FLOOD INSURANCE STUDY

WILSON COUNTY, TENNESSEE,
AND INCORPORATED AREAS

Community Name	Community Number
LEBANON, CITY OF	470208
MT. JULIET, CITY OF	470290
WATERTOWN, CITY OF	470380
WILSON COUNTY (UNINCORPORATED AREAS)	470207

EFFECTIVE DATE:

February 20, 2008

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
47189CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Date: February 20, 2008

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FLOOD INSURANCE STUDY
WILSON COUNTY, TENNESSEE AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in the geographic area of Wilson County, Tennessee, including the Cities of Lebanon, Mt. Juliet, and Watertown, and the unincorporated areas of Wilson County (hereinafter referred to collectively as Wilson County).

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 county that will be used to establish actuarial flood insurance rates. This information will be used by Wilson 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 promotes sound land use and floodplain development. Minimum floodplain management requirements for participation in the National Flood Insurance Program 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 Acknowledgments

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

This study was prepared to include all jurisdictions within Wilson County into a countywide format FIS. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown on the following pages.

Mt. Juliet, City of, Unincorporated Areas:	The hydrologic and hydraulic analyses for the original study of the unincorporated areas of Wilson County and the City of Mt. Juliet were prepared by the U.S. Army Corps of Engineers (USACE), Nashville District, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. IAA-H-18-78, Project Order No. 17. That work was completed in March 1982.

Lebanon, City of: The hydrologic and hydraulic analyses for the City of Lebanon were performed by the Nashville District, U.S. Army Corps of Engineers, for FEMA under Interagency Agreement No. IAA-H-18-78, Project Order No. 17. This study was completed in September 1980.

The authority and acknowledgments for the City of Watertown are not included because there was no previously printed FIS report for this community.

The hydrologic and hydraulic analyses for the FIS report dated May 16, 1994 were prepared by the USACE, Nashville District for FEMA, under Inter-Agency Agreement No. IA-EMW-91-E-3529, Project Order No. 3. This work was completed in November 1991. The hydrologic and hydraulic analyses for Sinking Creek and Cedar Creek were taken from the FIS for the City of Lebanon, Tennessee (FEMA, 1983).

For this countywide revision, the hydrologic and hydraulic analysis for all streams studied by limited detail methods were performed by Watershed IV Alliance, for the Federal Emergency Management Agency (FEMA), under Contract No. EMA-2002-CO-0011A. This work was completed in March 2006. Floodplain boundaries were redelineated based on more up-to-date topography submitted by the State of Tennessee.

Base map information shown on the Flood Insurance Rate Map (FIRM) was derived multiple sources. Base map files were provided in digital format by Wilson County Office of Information Technology. This information was photogramically compiled from digital aerial photography dated 2002, 2004, and 2005. Street Centerlines were digitized based on 1999 imagery and updated with georeferenced plat and approved against the 2004 imagery. Stream centerlines were photogrammetrically compiled from digital aerial photography dated 1999.

The coordinate system used for the production of this FIRM is Tennessee State Plane (FIPSZONE 4100), North American Datum of 1983 (NAD 83). Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Tennessee State Plane (FIPSZONE 4100) projection, NAD 83. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

An initial CCO meeting is typically held with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of an FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is typically held with representatives of FEMA, the community, and the study contractor to review the results of the study.

The initial CCO meeting for the unincorporated areas of Wilson County and the City of Mt. Juliet was held in November 1977. This meeting was attended by representatives of Wilson County, the City of Mt. Juliet, the USACE and FEMA.

The final CCO meeting for the unincorporated areas of Wilson County was held on July 6, 1983. This meeting was attended by representatives of Wilson County, the USACE and FEMA. The final CCO meeting for the City of Mt. Juliet was held on March 2, 1981. This meeting was attended by representatives of the USACE, FEMA, and the City of Mt. Juliet.

For the FIS report dated May 16, 1994, a final CCO meeting was held on April 13, 1993. This meeting was attended by representatives of Wilson County, the City of Mt. Juliet, the USACE, and FEMA.

The initial CCO meeting for the City of Lebanon was held in November 1977. The meeting was attended by representatives of the Nashville District, the USACE, FEMA, and the City of Lebanon officials. The final meeting was held on March 2, 1981, with representatives of the USACE, FEMA, and the City of Lebanon in attendance.

For this countywide FIS, an initial CCO meeting was held on June 29, 2004. This meeting was attended by representatives of the communities, FEMA, the study contractor, and the State of Tennessee. A final CCO meeting was held on April 20, 2006 and was attended by representatives of the communities, FEMA, and the study contractor.

2.0 <u>AREA STUDIED</u>

2.1 Scope of Study

This FIS covers the geographic area of Wilson County, Tennessee.

All or portions of the following streams were studied by detailed methods: Bartons Creek, Cedar Creek/South Fork, Cumberland River, Sinking Creek, Spencer Creek, Spring Creek, Stoners Creek, and Suggs Creek. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

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

Limited detail analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA, the State of Tennessee, and Wilson County. For this countywide study, limits of detail studies for the newly studied or revised streams are shown below in Table 1.

TABLE 1 - SCOPE OF REVISION

STREAM	LIMITS OF REVISED OR NEW DETAILED STUDY
Anthony Branch	From the confluence with North Fork Suggs Creek to approximately 0.20 mile upstream of Harkreader Road
Bartons Creek	From approximately 0.69 mile upstream of Tuckers Gap Road to approximately 0.20 mile upstream of Franklin Road
Bartons Creek Tributary 3	From the confluence with Bartons Creek to approximately 1.02 miles upstream of Blair Lane
Beech Log Creek	From the confluence with Round Lick Creek to approximately 80 feet downstream of confluence with Beech Log Creek Tributary 2
Black Branch	From the confluence with Spring Creek to approximately 0.6 mile upstream of Sparta Pike
Cave Creek	From the confluence with Hurricane Creek to approximately 0.72 mile upstream of Hurricane Creek Road
East Cedar Creek	From approximately 0.77 mile downstream of Beasleys Bend Road to approximately 0.39 mile upstream of Carthage Highway
Fall Creek	From the western County Boundary to approximately 0.62 mile downstream of Sherrilltown Road
Hurricane Creek	From the western County Boundary to approximately 360 feet upstream of Richmond Shop Road
Jennings Fork	From the eastern County Boundary to approximately 280 feet downstream of confluence with East Prong
Martha Branch	From the confluence with Spencer Creek to approximately 0.1 mile downstream of Martha Leville Road
North Fork Suggs Creek	From the confluence with Suggs Creek to approximately 0.47 mile downstream of Lohman Road
North Forks Suggs Creek Tributary 1	From the confluence with North Fork Suggs Creek to approximately 1.39 miles upstream of the confluence with North Fork Suggs Creek
Rocky Branch	From the confluence with Smith Fork to approximately 1.27 miles upstream of Clever Creek Road
Round Lick Creek	From the eastern County Boundary to approximately 0.36 mile upstream of Statesville Road
Shop Springs Branch	From the confluence with Spring Creek to approximately 0.25 mile upstream of Walnut Hill Road

TABLE 1 - SCOPE OF REVISION - continued

STREAM	LIMITS OF REVISED OR NEW DETAILED STUDY
Shop Spring Branch Tributary 1	From the confluence with Shop Springs Branch to just upstream of Shop Springs Road
Smith Fork	From the eastern County Boundary to approximately 0.95 mile upstream of Greenvale Road
Suggs Creek	From approximately 0.02 mile downstream of Underwood Road to approximately 0.50 mile upstream of Stewarts Ferry Pike
Suggs Creek Tributary 1	From the confluence with Suggs Creek to approximately 1.54 miles upstream of Stewarts Ferry Pike
Sinking Creek Tributary 3	From the confluence with Sinking Creek to approximately 180 feet downstream of the confluence with Sinking Creek Tributary 3.2
Sinking Creek Tributary 3.2	From the confluence with Sinking Creek Tributary 3 to approximately 60 feet upstream of Murfreesboro Road
Sinking Creek Tributary 1	From the confluence with Sinking Creek to approximately 120 feet downstream of Leeville Pike
Snarl Creek	From approximately 1.64 miles downstream of SW Cook Road to approximately 0.45 mile upstream of Mt. Juliet Road
South Fork Cedar Creek	From the confluence with Cedar Creek to just upstream of State Highway 109
Spring Creek Tributary 4	From the confluence with Spring Creek to just upstream of Locust Grove Road
Spring Creek Tributary 5	From the confluence with Spring Creek to approximately 0.68 mile upstream of the confluence with Spring Creek
Spring Creek Tributary 6	From the confluence with Spring Creek to approximately 20 feet downstream of the confluence of Spring Creek Tributary 6.1 and 6.2
Walker Branch	From the confluence with Bartons Creek to approximately 0.63 mile upstream of Hunters Point Pike

Floodplain boundaries of streams that have been previously studied by detailed methods were redelineated based on more up-to-date topographic mapping.

This countywide FIS also reflects a vertical datum conversion from the National Geodetic Vertical Datum of 1929 (NGVD29) to the North American Vertical Datum of 1988 (NAVD88).

This countywide FIS incorporates the determination of a Letter of Map Revision (LOMR): case number 01-04-209P, dated September 27, 2001 issued for Sinking Creek.

2.2 Community Description

Wilson County is located in northern middle Tennessee. It is bordered by Davidson County to the west, Sumner County to the north, Smith County to the east, and Rutherford County to the south. Wilson County's principal city and county seat, Lebanon, lies approximately 30 miles east of Nashville.

The county contains 580 square miles, of which 11.9 square miles are water and 568.1 square miles are land. There are three incorporated cities in Wilson County: Lebanon, Mt. Juliet, and Watertown.

2.3 Principal Flood Problems

The main flood seasons for streams in Wilson County are winter and early spring. However flash floods due to intense local thunderstorms, such as the August 1939 storms, can occur at any time. Velocity of water during major floods range up to seven feet per second (fps) in the channel of Sinking Creek. Velocities on the floodplains vary widely but generally are less than 2 fps.

Velocities greater than 3 fps combined with depths of three feet or greater are generally considered hazardous. Rates of rise during major floods are extremely fast. The streams can rise to extreme flood peaks in less than six hours following intense rainfall. During the March 1963 flood, Sinking Creek had a maximum rate of rise of about 2.5 fps at Public Square in Lebanon and crested in about six hours. The flood of record on the regulated on the regulated Cumberland River in Wilson County occurred in March 1975. This flood has a recurrence interval of 100 years; however, it caused only minor damage at the time due to lack of urban development along the banks of the Cumberland River in Wilson County.

The greatest flood known on Bartons Creek and Sinking Creek in Lebanon occurred in August 1939.

Other historically significant floods have occurred in June 1928, February 1962, March 1963, and May 1979 (USACE 1971).

2.4 Flood Protection Measures

The USACE operates a number of flood control projects on the Cumberland River and its tributaries which decrease the level of flooding in Wilson County.

Wolf Creek Dam, Lake Cumberland, is located on the Cumberland River in Wayne, Russell, Pulaski, Clinton, McCreary, Laurel, and Whitley Counties, Kentucky. Its primary purpose is flood control, and it controls runoff from a drainage area of 5,789 square miles. At the maximum controlled level the pool covers an area of 63,530 acres and extends 101 miles upstream from the dam to the vicinity of Cumberland Falls.

Dale Hollow Dam and Lake is in the Cumberland River Basin on the Obey River, 7.3 miles above its mouth at Celina, Tennessee. The lake covers parts of Clay, Pickett, Overton, and Fentress Counties in Tennessee, and Clinton and Cumberland Counties in Kentucky. It controls the runoff from a drainage area of 935 square miles. From the crest of the spillway to the top of the gates, a storage capacity of 353,000 acre-feet is available for the retention of flood flows.

Center Hill Dam and Lake are located in the Cumberland River Basin on the Stones River and covers parts of DeKalb, Putnam, White, and Warren Counties in Tennessee. They control runoff from a drainage area of 2,174 square miles. From the crest of the spillway to the top of the gates, a storage capacity of 762,000 acre-feet is available for the retention of flood flows.

J. Percy Priest Dam and Reservoir are located in the Cumberland River Basin on the Stones River in Davidson, Wilson, and Rutherford Counties. They control runoff from a drainage area of 892 square miles. From the crest of the spillway to the top of the gates, a storage capacity of 350,000 acre-feet is available for the retention of flood flows.

Old Hickory Dam is located on the Cumberland River in Davidson and Sumner Counties. However this project has no storage capacity for flood control and does not reduce peak flood flows downstream (USACE, 1979).

3.0 ENGINEERING METHODS

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

3.1 Hydrologic Analyses

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

Pre-countywide Analyses

Each community within Wilson County except the City of Watertown have previously printed FIS reports describing each community's hydrologic analyses. Those analyses not revised in this countywide FIS have been compiled from the FIS reports and are summarized below.

Flood flows on the Cumberland River are regulated by a system of large flood control reservoirs. Because of varying levels of historical flood control, streamflow records exhibit a time variant behavior. Use of a conventional Log-Pearson Type III flood frequency analysis as described in Water Resources Council Bulletin 17 is not appropriate in this case (Water Resources Council, 1976). A special study was conducted to develop regulated flood frequency flows for the Cumberland River (Resources Analysis, Inc., 1979).

A storm generation computer program was used to develop a 200-year synthetic rainfall record for the Cumberland River Basin. Significant flood-producing storms of the 200-year generated record were applied to a basin runoff-routing simulation model to produce streamflow discharges at central points. Results of the simulation model were analyzed to estimate discharge frequency curves. These discharge frequency curves were then combined with a graphical analysis of period of record regulated flow data developed by the USACE, Nashville District, to establish adopted discharge frequency curves at all major river control points.

Results of the regulated frequency study were found to yield statistically reliable estimates of floods, including the 1-percent annual chance event. For events greater than the 1-percent annual chance event, the statistical reliability of predicted flow was poor. Estimates of the 0.2-percent annual chance discharges from the study were found to approximate the USACE Standard Project Flood (SPF) for the majority of the Cumberland River. Since the SPF has been widely disseminated to the general public by the USACE, Nashville Distinct, to be used in the designing developments adjacent to the Cumberland River and since estimates for extremely rare events are not very reliable, as shown on the profiles (Exhibit 1) and FIRM (Exhibit 2), this study uses the SPF instead of the 500-year flood.

Discharge frequencies for Stoners Creek were determined using the regional regression equation (U.S. Department of the Interior, 1976).

Since no stream gage data exist for Stoners Creek, frequency discharges for 10-, 2-, 1- and 0.2-percent annual chance recurrence intervals were determined using a rainfall-runoff model.

The rainfall-runoff model was developed using the "HEC-1, Flood Hydrograph Package," developed by the USACE (USACE, 1973). The Stoners Creek watershed was divided into 15 subbasins, each consisting of approximately 0.5 to 2.5 square miles of drainage area. Clark synthetic unit hydrographs based on average basin time concentration, a storage coefficient (R) and a time curve, were used to distribute the runoff for each subbasin. Times of concentration were determined to range from 0.56 to 2.07 hours for the selected subbasins. The coefficient R was set equal to 0.538 multiplied by the time of concentration.

Rainfall loss rates were based on Soil Conservation Service (SCS) curve number methodology. The land use and percent of impervious area for each subbasin were determined from U.S. Geological Survey (USGS) topographic maps and field reconnaissance. Although a detailed soil survey for Wilson County has not been completed, general soil types have been established by the SCS. Resulting curve numbers for the Stoner Creek subbasins ranged from 84 to 92. These numbers are based on Antecedent Moisture Condition III. This moisture condition is prevalent for most large flood events in the region.

A 24-hour balanced hypothetical storm was used to develop the frequency discharge values on Stoners Creek. Frequency rainfall values were obtained from the U.S. Weather Bureau publication "Technical Paper No. 40," and the National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum "NWS HYDRO-35" (U.S. Department of Commerce, 1963, U.S. National Weather Service, 1977).

Since no stream gage data exist for Sinking Creek, frequency discharges for 10-, 2-, 1- and 0.2-percent annual chance recurrence intervals were determined using regional regression equations and a calibrated rainfall-runoff model.

The rainfall-runoff model was developed using the USACE HEC-1 users manual (USACE, 1973). The Sinking Creek watershed was divided into nine subbasins, each consisting of approximately one to three square miles of drainage area. SCS dimensionless unit hydrographs based on average basin lag times (fixed as 0.6 multiplied by time of concentration) were used to distribute the runoff for each subbasin. Lag times were determined to range from 0.42 hours to 1.67 hours for the selected subbasins.

Rainfall loss rates were based on basin average SCS curve number methodology. The land use was determined from USGS topographic maps and field reconnaissance. The soil type for the Sinking Creek basin is Talbott. This classification is Hydrologic Soil Group C. Curve numbers for Sinking Creek basin range from 79 to 91.

The USGS regional regression equations for Tennessee were used to determine frequency discharges at Mile 2.25 of Sinking Creek (U.S. Department of the Interior, 1976).

The distribution of the frequency discharges upstream and downstream of the reference point were determined by the use of the HEC-1 model (USACE, 1970). This was accomplished by varying the total rainfall amounts input into the model until the regression based discharges at the reference site were reproduced.

To check the reasonableness of the rainfall amounts required to reproduce the regression discharges, a comparison with rainfall probabilities was made. Frequency rainfall values obtained from Technical Paper No. 40 were found to be reasonably similar to the rainfall values needed to reproduce the regression discharges.

Since no useful stream gaging data exists for the streams under study in the City of Lebanon FIS, frequency discharges for floods of the 10-, 2-, 1- and 0.2-percent annual chance recurrence intervals were determined using the U.S. Geological Survey (USGS) regional regression analysis dated 1976 (USGS 1976). This multiple Regression Method uses drainage area as a parameter for deriving discharges and is based upon relatively long-term records of flow from streams in similar hydrologic areas. The formula for the 500-year flood, 1456A/0.723 where A is the drainage area was derived by the same multiple regression techniques that were used to define the formula for floods of lesser magnitudes.

This Countywide Analysis

Discharges for the 10-, 2-, 1-, and 0.2-percent annual chance recurrence intervals for all streams studied by limited detail methods were determined using the USGS regression equations for the HA3 hydrologic region of Tennessee as described in USGS Water Resource Investigation Reports 03-4176 (USGS, 2000) and 94-4002 (USGS, 1993).

The basin containing Sinking Creek Tributary 1 had sufficient urbanization (more than 10% impervious area) to suggest the use of the USGS National Flood Frequency program to obtain urban flows. Discharges from the urbanized basins were also compared to the rural regression equation discharges from the same basins. The equation yielding the higher discharge was used for the analyses.

A summary of the drainage area-peak discharge relationships for the streams studied by detailed and limited detailed methods is shown in Table 2.

