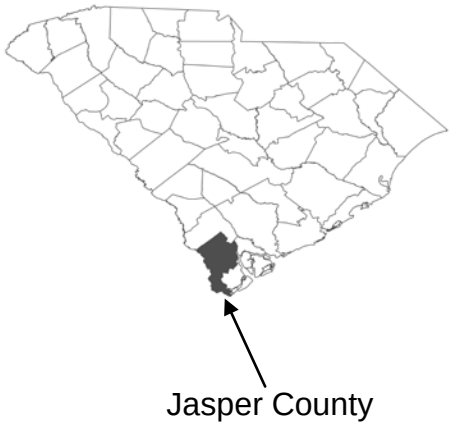
FLOOD INSURANCE STUDY

JASPER COUNTY, SOUTH CAROLINA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
HARDEEVILLE, CITY OF	450113
JASPER COUNTY (UNINCORPORATED AREAS)	450112
RIDGELAND, TOWN OF	450114



EFFECTIVE DATE:

October 18, 2019

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
45053CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

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

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

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

Initial Countywide FIS Effective Date: October 18, 2019

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FLOOD INSURANCE STUDY
JASPER COUNTY, SOUTH CAROLINA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Jasper County, South Carolina, including the City of Hardeeville; the Town of Ridgeland; and the unincorporated areas of Jasper County (referred to collectively herein as Jasper 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 and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

The City of Hardeeville is located in more than one county. The FIS and FIRM for Jasper County will show the portions of the City of Hardeeville within Jasper County. The remaining portions of this community lie within Beaufort County.

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

1.2 Authority and Acknowledgments

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

This FIS was prepared to include all jurisdictions within Jasper County into a countywide format FIS. Information on the authority and acknowledgments for each jurisdiction with a previously printed FIS report included in this countywide FIS is shown below.

Jasper County (Unincorporated Areas):	The hydrologic and hydraulic analyses for the coastal flooding from the

Atlantic Ocean for the September 29, 1986, FIS report were performed by Post, Buckley, Schuh & Jernigan, Inc. for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-C-0947. This study was completed in December 1984. All the riverine flooding information was taken from the Type 19 FIS for the Unincorporated Areas of Chatham County, Georgia.

There are no previous FIS Reports published for the City of Hardeeville, Town of Ridgeland; therefore, the previous authority and acknowledgments for these communities are not included in this FIS.

For this October 18, 2019, countywide FIS, existing detailed floodplains, and Letters of Map Revision, were revised using more up-to-date topographic information. Additional hydrologic and hydraulic analyses were prepared by URS Corporation (URS) for the state of South Carolina Department of Natural Resources (SCDNR) (Cooperating Technical Partner) under South Carolina Map Modernization Initiative Project No. 07-04-0633S. This work was completed in September 2016. Coastal analyses were completed as a part of the South Carolina storm surge project, see section 3.3 of this FIS report. Coastal analyses were completed in 2013.

Base map information shown on the Flood Insurance Rate Map (FIRM) was provided in digital format by Jasper County, South Carolina. Users of this FIRM should be aware that minor adjustments may have been made to specific base map features.

The coordinate system used for the production of this FIRM is State Plane, South Carolina, FIPS Zone 3900, North American Datum of 1983 (NAD 83). Corner coordinates shown on the FIRM are in latitude and longitude referenced to the UTM projection, NAD 83. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) meeting is held typically with representatives of FEMA, the community, and the study

contractor to explain the nature and purpose of a FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with the same representatives to review the results of the study.

For the pre-countywide study, an initial CCO meeting was held for Jasper County Unincorporated Areas on November 8, 1983. The final CCO meeting was held for Jasper County Unincorporated Areas on November 18, 1985.

For this October 18, 2019, countywide FIS an initial CCO meeting was held on June 26, 2007, and attended by representatives of Jasper County, the City of Hardeeville, URS and SCDNR. A final CCO meeting was held on July 13, 2017, and attended by representatives of Jasper County, the City of Hardeeville, the City of Ridgeville, AECOM and SCDNR.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the entire geographic area of Jasper County, South Carolina.

All or portions of the flooding sources listed in Table 1, "Flooding Sources Studied by Detailed Methods" were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction throughout Jasper County. Floodplain boundaries of streams that have been studied previously by detailed methods were re-delineated based on more up-to-date topographic mapping.

Table 1 – Flooding Sources Studied by Detailed Methods

Stream Name	Limits of Study
Baker Creek	From the confluence with Tributary 4 to Karrh Creek to approximately 6,550 feet upstream of confluence with Tributary 4 to Karrh Creek
Brickyard Swamp	From the confluence with Tributary A to New River to immediately upstream of Interstate 95 (I-95)
Jackson Creek	From the confluence with Tributary 4 to Karrh Creek to approximately 2,100 feet upstream of Pine Arbor Road

Table 1 – Flooding Sources Studied by Detailed Methods – continued

Stream Name	Limits of Study
Karrh Creek	From Striker Road to I-95
New River	From the county boundary to the Canal
Savannah River	From State Highway 170 to approximately 4,300 feet downstream of I-95
Subtributary to Tributary 2 to Thomas Swamp	From the confluence with Tributary 2 to Thomas Swamp to approximately 4,900 feet upstream of confluence with Tributary 2 to Thomas Swamp
Subtributary to Unnamed Tributary	From the confluence with Unnamed Tributary to the Canal
Thomas Swamp	From approximately 6,000 feet upstream of the confluence with New River to approximately 16,000 feet upstream of Carolina Drive
Tributary 1 to Thomas Swamp	From the confluence with Thomas Swamp to Argent Boulevard (County Highway 442)
Tributary 2 to Thomas Swamp	From the confluence with Thomas Swamp to the Canal
Tributary 4 to Karrh Creek	From the confluence with Karrh Creek to approximately 4,200 feet above confluence with Jackson Creek and Baker Creek
Tributary A to New River	From the confluence with New River to just downstream of I-95
Tributary A to Okatie River	From Beaufort County border to approximately 0.8 mile upstream of the county border
Tributary A1 to Tributary A to New River	From the confluence with Tributary A to New River to approximately 1.5 miles upstream of the confluence with Tributary A to New River
Tributary A1 to Tributary D to New River	From Carolina Drive to just downstream of John Smith Road
Tributary A2 to Tributary D to New River	From the confluence with Tributary D to New River to just upstream of Serenity Point Drive

Table 1 – Flooding Sources Studied by Detailed Methods – continued

Stream Name	Limits of Study
Tributary C to New River	From the confluence with New River to just downstream of I-95
Tributary D to New River	From Carolina Drive to approximately 1.2 miles upstream of the confluence of Tributary A2 to Tributary D to New River
Unnamed Tributary	From the county boundary to the Canal
Unnamed Tributary to Brickyard Swamp	From the confluence with Brickyard Swamp to approximately 0.8 mile upstream of the confluence with Brickyard Swamp
Unnamed Tributary to Canal	From the confluence with Unnamed Tributary to just downstream of Jasper Station Road (County Highway 162)
Unnamed Tributary to Okatie River	From the confluence with Okatie River to approximately 500 feet downstream of Argent Boulevard (County Highway 442)

This October 18, 2019, countywide FIS includes new coastal analyses and mapping for approximately 3.5 miles of shoreline along Atlantic Ocean and 12 estuarine miles along tidally influenced Broad River and Jasper County border. A Limited Detailed Study for New River was completed as part of an appeal resolution.

Numerous flooding sources were studied by approximate methods. Approximate analyses were used to study those areas having low development potential or minimal flood hazards. The scope and methods were proposed to, and agreed upon FEMA and SCDNR.

This countywide analysis incorporates the determination of Letters of Map Revision (LOMR) as shown in Table 2, “Letter of Map Revision”.

Table 2 – Letter of Map Revision

Community	Case Number	Flooding Source	Effective Date
City of Hardeeville Jasper County (Unincorporated Areas)	06-04-C661P	New River, Tributary A to New River, Tributary A1 to Tributary A to New River, Tributary C to New River, Canal	07/26/2007

Table 2 – Letter of Map Revision – continued

Community	Case Number	Flooding Source	Effective Date
City of Hardeeville	08-04-3462P	Unnamed Tributary to Canal	09/15/2008
City of Hardeeville, Jasper County (Unincorporated Areas)	07-04-6247P	Karrh Creek, Tributary 4 to Karrh Creek, Jackson Creek, Baker Creek, North Anderson Creek	06/11/2009
City of Hardeeville, Jasper County (Unincorporated Areas)	08-04-4422P	Tributary D to New River, Tributary A1 to Tributary D to New River, Tributary A2 to Tributary D to New River, Tributary A to Okatie River	03/30/2009
Jasper County (Unincorporated Areas)	08-04-5295P	Brickyard Swamp, Unnamed Tributary to Brickyard Swamp	07/09/2009
City of Hardeeville, Jasper County (Unincorporated Areas)	09-04-5183P	Thomas Swamp, Tributary 1 to Thomas Swamp, Tributary 2 to Thomas Swamp, Subtributary to Tributary 2 to Thomas Swamp, Unnamed Tributary, Subtributary to Unnamed Tributary.	09/09/2010
City of Hardeeville, Jasper County (Unincorporated Areas)	11-04-8141P	White Oak Nook Swamp	07/26/2012
City of Hardeeville, Jasper County (Unincorporated Areas)	14-04-1941P	Unnamed Tributary to Okatie River	09/18/2014
City of Hardeeville	17-04-7055P	Unnamed Tributary to Okatie River	05/24/2018

2.2 Community Description

Jasper County, approximately 669 square miles in area, is located in the southeastern portion of South Carolina in the Atlantic coastal plain. The county is bordered by Beaufort County, South Carolina on the northeast across the New River; Chatham County, Georgia on the southwest; Effingham County, Georgia on the west across the Savannah River; Hampton County, South Carolina on the north; and the Atlantic Ocean on the south. The Atlantic Ocean coastline accounts for about 4 miles of the

county's border. In 2013, the population of Jasper County was estimated to be 26,629 (from US Census Bureau, 2013 Population Estimates).

Jasper County lies in the southernmost region of South Carolina where the climate is sub-tropical with long, hot summers followed by short, mild winters. The mean temperatures in Jasper County range from a low of 37 degrees Fahrenheit (F) in January to a high of 91 degrees F in July. Precipitation is abundant, averaging about 51 inches per year. The annual rainfall distribution shows a maximum of about 7 inches in July and August and a minimum of about 2.5 inches in November. (South Carolina State Climatology Office, 2016). The period of April through October, which includes the growing season for most crops in this area, receives an average of about 34 inches of rain.

The county is situated on a low coastal plain with part of the area consisting of tidal marshes and swamps. Most of the area consists of nearly level lowlands and low ridges that have slopes generally less than 2 percent. Elevations range from sea level at the coast to approximately 100 feet above mean sea level (msl) in the northern portions of the county.

Although several rivers and streams are within or adjacent to the county's area, about 90 percent of the soils have high water tables. The Savannah River, the western boundary of Jasper County, is the only stream that does not originate in the coastal plain. Its watershed in Jasper County is very narrow, extending only 2 to 5 miles east of the river (U.S. Department of Agriculture, 1980). The New River, forming the eastern boundary of the county, has a fairly large watershed, extending beyond the county boundaries, but because of its low gradient, this watershed is largely influenced by tidal conditions. The Wright River, which drains the lower central part of Jasper County, has its drainage area within the county limits and is considered as a tidal estuary.

Much of the land situated in the flood plain is undeveloped marshland and agricultural land with some residential and commercial development. Most residential, commercial, and industrial development in the county is located relatively far away from the coastline. The major types of industries in Jasper County are Educational, Healthcare and Social Assistance, Retail Trade, and Construction (U.S. Census Bureau, 2016).

2.3 Principal Flood Problems

Jasper County is subject to flooding caused by hurricanes and tropical storms. The primary factors contributing to flooding in Jasper County are its openness to Atlantic Ocean surges and shallow offshore bathymetry. The principle streams within the county have wide mouths and are bordered by extensive areas of low marsh. In addition, the terrain at the

coast is generally too low to provide an effective barrier. The offshore ocean depths are shallow for great distances generating a high Atlantic Ocean surge.

Historical hurricane data for Jasper County have not been recorded in the past probably because no significant development has been established along the county's floodprone area. However, detailed data have been compiled for Savannah, Georgia, which is located just southwest of the Jasper County, SC – Chatham County, GA boundary limits.

A storm history for Savannah, Georgia and its vicinity during the past 100-years is summarized below (Tannehill, 1956; Dunn and Miller, 1964) as it is quite probable that hurricanes that have affected the Savannah, Georgia area may also have affected the Jasper County area. Damage figures are determined in dollar values at the time of the storm. No attempt has been made to adjust these figures to current dollar values.

1911 (August 23-30)

The center of this hurricane entered the coast between Savannah and Charleston on August 28. A maximum wind of 88 mph from the northwest was recorded at Savannah. Damage in the Savannah area was remarkably low. However, property on Tybee Island was heavily damaged. Excessive rains accompanied the storm and caused considerable damage to roads, crops, and other property throughout southern Georgia.

1940 (August 5-15)

This was the first hurricane to affect Georgia since August 1911. Its center entered the South Carolina coast to the north of Savannah on August 11. The wind at Savannah reached 73 mph, and damage in the Savannah area was estimated at $850,000. The highest tide observed at Beaufort, South Carolina was estimated to be 12.4 feet msl. High tides of 7.4 and 6.4 feet msl were recorded at Fort Pulaski, Georgia and at Fort Jackson, Savannah Harbor, Georgia respectively.

1944 (October 12-23)

This hurricane entered the gulf coast of Florida and moved northeastward across the peninsula. Its center crossed the east coast near Jacksonville, Florida in a north-northeast direction and moved inland again near Savannah. The hurricane was downgraded to a tropical storm by the time it reached Georgia. The highest tide of 5.9 feet msl was observed at Fort Pulaski, near the mouth of the Savannah River. The estimated damage in Georgia was $500,000

1947 (October 9-16)

The center of this hurricane entered the Georgia coast just south of Savannah on October 15. At Savannah, the maximum wind speed was 77 mph, and the lowest barometric pressure was 28.77 inches. Heavy losses were sustained at Savannah and Savannah Beach, where more than 1,500 buildings were substantially damaged. Total damage in the coastal area was estimated at more than $2,000,000. The highest tide, 7.9 feet msl, was recorded at Fort Jackson.

1952 Hurricane Able (August 18-September 2)

Hurricane Able moved inland on August 30. Its center passed near Beaufort with maximum wind of approximately 100 mph. Damage from this storm was estimated at about $2.8 million.

1959 Hurricane Gracie (September 20-October 2)

Hurricane Gracie moved inland on September 29. Its center passed over the South Carolina coast near Beaufort. Wind gusts of hurricane force were felt in the Savannah area, and damage was inflicted over the upper Georgia coastal area. The total damage inflicted by the storm was estimated at $14 million with damage in Georgia estimated at more than $500,000. High-water marks, which were reported near Edisto Beach, South Carolina, ranged from 7.3 to 11.9 feet msl.

1979 Hurricane David (August 25-September 7)

Hurricane David struck just north of Palm Beach, Florida on September 3 and made a second landfall about 24 hours later near Savannah Beach, Georgia. In the United States, David was responsible for five deaths and about $300 million in damages.

1989 Hurricane Hugo (September 12-25)

Hurricane Hugo struck the Charleston, South Carolina area at about midnight on September 22, near high tide. High water elevations were 12-13 feet msl at the open coast from the City of Folly Beach northward to the City of Myrtle Beach, with elevations up to 19 feet msl in bay areas in the vicinity of the maximum winds.

1999 Hurricane Floyd (September 14-30)

Jasper County received a major disaster declaration from The President following Hurricane Floyd.

2016 Hurricane Matthew (October 8-12)

Jasper County received a major disaster declaration from The President following Hurricane Matthew.

2.4 Flood Protection Measures

Applicable Federal or state funded flood protection measures have not been employed in Jasper County. However, scattered flood and erosion protection measures have been constructed on private properties. These protection measures offer minimal protection.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood 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 methods affecting Jasper County.

Pre-countywide Analyses

All hydrologic analyses for the Savannah River were taken from the Chatham County, Georgia and Incorporated Areas FIS (FEMA, 2014).

This October 18, 2019, Countywide Analysis

No new detailed hydrologic analyses were carried out for this countywide study. All detailed study streams, with the exception of the Savannah River, were incorporated from LOMRs as noted in Table 2, "Letters of Map Revision."

Discharges for the 10-, 2-, 1-, and 0.2-percent annual chance recurrence intervals for all streams studied by approximate methods were determined using U.S. Geological Survey (USGS) regression analyses. The calculations used the most recent edition of equations for both rural (Feaster and Tasker, 2002) and urban (Feaster and Guimaraes, 2004) streams.

Gage adjustments were also performed on Savannah River with available gage data per Bulletin 17B (USGS, 1982) guidelines.

Peak discharge-drainage area relationships for the selected recurrence intervals are shown in Table 3, "Summary of Discharges." It should be noted that all Summary of Discharges were incorporated directly from the LOMRs noted in Table 2, "Letters of Map Revision."

Table 3 – Summary of Discharges

		Peak Discharges (cfs)			
Flooding Source and Location	Drainage Area (sq. mi)	10 - percent annual chance	2 - percent annual chance	1 - percent annual chance	0.2 - percent annual chance
ANDERSON CREEK					
Approximately 2,480 feet upstream of the confluence with North Anderson	0.08	*	*	95	*
Approximately 1,630 feet upstream of the confluence with North Anderson	0.29	*	*	347	*
BAKER CREEK					
Just upstream of the confluence of Tributary A1 to Tributary A to New River	10.8	478	484	487	492
At the confluence with Tributary 4 to Karrh Creek	0.01	*	*	2	*

* Data Not Available

Table 3 – Summary of Discharges – continued

Flooding Source and Location	Drainage Area (sq. mi)	Peak Discharges (cfs) 10 - percent annual chance	2 - percent annual chance	1 - percent annual chance	0.2 - percent annual chance
BRICKYARD SWAMP					
Just upstream of Interstate 95	5.57	*	*	270	*
BRICKYARD SWAMP (continued)					
Approximately 1,100 feet upstream of the confluence with Tributary A to New River	7.93	*	*	609	*
Just upstream of the confluence	1.7	355	442	491	678
JACKSON CREEK					
At the confluence with Tributary 4 to Karrh Creek	0.28	*	*	64	*
KARRH CREEK					
Approximately 3,440 feet downstream of Striker Road	3.87	*	*	2,689	*
Approximately 2,180 feet upstream of Striker Road	3.56	*	*	2,432	*
Approximately 5,770 feet upstream of Striker Road	3.02	*	*	1,375	*
Approximately 7,390 feet upstream of Striker Road	2.97	*	*	1,306	*
Approximately 12,360 feet upstream of Striker Road	2.03	*	*	690	*
Approximately 19,580 feet upstream of Striker Road	1.66	*	*	424	*
Just upstream of Highway 95	0.67	*	*	123	*
MORGAN CREEK					
Approximately 30 feet upstream of Striker Road	0.67	*	*	532	*
Approximately 2,690 feet upstream of Striker Road	0.51	*	*	322	*
Approximately 5,920 feet upstream of Striker Road	0.20	*	*	144	*
Approximately 8,260 feet upstream of Striker Road	0.03	*	*	45	*

* Data Not Available

Table 3 – Summary of Discharges – continued

Flooding Source and Location	Drainage Area (sq. mi)	Peak Discharges (cfs) 10 - percent annual chance	2 - percent annual chance	1 - percent annual chance	0.2 - percent annual chance
NEW RIVER					
Just upstream of county boundary	130.7	3,276	4,380	5,081	8,390
Just upstream of the confluence of Tributary C to New River	121.3	2,063	2,634	3,061	5,724
NORTH ANDERSON CREEK					
Approximately 820 feet upstream of Striker Road	0.85	*	*	890	*
Approximately 2,580 feet upstream of Striker Road	0.59	*	*	619	*
Approximately 3,150 feet upstream of Striker Road	0.29	*	*	327	*
Approximately 5,100 feet upstream of Striker Road	0.14	*	*	150	*
Approximately 6,720 feet upstream of Striker Road	0.01	*	*	27	*
SAVANNAH RIVER	*	*	*	*	*
SUBTRIBUTARY TO TRIBUTARY 2 TO THOMAS SWAMP					
At the confluence with Tributary 2 to Thomas Swamp	0.62	*	*	184	*
SUBTRIBUTARY TO UNNAMED TRIBUTARY					
At the confluence with Unnamed Tributary	0.31	*	*	296	*
THOMAS SWAMP					
At the confluence of Tributary 1 to Thomas Swamp	3.73	*	*	1,084	*
At Seaboard Coastline Rail Road	1.00	*	*	382	*
TRIBUTARY TO BRICKYARD SWAMP					
Approximately 3,420 feet upstream of County Road 41	0.01	*	*	19	*

