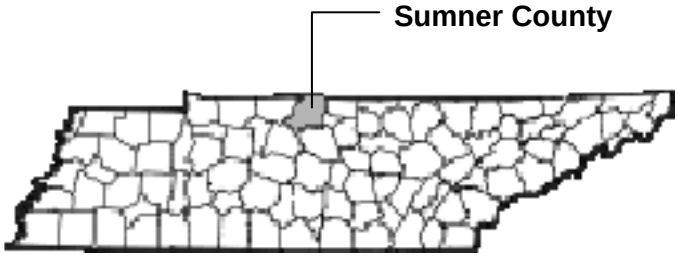
FLOOD INSURANCE STUDY

VOLUME 1 OF 2

SUMNER COUNTY, TENNESSEE
AND INCORPORATED AREAS



Community Name	Community Number
GALLATIN, CITY OF	470185
GOODLETTSVILLE, CITY OF	470287
HENDERSONVILLE, CITY OF	470186
MILLERSVILLE, CITY OF	470388
*MITCHELLVILLE, TOWN OF	470416
PORTLAND, CITY OF	470187
SUMNER COUNTY (UNINCORPORATED AREAS)	470349
WESTMORELAND, TOWN OF	470415
WHITE HOUSE, CITY OF	470339

*Non-floodprone Community

REVISED
April 17, 2012

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
47165CV001C

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 may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

This preliminary revised Flood Insurance Study contains profiles presented at a reduced scale to minimize reproduction costs. All profiles will be included and printed at full scale in the final published report.

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

Initial Countywide FIS Effective Date: November 21, 2002

First Revised Countywide FIS Date: September 20, 2006

Second Revised FIRM only Date: May 18, 2009

Second Revised Countywide FIS Date: April 17, 2012

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FLOOD INSURANCE STUDY

SUMNER COUNTY, TENNESSEE, AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Sumner County, including the Cities of Gallatin, Goodlettsville, Hendersonville, Millersville, Portland, and White House; the Towns of Mitchellville and Westmoreland; and the unincorporated areas of Sumner County (referred to collectively herein as Sumner County). The City of Goodlettsville is also located in Davidson County. The flood hazard information for the portion of the City of Goodlettsville located in Davidson County is included in the FIS for the Metropolitan Government of Nashville and Davidson County, Tennessee, and Incorporated Areas. The Cities of Millersville and White House are also located in Robertson County. They are shown in their entirety in the Sumner County FIS. The Town of Mitchellville is a non-flood prone 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 Sumner county to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

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

1.2 Authority and Acknowledgments

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

For this revision of the countywide FIS, new hydrologic and hydraulic analyses were prepared by BakerAECOM, LLC, for FEMA, under Contract No. HSFEHQ-09-D-0368, Task Order HSFE04-09-J-0066. This revised study was completed in October 2010. The following streams were included in this revised study:

- East Camp Creek
- Sink Hole Creek and Tributary
- Station Camp Creek

The original November 21, 2002, countywide FIS was prepared to include all jurisdictions within Sumner County into a countywide format FIS. Information on the authority and acknowledgments for each jurisdiction included in that countywide FIS, as compiled from their previously printed FIS reports, is shown on the following pages.

Gallatin, City of:	The hydrologic and hydraulic analyses for the February 3, 1981, FIS report were performed by the U.S. Army Corps of Engineers (USACE), Nashville District, for the Federal Insurance Administration (FIA), under Inter-Agency Agreement No. IAA-H10-77, Project Order No. 12. That work, which was completed in July 1978, covered all significant flooding sources affecting the City of Gallatin.
Goodlettsville, City of:	The hydrologic and hydraulic analyses for the December 15, 1980, FIS report were performed by the USACE, Nashville District, for the FIA, under Inter-Agency Agreement No. IAA-H-10-77, Project Order No. 12. That work, which was completed in February 1979, covered all significant flooding sources affecting the City of Goodlettsville.
Hendersonville, City of:	The hydrologic and hydraulic analyses for the FIS report dated May 4, 1981, were prepared by the USACE, Nashville District, for the FIA, under Inter-Agency Agreement No. IAA-H-10-77, Project Order No. 12. That work was completed in March 1979. For the August 16, 1995, revision, the hydrologic and hydraulic analyses were prepared by the USACE, Nashville District, for FEMA, under Inter-Agency Agreement No. EMW-90-E-3286, Project Order No. 2A. That work was completed in July 1993.
Millersville, City of:	The hydrologic and hydraulic analyses for the December 15, 1983, FIS report were performed by the USACE, Nashville District, for FEMA, under

	Inter-Agency Agreement No. IAA-H-18-78, Project Order No. 17. That work was completed in May 1982.
Sumner County (Unincorporated Areas):	The hydrologic and hydraulic analyses for the December 19, 1984, FIS report were performed by the USACE, Nashville District, for FEMA, under Inter-Agency Agreement No. IAA-H-18-78, Project Order No. 17. That study was completed in May 1982.

The authority and acknowledgments for the Cities of Portland and White House are not included because there were no previously printed FIS reports for these communities.

For the November 21, 2002, countywide FIS, the updated hydrologic and hydraulic analyses were prepared by Arcadis Geraghty & Miller, Inc., for FEMA, under Contract No. EMW-97-00-0139. That work was completed in December 1998. In addition, updated analyses for the Cumberland River were prepared by the USACE, Nashville District, for FEMA. That work was completed in December 1995.

For the September 20, 2006, countywide revision, no updated hydrologic and hydraulic analyses were prepared. Watershed IV Alliance compiled existing data to convert the previous countywide study into digital format.

Base map information shown on the FIRM was derived from multiple sources. Base map information for Sumner County and all incorporated communities within Sumner County was provided in digital format by the State of Tenessee. This information was compiled at scales of 1”=100’ and 1”=400’from aerial photography.

The coordinate system used for producing this FIRM is NAD 1983 State Plane Tennessee FIPS 4100. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the UTM 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 Consultation Coordination Officer (CCO) meeting (also occasionally referred to as the Scoping meeting) is held with representatives of the communities, FEMA, and the study contractors to explain the nature and purpose of the FIS and to identify the streams to be studied by detailed methods. A final CCO (often referred to as the Preliminary DFIRM Community Coordination, or PDCC, meeting) is held with representatives of the communities, FEMA, and the study contractors to review the results of the study.

For this revision of the countywide FIS, the initial CCO meeting was held on October 15, 2009, and attended by representatives of FEMA, BakerAECOM, LLC, community officials, and the State NFIP Coordinator.

The final CCO meeting was held on February 23, 2011 to review and accept the results of this FIS. Those who attended this meeting included representatives of BakerAECOM, the Study Contractor, FEMA, and the communities. All problems raised at that meeting have been addressed in this study.

The dates of the initial and final CCO meetings held for the communities within the boundaries of Sumner County are shown in Table 1, "Initial and Final CCO Meeting Dates."

Table 1: Initial and Final CCO Meeting Dates

Community Name	Initial CCO Date	Final CCO Date
City of Gallatin	August 25, 1976	August 8, 1980
City of Goodlettsville	August 26, 1976	June 4, 1980
City of Hendersonville	August 26, 1976	June 4, 1980
City of Millersville	November 1977	*
Sumner County (Unincorporated Areas)	November 1977	July 6, 1983
Sumner County (countywide)	March 12, 1997	August 21, 2001
Sumner County and Incorporated Areas (2006 countywide revision)	August 27, 2004	November 17, 2005

*Date not available

For the November 21, 2002, countywide FIS, an initial CCO meeting was held on March 12, 1997, and a final CCO meeting was held on August 21, 2001. Both meetings were attended by representatives of the communities, FEMA, USACE, and the study contractor. All communities were notified of the countywide FIS by letters dated February 25, 2000.

For the September 20, 2006, countywide revision, an initial CCO meeting was held on August 27, 2004, and a final CCO meeting was held on November 17, 2005. Both meetings were attended by representatives of the community, FEMA, and the study contractor.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Sumner County, Tennessee. The scope and methods of study were proposed to, and agreed upon, by FEMA and Sumner County.

For this revision, approximately 12.5 additional stream miles were studied using detailed methods, consisting of portions of East Camp Creek, Sink Hole Creek, Sink Hole Creek Tributary, and Station Camp Creek. In addition, floodplain boundaries for approximately 136 miles of streams that had been previously studied by detailed methods were redelineated based on more detailed and up-to-date topographic mapping for this FIS report.

All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. 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 hazards and areas of projected development or proposed construction.

Table 2: Flooding Sources Studied by Detailed Methods

Flooding Source	Reach Length (miles)
Albright Creek	1.56
Arterburn Branch	0.72
Bledsoe Creek	10.12
Bulls Creek	0.91
Center Point Branch	1.08
Cumberland River	42.75
Deshea Creek	5.05
Donoho Branch	0.96
Drakes Creek	9.24
Drakes Creek Left Bank Tributary No. 1	1.74
Drakes Creek Right Bank Tributary No. 1	1.31
Drakes Creek Right Bank Tributary No. 2	2.12
Drakes Creek Right Bank Tributary No. 3	2.26
Drakes Creek Unnamed Tributary	1.28
East Camp Creek	7.75
East Camp Creek*	0.69
East Camp Creek Northwest Tributary	0.51
East Camp Creek West Tributary	1.61
East Fork Bledsoe Creek	3.77
East Fork Slaters Creek	1.59
Hogan Branch	1.94

Flooding Source	Reach Length (miles)
Honey Run Creek	1.57
Jones Branch	1.67
Lick Creek	2.85
Madison Creek	4.07
Mansker Creek	9.61
Pattens Branch	1.03
Portland Channel	1.21
Rankin Branch	1.05
Sink Hole Creek	1.25
Sink Hole Creek*	1.54
Sink Hole Creek Tributary	0.86
Sink Hole Creek Tributary*	0.91
Slaters Creek	4.52
Station Camp Creek	10.02
Station Camp Creek*	0.45
Town Creek	5.16
Town Creek Left Bank Tributary 1	0.44
Town Creek Left Bank Tributary 2	1.53
Town Creek Left Bank Tributary 3	0.51
Unnamed Tributary No. 5	0.49
Willis Branch	2.17
Wix Branch	0.40

*Flooding source restudied as part of the current revision

Numerous streams were studied by approximate methods. This update include refining and establishing Zone A for approximately 123 miles of streams in addition to the 95 miles of streams from previous studies. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

This countywide FIS also incorporates the determination of letters issued by FEMA resulting in Letters of Map change as shown in Table 3,“Letters of Map Revision (LOMRs) Incorporated into Current Study.”

Table 3: Letters of Map Revision (LOMRs)
Incorporated into Current Study

Case Number	Flooding Source(s)	Communities Affected	Effective Date
03-04-039P	Madison Creek and Willis Branch	Sumner County	11/22/2002
04-04-035P	Rankin Branch	City of Gallatin	07/02/2004
07-04-5053P	Mansker Creek	City of Goodlettsville	09/19/2007
08-04-5293P	Rankin Branch	City of Gallatin	03/20/2009

2.2 Community Description

Sumner County is located in north-central Tennessee adjacent to the northeastern border of Davidson County. Sumner County's principal city and county seat, Gallatin, lies approximately 20 miles northeast of Nashville. Old Hickory Lake, which constitutes the county's southern border, is its principal recreational resource (USACE, June 1976).

The county contains 549 square miles: about 15 square miles of water and 534 square miles of land. The 2000 population was 130,449. The 2008 population was estimated to be 144,474. There are eight incorporated towns and cities in Sumner County: the Cities of Gallatin, Goodlettsville, Hendersonville, Portland, White House, and Millersville; and the Towns of Westmoreland and Mitchellville.

Sumner County's major farm crops are hay, corn, and tobacco, but the value of livestock products sold is usually more than twice that of the crops. Major manufacturing industries are fabricated metal products, furniture, leather products, and apparel.

North-central Tennessee is in the humid continental region, which is characterized by mild temperatures, sunny days, high humidity, and moderately high precipitation. Daily maximum temperatures range from 48 degrees Fahrenheit (°F) in January to 90°F in July. The average annual precipitation is 45 inches distributed throughout the year, though more rain usually falls in winter than in summer.

