FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1

WOODFORD COUNTY, KENTUCKY

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
MIDWAY, CITY OF	**210477**
VERSAILLES, CITY OF	**210231**
WOODFORD COUNTY UNINCORPORATED AREAS	**210230**

FEMA

REVISED:

12/21/2017

FLOOD INSURANCE STUDY NUMBER
21239CV000B

Version Number 2.3.3.3

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FLOOD INSURANCE STUDY REPORT
WOODFORD COUNTY, KENTUCKY

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after

the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Woodford County, Kentucky.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Midway, City of	210477	05100205	21239C0039D 21239C0041D 21239C0043D 21239C0045D	
Versailles, City of	210231	05100205	21239C0070D 21239C0080D 21239C0090D 21239C0095C	
Woodford County Unincorporated Area	210230	05100205	21239C0015D 21239C0020C 21239C0037D 21239C0039D 21239C0040C 21239C0041D 21239C0043D	

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Woodford County Unincorporated Area	210230	05100205	21239C0045D 21239C0050C 21239C0055D 21239C0060C 21239C0065D 21239C0070D 21239C0080D 21239C0085D 21239C0090D 21239C0095C 21239C0105D 21239C0110D 21239C0115D 21239C0120D 21239C0150D 21239C0160D 21239C0180D	

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

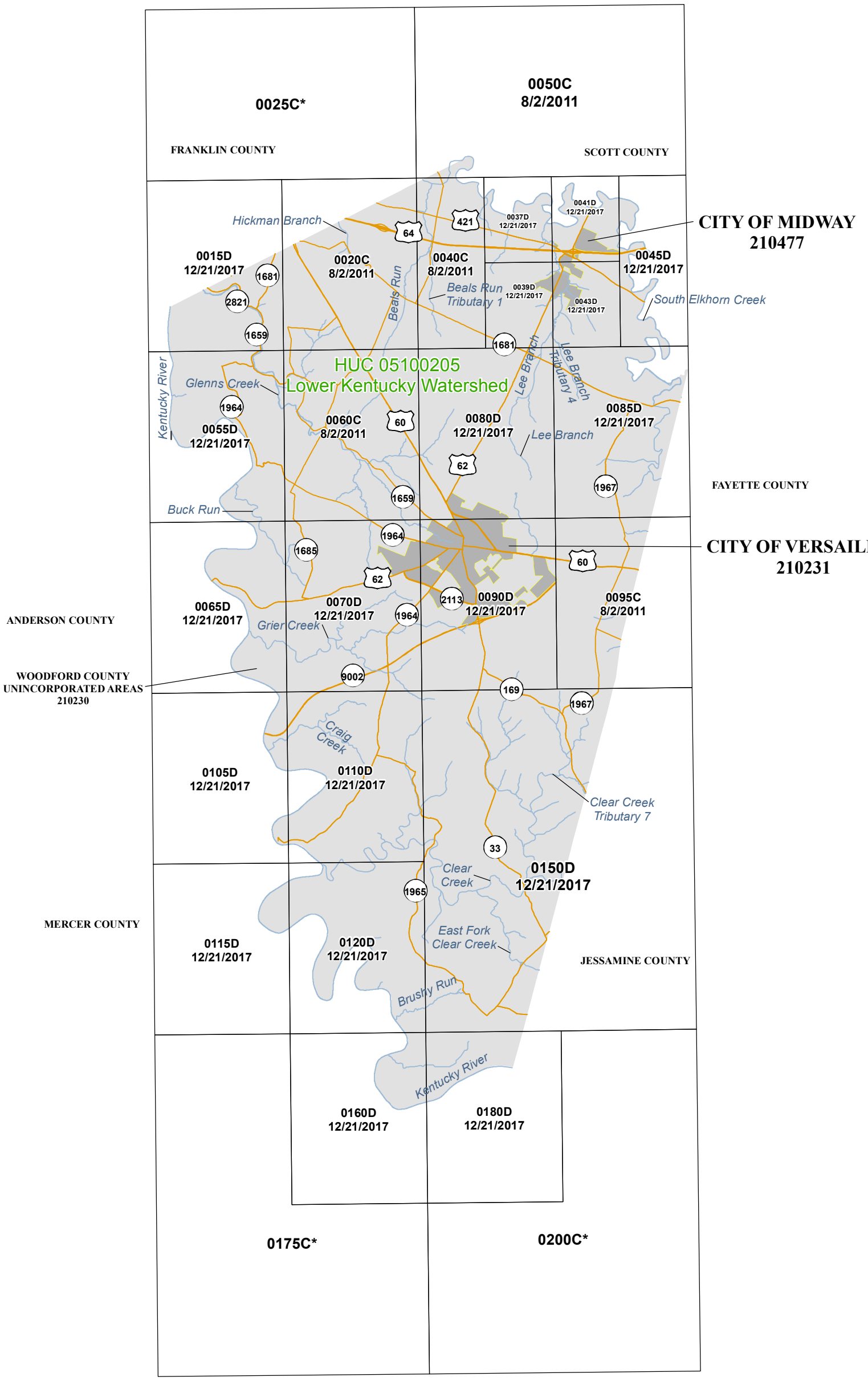
- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

  The initial Countywide FIS Report for Woodford County became effective on August 2, 2011. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at http://www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Woodford County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and United States Geological Survey (USGS) Hydrologic Unit Code – 8 (HUC-8) codes.

Figure 1: FIRM Panel Index



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before December 21, 2017

1 inch = 14,583 feet 1:175,000

N 0 8,300 16,600 33,200 Feet

Map Projection:
Kentucky State Plane Single Zone
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

*PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

MAP SYMBOLOGY
INDEX LAYERS

- Highway
- Stream Centerline
- 1175D 1/10/2010 — FIRM Panel
- HUC8 11540113 Unit Name — Watershed Boundary
- City, Town
- Woodford County

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

WOODFORD COUNTY, KENTUCKY and Incorporated Areas

PANELS PRINTED: 0015, 0020,0037, 0039, 0040, 0041, 0043, 0045, 0050, 0055, 0060, 0065, 0070, 0080, 0085, 0090, 0095, 0105, 0110, 0115, 0120, 0150, 0160, 0180

FEMA

MAP NUMBER
21239CIND0B

MAP REVISED
DECEMBER 21, 2017

Kentucky UNBRIDLED SPIRIT

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this 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 Flood 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 Flood Map Service Center website or by calling the 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 and countywide map dates, refer to Table 28 in this 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.

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 this 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 this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

Figure 2. FIRM Notes to Users

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane, Lambert Conformal Conic, Kentucky FIPS Single Zone 1600. The horizontal datum was North American Datum of 1983 (NAD83), GRS 80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in 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 listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on this FIRM was provided in digital format by the State of Kentucky Division of Geographic Information (KY DGI). Ortho imagery was originally produced by Photoscience for KY DGI in 2012 and has a 1-foot ground resolution. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

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.

Figure 2. FIRM Notes to Users

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Woodford County, Kentucky, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before December 21, 2017.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Woodford County, Kentucky, effective 12/21/2017.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this 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.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Woodford County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% 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 hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Figure 3: Map Legend for FIRM

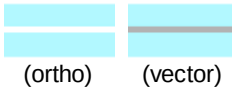
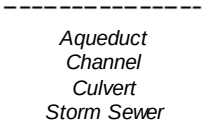
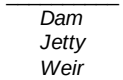
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible
	Unshaded Zone X: Areas determined to be outside the 0.2% annual chance flood hazard
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir

Figure 3: Map Legend for FIRM

	Levee, Dike or Floodwall
Bridge	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*	
CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth

Figure 3: Map Legend for FIRM

ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
———————	Horizontal Reference Grid Line
——	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Woodford County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM", describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Woodford County, Kentucky, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

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. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
All Zone A streams in HUC-12 51002050903, 51002050708, and 51002050707	Woodford County and Incorporated Areas	Various	Various	05100205	71.34		N	A	2015
All remaining Zone A streams	Woodford County and Incorporated Areas	Various	Various	05100205	96.266		N	A	2009
Glenns Creek	Woodford County Unincorporated Areas	Confluence with Kentucky River	Approximately 3,580 feet upstream of State Highway 1659	05100205	7.07		N	AE	1976
Glenns Creek	Woodford County Unincorporated Areas	Approximately 3,580 feet upstream of State Highway 1659	Approximately 1,850 feet upstream of Railroad	05100205	5.37		N	A	2009
Kentucky River	Woodford County Unincorporated Areas	Franklin County boundary	Jessamine and Mercer County boundary	05100205	40.36		Y	AE	2009
Lee Branch	Woodford County Unincorporated Areas	Confluence with South Elkhorn Creek	Approximately 2,690 feet downstream of West Leestown Pike	05100205	4.52		N	A	2009

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Lee Branch	City of Midway, Woodford County Unincorporated Areas	Approximately 2,690 feet downstream of West Leestown Pike	Approximately 890 feet upstream of Old Frankfort Pike	05100205	4.59		Y	AE	2009
Lee Branch	Woodford County Unincorporated Areas	Approximately 890 feet upstream of Old Frankfort Pike	Confluence with Sportsman Club Creek	05100205	4.08		N	A	2015
South Elkhorn Creek	Woodford County Unincorporated Areas	Franklin County boundary	At Paynes Depot Road	05100205	24.6		N	A	2015
South Elkhorn Creek	Woodford County Unincorporated Areas	At Paynes Depot Road	At Old Frankfort Road	05100205	2.12		Y	AE	1976
South Elkhorn Creek	Woodford County Unincorporated Areas	At Old Frankfort Road	Fayette County boundary	05100205	3.396		N	A	2009

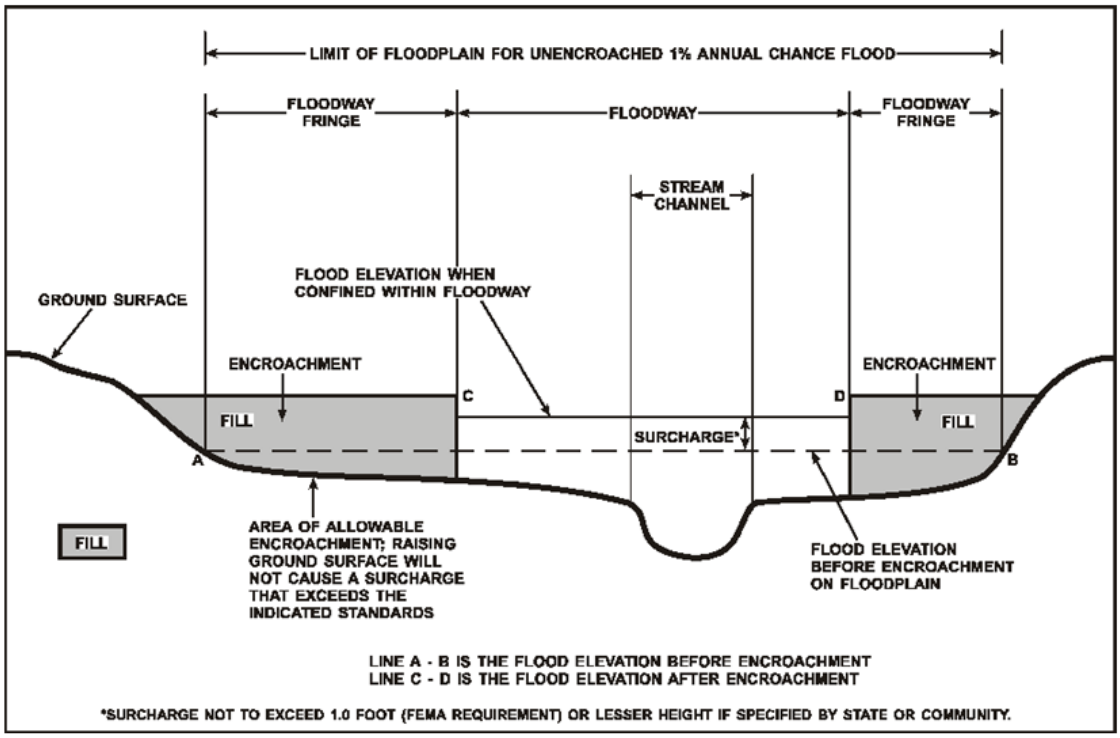
2.2 Floodways

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 balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for Kentucky require communities in Woodford County to limit increases caused by encroachment to 1.0 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM symbology described in Figure 3. In cases where the floodway and l% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs 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.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Woodford County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Midway, City of	A, AE, X
Versailles, City of	A, X
Woodford County Unincorporated Areas	A, AE, X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information

[Not Applicable to this Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Lower Kentucky	05100205	Kentucky River	Entire county within watershed	3,240

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Woodford County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Various sources	The most severe flooding problems for Woodford County result from overbank flooding in the immediate Kentucky River floodplain. The operation of Buckhorn and Carr Fork Lakes has reduced major flooding on the Kentucky River in Woodford County by an average of approximately 1.5 feet.
Glenns Creek	Flooding in the Glenns Creek basin is caused by local rainstorms. Backwater flooding from the Kentucky River extends approximately 1 mile upstream on Glenns Creek. The community of Millville, on the right bank of Glenns Creek, is subject to flooding from local rainstorms only.
Lee Branch, South Elkhorn Creek	Flooding caused by local rainstorms.

Table 7 contains information about historic flood elevations in the communities within Woodford County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Kentucky River	Lock No. 6	42.83	1937	45	FEMA, 2011
Kentucky River	Lock No. 6	48.52	1979	N/A	USGS, NWIS
Kentucky River	Lock No. 6	40.21	2010	N/A	USGS, NWIS

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Woodford County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

[Not Applicable to this Flood Risk Project]

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 9: Levees

[Not Applicable to this Flood Risk Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 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-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 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.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Glenns Creek	At confluence with Kentucky River	33.8	7,900	*	12,800	13,300	19,900
Glenns Creek	At Steele Road	19.2	6,400	*	10,600	11,100	17,000
Kentucky River	At River Mile Station 115.19	5,036	93,200	*	115,100	124,400	145,000
Kentucky River	At River Mile Station 80.86	5,225	88,600	*	107,000	113,000	126,000
Lee Branch	At Confluence with South Elkhorn Creek	23.6	930	*	1,978	2,546	4,474
Lee Branch	At approximately 0.3 miles downstream of U.S. Highway 421	23.2	930	*	1,978	2,546	4,474
Lee Branch	At Interstate 64	23	928	*	1,978	2,553	4,485
Lee Branch	At approximately 0.4 miles upstream of Interstate 64	22.5	924	*	1,984	2,570	4,565
Lee Branch	At approximately 0.2 miles downstream of U.S. Highway 62	22.3	930	*	2,006	2,611	4,624

*Data not available

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Lee Branch	At approximately 0.5 miles upstream of U.S. Highway 62	21.6	901	*	1,998	2,637	4,635
Lee Branch	At approximately 0.6 miles upstream of Walnut Street	18.9	1,077	*	2,278	2,898	4,894
Lee Branch	At approximately 0.9 miles downstream of Old Frankfort Pike (KY-1681)	18	1,566	*	2,856	3,513	5,447
Lee Branch	At approximately 0.4 miles downstream of Old Frankfort Pike (KY-1681)	14.2	1,012	*	2,022	2,527	4,033
Lee Branch	At approximately 1.3 miles upstream of Old Frankfort Pike (KY-1681)	9.9	680	*	1,342	1,670	2,649
South Elkhorn Creek	At Browns Mill Road	57	3,800	*	5,800	6,800	9,800
South Elkhorn Creek	At gage at Fort Spring, Kentucky (U.S. Highway 60)	24	1,850	*	3,000	3,600	5,400

*Data not available

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this Flood Risk Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

[Not Applicable to this Flood Risk Project]

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Kentucky River	03287000	USGS	Kentucky River at Lock 6 near Salvisa, KY	5,102	*	*
South Elkhorn Creek	03289300	USGS	South Elkhorn Creek near Midway, KY	105	1983	2011