TABLE 2 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
	Detail Study Streams				
BARTONS CREEK					
At River Mile 3.11	53.1	11,500	17,100	19,570	25,700
At River Mile 8.03	36.9	8,000	13,125	15,060	19,775
At River Mile 11.3	16.2	4,900	7,250	8,300	10,900
STONERS CREEK					
At River Mile 5.35	14.97	5,910	8,180	9,035	10,892
Approximately 1.3 miles downstream of Pascal Drive	12.68	3,656	4,973	5,436	6,525
At River Mile 7.88	8.75	3,85	4,139	4,08	5,324
At River Mile 8.50	7.61	3,047	3,896	4,262	5,037

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
	Detail Study Streams				
Just upstream of Baptist Church Road	6.57	2,877	3,688	4,012	4,805
Approximately 1,000 feet upstream of Mt. Juliet Road	3.93	2,208	2,848	3,136	3,796
CEDAR CREEK					
Approximately 1,500 feet downstream of Unnamed Road	8.97	3180	4741	5448	7113
Approximately 600 feet downstream of Martha Leeville Road	7.90	2,901	4,327	4,972	6,488
At confluence of North Fork	5.90	2,349	5,307	4,031	5,254
SPRING CREEK					
At River Mile 5.7	55.5	12,000	17,800	20,450	26,900
At River Mile 13.2	43.9	10,000	14,300	16,300	22,400
At River Mile 16.7	37.4	9,000	12,400	14,000	20,000
SUGGS CREEK					
At River Mile 6.84	22.4	6,160	9,150	10,500	13,800
At River Mile 10.32	11.9	3,900	5,810	6,670	8,720
SINKING CREEK					
At mouth	14.22	4,900	7,000	8,200	10,250
Above Tarver bridge	11.99	4,500	6,200	7,550	9,400
At River Mile 1.77	10.54	4,050	5,700	6,950	8,500
Just below Ragland Depot Bridge	9.91	3,850	5,400	6,600	8,100
Just above Ragland Depot Bridge	9.91	3,850	5,600	6,450	8,100
At River Mile 3.80	8.34	3,000	4,350	5,050	6,400
At Stumpy Lane	5.66	2,700	4,100	4,800	6,100
CUMBERLAND RIVER					
At River Mile 216.2	11674.00	120,000	146,000	158,000	193,000
At River Mile 264.7	11070.00	110,000	138,000	157,000	190,000

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
	Limited Detail Study Streams				
ANTHONY BRANCH					
At the confluence with North Fork Suggs Creek	2.13	*	*	1,708	*
Approximately 0.16 mile downstream of Logue Road	1.88	*	*	1,558	*
Approximately 0.71 mile downstream of Hark Reader Road	1.00	*	*	972	*
BARTONS CREEK					
Approximately 0.33 mile downstream of I-40	9.98	*	*	5,395	*
BARTONS CREEK TRIBUTARY 3					
At the confluence with Bartons Creek	3.94	*	*	2,700	*
Approximately 0.25 mile downstream of Alhambra Drive	3.41	*	*	2,422	*
Approximately 0.71 mile downstream of Highway 70	2.42	*	*	1,875	*
Approximately 0.59 mile downstream of Highway 70	1.41	*	*	1,256	*
Approximately 0.05 mile upstream of Highway 70	1.03	*	*	992	*
BEECH LOG CREEK					
At the confluence with Round Lick Creek	6.36	*	*	3,855	*
Approximately 0.12 mile upstream of Statesville Road	6.01	*	*	3,697	*
Approximately 0.13 mile upstream of Highway 70	5.20	*	*	3,317	*
Approximately 0.06 mile downstream of Sparta Pike	3.34	*	*	2,389	*
Approximately 0.03 mile downstream of Beech Log Road	2.45	*	*	1,895	*
Approximately 0.62 mile upstream Beech Log Road	2.04	*	*	1,654	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Limited Detail Study Streams					
BLACK BRANCH					
At the confluence with Spring Creek	2.64	*	*	2,005	*
Approximately 0.61 mile downstream of Sparta Pike	2.02	*	*	1,641	*
Approximately 0.41 mile upstream of Sparta Pike	1.20	*	*	1,116	*
CAVE CREEK					
At the confluence with Hurricane Creek	3.60	*	*	2,522	*
Approximately 0.02 mile upstream of Hurricane Creek Road	3.50	*	*	2,469	*
Approximately 0.12 mile upstream of Hurricane Creek Road	1.48	*	*	1,299	*
EAST CEDAR CREEK					
Approximately 0.81 mile downstream of Beasleys Bend Road	32.80	*	*	12,801	*
Approximately 0.19 mile downstream of Beasleys Bend Road	30.60	*	*	12,340	*
Approximately 0.33 mile upstream of Beasleys Bend Road	29.34	*	*	12,048	*
Approximately 0.64 mile downstream of Hartsville Pike	29.25	*	*	12,020	*
Approximately 0.25 mile downstream of Hartsville Pike	28.5	*	*	11,800	*
Approximately 0.15 mile downstream of Hartsville Pike	27.4	*	*	11,457	*
Approximately 0.73 mile downstream of Taylorsvillle Road	26.9	*	*	11,291	*
Approximately 0.61 mile downstream of Taylorsvillle Road	25.0	*	*	10,684	*
Approximately 0.37 mile downstream of Taylorsvillle Road	21.4	*	*	9,527	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 0.37 mile downstream of Taylorsvillle Road	20.5	*	*	9,238	*
Approximately 1.14 miles upstream of Taylorsvillle Road	17.9	*	*	8,324	*
Approximately 1.28 miles upstream of Taylorsvillle Road	16.5	*	*	7,110	*
Approximately 1.44 miles upstream of Taylorsvillle Road	14.5	*	*	7,084	*
Approximately 1.12 miles downstream of Old Rome Pike	14.38	*	*	6,599	*
Approximately 1.07 miles downstream of Old Rome Pike	13.08	*	*	6,538	*
Approximately 0.50 mile downstream of Old Rome Pike	12.91	*	*	5,421	*
Approximately 0.37 mile downstream of Old Rome Pike	10.04	*	*	5,213	*
Approximately 0.32 mile upstream of Old Rome Pike	9.53	*	*	4,349	*
Approximately 0.44 mile downstream of Carthage Highway	7.47	*	*	4,282	*
Approximately 22 feet upstream of Carthage Highway	5.06	*	*	3,252	*
FALL CREEK					
At the Western County Boundary	48.60	*	*	15,760	*
Approximately 0.47 mile upstream of Murfreesboro Road	48.25	*	*	15,700	*
Approximately 0.62 mile upstream of Murfreesboro Road	45.40	*	*	15,203	*
Approximately 2.32 miles upstream of Murfreesboro Road	44.38	*	*	15,021	*
Approximately 2.89 miles upstream of Murfreesboro Road	43.42	*	*	14,849	*
Approximately 0.58 mile upstream of Baldy Ford Road	42.52	*	*	14,686	*
Approximately 0.73 mile upstream of Baldy Ford Road	35.92	*	*	13,432	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 1.32 miles upstream of Baldy Ford Road	35.72	*	*	13,392	*
Approximately 1.42 miles upstream of Baldy Ford Road	32.68	*	*	12,775	*
Approximately 1.08 miles downstream of Cedar Forest Road	32.42	*	*	12,722	*
Approximately 0.59 mile downstream of Cedar Forest Road	31.47	*	*	12,525	*
Approximately 0.10 mile downstream of Cedar Forest Road	30.67	*	*	12,355	*
Approximately 0.27 mile upstream of Cedar Forest Road	29.71	*	*	12,160	*
Approximately 14 feet downstream of Salem Road	27.44	*	*	11,461	*
Approximately 0.97 mile upstream of Salem Road	26.73	*	*	11,241	*
Approximately 1.20 miles upstream of Salem Road	25.47	*	*	10,842	*
Approximately 1.36 miles upstream of Salem Road	11.01	*	*	5,806	*
Approximately 0.37 mile downstream of Cainsville Road	10.26	*	*	5,508	*
Approximately 0.13 mile downstream of Cainsville Road	4.91	*	*	3,179	*
Approximately 0.17 mile downstream of Puckett Road	2.46	*	*	1,900	*
Approximately 0.48 mile upstream of Puckett Road	1.92	*	*	1,582	*
HURRICANE CREEK					
At the Western County Boundary	34.77	*	*	13,203	*
Approximately 0.59 mile upstream of McCreary Road	33.74	*	*	12,993	*
Approximately 0.82 mile upstream of McCreary Road	29.99	*	*	12,246	*
Approximately 1.77 miles upstream of McCreary Road	29.26	*	*	12,022	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 1.89 miles upstream of McCreary Road	27.80	*	*	11,575	*
Approximately 2.23 miles upstream of McCreary Road	27.63	*	*	11,521	*
Approximately 1.37 miles downstream of Vesta Road	25.80	*	*	10,947	*
Approximately 0.97 mile downstream of Vesta Road	25.58	*	*	10,878	*
Approximately 0.50 mile downstream of Vesta Road	24.72	*	*	10,604	*
Approximately 0.41 mile downstream of Vesta Road	23.79	*	*	10,305	*
Approximately 0.23 mile upstream of Vesta Road	18.81	*	*	8,652	*
Approximately 0.95 mile downstream of Murfreesboro Road	18.20	*	*	8,440	*
Approximately 0.75 mile downstream of Murfreesboro Road	16.12	*	*	7,710	*
Approximately 0.14 mile downstream of Hurricane Creek Road	11.28	*	*	5,911	*
Approximately 0.99 mile downstream of Richmond Shop Road	10.48	*	*	5,597	*
Approximately 0.35 mile downstream of Richmond Shop Road	7.28	*	*	4,265	*
JENNINGS FORK					
At the Eastern County Boundary	19.19	*	*	8,782	*
Approximately 1.24 miles downstream of Swindell Hollow Road	17.35	*	*	8,147	*
Approximately 0.78 mile downstream of Swindell Hollow Road	16.48	*	*	7,840	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 0.27 mile downstream of Swindell Hollow Road	16.11	*	*	7,707	*
Approximately 0.19 mile upstream of Swindell Hollow Road	15.20	*	*	7,380	*
Approximately 0.86 mile downstream of Trousdale Ferry Pike	14.27	*	*	7,042	*
Approximately 0.57 mile downstream of Trousdale Ferry Pike	13.27	*	*	6,671	*
Approximately 0.38 mile downstream of I-40	12.33	*	*	6,314	*
Approximately 0.09 mile upstream of Bluebird Road	11.33	*	*	5,930	*
Approximately 0.86 mile upstream of Bluebird Road	10.75	*	*	5,703	*
MARTHA BRANCH,					
At the confluence with Spencer Creek	2.86	*	*	2,126	*
Approximately 0.08 mile downstream of Powell Grove Road	2.47	*	*	1,908	*
Approximately 0.02 mile upstream of Powell Grove Road	1.27	*	*	1,159	*
NORTH FORK SUGGS CREEK					
At the confluence with Suggs Creek	6.07	*	*	3,276	*
Approximately 0.39 mile downstream of Tinnell Road	3.75	*	*	2,602	*
Approximately 0.06 mile upstream of Tinnell Road	2.80	*	*	2,091	*
Approximately 1.18 mile upstream o of Logue Road	1.75	*	*	1,475	*
NORTH FORK SUGGS CREEK TRIBUTARY 1					
At the confluence with North Fork Suggs Creek	0.84	*	*	852	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
ROCKY BRANCH					
At the confluence with Smith Fork	10.04	*	*	5,418	*
Approximately 0.30 mile downstream of Clever Creek Road	9.89	*	*	5,358	*
Approximately 0.24 mile downstream of Clever Creek Road	7.42	*	*	4,325	*
Approximately 0.27 mile upstream of Clever Creek Road	6.96	*	*	4,127	*
ROUND LICK CREEK,					
At the eastern county boundary	37.36	*	*	13,714	*
Approximately 0.13 mile downstream of I-40	36.79	*	*	13,603	*
Approximately 1.13 miles upstream of I-40	36.28	*	*	13,503	*
Approximately 1.51 miles upstream of I-40	35.31	*	*	13,309	*
Approximately 1.64 miles upstream of I-40	32.83	*	*	12,808	*
Approximately 2.03 miles upstream of I-40	32.64	*	*	12,769	*
Approximately 2.16 miles upstream of I-40	27.58	*	*	11,507	*
Approximately 0.85 mile downstream of Commerce Church Road	27.06	*	*	11,342	*
Approximately 0.40 mile upstream of Commerce Church Road	26.12	*	*	11,048	*
Approximately 0.57 mile upstream of Commerce Church Road	22.13	*	*	9,765	*
Approximately 1.20 miles upstream of Commerce Church Road	20.62	*	*	9,265	*
Approximately 1.85 miles upstream of Commerce Church Road	20.25	*	*	9,142	*
Approximately 0.64 mile downstream of Knee Road	19.26	*	*	8,804	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 0.18 mile downstream of Knee Road	18.28	*	*	8,470	*
Approximately 420 feet downstream of Knee Road	15.39	*	*	7,451	*
Approximately 0.19 mile downstream of East Main Street	14.90	*	*	7,274	*
Approximately 485 feet downstream of East Main Street	13.02	*	*	6,577	*
Approximately 0.24 mile downstream of Statesville Road	4.59	*	*	3,027	*
SHOP SPRINGS BRANCH					
At the confluence with Spring Creek	5.57	*	*	3,495	*
Approximately 0.96 mile upstream of Sparta Pike	3.34	*	*	2,389	*
Approximately 0.29 mile downstream of Young Road	3.06	*	*	2,234	*
SHOP SPRINGS BRANCH TRIBUBARY 1					
At confluence with Shop Springs Branch	1.65	*	*	1,413	*
SINKING CREEK TRIBUTARY 1					
At the confluence with Sinking Creek	0.97	*	*	1,080	*
SINKING CREEK TRIBUTARY 3					
At the confluence with Sinking Creek	3.74	*	*	2,595	*
SINKING CREEK TRIBUTARY 3.2					
At the confluence with Sinking Creek Tributary 3	0.91	*	*	907	*
SMITH FORK					
At the eastern county boundary	50.28	*	*	16,046	*
Approximately 0.81 mile downstream of State Highway 96	48.85	*	*	15,803	*
Approximately 0.22 mile upstream of State Highway 96	48.40	*	*	15,727	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 0.31 mile upstream of State Highway 96	42.38	*	*	14,659	*
Approximately 1.19 miles upstream of State Highway 96	41.31	*	*	14,463	*
Approximately 1.27 miles upstream of State Highway 96	40.25	*	*	14,265	*
Approximately 1.37 miles upstream of State Highway 96	38.78	*	*	13,986	*
Approximately 0.46 mile downstream of Statesville Road	38.07	*	*	13,851	*
Approximately 0.34 mile downstream of Statesville Road	31.62	*	*	12,556	*
Approximately 77 feet downstream of Fuston Hollow	30.64	*	*	12,349	*
Approximately 0.95 mile upstream of Fuston Hollow	29.76	*	*	12,175	*
Approximately 1.05 miles upstream of Fuston Hollow	28.65	*	*	11,837	*
Approximately 1.75 miles upstream of Fuston Hollow	28.08	*	*	11,662	*
Approximately 1.86 miles upstream of Fuston Hollow	25.10	*	*	10,726	*
Approximately 0.96 mile downstream of Bridge Road	24.09	*	*	10,404	*
Approximately 0.88 mile downstream of Bridge Road	22.39	*	*	9,851	*
Approximately 0.80 mile downstream of Bridge Road	17.26	*	*	8,115	*
Approximately 32 feet downstream of Greenvale Road	6.55	*	*	3,942	*
Approximately 0.68 mile upstream of Greenvale Road	5.76	*	*	3,582	*
Approximately 0.77 mile upstream of Greenvale Road	2.54	*	*	1,947	*
SNARL CREEK					
Approximately 1.64 miles downstream of Southwest Cook	6.03	*	*	3,706	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Road					
Approximately 1.55 miles downstream of Southwest Cook Road	5.54	*	*	3,481	*
Approximately 0.82 mile downstream of Southwest Cook Road	2.33	*	*	1,827	*
Approximately 0.59 mile downstream of Southwest Cook Road	2.07	*	*	1,673	*
Approximately 0.23 mile upstream of Central Pike	1.23	*	*	1,137	*
SOUTH FORK CEDAR CREEK					
At the confluence with Cedar Creek	3.81	*	*	2,632	*
Approximately 0.55 mile upstream of Safari Camp Road	3.54	*	*	2,495	*
Approximately 130 feet upstream of State Highway 109	2.55	*	*	1,952	*
SPRING CREEK TRIBUTARY 4					
At the confluence with Spring Creek	1.75	*	*	1,139	*
Approximately 0.64 mile downstream of Locust Grove Road	1.24	*	*	1,474	*
SPRING CREEK TRIBUTARY 5					
At the confluence with Spring Creek	0.86	*	*	872	*
SPRING CREEK TRIBUTARY 6					
At the confluence with Spring Creek	1.74	*	*	1,469	*
SUGGS CREEK					
Approximately 0.63 mile downstream of Underwood Road	28.65	*	*	11,835	*
Approximately 0.16 mile upstream of Underwood Road	28.02	*	*	11,642	*
Approximately 0.26 mile upstream of Underwood Road	3.78	*	*	2,616	*

* Data not available

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent chance	2-percent chance	1-percent chance	0.2-percent chance
Approximately 0.48 mile upstream of Underwood Road	1.75	*	*	1,473	*
Approximately 0.64 mile downstream of Stewarts Ferry Pike	1.11	*	*	1,057	*
SUGGS CREEK TRIBUTARY 1					
At the confluence with Suggs Creek	2.00	*	*	1,629	*
Approximately 1.19 miles upstream of Stewarts Ferry Pike	1.03	*	*	991	*
WALKER BRANCH					
At the confluence with Bartons Creek	5.39	*	*	3,408	*
Approximately 0.18 mile upstream of Walker Lane	4.29	*	*	2,878	*
Approximately 0.68 mile downstream of Hunters Point Pike	2.76	*	*	2,069	*
Approximately 0.41 mile upstream of Hunters Point Pike	1.63	*	*	1,402	*

3.2 Hydraulic Analyses

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

Cross sections for the flooding sources studied by detailed methods were obtained from field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

* Data not available

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

The hydraulic analyses for this countywide FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if the hydraulic structures remain unobstructed, operate properly, and do not fail.

Pre-countywide Analyses

Each community within Wilson County except the City of Watertown have previously printed FIS reports describing each community's hydraulic analyses. Those analyses not revised in this FIS have been compiled form the previous FIS reports and are summarized below.

Cross Sections

Cross sections for the flooding sources studied in the City of Lebanon, the City of Mt. Juliet and the unincorporated areas of Wilson County were determined by field surveys. The cross sections for Sinking Creek were obtained from field survey and supplemented with topographic maps (G.R.W. Aerial Surveys, Inc., 1990, Presnell Fuller and Associates, Inc., 1983). All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry. For all other streams studied by detailed methods, existing cross sections used in previous studies were supplemented with field surveyed cross sections to facilitate more precise computations of the limits at the floodplain.

Water-Surface Elevations

Water-surface elevations of floods of the selected recurrence intervals of the streams studied by detailed methods were computed using the USACE HEC-2 step-backwater computer program (USACE, 1984).

Starting Water-Surface Elevations

Starting water-surface elevations for the Stoners Creek studied within the City of Mt. Juliet were obtained from the FIS for the City of Nashville-Davidson County (Metropolitan Government) (FEMA 2002a).

Starting water-surface elevations for the rest of the streams studied by detailed method were calculated using slope-area method. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Roughness Factors

Channel roughness factors (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and based on field observations of the stream and floodplain areas. The channel and overbank "n" values for the streams studied by detailed methods are shown below in Table 3.

TABLE 3 – MANNING'S "n" VALUES- Detailed Studied Streams

Stream	Channel "n"	Overbank "n"
Bartons Creek	0.04-0.045	0.060-0.100
Stoners Creek	0.048	0.100
Cedar Creek	0.040-0.100	0.100
Spring Creek	*	*
Suggs Creek	0.050	0.090
Sinking Creek	0.030-0.050	0.060-0.120
Cumberland River	0.025-0.048	0.050-0.100

* Data not available

Approximate Methods

For the flooding sources studied by approximate methods, a depth-area relationship, which was developed by the USGS, was used to estimate the depth of the 1-percent annual chance flow at locations unaffected by backwater from bridge obstructions. Estimates of backwater effects from such obstructions were made by field inspection.

This Countywide Analysis

Cross section geometries were obtained from a combination of digital terrain data provided by Wilson County and field surveys. For limited detail studied streams, all structure openings were field measured.

The hydraulic model used for this Flood Insurance Study is the U. S. Army Corps of Engineers Hydraulic Engineering Center River Analysis System, version 3.1.2 (HEC-RAS 3.1.2). Topographic data for the floodplain models was developed using recently flown LIDAR land data, field measurements of hydraulic structure information, and updated hydrologic data. The model was developed using HEC-RAS 3.1.2, run for the peak 1-percent annual chance discharge. The 1-percent annual chance frequency storm discharges for the studied streams in Wilson County were determined using Regional Regression equations.

Starting conditions for the hydraulic models were set to normal depth using starting slopes calculated from water surface elevation values taken from the LIDAR data or, where applicable, derived from the water surface elevations of existing effective flood elevations. Table 4 shows the channel and overbank "n" values for the streams studied by limited detailed methods. A Manning's n-value of 10.0 was used to designate ineffective flow areas.

TABLE 4 – MANNING’S “n” VALUES- Limited Detailed Studied Streams

Stream	Channel “n”	Overbank “n”
Anthony Branch	0.04-0.05	0.1-0.15
Bartons Creek	0.045-0.05	0.1-0.15
Bartons Creek Tributary 3	0.04-0.05	0.11-0.15
Beech Log Creek	0.04-0.045	0.1-0.15
Black Branch	0.04-0.05	0.1-0.15
Cave Creek	0.04-0.045	0.1-0.14
East Cedar Creek	0.045-0.055	0.11-0.15
Fall Creek	0.04-0.045	0.1-0.15
Hurricane Creek	0.04-0.05	0.1-0.15
Jennings Fork	0.04-0.05	0.11-0.15
Martha Branch	0.045-0.05	0.1-0.15
North Fork Suggs Creek	0.04-0.045	0.11-0.15
North Forks Suggs Creek Tributary 1	0.04	0.1-0.15
Rocky Branch	0.04	0.11-0.15
Round Lick Creek	0.045-0.055	0.1-0.15
Shop Springs Branch	0.045	0.1-0.14
Shop Spring Branch Tributary 1	0.045	0.1-0.12
Smith Fork	0.04-0.05	0.1-0.15
Suggs Creek	0.04	0.1-0.14
Suggs Creek Tributary 1	0.04-0.045	0.1-0.15
Sinking Creek Tributary 3	0.04	0.1
Sinking Creek Tributary 3.2	0.04	0.1-0.13
Sinking Creek Tributary 1	0.045-0.05	0.11-0.15
Snarl Creek	0.045-0.05	0.1-0.15
South Fork Cedar Creek	0.045-0.05	0.1-.014
Spring Creek Tributary 4	0.04-0.05	0.1-0.15
Spring Creek Tributary 5	0.05	0.1-.013
Spring Creek Tributary 6	0.05	0.11
Walker Branch	0.04-0.05	0.1-0.15

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (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 County 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 across the corporate limits between the communities and across county boundaries.

Prior versions of the FIS report and FIRM were referenced to NGVD29. When datum conversion is effected for an FIS report and FIRM, the flood profiles, BFEs, and elevation reference marks (ERMs) reflect the new datum values. To compare structure and ground elevations to 1-percent annual chance flood elevations shown in the FIS and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in the FIS report and on the FIRM for Wilson County are referenced to NAVD88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD29 by applying a conversion factor. To convert elevations from NAVD88 to NGVD29, add 0.17 foot to the NAVD88 elevation. The 0.17-foot value is an average for the entire County. The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 12.4 will appear as 12 on the FIRM and 12.6 as 13. Therefore, users who wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent annual chance flood elevations; delineations of the 1- and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the streams studied in detail, the 1- and 0.2-percent annual chance floodplains have been delineated using the flood elevations determined at each cross section.

For this countywide FIS, floodplain boundaries between cross sections were interpolated manually using USGS 2-foot contours for guidance on topographic characteristics.

For the streams studied by approximate methods, the 1-percent annual chance floodplain boundaries remain unchanged from the delineation shown on the previously printed FISs for the unincorporated areas of Wilson County and the City of Mt. Juliet (FEMA, 1984, FEMA, 1982).

