

# BAKER COUNTY, FLORIDA, AND INCORPORATED AREAS



**Community Name** 

Community Number

120002

120590

120419

\*GLEN ST. MARY, TOWN OF MACCLENNY, CITY OF BAKER COUNTY (UNINCORPORATED AREAS) \*Non-floodprone community.

June 17, 2008



FLOOD INSURANCE STUDY NUMBER 12003CV000A

#### 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:

Old Zone(s)	New Zone
Al through A30	AE
В	Х
С	Х

Initial Countywide FIS Effective Date: June 17, 2008

## TABLE OF CONTENTS

1.0	INTF	RODUCTION	1
	1.1	Purpose of Study	1
	1.2	Authority and Acknowledgments	1
	1.3	Coordination	2
2.0	ARE	A STUDIED	2
	2.1	Scope of Study	2
	2.2	Community Description	3
	2.3	Principal Flood Problems	3
	2.4	Flood Protection Measures	3
3.0	ENG	INEERING METHODS	3
	3.1	Hydrologic Analyses	4
	3.2	Hydraulic Analyses	9
	3.3	Vertical Datum	10
4.0	FLO	ODPLAIN MANAGEMENT APPLICATIONS	11
	4.1	Floodplain Boundaries	11
	4.2	Floodways	11
5.0	INSU	URANCE APPLICATIONS	21
6.0	FLO	OD INSURANCE RATE MAP	21
7.0	OTH	IER STUDIES	23
8.0	LOC	ATION OF DATA	23
9.0	REFI	ERENCES AND BIBLIOGRAPHY	23

### TABLE OF CONTENTS - continued

### FIGURES

Figure 1 - Floodway Schematic

12

## TABLES

Table 1 – Detailed Study Streams	2
Table 2 - Summary of Discharges	5-9
Table 3 - Range of Manning's N Values	10
Table 4 - Floodway Data	13-20
Table 5 - Community Map History	22

# **EXHIBITS**

Exhibit 1 -	Flood Profiles	
	Barber Bay Tributary	Panel 01P
	Cedar Creek	Panels 02P-04P
	Little River	Panel 05P
	St. Marys River	Panels 06P-07P
	North Prong St. Marys River	Panels 07P-08P
	Middle Prong St. Marys River	Panels 09P-11P
	South Prong St. Marys River	Panels 12P-14P
	South Prong St. Marys River Tributary 8	Panel 15P
	Turkey Creek	Panels 16P-17P
	Turkey Creek Tributary 1	Panels 18P-19P
	Turkey Creek Tributary 1.1	Panel 20P
	Turkey Creek Tributary 2	Panel 21P
	Turkey Creek Tributary 2.1	Panel 22P

Exhibit 2 - Flood Insurance Rate Map Index Flood Insurance Rate Map

#### FLOOD INSURANCE STUDY BAKER COUNTY, FLORIDA, AND INCORPORATED AREAS

#### 1.0 INTRODUCTION

#### 1.1 Purpose of Study

This Flood Insurance Study revises and supersedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs) in the geographic area of Baker County, Florida, including the City of Macclenny, Town of Glen St. Mary (Non-floodprone) and the Unincorporated Areas of Baker County (hereinafter referred to collectively as Baker 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 Baker County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

#### 1.2 Authority and 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.

The hydrologic and hydraulic analyses for this study were obtained from the "St. Marys River Basin Water Resources Management Study" (Reference 1).

For this countywide FIS, the redelineation of previously published base flood elevations were performed by Watershed IV Alliance, for the Federal Emergency Management Agency (FEMA), under Contract No. EMT-2002-CO-0011A. This work was completed in 2007. Floodplain boundaries were redelineated based on more detailed and up-to-date topography submitted by Baker County

The basemap data was provided by the Baker County Property Appraiser's Office:

32 N 5<sup>th</sup> Street Suite B Macclenny, FL 32063 http://www.bakercountyfl.org/pa/

The basemap data was provided in GCS\_North\_American\_1983\_HARN coordinate system and Lambert\_Conformal\_Conic State Plane Florida FIPS 0901 Feet projection. The datum was North American Datum 1983.

#### 1.3 Coordination

The streams requiring redelineation were identified at the Initial Consultation and Coordination (CCO) meeting attended by personnel of the USACE, FEMA, and communities within Baker County on August 16, 2005. Letters were sent to various State, Federal, and private agencies informing them of the forthcoming insurance study and requesting any pertinent information available.

