FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 12

SAN DIEGO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
CARLSBAD, CITY OF	060285	NATIONAL CITY, CITY OF	060293
CHULA VISTA, CITY OF	065021	OCEANSIDE, CITY OF	060294
CORONADO, CITY OF	060287	POWAY, CITY OF	060702
DEL MAR, CITY OF	060288	SAN DIEGO, CITY OF	060295
EL CAJON, CITY OF	060289	SAN DIEGO COUNTY, UNINCORPORATED AREAS	060284
ENCINITAS, CITY OF	060726	SAN MARCOS, CITY OF	060296
ESCONDIDO, CITY OF	060290	SANTEE, CITY OF	060703
IMPERIAL BEACH, CITY OF	060291	SOLANA BEACH, CITY OF	060725
LA MESA, CITY OF	060292	VISTA, CITY OF	060297
LEMON GROVE, CITY OF	060723		

REVISED:

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FLOOD INSURANCE STUDY NUMBER
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FLOOD INSURANCE STUDY REPORT
SAN DIEGO 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 60.3, *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 San Diego County, California.

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

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Carlsbad, City of	060285	18070303	06073C0761H 06073C0762G 06073C0763H 06073C0764H 06073C0766G 06073C0767G 06073C0768G 06073C0769G 06073C0788J 06073C1027H 06073C1029H 06073C1031H[1] 06073C1032H 06073C1033H 06073C1034H 06073C1052G 06073C1055G 06073C1061G	

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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
Chula Vista, City of	065021	18070304	06073C1911H 06073C1912G 06073C1913H 06073C1914G 06073C1916G 06073C1917G 06073C1918G 06073C1919G 06073C1936G 06073C1937F[1] 06073C1938G 06073C1939G 06073C1945G[1] 06073C2151G 06073C2152G 06073C2154J 06073C2156G 06073C2157G 06073C2158G 06073C2159G 06073C2176G 06073C2177G 06073C2178G 06073C2179G 06073C2181G	
Coronado, City of	060287	18070304	06073C1878H 06073C1879H 06073C1883H 06073C1884H 06073C1886H 06073C1887H 06073C1891H 06073C1892H 06073C1893F[1] 06073C1894H 06073C1913H 06073C2132H 06073C2134H 06073C2151G 06073C2153H	
Del Mar, City of	060288	18070304	06073C1307H 06073C1309H	
El Cajon, City of	060289	18070304	06073C1634G 06073C1642F[1] 06073C1653G 06073C1654G	

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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
El Cajon, City of (continued)	060289	18070304	06073C1660G 06073C1661G 06073C1662G 06073C1663G 06073C1664F[1] 06073C1666G 06073C1667G 06073C1668G	
Encinitas, City of	060726	18070303 18070304	06073C1033H 06073C1034H 06073C1041H 06073C1042H[1] 06073C1043H 06073C1044H 06073C1055G 06073C1061G 06073C1063G 06073C1065G 06073C1307H	
Escondido, City of	060290	18070303 18070304	06073C0792G 06073C0794G 06073C0804G 06073C0810G 06073C0811G 06073C0812G 06073C0813G 06073C0814G 06073C0818G 06073C0820G 06073C0850G 06073C1057G 06073C1059G 06073C1076G 06073C1077G 06073C1078G 06073C1079H 06073C1081G 06073C1082G 06073C1083G 06073C1090G 06073C1091G 06073C1101F[1]	
Imperial Beach, City of	060291	18070304 18070305	06073C2134H 06073C2142H 06073C2153H 06073C2161H	

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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
La Mesa, City of	060292	18070304	06073C1641G 06073C1642F[1] 06073C1643J 06073C1644H 06073C1661G 06073C1663G 06073C1910G	
Lemon Grove, City of	060723	18070304	06073C1644H 06073C1902G 06073C1908G 06073C1910G	
National City, City of	060293	18070304	06073C1892H 06073C1894H 06073C1903H 06073C1904G 06073C1911H 06073C1912G 06073C1913H 06073C1914G 06073C1916G 06073C2151G	
Oceanside, City of	060294	18070303	06073C0464G 06073C0468H 06073C0469G 06073C0475G[1] 06073C0488G 06073C0490G 06073C0732G 06073C0734J 06073C0742H 06073C0751H 06073C0752H 06073C0753J 06073C0754H 06073C0756H 06073C0757G 06073C0758G 06073C0759G 06073C0761H 06073C0762G 06073C0766G 06073C0767G 06073C0769G 06073C0776G 06073C0786J	

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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
Poway, City of	060702	18070304	06073C1084G 06073C1091G 06073C1092G 06073C1093G 06073C1094G 06073C1115G[1] 06073C1352G 06073C1354G 06073C1356G 06073C1357G 06073C1358G 06073C1359G 06073C1362G 06073C1366G 06073C1367G 06073C1400G[1]	
San Diego, City of	060295	18070304 18070305	06073C1068G 06073C1070G 06073C1078G 06073C1079H 06073C1082G 06073C1083G 06073C1084G 06073C1088G 06073C1090G 06073C1091G 06073C1092G 06073C1093G 06073C1101F[1] 06073C1102G 06073C1103H 06073C1104H 06073C1110G 06073C1307H 06073C1309H 06073C1317H 06073C1319H 06073C1326G 06073C1327G 06073C1328G 06073C1329G 06073C1332G 06073C1334G 06073C1335G 06073C1336G 06073C1337G 06073C1338G 06073C1339G 06073C1341G	

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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
San Diego, City of (continued)	060295	18070304 18070305	06073C1342G 06073C1343G 06073C1344G 06073C1351F[1] 06073C1352G 06073C1353G 06073C1354G 06073C1356G 06073C1359G 06073C1361G 06073C1362G 06073C1363G 06073C1364G 06073C1366G 06073C1367G 06073C1370G 06073C1400G[1] 06073C1582H 06073C1583H 06073C1584H 06073C1592H 06073C1594H 06073C1601G 06073C1602G 06073C1603G 06073C1604G 06073C1606G 06073C1608G 06073C1610G[1] 06073C1611H 06073C1612H 06073C1613H 06073C1614H 06073C1616G 06073C1617G 06073C1618G 06073C1619G 06073C1628H 06073C1629G 06073C1630G[1] 06073C1631G 06073C1632G 06073C1633G 06073C1634G 06073C1636H 06073C1637H 06073C1638H 06073C1639H 06073C1641G	

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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
San Diego, City of (continued)	060295	18070304 18070305	06073C1642F[1] 06073C1643J 06073C1857H 06073C1859H 06073C1867H 06073C1876H 06073C1877H 06073C1878H 06073C1879H 06073C1881H 06073C1882G 06073C1883H 06073C1884H 06073C1886H 06073C1887H 06073C1892H 06073C1894H 06073C1901G 06073C1902G 06073C1903H 06073C1904G 06073C1908G 06073C1910G 06073C1911H 06073C1912G 06073C1913H 06073C1916G 06073C1917G 06073C2151G 06073C2152G 06073C2153H 06073C2154J 06073C2158G 06073C2159G 06073C2161H 06073C2162G 06073C2166G 06073C2170G[1] 06073C2178G 06073C2179G 06073C2183G 06073C2200G[1]	
San Diego County, Unincorporated Areas	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C0025F[1] 06073C0050F[1] 06073C0075F[1] 06073C0100G 06073C0125F[1] 06073C0150G 06073C0165G 06073C0166G	

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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
San Diego County, Unincorporated Areas (continued)	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C0167G 06073C0170G[1] 06073C0175G[1] 06073C0200F[1] 06073C0225F[1] 06073C0250F[1] 06073C0275F[1] 06073C0300F[1] 06073C0320G 06073C0325G[1] 06073C0350F[1] 06073C0375F[1] 06073C0400F[1] 06073C0425G 06073C0450G 06073C0464G 06073C0468H 06073C0469G 06073C0475G[1] 06073C0480G 06073C0481G 06073C0485G 06073C0488G 06073C0489G 06073C0490G 06073C0493G 06073C0494G 06073C0495G 06073C0505G 06073C0510G 06073C0515G 06073C0520G 06073C0530G 06073C0535G[1] 06073C0540G 06073C0545G 06073C0575F[1] 06073C0600F[1] 06073C0625F[1] 06073C0635G 06073C0645G 06073C0650G[1] 06073C0675G 06073C0700F[1] 06073C0725F[1] 06073C0731G 06073C0732G 06073C0734J	

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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
San Diego County, Unincorporated Areas (continued)	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C0751H 06073C0752H 06073C0757G 06073C0759G 06073C0767G 06073C0776G 06073C0777F[1] 06073C0778G 06073C0779G 06073C0781F[1] 06073C0782G 06073C0783G 06073C0784G 06073C0786J 06073C0787H 06073C0788J 06073C0789H 06073C0791G 06073C0792G 06073C0794G 06073C0803G 06073C0804G 06073C0805G 06073C0809G 06073C0810G 06073C0811G 06073C0812G 06073C0813G 06073C0814G 06073C0818G 06073C0820G 06073C0828G 06073C0829G 06073C0836G 06073C0837G 06073C0850G 06073C0875F[1] 06073C0893G 06073C0900G 06073C0925F[1] 06073C0935G 06073C0950G 06073C0975G 06073C1000F[1] 06073C1025F[1] 06073C1052G 06073C1055G 06073C1056F[1]	

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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
San Diego County, Unincorporated Areas (continued)	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C1057G 06073C1058G 06073C1059G 06073C1061G 06073C1063G 06073C1065G 06073C1068G 06073C1070G 06073C1076G 06073C1077G 06073C1078G 06073C1079H 06073C1081G 06073C1082G 06073C1083G 06073C1084G 06073C1088G 06073C1090G 06073C1092G 06073C1094G 06073C1101F[1] 06073C1102G 06073C1103H 06073C1104H 06073C1110G 06073C1112H 06073C1115G[1] 06073C1116G 06073C1117G 06073C1118G 06073C1119G 06073C1128G 06073C1129G 06073C1130G[1] 06073C1136G 06073C1137G 06073C1140G[1] 06073C1150G[1] 06073C1151G 06073C1152G 06073C1153G 06073C1154G 06073C1156G 06073C1157G 06073C1158G 06073C1159G 06073C1175G 06073C1178G	

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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
San Diego County, Unincorporated Areas (continued)	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C1200F[1] 06073C1225F[1] 06073C1250F[1] 06073C1275F[1] 06073C1300F[1] 06073C1326G 06073C1327G 06073C1335G 06073C1351F[1] 06073C1363G 06073C1387G 06073C1389G 06073C1391G 06073C1393G 06073C1394G 06073C1400G[1] 06073C1415G 06073C1425G[1] 06073C1450F[1] 06073C1463G 06073C1464G 06073C1470G 06073C1475G[1] 06073C1500F[1] 06073C1525F[1] 06073C1550F[1] 06073C1575F[1] 06073C1643J 06073C1644H 06073C1652G 06073C1654G 06073C1656G 06073C1660G 06073C1662G 06073C1663G 06073C1664F[1] 06073C1666G 06073C1667G 06073C1668G 06073C1669G 06073C1679G 06073C1680G 06073C1685G 06073C1686G 06073C1687G 06073C1688G 06073C1689G 06073C1693G 06073C1694G	

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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
San Diego County, Unincorporated Areas (continued)	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C1695G[1] 06073C1725G 06073C1726G 06073C1727G 06073C1728G 06073C1729G 06073C1750G 06073C1775F[1] 06073C1800F[1] 06073C1825F[1] 06073C1850F[1] 06073C1902G 06073C1903H 06073C1910G 06073C1912G 06073C1914G 06073C1916G 06073C1917G 06073C1918G 06073C1919G 06073C1927G 06073C1929G 06073C1930G[1] 06073C1931G 06073C1932G 06073C1935G[1] 06073C1936G 06073C1937F[1] 06073C1939G 06073C1945G[1] 06073C1952G 06073C1955G[1] 06073C1957G 06073C1960G[1] 06073C1975G 06073C2000G 06073C2025F[1] 06073C2050F[1] 06073C2075F[1] 06073C2100F[1] 06073C2125F[1] 06073C2157G 06073C2176G 06073C2177G 06073C2178G 06073C2179G 06073C2181G 06073C2183G 06073C2200G[1]	

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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
San Diego County, Unincorporated Areas (continued)	060284	18070301 18070302 18070303 18070304 18070305 18100202 18100203 18100204	06073C2210G 06073C2225G[1] 06073C2250G 06073C2275G 06073C2300G 06073C2325F[1] 06073C2350F[1] 06073C2375F[1]	
San Marcos, City of	060296	18070303	06073C0783G 06073C0784G 06073C0787H 06073C0788J 06073C0789H 06073C0791G 06073C0792G 06073C0793G 06073C0794G 06073C0813G 06073C1052G 06073C1055G 06073C1056F[1] 06073C1057G	
Santee, City of	060703	18070304	06073C1370G 06073C1389G 06073C1400G[1] 06073C1632G 06073C1633G 06073C1634G 06073C1651G 06073C1652G 06073C1653G 06073C1654G	
Solana Beach, City of	060725	18070303 18070304	06073C1044H 06073C1063G 06073C1307H 06073C1326G	
Vista, City of	060297	18070303	06073C0757G 06073C0758G 06073C0759G 06073C0766G 06073C0767G 06073C0769G 06073C0776G 06073C0777F[1] 06073C0778G 06073C0779G 06073C0786J	

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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
Vista, City of (continued)	060297	18070303	06073C0787H 06073C0788J 06073C0789H	

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% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% 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 31, "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 San Diego County became effective on June 19, 1997. Refer to Table 28 for information about subsequent revisions to the FIRMs.

