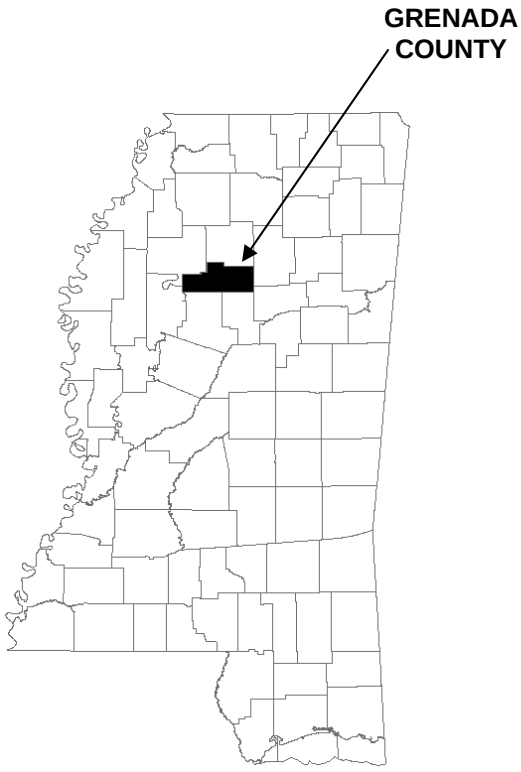
FLOOD INSURANCE STUDY

GRENADA COUNTY, MISSISSIPPI
AND INCORPORATED AREAS

Community Name	Community Number
GRENADA, CITY OF	280061
GRENADA COUNTY (UNINCORPORATED AREAS)	280060



PRELIMINARY

DEC 23 2009

EFFECTIVE:

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
28043CV000A

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 may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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
V1 through V30	VE
B	X
C	X

This preliminary revised Flood Insurance Study 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.

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

TABLE OF CONTENTS

TABLE OF CONTENTS - continued

FIGURES

TABLES

EXHIBITS

Exhibit 1 – Flood Profiles

FLOOD INSURANCE STUDY
GRENADA 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 Grenada County, Mississippi, including the City of Grenada, as well as the unincorporated areas of Grenada County (referred to collectively herein as Grenada 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.

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.

The hydrologic and hydraulic analyses for the June 1978 FIS report for Grenada County, Unincorporated Areas, were prepared by the U.S. Army Corps of Engineers (USACE), Vicksburg District, for the Federal Insurance Administration under Inter-Agency Agreement Nos. IAA-H-16-75 and IAA-H-7-76, Project Order Nos. 20 and 1, respectively (Reference 1).

The hydrologic and hydraulic analyses for this study were performed by the State of Mississippi for FEMA, under Contract No. EMA-2006-CA-5617. This study was completed in August 2009. Base map information shown on this Flood Insurance Rate Map (FIRM) was provided in digital format by Mississippi Department of Environmental Quality (MDEQ) and Mississippi Emergency Management Agency (MEMA). The information was photogrammetrically compiled at a scale of 1:400 from aerial photography dated 2006.

The coordinate system used for the production of DFIRM is Mississippi State Plane West (FIPS 2302), reference to the North American Datum of 1983 and the GRS80. Distance units were measured in United States (U.S.) feet.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) 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 by detailed methods. A final CCO meeting is held with representatives of the communities, FEMA,

and the study contractors to review the results of the study.

For the 1978 Grenada County, Unincorporated Areas FIS, an initial CCO meeting was held on December 20, 1974 and attended by representatives of the USACE, Federal Insurance Administration, and Grenada County. The county base map was selected and streams requiring detailed study were identified. An intermediate coordination meeting was held on July 22, 1975 and attended by county officials, local residents, and representatives from the Federal Insurance Administration and the USACE. A final coordination meeting was held on August 10, 1977, to present the results of the study to local officials. All changes resulting from that meeting were incorporated into the study (Reference 1).

For this countywide FIS, an initial Consultation Coordination Officer (CCO) meeting was held on April 17, 2008 in the City of Oxford, and attended by representatives of FEMA, MDEQ, MEMA, Grenada County, the City of Grenada, and MGI (Study Contractor). A final meeting, the Preliminary DFIRM Community Coordination (PDCC), was held on MONTH DD, YEAR to review the results of this study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Grenada County, Mississippi, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction.

Two types of analysis were used to develop this FIS report: redelineation of streams that had been previously studied with detailed methods, and approximate methods analysis. Floodplain boundaries of streams that had been previously studied by detailed methods were redelineated based on more detailed and up-to-date topographic mapping for this FIS report. Enhanced approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study for each stream were proposed to, and agreed upon, by FEMA and Grenada County. Table 1 lists the streams which were studied by enhanced approximate methods as part of this countywide revision.

Table 1. Limits of Enhanced Approximate Study

Stream	Downstream Limit	Upstream Limit	Length (mi)
Martin Creek	Approximately 500 feet downstream of I-55	Approximately 1.5 mile upstream of MS Hwy 7	4.8
Purdie Creek Tributary	Approximately 0.6 mile upstream of the confluence with Purdie Creek	Approximately 0.6 mile upstream of US Hwy 51	6.2

2.2 Community Description

Grenada County is in north-central Mississippi, and has an area of approximately 433 square miles. The county is adjacent to Yalobusha County to the north, Tallahatchie County to the north and west, Leflore County to the west, Carroll and Montgomery Counties to the south, and Calhoun and Webster Counties to the east.

The climate of the county is humid subtropical. More than one half of the average yearly rainfall of 53 inches comes in winter and spring. The winters are mild and the summers are warm and humid. Land use in the county is predominately for agricultural. Most of the soils are acidic, low in organic matter content, and medium to low in natural fertility (Reference 1).

The ground surface elevation in Grenada County varies from approximately 125 feet in the Delta area to approximately 460 feet in the hill section. Grenada County can be divided into three physiographic areas that extend from the north to south across the county. From west to east they are, the Mississippi River alluvial plain, the loessal hills, and part of the Coastal Plain east of these hills. The Mississippi River alluvial plain extends from the western boundary of the county eastward to the loessal hills. This plain is composed of nearly level silty and clayey soils. The loessal hills extend through the middle of the county and are in a nearly level to very steep area where silty soils are formed in loess. The terrain of the Coastal Plain are that extends from the loessal hills eastward to the county line is gently sloping to very steep (Reference 1).

As of 2000, the population of Grenada County was 23,263, with 14,879 people living with in the city limits of the City of Grenada (Reference 2). Commercial and residential developments along streams outside of the city are sparse at present; however, continuing growth of the Grenada area is expected and intensified floodplain use will undoubtedly accompany such development (Reference 1).

The two major streams in the county are the Yalobusha River and Batupan Bogue. The Yalobusha River enters the county from the east and flows in a westerly to southwesterly direction into Carroll and Leflore Counties. Batupan Bogue enters Grenada County from Montgomery County on the south and flows into the Yalobusha River at the City of Grenada. Several small tributaries empty into these two streams. Perry Creek flows into Batupan Bogue southeast of the City of Grenada (Reference 1).

2.3 Principal Flood Problems

The history of flooding in Grenada County indicates that flooding may occur during any season of the year. The majority of floods occur during the winter and spring. Run off due to intense rainfall is the principal cause of flooding. Due to the relatively small size of the drainage basin, flash floods can occur from local high intensity thunderstorms.

One of the highest flood recorded on the Yalobusha River since the closure of the Grenada Dam in June 1953 was the flood of March 16, 1973. The crest stage at the U.S. Highway 51 bridge over the Yalobusha River was at an elevation of 177.57 feet. This storm produced a maximum rainfall intensity of 2.63 inches in 3 hours and a total rainfall of 5.93 inches in 12 hours. This flood is estimated to have had a recurrence interval of 40 years.

During the 1973 storm, heave localized rains caused flash flooding of tributaries and upper reaches of Batupan Bogue. In the City of Grenada, extensive flooding occurred in some areas, inundating homes and some streets located in the northeastern section of the city. The worst damage probably occurred in the small community of Futheyville, located just east of Grenada on the east bank of Batupan Bogue. Several homes in the Dorroh Subdivision were completely inundated, requiring evacuation of approximately 300 persons.

