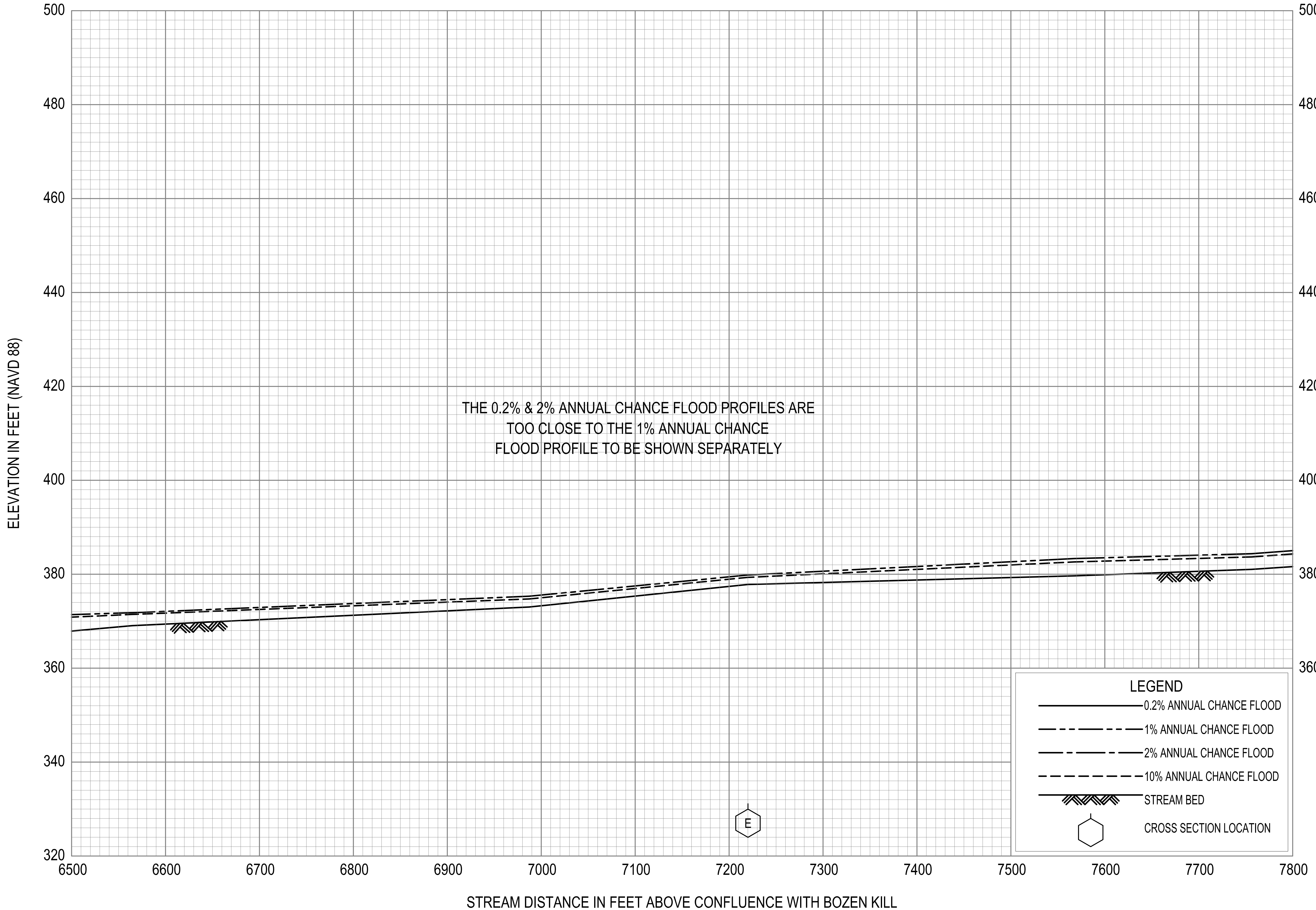
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



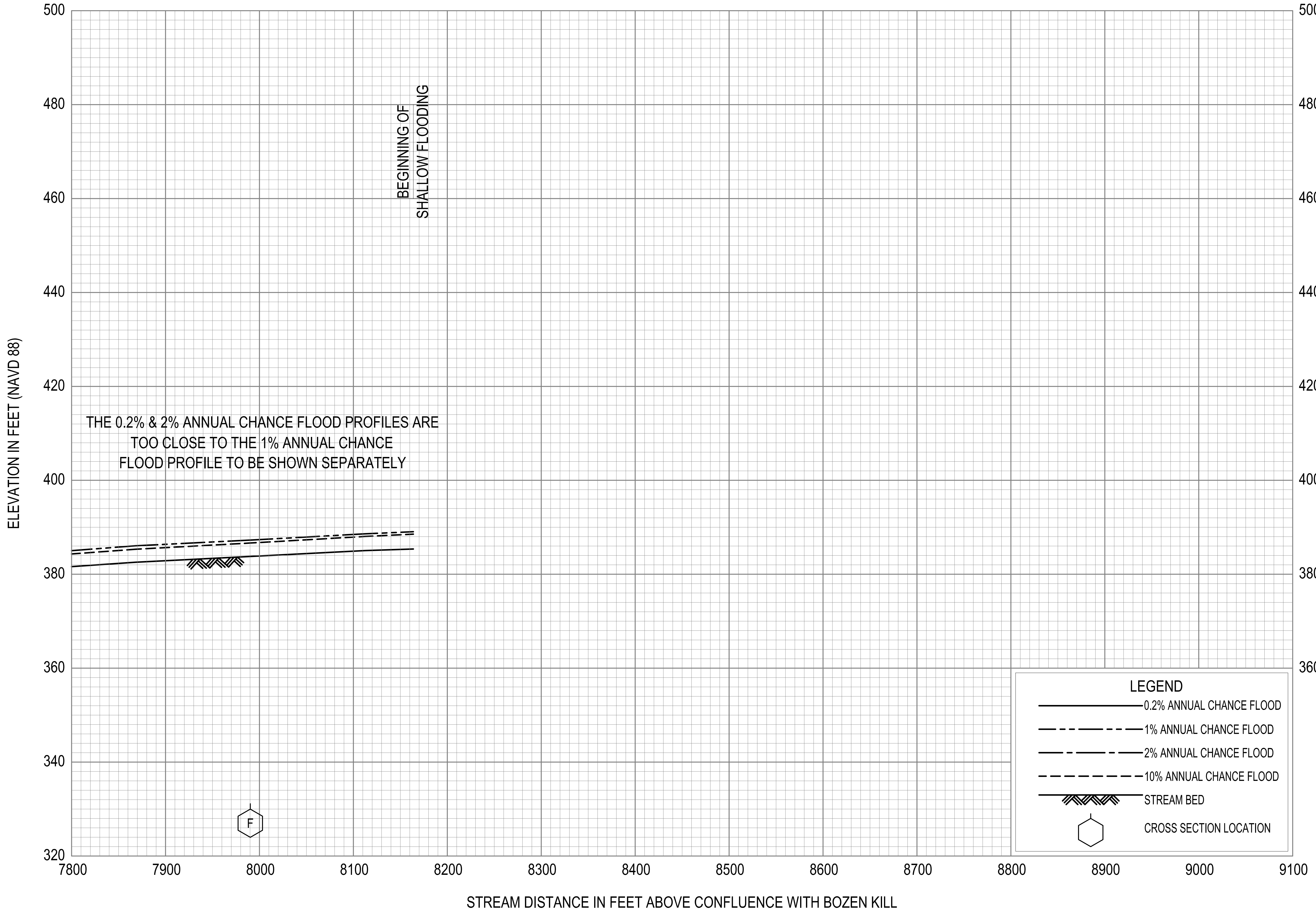
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



