FLOOD INSURANCE STUDY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
CORNING, VILLAGE OF	390440
CROOKSVILLE, VILLAGE OF	390441
GLENFORD, VILLAGE OF	390442
HEMLOCK, VILLAGE OF	390708
JUNCTION CITY, VILLAGE OF	390834
NEW LEXINGTON, VILLAGE OF	390443
NEW STRAITSVILLE, VILLAGE OF	390709
PERRY COUNTY (UNINCORPORATED AREAS)	390778
RENDVILLE, VILLAGE OF	390802
SHAWNEE, VILLAGE OF	390710
*SOMERSET, VILLAGE OF	395418
*THORNVILLE, VILLAGE OF	395419

* NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

PRELIMINARY
9/18/2015
Revised Date: TBD

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
39127CV000B

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Initial Countywide Effective Date: **April 18, 2011**

Revised Date(s): TBD

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Published Separately –

Flood Insurance Rate Map Index
Flood Insurance Rate Map

FLOOD INSURANCE STUDY

PERRY COUNTY, OHIO AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) revises and supersedes the previous FIS reports and/or Flood Insurance Rate Maps (FIRMs) for the geographic area of Perry County, Ohio, including the Villages of Corning, Crooksville, Glenford, Hemlock, Junction City, New Lexington, New Straitsville, Rendville, Shawnee, Somerset, and Thornsville; and the unincorporated areas of Perry County (hereinafter referred to collectively as Perry County). Please note that in the Villages of Somerset and Thornville, no special flood hazard areas have been identified. The Village of Roseville is geographically located in Perry and Muskingum Counties. Please note the flood hazard information for the Village of Roseville is not included in this FIS, but is included in its entirety in the FIS for Muskingum County, Ohio, and Incorporated Areas.

The Digital Flood Insurance Rate Map (DFIRM) and FIS Report for this countywide study have been produced in digital format. Flood hazard information was converted to meet Federal Emergency Management Agency (FEMA) DFIRM database Specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Perry County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

1.2 Authority and Acknowledgements

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

Information on the authority and acknowledgments for each of the previously printed FISs and FIRMs for communities within Perry County was compiled, and is shown below.

Pre-Countywide

The Village of Crooksville. For the March 4, 1988 FIS report (Reference 1) the hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey (USGS), Columbus, Ohio (the Study Contractor) for the FEMA, under Inter-Agency Agreement No. EMW-84-E-1548, Project Order No.1. This study was completed in May 1986.

The Village of Glenford. For the August 2, 1995 FIS report (Reference 2) the hydrologic and hydraulic analyses for this FIS were obtained from a Soil Conservation Service (SCS) report entitled Flood Plain Management Study: Jonathan Creek - Muskingum and Perry Counties, Ohio, which was completed in May 1990 (Reference 3).

The Village of Junction City. For the March 2, 1982 FIS report (Reference 4) the hydraulic and hydrologic analyses for this study were performed under the directive of the FEMA for the Village of Junction City, Ohio. Hydrology and hydraulic analyses were obtained from the SCS Flood Hazard Analysis completed in September 1980 (Reference 5).

The Village of New Lexington. For the March 2, 1982 FIS report (Reference 6) the hydraulic and hydrologic analyses for this study were performed under the directive of the FEMA for the Village of New Lexington, Ohio. These hydrologic and hydraulic analyses were obtained from the SCS Flood Hazard Analysis completed April 1980 (Reference 5).

Perry County Unincorporated Areas. For the September 27, 1991 FIS report (Reference 7) the hydrologic and hydraulic analyses for this study were obtained from the Flood Hazard Study for Rush Creek (Reference 5).

The authority and acknowledgements for the Villages of Corning, Hemlock, New Straitsville, Rendville, Shawnee, Somerset, and Thornsville are not available because no FIS reports were ever published for those communities.

Initial Countywide FIS –April 18, 2011

Redelineation of previously effective flood hazard information for this FIS report and accompanying FIRMs as well as conversion of the unincorporated and incorporated areas of Perry County into countywide format was performed by Stantec Consulting Services Inc. (Stantec) for FEMA under Contract No. HSFE05-05-D-0026, Task Order No. 37. This work was completed April 18, 2011.

The digital base mapping information was provided by the Ohio Department of Natural Resources (ODNR). Further information about the base mapping is

available by contacting ODNR. These files were compiled by photogrammetric methods and meet or exceed National Map Accuracy Standards.

Orthophotography was provided as a part of the Ohio Statewide Imagery Program (OSIP) at a 2.5 foot pixel resolution. Topographic information was provided in Light Detection and Ranging (LiDAR) mass points based on a 2007 flight. The LiDAR data has sufficient vertical accuracy to support the generation of 5 foot contours. Topographic data for portions of the Rush Creek basin were collected in the spring of 2003 includes mass points, breaklines and two foot contours.

The projection used for the production of this FIRM is Ohio State Plane South Zone 5001 (FIPSZONE 3402). The horizontal datum was NAD83. Differences in the datum, spheroid, projection or state plane zones used in the production of FIRMs in adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

For the initial countywide FIS, studies performed by the Soil Conservation Service (SCS) on portions of Jonathan Creek, Painter Creek, Painter Run, Turkey Run and Valley Run were incorporated as approximate studies. This work was completed in May 1990 for ODNR. Also incorporated into this FIS was a study performed by Stantec of Buckeye Lake was incorporated as a detailed study. This work was completed in 2001 for ODNR.

The hydrologic and hydraulic analyses for Moxahala Creek upstream of Black Fork and Sunday Creek within the Village of Corning were performed by ODNR (the Study Contractor) for FEMA, under CTP Agreement Number: EMC-2004-GR-0206. This study was completed in April 2005.

The hydrologic and hydraulic analyses for Brehm Run, Center Branch Rush Creek, Clark Run, Lideys Run, Rush Creek downstream of Dry Run, and Salem Run were performed by the NRCS and USGS for FEMA as part of a Limited Map Maintenance program. This study was completed in May 2005.

An update to the hydrologic and hydraulic analyses for Center Branch Rush Creek, and Rush Creek downstream of Dry Run, were performed by Stantec for FEMA under Contract No. HSFE05-05-D-0026, Task Order No. 37. This work was completed April 18, 2011.

The hydrologic and hydraulic analyses for West Branch Sunday Creek and West Branch Sunday Creek Tributary were performed by the USGS for FEMA. This study was completed in 2006.

For the initial countywide FIS, a study performed by Stantec of Buckeye Lake was incorporated as a detailed study. This work was completed in 2001 for the ODNR.

Revised Countywide FIS - TBD

For this revision, STARR completed a Physical Map Revision (PMR) based on accreditation of the Roseville Local Protection Project (LPP) in the City of Roseville. The protected area includes portions of Muskingum and Perry

Counties in Ohio. As part of the accreditation, DLZ Ohio, Inc. (DLZ) updated an existing interior drainage study on the landward side of the Roseville LPP. DLZ submitted their modeling as part of the accreditation package titled "Roseville LPP in Muskingum & Perry Counties, Ohio – Levee Accreditation Submittal" and dated May 23, 2014. STARR updated the DFIRM mapping based on the results of DLZ's study which determined ponding elevations for four areas on the interior side of the Roseville LPP levee.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer's (CCO) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study. The dates of the initial and final CCO meetings held for prior FISs for the incorporated communities within Perry County are shown in Table 1.

Table 1. CCO Meeting Dates for Prior FISs

Community Name	Initial CCO Date	Final CCO Date
Crooksville, Village of	March, 1984	April 13, 1987
Glenford, Village of	November 12 1993*	June 16, 1994
Junction City, Village of	December, 1978	September 14, 1981
New Lexington, Village of	December, 1978	September 14, 1981
Perry County, Unincorporated	**	November 8, 1990

*Notified by Letter **Not available

For the initial Countywide FIS study, an initial CCO meeting was held on May 13, 2008, and was attended by representatives of Perry County, the ODNR, FEMA, and Stantec. The results of the study were reviewed at the final CCO meeting held on October 27, 2009 and attended by representatives from Perry County the City of Crooksville, the ODNR, and Stantec. All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Perry County, Ohio, including the incorporated communities listed in Section 1.1 and unincorporated areas.

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by FEMA and Perry County officials.

For the initial Countywide FIS, the five detailed studies incorporated are shown in Table 2. No 0.2-percent-annual-chance water surface elevation or floodway boundaries were calculated for Brehm Run, Clark Run, Lideys Run, or Salem Run. No Floodway Boundaries were calculated for West Branch Sunday Creek. The limits of these Limited Detailed Studies are included in Table 3.

Table 2. New Detailed Studies

Flooding Source	Study Limits
Buckeye Lake	N/A
Center Branch Rush Creek	From its mouth at Rush Creek to NRCS Dam 3E.
Moxahala Creek	From approximately 4,200 feet upstream of Industrial Avenue to approximately 1,300 feet upstream of State Route 669.
Rush Creek	From the Fairfield County boundary to the confluence at Dry Run.
Sunday Creek	From approximately 4,000 feet downstream of Main Street (Village of Corning) to approximately 800 feet upstream of Adams Street.

Table 3. New Limited Detailed Studies

Flooding Source	Study Limits
Brehm Run	From its mouth at Center Branch Rush Creek to NRCS Site 3A.
Clark Run	From the Fairfield County boundary to NRCS Site 4C (Twin Churches Lake).
Lideys Run	From its mouth at Center Branch Rush Creek to NRCS Site 3C.
Salem Run	From its mouth at Clark Run to NRCS 4E (Flagdale Lake).
West Branch Sunday Creek	From approximately 1,800 feet downstream of Main Street to approximately 1,900 feet upstream of Main Street (Village of Hemlock).

Those streams studied previously by detailed methods were re-delineated using information from previous FIS reports from Perry County, Ohio as part of the initial Countywide FIS. Those streams studied previously by detailed methods are shown in Table 4. Limits of Detailed Studies are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (published separately).

Table 4. Detailed Studies (from Prior Studies)

Flooding Source	Study Limits
Buckeye Lake	NA
Jonathan Creek	From approximately 760 feet downstream of Main Street (Village of Glenford) to approximately 740 feet upstream of State Route 204.

Table 4. Detailed Studies (from Prior Studies) (Continued)

Flooding Source	Study Limits
Moxahala Creek	From approximately 1,000 feet upstream of South Main Street (Village of Roseville) to approximately 650 feet upstream of West Athens Road, and from approximately 5,900 feet downstream of Main Street (Village of Crooksville) to approximately 4,200 feet upstream of Industrial Avenue.
Moxahala Creek Overflow	From approximately 1,500 feet Downstream of Main Street to Main Street (Village of Crooksville).
Tributary F	From its mouth at Rush Creek to Garey Road North.
Tributary G	From its mouth at Rush Creek to Mainesville Road.
Tributary T	From its mouth at Rush Creek to Township Highway 131.
Rush Creek	From the confluence of Dry Run to Township Highway 364.

The areas studied by detailed methods in previous FIS reports were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards, as shown in Table 5. The scope and methods of study were proposed to and agreed upon by FEMA and ODNR.

Table 5. Streams Studied by Approximate Methods

Bear Creek	Painter Creek Tributary 4
Black Fork	Painter Run
Buckeye Fork	Rush Creek
Burley Run	Rush Creek Tributary 2
Eighteen Run	Rush Creek Tributary 3
Honey Creek	Shawnee Creek
Indian Run	Shawnee Creek Tributary 1
Jonathan Creek	Shawnee Creek Tributary 2
Jonathan Creek Tributary 25	Snake Run
Kent Run	Somerset Creek
Little Monday Creek	Sunday Creek

Table 5. Streams Studied by Approximate Methods (Continued)

Little Rush Creek	Sunday Creek Tributary 1
Little Rush Creek Tributary 18	Sunday Creek Tributary 2
McLuney Creek	Sunday Creek Tributary 3
Monday Creek	Sunday Creek Tributary 4
Monday Creek Tributary 24	Tributary F
Moxahala Creek	Tributary G
Moxahala Creek Tributary	Tributary T
Moxahala Creek Tributary 8	Turkey Run North
Muddy Run	Turkey Run West
Ogg Creek	Valley Run
Oxawoosie Creek	West Branch Sunday Creek
Painter Creek	West Branch Sunday Creek Tributary

Streams previously mapped as Zone A were replaced by new approximate studies as part of the initial Countywide FIS. Large lakes and areas of ponding that are currently mapped as Zone A were digitally converted with consideration given to the topography.

For TBD Revised FIS, an interior drainage study on the landward side of the Roseville LPP levee was incorporated into the DFIRM. Ponding areas were mapped based on detailed study methodology.

No Letters of Map Revisions (LOMRs) or Letters of Map Amendments (LOMAs) were incorporated into this countywide FIS. A Summary of Map Amendments (SOMA), which lists the status of the Letters of Map Changes (LOMCs) associated with Perry County, is included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

2.2 Community Description

Perry County is in southeastern Ohio approximately 50 miles east-southeast of the City of Columbus, Ohio. Perry County is bordered on the north by Licking and Muskingum Counties, Ohio; on the east by Morgan County, Ohio; on the south by Athens and Hocking Counties, Ohio; and on the west by Fairfield County, Ohio. Perry County is served by U.S. Route 23, State Routes 15, 93, 204, 345, 668, and 669; and Conrail and CSX railroads. The estimated population of the county in 2010 was 36,058 (Reference 8).

The topography of the Rush Creek watershed is moderately steep in the south and eastern portions to rolling in the western and northern portions. Elevations in the Rush Creek watershed range from about 769.4 feet North American Vertical Datum 1988 (NAVD88) at the mouth of Rush Creek at the Hocking River to about 1,139.3 feet NAVD88 along the southeastern watershed divide. Soils that dominate the higher elevations along the eastern and southern perimeter and the central portion of the watershed were formed in Illinoian-Aged till, or they are residual soils formed in generally acid siltstone, shale, or sandstone. Soils on the floodplains along the major streams were formed in water deposited sediments. Most of the soils on the floodplain and terraces are fertile and well suited for farming.

The watershed climate is moist temperate with an average annual temperature of 53 degrees Fahrenheit (ºF). The average annual precipitation is 41.4 inches. The maximum precipitation occurs from March through August with the highest rainfall occurring in March and June.

The Village of Corning is located in eastern Perry County in central southeastern Ohio approximately 54 miles east-southeast of Columbus, Ohio. Corning is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 605 (Reference 8).

The Village of Crooksville is located in eastern Perry County in central southeastern Ohio approximately 50 miles east-southeast of Columbus and 13 miles south of Zanesville, Ohio. Crooksville is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2007 was 2,424 (Reference 8).

The Village of Glenford is located in east-central Ohio, in Perry County, and is approximately 55 miles east of Columbus. The estimated population of the Village in 2007 was 194 (Reference 8).

The total annual precipitation is approximately 40 inches. Of this, approximately 23 inches, or nearly 60 percent, usually falls in April through September. Thunderstorms occur, on average, 42 days per year. Tornadoes and severe thunderstorms occur occasionally, and are usually local and of short duration, causing damage in scattered areas.

The average seasonal snowfall is approximately 29 inches. The greatest snow depth at any time during the period of record was 25 inches. At least one inch of snow is on the ground for an average 21 days per year, though the number of such days varies greatly from year to year.

The climate of the area is continental and is characterized by wide ranges in temperature and moderate precipitation. In winter, the average temperature is 30ºF, and the average daily minimum temperature is 20°F. The lowest recorded temperature, -26°F, occurred at New Lexington on January 28, 1963. In summer, the average temperature is 7lºF, and the average daily maximum is 84°F. The highest recorded temperature, l03°F, occurred on July 14, 1954 (Reference 9).

Soils in the watershed have developed over a wide variety of materials, including glacial till (both Wisconsin and Illinoian age), residual shales and rock, silt and

gravel deposits, and alluvial materials (Reference 10). These soils have moderate runoff potential.

The Village of Hemlock is located in southern Perry County in central southeastern Ohio approximately 52 miles east-southeast of Columbus, Ohio. Hemlock is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 145 (Reference 8).

The Village of Junction City is located in central Perry County in central southeastern Ohio approximately 40 miles east-southeast of Columbus, Ohio. Junction City is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 841 (Reference 8).

The Village of New Lexington is located in southeast Ohio in the center of Perry County. Completely surrounded by unincorporated Perry County, the village is approximately 21 miles from the City of Lancaster. The estimated population of the Village in 2007 was 4,538 (Reference8).

The total length of Rush Creek and tributaries studied in this report is 61.6 miles. The Rush Creek Watershed comprises 236.7 square miles and is located in southeastern Fairfield County, southwestern Perry County and a small portion of northern Hocking County. In 1978, the SCS completed and published an environmental impact statement for the watershed (Reference 11). This statement should be consulted for a detailed description and environmental assessment of the study area.

The Village of New Straitsville is located in southern Perry County in central southeastern Ohio approximately 48 miles east-southeast of Columbus, Ohio. New Straitsville is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 793 (Reference 8).

The Village of Rendville is located in eastern Perry County in central southeastern Ohio approximately 54 miles east-southeast of Columbus, Ohio. Rendville is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 47 (Reference 8).

The Village of Shawnee is located in southern Perry County in central southeastern Ohio approximately 48 miles east-southeast of Columbus, Ohio. Shawnee is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 631 (Reference 8).

The Village of Somerset is located in northern Perry County in central southeastern Ohio approximately 38 miles east-southeast of Columbus, Ohio. Somerset is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 1,556 (Reference 8).

The Village of Thornville is located in northern Perry County in central southeastern Ohio approximately 31 miles east-southeast of Columbus, Ohio. Thornville is surrounded by the unincorporated areas of Perry County. The estimated population of the Village in 2008 was 1,138 (Reference 8).

2.3 Principal Flood Problems

Historically, flooding has been a major water resource problem in the Rush Creek Watershed. Periodic flooding damages crops, pastures, urban areas and transportation systems. Floods causing serious widespread damage have occurred in March 1907, March 1913, August 1935, January 1937, April 1940, June 1950, March 1963 and March 1964. In recent years, major floods of somewhat lesser magnitude occurred in June 1958, January 1959, May 1961 and February 1975.

The storms of March 1963 and March 1964 resulted in the highest stages ever recorded in the area of the Village of Bremen, downstream of Perry County. The magnitude of the 1963 flood in terms of precipitation was equivalent to a 3-percent-annual-chance storm; however, the discharge approached the equivalent of a 1-percent-annual-chance flood event.

The Village of Crooksville has experienced extensive damage in previous floods. The most significant flooding occurred in June 1950 and March 1963; the former was the greatest flood experienced in the Crooksville area. The report entitled, “The Crooksville Area Flood of June 16-17, 1950," detailed the damage of the flooding. The report stated, "Twenty-five percent of Crooksville was underwater, with depths in the business section reaching as much as 7 or 8 feet. The power substation at Crooksville was drowned out, and later suffered additional damage from an explosion" (Reference 12). Elevations of high-water marks at the power substation's main office (located on Main Street) were provided by the U.S. Army Corps of Engineers (USACE), Huntington District. These elevations are 755.26 feet and 759.68 feet NAVD88 for the 1950 and 1963 events, respectively.

No discharge estimates were determined for Moxahala Creek in the vicinity of Crooksville for the 1950 flood. Use of discharge estimates determined downstream of Crooksville and adjusted for drainage-area indicates an approximate recurrence interval in excess of 500 years for the 1950 flood.

For the Village of Glenford the 1-percent-annual-chance flood affects nine homes and businesses in the Village of Glenford, while the 0.2-percent-annual-chance flood affects 10 homes and businesses. Average annual damages in the Village of Glenford total $3,500.

2.4 Flood Protection Measures

A watershed work plan was developed by the U.S. Department of Agriculture under the Watershed Protection and Flood Prevention Act (Public Law 566) providing for the installation of 22 reservoirs and 23 miles of channel improvements (Reference 13). By September of 1991, 19 retarding reservoirs have been constructed with the remainder of structural measures planned for construction. The depth and extent of flooding has been, and will continue to be, reduced by the installation of these measures.

The Huntington District, USACE constructed a levee along the Moxahala Creek. The Village of Roseville owns the levee and is responsible for its operation and maintenance.

This levee provides protection from the 1-percent-annual-chance flood event (Reference 14).

The criteria used to evaluate protection against the 1-percent-annual-chance flood are 1) adequate design, including freeboard, 2) structural stability, and 3) proper operation and maintenance. Levees that do not protect against the 1-percent-annual-chance flood are not considered in the hydraulic analysis of the 1-percent-annual-chance floodplain.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods within the County, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100- or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100- or 500-year floods, have a 10-, 2-, 1- and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10), and 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.

3.1 Hydrologic Analyses

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

The initial countywide FIS report included information from previously published FIS reports where streams were studied in detail. It also included new information for streams studied by approximate methods and information from the SCS, ODNR, and USGS studies that were incorporated as part of the countywide FIS.

Detailed Studies

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods of each flooding source studied in detail in the pre-countywide FIS reports and in the SCS, ODNR, and USGS studies are shown in Table 6. A summary of Stillwater elevations is shown in Table 7.

Pre-Countywide

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for Rush Creek upstream of the confluence at Dry Run, and Tributaries F, T and G were established by valley and structure flood routings computed through use of the TR-20 watershed model (Reference 15). This program uses the convex method for stream and valley flood routing.

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for Moxahala Creek in Perry County unincorporated areas outside the Village of Roseville were established by valley and structure flood routings computed through use of the TR-20 watershed model (Reference 15). This program uses the convex method for stream and valley flood routing.

Flow frequencies for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for Moxahala Creek at Crooksville downstream of the confluence at Black Fork were based on a statistical analysis of data from the USGS gage at the Village of Roseville located approximately four miles downstream. These data were analyzed in accordance with criteria outlined in U.S. Water Resources Council Bulletin No. 17B (Reference 16). Frequency-discharge data were based on a USGS computer model (Reference 17). The model was run using a systematic record of 22 years and a generalized skew coefficient. The Study Contractor reviewed the input and assumption of the analysis and used it for this study. The peak discharges determined at the Roseville Gage were then transferred upstream of Crooksville using a drainage-area reduction ratio raised to an exponent. The exponents used with respect to frequency were taken from the Area 2 drainage area-discharge equations in the Ohio Department of Natural Resources Bulletin No. 45 (Reference 18).

Initial Countywide FIS

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for Buckeye Lake were calculated using HEC-HMS watershed model.

Peak discharges for the 1-percent-annual-chance flood for Center Branch Rush Creek and Rush Creek downstream of the confluence of Dry Run were calculated using WinTR20 (version 2001) watershed model. This program uses the Muskingum-Cunge method for stream and valley flood routing. Input data included runoff curve numbers, drainage areas, time of concentration, and stream reach lengths. Peak discharges for the 0.2-percent-annual-chance storm event were developed as part of this update for two streams that were previously studied by the NRCS. Peak discharge values were calculated in locations consistent with the original 1-percent-annual-chance discharge values used in the initial study. The original model was created by the NRCS in 2004 with rainfall depths taken from the National Weather Service (NWS) Technical Paper 40 (TP – 40) Type II 24-hr storm charts. Since the TP-40 charts do not include the 0.2-percent-annual-chance event in order to stay consistent with the original model, a 0.2 percent discharge was derived by extrapolating the semi-log plot curve of the TP-40 Frequency vs. Rainfall depth. For more information about the original study procedures see the USGS Fairfield and Perry Counties, Ohio Limited Map Maintenance Program Restudy Technical Support Data Notebook (TSDN) May 2005.

Flow frequencies for the 10-, 2-, 1-percent-annual-chance floods for Moxahala Creek upstream of the confluence of Black Fork were calculated using the HEC-HMS software package (Version 3.1.0) developed by the U.S. Army Corps of Engineers. The 0.2-percent-annual-chance peak discharge was extrapolated from a logarithmic plot of the HEC-HMS results.

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for Sunday Creek were computed using regression equations presented in the USGS Water Resources Investigations Report (WRIR) 89-4126 (Reference 19).

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for West Branch Sunday Creek were computed using methods described in the USGS WRIR 03-4164 (Reference 20).

Revised Countywide FIS - TBD – Interior Drainage Study

DLZ Ohio, Inc. updated the existing interior drainage study for the Roseville LPP in 2014 as part of the accreditation package for the Roseville LPP. The original study was included Design Memorandum No. 1, "Local Flood Protection, Roseville, Ohio" by the Huntington District, USACE, dated July 1958 (Reference 33). The purpose of this revision was to incorporate changes in the hydrologic/hydraulic design procedures and update the study to due changes in the drainage system. Four ponding areas on the landward side of the levee were analyzed. The study focused on the performance of the system during high flow in Moxahala Creek when the pump station was active.

Bulletin 71 rainfall depths and the Huff 1st quartile rainfall distribution with a 2-hour duration were used in the hydrologic analysis. Four ponding areas were analyzed. The updated flows were computed in the USACE HEC-HMS computer program.

