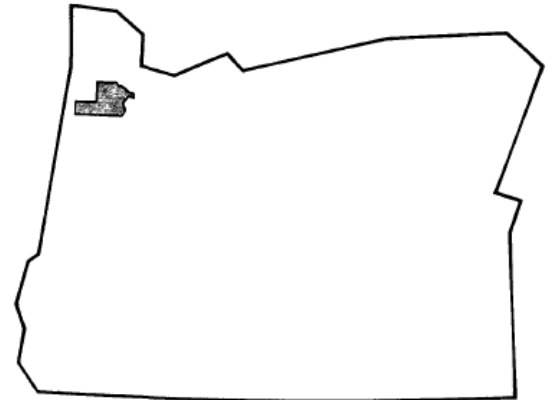


FLOOD INSURANCE STUDY



YAMHILL COUNTY, OREGON AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
AMITY, CITY OF	410250
CARLTON, CITY OF	410251
DAYTON, CITY OF	410252
DUNDEE, CITY OF	410253
LAFAYETTE, CITY OF	410254
MCMINNVILLE, CITY OF	410255
NEWBERG, CITY OF	410256
SHERIDAN, CITY OF	410257
WILLAMINA, CITY OF	410258
YAMHILL, CITY OF	410259
YAMHILL COUNTY	410249
UNINCORPORATED AREAS	



Effective Date: March 2, 2010



Federal Emergency Management Agency

Flood Insurance Study Number

41071CV000A

**NOTICE TO
FLOOD INSURANCE STUDY USERS**

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

Selected Flood Insurance Rate Map panels for the community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g. floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

<u>Old Zone</u>	<u>New Zone</u>
A1 through A30	AE
B	X (shaded)
C	X (unshaded)

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

This FIS report was revised on March 2, 2010. User should refer to Section 10.0, Revision Descriptions, for further information. Section 10.0 is intended to present the most up-to-date information for specific portions of this FIS report. Therefore, users of this FIS report should be aware that the information presented in Section 10.0 supersedes information in Sections 1.0 through 9.0 of this FIS report.

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PUBLISHED SEPARATELY

Flood Insurance Rate Map Index

Flood Insurance Rate Map

**FLOOD INSURANCE STUDY
YAMHILL COUNTY AND INCORPORATED AREAS**

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Yamhill County, including the Cities of Amity, Carlton, Dayton, Dundee, Lafayette, McMinnville, Newberg, Sheridan, Willamina, and Yamhill; and the unincorporated areas of Yamhill County (referred to collectively herein as Yamhill County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

1.2 Authority and Acknowledgments

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

The hydrologic and hydraulic analyses for Agency Creek, Ash Swale, Baker Creek, Chehalem Creek, Cozine Creek, North Fork Cozine Creek, Hess Creek, Palmer Creek, West Fork Palmer Creek, Panther Creek, Salt Creek, Willamette River, Willamina Creek, Yamhill Creek, Yamhill River, North Yamhill River, and South Yamhill River were performed by the U.S. Army Corps of Engineers (USACE), Portland District. These studies, completed at various times from February 1979 to January 1981, were performed for the Federal Emergency Management Agency (FEMA) under Contract No. IAA-H-10-77, Project Order No. 6.

The countywide update was performed by WEST Consultants, Inc. for FEMA under Contract No. EMS-20010-CO-0068 Task Order No. 30. Updated aerial photography from April 2006 was used in the analysis. The update was completed in February 2009.

1.3 Coordination

The dates of the initial, intermediate, and final Consultation Coordination Officer (CCO) meetings held for the previous FIS reports for Yamhill County and the incorporated communities within its boundaries are shown in Table 1, "Initial, Intermediate, and Final CCO Meetings". They were attended by representatives of FEMA, the communities, and the study contractor.

Table 1. Initial, Intermediate, and Final CCO Meetings

<u>Community</u>	<u>Initial CCO Date</u>	<u>Intermediate CCO Date</u>	<u>Final CCO Date</u>
Amity, City of	February 27, 1976	January 31, 1980	December 17, 1980
Carlton, City of	-- ¹	-- ¹	-- ¹
Dayton, City of	February 26, 1976	May 28, 1980	April 9, 1981
Dundee, City of	February 27, 1976	August 18, 1980	April 9, 1981
Lafayette, City of	February 26, 1976	December 10, 1980	July 21, 1981
McMinnville, City of	March 2, 1976	January 31, 1980	January 29, 1981
Newberg, City of	February 26, 1976	September 18, 1980	April 9, 1981
Sheridan, City of	February 27, 1976	December 20, 1978	June 7, 1979
Willamina, City of	February 26, 1976	July 24, 1980	April 8, 1981
Yamhill, City of	February 26, 1976	January 31, 1980	April 8, 1981
Yamhill County, unincorporated areas	February 25, 1976	December 10, 1980	October 28, 1982

¹ Information not available

Countywide Update

An initial CCO meeting for Yamhill County was held on November 21, 2006. This meeting was attended by representatives of the Cities of Amity, Dayton, Dundee, Lafayette, Sheridan, Willamina, Yamhill, Newberg, McMinnville, and Carlton, Grand Ronde Tribes, Yamhill County, and the State of Oregon. The results of the study were reviewed at the final CCO meeting held on May 28, 2009, and attended by representatives of County Staff, Local City staff, FEMA Region X, and Department of Land Conservation and Development. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

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

The flooding sources studied by detailed methods in Yamhill County were selected with priority given to all known flood hazards and areas of projected development or proposed construction through 1986.

Table 2 lists the flooding sources studied in detail and the included segments.

Table 2. Flooding Sources Studied by Detailed Methods

<u>Flooding Source</u>	<u>Limits of Detailed Study</u>
Agency Creek	From the Yamhill County line to the south line of Section 36 (River Mile 0.2 to 1.5)
Ash Swale	From its mouth to about 0.2 miles east of the eastern corporate limits of the City of Amity (River Mile 0.0 to 1.9)

Table 2. Flooding Sources Studied by Detailed Methods (continued)

<u>Flooding Source</u>	<u>Limits of Detailed Study</u>
North Fork Cozine Creek	From its mouth to a point 0.1 miles upstream of NW 11th Street (0.8 miles)
Hess Creek	From its mouth to a point 0.3 miles upstream of E Mountainview Drive (River Mile 0.0 to 5.2)
Palmer Creek	From its mouth to the confluence with West Fork Palmer Creek (1 mile)
West Fork Palmer Creek	From its mouth to Webfoot Road (0.5 miles)
Panther Creek	From its mouth to Baker Creek (0.4 miles)
Salt Creek	From near the north line of DLC 75 to near the north line of Section 32 (River Mile 7.2 to 10.4)
Willamette River	From the Clackamas County line to the Polk County line (River Mile 43.2 to 74.0)
Willamina Creek	From its mouth to a point 0.1 miles upstream of SW Tindle Creek Road (River Mile 0.0 to 3.7)
Yamhill Creek	From its mouth to a point 0.1 miles upstream of County Road bridge northeast of the City of Yamhill (River Mile 0.0 to 3.0)
Yamhill River	From its mouth to the confluence with North Yamhill River (River Mile 0.0 to 11.1)
North Yamhill River	From its mouth to the Meadow Lake Road bridge in the City of Carlton (River Mile 0.0 to 10.3)
South Yamhill River	From its mouth to the Polk County line, and from the Polk County line to State Highway 22 northwest of Midway (River Mile 0.0 to 44.0 and 56.0 to 61.0)

Approximate analyses were used to study flooding sources in areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by representatives from FEMA, USACE, Yamhill County, and the cities of Amity, Dayton, Lafayette, McMinnville, and Newberg.

Table 3 lists the flooding sources studied by approximate methods and the included segments.

Table 3. Flooding Sources Studied by Approximate Methods

<u>Flooding Source</u>	<u>Limits of Study</u>
Agency Creek	From the south line of Section 36 to a point north of Section 36
Ash Swale	From approximately 0.2 miles east of the Amity corporate limits to south line of Section 32
Unnamed Tributary to Ash Swale	From its mouth to Nursery Street in Amity
Unnamed Tributary to Ash Swale	From its mouth to a point east of SE Tallman Lane
Baker Creek	From the east line of DLC 86 to the east line of DLC 50
Bryan Creek	From its mouth to Walker Reservoir
Chehalem Creek	From County Road 99 to the north line of Section 30
Unnamed Tributary to Chehalem Creek	From its mouth to a point north of Section line 28-33
Coast Creek	From its mouth to a point on Section line 10-11
Cove Orchard Creek	From its mouth to Cove Orchard
Haskins Creek	From its mouth to a point south of NW Kutch Road; and Haskins Creek Reservoir
Hawn Creek	From its mouth to County Road 203
Henry Creek	From its mouth to the south line of Section 6
Hess Creek	From a point east of the Section line 35-36 to a point south of NE Niederberger Road southwest of the City of Dundee
Martin Creek	From its mouth to E 3rd Street in Lafayette
Millican Creek	From the Lafayette corporate limits to a point 1 mile north
Nestucca River	From the county boundary to near the intersection of Dry Estates Road and Nestucca River Road, and the McGuire Reservoir
Palmer Creek	From approximately 0.6 miles north of Bellevue-Hopewell Highway to Oak Road southwest of Hopewell
Panther Creek	From Baker Creek to Market Road
Rowland Creek	From its mouth to a point 0.2 miles north of Pike Road
Salt Creek	From its mouth to a point near the north line of DLC 75, and from a point south of the Section line 29-32 to the county boundary
Spring Brook	From its mouth to Pacific Highway (99W)

Table 3. Flooding Sources Studied by Approximate Methods (continued)

<u>Flooding Source</u>	<u>Limits of Study</u>
Unnamed Tributary to Spring Brook	From its mouth to Highway 99W
Unnamed Tributary to Spring Brook	From a point 0.2 miles north of E Fernwood Road to Highway 99W in the City of Newberg
Stag Hollow Creek	From its mouth to Shawmill Road
Three Rivers	From the county boundary to a point 0.5 miles east
Willamina Creek	From Fendall School to East Fork Willamina Creek
East Fork Willamina Creek	From its mouth to the west line of Section 6
Yamhill Creek	From a bridge northeast of the City of Yamhill to Cove Orchard Creek
Unnamed Tributary to Yamhill River	From Third Street in the City of Dayton to State Highway 18
North Yamhill River	From the Main Street bridge in Carlton to Rowland Creek
Unnamed Tributary to South Yamhill River	From its mouth to the north line of Section 35

2.2 Community Description

Yamhill County is located in northwest Oregon. It is bordered on the north by Tillamook and Washington Counties, to the south by Tillamook and Polk Counties, to the west by Tillamook County, and to the east by Clackamas and Marion Counties. The population of Yamhill County increased from 32,500 in 1960 to 50,100 in 1978. Most of the increase occurred within the urban incorporated areas of the county. In 2007, the population was estimated to be 96,573 (Reference 1).

Most of the streams considered in this study are part of the Willamette River drainage basin. The Willamette River forms at the confluence of its Coast and Middle Forks approximately 5 miles upstream of Eugene, Oregon. The Coast Fork originates in the Calapooya Mountains, and the Middle Fork has its origins in the Cascade Range. At Eugene, the Willamette River emerges from the foothills and flows northerly through the Willamette Valley. Upstream of the City of Dundee, the Willamette River drains approximately 8,230 square miles of predominately mountainous country (Reference 2). It forms approximately 30 miles of the eastern boundary of Yamhill County.

The Yamhill River drainage basin includes nearly all of Yamhill County as well as northern Polk County. The total area drained is 769 square miles. North and South Yamhill Rivers originate on the eastern slopes of the Coast Range, in rugged, timbered terrain. Both rivers enter rolling valley lands noted for high agricultural productivity, and then converge near McMinnville to become The Yamhill River. The Yamhill River flows easterly for approximately 11.2 miles and empties into the Willamette River.

The climate in Yamhill County is characterized by cool, wet winters and warm, dry summers. Maritime influences generally dominate the area throughout the year. The period of high precipitation within Yamhill County usually occurs from November through February. Average annual precipitation varies greatly throughout Yamhill County, from approximately 40 inches per year near McMinnville to more than 100 inches per year near the headwaters of the Yamhill River in the Coast Range. Maximum annual precipitation of over 200 inches per year occurs in a small area within southwestern Yamhill County, primarily over the Rock Creek drainage basin. Temperatures at lower elevations are moderate, with seasonal averages ranging from 43°F in the winter to 65°F during the summer months (Reference 2).

Agriculture and manufacturing are the primary industries within Yamhill County. Agriculture is divided between horticulture, crops, livestock, and poultry production. Numerous manufacturing plants contribute to the economy of the county. Among the larger contributors are a paper company, a steel rolling mill, and a wood products corporation, as well as numerous mobile home supply manufacturing firms, plywood and lumber mills, and other smaller industrial plants (Reference 3).

City of Amity

The City of Amity, incorporated in 1880, is located in southern Yamhill County. It is approximately 43 miles southwest of the Portland, Oregon, and 18 miles northwest of Salem, Oregon. Amity is bordered completely by unincorporated Yamhill County land. The population of Amity increased 45 percent from 708 in 1970 to 1,030 in 1979 (References 3 and 4). As of 2007, the population was estimated to be 1,481 (Reference 1).

Economic activity in Amity centers around agriculture and its supporting services. The area has a variety of crops including vegetables, bulbs, orchard fruit, seed crops, hay, and grass seeds (Reference 5). Most of the undeveloped area of Amity is farmland. The floodplains of Salt Creek and Ash Swale are predominately farmland. The largest industry is a prefabricated housing plant. Commercial development is primarily in the central section of Amity, out of the floodplain. Residential development is spread throughout the city. A small residential area just upstream of the mouth of Ash Swale and a mobile home development along Unnamed Tributary to Salt Creek are in the floodplain. The terrain in Amity is gently sloping and fairly well drained (Reference 5).

Salt Creek drains approximately 96 square miles as it flows northeasterly from its source in the foothills of the Coast Range to its confluence with South Yamhill River. It forms a portion of the western corporate limits of Amity. Ash Swale is a tributary to Salk Creek with a drainage area of 43 square miles. Ash Swale flows northwesterly and forms the southern corporate limits of Amity. Unnamed Tributary to Salt Creek flows northwesterly through northern Amity, draining 0.5 square mile before joining Salt Creek at River Mile 8.1. Unnamed Tributary to Ash Swale flows southwesterly joining Ash Swale at River Mile 1.0.

Soils in the area are generally moderately well-drained to well-drained silt loams of the Amity and Woodburn Series (Reference 5). Uncultivated vegetation consists mainly of scattered oak and Douglas fir.

City of Carlton

The City of Carlton, incorporated in 1899, lies in the north-central portion of Yamhill County and is surrounded by the unincorporated areas of the county. It is approximately

36 miles southwest of Portland and 7 miles north of McMinnville. The population of Carlton increased from approximately 1,289 in 1990 to 1,514 in 2007 (Reference 1).

The North Yamhill River is the principal stream flowing southerly along the western corporate limits of the city.

City of Dayton

The City of Dayton lies in eastern Yamhill County. It is approximately 29 miles southwest of Portland, and 6 miles east of McMinnville. Dayton was incorporated in 1880, and its population increased from 1,445 in 1978 to 2,297 in 2007 (References 3 and 1).

From the confluence of the North and South Yamhill Rivers, The Yamhill River flows easterly along the northeastern corporate limits of Dayton. It empties into the Willamette River 5 miles downstream of Dayton after draining an area of 769 square miles.

Palmer Creek flows northerly from its headwaters in the Eola Hills. It flows through the eastern portion of Dayton, draining an area of 31 square miles before joining The Yamhill River on the northeastern edge of the city.

The unnamed creek in the northwestern portion of Dayton drains a small area to the north and west of Dayton and, during 1-percent-annual-chance flood stages on The Yamhill River, actually becomes an overflow side channel.

Soils in Dayton are moderately well-drained silt loams on nearly level to moderate slopes. The area around Dayton supports a variety of crops, including vegetables, bulbs, orchard trees, grain, seed crops, hay and pasture plants, and berries (Reference 5).

Economic activities include agriculture, gravel mining, cement manufacturing, asphalt production, and retail and support services. Most commercial development is along Ferry Street, with some along 3rd Street.

Commercial and residential development in Dayton is generally on high ground above the floodplain. The only development within the 1-percent-annual-chance floodplain of Yamhill River in Dayton is a gravel mining operation near the unpaved extensions of 2nd and Ash Streets. There is no development in the 1-percent-annual-chance floodplain of Palmer Creek.

City of Dundee

Dundee is located in eastern Yamhill County. It is approximately 24 miles southwest of Portland, Oregon, and 11 miles northeast of McMinnville. The city is surrounded by unincorporated Yamhill County land. Dundee was incorporated in 1895, and its population more than doubled from 588 in 1970 to 1,210 in 1978 (Reference 3). In 2007, the population was estimated to be 3,082 (Reference 1).

The Willamette River is the principal stream within the city. Upstream of Dundee, the Willamette River drains approximately 8,240 square miles of mostly mountainous country. It forms a portion of the southeastern corporate limits of the city.

Soils in and around the City of Dundee are moderately well-drained silt loams on nearly level to moderate slopes. The area around Dundee supports a variety of crops including orchard trees, grain, seed crops, hay and pasture plants, and berries (Reference 5).

Economic activities include agriculture, nut processing, home building, and retail and support services. Most commercial development is along State Highway 99W; residential development is scattered throughout the city with the majority being near State Highway 99W. Commercial and residential development in Dundee is generally on high ground above the floodplain.

City of Lafayette

Lafayette is located in eastern Yamhill County. It is approximately 28 miles southwest of Portland, Oregon, and 5 miles east of McMinnville. Lafayette was incorporated in 1878, and its population increased from 553 in 1970 to 1,050 in 1978 (Reference 3). As of 2007, the population was approximately 3,499 (Reference 1).

From the confluence of the North and South Yamhill Rivers, The Yamhill River flows southeasterly along the southern corporate limits of Lafayette. It empties into the Willamette River 8 miles downstream from Lafayette after draining 769 square miles. Three Yamhill River tributaries, Millican Creek, Martin Creek, and Henry Creek, flow southerly through Lafayette from their headwaters in the Red Hills of Dundee. Millican Creek flows along the western border of Lafayette. It has a drainage area of 5.4 square miles. Martin Creek flows through central Lafayette and Lafayette Highway Bridge. Henry Creek flows along the southeastern corporate limits of Lafayette and has a drainage area of 1.6 square miles.

Soils in and around the City of Lafayette are moderately well-drained silt loams on nearly level to moderate slopes. The area around Lafayette supports a variety of crops including vegetables, bulbs, orchard trees, grain, seed crops, hay and pasture plants, and berries (Reference 5).

Economic activities include agriculture, and retail and support services. Most commercial development is within two blocks north or south of State Highway 99W. Commercial and residential development in Lafayette is generally on high ground above the floodplain.

City of McMinnville

McMinnville, the Yamhill County seat, is located in the south-central portion of the county. It is completely surrounded by unincorporated Yamhill County and lies approximately 38 miles southwest of the City of Portland. McMinnville was incorporated in 1876, and its population nearly doubled from 7,656 in 1960 to 14,350 in 1978 (Reference 3). The population has increased substantially since, with an estimated population of 30,899 in 2007 (Reference 1).

South Yamhill River flows easterly and joins North Yamhill River, approximately 2 miles northeast of McMinnville, to form the Yamhill River. The Yamhill River flows southerly through the city. Cozine Creek originates in the foothills of the Coast Range approximately 5 miles west of McMinnville. It flows easterly to its confluence with South Yamhill River and drains 11.3 square miles. Cozine Creek and its North and West Forks flow in narrow, well-defined valleys through McMinnville. North Fork Cozine Creek flows southeasterly from its origin northwest of McMinnville, draining nearly 2 square miles before its confluence with Cozine Creek. West Cozine Creek flows northeasterly and drains 0.6 square mile before its confluence with Cozine Creek. North Yamhill River flows easterly through the northeastern corner of McMinnville to its confluence with South Yamhill River.

Economic activity in McMinnville centers around agriculture and lumbering, and their supporting industries. Commercial development is primarily in the central section of McMinnville. Residential development is spread throughout the city. Soils in McMinnville are generally moderately well drained to well drained silt loam soils of the Amity and Woodburn series (Reference 5). Cultivated vegetation in the area includes small grains, grasses, hay, and pasture plants, and uncultivated vegetation consists of scattered oak and Douglas fir.

City of Newberg

Newberg, the second largest community in Yamhill County, lies in the eastern portion of the county. It is approximately 13 miles northeast of McMinnville and approximately 20 miles southwest of Portland. It is surrounded by unincorporated Yamhill County land. Newberg was incorporated in 1889, and its population increased 54 percent from 6,507 in 1970 to 10,000 in 1978 (Reference 3). In 2007, the population was 22,193 (Reference 1).

The Willamette River flows just south of the Newberg corporate limits. Although it does not directly overflow into the city, it causes several smaller tributaries to back up into the corporate limits.

Chehalem Creek flows generally southeasterly from its headwaters in hills approximately 9 miles northwest of Newberg. It flows along the southwestern corporate limits of the city to its confluence with Willamette River at River Mile 50.6. Elevations in the basin range from approximately 100 feet near Newberg to above 1,450 feet on the northeastern boundary in the Chehalem Mountains (Reference 6). Its drainage area is approximately 41 square miles.

Hess Creek originates in the southeastern part of Chehalem Mountains approximately 2.5 miles north of the city center. It flows southerly, through the middle of the city draining approximately 4.4 square miles before joining Spring Brook south of the city. Spring Brook, in turn, flows another 1.4 miles and joins the Willamette River at River Mile 47.4.

Soils in and around Newberg are mostly Aloha and Woodburn series silt loams. In areas that are not cultivated or urbanized, the vegetation is mainly grass, Oregon white oak, and Douglas fir. Aloha soils are used for vegetable and berry crops, orchards, small grain, hay, and pasture. The Aloha series consists of somewhat poorly drained, nearly level soils that formed in old alluvium of the Willamette Valley terraces. Elevations range from 150 feet to 200 feet. The Woodburn series is the dominant soil in the northwestern corner of the city. It consists of moderately well-drained silt loams that are on nearly level to moderate slopes, with elevations ranging from 150 feet to 250 feet (Reference 5).

Economic activities include agriculture, paper manufacturing, light industry, higher education, and retail and support services. Most commercial development is along Hancock Street, 1st Street, and 2nd Street. Commercial and residential development in Newberg is generally on high ground above the floodplain.

City of Sheridan

The City of Sheridan is located in south-central Yamhill County. It is approximately 45 miles southwest of the City of Portland, and 12 miles southwest of McMinnville. Sheridan is surrounded by the unincorporated areas of Yamhill County. Sheridan was incorporated in 1880, and its population of Sheridan increased from 1,881 in 1970, to 2,260 in 1977 (References 3 and 7). In 2007, the population was estimated to be 5,735 (Reference 1).

South Yamhill River flows eastward through Sheridan and joins North Yamhill River northeast of the City of McMinnville to form the Yamhill River. Upstream of Sheridan, South Yamhill River has a drainage area of approximately 250 square miles.

The terrain in Sheridan is flat, with most of the city situated within the 1-percent-annual-chance floodplain. The majority of commercial development is located near South Yamhill River, along Bridge Street and Willamina-Sheridan Highway.

The soils in Sheridan are poorly drained silty clay loams and clays. The floodplain is extensively developed, with grass and shrubs accounting for most of the vegetation.

City of Willamina

Willamina is located on the southern boundary of Yamhill County. The southern part of the city extends into Polk County. The city is located approximately 50 miles southwest of Portland and approximately 23 miles southwest of McMinnville. The area was settled in the 1850s, and the Willamina Post Office was established in May 1855. Willamina was incorporated in 1903, and its population increased from 1,193 in 1970 to 1,445 in 1978 (Reference 3). As of 2007, the population was 1,921 (Reference 1).

The South Yamhill River originates on the eastern slopes of the Coast Range, approximately 13 miles west of Willamina, in rugged, timbered terrain. From its headwaters at the confluence of Hanchet and Kitten Creeks, the river flows easterly approximately 21 miles, draining 141 square miles before being joined by Willamina Creek. Willamina Creek flows southerly from its headwaters approximately 14 miles north of Willamina. It drains approximately 84 square miles above its confluence with South Yamhill River at River Mile 43.7.

Soils are primarily silty clay loams ranging from McBee loams along the bottomlands to Willakensie loams, generally found above an elevation of 250 feet. The McBee loams are moderately well drained on moderately sloping to steep slopes. The Willamina area supports a few crops, including vegetables, grain, and hay and pasture plants (Reference 5).

Economic activities include agriculture, lumber and plywood mills, and retail and support services. Most commercial development is along Main Street, with lumber and plywood mills on the western and eastern sides of the city. Commercial and residential development in Willamina is generally on high ground above the floodplain.

City of Yamhill

Yamhill, the smallest incorporated community in Yamhill County, lies in the north-central part of the county approximately 9 miles north of McMinnville. The city is located between Yamhill and Rowland Creeks near their confluences with the North Yamhill River, and is surrounded by unincorporated areas of Yamhill County.

The community was platted in 1889 and incorporated in 1891 as the Town of North Yamhill. In April 1908, the town council changed the name of the town to the City of Yamhill. The population has fluctuated over the past 70 years. It was 418 in 1940, reached 539 in 1950, dropped back to 407 in 1960, and had increased to an estimated 640 in 1978 (Reference 3). In 2007, the population was estimated to be 859 (Reference 1).

Yamhill Creek flows just outside the Yamhill eastern corporate limits and through the southern part of the city. It drains 16.6 square miles before joining the North Yamhill

River 1.2 miles south of the city center. The Yamhill Creek basin is approximately 5.5 miles long and 4 miles wide, ranging in elevation from approximately 130 feet at the confluence with North Yamhill River to over 900 feet in the hills north of Yamhill.

Soils in and around the City of Yamhill are moderately well-drained silt loams on nearly level to moderately steep slopes. The area supports a variety of crops including vegetables, bulbs, orchard trees, grain, seed crops, hay and pasture plants, and berries (Reference 5).

Economic activities include agriculture, lumbering, and support services. Most commercial development is along Maple Street; however, there is some development along Main Street.

2.3 Principal Flood Problems

Flooding in Yamhill County is caused by intense rainfall from large winter storms moving inland from the Pacific Ocean. This often results in simultaneous flooding on multiple streams such as that which occurred in December 1964. Damaging floods may occur any time between late October and the end of April. Major floods usually occur in December, January, and February.

Five large floods with discharges greater than 200,000 cubic feet per second (cfs) were recorded during 25 years of record (1948 to 1973) at the Willamette River upstream gage at Wilsonville, Oregon, approximately 6 miles downstream of the Yamhill County boundary. The largest of these floods occurred in December 1964 with a discharge of 335,000 cfs and a recurrence interval of 120 years. Two other floods of comparable magnitude to the 1964 flood occurred in 1861 and 1850. Although no stream gage data are available for these floods, it is believed they each had an approximate recurrence interval of 100 years.

The largest recorded flood on Yamhill, North and South Yamhill Rivers, and Willamina Creek occurred in December 1964. The peak discharge at the U.S. Geological Survey (USGS) gage on South Yamhill River near Whiteson was 47,000 cfs, with an approximate recurrence interval of 60 years. There are no discharge records available for Yamhill Creek, therefore, the magnitude of the December 1964 flood is unknown. Other major Yamhill River basin floods occurred in January 1972 and, most recently in January 1974. These floods had peak discharges of 37,600 cfs and 37,000 cfs at Whiteson with approximate recurrence intervals of 17 and 15 years, respectively.

There are no stream-gage records available for Chehalem Creek or Hess Creek; however, based on records on North Yamhill River at Pike, the nearest gaged small stream, the December 1964 flood is estimated to have had approximately a 50-year return period on Chehalem and Hess Creeks. Figure 2 shows the estimated flood elevations of 1- and 0.2-percent-annual-chance floods on Hess Creek.

Chehalem Creek rises rapidly after rainfall, and, in extreme instances, the creek may rise 1 foot per hour. Major floods generally rise from low water to crest in 24 hours or less (Reference 6).

Records of past floods on the remaining study reaches in Yamhill County are not well documented. Flood damage has been minor in unincorporated areas due to the sparse development of their floodplains.

2.4 Flood Protection Measures

Although there have been several studies of potential flood control projects in Yamhill County, none have been authorized for construction.

Flood hazard areas are considered in the comprehensive land use plan of Yamhill County. A Flood Hazard District Ordinance, passed by the Yamhill County Commissioners on July 9, 1975, provides for county implementation such as that provided in this report. This ordinance requires the county to review all proposed development within the 1-percent-annual-chance floodplain to insure that it is reasonably safe from flooding (Reference 2).

The USACE operates 13 multi-purpose reservoir projects upstream from the study area on major tributaries to the Willamette River. These reservoirs have a combined capacity of 1,700,000 acre-feet and reduce the 1-percent-annual-chance flood by 200,000 cfs at the Salem gage and 210,000 cfs at the Wilsonville gage. They regulate runoff from approximately 40 percent of the drainage area upstream of Dundee and Newberg. Several bank protection projects have also been constructed along the Willamette River to control erosion and river course within the county.

The incorporated areas of Yamhill County have each established nonstructural measures aimed at reducing future flood loss within their communities. All communities require permits for all proposed construction and review permit applications to assure that sites are reasonably free from flooding. The cities of Amity, Lafayette, McMinnville, and Sheridan follow the FEMA guidelines for controlling development within the floodplain (Reference 8).

The City of Dayton adopted Zoning Ordinance No. 360 in May 1979 (Reference 9) and a comprehensive plan in May 1979 (Reference 10), which cover proposed development in the floodplain. In May 1977, Dundee adopted Zoning Ordinance No. 168 (Reference 11) and a Comprehensive Plan in May 1975 (Reference 12), which cover proposed development in the floodplain. The City of Willamina adopted Zoning Ordinance No. 467 on October 26, 1978 (Reference 13) and a comprehensive plan in May 1979 (Reference 14) that covers proposed development in the floodplain.

Newberg established a flood hazard overlay to their zoning ordinance that requires city planning and engineering staff approval for building permits within areas with a high flood hazard (Reference 15). When reviewing a building permit application, the city staff considers such factors as the danger to life and property due to increased flood heights or velocities caused by encroachments, the ability of the water supply and sanitation systems to prevent unsanitary conditions, and the availability of alternative locations not subject to flooding. Similarly, the City of Yamhill adopted an ordinance which established a flood hazard zone and called for review of building permit applications and subdivision proposals to ensure that new development considers the flood risk and does not increase flood hazards in other areas.

Flood warning and forecasting for Yamhill County is the responsibility of the National Weather Service, Portland River Forecast Center. River forecasts are not presently available on Yamhill River or North Yamhill River, but flood warnings and stage forecasts are prepared for the USGS stream gage on South Yamhill River near Whiteson during the October through March flood season (Reference 2).

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods 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 once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 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.

3.1 Hydrologic Analyses

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

Records for the Willamette River stream gage at Salem (USGS gage 14191000) were statistically analyzed utilizing the standard log-Pearson Type III distribution as outlined by the U.S. Water Resources Council (References 16 and 17). Natural discharge-frequency curves were developed for that gage using continuous records from 1983 through 1976 (Reference 18). A drainage area ratio was then applied to the Salem natural frequency curves to determine discharges at other locations along the Willamette River. Regulated discharge-frequency curves were then prepared for each location using flood routing computations to take into account upstream storage projects.

Stream gage records are not available for the Yamhill River; therefore, stream gage records at four sites in the Yamhill River basin were statistically analyzed using log-Pearson Type III methods, and discharge frequency curves were developed. The stream gage sites and period of record used were Willamina Creek (USGS gage 14193000) near Willamina, Oregon, (1935 through 1972); South Yamhill River (USGS gage 14194000) near Whiteson, Oregon, (1941 through 1972); South Yamhill River (USGS gage 14192500) near Willamina, Oregon, (1934 through 1971); and North Yamhill River (USGS gage 14194300) at Pike, Oregon, (1949 through 1971). As a result of the statistical analyses for the four gages and a regional discharge analysis, Meyers rating curves were developed to obtain peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods on Yamhill, North Yamhill, and South Yamhill Rivers. That analysis, completed in 1974, was used to prepare water-surface profiles and flooded area maps on the three streams as part of the USACE Floodplain Information program for Yamhill County (Reference 19).

In 1977, a new analysis was made for Yamhill, North Yamhill, and South Yamhill Rivers using more years of record and computed probability. The standard log-Pearson Type III analysis was used, as outlined by the U.S. Water Resources Council (Reference 16). The 1977 analysis determined that the 1974 discharges fell within the 90 percent confidence bank; therefore, the 1974 discharges were used in this Flood Insurance Study.

Cozine Creek discharges were obtained from a U.S. Soil Conservation Service report titled Flood Hazard Analyses, Cozine Creek and Tributaries, dated May 1978 (Reference 20). Stream-gage records are not available for Cozine Creek, North Fork Cozine Creek, or West Fork Cozine Creek; therefore, the modified – U.S. Soil Conservation Service methodology was used to determine the peak discharge-frequency relationships (Reference 21). This method develops peak discharges for selected recurrence intervals based on precipitation records, drainage area, soil characteristics, and land-use patterns.

There are no stream gage stations on Chehalem Creek or Hess Creek. The modified U.S. Soil Conservation Service method for rainfall-runoff and unit hydrograph determination (Reference 6) was used in conjunction with the USACE Flood Hydrograph Computer Program (HEC-1) (Reference 7) to determine the frequency-discharge data for Chehalem Creek and Hess Creek. Willamina Creek discharges were developed using the modified U.S. Soil Conservation Service method (Reference 22), except at the Willamina gage where a log-Pearson Type III analysis was used (Reference 16).

Since there are no gage data available for the remaining streams studied in detail, the modified U.S. Soil Conservation Service method for rainfall-runoff and unit hydrograph determination (Reference 22) was used.

Peak discharge-drainage area relationships for flooding sources studied in detail in Yamhill County are shown in Table 4.