Other record floods of the last 40 years occurred on November 14, 1961; March 21, 1955; February 10, 1966; and April 16, 1970. The stage elevations on the Yalobusha River at the U.S. Highway 51 bridge for these dates were 177.37, 176.77, 174.47, and 173.97 feet, respectively (Reference 1).

The November 1961 flood produced one of the highest stage of record on Batupan Bogue, with an estimated flood crest elevation of 184.1 feet at a bridge on State Highway 8. Records of flooding on Perry Creek are very limited, but flooding is known to have occurred along the stream in the past (Reference 1).

2.4 Flood Protection Measures

Flood damage protection measures have been provided to the Grenada area by channel improvement of the Yalobusha River channel and construction of the Grenada Dam. Improvement of the Yalobusha River from below Grenada Lake Reservoir to its mouth near Greenwood was completed in 1942. A number of cutoffs reduced the river length between these points from 63.6 to 45.6 miles. In 1953, the Grenada Lake Reservoir closure was completed to afford storage of floodwaters and flow regulation to further reduce downstream stages. The lake is approximately 3 miles northeast of the City of Grenada, and has a storage capacity of 1,337,400 acre-feet, of which 1,251,700 acre-feet are utilized for flood control. Since completion of Grenada Lake Reservoir project, which controls runoff of 1320 square miles, flood stages on the Yalobusha River north of Grenada result primarily from flood discharges on Batupan Bogue. The U.S. Soil Conservation Service completed bank stabilization projects on Perry Creek. The purpose of this work was primarily erosion control (Reference 1).

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 are expected to be equaled or exceeded once on the average during any l0-, 50-, l00-, 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 l0-, 50-, 100-, and 500-year floods, have a l0-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood 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 the peak discharge-frequency relationships for each flooding source studied by detail methods affecting the community.

Pre-countywide Analyses

Grenada County (Unincorporated Areas): For Yalobusha River Tributary 1, Batupan Bogue, and Perry Creek, peak discharges for floods of the l0-, 2-, 1-, and 0.2-percent-annual-chance recurrence intervals were computed from synthetic unit hydrographs and rainfall information contained in the U.S. Weather Bureau Technical Paper No. 40, Rainfall Frequency Atlas of the United States (Reference 3). The synthetic unit hydrographs were developed by the USACE for the Flood Plain Information report for Grenada (Reference 4). The 0.2-percent-annual-chance rainfall was determined by a straight-line extrapolation of single-log graph of rain-fall amounts obtained for frequencies up to 100 years. Discharges for the 0.2-percent-annual-chance floods on Batupan Bogue and Perry Creek were computed from this extrapolated rainfall and synthetic unit hydrographs (Reference 1).

Data from gaging station on the Yalobusha River at the Cities of Grenada and Whaley and on Batupan Bogue at the City of Grenada were used to develop peak discharges for the Yalobusha River in Grenada County. The gage on the Yalobusha River was established at the old U.S. Highway 51 bridge by the U.S. Geological Survey (USGS) in 1929.The USACE replaced this gage in 1934 and located it at the new U.S. Highway 51 bridge, 600 feet upstream from the old bridge. Daily records of these gages are available to date. The crest-stage gage on the Yalobusha River at Whaley was established by the USACE in 1938 and has been maintained to date. The USACE maintains the crest-stage gage on Batupan Bogue at State Highway 8 at Grenada and it has been read intermittently since 1958 (Reference 1).

Peak discharges for the Yalobusha River at Grenada were determined by a flow-frequency analysis of records of the gage at U.S. Highway 51. The flow-frequency analysis was performed according to U.S Water Resources Council Bulletin 17B (Reference 5). The available years of record subsequent to the closure of Grenada Lake (1954 to 1973) were included in the frequency analysis.

The peak discharges computed for Batupan Bogue at State Highway 8 by synthetic unit hydrographs were higher than those computed downstream on the Yalobusha River at U.S. Highway 51. Discharge measurements of the floods in 1966 and 1973 from the gages at these locations indicate an actual reduction in peak discharge between these stations. Combined outflow hydrographs from Batupan Bogue and Grenada Lake were routed through the large overbank storage area on the Yalobusha River upstream of U.S. Highway 51. These routings verified the computed reduction in peak discharges.

The peak discharges measured on the Yalobusha River at Whaley and Grenada for the 1966 and 1973 floods were approximately the same, indicating little change in peak flow between the stations. The peak discharges computed at Grenada were held constant on the downstream reach of the study.

Peak discharge-drainage area relationships for the Yalobusha River, Yalobusha River Tributary 1, Batupan Bogue, Perry Creek, and Perry Creek Tributary are shown in Table 2: Summary of Discharges (Reference 1).

This Countywide Study

For this countywide study, discharges for the 1-percent-annual-chance recurrence interval were calculated for stream reaches studied by approximate and enhanced approximate methods using regression equations for rural areas in Mississippi found in USGS Fact Sheet 008-01 (Reference 6).

Peak discharge-drainage area relationships for the select streams studied by detailed methods are shown in Table 2, "Summary of Discharges".

Table 2. Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (Square miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
BATUPAN BOGUE					
At Mouth	243.0	43,400	56,300	62,200	75,400
At State Highway 8	238.0	43,100	55,900	61,700	74,800
At Cross Section B	218.0	41,800	54,400	59,700	72,400
At Tie Plant Road	212.0	41,400	53,900	59,100	71,700
At Cross Section D	200.0	41,600	53,000	57,900	70,200
At Cross Section E	195.0	40,300	52,600	57,400	69,600
At Cross Section H	186.0	39,700	51,900	56,500	68,500
At the Confluence with Crowder Creek Tributary	76.0	32,600	43,400	45,600	55,300
PERRY CREEK					
At Mouth	18.5	11,300	14,850	15,800	19,000
At Illinois Central Gulf Railroad	17.8	11,050	14,500	15,400	18,550
At U.S. Highway 51	16.0	10,350	13,600	14,450	17,350
At the Confluence with Perry Creek Tributary	13.5	9,400	12,300	13,100	15,750
At Cross Section K	8.5	7,500	9,750	10,420	12,450
PERRY CREEK TRIBUTARY					
At Carrolton Road	4.0	5,800	7,450	8,000	9,500
YALOBUSHA RIVER					
At U.S. Highway 51	1570.0	19,000	39,000	52,000	63,500
YALOBUSHA RIVER TRIBUTARY 1					
At Mouth	2.4	2,580	2,930	3,130	3,540
At Gayoso Street	2.2	2,360	2,680	2,870	3,250
At State Highway 7	2.0	2,150	2,440	2,610	2,950
At State Highway 8	1.4	1,650	1,900	2,050	2,300
At Cross Section G	1.2	1,400	1,630	1,760	2,000

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 FIRMs 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.

Pre-Countywide Analyses

Water-surface elevations of floods on the selected recurrence intervals were computed through the use of the USACE HEC-2 step-backwater computer program (Reference 7).

Cross sections for the backwater analyses of the Yalobusha River, Yalobusha River Tributary 1, Batupan Bogue, Perry Creek, and Perry Creek Tributary were field surveyed and located at close intervals above and blow bridges and culverts in order to compute the significant backwater effects of these structures in the highly urbanized areas. Channel roughness factors (Manning's "n") for these computations were assigned on the basis of field inspection of floodplain areas. The roughness values ranged from 0.03 to 0.08 for the channels and from 0.07 to 0.15 for the overbanks throughout the study area. Starting water-surface elevations for the streams in this study were either taken from stream gage data or were developed by the slope-area method (Reference 1).

This Countywide Study

For this countywide study, water-surface profiles were computed through the use of the USACE HEC-RAS version 3.1.2 computer program (Reference 8). Water surface profiles were produced for the 1-percent-annual-chance storms for approximate studies.

The approximate study methodology used the computer program WISE as a preprocessor to HEC-RAS. WISE combined geo-referenced data from the terrain model and miscellaneous shapefiles (such as streams and cross sections). 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 1.0-percent-annual-chance flood elevations for Grenada Lake were determined by analysis of historical stage records. These elevations are presented in Table 3: Summary of Stillwater Elevations.

