FLOOD INSURANCE STUDY

MASON COUNTY, ILLINOIS
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BATH, VILLAGE OF	170464
*EASTON, VILLAGE OF	171248
FOREST CITY, VILLAGE OF	170827
HAVANA, CITY OF	170465
*KILBOURNE, VILLAGE OF	171249
MANITO, VILLAGE OF	171250
MASON CITY, CITY OF	170466
MASON COUNTY (UNINCORPORATED AREAS)	170463
*SAN JOSE, VILLAGE OF	171251
TOPEKA, TOWN OF	170828

*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

Preliminary: October 16, 2015

Revised: TBD

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER

17125CV000B

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS 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 Map Repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: January 6, 2012
Revised Countywide FIS Effective Date: TBD

TABLE OF CONTENTS

1.0	**INTRODUCTION**	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgments	1
	1.3 Coordination	3
2.0	**AREA STUDIED**	5
	2.1 Scope of Study	5
	2.2 Community Description	7
	2.3 Principal Flood Problems	9
	2.4 Flood Protection Measures	11
3.0	**ENGINEERING METHODS**	11
	3.1 Hydrologic Analyses	11
	3.2 Hydraulic Analyses	14
	3.3 Vertical Datum	17
4.0	**FLOODPLAIN MANAGEMENT APPLICATIONS**	23
	4.1 Floodplain Boundaries	23
	4.2 Floodways	24
5.0	**INSURANCE APPLICATIONS**	32
6.0	**FLOOD INSURANCE RATE MAP**	33
7.0	**OTHER STUDIES**	33
8.0	**LOCATION OF DATA**	33
9.0	**BIBLIOGRAPHY AND REFERENCES**	35

TABLE OF CONTENTS (continued)

FIGURES

Figure 1 – Vertical Datum Conversion 19

Figure 2 – Floodway Schematic 25

Figure 3 – FIRM Notes to Users 38

TABLES

Table 1 – CCO Meeting Dates for Pre-Countywide Studies 4

Table 2 – Limits of New or Revised Detailed Study 6

Table 3 – Limits of Detailed Study 6

Table 4 – Historical Flood Data (Illinois River at Havana, Illinois) 10

Table 5 – Historical Flood Data (Sangamon River at Oakford, Illinois) 10

Table 6 - Summary of Discharges (Countywide FIS) 13

Table 7 – Summary of Discharges (Revised Countywide FIS) 13

Table 8 – Roughness Coefficients (Manning's "n" Values) (Countywide FIS) 15

Table 9 – Roughness Coefficients (Manning's "n" Values) (Revised Countywide FIS) 16

Table 10a – Vertical Datum Conversions (Single Conversion Factor Method–Mason County) 20

Table 10b – Vertical Datum Conversions

(Cross Section Specific Conversion Factors – Illinois River) 21-22

Table 9 – Floodway Data Tables

ILLINOIS RIVER 27-30

SANGAMON RIVER 31

Table 10 – Community Map History 34

TABLE OF CONTENTS (continued)

EXHIBITS

Exhibit 1 – Flood Profiles	Panel
Illinois River	01P – 03P
Sangamon River	04P – 15P
Exhibit 2 – Flood Insurance Rate Map Index and Flood Insurance Rate Map	

FLOOD INSURANCE STUDY
MASON COUNTY, ILLINOIS AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs) and/or Flood Hazard Boundary Maps (FHBMs) in the geographic area of Mason County, Illinois, including: the cities of Havana and Mason City; the Town of Topeka; the Villages of Bath, Easton, Forest City, Kilbourne, Manito, and San Jose, and the unincorporated areas of Mason County (hereinafter referred to collectively as Mason 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 county that will be used to establish actuarial flood insurance rates. This information will also be used by Mason County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 C.F.R § 60.3.

The FIS and FIRMs show the portion of the Village of San Jose that lies within Mason County. The remaining portion of this community lies within Logan County. Please see the separately published FIS report and FIRM for the portion of the community that does not lie in Mason County.

Note that the Villages of Easton, Kilbourne, and San Jose have no special flood hazard areas (SFHAs) identified.

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 Acknowledgements

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

The FIS includes the unincorporated areas of, and incorporated communities within, Mason County. Information on the authority and acknowledgments for each jurisdiction included in this FIS, as compiled from their previously printed FIS reports, is shown below.

Pre-Countywide FISs

Village of Bath:	The hydrologic and hydraulic analyses for the FIS report dated July 5, 1983 (Reference 1) for the Village of Bath were performed by the U.S. Army Corps of Engineers (USACE), St. Louis District, as reported in Eldred- Spankey Levee Project on the Illinois River, Hydrologic and Hydraulic Analyses (Reference 2).
City of Havana:	The hydrologic and hydraulic analyses for the FIS report dated March 30, 1983 (Reference 3) for the City of Havana were performed by the USACE, St. Louis District, as reported in *Eldred-Spankey Levee Project on the Illinois River, Hydrologic and Hydraulic Analyses* (Reference 2).
Mason County (Unincorporated Areas):	The hydrologic and hydraulic analyses for the FIS report dated August 1, 1983 (Reference 4) for Mason County (Unincorporated Areas) were obtained from the Flood Insurance Study: Village of Browning, Illinois, Schuyler County (Reference 5) and Eldred-Spankey Levee Project on the Illinois River, Hydrologic and Hydraulic Analyses (Reference 2).

The authority and acknowledgements for the Villages of Easton, Forest City, Kilbourne, Manito and San Jose; the City of Mason City; and the Town of Topeka are not included because there were no previously printed FISs for those communities.

January 6, 2012
Countywide FIS

New hydrologic and hydraulic analyses for the Illinois River were prepared by the USACE and reported in the 2004 *Upper Mississippi River System Flow Frequency Study* (UMRSFFS) (Reference 6). Upon completion of the UMRSFFS, the 2005 *Illinois River, River Mile 80-286, Floodway Computation* (Reference 7) was prepared for the Federal Emergency Management Agency (FEMA) under Contract Number HSFE05-04-X-0018.

Also for this FIS, hydrologic and hydraulic analyses for the Sangamon River performed for the 1986 FIS for the Village of Chandlerville, Illinois, Cass County (Reference 8) were modified and extended for Mason County. This study was conducted by Crawford, Murphy & Tilly, Inc. under contract to the USACE, Rock Island District (the Study Contractor), for FEMA under Inter-Agency Agreement No. EMW-E-1153, Project Order No. 1, Amendment No. 23. and was completed in April 1985.

Planimetric base map information was derived from USGS digital orthophoto quarter quadrangles at a one-half meter ground resolution (Reference 9). Illinois State Geological Survey statewide ArcSDE raster mosaic of USGS digital raster graphs at a scale of 1:24,000 (Reference 10) and the USGS National Elevation Dataset were also used in the digitization (Reference 11).

The coordinate system used for the production of the digital FIRMs is Universal Transverse Mercator (UTM) North American Datum of 1983 (NAD 83) Geodetic Reference System 1980 (GRS80) spheroid.

This countywide FIS was performed under the Cooperating Technical Partners (CTP) Partnership Agreement No. EMC-2006-CA-7023 between the Illinois Department of Natural Resources (hereinafter referred to as IDNR) and FEMA, per the Mapping Activity Statement (MAS) No. IDNR06-14.

TBD
Revised Countywide FIS

The TBD revised countywide FIS Revision includes a Physical Map Revision (PMR) in the Unincorporated Areas of Mason County, Illinois. The revision was performed by Strategic Alliance for Risk Reduction (STARR) under contract HSFEHQ-09-D-0370.

Base map information shown on the FIRM was derived from United States Department of Agriculture-Farm Service Agency-APFO, produced at a scale of 1:1,200, from Digital Ortho Mosaic photography dated 2012 or later. The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 16, and the horizontal datum used is North American Datum of 1983 (NAD83) Geodetic Reference System 1980 (GRS80) spheroid.

1.3 Coordination

Coordination and outreach activities were performed to create a climate of understanding and ownership of the mapping process at the state and local levels. These activities were ongoing throughout the entirety of the project.

Pre-Countywide FISs

The purpose of an initial consultation coordination officer (CCO) meeting, or project team meeting, is to discuss the scope of the project. An intermediate CCO meeting, or scoping meeting, is meant to continue outreach and create a climate of understanding throughout the process. A final CCO meeting, or open house, is held with public officials and the general public to review the results of the study. The dates of the initial and final CCO meetings held for previous studies for Mason County's incorporated communities and unincorporated areas are shown in Table 1, "CCO Meeting Dates for Pre-Countywide Studies."

Table 1– CCO Meeting Dates for Pre-Countywide Studies

Community	Initial CCO Date	Final CCO Date
Bath, Village of	May 16, 1978	February 22, 1983
Havana, City of Mason County	May 16, 1978	August 12, 1980
(Unincorporated Areas)	*	March 22, 1983

*Meeting was not held

January 6, 2012
Countywide FIS

The project team meeting was held on September 20, 2006 in Havana, Illinois, and attended by representatives of Mason County, the City of Havana, and IDNR. This meeting was intended to discuss various issues and concerns for the study area. A scoping meeting was held on October 25, 2006 in Havana Illinois, and was attended by representatives from Mason County, the City of Havana, the Village of San Jose, and IDNR.

A preliminary FIRM and FIS were prepared by merging effective FIS text, tables, and profiles with new study data. A preliminary Summary of Map Actions (PSOMA) was also prepared for all affected communities. The PSOMA lists pertinent information regarding Letters of Map Change (LOMCs) that will be affected by the issuance of the FIRM (i.e., superseded, incorporated, and revalidated). Preliminary copies of the FIRM, FIS, and SOMA were distributed to community officials for public review and comment.

The results of the study were reviewed at the open house held on September 9, 2009 in Havana, Illinois, and attended by representatives of Mason County, the City of Havana, the Illinois State Water Survey, and IDNR. All problems raised at that meeting have been addressed in this study.

TBD
Revised Countywide FIS

The results of the Mason County, Illinois Farmers Levee PMR were reviewed at a meeting held on, _____ and attended by representatives of . All concerns and problems raised at that meeting were addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Mason County including the incorporated areas listed in Section 1.1.

January 6, 2012
Countywide FIS

The flooding information for the entire county, including both incorporated and unincorporated areas is shown. The vertical datum was converted from the National Geodetic Vertical Datum of 1929 (NGVD 29) to the North American Vertical Datum of 1988 (NAVD 88).

Typically, areas studied by detailed methods are selected with priority given to all known flood hazards and areas of projected development or proposed construction. Approximate analyses are used to study those areas having low development potential or minimal flood hazards.

The streams, or portions of streams, listed in Table 2, "Limits of New or Revised Detailed Study," have new or revised hydrologic and hydraulic analyses for this countywide FIS. This FIS incorporates a modified and extended detailed study of the Sangamon River, which was performed for the 1986 FIS for the Village of Chandlerville, Illinois, Cass County (Reference 8), providing new Sangamon River floodplain delineation in Mason County.

Table 2 – Limits of New or Revised Detailed Study (January 6, 2012 FIS)

Flooding Source	Limits of Detailed Study
Illinois River	From approximately 98 miles above the confluence with the Mississippi River, about 8.7 miles below the confluence of East Branch Illinois River, to the limit of flooding affecting community, approximately 134.1 miles above the confluence with the Mississippi River, or about 9.9 miles above the confluence of Quiver Creek.
Sangamon River	From approximately 12.88 miles above the mouth at the Illinois River to approximately 15.71 miles above the mouth at the Illinois River or approximately 0.29 miles above State Route 78.

The streams, or portions of streams, listed in Table 3, "Limits of Detailed Study," were studied in detail and included in this report. The limits of detailed study are also indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

Table 3 – Limits of Detailed Study

Flooding Source	Limits of Detailed Study
Illinois River	From approximately 98 miles above the confluence with the Mississippi River, about 8.7 miles below the confluence of East Branch Illinois River, to the limit of flooding affecting community, approximately 134.1 miles above the confluence with the Mississippi River, or about 9.9 miles above the confluence of Quiver Creek.
Sangamon River	From approximately 12.88 miles above the mouth of the Illinois River to approximately 15.71 miles above the mouth at the Illinois River or approximately 0.29 miles above State Route 78.

Previous maps and reports for Mason County are community-based. The maps and reports for adjacent communities may not reflect the same data. The conversion from community-based mapping to countywide mapping includes resolution and consolidation of data within the countywide FIS, as well as showing the full extent of the floodplains and floodways through mapped reaches on the countywide FIRM.

The conversion to countywide mapping may result in new or revised base flood elevations (BFEs) and floodway data for communities. The countywide FIRM may show detailed studies where previously approximate studies were shown, and/or may show flood hazard areas where previously no flood hazard areas were shown.

Also, special flood hazard areas were delineated for limited distances between study reaches using additional information from the model or interpolated for consistency.

TBD
Revised Countywide FIS

The levee status for the Farmers Levee along the Sangamon River was adjusted from provisionally accredited to non-accredited. The Mason County, Illinois Farmers Levee PMR incorporates revised hydrologic and hydraulic analyses for approximately 14.0 miles along the Sangamon River for development of detailed study (Zone AE) floodplain boundaries. The contributing watershed crosses multiple counties in Illinois. Most of the drainage area consists of rural agricultural land use.

Each FIS report provides floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations (the 1- percent-annual-chance flood elevation is also referred to as the BFE); delineations of the 1-percent-annual-chance floodway. This information is presented on the FIRM and/or in many components of the FIS report, including Flood Profiles and Floodway Data tables.

Figure 3 presents important considerations for using the information contained in this FIS report and the FIRM and is provided in response to changes in format and content.

Summary of Map Actions (SOMA)

FEMA issues LOMCs. No letters issued by FEMA resulted in map changes (Letter of Map Revision [LOMR] and/or Special Response [SR]) of sufficient scale to be incorporated in the FIS revision.

2.2 Community Description

Mason County is located in central Illinois in the Illinois River Valley approximately 150 miles north of St. Louis and 170 miles southwest of Chicago. It is bordered on the northeast by Tazewell County, on the east by Logan County, on the south by Menard and Cass Counties, on the southwest by Schuyler County, and on the northwest by Fulton County. The Illinois River flows along the entire western boundary of Mason County. In 2014, the population of Mason County was reported to be 13,898 (Reference 12).

Transportation facilities are well-developed throughout the county. These include Federal and State highways, railroads, barges, and small airfields. U.S. Highway 136 crosses Mason County east to west. State Routes 10, 29, 78, and 97 provide good access to communities and outlying areas throughout the county (Reference 13).

