

FLOOD INSURANCE STUDY



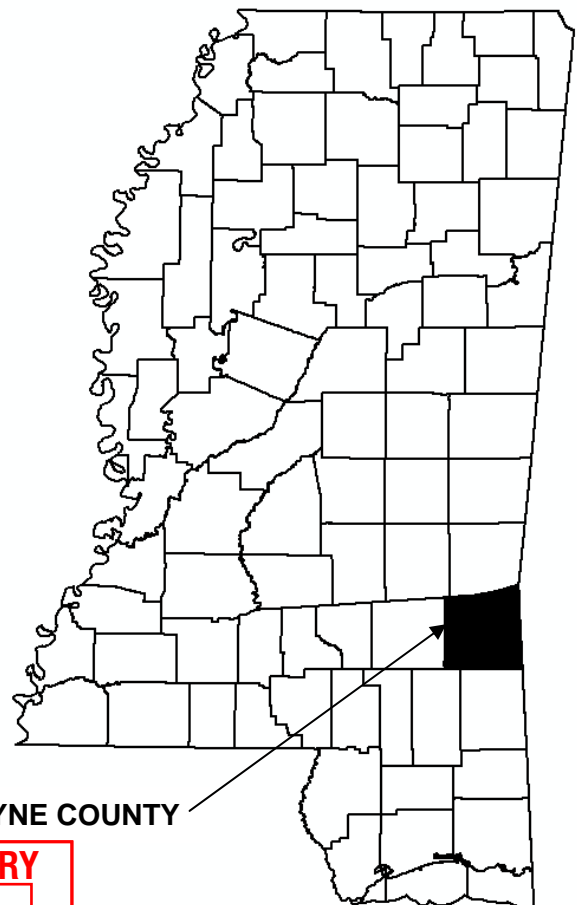
WAYNE COUNTY, MISSISSIPPI AND INCORPORATED AREAS

Community Name

Community Number

STATE LINE, TOWN OF
WAYNE COUNTY
(UNINCORPORATED AREAS)
WAYNESBORO, CITY OF

280059
280238
280182



WAYNE COUNTY

PRELIMINARY

SEP 01 2010



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
28153CV000A

**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.

This preliminary 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.

Initial Countywide FIS Effective Date – August 16, 1988

First Revised Countywide FIS Effective Date – XXXX XX, XXX

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**FLOOD INSURANCE STUDY
WAYNE 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 Wayne County, Mississippi, including the City of Waynesboro; the Town of State Line; and the unincorporated areas of Wayne County (referred to collectively herein as Wayne 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 Town of State Line is geographically located in Wayne County and Greene County. The Town of State Line is included in its entirety in this FIS report.

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 the previous countywide FIS report and are described below.

The hydrologic and hydraulic analyses for the August 16, 1988 FIS report were performed by the U.S. Geological Survey (USGS), Water Resources Division, (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823. This study was complete in October 1986 (Reference 1).

The hydrologic and hydraulic analyses for this study were performed by the State of Mississippi for FEMA, under Contract No. EMA-2008-CA-58. This study was completed in June 2010. Floodplain boundaries for approximate study streams were delineated based on a Digital Terrain Model (DTM) and contours. The DTM was compiled at a scale 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 (MDEQ), 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 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 East (FIPS 2301), 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 August 16, 1988 FIS, the dates of the initial and final CCO meetings held for the communities within the boundaries of Wayne County are shown below.

<u>Community Name</u>	<u>Initial CCO Date</u>	<u>Final CCO Date</u>
Wayne County (And Incorporated Areas)	N/A	September 23, 1987

For this countywide FIS, an initial Consultation Coordination Officer (CCO) meeting was held on September 17, 2008, and attended by representatives of FEMA, MDEQ, Mississippi Emergency Management Agency (MEMA), Wayne County, and the study contractor, AECOM. A final meeting, the Preliminary DFIRM Community Coordination (PDCC), was held on **XXXX XX, XXXX** to review the results of this study.

2.0 **AREA STUDIED**

2.1 Scope of Study

This FIS covers the geographic area of Wayne 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.

