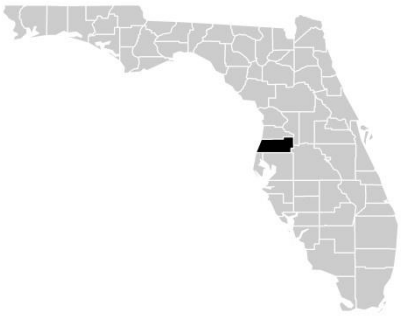
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 4



PASCO COUNTY, FLORIDA

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
DADE CITY, CITY OF	120231
NEW PORT RICHEY, CITY OF	120232
PASCO COUNTY, UNINCORPORATED AREAS	120230
PORT RICHEY, CITY OF	120234
SAN ANTONIO, CITY OF	120634
ST. LEO, TOWN OF	120166
ZEPHYRHILLS, CITY OF	120235

FEMA

REVISED:

JUNE 5, 2020

FLOOD INSURANCE STUDY NUMBER
12101CV001B

Version Number 2.4.3.2

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Exhibits

Flood Profiles	Panel
Anclote River	01 P
Bear Creek	02 P
Buckhorn Creek	03 P
Fivemile Creek	04 P
Hillsborough River	05 P
Pithlachascotee River	06-07 P
Tributary No. 1	08 P
Tributary No. 2	09 P
Tributary No. 5	10 P
Tributary No. 6	11 P
Tributary No. 9	12 P
Tributary No. 11	13 P
Tributary No. 12	14 P
Tributary No. 13	15 P
Tributary No. 14	16 P
Tributary No. 15	17 P
Tributary No. 16	18 P
Tributary No. 25	19 P
Withlacoochee River	20 P

Transect Profiles	Panel
Transect 1	01-03 T
Transect 2	04-06 T
Transect 3	07-09 T
Transect 4	10-11 T
Transect 5	12-14 T
Transect 6	15-17 T

Transect 7	18-20 T
Transect 8	21-23 T
Transect 9	24-26 T
Transect 10	27-29 T
Transect 11	30-32 T
Transect 12	33-35 T
Transect 13	36-38 T
Transect 14	39-41 T
Transect 15	42-44 T
Transect 16	45-47 T
Transect 17	48-50 T
Transect 18	51-53 T
Transect 19	54-56 T
Transect 20	57-59 T
Transect 21	60-62 T
Transect 22	63-64 T
Transect 23	65-67 T
Transect 24	68-70 T

Volume 3 – June 5, 2020

Exhibits

Transect Profiles	Panel
Transect 25	71-73 T
Transect 26	74-76 T
Transect 27	77-79 T
Transect 28	80-82 T
Transect 29	83-85 T
Transect 30	86-87 T
Transect 31	88-89 T
Transect 32	90-91 T
Transect 33	92-93 T
Transect 34	94-96 T
Transect 35	97-99 T
Transect 36	100-101 T
Transect 37	102-103 T
Transect 38	104-105 T
Transect 39	106-107 T
Transect 40	108-109 T
Transect 41	110-111 T
Transect 42	112-113 T
Transect 43	114-115 T
Transect 44	116-117 T
Transect 45	118 T
Transect 46	119-120 T
Transect 47	121 T
Transect 48	122 T

Appendix A

Nodes Table — Anclote River Watershed
Cypress Creek Watershed
East Pasco Watershed

Volume 4 – June 5, 2020

Appendix A (continued)

Nodes Table — Anclote River Watershed
Cypress Creek Watershed
East Pasco Watershed
Trout Creek Watershed

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
PASCO COUNTY, FLORIDA

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

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

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

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

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

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

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

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

1.2 Purpose of this Flood Insurance Study Report

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

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

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Pasco County, Florida.

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

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Dade City, City of	120231	03100205, 03100208	12101C0115F 12101C0120F 12101C0280F 12101C0285F	
New Port Richey, City of	120232	03100207	12101C0188G 12101C0189G 12101C0351G 12101C0352G	
Pasco County, Unincorporated Areas	120230	03100205, 03100206, 03100207, 03100208	12101C0015G 12101C0016G 12101C0017G	

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
Pasco County, Unincorporated Areas (continued)	120230	03100205, 03100206, 03100207, 03100208	12101C0018G 12101C0019G 12101C0040F 12101C0045F 12101C0065F 12101C0070F 12101C0082F 12101C0084F 12101C0090F 12101C0095F 12101C0101F 12101C0102F 12101C0103F 12101C0104F 12101C0106F 12101C0107F 12101C0108F 12101C0109F 12101C0115F 12101C0120F 12101C0130F 12101C0140F 12101C0150F 12101C0170G 12101C0176G[1] 12101C0177G 12101C0178G 12101C0179G 12101C0181G 12101C0182F 12101C0183G 12101C0184F 12101C0186G 12101C0187G 12101C0188G 12101C0189G 12101C0191G	