On May 7, 2007, 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 Baker County, Florida.

The following streams were studied by detailed methods for this study: Barber Bay Tributary; a portion of South Prong St. Marys River; South Prong St. Marys River Tributary 8; Turkey Creek; Turkey Creek Tributary 1; Turkey Creek Tributary 1.1; Turkey Creek Tributary 2; and Turkey Creek Tributary 2.1. Detailed study streams are shown in Table 1, "Detailed Study Streams."

Table 1 – Detailed Study Streams

Stream	Reach Limits
Barber Bay Tributary	From confluence with South Prong St. Marys River to approximately 0.6 miles upstream of County Road 228
South Prong St. Marys River	From approximately 0.08 miles downstream of County Road 125 to approximately 1.7 miles upstream of the confluence of South Prong St. Marys River Tributary 8
South Prong St. Marys River Tributary 8	From confluence with South Prong St. Marys River approximately 1.2 miles upstream of John Rowe Road
Turkey Creek	From confluence with South Prong St. Marys River to approximately 0.2 miles upstream of $5^{\text{th}}$ Street.
Turkey Creek Tributary 1	From confluence with Turkey Creek to approximately 1.1 miles upstream of State Highway 121
Turkey Creek Tributary 1.1	From confluence with Turkey Creek Tributary 1 to approximately 0.4 miles upstream of Woodlawn Road
Turkey Creek Tributary 2	From confluence with Turkey Creek to approximately 100 ft upstream of U.S. Highway 90
Turkey Creek Tributary 2.1	From confluence with Turkey Creek Tributary 2 to approximately 0.6 miles upstream of Canal Road

Floodplain boundaries of streams that have been previously studied by detailed methods

were redelineated based on more detailed and up-to-date topographic data. Redelineated streams include Cedar Creek, Little River, Middle Prong St. Marys River, North Prong St. Marys River, South Prong St. Marys River, St. Marys River, and portions of Turkey Creek.

2.2 Community Description

Baker County is located in north-central Florida. It is bordered on the north by Ware and Clinch Counties, Georgia; on the south by Union and Bradford Counties, Florida; on the west by Columbia County, Florida; and on the east by Duval, Nassau, and Clay Counties, Florida, and Charlton County, Georgia. The county is served by U.S. Route 90; Interstate 10; State Roads 121, 125, 250, and 229; and CSX Railroad, and Norfolk Southern Railway. The 2000 population of Baker County was reported to be 22,259 (Reference 2).

The climate of Baker County is semi-tropical, characterized by long, hot summers and mild winters. The average annual rainfall is 49.3 inches, while the average temperature varies from 55.6 degrees Fahrenheit in January to 81.1 degrees Fahrenheit in August (Reference 3).

2.3 Principal Flood Problems

Flooding in the study area may result either from general rainfall runoff or tidal surges. A large hurricane tidal surge could result in catastrophic loss of property and life. The St. Marys River and its tributaries have broad, swampy, heavily wooded floodplains that are frequently flooded. Major floods occurred in the St. Marys River basin in 1947, 1964, and 1973.

2.4 Flood Protection Measures

Due to the parameters of this existing data study, information regarding flood protection measures in the community is obtained only from the source report (Reference 1) and any other readily available sources. None of these sources provided information relating to the flood protection measures in the county.

#### 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 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 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 and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

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

#### **Pre-countywide Analyses**

Baker County has a previously printed FIS report narrative. The hydrologic analyses described in that narrative has been compiled below.

The HEC-1 Flood Hydrograph Package (Reference 4), including the SSCS technique for computing unit hydrographs, was used to calculate the magnitude and frequency of floods in the St. Marys River basin. Clark's method was used to generate the synthetic hydrographs, as described in HEC-1. This method incorporates time of concentration, a storage coefficient, and a time-area curve.

The time of concentration for each subbasin was determined using the following equation:

 $T = 11.9L^3/H^{0.385}$ 

Where: T = Time of concentration, in hours

L = Hydraulic length of watercourse in miles

H = Elevation change in feet

The time-area relationship described in HEC-1 was used. The rainfall amounts were obtained from Technical Paper No. 40 (Reference 3) for the 10-, 25-, 50-, 100-, and 500-year storm events. The depth-area option on the HEC-1 PC records was selected. This option automatically adjusts the rainfall depths to correspond to each specific subbasin area. The resulting hydrographs were routed through each adjoining downstream basin using the HEC-1 storage routine procedure (Reference 4).