Table 4. Summary of Discharges

<u>Flooding Source and Location</u>	<u>Drainage Area (square miles)</u>	<u>Peak Discharges (cfs)</u>			
		<u>10-percent- annual-chance</u>	<u>2-percent- annual-chance</u>	<u>1-percent- annual-chance</u>	<u>0.2-percent- annual-chance</u>
Agency Creek	25	2,130	3,430	4,080	5,090
Ash Swale	43	2,150	2,880	3,180	3,760
Baker Creek	26	1,320	1,780	2,030	2,400
Chehalem Creek					
at mouth	41	1,650	2,450	2,760	3,490
below Harvey Creek (River Mile 2.8)	39	1,600	2,380	2,680	3,390
at State Highway 240	27	1,330	1,950	2,190	2,750
Cozine Creek	11	600	830	940	1,230
North Fork Cozine Creek	2	196	270	309	399
West Fork Cozine Creek	0.6	109	150	170	221
Hess Creek					
at Wynoski Street	3.8	290	350	400	440
at U.S. Highway 99W (River Mile 3.4)	3.0	220	270	310	350
at Fulton Avenue (River Mile 4.0)	2.3	170	210	240	260
upstream of Mountain View Drive (River Mile 5.3)	1.7	140	180	210	230
Palmer Creek	31.3	3,210	4,020	4,360	5,260

Table 4. Summary of Discharges (continued)

<u>Flooding Source and Location</u>	<u>Drainage Area (square miles)</u>	<u>Peak Discharges (cfs)</u>			
		<u>10-percent- annual-chance</u>	<u>2-percent- annual-chance</u>	<u>1-percent- annual-chance</u>	<u>0.2-percent- annual-chance</u>
West Fork Palmer Creek					
At Webfoot Road	13	920	1,150	1,230	1,480
Panther Creek	52	3,400	4,600	5,500	6,400
Salt Creek					
Downstream of Ash Swale ¹	90	4,520	6,210	6,880	8,190
Upstream of Ash Swale	47	2,480	3,420	3,810	4,520
Willamette River					
At Salem	7280	157,000	223,000	250,000	345,000
At Wilsonville	8400	178,000	250,000	287,000	420,000
Downstream of Yamhill River (River Mile 54.9)	8230	174,000	245,000	278,000	405,000
Upstream of Yamhill River	7461	163,000	225,000	255,000	362,000
Willamina Creek					
At mouth	84	7,510	10,520	11,800	14,780
Near Fendall School	76	6,950	9,810	11,080	13,600
At USGS Gage (14193000)	64	6,000	7,900	8,800	11,100
Yamhill Creek					
At State Highway 47	16	1,640	2,280	2,600	3,440
Upstream of confluence with unnamed tributary	15.6	1,600	2,220	2,530	3,350
Downstream of confluence with Stag Hollow Creek	14.2	1,485	2,070	2,365	3,120
Upstream of confluence with Stag Hollow Creek	6	680	940	1,075	1,415

¹Includes drainage area for Ash Swale

Table 4. Summary of Discharges (continued)

<u>Flooding Source and Location</u>	<u>Drainage Area (square miles)</u>	<u>Peak Discharges (cfs)</u>			
		<u>10-percent- annual-chance</u>	<u>2-percent- annual-chance</u>	<u>1-percent- annual-chance</u>	<u>0.2-percent- annual-chance</u>
Yamhill River					
At mouth	769	53,100	70,000	74,500	94,600
At State Highway 18 (River Mile 5.3)	730	50,800	67,300	71,600	91,300
North Yamhill River					
At mouth	185	12,900	19,500	23,500	33,800
At Carlton (River Mile 10.2)	113	8,600	13,300	16,700	23,700
South Yamhill River					
At mouth	523	39,000	52,000	59,500	77,000
At USGS Gage (14194000) near Whiteson (River Mile 16.7)	502	34,900	46,500	51,400	66,000
At upstream corporate limits of Sheridan	250	21,250	28,950	32,750	43,750
Downstream of Willamina Creek (River Mile 43.7)	225	20,500	27,300	30,800	40,000
Upstream of Willamina Creek (River Mile 43.8)	141	14,200	18,100	19,700	25,100
At USGS Gage (14192500) near Willamina (River Mile 46.6)	133	13,700	17,700	19,500	24,000

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. 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 in conjunction with the data shown on the FIRM.

Cross sections for streams were field surveyed by the USACE, determined from detailed USGS topographic maps, or obtained from aerial photography (References 24, 25, 26, and 27). All bridges, dams, and culverts were field checked to obtain elevation data and structural geometry.

Cross sections for the Willamette River in the vicinity of Dundee were based on condition surveys taken from 1973 to 1976 and topographic maps dated April 1973 (Reference 28). Cross sections for Hess Creek in the vicinity of Newberg were based on USACE orthophoto topographic maps (Reference 29) and field channel surveys. Those field surveys were made in February and March 1978. Topographic maps were used for a few photographic control points to supplement the field-surveyed control points (Reference 30).

Cross sections for the Yamhill River, North Yamhill River, South Yamhill River, and Willamina Creek were based on orthophoto topographic maps (References 19 and 31) and field channel surveys. Topographic maps were used for a few photographic control points to supplement the field-surveyed control points (Reference 32).

Cross section data for Yamhill Creek were based on a USACE orthophoto topographic map, dated April 1977 (Reference 26), and June 1979 field channel surveys. Topographic maps were used for a few photographic control points to supplement the field-surveyed control points (Reference 32).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM.

Channel roughness factors (Manning's "n") used in the hydraulic computations for the channel and overbanks were chosen by engineering judgment based on field observations. The values were then adjusted to match high-water marks where available. The range of roughness values used for all flooding sources are shown in Table 5.

Table 5. Range of Manning's Roughness Values

<u>Flood Source</u>	<u>Main Channel</u>	<u>Floodplain</u>
Agency Creek	0.060-0.300	0.120
Ash Swale	0.030-0.650	0.120-0.300
Baker Creek	0.070-0.300	0.080
Chehalem Creek	0.050-0.060	0.080-0.120
Cozine Creek	0.030-0.130	0.030-0.150

Table 5. Range of Manning's Roughness Values (continued)

<u>Flood Source</u>	<u>Main Channel</u>	<u>Floodplain</u>
North Fork Cozine Creek	0.030-0.130	0.030-0.150
West Fork Cozine Creek	0.030-0.130	0.035-0.150
Hess Creek	0.035-0.055	0.070-0.100
Palmer Creek	0.050	0.070
West Fork Palmer Creek	0.050	0.070
Panther Creek	0.070	0.080
Salt Creek	0.030-0.065	0.120-0.300
Willamette River	0.028-0.029	0.077-.0150
Willamina Creek	0.045-0.050	0.070
Yamhill Creek	0.035-0.050	0.070-0.150
Yamhill River	0.033-0.042	0.075-0.090
North Yamhill River	0.035-0.500	0.070-0.100

Water-surface elevations of floods of the selected recurrence intervals were computed through use of the USACE HEC-2 step-backwater computer program for all streams studied in detail except Cozine Creek, North Fork Cozine Creek, and West Fork Cozine Creek (Reference 33). Cozine Creek, North Fork Cozine Creek, and West Fork Cozine Creek were analyzed using the U.S. Soil Conservation Service WSP-2 backwater computer program (Reference 34). North Yamhill River starting water-surface elevations were calculated considering Yamhill River elevations when North Yamhill River is at peak flow. Starting water-surface elevations for Yamhill River, South Yamhill River, Hess Creek, Cozine Creek, and Willamina Creek were calculated using normal depth computations. North Fork Cozine Creek starting water-surface elevations were calculated using critical depth. Starting water-surface elevations for Chehalem Creek, Palmer Creek, West Fork Palmer Creek, Panther Creek, Baker Creek, Yamhill Creek, Salt Creek, Ash Swale, and Agency Creek were determined using slope-area method. Starting water-surface elevations for the Willamette River were taken from the Clackamas County Flood Insurance Study (Reference 35).

Flooding on Salt Creek through the City of Amity is influenced by the South Yamhill River; thus, the elevations used in this study are based on a hydraulic analysis of South Yamhill River (Reference 36). Elevations on Ash Swale through the study area are controlled by Salt Creek backwater. Water-surface elevations on Palmer Creek are controlled by backwater from Yamhill River. On West Fork Cozine Creek, it was determined that flooding was due to backwater from Cozine Creek; therefore no profile is shown.

Base flood elevations shown on the Floodway Data Table (Table 6) for cross sections BF, BG, and BH on South Yamhill River are not representative for the entire cross section width across the floodplain. Orientation of base flood elevations shown on the Flood Insurance Rate Map (FIRM) (published separately) was determined through a combination of computed elevations on the South Yamhill and historical high-water marks along the floodplain.

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

Approximate study areas were analyzed using slope-area method, field reconnaissance, engineering judgment, and available topographic information (References 32 and 37). Approximate study areas within the City of Amity were analyzed using the Federal Insurance Administration Flood Hazard Boundary Map for the City of Amity (Reference 38), information from city officials, field inspection, engineering judgment, and topographic maps at a scale of 1:4800, with a contour interval of 5 feet (Reference 26). Approximate water-surface elevations for the unnamed tributary to the Yamhill River in the vicinity of the City of Dayton were determined using Yamhill River backwater elevation and adding a small surcharge.

For the approximate studies of an unnamed tributary to Yamhill Creek through the eastern part of the City of Yamhill, and a short reach of Rowland Creek upstream and downstream of Moores Valley Road near the western corporate limits, the 1-percent-annual-chance flood elevations were prepared from information furnished by the City of Yamhill and local residents; and by using aerial photographs, field observations, and limited hydraulic computations.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the completion of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are now prepared using NAVD 88 as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRMs are referenced to NAVD 88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the NGVD and the NAVD, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242
(301) 713-4172 (fax)

The conversion factor from NGVD to NAVD for all flooding sources in this report is +3.47 feet.

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

shown on the FIRMs, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; 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 in many components of the FIS report, including Flood Profiles and Floodway Data tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

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

Between cross sections, floodplain boundaries were interpolated using topographic maps at a scale of 1:6,000, with a contour interval of 5 feet for the Willamette River (Reference 24). Mapping for Hess and Cozine Creeks utilized topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (Reference 25). All other streams studied in detail used topographic maps at a scale of 1:4,800, with a contour interval of 5 feet (References 19, 26, and 31).

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the Flood Insurance Rate Map. Existing information such as topographic maps (References 19, 26, 32, 37, 38, 39, 40), USGS Flood-Prone Areas maps (Reference 27), and Flood Hazard Boundary maps (Reference 41) were used to map many of the approximate flood hazard areas.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, and AO), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain 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.

Countywide Update

As part of the countywide update, floodplain boundaries were digitized from the effective FIRM and Floodway panels. USGS topographic maps (Reference 42) and aerial

photography (Reference 43) were used to adjust floodplain and floodway boundaries where appropriate.

Floodplain boundaries of a number of streams in and around the City of McMinnville were revised using topographic mapping with a contour interval of two feet (Reference 44). These reaches include three miles of Baker Creek from 1.3 miles upstream of the City of McMinnville corporate limits to the east line of DLC 86, four miles of Cozine Creek from its mouth to Hill Road, and one mile of North Fork Cozine Creek from the confluence with Cozine Creek to a point 0.1 miles upstream of NW 11th Street. On North Yamhill River a total of 2.7 miles were redelineated. From its mouth to a point 0.2 miles above the Willamette and Pacific Railroad, the right overbank was redelineated; from this point to a point 0.2 miles upstream of State Highway 99W, both overbank areas were redelineated; and from this point to a point 1.3 miles upstream, the right overbank was redelineated. On South Yamhill River a total of ten miles were redelineated. From its mouth to a point 0.5 miles upstream, the left overbank was redelineated; from this point to a point 1.0 mile upstream of SE Three Mile Lane, both overbank areas were redelineated; and from this point to a point 0.8 miles upstream of the McMinnville Municipal Airport runway, the right overbank was redelineated.

On August 15, 2008, a Letter of Map Revision (LOMR), case number 08-10-0390P, was issued which revises the floodplain boundary delineations for the reach of Rowland Creek upstream and downstream of Moores Valley Road. New topographic data was used to update the hydraulic analysis of this reach, resulting in a decrease of the 1-percent-annual-chance flood boundary.

In accordance with FEMA Procedure Memorandum 36 (Reference 45), profile baselines have been included in all areas of detailed study. Profile baselines are shown in the location of the original stream centerline or original profile baseline without regard to the adjusted floodplain position on the new base map. This was done to maintain the relationship of distances between cross sections along the profile baseline between the hydraulic models, flood profiles, and floodway data tables.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to one foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies. The results of the floodway computations at selected stream cross sections are shown on Table 6, "Floodway Data."

The floodways presented in this study 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. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was computed (Table 6). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

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

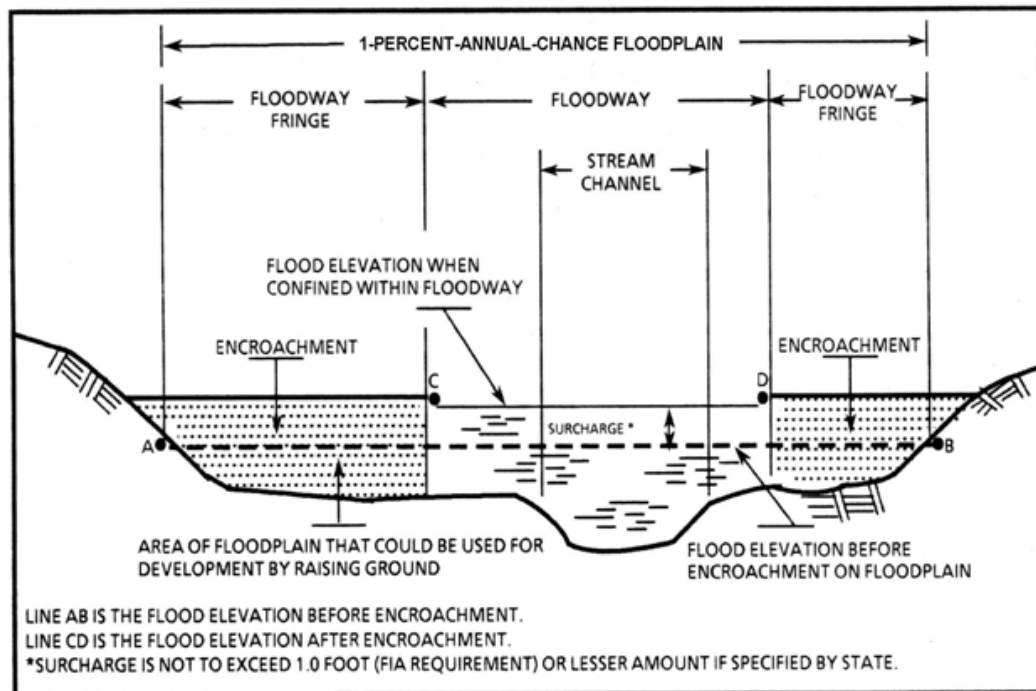


Figure 1. Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY ² (FEET NAVD)	WITH FLOODWAY ² (FEET NAVD)	INCREASE (FEET)
Agency Creek								
A	0.22	26 ²	1,134	3.6	342.6	341.3 ³	342.3 ³	1.0
B	0.70	240	1,287	3.2	350.7	350.7	351.6	0.9
C	0.77	74	707	5.8	351.9	351.9	352.6	0.7
D	0.96	450	2,049	2.0	354.5	354.5	355.2	0.7
E	1.22	320	1,175	3.5	357.1	357.1	358.1	1.0
F	1.55	100	740	5.5	363.8	363.8	363.8	0.0
Ash Swale								
A	0.22	100	1,133	2.8	138.8	133.4 ⁴	134.3 ⁴	0.9
B	0.34	100	1,116	2.8	138.8	134.6 ⁴	135.6 ⁴	1.0
C	0.37	100	1,216	2.6	138.8	135.2 ⁴	136.0 ⁴	0.8
D	0.72	220	2,631	1.2	138.8	136.4 ⁴	137.2 ⁴	0.8
E	0.97	310	3,795	0.8	138.8	136.7 ⁴	137.6 ⁴	0.9
F	1.30	240	2,162	1.5	138.8	137.1 ⁴	138.1 ⁴	1.0
G	1.96	200	2,245	1.4	139.5	139.5	140.2	0.7

¹Miles above mouth

²Width within Yamhill County

³Elevation computed without consideration of influence from South Yamhill River

⁴Elevation computed without consideration of backwater effects from Salt Creek

TABLE 6	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	YAMHILL COUNTY, OREGON AND INCORPORATED AREAS	AGENCY CREEK, ASH SWALE

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Baker Creek								
A	0.54	100	904	2.2	16.6	107.4 ²	107.5 ²	0.1
B	1.01	120	771	2.6	16.6	109.1 ²	109.4 ²	0.3
C	1.65	100	603	3.4	16.6	112.9 ²	113.9 ²	1.0
D	1.98	80	551	3.7	16.6	115.9 ²	116.8 ²	0.9
E	2.11	70	516	3.9	16.6	117.4 ²	118.1 ²	0.7
F	2.15	70	525	3.9	16.6	118.1 ²	118.6 ²	0.5
G	2.42	70	644	3.1	120.1	120.1	120.8	0.7
H	2.85	70	634	3.2	122.8	122.8	123.5	0.7
I	2.97	80	998	2.0	123.2	123.2	124.0	0.8
J	3.05	100	724	2.8	124.1	124.1	124.8	0.7
K	3.24	100	1,042	1.9	124.7	124.7	125.5	0.9
L	3.27	100	640	3.2	124.8	124.8	125.6	0.9
M	3.30	80	522	3.9	125.3	125.3	126.0	0.7
N	3.54	80	843	2.4	126.8	126.8	127.5	0.7
O	3.91	80	962	2.1	127.7	127.7	128.6	0.9

¹Miles above mouth

²Elevation computed without consideration of backwater effects from North Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS

FLOODWAY DATA

BAKER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Chehalem Creek								
A	0.61	60	663	4.2	102.5	75.8 ²	76.3 ²	0.5
B	1.39	50	461	6.0	102.5	84.7 ²	84.9 ²	0.2
C	1.86	48	223	12.4	102.5	98.9 ²	98.9 ²	0.0
D	1.99	55	531	5.2	103.5	103.5	103.7	0.2
E	2.45	148	1,010	2.7	107.3	107.3	108.0	0.7
F	2.64	105	1,175	2.3	108.0	108.0	108.8	0.8
G	2.66	75	138	2.6	108.2	108.2	109.0	0.8
H	3.02	67	551	4.9	109.3	109.3	109.9	0.6
I	3.04	51	553	4.8	109.6	109.6	110.3	0.7
J	3.20	130	1,111	2.4	110.8	110.8	111.5	0.7
K	3.68	85	772	3.5	112.6	112.6	113.4	0.8
L	4.21	75	736	3.3	116.2	116.2	116.7	0.5
M	4.70	61	642	3.8	119.0	119.0	119.8	0.8
N	4.99	140	855	2.6	121.0	121.0	121.8	0.8
O	5.36	85	442	5.0	124.7	124.7	125.0	0.3
P	5.37	78	421	5.2	125.2	125.2	125.5	0.3
Q	5.42	160	631	3.5	126.4	126.4	126.7	0.3
R	6.05	110	486	4.5	135.1	135.1	135.6	0.5
S	6.29	95	321	6.2	141.0	141.0	141.3	0.3
T	6.61	250	655	3.0	148.7	148.7	149.5	0.8
U	6.69	130	494	4.0	150.2	150.2	151.0	0.8
V	6.71	75	596	3.3	151.1	151.1	151.8	0.7
W	6.97	200	571	3.0	155.4	155.4	156.1	0.7
X	7.24	512	1,131	1.5	159.7	159.7	160.1	0.4

¹Miles above mouth

²Elevation computed without consideration of backwater effects from Willamette River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

CHEHALEM CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Chehalem Creek (continued)								
Y	7.45 ¹	410	2,192	0.8	160.2	160.2	160.6	0.4
Z	7.81 ¹	550	2,353	0.5	160.4	160.4	161.0	0.6
AA	8.13 ¹	440	1,361	0.9	160.7	160.7	161.5	0.8
AB	8.46 ¹	37	227	5.2	162.8	162.8	163.5	0.7
AC	8.47 ¹	22	125	9.4	163.0	163.0	163.3	0.3
AD	8.60 ¹	200	832	1.4	165.1	165.1	165.8	0.7
Cozine Creek								
A	84 ³	25	253	3.7	122.3	88.3 ²	89.3 ²	1.0
B	1,184 ³	42	337	2.9	122.3	91.5 ²	92.5 ²	1.0
C	1,404 ³	37	245	4.0	122.3	92.9 ²	93.9 ²	1.0
D	1,534 ³	27	219	4.5	122.3	93.2 ²	94.2 ²	1.0
E	1,834 ³	82	819	1.2	122.3	101.5 ²	102.5 ²	1.0
F	2,484 ³	92	795	1.2	122.3	101.7 ²	102.7 ²	1.0
G	2,714 ³	179	3,179	0.3	122.3	112.4 ²	113.4 ²	1.0
H	3,579 ³	214	2,051	5.4	122.3	112.5 ²	113.5 ²	1.0
I	4,134 ³	171	2,376	0.5	122.3	112.5 ²	113.5 ²	1.0
J	4,559 ³	123	1,608	0.7	122.3	114.1 ²	115.1 ²	1.0
K	5,564 ³	187	2,343	0.5	122.3	114.1 ²	115.1 ²	1.0
L	6,314 ³	170	1,397	0.8	122.3	114.2 ²	115.2 ²	1.0
M	6,414 ³	92	527	2.0	122.3	114.3 ²	115.3 ²	1.0
N	6,635 ³	132	1,348	0.9	122.3	114.4 ²	115.4 ²	1.0
O	6,935 ³	115	1,159	0.8	122.3	114.4 ²	115.4 ²	1.0

¹Miles above mouth

²Elevation computed without consideration of backwater effects from South Yamhill River

³Feet above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

CHEHALEM CREEK, COZINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Cozine Creek (Continued)								
P	7,265	168	2,259	0.4	122.3	119.4 ²	120.4 ²	1.0
Q	8,535	165	1,842	0.5	122.3	119.4 ²	120.4 ²	1.0
R	9,135	169	1,483	0.6	122.3	119.5 ²	120.5 ²	1.0
S	10,035	174	1,172	0.7	122.3	119.8 ²	120.8 ²	1.0
T	10,310	157	1,434	0.6	122.9	122.9	123.9	1.0
U	10,495	138	1,305	0.6	123.0	123.0	124.0	1.0
V	10,745	158	1,526	0.6	123.4	123.4	124.4	1.0
W	11,535	255	1,926	0.4	123.4	123.4	124.4	1.0
X	13,215	188	1,049	0.9	123.7	123.7	124.7	1.0
Y	14,150	200	759	1.2	125.5	125.5	126.5	1.0
Z	14,385	115	614	1.5	127.4	127.4	128.4	1.0
AA	15,335	124	547	1.9	128.9	128.9	129.9	1.0
AB	16,835	112	354	1.8	132.4	132.4	133.4	1.0
AC	17,475	28	161	2.4	134.0	134.0	135.0	1.0
AD	18,035	46	151	2.6	137.9	137.9	138.9	1.0
AE	19,415	48	116	3.4	147.6	147.6	148.6	1.0
AF	19,818	47	140	2.8	150.2	150.2	150.6	0.4

¹Feet above mouth

²Elevation computed without consideration of backwater effects from South Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

COZINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
North Fork Cozine Creek								
A	0.003	21	61	5.1	122.3	105.5 ²	106.5 ²	1.0
B	0.054	159	1,738	0.2	122.3	117.3 ²	118.3 ²	1.0
C	0.117	147	1,369	0.2	122.3	117.3 ²	118.3 ²	1.0
D	0.188	91	662	0.5	122.3	117.3 ²	118.3 ²	1.0
E	0.376	51	161	1.9	122.3	119.3 ²	120.3 ²	1.0
F	0.655	21	96	3.2	128.9	128.9	129.9	1.0
G	0.755	45	86	2.7	133.5	133.5	134.5	1.0
H	0.805	52	105	2.2	135.3	135.3	136.3	1.0

¹Miles above mouth

²Elevation computed without consideration of backwater effects from South Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH FORK COZINE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Hess Creek								
A	0.16	40	140	2.4	101.0	82.2 ²	82.9 ²	0.7
B	0.43	50	171	2.0	101.0	85.3 ²	86.0 ²	0.7
C	1.23	80	214	1.4	101.0	92.1 ²	92.9 ²	0.8
D	1.75	20	76	4.1	101.0	98.7 ²	99.0 ²	0.3
E	2.02	29	168	1.8	109.8	109.8	109.8	0.0
F	2.06	50	267	1.5	109.8	109.8	109.8	0.0
G	2.40	100	271	1.5	111.5	111.5	112.5	1.0
H	2.78	40	125	3.2	120.5	120.5	121.2	0.7
I	3.31	50	133	3.0	132.3	132.3	132.7	0.4
J	3.41	50	180	2.2	133.5	133.5	134.0	0.5
K	3.51	40	304	1.0	137.3	137.3	137.9	0.6
L	3.55	40	155	2.0	137.3	137.3	138.0	0.7
M	3.67	40	222	1.4	142.7	142.7	142.7	0.0
N	3.75	30	120	2.6	143.0	143.0	143.2	0.2
O	3.89	30	164	1.9	147.7	147.7	147.7	0.0
P	3.99	7	37	6.5	150.6	150.6	150.6	0.0
Q	4.07	25	104	2.3	152.7	152.7	152.9	0.2
R	4.22	10	39	6.1	154.6	154.6	155.1	0.5
S	4.31	20	82	2.9	161.8	161.8	162.1	0.3
T	4.37	20	97	2.5	162.4	162.4	163.3	0.9
U	4.44	20	78	2.3	163.4	163.4	164.3	0.9
V	4.69	20	58	3.1	171.8	171.8	172.6	0.8
W	4.96	17	53	3.4	180.2	180.2	180.8	0.6
X	5.09	40	122	1.7	187.9	187.9	188.2	0.3
Y	5.31	6	27	7.8	195.9	195.9	196.2	0.3

¹Miles above mouth

²Elevation computed without consideration of backwater effects from Willamette River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

HESS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Palmer Creek								
A	0.044	80	1,087	4.0	105.9	84.8 ²	85.8 ²	1.0
B	0.215	70	488	8.9	105.9	86.1 ²	86.9 ²	0.8
C	0.221	70	649	6.7	105.9	89.2 ²	89.3 ²	0.1
D	0.295	100	1,527	2.9	106.0	90.0 ²	90.3 ²	0.3
E	0.42	110	1,523	2.9	106.0	90.2 ²	90.6 ²	0.4
F	0.81	100	1,337	3.3	106.0	91.8 ²	92.4 ²	0.6
West Fork Palmer Creek								
A	0.10	80	580	2.1	106.0	92.4 ²	93.3 ²	0.9
B	0.23	60	347	3.5	106.0	93.1 ²	93.8 ²	0.7
C	0.37	50	437	2.8	106.0	93.9 ²	94.5 ²	0.6
D	0.43	44	206	6.0	106.0	93.9 ²	94.8 ²	0.9
E	0.47	50	400	3.1	106.0	95.3 ²	95.8 ²	0.5
Panther Creek								
A	0.19	70	743	7.4	116.6	97.5 ³	97.5 ³	0.0

¹Miles above mouth

²Elevation computed without consideration of backwater effects from Yamhill River

³Elevation computed without consideration of backwater effects from North Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

PALMER CREEK, WEST FORK PALMER CREEK, PANTHER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Salt Creek								
A	7.39	200	2,908	2.4	138.5	130.2 ²	130.4 ²	0.2
B	7.98	300	3,307	2.1	138.5	131.5 ²	132.0 ²	0.5
C	8.22	300	3,125	2.2	138.5	132.1 ²	132.8 ²	0.7
D	8.46	300	3,717	1.9	138.5	132.7 ²	133.4 ²	0.7
E	8.53	300	3,927	1.8	138.5	132.8 ²	133.6 ²	0.8
F	8.70	400	5,030	1.4	139.0	133.1 ²	133.9 ²	0.8
G	8.80	560	6,772	1.0	139.0	133.2 ²	134.1 ²	0.9
H	9.14	670	6,735	0.6	139.0	133.3 ²	134.2 ²	0.9
I	9.40	350	3,180	1.2	139.0	133.6 ²	134.6 ²	1.0
J	9.46	95	1,338	2.8	139.0	133.7 ²	134.7 ²	1.0
K	9.53	210	1,927	2.0	139.0	134.0 ²	135.0 ²	1.0
L	9.93	380	4,185	0.9	139.0	134.6 ²	135.5 ²	0.9
M	10.46	380	2,595	1.5	139.5	135.1 ²	139.1 ²	1.0

¹Miles above mouth

²Elevation computed without consideration of backwater effects from South Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

SALT CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET) ²	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Willamette River								
A	43.76	680/310	39,838	7.2	98.2	98.2	99.1	0.9
B	44.15	700/285	40,368	7.1	98.5	98.5	99.4	0.9
C	44.46	750/320	41,438	6.9	98.8	98.8	99.5	0.7
D	46.44	2,100/410	47,272	6.1	99.7	99.7	100.5	0.8
E	47.64	3,000/475	56,285	5.1	101.0	101.0	101.6	0.6
F	48.41	3,000/460	46,825	6.1	100.8	100.8	101.7	0.9
G	48.46	3,000/450	47,512	6.0	101.0	101.0	101.9	0.9
H	49.07	4,400/330	77,593	3.7	102.0	102.0	102.8	0.8
I	50.65	8,000/620	139,912	2.1	102.8	102.8	103.6	0.8
J	51.59	8,000/1,950	129,683	2.2	103.0	103.0	103.9	0.9
K	52.48	7,700/325	82,487	3.5	103.0	103.0	103.9	0.9
L	54.17	6,380/1,470	78,889	3.6	104.0	104.0	104.9	0.9
M	54.58	5,380/3,120	112,389	2.5	104.9	104.9	105.8	0.9
N	55.17	4,500/3,875	74,363	3.4	104.9	104.9	105.8	0.9
O	55.71	4,100/3260	76,317	3.3	105.3	105.3	106.1	0.8
P	56.44	3,600/360	88,098	2.9	105.7	105.7	106.5	0.8
Q	57.53	7,000/240	144,467	1.8	106.1	106.1	106.9	0.8
R	58.47	8,000/245	210,016	1.2	106.4	106.4	107.3	0.9
S	59.06	7,400/300	172,084	1.5	106.4	106.4	107.3	0.9
T	59.42	7,800/540	199,965	1.3	106.8	106.8	107.6	0.8
U	59.77	8,100/2,135	218,569	1.2	107.1	107.1	107.9	0.8
V	60.38	7,800/4,490	203,415	1.3	107.3	107.3	108.2	0.9
W	60.82	7,000/4,255	186,484	1.4	107.7	107.7	108.6	0.9
X	61.81	6,400/6,065	134,860	1.9	108.1	108.1	109.1	1.0

¹Miles above mouth

²Total width/width within Yamhill County

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLAMETTE RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET) ²	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Willamette River (Continued)								
Y	62.30	7,000/5,645	139,607	1.8	108.6	108.6	109.6	1.0
Z	63.23	8,500/8,285	166,468	1.5	109.0	109.0	109.9	0.9
AA	64.63	6,900/3,610	139,117	1.8	109.4	109.4	110.3	0.9
AB	65.58	8,400/4825	141,703	1.8	109.9	109.9	110.8	0.9
AC	66.32	8,400/5,540	116,173	2.2	110.4	110.4	111.2	0.8
AD	67.45	10,400/10,030	122,794	2.1	111.1	111.1	111.8	0.7
AE	68.12	12,300/11,425	121,997	2.1	111.4	111.4	112.1	0.7
AF	68.98	13,900/13,700	153,103	1.6	111.7	111.7	112.4	0.7
AG	69.55	13,600/12,330	164,805	1.5	111.9	111.9	112.7	0.8
AH	70.20	11,500/10,930	143,995	1.7	112.1	112.1	112.9	0.8
AI	71.23	10,400/4,965	109,917	2.3	112.8	112.8	113.7	0.9
AJ	71.80	4,000/125	54,682	4.6	113.7	113.7	114.6	0.9
AK	72.35	2,300/1,000	28,961	8.6	114.7	114.7	115.7	1.0
AL	73.94	3,600/420	50,844	4.9	119.6	119.6	120.5	0.9

¹Miles above mouth

²Total width/width within Yamhill County

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLAMETTE RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Willamina Creek								
A	0.07	140	2,181	5.4	226.3	220.7 ²	221.5 ²	0.8
B	0.28	140	1,903	6.2	226.3	222.6 ²	223.0 ²	0.4
C	0.45	90	1,086	10.9	226.3	224.5 ²	224.5 ²	0.0
D	0.55	80	1,138	10.4	227.1	227.1	227.9	0.8
E	0.90	200	1,409	8.4	238.5	238.5	239.4	0.9
F	1.10	500	2,891	4.1	243.1	243.1	244.0	0.9
G	1.51	500	3,152	3.7	245.8	245.8	246.7	0.9
H	1.61	600	3,532	3.3	246.6	246.6	247.6	1.0
I	1.73	259	2,194	5.4	247.5	247.5	248.4	0.9
J	1.90	500	1,959	6.0	250.0	250.0	250.4	0.4
K	2.30	700	5,628	2.0	254.9	254.9	255.8	0.9
L	2.80	650	3,827	2.9	257.4	257.4	258.3	0.9
M	2.98	450	2,197	5.0	258.7	258.7	259.6	0.9
N	3.45	200	1,791	6.2	266.5	266.5	267.1	0.6
O	3.55	150	1,784	6.2	268.1	268.1	268.6	0.5
P	3.67	150	1,924	5.8	269.2	269.2	269.5	0.3

¹Miles above confluence with South Yamhill River

²Elevation computed without consideration of backwater effects from South Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLAMINA CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Yamhill Creek								
A	0.12	200	1,116	2.4	146.8	146.8	147.7	0.9
B	0.53	535	2,487	1.1	147.9	147.9	148.8	0.9
C	1.05	230	785	3.3	150.3	150.3	151.3	1.0
D	1.20	150	732	3.6	153.3	153.3	154.0	0.7
E	1.26	81	520	5.0	154.1	154.1	154.8	0.7
F	1.28	51	386	6.7	155.1	155.1	155.6	0.5
G	1.40	147	947	2.7	156.6	156.6	157.3	0.7
H	1.58	260	1,347	1.9	157.8	157.8	158.4	0.6
I	2.05	57	413	5.7	161.9	161.9	162.6	0.7
J	2.25	125	525	2.0	166.3	166.3	167.1	0.8
K	2.31	20	136	7.9	168.2	168.2	169.3	1.1
L	2.38	110	609	1.8	170.5	170.5	171.3	0.8
M	2.61	140	592	1.8	171.4	171.4	172.3	0.9
N	2.86	129	290	3.7	177.7	177.7	178.1	0.4
O	2.87	180	418	2.6	183.1	183.1	183.8	0.7
P	2.88	180	711	1.5	183.9	183.9	184.9	1.0
Q	2.96	150	313	3.4	184.7	184.7	185.2	0.5
R	3.02	190	1,127	1.0	185.2	185.2	186.1	0.9

¹Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

YAMHILL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
Yamhill River								
A	0.86	770	13,289	5.6	105.0	101.1 ²	101.3 ²	0.2
B	1.92	800	13,003	5.7	105.0	102.4 ²	102.6 ²	0.2
C	2.85	585	11,359	6.6	105.0	103.9 ²	104.1 ²	0.2
D	3.72	1,390	25,072	3.0	105.3	105.3	105.6	0.3
E	4.95	380	12,476	5.7	106.3	106.3	106.9	0.6
F	5.31	425	11,644	6.1	106.8	106.8	107.1	0.3
G	5.50	741	15,559	4.6	107.3	107.3	107.6	0.3
H	6.16	800	13,083	5.5	108.3	108.3	108.6	0.3
I	6.95	1,775	24,139	3.0	109.5	109.5	109.9	0.4
J	7.40	1,020	19,328	3.7	110.0	110.0	110.4	0.4
K	7.44	980	19,601	3.7	110.1	110.1	110.6	0.5
L	8.02	375	9,455	7.6	110.3	110.3	110.9	0.6
M	8.18	326	10,274	6.8	110.8	110.8	111.5	0.7
N	8.29	397	12,744	5.6	111.5	111.5	112.1	0.6
O	8.50	957	18,875	3.8	112.3	112.3	112.9	0.6
P	9.21	550	14,296	4.9	113.8	113.8	114.5	0.7
Q	9.65	955	19,132	3.7	114.7	114.7	115.5	0.8
R	10.10	2,270	32,791	2.1	115.4	115.4	116.2	0.8
S	11.09	1,250	23,697	3.0	116.6	116.6	117.6	1.0

