

<https://www.nbc12.com/2021/07/09/petersburg-workers-rescued-after-becoming-trapped-floodwaters-70-roads-closed/>

[Petersburg workers rescued after becoming trapped in floodwaters \(nbc12.com\)](https://www.nbc12.com/2021/07/09/petersburg-workers-rescued-after-becoming-trapped-floodwaters-70-roads-closed/)

# Petersburg workers rescued after becoming trapped in floodwaters

By NBC12 Newsroom

Published: Jul. 8, 2021 at 7:27 PM EDT|Updated: Jul. 9, 2021 at 6:14 PM EDT

PETERSBURG, Va. (WWBT) - Rain from Tropical Storm Elsa caused flash flooding in Petersburg, which quickly caused city workers to become trapped in floodwaters.

[Heavy rain, isolated tornado threat from Elsa Thursday](#)

Crews rescued two public works employees from the roofs of vehicles on Thursday night.

Officials said the crews were out on Madison and Bollingbrook streets putting up signage when the water rapidly rose, causing them to get stuck.

The two were rescued and are now safe.

A spokesperson said that 70 percent of roadways in Petersburg were closed due to flooding on Thursday. Residents are asked to stay home and off the roadways.

“It is dangerous. It’s quite dangerous. Even roads that may not be blocked off, which is 30% of them, there could be lots of ponding that you might not see that could cause an accident,” Petersburg spokesperson Joanne Williams said.

A Ford Mustang also became stuck in high water on Wythe Street. NBC12’s Brent Solomon reports that the driver tried to push the car out after it stalled.

Petersburg police said the following roads, as of 5 p.m. on July 9, are closed due to high water:

- Franklin Street - tree down
- Roylart Road - tree down

Across Central Virginia, anywhere from 2-5 inches of rain is possible.

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<https://www.msn.com/en-us/weather/topstories/flash-flooding-causes-road-closures-in-petersburg/ar-AAMAk3a>

[Flash flooding causes road closures in Petersburg \(msn.com\)](https://www.msn.com/en-us/weather/topstories/flash-flooding-causes-road-closures-in-petersburg/ar-AAMAk3a)



Richmond-Petersburg WWBT

# Flash flooding causes road closures in Petersburg

NBC12 Newsroom - Jul 26

PETERSBURG, Va. (WWBT) - Flash flooding has caused several road closures in Petersburg as storms move through Central Virginia.



© Provided by Richmond-Petersburg WWBTRain (Source: Pixabay/stock image)

As of 6 p.m., between three and three-and-a-half inches of rain have already fallen, and more rain is expected Monday evening.

The following roads in Petersburg are closed:

- Bank Street between Crater Road and Madison Street
- Joseph Jenkins Robert's Parkway between Third Street and Fourth Street
- Bollingbrook Street between Crater Road and Madison Street

Officials said there is also ponding on many streets and drivers should be cautious.

“We are prepared and expect that some low areas in the city may flood during heavy downpours,” says City Manager Stuart Turille earlier on Monday before the storms. “City crews will close roadways with high water and will continuously monitor all street conditions.”

The Petersburg Department of Public Works has been cleaning drains following recent flash flooding from Tropical Storm Elsa.

According to Turille, infrastructure in the city is more than 150 years old and needs upgrading.

“Engineering consultants are working on a storm drainage management plan,” Turille said. “Once a plan is finalized and costs determined, the City will apply for grants from state and federal agencies to pay for the needed upgrades.”

Residents are asked to be cautious during heavy rain and flash flood situations:

- Don’t walk, swim or drive through floodwater. Six inches of fast-flowing water can knock you over and two feet will float a car. Never drive through barricades.
- If caught on a flooded road with rapidly rising waters, get out of the car quickly and move to higher ground. Most flood fatalities occur in vehicles.
- Don’t walk along streams or riverbanks.
- Don’t allow children or pets to play in or near flood water.
- Avoid any contact with floodwater. It may be contaminated with harmful chemicals and debris that are not visible from the surface.

- Stay out of areas subject to flooding. Underpasses, dips, low spots, etc. can become rapidly filled with water.

If residents see clogged drains or fallen trees, please call Street Operations at 804-733-2415 from 8 a.m. to 5 p.m. To report any flooded areas after 5 p.m., call the Petersburg Police Department's non-emergency number at 804-732-4222.

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<https://www.wric.com/news/local-news/the-tri-cities/petersburg-to-use-federal-dollars-to-upgrade-stormwater-management-system/>

[Petersburg to use federal dollars to upgrade stormwater management system | 8News \(wric.com\)](#)

# Petersburg to use federal dollars to upgrade stormwater management system

**THE TRI-CITIES**

by: [Sabrina Shuttters](#)

**Posted: Sep 1, 2021 / 03:48 PM EDT / Updated: Sep 1, 2021 / 08:52 PM EDT**

PETERSBURG, Va. (WRIC) – Heavy winds, dark skies and rain hit Petersburg as the remnants of Hurricane Ida passed through Central Virginia Wednesday.

Flooding has been a long time issue in Petersburg, but the city said they were prepared for the worst Wednesday.

Ominous clouds moved over Petersburg Wednesday afternoon, bringing on and off rain showers to the city. Rain water could be seen rushing into storm drains near city hall.





City Manager Stuart Turille said the city's fire and police departments were on standby Wednesday, prepared to close streets as needed and help keep vehicles and people away from areas in the city that flood during hard downpours.

On Tuesday, the Petersburg Department of Public Works cleaned storm drains throughout the city to prepare for Wednesday's storm.

### **"My basement is a pool": Petersburg man frustrated with city after home floods again**

Turille said the city is working on hiring a contractor to come in and perform a study to replace some of the old infrastructure causing flooding issues, using funding from the American Recovery Act.

"We're going to fix these problem areas," Turille said in an interview with 8News Wednesday.

He said Wednesday's storm brought in by Ida was just a test of the city's drainage system. The city is using the storm to collect data.

"These events just point out, highlight the urgency of the need for long term planning," he said.

The data is part of a new study that will help the city figure out where infrastructure needs to be replaced the most to minimize flooding when severe storms occur.

“We have the money now to actually put in culverts, construct more ditches, interconnect more pipes, replace the old pipes that were laid here in 1820 and fix the system,” Turille said.

Petersburg received \$21 million dollars from the American Recovery Act funding, and Turille said part of that money will go towards the project. A press release sent out by the city on Tuesday said the city will also apply for grants from state and federal agencies.

### **[PHOTOS: Severe weather wreaks havoc on Southwest Virginia as state prepares for remnants of Hurricane Ida Wednesday](#)**

For now, Petersburg Police Chief Travis Christian reminds the public, it’s still important to remember your own safety during severe weather.

“If you see high water, don’t drive through the water. If you see downed power lines, don’t attempt to go near the power lines, don’t attempt to go near wet areas where you see power lines, and by all means, try to stay inside the residence if at all possible and don’t come out in the weather,” Christian said.

The city is still looking for a contractor for the planned study.

If citizens see clogged drains or fallen trees, they’re asked to call street operations at (804) 733-2415 during normal working hours (8 a.m. – 5 p.m.).

To report any flooded areas or other concerns after 5 p.m., residents can call the Petersburg Police Department’s non-emergency number, (804) 732-4222. Call 9-1-1 for emergencies, including any emergencies where you must exit your home due to flooding.

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<https://www.wric.com/news/local-news/the-tri-cities/it-floods-every-major-rain-petersburg-sets-aside-over-2-million-to-repair-storm-drainage-system/>

[‘It floods every major rain’: Petersburg sets aside over \\$2 million to repair storm drainage system | 8News \(wric.com\)](#)

# ‘It floods every major rain’: Petersburg sets aside over \$2 million to repair storm drainage system

## THE TRI-CITIES

by: [Tyler Thrasher](#)

Posted: Oct 1, 2021 / 07:09 AM EDT / Updated: Oct 1, 2021 / 05:23 PM EDT

PETERSBURG, Va. (WRIC) — With the addition of over \$9 million from the American Rescue Plan Act federal, Petersburg City Council determined [storm drainage system repairs are one of their top priorities](#) for utilizing the grant funding.

The city has committed to using **around \$2.1 million** from the funding to repair Petersburg’s aging infrastructure that results in regular flooding in the area.

## [“My basement is a pool”: Petersburg man frustrated with city after home floods again](#)

Petersburg City Manager Stuart Turille attributed the changing climate and lack of infrastructure evaluation as the reason the flooding has become a more significant challenge for the city.

“It happens every major rain. The storm drainage system has had no comprehensive evaluation study likely in over 60 years,” Turille explained. “There is aging infrastructure laying in the ground that is nearly 200 to 300 years old. There are even more impervious surfaces in the city. It is not suitable for the city and stormwater runoff.”

Turille said the city has seen storms of greater intensity and frequency over the last several years, which has created even more flooding.

“We have shovel-ready projects mapped out for the worst areas in the city for flooding. We know those and are ready to get going on them,” he said. “A storm drainage study will be happening soon to determine the worst flooded areas, but

we know from on the ground experience that we can't wait for a map to be done for certain areas."

He noted Claremont Street, North Whitehill Drive and Bank Street as three of the first areas the city will handle when construction is ready to begin in the near future.



Flooding on Claremont Street in Petersburg

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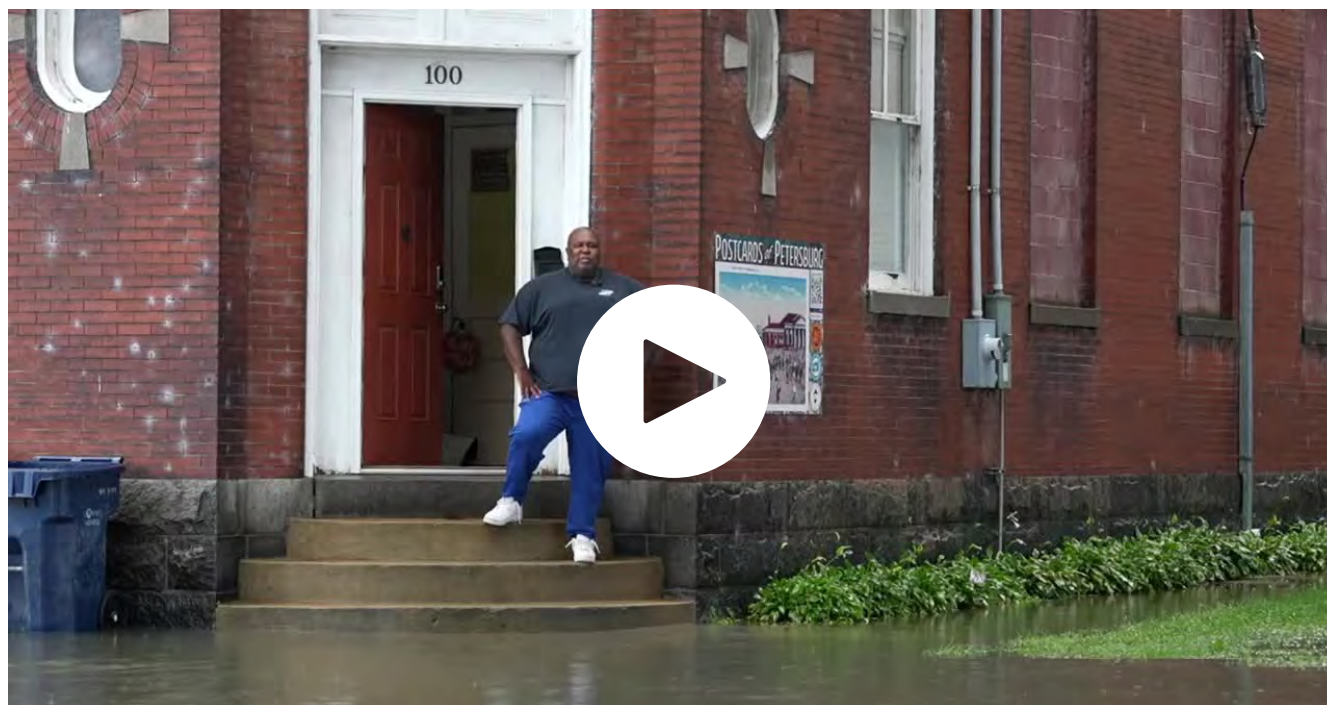


LOCAL NEWS



<https://www.wtvr.com/news/local-news/petersburg-flooding-shuts-down-his-street-oct-1-2024>

# Petersburg flooding shuts down his street '15 to 20' times a year, he said



Resident Michael Morton said he has to deal with his street flooding regularly, guessing about 15 to 20 times a year.



By: Wayne Covil

Posted 5:57 PM, Oct 01, 2024

PETERSBURG, Va. -- Water shut down more than six city streets after a

downpour of rain Tuesday morning.

Resident Michael Morton said he has to deal with his street flooding regularly, guessing about 15 to 20 times a year.

River Street in Downtown Petersburg floods in several locations, including the area in front of the apartment Morton shares with his wife. The problem is so bad that the first thing they do every day is watch the weather forecast, before looking at the weather apps on their phones.

They move their parked cars across the street at the first sign of a storm, because in the past their cars have been flooded. It sometimes takes 24 hours for the water to recede, Morton said.

Though the city said it prepares ahead of severe weather, the Appomattox River and the old harbor may be the biggest issue when it comes to drainage.

“The Harbor ... has not been dredged in many, many years,” said Jerry Byerly of Petersburg Public Works. “So the water level in the harbor is so high that the water, that you see behind me, has nowhere to go until that water goes down.”

Other problems the city faces related to flooding include littering, which gets swept into storm drains, and people driving around detour signs that are put up in key flooding spots.

Byerly said that while dredging the river may not solve all the flooding issues, it will alleviate a lot of problems across the city.

“One of our top priorities we have in our forecast and our plan is to try and get some federal funding to dredge the harbor so the water can actually go somewhere,” Byerly said.

***CBS 6 is committed to sharing community voices on this important***

**topic.** [Email your thoughts to the CBS 6 Newsroom.](#)



Eat It, Virginia!

**Antonio Owen: Sweet P's**

00:00 / 52:38

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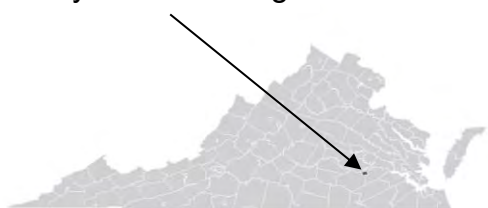
# FLOOD INSURANCE STUDY

## FEDERAL EMERGENCY MANAGEMENT AGENCY

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VOLUME 1 OF 1

City of Petersburg



## CITY OF PETERSBURG, VIRGINIA

INDEPENDENT CITY

COMMUNITY NAME	COMMUNITY NUMBER
PETERSBURG, CITY OF	510112



# FEMA

Reprinted with corrections on June 8, 2023

**REVISED:**

**December 15, 2022**

FLOOD INSURANCE STUDY NUMBER

510112V000B

Version Number 2.6.4.6

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### **Published Separately**

Flood Insurance Rate Map (FIRM)

# **FLOOD INSURANCE STUDY REPORT CITY OF PETERSBURG, 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 the City of Petersburg, 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.

**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
Petersburg, City of	510112	02080207, 03010201, 03010202	5101120002D, 5101120004D, 5101120006D, 5101120007D, 5101120008D, 5101120009D, 5101120015D <sup>1</sup> , 5101120020D, 5101120026D, 5101120028D, 5101120029D, 5101120036D, 5101120037D	

<sup>1</sup> 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.