*Data not available

5.2 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. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. 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. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
All Zone A streams in HUC-12 51002050903, 51002050708, and 51002050707	Various	Various	USGS Regression Equations	HEC-RAS 4.1.0	05/08/2015	A	
All remaining Zone A streams	Various	Various	USGS Regression Equations	HEC-RAS 3.1.2	07/01/2009	A	
Glenns Creek	Confluence with Kentucky River	Approximately 3,580 feet upstream of State Highway 1659	USGS Regression Equations	HEC-2	12/01/1976	AE	
Glenns Creek	Approximately 3,580 feet upstream of State Highway 1659	Approximately 1,850 feet upstream of Railroad	USGS Regression Equations	HEC-RAS 3.1.2	07/01/2009	A	
Kentucky River	Franklin County boundary	Jessamine and Mercer County boundary	Gage analysis	HEC-RAS 4.1.0	07/01/2009	AE w/ Floodway	
Lee Branch	Confluence with South Elkhorn Creek	Approximately 2,690 feet downstream of West Leestown Pike	XP SWMM, Version 11	HEC-RAS 3.1.2	07/01/2009	A	SCS methodology used; Lee Branch Watershed broken into 104 sub-basins, 81 of which contained sinkholes.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Lee Branch	Approximately 2,690 feet downstream of West Leestown Pike	Approximately 890 feet upstream of Old Frankfort Pike	XP SWMM, Version 11	HEC-RAS 3.1.2	07/01/2009	AE w/ Floodway	SCS methodology used; Lee Branch Watershed broken into 104 sub-basins, 81 of which contained sinkholes.
Lee Branch	Approximately 890 feet upstream of Old Frankfort Pike	Confluence with Sportsman Club Creek	USGS Regression Equations	HEC-RAS 4.1.0	05/08/2015	A	
South Elkhorn Creek	Franklin County boundary	At Paynes Depot Road	USGS Regression Equations	HEC-RAS 4.1.0	05/08/2015	A	
South Elkhorn Creek	At Paynes Depot Road	At Old Frankfort Road	USGS Regression Equations, Gage Analysis	HEC-2	12/01/1976	AE w/ Floodway	Portion of the floodway revised by LOMR Case No. 97-04-223P (06/03/1997).
South Elkhorn Creek	At Old Frankfort Road	Fayette County boundary	USGS Regression Equations	HEC-RAS 3.1.2	07/01/2009	A	

Table 14: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
All Zone A streams in HUC-12 51002050903, 51002050708, and 51002050707	0.035-0.055	0.060-0.120
All remaining Zone A streams	0.030-0.055	0.070-0.120
Glenns Creek	0.045	0.080
Kentucky River	0.038-0.045	0.070-0.120
Lee Branch	0.040-0.060	0.040-0.065
South Elkhorn Creek	*	*

*Data not available

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 15: Summary of Coastal Analyses

[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not Applicable to this Flood Risk Project]

Table 16: Tide Gage Analysis Specifics

[Not Applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Coastal Transect Parameters

[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map

[Not Applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 18: Summary of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

Table 19: Results of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Woodford County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

Table 21: Stream-by-Stream Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.
.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Political Areas	Kentucky Division of Geographic Information	03/20/2008	N/A	S_POL_AR contains county boundary lines and areas associated with the study area
Corporate Boundaries	Kentucky Division of Geographic Information	05/12/2010	N/A	S_POL_AR contains corporate boundary lines and areas associated with the study area
Transportation	Kentucky Transportation Cabinet	2002	N/A	S_Trnsprt_Ln. Roads within the study area
Transportation	Kentucky Transportation Cabinet	07/01/2013	N/A	S_Trnsprt_Ln. Railroads within the study area
Raster Imagery	Kentucky Division of Geographic Information	03/11/2012	1:400	S_BASE_INDEX contains information about the raster data used as the base map for the study area

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Water Features	Federal Emergency Management Agency	01/29/2013	N/A	S_Wtr_Ln. Stream Features
Water Features	Kentucky Division of Geographic Information	07/01/2009	N/A	S_Wtr_Ln. Kentucky River Stream Features

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% 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.

The floodway widths 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. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Table 23: Summary of Topographic Elevation Data used in Mapping

		Source for Topographic Elevation Data					
Community	Flooding Source	Description	Scale	Contour Interval	$RMSE_Z$	$Accuracy_Z$	Citation
Woodford County Unincorporated Area	Glenns Creek, various Zone A streams	Topographic Maps	1:24,000	10 ft	N/A	N/A	USGS 2004
Woodford County and Incorporated Areas	Glenns Creek, Kentucky River, Lee Branch, South Elkhorn Creek, various Zone A streams	Light Detection and Ranging data (LiDAR)	N/A	N/A			Photo Science 2011

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	387,926	389/211	21,900	5.1	513.6	513.6	514.4	0.8
B	391,127	421/254	20,348	5.5	513.9	513.9	514.7	0.8
C	394,492	514/291	23,335	4.8	514.5	514.5	515.3	0.8
D	398,622	504/300	23,101	4.8	515.1	515.1	515.9	0.8
E	401,376	557/317	23,271	4.8	515.5	515.5	516.4	0.9
F	404,176	631/445	25,526	4.4	516.0	516.0	516.8	0.8
G	406,668	467/169	22,552	5.0	516.4	516.4	517.2	0.8
H	409,347	589/64	26,856	4.2	516.9	516.9	517.7	0.8
I	412,205	540/297	24,259	4.6	517.2	517.2	518.0	0.8
J	415,627	409/215	22,039	5.1	517.7	517.7	518.5	0.8
K	418,650	466/270	22,722	4.9	518.1	518.1	518.9	0.8
L	422,844	622/447	29,408	3.8	519.0	519.0	519.8	0.8
M	429,466	426/167	22,885	5.4	519.7	519.7	520.5	0.8
N	433,695	415/198	22,751	5.5	520.4	520.4	521.2	0.8
O	439,196	432/278	19,872	6.3	521.4	521.4	522.2	0.8
P	443,889	416/377	19,699	6.3	522.1	522.1	522.9	0.8
Q	449,296	409/172	20,440	6.1	523.1	523.1	523.9	0.8
R	455,735	453/397	19,793	6.3	523.8	523.8	524.6	0.8
S	461,208	437/203	20,711	6.0	524.9	524.9	525.7	0.8
T	465,314	447/175	24,174	5.2	525.5	525.5	526.4	0.9
U	468,407	415/244	23,407	5.3	525.9	525.9	526.7	0.8
V	473,712	495/303	20,585	6.0	526.3	526.3	527.2	0.9

[1] Feet above confluence with Ohio River
[2] Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: KENTUCKY RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
W	477,520	375/170	19,529	6.4	526.9	526.9	527.7	0.8
X	482,381	412/184	20,826	6.0	527.6	527.6	528.4	0.8
Y	484,729	320/117	17,715	7.0	527.9	527.9	528.7	0.8
Z	488,992	500/192	22,599	5.5	528.6	528.6	529.3	0.7
AA	495,400	466/199	22,949	5.4	529.5	529.5	530.3	0.8
AB	500,598	455/225	23,196	5.4	530.3	530.3	531.1	0.8
AC	503,400	601/293	27,020	4.6	530.8	530.8	531.6	0.8
AD	506,173	503/275	24,739	5.0	531.2	531.2	531.9	0.7
AE	509,202	526/316	24,294	5.1	531.7	531.7	532.4	0.7
AF	511,575	620/304	32,512	3.8	532.3	532.3	533.0	0.7
AG	515,085	421/252	20,166	6.2	532.6	532.6	533.4	0.8
AH	520,849	418/149	20,454	6.1	534.0	534.0	534.7	0.7
AI	523,826	378/141	19,515	6.4	534.5	534.5	535.3	0.8
AJ	530,766	384/180	20,430	6.1	536.1	536.1	536.9	0.8
AK	535,996	405/180	21,455	5.8	537.3	537.3	538.0	0.7
AL	545,198	431/213	23,904	5.2	538.8	538.8	539.5	0.7
AM	552,525	428/290	23,628	5.3	539.8	539.8	540.5	0.7
AN	558,527	380/110	22,028	5.7	540.6	540.6	541.4	0.8
AO	565,801	414/206	20,828	6.0	541.8	541.8	542.5	0.7
AP	568,356	366/146	19,634	6.3	542.2	542.2	543.0	0.8
AQ	572,493	438/360	20,979	5.9	543.1	543.1	543.9	0.8
AR	576,759	363/145	20,824	6.0	544.2	544.2	544.9	0.7
AS	585,831	411/164	22,918	5.4	545.6	545.6	546.3	0.7
AT	591,195	404/105	21,082	5.9	546.3	546.3	547.1	0.8
AU	596,069	464/169	24,569	5.1	547.5	547.5	548.2	0.7

[1] Feet above confluence with Ohio River
[2] Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: KENTUCKY RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,322	218	1,090	2.3	774.2	774.2	774.5	0.3
B	5,256	141	1,305	2.0	780.7	780.7	780.9	0.2
C	6,403	300	2,294	1.1	783.7	783.7	783.9	0.2
D	7,505	244	1,182	2.2	784.0	784.0	784.2	0.2
E	8,643	280	1,297	2.0	785.4	785.4	785.5	0.1
F	9,416	399	1,360	1.9	786.8	786.8	787.0	0.2
G	10,406	142	567	4.7	790.0	790.0	790.0	0.0
H	11,390	207	1,016	2.6	792.9	792.9	793.5	0.6
I	12,148	380	1,690	1.6	793.8	793.8	794.4	0.6
J	13,022	471	4,299	0.7	801.5	801.5	801.7	0.2
K	13,684	155	1,543	1.9	801.5	801.5	802.0	0.5
L	15,309	292	1,924	1.5	801.8	801.8	802.7	0.9
M	18,615	450	1,798	2.0	805.8	805.8	806.3	0.5
N	21,315	219	1,213	2.1	808.6	808.6	809.5	0.9
O	22,056	350	1,231	2.1	810.0	810.0	810.9	0.9
P	22,783	220	972	2.6	813.5	813.5	814.1	0.6
Q	23,522	191	706	3.6	815.4	815.4	816.2	0.8
R	24,500	295	1,094	2.3	818.8	818.8	819.7	0.9
S	25,122	246	1,317	1.3	821.5	821.5	822.2	0.7
T	25,940	158	511	3.3	825.4	825.4	826.1	0.7
U	26,495	208	1,111	1.5	826.9	826.9	827.5	0.6

[1]Stream distance in feet above confluence with South Elkhorn Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LEE BRANCH

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	34.46	332	3,328	1.8	816.6	816.6	817.3	0.7
B	34.50	217	2,263	2.6	816.7	816.7	817.4	0.7
C	34.85	282	2,924	2.0	817.6	817.6	818.3	0.7
D	35.05	238	2,368	2.5	818.0	818.0	818.7	0.7
E	35.16	285	2,883	2.0	818.3	818.3	818.9	0.6

[1]Stream distance in miles above confluence with Kentucky River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH ELKHORN CREEK

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit https://www.fema.gov/floodplain-management/letter-map-amendment-loma and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at http://www.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting https://www.fema.gov/floodplain-management/letter-map-amendment-loma for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at http://www.fema.gov/online-tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit https://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into this revision of the Woodford County FIRM are listed in Table 27. Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

Table 27: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

PMRs are an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit http://www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Woodford County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Woodford County FIRMs in countywide format was 08/02/2011.

Table 28: Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Midway, City of	06/01/1978	None	None	06/01/1978	12/21/2017 08/02/2011
Versailles, City of	07/29/1977	07/29/1977	None	05/01/1990	12/21/2017 08/02/2011
Woodford County Unincorporated Areas	10/18/1974	10/18/1974	None	06/01/1978	12/21/2017 08/02/2011

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Glenns Creek, and various Zone A streams	08/02/2011	AMEC Earth & Environmental, Inc	EMA-2007-CA-5772	July 2009	Woodford County Unincorporated Areas
Glenns Creek, Kentucky River, Lee Branch, South Elkhorn Creek, and various Zone A streams	12/21/2017	AECOM	EMA-2012-CA-5265	May 2015	City of Midway, City of Versailles, Woodford County Unincorporated Areas

7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Midway, City of	12/21/2017	09/12/2012	Discovery	Woodford County Unincorporated Areas, City of Midway, City of Versailles, AECOM, URS KYDOW
		05/12/2016	Final CCO Meeting	FEMA, Kentucky Department of Water, the affected communities and study contractor
		TBD	Resilience	
	08/02/2011	05/24/2007	Initial CCO	Woodford County Unincorporated Areas, City of Midway, City of Versailles, FMSM Engineers, KYDOW
		11/09/2009	Final CCO	Woodford County Unincorporated Areas, City of Midway, City of Versailles, FMSM Engineers, KYDOW
Versailles, City of	12/21/2017	09/12/2012	Discovery	Woodford County Unincorporated Areas, City of Midway, City of Versailles, AECOM, URS KYDOW
		05/12/2016	Final CCO Meeting	FEMA, Kentucky Department of Water, the affected communities and study contractor
		TBD	Resilience	
	08/02/2011	05/24/2007	Initial CCO	Woodford County Unincorporated Areas, City of Midway, City of Versailles, FMSM Engineers, KYDOW
		11/09/2009	Final CCO	Woodford County Unincorporated Areas, City of Midway, City of Versailles, FMSM Engineers, KYDOW
Woodford County Unincorporated Areas	12/21/2017	09/12/2012	Discovery	Woodford County Unincorporated Areas, City of Midway, City of Versailles, AECOM, URS KYDOW

Table 30: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Woodford County Unincorporated Areas	12/21/2017	05/12/2016	Final CCO Meeting	FEMA, Kentucky Department of Water, the affected communities and study contractor
		TBD	Resilience	
	08/02/2011	05/24/2007	Initial CCO	Woodford County Unincorporated Areas, City of Midway, City of Versailles, FMSM Engineers, KYDOW
		11/09/2009	Final CCO	Woodford County Unincorporated Areas, City of Midway, City of Versailles, FMSM Engineers, KYDOW

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see http://www.fema.gov.