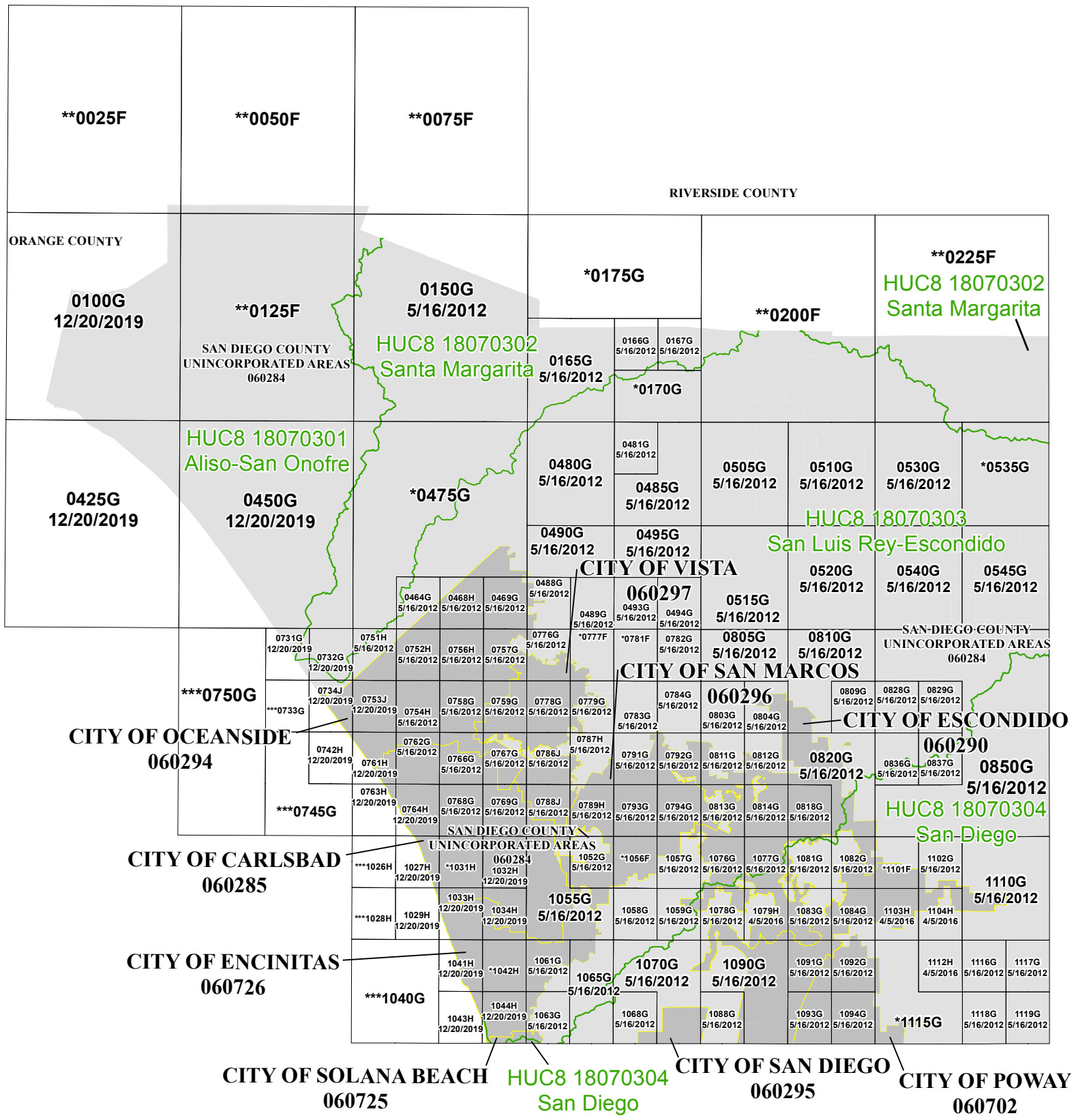
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must 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."

Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database (nld.usace.army.mil). For all other levees, the user is encouraged to contact the appropriate local community.

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

The FIRM Index in Figure 1 shows the overall FIRM panel layout within San Diego 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, and United States Geological Survey (USGS) Hydrologic Unit Code – 8 (HUC-8) codes.

Figure 1: FIRM Panel Index



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 December 20, 2019.

N

1 inch = 28,737 feet 1:344,839

feet

0 8,000 16,000 32,000 48,000 64,000

Map Projection:
Universal Transverse Mercator Zone 11 North;
North American Datum 1983

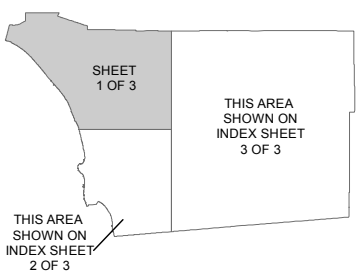
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

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

SAN DIEGO COUNTY, CA
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

SAN DIEGO COUNTY, CALIFORNIA and Incorporated Areas
SHEET 1 OF 3

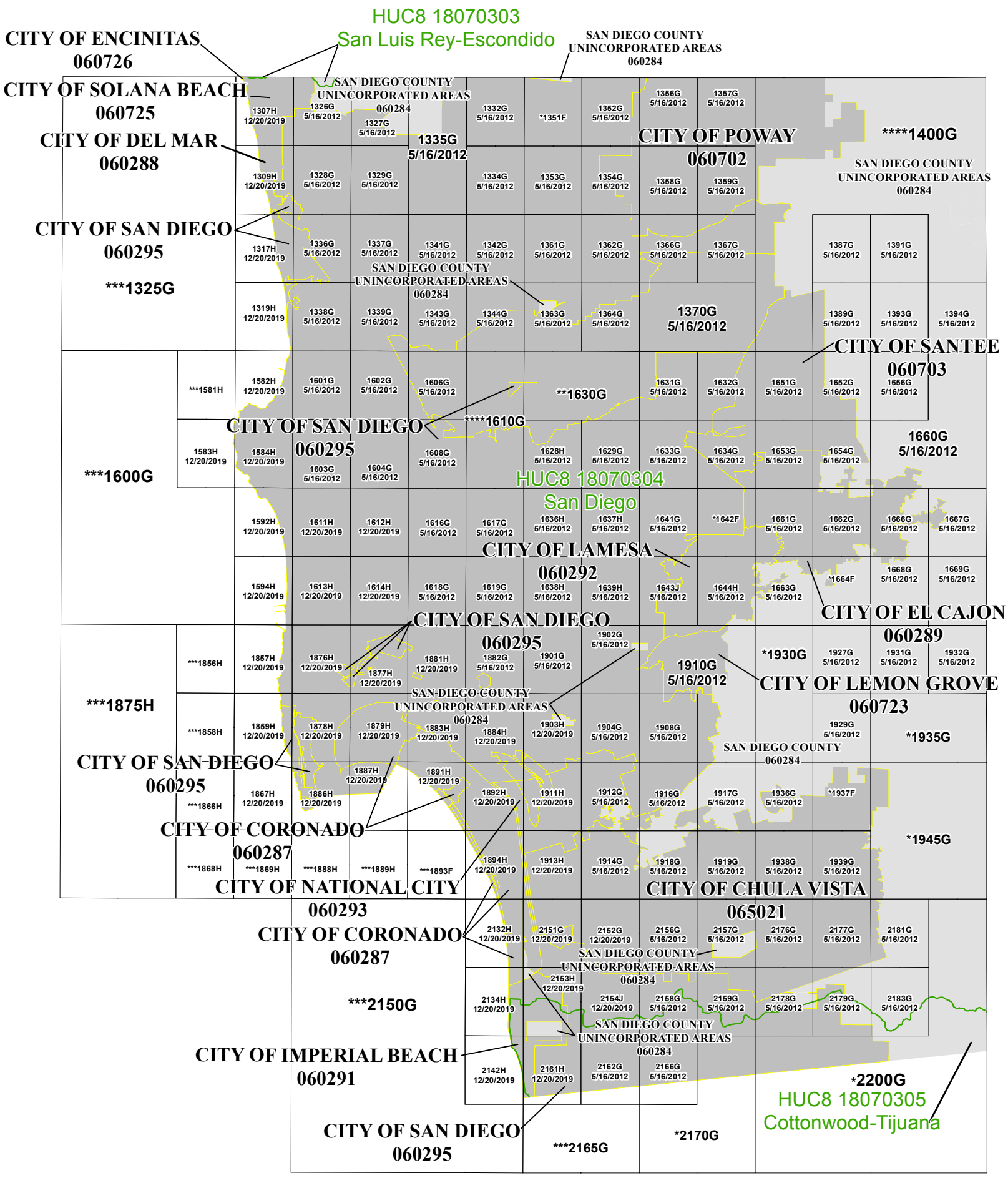
PANELS PRINTED:
0100, 0150, 0165, 0166, 0167, 0425, 0450, 0464, 0468, 0469, 0480, 0481, 0485, 0488, 0489, 0490, 0493, 0494, 0495, 0505, 0510, 0515, 0520, 0530, 0540, 0545, 0731, 0732, 0734, 0742, 0751, 0752, 0753, 0754, 0756, 0757, 0758, 0759, 0761, 0762, 0763, 0764, 0766, 0767, 0768, 0769, 0776, 0778, 0779, 0782, 0783, 0784, 0786, 0787, 0788, 0789, 0791, 0792, 0793, 0794, 0803, 0804, 0805, 0809, 0810, 0811, 0812, 0813, 0814, 0818, 0820, 0828, 0829, 0836, 0837, 0850, 1027, 1029, 1032, 1033, 1034, 1041, 1043, 1044, 1052, 1055, 1057, 1058, 1059, 1061, 1063, 1065, 1068, 1070, 1076, 1077, 1078, 1079, 1081, 1082, 1083, 1084, 1088, 1090, 1091, 1092, 1093, 1094, 1102, 1103, 1104, 1110, 1112, 1116, 1117, 1118, 1119.

FEMA

MAP NUMBER
06073CIND1E

MAP REVISED
DECEMBER 20, 2019

Figure 1: FIRM Panel Index, continued



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 December 20, 2019.

N

1 inch = 19,900 feet 1:238,801

0 5,500 11,000 22,000 33,000 44,000 feet

Map Projection:
Universal Transverse Mercator Zone 11 North;
North American Datum 1983

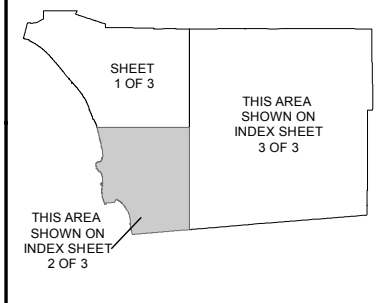
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA IN ZONE D
*** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY
**** PANEL NOT PRINTED - ALL ZONE D OR X

SAN DIEGO COUNTY, CA
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

SAN DIEGO COUNTY, CALIFORNIA and Incorporated Areas
SHEET 2 OF 3

PANELS PRINTED:

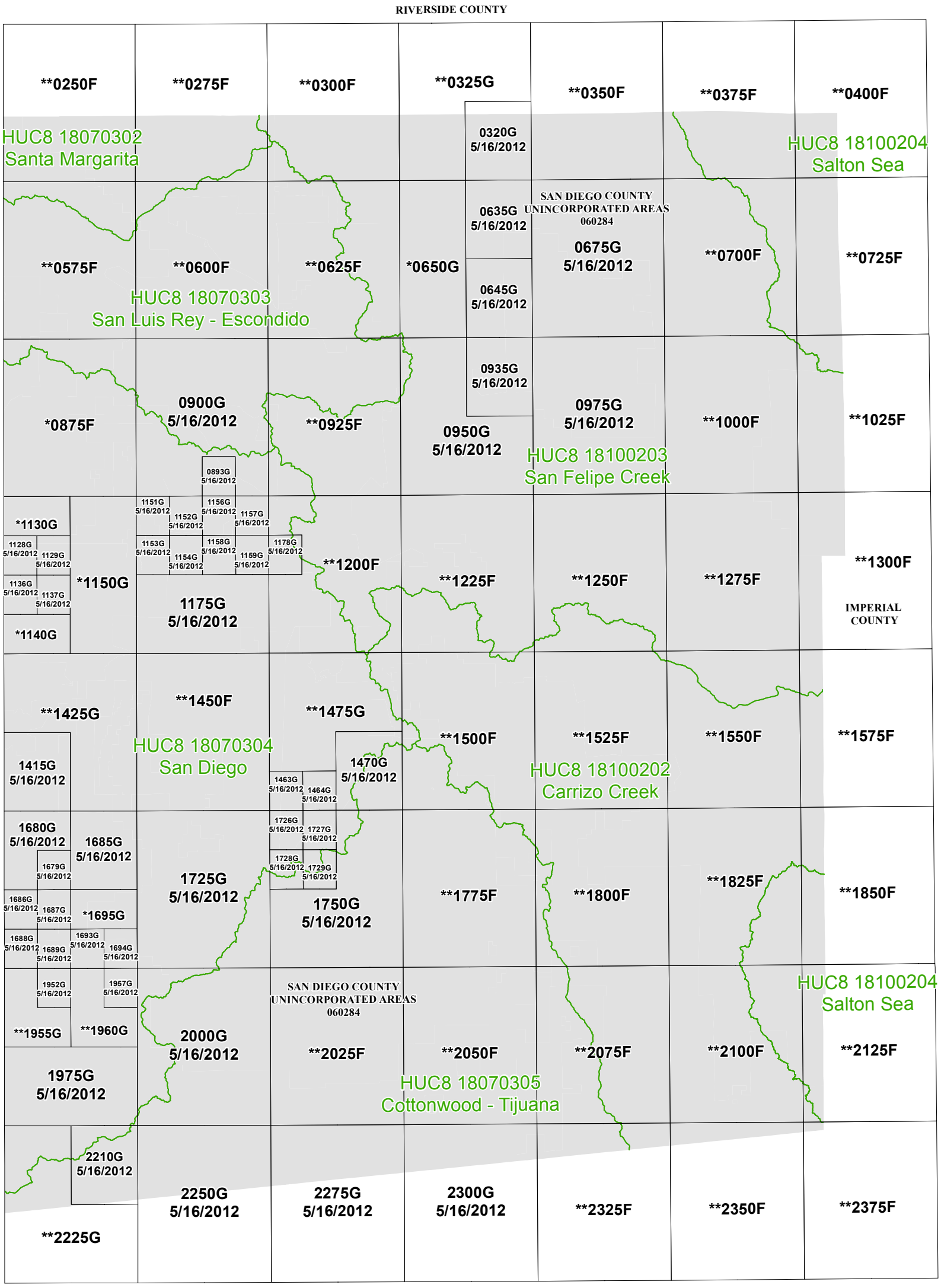
1307, 1309, 1317, 1319, 1326, 1327, 1328, 1329, 1332, 1334, 1335, 1336, 1337, 1338, 1339, 1341, 1342, 1343, 1344, 1352, 1353, 1354, 1356, 1357, 1358, 1359, 1361, 1362, 1363, 1364, 1366, 1367, 1370, 1387, 1389, 1391, 1393, 1394, 1582, 1583, 1584, 1592, 1594, 1601, 1602, 1603, 1604, 1606, 1608, 1611, 1612, 1613, 1614, 1616, 1617, 1618, 1619, 1628, 1629, 1631, 1632, 1633, 1634, 1636, 1637, 1638, 1639, 1641, 1643, 1644, 1651, 1652, 1653, 1654, 1656, 1660, 1661, 1662, 1663, 1666, 1667, 1668, 1669, 1857, 1859, 1867, 1876, 1877, 1878, 1879, 1881, 1882, 1883, 1884, 1886, 1887, 1891, 1892, 1894, 1901, 1902, 1903, 1904, 1908, 1910, 1911, 1912, 1913, 1914, 1916, 1917, 1918, 1919, 1927, 1929, 1931, 1932, 1936, 1938, 1939, 2132, 2134, 2142, 2151, 2152, 2153, 2154, 2156, 2157, 2158, 2159, 2161,2162, 2166, 2176, 2177, 2178, 2179, 2181, 2183

FEMA

MAP NUMBER
06073CIND2E

MAP REVISED
DECEMBER 20, 2019

Figure 1: FIRM Panel Index, continued



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 December 20, 2019.

