U.S. Department of Homeland Security
Washington, DC 20472

FEMA

April 14, 2022

Prelim-EAP
Community Name: Cumberland County, Virginia, (Unincorporated Areas)
Community No.: 510043

The Honorable Brian Stanley
Chairman, Cumberland County Board of Supervisors
Cumberland Courthouse
17 Courthouse Circle
Cumberland, Virginia 23040

Dear Mr. Stanley:

We are pleased to present your community with Preliminary copies of the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Cumberland County, Virginia (All Jurisdictions) for your review and comment. The enclosed FIS report for Cumberland County describes the flood hazard information updates made to the FIRM and FIS report and the source information used in making the updates.

We are sending the Preliminary copies at this time to give your community an opportunity to review them. Additionally, in an effort to assist you in circulating the information, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) has posted digital copies of the revised FIRM, FIS report, and supporting database on the following page of the Map Service Center: https://hazards.fema.gov/femaportal/prelimdownload/.

We will contact you shortly to schedule a formal community coordination meeting (a "Consultation Coordination Officer [CCO]" Meeting) to discuss the revised flood hazard information, ordinance adoption, and other frequently asked questions and concerns. In the meantime, we encourage you to circulate the enclosed copies as widely as possible among elected officials, staff, and other individuals or organizations in the community that would have an interest in the FIRM and FIS report so that they will have the opportunity to review them thoroughly before the formal community coordination meeting. The review period provides community officials and citizens in the affected communities with an opportunity to identify changes or corrections to non-technical information, such as corporate limits, road names, and stream names on the FIRM or in the FIS report.

Comments may be sent to:

Hani Rimawi, FEMA Region III
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, Pennsylvania 19106
hani.rimawi@fema.dhs.gov

Additional copy to:

Alexandra Gilman, PTS
1700 Market Street
Suite 3110
Philadelphia, Pennsylvania 19103
agilman@tandmassociates.com

Please submit comments (digital format such as shapefiles preferred) no later than 30 days from the date of this letter. All comments and changes received during this review period will be incorporated, as appropriate, before the FIRM and FIS report become effective.

To assist your community in maintaining the FIRM, we have enclosed a Summary of Map Actions (SOMA) to document previous Letters of Map Change (LOMCs) (i.e., Letters of Map Amendment [LOMAs], Letters of Map Revision [LOMRs]) that will be superseded when the FIRM becomes effective. Information on LOMCs is presented in the following four categories: (1) LOMCs for which results have been included on the FIRM; (2) LOMCs for which results could not be shown on the FIRM because of scale limitations or because the LOMC issued had determined that the lots or structures involved were outside the Special Flood Hazard Area (SFHA) as shown on the FIRM; (3) LOMCs for which results have not been included on the FIRM because the flood hazard information on which the original determinations were based is being superseded by new flood hazard information; and (4) LOMCs issued for multiple lots or structures where the determination for one or more of the lots or structures cannot be revalidated through an administrative process like the LOMCs in Category 2 above.

LOMCs in Category 2 will be revalidated through a single letter that reaffirms the validity of a previously issued LOMC; the letter will be sent to your community shortly before the effective date of the FIRM and will become effective one day after the FIRM becomes effective.

For the LOMCs listed in Category 4, we will review the data previously submitted for the LOMA or LOMR request and issue a new determination for the affected properties after the FIRM becomes effective upon request.

Your community should be aware that recently approved LOMCs, specifically LOMRs, may have been issued for your community. The LOMR process is dynamic and FEMA is reviewing LOMR applications regularly. To complete production of the Preliminary FIRMs which includes incorporating the effects of "mappable" LOMRs issued since the last map effective date, a specific cutoff was established. FEMA will address any approved LOMRs issued after the cutoff date when the final SOMA is distributed. If your community has concerns regarding a specific case, please submit the LOMR case number, as well as any appropriate documentation, to our FEMA Regional Office at 615 Chestnut Street, One Independence Mall, 6th Floor, Philadelphia, Pennsylvania 19106-4404 before the end of the comment or appeal periods discussed below to assist us in keeping the map up to date.

After the CCO Meeting, we will initiate a statutory 90-day appeal period for communities within Cumberland County. A statutory 90-day appeal period is required when FEMA adds or modifies Base (1-percent-annual-chance) Flood Elevations, base flood depths, SFHAs, flood zone designations, or regulatory floodways within a community, as shown on the Preliminary FIRM. If your community is identified as requiring an appeal period, we will send you a letter approximately 2 weeks before the start of the 90-day appeal period to detail the appeal process. The letter will forward information regarding notifications to be published in the *Federal Register* and local newspaper(s) and will provide the first and second publication dates. The appeal period will start on the second publication date. Additional information concerning the 90-day appeal period will be provided during the CCO Meeting.

After the 30-day review and appeal periods have ended and we have addressed all comments/appeals, we will initiate final preparation of the FIRM and FIS report. The new FIRM and FIS report for your community will become effective approximately 7 to 10 months later. Before the effective date, you will be notified in writing of the official FIRM and FIS report effective date and asked to adopt floodplain ordinances or modify existing ordinances as necessary that correspond with the new FIRM or FIS report. If you or other community officials have any questions regarding floodplain ordinances, you may raise them with our FEMA Regional Office or you may discuss those issues with your State National Flood Insurance Program (NFIP) Coordinator. Several months before the effective date, we will mail one set of printed copies of the finalized FIRM and FIS report and digital copies of the map and report products.

Your community's comments on the Preliminary FIRM panels and FIS report are an important part of our review process, and we will consider them carefully before we publish the FIRM and FIS report in their final form. If you have any questions regarding the Preliminary copies of the FIRM and FIS report, please contact Mr. Hani Rimawi of FEMA's Regional Office in Philadelphia, Pennsylvania at (202) 615-3238, or Ms. Alexandra Gilman of T&M Associates at (215) 282-7866. If you have general questions about mapping issues, please call our FEMA Mapping and Insurance eXchange (FMIX), toll free, at (877) 336-2627 (877-FEMA MAP) or e-mail our FMIX staff at FEMA-FMIX@fema.dhs.gov.

Sincerely,

Luis Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

Enclosures:
Preliminary FIRM and FIS report
Preliminary SOMA
Floodplain Management Bulletin 1-98, *Use of Flood Insurance Study (FIS) Data as Available Data*
Adoption of Flood Insurance Rate Maps by Participating Communities
Flood Hazard Mapping Fact Sheet

cc: Stephany Johnson, Floodplain Administrator, Cumberland County, Virginia
Angela Davis, CFM, State NFIP Coordinator, Virginia Department of Conservation & Recreation

PRELIMINARY SUMMARY OF MAP ACTIONS

Community: CUMBERLAND COUNTY Community No: 510043

To assist your community in maintaining the Flood Insurance Rate Map (FIRM), we have summarized below the effect of the enclosed revised FIRM panel(s) on previously issued Letter of Map Change (LOMC) actions (i.e., Letters of Map Revision (LOMRs), Letter of Map Revision based on Fill (LOMR-Fs), and Letters of Map Amendment (LOMAs)).

1. LOMCs Incorporated

The modifications effected by the LOMCs listed below have been reflected on the Preliminary copies of the revised FIRM panels. In addition, these LOMCs will remain in effect until the revised FIRM becomes effective.

LOMC	Case No.	Date Issued	Project Identifier	Original Panel	Current Panel
			NO CASES RECORDED		

2. LOMCs Not Incorporated

The modifications effected by the LOMCs listed below are either not located on revised FIRM panels, or have not been reflected on the Preliminary copies of the revised FIRM panels because of scale limitations or because the LOMC issued had determined that the lot(s) or structure(s) involved were outside the Special Flood Hazard Area, as shown on the FIRM. These LOMCs will be revalidated free of charge 1 day after the revised FIRM becomes effective through a single revalidation letter that reaffirms the validity of the previous LOMCs.

2A. LOMCs on Revised Panels

LOMC	Case No.	Date Issued	Project Identifier	Original Panel	Current Panel
LOMA	08-03-1509A	09/18/2008	449 RIVER ROAD -- PORTION OF RANDOLPH MAGISTERIAL DISTRICT	5100430100A	51049C0300C

2B. LOMCs on Unrevised Panels

LOMC	Case No.	Date Issued	Project Identifier	Original Panel	Current Panel
			NO CASES RECORDED		

PRELIMINARY SUMMARY OF MAP ACTIONS

Community: CUMBERLAND COUNTY Community No: 510043

3. LOMCs Superseded

The modifications effected by the LOMCs listed below have not been reflected on the Preliminary copies of the revised FIRM panels because they are being superseded by new or revised flood hazard information or the information available was not sufficient to make a determination. The reason each is being superseded is noted below. These LOMCs will no longer be in effect when the revised FIRM becomes effective.

LOMC	Case No.	Date Issued	Project Identifier	Reason Determination Will be Superseded
			NO CASES RECORDED	

1. Insufficient information available to make a determination.
2. Lowest Adjacent Grade and Lowest Finished Floor are below the proposed Base Flood Elevation.
3. Lowest Ground Elevation is below the proposed Base Flood Elevation.
4. Revised hydrologic and hydraulic analyses.
5. Revised topographic information.
6. Superseded by another LOMC.

4. LOMCs To Be Redetermined

The LOMCs in Category 2 above will be revalidated through a single revalidation letter that reaffirms the validity of the determination in the previously issued LOMC. For LOMCs issued for multiple lots or structures where the determination for one or more of the lots or structures is no longer valid, the LOMC cannot be revalidated through this administrative process. Therefore, we will review the data previously submitted for the LOMC requests listed below and issue a new determination for the affected properties after the effective date of the revised FIRM.

LOMC	Case No.	Date Issued	Project Identifier	Original Panel	Current Panel
			NO CASES RECORDED		

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1

CUMBERLAND COUNTY, VIRGINIA

ALL JURISDICTIONS

COMMUNITY NAME	COMMUNITY NUMBER
CUMBERLAND COUNTY, UNINCORPORATED AREAS	510043

Preliminary
April 14, 2022

FEMA

EFFECTIVE:

TBD

FLOOD INSURANCE STUDY NUMBER
51049CV000A
Version Number 2.6.5.6

TABLE OF CONTENTS

Volume 1

Figures

Page

Tables

Page

Volume 1

Exhibits

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
CUMBERLAND COUNTY, VIRGINIA

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were

built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Cumberland County, Virginia.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Cumberland County, Unincorporated Areas	510043	02080203, 02080205, 02080207	51049C0025C[1] 51049C0030C 51049C0035C 51049C0040C 51049C0045C 51049C0055C 51049C0065C 51049C0100C 51049C0110C 51049C0125C 51049C0130C 51049C0140C 51049C0150C[1] 51049C0175C 51049C0200C 51049C0225C 51049C0250C 51049C0255C 51049C0259C 51049C0260C 51049C0267C 51049C0300C 51049C0325C	
Farmville, Town of	510118	02080207	N/A	Prince Edward County, VA FIS Report, 10/02/2009

[1] Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1-percent-annual-chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1-percent-annual-chance and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision

(LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 30, "Map Repositories," within this FIS Report.

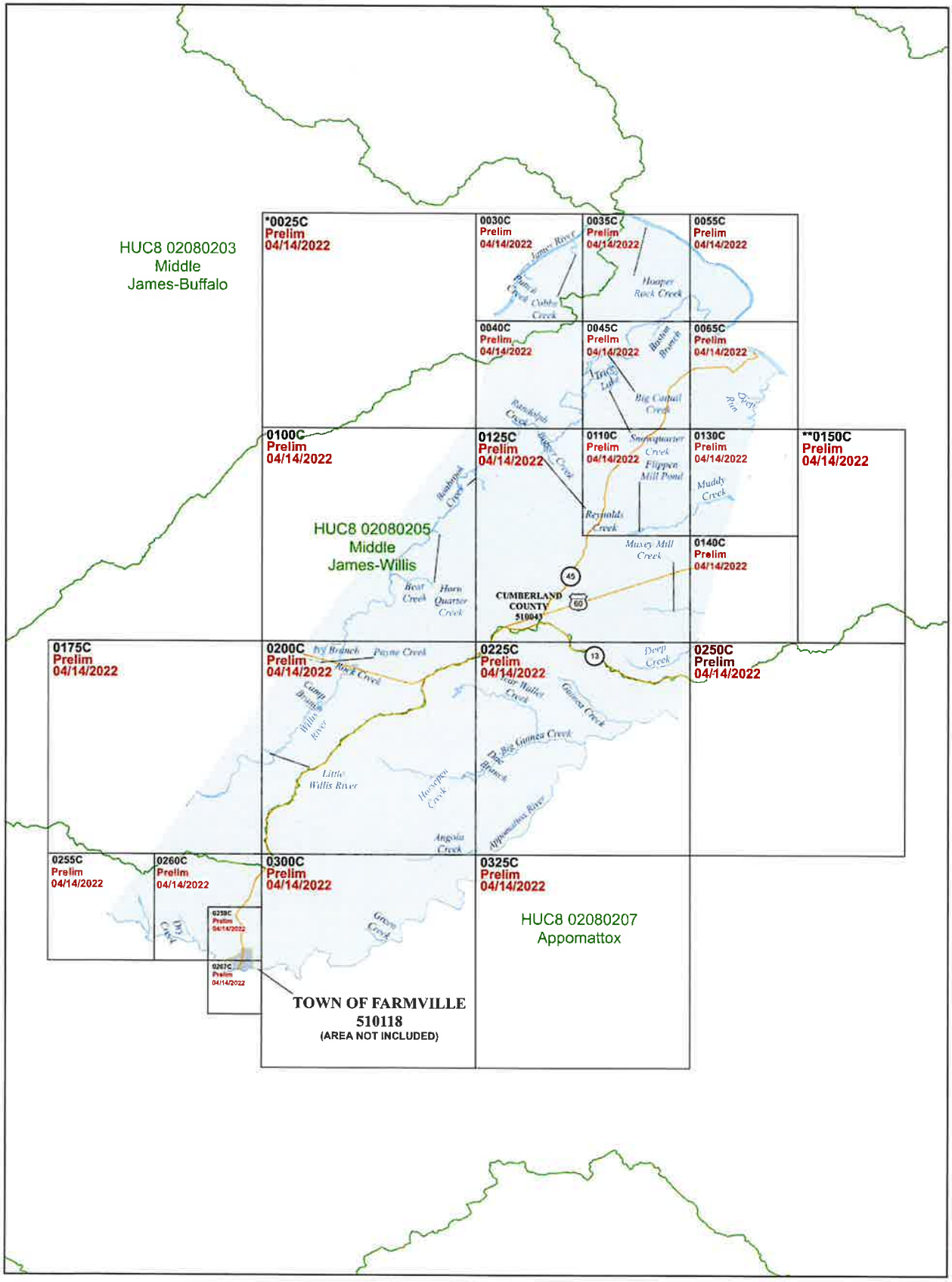
- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

  The initial Countywide FIS Report for Cumberland County became effective on **month day, year**. Refer to Table 27 for information about subsequent revisions to the FIRMs.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/flood-maps/tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Cumberland County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.

Figure 1: FIRM Index



1 inch = 20,087 feet 1:241,046

0 5,000 10,000 20,000 30,000 feet

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
**PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

CUMBERLAND COUNTY, VIRGINIA All Jurisdictions

PANELS PRINTED:

0030, 0035, 0040, 0045, 0055, 0065, 0100, 0110, 0125, 0130, 0140, 0175, 0200, 0225, 0250, 0255, 0259, 0260, 0267, 0300, 0325

FEMA

MAP NUMBER
51049CIND1C

EFFECTIVE DATE
Prelim Issue Date: 04/14/2022

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Mapping and Insurance eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 27 in this FIS Report.

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

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

Figure 2. FIRM Notes to Users

FLOODWAY INFORMATION: 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 FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may have reduced flood hazards due to flood control structures. Refer to Section 4.3 "Dams and Other Flood Hazard Reduction Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 17N. The horizontal datum was the WGS 1984 spheroid. Differences in datum, spheroid, projection or State Plane 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 the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. 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.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 30 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was derived from digital orthophotography collected under the USGS National Map program. This imagery was collected in October 2020. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

Corporate limits shown on the 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 the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Cumberland County, Virginia, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 27 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

Figure 2. FIRM Notes to Users

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Cumberland County, Virginia, effective **month, day, year**.

[This section is not applicable to this Flood Risk Project.]

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Cumberland County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. 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. See note for specific types. If the floodway is too narrow to be shown, a note is shown.

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were 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	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.
	Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM

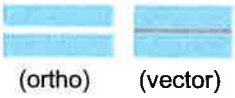
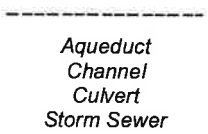
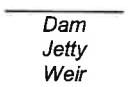
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Hazard due to Accredited or Provisionally Accredited Levee System: Area is shown as reduced flood hazard from the 1-percent-annual-chance or greater flood by a levee system. Overtopping or failure of any levee system is possible.
	Area with Undetermined Flood Hazard due to Non-Accredited Levee System: Analysis and mapping procedures for non-accredited levee systems were applied resulting in a flood insurance rate zone where flood hazards are undetermined, but possible.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir
	Levee, Dike, or Floodwall

Figure 3: Map Legend for FIRM

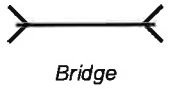
	Bridge
REFERENCE MARKERS	
22.0 ●	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8 - - - - - - -	Coastal Transect
——-———	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation. Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
~~ 513 ~~~~	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
	U.S. Highway
	State Highway
	County Highway

Figure 3: Map Legend for FIRM

MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}E$	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80• 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 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 hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Cumberland County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1-percent-annual-chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 22), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1-percent and 0.2-percent-annual-chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1-percent-annual-chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1-percent and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM", describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Cumberland County, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 12. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1-percent-annual-chance floodplain corresponds to the SFHAs. The 0.2-percent-annual-chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

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. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Angola Creek	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	6.7	N	A	2018
Angola Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	0.6	N	A	2018
Angola Creek Tributary 2	Cumberland County Unincorporated Areas	At confluence with Angola Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.0	N	A	2018
Angola Creek Tributary 4	Cumberland County Unincorporated Areas	At confluence with Angola Creek	Limit of Study, 1 sq mile Drainage Area	02080207	0.7	N	A	2018
Appomattox River	Cumberland County Unincorporated Areas	At Amelia, Powhatan, and Cumberland County boundary	Approximately 30,120 feet upstream of Norfolk Southern Railroad	02080207	25.6	N	A	2018
Appomattox River	Cumberland County Unincorporated Areas	Approximately 30,120 feet upstream of Norfolk Southern Railroad	At Town of Farmville east boundary	02080207	0.01	Y	AE	2019
Appomattox River	Cumberland County Unincorporated Areas	At Town of Farmville west boundary	At Buckingham, Prince Edward, and Cumberland County boundary	02080207	6.1	Y	AE	2019
Appomattox River Tributary 26	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	1.5	N	A	2018
Appomattox River Tributary 28	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	0.8	N	A	2018
Appomattox River Tributary 33	Cumberland County Unincorporated Areas	At Town of Farmville boundary	Limit of Study, 1 sq mile Drainage Area	02080207	1.1	N	A	2018
Appomattox River Tributary 34	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	1.9	N	A	2018

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Bad Luck Branch	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	2.6	N	A	2018
Bear Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	4.6	N	A	2018
Big Cattail Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	3.7	N	A	2018
Big Guinea Creek	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	9.2	N	A	2018
Big Guinea Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	0.9	N	A	2018
Big Guinea Creek Tributary 2	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.9	N	A	2018
Big Guinea Creek Tributary 3	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	0.7	N	A	2018
Bigger Creek	Cumberland County Unincorporated Areas	At confluence with Reynolds Creek	Limit of Study, 1 sq mile Drainage Area	02080205	3.5	N	A	2018
Bigger Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Bigger Creek	Limit of Study, 1 sq mile Drainage Area	02080205	0.3	N	A	2018
Bonbrook Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	7.3	N	A	2018
Bonbrook Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Bonbrook Creek	Limit of Study, 1 sq mile Drainage Area	02080205	0.3	N	A	2018
Boston Branch	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	2.7	N	A	2018
Boston Branch 1	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	0.7	N	A	2018
Brier Creek	Cumberland County Unincorporated Areas	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	2.6	N	A	2018

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Brown Branch	Cumberland County Unincorporated Areas	At confluence with Green Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.1	N	A	2018
Buck and Game Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	2.7	N	A	2018
Buffalo Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	1.0	N	A	2018
Camp Branch	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.2	N	A	2018
Cat Branch	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	1.1	N	A	2018
Cobbs Creek	Cumberland County Unincorporated Areas	At confluence with James River	Limit of Study, 1 sq mile Drainage Area	02080203	2.4	N	A	2018
Davis Creek	Cumberland County Unincorporated Areas	At confluence with Muddy Creek	Limit of Study, 1 sq mile Drainage Area	02080205	7.2	N	A	2018
Davis Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Davis Creek	Limit of Study, 1 sq mile Drainage Area	02080205	0.5	N	A	2018
Deep Creek	Cumberland County Unincorporated Areas	At Powhatan and Cumberland County boundary	Limit of Study, 1 sq mile Drainage Area	02080205	4.2	N	A	2018
Deep Run	Cumberland County Unincorporated Areas	At confluence with Muddy Creek	Limit of Study, 1 sq mile Drainage Area	02080205	3.2	N	A	2018
Deep Run Tributary 1	Cumberland County Unincorporated Areas	At confluence with Deep Run	Limit of Study, 1 sq mile Drainage Area	02080205	0.6	N	A	2018
Doe Branch	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.9	N	A	2018

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Dry Creek	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	3.6	N	A	2018
Dry Creek Tributary 2	Cumberland County Unincorporated Areas	At confluence with Dry Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.4	N	A	2018
Gannaway Creek	Cumberland County Unincorporated Areas	At confluence with Appomattox River	At Buckingham and Cumberland County boundary	02080207	1.3	N	A	2018
Green Creek	Cumberland County Unincorporated Areas	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	02080207	4.7	N	A	2018
Hatcher Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	1.5	N	A	2018
Hooper Rock Creek	Cumberland County Unincorporated Areas	At confluence with James River	Limit of Study, 1 sq mile Drainage Area	02080205	1.4	N	A	2018
Horn Quarter Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.4	N	A	2018
Horsepen Creek	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	3.0	N	A	2018
James River	Cumberland County Unincorporated Areas	At Goochland, Powhatan, and Cumberland County boundary	At Buckingham, Fluvanna, and Cumberland County boundary	02080203, 02080205	16.6	Y	AE	2020
James River Tributary 7	Cumberland County Unincorporated Areas	At confluence with James River	Limit of Study, 1 sq mile Drainage Area	02080203	1.2	N	A	2018
Little Bear Creek	Cumberland County Unincorporated Areas	At confluence with Bear Creek	Limit of Study, 1 sq mile Drainage Area	02080205	1.7	N	A	2018
Little Guinea Creek	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	4.3	N	A	2018

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Little Guinea Creek 2	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	5.1	N	A	2018
Little Guinea Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Little Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	0.2	N	A	2018
Little Guinea Creek Tributary 2	Cumberland County Unincorporated Areas	At confluence with Little Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.1	N	A	2018
Little Guinea Creek Tributary 3	Cumberland County Unincorporated Areas	At confluence with Little Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	1.7	N	A	2018
Little Willis River	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	5.9	N	A	2018
Little Willis River Tributary 1	Cumberland County Unincorporated Areas	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	0.9	N	A	2018
Little Willis River Tributary 2	Cumberland County Unincorporated Areas	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.4	N	A	2018
Little Willis River Tributary 3	Cumberland County Unincorporated Areas	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.0	N	A	2018
Maple Swamp Creek	Cumberland County Unincorporated Areas	At Powhatan and Cumberland County boundary	About 845 feet upstream of the border of Powhatan and Cumberland Counties	02080205	0.2	Y	AE	2020
Maple Swamp Creek	Cumberland County Unincorporated Areas	About 845 feet upstream of the border of Powhatan and Cumberland Counties	Limit of Study, 1 sq mile Drainage Area	02080205	0.7	N	A	2018
Maxey Mill Creek	Cumberland County Unincorporated Areas	At Powhatan and Cumberland County boundary	Limit of Study, 1 sq mile Drainage Area	02080205	5.0	N	A	2018

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Maxey Mill Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Maxey Mill Creek	Limit of Study, 1 sq mile Drainage Area	02080205	0.2	N	A	2018
Maxey Mill Creek Tributary 2	Cumberland County Unincorporated Areas	At confluence with Maxey Mill Creek	Limit of Study, 1 sq mile Drainage Area	02080205	2.6	N	A	2018
Muddy Creek	Cumberland County Unincorporated Areas	At confluence with James River	At Powhatan and Cumberland County boundary	02080205	4.0	Y	AE	2020
Muddy Creek	Cumberland County Unincorporated Areas	At Powhatan and Cumberland County boundary	At confluence with Flippen Lake	02080205	3.9	Y	AE	2020
Muddy Creek	Cumberland County Unincorporated Areas	At confluence with Flippen Lake	Limit of Study, 1 sq mile Drainage Area	02080205	1.0	N	A	2018
Muddy Creek Tributary 5	Cumberland County Unincorporated Areas	At confluence with Muddy Creek	Limit of Study, 1 sq mile Drainage Area	02080205	1.3	N	A	2018
Payne Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	3.3	N	A	2018
Randolph Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	2.1	N	A	2018
Randolph Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Randolph Creek	Limit of Study, 1 sq mile Drainage Area	02080205	0.3	N	A	2018
Reynolds Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	6.5	N	A	2018
Rock Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.9	N	A	2018
Rock Point Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	3.3	N	A	2018

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Rock Point Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Rock Point Creek	Limit of Study, 1 sq mile Drainage Area	02080205	0.2	N	A	2018
Snowquarter Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	2.1	N	A	2018
Snowquarter Creek Tributary 1	Cumberland County Unincorporated Areas	At confluence with Snowquarter Creek	Limit of Study, 1 sq mile Drainage Area	02080205	1.6	N	A	2018
Tear Wallet Creek	Cumberland County Unincorporated Areas	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	02080207	4.8	N	A	2018
Whispering Creek	Cumberland County Unincorporated Areas	At confluence with Willis River	At Buckingham and Cumberland County boundary	02080205	0.7	N	A	2018
Willis River	Cumberland County Unincorporated Areas	At confluence with James River	At Buckingham and Cumberland County boundary	02080205	42.0	N	A	2018
Willis River Tributary 2	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	2.3	N	A	2018
Willis River Tributary 2.1	Cumberland County Unincorporated Areas	At confluence with Willis River Tributary 2	Limit of Study, 1 sq mile Drainage Area	02080205	0.5	N	A	2018
Willis River Tributary 3	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.1	N	A	2018
Willis River Tributary 4	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	1.5	N	A	2018
Willis River Tributary 6	Cumberland County Unincorporated Areas	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	02080205	0.6	N	A	2018

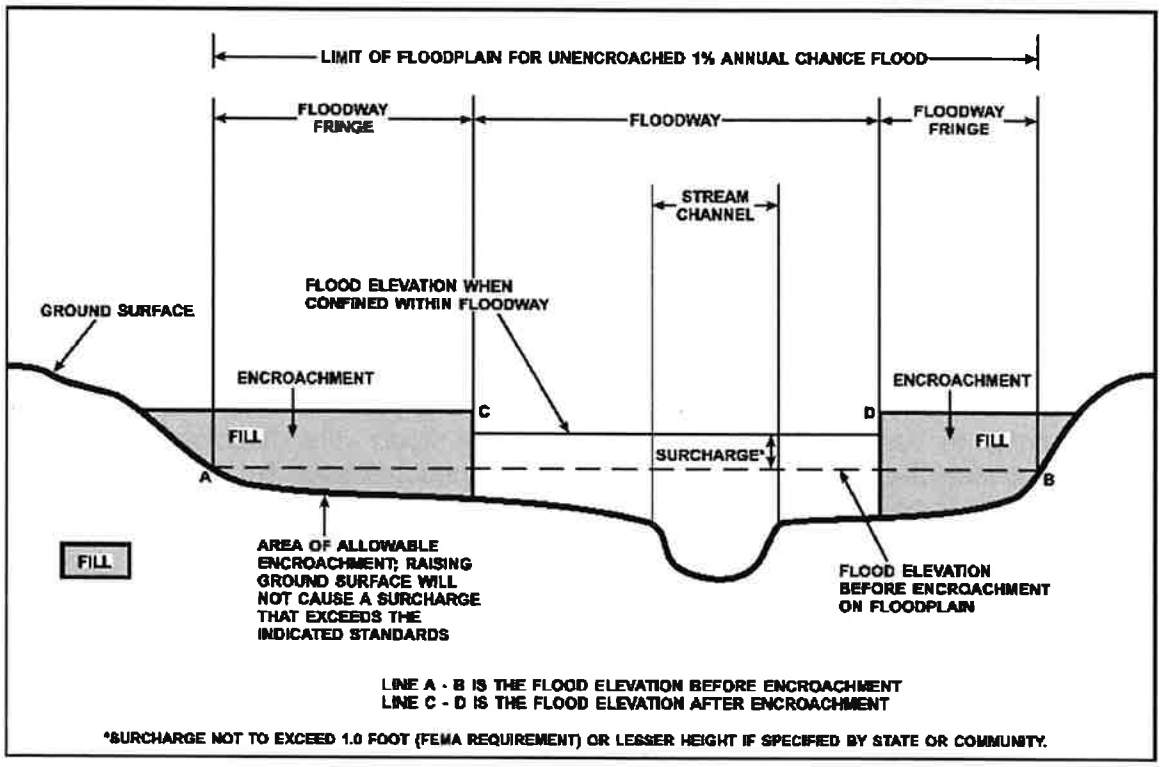
2.2 Floodways

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 balancing floodplain development against increasing flood hazard. With this approach, the area of the 1-percent-annual-chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1-percent-annual-chance flood. The floodway fringe is the area between the floodway and the 1-percent-annual-chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe 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 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. 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 on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The BFE is the elevation of the 1-percent-annual-chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

BFEs are primarily intended for flood insurance rating purposes. Cross sections with

BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. For example, the user may use the FIRM to determine the stream station of a location of interest and then use the profile to determine the 1-percent annual chance elevation at that location. Because only selected cross sections may be shown on the FIRM for riverine areas, the profile should be used to obtain the flood elevation between mapped cross sections. Additionally, for riverine areas, whole-foot elevations shown on the FIRM may not exactly reflect the elevations derived from the hydraulic analyses; therefore, elevations obtained from the profile may more accurately reflect the results of the hydraulic analysis.