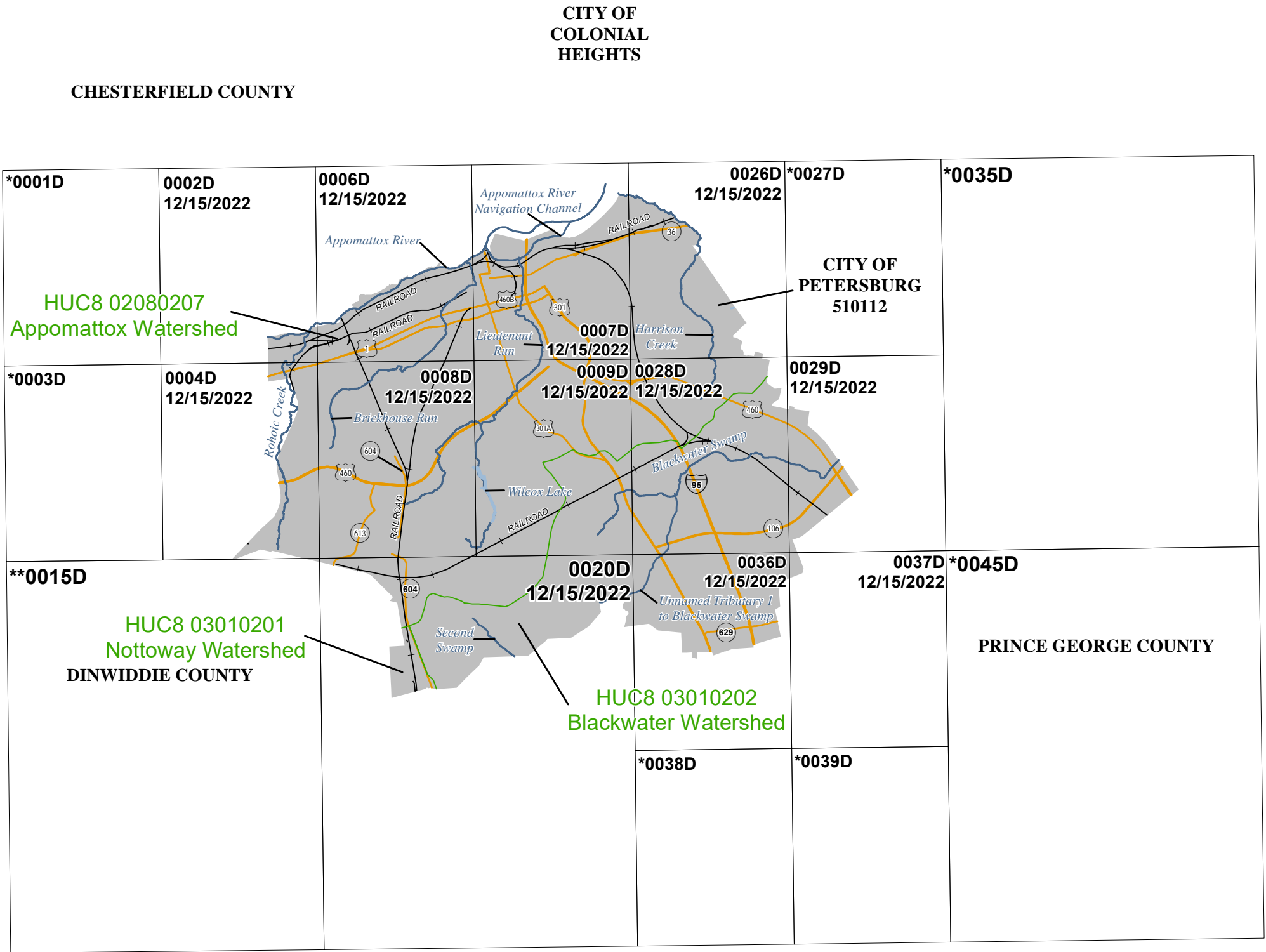
- This FIS report was reissued on June 8, 2023 to make a correction. See the Notice-to User letter that accompanied this correction for details. This version replaces any previous versions.
- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS 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 FIS Report for the City of Petersburg became effective on September 16, 1980. The initial FIRM for the City of Petersburg is dated March 16, 1981. 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/online-tutorials](http://www.fema.gov/online-tutorials).

The FIRM Index in Figure 1 shows the overall FIRM panel layout within the City of Petersburg, 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



N

1 inch = 7,083 feet

1:85,000

0

4,000

8,000

16,000

feet

Map Projection:

State Plane Virginia South 4502 Feet

North American Datum of 1983

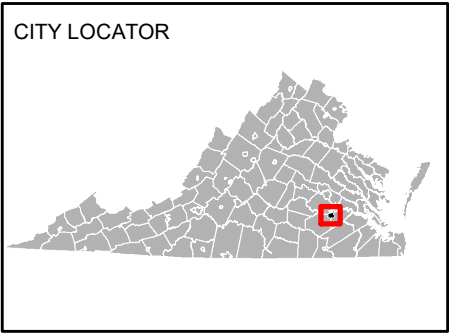
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FIS REPORT FOR ADDITIONAL INFORMATION

\*PANEL NOT PRINTED -- AREA OUTSIDE COMMUNITY BOUNDARY

\*\*PANEL NOT PRINTED -- NO SPECIAL FLOOD HAZARD AREAS



NATIONAL FLOOD INSURANCE PROGRAM


FLOOD INSURANCE RATE MAP INDEX

CITY OF PETERSBURG, VIRGINIA

Independent City

PANELS PRINTED:

0002, 0004, 0006, 0007, 0008, 0009, 0020, 0026, 0028, 0029, 0036, 0037



FEMA

MAP NUMBER

510112IND08

MAP REVISED

DECEMBER 15, 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**

<div><h2>NOTES TO USERS</h2><p>For information and questions about this map, 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 Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <a href="https://msc.fema.gov">https://msc.fema.gov</a>. 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 Map Information eXchange.</p><p>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.</p><p>For community map dates, refer to Table 27 in this FIS Report.</p><p>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.</p></div>
<div><p>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.</p><p><b>BASE FLOOD ELEVATIONS:</b> 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.</p></div>
<div><p><b>FLOODWAY INFORMATION:</b> 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.</p><p><b>FLOOD CONTROL STRUCTURE INFORMATION:</b> Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.</p><p><b>PROJECTION INFORMATION:</b> The projection used in the preparation of the map was State Plane Lambert Conformal Conic, Virginia South Zone 4502. The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 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</p></div>

## Figure 2. FIRM Notes to Users (continued)

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](http://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 provided by the United States Geological Survey (USGS). The following panels used base map information provided by the USGS that was derived from digital orthophotography at a 2-foot resolution, dated 2010. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

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 the City of Petersburg, 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 (continued)**

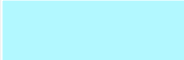

**SPECIAL NOTES FOR SPECIFIC FIRM PANELS**

This Notes to Users section was created specifically for the City of Petersburg, Virginia, effective December 15, 2022.















**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 the City of Petersburg.


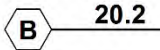

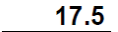











**Figure 3: Map Legend for FIRM**

<p><b>SPECIAL FLOOD HAZARD AREAS:</b> 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.</p>	
	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 (continued)**

<b>OTHER AREAS OF FLOOD HAZARD</b>	
	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 Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
<b>OTHER AREAS</b>	
	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.
<b>FLOOD HAZARD AND OTHER BOUNDARY LINES</b>	
 (ortho)      (vector)	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
<b>GENERAL STRUCTURES</b>	
 Aqueduct Channel Culvert Storm Sewer	Channel, Culvert, Aqueduct, or Storm Sewer
 Dam Jetty Weir	Dam, Jetty, Weir
	Levee, Dike, or Floodwall
 Bridge	Bridge

**Figure 3: Map Legend for FIRM (continued)**

<b>REFERENCE MARKERS</b>	
	River mile Markers
<b>CROSS SECTION &amp; TRANSECT INFORMATION</b>	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	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.
	Base Flood Elevation Line
<b>ZONE AE (EL 16)</b>	Static Base Flood Elevation value (shown under zone label)
<b>ZONE AO (DEPTH 2)</b>	Zone designation with Depth
<b>ZONE AO (DEPTH 2) (VEL 15 FPS)</b>	Zone designation with Depth and Velocity
<b>BASE MAP FEATURES</b>	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad

**Figure 3: Map Legend for FIRM (continued)**

	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
<b><sup>42</sup>76<sup>000</sup>mE</b>	Horizontal Reference Grid Coordinates (UTM)
<b>365000 FT</b>	Horizontal Reference Grid Coordinates (State Plane)
<b>80° 16' 52.5"</b>	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 the City of Petersburg 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 the City of Petersburg, 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
All Zone A Streams and Tributaries in HUC 02080207	Petersburg, City of	Various	Various	02080207	10.3	N	A	07/31/2019
All Zone A Streams and Tributaries in HUC 03010202	Petersburg, City of	Various	Various	03010202	4.0	N	A	07/31/2019
Appomattox River	Petersburg, City of	Approximately 3,000 feet downstream of Interstate 95	Approximately 0.5 miles upstream of confluence with Rohoic Creek	02080207	4.5	Y	AE	03/25/2020
Appomattox River Navigation Channel	Petersburg, City of	Convergence with the Appomattox River approximately 0.7 miles downstream of Interstate 95	Divergence from the Appomattox River approximately 200 feet downstream of U.S. Route 1	02080207	1.2	Y	AE	03/25/2020
Blackwater Swamp	Petersburg, City of	Approximately 500 feet downstream of U.S. Highway 460	Approximately 250 feet downstream of Retnag Road	03010202	3.5	Y	AE	03/25/2020
Brickhouse Run	Petersburg, City of	At confluence with Appomattox River	Approximately 370 feet downstream of Darby Drive	02080207	3.2	Y	AE	03/25/2020
Brickhouse Run Overland	Petersburg, City of	At Brown Street	Approximately 150 feet upstream of S South Street	02080207	0.2	Y	AE	03/25/2020
Harrison Creek	Petersburg, City of	At confluence with Appomattox River	Approximately 1,640 feet upstream of East Washington Street	02080207	1.4	Y	AE	03/25/2020

**Table 2: Flooding Sources Included in this FIS Report (continued)**

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
Lieutenant Run	Petersburg, City of	At confluence with Appomattox River Navigation Channel	Approximately 1,300 feet upstream of Baylors Lane	02080207	3.1	Y	AE	03/25/2020
Poor Creek	Petersburg, City of	At confluence with Appomattox River Navigation Channel	Approximately 320 feet upstream of Pine Oak Drive	02080207	1.2	Y	AE	03/25/2020
Rohoic Creek	Petersburg, City of	At confluence with Appomattox River	Approximately 60 feet upstream of Boynton Plank Road	02080207	2.5	Y	AE	03/25/2020
Unnamed Tributary 1 to Blackwater Swamp	Petersburg, City of	At confluence with Blackwater Swamp	Approximately 500 feet upstream of U.S. Highway 301	03010202	0.8	Y	AE	03/25/2020
Unnamed Tributary 2 to Blackwater Swamp	Petersburg, City of	At Norfolk Southern Railroad	Approximately 1,200 feet upstream of Norfolk Southern Railroad	03010202	0.3	N	AE	03/25/2020

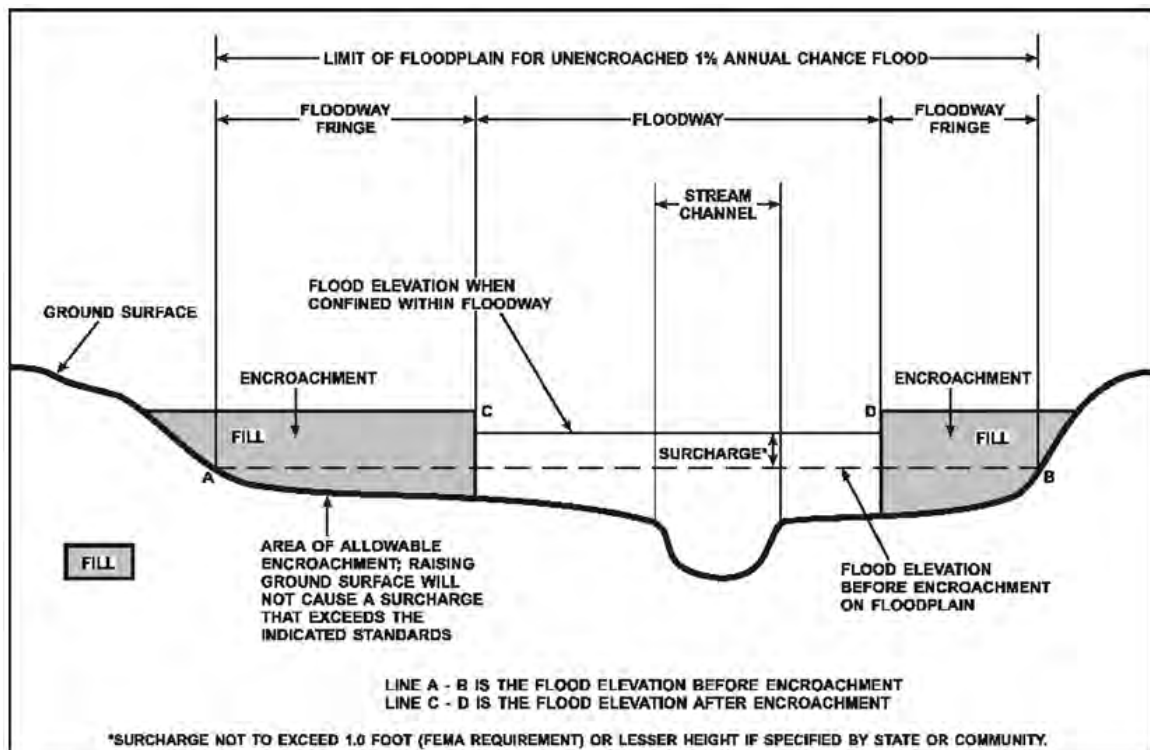
## 2.2 Floodways

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 the City of Petersburg.

**Table 3: Flood Zone Designations by Community**

Community	Flood Zone(s)
Petersburg, City of	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)
Appomattox	02080207	Appomattox River	Drains the northwestern two-thirds of the City of Petersburg.	1,610
Blackwater	03010202	Blackwater River	Drains the southeastern third of the City of Petersburg.	740
Nottoway	03010201	Nottoway River	Drains a small southwestern portion of the City of Petersburg.	1,723

## 4.2 Principal Flood Problems

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

**Table 5: Principal Flood Problems**

Flooding Source	Description of Flood Problems
Appomattox River	The Appomattox River is the source of most major flood problems in the City of Petersburg. The Appomattox River can flood any time of the year, typically from prolonged winter and spring storms or tropical storms that pass over the area in late summer and fall. Due to the hydrologic nature of the Appomattox River drainage basin, flood events typically last for several days. Three of the five largest floods in Petersburg were recorded between October 1971- 1972. Petersburg recorded highest peaks (cfs) of 40,800, 28,000, 22,800, 21,100, 18,800 in 1972, 1940, 1971, 1970, 1937 with recurrence intervals of 110, 40, 25, 20 and 15 years respectively (FIS 2011)
Blackwater Swamp	Major flooding along Blackwater Swamp has been the result of summer thunderstorms, hurricanes, and snowmelt. (FIS 2011)
Brickhouse Run, Harrison Creek, Lieutenant Run, Poor Creek, and Rohoic Creek	Downstream sections of these reaches are impacted by the backwater from Appomattox river and susceptible to flooding. Brickhouse and Lieutenant Run flow through highly urban areas, while Harrison Poor and Rohoic Creek flow through commercial/industrial development and many of their structures are inadequate and creating ponding. (FIS 2011)

Table 6 contains information about historic flood elevations in the communities within the City of Petersburg.