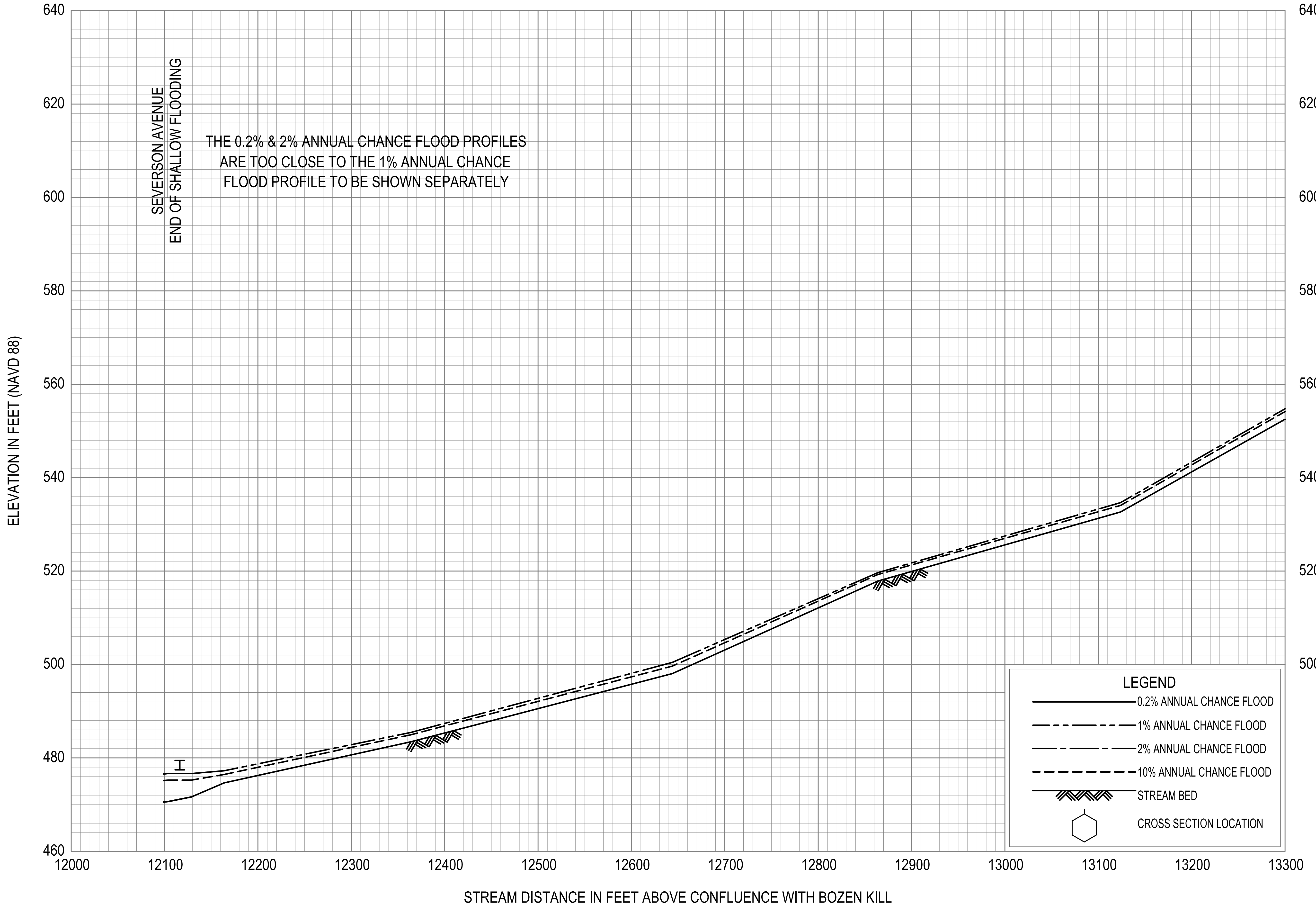
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



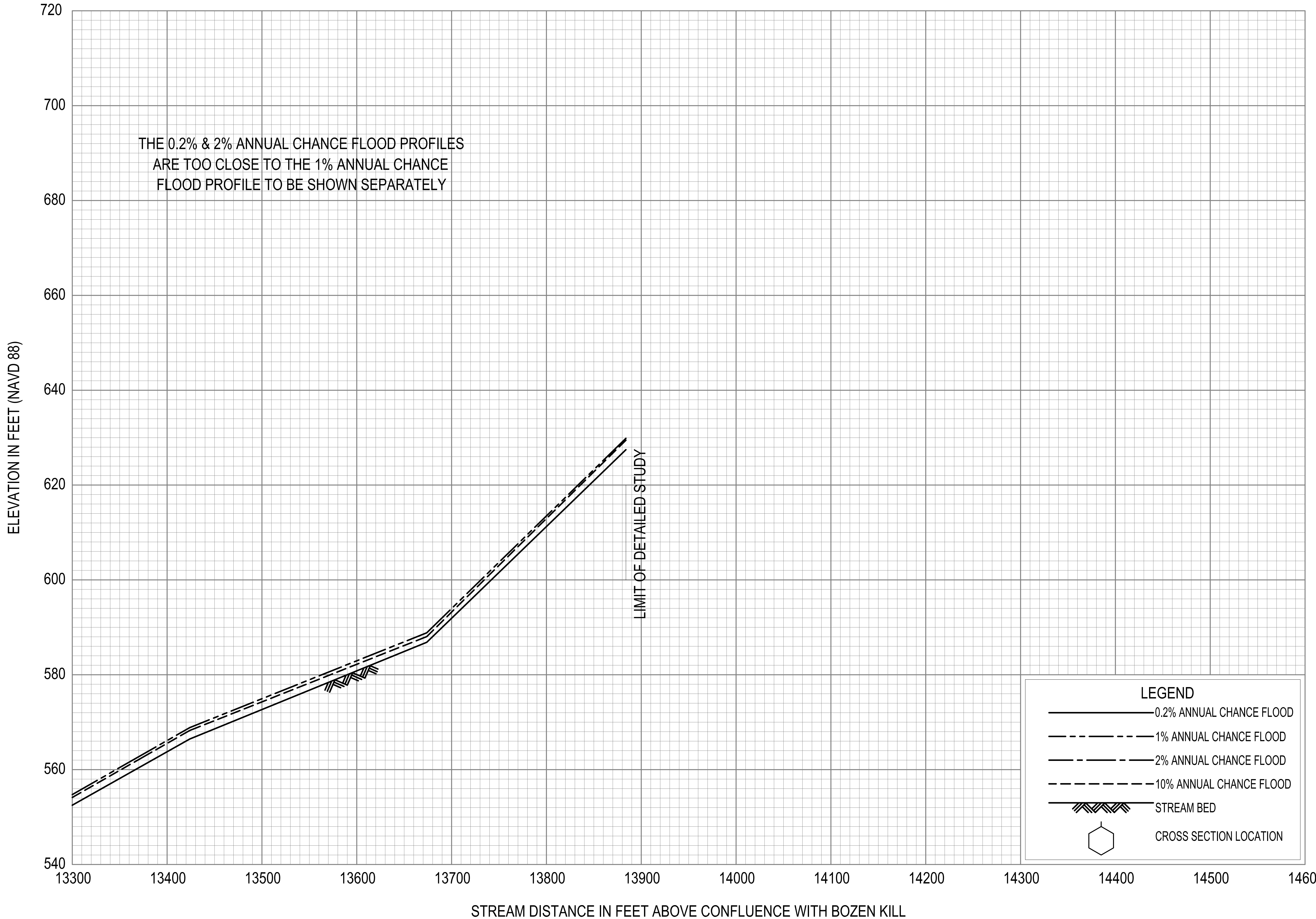
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