N

1 inch = 32,899 feet 1:394,787

feet
0 9,000 18,000 36,000 54,000 72,000

Map Projection:
Universal Transverse Mercator Zone 11 North;
North American Datum 1983

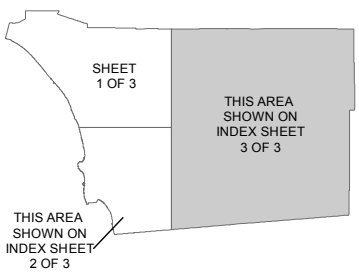
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

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

SAN DIEGO COUNTY, CA
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

SAN DIEGO COUNTY, CALIFORNIA and Incorporated Areas
SHEET 3 OF 3

PANELS PRINTED:

0320, 0635, 0645, 0675, 0893, 0900, 0935, 0950, 0975, 1128, 1129, 1136, 1137, 1151, 1152, 1153, 1154, 1156, 1157, 1158, 1159, 1175, 1178, 1415, 1463, 1464, 1470, 1679, 1680, 1685, 1686, 1687, 1688, 1689, 1693, 1694, 1725, 1726, 1727, 1728, 1729, 1750, 1952, 1957, 1975, 2000, 2210, 2250, 2275, 2300

FEMA

MAP NUMBER
06073CIND3E

MAP REVISED
DECEMBER 20, 2019

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 map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at 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 Map Information 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 28 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.

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

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.

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 be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

Figure 2: FIRM Notes to Users, continued

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was 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/ or contact the National Geodetic Survey at the following address:

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

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 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. Department of Agriculture imagery was flown in 2016 and was produced with a 1-meter ground sample distance. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

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

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

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within San Diego 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 28 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 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 of FIRM panels issued before December 20, 2019.

Figure 2: FIRM Notes to Users, continued

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for San Diego County, California, effective December 20, 2019**.**

ACCREDITED LEVEE: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit www.fema.gov/national-flood-insurance-program.

PROVISIONALLY ACCREDITED LEVEE: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by May 16, 2012. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit www.fema.gov/national-flood-insurance-program.

PROVISIONALLY ACCREDITED LEVEE: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by July 23, 2009. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit www.fema.gov/national-flood-insurance-program.

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 San Diego 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.

Figure 3: Map Legend for FIRM, continued

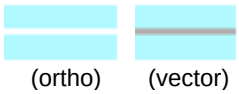
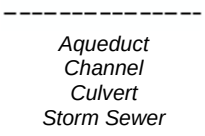
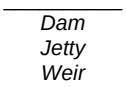
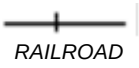
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood 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 Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir

Figure 3: Map Legend for FIRM, continued

	Levee, Dike, or Floodwall
Bridge	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.*	
CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
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)

Figure 3: Map Legend for FIRM, continued

ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	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% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% 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 San Diego 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% 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 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% 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% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% 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 San Diego County, California, 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 13. 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% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

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

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Adobe Creek	Escondido, City of	Confluence of Kit Carson Park Creek	Approximately 1,735 feet upstream of Las Palmas Avenue	18070304	0.4		N	AE	1985
Agua Hedionda Creek	Vista, City of	Approximately 1,500 feet downstream of Melrose Drive	Approximately 200 feet downstream of the confluence of Buena Creek	18070303	1.25		N	AE	2002
Agua Hedionda Creek	Carlsbad, City of; Vista, City of	Approximately 1,735 feet upstream of Sunny Creek Road	Approximately 1,500 feet downstream of Melrose Drive	18070303	2.1		N	A	1981
Agua Hedionda Creek (At City of Carlsbad)	Carlsbad, City of	0.2 miles downstream of El Camino Real	Oak Lake	18070303	2.4		Y	AE	1995
Agua Hedionda Creek (At City of Vista)	San Diego County, Unincorporated Ares; Vista, City of	Approximately 200 feet downstream of the confluence with Buena Creek	Cherimoya Drive	18070303	2.0		Y	AE	1981
Agua Hedionda Lagoon	Carlsbad, City of	Not provided	Not provided	18070303		0.5	N	A	1981
Alpine Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	1.9		N	A	1986
Alvarado Creek	La Mesa, City of	Approximately 1.5 miles downstream of Baltimore Drive	Baltimore Drive	18070304	1.5		Y	AE	2000
Alvarado Creek	San Diego, City of	Confluence with San Diego River	Approximately 1.5 miles downstream of Baltimore Drive	18070304	3.7		Y	AE	1998
Arroyo Drive Tributary	San Diego, City of	Not provided	Not provided	18070304	0.2		N	A	1979

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Bailey Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	1.6		N	A	*
Barrett Lake	San Diego County, Unincorporated Areas	Not provided	Not provided	18070305		1.0	N	A	*
Batiquitos Lagoon	Carlsbad, City of; Encinitas, City of	Not provided	Not provided	18070303		0.6	N	A, AE	*
Beaver Hollow Creek	San Diego County, Unincorporated Areas	Approximately 2,680 feet upstream of confluence with Sweetwater Creek	Approximately 900 feet upstream of Beaver Hollow Road	18070304	2.2		Y	AE	1993
Bee Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18070305	0.4		N	A	*
Beeler Creek	Poway, City of	Confluence with Poway Creek	Approximately 2.7 miles upstream of Pomerado Road	18070304	3.4		Y	AE	1983
Borrego Palm Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	3.2		N	A, AO	*
Borrego Sink	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	1.6		N	A	*
Borrego Sink Wash	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203		0.6	N	A	*
Box Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	0.4		N	AO	*
Broadway Creek	El Cajon, City of; San Diego County, Unincorporated Areas	Confluence with Forester Creek	Approximately 35 feet upstream of Oro Street	18070304	2.7		Y	AE	1976
Buena Creek	San Diego County, Unincorporated Areas; Vista, City of	Confluence with Agua Hedionda Creek	Approximately 600 feet upstream of Hollyberry Drive	18070303	3.8		Y	AE	1993

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Buena Vista Creek	Carlsbad, City of; Oceanside, City of	Not provided	Not provided	18070303	3.1		Y	AE	1986
Buena Vista Creek	Vista, City of	Northwestern portion in City of Vista	Northwestern portion in City of Vista	18070303	5.2		Y	AE	1985
Buena Vista Creek Tributary 1	Vista, City of	Approximately 1,420 feet downstream of Monte Vista Drive	Valley Drive	18070303	0.8		Y	AE	*
Buena Vista Creek Tributary 2	Vista, City of	Not provided	Not provided	18070303	0.7		N	A	*
Buena Vista Creek Tributary 3	Vista, City of	Confluence with Buena Vista Creek	Approximately 40 feet upstream Cananea Street	18070303	1.6		N	AE	*
Buena Vista Creek Tributary 4	Vista, City of	Not provided	Not provided	18070303	0.6		N	A	*
Buena Vista Lagoon	Carlsbad, City of; Oceanside, City of	Not provided	Not provided	18070303		0.2	N	A	1981
Cadman Street Tributary	San Diego, City of	Not provided	Not provided	18070304	0.2		N	A	1979
Calavera Creek	Carlsbad, City of	Confluence with Agua Hedionda Creek	Approximately 0.2 mile upstream of the boundary of the Rancho Carlsbad Mobile Home	18070303	0.7		Y	AE	1995
Campo Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070305	5.9		N	A	1993
Carmel Valley Creek	San Diego, City of	Approximately 125 feet downstream of Sorrento Valley Road	Approximately 350 feet upstream of confluence of McGonigle and Deer Canyon	18070304	3.4		Y	AE	1985

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Carroll Canyon Creek	San Diego, City of; San Diego County, Unincorporated Areas	At Atchinson, Topeka and Santa Fe Railroad bridge	Approximately 450 feet upstream of Semillon Boulevard	18070304	10.0		Y	AE	1981
Casa De Oro Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	0.1		N	A	1981
Chicarita Creek	San Diego, City of	Not provided	Not provided	18070304	2.3		N	A	1985
Chocolate Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	0.3		N	A	*
Chollas Reservoir Branch	San Diego, City of	Not provided	Not provided	18070304	1.8		N	A	1979
Coleman Creek	San Diego County, Unincorporated Areas	Approximately 5,800 feet above confluence with San Diego River	Approximately 20 feet upstream of State Route 78	18070304	3.4		Y	AE	1993
Coleman Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	1.2		N	A	*
County Ditch Creek	El Cajon, City of	Confluence with Forester Creek	Approximately 230 feet upstream of West Renetta Avenue	18070304	1.5		Y	AE	1976
Coyote Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	13.7		N	A, AO	*
Culp-Tubb Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	4.0		N	AO	*
Curlew Creek	San Diego, City of	Not provided	Not provided	18070304	0.6		N	A	1979
Deer Springs Creek	San Diego County, Unincorporated Areas	Approximately 650 feet upstream of confluence with Twin Oaks Valley Creek	Approximately 4,370 feet upstream of Marilyn Lane	18070303	0.8		Y	AE	1993

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Descanso Creek	San Diego County, Unincorporated Areas	Confluence with Sweetwater River	Approximately 1,970 feet upstream of Camino De Tierra Road	18070304	2.5		Y	AE	1981
Dry Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	1.3		N	AO	*
Dulzura Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	7.0		N	A	1993
El Vado Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	3.0		N	A, AO	*
Encanto Branch	San Diego, City of	Confluence with South Las Chollas Creek	Approximately 1,240 feet upstream of 69th Street	18070304	2.5		Y	AE	1979
Encinitas Creek	Carlsbad, City of; Encinitas, City of	Not provided	Not provided	18070303	2.5		N	A	1981
Escondido Creek	Encinitas, City of; Escondido, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	6.2		N	A, AH	1981
Escondido Creek (Above Lake Wohlford)	San Diego County, Unincorporated Areas	Approximately 2 miles upstream of Wohlford Dam	Approximately 1,400 feet upstream of Bear Valley Heights Road	18070303	1.1		Y	AE	1993
Escondido Creek (At Encinitas)	Encinitas, City of; San Diego County, Unincorporated Areas	Approximately 2 miles upstream of Pacific Ocean	Approximately 0.8 mile upstream of El Camino Del Norte	18070303	3.8		Y	AE	1993
Escondido Creek (At Escondido)	Escondido, City of; San Diego County, Unincorporated Areas	Approximately 10.4 miles upstream of Pacific Ocean	Approximately 1,440 feet upstream of Harmony Grove Road	18070303	5.5		Y	AE	1993

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Escondido Creek (Left Reach)	San Diego County, Unincorporated Areas	Approximately 2 miles upstream of Wohlford Dam	Approximately 2,025 feet upstream of Guejito Road	18070303	0.5		N	AE	1993
Eucalyptus Hills (East Branch)	San Diego County, Unincorporated Areas	Approximately 1,620 feet upstream of confluence with San Diego River	Approximately 2,660 feet upstream of Lakeside Avenue	18070304	0.8		Y	AE	1993
Eucalyptus Hills (West Branch)	San Diego County, Unincorporated Areas	Approximately 850 feet upstream of confluence with San Diego River	Approximately 4,775 feet upstream of Chase Creek Lane	18070304	1.5		Y	AE	1993
Fire Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	2.4		N	AO	*
Florida Drive Branch	San Diego, City of	Confluence with Switzer Creek	Approximately 360 feet upstream of confluence of Pershing Drive Branch	18070304	0.5		Y	AE	1979
Forester Creek	San Diego County, Unincorporated Areas	State Highway 67	Approximately 1.2 miles upstream of Shadow Mountain Road	18070304	5.7		Y	A, AE	1993
Garrison Creek	Oceanside, City of	Not provided	Not provided	18070303	3.0		Y	A, AE	1985
Gonzales Canyon Creek	San Diego, City of	Not provided	Not provided	18070304	3.4		Y	A, AE	1985
Gopher Canyon Creek	San Diego County, Unincorporated Areas	Approximately 525 feet upstream of confluence with San Luis Rey River	Approximately 620 feet upstream of Valley of the King Road	18070303	4.0		Y	AE	1993

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Green Valley Creek	Poway, City of; San Diego, City of	Approximately 3,040 feet downstream of Avenida Florencia	Approximately 3,100 feet upstream of Orchard Bend Road	18070304	2.1		Y	AE	1983
Green Valley Creek Tributary	Poway, City of	Confluence with Green Valley Creek	Painted Desert Road	18070304	0.7		Y	AE	1983
Guejito Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	3.9		N	A	*
Harbison Canyon Creek	San Diego County, Unincorporated Areas	Approximately 1,520 feet downstream of 26th East Street	Approximately 620 feet upstream of Patrick Drive	18070304	3.1		Y	AE	1986
Hatfield Creek	San Diego County, Unincorporated Areas	Confluence with Santa Maria Creek	Approximately 200 feet upstream of State Highway 78	18070304	1.0		Y	AE	1981
Hellhole Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	3.1		N	AO	*
Henderson Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	2.0		N	AO	*
Home Avenue Branch	San Diego, City of	Confluence with Las Chollas Creek	Approximately 550 feet upstream of Auburn Drive	18070304	2.4		Y	AE	1979
Jamacha Branch	San Diego, City of	Not provided	Not provided	18070304	1.3		N	A	1979
Johnson Canyon Creek	Chula Vista, City of; San Diego County, Unincorporated Areas	Approximately 120 feet upstream of confluence with Otay River	Approximately 2.6 miles upstream of confluence with Otay River	18070304	2.6		Y	AE	*
Keys Canyon Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	2.9		N	A, AE	1993
Keys Canyon Creek Tributary 1	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	7.7		N	A, AE	*