¹Miles above mouth

²Elevation computed without consideration of backwater effects from the Willamette River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS

FLOODWAY DATA

YAMHILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
North Yamhill River								
A	0.11	611	11,748	2.0	116.6	114.6 ²	115.2 ²	0.6
B	0.45	477	10,991	2.1	116.6	114.8 ²	115.4 ²	0.6
C	0.58	511	12,813	1.8	116.6	114.9 ²	115.5 ²	0.6
D	0.93	348	8,257	2.8	116.6	115.0 ²	115.6 ²	0.6
E	1.20	361	9,111	2.6	116.6	115.2 ²	115.8 ²	0.6
F	1.24	644	13,175	1.8	116.6	115.3 ²	115.9 ²	0.6
G	1.55	847	12,963	1.8	116.6	115.4 ²	116.0 ²	0.6
H	2.33	1,040	14,464	1.5	116.6	115.6 ²	116.3 ²	0.7
I	3.03	1,314	17,542	1.2	116.6	115.9 ²	116.6 ²	0.7
J	3.67	1,099	11,223	1.6	116.6	116.0 ²	116.7 ²	0.7
K	4.48	829	8,152	2.1	116.6	116.5 ²	117.2 ²	0.7
L	4.56	521	6,196	2.8	116.6	116.6	117.3	0.7
M	4.97	531	8,107	2.1	117.5	117.5	118.1	0.6
N	5.54	1,060	7,775	2.2	118.3	118.3	118.9	0.6
O	6.16	866	6,166	2.8	119.2	119.2	119.8	0.6
P	7.21	514	6,251	2.8	122.2	122.2	123.0	0.8
Q	7.72	200	2,597	6.4	124.5	124.5	125.2	0.7
R	8.25	1,379	10,348	1.6	126.4	126.4	127.1	0.7
S	8.82	1,200	7,797	2.1	127.2	127.2	127.9	0.7
T	9.07	790	5,548	3.0	127.7	127.7	128.5	0.8
U	9.59	920	4,161	4.0	129.1	129.1	130.1	1.0
V	10.03	770	4,667	3.6	131.3	131.3	132.3	1.0
W	10.16	360	3,991	4.2	132.1	132.1	133.0	0.9
X	10.21	355	4,268	3.9	132.1	132.1	133.0	0.9

¹Miles above mouth

²Elevation computed without consideration of backwater effects from Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH YAMHILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
North Yamhill River (Continued)								
Y	10.23	315	2,701	6.2	132.1	132.1	133.0	0.9
Z	10.25	330	2,869	5.8	134.7	134.7	134.7	0.0
South Yamhill River								
A	0.18	1210	23535	2.5	117.0	117.0	118.0	1.0
B	0.90	1,298	23,711	2.5	117.5	117.5	118.5	1.0
C	1.60	1,597	32,217	1.8	117.9	117.9	118.9	1.0
D	2.79	1,600	23,868	2.5	118.7	118.7	119.7	1.0
E	4.04	820	13,311	4.5	120.2	120.2	121.2	1.0
F	4.86	3,003	37,853	1.6	121.6	121.6	122.6	1.0
G	5.44	1,055	18,828	3.2	121.9	121.9	122.9	1.0
H	5.60	854	17,788	3.3	122.0	122.0	123.0	1.0
I	6.40	1,150	19,142	2.7	122.9	122.9	123.9	1.0
J	6.56	940	13,415	3.9	123.0	123.0	124.0	1.0
K	6.61	873	13,261	3.9	123.3	123.3	124.2	0.9
L	7.08	1,210	20,395	2.5	123.9	123.9	124.8	0.9
M	7.61	672	13,292	3.4	124.3	124.3	125.2	0.9
N	8.56	920	17,157	3.0	125.7	125.7	126.6	0.9
O	9.27	1,580	25,927	2.0	126.2	126.2	127.2	1.0
P	10.50	2,370	35,074	1.5	126.7	126.7	127.6	0.9
Q	11.47	930	14,825	3.5	127.1	127.1	128.0	0.9
R	12.20	1,440	23,750	2.2	128.2	128.2	129.0	0.8

¹Miles above mouth

²Elevation computed without consideration of backwater effects from Yamhill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH YAMHILL RIVER, SOUTH YAMHILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
South Yamhill River (Continued)								
S	13.46	4,575	43,148	1.2	128.9	128.9	129.7	0.8
T	14.42	2,950	28,516	1.8	129.6	129.6	130.4	0.8
U	15.03	3,860	30,932	1.7	130.4	130.4	131.2	0.8
V	15.99	2,445	18,789	2.7	131.7	131.7	132.4	0.7
W	16.56	950	12,109	4.2	133.2	133.2	133.8	0.6
X	16.69	1,014	16,745	3.1	133.8	133.8	134.4	0.6
Y	17.01	1,300	22,873	2.2	134.4	134.4	135.1	0.7
Z	17.92	1,432	19,807	2.6	135.6	135.6	136.3	0.7
AA	18.90	2,505	30,025	1.7	136.8	136.8	137.6	0.8
AB	20.04	2,000	24,147	2.1	138.0	138.0	138.8	0.8
AC	21.01	2,270	26,856	1.9	139.3	139.3	140.1	0.8
AD	22.15	2,620	34,271	1.4	140.3	140.3	141.2	0.9
AE	23.10	3,290	29,105	1.7	141.4	141.4	142.2	0.8
AF	24.80	3,969	34,247	1.5	144.0	144.0	145.0	1.0
AG	26.15	4,275	33,100	1.0	145.3	145.3	146.2	0.9
AH	27.10	2,749	16,444	2.0	146.5	146.5	147.2	0.7
AI	27.45	1,476	10,848	3.1	147.5	147.5	148.0	0.5
AJ	27.69	1,565	12,313	2.7	148.1	148.1	148.6	0.5
AK	28.08	1,608	14,048	2.4	149.5	149.5	150.0	0.5
AL	28.38	1,270	10,065	3.3	150.3	150.3	150.7	0.4
AM	29.25	1,312	13,068	2.6	152.5	152.5	153.3	0.8
AN	29.96	2,258	20,282	1.6	153.7	153.7	154.5	0.8
AO	30.41	2,310	15,444	2.2	154.4	154.4	155.2	0.8

¹Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

SOUTH YAMHILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
South Yamhill River (Continued)								
AP	31.41	3,580	17,823	1.9	156.7	156.7	157.3	0.6
AQ	32.56	4,575	19,357	1.7	159.6	159.6	159.9	0.3
AR	33.28	3,870	17,373	1.9	162.2	162.2	162.6	0.4
AS	33.59	3,075	11,406	2.9	163.3	163.3	163.8	0.5
AT	34.06	3,858	16,601	2.0	165.0	165.0	165.5	0.5
AU	34.21	3,750	17,787	1.9	165.6	165.6	166.1	0.5
AV	34.26	3,715	19,178	1.7	165.7	165.7	166.2	0.5
AW	34.30	3,459	15,679	2.1	165.8	165.8	166.3	0.5
AX	34.75	3,090	9,245	3.6	167.6	167.6	167.9	0.3
AY	35.47	1,850	10,402	3.2	171.1	171.1	171.6	0.5
AZ	35.77	1,270	7,645	4.3	172.2	172.2	172.8	0.6
BA	36.21	1,370	6,430	5.1	175.0	175.0	175.4	0.4
BB	36.56	870	6,724	4.9	177.2	177.2	178.0	0.8
BC	37.28	475	4,153	7.9	183.4	183.4	184.1	0.7
BD	37.49	410	5,063	6.5	185.9	185.9	186.8	0.9
BE	37.69	260	4,586	7.1	187.9	187.9	188.5	0.6
BF	38.03	256	4,401	7.4	192.0 ²	192.0 ²	192.6 ²	0.6
BG	38.39	256	5,174	6.3	195.5 ²	195.5 ²	196.3 ²	0.8
BH	38.50	247	5,160	6.3	196.3 ²	196.3 ²	197.1 ²	0.8
BI	39.17	352	6,939	4.7	200.2	200.2	200.9	0.7
BJ	40.10	1,724	15,472	2.1	202.9	202.9	203.7	0.8
BK	41.01	930	9,317	3.3	206.7	206.7	207.1	0.4
BL	41.65	445	4,830	6.7	209.4	209.4	209.9	0.5

¹Miles above mouth

²Elevation not representative of entire cross section width across the floodplain

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

SOUTH YAMHILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
South Yamhill River (Continued)								
BM	42.30	449	4,685	6.6	216.4	216.4	216.8	0.4
BN	43.03	276	4,413	7.0	221.9	221.9	222.6	0.7
BO	43.37	200	4,140	7.4	223.7	223.7	224.3	0.6
BP	43.38	200	3,865	8.0	223.7	223.7	224.3	0.6
BQ	43.70	235	4,306	7.6	225.9	225.9	226.3	0.4
BR	43.90	211	2,780	7.1	227.2	227.2	227.6	0.4
BS	56.85	110	316	6.1	348.6	348.6	348.6	0.0
BT	57.20	121	750	6.9	352.9	352.9	353.1	0.2
BU	57.75	265	1,602	3.2	357.8	357.8	358.6	0.8
BV	58.24	130	761	6.8	363.1	363.1	363.3	0.2
BW	58.70	130	1,003	5.2	369.2	369.2	369.8	0.6
BX	59.07	90	550	9.4	373.8	373.8	374.6	0.8
BY	59.55	56	430	12.1	380.5	380.5	381.2	0.7
BZ	59.78	159	1,125	4.1	385.7	385.7	386.2	0.5
CA	60.00	160	964	4.8	388.2	388.2	388.5	0.3
CB	60.40	140	780	5.9	396.0	396.0	396.0	0.0
CC	60.65	99	685	6.7	403.0	403.0	403.0	0.3
CD	60.70	239	1,461	3.1	405.1	405.1	405.2	0.1

¹Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

FLOODWAY DATA

SOUTH YAMHILL RIVER

5.0 INSURANCE APPLICATION

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

Zone A

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

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the Flood Insurance Study by detailed methods. BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

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

Table 7 lists the flood insurance zones that each community is responsible for regulating.

Table 7. Flood Insurance Zones within Each Community

<u>Community</u>	<u>Flood Zone(s)</u>
Amity, City of	A, AE, X
Carlton, City of	A, AE, X
Dayton, City of	A, AE, X
Dundee, City of	AE, X
Lafayette, City of	A, AE, X
McMinnville, City of	A, AE, X
Newberg, City of	A, AE, X
Sheridan, City of	AE, X
Willamina, City of	AE, X
Yamhill, City of	A, AE, X
Yamhill County, Unincorporated Areas	A, AE, X

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide Flood Insurance Rate Map presents flooding information for the entire geographic area of Yamhill County. Previously, Flood Insurance Rate Maps were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide Flood Insurance Rate Map also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community are presented in Table 8, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FLOOD INSURANCE RATE MAP EFFECTIVE DATE	FLOOD INSURANCE RATE MAP REVISION DATE(S)
Amity, City of	July 30, 1976	-----	December 1, 1981	-----
Carlton, City of	November 30, 1973	January 16, 1976	June 30, 1976	January 29, 1980
Dayton, City of	January 23, 1974	January 2, 1976	June 1, 1982	-----
Dundee, City of	June 28, 1974	December 17, 1976	March 1, 1982	-----
Lafayette, City of	May 20, 1975	-----	June 15, 1982	-----
McMinnville, City of	February 15, 1974	December 20, 1974 September 19, 1975	December 1, 1982	-----
Newberg, City of	June 14, 1974	November 28, 1975	March 1, 1982	-----

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FLOOD INSURANCE RATE MAP EFFECTIVE DATE	FLOOD INSURANCE RATE MAP REVISION DATE(S)
Sheridan, City of	October 18, 1974	July 30, 1976	August 1, 1980	September 30, 1988
Unincorporated Areas	December 27, 1974	July 19, 1977 March 13, 1979	September 30, 1983	-----
Willamina, City of	December 28, 1973	December 26, 1975	March 15, 1982	-----
Yamhill, City of	November 30, 1973	April 16, 1976 November 29, 1977	March 1, 1982	-----

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

**YAMHILL COUNTY, OREGON
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

The Federal Insurance Administration previously published Flood Insurance Rate Maps for unincorporated Yamhill County (Reference 35), the City of Amity (Reference 46), the City of Carlton (Reference 47), the City of Dayton (Reference 48), the City of Dundee (Reference 49), the City of Lafayette (Reference 50), the City of McMinnville (Reference 51), the City of Newberg (Reference 52), the City of Sheridan (Reference 53), the City of Willamina (Reference 54), and the City of Yamhill (Reference 55). The present Flood Insurance Study is more detailed and thus supersedes the earlier maps.

This study is compatible with the Flood Insurance Studies for Washington County (Reference 56), Clackamas County (Reference 34), Polk County (Reference 57), Tillamook County (Reference 58), and Marion County (Reference 59).

Four Floodplain Information reports were prepared by the USACE, Portland District, for Yamhill County. These include reports on the Yamhill River, North Yamhill River, and South Yamhill River, McMinnville, Oregon (Reference 2); Willamette River, Marion and Polk Counties, Oregon (Reference 60); Willamette River, Canby, Barlow, and Wilsonville, Oregon (Reference 61); and Willamette River, Newberg, Oregon (Reference 6). The base flood elevations and flood profiles used in this study are basically the same as shown in these reports.

This report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA, Mitigation Division, Federal Regional Center, 130 228th Street, SW, Bothell, Washington 98021-9796.

9.0 **BIBLIOGRAPHY AND REFERENCES**

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<u>Map Name</u>	<u>Date</u>	<u>Scale</u>	<u>Contour Interval (Feet)</u>
Amity	1993	1:24,000	10-20
Ballston	1992	1:24,000	10-20
Carlton	1992	1:24,000	20
Dayton	1992	1:24,000	10-20
Dolph	1985	1:24,000	40
Dundee	1993	1:24,000	20
Fairdale	1979	1:24,000	40
Gaston	1992	1:24,000	10-20
Gervais	1985	1:24,000	10
Gobblers Knob	1979	1:24,000	80
Grand Ronde	1979	1:24,000	20-40
Hebo	1985	1:24,000	40
Laurelwood	1992	1:24,000	10-20
McMinnville	1992	1:24,000	10-20
Midway	1979	1:24,000	20-40
Mission Bottom	1993	1:24,000	10-20
Muddy Valley	1992	1:24,000	20-40
Newberg	1985	1:24,000	10
Niagara Creek	1979	1:24,000	40
Saint Paul	1985	1:24,000	10
Scholls	1985	1:24,000	10
Sheridan	1992	1:24,000	10-20
Sherwood	1985	1:24,000	10
Springer Mountain	1979	1:24,000	40
Stony Mountain	1992	1:24,000	20-40
Trask Mountain	1979	1:24,000	40
Turner Creek	1979	1:24,000	40

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10.0 REVISION DESCRIPTIONS

This section has been added to provide information regarding significant revisions made since the original Flood Insurance Study was printed. Future revisions may be made that do not result in the republishing of the Flood Insurance Study report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data located at the Yamhill County Department of Planning and Development, 525 NE 4th Street, McMinnville, Oregon 97128.

LOMR 08-10-0390P revises floodplain boundary delineations for Rowland Creek from approximately 1,280 feet downstream of Moores Valley Road to approximately 310 feet upstream. The revised flood hazard area of this LOMR is within Yamhill County Unincorporated areas in the vicinity of the City of Yamhill. Using new topographic data, an updated hydraulic analysis was performed. As a result, the 1-percent-annual-chance flood boundary for this reach was decreased. The effective date is August 15, 2008.

Countywide Update

The countywide update was performed in February 2009 by WEST Consultants, Inc., for FEMA under Contract No. EMS-2001-CO-0068, Task Order No. 30.

This update combined the Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) reports for Yamhill County and incorporated communities into the countywide format. Under the countywide format, FIRM panels have been produced using a single layout format for the entire area within the county instead of separate layout formats for each community. The single-layout format facilitates the matching of adjacent panels and depicts the flood-hazard area within the entire panel border, even in areas beyond a community's corporate boundary line. In addition, under the countywide format this single FIS report provides all associated information and data for the entire county area.

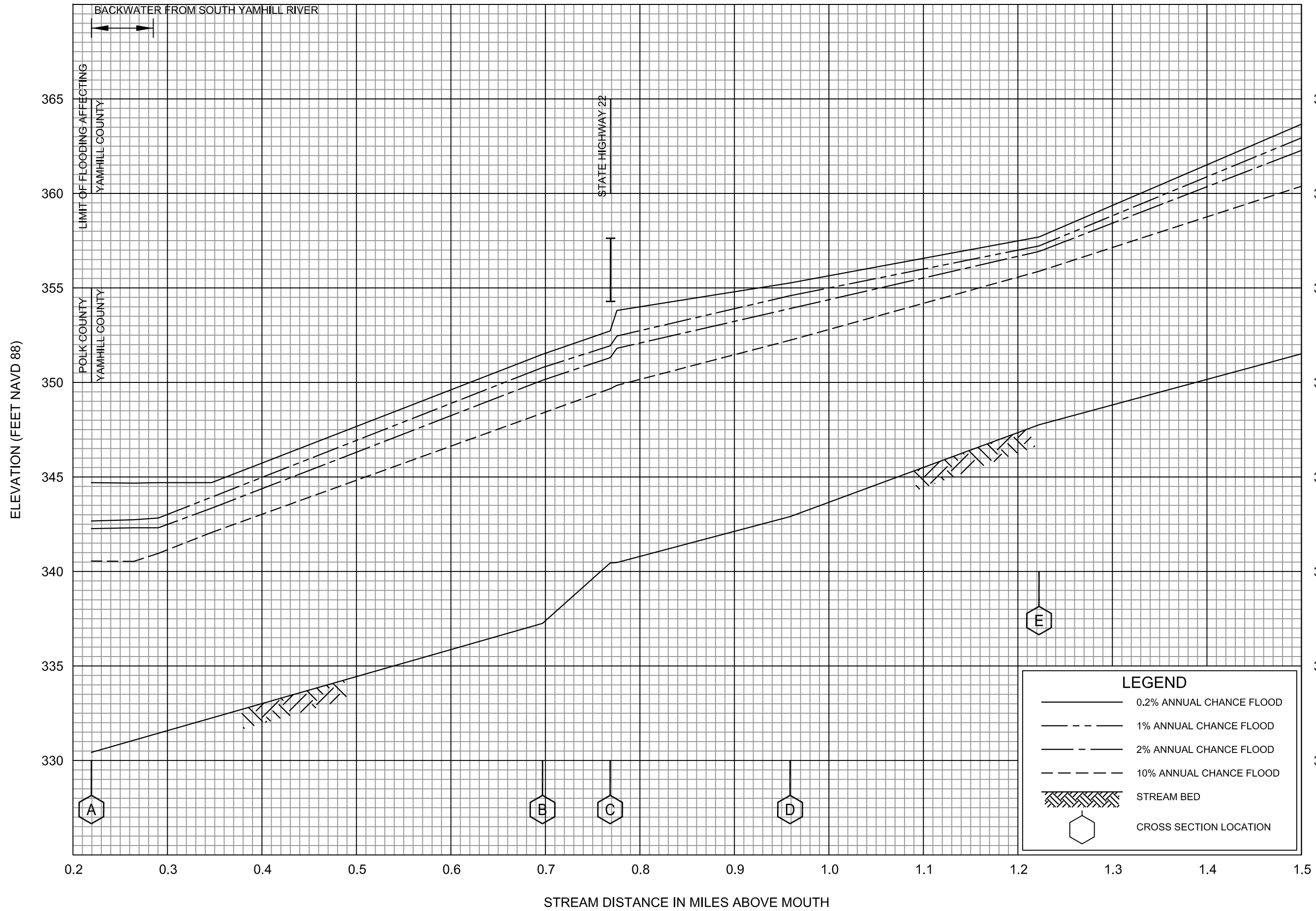
As part of this revision, the format of the map panels has changed. Previously, flood hazard information was shown on both FIRMs and Flood Boundary and Floodway Maps (FBFMs). In the new format, all base flood elevations, zone designations, cross sections, and floodplain and floodway boundary delineations are shown on the FIRMs; the FBFM has been eliminated. Some of the flood insurance zone designations were changed to reflect the new format. Areas previously shown as numbered Zone A were revised to Zone AE. Areas previously shown as Zone B were changed to Zone X (shaded). Areas previously shown as Zone C were changed to Zone X (unshaded). In addition, all Flood Insurance Zone Data Tables were removed from the FIS report and all zone designations and reach determinations were removed from the Flood Profiles.

All flood elevations shown in this FIS report and on the FIRM panels were converted from NGVD 29 to NAVD 88. The conversion factor for all flooding sources is +3.47 feet.

The floodplain boundaries for most flooding sources were digitized from the effective FIRM and Floodway panels. Aerial photography (Reference 43) and USGS topographic maps (Reference 42) were used to adjust floodplain and floodway boundaries where appropriate.

As part of the countywide update for Yamhill County, floodplain boundaries of a number of streams in and around the City of McMinnville were revised using topographic mapping with a contour interval of two feet (Reference 44). These reaches include three miles of Baker Creek, four miles of Cozine Creek, and one mile of North Fork Cozine Creek. For North Yamhill River

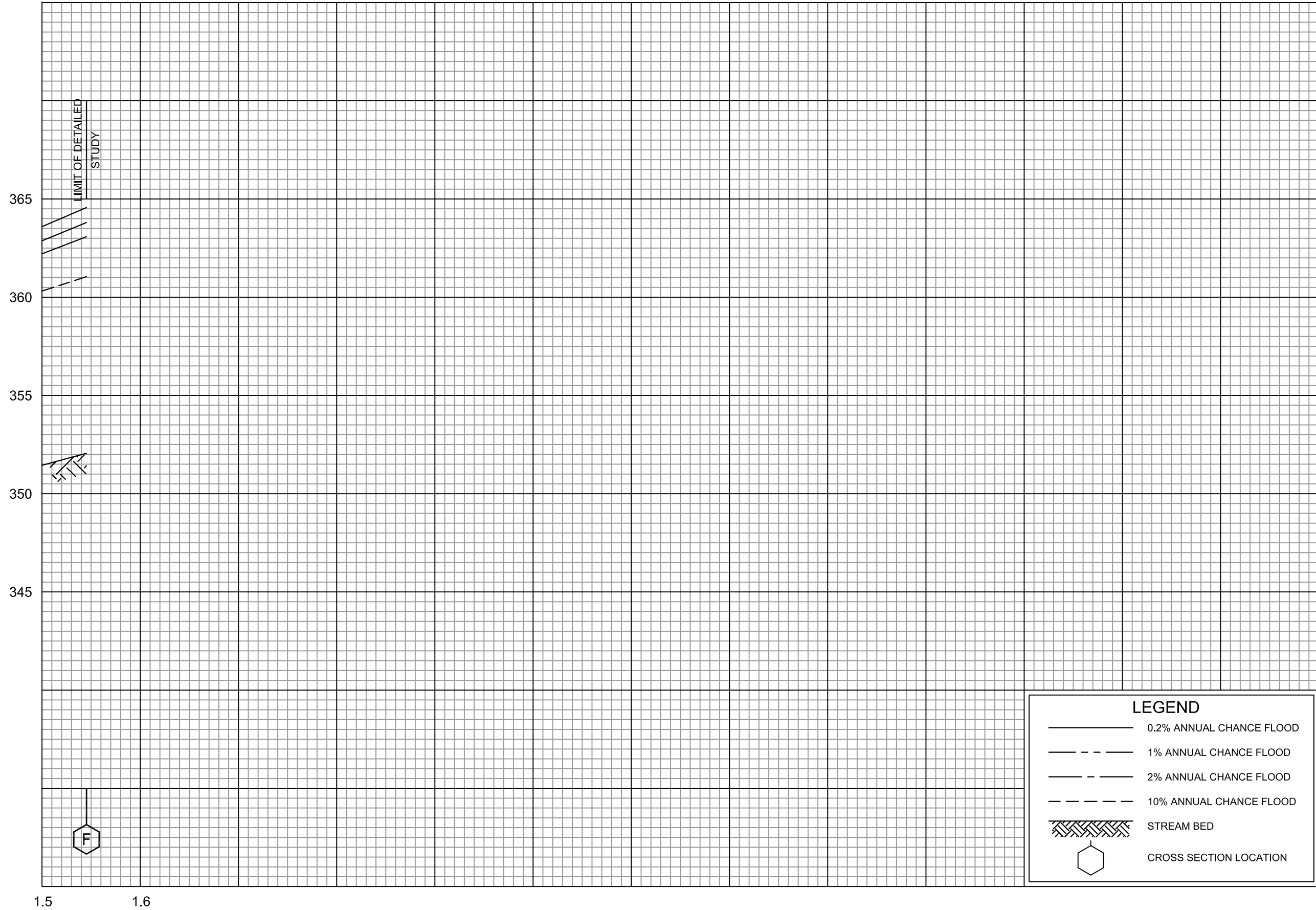
three miles were redelineated. From its mouth to a point 0.2 miles above the Willamette and Pacific Railroad, the right overbank was redelineated; from this point to a point 0.2 miles upstream of State Highway 99W, both overbank areas were redelineated; and from this point to a point 1.3 miles upstream, the right overbank was redelineated. For South Yamhill River ten miles were redelineated. From its mouth to a point 0.5 miles upstream, the left overbank was redelineated; from this point to a point 1.0 mile upstream of SE Three Mile Lane, both overbank areas were redelineated; and from this point to a point 0.8 miles upstream of the McMinnville Municipal Airport runway, the right overbank was redelineated.



FLOOD PROFILES
AGENCY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

ELEVATION (FEET NAVD 88)



1.5 1.6

STREAM DISTANCE IN MILES ABOVE MOUTH

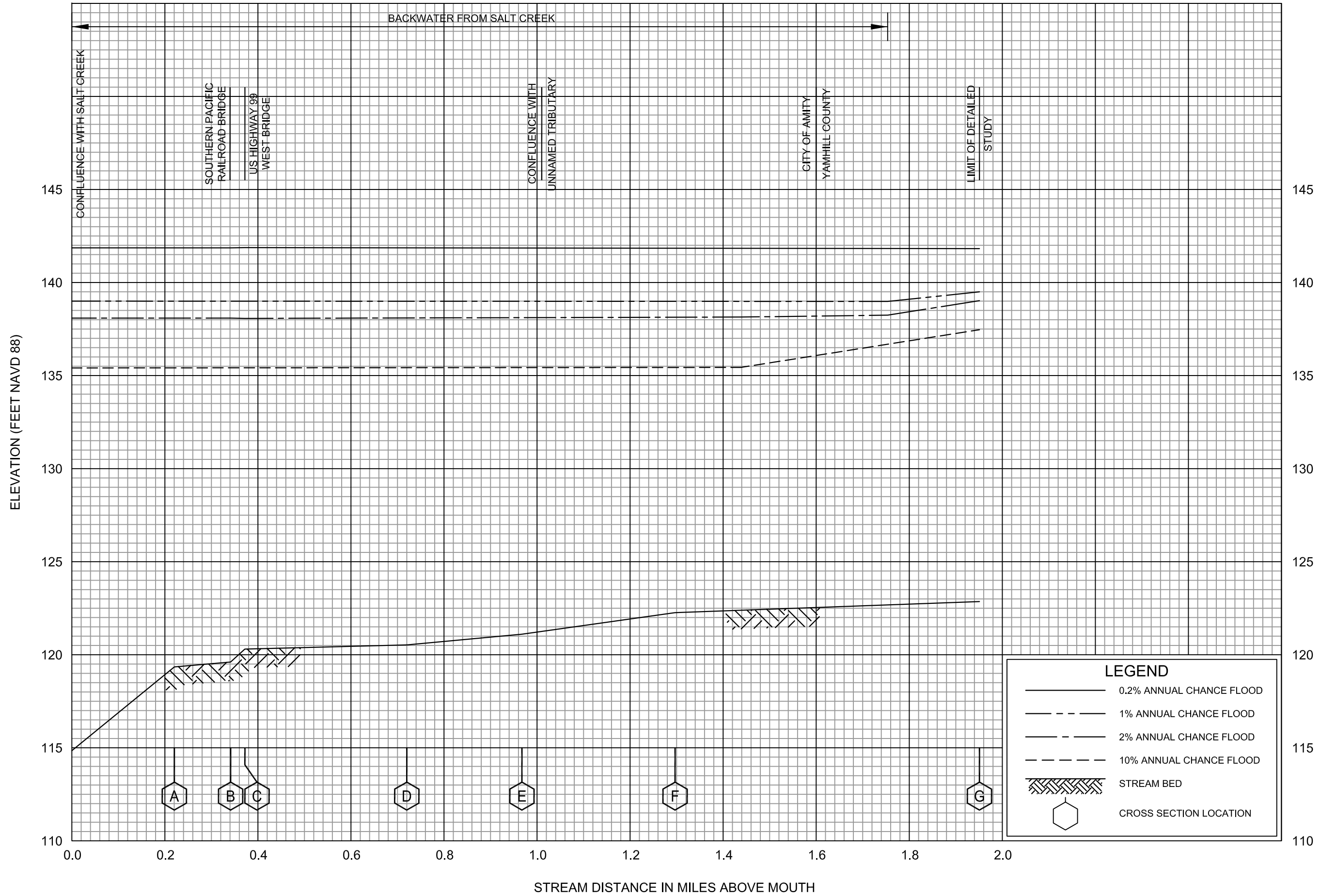
LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - · 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

FLOOD PROFILES
AGENCY CREEK

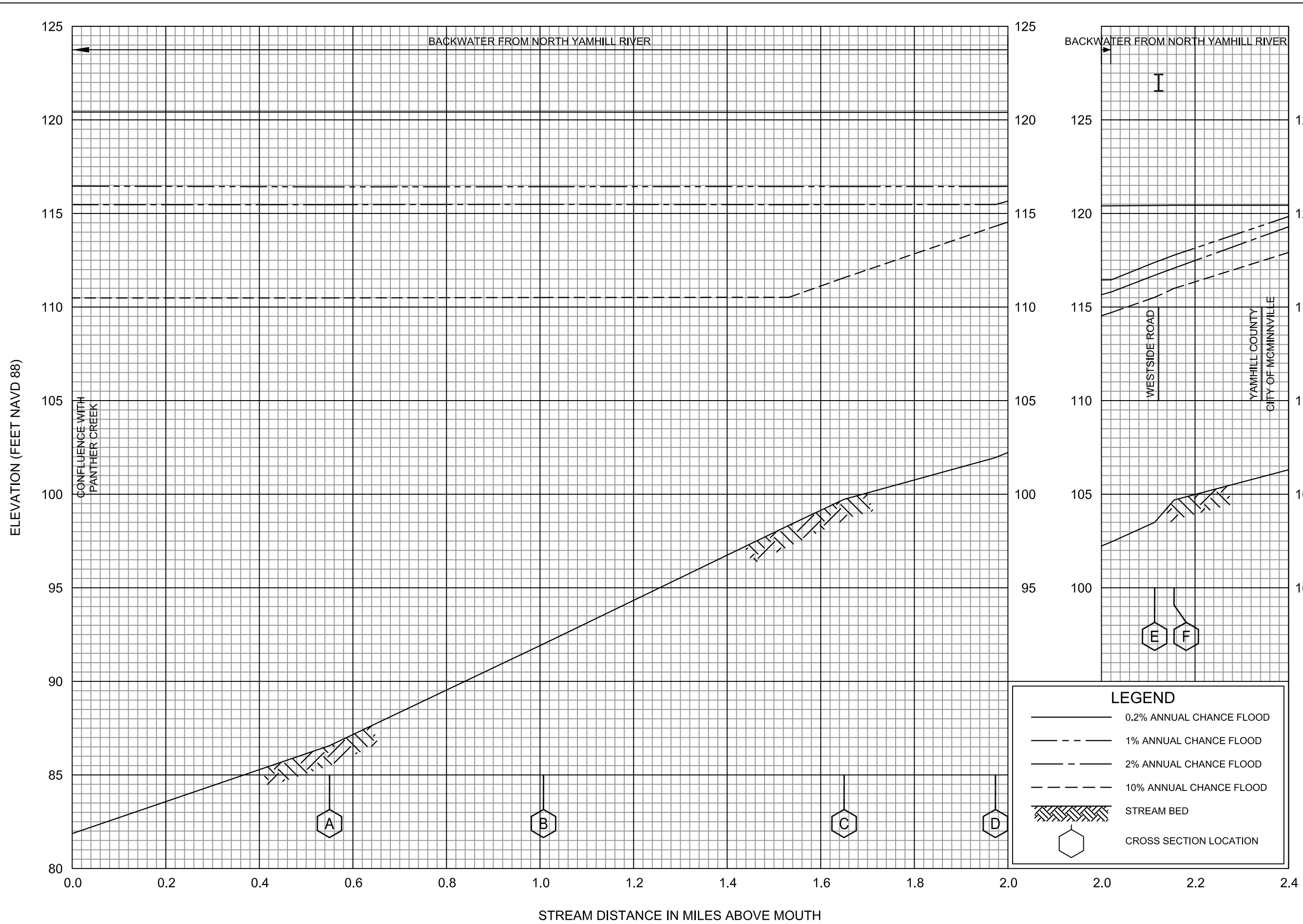
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FLOOD PROFILES