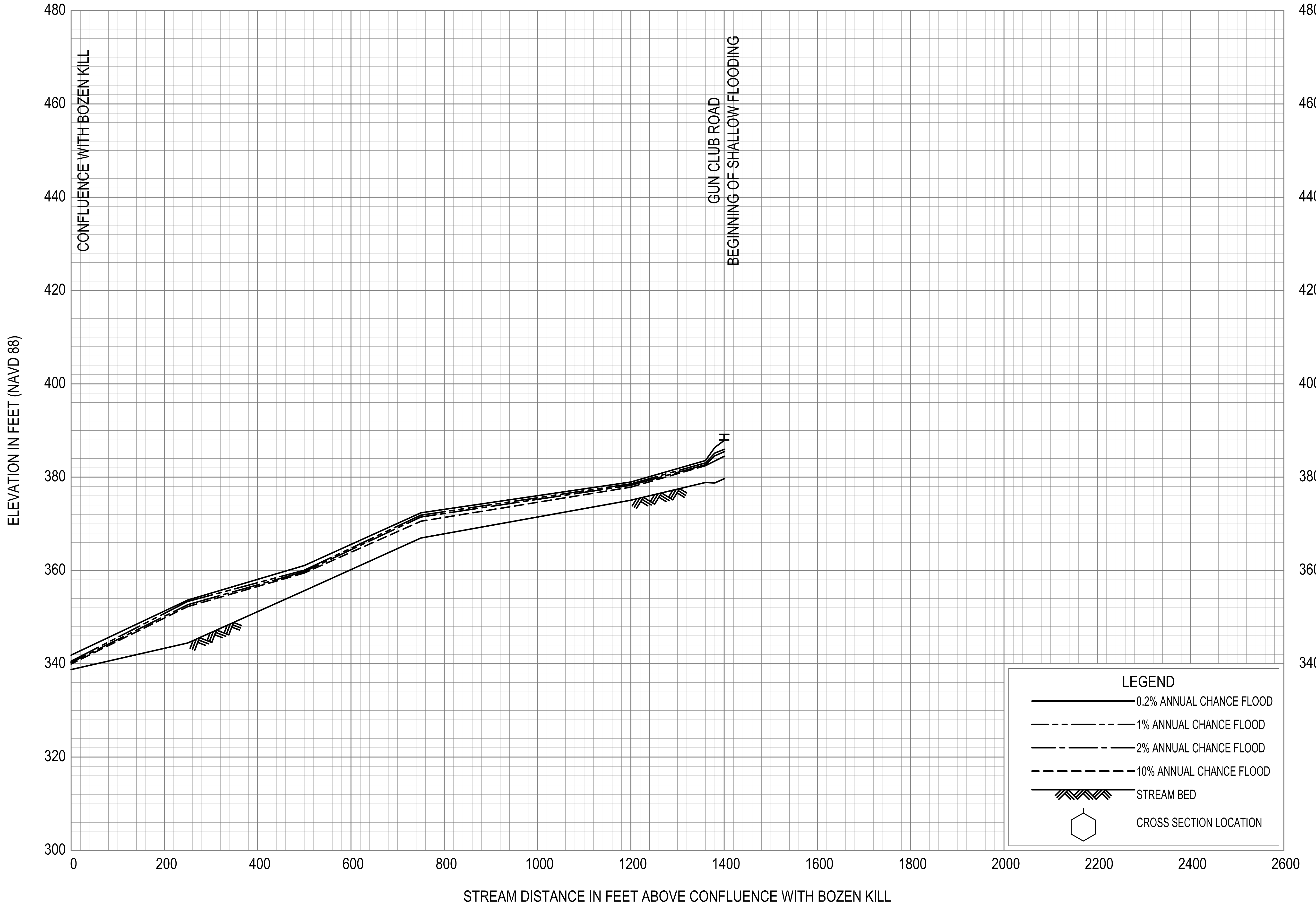
FLOOD PROFILES

TRIBUTARY 4 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



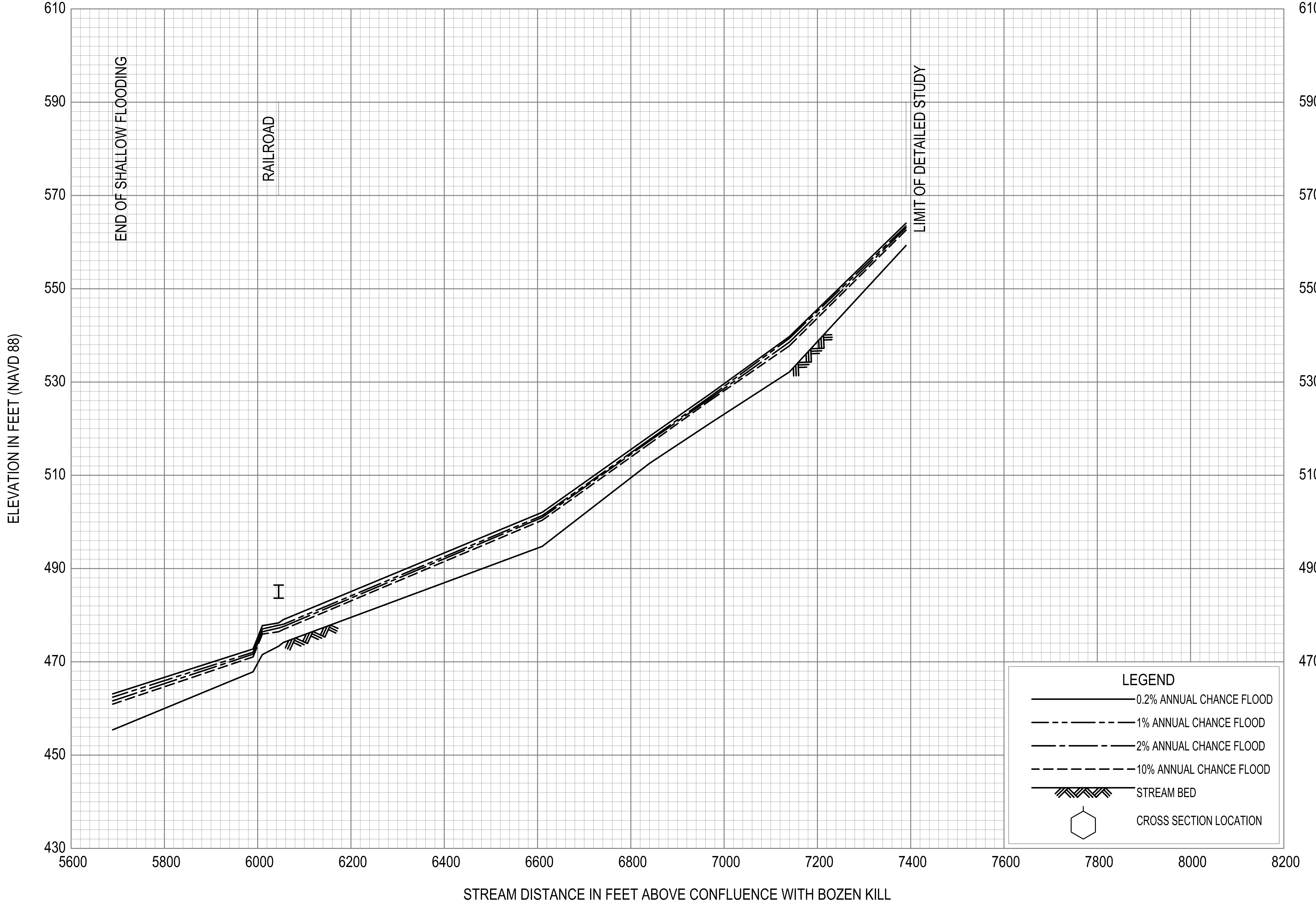
FLOOD PROFILES