Results of this analysis were used to estimate the 10-, and 1-percent-annual-chance flows for the landward side of the levee.

Table 6. Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance
Brehm Run					
At Mouth	1.6	*	*	208	*
Upstream of Township Highway 138	1.6	*	*	375	*
Upstream of Toll Gate Road	1.46	*	*	150	*
Center Branch Rush Creek					
At Mouth	25.12	*	*	3,000	3,780
Upstream of Lideys Run	22.56	*	*	2,910	3,660
Upstream of Brehm Run	18.97	*	*	2,880	3,590
Upstream of Dittoe Run	16.34	*	*	2,820	3,510
Downstream of Unnamed Tributary	15.42	*	*	2,740	3,430
Upstream of Unnamed Tributary	9.14	*	*	430	582

*Data not Available

Table 6. Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance
Dam outlet of NRCS Site 3E	8.86	*	*	400	536
Clark Run					
At Mouth	12.9	*	*	1,200	*
Upstream of Salem Run	6.61	*	*	410	*
Upstream of Tributary 2	0.30	*	*	130	*
Jonathan Creek					
Approximately 900 feet downstream of High Street	*	7,030	10,240	11,000	16,230
Lideys Run					
At Mouth	2.14	*	*	160	*
Upstream of Unnamed Tributary	2.00	*	*	86	*
Moxahala Creek					
About 1.74 miles downstream of Main Street	74.9	3,940	5,830	6,740	9,130
Just upstream of confluence of Burley Run	69.3	3,750	5,570	6,450	8,750
Downstream of confluence of Black Fork	67.9	3,750	5,570	6,450	8,750
Upstream of confluence of Black Fork	39.1	2,200	3,300	3,500	4,600
Moxahala Creek Overflow					
N/A	*	*	*	*	*
Rush Creek					
Approximately 7,500 feet downstream of Conrail	84.86	*	*	5,440	7,120
Approximately 1,900 feet downstream of Flagdale Road	70.07	*	*	5,380	6,870
Just upstream of the confluence of Center Branch Rush Creek	44.95	*	*	4,510	5,940
Just downstream of State Route 668	*	2,330	3,380	3,620	5,280
At confluence of Tributary G	*	2,460	3,740	4,030	5,720
Just upstream of Lexington Street	*	2,220	3,280	3,500	4,890
Salem Run					
At Mouth	6.09	*	*	975	*
Upstream of Unnamed Tributary	4.60	*	*	495	*
Dam outlet at NRCS Site 4E	3.45	*	*	137	*

*Data not Available

Table 6. Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance
Sunday Creek					
4,100 feet downstream of Main Street (S.R. 155)	9.71	1,020	1,580	1,830	2,430
900 feet upstream of Main Street (S.R. 155)	8.05	1,130	1,740	2,020	2,680
Tributary F					
At Mouth	*	550	920	990	1,430
Just upstream of Clay Road	*	550	920	990	1,430
Tributary G					
At Mouth	*	810	1,300	1,400	1,980
Just downstream of Mainesville Road	*	810	1,300	1,400	1,980
Tributary T					
At Mouth	*	930	1,530	1,650	2,360
Just downstream of Township Highway 189	*	930	1,530	1,650	2,360
Just downstream of Township Highway 131	*	930	1,530	1,650	2,360
West Branch Sunday Creek					
1,500 feet downstream of Main Street	8.3	1,170	1,790	2,060	2,690
Upstream of confluence of West Branch Sunday Creek Tributary	6.1	936	1,430	1,650	2,170
Roseville LPP Interior Ponding Areas					
Ponding Area1	0.031	10	*	11	*
Ponding Area2	0.035	15	*	18	*
Ponding Area3	0.056	28	*	32	*
Pump Station Outlet	0.027	9	*	10	*

*Data not Available

Table 7. Summary of Stillwater Elevations

Flooding Source and Location	Elevation (Feet NAVD)			
	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance
Buckeye Lake, Fairfield County, Ohio	892.1	892.6	892.8	893.2
Roseville LPP Interior Ponding Areas				
Ponding Area1	732.3	*	732.5	*
Ponding Area2	730.3	*	730.5	*
Ponding Area3	728.2	*	728.5	*
Pump Station Outlet	727.3	*	727.6	*

*Data not available

Approximate Studies

Peak discharges for the 1-percent-annual-chance storm event were determined for Jonathan Creek, Painter Creek, Painter Run, Turkey Run and Valley Run were established by valley flood routing computed through use of the SCS watershed model "Computer Program for Project Formulation – Hydrology (TR20)." This revised version uses the "Modified Attenuation-Kinematic" reach routing method for stream and valley flood routing. The discharges were compared with and found to be within the standard error of estimate of discharges calculated by ODNR's Bulletin 45, "Foods in Ohio, Magnitude and Frequency." (Reference 18).

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for West Branch Sunday Creek Tributary were computed using methods described in the USGS WRIR 03-4164 (Reference 20).

Peak discharges for the 1-percent-annual-chance storm event were determined at various locations throughout each of the approximate study reaches not previously mentioned in Perry County. Hydrologic calculations were performed using regression equations presented in SIR 2006-5312 (Reference 21). The regression equations were developed using generalized least-squares (GLS) regression analyses on data from 305 gaging stations. The equations were developed to estimate flood discharges on unregulated streams based on the total-contributing drainage area, channel slope determined from the 10-85 method, percentage of drainage area as open water and wetlands, and hydrologic regional factors. Additional information about the model development is contained in Techniques for Estimating Flood Peak Discharges of Rural, Unregulated Streams in Ohio by G.F. Koltun, 2003, USGS Water Resources Investigations Report (WRIR) 03-4164 (Reference 20).

Peak discharges were adjusted when needed to account for the influence of existing stream gages and dams on the approximate study reach.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. Flood elevations 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 study were based only 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. Changes in existing bridge dimensions and elevations could also affect the given water surface elevations (WSELs).

This section includes information from previously published FIS reports where streams were studied by detailed methods. It also includes new information for streams studied by approximate methods and information from the SCS, ODNR, and USGS studies that were incorporated as part of the countywide FIS.

Detailed Studies

<u>Pre-Countywide</u>

Cross sections and hydraulic structures for the analysis of Jonathan Creek, Moxahala Creek downstream of the confluence with Black Fork, Rush Creek upstream of the confluence of Dry Run, and Tributaries F, T and G were obtained by field survey.

Water surface elevations of floods of the selected recurrence intervals for Jonathan Creek, Rush Creek upstream of Dry Run, Tributaries F, T and G were computed through the use of the SCS WSP2 computer program (Reference 22).

Water surface elevations of floods of the selected recurrence intervals for, Moxahala Creek in Perry County unincorporated areas outside the Village of Roseville were computed through the use of WSPRO, a step-backwater computer program (Reference 23).

Water surface elevations of floods of the selected recurrence intervals for Moxahala Creek at Crooksville downstream of the confluence at Black Fork were computed through the use of the USGS step-backwater analysis program J635 (Reference 24).

Starting water-surface elevations for Jonathan Creek were calculated using the WSP2 step-backwater method.

Starting water-surface elevations for Moxahala Creek were calculated using the slope-conveyance method.

Countywide

Cross sections and hydraulic structures for the analysis of Brehm Run, Center Branch Rush Creek, Clark Run, Lideys Run, Moxahala Creek Upstream of the confluence with Black Fork, Rush Creek downstream of the confluence with Dry Run, Salem Run, and Sunday Creek, were obtained by field survey.

Cross sections and hydraulic structures for the analysis of West branch Sunday Creek were obtained by field survey and supplemented with cross sections interpolated from contours on the USGS 7.5-minute quadrangle map New Straitsville. Channel information in the supplemental cross sections was interpolated from cross sectional data surveyed in the field.

Water surface elevations of floods of the selected recurrence intervals for Moxahala Creek at Crooksville upstream of the confluence at Black Fork, and Sunday Creek were computed through the use of the USACE Hydraulic Engineering Center River Analysis System (HEC-RAS) computer program (Version 3.1.2).

Water surface elevations of floods of the selected recurrence intervals for Brehm Run, Center Branch Rush Creek, Clark Run, Lideys Run, Rush Creek downstream of Dry Run, and Salem Run were computed through the use of the USACE HEC-RAS computer program (Version 4.0.0).

Water surface elevations of floods of the selected recurrence intervals for West Branch Sunday Creek were computed through the use of the USACE HEC-RAS computer program (Version 3.1.1) with the HEC-2 Conveyance Computations.

Starting water-surface elevations for Brehm Run, Center Branch Rush Creek, Clark Run, Lideys Run, Salem Run, Sunday Creek, and West Branch Sunday Creek were calculated using normal depth.

Starting water-surface elevations for Moxahala Creek upstream of the confluence of Black Fork were taken from the September 1991 FIS for Perry County, Ohio unincorporated areas (Reference 7).

Starting water-surface elevations for Rush Creek was taken from the April 1996 FIS for Fairfield County, Ohio unincorporated areas (Reference 25).

Roughness factors (Manning's "n") used in the hydraulic computations were estimated from photographs and field reconnaissance of the study area. Roughness factors used in the detailed studies are summarized in Table 8.

Table 8. Manning's "n" Values

Flooding Source	Channel "n" Values	Overbank "n" Values
Brehm Run	0.038 to 0.046	0.028 to 0.068
Center Branch Rush Creek	0.024 to 0.050	0.030 to 0.070
Clark Run	0.038 to 0.046	0.032 to 0.068
Lideys Run	0.030 to 0.044	0.028 to 0.068
Jonathan Creek	0.028 to 0.065	0.060 to 0.120
Moxahala Creek	0.028 to 0.055	0.028 to 0.100
Moxahala Creek Overflow	*	*
Rush Creek	0.036 to 0.040	0.046 to 0.068
Salem Run	0.036 to 0.040	0.028 to 0.068
Sunday Creek	0.04	0.07 to 0.1
Tributary F	*	*
Tributary G	*	*
Tributary T	*	*
West Branch Sunday Creek	0.048	0.052 to 0.060

*Data not available

Detail-studied streams include a "profile base line" on the maps. This "profile base line" provides a link to the flood profiles included in the FIS report. For streams that were not re-studied as part of this map update, the detail-studied stream centerline may have been digitized or redelineated as part of this revision. The "profile base lines" for these streams were based on the best available data at the time of their study and are depicted as they were on the previous FIRMs. In some cases where improved topographic data was used to redelineate floodplain boundaries, the "profile base line" may deviate significantly from the channel centerline or may be outside the SFHA.

Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Approximate Studies

Cross sections for the analysis of Jonathan Creek, Painter Creek, Painter Run, Turkey Run, and Valley Run were obtained by field surveys using transit and stadia methods between November 1985 and February 1986.

Cross sections and hydraulic structures for the analysis of West branch Sunday Creek Tributary were obtained by field survey and supplemented with cross sections interpolated from contours on the USGS 7.5-minute quadrangle map New Straitsville. Channel information in the supplemental cross sections was interpolated from cross sectional data surveyed in the field.

Cross-section geometry data for approximate studies not mentioned previously was created using a 2007 5-foot contour data derived from LiDAR dataset provided by the Ohio Geographically Referenced Information Program OSIP. The data is in State Plane NAD83, Ohio South Zone 3402, with a vertical datum of NAVD88.

Water surface elevations of floods of the selected recurrence intervals for Jonathan Creek, Painter Creek, Painter Run, Turkey Run, and Valley Run were computed through the use of the SCS WSP2 computer program (Reference 17).

Water surface elevations of floods of the selected recurrence intervals for West Branch Sunday Creek Tributary were computed through the use of the USACE HEC-RAS computer program (Version 3.1.1) with the HEC-2 Conveyance Computations.

Water surface elevations of floods of the selected recurrence intervals for approximate studies not previously mentioned were computed through the use of USACE HEC-RAS computer program (Version 4.0.0). A simplified HEC-RAS hydraulic model was created for each stream system. These models contain unsurveyed cross sections with an average spacing of 1,800 feet apart. No structures (i.e. bridges or culverts) were included in the modeling.

Overbank Manning's 'n' values were estimated from a 2001 NLCD (National Land Cover Dataset) of Ohio prepared by USGS. A field reconnaissance was not performed. Channel 'n' values were assumed to be 0.035. The overbank 'n' values were extracted to RAS directly from GIS using HECGeoRAS 4.1. Table 8 shows the Overbank Manning's 'n' values used for each corresponding land use. These values were taken from Chow (1959) and McCuen (1998).

Table 9. Overbank Manning's 'n' Values

Land Use	Manning's 'n'
Developed-Open Space	0.04
Cultivated Crops	0.04
Grassland	0.05
Forest	0.10
Pasture/Hay	0.05
Developed-Low Intensity	0.05
Developed-Medium Intensity	0.06
Developed-High Intensity	0.08
Herbaceous Wetlands	0.08
Shrub/Scrub	0.05
Woody Wetlands	0.06
Barren land	0.03

The 1-percent-annual-chance flood discharges determined using the previously described hydrologic methods were used in the HEC-RAS models. Reach boundary conditions were selected in accordance with *Guidelines and*

Specifications for Flood Hazard Mapping Partners, and were either known water surface elevations or normal depth measured from the downstream end of each stream.

All elevations are referenced to the NAVD88. Elevation reference marks used in this study, and their descriptions, are shown on the maps.

Revised Countywide FIS - TBD – Interior Drainage Study

Detailed hydraulic analyses were performed using the EPA SWMM Version 5. This model contains manholes, pipelines, pumps, and storage areas. The downstream boundary condition was set assuming that Moxahala Creek would drop to approximately the 10-percent annual chance elevation at the time of the peak elevation the 1-percent annual chance storm for the interior drainage area.

The 1-percent annual chance elevations computed for the four ponding areas are summarized in Table 7.

3.3 Vertical Datum

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

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between communities. Effective information for this FIS was converted from NGVD29 to NAVD88. An average conversion of -0.73 feet (NGVD29 - 0.73 = NAVD88) was applied uniformly across the county to convert all effective BFEs and other profile elevations. The conversion factor was calculated using Corpscon (Reference 26) to obtain the conversion at the south east corner of each USGS 7.5 minute orthoquad within 2.5 miles of the county boundary, and an average conversion factor was determined. Table 10 contains the conversion factors for the orthoquads around Perry County.

Table 10. Vertical Datum Conversions
Single Conversion Factor (countywide) Method

Point ID #	Quadrangle Name	Corner	NAD83 Latitude (dec. deg.)	NAD83 Longitude (dec. deg.)	NGVD29 to NAVD88 Elevation Change (feet)
1	New Lexington	SE	39.625	-82.125	-0.771 ft
2	Junction City	SE	39.625	-82.25	-0.830 ft
3	Bremen	SE	39.625	-82.375	-0.771 ft
4	Fultonham	SE	39.75	-82.125	-0.732 ft
5	Somerset	SE	39.75	-82.25	-0.748 ft
6	Rushville	SE	39.75	-82.375	-0.774 ft
7	Glenford	SE	39.875	-82.25	-0.689 ft
8	Thornville	SE	39.875	-82.375	-0.673 ft
9	Deavertown	SE	39.625	-82	-0.722 ft
10	Crooksville	SE	39.75	-82	-0.686 ft
11	Gratiot	SE	39.875	-82.125	-0.709 ft
12	Millersport	SE	39.875	-82.5	-0.663 ft

Range of conversion values	-0.83 through -0.663
Average conversion values	-0.73
Maximum variance from the average conversion	0.099
Maximum variance from a non-conversion value	0.167

For more information on NAVD88, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA, June 1992), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910. (Internet address http://www.ngs.noaa.gov.)

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

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages the State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles and Floodway Data Tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

In order to provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base for floodplain management purposes. The 0.2-percent-annual-chance floods are

employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross-section.

Between cross-sections for Brehm Run, Center Branch Rush Creek, Clark Run, Lideys Run, Rush Creek downstream of Township Road 185, Salem Run, and Tributary F the 1-percent-annual-chance floodplain boundaries were delineated using a Triangulated Irregular Network (TIN) created from topographic information that supports the generation of 2 foot contours that was determined by photogrammetric methods from 1 in = 300 foot scale aerial images.

Between cross-sections for all other studied streams the 1-percent-annual-chance floodplain boundaries were delineated using a TIN created from LiDAR points that support 5-foot contours. The LiDAR was collected by OSIP for Perry County in 2007.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (published separately). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE); and the 0.2-percent-annual-chance floodplain boundaries correspond to the boundary of the areas of moderate flood hazards (Zone X). In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown on the FIRM (published separately). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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

4.2 Floodways

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

The floodways presented in this FIS and on the FIRMs were directly obtained from the previous FIS reports in the Floodway Data Tables. They were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross-sections. Between cross-sections, the floodway boundaries were interpolated. The results of the floodway computations were tabulated at selected cross-sections in Table 9. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

No floodway was computed for Brehm Run, Clark Run, Lideys Run, Salem Run and West Branch Sunday Creek, therefore, no floodways are shown in the study.

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

The floodways in this report are recommended to local agencies as minimum standards that can be adopted or used as a basis for additional studies.

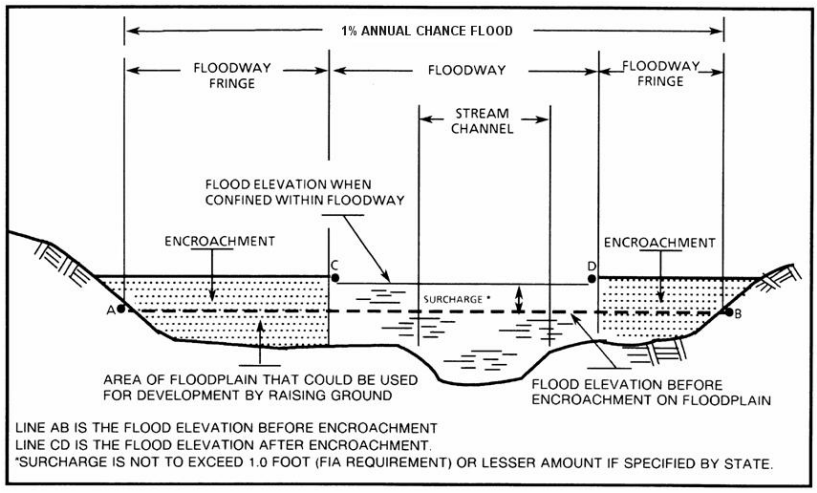

Figure 1. Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Brehm Run								
A	104	N/A[3]	N/A[3]	N/A[3]	824.2	N/A[3]	N/A[3]	N/A[3]
B	942	N/A[3]	N/A[3]	N/A[3]	824.2	N/A[3]	N/A[3]	N/A[3]
C	1,316	N/A[3]	N/A[3]	N/A[3]	826.0	N/A[3]	N/A[3]	N/A[3]
D	1,537	N/A[3]	N/A[3]	N/A[3]	827.0	N/A[3]	N/A[3]	N/A[3]
E	1,900	N/A[3]	N/A[3]	N/A[3]	828.8	N/A[3]	N/A[3]	N/A[3]
F	2,139	N/A[3]	N/A[3]	N/A[3]	829.2	N/A[3]	N/A[3]	N/A[3]
G	2,238	N/A[3]	N/A[3]	N/A[3]	831.9	N/A[3]	N/A[3]	N/A[3]
H	2,514	N/A[3]	N/A[3]	N/A[3]	832.0	N/A[3]	N/A[3]	N/A[3]
I	2,749	N/A[3]	N/A[3]	N/A[3]	832.5	N/A[3]	N/A[3]	N/A[3]
J	3,128	N/A[3]	N/A[3]	N/A[3]	834.7	N/A[3]	N/A[3]	N/A[3]
K	3,232	N/A[3]	N/A[3]	N/A[3]	835.5	N/A[3]	N/A[3]	N/A[3]
L	3,609	N/A[3]	N/A[3]	N/A[3]	837.0	N/A[3]	N/A[3]	N/A[3]
M	3,716	N/A[3]	N/A[3]	N/A[3]	837.3	N/A[3]	N/A[3]	N/A[3]
Center Branch Rush Creek								
A	653	90	743	4.0	811.1	810.9[2]	811.4[2]	0.5
B	1,606	58	613	4.9	811.7	811.7	812.3	0.6
C	2,860	63	567	5.3	812.7	812.7	813.5	0.8
D	3,803	63	688	4.2	813.5	813.5	814.4	0.9
E	4,245	52	582	5.0	814.0	814.0	814.9	0.9
F	4,428	117	747	3.9	814.9	814.9	815.6	0.7
G	5,552	113	702	4.1	816.5	816.5	817.4	0.9
H	6,457	159	956	3.0	817.1	817.1	818.1	1.0
I	7,753	63	656	4.4	818.4	818.4	819.3	0.9
J	9,091	59	553	5.3	820.1	820.1	820.9	0.8

[1]Feet above Mouth [2]Elevations computed without consideration of backwater effects from Rush Creek [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Brehm Run, Center Branch Rush Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Center Branch Rush Creek (Cont.)								
K	10,003	276	1,011	2.9	821.6	821.6	822.5	0.9
L	10,933	216	648	4.5	822.3	822.3	823.2	0.9
M	12,200	51	626	4.6	825.1	825.1	826.0	0.9
N	12,409	152	842	3.4	826.8	826.8	827.8	0.9
O	13,358	389	1,523	1.9	827.3	827.3	828.2	0.9
P	14,459	106	679	4.2	828.5	828.5	829.4	0.9
Q	16,207	45	461	6.1	829.8	829.8	830.7	0.9
R	16,275	38	449	6.3	831.5	831.5	832.2	0.7
S	16,305	85	691	4.1	831.7	831.7	832.6	0.9
T	17,510	238	1,443	2.0	832.9	832.9	833.9	1.0
U	18,960	732	2,943	1.0	833.3	833.3	834.2	0.9
V	19,991	486	1,914	1.5	833.5	833.5	834.4	0.9
W	21,360	281	793	0.5	834.8	834.8	835.6	0.8
X	22,020	46	205	2.0	834.8	834.8	835.7	0.9
Y	23,391	37	108	3.7	836.7	836.7	836.9	0.2
Z	23,482	19	133	3.0	839.9	839.9	839.9	0.0
AA	23,906	41	161	2.5	840.3	840.3	840.3	0.0
AB	23,958	43	121	3.3	840.3	840.3	840.3	0.0
AC	23,984	83	1,107	0.4	853.3	853.3	853.3	0.0
AD	25,469	544	1,124	0.4	853.3	853.3	853.3	0.0
AE	27,070	37	156	2.6	854.5	854.5	854.5	0.0
AF	28,563	38	122	3.3	855.9	855.9	856.0	0.1

[1]Feet above Mouth

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Center Branch Rush Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Clark Run								
A	549 [1]	N/A [3]	N/A [3]	N/A [3]	805.0	N/A [3]	N/A [3]	N/A [3]
B	715 [1]	N/A [3]	N/A [3]	N/A [3]	805.0	N/A [3]	N/A [3]	N/A [3]
C	2,072 [1]	N/A [3]	N/A [3]	N/A [3]	805.0	N/A [3]	N/A [3]	N/A [3]
D	4,004 [1]	N/A [3]	N/A [3]	N/A [3]	805.5	N/A [3]	N/A [3]	N/A [3]
E	6,200 [1]	N/A [3]	N/A [3]	N/A [3]	807.2	N/A [3]	N/A [3]	N/A [3]
F	6,879 [1]	N/A [3]	N/A [3]	N/A [3]	808.1	N/A [3]	N/A [3]	N/A [3]
G	6,926 [1]	N/A [3]	N/A [3]	N/A [3]	809.2	N/A [3]	N/A [3]	N/A [3]
H	8,256 [1]	N/A [3]	N/A [3]	N/A [3]	809.7	N/A [3]	N/A [3]	N/A [3]
I	8,314 [1]	N/A [3]	N/A [3]	N/A [3]	810.0	N/A [3]	N/A [3]	N/A [3]
J	8,463 [1]	N/A [3]	N/A [3]	N/A [3]	810.1	N/A [3]	N/A [3]	N/A [3]
K	10,020 [1]	N/A [3]	N/A [3]	N/A [3]	811.1	N/A [3]	N/A [3]	N/A [3]
L	10,853 [1]	N/A [3]	N/A [3]	N/A [3]	812.8	N/A [3]	N/A [3]	N/A [3]
M	11,284 [1]	N/A [3]	N/A [3]	N/A [3]	814.5	N/A [3]	N/A [3]	N/A [3]
N	11,445 [1]	N/A [3]	N/A [3]	N/A [3]	815.6	N/A [3]	N/A [3]	N/A [3]
O	11,522 [1]	N/A [3]	N/A [3]	N/A [3]	817.8	N/A [3]	N/A [3]	N/A [3]
P	12,247 [1]	N/A [3]	N/A [3]	N/A [3]	818.4	N/A [3]	N/A [3]	N/A [3]
Q	12,941 [1]	N/A [3]	N/A [3]	N/A [3]	819.4	N/A [3]	N/A [3]	N/A [3]
Jonathan Creek								
A	109,666 [2]	534	3,863	2.8	843.5	843.5	844.5	1.0
B	110,035 [2]	678	4,050	2.7	844.4	844.4	845.4	1.0
C	110,458 [2]	876	7,612	1.4	846.8	846.8	847.8	1.0
Lideys Run								
A	260 [2]	N/A [3]	N/A [3]	N/A [3]	812.7	N/A [3]	N/A [3]	N/A [3]

