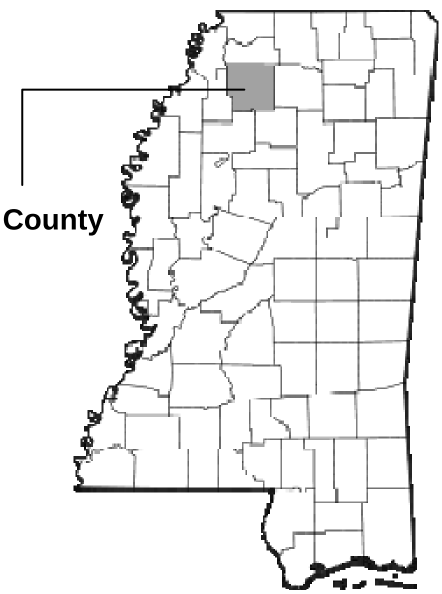
FLOOD INSURANCE STUDY

PANOLA COUNTY, MISSISSIPPI
AND INCORPORATED AREAS



Panola County

Community Name	Community Number
BATESVILLE, CITY OF	280126
COMO, TOWN OF*	280254
COURTLAND, TOWN OF	280255
CRENSHAW, TOWN OF	280127
PANOLA COUNTY (UNINCORPORATED AREAS)	280125
POPE, VILLAGE OF	280256
SARDIS, TOWN OF*	280257

*Non-floodprone community

PRELIMINARY
SEP 30 2010

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
28107CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) 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.

This preliminary FIS contains profiles presented at a reduced scale to minimize reproduction costs. All profiles will be included and printed at full scale in the final published report.

Selected Flood Insurance Rate Map panels for the 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	New Zone
A1 through A30	AE
B	X
C	X

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

Initial Countywide FIS Effective Date: Month xx, 201x

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FLOOD INSURANCE STUDY

PANOLA COUNTY, MISSISSIPPI, 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 Panola County, including the City of Batesville; the Towns of Como, Courtland, Crenshaw, and Sardis; the Village of Pope; and the unincorporated areas of Panola County (referred to collectively herein as Panola County), and 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.

Please note that the Towns of Crenshaw and Crowder are geographically located in Panola County and Quitman County. The Town of Crenshaw is included in its entirety in this FIS report. The Town of Crowder is not included in this study and is shown on the Flood Insurance Rate Map (FIRM) panels as Area Not Included. The Town of Crowder is included in its entirety in the FIRM for the Town of Crowder, Mississippi, Quitman County.

The Towns of Como and Sardis are non-floodprone and do not participate in the NFIP.

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.

The Digital Flood Insurance Rate Map (DFIRM) and FIS Report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information and is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

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. The sources of hydrologic and hydraulic analyses that have been performed for each jurisdiction included in this countywide FIS have been compiled from previous FIS reports and are described below.

Batesville, City of	The hydrologic and hydraulic analyses for the September 15, 1989 FIS report were performed by Smith and Sander, Inc. for the Federal Insurance Administration, under Contract No. H-4057. This study was complete in May 1978 (Reference 1).
Crenshaw, Town of	The hydrologic and hydraulic analyses for the March 1979 FIS report were performed by Smith and Sanders, Inc. (Study Contractor) for the Federal Insurance Administration under Contract No. H-4057. This work, which was completed in October 1977, covered all significant flooding sources in the Town of Crenshaw (Reference 2).
Panola County (Unincorporated Areas)	The hydrologic and hydraulic analyses for the November 1979 FIS report were performed by Smith and Sander, Inc. for the Federal Insurance Administration, under Contract No. H-4057. This study was complete in May 1978 (Reference 3).

For this countywide FIS, new hydrologic and hydraulic analyses were prepared by the State of Mississippi for FEMA under Contract No. EMA-2008-CA-58. These analyses were completed in August 2010. Floodplain boundaries for the detail study of Fowler Creek were delineated based on LIDAR data from the U.S. Army Corps of Engineers (USACE) (Reference 4). Floodplain boundaries for all other detail study streams were delineated based on 10 and 30 meter Digital Elevation Models (DEMs) from the U.S. Geological Survey (USGS).

Floodplain boundaries for enhanced approximate and approximate study streams were delineated based on a Digital Terrain Model (DTM) and contours. The DTM was compiled at a scale of 1:400 feet from imagery with a 2 foot ground sample distance (GSD) from a previous statewide project. Imagery acquisition occurred January through March, 2006 and January, 2007. The DTM was developed by Fugro EarthData, Inc. and Mississippi Geographic Information, LLC with cooperation from Mississippi Department of Environmental Quality, NOAA Coastal Services Center, Mississippi DOT, Mississippi State University, and Mississippi Coordinating Council for Remote Sensing and GIS. The DTM was delivered as mass points and breaklines and supports 5 foot ASPRS Class 2 contours.

Base map information shown on this Flood Insurance Rate Map (FIRM) was provided in digital format by the State of Mississippi, the City of Batesville, and the U.S. Census Bureau. The digital orthoimagery was photogrammetrically compiled at a scale of 1:400 from aerial photography dated March 2006.

The coordinate system used for the production of DFIRM is Mississippi State Plane West (FIPS 2302), referenced to the North American Datum of 1983, GRS80. Distance units were measured in United States (U.S.) feet. Differences in the datum and spheroid used in the projection of the 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 (CCO) meeting (also referred to as the Scoping meeting) is held with representatives of the communities, FEMA, and the study contractors to explain the nature and purpose of the FIS and to identify the streams to be studied. A final CCO meeting (also referred to as the Preliminary DFIRM Community Coordination, or PDCC, meeting) is held with representatives of the communities, FEMA, and the study contractors to review the results of the study.

For this countywide FIS, the initial CCO meeting was held on August 25, 2008, and attended by representatives of FEMA, the Mississippi Department of Environmental Quality (MDEQ), the Mississippi State Department of Health, community officials, and Mississippi Geographic Information, LLC. A final meeting, the Preliminary DFIRM Community Coordination (PDCC), was held on September 22, 2010 to review the results of this study. All problems raised at that meeting have been addressed in this study.

The dates of the historical initial and final CCO meetings held for the communities within the boundaries of Panola County are shown in Table 1, "Historical CCO Meeting Dates."

Table 1: Historical CCO Meeting Dates

Community Name	Initial CCO Date	Final CCO Date
City of Batesville	*	October 20, 1988
Town of Crenshaw	July 1975	September 8, 1978
Panola County (Unincorporated Areas)	June 1976	April 27, 1979

*Date not available

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Panola County, Mississippi, including the incorporated communities listed in Section 1.1. The scope and methods of this study were proposed to, and agreed upon, by FEMA, Panola County, and Mississippi Geographic Information, LLC.

This countywide FIS includes approximately 1.8 miles of new detailed study; 94.6 miles of redelineation; approximately 4.5 miles of enhanced approximate study; approximately 2.8 miles of new approximate study; and refinement and re-establishment of approximately 53.4 miles of effective Zone A.

The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed. The scope and methods of study were proposed to and agreed upon by FEMA and Panola County. The flooding sources studied by detailed methods are presented in Table 2, "Flooding Sources Studied by Detailed Methods".

Table 2: Flooding Sources Studied by Detailed Methods

Flooding Source	Reach Length (miles)	Study Limits
Fowler Creek	0.6	From Quitman/Panola county boundary to Approximately 100 feet upstream of Old Crenshaw Road
Whitten Creek	1.2	Approximately 1,080 feet downstream of Tiger Drive to approximately 1,110 feet upstream of Shamrock Drive

Due to the use of the Digital Terrain Model mentioned in Section 1.2 as the basis for mapping, selected streams were analyzed using an enhanced approximate approach instead of limited detailed studies. The differences between enhanced approximate and limited detailed studies are that Zone A designation is applied, Base Flood Elevations and cross sections are not shown on the DFIRMs, and no flood profiles are included in the FIS report for the enhanced approximate streams. Limited detailed survey methods were still used and floodway analyses were performed for these streams. In the event newer topographic data becomes available, the streams studied by enhanced approximate methods can easily be converted back to a traditional limited detailed study.

The areas studied by new enhanced approximate methods were selected for areas having low to moderate development potential or flood hazards. All flooding sources studied by enhanced approximate methods presented in Table 3, "Flooding Sources Studied by Enhanced Approximate Methods" were new studies for this countywide FIS.

Table 3: Flooding Sources Studied by Enhanced Approximate Methods

Flooding Source	Reach Length (miles)	Study Limits
Peters Creek Tributary 2	1.1	From the confluence with Peters Creek to approximately 0.6 mile upstream of MS Highway 718
Whitten Creek Tributary	3.4	From the confluence with Whitten Creek to approximately 1.6 miles upstream of County Club Road

Numerous streams were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

The appropriate Letters of Map Revision (LOMR) within Panola County and incorporated areas have been incorporated into the revised FIRMs. The FEMA issued LOMR is listed in Table 4, "Letters of Map Revision."

Table 4: Letters of Map Revision

Community	Case Number	Flooding Source	Effective Date	Status
City of Batesville	94-04-351P	Cole Creek and Tributary	September 19, 1994	Effective
City of Batesville	04-04-401P	Whitten Creek	March 3, 2006	Effective

Floodplain boundaries for all flooding sources within the study area have been mapped based upon the most up-to-date topographic data available.

2.2 Community Description

Panola County is located in the northwest section of Mississippi, approximately 45 miles south of Memphis, Tennessee, and 168 miles north of Jackson, Mississippi. Panola County is bordered by Tate County to the north; Lafayette County to the east; Yalobusha County to the southeast; Tallahatchie County to the southwest; Quitman County to the west; and Tunica County to the northwest. The county encompasses an area of 705 square miles which includes 21 square miles of water.

Panola County is located in the humid subtropical climate region, with long, hot summers and temperate winters. Normal daily average temperature in Batesville ranges from 39.5 degrees Fahrenheit (°F) in January to 80.2 °F in July (Reference 5). Rainfall is fairly evenly distributed throughout the year, with an annual average for the years 1971-2000 of about 56 inches in Batesville. However, the state is subject to periods of drought and flood as the climate delivers energy and moisture between the large landmass to the north and the Gulf of Mexico to the south (Reference 6). Thunderstorms that are locally violent and destructive occur on average about 60 days each year. Eight hurricanes have struck the coast since 1895.

The land in Panola County varies from flat delta land in its western sector to hilly, rough terrain along its eastern boundary. The delta lands are farmed extensively and timber is scarce except in low-lying areas along streams and bayous. The hills in the eastern sector are rather heavily wooded. Soil types vary from the sandy clays and loess found in the hill sections to the thick alluvium silts in the western delta portion of the county (Reference 3).

In 2008 manufacturing was the largest of 20 major economic sectors in Panola County. The year 2009 population of Panola County was estimated to be 35,245 (Reference 7). The population for the county grew by 27.7% in the last three decades of the 1900s. The county is traversed by Interstate Highway 55, U.S. Highway 51, State Highways 3, 6, and 35, and the Illinois Central Gulf Railroad.

The City of Batesville is the county seat for the southern half of the county, while the Town of Sardis is the county seat for the northern half. Batesville is surrounded by the unincorporated areas of Panola County. The year 2000 population of Batesville was reported to be 7,113 and the population of Sardis was reported as 2, 038 (Reference 7).

The Town of Crenshaw lies mostly in Panola County with only a small area in Quitman County. The year 2000 population for Crenshaw within Panola County was reported as 697. The general economy of this town is based on agriculture and related businesses. The year 2000 populations for the Towns of Como and Courtland and for the Village of Pope were 1,310, 460, and 241, respectively.

Tallahatchie River Basin

Most of Panola County falls within the basin of the Tallahatchie River and its tributaries. The Tallahatchie River extends from its origins in Tippah County, Mississippi, though Panola County to Leflore County, Mississippi, where it joins with the Yalobusha River to form the Yazoo River. The Yazoo River flows 188 miles from this confluence to discharge into the Mississippi River north of Vicksburg, Mississippi.

The upper sections of the Tallahatchie River in Panola County and above are referred to as the Little Tallahatchie River. From Tippah County, the Little Tallahatchie River flows generally west and northwestward through Union and Lafayette Counties into Sardis Lake. Sardis Lake is a 98,520-acre USACE flood control reservoir located in northwest Lafayette County and northeast Panola County.

Upon leaving Sardis Lake, the Little Tallahatchie River flows southwestward through the center of Panola County. Hotophia Creek is a major tributary of the Little Tallahatchie River that arises in east-central Panola County and flows northwestward into the Little Tallahatchie River about five miles below Sardis Lake, upstream of Batesville.

Whitten Creek and Cole Creek and their tributary streams arise near Batesville and flow generally northward through the city to join the Little Tallahatchie River below the confluence with Hotophia Creek.

Some five miles west of Batesville, the Little Tallahatchie River joins with McIvor Canal. McIvor Canal originates in north-central Panola County near the Town of Sardis and flows generally west and then south to its confluence with the Little Tallahatchie River. The Little Tallahatchie River and McIvor Canal combine to form the Panola-Quitman Floodway, another USACE flood control project. The Floodway flows southwestward to leave Panola County just southeast of the Town of Crowder. It flows south to a confluence with the Big Tallahatchie River about seven miles west of Charleston, Mississippi.

Yocona River Basin

The Yocona River and its tributaries, Bynum, Flowers, Rowsey, and Hubbard Creeks, drain the southeastern and extreme southern parts of Panola County. The Yocona River arises in Pontotoc County, Mississippi, and flows generally westward through Lafayette County to Enid Lake in southeastern Panola County. It continues southwestward, entering Tallahatchie County and then turning north back into Panola County. The Yocona River finally leaves Panola County at the extreme southwestern corner and immediately enters the Panola-Quitman Floodway.

Peters Creek is a major tributary to the Yocona River that arises in south central Panola County and flows generally southwestward to join the Yocona River southwest of the Village of Pope. This stream is formed by its tributaries Johnson, Goodwin, and Long Creeks east of the Town of Courtland and by unnamed tributaries flowing south through Courtland.

Indian Creek Basin

The extreme northern and northwestern area of Panola County is drained by tributaries of Indian Creek (Coldwater River basin), including Fowler Creek. Fowler Creek rises in the hills to the east of Crenshaw and flows along the southern boundary of that town into the Mississippi Delta to the west and its confluence with Indian Creek. The undeveloped flood plains of the streams in Crenshaw are composed primarily of open, cultivated lands while the stream channels and banks usually are filled with vegetation.

2.3 Principal Flood Problems

Tallahatchie River Basin

Generally, major floods in Panola County have been associated with periods of high water on the Little Tallahatchie River and its tributaries.

On April 29, 1973, Sardis Lake crested at an all-time gage record high stage of 285.80 ft., NAVD or 65.80 ft. on the gage after unusually heavy rainfall during the month of April. The monthly rainfall recorded at Sardis was 11.37 inches, as compared with normal rainfall of 4.94 inches for the month. Most camping areas along the upper and lower lakes were flooded, but there were no reports of other damages.

On November 26 and 27, 1973, 4.85 inches of rain fell in a 26-hour period with 1.60 inches recorded within a 30-minute period at Sardis Lake. State Highway 315 between the Town of Sardis and Sardis Lake again became impassable with portions of the highway washed out. Homes in low-lying areas were evacuated.

Widespread flooding across Mississippi, including Panola County, occurred between November 28 and 30, 2001, as the result of five to nine inches of rainfall. Numerous roads and some schools were closed and many homes and businesses were flooded (Reference 8). A similar event in June 19, 2007, caused flash flooding of 25 roads east-northeast of Batesville, including Highways 6 and 315. Heavy rain produced flash flooding in downtown Batesville on March 3, 2008.

Indian Creek Basin

Portions of Crenshaw have been flooded periodically by Fowler Creek. In the early 1950s local interest constructed a levee on the creek to protect the town but the levee has broken several times, most recently in 1973. Flood damage, though severe, principally has been confined to the downtown business section along the east side of the Illinois Central Gulf Railroad and to the area extending approximately one block east of the downtown section. Generally the portion of Crenshaw lying east of the railroad has been protected from prior floods on Fowler Creek by the railroad embankment extending in a north-south direction through the town. Minor flooding occurs in the portion of the town lying west of the railroad due primarily to inadequate local drainage facilities. There are no known instances of property damage from this source.

2.4 Flood Protection Measures

Little Tallahatchie River

Major flood protection facilities for the Little Tallahatchie River basin in the study area include Sardis Reservoir, the McIvor Canal, the Panola-Quitman Floodway, and the Lower Tallahatchie River Watershed Drainage Improvement Project. In addition, flood water retarding structures and stream channel improvements were implemented on Hotophia Creek.

Sardis Reservoir was constructed by the U.S. Army Corps of Engineers (USACE) as one of several flood control facilities that provide a degree of protection for the delta reaches of the Yazoo River basin. The reservoir is located in Panola County approximately six and a half miles southeast of Sardis. Constructed between 1938 and 1940, the reservoir controls flow from 1,545 square miles of hill area.

During the period 1959-1962, the Soil Conservation Service (SCS, now the Natural Resources Conservation Service) implemented a flood prevention project on Hotophia Creek. The project consisted of four floodwater retarding structures and stream channel improvements. The flood water retarding structures, all located on small tributaries of Hotophia Creek in the upper part of the drainage basin, consist of an earth embankment, an outlet conduit, and an emergency spillway. Stream channel improvements consist of channel enlargement, new channel, clearing and snagging, and streambank stabilization. The entire reach of Hotophia Creek included in this study was included in the flood prevention project.

The Lower Tallahatchie River Watershed Drainage Improvement Project was undertaken by the SCS in 1968-69 to improve drainage on several tributaries of the Little Tallahatchie River immediately northwest and west of the City of Batesville. Seven floodwater retarding structures and five grade stabilization and sediment control structures were included in the project. Approximately 18 miles of channel construction and two miles of channel clearing were also included.

McIvor Canal, extending from its mouth at the Little Tallahatchie River to the Illinois Central Gulf Railroad north of Sardis, was constructed during the period 1917-1922. The work was done by the McIvor Canal Drainage District which recently was dissolved.

The Panola-Quitman Floodway, located in Panola and Quitman Counties, affords protection for the eastern portion of Quitman County and parts of Panola and Tallahatchie Counties from the runoff from the hill sections of the Little Tallahatchie and Yocona Rivers. The floodway, constructed under the direction of the COE, replaced an old diversion channel built by local interests in about 1925. The new floodway, constructed in Panola County in the late 1960's begins in the delta section of Panola County, north of State Highway 6 near the intersection of the Little Tallahatchie River and the McIvor Canal and extends in a southerly direction to a point near the town of

Crowder where it intercepts the Yocona River. From this point it flows south to a confluence with the Big Tallahatchie River about seven miles west of Charleston, Mississippi. A system of levees, tied into the hills, was constructed on both sides of the floodway.

Yocona River and Peters Creek

The major flood protection facility on the Yocona River is the Enid Reservoir. Enid Reservoir lies approximately three miles north of the Town of Enid, 26 miles north of the City of Grenada, and 0.8 mile east of U.S. Highway 51. Most of the reservoir is located in Yalobusha County, with only a small portion falling in Panola County. The facility, which was placed in operation in 1952, controls flow from a watershed of 560 square miles.

Peters Creek was canalized from its mouth to the mouth of Johnson Creek which is immediately upstream of the present location of the Interstate Highway 55 crossing. This project was done by a local drainage district during the period 1927-28.

Indian Creek Basin

In 1963, the SCS (now the Natural Resources Conservation Service) constructed four floodwater retarding structures in the Fowler Creek watershed in the hills east of the Town of Crenshaw.

Between 1973 and 1975, flood protection facilities were built in portions of western Panola County and eastern Quitman County under the Indian Creek-Bobo Bayou Drainage Improvement Project. The primary purpose of the project was to help control runoff from the hill sections of Panola County and, as a consequence, to reduce flooding in the delta portion of the county. In 1973, the SCS built a levee protecting Crenshaw along the north bank of the reach of Fowler Creek extending from Mississippi State Highway 3 downstream past the corporate limits of the town. As a result of the 1973 flooding, the SCS rebuilt the levee in 1974 to protect Crenshaw along the north bank of the reach of Fowler Creek extending from Mississippi State Highway 3 upstream to the hills east of the town. This project was accomplished under the emergency program. In 1974-75, a large number of channels were improved and five floodwater retarding structures were constructed on Peach Creek as part of the Indian Creek-Bobo Bayou Drainage Improvement Project.

Panola County is part of the USACE Yazoo Basin Headwaters Project. A Provisionally Accredited Levee (PAL) was issued by FEMA for levees existing along the Little Tallahatchie River as part of the Panola Quitman Floodway. Significant portions of this levee system show protection against the 1-percent-annual-chance flood on the previous effective FIRM. At the time of this submittal, the PAL for the Panola Quitman Floodway levee is currently under review. A PAL note is included on the panels containing the levee. If the PAL is not accepted then the PAL note will be removed from the panels and the levee will be mapped as not showing protection.

There are other levees existing in the study area that provide the community with some degree of protection against flooding. However it has been ascertained that some of these levees may not protect the community from rare events such as the 1-percent-annual-chance flood. The criteria used to evaluate protection against the 1-percent-annual-chance flood are 1) adequate design, including freeboard, 2) structural stability, and 3) proper operation and maintenance.

Levees that do not protect against the 1-percent-annual-chance flood are not considered in the hydraulic analysis of the 1-percent-annual-chance floodplain.

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

3.1.1 Methods for Flooding Sources with New or Revised Analyses in Current Study

For this countywide study, hydrologic analyses were carried out to establish peak discharge frequency relationships for each flooding source studied by detailed, enhanced approximate, and approximate methods affecting the community. A summary of peak discharge-drainage area relationships for streams studied by detailed methods is shown in Table 5, "Summary of Discharges."

Discharges for the 1-percent-annual-chance recurrence interval for all new enhanced approximate and approximate streams in Panola County were determined using Rural-West Region USGS regression equations for rural areas in Mississippi found in USGS Water-Resources Investigations Report 91-4037 (Reference 9).

Discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance recurrence interval for Whitten Creek were determined using Rural-West Region USGS regression equations for rural areas in Mississippi found in USGS Water-Resources Investigations Report 91-4037 (Reference 10).

Adjustments for urbanization effects were made according to the methodology presented by the USGS in "Flood Characteristics of Urban Watersheds in the United States" (Reference 10).

Peak discharge-frequency data for the 1-percent-annual-chance flood for the uncontrolled drainage basin of Fowler Creek at Crenshaw were computed using regional relationships developed by the USGS (Reference 11). To obtain final peak discharge-frequency data, the discharge rates from the four floodwater retarding structures within the basin were added to the discharges for the uncontrolled portion of the basin. This peak discharge was fit to a unit hydrograph which was incorporated into the hydraulic model.

