FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 4

MENDOCINO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
FORT BRAGG, CITY OF	060184
MENDOCINO COUNTY UNINCORPORATED AREAS	060183
POINT ARENA, CITY OF	060185
UKIAH, CITY OF	060186
WILLITS, CITY OF	060187

TRIBAL NATION**	TRIBAL NATION**
CAHTO TRIBE OF LAYTONVILLE RANCHERIA	PINOLEVILLE POMO NATION (060058)
COYOTE VALLEY BAND OF POMO INDIANS	POTTER VALLEY TRIBE
GUIDIVILLE RANCHERIA	REDWOOD VALLEY LITTLE RIVER BAND OF POMO INDIANS
HOPLAND BAND OF POMO INDIANS	ROUND VALLEY INDIAN TRIBES
MANCHESTER BAND OF POMO INDIANS	SHERWOOD VALLEY RANCHERIA OF POMO INDIANS

**Federally Recognized Tribal Nations

REVISED: September 19, 2025

FLOOD INSURANCE STUDY NUMBER

06045CV001D

Version Number 2.6.4.6

FEMA

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Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
MENDOCINO COUNTY, CALIFORNIA

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

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

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

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

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

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

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

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

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

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Mendocino County, California.

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

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

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Fort Bragg, City of	060184	18010108	06045C1005G, 06045C1010G, 06045C1015G, 06045C1016G, 06045C1017F, 06045C1019F[1]	—
Mendocino County, Unincorporated Areas	060183	18010103, 18010104, 18010105, 18010106, 18010107, 18010108, 18010109, 18010110, 18020115, 18020116	06045C0020G, 06045C0050F, 06045C0075F, 06045C0100F, 06045C0125F, 06045C0135G, 06045C0175G, 06045C0200F, 06045C0225F, 06045C0250F, 06045C0275F, 06045C0300F, 06045C0325F, 06045C0350F, 06045C0375F[1], 06045C0385G, 06045C0425G, 06045C0450F, 06045C0475F, 06045C0500F, 06045C0517F, 06045C0525F, 06045C0536F, 06045C0550F, 06045C0575F, 06045C0600F[1], 06045C0625G, 06045C0650F, 06045C0659F, 06045C0667F, 06045C0675F, 06045C0678F, 06045C0686F, 06045C0700F,	—

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Mendocino County, Unincorporated Areas (continued)	060183	18010103, 18010104, 18010105, 18010106, 18010107, 18010108, 18010109, 18010110, 18020115, 18020116	06045C0725F, 06045C0750F, 06045C0775F, 06045C0800F[1], 06045C0810G, 06045C0820G, 06045C0850F, 06045C0875F[1], 06045C0900F, 06045C0925F, 06045C0950F, 06045C0975F, 06045C1000F[1], 06045C1005G, 06045C1010G, 06045C1015G, 06045C1016G, 06045C1017F, 06045C1018F, 06045C1019F[1], 06045C1050F, 06045C1075F[1], 06045C1100F, 06045C1111G, 06045C1112G, 06045C1113G, 06045C1114G, 06045C1115G 06045C1125G, 06045C1142F, 06045C1144F, 06045C1150F, 06045C1161F, 06045C1163F, 06045C1164F, 06045C1175F, 06045C1200G, 06045C1225F,	—

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Mendocino County, Unincorporated Areas (continued)	060183	18010103, 18010104, 18010105, 18010106, 18010107, 18010108, 18010109, 18010110, 18020115, 18020116	06045C1250F[1], 06045C1275F[1], 06045C1291F, 06045C1292F, 06045C1293F, 06045C1294F, 06045C1300F, 06045C1313F, 06045C1314F, 06045C1325F, 06045C1328F, 06045C1336F, 06045C1350F, 06045C1375F[1], 06045C1385G, 06045C1392G, 06045C1425G, 06045C1450F, 06045C1475F, 06045C1500F[1], 06045C1501F, 06045C1502F, 06045C1503F, 06045C1504F, 06045C1506F, 06045C1507F, 06045C1508F, 06045C1509F, 06045C1511G, 06045C1512G, 06045C1513G, 06045C1514G, 06045C1516F, 06045C1517F, 06045C1518G, 06045C1519F,	—

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Mendocino County, Unincorporated Areas (continued)	060183	18010103, 18010104, 18010105, 18010106, 18010107, 18010108, 18010109, 18010110, 18020115, 18020116	06045C1550F, 06045C1575F[1], 06045C1600G, 06045C1625F, 06045C1641F, 06045C1642F, 06045C1644F, 06045C1650F, 06045C1659F, 06045C1663F, 06045C1675F[1], 06045C1676F, 06045C1677F, 06045C1678F, 06045C1679F, 06045C1681F, 06045C1682F[1], 06045C1683F, 06045C1684F, 06045C1690F, 06045C1691F, 06045C1692F, 06045C1693F[1], 06045C1694F, 06045C1711F, 06045C1713F, 06045C1725F[1], 06045C1740G, 06045C1750G, 06045C1775F, 06045C1800F, 06045C1825F, 06045C1831F, 06045C1832F, 06045C1834F, 06045C1850F, 06045C1851F, 06045C1852F, 06045C1853F, 06045C1854F, 06045C1875F, 06045C1900F[1], 06045C1920G, 06045C1950G, 06045C1975F, 06045C2000F[1], 06045C2025F, 06045C2050F, 06045C2075F[1],	—

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Mendocino County, Unincorporated Areas (continued)	060183	18010103, 18010104, 18010105, 18010106, 18010107, 18010108, 18010109, 18010110, 18020115, 18020116	06045C2100F[1]	—
Pinoleville Pomo Nation	060058	18010110	06045C1511G, 06045C1512G	—
Point Arena, City of	060185	18010108	06045C1740G, 06045C1750G	—
Ukiah, City of	060186	18010110	06045C1511G, 06045C1512G, 06045C1513G, 06045C1514G, 06045C1518G, 06045C1677F, 06045C1681F	—
Willits, City of	060187	18010103	06045C1111G, 06045C1112G, 06045C1113G, 06045C1114G, 06045C1115G 06045C1125G, 06045C1300F	—

[1] Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

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

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

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

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

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

  The initial Countywide FIS Report for Mendocino County became effective on June 2, 2011. Refer to Table 27 for information about subsequent revisions to the FIRMs.

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

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/flood-insurance/rules-legislation/community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.

- FEMA does not design, build, inspect, operate, maintain, or certify levees. FEMA is responsible for accurately identifying flood hazards and communicating those hazards and risks to affected stakeholders. FEMA has identified one or more levee systems in this jurisdiction summarized in Table 8 of this FIS Report. For FEMA to accredit the identified levee systems, the levee systems must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

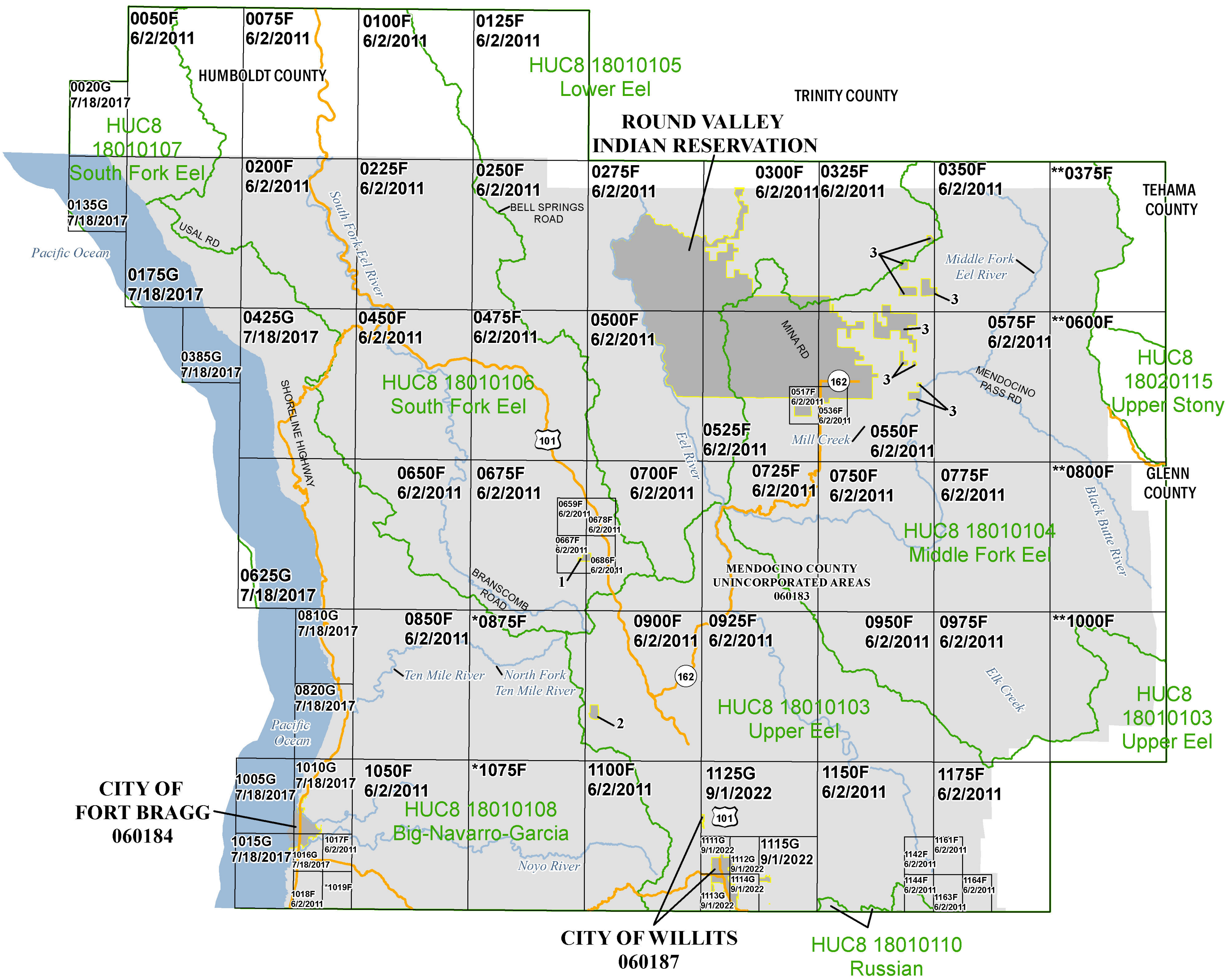
  Information on the levee systems in this jurisdiction can be obtained from the USACE National Levee Database (https://levees.sec.usace.army.mil/). For additional information, the user should contact the appropriate jurisdiction floodplain administrator and the levee owner or sponsor.

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

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

Figure 1: FIRM Index

KEY NUMBER	COMMUNITY
1	Laytonville Indian Reservation
2	Sherwood Indian Reservation
3	Round Valley Indian Reservation



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before September 19, 2025.

N

1 inch = 7 miles

0 1.5 3 6 9 12 Miles

Map Projection:
Universal Transverse Mercator 10 North;
North American Datum 1983

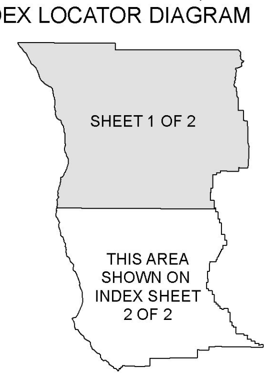
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA ALL ZONE D

MENDOCINO COUNTY, CA
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

MENDOCINO COUNTY, CALIFORNIA and Incorporated Areas
SHEET 1 OF 2
PANELS PRINTED:
0020, 0050, 0075, 0100, 0125, 0135, 0175, 0200, 0225, 0250, 0275, 0300, 0325, 0350, 0385, 0425, 0450, 0475, 0500, 0517, 0525, 0536, 0550, 0575, 0625, 0650, 0659, 0667, 0675, 0678, 0686, 0700, 0725, 0750, 0775, 0810, 0820, 0850, 0900, 0925, 0950, 0975, 1005, 1010, 1015, 1016, 1017, 1018, 1050, 1100, 1111, 1112, 1113, 1114, 1115, 1125, 1142, 1144, 1150, 1161, 1163, 1164, 1175

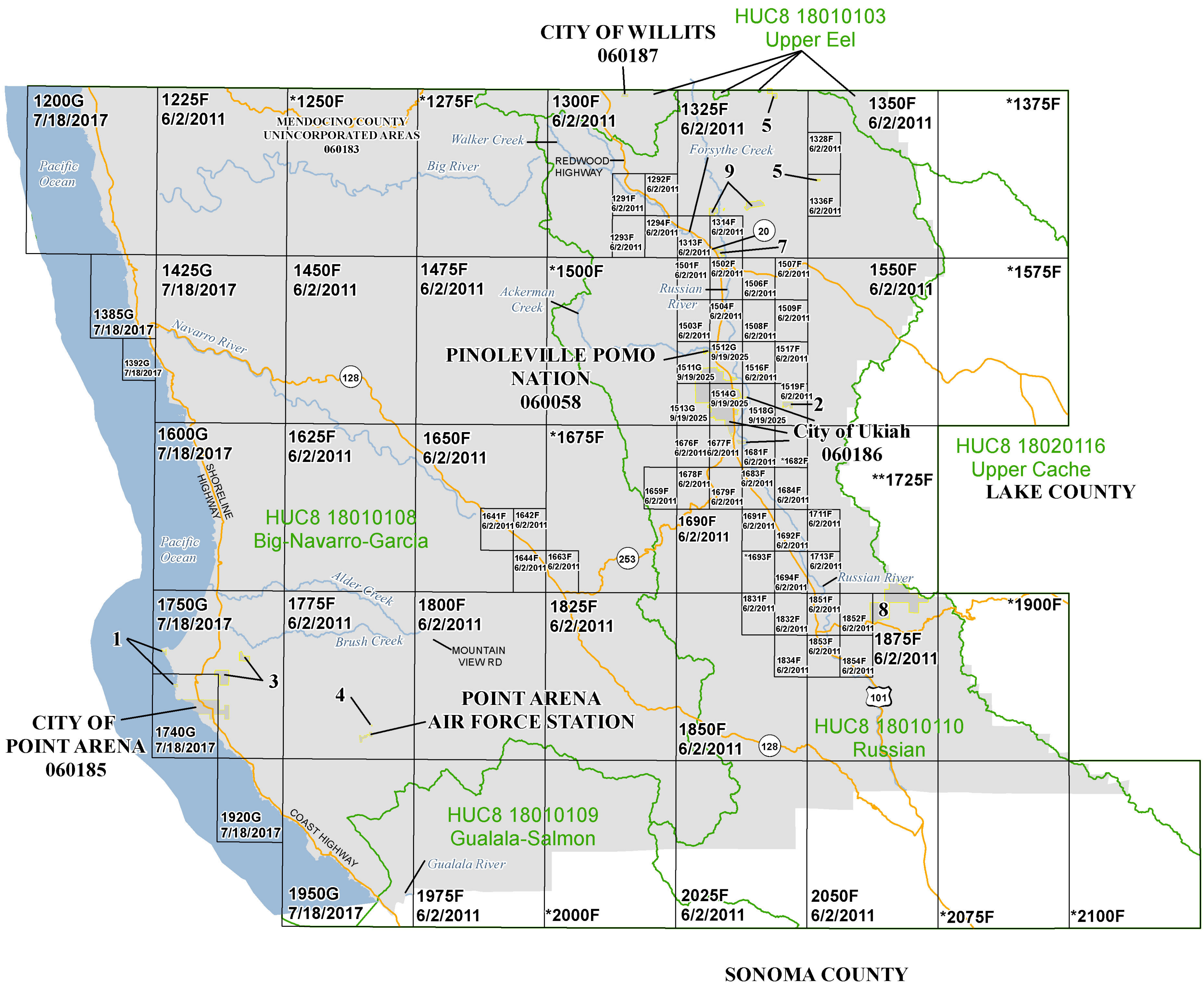
FEMA

MAP NUMBER
06045CIND1D

MAP REVISED
Septemeber 19, 2025

Figure 1: FIRM Index *(continued)*

KEY NUMBER	COMMUNITY
1	Coast Guard Reservation
2	Guildville Indian Reservation
3	Manchester Indian Reservation
4	Military Reservation
5	Potter Valley Indian Reservation
6	Coyote Vally Band of Pomo Indians
7	Hopland Band of Pomo Indians
8	Redwood Valley Rancheria



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before September 19, 2025.