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Keys Canyon Creek Tributary 2	San Diego County, Unincorporated Areas	Confluence with Keys Canyon Creek	Approximately 1,125 feet upstream above Old Lilac Road	18070303	0.9		N	AE	*
Kit Carson Park Creek	Escondido, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	1.6		N	A	1993
Kit Carson Park Creek	Escondido, City of; San Diego, City of	Approximately 2.2 miles above Lake Hodges Dam	Approximately 2,450 feet upstream of Bear Valley Parkway	18070304	2.1		Y	AE	1981
Kit Carson Park Creek Tributary	Escondido, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	1.5		N	A	1981
La Orillia Road Tributary	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	2.3		N	A	*
La Zanja Canyon	San Diego, City of	Not provided	Not provided	18070304	2.3		N	A	1985
Lake Hodges	San Diego, City of	Not provided	Not provided	18070304		1.5	N	A	1985
Las Chollas Creek	San Diego, City of	Approximately 85 feet downstream of Main Street	Approximately 1,775 feet upstream of 54th Street	18070304	5.4		Y	AE	1979
Las Posas Creek (Lower)	San Marcos, City of	Not provided	Not provided	18070303	0.5		Y	AE	1989
Las Posas Creek (Upper)	San Marcos, City of	Linda Vista Drive	Approximately 930 feet upstream of West Mission Road	18070303	1.1		Y	AE	1989
Las Puleta Creek	National City, City of; San Diego, City of	Not provided	Not provided	18070304	1.9		N	A, AE, AO	1979
Lawson Valley Creek	San Diego County, Unincorporated Areas	Approximately 1.4 miles upstream of confluence with Sweetwater River	Approximately 1,770 feet upstream of Rudnick Road	18070304	2.6		Y	AE	1993

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Loma Alta Creek	Oceanside, City of	Pacific Street	Approximately 1 mile upstream of Railroad	18070303	6.8		Y	AE	1997
Los Coches Creek	San Diego County, Unincorporated Areas	Confluence with San Diego River	Ha-Hana Road	18070304	2.0		N	A	1987
Los Coches Creek	San Diego County, Unincorporated Areas	Ha-Hana Road	Approximately 1.4 miles upstream of Rios Canyon Road	18070304	4.0		N	A	1981
Los Pensaquitos Creek	San Diego, City of	Just upstream of confluence of Chicarita Creek	At Chambers Dam	18070304	0.04		Y	AE	1985
Los Pensaquitos Creek	San Diego, City of	Not provided	Not provided	18070304	10.7		Y	AE	1981
Lusardi Creek	San Diego, City of ; San Diego County, Unincorporated Areas	Confluence with San Diego River	Approximately 1 mile upstream of confluence with San Diego River	18070304	1.0		Y	AE	1993
Lusardi Creek	San Diego, City of	Not provided	Not provided	18070304	2.4		N	A	1985
Maple Street Canyon Tributary	San Diego, City of	Not provided	Not provided	18070304	0.5		N	A	1979
Mataqual Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	2.9		N	A	*
McGonigle Canyon Creek	San Diego, City of	Not provided	Not provided	18070304	3.8		Y	A, AE	1985
McGonigle Canyon Creek Tributary A	San Diego, City of	Confluence with McGonigle Canyon Creek Tributary A	Approximately 560 feet upstream of confluence with McGonigle Canyon Creek Tributary A	18070304	0.1		Y	AE	1985

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Mexican Canyon Creek	San Diego County, Unincorporated Areas	Confluence with Sweetwater River	Approximately 1,580 feet upstream of Jamul Drive	18070304	1.9		Y	AE	*
Miramar Reservoir	San Diego, City of	Not provided	Not provided	18070304		0.2	N	A	1985
Moosa Canyon Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	4.2		N	A	*
Moosa Creek (North Branch)	San Diego County, Unincorporated Areas	Private Road	Approximately 25 feet upstream of South Canal Road	18070303	2.3		Y	AE	1993
Moosa Creek (South Branch)	San Diego County, Unincorporated Areas	Confluence with Moosa Creek North Branch	Approximately 10 feet upstream of North Lake Wohlford Road	18070303	0.4		Y	AE	1993
Murphy Canyon Creek	San Diego, City of	Approximately 170 feet upstream of Friars Road	Approximately 165 feet upstream of Clairemont Mesa Boulevard	18070304	3.1		Y	AE	1985
Murray Canyon Creek	San Diego, City of	Not provided	Not provided	18070304	2.7		N	A, AE	1981
Murray Reservoir	San Diego, City of	Not provided	Not provided	18070304		0.2	N	A	1985
Nestor Creek	San Diego, City of	Confluence with Otay River	Upstream side of Interstate Highway 5	18070304	2.1		Y	AE	1989
Nestor Creek	San Diego, City of	Interstate Highway 5 embankment	Above Interstate Highway 5	18070304		0.03	N	AH	1989
Nestor Creek	San Diego, City of	Upstream side of Interstate Highway 5	Approximately 800 feet upstream of 30th Street	18070304	0.8		N	AE	1979

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
North Avenue Tributary	Escondido, City of	Confluence with Reidy Creek	Approximately 3,200 feet upstream of confluence with Reidy Creek	18070303	0.6		N	AE	1988
North Branch Poway Creek	Poway, City of	Not provided	Not provided	18070304	1.0		Y	A, AE	1983
North Tributary to Santa Maria Creek	San Diego County, Unincorporated Areas	Confluence with Santa Maria Creek	Approximately 1,100 feet upstream of Ramona Airport Road	18070304	0.7		Y	AE	1981
Northern Split	San Marcos, City of	Not provided	Not provided	18070303			Y	AE	1989
Olive Creek	San Diego County, Unincorporated Areas; San Marcos, City of	Confluence with Twin Oaks Valley Creek	Approximately 940 feet upstream of Mulberry Drive	18070304	0.5		Y	AE	1993
Opato Creek	San Diego, City of	Not provided	Not provided	18070304	0.6		N	A	1985
Otay River	Imperial Beach, City of; San Diego, City of	Confluence with San Diego Bay	Confluence of Nestor Creek	18070304	1.6		N	AE	2015
Otay River	San Diego, City of	Not provided	Not provided	18070304	4.2		Y	AE	1989
Otay River	Chula Vista, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	7.5		Y	AE	1981

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Pacific Ocean	Carlsbad, City of; Chula Vista, City of; Coronado, City of; Del Mar, City of; Encinitas, City of; Imperial Beach, City of; National City, City of; Oceanside, City of; San Diego, City of: San Diego County, Unincorporated Areas; Solana Beach, City of	Entire coastline in San Diego County	Entire coastline in San Diego County	18070301 18070302 18070303 18070304 18070305	70.0		N	AE, VE	2015
Pala Mesa Creek	San Diego County, Unincorporated Areas	U.S. Highway 395 (Escondido Expressway)	Approximately 1,740 feet upstream of Tecalote Drive	18070303	1.3		Y	AE	1993
Paradise Creek	Chula Vista, City of; National City, City of	Not provided	Not provided	18070304	5.4		Y	AE, AO	1976
Paradise Creek North Branch	National City, City of; San Diego, City of	Not provided	Not provided	18070304	1.7		N	A, AE	1979
Paradise Creek North Branch Tributary	San Diego, City of	Not provided	Not provided	18070304	0.2		N	A	1979
Paradise Creek - Valley Road Branch	National City, City of; San Diego, City of	Not provided	Not provided	18070304	1.7		Y	A, AE	1985
Pauma Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	2.0		N	A	*
Pilgrim Creek	Oceanside, City of	Confluence with San Luis Rey River	Approximately 2.4 miles upstream of confluence with San Luis Rey River	18070303	2.4		Y	AE, AH	1991
Pine Valley Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070305	12.1		N	A	*

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Poggi Canyon Creek	Chula Vista, City of	Not provided	Not provided	18070304	1.5		N	A	1993
Poggi Canyon Creek	Chula Vista, City of; San Diego, City of	Not provided	Not provided	18070304	1.2		Y	AE	1984
Pomerado Creek	Poway, City of	Confluence with Poway Creek	Immediately Downstream of Glen Oak Avenue	18070304	1.6		Y	AE	1995
Potrero Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070305	7.2		N	A	1993
Poway Creek	Poway, City of	Confluence with Los Pensaquitos Creek	Confluence with North Branch and South Branch Poway Creek	18070304	3.8		Y	AE	1983
Radio Drive Branch	San Diego, City of	Not provided	Not provided	18070304	1.0		N	A	1979
Rainbow Creek	San Diego County, Unincorporated Areas	Interstate 15	Approximately 4,585 feet upstream of Rainbow Valley Boulevard	18070302	1.7		Y	AE	1993
Rainbow Creek (West Branch)	San Diego County, Unincorporated Areas	Confluence with Rainbow Creek	Approximately 1,900 feet upstream of 1st Street	18070302	0.8		Y	AE	1993
Rainbow Creek (West Branch)	San Diego County, Unincorporated Areas	Not provided	Not provided	18070302	0.6		N	A	*
Rattlesnake Creek	Poway, City of	Confluence with Poway Creek	Approximately 1,430 feet upstream of Range Park Road	18070304	3.5		Y	AE	1983
Rattlesnake Creek Split Flow at Heritage Hills	Poway, City of	Confluence with Rattlesnake Creek	Divergence from Rattlesnake Creek	18070304	0.6		Y	AE	1983

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Rattlesnake Creek Split Flow at Midland Road	Poway, City of	Confluence with Rattlesnake Creek	Divergence from Rattlesnake Creek	18070304	0.2		Y	AE	1983
Reidy Creek	Escondido, City of	Rincon Avenue	City of Escondido corporate limits	18070303	1.1		Y	AE	1988
Reidy Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	5.4		Y	AE	1981
Rice Canyon Creek	Chula Vista, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	0.8		N	A	1984
Rincon Avenue Tributary	Escondido, City of	Confluence with Reidy Creek	Approximately 1,405 feet upstream of confluence with Reidy Creek	18070303	0.3		N	AE	1985
Rios Canyon Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	0.5		N	A	*
Rose Canyon Creek/Rose Inlet	San Diego, City of	Approximately 1,500 feet upstream of Mission Bay	Approximately 2,210 feet upstream of Interstate Highway 805	18070304	7.5		N	AE	1981
Samagutuma Creek	San Diego County, Unincorporated Areas	Confluence with Sweetwater River (Descanso Area)	Approximately 2,180 feet upstream of Tecate Cypress Trail	18070304	2.4		Y	AE	1981
San Clemente Canyon Creek	San Diego, City of	Confluence with Rose Canyon Creek	Approximately 210 feet upstream of Interstate Highway 905	180703004	3.5		N	AE	1981
San Diego Bay	Chula Vista, City of; Coronado, City of; National City, City of; San Diego, City of;	Pacific Ocean	Confluence with Otay River	18070304		17.2	N	AE, VE	2015

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
San Diego River	San Diego, City of; San Diego County, Unincorporated Areas; Santee, City of	Just upstream of Friars Road	Approximately 845 feet upstream of State Highway 67	18070304	11.2		Y	AE	1985
San Diego River	San Diego, City of	Approximately 1,370 feet upstream of Pacific Ocean	Just upstream of Friars Road	18070304	9.7		Y	AE	1981
San Diego River	San Diego, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	9.2		N	A	1981
San Dieguito River	Del Mar, City of; Solano Beach, City of	Not provided	Not provided	18070304	14.1		Y	A, AE	1985
San Elijo Creek	Encinitas, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	0.9		Y	A, AE	*
San Elijo Lagoon	Encinitas, City of; Solano Beach, City of	Not provided	Not provided	18070303		0.6	N	A, AE	*
San Luis Rey River	Oceanside, City of	Pacific Ocean	College Boulevard	18070303	7.3		N	A99	2001
San Luis Rey River	San Diego County, Unincorporated Areas	Not provided	Not provided	18070303	25.8		N	A	1981
San Luis Rey River (At Oceanside)	Oceanside, City of	College Boulevard	Approximately 4.1 miles upstream of College Boulevard	18070303	4.1		Y	AE	1986
San Marcos Creek	San Diego County, Unincorporated Areas; San Marcos, City of	Approximately 1,600 feet upstream of Lake San Marcos	Woodland Parkway	18070303	3.9		Y	AE	1989
San Marcos Creek	Carlsbad, City of; San Marcos, City of	Not provided	Not provided	18070303	4.1		N	A	1975

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
San Marcos Creek (Below Lake San Marcos)	Carlsbad, City of; San Marcos, City of	Approximately 310 feet downstream of Rancho Santa Fe Road	Approximately 2,425 feet upstream of Melrose Drive	18070303	1.2		Y	AE	1989
San Marcos Creek Highway 78 Split Flow	San Marcos, City of	Confluence with San Marcos Creek	Divergence with San Marcos Creek	18070303	1.0		Y	AE	1989
San Vicente Creek	San Diego County, Unincorporated Areas	Approximately 1 mile downstream of San Vicente Avenue	Approximately 2,095 feet upstream of Moreno Avenue	18070304	2.8		Y	AE	1981
Santa Margarita River	San Diego County, Unincorporated Areas	Not provided	Not provided	18070302	5.5		N	A	*
Santa Maria Creek (San Pasqual Valley Area)	San Diego, City of; San Diego County, Unincorporated Areas	Confluence with Santa Ysabel Creek	Approximately 1,700 feet upstream of Bandy Canyon Road	18070304	1.9		Y	AE	1986
Santa Maria Creek (Santa Maria Valley Area)	San Diego County, Unincorporated Areas	Approximately 1.6 miles downstream of Rangeland Road	Approximately 1.4 miles upstream of Pile Street	18070304	9.9		Y	AE	1981
Santa Ysabel Creek	San Diego, City of; San Diego County, Unincorporated Areas	Interstate Highway 15	Approximately 1.4 miles upstream of State Highway 78	18070304	9.7		Y	AE	1993
Santa Ysabel Creek	San Diego County, Unincorporated Areas	Approximately 2.9 miles upstream of confluence with Witch Creek	Approximately 2,930 feet upstream of State Route 79	18070304	2.1		Y	AE	1993
Santa Ysabel Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	3.3		N	A	1986
Shaw Valley Creek	San Diego, City of	Not provided	Not provided	18070304	1.5		N	A	1985
Sheperd Canyon	San Diego, City of	Not provided	Not provided	18070304	2.1		N	A	1985

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Slaughterhouse Creek	San Diego County, Unincorporated Areas	Approximately 1,800 feet upstream of confluence with San Vicente Creek	Approximately 4,180 feet upstream of Slaughterhouse Canyon Road	18070304	1.4		Y	AE	1993
Soledad Canyon	San Diego, City of	North Torrey Pines Road	Atchinson Topeka & Santa Fe Railroad	18070304	4.1		Y	AE	1981
South Branch Poway Creek	Poway, City of	Confluence with Poway Creek and North Branch Poway Creek	Approximately 1,000 feet upstream of Sycamore Canyon Road	18070304	0.5		Y	AE	1983
South Fork Alpine Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	2.4		N	A	*
South Fork Moosa Canyon Creek	San Diego County, Unincorporated Areas	Approximately 350 feet upstream of confluence with Moosa Canyon Creek	Approximately 525 feet upstream of Cork Oak Drive	18070303	2.1		Y	AE	1986
South Las Chollas Creek	San Diego, City of	Interstate Highway 805	Approximately 650 feet upstream of 47th Street	18070304	0.3		Y	AE	1991
South Las Chollas Creek	San Diego, City of; San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	5.1		Y	AE	1979
South Tributary to Santa Maria Creek	San Diego County, Unincorporated Areas	Confluence with Santa Maria Creek	Approximately 930 feet upstream of State Highway 67/Main Street	18070304	1.3		Y	AE	1981
Spring Valley Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	3.2		N	A	1981