**Table 6: Historic Flooding Elevations**

**[Not applicable to this Flood Risk Project.]**

### 4.3 Non-Levee Flood Protection Measures

Table 7 contains information about non-levee flood protection measures within the City of Petersburg such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

**Table 7: Non-Levee Flood Protection Measures**

**[Not applicable to this Flood Risk Project.]**

### 4.4 Levees

This section is not applicable to this Flood Risk Project.

**Table 8: Levees**

**[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. Note: Discharges for flooding sources designated as Zone A on the FIRM are not shown in Table 9 of this FIS report, however, discharge values are included in the FIRM database in the S\_NODES and L\_SUMMARY\_DISCHARGES feature classes. 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
Appomattox River	Upstream of the confluence with Brickhouse Run	1,357	19,707	26,101	31,503	37,462	53,881
Appomattox River	Upstream of the confluence with Fleets Branch	1,356	19,690	26,078	31,475	37,429	53,834
Appomattox River	Upstream of the confluence with Rohoic Creek	1,345	19,525	25,859	31,212	37,115	53,382
Blackwater Swamp	Approximately 1,000 feet upstream of County Road	4.8	590	809	831	1,172	1,616
Blackwater Swamp	Approximately 1,800 feet downstream of Country Drive	2.9	850	1,231	1,246	1,880	2,723
Blackwater Swamp	Upstream of Wagner Road	1.8	492	717	722	1,094	1,580
Brickhouse Run	At the confluence with Appomattox River	2.3	1,711	2,328	2,910	3,536	5,186
Brickhouse Run	Approximately 700 feet upstream of S West St	1.2	638	847	1,035	1,242	1,804
Brickhouse Run	Approximately 550 feet upstream of Elm Street	0.4	336	477	567	709	1,092
Harrison Creek	At the confluence with Appomattox River	2.9	782	1,119	1,368	1,634	2,228
Harrison Creek	Upstream of Norfolk Southern Railroad	1.8	332	562	770	1,004	1,504
Harrison Creek	Downstream of Hickory Hill Road	0.6	226	354	464	586	898

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
Lieutenant Run	At the confluence with Appomattox River Navigation Channel	5.6	2,525	3,197	3,637	4,079	5,091
Lieutenant Run	Upstream of Johnson Road	3.3	1,046	1,495	1,919	2,407	3,711
Lieutenant Run	Downstream of East Washington Street	5.3	2,252	2,874	3,281	3,662	4,367
Poor Creek	At the confluence with Appomattox River Navigation Channel	2.6	1,075	1,189	1,276	1,449	1,863
Poor Creek	At East Washington Street	2.4	1,572	2,266	2,912	3,635	5,194
Poor Creek	Approximately 5,000 feet upstream of East Washington Street	1.9	1,643	2,378	3,040	3,750	4,907
Rohoic Creek	At the confluence with Appomattox River	9.6	1,792	2,636	3,383	4,267	8,571
Rohoic Creek	Upstream of Cattail Creek	4.9	990	1,475	1,929	2,405	4,550
Rohoic Creek	Upstream of Route 142	3.9	805	1,208	1,591	1,974	3,688

**Figure 7: Frequency Discharge-Drainage Area Curves**  
**[Not applicable to this Flood Risk Project.]**

**Table 10: Summary of Non-Coastal Stillwater Elevations**

Flooding Source	Location	Elevations (feet NAVD 88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Unnamed tributary 2 to Blackwater Swamp	Upstream of Norfolk Southern Railroad	140.1	140.5	140.5	141.2	142

**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	02041650	USGS	Appomattox River at Matoaca	1,342	04/04/1970	12/26/2015

## **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
All Zone A Streams and Tributaries in HUC 02080207	Various	Various	Regression Equations	HEC-RAS 5.0.5	07/31/2019	A	Effects of hydraulic structures were not considered in the model.
All Zone A Streams and Tributaries in HUC 03010202	Various	Various	Regression Equations	HEC-RAS 5.0.5	07/31/2019	A	Effects of hydraulic structures were not considered in the model.
Appomattox River	Approximately 3,000 feet downstream of Interstate 95	Approximately 0.5 miles upstream of confluence with Rohoic Creek	Regression Equations	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Gage No. 02041650 was used in hydrologic analysis. Hydraulic models incorporated field measured bridge and culvert data. Modeling incorporates split flow through Interstate 95.
Appomattox River Navigation Channel	Convergence with the Appomattox River approximately 0.7 miles downstream of Interstate 95	Divergence from the Appomattox River approximately 200 feet downstream of U.S. Route 1	Regression Equations	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Gage No. 02041650 was used in hydrologic analysis. Hydraulic models incorporated field measured bridge and culvert data. Modeling incorporates split flow through Interstate 95.
Blackwater Swamp	Approximately 500 feet downstream of U.S. Highway 460	Approximately 250 feet downstream of Retnag Road	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulic model incorporated field measured bridge and culvert data.
Brickhouse Run	At confluence with Appomattox River	Approximately 370 feet downstream of Darby Drive	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulics models incorporated field measured bridge and culvert data. A culvert extends from S. South Street to Brown Street. The overland flow for this reach has been modeled separately.
Brickhouse Run Overland	At Brown Street	Approximately 150 feet upstream of S. South Street	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	A culvert extends from S. South Street to Brown Street. The overland flow for this reach has been modeled separately.
Harrison Creek	At confluence with Appomattox River	Approximately 1,640 feet upstream of East Washington Street	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulic model incorporated field measured bridge and culvert data.

**Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)**

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
Lieutenant Run	At confluence with Appomattox River Navigation Channel	Approximately 1,300 feet upstream of Baylors Lane	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulic model incorporated field measured bridge and culvert data.
Poor Creek	At confluence with Appomattox River Navigation Channel	Approximately 320 feet upstream of Pine Oak Drive	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulic model incorporated field measured bridge and culvert data.
Rohoic Creek	At confluence with Appomattox River	Approximately 60 feet upstream of Boynton Plank Road	Regression Equations	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulic model incorporated field measured bridge and culvert data.
Unnamed Tributary 1 to Blackwater Swamp	At confluence with Blackwater Swamp	Approximately 500 feet upstream of U.S. Highway 301	HEC-HMS 4.3	HEC-RAS 5.0.5	03/25/2020	AE w/ Floodway	Hydraulic model incorporated field measured bridge and culvert data.
Unnamed Tributary 2 to Blackwater Swamp	At Norfolk Southern Railroad	Approximately 1,200 feet upstream of Norfolk Southern Railroad	HEC-HMS 4.3	N/A	03/25/2020	AE	Static elevation mapped based on the hydrologic analysis of the storage area.

**Table 13: Roughness Coefficients**

Flooding Source	Channel "n"	Overbank "n"
Appomattox River	0.045 - 0.055	0.045 - 0.120
Appomattox River Navigation Channel	0.045 - 0.055	0.045 - 0.120
Blackwater Swamp	0.045 - 0.050	0.040 - 0.082
Brickhouse Run	0.035 - 0.045	0.035 - 0.120
Brickhouse Run Overland Flow	0.048 - 0.100	0.048 - 0.100
Harrison Creek	0.040	0.060 - 0.100
Lieutenant Run	0.040 - 0.045	0.060 - 0.120
Poor Creek	0.040	0.055 - 0.080
Rohoic Creek	0.045 - 0.050	0.040 - 0.120

### **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](http://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](http://www.ngs.noaa.gov).

The datum conversion locations and values that were calculated for the City of Petersburg are provided in Table 19.

**Table 19: Vertical Datum Conversion**

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion
Carson	NE	37.125	-77.375	-1.122
Charles City	SE	37.250	-77.000	-0.990
Charles City	VA	37.250	-77.000	-0.990
Disputanta North	NE	37.250	-77.125	-1.132
Petersburg	NE	37.250	-77.375	-1.168
Petersburg	NE	37.250	-77.375	-1.168
Petersburg	NE	37.250	-77.375	-1.168
Prince George	NE	37.250	-77.250	-1.158
Prince George	NE	37.250	-77.250	-1.158
Savage	NE	37.250	-77.000	-0.991
Templeton	NE	37.125	-77.250	-1.099
Average Conversion from NGVD29 to NAVD88 = -1.104 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/media-library/resources-documents/collections/361](http://www.fema.gov/media-library/resources-documents/collections/361).

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
City of Petersburg Ortho Imagery	USDA FSA Aerial Photography Field Office	2016	N/A	NAIP Ortho Imagery for City of Petersburg, VA (USDA 2016)

Data Type	Data Provider	Data Date	Data Scale	Data Description
NHD Data	United States Geological Survey	2017	N/A	NHD data for City of Petersburg, VA (USGS 2017)
TIGER Roads and Rail Data	U.S. Census Bureau	2016	N/A	Road and Rail data for City of Petersburg, VA (U.S. Census 2016)
Virginia Administrative Boundaries	Virginia Geographic Information Network	2018	N/A	VGIN City of Petersburg, VA boundary (VGIN 2018)

### 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
Petersburg, City of	All flooding sources in City of Petersburg	USGS VA NRCS SANDY 2014 United States Geological Survey	18.7 cm CVA	N/A	USGS 2014

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 <sup>1</sup>	WIDTH <sup>3</sup> (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	54,787	1,080/116	14,824	2.5	14.6	14.6	14.8	0.2
B <sup>2</sup>	58,550	247/0	4,989	4.9	15.3	15.3	15.3	0.0
C	60,934	238/0	4,368	5.6	16.3	16.3	16.6	0.3
D	63,227	527/375	7,559	5.0	17.3	17.3	17.8	0.5
E	65,531	538/489	8,640	4.3	19.5	19.5	19.9	0.4
F	66,773	248/238	2,630	14.2	26.4	26.4	27.4	1.0
G	67,046	376/229	6,696	5.6	35.2	35.2	36.1	0.9
H	69,078	570/426	6,105	6.1	38.1	38.1	38.4	0.3
I	72,340	706/307	6,650	5.6	44.5	44.5	44.6	0.1
J	74,804	655/362	6,189	6.0	50.6	50.6	50.8	0.2
<sup>1</sup> Feet Above Confluence With James River <sup>2</sup> Cross section is outside of this community and is located in the City of Colonial Heights <sup>3</sup> Total floodway width/width within jurisdiction								
TABLE 23	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PETERSBURG, VIRGINIA INDEPENDENT CITY</b>			<b>FLOODWAY DATA</b>				
				<b>FLOODING SOURCE: APPOMATTOX RIVER</b>				

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,943	361	6,040	2.2	15.3	15.3	15.4	0.1
B	4,684	272	4,029	3.4	15.8	15.8	15.8	0.0
<sup>1</sup> Stream Distance in Feet Above Confluence with Appomattox River								
TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PETERSBURG, VIRGINIA INDEPENDENT CITY			FLOODWAY DATA				
				FLOODING SOURCE: APPOMATTOX RIVER NAVIGATION CHANNEL				

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	93,449	670	1,825	1.3	121.1	121.1	121.5	0.4
B	94,411	792	4,423	0.6	125.1	125.1	125.4	0.3
C	97,430	519	1,545	0.8	125.6	125.6	125.9	0.3
D	99,198	261	737	1.5	127.8	127.8	128.0	0.2
E	99,385	1,260	7,015	0.8	133.1	133.1	133.3	0.2
F	100,045	976	6,874	0.2	135.2	135.2	135.2	0.0
G	101,169	765	5,610	0.2	135.2	135.2	135.2	0.0
H	101,718	641	1,713	0.7	135.2	135.2	135.2	0.0
I	101,889	903	2,401	0.5	135.2	135.2	135.3	0.1
J	103,219	923	2,480	0.6	135.3	135.3	135.4	0.1
K	103,757	860	3,618	0.4	137.7	137.7	137.7	0.0
L	106,861	440	1,422	0.5	138.0	138.0	138.1	0.1
M	108,140	265	637	1.2	138.7	138.7	138.9	0.2
N	109,113	95	377	2.0	142.8	142.8	142.8	0.0
O	109,921	193	732	0.7	143.0	143.0	143.0	0.0
P	110,426	89	283	1.9	143.3	143.3	143.3	0.0
Q	111,247	30	103	5.1	145.8	145.8	146.0	0.2

<sup>1</sup> Feet Above Confluence With Blackwater River

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CITY OF PETERSBURG, VIRGINIA  
INDEPENDENT CITY**

## FLOODWAY DATA

**FLOODING SOURCE: BLACKWATER SWAMP**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	994	94	414	8.6	23.6	23.6	23.6	0.0
B	1,522	65	400	8.8	28.7	28.7	29.7	1.0
C	1,958	30	397	8.9	37.7	37.7	38.1	0.4
D	2,280	84	813	4.3	40.5	40.5	41.4	0.9
E	2,544	99	810	4.4	41.0	41.0	41.9	0.9
F	2,785	57	379	9.3	41.1	41.1	42.1	1.0
G	3,242	81	598	5.9	45.6	45.6	46.1	0.5
H	3,782	115	665	5.3	50.6	50.6	51.1	0.5
I	4,270	133	774	4.6	51.7	51.7	52.1	0.4
J	4,932	78	676	5.2	58.7	58.7	59.7	1.0
K	5,356	75	575	6.1	59.6	59.6	60.5	0.9
L	6,925	95	454	4.6	65.8	65.8	66.1	0.3
M	7,421	94	484	2.9	68.5	68.5	69.0	0.5
N	7,857	59	275	5.1	69.4	69.4	70.2	0.8
O	8,791	124	982	1.4	78.8	78.8	79.2	0.4
P	9,761	308	2,578	0.3	86.0	86.0	86.4	0.4
Q	10,895	185	1,079	0.8	89.0	89.0	89.4	0.4
R	11,760	45	172	1.8	89.6	89.6	89.8	0.2
S	12,573	478	1,564	0.3	94.7	94.7	94.7	0.0
T	13,291	50	159	4.4	96.5	96.5	96.6	0.1
U	13,576	65	233	3.0	98.4	98.4	99.1	0.7
V	14,259	76	214	3.3	102.6	102.6	103.5	0.9
W	14,833	65	119	6.0	107.2	107.2	107.4	0.2
X	16,226	25	122	5.8	120.5	120.5	120.8	0.3
Y	16,852	44	115	6.2	124.8	124.8	124.8	0.0

<sup>1</sup> Feet Above Confluence With Appomattox River

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CITY OF PETERSBURG, VIRGINIA  
INDEPENDENT CITY**

## FLOODWAY DATA

**FLOODING SOURCE: BRICKHOUSE RUN**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	263	190	900	1.6	61.2	61.2	61.7	0.5
B	680	145	231	6.3	63.3	63.3	63.4	0.1
C	1,060	135	562	2.6	65.1	65.1	65.6	0.5
<sup>1</sup> Feet Above Convergence With Brickhouse Run								
TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PETERSBURG, VIRGINIA INDEPENDENT CITY			FLOODWAY DATA				
				FLOODING SOURCE: BRICKHOUSE RUN OVERLAND				

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH <sup>2</sup> (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	659	157/146	645	2.5	14.4	6.1 <sup>3</sup>	6.3	0.2
B	1,914	55/16	214	7.6	14.7	14.7	15.5	0.8
C	2,494	31/15	221	5.5	21.0	21.0	21.2	0.2
D	2,978	250/62	2,300	0.5	25.7	25.7	26.0	0.3
E	3,694	305/133	2,032	0.6	25.7	25.7	26.1	0.4
F	4,240	245/209	1,131	0.9	25.9	25.9	26.2	0.3
G	4,711	218/32	1,205	0.8	31.2	31.2	31.2	0.0
H	5,815	130/12	453	2.2	32.7	32.7	32.8	0.1
I	6,536	80/13	285	3.5	36.1	36.1	36.9	0.8
J	7,200	151/0	447	2.2	38.6	38.6	39.2	0.6
<sup>1</sup> Feet Above Confluence with Appomattox River <sup>2</sup> Total floodway width/width within jurisdiction <sup>3</sup> Elevation Computed Without Consideration of Backwater Effects from Appomattox River								
TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PETERSBURG, VIRGINIA INDEPENDENT CITY				FLOODWAY DATA			
					FLOODING SOURCE: HARRISON CREEK			