[1]Feet above Fairfield / Perry County Boundary [2]Feet above Mouth [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Clark Run, Jonathan Creek, Lideys Run

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Lideys Run (Cont.)								
B	1,353 [1]	N/A[3]	N/A[3]	N/A[3]	812.7	N/A[3]	N/A[3]	N/A[3]
C	1,976 [1]	N/A[3]	N/A[3]	N/A[3]	812.7	N/A[3]	N/A[3]	N/A[3]
D	2,075 [1]	N/A[3]	N/A[3]	N/A[3]	813.6	N/A[3]	N/A[3]	N/A[3]
E	2,497 [1]	N/A[3]	N/A[3]	N/A[3]	815.5	N/A[3]	N/A[3]	N/A[3]
F	2,639 [1]	N/A[3]	N/A[3]	N/A[3]	816.3	N/A[3]	N/A[3]	N/A[3]
G	2,693 [1]	N/A[3]	N/A[3]	N/A[3]	816.5	N/A[3]	N/A[3]	N/A[3]
H	2,780 [1]	N/A[3]	N/A[3]	N/A[3]	816.6	N/A[3]	N/A[3]	N/A[3]
Moxahala Creek								
A	30 [2]	300	3,243	2.2	737.3	737.3	737.8	0.5
B	1,100 [2]	510	3,172	2.2	737.6	737.6	738.1	0.5
C	2,580 [2]	527	3,763	1.9	738.0	738.0	738.8	0.8
D	3,975 [2]	414	2,855	2.5	738.4	738.4	739.4	1.0
E	16,250 [2]	640	3,085	2.2	745.9	745.9	746.5	0.6
F	17,540 [2]	300	1,880	3.6	747.2	747.2	747.7	0.5
G	18,380 [2]	560	3,216	2.1	748.5	748.5	748.8	0.3
H	19,060 [2]	560	2,788	2.3	749.0	749.0	749.3	0.3
I	19,580 [2]	180	1,275	5.1	749.7	749.7	750.0	0.3
J	19,840 [2]	90	814	7.9	749.7	749.7	750.0	0.3
K	20,010 [2]	100	1,148	5.6	750.7	750.7	751.0	0.3
L	20,350 [2]	502	3,321	1.9	751.9	751.9	752.2	0.3
M	20,560 [2]	610	4,487	1.4	752.0	752.0	752.4	0.4
N	21,420 [2]	677	5,073	1.3	752.2	752.2	752.5	0.3
O	21,650 [2]	609	4,177	1.6	752.3	752.3	752.6	0.3
P	21,880 [2]	515	2,941	2.2	752.4	752.4	752.7	0.3

[1]Feet above Mouth [2]Feet above Railroad [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Lideys Run, Moxahala Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Moxahala Creek								
Q	23,250 [1]	420	3,234	2.0	753.9	753.9	754.1	0.2
R	23,480 [1]	755	4,757	1.4	754.0	754.0	754.2	0.2
S	24,200 [1]	800	4,998	1.3	754.1	754.1	754.4	0.3
T	24,960 [1]	775	4,101	1.6	754.2	754.2	754.5	0.3
U	25,950 [1]	425	1,755	3.7	754.5	754.5	755.0	0.5
V	26,536 [1]	481	2,703	1.3	755.0	755.0	755.6	0.6
W	26,921 [1]	574	3,275	1.1	755.1	755.1	755.7	0.6
X	27,571 [1]	426	2,297	1.5	755.2	755.2	755.8	0.6
Y	28,337 [1]	327	1,630	2.2	755.5	755.5	756.2	0.7
Z	28,789 [1]	195	972	3.6	755.8	755.8	756.5	0.7
AA	29,381 [1]	194	1,281	2.7	756.6	756.6	757.4	0.8
AB	29,821 [1]	261	1,646	2.1	757.0	757.0	757.8	0.8
AC	30,188 [1]	303	1,640	2.1	757.2	757.2	758.1	0.9
AD	30,713 [1]	251	1,353	2.6	757.6	757.6	758.5	0.9
AE	31,056 [1]	58	563	6.2	758.0	758.0	758.9	0.9
AF	31,119 [1]	58	571	6.1	758.3	758.3	759.2	0.9
AG	31,296 [1]	175	1,265	2.8	759.1	759.1	760.0	0.9
AH	31,573 [1]	199	1,387	2.5	759.3	759.3	760.2	0.9
AI	31,799 [1]	221	1,595	2.2	759.4	759.4	760.4	1.0
AJ	32,460 [1]	319	2,156	1.6	759.8	759.8	760.7	0.9
Moxahala Creek Overflow								
A	0 [2]	N/A [3]	N/A [3]	N/A [3]	748.8	N/A [3]	N/A [3]	N/A [3]
B	690 [2]	N/A [3]	N/A [3]	N/A [3]	748.8	N/A [3]	N/A [3]	N/A [3]
C	1,100 [2]	N/A [3]	N/A [3]	N/A [3]	749.0	N/A [3]	N/A [3]	N/A [3]

[1]Feet above Railroad [2]Feet Above 1,500 feet Downstream of Main Street [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Moxahala Creek, Moxahala Creek Overflow

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Moxahala Creek Overflow (Cont.)								
D	1,241 [1]	N/A[3]	N/A[3]	N/A[3]	750.2	N/A[3]	N/A[3]	N/A[3]
E	1,461 [1]	N/A[3]	N/A[3]	N/A[3]	751.4	N/A[3]	N/A[3]	N/A[3]
Rush Creek								
A	405 [2]	528	2,408	2.3	805.3	805.3	806.1	0.8
B	1,492 [2]	888	3,157	1.7	805.7	805.7	806.5	0.8
C	2,726 [2]	994	3,263	1.7	806.0	806.0	806.9	0.9
D	3,691 [2]	759	2,069	2.6	806.4	806.4	807.4	1.0
E	4,817 [2]	663	1,896	2.8	807.6	807.6	808.3	0.7
F	5,938 [2]	78	834	6.5	808.6	808.6	809.2	0.6
G	6,644 [2]	75	828	6.5	809.5	809.5	810.1	0.6
H	7,785 [2]	232	1,159	4.6	811.7	811.7	811.9	0.2
I	8,938 [2]	273	1,516	3.0	812.3	812.3	813.3	1.0
J	10,980 [2]	636	2,874	1.2	815.3	815.3	816.3	1.0
K	14,280 [2]	782	2,476	1.4	817.3	817.3	818.3	1.0
L	20,892 [2]	408	1,485	2.4	824.2	824.2	825.2	1.0
M	25,080 [2]	446	1,488	2.4	829.6	829.6	830.6	1.0
N	27,780 [2]	195	1,137	3.0	831.9	831.9	832.9	1.0
O	35,430 [2]	503	1,838	1.9	840.6	840.6	841.6	1.0
P	41,930 [2]	188	831	4.8	848.6	848.6	849.6	1.0
Q	43,610 [2]	374	1,502	2.3	851.0	851.0	852.0	1.0
R	47,319 [2]	253	1,423	2.5	858.3	858.3	859.3	1.0
S	49,729 [2]	123	875	2.8	863.0	863.0	864.0	1.0
T	51,359 [2]	206	1,373	1.8	866.3	866.3	867.3	1.0
U	52,559 [2]	90	669	3.7	867.8	867.8	868.8	1.0

[1]Feet Above 1,500 feet Downstream of Main Street [2]Feet above Fairfield / Perry County Boundary [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Moxahala Creek Overflow, Rush Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Salem Run								
A	370 [1]	N/A[3]	N/A[3]	N/A[3]	805.8	N/A[3]	N/A[3]	N/A[3]
B	589 [1]	N/A[3]	N/A[3]	N/A[3]	806.0	N/A[3]	N/A[3]	N/A[3]
C	689 [1]	N/A[3]	N/A[3]	N/A[3]	806.5	N/A[3]	N/A[3]	N/A[3]
D	1,435 [1]	N/A[3]	N/A[3]	N/A[3]	807.8	N/A[3]	N/A[3]	N/A[3]
E	2,234 [1]	N/A[3]	N/A[3]	N/A[3]	808.9	N/A[3]	N/A[3]	N/A[3]
F	2,741 [1]	N/A[3]	N/A[3]	N/A[3]	810.1	N/A[3]	N/A[3]	N/A[3]
G	4,053 [1]	N/A[3]	N/A[3]	N/A[3]	810.9	N/A[3]	N/A[3]	N/A[3]
H	4,105 [1]	N/A[3]	N/A[3]	N/A[3]	811.1	N/A[3]	N/A[3]	N/A[3]
I	4,409 [1]	N/A[3]	N/A[3]	N/A[3]	811.5	N/A[3]	N/A[3]	N/A[3]
J	5,613 [1]	N/A[3]	N/A[3]	N/A[3]	813.0	N/A[3]	N/A[3]	N/A[3]
K	6,141 [1]	N/A[3]	N/A[3]	N/A[3]	814.5	N/A[3]	N/A[3]	N/A[3]
L	6,248 [1]	N/A[3]	N/A[3]	N/A[3]	816.3	N/A[3]	N/A[3]	N/A[3]
M	6,599 [1]	N/A[3]	N/A[3]	N/A[3]	817.7	N/A[3]	N/A[3]	N/A[3]
N	7,126 [1]	N/A[3]	N/A[3]	N/A[3]	819.3	N/A[3]	N/A[3]	N/A[3]
O	8,162 [1]	N/A[3]	N/A[3]	N/A[3]	819.6	N/A[3]	N/A[3]	N/A[3]
P	8,544 [1]	N/A[3]	N/A[3]	N/A[3]	820.0	N/A[3]	N/A[3]	N/A[3]
Q	8,626 [1]	N/A[3]	N/A[3]	N/A[3]	823.9	N/A[3]	N/A[3]	N/A[3]
Sunday Creek								
A	6,014 [2]	83	444	4.6	723.8	723.8	724.5	0.7
B	6,470 [2]	38	390	5.2	724.5	724.5	725.2	0.7
C	6,994 [2]	35	353	5.7	725.1	725.1	725.9	0.8
D	7,363 [2]	74	435	4.6	725.9	725.9	726.6	0.7
E	7,686 [2]	258	1,082	1.9	726.3	726.3	727.1	0.8
F	8,064 [2]	182	850	2.4	726.6	726.6	727.4	0.8

[1]Feet above Mouth [2]Feet above Confluence with Dotson Creek [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Salem Run, Sunday Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Sunday Creek (Cont.)								
G	8,333	139	609	3.3	726.7	726.7	727.6	0.9
H	8,613	34	345	5.9	726.9	726.9	727.8	0.9
I	8,944	47	373	5.4	727.5	727.5	728.5	1.0
J	9,445	47	377	5.4	728.3	728.3	729.3	1.0
K	9,816	149	684	3.0	729.0	729.0	730.0	1.0
L	9,987	48	397	5.1	729.1	729.1	730.1	1.0
M	10,212	75	467	4.3	730.0	730.0	730.7	0.7
N	10,253	41	362	5.6	730.1	730.1	730.7	0.6
O	10,490	45	410	4.9	730.4	730.4	731.2	0.8
P	10,716	83	552	3.7	730.9	730.9	731.5	0.6
Q	10,972	77	466	4.3	731.0	731.0	731.7	0.7
R	11,388	42	329	5.6	731.5	731.5	732.4	0.9
S	11,591	47	359	5.1	731.9	731.9	732.8	0.9
T	11,879	49	394	4.7	732.6	732.6	733.3	0.7
U	12,021	43	384	4.8	732.8	732.8	733.5	0.7
V	12,137	33	313	5.8	732.9	732.9	733.3	0.4
W	12,238	88	659	2.8	733.5	733.5	734.2	0.7
X	12,364	70	633	2.9	734.1	734.1	734.8	0.7
Y	12,426	66	490	3.7	734.1	734.1	734.7	0.6
Z	12,515	55	420	4.4	734.1	734.1	734.8	0.7
AA	12,580	85	503	3.6	734.1	734.1	734.8	0.7
AB	12,784	39	358	5.1	734.3	734.3	735.0	0.7
AC	13,170	30	300	6.1	734.9	734.9	735.9	1.0

[1]Feet above Confluence with Dotson Creek

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Sunday Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Tributary F								
A	1,500 [1]	410	989	1.0	820.0	820.0	821.0	1.0
B	3,460 [1]	67	224	4.4	830.7	830.7	831.7	1.0
Tributary G								
A	1,450 [1]	95	569	2.5	853.1	853.1	854.1	1.0
B	4,950 [1]	240	710	2.0	861.6	861.6	862.6	1.0
Tributary T								
A	1,410 [1]	53	338	4.9	832.5	832.5	833.5	1.0
B	4,110 [1]	214	1,089	1.5	839.9	839.9	840.9	1.0
C	6,700 [1]	160	568	2.9	845.6	845.6	846.6	1.0
West Branch Sunday Creek								
A	389 [2]	N/A[3]	N/A[3]	N/A[3]	760.5	N/A[3]	N/A[3]	N/A[3]
B	1,597 [2]	N/A[3]	N/A[3]	N/A[3]	762.1	N/A[3]	N/A[3]	N/A[3]
C	1,708 [2]	N/A[3]	N/A[3]	N/A[3]	762.5	N/A[3]	N/A[3]	N/A[3]
D	1,830 [2]	N/A[3]	N/A[3]	N/A[3]	764.6	N/A[3]	N/A[3]	N/A[3]
E	2,138 [2]	N/A[3]	N/A[3]	N/A[3]	764.8	N/A[3]	N/A[3]	N/A[3]
F	3,161 [2]	N/A[3]	N/A[3]	N/A[3]	766.5	N/A[3]	N/A[3]	N/A[3]

[1]Feet above Mouth [2]Feet above 1,800 feet Downstream of Main Street [3]No data available

Table 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

FLOODWAY DATA

Tributaries F, G, and T, West Branch Sunday Creek

5.0 INSURANCE APPLICATION

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

Zone A	The flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.
Zone AE	The flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
Zone X	The flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP (FIRM)

The FIRM is designed for flood insurance and floodplain management applications.

The FIRM for Perry County is, for insurance purposes, the principal result of the FIS. This map (published separately) contains the official delineation of flood insurance zones and BFE lines. BFE lines show the locations of the expected whole-foot WSELs of the base flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by FEMA.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the existing conditions 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs for existing conditions in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens and symbols, the 1- and 0.2-percent-chance-annual floodplains. Floodways for the 1-percent-annual-chance flood extent and the locations of selected cross-sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Perry County. Previously, separate FIRMs were prepared for each incorporated community and for the unincorporated areas of the county with identified special flood hazard areas. Historical data relating to the maps prepared for each community are presented in Table 12.

7.0 OTHER STUDIES

Due to being based on more up-to-date analyses, this FIS supersedes previously printed FISs for Perry County, Ohio. This FIS also supersedes the Flood Boundary and Floodway Maps for Perry County that were printed as part of previous FISs. The information on the Flood Boundary and Floodway Maps has been added to the FIRM accompanying this FIS. This report either supersedes or is compatible with all previous studies published on the streams studies in this report and should be considered authoritative for the purposes of the NFIP.

FISs have been prepared for Athens County, Ohio (Reference 27), Fairfield County, Ohio (Reference 28), Hocking County, Ohio (Reference 29), Licking County, Ohio (Reference 30), Morgan County, Ohio (Reference 31), and Muskingum County, Ohio (Reference 32). The results of these studies will be in agreement with the results of this countywide FIS.

8.0 LOCATION OF DATA

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

Future revisions may be made that do not result in the republishing of the FIS Report. To ensure that any user is aware of all revisions, it is advisable to contact the map repository of flood hazard data located in the community.

Community Name	Initial Identification	Flood Hazard Boundary Map Revisions Date(s)	FIRM Effective Date	FIRM Revision Date
Corning, Village of	May 10, 1974	June 11, 1976 November 2, 1979	September 1, 1987	April 18, 2011, TBD**
Crooksville, Village of	February 1, 1974	April 23, 1976	March 4, 1988	April 18, 2011, TBD**
Glenford, Village of	August 23, 1974	May 21, 1976 July 20, 1979	August 2, 1995	April 18, 2011, TBD**
Hemlock, Village of	February 7, 1975	None	August 19, 1987	April 18, 2011, TBD**
Junction City, Village of	January 5, 1979	None	September 2, 1982	April 18, 2011
New Lexington, Village of	May 17, 1974	April 9, 1976 June 12, 1981	September 2, 1982	April 18, 2011
New Straitsville, Village of	February 7, 1975	None	April 18, 2011	
Perry County (Unincorporated Areas)	January 20, 1978	August 7, 1981	September 27, 1991	April 18, 2011, TBD**
Rendville, Village of	December 2, 1977	None	April 18, 2011	
Shawnee, Village of	February 7, 1975	None	September 1, 1987	April 18, 2011
* Somerset, Village of	N/A	None	April 18, 2011	
* Thornville, Village of	N/A	None	April 18, 2011	

*No Special Flood Hazard Areas Identified, **To Be Determined

Table 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OHIO
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

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26. U.S. Army Corps of Engineers, Topographic Engineering Center, retrieved on March 20, 2009, from http://crunch.tec.army.mil/software/corpscon/corpscon.html.

27. ----------, Flood Insurance Study, Athens County, Ohio and Incorporated Areas, XXXX.

28. ----------, Flood Insurance Study, Fairfield County, Ohio and Incorporated Areas, XXXX.

29. ----------, Flood Insurance Study, Hocking County, Ohio and Incorporated Areas, XXXX.

30. ----------, Flood Insurance Study, Licking County, Ohio and Incorporated Areas, May, 2007.

31. ----------, Flood Insurance Study, Morgan County, Ohio Unincorporated Areas, November, 1990.

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33. USACE, Design Memorandum No. 1, "Local Flood Protection, Roseville, Ohio." July 1958.

Figure 2. Notes to FIRM 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 Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 12 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.

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

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

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within 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.

Figure 2. FIRM Notes to Users (Continued)

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

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Ohio South FIPS 6402. The horizontal datum was NAD83, GRS1980 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.

BASE MAP INFORMATION: Base map information shown on the FIRM consisted of orthophotography obtained through Ohio Statewide Imagery program in 2008, 2008 LiDAR data, and topographic mapping consisting of 1 and 2 foot contours in the Rush Creek and Center Branch rush Creek region and 5 foot contours for the remaining areas.

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.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Perry County, Ohio, 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 10 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.

Figure 2. FIRM Notes to Users (Continued)

SPECIAL NOTES FOR SPECIFIC FIRM PANELS This Notes to Users section was created specifically for Perry County, Ohio, effective TBD.
ACCREDITED LEVEE: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/national-flood-insurance-program. 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.

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.
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.
	Regulatory Floodway determined in Zone AE.

Figure 3. Map Legend for FIRM (Continued)

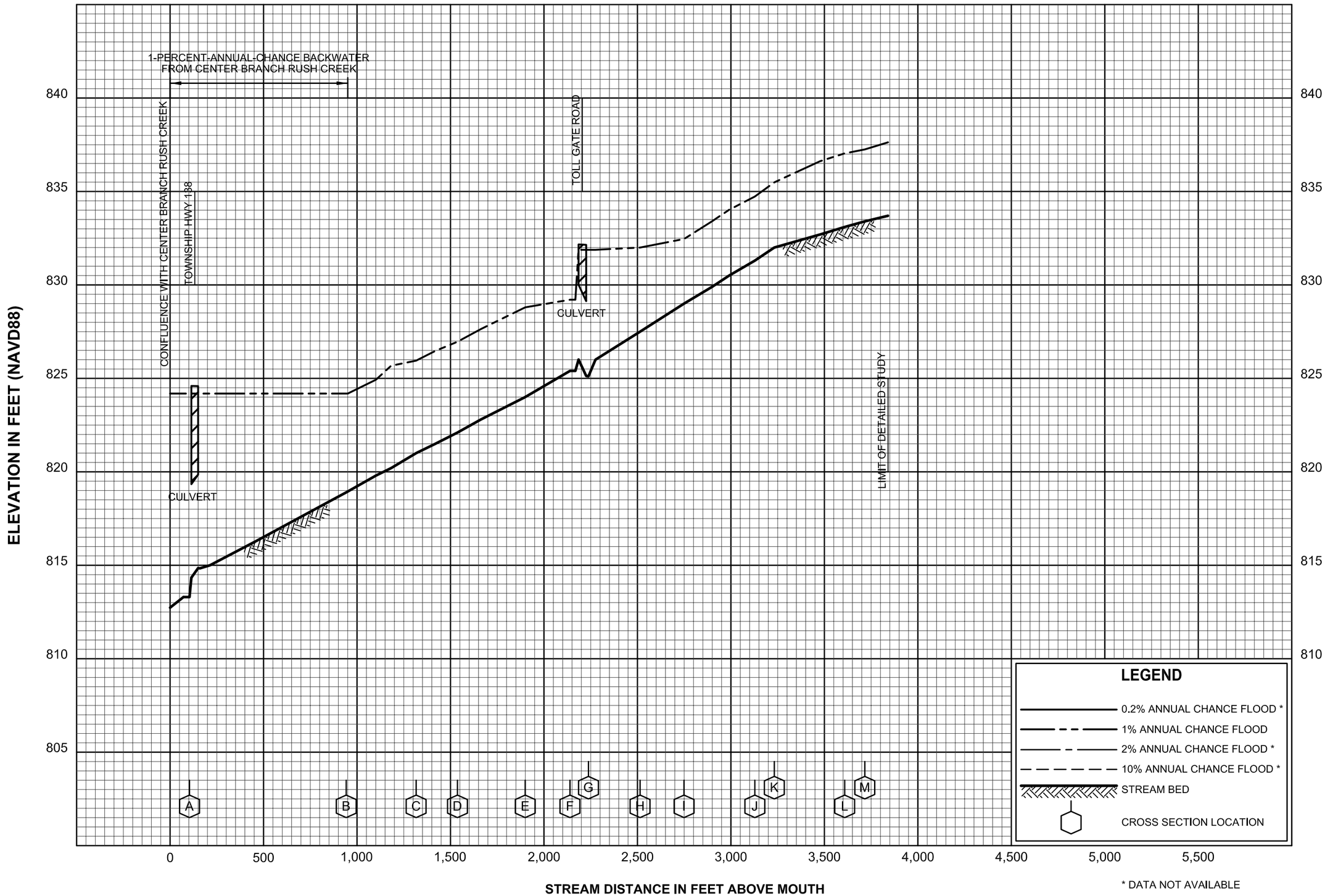
	Non-encroachment zone (see Section 2.4 of this FIS Report for more information)
FLOOD INSURANCE IS NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER APRIL 8, 1987, IN THE DESIGNATED COLORADO RIVER FLOODWAY	The Colorado River Floodway was established by Congress in the Colorado River Floodway Protection Act of 1986, Public Law 99-450 (100 Statute 1129). The Act imposes certain restrictions within the Floodway.
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 of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
(ortho) (vector)	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

Figure 3. Map Legend for FIRM (Continued)

GENERAL STRUCTURES	
Aqueduct *Channel* *Culvert* *Storm Sewer*	Channel, Culvert, Aqueduct or Storm Sewer
Dam *Jetty* *Weir*	Dam, Jetty, Weir
	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

Figure 3. Map Legend for FIRM (Continued)

	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
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
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)