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Steele Canyon Creek	San Diego County, Unincorporated Areas	Approximately 480 feet upstream of confluence with Sweetwater River	Approximately 2,900 feet upstream of Vista Sage Lane	18070304	3.9		Y	AE	1993
Stevenson Creek	San Diego County, Unincorporated Areas	Approximately 550 feet upstream of confluence with Twin Oaks Valley Creek	Approximately 210 feet upstream of Country Garden Lane	18070303	0.8		Y	AE	1993
Sweetwater River	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	4.9		N	A	1981
Sweetwater River (Above Reservoir)	San Diego County, Unincorporated Areas	At Sweetwater Reservoir	Approximately 1.2 miles upstream of Sloane Canyon Road	18070304	12.8		Y	AE	1986
Sweetwater River (At National City)	Chula Vista, City of; National City, City of	Not provided	Not provided	18070304	2.7		Y	AE	1984
Sweetwater River (At National City)	Chula Vista, City of	Not provided	Not provided	18070304	0.8		N	AE	1984
Sweetwater River (Descanso Area)	San Diego County, Unincorporated Areas	Approximately 0.75 mile downstream of Riverside Drive	Approximately 3.0 miles upstream of Viejas Boulevard	18070304	4.7		Y	AE	1981
Switzer Creek	San Diego, City of	Not provided	Not provided	18070304	2.4		Y	A, AE, AO	1979
Sycamore Creek	Poway, City of; San Diego, City of	Not provided	Not provided	18070304	4.9		N	A	1983
Tecate Creek	San Diego County, Unincorporated Areas	Not provided	Not provided	18070305	0.9		N	A	1993
Tecolote Creek	San Diego, City of	Confluence with Mission Bay	Approximately 775 feet upstream of Derrick Drive	18070304	6.6		N	AE	1981
Telegraph Canyon Creek	Chula Vista, City of	Not provided	Not provided	18070304	4.9		Y	AE, A	1984

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Tijuana River	Imperial Beach, City of; San Diego, City of	Confluence with Oneonta Slough	Approximately 4,400 feet upstream of West Tia Juana Street	18070305	5.3		Y	AE	1985
Tributary of South Tributary to Santa Maria Creek	San Diego County, Unincorporated Areas	Confluence with South Tributary to Santa Maria Creek	Approximately 1,650 feet upstream of State Highway 67/ Main Street	18070304	0.4		Y	AE	*
Tributary to Forester Creek	El Cajon, City of	Approximately 115 feet downstream of Melody Lane	Approximately 2,720 feet upstream of 4th Street	18070304	0.7		Y	AE	1976
Tributary to Forester Creek (South Branch)	El Cajon, City of	Confluence with Tributary to Forester Creek	Approximately 2,955 feet upstream of 4th Street	18070304	0.8		Y	AE	1976
Tributary to Sweetwater River	San Diego County, Unincorporated Areas	Approximately 800 feet above Loma Del Sol Drive	Approximately 1,400 feet upstream of San Miguel Road	18070304	1.4		Y	AE	1993
Tributary to Sweetwater River	San Diego County, Unincorporated Areas	Not provided	Not provided	18070304	0.4		N	A	*
Twin Oaks Valley Creek	San Diego County, Unincorporated Areas; San Marcos, City of	Confluence with San Marcos Creek	Approximately 935 feet upstream of Solar Lane	18070303	4.7		Y	AE	1993
Unnamed Canyon	San Diego County, Unincorporated Areas	Not provided	Not provided	18100203	0.3		N	AO	*
Unnamed Tributary to San Dieguito River	San Diego, City of	Not provided	Not provided	18070304	0.3		Y	A, AE	1985
Unnamed Tributary to San Marcos Creek	Carlsbad, City of	Not provided	Not provided	18070303	2.4		N	A	1975

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Wabash Branch	San Diego, City of	Confluence with Las Chollas Creek	Approximately 1,550 feet upstream of 36th Street	18070304	0.9		Y	AE	1979
Wabash Tributary	San Diego, City of	Not provided	Not provided	18070304	0.3		N	A	1979
Witch Creek	San Diego County, Unincorporated Areas	Approximately 1.4 miles upstream of confluence with Santa Ysabel Creek	Approximately 2,670 feet upstream of Slaughterhouse Road	18070304	1.9		Y	AE	1993

*Data not available

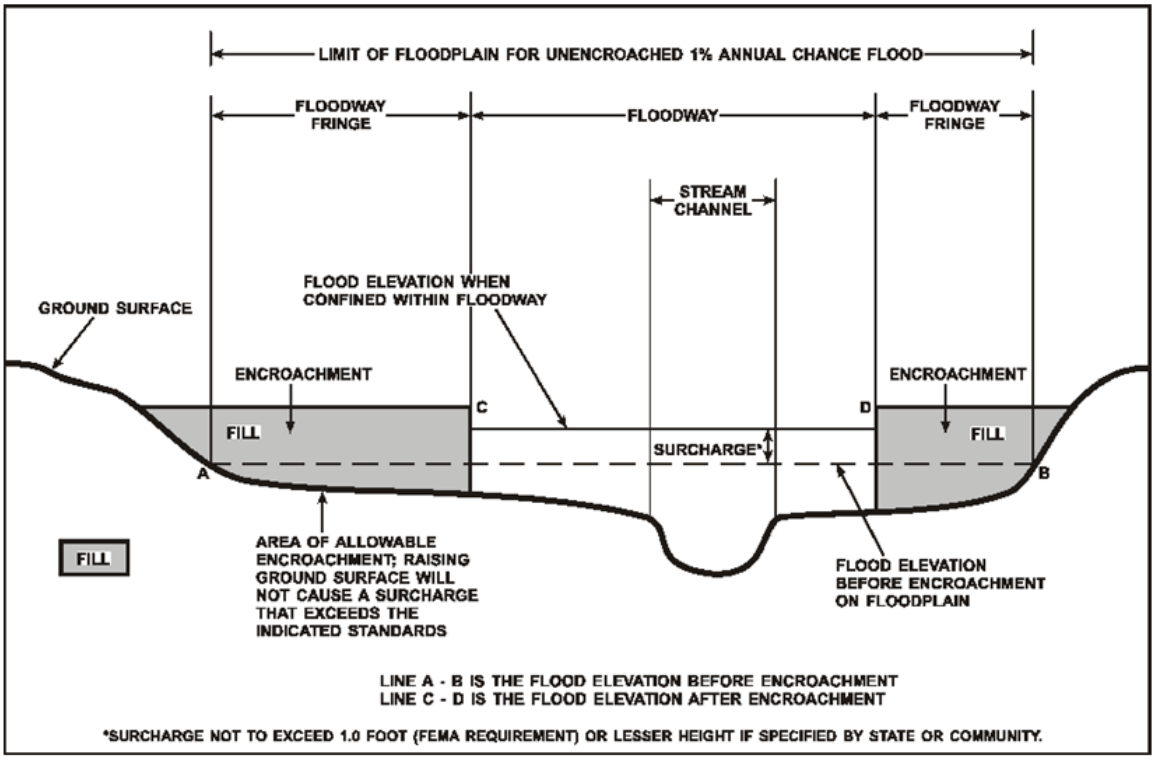
2.2 Floodways

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% 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% annual chance flood. The floodway fringe is the area between the floodway and the 1% 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% 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 24, "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 l% 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 Base Flood Elevation (BFE) is the elevation of the 1% 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.

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. BFEs 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.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

Areas of the coast are subject to flooding during coastal storms and the FIRM panels depict the flood hazard areas during the 1% annual chance coastal flood event. Flooding is typically caused by several nearshore processes, which can include high storm surge and large waves, although the magnitude of each process varies regionally. Because the processes that cause coastal flooding are unique and different from the processes in riverine flooding, this section provides a brief summary of coastal flood processes.

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

Nearly all studies include analysis of offshore water levels and the determination of stillwater levels (SWL). The SWL is the water surface elevation resulting from astronomical tides, storm surge, and freshwater inputs, but excluding the effects of wave setup and wave runup.

- *Astronomical tides* are periodic increases and decreases in nearhsore water surface elevations caused by the gravitational forces exerted by the earth, moon and sun.

- *Storm surge* is the increase in nearshore water surface elevations that occur during large storm events. These events can include air pressure changes and strong winds that force water up against the coast.
- *Freshwater inputs* include runoff from surfaces and overland flow, and inputs from rivers that temporarily increase nearshore water surface elevations.

The 1% annual chance stillwater elevation (SWEL) is the statistically determined SWL that has been calculated for the 1% annual chance storm event. In a response-based analysis, the 1% annual chance SWEL is typically calculated from analyses of tide gage records or numerical model output. Observed tide gage records are usually assumed to include all the components of the SWL listed above. The 1% annual chance SWEL is largely determined by the highest historical SWL events for a particular region, which often occur during periods of combined high tides and storm surge. SWELs for different probabilities of occurrence can also be calculated.

During a coastal storm, large waves break in the surf zone and generate wave setup and runup at the shoreline. The total water level (TWL) is the SWL combined with the heights of wave setup and wave runup.

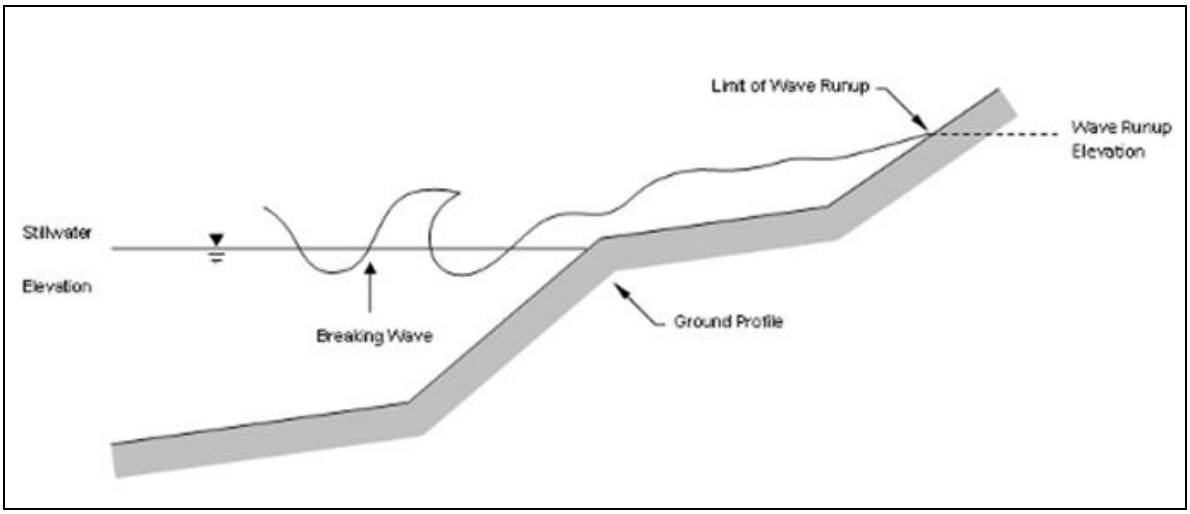
- *Wave setup* is the increase in water levels at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred across the surf zone.
- *Wave runup* is the vertical uprush of water across the foreshore and backshore (beach, bluff, or structure) due to breaking waves. It is usually a function of the height and period of the offshore waves, geometry of the shoreline, particularly slope, and the roughness.

Like the 1% annual chance SWEL, the TWL can be statistically determined for different probabilities of occurrence. In a response-based analysis, wave setup and runup heights are typically calculated using standard engineering equations or numerical models which incorporate offshore wave conditions. Time series of wave setup and runup heights are then combined with records of the SWL to form a time series of the TWL. On the Pacific coast, the highest TWLs are often the results of periods of combined high tides and large, long period waves during El Niño winters. The 1% annual chance TWL is then statistically determined from the time series using a statistical extreme value analysis (EVA).

Coastal analyses may also examine the effects of 1% annual chance events by analyzing storm-induced erosion, overland wave propagation, and/or wave overtopping.

- *Storm-induced erosion* is the eroding of the shoreline caused by a specific storm event, as opposed to long-term retreat which occurs over longer time periods.
- *Overland wave propagation* describes the local, wind-generated waves that form over inundated areas. It includes the combined effects of nearshore wave characteristics, inundation depth, wind strength and direction, and variations in ground elevation and land use.
- *Wave overtopping* refers to the splash or bore overtopping that occurs when wave runup passes over the crest of a barrier, such as a bluff or structure.

Figure 5: Wave Runup Transect Schematic



2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific coasts, the Gulf of Mexico, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and high tides impact the coastline. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond immediate 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 areas of the Pacific coast, wave setup and runup are the dominant components of flooding. The extent of the 1% annual chance floodplain in these areas is derived from the TWL (SWL combined with wave effects) for the 1% annual chance event. The methods that were used for calculation of the 1% annual chance TWL for coastal areas are described in Section 5.3 of this FIS Report. An example of the inland extent of flooding due to the 1% annual chance TWL is shown in Figure 8.

In areas where the calculated 1% annual chance TWL exceeds coastal barrier features, the 1% annual chance floodplain is based upon the inland limit of wave overtopping. The methods that were used for calculation of wave overtopping are described in Section 5.3 of this FIS Report. In limited areas that are expected to be inundated during the 1% annual chance event, the floodplain boundaries are determined by analysis of overland wave propagation. These areas are limited to inland bays on the Pacific coast.

Table 26 presents the types of coastal analyses that were used in mapping the 1% annual chance floodplain in coastal areas.

Coastal BFEs

Coastal BFEs are generally calculated as the 1% annual chance TWL for each coastal reach. In areas of wave overtopping, coastal BFEs are determined from calculated splash or bore elevations.

In isolated areas of overland wave propagation, coastal BFEs are determined from modeled overland wave heights.

Coastal BFEs are calculated along analysis transects that are oriented perpendicular to the coastline and extend from an offshore water depth to beyond the inland limit of coastal flooding. Results of these analyses are mapped adjacent to each transect and are accurate until local topography, vegetation, or development type and density within the community significantly change.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 17, "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% 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% annual chance flood. These can include wave overtopping zones.
- *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.