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
Pasco County, Unincorporated Areas (continued)	120230	03100205, 03100206, 03100207, 03100208	12101C0192F 12101C0193F 12101C0194F 12101C0201F 12101C0202F 12101C0203F 12101C0204F 12101C0206F 12101C0207F 12101C0208F 12101C0209F 12101C0211F 12101C0215F 12101C0216F 12101C0217F 12101C0218F 12101C0219F 12101C0230F 12101C0231F 12101C0232F 12101C0233F 12101C0234F 12101C0238F 12101C0239F 12101C0240F 12101C0241F 12101C0242F 12101C0243F 12101C0244F 12101C0251F 12101C0252F 12101C0253F 12101C0254F 12101C0256F 12101C0257F 12101C0258F 12101C0259F 12101C0261F 12101C0262F	

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
Pasco County, Unincorporated Areas (continued)	120230	03100205, 03100206, 03100207, 03100208	12101C0263F 12101C0264F 12101C0266F 12101C0267F 12101C0268F 12101C0269F 12101C0280F 12101C0285F 12101C0286F 12101C0287F 12101C0288F 12101C0289F 12101C0293F 12101C0295F 12101C0305F 12101C0315F 12101C0325F 12101C0330G 12101C0332G 12101C0333G 12101C0334G 12101C0340G 12101C0345G 12101C0351G 12101C0352G 12101C0353G 12101C0354G 12101C0356G 12101C0357F 12101C0360F 12101C0361G 12101C0362G 12101C0366F 12101C0367F 12101C0380F 12101C0381F 12101C0382F 12101C0383F 12101C0384F	

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
Pasco County, Unincorporated Areas (continued)	120230	03100205, 03100206, 03100207, 03100208	12101C0386F 12101C0387F 12101C0391F 12101C0392F 12101C0401F 12101C0402F 12101C0403F 12101C0404F 12101C0406F 12101C0407F 12101C0408F 12101C0409F 12101C0411F 12101C0412F 12101C0416F 12101C0417F 12101C0426F 12101C0427F 12101C0428F 12101C0429F 12101C0431F 12101C0432F 12101C0433F 12101C0434F 12101C0436F 12101C0437F 12101C0441F 12101C0442F 12101C0451F 12101C0452F 12101C0453F 12101C0454F 12101C0456F 12101C0457F 12101C0458F 12101C0459F 12101C0461F 12101C0462F 12101C0466F	

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
Pasco County, Unincorporated Areas (continued)	120230	03100205, 03100206, 03100207, 03100208	12101C0470F 12101C0480F 12101C0490F	
Port Richey, City of	120234	03100207	12101C0186G 12101C0187G 12101C0188G 12101C0189G	
San Antonio, City of	120634	03100205, 03100208	12101C0256F 12101C0257F 12101C0258F 12101C0259F	
St. Leo, Town of	120166	03100205, 03100208	12101C0257F 12101C0259F 12101C0280F	
Zephyrhills, City of	120235	03100205, 03100208	12101C0287F 12101C0288F 12101C0289F 12101C0293F 12101C0295F 12101C0451F 12101C0452F 12101C0456F 12101C0457F 12101C0458F 12101C0459F	

[1]Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% 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 30, "Map Repositories," within this FIS Report.

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

  The initial Countywide FIS Report for Pasco County became effective on September 26, 2014. Refer to Table 27 for information about subsequent revisions to the FIRMs.

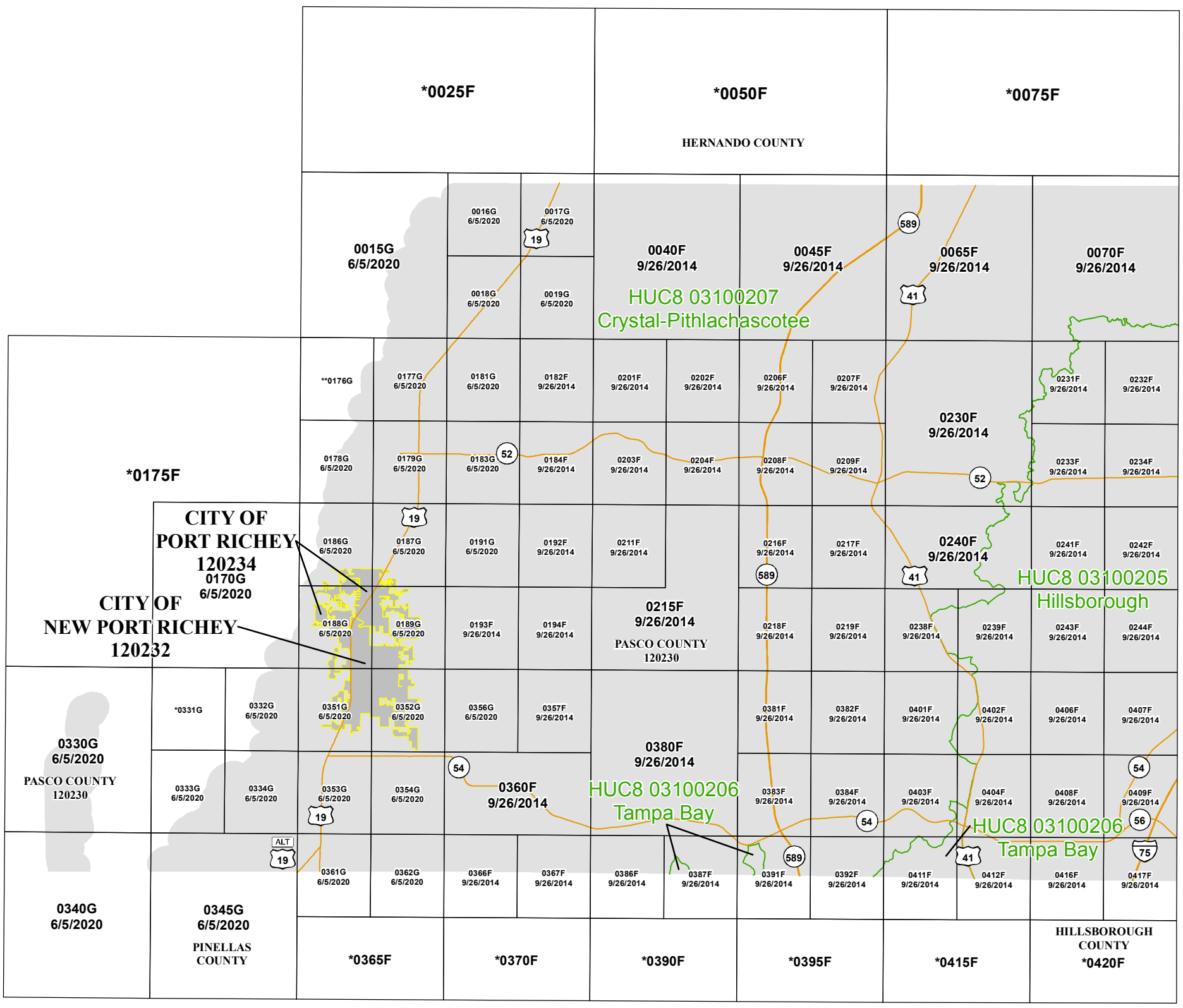
- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