The 1- and 0.2-percent annual chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

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

The floodways presented in this study 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 are tabulated for selected cross sections in Table 5. The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

No floodways were computed for streams studied by limited detail methods.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Bartons Creek								
A	3.11	217	2,525	7.8	455.4	449.8[2]	450.8	1.0
B	3.67	409	4,367	4.5	455.4	454.7[2]	455.5	0.8
C	4.19	367	3,678	5.3	457.3	457.3	457.7	0.4
D	4.74	555	4,094	4.8	461.2	461.2	462.1	0.9
E	5.18	616	4,201	4.7	464.8	464.8	465.7	0.9
F	5.60	496	2,870	6.8	469.8	469.8	470.7	0.9
G	6.08	624	4,291	4.6	476.0	476.0	477.0	1.0
H	6.78	892	5,775	3.4	481.4	481.4	482.4	1.0
I	7.32	742	6,421	3.0	485.9	485.9	486.9	1.0
J	8.03	1321	7,966	1.9	489.9	489.9	490.8	0.9
K	8.44	410	2,167	6.9	491.3	491.3	492.2	0.9
L	8.88	1020	4,490	3.4	498.4	498.4	498.7	0.3
M	9.45	788	3,802	4.0	502.3	502.3	503.1	0.8
N	9.98	372	3,117	4.8	508.6	508.6	509.3	0.7
O	10.45	763	5,590	2.7	511.0	511.0	511.9	0.9
P	10.86	743	5,374	2.8	512.3	512.3	513.2	0.9
Q	11.29	900	6,098	1.4	513.3	513.3	514.1	0.8
R	11.40	484	2,907	2.9	513.5	513.5	514.3	0.8
S	11.47	281	3,053	2.7	514.7	514.7	515.4	0.7
T	11.70	274	2,418	3.4	514.8	514.8	515.7	0.9
U	11.82	258	1,661	5.0	515.5	515.5	516.3	0.8
V	12.24	165	1,379	6.0	520.1	520.1	521.0	0.9
W	12.48	449	3,011	2.8	523.2	523.2	523.6	0.4
X	12.68	641	2,539	3.3	524.9	524.9	525.6	0.7

[1]Miles above mouth
[2]Elevation computed without consideration of backwater effects

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN AND INCORPORATED AREAS

FLOODWAY DATA

BARTONS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Bartons Creek (continued)								
Y	12.78	786	3,934	2.1	527.2	527.2	528.0	0.8
Z	13.24	723	2,148	3.9	529.2	529.2	530.1	0.9
AA	13.40	887	3,037	2.7	535.9	535.9	536.8	0.9
AB	13.61	176	1,478	5.6	538.0	538.0	538.6	0.6
AC	14.98	328	1,110	7.5	556.5	556.5	557.5	1.0

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOODWAY DATA

BARTONS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Cedar Creek								
A	4.51	198	2,094	7.5	451.8	451.8	452.8	1.0
B	5.20	450	3,920	4.0	459.4	459.4	460.4	1.0
C	5.53	521	3,727	4.2	463.1	463.1	464.1	1.0
D	5.96	816	5,308	3.0	467.9	467.9	468.9	1.0
E	6.32	401	3,350	4.7	470.1	470.1	470.9	0.8
F	6.55	542	4,157	3.8	472.5	472.5	473.3	0.8
G	6.83	475	3,815	4.1	474.9	474.9	475.7	0.8
H	7.04	153	1,951	7.0	475.9	475.9	476.8	0.9
I	7.25	597	4,102	3.3	477.7	477.7	478.6	0.9
J	7.48	371	2,894	4.7	479.6	479.6	480.5	0.9
K	7.73	362	2,033	6.7	482.6	482.6	483.5	0.9
L	8.00	1,246	9,607	1.4	485.7	485.7	486.7	1.0
M	8.25	381	1,654	8.3	487.4	487.4	487.7	0.3
N	8.57	508	3,821	3.6	492.7	492.7	493.7	1.0
O	8.83	566	4,929	2.8	494.3	494.3	495.3	1.0
P	9.39	258	2,730	5.0	497.9	497.9	498.8	0.9
Q	9.95	471	4,094	3.4	502.3	502.3	503.3	1.0
R	10.55	451	3,345	3.3	506.3	506.3	507.3	1.0
S	11.28	242	1,718	6.5	512.6	512.6	513.5	0.9
T	11.56	557	3,311	3.4	516.4	516.4	517.4	1.0
U	11.88	338	2,379	4.7	519.7	519.7	520.6	0.9
V	12.08	359	2,579	4.3	522.1	522.1	522.8	0.7
W	12.53	554	3,562	3.1	526.0	526.0	526.9	0.9
X	12.60	467	2,920	3.8	527.4	527.4	527.9	0.5
Y	12.77	457	3,025	3.7	529.6	529.6	530.6	1.0
Z	12.98	404	2,184	3.9	533.3	533.3	533.6	0.3

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Cedar Creek (continued)								
AA	13.61	488	2,752	3.1	539.6	539.6	540.4	0.8
AB	13.94	646	4,090	2.1	542.1	542.1	542.1	0.0
AC	14.14	309	1,089	5.6	543.8	543.8	543.8	0.0
AD	14.33	611	2,660	2.3	547.0	547.0	547.2	0.2
AE	14.41	447	1,875	3.3	547.3	547.3	547.5	0.2
AF	14.57	344	1,725	3.6	550.1	550.1	550.6	0.5
AG	14.68	450	2,322	2.3	550.8	550.8	551.8	1.0
AH	14.80	250	1,355	4.0	551.7	551.7	552.3	0.6
AI	14.94	222	1,199	4.5	553.3	553.3	553.8	0.5
AJ	15.04	260	1,213	4.5	554.4	554.4	555.1	0.7
AK	15.13	460	2,470	2.2	555.6	555.6	556.6	1.0
AL	15.29	325	1,373	4.0	557.2	557.2	557.7	0.5
AM	15.44	215	688	7.9	560.8	560.8	560.8	0.0
AN	15.61	350	1,651	3.0	565.0	565.0	565.9	0.9
AO	15.72	515	1,155	4.3	567.6	567.6	568.1	0.5
AP	15.88	350	1,325	3.8	568.8	568.8	569.6	0.8
South Fork								
A	16.14	242	1,012	4.0	573.5	573.5	573.7	0.2
B	16.24	229	985	2.8	575.1	575.1	576.1	1.0
C	16.36	30	204	13.3	577.0	577.0	577.5	0.5

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR CREEK / SOUTH FORK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Cumberland River								
A	222.60	2057/250[3]	74,618	2.1	450.3	450.3	451.3	1.0
B	230.00	3000/2286[4]	64,143	2.5	450.9	450.9	451.9	1.0
C	235.60	2500/2172[4]	60,881	2.6	451.5	451.5	452.5	1.0
D	241.60	1600/1307[4]	46,614	3.4	452.4	452.4	453.4	1.0
E	248.50	2000/1302[4]	40,141	3.9	454.1	454.1	455.1	1.0
F	252.00	577/200[3]	29,324	5.4	455.2	455.2	456.2	1.0
G	255.30	599/270[3]	32,879	4.8	456.3	456.3	457.3	1.0
H	259.50	666/450[3]	26,732	5.9	457.6	457.6	458.6	1.0
I	261.30	1340/100[3]	43,566	3.6	458.7	458.7	459.7	1.0
J	262.50	1040/500[3]	38,196	4.1	459.0	459.0	460.0	1.0
K	263.90	1073/175[3]	29,627	5.3	459.4	459.4	460.4	1.0
L	265.40	565/400[3]	26,076	6.0	460.1	460.1	461.1	1.0
M[2]	267.80	1077/0[3]	36,791	4.3	461.3	461.3	462.3	1.0
N[2]	269.60	1099/0[3]	35,207	4.5	462.0	462.0	463.0	1.0
O[2]	271.40	2061/0[3]	43,548	3.6	462.6	462.6	463.6	1.0
P	273.30	814/375[3]	31,909	4.9	463.4	463.4	464.4	1.0

[1]Miles above mouth
[2]Cross sections located outside county limits
[3]Total width/ width within county limits
[4] Designated width/computer width; floodway extends beyond county limits

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOODWAY DATA

CUMBERLAND RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Sinking Creek								
A	0.28	277	1,331	6.2	515.5	515.5	516.3	0.8
B	0.86	609	2,852	2.9	521.4	521.4	522.3	0.9
C	1.26	106	1,067	7.1	523.9	523.9	524.5	0.6
D	1.33	81	1,152	6.5	525.0	525.0	525.6	0.6
E	1.49	188	1,024	7.4	526.2	526.2	527.1	0.9
F	1.74	470	1,891	4.0	529.8	529.8	530.7	0.9
G	1.84	360	1,952	3.6	531.4	531.4	531.8	0.4
H	1.91	411	2,273	3.1	531.7	531.7	532.1	0.4
I	2.01	265	1,471	4.7	532.6	532.6	532.8	0.2
J	2.06	149	956	6.9	533.3	533.3	533.4	0.1
K	2.13	150	2,049	3.2	535.0	535.0	535.0	0.0
L	2.46	144	1,046	6.2	543.5	543.5	543.5	0.0
M	2.79	141	720	8.9	548.1	548.1	548.9	0.8
N	2.92	235	1,298	5.0	551.6	551.6	552.3	0.7
O	3.11	143	991	6.5	554.7	554.7	555.5	0.8
P	3.38	273	1,874	3.4	559.0	559.0	560.0	1.0
Q	3.57	189	1,084	5.9	561.9	561.9	562.6	0.7
R	3.86	125	889	5.7	565.5	565.5	566.5	1.0
S	4.06	106	996	5.1	569.5	569.5	570.4	0.9
T	4.34	182	1,672	3.0	570.3	570.3	571.2	0.9
U	4.56	227	1,905	2.7	571.5	571.5	571.9	0.4
V	4.80	135	1,269	4.0	572.2	572.2	572.7	0.5
W	5.10	102	624	8.1	574.8	574.8	575.0	0.2
X	5.17	150	1,018	5.0	577.2	577.2	578.2	1.0
Y	5.33	141	1,026	4.9	578.9	578.9	579.7	0.8
Z	5.77	335	2,532	1.9	593.5	593.5	594.3	0.8
AA	5.91	354	2,632	1.8	593.7	593.7	594.6	0.9

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOODWAY DATA

SINKING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Spring Creek								
A	3.20	556	5,357	3.8	455.9	453.5[2]	454.5	1.0
B	3.80	719	7,073	2.9	457.7	457.7	458.7	1.0
C	4.02	1,498	12,955	1.6	458.6	458.6	459.6	1.0
D	4.08	1,988	16,335	1.3	459.3	459.3	460.3	1.0
E	4.49	698	4,863	4.2	460.4	460.4	461.3	0.9
F	5.32	998	7,515	2.7	468.0	468.0	468.8	0.8
G	5.67	849	5,891	3.5	471.9	471.9	471.4	0.5
H	6.13	1,113	7,329	2.8	474.2	474.2	475.1	0.9
I	6.58	873	6,154	3.0	477.1	477.1	478.1	1.0
J	7.35	1,311	8,599	2.1	481.7	481.7	482.7	1.0
K	7.55	822	4,401	4.2	483.7	483.7	484.5	0.8
L	8.30	1,198	7,683	2.4	490.5	490.5	491.4	0.9
M	8.68	608	5,095	3.6	493.7	493.7	494.5	0.8
N	9.32	280	3,337	5.5	500.5	500.5	501.3	0.8
O	9.38	536	5,608	3.3	503.3	503.3	504.0	0.7
P	9.70	685	7,885	2.3	505.2	505.2	506.0	0.8
Q	9.80	725	9,025	2.0	505.6	505.6	506.4	0.8
R	9.98	320	2,810	6.5	506.6	506.6	507.5	0.9
S	10.44	984	7,680	2.4	512.4	512.4	512.7	0.3
T	11.02	999	7,862	2.3	515.0	515.0	515.5	0.5
U	11.45	1,199	5,873	2.8	517.4	517.4	518.0	0.6
V	12.45	331	3,810	4.3	523.1	523.1	523.7	0.6
W	13.00	593	4,186	3.9	526.5	526.5	527.1	0.6
X	13.23	583	5,046	3.2	527.9	527.9	528.4	0.5
Y	13.30	714	6,032	2.7	528.5	528.5	529.2	0.7
Z	13.87	553	2,552	6.4	531.8	531.8	532.6	0.8

[1]Miles above mouth
[2]Elevation computed without consideration of backwater effects

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN AND INCORPORATED AREAS

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Spring Creek (continued)								
AA	14.54	606	5,503	3.0	539.4	539.4	540.4	1.0
AB	15.25	540	4,921	2.8	543.2	543.2	544.2	1.0
AC	15.90	704	7,339	1.9	546.9	546.9	547.6	0.7
AD	16.73	684	5,224	2.7	549.7	549.7	550.5	0.8
AE	17.06	866	6,049	2.3	552.8	552.8	553.7	0.9
AF	17.45	388	2,481	5.6	555.9	555.9	556.7	0.8
AG	17.59	640	4,720	2.8	559.3	559.3	560.0	0.7
AH	18.23	601	4,074	3.3	564.3	564.3	565.2	0.9
AI	18.74	681	3,628	3.7	569.5	569.5	570.4	0.9
AJ	18.81	450	4,130	3.2	571.3	571.3	572.3	1.0
AK	19.23	515	3,226	4.1	575.2	575.2	576.1	0.9
AL	19.77	491	4,488	3.0	580.8	580.8	581.8	1.0
AM	20.64	473	3,805	3.1	585.3	585.3	586.3	1.0
AN	21.00	557	4,474	2.6	588.3	588.3	589.0	0.7
AO	21.48	700	6,117	1.9	590.3	590.3	591.1	0.8
AP	22.27	1,190	4,763	2.5	594.8	594.8	595.7	0.9
AQ	22.43	910	4,446	2.7	598.7	598.7	599.1	0.4
AR	22.57	1,066	5,882	2.0	601.4	601.4	601.7	0.3
AS	23.10	672	4,232	2.8	604.5	604.5	604.9	0.4
AT	23.51	395	2,272	5.2	608.7	608.7	609.6	0.9
AU	24.10	681	4,399	2.7	618.7	618.7	619.6	0.9
AV	24.37	593	3,387	3.5	620.2	620.2	621.0	0.8

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN AND INCORPORATED AREAS

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Stoners Creek								
A	5.73	185	1,563	5.8	463.6	463.6	464.1	0.5
B	6.00	292	3,006	3.0	471.1	471.1	471.9	0.8
C	6.35	320	2,084	4.3	475.2	475.2	476.0	0.8
D	6.99	654	5,549	1.6	484.5	484.5	485.3	0.8
E	7.29	302	1,914	4.7	486.8	486.8	487.5	0.7
F	7.79	277	2,163	2.5	494.9	494.9	495.6	0.7
G	8.13	180	1,146	3.9	499.3	499.3	500.1	0.8
H	8.57	215	1,522	3.0	505.2	505.2	505.9	0.7
I	8.84	157	1,095	3.9	508.1	508.1	508.9	0.8
J	8.92	183	841	5.1	510.4	510.4	510.8	0.4
K	9.07	102	651	6.5	513.6	513.6	514.3	0.7
L	9.22	243	1,577	2.5	517.9	517.9	518.7	0.8
M	9.39	341	1,640	2.4	519.4	519.4	520.1	0.7
N	9.67	297	1,315	3.1	522.5	522.5	523.1	0.6
O	10.07	114	581	6.9	531.9	531.9	532.5	0.6
P	10.12	215	1,098	3.7	536.5	536.5	536.6	0.1
Q	10.53	332	1,711	2.3	541.1	541.1	541.9	0.8
R	10.76	379	1,913	2.1	543.0	543.0	543.8	0.8
S	10.99	306	2,494	1.6	550.1	550.1	550.1	0.0
T	11.13	138	824	4.9	550.9	550.9	551.3	0.4
U	11.95	297	1,295	2.4	564.4	564.4	565.2	0.8
V	12.29	404	2,459	1.3	567.1	567.1	567.9	0.8
W	12.45	231	944	5.0	569.1	569.1	569.8	0.7
X	12.56	252	1,185	4.0	572.8	572.8	573.6	0.8

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOODWAY DATA

STONERS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
Suggs Creek								
A	6.84	377	3,028	3.5	504.2	504.2	505.2	1.0
B	7.28	394	2,745	3.8	508.7	508.7	509.6	0.9
C	7.51	299	2,049	5.1	511.9	511.9	512.9	1.0
D	7.89	339	1,461	7.2	517.1	517.1	517.6	0.5
E	8.41	456	3,620	2.6	523.2	523.2	524.0	0.8
F	8.65	446	3,053	3.1	524.9	524.9	525.7	0.8
G	9.26	670	4,469	2.1	529.2	529.2	530.1	0.9
H	9.82	635	3,426	2.7	533.0	533.0	533.9	0.9
I	10.15	811	4,788	2.0	535.5	535.5	536.4	0.9
J	10.32	584	3,885	1.7	536.2	536.2	537.2	1.0
K	10.76	664	2,924	2.3	539.8	539.8	540.4	0.6
L	11.40	682	3,250	1.8	544.4	544.4	545.3	0.9
M	11.76	677	3,203	1.8	547.4	547.4	548.3	0.9
N	12.17	617	2,991	1.9	550.5	550.5	551.3	0.8
O	12.78	168	2,263	2.2	555.0	555.0	555.8	0.8
P	13.18	601	1,738	2.9	559.3	559.3	560.2	0.9
Q	13.51	470	1,800	2.8	564.1	564.1	565.0	0.9

[1]Miles above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOODWAY DATA

SUGGS CREEK

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A list of stream velocities at selected cross sections is provided in Table 5. To reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway. A portion of the floodway widths for the Cumberland River, Bartons Creek, and Cedar Creek extend beyond the county boundary.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, “Without Floodway” elevations presented in Table 5 for certain downstream cross sections of Bartons Creek are lower than the regulatory flood elevations in that area, which must take into account the 1-percent annual chance flooding due to backwater from other sources.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplains will not cause more than a 1.0-foot increase in base flood elevations at any point within the community.

The area between the floodway and 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by 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.

5.0 INSURANCE APPLICATIONS

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

Zone A

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

Zone AE

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

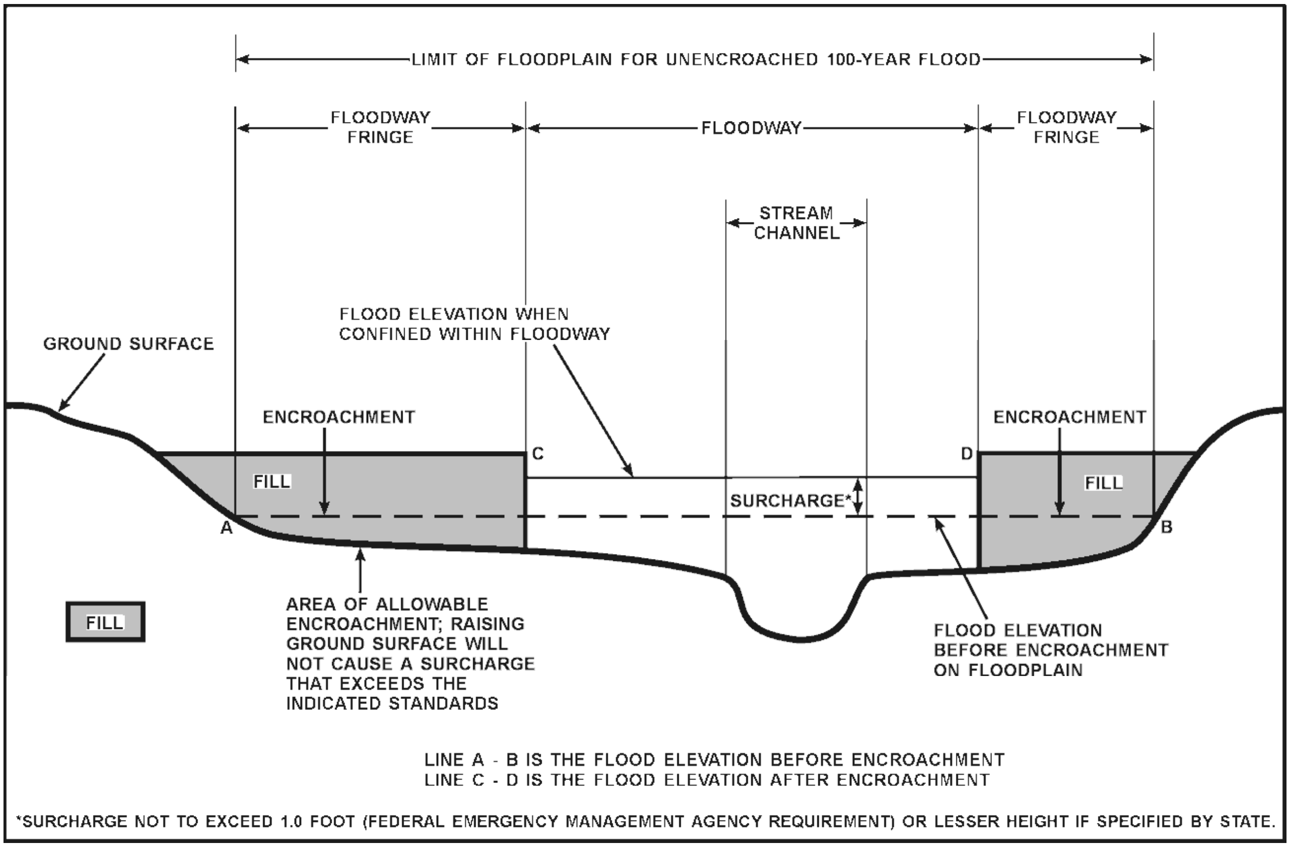

Figure 1: FLOODWAY SCHEMATIC

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent annual chance floodplain, areas within the 0.2-percent annual chance floodplain, and areas of 1-percent annual chance flooding where average depths are less than 1 foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent annual chance flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

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

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

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

The current FIRM presents flooding information for the entire geographic region of Wilson County. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 6.