* Data Not Available

Table 3 – Summary of Discharges – continued

Flooding Source and Location	Drainage Area (sq. mi)	Peak Discharges (cfs) 10 - percent annual chance	2 - percent annual chance	1 - percent annual chance	0.2 - percent annual chance
TRIBUTARY 1 TO THOMAS SWAMP					
At the confluence with Thomas Swamp	0.83	*	*	301	*
TRIBUTARY 2 TO THOMAS SWAMP					
At the confluence with Thomas Swamp	1.20	*	*	371	*
TRIBUTARY 1 TO MORGAN CREEK					
Approximately 2,450 feet upstream of Striker Road	0.11	*	*	95	*
TRIBUTARY 1 TO KARRH CREEK					
Approximately 2,920 feet upstream of the confluence with Karrh Creek	0.12	*	*	114	*
TRIBUTARY 2 TO KARRH CREEK					
Approximately 1,510 feet upstream of the confluence with Karrh Creek	0.25	*	*	200	*
TRIBUTARY 3 TO KARRH CREEK					
Approximately 1,680 feet upstream of the confluence with Karrh Creek	0.20	*	*	120	*
TRIBUTARY 4 TO KARRH CREEK					
Approximately 5,400 feet upstream of the confluence with Karrh Creek	0.20	*	*	243	*

* Data Not Available

Table 3 – Summary of Discharges – continued

Flooding Source and Location	Drainage Area (sq. mi)	Peak Discharges (cfs) 10 - percent annual chance	2 - percent annual chance	1 - percent annual chance	0.2 - percent annual chance
TRIBUTARY 4 TO KARRH CREEK (continued)					
Approximately 7,810 feet upstream of the confluence with Karrh Creek	0.09	*	*	77	*
TRIBUTARY 5 TO KARRH CREEK					
Approximately 7,280 feet upstream of the confluence with Karrh Creek	0.30	*	*	106	*
TRIBUTARY A TO NEW RIVER					
Just upstream of U.S. Highway 278	12.4	776	872	925	1,113
Just upstream of the confluence of Tributary A1 to Tributary A to New River	10.8	478	484	487	492
TRIBUTARY A TO OKATIE RIVER					
Just upstream of U.S Highway 170	0.3	94	206	255	366
TRIBUTARY A1 TO TRIBUTARY A TO NEW RIVER					
Just upstream of the confluence	1.7	355	442	491	678
TRIBUTARY A1 TO TRIBUTARY D TO NEW RIVER					
Just upstream of Seaboard Coast Line Railroad	0.4	42	108	149	242
TRIBUTARY A2 TO TRIBUTARY D TO NEW RIVER					
Approximately 2,150 feet upstream of the confluence with Tributary D to New River	0.2	93	147	175	246

* Data Not Available

Table 3 – Summary of Discharges – continued

Flooding Source and Location	Drainage Area (sq. mi)	Peak Discharges (cfs) 10 - percent annual chance	2 - percent annual chance	1 - percent annual chance	0.2 - percent annual chance
TRIBUTARY C TO NEW RIVER					
Just upstream of the confluence	9.9	1,065	1,569	1,922	3,922
TRIBUTARY D TO NEW RIVER					
Just upstream of Sargent William Jasper Boulevard	0.3	76	123	148	212
UNNAMED TRIBUTARY					
Just downstream of South Carolina Highway 170	1.79	*	*	572	*
UNNAMED TRIBUTARY TO BRICKYARD SWAMP					
Approximately 4,200 feet upstream of the confluence with Brickyards Swamp	0.03	*	*	44	*
UNNAMED TRIBUTARY TO CANAL					
Approximately 3,650 feet downstream of Jasper Station Road	0.4	*	*	486	*
Approximately 2,050 feet downstream of Jasper Station Road	0.3	*	*	358	*
Approximately 1,050 feet downstream of Jasper Station Road	0.1	*	*	117	*
UNNAMED TRIBUTARY TO OKATIE RIVER					
Just upstream U.S. Highway 170	0.86	176	289	351	507
WHITE OAK NOOK SWAMP					
Approximately 7,200 feet downstream of State Highway 214	0.86	*	*	323	*

*Data not available

3.2 Hydraulic Analyses

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

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2). Cross sections for the flooding sources studied by detailed methods were obtained from field surveys. All bridges, dams and culverts were field surveyed to obtain elevation data and structural geometry.

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

Pre-countywide Analyses

All hydraulic data, including water surface profiles, for the Savannah River were taken from Chatham County, Georgia and Incorporated Areas FIS (FEMA, 2014).

This October 18, 2019, Countywide Analysis

All detailed study streams, with the exception of the Savannah River, were incorporated from LOMRs as noted in Table 2, “Letters of Map Revision.”

Cross section geometries were obtained from Light Detection and Ranging (LiDAR) data provided by SCDNR (SCDNR, 2011).

Water surface elevations of the 1-percent annual chance flood were computed using U.S. Army Corps of Engineer’s (USACE) Hydrologic Engineering Center’s Hydraulic Engineering Center River Analysis System (HEC-RAS) computer program, Version 4.0 (USACE, 2005). The hydraulic models were developed using recently acquired LiDAR land data, and updated hydrologic data.

Starting conditions for the hydraulic models were set to normal depth using starting slopes calculated from energy slope, or derived from the water surface elevations of existing effective hydraulic models.

Roughness coefficients (Manning's "n" Values) used in the hydraulic computations were chosen based on aerial imagery. Specific Manning's "n" Values for the Savannah River were not available in the Chatham County, Georgia and Incorporated Areas FIS (FEMA, 2014). Additionally, specific Manning's "n" Values for all streams incorporated from LOMRs were not available in those LOMRs. Values for New River were 0.04 for the main channel and ranged from 0.11 – 0.14 for the overbank areas.

3.3 Coastal Analyses

The stillwater surge elevation is the water elevation due solely to the effects of the astronomical tides, storm surge, and wave setup on the water surface but which does not include wave heights. The inclusion of wave heights, which is the distance from the trough to the crest of the wave, increases the water-surface elevations. The height of a wave is dependent upon wind speed and duration, depth of water, and length of fetch. The wave crest elevation is the sum of the stillwater elevation and the portion of the wave height above the stillwater elevation.

For this October 18, 2019, countywide FIS revision, the coastal analysis considered storm characteristics and the shoreline and bathymetric characteristics of the flooding sources studied, to provide estimates of the elevations of floods of the selected recurrence intervals along the shoreline. Users of the FIRM should be aware that coastal flood elevations are provided in Table 7, "Summary of Coastal Stillwater Elevations" table in this report. If the elevation on the FIRM is higher than the elevation shown in this table, a wave height, and/or wave runup component likely exists, in which case the higher elevation should be used for construction and/or floodplain management purposes.

The South Carolina storm surge project was initiated under the CTP agreement between SCDNR and FEMA Region IV under Mapping Activity Statements (MAS) 7, 8, and 10 for coastal storm surge activities being conducted as a statewide effort. The project team consists of FEMA, SCDNR, URS, AECOM/Watershed Concepts and their subcontractors, Taylor Engineering, Risk Engineering, and Ocean Weather, Inc. The study replaces outdated coastal analyses as well as previously published storm surge stillwater elevations for all FIS Reports in the study area, including Jasper County, South Carolina and serves as

the basis for updated FIRMs. Study efforts were initiated in 2007 and concluded in 2013.

In addition to FEMA and SCDNR, project oversight and guidance are being provided by a Steering Committee for this project, which consists of an independent panel of scientists identified by SCDNR. The purpose of the Steering Committee is to provide oversight and guidance in the event of unusual circumstances that are encountered on the project.

The purpose of the South Carolina storm surge project was to develop updated storm surge analyses for the 10-percent, 2-percent, 1-percent, and 0.2-percent-annual-chance stillwater elevations or storm surge levels along the entire South Carolina coast. Storm surge includes the cumulative effects of storm winds, wave forces, and tides. The storm surge levels were determined by using the ADCIRC hydrodynamic model in concert with the Steady State Spectral Wave (STWAVE) model to complete a series of model runs with input data from artificial storms created using the Joint Probability Method (JPM) statistical analysis. After the completion of this process, the data were analyzed to determine the stillwater elevations, and then overland wave height analysis was performed with the WHAFIS model, to determine the final Base Flood Elevations (BFEs). The results of the overland wave height study were used to update the FIRMs and FISs for the counties in South Carolina affected by coastal surge.

The storm surge from Atlantic Ocean affects the shoreline of Broad River and Savannah River. The storm-surge elevations for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods along the coastline of Jasper are shown in Table 4, “Summary of Coastal Stillwater Elevations.” The analyses reported herein reflect the stillwater elevations due to storm surge and wave setup effects. As storm surge is driven by wind and the inverse barometric effect of low atmospheric pressure and is also influenced by waves, tides, and uneven bathymetric and topographic surfaces, it varies along the shoreline.

Table 4 – Summary of Coastal Stillwater Elevations

FLOODING SOURCE AND LOCATION	ELEVATION (feet NAVD88) Percent Annual Chance 10-Percent	2-Percent	1-Percent	0.2-Percent
Atlantic Ocean				
Along Savannah River from divergence of South Channel to Fig Island	6.3-6.4	6.4-6.8	7.9-8.9	13.0-14.8
Near Turtle Island	6.3	7.2-7.4	9.5-10.0	14.6-15.5
Along Wright River from Confluence of Mud River upstream to headwaters	6.3	6.4-6.8	8.2-8.8	12.6-13.4
Along Broad River from approximately 0.5 mile downstream of State Hwy 170 to Buzzard Island	6.0	6.9-7.0	8.8-9.0	13.8-14.2
Along Broad River from Cole Island to Pilot Island	6.0	7.0-7.1	9.1-9.2	14.3-14.4

The methodology for analyzing the effects of wave heights associated with coastal storm surge flooding is described in a report prepared by the National Academy of Sciences (NAS; NAS, 1977). This method is based on three major concepts. First, depth-limited waves in shallow water reach maximum breaking height that is equal to 0.78 times the stillwater depth. The wave crest is 70 percent of the total wave height above the stillwater level. The second major concept is that wave height may be diminished by dissipation of energy because of obstructions, such as sand dunes, dikes and seawalls, buildings and vegetation. The amount of energy dissipation is a function of the physical characteristics of the obstruction and is determined by procedures described in the NAS Report. The third major concept is that wave height can be regenerated in open fetch areas because of the transfer of wind energy to the water. This added energy is related to fetch length and depth.

The coastal analysis for this revision involved transect layout, field reconnaissance, erosion analysis, and overland wave modeling, wave height analysis and wave runup analysis.

Atlantic Ocean is the primary coastal flooding sources in Jasper County. Wave heights were computed along transects that were located along open coastline and along shorelines of Broad River, as illustrated on the FIRMs. The transects were located with consideration given to existing transect locations and to the physical and cultural characteristics of the land so that they would closely represent conditions in the locality.

Each transect was taken perpendicular to the shoreline and extended inland to a point where coastal flooding ceased. Along each transect,

wave heights and elevations were computed in consideration of the combined effects of changes in ground elevation, vegetation, and physical features. The stillwater elevations for a 1-percent-annual-chance event were used as the starting elevations for these computations. Wave heights were calculated to the nearest 0.1 foot, and wave elevations were determined at whole-foot increments along the transects. The location of the 3-foot breaking wave for determining the terminus of the Zone VE (area with velocity wave action) was computed at each transect.

Wave height calculations used in this flood insurance study are based on the methodologies described in the FEMA guidance for coastal mapping (FEMA, 2007[a]). Wave setup results in an increased water level at the shoreline due to the breaking of waves and transfer of momentum to the water column during hurricanes and severe storms. For the Berkeley County study, wave setup was determined directly from the coupled wave and storm surge model. The total stillwater elevation (SWEL) with wave setup was then used for simulations of overland wave propagation conducted using FEMA's WHAFIS model Version 4.0 (FEMA, 2007[b]). WHAFIS is a one-dimensional model that was applied to each transect in the study area. The model uses the specified SWEL and the starting wave conditions as input. Simulations of wave transformations were then conducted with WHAFIS taking into account the storm-induced erosion and overland features of each transect. Output from the model includes the combined SWEL and wave height along each cross-shore transect allowing for the establishment of BFEs and flood zones from the shoreline to points inland within the study area.

Coastline along Atlantic Ocean and Broad River in Jasper County are marshy. There is no sandy beach identified thus dune erosion was not conducted. In addition, no erodible bluffs were identified, either, in Jasper County.

Wave runup is defined as the maximum vertical extent of wave uprush on a beach or structure. There were no beach or structures identified at the intersection between the transects and the shoreline. Runup analysis was not applicable and thus not performed.

The starting wave conditions at each transect are shown in Table 5, "Transect Data."

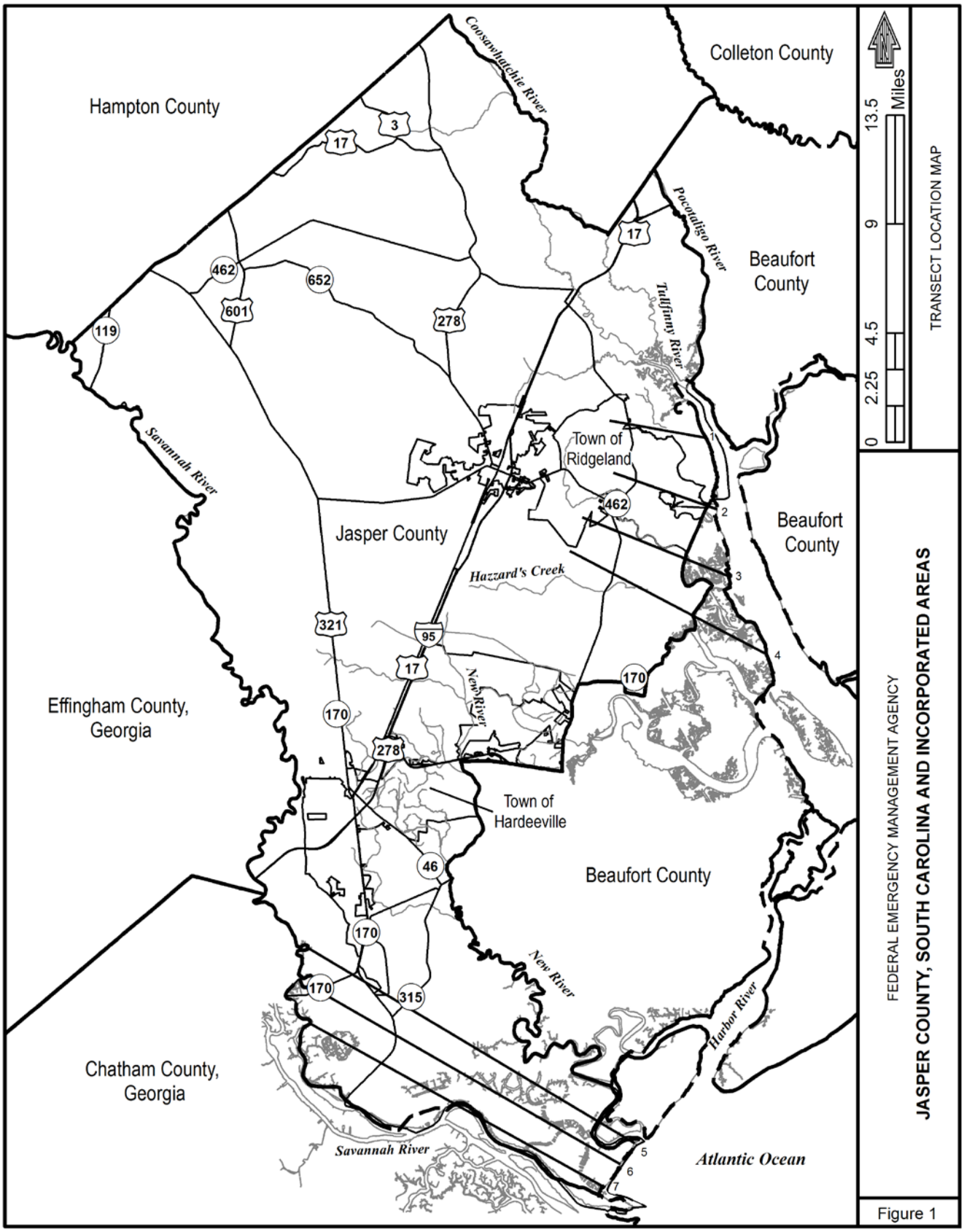
Figure 1, "Transect Location Map," illustrates the location of each transect. Along each transect, wave envelopes were computed considering the combined effects of changes in ground elevation, vegetation and physical features. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and engineering judgment to determine the aerial extent of flooding. The results of the

calculations are accurate until local topography, vegetation, or cultural development within the community undergoes major changes. In Table 5, the flood hazard zone and base flood elevations for each transect flooding source are provided, along with the 10-, 2-, 1-, and 0.2-percent-annual-chance stillwater elevations for the respective flooding sources.

Table 5 – Transect Data

Flood Source	Transect	Starting Wave Conditions for the 1% Annual Chance			Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations* (ft NAVD88)			
		Coordinates	Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Broad River	1	N 32.499912 W 80.833657	3.13	3.26	6.0	7.1 6.1-7.1	9.0 9.0-9.3	14.2 13.3-15.0
Broad River	2	N 32.456978 W 80.825649	4.25	3.81	6.0	7.0 6.2-7.0	9.0 9.0-9.4	14.2 13.5-15.0
Broad River	3	N 32.416713 W 80.816455	5.19	4.19	6.0	7.2 6.0-7.2	9.0 8.4-9.3	14.2 13.9-14.8
Broad River	4	N 32.370791 W 80.792133	5.55	4.42	6.0	7.3 6.7-7.3	8.8 8.6-9.5	13.9 12.2-15.2
Atlantic Ocean	5	N 32.077587 W 80.884241	6.09	7.22	6.3	7.1 6.3-7.1	9.4 6.6-9.4	14.5 10.0-14.5
Atlantic Ocean	6	N 32.064858 W 80.894405	6.07	6.25	6.3	7.2 6.3-7.2	9.9 6.6-9.9	15.2 9.8-15.2
Atlantic Ocean	7	N 32.051459 W 80.905836	5.61	4.35	6.3	7.4 6.3-7.4	10.1 6.8-10.1	15.5 10.2-15.5

* For transects with a constant Stillwater Elevation, only one number is provided to represent both the starting value and the range.


Hampton County
Colleton County
Beaufort County
Jasper County
Beaufort County
Effingham County, Georgia
Beaufort County
Chatham County, Georgia
Atlantic Ocean
Coosawhatchie River
Pocotaligo River
Tullifinny River
Savannah River
Hazzard's Creek
New River
New River
Harbor River
Savannah River
Town of Ridgeland
Town of Hardeeville
3
17
462
652
601
278
119
17
321
95
17
170
278
46
170
170
315
462
170
1
2
3
4
5
6
7
0
2.25
4.5
9
13.5
Miles
TRANSECT LOCATION MAP
FEDERAL EMERGENCY MANAGEMENT AGENCY
JASPER COUNTY, SOUTH CAROLINA AND INCORPORATED AREAS
Figure 1

Areas of coastline subject to significant wave attack are referred to as coastal high hazard zones. The coastal high hazard zone is depicted on the FIRMs as Zone VE. The USACE has established the 3-foot breaking wave as the criterion for identifying the limit of coastal high hazard zones. The one exception to the 3-foot wave criteria is where a primary frontal dune exists. The limit of the coastal high hazard area then becomes the landward toe of the primary frontal dune or where a 3-foot or greater breaking wave exists, whichever is most landward. The delineation of the landward toe of the primary frontal dune are based on the methodologies described in the FEMA guidance (FEMA, 2007[a]). It extends along the coastline of Jasper County except for at the inlet openings and at Bulls Bay. The basis of the VE zone is presented in the Technical Support Data Notebook in association with the FIS report and FIRM for this community. Zone AE is depicted on the FIRMs where the delineated flood hazard includes wave heights less than three feet. A depiction of how the Zones VE and AE are mapped is shown in Figure 2.

Post-storm field visits and laboratory tests have confirmed that wave heights as small as 1.5 feet can cause significant damage to structures constructed without consideration to the coastal hazards. Additional flood hazards associated with coastal waves include floating debris, high velocity flow, erosion, and scour which can cause damage to Zone AE-type construction in these coastal areas. To help community officials and property owners recognize this increased potential for damage due to wave action in the AE zone, FEMA issued guidance in December 2008 on identifying and mapping the 1.5-foot wave height line, referred to as the Limit of Moderate Wave Action (LiMWA). While FEMA does not impose floodplain management requirements based on the LiMWA, the LiMWA is provided to help communicate the higher risk that exists in that area. Consequently, it is important to be aware of the area between this inland limit and the Zone VE boundary, as it still poses a high risk, though not as high a risk as Zone VE (see Figure 2, “Transect Schematic.”)