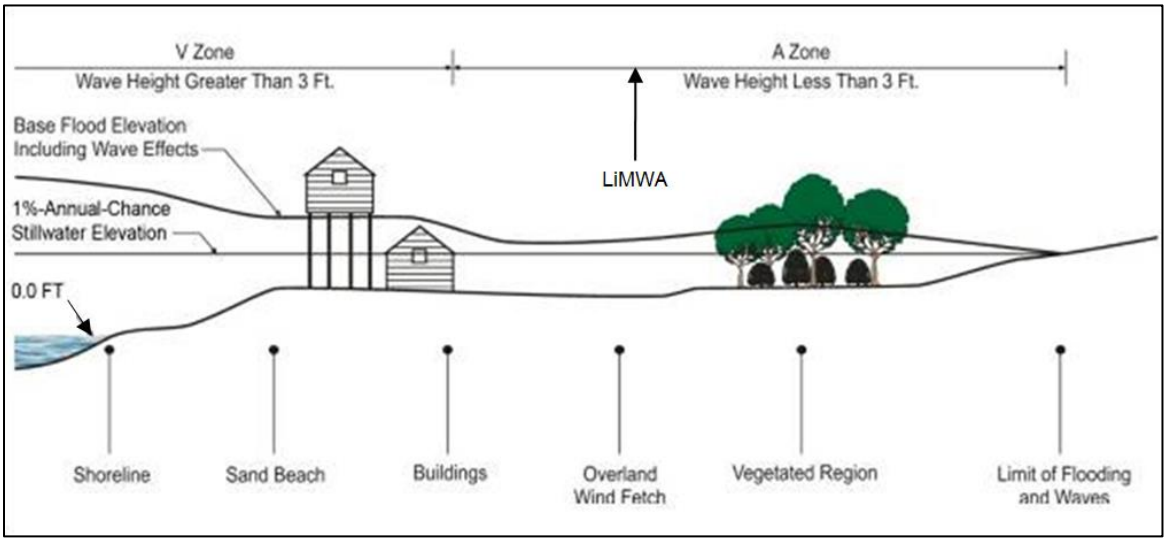
CHHAs are designated as "V" zones (for "velocity wave zones") and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the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

The landward limit of the PFD occurs at the dune heel 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 BFE (which is based upon the 1% annual chance TWL or wave overtopping elevations), the 1% annual chance SWEL, 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 incident waves and overland propagation of waves 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."

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

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

The 1% 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% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in San Diego County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Carlsbad, City of	A, AE, VE, X
Chula Vista, City of	A, AE, AO, X
Coronado, City of	A, AE, D, VE, X
Del Mar, City of	A, AE, VE, X
El Cajon, City of	A, AE, X
Encinitas, City of	A, AE, VE, X
Escondido, City of	A, AE, AH, AO, X
Imperial Beach, City of	AE, VE, X
La Mesa, City of	A, AE, X
Lemon Grove, City of	A, AE, X
National City, City of	A, AE, AH, AO, D, VE, X
Oceanside, City of	A, A99, AE, AH, D, VE, X
Poway, City of	A, AE, AH, AO, X
San Diego, City of	A, AE, AH, AO, D, VE, X
San Diego County, Unincorporated Areas	A, AE, AH, AO, D, VE, X
San Marcos, City of	A, AE, X
Santee, City of	A, AE, X
Solana Beach, City of	A, AE, VE, X
Vista, City of	A, AE, AH, AO, X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information
[Not Applicable to this Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 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 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Aliso-San Onofre	18070301	San Mateo Creek/ San Juan Creek	Watershed covers the northwestern corner of San Diego County, with the headwaters of San Mateo Creek located in the county.	616
Carrizo Creek	18100202	Carrizo Creek	The source of Carrizo Creek arises in the mountains in San Diego County and terminates in Imperial County.	653
Cottonwood-Tijuana	18070305	Cottonwood Creek/ Tijuana River	A binational basin that extends from the Laguna Mountains in the U.S. to the Sierra de Juárez Mountains in Mexico.	1,719
Salton Sea	18100204	Salton Sea	The Salton Sea is a shallow, saline, endorheic rift lake located directly on the San Andreas Fault, predominantly in the Imperial and Coachella Valleys.	4,984
San Diego	18070304	San Diego River	The San Diego River flows westerly through the central portion of the county and drains at its mouth in Mission Bay.	1,553
San Felipe Creek	18100203	San Felipe Creek	Arises in the Volcan Mountains of San Diego County and empties into the Salton Sea.	1,056
San Luis Rey-Escondido	18070303	San Luis Rey River	Located in northern San Diego County. The river's headwaters are in the Palomar Mountain Range and empties into the Pacific Ocean north of the City of Oceanside.	831
Santa Margarita	18070302	Santa Margarita River	Drains an arid region at the southern end of the Santa Ana Mountains, between the cities of Los Angeles and San Diego.	741

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for San Diego County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Alvarado Creek	Due to the extensive damage brought by the storm, many local municipalities, including the City of La Mesa, declared local flood emergencies in order to seek State and Federal disaster funds. Documented damage in La Mesa included: flooding of 12 classrooms at Helix High School, the development of a sinkhole 16 feet deep and 5 feet across after an underground pipe on Harbinson Avenue was damaged by floodwaters, and two collapsed storm drains. Much of the flooding that occurred in the developed areas around Alvarado Creek was due to flow breaking out of the channel at road crossings. Flow breakout was due to low capacity culverts or debris buildup that obstructed flow in the channels and through the culverts. The mobile-home park, which borders Alvarado Creek, experienced flooding twice in 1995. Three feet of water in the park caused mobile homes to start floating downstream. In response to this event, a 3-foot cinder block wall was built in 1995 and has since kept the park from flooding.
Buena Vista Creek	Major floods have occurred along Buena Vista Creek, as well as in adjacent basins during both the winter and summer, although most of the precipitation occurs between December and March. Rainless periods of several months are common during the summer. Damaging floods occurred in the region that includes the Buena Vista Creek basin in 1862, 1884, 1895, 1916, 1927, 1932, 1938, and 1942. Little information is available, but indications are that significant inundation occurred in the basin, blocking roads and flooding out farmhouses and crops. Flood damage from such floods has been relatively light because virtually no high-value developments existed on the floodplain during those floods. Prior to extensive development and improvement of its natural intermittent streams, the City of El Cajon was subject to heavy inundation during large storms. One resident described the use of rowboats for traveling along Main Street during the 1916 flooding in El Cajon. However, due to some protective measures, flooding has been limited to deep water in streets and water seeping into garages, with only minor damage being reported.
Casa de Oro Creek	Over bank flood flows on Casa de Oro Creek are caused by debris collected by driveways upstream of Olive Drive and the restricted capacity of culverts located at Troy Street and Olive Drive, as well as limited channel capacity downstream of Mac Lane, at Kenwood Drive, and upstream of Andreen Lane.
County Ditch Creek	The construction of Interstate 8 through the City of El Cajon has created a major hindrance to large flows on County Ditch Creek and Washington Creek. The combined 0.2-percent annual chance flood from these streams will pond to as much as 7 feet deep upstream from the freeway and overtop it in the vicinity of Washington Creek.
Escondido Creek	The concrete-lined channel for Escondido Creek, from approximately 1,300 feet upstream of Rose Street to 1,300 feet upstream of Harmony Grove Road, does not contain the 0.2-percent annual chance flood flows and results in shallow flooding. Downstream of the channel improvement,

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
Escondido Creek, continued	floodwaters from the 1-percent annual chance flood inundate the sewage treatment plant. In the downstream reach near San Elijo Lagoon in the City of Encinitas, Encinitas Boulevard and El Camino Del Norte dip sections are subject to overtopping and damage due to flooding from low-return period events similar to the 20- to 10-percent annual chance flood of January 17, 1978 (San Diego County, California, Department of Public Works, October 1980).
Forester Creek	The construction of Interstate 8 through the City of El Cajon has created a major hindrance to large flows on County Ditch Creek and Washington Creek. The combined 0.2-percent annual chance flood from these streams will pond to as much as 7 feet deep upstream from the freeway and overtop it in the vicinity of Washington Creek. Forester Creek's 0.2-percent annual chance flood would also be hindered from entering the channel, and the excess will flow west along the south side of the freeway from Main Street to the ponding area of Washington Creek as it crosses the freeway to join Forester Creek west of Magnolia Avenue.
Henderson Canyon	During the storm of August 15-17, 1977, severe flooding occurred on Montezuma Road, where water from Henderson Canyon emerges onto an alluvial fan and the stream patterns are continually shifting down the fan. For many years, the flow has been primarily to the east, with perhaps 10 percent flowing south toward Montezuma Road. This flood changed the main course of the flow toward the south and, therefore, caused heavy flooding in the Montezuma Road area (San Diego County, California, August 1977).
Las Chollas Creek	Many of the flooding problems in the developed areas are caused by the flow breaking out of the channel at road crossings due to inadequate conveyance structures and debris buildup on the pier walls. Debris accumulation is a particular problem in the upstream reaches where open brush is the predominant ground cover.
Murray Canyon Creek	Flooding problems along Murray Canyon Creek are relatively minor. The 1-percent annual chance floodwaters pond behind Friars Road to a depth of 15 feet Floodwaters back up behind Frazee Road bridge at a depth of 8 feet for the 1-percent annual chance flood.
Nestor Creek	Nestor Creek flows through a highly urbanized area. The majority of the less-frequent flood flows are conveyed in the over bank areas, causing considerable inundation of the development within the floodplain. Flood flows on Nestor Creek are significantly restricted at two locations by embankments. One restriction, located 1.7 stream miles above the confluence of Nestor Creek with Otay River, is Interstate Highway 5. The other restriction, located 2.1 stream miles above the confluence, is the San Diego and Arizona Eastern Railroad. Neither of these embankments was designed as a floodwater- retarding structure, but they function as such due to low-capacity culverts. All runoff from the drainage basin above the freeway enters a retarding pool

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
Nestor Creek, continued	above the freeway embankment. Water leaves the pool in three directions: (1) through culverts under the freeway; (2) over the center barrier wall of the freeway; and (3) along the freeway alignment. Water crossing over the center barrier wall and under the freeway through the culverts remains within the Nestor Creek drainage basin and continues downstream in Nestor Creek. Flow along the alignment of the freeway is diverted from the Nestor Creek drainage basin northerly to Otay River. The restriction at the railroad also causes a pool to develop upstream. The storage volume of the pool is adequate to contain the 10-, 2-, and 1-percent annual chance floods. Overtopping of the railroad occurs during the 0.2-percent annual chance flood. The low-lying lands adjacent to Hollister Street are subject to flooding from both the Tijuana River and Nestor Creek. Flooding is experienced in the area when water-surface elevations in Nestor Creek or the Tijuana River exceed certain elevations. This overflow area diverts water from the Tijuana River into the Nestor Creek during the less-frequent floods, and diverts water from Nestor Creek into the Tijuana River during the more-frequent floods. The overflow area is referred to as Sunrise Overflow. Diversion of water from Nestor Creek to Tijuana River occurs during the 10-, 2-, and 1-percent annual chance events. The direction of flow in the overflow area is southerly during these floods. The quantity diverted is a significant portion of the Nestor creek runoff, and peak flow rates downstream of the overflow area are reduced accordingly. Diversion of floodwaters from the Tijuana River to Nestor Creek occurs during the 0.2-percent annual chance event. The direction of flow in the overflow area is northerly during this frequency flood. The quantity of water diverted is insignificant in comparison to the magnitude of the Tijuana River, but it significantly increases the peak flow rate downstream of the-overflow area in Nestor Creek. The 1978 completion of the Sunrise residential development, at the confluence of the overflow area and Tijuana River, has significantly affected flood flow characteristics in the overflow area. The grading that has taken place elevates the development above the 1-percent annual chance flood elevation for Tijuana River, partially blocking the path of flow entering the overflow area. Consequently, this development has reduced the potential for flooding on Nestor Creek due to floodwater diverted from the Tijuana River by the overflow area. Documentation of historical flooding problems on Nestor Creek downstream of the overflow area from the Tijuana River is based on the conditions that existed prior to completion of the Sunrise development. Historically, the flooding problems have been attributed to floodwaters that overflowed from the Tijuana River. Flooding problems along the reach of Nestor Creek, upstream of the overflow area, are caused by runoff from the Nestor Creek drainage basin only. Flooding of a condominium development upstream of the freeway occurs frequently. Flood flows washed out the Union Pacific Railroad bridge over Nestor Creek in 1937. The present embankment was constructed as a replacement for the washed-out railroad bridge.

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
North Branch Poway Creek	Floodwaters from North Branch Poway Creek in the north-south channel east of Park Poway will exceed the channel capacity, overflowing the west bank and flow between the houses on the east side of Acton Street. These flows into Acton Street will continue to Saco and Kittery Streets.
Otay River	There are no major flooding problems on Otay River. Some areas downstream of Broadway Avenue will be inundated by the 1-percent annual chance flood. A large flood on the Otay River will divide in such a way that the greater portion of the water will flow almost uniformly over the Southern Pacific Railroad embankment, travel 150 feet, and then flow over the perimeter dike into the salt evaporation ponds at the southern end of San Diego Bay. Once the floodwaters pass over the perimeter dike and encounter the asymmetrical maze of interior dikes, weir flow will occur in several directions simultaneously before ultimately flowing back over the dike and into the bay. The smaller portion of the floodwaters will be conveyed the last 2 miles to the San Diego Bay by a partially improved, limited-capacity, soft-bottom channel.
Pacific Ocean	The southern California coastline is exposed to waves generated by winter and summer storms originating in the Pacific Ocean. It is not uncommon for these storms to cause 15-foot breakers. The occurrence of such a storm event, in combination with high astronomical tides and strong winds, can cause a significant wave run-up and allow storm waves to effect higher-than-normal elevations along the coastline. When this occurs, shoreline erosion and coastal flooding frequently result in damage to inadequately protected structures and facilities located along low-lying portions of the shoreline.
Paradise Creek	Many of the flooding problems in the developed areas are caused by the flow breaking out of the channel at road crossings due to inadequate conveyance structures and debris buildup on the pier walls. Debris accumulation is a particular problem in the upstream reaches where open brush is the predominant ground cover. There is no major flood problem from Paradise Creek itself in the City of National City. Minor floods are expected at River Mile 3.6 on Paradise Creek when floods of 1-percent annual chance or greater recurrence intervals occur. The excess water is expected to flow north along the Old Paradise Creek course and rejoin the main flow at River Mile 2.47. Major flooding problems along Paradise Creek occur, however, when the floodwater from the Sweetwater River flows into Paradise Creek. This can occur in two ways: one is by backing up through the Interstate Highway 5 culvert along Paradise Creek; the other is by backing up from the ditch along the Southern Pacific Railroad near West 30th Street. During periods of major flows, the capacity of the Paradise Creek diversion channel will be exceeded. This will result in an area of shallow sheet flow in the vicinity of Las Palmas Park. Between Interstate Highway 5 and the confluence with the Sweetwater River, there is a swampy area that the City of National City has no intention of developing.