Data from four U.S. Geological Survey streamflow gages – Moniac, Georgia, and Glen St. Marys, Macclenny, and Turkey Creek, Florida – were used to calibrate the HEC-1 computer model. The hydrologic parameters were adjusted to match the calculated HEC-1 discharges to those derived from statistical analyses at the gages.

Channel routing for the reaches between sub-area combining points was based on HEC-2 water-surface profile computations (Reference 5). The computations established a relationship between storage and discharge for each channel reach. The HEC-1 storage routing option was selected utilizing the HEC-2 storage volumes.

#### This Countywide Analysis

Frequency-discharges were developed for each basin using the USACE HEC-HMS computer program (Reference 6). The basins were divided into sub-areas, and synthetic unit hydrographs were developed for each sub-area using SCS methodology.

Rainfall frequency values were determined from National Weather Service Technical

Paper No. 40 for the 10-, 50-, and 100-year frequency rainfalls (Reference 3). A corresponding 500-year frequency rainfall was determined by extrapolation from the 10-, 50-, and 100-year frequency rainfall depths for given durations. Rainfall losses for all basins were based on SCS Curve Number loss rates. Each HEC-HMS model was executed using the SCS Unit Hydrograph precipitation model with Type II distribution.

Initial abstraction was calculated as the default 0.2\*S (0.2\*((1000/CurveNumber)-10)). The rainfall excess was applied to each unit hydrograph to obtain the flood hydrograph for each sub-area. The flood hydrographs were combined and routed using the modified Puls method.

A summary of the drainage area-peak discharge relationships for streams studied by detailed methods and the streams previously studied by detailed methods and have been redelineated for this study are shown in Table 2, "Summary of Discharges."

Table 2 – Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	10-Percent- Annual-Chance	2-Percent- Annual-Chance	1-Percent- Annual-Chance	0.2-Percent- Annual-Chance
Barber Bay Tributary					
At confluence with South Prong St. Marys River Approximately 0.5 miles	2.53	305	442	566	679
upstream of confluence with South Prong St. Marys River	2.38	285	414	530	636
At NE 57 <sup>th</sup> Boulevard	2.08	249	361	462	555
Approximately 0.3 miles upstream of NE 57 <sup>th</sup>	1.83	219	318	406	488
Boulevard		100	1.50	10.6	224
At County Highway 228	0.92	103	152	196	236
upstream of County	0.62	60	101	130	156
Highway 228	0.02	09	101	150	150
South Prong St. Marys River					
Approximately 0.2 miles					
downstream of State Road 125	121.29	1172	1833	2452	3040
At State Road 125	121.17	1172	1833	2452	3040
Approximately 0.2 miles upstream of State Road 125	121.10	1172	1833	2452	3040
Approximately 0.3 miles					
upstream of State Road 125	115.23	1171	1833	2451	3040
Approximately 0.7 miles upstream of State Road 125	114.91	1171	1833	2451	3040
Approximately 1.6 miles upstream of State Road 125	109.78	1171	1833	2451	3040
Approximately 2.1 miles upstream of State Road 125	109.2	1171	1833	2451	3040