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

- 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 Pasco County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, transportation lines, and USGS 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 June 5, 2020.

N

1 inch = 16,667 feet 1:200,000

feet 0 4,750 9,500 19,000 28,500 38,000

Map Projection:
State Plane Transvere Mercator, Florida West,
Zone 0902H; North American Datum 1983 HARN

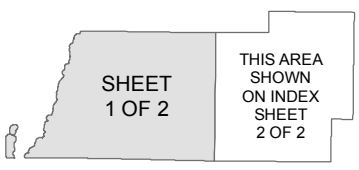
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY
** PANEL NOT PRINTED - AREA ALL WITHIN ZONE VE (EL 15)

PASCO COUNTY, FL
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

PASCO COUNTY, FLORIDA and Incorporated Areas
SHEET 1 OF 2

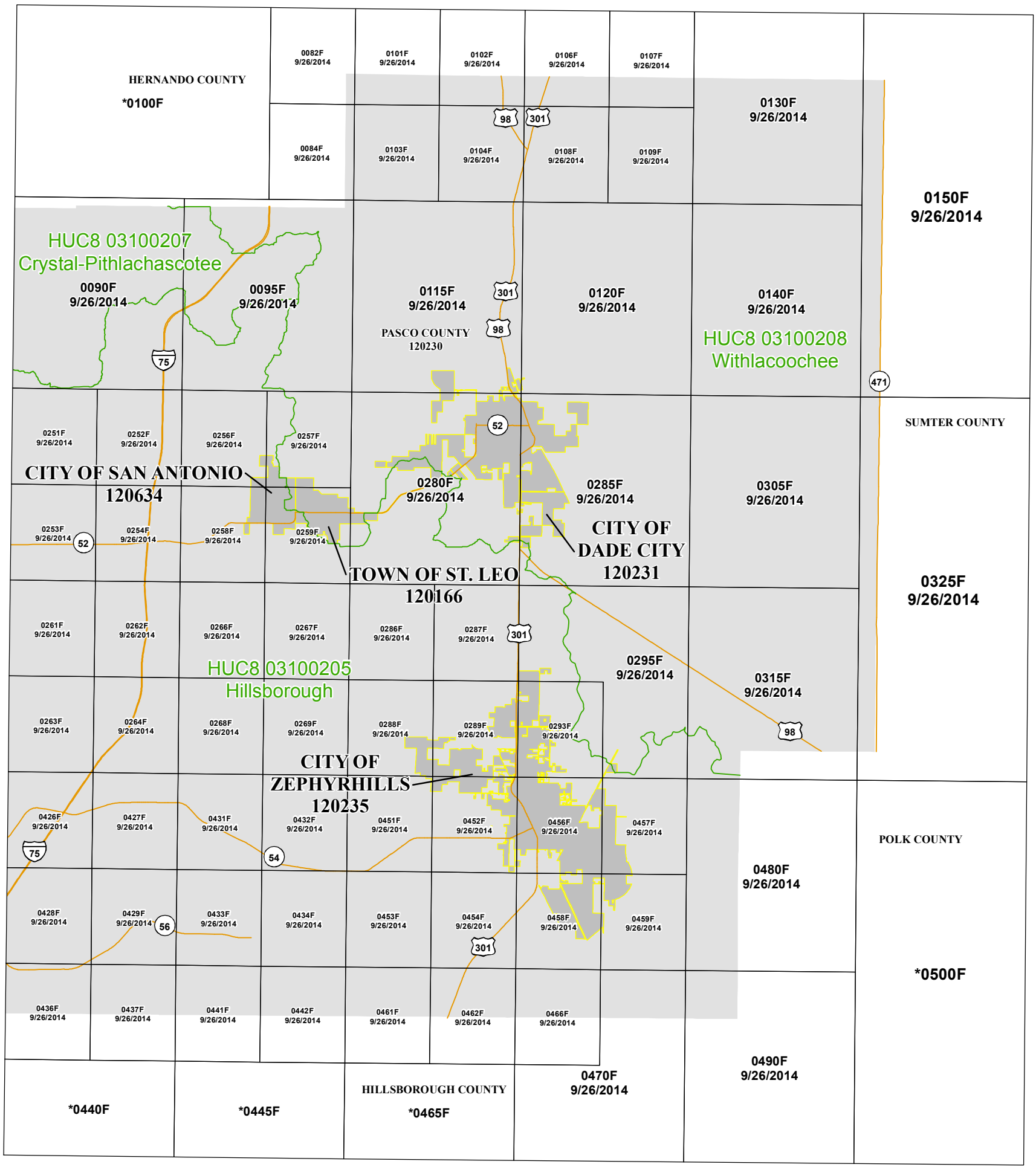
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FEMA