2.3 Principal Flood Problems

Major floods on the Cumberland River and streams in the study area have typically occurred during the late winter and early spring. Although infrequent and of short duration, summer floods have occurred following intense thunderstorms.

Backwater from the Cumberland River produces flooding on Mansker Creek and its lower tributaries. A flood approximating the 1-percent-annual-chance event occurred on the Cumberland River on March 12, 1975. This flood produced backwater extending approximately 3 miles upstream of the confluence of Mansker Creek with the Cumberland River.

Intense local rainfall in the contributing watersheds of the studied streams produces headwater floods that rise and fall rapidly. Flooding outside the channel banks of the studied streams occurs frequently, particularly in the headwater reaches.

In Portland, Donoho Branch and its tributaries flood frequently due to the topography and drainage characteristics of the area. The area is dominated by sinkholes, which typically have a flat, bowl-shaped watershed and limited discharge capacity.

2.4 Flood Protection Measures

The USACE operates flood control projects on the Cumberland River and its tributaries which significantly decrease flood levels along the Cumberland River in Sumner County.

In Portland, flooding on Donoho Branch and its tributaries has been reduced by the construction of the Portland Flood Channel. This channel allows floodwaters stored in the Donoho Branch sinkhole to flow into the Summers Branch watershed at lower elevations than before construction of the channel.

The Portland Flood Channel was designed and funded under the Watershed Protection and Flood Prevention Act by the Natural Resources Conservation Service (NRCS) and was completed in 1997. As part of the agreement between the City of Portland and the NRCS, the City agreed to regulate the 1-percent-annual-chance floodplain in compliance with the NFIP.

Nonstructural measures of flood protection are also being employed to aid in the prevention of future flood damage. These are in the form of land-use regulations adopted from the Code of Federal Regulations which control building within areas that have a high risk of flooding.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this FIS report. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

For this countywide study, hydrologic analyses were carried out to establish peak discharge frequency relationships for each flooding source studied by detailed and approximate methods affecting the community. A summary of peak discharge-drainage area relationships for streams studied by detailed methods is shown in Table 4, "Summary of Discharges."

The stillwater elevations have been determined for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for the flooding sources studied by detailed methods and are summarized in Table 5, "Summary of Stillwater Elevations."

3.1.1 Methods for Flooding Sources with New or Revised Analyses in Current Study

Discharges for the 1-percent-annual-chance recurrence interval for all new enhanced approximate, approximate study, and detailed study streams in Sumner County were determined using the Flood-Frequency Prediction Methods for Unregulated Streams of Tennessee, 2000 (WRIR 03-4176) for the hydrology computations. Sumner County, TN is located in Hydrologic Area 2 and 3 (HA2 and HA3), thereby determining the use of HA2 and HA3 regression equations in hydrologic analyses for numerous flooding sources including detailed study streams; East Camp Creek, Sink Hole Creek, Sink Hole Creek Tributary, and Station Camp Creek.

3.1.2 Methods for Flooding Sources Incorporated from Previous Studies

This section describes the methodology used in previous studies of flooding sources incorporated into this FIS that were not revised for this countywide study.

Pre-countywide Analyses

Each community within Sumner County, with the exception of the Cities of Portland and White House, and the Towns of Mitchellville and Westmoreland, has a previously printed FIS report. The hydrologic analyses described in those reports for the streams not revised in this countywide FIS have been compiled and are summarized below.

City of Gallatin

Since no suitable stream gaging data existed for the streams under study in the February 3, 1981, report, discharges for floods of the 10-, 2-, 1-, and 0.2-percent annual chance of occurrence were determined using the U.S. Geological Survey (USGS) regional regression analysis dated 1976 (U.S. Department of the Interior, 1976). In this study, drainage areas-versus-frequency discharge curves were developed for areas in Tennessee based on a regional-regression analysis of existing gaging stations, with relatively long periods of record for hydrologically similar areas.

Bulls Creek flows were modified above State Route 109 because of a fill constructed across the creek with an undersized culvert. Due to this severe restriction, the 10-, 2-, 1-, and 0.2-percent-annual-chance flood hydrographs were routed through the culvert to determine the effect on peak flows. The flood hydrographs were computed, setting the peak of the inflow hydrograph equal to the peak flows developed from the regression analysis. As a result of the routing analysis, the peak flows were reduced considerably and were incorporated into the study.

Albright Creek has a small dam constructed across the creek at River Mile 0.69. Flood hydrographs for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods were routed through the lake, setting the peak of the inflow hydrographs equal to the peak flows developed from the regression analysis. The effects of the routing on the peak flows were found to be insignificant.

City of Goodlettsville

Since no useful stream gaging data existed for the streams under study in the December 15, 1980, FIS report, discharges for floods of the 10-, 2-, 1-, and 0.2-percent annual chance of occurrence were determined using the USGS regional regression analysis dated 1976 (U.S. Department of the Interior, 1976). In this regional frequency study, drainage area-versus-frequency discharge curves were developed for areas in Tennessee based on a regional-regression analysis of existing gaging stations, with relatively long periods of record for hydrologically similar areas.

City of Hendersonville

Flood discharges for Drakes Creek were based on USGS gage No. 0342600 at Long Hollow Pike and the regional regression analysis for Tennessee developed by the USGS (U.S. Department of the Interior, 1976). Discharges were based on a weighted average of the frequency flows computed at the gage and flows developed from the regional regression analysis as outlined by the USGS. The statistical analysis of the gage covered a 22-year period, from 1955 to 1976, and followed the standard log-Pearson Type III method, as outlined by the U.S. Water Resources Council Bulletin 17 (Water Resources Council, March 1976).

Flood discharges 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. Using a conventional log-Pearson Type III flood-frequency analysis, as described in Bulletin 17, is inappropriate in this case (Water Resources Council, March 1976). A special study was conducted to develop regulated flood-frequency discharges for the Cumberland River (USACE, January 1979).

A storm-rainfall-generation computer program was used to develop a 0.5-percent-annual-chance (200-year) synthetic rainfall record for the Cumberland River basin. Significant flood-producing storms of the 0.5-percent 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 republish 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 up to and including the 1-percent event. For events of a greater magnitude than the 1-percent event, such as the 0.2-percent flood, the statistical reliability of predicted flow was poor. Estimates of the 0.2-percent flood discharges from the study were found to approximate the USACE-developed Standard Project Flood (SPF) for most of the Cumberland River. The SPF has been widely disseminated to the general public by the USACE, Nashville District, to be used for designing developments adjacent to the Cumberland River. Because of the low reliability of estimates for extremely rare events, and to maintain consistency with previously published information, the SPF was used in lieu of the 0.2-percent flood for the Cumberland River.

For detailed study of the ungaged streams, flood discharges were determined using USGS regional regression analysis (U.S. Department of the Interior, 1976).

Because of the relatively small drainage area for Drakes Creek Unnamed Tributary, peak discharges were determined using the Soil Conservation Service (SCS) unit hydrograph method within the USACE HEC-1 hydrology computer program (USACE, January 1984).

City of Millersville

Hydrologic data used in the December 15, 1983, FIS report was taken from the Sumner County, Tennessee, FIS (FEMA, December 1984).

Discharges for floods of the 10-, 2-, 1-, and 0.2-percent annual chance of occurrence were determined using the USGS regional regression analysis dated 1976 (U.S. Department of the Interior, 1976).

Sumner County (Unincorporated Areas)

Flood discharges 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 (WRC) Bulletin 17 (Water Resources Council, March 1976), is not appropriate in this case. A special study was conducted to develop regulated flood frequency flows for the Cumberland River (USACE, January 1979).

A storm generation computer program was used to develop a 0.5-percent-annual-chance synthetic rainfall record for the Cumberland River basin. Significant flood-producing storms of the 0.5-percent 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 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 up to and including the 1-percent-annual-chance event. For events greater in magnitude than the 1-percent annual chance, the statistical reliability of predicted flow was poor. Estimates of the 0.2-percent-annual-chance flood discharges from the study were found to approximate the USACE for the majority of the Cumberland River. Since the SPF has been widely disseminated to the general public by the Nashville District to be used in designing developments adjacent to the Cumberland River and since estimates for extremely rare events are not very reliable, this study uses the SPF instead of the 0.2-percent-annual-chance flood for the Cumberland River.

Since no useful stream gaging data existed for the other streams under study in the December 19, 1984, FIS report, discharges for floods of the 10-, 2-, 1-, and 0.2- percent annual chance of occurrence were determined using the USGS regional regression analysis dated 1976 (U.S. Department of the Interior, 1976).

November 21, 2002, Countywide Analysis

Flood discharges for Drakes Creek were developed by the USACE and were based on USGS gage No. 0342600 at Long Hollow Pike and the regional regression analysis for Tennessee developed by the USGS (U.S. Department of the Interior, 1976). Discharges were based on a weighted average of the frequency of flows computed at the gage and flows developed from the regional regression analysis as outlined by the USGS.

The statistical analysis of the gage covered a 21-year period from 1955 to 1976 and followed the standard log-Pearson Type III method, as outlined by the U.S. Water Resources Council Bulletin 17.

Flood discharges on the Cumberland River are regulated by a system of large flood-control reservoirs. Because of varying levels of historical flood control, stream flow records exhibit a time-variant behavior. Using a conventional log-Pearson Type III flood-frequency analysis, as described in Bulletin 17, is inappropriate in this case. A special study was conducted by the USACE to develop regulated flood-frequency discharges for the Cumberland River. This is the same methodology as referenced above under pre-countywide hydrologic analyses. The longer period of record was incorporated in the analysis.

Flood discharges for Donoho Branch and Portland Flood Channel were taken from the NRCS study for the flood channel project (SCS, July 1984). The NRCS study includes the effects of storage in the sinkhole and the flood channel. Regional regression equations (U.S. Department of the Interior, 1993) were used

to determine flood discharges for Donoho Branch upstream of the sinkhole and for Summers Branch downstream of Portland Flood Channel.

For detailed study of the remaining streams in the study, flood discharges were determined using USGS regional regression analysis (U.S. Department of the Interior, 1976; 1993). This method relates drainage area to peak discharge for hydrologically similar streams.

September 20, 2006, Countywide Revision

No hydrologic analyses were carried out for the 2006 countywide revision.

Table 4: Summary of Discharges

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
ALBRIGHT CREEK					
At County Route, at river mile 0.15	1.70	880	1,310	1,530	1,990
Above Left Bank Tributary, at river mile 0.43	1.33	670	1,010	1,170	1,530
ARTERBURN BRANCH					
At mouth	4.09	1,340	2,130	2,480	3,350
Upstream end of study, river mile 0.74	1.66	720	1,140	1,330	1,810
BLEDSOE CREEK					
At river mile 5.68	92.5	17,183	25,440	29,161	38,431
At river mile 9.76	70.9	14,177	21,007	24,086	31,709
At river mile 10.27	55.8	11,923	17,680	20,276	26,667
At river mile 12.93	38.7	9,152	13,585	15,585	20,468
At river mile 15.48	22.9	6,262	9,310	10,452	14,006
BULLS CREEK					
At mouth	0.98	490	840	990	1,275
At Woods Ferry Road	0.67	298	400	423	473
CENTER POINT BRANCH					
At mouth	2.60	1,360	2,060	2,380	3,130
Upstream end of study, river mile 1.05	1.24	830	1,250	1,450	1,910

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
CUMBERLAND RIVER					
At Cheatham-Davidson County boundary, river mile 165	13,125 (9,790)[1]	115,000	140,000	155,000	180,000*
Upstream of Stones River, river mile 205.9	11,748 (8,898)[1]	130,000	165,000	176,000	193,000*
River mile 216.2 at Old Hickory Dam	11,694	120,000	146,000	158,000	193,000*
DESHEA CREEK					
At mouth	13.75	4,350	6,450	7,400	9,700
At river mile 2.03	11.06	3,700	5,500	6,350	8,300
At river mile 2.38	9.00	3,200	4,750	5,450	7,150
At river mile 3.35	6.48	2,510	3,750	4,300	5,600
DRAKES CREEK					
At U.S. Route 31E	38.1	9,100	13,400	15,400	20,400
Above Drakes Creek Right Bank Tributary No. 2	35.4	8,600	12,800	14,600	19,200
Above Drakes Creek Right Bank Tributary No. 3	29.6	7,500	11,200	12,900	16,900
At Stop Thirty Road	23.9	6,700	9,900	11,400	15,000
At Drakes Creek Road	20.9	6,200	9,200	10,600	13,900
At Long Hollow Pike	19.2	5,100	7,500	8,700	11,300