7.0 OTHER STUDIES

FISs have been prepared for the unincorporated areas of Cannon County (FEMA, 1991), De Kalb County (FEMA, 1991), Smith County (FEMA, 1999), Trousdale County (FEMA, 1982), the incorporated areas of Rutherford County (FEMA, 2002b) and Sumner County (FEMA, 2002c), and the City of Nashville and Davidson County Metropolitan Government (FEMA, 2002a).

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Wilson County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, FHBMs, FIRMs, and/or Flood Boundary and Floodway Maps (FBFMs) for all of the incorporated and unincorporated jurisdictions within Wilson County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, Mitigation Division, Koger Center - Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia 30341.

9.0 BIBLIOGRAPHY AND REFERENCES

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COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Lebanon, City of	April 12, 1974	August 6, 1976	January 6, 1983	February 3, 1993
Mt. Juliet, City of	July 18, 1975	None	May 17, 1982	May 16, 1994
Watertown, City of	September 15, 1978	None	January 1, 1987	None
Wilson County (Unincorporated Areas)	September 13, 1974	December 30, 1977	June 15, 1984	None

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

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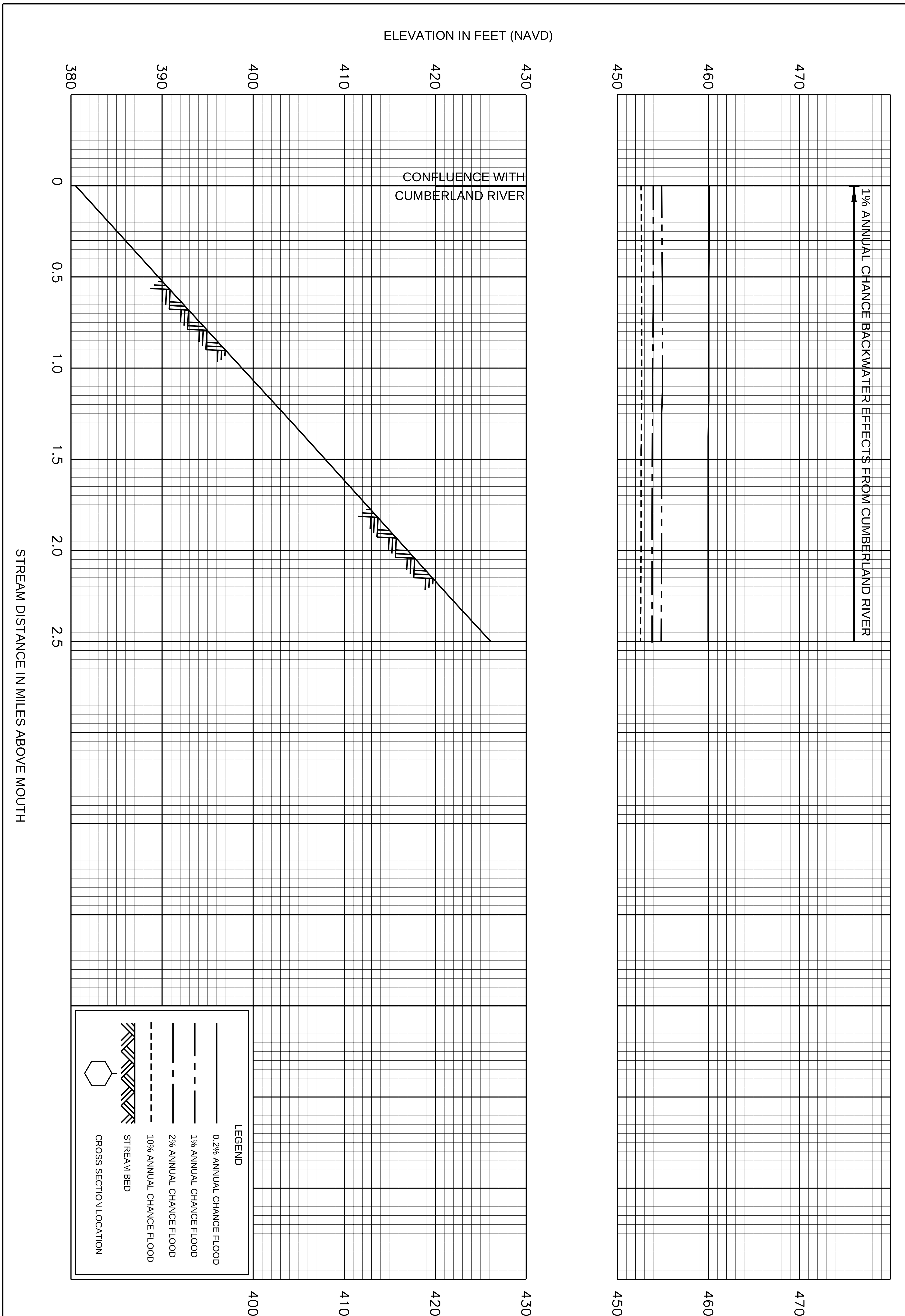


01P

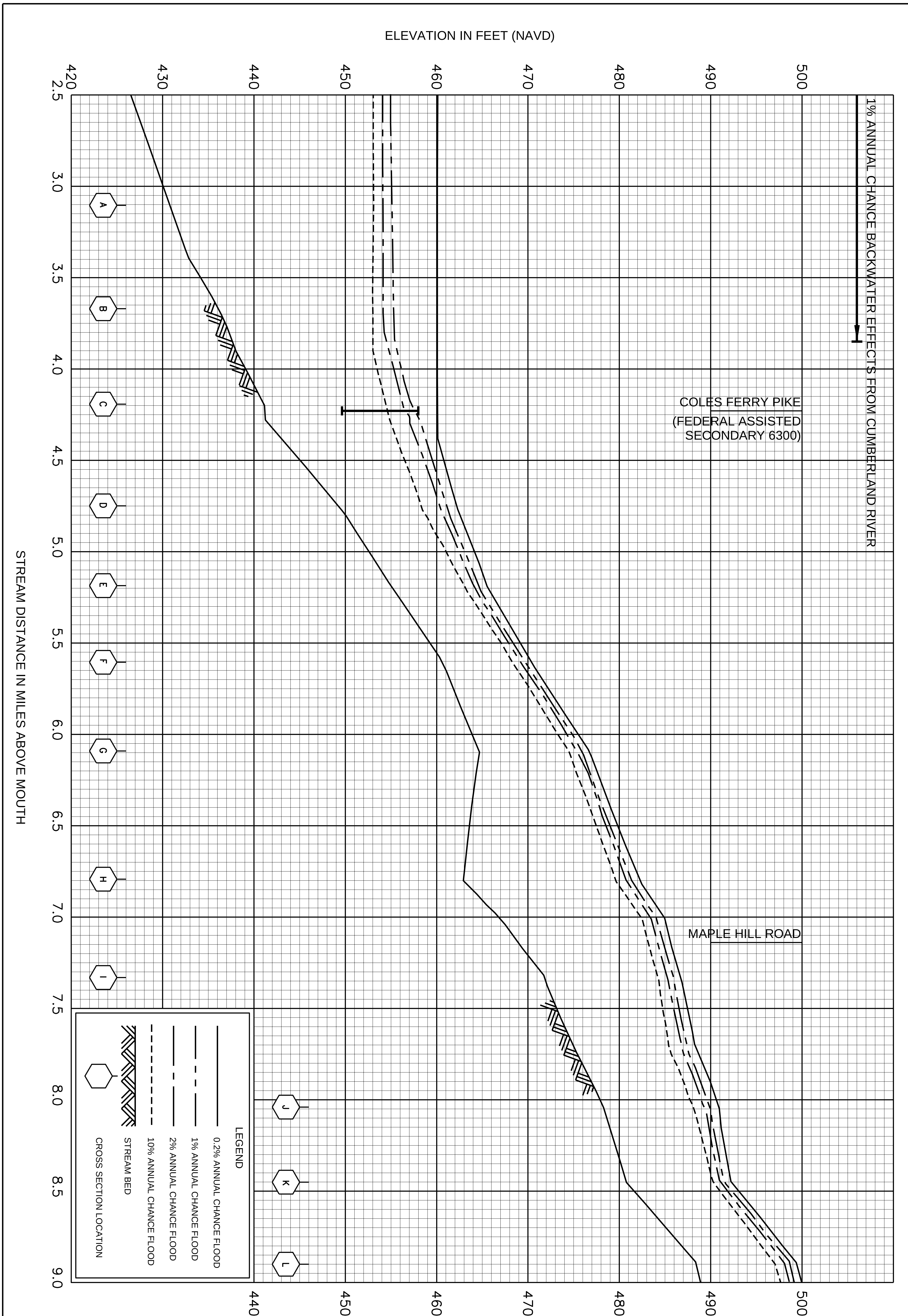
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

BARTONS CREEK



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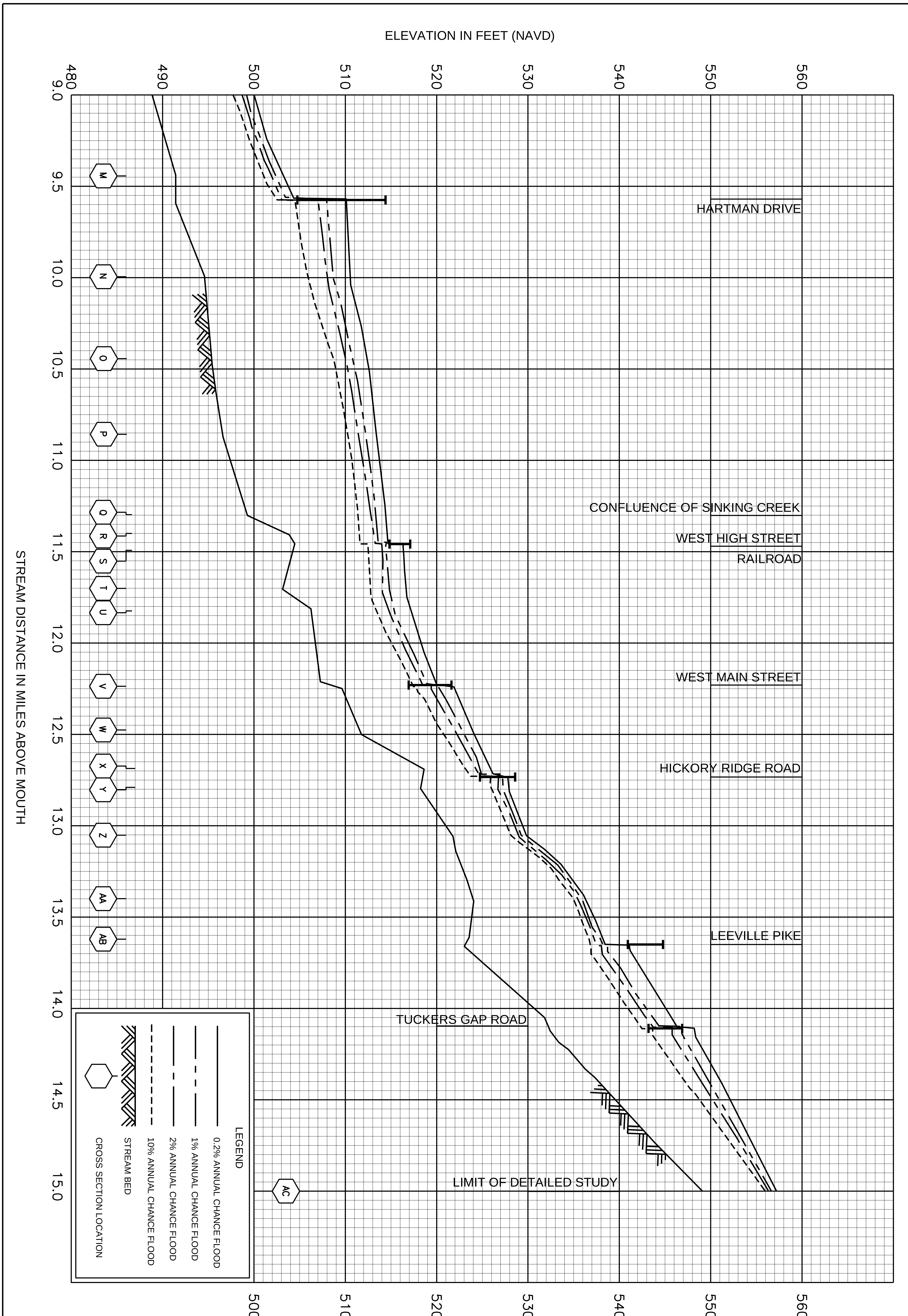
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

BARTONS CREEK



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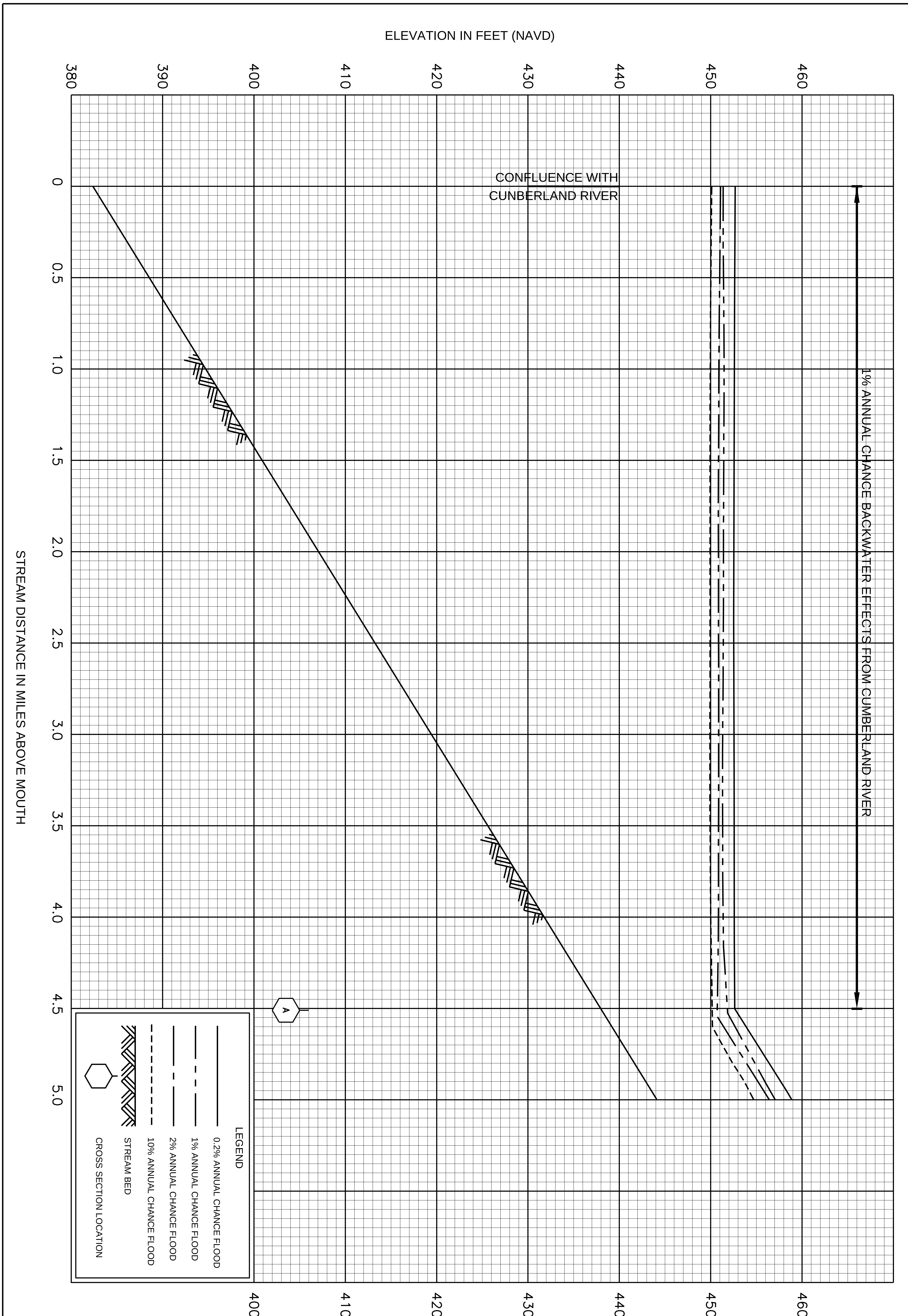
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

BARTONS CREEK



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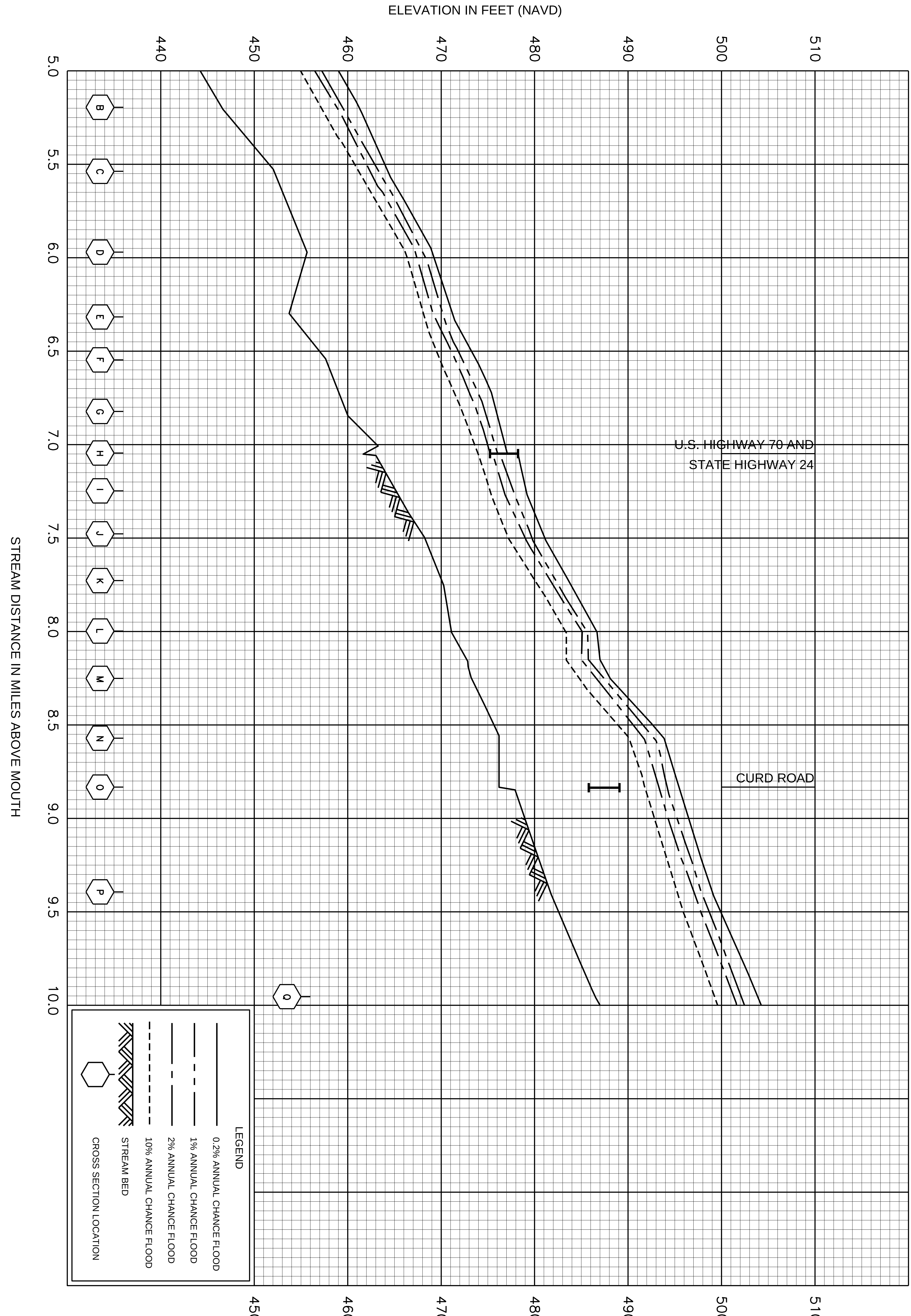
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