MAP NUMBER
12101CIND1B

MAP REVISED
JUNE 5, 2020

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 June 5, 2020.

N

1 inch = 13,750 feet 1:165,000

feet
0 3,875 7,750 15,500 23,250 31,000

Map Projection:
State Plane Transvere Mercator, Florida West,
Zone 0902H; North American Datum 1983 HARN

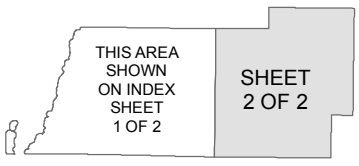
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

PASCO COUNTY, FL
INDEX LOCATOR DIAGRAM



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

PASCO COUNTY, FLORIDA and Incorporated Areas
SHEET 2 OF 2

PANELS PRINTED:
0082, 0084, 0090, 0095, 0101, 0102, 0103, 0104, 0106, 0107, 0108, 0109, 0115, 0120, 0130, 0140, 0150, 0251, 0252, 0253, 0254, 0256, 0257, 0258, 0259, 0261, 0262, 0263, 0264, 0266, 0267, 0268, 0269, 0280, 0285, 0286, 0287, 0288, 0289, 0293, 0295, 0305, 0315, 0325, 0426, 0427, 0428, 0429, 0431, 0432, 0433, 0434, 0436, 0437, 0441, 0442, 0451, 0452, 0453, 0454, 0456, 0457, 0458, 0459, 0461, 0462, 0466, 0470, 0480, 0490

FEMA

MAP NUMBER
12101CIND2B

MAP REVISED
JUNE 5, 2020

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 27 in this FIS Report.

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

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

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.

Figure 2: FIRM Notes to Users

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.

PROJECTION INFORMATION: The projection used in the preparation of the map was HARN State Plane Transverse Mercator, Florida West Zone 0902. The horizontal datum was the North American Datum of 1983 NAD83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

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

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

BASE MAP INFORMATION: Base map information shown on this FIRM was provided by Pasco County, dated 2009, 2010 and 2017; the Florida Department of Transportation, dated 2017; the U.S. Department of Agriculture, dated 2016; the U.S. Geological Survey, dated 2006; and FEMA, dated 2014. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

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

NOTES FOR FIRM INDEX

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

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Pasco County, Florida, effective June 5, 2020.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in Zone VE.

Figure 2: FIRM Notes to Users

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 Pasco 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

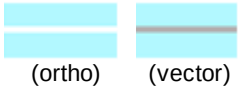
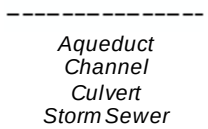
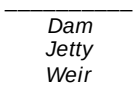
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood 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.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
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
	Watershed Boundary
	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

	Levee, Dike, or Floodwall
Bridge	Bridge
REFERENCE MARKERS	
22.0	River mile Markers
130A	Node – Flow accumulation point or hydraulic connection
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway

Figure 3: Map Legend for FIRM

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

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% 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 Pasco 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 22), 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 Pasco County, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 12. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% 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
Anclote River	Pasco County, Unincorporated Areas	At county boundary	Approximately 320 feet upstream of the confluence of Tributary No. 6	03100207	5.7	--	Y	AE	2016
Anclote River	New Port Richey, City of; Pasco County, Unincorporated Areas	Approximately 320 feet upstream of the confluence of Tributary No. 6	Approximately 0.8 miles upstream of Little Road	03100207	3.9	--	Y	AE	1979
Anclote River	Pasco County, Unincorporated Areas	Approximately 0.8 miles upstream of Little Road	At the confluence of Sandy Branch	03100207	6.9	--	N	AE	*
Anclote River Watershed	Pasco County, Unincorporated Areas	Suncoast Parkway	Eastern watershed boundary limits	03100203, 03100205, 03100207	--	51.2	N	A, AE	2011
Bear Creek	Pasco County, Unincorporated Areas	Bruin Drive	Approximately 1.1 miles upstream of Cordel Street	03100207	3.6	--	N	AE	1991
Bear Creek	Pasco County, Unincorporated Areas	Approximately 0.7 miles upstream of State Highway 52	Bruin Drive	03100207	3.7	--	N	AE	*
Buckhorn Creek	Pasco County, Unincorporated Areas	Confluence with Bear Creek	Approximately 1.5 miles upstream of Sugar Creek Boulevard	03100207	3.7	--	N	AE	1991
Cypress Creek Watershed	Pasco County, Unincorporated Areas; San Antonio, City of	Entire reach of Cypress Creek watershed	Entire reach of Cypress Creek watershed	03100205	--	129.0	N	A, AE	2010
Duck Slough Watershed Ponding Areas 1-40	Pasco County, Unincorporated Areas	Within Duck Slough watershed	Within Duck Slough watershed	03100207	--	0.29	N	AE	2000