1 inch = 7 miles

0 1.5 3 6 9 12 Miles

Map Projection:
Universal Transverse Mercator 10 North;
North American Datum 1983

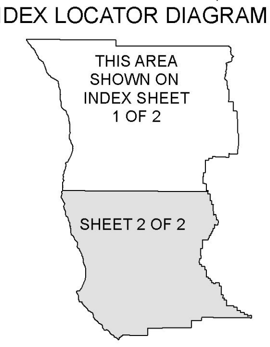
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - HOPLAND INDIAN RESERVATION ZONE D, REST ZONE X

MENDOCINO COUNTY, CA
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

MENDOCINO COUNTY, CALIFORNIA and Incorporated Areas
SHEET 2 OF 2

PANELS PRINTED:

1200, 1225, 1291, 1292, 1293, 1294, 1300, 1313, 1314, 1325, 1328, 1336, 1350, 1385, 1392, 1425, 1450, 1475, 1501, 1502, 1503, 1504, 1506, 1507, 1508, 1509, 1511, 1512, 1513, 1514, 1516, 1517, 1518, 1519, 1550, 1600, 1625, 1641, 1642, 1644, 1650, 1659, 1663, 1676, 1677, 1678, 1679, 1681, 1683, 1684, 1690, 1691, 1692, 1694, 1711, 1713, 1740, 1750, 1775, 1800, 1825, 1831, 1832, 1834, 1850, 1851, 1852, 1853, 1854, 1875, 1920, 1950, 1975, 2025, 2050

FEMA

MAP NUMBER
06045CIND2D

MAP REVISED
September 19, 2025

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

Figure 2: FIRM Notes to Users

NOTES TO USERS

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

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

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

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

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

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

Coastal Base Flood Elevations shown on the map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Coastal flood elevations are also provided in the Coastal Transect Parameters table in the FIS Report for this jurisdiction. Elevations shown in the Coastal Transect Parameters table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

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

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

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

PROJECTION INFORMATION: The projection used in the preparation of the map was UTM Zone 10 and a secondary projection of State Plane Lambert Conformal Conic, California II, Zone. The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

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

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

BASE MAP INFORMATION: For FIRM panels dated June 2, 2011: Base map information shown on this FIRM was derived from U.S, Geological Survey (USGS), 1989 and 1997, National Atlas, 2000 and 2002, National Geodetic Survey, 2005, Mendocino County GIS, 2007, and U.S. Census Bureau, 2006. Additional information was photogrammetrically compiled at a scale of 1:12,000 from U.S. Department of Agriculture aerial photography dated 2005.

For FIRM panels dated July 18, 2017: Base map information shown on the FIRM was derived from multiple sources. Data was provided in digital format by Mendocino County GIS Department. This information was derived from Coastal California LiDAR and Digital Imagery dated 2011. USDA NAIP 2012 imagery was used in areas not covered by the Coastal California imagery. For FIRM panels dated September 1, 2022: Base map information shown on this FIRM was provided in digital format by the National Agricultural Imagery Program (NAIP) administered by the United States Department of Agriculture. This information was derived from digital orthophotography at a 1-meter resolution from photography dated 2014. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

Base map information shown on FIRMs dated September 19, 2025 was provided by the United States Department of Agriculture National Resource Conservation Service (USDA -NRCS.)This information was derived from digital orthophotography at a 1-meter resolution from photography dated 2016. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report

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

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

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

NOTES FOR FIRM INDEX

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

ATTENTION: The corporate limits shown are based on the best information available at the time of publication of this FIRM Panel Index. As such, they may be more current than those shown on FIRM panels issued before September 19, 2025

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Mendocino County, California, effective September 19, 2025

NON-ACCREDITED LEVEE SYSTEM: This panel contains a levee system that has not been accredited and is therefore not recognized as reducing the 1-percent-annual-chance flood hazard.

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

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

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.

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

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

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

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

GENERAL STRUCTURES	
Dam Jetty Weir	Dam, Jetty, Weir
	Levee, Dike, or Floodwall
Bridge	Bridge
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity

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

BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

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

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

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

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Ackerman Creek	Mendocino County, Unincorporated Areas	Approximately 130 feet upstream of Orr Springs Road	Approximately 1.1 miles upstream of Orr Spring Road	18010110	1.1	—	N	A	2019
Ackerman Creek	Mendocino County, Unincorporated Areas, Pinoleville Pomo Nation	Confluence with Russian River	Approximately 130 feet upstream of Orr Springs Road	18010110	2.2	—	Y	AE	1981
Anderson Creek	Mendocino County, Unincorporated Areas	Approximately 1.7 miles downstream of State Highway 128	Approximately 50 feet upstream of State Highway 253	18010106	3.6	—	Y	AE	1981
Baechtel Creek	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Outlet Creek	Approximately 0.5 mile upstream of South Main Street	18010103	5.1	—	Y	AE	2017
Baechtel Creek East Overflow 1	Mendocino County, Unincorporated Areas	Confluence with Baechtel Creek East Overflow 3	Divergence from Baechtel Creek	18010103	0.2	—	Y	AE	2020
Baechtel Creek East Overflow 2	Mendocino County, Unincorporated Areas	At Limit of Study	Divergence from Baechtel Creek East Overflow 1	18010103	0.8	—	Y	AE	2020
Baechtel Creek East Overflow 3	Mendocino County, Unincorporated Areas	At Limit of Study	Divergence from Baechtel Creek East Overflow 1	18010103	0.9	—	Y	AE	2020
Baechtel Creek East Overflow 4	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek East Overflow 5	Divergence from Baechtel Creek	18010103	0.2	—	Y	AE	2020
Baechtel Creek East Overflow 5	Mendocino County, Unincorporated Areas	At Limit of Study	Divergence from Baechtel CreekEast Overflow 4	18010103	0.7	—	Y	AE	2020
Baechtel Creek East Overflow 6	Mendocino County, Unincorporated Areas	At Limit of Study	Divergence from Baechtel Creek East Overflow 4	18010103	0.8	—	Y	AE	2020

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Baechtel Creek East Overflow 7	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek East Overflow 8	Divergence from Baechtel Creek	18010103	0.4	—	Y	AE	2020
Baechtel Creek East Overflow 8	Willits, City of	Confluence with Baechtel Creek East Overflow 7	Divergence from Baechtel Creek	18010103	0.2	—	Y	AE	2020
Baechtel Creek East Overflow 9	Willits, City of	Confluence with Baechtel Creek	Divergence from Baechtel Creek East Overflow 8	18010103	0.1	—	Y	AE	2020
Baechtel Creek West Overflow 1	Willits, City of	Confluence with Baechtel Creek West Overflow 3	Divergence from Baechtel Creek	18010103	0.3	—	Y	AE	2020
Baechtel Creek West Overflow 2	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek West Overflow 3	Divergence from Baechtel Creek	18010103	0.1	—	Y	AE	2020
Baechtel Creek West Overflow 3	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek West Overflow 8	Divergence from Baechtel Creek West Overflow 1	18010103	0.4	—	Y	AE	2020
Baechtel Creek West Overflow 4	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek West Overflow 7	Divergence from Baechtel Creek	18010103	0.2	—	Y	AE	2020
Baechtel Creek West Overflow 5	Willits, City of	At Limit of Study	Divergence from Baechtel Creek West Overflow 8	18010103	0.1	—	Y	AE	2020
Baechtel Creek West Overflow 6	Willits, City of	Confluence with Baechtel Creek West Overflow 8	Divergence from Baechtel Creek West Overflow 4	18010103	0.1	—	Y	AE	2020
Baechtel Creek West Overflow 7	Willits, City of	Confluence with Baechtel Creek West Overflow 5	Divergence from Baechtel Creek West Overflow 4	18010103	0.2	—	Y	AE	2020

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Baechtel Creek West Overflow 8	Willits, City of	Confluence with Baechtel Creek West Overflow 5	Divergence from Baechtel Creek West Overflow 3	18010103	0.1	—	Y	AE	2020
Berry Creek	Mendocino County, Unincorporated Areas	Confluence with Outlet Creek	Approximately 0.2 mile upstream of East Side Road	18010103	4.8	—	N	AE	2017
Big/Navarrro/Garcia Rivers Watershed (Zone A)	Fort Bragg, City of; Mendocino County, Unincorporated Areas; Point Arena, City of	—	—	18010108	—	—	N	A	—
Broaddus Creek	Willits, City of	Confluence with Haehl/Baechtel Creek	Approximately 500 feet upstream of Fort Bragg	18010103	1.9	—	Y	AE	2017
Broaddus Creek East Overflow 1	Willits, City of	Confluence with Baechtel Creek West Overflow 8	Divergence from Broaddus Creek	18010103	0.4	—	Y	AE	2020
Broaddus Creek East Overflow 2	Willits, City of	Confluence with Baechtel Creek West Overflow 5	Divergence from Broaddus Creek	18010103	0.4	—	Y	AE	2020
Davis Creek	Mendocino County, Unincorporated Areas	Confluence with Baechtel Creek	Approximately 1.3 miles upstream of Hearst-Willits Road	18010103	4.4	—	Y	AE	2017
Doolin Creek	Mendocino County, Unincorporated Areas	0.1 miles upstream of Helen Avenue	Approximately 1.34 miles upstream of Doolan Canyon Drive	18010110	1.3	—	N	A	2019
Doolin Creek	Mendocino County, Unincorporated Areas, Ukiah, City of	Confluence with Russian River	0.1 miles upstream of Helen Avenue	18010110	1.9	—	Y	AE	2021
East Fork Russian River	Mendocino County, Unincorporated Areas	Approximately 0.3 mile downstream of Main Street	Approximately 0.6 mile upstream of Main Street	18010110	0.9	—	Y	AE	1981

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Eel River	Mendocino County, Unincorporated Areas	Approximately 1.8 miles downstream of Cape Horn Dam	Approximately 70 feet upstream of Eel River Road	18010103	3.0	—	Y	AE	1981
Feliz Creek	Mendocino County, Unincorporated Areas	Confluence with Russian River	Approximately 90 feet upstream of Old Hopland- Yorkville Road	18010110	2.4	—	Y	AE	1981
Forsythe Creek	Mendocino County, Unincorporated Areas	Confluence with Russian River	At Reeves Canyon Road	18010110	4.7	—	Y	AE	1981
Gibson Creek	Mendocino County, Unincorporated Areas, Ukiah, City of	Confluence with Doolin Creek	Approximately 450 feet downstream of Park Boulevard	18010110	2.2	—	Y	AE	2024
Gibson Creek	Ukiah, City of	Approximately 450 feet downstream of Park Blvd	Approximately 0.2 miles upstream of W Standley Street	18010110	0.8	—	Y	AE	2024
Gibson Creek	Mendocino County, Unincorporated Areas, Ukiah, City of	Approximately 0.2 miles upstream of W Standley Street	Approximately 1,000 feet upstream of Stanley Avenue	18010110	0.7	—	N	A	2019
Gualala River	Mendocino County, Unincorporated Areas	0.6 mile downstream of State Highway 1	Approximately 170 feet upstream of State Highway 1	18010109	0.6	—	N	AE	1984
Gualala/Salmon Rivers Watershed (Zone A)	Mendocino County, Unincorporated Areas	—	—	18010109	11.9	—	N	A	—
Haehl Creek	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek	Approximately 0.8 mile upstream of East Hill Road	18010103	2.3	—	N	AE	2017
Hensley Creek	Mendocino County, Unincorporated Areas	Confluence with Russian River	Upstream Limit of Study	18010110	0.9	—	Y	AE	1981

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Howard Creek	Mendocino County, Unincorporated Areas	Approximately 3,500 feet downstream of Redemeyer Road	Approximately 490 feet upstream of Redemeyer Road	18010110	0.7	—	N	A	2019
Lower Eel River Watershed (Zone A)	Mendocino County, Unincorporated Areas	—	—	18010105	52.1	—	N	A	—
Mattole River Watershed (Zone A)	Mendocino County, Unincorporated Areas	—	—	18010107	5.2	—	N	A	—
McClure Creek	Mendocino County, Unincorporated Areas	Approximately 750 feet downstream of Sanford Ranch Road	Approximately 5,800 feet upstream of Sanford Ranch Road	18010110	2.0	—	N	A	2019
Middle Fork Eel River Watershed (Zone A)	Mendocino County, Unincorporated Areas	—	—	18010104	67.0	—	N	A	—
Mill Creek (at Redwood Valley)	Mendocino County, Unincorporated Areas	—	—	18010110	5.6	—	N	A	—
Mill Creek (at Redwood Valley)	Mendocino County, Unincorporated Areas	Confluence with Forsythe Creek	Approximately 20 feet upstream of Reeves Canyon Road	18010110	2.9	—	Y	AE	1981
Mill Creek(at Willits)	Mendocino County, Unincorporated Areas; Willits, City of	Confluence with Baechtel Creek	Approximately 0.5 mile upstream of Mill Creek Drive	18010103	4.2	—	Y	AE	2017
Mill Creek (At Willits) East Overflow 1	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 7	Divergence from Mill Creek (at Willits)	18010103	0.5	—	Y	AE	2020
Mill Creek (At Willits) East Overflow 2	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from MillCreek (at Willits)	18010103	0.4	—	Y	AE	2020

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Mill Creek (At Willits) East Overflow 3	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 7	Divergence from Broaddus Creek	18010103	0.1	—	Y	AE	2020
Mill Creek (At Willits) East Overflow 4	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 6	Divergence from Broaddus Creek	18010103	0.1	—	Y	AE	2020
Mill Creek (At Willits) East Overflow 5	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 6	Divergence from Broaddus Creek	18010103	0.1	—	Y	AE	2020
Mill Creek (At Willits) East Overflow 6	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from Mill Creek (At Willits) East Overflow 5	18010103	0.3	—	Y	AE	2020
Mill Creek (At Willits) East Overflow 7	Willits, City of	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from Mill Creek (At Willits) East Overflow 3	18010103	0.3	—	Y	AE	2020
Mill Creek (At Willits) East Overflow 8	Willits, City of	Limit of Study	Divergence from Mill Creek (At Willits) East Overflow 7	18010103	0.1	—	Y	AE	2020
Mill Creek (At Willits) West Overflow 1	Mendocino County, Unincorporated Areas; Willits, City of	Limit of Study	Divergence from Mill Creek (at Willits)	18010103	0.3	—	Y	AE	2020
Mill Creek (At Willits) West Overflow 2	Mendocino County, Unincorporated Areas; Willits, City of	Limit of Study	Divergence from Mill Creek (at Willits)	18010103	0.3	—	Y	AE	2020

