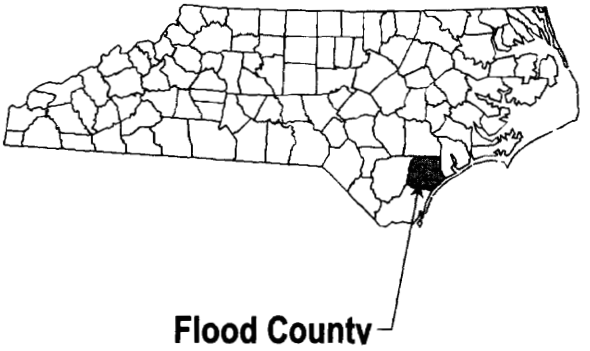
FLOOD INSURANCE STUDY

FLOOD COUNTY, USA
AND INCORPORATED AREAS



COMMUNITY NAME	COMMUNITY NUMBER
FLOOD COUNTY (UNINCORPORATED AREAS)	990099
FLOODVILLE, TOWN OF	990098

AUGUST 19, 1998

Federal Emergency Management Agency

THIS IS A SAMPLE TEXT OF A FLOOD INSURANCE STUDY

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

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

Initial Countywide FIS Effective Date: August 19, 1998

Revised Countywide FIS Dates:

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FLOOD INSURANCE STUDY
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1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises previous FISs/Flood Insurance Rate Maps (FIRMs) for, the geographic area of Flood County, USA, including: the Town of Floodville and the unincorporated areas of Flood County (hereinafter referred to collectively as Flood County). This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Flood 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 National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

1.2 Authority and Acknowledgments

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

This FIS was prepared to include incorporated communities within Flood County in a countywide FIS. Information on the authority and acknowledgements for each jurisdiction included in this countywide FIS was compiled from their previously printed FIS reports and is shown below.

Flood County (Unincorporated Areas):	the hydrologic and hydraulic analyses for the FIS report dated April 17, 1987, were prepared by the U.S. Army Corps of Engineers (USACE), Springfield District, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-84-E-1506. That work was completed in December 1985.

Floodville, Town of:	the hydrologic and hydraulic analyses for the FIS report dated April 17, 1987, were prepared by the USACE, Springfield District, for the FEMA, under Inter-Agency Agreement No. EMW-84-E-1506, Project Order No. 1, Amendment No. 4. That work was completed in December 1985.

For this countywide FIS, the hydrologic and hydraulic analyses were prepared by USACE for FEMA, under Inter-Agency Agreement No. EMW-94-C-0019. This work was completed in October 1995.

Base map files were provided by the Town of Floodville Stormwater Management Department, 126 Royal Oaks Drive, Suite 201, Floodville, USA 99150, and the Flood County Geographic Information Systems Department, 1110 South Road, Suite 205, Floodville, USA 99150. These files were photogrammetrically compiled at scales of 1"=200' (urban areas) and 1"=400' (rural areas) from aerial photographs. Additional information was derived from U.S. Geological Survey (USGS) 7.5-Minute Series Topographic Maps. The coordinate system used for the production of the digital FIRMs is Universal Transverse Mercator referenced to the North American Vertical Datum of 1927 and the Clarke 1866 spheroid.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) 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 meeting is held with representatives of the communities, FEMA, and the study contractors to review the results of the study.

The dates of the initial and final CCO meetings held for Flood County and the incorporated communities within its boundaries are shown in the following tabulation:

Community Name	Initial CCO Date	Final CCO Date
Flood County (Unincorporated Areas)	November 2, 1983	July 22, 1986
Floodville, Town of	November 4, 1983	August 21, 1986

For this countywide FIS, an initial CCO meeting was held on September 11, 1994 and was attended by representatives of Flood County, USACE, and FEMA. A final CCO meeting was held on February 3, 1997, and was attended by representatives of Flood County, USACE, and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Flood County, USA. The area of study is shown on the Vicinity Map (Figure 1).

All or portions of the following flooding sources were studied by detailed methods: Atlantic Ocean, Cobb Brook, Rocky River, Jesco Lake, Silver Lakes, South Lake, and Stone Lake.

For this countywide FIS, Cobb Brook from the confluence with Rocky River to a point approximately 1,725 feet upstream of Raymond Diehl Road, and Rocky River from a point approximately 700 feet downstream of the confluence of Cobb Brook to a point approximately 1.85 miles upstream of Wellington Road, were newly studied by detailed methods.

Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and/or on the FIRM (Exhibit 2). The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

All or portions of the following flooding sources were studied by approximate methods: Coleman Creek, Dean Lake, Flood Lake, Harpo Lake, Ireland Creek, Ireland Creek Tributary, Ireland Lake, Lake Cartman, Lake Morgan, Lily Foot Lake, Lynn Lake, Orchard Creek, Orchard Ponds, Rocky River, and Spark Lake. 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 Flood County.

2.2 Community Description

Flood County is located in the southeastern portion of USA on the Atlantic Ocean. The total land area within the county limits is approximately 1,052 square miles. The county is bordered by Anderson County to the north, the Atlantic Ocean to the southeast, Seaside County to the south, Bowen County to the east, and Chandler County to the west. Flood County had a 1997 population of 36,123.

Industry in the county is diversified, with forestry and farming serving as the most important industries. Commercial fishing is also important along the coastline. Flood County is served by U.S. Route 99, State Route 45, and CSX Transportation.

The climate of Flood County is subtropical, with a moderating influence from the Atlantic Ocean. The average daily temperature varies during the year from 55 degrees Fahrenheit (^{o}F) to 82 ^{o}F. The average annual precipitation is 57.6 inches.

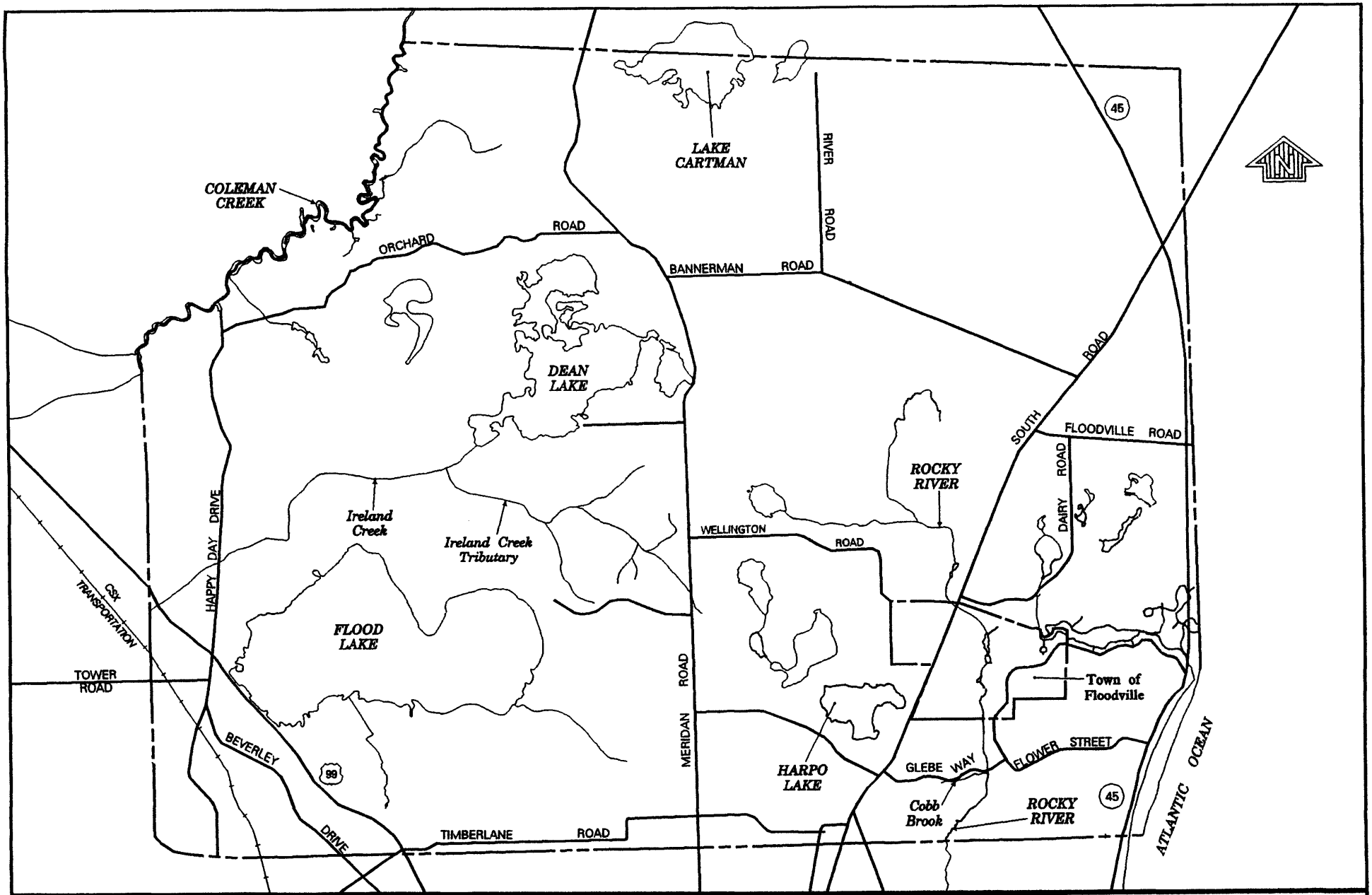


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA
AND INCORPORATED AREAS

APPROXIMATE SCALE

1.4 0 1.4 2.8 4.2 MILES

VICINITY MAP

2.3 Principal Flood Problems

Flood problems in the county can be attributed to both riverine flooding and tidal surge. Riverine flooding occurs as a result of both naturally occurring storm patterns and severe precipitation due to hurricanes.

Normal rainfall patterns are greatest during two distinct periods: 1) during summer, due to afternoon and evening thunderstorms, and 2) during late winter and early spring, due to frontal systems.

The Rocky River, Coleman Creek and several lakes within the county are major contributors to much of the flooding in the county. Major floods to date include the 1929 flood and the 1975 flood. The 1929 flood was the largest flood ever recorded. At the gaging station near Bruce, USA, the Rocky River reached an elevation of 28.94 feet mean sea level (msl), 7.46 feet higher than the next largest flood. The 1975 flood was the second largest flood recorded; it reached an elevation of 21.48 feet msl. The recurrence interval of this 1975 flood is once every 19 years while the 1929 flood interval would be less than once in 500 years.