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
Duck Slough Watershed Ponding Areas 3-1, 3-2, 3-5, 3-9, 3-10, 5-1, 5-2, 5-3, 5-5, 5-9, 5-10 and C-1	Pasco County, Unincorporated Areas	Within Duck Slough watershed	Within Duck Slough watershed	03100207	--	0.17	N	AE	2000
Duck Slough Watershed Ponding Areas 13, 13a, 14 and 15	Pasco County, Unincorporated Areas	Within Duck Slough watershed	Within Duck Slough watershed	03100207	--	0.01	N	AE	*
East Pasco Watershed	Pasco County, Unincorporated Areas; St. Leo, Town of; Zephyrills, City of	Entire reach of East Pasco watershed	Entire reach of East Pasco watershed	03100205	--	35.7	N	A, AE	2010
Fivemile Creek	Pasco County, Unincorporated Areas	Confluence with Pithlachascotee River	Railroad	03100207	3.6	--	N	AE	1991
Gulf of Mexico	New Port Richey, City of; Pasco County, Unincorporated Areas; Port Richey, City of	Entire shoreline of Pasco County	Entire shoreline of Pasco County	03100207	20.0	--	N	AE, VE	2016
Hillsborough River	Pasco County, Unincorporated Areas	Pasco/Hillsborough county boundary	Approximately 1.4 miles upstream of Crystal Springs Road	03100205	3.0	--	Y	AE	1979
Hillsborough River	Pasco County, Unincorporated Areas	Approximately 1.4 miles upstream of Crystal Springs Road	At U.S. Highway 98	03100205, 03100208	9.0	--	N	AE	*
New River	Pasco County Unincorporated Areas	Pasco/Hillsborough county boundary	At State Highway 54	03100205	4.4	--	N	AE	*
New River	Pasco County Unincorporated Areas	Approximately 0.1 mile upstream of Hilton Road	Approximately 4.1 miles upstream of Hilton Road	03100205	4.0	--	N	AH	*

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
Pithlachascotee River	New Port Richey, City of; Pasco County, Unincorporated Areas	Approximately 0.7 mile downstream of Rowan Road	Approximately 0.8 mile upstream of Little Road	03100207	4.1	--	Y	AE	2016
Pithlachascotee River	Pasco County, Unincorporated Areas	Approximately 0.8 mile upstream of Little Road	Approximately 70 feet upstream of Starkey Boulevard	03100207	2.5	--	Y	AE	1979
Pithlachascotee River	Pasco County, Unincorporated Areas	Approximately 70 feet upstream of Starkey Boulevard	Approximately 6.9 miles upstream of State Highway 52	03100207	17.7	--	N	AE	*
South Fork Lower River	Pasco County, Unincorporated Areas	Confluence with Anclote River	Approximately 3.6 miles upstream of Anclote River	03100207	3.6	--	N	AE	*
Tributary No. 1	Pasco County, Unincorporated Areas	Confluence with Anclote River	Approximately 350 feet upstream of Ridge Top Drive	03100207	0.2	--	N	AE	2016
Tributary No. 1	Pasco County, Unincorporated Areas	Approximately 350 feet upstream of Ridge Top Drive	Approximately 290 feet upstream of Summerfield Loop	03100207	0.4	--	N	AE	1991
Tributary No. 2	Pasco County, Unincorporated Areas	Confluence with Anclote River	Approximately 0.6 mile upstream of confluence with Anclote River	03100207	0.6	--	N	AE	2016
Tributary No. 2	Pasco County, Unincorporated Areas	Approximately 0.6 mile upstream of confluence with Anclote River	Approximately 0.6 mile upstream of Davenport Drive	03100207	2.0	--	N	AE	1991
Tributary No. 2 Basin	Pasco County, Unincorporated Areas	Approximately 1.3 miles upstream of Seven Springs Boulevard	Not provided	03100207	--	*	N	AE	1991