[1] Area controlled by upstream flood-control reservoir

* Standard Project Flood

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
DRAKES CREEK (continued)					
At Lattimer Lane	16.4	4,920	7,320	8,410	11,000
At Shell Road	10.0	3,440	5,130	5,890	7,690
DRAKES CREEK LEFT BANK TRIBUTARY NO. 1					
At mouth	0.78	520	780	910	1,175
At Stop Thirty Road	0.70	370	560	650	845
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 1					
At mouth	0.99	610	858	1,070	1,400
At Old Shackle Island Road	0.87	485	713	860	1,113
At New Shackle Island Road	0.51	318	523	570	728
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 2					
At mouth	1.69	935	1,400	1,620	2,115
At Wessington Place	1.62	835	1,290	1,450	1,890
At New Shackle Island Road	1.23	675	1,050	1,180	1,535
At Forest Retreat Road	0.49	360	545	630	825
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 3					
At mouth	3.50	1,570	2,350	2,730	3,525
Above Unnamed Tributary at river mile 0.55	2.58	1,250	1,885	2,150	2,850

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 3 (continued)					
At New Shackle Island Road	2.39	1,145	1,725	1,990	2,610
DRAKES CREEK UNNAMED TRIBUTARY					
At mouth	0.32	191	294	343	411
EAST CAMP CREEK*					
Approximately 1,150 feet downstream of U.S. Highway 31	33.18	7,992	11,397	12,880	16,328
Approximately 600 feet upstream of U.S. highway 31	32.78	7,942	11,325	12,798	16,222
Approximately 100 feet upstream of Railroad	32.67	7,927	11,304	12,775	16,192
Approximately 1,800 feet upstream of Railroad	20.54	5,726	8,182	9,239	11,668
Approximately 600 feet downstream of State Highway 174	19.74	5,555	7,941	8,968	11,328
Approximately 220 feet upstream of State Highway 174	17.65	5,102	7,304	8,252	10,430
Approximately 1,100 feet downstream of State Highway 109 Bypass	17.63	5,098	7,298	8,245	10,422
Approximately 300 feet upstream of State Highway 109 Bypass	16.99	4,956	7,099	8,021	10,141
Approximately 1,300 feet upstream of State Highway 109 Bypass	16.88	4,930	7,062	7,980	10,089

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
EAST CAMP CREEK* (continued)					
Approximately 150 feet upstream of Red River Road	16.32	4,805	6,887	7,782	9,841
Approximately 1,950 feet upstream of Red River Road	13.74	4,216	6,056	6,846	8,667
Approximately 80 feet upstream of Old Douglas Road	12.57	3,939	5,665	6,406	8,114
Approximately 390 feet upstream of Old Douglas Road	8.03	2,801	4,052	4,588	5,827
Approximately 190 feet upstream of Railroad	7.97	2,786	4,030	4,563	5,796
Approximately 2,850 feet upstream of Railroad	7.23	2,587	3,747	4,245	5,394
At river mile 9.25	2.50	1,425	2,200	2,475	3,250
EAST CAMP CREEK NORTHWEST TRIBUTARY					
At mouth	0.90	550	830	970	1,270
EAST CAMP CREEK WEST TRIBUTARY					
At mouth	2.06	1,020	1,520	1,770	2,330
Above East Camp Creek Northwest Tributary	0.79	410	620	725	940
EAST FORK BLEDSOE CREEK					
At confluence with Bledsoe Creek	9.80	3,400	5,050	5,800	7,580

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
EAST FORK SLATERS CREEK					
At mouth	2.38	1,290	1,940	2,240	2,950
Upper end of study, mile 1.60	1.24	830	1,250	1,450	1,910
HOGAN BRANCH					
At mouth	2.96	1,450	2,150	2,500	3,200
Upstream end of study, mile 1.92	1.40	900	1,360	1,570	2,070
HONEY RUN CREEK					
At Sumner County line	10.10	2,550	3,980	4,620	6,210
At confluence with Jones Branch	8.19	2,200	3,440	4,000	5,380
JONES BRANCH					
At mouth	4.10	1,350	2,130	2,480	3,360
Upstream end of study, mile 1.71	1.08	530	840	990	1,350
LICK CREEK					
River mile 1.67	7.59	2,800	4,200	4,850	6,300
Upstream of river mile 1.67	5.94	2,175	3,265	3,775	4,900
River mile 2.97	3.88	1,575	2,365	2,750	3,575
River mile 3.80	2.84	1,385	2,075	2,385	3,100
MADISON CREEK					
At mouth	9.68	3,280	4,880	5,610	7,380
At Willis Branch	6.97	2,560	3,820	4,390	5,780

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
MADISON CREEK (continued)					
Above Long Hollow Pike	4.15	1,870	2,820	3,250	4,270
At confluence of Pattens Branch	3.50	1,670	2,520	2,900	3,810
Upstream end of study	0.97	700	1,060	1,230	1,620
MANSKER CREEK					
At mouth	46.83	10,430	15,480	17,760	23,250
Above Center Point Branch	43.32	9,890	14,670	16,803	22,040
Above Madison Creek	33.13	8,010	11,900	13,650	17,890
Upstream of Goodlettsville Outlet Ditch	29.61	7,490	11,130	12,770	16,750
Upstream of Left Bank Tributary, Mile 3.99	28.18	7,240	10,750	12,340	16,180
Upstream of Slaters Creek	19.91	5,660	8,420	9,660	12,690
Upstream of Lumsley Fork	16.59	4,950	7,370	8,460	11,110
Upstream of Walker Creek	5.26	2,120	3,170	3,640	4,800
At U.S. Route 41	4.97	1,930	2,875	3,310	4,360
At Williamson Branch	3.87	1,790	2,700	3,100	4,080
At Bakers Creek Road	2.45	1,310	1,980	2,280	3,010
Upstream end of study, mile 9.67	0.70	560	850	990	1,300
PATTENS BRANCH					
At mouth	1.61	990	1,500	1,720	2,270
Upstream end of study, mile 1.04	0.86	650	980	1,130	1,500

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
PORTLAND CHANNEL-DONOHO BRANCH					
At College Street	2.00	480	740	845	1,120
At State Route 109	0.09	660	1,000	1,160	1,530
RANKIN BRANCH					
Approximately 900 feet downstream of the dam	1.62	549	925	1,079	4,945
At the dam	1.62	962	1,464	1,666	6,110
Approximately 1,300 feet downstream of Nashville Pike	1.08	440	623	688	3,024
SINK HOLE CREEK*					
At Newton Lane	2.48	1,145	1,681	1,911	2,444
Approximately 400 feet upstream of Newton Lane	1.15	640	950	1,082	1,390
At upstream of the confluence with Sink Hole Creek Tributary	0.33	248	373	427	552
Approximately 500 feet upstream of Industrial Blvd	0.17	149	227	260	338
Approximately 450 feet upstream of Airport Driveway	0.09	91	140	160	209
SINK HOLE CREEK TRIBUTARY*					
At mouth	0.60	388	580	662	854
Approximately 1,450 feet downstream of Airport Road	0.08	81	124	143	186

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
SINK HOLE CREEK TRIBUTARY* (continued)					
Approximately 300 feet upstream of Airport Road	0.02	25	39	45	59
SLATERS CREEK					
At mouth	7.78	2,710	4,045	4,645	6,120
Goodlettsville corporate limits	6.93	2,650	3,990	4,580	6,010
Confluence of East Fork Slaters Creek	5.96	2,390	3,600	4,140	5,440
Above East Fork Slaters Creek	3.58	1,700	2,560	2,940	3,870
Upper end of study, mile 4.50	1.41	900	1,370	1,580	2,080
STATION CAMP CREEK*					
At Lower Station Camp Road	41.71	9,007	12,856	14,536	18,461
Approximately 840 feet upstream of Lower Station Camp Road	40.66	8,888	12,686	14,342	18,211
Approximately 440 feet downstream of Railroad	40.35	8,853	12,635	14,284	18,137
Approximately 210 feet upstream of Railroad	40.06	8,819	12,587	14,230	18,066
Approximately 400 feet upstream of State Highway 386	39.78	8,786	12,539	14,176	17,997
Approximately 200 feet downstream of Pilot Knob Lane	38.72	8,663	12,362	13,975	17,737
Approximately 330 feet upstream of Pilot Knob Lane	38.67	8,658	12,355	13,967	17,727

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
STATION CAMP CREEK* (continued)					
Approximately 870 feet upstream of Pilot Knob Lane	37.45	8,514	12,147	13,731	17,424
Approximately 1,600 feet downstream of Saundersville Road	37.08	8,469	12,083	13,658	17,330
Approximately 190 feet downstream of Saundersville Road	35.90	8,328	11,880	13,427	17,033
Approximately 1,200 feet downstream of Jenkins Lane	34.65	8,175	11,660	13,179	16,712
Approximately 150 feet upstream of Jenkins Lane	34.63	8,172	11,656	13,174	16,707
Approximately 2,100 feet upstream of Jenkins Lane	33.85	8,075	11,516	13,015	16,502
Approximately 1,450 feet downstream of State Highway 174	32.54	7,911	11,281	12,748	16,158
Approximately 290 feet upstream of State Highway 174	30.84	7,691	10,965	12,390	15,697
Approximately 200 feet upstream of Liberty Lane	30.47	7,643	10,896	12,312	15,597
Approximately 810 feet upstream of Liberty Lane	29.44	7,529	10,708	12,078	15,221
Above Brinkley Branch	24.80	6,630	9,860	11,300	14,800
Above Liggett Branch	21.40	5,960	8,870	10,200	13,300
Above Pee Dee Creek	15.50	2,880	4,290	4,930	6,430

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
TOWN CREEK					
At Lock 4 Road	9.10	3,200	4,800	5,500	7,200
Above Town Creek Left Bank Tributary 1	6.56	2,500	3,800	4,400	5,700
At Maple Street	5.10	2,100	3,200	3,600	4,700
At Railroad	4.97	2,100	3,100	3,500	4,600
At West Main Street	4.74	2,000	3,000	3,400	4,500
At South Water Avenue	4.29	1,900	2,800	3,200	4,200
Above Unnamed Tributary, at river mile 3.79	3.80	1,400	2,000	2,300	3,000
Above Town Creek Left Bank Tributary 3	0.97	640	960	1,100	1,420
At Gibbs Lane	0.59	450	670	770	990
TOWN CREEK LEFT BANK TRIBUTARY 1					
At mouth	1.09	625	900	1,090	1,420
At river mile 0.41	0.33	275	415	490	630
TOWN CREEK LEFT BANK TRIBUTARY 2					
At mouth	1.13	675	1,010	1,180	1,550
At South Water Avenue	1.01	575	860	1,000	1,310
At South Westland Avenue	0.69	390	590	690	880
TOWN CREEK LEFT BANK TRIBUTARY 3					
At mouth	1.05	580	710	820	1,080
UNNAMED TRIBUTARY NO. 5					
At mouth	1.08	750	1,140	1,320	1,740

Table 4: Summary of Discharges (continued)

Flooding Source and Location	Drainage Area (Square miles)	Peak Discharges (Cubic Feet per Second) 10-percent	2-percent	1-percent	0.2-percent
WILLIS BRANCH					
At mouth	2.02	1,030	1,540	1,780	2,350
At a point approximately 100 feet downstream of County Road	1.43	700	1,040	1,210	1,590
At a point approximately 1.0 mile upstream of County Road	0.56	380	570	650	870

*Flooding source studied with new studies as part of the current revision

Table 5: 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
OLD HICKORY LAKE				
At East Camp Creek	450.2	451.1	451.4	452.8

*North American Vertical Datum of 1988

3.2 Hydraulic Analyses

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

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).

Roughness coefficients (Manning's “n”) used in the hydraulic computations were chosen by engineering judgment and based on field observation of the channel and floodplain areas. Table 6, “Summary of Roughness Coefficients,” contains the channel and overbank "n" values for the streams studied by detailed methods.