Table 3. Summary of Stillwater Elevations

FLOODING SOURCE AND LOCATION	ELEVATION (ft NAVD) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
GRENADA LAKE				
At Dam	*	*	236.9	*

* Data not computed

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. Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 2%- and 1%-annual chance elevations are close together, due to limitations of the profile scale, only the 1%-annual chance profile has been shown.

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.

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

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

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on

the FIRM with the approximate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

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

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

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 (NGVD). With the completion of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. 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 Grenada County is -0.03 feet.

For additional information regarding conversion between the NGVD and NAVD, 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 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 1- and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS 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 county. For each stream studied in detail, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated based on topographic maps at a scale of 1:62,500 with contour intervals of 5 and 20 feet (References 9-10).

Floodplain boundaries for enhanced approximate and approximate study streams were delineated based on a statewide 10 meter Digital Elevation Model (DEM) from the Mississippi Automated Resource Information System (Reference 11).

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 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 the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundaries are shown on the FIRM. For this revision, the floodplain boundaries were delineated based on topographic data provided by the USGS (References 9-10).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway

is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this 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 in Table 4, "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.

No floodways were computed for streams studied by enhanced approximate and approximate methods. 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 at any point within the county.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
BATUPAN BOGUE								
A	1.38[1]	310	5,057	13.91	186.5	186.5	187.0	0.5
B	2.94[1]	1,940	20,439	5.94	192.6	192.6	193.5	0.9
C	4.76[1]	2,273	23,987	6.86	198.2	198.2	199.2	1.0
D	5.86[1]	2,476	24,155	7.42	203.5	203.5	204.5	1.0
E	6.92[1]	2,627	23,143	7.50	207.2	207.2	208.2	1.0
F	8.53[1]	2,535	25,545	7.62	213.7	213.7	214.7	1.0
G	9.47[1]	1,821	19,345	8.09	217.5	217.5	218.5	1.0
H	10.00[1]	2,283	21,813	7.66	219.8	219.8	220.8	1.0
I	11.23[1]	2,791/ 1,350[3]	21,798	7.86	225.0	225.0	226.0	1.0
BATUPAN BOGUE TRIBUTARY 1								
A	2,000[2]	632	1,906	3.26	184.3[4]	177.5	178.4	0.9
B	3,990[2]	58	481	4.11	186.7	186.7	187.6	0.9
C	4,300[2]	154	737	6.91	189.6	189.6	190.3	0.7
D	4,955[2]	293	1,354	4.16	192.9	192.9	193.9	1.0

[1] Miles above mouth [2] Feet above mouth

[3] Width/Width within county

[4] Flooding controlled by Batupan Bogue

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

BATUPAN BOGUE – BATUPAN BOGUE TRIBUTARY 1

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
BROWNS CREEK								
A	2,400	273	1,722	4.20	186.7	186.7	187.5	0.8
B	3,720	240	1,623	4.65	191.5	191.5	192.5	1.0
C	4,125	322	2,234	3.25	191.8	191.8	192.8	1.0
D	5,430	319	1,907	4.12	192.7	192.7	193.7	1.0
E	6,085	76	631	6.48	194.5	194.5	195.3	0.8
F	6,275	54	505	7.59	194.8	194.8	195.6	0.8
G	6,875	223	1,121	5.44	198.1	198.1	198.8	0.7
H	7,540	196	1,287	4.52	200.7	200.7	201.6	0.9
I	8,170	71	708	5.41	201.4	201.4	202.3	0.9
J	8,800	244	997	6.81	202.7	202.7	203.5	0.8
K	9,300	58	656	5.46	203.8	203.8	204.8	1.0
L	10,450	52	481	6.92	207.1	207.1	208.0	0.9
M	11,000	58	454	7.34	209.6	209.6	210.1	0.5
N	11,850	57	555	4.67	212.3	212.3	212.8	0.5
O	12,250	38	284	9.11	212.8	212.8	213.4	0.6
P	12,950	51	416	5.91	216.3	216.3	217.0	0.7

[1] Feet above mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

BROWNS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
BROWNS CREEK TRIBUTARY								
A	590[1]	156	*	*	215.9	*	*	*
B	1,260[1]	38	*	*	216.5	*	*	*
C	2,500[1]	29	*	*	226.4	*	*	*
PERRY CREEK								
A	0.99[2]	298	2,563	6.99	191.7	190.7[3]	191.6	0.9
B	1.48[2]	748	4,620	5.43	196.6	196.6	197.2	0.6
C	1.54[2]	882	6,298	4.62	198.1	198.1	198.9	0.8
D	2.31[2]	719	4,569	5.98	205.5	205.5	206.4	0.9
E	2.72[2]	799	5,151	5.11	210.2	210.2	210.7	0.5
F	2.99[2]	225	1,908	8.78	211.6	211.6	212.3	0.7
G	3.53[2]	409	2,913	7.24	218.1	218.1	219.1	1.0
H	3.88[2]	533	3,730	6.52	221.6	221.6	222.3	0.7
I	4.78[2]	762	4,461	6.17	229.4	229.4	230.2	0.8
J	5.39[2]	1,223	8,461	2.59	239.9	239.9	240.5	0.6
K	5.79[2]	113	1,194	8.73	240.0	240.0	240.9	0.9

[1] Feet above mouth [2] Miles above mouth [3] Elevation computed without consideration of backwater effects from Batupan Bogue

* Data not available

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

BROWNS CREEK TRIBUTARY – PERRY 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
PERRY CREEK TRIBUTARY								
A	0.35	55	652	12.28	239.9[2]	234.3	234.9	0.6
B	0.86	925	4,348	4.78	249.8	249.8	250.8	1.0
C	0.98	925	9,826	2.22	250.3	250.3	251.3	1.0
YALOBUSHA RIVER								
B	28.05	2,978	24,213	6.21	157.1	157.1	158.1	1.0
C	31.26	4,056	32,190	5.42	161.2	161.2	162.2	1.0
D	33.19	4,101	30,738	6.21	164.7	164.7	165.7	1.0
E	36.72	6,304	42,651	5.23	170.4	170.4	171.2	0.8
F	40.60	5,995	43,910	4.66	176.8	176.8	177.7	0.9
G	40.69	5,491	40,714	4.81	177.6	177.6	178.5	0.9
H	42.89	444	6,397	8.13	179.2	179.2	180.2	1.0
I	43.54	6,478	75,288	2.46	181.6	181.6	182.4	0.8
J	43.77	5,944	54,877	3.38	181.9	181.9	182.8	0.9

[1] Miles above mouth

[2] Flooding controlled by Perry Creek

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

PERRY CREEK TRIBUTARY – YALOBUSHA 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
YALOBUSHA RIVER TRIBUTARY 1								
A	1,300	68	518	5.54	179.5	171.9[2]	172.9	1.0
B	1,880	69	555	5.17	179.5	176.4[2]	176.6	0.2
C	3,400	81	589	5.54	181.1	181.1	181.9	0.8
D	3,650	248	1,509	3.43	184.0	184.0	184.9	0.9
E	5,250	176	793	6.33	193.8	193.8	194.5	0.7
F	8,160	224	1,488	1.4	203.5	203.5	204.1	0.6
G	8,450	151	616	2.9	203.6	203.6	204.1	0.5
YALOBUSHA RIVER TRIBUTARY 1B								
A	600	33	199	4.20	204.5	204.5	204.7	0.2
B	1,600	21	137	4.30	217.1	217.1	218.1	1.0