Mason County is a rural county that encompasses approximately 563 square miles or 360,354 acres. Sixty-eight percent of the county is covered in cropland. The remainder of the county is grassland (12 percent), forest (9 percent), wetland (7 percent), urban land (1 percent), and open water (3 percent). Of the 102 Illinois counties, Mason County ranks sixth in total wetland acreage (26,345 acres) and tenth in percentage of the county in wetland. The county ranks fourth both in acres of deep marsh (1,798) and in acres of shallow water wetlands (7,779). Mason County is sixth-ranked in acres of coniferous forest (3,194) (Reference 14).

Farming is the principal economic activity in the county. Corn, soybeans, and wheat are the major crops. Mason County produces a wide variety of crops because of its sandy soils and the wide use of irrigation. The county is a leading producer of watermelons, pumpkins, and cantaloupes (Reference 13).

The topography of Mason County consists of uplands, stream terraces, dunes, and floodplains. The uplands, which are in the southeastern third of Mason County, are remnants of glacial till deposits from the Illinoian glacial advance. The till is covered by loess, which is more than 25 feet thick in places (Reference 13).

The majority of the county consists of the Manito, Havana, and Bath-Beardstown terraces. The terraces consist of well sorted sand and gravel deposited by glacial meltwaters. Stabilized dunes are very common on the terraces. These dunes are made of sand that was deposited by glacial meltwaters. The dunes have been reworked by the wind and rise 25 to 100 feet above the level of the terraces (Reference 13).

Mason County has five major watersheds. The northern part of the county is drained by Quiver Creek, which empties into the Illinois River. The southern part of the county is drained by Crane Creek and Salt Creek which flow into the Sangamon River. The Sangamon River flows into the Illinois River. The floodplains along the Illinois and Sangamon Rivers consist of alluvium, which is poorly graded sand, silt, and clay (Reference 13). The floodplain within the county consists of steep banked areas and is primarily undeveloped, although there is minimal development in and around some of the incorporated communities (Reference 4).

The Illinois River, which forms approximately 35 miles of Mason County's western boundary, is a principal tributary of the Mississippi River. The total drainage area of the Illinois River is roughly 29,000 square miles, and the total length is 273 miles. In Mason County, the Illinois River is joined by the Sangamon River and Quiver Creek (Reference 15).

The Sangamon River Drainage Basin covers a large portion of central Illinois and is a sub-watershed of the Illinois River Drainage Basin. The Sangamon River is approximately 250 miles long and its watershed covers an area of 6,019 square miles. The Sangamon River forms greater than half of the southern border of Mason County (Reference 16).

Mason County has a typical mid-western continental climate that is characterized by cold winters and hot summers. Migratory air masses provide both seasonal and

daily variability in weather conditions (Reference 17). According to records from the nearest weather station located in Havana, Illinois (station 113940) the average annual temperature for Mason County is 51.4 degrees Fahrenheit (°F). The coldest average temperatures are in January and the warmest average temperatures are in July. The coldest temperature recorded was -30 °F on January 5, 1999. The warmest temperature recorded was 106 °F on July 23, 1983 and August 19, 1983. The average annual total precipitation for Mason County at Havana is 37.8 inches, which includes an average annual snowfall of 29.6 inches. The largest daily snowfall on record was 14.6 inches on December 1, 2006. The largest recorded daily rainfall total was 7.14 inches on July 13, 1937 (Reference 18).

2.3 Principal Flood Problems

Floods within Mason County occur during all seasons of the year, yet the Illinois River shows marked seasonal characteristics. Floods on the Illinois River are most likely to occur in the months of February, March, April, and May due to a combination of melting snow cover and increased precipitation during spring. The lower Illinois River possesses unique flood characteristics because of its natural, relatively low gradient. Floodwaters rise slowly, persist for unusually long periods, and recede slowly (Reference 4).

The severity of floods is directly related to flood stage (the height of the flood waters) at a given location. Early records of flood heights were marked on buildings and recorded by settlers in the area. Complete records of flood stages and discharges on the main stem of the lower Illinois River date back to 1921 when the first continuous gage records were initiated at Beardstown, Illinois. Continuous records of stage at other sites began in the late 1800s or early 1900s, including the USACE gage at Hardin initiated in 1932. These records, along with additional miscellaneous flood stage records, present a reliable record of flood stages on the Illinois River (Reference 4).

The earliest authentic account of flooding is the flood of 1844. The flood occurred before the establishment of the present stream gages, but it was so remarkable that it left well-authenticated high water marks throughout the river valley. At Havana, the 1844 flood reached an elevation of 446.3 feet (NGVD 29). The peak discharge of the 1844 flood has been estimated at 126,000 cubic feet per second (cfs) at Beardstown (Reference 4).

The Illinois River flood of record at Havana occurred in 1943. Record-breaking rainfall throughout the Illinois River basin during April and May of 1943 produced a river stage reading of 27.1 feet. The 1943 flood broke all records for maximum stage at Havana and has yet to be exceeded.

The river stages of record on the Illinois River at Havana, Illinois are listed in Table 4, "Historical Flood Data." Information gathered for the table was

collected from *River Stages in Illinois* (Reference 19) and *National Weather Service Advanced Hydrologic Prediction Service* (Reference 20).

Table 4 – Historical Flood Data
Illinois River at Havana, Illinois – USGS Gage Number 05570500
Datum of gage is 424.4 feet above NGVD 1929
Flood Stage: 14.0 feet

Date	River Stage (feet)
May 26, 1943	27.10
March 9, 1985	26.40
May 31, 1995	26.33
May 19, 2002	26.00
December 11, 1982	25.20
April 3, 1979	25.10
March 4, 1997	23.68
July 29, 1993	23.40
April 29, 1944	23.30
January 20, 2005	23.04
October 11, 1926	23.00

Another source of flooding in Mason County is the Sangamon River. Flooding on the Sangamon River may occur during any season of the year, but is generally associated with spring snowmelt combined with heavy rainstorms. The largest flood of the Sangamon River occurred in the spring of 1943.

Table 5, "Historical Flood Data" summarizes river stages of record on the Sangamon River at Oakford, Illinois. Information for the table was collected from *River Stages in Illinois* (Reference 19) and the *National Weather Service Advanced Hydrologic Prediction Service* (Reference 20).

Table 5 – Historical Flood Data
Sangamon River at Oakford, Illinois – USGS Gage Number 05583000
Datum of gage is 452.88 feet NGVD 1929
Flood stage: 18.1 feet

Date	River Stage (feet)
May 20, 1943	25.63
April 15, 1979	24.02
May 15, 2002	23.66
December 5, 1982	23.56
April 15, 1994	23.21
June 25, 1974	21.76
April 25, 1973	21.58
April 26, 1944	20.92
May 20, 1995	20.68
May 8, 1991	19.26

2.4 Flood Protection Measures

Consideration has been given to existing levees in the study area. However, no structures were found to protect against the 1-percent-annual-chance flood event. Therefore, no flood protection structures have been included in the engineering analysis.

3.0 ENGINEERING METHODS

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

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the county.

Pre-Countywide FISs

Due to new detailed study data, pre-countywide study data on the Illinois River have been superseded. No other detailed studies were included previously.

January 6, 2012
Countywide FIS

Information on the methods used to determine peak discharge-frequency relationships for the streams studied as part of this countywide FIS is given below.

The following information on the hydrologic analysis for the Illinois River supersedes the hydrologic analysis for the Illinois River from the FIS for Mason County, Illinois, Unincorporated Areas, dated August 1, 1983 (Reference 4), the FIS for the Village of Bath dated July 5, 1983 (Reference 1), and for the FIS for the City of Havana dated March 30, 1983 (Reference 3).

Illinois River flood elevations were determined by the January 2004 UMRSFFS (Reference 6). The UMRSFFS was developed by five Corps of Engineer Districts (St. Paul, Rock Island, Omaha, Kansas City, and St. Louis) and coordinated through representatives from seven federal agencies and seven states. The study addresses flooding of the Illinois River from Lockport to the mouth, the Missouri River below the Gavins Point Dam to the mouth, and the Mississippi River from St. Paul to the confluence with the Ohio River. The St. Louis District conducted the study of the Illinois River from the confluence with the Mississippi River to the La Grange Lock and Dam tailwater (river mile 80.2). The Rock Island District conducted the study of the Illinois River from river mile 80.2 to Lockport, Illinois.

Technical aspects of the study include impacts of levees, land use change, and climate variation. The Illinois River flows were determined using data from the period 1940 to 1998. In situations where historic records were not adequate to develop discharge frequency relationships or to verify the results, hydrologic modeling was used to create synthetic flows based on rainfall.

In the vicinity of the Village of Bath and the City of Havana, unique hydrologic conditions exist which produce shallow flooding due to high groundwater levels associated with surface flooding events. These conditions are described in the Illinois State Water Survey report, *Determination of 100-Year Ground-Water Flood Danger Zones for the Havana and Bath Areas, Mason County, Illinois* (Reference 21). Portions of the 1995 study were used to delineate SFHA areas. However, many areas subject to high groundwater levels cannot be appropriately mapped as SFHA. Nevertheless, the potential for basement flooding within the City of Havana and the Village of Bath does exist, as these areas are subject to high groundwater levels.

For the Sangamon River, hydrologic analyses performed for the September 18, 1986 FIS for the Village of Chandlerville, Illinois, Cass County (Reference 8), were incorporated. This FIS should be referenced for additional information.

A summary of the drainage area-peak discharge relationships for all the streams studied by detailed methods is shown in Table 6, “Summary of Discharges.”

Table 6 - Summary of Discharges

Flooding Source and Location	*Drainage Area (square miles)*	*Peak Discharges (cubic feet per second)*			
		10-Percent-Annual-Chance	*2-Percent-Annual-Chance*	*1-Percent-Annual-Chance*	*0.2-Percent-Annual-Chance*
Illinois River					
At Beardstown, IL Gage (RM 88.6)	24,229	89,000	112,000	119,000	147,000
At Kingston Mines, IL Gage (RM 145.40)	15,820	72,000	90,000	98,000	114,000
Sangamon River					
At County Route 1040 E	5,208	50,000	75,900	86,800	112,000

TBD
Revised Countywide FIS

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the county.

For the Sangamon River, hydrologic analyses were determined using measurements obtained at the stream gage 05583000, Sangamon River near Oakford, Illinois. This gage is located just upstream of the detailed studied reach. The contributing drainage area at the gage was reported as 5,092 square miles and the period of record was over 95 years at the time of study. The gage was used in conjunction with the methods described in USGS Scientific Investigations Report 2004-5103 (Reference 27) to determine the peak discharges by translating the gage discharges downstream to the study reach and weighting the discharges with the regression results.

The Summary of Discharges table below shows a summary of the drainage area-peak discharge relationships for the studied streams.

Table 7 - Summary of Discharges

Flooding Source and Location	*Drainage Area (square miles)*	*10-Percent-Annual-Chance*	*2-Percent-Annual-Chance*	*1-Percent-Annual-Chance*	*0.2-Percent-Annual-Chance*
Sangamon River					
Approximately 7.4 miles downstream of County Route 1040 East	5,296	52,200	78,900	90,200	116,700

3.2 Hydraulic Analyses

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

Pre-Countywide FIS

Due to new detailed study data, pre-countywide study data on the Illinois River have been superseded. No other detailed studies were included previously.

January 6, 2012
Countywide FIS

The following information on the hydraulic analysis for the Illinois River supersedes the hydraulic analysis for the Illinois River from the FIS for Mason County, Illinois Unincorporated Areas dated, August 1, 1983 (Reference 4), the FIS for the Village of Bath dated July 5, 1983 (Reference 1), and for the FIS for the City of Havana dated March 30, 1983 (Reference 3).

Cross sections for the Illinois River from the mouth to river mile 43.0 were developed using channel hydrographic surveys in conjunction with Scientific Assessment and Strategy Team (SAST) floodplain digital terrain data collected in 1995 and 1998. Cross sections for the Illinois River from river mile 43 to 80.2 were taken from existing HEC models. Cross sections for the Illinois River from river mile 80.2 to 286 were created from a combination of floodplain digital terrain models and digital hydrographic surveys. The floodplain digital terrain models were developed from 1998 aerial photography and photogrammetry, as well as digital hydrographic surveys that date from 1997 or later; supplemented as necessary with USGS National Elevation Dataset (NED) 1/3 arc second coverage (Reference 11). For areas where no digital hydrographic surveys were available, such as in some side channels and chutes, depths were estimated from the most current printed surveys available (Reference 6).

The UMRSFFS (discussed in Section 3.1) is based on an unsteady flow model (UNET). Levee failure was assumed at the top of existing levee grade based on an upstream and a downstream point. The UNET model was calibrated by both stage and discharge at gaging locations primarily by adjusting roughness coefficients and estimated lateral inflows. Some special considerations and techniques were required to address especially complex flow reaches and levee failure impacts.

Backwater effects from the UMRSFFS have been considered for tributaries to the Illinois River within the county.

The Illinois River centerline is the jurisdictional divide between many counties within the watershed. Due to the lateral sharing of the floodplain and the longitudinal overlap of the limits of flooding affecting each county; portions of the Illinois River Flood Profiles are duplicated within adjacent countywide FIS(s).

The Sangamon River, which experiences backwater from the Illinois River, was not previously studied in Mason County. However, the effective profile from the Flood Insurance Study for the Village of Chandlerville, Illinois in Cass County (Reference 8) and a USACE HEC-2 model were used to delineate Zone AE floodplain for the Sangamon River in Mason County (Reference 22).

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).

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. The range of the Manning's "n" coefficients for each stream is shown in Table 7, "Roughness Coefficients (Manning's 'n' Values)
."

Table 8 – Roughness Coefficients (Manning's "n" Values)

Stream	Channel "n"	Overbank "n"
Illinois River		
LaGrange Pool (RM 80.2-157.7)	0.023 - 0.025	0.055 - 0.150
Sangamon River	0.02 - 0.035	0.043 - 0.077

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.

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

A 14-mile portion of the Sangamon River was studied using detailed methods. The studied portion begins approximately 7.4 miles downstream of County Route 1040 East. Cross sections were surveyed at multiple locations to obtain channel thalweg and overbank elevation information. For areas in the overbanks beyond the survey data, the USGS Nations Elevation Dataset (NED) 1/3 arc second coverage (Reference 11) was used to supplement the data as necessary.

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. The range of the Manning's "n" coefficients for each stream is shown in the table below, "Roughness Coefficients (Manning's 'n' Values)."

Table 9 - Roughness Coefficients (Manning's "n" Values)

Stream	Channel "n"	Overbank "n"
Sangamon River	0.040	0.045 – 0.100

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.

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the (NGVD 29). With the finalization of the (NAVD 88), many FIS and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent counties may be referenced to NGVD 29. This may result in differences in base flood elevations (BFEs) across the county boundary.