Three types of analysis were used to develop this FIS report: redelineation of streams that had been previously studied with detailed methods, enhanced approximate and approximate methods analyses. 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. The scope and methods of study for each stream were proposed to, and agreed upon, by FEMA and Wayne County.

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.

All flooding sources studied by enhanced approximate methods presented in Table 1 were new studies for this countywide FIS.

Table 1: Flooding Sources Studied by Enhanced Approximate Methods

Flooding Source	Reach Length (miles)	Study Limits
Langs Creek	2.7	From the approximately 210 feet downstream of Illinois Central Railroad to approximately 1.0 mile upstream of U.S. Highway 45

2.2 Community Description

Wayne County is located in southeast Mississippi along the Alabama state line. The county is bordered by Greene County to the south; Jones County to the west; Perry County to the southwest; Clarke and Jasper Counties to the north; and Washington and Choctaw Counties, Alabama, on the east. The county has a total land area of 810 square miles and an estimated 2009 population of 20,654 (Reference 2). The City of Waynesboro is the county seat. The county’s major thoroughfares are US Highways 84 and 45, State Highway 63, and the Illinois Central Gulf Railroad.

Major drainage for Jasper County is provided by Chickasawhay River and Leaf River, Thompson Creek, Buckatunna Creek, and Big Creek.

2.3 Principal Flood Problems

Flooding problems in Wayne County are primarily due to the overflow of the Chickasawhay River. The Chickasawhay River flows south-southeast through the county and just to the west of the Waynesboro city limits. The three largest annual peak flows during the period of record (1937-84) and the historic peak of April 1900 at the Chickasawhay River gage near Waynesboro are shown below:

<u>Date</u>	<u>Elevation (ft)</u>	<u>Discharge (cfs)</u>
April 1900	170.2	73,000 (estimated)
February 26, 1961	167.8	58,300
April 11, 1938	167.0	53,100 (estimated)
December 22, 1961	162.2	35,000

2.4 Flood Protection Measures

Flood protection measures are not known to exist within the study area.

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 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-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.

August 16, 1988 Countywide Analysis

The magnitude of the 1-percent-annual-chance flood was determined using a log-Pearson Type III statistical distribution, as outlined in Bulletin 17B (Reference 3), of records of annual peak flow for the Chickasawhay River gage number 02477500 near Waynesboro, including the estimated April 1900 historic peak discharge. An independent estimate of the magnitude of the 1-percent-annual-chance flood was determined at the Chickasawhay River gage near Waynesboro using the regional regression equations developed in the 1976 USGS report "Flood Frequency of Mississippi Stream" (Reference 4). A weighing procedure using the number of annual peak records and the equivalent years of record was used to estimate the magnitude of the 1-percent-annual-chance flood at the Chickasawhay River gage near Waynesboro for the previous countywide study.

Peak discharge-drainage area relationships for the 1-percent-annual-chance flood of each flooding source studied in detail in the community are shown in Table 2.

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
CHICKASAWHAY RIVER					
At County Road (north of the City of Waynesboro)	1,648	N/A	N/A	69,900	N/A
At U.S. Highway 84 (gaging station 02477500)	1,650	N/A	N/A	69,900	N/A
At State Highway 63	1,664	N/A	N/A	69,900	N/A

This Countywide Study

For this countywide study, hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by enhanced approximate and approximate methods affecting the community. Discharges for the 1-percent-annual-chance recurrence interval for all new enhanced approximate and approximate study streams in Wayne County were determined using the Rural-East Region USGS regression equation for Mississippi found in USGS Water-Resources Investigations Report 91-4037 (Reference 5).

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 6).

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 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.

August 16, 1988 Countywide Analysis

The elevation of the 1-percent-annual-chance flood on the Chickasawhay River at Spring Street, north of Waynesboro, was determined using the estimated elevation and discharge of the February 1961 flood and discharge-conveyance computations. In the hydraulic analysis of the Chickasawhay River, roughness factors (Manning’s “n”) were chosen by engineering judgment and based on field observation of the channel and floodplain areas. Values of 0.055 and 0.15 were used for the main channel and overbank areas, respectively. A hydraulic baseline was used to reference stream distance so that changing amounts of meandering within the study reach would not skew the results.