Cobb Brook experiences flooding from extensive rainfall. Even though no severe flooding problems have been recorded, Cobb Brook poses a threat to the area's residential housing and also to future development along the brook.

The coastal areas of Flood County are subject to flooding from tidal surges associated with hurricanes along the Atlantic Ocean.

2.4 Flood Protection Measures

FEMA specifies that all levees must have a minimum of three foot freeboard against the 100-year flooding to be considered a safe flood protection structure. Levees that are shown within Flood County meet the FEMA requirement.

Federal and State funded protection measures are being employed in Flood County with the construction of Dean Lake Dam. Another levee along the leftside of the downstream bank of the Rocky River is under construction and will be finished in the year 2000.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance,

respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual 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 county 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 and peak elevation-frequency relationships for each flooding source studied in detail affecting the county.

Precountywide Analyses

Each jurisdiction within Flood County had a previously printed FIS report describing each community's hydrologic analyses. Those analyses have been compiled from the FIS reports and are summarized below.

For the unincorporated areas of Flood County and the Town of Floodville, inundation from the Atlantic Ocean caused by passage of storms (storm surge) was determined by the joint probability method (Reference 1). The storm populations were described by probability distributions of five parameters that influence surge heights. These parameters were central pressure depression (which measures the intensity of the storm), radius to maximum winds, forward speed of the storm, shoreline crossing point, and crossing angle. These characteristics were described statistically based on an analysis of observed storms in the vicinity of Flood County. Primary sources of data for this analysis were obtained from two reports made by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) reports (References 2 and 3). A summary of the parameters used for the area is presented in Table 1, "Parameter Values for Surge Elevations."

For areas subject to flooding directly from the Atlantic Ocean, the FEMA standard storm surge model was used to simulate the coastal surge generated by any chosen storm (that is, any combination of the five storm parameters defined previously). By performing such simulations for a large number of storms, each of known total probability, the frequency distribution of surge height can be established as a function of coastal location. Those distributions incorporate the large-scale surge behavior, but do not include an analysis of the added effects associated with much finer scale wave phenomena, such as wave height or runup. As the final step in the calculations, the astronomic tide for the region is then statistically combined with the computed storm surge to yield recurrence intervals of total water level (Reference 4).

Central Pressure Depression (Millibars)	51.2	24.2	33.2	38.2	49.2	60.2	75.2	79.2
Assigned Probabilities	0.32	0.27	0.06	0.11	0.09	0.08	0.05	0.02
Storm Radius to Maximum Winds (nautical miles)	12			24			36	
Probability	0.23			0.50			0.27	
Forward Speed (knots)	7			13			19	
Probabilities: Entering	0.46			0.36			0.18	
Direction of storm path (degrees from true north)		138		ENTERING 167		196		225
Probability		0.25		0.23		0.27		0.25
Frequency of Storm Occurrence (Storm/Nautical mile/year)				0.002213				

TABLE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA
AND INCORPORATED AREAS

PARAMETER VALUES FOR SURGE ELEVATIONS

Wave set-up was determined to significantly contribute to the total stillwater flood levels along the Atlantic Ocean coastline. The amount of wave setup was calculated using the methodology outlined in the USACE publication Coastal Engineering Research Center, Shore Protection Manual (Reference 5). The 100-year stillwater elevations for Transects 1 to 3 along the Atlantic Ocean presented in Table 2, "Summary of Stillwater Elevations," include wave setup.

The storm-surge elevations for the 10-, 50-, 100-, and 500-year floods have been determined for the Atlantic Ocean, Jesco Lake, Silver Lakes, South Lake, and Stone Lake and are shown in Table 2, "Summary of Stillwater Elevations." The analyses reported herein reflect the stillwater elevations due to tidal and wind setup effects and include the contributions from wave action effects.

TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NGVD) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
ATLANTIC OCEAN				
Entire open coast shoreline within Flood County	6.7	8.7	10.0[1]	12.6
JESCO LAKE				
Entire shoreline within Flood County	6.9	8.9	10.3	12.8
SILVER LAKES				
Entire shoreline within Flood County	8.6	9.6	10.4	13.5
SOUTH LAKE				
Entire shoreline within Flood County	6.9	8.9	10.3	12.8
STONE LAKE				
Entire shoreline within Flood County	7.0	9.0	10.2	12.8
RETENTION POND NO. 1				
Entire shoreline within Flood County	N/A	N/A	10.0	N/A

[1] Includes wave set-up of 0.5 foot

Countywide Analyses

The hydrologic analyses for the Cobb Brook watershed were performed using the USACE HEC-1 Flood Hydrograph Package (Reference 6). The Soil Conservation Service Dimensionless Unit Hydrograph (DUH) was used as the method to calculate the hydrograph for each subbasin. The storage method was used for the routing methodology with the DUH. The raw data for the drainage areas, curve numbers, and the lag and routing times was obtained from USGS 7.5-Minute Series Topographic Maps (Reference 7). The hypothetical storm information was obtained from Technical Paper No. 40 (Reference 8). The analyses were based on historical high watermarks obtained from interviews of county residents.

Discharges for the Rocky River were determined from a log-Pearson Type III frequency analysis, using data from a 50-year record of two USGS continuous-record stations at Mayberry and Bruce (Gage Nos. 02174000 and 02175000, respectively). The Mayberry gage was transposed downstream to more accurately reflect discharges in the upstream reach of the detailed study. The gage at Bruce was transposed to the downstream limit of the study.

A summary of the drainage area-peak discharge relationships for the flooding sources studied by detailed methods is shown in Table 3, "Summary of Discharges."

TABLE 3 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
COBB BROOK					
At the confluence with the Rocky River	4.2	560	910	1,080	1,550
ROCKY RIVER					
Approximately 0.7 mile upstream of county boundary	23.7	2,030	3,310	3,950	5,650
Just upstream of Wellington Road	13.5	1,150	2,000	2,610	4,050

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.

Precountywide Analyses

Each jurisdiction within Flood County had a previously printed FIS report describing each community's hydraulic analyses. Those analyses have been compiled from the FIS reports and are summarized below.

The FEMA storm surge model was used to simulate the hydrodynamic behavior of the surge generated by the various synthetic storms. This model utilizes a grid pattern approximating the geographical features of the study area and the adjoining areas. Surges were computed utilizing grids of 5 by 5 nautical miles and 10 by 10 miles, depending on the resolution required. Underwater depths and land heights for the model grid systems were obtained from the NOAA project and USGS topographic maps (References 3 and 7).

The methodology for analyzing the effects of wave heights associated with coastal storm surge flooding is described in a report prepared by the National Academy of Sciences (NAS) (Reference 9). This method is based on the following major concepts. First, depth-limited waves in shallow water reach a maximum breaking height that is equal to 0.78 times the stillwater depth. The wave crest is 70 percent of the total wave height above the stillwater level. The second major concept is that wave height may be diminished by dissipation of energy due to the presence of obstructions, such as sand dunes, dikes and seawalls, buildings, and vegetation. The amount of energy dissipation is a function of the physical characteristics of the obstruction and is determined by procedures prescribed in Reference 9. The third major concept is that wave height can be regenerated in open fetch areas due to the transfer of wind energy to the water. This added energy is related to fetch length and depth.

The wave height analysis along the Atlantic Ocean shoreline was computed using FEMA's standard coastal surge model, WHAFIS 3.0. Wave heights were computed along transects (cross-section lines) that were located along the coastal areas, as illustrated in Figure 2, Transect Location Map, in accordance with the Users' Manual for Wave Height Analysis (Reference 10). The transects were located with consideration given to the physical and cultural characteristics of the land so that they would closely represent conditions of their locality. Transects were spaced close together in areas of complex topography and dense development. In areas having more uniform characteristics, they were spaced at large intervals. It was also necessary to locate transects in areas where unique flooding existed and in areas where computed wave heights varied significantly between adjacent transects. Table 4 provides a listing of the transect locations and stillwater starting elevations, as well as maximum wave crest elevations.