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Mill Creek (At Willits) West Overflow 3	Willits, City of	Confluence with Mill Creek (At Willits) West Overflow 8	Divergence from Mill Creek (at Willits)	18010103	0.2	—	Y	AE	2020
Mill Creek (At Willits) West Overflow 4	Willits, City of	Limit of Study	Divergence from Mill Creek (At Willits) West Overflow 3	18010103	0.1	—	Y	AE	2020
Mill Creek (At Willits) West Overflow 5	Willits, City of	Limit of Study	Divergence from Mill Creek (At Willits) West Overflow 3	18010103	0.1	—	Y	AE	2020
Mill Creek (Near Talmage)	Mendocino County, Unincorporated Areas	Confluence with Russian River	Upstream Limit of Study	18010110	1.9		Y	AE	1981
North Fork Mill Creek	Mendocino County, Unincorporated Areas	Confluence with Mill Creek (near Talmage)	Approximately 0.2 mile upstream of Guidville Reservation Road	18010110	0.7	—	Y	AE	1981
Noyo River	Fort Bragg, City of; Mendocino County, Unincorporated Areas	Approximately 510 feet downstream of State Highway 1	Approximately 1.4 miles upstream of State Highway 1	18010108	1.5	—	N	AE	1991
Orrs Creek	Mendocino County, Unincorporated Areas, Ukiah, City of	Confluence with Russian River	0.2 miles upstream of North Bush Street	18010110	1.8	—	Y	AE	2024
Orrs Creek	Mendocino County, Unincorporated Areas, Ukiah, City of	1.1 miles upstream of North Bush Street	2.5 miles upstream of North Bush Street	18010110	1.2	—	N	A	2019
Orrs Creek	Mendocino County, Unincorporated Areas, Ukiah, City of	0.2 miles upstream of North Bush Street	1.1 miles upstream of North Bush Street	18010110	1.1	—	Y	AE	2024

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Pacific Ocean	Fort Bragg, City of; Mendocino County, Unincorporated Areas; Point Arena, City of	Entire coastline of Mendocino County	Entire coastline of Mendocino County	18010108	—	—	N	VE	2013
Robinson Creek	Mendocino County, Unincorporated Areas	Confluence with Russian River	Approximately 160 feet upstream of Robinson Creek Road	18010110	5.6	—	Y	AE	1981
Russian River	Mendocino County, Unincorporated Areas, Ukiah, City of	Approximately 3,900 feet downstream of Talmage Road	Upstream Limit of Study	18010110	5.0	—	Y	AE	1981
Russian River Watershed (Zone A)	Mendocino County, Unincorporated Areas; Ukiah, City of	—	—	18010110	105.6	—	N	A	—
Scout Lake Creek	Mendocino County, Unincorporated Areas	Confluence with Berry Creek	Approximately 500 feet upstream of East Side Road	18010103	2.6	—	N	AE	2017
South Fork Eel River Watershed (Zone A)	Mendocino County, Unincorporated Areas	—	—	18010106	126.6	—	N	A	—
Sulphur Creek	Mendocino County, Unincorporated Areas	Confluence of Russian River	Approximately 250 feet west of Vicky Springs Road	18010110	0.2	—	N	A	1981
Tenmile Creek	Mendocino County, Unincorporated Areas	Approximately 0.2 mile downstream of Branscomb Road	Approximately 0.8 mile upstream of Branscomb Road	18010106	1.0	—	Y	AE	1981
Town Creek	Mendocino County, Unincorporated Areas; Round Valley Indian Tribe	Confluence with Grist Creek	Approximately 0.6 mile upstream of State Highway 162	18010104	1.0	—	Y	AE	1981

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

Flooding Source	Community/Tribal Nation	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Unnamed Tributary to Berry Creek	Mendocino County, Unincorporated Areas	Confluence with Berry Creek	Approximately 0.6 mile upstream of Willits Road	18010103	2.6	—	N	AE	2017
Unnamed Tributary to McClure Creek	Mendocino County, Unincorporated Areas	Approximately 2.2 miles upstream of McClure Creek	Approximately 1,820 feet upstream of confluence with McClure Creek	18010110	0.4	—	N	A	2019
Unnamed Tributary to Russian River	Mendocino County, Unincorporated Areas	Confluence with Russian River	Approximately 75 feet west of Redemeyer Road	18010110	0.6	—	N	A	2019
Upp Creek	Mendocino County, Unincorporated Areas	Confluence with Mill Creek	Approximately 230 feet upstream of North Highway 101	18010103	0.4	—	N	AE	2017
Upper Eel River Watershed (Zone A)	Mendocino County, Unincorporated Areas	—	—	18010103	81.5	—	N	A	—
York Creek	Mendocino County, Unincorporated Areas	Confluence with Russian River	Approximately 2.1 miles upstream of U.S. Highway 101	18010110	2.5	—	Y	AE	1981

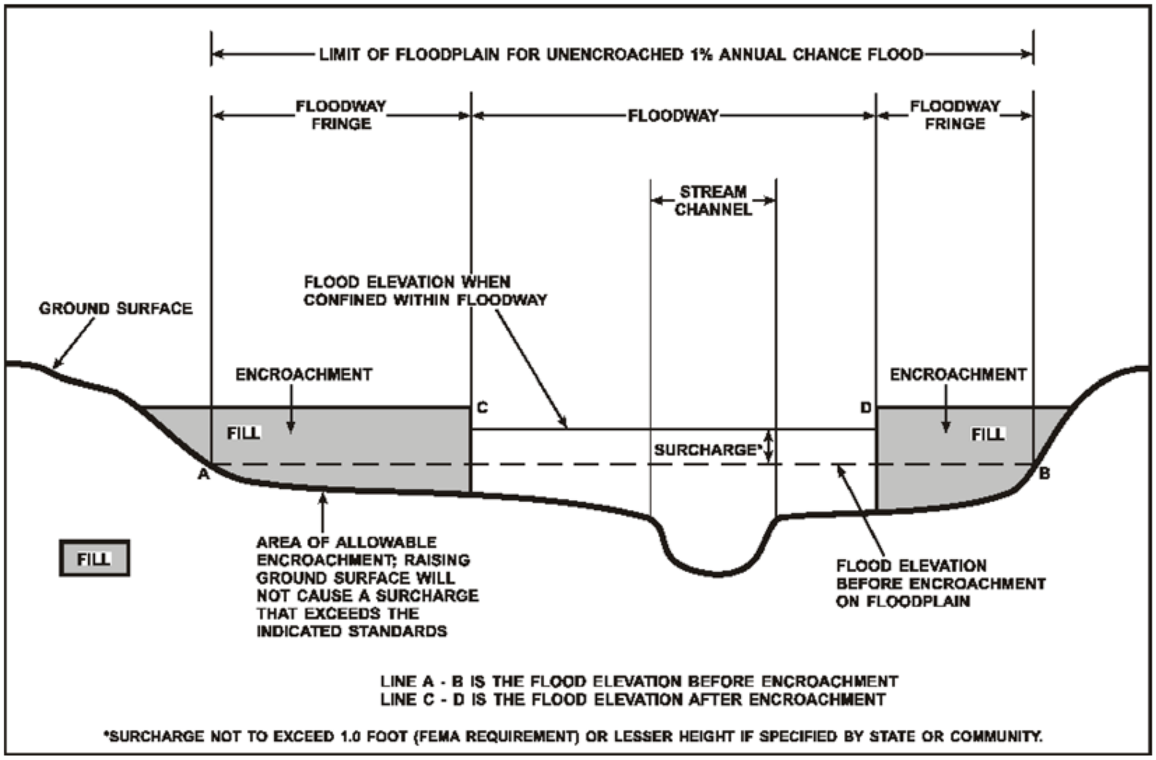
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1-percent-annual-chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1-percent-annual-chance flood. The floodway fringe is the area between the floodway and the 1-percent-annual-chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

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

Figure 4: Floodway Schematic



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

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

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

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

2.4 Non-Encroachment Zones

Some States and communities use non-encroachment zones to manage floodplain development. For flooding sources with medium flood risk, field surveys are often not collected and surveyed bridge and culvert geometry is not developed. Standard hydrologic and hydraulic analyses are still performed to determine BFEs in these areas. However, floodways are not typically determined, since specific channel profiles are not developed. To assist communities with managing floodplain development in these areas, a “non-encroachment zone” may be provided. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1-percent-annual-chance flood event. As with a floodway, all surcharges must fall within the acceptable range in the non-encroachment zone.

General setbacks can be used in areas of lower risk (e.g. unnumbered Zone A), but these are not considered sufficient where unnumbered Zone A is replaced by Zone AE. The NFIP requires communities to ensure that any development in a non-encroachment area causes no increase in BFEs. Communities must generally prohibit development within the area defined by the non-encroachment width to meet the NFIP requirement. Regulations for California require communities in Mendocino County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions for non-encroachment areas.

Non-encroachment determinations may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 24, “Flood Hazard and Non-Encroachment Data for Selected Streams.” Areas for which non-encroachment zones are provided show BFEs and the 1-percent-annual-chance floodplain boundaries mapped as zone AE on the FIRM but no floodways.

There are no non-encroachment zones within Mendocino County

2.5 Coastal Flood Hazard Areas

For most areas along rivers, streams, and small lakes, BFEs and floodplain boundaries are based on the amount of water expected to enter the area during a 1-percent-annual-chance flood and the geometry of the floodplain. Floods in these areas are typically caused by storm events. However, for areas on or near ocean coasts, large rivers, or large bodies of water, BFE and floodplain boundaries may need to be based on additional components, including storm surges and waves.

Coastal flooding sources that are included in this Flood Risk Project are shown in Table 2.

2.5.1 Water Elevations and the Effects of Waves

Specific terminology is used in coastal analyses to indicate which components have been included in evaluating flood hazards.

The stillwater elevation (SWEL or still water level) is the surface of the water resulting from astronomical tides, storm surge, and freshwater inputs, but excluding wave setup contribution or the effects of waves.

- *Astronomical tides* are periodic rises and falls in large bodies of water caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon and sun.
- *Storm surge* is the additional water depth that occurs during large storm events. These events can bring air pressure changes and strong winds that force water up against the shore.
- *Freshwater inputs* include rainfall that falls directly on the body of water, runoff from surfaces and overland flow, and inputs from rivers.

The 1-percent-annual-chance stillwater elevation is the stillwater elevation that has been calculated for a storm surge from a 1-percent-annual-chance storm. The 1-percent-annual-chance storm surge can be determined from analyses of tidal gage records, statistical study of regional historical storms, or other modeling approaches. Stillwater elevations for storms of other frequencies can be developed using similar approaches.

The total stillwater elevation (also referred to as the mean water level) is the stillwater elevation plus wave setup contribution but excluding the effects of waves.

- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

Like the stillwater elevation, the total stillwater elevation is based on a storm of a particular frequency, such as the 1-percent-annual-chance storm. Wave setup is typically estimated using standard engineering practices or calculated using models, since tidal gages are often sited in areas sheltered from wave action and do not capture this information.

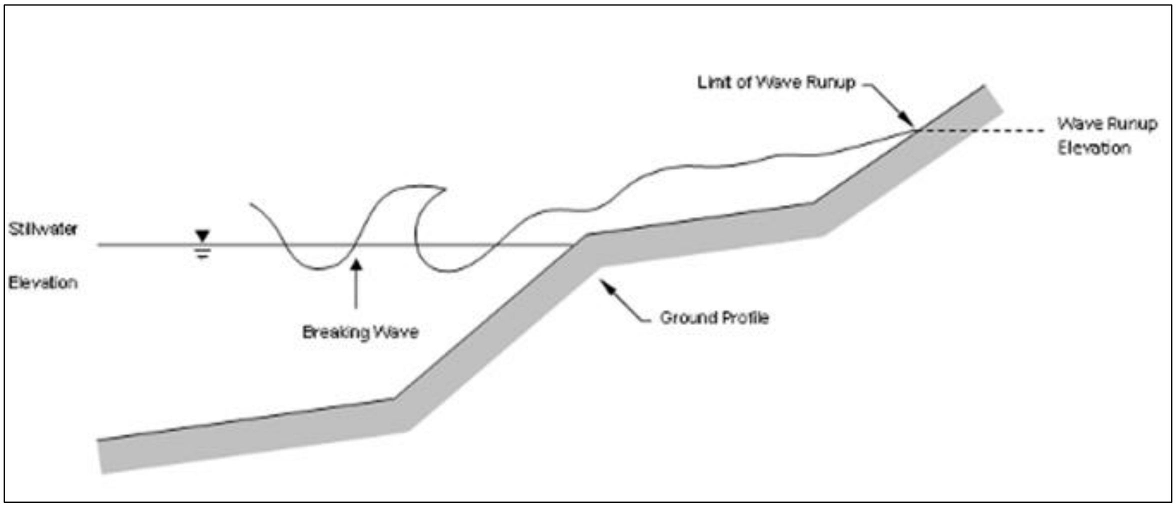
Coastal analyses may examine the effects of overland waves by analyzing storm-induced erosion, overland wave propagation, wave runup, and/or wave overtopping.

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves

move onshore.

- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

Figure 5: Wave Runup Transect Schematic



2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific Oceans, the Gulf of America, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and extreme tides interact with factors such as topography and vegetation. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond areas that are affected by waves and tides, coastal communities can also have riverine floodplains with designated floodways, as described in previous sections.

Floodplain Boundaries

In many coastal areas, storm surge is the principle component of flooding. The extent of the 1-percent-annual-chance floodplain in these areas is derived from the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1-percent-annual-chance storm. The methods that were used for calculation of total stillwater elevations for coastal areas are described in Section 5.3 of this FIS Report. Location of total stillwater elevations for coastal areas are shown in Figure 8, “1% Annual Chance Total Stillwater Levels for Coastal Areas.”

In some areas, the 1-percent-annual-chance floodplain is determined based on the limit of wave runup or wave overtopping for the 1-percent-annual-chance storm surge. The methods that were used for calculation of wave hazards are described in Section 5.3 of this FIS Report.

Table 25 presents the types of coastal analyses that were used in mapping the 1-percent-annual-chance floodplain in coastal areas.

Coastal BFEs

Coastal BFEs are calculated as the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1-percent-annual-chance storm plus the additional flood hazard from overland wave effects (storm-induced erosion, overland wave propagation, wave runup and wave overtopping).

Where they apply, coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. Results of these analyses are accurate until local topography, vegetation, or development type and density within the community undergoes major changes.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 16, "Coastal Transect Parameters." The locations of transects are shown in Figure 9, "Transect Location Map." More detailed information about the methods used in coastal analyses and the results of intermediate steps in the coastal analyses are presented in Section 5.3 of this FIS Report. Additional information on specific mapping methods is provided in Section 6.4 of this FIS Report.

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1-percent-annual-chance flood. These areas will be identified on the FIRM as Coastal High Hazard Areas.