[1] Feet above mouth

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

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

YALOBUSHA RIVER TRIBUTARY 1 – YALOBUSHA RIVER TRIBUTARY 1B

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

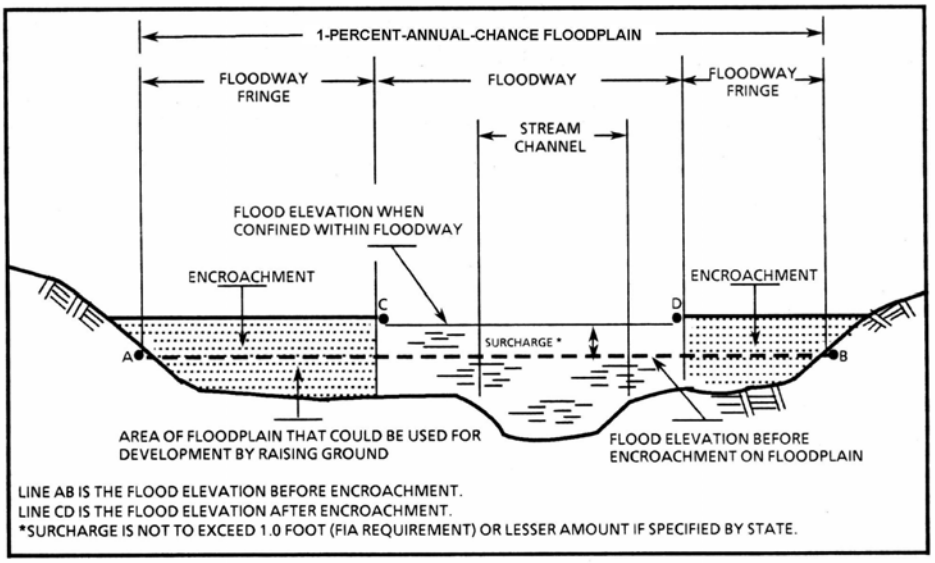


Figure 1. Floodway Schematic

5.0 INSURANCE APPLICATION

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 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.

The countywide FIRM presents flooding information for the entire geographic area of Grenada County, Mississippi. 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 5, "Community Map History."

7.0 OTHER STUDIES

FIS reports have been published or are currently in progress for Calhoun, Carroll, Leflore, Montgomery, Tallahatchie, Webster and Yalobusha Counties, Mississippi. The Grenada County study is in agreement with these studies.

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Grenada County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, FIRMs, and\or FBFMs for all the incorporated and unincorporated jurisdictions within Grenada County, 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 FEMA Region IV, Federal Insurance and Mitigation Division, Koger Center – Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia, 30341.

COMMUNTIY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Grenada, City of	November 28, 1973	--	March 1, 1979	February 1, 1984
Grenada County Unincorporated Areas	September 13, 1974	--	December 1, 1978	--

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS

AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, Grenada County, Mississippi, Washington, D.C., June, 1978.

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5. U.S. Water Resources Council, "Guidelines for Determining Flood Flow Frequency," Bulletin 17, March 1976.

6. U.S Department of the Interior, Geological Survey, Flood Characteristics of Mississippi Streams, Water-Resources Investigations Report 91-4037, Jackson, Mississippi, 1991.

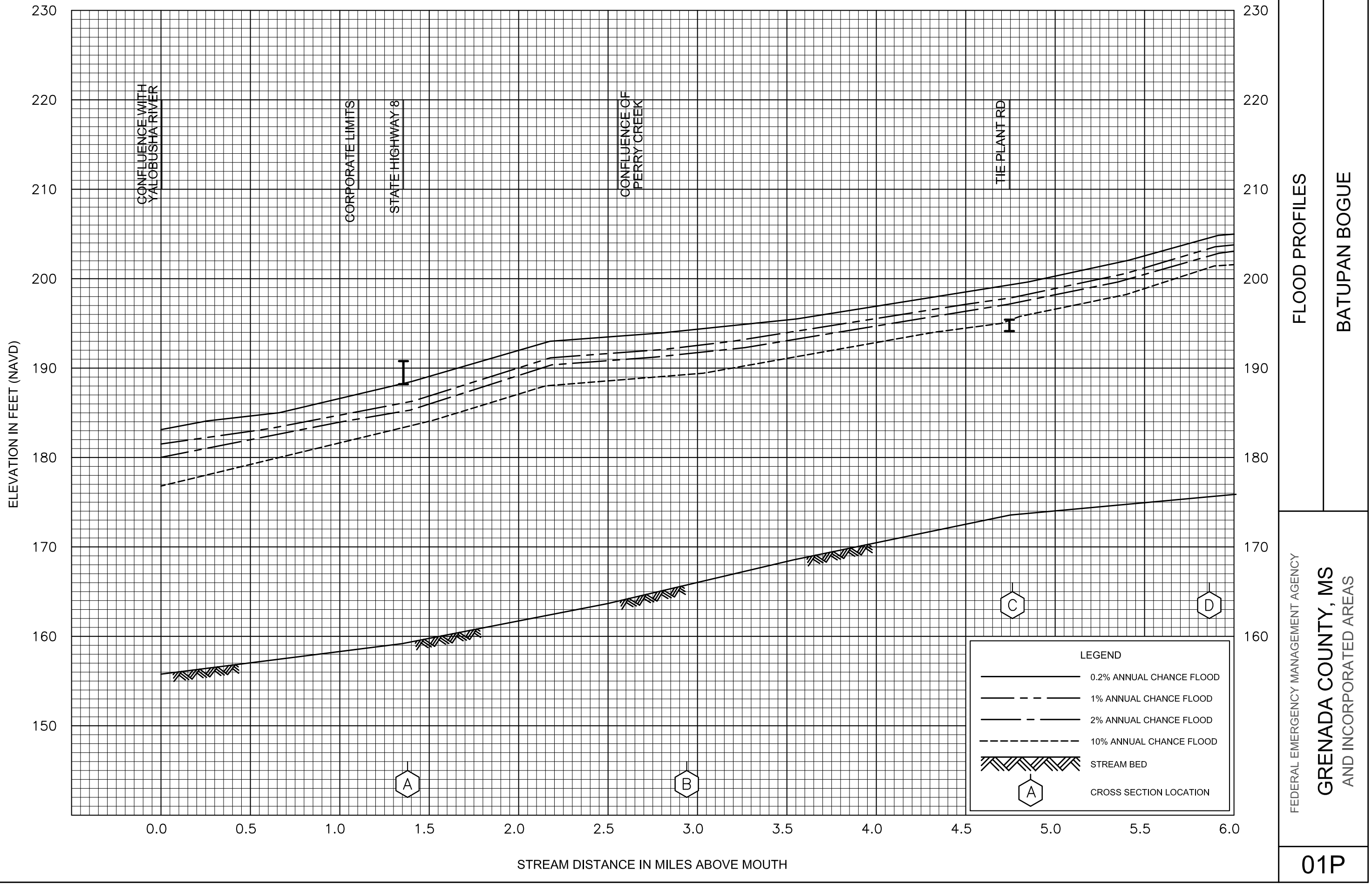
7. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles – Users Manual, Davis, California, October 1973.

8. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Version 3.1.2, Davis, California, April 2004.

9. U.S. Department of the Interior, Geological Survey, 15-Minute Series Quadrangle Maps, Scale 1:62,500, Contour Interval 20 feet: Grenada, Mississippi (1954); duck Hill, Mississippi (1954); Coffeville, Mississippi (1955); McCarley, Mississippi (1954)

10. U.S. Department of the Interior, Geological Survey, 15-Minute Series Topographic Maps, Scale 1:62,500, Contour Intervals 5 and 20 feet: Greenwood Mississippi (1957); Phillipp, Mississippi (1957)

11. Mississippi Automated Resource Information System, Statewide 10-Meter Digital Elevation Model (DEM), http://www.maris.state.ms.us, July 2008.