ASH SWALE

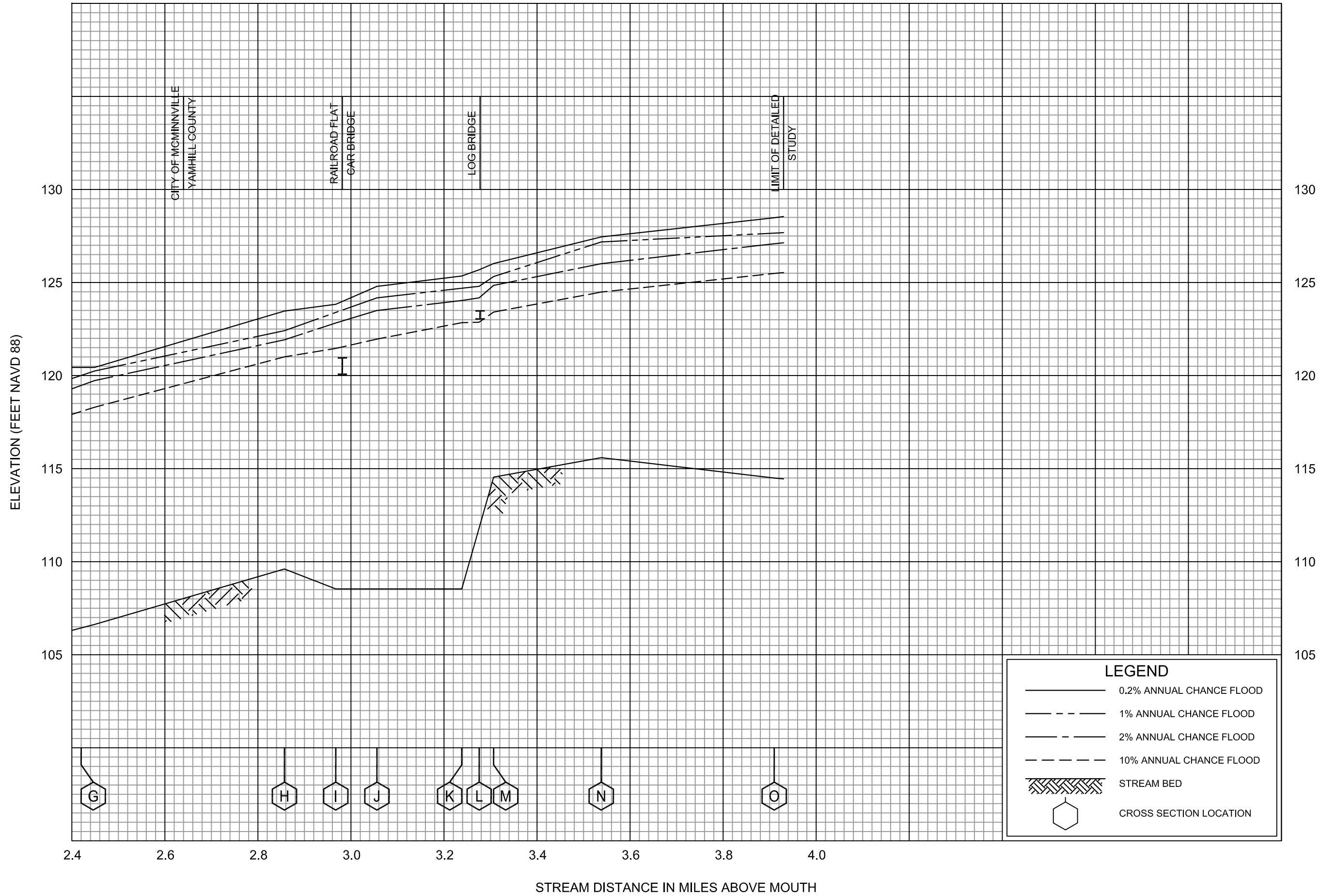
FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



FLOOD PROFILES

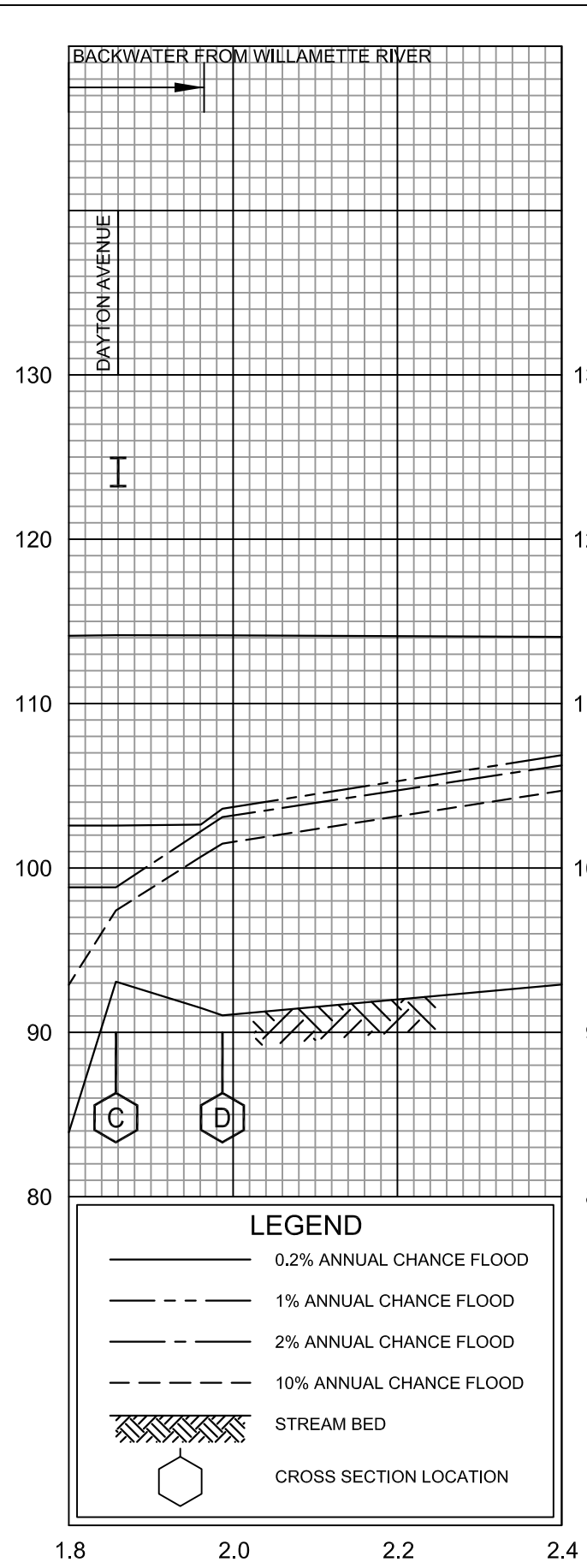
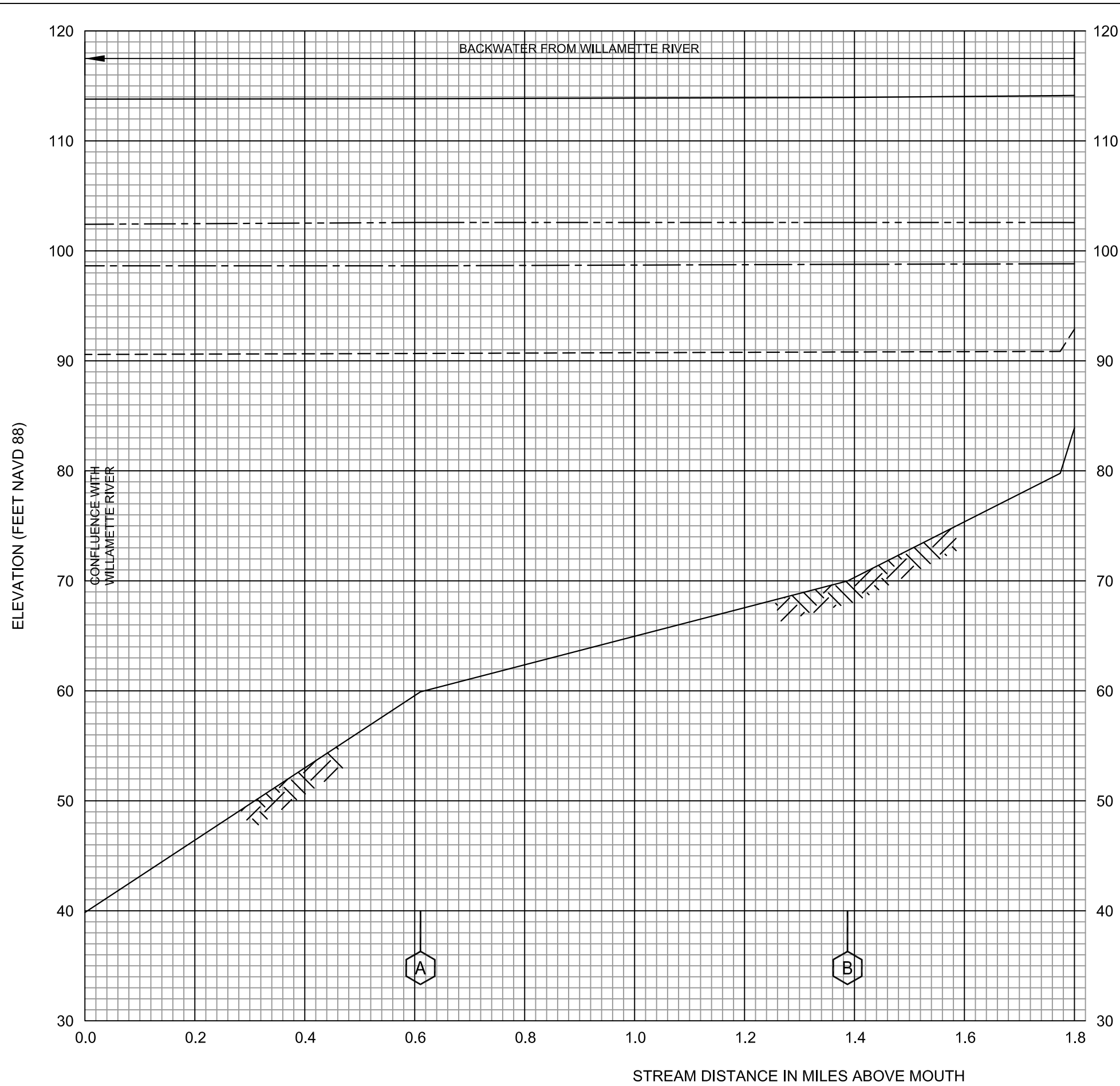
BAKER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



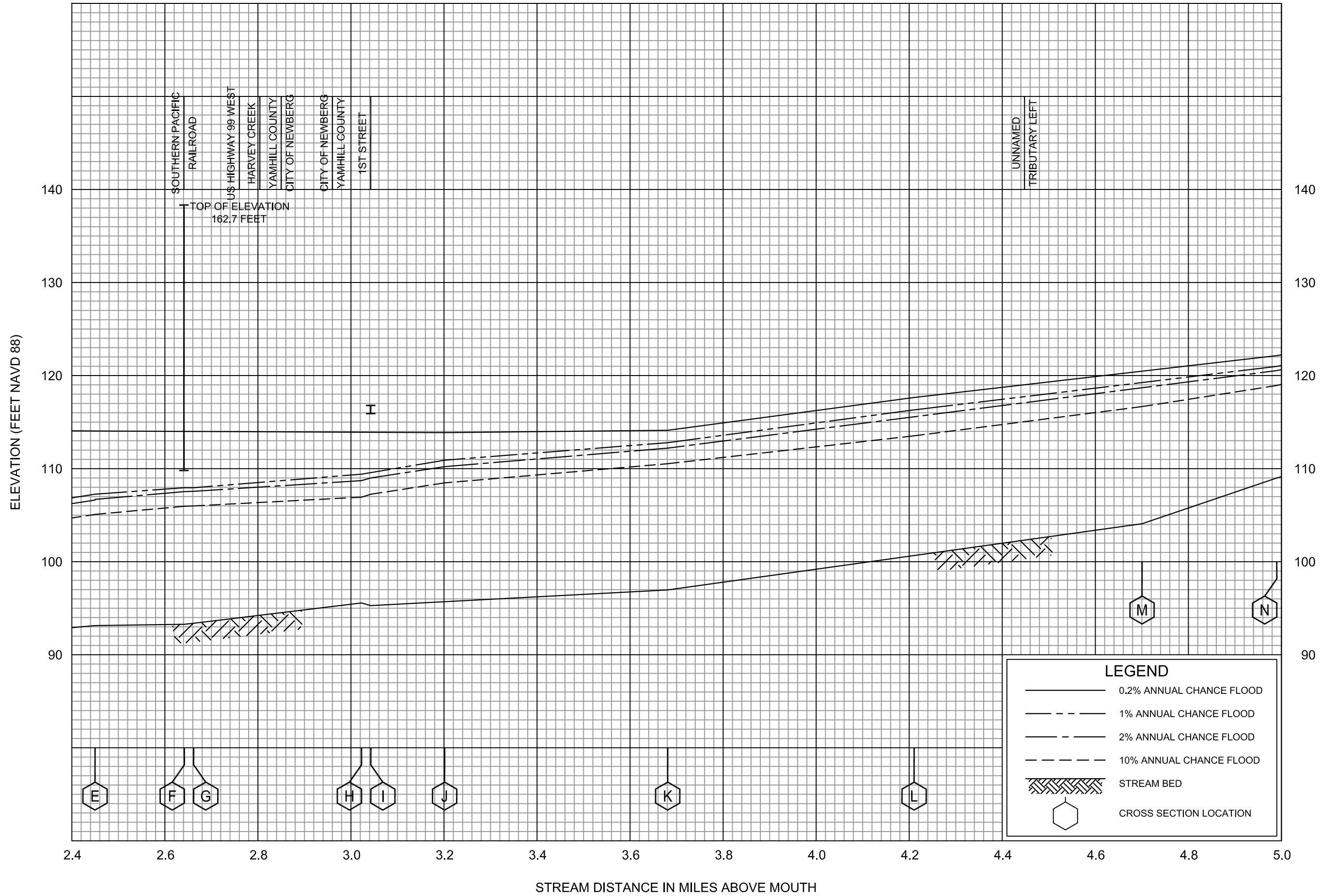
FLOOD PROFILES
BAKER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



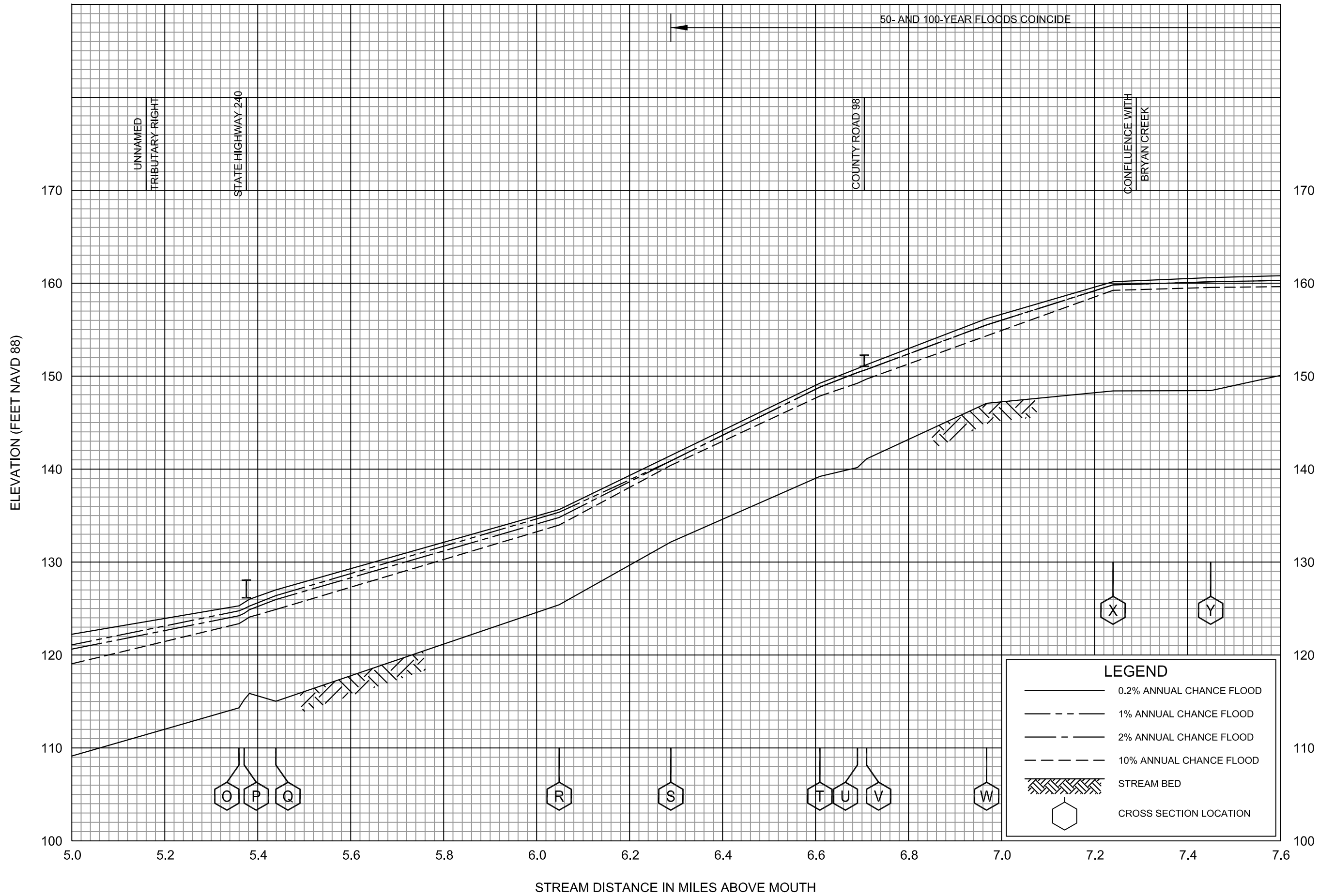
LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- . - . 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION



FLOOD PROFILES
CHEHALEM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



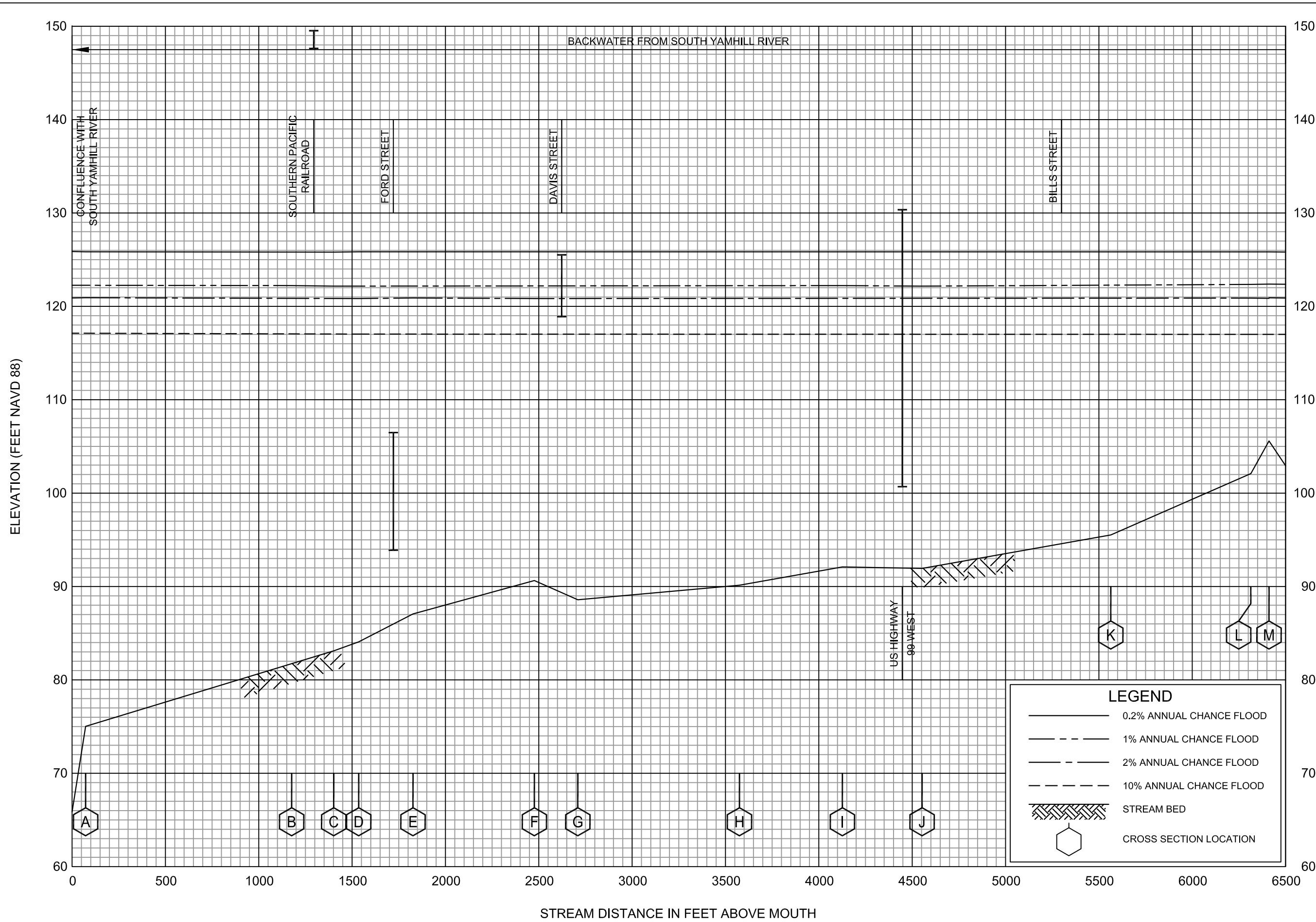
FLOOD PROFILES
CHEHALEM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES
CHEHALEM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS

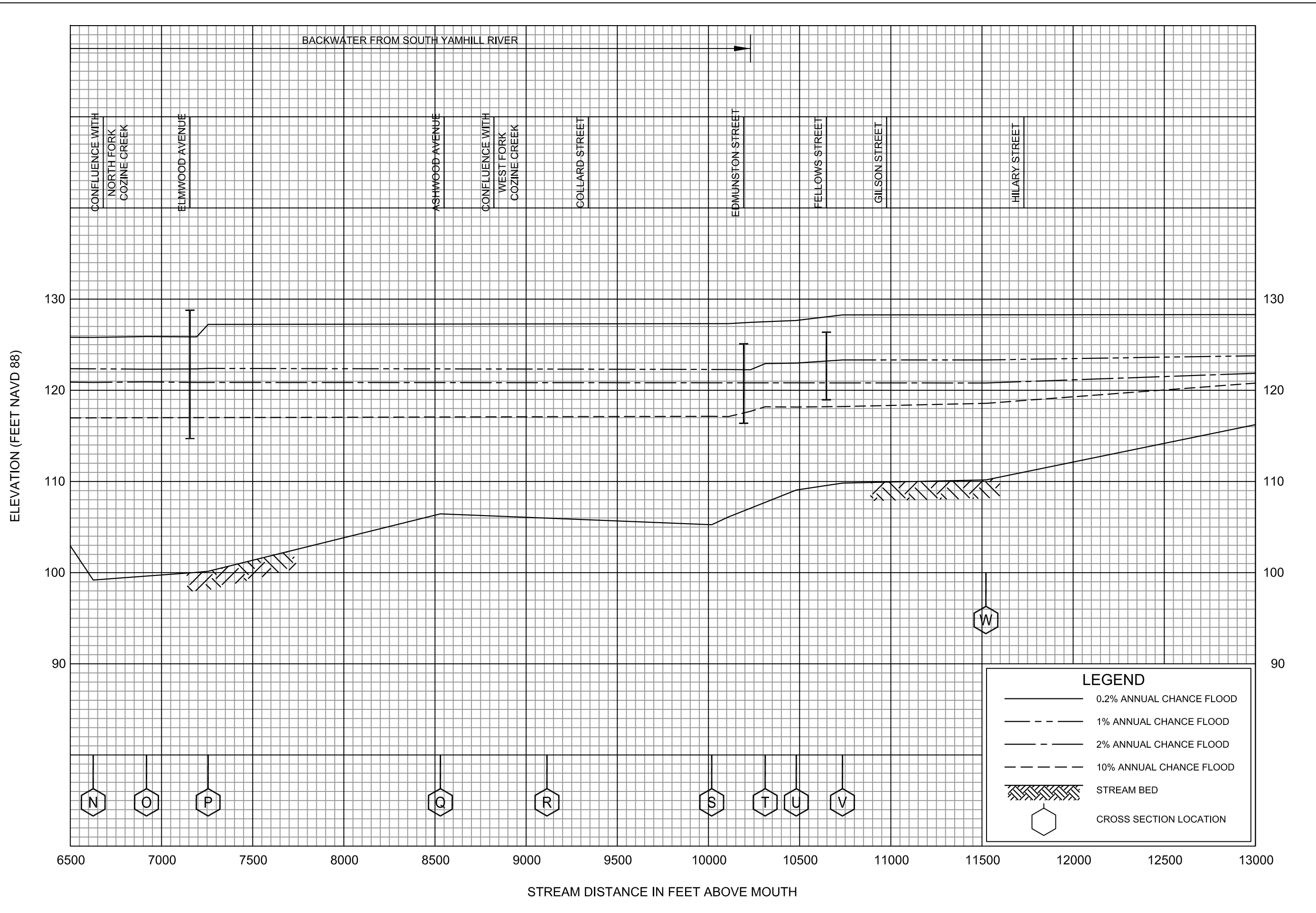


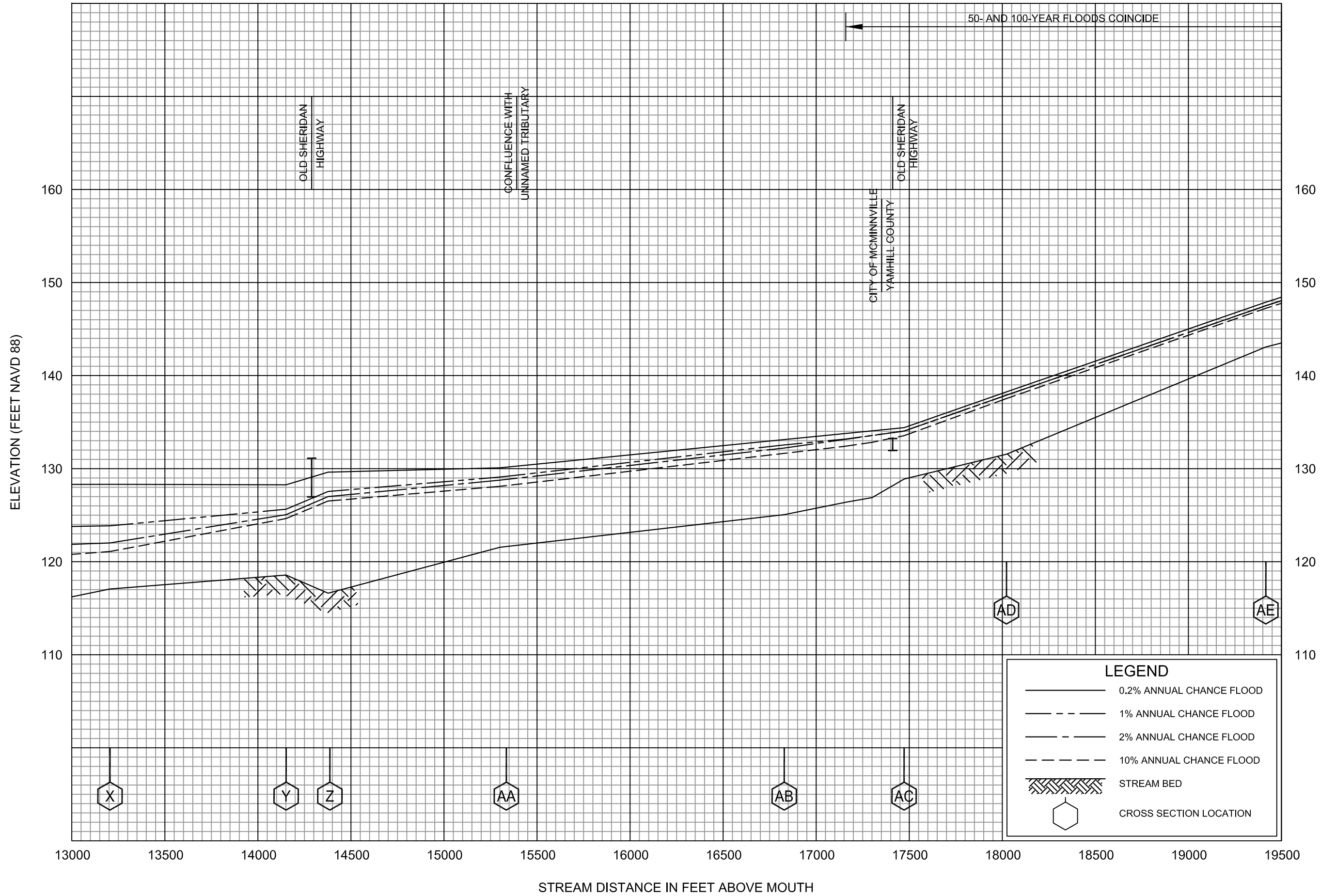
FLOOD PROFILES

COZINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS

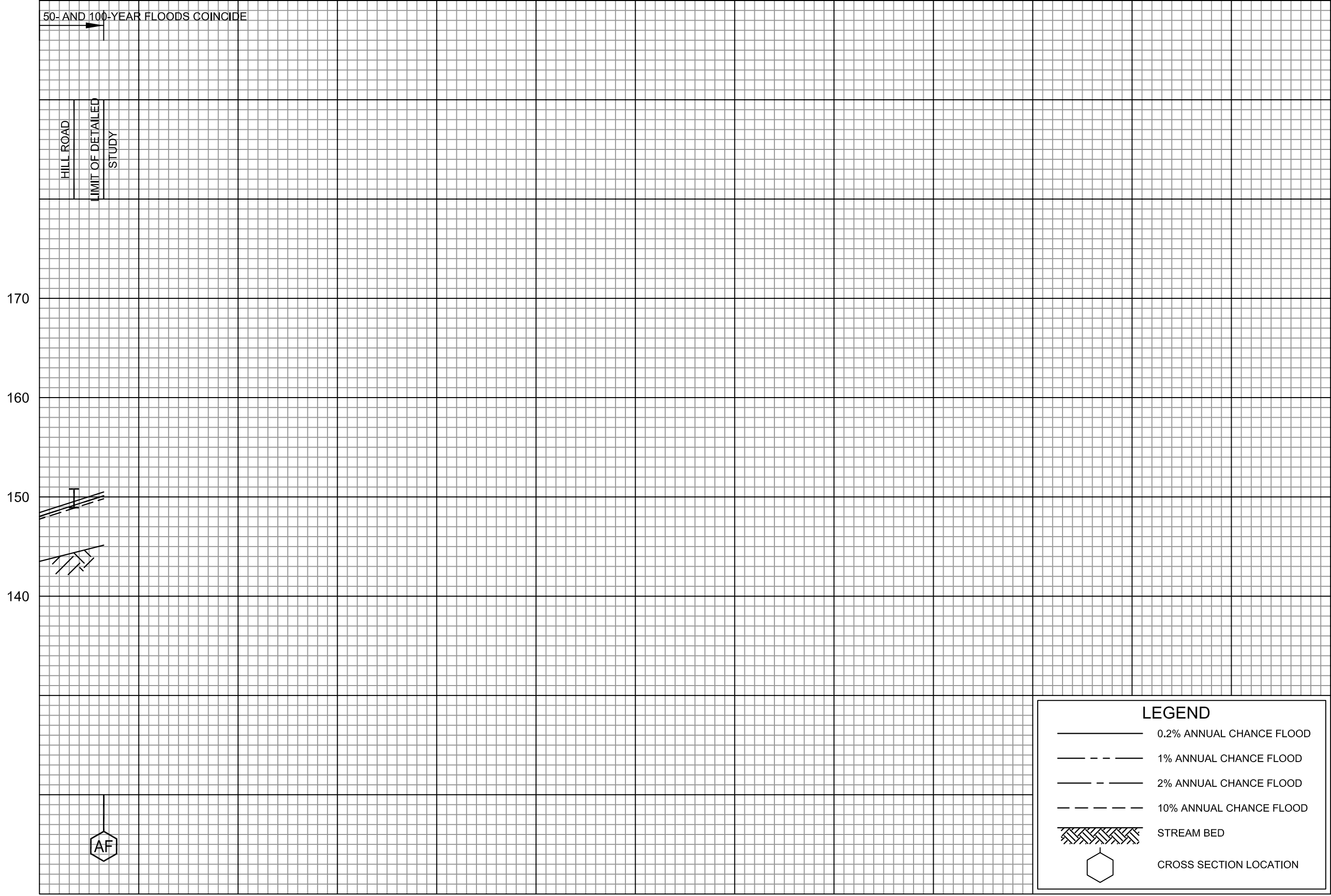




FLOOD PROFILES
COZINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

ELEVATION (FEET NAVD 88)



19500 20000

STREAM DISTANCE IN FEET ABOVE MOUTH

LEGEND

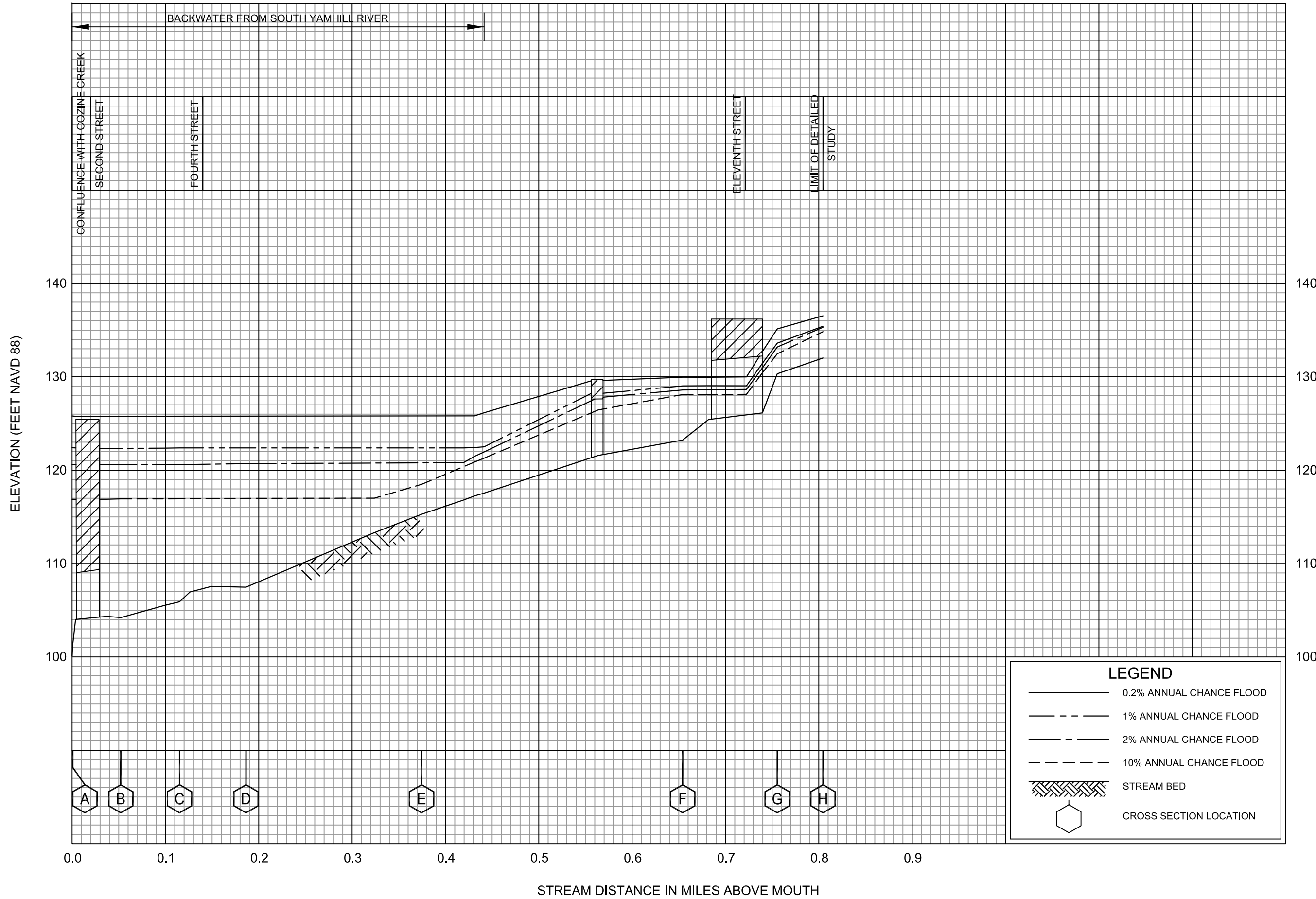
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- - - - - 1% ANNUAL CHANCE FLOOD
- · - · - 2% ANNUAL CHANCE FLOOD
- - - - - 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