- *Coastal High Hazard Area (CHHA)* is a SFHA extending from offshore to the inland limit of the primary frontal dune (PFD) or any other area subject to damages caused by wave action and/or high-velocity water during the 1-percent-annual-chance flood.

- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

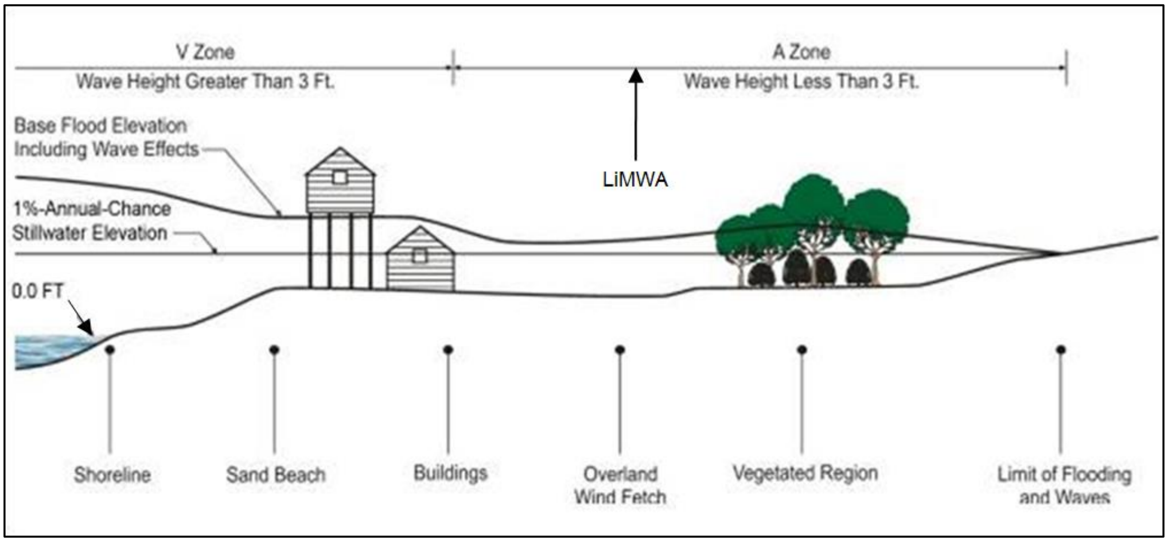
CHHAs are designated as "V" zones (for "velocity wave zones") and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the FIRM.

The landward limit of the PFD occurs at a point where there is a distinct change from a relatively steep slope to a relatively mild slope; this point represents the landward extension of Zone VE. Areas of lower risk in the CHHA are designated with Zone V on the FIRM. More detailed information about the identification and designation of Zone VE is presented in Section 6.4 of this FIS Report.

Areas that are not within the CHHA but are SFHAs may still be impacted by coastal flooding and damaging waves; these areas are shown as “A” zones on the FIRM.

Figure 6, “Coastal Transect Schematic,” illustrates the relationship between the base flood elevation, the 1-percent-annual-chance stillwater elevation, and the ground profile as well as the location of the Zone VE and Zone AE areas in an area without a PFD subject to overland wave propagation. This figure also illustrates energy dissipation and regeneration of a wave as it moves inland.

Figure 6: Coastal Transect Schematic



Methods used in coastal analyses in this Flood Risk Project are presented in Section 5.3 and mapping methods are provided in Section 6.4 of this FIS Report.

Coastal floodplains are shown on the FIRM using the symbology described in Figure 3, “Map Legend for FIRM.” In many cases, the BFE on the FIRM is higher than the stillwater elevations shown in Table 16 due to the presence of wave effects. The higher elevation should be used for construction and/or floodplain management purposes.

2.5.4 Limit of Moderate Wave Action

This section is not applicable to the Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

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

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

Table 3 lists the flood insurance zones in Mendocino County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Fort Bragg, City of	A, AE, VE, X
Mendocino County, Unincorporated Areas	A, AE, D, V, VE, X
Pinoleville Pomo Nation	AE, X
Point Arena, City of	A, VE, X
Ukiah, City of	A, AE, X
Willits, City of	AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

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

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Big-Navarro-Garcia	18010108	Big-Navarro-Garcia Rivers	This large watershed in the northwestern portion of Mendocino County consists primarily of the Big, Navarro, and Garcia Rivers and their tributaries, along with smaller flooding sources flowing directly into the Pacific Ocean.	1,601
Gualala-Salmon	18010109	Gualala River-Salmon Creek	Located in the southwest portion of the county, this relatively small watershed consists primarily of tributaries to the Gualala River.	554
Lower Eel	18010105	Lower Eel River	This large watershed is located in the north-central Mendocino County and consists of the Eel River and its tributaries in the northern portion of the county.	1,529

Table 4: Basin Characteristics *(continued)*

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Mattole	18010107	Mattole River	A small portion of this watershed is located in the northwest portion of Mendocino County. It consists of the Mattole River and its tributaries, as well as a few streams flowing directly into the Pacific Ocean.	747
Middle Fork Eel	18010104	Middle Fork Eel River	Located in the northeastern portion of the county, this watershed consists of the Middle Fork of the Eel river and its many tributaries.	753
Russian	18010110	Russian River	This large watershed is located in the eastern and southeastern portions of Mendocino County and includes the mainstem of the Russian River and its many tributaries.	1,484
South Fork Eel	18010106	South Fork Eel River	Located in the northern portion of the county, this watershed includes the South Fork Eel River and its tributaries.	689
Upper Cache	18020116	Upper Cache Creek	This watershed is located primarily in Lake County, but small portions are also located in Mendocino County.	1,164
Upper Eel	18010103	Upper Eel River	Located in the center portion of the county, this watershed includes the Eel River and its tributaries, as well as the flooding sources in the general area of the City of Willits.	709
Upper Stony	18020115	Upper Stony Creek	Primarily located in Lake and Glenn Counties, a very small segment of this watershed is located in the northeastern portion of Mendocino County.	776

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
All sources	Major floods have resulted from extended periods of winter rainfall produced by storms from the Pacific Ocean. Flooding on several of the streams studied in detail have been extensively documented by gage records, high-water marks, damage surveys, and personal accounts. Areas of Mendocino County are also subject to flooding from storm tides.
All sources (City of Ukiah)	The eastern portion of Ukiah is subject to flooding from Russian River.Flooding in the Russian River valley has been extensively documented by gage records, high-water marks, damage surveys, and personal accounts. Past flooding problems on Orrs, Gibson, and Doolin Creeks are not documented by streamflow gage records. However, the USACE did collect and tabulate high-water-mark elevations from the 1964 flood on Orrs, Gibson, and Doolin Creeks (USACE (c), 1965).
All sources (City of Willits)	The eastern section of Willits is subject to flooding from streams flowing into Little Lake Valley from the west (Mill Creek (at Willits) and Broaddus Creek) and south (Haehl/Baechtel Creek). The extent of flooding has been documented by high-water-mark elevations taken by the USACE. Flooding occurred in January 1974; however, no gage data are available to estimate the recurrence interval. The extent of flooding for major floods other than December 1964 (December 1955, January 1974, and others) has not been documented by published high-water marks; however, the December 1964 event was the largest flood of record on Eel River, to the east of Willits. Stream blockage by debris has been cited as a problem by city officials during past floods. The area between U.S. Highway 101 and Southern Pacific Railroad tracks north of Mill Creek (at Willits) to the northern corporate limits is subject to shallow flooding resulting from ponding and backwater flooding. Water from streams flowing into Little Lake Valley floods the flat valley floor, including this portion of land within the corporate limits.
Eel River	Several publications have described the floods of Dec ember 1955 and December 1964 in the Eel River watershed (California 1965; USACE 1956, 1965; USGS 1969; Winsler & Kelly 1970). Over $64 million in damage and 19 deaths resulted from the 1964 flood on Eel River (USGS 1969; Winsler & Kelly 1970). Most of the damage and destruction resulting from the 1955 and1964 floods in the Eel River watershed occurred in the areas downstream and outside of Mendocino County.
East Fork Russian River	The flood of 1955 was larger than the 1964 flood in the Ukiah area. The decrease in size of the peak flow in 1964 was a result of the storage of excessive flows from East Fork Russian River into Lake Mendocino created by Coyote Dam northeast of Ukiah in 1958 (California 1965).

Table 5: Principal Flood Problems *(continued)*

Flooding Source	Description of Flood Problems
Noyo Harbor	Flooding in Noyo Harbor can be caused by high river flows and high tides with storm surge. The most destructive flooding, which occurred in April1964, was caused by tsunami and associated tidal surges resulting from the Alaskan earthquake. Heavy rains in January of 1966 caused damage to boats in the harbor, primarily as a result of high velocity river flows carrying large logs and other debris. However, there are no records of flood damage during the maximum recorded river discharge of 26,600 cfs in 1974, almost 50 percent greater than the maximum river flow of 19,200 cfs in 1966.
Pacific Ocean	Flooding along the Pacific coast at Point Arena is typically associated with the simultaneous occurrence of very high tides, large waves, and storm swells during the winter. As a result, ocean-front development has not been compatible with the natural instability of the shoreline and the intense winter weather conditions. Tsunami (sea waves generated from oceanic earthquakes, submarine landslides, and volcanic eruptions) create some of the most destructive natural water waves. As tsunami waves approach shallow coastal waters, wave refraction, shoaling, and bay resonance amplify the wave heights. Storm centers from the southwest produce the type of storm pattern most commonly responsible for the majority of the serious coastal flooding. The strong winds and high tides that create storm surges are al so accompanied by heavy rains. In some instances, high tides back up riverflows, which causes flooding at the river mouth. In the past, developed portions of the northern California coast have been damaged as a result of severe winter storms. The most severe storms to hit the California coast occurred in 1978 and 1983, when high water levels were accompanied by very large storm waves. In January 1978 a series of storms emanated from a more southerly directionthan normally occurs; consequently, some of the better protected beaches in the area were also damaged. The winter of 1983 brought an extremely unusual series of high tides, storm surges, and storm waves that caused damage along the northern California coast (Ott Water 1984).

Table 5: Principal Flood Problems *(continued)*

Flooding Source	Description of Flood Problems
Russian River	The eastern portion of Ukiah is subject to flooding from Russian River.Flooding in the Russian River valley has been extensively documented by gage records, high-water marks, damage surveys, and personal accounts. Regulation of the Russian River streamflow since 1958 with the construction of Coyote Dam (Lake Mendocino) on East Fork Russian River has reduced the peak discharge. The largest flood recorded since 1958 occurred on December 22, 1964, with a measured peak discharge of 41,500 cfs and an estimated recurrence interval of 32 years. The only other large flood to occur since 1958 was on January 16, 1974, with a peak discharge of 39,700 cfs and an estimated recurrence interval of 25 years. Several publications have described the floods of Dec ember 1955 and December 1964 in the Russian River watershed (California 1965; USACE 1956, 1965; USGS 1969; Winsler & Kelly 1970). Damage estimates for the 1955 flood in the Russian River valley amounted to over $5 million for the combined area of Mendocino and Sonoma Counties (USACE 1956). Most of the damage and destruction resulting from the 1955 and 1964 floods in the Russian River watershed occurred in the areas downstream and outside of Mendocino County.

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

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Eel River	Eel River at Van Arsdale Dam near Potter Valley, CA	*	1937	14	USGS NationalWater Information System (NWIS)
Eel River	Eel River at Van Arsdale Dam near Potter Valley, CA	*	1955	18	USGS NationalWater Information System (NWIS)
Eel River	Eel River at Van Arsdale Dam near Potter Valley, CA	*	1964	44	USGS NationalWater Information System (NWIS)
Feliz Creek	Feliz Creek near Hopland, CA	*	1964	N/A	USGS NationalWater Information System (NWIS)

* No data available

Table 6: Historic Flooding Elevations *(continued)*

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Russian River	Russian Rivernear Hopland, CA	*	1955	46	USGS NationalWater Information System (NWIS)
Russian River	Russian River near Ukiah, CA	*	1955	36	USGS NationalWater Information System (NWIS)
Russian River	*	*	1964	32	*
Russian River	*	*	1974	25	*

* No data available

4.3 Dams and Other Flood Hazard Reduction Measures

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

Table 7: Dams and Other Flood Hazard Reduction Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Albion River	Albion	Revetment	From State Route 1 to approximately 0.5 miles upstream of State Route 1	Coastal Armoring Structure
Arena Cove	Arena Cove	Revetment	Near Point Arena Creek confluence with Arena Cove	Coastal Armoring Structure
Caspar Creek	Caspar	Revetment	Along Caspar Little Lake Road near confluence with Pacific Ocean	Coastal Armoring Structure
East Fork Russian River	Coyote Dam	Dam	Below Potter Valley	Constructed by USACE in 1958
Eel River	Cape Horn Dam	Dam	Van Arsdale Reservoir	Operated by Pacific Gasand Electric
Gibson Creek	N/A	Concrete walls	Between Orchard Street and Warren Drive	Streambanks have been reinforced with concrete walls to contain minor floods
Juan Creek	Juan Creek	Revetment	Downstream of State Route 1	Coastal Armoring Structure
Little River	Van Damme Beach	Seawall	Downstream ofState Route 1	Coastal Armoring Structure

Table 7: Dams and Other Flood Hazard Reduction Measures *(continued)*

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Noyo River	Noyo River	Jetty (left bank)	Downstream of State Route 1 in Noyo Bay	Beach stabilization structure
Noyo River	Noyo River	Jetty (right bank)	Downstream of State Route 1 in Noyo Bay	Beach stabilization structure

4.4 Levee Systems

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the flood hazard from the 1-percent-annual-chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate flood hazard zone.

Levee systems that are determined to reduce the hazard from the 1-percent-annual-chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA is awaiting data and/or documentation to demonstrate compliance with 44 CFR 65.10. These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee system's accreditation status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system no longer meets 44 CFR 65.10, FEMA will consider the levee system as non-accredited and issue an effective FIRM showing the levee-impacted area as a SFHA or Zone D.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levee systems that exist within Mendocino County. Table 8, "Levee Systems," lists all accredited levee systems, PALs, and non-accredited levee systems shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levee systems identified in the table are displayed on the FIRM with notes to users to indicate their flood hazard mapping status.

Please note that the information presented in Table 8 is subject to change at any time. For that reason, the latest information regarding the levee systems presented in the table may be obtained by accessing the National Levee Database. For additional information, contact the levee owner/sponsor or the local community shown in Table 30.

Table 8: Levee Systems

Community/Tribal Nation	Flooding Source(s)	Levee Location	NLD Levee System Name	Levee System Status on Effective FIRM	FIRM Panel(s)	Levee Owner(s) / Sponsor(s)
Mendocino County, Unincorporated Areas	Donelly Creek	Approximately 0.5 mile northeast of Anderson Creek	N/A	Non-Accredited	06045C1663F	*
Mendocino County, Unincorporated Areas	Local Flooding	Approximately 0.6 mile northeast of Anderson Creek	N/A	Non-Accredited	06045C1663F	*
Mendocino County, Unincorporated Areas	Morrison Creek	Left Bank	Mendocino County Levee 1	Non-Accredited	06045C1683F	Locally operated
Mendocino County, Unincorporated Areas	Morrison Creek	Right Bank	Mendocino County Levee 2	Non-Accredited	06045C1683F, 06045C1684F	Locally operated
Mendocino County, Unincorporated Areas	Russian River	Left Bank	Mendocino County Levee 4	Non-Accredited	06045C1502F	Locally operated
Mendocino County, Unincorporated Areas	Short Creek	Left Bank	Mendocino County Levee 3	Non-Accredited	06045C0550F	Locally operated

* No data available

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year.

