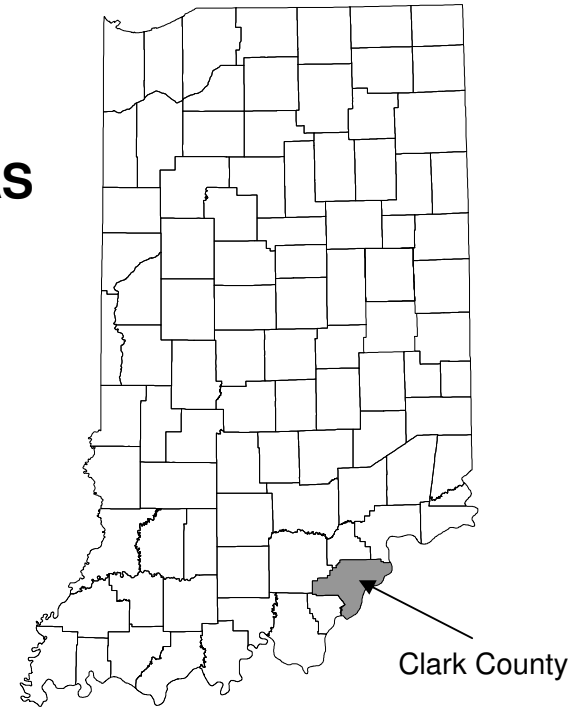
FLOOD INSURANCE STUDY

CLARK COUNTY, INDIANA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BORDEN, TOWN OF	180464
CHARLESTOWN, CITY OF	180025
CLARK COUNTY (UNINCORPORATED AREAS)	180426
CLARKSVILLE, TOWN OF	180026
JEFFERSONVILLE, CITY OF	180027
SELLERSBURG, TOWN OF	180028
UTICA, TOWN OF	180487



REVISED PRELIMINARY:
AUGUST 31, 2012

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
18019CV000A

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) report may not contain all data available within the Community Map Repository. Please 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 report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

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

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

Initial Countywide FIS Effective Date: To Be Determined

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FLOOD INSURANCE STUDY
CLARK COUNTY, INDIANA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and Flood Insurance Rate Maps (FIRMs) in the geographic area of Clark County, Indiana, including the Cities of Charlestown and Jeffersonville; the Towns of Borden, Clarksville, Sellersburg, and Utica; and the unincorporated areas of Clark County (hereinafter referred to collectively as Clark 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. This information will also be used by Clark 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 CFR, 60.3.

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

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 System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

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

Precountywide Analyses

Information of the authority and acknowledgements for each of the new studies and previously printed FIS reports and FIRMs for communities within Clark County was compiled and is shown below:

Charlestown, City of:	The hydrologic and hydraulic analyses for Pleasant Run for the May 15, 1979, FIS report (Federal Insurance Administration (FIA), 1979b) were performed by the U.S. Army Corps of Engineers (USACE), Louisville District, for the FIA, under Inter-Agency Agreement No. IAA-H-7-76. The study was completed in August 1977.
	The annexations to the City of Charlestown for the November 5, 1986, FIS report (FEMA, 1986) were performed by FEMA.
Clark County (Unincorporated Areas):	The hydrologic and hydraulic analyses for Hamburg Creek Tributary, Lancassange Creek, Mill Creek, Muddy Fork, Ohio River, Silver Creek, and Woodland Court Tributary for the March 1980, FIS report (FIA, 1980a) were performed by Cole Associates, Inc. for the FIA, under Contract No. H-4023. The work was completed in August 28, 1979.
Clarksville, Town of:	The hydrologic and hydraulic analyses for Ohio River and Silver Creek for the February 3, 1981, FIS report (FIA, 1981) were performed by the USACE, Louisville District, for the FIA, under Inter-Agency Agreement No. IAA-H-15-72. The work was completed in September 1979.
Jeffersonville, City of:	The hydrologic and hydraulic analyses for Greenbriar Tributary, Hamburg Pike Tributary, Mill Creek, Ohio River, Silver Creek, and Woodland Creek Tributary for the February 1, 1979, FIS report (FIA, 1979a) were performed by the USACE, Louisville District, for the FIA, under Inter-Agency Agreement No. (IAA)-H-7-76, Project Order No. 25. The study was completed in December 1977.
	The revised hydraulic analysis for Greenbriar Tributary for the July 16, 1990, revised FIS report (FEMA, 1990) were performed by the USACE, Louisville District.

Sellersburg, Town of:	The hydrologic and hydraulic analyses for Muddy Fork and Silver Creek for the February 1980, FIS report (FIA, 1980b) were performed by Cole Associates, Inc., for the FIA, under Contract No. H-4023. The study was completed in May 1978.
Utica, Town of:	The hydrologic and hydraulic analyses for the Ohio River for the March 19, 1984, FIS report (FEMA, 1984) were obtained from the FIS for Clark County, Indiana (Unincorporated Areas) (FIA, 1980a). The study was completed in October 3, 1983.

There are no previous FIS reports completed for the Town of Borden.

This Countywide FIS Report

The hydrologic and hydraulic analyses for the approximate study of Lentzier Creek were performed by Christopher B. Burke Engineering, Ltd., on behalf of the Indiana Department of Natural Resources (IDNR), under Indiana Public Works Project Number E400203. The hydrologic and hydraulic analyses for the detailed study of Lick Creek, Muddy Fork, and Plum Run were performed by the INDR. The hydrologic and hydraulic analyses for the detailed study of the Ohio River were performed by the USACE. The IDNR managed the production of this study as part of their Cooperating Technical Partner agreement with the FEMA dated April 29, 2004, which was defined by the IDNR Mapping Activity Statement 05-02 dated June 23, 2005, and funded under agreement number EMC-2005-GR-7022.

Redelineation of Silver Creek was performed by Christopher B. Burke Engineering, Ltd., on behalf of the IDNR, under Indiana Public Works Project Number E400203. Conversion to the North American Vertical Datum of 1988 (NAVD) was performed by the IDNR.

Hydrologic analyses for interior drainage within the Jeffersonville-Clarksville, Indiana Local Flood Protection Project was completed by the USACE.

Base map information shown on the FIRM was derived from the 2005 Indiana Orthophotography produced at a scale of 1:2,400, from aerial photography dated Spring 2005. The projection used in the preparation of this map is Indiana State Plane East Zone, and the horizontal datum used is North American Datum of 1983 (NAD83), Geodetic Reference System 1980 (GRS80) spheroid.

1.3 Coordination

An initial meeting is held with representatives from FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied or restudied. A final meeting is held with representatives from FEMA, the community, and the study contractor to review the results of the study.

Precountywide Analyses

The initial and final meeting dates for previous FIS reports for Clark County and its communities are listed in Table 1.

Table 1 – CCO Meeting Dates for Pre-Countywide FIS

Community Name	FIS Date	Initial CCO Date	Final CCO Date
Charlestown, City of	May 15, 1979 November 5, 1986	February 1976 *	May 6, 1976 *
Clark County (Unincorporated Areas)	March 1980	March 1976	August 28, 1979
Clarksville, Town of	February 3, 1981	*	April 17, 1980
Jeffersonville, City of	February 1, 1979 July 16, 1990	February 1976 *	September 12, 1978 *
Sellersburg, Town of	February 1980	March 1976	June 26, 1979
Utica, Town of	March 19, 1984	*	October 3, 1983

*Data not available

This Countywide FIS Report

For this countywide FIS, an Initial CCO meeting was held on January 19, 2005, and was attended by the IDNR, and representatives from the Cities of Jeffersonville and Charlestown; the Towns of Attica and Borden; and Clark County.

The results of the countywide study were reviewed at the final CCO meeting held on _____, and attended by representatives of _____. All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Clark County, Indiana, including the incorporated communities listed in Section 1.1

All FIRM panels for Clark County have been revised, updated, and republished in countywide format as a part of this FIS. The FIRM panel index, provided as Exhibit 2, illustrates the revised FIRM panel layout.

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified during the initial CCO meeting. For this study, Lentzier Creek was studied using approximate methods. The

scope and methods of new approximate studies were proposed and agreed upon by FEMA, the IDNR, and Clark County.

For this countywide study, Lick Run and Muddy Fork were studied by detailed methods. Leveraged detailed studies for the Ohio River and Plum Run were also included. The previous detailed study for Silver Creek was redelineated based on topography provided by the communities in Clark County.

This FIS update also incorporates the determination of letters issued by FEMA resulting in map changes (Letters of Map Change, or LOMCs). Letters of Map Amendment (LOMAs) revalidated for this study are summarized in the Summary of Map Actions (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

Table 2 – Streams Studied By Detailed Methods

Greenbriar Tributary	Ohio River
Hamburg Pike Tributary	Pleasant Run
Lancassange Creek	Plum Run
Lick Run	Silver Creek
Mill Creek	Woodland Court Tributary
Muddy Fork	

Table 3 – Streams Studied By Approximate Methods

Bartle Knob Run	Miller Fork
Blue Lick Creek	Pleasant Run
Bowery Creek	Polk Run
Clegg Run	Right Branch Blue Lick Creek
East Fork Fourteenmile Creek	Rogers Run
Flag Run	Silver Creek
Fourteen Mile Creek	Sinking Fork Silver Creek
Hamburg Pike Tributary	Sticky Branch Blue Lick Creek
Henthorn Branch Fourteenmile Creek	Sugar Run
Left Branch Blue Lick Creek	West Fork Fourteenmile Creek
Lentzier Creek	West Fork Silver Creek
Lodge Creek	Wolf Run
Miller Branch	Wrong Branch

Table 4 – Scope of Study

Stream	Limits of Detailed Study
Lick Run	Confluence with Silver Creek to approximately 0.36 miles upstream of Coopers Lane
Muddy Fork	Confluence with Silver Creek to just upstream of West Street/Martinsburg Knob Road

Table 4 – Scope of Study *(continued)*

Stream	Limits of Leverage Study
Ohio River	County Boundary to County Boundary
Plum Run	Confluence with Silver Creek to approximately 0.80 miles upstream of Payne-Koehler Road
Stream	**Limits of Redelineation**
Lentzier Creek	Confluence with Ohio River to approximately 725 feet upstream of Patrol Road
Silver Creek	Confluence with Ohio River to Heil Road

In addition to the items listed in the previous table, the following stillwater flooding sources within the Jeffersonville-Clarksville, Indiana Local Flood Protection Project were studied by detailed methods:

Cane Run Ponding Area
Charlestown Road Ponding Area
Emery Crossing Ponding Area
Lincoln Avenue Ponding Area
Mill Creek Ponding Area

The following tabulation presents Letters of Map Revision (LOMR) incorporated into this countywide study:

LOMC	Case Number	Date Issued	Project Identifier
LOMR	07-05-4605P	October 31, 2007	Skyline Acres Section 3

2.2 Community Description

Clark County, located on the Ohio River in Southern Indiana, is less than one mile north of the City of Louisville, Kentucky and has an estimated population of 110,232 as of 2010 (U.S. Census Bureau, 2012). Clark County is bordered on the northeast by Jefferson County, on the north by Scott County, and on the west and southwest by Floyd County, all in Indiana. The county is bordered on the south by the Ohio River. The three largest cities and town in Clark County include the following: the City of Jeffersonville, located in the southernmost tip of the county, and across the Ohio River from the City of Louisville, Kentucky; the Town of Clarksville, which is immediately west of the City of Jeffersonville; and the City of Charlestown, situated in the central part of the county.

The climate is typical of the Midwest with hot, humid summers and cold winters. According to the National Oceanic and Atmospheric Administration (NOAA), temperatures average 74 degrees Fahrenheit (ºF) from June to August and 35 ºF from December to February. For the period of record between 1971 and 2000, annual average precipitation was approximately 45.6 inches (NOAA, 2002).

The majority of Clark County is situated on gently rolling hills, which rise moderately from the normal pool elevation of the Ohio River. However, sharp elevation differences near the streams that were studied, including the Ohio River, cause runoff in all tributary streams to be quite rapid. The soils in the study areas consist of shallow clays underlain by bedrock in the form of fissured limestone (Linsey, 1973).

The Town of Borden is located in northwestern Clark County, off of State Road 60. Until 1994, the town was known as the Town of New Providence. As of 2010, the community had an estimated population of 808 (U.S. Census Bureau, 2012).

The City of Charlestown is located in the flat to rolling upland portion of Clark County, near the Ohio River in southeastern Indiana. It is 13 miles from the City of Louisville, Kentucky; 126 miles from the City of Indianapolis, Indiana; 97 miles from the City of Cincinnati, Ohio; 277 miles from the City of St. Louis, Missouri; and 311 miles from the City of Chicago, Illinois. As of 2010, the community had an estimated population of 7,585 (U.S. Census Bureau, 2012).

The Town of Clarksville is located in the south central corner of Clark County in southeastern Indiana. It lies on the broad, relatively flat, Ohio River flood plain, directly across the river from the City of Louisville, Kentucky. As of 2010, the community had an estimated population of 21,724 (U.S. Census Bureau, 2012).

The City of Jeffersonville is located in southern Clark County in southern Indiana. The City of Jeffersonville is surrounded on the east and south by the City of Louisville, Kentucky, and on the north and west by Clark County. The City of Jeffersonville, the county seat of Clark County, is located on the Ohio River at the focal point of water, highway, rail, and air transportation networks in southern Indiana. The City of Louisville, Kentucky, is south and directly opposite the City of Jeffersonville. The City of Indianapolis, Indiana, to the north, and the City of Cincinnati, Ohio, to the northeast, are just over 100 miles distant via Interstate highways. The City of Chicago, Illinois, and the City of St. Louis, Missouri, are both within 300 miles. As of 2010, the community had an estimated population of 44,953 (U.S. Census Bureau, 2012).

The Town of Sellersburg, located in southeastern Indiana in the southern third of Clark County on the U.S. Highway 31 and Interstate highway 65, is six miles north of the City of Jeffersonville. Other towns nearby include the Town of Charlestown, 6.6 miles to the northeast, and the City of Memphis, 6.6 miles to the north. The Town of Sellersburg is surrounded by unincorporated areas of Clark County on the south, west, and east, and is situated primarily on gently sloping upland areas west of Silver Creek and south of Muddy Fork at elevations of 50 to 60 feet above these streams. Because of the sharp elevation differences outside the study area, runoff in all tributaries to Muddy Fork and Silver Creek, near the Town of Sellersburg, is quite rapid. As of 2010, the community had an estimated population of 6,128 (U.S. Census Bureau, 2012).

The Town of Utica is located in southeastern Clark County in southern Indiana. The Town of Utica is 7 river miles north of the City of Louisville, Kentucky on the Ohio River. It is surrounded on 3 sides by unincorporated areas of Clark County and its eastern boundary is the Indiana/Kentucky boundary on the Ohio River. Located mostly in the gently sloping Ohio River valley, the Town of Utica is surrounded by steeped slopes which rise to the rolling hills to west. Sharp elevation differences near the Ohio River cause runoff in all tributary streams to be quite rapid. As of 2010, the community had an estimated population of 776 (U.S. Census Bureau, 2012).

2.3 Principal Flood Problems

Areas along the Ohio River, including the towns and cities of Clarksville, Jeffersonville, Oak Park, Utica, Owen, and Bethlehem, are subject to flooding caused by the overflow of the Ohio River. The most noted floods of the Ohio River occurred in 1832, 1847, 1867, 1883, 1884, 1913, 1937, 1948, 1964 and 1997. The flood of 1937 is the worst on record and is considered to be greater than a 0.2-percent-annual-chance frequency flood. The river reached a crest in the Jefferson-Louisville area of 456.9 feet (NAVD) - 10.7 feet higher than the recorded crest of the 1884 flood (USACE, 1973). There were no monetary estimates of damage located in available sources. The table below indicates peak historic floods since the completion of the Jeffersonville-Clarksville Flood Protection Project:

Date	Elevation (feet, NAVD)
February 7, 1950	438.1
March 11, 1955	438.5
May 11, 1961	436.7
March 4, 1962	440.1
March 22, 1963	438.2
March 13, 1964	447.9
March 13, 1967	438.2
December 14, 1978	438.7
March 2, 1979	436.7
March 7, 1997	445.5

Also, areas along Silver Creek, Muddy Fork, and Lancassange Creek are subject to flooding caused by the overflows of these streams. Communities bordering Silver Creek include the Towns of Clarksville and Sellersburg; the census-designated place of Memphis; and the unincorporated Town of Cementville. Communities bordering Muddy Fork include the Towns of Borden and Sellersburg. Communities bordering Lancassange Creek include the census-designated place of Oak Park. The most noted floods on record in the Silver Creek-Muddy Fork basin are those of 1959 and 1964. The 1959 flood was approximately a 4.76-percent-annual-chance flood. The flood closed many schools in the area and made most major roads inaccessible (USACE, 1973).

Charlestown, City of: Low-lying areas of the City of Charlestown are subject to periodic flooding caused by overflow of Pleasant Run. The most severe flooding usually occurs in late winter or early spring as a result of heavy general rains.

Clarksville, Town of: The 1937 flood on the on the Ohio River was the greatest and most destructive flood in the history of the Town of Clarksville. On January 27, 1937, the river crested at an elevation of 458.1 (NAVD) at the lower gage. Flooding completely disrupted the life of the community, inundating practically the whole city. Long before the crest was reached, schools, churches, businesses and industrial plants were closed. Flood damage ran into the millions of dollars.

Jeffersonville, City of: Because the core area of the City of Jeffersonville is protected from major Ohio River flooding by a levee and floodwall system, the resultant principal flood problem is to development outside the protection works and some flooding from interior damage.

Sellersburg, Town of: A major portion of the Town of Sellersburg is subject to flooding caused by the overflows of Muddy Fork and Silver Creek. Floods causing major damage occurred in 1937, 1945, and 1959. These floods were coincidental with high flows of the Ohio River. However, due to the topographical characteristics of the areas surrounding Muddy Fork and Silver Creek, floods causing at least moderate damage have occurred frequently. Since 1954, when the U.S. Geological Survey (USGS) gage on Silver Creek at the Town of Sellersburg was installed, a gage height of 16.0 feet has been exceeded more than 15 times (overbanks flooding occurs at a gage height of 10.0 feet). The most notable of these floods occurred in 1959 (30.98 feet), 1960 (28.1 feet), and 1964 (30.4 feet). More recently, the Town of Sellersburg gage reached 24.46 feet in 2004 and 17 feet in 2001 and 1995.

Utica, Town of: The Town of Utica, located on the Ohio River, has been flooded by the major Ohio River floods, such as 1937, 1964, and 1997.

2.4 Flood Protection Measures

The principal structural method for flood control in Clark County is the floodwall and levee system that protects an area of 4,190 acres, including most of the downtown portion of the City of Jeffersonville. The system is comprised of 5.1 miles of earth levee, 1.8 miles of concrete floodwall, 10 pumping plants for the removal of interior drainage during high river stages, and other necessary appurtenances. The project

was completed in 1949. The system provides protection against floods greater than 1-percent-annual-chance frequency levels. The levees and floodwalls are designed to be a minimum of 3 feet higher than the natural 1937 disaster.

The system of upstream tributary reservoirs that affects flood heights on the Ohio River at the City of Jeffersonville was taken into consideration for this study.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in Clark 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 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 Analysis

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

Precountywide Analyses

Standard and accepted hydrologic methods were used to develop discharge data on the study streams in Clark County.

The principal gaging station on the Ohio River used in defining the discharge-frequency, drainage-area relationships for this report was the McAlpine Dam and Locks Station in the City of Louisville, Kentucky. The drainage area is for the station is 91,170 square miles (USGS, 2009). Historical records at the McAlpine Station date from 1832 to the present.