FLOOD PROFILES

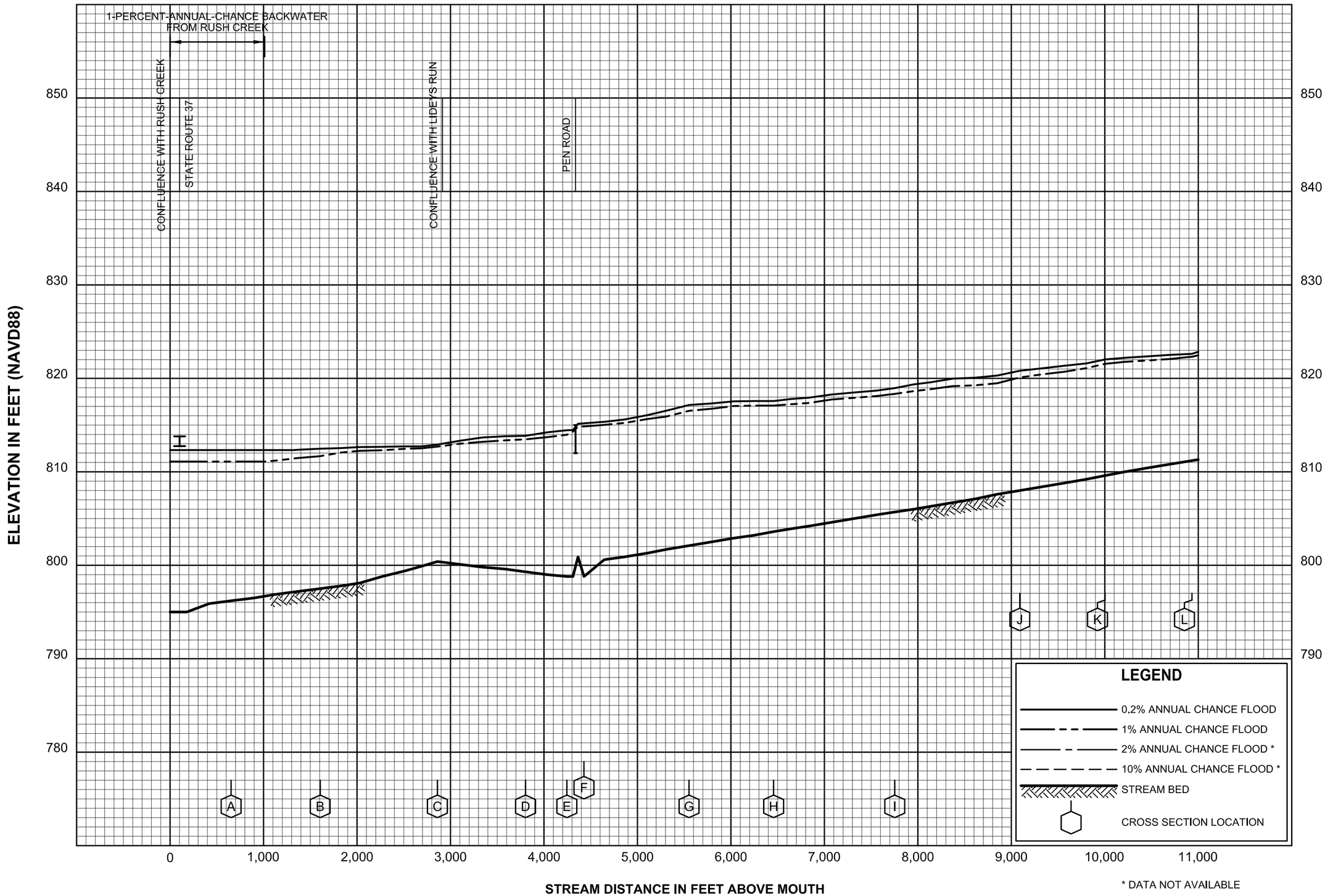
BREHM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

01P



FLOOD PROFILES

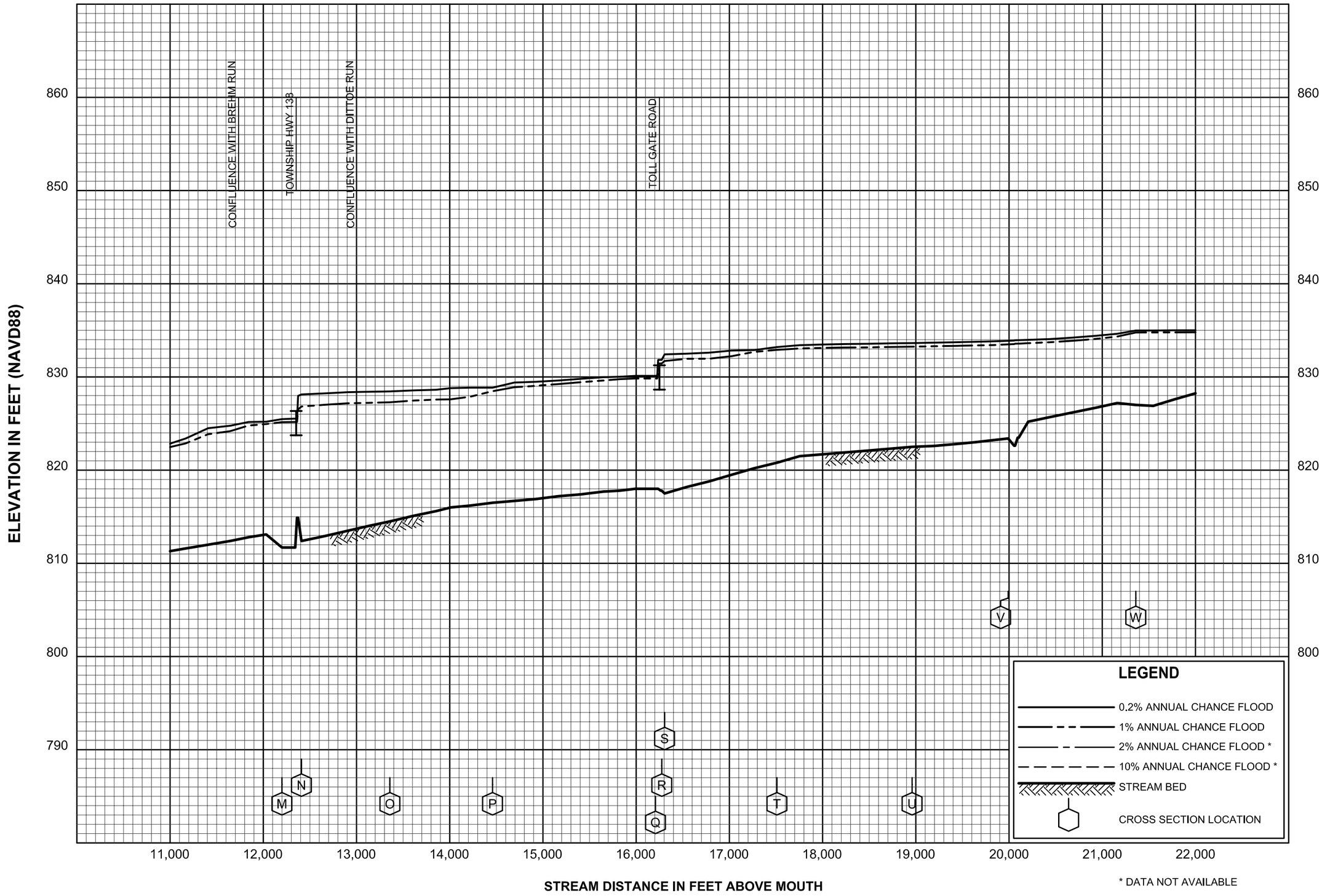
CENTER BRANCH RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

02P



FLOOD PROFILES

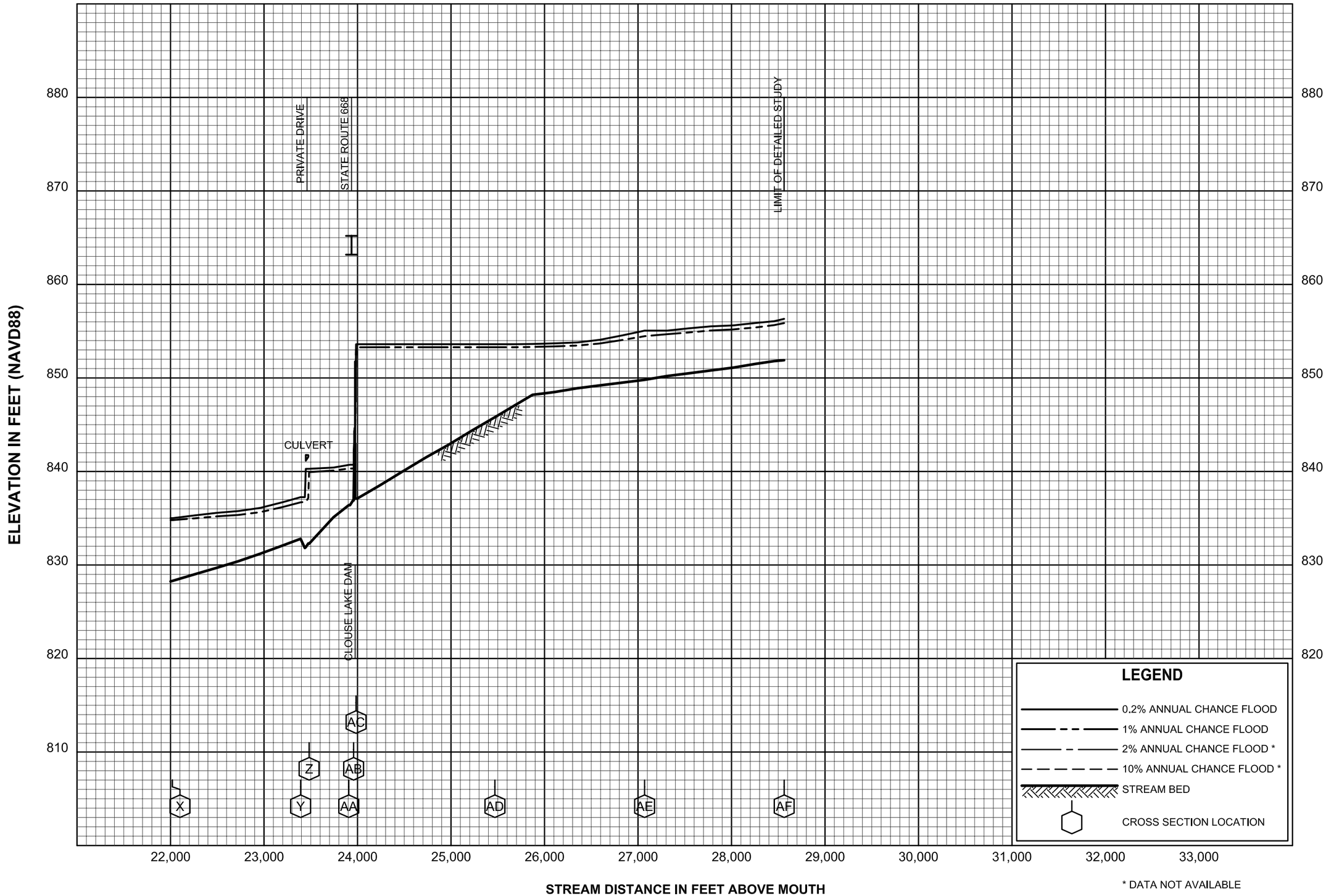
CENTER BRANCH RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

03P



FLOOD PROFILES

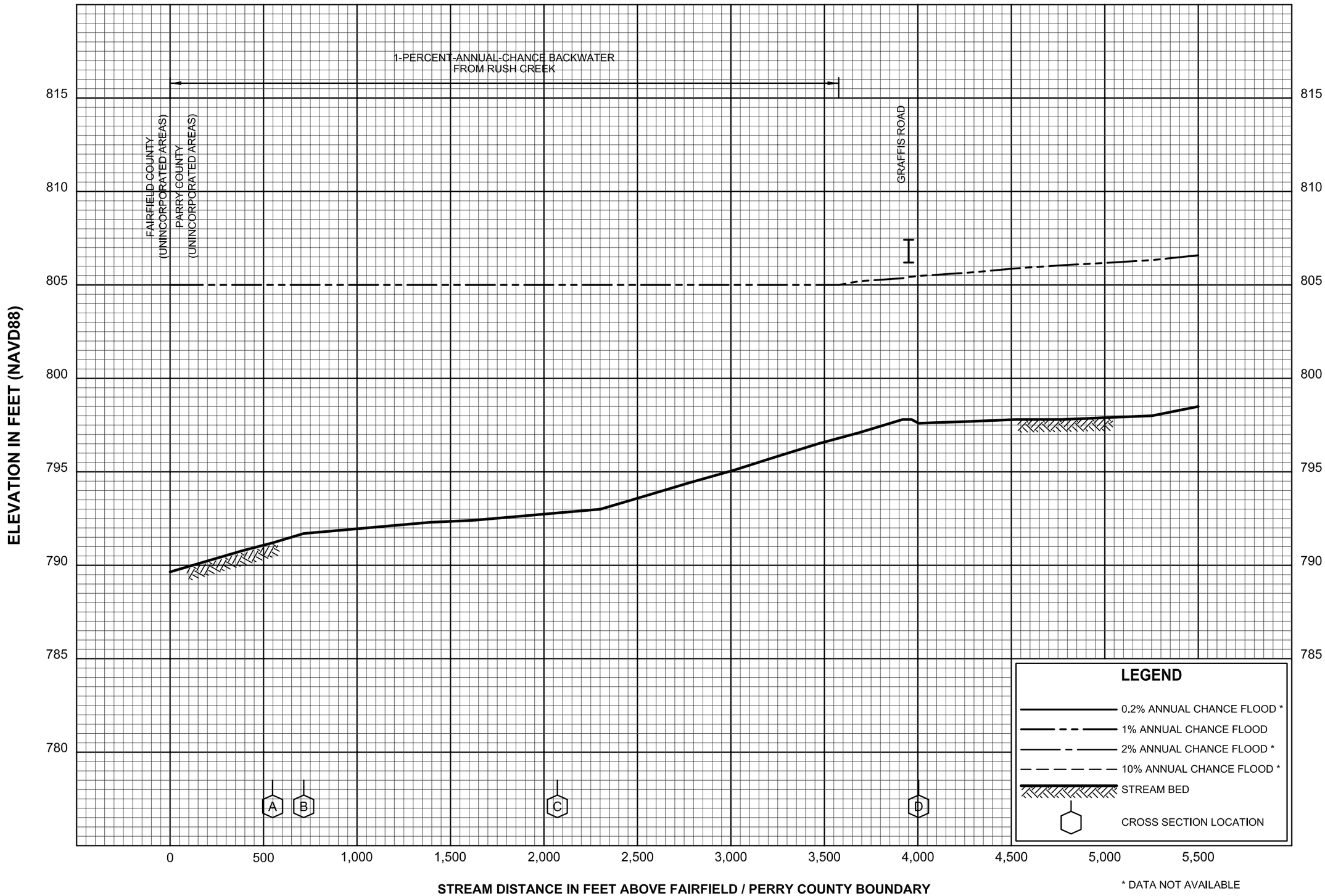
CENTER BRANCH RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

04P



FLOOD PROFILES

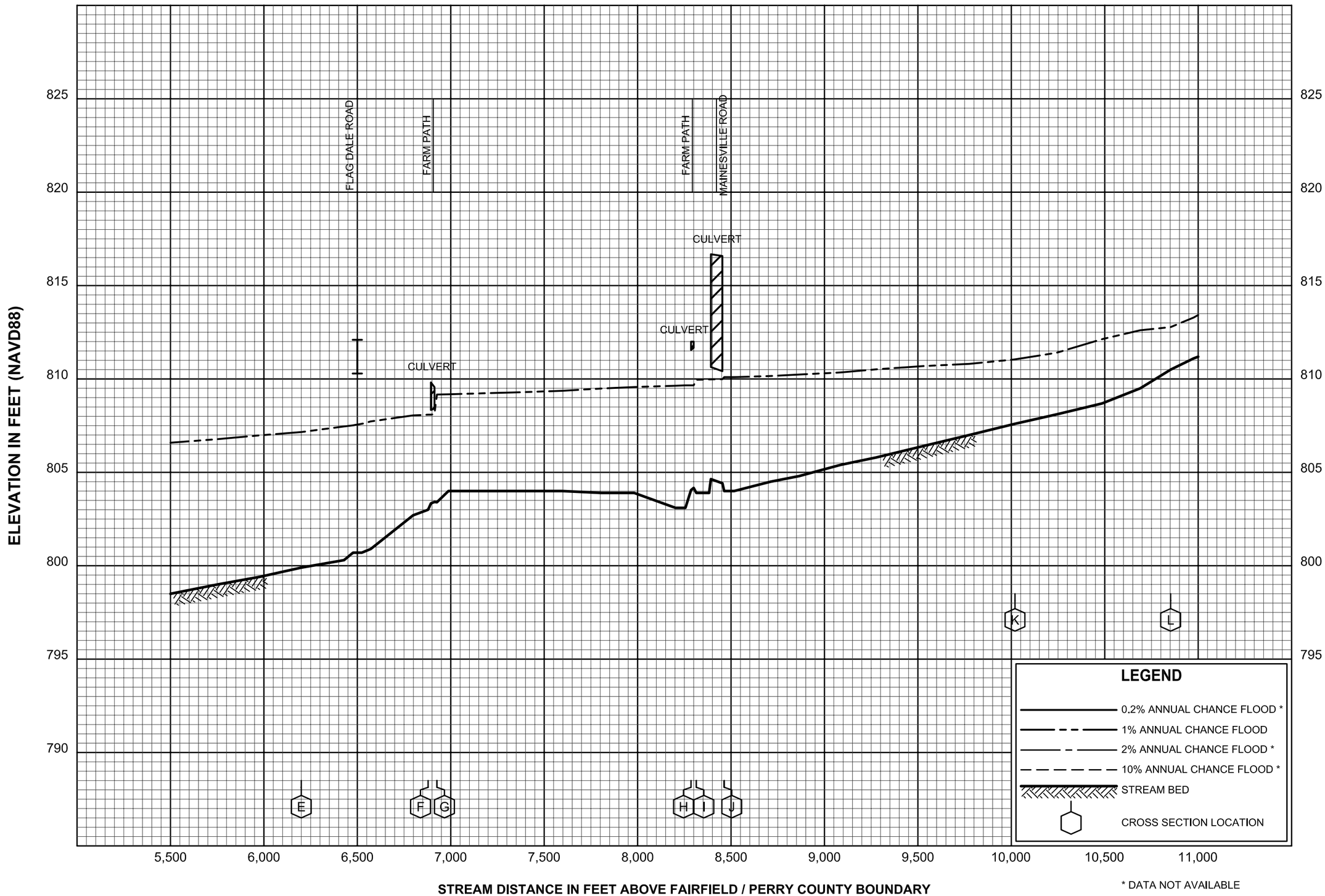
CLARK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

05P



FLOOD PROFILES

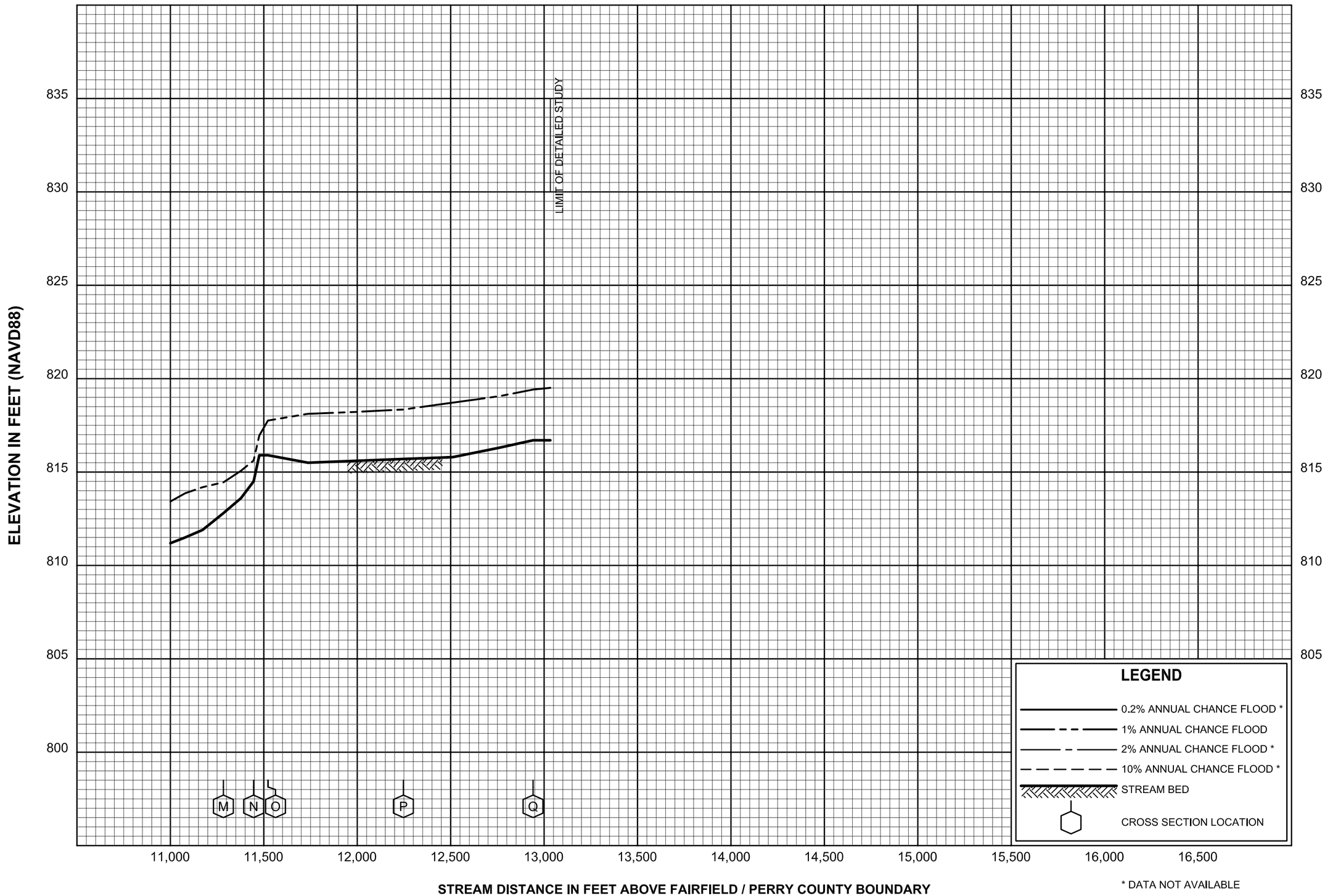
CLARK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

06P



FLOOD PROFILES

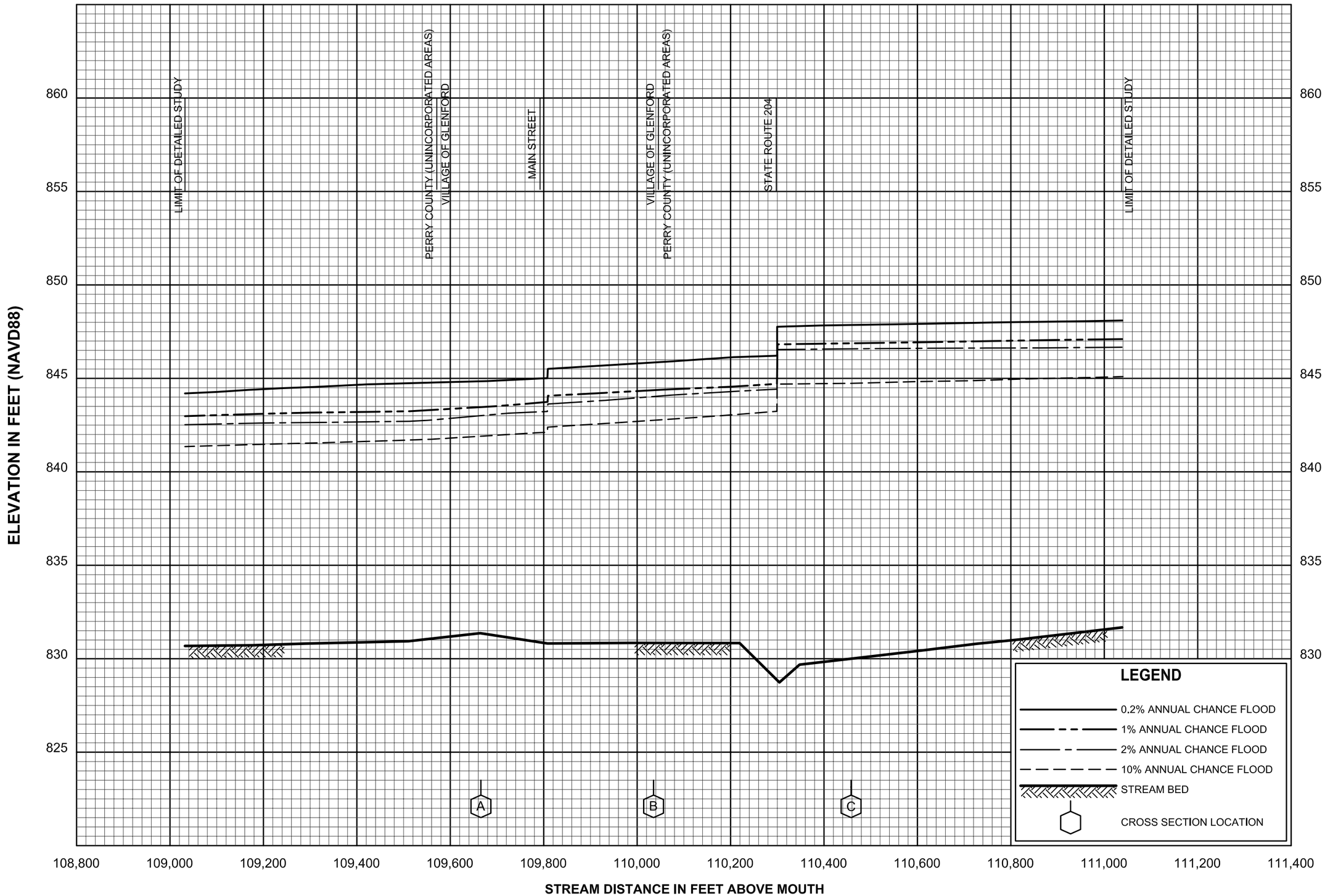
CLARK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