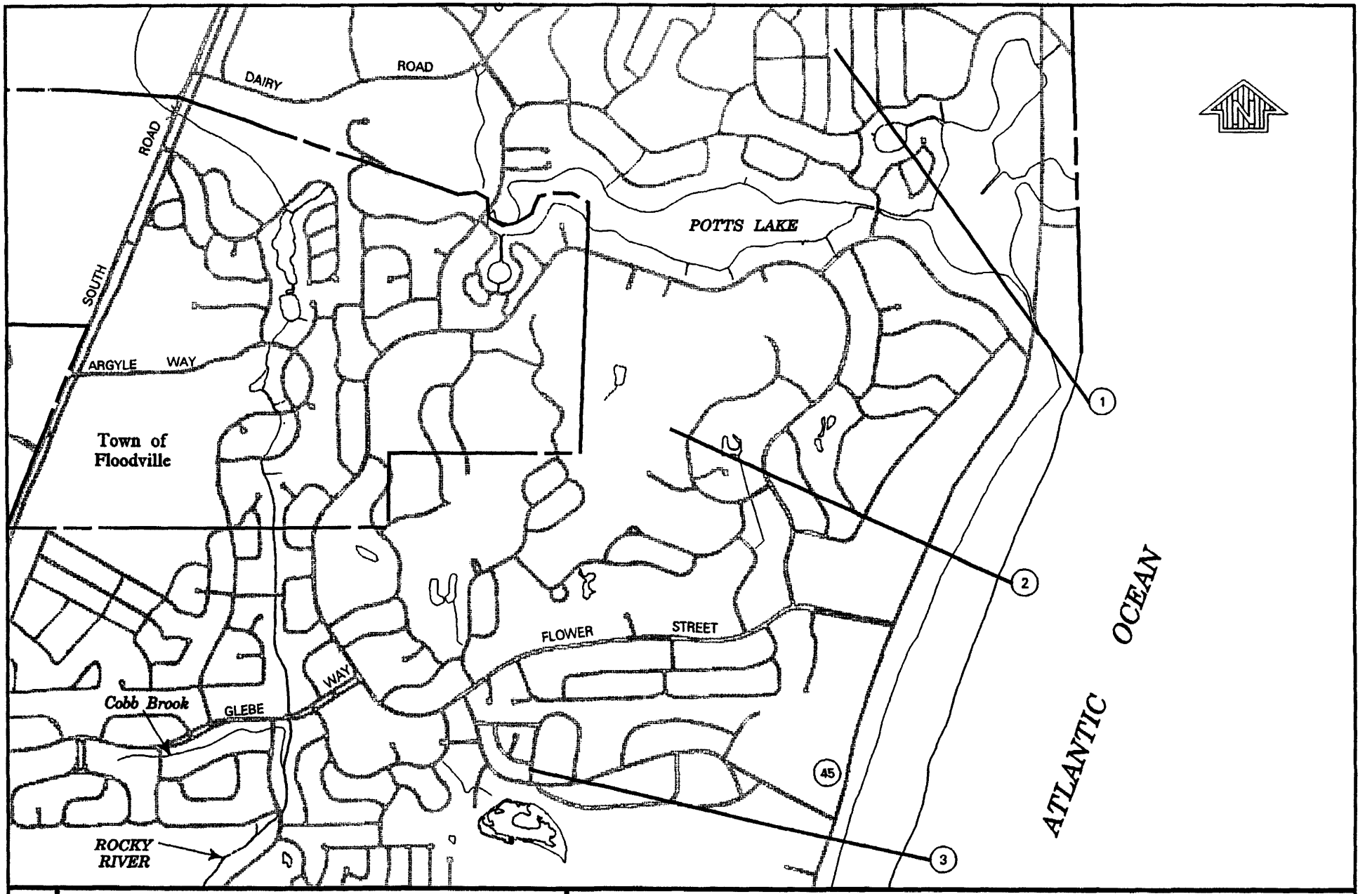


FIGURE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA

AND INCORPORATED AREAS

APPROXIMATE SCALE

.4 0 .4 .8 1.2 MILES

TRANSECT LOCATION MAP

TABLE 4 - TRANSECT DESCRIPTIONS

TRANSECT	LOCATION	ELEVATION (feet NGVD) 100-YEAR STILLWATER	ELEVATION (feet NGVD) MAXIMUM 100-YEAR WAVE CREST[2]
1	Shoreline of Flood County, approximately 1,000 feet southeast of the intersection of Tralee Road and McLaughlin Drive, extending inland approximately 5,400 feet to Old Ventura.	10.0[1]	14.2
2	Shoreline of Flood County, between McLaughlin Drive and Flower Street, extending inland approximately 4,300 feet to Palmeri Drive.	10.0[1]	14.2
3	Shoreline of Flood County approximately 300 feet southwest of the intersection of State Route 45 and View Way, extending inland approximately 4,700 feet to Stone Trail.	10.0[1]	14.2

[1] Includes wave setup of 0.5 foot
[2] Because of map scale limitations, the maximum wave elevation may not be shown on the FIRM

Each transect was taken perpendicular to the shoreline and extended inland to a point where wave action ceased. Along each transect, wave heights and elevations were computed considering effects of changes in ground elevation, vegetation, and physical features. The stillwater elevations for the 100-year flood were used as the starting elevations for these computations. Wave heights were calculated to the nearest 0.1 foot, and wave elevations were determined at whole-foot increments along the transects. The location of the 3-foot breaking wave for determining the terminus of the V Zone (area with velocity wave action) was also computed at each transect.

Table 5, "Transect Data," shows the Atlantic Ocean stillwater elevations and the maximum and minimum VE and AE zone elevations at each transect.

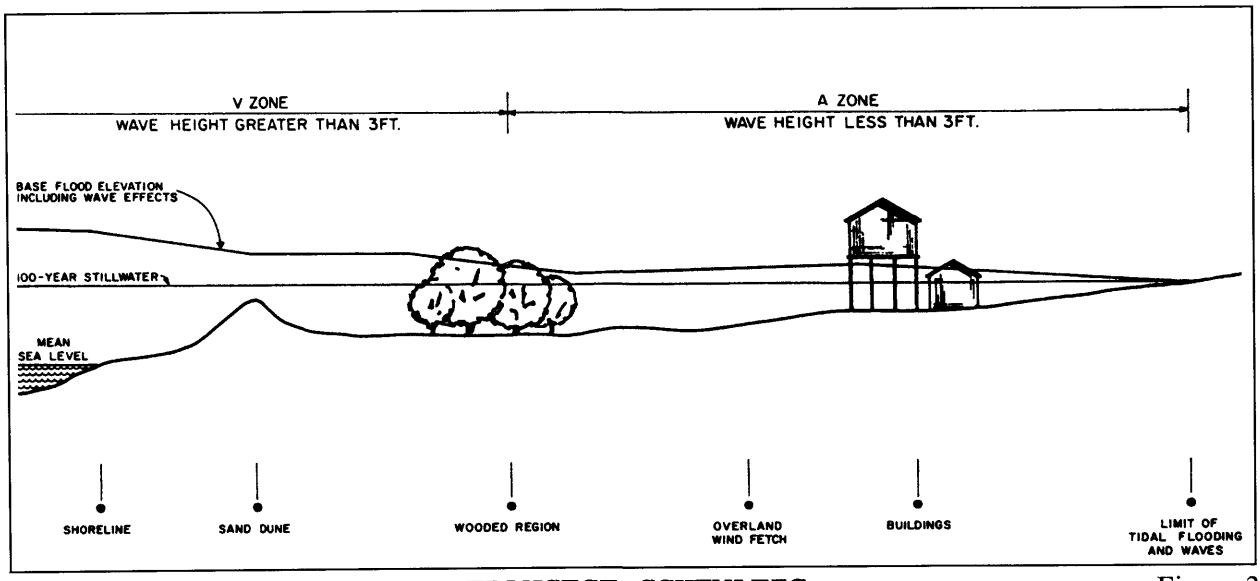
TABLE 5 - TRANSECT DATA

FLOODING SOURCE	STILLWATER ELEVATION (feet NGVD) 10-YEAR	50-YEAR	100-YEAR	500-YEAR	ZONE	BASE FLOOD ELEVATION (feet NGVD)[2]
ATLANTIC OCEAN						
Transect 1	6.7	8.7	10.0[1]	12.6	VE	12-14
					AE	10-12
Transect 2	6.7	8.7	10.0[1]	12.6	VE	13-14
					AE	10-12
					AO	Depth 2'
Transect 3	6.7	8.7	10.0[1]	12.6	VE	12-14
					AE	10-12

[1]Includes wave set-up of 0.5 foot
[2]Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.

Along the Flood County shoreline, existing dunes were found to be insufficient in size to sustain wave attack. Therefore, using standard erosion analysis procedures as outlined in the Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping, the protection afforded by the dunes was removed from the coastal analysis, resulting in a low beach profile slope (Reference 11). This does not allow for the development of wave runup. As a result, wave runup was not considered in the coastal base flood elevations.

Figure 3 represents a sample transect that illustrates the relationship between the stillwater elevation, the wave crest elevation, the ground elevation profile, and the location of the A/V Zone boundary.



TRANSECT SCHEMATIC Figure 3

After analyzing wave heights along each transect, wave elevations were interpolated between transects. Various source data were used in the interpolation, including topographic maps and engineering judgment (Reference 7). Controlling features affecting the elevations were identified and considered in relation to their positions at particular transect and their variation between transects.

Countywide Analyses

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. The channel sections were located at close intervals upstream and downstream of structures. The overbank cross section data were obtained from topographic maps at a scale of 1:2,400 with a contour interval of 2 feet, provided by the USACE (Reference 12).

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).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 13). Starting water-surface elevations for Cobb Brook were calculated using the slope/area method. The starting water-surface elevations for the Rocky River were obtained by using the mean high tide elevation because starting conditions produced water-surface elevations below mean high tide. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Along certain portions of the Rocky River, a profile base line is shown on the maps to represent channel distances as indicated on the flood profiles and floodway data tables.

Roughness factors (Manning's "n") used in the hydraulic computations were based on field observations. The channel "n" values for Cobb Brook ranged from 0.040 to 0.048 and the overbank "n" values ranged from 0.095 to 0.143. The Channel "n" values for the Rocky River ranged from 0.042 to 0.050 and the overbank "n" values ranged from 0.105 to 0.210.

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

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study, and their descriptions, are shown on the FIRM.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS generally provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the stream studied in detail, the 100- and 500-year floodplains have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:2,400 with a contour interval of 2 feet (Reference 12). For the lacustrine and coastal floodplains, the USGS 7.5-Minute Series Topographic Maps at a scale of 1:24,000 with a contour interval of 5 feet were used (Reference 7).

For the streams studied by approximate methods, the 100-year floodplain boundaries were taken from the Flood Hazard Boundary Map for the unincorporated areas of Flood County (Reference 14).