2.4 Non-Encroachment Zones

[This section is not applicable to this Flood Risk Project.]

2.5 Coastal Flood Hazard Areas

[This section is not applicable to this Flood Risk Project.]

2.5.1 Water Elevations and the Effects of Waves

[This section is not applicable to this Flood Risk Project.]

Figure 5: Wave Runup Transect Schematic

[Not applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

[This section is not applicable to this Flood Risk Project.]

2.5.3 Coastal High Hazard Areas

[This section is not applicable to this Flood Risk Project.]

Figure 6: Coastal Transect Schematic

[Not applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

[This section is not applicable to this Flood Risk Project.]

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Cumberland County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Cumberland County, Unincorporated Areas	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 4 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Middle James-Buffalo	02080203	James River	Falls within the northwestern corner of Cumberland County and drains a portion of the James River.	2,023
Middle James-Willis	02080205	Willis River	Largest watershed within Cumberland County and drains the Willis and James Rivers and their tributaries in the western, central, and northeastern parts of the county.	945

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Appomattox	02080207	Appomattox River	Second largest watershed within Cumberland County and drains the Appomattox River and its tributaries in the south and southeastern parts of the county.	1,610

4.2 Principal Flood Problems

Table 5 contains a description of the principal flood problems that have been noted for Cumberland County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Riverine Flooding	Flooding may be caused by heavy rain occurring anytime of the year. Flooding may also occur as a result of intense rainfall produced by local thunderstorms or tropical disturbances such as hurricanes, which move into the area from the Gulf or Atlantic coasts.
James River	Low-lying areas along the James River are subject to periodic flooding. Tropical storms are responsible for some of the larger floods experienced on the James River. One of the largest floods ever recorded occurred in June 1972 as a result of intense rainfall associated with Tropical Storm Agnes.

Table 6 contains information about historic flood elevations in the communities within Cumberland County.

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Appomattox River	At USGS gaging station 02039500 on Appomattox River at Farmville, VA	310.8	6/22/1972	200	USGS
James River	At USGS gaging station 02035000 on James River at Cartersville, VA	205.0	6/22/1972	500	USGS
James River	At USGS gaging station 02035000 on James River at Cartersville, VA	200.9	8/21/1969	100	USGS

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
James River	At USGS gaging station 02035000 on James River at Cartersville, VA	199.7	11/6/1985	100	USGS

4.3 Dams and Other Flood Hazard Reduction Measures

Table 7 contains information about non-levee flood hazard reduction measures within Cumberland County such as dams or jetties. Levee systems are addressed in Section 4.4 of this FIS Report.

Table 7: Dams and Other Flood Hazard Reduction Measures

[Not applicable to this Flood Risk Project.]

4.4 Levee Systems

[This section is not applicable to this Flood Risk Project.]

Table 8: Levee Systems

[Not applicable to this Flood Risk Project.]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources 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 are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 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-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In addition to these flood events, the "1-percent-plus", or "1%+", annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources

in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1-percent-annual-chance flood elevation and a 1-percent-annual-chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% "plus"). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1-percent-annual-chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 12. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9. Stream gage information is provided in Table 11.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Angola Creek	-78.241, 37.376	15.0	2,222	3,313	4,285	5,408	10,283
Angola Creek	-78.245, 37.377	13.8	2,126	3,175	4,111	5,193	9,900
Angola Creek	-78.25, 37.377	13.1	2,067	3,091	4,005	5,062	9,669
Angola Creek	-78.261, 37.375	12.6	2,026	3,031	3,929	4,968	9,498
Angola Creek	-78.267, 37.375	11.5	1,933	2,897	3,760	4,759	9,125
Angola Creek	-78.27, 37.375	11.4	1,917	2,874	3,730	4,722	9,057
Angola Creek	-78.274, 37.374	11.0	1,883	2,826	3,669	4,646	8,923
Angola Creek	-78.277, 37.373	9.6	1,752	2,635	3,428	4,347	8,383
Angola Creek	-78.284, 37.372	9.3	1,723	2,593	3,375	4,282	8,266
Angola Creek	-78.285, 37.372	8.4	1,626	2,453	3,196	4,060	7,864
Angola Creek	-78.289, 37.372	8.0	1,589	2,400	3,129	3,977	7,717
Angola Creek	-78.296, 37.371	6.8	1,453	2,201	2,877	3,662	7,143
Angola Creek	-78.297, 37.371	6.6	1,440	2,182	2,852	3,631	7,085
Angola Creek	-78.301, 37.37	6.1	1,380	2,095	2,741	3,493	6,835
Angola Creek	-78.304, 37.369	5.6	1,308	1,989	2,606	3,324	6,523
Angola Creek	-78.314, 37.37	4.9	1,227	1,870	2,454	3,136	6,178
Angola Creek	-78.318, 37.373	4.3	1,145	1,750	2,300	2,942	5,820
Angola Creek	-78.321, 37.373	2.7	890	1,374	1,817	2,337	4,697
Angola Creek	-78.332, 37.374	2.1	786	1,218	1,615	2,083	4,213
Angola Creek	-78.333, 37.374	1.5	659	1,028	1,369	1,772	3,622
Angola Creek	-78.338, 37.369	1.3	591	926	1,237	1,605	3,305
Angola Creek Tributary 1	-78.244, 37.378	1.1	557	874	1,170	1,519	3,138
Angola Creek Tributary 2	-78.278, 37.373	1.2	588	922	1,232	1,598	3,293
Angola Creek Tributary 4	-78.321, 37.373	1.6	671	1,046	1,393	1,802	3,681

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Angola Creek Tributary 4	-78.323, 37.381	1.0	524	825	1,105	1,437	2,980
Appomattox River	-78.131, 37.455	610.0	13,477	19,315	24,631	30,915	53,010
Appomattox River	-78.14, 37.46	608.4	13,477	19,311	24,620	30,895	52,976
Appomattox River	-78.141, 37.459	607.9	13,477	19,309	24,617	30,889	52,964
Appomattox River	-78.147, 37.455	605.9	13,476	19,304	24,604	30,865	52,926
Appomattox River	-78.159, 37.452	595.0	13,472	19,273	24,530	30,729	52,698
Appomattox River	-78.162, 37.449	594.8	13,472	19,272	24,529	30,726	52,693
Appomattox River	-78.164, 37.446	594.3	13,471	19,271	24,525	30,720	52,683
Appomattox River	-78.176, 37.443	593.7	13,471	19,268	24,521	30,712	52,668
Appomattox River	-78.182, 37.445	593.4	13,471	19,268	24,519	30,708	52,662
Appomattox River	-78.185, 37.444	592.4	13,470	19,264	24,511	30,696	52,640
Appomattox River	-78.186, 37.44	554.7	13,424	19,119	24,217	30,187	51,795
Appomattox River	-78.187, 37.427	552.8	13,421	19,111	24,201	30,160	51,752
Appomattox River	-78.191, 37.426	552.4	13,420	19,109	24,197	30,154	51,739
Appomattox River	-78.202, 37.425	551.5	13,418	19,105	24,190	30,141	51,717
Appomattox River	-78.202, 37.422	551.3	13,418	19,104	24,188	30,138	51,714
Appomattox River	-78.205, 37.415	550.5	13,416	19,100	24,181	30,126	51,695
Appomattox River	-78.206, 37.408	548.9	13,413	19,092	24,167	30,103	51,655
Appomattox River	-78.207, 37.407	548.4	13,412	19,090	24,162	30,096	51,644
Appomattox River	-78.208, 37.406	536.1	13,385	19,028	24,051	29,914	51,343
Appomattox River	-78.216, 37.4	535.5	13,384	19,025	24,045	29,905	51,330
Appomattox River	-78.217, 37.397	534.8	13,382	19,021	24,038	29,894	51,313
Appomattox River	-78.225, 37.386	529.5	13,369	18,993	23,988	29,813	51,177
Appomattox River	-78.23, 37.384	529.1	13,368	18,991	23,984	29,807	51,169
Appomattox River	-78.234, 37.38	528.7	13,367	18,988	23,981	29,801	51,159
Appomattox River	-78.241, 37.376	513.5	13,323	18,899	23,829	29,562	50,764
Appomattox River	-78.24, 37.375	513.1	13,322	18,897	23,825	29,555	50,752
Appomattox River	-78.238, 37.365	512.5	13,320	18,893	23,818	29,545	50,738

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Appomattox River	-78.246, 37.36	511.0	13,315	18,883	23,802	29,520	50,695
Appomattox River	-78.251, 37.359	510.7	13,314	18,882	23,800	29,517	50,691
Appomattox River	-78.258, 37.36	510.5	13,313	18,880	23,797	29,513	50,682
Appomattox River	-78.26, 37.359	509.2	13,309	18,872	23,784	29,492	50,649
Appomattox River	-78.261, 37.343	484.2	13,217	18,700	23,506	29,068	49,957
Appomattox River	-78.277, 37.348	483.4	13,214	18,695	23,498	29,056	49,934
Appomattox River	-78.281, 37.336	482.5	13,210	18,688	23,487	29,040	49,911
Appomattox River	-78.282, 37.335	482.3	13,209	18,686	23,484	29,036	49,900
Appomattox River	-78.291, 37.336	481.8	13,207	18,683	23,479	29,027	49,889
Appomattox River	-78.294, 37.333	481.5	13,205	18,680	23,475	29,021	49,880
Appomattox River	-78.293, 37.324	479.7	13,198	18,666	23,453	28,989	49,830
Appomattox River	-78.302, 37.324	470.6	13,157	18,596	23,344	28,827	49,564
Appomattox River	-78.306, 37.322	470.5	13,157	18,595	23,342	28,824	49,557
Appomattox River	-78.309, 37.321	470.3	13,156	18,593	23,340	28,820	49,553
Appomattox River	-78.312, 37.316	468.2	13,146	18,577	23,314	28,783	49,492
Appomattox River	-78.315, 37.314	467.8	13,144	18,573	23,309	28,775	49,480
Appomattox River	-78.318, 37.312	467.5	13,143	18,571	23,305	28,769	49,470
Appomattox River	-78.323, 37.309	467.2	13,142	18,569	23,302	28,765	49,461
Appomattox River	-78.326, 37.309	312.1	12,124	17,270	21,769	26,872	42,198
Appomattox River	-78.336, 37.312	311.7	12,118	17,262	21,760	26,863	42,176
Appomattox River	-78.337, 37.317	311.4	12,113	17,256	21,754	26,855	42,156
Appomattox River	-78.342, 37.319	311.0	12,107	17,249	21,745	26,845	42,130
Appomattox River	-78.343, 37.319	310.8	12,105	17,246	21,741	26,841	42,121
Appomattox River	-78.35, 37.312	307.5	12,051	17,179	21,666	26,757	41,911
Appomattox River	-78.355, 37.303	305.9	12,027	17,148	21,631	26,718	41,813
Appomattox River	Approximately 6,900 feet downstream of N Main St	304.6	11,890	16,957	21,359	26,332	48,310

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Appomattox River	At USGS Gage 02039500 - Appomattox River At Farmville, VA	302.1	11,849	16,906	21,300	26,265	48,239
Appomattox River	Approximately 1,300 feet downstream of Buffalo Creek confluence	183.9	8,777	12,554	15,819	19,555	35,161
Appomattox River	Approximately 300 feet upstream of Dry Creek confluence	174.7	8,371	11,928	14,986	18,458	32,855
Appomattox River	Approximately 5,000 feet downstream of Gannaway Creek confluence	172.4	8,300	11,825	14,856	18,297	32,546
Appomattox River	Approximately 3,500 feet downstream of Gannaway Creek confluence	166.7	8,086	11,504	14,435	17,752	31,429
Appomattox River Tributary 26	-78.147, 37.455	1.8	715	1,113	1,479	1,911	3,890
Appomattox River Tributary 26	-78.159, 37.465	1.2	576	903	1,207	1,567	3,230
Appomattox River Tributary 28	-78.206, 37.408	1.3	612	958	1,278	1,657	3,404
Appomattox River Tributary 28	-78.214, 37.411	1.1	539	847	1,134	1,473	3,048
Appomattox River Tributary 33	-78.39, 37.307	1.9	715	1,168	1,610	2,175	4,929
Appomattox River Tributary 33	-78.398, 37.315	1.4	595	997	1,398	1,925	4,569

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Appomattox River Tributary 33	-78.398, 37.316	1.2	550	933	1,320	1,835	4,450
Appomattox River Tributary 34	-78.445, 37.337	2.6	821	1,463	2,132	3,066	7,852
Appomattox River Tributary 34	-78.444, 37.339	2.4	785	1,402	2,046	2,948	7,581
Appomattox River Tributary 34	-78.447, 37.351	1.9	667	1,204	1,768	2,562	6,696
Appomattox River Tributary 34	-78.448, 37.352	1.5	580	1,055	1,558	2,270	6,010
Appomattox River Tributary 34	-78.45, 37.355	1.3	533	974	1,443	2,108	5,633
Bad Luck Branch	-78.35, 37.313	3.0	938	1,445	1,909	2,452	4,912
Bad Luck Branch	-78.357, 37.322	2.5	855	1,321	1,749	2,251	4,532
Bad Luck Branch	-78.362, 37.323	2.2	806	1,248	1,654	2,132	4,307
Bad Luck Branch	-78.362, 37.324	2.1	781	1,211	1,607	2,072	4,196
Bad Luck Branch	-78.367, 37.33	1.5	641	1,001	1,334	1,728	3,539
Bad Luck Branch	-78.374, 37.332	1.2	563	884	1,182	1,534	3,167
Bear Creek	-78.296, 37.539	7.8	1,569	2,378	3,109	3,964	7,752
Bear Creek	-78.282, 37.537	7.1	1,494	2,262	2,953	3,758	7,319
Bear Creek	-78.278, 37.536	7.0	1,474	2,232	2,916	3,711	7,233
Bear Creek	-78.275, 37.533	6.5	1,422	2,156	2,819	3,591	7,014
Bear Creek	-78.271, 37.527	5.7	1,327	2,017	2,641	3,369	6,605
Bear Creek	-78.269, 37.526	3.0	936	1,442	1,905	2,447	4,903
Bear Creek	-78.266, 37.506	2.0	763	1,184	1,571	2,027	4,108
Bear Creek	-78.266, 37.501	1.2	573	898	1,201	1,558	3,212
Big Cattail Creek	-78.171, 37.668	5.9	1,345	2,043	2,675	3,411	6,683
Big Cattail Creek	-78.173, 37.668	5.7	1,330	2,022	2,648	3,377	6,623
Big Cattail Creek	-78.178, 37.667	5.2	1,264	1,925	2,524	3,222	6,337
Big Cattail Creek	-78.184, 37.663	4.5	1,170	1,788	2,348	3,003	5,935

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Big Cattail Creek	-78.198, 37.657	3.0	949	1,460	1,928	2,476	4,953
Big Cattail Creek	-78.2, 37.66	2.8	908	1,399	1,850	2,378	4,770
Big Cattail Creek	-78.204, 37.663	2.4	840	1,299	1,720	2,214	4,462
Big Cattail Creek	-78.206, 37.665	2.3	811	1,255	1,664	2,144	4,330
Big Cattail Creek	-78.211, 37.667	1.5	645	1,008	1,343	1,739	3,560
Big Cattail Creek	-78.212, 37.668	1.1	547	860	1,151	1,495	3,094
Big Guinea Creek	-78.186, 37.441	37.6	3,630	5,314	6,791	8,484	15,662
Big Guinea Creek	-78.196, 37.441	37.1	3,608	5,284	6,753	8,438	15,584
Big Guinea Creek	-78.201, 37.443	36.8	3,591	5,259	6,723	8,401	15,520
Big Guinea Creek	-78.21, 37.441	36.3	3,565	5,222	6,677	8,345	15,423
Big Guinea Creek	-78.213, 37.441	28.9	3,154	4,641	5,952	7,457	13,883
Big Guinea Creek	-78.221, 37.44	27.7	3,085	4,544	5,831	7,309	13,628
Big Guinea Creek	-78.224, 37.438	27.0	3,045	4,487	5,759	7,221	13,473
Big Guinea Creek	-78.226, 37.436	26.9	3,036	4,474	5,742	7,201	13,436
Big Guinea Creek	-78.228, 37.433	26.5	3,016	4,445	5,707	7,157	13,360
Big Guinea Creek	-78.233, 37.433	26.1	2,991	4,411	5,664	7,104	13,270
Big Guinea Creek	-78.234, 37.432	23.9	2,850	4,210	5,412	6,795	12,728
Big Guinea Creek	-78.239, 37.428	23.6	2,829	4,180	5,375	6,749	12,648
Big Guinea Creek	-78.242, 37.426	23.1	2,802	4,142	5,327	6,691	12,547
Big Guinea Creek	-78.244, 37.425	23.0	2,792	4,127	5,308	6,668	12,504
Big Guinea Creek	-78.25, 37.422	21.8	2,716	4,020	5,174	6,502	12,216
Big Guinea Creek	-78.253, 37.422	21.0	2,664	3,945	5,080	6,387	12,012
Big Guinea Creek	-78.257, 37.421	19.6	2,565	3,804	4,903	6,169	11,629
Big Guinea Creek	-78.266, 37.421	19.1	2,532	3,756	4,843	6,096	11,499
Big Guinea Creek	-78.267, 37.421	18.7	2,498	3,708	4,782	6,020	11,365
Big Guinea Creek	-78.269, 37.421	18.4	2,480	3,683	4,750	5,981	11,297
Big Guinea Creek	-78.274, 37.421	18.2	2,462	3,656	4,717	5,941	11,225
Big Guinea Creek	-78.276, 37.421	14.0	2,146	3,204	4,148	5,239	9,984
Big Guinea Creek	-78.282, 37.423	11.6	1,941	2,909	3,774	4,777	9,156

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Big Guinea Creek	-78.293, 37.424	10.0	1,789	2,689	3,496	4,432	8,536
Big Guinea Creek	-78.299, 37.425	9.7	1,758	2,645	3,440	4,362	8,412
Big Guinea Creek	-78.306, 37.431	9.2	1,713	2,579	3,357	4,260	8,228
Big Guinea Creek	-78.313, 37.43	8.8	1,675	2,524	3,287	4,173	8,070
Big Guinea Creek Tributary 1	-78.256, 37.421	1.4	619	968	1,292	1,674	3,437
Big Guinea Creek Tributary 2	-78.281, 37.423	2.3	814	1,260	1,670	2,152	4,346
Big Guinea Creek Tributary 2	-78.281, 37.438	1.5	650	1,015	1,352	1,750	3,581
Big Guinea Creek Tributary 2	-78.28, 37.44	1.4	617	965	1,288	1,669	3,427
Big Guinea Creek Tributary 3	-78.293, 37.425	1.4	617	965	1,287	1,668	3,423
Bigger Creek	-78.209, 37.612	5.5	1,299	1,977	2,590	3,305	6,491
Bigger Creek	-78.207, 37.607	5.2	1,268	1,930	2,531	3,231	6,353
Bigger Creek	-78.204, 37.603	4.9	1,226	1,870	2,454	3,135	6,180
Bigger Creek	-78.203, 37.599	3.7	1,053	1,615	2,127	2,726	5,422
Bigger Creek	-78.201, 37.584	2.9	919	1,416	1,871	2,404	4,818
Bigger Creek	-78.2, 37.583	1.9	736	1,144	1,519	1,962	3,985
Bigger Creek	-78.199, 37.577	1.4	618	966	1,289	1,670	3,427
Bigger Creek Tributary 1	-78.203, 37.599	1.0	529	833	1,115	1,450	3,006
Bonbrook Creek	-78.25, 37.601	9.8	1,773	2,666	3,467	4,396	8,472
Bonbrook Creek	-78.245, 37.593	9.5	1,738	2,615	3,402	4,316	8,327
Bonbrook Creek	-78.245, 37.593	9.3	1,723	2,593	3,375	4,281	8,264
Bonbrook Creek	-78.245, 37.586	9.0	1,688	2,543	3,311	4,203	8,125
Bonbrook Creek	-78.245, 37.584	8.8	1,668	2,514	3,274	4,156	8,039
Bonbrook Creek	-78.244, 37.581	8.4	1,630	2,458	3,204	4,069	7,882
Bonbrook Creek	-78.246, 37.579	8.2	1,611	2,432	3,170	4,027	7,808

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bonbrook Creek	-78.244, 37.573	7.7	1,559	2,355	3,072	3,906	7,585
Bonbrook Creek	-78.241, 37.571	7.4	1,525	2,306	3,010	3,829	7,447
Bonbrook Creek	-78.241, 37.565	6.9	1,467	2,222	2,903	3,695	7,204
Bonbrook Creek	-78.24, 37.562	6.0	1,364	2,072	2,712	3,457	6,771
Bonbrook Creek	-78.243, 37.559	5.7	1,326	2,016	2,641	3,369	6,610
Bonbrook Creek	-78.244, 37.552	5.3	1,275	1,941	2,545	3,249	6,388
Bonbrook Creek	-78.242, 37.548	5.0	1,238	1,887	2,476	3,163	6,231
Bonbrook Creek	-78.238, 37.544	4.6	1,179	1,800	2,364	3,023	5,970
Bonbrook Creek	-78.237, 37.544	4.4	1,153	1,763	2,316	2,963	5,861
Bonbrook Creek	-78.235, 37.541	3.8	1,073	1,644	2,165	2,773	5,509
Bonbrook Creek	-78.233, 37.534	2.5	859	1,327	1,757	2,261	4,552
Bonbrook Creek	-78.228, 37.531	1.7	695	1,082	1,439	1,861	3,792
Bonbrook Creek Tributary 1	-78.234, 37.534	1.1	542	852	1,140	1,481	3,064
Boston Branch	-78.14, 37.689	3.7	1,054	1,616	2,129	2,728	5,426
Boston Branch	-78.141, 37.686	3.0	933	1,437	1,898	2,439	4,885
Boston Branch	-78.147, 37.678	2.7	883	1,363	1,803	2,319	4,661
Boston Branch	-78.15, 37.67	2.3	816	1,263	1,673	2,156	4,351
Boston Branch	-78.147, 37.664	1.9	738	1,147	1,524	1,968	3,999
Boston Branch	-78.148, 37.664	1.5	644	1,006	1,341	1,736	3,556
Boston Branch	-78.148, 37.658	1.0	526	827	1,108	1,441	2,986
Boston Branch 1	-78.314, 37.431	1.8	709	1,103	1,467	1,896	3,861
Boston Branch 1	-78.316, 37.434	1.5	657	1,025	1,366	1,768	3,617
Boston Branch 1	-78.315, 37.435	1.2	585	916	1,224	1,588	3,269
Brier Creek	-78.389, 37.423	4.9	1,219	2,045	2,867	3,962	9,317
Brier Creek	-78.39, 37.42	4.7	1,184	1,985	2,782	3,844	9,032
Brier Creek	-78.395, 37.41	4.2	1,111	1,859	2,604	3,594	8,444
Brier Creek	-78.394, 37.401	3.7	1,035	1,729	2,419	3,331	7,808
Brier Creek	-78.393, 37.397	3.4	982	1,637	2,288	3,147	7,367

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Brier Creek	-78.393, 37.394	3.1	942	1,567	2,186	3,002	7,004
Brier Creek	-78.393, 37.393	2.6	832	1,407	1,983	2,751	6,584
Brier Creek	-78.394, 37.388	2.1	748	1,275	1,807	2,523	6,126
Brier Creek	-78.393, 37.385	1.8	687	1,166	1,648	2,293	5,539
Brier Creek	-78.391, 37.38	1.1	505	870	1,244	1,749	4,347
Brown Branch	-78.314, 37.331	2.5	856	1,323	1,751	2,254	4,539
Brown Branch	-78.317, 37.342	1.3	589	923	1,233	1,600	3,295
Buck and Game Creek	-78.261, 37.582	4.3	1,137	1,738	2,285	2,923	5,785
Buck and Game Creek	-78.269, 37.58	3.9	1,077	1,649	2,171	2,781	5,521
Buck and Game Creek	-78.285, 37.573	3.0	945	1,455	1,921	2,468	4,940
Buck and Game Creek	-78.297, 37.568	2.2	802	1,243	1,648	2,124	4,295
Buffalo Creek	-78.327, 37.511	11.9	1,969	2,962	3,856	4,899	9,484
Buffalo Creek	-78.328, 37.511	11.7	1,950	2,929	3,807	4,829	9,309
Buffalo Creek	-78.333, 37.508	11.5	1,929	2,895	3,762	4,767	9,168
Buffalo Creek	-78.337, 37.509	10.8	1,861	2,794	3,629	4,597	8,836
Camp Branch	-78.346, 37.46	2.1	726	1,302	1,905	2,751	7,128
Camp Branch	-78.35, 37.462	1.8	648	1,170	1,719	2,492	6,528
Camp Branch	-78.356, 37.462	1.3	522	953	1,412	2,062	5,510
Cat Branch	-78.261, 37.594	4.8	1,210	1,845	2,422	3,095	6,102
Cobbs Creek	-78.193, 37.735	3.1	960	1,478	1,950	2,504	5,008
Cobbs Creek	-78.189, 37.724	2.5	848	1,311	1,735	2,234	4,499
Cobbs Creek	-78.19, 37.72	1.5	647	1,010	1,347	1,743	3,570
Cobbs Creek	-78.187, 37.718	1.2	576	904	1,208	1,568	3,235
Davis Creek	-78.09, 37.626	9.5	1,746	2,626	3,417	4,334	8,360
Davis Creek	-78.096, 37.625	8.9	1,684	2,538	3,304	4,194	8,109

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Davis Creek	-78.096, 37.619	8.6	1,656	2,496	3,251	4,128	7,987
Davis Creek	-78.104, 37.62	7.3	1,514	2,290	2,990	3,804	7,400
Davis Creek	-78.117, 37.619	6.7	1,449	2,195	2,868	3,652	7,122
Davis Creek	-78.12, 37.619	6.4	1,407	2,135	2,792	3,557	6,954
Davis Creek	-78.123, 37.615	6.2	1,383	2,099	2,746	3,499	6,844
Davis Creek	-78.123, 37.615	5.5	1,295	1,970	2,581	3,294	6,467
Davis Creek	-78.128, 37.611	5.2	1,258	1,916	2,512	3,208	6,310
Davis Creek	-78.129, 37.611	5.1	1,244	1,895	2,486	3,175	6,250
Davis Creek	-78.133, 37.611	4.9	1,220	1,861	2,442	3,121	6,153
Davis Creek	-78.135, 37.611	4.2	1,131	1,729	2,274	2,910	5,762
Davis Creek	-78.138, 37.609	3.9	1,089	1,668	2,195	2,811	5,579
Davis Creek	-78.143, 37.604	3.5	1,018	1,563	2,060	2,642	5,264
Davis Creek	-78.146, 37.604	3.2	973	1,496	1,974	2,534	5,062
Davis Creek	-78.15, 37.603	2.8	910	1,403	1,854	2,383	4,779
Davis Creek	-78.151, 37.602	2.6	874	1,350	1,786	2,298	4,622
Davis Creek	-78.154, 37.599	2.2	789	1,222	1,621	2,090	4,226
Davis Creek	-78.156, 37.599	2.0	759	1,177	1,563	2,017	4,088
Davis Creek	-78.157, 37.597	1.5	647	1,010	1,346	1,743	3,568
Davis Creek	-78.157, 37.594	1.3	592	927	1,238	1,606	3,304
Davis Creek Tributary 1	-78.103, 37.62	1.2	567	889	1,189	1,543	3,188
Deep Creek	-78.114, 37.507	6.9	1,473	2,230	2,913	3,708	7,225
Deep Creek	-78.121, 37.501	5.8	1,343	2,040	2,671	3,406	6,673
Deep Creek	-78.121, 37.501	5.6	1,316	2,001	2,622	3,344	6,562
Deep Creek	-78.125, 37.497	5.1	1,253	1,909	2,504	3,197	6,292
Deep Creek	-78.127, 37.495	4.9	1,229	1,874	2,459	3,141	6,190
Deep Creek	-78.132, 37.491	4.1	1,116	1,707	2,245	2,874	5,694
Deep Creek	-78.133, 37.489	3.5	1,021	1,567	2,065	2,649	5,276
Deep Creek	-78.138, 37.486	3.2	979	1,505	1,986	2,549	5,091