CEDAR CREEK



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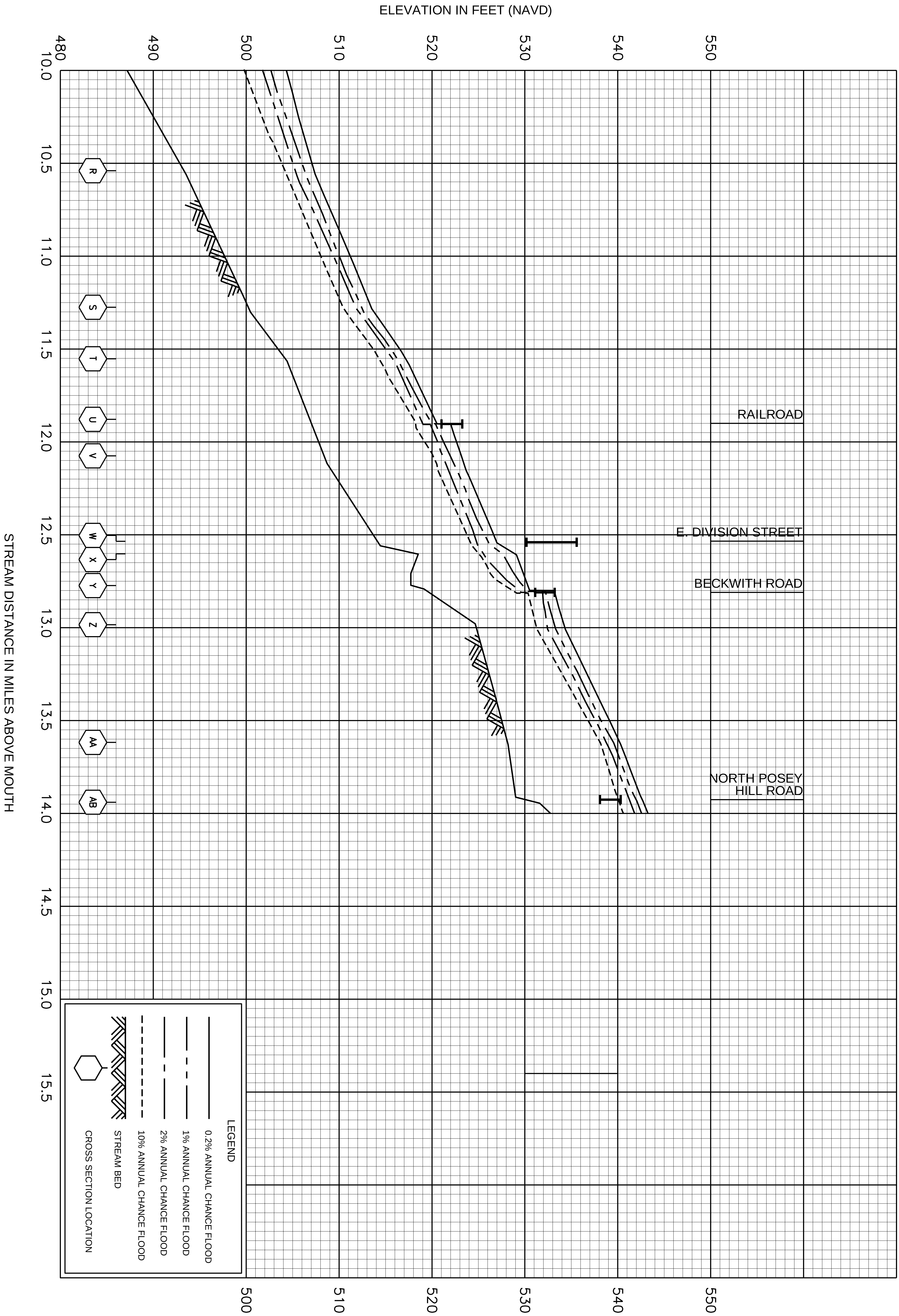
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

CEDAR CREEK



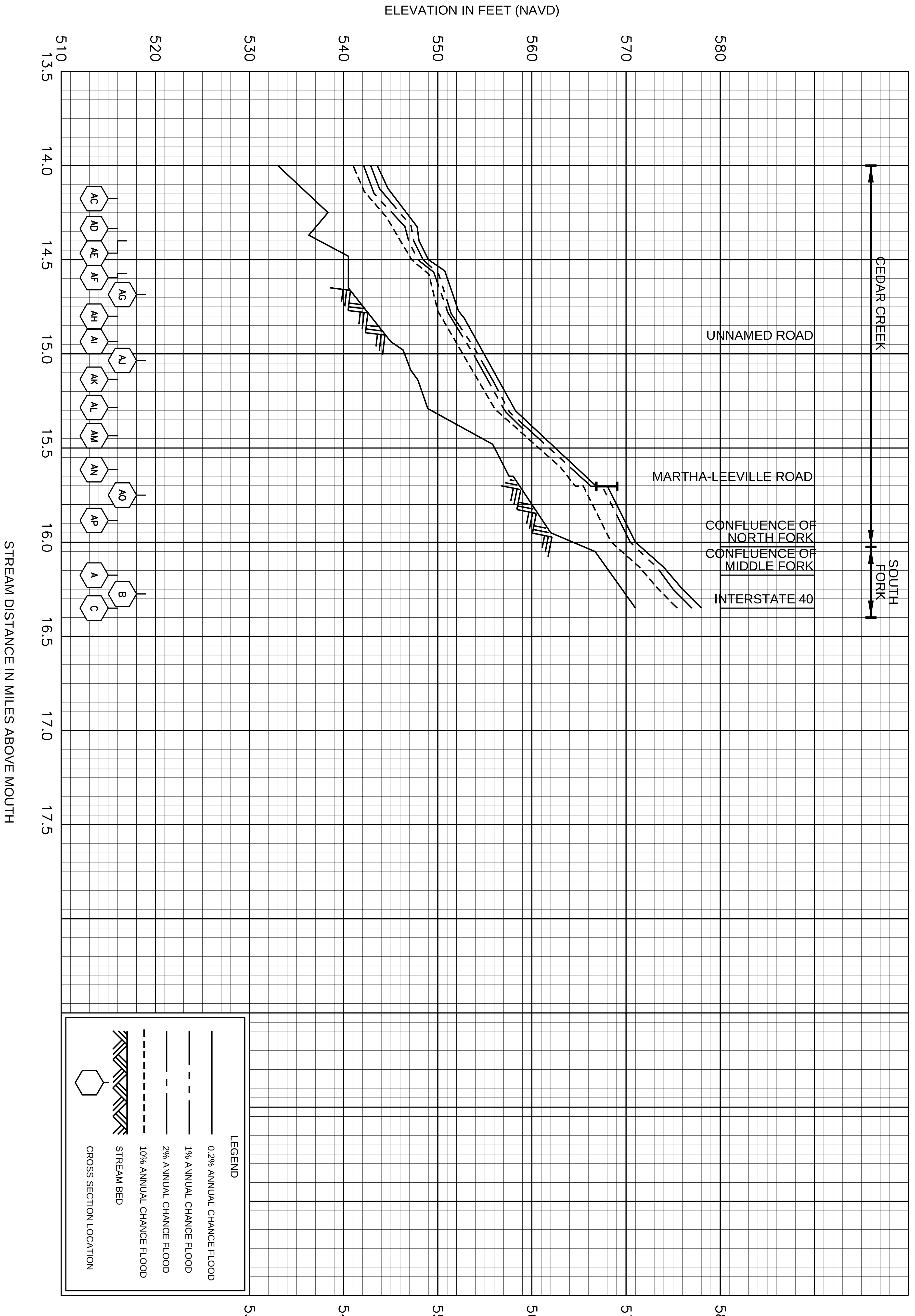
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

CEDAR CREEK



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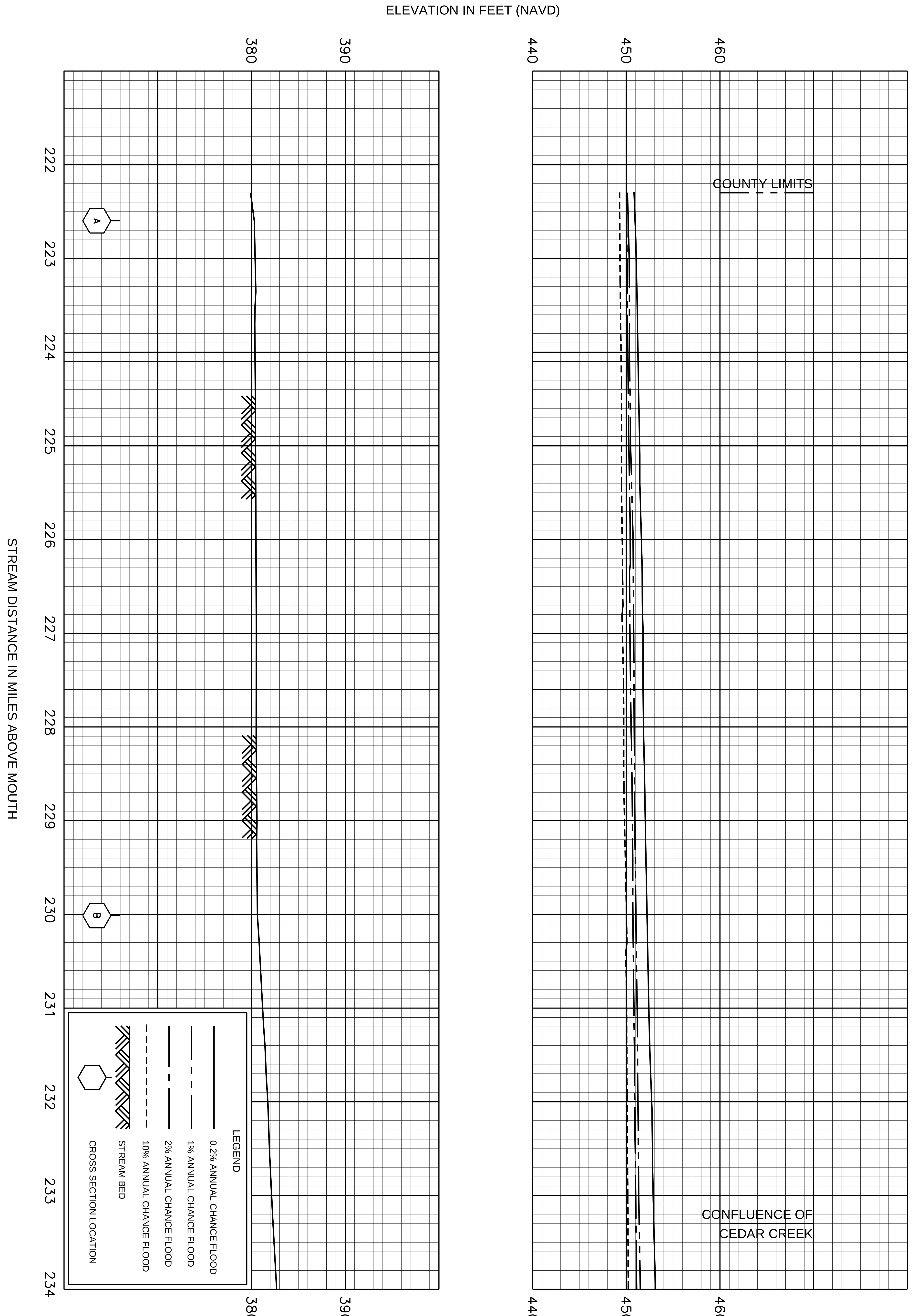
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

CEDAR CREEK/SOUTH FORK



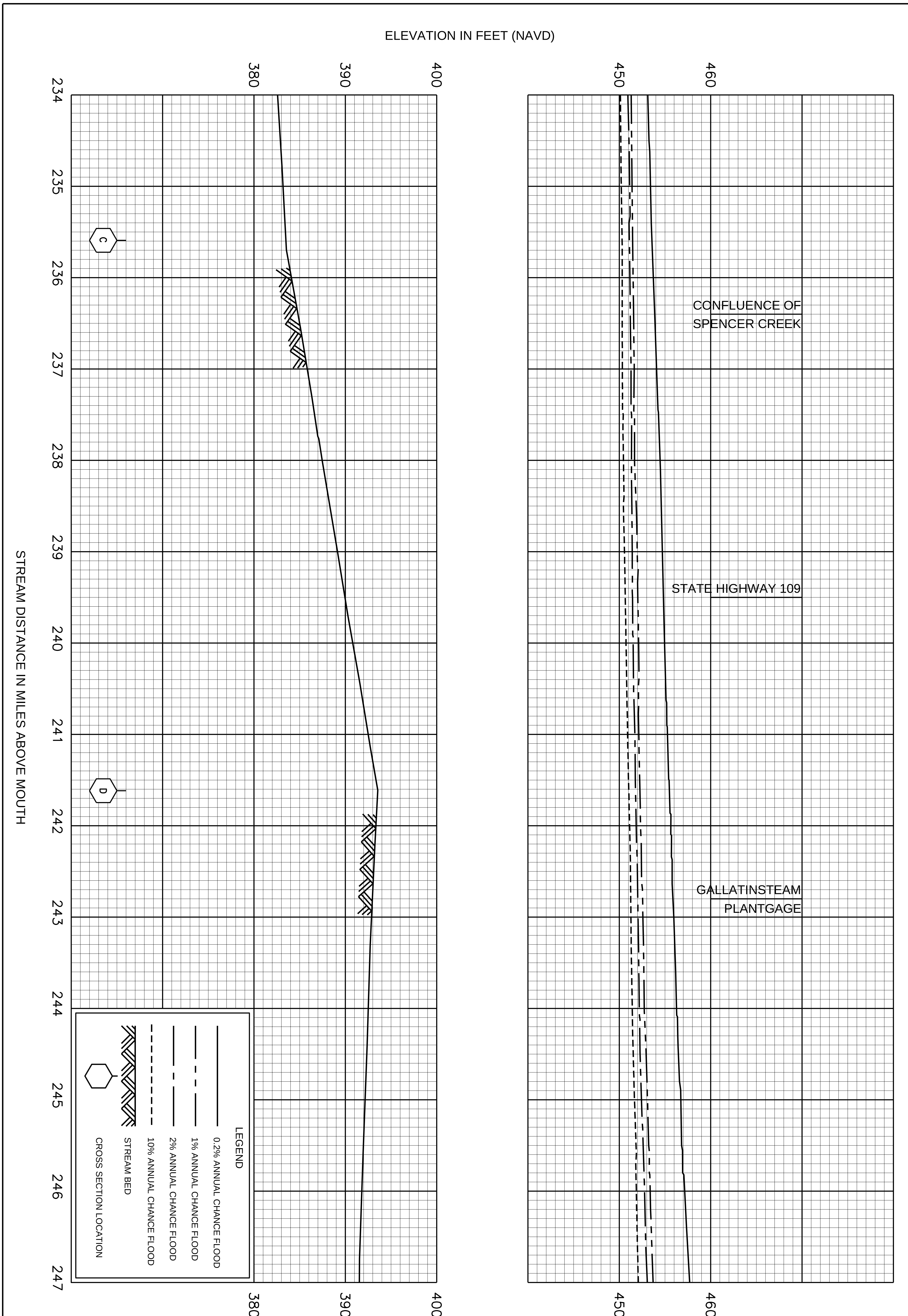
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

CUMBERLAND RIVER



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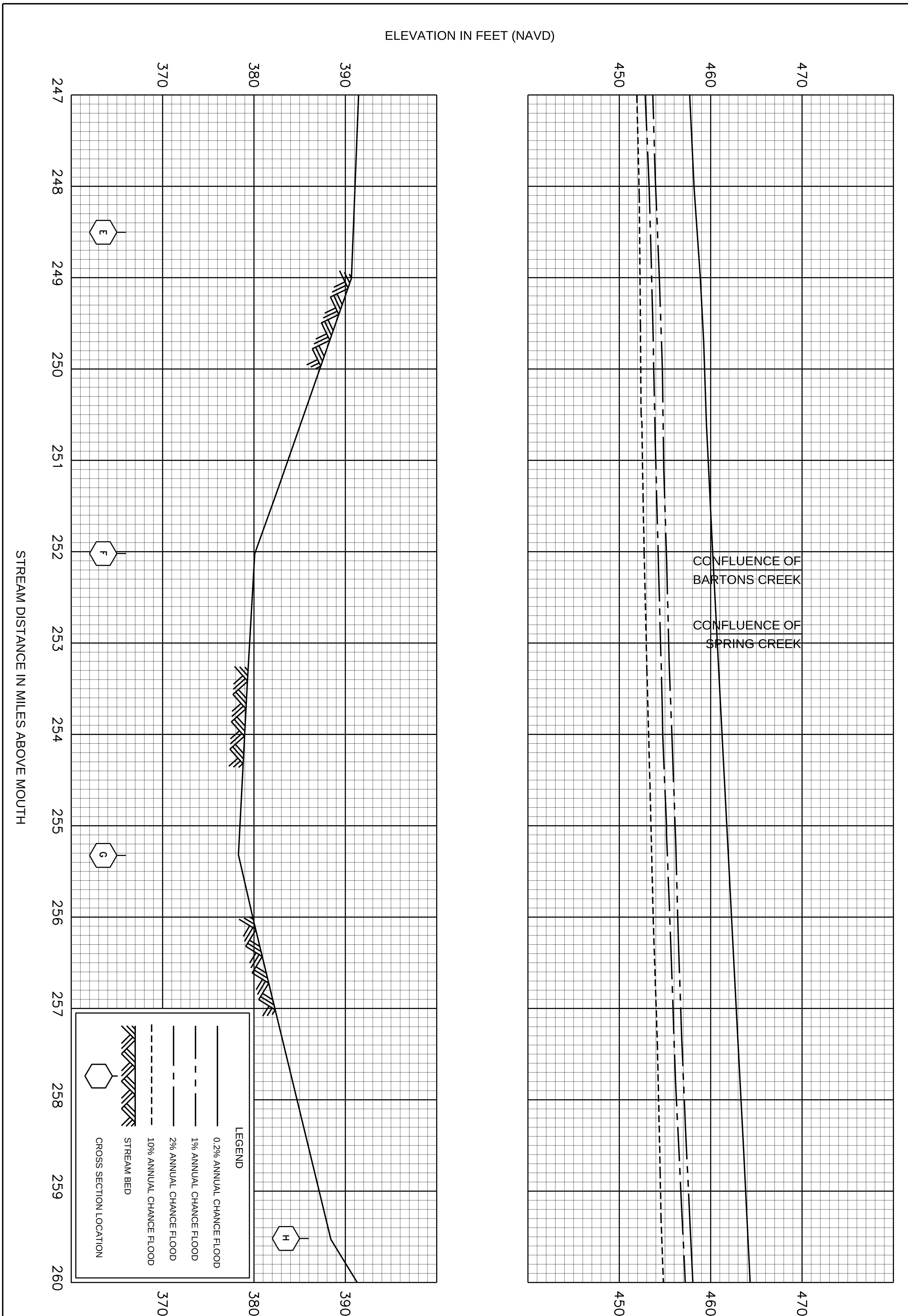
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