3.1.2 Methods for Flooding Sources Incorporated from Previous Studies

This section describes the methodology used in previous studies of flooding sources incorporated into this FIS that were not revised for this countywide study. Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

Little Tallahatchie River

Peak discharge-frequency data for the Little Tallahatchie River were derived from streamflow records obtained from two gaging stations on the reach of the stream being studied.

A gage was established on the Little Tallahatchie River at Mississippi State Highway 6 by the USACE on February 23, 1940. For the 1979 FIS, values for the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges at this location were obtained from a log-Pearson Type III distribution of annual peak-flow data for the 35-year period from 1942 to 1976. The period of analysis was begun in 1942 because this was the first year in which the Sardis Dam was fully operational. The computations were performed using guidelines in Bulletin No. 17 (Reference 12)

The USACE also maintained a recording gage on the Little Tallahatchie River at the Belmont Bridge during the period 1929-1959. Belmont Bridge is located about five miles downstream from Sardis Lake. The gage was discontinued on March 24, 1960. A unit hydrograph for the Little Tallahatchie River at this location was developed from rainfall-runoff records. Discharge records from another gaging station on the Little Tallahatchie River at the Sardis Lake outlet were used to separate the discharge basin downstream of the dam. Consequently, the unit hydrograph represents discharge only from the Little Tallahatchie River drainage basin below Sardis Lake.

Values for the 10-, 2-, and 1-percent-annual-chance discharges at the Belmont Bridge location were obtained from the unit hydrograph and rainfall data derived from the U.S. Department of Commerce publication, *Rainfall Frequency Atlas of the United States* (Reference 13). The 0.2-percent-annual-chance discharge was determined by straight-line extrapolation of a single-log graph of the 10-, 2-, and 1-percent-annual-chance discharges. Final discharge values at the Belmont Bridge locations were determined by adding 2,500 cfs to the values computed by the unit hydrograph. The 2,500 cfs was added to account for base flow in the stream and possible discharge from Sardis Lake. Discharges at intermediate locations on the Little Tallahatchie River were proportioned based on drainage area.

For Hotophia Creek, final peak discharges were computed by adding the spillway outflow from the floodwater retarding structures to the peak flows computed for the uncontrolled drainage areas. Adjustments for urbanization effects, if required, were made according to the methodology presented by the USGS in *An Approach to Estimating Flood Frequency for Urban Areas in Oklahoma* (Reference 14).

<u>All Other Flooding Sources</u>

Peak discharge-frequency relationships for the other streams studied in Panola County were derived using USGS regional relationships developed for Mississippi (Reference 11). Peak flows computed from the regional relationships were adjusted for compatibility with streamflow records obtained from a gaging station on Peters Creek. Values for the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges at this location were obtained from a log-Pearson Type III distribution (Reference 5) of annual peak flow data for the 36-year period of record from 1940 to 1975 (Reference 12).

Table 5: Summary of Discharges

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
BELMONT CREEK					
Cross Section A	4.98	2,020	2,800	3,330	4,260
Cross Section D	3.81	1,740	2,370	2,790	3,560
Cross Section E	1.99	1,190	1,590	1,850	2,350
BLACKS CREEK					
Cross Section A	3.26	1,960	2,640	3,080	3,920
Cross Section B	2.70	1,850	2,450	2,830	3,590
Cross Section C	2.00	1,510	1,970	2,280	2,880
COLE CREEK					
About 0.6 mile downstream of Tubbs Road (Cross Section A)	7.18	6,530	8,600	9,720	11,900
At Tubbs Road	4.41	3,640	4,830	5,450	6,740
FOWLER CREEK					
Mississippi State Highway 3	7.11	*	*	2,440	*
GOODWIN CREEK					
Cross Section A	8.93	3,300	4,650	5,420	6,950
Cross Section D	6.72	3,120	4,340	5,030	6,440
Cross Section E	3.22	1,610	2,200	2,590	3,300
HOTOPHIA CREEK					
Mississippi State Highway. 35	34.8	8,630	12,200	13,500	17,500
Cross Section G	27.8	7,790	9,910	11,100	14,200
Cross Section I	24.6	6,440	9,140	10,300	13,200

Table 5: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
HOTOPHIA CREEK (continued)					
Cross Section J	21.6	5,750	8,130	9,140	11,700
Cross Section K	17.9	4,950	6,940	7,800	10,000
Cross Section M	10.2	3,900	5,380	5,980	7,650
JOHNSON CREEK					
Cross Section A	20.0	5,720	8,160	9,260	11,900
Cross Section C	11.7	3,560	5,030	5,750	7,380
Cross Section F	8.09	2,880	4,050	4,730	6,070
Cross Section H	5.55	2,400	3,330	3,900	5,000
Cross Section I	4.48	2,300	3,150	3,650	4,670
JONES CREEK					
Mississippi State Highway 35	9.02	3,830	5,360	6,140	7,880
Cross Section D	6.19	3,020	4,180	4,840	6,200
Cross Section F	4.70	2,790	3,790	4,340	5,550
Cross Section H	1.13	980	1,260	1,390	1,750
LITTLE TALLAHATCHIE RIVER					
At Mississippi State Highway 6	1,802	23,600	29,000	31,100	35,600
About 5.8 miles downstream of Old Panola Road(Cross section C)	1,680	16,400	20,800	22,500	26,500
Cross Section G	1,657	15,000	19,300	20,900	24,700
Railroad	1,640	14,000	18,100	19,700	23,500
Belmont Road	1,595	11,350	15,100	16,500	20,100

Table 5: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
LITTLE TALLAHATCHIE RIVER (continued)					
Cross Section N	1,561	9,300	12,800	14,100	17,500
Cross Section O	1,557	9,130	12,600	13,900	17,300
LONG CREEK					
Cross Section A	40.4	11,600	16,800	19,300	25,000
Cross Section B	30.7	9,130	13,200	15,200	19,600
Cross Section D	13.5	5,740	8,060	9,150	11,800
Cross Section F	10.1	5,090	7,090	7,690	10,200
MCIVOR CANAL					
Mouth	73.1	14,600	21,400	24,700	32,000
Cross Section E	53.4	14,100	20,600	23,800	30,900
Cross Section G	32.6	10,300	15,000	17,400	22,500
Cross Section H	26.3	9,300	13,400	15,700	20,300
Cross Section I	18.2	7,340	10,400	12,100	15,700
Cross Section J	11.8	5,200	7,320	8,610	11,100
Cross Section K	7.65	4,040	5,580	6,470	8,300
Cross Section L	6.36	3,820	5,220	6,030	7,710
PETERS CREEK					
Cross Section A	86.2	19,100	28,000	31,900	41,400
U.S. Highway 51	66.2	17,800	26,000	29,600	38,400
Interstate Highway 55	60.9	17,400	25,400	29,000	37,500

Table 5: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
RUNNING SLOUGH DITCH					
Cross Section A	11.3	2,940	4,690	5,590	7,320
Cross Section B	9.25	2,530	4,020	4,780	6,250
Cross Section C	5.07	1,790	2,780	3,260	4,230
STREAM A					
Cross Section A	1.49	1,300	1,690	1,840	2,310
Cross Section B	1.31	1,210	1,560	1,690	2,130
Cross Section C	0.71	850	1,060	1,110	1,380
STREAM B					
Cross Section A	2.47	1,390	1,870	2,160	2,750
Mississippi State Highway 6	2.17	1,330	1,780	2,040	2,590
STREAM C					
Cross Section A	4.03	2,100	2,870	3,360	4,290
STREAM D					
Cross Section A	7.42[1]	5,550	7,500	8,270	10,600
Cross Section B	0.99	800	1,040	1,150	1,440
STREAM E					
Cross Section A	7.42[1]	5,550	7,500	8,270	10,600
Cross Section B	1.06	1,010	1,300	1,400	1,760

[1] Drainage area includes both Streams D and E.

Table 5: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
WHITTEN CREEK					
About 0.5 mile downstream of U.S. Highway 51 (Cross Section A)	2.08	1,990	2,660	2,920	3,590
At U.S. Highway 51	1.35	1,310	1,700	1,900	2,340
About 0.5 mile upstream of Railroad	0.82	740	950	1,040	1,250

3.2 Hydraulic Analyses

Hydraulic analyses were performed to estimate the elevation of flooding during the base flood event. 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. 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 in conjunction with the data shown on the FIRM.

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

Roughness coefficients (Manning's "n") were chosen by engineering judgment and based on field observation of the channel and floodplain areas. Table 6, "Summary of Roughness Coefficients," contains the channel and overbank "n" values for the streams studied by detailed methods.

Table 6: Summary of Roughness Coefficients

Flooding Source	Channel	Overbanks
Cole Creek	0.04 – 0.06	0.08 – 0.15
Fowler Creek	0.050 – 0.055	0.060 – 0.150
Little Tallahatchie River	0.035	0.08 – 0.12
Whitten Creek	0.04 – 0.06	0.07 – 0.15
All Other Streams	0.04 – 0.06	0.08 – 0.15

Flood elevations may be raised by debris blockage of the streams in the study area. 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.

3.2.1 Methods for Flooding Sources with New or Revised Analyses in Current Study

Analyses of the hydraulic characteristics of flooding from the sources studied by detailed, enhanced approximate and approximate methods were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Water-surface profiles were computed for Whitten Creek through the use of the USACE HEC-RAS version 4.0 computer program (Refernce15). Water surface profiles were produced for the 10-, 2-, 1-, and 0.2-percent-annual-chance storms for the detail study of Whitten Creek.

The hydraulic analysis for Fowler Creek was conducted using FLO-2D (Reference 16), which is a two dimensional, dynamic flood routing model that simulates channel flow, unconfined flow and street flow. Two models were constructed for Fowler Creek: a with levee model and a without levee model. The only difference between the two models was the presence of the levees in the with levee model. Preparation of the hydraulic model was achieved through the use of the FLO-2D Grid Developer System (GDS) and ESRI's ArcMap program. (Reference 17) GDS is a FLO-2D preprocessor developed by FLO-2D Software Inc. for use in developing FLO-2D models. ArcMap is a Geospatial Information System Platform developed by ESRI. Data including overland flow Manning's 'n' values, levee data, transportation lines, building footprints, location of inflowing hydrographs, model extents, and terrain elevation, were prepared in ArcMap and then imported into GDS. The channel geometry was improved through the incorporation of the previously effective study's structure survey and surveyed cross sections. The transportation lines, overland flow Manning's 'n' values, and building footprints were all obtained from aerial imagery (Reference 18). The various data was not input into GDS all at once. The data was entered into GDS in stages. Once the data for a stage was entered it was checked for accuracy and completeness. Once verified, a FLO-2D model was built and run. Through several iterations, the data was slightly adjusted to increase model stability and speed. Once the model was stable and completing calculations in a reasonable time, the next stage of data was added to GDS and the process repeated, but this time including the next stage of data in the run. This process was repeated until all data was in the model and the model was running stable and at a reasonable calculation time.

Water surface profiles were developed for the 1-percent-annual-chance flood for Fowler Creek and the overbank flooding from the FLO-2D model results.

Water-surface profiles were computed for enhanced approximate and approximate study streams through the use of the USACE HEC-RAS version 3.1.2 computer program (Reference 19). Water surface profiles were produced for the 1-percent-annual-chance storms for enhanced approximate and approximate studies.

The enhanced approximate and approximate study methodology used Watershed Information System (WISE) as a preprocessor to HEC-RAS (Reference 20). Tools within WISE allowed the engineer to verify that the cross-section data was acceptable. The WISE program was used to generate the input data file for HEC-RAS. Then HEC-RAS was used to determine the flood elevation at each cross section of the modeled stream. No floodway was calculated for streams studied by approximate methods.

The 1-percent-annual-chance flood elevations for Enid and Sardis Lakes were determined by analysis of historical stage records. These elevations are presented in Table 7," Summary of Stillwater Elevations."

Table 7. Summary of Stillwater Elevations

FLOODING SOURCE AND LOCATION	ELEVATION (ft NAVD) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
ENID LAKE At Dam	*	*	273.5	*
SARDIS LAKE At Dam	283.1	*	285.6	*

*Data Not Available

The hydraulic analyses for this study are based only on the effect on unobstructed flow. The flood elevations as shown on the profiles are thus considered valid only if hydraulic structures in general remain unobstructed and do not fail.

Floodplains were mapped to include backwater effects that govern each flooding source near its downstream extent. Floodplains were reviewed for accuracy and adjusted as necessary.

3.2.2 Methods for Flooding Sources Incorporated from Previous Studies

Cross-section data for streams in the study area were obtained by field survey. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

For all studies not revised with this FIS, water-surface profiles were developed using the HEC-2 step-backwater computer model (Reference 21). Records from the gages on the Little Tallahatchie River at Mississippi State Highway 6 and Belmont Bridge and on Peters Creek at U.S. Highway 51 were used in developing and adjusting computed water-surface profiles on those streams. Values for the 10-, 2-, 1-, and 0.2-percent-annual-chance water-surface elevations at the gage locations were obtained from log-Pearson Type III distributions of annual peak stage data.

An area in Panola County immediately west of Batesville and south of Mississippi State Highway 6 was determined to be subject to shallow flooding. For purposes of the NFIP, shallow flooding is defined as flooding which is limited to 3.0 feet or less in depth and unrelated to or not readily associated with channel flooding and flood profiles, and where reliable determinations of depths, extent of flooding, and direction of flow by hydraulic backwater computations are extremely difficult, if not impossible. The type of shallow flooding occurring in this area of Panola County is sheet runoff. Sheet runoff is the broad, relatively unconfined downslope movement of water across gently sloping terrain that results from many sources including intense rainfall, overflow from a channel which crosses a drainage divide, and alluvial fan flow. Sheet runoff is typical in areas of low topographic relief. This area subject to shallow flooding in Panola County was identified from routings, field reconnaissance, local inquiries and examination of topographic maps.

Approximate 1-percent-annual-chance flood boundaries in the Delta portion of Panola County were determined from existing data, published reports, interviews with local residents and field and map reconnaissance.

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 used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. It is important to note that adjacent counties may be referenced to NGVD29, which may result in differences in base flood elevations across county lines.

Some of the data used in this revision were taken from the prior effective FIS reports and FIRMs and adjusted to NAVD88. The datum conversion factor from NGVD29 to NAVD88 in Panola County is -0.03 feet.

For more information regarding conversion between the NGVD29 and NAVD88, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (Reference 22), 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 20910-3282
(301) 713-3242

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 community. Interested individuals may contact FEMA to access these data.

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

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS 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 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 or limited 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 topographic maps at a scale of 1:24,000 with contour intervals of 10 and 20 feet.

The 1- and 0.2-percent-annual-chance floodplain boundaries for streams studied by detailed methods 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 (Zone X). 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 streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2). For this revision, the floodplain boundaries were delineated based on topographic data provided by the DTM mentioned in Section 1.2.

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 study 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 and provided in Table 8, “Floodway Data Table.” The computed floodway is 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 on the FIRM.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

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 (WSEL) of the base flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

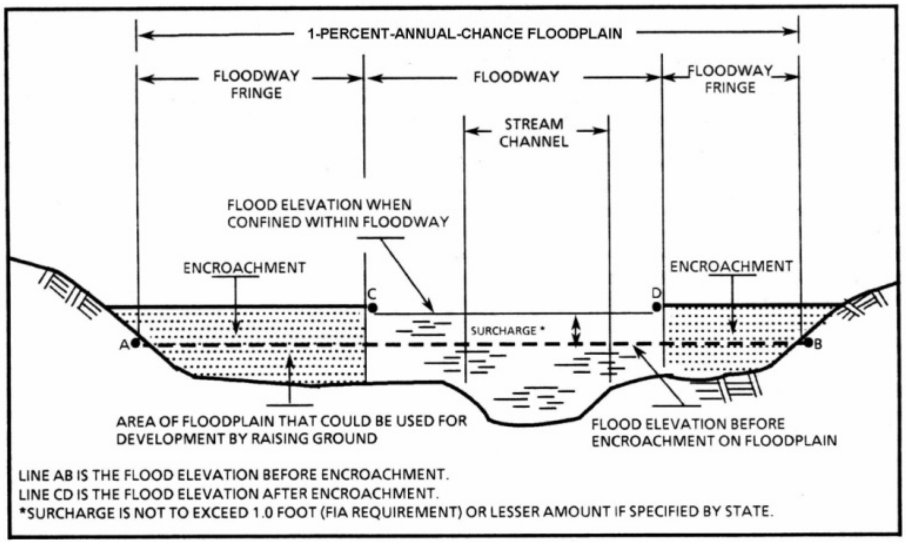

Figure 1. Floodway Schematic

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
BELMONT CREEK								
A	5,900	422	1,854	1.80	214.4	214.4	215.4	1.0
B	8,500	1,016	4,918	0.68	221.7	221.7	222.7	1.0
C	12,000	500	886	3.76	229.6	229.6	229.6	0.0
D	15,430	700	2,920	0.95	239.7	239.7	240.7	1.0
E	18,750	233	1,036	1.79	249.0	249.0	249.8	0.8
F	21,100	207	793	2.33	254.8	254.8	255.8	1.0

[1]Feet above mouth

TABLE 8	FEDERAL EMERGENCY MANAGEMENT AGENCY **PANOLA COUNTY, MS AND INCORPORATED AREAS**	**FLOODWAY DATA** **BELMONT CREEK**

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
BLACKS CREEK								
A	2,875	77	655	4.70	219.0	219.0	220.0	1.0
B	6,000	61	611	4.63	226.1	226.1	227.1	1.0
C	9,960	283	737	3.09	244.8	244.8	245.7	0.9

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

BLACKS CREEK

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
COLE CREEK								
A	3,660	528	3,701	2.63	201.6	201.6	202.1	0.5
B	6,950	1,061	3,086	1.77	210.0	210.0	211.0	1.0
C	8,970	51	266	3.8	210.7	210.7	211.5	0.8
D	9,435	45	273	3.7	213.2	213.2	213.4	0.2

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

FLOODWAY DATA

COLE CREEK

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
GOODWIN CREEK								
A	3,350	88	861	6.30	237.7	236.2[2]	236.5	0.3
B	7,310	59	713	7.60	247.1	247.1	248.0	0.9
C	10,740	852	3,473	1.56	256.9	256.9	257.9	1.0
D	14,700	179	1,105	4.55	267.7	267.7	268.6	0.9
E	19,070	62	588	4.40	280.3	280.3	281.3	1.0

[1]Feet above mouth

[2]Elevation computed without consideration of backwater effects from Long Creek

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

GOODWIN CREEK

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
HOTOPHIA CREEK								
A	8,625	1,181	8,826	1.53	216.5	216.5	217.5	1.0
B	14,250	553	3,382	3.99	221.1	221.1	222.0	0.9
C	19,020	570	4,065	3.32	227.1	227.1	228.1	1.0
D	21,350	285	2,442	5.53	229.9	229.9	230.9	1.0
E	25,450	591	3,732	3.62	236.2	236.2	237.1	0.9
F	29,720	127	1,954	6.91	244.9	244.9	245.1	0.2
G	34,080	1,211	6,418	1.73	251.3	251.3	252.2	0.9
H	35,225	1,305	5,561	2.00	251.8	251.8	252.7	0.9
I	38,900	72	1,252	8.23	256.1	256.1	257.1	1.0
J	42,700	253	1,461	6.26	262.8	262.8	263.8	1.0
K	46,200	102	1,461	5.34	269.4	269.4	270.3	0.9
L	51,700	66	970	8.04	279.3	279.3	279.4	0.1
M	56,820	87	960	6.23	287.7	287.7	287.9	0.2

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

HOTOPHIA CREEK

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
JOHNSON CREEK								
A	2,270	101	1,593	5.81	235.8	235.8	236.8	1.0
B	4,000	106	1,563	5.92	238.0	238.0	238.9	0.9
C	8,480	186	1,003	5.73	245.4	245.4	246.0	0.6
D	12,140	478	2,360	2.44	254.3	254.3	255.2	0.9
E	17,770	259	1,466	3.92	265.5	265.5	266.4	0.9
F	23,220	88	903	5.24	279.8	279.8	279.9	0.1
G	30,075	638	1,838	2.57	298.0	298.0	298.8	0.8
H	33,060	396	1,491	2.62	304.1	304.1	304.9	0.8
I	39,550	176	905	4.03	322.3	322.3	323.1	0.8

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

JOHNSON CREEK

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
JONES CREEK								
A	6,460	1,618	4,276	1.44	218.4	218.4	219.3	0.9
B	8,510	450	2,707	2.27	228.1	228.1	229.1	1.0
C	11,840	374	2,072	2.96	235.2	235.2	236.2	1.0
D	15,165	423	1,987	2.44	240.8	240.8	241.7	0.9
E	18,200	150	902	5.37	248.2	248.2	248.5	0.3
F	21,350	263	1,117	3.89	255.6	255.6	256.6	1.0
G	22,500	566	2,477	1.75	260.3	260.3	261.2	0.9
H	28,650	25	126	11.03	276.2	276.2	276.2	0.0

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

JONES CREEK

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
LITTLE TALLAHATCHIE RIVER								
A	23.05	2,777	26,546	1.17	185.3	185.3	186.3	1.0
B	24.17	4,450[2]	33,675	0.92	185.9	185.9	186.9	1.0
C	25.77	6,608[2]	41,101	0.55	186.5	186.5	187.5	1.0
D	27.58	7,947[2]	18,185	1.24	187.5	187.5	188.5	1.0
E	30.40	3,920	17,680	1.27	190.8	190.8	191.8	1.0
F	31.93	5,244	16,264	1.38	193.8	193.8	194.7	0.9
G	33.59	900	4,438	4.71	195.7	195.7	196.7	1.0
H	34.53	1,164	6,557	3.19	198.6	198.6	199.5	0.9
I	36.16	1,577	10,528	1.87	201.6	201.6	202.6	1.0
J	36.77	3,182	16,556	1.19	202.5	202.5	203.5	1.0
K	37.74	1,416	9,824	2.01	203.8	203.8	204.7	0.9
L	39.76	1,434	9,929	1.66	206.8	206.8	207.8	1.0
M	41.57	666	4,610	3.58	208.3	208.3	209.3	1.0
N	43.42	174	2,945	4.79	210.6	210.6	211.6	1.0
O	45.13	190[3]	4,114	3.38	212.5	212.5	213.4	0.9

[1] Miles above mouth
[2] Combined floodway width for Little Tallahatchie River/Running Slough Ditch
[3] Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE TALLAHATCHIE RIVER

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
LONG CREEK								
A	1,670	1,044	7,874	2.45	236.5	236.5	237.5	1.0
B	4,900	462	4,877	3.12	241.8	241.8	242.8	1.0
C	10,320	338	2,621	5.80	247.0	247.0	248.0	1.0
D	16,140	650	4,059	2.25	257.7	257.7	258.7	1.0
E	22,860	329	2,040	4.49	269.6	269.6	270.1	0.5
F	29,650	430	1,487	5.35	284.7	284.7	285.5	0.8