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Deep Creek	-78.144, 37.485	2.9	927	1,427	1,886	2,423	4,853
Deep Creek	-78.152, 37.485	2.5	849	1,313	1,738	2,238	4,510
Deep Creek	-78.157, 37.485	2.1	783	1,215	1,611	2,078	4,208
Deep Creek	-78.16, 37.488	1.9	737	1,146	1,522	1,965	3,993
Deep Creek	-78.161, 37.489	1.6	663	1,034	1,378	1,782	3,643
Deep Creek	-78.165, 37.494	1.2	574	901	1,204	1,563	3,225
Deep Run	-78.085, 37.641	4.6	1,186	1,810	2,378	3,040	6,003
Deep Run	-78.093, 37.645	4.1	1,116	1,708	2,246	2,875	5,698
Deep Run	-78.1, 37.649	3.8	1,061	1,626	2,141	2,744	5,453
Deep Run	-78.105, 37.651	2.4	829	1,283	1,700	2,189	4,418
Deep Run	-78.106, 37.651	2.2	808	1,252	1,659	2,138	4,321
Deep Run	-78.107, 37.651	2.0	762	1,182	1,569	2,025	4,104
Deep Run	-78.114, 37.65	1.6	670	1,045	1,392	1,800	3,679
Deep Run	-78.116, 37.65	1.4	614	960	1,282	1,661	3,412
Deep Run	-78.123, 37.65	1.1	547	859	1,149	1,493	3,085
Deep Run Tributary 1	-78.105, 37.65	1.2	576	903	1,207	1,566	3,228
Doe Branch	-78.234, 37.433	2.3	809	1,254	1,662	2,141	4,328
Doe Branch	-78.242, 37.437	2.0	747	1,161	1,541	1,990	4,040
Doe Branch	-78.251, 37.441	1.2	577	905	1,210	1,570	3,238
Dry Creek	-78.415, 37.324	8.0	1,654	2,798	3,941	5,485	12,956
Dry Creek	-78.419, 37.332	7.6	1,601	2,713	3,826	5,329	12,622
Dry Creek	-78.421, 37.336	7.3	1,558	2,643	3,730	5,200	12,343
Dry Creek	-78.421, 37.34	5.9	1,366	2,329	3,298	4,612	11,054
Dry Creek	-78.418, 37.342	4.1	1,089	1,867	2,656	3,728	9,055
Dry Creek	-78.412, 37.345	3.6	1,014	1,742	2,479	3,482	8,485
Dry Creek	-78.411, 37.347	2.9	887	1,536	2,198	3,103	7,664
Dry Creek	-78.407, 37.353	2.5	819	1,418	2,031	2,868	7,103
Dry Creek	-78.406, 37.356	2.4	787	1,364	1,953	2,758	6,837

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Dry Creek	-78.404, 37.357	1.7	634	1,113	1,609	2,292	5,815
Dry Creek	-78.402, 37.359	1.1	507	887	1,279	1,816	4,608
Dry Creek Tributary 2	-78.418, 37.343	1.8	647	1,171	1,724	2,503	6,576
Gannaway Creek	-78.446, 37.334	5.4	1,297	2,129	2,943	4,005	9,111
Gannaway Creek	-78.445, 37.337	2.8	902	1,423	1,914	2,514	5,324
Gannaway Creek	-78.459, 37.341	2.2	803	1,249	1,661	2,149	4,386
Green Creek	-78.302, 37.324	8.8	1,675	2,524	3,286	4,172	8,066
Green Creek	-78.312, 37.33	8.0	1,589	2,399	3,129	3,976	7,715
Green Creek	-78.314, 37.331	5.4	1,292	1,966	2,576	3,288	6,458
Green Creek	-78.33, 37.332	4.9	1,227	1,870	2,454	3,135	6,176
Green Creek	-78.33, 37.332	4.3	1,139	1,741	2,289	2,929	5,797
Green Creek	-78.343, 37.337	3.5	1,029	1,579	2,080	2,668	5,311
Green Creek	-78.346, 37.34	2.9	918	1,415	1,870	2,404	4,821
Green Creek	-78.349, 37.343	2.6	877	1,354	1,791	2,304	4,632
Green Creek	-78.352, 37.347	2.3	819	1,268	1,680	2,164	4,369
Green Creek	-78.355, 37.348	1.9	746	1,159	1,539	1,987	4,034
Green Creek	-78.359, 37.351	1.0	532	836	1,120	1,455	3,012
Hatcher Creek	-78.291, 37.553	18.9	2,519	3,738	4,819	6,067	11,447
Hatcher Creek	-78.294, 37.554	18.7	2,504	3,716	4,793	6,034	11,390
Hatcher Creek	-78.303, 37.551	18.4	2,480	3,682	4,750	5,981	11,294
Hatcher Creek	-78.308, 37.556	18.0	2,447	3,635	4,691	5,908	11,168
Hooper Rock Creek	-78.149, 37.745	2.5	860	1,328	1,758	2,263	4,554
Hooper Rock Creek	-78.15, 37.743	2.4	827	1,280	1,696	2,184	4,408
Hooper Rock Creek	-78.155, 37.736	1.3	600	940	1,255	1,627	3,347

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Horn Quarter Creek	-78.275, 37.565	2.1	784	1,220	1,622	2,099	4,284
Horn Quarter Creek	-78.266, 37.559	1.5	650	1,015	1,353	1,751	3,586
Horsepen Creek	-78.276, 37.42	4.1	1,105	1,691	2,225	2,849	5,649
Horsepen Creek	-78.282, 37.416	3.6	1,037	1,591	2,096	2,687	5,348
Horsepen Creek	-78.287, 37.414	2.7	882	1,361	1,800	2,316	4,653
Horsepen Creek	-78.304, 37.414	1.9	737	1,145	1,521	1,964	3,989
Horsepen Creek	-78.306, 37.412	1.7	702	1,093	1,454	1,879	3,829
Horsepen Creek	-78.307, 37.411	1.6	670	1,045	1,392	1,801	3,682
Horsepen Creek	-78.31, 37.408	1.3	603	944	1,260	1,633	3,357
Horsepen Creek	-78.312, 37.406	1.2	563	884	1,183	1,535	3,172
James River	-78.086206, 37,670280	6,252.0	130,400	169,300	201,900	237,700	335,500
James River Tributary 7	-78.228, 37.702	2.0	766	1,188	1,577	2,035	4,124
James River Tributary 7	-78.225, 37.7	1.8	718	1,117	1,485	1,918	3,903
Little Bear Creek	-78.269, 37.526	2.7	881	1,360	1,799	2,314	4,651
Little Bear Creek	-78.264, 37.526	2.2	800	1,239	1,643	2,118	4,281
Little Bear Creek	-78.261, 37.522	1.6	665	1,037	1,382	1,788	3,656
Little Bear Creek	-78.261, 37.518	1.3	612	958	1,279	1,658	3,409
Little Bear Creek	-78.258, 37.512	1.0	528	831	1,113	1,447	3,000
Little Guinea Creek	-78.159, 37.453	10.3	1,820	2,734	3,554	4,504	8,669
Little Guinea Creek	-78.165, 37.453	10.1	1,802	2,708	3,520	4,462	8,591
Little Guinea Creek	-78.175, 37.456	9.5	1,737	2,614	3,402	4,315	8,329
Little Guinea Creek	-78.177, 37.459	9.3	1,721	2,591	3,372	4,278	8,261

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Little Guinea Creek	-78.181, 37.461	9.0	1,694	2,551	3,322	4,216	8,148
Little Guinea Creek	-78.183, 37.464	8.8	1,672	2,520	3,282	4,167	8,061
Little Guinea Creek	-78.184, 37.465	8.7	1,658	2,500	3,256	4,134	8,000
Little Guinea Creek	-78.186, 37.467	8.4	1,635	2,466	3,213	4,081	7,903
Little Guinea Creek	-78.187, 37.468	8.0	1,587	2,397	3,125	3,971	7,705
Little Guinea Creek	-78.189, 37.47	7.3	1,519	2,297	2,998	3,814	7,418
Little Guinea Creek	-78.193, 37.477	6.0	1,363	2,070	2,709	3,453	6,761
Little Guinea Creek	-78.2, 37.479	5.6	1,318	2,004	2,625	3,348	6,568
Little Guinea Creek	-78.204, 37.481	4.1	1,106	1,693	2,228	2,852	5,657
Little Guinea Creek	-78.206, 37.482	1.1	548	861	1,152	1,497	3,096
Little Guinea Creek 2	-78.315, 37.43	7.0	1,485	2,247	2,935	3,735	7,274
Little Guinea Creek 2	-78.326, 37.428	6.5	1,419	2,152	2,814	3,585	7,004
Little Guinea Creek 2	-78.326, 37.427	6.1	1,373	2,084	2,727	3,476	6,802
Little Guinea Creek 2	-78.327, 37.425	5.9	1,352	2,054	2,688	3,428	6,715
Little Guinea Creek 2	-78.337, 37.419	4.9	1,228	1,873	2,457	3,139	6,186

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Little Guinea Creek 2	-78.339, 37.417	4.6	1,188	1,814	2,382	3,045	6,013
Little Guinea Creek 2	-78.341, 37.41	4.1	1,106	1,693	2,227	2,851	5,653
Little Guinea Creek 2	-78.343, 37.408	3.8	1,071	1,641	2,161	2,768	5,499
Little Guinea Creek 2	-78.346, 37.406	3.5	1,025	1,574	2,074	2,660	5,300
Little Guinea Creek 2	-78.347, 37.405	3.2	978	1,503	1,983	2,546	5,083
Little Guinea Creek 2	-78.353, 37.399	2.2	798	1,236	1,639	2,112	4,269
Little Guinea Creek 2	-78.353, 37.398	1.4	623	974	1,299	1,683	3,452
Little Guinea Creek Tributary 1	-78.193, 37.477	1.1	542	852	1,140	1,481	3,064
Little Guinea Creek Tributary 2	-78.204, 37.481	1.5	645	1,007	1,342	1,738	3,558
Little Guinea Creek Tributary 2	-78.205, 37.491	1.1	542	852	1,140	1,481	3,064
Little Guinea Creek Tributary 3	-78.206, 37.481	2.9	932	1,435	1,896	2,436	4,879
Little Guinea Creek Tributary 3	-78.214, 37.481	2.6	867	1,339	1,773	2,281	4,591
Little Guinea Creek Tributary 3	-78.225, 37.485	1.2	585	917	1,225	1,590	3,276
Little Willis River	-78.369, 37.432	29.1	3,447	5,367	7,160	9,416	19,518
Little Willis River	-78.369, 37.429	28.6	3,415	5,325	7,110	9,359	19,443
Little Willis River	-78.373, 37.428	26.1	3,258	5,114	6,859	9,071	19,054
Little Willis River	-78.388, 37.426	25.3	3,191	5,006	6,711	8,872	18,621
Little Willis River	-78.389, 37.424	25.1	3,178	4,985	6,683	8,835	18,540

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Little Willis River	-78.389, 37.423	20.3	2,786	4,380	5,881	7,779	16,400
Little Willis River	-78.392, 37.421	20.1	2,771	4,355	5,846	7,732	16,298
Little Willis River	-78.395, 37.412	19.4	2,711	4,257	5,710	7,546	15,883
Little Willis River	-78.402, 37.409	19.1	2,685	4,215	5,653	7,467	15,706
Little Willis River	-78.413, 37.411	17.2	2,507	3,921	5,245	6,905	14,440
Little Willis River	-78.415, 37.411	16.4	2,431	3,793	5,067	6,659	13,877
Little Willis River	-78.418, 37.404	16.0	2,400	3,742	4,996	6,559	13,649
Little Willis River	-78.425, 37.397	14.2	2,222	3,441	4,574	5,969	12,277
Little Willis River Tributary 1	-78.373, 37.427	2.3	820	1,287	1,724	2,252	4,708
Little Willis River Tributary 1	-78.374, 37.422	1.9	728	1,152	1,551	2,036	4,314
Little Willis River Tributary 2	-78.413, 37.411	1.7	620	1,125	1,659	2,413	6,366
Little Willis River Tributary 2	-78.412, 37.396	1.2	499	918	1,365	2,002	5,398
Little Willis River Tributary 3	-78.425, 37.396	1.6	602	1,093	1,614	2,350	6,212
Little Willis River Tributary 3	-78.427, 37.394	1.4	546	999	1,480	2,163	5,779
Maple Swamp Creek	Approximately 155 feet upstream from confluence with Muddy Creek	4.2	1,130	1,728	2,273	2,908	5,760
Maple Swamp Creek	Approximately 7.75 miles upstream from Cartersville Rd	3.1	965	1,485	1,959	2,516	5,029
Maple Swamp Creek	Approximately 8.38 miles upstream from Cartersville Rd	2.5	848	1,311	1,736	2,234	4,501

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Maple Swamp Creek	Approximately 8.6 miles upstream from Cartersville Rd	2.0	750	1,165	1,547	1,996	4,051
Maple Swamp Creek	Approximately 8.8 miles upstream from Cartersville Rd	1.7	702	1,093	1,454	1,879	3,829
Maple Swamp Creek	Approximately 8.9 miles upstream from Cartersville Rd	1.6	664	1,036	1,380	1,785	3,650
Maxey Mill Creek	-78.109, 37.513	12.6	2,024	3,029	3,927	4,965	9,496
Maxey Mill Creek	-78.127, 37.52	11.5	1,926	2,886	3,746	4,742	9,092
Maxey Mill Creek	-78.132, 37.519	10.4	1,824	2,740	3,561	4,512	8,682
Maxey Mill Creek	-78.134, 37.518	10.2	1,812	2,722	3,538	4,484	8,629
Maxey Mill Creek	-78.143, 37.518	8.8	1,669	2,516	3,276	4,159	8,045
Maxey Mill Creek	-78.145, 37.519	8.6	1,651	2,489	3,243	4,118	7,971
Maxey Mill Creek	-78.148, 37.52	5.5	1,295	1,970	2,581	3,294	6,467
Maxey Mill Creek	-78.154, 37.519	4.4	1,160	1,772	2,328	2,977	5,884
Maxey Mill Creek	-78.16, 37.516	4.1	1,108	1,696	2,231	2,857	5,665
Maxey Mill Creek	-78.163, 37.516	3.8	1,072	1,643	2,163	2,771	5,505
Maxey Mill Creek	-78.168, 37.516	3.4	1,000	1,537	2,026	2,600	5,187
Maxey Mill Creek	-78.175, 37.516	3.0	936	1,442	1,905	2,447	4,903
Maxey Mill Creek	-78.179, 37.517	2.7	886	1,368	1,809	2,327	4,677
Maxey Mill Creek	-78.181, 37.516	2.5	852	1,317	1,743	2,244	4,519
Maxey Mill Creek	-78.184, 37.516	2.0	761	1,180	1,567	2,022	4,098
Maxey Mill Creek	-78.187, 37.517	1.3	612	957	1,278	1,656	3,402
Maxey Mill Creek	-78.191, 37.517	1.0	526	827	1,108	1,441	2,986
Maxey Mill Creek Tributary 1	-78.143, 37.518	1.2	576	903	1,207	1,566	3,228
Maxey Mill Creek Tributary 2	-78.148, 37.52	3.1	957	1,472	1,943	2,495	4,988

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Maxey Mill Creek Tributary 2	-78.154, 37.527	2.5	851	1,316	1,742	2,242	4,517
Maxey Mill Creek Tributary 2	-78.158, 37.532	2.1	769	1,193	1,583	2,042	4,137
Maxey Mill Creek Tributary 2	-78.165, 37.537	1.6	661	1,031	1,373	1,777	3,632
Maxey Mill Creek Tributary 2	-78.168, 37.538	1.4	614	961	1,282	1,662	3,414
Maxey Mill Creek Tributary 2	-78.171, 37.538	1.2	571	896	1,197	1,554	3,205
Muddy Creek	Approximately 1.2 miles downstream from Cartersville Rd	40.9	3,798	5,551	7,086	8,844	16,283
Muddy Creek	Approximately 0.95 mile downstream from Cartersville Rd	40.6	3,782	5,528	7,058	8,811	16,227
Muddy Creek	Approximately 0.3 mile downstream from Cartersville Rd	39.8	3,743	5,473	6,989	8,726	16,079
Muddy Creek	Approximately 682 feet downstream from Cartersville Rd	39.2	3,713	5,431	6,937	8,663	15,972
Muddy Creek	Approximately 0.5 mile upstream from Cartersville Rd	38.8	3,694	5,404	6,903	8,621	15,898
Muddy Creek	Approximately 0.6 mile upstream from Cartersville Rd	34.2	3,451	5,062	6,477	8,101	15,002
Muddy Creek	Approximately 1.6 miles upstream from Cartersville Rd	33.6	3,419	5,016	6,420	8,031	14,880

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Muddy Creek	Approximately 1.85 miles upstream from Cartersville Rd	33.4	3,407	4,999	6,399	8,005	14,835
Muddy Creek	Approximately 2 miles upstream from Cartersville Rd	33.2	3,399	4,988	6,384	7,987	14,802
Muddy Creek	Approximately 2.5 miles upstream from Cartersville Rd	23.5	2,828	4,178	5,373	6,747	12,644
Muddy Creek	Approximately 3.4 miles upstream from Cartersville Rd	22.7	2,773	4,100	5,274	6,626	12,430
Muddy Creek	Approximately 3.5 miles upstream from Cartersville Rd	22.3	2,745	4,061	5,226	6,566	12,329
Muddy Creek	Approximately 4.3 miles upstream from Cartersville Rd	20.9	2,653	3,930	5,061	6,363	11,971
Muddy Creek	Approximately 5.2 miles upstream from Cartersville Rd	18.6	2,495	3,704	4,777	6,015	11,357
Muddy Creek	Approximately 5.9 miles upstream from Cartersville Rd	18.0	2,453	3,644	4,702	5,922	11,194
Muddy Creek	Approximately 6.3 miles upstream from Cartersville Rd	16.3	2,322	3,456	4,465	5,630	10,675
Muddy Creek	Approximately 195 feet upstream from confluence with Maple Swamp Creek	11.7	1,949	2,920	3,789	4,795	9,189

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Muddy Creek	Approximately 2.4 miles upstream from Pine Grove Rd	11.4	1,919	2,877	3,734	4,727	9,067
Muddy Creek	Approximately 2.3 miles upstream from Pine Grove Rd	11.1	1,894	2,841	3,689	4,671	8,968
Muddy Creek	Approximately 2.2 miles upstream from Pine Grove Rd	10.8	1,864	2,798	3,634	4,603	8,845
Muddy Creek	Approximately 1.7 miles upstream from Pine Grove Rd	10.4	1,829	2,747	3,570	4,523	8,701
Muddy Creek	Approximately 1.5 miles upstream from Pine Grove Rd	9.3	1,718	2,586	3,366	4,271	8,247
Muddy Creek	Approximately 1 mile upstream from Pine Grove Rd	8.3	1,622	2,447	3,189	4,051	7,849
Muddy Creek	Approximately 0.8 mile upstream from Pine Grove Rd	7.4	1,528	2,311	3,016	3,836	7,460
Muddy Creek	Approximately 782 feet upstream from Pine Grove Rd	6.9	1,468	2,223	2,904	3,697	7,206
Muddy Creek	Approximately 930 feet downstream from Pine Grove Rd	4.1	1,113	1,703	2,240	2,868	5,685
Muddy Creek	Approximately 0.3 mile downstream from Pine Grove Rd	3.7	1,051	1,612	2,123	2,721	5,412

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Muddy Creek	Approximately 1 mile downstream from Pine Grove Rd	3.1	960	1,477	1,950	2,503	5,005
Muddy Creek	-78.159, 37.563	2.7	890	1,373	1,815	2,335	4,688
Muddy Creek	-78.159, 37.563	2.2	789	1,223	1,622	2,091	4,231
Muddy Creek	-78.163, 37.562	2.0	756	1,174	1,559	2,012	4,083
Muddy Creek	-78.165, 37.562	1.7	699	1,088	1,447	1,870	3,809
Muddy Creek Tributary 5	-78.139, 37.567	2.6	876	1,352	1,789	2,302	4,628
Muddy Creek Tributary 5	-78.14, 37.56	2.3	810	1,254	1,663	2,142	4,328
Muddy Creek Tributary 5	-78.14, 37.56	2.1	769	1,192	1,583	2,041	4,134
Muddy Creek Tributary 5	-78.14, 37.558	1.3	600	940	1,255	1,627	3,347
Payne Creek	-78.328, 37.497	6.4	1,424	2,283	3,107	4,155	9,094
Payne Creek	-78.338, 37.496	5.2	1,270	2,038	2,775	3,710	8,135
Payne Creek	-78.341, 37.487	4.9	1,215	1,941	2,634	3,508	7,628
Payne Creek	-78.344, 37.483	4.6	1,173	1,865	2,523	3,346	7,213
Payne Creek	-78.355, 37.479	3.8	1,060	1,663	2,229	2,919	6,127
Randolph Creek	-78.224, 37.627	25.2	2,933	4,329	5,561	6,978	13,050
Randolph Creek	-78.234, 37.632	24.3	2,877	4,248	5,460	6,854	12,831
Randolph Creek	-78.236, 37.634	23.5	2,828	4,179	5,373	6,748	12,646
Randolph Creek	-78.238, 37.64	22.3	2,751	4,069	5,235	6,578	12,347
Randolph Creek	-78.239, 37.641	22.2	2,741	4,055	5,218	6,557	12,312
Randolph Creek	-78.247, 37.641	21.7	2,707	4,007	5,158	6,483	12,183
Randolph Creek	-78.248, 37.641	21.5	2,697	3,993	5,140	6,461	12,144
Randolph Creek Tributary 1	-78.238, 37.64	1.1	541	850	1,138	1,478	3,058
Reynolds Creek	-78.209, 37.616	12.9	2,051	3,067	3,975	5,025	9,601

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Reynolds Creek	-78.21, 37.611	7.3	1,517	2,294	2,995	3,810	7,412
Reynolds Creek	-78.212, 37.609	7.1	1,492	2,258	2,949	3,753	7,309
Reynolds Creek	-78.218, 37.604	6.5	1,423	2,157	2,820	3,592	7,013
Reynolds Creek	-78.218, 37.601	5.8	1,343	2,040	2,672	3,407	6,677
Reynolds Creek	-78.219, 37.591	5.3	1,273	1,938	2,541	3,243	6,376
Reynolds Creek	-78.218, 37.589	5.1	1,250	1,904	2,498	3,190	6,279
Reynolds Creek	-78.219, 37.585	4.9	1,219	1,859	2,440	3,117	6,145
Reynolds Creek	-78.221, 37.581	4.5	1,169	1,786	2,346	3,000	5,929
Reynolds Creek	-78.221, 37.581	4.3	1,140	1,743	2,291	2,931	5,801
Reynolds Creek	-78.219, 37.574	3.9	1,075	1,648	2,169	2,778	5,519
Reynolds Creek	-78.215, 37.57	3.6	1,031	1,582	2,085	2,673	5,322
Reynolds Creek	-78.213, 37.564	3.1	956	1,472	1,943	2,495	4,992
Reynolds Creek	-78.211, 37.559	2.8	908	1,399	1,850	2,378	4,770
Reynolds Creek	-78.211, 37.559	2.7	886	1,368	1,809	2,326	4,674
Reynolds Creek	-78.21, 37.552	1.8	709	1,104	1,468	1,896	3,862
Reynolds Creek	-78.21, 37.551	1.4	636	993	1,325	1,715	3,515
Reynolds Creek	-78.209, 37.548	1.2	567	890	1,191	1,545	3,191
Rock Creek	-78.322, 37.485	2.8	909	1,405	1,860	2,397	4,839
Rock Creek	-78.315, 37.482	2.4	831	1,285	1,702	2,192	4,419
Rock Creek	-78.311, 37.479	2.0	762	1,182	1,569	2,025	4,104
Rock Creek	-78.306, 37.471	1.0	526	828	1,109	1,442	2,990
Rock Point Creek	-78.302, 37.521	4.5	1,170	1,822	2,428	3,161	6,527
Rock Point Creek	-78.303, 37.517	3.4	1,001	1,567	2,096	2,737	5,708
Rock Point Creek	-78.309, 37.506	2.2	799	1,247	1,662	2,155	4,431
Rock Point Creek	-78.303, 37.498	1.8	716	1,113	1,480	1,912	3,889
Rock Point Creek	-78.298, 37.488	1.1	542	851	1,140	1,481	3,064
Rock Point Creek Tributary 1	-78.303, 37.517	1.0	523	830	1,118	1,464	3,097

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Snowquarter Creek	-78.172, 37.656	4.3	1,134	1,734	2,280	2,918	5,778
Snowquarter Creek	-78.171, 37.654	3.7	1,058	1,622	2,136	2,737	5,441
Snowquarter Creek	-78.171, 37.647	3.4	1,005	1,544	2,036	2,612	5,210
Snowquarter Creek	-78.171, 37.646	1.5	649	1,013	1,350	1,748	3,578
Snowquarter Creek Tributary 1	-78.171, 37.645	1.9	736	1,143	1,519	1,961	3,983
Snowquarter Creek Tributary 1	-78.17, 37.633	1.3	597	935	1,249	1,620	3,334
Tear Wallet Creek	-78.213, 37.441	7.4	1,526	2,307	3,011	3,830	7,447
Tear Wallet Creek	-78.215, 37.451	6.9	1,468	2,223	2,905	3,697	7,208
Tear Wallet Creek	-78.214, 37.454	6.7	1,440	2,183	2,853	3,633	7,091
Tear Wallet Creek	-78.216, 37.461	6.1	1,371	2,081	2,724	3,472	6,796
Tear Wallet Creek	-78.22, 37.462	5.7	1,328	2,019	2,644	3,373	6,616
Tear Wallet Creek	-78.226, 37.465	5.4	1,287	1,959	2,567	3,276	6,436
Tear Wallet Creek	-78.226, 37.465	5.2	1,264	1,925	2,525	3,223	6,341
Tear Wallet Creek	-78.229, 37.466	5.0	1,231	1,877	2,463	3,146	6,199
Tear Wallet Creek	-78.234, 37.468	4.6	1,182	1,805	2,371	3,031	5,988

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Tear Wallet Creek	-78.237, 37.467	4.3	1,135	1,735	2,281	2,918	5,775
Tear Wallet Creek	-78.24, 37.469	3.9	1,088	1,667	2,193	2,809	5,576
Tear Wallet Creek	-78.243, 37.468	3.8	1,060	1,625	2,140	2,742	5,451
Tear Wallet Creek	-78.245, 37.47	3.2	976	1,501	1,980	2,542	5,078
Tear Wallet Creek	-78.249, 37.473	2.8	904	1,395	1,844	2,370	4,758
Tear Wallet Creek	-78.255, 37.474	2.2	791	1,226	1,626	2,096	4,240
Tear Wallet Creek	-78.258, 37.475	1.2	588	922	1,232	1,598	3,293
Whispering Creek	-78.38, 37.439	25.4	2,973	4,419	5,708	7,211	13,707
Whispering Creek	-78.382, 37.443	25.2	2,957	4,392	5,669	7,157	13,576
Whispering Creek	-78.388, 37.446	24.7	2,918	4,329	5,582	7,039	13,317
Willis River	-78.109, 37.681	278.4	9,645	13,658	18,127	21,615	40,281
Willis River	-78.108, 37.685	278.2	9,638	13,648	18,116	21,601	40,262
Willis River	-78.117, 37.687	277.8	9,627	13,633	18,100	21,580	40,233
Willis River	-78.117, 37.689	277.5	9,617	13,619	18,086	21,561	40,205
Willis River	-78.115, 37.695	276.9	9,599	13,594	18,059	21,525	40,156
Willis River	-78.12, 37.696	276.6	9,589	13,581	18,045	21,507	40,132
Willis River	-78.122, 37.701	276.2	9,579	13,566	18,030	21,487	40,107
Willis River	-78.126, 37.702	275.8	9,565	13,548	18,010	21,461	40,071
Willis River	-78.126, 37.702	275.5	9,558	13,538	18,000	21,447	40,049
Willis River	-78.129, 37.7	274.2	9,518	13,483	17,942	21,371	39,947
Willis River	-78.132, 37.695	273.7	9,502	13,461	17,918	21,341	39,904
Willis River	-78.136, 37.692	273.4	9,492	13,447	17,904	21,322	39,879
Willis River	-78.139, 37.69	273.2	9,487	13,440	17,896	21,312	39,863

