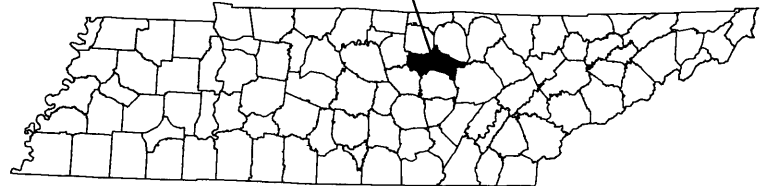


FLOOD INSURANCE STUDY



PUTNAM COUNTY, TENNESSEE, AND INCORPORATED AREAS

PUTNAM COUNTY



Community Name	Community Number
ALGOOD, TOWN OF	470461
*BAXTER, TOWN OF	470462
COOKEVILLE, CITY OF	470150
*MONTEREY, TOWN OF	470463
PUTNAM COUNTY (UNINCORPORATED AREAS)	470149

*Non-floodprone

May 16, 2007



Federal Emergency Management Agency
FLOOD INSURANCE STUDY NUMBER
47141CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

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

Former flood hazard zone designations have been changed as follows:

<u>Old Zone(s)</u>	<u>New Zone</u>
C	X

Initial Countywide FIS Effective Date: May 16, 2007

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FLOOD INSURANCE STUDY

PUTNAM COUNTY, TENNESSEE, AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs), Flood Boundary and Floodway Maps in the geographic area of Putnam County, Tennessee, including the Towns of Algood, Baxter and Monterey, the City of Cookeville, and the unincorporated areas of Putnam County (hereinafter referred to collectively as Putnam County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Putnam 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.

Please note that the Towns of Baxter and Monterey are non-floodprone.

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

1.2 Authority and Acknowledgments

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

This FIS was prepared to include the unincorporated areas of, and incorporated communities within, Putnam County in a countywide format. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS. No previously printed FIS reports exist for the unincorporated areas of, and incorporated communities within, Putnam County.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The work for this study was performed by the Watershed IV Alliance, for the Federal Emergency Management Agency (FEMA), under Contract No. EMT-2002-CO-0011A.

Basemap data was provided by the State of Tennessee Office for Information Resources, GIS Services, as part of the Tennessee Base Mapping Program.

312 8th Avenue N.
16th Floor Tennessee Tower

Nashville, TN 37243
<http://gis.state.tn.us/mapping.html>

The basemap data was provided in GCS_North_American_1983 coordinate system and Lambert_Conformal_Conic State Plane Tennessee FIPS 4100 Feet projection. The datum was North American Datum 1983.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) meeting is held with representatives from FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held with representatives from FEMA, the community, and the study contractor to review the results of the study. All problems raised in the meeting have been addressed in this study.

For this countywide FIS, an initial CCO meeting was held with representatives of the impacted communities on June 21, 2005. Attendees included representatives from the City of Cookeville and the State of Tennessee.

On October 24, 2006 the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the USACE, FEMA, and the community.

2.0 **AREA STUDIED**

2.1 Scope of Study

This Flood Insurance Study covers the geographic area of Putnam County, Tennessee, including the incorporated communities listed in Section 1.1.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and Taylor Engineering, Inc. The streams studied are shown in Table 1, "Scope of Study."

Table 1. Scope of Study

Bear Creek	Hudgens Creek
Bear Creek Tributary 1	Hurricane Creek
Bridge Creek	Hurricane Creek C
Brown Hollow Branch	Indian Creek
Brown Hollow Branch Tributary 1	Indian Creek Tributary 1
Brown Hollow Branch Tributary 2	Indian Creek Tributary 3
Buffalo Branch	Indian Creek Tributary 4
Burton Branch	Indian Creek Tributary 5
Calfkiller River	Little Creek
Calfkiller River Tributary 1	Little Indian Creek A
Calfkiller River Tributary 2	Little Indian Creek Tributary 1.1
Calfkiller River Tributary 2.1	Little Mill Creek
Calfkiller River Tributary 2.2	Martin Creek
Cane Creek	Maxwell Branch
Cane Creek Tributary 1	Mill Creek A
Cane Creek Tributary 2	Mill Creek B
Cookeville Creek	Miller Creek Tributary 1
Cookeville Creek Tributary 1	Mine Lick Creek
Cookeville Creek Tributary 2	Mine Lick Creek Tributary 1.1
Crane Creek	Pigeon Roost Creek
Davidson Cove	Short Creek Tributary 1
East Blackburn Fork	Spring Creek A
East Fork Obey River	Spring Creek A Tributary 1
Falling Water River A	Spring Creek A Tributary 2
Falling Water River A Tributary 1	Stamps Hollow
Falling Water River B	Turkey Creek
Falling Water River B Tributary 1	Turkey Creek Tributary 1
Falling Water River B Tributary 2	West Blackburn Fork

2.2 Community Description

Putnam County is located on the Eastern Highland Rim of the Middle Grand Division of the state along the Interstate 40 corridor between Nashville and Knoxville. Surrounding Putnam County are Smith County to the west, Jackson and Overton Counties to the north, Cumberland County to the southeast, White County to the south, and DeKalb County to the southwest. The total size of the county is 401 square miles. The 2000 population of the county, including all incorporated areas, was 62,315 (US Census Bureau).

Average maximum and minimum temperatures in the county vary from 88 to 37 degrees Fahrenheit, respectively. The average annual precipitation is 51 inches (NOAA).

2.3 Principal Flood Problems

There is no documented historical flooding for Putnam County.

The principal sources of flooding in Putnam County are Calfkiller River, Falling Water River, and East Fork Obey River.

The USGS no longer maintains any daily stage and flow gages in Putnam County. However, historical records exist for two gages no longer in use. Table 2 lists these gages and their dates of record.