Table 6: Manning’s “n” Values

Stream	Channel “n”	Overbank “n”
Albright Creek	0.050-0.060	0.100-0.150
Arterburn Branch	0.050-0.060	0.055-0.130
Bledsoe Creek	0.060	0.100
Bulls Creek	0.050	0.100-0.110

Stream	Channel “n”	Overbank “n”
Center Point Branch	0.050-0.060	0.080-0.100
Cumberland River	0.025-0.030	0.050-0.100
Deshea Creek	0.050	0.090
Drakes Creek	0.030-0.065	0.100-0.115
Drakes Creek Left Bank Tributary No. 1	0.040-0.050	0.100-0.110
Drakes Creek Right Bank Tributary No. 1	0.040-0.050	0.100-0.110
Drakes Creek Right Bank Tributary No. 2	0.040-0.050	0.100-0.110
Drakes Creek Right Bank Tributary No. 3	0.040-0.050	0.100-0.110
Drakes Creek Unnamed Tributary	0.040-0.050	0.100-0.110
East Camp Creek*	0.045	0.015-0.110
East Camp Creek Northwest Tributary	0.050	0.100-0.110
East Camp Creek West Tributary	0.050	0.100-0.110
East Fork Bledsoe Creek	0.060	0.100
East Fork Slaters Creek	0.040-0.050	0.100
Hogan Branch	0.045	0.100
Honey Run Creek	0.045-0.055	0.055-0.120
Jones Branch	0.045-0.060	0.055-0.120
Lick Creek	0.045	0.080
Madison Creek	0.035-0.090	0.045-0.100
Mansker Creek	0.032-0.050	0.060-0.125
Pattens Branch	0.050-0.065	0.065-0.080
Portland Channel-Donoho Branch	0.050-0.080	0.060-0.120
Sink Hole Creek*	0.045	0.110
Sink Hole Creek Tributary*	0.045	0.110
Slaters Creek	0.060-0.070	0.080-0.100
Station Camp Creek*	0.040-0.050	0.015-0.150
Town Creek	0.050	0.100-0.110
Town Creek Left Bank Tributary 1	0.050	0.100-0.110
Town Creek Left Bank Tributary 2	0.050	0.100-0.110

Stream	Channel "n"	Overbank "n"
Town Creek Left Bank Tributary 3	0.050	0.100-0.110
Unnamed Tributary No. 5	0.045	0.070
Willis Branch	0.045-0.060	0.080-0.125

*Flooding source studied with new studies as part of the current revision

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

3.2.1 Methods for Flooding Sources with New or Revised Analyses in Current Study

East Camp Creek, Sink Hole Creek, Sink Hole Creek Tributary, and Station Camp Creek have been studied by new detailed methods with up-to-date stream channel configurations.

Analyses of the hydraulic characteristics of flooding from the sources studied by enhanced approximate and approximate methods were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Water-surface profiles were computed for enhanced approximate, approximate study streams, and detailed study streams through the use of the USACE HEC-RAS version 4.0.0 computer program (USACE, 2008). Water surface profiles were produced for the 1-percent-annual-chance storms for enhanced approximate and approximate studies.

The enhanced approximate and approximate study methodology used Watershed Information System (WISE) as a preprocessor to HEC-RAS. Tools within WISE allowed the engineer to verify that the cross-section data was acceptable (Watershed Concepts, 2008). The WISE program was used to generate the input data file for HEC-RAS. Then HEC-RAS was used to determine the flood elevation at each cross section of the modeled stream. No floodway was calculated for streams studied by approximate methods.

3.2.2 Methods for Flooding Sources Incorporated from Previous Studies

Pre-countywide Analyses

For each community within Sumner County that has a previously printed FIS report, the hydraulic analyses described in those reports have been compiled and are summarized below.

<u>City of Gallatin</u>

Cross sections for East Camp Creek and Town Creek were taken from the Flood Plain Information report on Gallatin, Tennessee (USACE, March 1976) and

supplemented with additional cross sections surveyed in 1977. Cross sections for all other streams studied in detail were surveyed in 1977.

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, December 1968). Starting water-surface elevations were calculated using the slope/area method for all streams in the study area. Headwater profiles were developed without regard to backwater in order that encroachment stations for the floodways could be properly defined.

The hydraulic analysis used for streams studied by approximate methods was based on normal-depth calculations and topographic maps at a scale of 1:24,000, enlarged to 1:4,800, with a contour interval of 20 feet (U.S. Department of the Interior, 1953, et cetera).

City of Goodlettsville

Cross sections for all streams studied in detail were field surveyed. All bridges and culverts were field checked to obtain elevation data and structural geometry except for the proposed new Long Hollow Pike Road over Mansker Creek near Old Long Hollow Pike. These data were taken from plans furnished by the Tennessee Department of Transportation for the Mansker Creek crossing, and for the Goodlettsville Outlet Ditch, which was altered by the interchange.

Water-surface elevations of floods of the selected recurrence intervals were computed through use of the USACE HEC-2 step-backwater computer program (USACE, November 1976). Starting water-surface elevations were calculated using the slope/area method for all streams in the study area. Headwater profiles were developed without regard to backwater in order that encroachment stations for the floodways could be properly defined.

City of Hendersonville

For the original study, cross sections for Drakes Creek were obtained from a flood hazard information report and supplemented by field surveys (USACE, February 1971). Cross sections for all other streams were field surveyed.

For the August 16, 1995, FIS, cross sections for Drakes Creek, Drakes Creek Unnamed Tributary, Drakes Creek Right Bank Tributary No. 2, Drakes Creek Left Bank Tributary No. 1, and Drakes Creek Right Bank Tributary No. 3 were obtained from field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

For the August 16, 1995, FIS, water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, May 1991).

Starting water-surface elevations for the Cumberland River were established by the operating criteria for Barkley Dam (FEMA May, 1984). For the remainder of

the streams studied in detail, starting water-surface elevations were calculated using the slope/area method (FEMA May, 1981 and August, 1995). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

City of Millersville

Water-surface elevations of floods of the selected recurrence intervals were computed by using the USACE HEC-2 backwater computer program (USACE, November 1976). Starting water-surface elevations were calculated using the slope/area method.

Sumner County (Unincorporated Areas)

Water-surface elevations of floods of the selected recurrence intervals were computed through use of the USACE HEC-2 step-backwater computer program (USACE, November 1976). Starting water-surface elevations for all streams in the study area were calculated using the slope/area method except for the Cumberland River. Since profiles for the Cumberland River were developed continuously for a 283-mile reach extending from Barkley Dam to Cordell Hull Dam, its starting elevations were established by the operating criteria for the Barkley Project.

A depth-area relationship, also developed by the USGS, was used for the streams studied by approximate methods 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.

November 21, 2002, Countywide Analysis

For previously studied streams that were revised, flood elevations were computed using the USACE HEC-2 step-backwater program. For previously unstudied streams, the flood elevations were computed using the USACE HEC-RAS step-backwater program. Starting water-surface elevations were calculated using the slope/area method. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Due to changes in stream distances represented on the flood profile downstream of the Old Hickory Dam, stream distances have been revised for the entire reach of the Cumberland River within Sumner County.

September 20, 2006, Countywide Revision

No hydraulic analyses were carried out for the September 20, 2006, countywide revision.

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 used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the completion of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD 88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. It is important to note that adjacent counties may be referenced to NGVD, which may result in differences in base flood elevations (BFEs) across county lines.

Ground, structure, and flood elevations based on NAVD 88 in Sumner County can be compared and/or referenced to NGVD 29 by applying a conversion factor. To convert elevations from NAVD 88 to NGVD 29, add 0.23 foot to the NAVD 88 elevation. The 0.23-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 regarding conversion between the NGVD and NAVD, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA, June 1992), visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

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

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 report 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 a 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data tables, and Summary of

Stillwater Elevation tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed or limited detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

The 1- and 0.2-percent-annual-chance floodplain boundaries for streams studied by detailed methods are shown on the FIRM. 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.

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

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 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 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 and provided in Table 7, “Floodway Data.” The computed floodway is 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 on the FIRM.

Cumberland River and Mansker Creek have floodways that extend beyond the county boundary.

A floodway was computed for the Cumberland River downstream of Old Hickory Dam; however, cross sections used to compute this floodway were located downstream of the county boundary and are, therefore, not shown in Table 7.

For the portion of the Cumberland River between River Miles 216.14 and 248.44, the floodway shown on the FIRM was designated using the shorelines. The Old Hickory Dam located at River Mile 216.14 creates an impoundment effect upstream; therefore, a decision was made to use a designated floodway in this area. Both the computed floodway and designated floodway are listed in the Floodway Data Table.

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 listing of stream velocities at selected cross sections is presented in Table 7, "Floodway Data." 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.

Near the confluence of streams studied in detail, floodway computations were made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 7, "Floodway Data," for certain downstream cross sections of Albright Creek, Center Point Branch, Deshea Creek, Drakes Creek, Drakes Creek Right Bank Tributary No. 1, Drakes Creek Right Bank Tributary No. 2, Drakes Creek Right Bank Tributary No. 3, East Camp Creek, East Camp Creek West Tributary, East Fork Bledsoe Creek, Lick Creek, Madison Creek, and Mansker 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 the BFEs 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 (WSEL) of the base flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1, "Floodway Schematic."

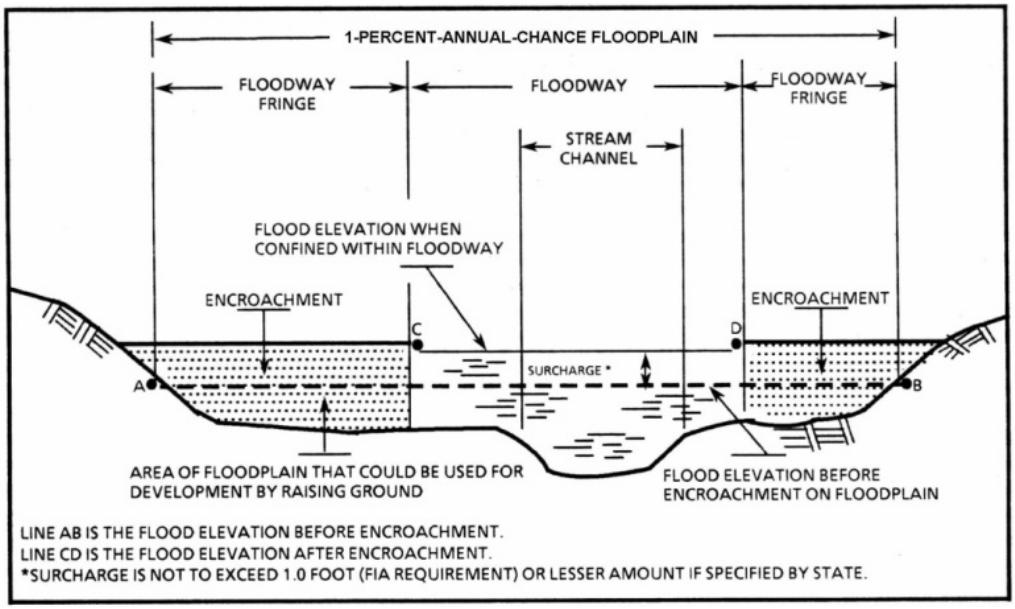

Figure 1. Floodway Schematic

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
ALBRIGHT CREEK								
A	739[1]	258	350	4.4	453.6	449.1[3]	449.1	0.0
B	2,640[1]	56	190	7.7	494.2	494.2	494.2	0.0
C	4,224[1]	104	454	2.5	523.1	523.1	523.9	0.8
D	5,914[1]	73	282	4.1	538.9	538.9	539.7	0.8
E	7,392[1]	32	176	6.6	550.1	550.1	550.9	0.8
F	7,709[1]	40	173	6.7	553.4	553.4	554.1	0.7
G	9,187[1]	143	457	2.5	564.0	564.0	564.8	0.8
ARTERBURN BRANCH								
A	333[2]	100	500	5.0	744.5	744.5	745.3	0.8
B	1,911[2]	50	350	4.1	754.1	754.1	755.0	0.9
C	3,897[2]	40	220	6.1	768.5	768.5	769.4	0.9
BLEDSOE CREEK								
A	29,990[4]	555	6,538	4.5	462.1	462.1	463.1	1.0
B	31,891[4]	582	6,957	4.2	465.2	465.2	466.2	1.0
C	33,581[4]	772	8,045	3.6	467.7	467.7	468.7	1.0
D	35,534[4]	261	4,464	6.5	470.7	470.7	471.7	1.0
E	37,805[4]	703	8,520	3.4	474.9	474.9	475.8	0.9
F	39,600[4]	186	2,903	10.0	477.6	477.6	478.3	0.7
G	42,134[4]	790	10,141	2.9	483.7	483.7	484.7	1.0