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Willis River	-78.141, 37.689	269.4	9,372	13,282	17,729	21,092	39,566
Willis River	-78.144, 37.687	265.7	9,260	13,127	17,565	20,877	39,266
Willis River	-78.16, 37.683	265.0	9,241	13,101	17,537	20,840	39,218
Willis River	-78.162, 37.679	263.3	9,188	13,028	17,460	20,739	39,076
Willis River	-78.16, 37.674	263.0	9,180	13,016	17,447	20,723	39,056
Willis River	-78.163, 37.666	262.6	9,168	13,000	17,430	20,701	39,024
Willis River	-78.166, 37.667	262.3	9,160	12,989	17,418	20,686	39,005
Willis River	-78.167, 37.667	262.3	9,160	12,989	17,418	20,685	39,002
Willis River	-78.167, 37.667	262.1	9,159	12,988	17,414	20,683	38,995
Willis River	-78.171, 37.667	256.2	9,130	12,959	17,326	20,629	38,825
Willis River	-78.167, 37.657	255.7	9,127	12,956	17,318	20,625	38,812
Willis River	-78.173, 37.656	251.3	9,103	12,932	17,250	20,582	38,683
Willis River	-78.187, 37.643	250.5	9,099	12,927	17,237	20,574	38,659
Willis River	-78.197, 37.645	250.1	9,096	12,925	17,231	20,569	38,646
Willis River	-78.2, 37.639	249.7	9,094	12,923	17,225	20,565	38,634
Willis River	-78.2, 37.638	249.6	9,093	12,922	17,222	20,564	38,629
Willis River	-78.189, 37.636	249.0	9,090	12,918	17,213	20,558	38,611
Willis River	-78.187, 37.633	248.8	9,089	12,917	17,209	20,555	38,604
Willis River	-78.188, 37.63	245.9	9,072	12,899	17,163	20,525	38,516
Willis River	-78.198, 37.623	245.3	9,068	12,895	17,152	20,518	38,497
Willis River	-78.203, 37.618	244.7	9,065	12,892	17,144	20,512	38,481
Willis River	-78.209, 37.616	231.6	8,977	12,796	16,918	20,354	38,060
Willis River	-78.213, 37.62	231.3	8,974	12,794	16,912	20,350	38,047
Willis River	-78.217, 37.628	230.5	8,968	12,787	16,897	20,339	38,019
Willis River	-78.222, 37.628	230.2	8,966	12,784	16,891	20,335	38,011
Willis River	-78.224, 37.626	204.9	8,749	12,537	16,394	19,951	37,104
Willis River	-78.232, 37.618	204.2	8,742	12,529	16,379	19,938	37,078
Willis River	-78.236, 37.611	203.8	8,739	12,525	16,372	19,932	37,067
Willis River	-78.244, 37.609	202.7	8,727	12,512	16,347	19,912	37,020

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Willis River	-78.245, 37.607	202.4	8,724	12,508	16,340	19,906	37,009
Willis River	-78.248, 37.604	202.1	8,721	12,505	16,334	19,901	37,000
Willis River	-78.25, 37.601	192.1	8,616	12,380	16,112	19,716	36,603
Willis River	-78.255, 37.598	191.0	8,603	12,365	16,086	19,694	36,557
Willis River	-78.261, 37.594	186.0	8,545	12,296	15,968	19,592	36,350
Willis River	-78.261, 37.586	185.2	8,536	12,285	15,949	19,576	36,318
Willis River	-78.26, 37.582	180.8	8,483	12,221	15,843	19,483	36,133
Willis River	-78.261, 37.58	180.5	8,478	12,216	15,834	19,476	36,117
Willis River	-78.265, 37.577	180.2	8,475	12,212	15,828	19,470	36,106
Willis River	-78.274, 37.568	179.8	8,468	12,203	15,813	19,455	36,074
Willis River	-78.276, 37.565	179.6	8,466	12,200	15,808	19,450	36,064
Willis River	-78.276, 37.564	177.5	8,438	12,166	15,752	19,399	35,963
Willis River	-78.278, 37.559	176.9	8,428	12,152	15,731	19,378	35,916
Willis River	-78.28, 37.558	176.8	8,426	12,150	15,727	19,373	35,908
Willis River	-78.288, 37.555	176.4	8,418	12,138	15,709	19,353	35,862
Willis River	-78.29, 37.553	176.2	8,412	12,130	15,696	19,338	35,830
Willis River	-78.291, 37.553	157.2	8,144	11,803	15,186	18,871	34,954
Willis River	-78.291, 37.551	157.0	8,141	11,799	15,180	18,866	34,943
Willis River	-78.291, 37.549	156.5	8,129	11,783	15,156	18,838	34,884
Willis River	-78.294, 37.547	155.7	8,110	11,756	15,116	18,792	34,787
Willis River	-78.297, 37.539	147.7	7,975	11,585	14,863	18,544	34,329
Willis River	-78.297, 37.537	147.2	7,963	11,569	14,839	18,518	34,279
Willis River	-78.3, 37.532	146.1	7,940	11,538	14,794	18,468	34,179
Willis River	-78.302, 37.521	141.1	7,835	11,397	14,588	18,246	33,747
Willis River	-78.312, 37.523	140.3	7,811	11,362	14,537	18,185	33,616
Willis River	-78.32, 37.516	139.6	7,791	11,331	14,493	18,131	33,503
Willis River	-78.325, 37.513	139.1	7,778	11,313	14,467	18,101	33,442
Willis River	-78.327, 37.511	127.2	7,507	10,961	14,002	17,601	32,615
Willis River	-78.324, 37.51	127.0	7,499	10,948	13,985	17,579	32,569

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Willis River	-78.324, 37.509	126.7	7,485	10,927	13,957	17,542	32,495
Willis River	-78.328, 37.507	126.3	7,466	10,897	13,918	17,491	32,395
Willis River	-78.327, 37.498	126.0	7,450	10,874	13,887	17,450	32,315
Willis River	-78.328, 37.497	119.6	7,213	10,531	13,452	16,904	31,315
Willis River	-78.328, 37.497	119.3	7,204	10,518	13,435	16,882	31,275
Willis River	-78.322, 37.485	115.9	7,091	10,361	13,241	16,645	30,878
Willis River	-78.325, 37.48	115.4	7,075	10,340	13,215	16,615	30,833
Willis River	-78.33, 37.477	114.8	7,047	10,296	13,157	16,539	30,678
Willis River	-78.333, 37.468	113.2	6,995	10,224	13,070	16,434	30,506
Willis River	-78.341, 37.462	112.2	6,959	10,175	13,009	16,359	30,381
Willis River	-78.342, 37.461	111.7	6,943	10,152	12,982	16,328	30,332
Willis River	-78.346, 37.46	109.5	6,835	9,985	12,760	16,033	29,731
Willis River	-78.348, 37.457	109.3	6,825	9,971	12,741	16,009	29,684
Willis River	-78.353, 37.449	108.2	6,787	9,918	12,675	15,928	29,545
Willis River	-78.354, 37.45	108.1	6,782	9,910	12,664	15,913	29,515
Willis River	-78.356, 37.447	107.9	6,772	9,894	12,643	15,886	29,458
Willis River	-78.358, 37.445	106.8	6,737	9,846	12,584	15,815	29,343
Willis River	-78.361, 37.438	106.3	6,717	9,817	12,548	15,770	29,261
Willis River	-78.369, 37.433	105.0	6,656	9,724	12,424	15,606	28,928
Willis River	-78.369, 37.432	75.9	5,377	7,814	9,943	12,403	22,707
Willis River	-78.381, 37.439	50.2	4,296	6,295	8,053	10,090	18,718
Willis River Tributary 2	-78.144, 37.687	3.7	1,047	1,606	2,115	2,711	5,393
Willis River Tributary 2	-78.152, 37.693	3.3	988	1,518	2,003	2,570	5,130
Willis River Tributary 2	-78.157, 37.695	3.0	945	1,455	1,922	2,468	4,941
Willis River Tributary 2	-78.162, 37.697	1.5	652	1,018	1,356	1,756	3,594

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Willis River Tributary 2	-78.168, 37.695	1.2	566	888	1,187	1,541	3,179
Willis River Tributary 2.1	-78.161, 37.698	1.5	639	998	1,331	1,723	3,531
Willis River Tributary 2.1	-78.161, 37.699	1.2	578	906	1,211	1,571	3,238
Willis River Tributary 3	-78.162, 37.679	1.6	675	1,052	1,400	1,811	3,696
Willis River Tributary 3	-78.174, 37.685	1.0	536	842	1,128	1,466	3,035
Willis River Tributary 4	-78.188, 37.63	2.8	909	1,401	1,852	2,380	4,773
Willis River Tributary 4	-78.186, 37.627	2.4	834	1,290	1,709	2,201	4,439
Willis River Tributary 4	-78.186, 37.621	2.0	765	1,187	1,576	2,033	4,122
Willis River Tributary 4	-78.187, 37.615	1.1	544	856	1,145	1,488	3,080
Willis River Tributary 6	-78.333, 37.468	1.2	582	912	1,219	1,582	3,260

Figure 7: Frequency Discharge-Drainage Area Curves

[Not applicable to this Flood Risk Project]

Table 10: Summary of Non-Coastal Stillwater Elevations

[Not applicable to this Flood Risk Project]

Table 11: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Appomattox River	02039500	USGS	Appomattox River at Farmville, VA	302	7/6/1926	10/9/2016
James River	02035000	USGS	James River at Cartersville, VA	6,252	10/1/1869	5/25/2017

5.2 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. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS 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.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 23, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 12. Roughness coefficients are provided in Table 13. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Angola Creek	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Angola Creek Tributary 1	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Angola Creek Tributary 2	At confluence with Angola Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Angola Creek Tributary 4	At confluence with Angola Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Appomattox River	At Amelia, Powhatan, and Cumberland County boundary	Approximately 30,120 feet upstream of Norfolk Southern Railroad	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Appomattox River	Approximately 30,120 feet upstream of Norfolk Southern Railroad	At Town of Farmville east boundary	Regression Equations w/weighted gage analysis	HEC-RAS 5.0.7	9/30/2019	AE w/ Floodway	
Appomattox River	At Town of Farmville west boundary	At Buckingham, Prince Edward, and Cumberland County boundary	Regression Equations w/weighted gage analysis	HEC-RAS 5.0.7	9/30/2019	AE w/ Floodway	
Appomattox River Tributary 26	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Appomattox River Tributary 28	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Appomattox River Tributary 33	At Town of Farmville boundary	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Appomattox River Tributary 34	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Bad Luck Branch	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Bear Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Big Cattail Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Big Guinea Creek	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Big Guinea Creek Tributary 1	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Big Guinea Creek Tributary 2	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Big Guinea Creek Tributary 3	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Bigger Creek	At confluence with Reynolds Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Bigger Creek Tributary 1	At confluence with Bigger Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Bonbrook Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Bonbrook Creek Tributary 1	At confluence with Bonbrook Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Boston Branch	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Boston Branch 1	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Brier Creek	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Brown Branch	At confluence with Green Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Buck and Game Creek	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Buffalo Creek	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Camp Branch	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cat Branch	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Cobbs Creek	At confluence with James River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Davis Creek	At confluence with Muddy Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Davis Creek Tributary 1	At confluence with Davis Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Deep Creek	At Powhatan and Cumberland County boundary	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Deep Run	At confluence with Muddy Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Deep Run Tributary 1	At confluence with Deep Run	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Doe Branch	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Dry Creek	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Dry Creek Tributary 2	At confluence with Dry Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Gannaway Creek	At confluence with Appomattox River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Green Creek	At confluence with Appomattox River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Hatcher Creek	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Hooper Rock Creek	At confluence with James River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Horn Quarter Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Horsepen Creek	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
James River	At Goochland, Powhatan, and Cumberland County boundary	At Buckingham, Fluvanna, and Cumberland County boundary	Regression Equations w/weighted gage analysis	HEC-RAS 5.0.3	3/31/2020	AE w/ Floodway	Hydraulic models incorporated field measured bridge data.
James River Tributary 7	At confluence with James River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Bear Creek	At confluence with Bear Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Guinea Creek	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Guinea Creek 2	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Guinea Creek Tributary 1	At confluence with Little Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Guinea Creek Tributary 2	At confluence with Little Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Guinea Creek Tributary 3	At confluence with Little Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Willis River	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Willis River Tributary 1	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Willis River Tributary 2	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Little Willis River Tributary 3	At confluence with Little Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Maple Swamp Creek	At Powhatan and Cumberland County boundary	About 845 feet upstream of the border of Powhatan and Cumberland Counties	Regression Equations	HEC-RAS 5.0.7	8/31/2020	AE w/ Floodway	
Maple Swamp Creek	About 845 feet upstream of the border of Powhatan and Cumberland Counties	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Maxey Mill Creek	At Powhatan and Cumberland County boundary	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Maxey Mill Creek Tributary 1	At confluence with Maxey Mill Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Maxey Mill Creek Tributary 2	At confluence with Maxey Mill Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Muddy Creek	At confluence with James River	At Powhatan and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.7	8/31/2020	AE w/ Floodway	Hydraulic models incorporated field measured bridge, culvert, and/or weir data.
Muddy Creek	At Powhatan and Cumberland County boundary	At confluence with Flippen Lake	Regression Equations	HEC-RAS 5.0.7	8/31/2020	AE w/ Floodway	Hydraulic models incorporated field measured bridge, culvert, and/or weir data.
Muddy Creek	At confluence with Flippen Lake	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Muddy Creek Tributary 5	At confluence with Muddy Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Payne Creek	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Randolph Creek	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Randolph Creek Tributary 1	At confluence with Randolph Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Reynolds Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Rock Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Rock Point Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Rock Point Creek Tributary 1	At confluence with Rock Point Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Snowquarter Creek	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Snowquarter Creek Tributary 1	At confluence with Snowquarter Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Tear Wallet Creek	At confluence with Big Guinea Creek	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Whispering Creek	At confluence with Willis River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Willis River	At confluence with James River	At Buckingham and Cumberland County boundary	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Willis River Tributary 2	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Willis River Tributary 2.1	At confluence with Willis River Tributary 2	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Willis River Tributary 3	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Willis River Tributary 4	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.
Willis River Tributary 6	At confluence with Willis River	Limit of Study, 1 sq mile Drainage Area	Regression Equations	HEC-RAS 5.0.3	11/30/2018	A	Effects of hydraulic structures were not considered in the model.

Table 13: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
All streams studied by approximate methods	0.045-0.055	0.045-0.12
Appomattox River (AE)	0.045	0.030-0.120
James River	0.30-0.55	0.040-0.100
Maple Swamp Creek (AE)	0.045	0.035-0.1
Muddy Creek (AE)	0.045	0.045-0.1

5.3 Coastal Analyses

[This section is not applicable to this Flood Risk Project.]

Table 14: Summary of Coastal Analyses

[Not applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

[This section is not applicable to this Flood Risk Project.]

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not applicable to this Flood Risk Project]

Table 15: Tide Gage Analysis Specifics

[Not applicable to this Flood Risk Project]

5.3.2 Waves

[This section is not applicable to this Flood Risk Project.]

5.3.3 Coastal Erosion

[This section is not applicable to this Flood Risk Project.]

5.3.4 Wave Hazard Analyses

[This section is not applicable to this Flood Risk Project.]

Table 16: Coastal Transect Parameters

[Not applicable to this Flood Risk Project]

Figure 9: Transect Location Map

[Not applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

[This section is not applicable to this Flood Risk Project.]

Table 17: Summary of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

Table 18: Results of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

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

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov.

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

To obtain current elevation, description, and/or location information for benchmarks in the area, please visit the NGS website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Cumberland County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Arvonia	SE	37.625	-78.250	-0.919
Gold Hill	SE	37.500	-78.250	-0.866

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Hillcrest	SE	37.375	-78.250	-0.869
Lakeside Village	SE	37.625	-78.125	-0.912
Whiteville	SE	37.500	-78.125	-0.889
Wills Mountain	SE	37.375	-78.375	-0.873
Average Conversion from NGVD29 to NAVD88 = -0.888 feet				

Table 20: Stream-Based Vertical Datum Conversion

[Not applicable to this Flood Risk Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/flood-maps/guidance-partners/guidelines-standards.

Base map information shown on the FIRM was derived from the sources described in Table 21.

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
2019 TIGER/Line Shapefiles: Roads	U.S. Census Bureau	2019	*	Roads and transportation data
Political boundaries	Virginia Geographic Information Network	2019	*	Municipal and county boundaries
The Watershed Boundary Dataset (WBD)	U.S. Geological Survey	2016	12,000	Watershed boundaries

*Data not available

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as

well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 22.

In cases where the 1-percent and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Cumberland County Unincorporated Areas	All Riverine Flooding Sources	2015 USGS VA Chesapeake Bay South LiDAR converted to 5 Foot DEM	16.8 cm RMSEz	1.25 feet at 95% confidence level	TOPO1

BFEs shown at cross sections on the FIRM represent the 1-percent-annual-chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 23: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	409,410	704 / 168[2]	11,568	2.3	306.4	306.4	307.4	1.0
B-F[3]	*	*	*	*	*	*	*	*
G	417,866	1,036 / 522[2]	16,229	1.6	310.2	310.2	311.2	1.0
H	421,105	2,275 / 233[2]	28,633	0.7	310.4	310.4	311.4	1.0
I	423,817	1,934 / 649[2]	19,264	1.0	310.5	310.5	311.5	1.0
J	426,546	1,490 / 563[2]	11,059	1.8	310.9	310.9	311.9	1.0
K	428,453	568 / 228[2]	4,433	4.2	312.7	312.7	313.4	0.7
L	430,335	437 / 192[2]	4,673	4.0	316.2	316.2	316.6	0.4
M	431,338	490 / 232[2]	5,243	3.5	317.5	317.5	317.9	0.4
N	432,434	327 / 172[2]	4,066	4.5	318.7	318.7	319.1	0.4
O	434,872	641 / 426[2]	8,656	2.1	321.0	321.0	321.6	0.6
P	438,480	2,180 / 1,097[2]	26,169	0.7	321.5	321.5	322.2	0.7
Q	441,925	1,785 / 868[2]	15,067	1.2	321.6	321.6	322.3	0.7
R	443,870	693 / 533[2]	5,232	3.4	322.2	322.2	322.9	0.7
S	445,998	493 / 457[2]	3,671	4.8	325.2	325.2	325.7	0.5
T	447,001	586 / 65[2]	6,175	2.9	327.7	327.7	328.2	0.5

[1] Feet above approximately 4,715 feet downstream of the Zone Break to Lake Chesdin Static AE
[2] Total width / width within Cumberland County
[3] Located entirely within Town of Farmville (see Prince Edward County, VA FIS)

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VIRGINIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: APPOMATTOX RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AD	413,770	1,766 / 143[2]	49,391	4.8	200.7	200.7	201.6	0.9
AE	416,995	1,723 / 9[2]	47,047	5.1	202.1	202.1	203.0	0.9
AF	422,926	2,379 / 1,359[2]	58,264	4.1	204.1	204.1	205.1	1.0
AG	428,090	2,558 / 1,122[2]	62,693	3.8	205.6	205.6	206.4	0.8
AH	432,349	1,714 / 328[2]	44,051	5.4	206.6	206.6	207.5	0.9
AI	445,896	4,374 / 20[2]	83,642	2.8	209.5	209.5	210.4	0.9
AJ	453,078	2,980 / 261[2]	60,919	3.9	211.0	211.0	211.9	0.9
AK	456,664	2,241 / 175[2]	49,620	4.8	211.7	211.7	212.6	0.9
AL	463,259	1,832 / 356[2]	48,731	4.9	214.5	214.5	215.3	0.8
AM	469,243	1,615 / 90[2]	40,400	5.9	216.2	216.2	217.2	1.0
AN	477,199	1,824 / 238[2]	40,201	5.9	218.7	218.7	219.5	0.8
AO	483,377	1,278 / 128[2]	35,654	6.7	221.1	221.1	222.0	0.9
AP	489,218	1,695 / 36[2]	38,881	6.1	223.3	223.3	224.1	0.8
AQ	490,344	1,918 / 6[2]	41,377	5.7	223.6	223.6	224.4	0.8

[1] Feet above a point approximately 20,500 feet upstream of Roxbury Road
[2] Total width / width within Cumberland County

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VIRGINIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: JAMES RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
I	9,569	164 / 82[2]	606	3.7	257.4	257.4	258.1	0.7

[1] Feet above confluence with Muddy Creek
[2] Total width / width within Cumberland County

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VIRGINIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MAPLE SWAMP CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,579	285 / 78[2]	2,856	3.1	198.8	185.0[3]	186.0	1.0
B	3,189	123 / 49[2]	2,090	4.2	198.8	185.8[3]	186.7	0.9
C	4,886	157 / 96[2]	2,113	4.2	198.8	187.0[3]	187.7	0.7
D	5,657	202 / 155[2]	1,744	5.0	198.8	190.8[3]	190.9	0.1
E	6,979	196 / 84[2]	1,809	4.8	198.8	194.6[3]	194.7	0.1
F	8,494	178 / 84[2]	2,047	4.2	198.8	196.7[3]	196.9	0.2
G	10,666	284 / 50[2]	3,421	2.4	198.8	198.6[3]	199.1	0.5
H	13,212	178 / 76[2]	2,244	3.6	200.7	200.7	201.3	0.6
I	14,702	238 / 206[2]	2,636	3.1	202.1	202.1	202.9	0.8
J	17,144	189 / 41[2]	2,298	3.5	203.8	203.8	204.4	0.6
K	18,665	234 / 110[2]	2,937	2.7	204.9	204.9	205.6	0.7
L	20,380	274 / 67[2]	2,838	2.4	205.8	205.8	206.6	0.8
M-Y[4]	*	*	*	*	*	*	*	*
Z	45,945	275	1,928	2.5	235.8	235.8	236.8	1.0
AA	47,905	300	2,059	2.2	239.0	239.0	239.9	0.9
AB	49,291	178	1,259	3.7	240.9	240.9	241.7	0.8
AC	50,653	412	2,925	1.6	242.9	242.9	243.6	0.7
AD	52,162	273	1,682	2.5	244.0	244.0	245.0	1.0
AE	53,899	312	1,567	2.7	246.4	246.4	247.2	0.8
AF	55,450	351	1,787	2.2	249.0	249.0	249.8	0.8
AG	56,819	187	1,021	3.8	252.6	252.6	253.1	0.5

[1] Feet above confluence with James River
[2] Total width / width within Cumberland County
[3] Elevation computed without consideration of backwater effects from James River
[4] Located entirely within Powhatan County Unincorporated Areas (see Powhatan County, VA FIS)

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VIRGINIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MUDDY CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AH	57,961	233	1,331	2.9	255.1	255.1	255.7	0.6
AI	59,456	192	1,138	3.3	257.6	257.6	258.4	0.8
AJ	60,882	198	1,520	1.9	262.2	262.2	263.1	0.9
AK	62,369	271	1,704	1.6	263.0	263.0	263.9	0.9
AL	64,239	179	730	3.7	267.5	267.5	268.1	0.6

[1] Feet above confluence with James River

Table 24: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

[This section is not applicable to this Flood Risk Project.]

Table 25: Summary of Coastal Transect Mapping Considerations

[Not applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 30, "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/flood-maps/tutorials.

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/flood-maps/change-your-flood-zone for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Mapping and Insurance eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at www.fema.gov/flood-maps/tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Cumberland County FIRM are listed in Table 26.

Table 26: Incorporated Letters of Map Change

[Not applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the Floods & Maps "Change Your Flood Zone Designation" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Cumberland County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 27, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 27 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all

the panels within that community.

The initial effective date for the Cumberland County FIRMs in countywide format was **xx/xx/xxxx**.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Cumberland County, Unincorporated Areas	10/18/1974	10/18/1974	N/A	02/15/1979	TBD 06/16/2009

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 28 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Appomattox River	TBD	STARR II	HSFE60-15-D-0005	September 2019	Cumberland County Unincorporated Areas (UIA)
James River	TBD	STARR II	HSFE60-15-D-0005	March 2020	Cumberland County UIA
Maple Swamp Creek & Muddy Creek	TBD	STARR II	HSFE60-15-D-0005	August 2020	Cumberland County UIA
All other Zone A Flood Sources	TBD	STARR II	HSFE60-15-D-0005	November 2018	Cumberland County UIA

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 29. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Cumberland County Unincorporated Areas	TBD	TBD	CCO Meeting	TBD
		11/12/2021	Flood Risk Review	FEMA, VA Department of Conservation and Recreation, Cumberland County, Compass (study contractor), STARR II (study contractor) and Resilience Action Partners (outreach contractor)
		09/11/2018	Discovery	FEMA, VA Department of Conservation and Recreation, Commonwealth Regional Council Planning District Commission, Cumberland County, Compass (study contractor), and Resilience Action Partners (outreach contractor)

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

Table 30 is a list of the locations where FIRMs for Cumberland County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 30: Map Repositories

Community	Address	City	State	Zip Code
Cumberland County, Unincorporated Areas	Building Inspectors Office Cumberland County Courthouse 1 Courthouse Circle	Cumberland	VA	23040

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 31.