Flooding Source and Location	Drainage Area (square miles)	10-Percent- Annual-Chance	2-Percent- Annual-Chance	1-Percent- Annual-Chance	0.2-Percent- Annual-Chance
South Prong St. Marys River					
Tributary 8					
At confluence with South Prong St. Marys River	5.84	512	749	963	1162
At State Road 125	5.82	511	749	963	1162
At Southern States Nursery Road	5.64	510	748	962	1160
Approximately 0.28 miles upstream of Southern States Nursery Road	4.45	411	597	767	922
At John Rowe Road	4.35	409	596	763	918
Approximately 0.58 miles upstream of John Rowe Road	3.85	384	545	688	820
Approximately 1.1 miles upstream of John Rowe Road	3.55	382	541	682	813
Turkev Creek					
At confluence with South Prong St. Marys River	23.17	953	1401	1813	2194
At confluence of Turkey Creek Tributary 1	19.08	638	977	1294	1590
Approximately 1.2 miles					
upstream of confluence with South Prong St.	18.74	638	976	1294	1590
Marys River					
upstream of confluence with South Prong St.	17.53	637	975	1292	1587
Marys River Approximately 1.8 miles					
upstream of confluence with South Prong St. Marys Piyor	16.99	636	975	1292	1587
At Darbyville Avenue	16.88	636	074	1201	1586
At Barber Road	11 59	439	665	872	1066
At Interstate 10	10.47	437	661	868	1061
Turkey Creek Tributary 1					
At confluence with	2.06	405	705	007	1070
Turkey Creek	3.96	495	705	897	1072
At Chestnut Road	3.94	494	704	893	1067
At confluence of Turkey Creek Tributary 1.1	3.89	493	703	890	1062
At Woodlawn Road	2.65	333	473	598	713
At J.B. Hines Road	2.58	329	467	588	701

Flooding Source and Location	Drainage Area (square miles)	10-Percent- Annual-Chance	2-Percent- Annual-Chance	1-Percent- Annual-Chance	0.2-Percent- Annual-Chance
Turkey Creek Tributary 1 (continued)					
At Southern States	2.00	259	365	458	544
At State Highway 121	1.96	252	356	447	531
upstream of State Highway 121	1.93	250	352	442	526
Approximately 0.33 miles upstream of State Highway 121	1.81	237	334	418	497
Approximately 0.78 miles upstream of State Highway 121	1.51	199	280	350	415
Approximately 1.1 miles upstream of State Highway 121	1.34	182	253	316	373
Turkey Creek Tributary 1.1					
At confluence with Turkey Creek Tributary 1	0.77	106	150	190	226
Approximately 0.17 miles downstream of Woodland Road	0.61	81	116	147	175
Approximately 0.5 miles upstream of Woodland Road	0.31	44	62	78	92
Turkey Creek Tributary 2					
At confluence with Turkey Creek	5.01	315	496	656	812
At confluence of Turkey Creek Tributary 2.1	3.30	157	247	331	431
Approximately 0.44 miles upstream of confluence of Turkey Creek Tributary 2.1	3.06	155	243	325	422
At Seaboard Coast Line Railroad	2.40	120	188	252	312
Approximately 0.18 miles upstream of Seaboard Coast Line Railroad	1.22	95	147	195	240

Elocding Source and Location	Drainage Area	10-Percent-	2-Percent-	1-Percent-	0.2-Percent-
Flooding Source and Location	(square miles)	Annual-Chance	Annual-Chance	Annual-Chance	Annual-Chance
Turkey Creek Tributary 2.1					
At confluence with					
Turkey Creek Tributary 2	1.47	143	217	284	347
At Power Line Road	1.40	137	207	270	330
At Canal Road	1.32	133	200	261	318
Approximately 0.44 miles	1 09	111	166	217	264
upstream of Canal Road	1.09	111	100	217	204
Approximately 0.68 miles	0.77	74	113	148	181
upstream of Canal Road	0.77	, ,	115	110	101
The following streams were	redelineated an	d the reported	flows originate	ed in the previo	ously
published FIS.		•	0	L.	·
Cedar Creek					
At mouth	80.0	4.046	6.304	7.274	9.408
At State Road 125	71.4	3.569	5.534	6.343	8.191
At State Road 229	26.9	1,168	1,745	1,991	2,525
Little Divon					
At mouth	40.8	2 940	4 420	5 044	6 405
Approximately 2 25 miles	40.8	2,940	4,420	5,044	0,405
upstream of Baxter Road	30.6	2,398	3,576	4,077	5,165
Middle Prong St. Marys River					
At mouth	174 1	4 4 5 4	6 988	8 047	10 356
Approximately 0.5 miles	1, 111	1,101	0,900	0,017	10,000
downstream of State Road	125.1	2,211	3,357	3,835	4,883
125					
Just downstream of State Road 250	105.6	1,848	2,797	3,196	4,074
Road 250					
North Prong St. Marys River					
Approximately 0.4 miles					
upstream of confluence of	205.0	6.582	11.419	13.986	19.393
Middle Prong St. Marys		- ,	7 -	- ,	
River					
South Prong St. Marvs River					
At mouth	196.6	6.200	9.787	11.246	14.609
At U.S. Route 90	169.6	4.941	7,983	9.264	12.161
At confluence of Turkey	<b>67</b> 0	2,224	2.2.42	2.014	4.055
Creek	57.8	2,224	3,342	3,814	4,855
St. Marvs River					
Approximately 1.050 feet					
upstream of county	710.7	17,273	29,115	34,162	46,373
boundary			,	~	,