[1] Feet above confluence with Cumberland River (Old Hickory Lake)
[2] Feet above confluence with Honey Run Creek and Jones Branch
[3] Elevation computed without consideration of backwater effects from Cumberland River (Old Hickory Lake)
[4] Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

ALBRIGHT CREEK – ARTERBURN BRANCH – BLEDSOE 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
BLEDSOE CREEK (continued)								
H	44,986	434	4,846	6.0	487.4	487.4	488.4	1.0
I	47,362	616	7,244	4.0	493.0	493.0	493.9	0.9
J	50,107	462	5,843	5.0	497.5	497.5	498.4	0.9
K	51,533	926	10,936	2.2	499.5	499.5	500.4	0.9
L	52,483	636	7,565	3.2	500.2	500.2	501.1	0.9
M	53,750	480	5,075	4.7	501.8	501.8	502.6	0.8
N	53,909	484	5,261	4.6	502.5	502.5	503.3	0.8
O	54,173	461	5,430	4.4	503.1	503.1	504.0	0.9
P	55,440	704	6,927	2.9	504.6	504.6	505.5	0.9
Q	56,866	509	4,752	4.3	506.5	506.5	507.4	0.9
R	59,558	574	5,995	3.4	511.7	511.7	512.5	0.8
S	61,618	542	5,212	3.9	515.7	515.7	516.7	1.0
T	63,941	556	5,130	4.0	520.9	520.9	521.9	1.0
U	66,158	662	5,216	3.9	526.2	526.2	527.2	1.0
V	70,541	598	4,989	3.1	535.0	535.0	536.0	1.0
W	72,230	758	5,392	2.9	538.3	538.3	539.3	1.0
X	73,286	376	3,530	4.4	540.7	540.7	541.6	0.9
Y	75,768	562	4,989	3.1	546.9	546.9	547.8	0.9
Z	76,507	627	4,839	3.2	548.9	548.9	549.7	0.8
AA	78,038	393	3,369	4.6	552.7	552.7	553.4	0.7
AB	79,042	643	4,957	3.1	556.8	556.8	557.2	0.4
AC	81,734	433	2,987	3.5	561.4	561.4	562.2	0.8
AD	83,318	303	2,303	4.5	565.6	565.6	566.6	1.0

[1] Feet above mouth

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
BULLS CREEK								
A	158[1]	33	161	6.1	452.2	452.2	453.2	1.0
B	528[1]	30	140	7.0	455.7	455.7	456.3	0.6
C	1,531[1]	88	210	4.6	462.9	462.9	463.5	0.6
D	2,376[1]	73	315	2.2	468.7	468.7	469.7	1.0
E	3,326[1]	31	81	8.6	478.3	478.3	479.1	0.8
F	3,696[1]	143	1,743	0.2	490.9	490.9	491.9	1.0
G	3,960[1]	64	567	0.7	490.9	490.9	491.9	1.0
H	4,594[1]	14	49	8.5	490.9	490.9	491.9	1.0
CENTER POINT BRANCH								
A	2,144[2]	160	1,804	1.3	431.7	422.0[6]	422.8	0.8
B	2,772[2]	175	1,650	1.4	431.7	425.4[6]	426.3	0.9
C	3,722[2]	60	259	9.2	431.7	425.9[6]	426.9	1.0
D	4,261[2]	250	879	2.7	431.7	429.7[6]	429.8	0.1
E	5,523[2]	35	172	8.4	436.8	436.8	436.8	0.0
CUMBERLAND RIVER								
A	1,214,083[3]	3,000/2,659[4,5]	64,143	2.5	450.9	450.9	451.9	1.0
B	1,243,651[3]	2,500/1,491[4,5]	60,881	2.6	451.5	451.5	452.5	1.0
C	1,311,763[3]	2,000/1,246[4,5]	40,141	3.9	454.1	454.1	455.1	1.0
D	1,330,243[3]	406[5]	29,324	5.4	455.2	455.2	456.2	1.0
E	1,347,667[3]	771[5]	32,879	4.8	456.3	456.3	457.3	1.0

[1] Feet above confluence with Old Hickory Lake
[2] Feet above confluence with Mansker Creek
[3] Feet above mouth
[4] Designated width/computed width
[5] Width extends beyond county boundary
[6] Elevation computed without consideration of backwater effects from Mansker Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

BULLS CREEK – CENTER POINT BRANCH – CUMBERLAND RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
DESHEA CREEK								
A	1,214[1]	69	725	10.2	465.4	460.8[3]	461.8	1.0
B	4,435[1]	83	783	9.5	478.5	478.5	479.5	1.0
C	7,128[1]	200	1,556	4.8	488.6	488.6	489.3	0.7
D	10,824[1]	214	1,180	5.4	501.2	501.2	501.2	0.0
E	11,827[1]	143	983	6.5	503.3	503.3	503.8	0.5
F	12,566[1]	88	768	7.1	505.3	505.3	506.1	0.8
G	13,886[1]	74	829	6.6	509.6	509.6	510.3	0.7
H	15,893[1]	138	992	5.5	520.3	520.3	520.6	0.3
I	17,688[1]	196	1,107	3.9	525.1	525.1	525.9	0.8
J	20,381[1]	160	716	6.0	539.2	539.2	540.0	0.8
K	23,496[1]	110	675	6.4	559.4	559.4	560.0	0.6
L	26,083[1]	171	716	6.0	574.1	574.1	574.4	0.3
DRAKES CREEK								
A	0[2]	362	3,354	4.6	450.2	448.8[4]	449.8	1.0
B	3,580[2]	763	6,095	2.5	453.9	453.9	454.8	0.9
C	7,000[2]	316	2,187	6.7	459.9	459.9	460.5	0.6
D	7,950[2]	379	3,819	3.8	465.1	465.1	465.8	0.7
E	10,840[2]	933	6,330	2.0	469.1	469.1	469.9	0.8
F	12,490[2]	449	3,100	4.2	471.4	471.4	472.2	0.8
G	13,490[2]	266	2,401	5.4	474.0	474.0	474.6	0.6
H	14,210[2]	735	4,369	3.0	474.9	474.9	475.2	0.3
I	15,110[2]	949	4,630	2.8	476.3	476.3	476.8	0.5

[1] Feet above confluence with Bledsoe Creek
[2] Feet above U.S. Highway 31E
[3] Elevation computed without consideration of backwater effects from Bledsoe Creek
[4] Elevation computed without consideration of backwater effects from Cumberland River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

DESHEA CREEK – DRAKES 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
DRAKES CREEK (continued)								
J	15,390	1,061	5,775	2.2	476.9	476.9	477.5	0.6
K	18,155	338	1,426	9.0	481.8	481.8	481.9	0.1
L	22,170	832	5,790	2.2	492.8	492.8	493.6	0.8
M	26,070	537	3,288	3.5	498.3	498.3	498.9	0.6
N	27,500	387	3,483	3.3	500.9	500.9	501.7	0.8
O	28,605	619	3,022	3.8	503.3	503.3	504.1	0.8
P	29,195	801	4,951	2.3	504.6	504.6	505.5	0.9
Q	30,195	220	1,412	7.5	505.9	505.9	506.5	0.6
R	31,575	296	2,066	4.2	511.0	511.0	511.9	0.9
S	33,740	987	4,254	2.0	515.8	515.8	516.4	0.6
T	34,000	654	2,366	3.7	516.1	516.1	516.7	0.6
U	34,610	667	3,647	2.4	517.5	517.5	518.5	1.0
V	36,205	451	2,744	3.2	523.1	523.1	523.9	0.8
W	37,205	562	3,271	2.7	524.8	524.8	525.7	0.9
X	40,030	300	1,350	6.4	530.9	530.9	531.5	0.6
Y	41,770	135	1,321	6.6	537.3	537.3	537.5	0.2
Z	42,580	202	1,319	6.4	539.5	539.5	540.0	0.5
AA	43,175	157	1,702	4.9	544.5	544.5	545.4	0.9
AB	44,450	300	1,234	6.8	545.9	545.9	546.9	1.0
AC	45,705	413	2,257	3.7	552.4	552.4	553.1	0.7
AD	46,795	517	2,511	2.3	555.1	555.1	556.1	1.0
AE	49,250	102	661	8.9	561.9	561.9	562.7	0.8

[1] Feet above U.S. Highway 31E

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

DRAKES 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
DRAKES CREEK LEFT BANK TRIBUTARY NO. 1								
A	2112	33	164	5.5	469.7	469.7	470.5	0.8
B	3,379	31	123	7.4	478.6	478.6	478.8	0.2
C	5,386	104	382	1.7	500.2	500.2	500.9	0.7
D	7,234	43	97	6.7	514.5	514.5	514.7	0.2
E	7,920	128	299	2.2	522.2	522.2	522.9	0.7
F	9,504	263	616	1.1	532.5	532.5	532.7	0.2
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 1								
A	1,426	143	341	3.1	451.4	448.4[2]	449.4	1.0
B	1,954	141	187	5.7	454.1	454.1	454.2	0.1
C	2,165	54	393	2.7	462.5	462.5	462.5	0.0
D	2,429	38	249	4.3	462.6	462.6	462.8	0.2
E	2,587	69	346	3.1	463.9	463.9	464.2	0.3
F	3,379	75	362	3.0	467.5	467.5	468.2	0.7
G	3,643	100	181	5.9	469.5	469.5	469.5	0.0
H	5,174	38	145	5.9	481.2	481.2	482.0	0.8
I	6,178	36	129	6.6	491.8	491.8	491.8	0.0
J	7,234	24	108	5.3	501.8	501.8	502.2	0.4
K	8,078	25	92	6.2	509.3	509.3	510.0	0.7

[1] Feet above confluence with Drakes Creek
[2] Elevation computed without consideration of backwater effects from Drakes 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 2								
A	1,003	48	248	6.5	455.5	455.2[2]	455.5	0.3
B	1,531	61	218	7.4	459.8	459.8	459.8	0.0
C	2,165	152	608	2.7	464.0	464.0	464.1	0.1
D	2,851	90	398	3.6	465.5	465.5	466.2	0.7
E	3,643	95	255	5.7	471.2	471.2	471.7	0.5
F	4,858	74	360	4.0	478.3	478.3	479.0	0.7
G	5,386	50	242	6.0	480.6	480.6	481.2	0.6
H	6,494	157	227	6.4	489.8	489.8	489.8	0.0
I	7,920	70	177	6.7	496.0	496.0	496.2	0.2
J	9,187	70	235	5.0	508.3	508.3	508.6	0.3
K	9,293	39	197	6.0	509.1	509.1	509.3	0.2
L	10,243	103	360	1.7	516.7	516.7	516.8	0.1
M	11,827	34	79	7.9	525.0	525.0	525.3	0.3

[1] Feet above confluence with Drakes Creek
[2] Elevation computed without consideration of backwater effects from Drakes Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