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
Tributary No. 5	Pasco County, Unincorporated Areas	Confluence with Anclote River	Approximately 0.5 mile upstream of confluence with Anclote River	03100207	0.5	--	N	AE	2016
Tributary No. 5	Pasco County, Unincorporated Areas	Approximately 0.5 mile upstream of confluence with Anclote River	Approximately 615 feet upstream of Alcester Drive	03100207	0.2	--	N	AE	1991
Tributary No. 6	Pasco County, Unincorporated Areas	Confluence with Anclote River	Approximately 1,615 feet upstream of Crete Street	03100207	0.5	--	N	AE	1991
Tributary No. 7 Basin	Pasco County, Unincorporated Areas	Just upstream of State Highway 54	Approximately 0.7 mile upstream of Little Road	03100207	1.5	--	N	AE	1991
Tributary No. 9	Pasco County, Unincorporated Areas	Confluence with Anclote River	Approximately 1,070 feet upstream of confluence of Tributary No. 10	03100207	1.2	--	N	AE	1991
Tributary No. 11	Pasco County, Unincorporated Areas	Confluence with Bear Creek	At State Highway 52	03100207	1.3	--	N	AE	1991
Tributary No. 12	Pasco County, Unincorporated Areas	Confluence with Bear Creek	Approximately 600 feet upstream of Midvale Avenue	03100207	2.0	--	N	AE	1991
Tributary No. 13	Pasco County, Unincorporated Areas	Confluence with Bear Creek	Approximately 0.7 mile upstream of Jasmine Boulevard	03100207	1.6	--	N	AE	1991
Tributary No. 14	Pasco County, Unincorporated Areas	Confluence with Pithlachascotee River	Approximately 1.0 mile upstream of Decubellis Road	03100207	1.2	--	N	AE	1991

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
Tributary No. 15	Pasco County, Unincorporated Areas	Confluence with Pithlachascotee River	Approximately 1.0 mile upstream of Roseland Drive	03100207	1.3	--	N	AE	1991
Tributary No. 16	Pasco County, Unincorporated Areas	Confluence with Fivemile Creek	At Railroad	03100207	1.0	--	N	AE	1991
Tributary No. 25	Pasco County, Unincorporated Areas	Confluence with Bear Creek	Approximately 0.6 mile upstream of Southwood Court	03100207	1.8	--	N	AE	1991
Trout Creek Watershed	Pasco County, Unincorporated Areas	Entire reach of Trout Creek watershed	Entire reach of Trout Creek watershed	03100205	--	35.4	N	A, AE	2010
Withlacoochee River	Pasco County, Unincorporated Areas	Pasco/Hernando county boundary	Approximately 1,550 feet upstream of State Highway 575	03100208	4.1	--	Y	AE	1979
Withlacoochee River	Pasco County, Unincorporated Areas	Approximately 1,550 feet upstream of State Highway 575	Pasco/Sumter county boundary	03100208	25.4	--	N	AE	*

*Data not available

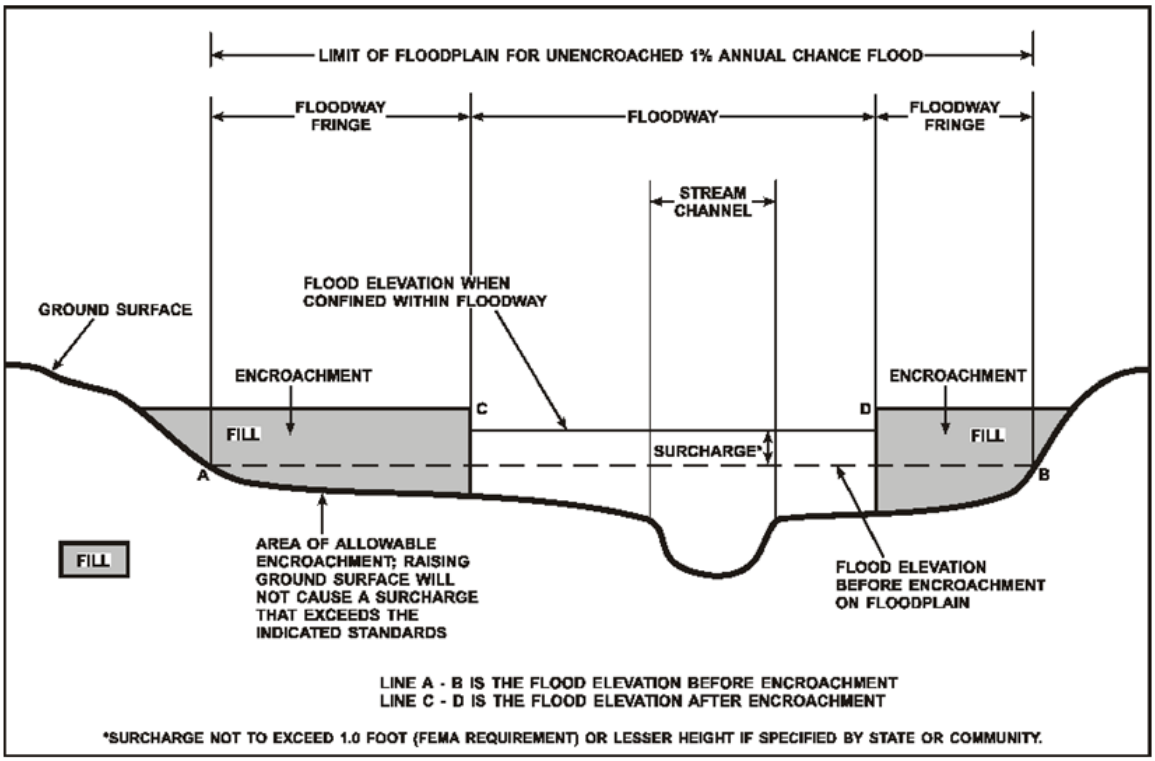
2.2 Floodways

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 23, "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% 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