170
160
150
140

FLOOD PROFILES

COZINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



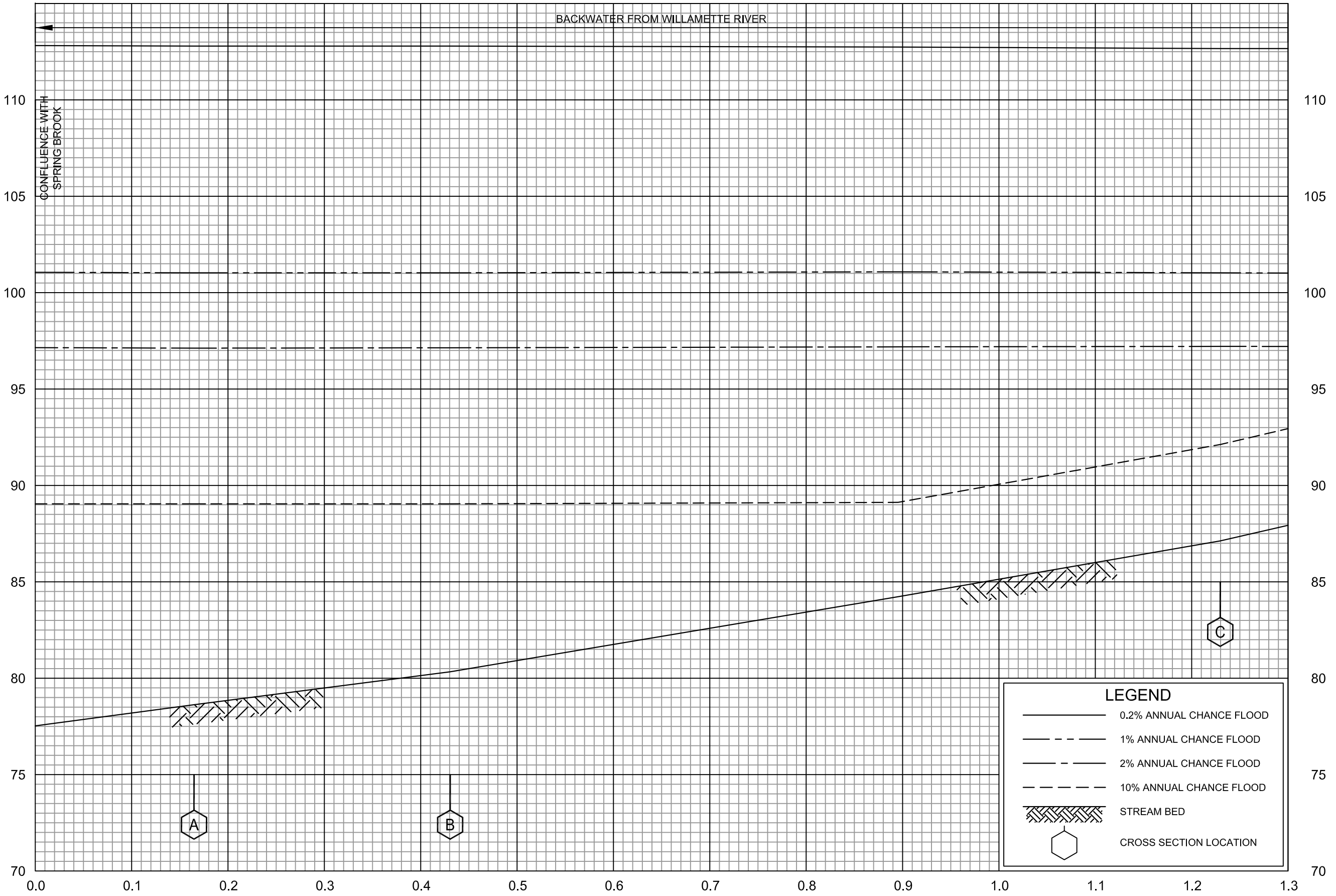
FLOOD PROFILES
NORTH FORK COZINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

BACKWATER FROM WILLAMETTE RIVER

CONFLUENCE WITH
SPRING BROOK

ELEVATION (FEET NAVD 88)



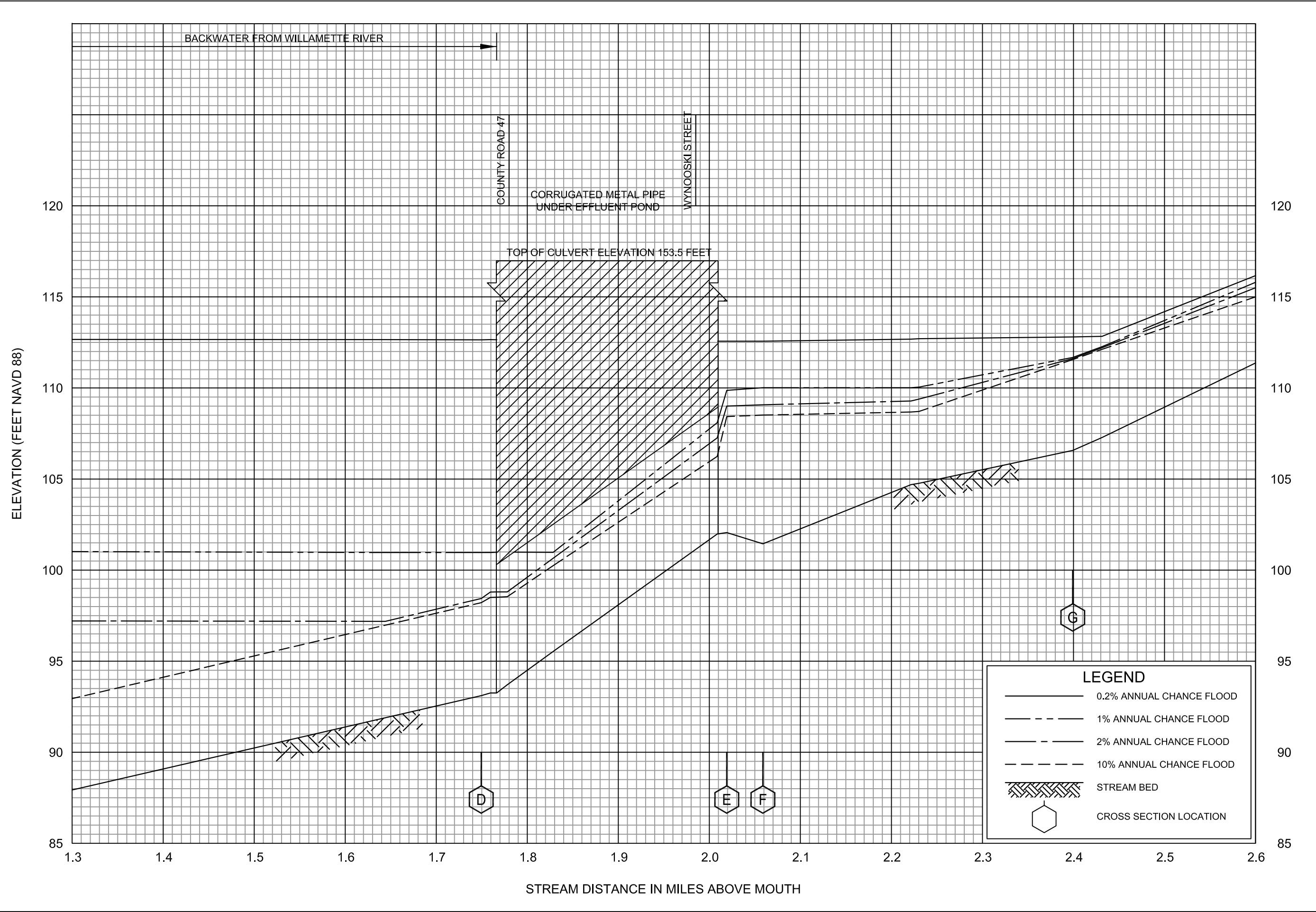
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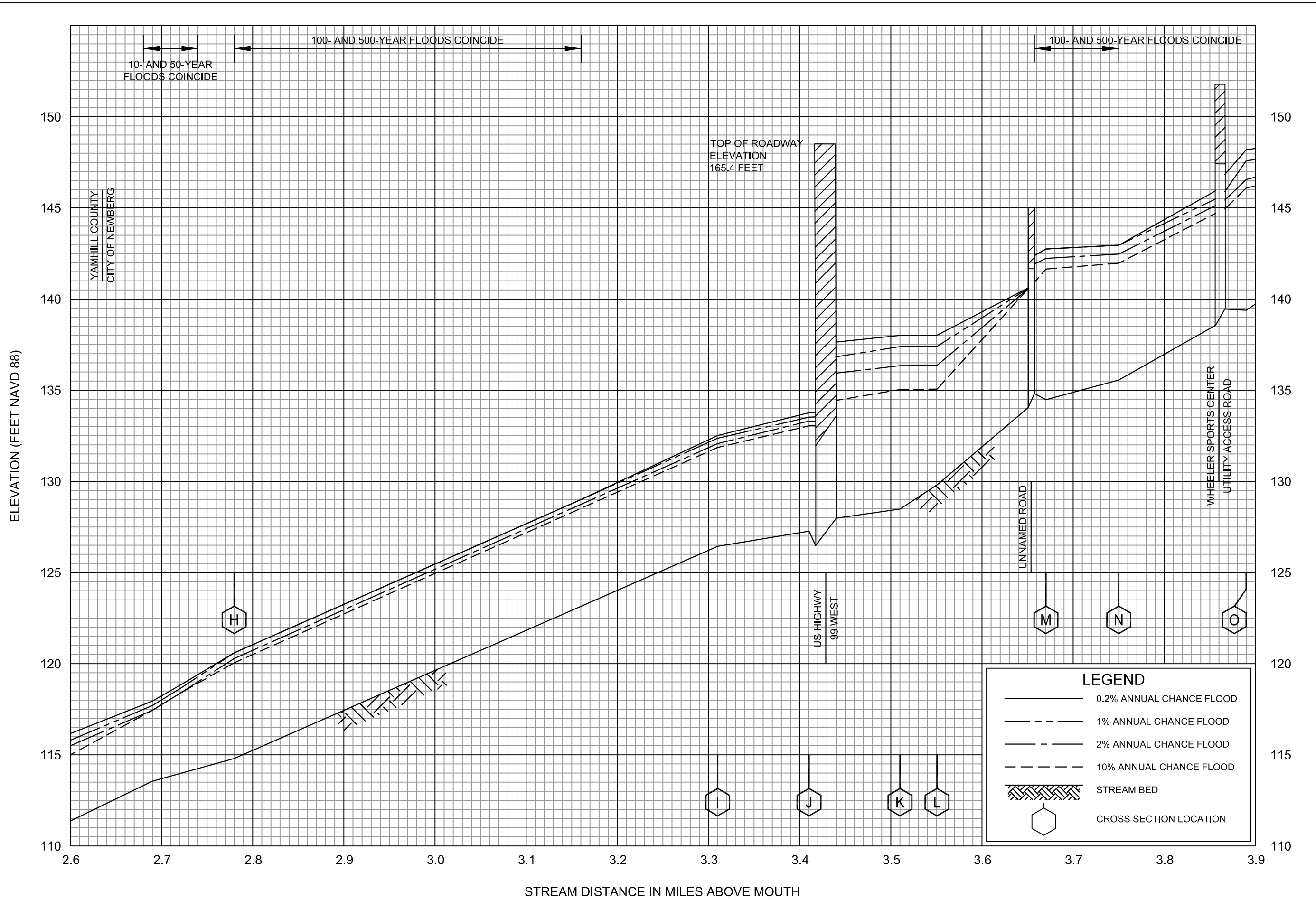
- 0.2% ANNUAL CHANCE FLOOD
- - - - 1% ANNUAL CHANCE FLOOD
- . - . 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

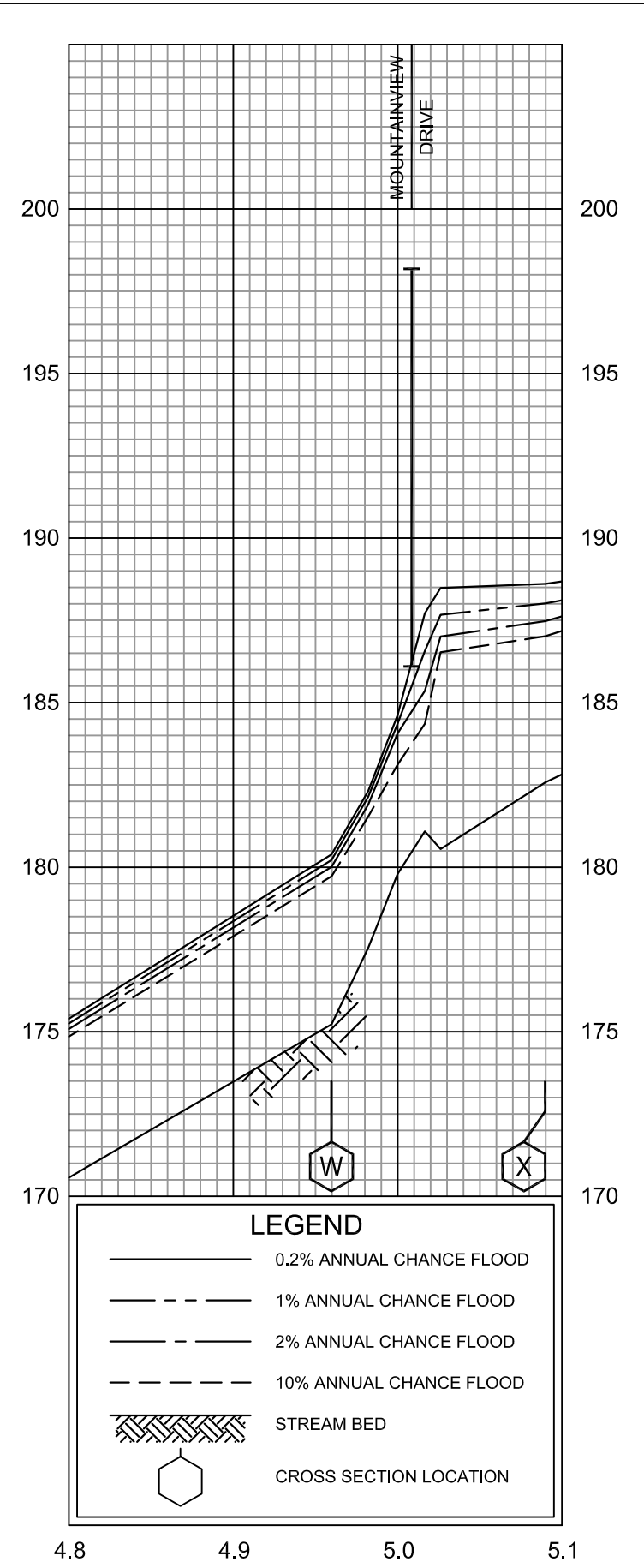
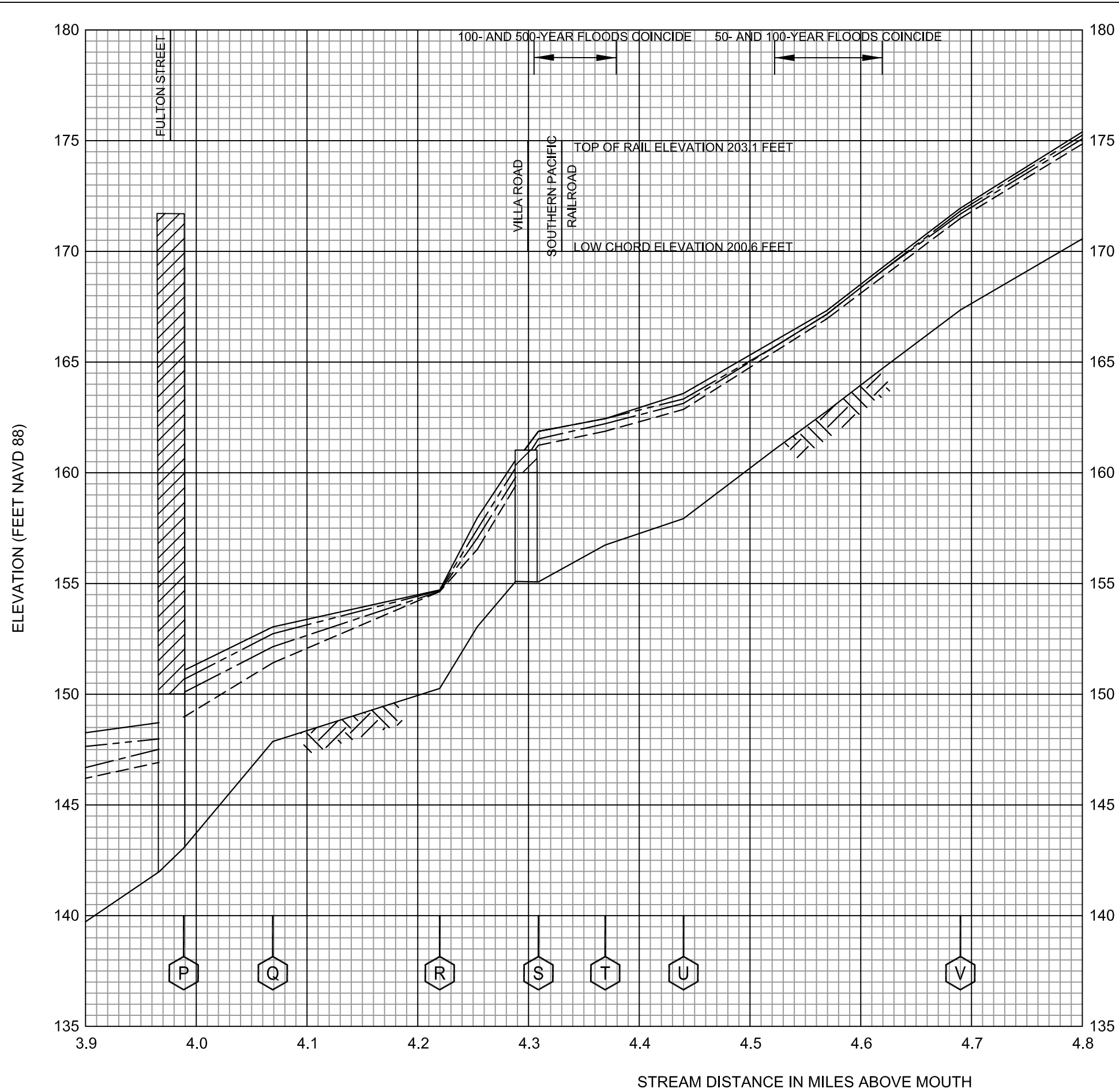
FLOOD PROFILES

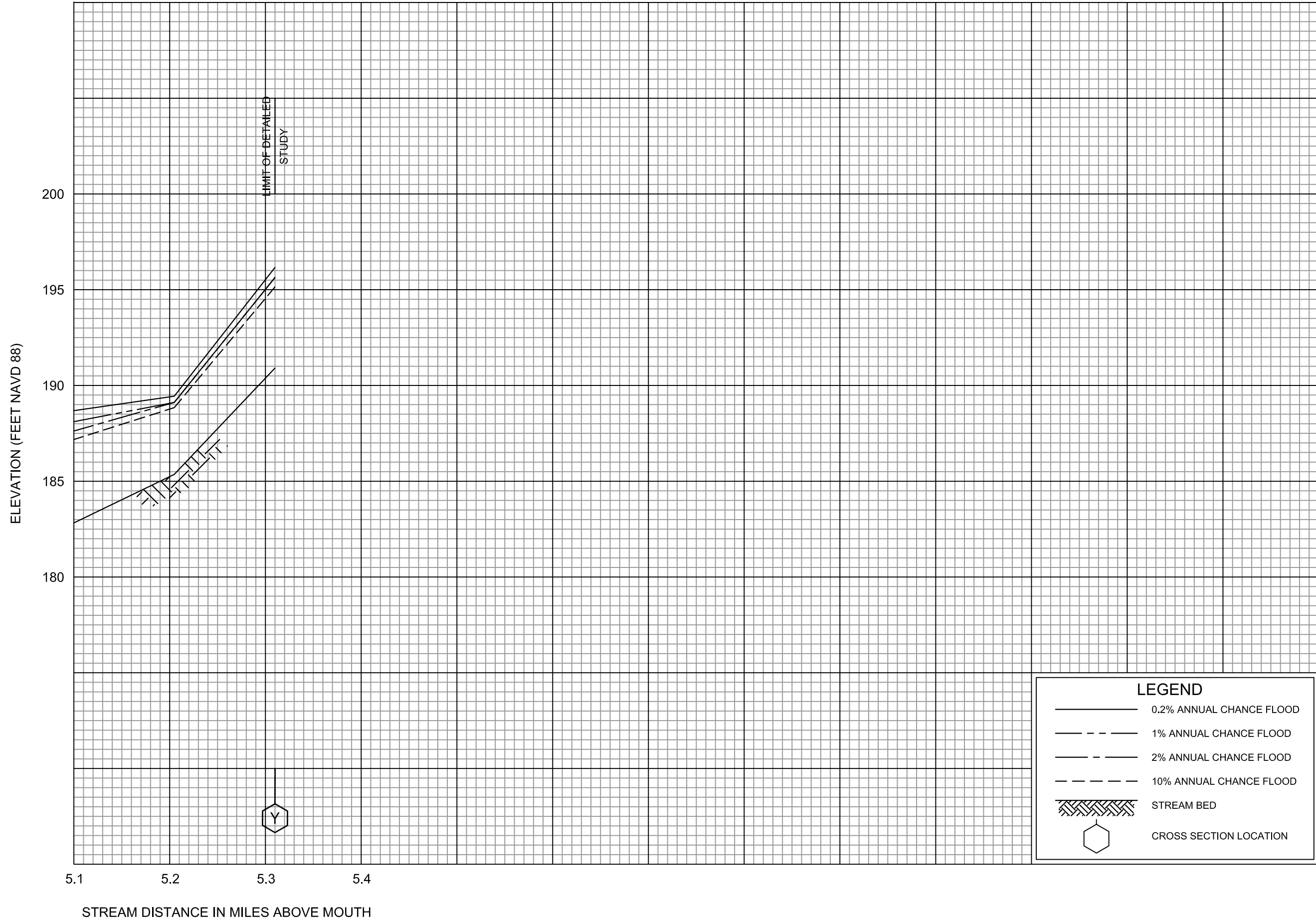
HESS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS





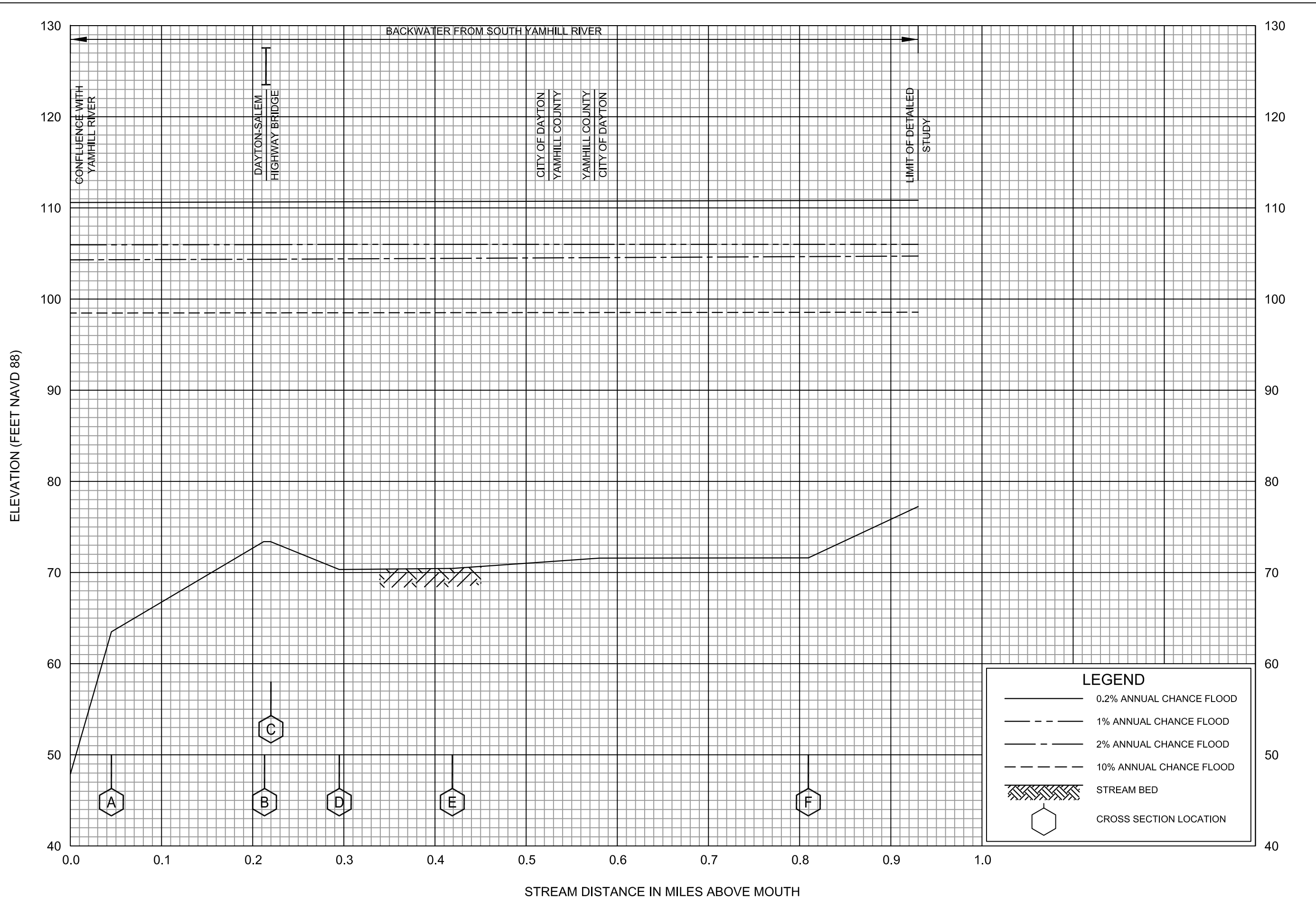


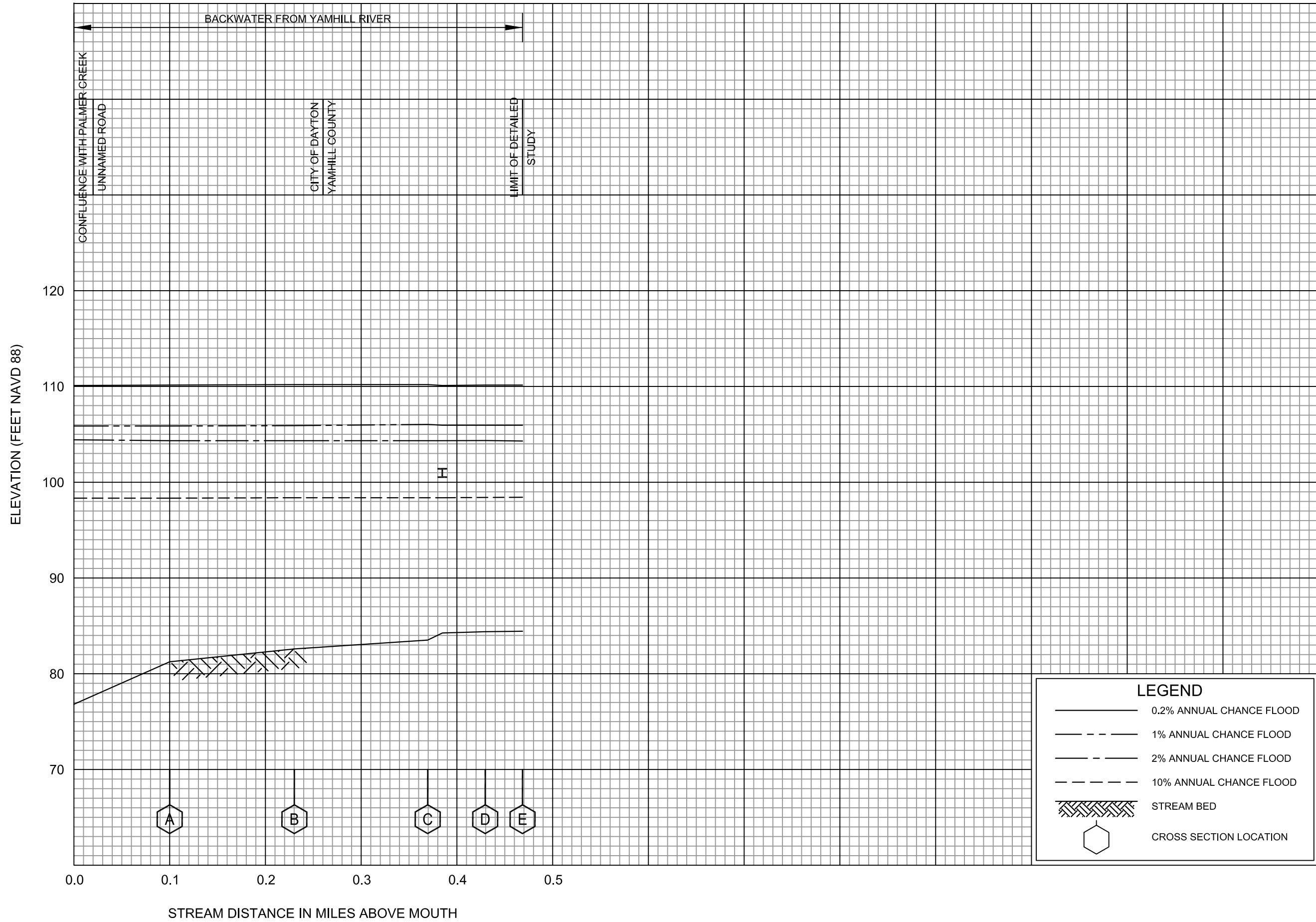


FLOOD PROFILES

HESS CREEK

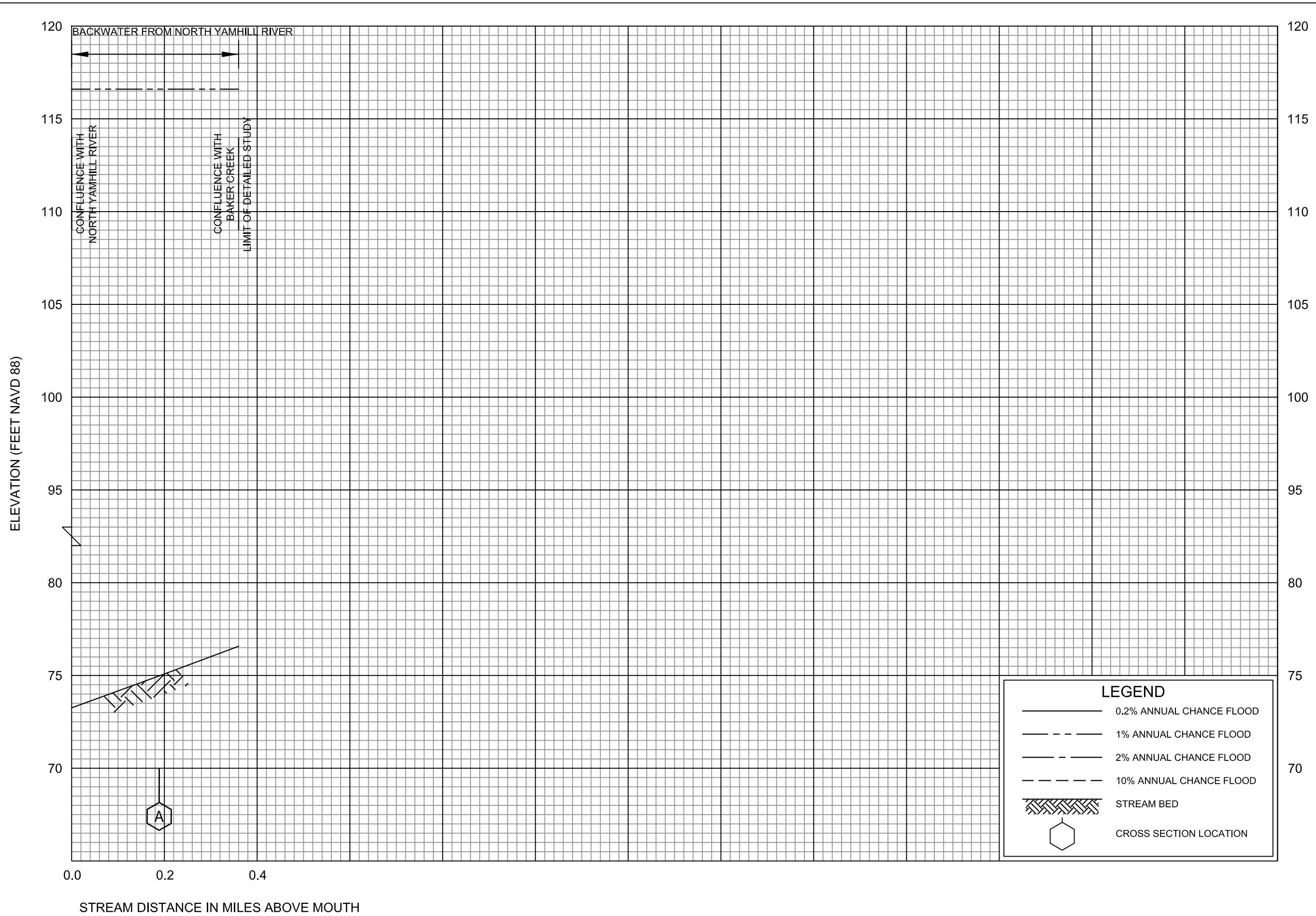
FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS





FLOOD PROFILES
WEST FORK PALMER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