DRAKES CREEK RIGHT BANK TRIBUTARY NO. 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
DRAKES CREEK RIGHT BANK TRIBUTARY NO. 3								
A	264[1]	274	617	4.4	466.3	461.0[3]	461.0	0.0
B	898[1]	78	388	7.0	466.3	466.1[3]	466.1	0.0
C	2,218[1]	92	424	6.4	472.7	472.7	472.7	0.0
D	3,168[1]	106	410	5.2	478.4	478.4	478.8	0.4
E	3,854[1]	91	455	4.7	481.8	481.8	482.6	0.8
F	5,069[1]	117	621	3.5	487.5	487.5	487.5	0.0
G	5,966[1]	237	1,082	2.0	494.9	494.9	494.9	0.0
H	7,339[1]	60	301	7.1	498.2	498.2	498.4	0.2
I	8,501[1]	143	491	4.4	506.8	506.8	507.0	0.2
J	9,715[1]	196	689	3.1	514.4	514.4	514.6	0.2
K	10,454[1]	328	403	5.3	518.2	518.2	518.2	0.0
L	10,718[1]	44	184	11.7	521.7	521.7	521.7	0.0
M	11,246[1]	81	258	8.3	527.2	527.2	527.6	0.4
DRAKES CREEK UNNAMED TRIBUTARY								
A	1,056[2]	24	89	3.9	460.6	460.6	461.4	0.8
B	1,584[2]	16	89	3.9	469.4	469.4	469.9	0.5
C	2,112[2]	31	86	4.0	470.5	470.5	471.5	1.0
D	2,482[2]	15	45	7.6	474.8	474.8	475.0	0.2
E	2,904[2]	54	58	5.9	479.3	479.3	479.3	0.0
F	3,326[2]	14	46	7.5	486.1	486.1	486.3	0.2
G	3,485[2]	27	92	3.7	489.8	489.8	490.4	0.6

[1] Feet above confluence with Drakes Creek
[2] Feet above confluence with Drakes Creek Right Bank Tributary No. 1
[3] Elevation computed without consideration of backwater effects from Drakes Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

DRAKES CREEK RIGHT BANK TRIBUTARY NO. 3 – DRAKES CREEK UNNAMED TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
DRAKES CREEK UNNAMED TRIBUTARY (CONTINUED)								
H	3,802[1]	31	66	5.0	491.9	491.9	491.9	0.0
I	4,382[1]	47	57	6.0	496.8	496.8	496.8	0.0
J	4,858[1]	55	85	4.0	509.2	509.2	509.9	0.7
K	5,306[1]	33	50	6.9	521.3	521.3	521.3	0.0
EAST CAMP CREEK								
A	19,390[2]	424	1,468	8.8	452.7	452.7	453.0	0.3
B	20,240[2]	427	3,336	3.9	455.1	455.1	455.7	0.6
C	21,240[2]	431	2,556	5.0	457.4	457.4	457.9	0.5
D	22,160[2]	172	2,003	6.4	460.8	460.8	461.1	0.3
E	23,240[2]	442	3,356	3.8	461.3	461.3	461.8	0.5
F	24,240[2]	252	2,162	4.3	462.0	462.0	462.6	0.6
G	25,240[2]	291	2,119	4.4	463.6	463.6	464.4	0.8
H	26,240[2]	261	1,279	7.2	465.7	465.7	466.0	0.3
I	27,240[2]	311	1,242	7.4	468.7	468.7	468.8	0.1
J	28,249[2]	437	3,159	2.6	474.9	474.9	474.9	0.0
K	29,447[2]	133	818	10.1	475.5	475.5	475.8	0.3
L	30,674[2]	192	764	10.5	479.4	479.4	479.7	0.3
M	31,740[2]	273	1,498	5.3	481.8	481.8	482.6	0.8
N	32,740[2]	105	806	9.9	484.5	484.5	485.2	0.7
O	33,740[2]	501	3,499	2.2	490.3	490.3	490.9	0.6
P	34,740[2]	547	2,582	3.0	490.6	490.6	491.3	0.7
Q	35,740[2]	331	1,875	3.7	491.7	491.7	492.4	0.7

[1] Feet above confluence with Drakes Creek Tributary No. 1
[2] Feet above confluence with Cumberland River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

DRAKES CREEK UNNAMED TRIBUTARY – EAST CAMP CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
EAST CAMP CREEK (CONTINUED)								
R	36,990[2]	409	1,830	3.7	494.1	494.1	495.0	0.9
S	37,990[2]	323	1,107	6.2	495.6	495.6	496.2	0.6
T	38,990[2]	607	2,093	3.3	498.2	498.2	499.1	0.9
U	39,990[2]	202	1,702	4.0	500.9	500.9	501.8	0.9
V	40,990[2]	100	881	7.8	502.3	502.3	503.1	0.8
W	41,490[2]	100	920	7.4	504.0	504.0	504.7	0.7
X	42,490[2]	401	1,648	3.9	513.4	513.4	513.7	0.3
Y	43,490[2]	170	1,073	4.3	514.4	514.4	514.5	0.1
Z	44,490[2]	105	544	8.4	514.6	514.6	514.9	0.3
AA	45,490[2]	346	826	5.5	520.2	520.2	520.7	0.5
AB	46,023[2]	391	1,451	2.9	522.7	522.7	523.5	0.8
AC[1]	46,899[3]	69	523	9.0	523.5	523.5	524.4	0.9
AD[1]	49,116[3]	113	741	6.3	536.0	536.0	536.6	0.6
AE[1]	49,961[3]	102	261	9.5	538.8	538.8	538.8	0.0
AF[1]	51,756[3]	263	1,148	2.2	546.5	546.5	547.4	0.9
AG[1]	52,020[3]	54	336	7.4	549.0	549.0	549.3	0.3
AH[1]	52,231[3]	201	896	2.8	549.9	549.9	550.7	0.8
AI[1]	53,393[3]	59	279	8.9	553.1	553.1	553.7	0.6
AJ[1]	54,343[3]	74	422	5.9	560.4	560.4	560.7	0.3
AK[1]	54,766[3]	69	326	7.6	562.6	562.6	563.3	0.7
AL[1]	55,927[3]	53	350	7.1	572.2	572.2	572.6	0.4
AM[1]	58,409[3]	32	205	12.1	592.6	592.6	592.7	0.1

[1] Cross sections AC through AM are redelineation cross sections U through AE from the 2006 study.
[2] Feet above confluence with Cumberland River
[3] Stationing adjusted by 1,121.0 feet to accommodate for new detailed study.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
EAST CAMP CREEK NORTHWEST TRIBUTARY								
A	581[1]	48	191	5.0	494.5	494.5	495.2	0.7
B	1,320[1]	48	146	6.6	498.5	498.5	499.4	0.9
C	2,693[1]	42	180	5.3	504.6	504.6	505.2	0.6
EAST CAMP CREEK WEST TRIBUTARY								
A	317[2]	85	389	4.5	474.3	472.4[3]	473.4	1.0
B	3,274[2]	81	227	3.1	491.0	491.0	492.0	1.0
C	3,907[2]	42	120	6.0	494.5	494.5	495.2	0.7
D	5,914[2]	53	168	4.3	511.3	511.3	512.1	0.8
E	8,342[2]	66	270	2.6	526.3	526.3	527.3	1.0

[1] Feet above confluence with East Camp Creek West Tributary
[2] Feet above confluence with East Camp Creek
[3] Elevation computed without consideration of backwater effects from East Camp 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
EAST FORK BLEDSOE CREEK								
A	1,162	322	1,668	3.5	503.4	499.1[2]	500.1	1.0
B	3,115	90	834	7.0	505.9	505.9	506.6	0.7
C	4,171	214	997	5.8	511.6	511.6	512.6	1.0
D	5,069	278	1,345	4.3	517.5	517.5	518.3	0.8
E	5,438	310	1,902	3.0	520.6	520.6	521.6	1.0
F	6,442	199	1,022	5.7	524.3	524.3	524.9	0.6
G	7,656	245	1,384	4.2	532.5	532.5	533.4	0.9
H	9,821	174	988	5.9	543.8	543.8	544.1	0.3
I	12,144	161	881	4.8	556.2	556.2	557.1	0.9
J	14,098	88	503	7.6	568.1	568.1	598.2	0.1
K	16,104	193	998	3.8	581.2	581.2	582.2	1.0
L	17,002	129	653	5.9	583.6	583.6	584.3	0.7
M	17,477	151	850	4.5	587.2	587.2	587.9	0.7
N	18,797	128	630	6.1	594.0	594.0	594.6	0.6

[1] Feet above Bledsoe Creek
[2] Elevation computed without consideration of backwater effects from Bledsoe Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

EAST FORK BLEDSOE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
EAST FORK SLATERS CREEK								
A	195[1]	160	677	3.3	505.4	505.4	506.1	0.7
B	496[1]	100	470	4.8	508.3	508.3	509.3	1.0
C	1,315[1]	210	856	2.6	514.5	514.5	514.5	0.0
D	2,751[1]	100	445	4.1	519.6	519.6	519.8	0.2
E	4,060[1]	110	681	2.7	529.7	529.7	530.3	0.6
F	5,359[1]	85	415	4.4	539.7	539.7	540.0	0.3
G	6,347[1]	70	426	4.3	545.2	545.2	546.0	0.8
H	7,403[1]	49	283	5.1	551.9	551.9	552.5	0.6
I	8,432[1]	47	235	6.2	564.1	564.1	564.4	0.3
HOGAN BRANCH								
A	1,652[2]	130	377	6.6	551.6	551.6	551.6	0.0
B	2,499[2]	123	316	7.9	556.3	556.3	556.3	0.0
C	2,883[2]	82	393	6.4	559.5	559.5	560.1	0.6
D	3,094[2]	165	734	3.4	561.7	561.7	562.5	0.8
E	3,230[2]	90	476	5.2	561.7	561.7	562.6	0.9
F	4,425[2]	97	348	7.2	571.6	571.6	571.8	0.2
G	5,956[2]	90	371	6.7	584.9	584.9	584.9	0.0
H	6,159[2]	135	739	3.4	586.8	586.8	587.2	0.4
I	8,105[2]	92	395	6.3	603.2	603.2	603.3	0.1
J	10,155[2]	56	264	6.0	620.5	620.5	621.5	1.0

[1] Feet above confluence with Slaters Creek
[2] Feet above confluence with Drakes Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

EAST FORK SLATERS CREEK – HOGAN BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
HONEY RUN CREEK								
A	51,660[1]	76	772	6.0	713.3	713.3	713.9	0.6
B	53,856[1]	150	700	6.1	720.5	720.5	720.5	0.0
C	55,857[1]	160	740	5.4	727.4	727.4	728.2	0.8
D	56,374[1]	96	740	5.4	730.6	730.6	730.8	00.2
E	58,544[1]	76	530	7.5	738.4	738.4	739.2	0.8
F	59,645[1]	150	630	6.3	742.7	742.7	743.6	0.9
JONES BRANCH								
A	444[2]	76	440	5.7	745.3	745.3	746.2	0.9
B	2,297[2]	73	470	4.2	755.8	755.8	756.2	0.4
C	3,358[2]	68	300	6.6	764.5	764.5	764.6	0.1
D	5,406[2]	65	440	3.4	777.4	777.4	777.4	0.0
E	7,350[2]	45	200	4.9	789.5	789.5	790.3	0.8
F	8,100[2]	45	160	6.1	796.1	796.1	796.4	0.3
G	9,050[2]	45	158	6.3	804.5	804.5	804.5	0.0

[1] Feet above confluence with South Fork Red River Creek
[2] Feet above confluence with Honey Run Creek and Arterburn Branch

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

HONEY RUN CREEK – JONES BRANCH

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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
LICK CREEK								
A	8,818	482	1,491	3.3	454.1	452.5[2]	453.5	1.0
B	9,504	256	1,128	3.3	455.0	455.0	455.7	0.7
C	10,190	171	1,045	3.6	456.5	456.5	457.1	0.6
D	10,718	108	693	5.5	457.0	457.0	457.9	0.9
E	11,088	62	359	10.5	458.2	458.2	459.2	1.0
F	11,352	150	602	6.3	462.0	462.0	462.0	0.0
G	12,778	100	556	6.8	468.6	468.6	469.2	0.6
H	13,728	90	497	7.6	474.3	474.3	474.3	0.0
I	14,784	81	524	7.2	479.9	479.9	480.9	1.0
J	15,259	69	473	8.0	482.7	482.7	483.5	0.8
K	15,265	78	489	7.7	482.9	482.9	483.6	0.7
L	15,418	93	603	6.3	484.1	484.1	484.1	0.0
M	16,157	267	386	2.7	485.5	485.5	486.2	0.7
N	17,318	200	971	2.8	487.4	487.4	488.4	1.0
O	17,424	191	1,023	2.7	487.5	487.5	488.5	1.0
P	18,269	86	589	4.7	488.5	488.5	489.5	1.0
Q	18,744	52	229	12.0	491.5	491.5	491.5	0.0
R	19,114	207	964	2.9	495.0	495.0	495.5	0.5
S	20,011	85	454	6.1	497.8	497.8	498.1	0.3
T	21,648	104	306	7.8	510.0	510.0	510.1	0.1
U	23,707	66	305	7.8	528.8	528.8	529.6	0.8