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

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

2.5.1 Water Elevations and the Effects of Waves

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

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

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

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

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

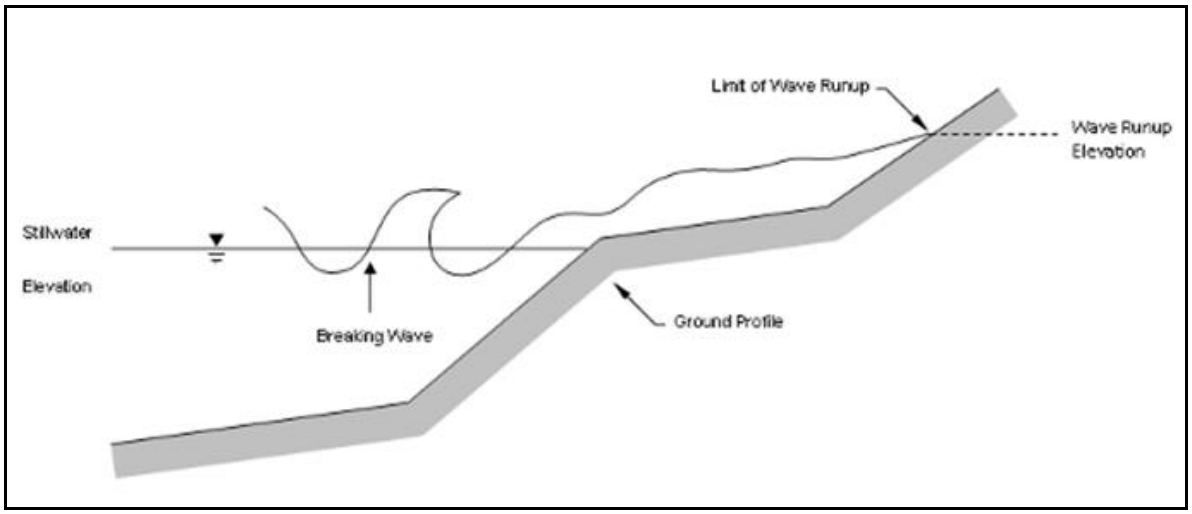
- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

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

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

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves move onshore.
- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

Figure 5: Wave Runup Transect Schematic



2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

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

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

Floodplain Boundaries

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

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

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

Coastal BFEs

Coastal BFEs are calculated as the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm plus the additional flood

hazard from overland wave effects (storm-induced erosion, overland wave propagation, wave runup and wave overtopping).

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

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

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1% 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.
- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

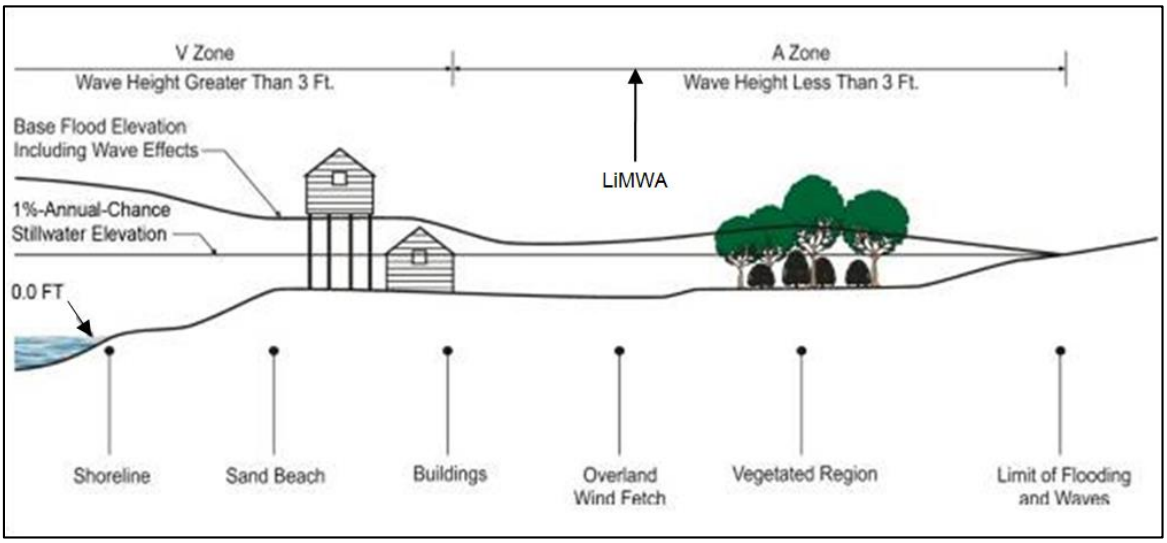
CHHAs are designated as "V" zones (for "velocity wave zones") and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the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

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

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

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

Figure 6: Coastal Transect Schematic



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

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

2.5.4 Limit of Moderate Wave Action

Laboratory tests and field investigations have shown that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE building construction. Wood-frame, light gage steel, or masonry walls on shallow footings or slabs are subject to damage when exposed to waves less than 3 feet in height. Other flood hazards associated with coastal waves (floating debris, high velocity flow, erosion, and scour) can also damage Zone AE construction.