Effective information for this FIS was converted from NGVD 29 to NAVD 88 based on data presented in Figure 1 and Table 8a. Computations show a single average conversion factor of -0.326 feet (NGVD 29 – 0.349 = NAVD 88) for the county. The conversion factor was applied uniformly across the county, with the exception of the Illinois River, and was used to prepare the Floodway Data Tables, Flood Profiles, and FIRMs.

The cross section specific conversion factor (cross section-by-cross section) method was applied to the Illinois River for Mason County. The cross section specific conversion Factor method is applied to all reaches of the Illinois River for consistency within the state.

The data presented in the UMRSFFS (Reference 6) were incorporated into this FIS and associated FIRMs. This information was converted to NAVD 88 based on data presented in Table 8b. A conversion factor was calculated using the latitude and longitude of each Illinois River cross section. The conversion factor for each cross section was used to prepare the new Illinois River Floodway Data Tables, Flood Profiles, and FIRMs.

For more information on NAVD 88, see *Guidelines and Specifications for Flood Hazard Mapping Partners Appendix B: Guidance for Converting to the North American Vertical Datum of 1988* (Reference 23) available at http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

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

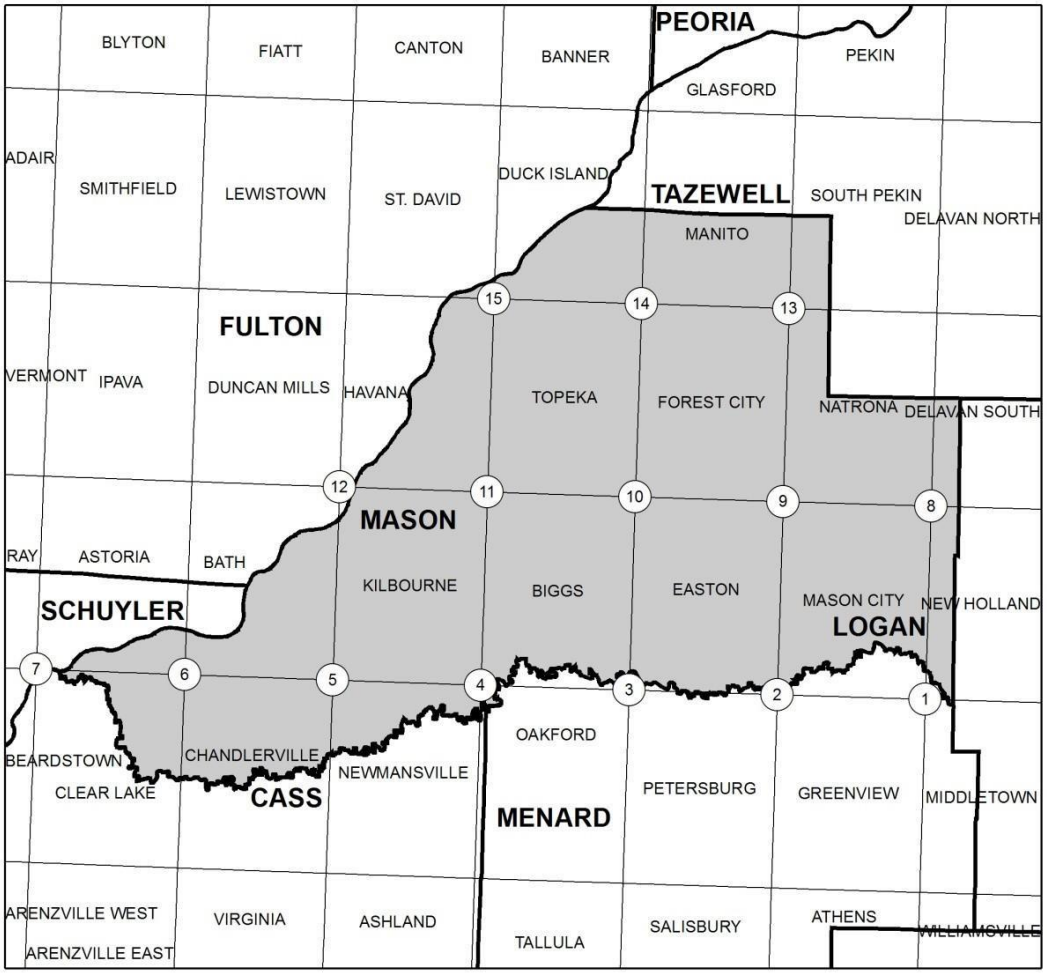


Figure 1 – Vertical Datum Conversion
USGS Quadrangle Corner Intersections
The change in elevation for each Point ID is listed in Table 8a.

Table 10a - Vertical Datum Conversions
Single Conversion Factor (countywide)
Method Mason County

Point ID #	Quadrangle Name	Corner	NAD83 Latitude (dec. deg.)	NAD83 Longitude (dec. deg.)	NGVD 29 to NAVD 88 Elevation Change (feet)
1	Middletown	NW	40.125	89.625	-0.308
2	Greenview	NW	40.125	89.750	-0.325
3	Petersburg	NW	40.125	89.875	-0.328
4	Oakford	NW	40.125	90.000	-0.328
5	Newmansville	NW	40.125	90.125	-0.322
6	Chandlerville	NW	40.125	90.250	-0.338
7	Clear Lake	NW	40.125	90.375	-0.341
8	New Holland	NW	40.250	89.625	-0.312
9	Mason City	NW	40.250	89.750	-0.312
10	Easton	NW	40.250	89.875	-0.322
11	Biggs	NW	40.250	90.000	-0.312
12	Kilbourne	NW	40.250	90.125	-0.318
13	Natrona	NW	40.375	89.750	-0.335
14	Forest City	NW	40.375	89.875	-0.338
15	Topeka	NW	40.375	90.000	-0.348

Range of conversion values	-0.348 to -0.308
Average conversion factor	**-0.326**
Maximum variance from the average conversion (Within 0.25 foot tolerance)	0.022
Maximum variance from a no-conversion value	0.348

Table 10b - Vertical Datum Conversions
Cross Section Specific (cross section-by cross-section) Conversion Factors
Illinois River

Cross Section ID	NAD 83 Latitude (dec. deg.)	NAD 83 Longitude (dec. deg.)	NGVD 29 to NAVD 88 Elevation Change (feet)
98.2	40.125	90.352	-0.3
98.7	40.129	90.345	-0.3
99.2	40.135	90.340	-0.3
99.7	40.139	90.329	-0.3
100.2	40.140	90.320	-0.3
100.7	40.139	90.311	-0.3
101.2	40.142	90.302	-0.3
101.7	40.145	90.297	-0.3
102.2	40.148	90.288	-0.3
102.7	40.151	90.278	-0.3
103.2	40.154	90.269	-0.3
103.7	40.155	90.260	-0.3
104.2	40.154	90.250	-0.3
104.7	40.152	90.242	-0.3
105.2	40.150	90.232	-0.3
105.7	40.150	90.223	-0.3
106.2	40.151	90.214	-0.3
106.7	40.155	90.207	-0.3
107.2	40.162	90.203	-0.3
107.7	40.169	90.203	-0.3
108.2	40.176	90.202	-0.3
108.4	40.179	90.202	-0.3
109.0	40.188	90.197	-0.3
109.6	40.193	90.189	-0.3
110.2	40.197	90.180	-0.3
110.7	40.203	90.174	-0.3
111.2	40.209	90.172	-0.3
111.7	40.215	90.166	-0.3
111.9	40.217	90.163	-0.3
112.4	40.221	90.155	-0.3
112.9	40.222	90.146	-0.3
113.47	40.224	90.135	-0.3
114.0	40.228	90.127	-0.3
114.6	40.234	90.120	-0.3
115.1	40.241	90.117	-0.3
115.6	40.248	90.114	-0.3
116.1	40.254	90.111	-0.3
116.6	40.261	90.107	-0.3
117.1	40.266	90.099	-0.3
117.6	40.270	90.093	-0.3
118.1	40.277	90.086	-0.3

Table 10b - Vertical Datum Conversions
(continued)
Cross Section Specific (cross section-by cross-section) Conversion Factors
Illinois River

Cross Section ID	NAD 83 Latitude (dec. deg.)	NAD 83 Longitude (dec. deg.)	NGVD 29 to NAVD 88 Elevation Change (feet)
118.6	40.282	90.082	-0.3
119.0	40.287	90.077	-0.3
119.3	40.290	90.074	-0.3
119.4	40.291	90.073	-0.3
119.56	40.293	90.071	-0.3
120.0	40.299	90.068	-0.3
120.4	40.305	90.068	-0.3
120.75	40.310	90.069	-0.3
120.92	40.312	90.069	-0.3
121.4	40.319	90.065	-0.3
122.9	40.336	90.050	-0.3
123.4	40.343	90.051	-0.3
123.9	40.351	90.052	-0.3
124.4	40.358	90.049	-0.3
124.9	40.365	90.046	-0.3
125.4	40.372	90.041	-0.3
125.9	40.377	90.035	-0.3
126.4	40.379	90.027	-0.3
126.9	40.381	90.018	-0.3
127.35	40.384	90.010	-0.3
127.9	40.388	90.001	-0.3
128.4	40.391	89.992	-0.4
128.9	40.394	89.982	-0.4
129.4	40.400	89.979	-0.4
129.9	40.406	89.973	-0.4
130.4	40.411	89.967	-0.4
130.93	40.417	89.960	-0.4
131.4	40.421	89.954	-0.4
131.7	40.424	89.949	-0.4
132.2	40.429	89.942	-0.4
132.7	40.433	89.934	-0.4
133.2	40.436	89.925	-0.3
133.7	40.439	89.917	-0.3

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages state and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, and Floodway Data tables. Users should reference the data presented in the FIS 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 the flooding sources studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 (Reference 10, 11).

Where available along the Illinois River, digital terrain data provided by the USACE Rock Island and St. Louis Districts were used to delineate the floodplain (Reference 24). In areas along the Illinois River where the digital terrain data were not available, the USGS National Elevation Dataset was supplemented as available data (Reference 11).

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

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

4.2 Floodways

Encroachment on floodplains, such as structures and fill, has the potential to reduce flood-carrying capacity, increase flood heights and velocities, and increase flood hazards in areas beyond the encroachment itself. For purposes of the NFIP, a floodway is used as a tool to assist local communities in floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a flood fringe.

The floodway is the channel of a stream, plus any adjacent floodplain areas (see Figure 2, "Floodway Schematic") 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. In Illinois, however, under the *Rivers, Lakes and Streams Act* (615 ILCS 5/23, 29 & 30 and 615 ILCS 5/18), encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights (Reference 25). The State of Illinois has adopted this more stringent criterion which limits the increase in flood heights to 0.1 foot, no more than a 10 percent reduction in floodplain volume, and no more than a 10 percent increase in average velocity. This has generally been interpreted as the least surcharge measurable, consistent with the encroachment option of the computer program utilized for the floodway determination. The floodways in this FIS are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The area between the floodway and the 1-percent-annual-chance floodplain boundaries is termed the flood fringe. The flood fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 0.1 foot at any point. Typical relationships between the floodway and the flood fringe and their significance to floodplain development are shown in Figure 2, "Floodway Schematic."

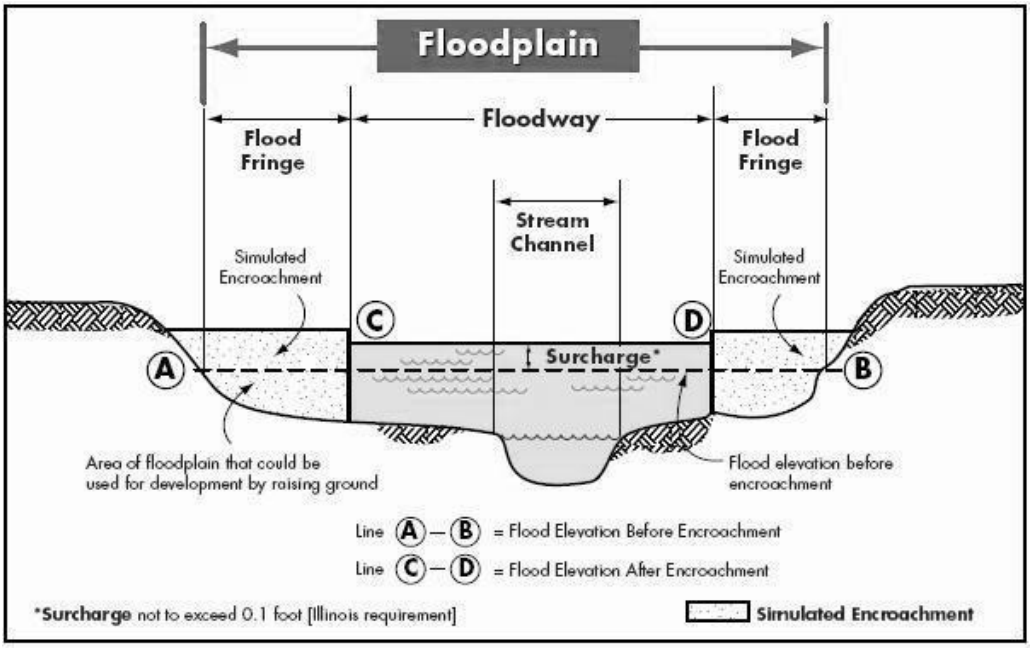


Figure 2 - Floodway Schematic

The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (see Table 9, "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

Floodway calculations for the Illinois River are based on the September 2005 *Illinois River, River Mile 80 to 286, Floodway Computation* (Reference 7) performed by the USACE, Rock Island District. The study extends from La Grange Lock and Dam to Brandon Road Lock and Dam.

The objective of the study was to produce a floodway consistent with the results of the UMRSFFS (discussed in Section 3.1). An unsteady steady flow HEC-RAS model was built and calibrated to the 1-percent-annual-chance UMRSFFS profile only. The model was not calibrated to other frequency events or to "natural" conditions. This model was used to compute the floodway. Use of the model for other purposes is not recommended.

The Floodway Data Tables for the Illinois River are also a special case. A floodway was not calculated for the Illinois River downstream of the La Grange Dam. Therefore, the Floodway Data Table for river miles 0 to 80 reports only the regulatory 1-percent-annual-chance flood water surface elevations from the UNET model. A floodway was calculated for river miles 80 to 286. Regulatory

1-percent-annual-chance flood water surface elevations are reported from the UNET model. Floodway section areas, floodway mean velocities, and 1-percent-annual-chance flood water surface elevations with floodways are not reported from the steady state hydraulic models.

This project affects the floodway status of Mason County, Unincorporated Areas, which previously did not have mapped floodway. Floodway is now mapped for the Illinois River and Sangamon River within Mason County, Unincorporated Areas.