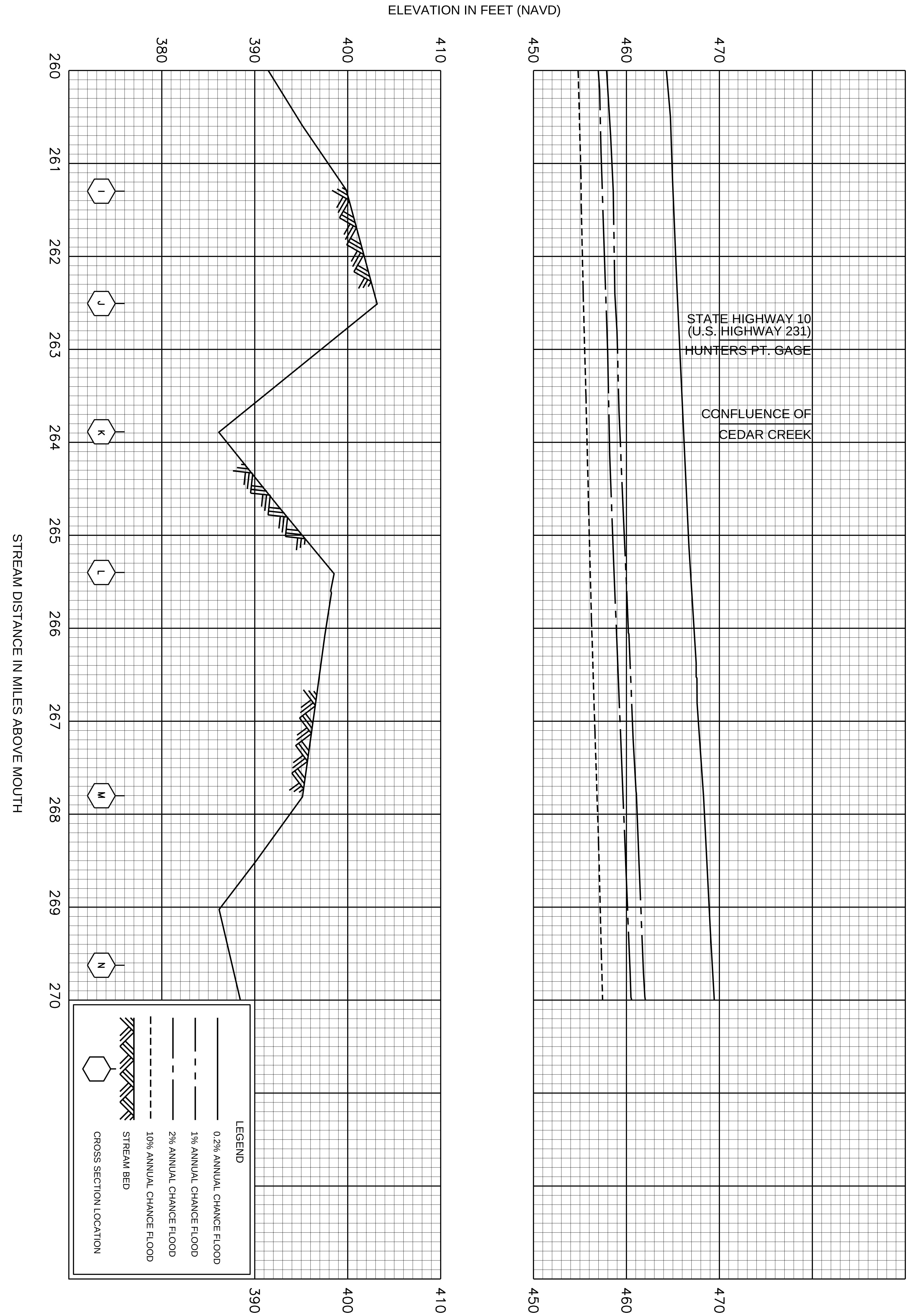
AND INCORPORATED AREAS

FLOOD PROFILES

CUMBERLAND RIVER



FEDERAL EMERGENCY MANAGEMENT AGENCY WILSON COUNTY, TN AND INCORPORATED AREAS	FLOOD PROFILES CUMBERLAND RIVER



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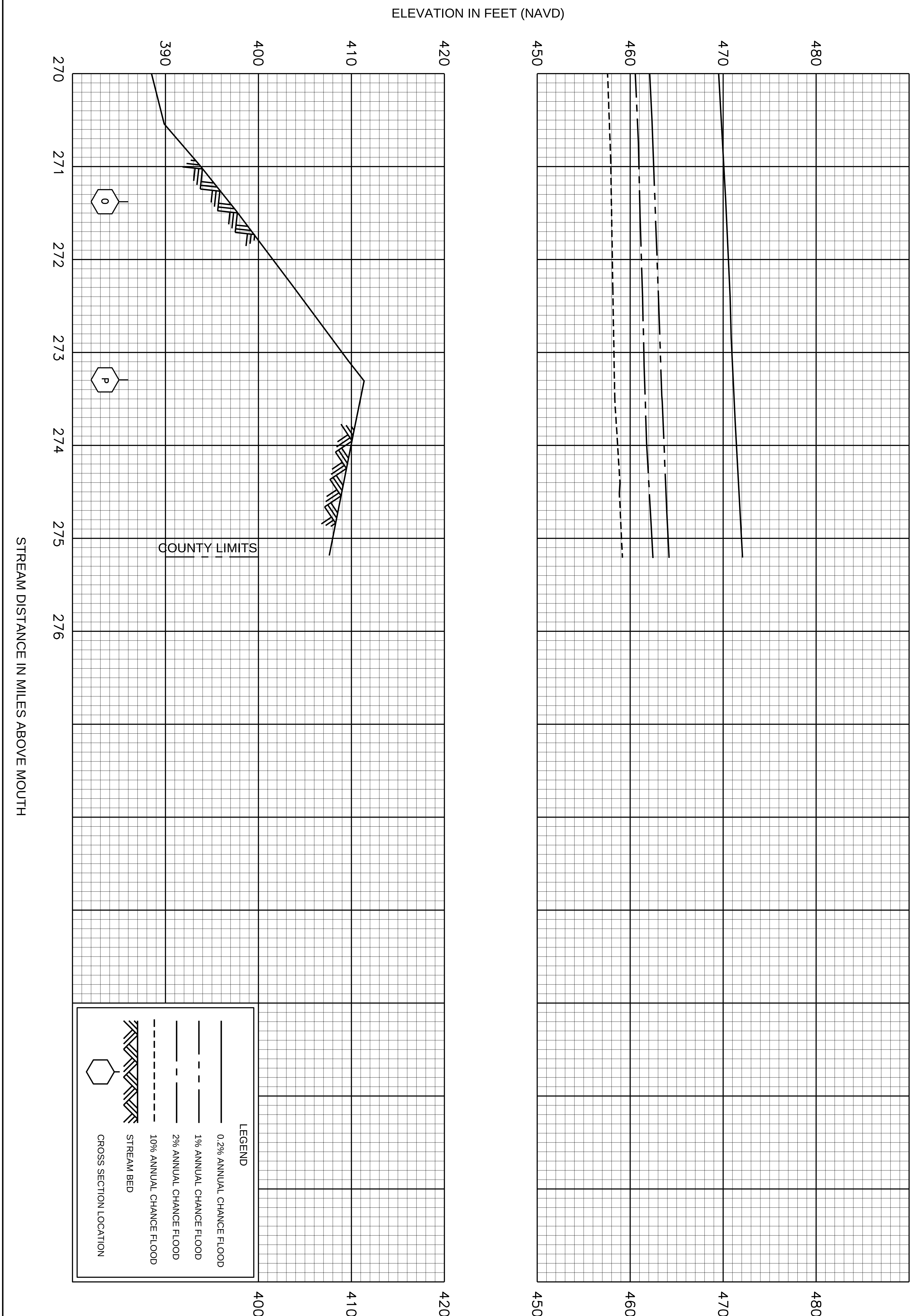
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

CUMBERLAND RIVER



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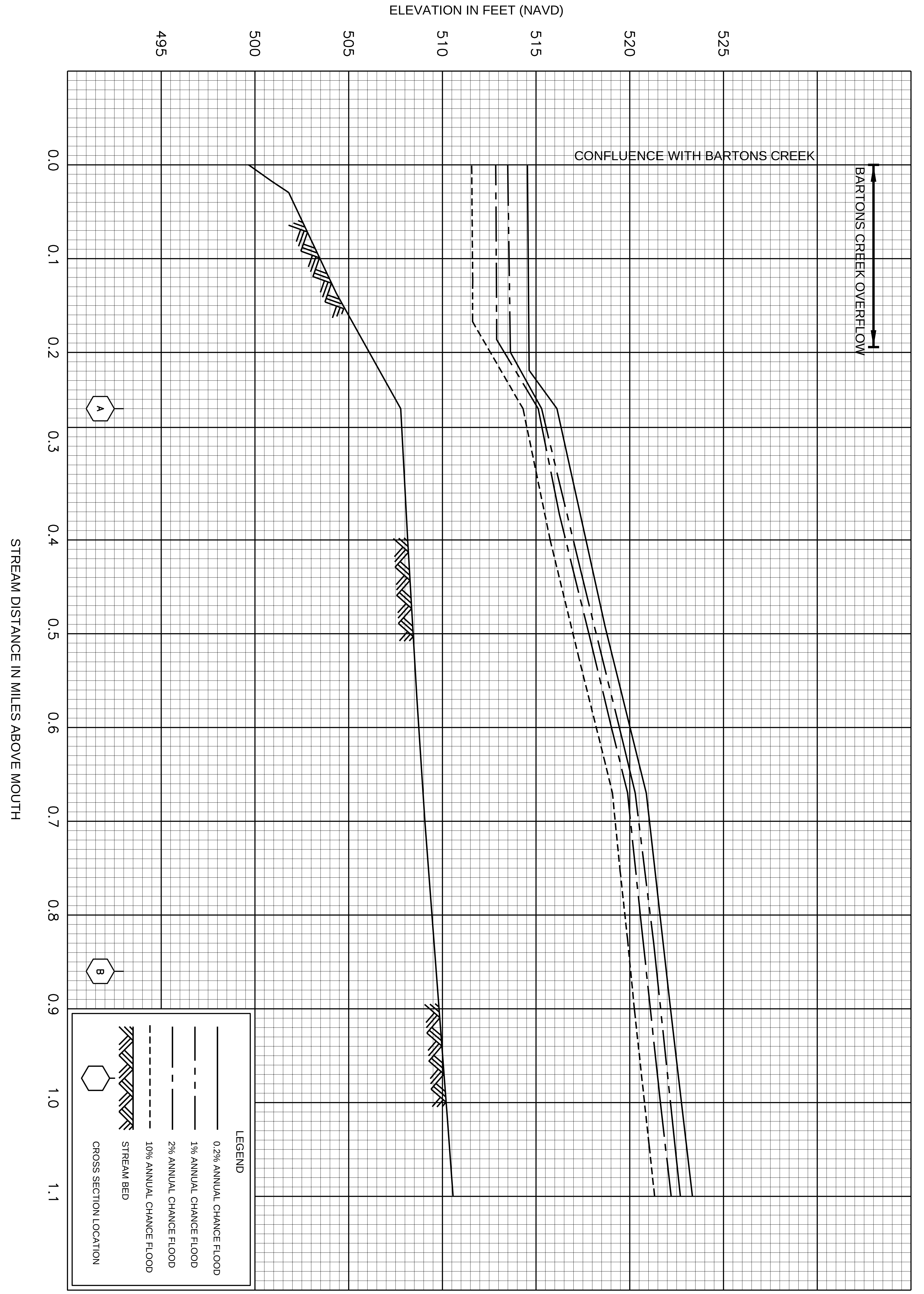
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

CUMBERLAND RIVER



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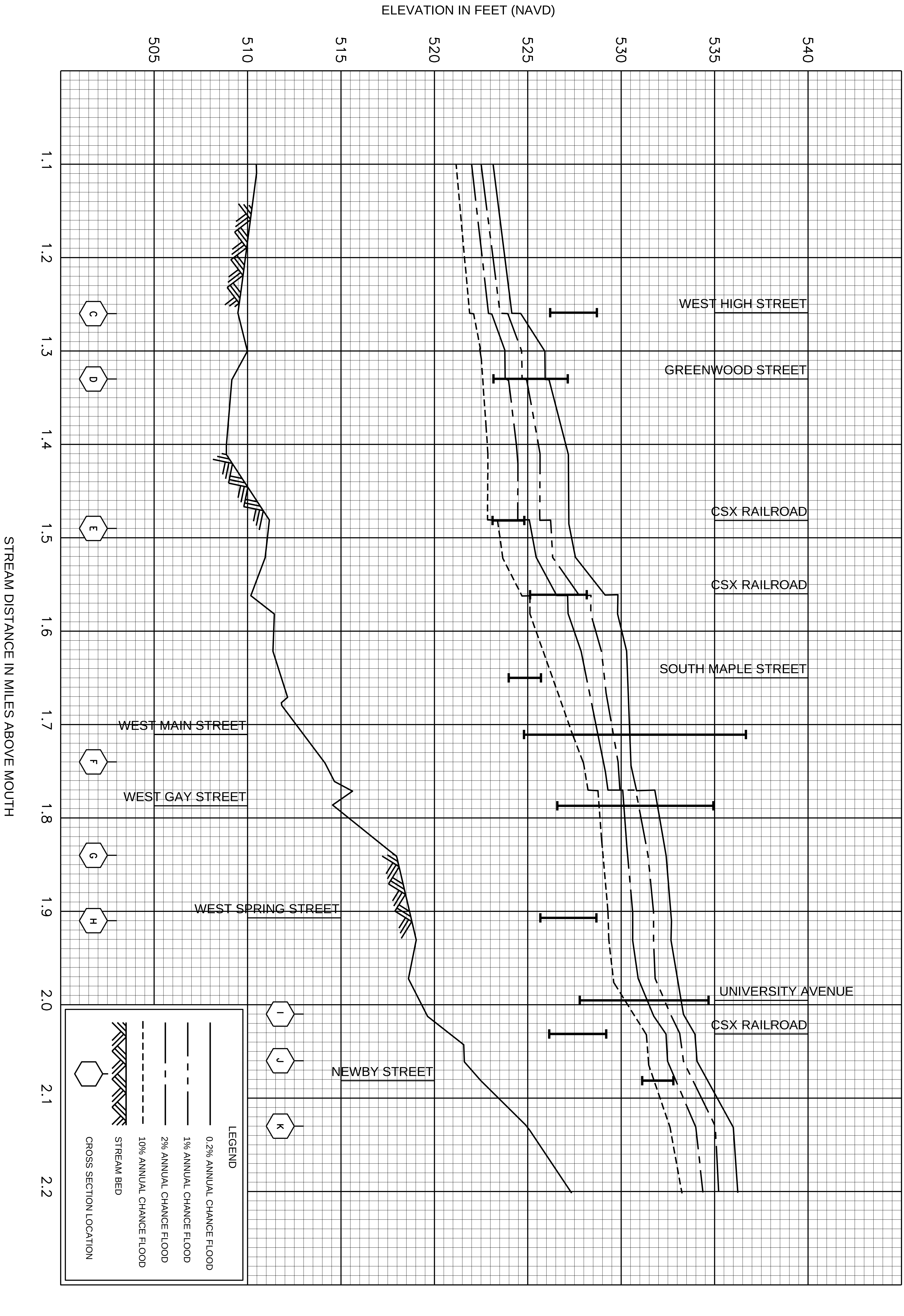
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SINKING CREEK



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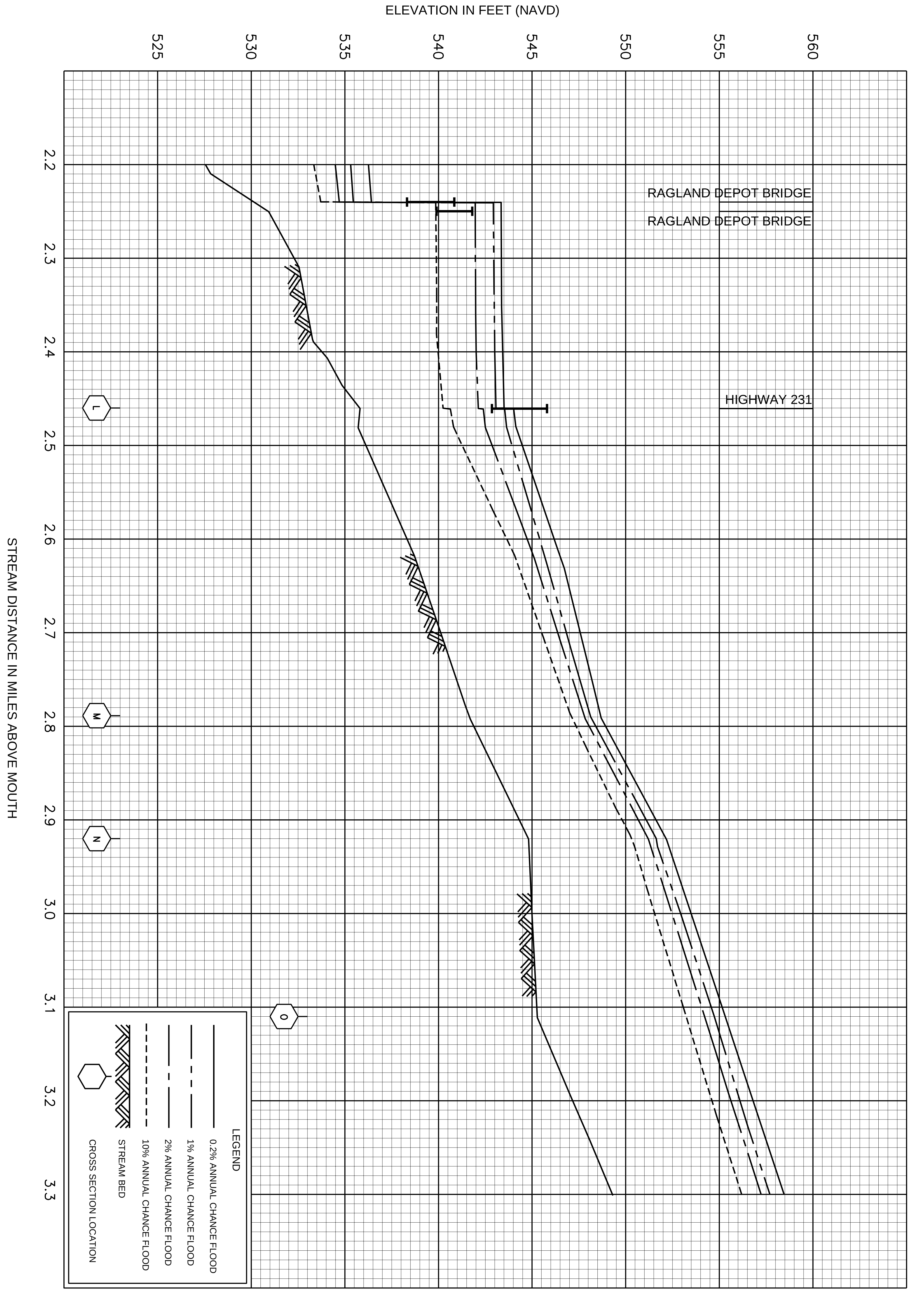
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

SINKING CREEK



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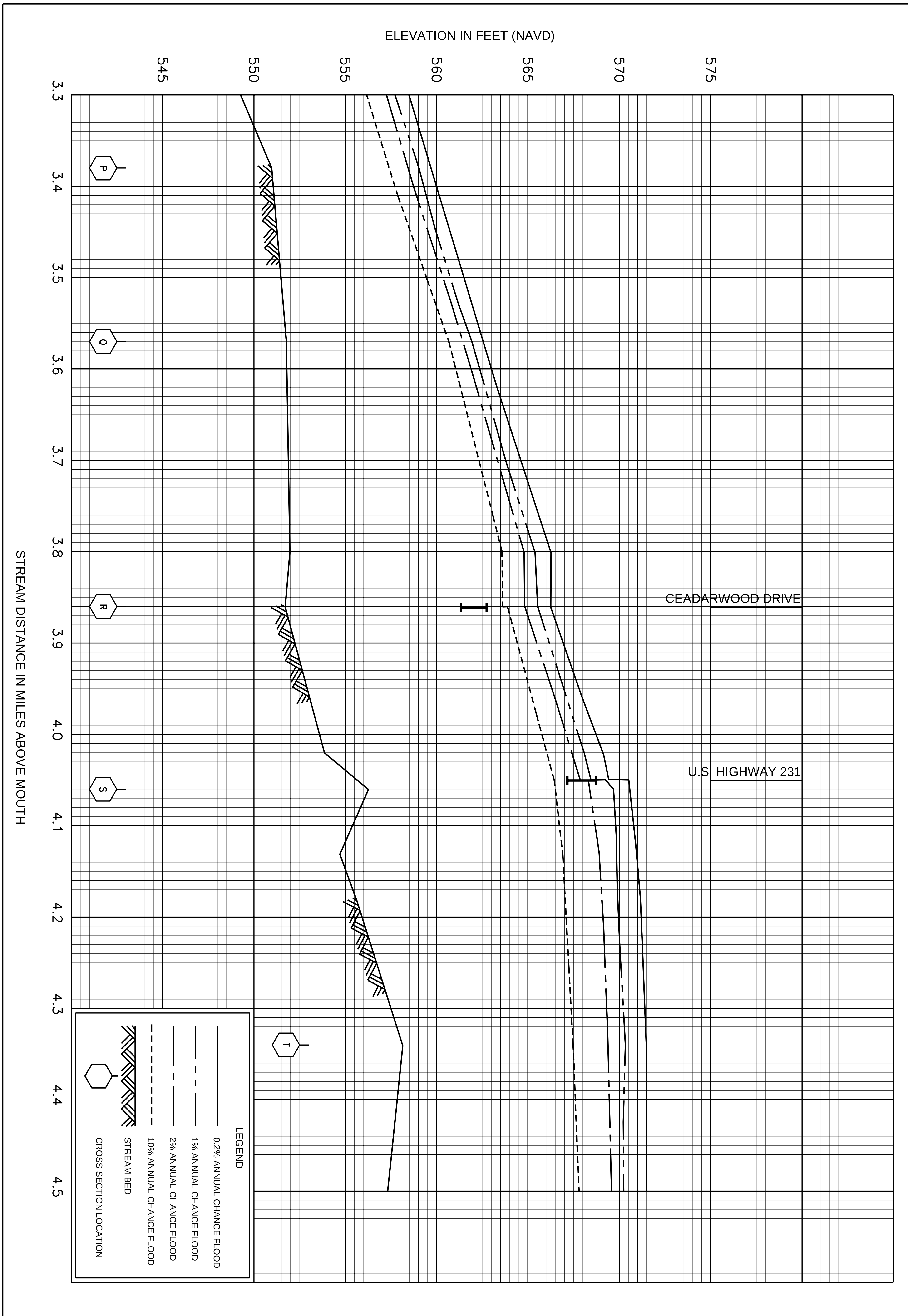
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SINKING CREEK



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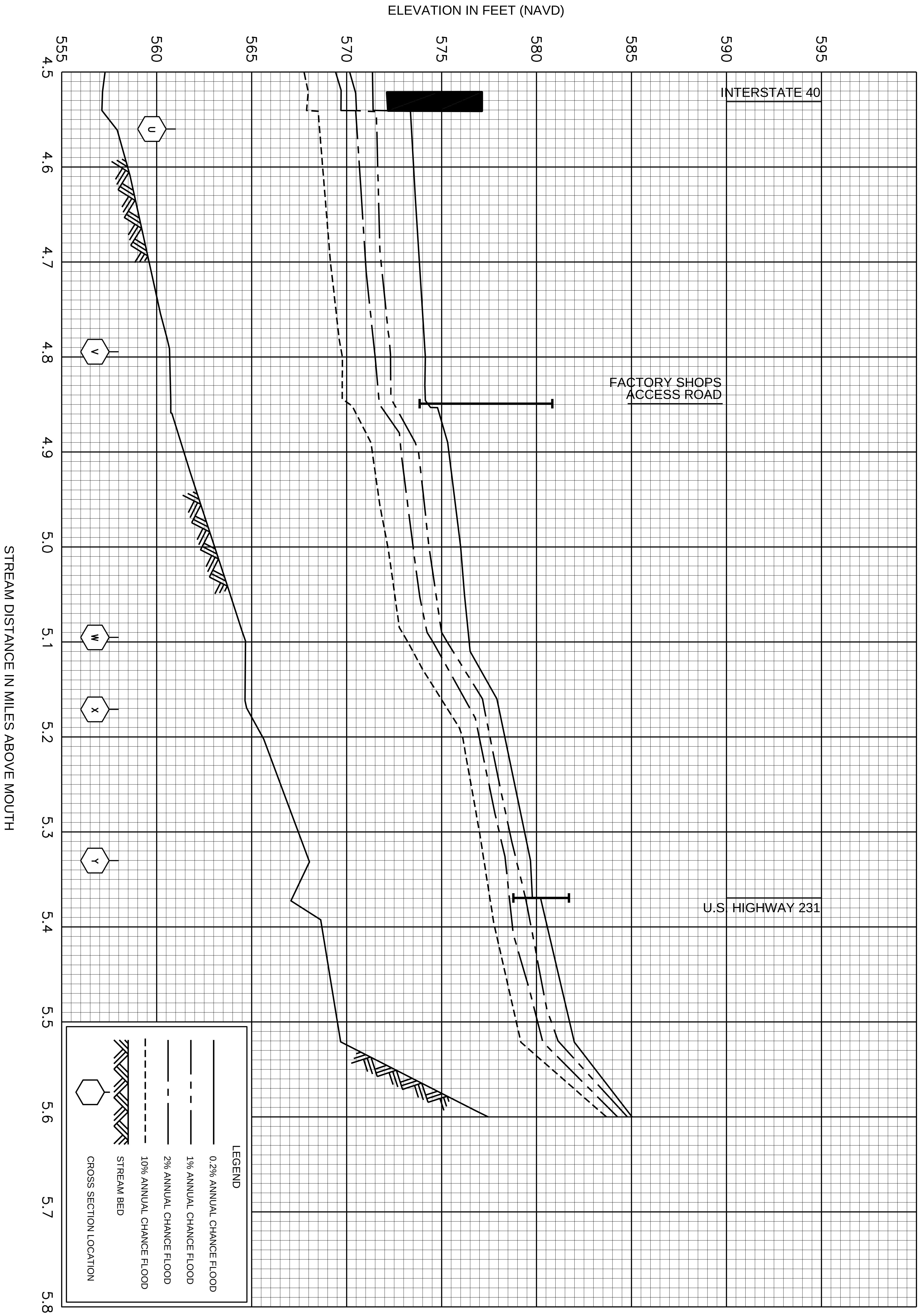