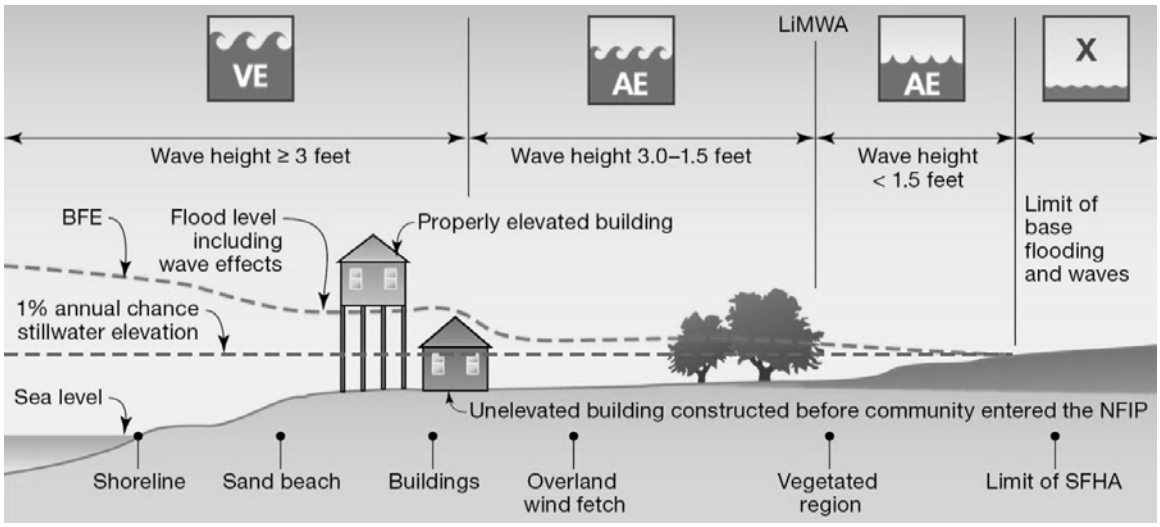


Figure 2 – Transect Schematic

3.4 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 used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the completion of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are now prepared using NAVD 88 as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For this countywide FIS the vertical datum conversion from NGVD 29 to NAVD 88 is -0.913 feet.

For information regarding conversion between NGVD 29 and NAVD 88, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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

All elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88). Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

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

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

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

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

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

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

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

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

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

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance flood is employed to indicate additional areas of flood risk in the 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.

For this October 18, 2019, countywide FIS, flood boundaries for the 1- and 0.2- percent annual chance riverine floodplains have been delineated using LiDAR data supplied by SCDNR and used to develop the Digital Terrain Model for hydraulic analysis and floodplain mapping. The LiDAR was collected for SCDNR, as a part of the South Carolina Statewide LiDAR Project by Photo Science Geospatial Solutions in winter 2006-2007 (SCDNR, 2011).

The data is available from SCDNR LiDAR Data Products website at:
http://www.dnr.sc.gov/GIS/lidar.html

The bathymetric data for the coastal study was compiled from multiple sources for the South Carolina Storm Surge Project and was provided by SCDNR (SCNDR, 2009).

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

floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations, but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 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 were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections in Table 6, “Floodway Data.” The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

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 6, “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.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplains will not cause more than a 1.0-foot increase in the Base Flood Elevations (BFEs) at any point within the community.

Floodways have only been computed for Brickyard Swamp and Unnamed Tributary to Brickyard Swamp.

No floodways have been computed for streams studied by limited detailed methods. Information pertaining to the flood discharges and 1-percent-annual-chance water-surface elevations for selected cross sections along streams studied by limited detailed methods are shown on Table 7 "Limited Detailed Food Hazard Data."

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

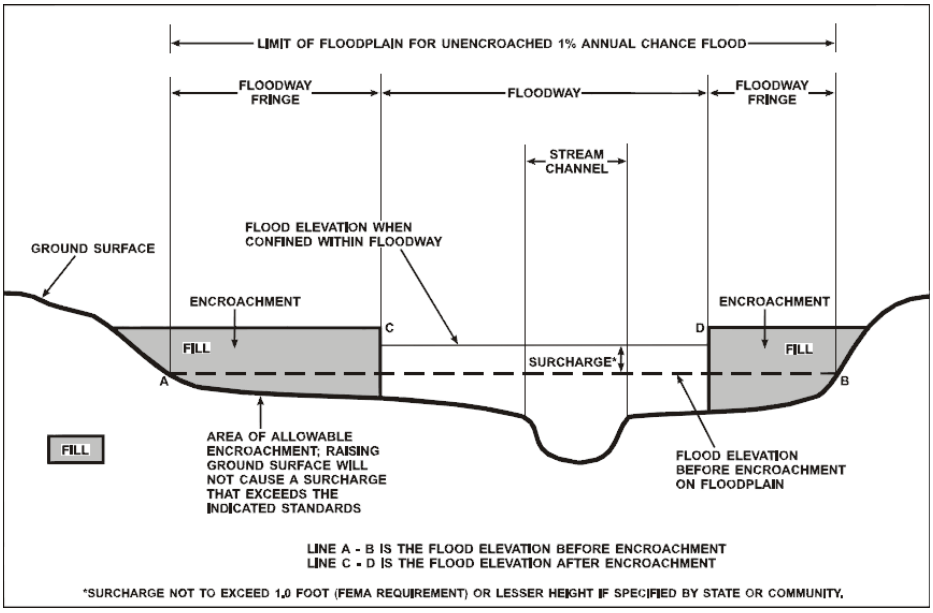


Figure 3 – Floodway Schematic

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Brickyard Swamp								
A	1,121[1]	524	455	0.8	13.1	13.1	13.1	0.0
B	3,471[1]	340	1,001	0.4	13.3	13.3	13.4	0.1
C	5,786[1]	490	1,539	0.2	14.3	14.3	14.3	0.0
D	7,692[1]	470	1,669	0.2	14.3	14.3	14.4	0.1
E	9,809[1]	320	795	0.3	14.4	14.4	14.4	0.0
Unnamed Tributary To Brickyard Swamp								
A	870[2]	189	89	0.5	14.3	12.6[3]	12.6	0.0
B	2,363[2]	160	65	0.7	14.5	14.5	14.5	0.0
C	4,155[2]	295	73	0.6	15.1	15.1	15.1	0.0

[1] Feet above confluence with Tributary A to New River

[2] Feet above confluence with Brickyard Swamp

[3] Elevation computed without consideration of backwater effects from Brickyard Swamp

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS

FLOODWAY DATA

BRICKYARD SWAMP – UNNAMED TRIBUTARY TO BRICKYARD SWAMP

TABLE 7—Limited Detailed Flood Hazard Data

Cross Section[1]	Stream Station[2]	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)
New River			
117	11,675	8,307	6.20
131	13,107	8,307	6.43
148	14,798	8,307	6.68
151	15,103	8,307	6.89
164	16,356	8,307	7.44
169	16,899	8,307	7.56
184	18,381	8,307	7.67
198	19,831	8,307	7.78
216	21,570	8,036	7.88
246	24,643	8,036	8.02
261	26,143	8,036	8.11
283	28,295	8,036	8.25
304	30,415	8,036	8.51
319	31,924	8,036	8.72
338	33,837	8,036	9.05
357	35,707	8,036	9.35
373	37,252	8,036	9.66
389	38,854	8,036	10.00
401	40,116	8,036	10.22
418	41,847	8,036	10.43
429	42,942	8,036	10.49
444	44,430	8,036	10.58
467	46,650	8,036	10.81
474	47,408	7,062	10.92

[1]This table reflects all modeled cross-sections. Some cross-sections shown in this table may not appear on map.

[2]Feet above mouth

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 base (1-percent-annual-chance) floods elevations (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 AH

Zone AH is the flood insurance risk zone that corresponds to the areas of the 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are shown between 1 and 3 feet. 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 the 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 V

Zone V is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone.

Zone VE

Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals 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-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 base flood by levees. No BFEs or depths are shown within this zone.

Zone D

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

6.0 FLOOD INSURANCE RATE MAP

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

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use 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 the entire geographic area of Jasper County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as having SFHAs. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 8, “Community Map History.”

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Hardeeville, City of	June 14, 1974	April 23, 1976 June 27, 1980	September 1, 1987	
Jasper County (Unincorporated Areas)	March 31, 1978	None	September 29, 1986	October 16, 1992
Ridgeland, Town of	February 27, 1976	May 9, 1980	August 19, 1986	

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Jasper County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, FIRMs, and/or FBFMs for all of the incorporated and unincorporated jurisdictions within Jasper County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region IV, Koger Center - Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, GA 30341.

9.0 BIBLIOGRAPHY AND REFERENCES

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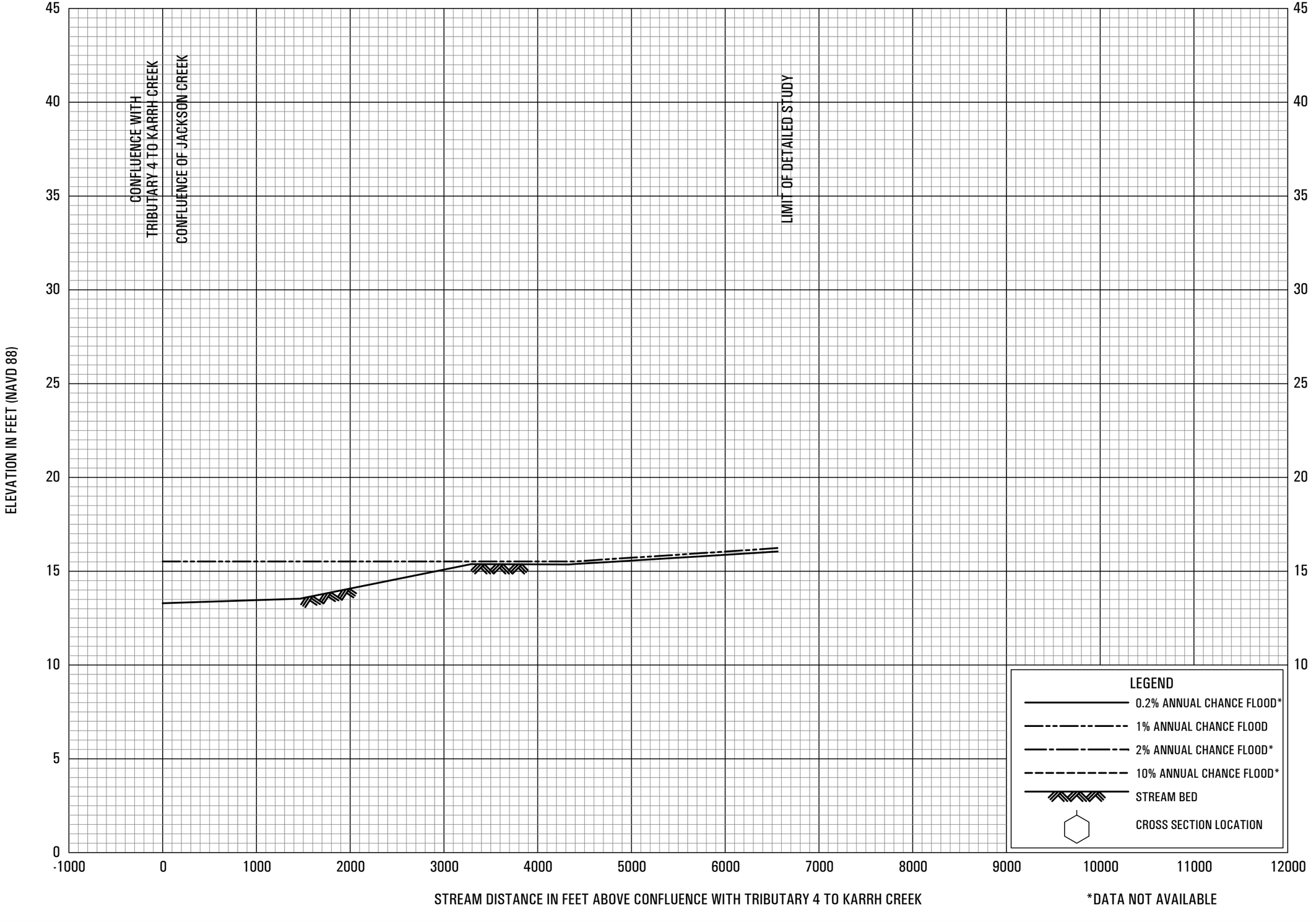