A gaging station on Silver Creek, south of the Town of Sellersburg, was the source of data for defining discharge-frequency, drainage-area relationships for the creek. The station is at river mile 12.2, has a drainage area of 189 square miles, and has been in operation since October 1954 (USGS, 2009).

Since streamflow records were not available for Muddy Fork and Fourteen Mile Creek, regional analyses were performed by the IDNR to establish the peak discharges for floods of the selected recurrence intervals (USGS, 1974; Water Resources Council, 1982; USGS, date unknown). The USACE, Hydrologic Engineering Center (HEC), HEC-HMS modeling was used to determine the peak discharges for floods for Lancassange Creek.

The Colorado Urban Hydrograph Procedure (CUHP) developed the discharge data for Mill Creek, Hamburg Pike Tributary, and Woodland Court Tributary for the City of Jeffersonville, Indiana, FIS (FEMA, 1990; Denver Regional Council of Governments, 1971). The discharge of Pleasant Run was also developed using the CUHP.

This Countywide FIS Report

For the entire reaches of Lick Run and Muddy Fork, hydrologic analyses were performed using the USACE, HEC computer program, HEC-HMS, Version 3.4 (HEC, 2009). For Lentzier Creek, hydrologic analyses were performed using USACE, HEC computer program, HEC-HMS, Version 3.0.1 (HEC, 2006).

Frequency discharges for the entire length of the Ohio River are based upon 1976 discharge frequency curves developed by the USACE. Modified discharge frequency curves resulted from routing twelve representative floods for the Ohio River modified by the upstream reservoir system. That system included reservoirs completed or near completion in 1976 and is considered current in 2002. Data were plotted opposite original flood data on a grid containing a referenced flow reduction of natural flow and a new best-fit curve drawn. Total reductions were read from the new curve at selected natural flow frequencies, and subtracted from natural flows at those frequencies to obtain new modified-flow values.

The hydrologic analysis for Plum Run was provided by IDNR.

For the Jeffersonville-Clarksville flood protection system, the interior analysis considers interior rainfall events during both low river stages when gravity outlets are open and high river stages when the gravity outlets are closed and the performance of all pumping stations along the lines of protection. The USACE, HEC computer program, HEC-HMS, Version 3.4 (HEC, 2009) was used for this analysis. Subbasins draining through the line of protection are relatively small compared to the drainage area on the exterior side of the levee. Due to the relative size of the interior and exterior drainage areas, interior and exterior events can be assumed to be independent of one another. This analysis was used to determine 1-percent-annual-chance interior ponding elevations.

Peak discharge-drainage area relationships for each flooding source studied in detail are presented in Table 5.

Table 5 – 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
GREENBRIAR TRIBUTARY					
At confluence with Mill Creek	0.90	390	530	570	680
At Reeds Lane	0.80	370	510	540	650
At East 10th Street	0.70	355	480	515	615
HAMBURG PIKE TRIBUTARY					
At confluence with Mill Creek	1.50	690	960	1,090	1,410
At Hamburg Pike	0.50	365	520	590	770
LANCASSANGE CREEK					
At Utica Pike	6.72	2,180	3,030	3,420	4,350
At Lancassange Drive	5.65	2,000	2,725	3,100	3,900
At Middle Road	4.22	1,680	2,340	2,680	3,225
At Allison Lane	3.28	1,450	2,020	2,300	2,930
At Capitol Hills Drive	1.93	1,050	1,450	1,670	2,130
MILL CREEK					
At confluence of Hamburg Pike Tributary	2.40	910	1,170	1,270	1,490
MUDDY FORK					
At confluence with Silver Creek	66.50	8,330	11,700	13,100	16,800
LICK RUN					
At confluence with Silver Creek	*	*	*	2,367	*
At Interstate Highway 265	*	*	*	1,575	*
OHIO RIVER					
At McAlpine Dam	91,170.00	600,000	750,000	814,000	952,000
PLEASANT RUN					
At Spring Street	1.28	850	1,200	1,350	1,690
At Monroe Street	0.61	540	770	860	1,070
At Glendale Drive	0.27	335	480	535	610
PLUM RUN					
At confluence with Silver Creek	2.19	*	*	1,650	*
At Payne-Kohler Road	1.73	*	*	1,550	*
SILVER CREEK					
At Blackiston Mill Dam	209.00	16,250	23,000	25,500	33,000
Just upstream of the confluence of Lick Run	191.00	15,400	21,800	24,000	31,000
Just upstream of the confluence of Pleasant Run	176.00	14,600	20,800	23,200	29,800
Approximately 5.1 miles downstream of the confluence of Muddy Fork	165.00	14,600	20,800	23,200	29,800

*Data not available

Table 5 – Summary of Discharges *(continued)*

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
SILVER CREEK *(continued)*					
Just upstream of the confluence of Muddy Fork	98.70	10,600	14,800	16,500	21,000
Just upstream of the confluence of Sinking Fork Silver Creek	68.80	8,400	12,000	13,400	17,500
Just upstream of the confluence of Blue Lick Creek	43.70	6,500	9,200	10,200	13,200
Just upstream of the confluence of Miller Fork	24.90	4,700	6,550	7,300	9,300
WOODLAND COURT TRIBUTARY					
At confluence with Lancassange Creek	0.81	625	870	995	1260
At Woodland Court	0.54	490	680	780	1,000

Stillwater elevations for Clark County are presented in Table 6.

Table 6 – Summary of Stillwater Elevations

Flooding Source	Water Surface Elevations (Feet NAVD) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
CANE RUN PONDING AREA	*	*	430.9	*
CHARLESTOWN ROAD PONDING AREA	*	*	450.0	*
EMERY CROSSING PONDING AREA	*	*	448.1	*
LINCOLN AVENUE PONDING AREA	*	*	448.9	*
MILL CREEK PONDING AREA	*	*	436.8	*

*Data not available

3.2 Hydraulic Analysis

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 table 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 report in conjunction with the data shown on the FIRM.

Precountywide Analyses

Cross section data for Silver Creek and Muddy Fork were obtained from aerial photographs enlarged to 1:4,800 and USGS quadrangle maps with 10-foot contour intervals enlarged to a scale of 1:6,000 (Air-Maps, Inc., 1976; USGS, various dates). Below-water sections were obtained by field measurements. Elevations and structural data for bridges were obtained from Indiana State Highway Bridge Plans or by direct field measurement.

Cross section data for Greenbriar Tributary, Hamburg Pike Tributary, Mill Creek, and Woodland Court Tributary were based on 1:24,000 quadrangle maps with a contour interval of 10 feet (USGS, various dates) and on field reconnaissance. Lancassange Creek and Plum Run cross sections were obtained from 2-foot maps compiled by photogrammetric methods for the March 1980 study for Clark County and USGS quadrangle map data. Cross section data for Pleasant Run were field surveyed. Cross sections for the Ohio River were determined from detailed mapping with bathymetry (1" = 600' with 5-foot contour intervals), developed for the USACE - Ohio River navigation studies.

The starting water-surface elevations for Silver Creek and Muddy Fork were computed from the measured high water marks of historical floods. The starting water-surface elevations for Lancassange Creek were computed from Manning's equation, assuming uniform flow close to the mouth and not considering backwater from the Ohio River. Starting water-surface elevations for Mill Creek and Pleasant Run were developed by the slope-area method. Starting water-surface elevations for Woodland Court Tributary and Hamburg Pike Tributary were obtained from the profiles of Mill Creek at the confluence points. The starting water-surface elevations of Greenbriar Tributary were obtained from headwater determinations due to a drop inlet at the mouth. Starting water-surface elevations for Plum Run were computed using the slope-area method.

Previously published water surface profiles for Greenbriar Tributary, Hamburg Pike Tributary, Lancassange Creek, Mill Creek, Muddy Fork, Ohio River, Pleasant Run, Silver Creek, and Woodland Court Tributary were developed using the USACE, HEC computer program, HEC-2 (HEC, 1976). Profiles were then determined for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods and were drawn showing computed water-surface elevations to an accuracy of 0.5 feet (Exhibit 1).

This Countywide Analysis

For Lick Run and Muddy Fork, cross-sections were chosen based on topography.

Cross sections for the Ohio River were determined from detailed mapping with bathymetry (1" = 600' with 5-foot contour intervals), developed for the USACE - Ohio River navigation studies.

Cross section information for Plum Run was taken from aerial photography, topographic mapping, and pre-development data for Deer Run Subdivision (Paul Primavera and Associates, date unknown).

Water-surface elevations for Plum Run were computed using the USACE, HEC computer program, HEC-RAS, Version 3.0.1 (HEC, 2001). For Lick Run, Muddy Fork, and the Ohio River, water-surface elevations were computed using the USACE, HEC computer program, HEC-RAS, Version 3.1.1 (HEC, 2003).

For the new approximate study reaches, the USACE, HEC computer program, HEC-RAS, Version 3.1.3 (HEC, 2005) was used.

For the Ohio River, the starting water-surface elevations were obtained using gaged data and known elevation-discharge relationships at those locations. For Lick Run, a normal depth analysis was used to calculate starting water-surface elevations. For Muddy Fork, a known water-surface elevation was used as the starting water-surface elevation. For Plum Run, the slope-area method was used to determine starting water-surface elevations.

Flood profiles were prepared for all streams studied by detailed methods and show computed water-surface elevations for floods of the selected recurrence intervals. For this countywide FIS, flood profiles and approved LOMRs have been consolidated into continuous stream reaches and adjusted to reflect the current vertical datum as described in Section 3.3. 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 profile has been shown.

Channel and overbank roughness factors (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Channel and overbank roughness factors used in the detailed studies are summarized by stream in Table 7.

Table 7 – Channel and Overbank Roughness Factors

	Roughness Coefficients	
Stream	Main Channel	Overbanks
Greenbriar Tributary	0.055	0.1
Hamburg Pike Tributary	0.055	0.06
Lancassange Creek	0.06 – 0.10	0.08 – 0.15
Lick Run	*	*
Mill Creek	0.05	0.075
Muddy Fork	0.12	0.14
Ohio River	0.027 – 0.030	0.04 – 0.05
Pleasant Run	0.045	0.06
Plum Run	*	*
Silver Creek	0.05 – 0.06	0.10 – 0.12
Woodland Court Tributary	0.06	0.075

*Data Not Available

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).

The profile baselines depicted on the FIRM represent the hydraulic modeling baselines that match the flood profiles on this FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the Special Flood Hazard Area.

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

3.3 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 in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the finalization of NAVD, many FIS reports and FIRMs are being prepared using NAVD as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD. Structure and ground elevations in the community must, therefore, be referenced to NAVD. It is important to note that adjacent communities may be referenced to NGVD. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities. In this revision, a vertical datum conversion of -0.48 foot was calculated at the centroid of the county and used to convert all elevations in Clark County from NGVD to NAVD using the National Geodetic Survey's (NGS) VERTCON online utility (NGS, date unknown).

For more information on NAVD, see the FEMA publication entitled Converting the NFIP to NAVD, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, in Silver Spring, Maryland.

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

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 the Floodway Data table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local 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 Lick Run and Muddy Fork, the 1- and 0.2-percent-annual-chance floodplain boundaries were delineated between cross sections using digital topography, with 2-foot contours, provided by IDNR. This digital topography was also used to delineate floodplain boundaries for Silver Creek, along with scanned digital topography and USGS topographic maps (USGS, various dates).

For streams studied by detailed methods, floodplain boundaries have been delineated using the flood elevations determined at each cross section. For Greenbriar Tributary, Hamburg Pike Tributary, Lancassange Creek, Mill Creek, Ohio River, Pleasant Run, and Woodland Creek Tributary, the 1- and 0.2-percent-annual-chance boundaries were interpolated between cross sections using USGS topographic maps (USGS, various dates). For Plum Run, the 1-percent-annual-chance boundaries were interpolated between cross sections using digital topography with a 2-foot contour inverval (Paul Primavera and Associates, date unknown).

The 1-percent-annual-chance floodplains for all streams studied by approximate methods, except Lentzier Creek, were taken from the FIS for Clark County (Unincorporated Areas) (FIA, 1980a). The floodplain boundaries for Lentzier Creek were delineated using USGS topographic maps (USGS, various dates).

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 the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries

may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections in Table 8. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
GREENBRIAR TRIBUTARY								
A	0.020	171	592	1.0	453.0	453.0	453.1	0.1
B	0.280	247[2]	714	0.8	453.3	453.3	453.4	0.1
C	0.320	61	275	2.0	453.4	453.4	453.5	0.1
D	0.410	41	192	2.8	453.8	453.8	453.9	0.1
E	0.450	47	192	2.8	454.8	454.8	454.9	0.1
F	0.500	42	163	3.2	455.0	455.0	455.1	0.1
G	0.565	52	178	2.9	455.5	455.5	455.6	0.1
HAMBURG PIKE TRIBUTARY								
A	0.040	140[2]	247	4.4	446.8	446.8	446.9	0.1
B	0.130	155	499	2.1	449.1	449.1	449.2	0.1
C	0.170	256[2]	953	1.1	451.0	451.0	451.0	0.0
D	0.650	101[2]	148	5.6	454.4	454.4	454.5	0.1
E	1.140	171	397	1.5	463.5	463.5	463.6	0.1

[1] MILES ABOVE CONFLUENCE WITH MILL CREEK
[2] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

GREENBRIAR TRIBUTARY - HAMBURG PIKE TRIBUTARY

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LANCASSANGE CREEK								
A	0.566	300[3]	1,069	3.2	451.1	444.6[2]	444.6	0.0
B	0.880	220[3]	2,589	1.3	451.1	446.6[2]	446.6	0.0
C	1.240	160	1,908	1.8	451.1	448.5[2]	448.6	0.1
D	1.470	230[3]	1,942	1.8	451.4	451.4	451.5	0.1
E	1.591	200[3]	1,766	1.9	455.2	455.2	455.2	0.0
F	1.760	350[3]	2,679	1.2	457.0	457.0	457.0	0.0
G	1.960	200	1,720	1.8	457.8	457.8	457.8	0.0
H	2.171	360[3]	6,329	0.8	458.6	458.6	458.6	0.0
I	2.422	330[3]	844	1.9	459.9	459.9	459.9	0.0
J	2.720	325	1,621	1.4	463.3	463.3	463.4	0.1
K	2.991	100[3]	453	5.1	465.6	465.6	465.7	0.1
L	3.222	75[3]	471	3.5	467.7	467.7	467.8	0.1
M	3.462	220	2,082	0.8	469.3	469.3	469.3	0.0
N	3.834	300[3]	1,152	1.4	471.6	471.6	471.6	0.0
O	4.122	100[3]	1,169	1.4	475.6	475.6	475.6	0.0

[1] MILES ABOVE CONFLUENCE WITH OHIO RIVER
[2] ELEVATION COMPUTED WITHOUT CONSIDERING BACKWATER EFFECTS FROM OHIO RIVER
[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

LANCASSANGE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LICK RUN								
A	0.777	535[3]	2,802	1.0	461.2	446.0[2]	446.1	0.1
B	1.000	529[3]	2,425	1.0	461.2	446.4[2]	446.5	0.1
C	1.098	755	3,280	0.7	461.2	446.5[2]	446.6	0.1
D	1.478	405	1,277	1.9	461.2	447.6[2]	447.7	0.1
E	1.569	299	1,423	1.7	461.2	448.2[2]	448.3	0.1
F	1.715	280	1,244	1.9	461.2	448.8[2]	448.9	0.1
G	1.770	214[3]	1,087	2.2	461.2	449.1[2]	449.2	0.1
H	1.934	101[3]	493	3.2	461.2	450.8[2]	450.8	0.0
I	1.992	150	776	2.0	461.2	451.2[2]	451.3	0.1
J	2.077	66	430	3.7	461.2	451.5[2]	451.6	0.1
K	2.194	155	808	2.0	461.2	452.7[2]	452.8	0.1
L	2.386	238	1,356	0.6	461.2	453.0[2]	453.1	0.1
M	2.474	449[3]	2,380	0.3	461.2	453.0[2]	453.1	0.1

[1] MILES ABOVE CONFLUENCE WITH SILVER CREEK

[2] ELEVATION COMPUTED WITHOUT CONSIDERING BACKWATER EFFECTS FROM SILVER CREEK

[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
MILL CREEK								
A	1.750	288[2]	2,197	0.8	441.9	441.9	442.0	0.1
B	1.910	262[2]	1,757	1.0	442.3	442.3	442.4	0.1
C	1.980	90	813	2.1	442.8	442.8	442.9	0.1
D	2.100	159	1,081	1.6	443.1	443.1	443.1	0.0
E	2.180	297	1,161	1.6	443.8	443.8	443.9	0.1
F	2.310	117	837	2.2	444.0	444.0	444.1	0.1
G	2.400	136[2]	903	2.0	444.2	444.2	444.3	0.1
H	2.660	87[2]	654	1.9	445.0	445.0	445.1	0.1
I	2.780	53[2]	412	3.1	445.3	445.3	445.4	0.1
J	2.900	75	570	2.2	445.9	445.9	446.0	0.1
K	3.300	38[2]	372	2.9	447.9	447.9	448.0	0.1

[1] MILES ABOVE CONFLUENCE WITH OHIO RIVER

[2] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
MUDDY FORK								
A	3.182	3,592	24,895	0.5	472.4	472.4	472.5	0.1
B	3.844	2,830	14,396	1.0	472.7	472.7	472.7	0.0
C	4.921	2,685	9,468	1.4	474.5	474.5	474.6	0.1
D	5.815	2,633	7,531	1.8	477.1	477.1	477.2	0.1
E	6.149	2,177	8,518	1.6	480.0	480.0	480.1	0.1
F	6.518	1,673	7,585	1.5	481.5	481.5	481.6	0.1
G	6.780	1,696	6,813	1.6	482.1	482.1	482.1	0.0
H	7.003	1,534	6,870	1.6	482.6	482.6	482.7	0.1
I	7.594	1,524	7,332	1.5	486.5	486.5	486.5	0.0
J	7.762	2,266	8,394	1.3	486.9	486.9	486.9	0.0
K	8.017	2,370	9,300	1.2	487.6	487.6	487.7	0.1
L	8.239	2,541	8,380	1.3	488.2	488.2	488.3	0.1
M	8.728	2,225	10,480	1.4	490.1	490.1	490.2	0.1
N	9.098	2,514	8,321	1.2	490.6	490.6	490.7	0.1
O	10.064	2,230	5,809	1.6	494.9	494.9	494.9	0.0
P	10.727	1,915	5,559	1.7	496.7	496.7	496.7	0.0
Q	11.337	2,958[2]	11,179	0.8	501.2	501.2	501.3	0.1
R	12.555	1,571	3,977	2.2	509.0	509.0	509.0	0.0
S	12.703	1,182	3,010	2.3	510.0	510.0	510.1	0.1
T	12.809	1,297	3,851	1.8	510.8	510.8	510.9	0.1
U	12.905	1,460	3,605	1.9	511.2	511.2	511.3	0.1
V	13.590	1,128	2,309	2.8	515.8	515.8	515.8	0.0
W	13.788	1,435	3,864	1.7	518.0	518.0	518.0	0.0
X	13.973	1,340	3,907	1.7	520.0	520.0	520.0	0.0
Y	14.338	1,555	4,775	1.9	523.0	523.0	523.1	0.1
Z	14.765	1,727	5,888	0.9	525.9	525.9	526.0	0.1