In the State of Illinois, any portion of a stream or watercourse that lies within the floodway fringe of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the widths listed in the floodway data table in the Flood Insurance Study. The floodway as shown on the FIRM should be used for regulatory purposes.

In Illinois, along streams where floodways have not been computed, the community must obtain state permit approval (when applicable) for development. This ensures that the cumulative effect of development in the floodplain will not cause an increase in the base flood elevations that creates a potential for flood damages.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY FROM UNET MODEL	WITHOUT FLOODWAY FROM UNET MODEL	WITH FLOODWAY	INCREASE
Illinois River								
98.2	98.20	26,361/2,597	*	*	451.5	451.5	*	*
98.7	98.70	28,951/4,176	*	*	451.5	451.5	*	*
99.2	99.20	30,442/5,324	*	*	451.5	451.5	*	*
99.7	99.70	31,336/10,500	*	*	451.6	451.6	*	*
100.2	100.20	29,895/29,054	*	*	451.6	451.6	*	*
100.7	100.70	16,226/15,546	*	*	451.6	451.6	*	*
101.2	101.20	15,810/15,285	*	*	451.7	451.7	*	*
101.7	101.70	16,237/15,797	*	*	451.7	451.7	*	*
102.2	102.20	16,336/15,892	*	*	451.7	451.7	*	*
102.7	102.70	17,341/16,405	*	*	451.7	451.7	*	*
103.2	103.20	17,973/17,405	*	*	451.7	451.7	*	*
103.7	103.70	17,513/17,008	*	*	451.7	451.7	*	*
104.2	104.20	15,340/14,819	*	*	451.7	451.7	*	*
104.7	104.70	12,731/12,077	*	*	451.7	451.7	*	*
105.2	105.20	9,672/9,025	*	*	451.7	451.7	*	*
105.7	105.70	8,624/7,917	*	*	451.8	451.8	*	*
106.2	106.20	7,970/7,242	*	*	451.8	451.8	*	*
106.7	106.70	6,248/5,596	*	*	451.8	451.8	*	*
107.2	107.20	6,257/5,729	*	*	451.9	451.9	*	*

[1]Miles above confluence with Mississippi River

[2]Total width/width within Mason County

*Data not available

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL AND INCORPORATED AREAS

FLOODWAY DATA

ILLINOIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY FROM UNET MODEL	WITHOUT FLOODWAY FROM UNET MODEL	WITH FLOODWAY	INCREASE
Illinois River (continued)								
107.7	107.70	8,186/7,685	*	*	451.9	451.9	*	*
108.2	108.20	8,877/8,355	*	*	451.9	451.9	*	*
108.4	108.40	10,283/9,072	*	*	451.9	451.9	*	*
109	109.00	13,024/10,415	*	*	452.0	452.0	*	*
109.6	109.60	15,009/10,157	*	*	452.0	452.0	*	*
110.2	110.20	17,486/8,937	*	*	452.0	452.0	*	*
110.7	110.70	18,476/9,021	*	*	452.0	452.0	*	*
111.2	111.20	17,002/10,069	*	*	452.0	452.0	*	*
111.7	111.70	14,447/10,244	*	*	452.0	452.0	*	*
111.9	111.90	11,325/9,979	*	*	452.0	452.0	*	*
112.4	112.40	9,579/9,074	*	*	452.1	452.1	*	*
112.9	112.90	7,020/6,429	*	*	452.1	452.1	*	*
113.47	113.47	4,805/4,206	*	*	452.1	452.1	*	*
114	114.00	3,140/2,590	*	*	452.2	452.2	*	*
114.6	114.60	2,500/1,847	*	*	452.3	452.3	*	*
115.1	115.10	2,810/2,182	*	*	452.3	452.3	*	*
115.6	115.60	4,013/3,357	*	*	452.4	452.4	*	*
116.1	116.10	4,750/4,175	*	*	452.4	452.4	*	*

[1]Miles above confluence with Mississippi River

[2]Total width/width within Mason County

*Data not available

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL AND INCORPORATED AREAS

FLOODWAY DATA

ILLINOIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY FROM UNET MODEL	WITHOUT FLOODWAY FROM UNET MODEL	WITH FLOODWAY	INCREASE
Illinois River (continued)								
116.6	116.60	4,912/4,368	*	*	452.5	452.5	*	*
117.1	117.10	3,962/3,354	*	*	452.5	452.5	*	*
117.6	117.60	2,486/1,919	*	*	452.5	452.5	*	*
118.1	118.10	1,031/411	*	*	452.6	452.6	*	*
118.6	118.60	1,364/469	*	*	452.7	452.7	*	*
119	119.00	1,430/534	*	*	452.7	452.7	*	*
119.3	119.30	1,555/441	*	*	452.8	452.8	*	*
119.4	119.40	2,498/423	*	*	452.8	452.8	*	*
119.56	119.56	4,092/373	*	*	452.8	452.8	*	*
120	120.00	4,840/382	*	*	452.8	452.8	*	*
120.4	120.40	5,582/647	*	*	452.9	452.9	*	*
120.75	120.75	5,493/1,616	*	*	452.9	452.9	*	*
120.92	120.92	3,484/1,363	*	*	452.9	452.9	*	*
121.4	121.40	2,134/1,709	*	*	452.9	452.9	*	*
122.9	122.90	2,439/1,719	*	*	453.1	453.1	*	*
123.4	123.40	4,237/3,627	*	*	453.1	453.1	*	*
123.9	123.90	6,212/5,549	*	*	453.2	453.2	*	*
124.4	124.40	6,994/6,368	*	*	453.2	453.2	*	*
124.9	124.90	8,320/7,857	*	*	453.2	453.2	*	*

[1]Miles above confluence with Mississippi River

[2]Total width/width within Mason County

*Data not available

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL AND INCORPORATED AREAS

FLOODWAY DATA

ILLINOIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY FROM UNET MODEL	WITHOUT FLOODWAY FROM UNET MODEL	WITH FLOODWAY	INCREASE
Illinois River (continued)								
125.4	125.40	9,740/9,306	*	*	453.2	453.2	*	*
125.9	125.90	10,184/9,503	*	*	453.2	453.2	*	*
126.4	126.40	9,113/8,507	*	*	453.2	453.2	*	*
126.9	126.90	8,259/7,466	*	*	453.2	453.2	*	*
127.35	127.35	8,445/7,353	*	*	453.3	453.3	*	*
127.9	127.90	7,583/6,895	*	*	453.3	453.3	*	*
128.4	128.40	8,056/7,076	*	*	453.3	453.3	*	*
128.9	128.90	7,330/6,286	*	*	453.3	453.3	*	*
129.4	129.40	10,530/9,830	*	*	453.4	453.4	*	*
129.9	129.90	9,489/8,954	*	*	453.4	453.4	*	*
130.4	130.40	8,490/7,948	*	*	453.4	453.4	*	*
130.93	130.93	8,080/7,531	*	*	453.5	453.5	*	*
131.4	131.40	8,239/7,706	*	*	453.5	453.5	*	*
131.7	131.70	8,170/7,444	*	*	453.5	453.5	*	*
132.2	132.20	11,040/7,106	*	*	453.5	453.5	*	*
132.7	132.70	16,221/6,509	*	*	453.5	453.5	*	*
133.2	133.20	17,927/5,518	*	*	453.7	453.7	*	*
133.7	133.70	17,428/1,903	*	*	453.7	453.7	*	*

[1]Miles above confluence with Mississippi River

[2]Total width/width within Mason County

*Data not available

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL AND INCORPORATED AREAS

FLOODWAY DATA

ILLINOIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-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
Sangamon River								
A	78,686	*	*	*	453.4	453.4	*	*
B	82,665	*	*	*	453.6	453.6	*	*
C	90,153	*	*	*	454.5	454.5	*	*
D	96,718	*	*	*	455.8	455.8	*	*
E	102,630	*	*	*	457.1	457.1	*	*
F	105,976	*	*	*	457.8	457.8	*	*
G	110,533	*	*	*	460.7	460.7	*	*
H	114,049	*	*	*	461.1	461.1	*	*
I	120,270	*	*	*	461.8	461.8	*	*
J	125,589	*	*	*	462.4	462.4	*	*
K	130,564	*	*	*	463.2	463.2	*	*
L	134,099	*	*	*	464.3	464.3	*	*
M	139,318	*	*	*	465.9	465.9	*	*

[1]Feet above confluence with Illinois River

*Data not available

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL
AND INCORPORATED AREAS

FLOODWAY DATA

SANGAMON RIVER

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. The 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 by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations 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 by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at the selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations 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 (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown 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, and to areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No base flood elevations 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 base flood elevations or average depths. Insurance agents use the zones and base flood elevations 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 are shown where applicable

The current FIRM presents flooding information for the entire geographic area of Mason County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each incorporated community and the unincorporated areas of the county identified as having special flood hazard areas. The countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFM), where applicable. Historical data relating to the community maps prepared is presented in Table 10, "Community Map History."

7.0 OTHER STUDIES

FIS reports have been prepared for Cass, Fulton Logan, Menard, Schuyler, and Tazewell Counties, Illinois. FIS reports were also prepared for the Village of Liverpool in Fulton County and the Village of Browning in Schuyler County (Reference 26).

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

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FLOOD INSURANCE RATE MAP EFFECTIVE DATE	FLOOD INSURANCE RATE MAP REVISION DATE(S)
Bath, Village of	December 17, 1973	April 16, 1976	January 5, 1984	
Easton, Village of[1,2]	N/A	N/A	N/A	
Forest City, Village of	March 28, 1975	None	N/A	
Havana, City of	April 5, 1974	January 30, 1976	July 2, 1981	September 30, 1983
Kilbourne, Village of[1,2]	N/A	N/A	N/A	
Manito, Village of[2]	N/A	N/A	N/A	
Mason City, City of	November 15, 1974	April 30, 1976 October 15, 1976	July 18, 1985	
Mason County (Unincorporated Areas)	January 31, 1975	November 17, 1978	February 1, 1984	
San Jose, Village of[1,2]	N/A	N/A	N/A	
Topeka, Town of	March 21, 1975	None	N/A	

[1] No Special Flood Hazard Areas identified
[2] This community does not have map history prior to the first countywide mapping

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL AND INCORPORATED AREA

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency. *Flood Insurance Study: Village of Bath, Illinois, Mason County*. Washington D.C.: July 5, 1983.

2. U.S. Army Corps of Engineers, St. Louis District. *Eldred-Spankey Levee Project on the Illinois River, Hydrologic and Hydraulic Analyses, General Design, Memorandum, Appendix C*. 1983.

3. Federal Emergency Management Agency. *Flood Insurance Study: City of Havana, Illinois, Mason County*. Washington D.C.: March 30, 1983.

4. Federal Emergency Management Agency. *Flood Insurance Study: County of Mason, Illinois, Unincorporated Areas*. Washington D.C.: August 1, 1983.

5. Federal Emergency Management Agency. *Flood Insurance Study: Village of Browning, Illinois, Schuyler County*. Washington D.C.: February 16, 1982.

6. U.S. Army Corp of Engineers, Rock Island District. *Upper Mississippi River System Flow Frequency Study: Final Report*. January 2004. http://www.mvr.usace.army.mil/pdw/pdf/FlowFrequency/flowfreq.htm

7. U.S. Army Corps of Engineers, Rock Island District: for FEMA Region V. *Illinois River, River Mile 80 - 286, Floodway Computation*. FEMA Interagency Agreement No. HSFE05-04-X-0018. September 30, 2005.

8. Federal Emergency Management Agency. *Flood Insurance Study: Village of Chandlerville, Illinois, Cass County*. Washington D.C.: September 18, 1986.

9. Surdex Corporation and Science Applications International. *USGS Digital Orthophoto Quarter-Quadrangles*. U.S. Geological Survey. Sioux Falls, South Dakota: 2005.

10. Illinois State Geological Survey. *Statewide ArcSDE Raster Mosaic of USGS DRGs*. Champaign, Illinois: 2003.

11. U.S. Geological Survey (USGS) Center for Earth Resources Observation and Science (EROS). *National Elevation Dataset*. Sioux Falls, South Dakota: 1999.

12. U.S. Census Bureau. *State and County QuickFacts - Mason County, Illinois.* [Cited September 3, 2015] http://quickfacts.census.gov

13. Calsyn, Dale E. *Soil Survey of Mason County, Illinois*. United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Illinois Agricultural Experiment Station. 1995.

14. Illinois Department of Natural Resources. *Illinois Land Cover Summary Data by Counties.* 2007. [Cited October 10, 2008]. Available from: http://dnr.state.il.us/orep/ctap/map/counties.htm.

15. U.S. Geological Survey. *Basin Information.* [Cited May 5, 2008]. Available from: http://il.water.usgs.gov/proj/lirb/info

16. Federal Emergency Management Agency. *Flood Insurance Study: Sangamon County, Illinois and Incorporated Areas*. Washington D.C.: Revised August 2, 2007.

17. Hess, Darrell and Tom McKnight. *Physical Geography: A Landscape Appreciation*. 8th ed., Upper Saddle River, N.J.: Pearson Prentice Hall. 2005.

18. *Historical Climate Data, Havana, Illinois - Illinois State Climatologist Office.* September 11, 2007. [Cited May 5, 2008]. Available from: http://www.sws.uiuc.edu/atmos/statecli/Summary/113940.htm

19. Illinois Department of Natural Resources, Office of Water Resources. *River Stages in Illinois: Flood and Damage Data*. Springfield, Illinois: August 2004.

20. *National Weather Service Advanced Hydrologic Prediction Service.* March 13, 2008. United States Department of Commerce, National Oceanic and Atmospheric Administration [Cited May 12, 2008]. Available from: http://www.crh.noaa.gov/ahps2/index.php?wfo+ilx

21. Visocky, A.P. *Determination of 100-Year Ground-Water Flood Danger Zones for the Havana and Bath Areas, Mason County, Illinois*. Illinois State Water Survey, Contract Report 584, 1995.

22. U.S. Army Corps of Engineers, St. Louis District. *HEC-RAS Model Run: Sangamon River Flow Profiles, After Overtopping*. April 26, 1985.

23. Federal Emergency Management Agency. *Appendix B: Guidance for Converting to the North American Vertical Datum of 1988*. April 2003. www.fema.gov/fhm/dl_cgs.shtm

24. EarthData International of Maryland LLC. *Mississippi River DEM/DTM Project*. 1998-2001.

25. Illinois Compiled Statutes. *Waterways Rivers, Lakes and Streams Act, 615 ILCS 5/23, 5/29 & 5/30; 615 ILCS 5/18*. 2005.