Table 31 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/flood-maps/products-tools/know-your-risk/engineers-surveyors-architects
NFIP website	www.fema.gov/flood-insurance
NFHL Dataset	msc.fema.gov
FEMA Region 3	615 Chestnut Street One Independence Mall, Sixth Floor Philadelphia, PA 19106-4404 (215) 931-5500
Other Federal Agencies	
USGS website	www.usgs.gov

Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Angela Davis, CFM Virginia Department of Conservation and Recreation Division of Dam Safety and Floodplain Management 600 East Main Street, 24th Floor Richmond, VA 23219 (804) 371-6135 angela.davis@dcr.virginia.gov
State GIS Coordinator	Stuart Blankenship, Geospatial Projects Manager Integrated Services Program VITA, Virginia Geographic Information Network (VGIN) 11751 Meadowville Lane Chester, VA 23836 (804) 416-6208 stuart.blankenship@vita.virginia.gov

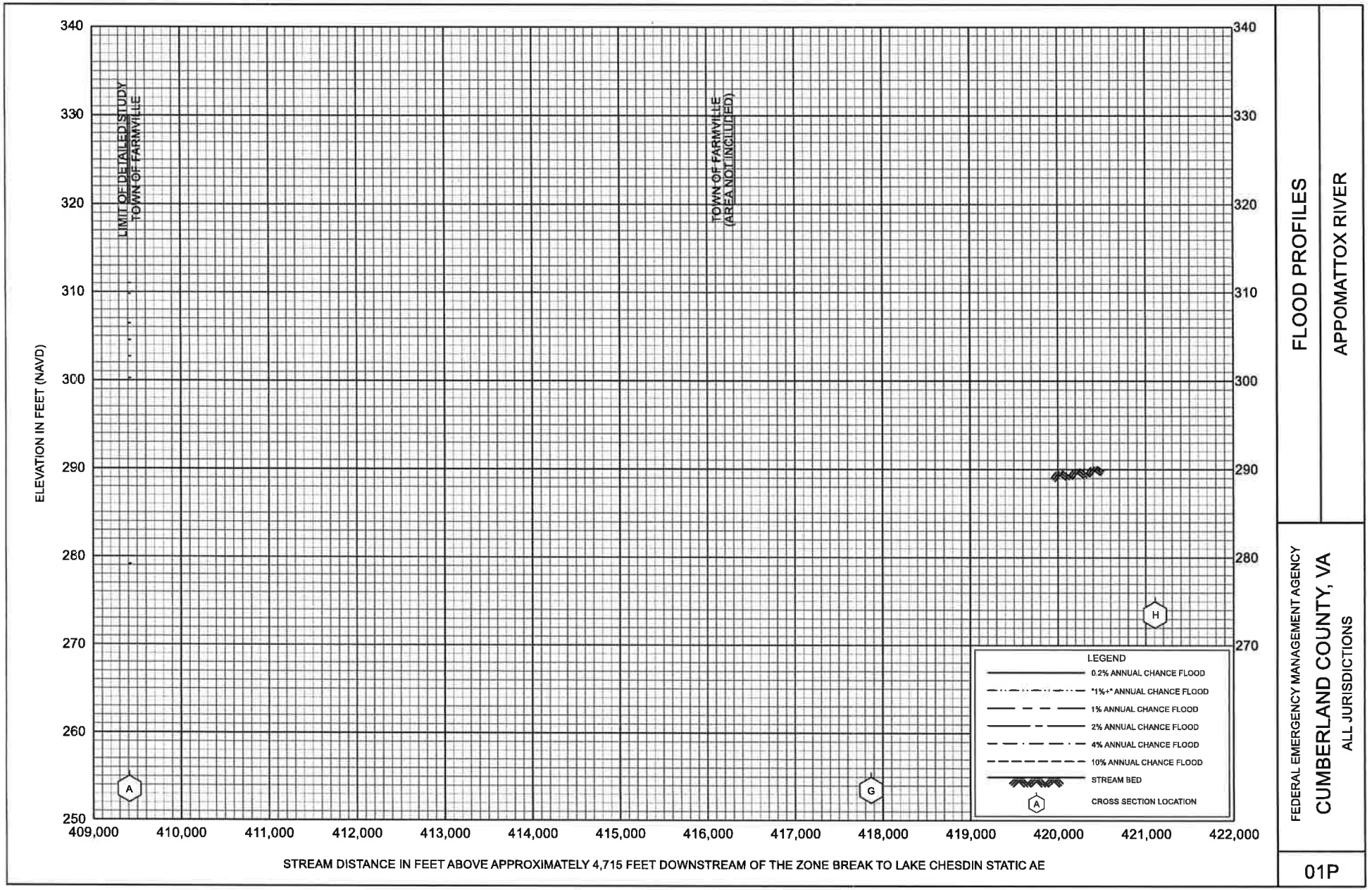
SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 32 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 32: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
CENSUS 2019	U.S. Census Bureau	*Tiger/line Shapefile, 2019, Cumberland County, USA, All Roads County-Based Shapefile*	U.S. Census Bureau	Washington, D.C.	2019	https://census.gov
DATUM1	Compass PTS JV	*National Flood Hazard Layer Data Augmentation - FIS Vertical Datum Conversion Points April 2017*	Compass PTS JV	Arlington, VA	2017	N/A
FEMA 2009	Federal Emergency Management Agency	*National Flood Hazard Layer for Cumberland County, VA*	Federal Emergency Management Agency	Washington, D.C.	6/16/2009	https://msc.fema.gov
HUC8	U.S. Geological Survey	*The Watershed Boundary Dataset (WBD)*	U.S. Geological Survey	Reston, VA	6/1/2016	https://www.usgs.gov
HWM1	U.S. Geological Survey	*Historic Flooding Elevations*	U.S. Geological Survey	Reston, VA	2021	https://www.usgs.gov
STARR II 2018a	Federal Emergency Management Agency	*Virginia Base Level Engineering DFIRM Ready - FY17 Plus Up (HUC 02080203)*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	11/30/2018	https://hazards.fema.gov
STARR II 2018b	Federal Emergency Management Agency	*Virginia Base Level Engineering DFIRM Ready - FY17 Plus Up (HUC 02080205)*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	11/30/2018	https://hazards.fema.gov

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
STARR II 2018c	Federal Emergency Management Agency	*Virginia Base Level Engineering DFIRM Ready - FY17 Plus Up (HUC 02080207)*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	11/30/2018	https://hazards.fema.gov
STARR II 2019	Federal Emergency Management Agency	*Prince Edward County Hydraulics Study - Appomattox River AE-Floodway*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	9/30/2019	https://hazards.fema.gov
STARR II 2020a	Federal Emergency Management Agency	*Middle James River Watershed Hydraulic Analysis - James River AE-Floodway*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	3/31/2020	https://hazards.fema.gov
STARR II 2020b	Federal Emergency Management Agency	*Middle James Willis Watershed Hydraulic Analysis - Maple Swamp Creek and Muddy Creek AE-Floodway*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	8/31/2020	https://hazards.fema.gov
TOPO1	Federal Emergency Management Agency	*2015 USGS VA Chesapeake Bay South LiDAR converted to 5 Foot DEM*	Strategic Alliance for Risk Reduction II (STARR II)	Washington, D.C.	1/31/2018	https://hazards.fema.gov
VGIN 2019	Virginia Geographic Information Network	*Virginia Administrative Boundaries*	Virginia Geographic Information Network	Richmond, VA	2019	https://vgin.maps.arcgis.com



FLOOD PROFILES

APPOMATTOX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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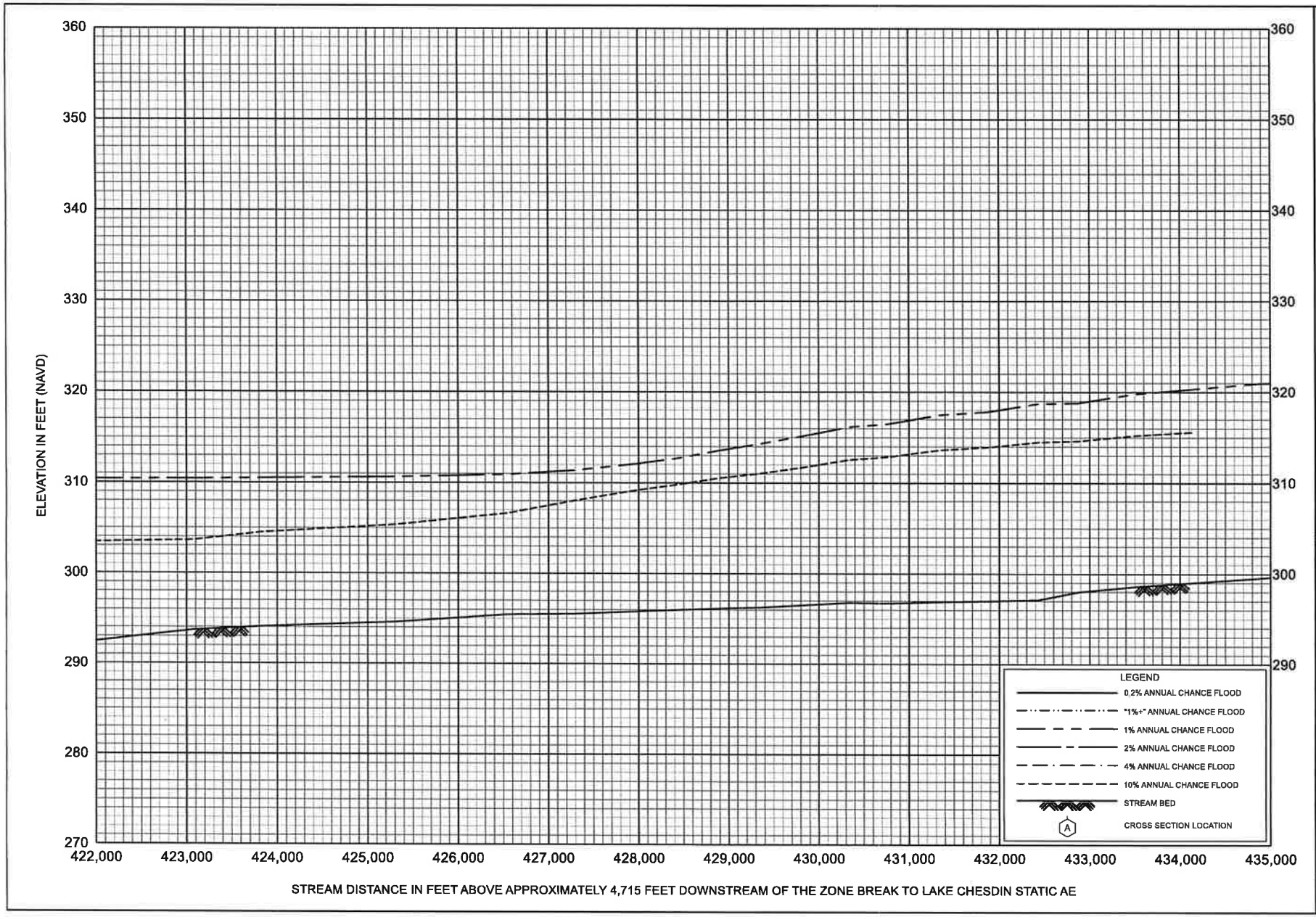

FLOOD PROFILES

APPOMATTOX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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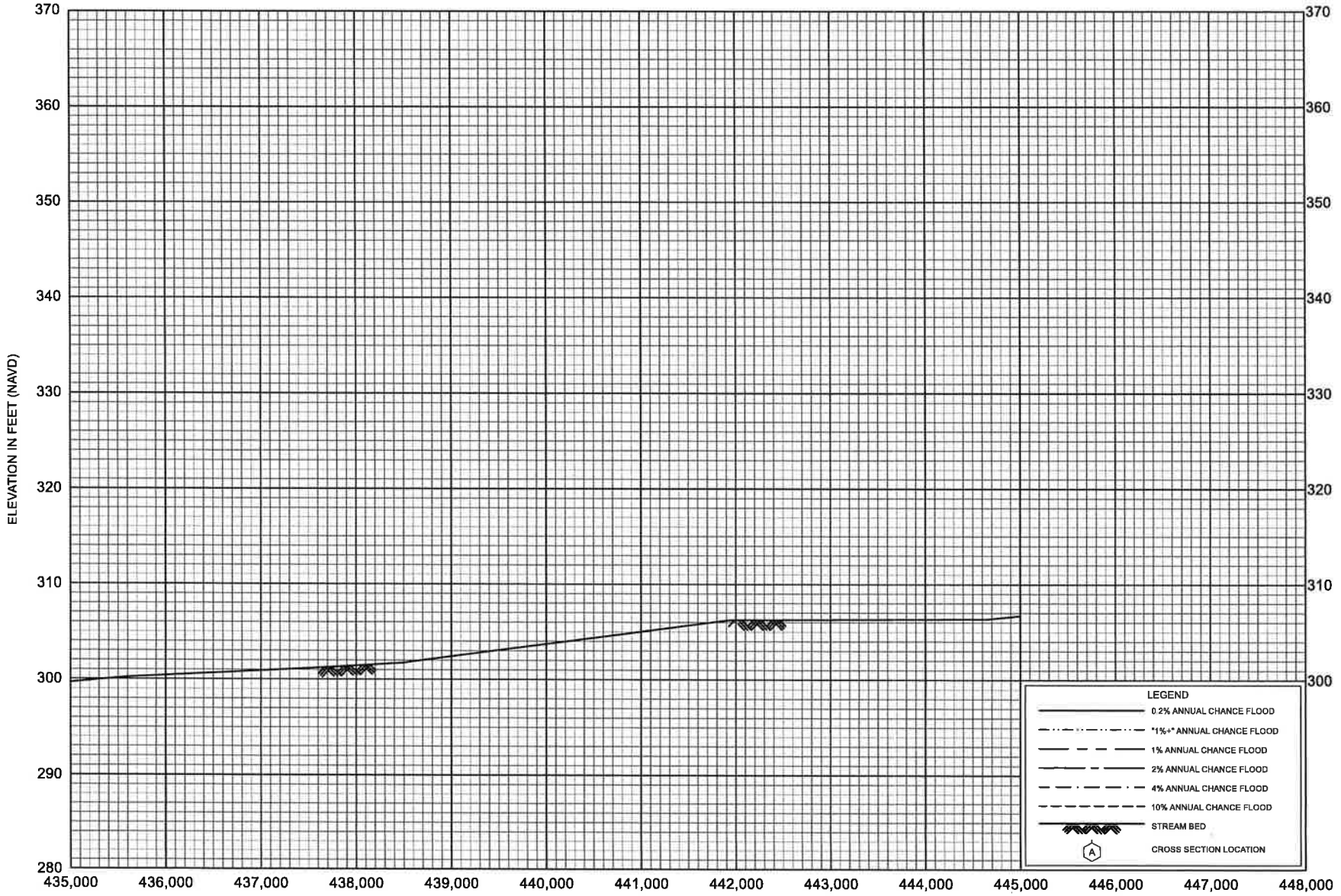

FLOOD PROFILES

APPOMATTOX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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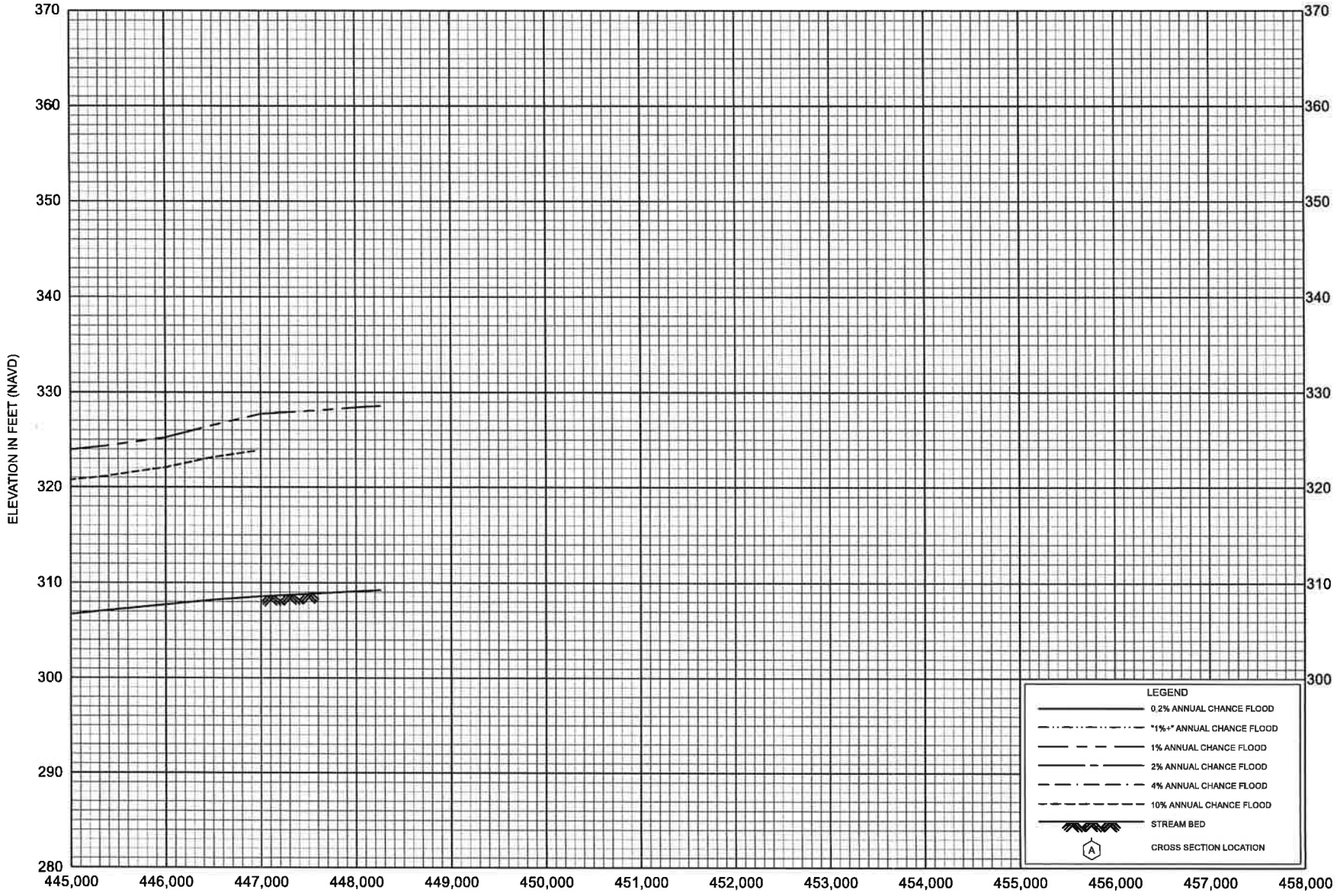

FLOOD PROFILES

APPOMATTOX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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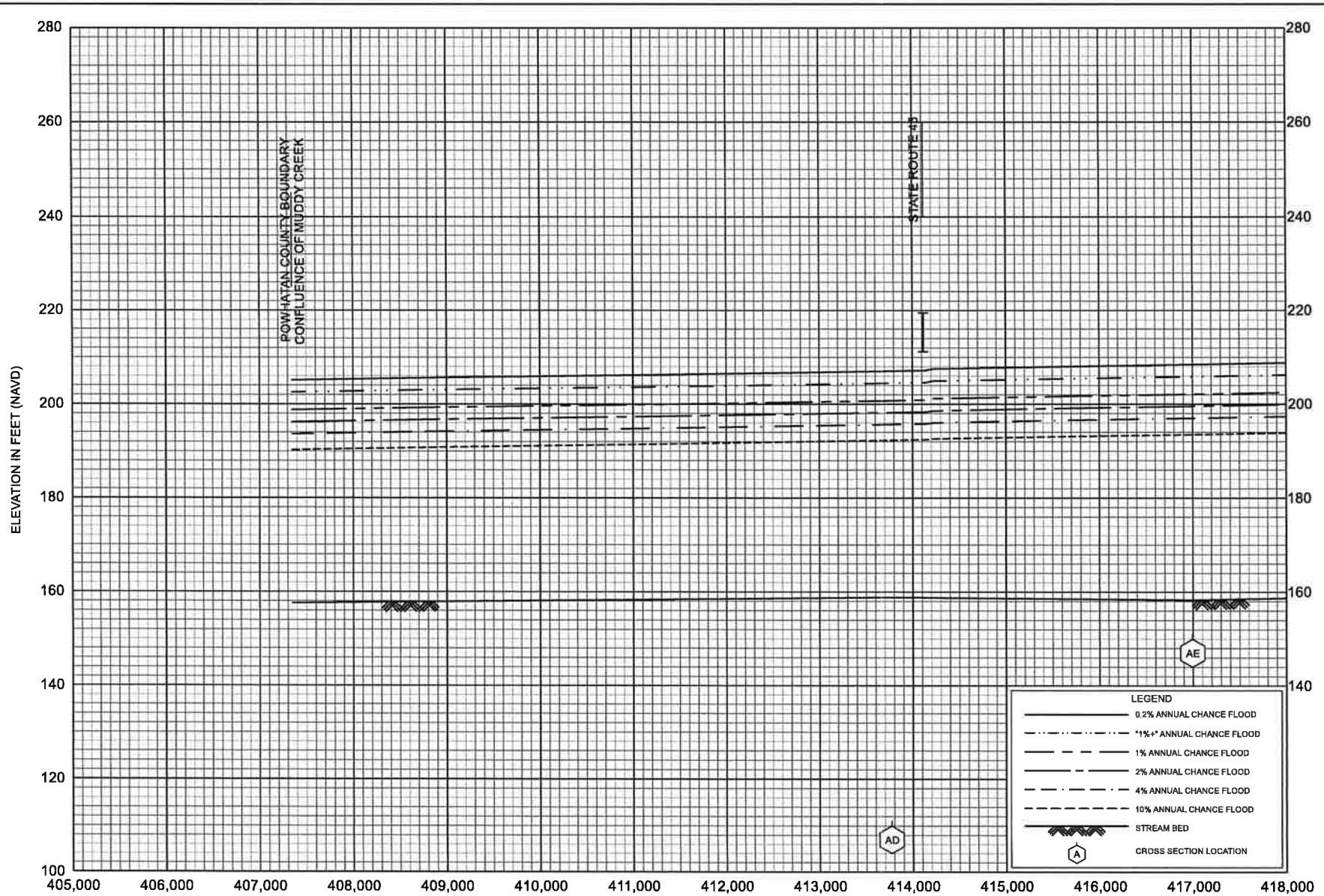

FLOOD PROFILES

JAMES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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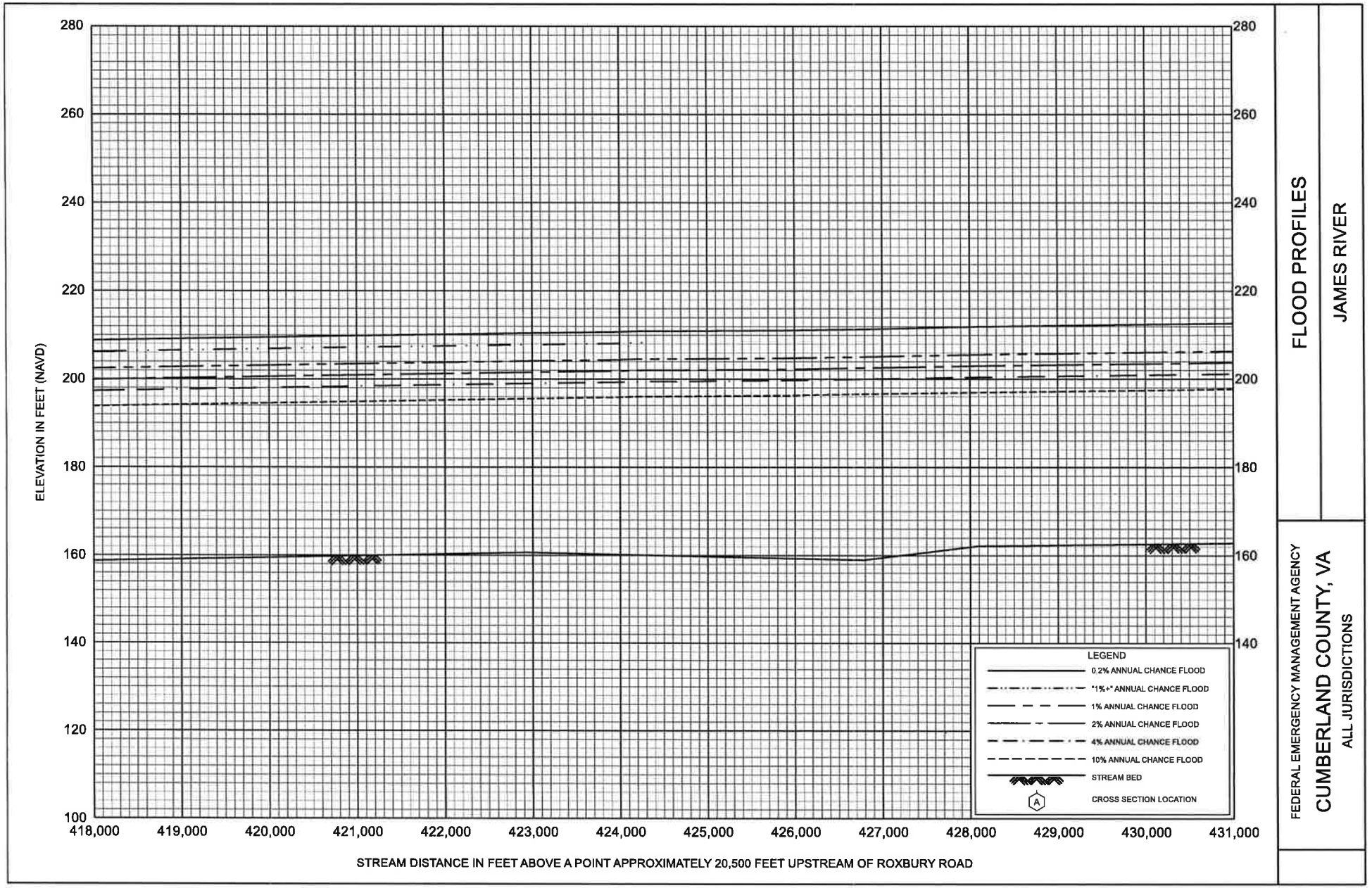

FLOOD PROFILES

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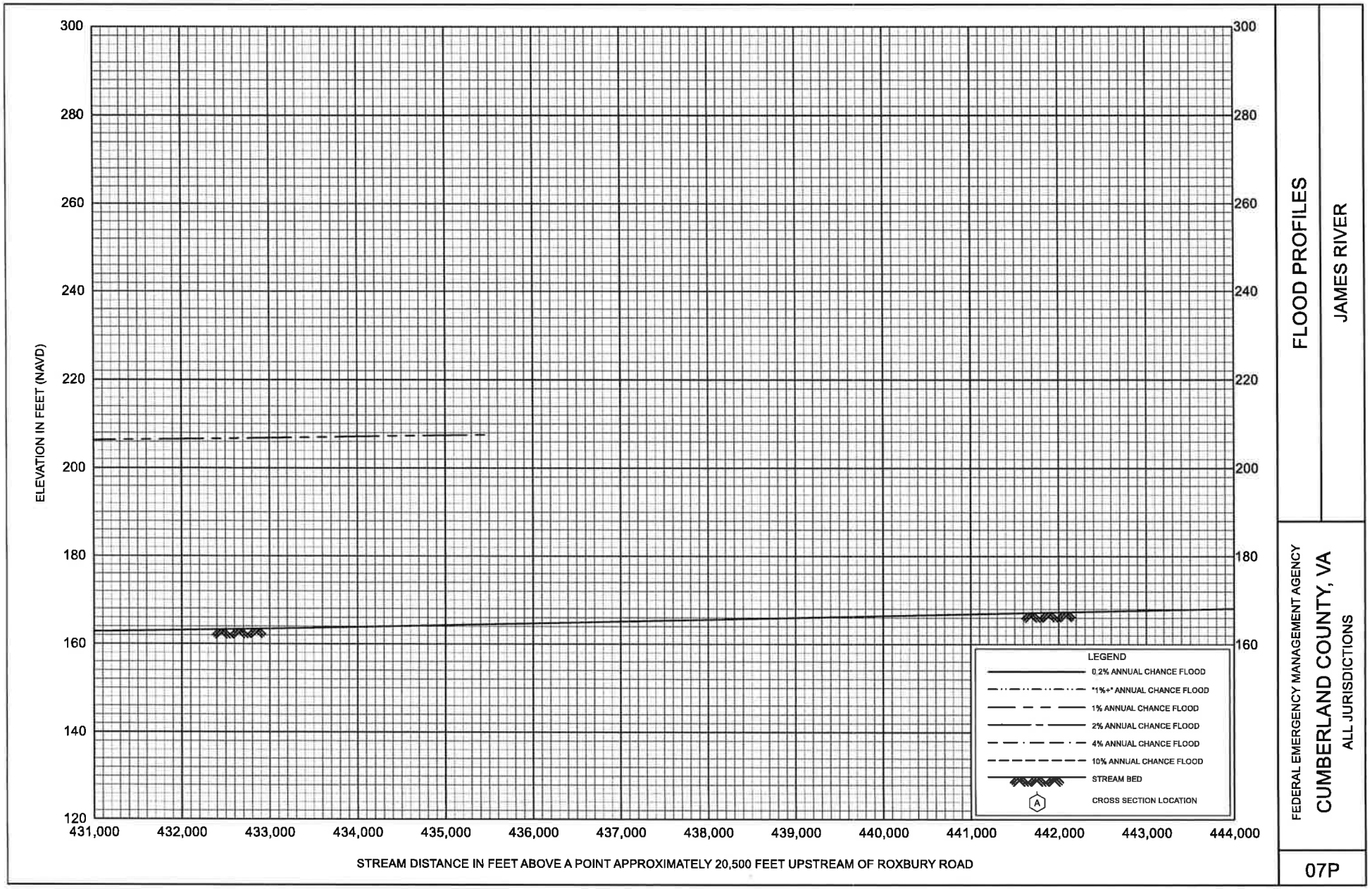
ALL JURISDICTIONS



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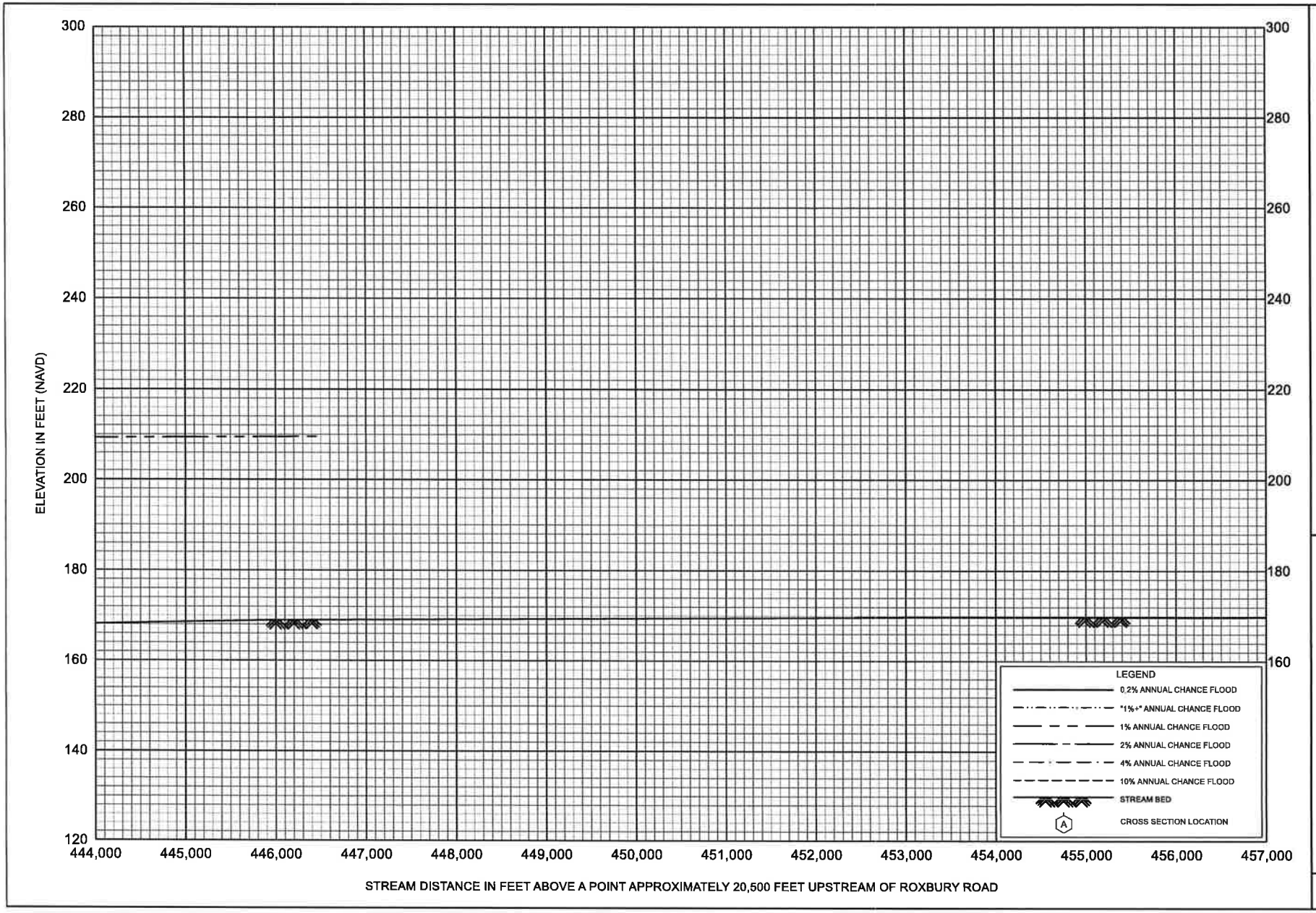