[1] MILES ABOVE CONFLUENCE WITH SILVER CREEK

[2] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

MUDDY FORK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
MUDDY FORK (CONTINUED)								
AA	15.249	1,342	4,202	1.2	530.8	530.8	530.9	0.1
AB	15.525	992	3,464	1.5	534.6	534.6	534.6	0.0
AC	15.883	1,001	2,946	1.7	539.4	539.4	539.5	0.1
AD	16.076	720	2,131	2.4	541.9	541.9	542.0	0.1
AE	16.434	826	2,475	1.2	546.3	546.3	546.4	0.1
AF	16.774	209	899	3.3	550.3	550.3	550.4	0.1
AG	17.013	123	844	3.5	554.6	554.6	554.6	0.0
AH	17.191	108	691	4.3	556.1	556.1	556.1	0.0
AI	17.324	105	672	4.4	557.8	557.8	557.9	0.1
AJ	17.580	126	621	3.4	562.4	562.4	562.4	0.0
AK	17.849	135	780	2.7	566.0	566.0	566.0	0.0
AL	17.942	107	539	3.9	566.9	566.9	567.0	0.1
AM	18.085	90	495	4.2	568.9	568.9	568.9	0.0
AN	18.232	80	326	4.3	570.5	570.5	570.5	0.0
AO	18.439	75	295	4.7	575.1	575.1	575.1	0.0
AP	18.642	72	280	5.0	581.4	581.4	581.4	0.0
AQ	18.917	56	258	5.4	589.0	589.0	589.0	0.0
AR	19.156	87	289	4.8	596.3	596.3	596.4	0.1
AS	19.230	47	222	6.3	598.2	598.2	598.2	0.0
AT	19.521	46	156	9.0	608.5	608.5	608.5	0.0
AU	19.764	62	194	7.2	617.3	617.3	617.3	0.0
AV	19.880	53	281	5.0	623.7	623.7	623.7	0.0
AW	20.008	53/8[2]	252	5.6	629.8	629.8	629.8	0.0

[1] MILES ABOVE CONFLUENCE WITH SILVER CREEK
[2] TOTAL WIDTH/WIDTH WITHIN COUNTY

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
OHIO RIVER								
A	603.500	3,718/511	178,376	4.6	449.7	449.7	449.8	0.1
B	603.000	2,948/527	130,276	6.2	449.7	449.7	449.8	0.1
C	602.500	2,973/433	154,875	5.2	450.0	450.0	450.0	0.0
D	602.000	3,454/432	168,112	4.8	450.0	450.0	450.1	0.1
E	601.500	2,902/197	139,856	5.8	450.0	450.0	450.1	0.1
F	601.000	2,541/305	139,439	5.8	450.1	450.1	450.2	0.1
G	600.500	2,170/209	134,924	6.0	450.1	450.1	450.2	0.1
H	600.000	2,880/343	151,463	5.4	450.3	450.3	450.4	0.1
I	599.500	3,273/675	159,033	5.1	450.4	450.4	450.5	0.1
J	599.000	3,560/1,062	164,123	4.9	450.6	450.6	450.7	0.1
K	598.500	3,727/1,334	171,237	4.7	450.8	450.8	450.9	0.1
L	598.000	3,827/924	172,445	4.7	450.9	450.9	451.0	0.1
M	597.500	4,366/967	193,933	4.2	451.2	451.2	451.3	0.1
N	597.250	5,219/967	211,280	3.8	451.3	451.3	451.4	0.1
O	596.750	6,001/1,253	217,731	3.7	451.3	451.3	451.4	0.1
P	596.500	6,055/1,377	202,709	4.0	451.4	451.4	451.5	0.1
Q	596.000	4,587/897	187,876	4.3	451.5	451.5	451.6	0.1
R	595.750	3,700/505	161,632	5.0	451.5	451.5	451.6	0.1
S	595.500	3,587/239	161,488	5.0	451.5	451.5	451.6	0.1
T	595.000	2,769/138	139,444	5.8	451.6	451.6	451.7	0.1
U	594.500	3,274/271	152,979	5.3	451.9	451.9	452.0	0.1
V	594.000	3,857/269	169,392	4.8	452.1	452.1	452.2	0.1
W	593.500	3,665/209	169,303	4.8	452.2	452.2	452.3	0.1
X	593.000	3,930/240	172,768	4.7	452.4	452.4	452.5	0.1
Y	592.500	4,943/285	193,728	4.2	452.5	452.5	452.6	0.1
Z	592.000	4,687/235	208,686	3.9	452.7	452.7	452.8	0.1

[1] MILES BELOW PITTSBURGH
[2] TOTAL WIDTH/WIDTH WITHIN COUNTY

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

OHIO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
OHIO RIVER (CONTINUED)								
AA	591.500	4,047/300	178,506	4.5	452.7	452.7	452.8	0.1
AB	591.000	3,630/640	163,766	5.0	452.7	452.7	452.8	0.1
AC	590.500	2,878/479	144,785	5.6	452.8	452.8	452.9	0.1
AD	590.000	2,294/286	129,993	6.2	452.8	452.8	452.9	0.1
AE	589.500	2,597/346	139,552	5.8	453.1	453.1	453.2	0.1
AF	589.000	2,871/117	146,812	5.5	453.2	453.2	453.3	0.1
AG	588.500	2,746/167	138,623	5.9	453.3	453.3	453.4	0.1
AH	588.000	2,991/183	147,017	5.5	453.5	453.5	453.6	0.1
AI	587.500	2,955/170	148,398	5.5	453.6	453.6	453.7	0.1
AJ	587.000	3,240/208	153,296	5.3	453.8	453.8	453.9	0.1
AK	586.500	3,288/183	159,594	5.1	453.9	453.9	454.0	0.1
AL	586.000	3,546/205	162,407	5.0	454.1	454.1	454.2	0.1
AM	585.500	3,268/246	155,347	5.2	454.2	454.2	454.3	0.1
AN	585.000	3,230/793	152,853	5.3	454.3	454.3	454.4	0.1
AO	584.500	2,651/723	135,927	6.0	454.3	454.3	454.4	0.1
AP	584.000	2,619/781	131,432	6.2	454.4	454.4	454.5	0.1
AQ	583.500	2,643/778	137,822	5.9	454.6	454.6	454.7	0.1
AR	583.000	2,934/423	159,649	5.1	454.9	454.9	455.0	0.1
AS	582.500	3,415/259	162,165	5.0	455.0	455.0	455.1	0.1
AT	582.000	4,095/180	165,848	4.9	455.2	455.2	455.3	0.1
AU	581.500	2,886/173	149,976	5.4	455.3	455.3	455.4	0.1
AV	581.000	2,636/174	140,657	5.8	455.3	455.3	455.5	0.1
AW	580.500	2,433/197	132,941	6.1	455.4	455.4	455.5	0.1
AX	580.000	2,128/250	118,007	6.9	455.4	455.4	455.5	0.1
AY	579.500	2,510/181	128,536	6.3	455.7	455.7	455.8	0.1
AZ	579.000	2,765/172	138,157	5.9	456.0	456.0	456.1	0.1

[1] MILES BELOW PITTSBURGH
[2] TOTAL WIDTH/WIDTH WITHIN COUNTY

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

OHIO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
OHIO RIVER (CONTINUED)								
BA	578.500	3,235/533	145,258	5.6	456.1	456.1	456.3	0.1
BB	578.000	2,467/374	136,375	6.0	456.3	456.3	456.4	0.1
BC	577.500	2,187/503	126,164	6.4	456.3	456.3	456.4	0.1
BD	577.000	2,353/517	125,912	6.4	456.5	456.5	456.6	0.1
BE	576.500	2,574/707	132,387	6.1	456.7	456.7	456.8	0.1
BF	576.000	2,672/704	131,863	6.2	456.8	456.8	456.9	0.1
BG	575.200	2,600/459	144,504	5.6	457.2	457.2	457.3	0.1
BH	574.200	3,713/235	165,511	4.9	457.6	457.6	457.7	0.1
BI	573.200	3,280/202	148,770	5.5	457.8	457.8	457.9	0.1
BJ	572.500	2,682/238	135,618	6.0	458.0	458.0	458.1	0.1
BK	572.000	2,648/229	136,323	6.0	458.2	458.2	458.3	0.1
BL	571.500	2,492/296	129,952	6.2	458.3	458.3	458.4	0.1

[1] MILES BELOW PITTSBURGH
[2] TOTAL WIDTH/WIDTH WITHIN COUNTY

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
PLEASANT RUN								
A	7.070	82	252	5.7	548.4	548.4	548.5	0.1
B	7.170	71	294	4.9	552.9	552.9	553.0	0.1
C	7.250	102	363	3.7	555.6	555.6	555.6	0.0
D	7.350	47	159	8.5	559.9	559.9	560.0	0.1
E	7.440	51	226	6.0	564.1	564.1	564.2	0.1
F	7.525	50	197	6.8	566.3	566.3	566.3	0.0
G	7.750	98	262	4.4	572.7	572.7	572.8	0.1
H	7.760	150	380	3.0	576.2	576.2	576.2	0.0
I	7.785	150	476	2.4	577.8	577.8	577.8	0.0
J	7.850	200	491	2.3	579.2	579.2	579.2	0.0
K	7.860	200	578	1.9	579.3	579.3	579.3	0.0
L	7.910	265	141	8.1	579.4	579.4	579.4	0.0
M	8.000	390	665	1.6	582.1	582.1	582.1	0.0
N	8.100	280	516	2.1	587.8	587.8	587.8	0.0
O	8.125	220	934	1.2	588.0	588.0	588.1	0.1
P	8.200	174	624	1.6	588.1	588.1	588.2	0.1
Q	8.380	94	198	4.7	590.7	590.7	590.8	0.1
R	8.495	45	124	6.9	593.2	593.2	593.3	0.1
S	8.680	46	131	6.2	597.9	597.9	598.0	0.1
T	8.755	139	320	1.8	599.8	599.8	599.9	0.1
U	8.830	96	107	5.0	602.2	602.2	602.3	0.1
V	8.880	71/10[2]	90	5.9	603.4	603.4	603.5	0.1

[1] MILES ABOVE CONFLUENCE WITH SILVER CREEK
[2] TOTAL WIDTH/WIDTH WITHIN STUDIED AREA

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
PLUM RUN								
A	0.405	254	872	3.7	454.5	441.2[2]	441.3	0.1
B	0.505	362	1,051	3.2	454.5	441.7[2]	441.8	0.1
C	0.553	338	822	4.1	454.5	442.0[2]	442.1	0.1
D	0.626	190	552	5.9	454.5	442.6[2]	443.7	0.1
E	0.679	235	595	5.1	454.5	443.4[2]	443.5	0.1
F	0.806	173	544	5.2	454.5	444.9[2]	445.0	0.1
G	0.891	206	603	5.2	454.5	445.9[2]	446.0	0.1
H	0.982	235	707	4.8	454.5	446.9[2]	447.0	0.1
I	1.042	171	505	6.7	454.5	447.4[2]	447.5	0.1
J	1.101	153	487	6.3	454.5	448.5[2]	448.6	0.1
K	1.141	171	492	8.3	454.5	448.9[2]	449.0	0.1
L	1.236	267	873	5.4	454.5	450.3[2]	450.3	0.0
M	1.321	205	567	6.9	454.5	451.5[2]	451.6	0.1
N	1.334	195	627	8.6	454.5	451.7[2]	451.8	0.1

[1] MILES ABOVE CONFLUENCE WITH SILVER CREEK

[2] ELEVATION COMPUTED WITHOUT CONSIDERING BACKWATER EFFECTS FROM SILVER CREEK

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

PLUM RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
PLUM RUN (CONTINUED)								
O	1.363	170	536	7.7	454.5	452.2[2]	452.2	0.0
P	1.391	190	728	5.0	454.5	452.6[2]	452.7	0.1
Q	1.410	220	824	5.7	454.5	452.7[2]	452.8	0.1
R	1.447	272	793	7.1	454.5	452.9[2]	453.0	0.1
S	1.484	168	636	4.4	454.5	453.2	453.3	0.1
T	1.515	184	673	5.2	454.5	453.4[2]	453.5	0.1
U	1.550	163	531	8.8	454.5	453.5[2]	453.6	0.1
V	1.626	159	535	7.2	454.6	454.6	454.7	0.1
W	1.656	177	648	7.3	455.2	455.2	455.3	0.1
X	1.721	459[3]	1,513	2.9	455.7	455.7	455.8	0.1
Y	1.762	326	993	3.8	455.8	455.8	455.9	0.1
Z	1.827	161	415	6.2	456.0	456.0	456.1	0.1
AA	1.898	311	424	8.9	456.9	456.9	457.0	0.1
AB	1.948	131	459	5.1	458.1	458.1	458.2	0.1
AC	2.090	205	512	7.3	460.2	460.2	460.3	0.1
AD	2.123	311	844	4.1	460.7	460.7	460.8	0.1

[1] MILES ABOVE CONFLUENCE WITH SILVER CREEK

[2] ELEVATION COMPUTED WITHOUT CONSIDERING BACKWATER EFFECTS FROM SILVER CREEK

[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SILVER CREEK								
A	4.690	589/408[2]	6,043	4.2	448.1	439.3[3]	439.4	0.1
B	4.980	516/187[2]	5,154	4.9	448.1	440.5[3]	440.6	0.1
C	5.390	1,138/285[2]	11,815	2.2	448.1	441.9[3]	442.0	0.1
D	5.850	532/467[2]	6,437	4.0	448.1	442.6[3]	442.7	0.1
E	6.120	1,253/1,220[2]	6,931	3.7	448.1	442.7[3]	442.8	0.1
F	6.510	1,465/235[2]	14,603	1.7	448.1	444.7[3]	444.7	0.0
G	7.000	984[4]	5,997	4.2	448.1	445.5[3]	445.5	0.0
H	7.270	397/341[2]	3,524	7.2	448.1	447.7[3]	447.7	0.0
I	8.420	782	9,878	2.6	454.4	454.4	454.5	0.1
J	8.700	336[4]	4,637	5.5	454.9	454.9	455.0	0.1
K	8.720	342[4]	4,690	5.4	455.0	455.0	455.1	0.1
L	9.000	484[4]	6,335	4.0	456.3	456.3	456.4	0.1
M	9.410	994[4]	6,112	4.2	457.7	457.7	457.8	0.1
N	9.540	1,076[4]	5,074	5.0	458.4	458.4	458.5	0.1
O	9.670	879[4]	9,175	2.8	460.2	460.2	460.3	0.1
P	10.040	1,331[4]	15,228	1.7	460.9	460.9	461.0	0.1
Q	10.470	1,156[4]	13,299	1.8	461.4	461.4	461.5	0.1
R	10.620	1,700[4]	13,547	1.8	461.6	461.6	461.7	0.1
S	10.880	1,910[4]	15,945	1.5	461.9	461.9	462.0	0.1
T	11.170	1,890	21,105	1.1	462.3	462.3	462.4	0.1
U	11.500	2,000[4]	13,307	1.8	462.7	462.7	462.8	0.1
V	13.180	1,750[4]	11,571	2.0	463.6	463.6	463.7	0.1
W	13.520	1,700[4]	21,990	1.1	464.5	464.5	464.6	0.1
X	14.550	986[4]	10,459	2.2	465.3	465.3	465.4	0.1
Y	15.000	636[4]	9,398	2.5	466.8	466.8	466.9	0.1
Z	15.480	1,437[4]	14,944	1.6	467.9	467.9	468.1	0.2

[1] MILES ABOVE CONFLUENCE WITH OHIO RIVER
[2] TOTAL WIDTH/WIDTH WITHIN COUNTY BOUNDARY
[3] ELEVATION COMPUTED WITHOUT CONSIDERING BACKWATER EFFECTS FROM OHIO RIVER
[4] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SILVER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SILVER CREEK (CONTINUED)								
AA	16.220	1,480[2]	31,051	0.7	468.4	468.4	468.5	0.1
AB	16.550	1,780	24,533	0.9	468.6	468.6	468.7	0.1
AC	16.870	2,719[2]	22,416	1.0	468.8	468.8	468.9	0.1
AD	17.030	2,472[2]	16,756	1.4	469.1	469.1	469.2	0.1
AE	17.420	2,250	11,150	2.1	469.5	469.5	469.6	0.1
AF	17.550	2,143	19,353	1.2	470.1	470.1	470.2	0.1
AG	17.590	2,365	19,900	1.2	470.2	470.2	470.3	0.1
AH	18.420	1,070[2]	13,483	1.2	471.2	471.2	471.2	0.0
AI	18.720	1,678	19,909	0.8	471.3	471.3	471.3	0.0
AJ	18.920	1,193[2]	11,520	1.4	471.4	471.4	471.4	0.0
AK	19.640	1,094	12,682	1.3	472.5	472.5	472.5	0.0
AL	20.030	968	13,219	1.0	472.7	472.7	472.7	0.0
AM	20.430	1,460[2]	19,320	0.7	472.9	472.9	472.9	0.0
AN	20.780	2,668[2]	36,484	0.4	472.9	472.9	472.9	0.0
AO	21.120	2,450	32,435	0.4	473.0	473.0	473.0	0.0
AP	21.450	2,100[2]	31,619	0.4	473.0	473.0	473.0	0.0
AQ	21.730	2,550[2]	33,015	0.4	473.1	473.1	473.1	0.0
AR	21.940	2,750	28,857	0.5	473.1	473.1	473.1	0.0
AS	22.670	2,750[2]	33,348	0.4	473.2	473.2	473.2	0.0
AT	23.090	3,700[2]	32,678	0.4	473.3	473.3	473.3	0.0
AU	23.500	3,844	29,775	0.5	473.4	473.4	473.4	0.0
AV	24.090	2,593[2]	21,142	0.6	473.5	473.5	473.5	0.0
AW	24.430	2,450	20,840	0.6	473.7	473.7	473.7	0.0
AX	24.580	2,300[2]	20,133	0.7	473.7	473.7	473.7	0.0
AY	25.120	2,300	20,541	0.7	474.5	474.5	474.5	0.0
AZ	25.550	2,000	15,770	0.8	474.8	474.8	474.8	0.0
BA	25.740	2,161	11,087	1.2	475.2	475.2	475.2	0.0

[1] MILES ABOVE CONFLUENCE WITH OHIO RIVER
[2] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SILVER CREEK (CONTINUED)								
BB	26.190[1]	2,320	18,750	0.7	476.0	476.0	476.1	0.1
BC	26.640[1]	2,075[4]	14,926	0.9	476.5	476.5	476.6	0.1
BD	26.950[1]	1,829	4,821	2.1	477.9	477.9	478.0	0.1
BE	27.200[1]	2,109[4]	5,867	1.2	480.4	480.4	480.4	0.0
BF	27.470[1]	1,775[4]	8,215	0.9	481.7	481.7	481.7	0.0
BG	27.800[1]	1,559	5,956	1.2	482.6	482.6	482.6	0.0
BH	27.970[1]	1,694[4]	9,481	0.8	483.2	483.2	483.2	0.0
BI	28.300[1]	1,498	3,352	2.2	484.1	484.1	484.1	0.0
BJ	28.450[1]	1,290[4]	4,096	1.8	487.2	487.2	487.2	0.0
BK	28.740[1]	844[4]	3,429	2.1	489.7	489.7	489.7	0.0
BL	29.080[1]	839[4]	5,160	1.4	492.4	492.4	492.5	0.1
BM	29.520[1]	1,230[4]	4,715	1.5	494.8	494.8	494.9	0.1
BN	29.850[1]	1,473[4]	8,195	0.9	497.0	497.0	497.0	0.0
BO	30.500[1]	1,101[4]	6,844	1.1	499.7	499.7	499.7	0.0
BP	31.200[1]	903[4]	3,239	2.3	504.2	504.2	504.3	0.1
WOODLAND COURT TRIBUTARY								
A	0.250[2]	363[4]	1,081	0.8	458.7	457.0[3]	457.1	0.1
B	0.330[2]	325[4]	519	1.7	458.7	457.5[3]	457.6	0.1
C	0.410[2]	334	561	1.6	459.4	459.4	459.5	0.1
D	0.500[2]	624[4]	677	1.2	460.9	460.9	461.0	0.1
E	0.530[2]	734[4]	964	0.8	461.7	461.7	461.7	0.0
F	0.780[2]	102	135	4.8	468.3	468.3	468.4	0.1
G	0.880[2]	80	170	3.8	471.1	471.1	471.1	0.0
H	0.920[2]	81	260	2.5	474.0	474.0	474.1	0.1
I	1.020[2]	23[4]	56	9.0	474.4	474.4	474.5	0.1