TRIBUTARY 5 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



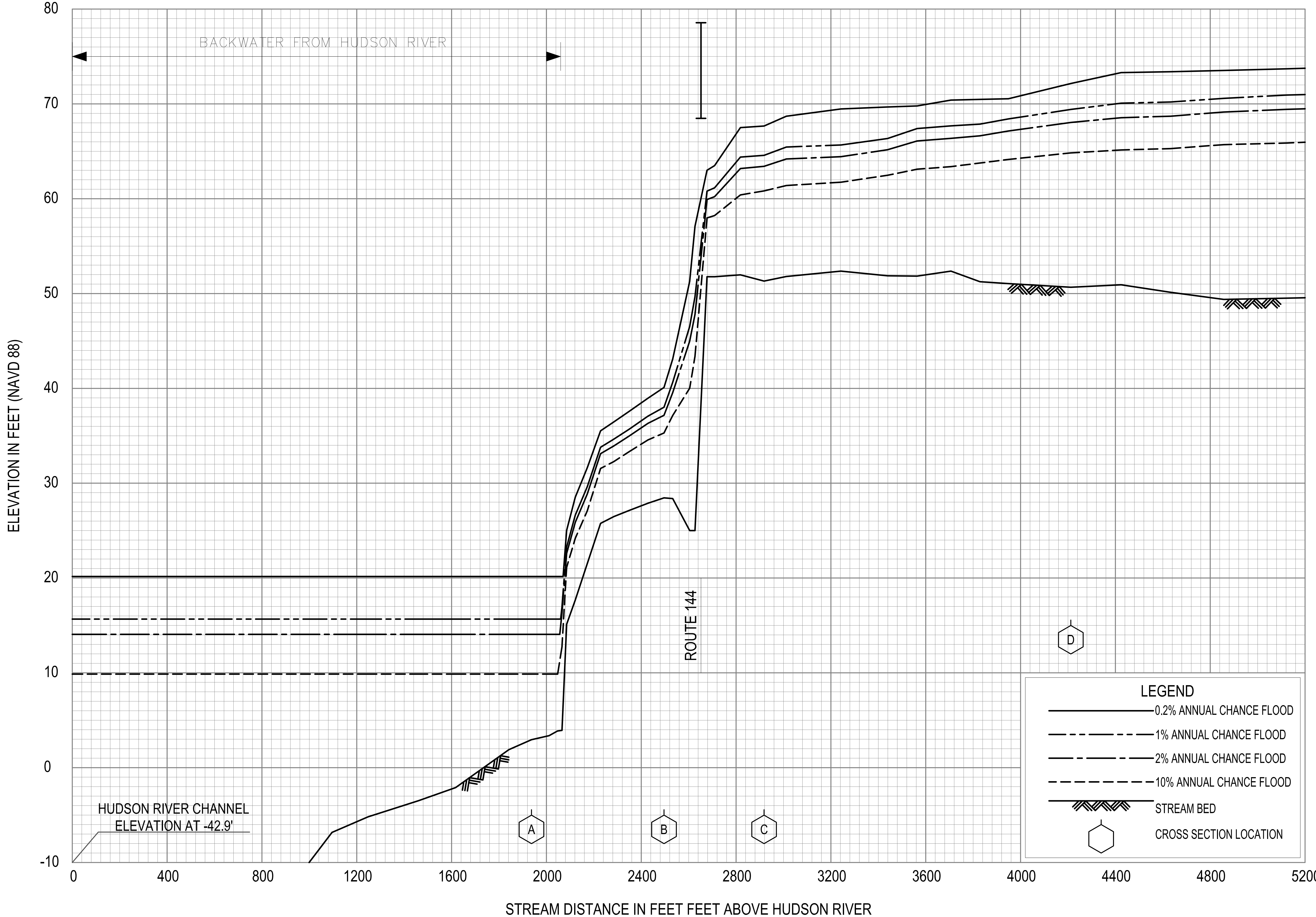
FLOOD PROFILES

TRIBUTARY 5 TO BOZEN KILL

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



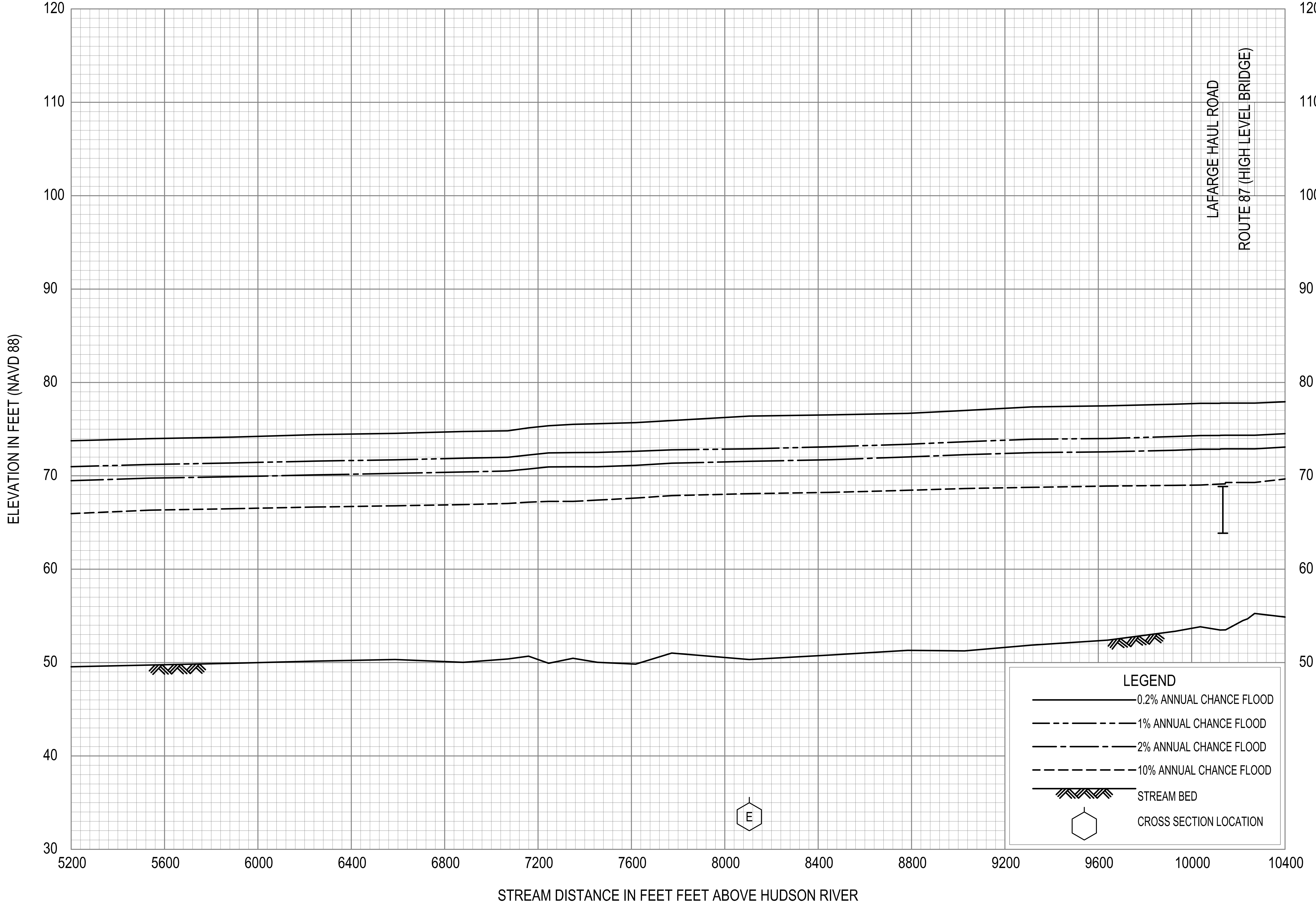