LEGEND

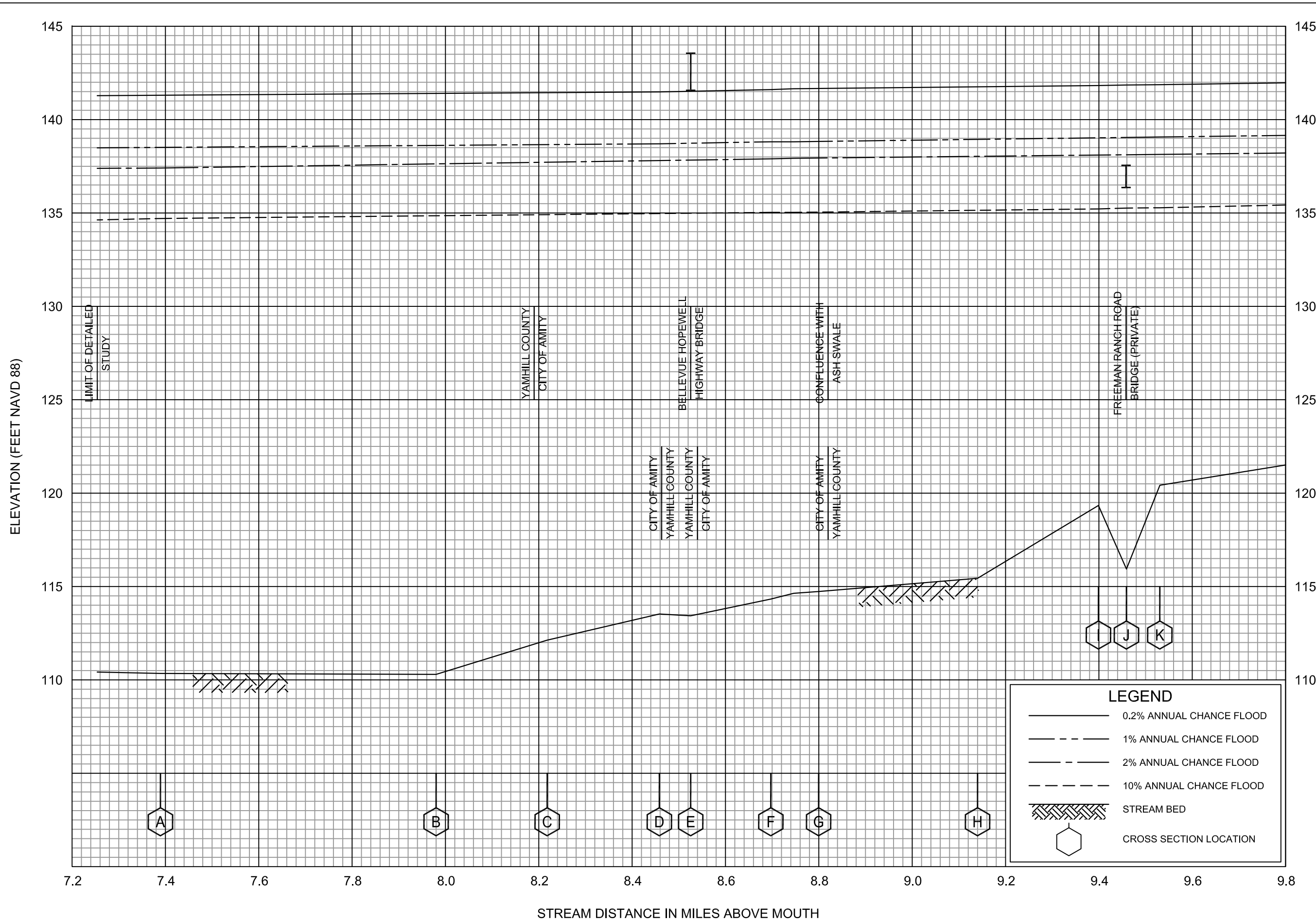
- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- . - . 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS

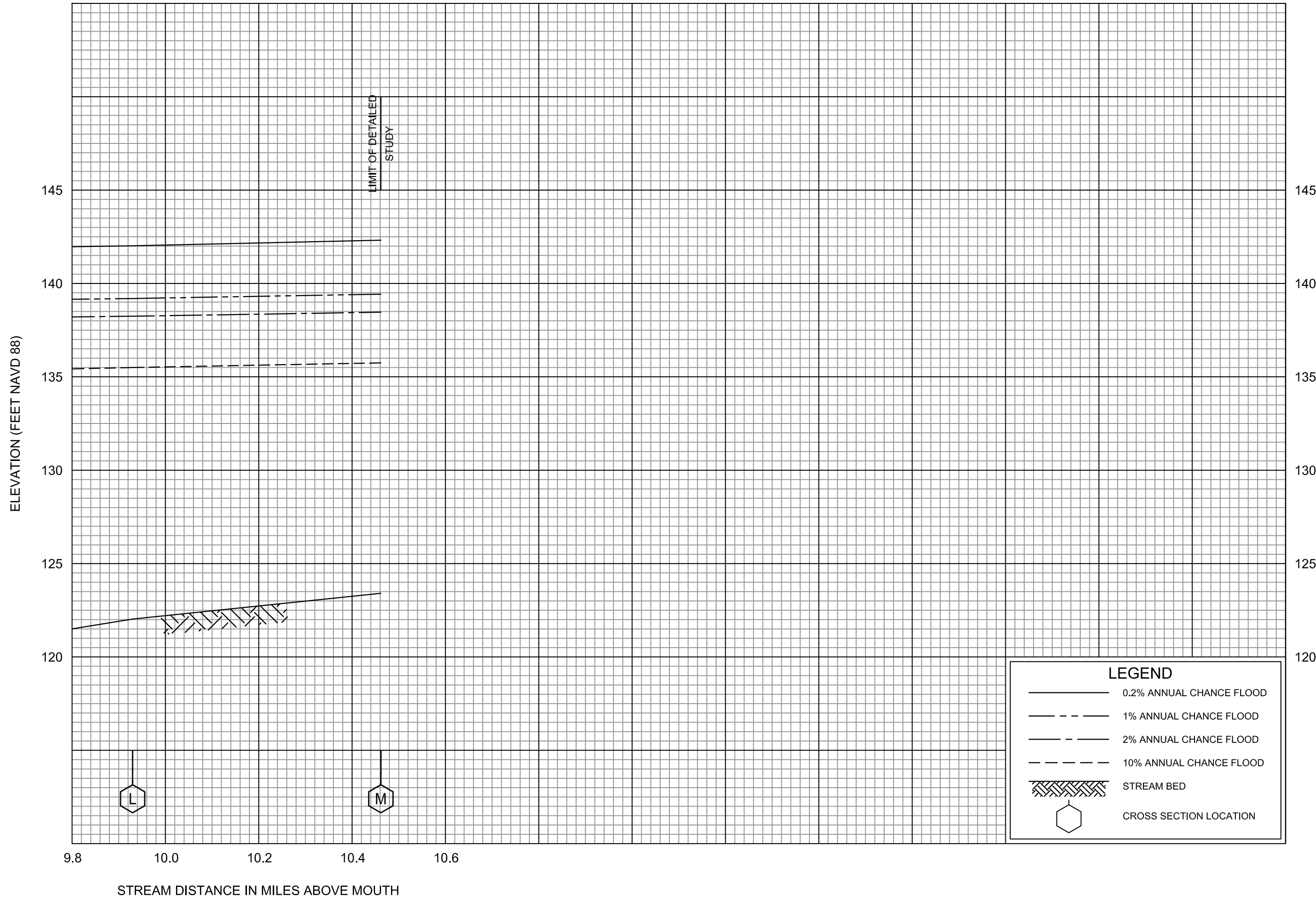


FLOOD PROFILES

SALT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

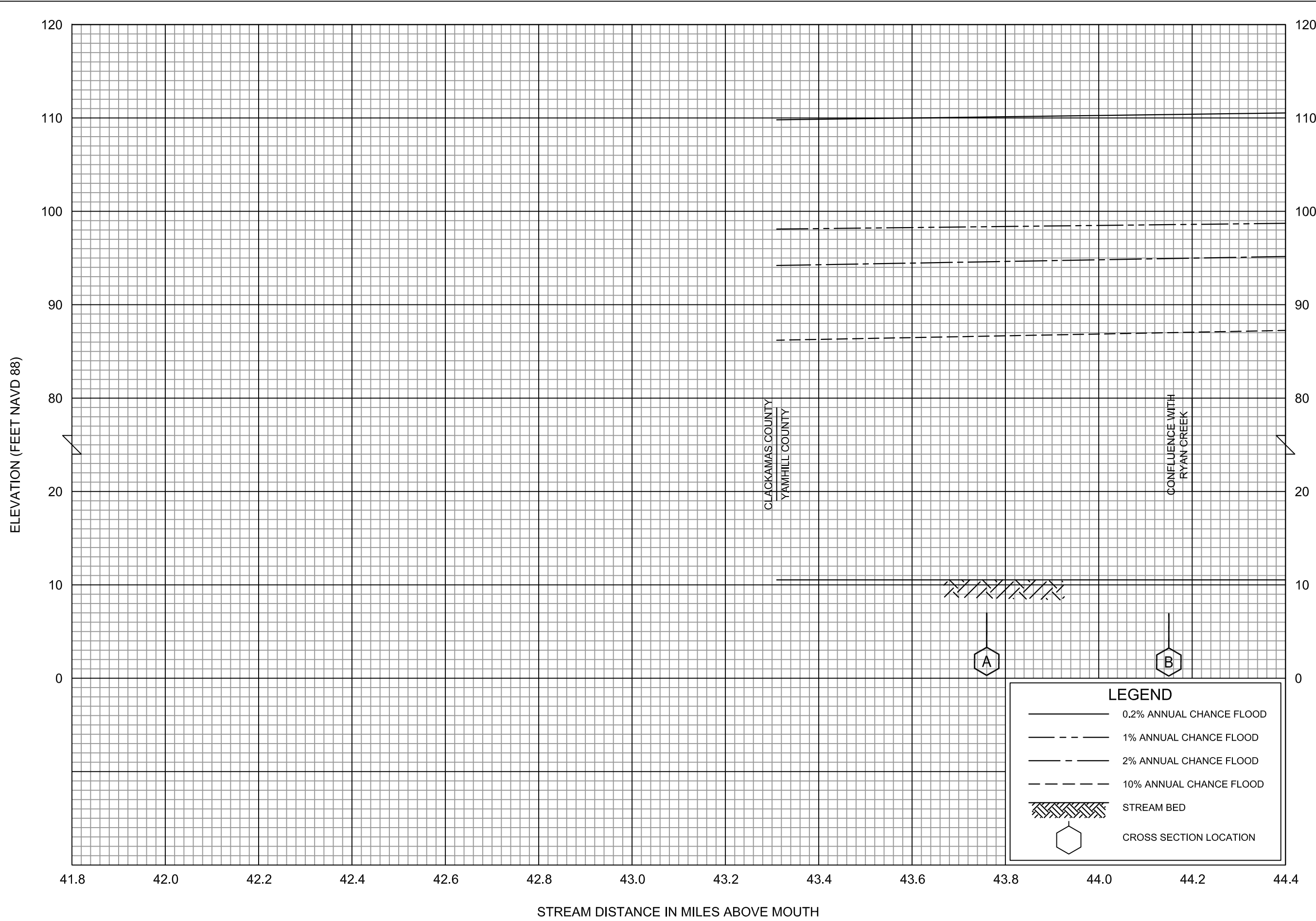
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES

SALT CREEK

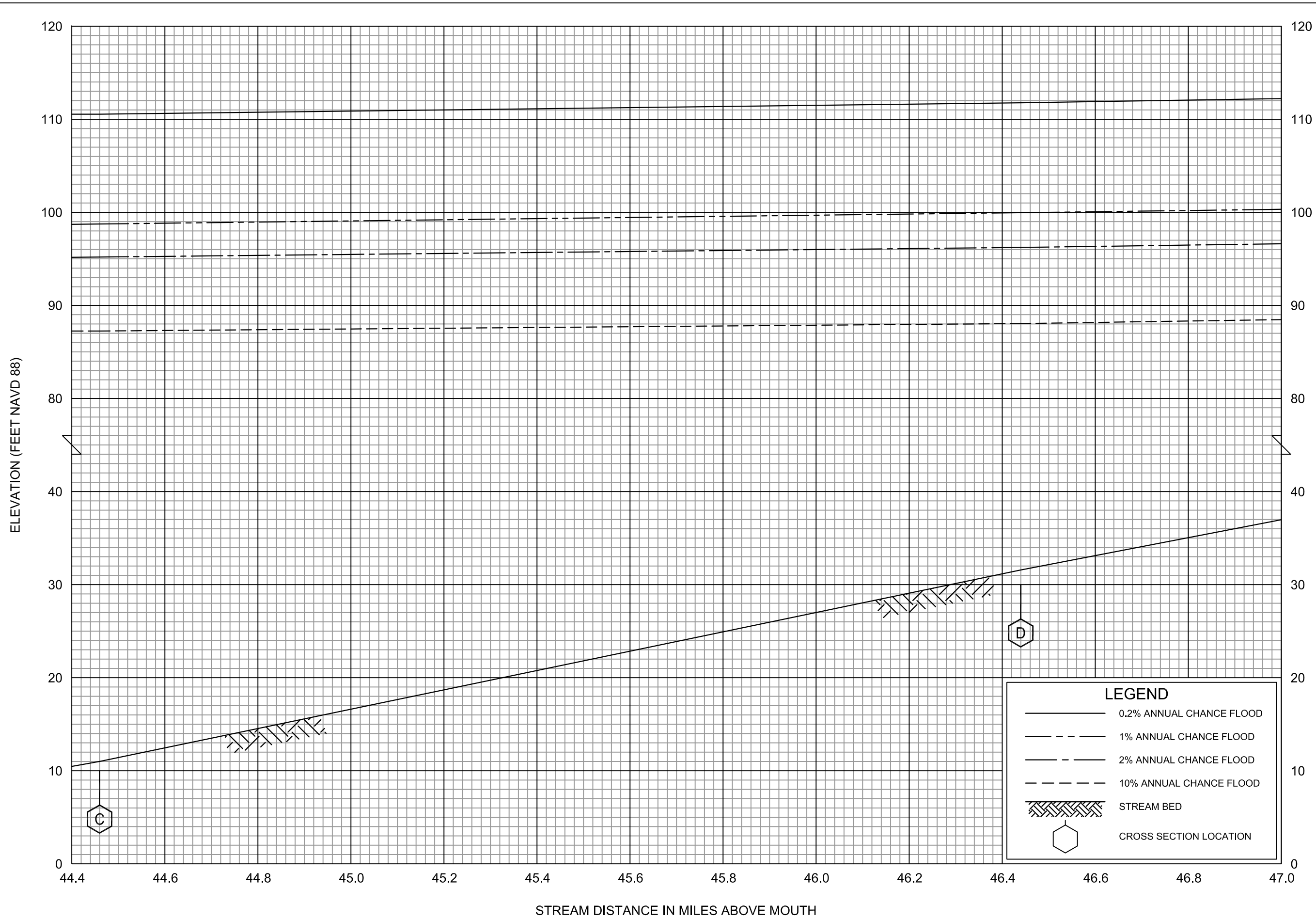
FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



FLOOD PROFILES

WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



ELEVATION (FEET NAVD 88)

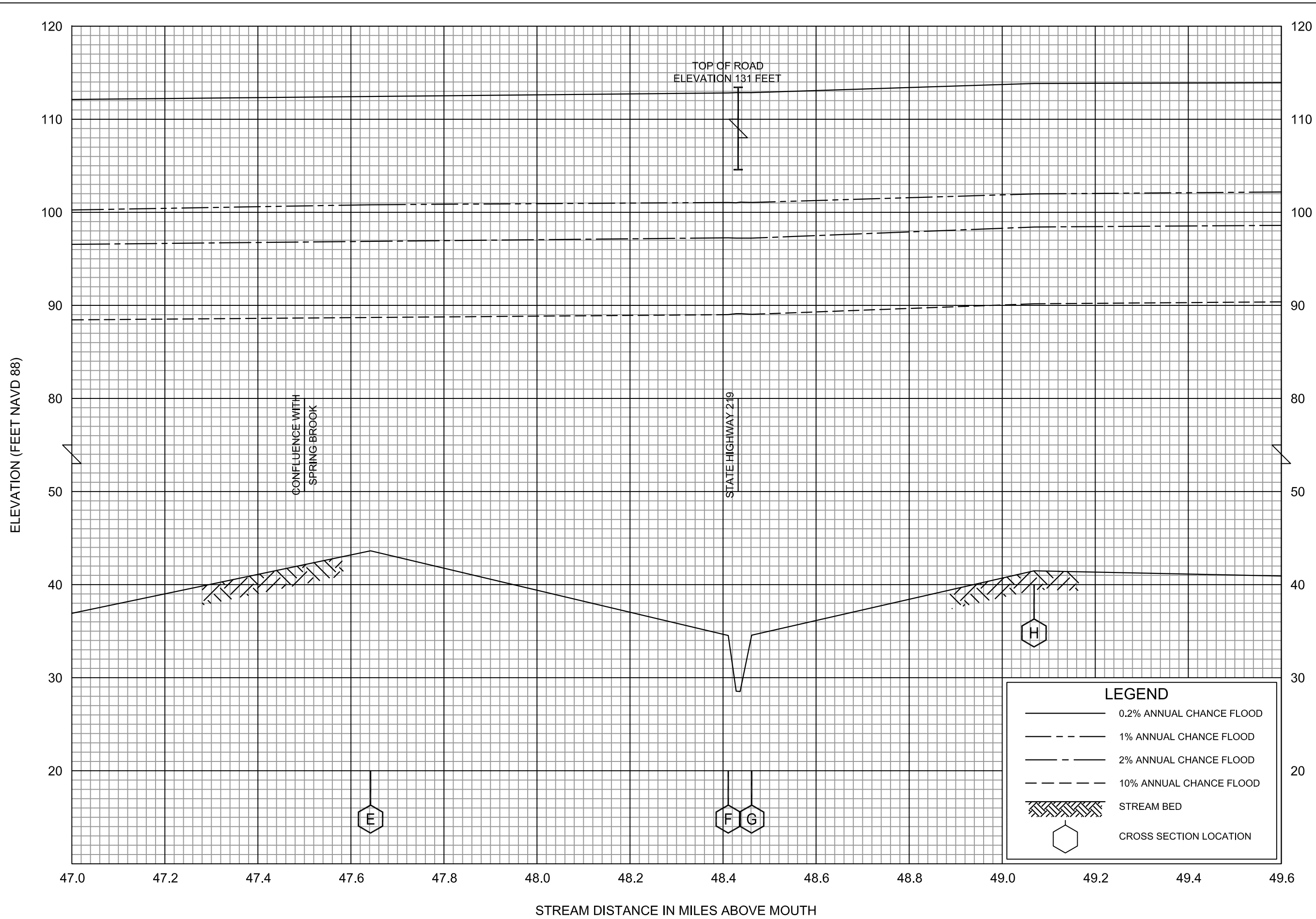
STREAM DISTANCE IN MILES ABOVE MOUTH

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
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FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

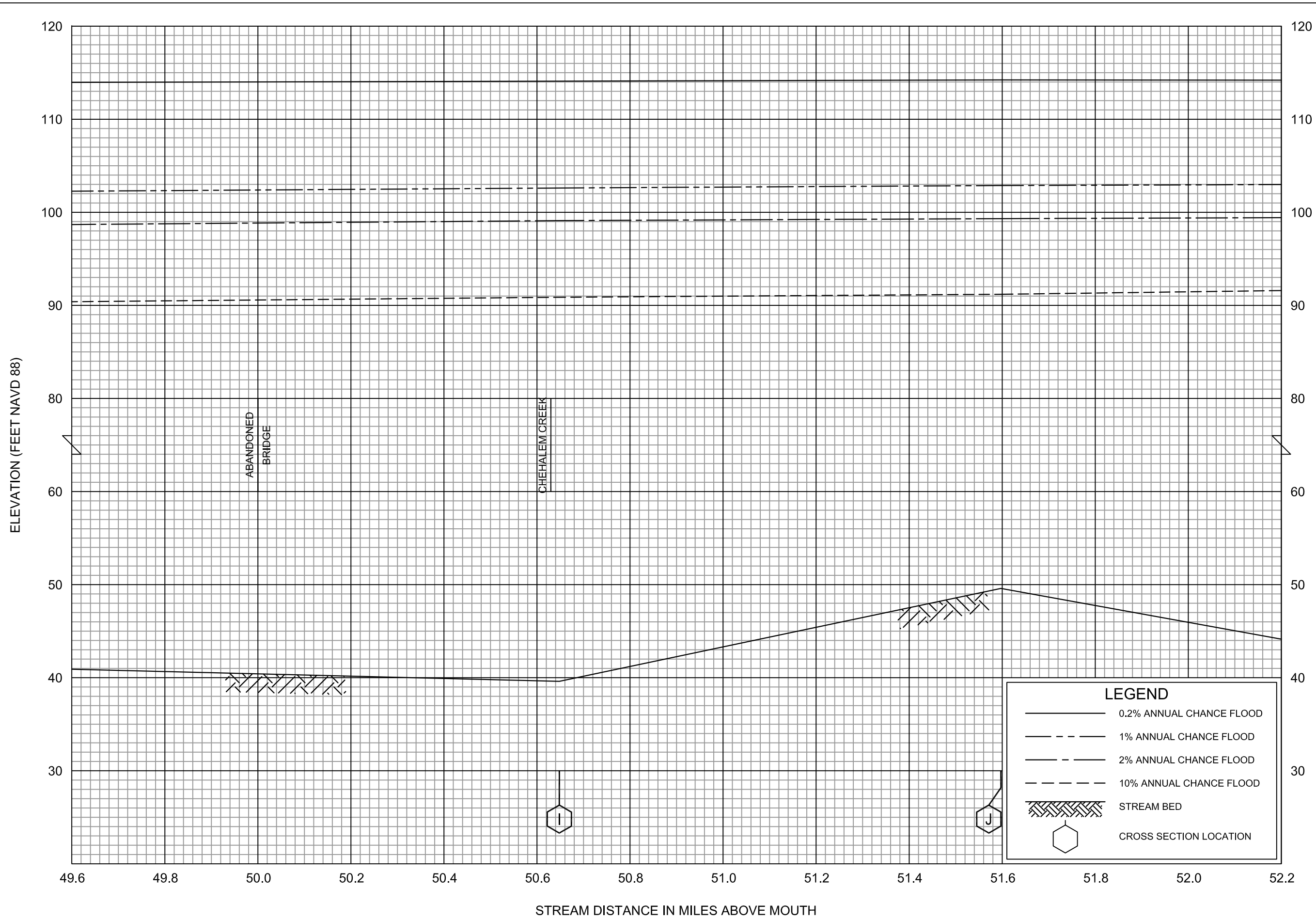


FLOOD PROFILES

WILLAMETTE RIVER

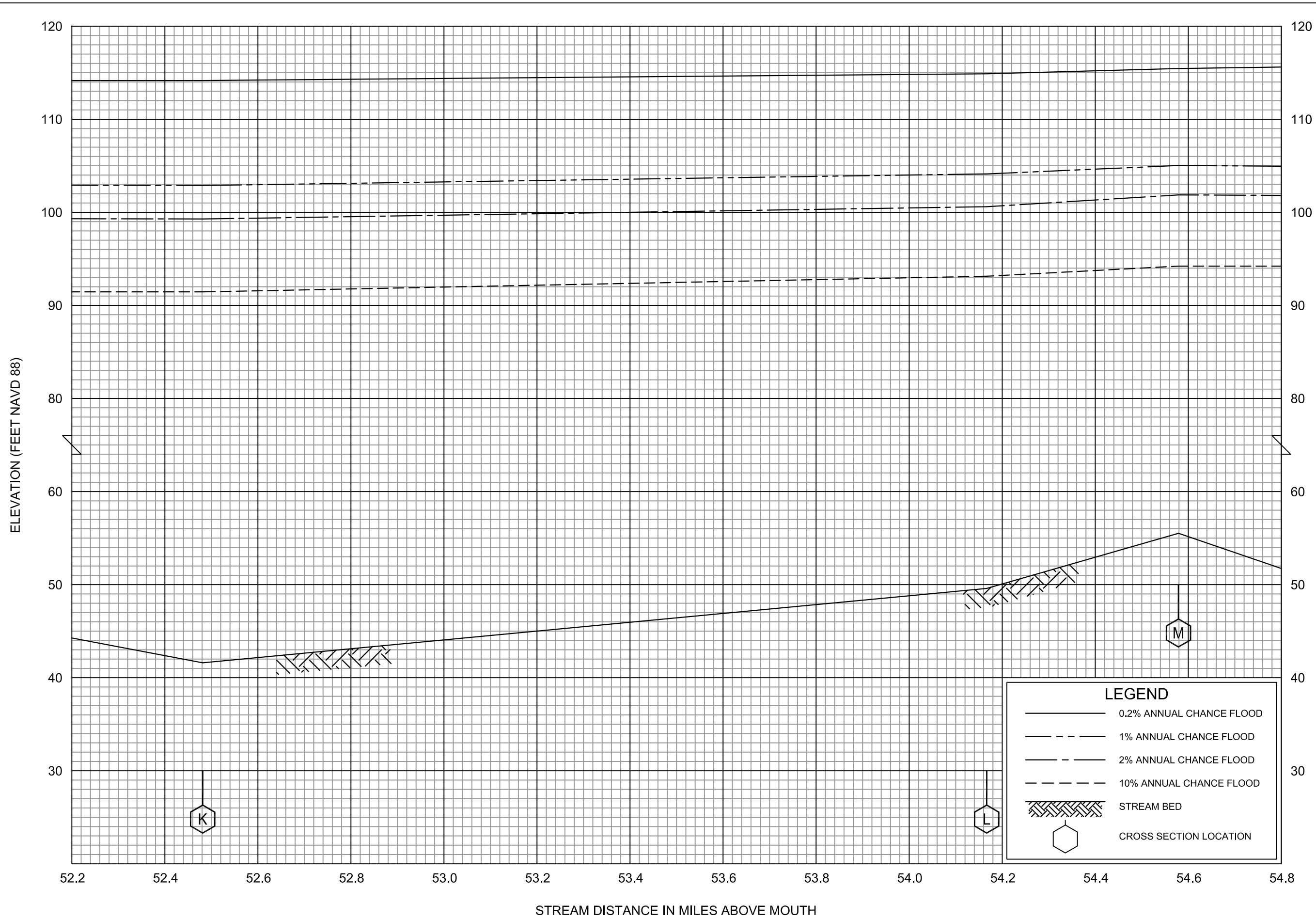
FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



ELEVATION (FEET NAVD 88)

STREAM DISTANCE IN MILES ABOVE MOUTH

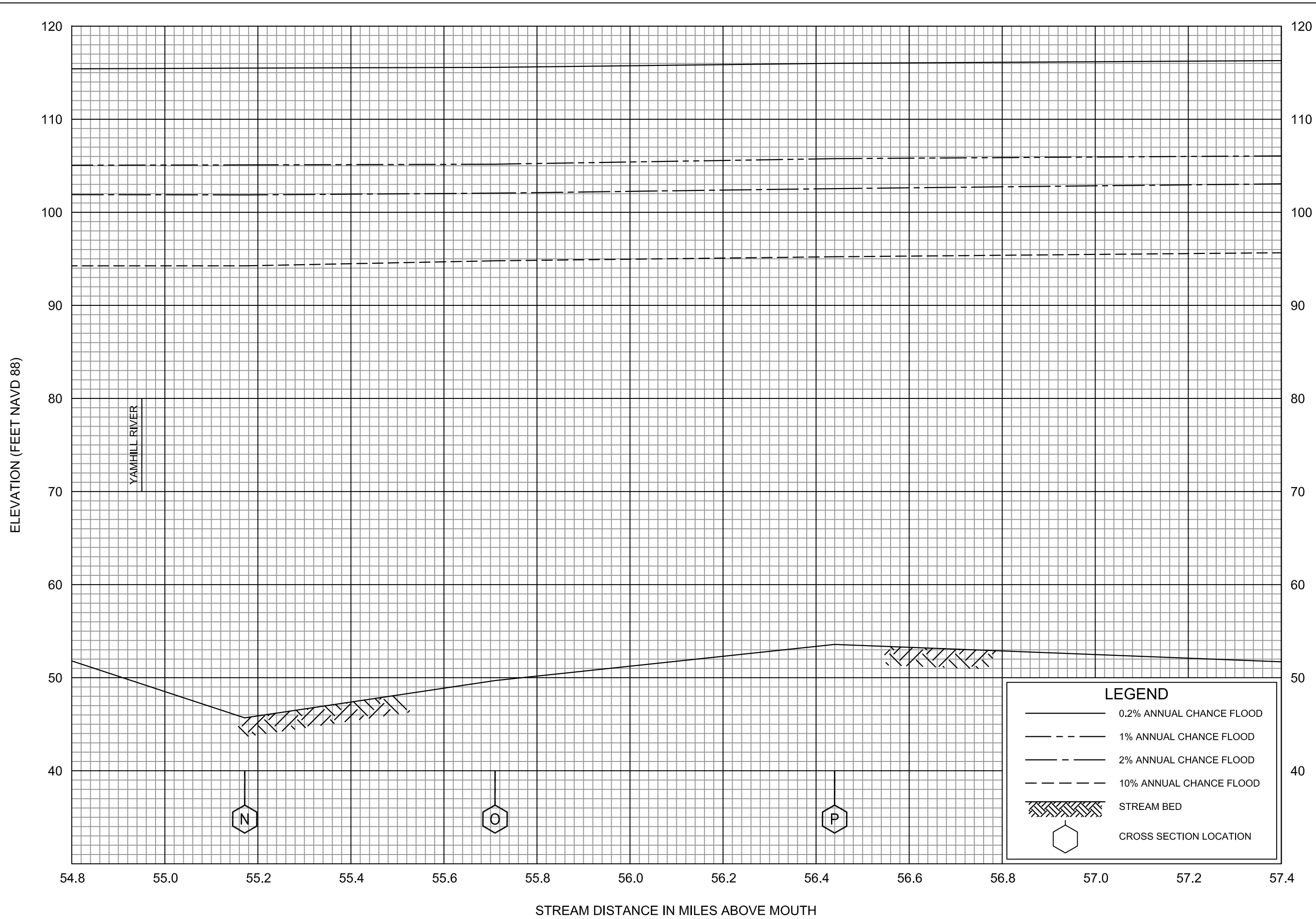
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FLOOD PROFILES

WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



ELEVATION (FEET NAVD 88)

STREAM DISTANCE IN MILES ABOVE MOUTH

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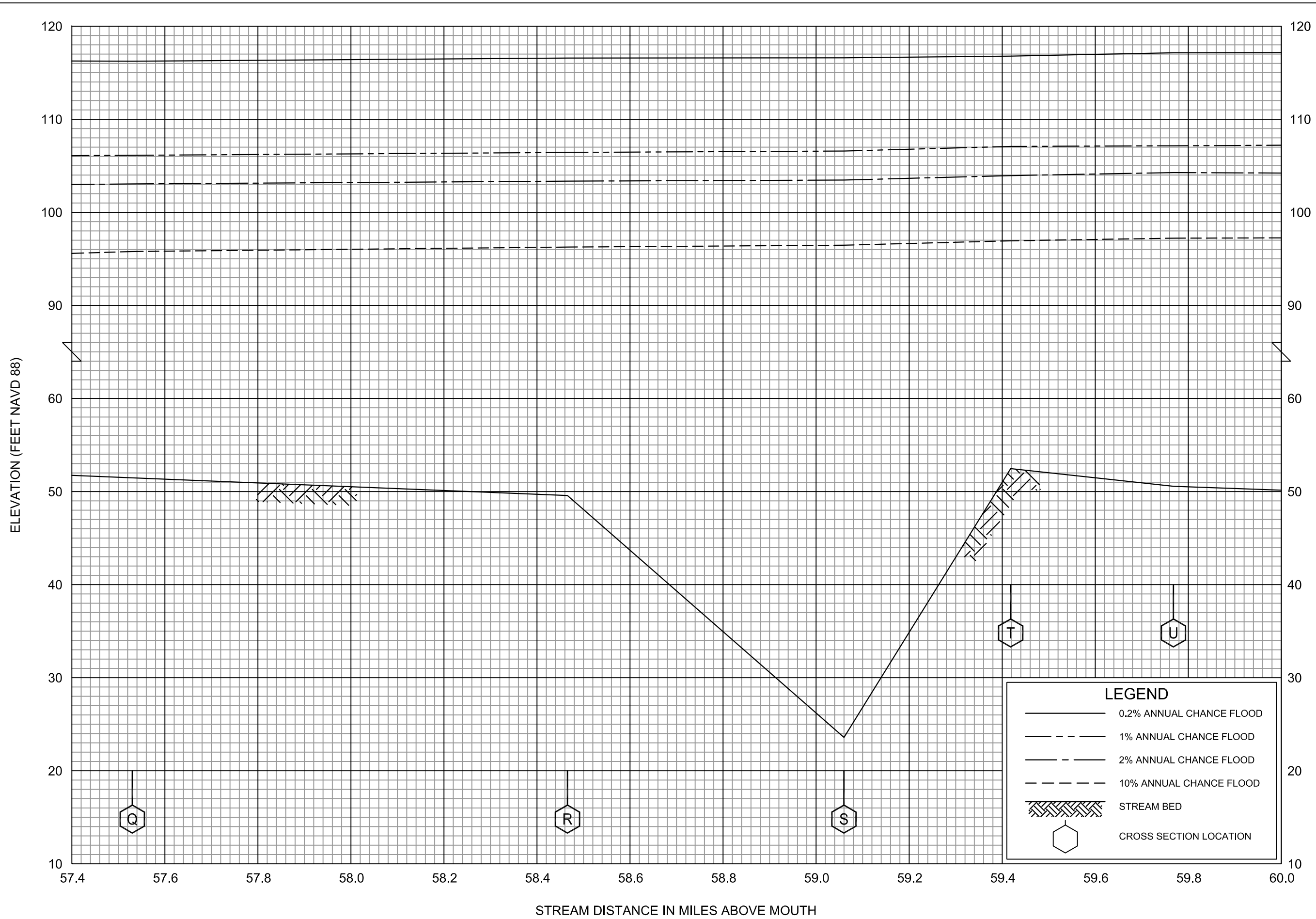
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FLOOD PROFILES

WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS



ELEVATION (FEET NAVD 88)