26. Federal Emergency Management Agency. *Map Service Center: Product Catalog - Flood Insurance Studies (FIS).* [Cited 2008]. Available from: http://msc.fema.gov/webapp/wcs/stores/servlet/StoreCatalogDisplay?storeId=10001&catalogId=10001&langId=-1&userType=G

27. Soong, D.T, Ishii, A.L., Sharpe, J.B., Avery, C.F., Estimating Flood-Peak Discharge Magnitudes and Frequencies for Rural Streams in Illinois, U.S. Geological Survey Scientific Investigations Report 2004-5103, U.S. Geological Survey, U.S. Department of the Interior, 2004.

Figure 3 – FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of the FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community dates, refer to Table 10 in the FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within in the FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for the jurisdiction.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study.

In the State of Illinois, any portion of a stream or watercourse that lies within the floodway fringe of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Figure 3 – FIRM Notes to Users (continued)

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 16. The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in the slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://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

Local Vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community.

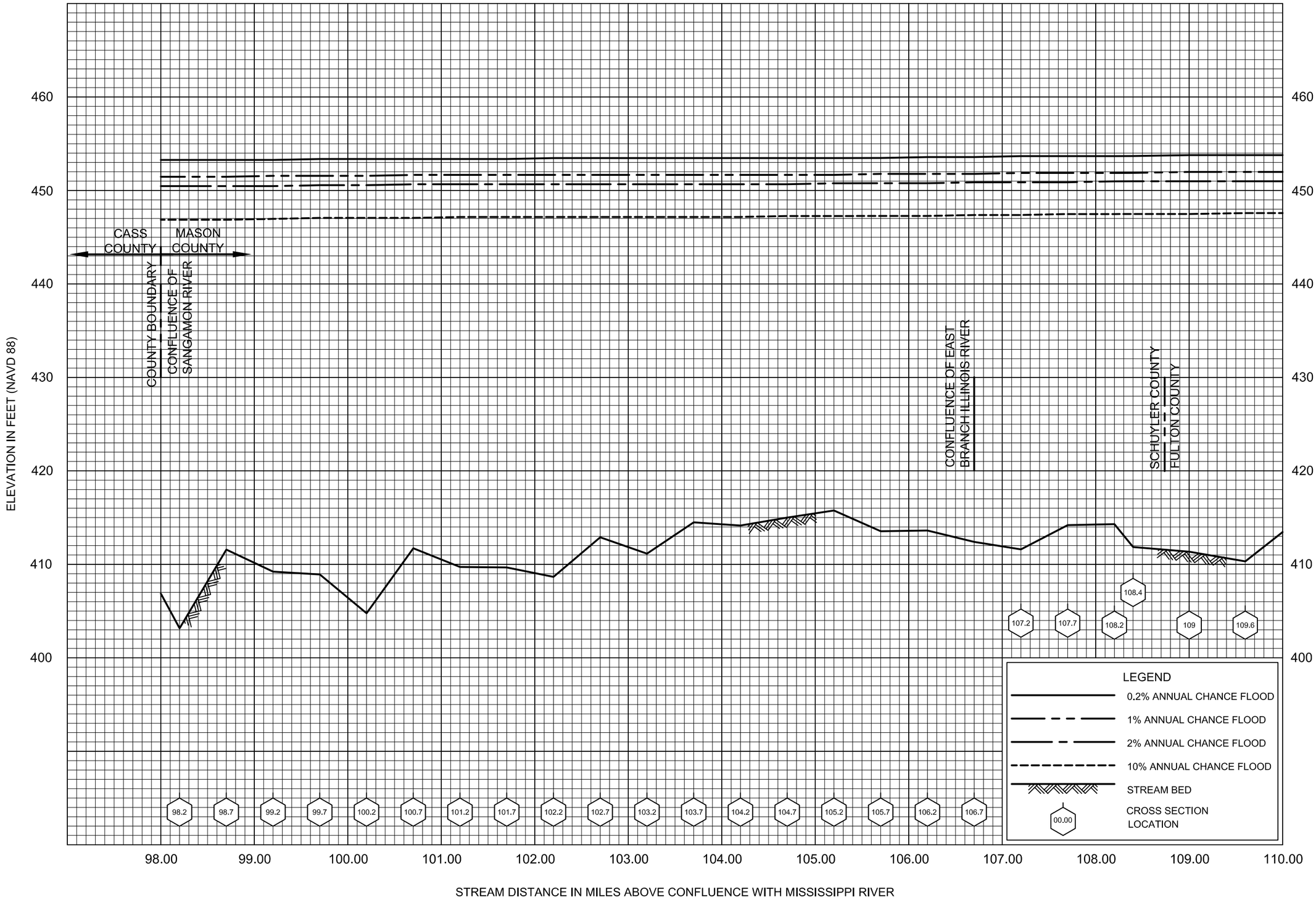
BASE MAP INFORMATION: Base map information is panel-specific. The map panels should be referenced for this information.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Mason County, IL, corresponding revisions to the FIRM Index will be incorporated to reflect the effective dates of those panels.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in the FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk



FLOOD PROFILES

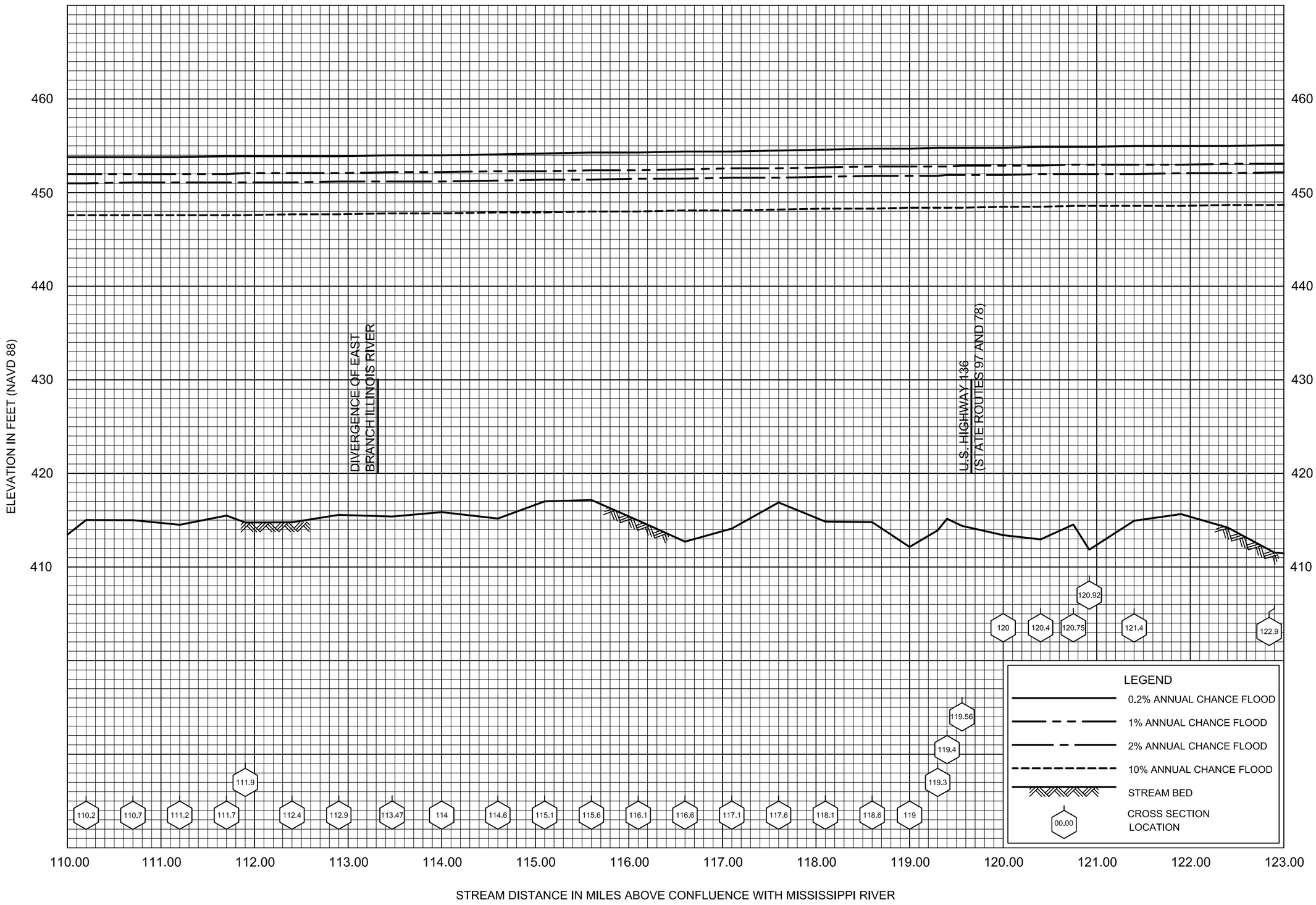
ILLINOIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

01P



FLOOD PROFILES

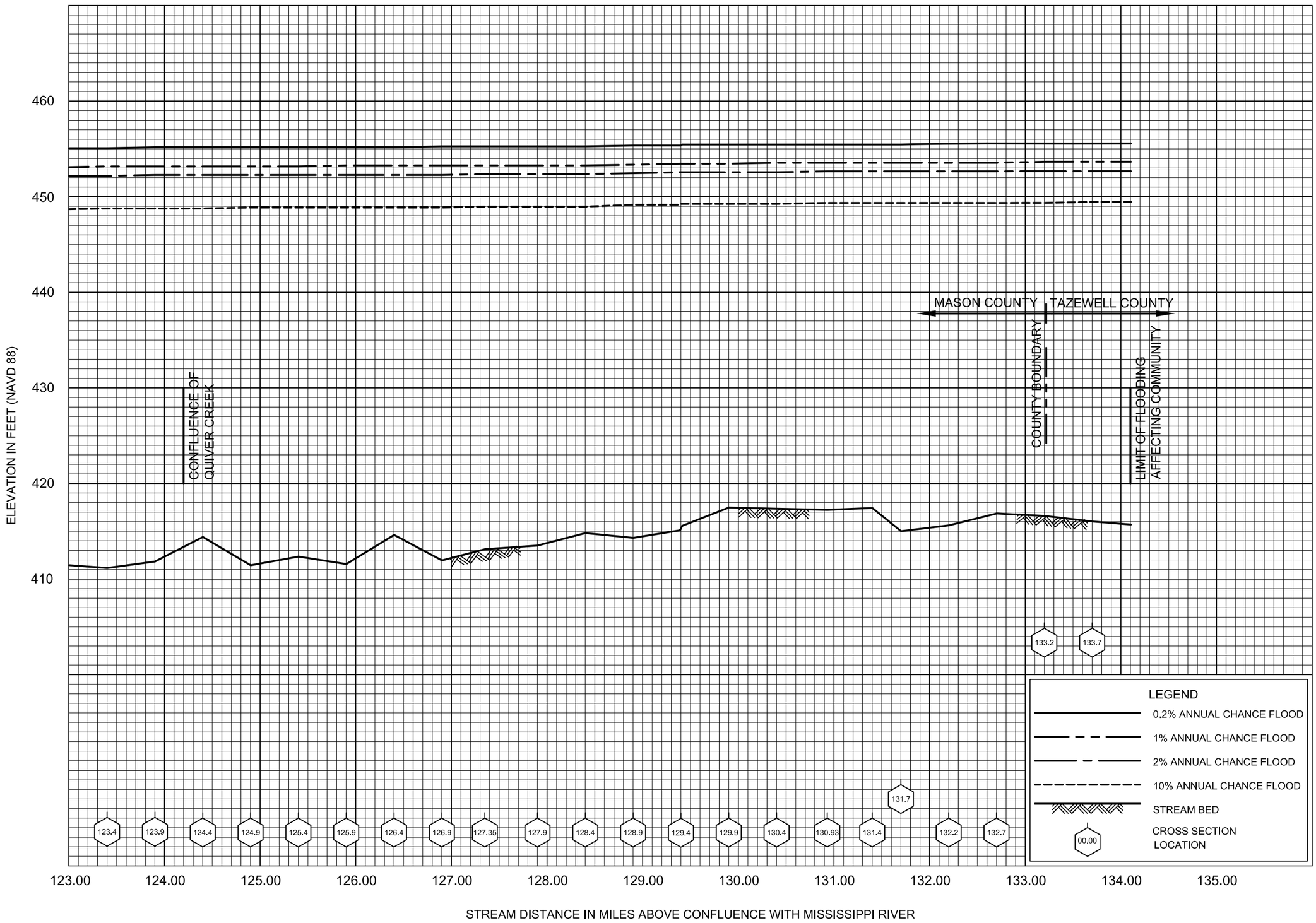
ILLINOIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

02P



FLOOD PROFILES

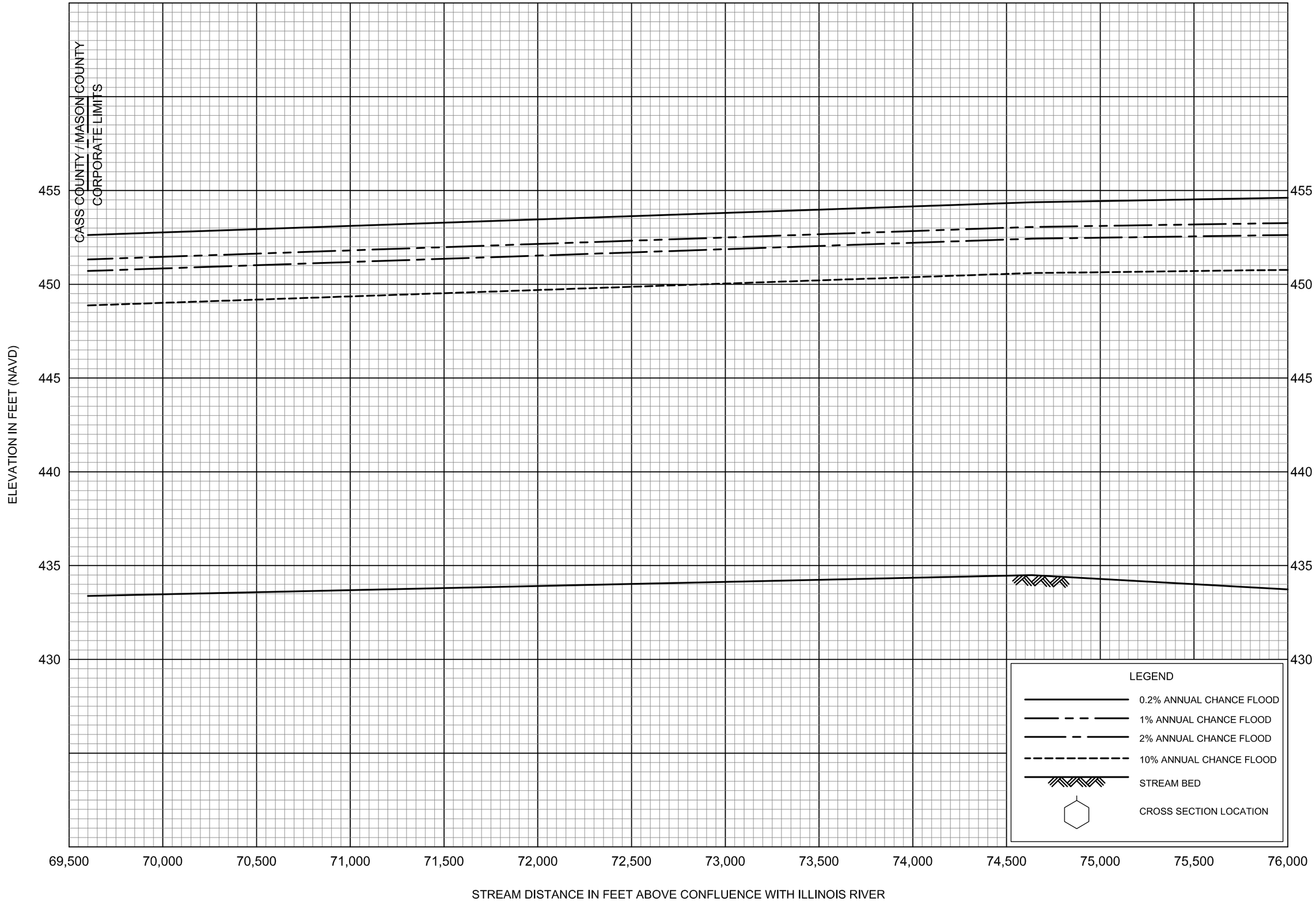
ILLINOIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