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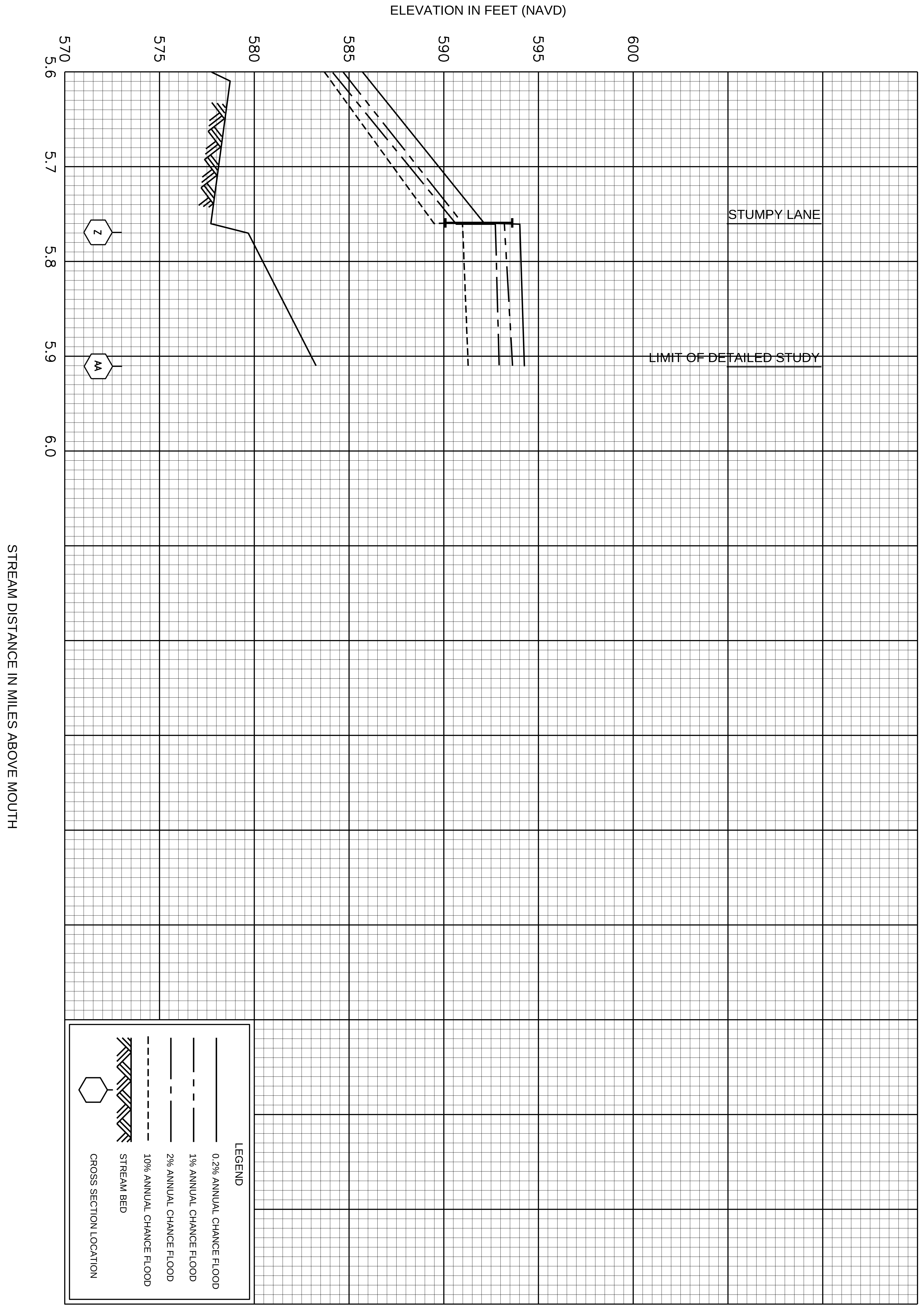
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SINKING CREEK



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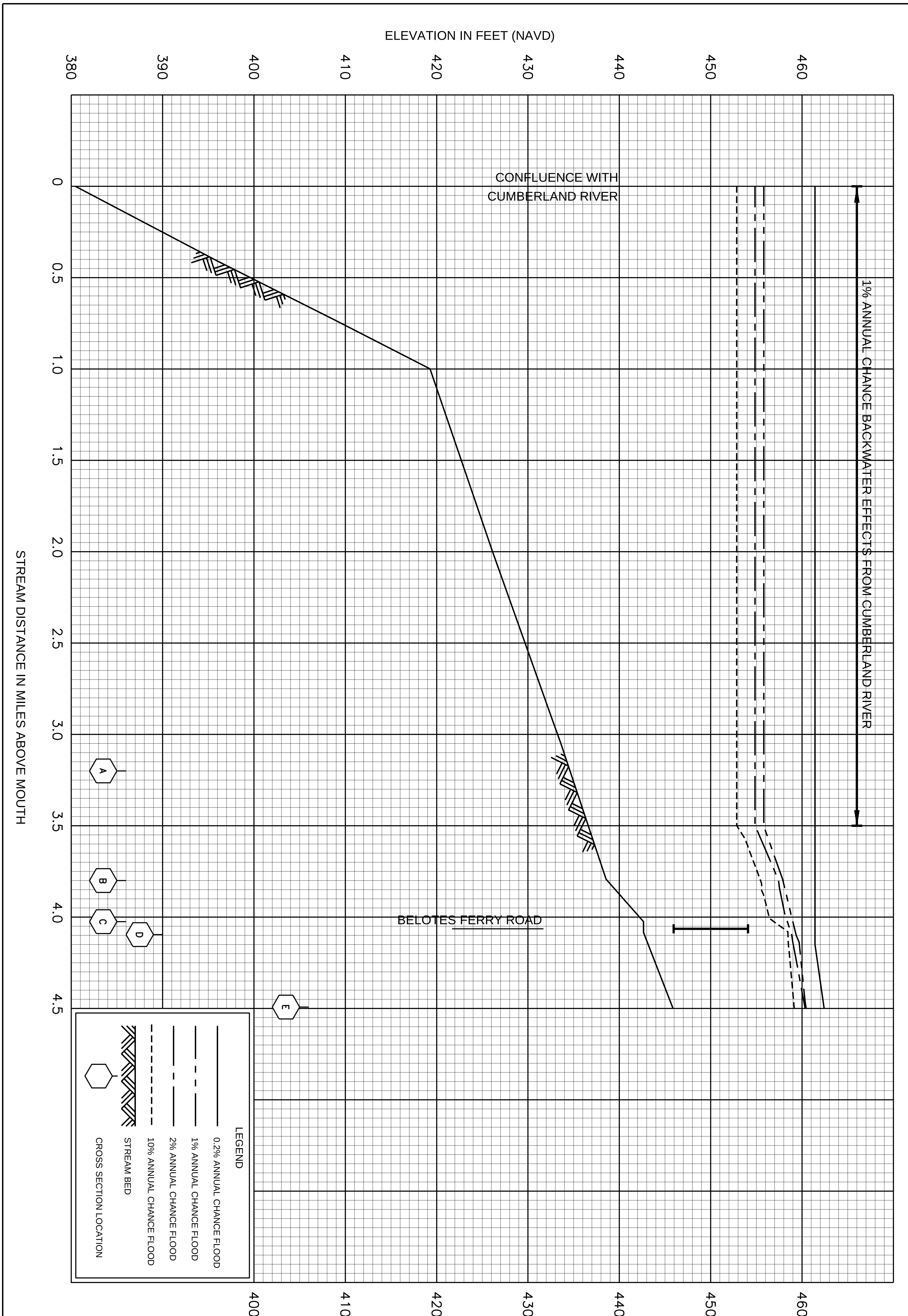
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

SINKING CREEK



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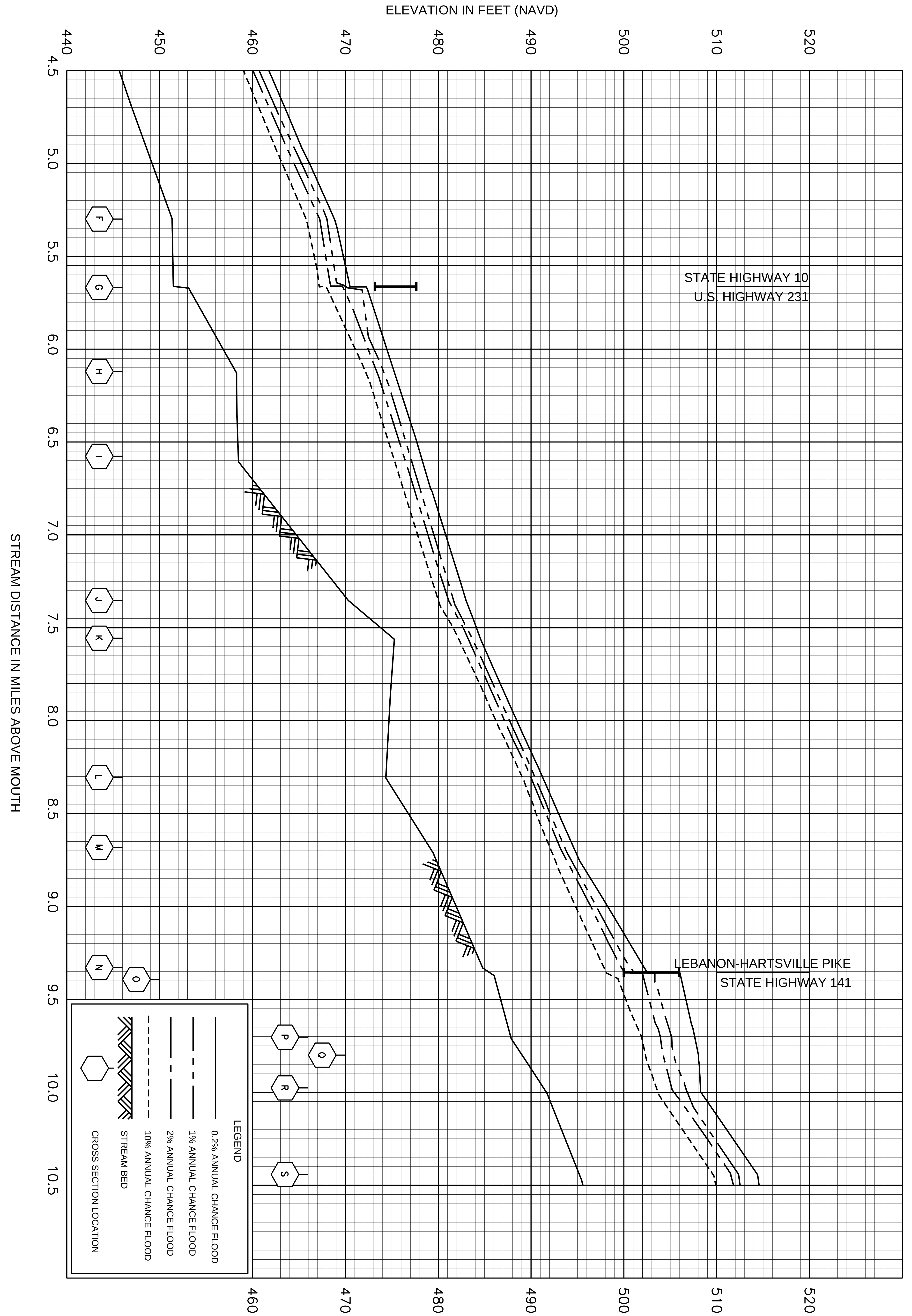
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SPRING CREEK



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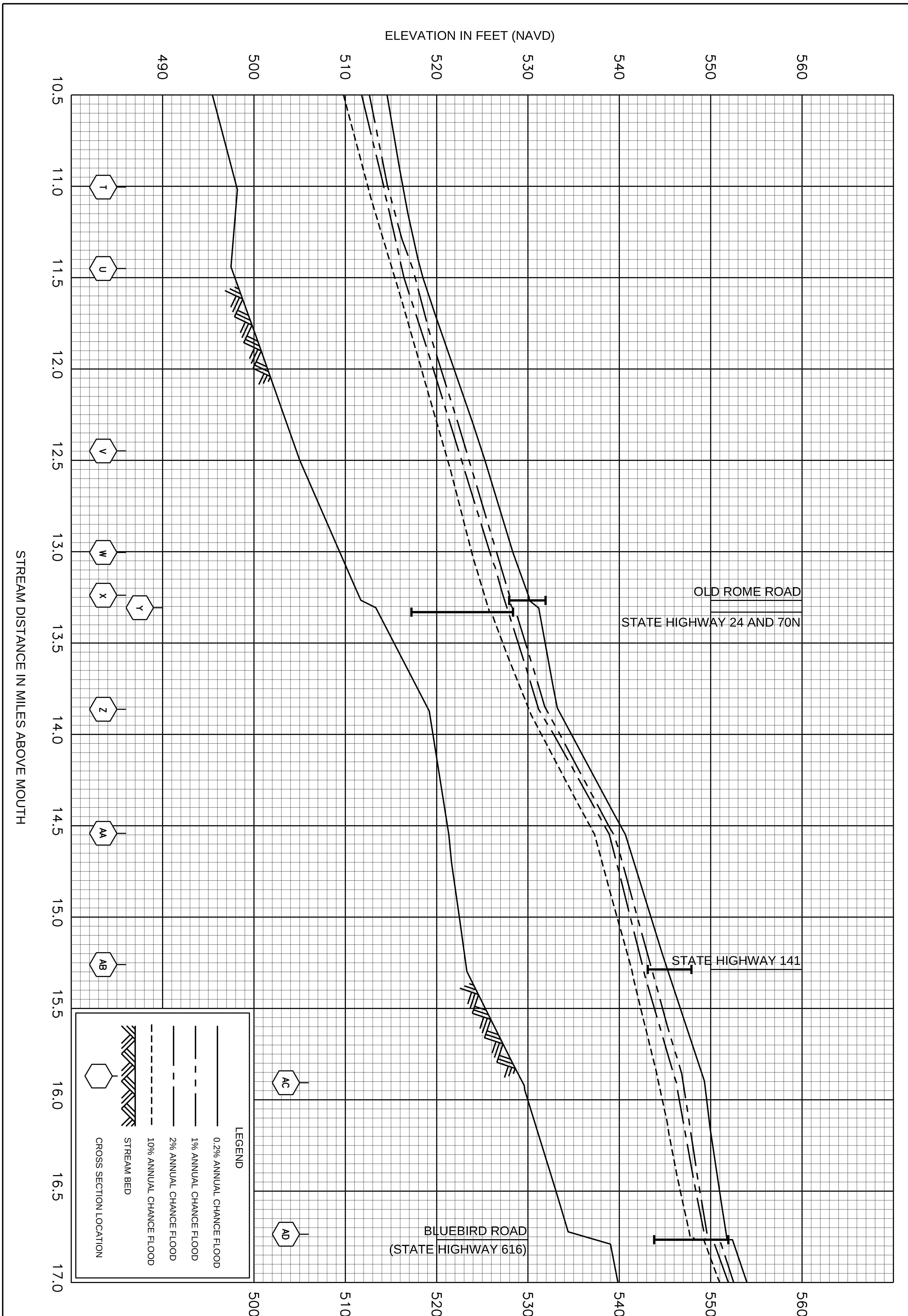
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

SPRING CREEK



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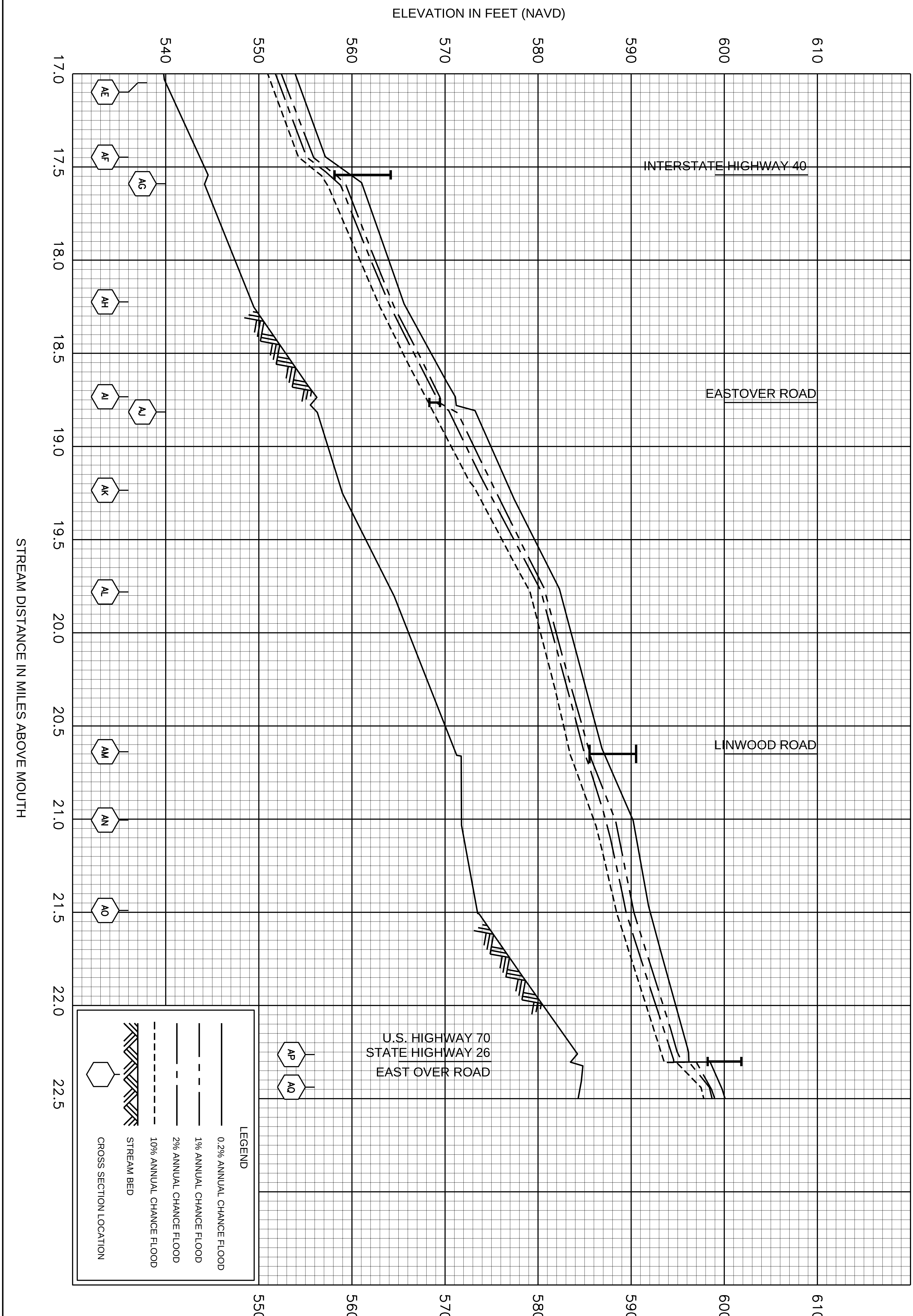
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SPRING CREEK