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

LONG CREEK

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
McIVOR CANAL								
A	4,880	2,497	13,572	1.82	190.6	190.6	191.6	1.0
B	9,180	1,515	8,269	2.99	197.1	197.1	198.1	1.0
C	16,300	1,141	6,493	3.80	206.7	206.7	207.7	1.0
D	22,020	1,220	7,748	3.19	214.6	214.6	215.5	0.9
E	28,560	600	3,323	7.16	222.5	222.5	223.3	0.8
F	34,600	358	3,674	6.48	229.0	229.0	229.9	0.9
G	41,430	1,220	4,572	3.81	238.0	238.0	238.8	0.8
H	49,300	1,387	7,628	2.06	248.8	248.8	249.8	1.0
I	54,680	163	2,017	6.00	254.9	254.9	255.9	1.0
J	60,950	88	1,242	6.93	268.1	268.1	268.2	0.1
K	65,800	108	1,118	5.79	275.3	275.3	275.8	0.5
L	70,200	82	936	6.44	285.2	285.2	285.2	0.0

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

McIVOR CANAL

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
PETERS CREEK								
A	4,350	1,258	10,941	2.92	194.9	194.9	194.9	0.0
B	9,010	183	2,814	11.34	199.7	199.7	200.6	0.9
C	15,400	487	5,427	5.88	209.9	209.9	210.8	0.9
D	22,030	1,200	9,898	3.22	219.9	219.9	220.9	1.0
E	27,400	703	5,934	5.38	225.8	225.8	226.6	0.8
F	29,250	800	6,030	4.93	229.4	229.4	230.0	0.6
G	33,900	1,320	9,979	2.91	234.6	234.6	235.5	0.9

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

PETERS CREEK

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
RUNNING SLOUGH DITCH								
A	8,000	4,450[2]	5,818	0.96	186.0	181.9[3]	182.9	1.0
B	9,850	6,608[2]	9,012	0.53	186.3	182.5[3]	183.5	1.0
C	17,200	7,947[2]	4,297	0.76	187.8	187.2[3]	188.2	1.0

[1]Feet above mouth
[2] Combined floodway width for Little Tallahatchie River/Running Slough Ditch.
[3] Elevation computed without consideration of backwater effects from Little Tallahatchie River

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

RUNNING SLOUGH DITCH

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
STREAM A								
A	2,950	195	1,256	1.46	192.1	192.1	193.1	1.0
B	4,775	164	1,157	1.46	200.7	200.7	201.4	0.7
C	7,830	182	449	2.47	203.9	203.9	204.9	1.0

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

STREAM A

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
STREAM B								
A	3,800	803	2,031	1.06	194.6	194.6	195.6	1.0

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

FLOODWAY DATA

STREAM B

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
STREAM C								
A	6,000	477	1,716	1.96	198.7	198.7	199.7	1.0

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

STREAM C

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
STREAM D								
A	4,380	290	3,020	2.74	212.8	212.8	213.7	0.9
B	6,180	72	342	3.36	224.4	224.4	224.4	0.0

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

STREAM D

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
STREAM E								
A	1,795	293	3,079	2.69	212.8	212.8	213.8	1.0
B	4,150	474	1,829	0.77	222.0	222.0	222.8	0.8

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

STREAM E

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
TRIBUTARY TO COLE CREEK								
A	1,200	460	1,042	0.5	210.8	210.8	211.5	0.7
B	1,665	238	502	1.0	211.0	211.0	211.7	0.7

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

TRIBUTARY TO COLE CREEK

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
WHITTEN CREEK								
A	3,900	748	2,225	1.31	202.3	202.3	203.3	1.0
B	6,775	700	1,810	1.05	216.0	216.0	216.7	0.7
C	9,921	149	407	4.89	235.5	235.5	235.6	0.1
D	10,890	55	186	5.6	238.0	238.0	238.0	0.0
E	11,578	83	373	2.8	242.0	242.0	242.2	0.2
F	12,061	98	1,041	1.0	250.5	250.5	251.2	0.7
G	13,064	111	416	2.5	251.9	251.9	252.6	0.7
H	13,865	38	176	5.9	257.6	257.6	258.3	0.7
I	14,503	91	440	2.4	262.8	262.8	263.7	0.9
J	15,368	110	258	4.0	271.4	271.4	271.4	0.0
K	15,874	87	338	3.1	278.9	278.9	279.8	0.9
L	16,132	64	245	4.2	281.9	281.9	282.7	0.8

[1]Feet above mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

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

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS report by detailed methods. 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 rate zone that corresponds to the areas of 1-percent-annual-chance shallow flooding where average depths are between 1 and 3 feet. The depth should be averaged along the cross section and then along the direction of flow to determine the extent of the zone. Average flood depths derived from the detailed hydraulic analyses are shown within this zone. In addition, alluvial fan flood hazards are shown as Zone AO on the FIRM.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, 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 (sq. mi.), and areas protected from the base flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

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

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot 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.

This countywide FIRM presents flooding information for the entire geographic area of Panola County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. 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 9, "Community Map History."

7.0 OTHER STUDIES

FIS reports were previously prepared for the City of Batesville, the Town of Crenshaw, and the unincorporated areas of Panola County (References 1; 2; 3).

An FIS report was previously prepared for the incorporated and unincorporated areas of Tate County (Reference 23). FIS reports have been prepared for the unincorporated areas of Lafayette County and Tallahatchie County (References 24; 25). A countywide FIS is currently being prepared for Yalobusha County which will become effective in September 2010. (Reference 26)

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

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.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Batesville, City of	February 1, 1974	January 16, 1976	September 10, 1976	September 15, 1989
Como, Town of *	N/A	None	N/A	None
Courtland, Town of	N/A	None	N/A	None
Crenshaw, Town of	June 7, 1974	None	September 28, 1979	None
Panola County (Unincorporated Areas)	November 25, 1977	None	June 4, 1980	None
Pope, Village of	N/A	None	N/A	None
Sardis, Town of *	N/A	None	N/A	None

*Non-floodprone community

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

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25. —. *Flood Insurance Study, Tallahatchie County, Mississippi, Unincorporated Areas.* Washington, D.C., December 15, 1990.

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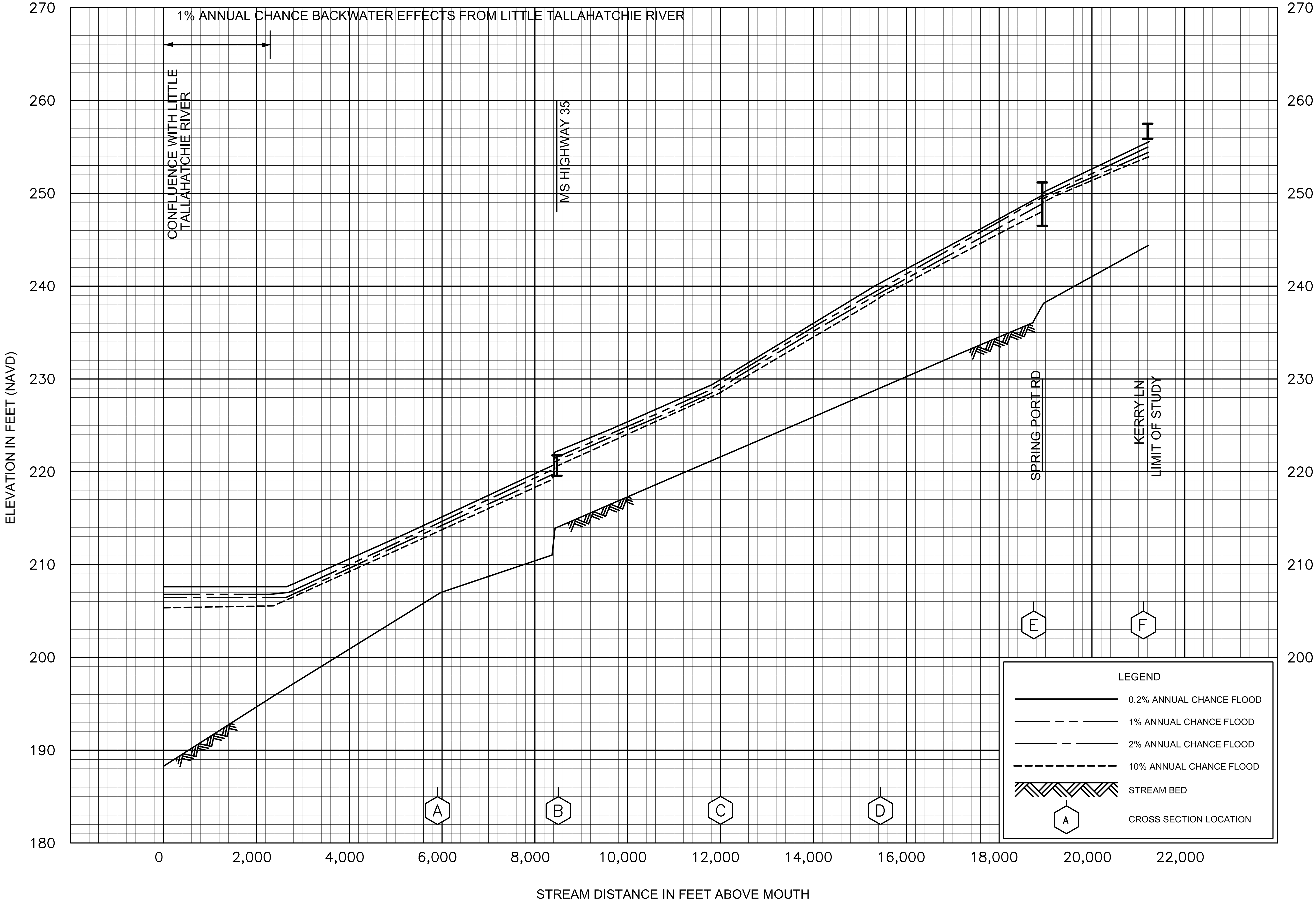