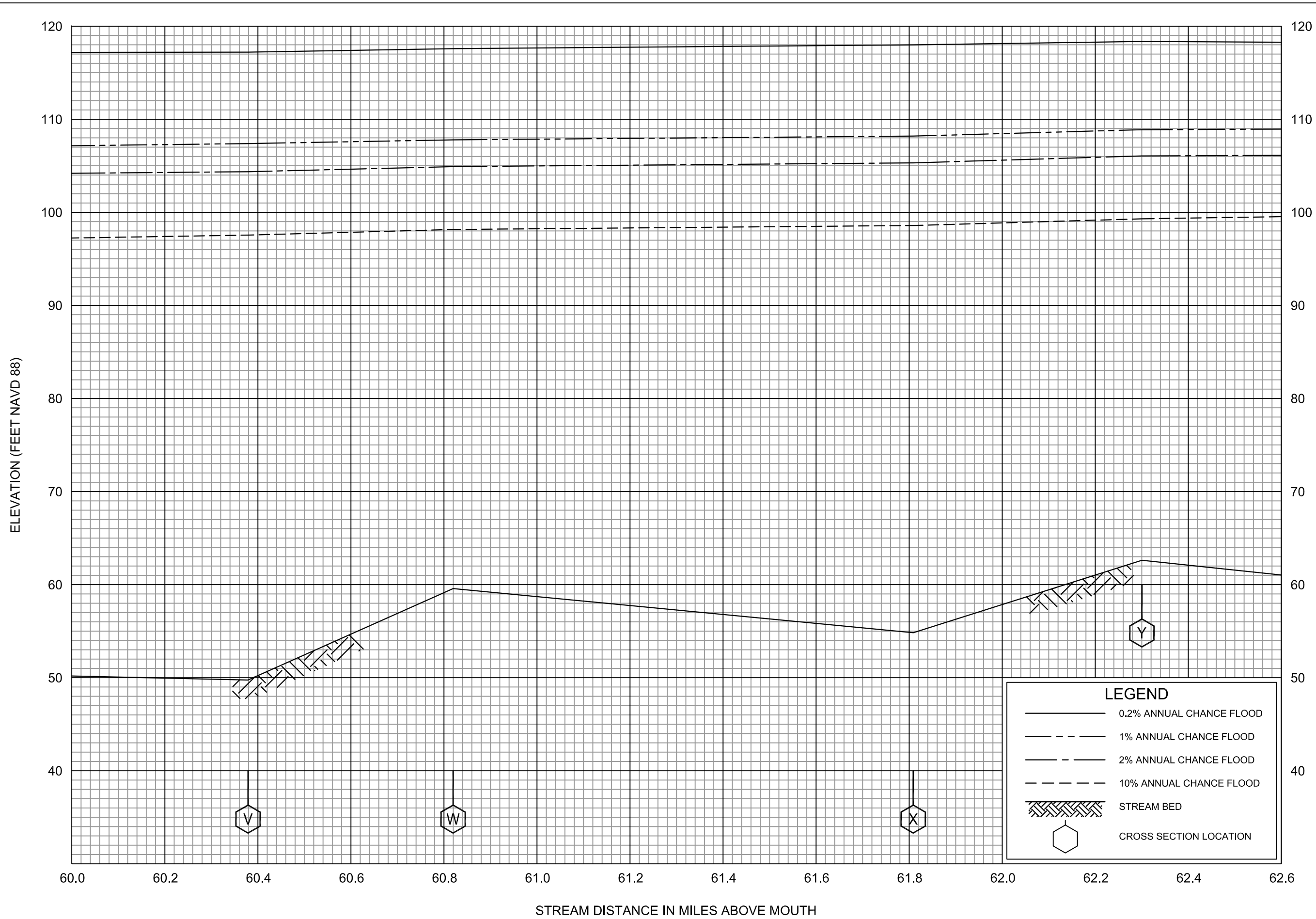
STREAM DISTANCE IN MILES ABOVE MOUTH

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FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



ELEVATION (FEET NAVD 88)

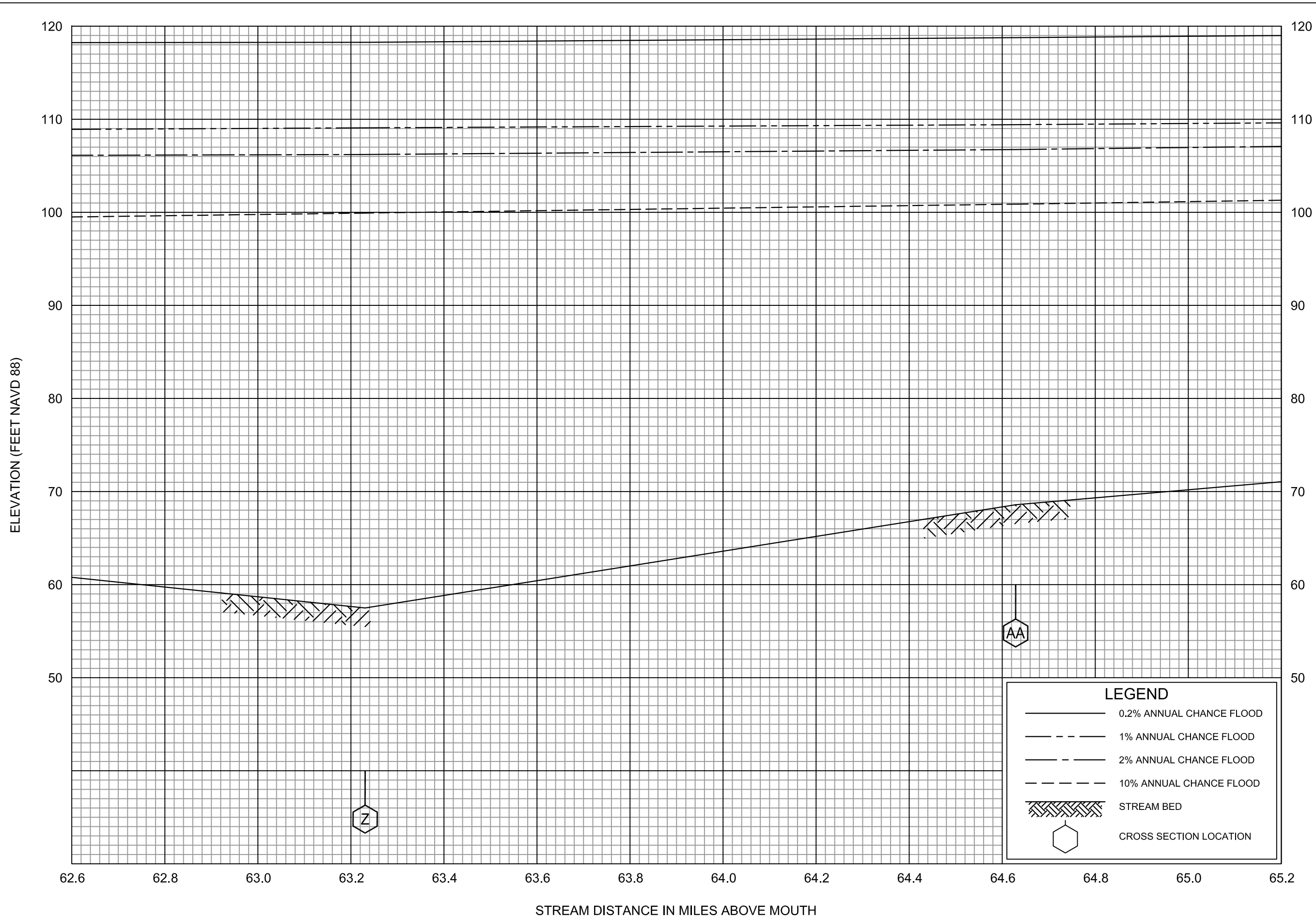
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FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

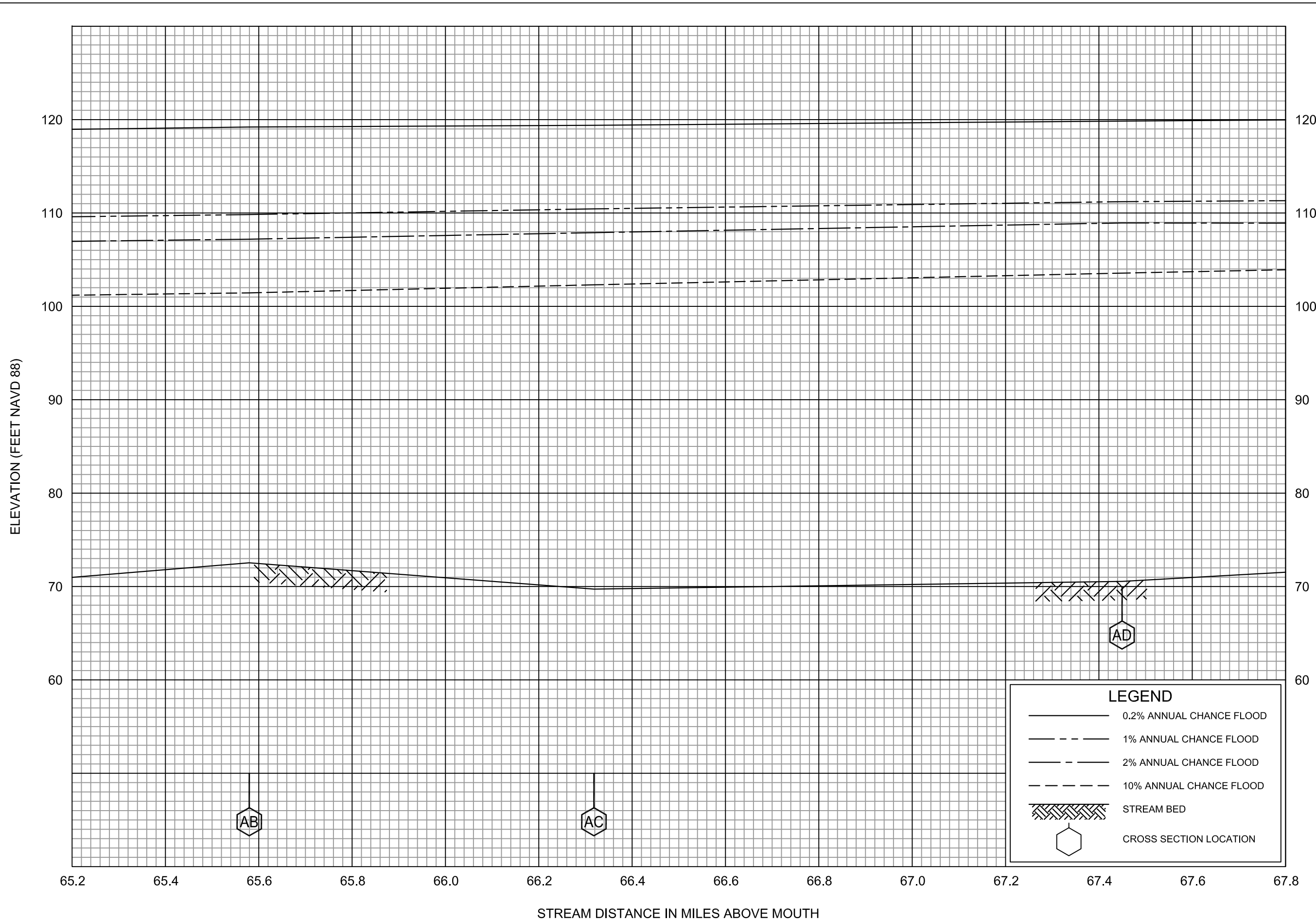


FLOOD PROFILES

WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS



ELEVATION (FEET NAVD 88)

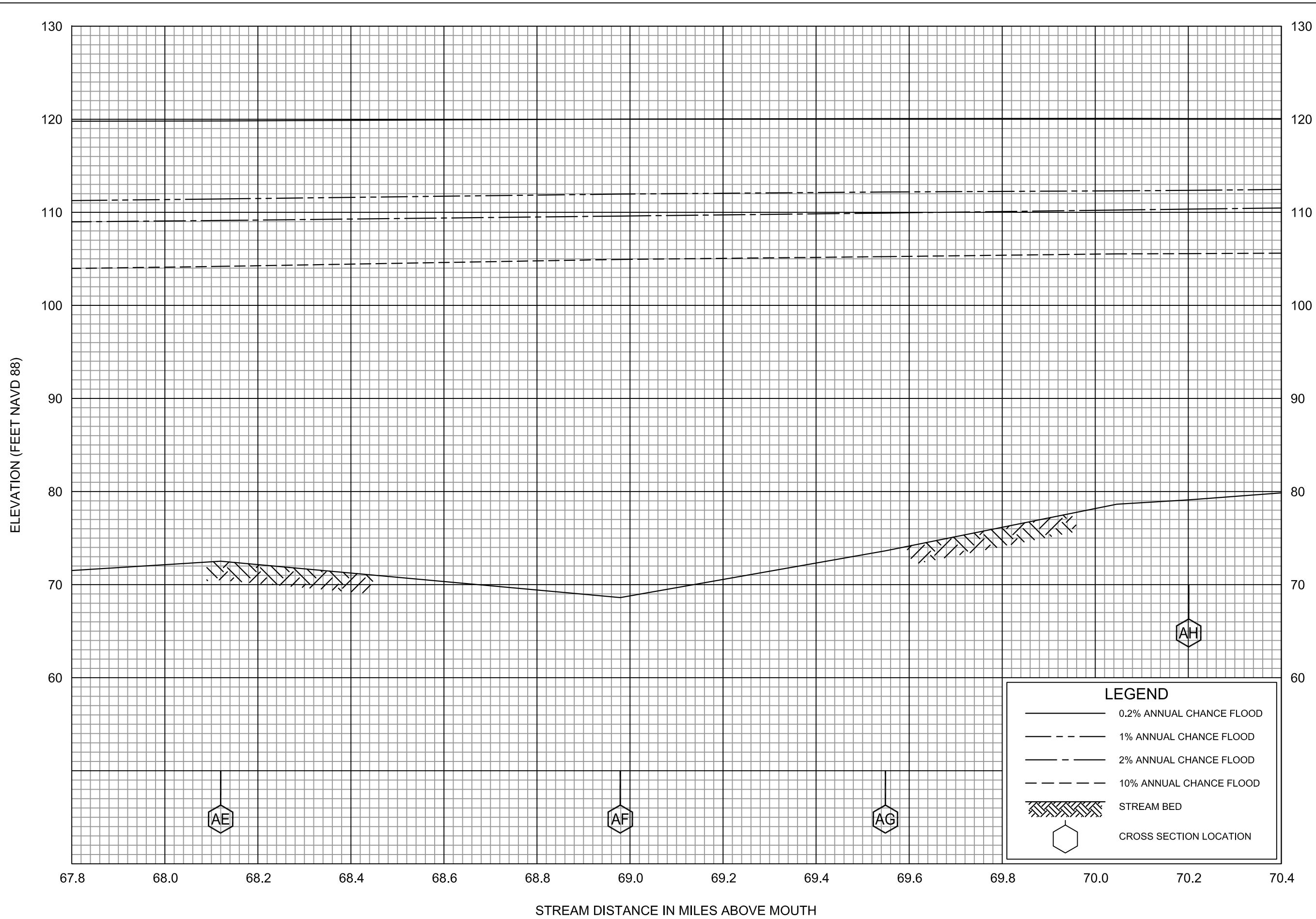
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FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS

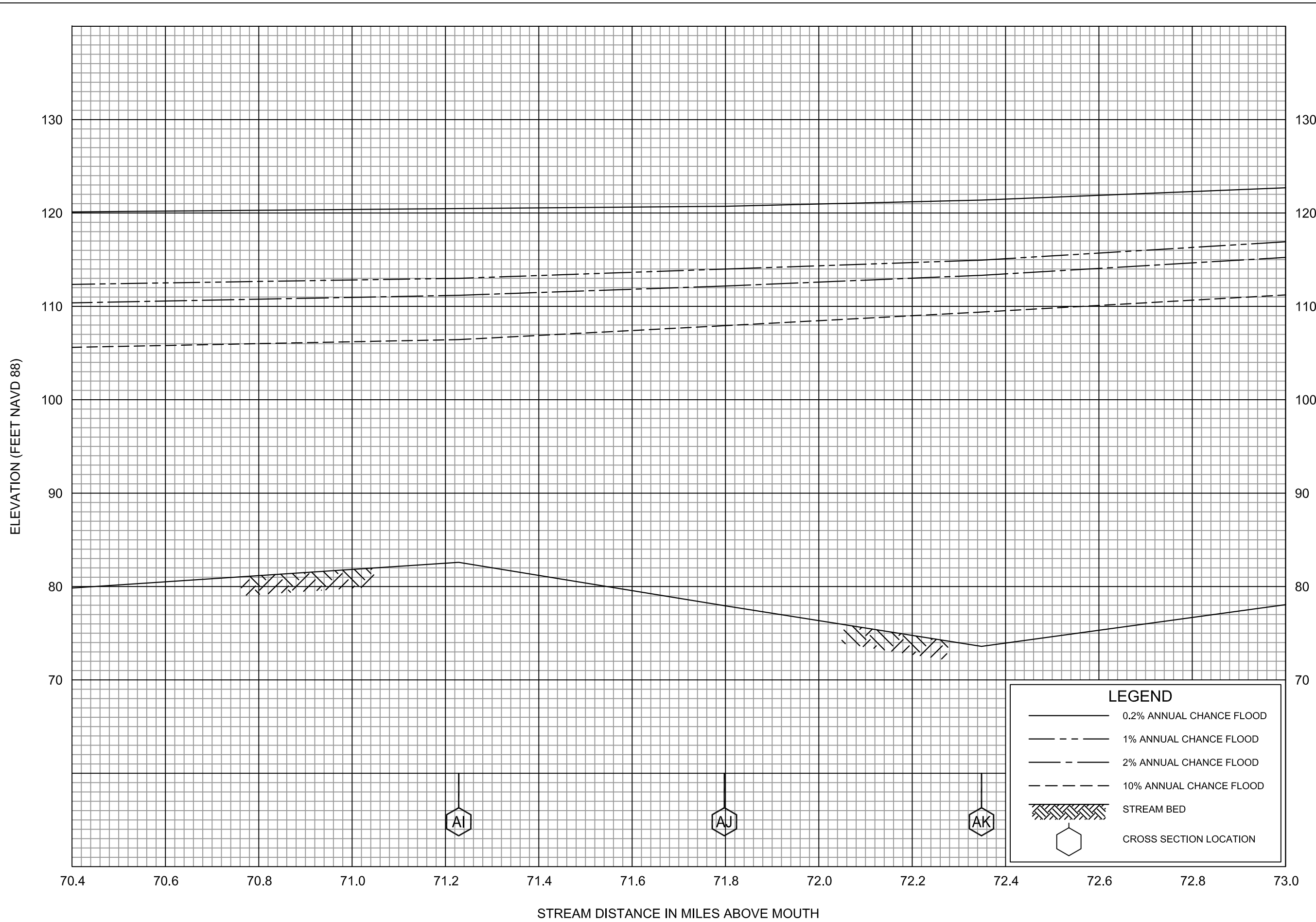


FLOOD PROFILES

WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS



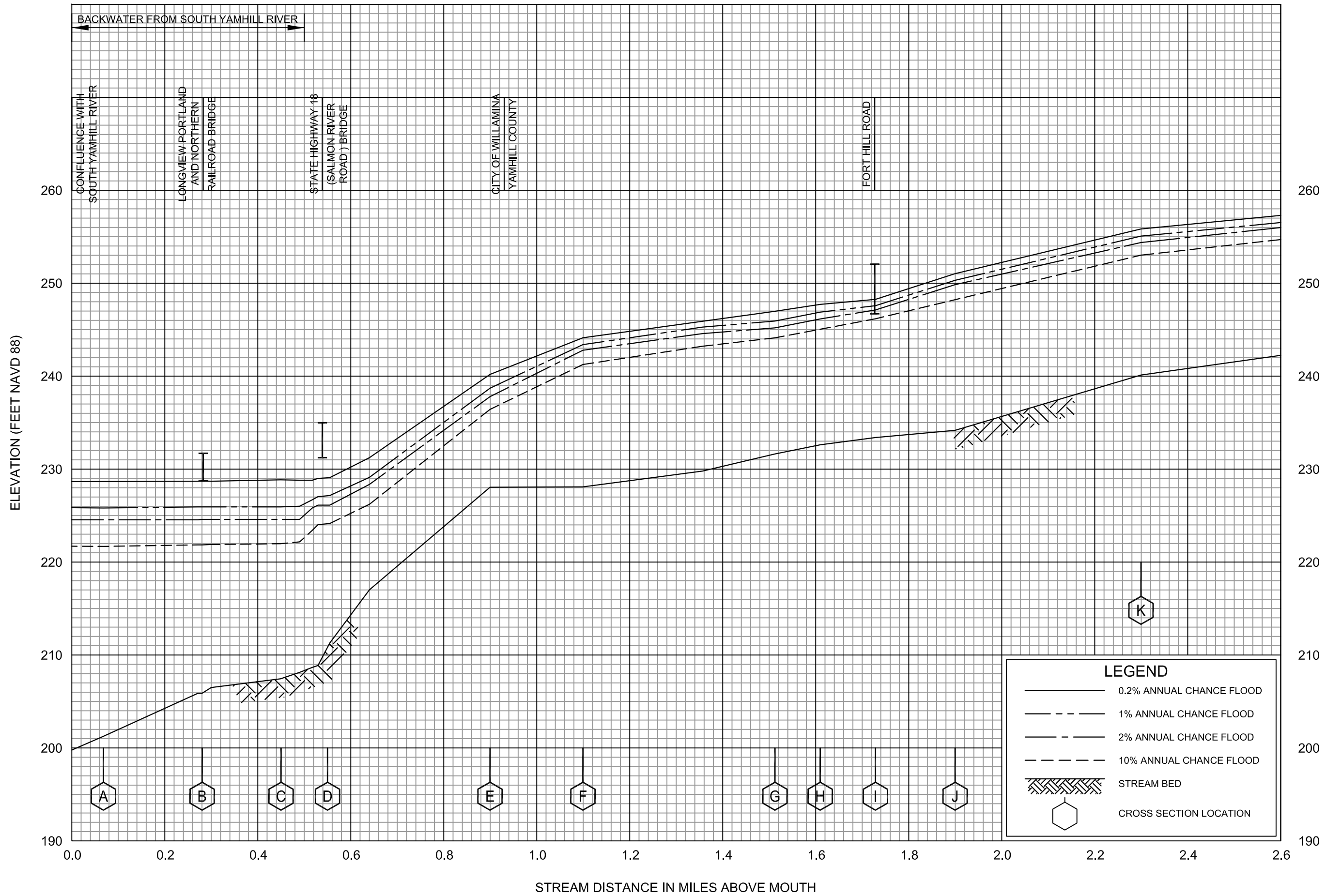
FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



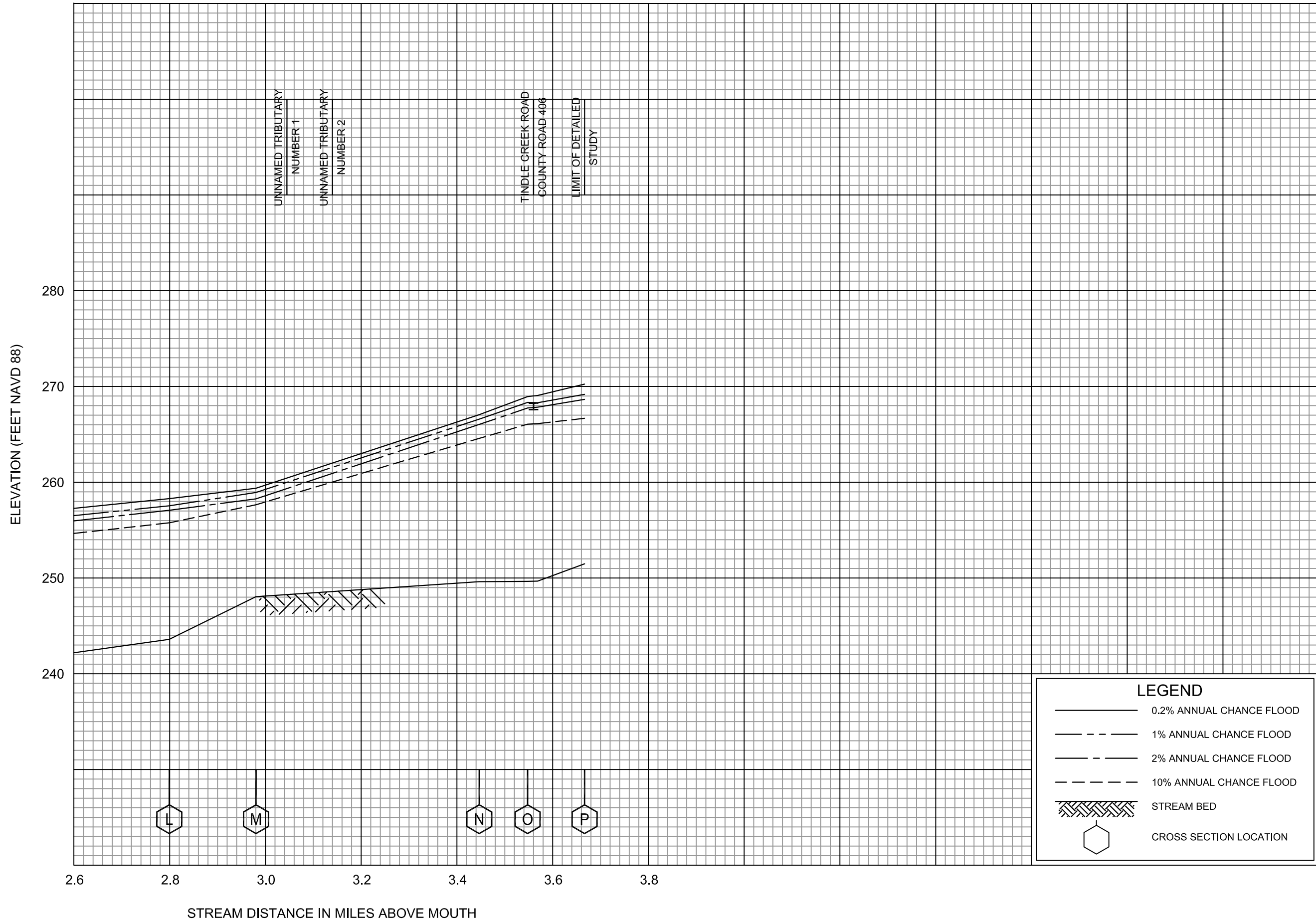
FLOOD PROFILES
WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES
WILLAMINA CREEK

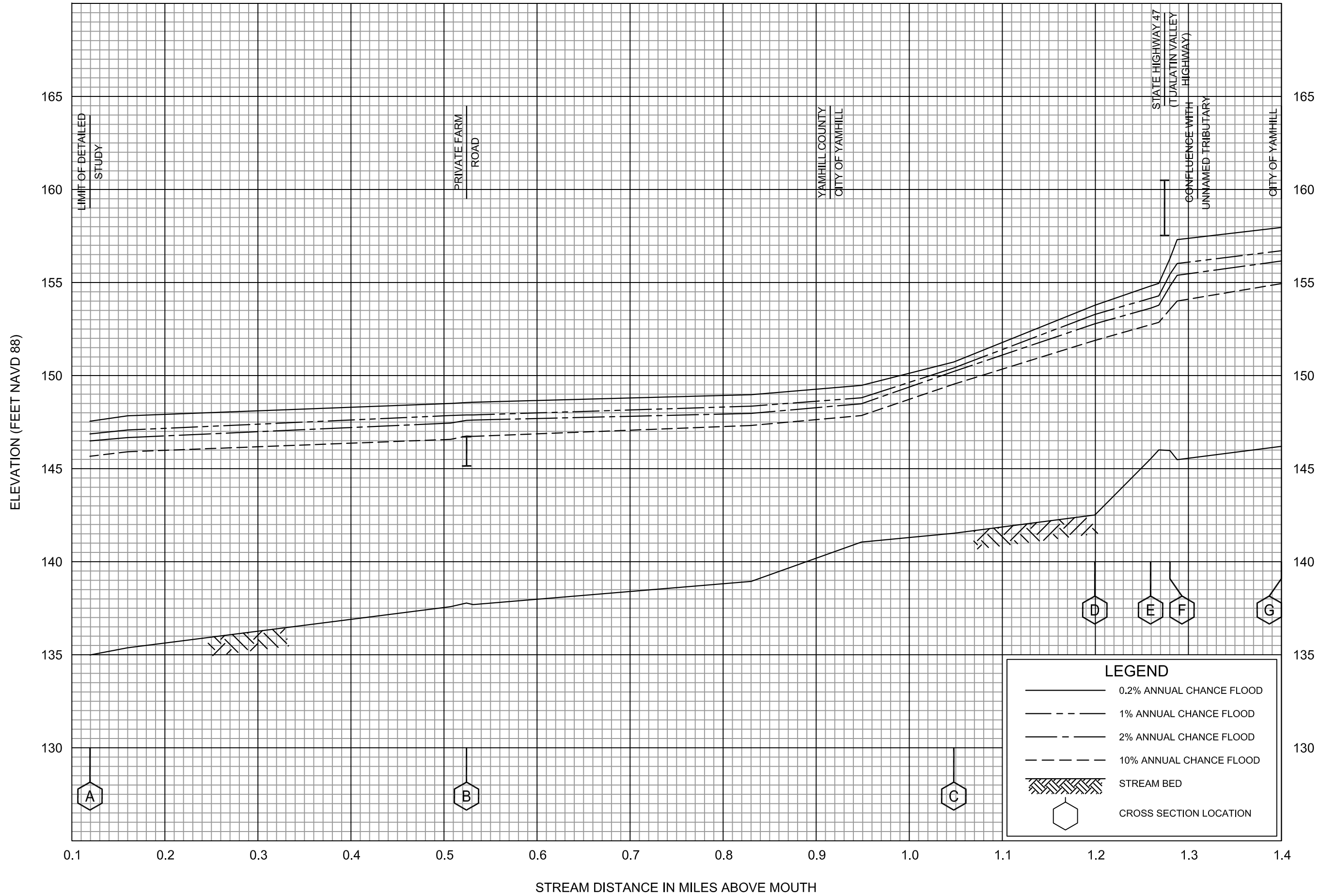
FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES

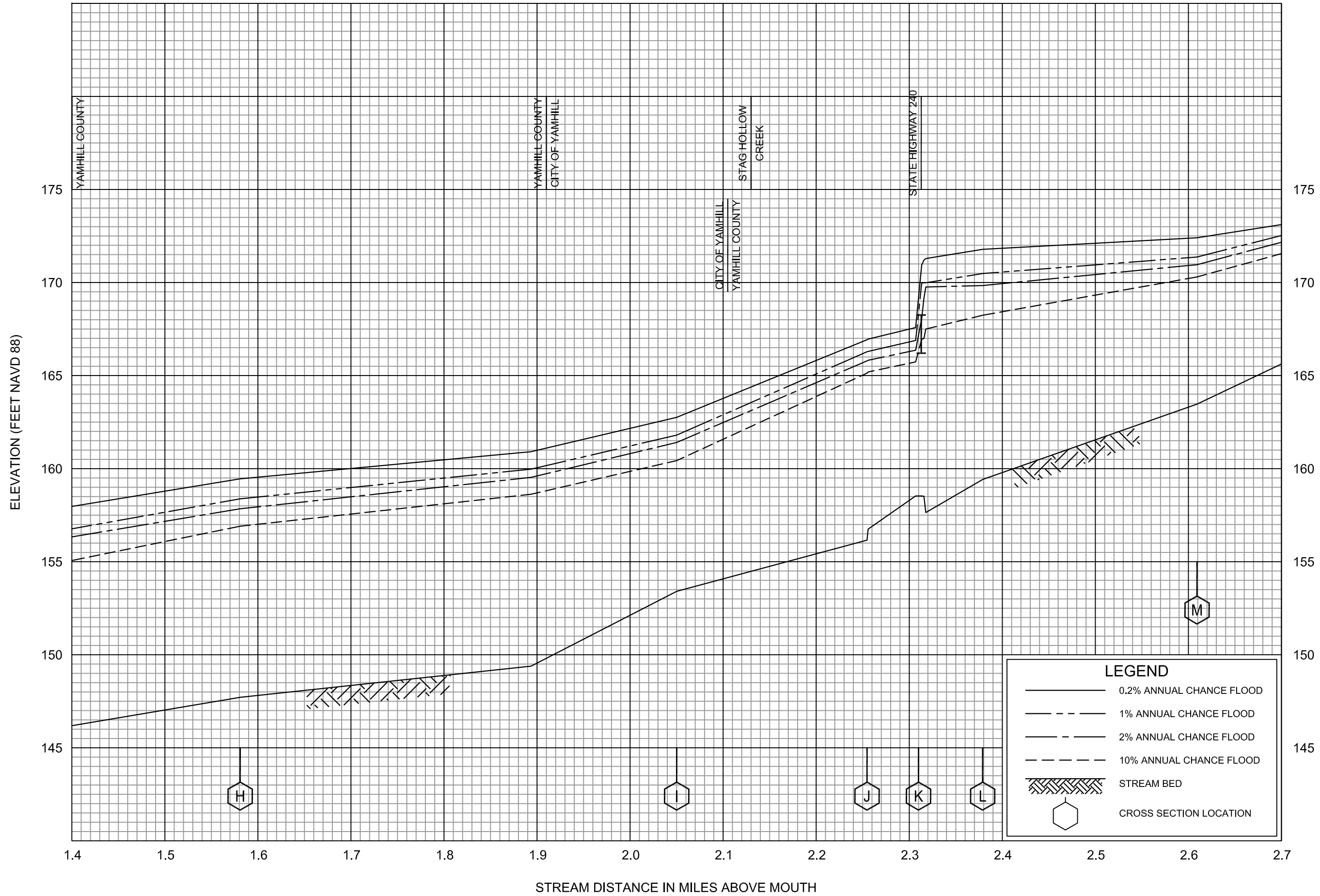
WILLAMINA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