07P



FLOOD PROFILES

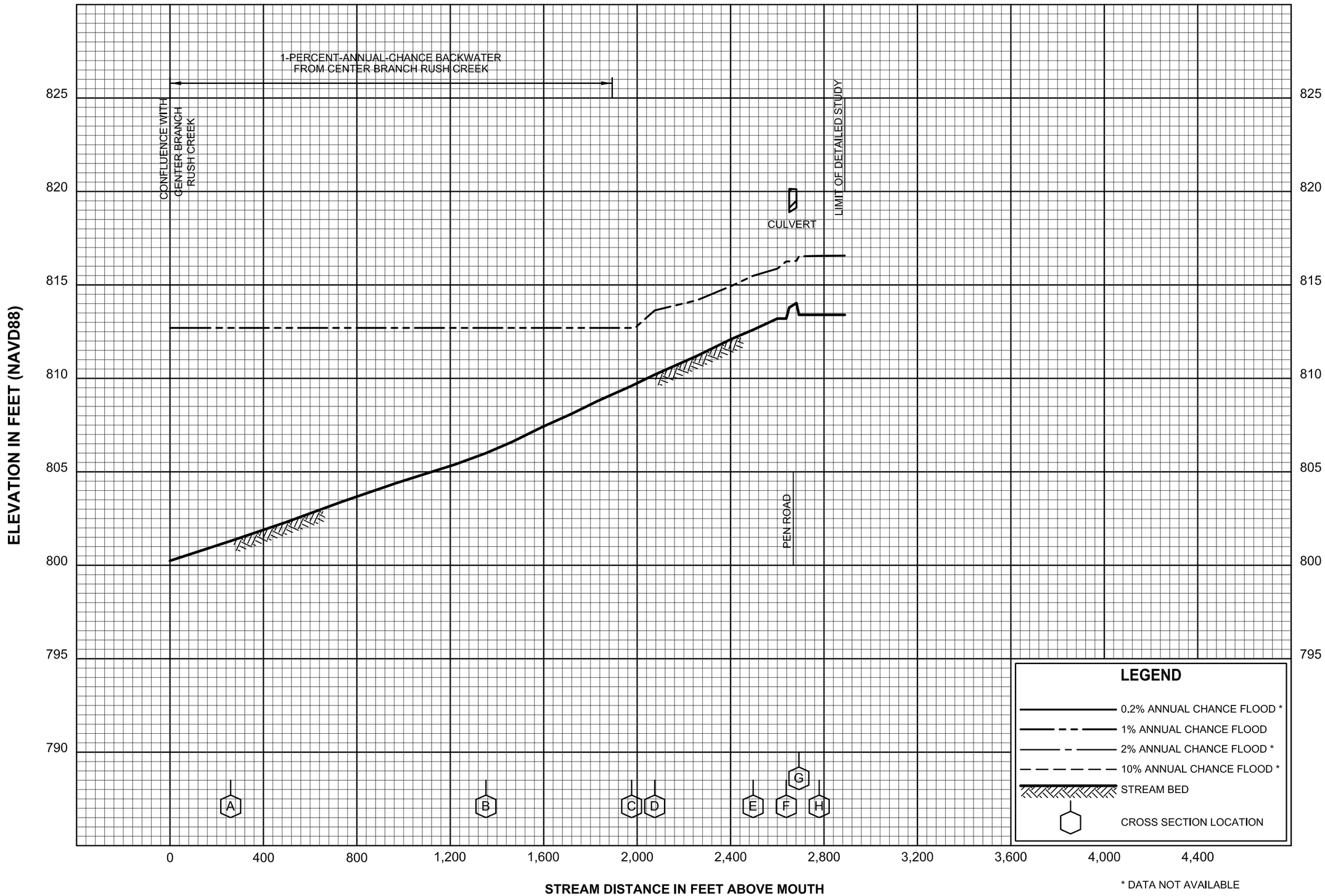
JONATHAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

08P



FLOOD PROFILES

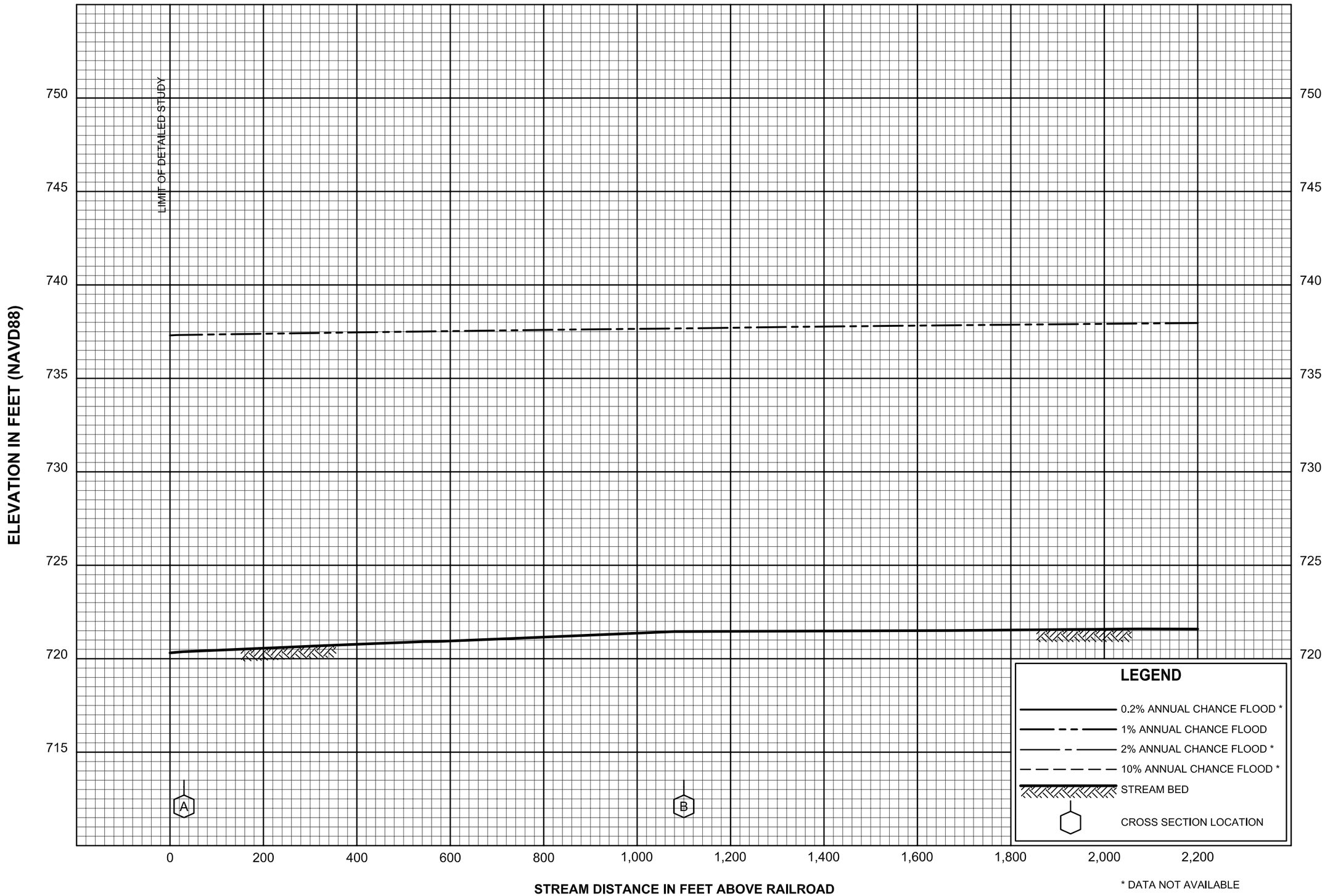
LIDEYS RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

09P



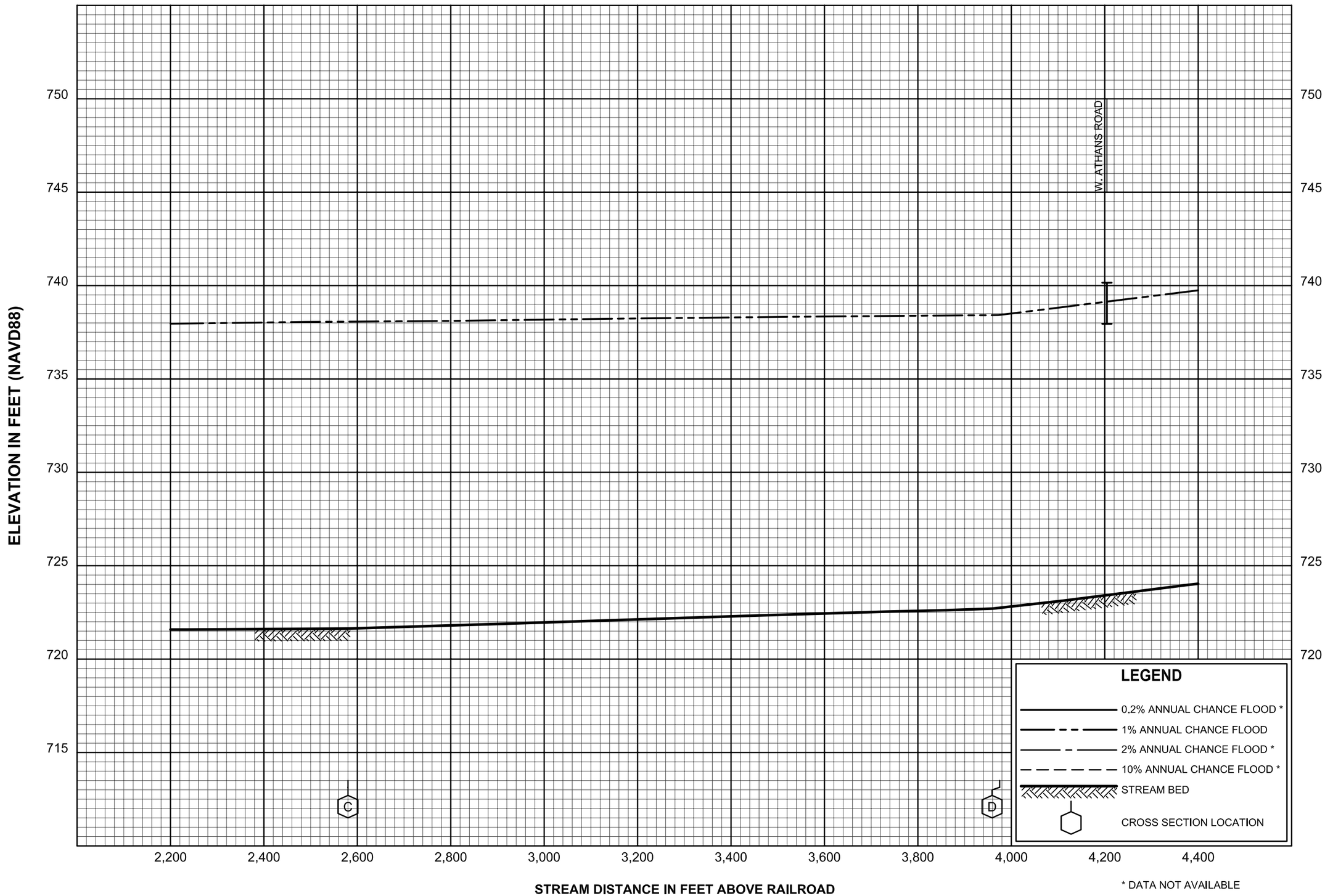
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



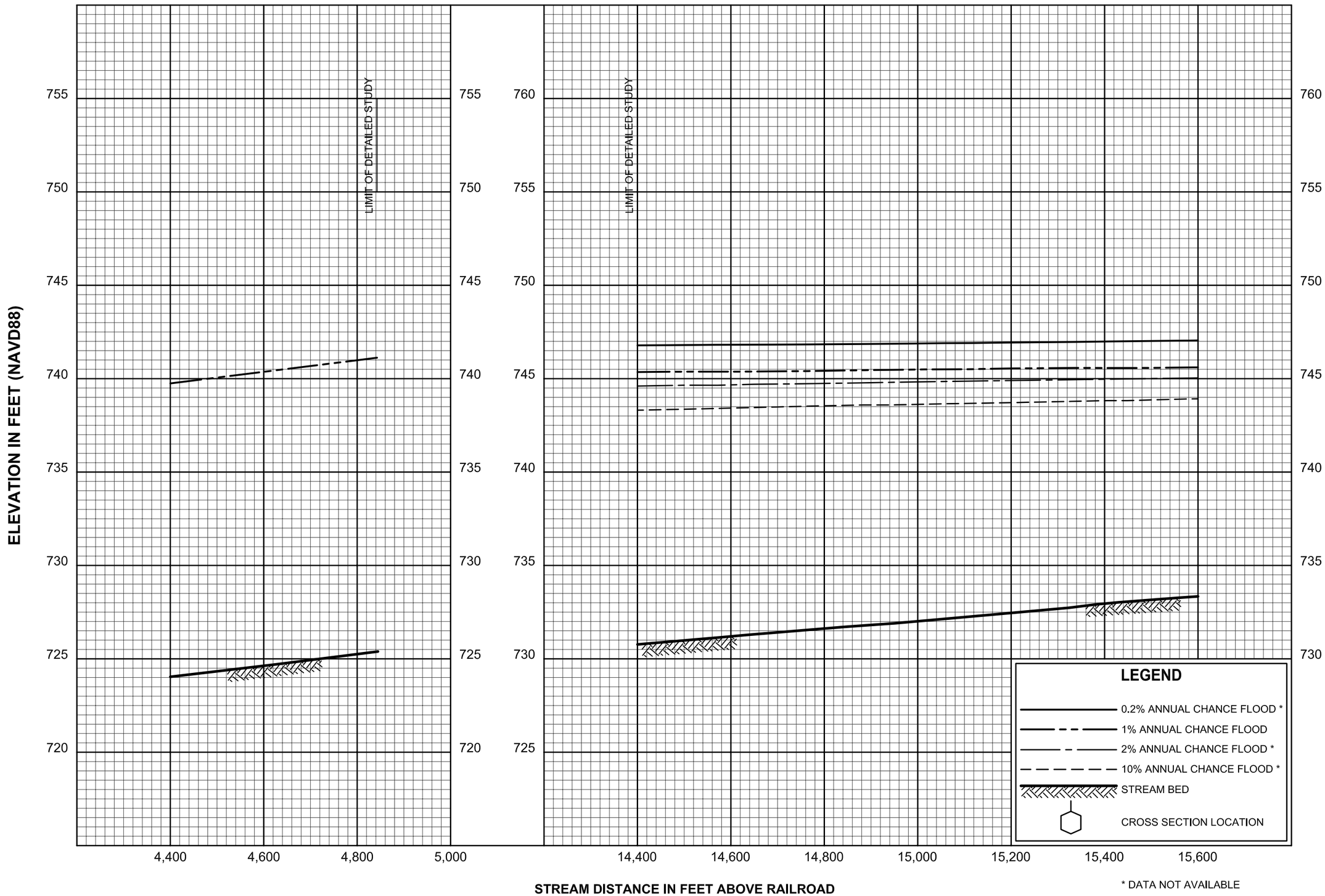
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



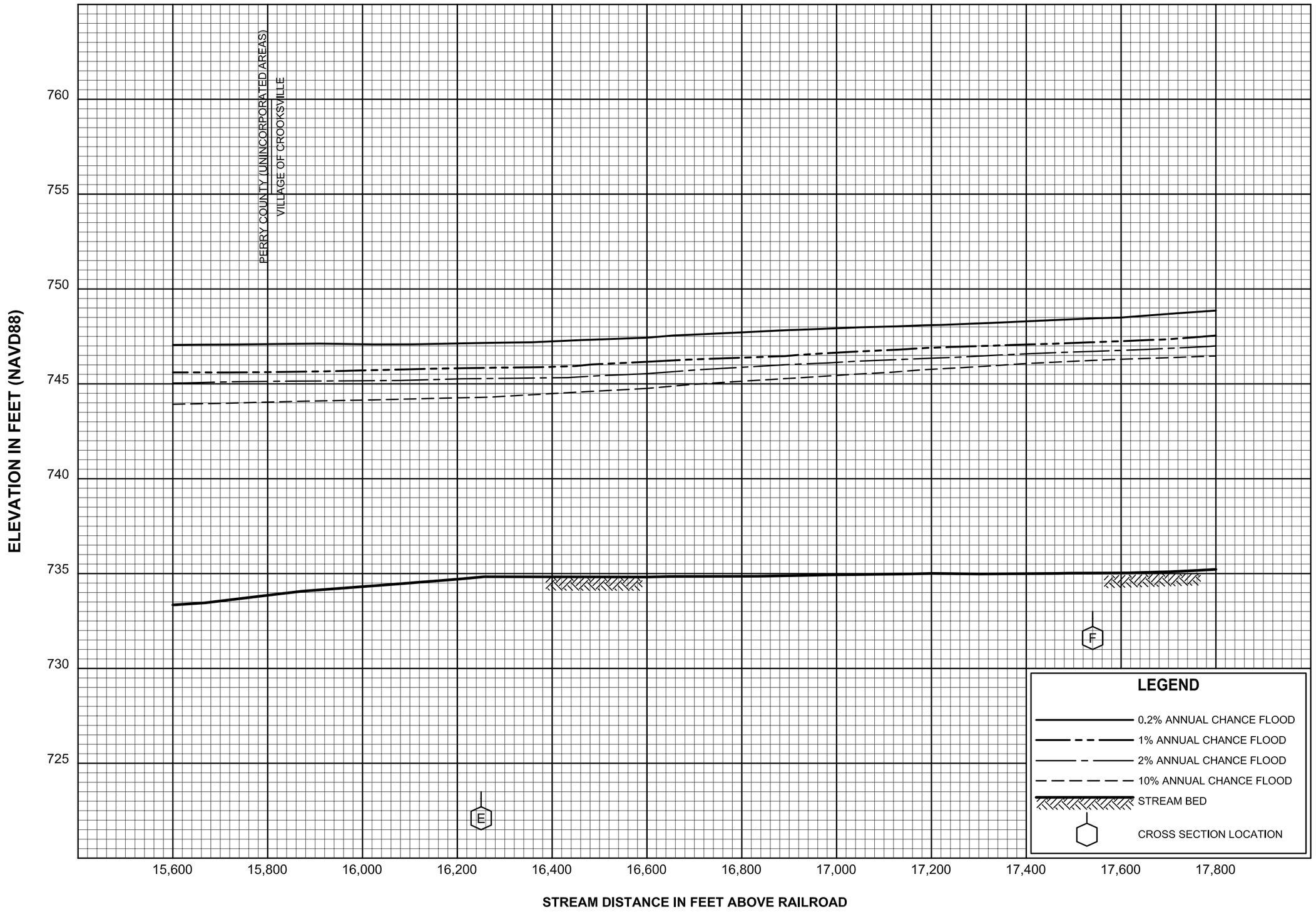
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



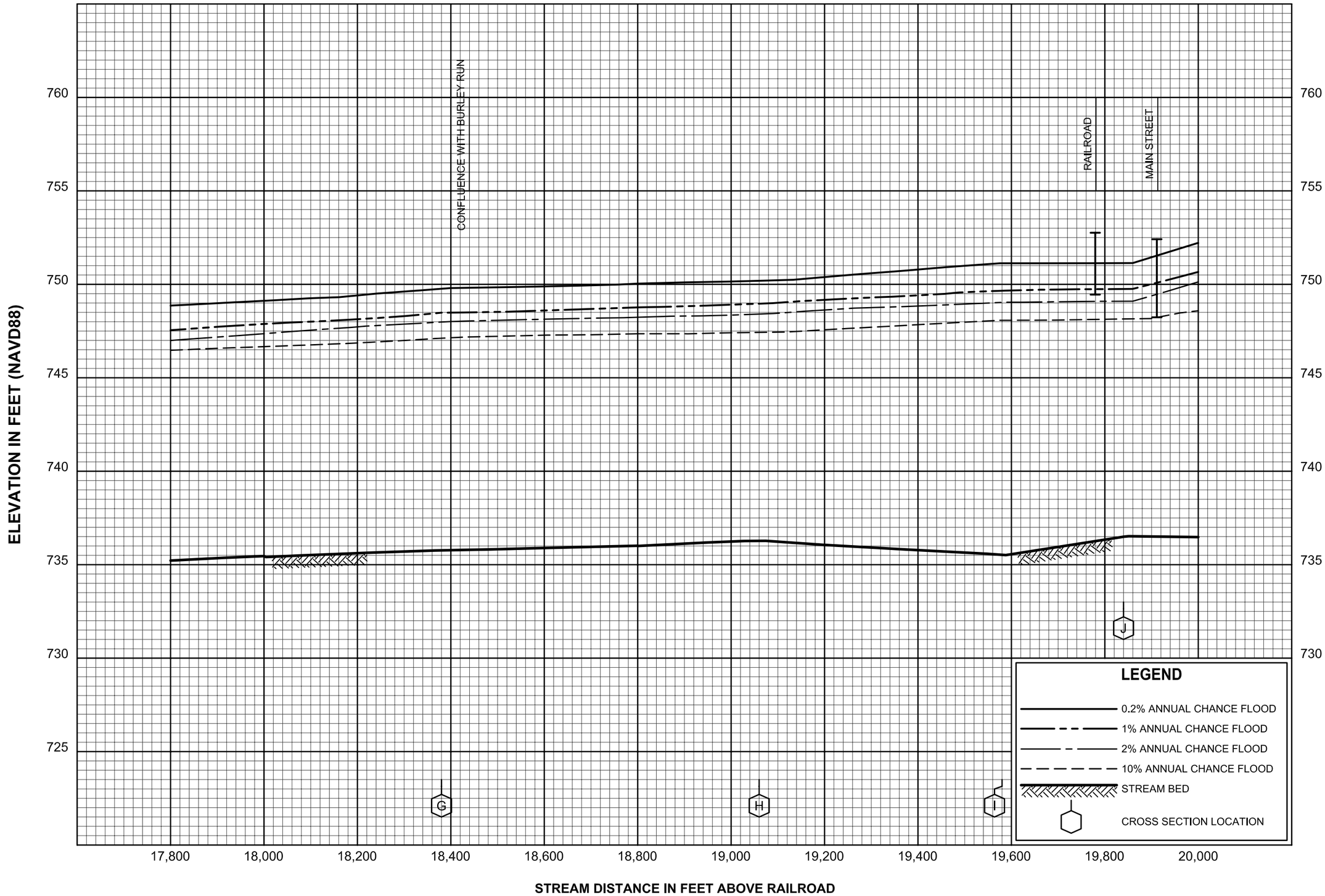
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