Table 31 is a list of the locations where FIRMs for Woodford County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Midway, City of	City Hall 101 East Main Street	Midway	KY	40347
Versailles, City of	City Hall 196 South Main Street	Versailles	KY	40383
Woodford County, Unincorporated Areas	Woodford County Courthouse 103 South Main Street	Versailles	KY	40383

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	https://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	http://www.fema.gov/national-flood-insurance-program
NFHL Dataset	http://msc.fema.gov
FEMA Region IV	Federal Emergency Management Agency, 3003 Chamblee Tucker Road, Atlanta, GA 30341 (770) – 220 - 5200
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Alex J. VanPelt KY Division of Water 200 Fair Oaks Lane Frankfort, KY 40601 502-564-3410 ext. 4952 alex.vanpelt@ky.gov
State GIS Coordinator	Kent Anness Statewide GIS Coordinator 100 Fair Oaks Frankfort, KY 40601 Phone: 502-564-6268 kent.anness@ky.gov
Statewide Regulatory Coordinator	Carey Johnson Statewide Regulatory Coordinator 200 Fair Oaks Lane, Fourth Floor Frankfort, KY 40601 Phone: 502-564-3410 carey.johnson@ky.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
CED, 2009	Cabinet for Economic Development	*Kentucky Quick Facts*	Cabinet for Economic Development	Kentucky	2009	http://www.thinkkentucky.com
FEMA, 1977	FEMA	*Flood Insurance Study, Woodford County Unincorporated Areas, Kentucky*	FEMA	Washington, D.C.	December, 1977	FEMA Flood Map Service Center http://msc.fema.gov
FEMA, 2011	FEMA	*Flood Insurance Study, Woodford County Unincorporated Areas, Kentucky*	FEMA	Washington, D.C.	August 2, 2011	FEMA Flood Map Service Center http://msc.fema.gov
Hydrology, 2005	Subcommittee on Hydrology: Hydrologic Frequency Analysis Work Group	*Bulletin 17-B Guidelines for Determining Flood Flow Frequency: Frequently Asked Questions*	Advisory Committee on Water Information		2005	
KGN, 2010	Kentucky Geography Network	*Geoportal*			December 29, 2010	http://kygisserver.ky.gov/geoportal/catalog/main/home.page
NRCS, 1986	National Resources Conservation Service	*Urban Hydrology for Small Watersheds, Technical Release 55, Chapter 3*			1986	

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Photo Science, 2011	Photo Science, Inc.	*2 ft. contours, scale 1" = 200' derived from photography. Horizontal datum is NAD83, Geoid Model is GEOID03, US Feet, and vertical datum is NAVD88.*	Photo Science, Inc.	Lexington, Kentucky	2011	Photo Science, Inc.
USACE	U.S. Department of the Army, Corp of Engineers	*Project and Index Maps*	Louisville District			
USACE, 1975	U.S. Department of the Army, Corp of Engineers	*Detailed Project Report, Small Flood Control Project, Town Fork, Nicholasville, Kentucky*	Louisville District		November 1975	
USACE, 2004	Hydrologic Engineering Center	River Analysis System, HEC-RAS, Version 3.1.2 Computer Program		Davis, California	April 2004	
USACE, 2010	Hydrologic Engineering Center	*HEC-RAS, River Analysis System User's Manual, Version 4.1*		Davis, California	2010	
USGS, 1976	U.S. Geological Survey	*Technique for Estimating Magnitude and Frequency of Floods in Kentucky, Water Resources Investigations 76-62*	C.H. Hannum		November 1976	

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS, 2003	U.S. Geological Survey	*Estimating the Magnitude of Peak Flows for Streams in Kentucky for Selected Recurrence Intervals, Water Resources Investigations Report 03-4180*	Hodgkins, G.A. and Martin, G.R.		2003	
USGS, 2004	U.S. Geological Survey	*10 ft. contours, scale 1" = 24,000' (City) derived from 7.5 Minute Series Topographic Maps. Horizontal datum is NAD83and vertical datum is NAVD88.*	USGS		2004	
USIACWD, 1982	U.S. Interagency Advisory Committee on Water Data	*Guidelines for Determining Flood Flow Frequency, Bulletin 17-B of the Hydrology Subcommittee*	Office of Water Data Coordination, U.S. Geological Survey	Reston, VA	1982	
Watershed Concepts, 2008	Watershed Concepts, a Division of Hayes, Seay, Mattern & Mattern, Inc.	*Watershed Information System (WISE) Computer Software, Version 4.1.0*	Watershed Concepts		2008	

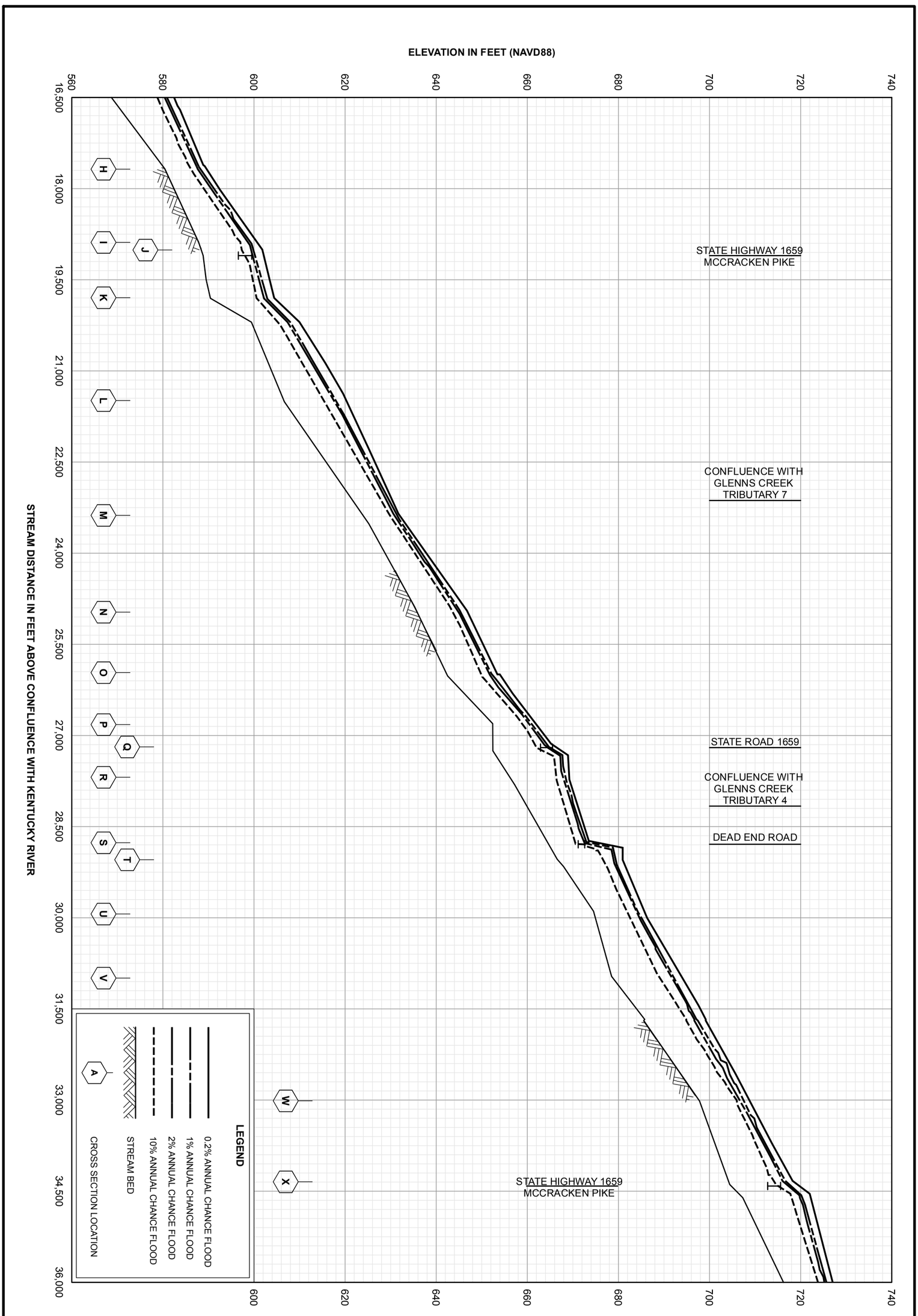
FLOOD PROFILES

GLENNS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY
AND INCORPORATED AREAS

01P



02P

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

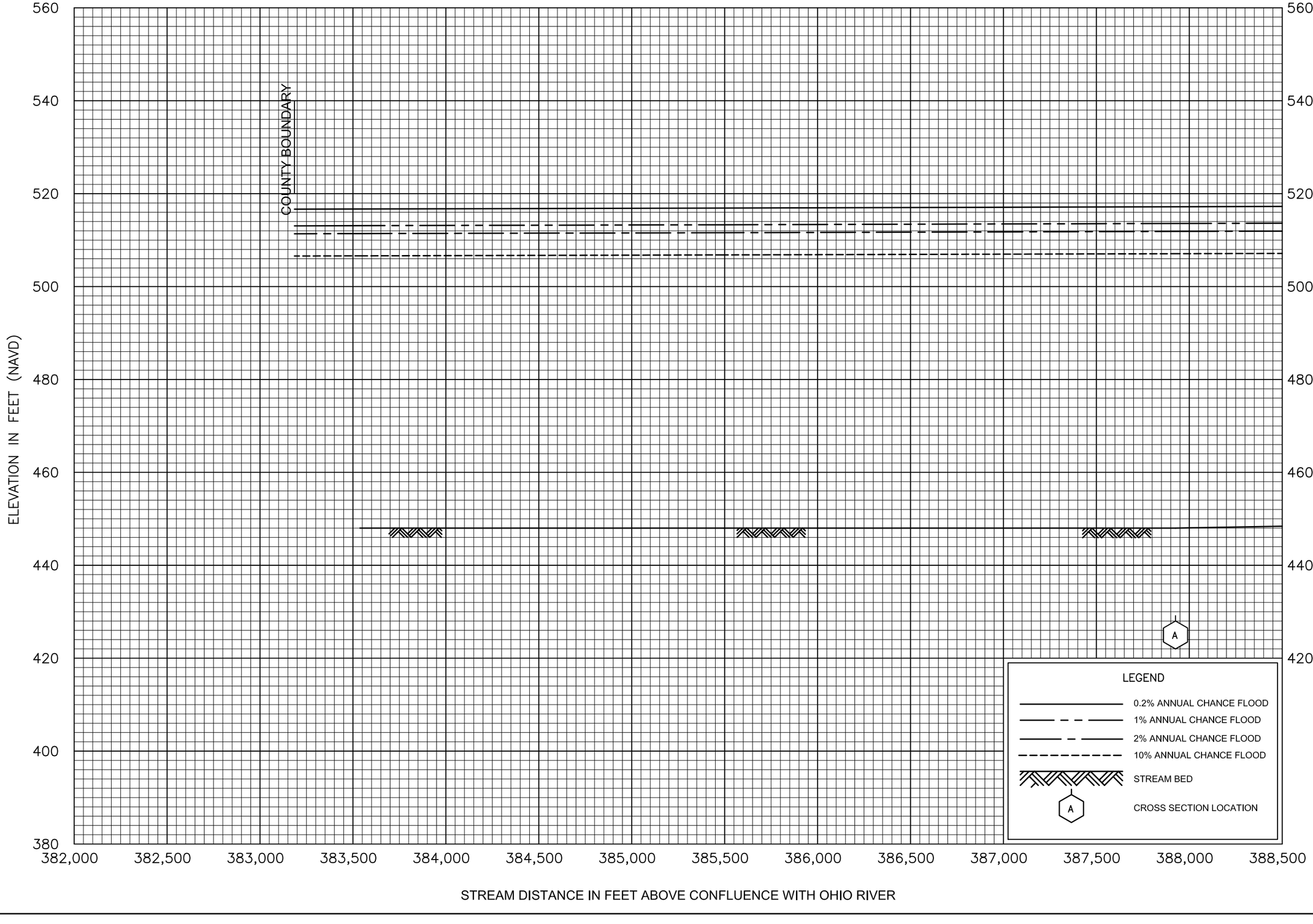
GLENNS CREEK

FLOOD PROFILES

GLENNS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY
AND INCORPORATED AREAS



FLOOD PROFILES

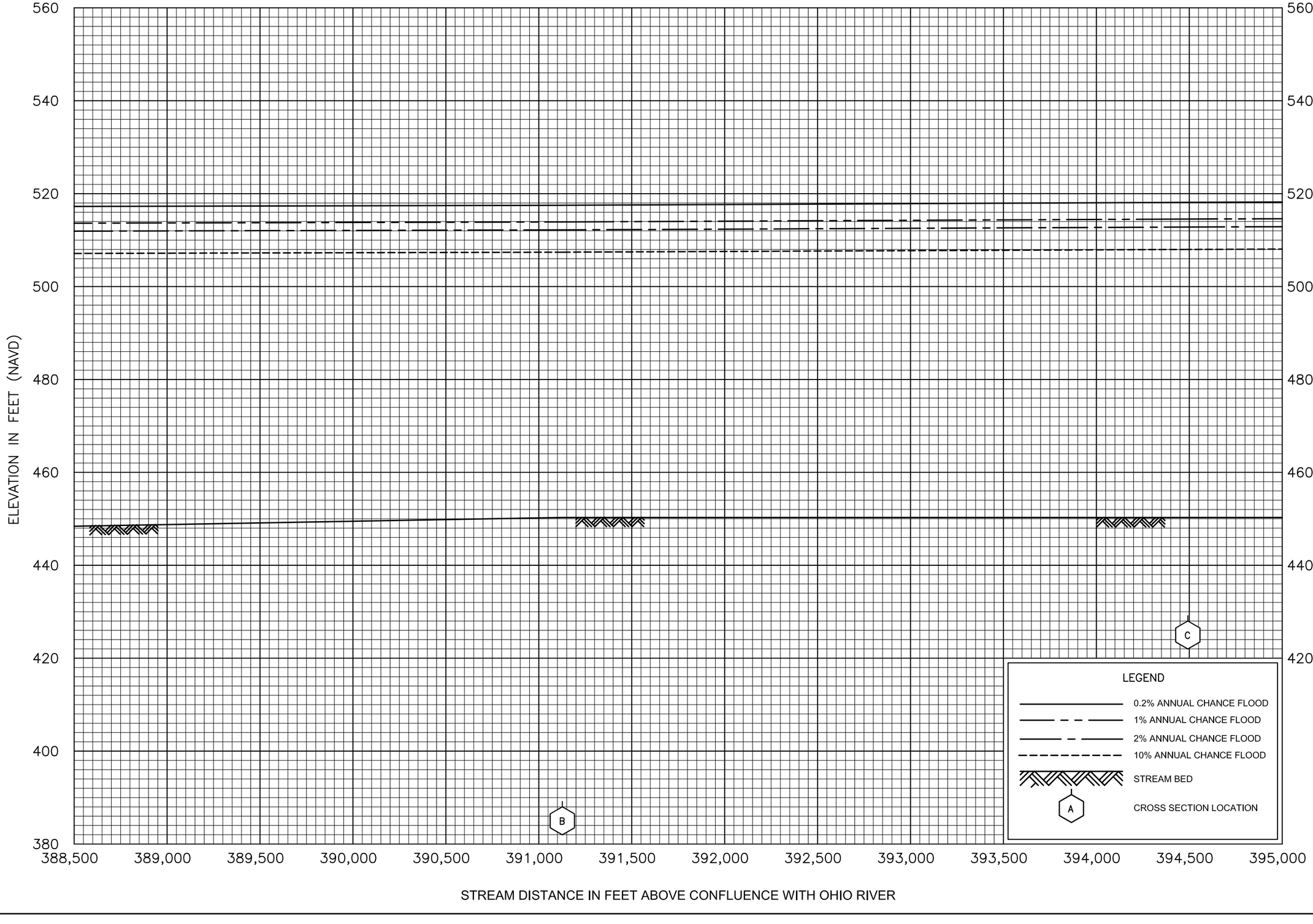
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