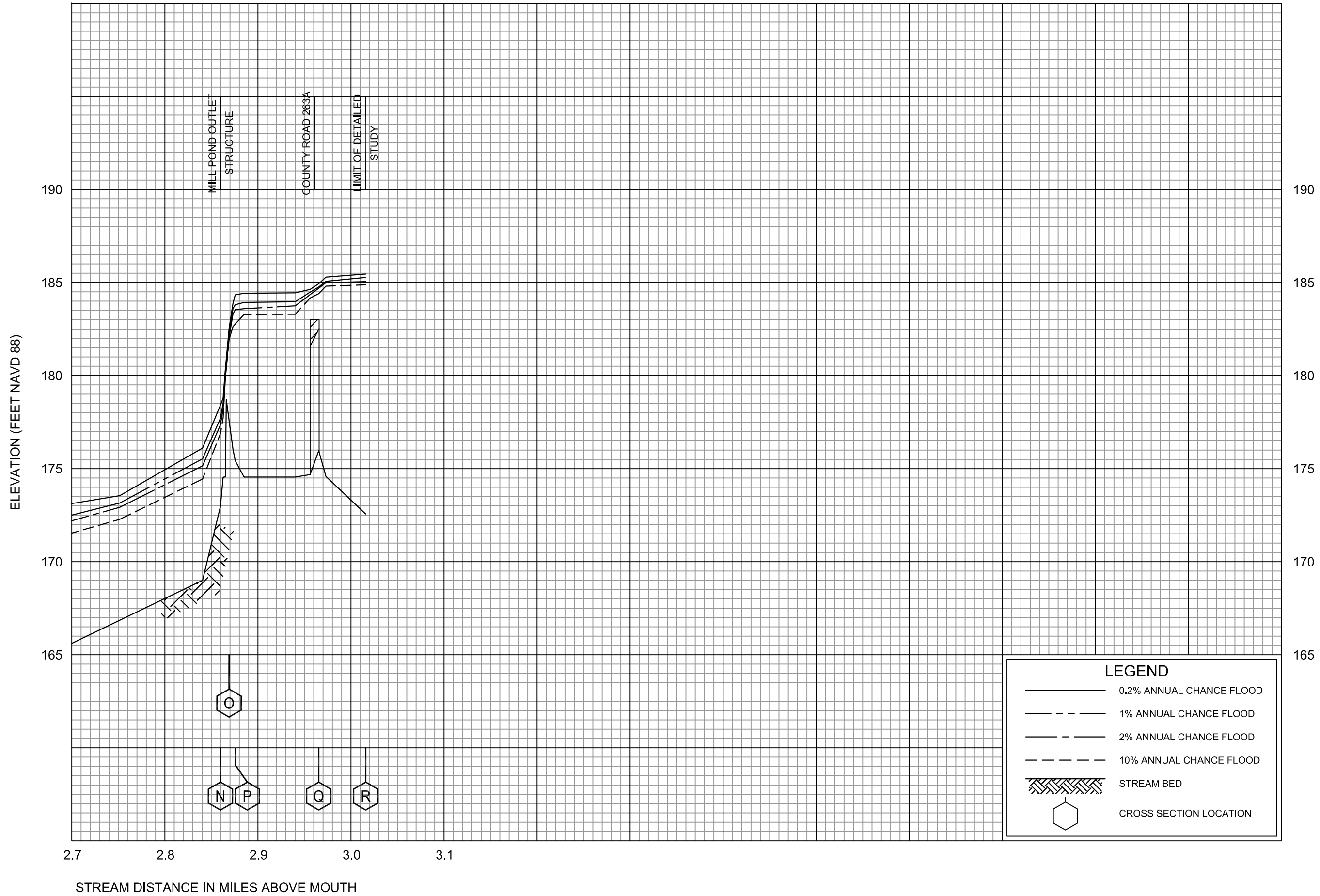
FLOOD PROFILES
YAMHILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES
YAMHILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
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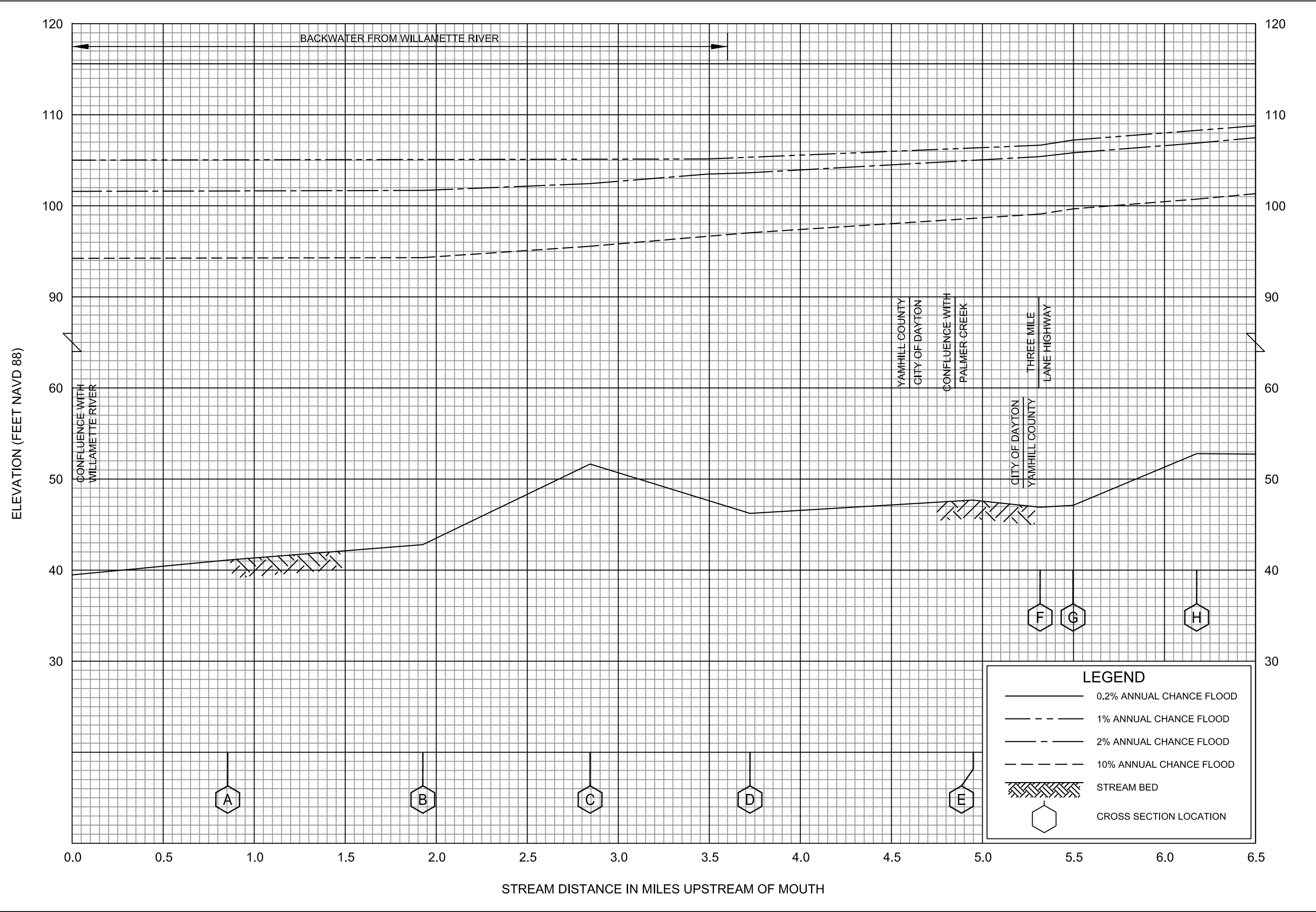


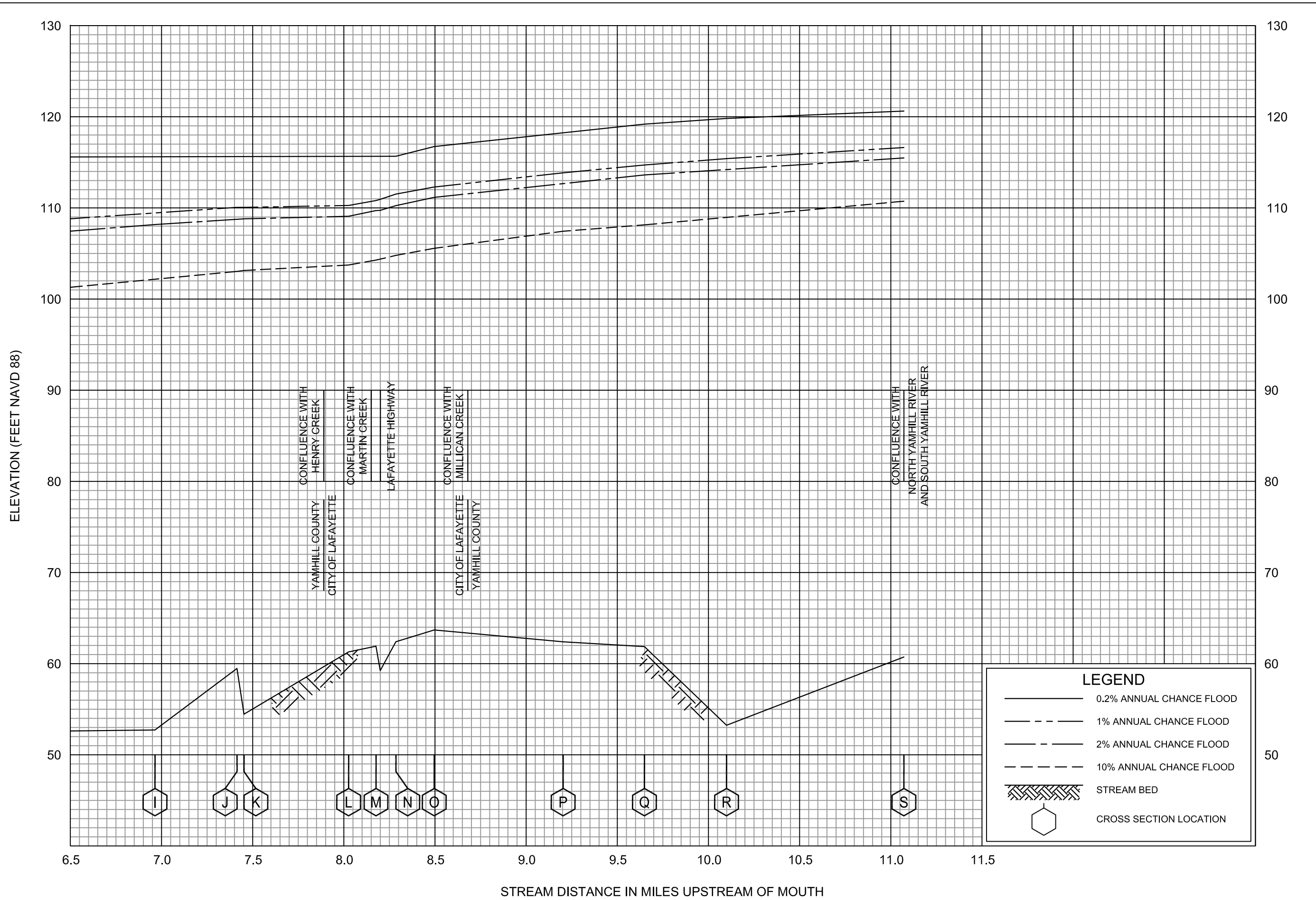
FLOOD PROFILES

YAMHILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

YAMHILL COUNTY, OR
AND INCORPORATED AREAS

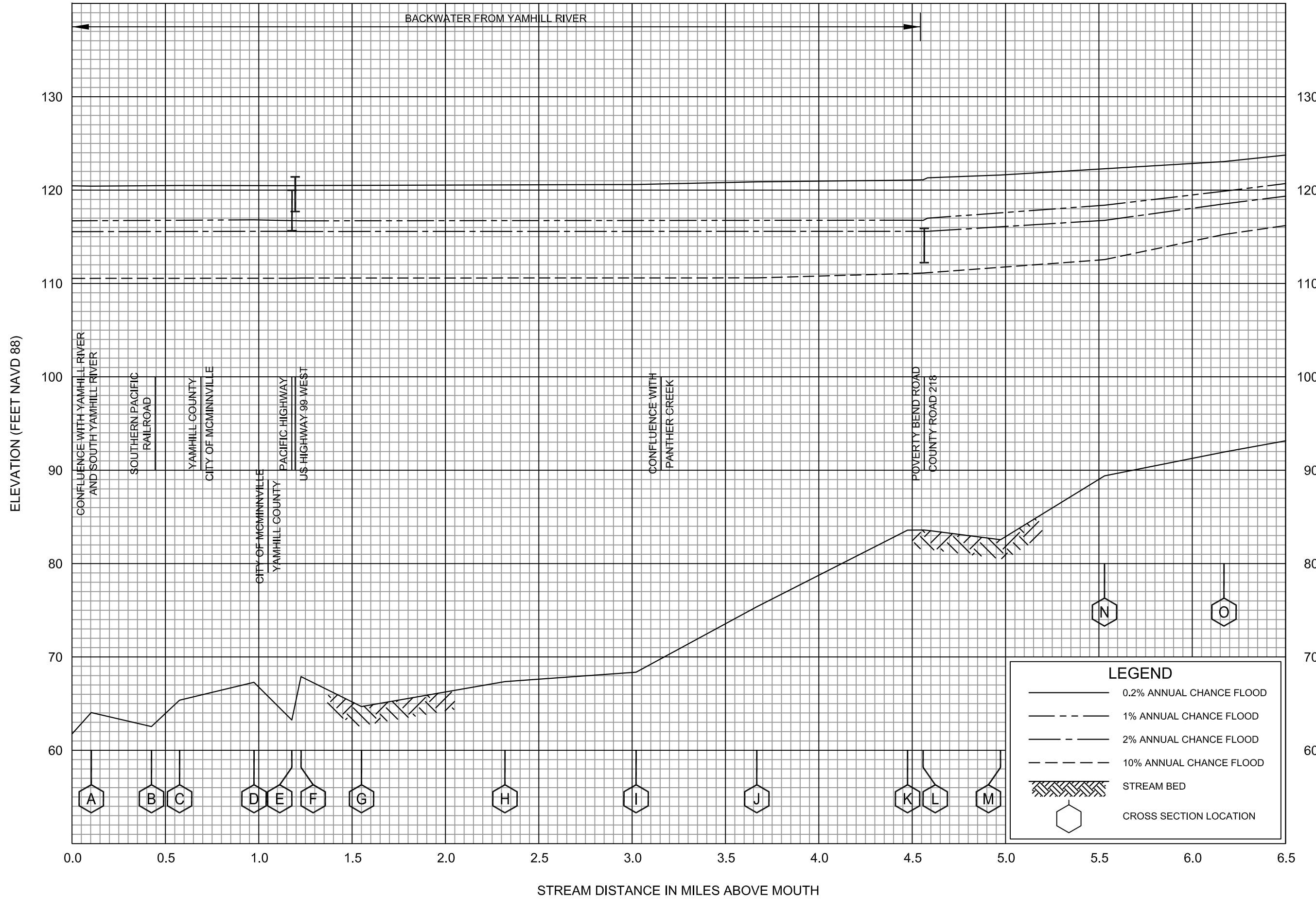




FLOOD PROFILES

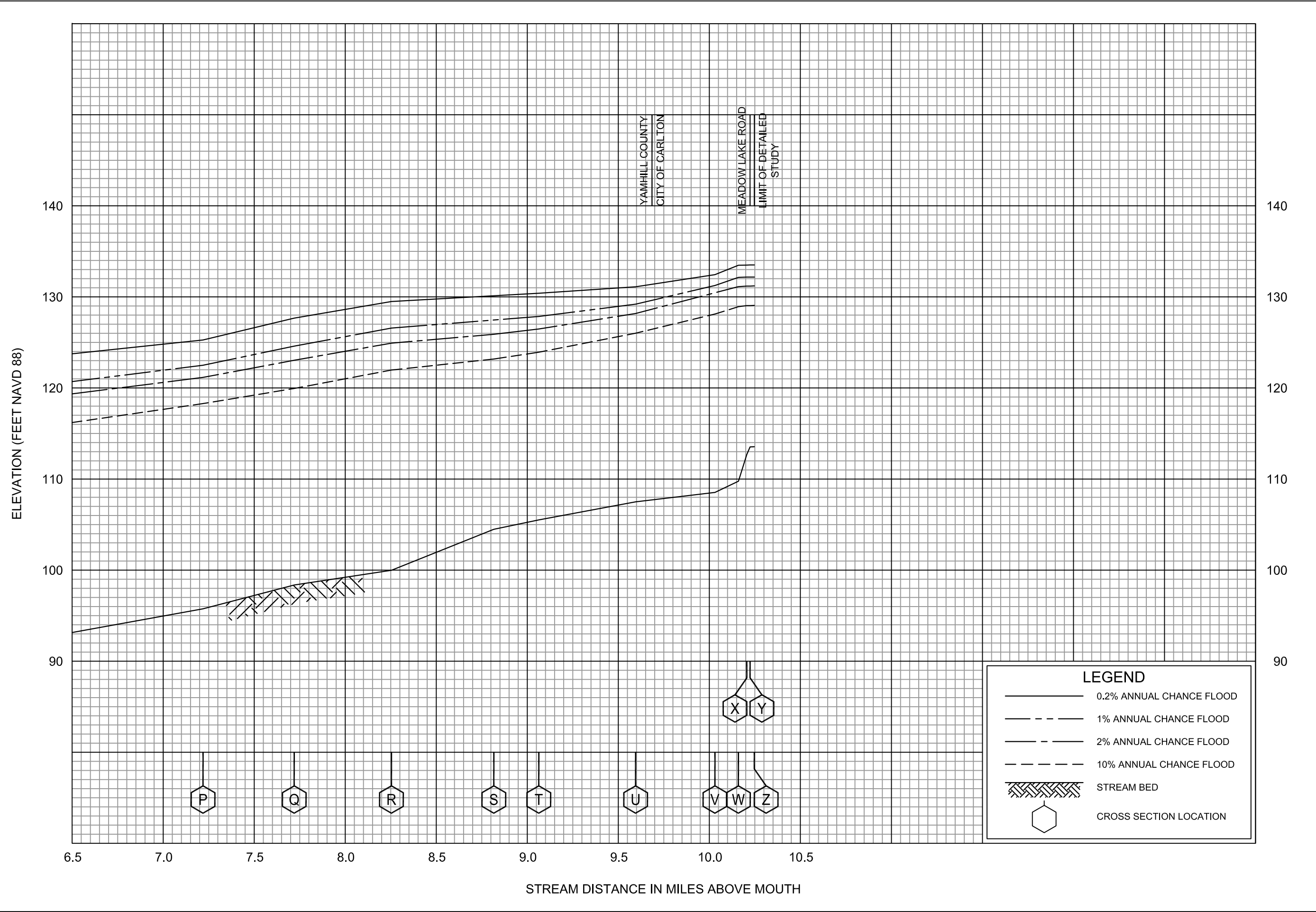
YAMHILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



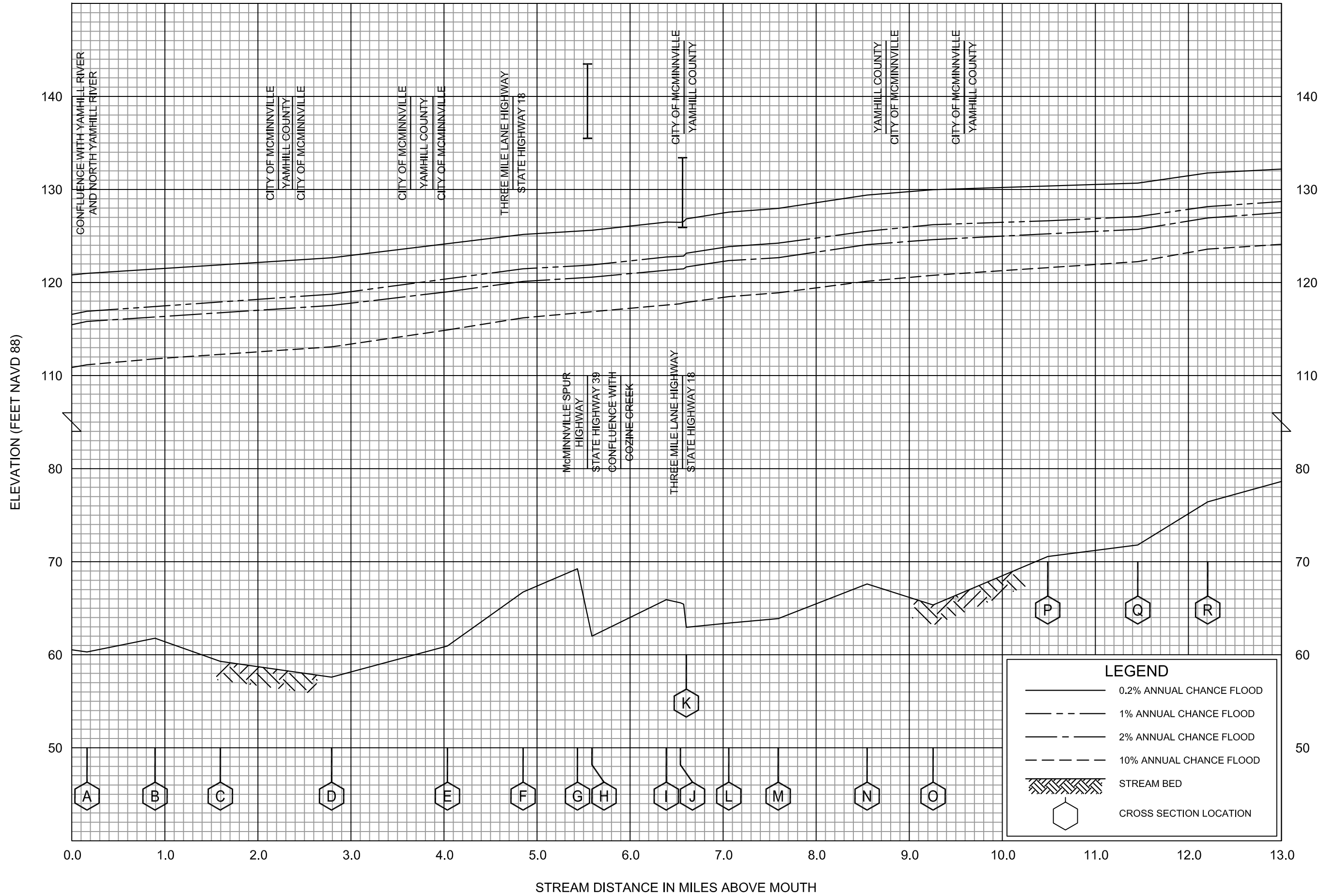
FLOOD PROFILES
NORTH YAMHILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



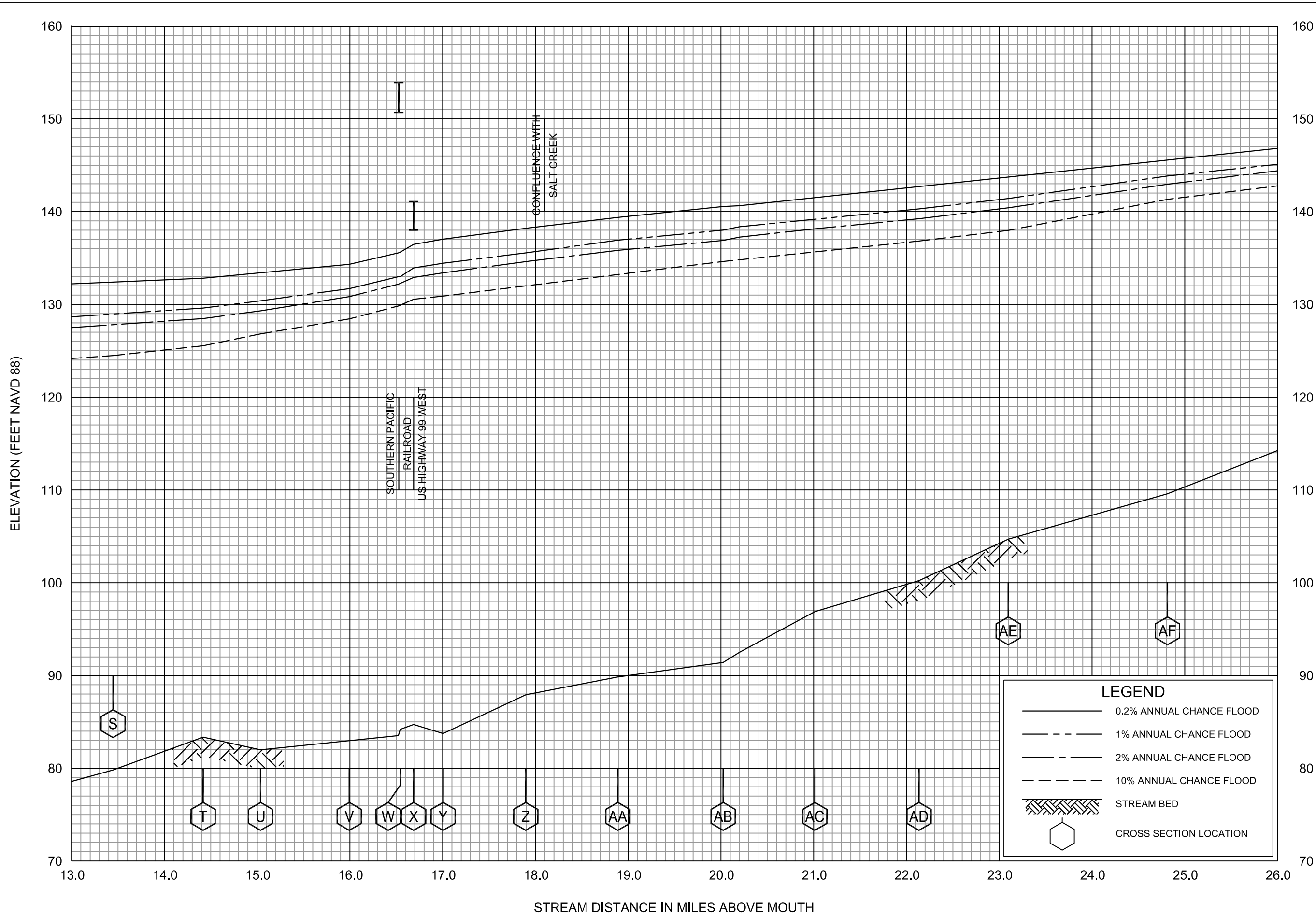
FLOOD PROFILES
NORTH YAMHILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



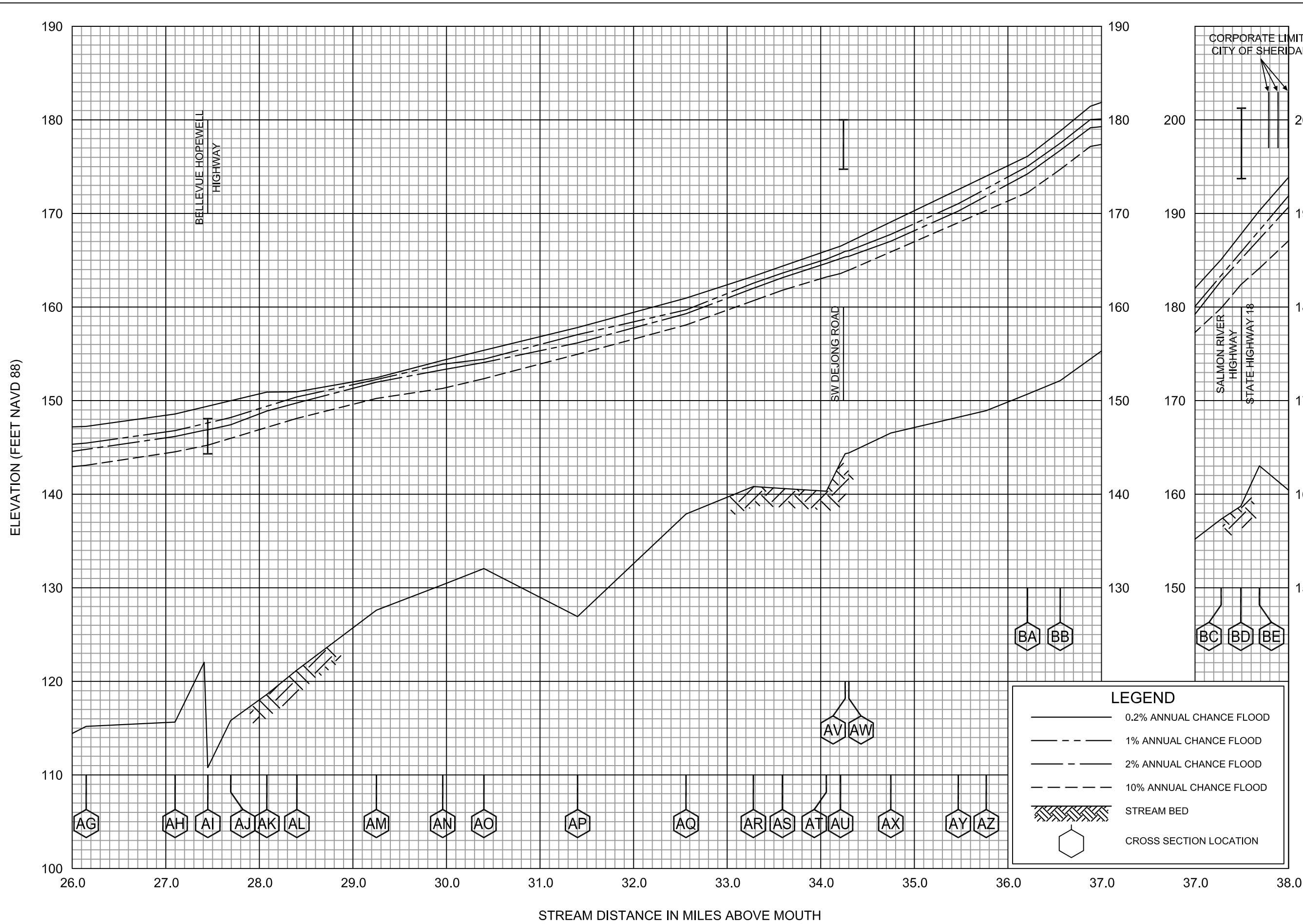
FLOOD PROFILES
SOUTH YAMHILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



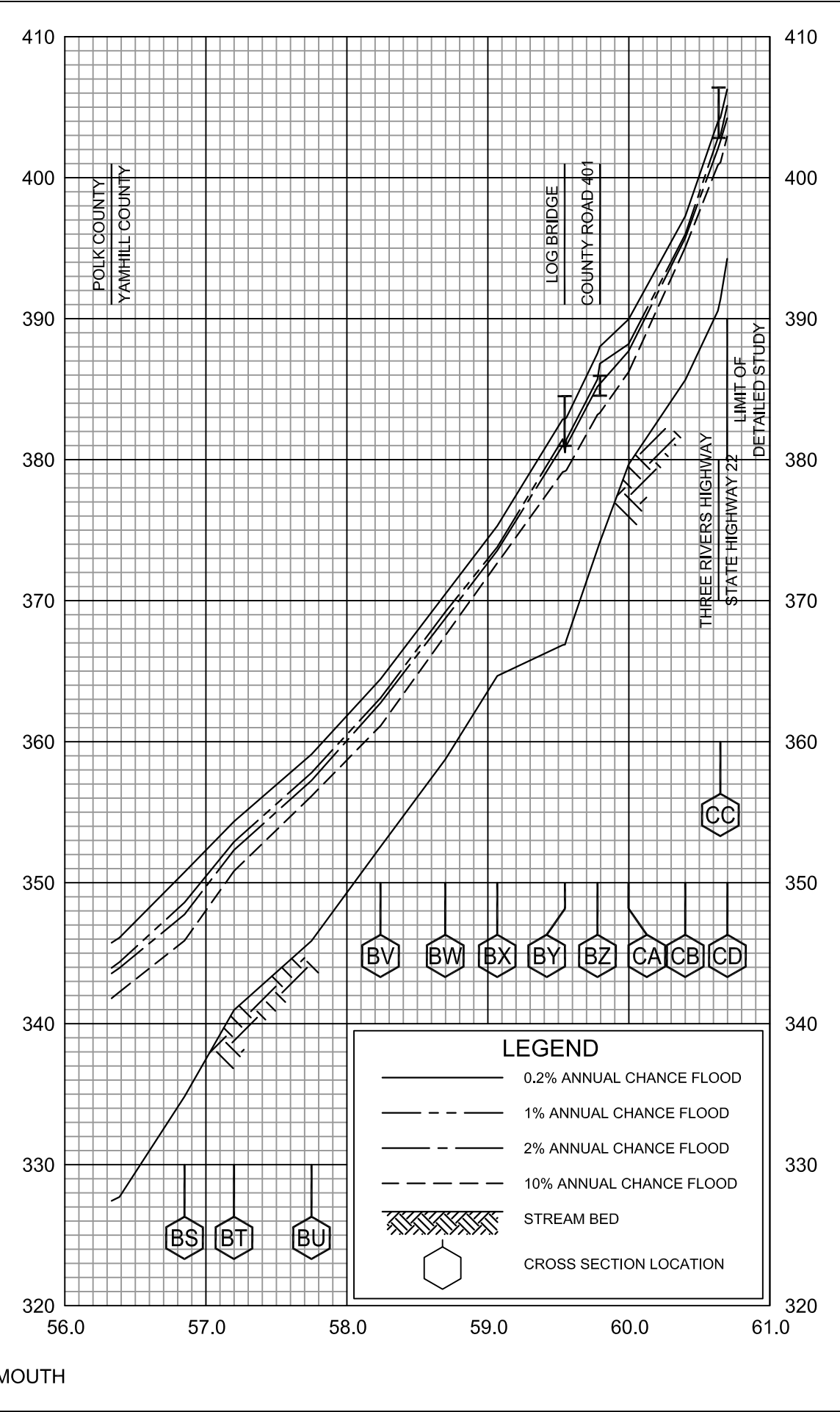
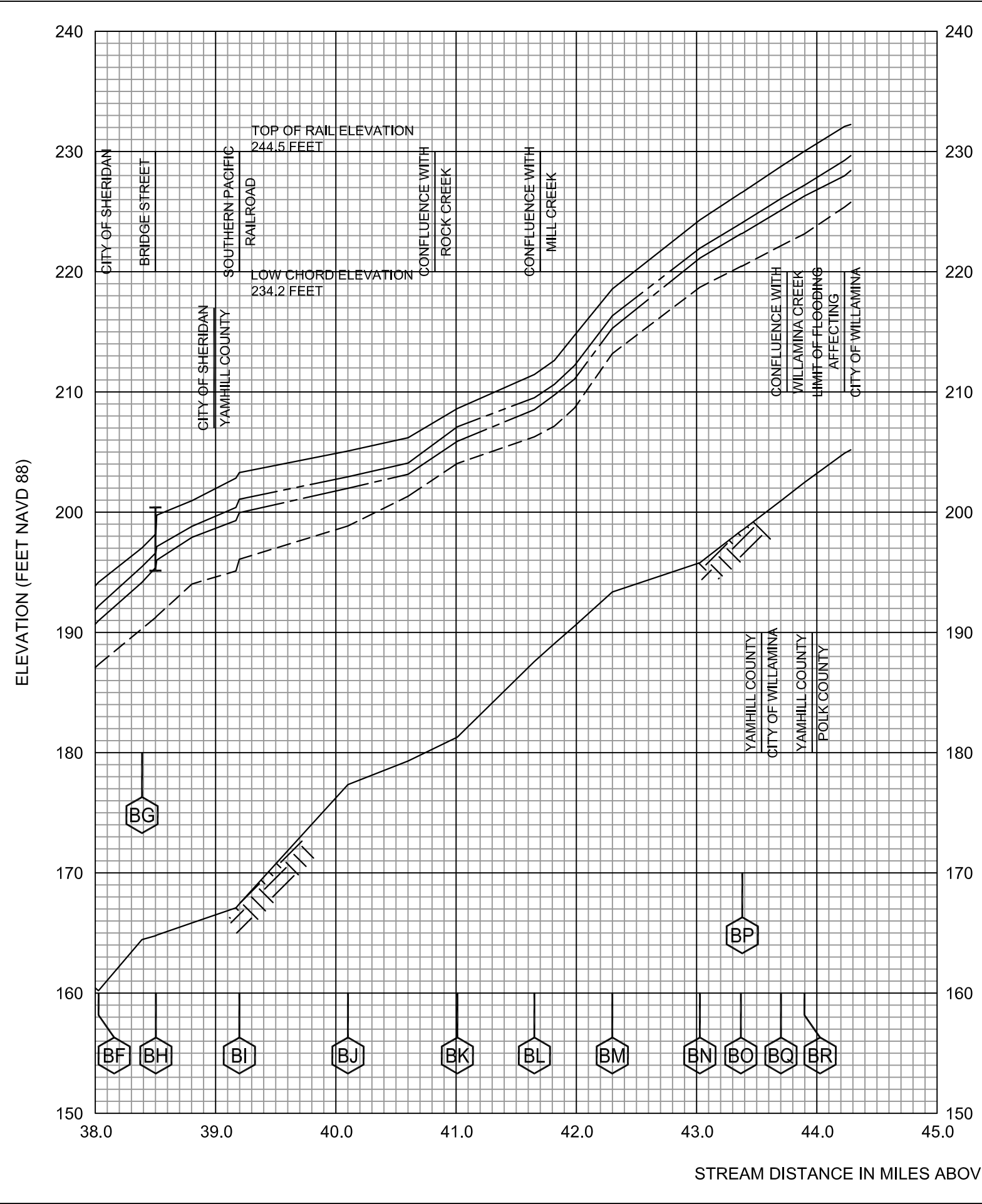
FLOOD PROFILES
SOUTH YAMHILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
AND INCORPORATED AREAS



FLOOD PROFILES
SOUTH YAMHILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YAMHILL COUNTY, OR
 AND INCORPORATED AREAS



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
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