Discharges of the 1961 flood were estimated by logarithmic interpolation on the basis of drainage area between the peak discharges at the USGS gages at Shubuta and the City of Waynesboro. The elevation of the 1-percent-annual-chance flood at U.S. Highway 84 was estimated from the stage-discharge relationship for the gaging station at that site. The elevation of the 1-percent-annual-chance flood at State Highway 63 was estimated using the elevation and discharge of a flood discharge measurement made on February 26, 1961, and discharge conveyance ratios. All conveyance computations were based on the cross section of the main channel from the discharge measurement and the overbank section estimated from a 10-foot contour interval topographic map.

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

This Countywide Study

For this countywide study, water-surface profiles for approximate studies were computed through the use of the USACE HEC-RAS version 3.1.2 computer program (Reference 7). Water-surface profiles for enhanced approximate studies were computed through the use of the USACE HEC-RAS version 4.0 computer program (Reference 8). 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 the computer program Watershed Information SystEm (WISE) as a preprocessor to HEC-RAS (Reference 9). 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 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.

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.

3.3 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 Wayne County is +0.02 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 the Digital Terrain Model described in Section 1.2.

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 and 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 described in Section 1.2.

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. Floodways are presented to local agencies as minimum standards that can be adopted directly or used as a basis for additional floodway studies.

No floodways were computed for streams in this study. 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.

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

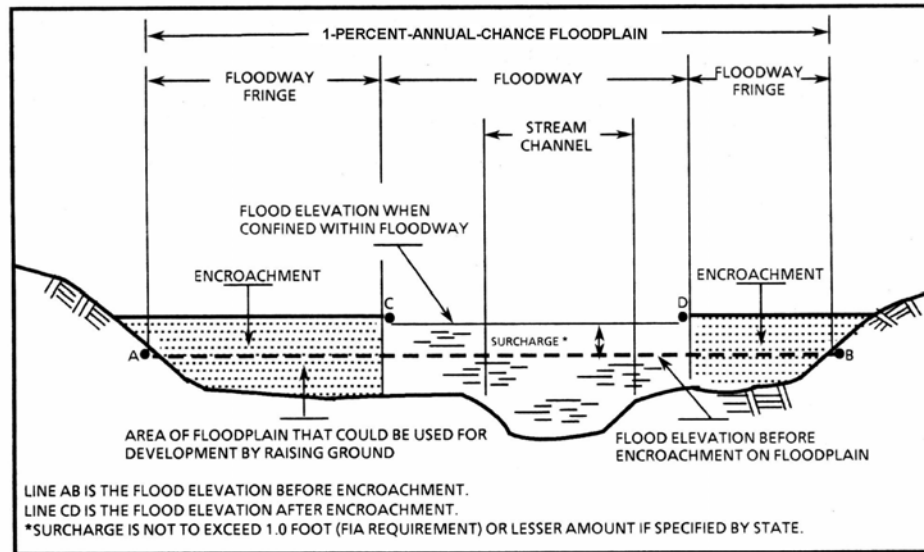


Figure 1. Floodway Schematic

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 Wayne 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 3, "Community Map History."

7.0 OTHER STUDIES

FIS reports have been published or are currently in progress for Clarke, Jasper, Jones, Greene, and Perry Counties, Mississippi; and Washington and Choctaw Counties, Alabama (References 10-15). The Wayne County study is in agreement with these studies.