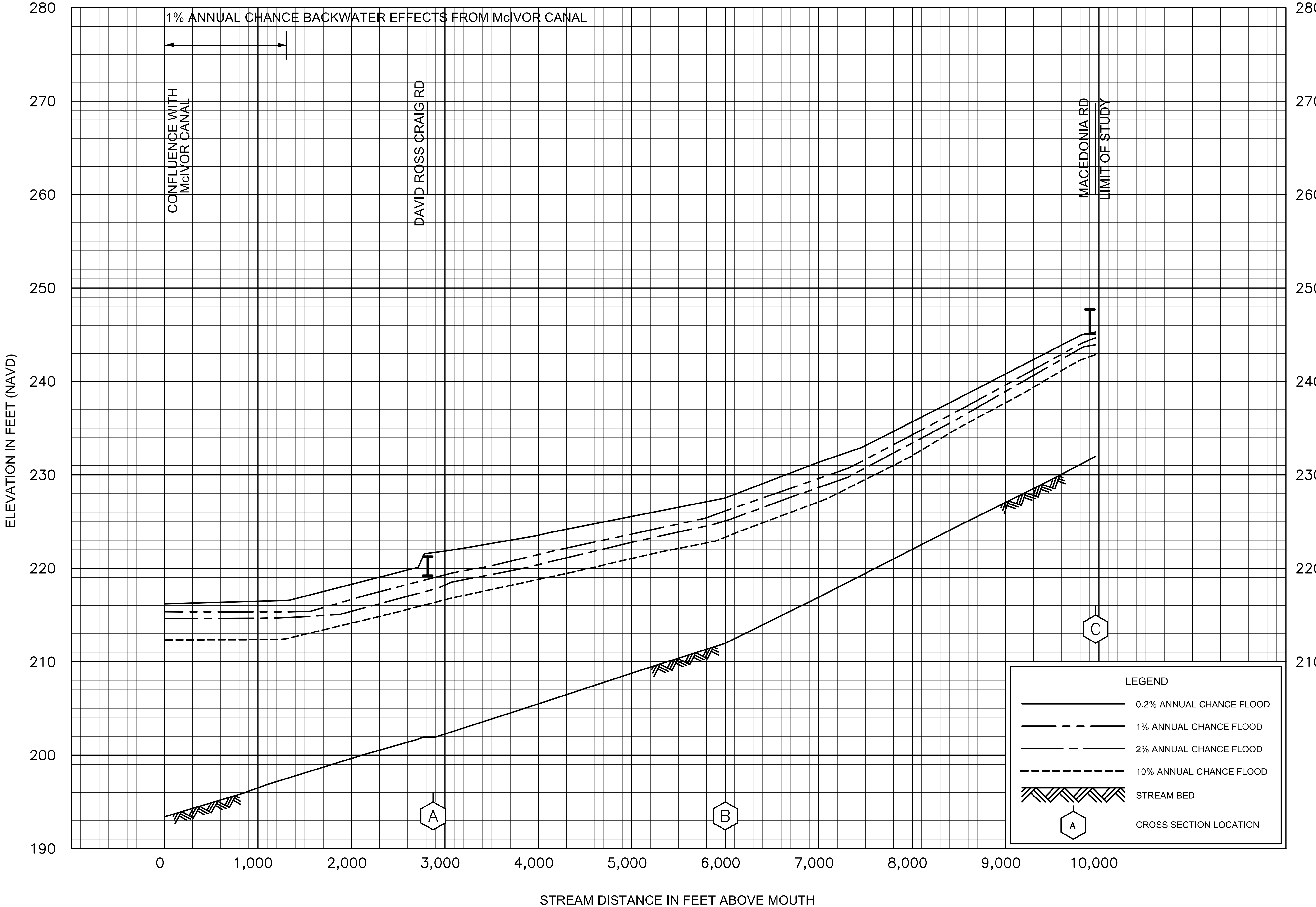
FLOOD PROFILES

BELMONT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

01P



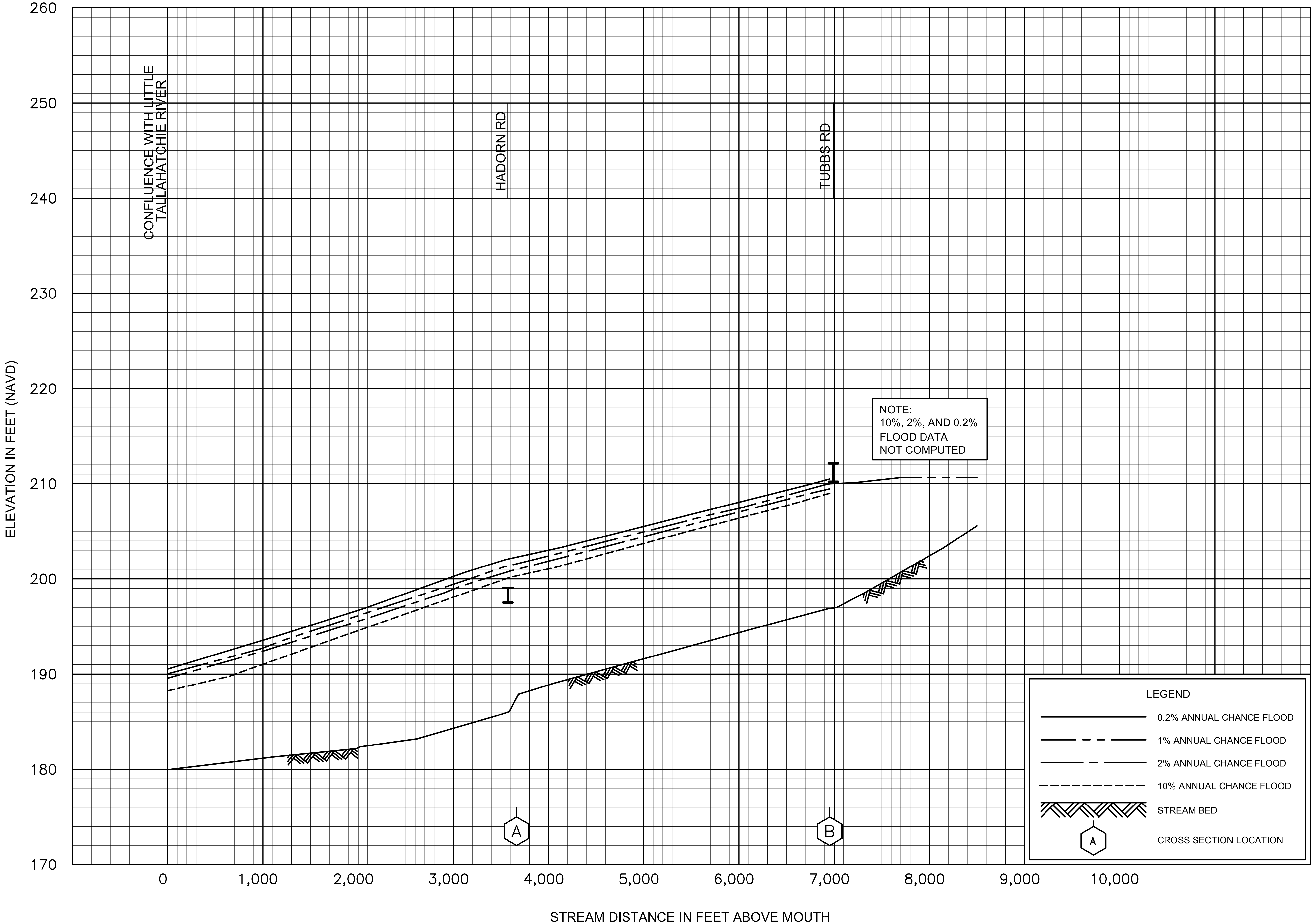
FLOOD PROFILES

BLACKS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

02P



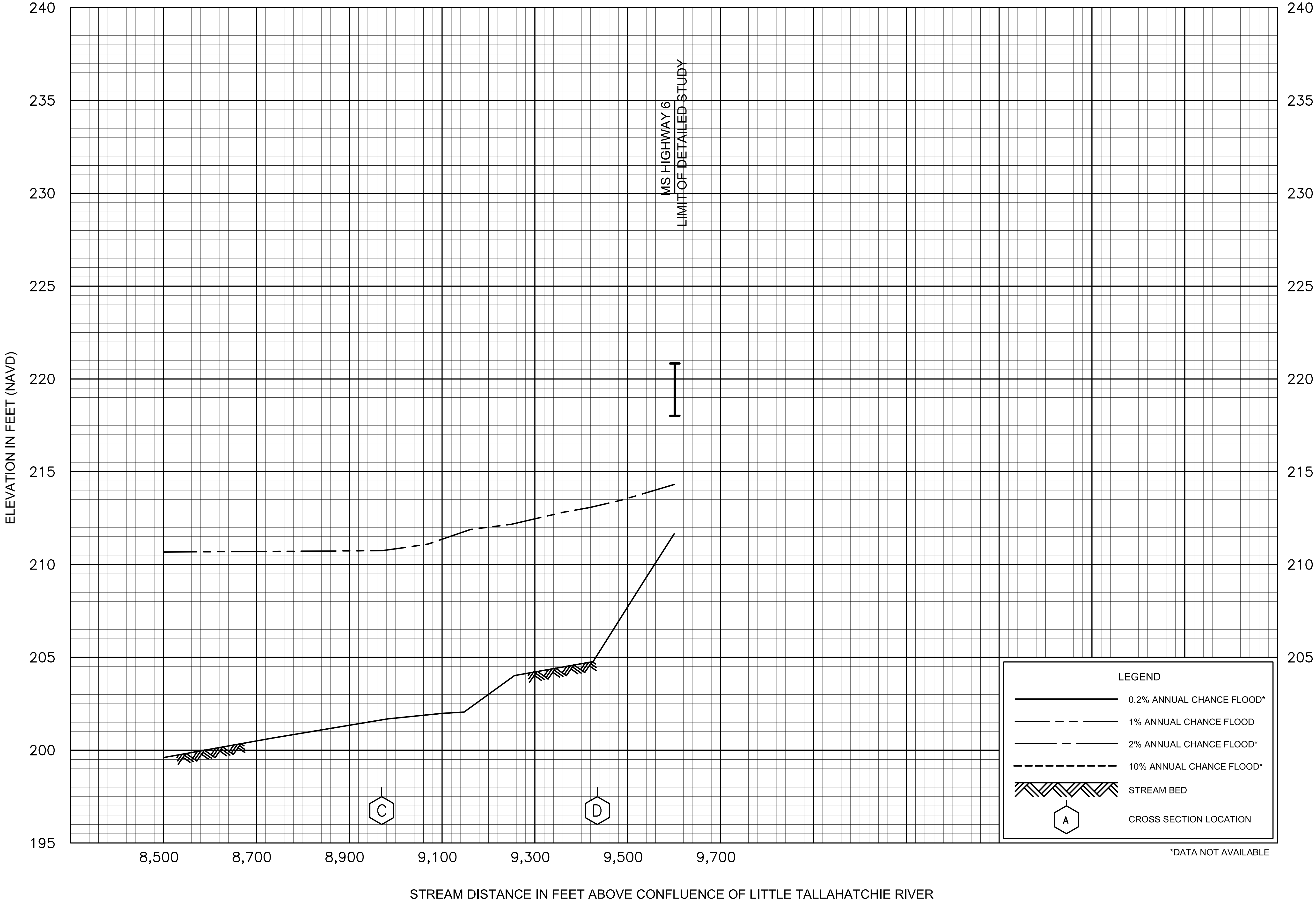
FLOOD PROFILES

COLE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

03P



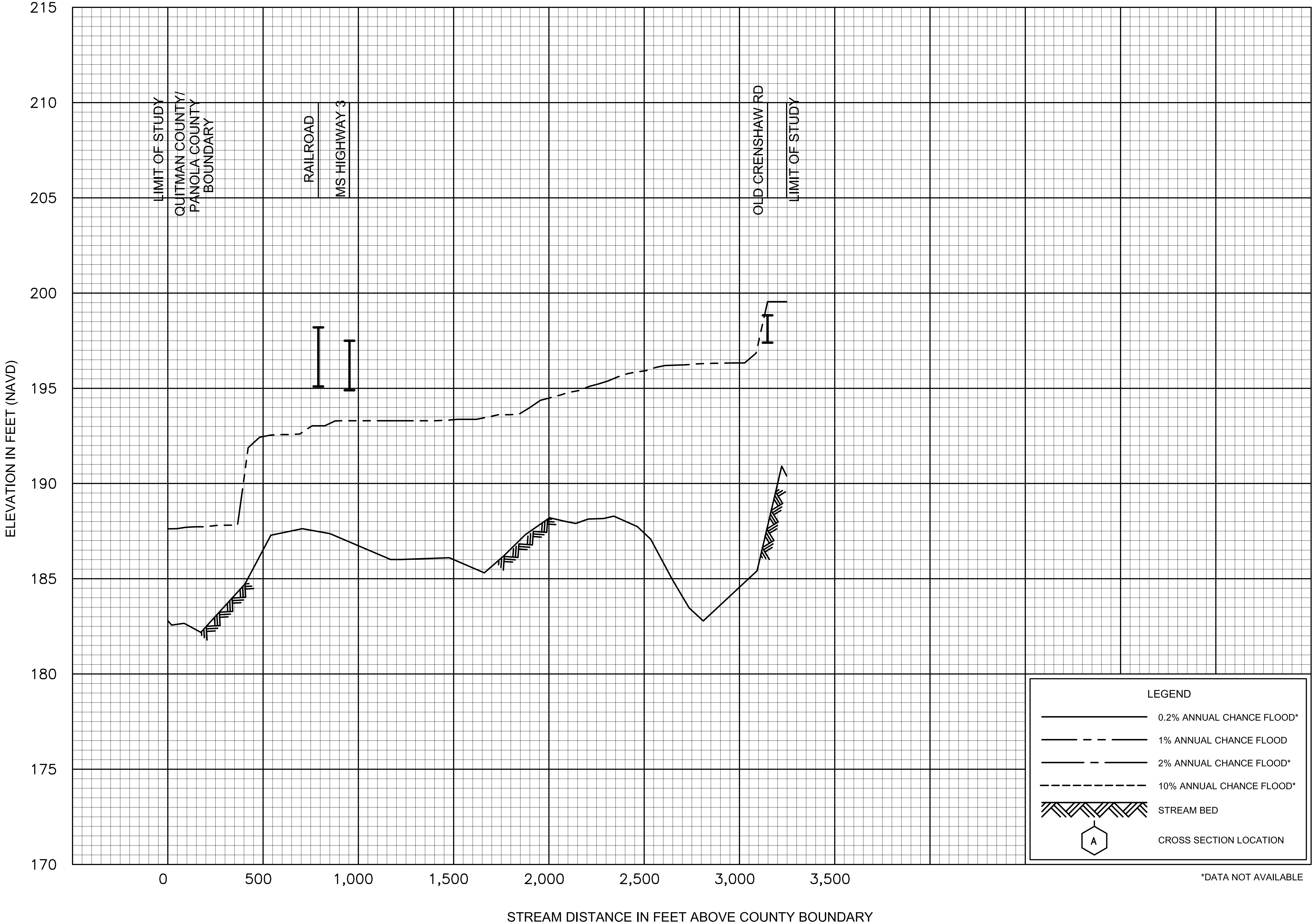
FLOOD PROFILES

COLE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS



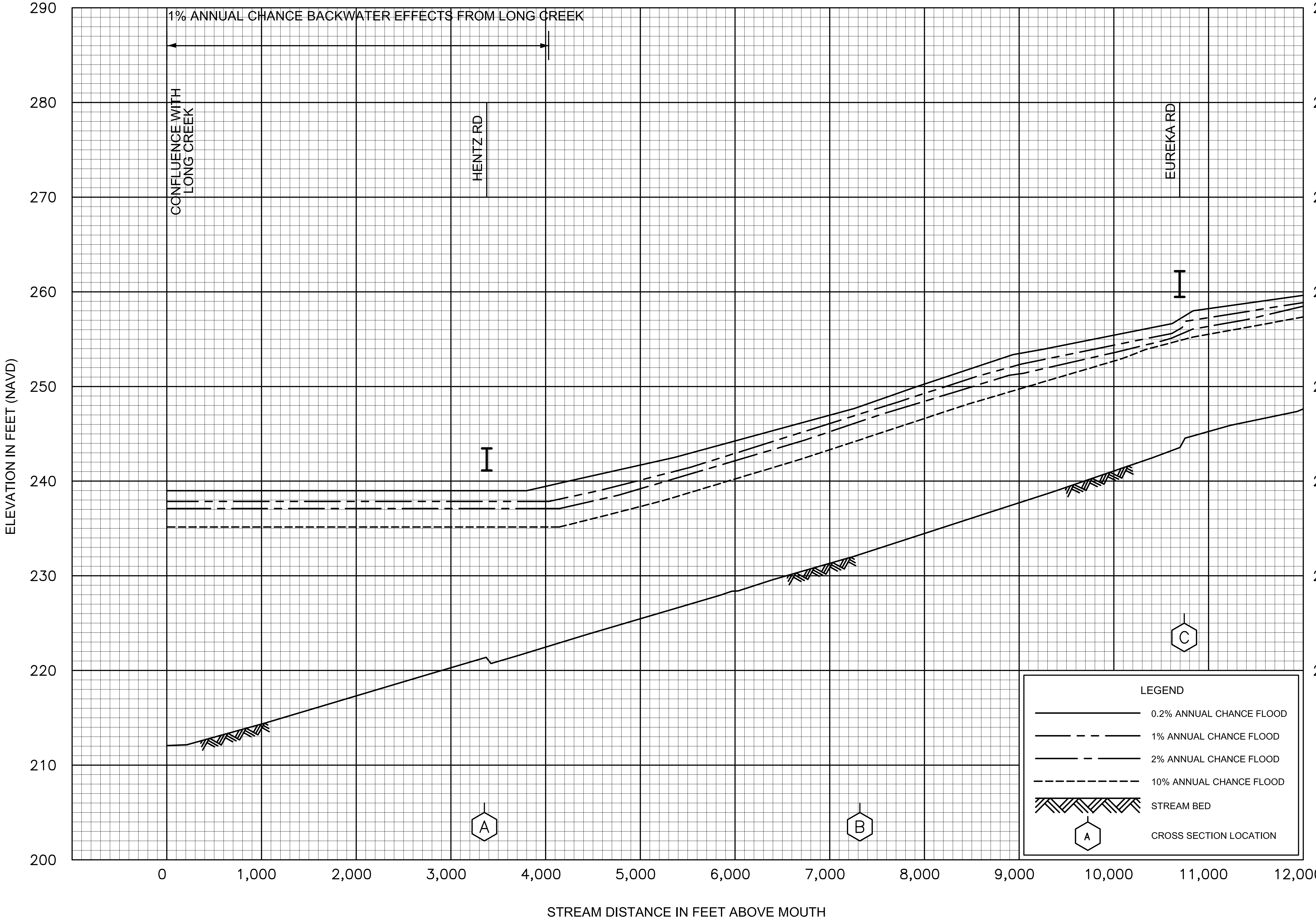
FLOOD PROFILES

FOWLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

05P



FLOOD PROFILES

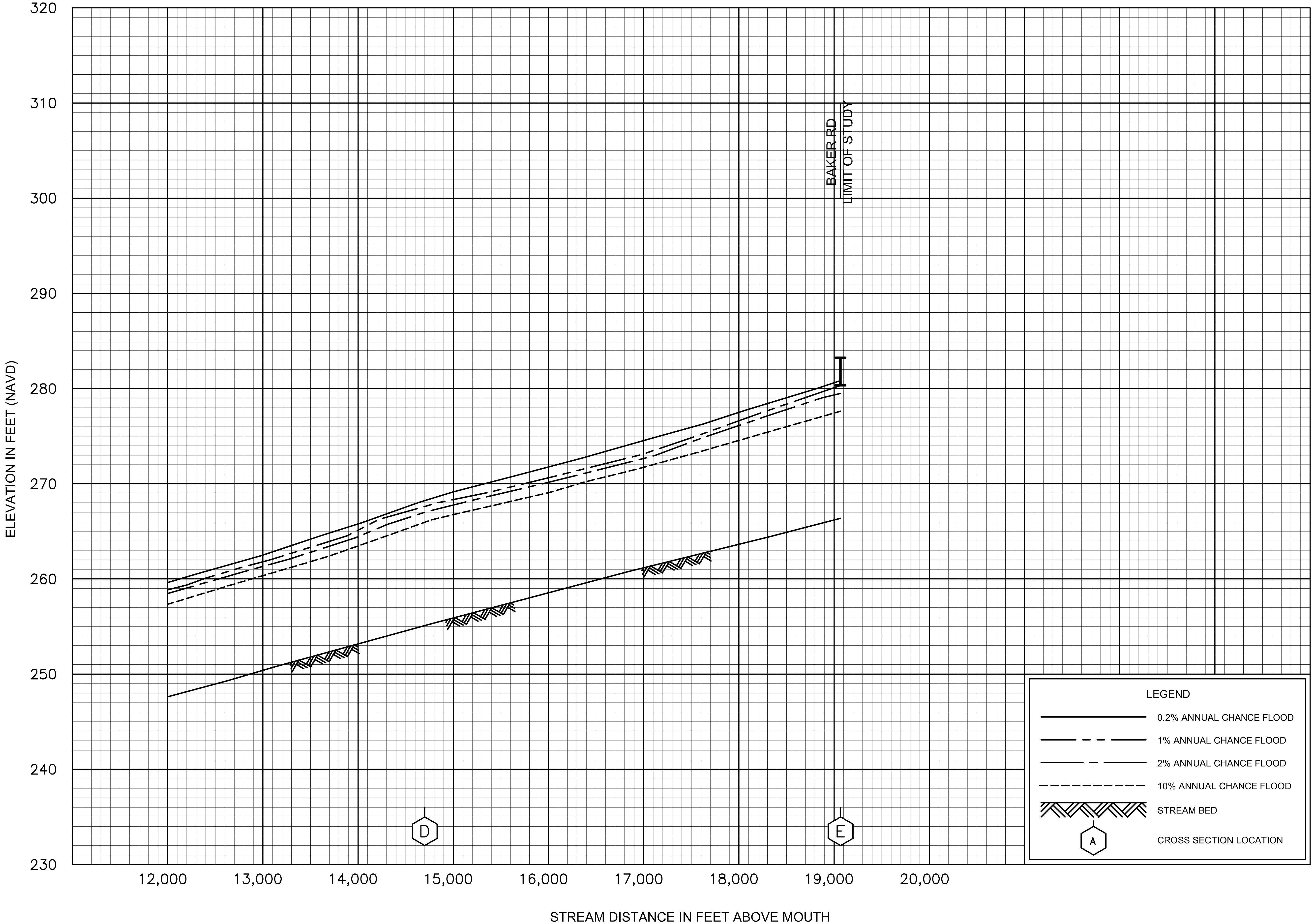
GOODWIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS

06P



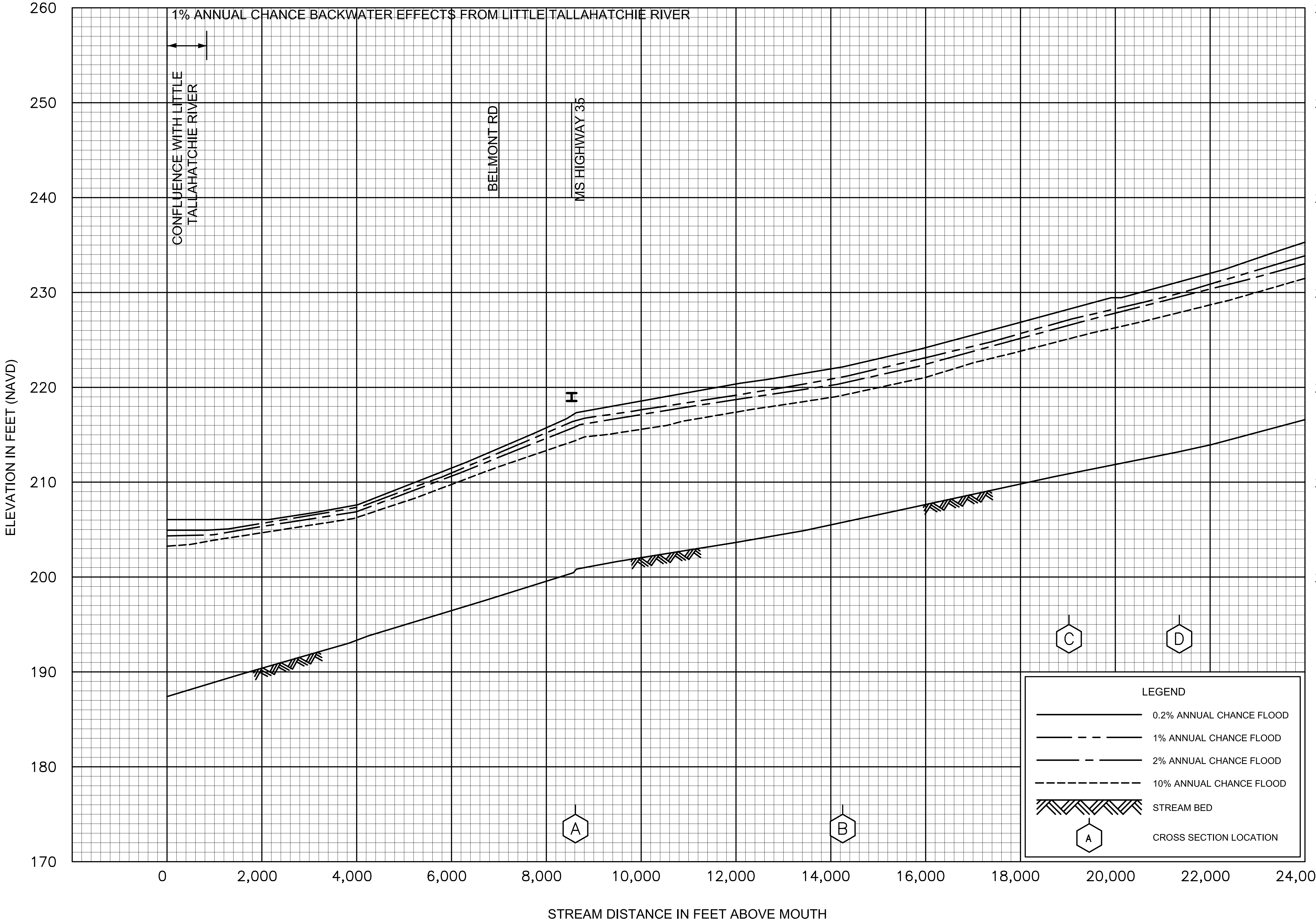
FLOOD PROFILES

GOODWIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

07P



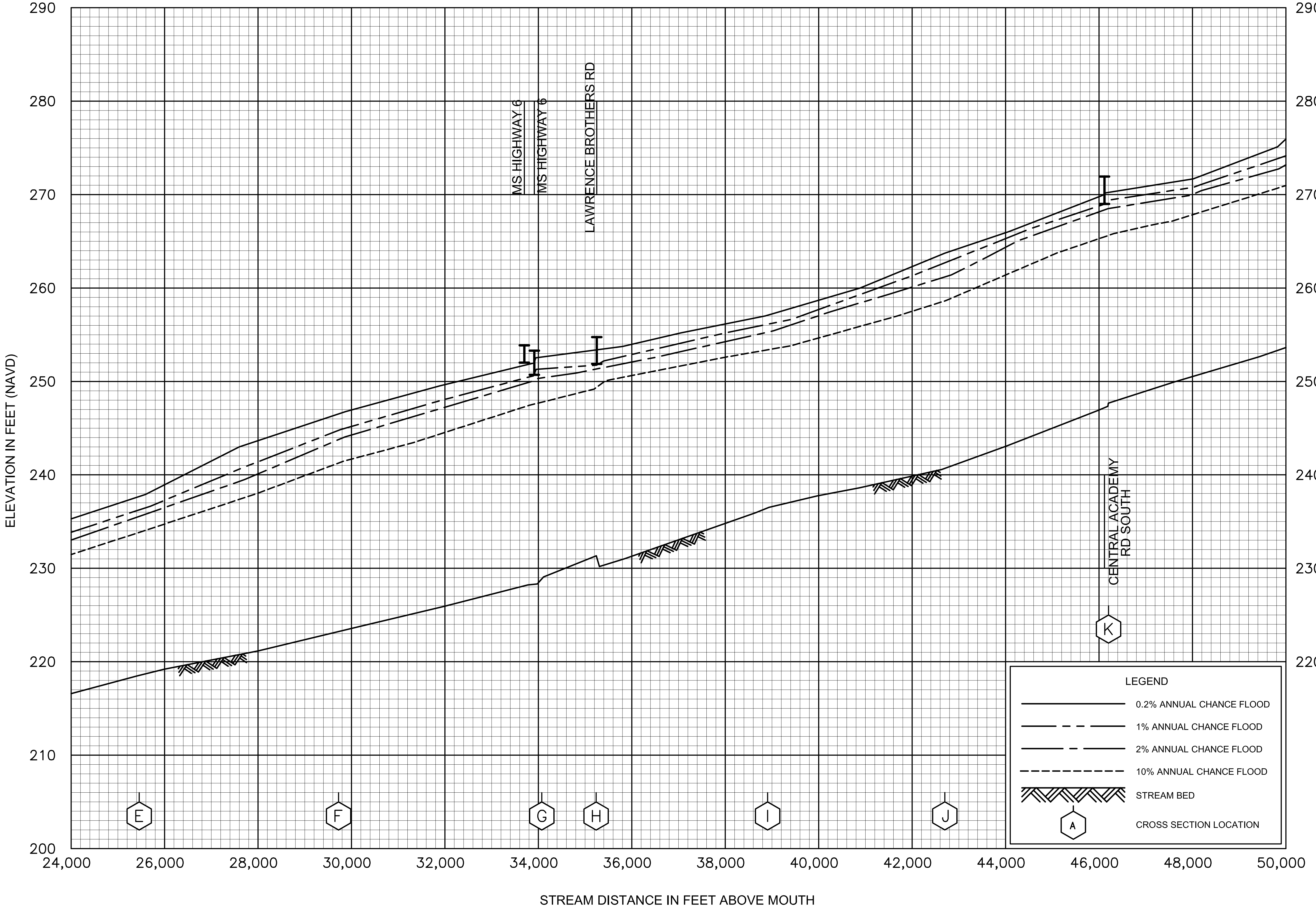
FLOOD PROFILES

HOTOPHIA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

08P



FLOOD PROFILES

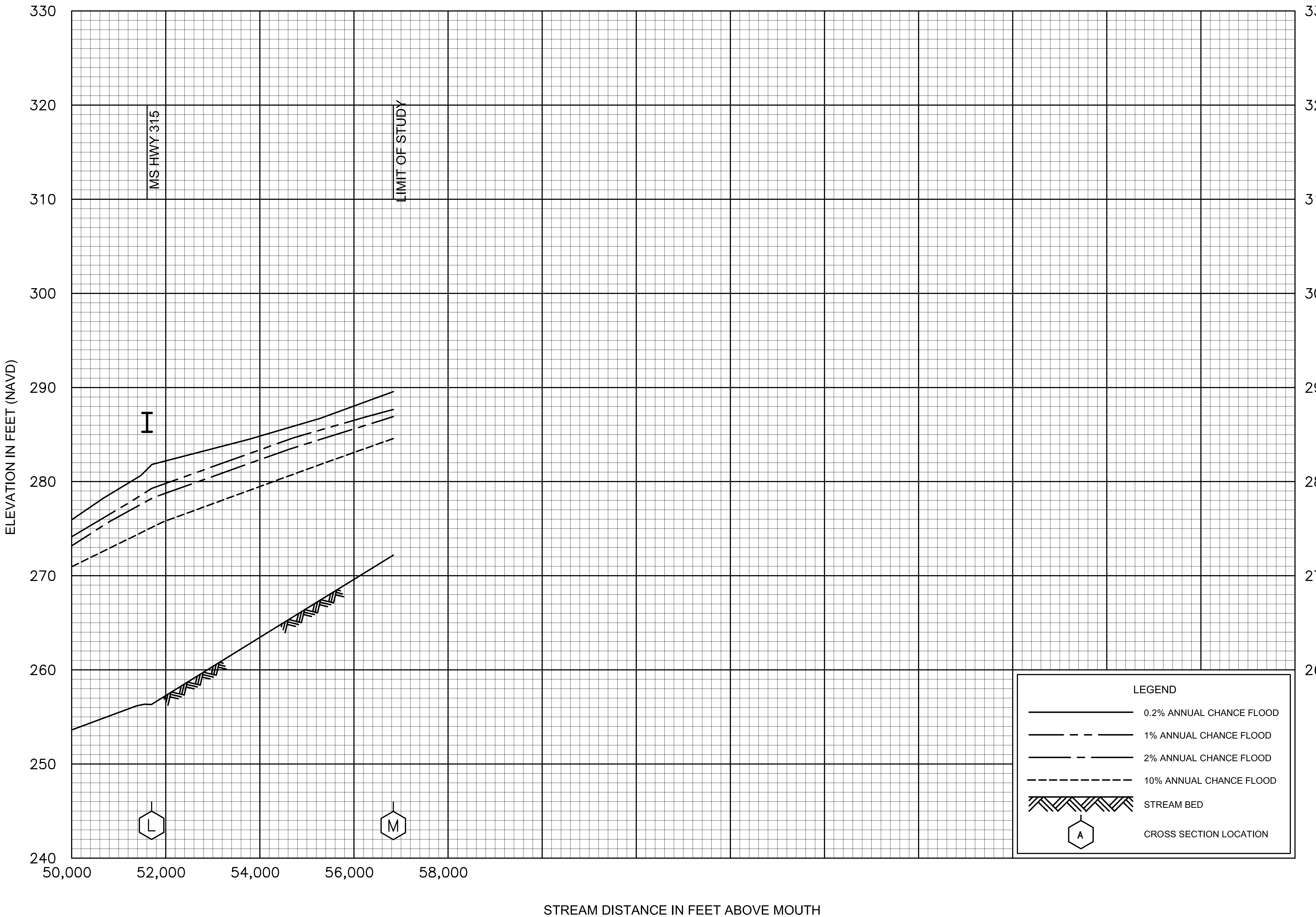
HOTOPHIA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS

09P

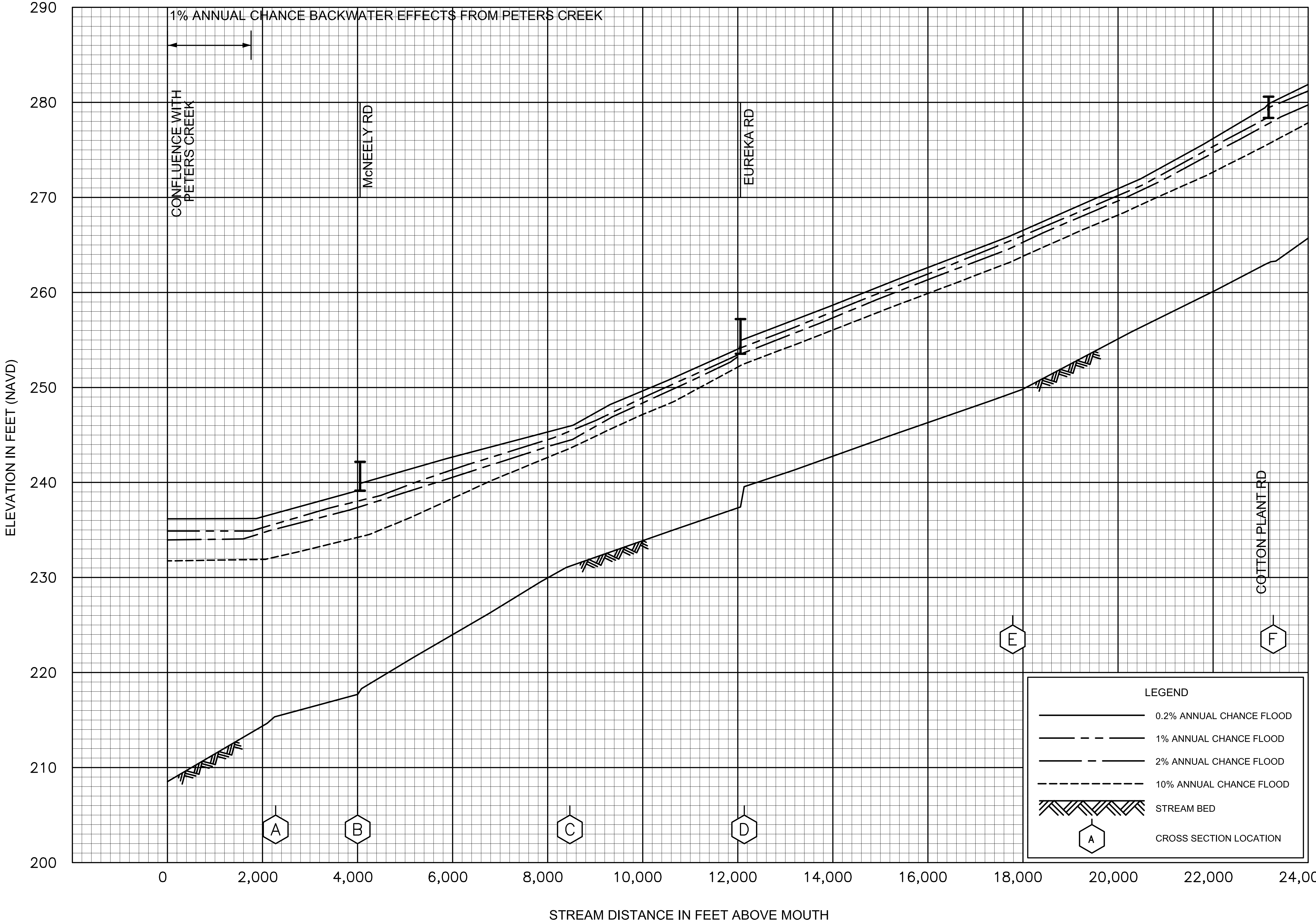


FLOOD PROFILES

HOTOPHIA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

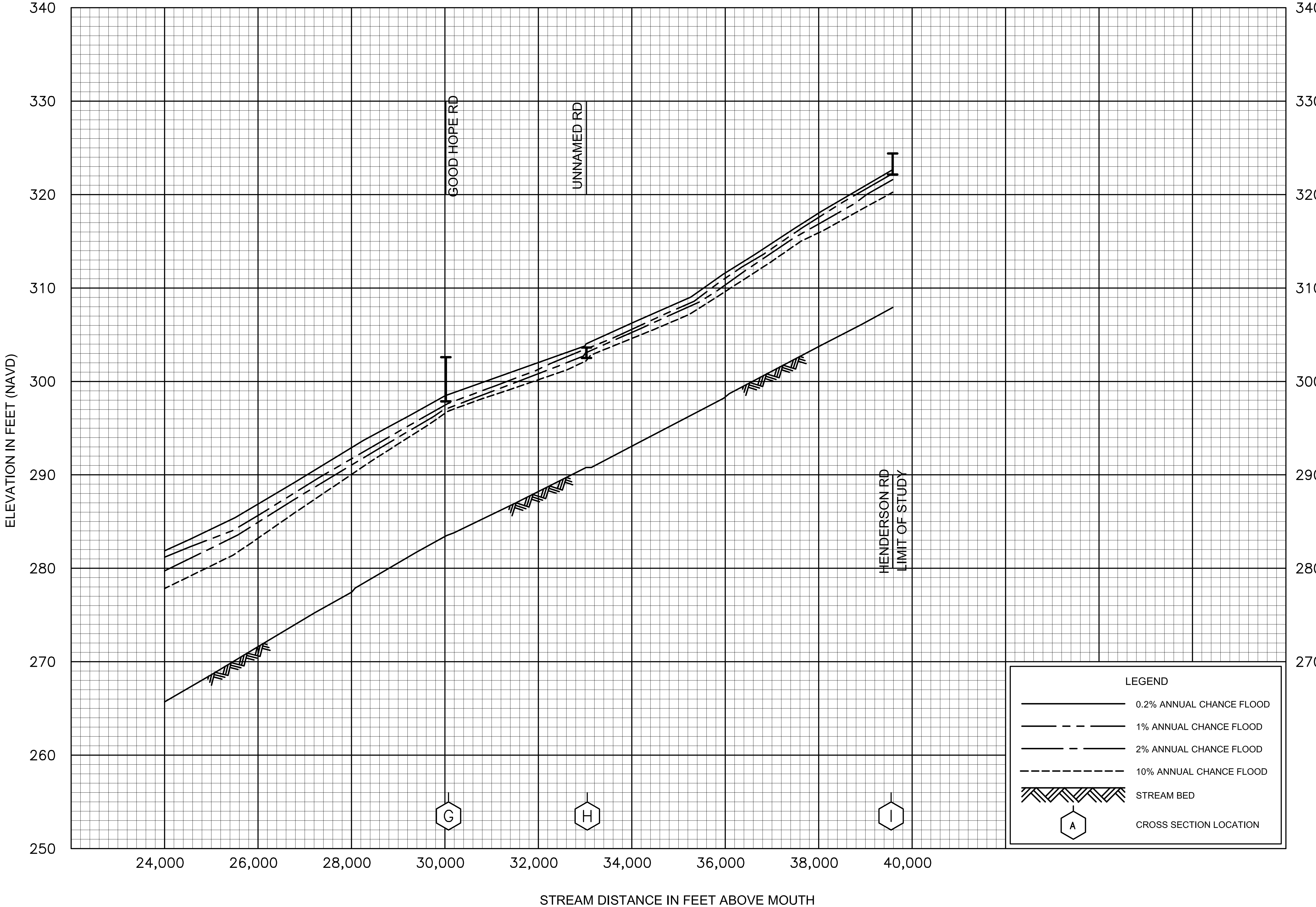


FLOOD PROFILES

JOHNSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

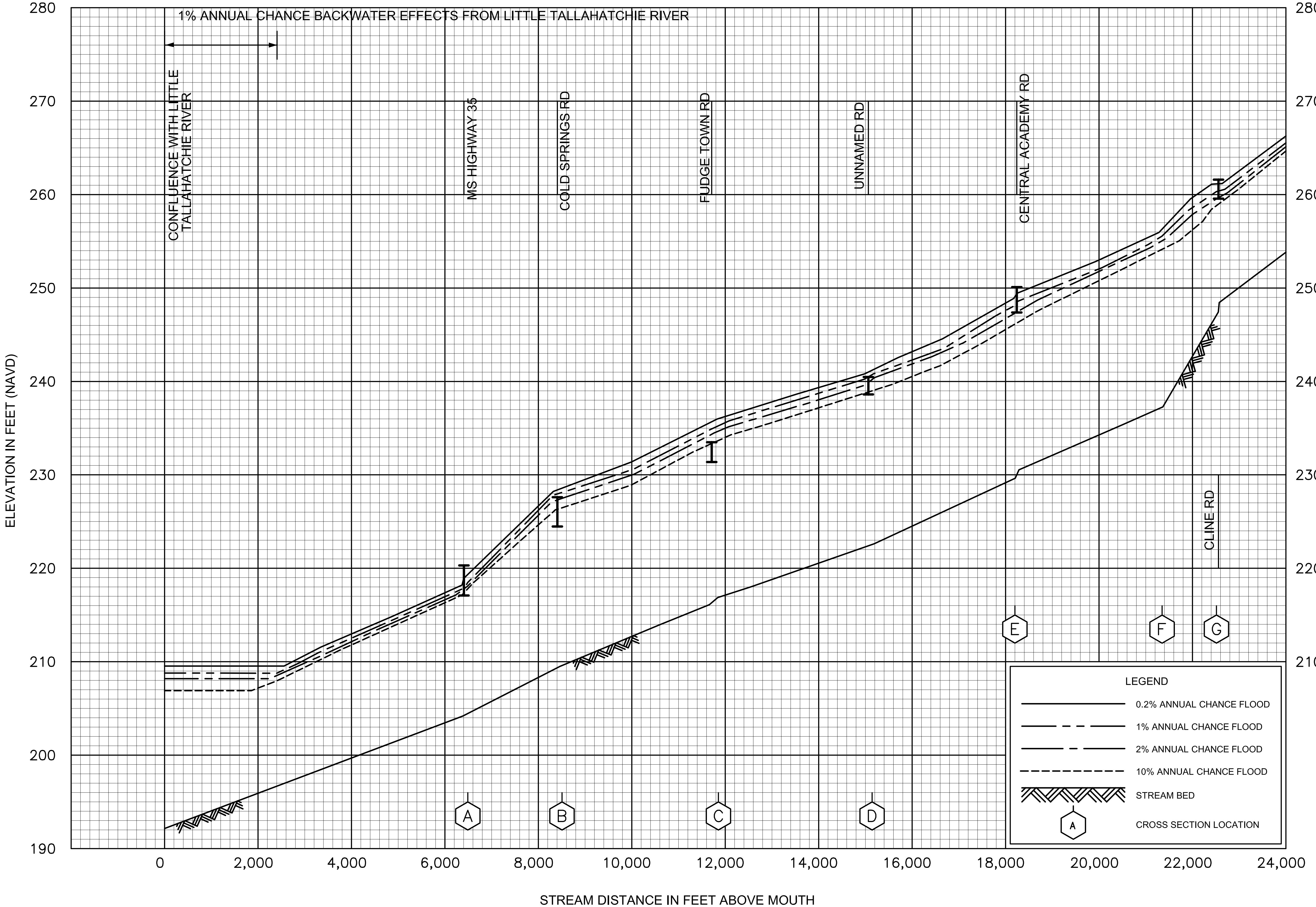


FLOOD PROFILES

JOHNSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

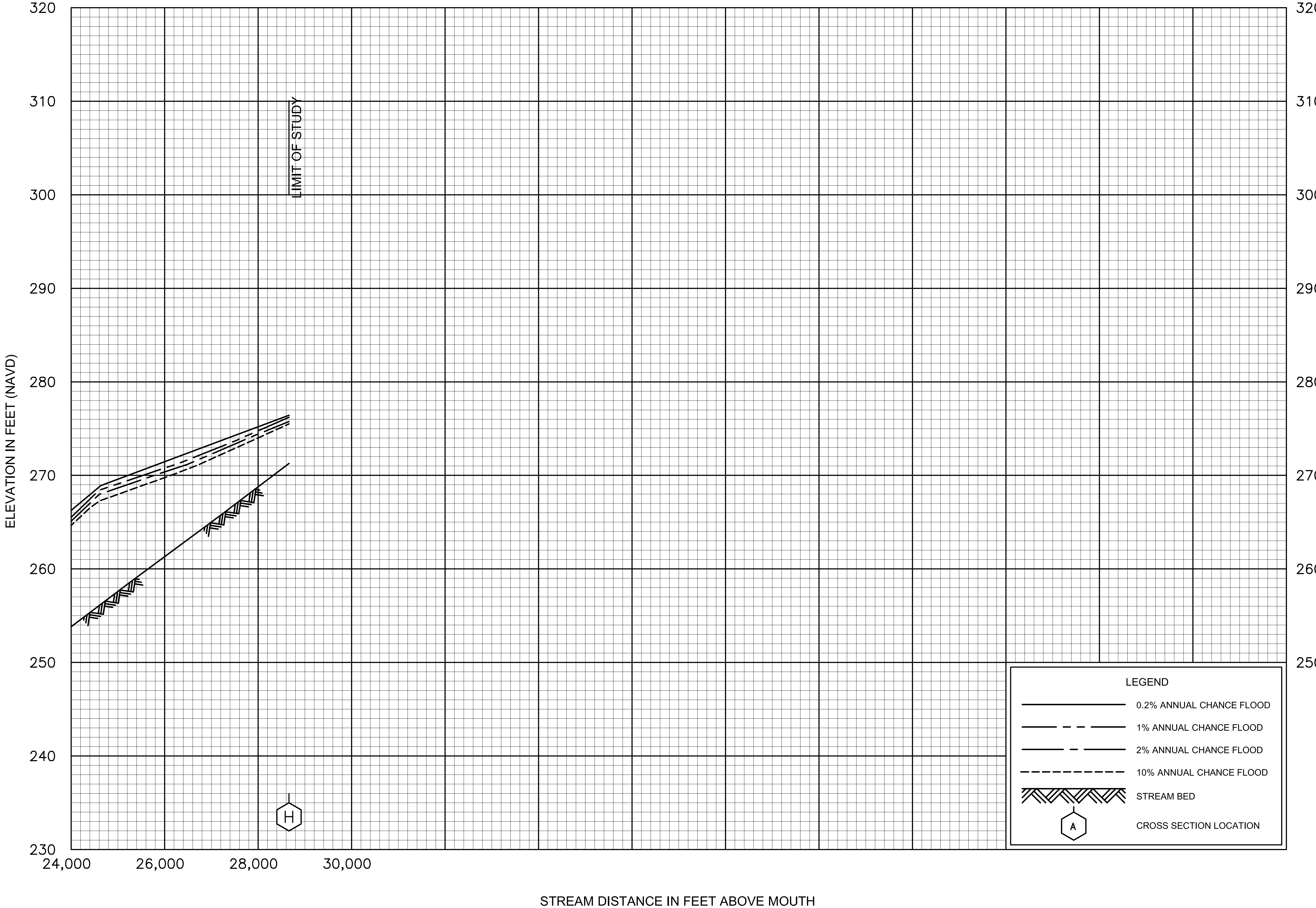


FLOOD PROFILES

JONES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



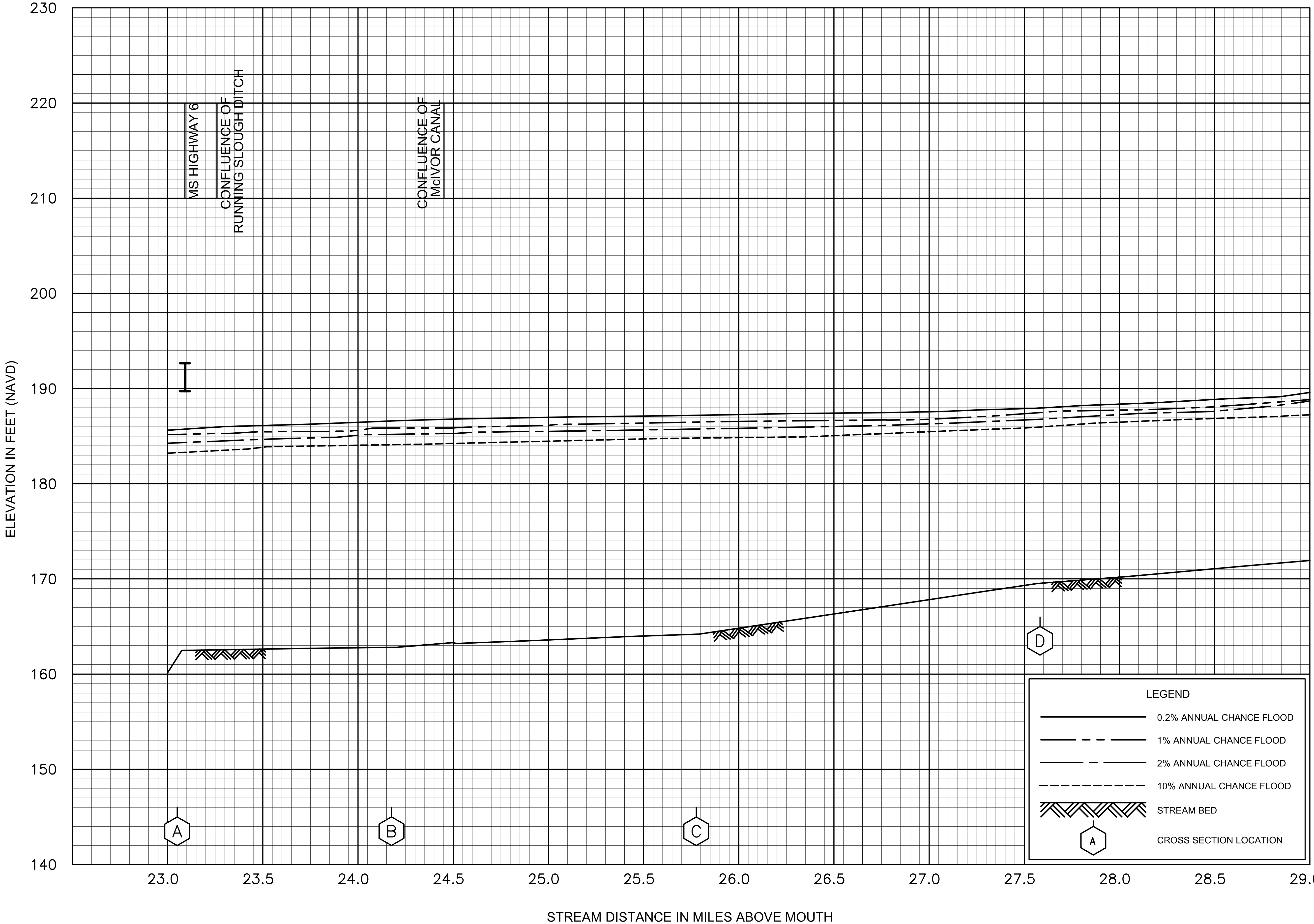
FLOOD PROFILES

JONES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS



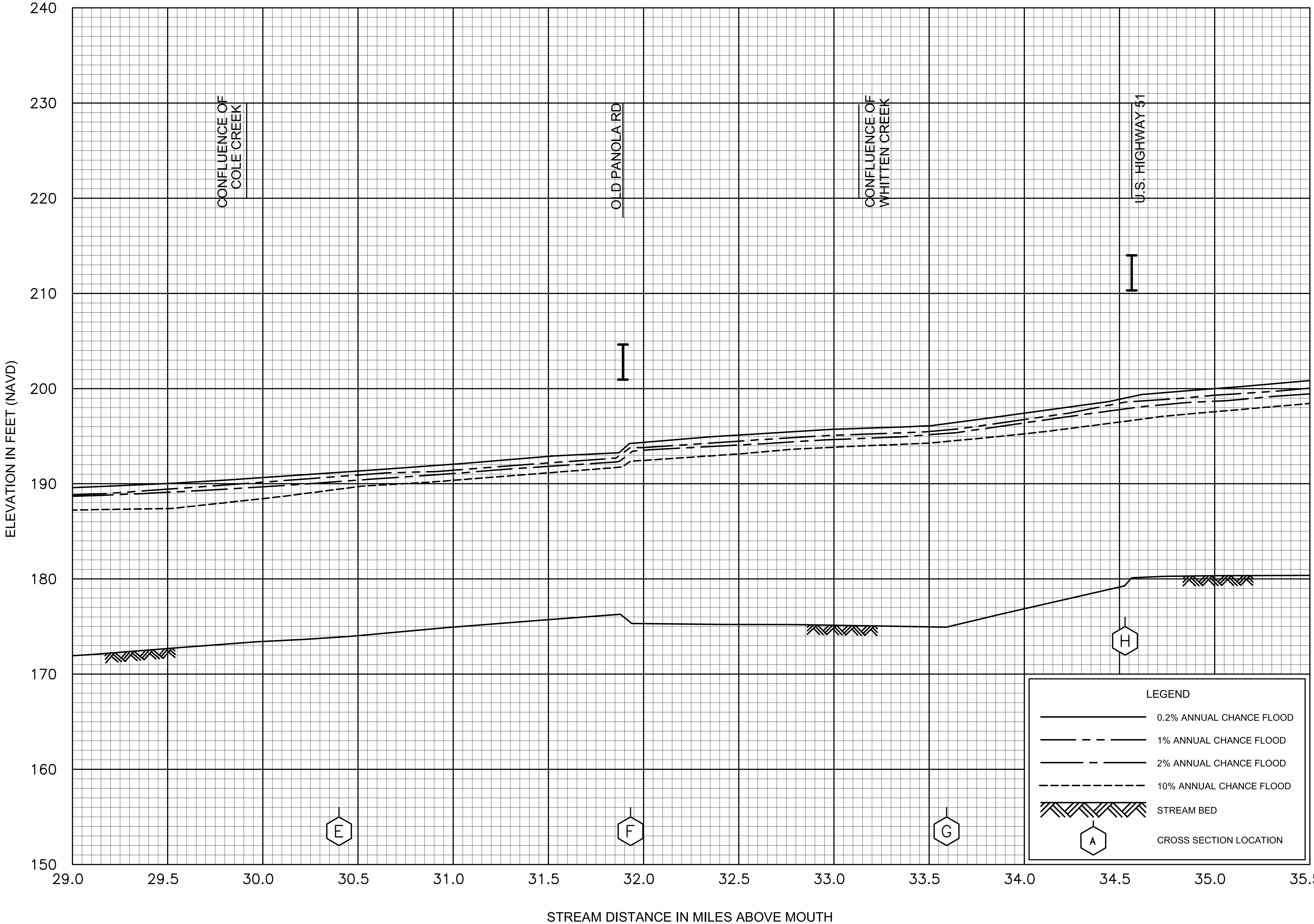
FLOOD PROFILES

LITTLE TALLAHATCHIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS



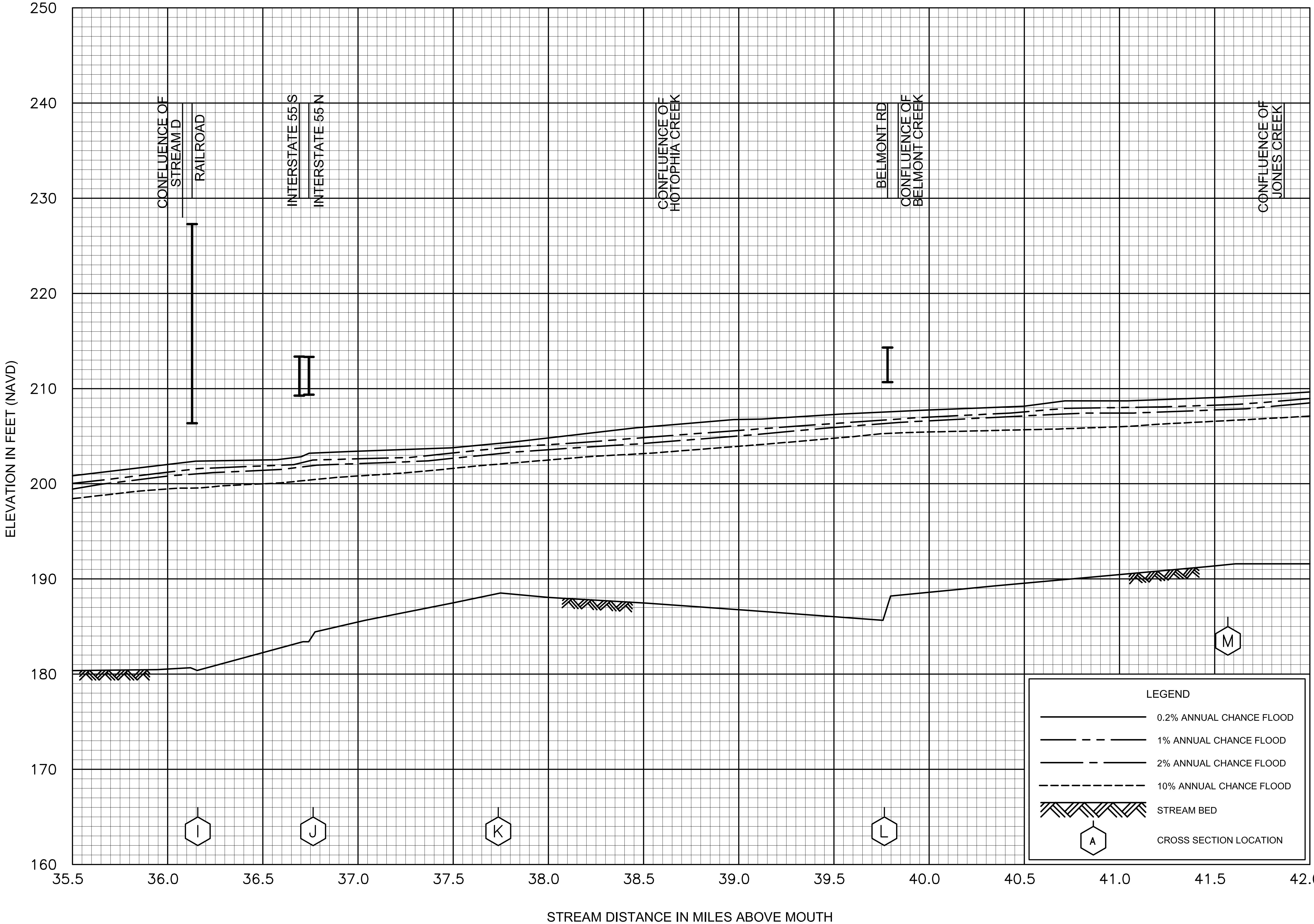
FLOOD PROFILES

LITTLE TALLAHATCHIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

16P

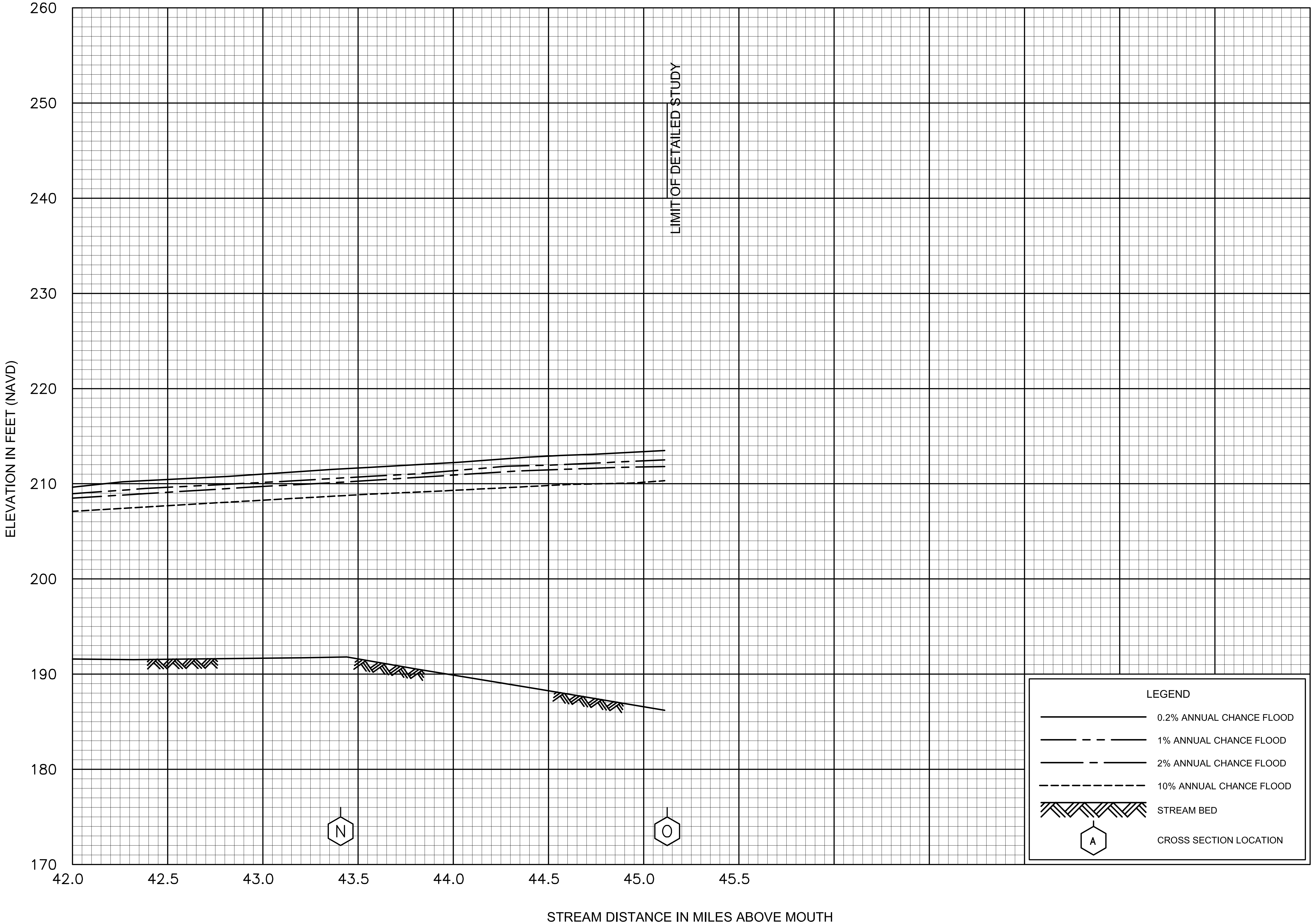


FLOOD PROFILES

LITTLE TALLAHATCHIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



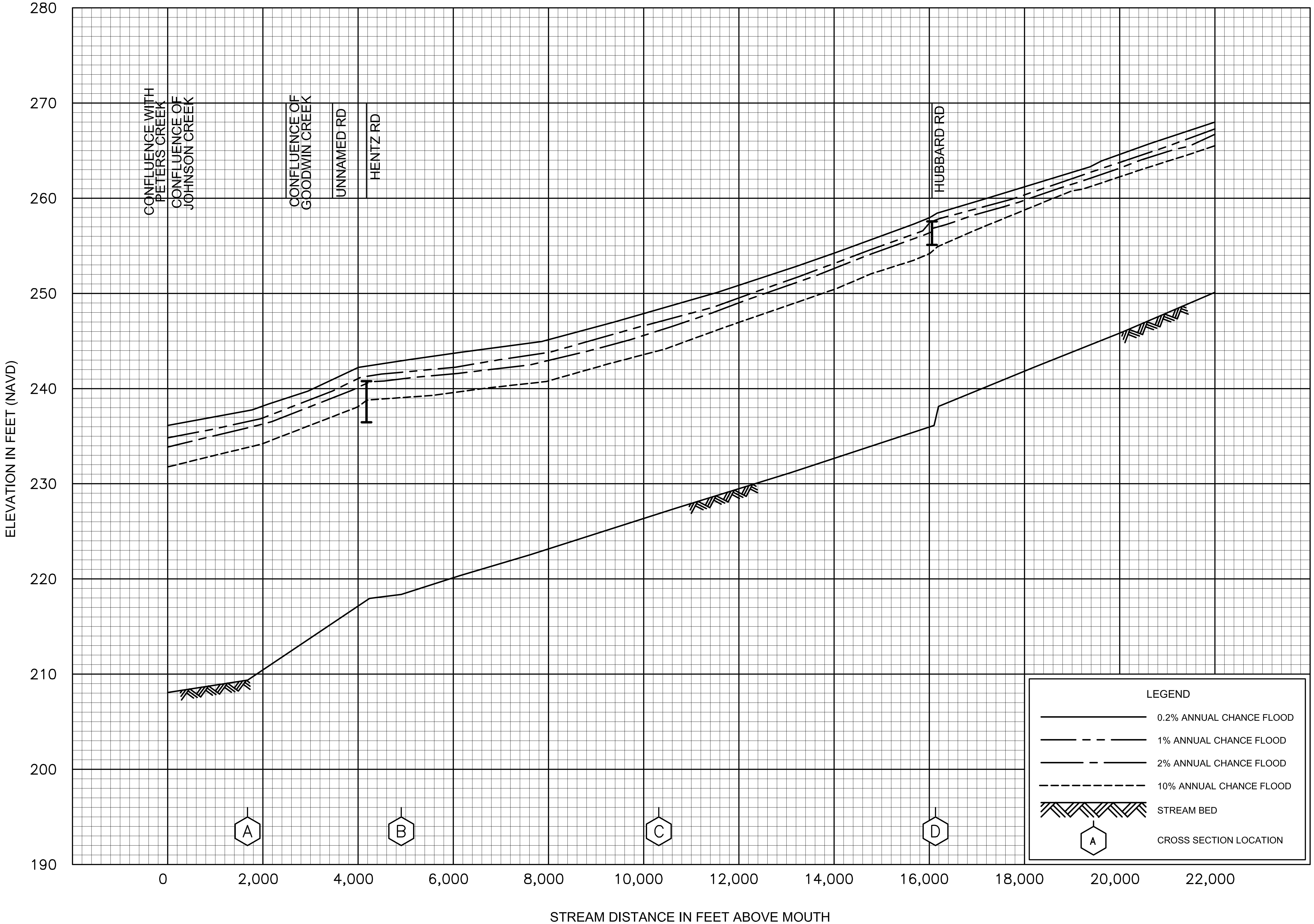
FLOOD PROFILES

LITTLE TALLAHATCHIE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS

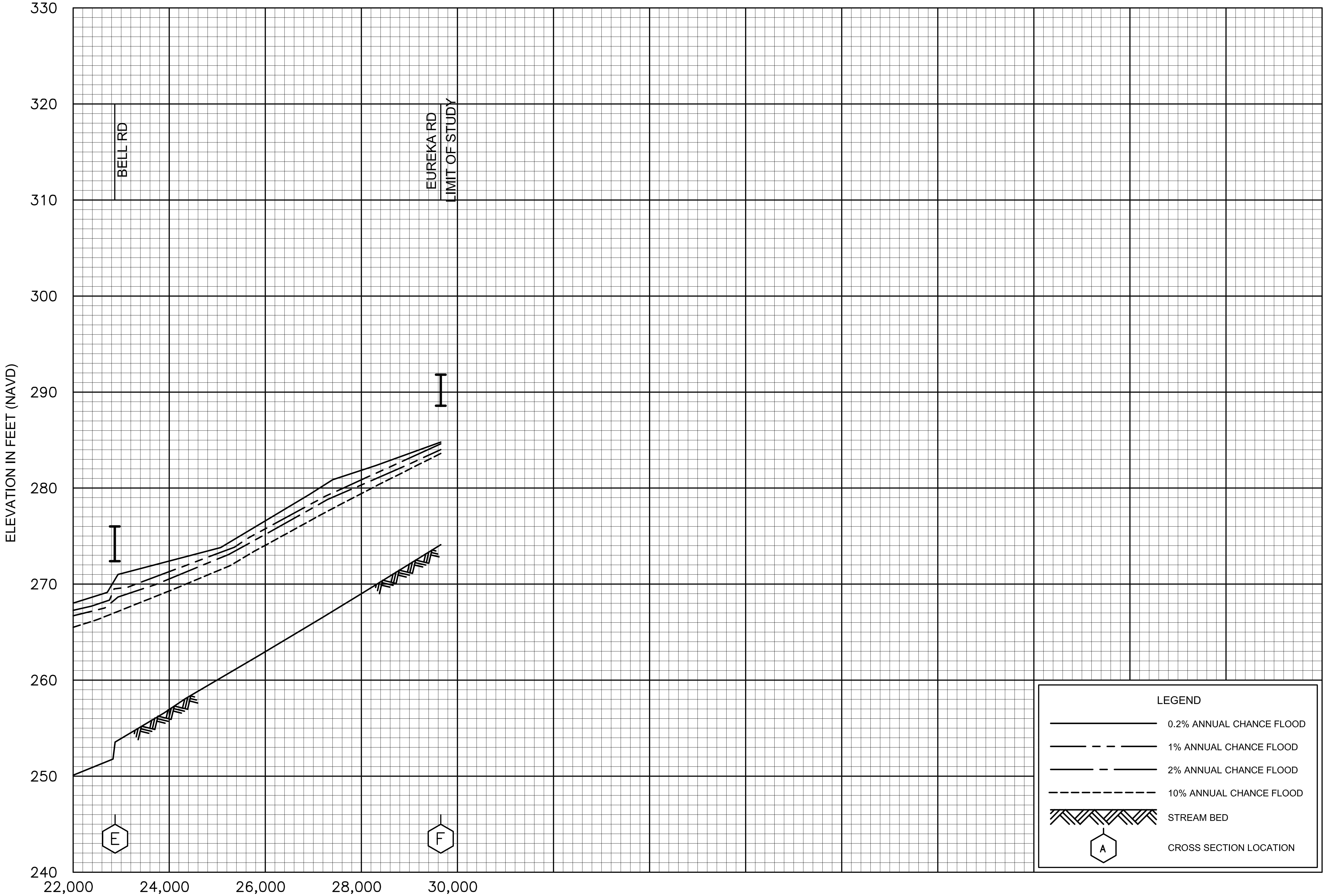


FLOOD PROFILES

LONG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



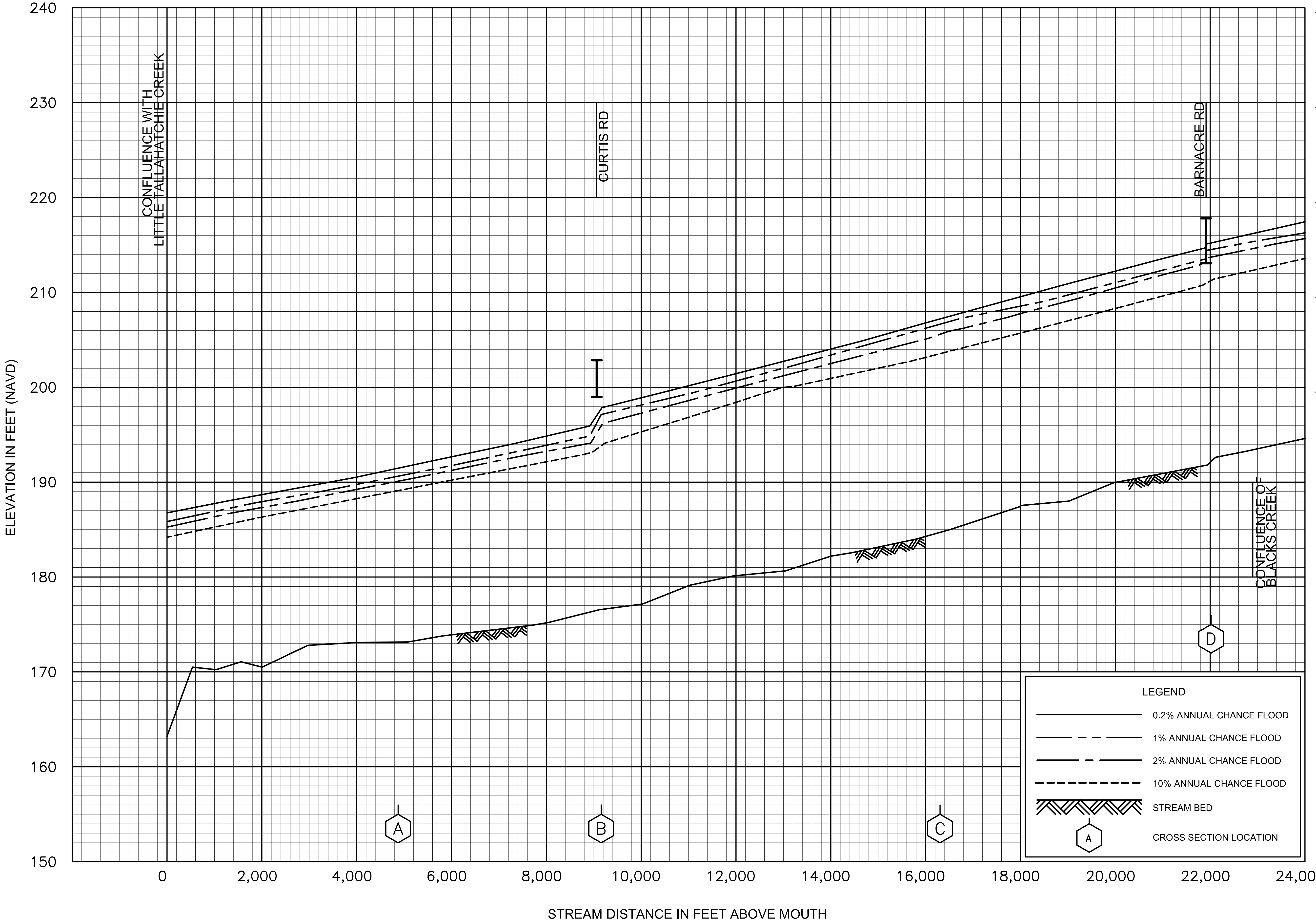
FLOOD PROFILES

LONG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS

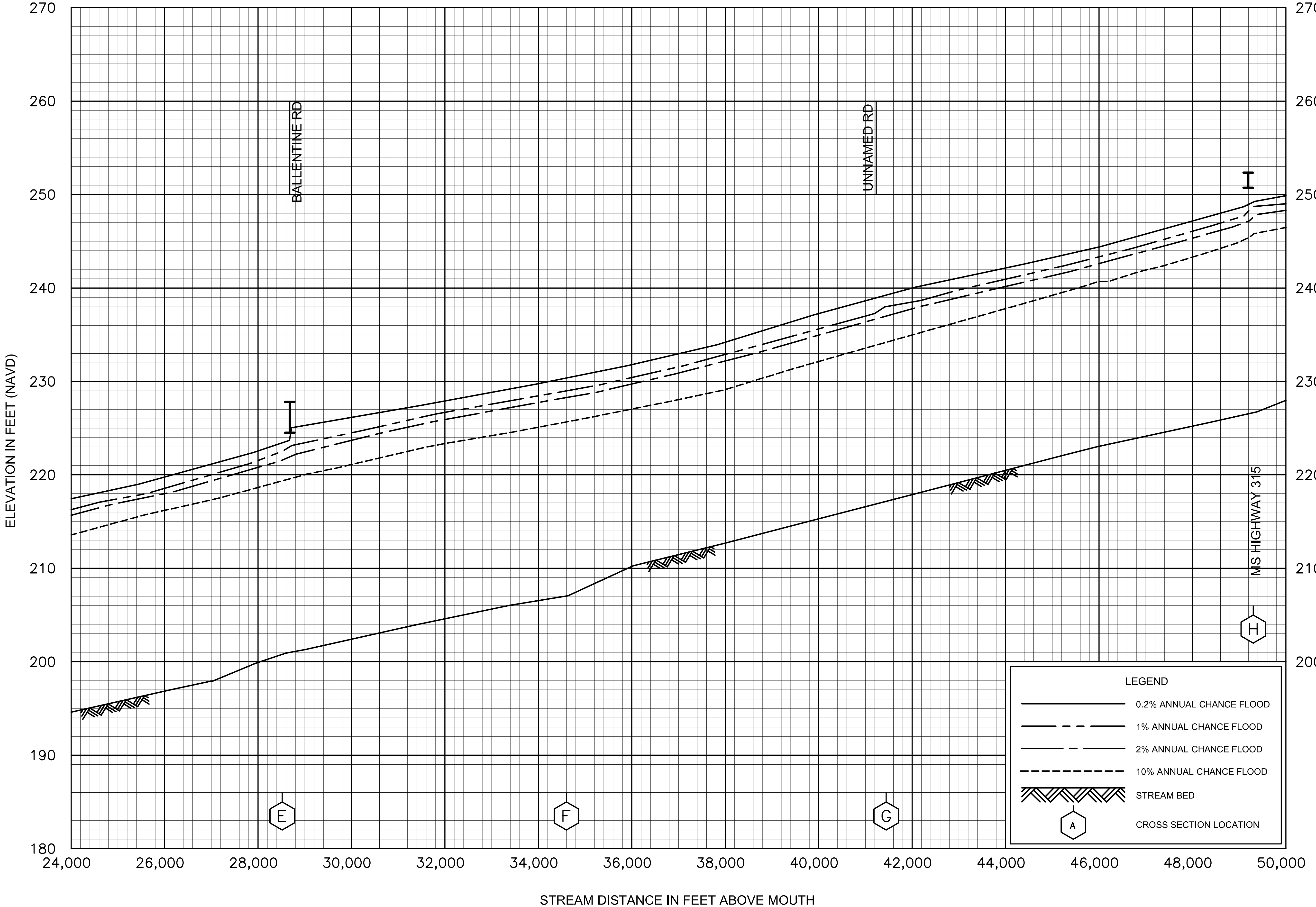


FLOOD PROFILES

McIVOR CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