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ALL JURISDICTIONS

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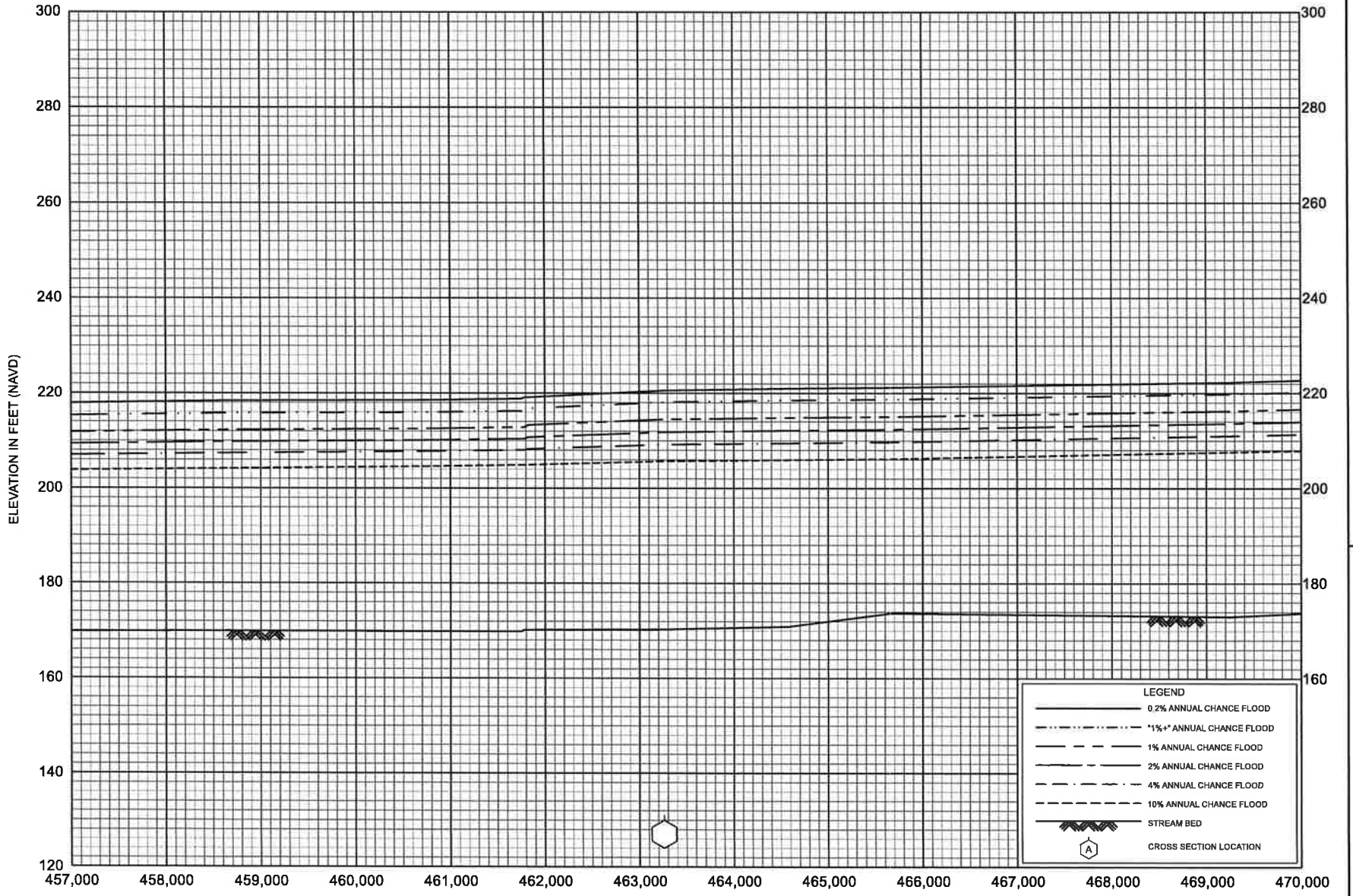

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CUMBERLAND COUNTY, VA

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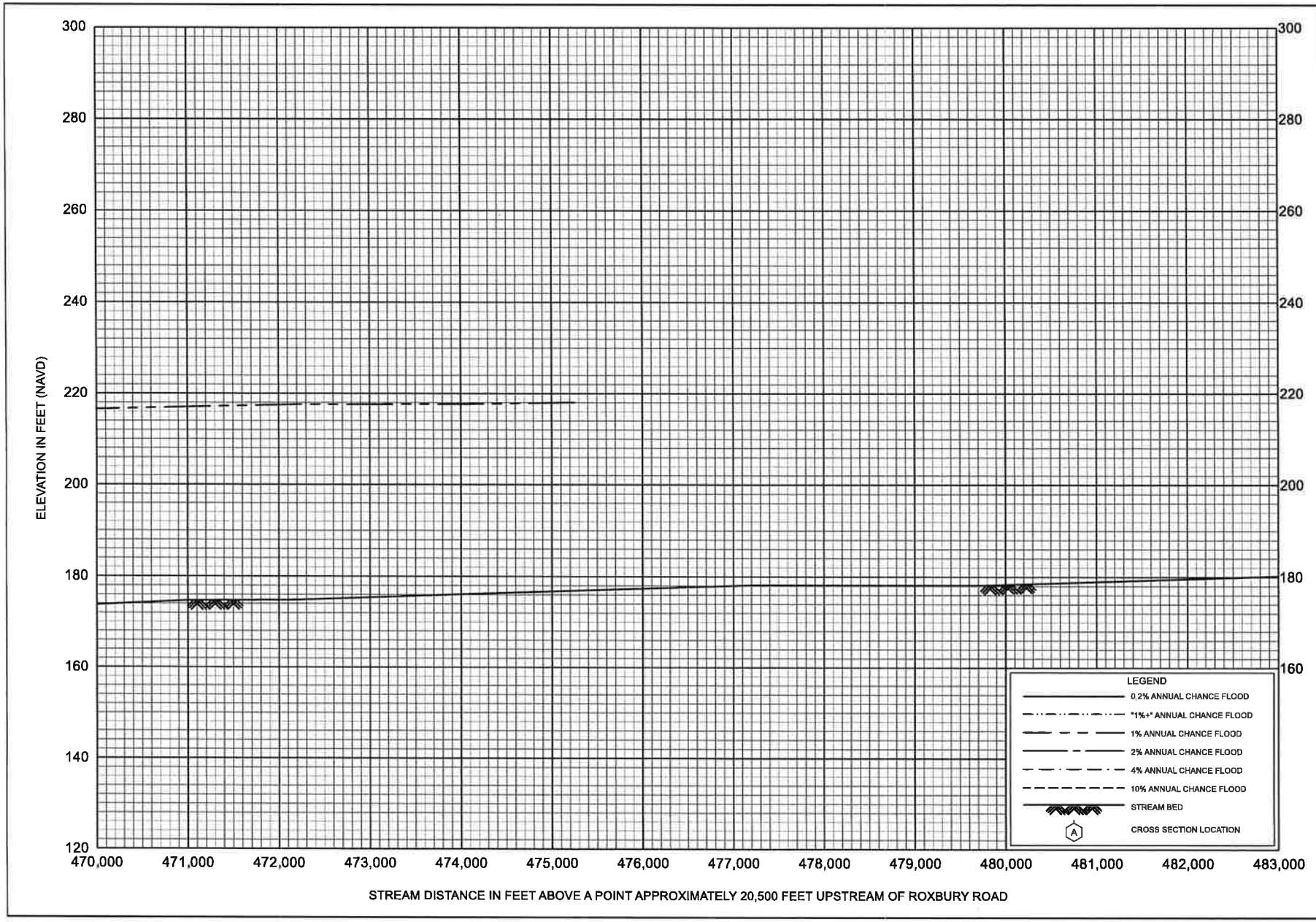

FLOOD PROFILES

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CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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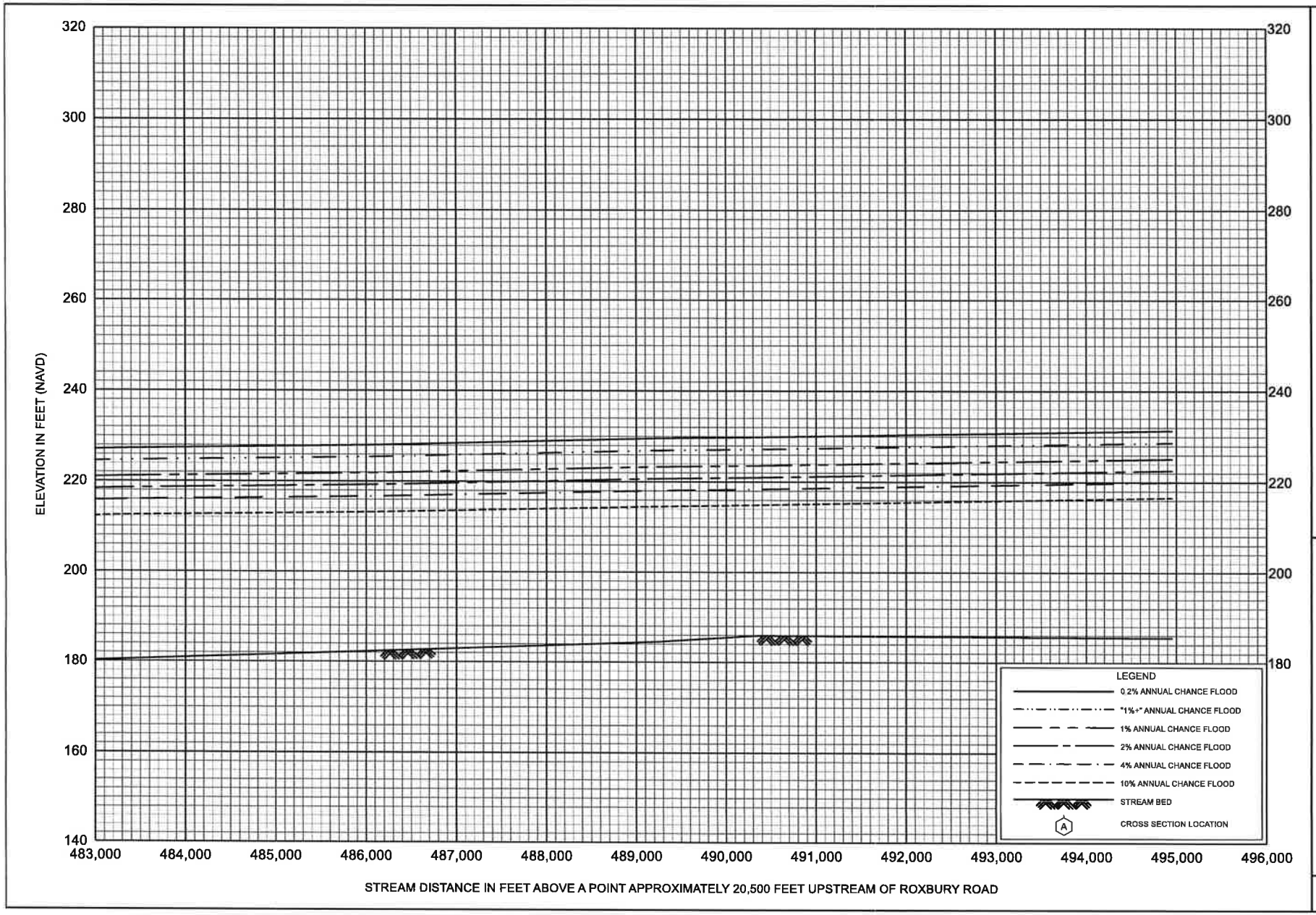

FLOOD PROFILES

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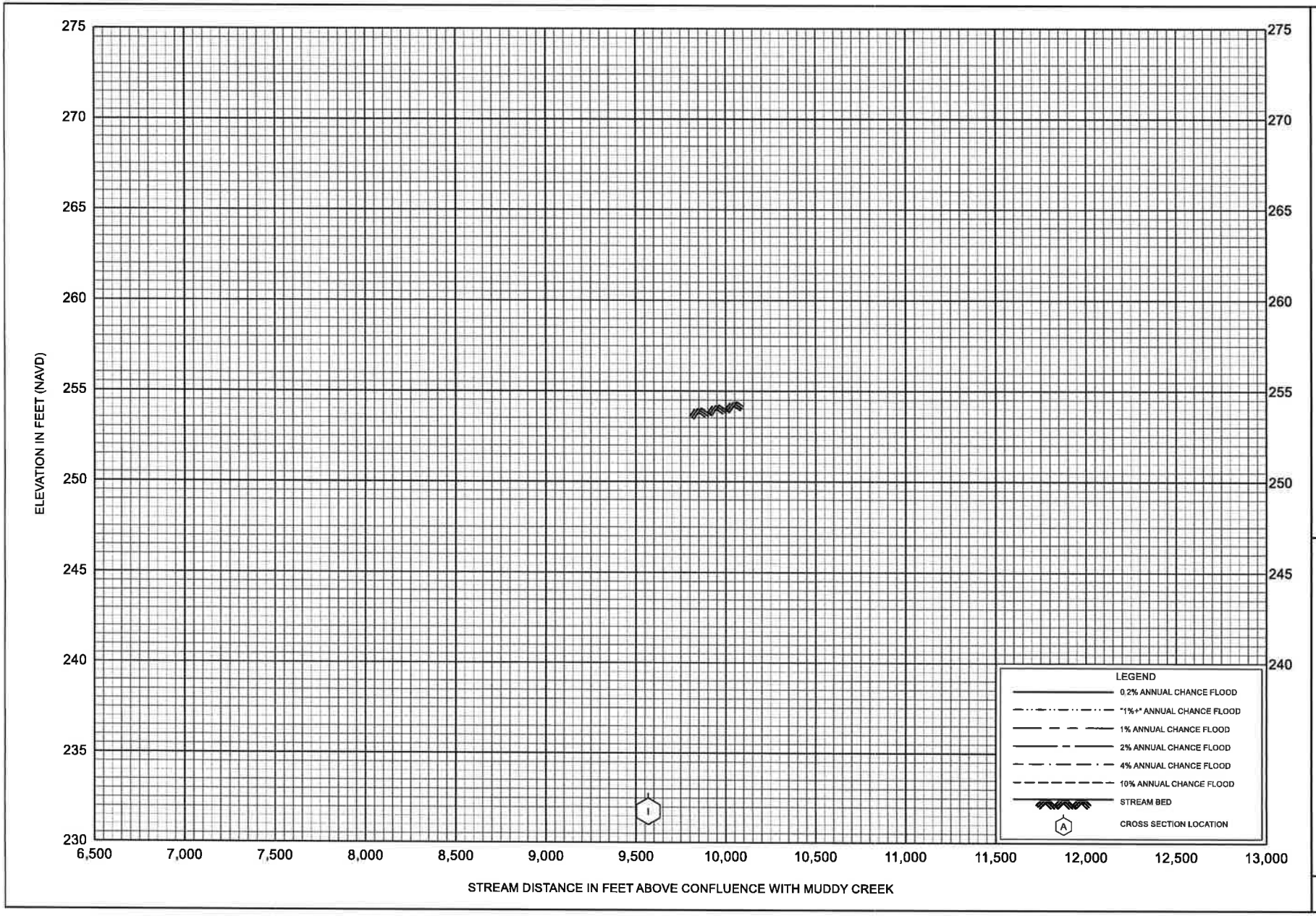

FLOOD PROFILES

MAPLE SWAMP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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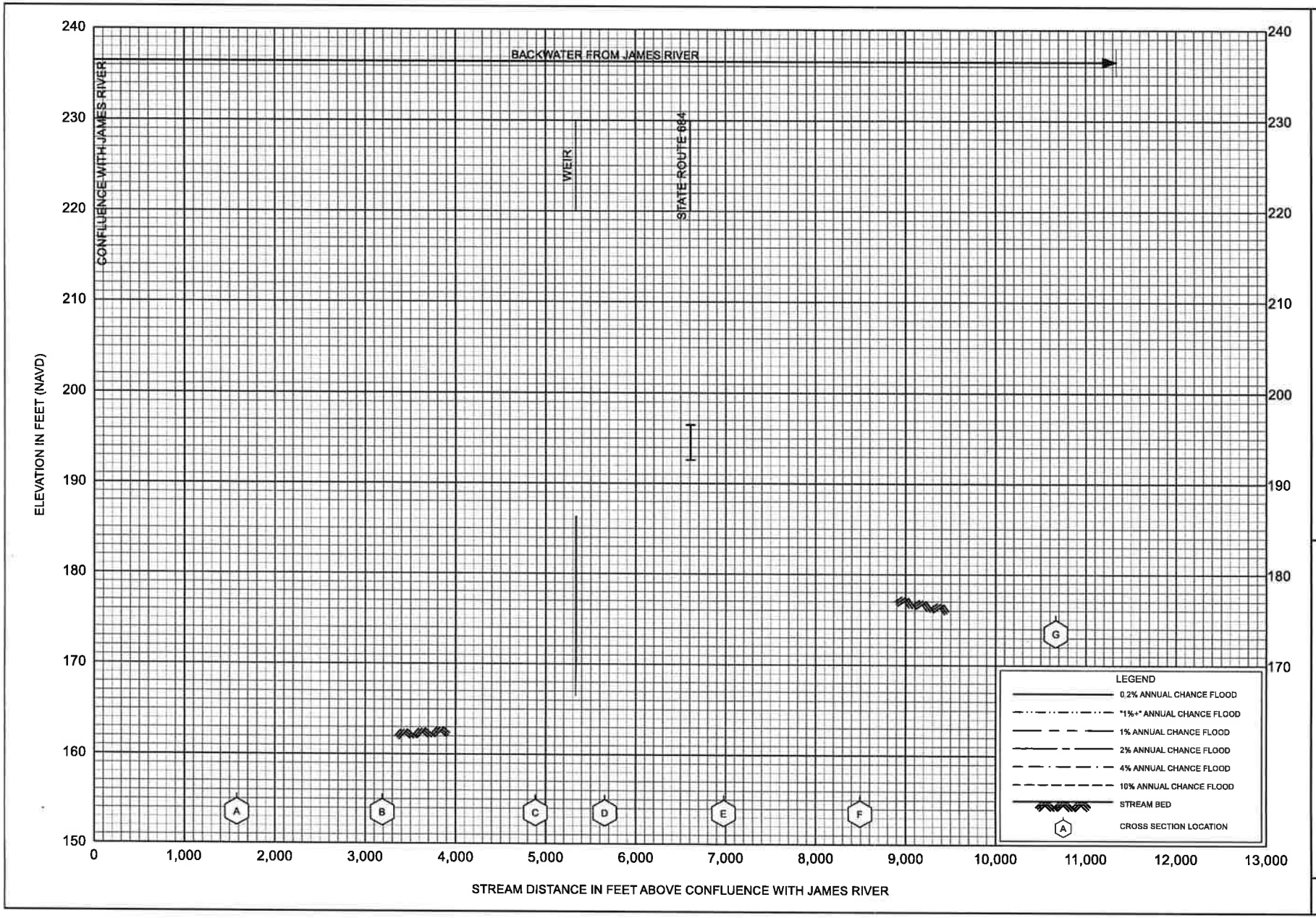

FLOOD PROFILES

MUDDY CREEK

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CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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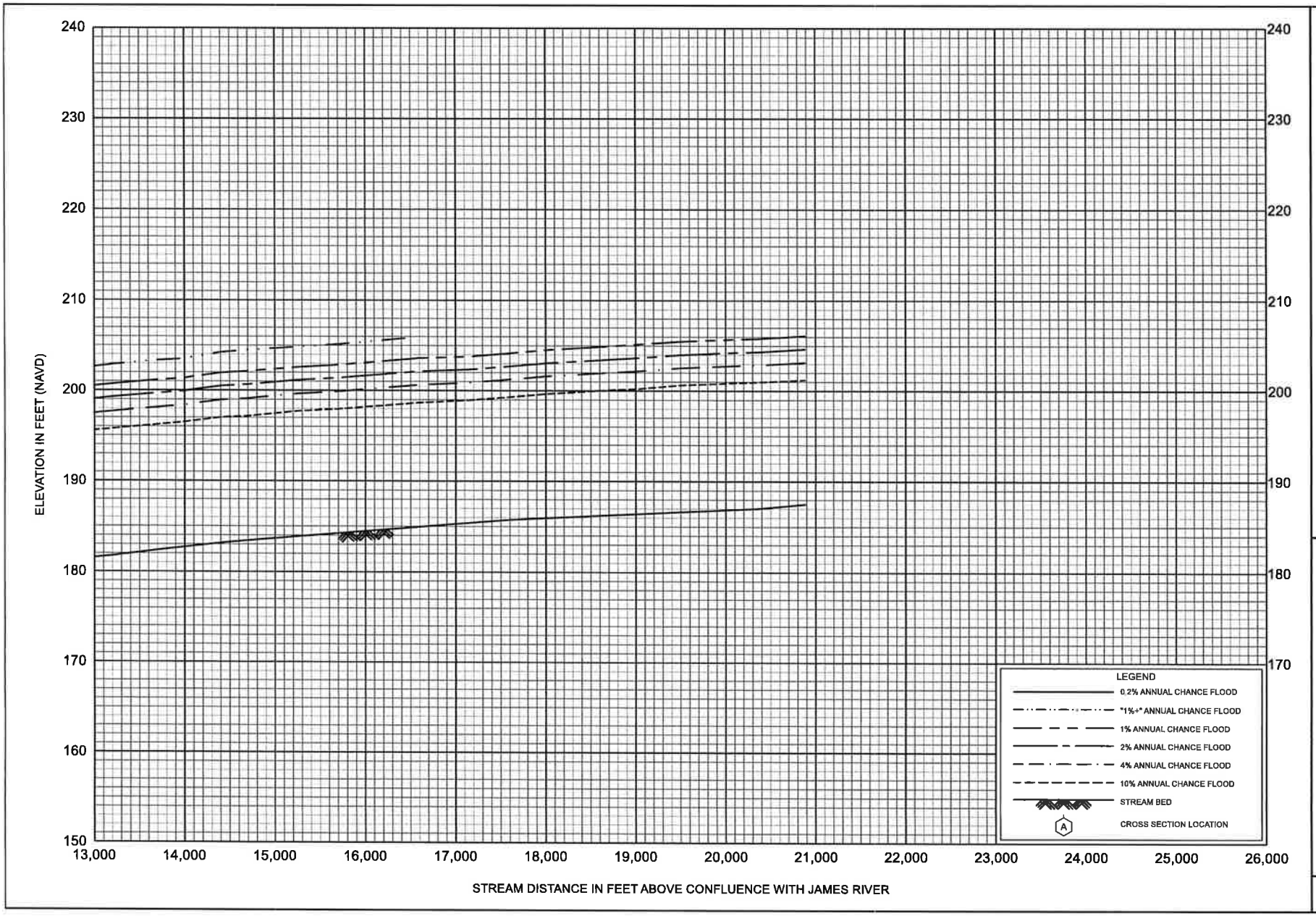

FLOOD PROFILES

MUDDY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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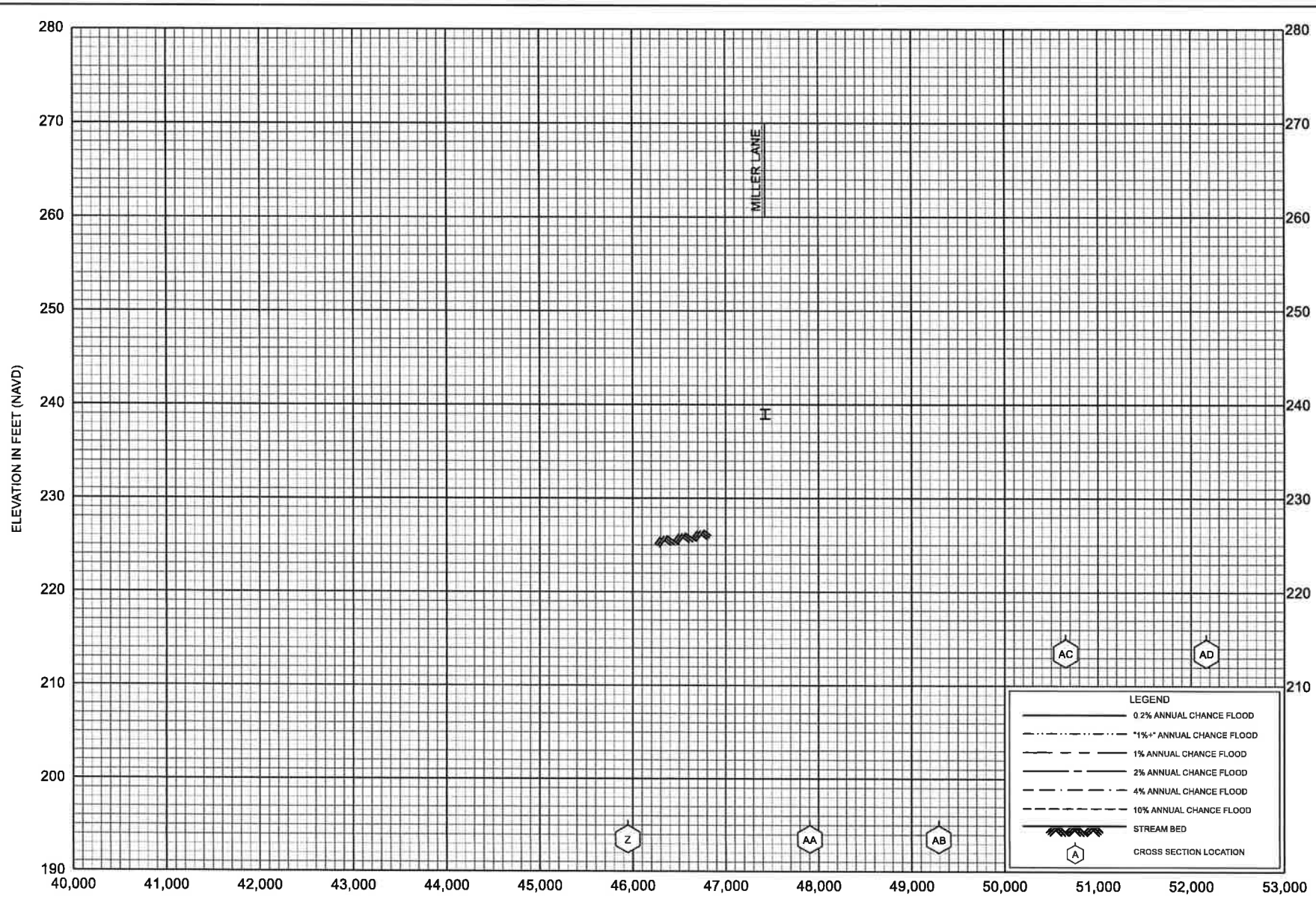

FLOOD PROFILES

MUDDY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

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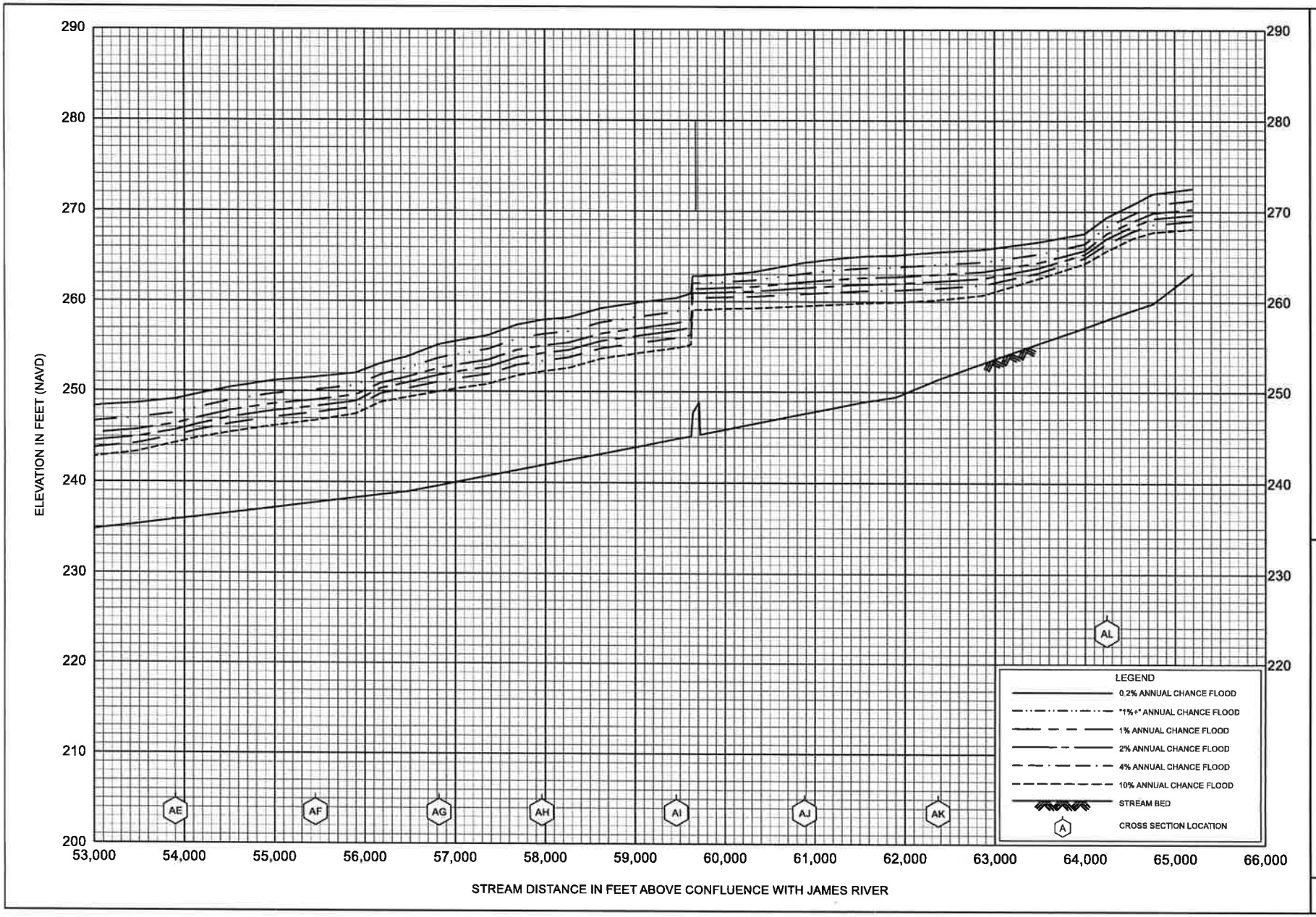


FLOOD PROFILES

MUDDY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CUMBERLAND COUNTY, VA

ALL JURISDICTIONS

16P

Floodplain Management Bulletin 1–98

Use Of Flood Insurance Study (FIS) Data As Available Data

Floodplain Management Bulletin 1-98 provides guidance on the use of FEMA draft or preliminary Flood Insurance Study data as "available data" for regulating floodplain development. The bulletin includes:

Introduction

When areas have been designated as special flood hazard areas on the community's Flood Hazard Boundary Map (FHBM) or Flood Insurance Rate Map (FIRM) and no Base Flood Elevations (BFEs) or an identified floodway have been developed, communities are required to apply the provisions of 44 Code of Federal Regulations 60.3(b)(4). Subparagraph 60.3(b)(4) requires that communities:

> ***Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source... [44 CFR 60.3(b)(4)]***

Data obtained are to be used by communities as criteria for requiring that new construction and substantial improvements have their lowest floors elevated to or above the BFE (non-residential structures can also be floodproofed to or above the BFE) and for prohibiting any encroachments in a floodway that would result in any increase in flood levels during occurrence of the base flood discharge. The data obtained should be used as long as they reasonably reflect flooding conditions expected during the base flood, are not known to be scientifically or technically incorrect, and represent the best data available. Data from a draft or preliminary Flood Insurance Study (FIS) constitute available data under 44 CFR 60.3(b)(4). This bulletin provides guidance on the use of FEMA draft or preliminary FIS data as available data for regulating floodplain development.