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	484	180	1,416	2.9	17.9	17.9	17.9	0.0
B	654	192	1,389	2.9	18.1	18.1	18.2	0.1
C	1,171	114	919	4.4	18.6	18.6	18.7	0.1
D	2,580	103	1,122	3.3	27.3	27.3	27.5	0.2
E	2,933	145	1,625	2.3	27.8	27.8	28.1	0.3
F	4,620	160	493	6.5	30.1	30.1	30.2	0.1
G	5,073	105	682	4.7	33.3	33.3	34.1	0.8
H	5,443	28	225	14.3	35.2	35.2	35.3	0.1
I	6,176	64	417	7.7	44.8	44.8	45.1	0.3
J	7,222	72	478	6.7	49.2	49.2	49.4	0.2
K	7,557	111	762	4.2	51.5	51.5	52.4	0.9
L	8,963	108	428	5.1	54.4	54.4	55.0	0.6
M	9,852	441	5,207	2.0	67.8	67.8	68.3	0.5
N	10,739	944	7,962	0.3	68.4	68.4	68.6	0.2
O	11,886	322	1,389	1.5	68.8	68.8	69.1	0.3
P	12,431	276	699	3.4	70.8	70.8	70.9	0.1
Q	13,346	179	850	1.6	83.7	83.7	83.7	0.0
R	14,078	125	585	1.9	83.8	83.8	83.8	0.0
S	14,815	29	139	8.0	86.0	86.0	86.1	0.1
T	15,259	55	471	2.3	96.8	96.8	97.3	0.5
U	15,983	55	244	4.5	98.2	98.2	98.4	0.2
V	16,517	27	111	10.0	100.9	100.9	100.9	0.0

<sup>1</sup> Feet Above Confluence With Appomattox River Navigation Channel

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CITY OF PETERSBURG, VIRGINIA  
INDEPENDENT CITY**

## FLOODWAY DATA

**FLOODING SOURCE: LIEUTENANT RUN**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	546	382	172	10.2	15.3	5.6 <sup>2</sup>	6.0	0.4
B	1,066	190	3,341	0.5	25.9	25.9	25.9	0.0
C	1,613	232	3,713	0.4	25.9	25.9	25.9	0.0
D	2,511	287	2,993	0.5	25.9	25.9	25.9	0.0
E	3,206	37	155	10.2	26.0	26.0	26.0	0.0
F	4,949	129	275	4.9	31.8	31.8	31.9	0.1
G	5,866	45	250	5.4	38.2	38.2	38.2	0.0
H	6,456	55	173	7.9	40.9	40.9	41.0	0.1

<sup>1</sup> Feet Above Confluence With Appomattox River Navigation Channel

<sup>2</sup> Computed Without Consideration of Backwater Effects From Appomattox River Navigation Channel

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CITY OF PETERSBURG, VIRGINIA  
INDEPENDENT CITY**

## FLOODWAY DATA

**FLOODING SOURCE: POOR CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	557	120	492	8.7	50.7	46.0 <sup>3</sup>	46.5	0.5
B	872	81	2,283	1.9	73.2	73.2	73.2	0.0
C	1,582	128	2,193	1.9	73.3	73.3	73.3	0.0
D	2,004	137	1,186	3.6	74.0	74.0	74.0	0.0
E	2,670	110	983	4.3	74.6	74.6	74.7	0.1
F	3,371	88	817	5.2	75.8	75.8	75.8	0.0
G	3,795	79	640	6.7	78.1	78.1	78.2	0.1
H	4,248	140/0 <sup>2</sup>	1,338	3.2	80.7	80.7	80.7	0.0
I	5,845	80/0 <sup>2</sup>	695	6.1	82.7	82.7	82.9	0.2
J	7,728	120/0 <sup>2</sup>	573	4.2	86.3	86.3	86.8	0.5
K	9,454	137/0 <sup>2</sup>	717	3.4	92.7	92.7	92.8	0.1
L	10,349	97/0 <sup>2</sup>	905	2.7	98.9	98.9	99.6	0.7
M	11,356	159	1,150	1.9	101.9	101.9	102.2	0.3
N	12,945	50	322	6.3	105.3	105.3	105.5	0.2
O	13,269	118	907	2.2	106.9	106.9	107.2	0.3

<sup>1</sup> Feet Above Confluence With Appomattox River

<sup>2</sup> Total floodway width/width within jurisdiction

<sup>3</sup> Elevation Computed Without Consideration of Backwater Effects From Appomattox River

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CITY OF PETERSBURG, VIRGINIA  
INDEPENDENT CITY**

**FLOODWAY DATA**

**FLOODING SOURCE: ROHOIC CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (Feet)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,766	322	844	1.8	139.4	139.4	139.5	0.1
B	3,580	98	381	3.2	143.6	143.6	143.7	0.1
C	4,460	180	1,111	1.1	146.4	146.4	147.3	0.9

<sup>1</sup> Feet above Confluence With Blackwater Swamp

TABLE 23	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b> <b>CITY OF PETERSBURG, VIRGINIA</b> INDEPENDENT CITY	<b>FLOODWAY DATA</b>
		<b>FLOODING SOURCE: UNNAMED TRIBUTARY 1 TO BLACKWATER SWAMP</b>

**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/letter-map-amendment-loma](http://www.fema.gov/letter-map-amendment-loma) 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/online-tutorials](http://www.fema.gov/online-tutorials).

For more information about how to apply for a LOMA, call the FEMA Map Information 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/letter-map-amendment-loma](http://www.fema.gov/letter-map-amendment-loma) 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 Map Information 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/online-tutorials](http://www.fema.gov/online-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/media-library/assets/documents/1343](http://www.fema.gov/media-library/assets/documents/1343) 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 Map Information 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 City of Petersburg 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](http://www.fema.gov) and visit the “Flood Map Revision Processes” 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](http://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 the City of Petersburg. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the community 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 single-jurisdiction studies are completed or revised, the community should have its FIRM dates updated accordingly to reflect the date of the single-jurisdiction study. Once the FIRMs exist in single-jurisdiction 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 City of Petersburg FIRMs was 03/16/1981.

**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)
Petersburg, City of	05/31/1974	05/31/1974	07/30/1976	03/16/1981	12/15/2022 02/04/2011

## 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
All Zone A Streams and Tributaries in HUC 02080207	12/15/2022	STARR II	HSFE60-15-D-0005	07/31/2019	Petersburg, City of
All Zone A Streams and Tributaries in HUC 03010202	12/15/2022	STARR II	HSFE60-15-D-0005	07/31/2019	Petersburg, City of
Appomattox River	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Appomattox River Navigation Channel	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Blackwater Swamp	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Brickhouse Run	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Brickhouse Run Overland	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Harrison Creek	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Lieutenant Run	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Poor Creek	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of

**Table 28: Summary of Contracted Studies Included in this FIS Report (continued)**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Rohoic Creek	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of
Unnamed Tributary 1 to Blackwater Swamp	12/15/2022	STARR II	HSFE60-15-D-0005	03/25/2020	Petersburg, City of

## **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
Petersburg, City of	12/15/2022	08/25/2016	Project Discovery	FEMA, Compass, City of Petersburg.
		04/28/2020	Flood Risk Review	FEMA, STARR II, City of Petersburg, Virginia Department of Conservation and Recreation, Crater Planning District Commission.
		03/25/2021	Final CCO Meeting	FEMA, STARR II, City of Petersburg, Virginia Department of Conservation and Recreation, Crater Planning District Commission.

## 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](http://www.fema.gov).

Table 30 is a list of the locations where FIRMs for the City of Petersburg 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
Petersburg, City of	City Hall 135 North Union Street	Petersburg	VA	23803

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	<a href="http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library">www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library</a>
NFIP website	<a href="http://www.fema.gov/national-flood-insurance-program">www.fema.gov/national-flood-insurance-program</a>
NFHL Dataset	<a href="http://msc.fema.gov">msc.fema.gov</a>
FEMA Region III	Federal Emergency Management Agency One Independence Mall 615 Chestnut Street, 6th Floor Philadelphia, PA 19106-4404 (215) 931-5500
Other Federal Agencies	
USGS website	<a href="http://www.usgs.gov">www.usgs.gov</a>
Hydraulic Engineering Center website	<a href="http://www.hec.usace.army.mil">www.hec.usace.army.mil</a>
State Agencies and Organizations	
State NFIP Coordinator	Angela Davis, Floodplain Program Planner Virginia Department of Conservation & Recreation 600 East Main Street, 24th Floor Richmond, V.A. 23219 Phone: (804) 371-6135 <a href="mailto:angela.davis@dcr.virginia.gov">angela.davis@dcr.virginia.gov</a>
State GIS Coordinator	Stuart Blankenship, Geospatial Projects Manager Integrated Services Program VITA, Virginia Geographic Information Network (VGIN) 11751 Meadowville Lane Chester, VA 23836 Phone: (804) 416-6208 <a href="mailto:stuart.blankship@vita.virginia.gov">stuart.blankship@vita.virginia.gov</a>

## SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

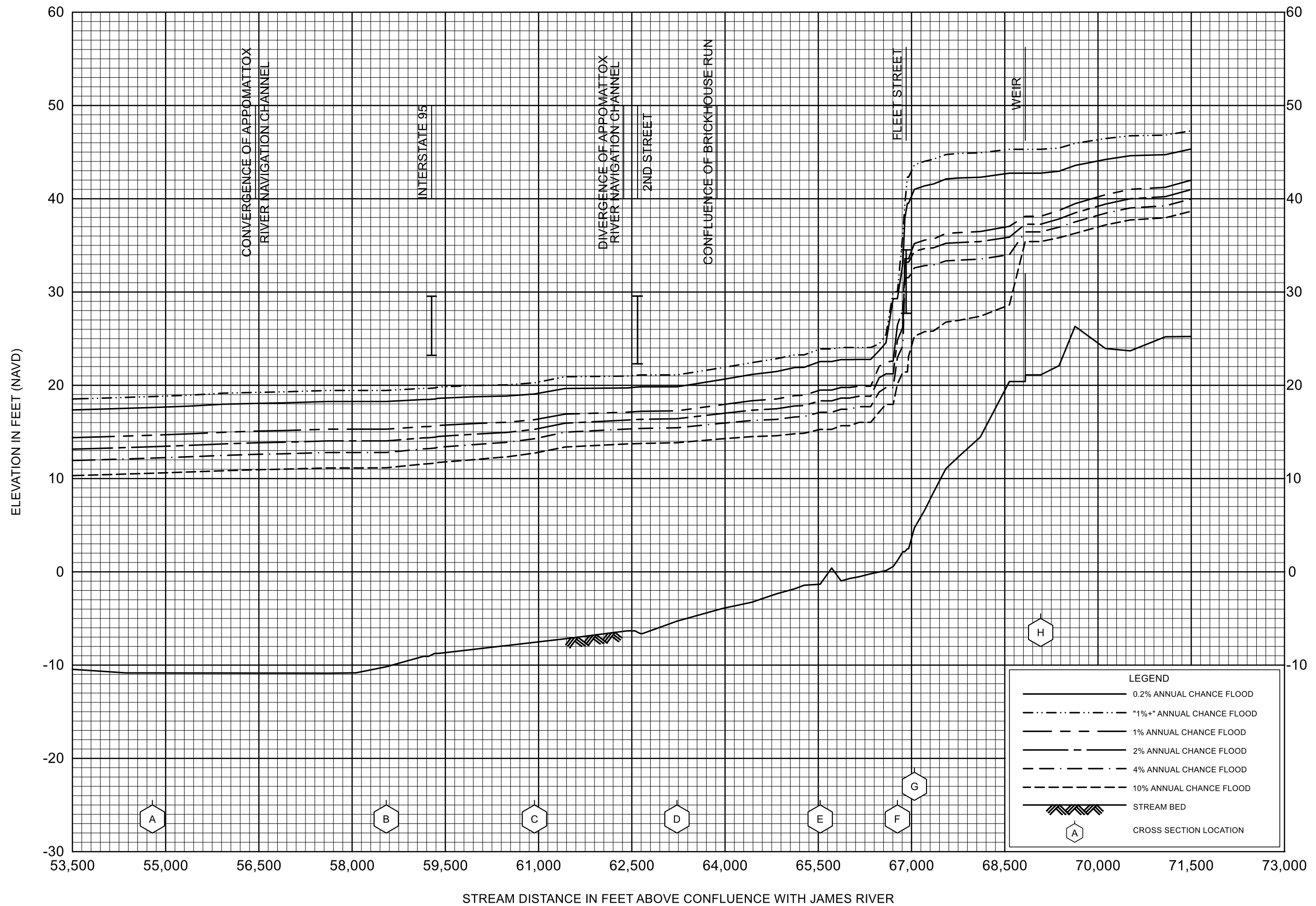
Table 32 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

**Table 32: Bibliography and References**

Citation in this FIS	Publisher/ Issuer	<i>Publication Title</i> , "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 2011	Federal Emergency Management Agency	National Flood Hazard Layer Data	Federal Emergency Management Agency	Washington, D.C.	02/04/2011	<a href="https://msc.fema.gov/portal">https://msc.fema.gov/portal</a>
FEMA 2018	Federal Emergency Management Agency	Lower James Watershed Hydrology Study	STARR II	Washington, D.C.	08/01/2018	<a href="http://hazards.fema.gov">http://hazards.fema.gov</a>
FEMA 2019a	Federal Emergency Management Agency	Lower James: Brickhouse Run Hydrology Study	STARR II	Washington, D.C.	12/01/2019	<a href="http://hazards.fema.gov">http://hazards.fema.gov</a>
FEMA 2019b	Federal Emergency Management Agency	Lower James: Lieutenant Hydrology Study	STARR II	Washington, D.C.	12/01/2019	<a href="http://hazards.fema.gov">http://hazards.fema.gov</a>
FEMA 2019c	Federal Emergency Management Agency	Lower James: Poor Creek Hydrology Study	STARR II	Washington, D.C.	12/01/2019	<a href="http://hazards.fema.gov">http://hazards.fema.gov</a>
FEMA 2019d	Federal Emergency Management Agency	Hydrology: Prince Georges County, Lower James	STARR II	Washington, D.C.	12/01/2019	<a href="http://hazards.fema.gov">http://hazards.fema.gov</a>
FEMA 2020a	Federal Emergency Management Agency	Lower James Watershed Hydraulic Analysis	STARR II	Washington, D.C.	03/25/2020	<a href="http://hazards.fema.gov">http://hazards.fema.gov</a>