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

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

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 26, “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

5.1 Hydrologic Analyses

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

A summary of the discharges is provided in Table 9. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 16.) Stream gage information is provided in Table 11.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Ackerman Creek	At the confluence with Russian River	20.6	3,190	*	4,800	5,370	*	7,000
Ackerman Creek	At Orrs Springs Road	19.0	3,060	*	4,700	5,320	*	6,600
Anderson Creek	At the confluence with Con Creek	35.4	5,230	*	8,060	9,140	*	11,800
Anderson Creek	Upstream of the confluence with Robinson Creek	24.0	3,670	*	5,730	6,520	*	8,460
Anderson Creek	Upstream of the confluence with Donelly Creek	21.7	3,360	*	5,240	5,970	*	7,750
Anderson Creek	At State Highway 253	14.3	2,280	*	3,630	4,150	*	5,460
Baechtel Creek	Approximately 500 feet downstream of Center Valley Road	9.7	*	*	*	3,270	*	4,260
Baechtel Creek East Overflow 1**	At the confluence with Baechtel Creek	*	*	*	*	592	*	*
Baechtel Creek East Overflow 2**	At the confluence with Baechtel Creek Overflow 1	*	*	*	*	350	*	*
Baechtel Creek East Overflow 3**	At the confluence with Baechtel Creek Overflow 1	*	*	*	*	676	*	*
Baechtel Creek East Overflow 4**	At the confluence with Baechtel Creek	*	*	*	*	110	*	*
Baechtel Creek East Overflow 5**	At the confluence with Baechtel Creek Overflow 4	*	*	*	*	84	*	*
Baechtel Creek East Overflow 6**	At the confluence with Baechtel Creek Overflow 4	*	*	*	*	30	*	*
Baechtel Creek East Overflow 7**	At the confluence with Baechtel Creek Overflow 8	*	*	*	*	60	*	*

* Not calculated for this Flood Risk Project

** Discharges are derived from the unsteady state hydraulic model to reproduce the unsteady flow results in the steady state model for the floodway analysis. (Models and Report available for reference in the DCS package)

Table 9: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Baechtel Creek East Overflow 8**	At the confluence with Baechtel Creek	*	*	*	*	172	*	*
Baechtel Creek East Overflow 9**	At the confluence with Baechtel Creek Overflow 8	*	*	*	*	50	*	*
Baechtel Creek West Overflow 1**	At the confluence with Baechtel Creek	*	*	*	*	86	*	*
Baechtel Creek West Overflow 2**	At the confluence with Baechtel Creek	*	*	*	*	132	*	*
Baechtel Creek West Overflow 3**	At the confluence with Baechtel Creek West Overflow 1	*	*	*	*	457	*	*
Baechtel Creek West Overflow 4**	At the confluence with Baechtel Creek	*	*	*	*	143	*	*
Baechtel Creek West Overflow 5**	At the confluence with Baechtel Creek West Overflow 8	*	*	*	*	750	*	*
Baechtel Creek West Overflow 6**	At the confluence with Baechtel Creek West Overflow 4	*	*	*	*	34	*	*
Baechtel Creek West Overflow 7**	At the confluence with Baechtel Creek West Overflow 4	*	*	*	*	38	*	*
Baechtel Creek West Overflow 8**	At the confluence with Baechtel Creek West Overflow 3	*	*	*	*	593	*	*
Berry Creek	Approximately 0.9 mile downstream of East Side Road	3.2	*	*	*	1,040	*	1,380
Broaddus Creek	Approximately 0.4 mile downstream of East Commercial Street	7.8	*	*	*	2,710	*	3,530
Broaddus Creek East Overflow 1**	At the confluence with Broaddus Creek	*	*	*	*	131	*	*
Broaddus Creek East Overflow 2**	At the confluence with Broaddus Creek	*	*	*	*	211	*	*

* Not calculated for this Flood Risk Project
** Discharges are derived from the unsteady state hydraulic model to reproduce the unsteady flow results in the steady state model for the floodway analysis. (Models and Report available for reference in the DCS package)

Table 9: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (Square Miles)		Peak Discharge (cfs)				
			10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Davis Creek	Approximately 1.0 mile downstream of Hearst-Willits Road	14.3	*	*	*	4,030	*	5,300
Doolin Creek	At confluence with Russian River	6.8	1,160	1,550	1,850	2,160	3,117	2,850
Doolin Creek	Above the confluence with Mendocino Creek	2.7	528	708	846	991	1,430	1,310
Doolin Creek	Upstream of South Dora Street	2.2	446	599	715	838	1,209	11,200
East Fork Russian River	Approximately 0.3 mile downstreamof Centerville Road	29.1	4,050	*	6,050	6,810	*	8,640
Eel River	At the confluence with Hale Creek	35.3	41,000	*	70,000	82,500	*	112,000
Feliz Creek	At the confluence with Russian River	43.3	5,990	*	8,230	9,160	*	11,470
Feliz Creek	At Old Hopland-Yorkville Road	31.1	4,550	*	6,290	7,040	*	8,940
Forsythe Creek	At the confluence with Russian River	49.7	6,940	*	10,500	11,900	*	15,200
Forsythe Creek	Upstream of the confluence with Seward Creek	34.6	5,120	*	7,900	8,960	*	11,600
Forsythe Creek	Upstream of the confluence with Bakers Creek	32.5	4,810	*	7,460	8,480	*	11,000
Forsythe Creek	Upstream of the confluence with Mill Creek (at Redwood Valley)	18.7	3,070	*	4,790	5,450	*	7,060
Gibson Creek	At the confluence with Doolin Creek	2.6	506	680	814	954	1,377	1,270
Gibson Creek	At West Standley Street	1.7	357	478	572	670	967	886
Haehl Creek	250 feet downstream of Center Valley Road	5.7	*	*	*	1,910	*	2,520
Hensley Creek	At the confluence with Russian River	7.6	1,290	*	1,970	2,210	*	2,790

* Not calculated for this Flood Risk Project

Table 9: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Hensley Creek	Approximately 2.1 miles upstream of U.S. Highway 101	3.7	661	*	1,070	1,230	*	1,630
Mill Creek (near Talmage)	At the confluence with Russian River	18.0	2,210	*	3,320	3,790	*	4,490
Mill Creek (near Talmage)	Above the confluence with McClure Creek	10.1	1,260	*	2,000	2,290	*	3,000
Mill Creek (near Talmage)	Above confluence with North Fork Mill Creek	4.4	610	*	990	1,140	*	1,520
Mill Creek(at Willits)	Approximately 0.6 mile downstream of North Lenore Avenue	9.5	*	*	*	3,150	*	4,110
Mill Creek (At Willits) East Overflow 1**	At the confluence with Mill Creek (at Willits)	*	*	*	*	116	*	*
Mill Creek (At Willits) East Overflow 2**	At the confluence with Mill Creek (at Willits)	*	*	*	*	160	*	*
Mill Creek (At Willits) East Overflow 3**	At the confluence with Broaddus Creek	*	*	*	*	200	*	*
Mill Creek (At Willits) East Overflow 4**	At the confluence with Broaddus Creek	*	*	*	*	400	*	*
Mill Creek (At Willits) East Overflow 5**	At the confluence with Broaddus Creek	*	*	*	*	200	*	*
Mill Creek (At Willits) East Overflow 6**	At the confluence with Mill Creek (at Willits) East Overflow 5	*	*	*	*	216	*	*

* Not calculated for this Flood Risk Project

** Discharges are derived from the unsteady state hydraulic model to reproduce the unsteady flow results in the steady state model for the floodway analysis. (Models and Report available for reference in the DCS package)

Table 9: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Mill Creek (At Willits) East Overflow 7**	At the confluence with Mill Creek (at Willits) East Overflow 1	*	*	*	*	174	*	*
Mill Creek (At Willits) East Overflow 8**	At the confluence with Mill Creek (at Willits) East Overflow 7	*	*	*	*	540	*	*
Mill Creek (At Willits) West Overflow 1**	At the confluence with Mill Creek (at Willits)	*	*	*	*	491	*	*
Mill Creek (At Willits) West Overflow 2**	At the confluence with Mill Creek (at Willits)	*	*	*	*	156	*	*
Mill Creek (At Willits) West Overflow 3**	At the confluence with Mill Creek (at Willits)	*	*	*	*	210	*	*
Mill Creek (At Willits) West Overflow 4**	At the confluence with Mill Creek (at Willits) West Overflow 3	*	*	*	*	96	*	*
Mill Creek (At Willits) West Overflow 5**	At the confluence with Mill Creek (at Willits) West Overflow 3	*	*	*	*	110	*	*
North Fork Mill Creek	At the confluence with Mill Creek	5.3	730	*	1,210	1,410	*	1,910
Noyo River	At U.S. Highway 1	114.0	17,740	*	31,085	38,000	*	57,367
Orrs Creek	At the confluence with Russian River	9.2	1,600	2,130	2,530	2,940	4,242	3,850
Orrs Creek	Downstream of North Bush Street	8.7	1,540	2,050	2,430	2,830	4,084	3,700
Orrs Creek	At Low Gap Park	7.8	1,420	1,880	2,230	2,600	3,752	3,400
Overland Flow	Approximately 0.2 mile upstream of Center Valley Road	2.0	*	*	*	734	*	977

* Not calculated for this Flood Risk Project

** Discharges are derived from the unsteady state hydraulic model to reproduce the unsteady flow results in the steady state model for the floodway analysis. (Models and Report available for reference in the DCS package)

Table 9: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Robinson Creek	At the confluence with Russian River	26.7	3,930	*	5,890	6,590	*	8,280
Robinson Creek	Upstream of the confluence with Unnamed Tributary near State Highway 253 crossing	20.5	3,240	*	5,020	5,680	*	7,310
Robinson Creek	Approximately 1.4 miles upstream of State Highway 253	16.3	2,620	*	4,150	4,720	*	6,210
Robinson Creek	Approximately 2.2 miles upstream of State Highway 253	10.2	1,770	*	2,810	3,220	*	4,210
Russian River	At U.S. Highway 101 bridge south of Hopland	437	36,900	*	53,100	59,900	*	75,800
Russian River	Upstream of the confluence with Feliz Creek	391	32,700	*	47,100	53,000	*	67,100
Russian River	At USGS gaging station near Hopland (No. 11462500)	362	30,000	*	43,100	48,600	*	61,400
Russian River	Downstream of the confluence with Robinson Creek	317	26,100	*	37,500	42,100	*	53,800
Russian River	Upstream of theconfluence with Robinson Creek	291	23,100	*	33,300	37,300	*	46,800
Russian River	Upstream of the confluence with Doolin and Mill Creek (near Talmage)	261	19,600	*	28,300	31,700	*	39,700
Russian River	Upstream of the confluence with Orrs Creek	249	18,200	*	26,300	29,400	*	36,900
Russian River	Downstream of the confluence with Ackerman Creek	235	16,500	*	23,900	26,800	*	33,600
Russian River	Upstream of the confluence with Ackerman Creek	215	15,800	*	21,500	23,700	*	29,100
Russian River	Upstream of the confluence with Hensley Creek	207	14,800	*	21,100	22,200	*	27,200

* Not calculated for this Flood Risk Project

Table 9: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance (Existing)	1-Percent-Annual-Chance (Future)	0.2-Percent-Annual-Chance
Russian River	At USGS gaging station near Ukiah(No. 11461000)	99.7	14,400	*	19,700	21,700	*	26,800
Russian River	Upstream of the confluence with Your Creek	87.0	12,700	*	17,300	19,200	*	23,600
Russian River	Upstream of the confluence with Forsythe Creek	35.0	5,310	*	7,620	8,480	*	10,600
Russian River	At upstream Limit of Detailed Study	27.1	4,480	*	6,400	7,120	*	8,900
Scout Lake Creek	Approximately 0.7 mile downstream of Valley Road	1.9	*	*	*	699	*	930
Sulphur Creek	At Vicky Springs Road	5.5	950	*	1,380	1,600	*	2,130
Tenmile Creek	Approximately 0.2 mile downstream of Branscomb Road	20.9	3,440	*	5,850	6,900	*	9,620
Town Creek	At the confluence with Grist Creek	11.3	1,300	*	2,280	2,720	*	3,890
Unnamed Tributary to Berry Creek	Approximately 0.8 mile downstream of Hearst-Willits Road	1.8	*	*	*	657	*	875
Upp Creek	Approximately 0.3 mile downstream of North Highway 101	1.7	*	*	*	641	*	967
York Creek	At the confluence with Russian River	12.0	1,920	*	2,920	3,290	*	4,170
York Creek	Approximately 2.1 miles upstream of U.S. Highway 101	8.0	1,270	*	2,080	2,410	*	3,220

* Not calculated for this Flood Risk Project
** Discharges are derived from the unsteady state hydraulic model to reproduce the unsteady flow results in the steady state model for the floodway analysis. (Models and Report available for reference in the DCS package)

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

Table 10: Summary of Non-Coastal Stillwater Elevations
[Not applicable to this Flood Risk Project]

Table 11: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Eel River	11471500	USGS	Eel River at Van Arsdale Dam near Potter Valley, CA	349	1910	1977
Eel River	11472150	USGS	Eel River near Dos Rios, CA	528	1965	1977
Eel River	11472500	USGS	Eel River above Dos Rios, CA	705	1951	1965
Feliz Creek	11462700	USGS	Feliz Creek near Hopland, CA	31	1958	1966
Russian River	11460940	USGS	Russian River near Redwood Valley, CA	14	1964	1976
Russian River	11461000	USGS	Russian River near Ukiah, CA	100	1953	1976
Russian River	11462500	USGS	Russian River near Hopland, CA	362	1959	1979
Russian River	11463000	USGS	Russian River near Cloverdale, CA	503	1959	1979
Russian River	11464000	USGS	Russian River near Healdsburg, CA	793	1959	1976