FLOOD PROFILES

COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



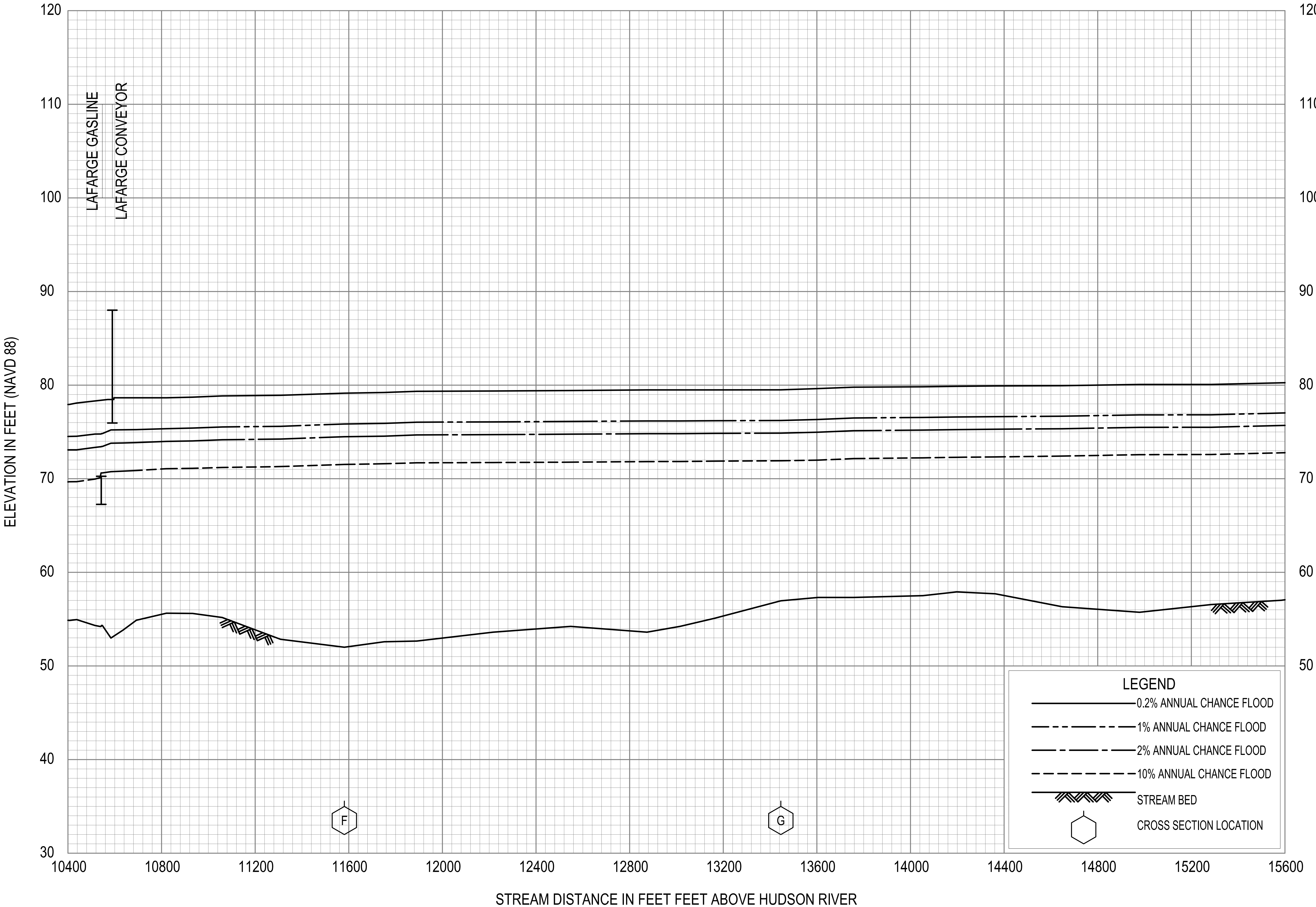
FLOOD PROFILES

COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