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE 2005	United States Army Corps of Engineers	Hec-GeoRAS; GIS Tools for Support of HEC-RAS using ArcGIS	Ackerman, C.T.	Davis, C.A.	01/01/2005	
USACE 2016	US Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-RAS River Analysis System, Version 5.0.5</i>	US Army Corps of Engineers	Davis, CA	02/1/2016	
USACE 2018	United States Army Corps of Engineers	HEC-HMS 4.3	USACE, Hydrologic Engineering Center	Davis, C.A.	09/01/2018	
US Census 2016	U.S. Census Bureau	TIGER Roads and Rail Data	U.S. Census Bureau	Washington, D.C.	08/19/2016	<a href="https://www.census.gov/geo/maps-data/data/tiger-line.html">https://www.census.gov/geo/maps-data/data/tiger-line.html</a>
USDA 2016	USDA FSA Aerial Photography Field Office	City of Petersburg Ortho Imagery	USDA FSA Aerial Photography Field Office	Salt Lake City, U.T.	09/15/2016	<a href="https://nracs.app.box.com/v/naip">https://nracs.app.box.com/v/naip</a>
USGS 2011	United States Geological Survey	U.S. Geological Survey Scientific Investigations Report 2011 – 5144: Peak Flow Characteristics of Virginia Streams	Samuel H. Austin, Jennifer L. Krstolic, and Ute Wiegand	Reston, V.A.	01/01/2011	<a href="https://pubs.usgs.gov/sir/2011/5144/">https://pubs.usgs.gov/sir/2011/5144/</a>
USGS 2014	United States Geological Survey	USGS VA NRCS SANDY 2014	United States Geological Survey	Reston, V.A.	08/27/2015	
USGS 2017	United States Geological Survey	NHD Data	United States Geological Survey	Reston, V.A.	04/26/2017	<a href="https://viewer.nationalmap.gov/basic/?basemap=b1&amp;category=nhd&amp;title=NHD%20View">https://viewer.nationalmap.gov/basic/?basemap=b1&amp;category=nhd&amp;title=NHD%20View</a>

Citation in this FIS	Publisher/ Issuer	<i>Publication Title</i> , "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
VGIN 2018	Virginia Geographic Information Network	Virginia Administrative Boundaries	Virginia Geographic Information Network	Chester, V.A.	01/01/2018	<a href="https://vgin.maps.arcgis.com/home/item.html?id=777890ecdb634d18a02eec604db522c6">https://vgin.maps.arcgis.com/home/item.html?id=777890ecdb634d18a02eec604db522c6</a>



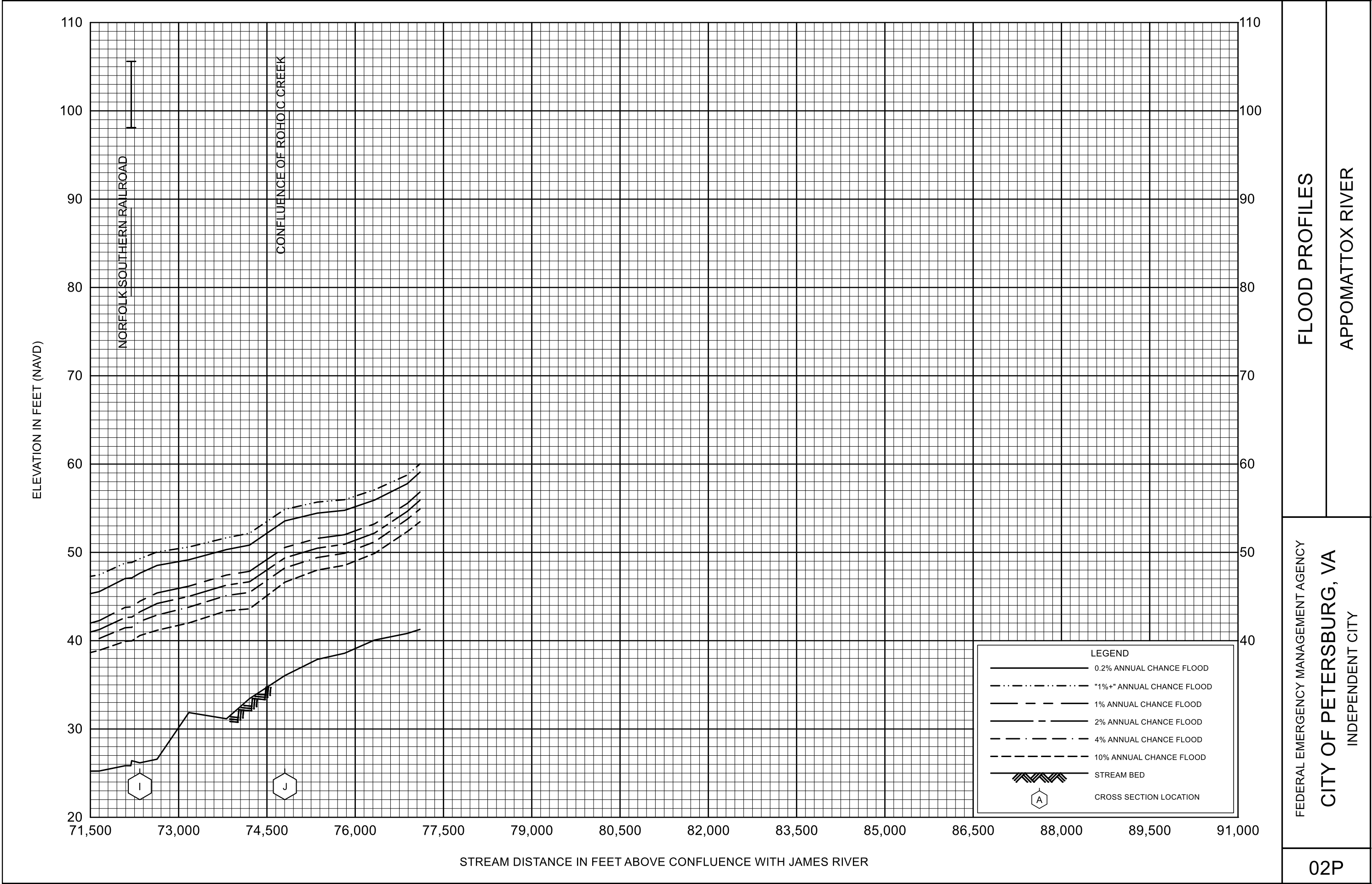
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# APPOMATTOX RIVER