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

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

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

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Ackerman Creek	Confluence with Russian River	Approximately 130 feet upstream of Orr Springs Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	For all flooding sources in this table using 1977 equations, a 0.2-percent-annual-chance discharge was calculated by extrapolation from the other three frequency data points.
Ackerman Creek	Approximately 130 feet upstream of Orr Springs Road	Approximately 1.1 miles upstream of Orr Spring Road	Regression Equations	HEC-RAS 5.0 and up	07/01/2019	A	
Anderson Creek	Approximately 1.7 miles downstream of State Highway 128	Approximately 50 feet upstream of State Highway 253	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
Baechtel Creek	Confluence with Outlet Creek	Approximately 0.5 mile upstream of South Main Street	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 1	Confluence with Baechtel Creek East Overflow 3	Confluence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 2	At Limit of Study	Confluence from Baechtel Creek East Overflow 1	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 3	At Limit of Study	Confluence from Baechtel Creek East Overflow 1	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 4	Confluence with Baechtel Creek East Overflow 5	Confluence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Baechtel Creek East Overflow 5	At Limit of Study	Divergence from Baechtel Creek East Overflow 4	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 6	At Limit of Study	Divergence from Baechtel Creek East Overflow 4	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 7	Confluence with Baechtel Creek East Overflow 8	Divergence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 8	Confluence with Baechtel Creek East Overflow 7	Divergence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek East Overflow 9	Confluence with Baechtel Creek	Divergence from Baechtel Creek East Overflow 8	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 1	Confluence with Baechtel Creek West Overflow 3	Divergence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 2	Confluence with Baechtel Creek West Overflow 3	Divergence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 3	Confluence with Baechtel Creek West Overflow 8	Divergence from Baechtel Creek West Overflow 1	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Baechtel Creek West Overflow 4	Confluence with Baechtel Creek West Overflow 7	Divergence from Baechtel Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 5	At Limit of Study	Divergence from Baechtel Creek West Overflow 8	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 6	Confluence with Baechtel Creek West Overflow 8	Divergence from Baechtel Creek West Overflow 4	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 7	Confluence with Baechtel Creek West Overflow 5	Divergence from Baechtel Creek West Overflow 4	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Baechtel Creek West Overflow 8	Confluence with Baechtel Creek West Overflow 5	Divergence from Baechtel Creek West Overflow 3	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Berry Creek	Confluence with Outlet Creek	Approximately 0.2 mile upstream of East Side Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE	A combined 1D/2D unsteady state hydraulic model was used.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Big/Navarro/ Garcia Rivers Watershed (Zone A)	—	—	—	HEC-2	—	A	For all flooding source in this table containing Zone A areas approximate methods were analyzed based on a review of the following information: the Flood Hazard Boundary Map (FHBM) (FIA 1978); the results of HEC-2 computer backwater computations in adjacent detailed-study areas; the floodplain delineations previously developed in the City of Willits FIS (FEMA 1988); and high-water-mark data gathered by the USACE after the flood of December 1964 (USACE (b), (c), 1965(b)). The updated topographic information preceded the effective date of the FIRM (June 1, 1983) and there was no evidence of fill activities in the floodplain. For this watershed flooding source approximate study results were determined for areas subject to tidal flooding along the Pacific Ocean. The boundary of the 1-percent-annual-chance tidal storm surge was based on the delineation shown on the FHBM (FIA 1978). The boundary of the coastal high hazard zone in Mendocino County was approximately determined after considering the tidal floodplain boundary shown on the FHBM (FIA 1978) and the methods of wave analysis developed by the USACE (USACE 1975(a)).
Broaddus Creek	Confluence with Baechtel Creek	Approximately 500 feet upstream of Fort Bragg Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Broaddus Creek East Overflow 1	Confluence with Baechtel Creek West Overflow 8	Divergence from Broaddus Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Broaddus Creek East Overflow 2	Confluence with Baechtel Creek West Overflow 5	Confluence from Broaddus Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Davis Creek	Confluence with Baechtel Creek	Approximately 1.3 miles upstream of Hearst-Willits Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Doolin Creek	Confluence with Russian River	0.1 miles upstream of Helen Avenue	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0.7	04/1/2021	AE w/ Floodway	
Doolin Creek	0.1 miles upstream of Helen Avenue	Approximately 1.34 miles upstream of Doolin Canyon Drive	Regression Equations	HEC-RAS 5.05	07/01/2019	A	
East Fork Russian River	Approximately0.3 mile downstream of Main Street	0.6 mile upstream of Main Street	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	Analysis of flows for East Fork Russian River included a diversion of 300 cfs from Eel River at Van Arsdale Reservoir to the upper reaches of East Fork Russian River for each of the selected flood events.
Eel River	1.8 miles downstream of Cape Horn Dam	Approximately 70 feet upstream of Eel River Road	Log-Pearson Type III Analysis	HEC-2	1981	AE w/ Floodway	Peak discharges were determined in accordance with USGS guidelines (USGS1975, 1977(b)). Analysis of floodflows for the Eel River included the diversion of 300 cfs from the EelRiver at Van Arsdale Reservoir to the upper reaches of the East Fork Russian River. For each of the selected flood events, 300 cfs was subtracted from the Eel River flows below the Van Arsdale Reservoir.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Feliz Creek	Confluence with Russian River	Approximately 90 feet upstream of Old Hopland-Yorkville Road	Log-Pearson Type III Analysis	HEC-2	1981	AE w/ Floodway	Peak discharges were determined in accordance with USGS guidelines (USGS 1975, 1977(b)).
Forsythe Creek	Confluence with Russian River	At Reeves Canyon Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
Gibson Creek	Approximately 0.2 miles upstream of West Standley Street	Approximately 1,000 feet upstream of Stanley Avenue	Regression Equations	HEC-RAS 5.0 and up	07/01/2019	A	
Gibson Creek	Approximately 450 feet upstream of Park Boulevard	Approximately 0.2 miles upstream of West Standley Street	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	02/01/2024	AE w/ Floodway	Hydraulic analysis performed using combined 1D/2D methods.
Gibson Creek	Stream distance in feet above confluence with Doolin Creek	Approximately 450 feet upstream of Park Boulevard	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	02/01/2024	AE w/ Floodway	Hydraulic analysis performed using combined 1D/2D methods.
Gaulala River	Approximately 0.6 mile downstream of State Highway 1	Approximately 170 feet upstream of State Highway 1	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1984	AE	Field surveys and hydraulic analyses established that the sand spit at the mouth was formed by wave action and its elevation exceeded the maximum Stillwater ocean levelplus wave setup. Tsunami would not affect the Gualala River because the sand spit protects the study area. The maximum WSEL of the Gualala River was determined by treating the sand spit as a broad-crested weir during flood events. The sand spit at the mouth is assumed to back up flooding from the Gualala River just before breaching. Actual ocean levels at the time of breach have no influence on water-surface elevations from the Gualala River. The water level so produced was consistent with local observations and was used in the delineation of flooding (Ott Water 1984).

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Gaulala/Salmon Rivers Watershed (Zone A)	—	—	—	HEC-2	—	A	
Haehl Creek	Confluence with Baechtel Creek	Approximately 0.8 mile upstream of East Hill Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE	A combined 1D/2D unsteady state hydraulic model was used.
Hensley Creek	Confluence with Russian River	Upstream Limit of Study	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
Howard Creek	Approximately 3,500 feet downstream of Redemeyer Road	Approximately 490 feet upstream of Redemeyer Road	Regression Equations	HEC-RAS 5.0 and up	07/01/2019	A	
Lower Eel River Watershed (Zone A)	—	—	—	HEC-2	—	A	
Mattole River Watershed (Zone A)	—	—	—	HEC-2	—	A	
McClure Creek	Approximately 750 feet downstream of Sanford Branch Road	Approximately 5,800 feet upstream of Sanford Branch Road	Regression Equations	HEC-RAS 5.0 and up	07/01/2019	A	
Middle Fork Eel River Watershed (Zone A)	—	—	—	HEC-2	—	A	
Mill Creek (at RedwoodValley)	—	—	—	HEC-2	1981	A	
Mill Creek (at Redwood Valley)	Confluence with Forsythe Creek	Approximately 20 feet upstream of Reeves Canyon Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mill Creek (at Willits)	Confluence with Baechtel Creek	Approximately 0.5 mile upstream of Mill Creek Drive	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 1	Confluence with Mill Creek (At Willits) East Overflow 7	Divergence from Mill Creek (at Willits)	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 2	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from Mill Creek (at Willits)	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 3	Confluence with Mill Creek (At Willits) East Overflow 7	Divergence from Broaddus Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 4	Confluence with Mill Creek (At Willits) East Overflow 6	Divergence from Broaddus Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 5	Confluence with Mill Creek (At Willits) East Overflow 6	Divergence from Broaddus Creek	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 6	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from Mill Creek (At Willits) East Overflow 5	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) East Overflow 7	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from Mill Creek (At Willits) East Overflow 3	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mill Creek (At Willits) East Overflow 8	At Limit of Study	Divergence from Mill Creek (At Willits) East Overflow 7	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) West Overflow 1	At Limit of Study	Divergence from Mill Creek (at Willits)	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) West Overflow 2	At Limit of Study	Divergence from Mill Creek (at Willits)	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) West Overflow 3	Confluence with Mill Creek (At Willits) East Overflow 8	Divergence from Mill Creek (At Willits) East Overflow 5	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) West Overflow 4	At Limit of Study	Divergence from Mill Creek (At Willits) West Overflow 3	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (At Willits) West Overflow 5	At Limit of Study	Divergence from Mill Creek (At Willits) West Overflow 3	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	05/01/2020	AE w/ Floodway	A combined 1D/2D unsteady state hydraulic model was used.
Mill Creek (near Talmage)	Confluence with Russian River	Approximately 130 feet downstream of Mill Creek Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
North Fork Mill Creek	Confluence with Mill Creek (near Talmage)	Approximately 0.2 mile upstream of Guidville Reservation Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	The starting WSEL was set equal to the WSEL of Mill Creek (near Talmage) at their confluence. This assumption was made based on the apparent equal size at the confluence, and it is likely that peak discharges will occur on both creeks at the same time.

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Noyo River	Approximately 510 feet downstream of State Highway 1	1.4 miles upstream of State Highway 1	Log-Pearson Type III Analysis	HEC-2	1991	AE	The starting water-surface elevation at the mouth of the Noyo river was taken as Mean Higher water, elevation 6.0 feet NAVD88. This elevation did not control the backwater calculation.
Orrs Creek	0.2 miles upstream of North Bush Street	1.1 miles upstream of North Bush Street	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	02/01/2024	AE w/ Floodway	Hydraulic analysis performed using combined 1D/2D methods.
Orrs Creek	1.1 miles upstream of North Bush Street	2.5 miles upstream of North Bush Street	Regression Equations	HEC-RAS 5.0 and up	07/01/2019	A	
Orrs Creek	Confluence with Russian River	0.2 miles upstream of North Bush Street	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	02/01/2024	AE w/ Floodway	Hydraulic analysis performed using combined 1D/2D methods.
Pacific Ocean	Entire coastline of Mendocino County	Entire coastline of Mendocino County	—	—	2013	VE	
Robinson Creek	Confluence with Russian River	Approximately 160 feet upstream of Robinson Creek Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
Russian River	Approximately 3900 feet downstream of East Side Road	Upstream Limit of Study	Log-Pearson Type III Analysis	HEC-2	1981	AE w/ Floodway	Peak discharges were determined in accordance with USGS guidelines (USGS1975, 1977(b)). Analysis of flows for Russian River takes into account the USACE release operation policy for Lake Mendocino. This reservoir on East Fork Russian River delays and decreases flooding effects downstream. The release operation policy results in no addition to peak flows on Russian River from East Fork Russian River, as these flows are held in the reservoir until after the peak on the main stemhas passed the confluence (California 1965). Thus, for Russian River the drainage area of East Fork Russian River was not included in the hydrologic analysis.
Russian River Watershed (Zone A)	—	—	—	HEC-2	—	A	

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Scout Lake Creek	Confluence with Berry Creek	Approximately 500 feet upstream of East Side Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE	A combined 1D/2D unsteady state hydraulic model was used.
South Fork Eel River Watershed (Zone A)	—	—	—	HEC-2	—	A	
Sulphur Creek	Confluence of Russian River	Approximately 250 feet west of Vicky Springs Road	—	—	2000	AE w/ Floodway	
Tenmile Creek	Approximately 0.2 mile downstream of Branscomb Road	Approximately 0.8 mile upstream of Branscomb Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
Town Creek	Confluence with Grist Creek	Approximately 0.6 mile upstream of State Highway 162	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	
Unnamed Tributary to Berry Creek	Confluence with Berry Creek	Approximately 0.6 mile upstream of Willits Road	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE	A combined 1D/2D unsteady state hydraulic model was used.
Unnamed Tributary to McClure Creek	Approximately 2.2 miles upstream of McClure Creek	Approximately 1,820 feet upstream of confluence with McClure Creek	Regression Equations	HEC-RAS 5.05	07/01/2019	A	
Unnamed Tributary to Russian River	Confluence with Russian River	Approximately 75 feet west of Redemeyer Road	Regression Equations	HEC-RAS 5.05	07/01/2019	A	

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Upp Creek	Confluence with Mill Creek	Approximately 230 feet upstream of North Highway 101	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-RAS 5.05	2017	AE	A combined 1D/2D unsteady state hydraulic model was used.
Upper Eel River Watershed (Zone A)	—	—	—	HEC-2	—	A	Revised HEC-2 hydraulic computer model analyses utilizing new mapping were conducted for Baechtel Creek by Aqua Terra Consultants, Mountain View, California, in April 1987.
York Creek	Confluence with Russian River	Approximately 2.1 miles upstream of U.S. Highway 101	1977 Rural & Urban California Regional Flood-Frequency Equations	HEC-2	1981	AE w/ Floodway	

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Ackerman Creek	0.013–0.070	0.040–0.180
Anderson Creek	0.013–0.070	0.040–0.180
Baechtel Creek	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 1	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 2	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 3	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 4	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 5	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 6	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 7	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 8	0.035-0.045	0.040–0.250
Baechtel Creek East Overflow 9	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 1	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 2	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 3	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 4	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 5	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 6	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 7	0.035-0.045	0.040–0.250
Baechtel Creek West Overflow 8	0.035-0.045	0.040–0.250
Berry Creek	0.035-0.045	0.040–0.250
Broaddus Creek	0.035-0.045	0.040–0.250
Broaddus Creek East Overflow 1	0.035-0.045	0.040–0.250
Broaddus Creek East Overflow 2	0.035-0.045	0.040–0.250
Davis Creek	0.035-0.045	0.040–0.250
Doolin Creek	0.035–0.040	0.050–0.130
East Fork Russian River	0.013–0.070	0.040–0.180
Eel River	0.013–0.070	0.040–0.180
Feliz Creek	0.013–0.070	0.040–0.180
Forsythe Creek	0.013–0.070	0.040–0.180
Gibson Creek	0.030–0.050	0.050–0.150
Haehl Creek	0.035-0.045	0.040–0.250
Hensley Creek	0.013–0.070	0.040–0.180

Table 13: Roughness Coefficients *(continued)*

Flooding Source	Channel “n”	Overbank “n”
Mill Creek (at Redwood Valley)	0.013–0.070	0.040–0.180
Mill Creek (near Talmage)	0.013–0.070	0.040–0.180
Mill Creek (at Willits)	0.035-0.045	0.040–0.250
Mill Creek (At Willits) East Overflow 1	0.035-0.045	0.040–0.250
Mill Creek (At Willits) East Overflow 2	0.035-0.045	0.040–0.250
Mill Creek (At Wilts) East Overflow 3	0.035-0.045	0.040–0.250
Mill Creek (At Wililts) East Overflow 4	0.035-0.045	0.040–0.250
Mill Creek (At Willits) East Overflow 5	0.035-0.045	0.040–0.250
Mill Creek (At Willits) East Overflow 6	0.035-0.045	0.040–0.250
Mill Creek (At Willits) East Overflow 7	0.035-0.045	0.040–0.250
Mill Creek (At Willits) East Overflow 8	0.035-0.045	0.040–0.250
Mill Creek (At Willits) West Overflow 1	0.035-0.045	0.040–0.250
Mill Creek (At Willits) West Overflow 2	0.035-0.045	0.040–0.250
Mill Creek (At Willits) West Overflow 3	0.035-0.045	0.040–0.250
Mill Creek (At Willits) West Overflow 4	0.035-0.045	0.040–0.250
Mill Creek (At Willits) West Overflow 5	0.035-0.045	0.040–0.250
North Fork Mill Creek	0.013–0.070	0.040–0.180
Noyo River	0.030–0.035	0.035–0.120
Orrs Creek	0.035–0.055	0.060–0.130
Robinson Creek	0.013–0.070	0.040–0.180
Russian River	—	—
Scout Lake Creek	0.035-0.045	0.040–0.250
Tenmile Creek	0.013–0.070	0.040–0.180
Town Creek	0.013–0.070	0.040–0.180
Unnamed Tributary to Berry Creek	0.035-0.045	0.040–0.250
Upp Creek	0.035-0.045	0.040–0.250
York Creek	0.013–0.070	0.040–0.180