04P



FLOOD PROFILES

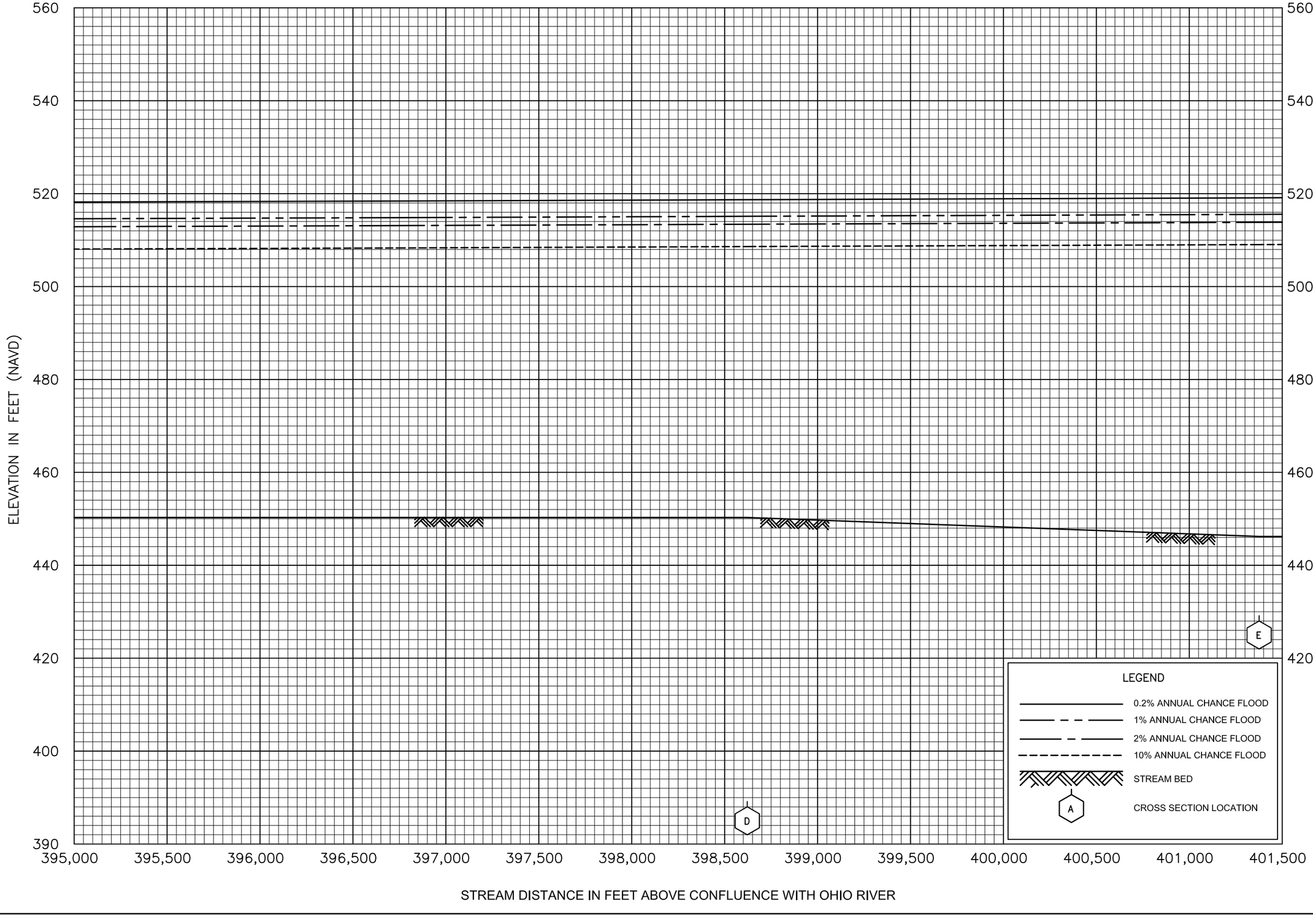
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

05P



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

06P

ELEVATION IN FEET (NAVD)

560
540
520
500
480
460
440
420
400
390

401,500 402,000 402,500 403,000 403,500 404,000 404,500 405,000 405,500 406,000 406,500 407,000 407,500 408,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

F

G

LEGEND

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

FLOOD PROFILES

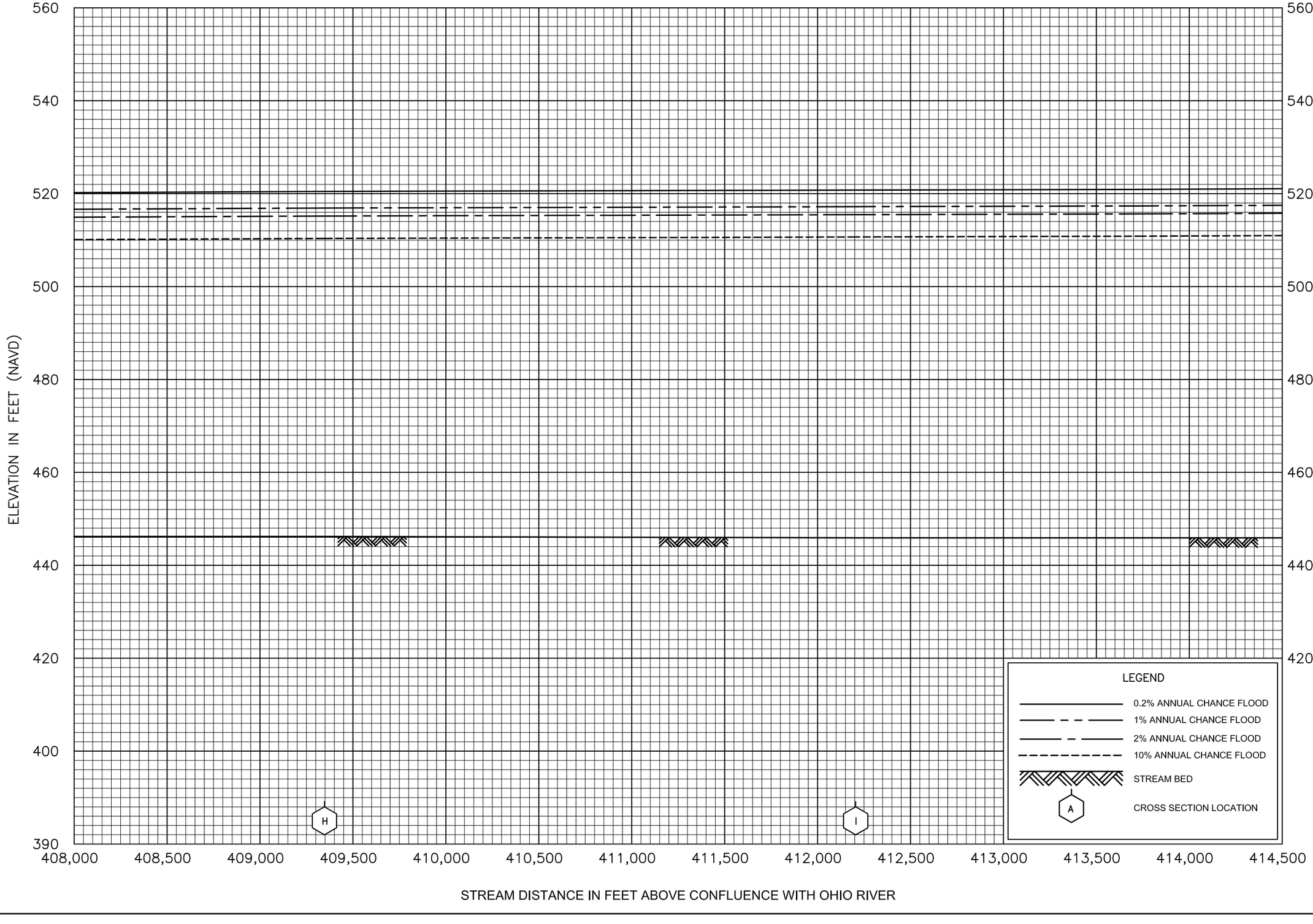
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07P



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07aP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

414,500 415,000 415,500 416,000 416,500 417,000 417,500 418,000 418,500 419,000 419,500 420,000 420,500 421,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

J

K

LEGEND

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

FLOOD PROFILES

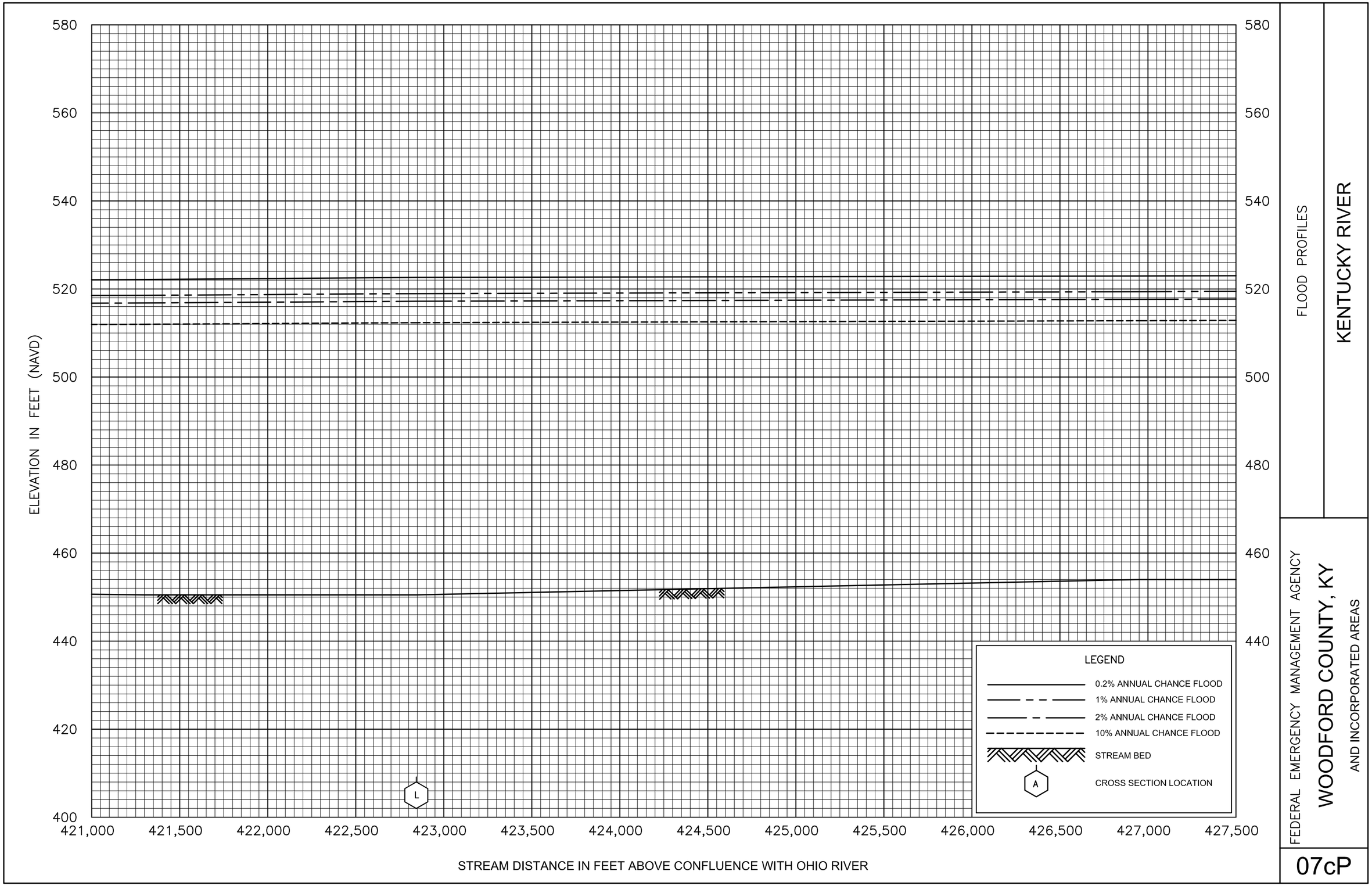
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07bP



FLOOD PROFILES

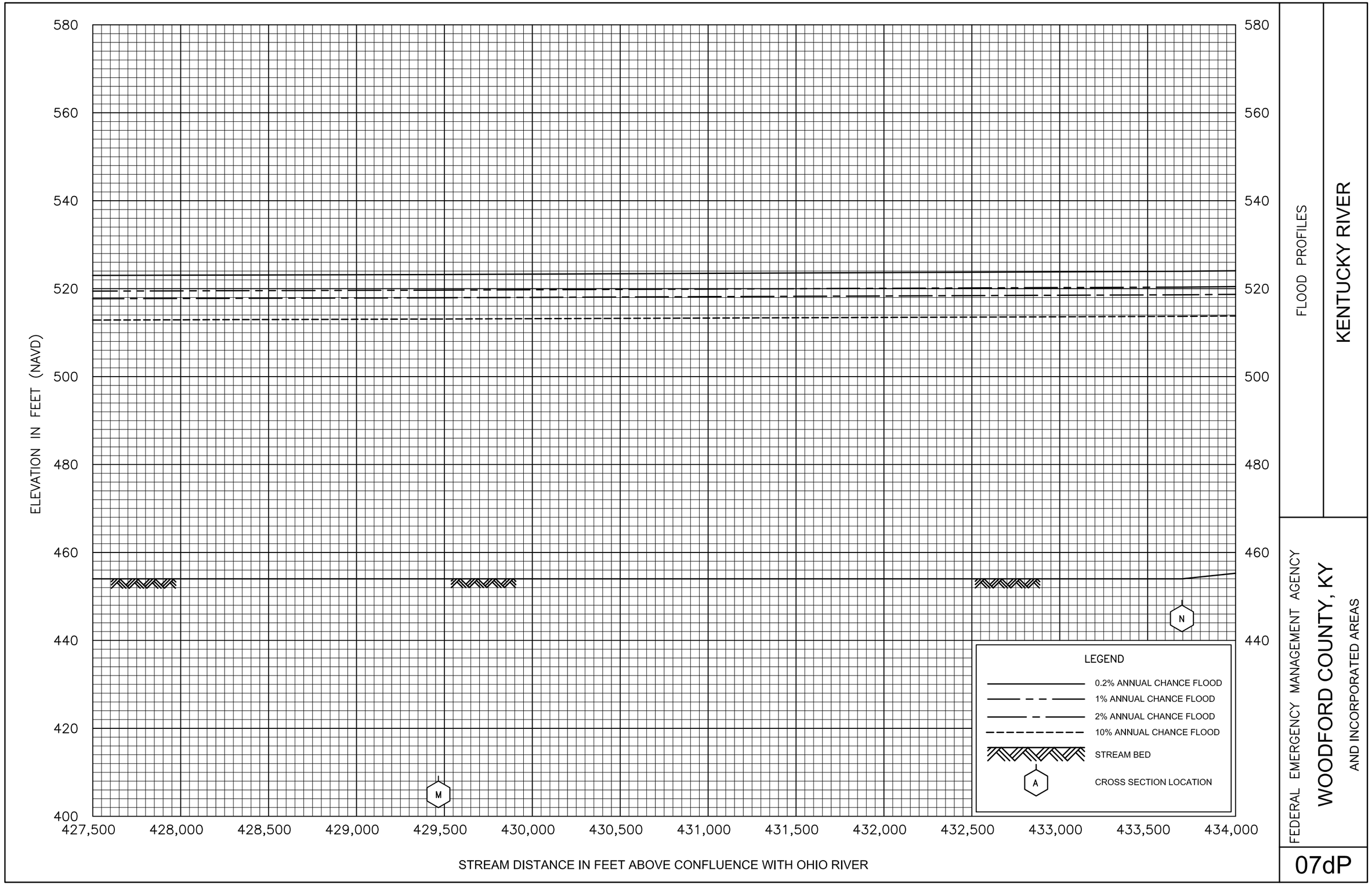
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07cP