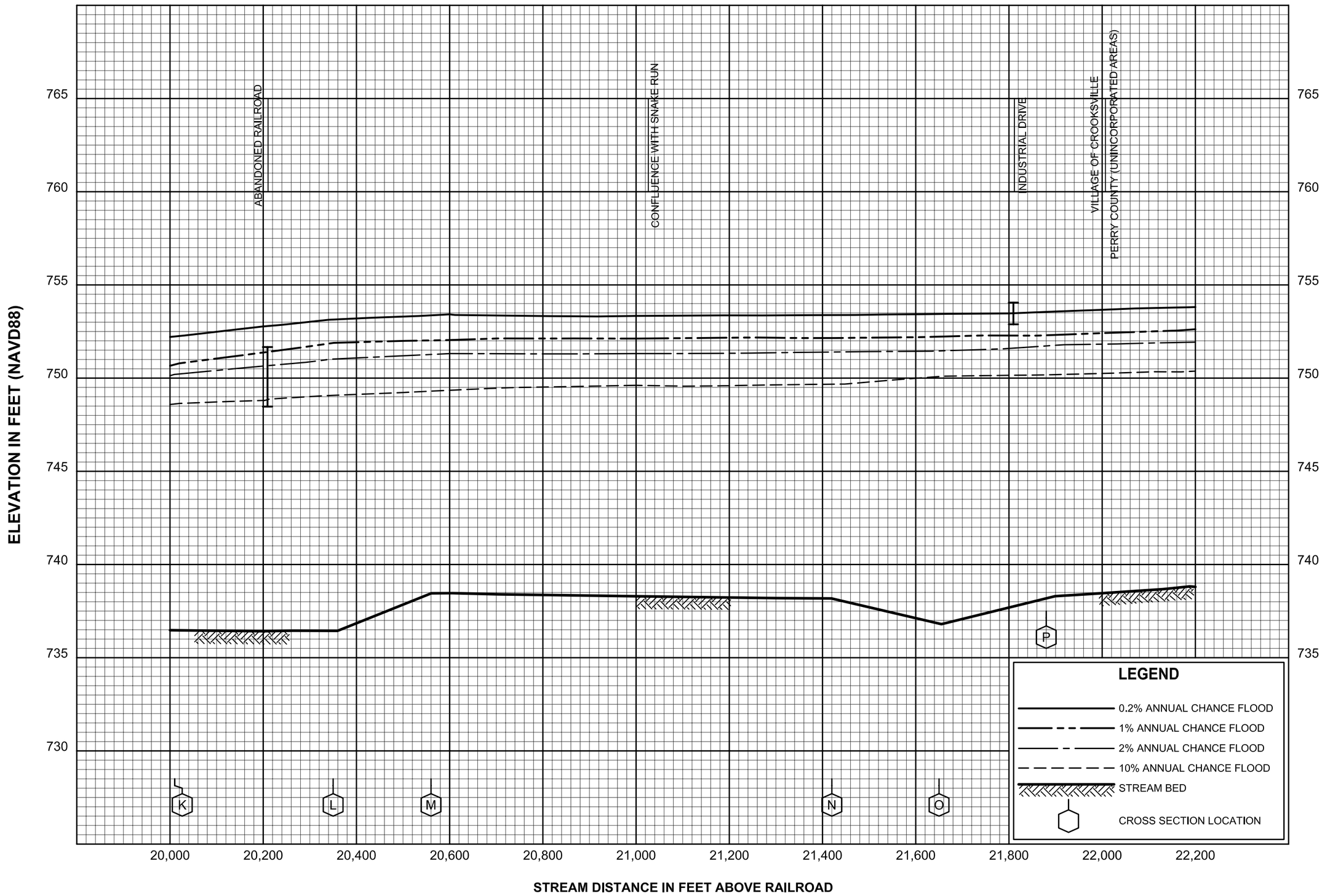
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



FLOOD PROFILES

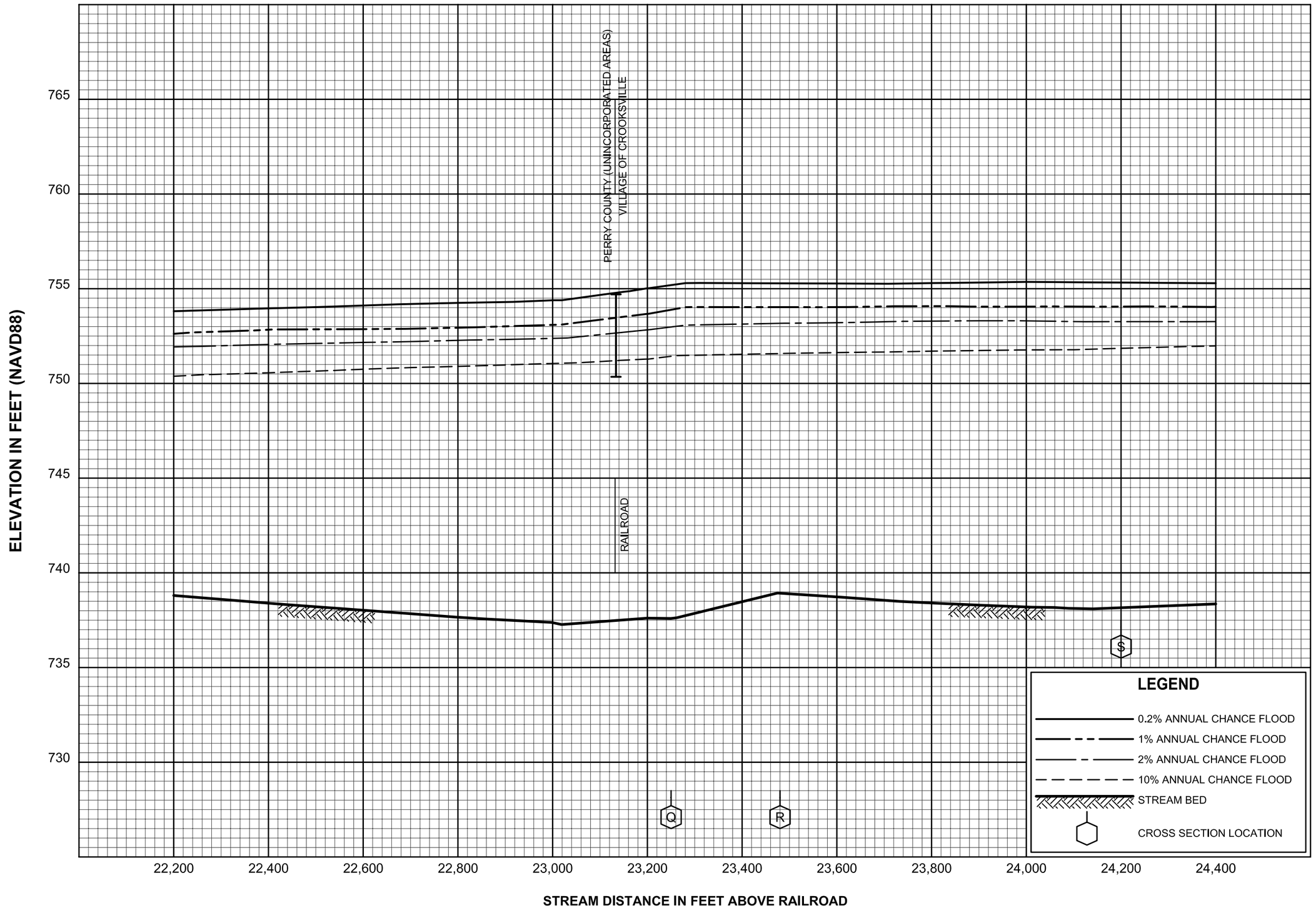
MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS

15P



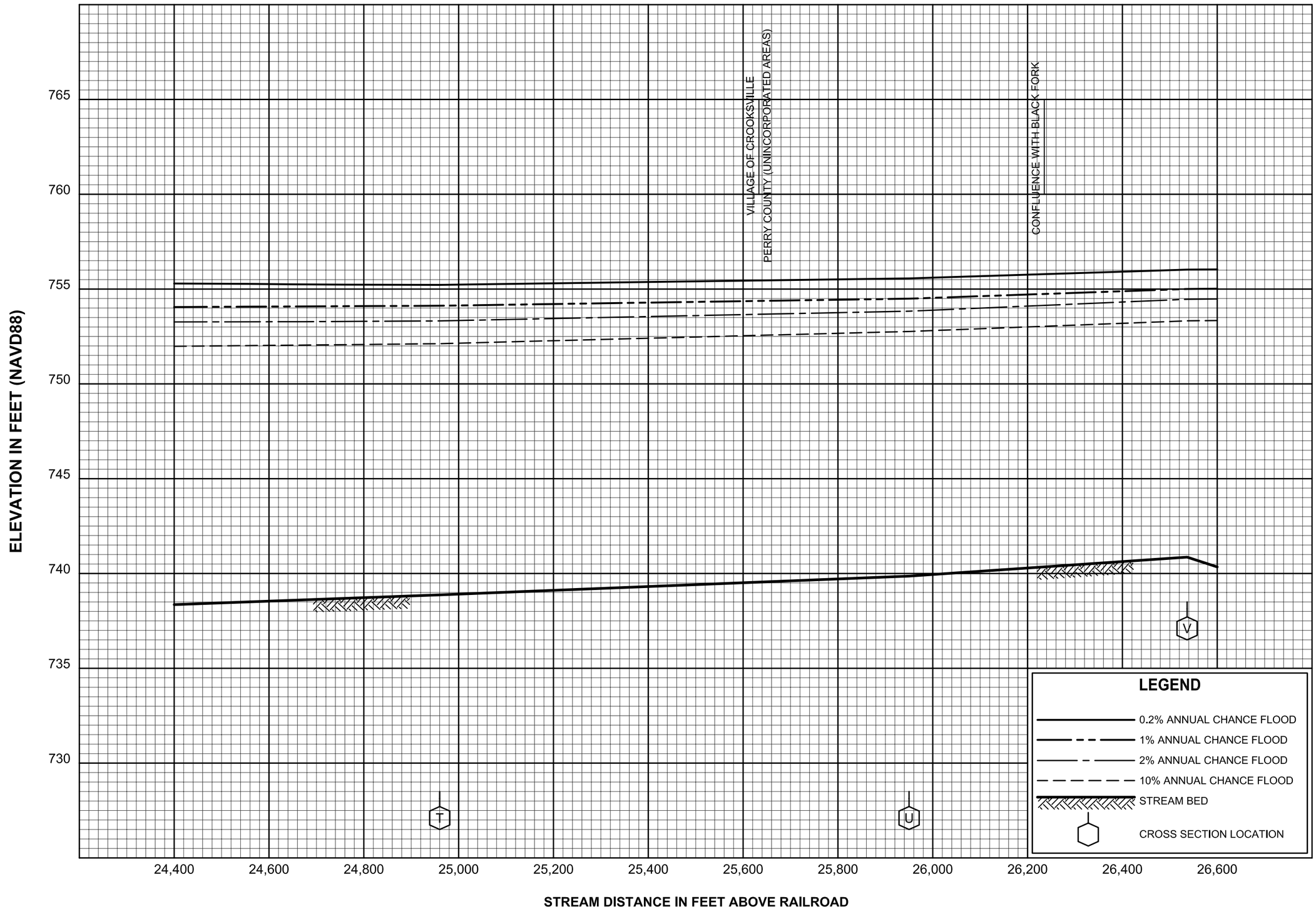
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



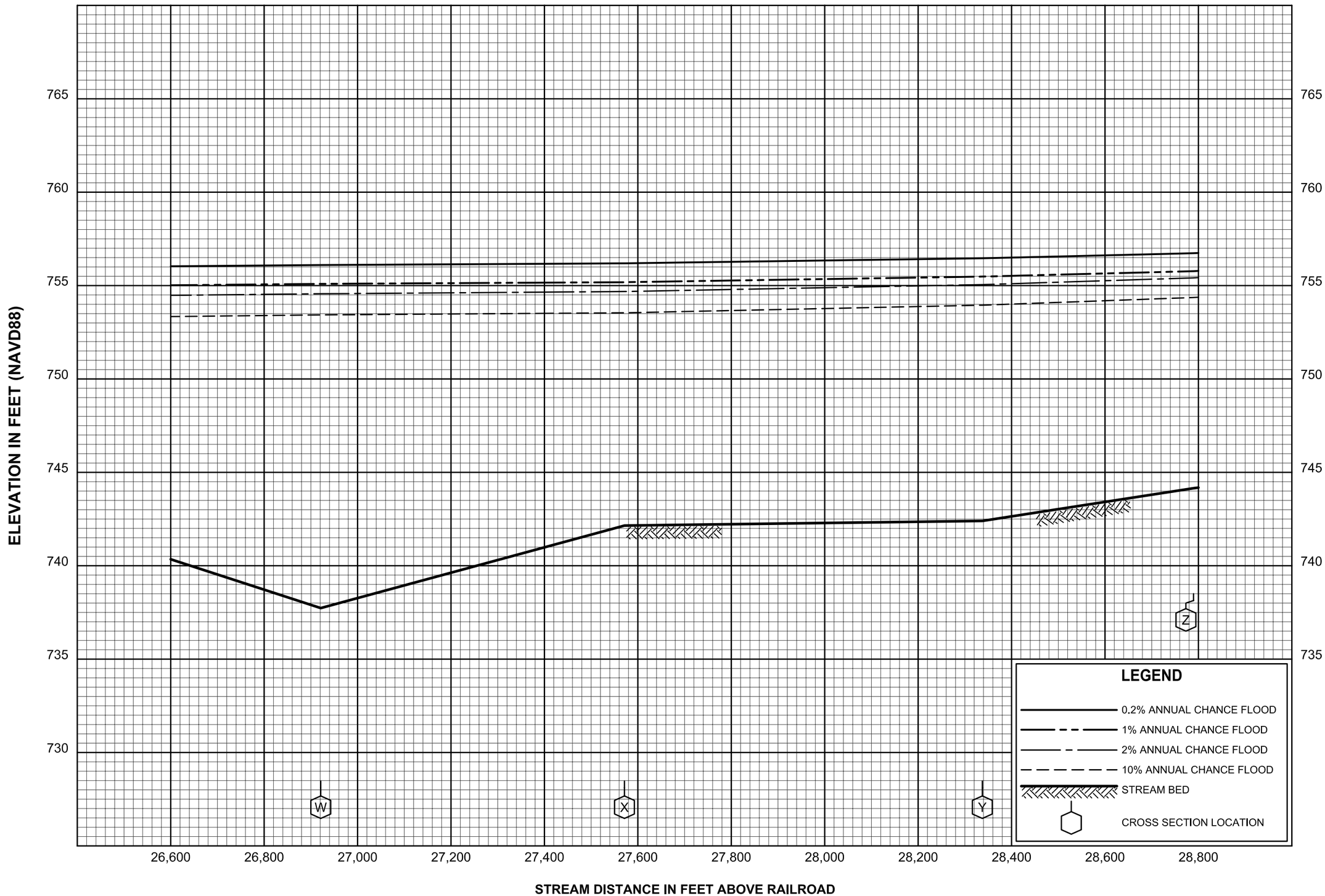
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



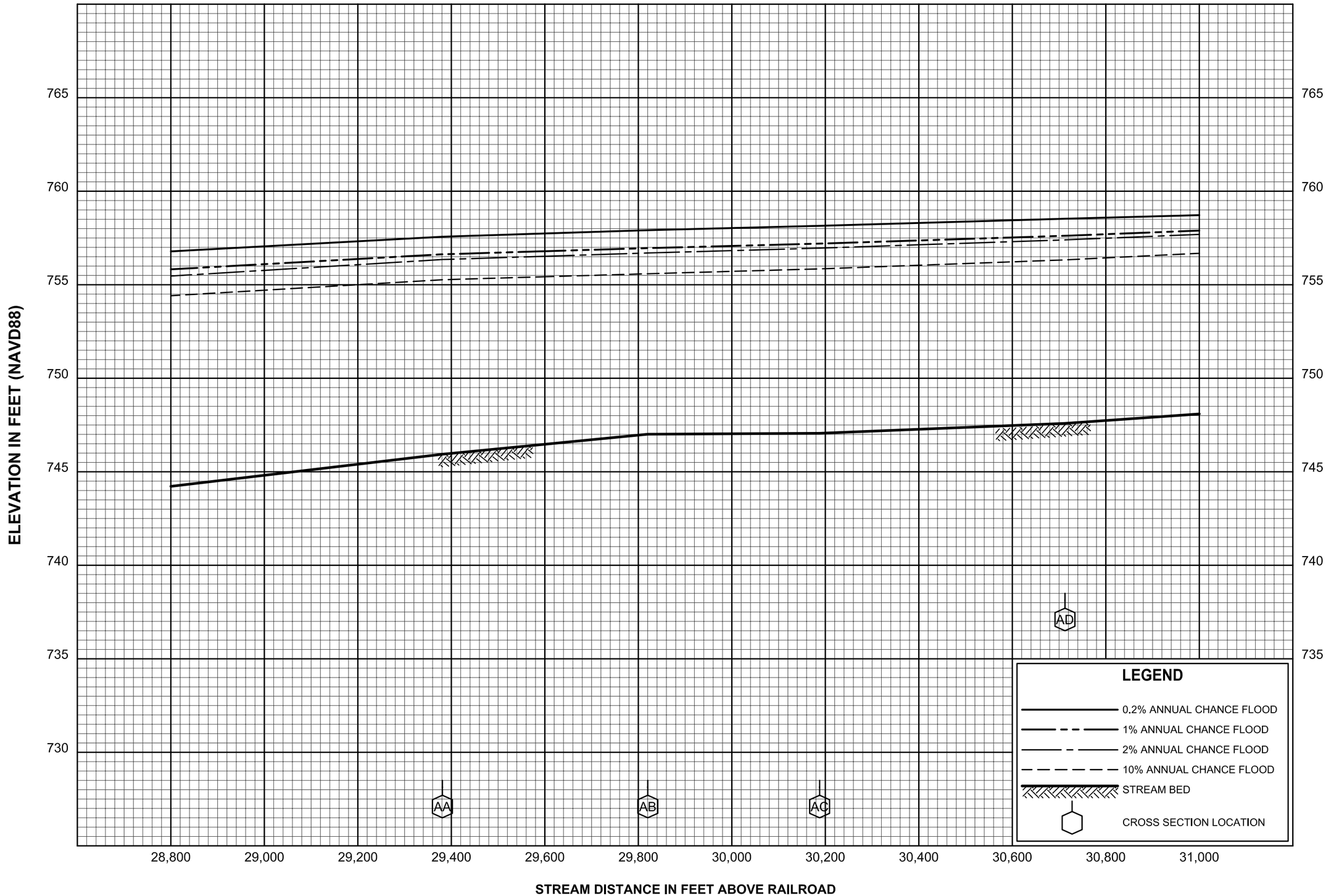
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



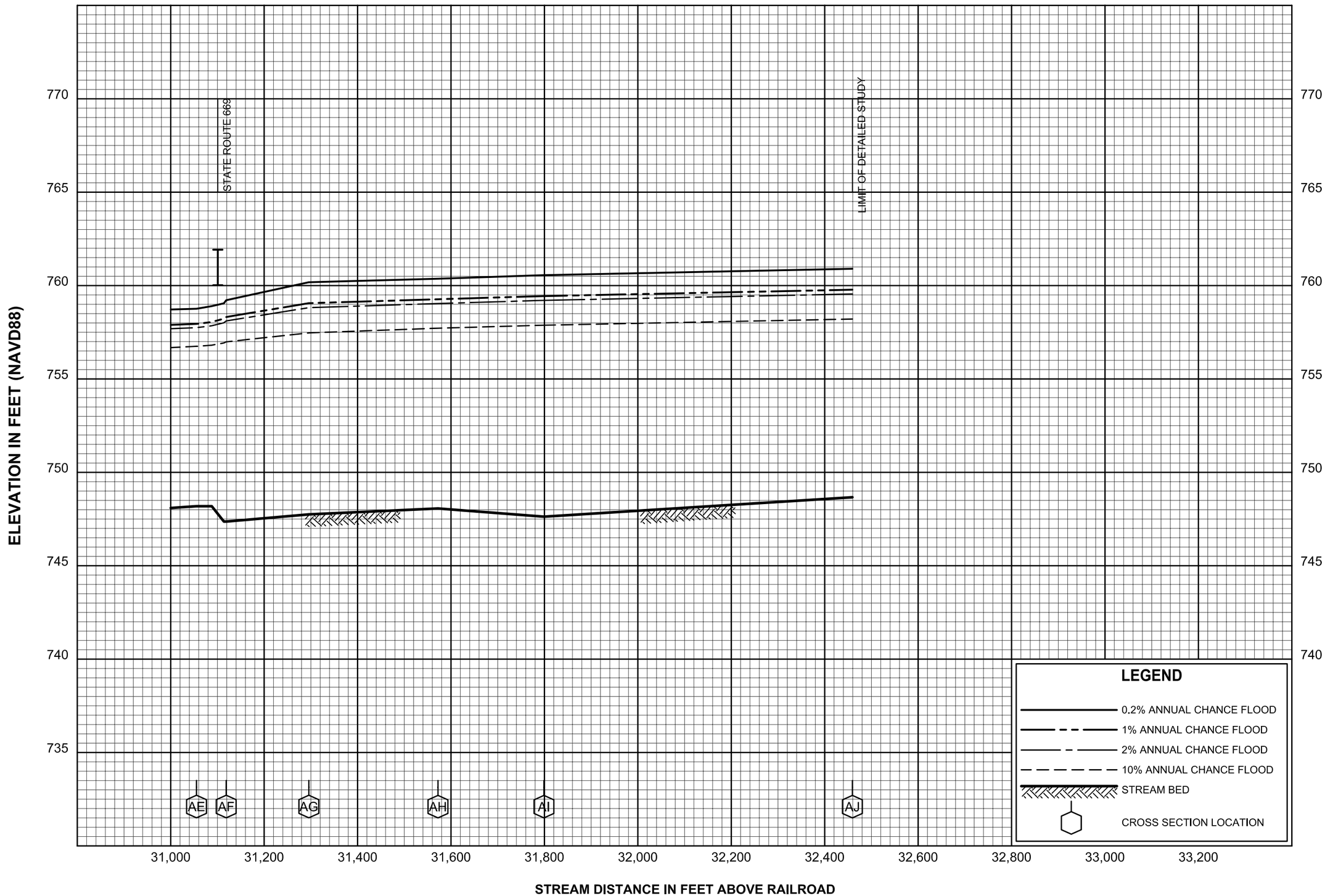
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