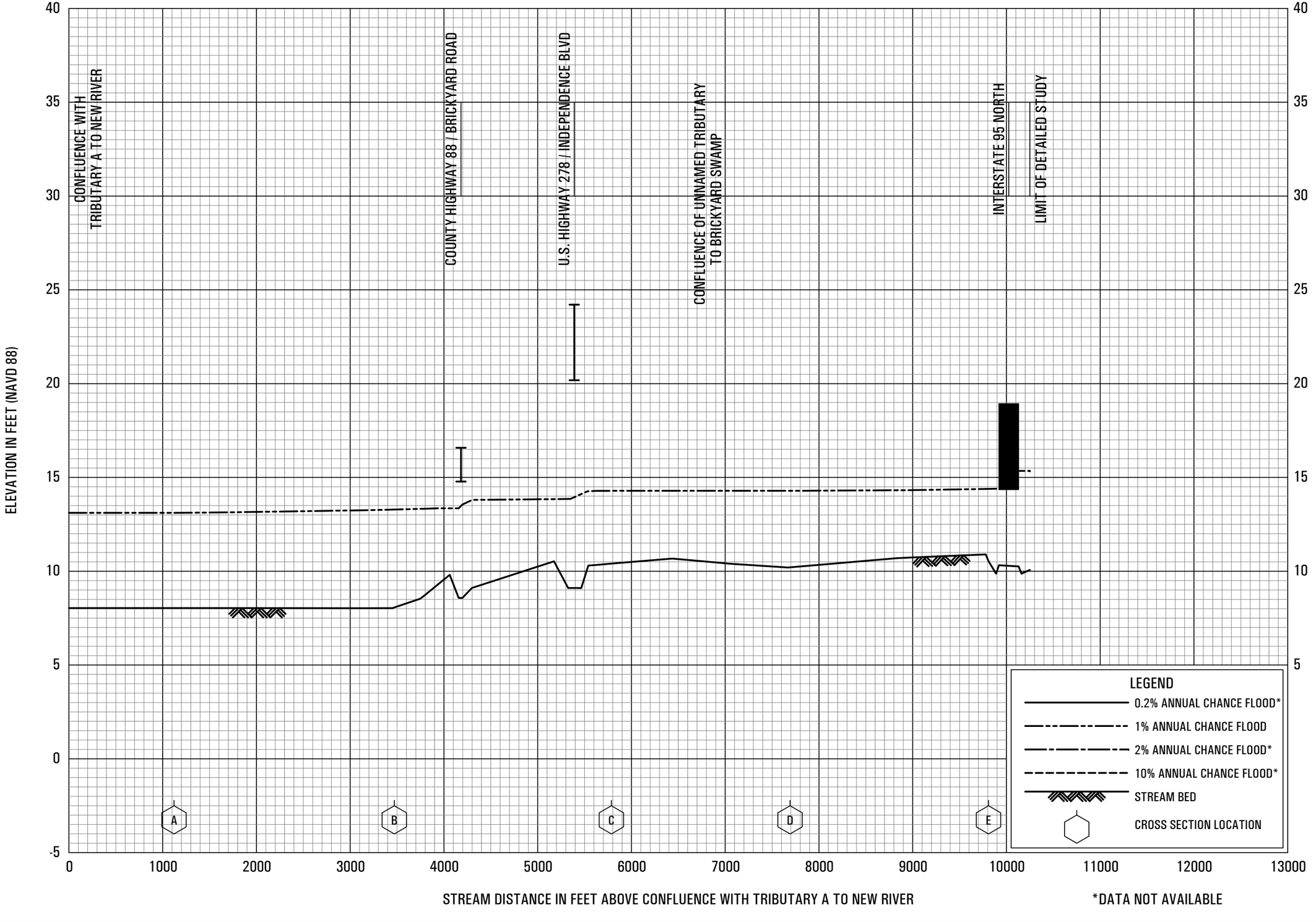
FLOOD PROFILES

BAKER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



*DATA NOT AVAILABLE

FLOOD PROFILES

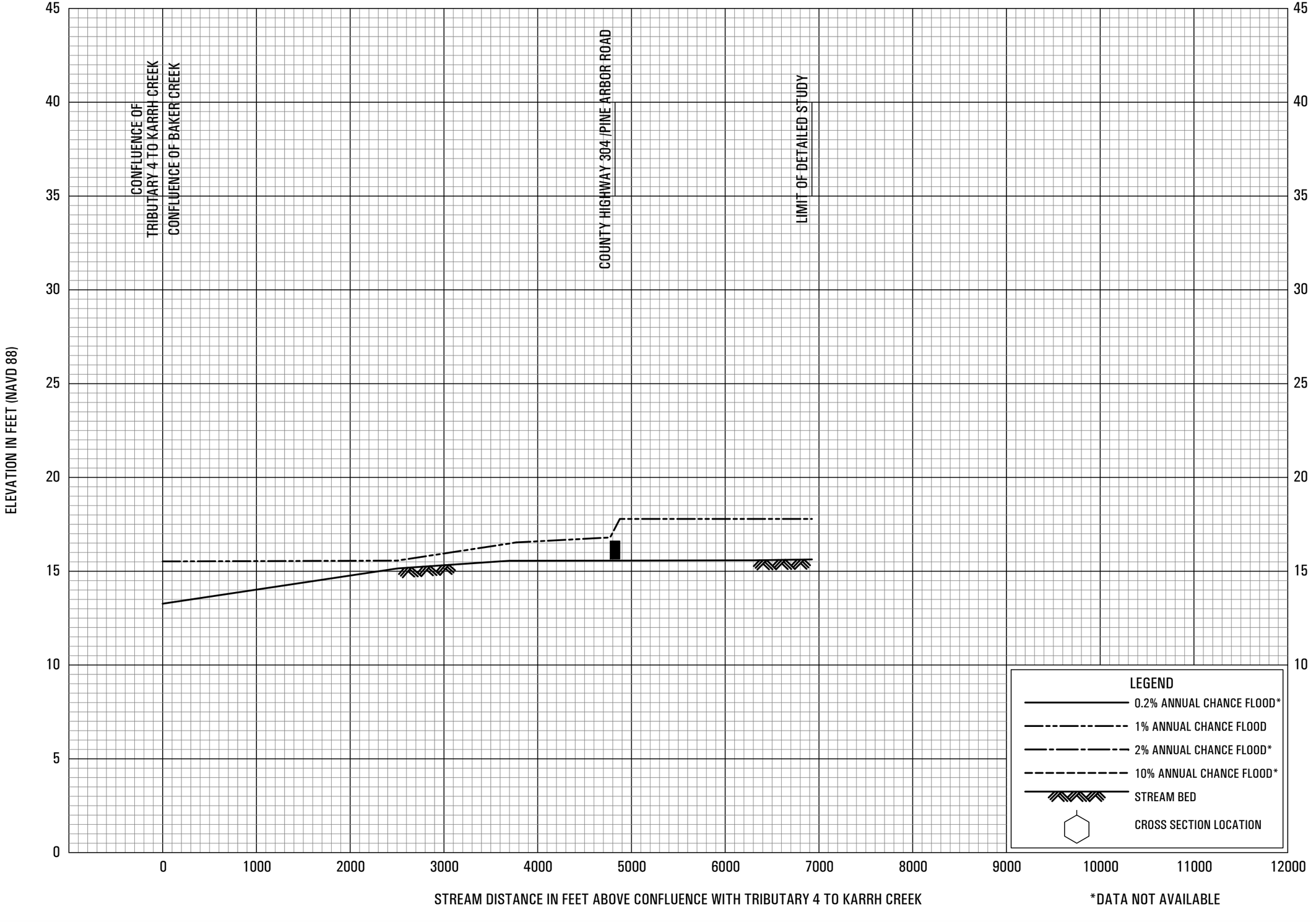
BRICKYARD SWAMP

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

02P



FLOOD PROFILES

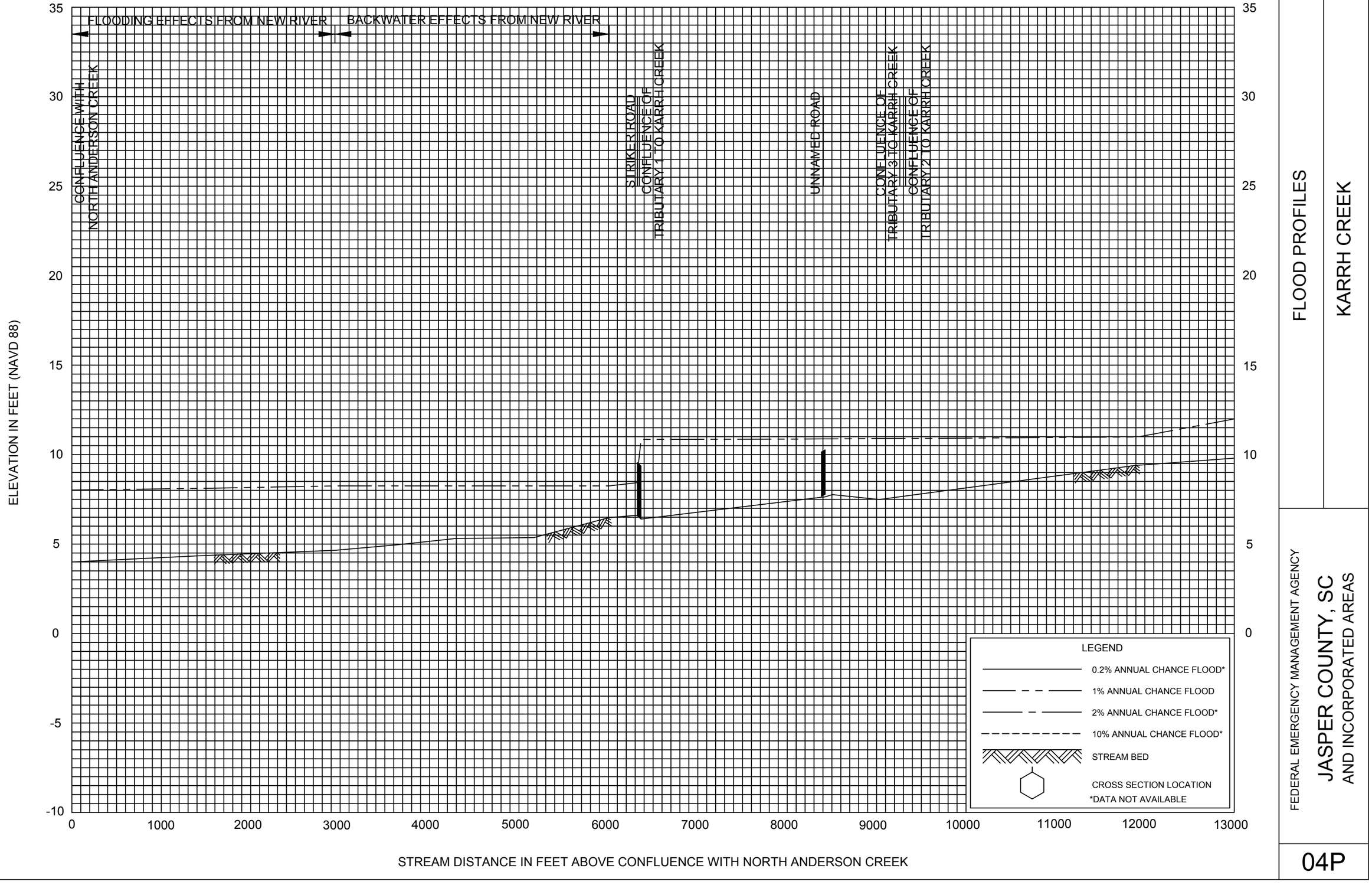
JACKSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

03P



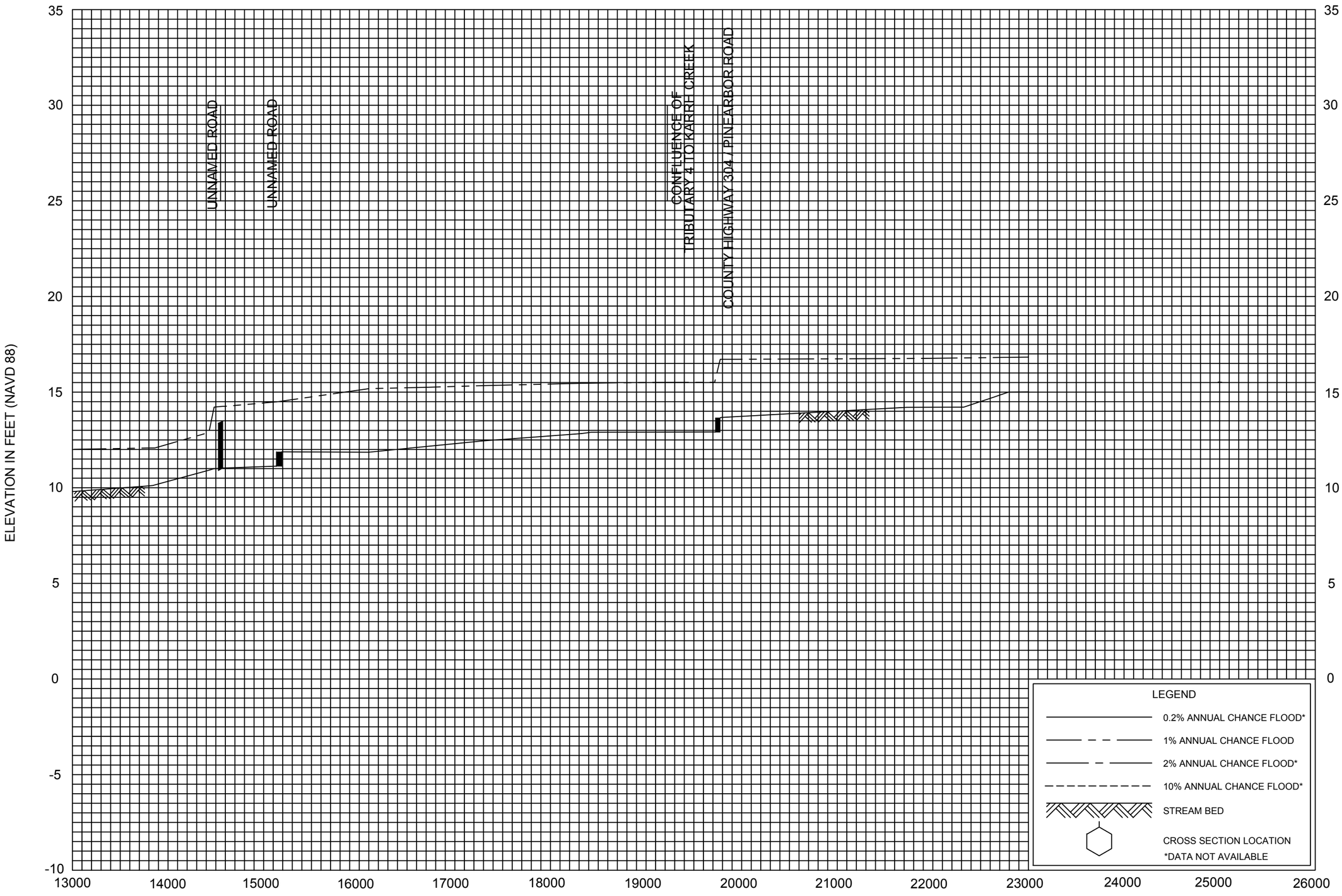
FLOOD PROFILES

KARRH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS

04P



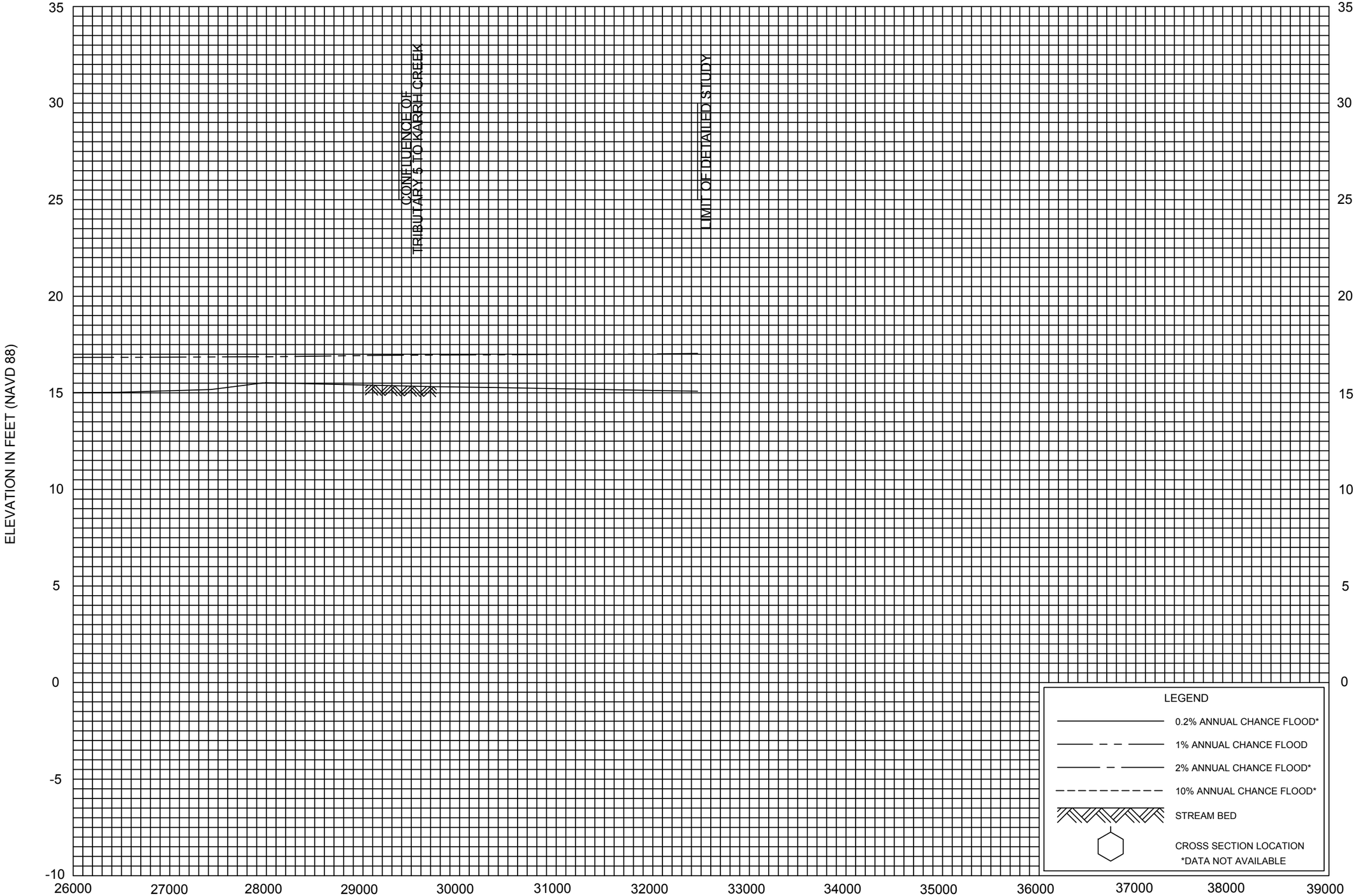
FLOOD PROFILES

KARRH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS

05P



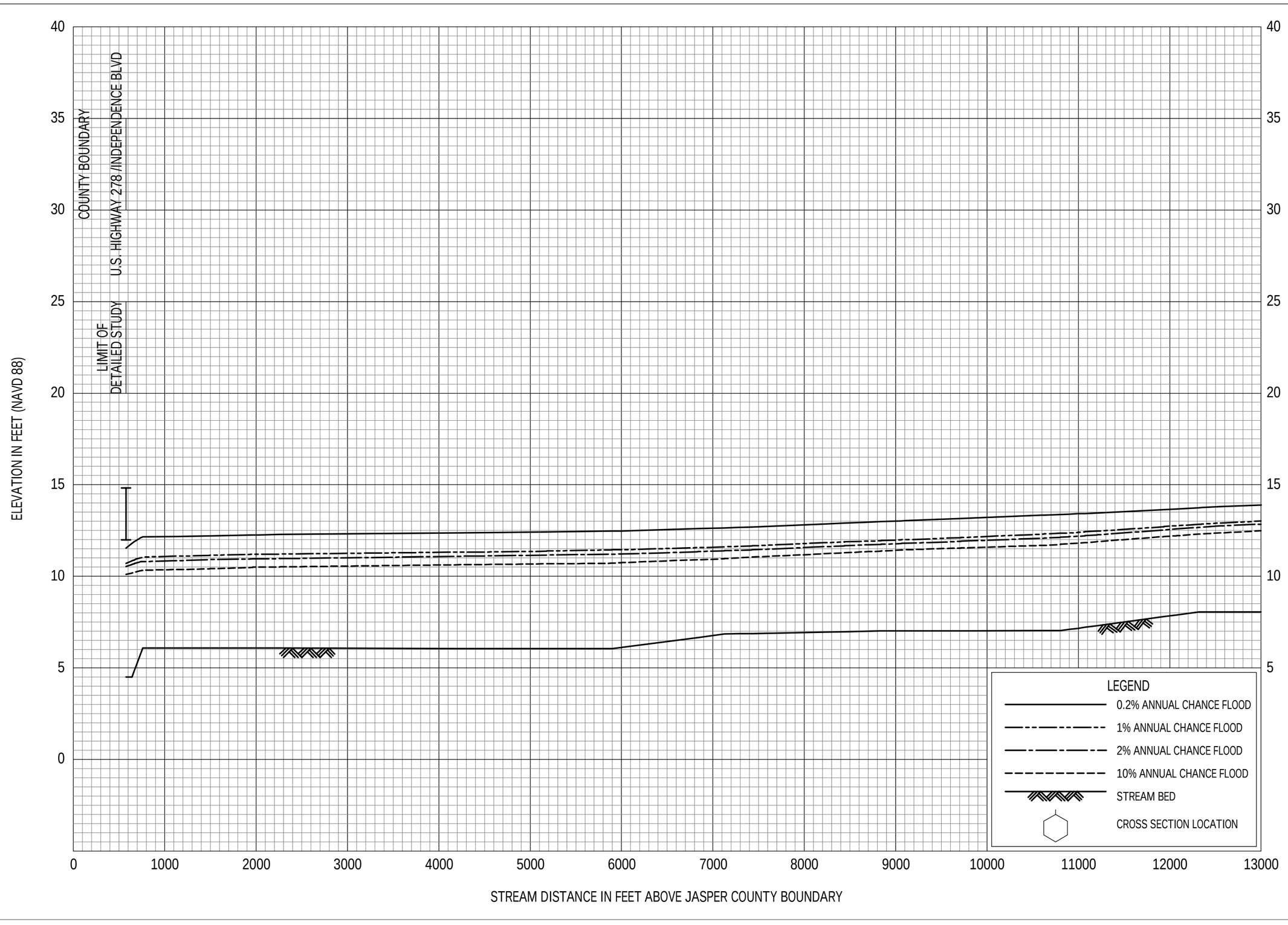
FLOOD PROFILES

KARRH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS

06P



FLOOD PROFILES

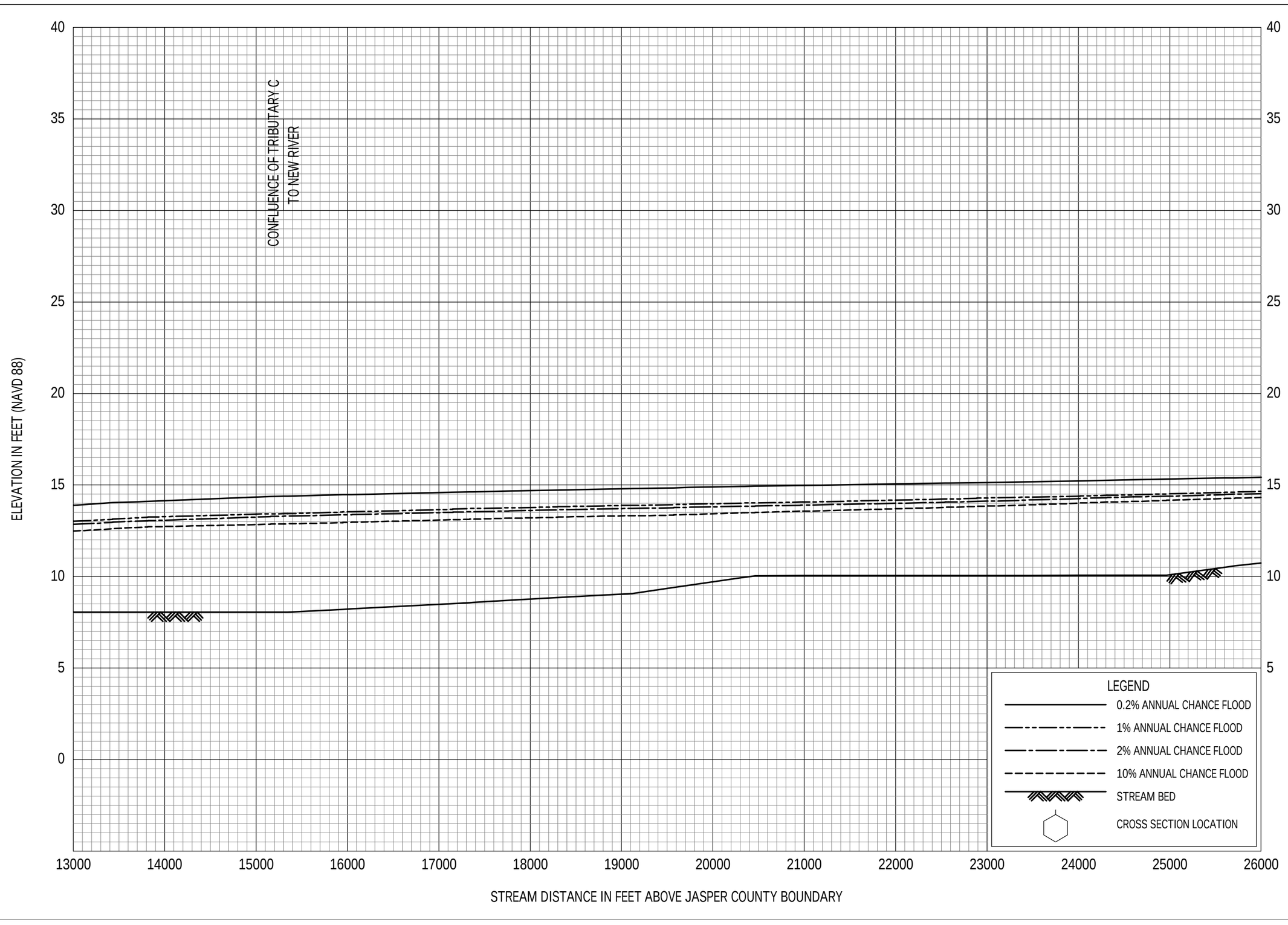
NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

07P



FLOOD PROFILES

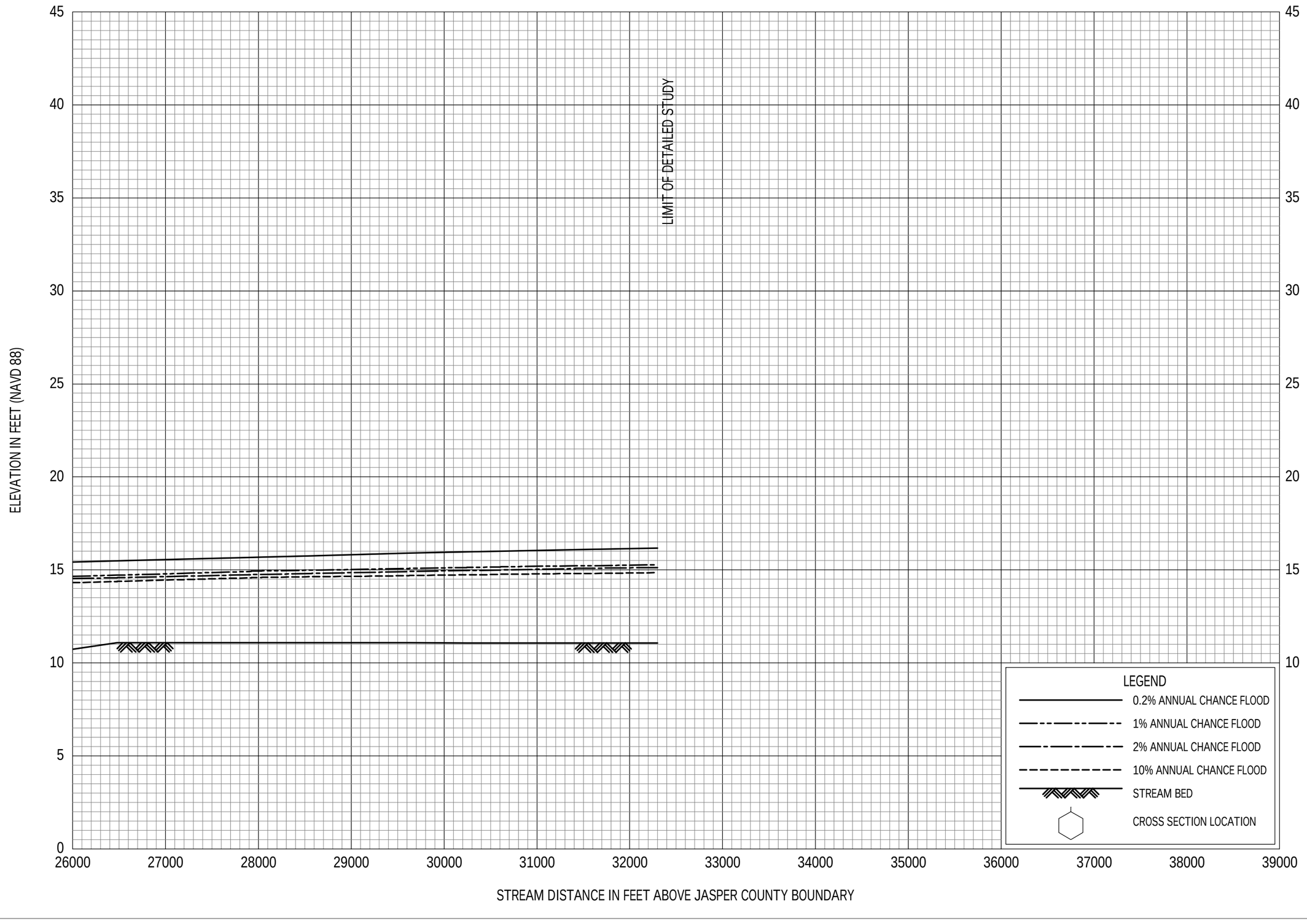
NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