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Wayne 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 Wayne 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.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
State Line, Town of	July 18, 1975	None	August 19, 1985	August 16, 1988
Wayne County (Unincorporated Areas)	December 20, 1974	January 13, 1978	August 16, 1988	None
Waynesboro, City of	January 18, 1974	February 27, 1976	August 16, 1988	None

TABLE 3

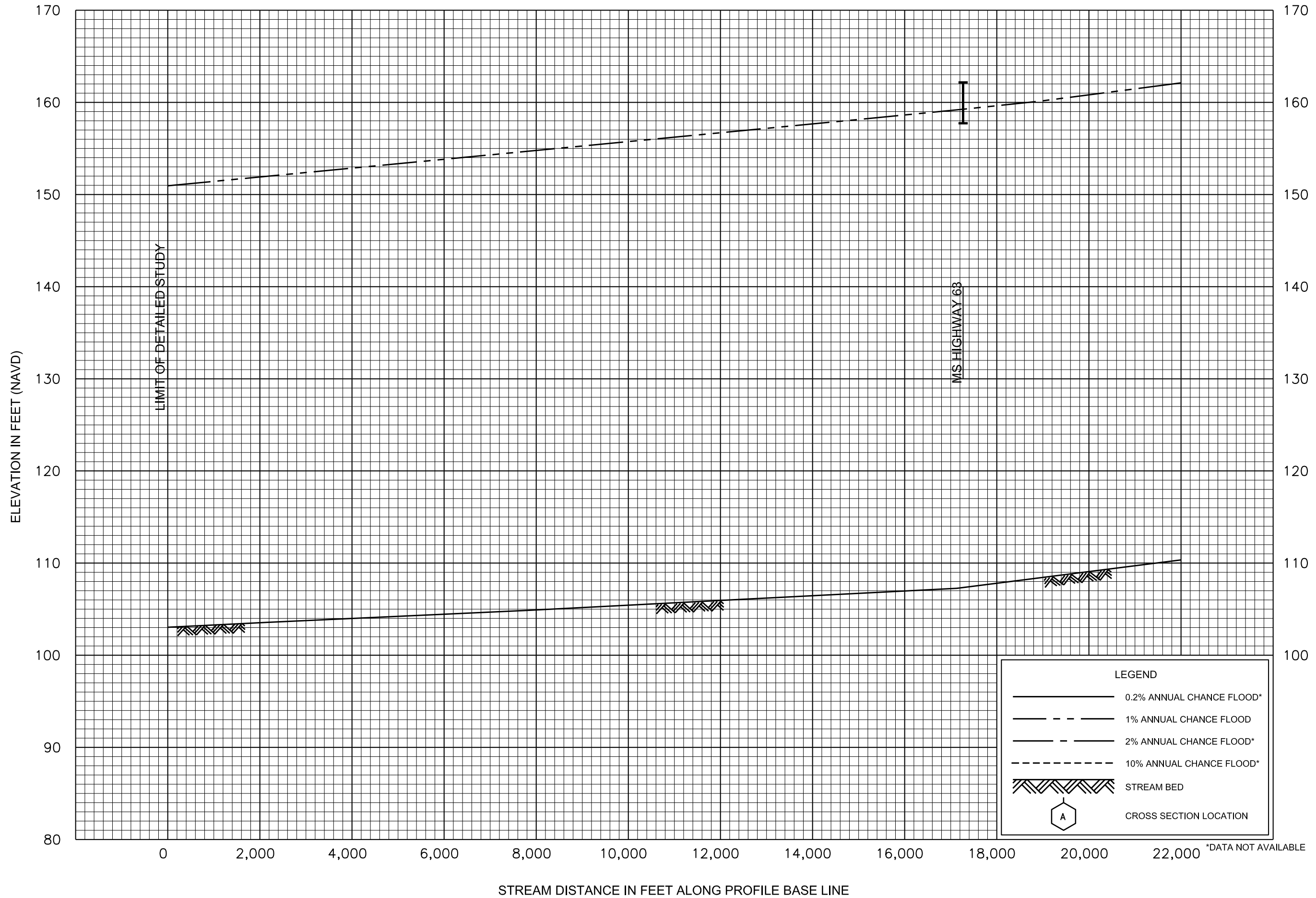