03P



FLOOD PROFILES

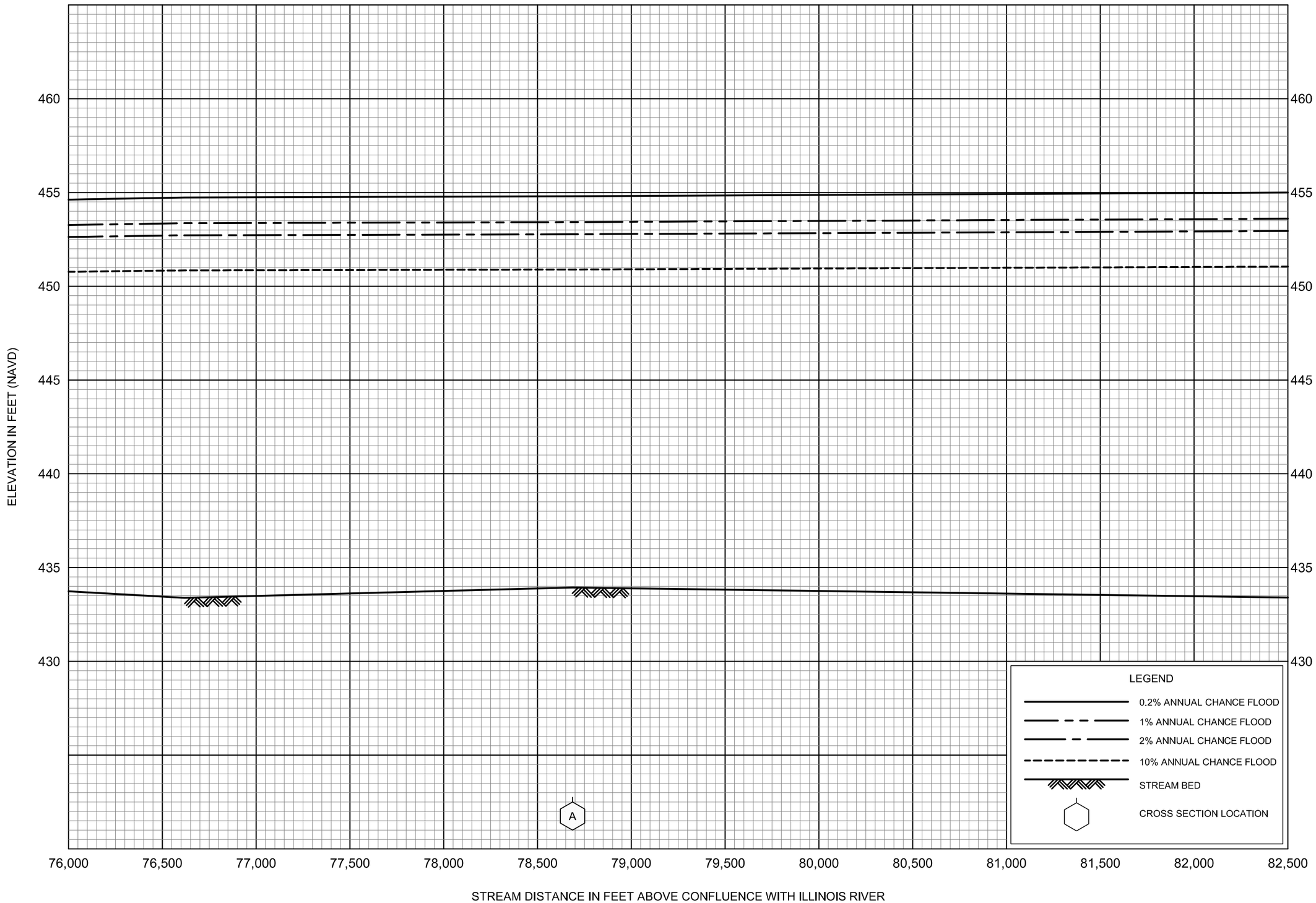
SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

04P



FLOOD PROFILES

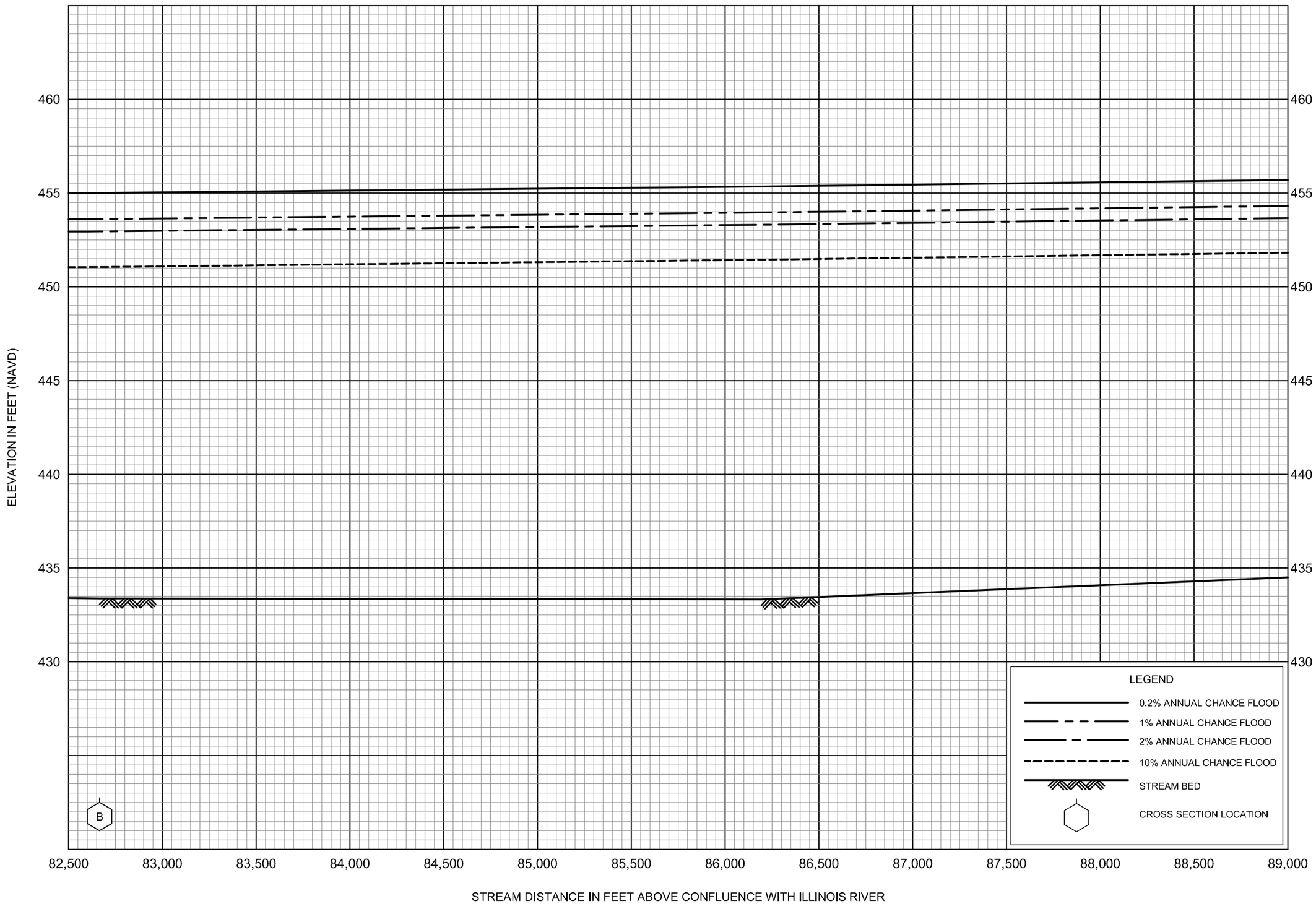
SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

05P



FLOOD PROFILES

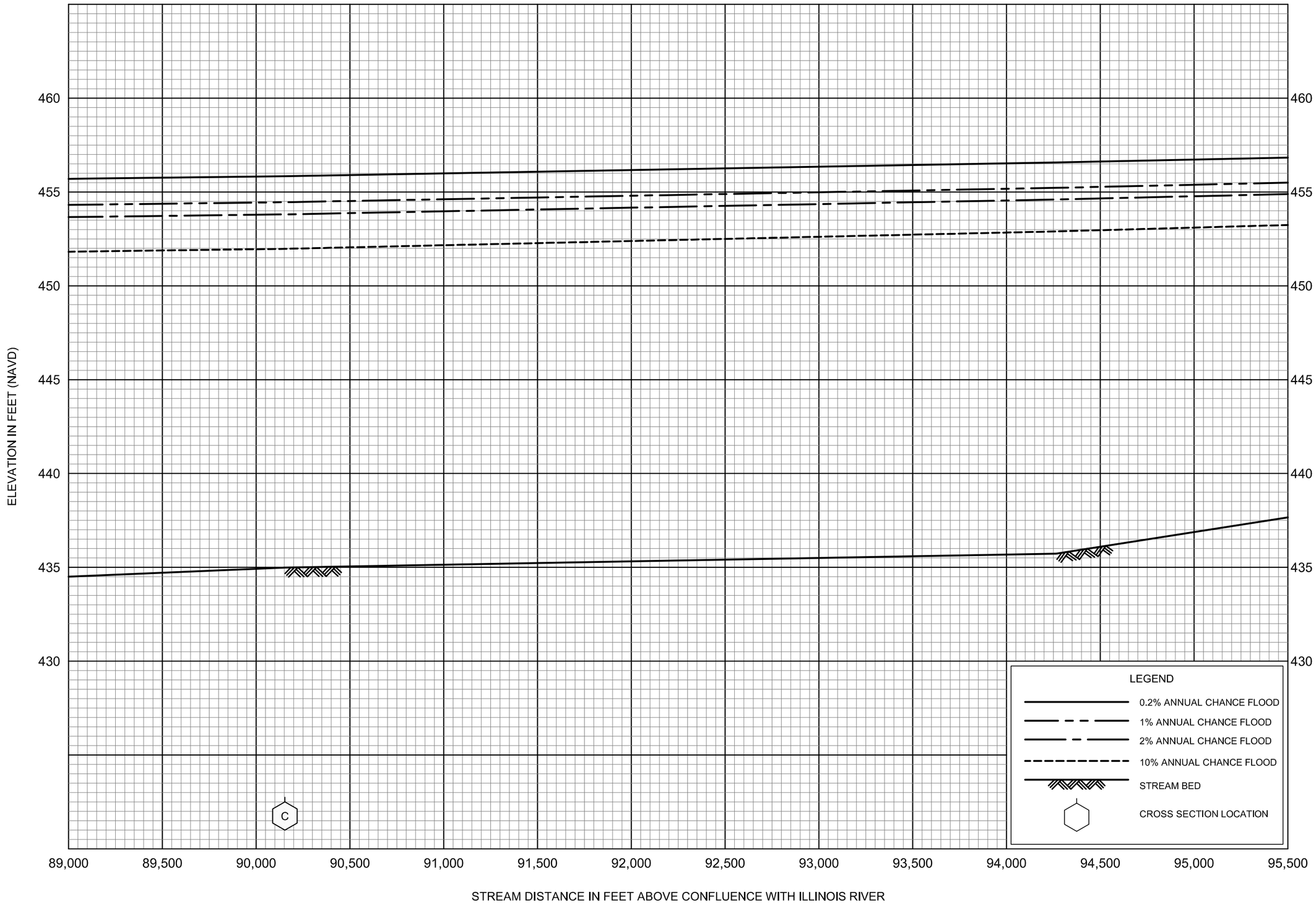
SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