The 100- and 500-year floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones VE, AO, AH, A99, A, and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year 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 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this FIS 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 are tabulated for selected cross sections (Table 6, "Floodway Data"). The computed floodway is shown on the FIRM (Exhibit 2). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown. No floodway was computed for Cobb Brook.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Rocky River								
A	4.395	115	1.233	6.1	9.9	9.9	10.0	0.1
B	5.537	13	142	9.2	10.4	10.4	10.5	0.1
C	9.610	100	323	8.4	10.9	10.9	11.1	0.2
D	10.995	85	861	7.2	11.2	11.2	11.3	0.1
E	12.695	245	1.887	5.1	11.3	11.3	11.4	0.1
F	13.845	270	2.403	4.5	11.5	11.5	11.5	0.0
G	14.513	230	2.553	3.7	11.6	11.6	11.6	0.0
H	16.625	180	2.000	4.2	11.7	11.7	11.7	0.0
I	18.209	415	2.566	3.9	12.5	12.5	12.7	0.2
J	20.849	230	2.381	4.0	13.0	13.0	13.2	0.2
K	25.360	340	2.924	3.6	14.0	14.0	14.2	0.2

[1]Feet above county boundary

TABLE 6

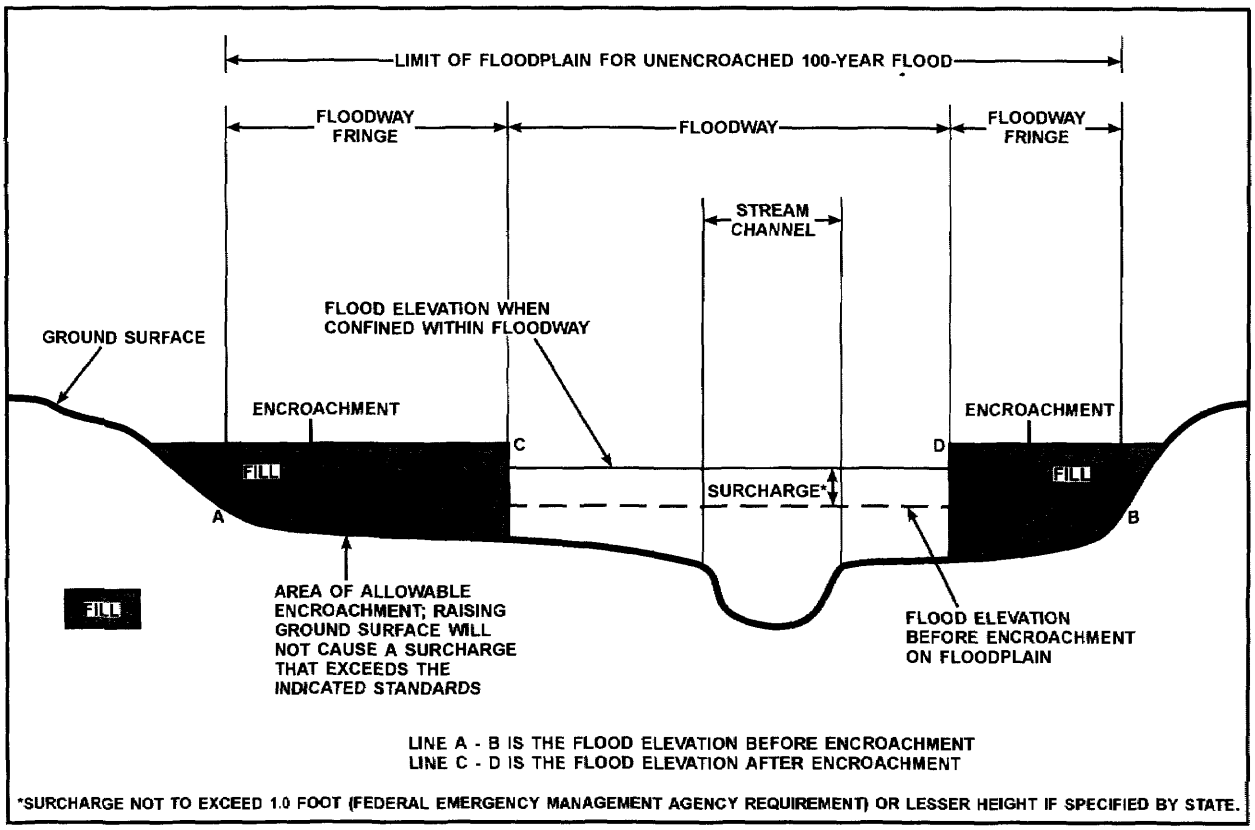
FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA
AND INCORPORATED AREAS

FLOODWAY DATA

ROCKY RIVER

The area between the floodway and 100-year 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 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.



FLOODWAY SCHEMATIC Figure 4

5.0 INSURANCE APPLICATIONS

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

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations 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 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

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 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. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Flood County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community up to and including this countywide FIS are presented in Table 7, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Flood County (Unincorporated Areas)	May 19, 1974	NONE	April 17, 1987	August 19, 1998
Floodville, Town of	June 18, 1978	NONE	April 17, 1987	

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

FISs have been prepared for the unincorporated areas of Anderson, Bowen, Chandler and Seaside Counties (References 15, 16, 17, and 18).

Because it is based on more up-to-date analyses, this countywide FIS supersedes the previously printed FISs for the unincorporated areas of Flood County and the Town of Floodville (References 19 and 20).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA, Mitigation Division, Roger Center - Koger Building, 6006 South Road, Floodville, USA 99150.

9.0 BIBLIOGRAPHY AND REFERENCES

1. U.S. Department of Commerce, Environmental Sciences Services Administration, Technical Memorandum WBTM, Hydro 11, Joint Probability Method of Tide Frequency Analysis, by Vance A. Myers, Washington, D.C., April 1970.

2. U.S. Department of Commerce, National Oceanic and Atmospheric Admininstration, National Weather Service, Technical Report NWS 15, Some Climatological Characteristics of Hurricanes and Tropical Storms, Gulf and East Coasts of the United States, by Francis P. Ho, Richard W. Schwerdt, and Hugo V. Goodyear, May 1975.

3. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Hurricane Project, Report No. 33, Meteorological Considerations Pertinent to Standard Project Hurricane, Atlantic and Gulf Coasts of the United States, by Howard E. Graham and Dwight B. Nunn, November 1959.

4. Federal Emergency Management Agency, Coastal Flooding Storm Surge Model, Part 1, Methodology, February 1981.

5. U.S. Army Corps of Engineers, Coastal Engineering Research Center, Shore Protection Manual, Vicksburg, Mississippi, 1977.

6. U.S. Army Corps of Engineers, HEC-1 Flood Hydrograph Package, Floodville, USA, October 1970.

7. U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 5 Feet: Narnia, USA, 1960; Lake Ness, USA, 1960; Witch Mountain, USA, 1960; Scale 1:62,500, Contour Interval 20 Feet: Green Gable Pond, USA, 1943.

8. U.S. Department of Commerce, Weather Bureau, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, Washington, D.C., 1961, revised 1963.

9. National Academy of Sciences, Methodology for Calculating Wave Action Effects Associated with Storm Surges, Washington, D.C., 1977.

10. Federal Emergency Management Agency, Federal Insurance Administration, Users Manual for Wave Height Analysis, Washington, D.C., Revised February 1981.

11. Federal Emergency Mapping Agency, Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping, Washington, D.C., March 1995.

12. U.S. Army Corps of Engineers, Topographic Maps, Scale 1:2,400, Contour Interval of 2 Feet, Flood County, USA, May 1995.

13. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2, Water Surface Profiles, Generalized Computer Program, Floodville, USA, April 1984, revised May 1991.

14. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Flood County (Unincorporated Areas), USA, Washington, D.C., May 19, 1974.

15. Federal Emergency Management Agency, Flood Insurance Study, Anderson County, USA (Unincorporated Areas), Washington, D.C., April 17, 1987.

16. Federal Emergency Management Agency, Flood Insurance Study, Bowen County, USA (Unincorporated Areas), Washington, D.C., April 15, 1994.

17. Federal Emergency Management Agency, Flood Insurance Study, Chandler County, USA (Unincorporated Areas), Washington, D.C., August 19, 1998.

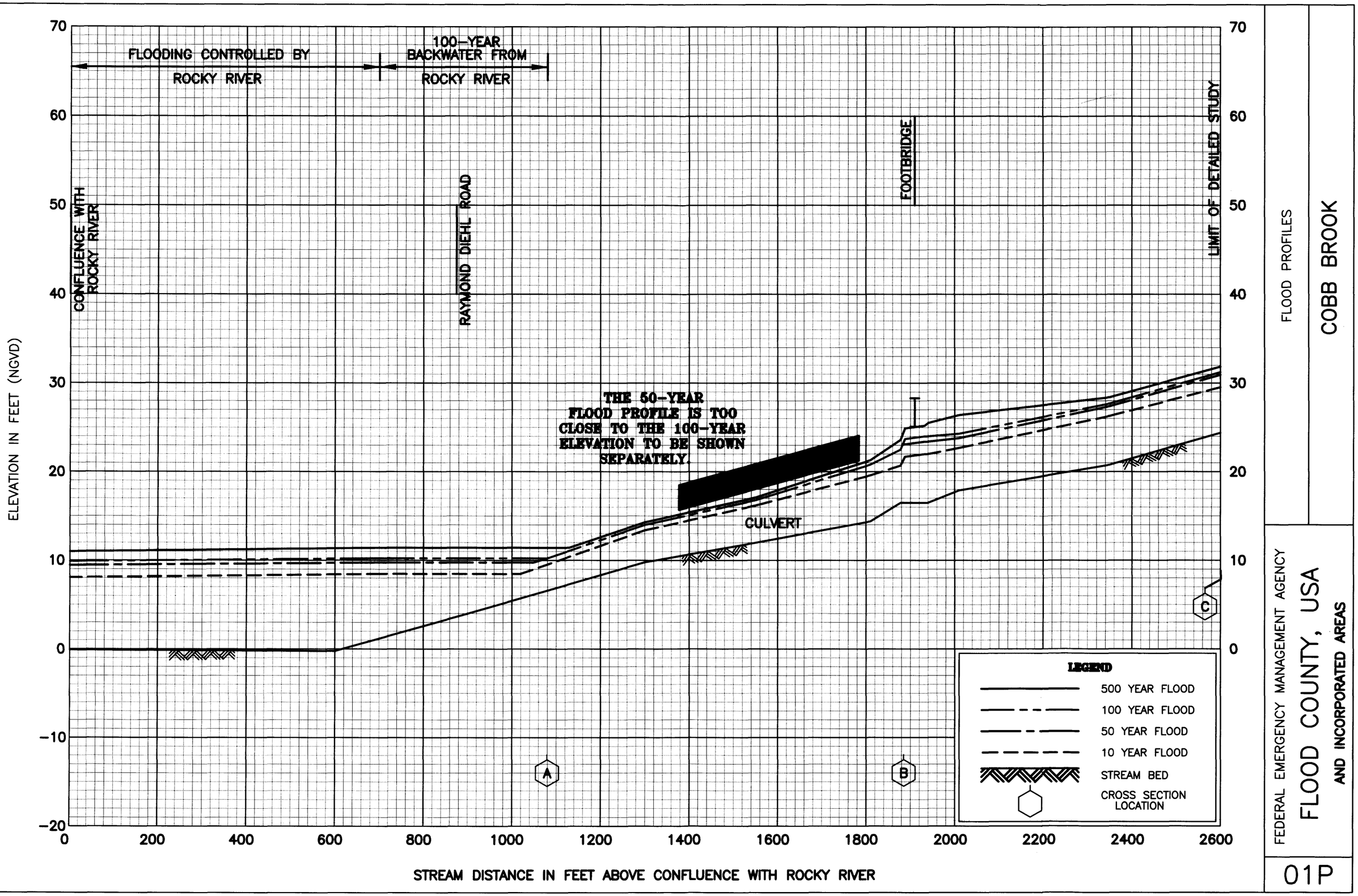
18. Federal Emergency Management Agency, Flood Insurance Study, Seaside County, USA (Unincorporated Areas), Washington, D.C., May 12, 1995.