[1] MILES ABOVE CONFLUENCE WITH OHIO RIVER

[2] MILES ABOVE CONFLUENCE WITH LANCASSANGE CREEK

[3] ELEVATION COMPUTED WITHOUT CONSIDERING BACKWATER EFFECTS FROM LANCASSANGE CREEK

[4] FLOODWAY WIDTH MAY DIFFER FROM FIRM. PLEASE SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

SILVER CREEK - WOODLAND COURT TRIBUTARY

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than 0.14 feet at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

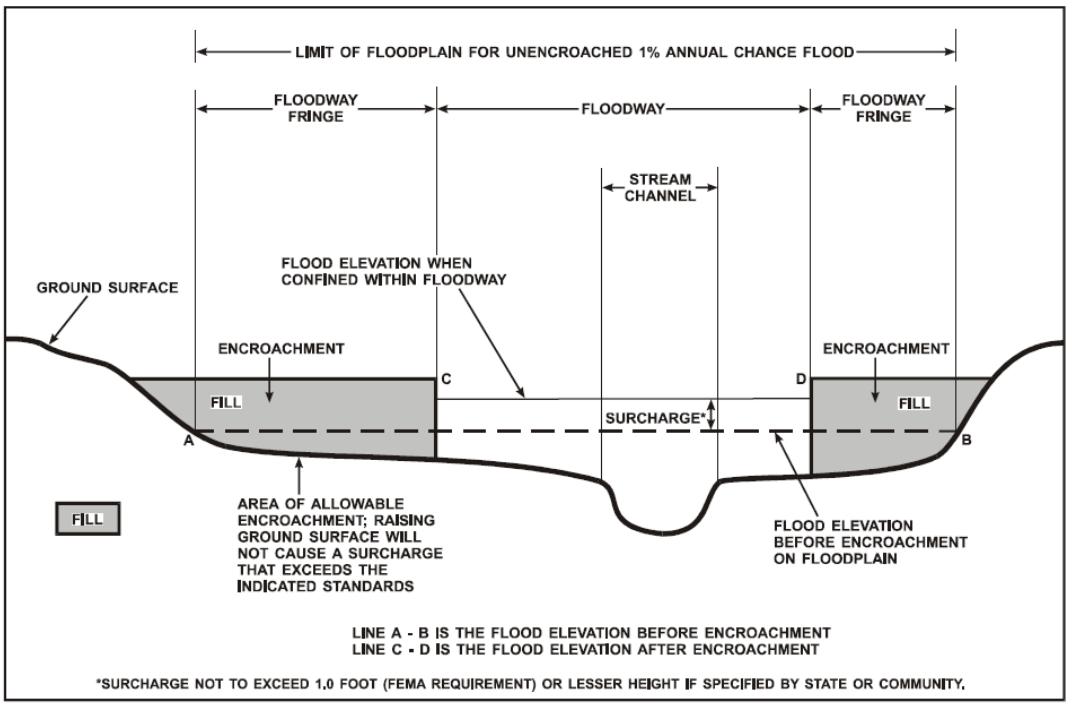

Figure 1 – Floodway Schematic

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-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, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood 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 risk 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 the 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 Clark County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 9.

7.0 OTHER STUDIES

This FIS report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for 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 the Flood Insurance and Mitigation Division, Federal Emergency Management Agency, Region V, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATE
Borden, Town of	April 18, 1980	None	To Be Determined	None
Charlestown, City of	April 12, 1974	None	November 15, 1979	November 5, 1986
Clark County (Unincorporated Areas)	February 24, 1978	None	September 30, 1980	February 18, 1983
Clarksville, Town of	June 14, 1974	August 6, 1976	August 3, 1981	None
Jeffersonville, City of	June 14, 1974	December 26, 1975	August 1, 1979	February 18, 1983 July 16, 1990
Sellersburg, Town of	November 23, 1973	July 16, 1976	August 1, 1980	None
Utica, Town of	February 12, 1982	None	September 19, 1984	None

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCE

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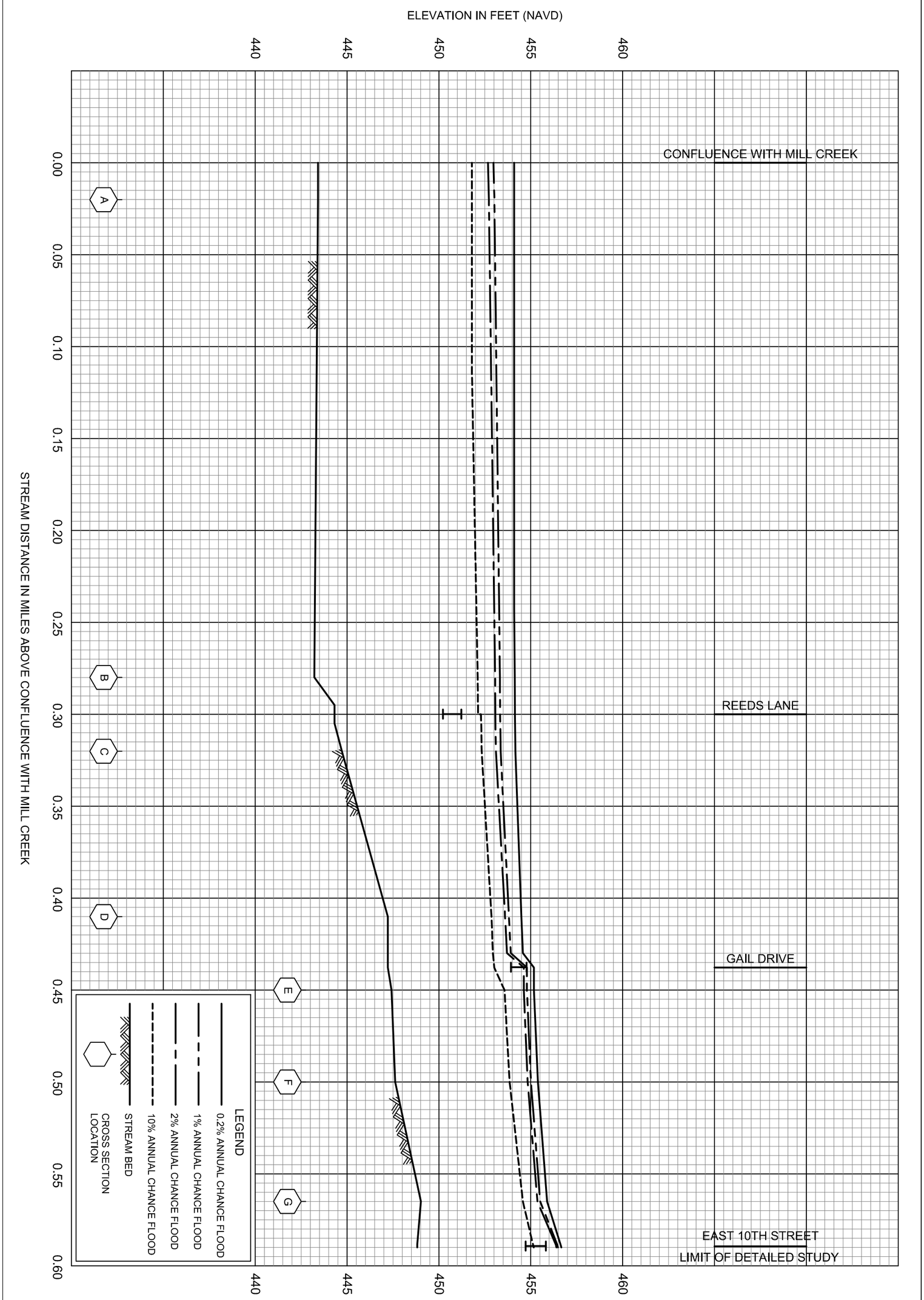


01P

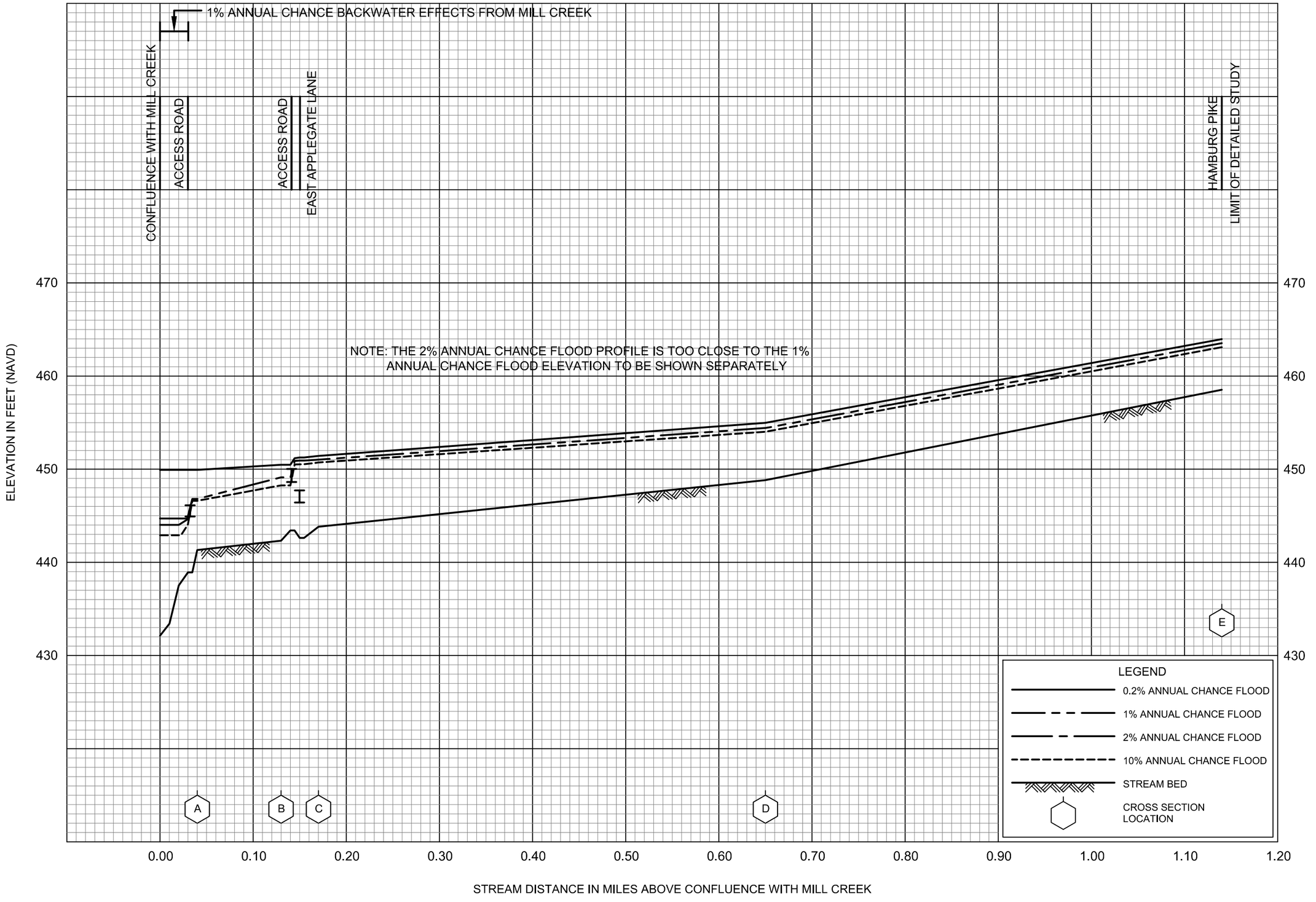
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

FLOOD PROFILES

GREENBRIAR TRIBUTARY



FLOOD PROFILES

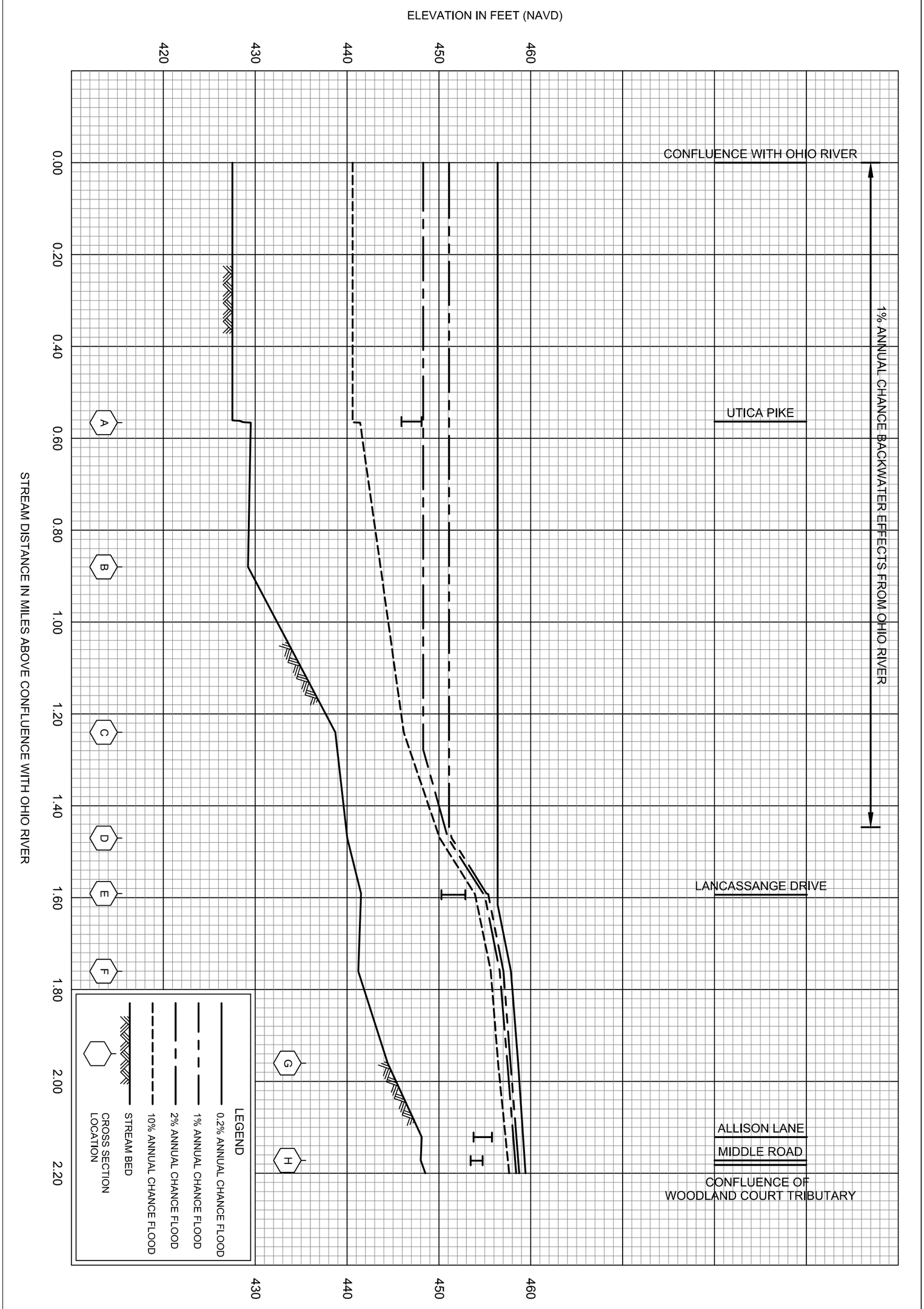
HAMBURG PIKE TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