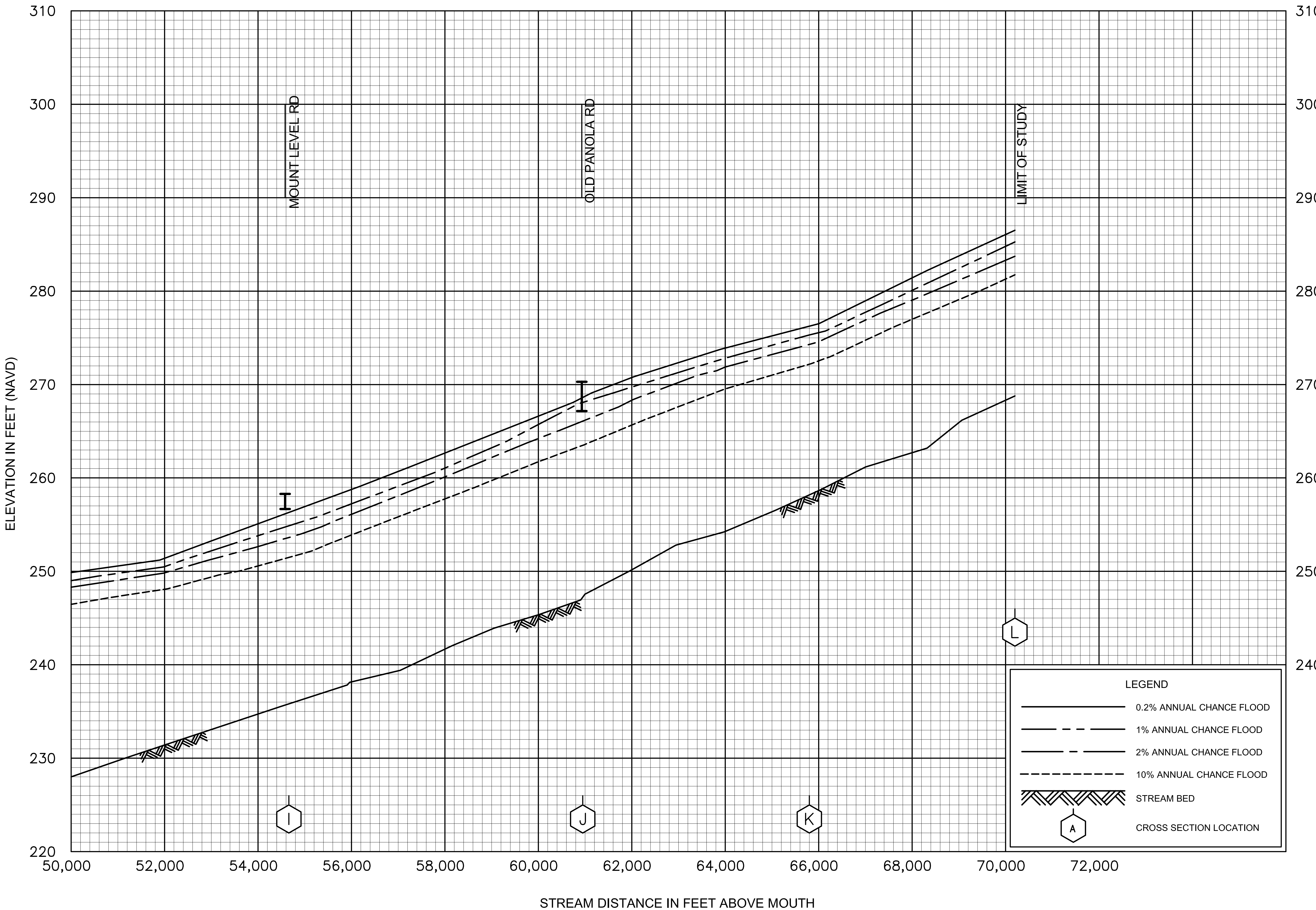


FLOOD PROFILES

McIVOR CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

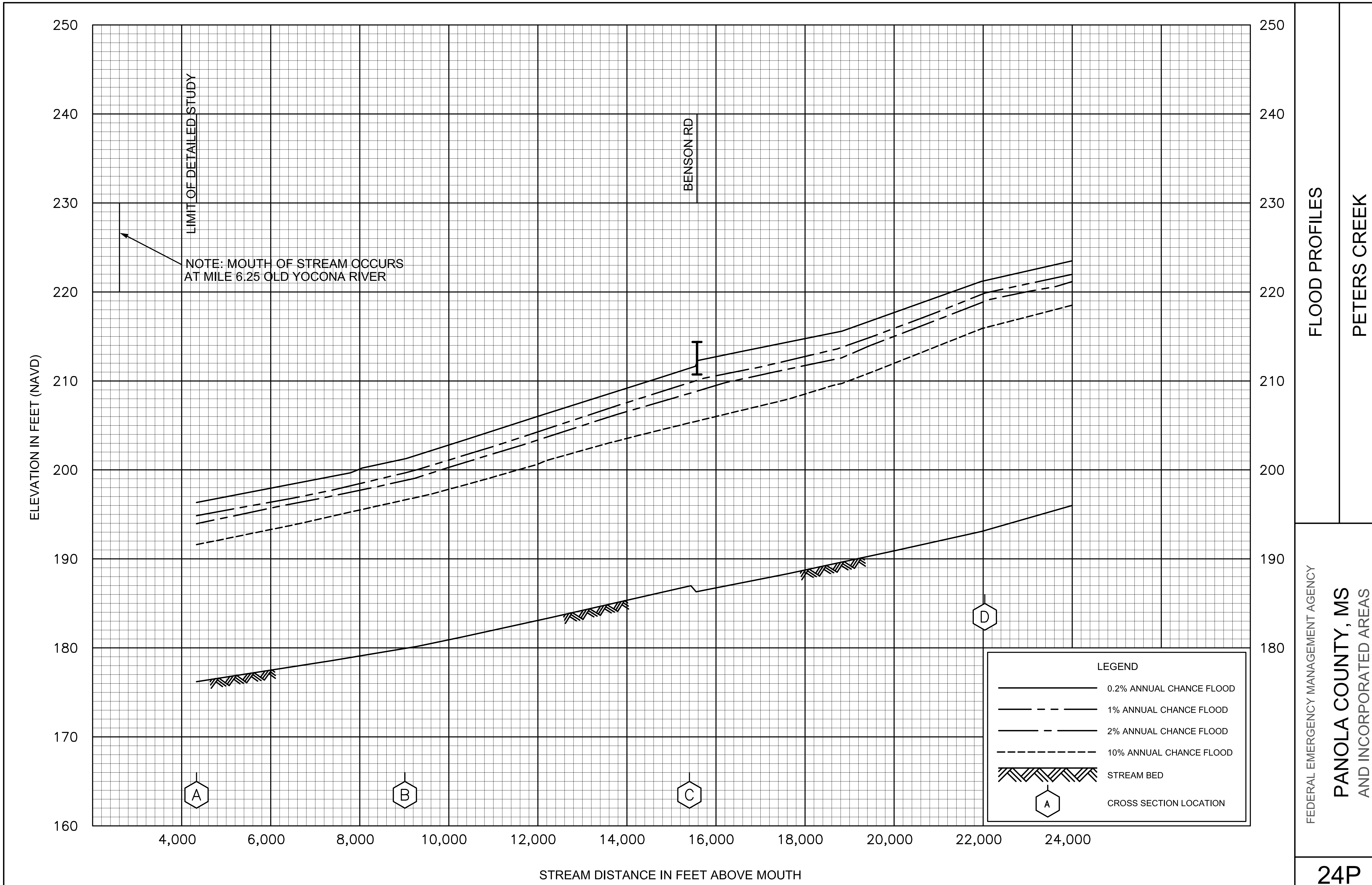


FLOOD PROFILES

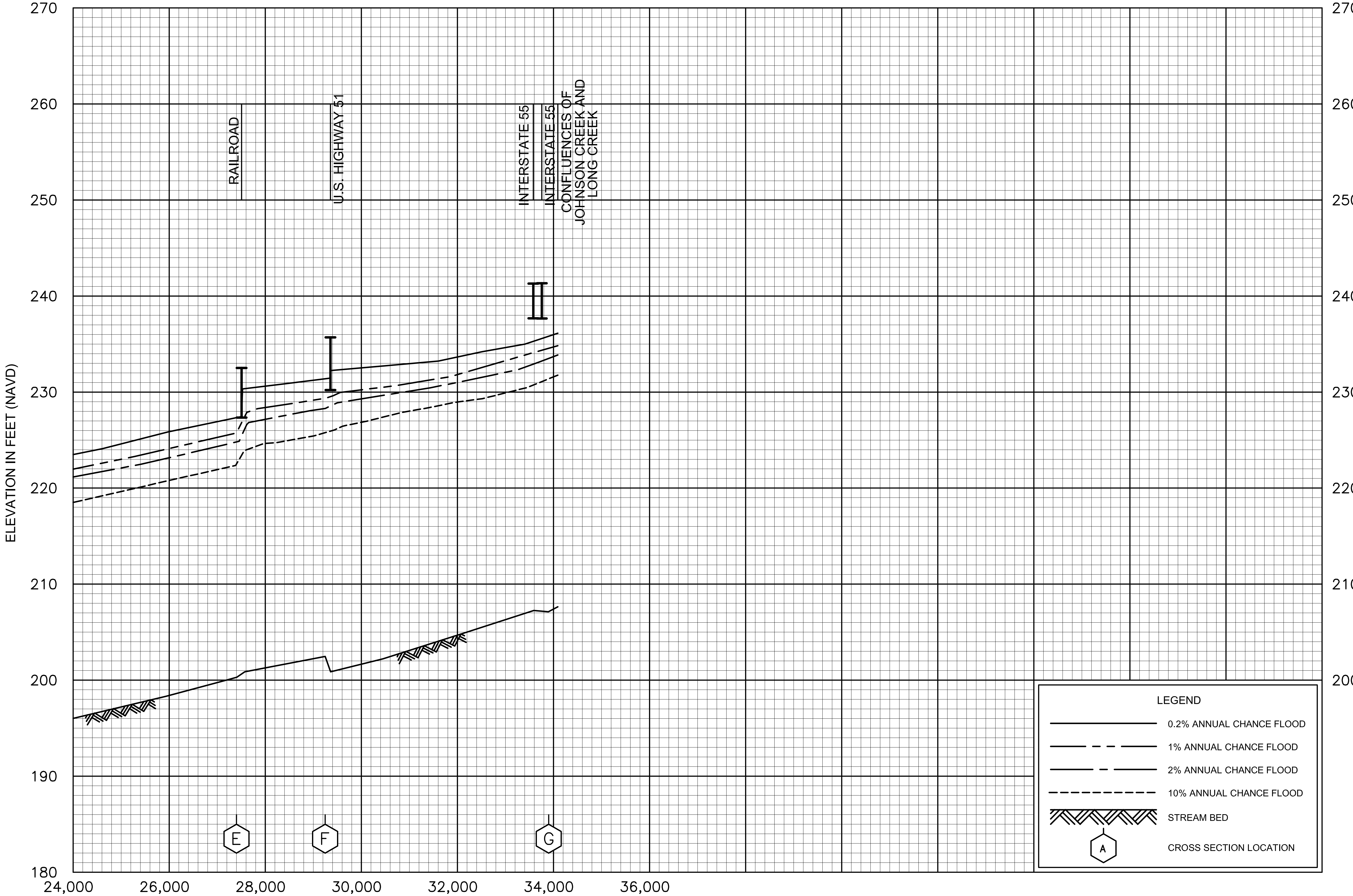
McIVOR CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



250
240
230
220
210
200
190
180
170
160
ELEVATION IN FEET (NAVD)
LIMIT OF DETAILED STUDY
BENSON RD
NOTE: MOUTH OF STREAM OCCURS
AT MILE 6.25 OLD YOCONA RIVER
A
B
C
D
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
22,000
24,000
STREAM DISTANCE IN FEET ABOVE MOUTH
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
PETERS CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
PANOLA COUNTY, MS
AND INCORPORATED AREAS
24P