19. Federal Emergency Management Agency, Flood Insurance Study, Flood County, USA (Unincorporated Areas), Washington, D.C., April 17, 1987.

20. Federal Emergency Management Agency, Flood Insurance Study, Town of Floodville, Flood County, USA, Washington, D.C., April 17, 1987.

Water Resources Council, "Guidelines for Determining Flood Flow Frequency," Bulletin 17, Washington, D.C., March 1976.

U.S. Department of Agriculture, Soil Conservation Service, Technical Release No. 55, Urban Hydrology for Small Watersheds, Washington, D.C., January 1975.



FLOOD PROFILES

COBB BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA

AND INCORPORATED AREAS

01P

ELEVATION IN FEET (NGVD)

-15 -10 -5 0 5 10 15 20 25 30

3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000

STREAM DISTANCE IN FEET ABOVE COUNTY BOUNDARY

DOWNSTREAM FLOOD ELEVATIONS CONTROLED BY ATLANTIC OCEAN

CONFLUENCE OF COBB BROOK

GLEBE WAY

MARTLING WAY

OAKS DRIVE

ARGYLE WAY

CULVERT

A

B

C

LEGEND

500 YEAR FLOOD

100 YEAR FLOOD

50 YEAR FLOOD

10 YEAR FLOOD

STREAM BED

CROSS SECTION LOCATION

-5 0 5 10 15 20 25 30

02P

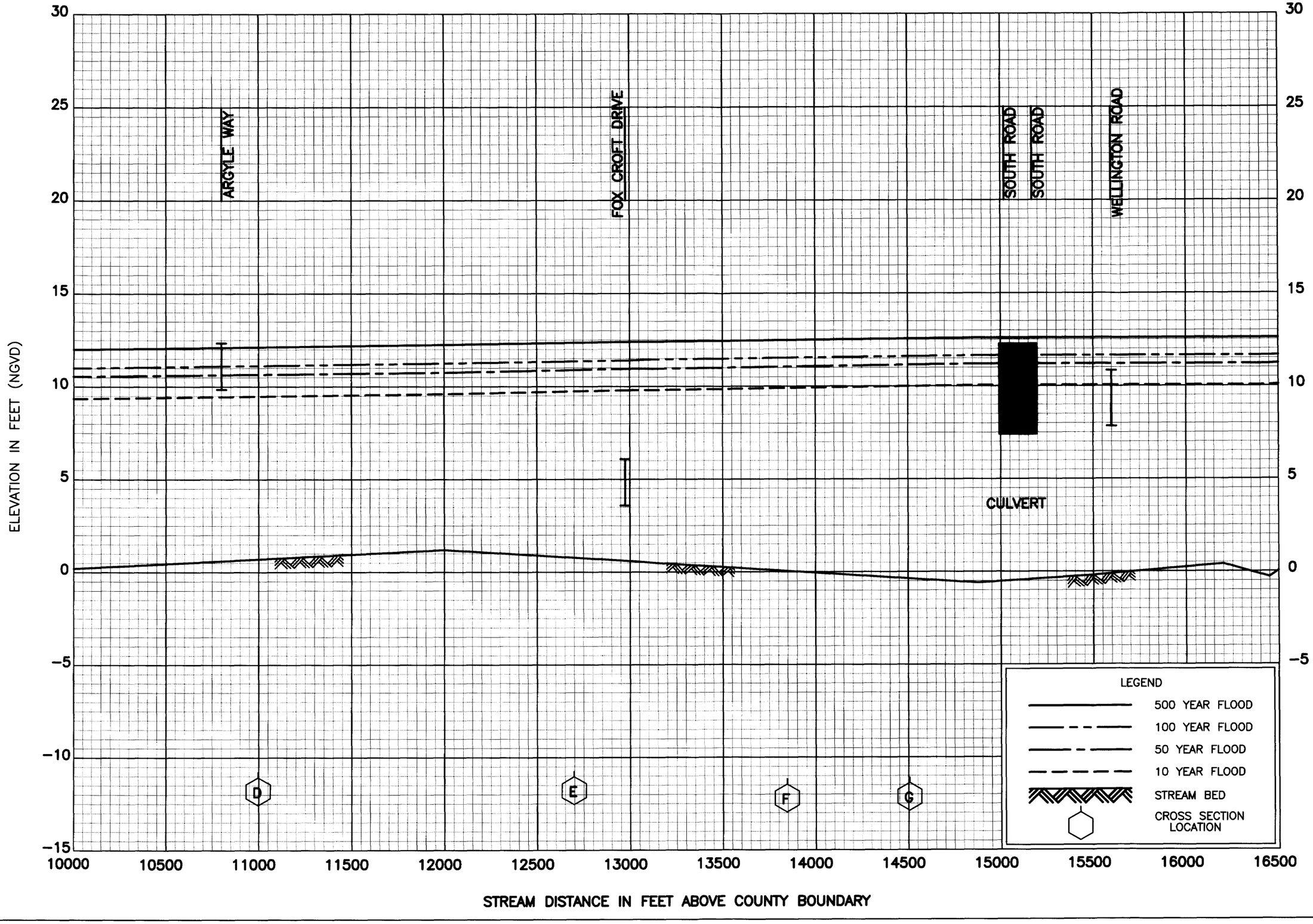
FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA

AND INCORPORATED AREAS

FLOOD PROFILES

ROCKY RIVER



FLOOD PROFILES

ROCKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA

AND INCORPORATED AREAS

03P

ELEVATION IN FEET (NGVD)

−15 −10 −5 0 5 10 15 20 25 30

STREAM DISTANCE IN FEET ABOVE COUNTY BOUNDARY

16500 17000 17500 18000 18500 19000 19500 20000 20500 21000 21500 22000 22500 23000

H I J

FOOTBRIDGE

LEGEND

500 YEAR FLOOD

100 YEAR FLOOD

50 YEAR FLOOD

10 YEAR FLOOD

STREAM BED

CROSS SECTION LOCATION

−5 0 5 10 15 20 25 30

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA

AND INCORPORATED AREAS

FLOOD PROFILES

ROCKY RIVER

04P

ELEVATION IN FEET (NGVD)

−10 −5 0 5 10 15 20 25 30 35

STREAM DISTANCE IN FEET ABOVE COUNTY BOUNDARY

23000 23500 24000 24500 25000 25500

LIMIT OF DETAILED STUDY

LEGEND

500 YEAR FLOOD

100 YEAR FLOOD

50 YEAR FLOOD

10 YEAR FLOOD

STREAM BED

CROSS SECTION LOCATION

0 5 10 15 20 25 30 35

05P

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA

AND INCORPORATED AREAS

FLOOD PROFILES

ROCKY RIVER

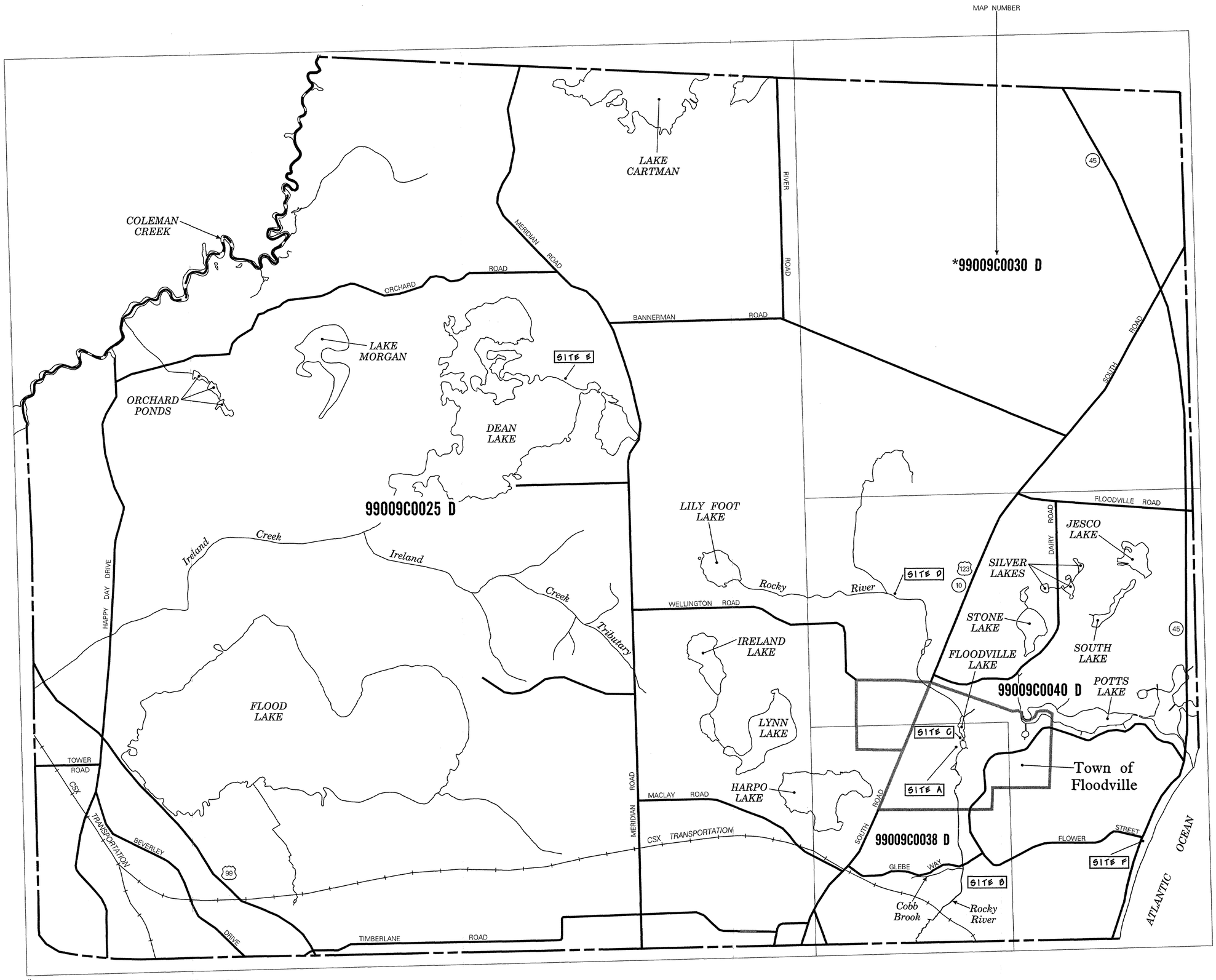
LISTING OF COMMUNITIES

COMMUNITY NAME	COMMUNITY NUMBER	LOCATED ON PANEL(S)	INITIAL IDENTIFICATION DATE	POST FIRM DATE
FLOOD COUNTY (UNINCORPORATED AREAS)	990099	0025, 0030[1], 0038, 0040	MAY 19, 1974	APRIL 17, 1987
FLOODVILLE, TOWN OF	990098	0038, 0040	JUNE 18, 1978	APRIL 17, 1987

[1] PANEL NOT PRINTED

LEGEND

SITE A — Site location for a site referenced in this class. These are not a standard part of the FIRM.



* PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS

MAP REPOSITORIES

(Maps available for reference only, not for distribution.)

FLOOD COUNTY
(UNINCORPORATED AREAS):
Flood County Engineering Department
1110 South Road, Room 204
Floodville, USA 99150

FLOODVILLE, TOWN OF:
Floodville Town Hall
126 Royal Oaks Drive
Floodville, USA 99150

– NOTE –
DESIGNATED COASTAL BARRIERS ARE LOCATED ON PANELS 38 AND 40.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
FLOOD COUNTY,
USA
AND INCORPORATED AREAS
(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX
PANELS PRINTED: 25, 38, 40

MAP NUMBER
99009C0000

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data tables and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

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

Base map information shown on this FIRM was derived from U. S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1996 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this FIRM may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 1-800-358-9616
Fax: 1-800-358-9620
www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

COASTAL BARRIER LEGEND

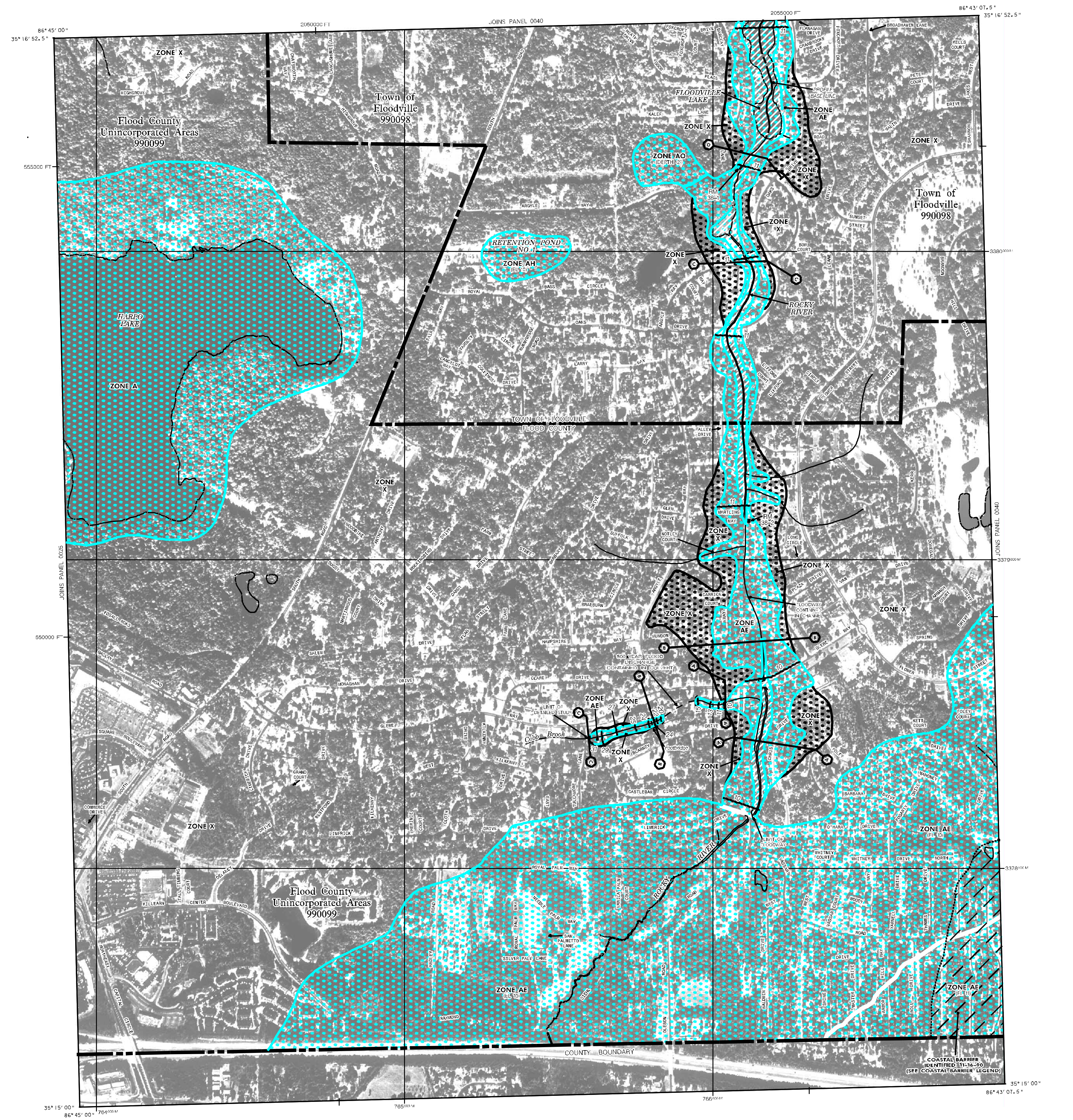
11-16-90 Coastal Barrier

FLOOD INSURANCE NOT AVAILABLE FOR NEW CONSTRUCTION OR SUBSTANTIALLY IMPROVED STRUCTURES ON OR AFTER NOVEMBER 16, 1990, IN DESIGNATED COASTAL BARRIERS.

10-01-83 Coastal Barrier

FLOOD INSURANCE NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER OCTOBER 1, 1983, IN DESIGNATED COASTAL BARRIERS.

Comments or concerns regarding the Coastal Barrier Resources System or Otherwise Protected Areas should be directed to the Coastal Barrier Coordinator at the U. S. Fish and Wildlife Service; (413) 253-8614.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of Special Flood Hazard formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A	Cross section line
23 - - 23	Transect line
97° 07' 30", 32° 22' 30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 16
600000 FT	5000-foot grid ticks: Florida State Plane coordinate system, north zone (FIPSZONE 903), Transverse Mercator
DX5510 ✖	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0038 D

FIRM
FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

-NOTE-
THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF COASTAL BARRIER RESOURCES SYSTEM UNITS AND/OR OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101-591).

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
99009C0038 D

EFFECTIVE DATE
AUGUST 19, 1998

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limit delineations shown on this map.

For community map revision history prior to countywide mapping, see section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

DIGITAL DATA AVAILABILITY: Digital files containing the thematic floodplain information shown on these maps are published by the Federal Emergency Management Agency in DLG-3 Optional format on CD-ROM. Requests for data should include the full name of the community or county and the Flood Insurance Rate Map panel numbers covered by the request. Contact the Federal Emergency Management Agency, Map Service Center, 6730 Santa Barbara Court, Baltimore, Maryland 21227-5832. Telephone 1-800-358-9616.

NOTE: The coordinate system used for the production of this Flood Insurance Rate Map (FIRM) is Universal Transverse Mercator (UTM), North American Datum of 1927 (NAD27), Clarke 1866 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Universal Transverse Mercator projection, NAD27. 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 the information shown on the FIRM.

ATTENTION: Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Base map files were provided by the Town of Floodville Stormwater Management Department and the Flood County Geographic Information Systems Department. These files were photogrammetrically compiled at scales of 1" = 200' (urban areas) and 1" = 400' (rural areas) from aerial photographs. Additional information may have been derived from other sources. Users of this FIRM should be aware that minor adjustments may have been made specific base map features.

COASTAL BARRIER LEGEND

10-01-83 Coastal Barrier

FLOOD INSURANCE NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER OCTOBER 1, 1983, IN DESIGNATED COASTAL BARRIERS.