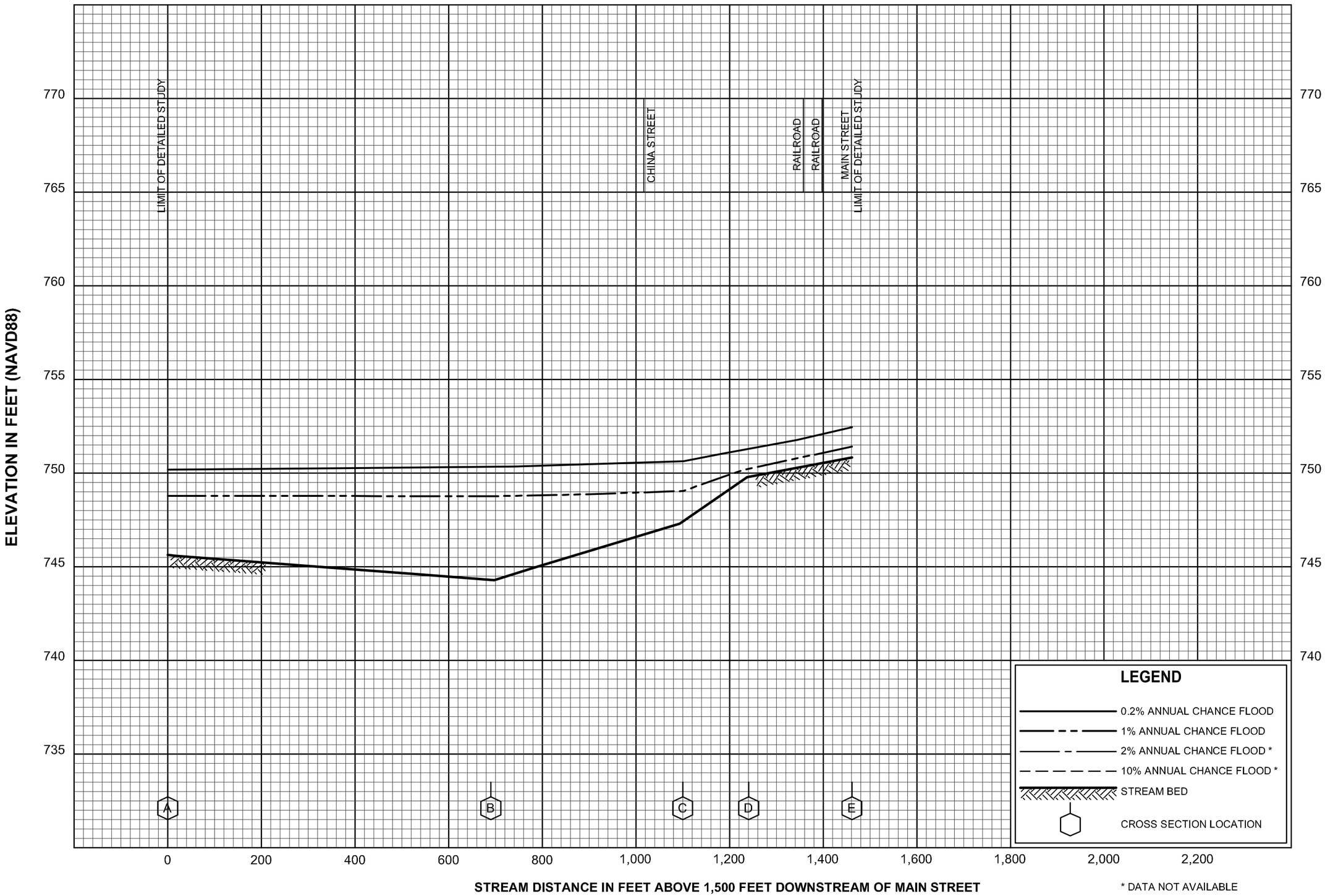
FLOOD PROFILES

MOXAHALA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



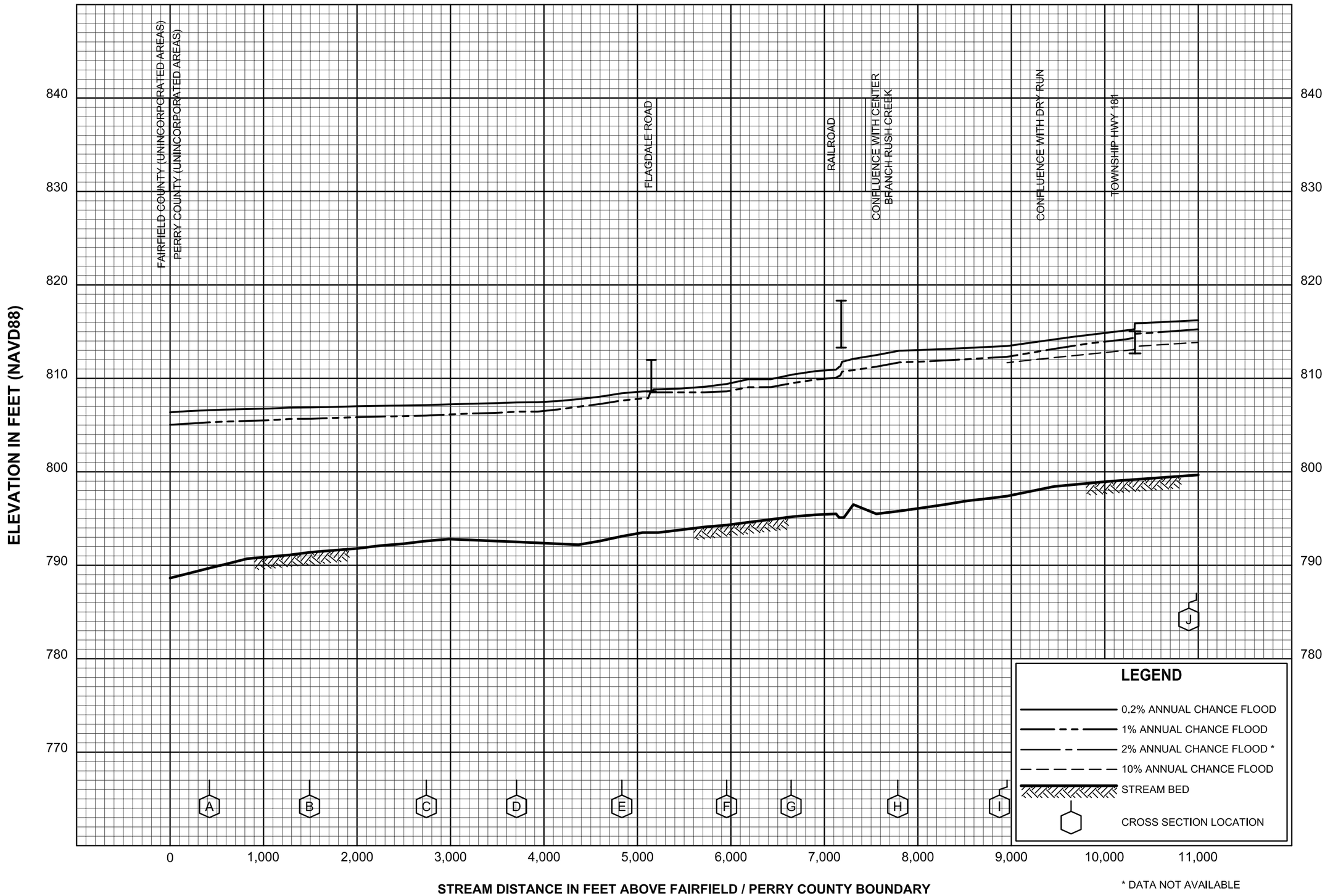
FLOOD PROFILES

MOXAHALA CREEK OVERFLOW

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



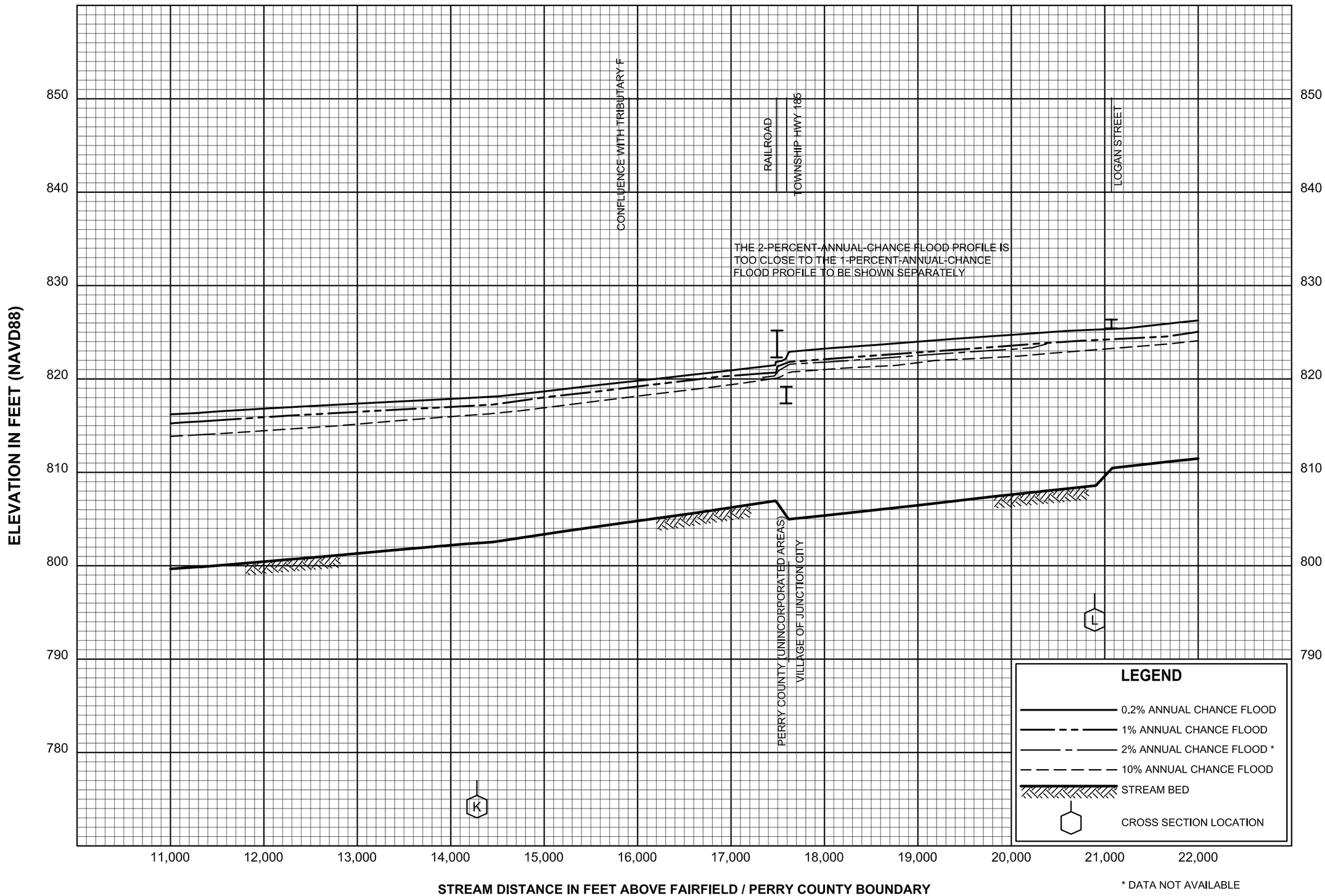
FLOOD PROFILES

RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



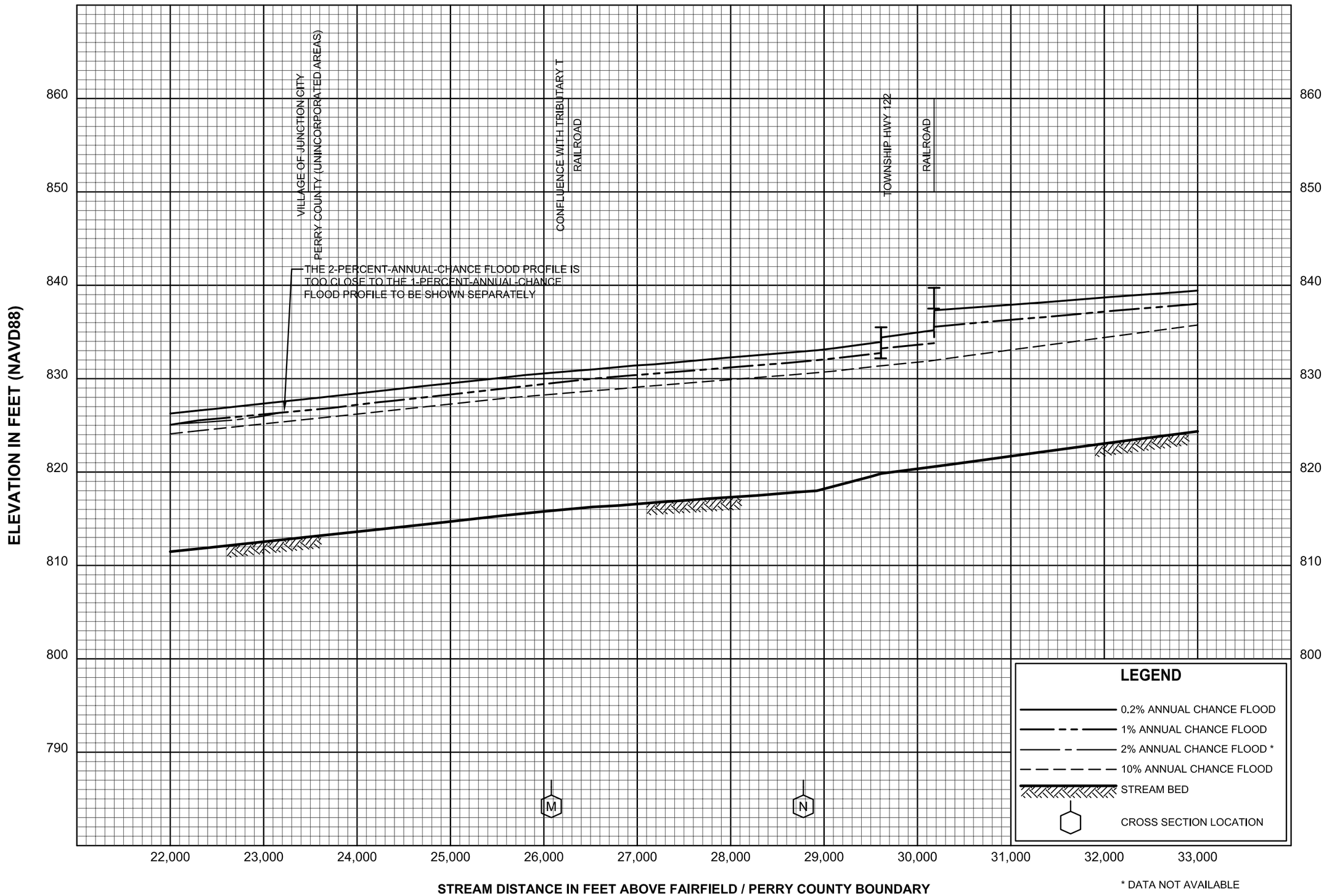
FLOOD PROFILES

RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



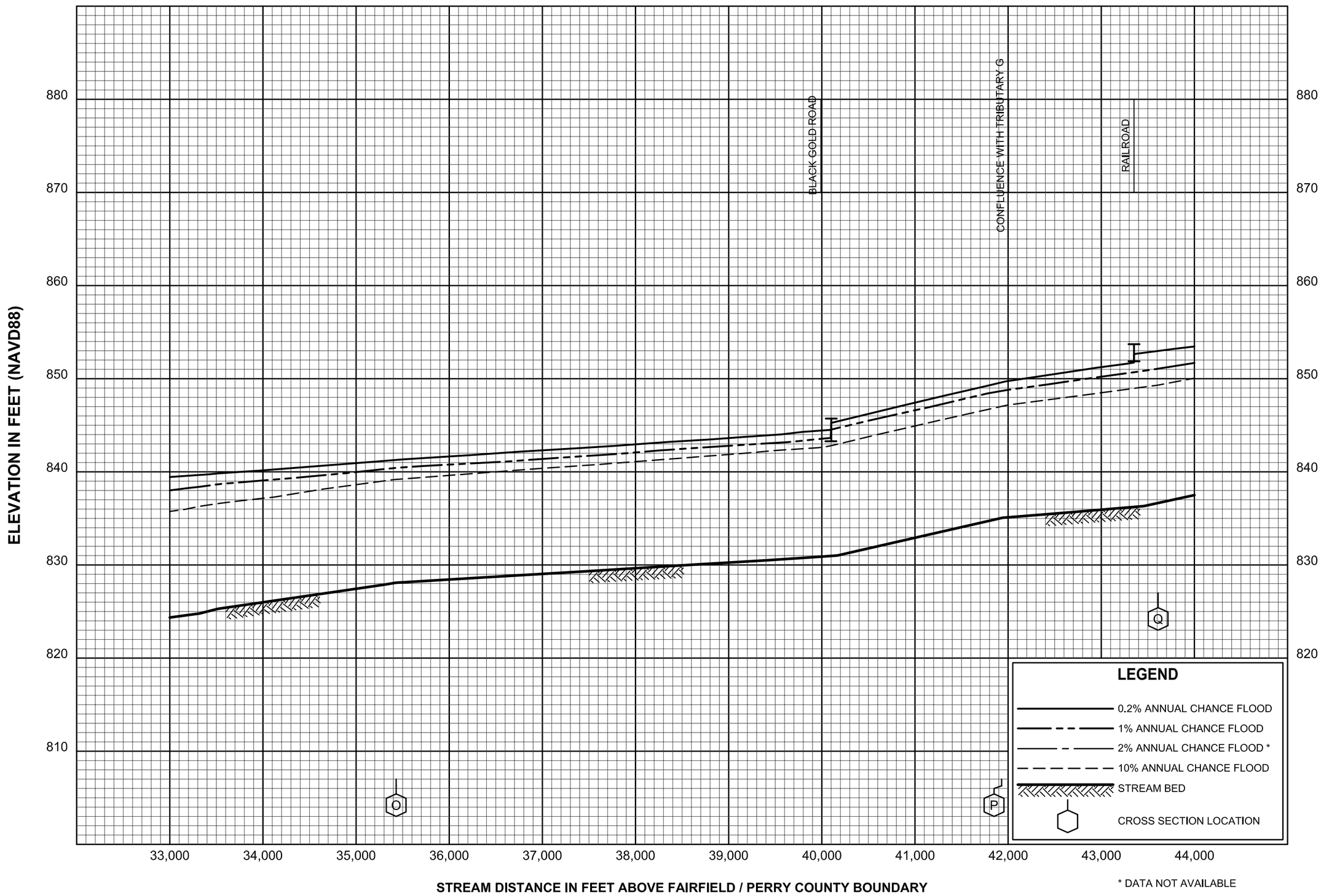
FLOOD PROFILES

RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



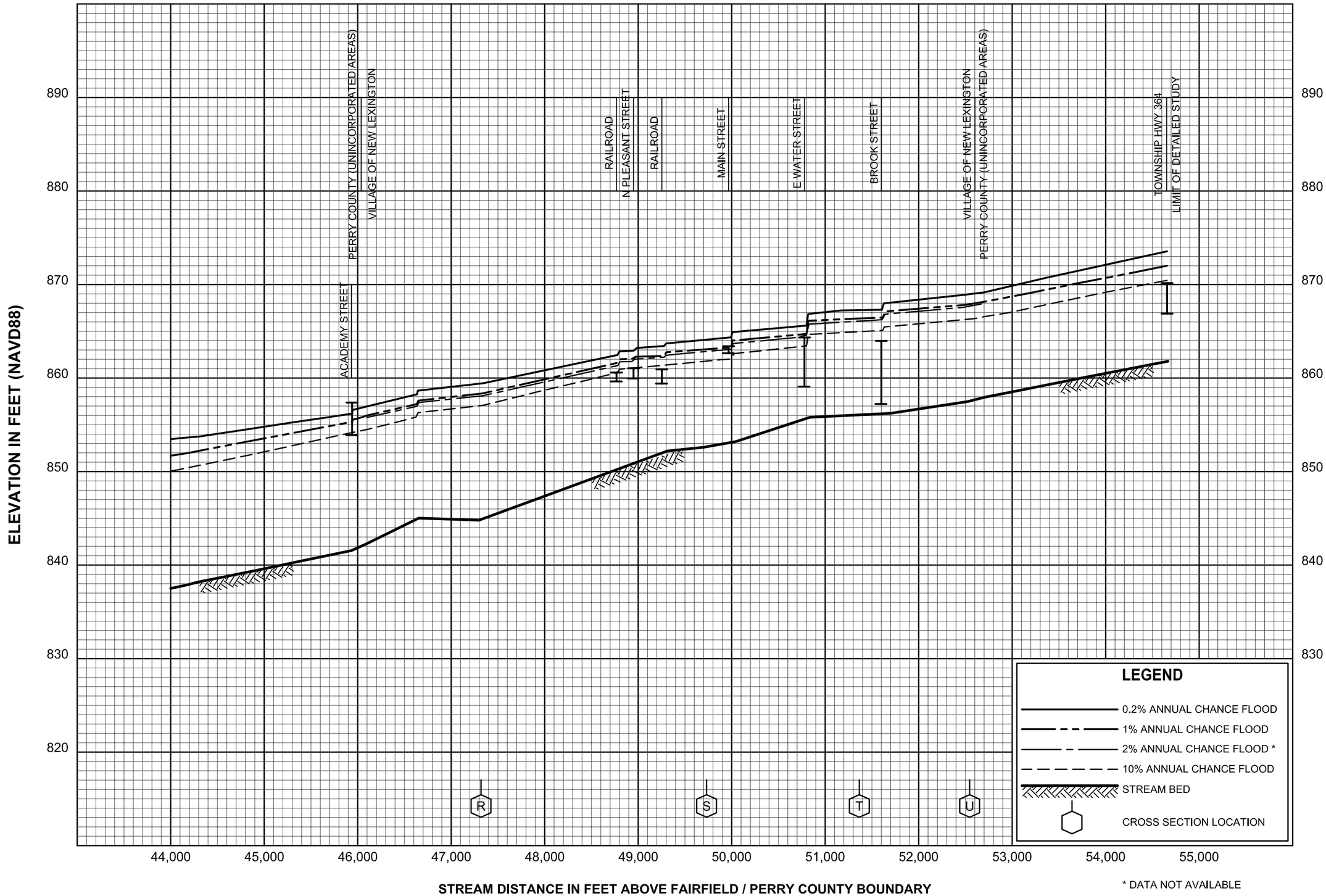
FLOOD PROFILES

RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



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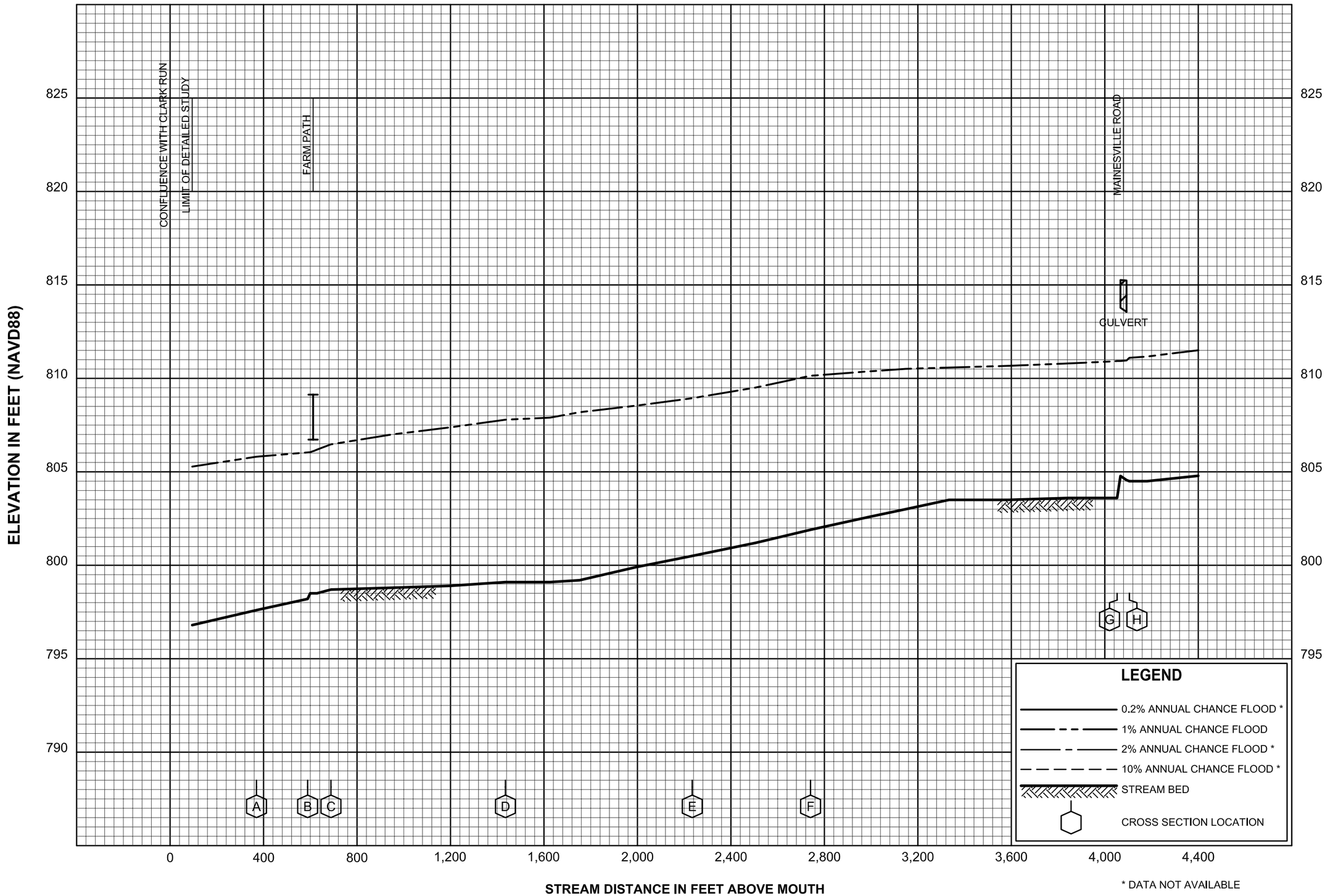
FLOOD PROFILES