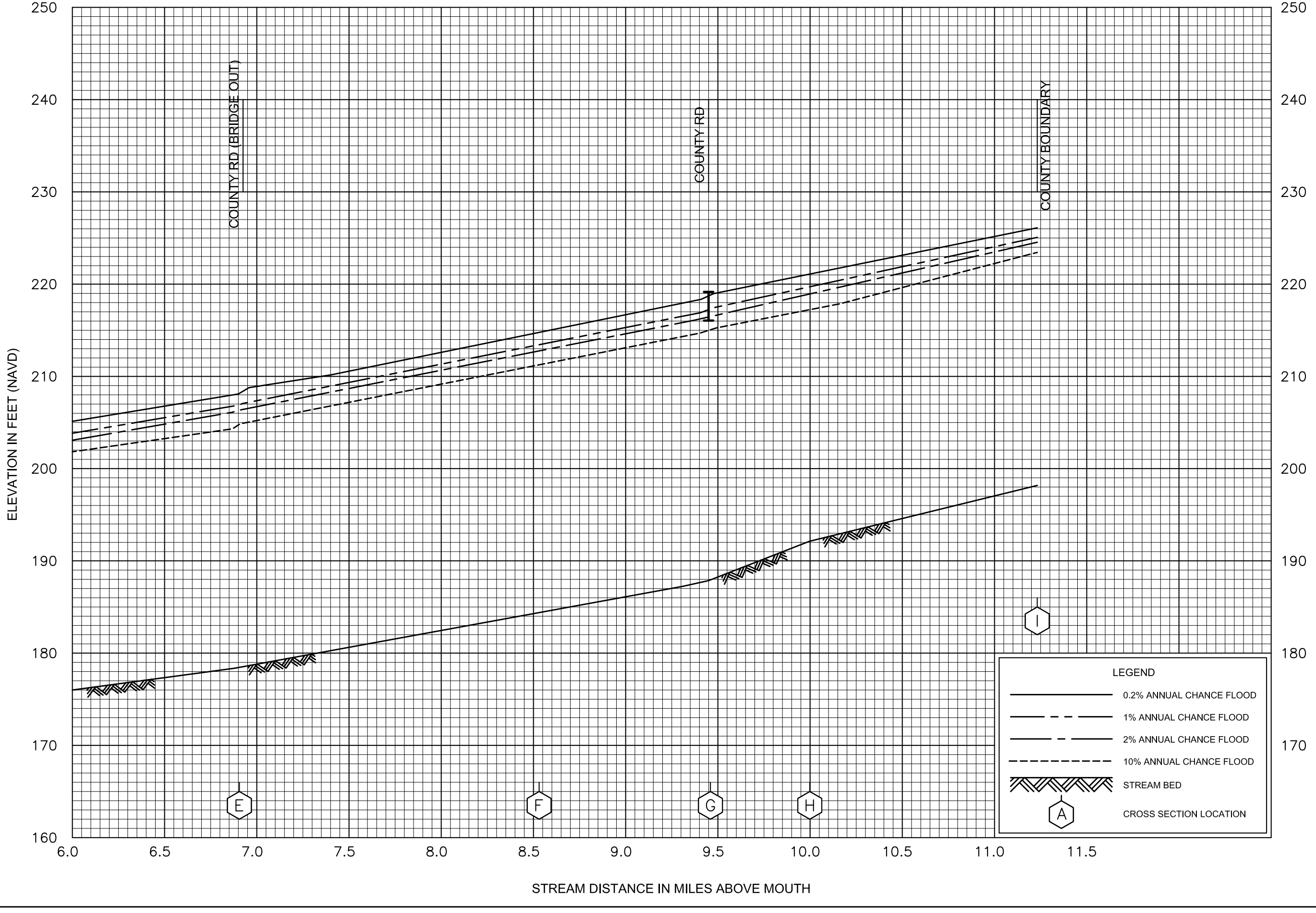
FLOOD PROFILES

BATUPAN BOGUE

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

01P



FLOOD PROFILES

BATUPAN BOGUE

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

02P

ELEVATION IN FEET (NAVD)

150 160 170 180 190 200 210 220 230 240

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500

STREAM DISTANCE IN FEET ABOVE MOUTH

CONFLUENCE WITH BATUPAN BOGUE

RAILROAD

FRANKLIN ST

MOUND ST

LIMIT OF DETAILED STUDY

A B C D

H

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

A CROSS SECTION LOCATION

03P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS

AND INCORPORATED AREAS

FLOOD PROFILES

BATUPAN BOGUE TRIBUTARY 1

ELEVATION IN FEET (NAVD)

150 160 170 180 190 200 210 220 230 240

STREAM DISTANCE IN FEET ABOVE MOUTH

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500 6,000 6,500

CONFLUENCE WITH BATUPAN BOGUE

CORPORATE LIMITS

STATE HIGHWAY 8

VANCE RD

PROVINE RD

RAILROAD

A B C D E F

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

A CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS

AND INCORPORATED AREAS

FLOOD PROFILES

BROWNS CREEK

04P

ELEVATION IN FEET (NAVD)

170 180 190 200 210 220 230 240 250 260

STREAM DISTANCE IN FEET ABOVE MOUTH

6,500 7,000 7,500 8,000 8,500 9,000 9,500 10,000 10,500 11,000 11,500 12,000 12,500 13,000

JACKSON AVE

FAIRGROUND RD

MONROE ST

U.S. HIGHWAY 51

CONFLUENCE OF
BROWNS CREEK TRIBUTARY

LIMIT OF DETAILED STUDY

A G H I J K L M N O P

190 200 210 220 230 240 250 260

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

CROSS SECTION LOCATION

05P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

FLOOD PROFILES

BROWNS CREEK

ELEVATION IN FEET (NAVD)