Federal Emergency Management Agency
Mitigation Directorate and the
Federal Insurance Administration

FMB-1
1/98

Background

Flood Insurance Studies (FIS) use detailed hydrologic and hydraulic analyses to model the 1% annual chance flood event, determine BFEs, and designate floodways and risk zones (Zones AE, A1-30, AH, AO, VE, and V1-30). The flood hazard data are portrayed in tabular fashion in the FIS narrative and graphically as flood profiles that are attached to the narrative. They are portrayed planimetrically on the FIRM. Over 10,000 communities have now been provided detailed FISs and issued FIRMs that include BFEs for Zones AE, A1-30, AH, AO, VE, and V1-30.

A draft FIS can be prepared by a study contractor to FEMA under 44 CFR Part 66 or by appellants under 44 CFR Part 65 for the purpose of establishing or revising BFE and floodway data. FEMA reviews and modifies, as appropriate, the draft FIS to ensure it complies with established NFIP criteria. Once FEMA has reviewed and approved the draft FIS, FEMA releases the information to the public as a Preliminary FIS and FIRM for review and comment during a statutory 90-day appeal period in accordance with 44 CFR Part 67. Until such time as the 90-day appeal period is completed and a notice of final flood elevation determination [Letter of Final Determination (LFD)] has been provided, the BFE and floodway data in the FIS are considered preliminary and subject to change.

Due to the cost of developing detailed flood hazard data, not all floodplains can be studied using detailed methodologies. A primary factor FEMA uses in it's system for prioritizing floodplain studies or restudies with BFEs and floodway data is whether the floodplains of the flooding sources are currently or are projected to be subject to development pressure. In NFIP communities where there are few existing buildings in the floodplain and minimal development pressure, FEMA does not prepare a detailed FIS. These communities are converted to the Regular Program with a FIRM in which all of the special flood hazard areas are designated Zone A without BFEs using approximate methodologies. Most NFIP communities will have FIRMs that include a combination of special flood hazard areas that have been studied in detail with BFEs and floodway data and special flood hazard areas that have been studied using approximate methods which have been designated Zone A.

National Flood Insurance Program (NFIP) Requirements: Use of Draft or Preliminary FIS Data

For Zone A:

For Zone A areas designated on the community's effective FHBM or FIRM, the BFE and floodway data from a draft or preliminary FIS constitute available data under Subparagraph 60.3(b)(4). The requirement at Subparagraph 60.3(b)(4) is an important floodplain management tool for reducing flood damages in areas where a detailed engineering study to develop BFEs and designate floodways on streams has not been conducted. Communities are required to reasonably utilize the data from a draft or preliminary FIS under the section of their ordinance that applies to this paragraph. A community is allowed discretion in using

this data only to the extent that the technical or scientific validity of the data in the draft or preliminary FIS is questioned.

When all appeals have been resolved and a notice of final flood elevation determination has been provided in a LFD, communities are required to use the BFE and floodway data for regulating floodplain development in accordance with 44 CFR 60.3(b)(4) since the data represents the best data available. This includes meeting the standards at 44 CFR 60.3(c), and (d) which includes the requirement that new construction, substantial improvements, and other development have their lowest floor elevated to or above the BFE (non-residential structures can also be floodproofed to or above the BFE). Communities must regulate floodplain development using the data in the FIS under 60.3(b)(4) until such time as the community has adopted the revised FIRM and FIS.

In Zone A areas, the rationale for requiring reasonable utilization of BFE and floodway data in a draft or preliminary FIS is premised on the absence of other BFE or floodway data and the need to protect new or substantially improved structures from flood damage until such time as appeals are completed and the BFEs and/or floodway are incorporated into the local ordinance. The use of the qualifier "reasonable" at 44 CFR 60.3(b)(4) reflects FEMA's statutory obligation to provide the public an opportunity to appeal the proposed elevation data.

If a community decides not to use the BFE or floodway data in the draft or preliminary FIS because it is questioning the data through a valid appeal, the community must continue to ensure that buildings are constructed using methods and practices that minimize flood damages in accordance with the floodplain management requirements under subparagraphs 60.3(a)(3) and (4).

- Subparagraph 60.3(a)(3) requires communities to review permit applications to determine whether proposed building sites are reasonably safe from flooding. If a proposed building site is floodprone, communities are to require that new construction and substantial improvements be adequately anchored, use flood resistant materials, be constructed to minimize flood damages, and have attendant utilities protected during the conditions of flooding.

- Subparagraph 60.3(a)(4) requires communities to review subdivision proposal and other proposed new development, including manufactured home parks or subdivisions, to determine whether proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is floodprone, communities are required to review such proposals to assure potential flood damages are minimized, utilities are constructed to minimize or eliminate damages, and adequate drainage is provided to reduce the exposure to flood hazards.

For Zones AE, A1-30, AH, AO, VE, and V1-30:

The NFIP floodplain management criteria do not require communities to use BFE and flood way data from a draft or preliminary Flood Insurance Restudy in Zones AE, A1-30, AH, AO, VE, and V1-30 in lieu of using the BFE and floodway data contained in an existing effective FIS and FIRM. Because communities are afforded the opportunity to appeal BFE data from a restudy in accordance with Section 1363 of the National Flood Insurance Act of 1968, as amended, a presumption of validity is given to existing effective BFE data that has gone through the formal statutory appeals process and which has been adopted by the community.

However, in cases where BFEs increase in the restudied area, communities have the responsibility to ensure that new or substantially improved structures are protected, particularly if the increases in BFEs are significant. While FEMA can not mandate or require a community to use BFE and floodway data in a draft or preliminary FIS as available data or to use the data at the time FEMA issues the LFD to the community, FEMA encourages communities to reasonably utilize this information in instances where BFEs increase and floodways are revised to ensure that the health, safety, and property of their citizens are protected.

In cases where BFEs decrease, the community should not use this information to regulate floodplain development until the LFD has been issued or at least until all appeals have been resolved. If the draft or preliminary FIS provides information that BFEs are decreasing, but a valid appeal actually results in higher BFEs, the community could place its citizens at a greater flood risk by using the draft or preliminary FIS to regulate floodplain development. Also, these structures could be subject to increased flood insurance premiums.

In communities where floodways have not been designated for all or some of the flooding sources, but BFEs have been provided, communities are required to apply the criteria at 44 CFR 60.3(c)(10). This provision requires that:

> ***Until a regulatory floodway is designated, no new construction, substantial improvements, or other development shall be permitted unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community. [44 CFR 60.3(c)(10)]***

However, if a draft or preliminary FIS has designated floodways where none had previously existed, communities should reasonably utilize this data in lieu of applying the encroachment performance standard of 44 CFR 60.3(c)(10) since the data in the draft or preliminary FIS represents the best data available. By utilizing the floodway data from a draft or Preliminary FIS, communities avoid the expense of conducting the hydraulic analysis necessary to demonstrate compliance with 60.3 (c)(10). In addition, communities can minimize flood damages by ensuring that the flood carrying capacity of the floodway is preserved since obstruction of floodways can significantly increase potential flooding upstream.

For Zones B, C, and X:

The NFIP floodplain management criteria do not require the use of BFE and floodway data from a draft or preliminary FIS under 44 CFR 60.3(b)(4) for an area or areas within Zones B, C, or X on the community's FIRM that are being revised to Zone AE, A1-30, AH, AO, VE, or V1-30. While FEMA can not mandate or require a community to use the information contained in the draft or preliminary FIS pertaining to areas designated as Zone B, C, or X as available data or use the data at the time FEMA issues the LFD to the community, FEMA encourages communities to reasonably utilize this information to ensure that the health, safety, and property of their citizens are protected.

Important Note to Communities:

In order to participate in the NFIP, all communities must initially adopt a resolution or ordinance which expresses a "commitment to recognize and evaluate flood hazards in all official actions and to take such other official action as reasonably necessary to carry out the objectives of the program" [44 CFR 59.22(a)(8)]. This is in addition to the general requirement that the community "take into account flood hazards to the extent that they are known in all official actions relating to land management and use" [44 CFR 60.1(c)]. When communities receive a draft or preliminary FIS, communities have a responsibility to evaluate and prudently use this information for actions in the floodplain to ensure that the health, safety, and property of their citizens are protected. Neglecting to take into consideration the information provided in a draft or preliminary FIS and not taking reasonable actions to ensure the safety of lives and property may subject the community to potential liability when flooding occurs.

In the interest of sound floodplain management and to anticipate the impacts of future development on flood elevations, communities also can, at their discretion, adopt more restrictive floodplain management requirements. For example, the community can require that new or substantially improved buildings be elevated or floodproofed to one or more feet above the BFEs provided in the draft or preliminary FIS. This more restrictive requirement is generally referred to as "freeboard".

Ordinance Requirements: Adoption of the Data

For Zone A:

When all appeals have been resolved and a notice of final flood elevation determination has been provided in a LFD, communities are required to use the BFE and floodway data for regulating floodplain development in accordance with 44 CFR 60.3(b)(4) since the data represents the best data available. This includes meeting the standards of Subparagraphs 60.3(c), (d), and/or (e). Communities must regulate floodplain development using the data in the FIS under Subparagraph 60.3(b)(4) until such time as the community has adopted the effective FIRM and FIS.

For Zones AE, A1-30, AH, AO, VE, V1-30, B, C, and X:

Communities are given six months from the date of the LFD in which to adopt the revised FIS and FIRM. This is in keeping with FEMA's statutory obligation to provide a reasonable time for the community to adopt floodplain management regulations consistent with the final flood elevation determinations. Subparagraph 44 CFR 59.24(a) of the NFIP Regulations provides for a six month compliance period in which the community must adopt the effective FIS and FIRM and amend existing regulations to incorporate any additional requirements under 44 CFR 60.3.

Floodplain management ordinances generally contain a section entitled "Basis for Establishing the Areas of Special Flood Hazard" in which the current effective FIS and FIRM are cited. Language in the ordinance may include any subsequent amendments thereto (i.e., to include any subsequent revised FIS and FIRM); however, this language should not be used as the basis for a community to use the preliminary FIS prior to the issuance of the LFD. If a community chooses to use BFE and floodway data from a preliminary FIS prior to the LFD being issued or use the data after a LFD is issued but before the effective date of the FIS and FIRM, it is advised that the community adopt this information before its use.

Advisory Flood Hazard Data:

FEMA may issue advisory flood hazard data in certain situations. A major flood disaster, such as from a coastal storm or from a failure of a flood protection system, may result in a community's effective FIS and FIRMs underestimating the extent of the flood hazard and the risk of flooding. FEMA may undertake a post-flood survey to document additional areas of the community subject to the base flood (1% annual chance) and to develop estimated flood elevations which will be used to reanalyze and revise the effective FIS and FIRMs. The information from the post-flood survey will be provided to communities as advisory information when the analyses indicates that the effective FIS and FIRMs are inaccurate. Also, communities may obtain or develop flood hazard data that indicates existing flood hazard areas that shows a greater risk than what is in the effective FIS and on the FIRM.

Communities are advised to prudently use this information for regulating floodplain development. When communities receive advisory flood hazard information or have evidence that there is an increased flood hazard risk, communities have a responsibility to evaluate and prudently use this information for actions in the floodplain to ensure that structures are not vulnerable to flood damage. If a community chooses to use this information, it is advised that the community formally adopt the information. Neglecting to take into consideration advisory or other flood hazard information and not taking reasonable actions to ensure that the health, safety, and property of their citizens are protected may subject the community to potential liability when flooding occurs.

Insurance Implications

Zone A:

For a new or substantially improved structure, communities can use information from a draft or preliminary FIS for completing the Elevation Certificate in Zone A areas. The flood insurance policies for new or substantially improved structures in Zone A that are rated using BFE data from a draft or preliminary FIS will often qualify for significantly lower insurance rates than policies that are rated without a BFE.

Zones AE, A1-30, AH, AO, VE, and V1-30:

For flood insurance rating purposes, in Zones AE, A1-30, AH, AO, VE, or V1-30, new or substantially improved structures are rated based on the BFE and FIRM zone in effect on the date of construction until the revised FIRM becomes effective. This is the case regardless of whether the preliminary FIS indicates that the proposed BFEs will increase or decrease.

If a community chooses to use proposed BFEs from a draft or a preliminary FIS for a new or substantially improved structure, the flood insurance rate is still based on the BFE and FIRM Zone in effect on the date of construction. The flood insurance rate will be based on the elevation difference between the BFE and FIRM Zone in effect and the elevation of the lowest floor. Therefore, if a new or substantially improved structure is built to the proposed BFE from a draft or preliminary FIS and this BFE is higher than the BFE in effect, the flood insurance rate may be significantly lower. However, a new or substantially improved structure built to the proposed BFE that is lower than the BFE in effect may result in a significantly higher flood insurance rate. In this case, the insured will qualify for a premium pro rata refund once the revised FIRM is effective.

Zones B, C, and X:

For flood insurance rating purposes, new or substantially improved structures are rated based on the FIRM Zone in effect (i.e., Zone B, C, or X) on the date of start of construction. If a community chooses to use proposed BFEs from a draft or preliminary FIS for a new or substantially improved structure, the flood insurance rate is still based on the FIRM Zone in effect (i.e., Zone B, C or X) on the date of construction.

Further Information

Managing Floodplain Development in Approximate Zone A Areas, A Guide For Obtaining and Developing Base (100-year) Flood Elevations, FEMA 265, July 1995. Additional guidance pertaining to obtaining and developing BFEs in Zone A can be found in this publication. To obtain a copy of this publication, see the section on Ordering Information on the following page.

Comments

Any comments on the Floodplain Management Bulletin should be directed to:

FEMA
Mitigation Directorate
500 C St., SW
Washington, D.C. 20472

Ordering Information

Copies of Floodplain Management Bulletins are available from various sources.

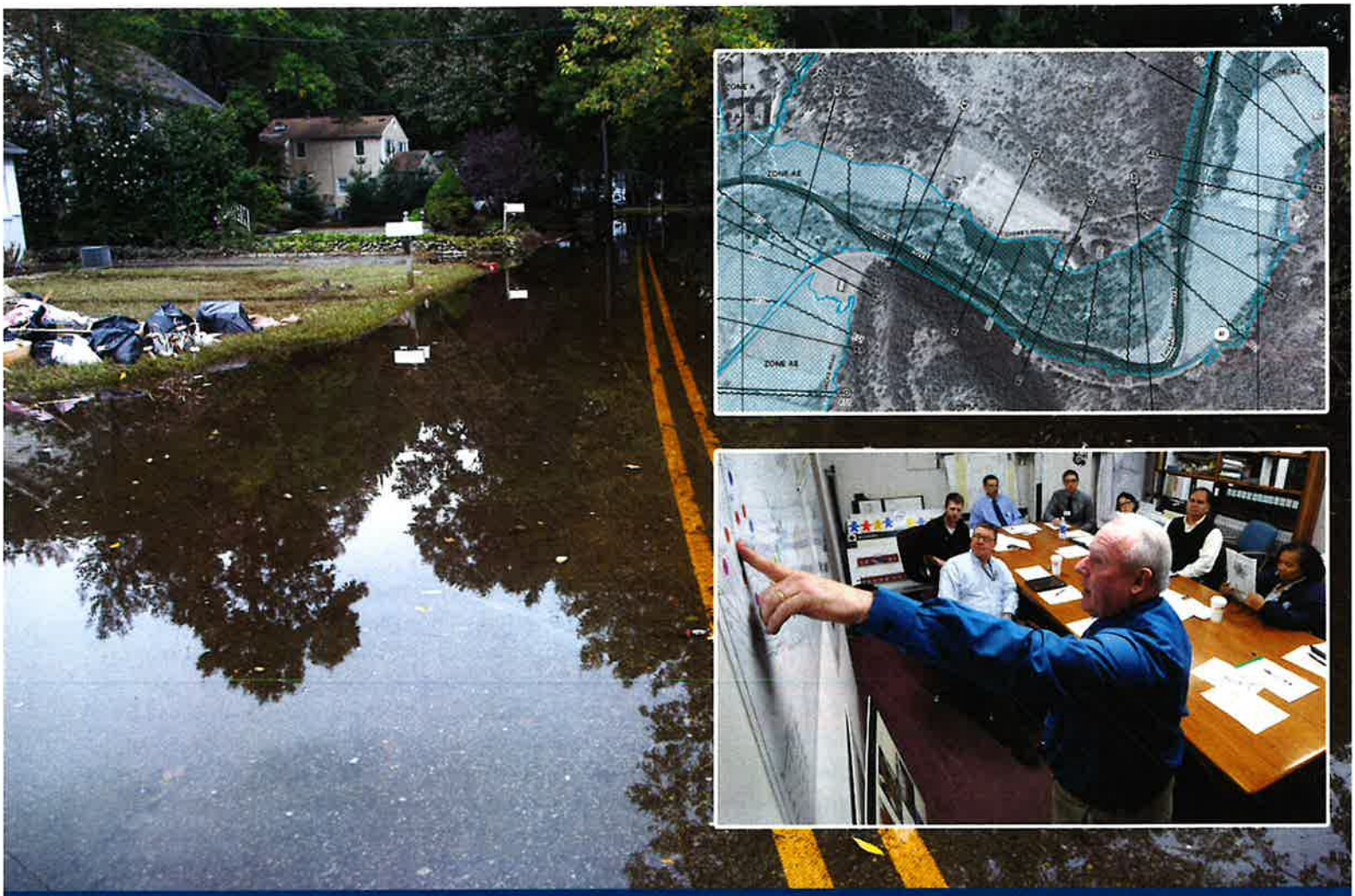
- Floodplain Management Bulletins can be ordered from the FEMA Distribution Facility. Use of FEMA Form 60-8 will result in a more timely delivery from the warehouse. The form can be obtained from FEMA regional offices or your state's Office of Emergency Management. Send publication requests to FEMA Distribution Facility, P.O. Box 2012, Jessup, MD 20794-2012. FEMA's Distribution Facility also accepts telephone requests (1-800-480-2520) and facsimile requests (301-497-6378).

- FEMA's Fax-On-Demand system: Call 202-646-FEMA (3362) and follow the directions.

- FEMA World Wide Web Page: http://www.fema.gov/mit/

- Copies of the Floodplain Management Bulletins can be obtained from the appropriate FEMA regional office.

Graphic design based on the Japanese print The Great Wave Off Kanagawa, by Katsushika Hakusai (1760-1849), Asiatic Collection, Museum of Fine Arts, Boston.



Adoption of Flood Insurance Rate Maps by Participating Communities

FEMA 495 / September 2012

FEMA

Adoption of Flood Insurance Rate Maps by Participating Communities

The National Flood Insurance Program (NFIP) was established with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Over 21,000 communities participate in the Program.

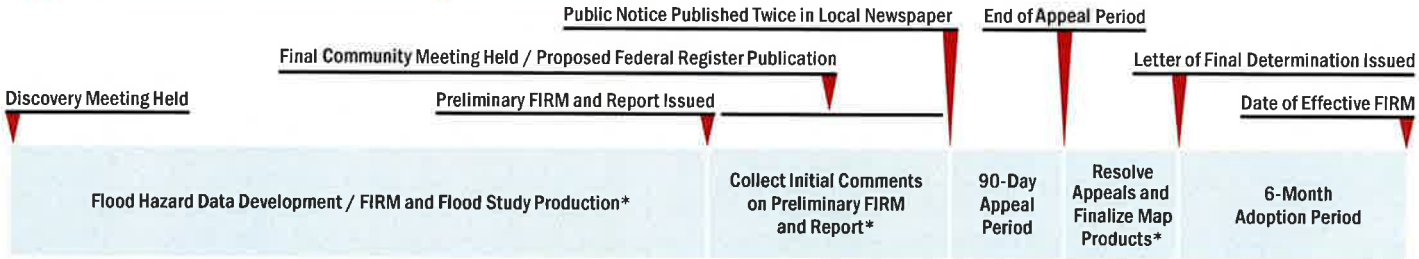
This brochure addresses several questions about community adoption of the Flood Insurance Rate Map (FIRM). As a participating community in the NFIP, your community is responsible for making sure that its floodplain management regulations meet or exceed the minimum requirements of the NFIP. By law, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) cannot offer flood insurance in communities that do not have regulations that meet or exceed these minimum requirements. These regulations can be found in **Title 44** of the **Code of Federal Regulations (44 CFR) Section 60.3**. You can also find them in model ordinances developed by most States and by FEMA Regional Offices.

The basis of your community's floodplain management regulations is the flood hazard data provided to the community by FEMA. FEMA identifies flood hazards nationwide and publishes and periodically updates flood hazard data in support of the NFIP. Flood hazard data is provided to communities in the form of a FIRM and Flood Insurance Study (FIS) report, typically prepared in a countywide format. Please be aware that while an FIS report accompanies most FIRMs, it is not created for all flood studies.

The identification of flood hazards serves many important purposes. Identifying flood hazards creates an awareness of the hazard, especially for those who live and work in floodprone areas. The FIRM and FIS report provide States and communities with the information needed for land use planning and to reduce flood risk to floodplain development and implement other health and safety requirements through codes and regulations. States and communities can also use the information for emergency management.

Each time FEMA provides your community with additional flood hazard data, your community must adopt new floodplain management regulations or amend existing regulations to incorporate the new data and meet any additional requirements that result from any changes in the data, such as the designation of a regulatory floodway for the first time. Your floodplain management regulations must also meet any additional State requirements and be adopted through a process that complies with any procedural requirements established in your State for the adoption of ordinances or regulations.

Flood Study and Adoption Timeline



*The timeframe for completing these activites may vary.

What is the process for developing new flood hazard data or revising existing data?

FEMA coordinates closely with communities to develop new flood risk data or revise existing data during the flood study process. This coordination may lead to new or updated flood hazard mapping (i.e., the update of a community's FIRM and FIS report), flood risk assessment projects, and/or mitigation planning assistance. In general, the process includes the following activities:

- Under FEMA's Risk MAP program, FEMA engages in a Discovery process with communities and other local stakeholders to obtain a comprehensive picture of flooding issues, flood risk, and the potential for the performance of additional flood mitigation activities, including the adoption of more restrictive floodplain management criteria by communities. Stakeholders may include, but are not limited to, local officials, citizen associations, representatives of levee boards, conservation districts, Tribal Nations, and economic development organizations. Information obtained during the Discovery meeting helps determine whether a flood risk assessment project, including new or updated flood hazard data and a corresponding FIRM and FIS report, is needed.
- Once it is determined that the creation or revision of flood hazard data, including an update to the FIRM and FIS report, is needed, FEMA works with communities and other Discovery stakeholders to determine the parameters of the project, including flooding sources and the type and extent (number of stream or coastline miles) of the study.
- The mapping process typically includes development of Base Flood Elevations (BFEs) and floodways for the project area. In addition, the mapping process includes activities such as obtaining the digital base map, developing the FIRM flood hazard database and, when appropriate, incorporating or revalidating previously issued Letters of Map Change, or LOMCs. LOMCs, which include Letters of Map Revision (LOMRs), Letters of Map Revision Based on Fill and Letters of Map Amendment, serve to officially revise the effective FIRM and FIS report without requiring the physical revision and republication of these materials.
- When the study is completed, FEMA provides the community with a preliminary FIRM and FIS report for review. In addition, FEMA may hold public meetings—often referred to as the Final Meeting and Open House—to explain and obtain comments on the preliminary FIRM and FIS report.
- FEMA provides a 90-day appeal period for all new or modified flood hazard information shown on a FIRM, including additions or modifications of any BFEs, base flood depths, Special Flood Hazard Area (SFHA) boundaries or zone designations, or regulatory floodways. SFHAs are areas subject to inundation by the base (1-percent-annual-chance) flood and include the following flood zones: A, AO, AH, A1-A30, AE, A99, AR, AR/A1-A30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-V30, VE, and V. The regulatory floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Before the appeal period is initiated, FEMA will publish a notice of proposed flood hazard determinations in the Federal Register and notify the community's Chief Executive Officer of the determination. FEMA will then publish information about the flood hazard determinations at least twice in a local newspaper. The appeal period provides the community and owners or lessees of property in the community an opportunity to submit scientific or technical information if they believe the flood hazard determinations are scientifically or technically incorrect.
- Following the 90-day appeal period, FEMA resolves all appeals and finalizes all changes to the FIRM and FIS report.
- FEMA then issues a Letter of Final Determination (LFD), which establishes the final flood hazard data and the effective date of the new FIRM and FIS report for the community. The LFD also initiates the six-month adoption period during which the community must adopt or amend its floodplain management regulations to reference the new FIRM and FIS report.
- The FIRM and FIS report become effective at the end of the six-month period. The effective date is also the date when flood insurance rates will be based on the new flood data for new construction built after this date. The effective FIRM will be used by Federally insured or regulated lenders to determine if flood insurance is required as a condition of a loan.

FEMA has entered into agreements with nearly 250 communities, States, and regional agencies to be active partners in FEMA's flood hazard mapping program under the Cooperating Technical Partners (CTP) Program. These agencies are participating with FEMA in developing and updating FIRMs. (See the box on the inside of the back cover page for a brief description of the CTP program.)

FIRM

What must an NFIP participating community do when FEMA provides new or revised flood hazard data?

Each time FEMA provides a community with new or revised flood hazard data, the community must either adopt new floodplain management regulations, or amend its existing regulations to reference the new FIRM and FIS report. In some cases, communities may have to adopt additional floodplain management requirements if a new type of flood hazard data is provided, such as a new flood zone (e.g., going from a Zone A without BFEs to a Zone AE with BFEs or going from a Zone AE to a Zone VE – the coastal high hazard area), or with the addition of a regulatory floodway designation.