08P



FLOOD PROFILES

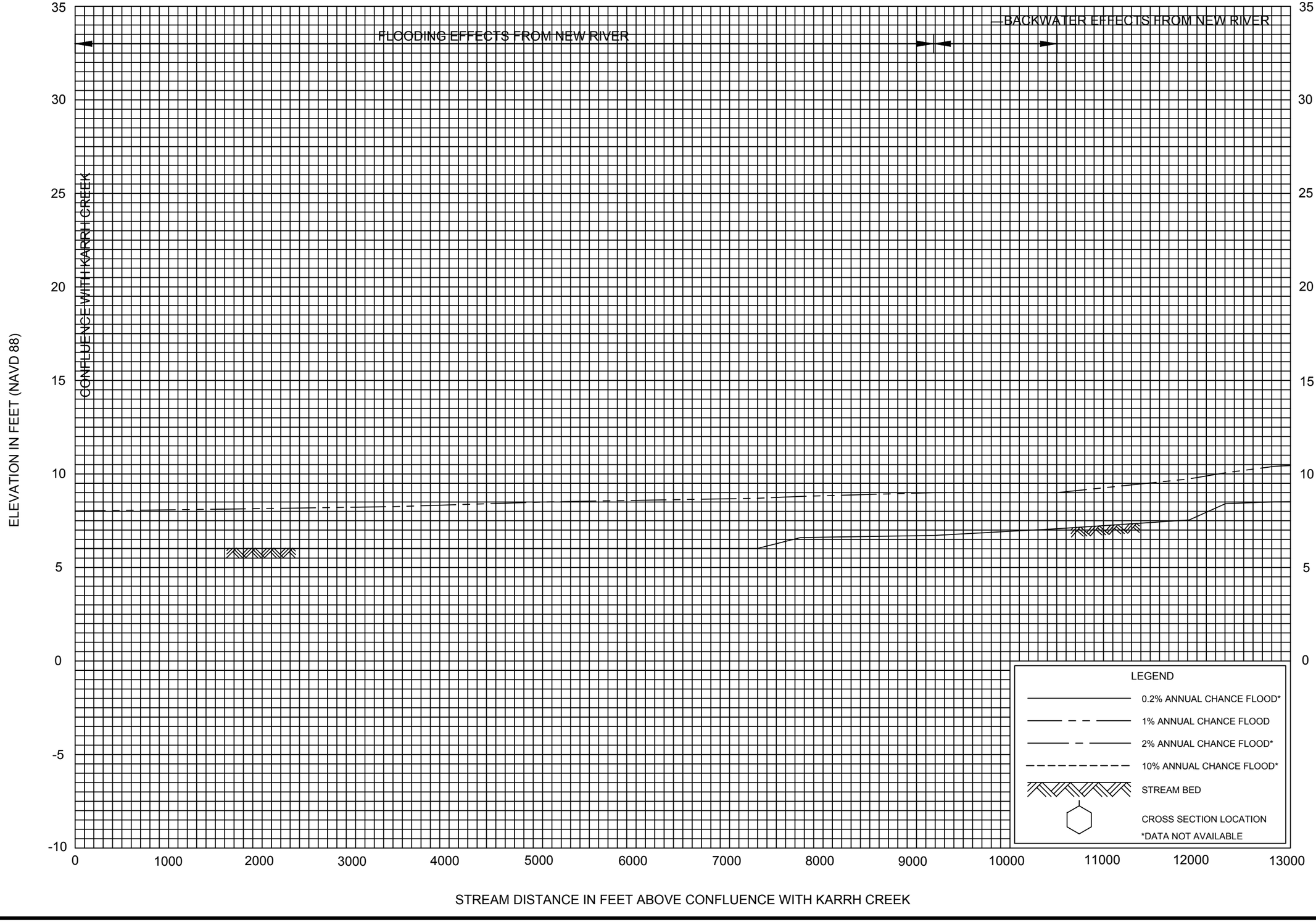
NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

09P



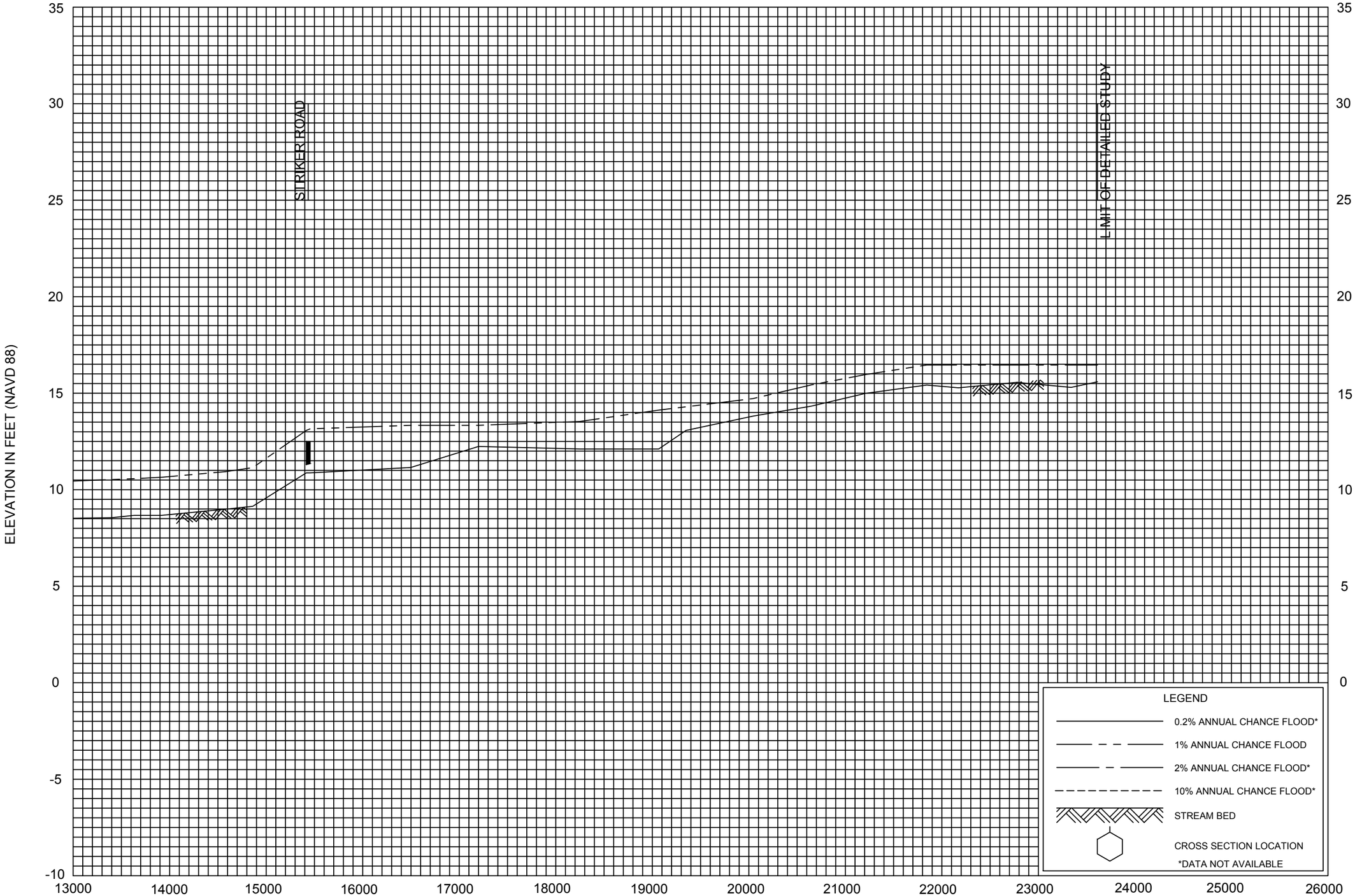
FLOOD PROFILES

NORTH ANDERSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS

10P

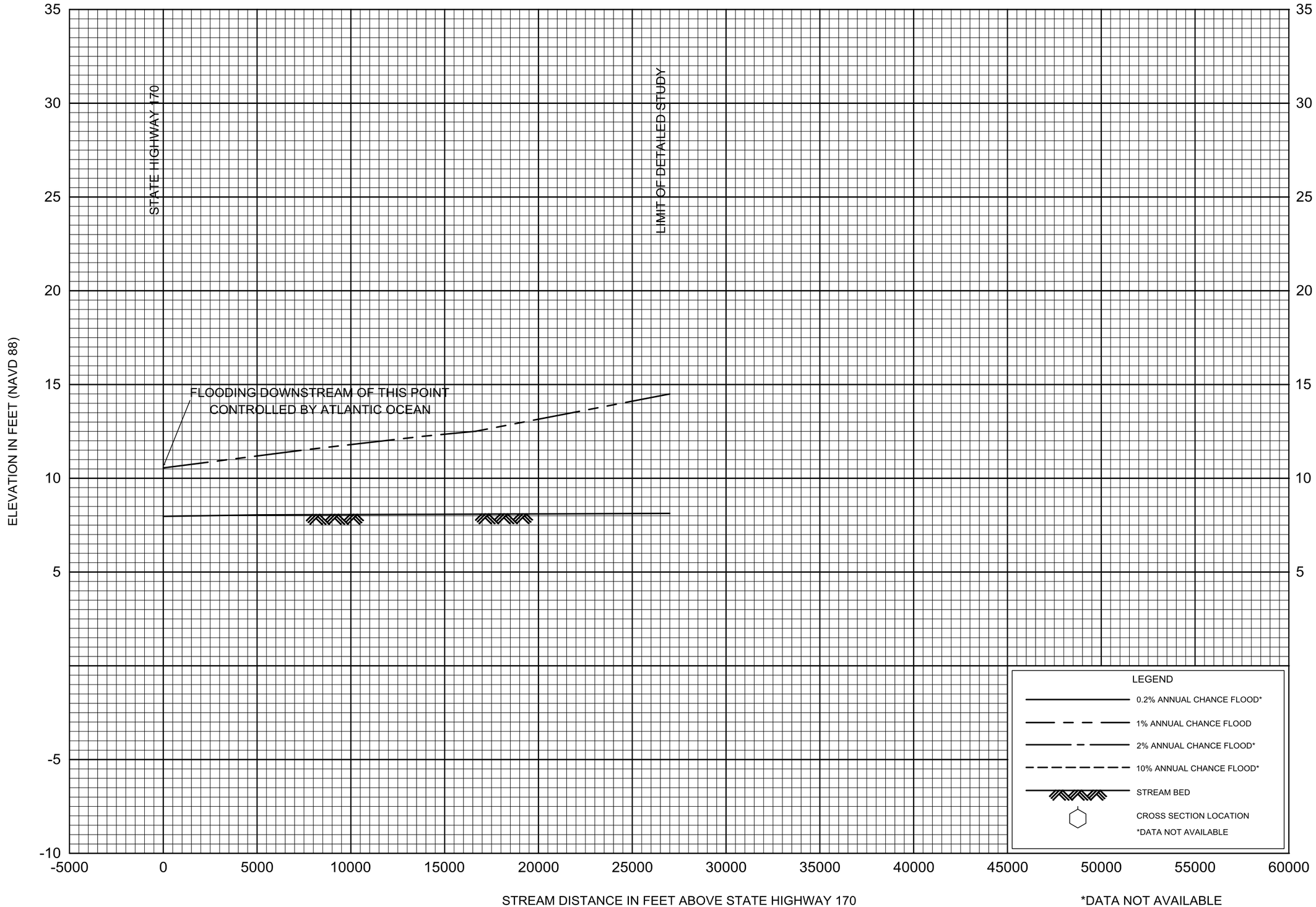


FLOOD PROFILES

NORTH ANDERSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC
AND INCORPORATED AREAS



FLOOD PROFILES

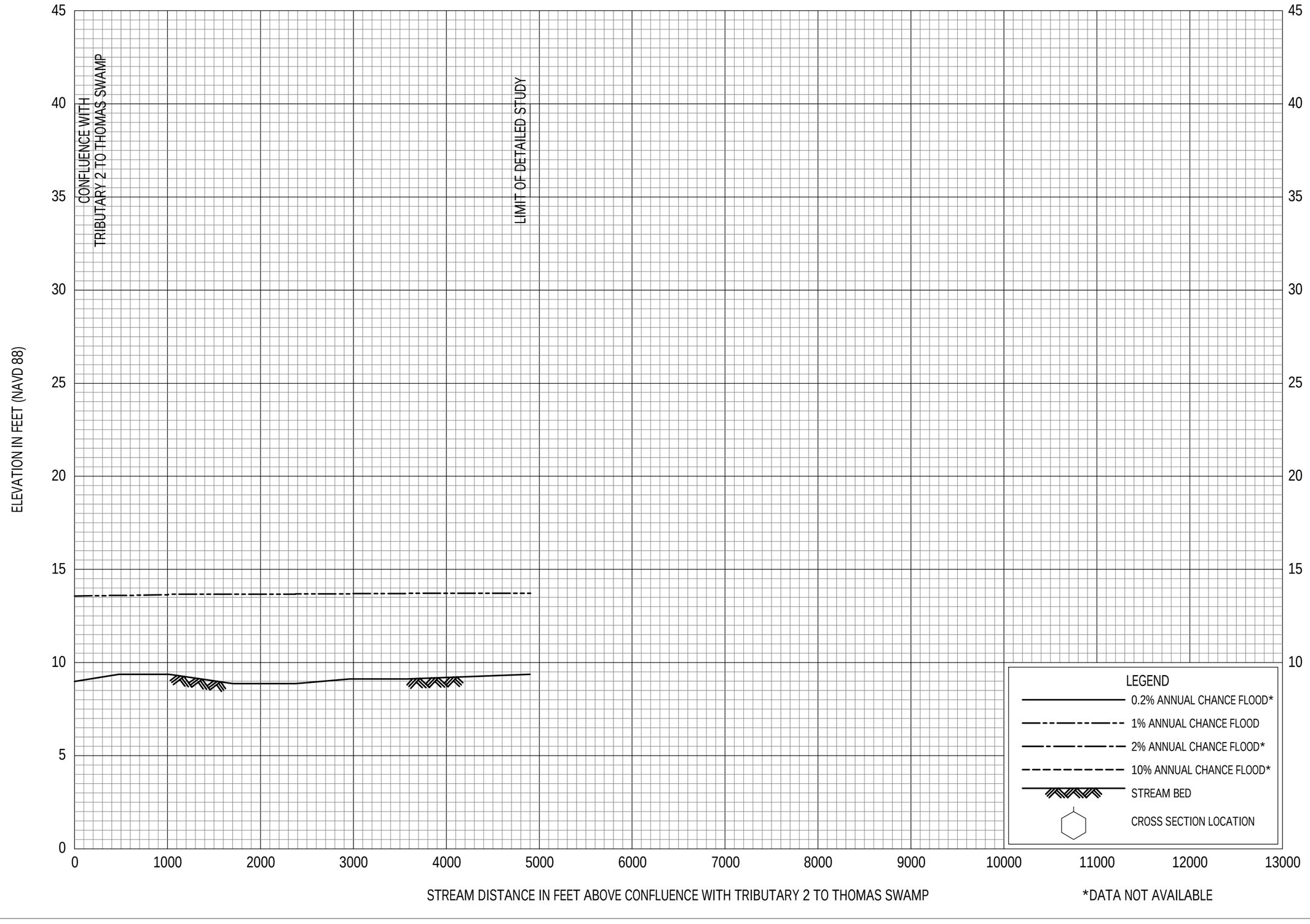
SAVANNAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

12P



FLOOD PROFILES

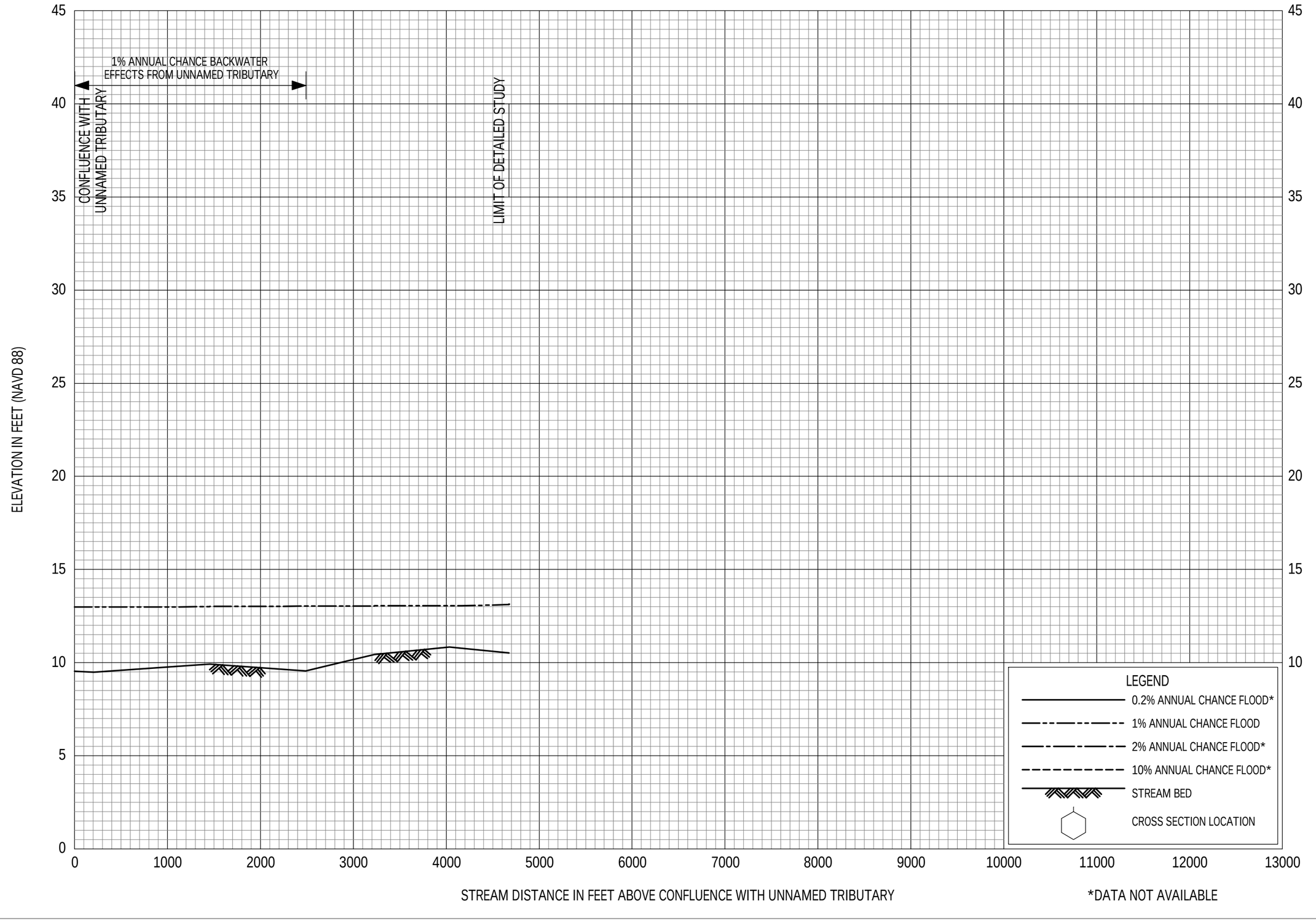
SUBTRIBUTARY TO TRIBUTARY 2 TO THOMAS SWAMP