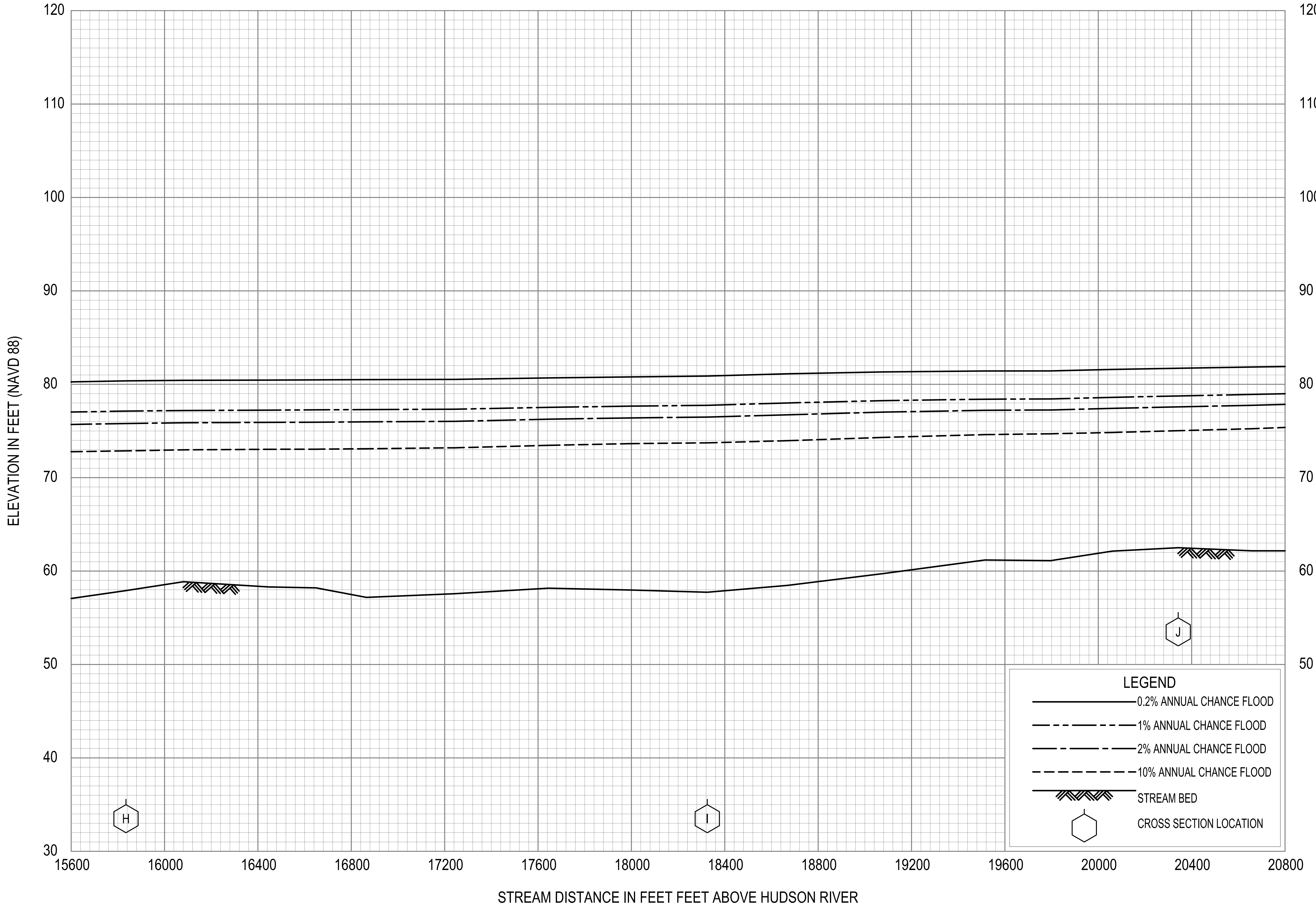
COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

31P



FLOOD PROFILES

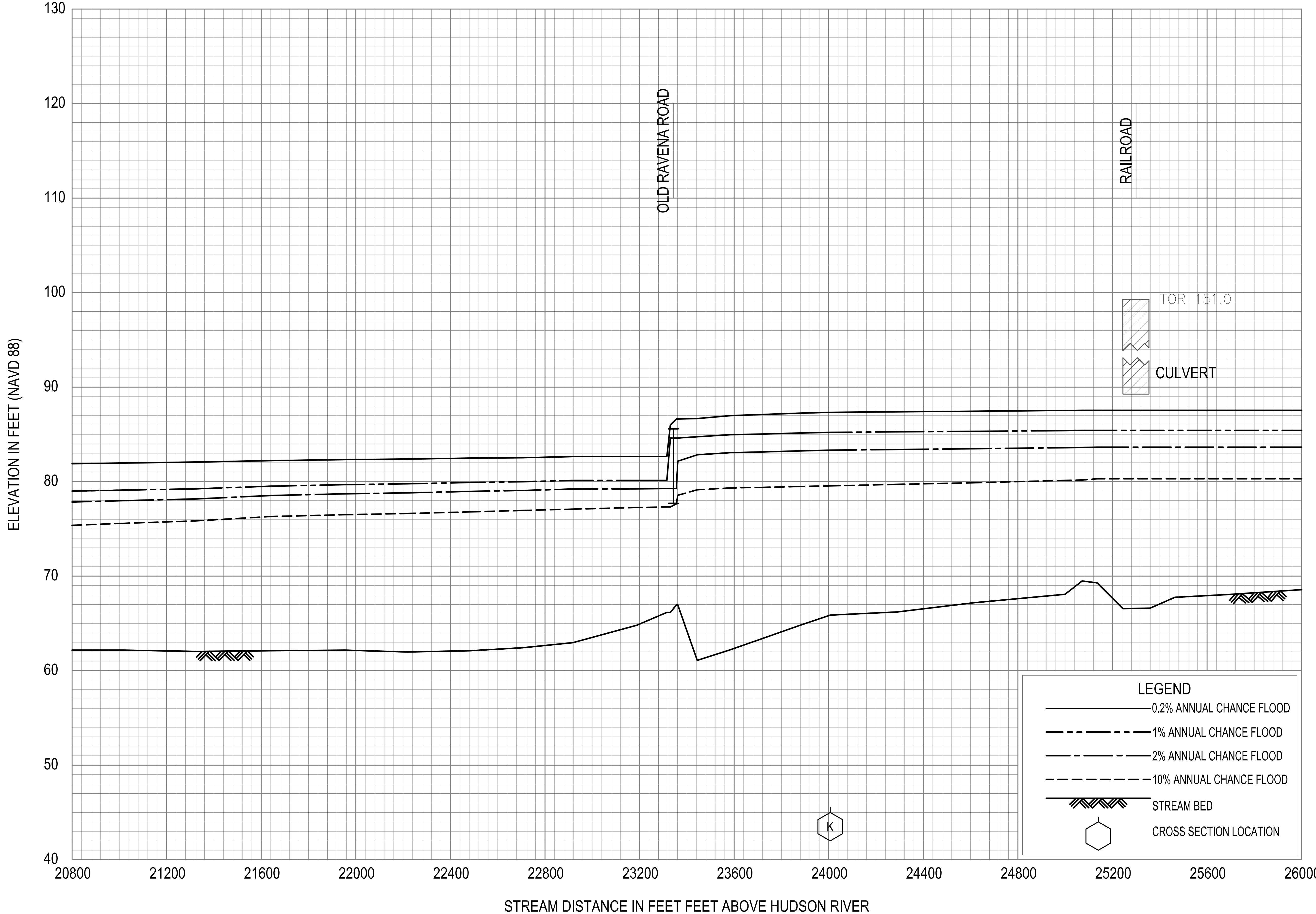
COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