11-16-90 Coastal Barrier

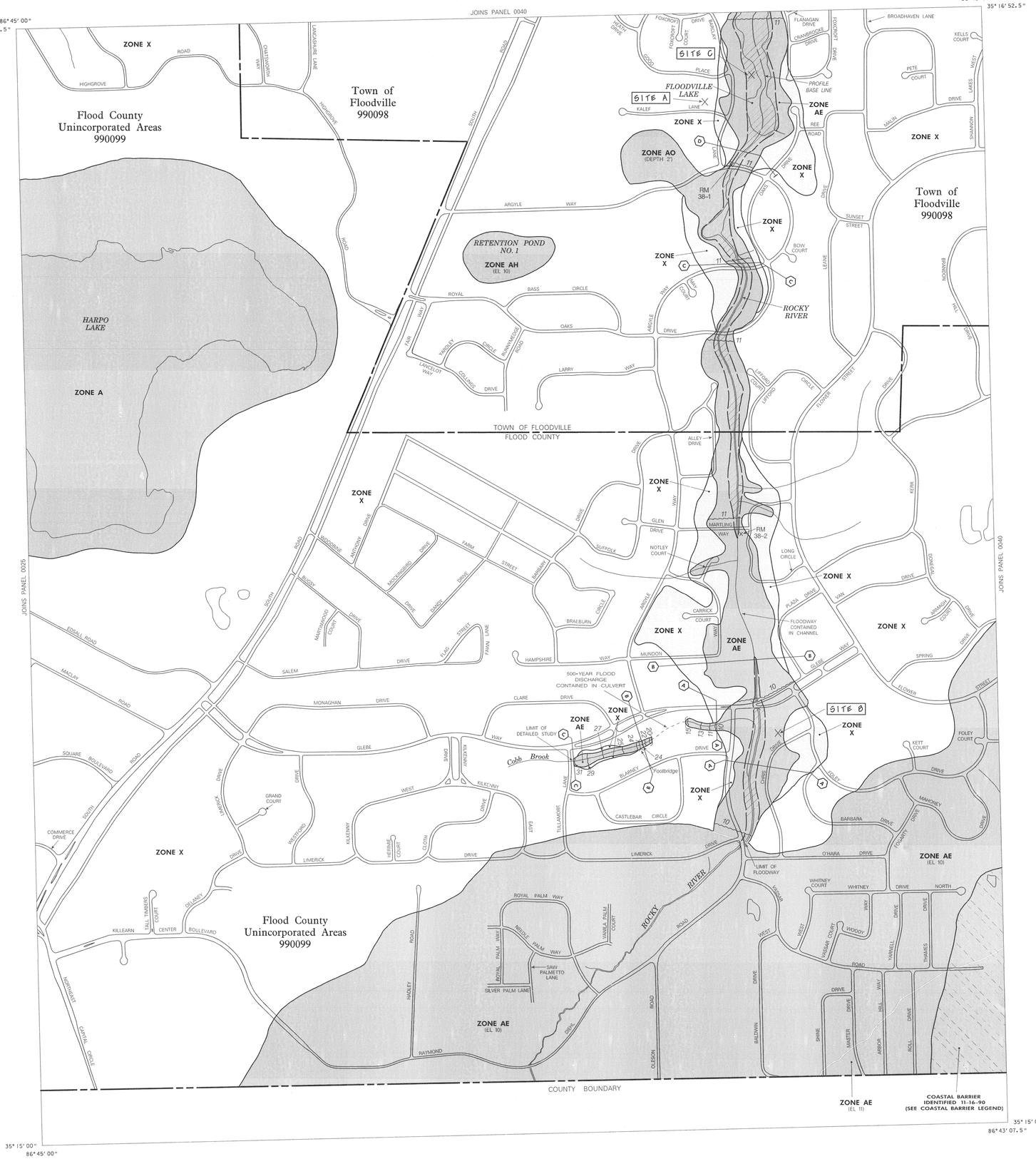
FLOOD INSURANCE NOT AVAILABLE FOR NEW CONSTRUCTION OR SUBSTANTIALLY IMPROVED STRUCTURES ON OR AFTER NOVEMBER 16, 1990, IN DESIGNATED COASTAL BARRIERS.

Comments or concerns regarding Coastal Barrier Resources System areas should be directed to the Coastal Barrier Coordinator at the U. S. Fish and Wildlife Service; (123) 456-7890.

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 38-1	14.23	Chiseled square in southwest corner of northeast wing wall of Argyle Way bridge over Rocky River.
RM 38-2	13.10	Chiseled cross in top of 3/4 - inch bolt on southeast corner of iron bridge over Rocky River on Martling Way. Approximately 0.5 mile northwest of maintenance building.

[1] National Geodetic Vertical Datum of 1929



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- (A) — (A) — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 × — Elevation Reference Mark
- ● M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

AUGUST 19, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Refer to the FLOOD INSURANCE RATE MAP effective date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

-NOTE-
THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF COASTAL BARRIER RESOURCES SYSTEM UNITS AND OR OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101-591).

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
99009C0038 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limit delineations shown on this map.

For community map revision history prior to countywide mapping, see section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

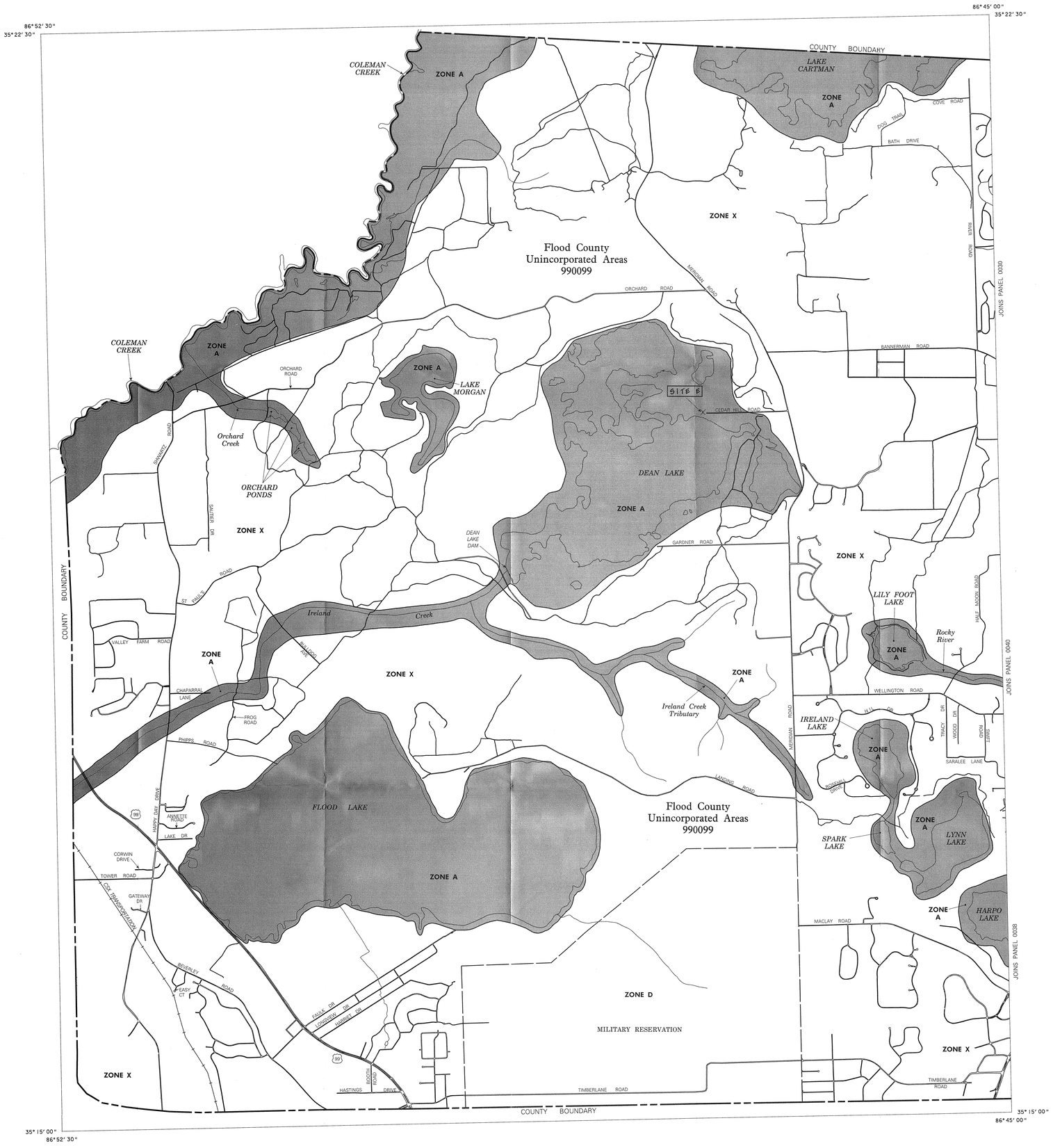
DIGITAL DATA AVAILABILITY: Digital files containing the thematic floodplain information shown on these maps are published by the Federal Emergency Management Agency in DLG-3 Optional format on CD-ROM. Requests for data should include the full name of the community or county and the Flood Insurance Rate Map panel numbers covered by the request. Contact the Federal Emergency Management Agency, Map Service Center, 6730 Santa Barbara Court, Baltimore, Maryland 21227-5832. Telephone 1-800-358-9616.

NOTE: The coordinate system used for the production of this Flood Insurance Rate Map (FIRM) is Universal Transverse Mercator (UTM), North American Datum of 1927 (NAD27), Clarke 1866 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Universal Transverse Mercator projection, NAD27. 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 the information shown on the FIRM.

ATTENTION: Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Base map files were provided by the Town of Floodville Stormwater Management Department and the Flood County Geographic Information Systems Department. These files were photogrammetrically compiled at scales of 1" = 200' (urban areas) and 1" = 400' (rural areas) from aerial photographs. Additional information may have been derived from other sources. Users of this FIRM should be aware that minor adjustments may have been made to specific base map features.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
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- 513 — Base Flood Elevation Line; Elevation in Feet**
- A — A — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X — Elevation Reference Mark
- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

AUGUST 19, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-8620.

APPROXIMATE SCALE

2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 25 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0025	D

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
99009C0025 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

NOTES TO USERS

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Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limit delineations shown on this map.

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COASTAL BARRIER LEGEND

10-01-83 Coastal Barrier

FLOOD INSURANCE NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER OCTOBER 1, 1983, IN DESIGNATED COASTAL BARRIERS.