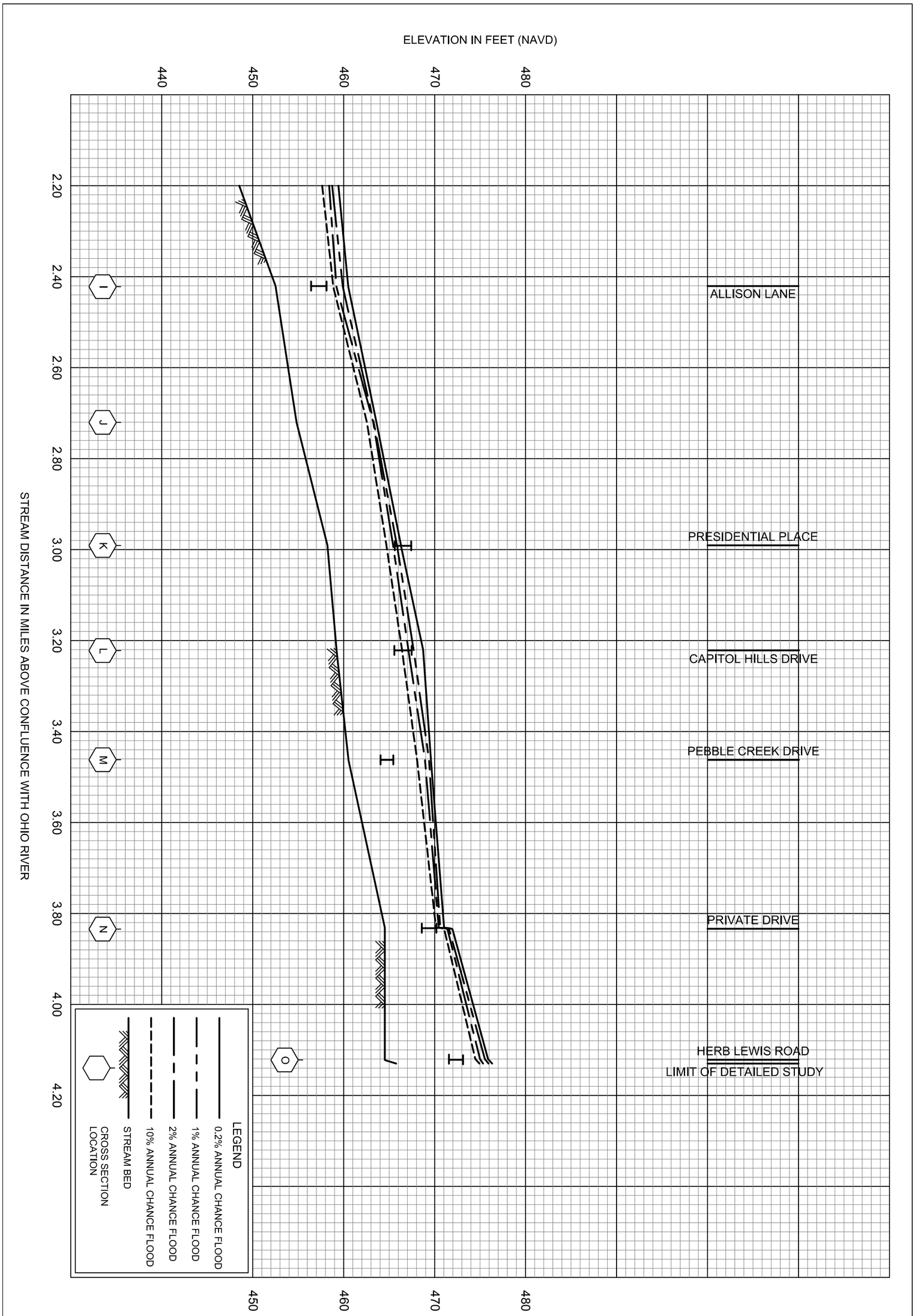
CLARK COUNTY, IN

AND INCORPORATED AREAS

02P



03P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, IN AND INCORPORATED AREAS	FLOOD PROFILES LANCASSANGE CREEK



04P

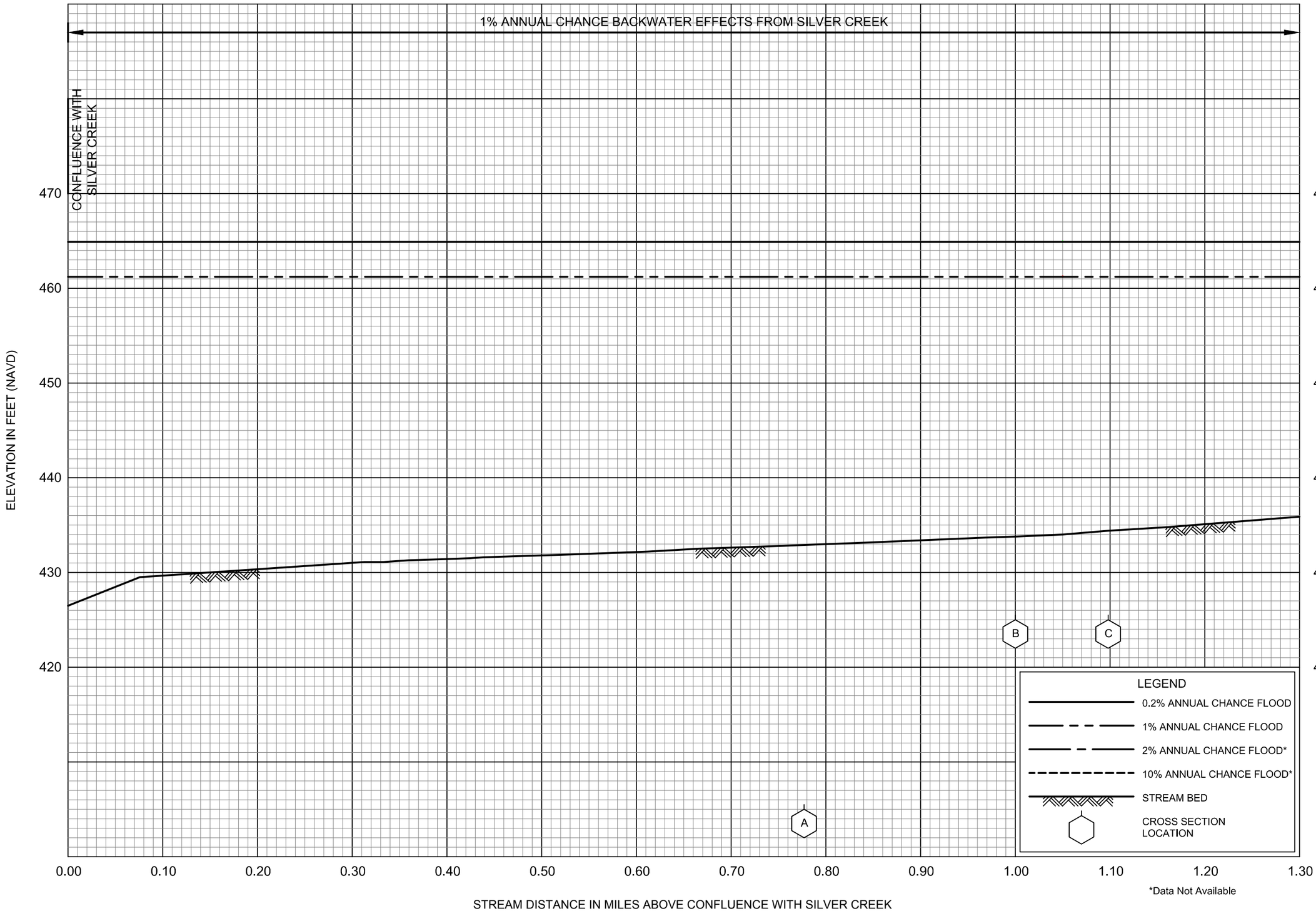
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

FLOOD PROFILES

LANCASSANGE CREEK



FLOOD PROFILES

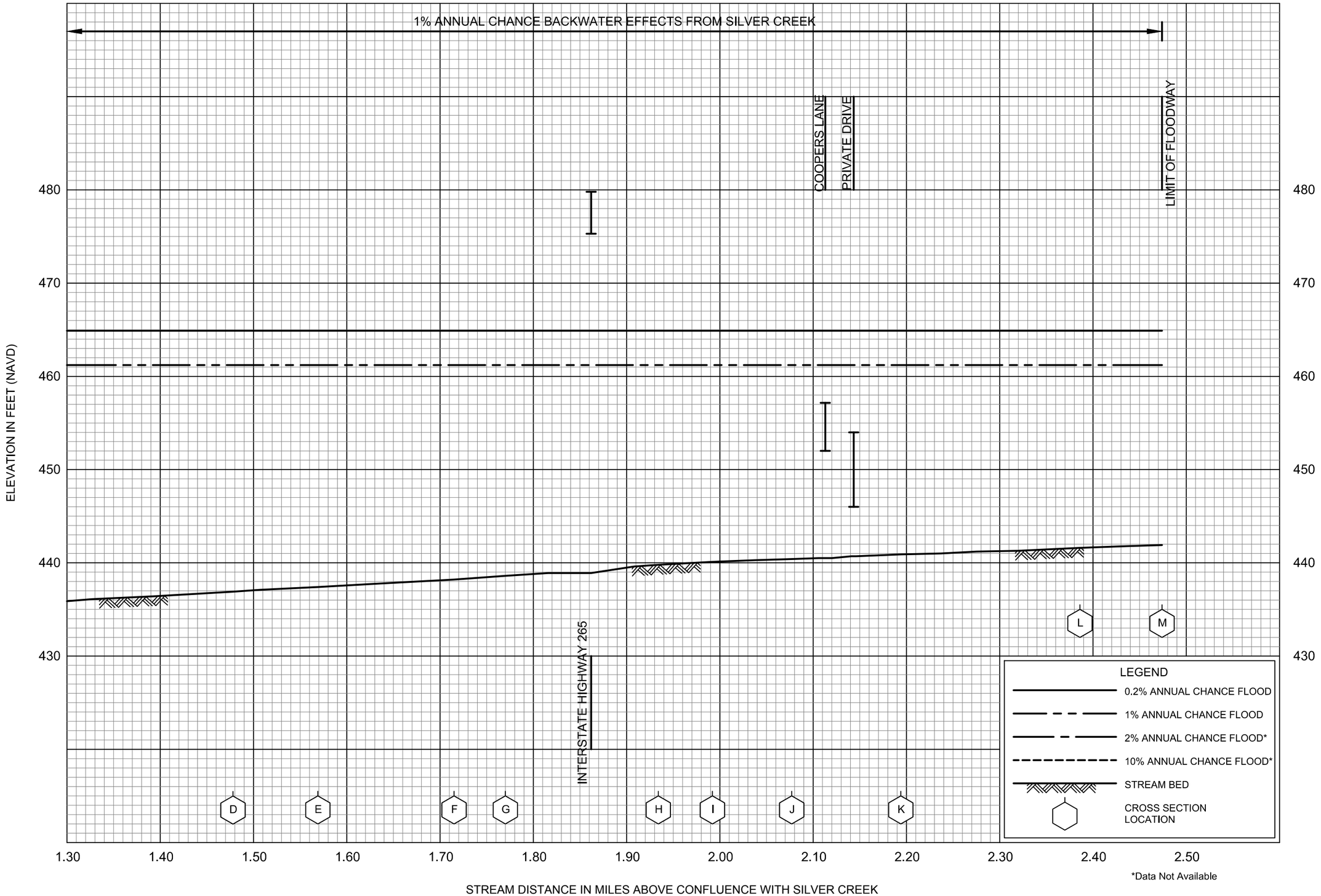
LICK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

05P



FLOOD PROFILES

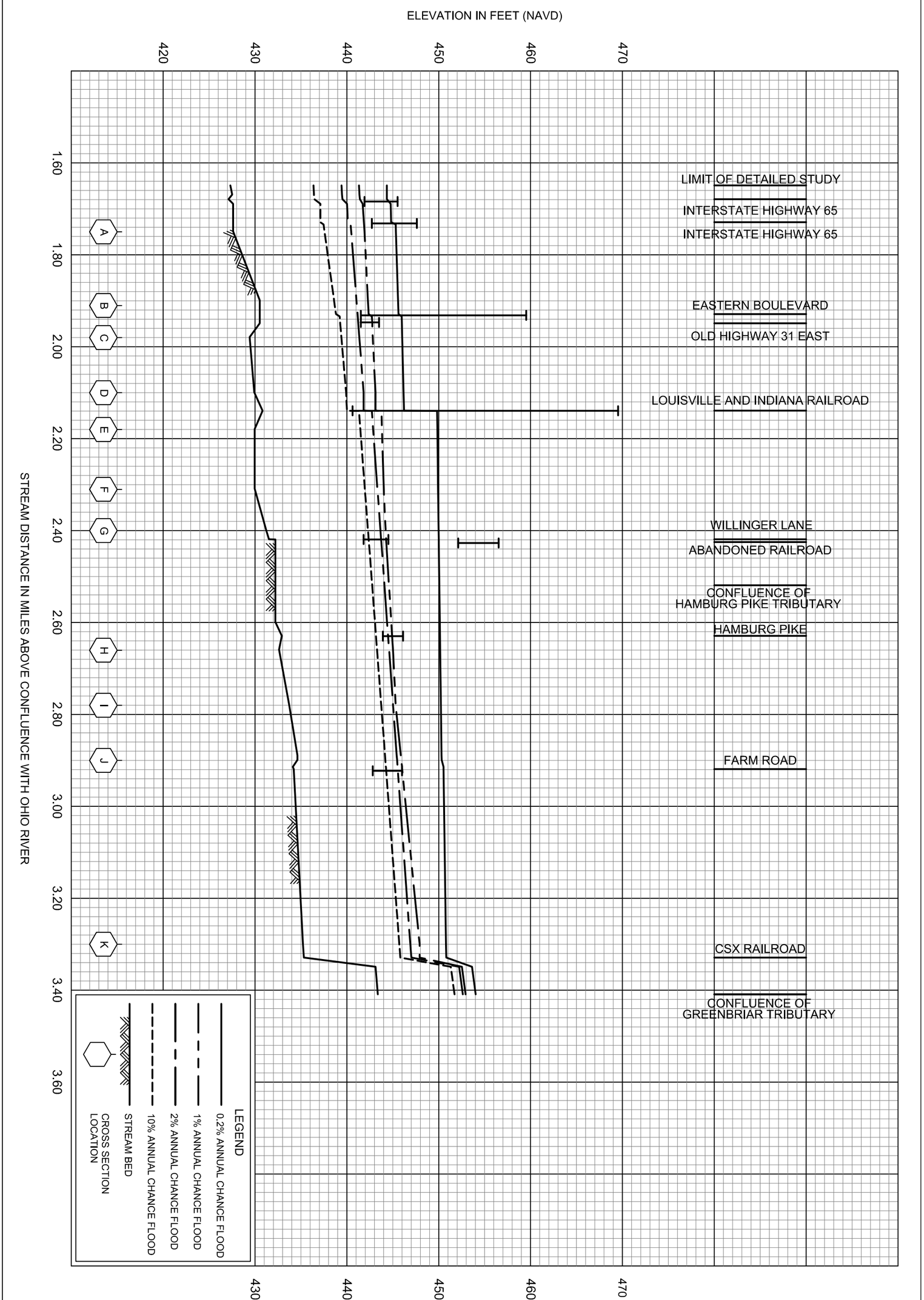
LICK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

06P



07P

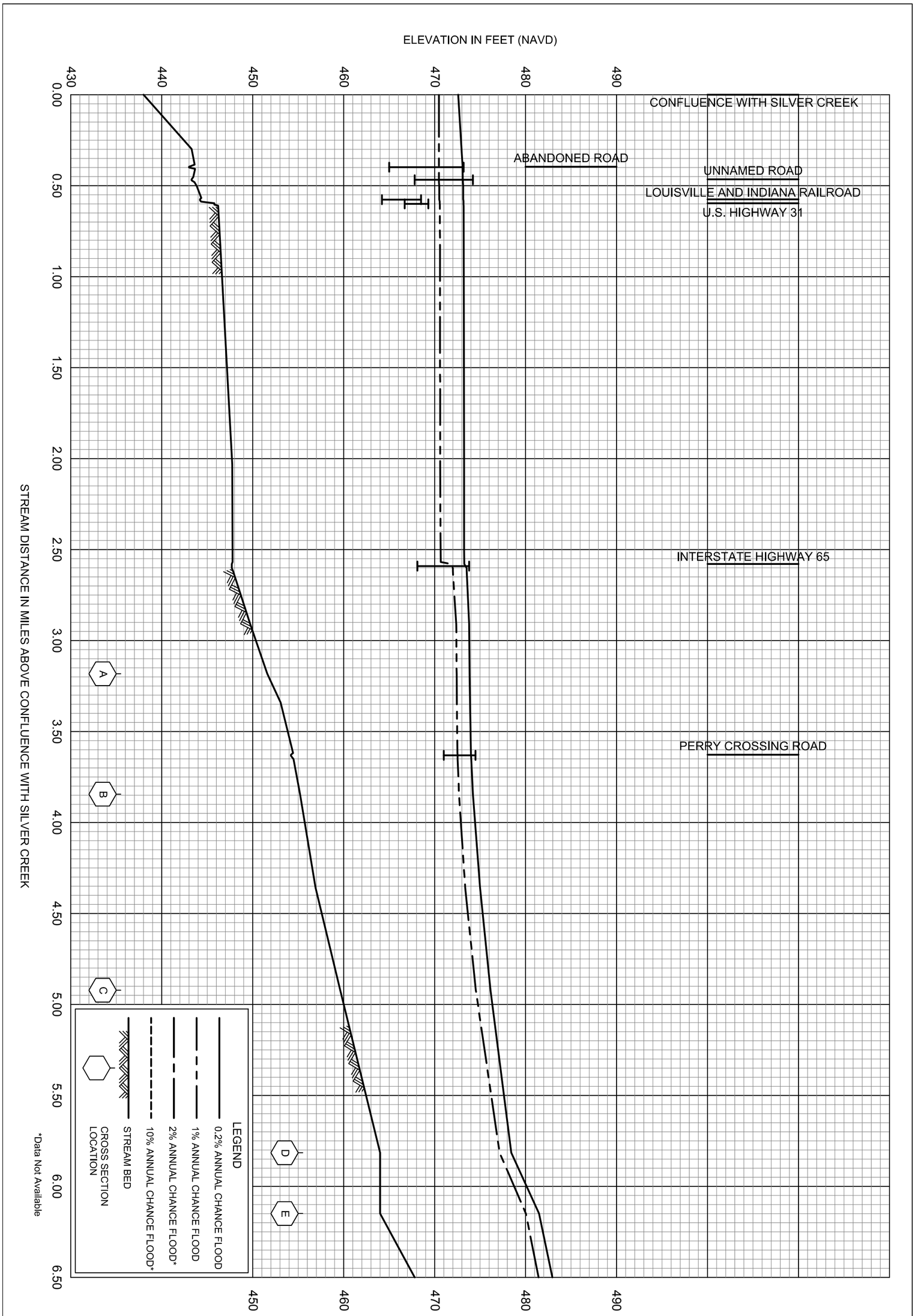
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