FLOOD PROFILES

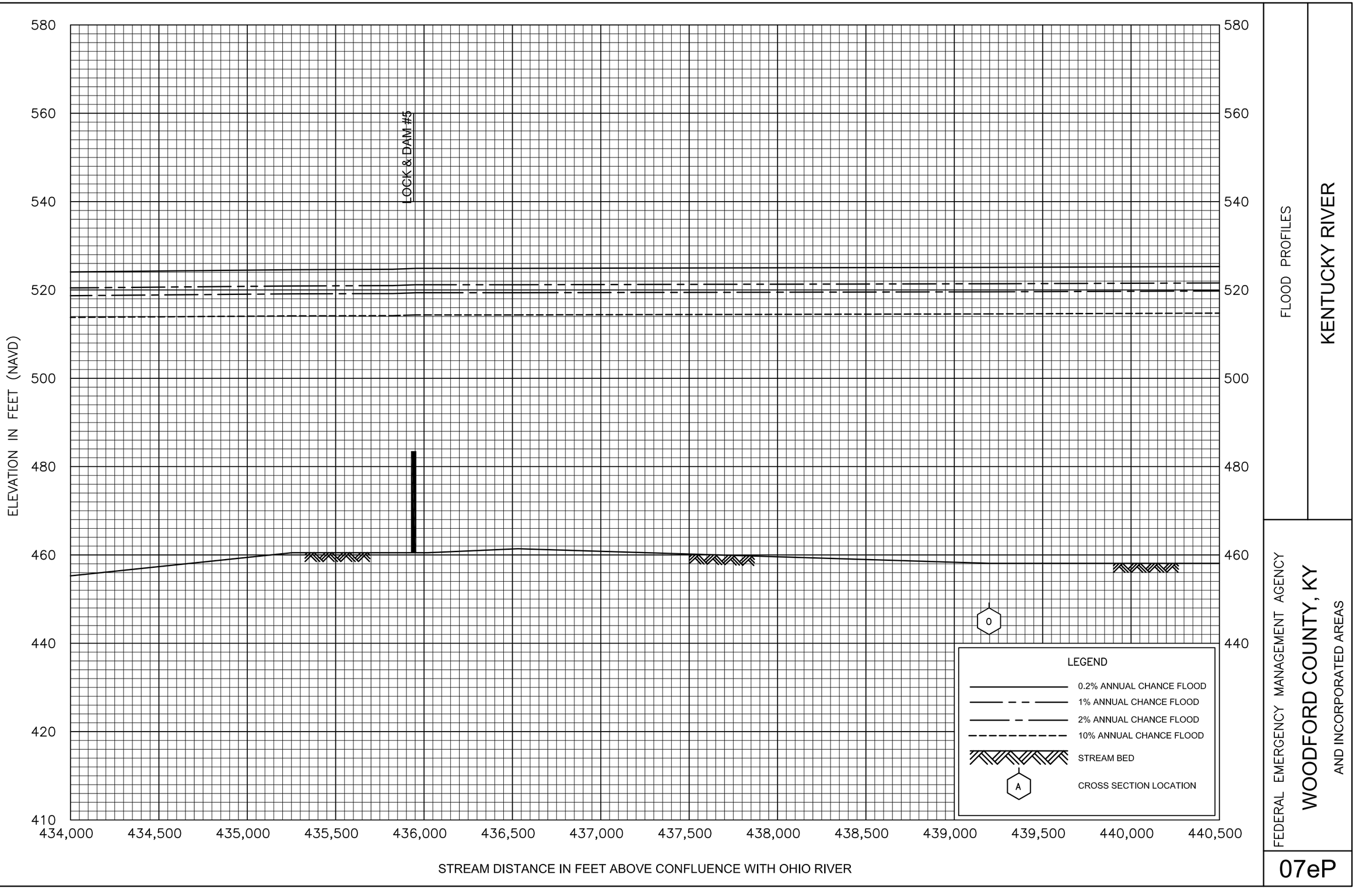
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07dP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07eP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

EL. 652.3
EL. 648.3
EL. 717.15
EL. 713.76

U.S. HWY 62
TYRONE PIKE

U.S. HWY 62
TYRONE PIKE

P

LEGEND

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

440,500 441,000 441,500 442,000 442,500 443,000 443,500 444,000 444,500 445,000 445,500 446,000 446,500 447,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07fP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

447,000 447,500 448,000 448,500 449,000 449,500 450,000 450,500 451,000 451,500 452,000 452,500 453,000 453,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

Q

LEGEND

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

FLOOD PROFILES

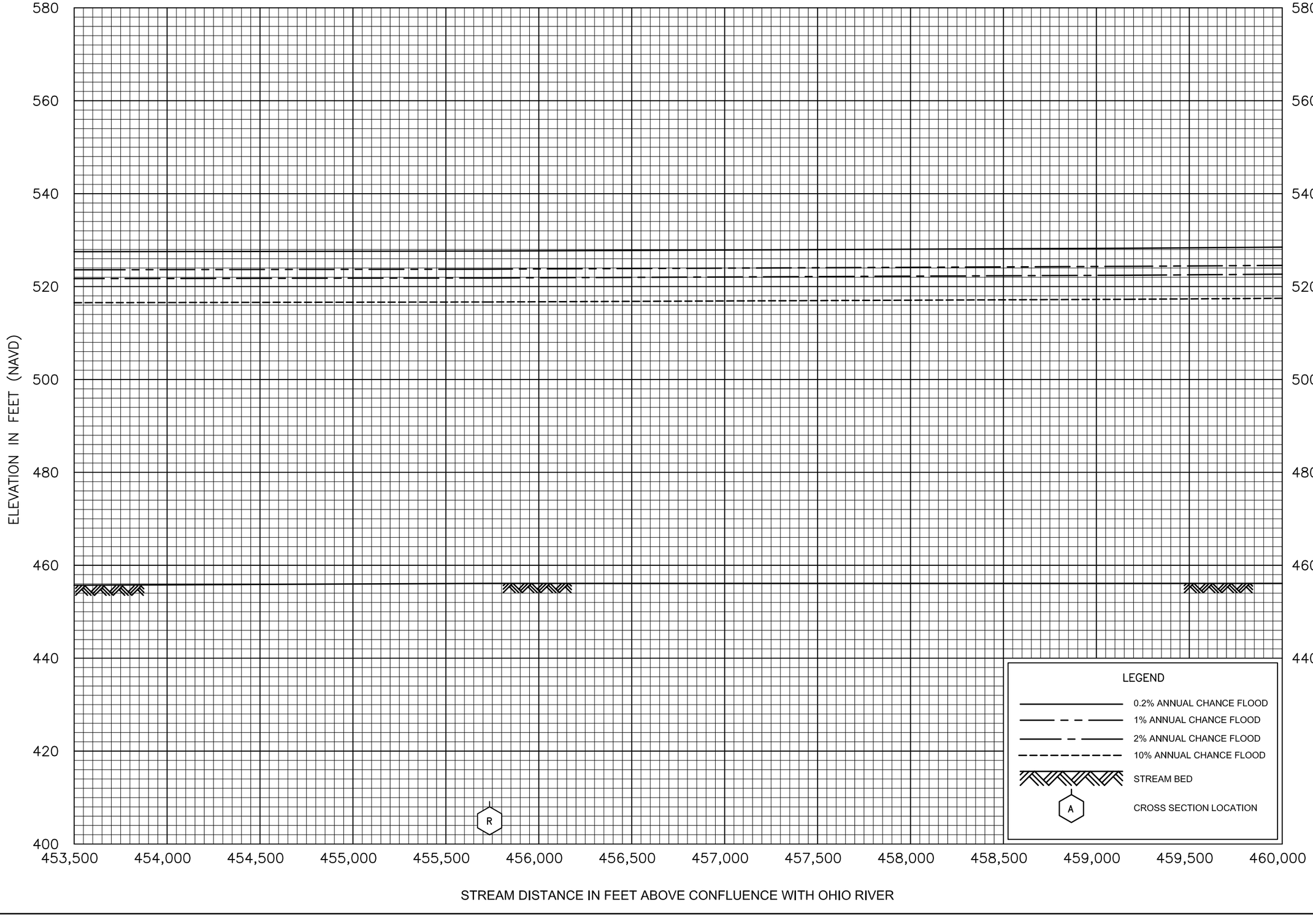
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07gP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07hP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

460,000 460,500 461,000 461,500 462,000 462,500 463,000 463,500 464,000 464,500 465,000 465,500 466,000 466,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

S

T

LEGEND

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

FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07iP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

EL. 651.66
EL. 626.78

KY HWY 9002
MARTHA LAYNE COLLINS
BLUEGRASS PKWY

U

LEGEND

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

466,500 467,000 467,500 468,000 468,500 469,000 469,500 470,000 470,500 471,000 471,500 472,000 472,500 473,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07jP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
410

473,000 473,500 474,000 474,500 475,000 475,500 476,000 476,500 477,000 477,500 478,000 478,500 479,000 479,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

V

W

LEGEND

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

FLOOD PROFILES

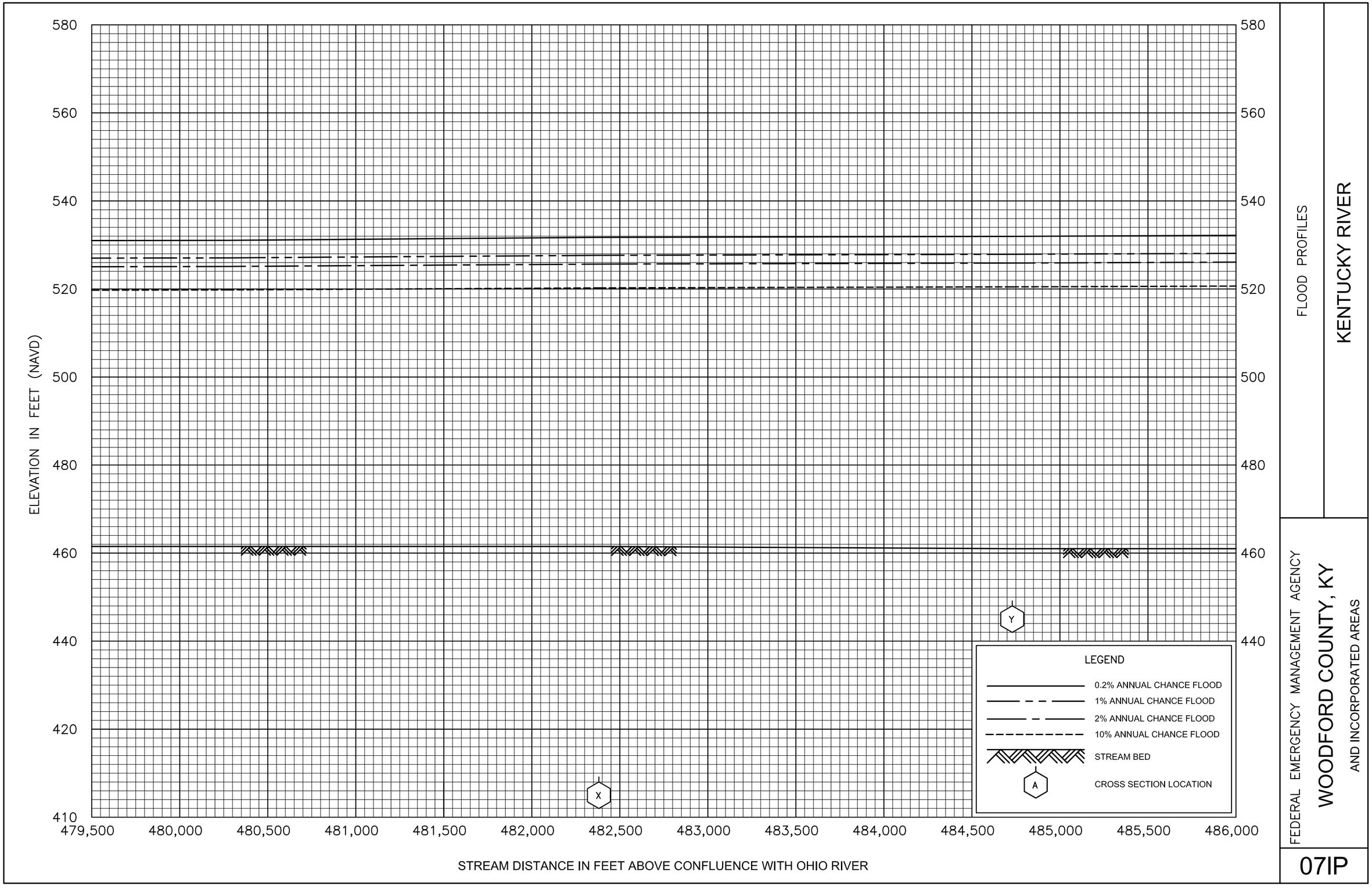
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07kP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07IP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
410

486,000 486,500 487,000 487,500 488,000 488,500 489,000 489,500 490,000 490,500 491,000 491,500 492,000 492,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

Z

LEGEND

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

FLOOD PROFILES

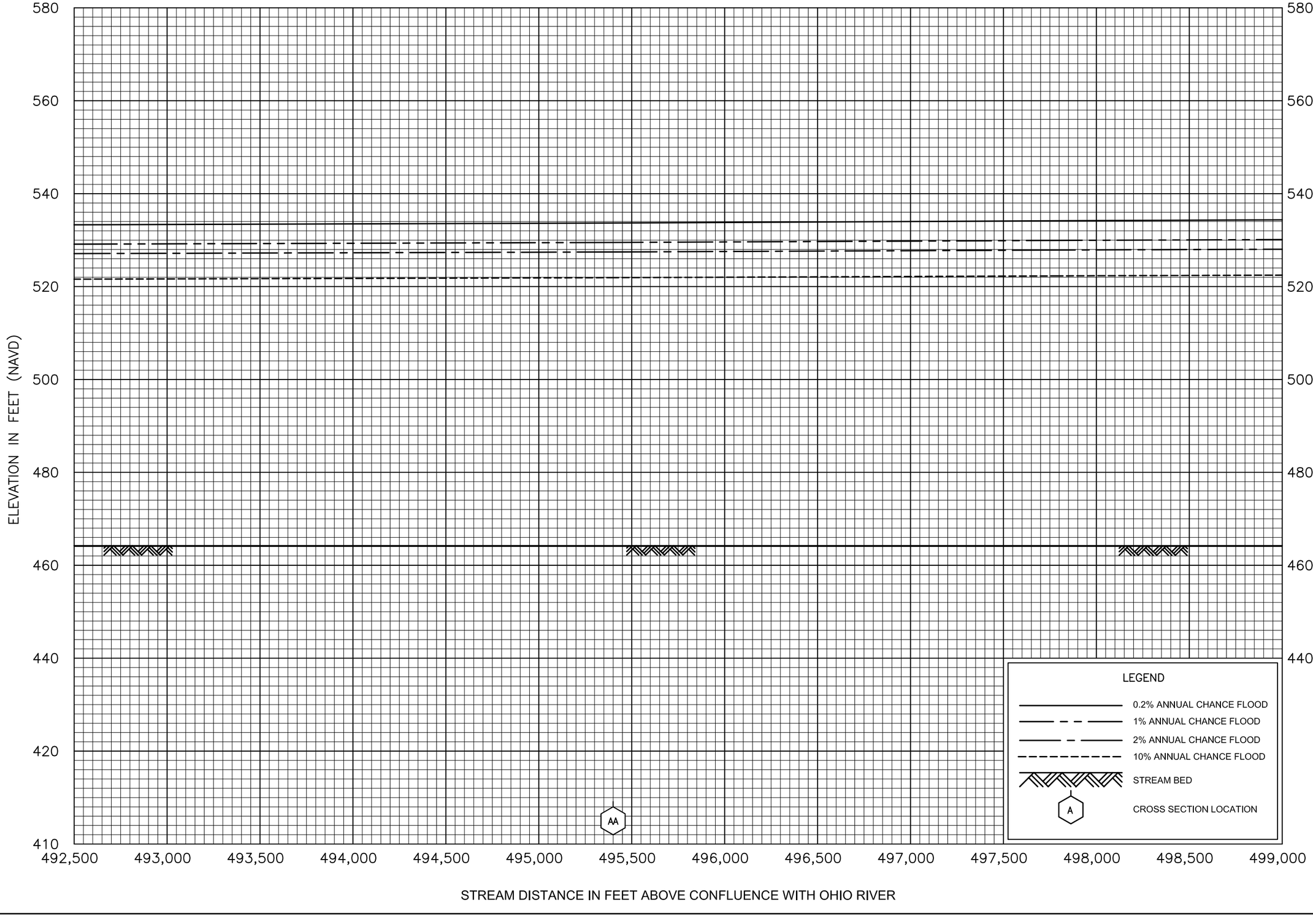
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07mP