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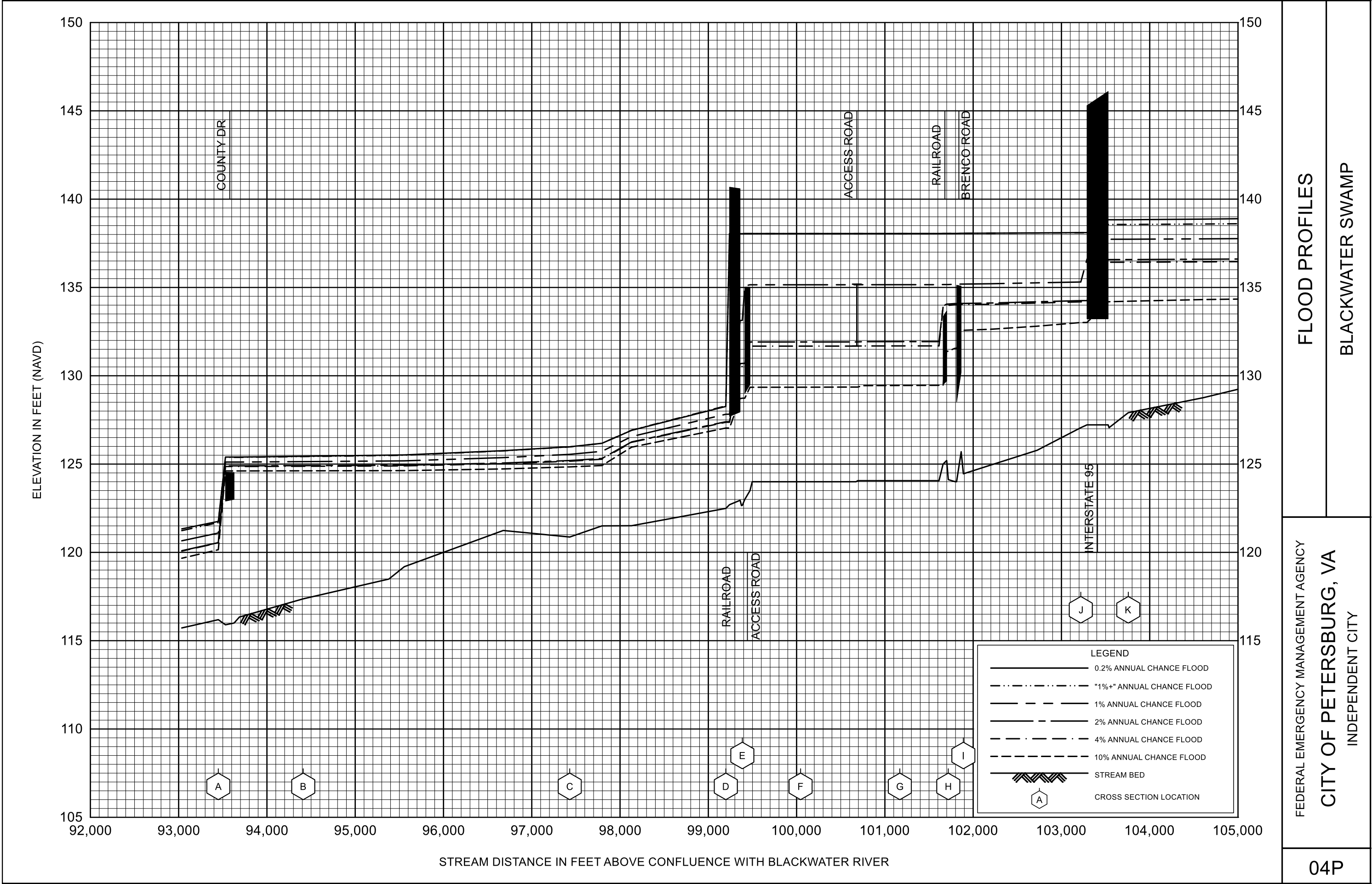
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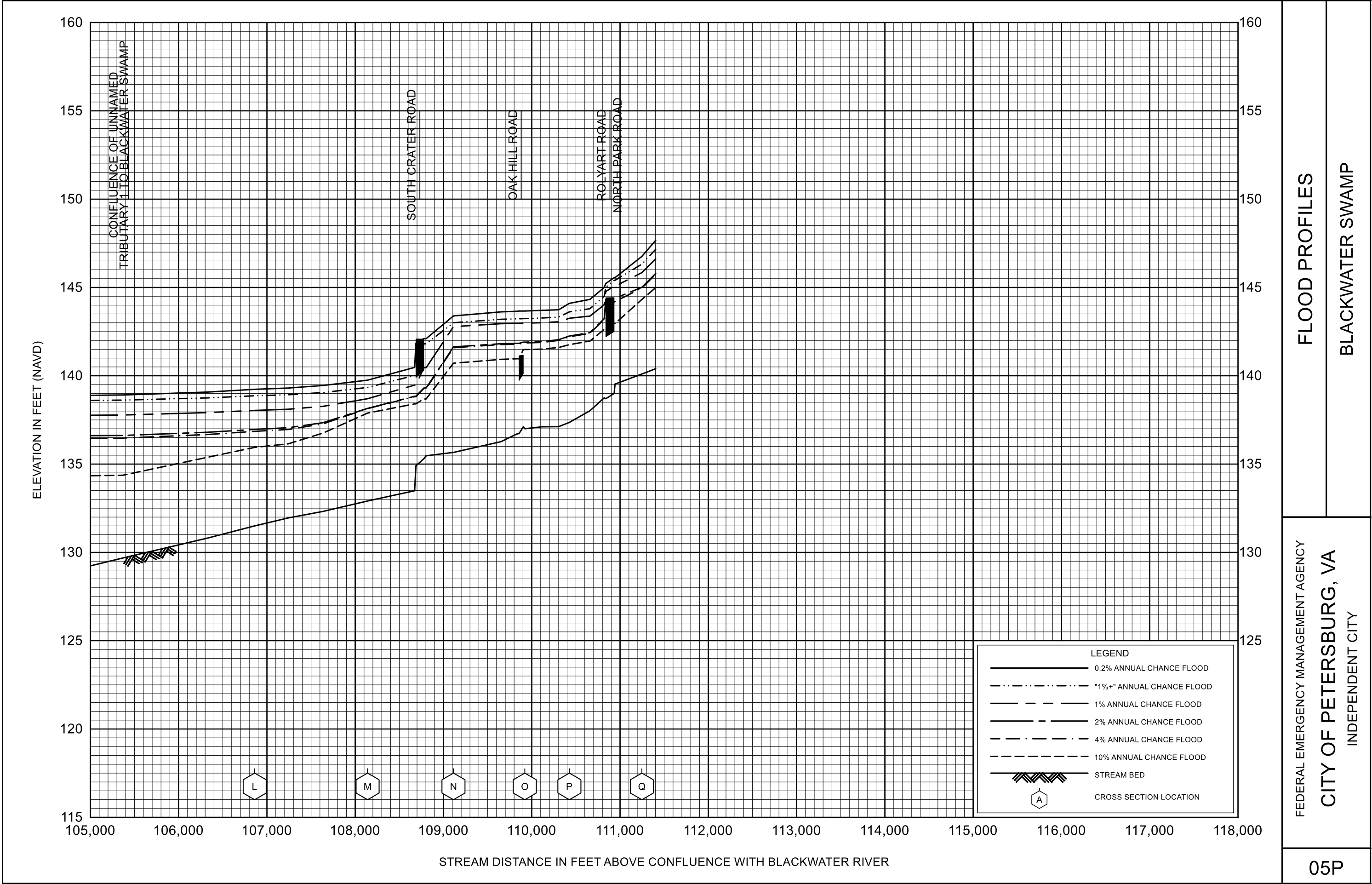
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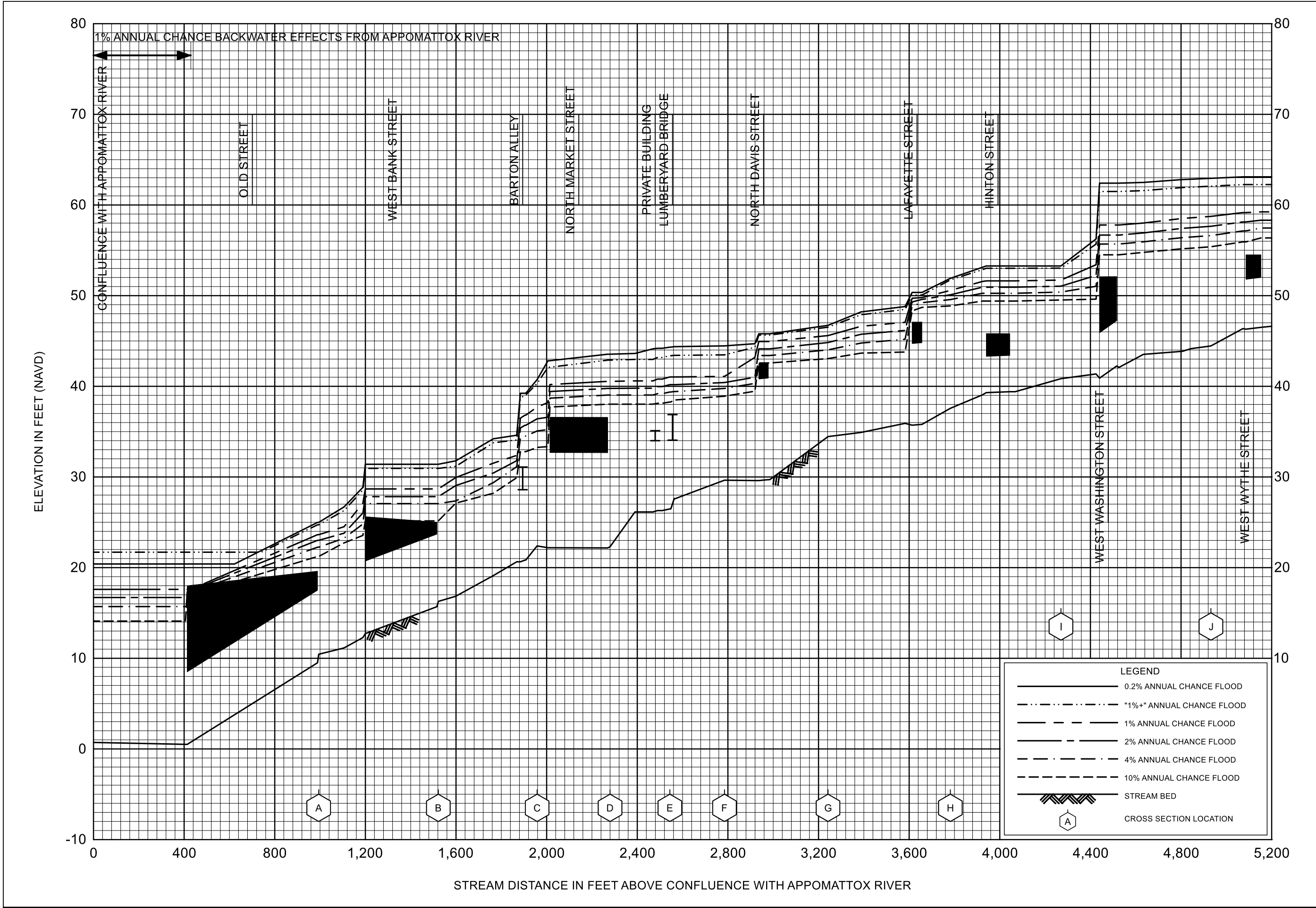
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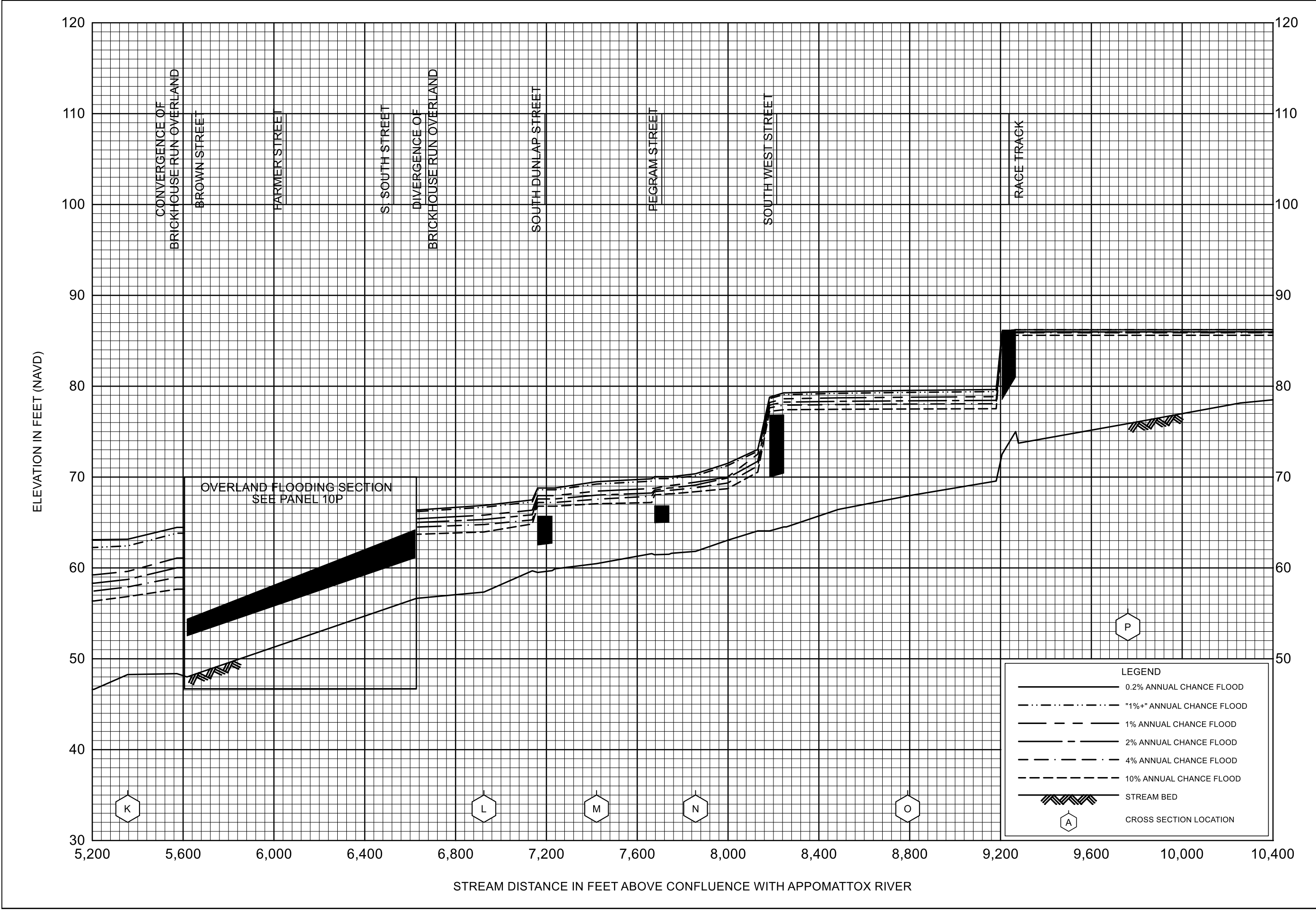
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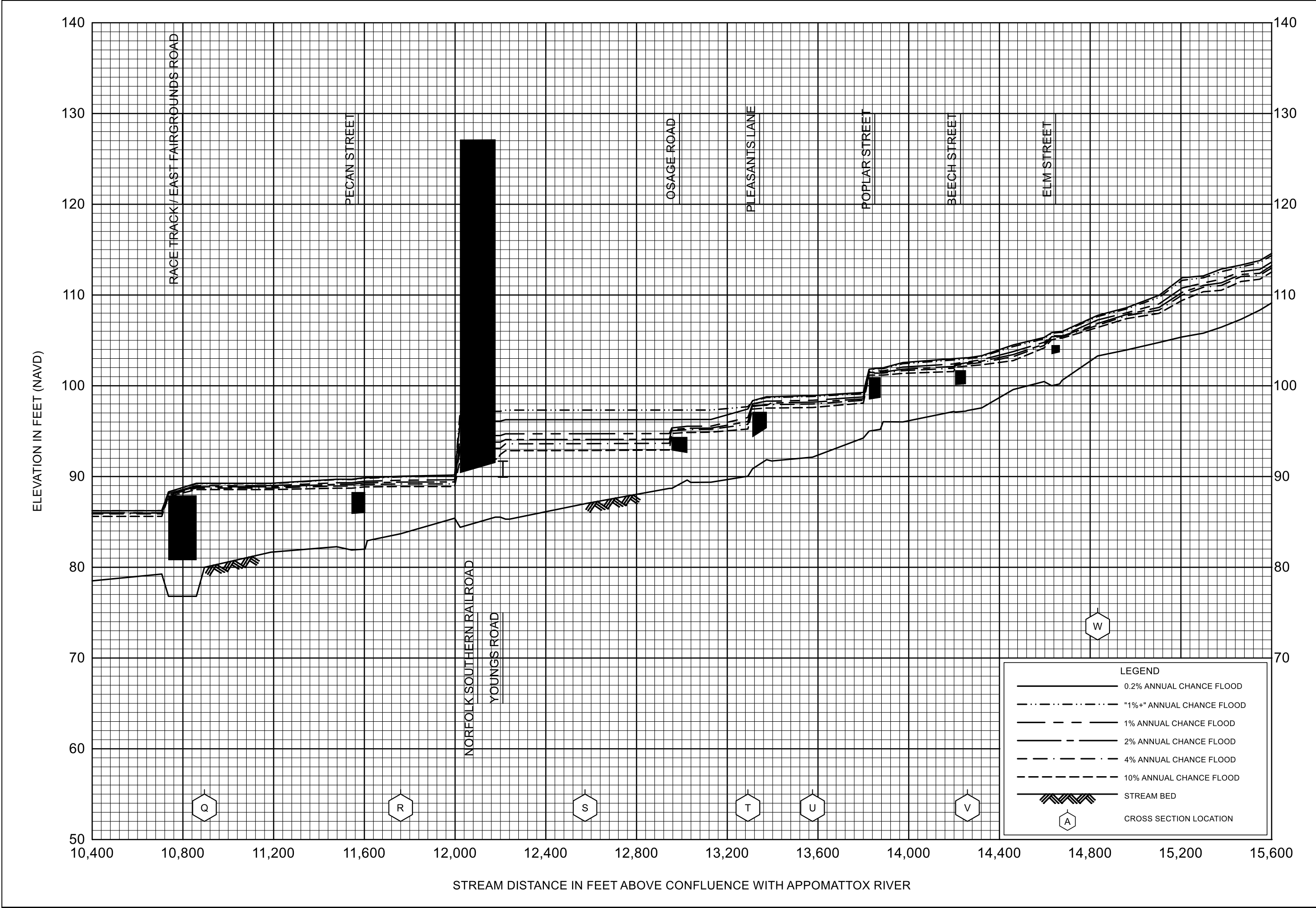
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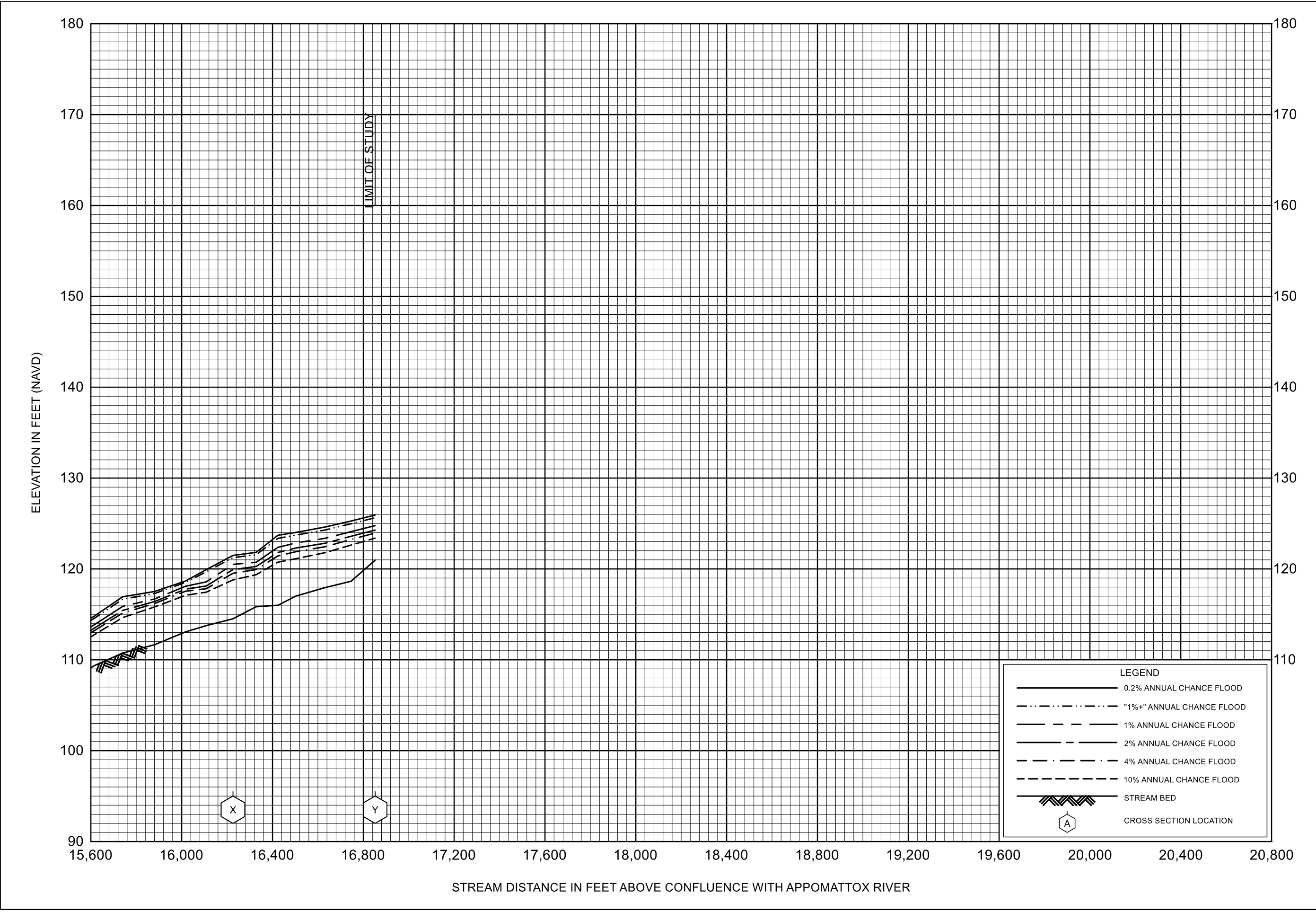
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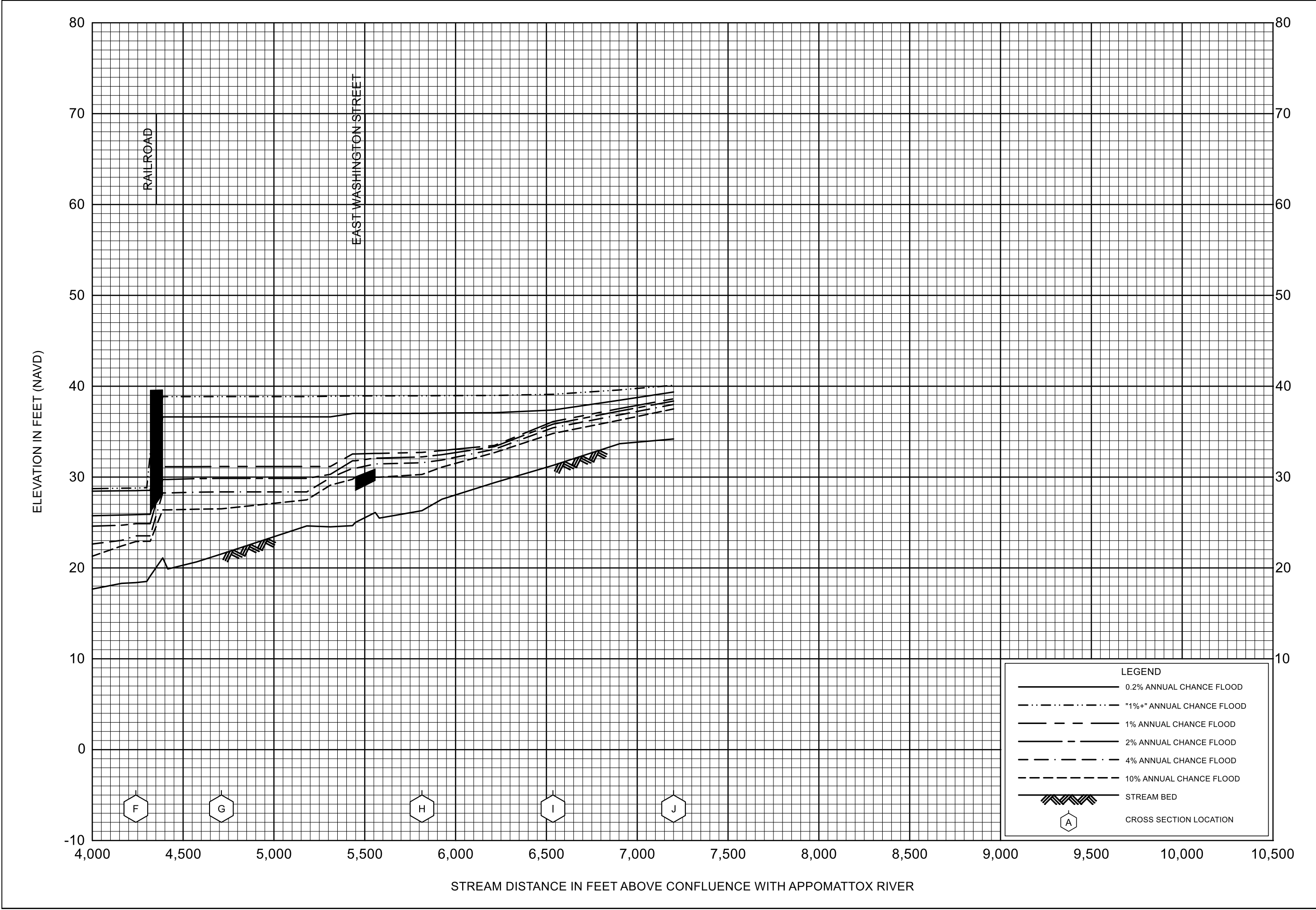
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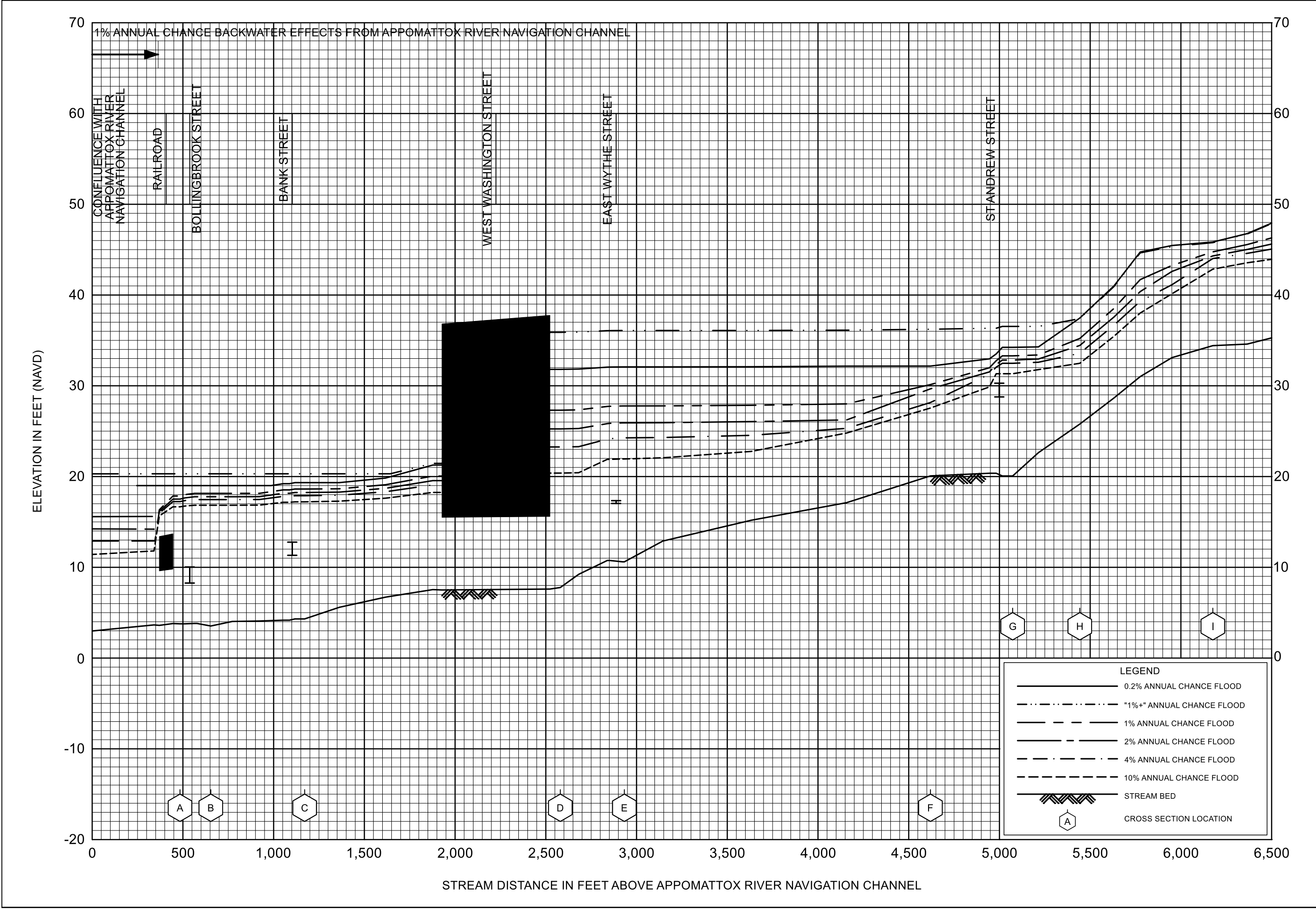