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
Poway Creek	The areas south of Oak Knoll Road north and northwest of the confluence will be inundated by the 1-percent annual chance flood. The south overbank areas immediately downstream of Community Road are subject to sheetflow by the 1-percent annual chance natural flood. A 1-percent annual chance flood exceeds the capacity of the culvert at Gate Drive, the approach channel, and the natural channel upstream of it. Overflows are conveyed through the subdivision by Woodgate Place, Gate Drive, and Fairgate Drive. Some areas in the Garden City and Park Poway Subdivisions are inside the 1-percent annual chance flood boundary. These areas are ponded or with low velocity backwater. At the northeast corner of Park Poway Subdivision, minor amounts of flow from North Branch Poway Creek that do not enter the north-south channel at the eastern boundary may flow west on Garden Road, south on Acton Avenue, west on Biddeford and Saco Streets, and finally rejoin the main flow.
Rattlesnake Creek	Backwater at the entrance to the concrete-lined channel on the north side of Heritage Hills Unit 4 Subdivision causes1-percent annual chance floodflow to split and travel down the east overbank through open fields, and over parking lots, streets, earth fill (at time of study) storage yards, grass-covered lots. The culvert at Poway road is not capable of carrying the 1-percent annual chance floodflow. This contributes to overbank flow upstream and downstream of Poway Road. Houses south of the channel will be flooded during the 1-percent annual chance storm, because of the inadequate drainage facility at Tierra Bonita Road. The Pomerado Road Bridge is inadequate to convey the 1-percent annual chance flow. The head needed to press the flow through the bridge will cause overflow to the north bank and flood a few houses. Several homes in Valle Verde Estates downstream of Avenida Del Norte lie within the 1-percent annual chance floodplain. The triple 6 x 3 foot reinforced box culvert is unable to convey the 1-percent annual chance discharge of 2,300 cfs, causing a backup on the north overbank also.
Reidy Creek	Shallow flooding for the 0.2-percent annual chance event results from limited channel capacity on Reidy Creek downstream of Lincoln Avenue in the City of Escondido.
Rose Canyon Creek/Rose Inlet	The 0.2-percent annual chance flood on Rose Canyon Creek breaks out of the channel at two locations. The first breakout occurs upstream of the Interstate Highway 5 bridge; the second breakout occurs at the Mission Bay Drive bridge. Approximately 12,000 cfs breaks out at both locations and flows southerly from the Mission Bay Drive bridge through urbanized areas and into Mission Bay.

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
San Luis Rey River	During the 1977-1978 winter season, several floods occurred on the San Luis Rey River. Erosion and sedimentation occurred in many places, washing out or silting many areas and closing dip section road crossings. The Pauma Valley Country Club experienced major disruptions as a result of water and silt problems. Approximately 40,000 cubic yards of sediment was deposited in the golf course area and expenditures of approximately $30,000 were required because of the flooding problems.
Santa Maria Creek	Santa Maria Creek flows intermittently; only during periods of heavy rainfall is there any substantial flow. During heavy storms, the creek and its several tributaries are subject to overflow, inundating adjoining properties. As the community of Ramona continues to grow, the overflows will result in greater losses of property. The most serious flood problem in Ramona is caused by a shallow swale, which carries runoff from the low hills at the east end of the town through the central residential section to a southeasterly tributary of Santa Maria Creek. A moderately heavy storm will inundate the streets and homes in the vicinity of this swale. In the San Pasqual Valley, Santa Maria Creek would inundate at least one Fenton Ranch structure in a 1-percent annual chance storm. The embankment where Monument Road crosses the San Pasqual Valley, 6.3 miles upstream of the Interstate 15 bridges, washes out in small (less than 10-percent annual chance) floods at the crossing of both Santa Ysabel and Santa Maria Creeks. The peak flow passing the San Pasqual gage on Santa Ysabel Creek upstream of the San Pasqual Valley was 12,500 cubic feet per second (cfs), a flow with a 0.04 exceedance frequency, corresponding to a 2.5-percent annual chance event. Flow in the San Pasqual Valley was augmented by the overtopping and failure of an earthen dam in Bandy Canyon on Santa Maria Creek. The resulting flow washed out the bridge carrying Bandy Canyon Road across Santa Maria Creek and extensively flooded the valley downstream.
Santa Ysabel Creek	The embankment where Monument Road crosses the San Pasqual Valley, 6.3 miles upstream of the Interstate 15 bridges, washes out in small (less than 10-percent annual chance) floods at the crossing of both Santa Ysabel and Santa Maria Creeks. The peak flow passing the San Pasqual gage on Santa Ysabel Creek upstream of the San Pasqual Valley was 12,500 cubic feet per second (cfs), a flow with a 0.04 exceedance frequency, corresponding to a 2.5-percent annual chance event. Flow in the San Pasqual Valley was augmented by the overtopping and failure of an earthen dam in Bandy Canyon on Santa Maria Creek. The resulting flow washed out the bridge carrying Bandy Canyon Road across Santa Maria Creek and extensively flooded the valley downstream.

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
South Las Chollas Creek	During the 1969 floods, damage occurred on South Las Chollas Creek in the lower reaches when the channel banks collapsed in the vicinity of Oceanview Boulevard crossing. No homes were damaged. The Jackie Robinson YMCA on South Las Chollas Creek suffered damage to its playfield and pool when the flow exceeded the natural channel capacity, which is estimated to be less than the 10-percent annual chance flood. The flow was estimated to be approximately the 10-percent annual chance flood. Flooding also occurred in 1978 and 1979, resulting in extensive damage. Many of the flooding problems in the developed areas are caused by the flow breaking out of the channel at road crossings due to inadequate conveyance structures and debris buildup on the pier walls. Debris accumulation is a particular problem in the upstream reaches where open brush is the predominant ground cover.
Spring Valley Creek	Limited culvert capacity on Spring Valley Creek exists at Quarry Road, Sweetwater Road near Jamacha Boulevard, and at Jamacha Road north of Spring Valley Estates. The channel between Lamar Street and Sweetwater Road does not convey the 1-percent annual chance flood. Between Spring Place and Bancroft Drive, the channel is rock-lined and crossed by many bridges that reduce the flow area of the channel by more than 50 percent. The City of Lemon Grove is affected by flood hazards along Spring Valley Creek. In addition, flooding occurs on Federal Boulevard when there is extended heavy rain.
Sweetwater River	The major cause of flooding along Sweetwater River is long-duration, high-intensity storms. Large floods occurred in the Sweetwater River drainage area in 1825, 1862, 1884, 1916, 1927, and 1937. According to the inhabitants of the area, the flood of 1862 was said to have been the most severe. The 1916 flood caused the wing dike on the right abutment of Sweetwater Dam, which was built in 1888, to fail. The flood of 1927 was almost as large as the 1916 flood.
Tecolote Creek	Both over banks along the concrete channel on Tecolote Creek are subject to 1-percent annual chance flooding because high-flow velocities in the channel may cause erosion to the unprotected earthen banks. Additional flood problems are caused by water ponding upstream of Weeks Avenue and Morena Boulevard. The concrete ditch upstream of Diane Avenue can convey low flows. During major floods, the culverts at Verley Court and Derrick Drive cannot pass the floodwaters, which results in a breakout along Chateau Drive.
Telegraph Canyon Creek	There are no historical records of flooding along Telegraph Canyon Creek; however, in 1968, the Harbor Side-Castle Park area in the City of Chula Vista experienced considerable flooding. A serious flood problem exists along the lower one-third of Telegraph Canyon Creek, where residential, commercial, and industrial development would be inundated. Approximately 82 percent of the floodplain along the lower one-third of the creek is presently developed for urban uses, with residential usage occupying more than half of the urban area. In the vicinity of Mission Valley Shopping Center, approximately 30 percent (12,000 cfs) of the 1-percent annual chance

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
Telegraph Canyon Creek, continued	discharge on San Diego River breaks out of the channel and causes shallow flooding at the shopping center. Shallow flooding also occurs at the Town and Country Hotel area downstream of Fashion Valley Road.
Tijuana River	Historically, the Tijuana River valley has been subjected to many severe floods. A storm in 1825 caused severe flooding, and a flood in 1862 was reported to have been the largest flood in the memory of inhabitants at that time. No quantitative records are available for floods prior to 1877. Medium-to-large floods occurred in the drainage area in 1889, 1891, 1895, 1906, 1916, 1921, 1937, 1938, 1941, 1944, and 1980. The greatest rate of runoff in the lower valley measured by gages was 33,500 cfs, which occurred during the February 1980 flood. The most severe flood occurred in 1916, when the flow was estimated at 75,000 cfs. Flood flow rates of 17,000 cfs and 75,000 cfs correspond to 10- and 1-percent annual chance flood flows, respectively. The USACE estimates the in-bank capacity of the natural channel in the Tijuana River valley to be approximately 1,500 cfs. Comparison of this estimated channel capacity with the magnitude of the 10- percent annual chance flood of 17,000 cfs indicates that substantial flooding and damages can be expected frequently in the valley. Damage will include physical damage to structures and improvements, business losses, and interruption of home life and other normal community activities. The February 21, 1980, flood had a discharge of 33,500 cfs, a 2.5- percent annual chance event. It washed out bridges at 19th Street and Dairy Mart Road and changed the river alignment. The low-lying lands adjacent to Hollister Street are subject to flooding from both the Tijuana River and Nestor Creek. Flooding is experienced in the area when water-surface elevations in Nestor Creek or the Tijuana River exceed certain elevations. This overflow area diverts water from the Tijuana River into the Nestor Creek during the less-frequent floods, and diverts water from Nestor Creek into the Tijuana River during the more-frequent floods. The overflow area is referred to as Sunrise Overflow. Diversion of water from Nestor Creek to Tijuana River occurs during the 10-, 2-, and 1-percent annual chance events. The direction of flow in the overflow area is southerly during these floods. The quantity diverted is a significant portion of the Nestor creek runoff, and peak flow rates downstream of the overflow area are reduced accordingly. Diversion of floodwaters from the Tijuana River to Nestor Creek occurs during the 0.2-percent annual chance event. The direction of flow in the overflow area is northerly during this frequency flood. The quantity of water diverted is insignificant in comparison to the magnitude of the Tijuana River, but it significantly increases the peak flow rate downstream of the-overflow area in Nestor Creek. The 1978 completion of the Sunrise residential development, at the confluence of the overflow area and Tijuana River, has significantly affected flood flow characteristics in the overflow area. The grading that has taken place elevates the development above the 1-percent annual chance flood elevation for Tijuana River, partially blocking the path of flow entering the overflow area. Consequently, this development has reduced the potential for

Table 6: Principal Flood Problems, continued

Flooding Source	Description of Flood Problems
Tijuana River, continued	flooding on Nestor Creek due to floodwater diverted from the Tijuana River by the overflow area. Documentation of historical flooding problems on Nestor Creek downstream of the overflow area from the Tijuana River is based on the conditions that existed prior to completion of the Sunrise development. Historically, the flooding problems have been attributed to floodwaters that overflowed from the Tijuana River.

Table 7 contains information about historic flood elevations in the communities within San Diego County.

Table 7: Historic Flooding Elevations

[Not Applicable to this Flood Risk Project]

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within San Diego County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Alvarado Creek	N/A	Improved channel	Approximately 65 feet upstream of Fairmount Avenue to approximately 2,330 feet upstream	Improved channel.
Alvarado Creek	N/A	Improved channel	Just downstream of Mission Gorge Place to approximately 420 feet upstream	Improved channel.
Agua Hedionda Creek	N/A	Flood wall	El Camino Real/County Highway S11	Control structure.
Barrett Lake	Barrett Dam	Dam	At Barrett Lake and San Diego City Conduit	Dam.
Broadway Creek	N/A	Concrete channel	Just west of Victor Street to Oro Street	Reinforced concrete trapezoidal channel.
Buena Creek	N/A	Dam	Approximately 830 feet upstream of Atchinson Topeka and Santa Fe Railroad	Private dam.
Buena Creek	N/A	Trapezoidal channel	Approximately 500 feet downstream of State Highway 78	Trapezoidal channel approximately 600 feet in length, has the capacity to carry the 1-percent annual chance flood.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Buena Vista Creek	N/A	Concrete-lined channel	0.2 mile upstream of Thunder Drive	Concrete-lined channel, however the channel does not have the capacity to carry the 1-percent annual chance flood.
Buena Vista Creek	N/A	Trapezoidal channel	400-feet upstream of State Highway 78 and extends approximately 5,400 feet upstream	A concrete-lined NRCS trapezoidal channel. Generally, this channel does not have the capacity to contain the 1-percent annual chance flood flows.
Calavera Creek	N/A	Flood wall	El Camino Real/County Highway S11 to approximately 3,780 feet upstream	Control structure
Cannel Valley Creek	N/A	Channel improvements	Downstream of Interstate Highway 5 to Shaw Valley Road	Channel improvements have been proposed.
Carmel Valley Creek	N/A	Channel improvements	Shaw Valley Road to 1 mile upstream of Shaw Valley Road	Channel improvements are in progress or are planned.
Chollas Reservoir Branch	N/A	Dam	Chollas Reservoir	Dam
County Ditch Creek	N/A	Conduit	Confluence with Forester Creek to the upstream side of Interstate 8	Reinforced concrete box conduit.
County Ditch Creek	N/A	Concrete channel	From the freeway to east of Johnson Avenue, and Main Street to Washington Avenue	Reinforced concrete trapezoidal channel.
Dixon Lake	Dixion Reservoir Dam	Dam	On Dixon Lake near the Escondido Water Treatment Plant	Dam

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Escondido Creek	N/A	Channel improvement	1,300 feet upstream of Rose Street to 1,300 feet upstream of Harmony Grove Road	Flood control channel has been improved to contain the 1-percent annual chance flood.
Escondido Creek	N/A	Channel improvement	El Norte Parkway to a point 1,300 feet upstream of Harmony Grove road	Improved flood control channel that has the capacity to contain a 1-percent annual chance food.
Forester Creek	N/A	Conduit improvement	Fletcher Parkway to the extension of Petree Street, and from Arnelle Avenue to Johnson Avenue	Reinforced concrete box conduit.
Forester Creek	N/A	Channel improvement	Bradley Avenue to Pletcher Parkway, and from Johnson Street to the upstream corporate limits	Reinforced concrete trapezoidal channel.
Forester Creek	N/A	Channel improvement	From it's confluence with the San Diego River to just downstream of Prospect Avenue	Flood-protection improvements provide 1-percent annual chance flood protection with the City of Santee. The project is documented as a LOMR issued to the City of Santee on December 24, 2008.
Green Valley Creek	N/A	Dam	Approximately 1,950 feet upstream of Orchard Bend Road	Dam
Las Posas Creek	N/A	Improved channel	From its confluence with San Marcos Creek to approximately 600 feet downstream of Linda Vista Drive	Improved channel