RUSH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



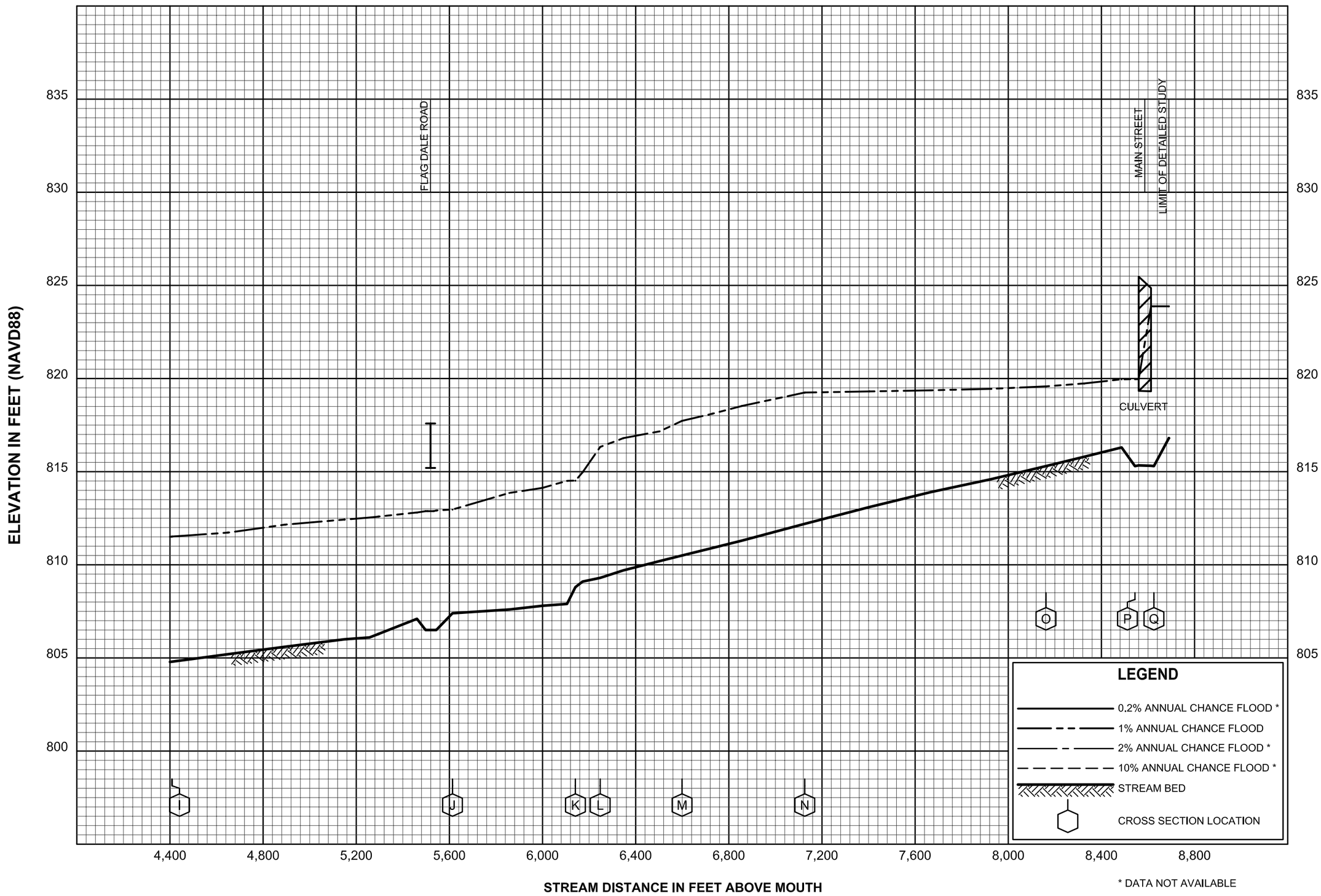
FLOOD PROFILES

SALEM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



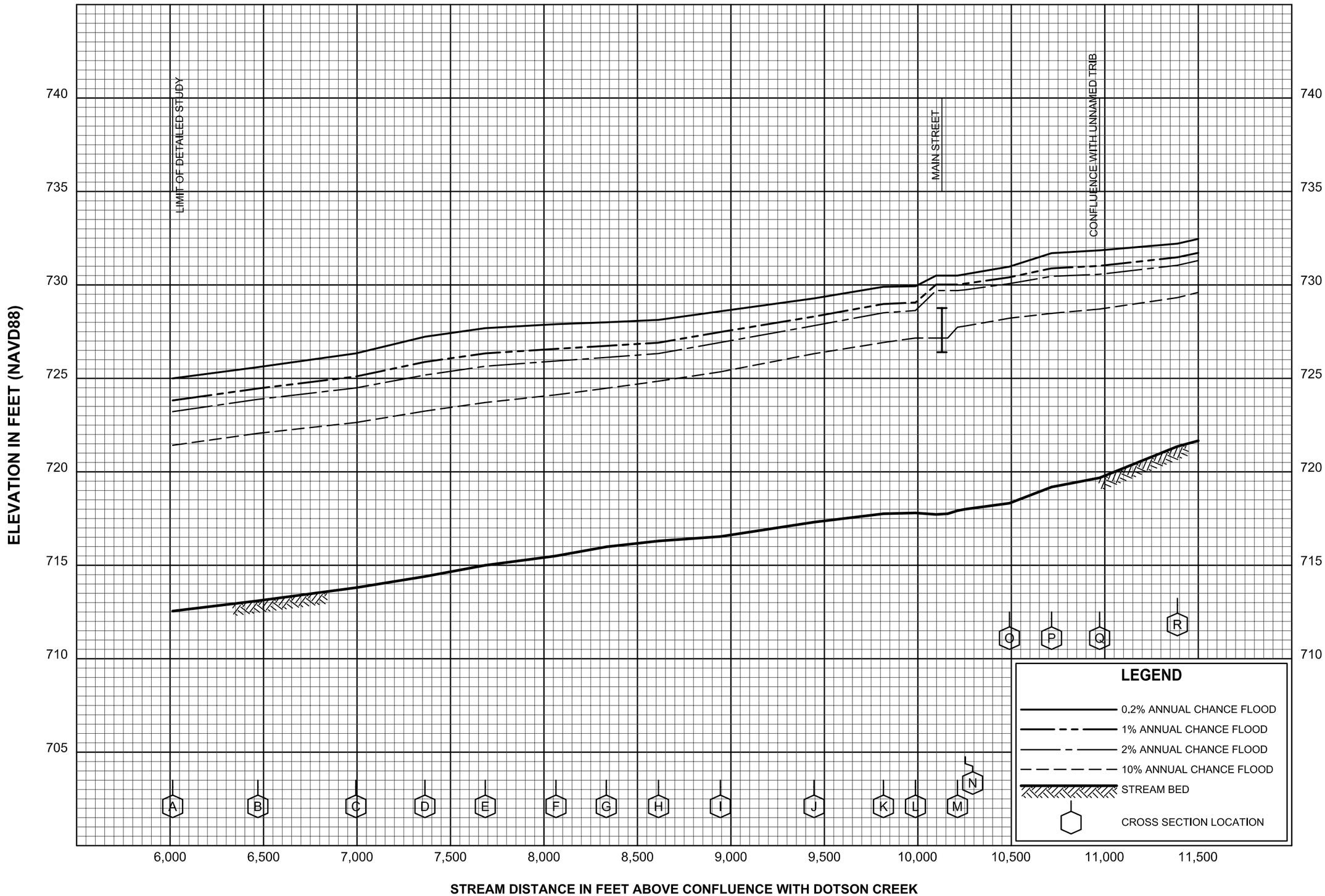
FLOOD PROFILES

SALEM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



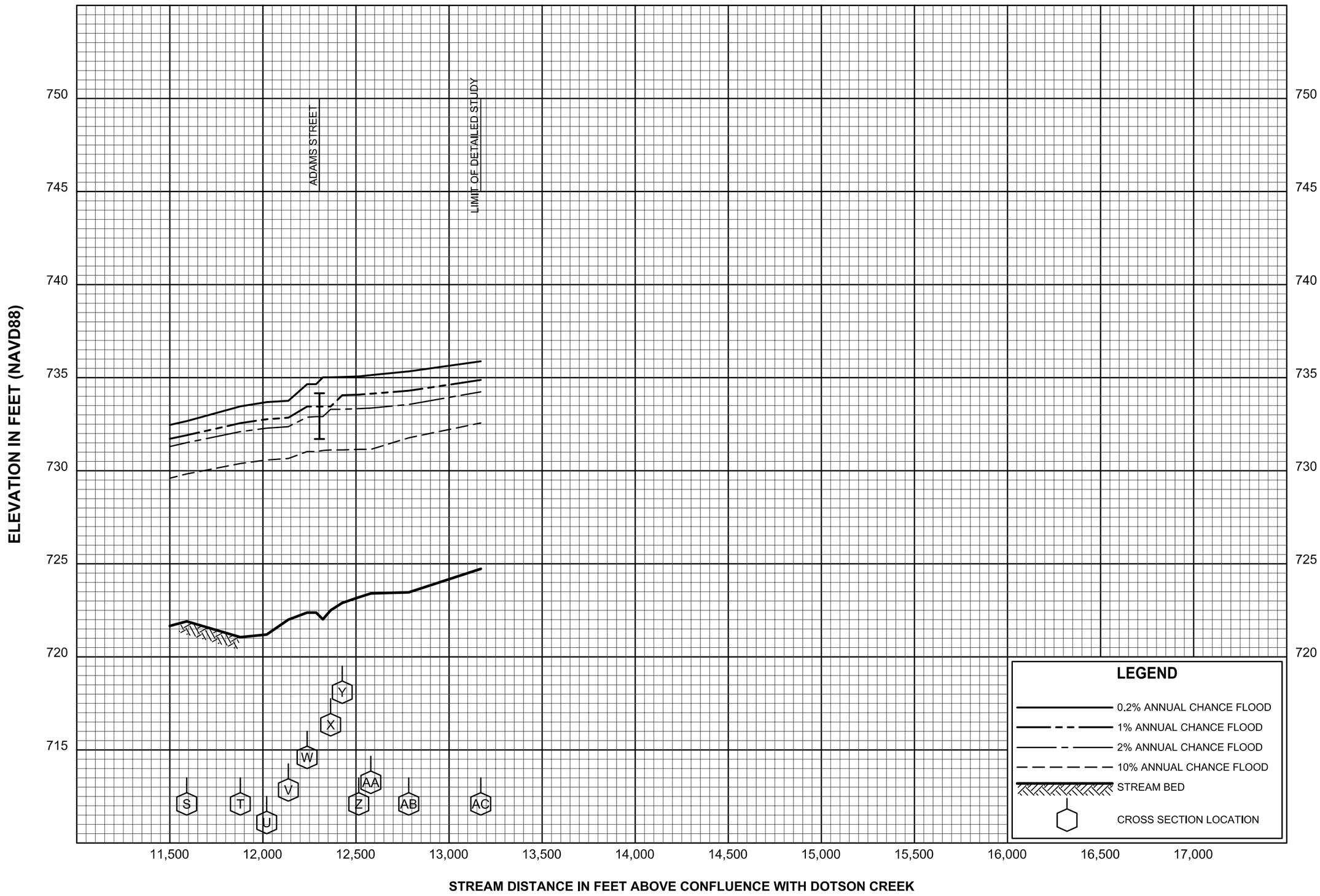
FLOOD PROFILES

SUNDAY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



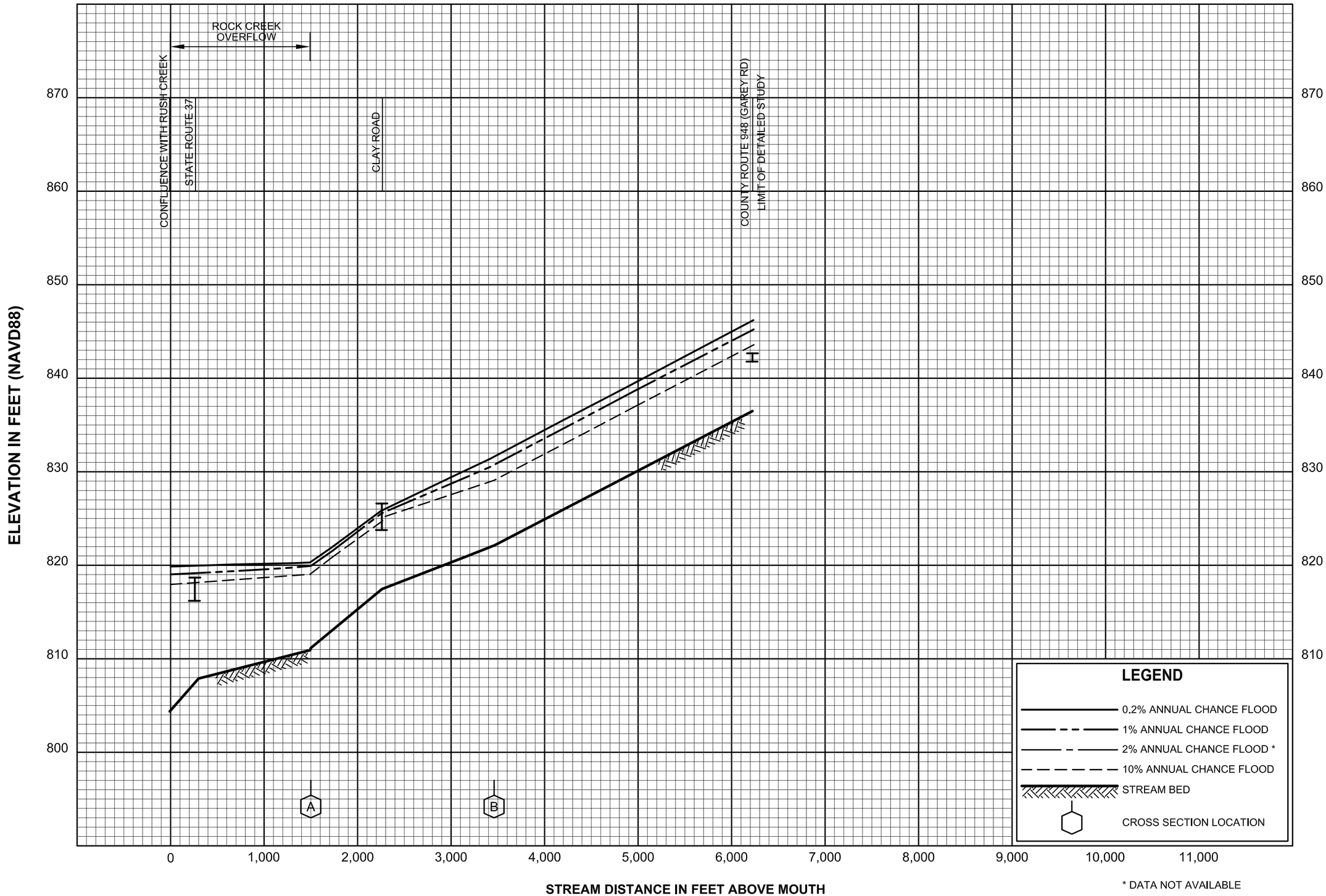
FLOOD PROFILES

SUNDAY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



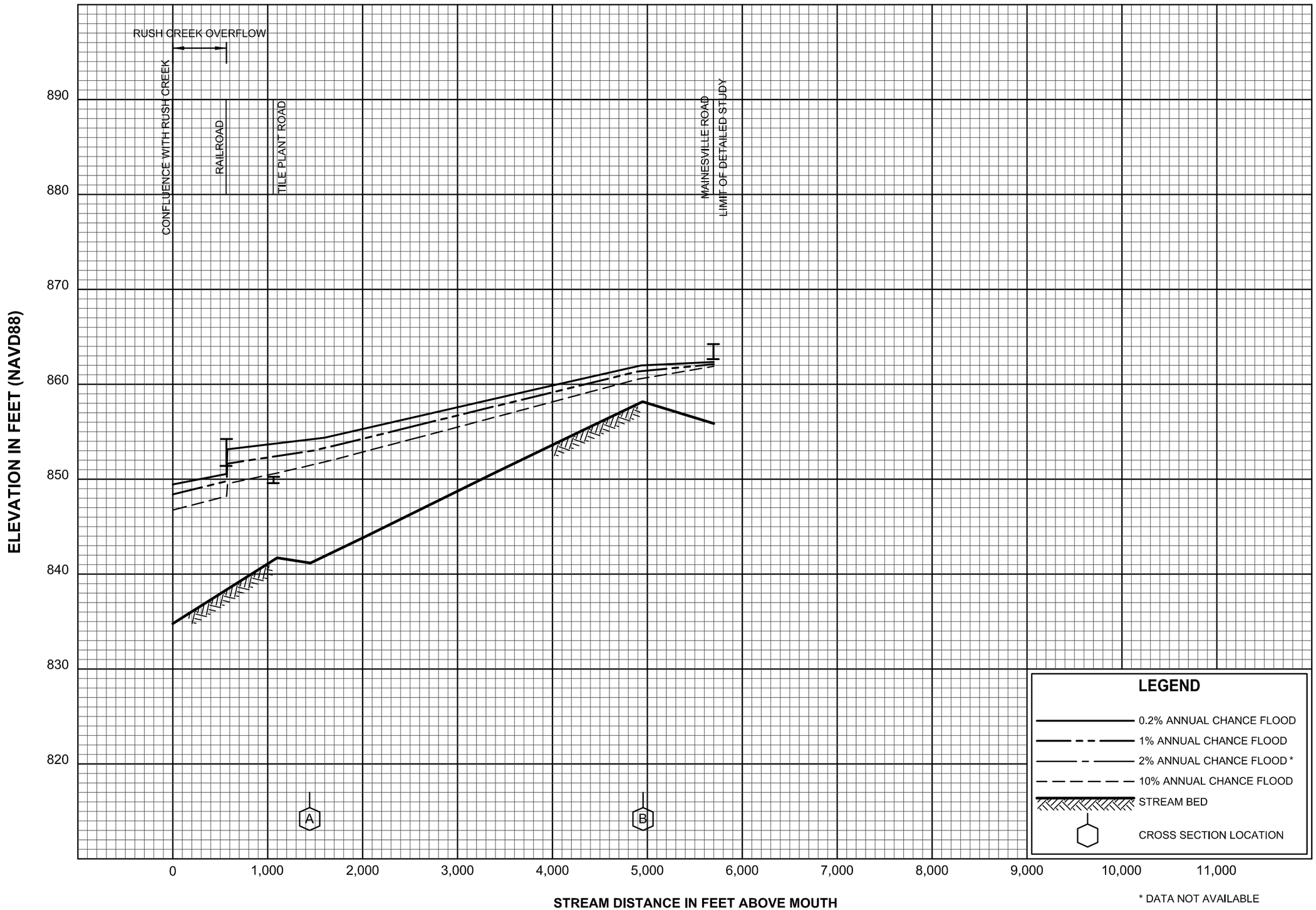
FLOOD PROFILES

TRIBUTARY F

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



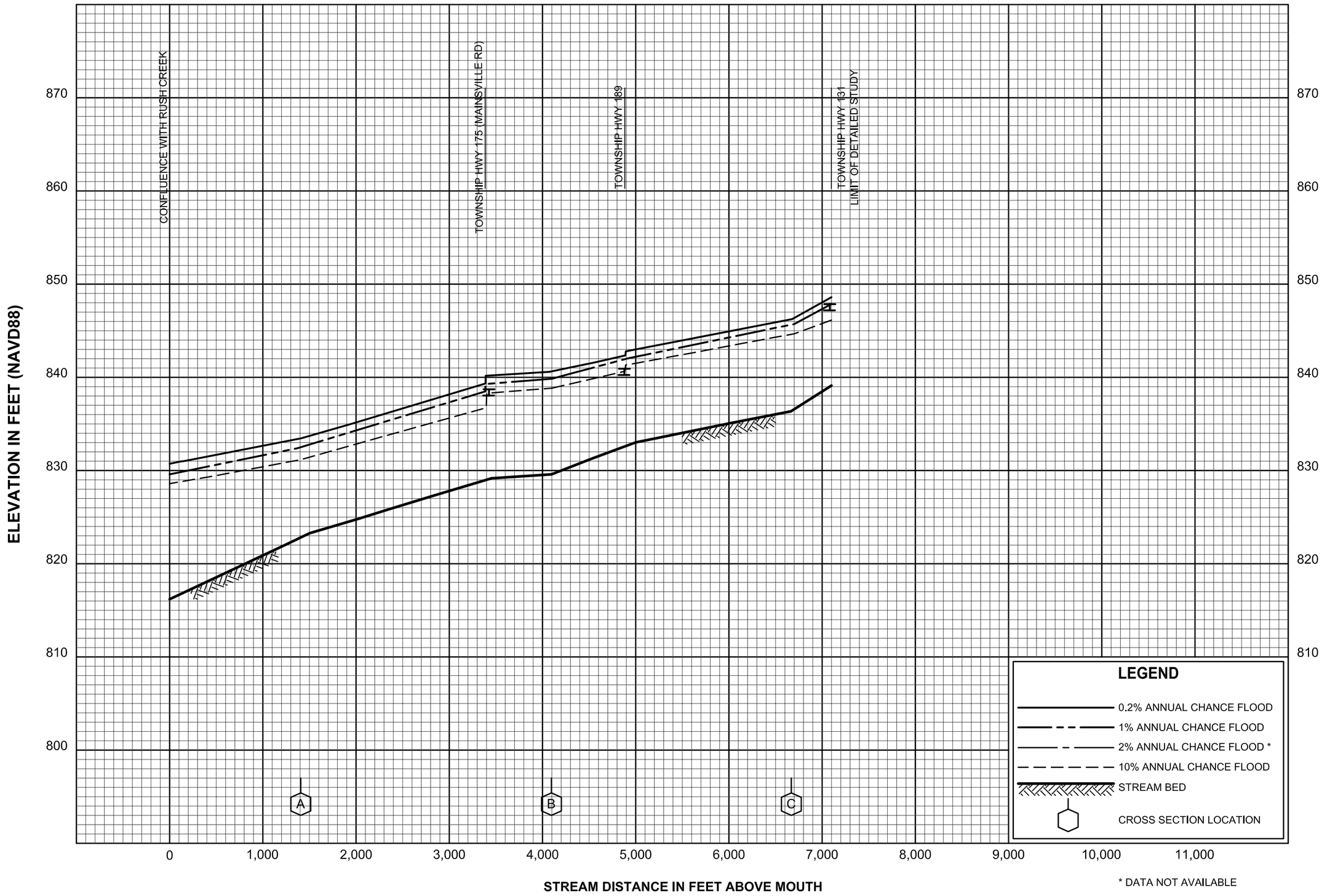
FLOOD PROFILES

TRIBUTARY G

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



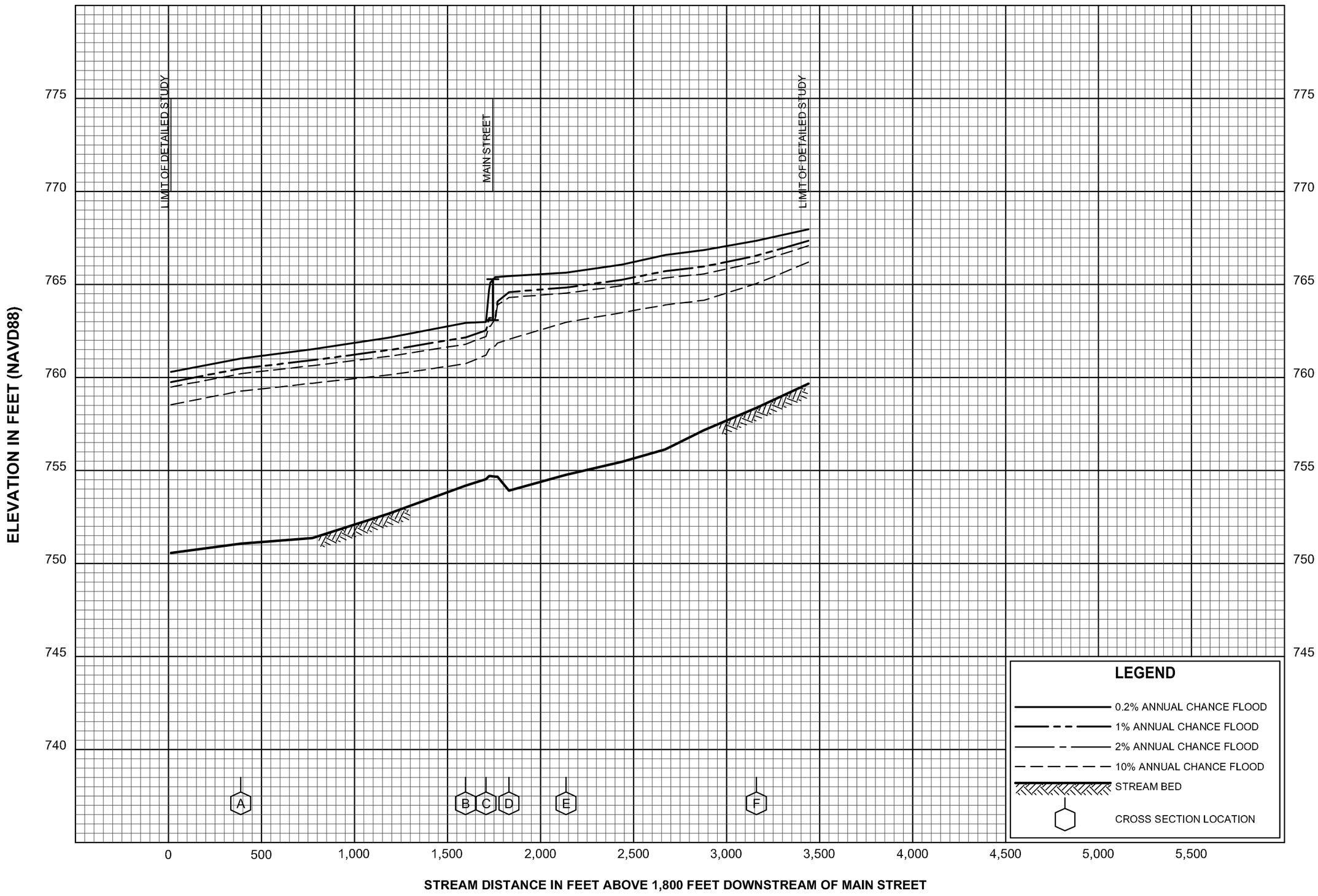
FLOOD PROFILES

TRIBUTARY T

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS



FLOOD PROFILES

WEST BRANCH SUNDAY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PERRY COUNTY, OH

AND INCORPORATED AREAS