FLOOD PROFILES

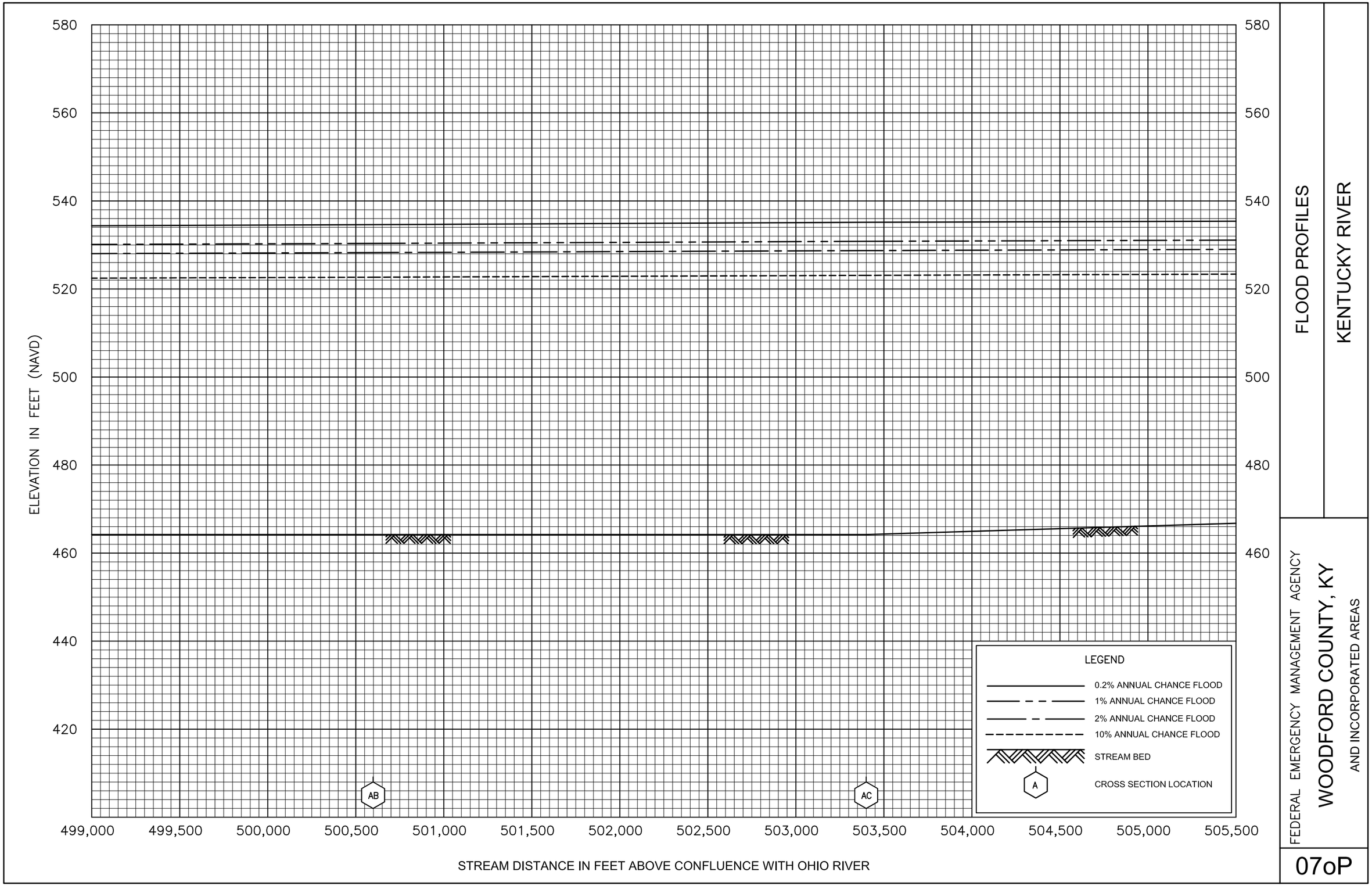
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07nP



FLOOD PROFILES

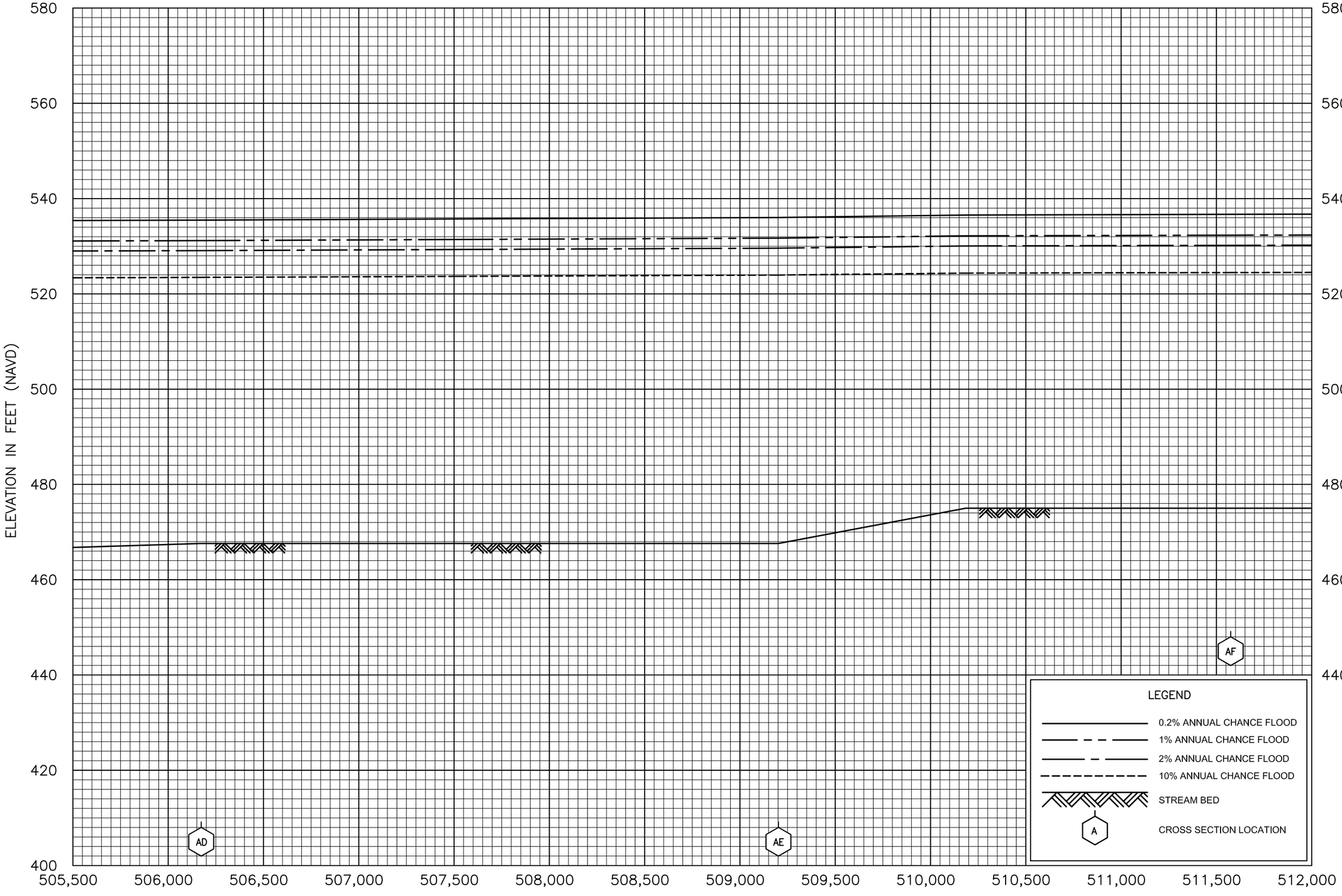
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07oP



FLOOD PROFILES

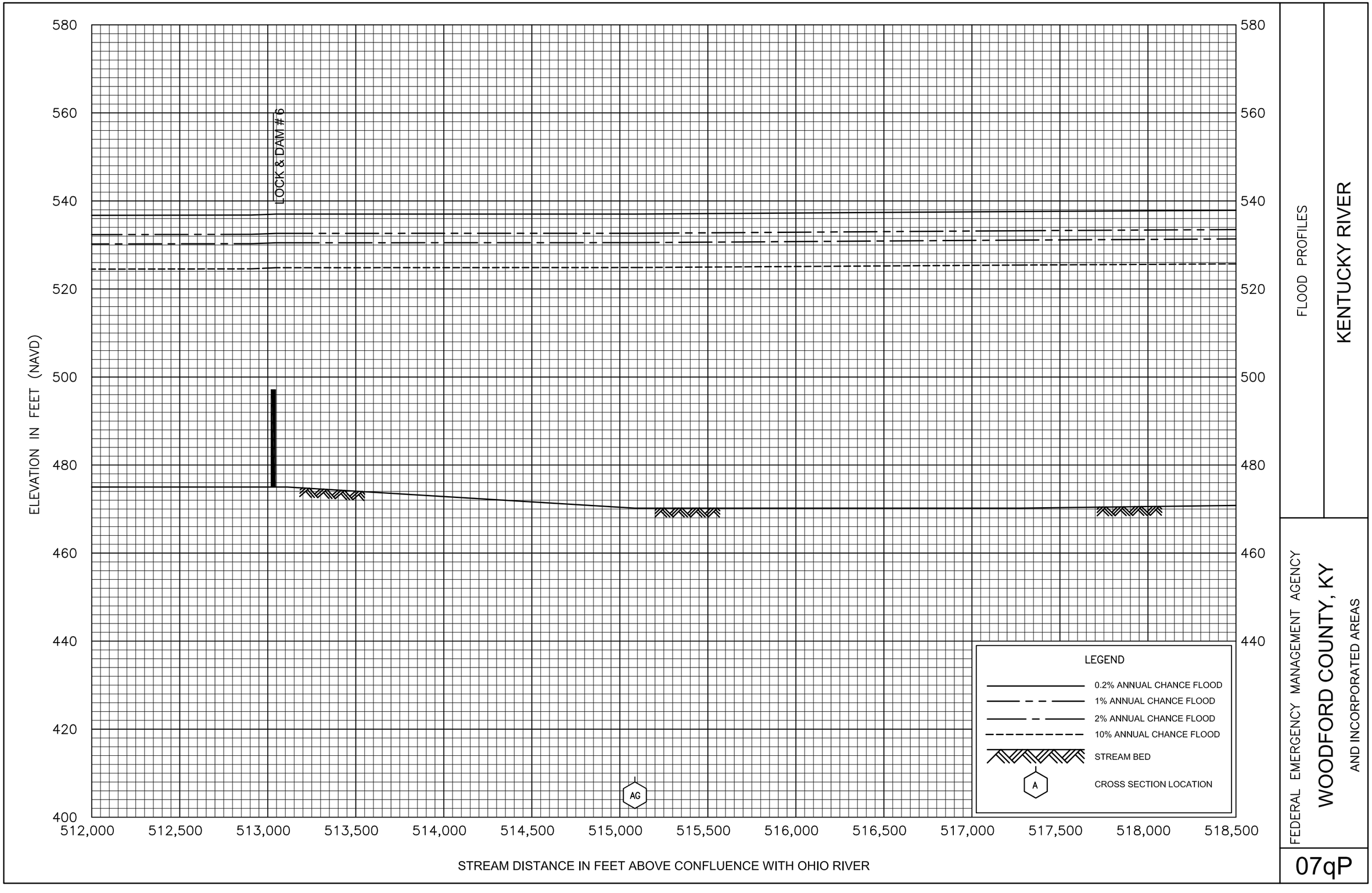
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07pP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07qP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

518,500 519,000 519,500 520,000 520,500 521,000 521,500 522,000 522,500 523,000 523,500 524,000 524,500 525,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

AH

AI

LEGEND

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

FLOOD PROFILES

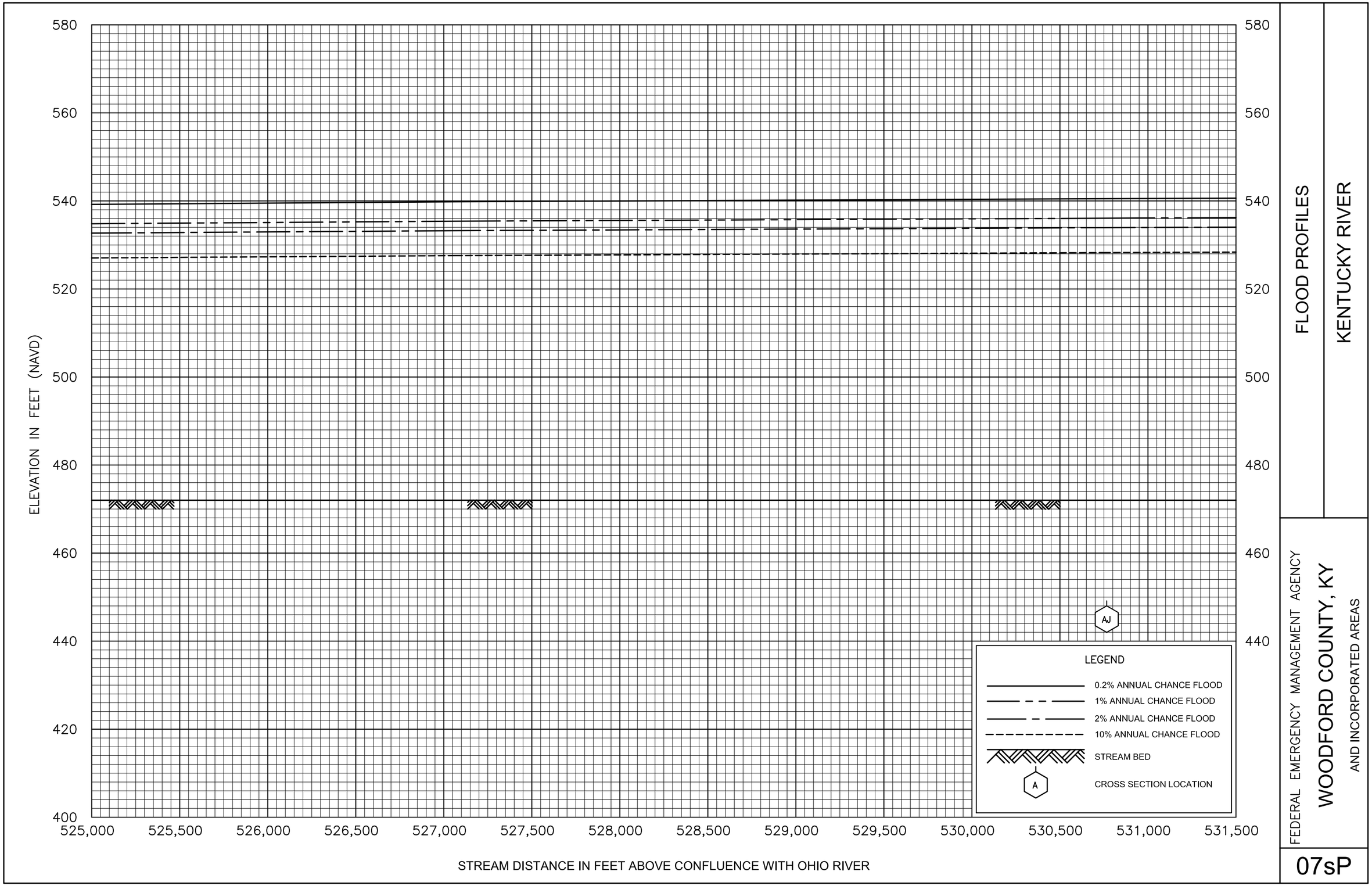
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07rP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07sP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

531,500 532,000 532,500 533,000 533,500 534,000 534,500 535,000 535,500 536,000 536,500 537,000 537,500 538,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

AK

LEGEND

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

FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07tP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

538,000 538,500 539,000 539,500 540,000 540,500 541,000 541,500 542,000 542,500 543,000 543,500 544,000 544,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