06P



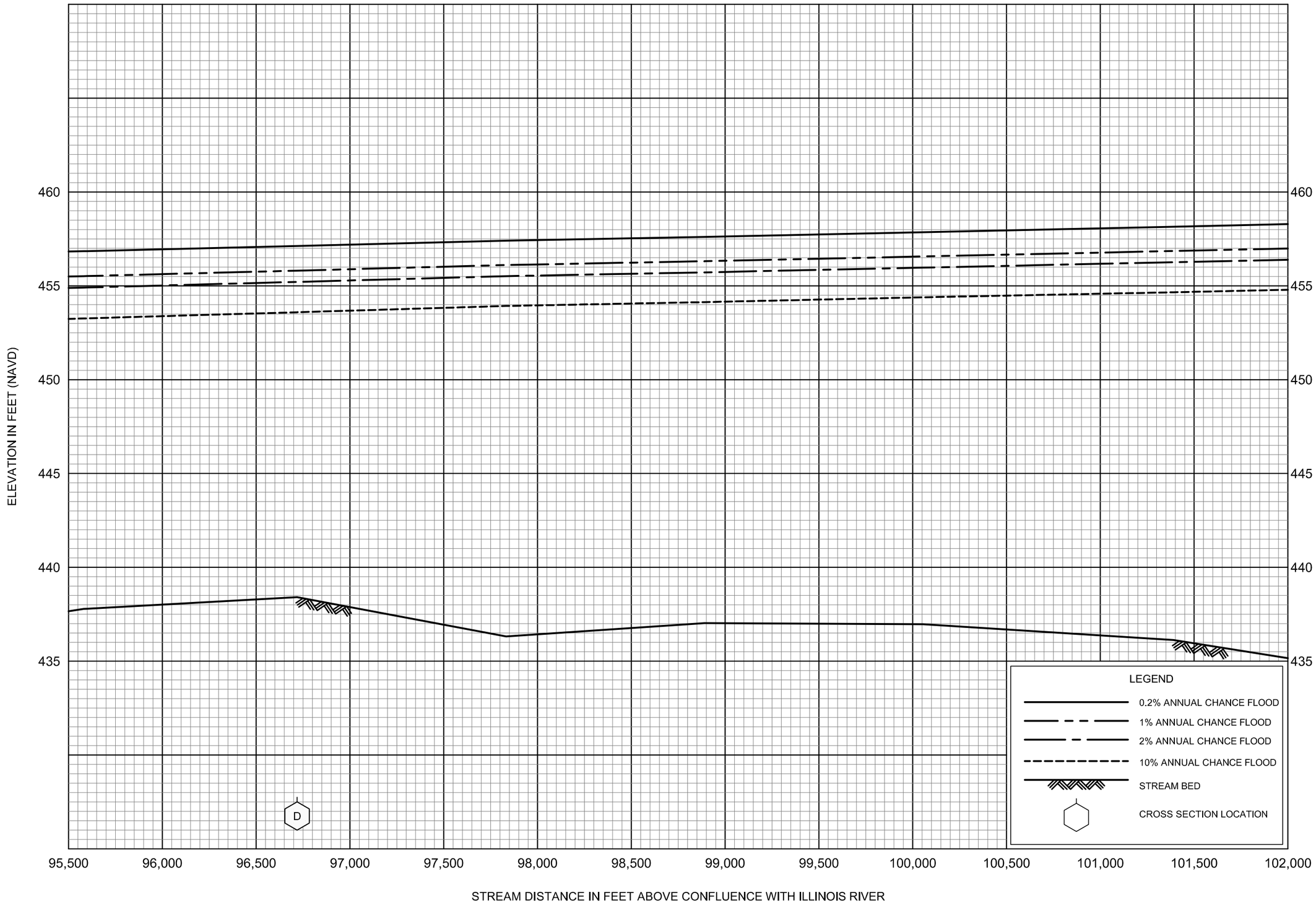
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



FLOOD PROFILES

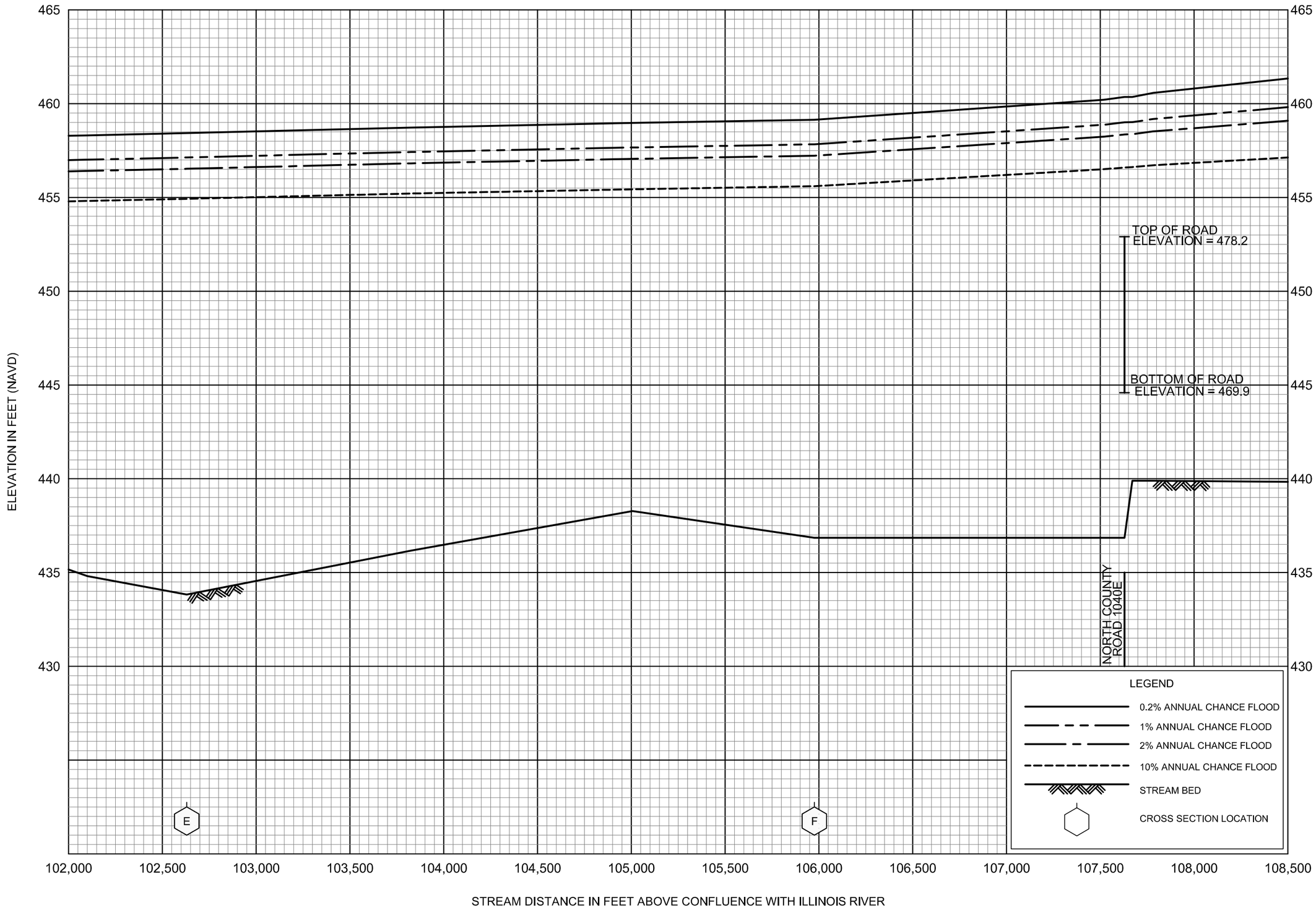
SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS

08P



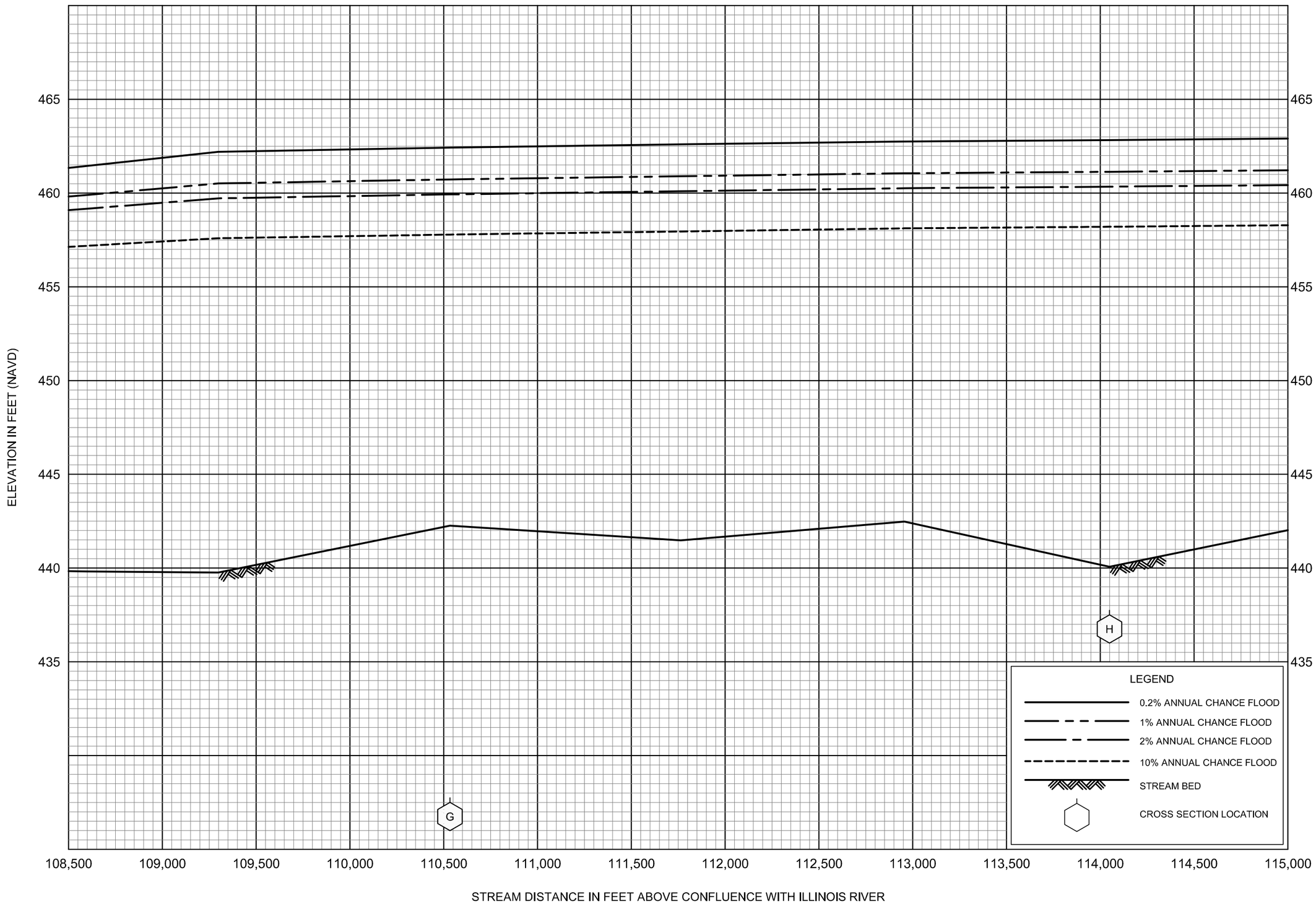
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



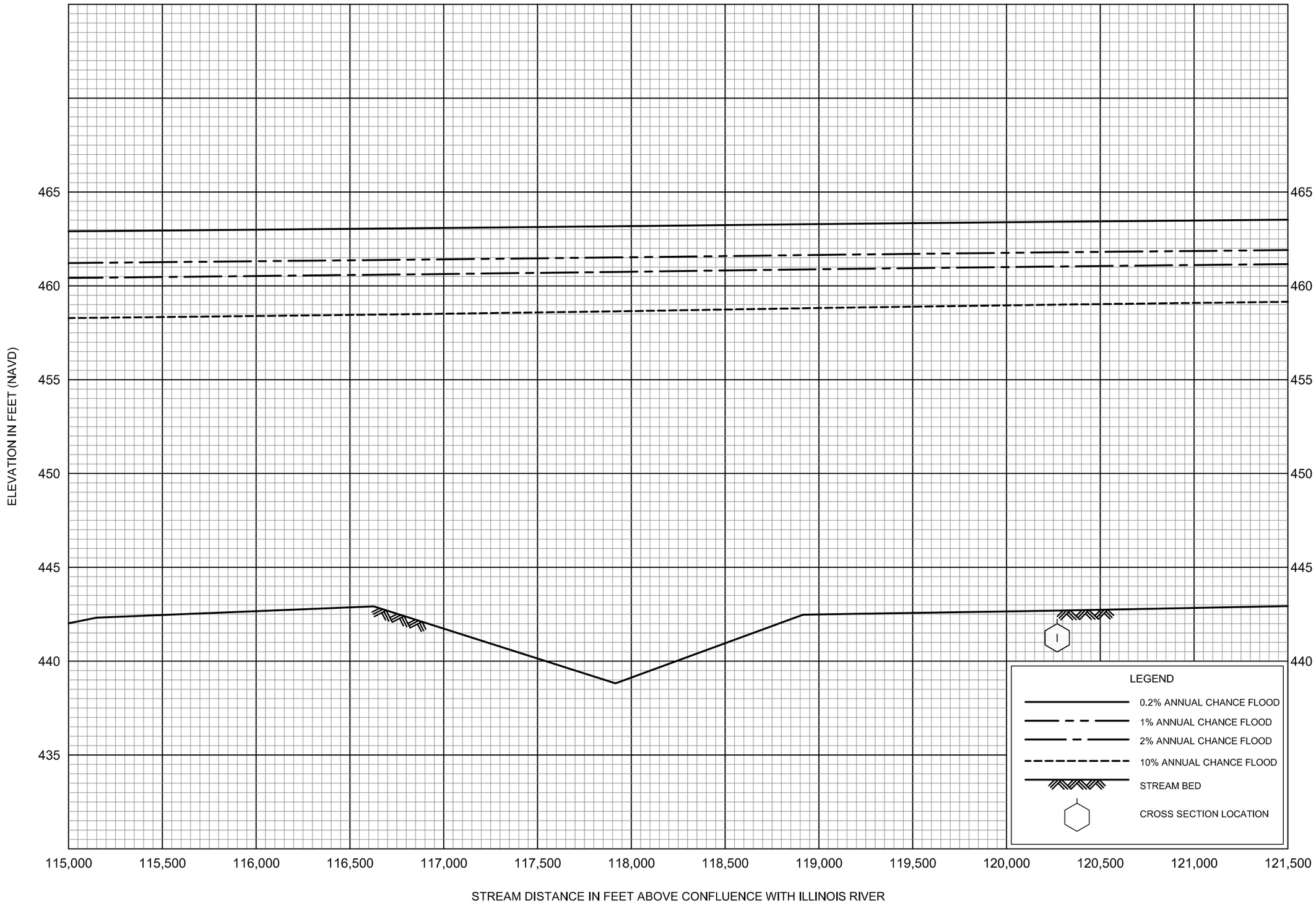
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