32P



FLOOD PROFILES

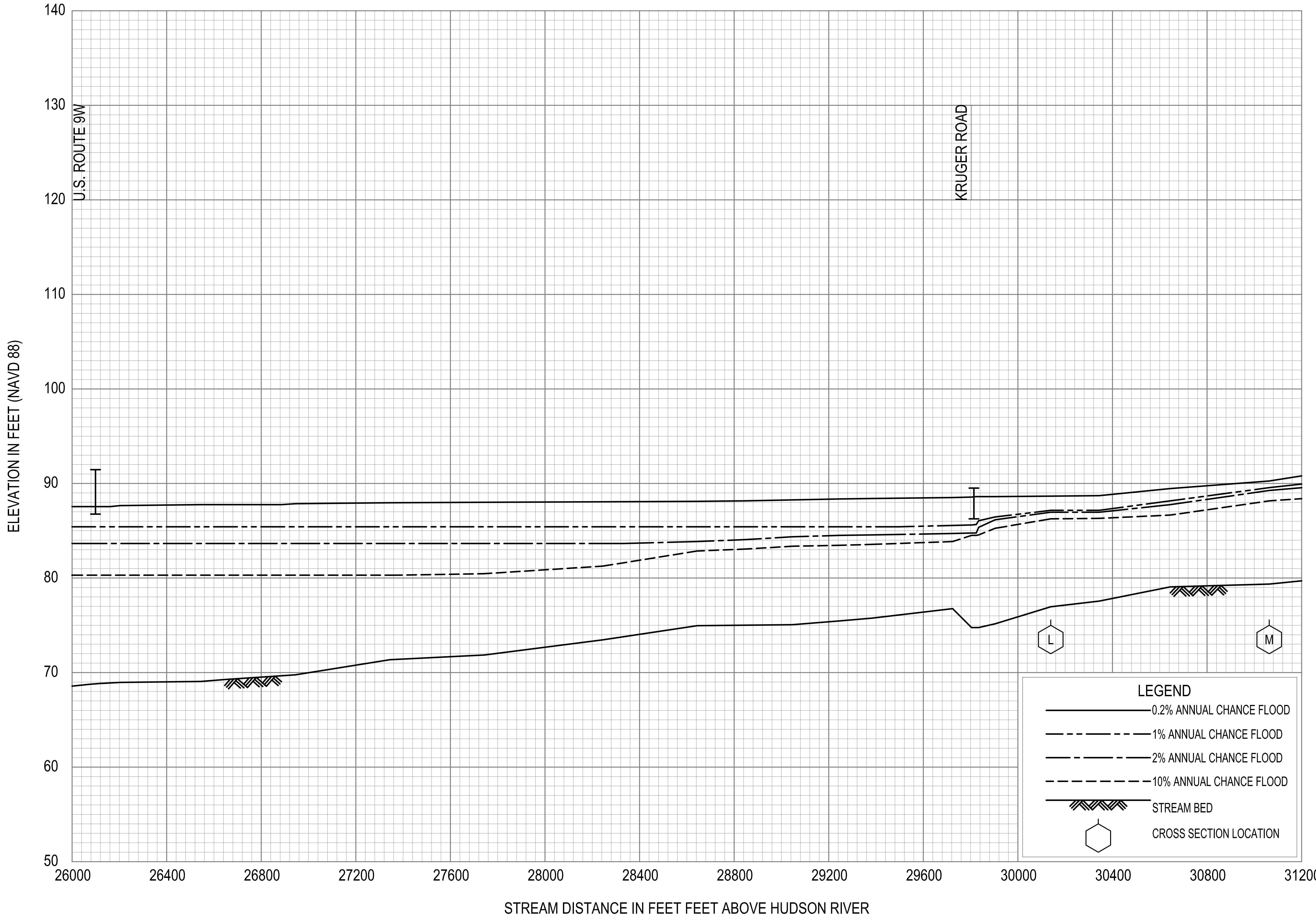
COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