Flooding Source and Location	Drainage Area (square miles)	10-Percent- Annual-Chance	2-Percent- Annual-Chance	1-Percent- Annual-Chance	0.2-Percent- Annual-Chance
St. Marys River (continued)					
At confluence of South Prong St. Marys River	503.9	14,451	23,855	28,128	37,812
Approximately 0.7 miles upstream of confluence of Cedar Creek	403.9	11,035	18,536	22,063	29,904
Turkey Creek					
At mouth	27.0	2,218	3,404	3,921	5,005
At State Road 121	19.9	1,647	2,413	2,785	3,522

#### Peak Discharges (cubic feet per second)

#### 3.2 Hydraulic Analyses

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles. For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (FBFM) or the revised FIRM.

#### **Pre-countywide Analyses**

Baker County has a previously printed FIS report narrative. The hydraulic analyses described in that narrative has been compiled below.

Photogrammetric methods were combined with field surveys to obtain cross-section data for the overbanks and channel sections for the backwater analysis. All bridges, dams, and culverts were surveyed to obtain elevation and structural geometry data. Land use and land cover were obtained from field surveys. Roughness coefficients (Manning's "n") were determined using engineering judgement.

Water-surface elevations of floods of the selected recurrence intervals were calculated using the USACE HEC-2 backwater computer program (Reference 5). Flood profiles were drawn showing computed water-surface elevations of floods of the selected recurrence intervals. In cases where the 2- and 1-percent-annual-chance flood elevations are close together, due to limitations of the profile scale, only the 1-percent-annual-chance profile has been shown.

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.

#### This Countywide Analysis

Cross section geometries were obtained from a combination of digital terrain data provided by Baker County and field surveys. For detail study streams, all bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry. Selected cross sections were field surveyed along the streams to determine channel geometries between bridges and culverts.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-RAS step-backwater computer program (Reference 7). Backwater computations were started at normal depth. Flood profiles were drawn showing computed water-surface elevations of floods of the selected recurrence intervals.

Manning's Roughness Coefficients (Manning's "n") for these computations were assigned on the basis of field inspection of the flood plain areas. Roughness coefficients for the streams studied in detail are contained in Table 3, "Manning's N Values."

Channel	<u>Overbank</u>
0.069-0.07	0.045-0.1
0.054-0.055	0.045-0.5
0.069-0.07	0.045-0.5
0.06	0.045-0.5
0.06-0.11	0.045-0.5
0.069-0.07	0.1-0.5
0.07	0.1-0.5
0.069-0.07	0.1-0.5
	<u>Channel</u> 0.069-0.07 0.054-0.055 0.069-0.07 0.06 0.06-0.11 0.069-0.07 0.07 0.069-0.07

Table 3 - Range of Manning's N Values

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.

#### 3.3 Vertical Datum

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

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community must, therefore, be referenced to NAVD88. The datum shift value in Baker County to convert from NGVD29 to NAVD88 is -0.92 feet.

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

No temporary vertical monuments were established during the preparation of this flood hazard analysis.

#### 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

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

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

For the streams studied by approximate methods, only the 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 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

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



Figure 1 – Floodway Schematic

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 floodway presented in this FIS report and on the FIRM was 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 have been tabulated for selected cross sections (Table 4). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