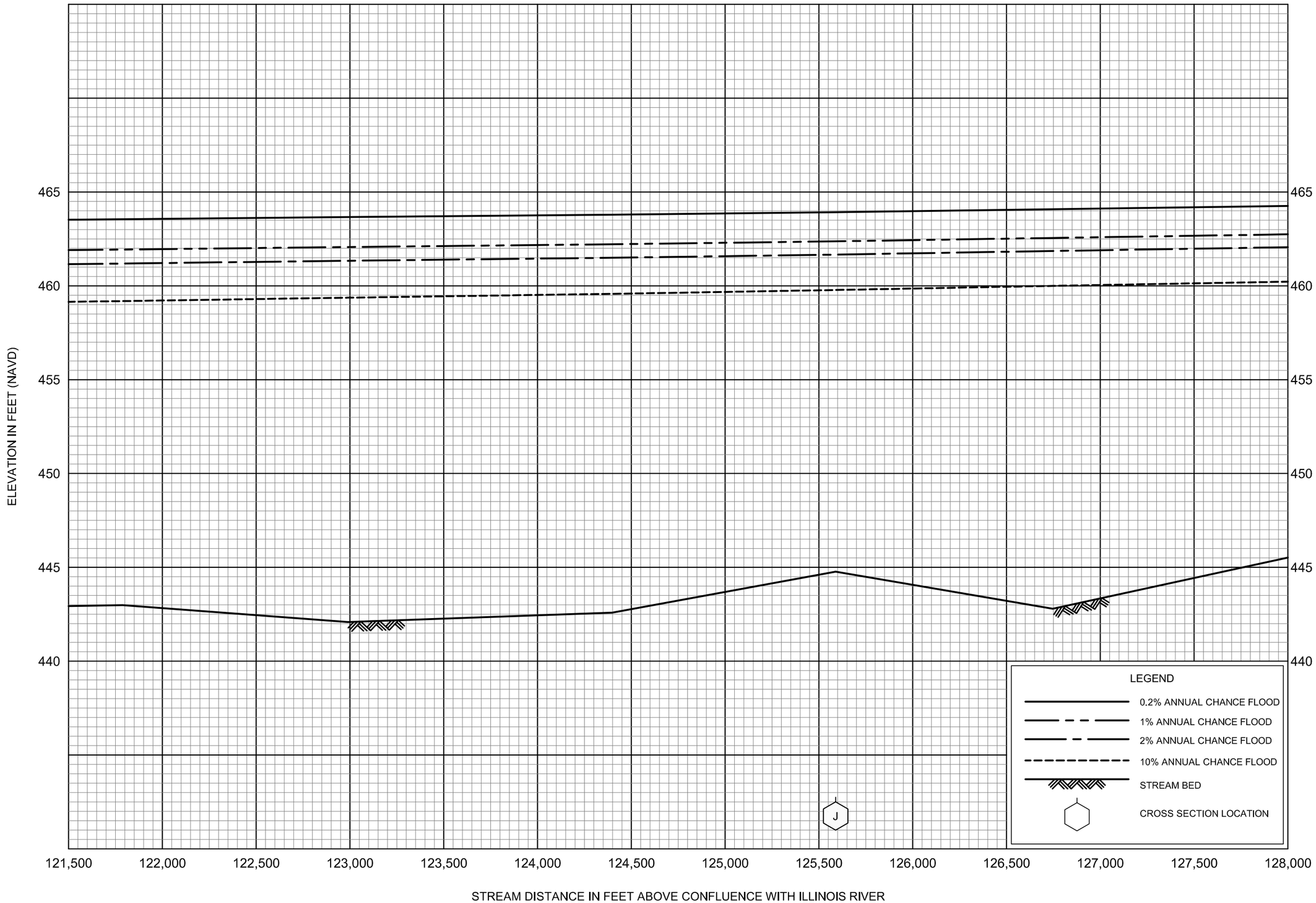
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



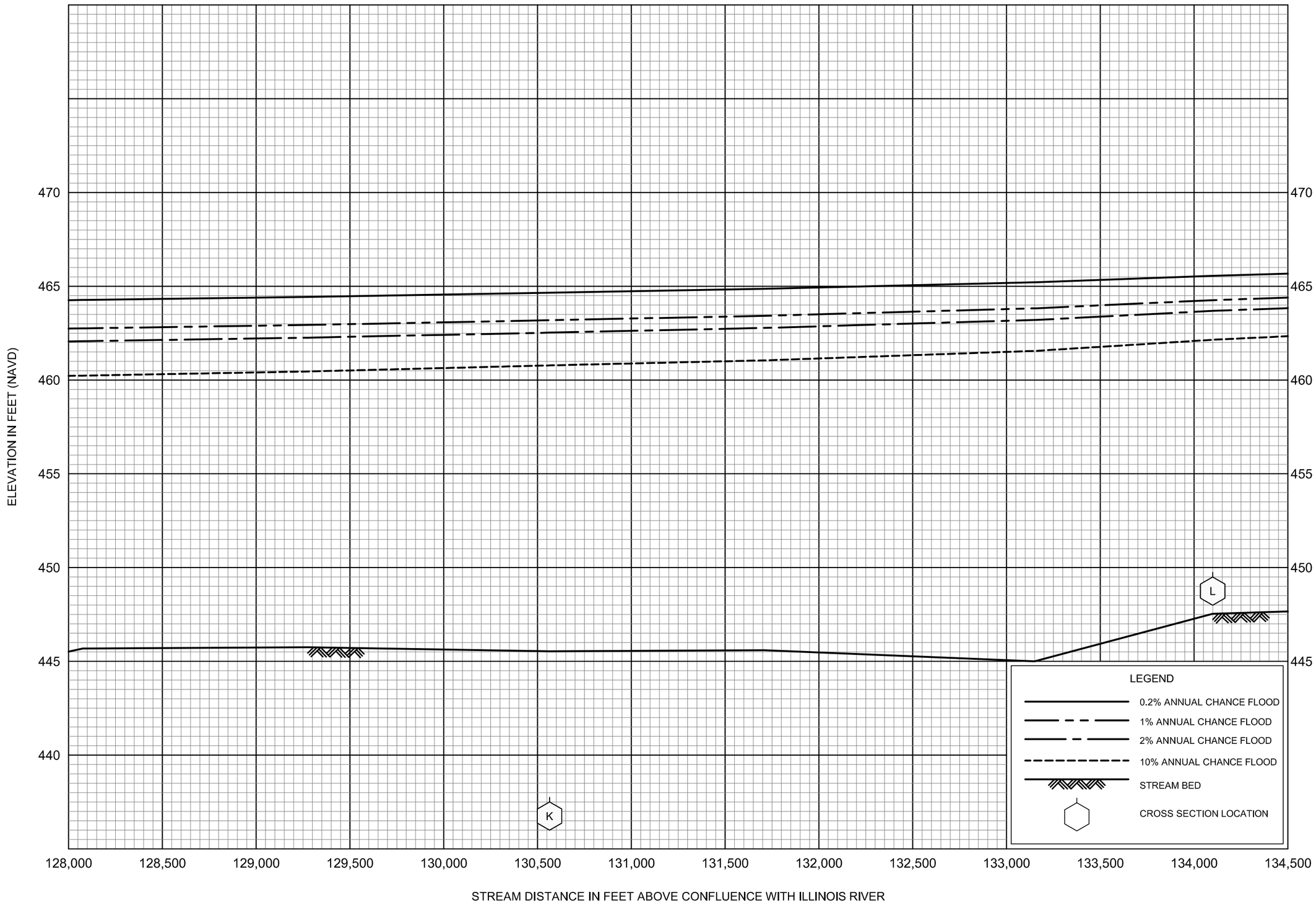
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



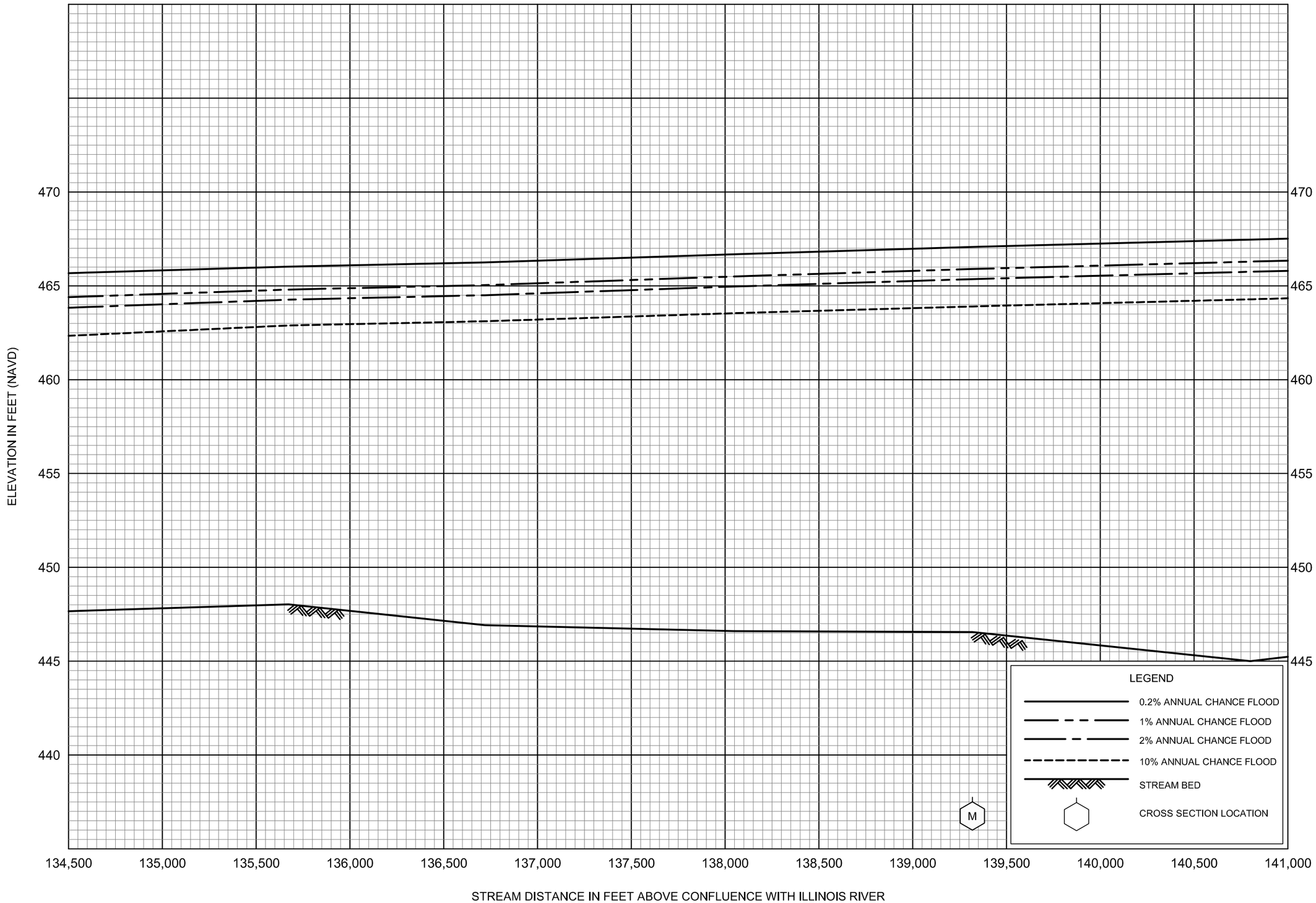
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



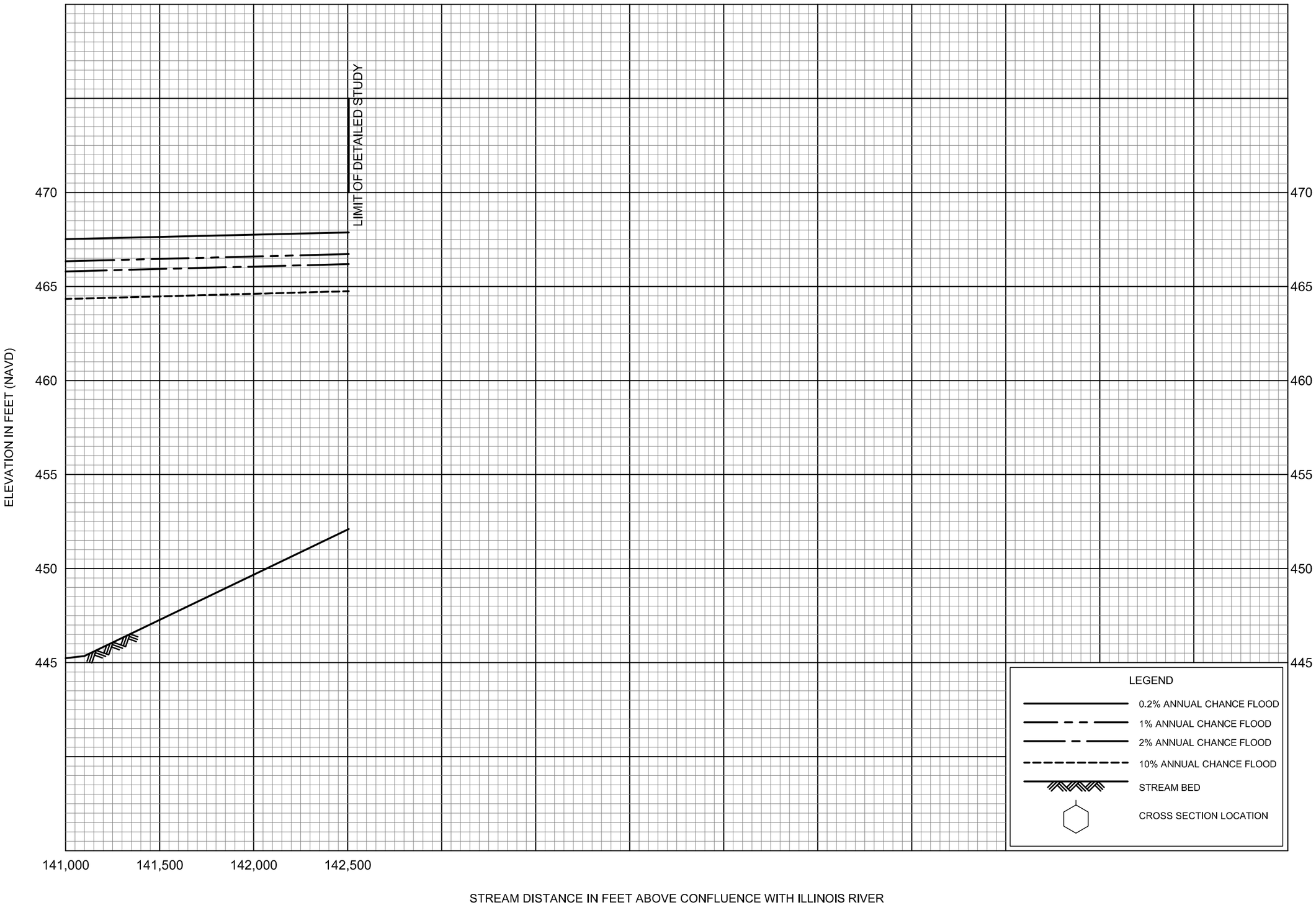
FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS



FLOOD PROFILES

SANGAMON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MASON COUNTY, IL

AND INCORPORATED AREAS