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Las Posas Creek	N/A	Box culvert	Approximately 600 feet downstream of Linda Vista Drive to Grand Avenue	Reinforced box culvert.
Las Posas Creek	N/A	Siltation basin	Intersection of Las Posas Road and Avenida Azul	A siltation basin was completed in 1989. This facility has an insignificant effect on the peak flow rates.
Las Posas Creek	N/A	Improved channel and storm drain	Upstream of the intersection of Las Posas Road and Avenida Azul	Underground storm drain system in series with an improved channel.
Los Penasquitos Creek	Chambers Dam	Dam	Upstream of Interstate Highway 5	This structure does not affect the magnitude of the 1- or 0.2-percent annual chance flood discharges.
Murphy Canyon Creek	N/A	Channel improvements	Upstream of Friars Road	There is an approximately 300-foot long concrete trapezoidal channel downstream of a 1,900-foot long double, 8- by 14-foot reinforced concrete box culvert. Upstream of the double box culvert, there is an additional 600 feet of concrete-lined trapezoidal channel. This lined channel/box culvert structure will fully contain the 10- and 2-percent annual chance flood flows and will contain a major portion of the 1- and 0.2-percent annual chance flood flows.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Murphy Canyon Creek	N/A	Corrugated metal pipe culvert	Interstate Highway 5 crossing	This corrugated metal pipe culvert restricts the flood flow, thereby causing the upstream valley to act as a detention pond. This detention pond greatly reduces the peak flows downstream, and is wholly contained within the Miramar Naval Air Station.
Murray Creek	N/A	Dam	Murray Reservoir	Dam
Nestor Creek	N/A	Concrete box culvert	Downstream of Bayer Way	A 10- by 5-foot reinforced concrete box culvert, constructed within the industrial park, decreases the extent of flooding in the vicinity of the park from the flows on Nestor Creek. The culvert will fully contain the 10- and 2-percent annual chance flood flows, and will contain a significant portion of the 1- and 0.2-percent annual chance flood flows.
Otay River	Lower Otay Dam (Savage Dam)	Dam	Lower Otay Reservoir, just upstream of Wueste Road	Provides incidental flood protection, although its main purpose is to provide water storage.
Pacific Ocean	N/A	Breakwaters and seawalls	Various locations along San Diego County coastline	These structures are designed to absorb the impact of wave forces, and provide protection against excessive beach and berm erosion.
Pacific Ocean	N/A	Seawall	Along Stran Way on Mission Beach	May serve as a flood protection measure.
Pacific Ocean	N/A	Submerged breakwater	Imperial Beach	May serve as a flood protection measure.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Pacific Ocean	N/A	Jetties	City of Coronado	A submerged jetty located south of Zuniga Point on North Island and two jetties are located by Hotel del Coronado.
Pacific Ocean	N/A	Seawall	Hotel del Coronado	A seawall was constructed to protect the shore from storm surge and wave erosion. A massive rock seawall.
Pacific Ocean	N/A	Seawall	Extends one mile along Ocean Avenue	Massive rock seawall constructed by the City of Coronado.
Pacific Ocean	N/A	Bulkhead	Silver Strand	Five miles of bulkhead at an elevation of eight feet above mean higher high water protects the Coronado Cays residential development.
Poggi Canyon Creek	N/A	Concrete-lined channel	N/A	Improvement project that local interests have conducted to reduced flood damage.
Poway Creek	N/A	Drainage channels	Various locations	There are manmade drainage channels through Ridgedale, Tustin Hills, and Casa Real Poway upstream of Pomerado Road. The drainage channels in Westgate, Garden City, and Park Poway are not sufficient to carry the 1-percent annual chance flood.
Rattlesnake Creek	N/A	Drainage channel	East of Russ Estates	It is not adequate to contain the 1-percent annual chance flood.
Rattlesnake Creek	N/A	Concrete channel	Through Heritage	The concrete channel through Heritage is capable of conveying the 1-percent annual chance flow.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Rattlesnake Creek	N/A	Concrete box culvert	Under Poway Road	Triple box concrete culvert under Poway Road is not capable of conveying the 1-percent annual chance flood.
Reidy Creek	N/A	Channel improvement	Downstream of Lincoln Avenue	Channel has been improved to contain the 1-percent annual chance flood event.
Rice Canyon Creek	N/A	Culvert	N/A	Long culvert that local interests have conducted to reduce flood damage.
Rose Canyon Creek	N/A	Concrete channel	Under the Interstate Highway 5-State Highway 52 interchange and between mile 3.78 and 4.06	Approximately 700 feet of trapezoidal concrete channel under the Interstate Highway 5-State Highway 52 interchange and approximately 1,500 feet of trapezoidal concrete channel between mile 3.78 and mile 4.06.
Rose Canyon Creek	N/A	Rock slope	Interstate Highway 805	Approximately 500 feet of rock slope protection.
Rose Canyon Creek	N/A	Rock-revetted channel	Downstream of Genesee Avenue crossing	The City of San Diego has constructed and maintains 250 feet of rock-revetted channel.
Rose Canyon Creek	N/A	Rock-revetted channel	Regents Road crossing	Rock-revetted channel improvement (U.S. Department of the Army, July 1970).
San Dieguito River	N/A	Dam	Lake Hodges	The dam provides incidental flood protection, although its main purpose is to provide water storage.
San Luis Rey River	N/A	Channel with riprap	Interstate Highway 15 bridge	Approximately 2,000 feet of channel with an unlined bottom and riprap bank protection.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
San Luis Rey River	N/A	Stone groin and rock revetment	From the mouth of the San Luis Rey River to the Pacific Ocean	The 2,000-foot long rock revetment extends along the northern riverbank from the beach to approximately 500 feet upstream of a railroad bridge. The southern riverbank is protected with rock revetment from the railroad bridge to the Pacific Ocean.
San Luis Rey River	N/A	Stone revetment	Upstream of Douglas Drive bridge	Stone revetments have been placed along the northern riverbank upstream of the Douglas Drive bridge to provide 1-percent annual chance flood protection.
San Luis Rey River	N/A	Stone revetment	Upstream of the Murray Road bridge	Stone revetments have been placed along the southern riverbank upstream of the Murray Road bridge to provide 1-percent annual chance flood protection.
San Marcos Creek	N/A	Earthen channel	Southwestern corporate limits	An improved earthen channel had been constructed to control flow.
San Marcos Creek	N/A	Culvert	Woodland Parkway	The Woodland Parkway culvert, approximately 3,485 feet in length, contains the entire 1-percent annual chance flood discharge.
Santa Maria Creek	N/A	Channel improvement	From the confluence with Santa Ysabel Creek to Monument Road	The channel is designed as a 250- by 8-foot trapezoidal channel, with armored sides on the 300-foot long reach downstream of the road. The channel will contain the 10-percent annual chance flood.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Santa Ysabel Creek	N/A	Dam	Sutherland Reservoir	The dam provides incidental flood protection, although its main purpose is to provide water storage.
Santa Ysabel Creek	N/A	Channel improvements	San Pasqual Valley	A 300- by 8-foot channel begins 4.0 miles upstream of the Interstate 15 bridge and ends 400 feet downstream of Monument Road, where a 400-foot wide channel with armored sides continues to the road, a total distance of 2.3 miles. The upper 2.1 miles of this improved channel will contain the 10-percent annual chance flood.
Santa Ysabel Creek (continued)	N/A	Channel improvements	San Pasqual Valley	Beginning 1,200 feet upstream of Monument Road, 0.8 mile of a 300- by 5-foot channel is designed to contain the 10-percent annual chance flood. None of the improved sections will contain the 2-percent annual chance or larger floods.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Sweetwater River	N/A	Rock-lined channel	Bonita Mesa Road to Interstate Highway 805	The Bonita Plaza (Rick Engineering Company, November 1974) is considered in this study. The project includes a proposed rock-lined channel from Bonita Mesa Road to Interstate Highway 805. The channel will tie to the proposed USACE Sweetwater River flood control channel, and will have all of the design dimensions except depth of invert. Thus, the 1-percent annual chance flood will overtop the channel and inundate the parking lot of the plaza. Then the USACE project is constructed, the channel will be deepen and the 0.2-percent annual chance flood will be contained within the channel banks.
Sweetwater River	Sweetwater Reservoir	Reservoir	River Mile 9	Privately owned water-conservation reservoir completed in 1888. It was breached by the 1916 flood and rebuilt shortly thereafter.
Sweetwater River	Loveland Reservoir	Reservoir	River Mile 28	Privately owned water-conservation reservoir that was completed in 1945.
Sweetwater River	Sweetwater Falls Dam	Dam	Loveland Reservoir	Dam.
Sweetwater River	N/A	Sandbag dike	Along Interstate Highway 5, the ditch, and the Southern Pacific Railway	The sandbagging is intended to divert the floodwaters west across Interstate highway 5 and then back into the Sweetwater River.

Table 8: Non-Levee Flood Protection Measures, continued

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Sweetwater River	Sweetwater River Flood Control Channel	Channel	Entire reach of Sweetwater River within National City	USACE flood-control channel designed to handle the 0.2-percent annual chance flood.
Sycamore Creek	N/A	Dam	Lake Poway	Dam
Tijuana River	N/A	Channel	N/A	Approximately 0.5 mile of trapezoidal concrete channel.
Twin Oaks Valley Creek	N/A	Modifications	Approximately 2,950 feet upstream of Mission Road to approximately 5,750 feet upstream of La Cienega Road	As a result of these modifications, which include the construction of eight drop structures along the creek, the 1-percent annual chance floodplain is confined within the Twin Oaks Valley Ranch golf Course.
Unnamed Stream	Henry Jr. Dam	Dam	Upstream of Skye Valley Road/Forest Route 17504	Dam
Unnamed Stream	Mary Jo Dam	Dam	Approximately 4,500 feet upstream of Skye Valley Road/Forest Route 17504	Dam
Witch Creek	N/A	Dam	Upstream of Slaughterhouse Road	Dam

4.4 Levees

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 risk from the 1% 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 FIRM flood zone.

Levee systems that are determined to reduce the risk from the 1% 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 Section 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's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3 and in Table 9. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system not longer meets Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

FEMA coordinates its programs with USACE, who may inspect, maintain, and repair levee systems. The USACE has authority under Public Law 84-99 to supplement local efforts to repair flood control projects that are damaged by floods. Like FEMA, the USACE provides a program to allow public sponsors or operators to address levee system maintenance deficiencies. Failure to do so within the required timeframe results in the levee system being placed in an inactive status in the USACE Rehabilitation and Inspection Program. Levee systems in an inactive status are ineligible for rehabilitation assistance under Public Law 84-99.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within San Diego County. Table 9, "Levees," lists all accredited levees, PALs, and de-accredited levees 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. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 9 is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE national levee database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 31.

Table 9: Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
Carlsbad, City of	Agua Hedionda Creek (At City of Carlsbad)	*	*	No	37	*	06073C0768G
Carlsbad, City of; Oceanside, City of	Buena Vista Creek	Left Bank	*	No	A2	*	06073C0766G
Chula Vista, City of	Telegraph Canyon Creek	*	*	No	26	*	06073C2152G
Chula Vista, City of	Telegraph Canyon Creek	*	*	No	27	*	06073C2152G
Chula Vista, City of	San Diego Bay	Right Bank	City of Chula Vista	No	23	*	06073C2151G
Chula Vista, City of; National City, City of	Nestor Creek	Left Bank	City of San Diego	No	28	*	06073C2153H
Chula Vista, City of; National City, City of; San Diego County, Unincorporated Areas	Sweetwater River	Right and Left Banks	San Diego County	Yes	36	*	06073C1912G 06073C1913H 06073C1914G
Coronado, City of; San Diego, City of	Otay River	*	*	No	24	*	06073C2151G 06073C2153H
Escondido, City of; San Diego County, Unincorporated Areas	Escondido Creek	*	*	No	A1	*	06073C1076G
Imperial Beach, City of	Tijuana Slough	*	*	*	*	*	06073C2134H 06073C2153H
Oceanside, City of[1]	San Luis Rey River	*	*	No	1	*	06073C0469G

Table 9: Levees, continued

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
Poway, City of[1]	North Branch Poway Creek	*	*	No	5	*	06073C1359G
San Diego, City of[1]	Arroyo Drive Tributary	*	*	No	16	*	06073C1881H
San Diego, City of[2]	Encanto Branch		*	No	20	*	06073C1904G 06073C1908G
San Diego, City of[2]	Encanto Branch	*	*	No	34	*	06073C1908G
San Diego, City of[2]	Las Chollas Creek	*	*	No	17	*	06073C1903H
San Diego, City of[2]	Nestor Creek	*	*	No	29	*	06073C2154J
San Diego, City of[2]	Rose Canyon Creek	*	*	No	8	*	06073C1601G 06073C1603G
San Diego, City of[2]	Rose Canyon Creek	*	*	No	9	*	06073C1603G
San Diego, City of[2]	Rose Canyon Creek	*	*	No	10	*	06073C1603G
San Diego, City of[2]	Rose Canyon Creek	*	*	No	33	*	06073C1601G
San Diego, City of	San Diego River	Left Bank	City of San Diego	Yes	7	*	06073C1594H 06073C1613H 06073C1614H
San Diego, City of	San Diego River	Right Bank	City of San Diego	No	11	*	06073C1618G 06073C1619G

Table 9: Levees, continued

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
San Diego, City of	San Diego River	Left Bank	City of San Diego	No	12	*	06073C1618G 06073C1619G
San Diego, City of	San Diego River	Right Bank	City of San Diego	No	13	*	06073C1619G
San Diego, City of	Tijuana River	Right Bank	IBWC	Yes	30	*	06073C2166G
San Diego, City of	Tijuana River	Left Bank	IBWC	Yes	31	*	06073C2162G 06073C2166G
San Diego County, Unincorporated Areas	Mexican Canyon Creek	*	*	No	22	*	06073C1932G
San Diego, City of; San Diego County, Unincorporated Areas	Santa Ysabel Creek	Left Bank	*	*	*	*	06073C1103H 06073C1104H
San Diego, City of; San Diego County, Unincorporated Areas	Santa Ysabel Creek	Right Bank	*	*	*	*	06073C1103H 06073C1104H

*Data not available

[1]Road embankment

[2]Railroad embankment