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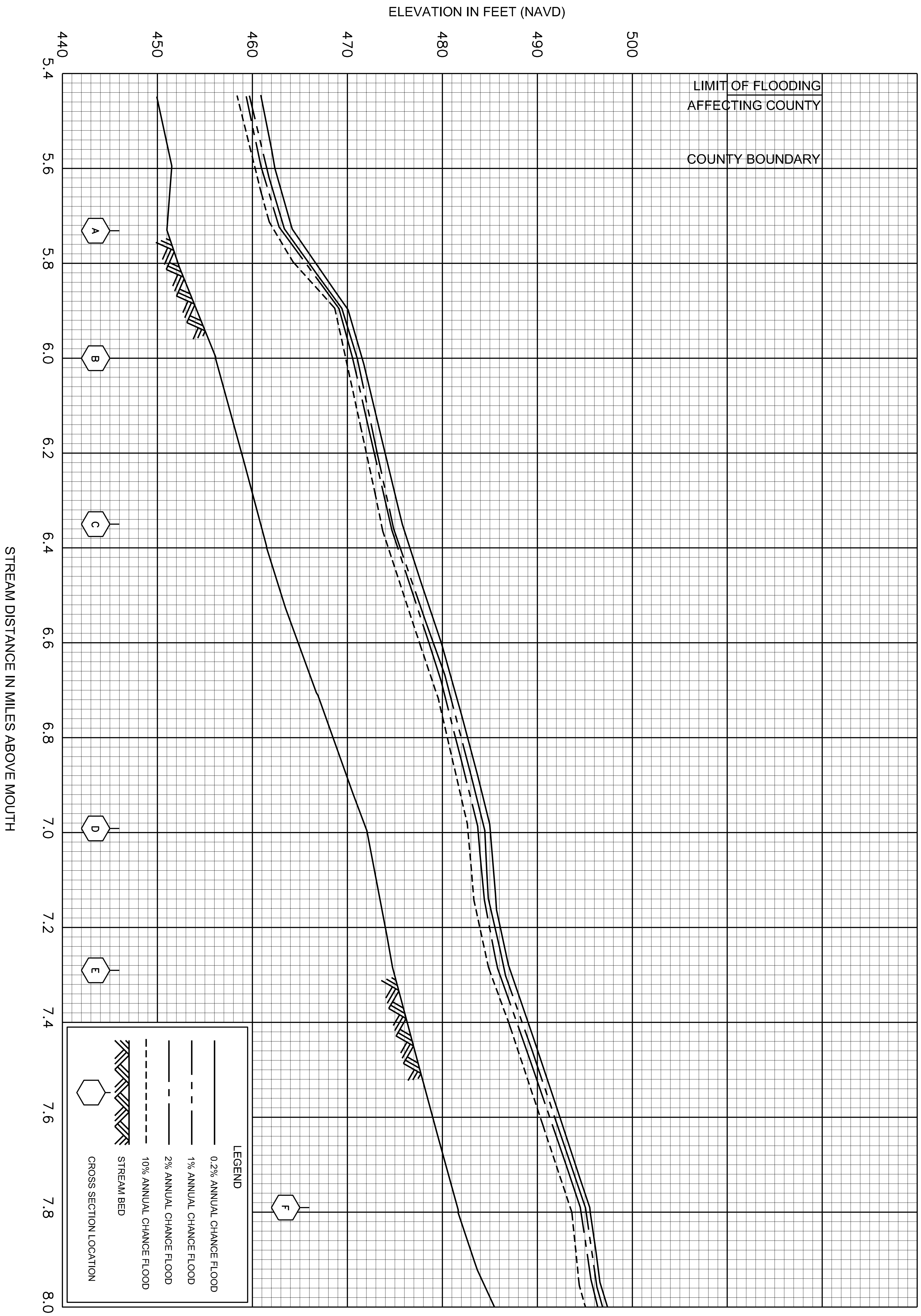
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SPRING CREEK



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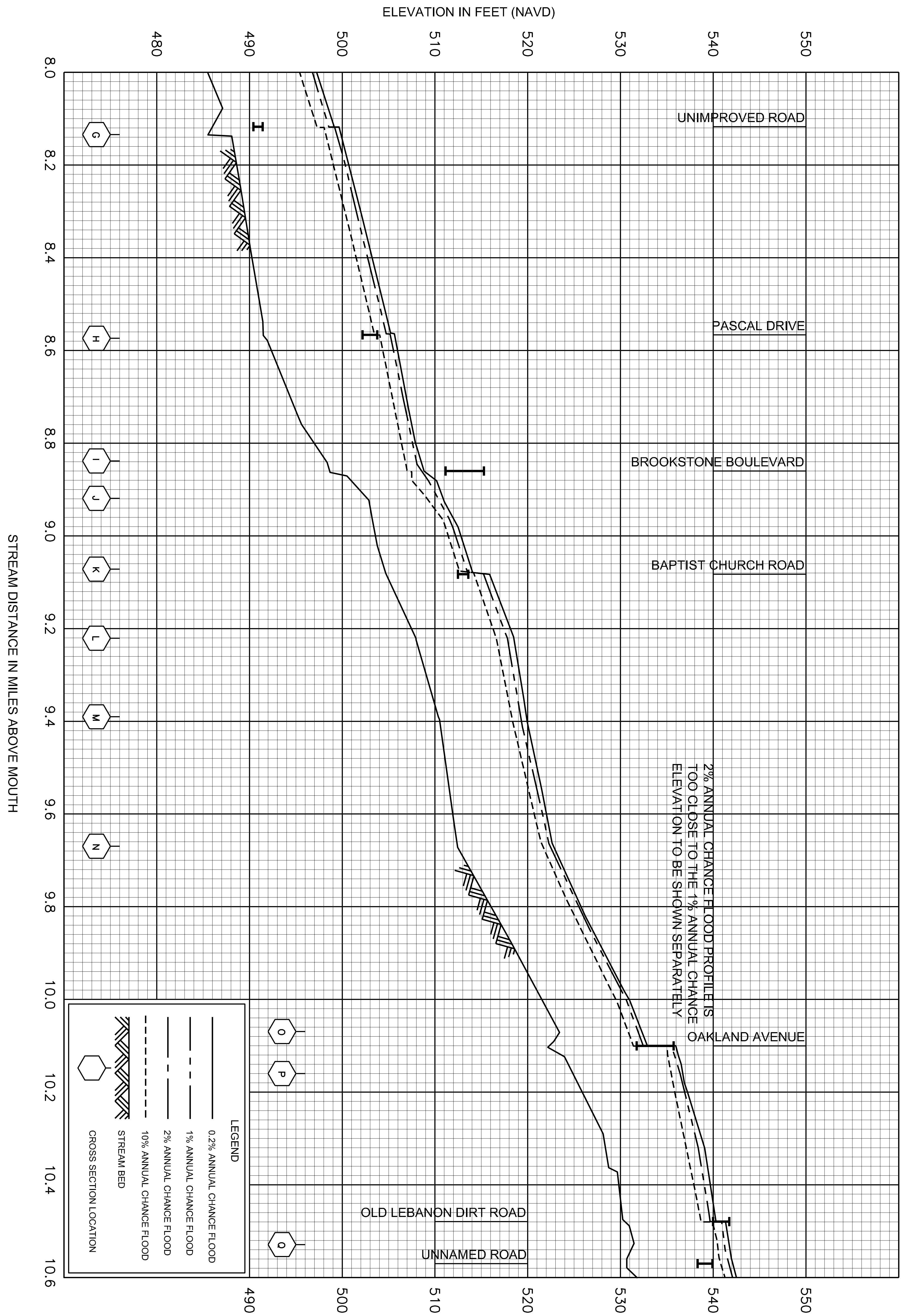
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

STONERS CREEK



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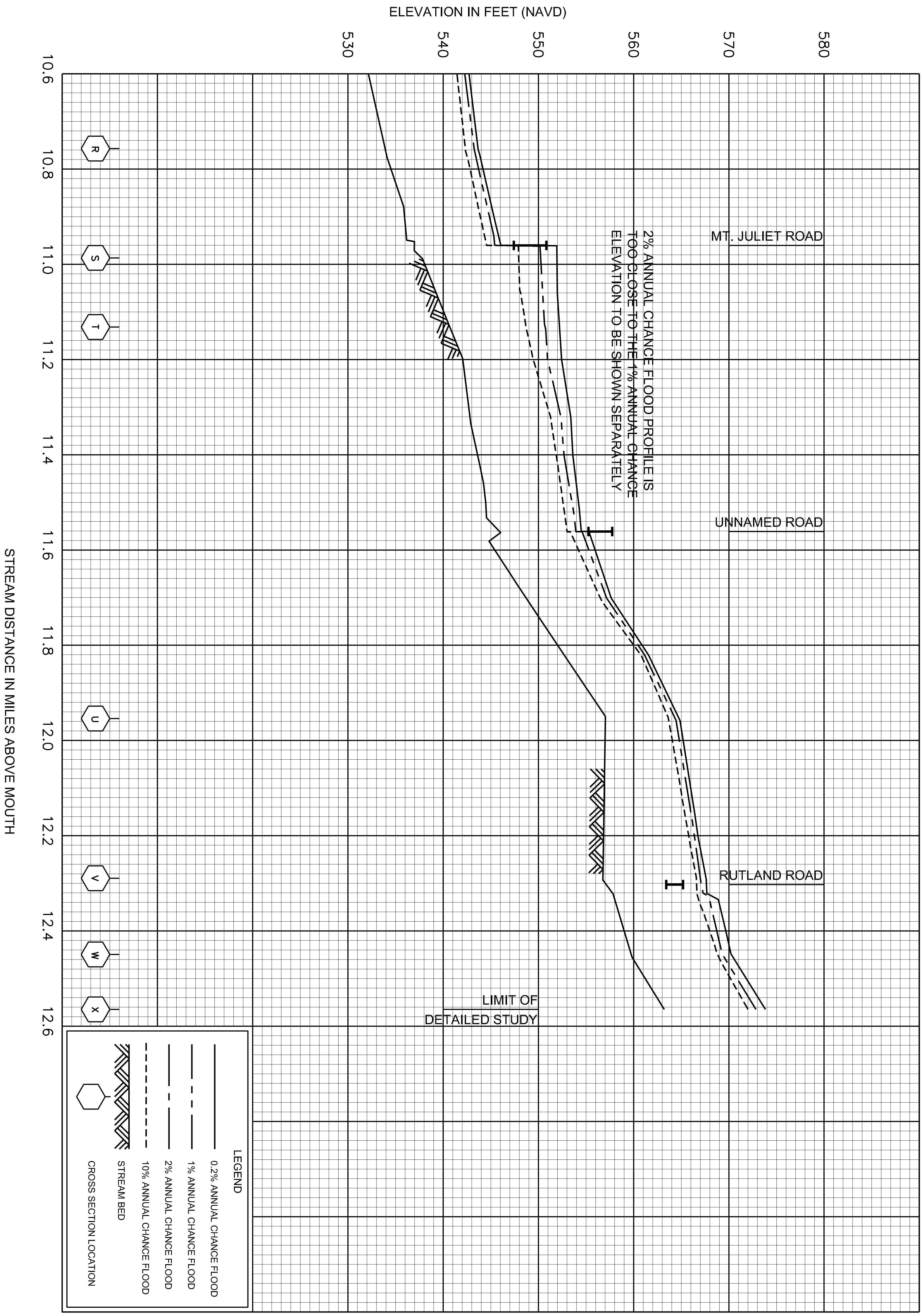
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

STONERS CREEK



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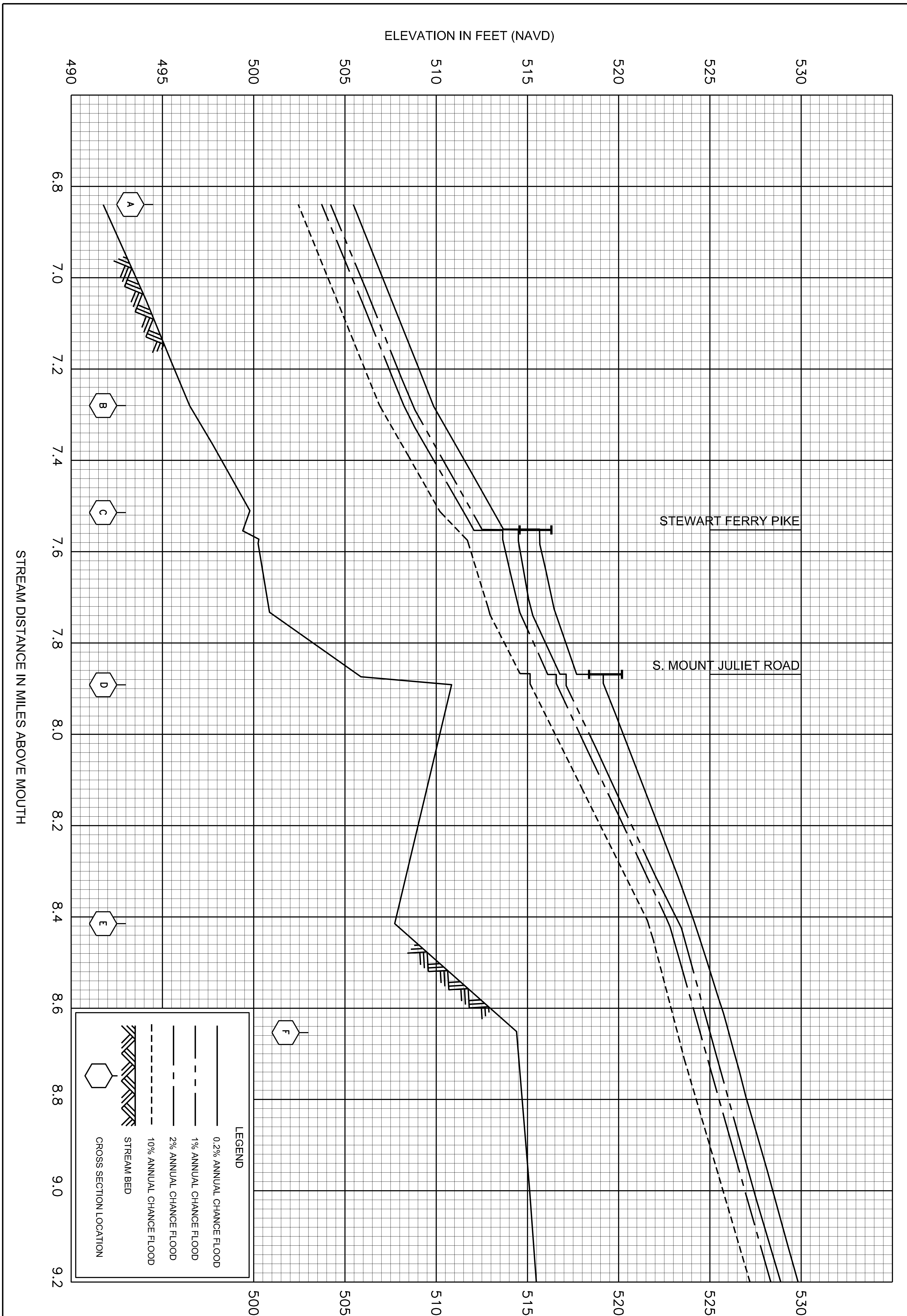
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

STONERS CREEK



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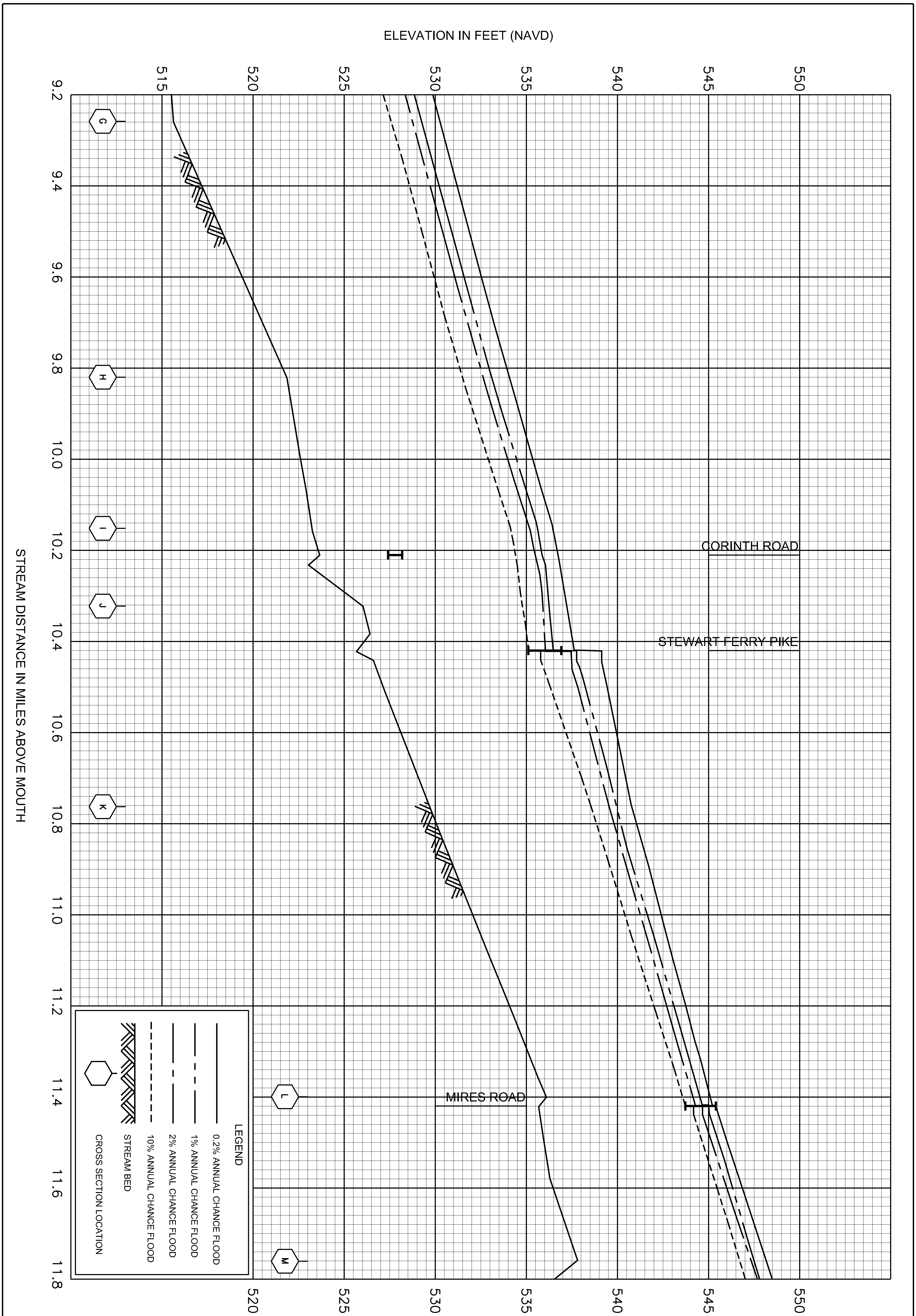
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN
AND INCORPORATED AREAS

FLOOD PROFILES

SUGGS CREEK



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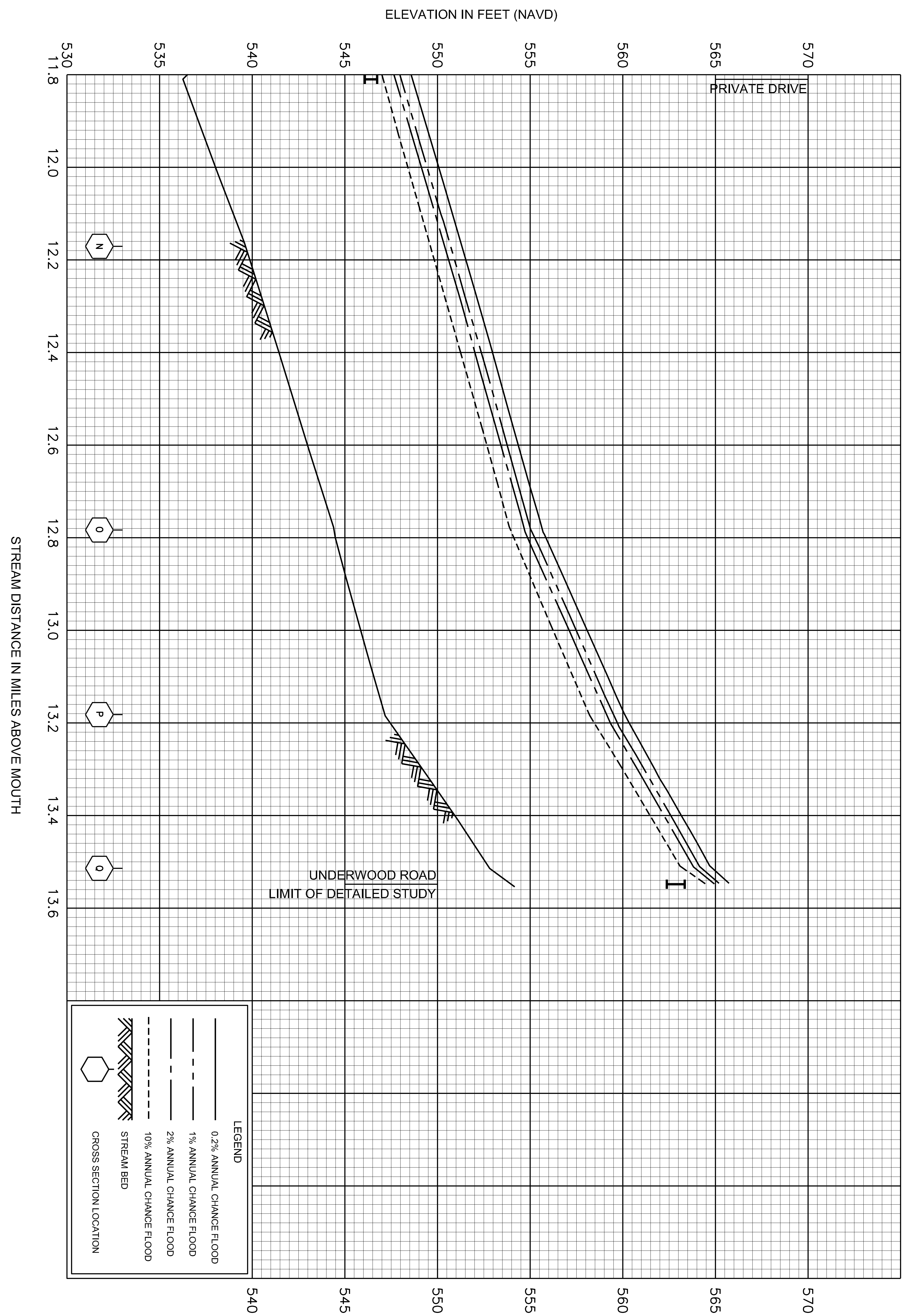
FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

SUGGS CREEK



FEDERAL EMERGENCY MANAGEMENT AGENCY

WILSON COUNTY, TN

AND INCORPORATED AREAS

FLOOD PROFILES

SUGGS CREEK

29P