190 200 210 220 230 240 250 260 270 280

0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500

STREAM DISTANCE IN FEET ABOVE MOUTH

CONFLUENCE WITH BROWNS CREEK

DR. F.S. HILL DR

GOVAN ST

LIMIT OF DETAILED STUDY

A

B

C

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

A CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

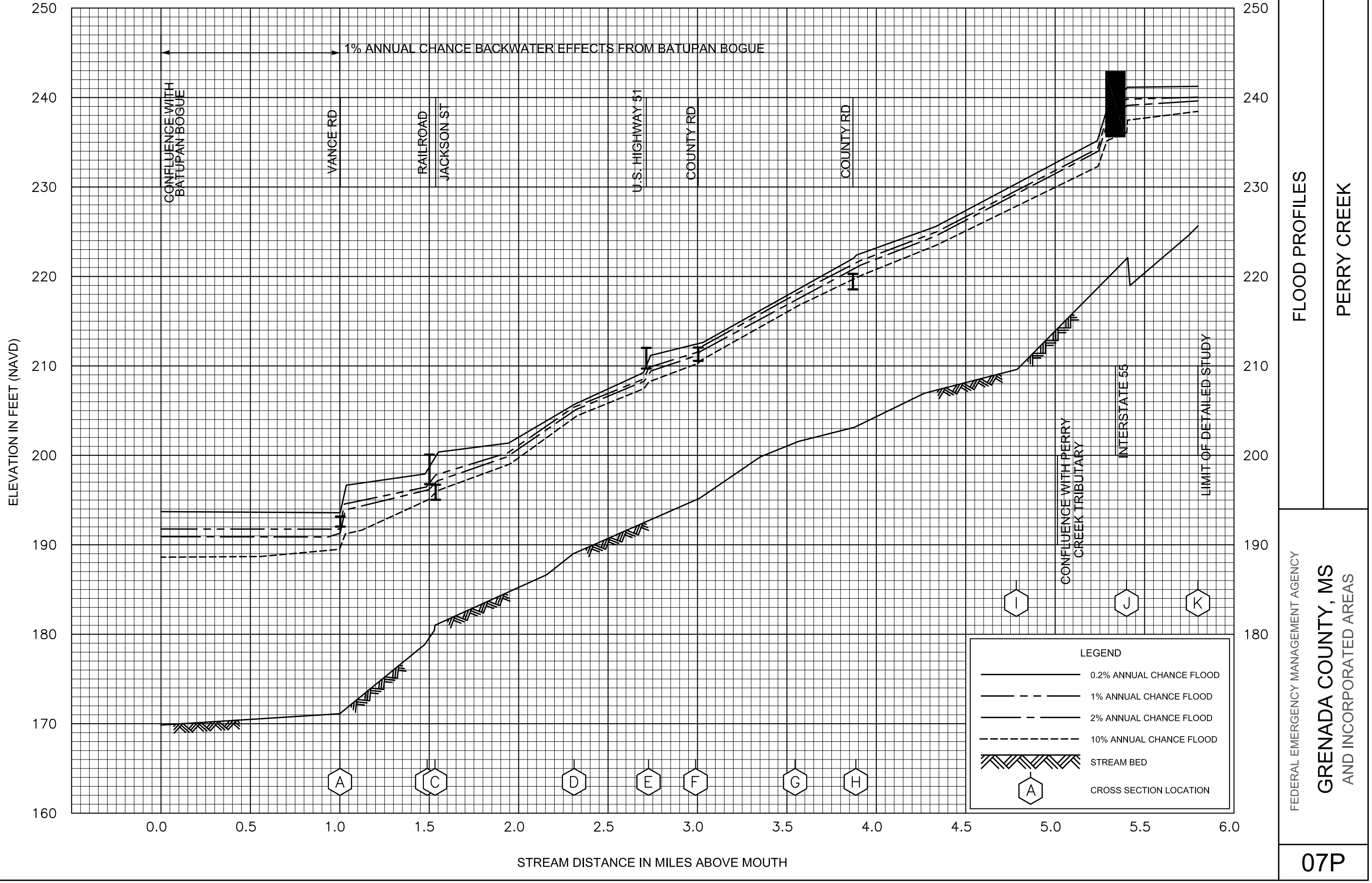
GRENADA COUNTY, MS

AND INCORPORATED AREAS

FLOOD PROFILES

BROWNS CREEK TRIBUTARY

06P



FLOOD PROFILES

PERRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

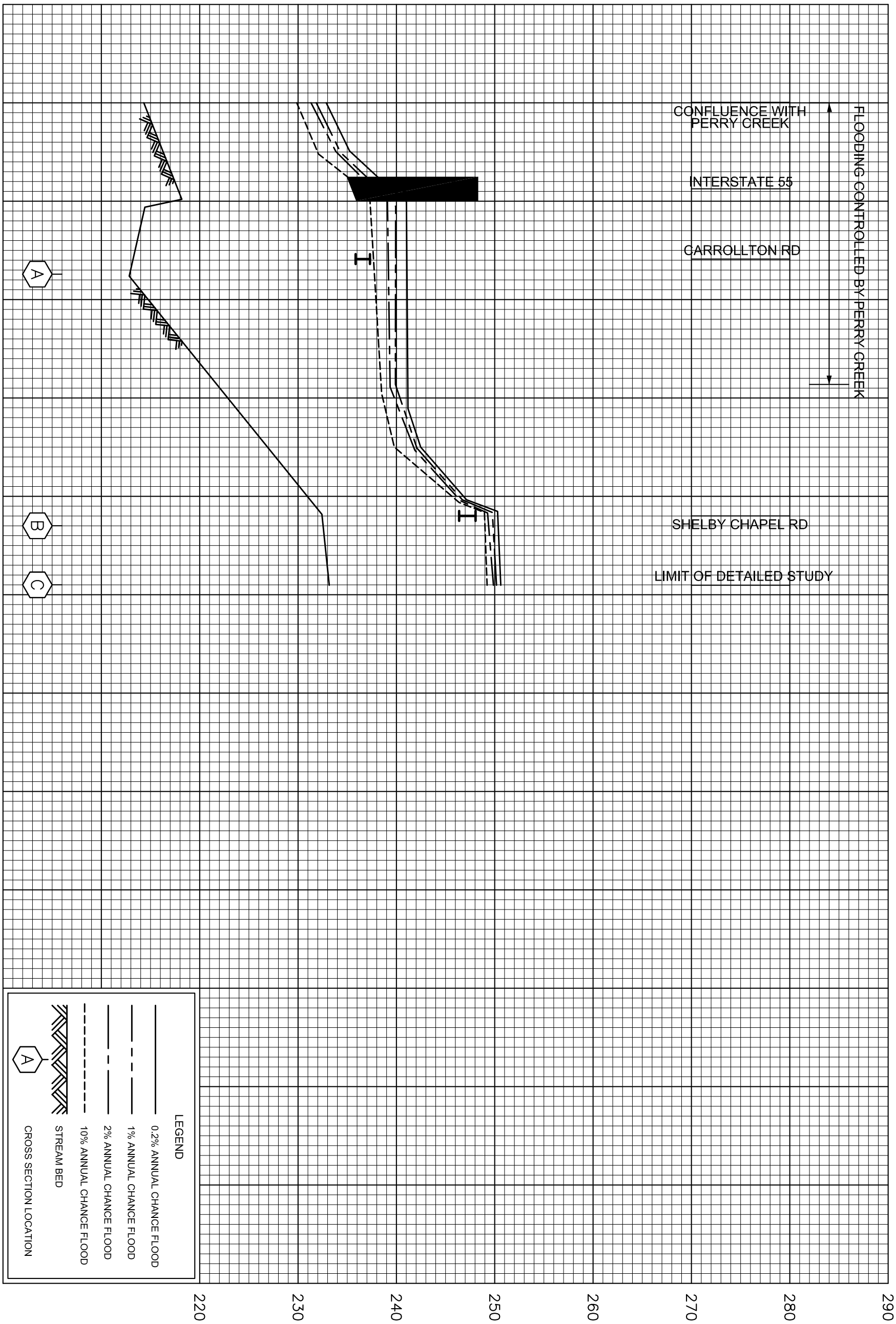
07P

ELEVATION IN FEET (NAVD)

200 210 220 230 240 250 260 270 280 290

0 0.2 0.4 0.6 0.8 1.0 1.2

STREAM DISTANCE IN MILES ABOVE MOUTH



08P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

FLOOD PROFILES

PERRY CREEK TRIBUTARY

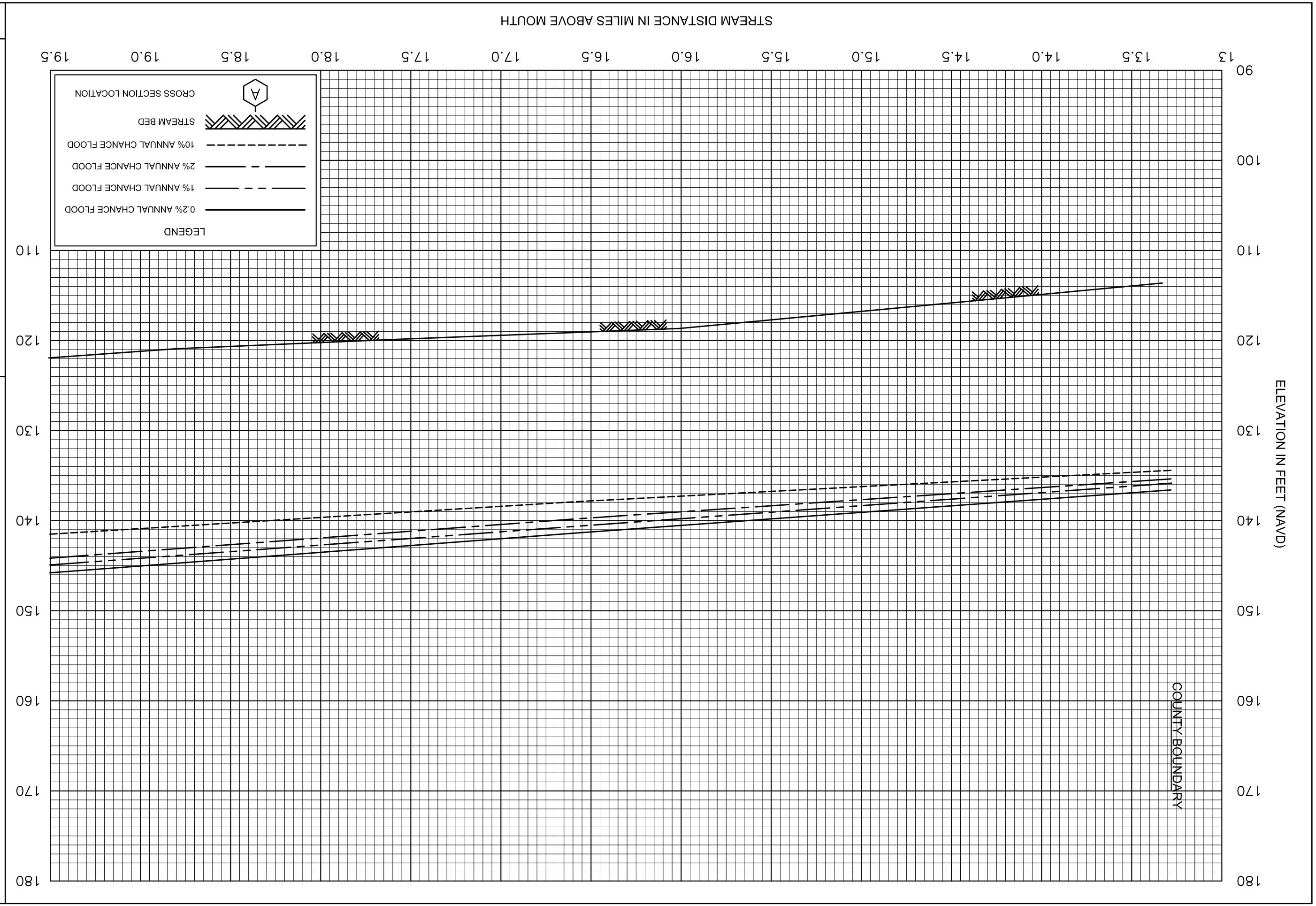
09P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