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

13P



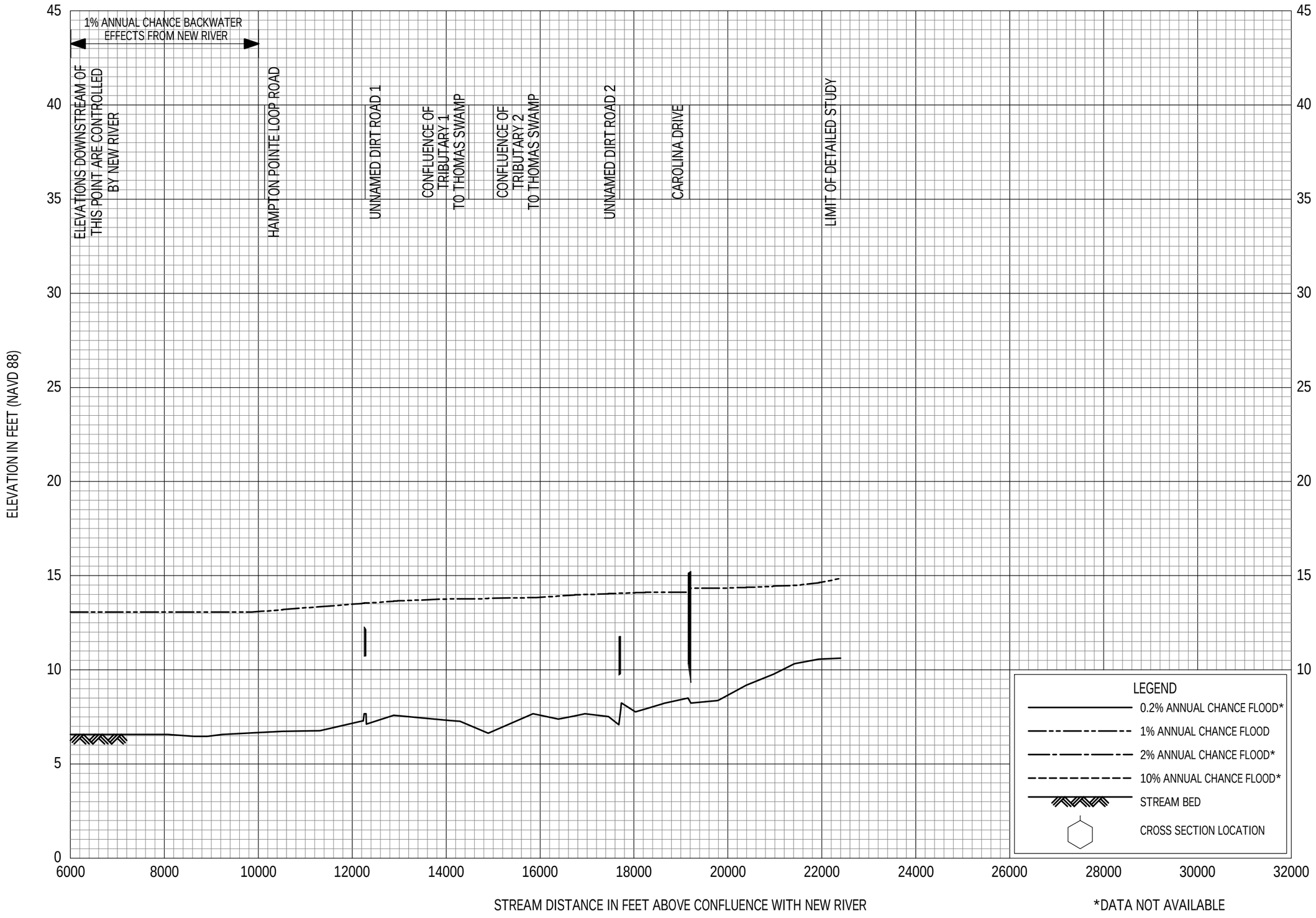
FLOOD PROFILES

SUBTRIBUTARY TO UNNAMED TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



FLOOD PROFILES

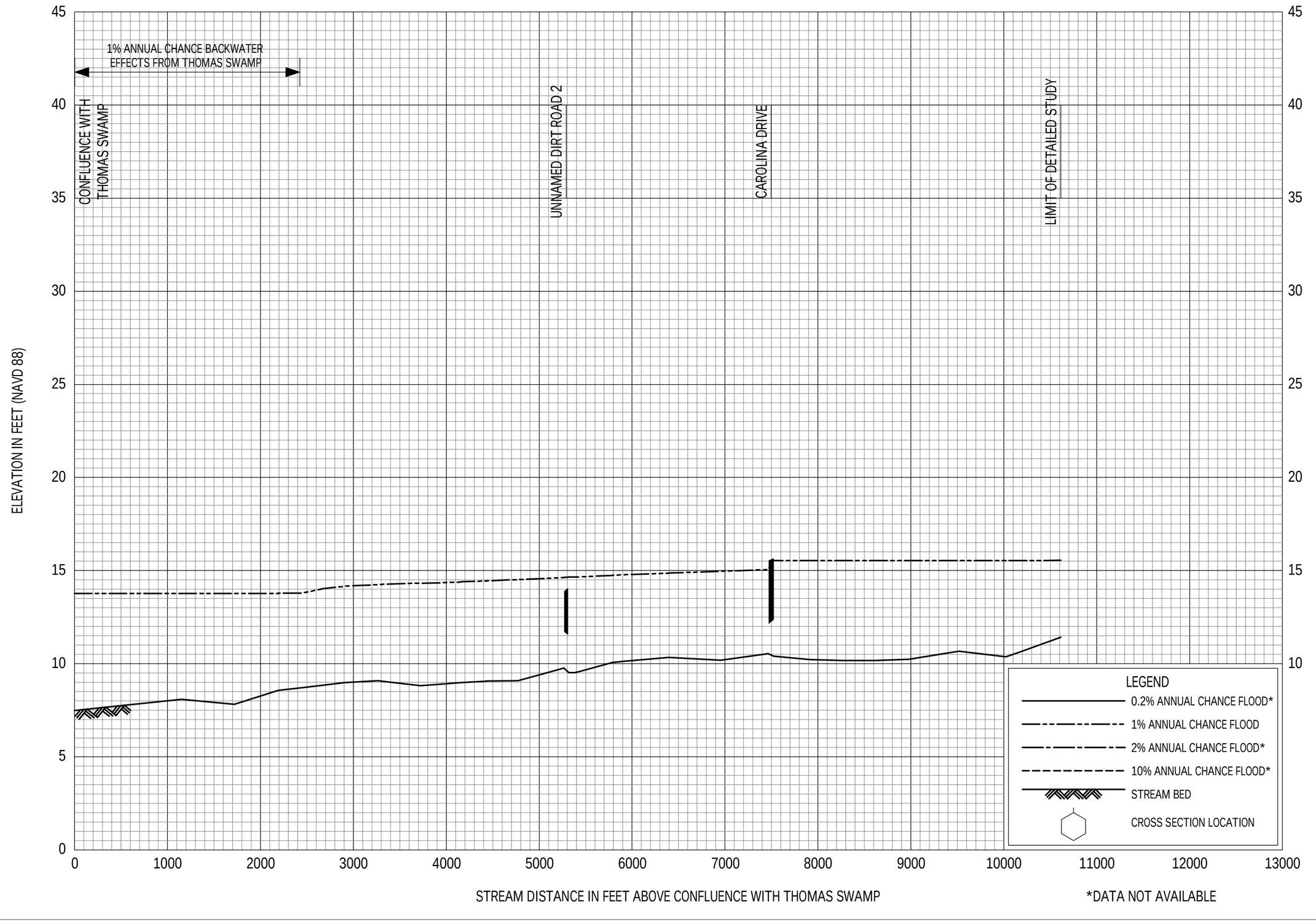
THOMAS SWAMP

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

15P



FLOOD PROFILES

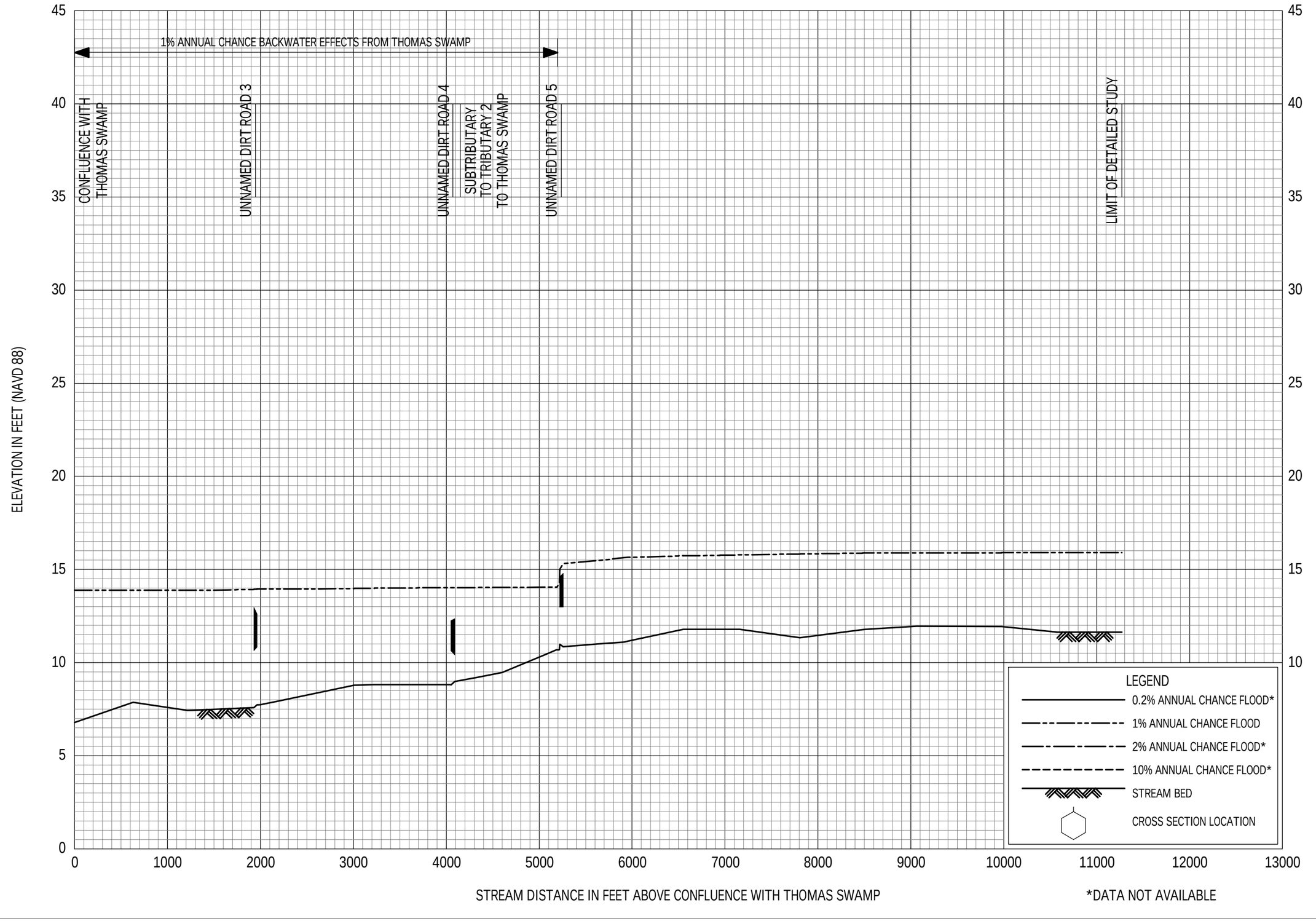
TRIBUTARY 1 TO THOMAS SWAMP

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

16P



FLOOD PROFILES

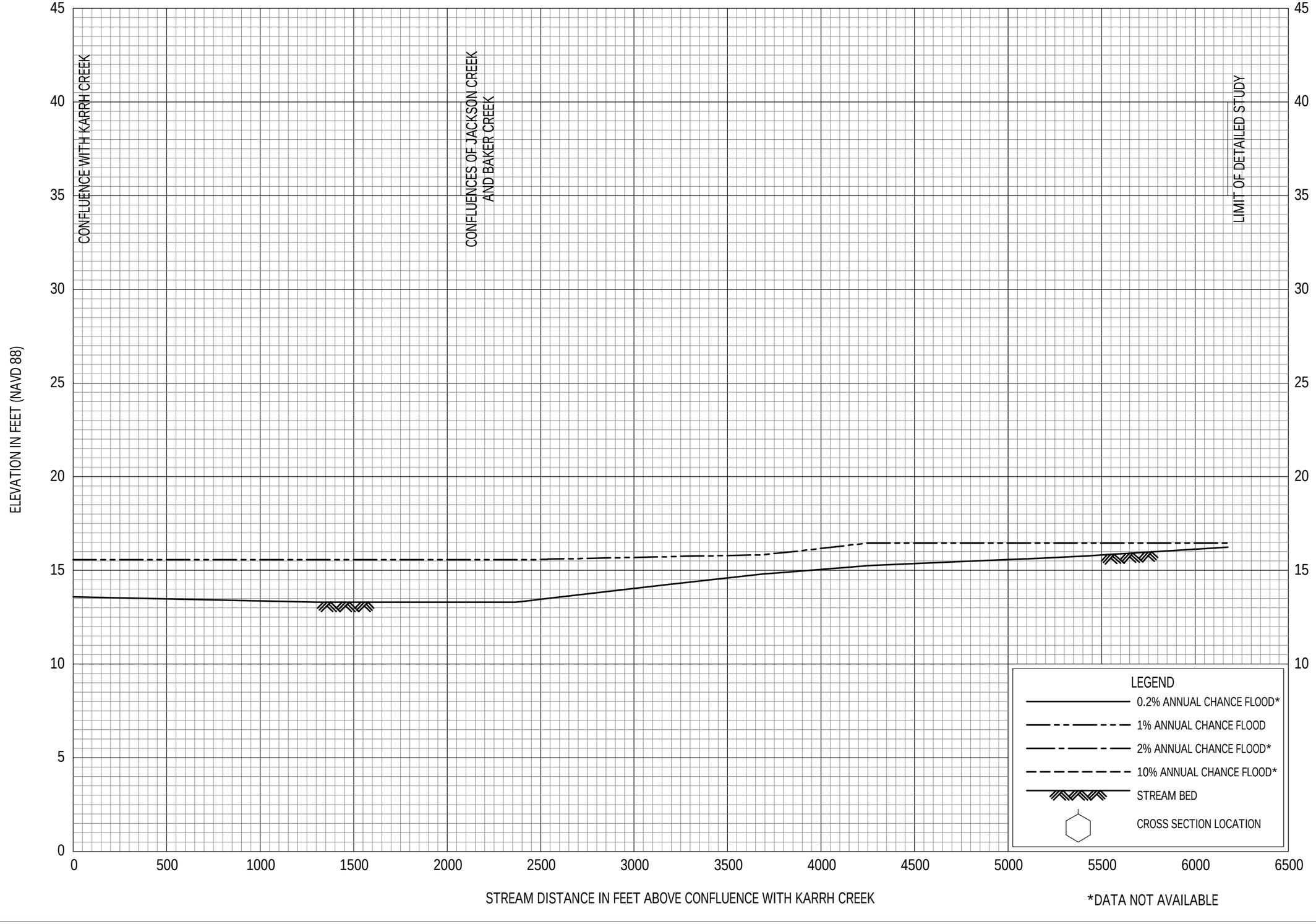
TRIBUTARY 2 TO THOMAS SWAMP

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

17P



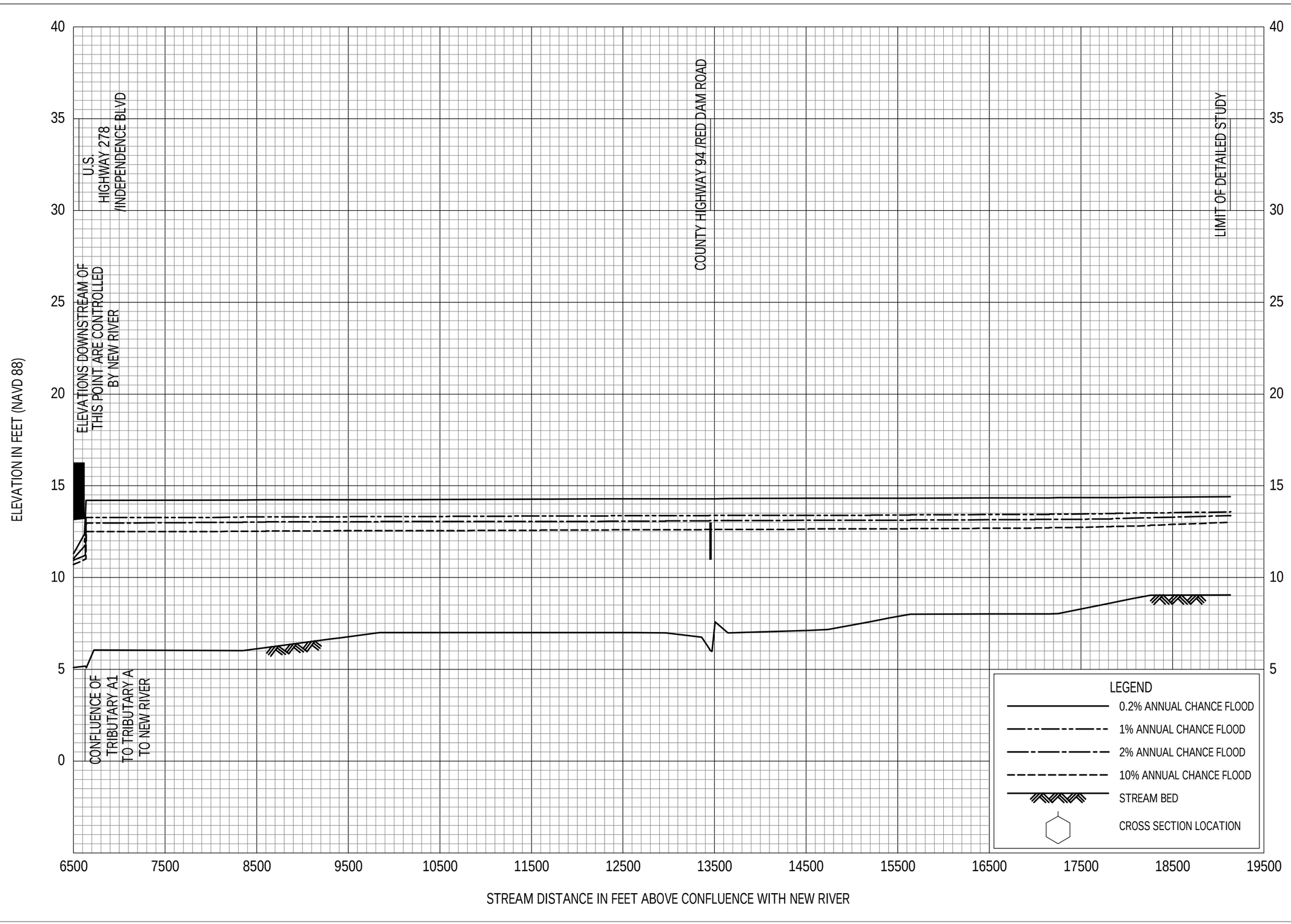
FLOOD PROFILES

TRIBUTARY 4 TO KARRH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



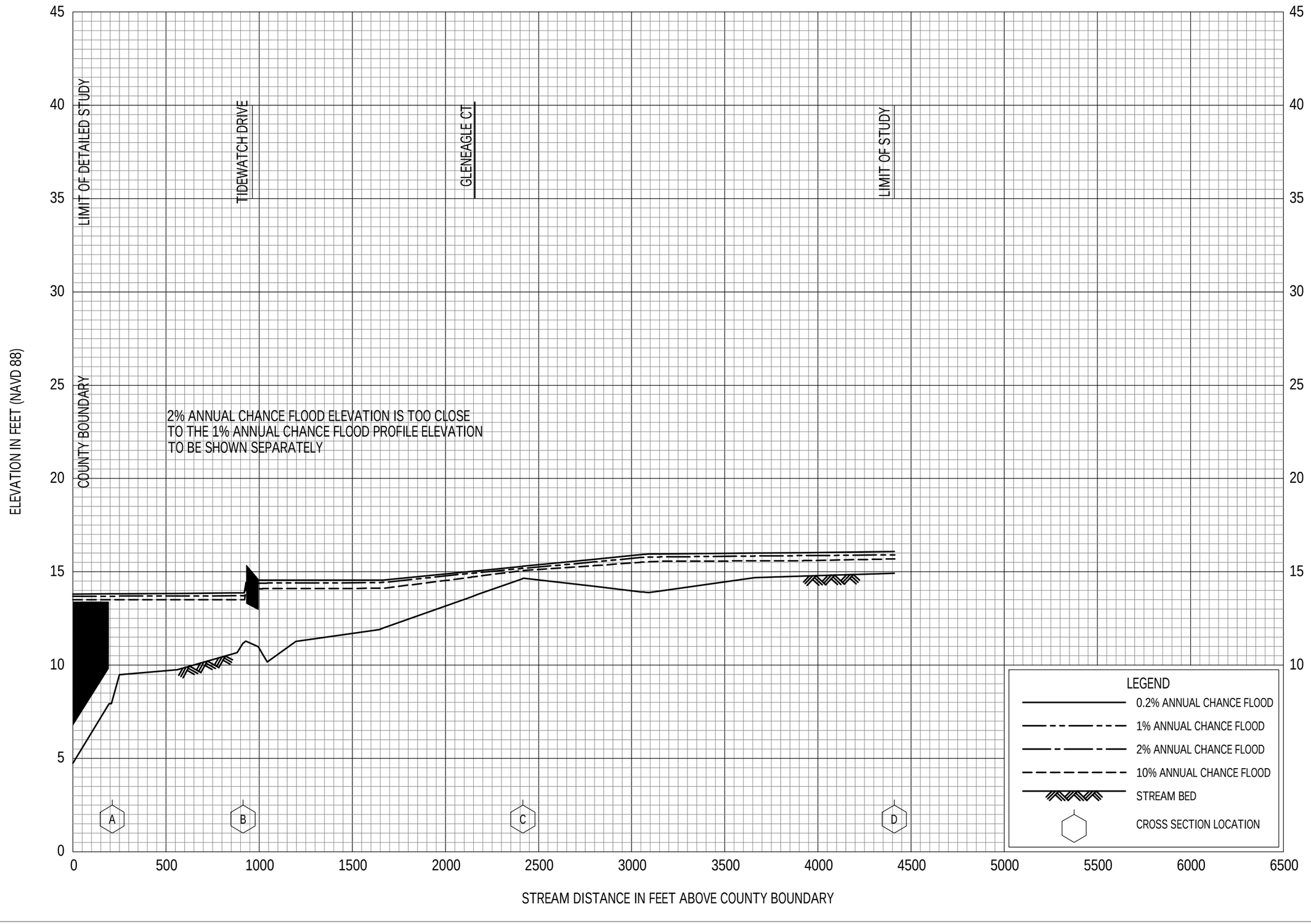