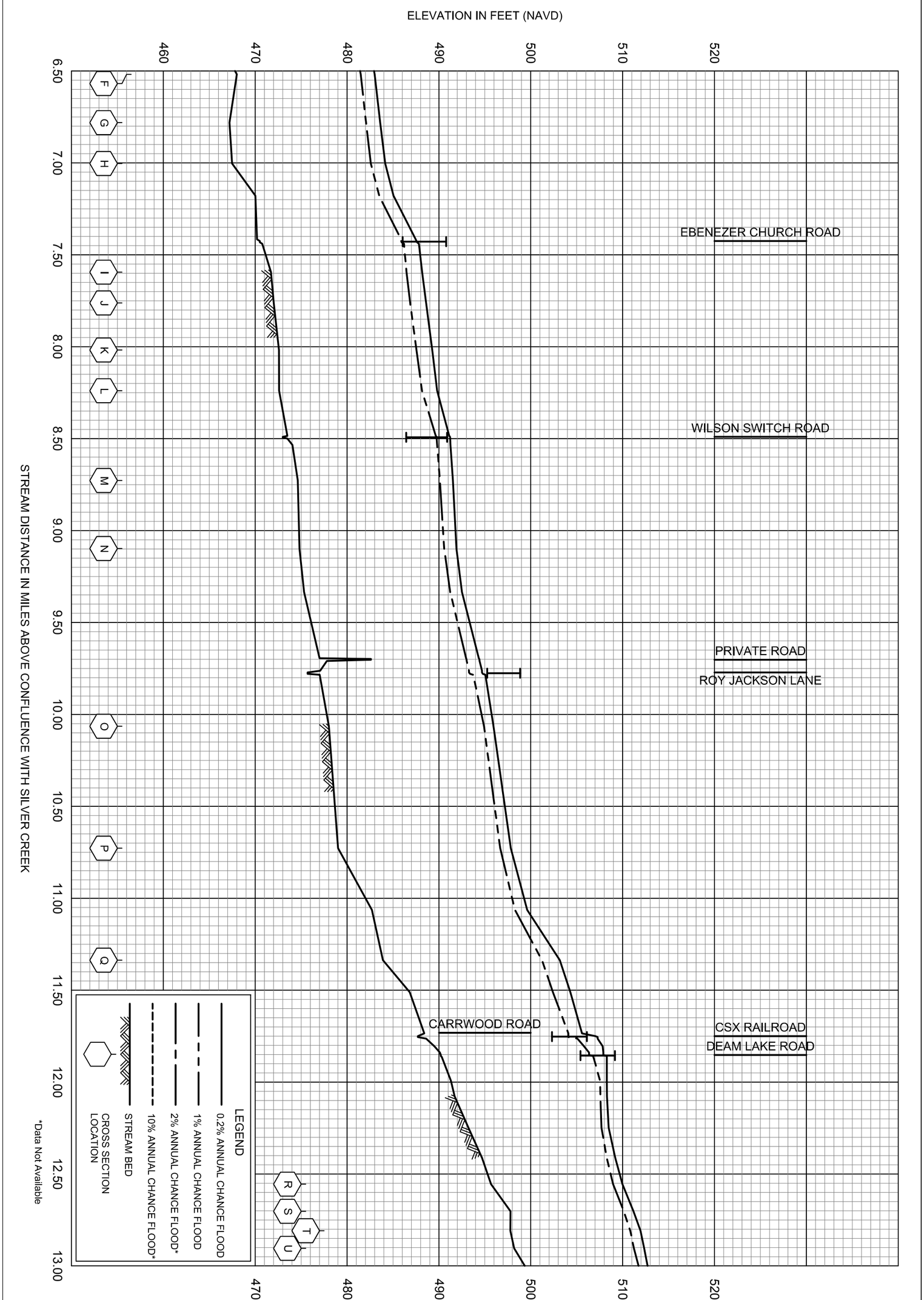
AND INCORPORATED AREAS

FLOOD PROFILES

MILL CREEK



08P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, IN AND INCORPORATED AREAS	FLOOD PROFILES MUDDY FORK



09P

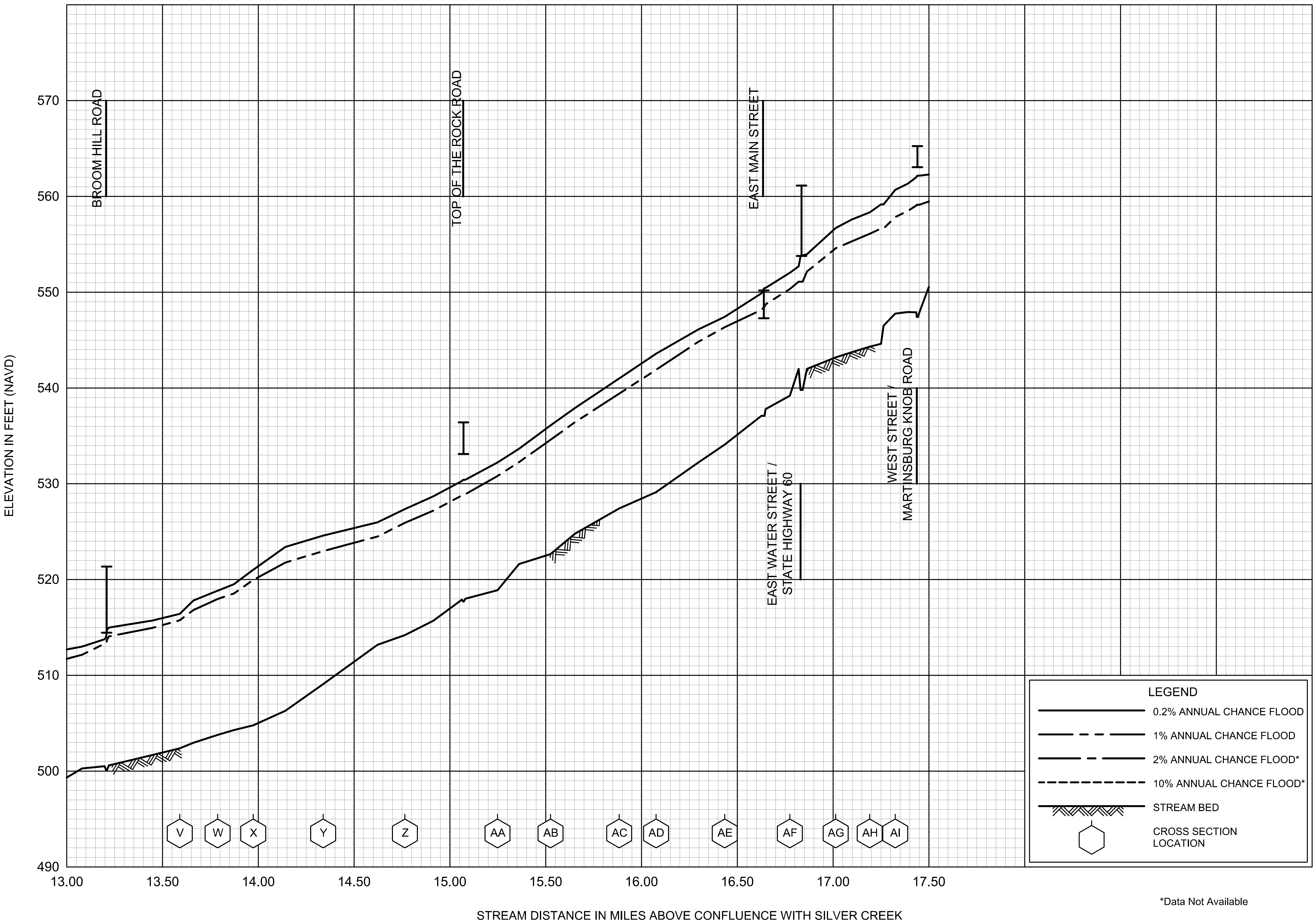
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

FLOOD PROFILES

MUDDY FORK



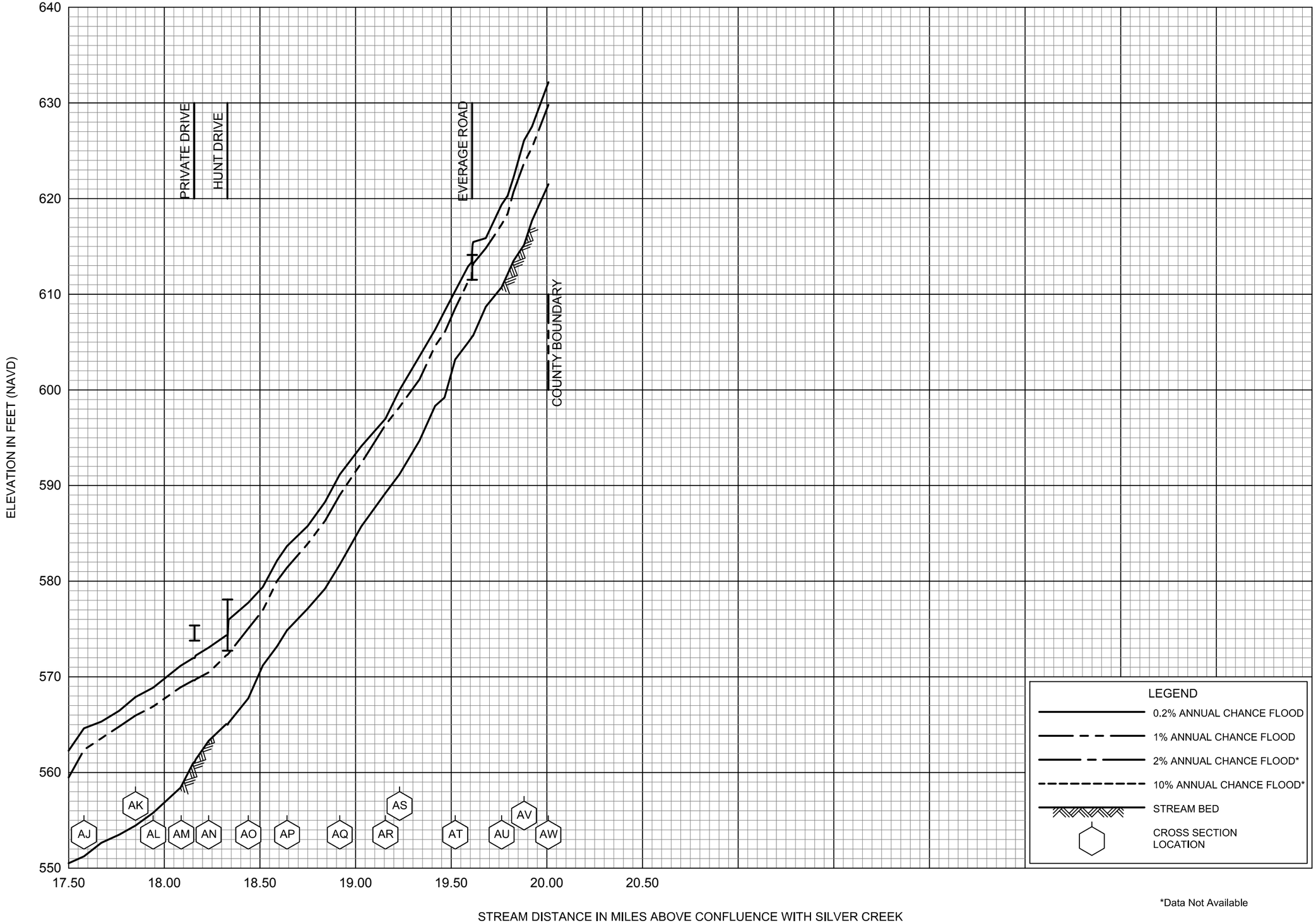
FLOOD PROFILES

MUDDY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

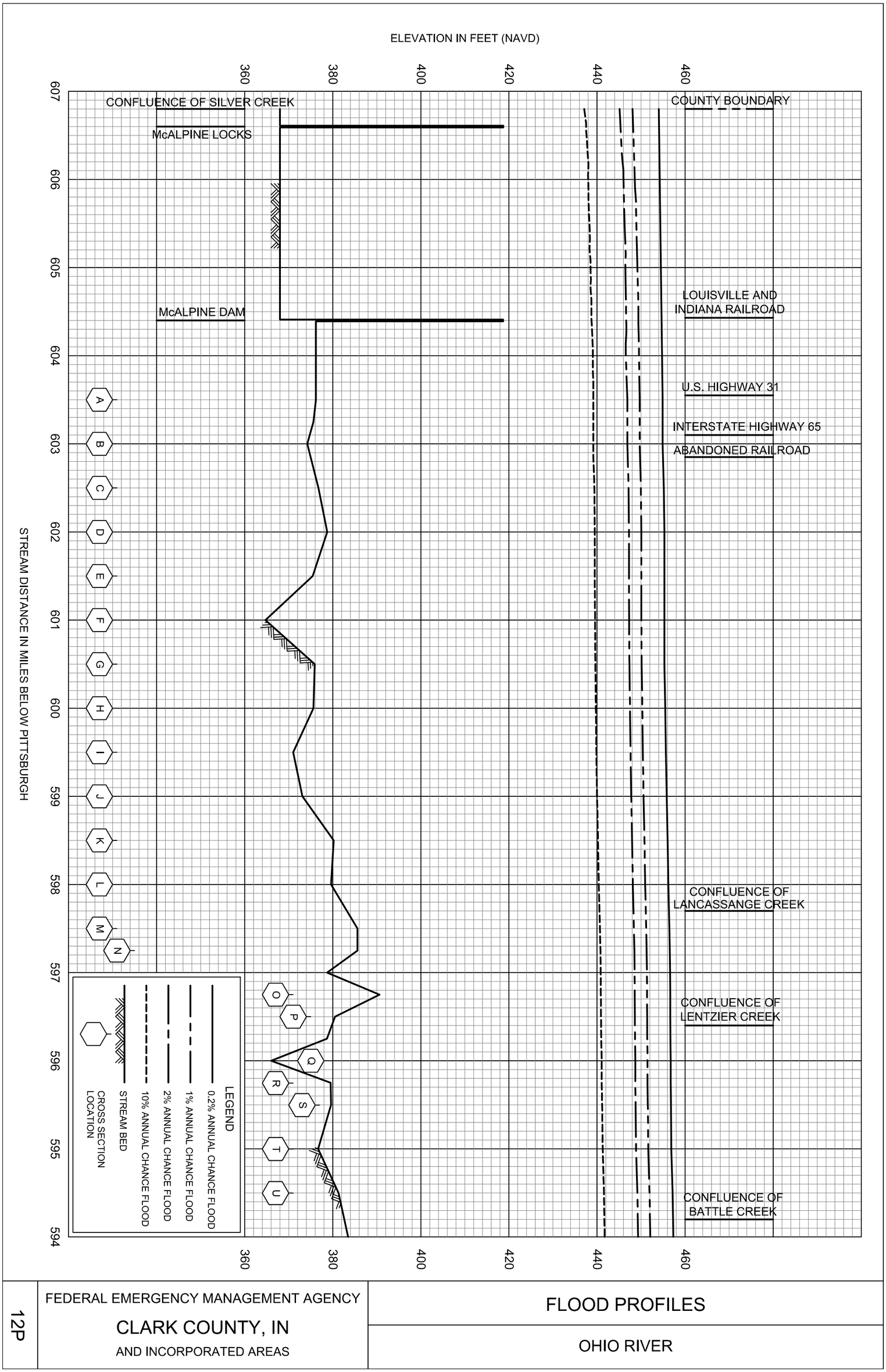
MUDDY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

11P



12P

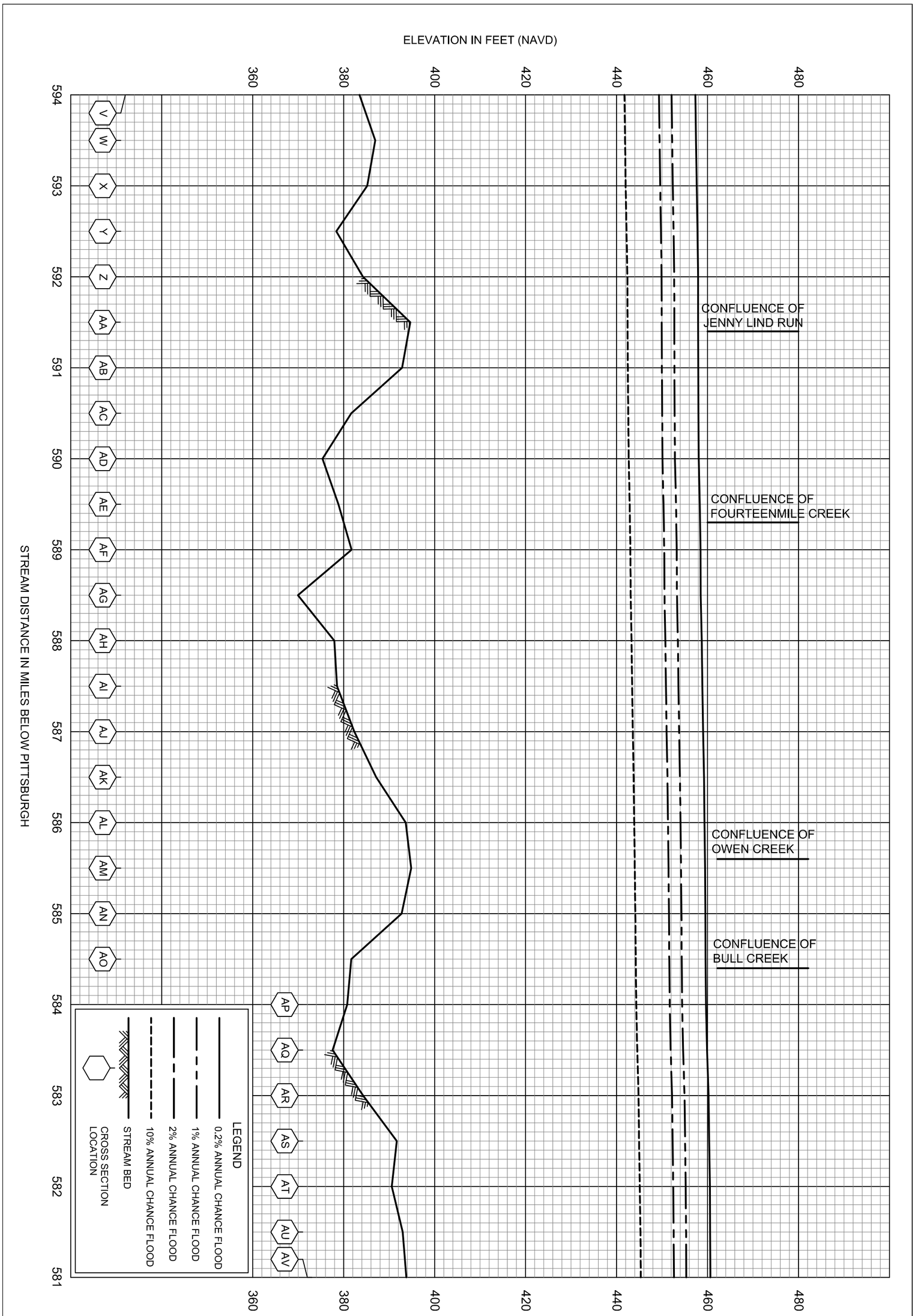
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

FLOOD PROFILES

OHIO RIVER



13P

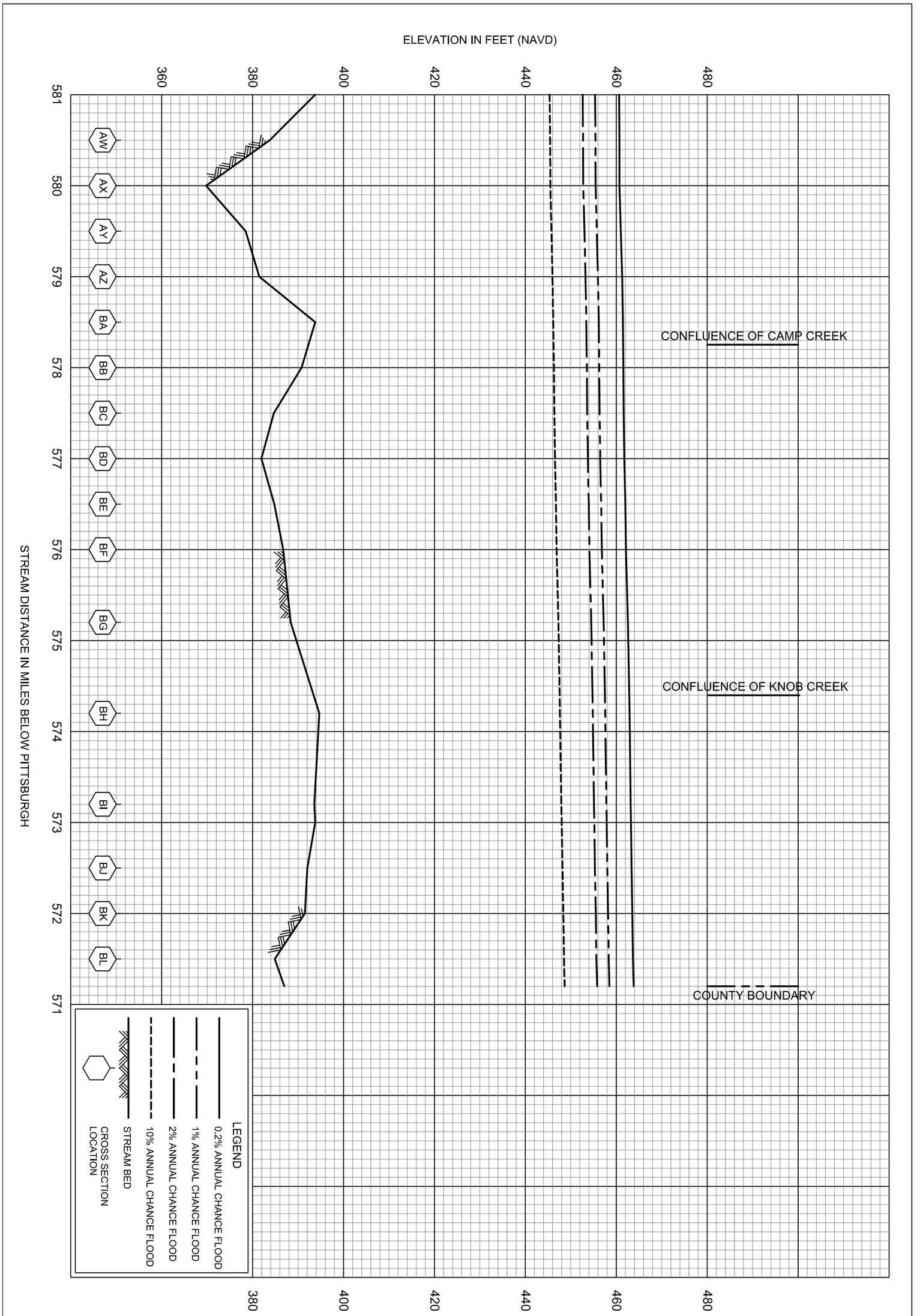
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