[1] Feet above Mouth
[2] Elevation computed without consideration of backwater effects from Cumberland River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

LICK 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
MADISON CREEK								
A	570	455	1,239	4.5	431.7	412.8[2]	412.9	0.1
B	2,534	150	791	7.1	431.7	418.5[2]	419.3	0.8
C	4,488	183	1,057	5.3	431.7	426.5[2]	427.2	0.7
D	6,336	333	1,807	2.4	433.2	433.2	433.7	0.5
E	8,026	170	933	4.7	437.8	437.8	438.6	0.8
F	9,129	87	784	5.3	443.6	443.6	444.1	0.5
G	10,449	140	976	3.3	450.8	450.8	451.4	0.6
H	11,136	315	983	3.3	453.9	453.9	453.9	0.0
I	12,181	175	712	4.6	458.7	458.7	458.9	0.2
J	13,337	120	544	6.0	463.6	463.6	463.9	0.3
K	13,892	120	401	7.2	466.2	466.2	466.4	0.2
L	14,536	260	1,792	1.6	476.3	476.3	476.3	0.0
M	15,465	146	331	8.8	476.7	476.7	476.7	0.0
N	17,345	290	830	3.5	494.0	494.0	494.2	0.2
O	18,528	80	366	7.9	503.2	503.2	504.1	0.9
P	19,842	70	287	10.1	514.5	514.5	515.0	0.5
Q	20,703	50	263	11.0	524.4	524.4	525.1	0.7
R	21,542	40	156	7.9	534.3	534.3	534.8	0.5

[1] Feet above confluence with Mansker Creek
[2] Elevation computed without consideration of backwater effects from Mansker Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

MADISON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
MANSKER CREEK								
A	1,589	177	2,189	8.1	431.7	405.8[3]	406.0	0.2
B	2,999	141	1,839	9.7	431.7	407.9[3]	408.4	0.5
C	4,351	181	2,323	7.6	431.7	411.9[3]	412.1	0.2
D	5,433	534	4,789	3.5	431.7	414.3[3]	414.6	0.3
E	6,616	527	6,945	2.4	431.7	415.0[3]	415.4	0.4
F	8,886	500	4,081	3.3	431.7	417.1[3]	417.7	0.6
G	10,945	590	2,658	5.1	431.7	419.6[3]	420.1	0.5
H	13,385	511	3,088	4.4	431.7	426.1[3]	426.3	0.2
I	15,766	203	2,131	6.4	431.7	430.7[3]	430.9	0.2
J	17,276	225	2,977	4.6	435.5	435.5	435.5	0.0
K	19,763	480	3,589	3.6	438.7	438.7	438.8	0.1
L	20,713	305	2,410	5.3	440.3	440.3	440.4	0.1
M	21,944	189	2,114	6.0	442.8	442.8	443.3	0.5
N	22,493	159	1,693	7.6	444.4	444.4	444.7	0.3
O	23,058	528	2,744	4.7	446.8	446.8	447.1	0.3
P	23,802	724	4,365	2.9	449.2	449.2	450.1	0.9
Q	24,753	828	4,772	2.6	450.9	450.9	451.9	1.0
R	25,381	309	2,696	3.6	452.5	452.5	453.3	0.8
S	25,703	163	1,055	9.2	452.5	452.5	453.3	0.8
T	26,521	233	2,136	4.0	456.4	456.4	457.3	0.9
U	26,954	318	2,772	3.1	457.2	457.2	458.1	0.9
V	28,692	228	889	4.1	459.3	459.3	460.2	0.9
W	30,661	251	1,366	2.7	469.1	469.1	469.1	0.0

[1] Feet above Cumberland River
[2] Width extends beyond county boundary
[3] Elevation computed without consideration of backwater effects from Cumberland River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

MANSKER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
MANSKER CREEK (continued)								
X	32,820	150	726	5.0	477.2	477.2	477.6	0.4
Y	33,660	62	439	7.5	481.2	481.2	481.4	0.2
Z	34,911	166	784	4.2	486.3	486.3	487.3	1.0
AA	35,851	172	705	4.7	490.7	490.7	491.2	0.5
AB	37,372	146	669	5..0	497.8	497.8	498.1	0.3
AC	38,227	145	478	6.9	502.3	502.3	502.5	0.2
AD	39,494	182	738	4.5	510.1	510.1	511.0	0.9
AE	40,403	130	605	5.1	515.7	515.7	516.0	0.3
AF	41,337	129	602	5.2	520.7	520.7	521.3	0.6
AG	42,261	130	590	5.3	524.8	524.8	525.6	0.8
AH	43,724	130	536	5.8	534.6	534.6	534.8	0.2
AI	44,632	130	608	5.1	539.4	539.4	540.4	1.0
AJ	45,081	164	933	3.3	544.5	544.5	545.2	0.7
AK	46,042	145	565	5.5	548.2	548.2	549.2	1.0
AL	47,483	98	438	5.2	559.8	559.8	559.8	0.0
AM	49,315	49	325	7.0	570.4	570.4	571.0	0.6
AN	49,891	82	407	5.6	573.7	573.7	574.4	0.7
AO	51,058	86	236	4.2	584.1	584.1	584.4	0.3

[1] Feet above confluence with Cumberland River
[2] Width extends beyond county boundary

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

MANSKER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
PATTENS BRANCH								
A	100[1]	60	271	6.3	465.6	465.6	466.2	0.6
B	935[1]	40	218	7.9	472.2	472.2	472.9	0.7
C	1,573[1]	45	328	5.2	479.5	479.5	480.1	0.6
D	2,112[1]	156	423	4.1	489.0	489.0	489.0	0.0
E	3,912[1]	200	821	2.1	504.1	504.1	504.1	0.0
F	5,475[1]	30	160	7.1	520.6	520.6	520.8	0.2
PORTLAND CHANNEL								
A	54,226[2]	177	724	0.8	786.9	786.9	786.9	0.0
B	55,757[2]	68	293	2.5	787.2	787.2	787.2	0.0
C	56,443[2]	94	321	2.3	789.2	789.2	789.2	0.0
D	57,763[2]	50	230	3.3	790.3	790.3	790.3	0.0
DONOHO BRANCH								
E	60,614[2]	57	245	3.4	794.7	794.7	794.7	0.0
F	60,931[2]	537	869	1.0	795.8	795.8	795.8	0.0
G	61,755[2]	865	596	1.5	797.3	797.3	797.3	0.0
H	62,990[2]	323	408	2.2	801.3	801.3	801.3	0.0
I	64,046[2]	327	1,410	0.6	804.8	804.8	804.8	0.0
J	65,525[2]	422	1,098	1.1	805.0	805.0	805.0	0.0

[1] Feet above confluence with Madison Creek
[2] Feet above confluence of Summers Branch with Red River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

PATTENS BRANCH – PORTLAND CHANNEL – DONOHO BRANCH

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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
RANKIN BRANCH								
A	0	73	448	2.4	451.7	451.7	452.7	1.0
B	610	59	146	7.4	453.6	453.6	454.6	1.0
C	895	25	111	9.7	458.9	458.9	459.4	0.5
D	1,882	510	2,010	0.8	473.0	473.0	473.0	0.0
E	2,141	200	810	2.1	473.8	473.8	474.2	0.4
F	2,918	197	983	1.7	474.5	474.5	475.2	0.7
G	3,425	165	639	2.6	474.8	474.8	475.7	0.9
H	4,126	120	311	5.4	477.4	477.4	478.3	0.9
I	4,740	44	341	3.4	479.7	479.7	480.2	0.5
J	4,911	42	275	3.4	483.3	483.3	483.3	0.0
K	5,152	72	85	3.9	483.6	483.6	483.6	0.0

[1] Feet above limit of detailed study

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

RANKIN BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
SINK HOLE CREEK								
A	72[1]	107	348	5.5	475.2	475.2	476.0	0.8
B	929[1]	172	708	1.5	480.8	480.8	481.4	0.6
C	2,000[1]	63	337	3.2	485.4	485.4	486.3	0.9
D	3,000[1]	160	963	1.1	493.7	493.7	494.6	0.9
E	4,000[1]	40	68	6.3	501.6	501.6	501.6	0.0
F	5,000[1]	40	78	5.5	514.7	514.7	515.5	0.8
G	6,090[1]	40	155	2.8	531.5	531.5	531.8	0.3
H	6,867[1]	32	77	3.4	541.1	541.1	542.1	1.0
I	8,000[1]	77	167	1.0	561.4	561.4	561.8	0.4
J	9,107[1]	56	79	2.0	570.5	570.5	570.7	0.2
SINK HOLE CREEK TRIBUTARY								
A	129[2]	80	232	2.9	497.6	494.4[3]	495.2	0.8
B	1,000[2]	25	97	6.9	504.8	504.8	505.3	0.5
C	2,000[2]	60	215	3.1	511.9	511.9	512.7	0.8
D	3,000[2]	25	69	2.1	519.6	519.6	520.2	0.6
E	4,000[2]	24	67	2.2	526.9	526.9	527.1	0.2
F	4,810[2]	108	21	2.2	547.1	547.1	547.1	0.0

[1] Feet above Limit of Study
[2] Feet above confluence with Sink Hole Creek
[3] Elevation computed without consideration of backwater effects from Sink Hole Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

SINK HOLE CREEK – SINK HOLE CREEK TRIBUTARY

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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
SLATERS CREEK								
A	1,375	452	1,234	3.8	454.2	454.2	454.3	0.1
B	2,150	228	958	4.8	457.9	457.9	458.2	0.3
C	4,230	328	1,970	2.4	469.1	469.1	469.5	0.4
D	5,215	286	161	4.0	470.4	470.4	470.8	0.4
E	7,128	150	1,002	4.6	476.8	476.8	476.8	0.0
F	7,328	142	956	4.8	477.4	477.4	477.8	0.4
G	7,840	1,668	992	4.6	480.2	480.2	480.5	0.3
H	8,421	159	1,037	4.4	483.3	483.3	483.7	0.4
I	8,800	155	938	4.9	484.2	484.2	484.7	0.5
J	9,440	368	1,784	2.5	486.6	486.6	487.0	0.4
K	11,204	179	1,156	3.8	493.6	493.6	494.0	0.4
L	11,520	140	724	6.0	494.4	494.4	494.9	0.5
M	12,050	126	970	4.5	499.7	499.7	500.1	0.4
N	12,524	170	1,043	4.1	501.3	501.3	501.9	0.6
O	13,104	148	1,052	3.9	503.1	503.1	503.8	0.7
P	14,875	200	468	6.3	508.7	508.7	509.5	0.8
Q	15,755	275	846	3.5	514.1	514.1	514.3	0.2
R	16,175	275	993	3.0	515.8	515.8	516.0	0.2
S	16,864	200	940	3.1	518.3	518.3	518.4	0.1
T	17,466	165	915	3.0	523.3	523.3	523.5	0.2
U	18,875	120	912	2.7	531.8	531.8	532.1	0.3
V	21,050	138	1,130	2.0	550.3	550.3	551.0	0.7
W	21,740	149	1,217	1.9	550.7	550.7	551.4	0.7
X	22,873	50	423	4.9	558.1	558.1	558.9	0.8
Y	23,775	43	286	5.5	561.9	561.9	562.2	0.3

[1] Feet above confluence with Mansker Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