FEDERAL EMERGENCY MANAGEMENT AGENCY

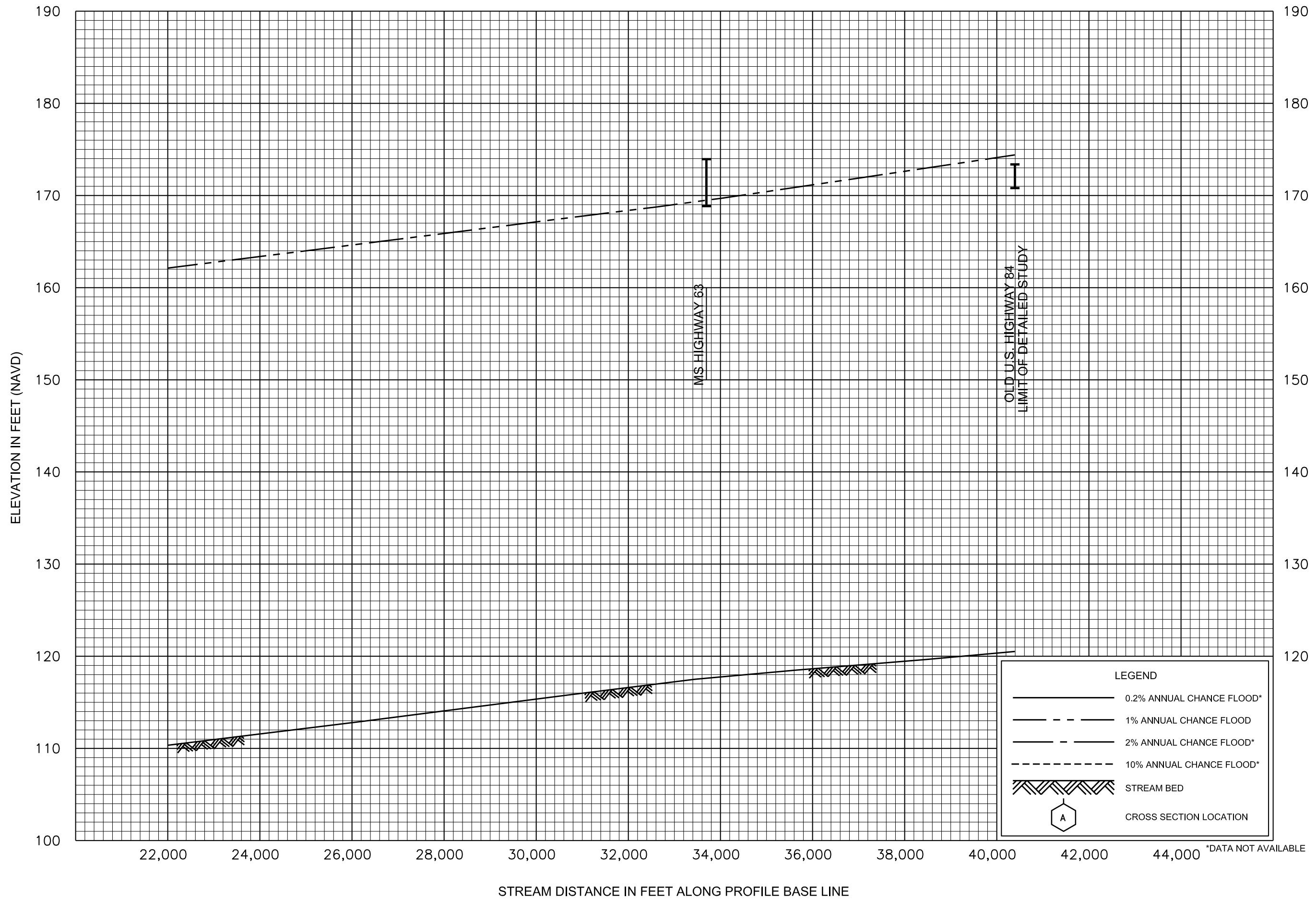
**WAYNE COUNTY, MS
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

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15. Federal Emergency Management Agency, Flood Insurance Study, Choctaw County, Alabama And Incorporated Areas, Washington, D.C., September 3, 2010.





FLOOD PROFILES
CHICKASAWHAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
WAYNE COUNTY, MS
AND INCORPORATED AREAS