FLOODING SOURCE		FLOODING SOURCE FLOODWAY		1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
BARBER BAY TRIBUTARY								
A B C D E F G H I J K L M N O P Q	552 1,390 1,877 3,102 3,946 4,164 5,055 5,615 5,982 6,760 7,609 8,696 9,096 9,572 10,191 11,261 12,346	672 37 29 44 22 36 30 32 27 56 49 18 67 43 48 127	2,656 167 171 151 261 154 227 155 139 106 295 140 57 231 224 110 285	0.2 3.2 3.1 3.5 1.8 3.0 2.0 3.0 3.0 3.3 3.8 1.4 1.4 3.5 0.9 0.6 1.2 0.5	84.1 85.4 87.0 91.4 92.6 93.7 96.6 102.6 108.5 113.2 117.1 119.6 121.6 123.7 123.9 125.3 127.8	84.1 85.4 87.0 91.4 92.6 93.7 96.6 102.6 108.5 113.2 117.1 119.6 121.6 123.7 123.9 125.3 127.8	84.1 85.5 87.1 91.4 92.7 94.3 97.6 103.5 108.6 114.0 118.1 120.2 121.9 124.2 124.4 125.8 128.7	$\begin{array}{c} 0.0\\ 0.1\\ 0.1\\ 0.0\\ 0.1\\ 0.6\\ 1.0\\ 0.9\\ 0.1\\ 0.8\\ 1.0\\ 0.6\\ 0.3\\ 0.5\\ 0.5\\ 0.5\\ 0.5\\ 0.9\\ \end{array}$
1FEET ABOVE CONFLU	ENCE WITH SOUTI	H PRONG ST	. MARYS RIVER	२				
		EMENT AC	GENCY			FLOODWA	Y DATA	
BAKER COUNTY, FL AND INCORPORATED AREAS BARBER BAY TRIBUTARY								

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE1	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
SOUTH PRONG ST. MARYS RIVER								
F G H I J K L M N O P Q Q	589 1,223 1,979 3,123 4,320 5,460 6,283 7,539 8,494 9,422 10,585 11,292 NT 975' DOWNSTREA	422 156 493 563 546 341 506 547 792 1382 670 873	3,109 1,318 3076 4,118 4,105 2,760 3,978 4,039 5,260 8,991 4,796 6,232 ROAD 125	0.8 1.9 0.8 0.6 0.6 0.9 0.6 0.5 0.3 0.5 0.4	94.6 94.7 95.0 95.8 96.8 97.5 98.0 98.8 99.0 99.2 99.8 100.4	94.6 94.7 95.0 95.8 96.8 97.5 98.0 98.8 99.0 99.2 99.8 100.4	94.6 94.8 95.2 96.3 97.4 98.2 98.8 99.7 99.9 100.1 100.8 101.3	0.0 0.1 0.2 0.5 0.6 0.7 0.8 0.9 0.9 0.9 1.0 0.9
FEDERAL EME	RGENCY MANAG	EMENT AG	EMENT AGENCY			FLOODWA	Y DATA	
B AND II	AKER COUNTY,	FL AREAS			SOUTH	PRONG ST	. MARYS RI	VER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
SOUTH PRONG ST. MARYS RIVER TRIBUTARY 8									
A B C D E F G H I J K L M N O P	318 1,397 2,232 3,106 3,759 4,394 5,020 6,586 7,537 8,269 9,005 9,617 10,277 10,787 11,854 12,660 ENCE WITH SOUTH	1012 104 71 128 130 110 106 86 62 95 138 307 246 396 243 503	5,617 395 249 875 806 703 600 510 358 484 804 1,592 1,306 1,853 862 1,144	0.2 2.4 3.9 1.1 1.0 1.1 1.3 1.5 1.9 1.4 0.9 0.4 0.5 0.4 0.8 0.6	95.4 96.7 98.3 103.8 105.3 106.7 108.2 113.2 114.8 116.9 119.1 119.9 119.9 119.9 119.9 120.0 121.6	95.4 96.7 98.3 103.8 105.3 106.7 108.2 113.2 114.8 116.9 119.1 119.9 119.9 119.9 119.9 120.0 121.6	95.4 96.9 98.8 104.7 106.1 107.5 108.9 114.1 115.7 117.7 119.8 120.6 120.7 120.7 120.7 122.3	0.0 0.2 0.5 0.9 0.8 0.7 0.9 0.9 0.9 0.8 0.7 0.7 0.7 0.8 0.8 0.7 0.7	
FEDERAL EMERG	ENCY MANAG	EMENT AC	GENCY		FLOODWAY DATA				
BAI AND INC	CER COUNTY,	FL AREAS		SOUTH PRONG ST. MARYS RIVER TRIBUTARY 8					

	FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
	CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
	TURKEY CREEK									
	A B C D E F G H I J K L M N O	992 2,341 3,259 3,979 5,272 6,112 7,226 8,324 9,320 11,186 12,389 13,161 14,207 15,273 16,330	1,892 525 361 190 312 342 379 250 288 290 370 313 144 136 225	15,070 3,095 2,104 1077 1,720 1,891 1,754 1,241 1,584 1,654 1,603 1,290 512 663 979	0.1 0.6 0.6 1.2 0.8 0.7 1.0 0.8 0.5 0.7 1.7 1.3 0.9	93.5 94.1 94.9 95.5 97.3 98.6 100.2 102.6 104.6 108.0 109.6 110.7 112.6 114.7 117.3	93.5 94.1 94.9 95.5 97.3 98.6 100.2 102.6 104.6 108.0 109.6 110.7 112.6 114.7 117.3	93.5 94.3 95.3 96.1 98.1 99.4 101.1 103.5 105.5 108.9 110.4 111.5 113.5 115.5 118.1	0.0 0.2 0.4 0.6 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.8 0.8 0.8 0.8 0.8 0.8	
T	FEDERAL EMERG	RGENCY MANAGEMENT AGENCY			FLOODWAY DATA					
	BAR AND INC	CER COUNTY, I	FL AREAS					REEK		

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
CROSS SECTION	DISTANCE1	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
TURKEY CREEK TRIBUTARY 1									
А	308²	655	2,612	0.3	94.5	94.5	94.5	0.0	
В	847	32	204	4.4	95.1	95.1	95.7	0.6	
С	1,423	136	692	1.3	97.5	97.5	97.7	0.2	
D	1,863	17	137	5.2	98.1	98.1	98.8	0.7	
E	2,791	95	393	1.5	102.6	102.6	103.6	1.0	
F	3,442	135	566	1.1	105.2	105.2	106.0	0.8	
G	4,311	30	157	3.8	108.1	108.1	108.7	0.6	
Н	4,939	59	301	2.0	112.6	112.6	112.7	0.1	
I	5,993	47	248	2.4	117.6	117.6	118.6	1.0	
J	6,833	85	426	1.1	119.9	119.9	120.9	1.0	
К	7,822	92	245	1.9	121.7	121.7	122.6	0.9	
L	8,735	89	451	1.0	124.3	124.3	124.7	0.4	
М	9,160	31	149	3.0	124.7	124.7	125.2	0.5	
Ν	10,098	83	405	1.1	127.9	127.9	128.4	0.5	
0	10,487	60	320	1.4	128.7	128.7	129.3	0.6	
Р	11,122	31	145	2.9	129.4	129.4	130.2	0.8	
Q	11,794	264	885	0.5	131.4	131.4	132.3	0.9	
R	12,631	108	381	0.9	132.1	132.1	132.8	0.7	
S	13,223	108	382	0.9	132.3	132.3	132.9	0.6	
Т	13,972	97	232	1.5	133.1	133.1	133.5	0.4	
U	14,847	84	152	2.1	135.3	135.3	135.4	0.1	
V	15,862	191	407	0.8	137.8	137.8	138.6	0.8	
1FEET ABOVE CONFLU	ENCE WITH TURK	EY CREEK							
<sup>2</sup> FLOODWAY AT THIS (	ROSS SECTION F	ALLS ENTIRE	LY WITHIN THI	E FLOODWAY	FOR TURKEY CF	REEK			
	EMERGENCY MANAGEMENT AGENCY			FLOODWAY DATA					
	ORPORATED	AREAS		TURKEY CREEK TRIBUTARY 1					

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
CROSS SECTION	DISTANCE1	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
TURKEY CREEK TRIBUTARY 1.1									
A B C D E F <sup>1</sup> FEET ABOVE CONFLU	173 1,005 2,133 3,607 4,272 5,343	47 50 22 28 28 11	113 139 72 90 57 31	1.7 1.1 2.0 0.9 1.4 2.5	97.7 102.1 108.4 115.4 115.9 119.2	97.7 102.1 108.4 115.4 115.9 119.2	97.7 103.1 109.4 115.4 116.1 119.9	0.0 1.0 1.0 0.2 0.7	
		<u> </u>							
FEDERAL EMERO BA AND INO	EMENT AGENCY FL AREAS			TURKE	EY CREEK T	RIBUTARY	1.1		

	FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
	CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
	TURKEY CREEK TRIBUTARY 2									
	A B C D E F G H I J K L M N	718 1,754 2,590 3,408 4,478 5,296 6,098 6,759 7,472 8,171 8,656 10,261 10,599 11,072	352 46 90 80 66 57 67 85 223 238 91 189 498 445 445	1,303 232 363 286 287 240 244 338 568 903 361 571 1,471 1,367	0.5 2.7 1.7 2.2 1.2 1.4 1.3 0.8 0.4 0.3 0.7 0.4 0.2 0.1	108.8 110.9 112.0 113.6 117.1 120.7 123.9 124.9 125.8 126.4 126.8 127.4 128.3 128.3 128.4	108.8 110.9 112.0 113.6 117.1 120.7 123.9 124.9 125.8 126.4 126.8 127.4 128.3 128.3 128.4	108.8 111.2 112.9 114.6 118.0 121.5 124.8 125.8 126.7 127.3 127.7 128.3 128.5 128.7	0.0 0.3 0.9 1.0 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.2 0.3	
T	FEDERAL EMERG		EMENT AGENCY			FLOODWAY DATA				
	AND INC	ORPORATED	AREAS			TURK	EY CREEK	TRIBUTARY	2	

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)				
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
TURKEY CREEK TRIBUTARY 2.1									
A B C D E F G	359 1,616 2,477 3,205 4,119 5,185 6,120	24 34 64 22 53 292	56 118 166 119 273 132 594	5.1 2.2 1.6 1.8 0.8 1.6 0.3	115.0 123.6 126.9 129.8 130.2 131.8 132.2	115.0 123.6 126.9 129.8 130.2 131.8 132.2	115.0 124.3 127.2 130.8 131.1 132.2 132.7	0.0 0.7 0.3 1.0 0.9 0.4 0.5	
	GENCY MANAG	EMENT A	GENCY			FLOODWA	Υ DATA		
BA AND IN	KER COUNTY, CORPORATED	FL AREAS			TURKE	EY CREEK T	RIBUTARY	2.1	

#### 5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. 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 AE

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

Zone X

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 J-44 Section J.5 Guidelines and Specifications for Flood Hazard Mapping Partners [April 2003] 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 Flood Insurance Rate Map 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 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current Flood Insurance Rate Map presents flooding information for the geographic area of Baker County. Previously, separate Flood Hazard Boundary Maps and/or Flood Insurance Rate Maps were prepared for each flood-prone incorporated community and the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 5, Community Map History.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE		
*Glen St. Mary, Town of	N/A	N/A	N/A	N/A		
Macclenny, City of	November 24, 1978	None	February 1, 1987	None		
Unincorporated Areas	January 27, 1978	None	July 16, 1991	None		
*Non-floodprone						
FEDERAL EMERGENCY MANAG BAKER COUNT AND INCORPORATE	EMENT AGENCY Y, FL D AREAS	COMMUNITY MAP HISTORY				

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#### 7.0 <u>OTHER STUDIES</u>

The Flood Insurance Study for the unincorporated areas of Baker County is in agreement with this study (Reference 8).

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Baker County has been compiled into this FIS. Therefore, this FIS report supersedes or is compatible with all previously printed FIS reports, FIRMs, and FBFMs for all jurisdictions within Baker County and should be considered authoritative for the 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 Federal Insurance and Mitigation Division, FEMA Region IV, Koger-Center – Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia 30341.

#### 9.0 <u>REFERENCES AND BIBLIOGRAPHY</u>

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- 2. U.S. Department of Commerce, Bureau of the Census, 2000 Census of Population, Number of Inhabitants, Baker County, Tennessee, Internet site.
- 3. -----, Weather Bureau, Technical Paper No. 40, <u>Rainfall Frequency Atlas of the United</u> <u>States</u>, Washington, D.C., January 1963.
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- 5. U.S. Army Corps of Engineers, Hydrologic Engineering Center, <u>HEC-2 Water-Surface</u> <u>Profiles, Computer Program 723-X6-L202A</u>, Davis, California, April 1984.
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- 7. U.S. Army Corps of Engineers, Hydrologic Engineering Center, <u>HEC-RAS River Analysis</u> System, Version 3.1.2, November 2002.
- 8. Federal Emergency Management Agency, <u>Flood Insurance Study, Baker County, Florida</u> (<u>Unincorporated Areas</u>), Washington, D.C., July 16, 1991.











