33P



FLOOD PROFILES

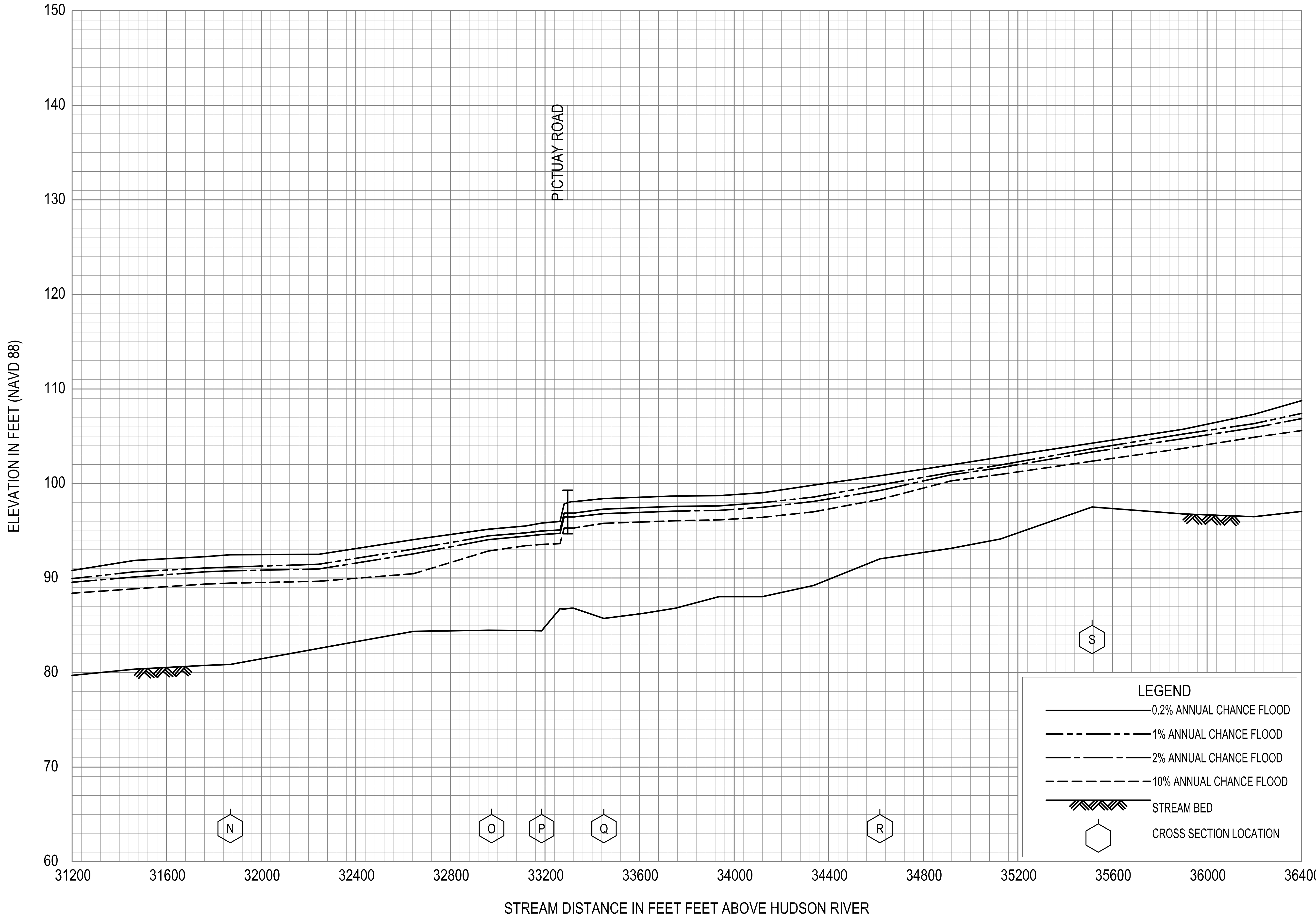
COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)

34P



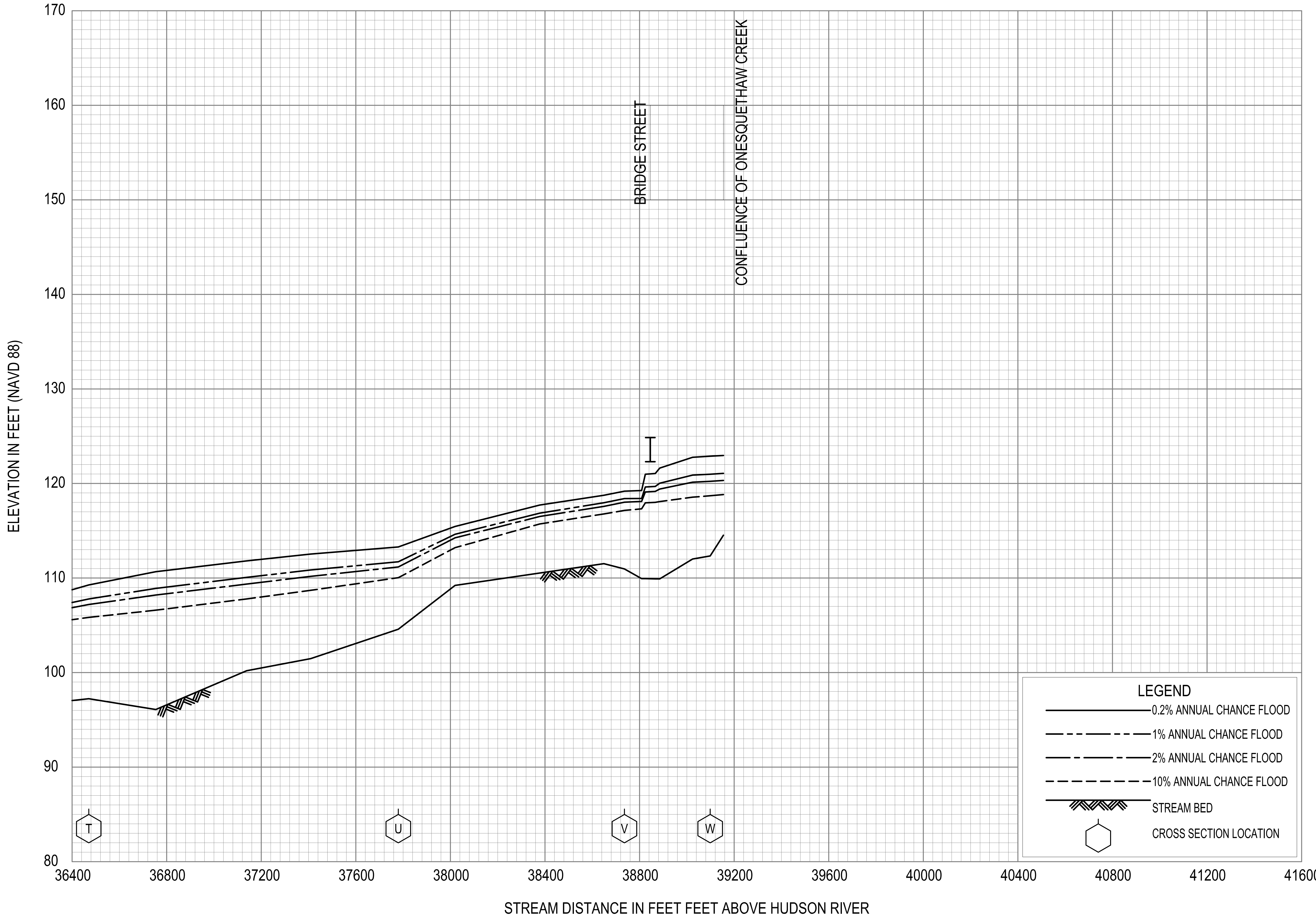
FLOOD PROFILES

COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)



FLOOD PROFILES

COEYMANS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALBANY COUNTY, NY

(ALL JURISDICTIONS)