YALOBUSHA RIVER

FLOOD PROFILES

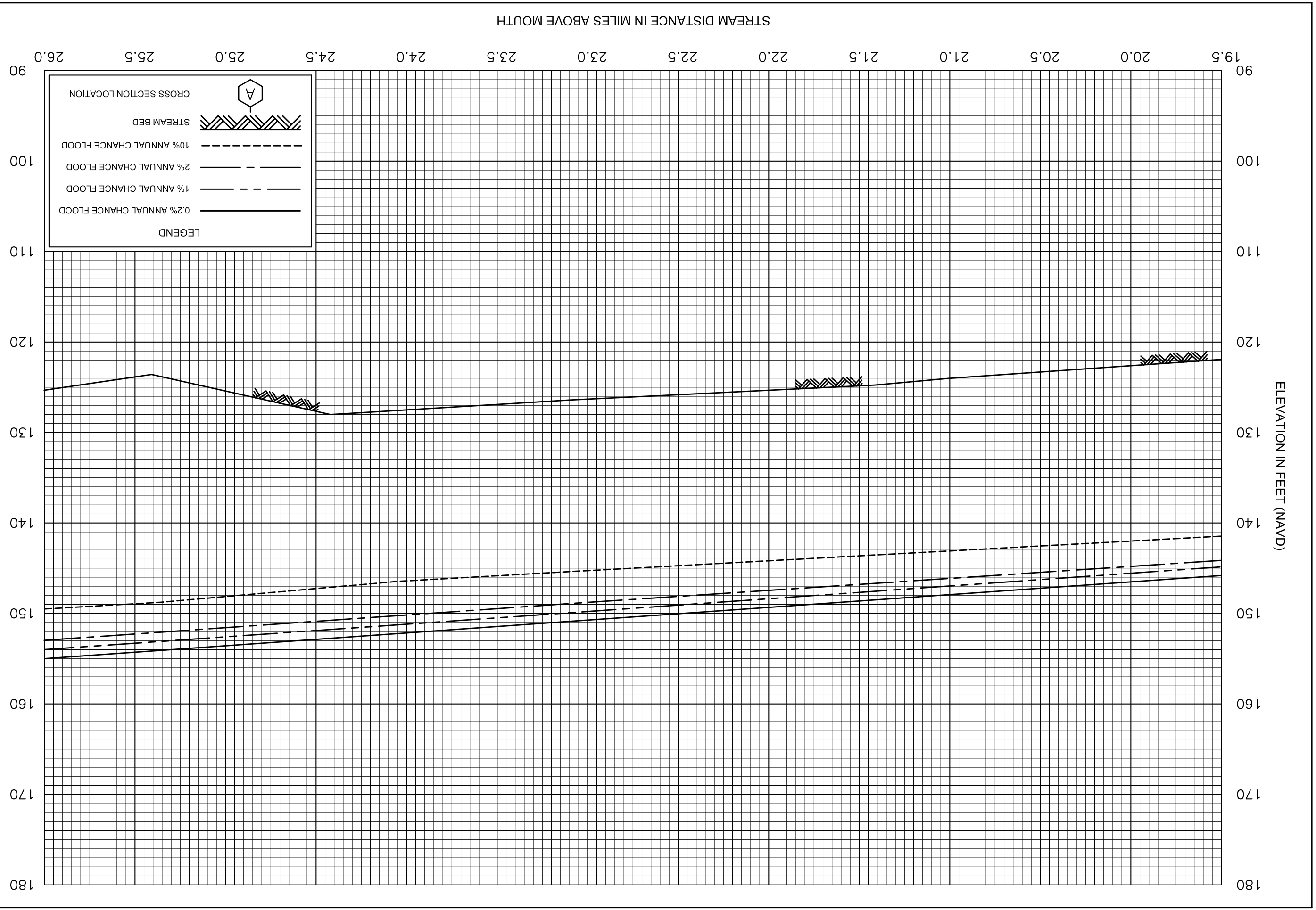


FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

FLOOD PROFILES

YALOBUSHA RIVER



ELEVATION IN FEET (NAVD)

110 120 130 140 150 160 170 180 190 200

26.0 26.5 27.0 27.5 28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5

STREAM DISTANCE IN MILES ABOVE MOUTH

STATE HIGHWAY 8

A

B

C

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS

AND INCORPORATED AREAS

FLOOD PROFILES

YALOBUSHA RIVER

11P

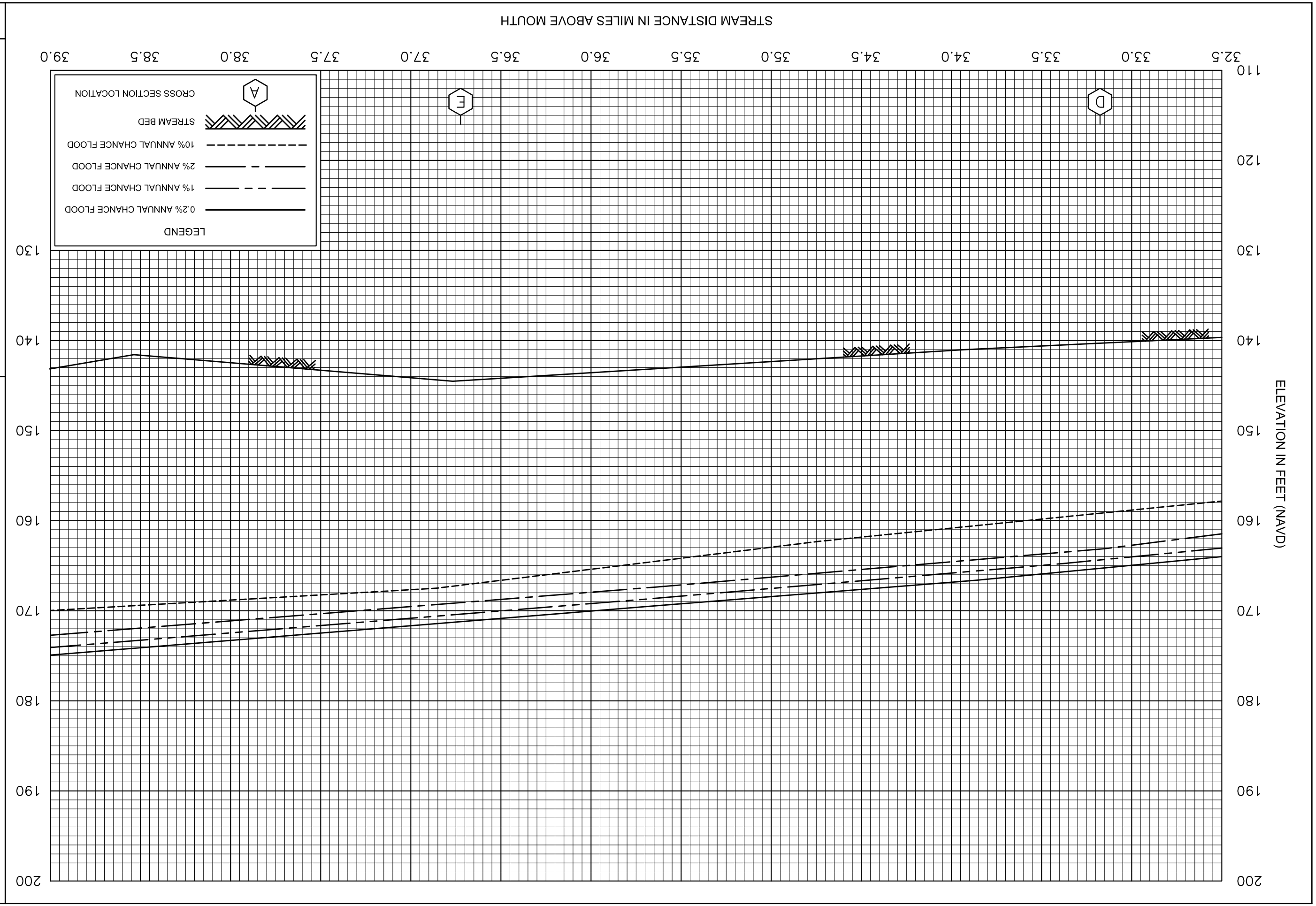
FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