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HARRISON CREEK

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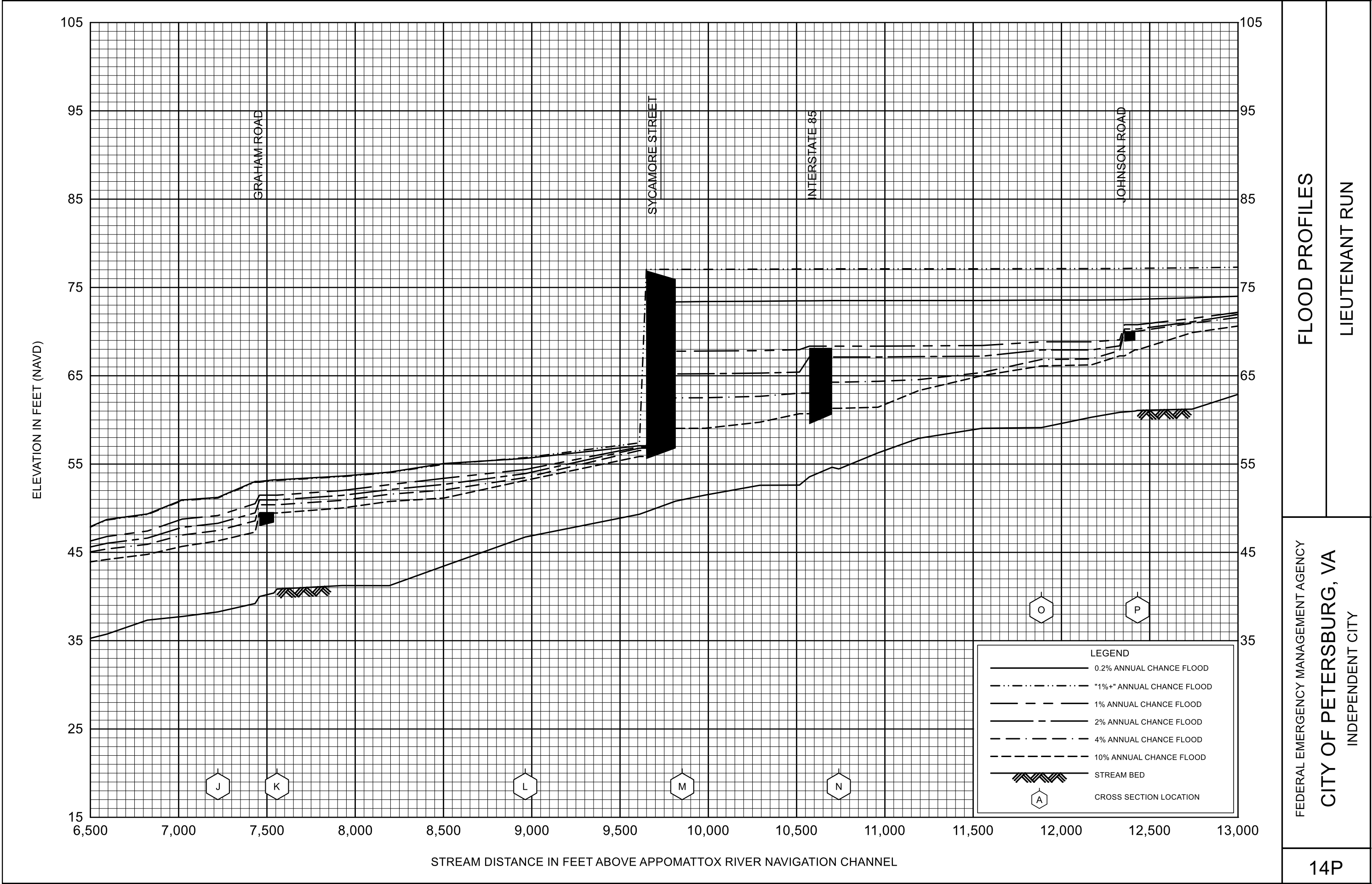
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LIEUTENANT RUN