FLOOD PROFILES

TRIBUTARY A TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



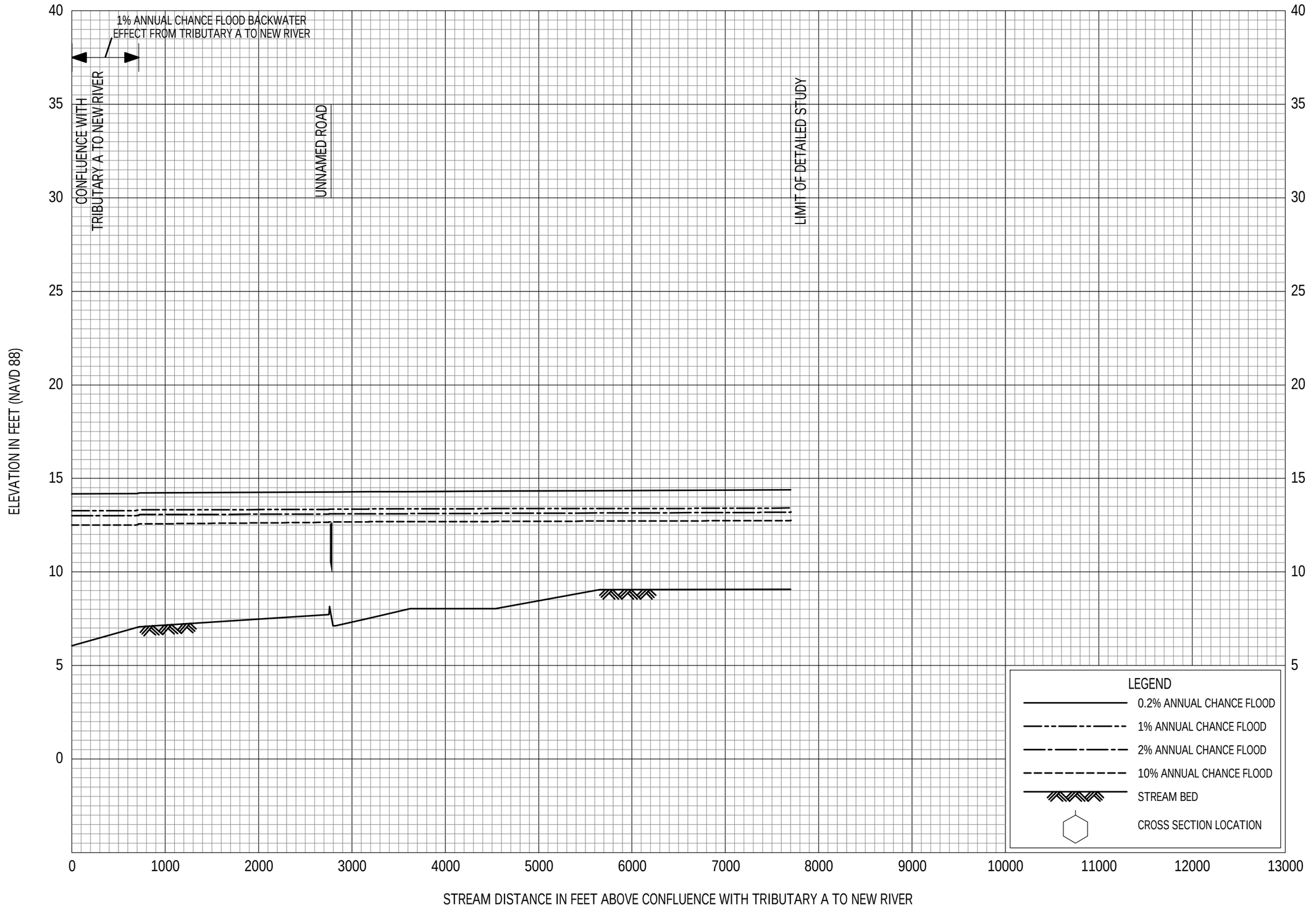
FLOOD PROFILES

TRIBUTARY A TO OKATIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



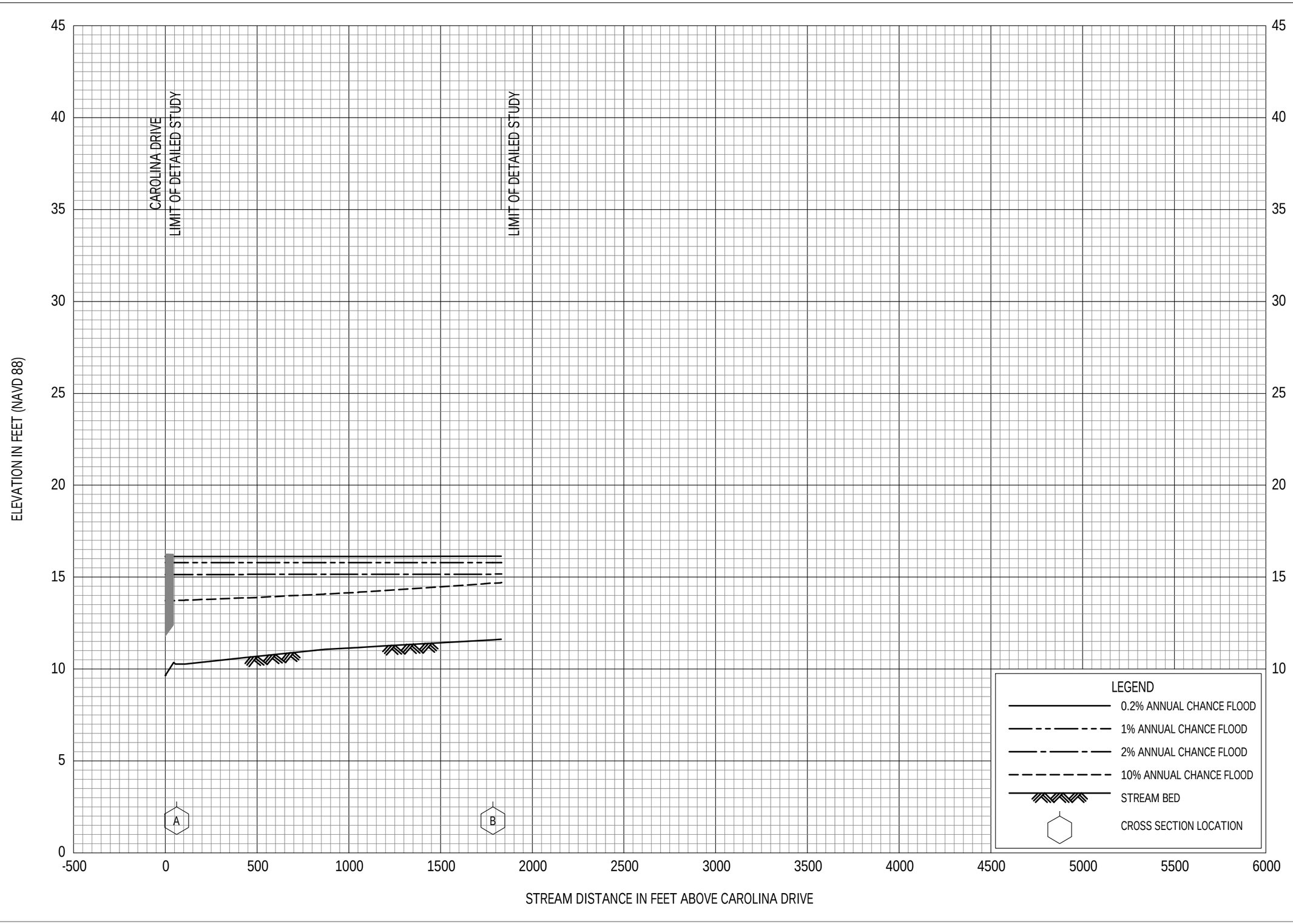
FLOOD PROFILES

TRIBUTARY A1 TO TRIBUTARY A TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



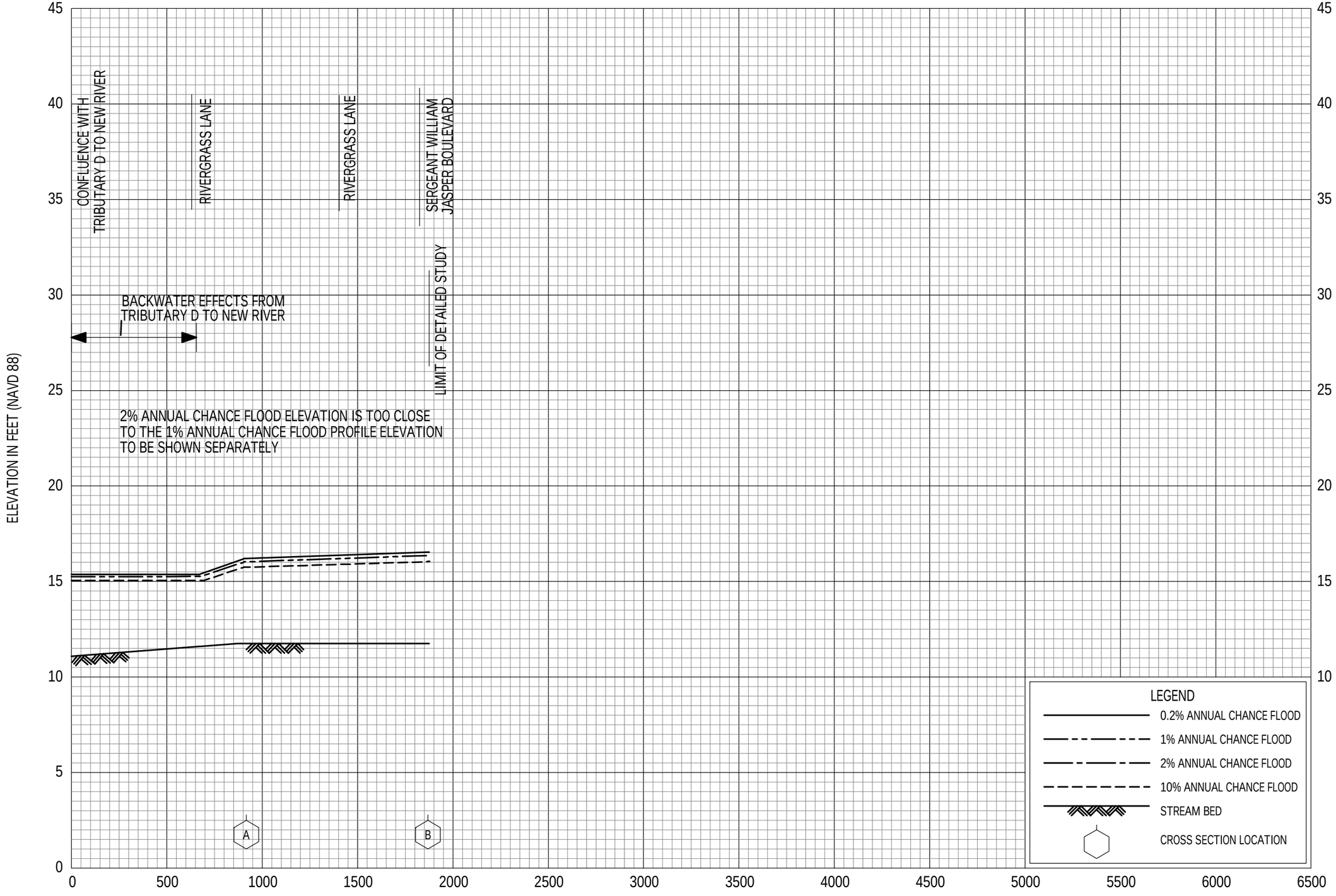
FLOOD PROFILES

TRIBUTARY A1 TO TRIBUTARY D TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



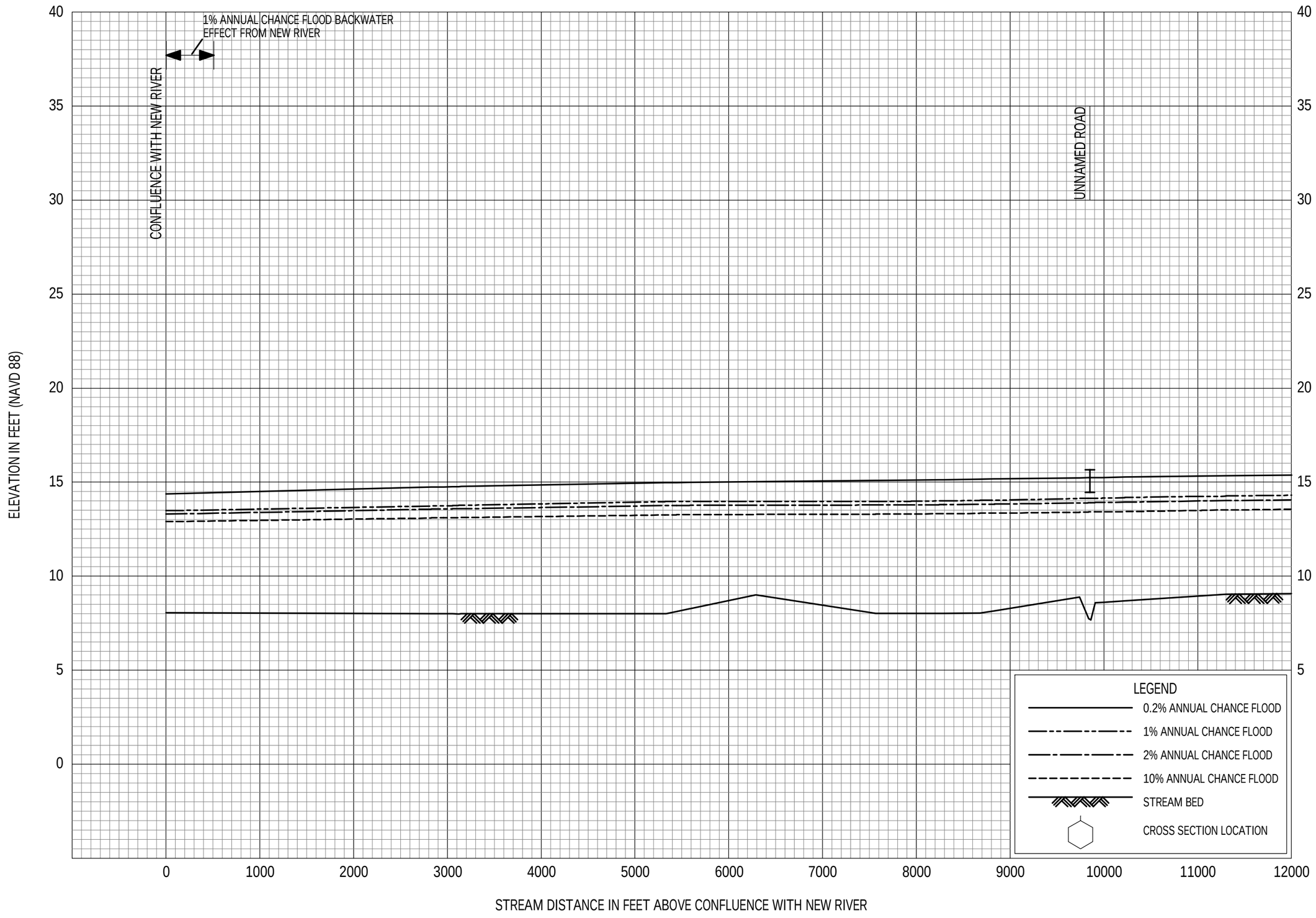
FLOOD PROFILES

TRIBUTARY A2 TO TRIBUTARY D TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



FLOOD PROFILES

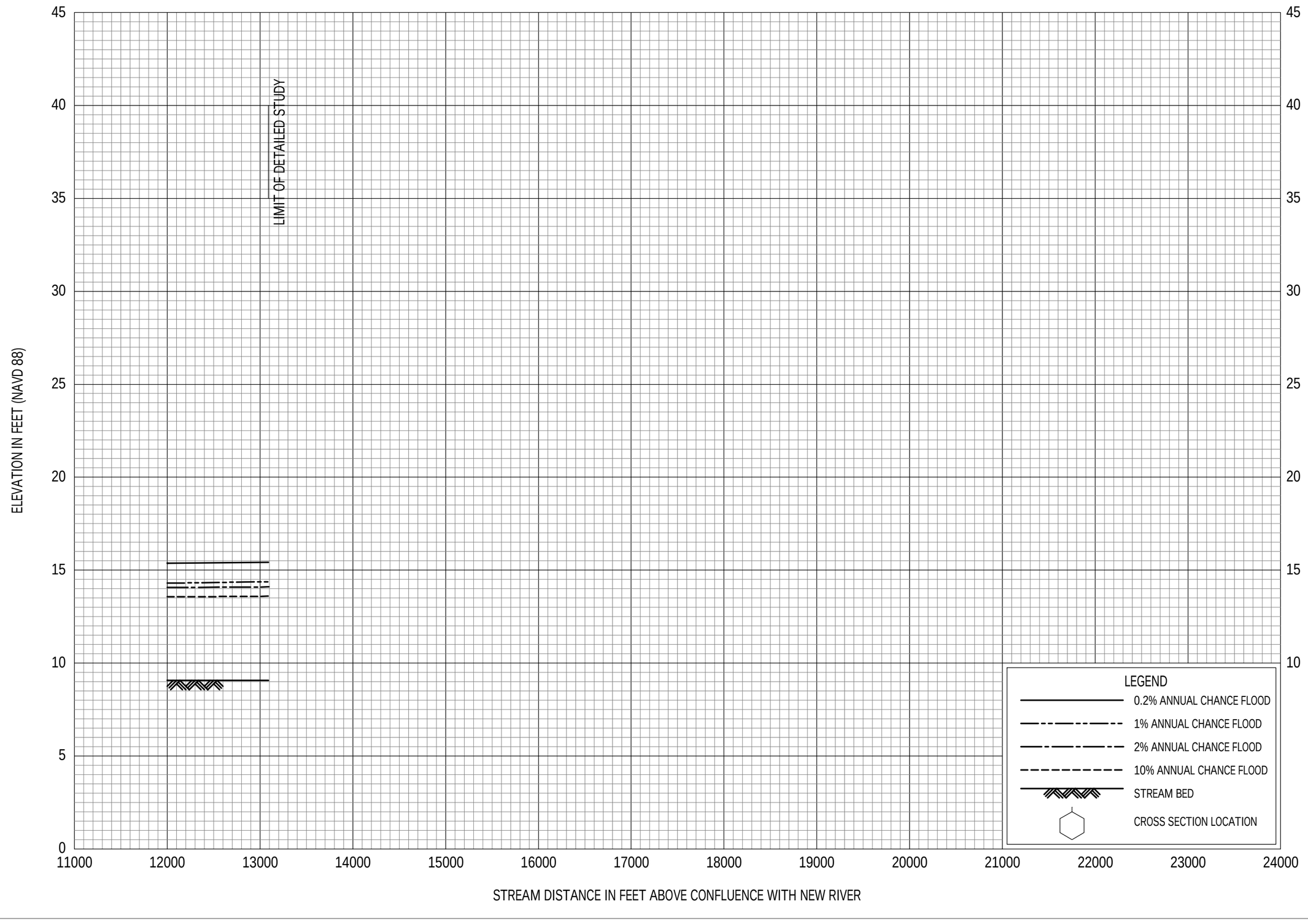
TRIBUTARY C TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