5.3 Coastal Analyses

For the areas of Mendocino County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for this FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. Table 14 summarizes the methods and/or models used for the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

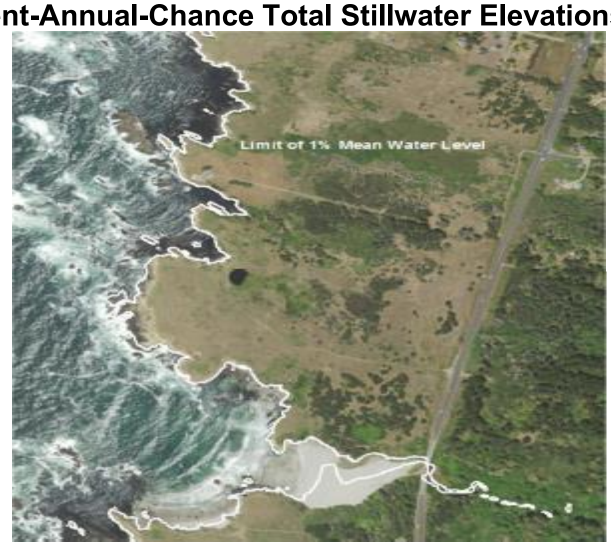
Table 14: Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Pacific Ocean	Entire coastline of Mendocino County	Entire coastline of Mendocino County	Wave Runup	TAW	10/28/2013

5.3.1 Total Stillwater Elevations

The total stillwater elevations (stillwater including storm surge plus wave setup) for the 1-percent-annual-chance flood were determined for areas subject to coastal flooding. The models and methods that were used to determine storm surge and wave setup are listed in Table 14. The stillwater elevation that was used for each transect in coastal analyses is shown in Table 16, "Coastal Transect Parameters." Figure 8 shows the total stillwater elevations for the 1-percent-annual-chance flood that was determined for this coastal analysis.

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



Astronomical Tide

Astronomical tidal statistics were generated directly from local tidal constituents by sampling the predicted tide at random times throughout the tidal epoch.

Storm Surge Statistics

Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms are typically determined by statistical study of the regional historical record of storms or by statistical study of tidal gages.

When historic records are used to calculate storm surge, characteristics such as the strength, size, track, etc., of storms are identified by site. Storm data was used in conjunction with numerical hydrodynamic models to determine the corresponding storm surge levels. An extreme value analysis was performed on the storm surge modeling results to determine a stillwater elevation for the 1-percent-annual-chance event.

Tidal gages can be used instead of historic records of storms when the available tidal gage record for the area represents both the astronomical tide component and the storm surge component. Table 15 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the stillwater elevations. For areas between gages, peak stillwater elevations for selected recurrence intervals were estimated by combining interpolation between gages and observed high water marks during major storms. A regionalized statistical approach was applied to the gage data so that stillwater elevations in areas between gages could be identified.

Table 15: Tide Gage Analysis Specifics

Gage Name	Managing Agency of Tide Gage Record	Gage Type	Start Date	End Date	Statistical Methodology
Arena Cove	NOAA	Tide	04/10/1933	12/31/2009	*
Crescent City	NOAA	Tide	08/16/1977	12/31/2009	*
Humboldt Bay, North Spit	NOAA	Tide	04/09/1978	12/31/2009	*
La Jolla	NOAA	Tide	01/10/1975	12/31/2009	*
Los Angeles	NOAA	Tide	06/30/1854	12/31/2009	*
Monterey	NOAA	Tide	11/04/1973	12/31/2009	*
Newport Bay Entrance	NOAA	Tide	05/31/1945	12/31/2009	*
Oil Platform Harvest	NOAA	Tide	05/13/1992	12/31/2009	*
Port San Luis	NOAA	Tide	02/26/1974	12/31/2009	*
Point Reyes	NOAA	Tide	11/25/1973	12/31/2009	*
San Diego	NOAA	Tide	11/28/1923	12/31/2009	*
San Francisco	NOAA	Tide	08/02/1955	12/31/2009	*
Santa Barbara	NOAA	Tide	08/01/1924	12/31/2009	*
Santa Monica	NOAA	Tide	01/26/1906	12/31/2009	*

* Data not available

Wave Setup Analysis

Wave setup was computed during the storm surge modeling through the methods and models listed in Table 14 and included in the frequency analysis for the determination of the total stillwater elevations.

5.3.2 Waves

Water level and wave information from the tide gauge analysis and the SHELF model were used as inputs to the 1-dimensional onshore flood hazard analyses. Wave setup, runup, overtopping, event-based erosion, and overland wave propagation were analyzed, where appropriate, at transects placed along the coastline. Transects are shown on the FIRM panels and are depicted in Figure 9, "Transect Location Map". Transect profiles were obtained from LiDAR collected by the Ocean Protection Council and the United States Geological Survey between 2009 and 2011. Bathymetric data was obtained from the NOAA. Various datasets were merged to create a seamless terrain for use in this study.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 14.

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runup. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1-percent-annual-chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Transects shown in Figure 9, "Transect Location Map," are also depicted on the FIRM. Table 16 provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, "starting" indicates the parameter value at the beginning of the transect.

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1-percent-annual-chance flood. Wave runup elevations were modeled using the methods and models listed in Table 14.

Table 16: Coastal Transect Parameters

Flood Source	Coastal Transect	Starting Wave Conditions for the 1-Percent-Annual-Chance		Total Water Elevation (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Pacific Ocean	1	*	*	36.6	*	42.2	44.3	49.1
Pacific Ocean	2	*	*	17.5	*	20.0	21.1	23.8
Pacific Ocean	3	*	*	31.3	*	35.1	36.7	40.2
Pacific Ocean	4	*	*	26.9	*	33.3	36.1	42.8
Pacific Ocean	5	*	*	29.0	*	32.9	34.3	37.1
Pacific Ocean	6	*	*	16.6	*	17.9	18.4	19.3
Pacific Ocean	7	*	*	24.3	*	29.4	31.5	36.4
Pacific Ocean	8	*	*	23.2	*	23.6	23.6	23.7
Pacific Ocean	9	*	*	17.6	*	21.8	24.1	31.2
Pacific Ocean	10	*	*	30.7	*	34.8	36.4	40.1
Pacific Ocean	11	*	*	20.8	*	27.9	31.8	43.3
Pacific Ocean	12	*	*	17.3	*	20.6	22.1	25.9
Pacific Ocean	13	*	*	20.3	*	28.2	33.0	49.6
Pacific Ocean	14	*	*	17.5	*	20.1	21.3	24.3
Pacific Ocean	15	*	*	20.2	*	21.4	21.9	22.7
Pacific Ocean	16	*	*	17.5	*	21.3	23.3	29.2
Pacific Ocean	17	*	*	19.3	*	25.4	29.0	38.5
Pacific Ocean	18	*	*	18.6	*	25.4	29.0	43.1
Pacific Ocean	19	*	*	17.3	*	20.8	22.5	27.4
Pacific Ocean	20	*	*	16.5	*	18.3	19.1	20.9
Pacific Ocean	21	*	*	16.6	*	19.3	20.6	24.2

*Not calculated for this Flood Risk Project

Table 16: Coastal Transect Parameters *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1-Percent-Annual-Chance		Total Water Elevation (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Pacific Ocean	22	*	*	18.2	*	22.8	25.1	33.8
Pacific Ocean	23	*	*	20.3	*	27.1	30.9	42.9
Pacific Ocean	24	*	*	40.1	*	45.4	47.5	52.4
Pacific Ocean	25	*	*	22.5	*	27.3	29.4	34.4
Pacific Ocean	26	*	*	25.4	*	32.1	35.1	42.5
Pacific Ocean	27	*	*	25.0	*	29.5	31.4	35.8
Pacific Ocean	28	*	*	28.6	*	33.4	35.4	40.0
Pacific Ocean	29	*	*	33.2	*	38.0	39.8	43.6
Pacific Ocean	30	*	*	16.9	*	18.5	19.2	20.5
Pacific Ocean	31	*	*	32.9	*	38.4	40.0	45.0
Pacific Ocean	32	*	*	24.9	*	32.3	35.9	45.3
Pacific Ocean	33	*	*	16.0	*	17.6	18.2	19.6
Pacific Ocean	34	*	*	23.0	*	28.2	30.0	36.0
Pacific Ocean	35	*	*	42.3	*	48.0	50.4	56.2
Pacific Ocean	36	*	*	27.0	*	31.2	32.9	36.7
Pacific Ocean	37	*	*	24.0	*	30.6	33.5	41.0
Pacific Ocean	38	*	*	35.1	*	40.1	42.3	47.5
Pacific Ocean	39	*	*	42.2	*	47.4	49.4	53.6
Pacific Ocean	40	*	*	43.3	*	49.4	51.8	57.1
Pacific Ocean	41	*	*	20.3	*	24.8	26.9	32.1
Pacific Ocean	42	*	*	23.4	*	26.5	27.8	30.9
Pacific Ocean	43	*	*	45.0	*	52.0	55.2	63.3

*Not calculated for this Flood Risk Project

Table 16: Coastal Transect Parameters *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1-Percent-Annual-Chance		Total Water Elevation (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Pacific Ocean	44	*	*	27.3	*	30.1	31.1	33.3
Pacific Ocean	45	*	*	16.3	*	18.5	19.4	21.7
Pacific Ocean	46	*	*	19.2	*	23.8	26.8	37.9
Pacific Ocean	47	*	*	33.8	*	38.8	40.8	45.1
Pacific Ocean	48	*	*	16.3	*	19.4	21.1	26.2
Pacific Ocean	49	*	*	43.3	*	48.0	49.9	54.0
Pacific Ocean	50	*	*	21.0	*	23.2	24.0	25.7
Pacific Ocean	51	*	*	15.7	*	17.7	18.7	21.7
Pacific Ocean	52	*	*	17.8	*	23.0	26.0	36.1
Pacific Ocean	53	*	*	33.2	*	38.4	40.9	47.0
Pacific Ocean	54	*	*	23.5	*	29.5	32.2	38.9
Pacific Ocean	55	*	*	16.5	*	18.8	19.9	22.7
Pacific Ocean	56	*	*	20.5	*	26.8	30.4	40.6
Pacific Ocean	57	*	*	16.2	*	17.9	18.6	20.1
Pacific Ocean	58	*	*	16.2	*	17.7	18.2	19.4
Pacific Ocean	59	*	*	20.4	*	27.7	32.0	46.6
Pacific Ocean	60	*	*	27.4	*	30.4	31.6	34.3
Pacific Ocean	61	*	*	24.5	*	28.8	30.5	34.0
Pacific Ocean	62	*	*	21.7	*	23.3	23.9	25.1
Pacific Ocean	63	*	*	17.7	*	20.7	22.3	26.6
Pacific Ocean	64	*	*	18.0	*	21.2	22.9	27.9
Pacific Ocean	65	*	*	18.9	*	25.6	29.4	41.7

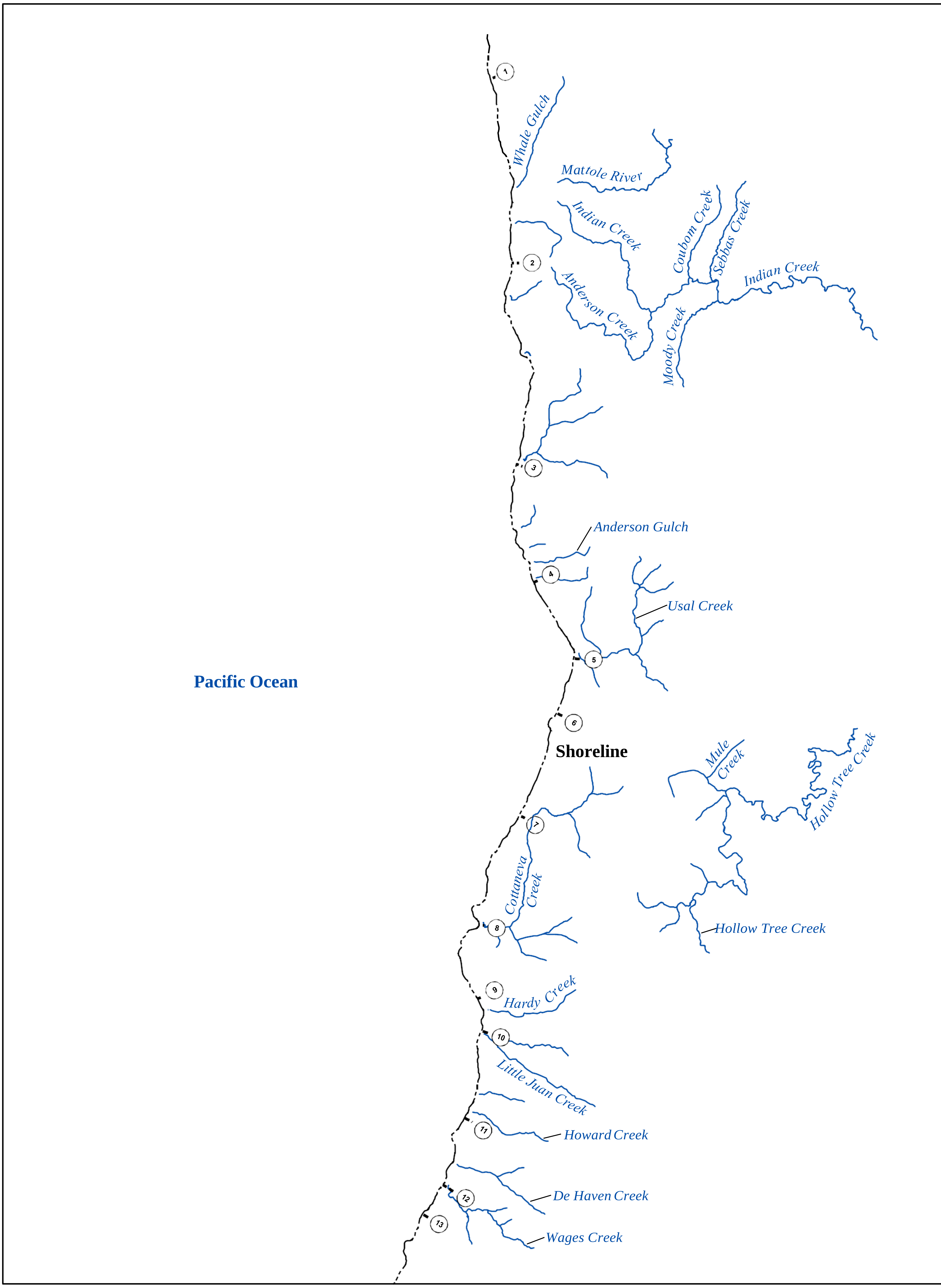
*Not calculated for this Flood Risk Project