11-16-90 Coastal Barrier

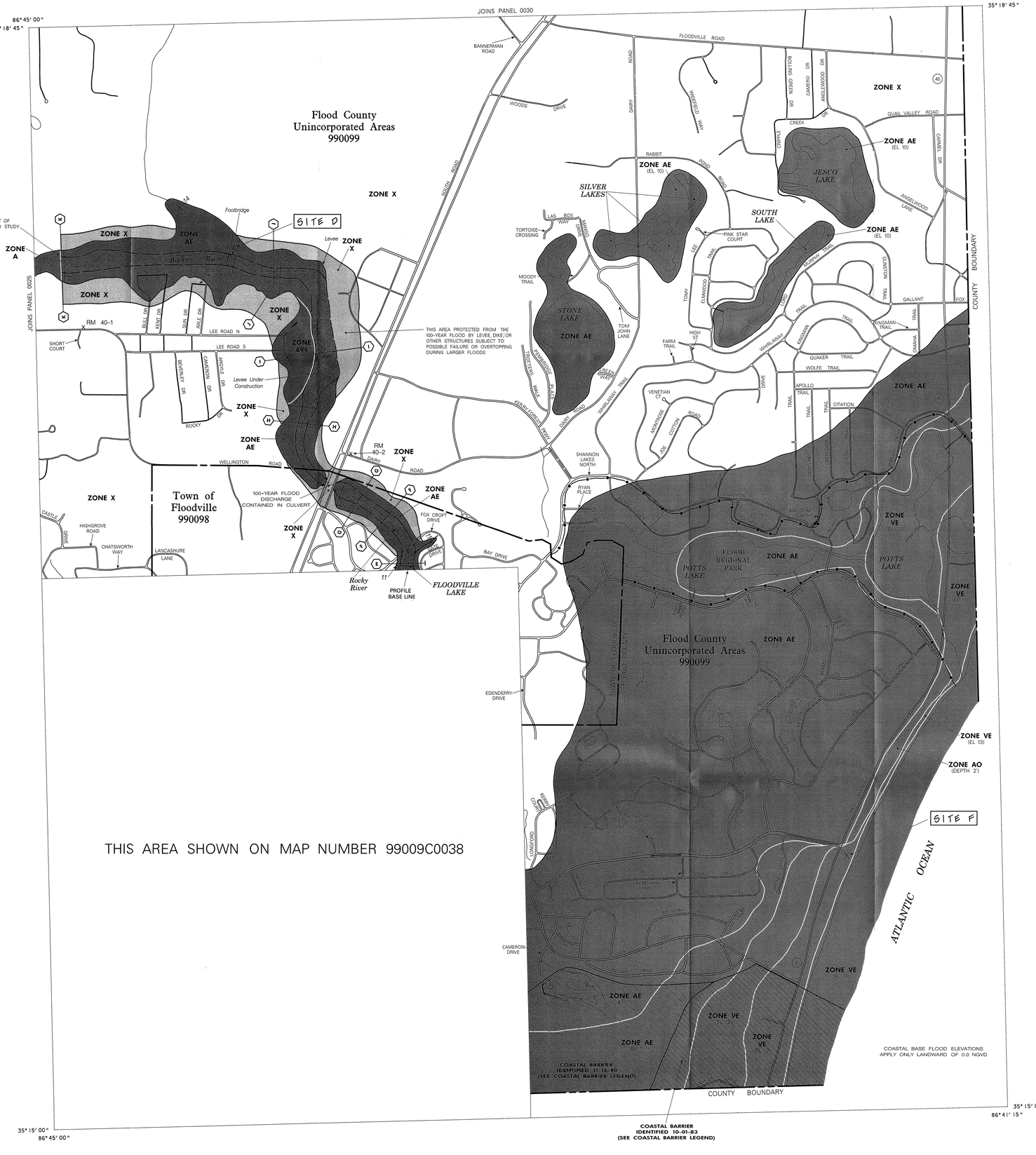
FLOOD INSURANCE NOT AVAILABLE FOR NEW CONSTRUCTION OR SUBSTANTIALLY IMPROVED STRUCTURES ON OR AFTER NOVEMBER 16, 1990, IN DESIGNATED COASTAL BARRIERS.

Comments or concerns regarding Coastal Barrier Resources System areas should be directed to the Coastal Barrier Coordinator at the U. S. Fish and Wildlife Service; (123) 456-7890.

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 40-1	16.54	Brass disk set vertically in concrete post lying at northeast intersection of Wellington Road and Short Court, approximately 1 foot west from fence line.
RM 40-2	15.12	Railroad spike in power pole on northeast corner of South Road and Dairy Road.

[1]National Geodetic Vertical Datum of 1929



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

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- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

AUGUST 19, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY, USA
AND INCORPORATED AREAS

PANEL 40 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0040	D
FLOODVILLE TOWN OF	990098	0040	D

-NOTE-

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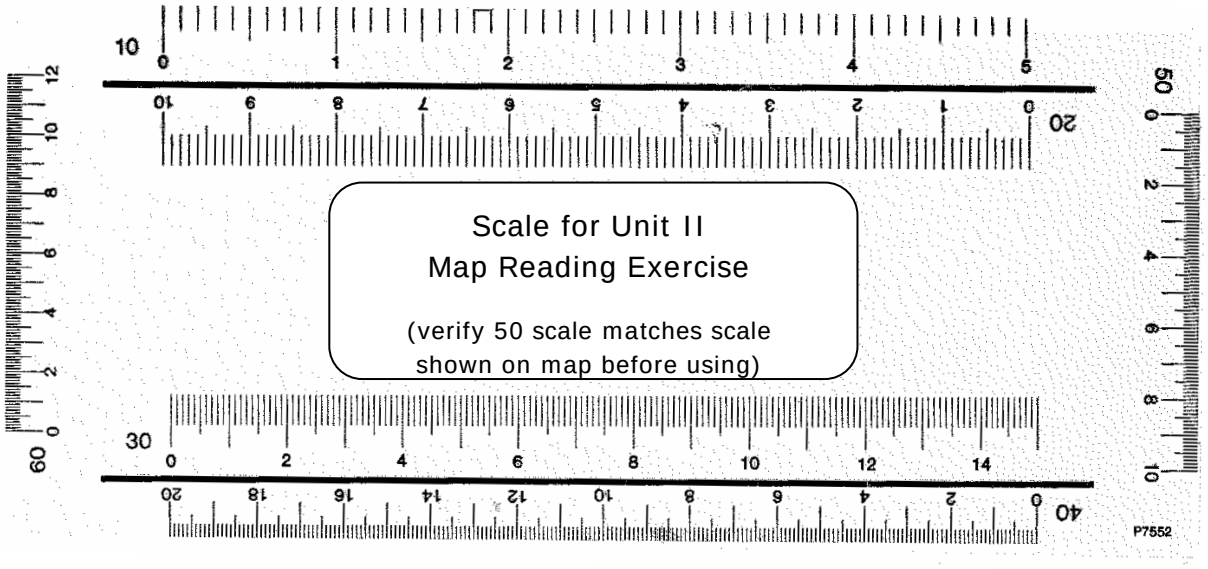
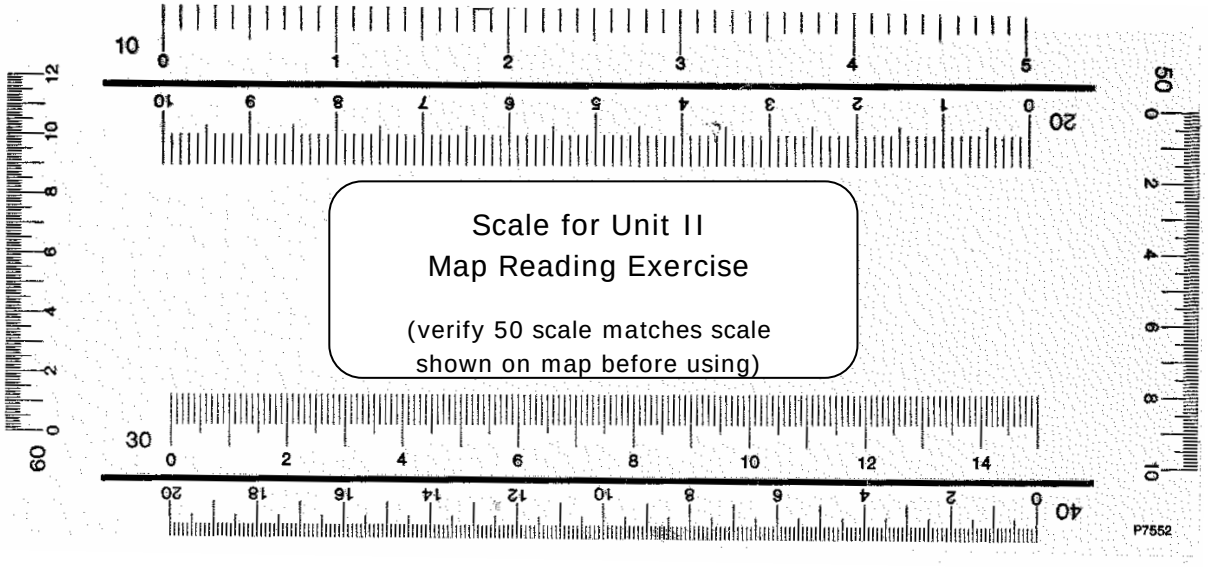
MAP NUMBER 99009C0040 D

EFFECTIVE DATE: AUGUST 19, 1998

Federal Emergency Management Agency


Scale for Unit II
Map Reading Exercise
(verify 50 scale matches scale shown on map before using)
P7552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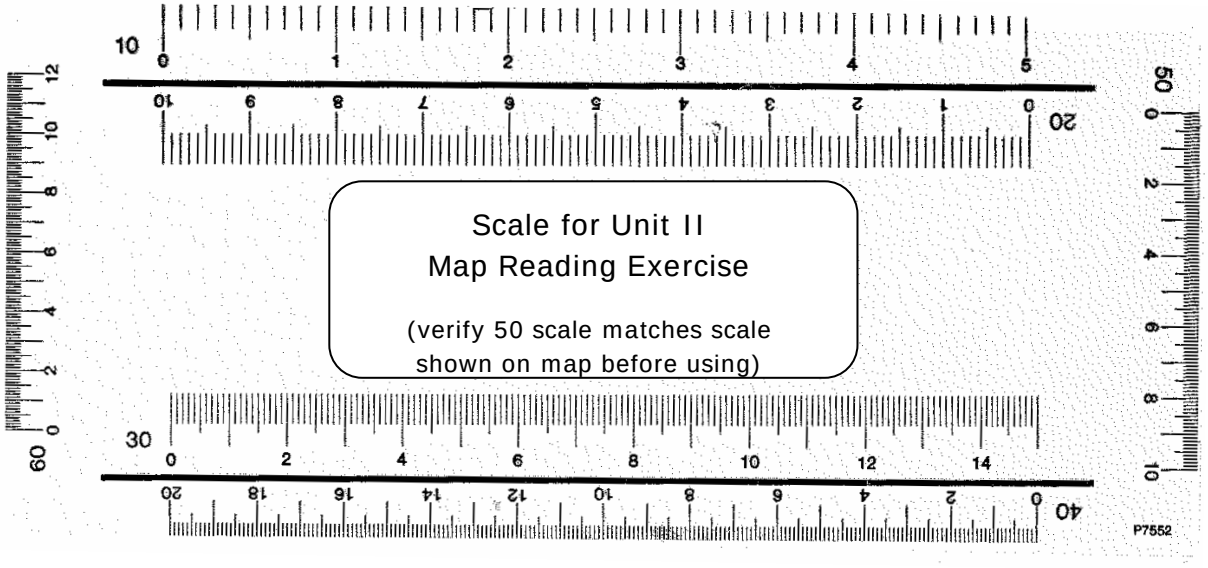
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