Table 2. Historical USGS Gages in Putnam County, TN

<u>Gage Number</u>	<u>Location</u>	<u>Dates of Record</u>
<u>03422860</u>	SHORT CREEK TRIB AT COOKEVILLE, TN	08/16/1978 to 07/07/1979
<u>03423500</u>	CANEY FORK NEAR SILVER POINT, TN	02/04/1923 to 02/14/1948

2.4 Flood Protection Measures

Putnam County is the location of seven small dams, listed in Table 3. These dams provide some protection from flooding. However, they are not operated for flood control purposes and are not believed to provide protection from the 100-year flood.

Table 3. Dams Located in Putnam County, TN

Burgess Falls Dam	JE Walker Lake Dam
City of Monterey Water Supply Dam	Monterey Lake Dam No. 1
Gordon Hunter Dam	Monterey Lake Dam No. 2
Green Valley Farm Lake Dam	

3.0 ENGINEERING METHODS

For the flooding sources studied in detail 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 which are expected to be equaled or exceeded once on the average during any 100-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. This event, commonly termed the 100-year flood, has a 1 percent chance of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

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

Pre-countywide Analyses

No previously printed FIS reports exist for Putnam County. There are no written records of detailed hydrologic analyses carried out in this county. All floodplain boundaries delineated on the effective FIRMs are for A Zones calculated using approximate hydrologic methods.

This Countywide Revision

Discharges for the 1-percent-annual-chance recurrence interval for all new or restudied approximate study streams in Putnam County were determined using the USGS regression equations for the state of Tennessee as described in USGS Water Resource Investigation (WRI) Reports 03-4 176 (USGS 2000).

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the floodplain boundaries.

Pre-countywide Analyses

No previously printed FIS reports exist for Putnam County. There are no written records of detailed hydraulic analyses carried out in this county. All floodplain boundaries delineated on the effective FIRMs are for A Zones calculated using approximate hydraulic methods.

This Countywide Analysis

Cross section geometries were obtained from digital terrain data provided by Putnam County. Water-surface profiles were computed through the use of the U.S. Army Corp of Engineers (USACE) HEC-RAS version 3.1.2 water-surface profiles computer program (USACE 2004). The model was run for the 1-percent-annual-chance storm for the approximate studies.

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.

Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. Some of the data used in this revision were taken from the prior effective FIS reports and FIRMs and adjusted to NAVD88.

For additional information regarding conversion between the NGVD and NAVD, 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
Fax: (301) 713-4172, or
Telephone: (301) 713-3242

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

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the NGS at (301) 713 3242, or visit their website at www.ngs.noaa.gov.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

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

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. For each stream studied by approximate methods, only the 1 -percent-annual-chance floodplain boundaries have been delineated using the flood elevation determined at each cross section. Between cross sections, the boundaries were interpolated using points and breaklines at a scale of 1:2400, 1:1200, and 1:600 with a contour interval of 2-10 feet (Tennessee Base Mapping Program 2004).

The 1-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 1). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zone A). Small areas within the

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

4.2 Floodways

No floodways were computed for streams studied by approximate methods.

5.0 INSURANCE APPLICATIONS

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

Zone A

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

Zone X

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

6.0 FLOOD INSURANCE RATE MAP

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

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0. Insurance agents use the zones to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints the 1-percent-annual-chance floodplain.

The countywide FIRM presents flooding information for the entire geographic area of Putnam County. Previously, separate FIRMs were prepared for each identified floodprone incorporated community and for the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 4.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Algood, Town of	May 16, 2007	None	May 16, 2007	None
*Baxter, Town of	None	None	None	None
Cookeville, City of	May 24, 1974	June 18, 1976 September 14, 1979	August 19, 1986	None
*Monterey, Town of	None	None	None	None
Unincorporated Areas	September 13, 1974	October 21, 1977	November 1, 1998	None

*Non-floodprone

FEDERAL EMERGENCY MANAGEMENT AGENCY
PUTNAM COUNTY, TN
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

TABLE 4

7.0 OTHER STUDIES

There are no previously printed FIS reports for Putnam County. There were FIRMs previously produced for the Unincorporated Areas of Putnam County and the City of Cookeville (FEMA 1986, FEMA 1998).

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Putnam County has been compiled into this FIS. Therefore, this FIS report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for purposes of the NFIP.

8.0 LOCATION OF DATA

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

9.0 REFERENCES AND BIBLIOGRAPHY

1. Federal Emergency Management Agency, Flood Hazard Boundary Map, Putnam County, Tennessee (Unincorporated Areas), Washington, D.C., November 1998.
2. Federal Emergency Management Agency, Flood Insurance Rate Map, City of Cookeville, Putnam County, Tennessee, Washington, D.C., August 1986.
3. Federal Emergency Management Agency, Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, June 1992.
4. Goodspeed Publishing Company, "History of Tennessee: Putnam County", TNGenWeb.org, <<http://www.tngenweb.org/Putnam/goodspeed/goodhst1.htm>>.
5. National Oceanic and Atmospheric Administration, National Weather Service Forecast Office, <http://www.srh.noaa.gov>, Annual rainfall average 1971-2000.
6. Tennessee Base Mapping Program, <http://gis.state.tn.us/mapping.html>, Scale 1:2400, 1:1200, and 1:600, Contour Interval 2-10 feet, April 2004.
7. U.S. Census Bureau, www.census.gov, 2000 Population Estimates, Census 2000.
8. U.S. Army Corps of Engineers, Hydrologic Engineering Center, River Analysis System: HEC-RAS Version 3.1.2. Davis, California, April 2004.
9. U.S. Geological Survey, Water-Resources Investigations Report 03-4176, Flood-Frequency Prediction Methods for Unregulated Streams of Tennessee, 2000.