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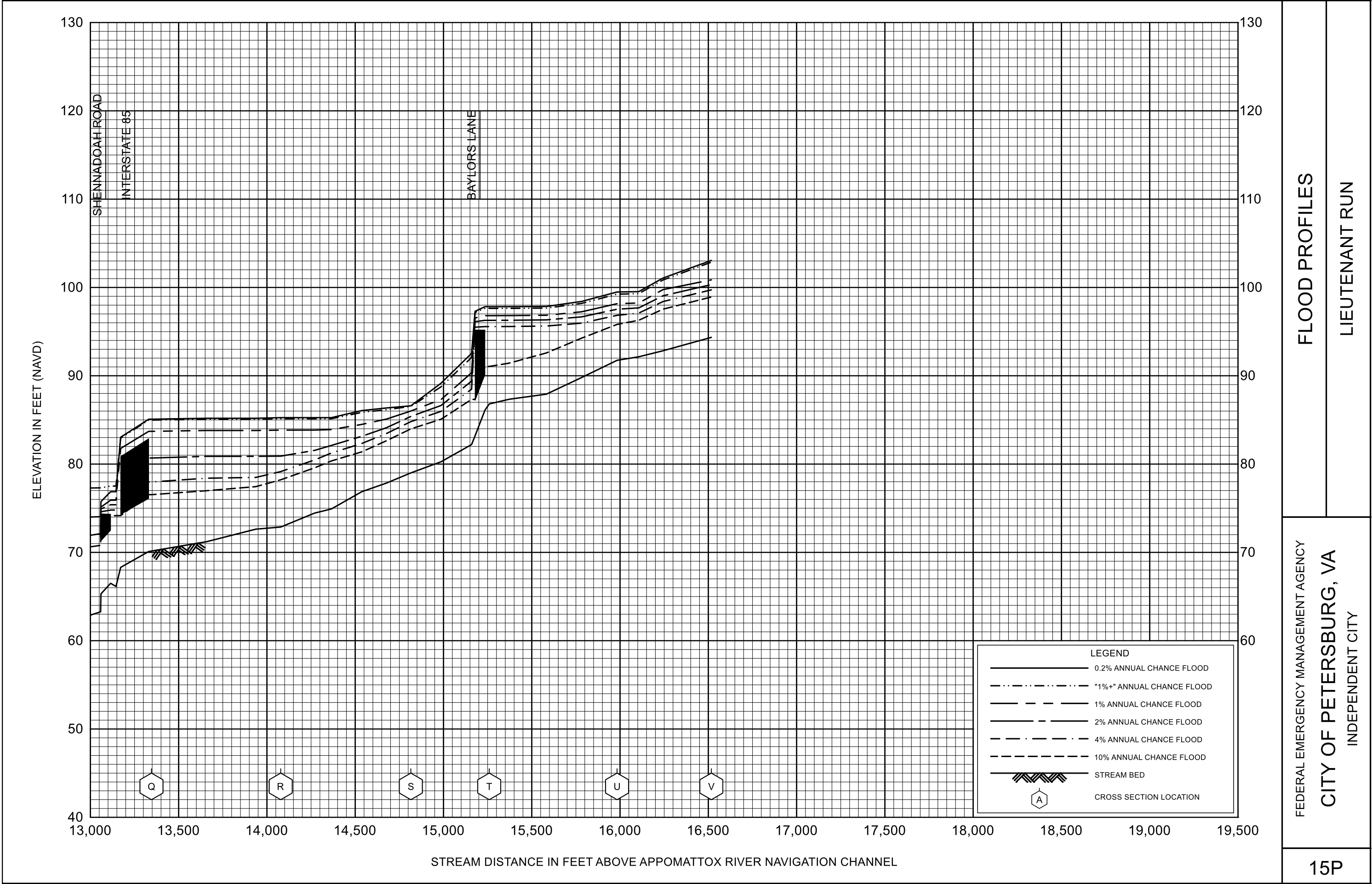
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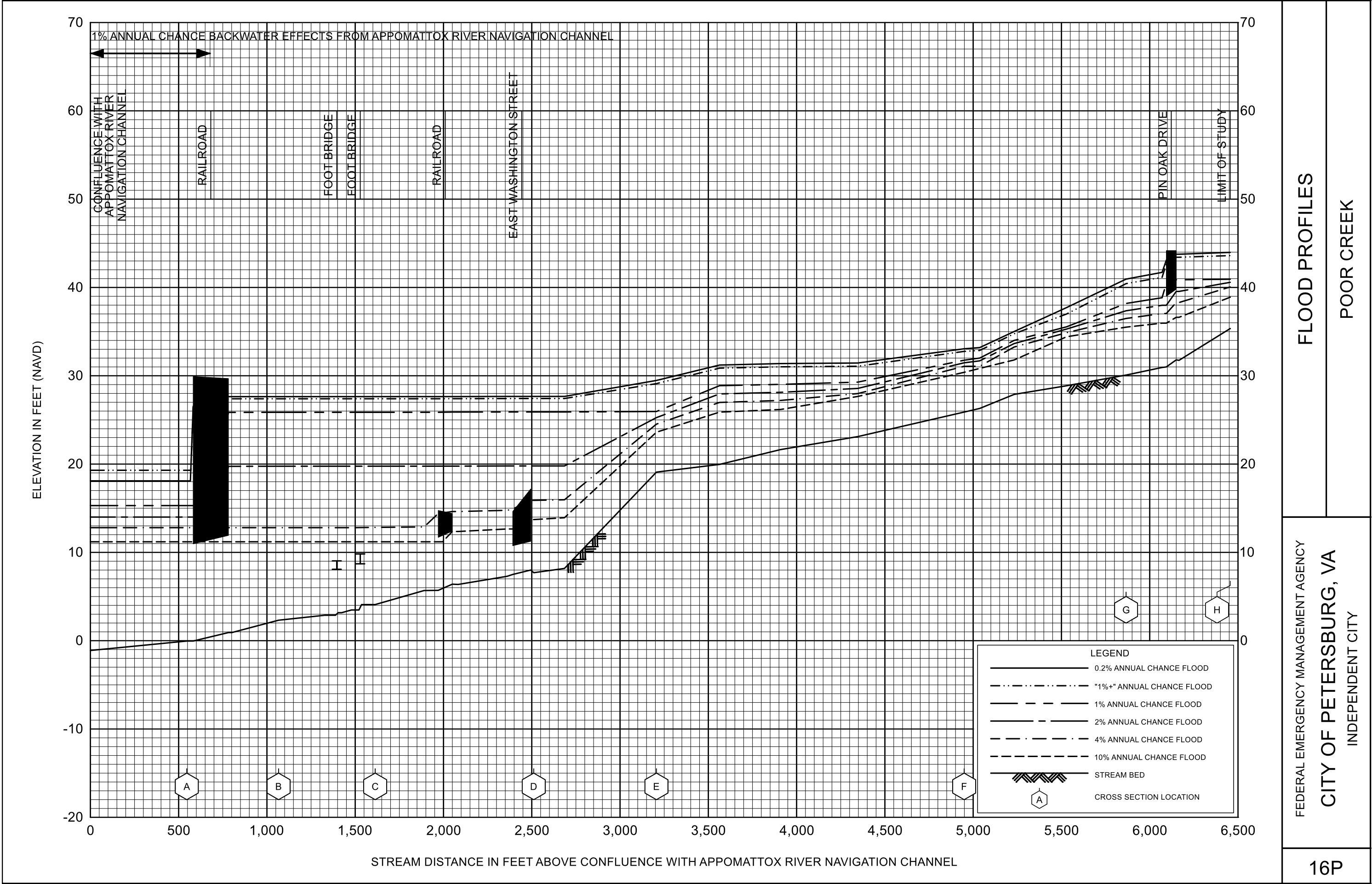
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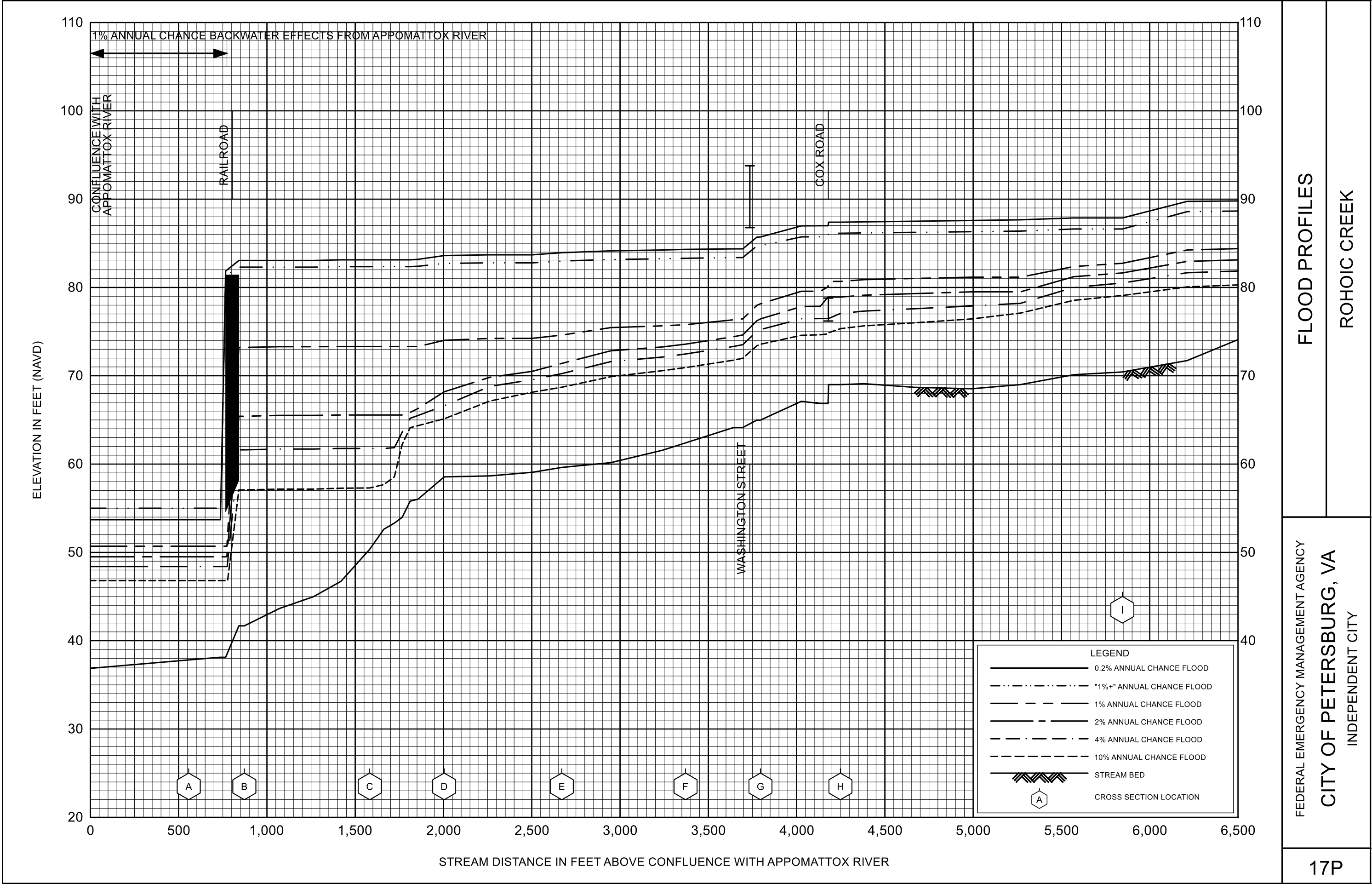
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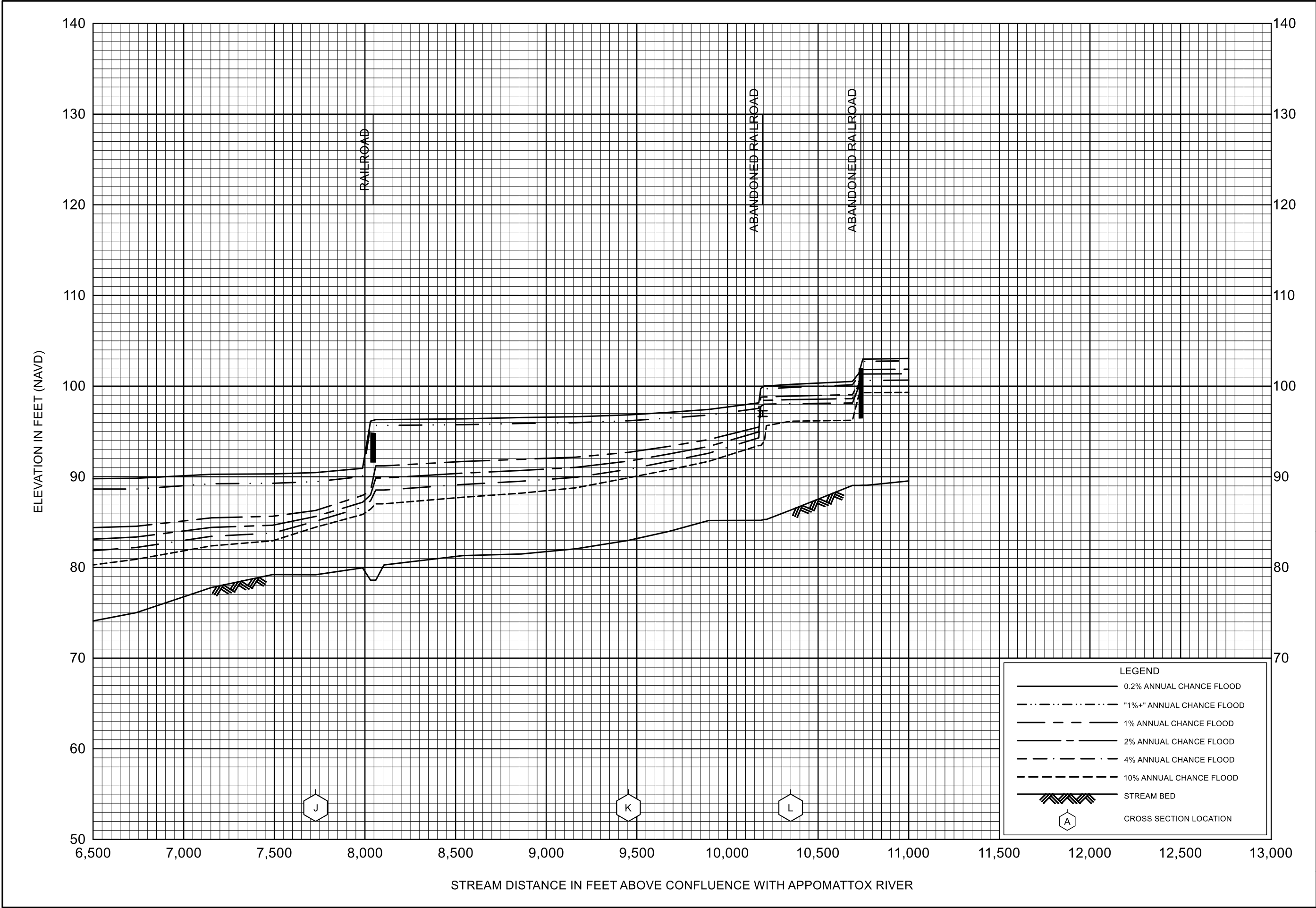


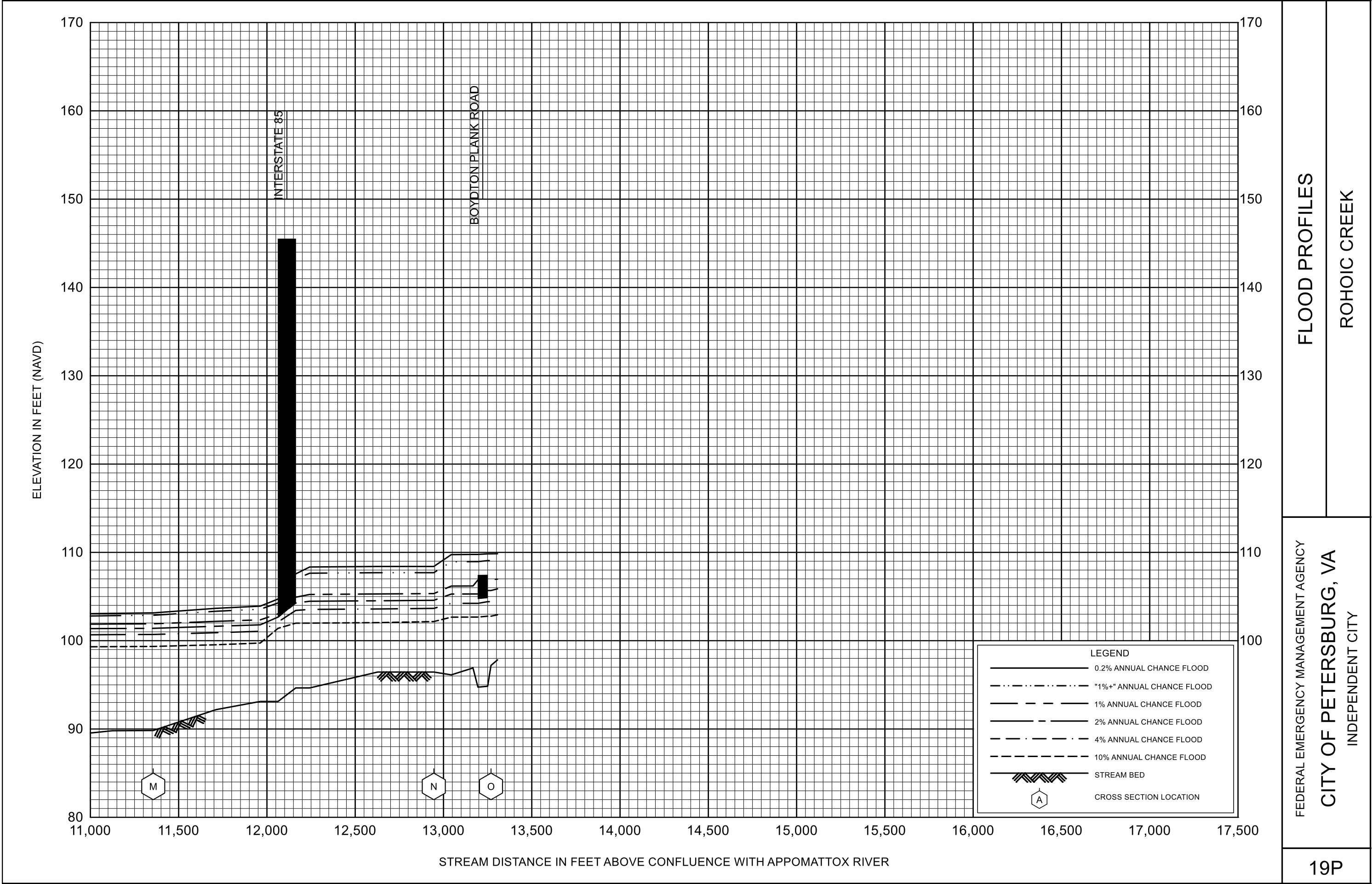
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ROHOIC CREEK

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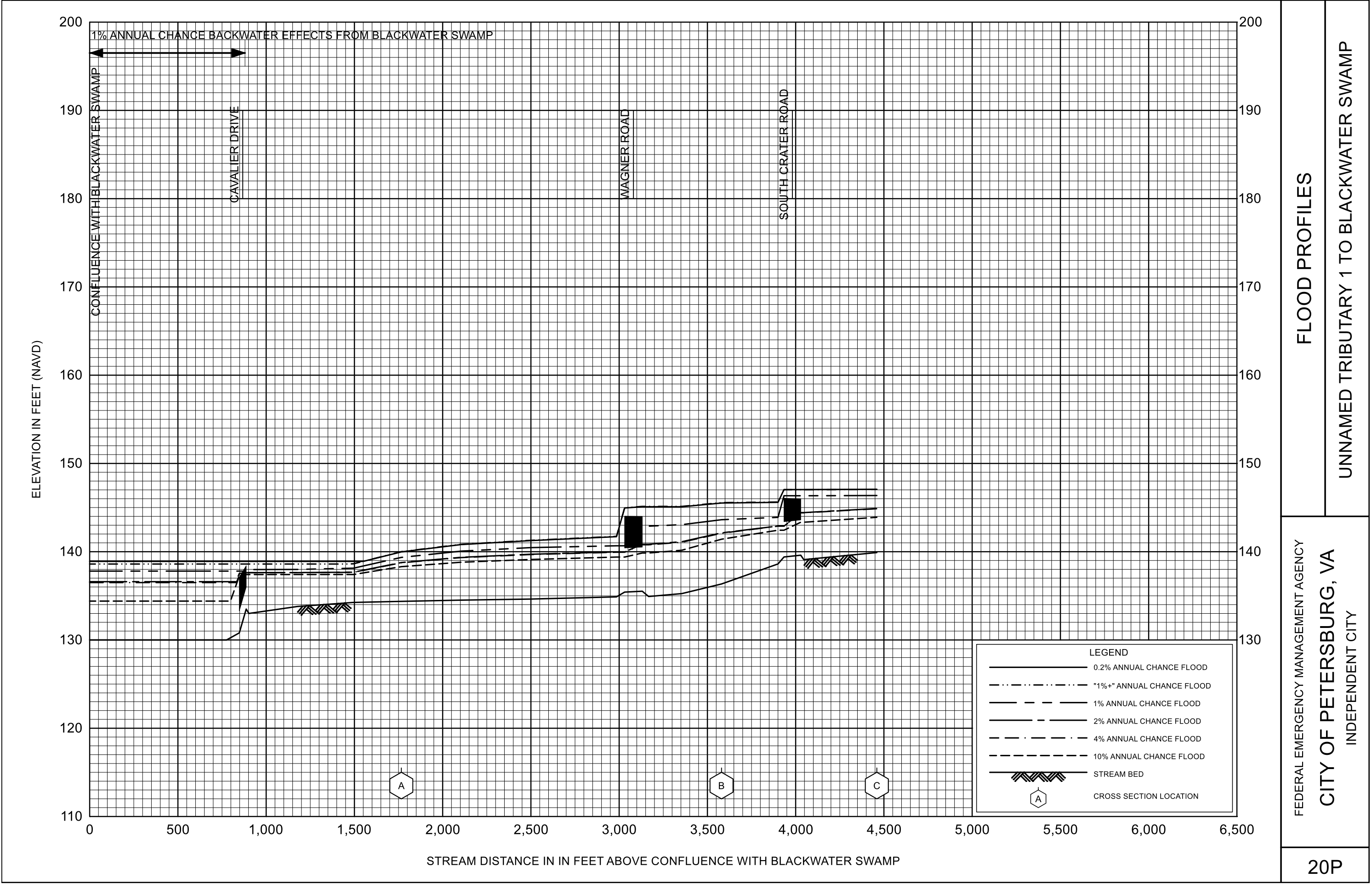
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UNNAMED TRIBUTARY 1 TO BLACKWATER SWAMP

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