24P



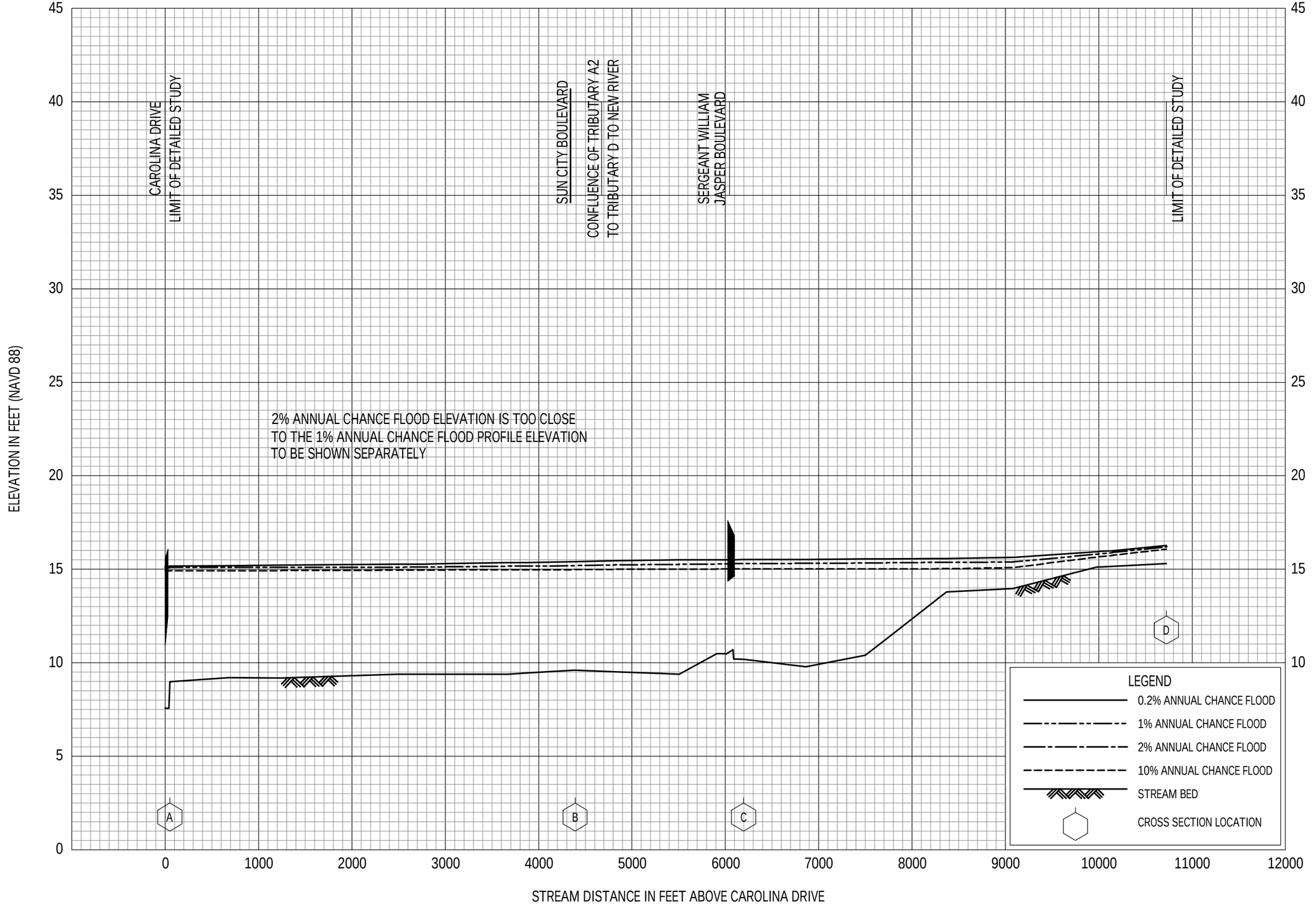
FLOOD PROFILES

TRIBUTARY C TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



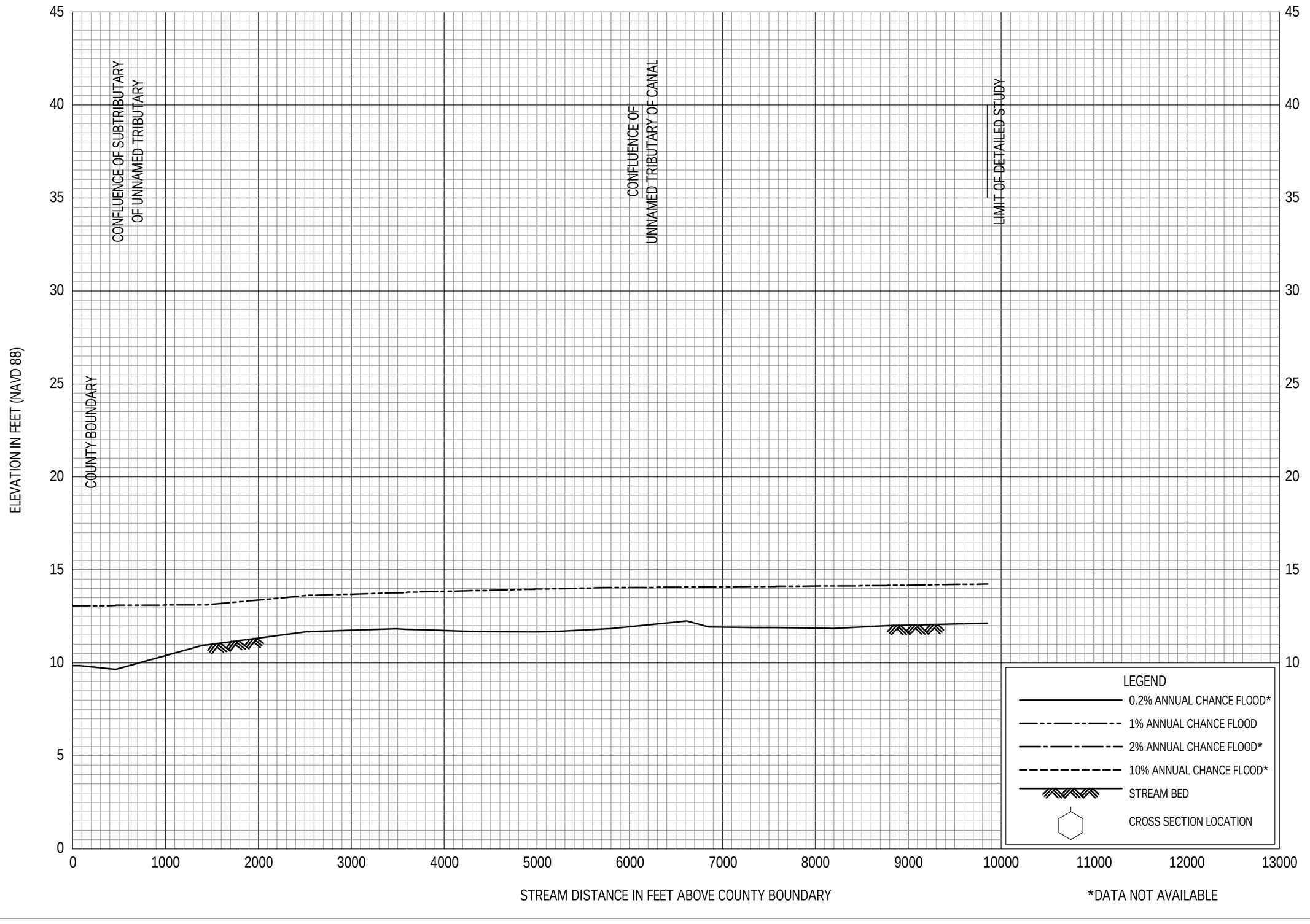
FLOOD PROFILES

TRIBUTARY D TO NEW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



FLOOD PROFILES

UNNAMED TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)

45
40
35
30
25
20
15
10
5
0

CONFLUENCE WITH BRICKYARD SWAMP

LIMIT OF DETAILED STUDY

1% ANNUAL CHANCE BACKWATER EFFECT FROM BRICKYARD SWAMP

A
B
C

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BRICKYARD SWAMP

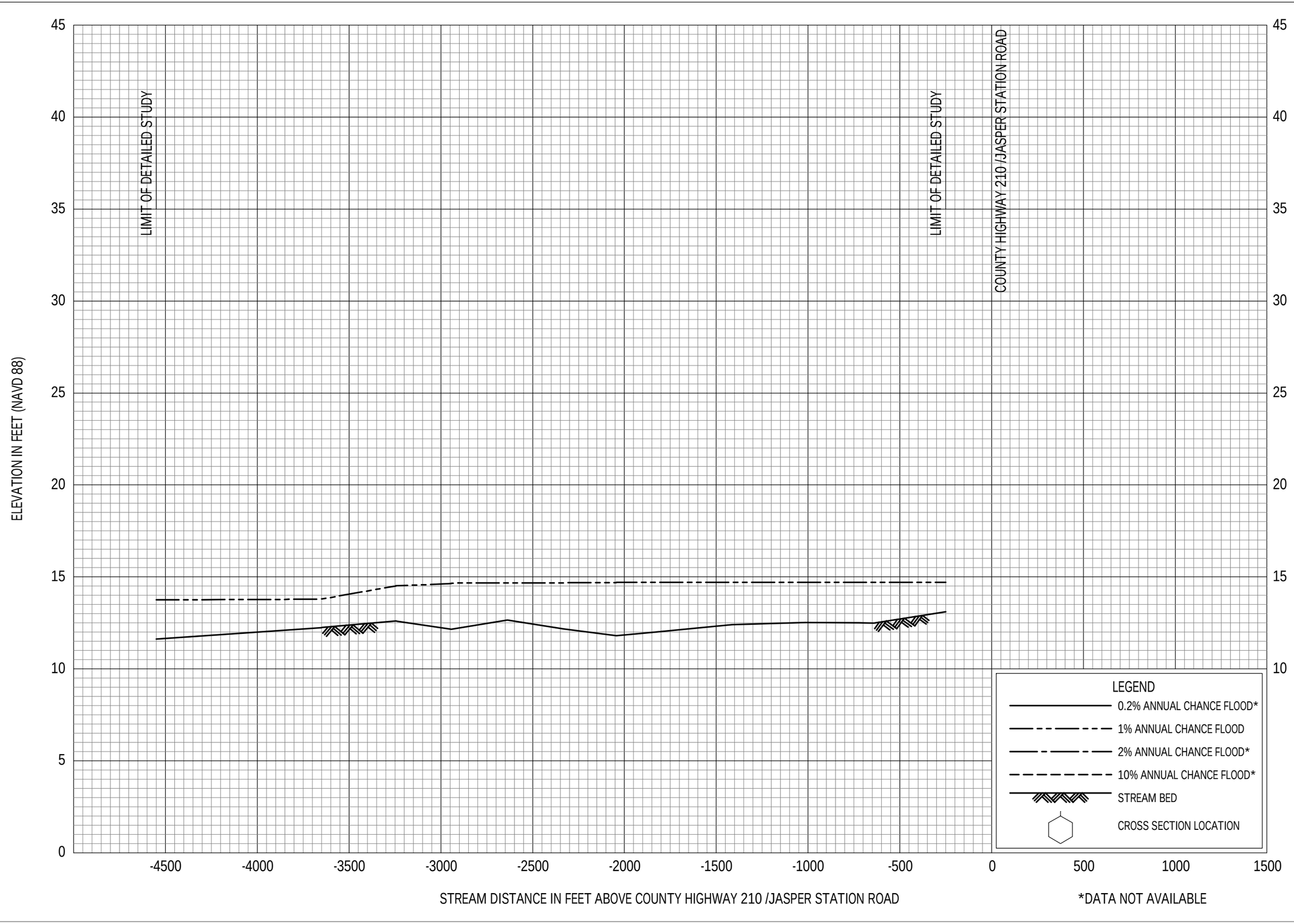
LEGEND
- 0.2% ANNUAL CHANCE FLOOD*
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD*
- 10% ANNUAL CHANCE FLOOD*
- STREAM BED
- CROSS SECTION LOCATION

*DATA NOT AVAILABLE

FLOOD PROFILES

UNNAMED TRIBUTARY TO BRICKYARD SWAMP

FEDERAL EMERGENCY MANAGEMENT AGENCY
JASPER COUNTY, SC
AND INCORPORATED AREAS



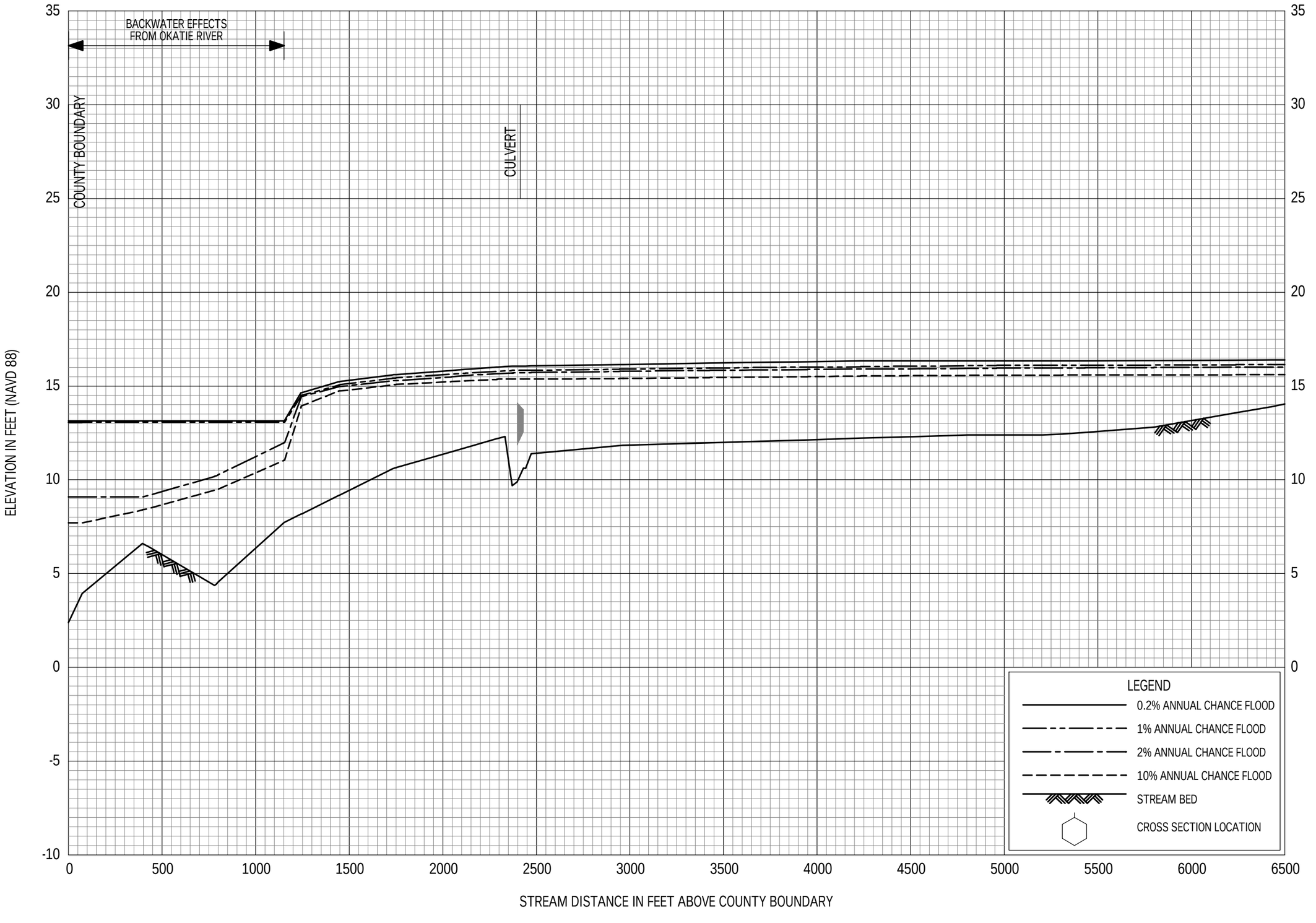
FLOOD PROFILES

UNNAMED TRIBUTARY TO CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



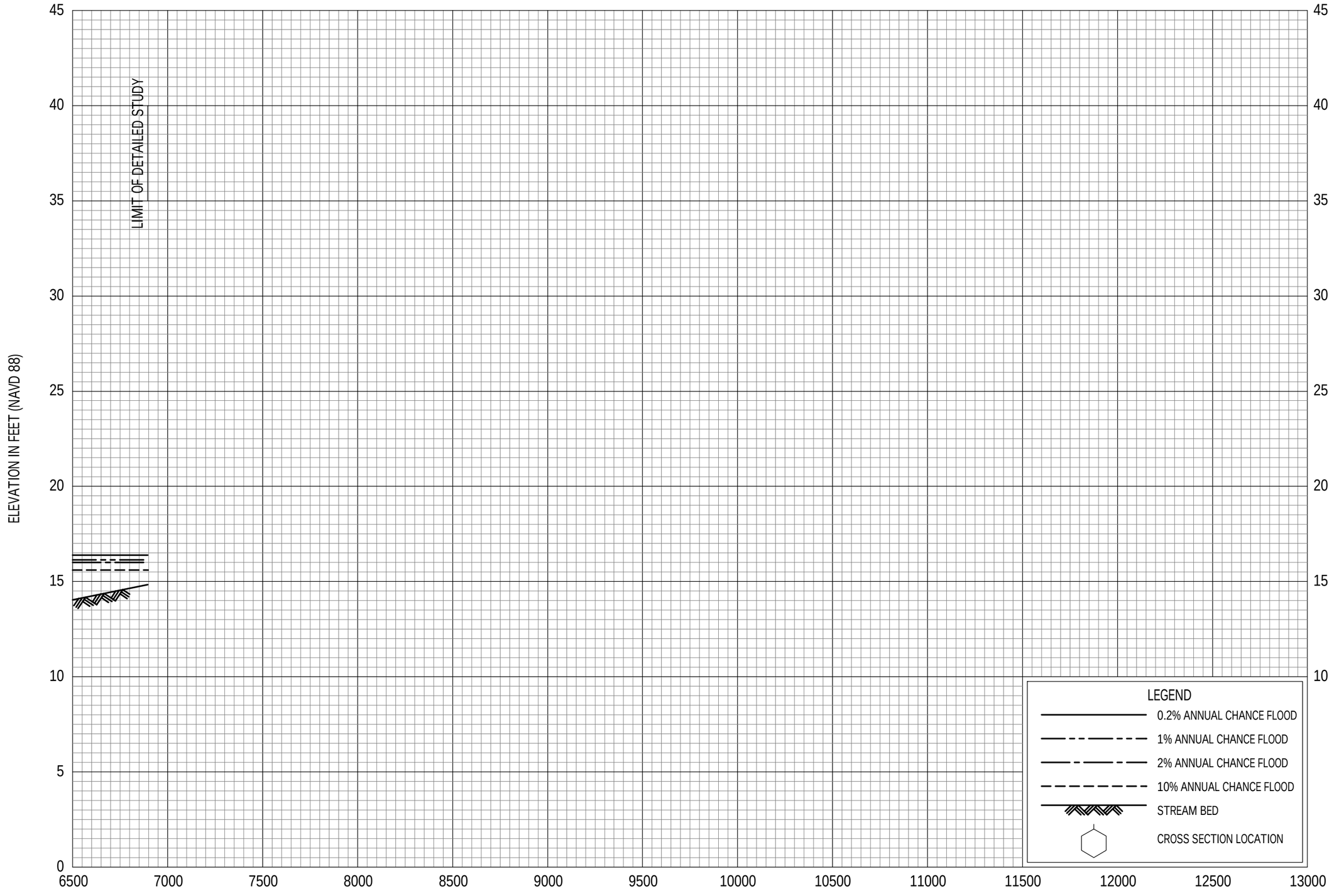
FLOOD PROFILES

UNNAMED TRIBUTARY TO OKATIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS



FLOOD PROFILES

UNNAMED TRIBUTARY TO OKATIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

JASPER COUNTY, SC

AND INCORPORATED AREAS