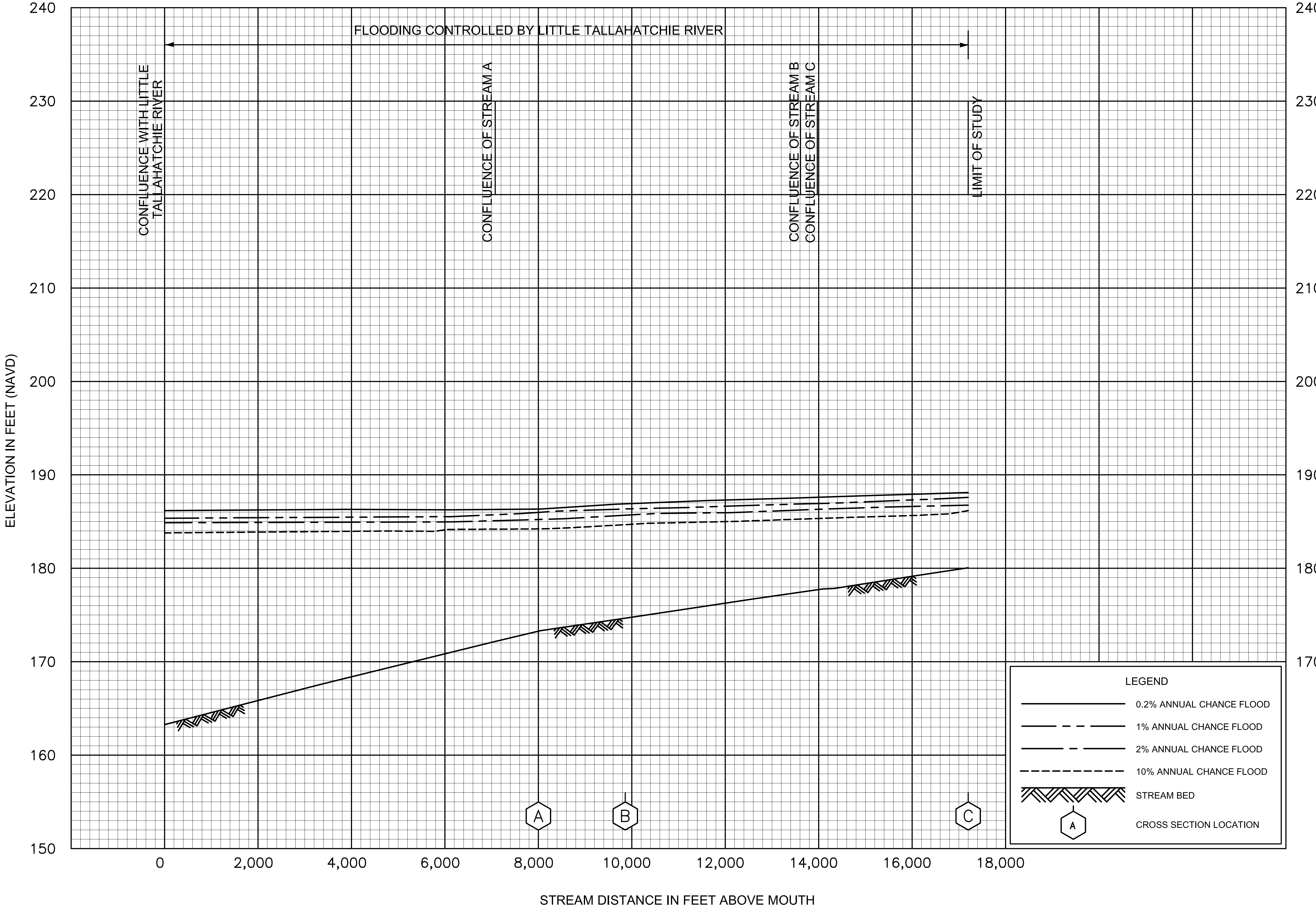


FLOOD PROFILES

PETERS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

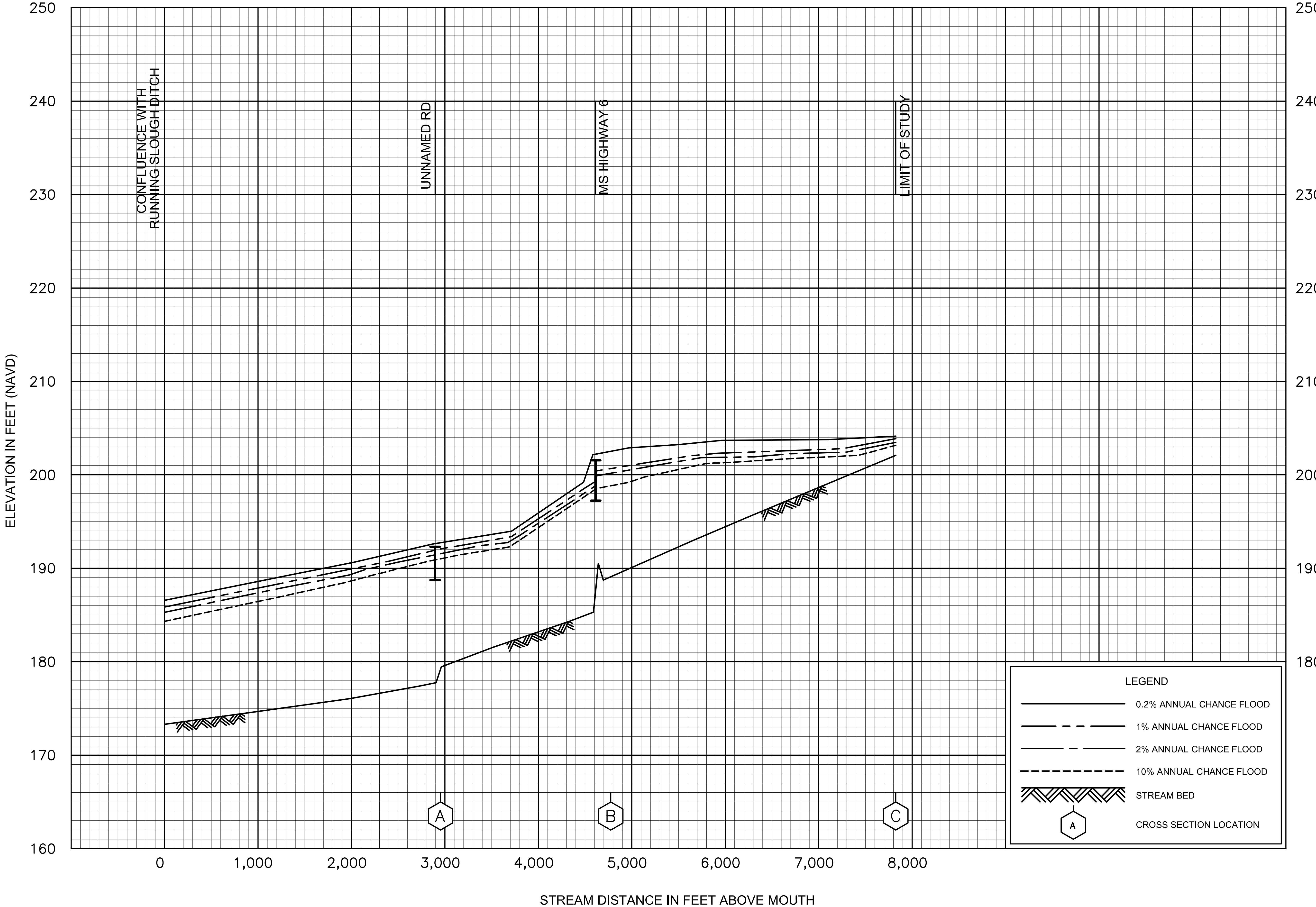


FLOOD PROFILES

RUNNING SLOUGH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

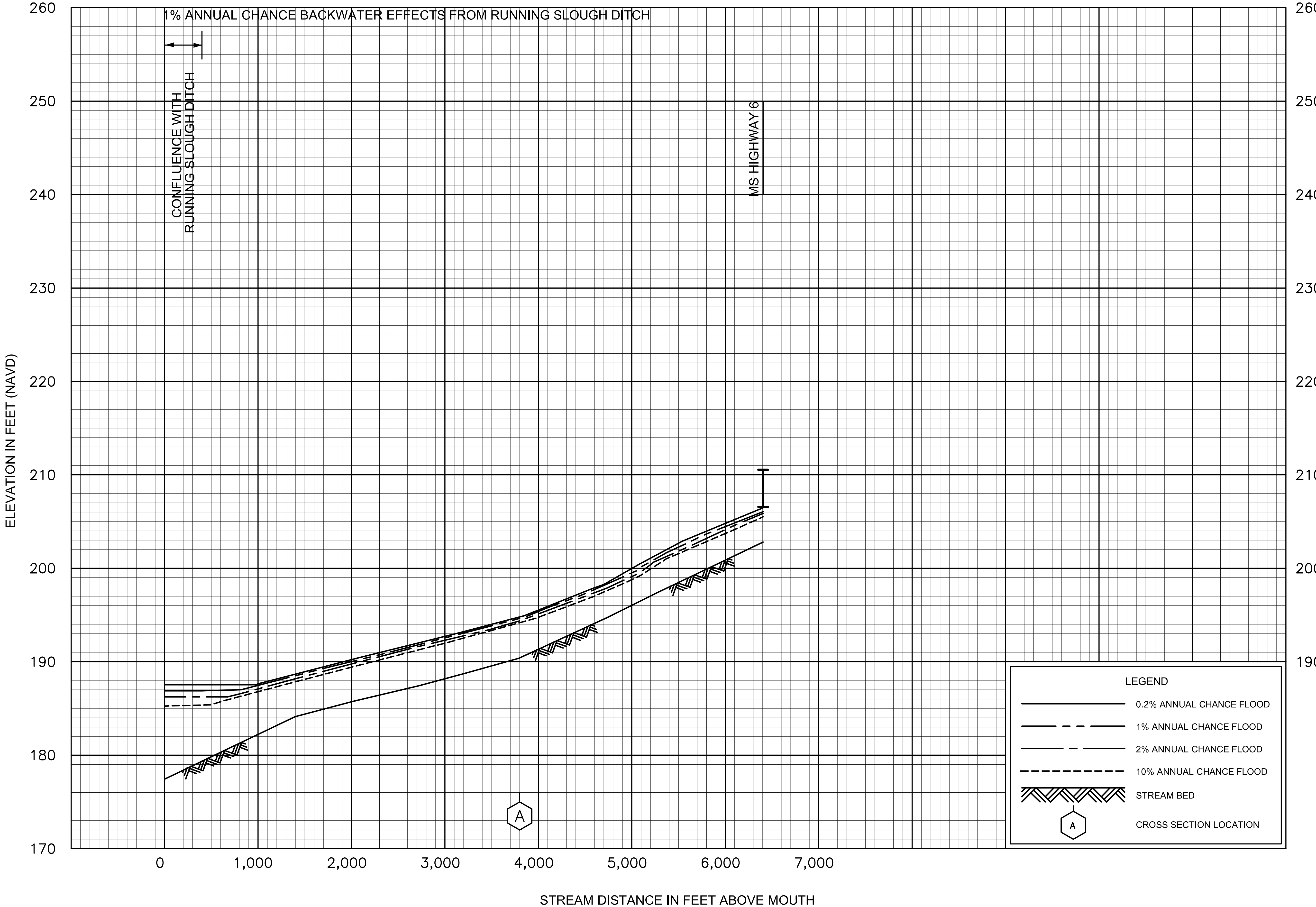


FLOOD PROFILES

STREAM A

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

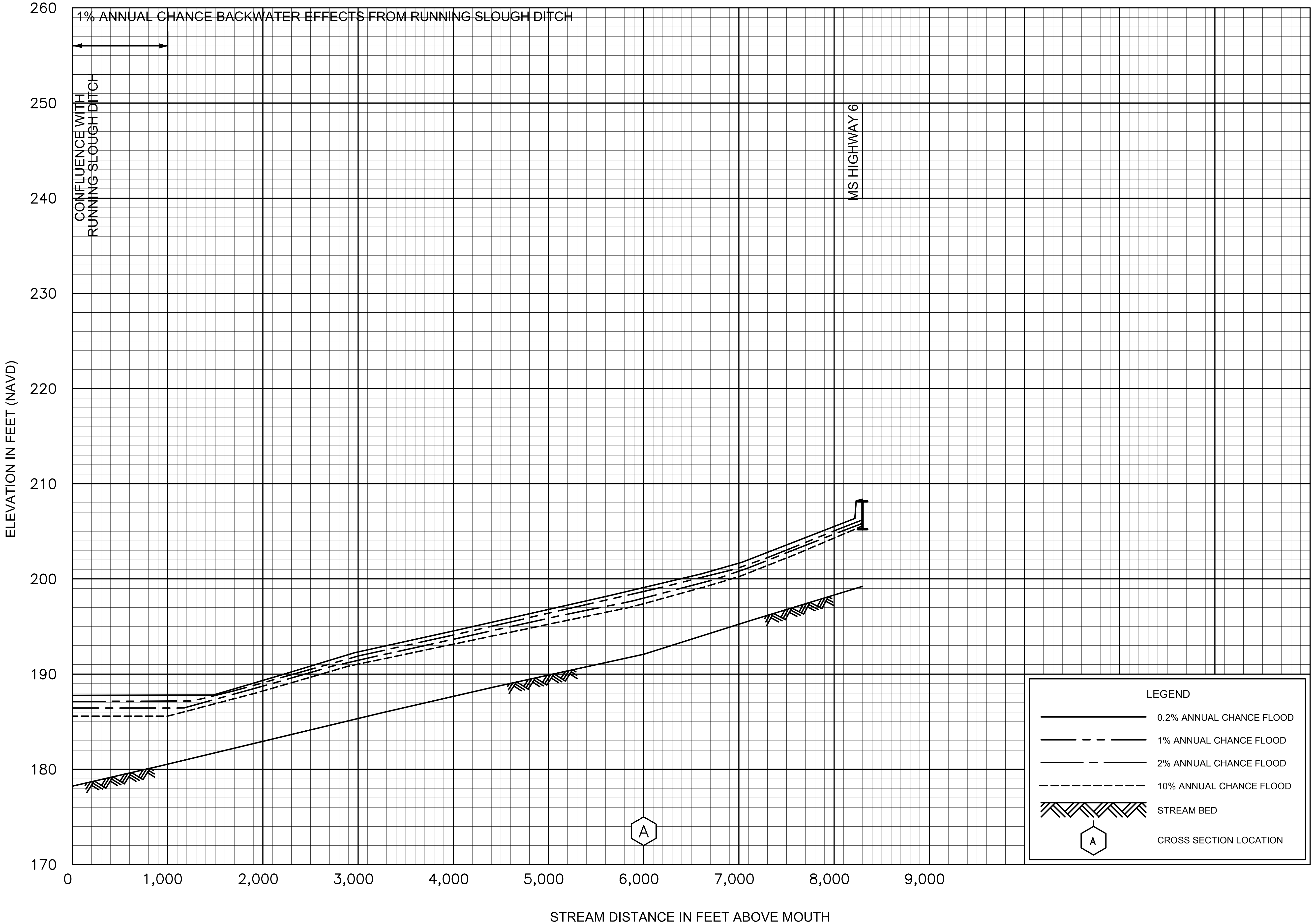


FLOOD PROFILES

STREAM B

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



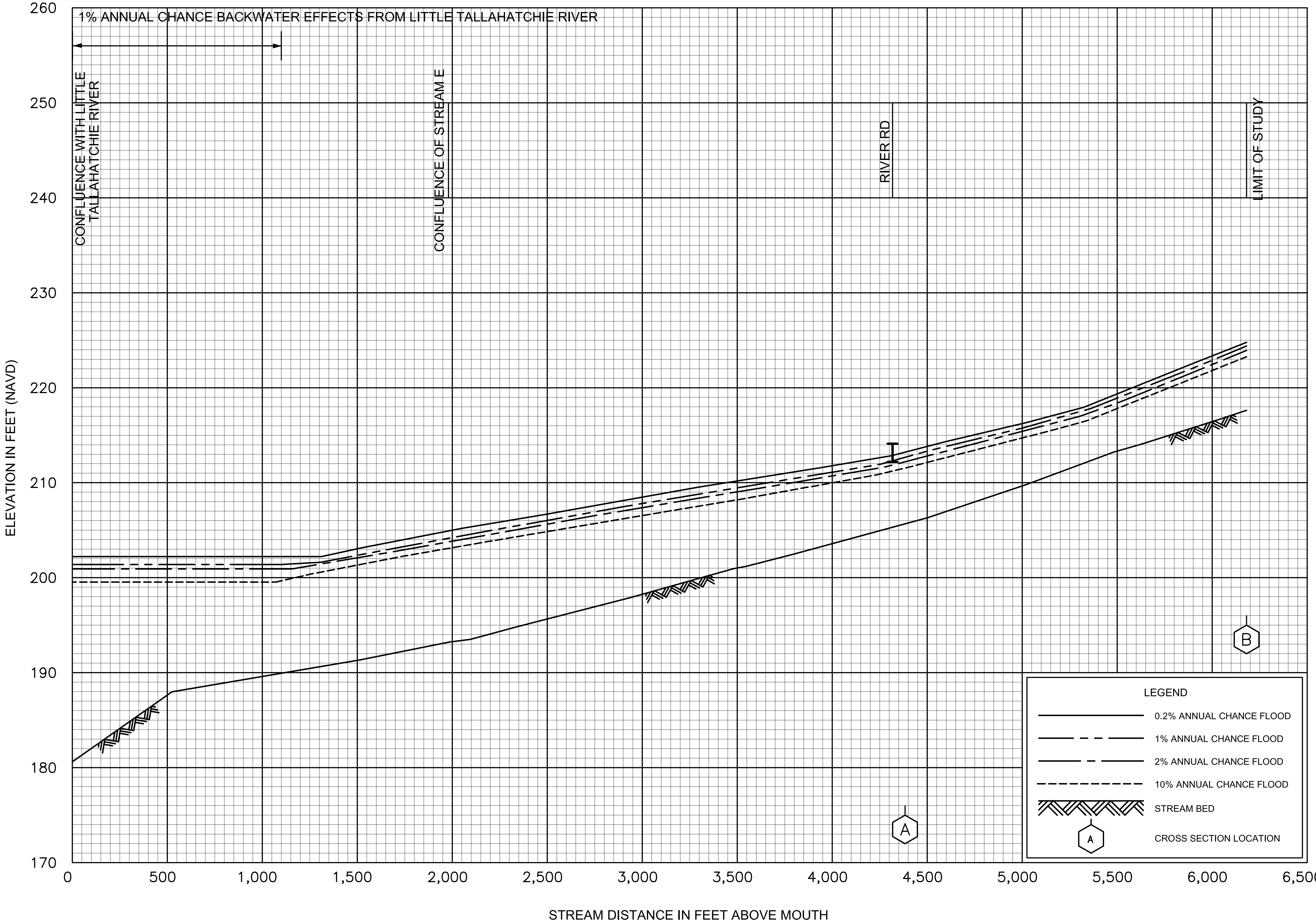
FLOOD PROFILES

STREAM C

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS

AND INCORPORATED AREAS

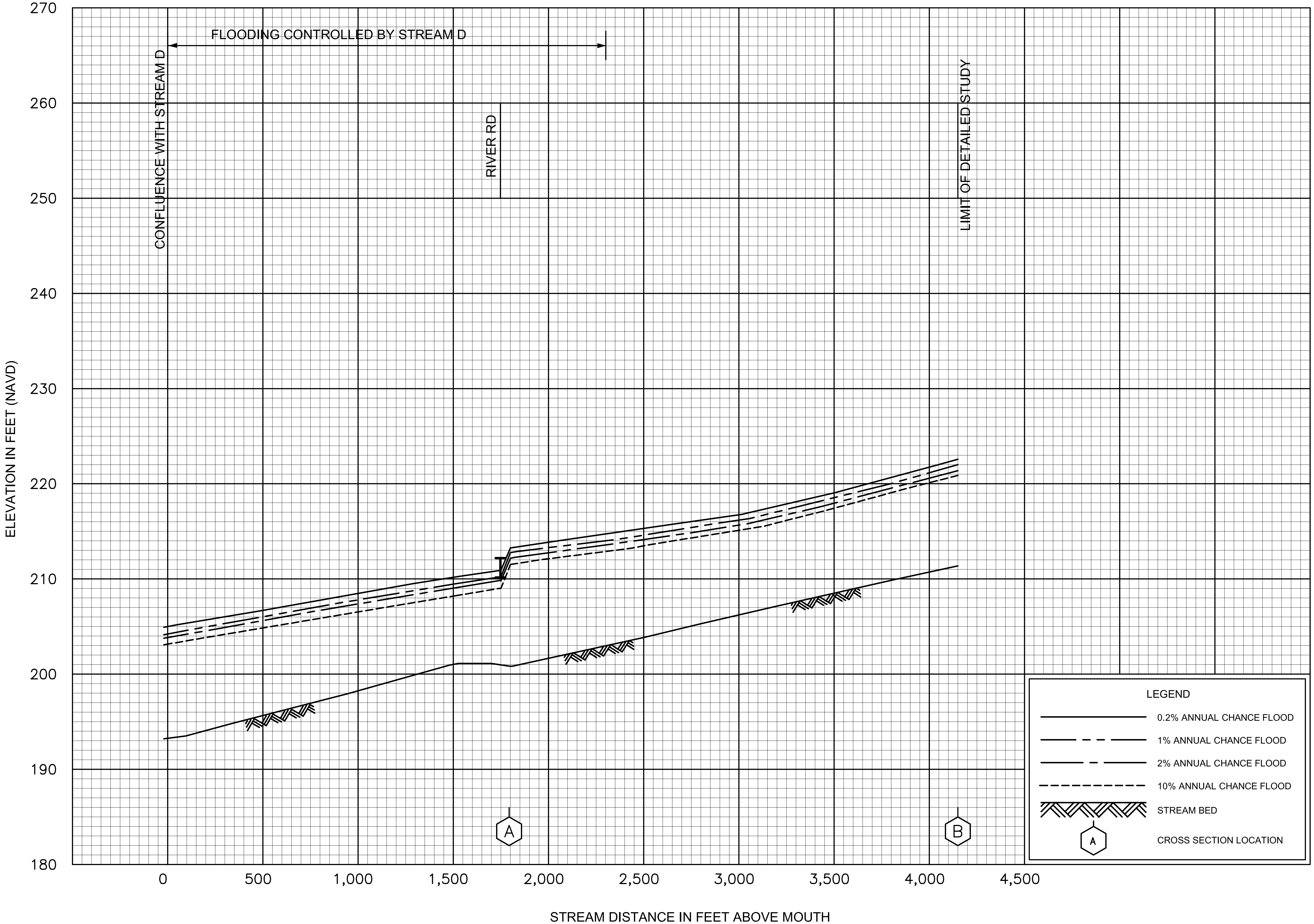


FLOOD PROFILES

STREAM D

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

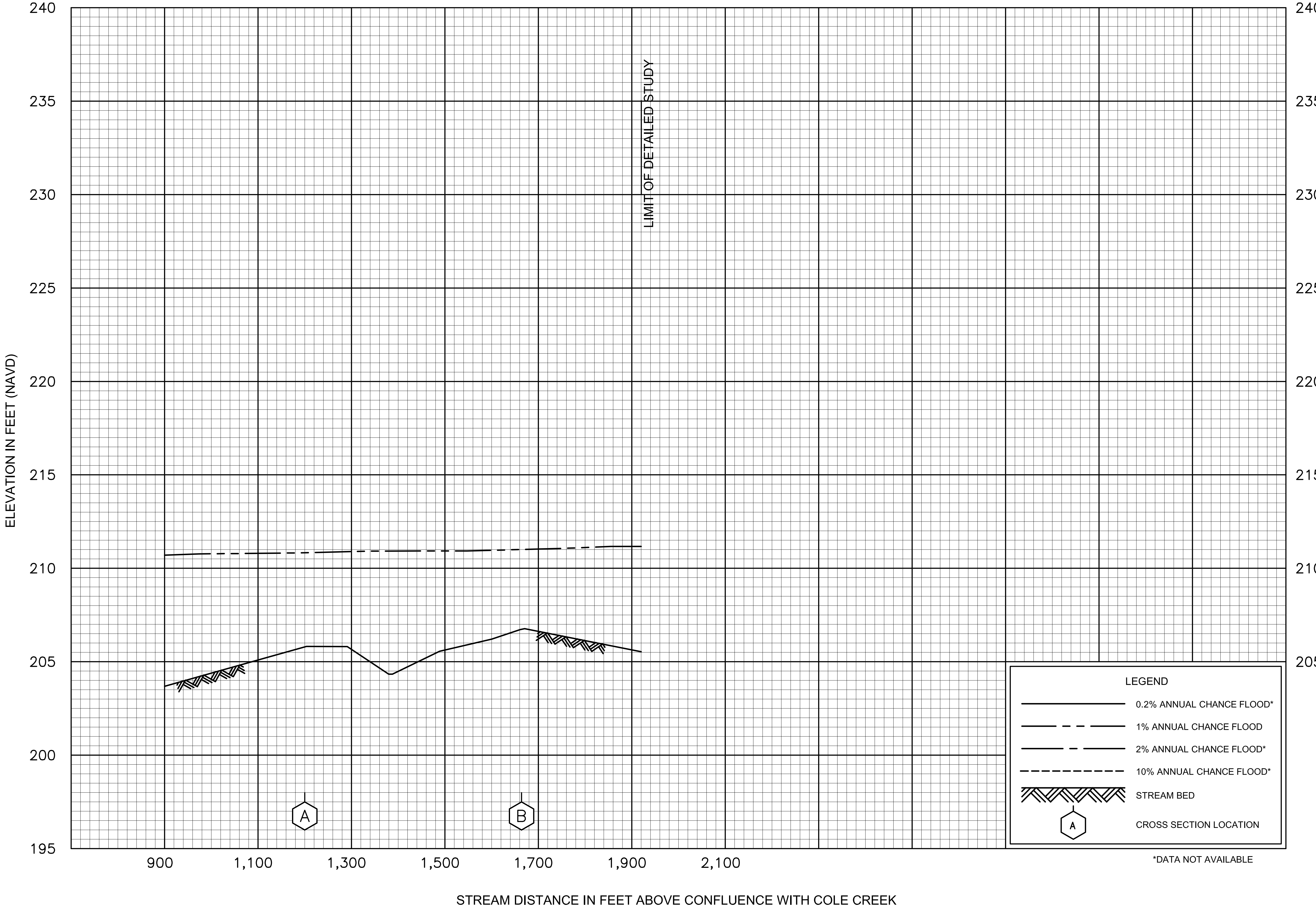


FLOOD PROFILES

STREAM E

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



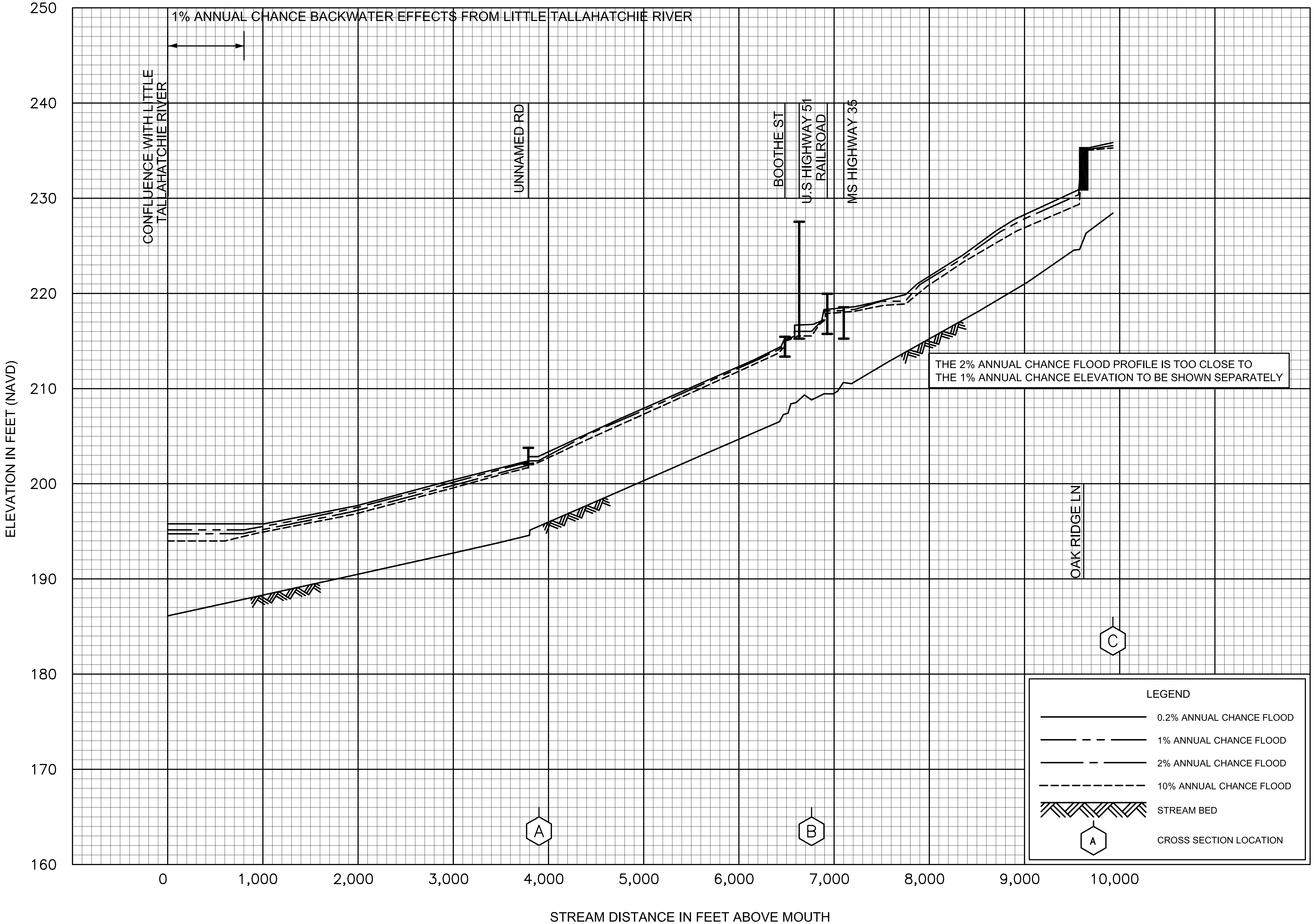
FLOOD PROFILES

TRIBUTARY TO COLE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS

32P

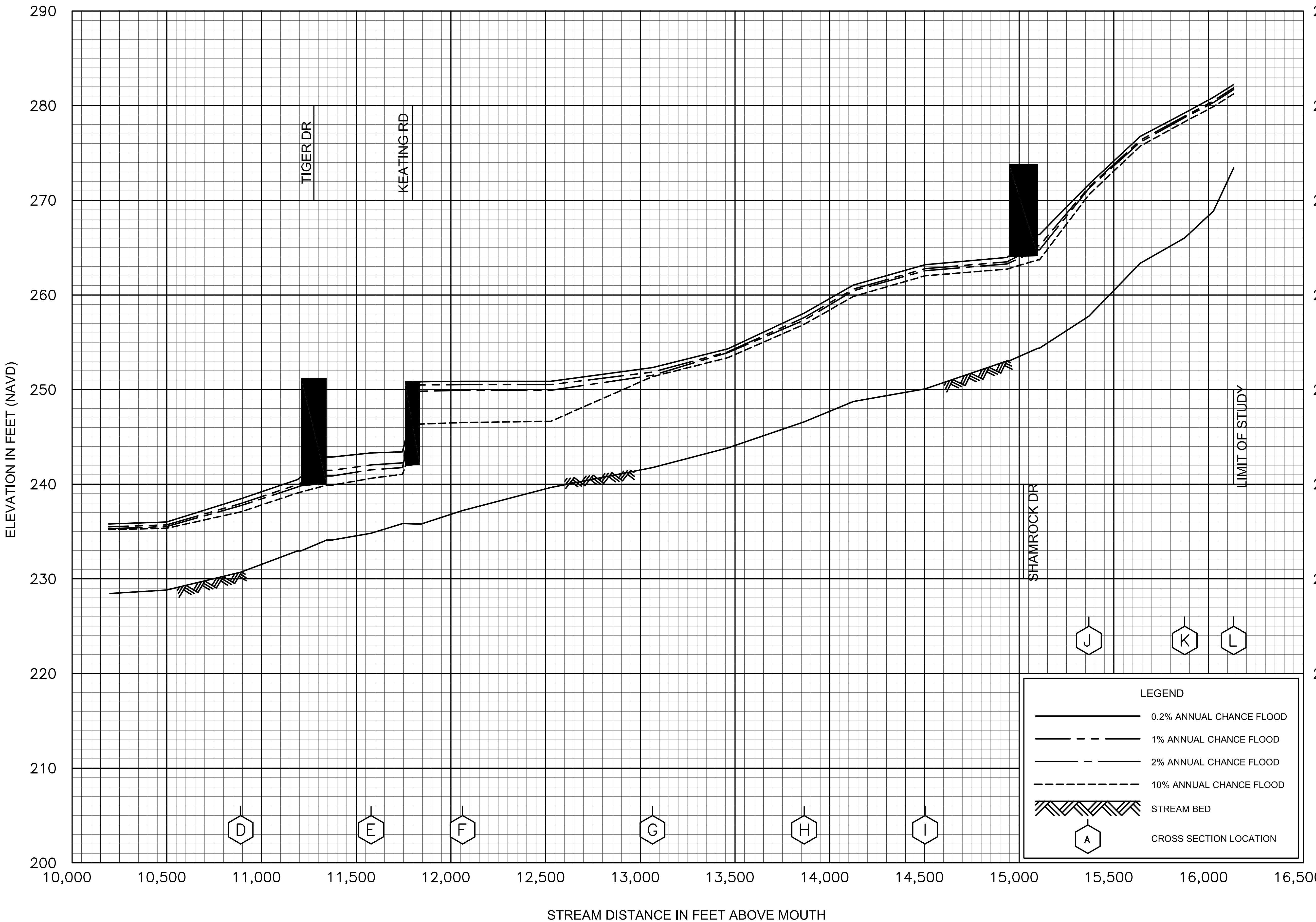


FLOOD PROFILES

WHITTEN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, MS
AND INCORPORATED AREAS



FLOOD PROFILES

WHITTEN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PANOLA COUNTY, NC

AND INCORPORATED AREAS