LEGEND

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

FLOOD PROFILES

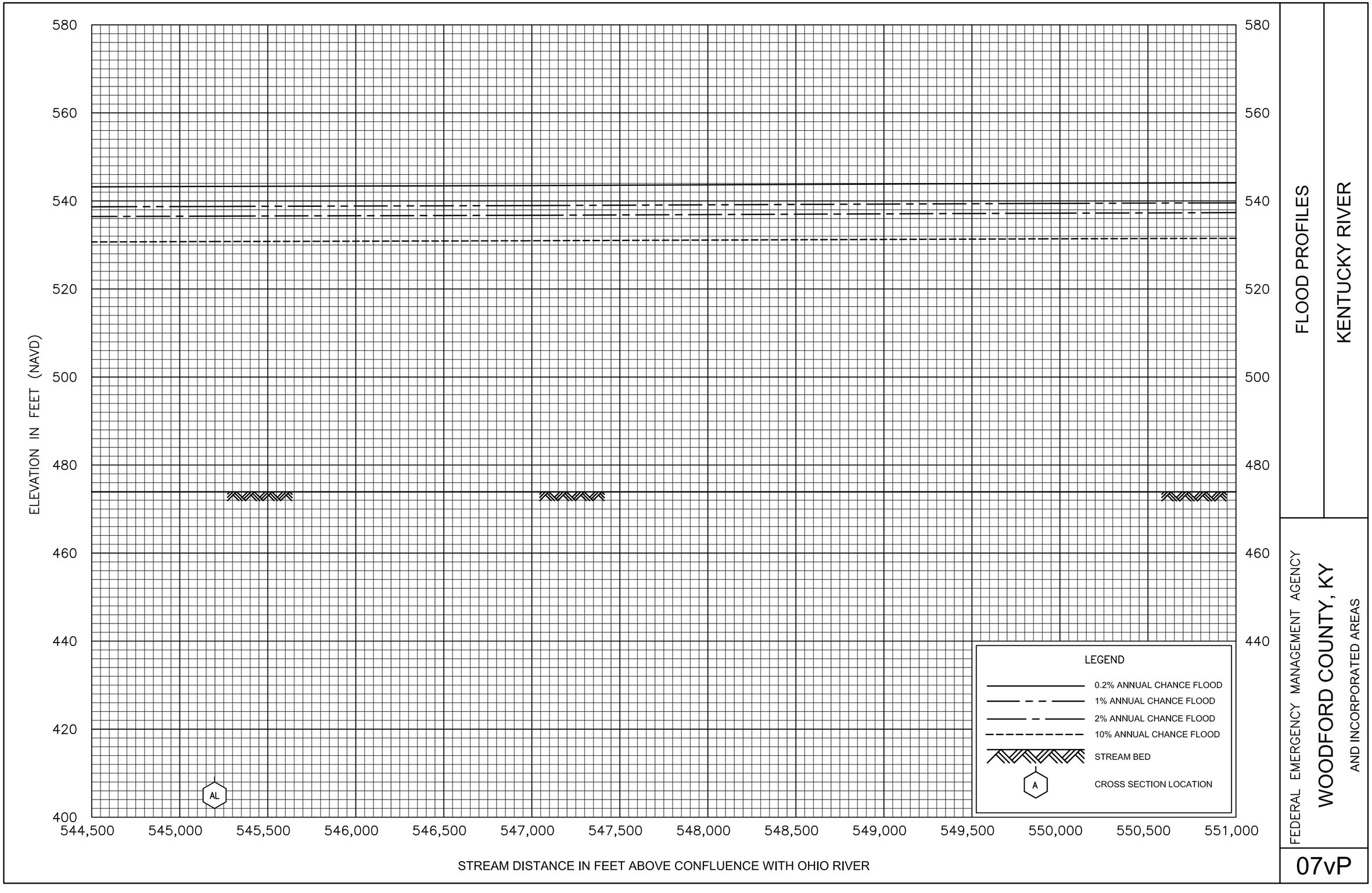
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07uP



FLOOD PROFILES

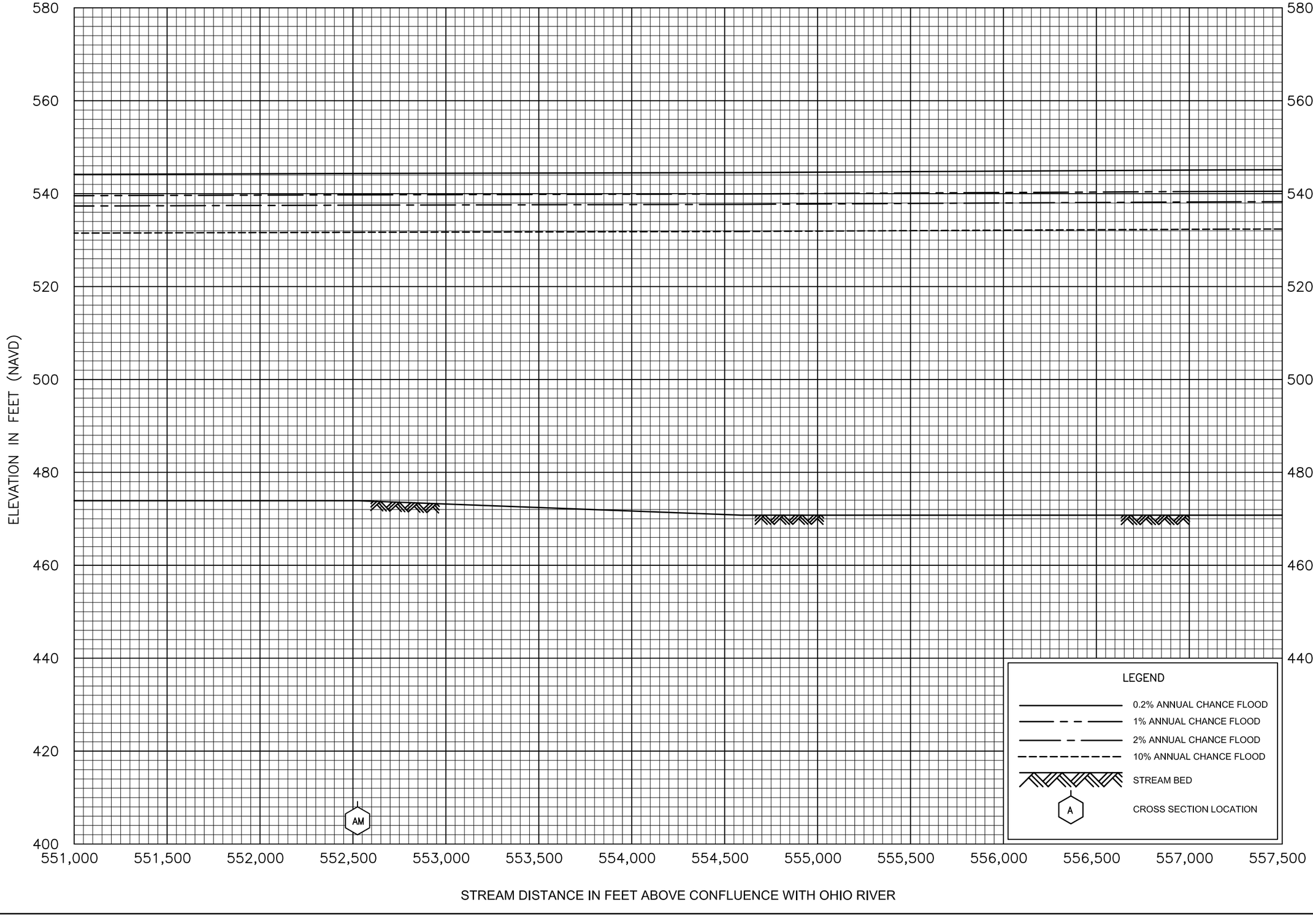
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07vP



FLOOD PROFILES

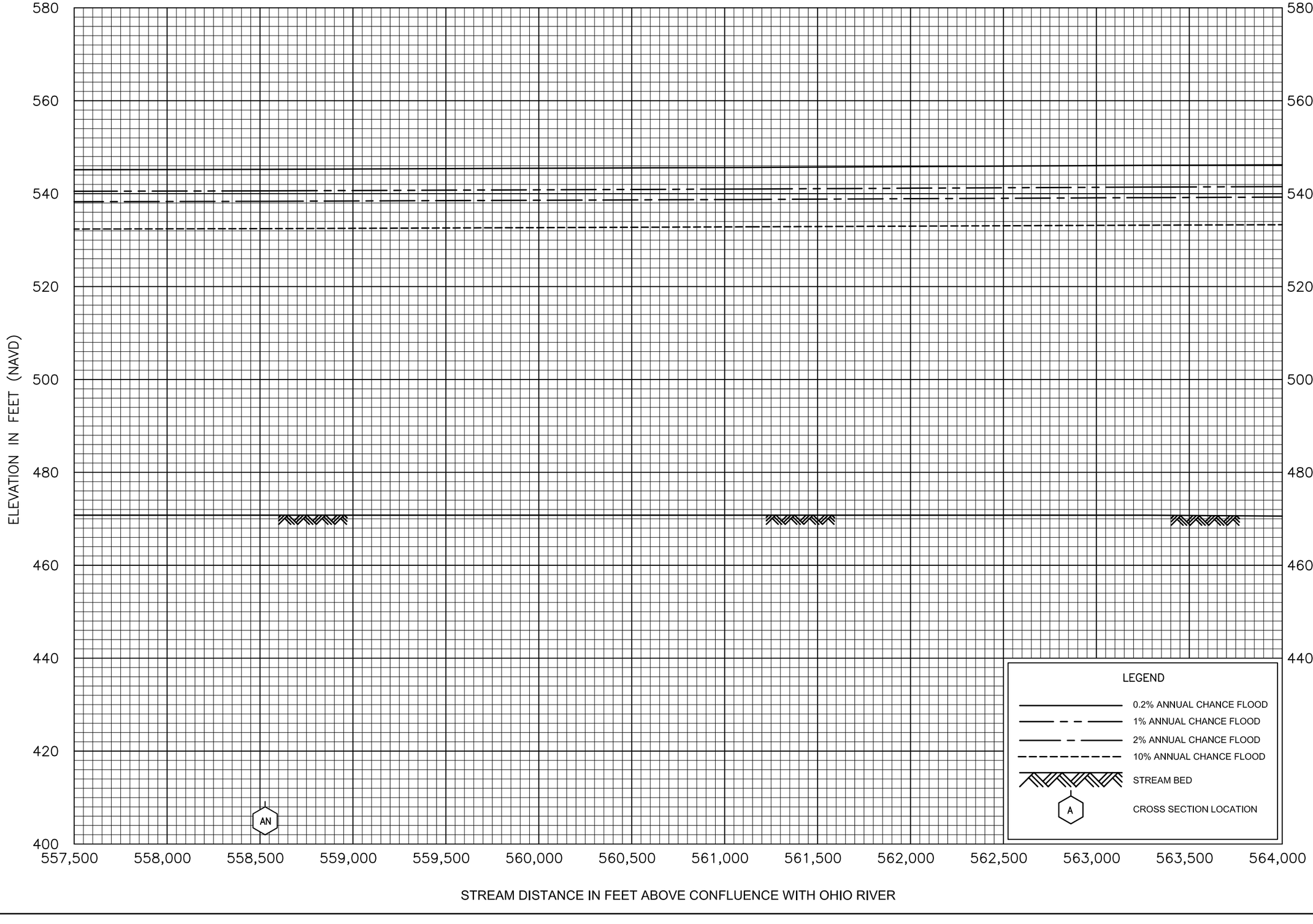
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07wP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07xP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

564,000 564,500 565,000 565,500 566,000 566,500 567,000 567,500 568,000 568,500 569,000 569,500 570,000 570,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

AO

AP

LEGEND

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

FLOOD PROFILES

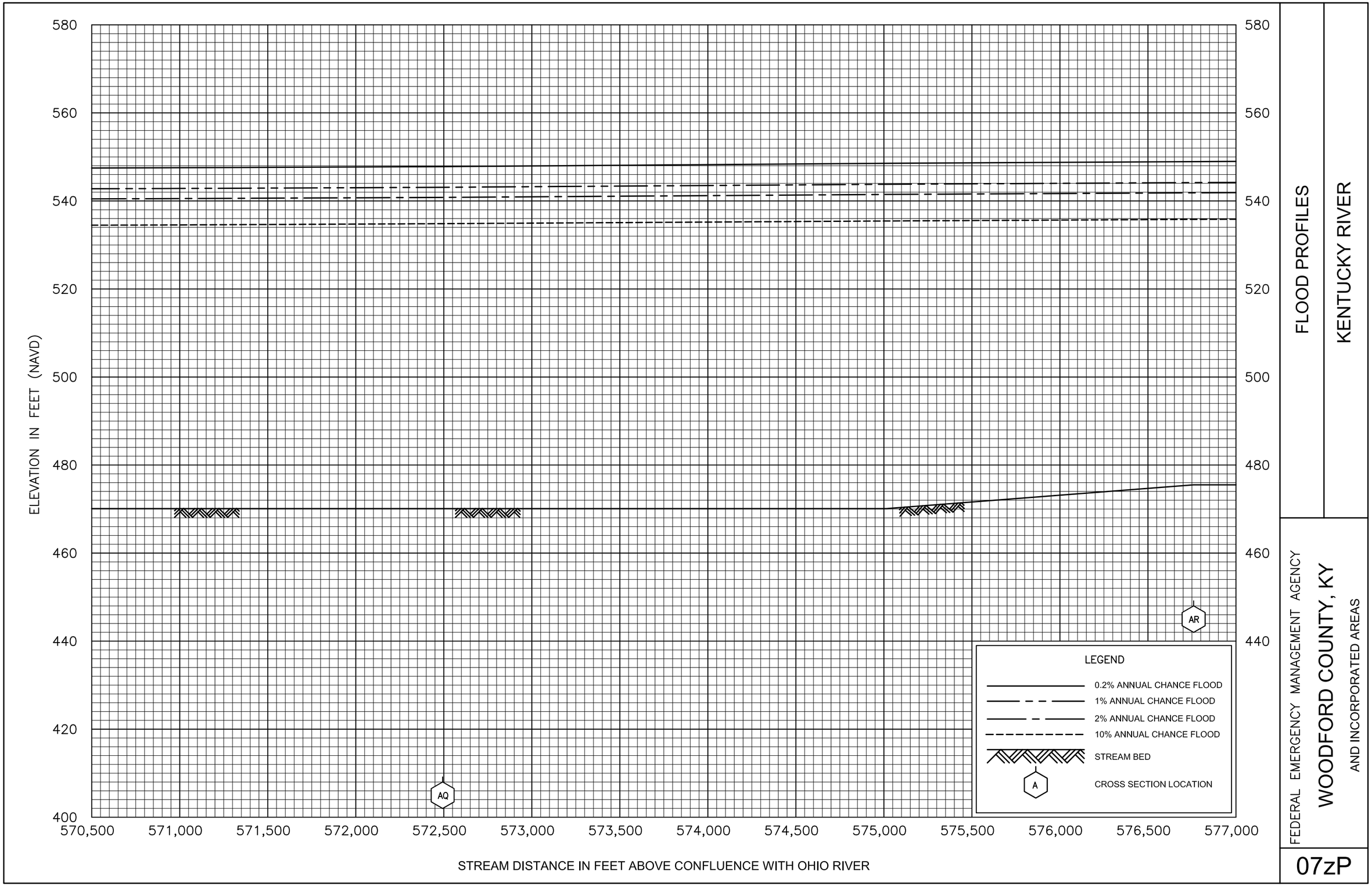
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07yP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07zP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

577,000 577,500 578,000 578,500 579,000 579,500 580,000 580,500 581,000 581,500 582,000 582,500 583,000 583,500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

LEGEND

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

FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07aaP

ELEVATION IN FEET (NAVD)