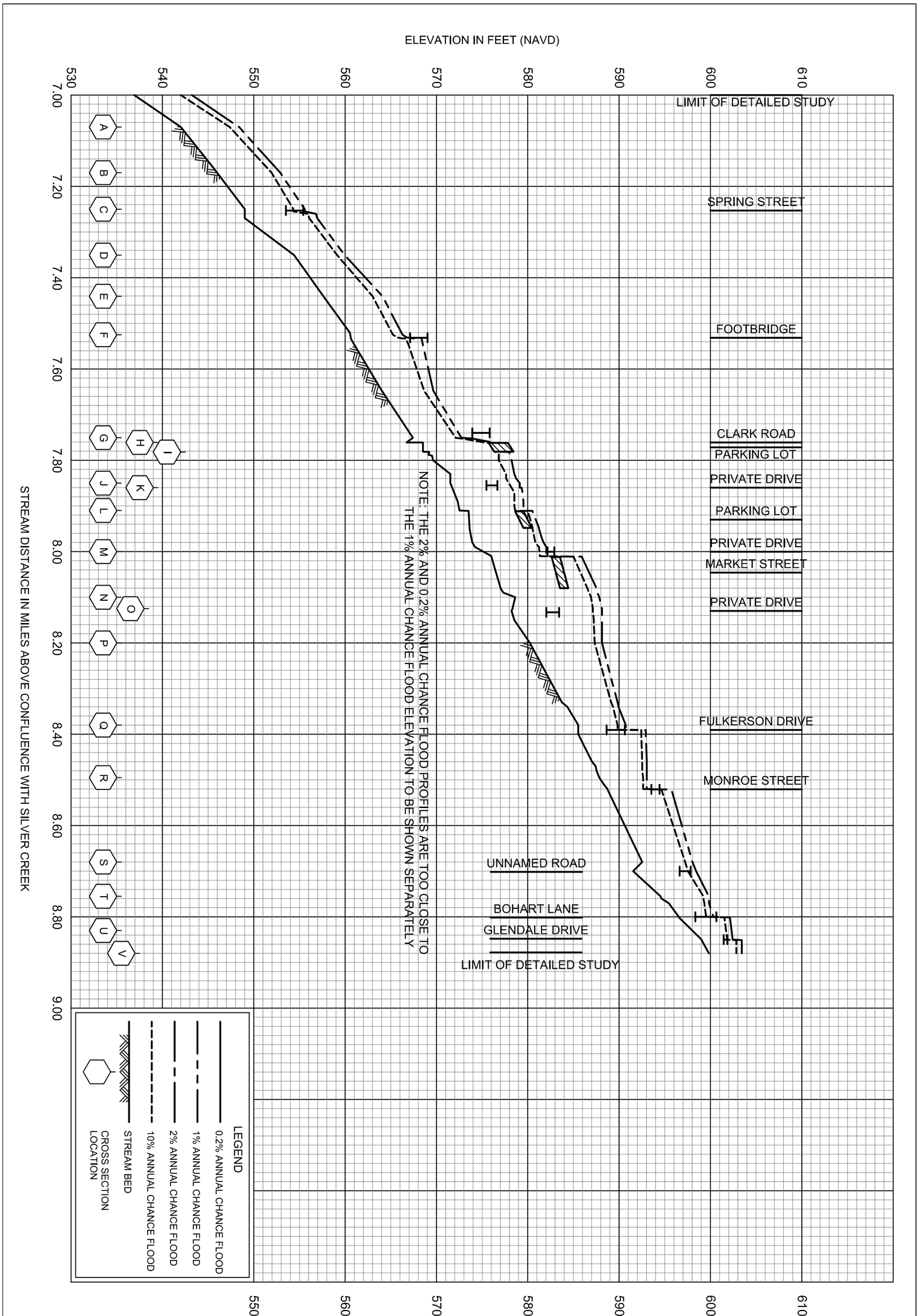
AND INCORPORATED AREAS

FLOOD PROFILES

OHIO RIVER



14P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, IN AND INCORPORATED AREAS	FLOOD PROFILES OHIO RIVER



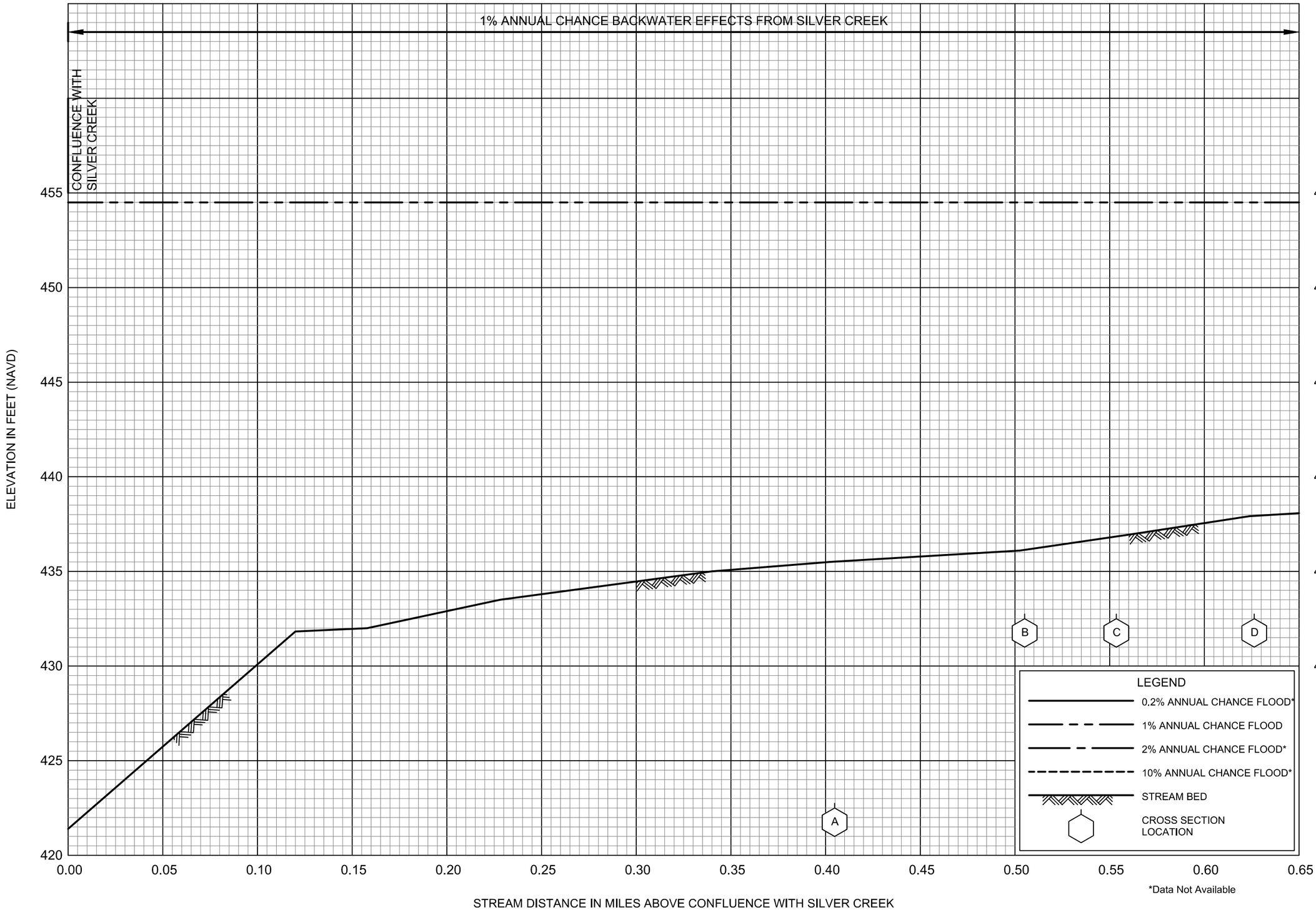
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

FLOOD PROFILES

PLEASANT RUN



FLOOD PROFILES

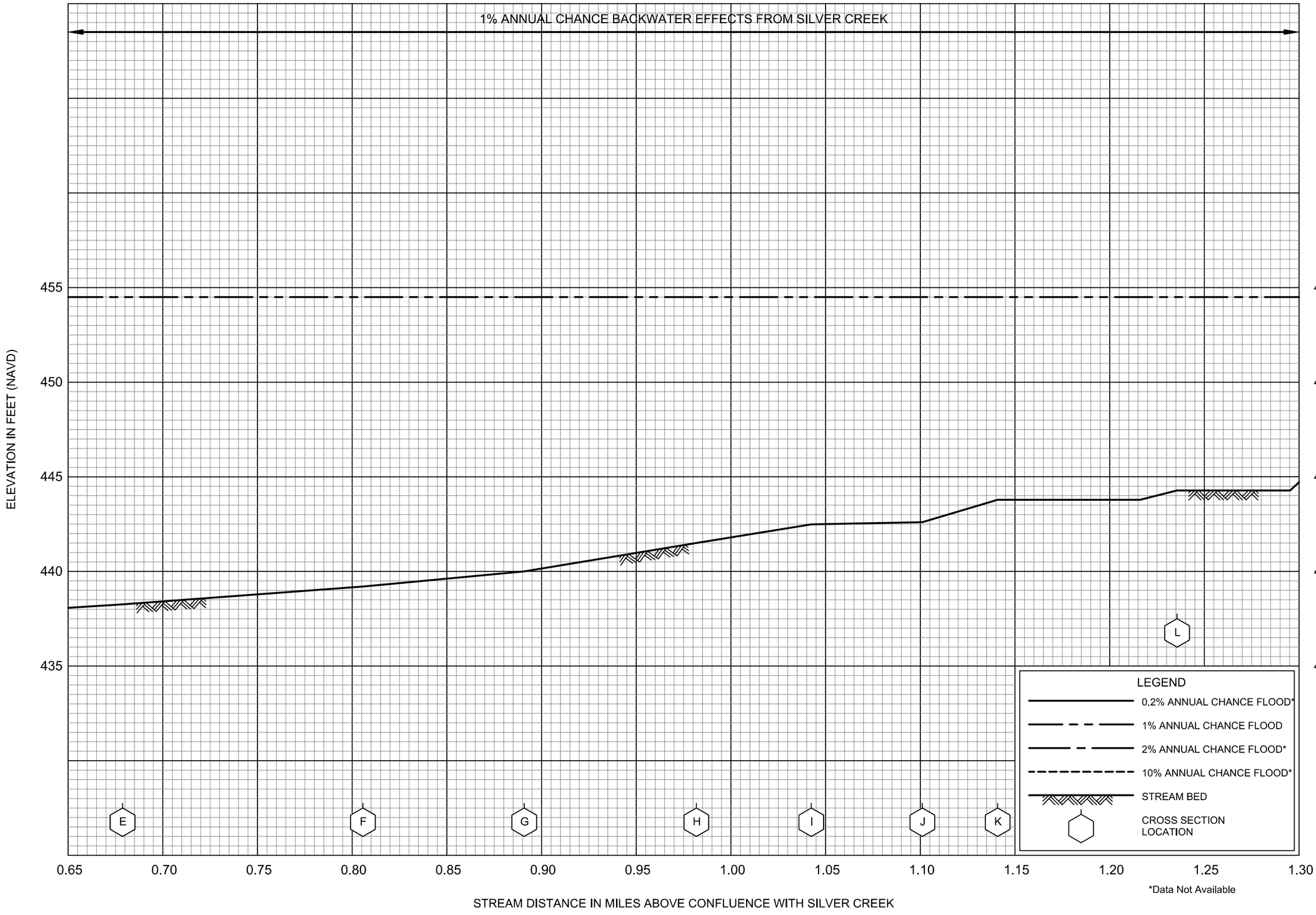
PLUM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

16P



FLOOD PROFILES

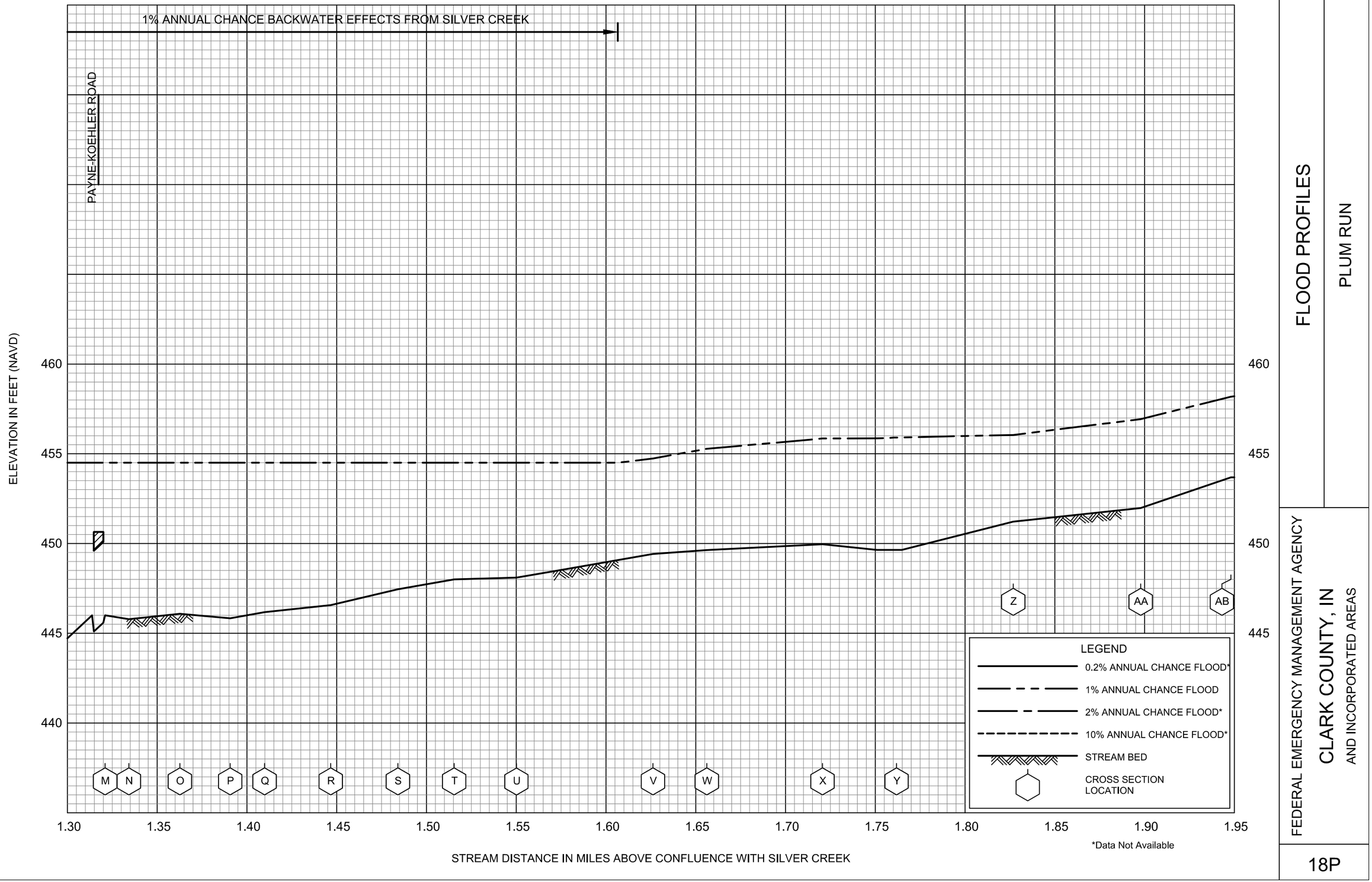
PLUM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