YALOBUSHA RIVER

FLOOD PROFILES

12P



ELEVATION IN FEET (NAVD)

120 130 140 150 160 170 180 190 200 210

STREAM DISTANCE IN MILES ABOVE MOUTH

39.0 39.5 40.0 40.5 41.0 41.5 42.0 42.5 43.0 43.5 44.0 44.5 45.0 45.5

INTERSTATE 55
(SOUTHBOUND LANE)

INTERSTATE 55
(NORTHBOUND LANE)

CONFLUENCE OF
YALOBUSHA RIVER TRIBUTARY 1

U.S. HIGHWAY 51

MAIN ST

RAILROAD

CONFLUENCE WITH
BATUPAN BOGUE

GRENADA LAKE
RESERVOIR BOUNDARY

LIMIT OF DETAILED STUDY

A F G H I J

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

FLOOD PROFILES

YALOBUSHA RIVER

13P

ELEVATION IN FEET (NAVD)

130 140 150 160 170 180 190 200 210 220

STREAM DISTANCE IN FEET ABOVE MOUTH

−500 0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500 6,000

CONFLUENCE WITH YALOBUSHA RIVER

GAYOSO ST

CORPORATE LIMITS

SOUTH STREET

CATHEY DR

CORPORATE LIMITS

A

E

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

A CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS

AND INCORPORATED AREAS

FLOOD PROFILES

YALOBUSHA RIVER TRIBUTARY 1

14P

ELEVATION IN FEET (NAVD)

170 180 190 200 210 220 230 240 250 260

6,000 6,500 7,000 7,500 8,000 8,500 9,000 9,500 10,000 10,500 11,000 11,500 12,000 12,500

STREAM DISTANCE IN FEET ABOVE MOUTH

CORPORATE LIMITS

STATE HIGHWAY 8

CONFLUENCE OF YALOBUSHA RIVER TRIBUTARY 1B

CORPORATE LIMITS

LIMIT OF DETAILED STUDY

F

G

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

A

CROSS SECTION LOCATION

15P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS

AND INCORPORATED AREAS

FLOOD PROFILES

YALOBUSHA RIVER TRIBUTARY 1

ELEVATION IN FEET (NAVD)

150 160 170 180 190 200 210 220 230 240

−500 0 500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500 6,000

STREAM DISTANCE IN FEET ABOVE MOUTH

CONFLUENCE WITH
YALOBUSHA RIVER TRIBUTARY 1

RAILROAD

PEARL ST

CHERRY ST

UNION ST

SOUTH ST

TELEGRAPH ST

CULVERT

CULVERT

LIMIT OF DETAILED STUDY

A B C D E F

LEGEND

0.2% ANNUAL CHANCE FLOOD

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD

10% ANNUAL CHANCE FLOOD

STREAM BED

A CROSS SECTION LOCATION

150 160 170 180 190 200 210 220 230 240

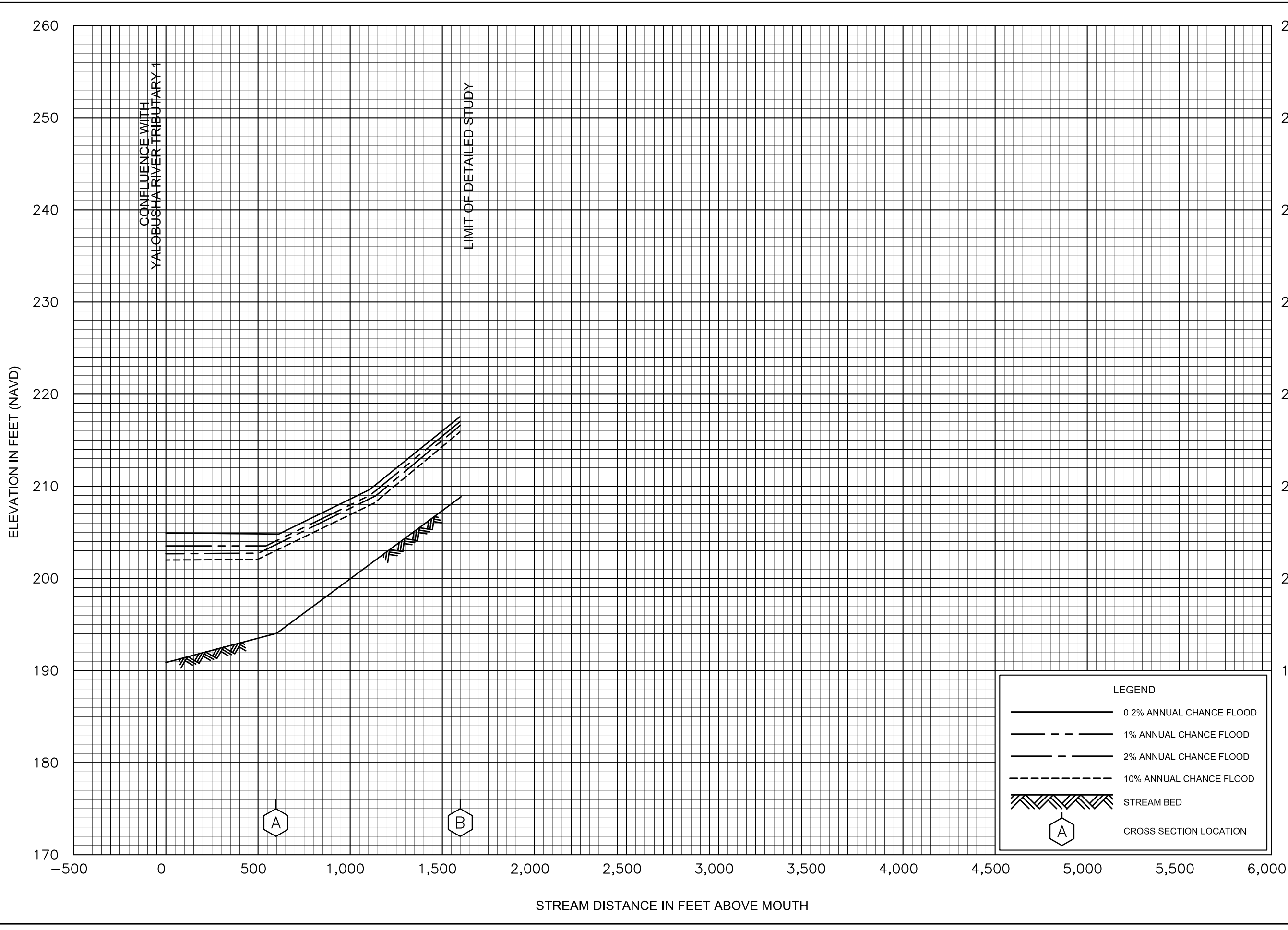
16P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

FLOOD PROFILES

YALOBUSHA RIVER TRIBUTARY 1A



FLOOD PROFILES

YALOBUSHA RIVER TRIBUTARY 1B

FEDERAL EMERGENCY MANAGEMENT AGENCY

GRENADA COUNTY, MS
AND INCORPORATED AREAS

17P