580
560
540
520
500
480
460
440
420
400

583,500 584,000 584,500 585,000 585,500 586,000 586,500 587,000 587,500 588,000 588,500 589,000 589,500 590,000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH OHIO RIVER

AS

LEGEND

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

FLOOD PROFILES

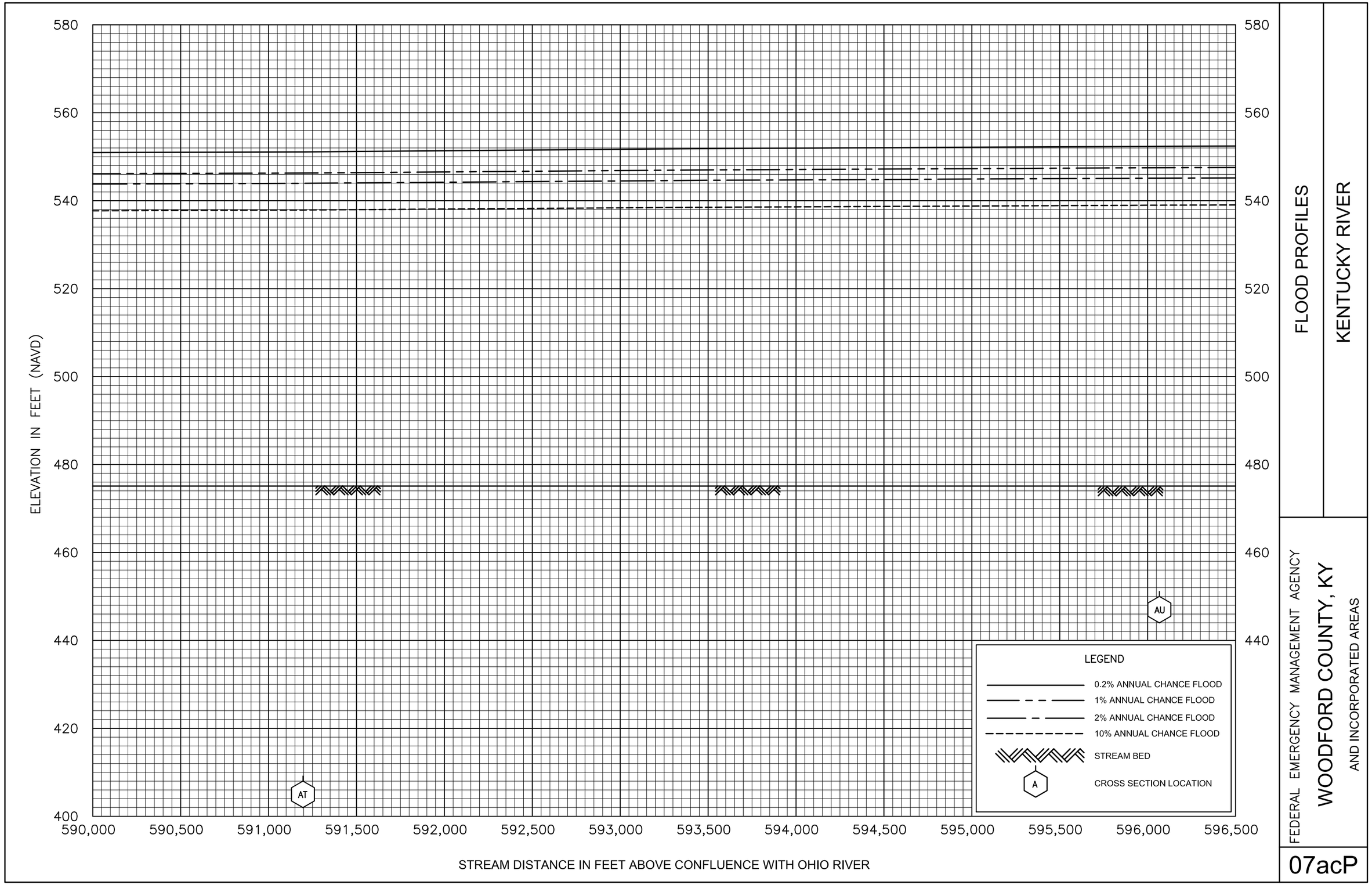
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07abP



FLOOD PROFILES

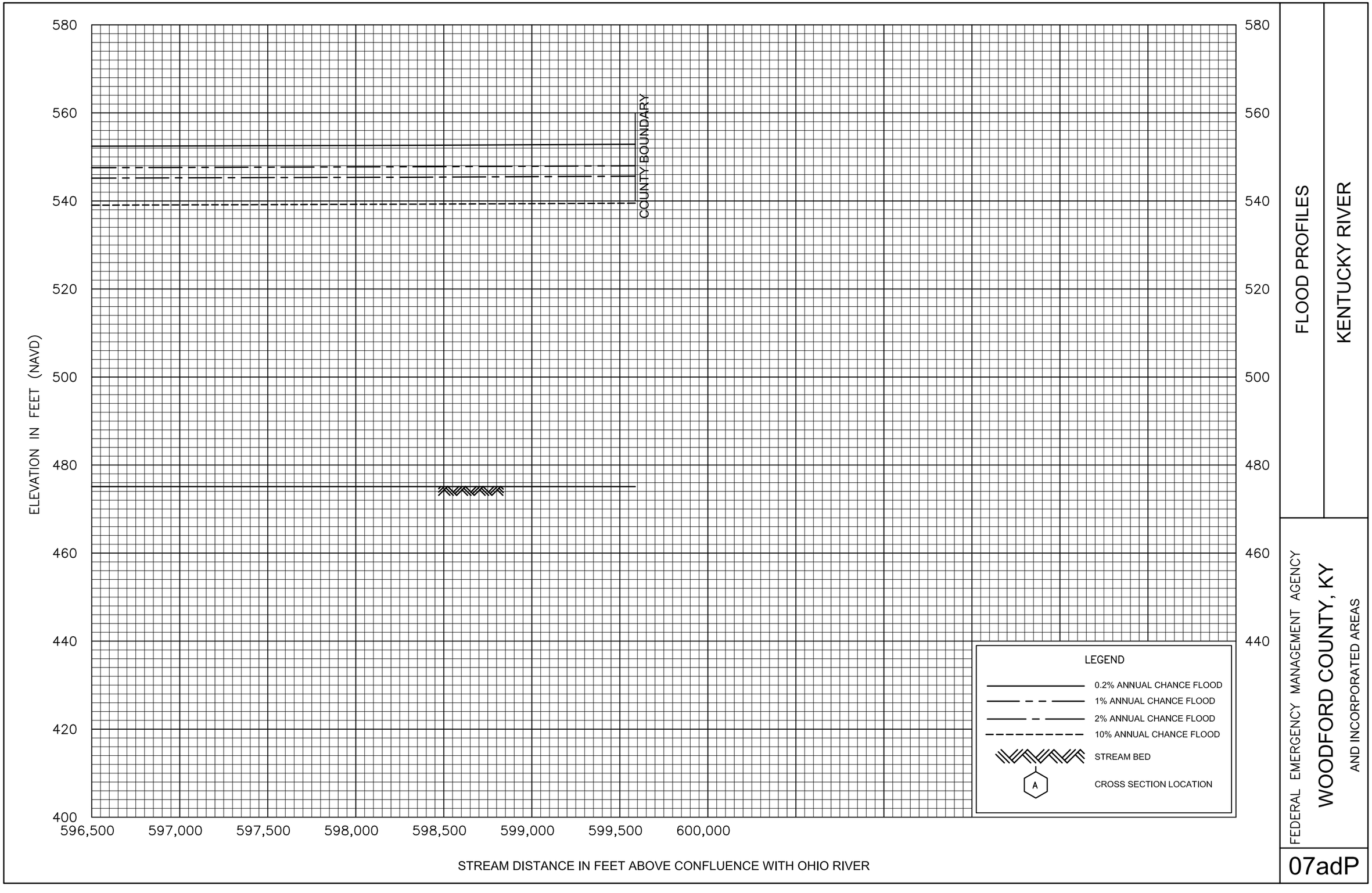
KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07acP



FLOOD PROFILES

KENTUCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY

AND INCORPORATED AREAS

07adP

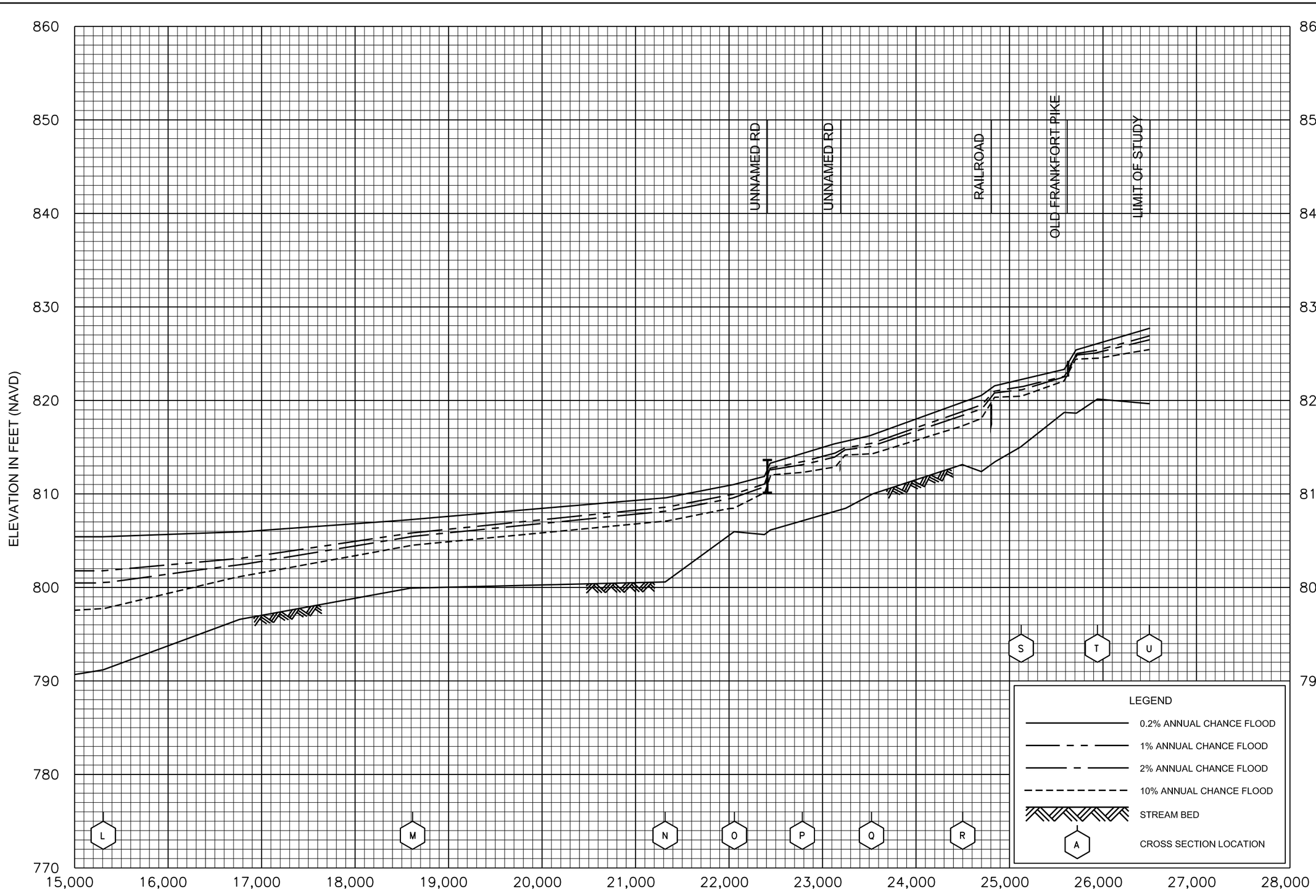
FLOOD PROFILES

LEE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY
AND INCORPORATED AREAS

08P



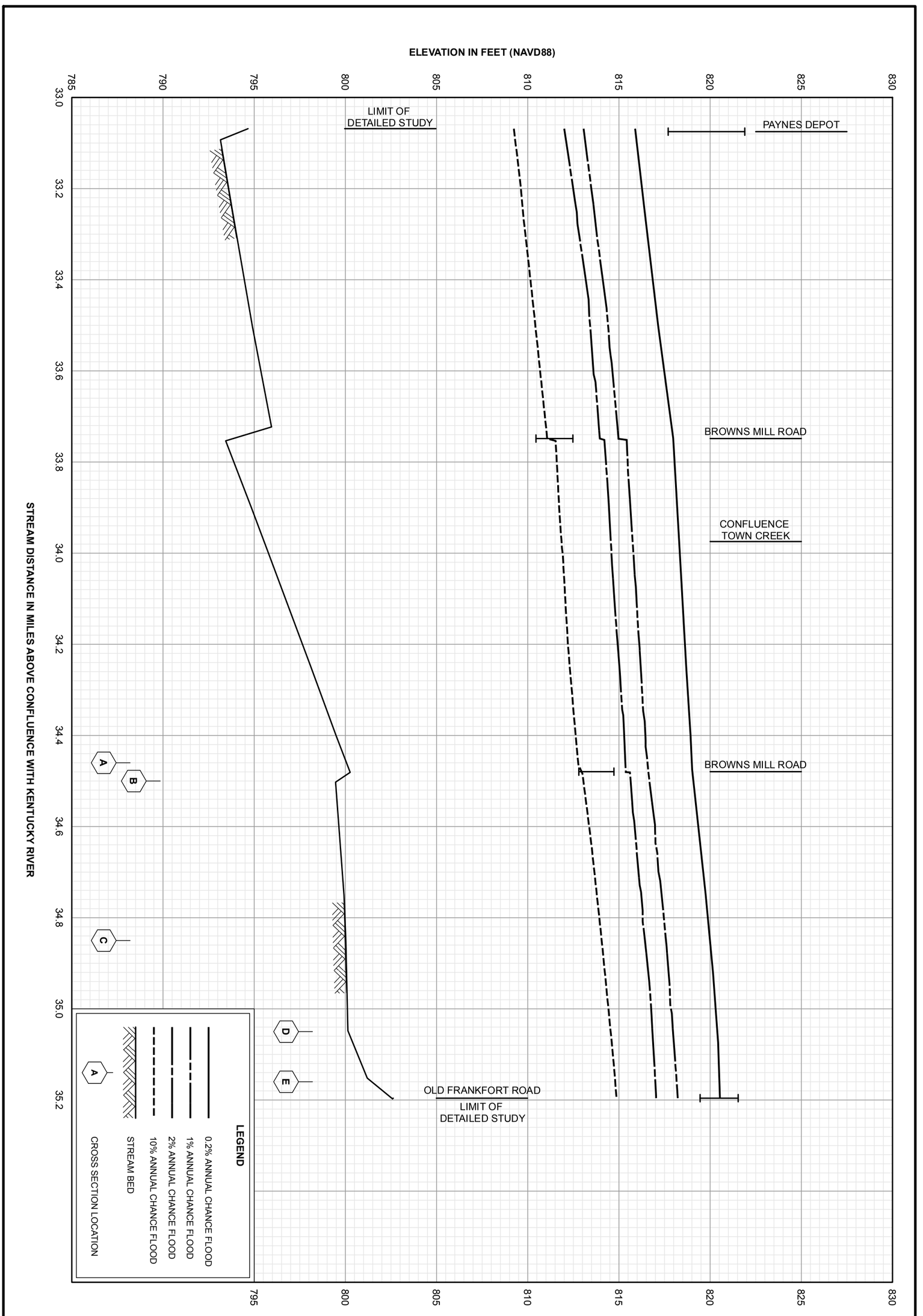
FLOOD PROFILES

LEE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY
AND INCORPORATED AREAS

09P



10P

FEDERAL EMERGENCY MANAGEMENT AGENCY

WOODFORD COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

SOUTH ELKHORN CREEK