17P



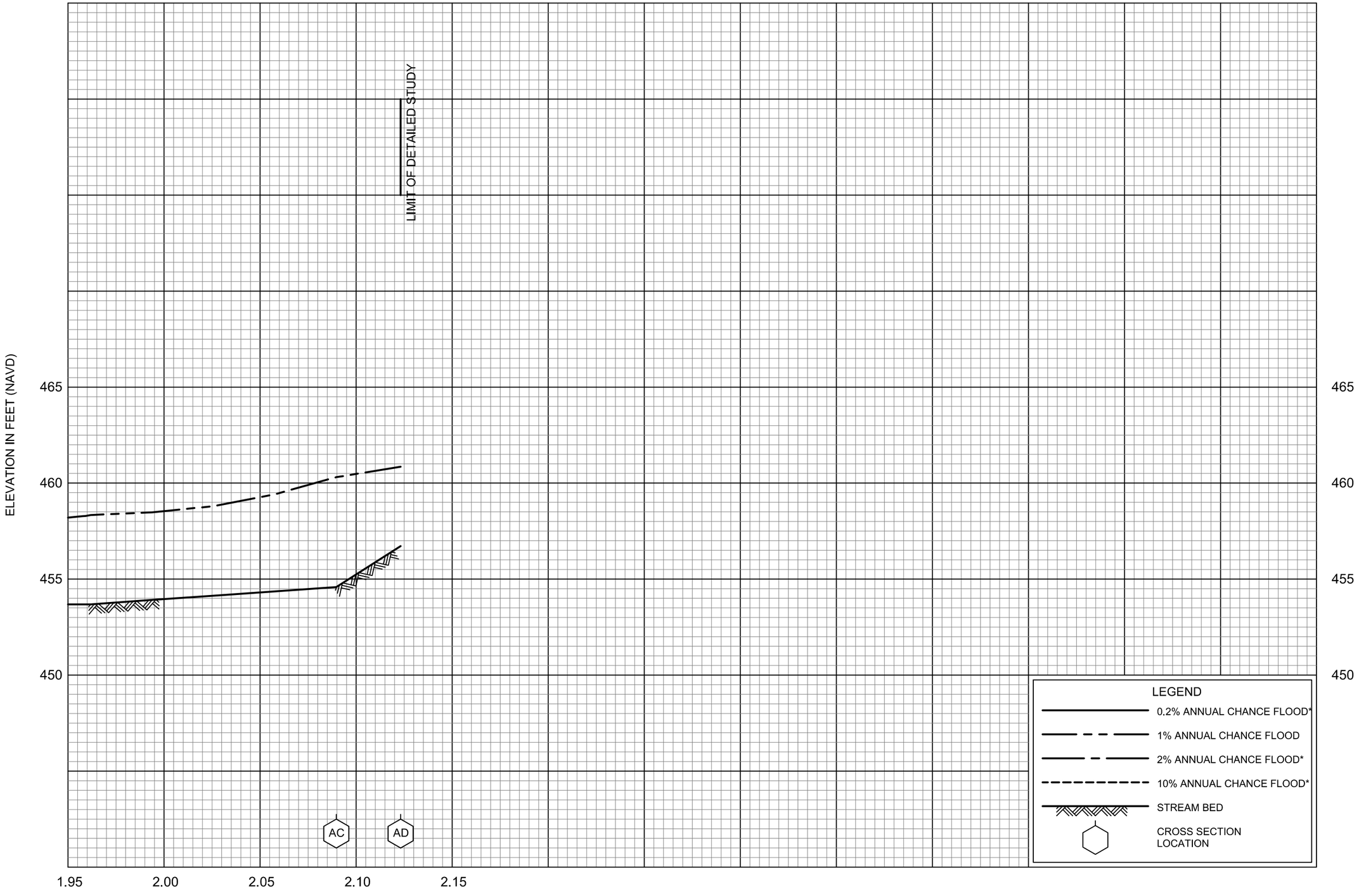
FLOOD PROFILES

PLUM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

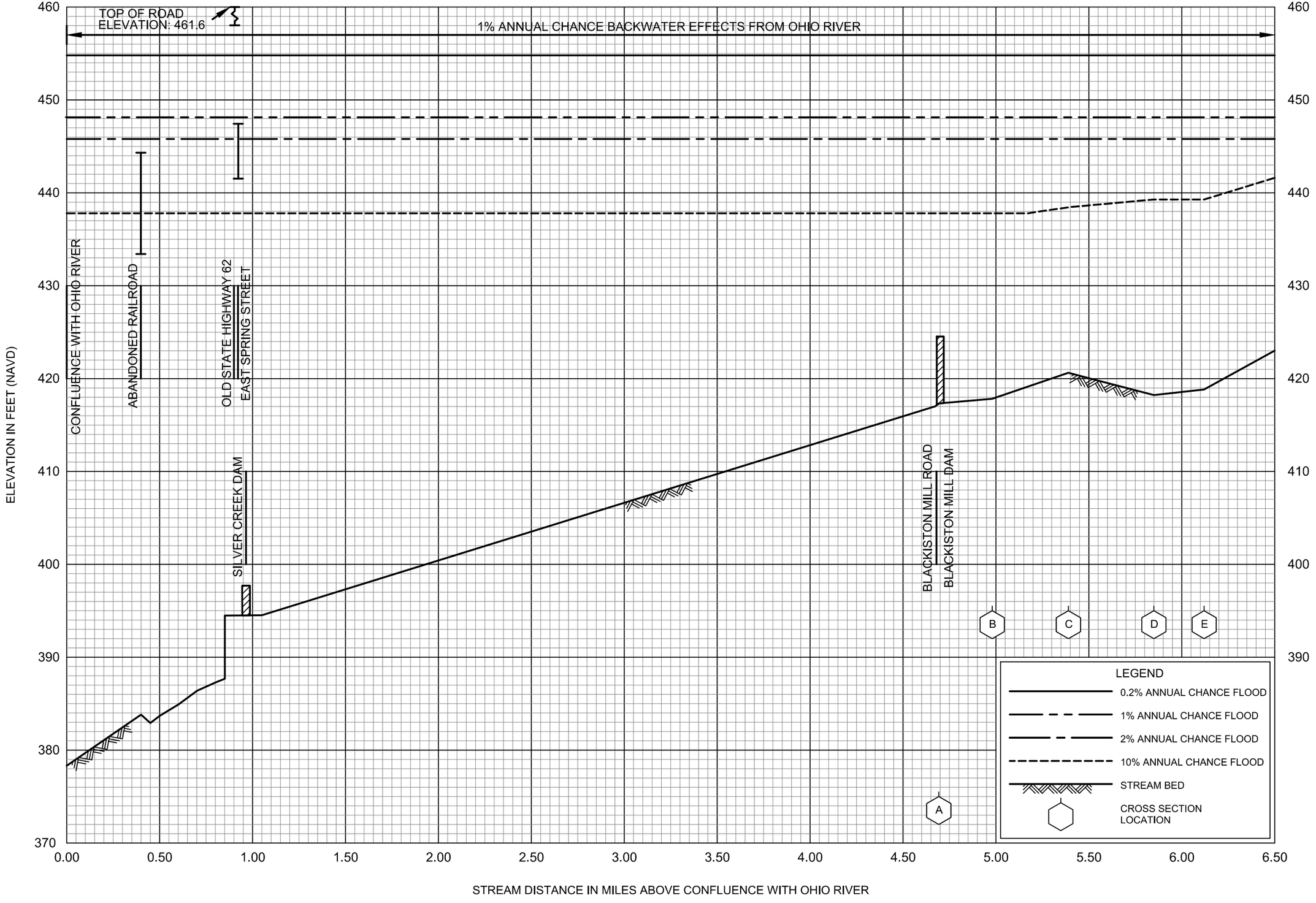
PLUM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

19P



FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

1% ANNUAL CHANCE BACKWATER EFFECTS FROM OHIO RIVER

INTERSTATE HIGHWAY 265
CONFLUENCE OF PLUM RUN
INTERSTATE HIGHWAY 65
STATE HIGHWAY 60
U.S. HIGHWAY 31
LOUISVILLE AND INDIANA RAILROAD
CONFLUENCE OF LICK RUN
SOUTHERN INDIANA RAILROAD
UTICA SELLERSBURG ROAD
CONFLUENCE OF PLEASANT RUN

ELEVATION IN FEET (NAVD)

470
460
450
440
430
420
410

6.50 7.00 7.50 8.00 8.50 9.00 9.50 10.00 10.50 11.00 11.50 12.00 12.50 13.00

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH OHIO RIVER

F G H I K J L M N O P Q R S T U

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

FLOOD PROFILES

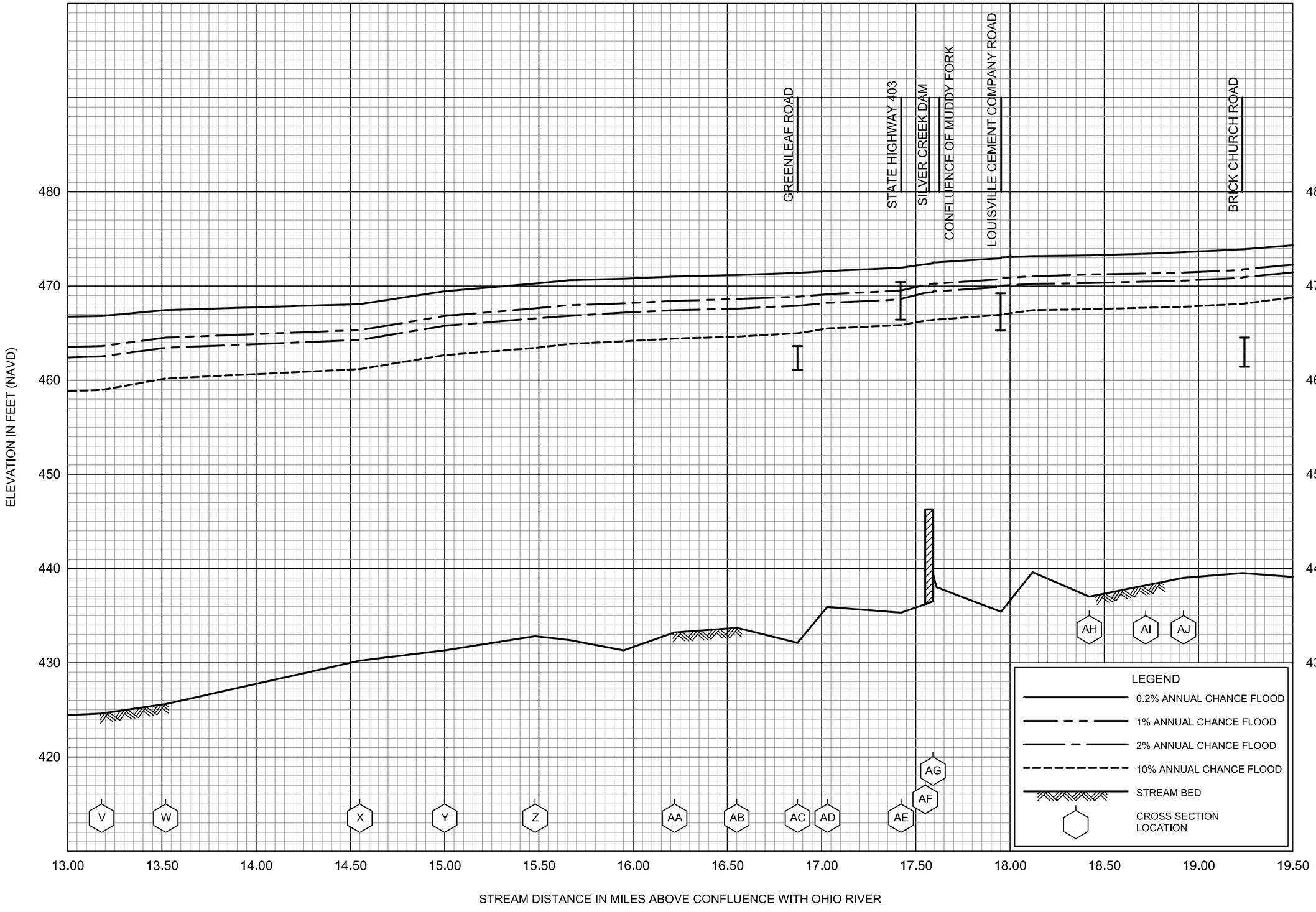
SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS

21P



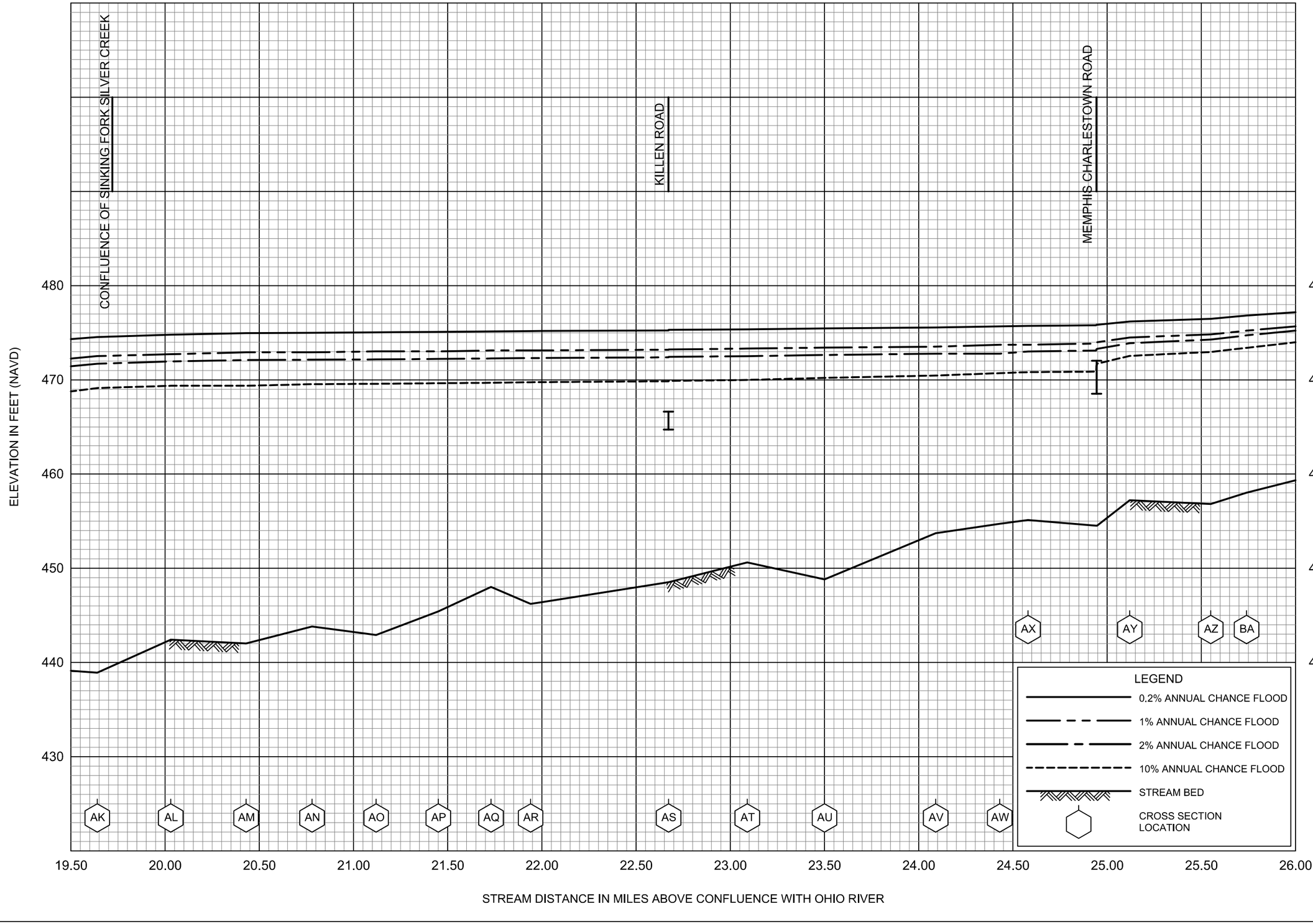
FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS



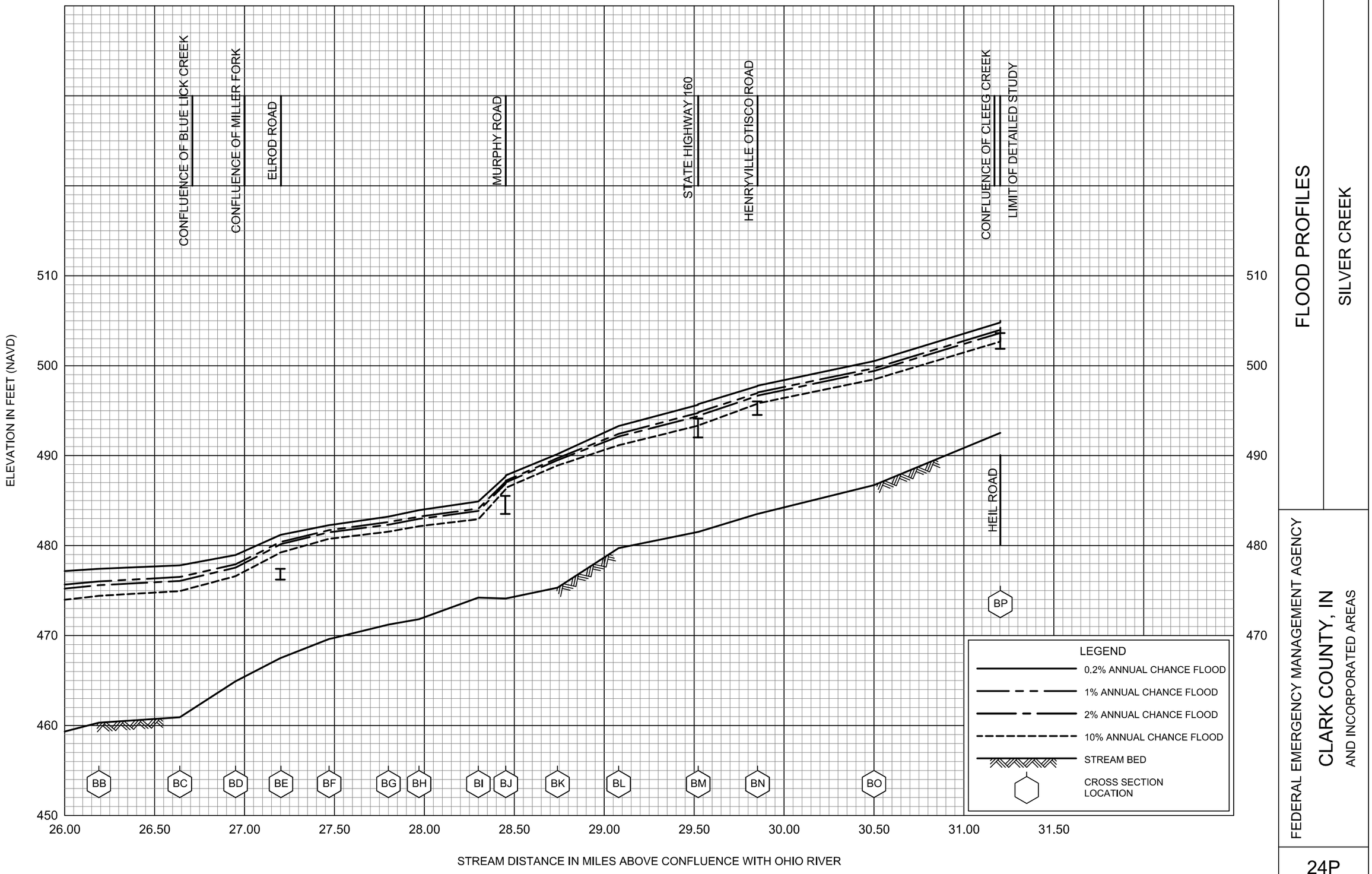
FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS



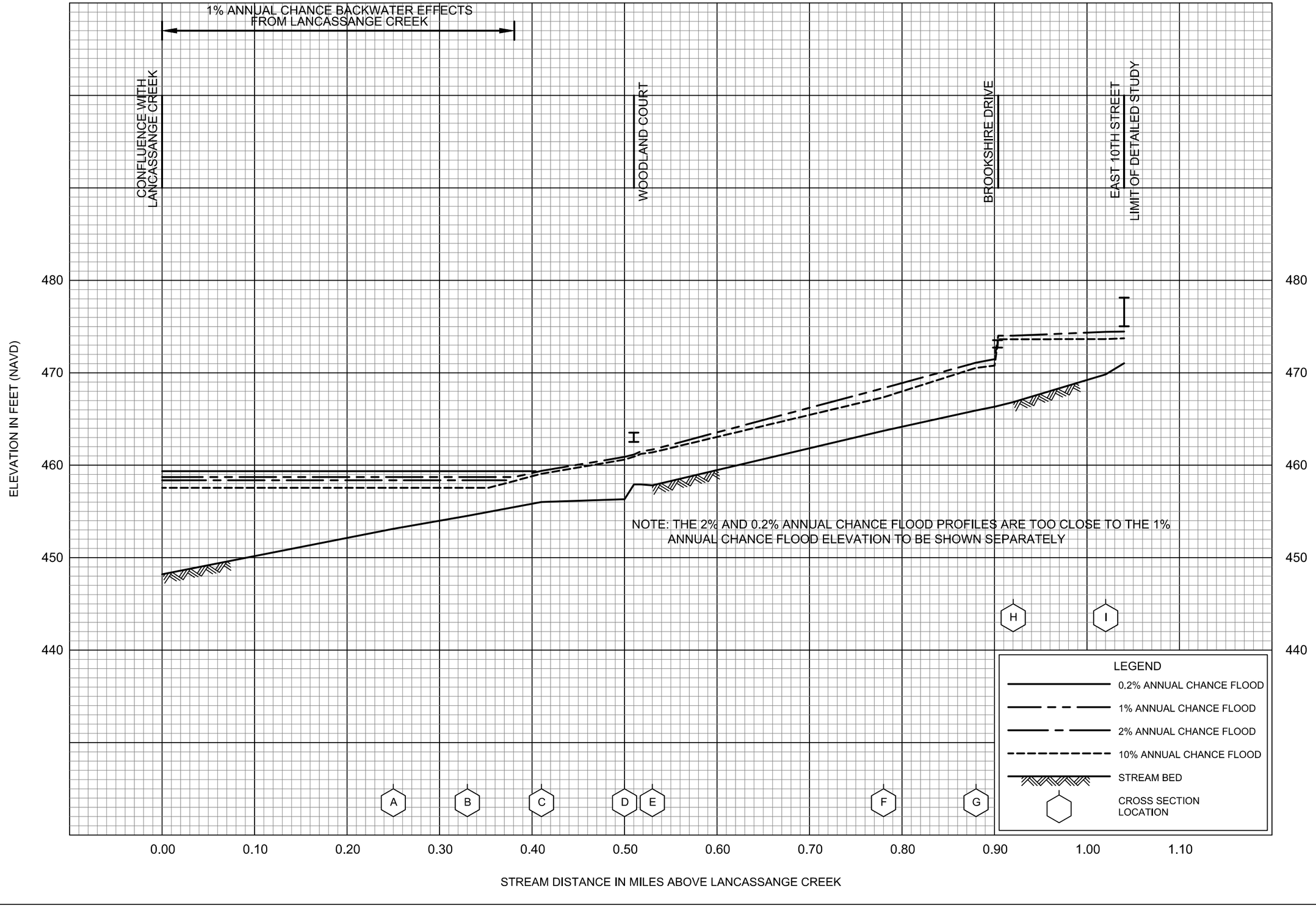
FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

WOODLAND COURT TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, IN

AND INCORPORATED AREAS