SLATERS 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
STATION CAMP CREEK								
A	17,709	408	2,255	11.6	451.5	449.7[2]	449.7	0.0
B	18,588	950	5,865	2.5	453.8	453.8	454.4	0.6
C	19,588	662	3,722	3.9	453.9	453.9	454.6	0.7
D	20,588	175	1,473	9.7	455.7	455.7	456.4	0.7
E	21,338	234	2,174	6.6	459.7	459.7	460.6	0.9
F	22,088	334	3,545	4.0	461.4	461.4	462.3	0.9
G	22,838	1,029	8,527	1.7	463.7	463.7	464.4	0.7
H	24,088	830	5,258	2.7	464.0	464.0	464.7	0.7
I	25,088	478	3,197	4.4	464.3	464.3	464.9	0.6
J	26,088	723	4,198	3.3	465.3	465.3	466.0	0.7
K	27,088	281	1,386	9.9	468.0	468.0	468.5	0.5
L	28,088	335	2,428	5.6	470.3	470.3	471.1	0.8
M	29,338	502	3,635	3.7	472.4	472.4	473.0	0.6
N	30,338	525	3,276	4.0	473.2	473.2	473.8	0.6
O	31,588	406	1,525	8.6	474.9	474.9	475.2	0.3
P	32,588	705	2,323	5.7	476.8	476.8	477.3	0.5
Q	33,838	789	3,899	3.3	478.9	478.9	479.7	0.8
R	34,838	264	1,842	7.1	482.8	482.8	483.5	0.7
S	35,838	271	2,382	5.4	485.0	485.0	485.9	0.9
T	36,838	177	1,681	7.6	486.6	486.6	487.4	0.8
U	37,838	341	2,398.3	5.2	488.5	488.5	489.1	0.6
V	38,838	496	2,953.8	4.2	489.4	489.4	490.1	0.7
W	39,838	505	2,929.4	4.2	491.6	491.6	492.4	0.8
X	40,673	561	2,448.5	5.1	492.8	492.8	493.5	0.7
Y	41,560	232	1,210.3	10.2	493.8	493.8	493.9	0.1
Z	42,588	239	2,026.5	6.0	496.0	496.0	496.7	0.7

[1] Feet above confluence with East Camp Creek
[2] Elevation computed without consideration of backwater effects from Cumberland River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

STATION CAMP CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[2]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
STATION CAMP CREEK (CONTINUED)								
AA	43,588	182	1,651.6	7.3	497.5	497.5	498.4	0.9
AB	44,186	385	2,121.7	5.7	498.7	498.7	499.5	0.8
AC[1]	46,223[3]	563	4,097	3.2	505.8	505.8	506.7	0.9
AD[1]	47,649[3]	486	3,570	3.7	508.8	508.8	509.7	0.9
AE[1]	48,071[3]	552	3,948	3.4	510.1	510.1	511.0	0.9
AF[1]	49,867[3]	271	2,460	4.6	513.7	513.7	514.7	1.0
AG[1]	55,358[3]	459	3,144	3.6	525.7	525.7	526.7	1.0
AH[1]	56,361[3]	358	2,552	4.0	528.1	528.1	529.1	1.0
AI[1]	58,156[3]	363	2,049	5.0	531.5	531.5	532.5	1.0
AJ[1]	59,529[3]	552	4,176	2.4	536.1	536.1	537.1	1.0
AK[1]	62,116[3]	241	1,748	4.6	542.1	542.1	543.1	1.0
AL[1]	66,393[3]	224	1,500	5.4	555.9	555.9	556.9	1.0
AM[1]	71,251[3]	244	1,134	4.3	571.5	571.5	572.4	0.9

[1] Cross sections AC through AM are redelineation cross sections U through AE from the 2006 study
[2] Feet above confluence with East Camp Creek
[3] Stationing adjusted by 2,082.5 feet to accommodate for new detailed study

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

STATION CAMP 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
TOWN CREEK								
A	1,690	325	1,275	4.3	454.8	454.8	455.4	0.6
B	2,534	216	1,402	3.9	456.5	456.5	457.2	0.7
C	4,646	171	988	5.6	465.9	465.9	466.3	0.4
D	6,758	106	727	7.6	475.2	475.2	475.5	0.3
E	7,234	194	1,379	3.2	477.2	477.2	478.0	0.8
F	7,973	90	532	8.3	479.3	479.3	480.0	0.7
G	9,240	90	485	7.4	490.9	490.9	491.5	0.6
H	10,349	220	781	4.6	497.4	497.4	498.1	0.7
I	10,613	359	1,645	2.2	499.6	499.6	499.9	0.3
J	11,035	125	748	4.7	499.9	499.9	500.3	0.4
K	11,880	210	732	4.8	502.5	502.5	503.1	0.6
L	12,883	39	316	10.8	508.7	508.7	509.5	0.8
M	13,094	258	834	4.1	513.7	513.7	514.5	0.8
N	13,358	242	947	3.6	514.3	514.3	515.3	1.0
O	13,622	250	1,067	3.2	515.3	515.3	516.1	0.8
P	14,626	55	528	6.4	518.1	518.1	519.0	0.9
Q	15,734	100	699	4.6	522.2	522.2	522.6	0.4
R	16,104	74	614	5.2	523.9	523.9	524.3	0.4
S	19,853	205	699	3.3	538.6	538.6	538.7	0.1
T	21,437	76	369	6.2	546.4	546.4	547.1	0.7
U	21,859	130	502	4.6	551.0	551.0	551.1	0.1
V	23,602	136	599	3.8	559.3	559.3	560.3	1.0
W	24,182	33	162	6.8	561.8	561.8	562.6	0.8
X	25,502	42	166	6.6	574.5	574.5	575.1	0.6
Y	26,770	70	209	5.3	590.6	590.6	591.6	1.0
Z	28,195	71	263	4.2	602.9	602.9	603.2	0.3

[1] Feet above confluence with East Camp Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

TOWN 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 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
TOWN CREEK LEFT BANK TRIBUTARY 1								
A	422	35	158	6.8	476.5	476.5	477.5	1.0
B	1,162	71	317	3.4	485.7	485.7	486.2	0.5
C	1,531	59	375	2.9	490.1	490.1	490.4	0.3
D	1,848	82	394	2.7	491.8	491.8	492.8	1.0
E	2,218	29	198	2.4	495.1	495.1	495.7	0.6
TOWN CREEK LEFT BANK TRIBUTARY 2								
A	211	184	687	1.7	505.6	505.6	506.4	0.8
B	1,373	78	348	3.3	509.1	509.1	509.9	0.8
C	3,353	160	294	4.0	518.8	518.8	519.2	0.4
D	3,749	170	714	1.6	520.6	520.6	521.4	0.8
E	4,066	154	571	1.7	522.8	522.8	523.7	0.9
F	5,122	173	604	1.6	528.7	528.7	529.7	1.0
G	5,438	134	466	2.1	531.7	531.7	532.2	0.5
H	6,178	34	139	7.1	535.3	535.3	535.9	0.6
I	6,864	98	428	1.6	538.3	538.3	539.4	0.8
J	7,920	30	177	3.8	544.2	544.2	544.8	0.6

[1] Feet above confluence with Town Creek

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD 88)	WITHOUT FLOODWAY (NAVD 88)	WITH FLOODWAY (NAVD 88)	INCREASE (FEET)
TOWN CREEK LEFT BANK TRIBUTARY 3								
A	264[1]	44	177	4.6	559.6	559.6	560.6	1.0
B	1,531[1]	25	128	6.3	568.0	568.0	568.8	0.8
C	2,746[1]	25	96	8.4	584.1	584.1	584.7	0.6
UNNAMED TRIBUTARY NO. 5								
A	465[2]	55	293	4.5	506.2	506.2	506.3	0.1
B	1,230[2]	41	159	8.3	512.5	512.5	512.8	0.3
C	2,450[2]	38	164	8.1	522.8	522.8	523.3	0.5
WILLIS BRANCH								
A	898[3]	156	462	3.9	433.5	433.5	434.0	0.5
B	2,112[3]	43	215	8.2	443.1	443.1	444.1	1.0
C	3,485[3]	81	270	6.5	457.3	457.3	458.0	0.7
D	5,016[3]	51	270	6.5	472.6	472.6	473.1	0.5
E	6,864[3]	174	291	4.1	492.8	492.8	493.8	1.0
F	8,976[3]	47	194	6.2	513.7	513.7	514.2	0.5
G	9,821[3]	20	89	7.2	527.8	527.8	528.7	0.9
H	11,510[3]	22	81	7.9	553.0	553.0	553.7	0.7

[1] Feet above confluence with Town Creek
[2] Feet above confluence with Drakes Creek
[3] Feet above confluence with Madison Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN

AND INCORPORATED AREAS

FLOODWAY DATA

TOWN CREEK LEFT BANK TRIBUTARY 3 – UNNAMED TRIBUTARY NO.5 – WILLIS BRANCH

5.0 INSURANCE APPLICATIONS

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

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS report by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base (1-percent-annual-chance) flood elevations (BFEs) 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 report by detailed methods. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate 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 (sq. mi.), and areas protected from the base flood by levees. No BFEs 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 BFEs or average depths. Insurance agents use zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

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

The current FIRM presents flooding information for the entire geographic area of Sumner County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 8, “Community Map History.”

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM INITIAL EFFECTIVE DATE	FIRM REVISIONS DATE
Gallatin, City of	August 16, 1974	July 16, 1976	August 3, 1981	N/A
Goodlettsville, City of	October 10, 1975	None	June 15, 1981	N/A
Hendersonville, City of	June 21, 1974	July 15, 1977	November 4, 1981	8/16/1995
Millersville, City of	June 15, 1984	None	June 15, 1984	N/A
*Mitchellville, Town of	N/A	N/A	N/A	N/A
Portland, City of	May 24, 1974	July 30, 1976	August 4, 1987	N/A
Sumner County (Unincorporated Areas)	December 16, 1977	None	June 19, 1985	N/A
Westmoreland, Town of	April 17, 2012	N/A	April 17, 2012	N/A
White House, City of	May 17, 1974	April 8, 1977	June 1, 1988	N/A

*Non-Floodprone Community

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUMNER COUNTY, TN
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

FIS reports have been prepared for the incorporated and unincorporated areas of Trousdale (FEMA, 2010) County; the incorporated and unincorporated areas of Macon (FEMA, 2010), Robertson (FEMA, April 2008) and Wilson Counties (FEMA, February 2008); the geographic area of the Metropolitan Government of Nashville and Davidson County and incorporated areas (FEMA, 2002); and the unincorporated areas of Simpson County, Kentucky (FEMA, 1987).

This FIS report supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

This is a multi-volume FIS. Each volume may be revised separately, in which case it supersedes the previously printed volume. Users should refer to the Table of Contents in Volume 1 for the current effective date of each volume; volumes bearing these dates contain the most up-to-date flood hazard data.

8.0 LOCATION OF DATA

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

9.0 BIBLIOGRAPHY AND REFERENCES

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4. Federal Emergency Management Agency. (FIRM, August 3, 1981; FIS report, February 3, 1981). *Flood Insurance Study, City of Gallatin, Sumner County, Tennessee.* Washington, D.C.

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10.0 REVISION DESCRIPTIONS

This section has been added to provide information regarding significant revisions made since the original FIS was printed. Future revisions may be made that do not result in the republishing of the FIS report. To assure that the user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data located at:

- Gallatin City Hall
  132 West Main Street
  Gallatin, Tennessee 37066

- Goodlettsville City Hall
  105 South Main Street
  Goodlettsville, Tennessee 37072

- Henderson City Hall
  Planning and Zoning
  One Executive Park Drive
  Hendersonville, Tennessee 37075

- Millersville City Hall
  1246 Louisville Highway
  Millersville, Tennessee 37072

- Portland City Hall
  100 South Russell Street
  Portland, Tennessee 37148

- Sumner County Building Department
  355 North Belvedere Drive, Room 202
  Gallatin, Tennessee 37066

- White House City Hall
  Codes Department
  105 College Street
  White House, Tennessee 37188

10.1 First Revision (Revised September 20, 2006)

The September 20, 2006, revision was initiated by FEMA to meet the objectives of Map Modernization.

The first revision involved compiling existing data to convert the previous countywide study into digital format. No updated hydrologic and hydraulic analyses were prepared.

10.2 Second Revision (Revised April 17, 2012)

The April 17, 2012 revision was initiated by BakerAECOM, on behalf of FEMA.

This revision involved updating the mapping for portions of Sumner County, Tennessee. The revision includes refinement and establishment of approximate zones, redelineation of existing detailed studies, new detailed studies, and the creation of new DFIRMs using new topographic and base map data.