The following guide is to help you determine whether changes need to be made in your community's floodplain management regulations when a new or revised FIRM and FIS report are provided:

- If the community's floodplain management regulations are compliant with the NFIP requirements when the LFD is issued, the community needs to amend only the map reference section of their floodplain management regulations to identify the new FIRM and FIS report.
- If the community has a legally valid automatic adoption clause established in the map reference section of the regulations and the community's regulations are otherwise compliant with the NFIP requirements, then the floodplain management regulations do not need to be amended. Automatic adoption clauses adopt all future revisions to the FIRM without further action by the community. However, keep in mind that the FIRM and FIS report update process outlined above still applies for communities with automatic adoption clauses. Automatic adoption clauses are not permitted in many States.
- If the community is provided a new type of flood hazard data, the community will need to either adopt new regulations or amend existing regulations to include the appropriate NFIP requirements, in addition to referencing the new FIRM and FIS report.

The LFD indicates the sections of the NFIP floodplain management requirements at 44 CFR Section 60.3 that a community must adopt based on the type of flood hazard data provided to the community.

You can contact the FEMA Regional Office or your State NFIP Coordinating Agency for assistance on the specific requirements your community will need to adopt. (See "For Assistance" on the back cover page for contact information.)

If your community has adopted higher standards than the minimum requirements of the NFIP, your community may qualify for a reduction in flood insurance premiums for your citizens under the Community Rating System (CRS). (See the box on the inside of the back cover for a brief description of the CRS.)

Janesville, Wisconsin, 2008

When must a community adopt the new or revised flood hazard data?

Your community must amend its existing floodplain management regulations or adopt new regulations before the effective date of the FIRM and FIS report, which is identified in the LFD. The LFD initiates the six-month adoption period.

Communities are encouraged to adopt the appropriate floodplain management regulations as soon as possible after the LFD is issued. The adopted regulations must be submitted to FEMA or the State and be approved by FEMA before the effective date of the FIRM and FIS report.

FEMA will send two letters notifying the community that it must have approved floodplain management regulations in place before the effective date of the FIRM. The first letter is a reminder letter and is sent to the community 90 days before the effective date. The second letter is sent to the community 30 days before the effective date of the FIRM. This letter is FEMA's final notification that the community will be suspended from the NFIP if it does not adopt the FIRM before the effective date. Notice of the suspension is also published in the *Federal Register*.

If the community adopts or amends its floodplain management regulations prior to the effective date of the FIRM and FIS report and the FEMA Regional Office approves the community's regulations, the suspension will not go into effect and the community will remain eligible for participation in the NFIP.

What happens if a community does not adopt the appropriate floodplain management regulations during the six-month adoption period?

If a community does not adopt new floodplain management regulations or amend its existing regulations before the effective date of the FIRM and FIS report, the community will be suspended from the NFIP.

The following sanctions apply if a community is suspended from the NFIP:

- Property owners will not be able to purchase NFIP flood insurance policies and existing policies will not be renewed.
- Federal grants or loans for development will not be available in identified flood hazard areas under programs administered by Federal agencies such as the Department of Housing and Urban Development, the Environmental Protection Agency, and the Small Business Administration.
- Federal disaster assistance will not be provided to repair insurable buildings located in identified flood hazard areas for damage caused by a flood.
- Federal mortgage insurance or loan guarantees will not be provided in identified flood hazard areas such as those written by the Federal Housing Administration and the Department of Veteran Affairs.
- Federally insured or regulated lending institutions, such as banks and credit unions, are allowed to

Elevated home on pile foundation

Elevated home on crawl space foundation

make conventional loans for insurable buildings in flood hazard areas of non-participating communities. However, the lender must notify applicants that the property is in a flood hazard area and that the property is not eligible for Federal disaster assistance. Some lenders may voluntarily choose not to make these loans.

If a community is suspended, it may regain its eligibility in the NFIP by enacting the floodplain management measures established in 44 CFR Section 60.3 of the NFIP regulations. If development takes place in your community during suspension that does not meet the minimum NFIP requirements, your community will be asked to take actions to reduce the increased flood hazard prior to reinstatement.

Digital Flood Hazard Information Resources

In accordance with the Flood Insurance Reform Act of 2004, FEMA has implemented a policy that allows the use of digital data for official NFIP purposes. All FEMA's flood mapping products are now prepared digitally, and a number of different digital options are available to view the flood hazard information shown on community FIRMs. All digital flood hazard resources referenced below can be accessed through FEMA's Map Service Center (MSC) at http://msc.fema.gov.

- Once effective, copies of the FIRM panels in digital format will be provided to your community and will also be available through the MSC. Note that Letters of Map Change (LOMCs) are also available through the MSC in .pdf format.
- FIRMettes show a desired section of a FIRM panel specified by a user, plus map scale, and other legend information from the FIRM. FIRMettes can be created online through the MSC, and printed or saved in .pdf format at no cost.
- The FIRM database is designed for use with specialized Geographic Information System (GIS) software. Users are able to integrate local data sets with the FEMA flood hazard data in the FIRM database to assist with floodplain management or mitigation planning measures. The FIRM database is provided to your community once the FIRM becomes effective and is also available for download through the MSC.
- The National Flood Hazard Layer (NFHL) contains all effective digital flood hazard information from FIRM databases and LOMRs produced by FEMA in one integrated nationwide dataset. It also contains point locations of other LOMCs, such as Letters of Map Revision Based on Fill and Letters of Map Amendment. The NFHL is available for viewing through FEMA's online map viewer which can be accessed through the MSC. The NFHL can also be viewed as a layer in Google Earth or accessed via Web Map Service (WMS), a web-based method of viewing map information using commercial GIS software, such as ESRI's ArcGIS. Additional information on these services is available through the MSC.

Note for communities that do not yet have digitally produced FIRMs: scanned digital versions of the paper FIRM panels are available through the MSC. However, since the FIRMs were not produced digitally, a FIRM database will not be available and the flood hazard information shown on the FIRMs will not be included in the NFHL.

Becoming a Cooperating Technical Partner

FEMA established the Cooperating Technical Partner (CTP) program to increase local involvement in, and ownership of, the flood study process and the flood hazard data developed as part of that process. This program enables communities, and regional and State agencies that have the interest, capabilities, and resources to be active partners in FEMA's flood hazard mapping program.

One of the major objectives of the CTP program is to recognize States, regional agencies, and communities with proactive floodplain management programs that include identifying the flood risk and getting the information incorporated into official FEMA flood hazard data. The CTP Program maintains national standards consistent with the NFIP Regulations. The following are some of the benefits of being a CTP.

- CTPs are given an opportunity to develop more detailed maps by making local geospatial data a part of the FIRM
- CTPs receive support such as access to existing data, access to custom-made FEMA tools, technical assistance, and national recognition
- CTPs receive mentoring support, online examples of "best practices," and free training
- Communities that participate in the Community Rating System (CRS) that also become CTPs or are in an area covered by a regional or State CTP may be eligible to receive CRS credit for CTP activities

Another major objective and benefit of the CTP Program is the ability to leverage available funding and local data to make the most of limited resources. Communities, States, and regional agencies can take advantage of these benefits by entering into an agreement with FEMA that formalizes the types of mapping activities and support the CTP will provide. Nearly 250 communities, States, and regional agencies are currently participating in the CTP Program.

To learn more about becoming a CTP, visit www.fema.gov/plan/prevent/fhm/ctp_main.shtm or contact your FEMA regional office (see back page for contact information)

Becoming an NFIP Community Rating System Community

The NFIP Community Rating System (CRS) recognizes community floodplain management practices that exceed the minimum requirements of the NFIP. CRS recognizes these efforts by reducing the cost of flood insurance premiums from 5 percent to 45 percent for flood insurance policies in communities that participate in the CRS.

Many communities may already be doing activities that would earn credit under the CRS which would reduce flood insurance premiums for their citizens. Here are a few examples:

- Adopting and enforcing more protective building standards that result in safer new construction
- Informing the public about flood hazards and flood insurance and how to reduce flood damage
- Preserving open space in the floodplain

To receive CRS credit, a community must submit a CRS application to FEMA which identifies floodplain management practices being implemented by the community. FEMA can help with the application. After FEMA reviews and verifies the application, the flood insurance premium discounts will go into effect. The amount of flood insurance policy premium discount depends on the number of CRS-credited activities a community performs.

Community participation in the CRS has many benefits:

- Discounts for flood insurance premiums from 5 percent to 45 percent
- Enhanced public safety
- Reduced flood damage
- Increased environmental protection
- Informed community residents supporting improved flood protection measures that will make communities safer from flood risks.

To learn more about CRS, visit www.fema.gov/business/nfip/crs.shtm or call 317-848-2898

For Assistance

If your community needs assistance in adopting the FIRM, you may contact the FEMA Regional Offices listed below. You may also contact your State Coordinating Agency for the NFIP. Additional information is available at www.fema.gov/rm-main/regional-contact-information.

REGION I
CT, ME, MA, NH, RI, VT
99 High Street, 6th Floor
Boston, MA 02110
617-956-7506

REGION II
NJ, NY, PR, VI
26 Federal Plaza, Suite 1337
New York, NY 10278-0002
212-680-3600

REGION III
DE, DC, MD, PA, VA, WV
615 Chestnut Street
1 Independence Mall, 6th Floor
Philadelphia, PA 19106-4404
215-931-5500

REGION IV
AL, FL, GA, KY, MS, NC, SC, TN
3003 Chamblee-Tucker Road
Atlanta, GA 30341
770-220-5200

REGION V
IL, IN, MI, MN, OH, WI
536 South Clark Street, 6th Floor
Chicago, IL 60605
312-408-5500

REGION VI
AR, LA, NM, OK, TX
Federal Regional Center
800 North Loop 288
Denton, TX 76209-3698
940-898-5399

REGION VII
IA, KS, MO, NE
9221 Ward Parkway, Suite 300
Kansas City, MO 64114-3372
816-283-7061

REGION VIII
CO, MT, ND, SD, UT, WY
Denver Federal Center, Building 710, Box 25267
Denver, CO 80225-0267
303-235-4800

REGION IX
AZ, CA, HI, NV, American Samoa, Guam,
Marshall Islands and Northern Mariana Islands
1111 Broadway, Suite 1200
Oakland, CA 94607
510-627-7100

REGION X
AK, ID, OR, WA
Federal Regional Center
130 228th Street SW
Bothell, WA 98021-8627
425-487-4600

Flood Hazard Mapping Fact Sheet

FEMA

Cumberland County, Virginia

April 14, 2022

What is the NFIP? What is Risk MAP?

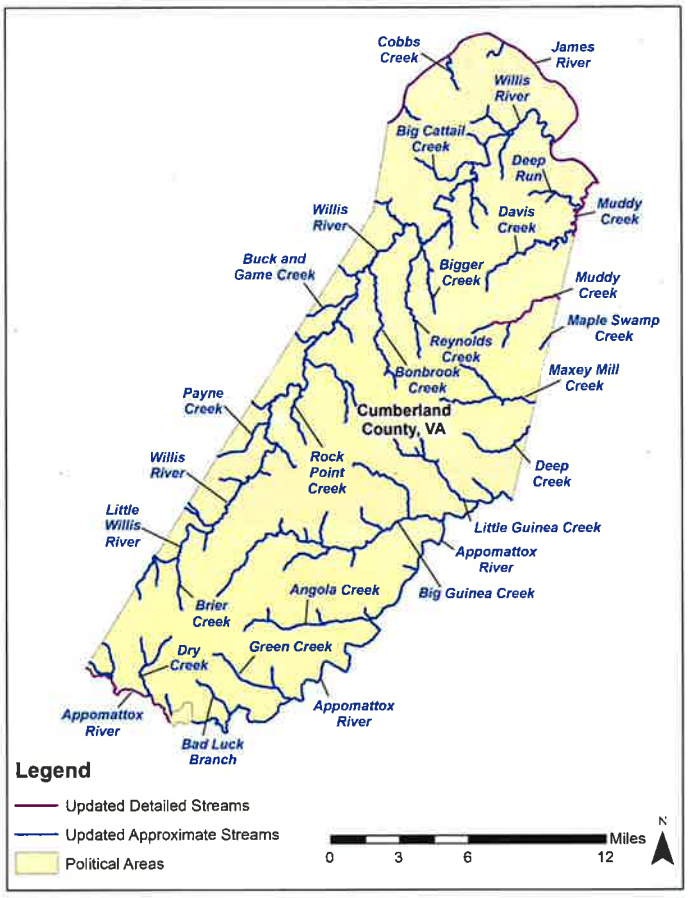
This Fact Sheet provides background information on the National Flood Insurance Program (NFIP) and Risk Mapping, Assessment, and Planning (Risk MAP) program, which are administered by the Federal Emergency Management Agency (FEMA), as well as an overview of the flood hazard assessment and mapping process underway in Cumberland County, Virginia. FEMA is revising the county's Flood Insurance Rate Maps (FIRMs) using the latest technologies and the most current data, so that residents, homeowners, business owners, and community officials may understand their local flood risk and take action to keep people and property safe from floods.

Congress established the NFIP due to escalating costs to taxpayers for flood disaster relief. If a community participates in sound floodplain management, the Federal Government will make flood insurance available to residents in that community. FIRMs show the Special Flood Hazard Area (SFHA). Development may take place within the SFHA provided that it complies with local floodplain ordinances that meet NFIP criteria. Risk MAP is a new FEMA program that provides communities with additional risk assessment tools and outreach support. Through collaboration with States and local entities, FEMA will deliver quality data that increase public awareness and strengthen local ability to make informed decisions about reducing risk to life and property.

What is a FIRM?

When FEMA maps flood hazards in a community or county, two products are produced – a Flood Insurance Study (FIS) report and a FIRM. An FIS contains prior flooding information, descriptions of the flooding sources, information on flood protection measures, and a description of the hydrologic and hydraulic methods used in the study. A FIRM illustrates the extent of flood hazards in a community by depicting flood risk zones and the SFHA and is used with the FIS to determine the floodplain development regulations that apply in each flood risk zone and who must buy flood insurance. FIRMs also depict Base (1-percent annual chance) Flood Elevations (BFEs), floodways, and common physical features such as roads.

Flood Hazard Mapping Fact Sheet



Why Are the Maps Being Updated?

This countywide revision updates hydrology, hydraulics, and floodplain mapping for the entirety of Cumberland County. This includes 31 miles of updated detailed AE mapping and 236 miles of updated approximate A mapping. Floodways have been delineated for the first time on Appomattox River, Maple Swamp Creek, and Muddy Creek.

What Else Has Changed?

With this countywide revision we have updated the FIRM panels as a part of this study to FEMA's new format specifications. Some of the changes to the FIRMs include the adoption of new colors and symbology to depict flood hazard features. It also includes the publication of the regulatory water surface elevation at each cross section directly on the FIRM panel. Additionally, the overall layout of the FIRM panel has been updated. A complete description of the Notes to Users and FIRM Legend for the new format FIRMs can be found in the Appendix located at the end of the FIS Report.

How do I Find Out if a Structure or Property is Located in the Special Flood Hazard Area?

You can locate a building or structure by consulting the FIRM, or by contacting the floodplain administrator for your community for property information. For help interpreting a FIRM, call the FMIX at 1-877-FEMA MAP (1-877-336-2627).

What is an Appeal?

Some flood studies result in new or revised flood hazard information. During the 90-day appeal period, community officials and others may object to the accuracy of this flood hazard information, which may include new or revised BFEs, base flood depths, SFHA boundaries or zone designations, or regulatory floodways. All appeals must be based on data that show the new or revised flood hazard information is scientifically or technically incorrect. Communities should coordinate with the FEMA Region III Philadelphia office before submitting an appeal.

What is a Comment?

Challenges received during the appeal period that do not involve proposed flood hazard information are called "comments"; these generally involve concerns with updated corporate limits, jurisdictional boundaries, road names, and other base map errors or omissions; or requests that a Letter of Map Amendment (LOMA) Letter of Map Revision Based on Fill (LOMR-F), or LOMR be incorporated.

What Happens After the Appeal Period?

FEMA will issue a Letter of Final Determination and then provide the community with six months to adopt up-to-date floodplain management ordinances. If the floodplain ordinances in effect are satisfactory, they can be submitted in their current form. If ordinances need to be updated, communities should seek assistance from their State NFIP Coordinator or the FEMA Region III office in Philadelphia. After the six-month compliance period, the new FIS and FIRM will become effective.

What if a Structure is Shown in a Different Flood Zone on the New Map?

The new map will not affect continuing insurance policies for a structure built in compliance with local floodplain management regulations and the flood map in effect at the time of construction. However, should

The Mapping Process

The key steps in the Risk MAP mapping and product development process are outlined below. Additionally, the points at which community officials and property owners may provide comments and express concerns with the information in the FIS report and FIRM are identified.

Scoping/ Discovery and Map Production	Preliminary Map Release and Planning	Due Process and Path Forward	Final Determination	Final FIS and FIRM Effective
• These tasks have been completed	• Preliminary FIS and FIRM issued to all communities • Communities comment on preliminary FIS and FIRM to FEMA • Communities begin planning to mitigate flood risk	• New FIS, FIRM and Flood Risk Products presented with NFIP requirements at community meeting • 90-day appeal period for FIS/FIRM begins after a 2nd public notice	• Issued by FEMA following the appeal period • *Federal Register* notice published • Resilience Meeting held to review potential mitigation actions	▪ Six months after the final determination ▪ FIS and FIRM published and distributed by FEMA ▪ The new effective FIS and FIRM available at community offices

the structure be substantially improved or substantially damaged (where damages or improvements reach 50% or more of the predamage market value) the entire structure will have to be brought into compliance with the floodplain requirements and the BFE in effect at the time any repairs take place.

Is There any Recourse if I Do Not Agree with the New Map?

Although FEMA uses the most accurate flood hazard information available, limitations of scale or topographic definition of the source maps used to prepare the FIRM may cause small areas that are at or above the BFE to be inadvertently shown within Special Flood Hazard Area boundaries. Such situations may exist in Cumberland County. For these situations, FEMA established the LOMA process to remove such structures from the Special Flood Hazard Area.

How Can I Request a LOMA?

To obtain a LOMA, the requester must complete a LOMA application. For a LOMA to be issued removing a structure from the SFHA, federal regulations require that lowest adjacent grade be at or above the BFE. There is no fee for FEMA's review of the LOMA request, but the requester of a LOMA must provide all of the information needed for a review. Elevation information certified by a licensed surveyor is often required if an elevation certificate is not available. The application and additional details are available from: https://www.fema.gov/flood-maps/change-your-flood-zone

Will LOMAs Issued under the Old Map be Valid under the New Map?

When a new FIRM becomes effective, it automatically supersedes previously issued LOMAs, LOMRs, and other map changes that have been issued for structures and properties on the revised FIRM panels. Recognizing that some map changes may still be valid even though the flood hazard information on the FIRM has been updated, FEMA has established a process for revalidating such map changes.

What is FEMA's Process for Revalidating Existing LOMAs and LOMR-Fs?

To revalidate map changes, FEMA conducts a detailed comparison of the BFEs shown on FEMA's new FIRM and the lowest adjacent grade or lowest lot elevation of previously issued map changes. Those structures or properties that are above the BFE or are located in areas of the community that are not affected by updated flood hazard information are revalidated through a formal determination letter that is issued to the community's Chief Executive Officer when the new FIRM becomes effective. The revalidation letter is also mailed to each community's map repository to be kept on file and is available for public reference. Map changes that have been issued for multiple lots or structures where the determination for one or more of the lots or structures have changed cannot be automatically revalidated through the administrative process described above. To request that FEMA review such map changes (i.e., those that are not included in the revalidation letter), please submit the following to FEMA:

- A letter requesting the re-issuance (provide the case number of the LOMA to be reissued); and
- A copy of the LOMA to be reissued, if available.

FEMA will review the case file and issue a new letter reflecting its new determination.

How can I purchase flood insurance?

A policy may be purchased from most licensed property insurance agents or brokers who are in good standing in the State in which they are licensed or through any agent representing a Write Your Own (WYO) company. Call 1-800-427-4661 or visit floodsmart.gov to find a flood insurance agent near you.

What Factors Determine Flood Insurance Premiums?

A number of factors are used to determine flood insurance premiums, including the amount of coverage purchased, the deductible, location, age, occupancy, and type of building. For newer buildings in floodplains, the elevation of the lowest adjacent grade (the lowest ground touching the structure), or lowest floor relative to the BFE will also be used to rate the policy.

For Further Information

For any questions concerning flood hazard mapping or LOMAs, please contact the FEMA Mapping and Insurance eXchange's (FMIX) toll-free information line at 1-877-FEMA MAP (1-877-336-2627).

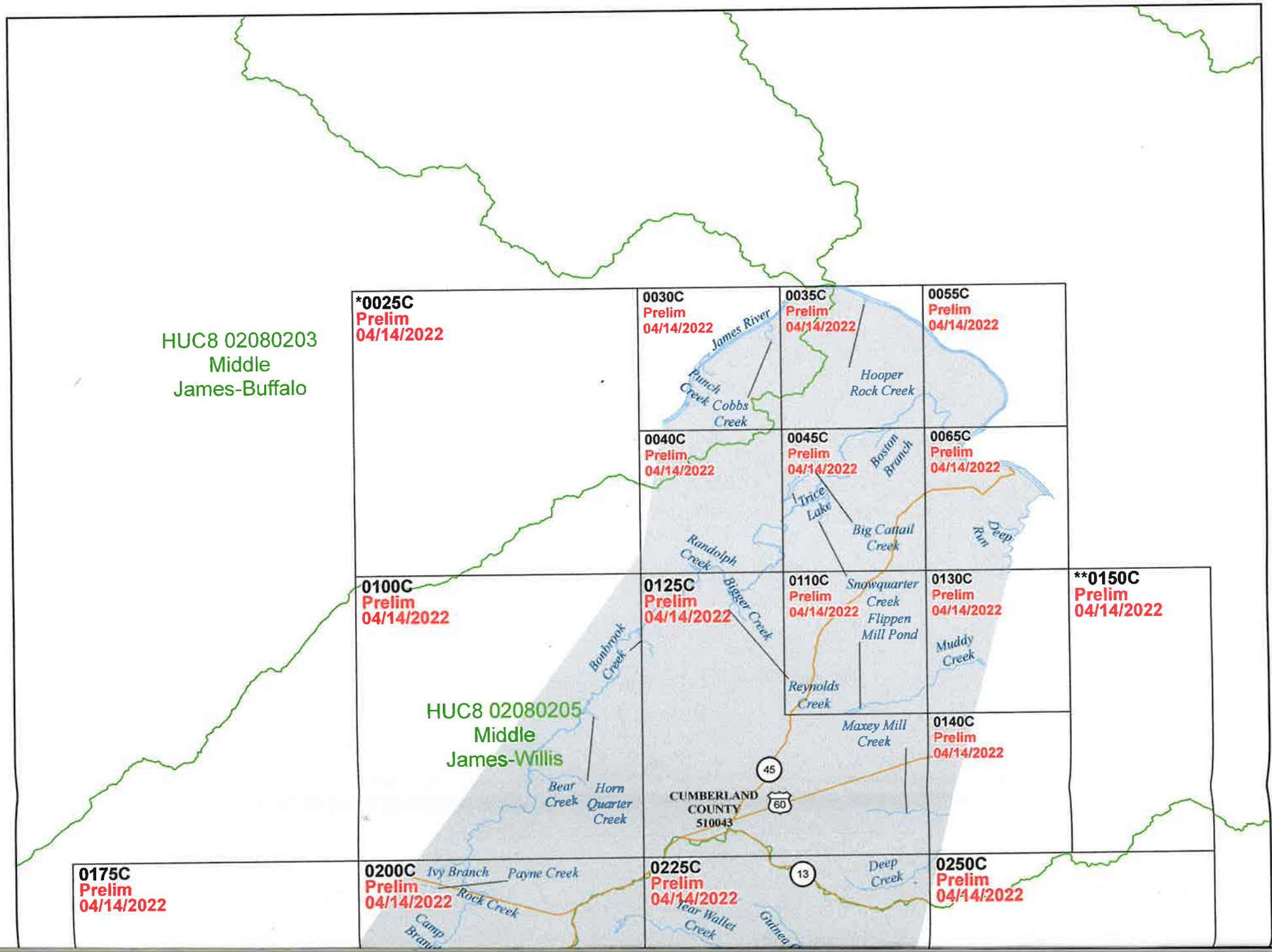
More information is available online at: https://www.fema.gov/flood-maps

The FEMA Map Service Center has flood hazard mapping information and products that may be reviewed online and downloaded at https://msc.fema.gov. For map questions call 1-877-FEMA MAP (1-877-336-2627).

For information about floodplain management, ordinances, or map adoption policies, communities can contact their State NFIP Coordinator.

For questions specifically concerning insurance, please call 1-800-427-4661 or visit http://www.floodsmart.gov.

FLOODSMART.GOV
An official site of the National Flood Insurance Program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Payne Creek
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Bear Wallet Creek
Guinea
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Prelim
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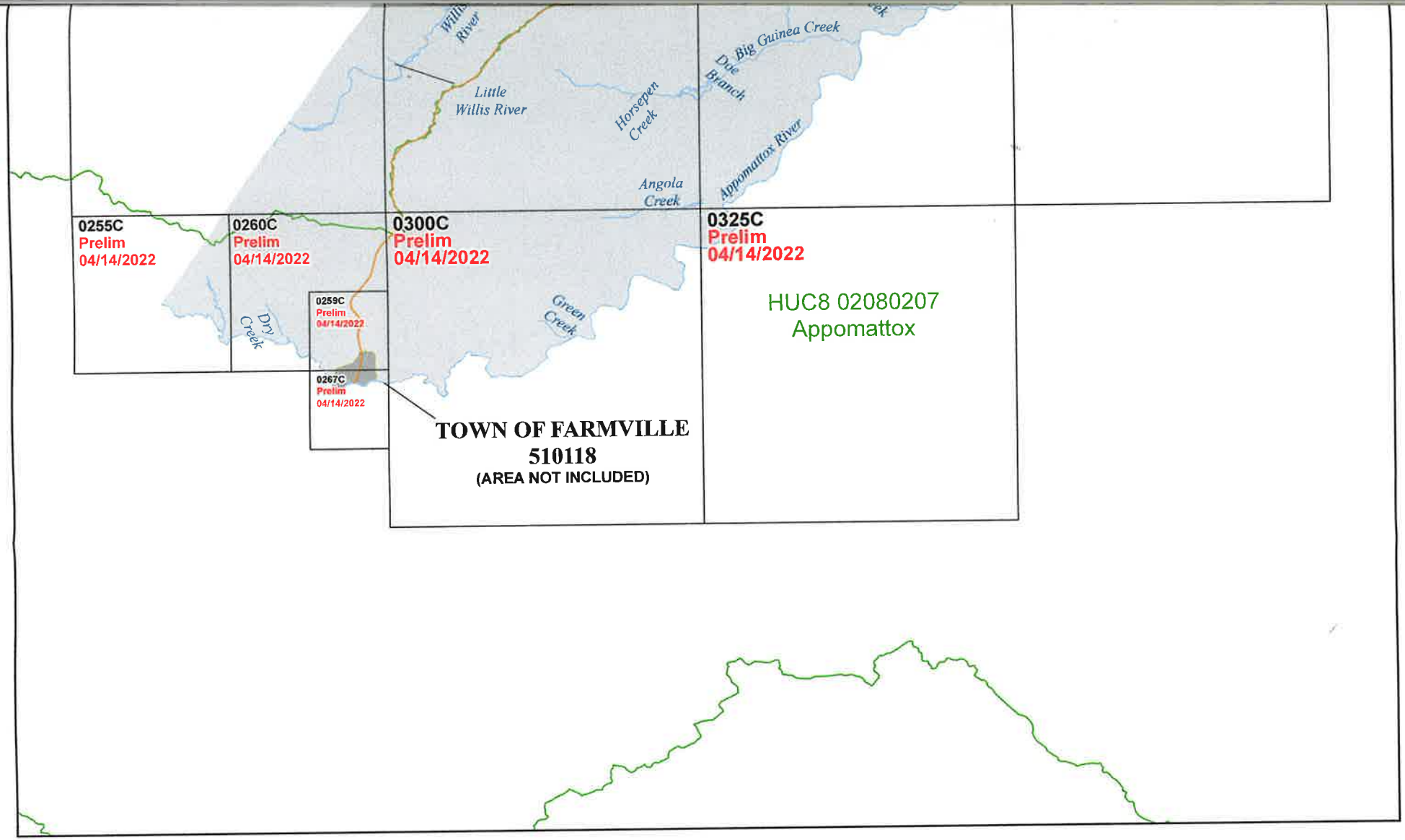

1 inch = 20,087 feet 1:241,046

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feet

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Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
**PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

CUMBERLAND COUNTY, VIRGINIA All Jurisdictions

PANELS PRINTED:

0030, 0035, 0040, 0045, 0055, 0065, 0100, 0110, 0125, 0130, 0140, 0175, 0200, 0225, 0250, 0255, 0259, 0260, 0267, 0300, 0325

U.S. DEPARTMENT OF HOMELAND SECURITY

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