Table 16: Coastal Transect Parameters *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1-Percent-Annual-Chance		Total Water Elevation (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-Percent-Annual-Chance	4-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Pacific Ocean	66	*	*	29.3	*	34.0	35.9	40.4
Pacific Ocean	67	*	*	20.1	*	26.4	29.6	39.2
Pacific Ocean	68	*	*	24.2	*	30.1	32.6	38.4

*Not calculated for this Flood Risk Project

Figure 9: Transect Location Map



1 inch = 13,800 feet 1:165,604

N

0 4,000 8,000 16,000 24,000 32,000 Feet

Map Projection:

Universal Transeverse Mercator Zone 10 North;
North American Datum 1983

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

Transect Location Map

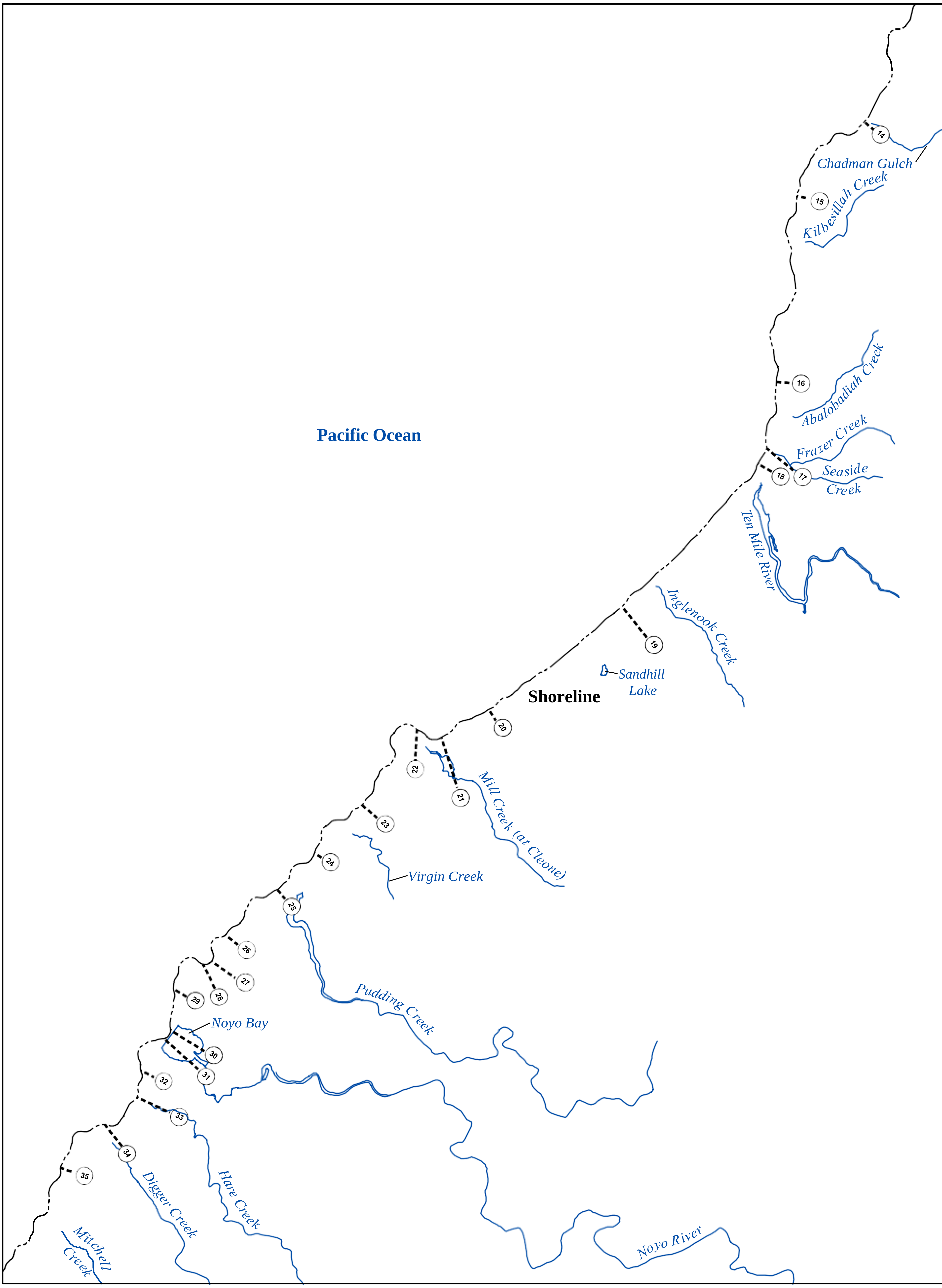
MENDOCINO COUNTY, CALIFORNIA

PANELS WITH TRANSECTS:

0135G, 0175G, 0385G, 0425G, 0625G, 0810G, 0820G, 1005G, 1010G, 1015G, 1016G, 1200G, 1385G, 1425G, 1600G, 1740G, 1750G, 1920G, 1950G

FEMA

Figure 9: Transect Location Map



N
1 inch = 6,515 feet 1:78,175
0 1,875 3,750 7,500 11,250 15,000 Feet

Map Projection:
Universal Transeverse Mercator Zone 10 North;
North American Datum 1983

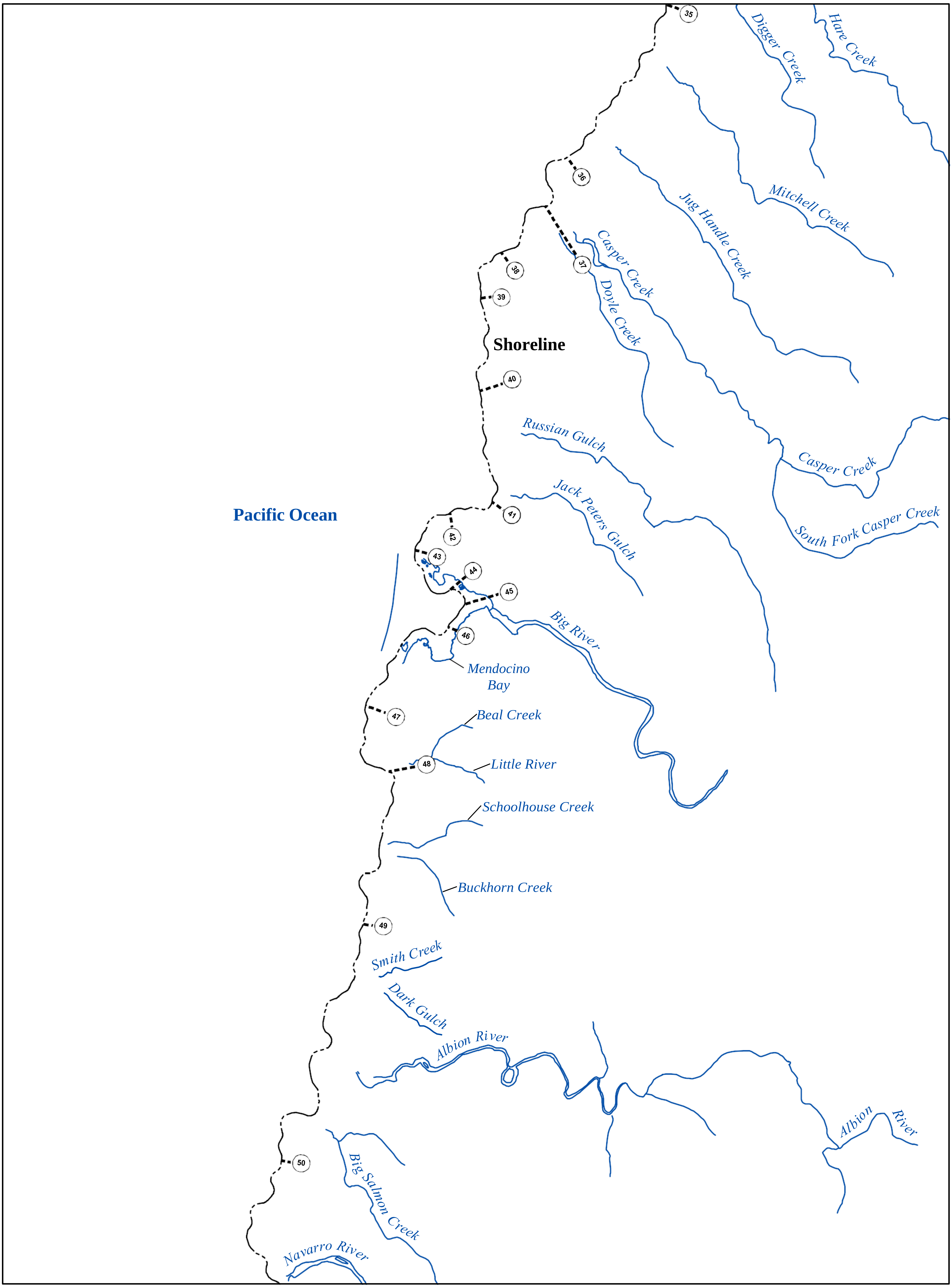
COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM
Transect Location Map

MENDOCINO COUNTY, CALIFORNIA
PANELS WITH TRANSECTS:
0135G, 0175G, 0385G, 0425G, 0625G, 0810G, 0820G, 1005G, 1010G, 1015G, 1016G, 1200G, 1385G, 1425G, 1600G, 1740G, 1750G, 1920G, 1950G

FEMA

Figure 9: Transect Location Map



1 inch = 6,515 feet 1:78,175

N

0 1,875 3,750 7,500 11,250 15,000 Feet

Map Projection:

Universal Transeverse Mercator Zone 10 North; North American Datum 1983

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

Transect Location Map

MENDOCINO COUNTY, CALIFORNIA

PANELS WITH TRANSECTS:

0135G, 0175G, 0385G, 0425G, 0625G, 0810G, 0820G, 1005G, 1010G, 1015G, 1016G, 1200G, 1385G, 1425G, 1600G, 1740G, 1750G, 1920G, 1950G

FEMA

Figure 9: Transect Location Map

N

1 inch = 8,333 feet 1:100,000

0 2,400 4,800 9,600 14,400 19,200 Feet

Map Projection:
Universal Transeverse Mercator Zone 10 North;
North American Datum 1983

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

Transect Location Map

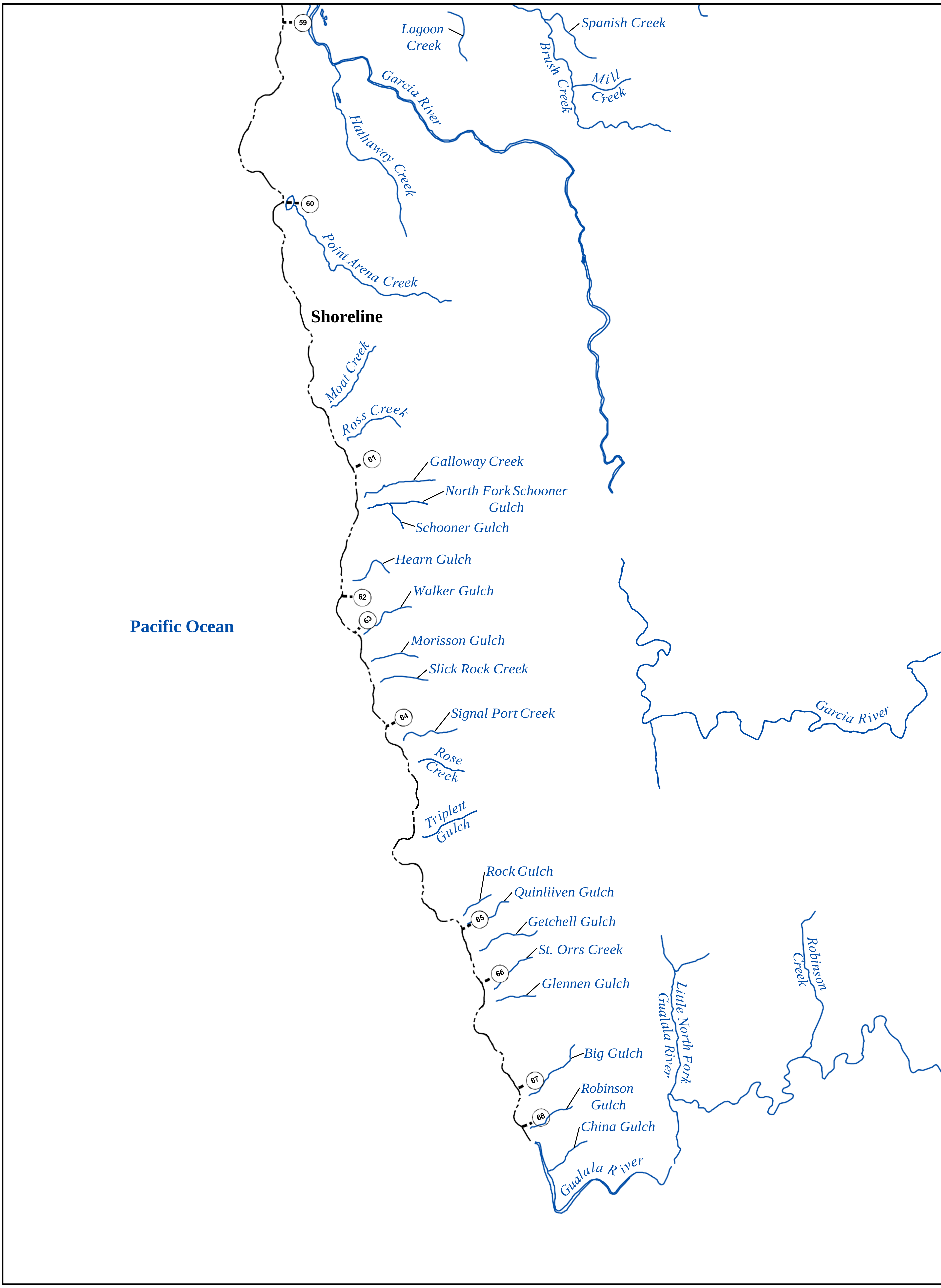
MENDOCINO COUNTY, CALIFORNIA

PANELS WITH TRANSECTS:

0135G, 0175G, 0385G, 0425G, 0625G, 0810G, 0820G, 1005G, 1010G, 1015G, 1016G, 1200G, 1385G, 1425G, 1600G, 1740G, 1750G, 1920G, 1950G

FEMA

Figure 9: Transect Location Map



N

1 inch = 8,333 feet 1:100,000

0 2,400 4,800 9,600 14,400 19,200 Feet

Map Projection:

Universal Transeverse Mercator Zone 10 North; North American Datum 1983

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

Transect Location Map

MENDOCINO COUNTY, CALIFORNIA

PANELS WITH TRANSECTS:

0135G, 0175G, 0385G, 0425G, 0625G, 0810G, 0820G, 1005G, 1010G, 1015G, 1016G, 1200G, 1385G, 1425G, 1600G, 1740G, 1750G, 1920G, 1950G

FEMA