Therefore, a LiMWA boundary may be shown on the FIRM as an informational layer to assist coastal communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The location of the LiMWA relative to Zone VE and Zone AE is shown in Figure 6.

The effects of wave hazards in Zone AE between Zone VE (or the shoreline where Zone VE is not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot or greater breaking waves are projected to occur during the 1% annual chance flooding event. Communities are therefore encouraged to adopt and enforce more stringent floodplain management requirements than the minimum NFIP requirements in the LiMWA. The NFIP Community Rating System provides credits for these actions.

Where wave runup elevations dominate over wave heights, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet.

Examples of these areas include areas with steeply sloped beaches, bluffs, or flood protection structures that lie parallel to the shore. In these areas, the FIRM shows the LiMWA immediately landward of the VE/AE boundary. Similarly, in areas where the zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA is delineated immediately landward of the Zone VE/AE boundary.

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 Pasco County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Dade City, City of	A, AE, X
New Port Richey, City of	A, AE, X
Pasco County, Unincorporated Areas	A, AE, AH, VE, X
Port Richey, City of	AE, VE, X
San Antonio, City of	A, AE, X
St. Leo, Town of	A, AE, X
Zephyrhills, City of	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

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

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Crystal-Pithlachascotee	03100207	Gulf of Mexico	Located in Citrus, Hernando, Hillsborough, Pasco, and Pinellas counties.	1,174
Hillsborough	03100205	Hillsborough River	Located in Hillsborough, Pasco, and Polk counties.	656
Tampa Bay	03100206	Tampa Bay	Located in Hillsborough, Manatee, Pasco, and Pinellas counties.	874
Withlacoochee	03100208	Withlacoochee River	Located in Citrus, Hernando, Lake, Levy, Marion, Pasco, Polk, and Sumter counties.	2,082

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
All flooding sources in central and eastern Pasco County	Flooding in central and eastern Pasco County results from overland flow during storm events.
All flooding sources in western Pasco County	Flooding in western Pasco County results primarily from tidal surge in the coastal areas of the county, which are caused by hurricanes, tropical storms, and overflow of the streams caused by rainfall and runoff. Not all storms which pass close to the study area produce extremely high tides. Similarly, storms which produce extreme conditions in one area may not necessarily produce critical conditions in other parts of the study area.
Pithlachascotee and Anclote Rivers	The Pithlachascotee and Anclote Rivers are broad estuaries and, under certain conditions, tides generated at their mouths in the Gulf of Mexico can intrude far upstream. Rainfall which usually accompanies hurricanes can aggravate the tidal situation. Because of the flatness of the terrain along the streams and rivers, most inland areas are characterized by shallow flooding during heavy rainfall.
Zephyr Creek	Many areas along the Zephyr Creek are flood prone during relatively minor or frequent storm events. The areas along Zephyr Creek between C Avenue and Meadowbrook Drive experience the most frequent overbank flooding (Greiner, Inc. 1989).

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

Table 6: Historic Flooding Elevations

[Not Applicable to this Flood Risk Project]

4.3 Non-Levee Flood Protection Measures

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

Table 7: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Geiger Pond	N/A	Stormwater Detention Pond	Geiger Pond in Zephyr Creek watershed	The recently constructed 70-acre detention pond, Geiger Pond, in the Zephyr Creek watershed provides stormwater storage for 400 acre-feet. It is approximately 1.25 square miles in area and about 1 mile long. The watershed, characterized by gentle slopes and a high percentage of pasture area, has a typical flood response time of about 14 hours and flood duration of less than one-half of a day. Natural conditions such as an intense precipitation event in the upper watershed that could lead to an embankment failure or other adverse condition could occur relatively rapidly. It should also be recognized that areas downstream of Geiger Pond in Zephyrhills are prone to flooding events that might occur at the same time as a dam emergency.
Ponding Area	N/A	Pumping Station	Near Howard Avenue in the City of Dade City	Transfers water out of the low-lying ponding area near Howard Avenue and provides only minor protection against flooding within the City of Dade City

Table 7: Non-Levee Flood Protection Measures (continued)

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
N/A	N/A	Retention Ponds	City of Dade City between 17th and 10th Streets	Recent flood protection improvements in the City of Dade City consist of retention ponds between 17th and 10th Streets collect runoff

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 8: Levees

[Not Applicable to this Flood Risk Project]

SECTION 5.0 – ENGINEERING METHODS

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

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

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for

each stream is provided in Table 12. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 16.) Stream gage information is provided in Table 11.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Anclote River	At State Highway 54	72.50	2,880	*	5,220	6,420	9,760
Bear Creek	At Bear Creek Drive	9.00	*	*	*	1,322	1,944
Bear Creek	At State Road 587	8.30	*	*	*	1,220	1,795
Bear Creek	At Citrus Street	2.54	*	*	*	958	1,426
Buckhorn Creek	At the confluence with Bear Creek	3.86	*	*	*	199	307
Buckhorn Creek	At State Road 52	2.71	*	*	*	145	225
Fivemile Creek	At confluence with Pithlachascotee River	5.16	*	*	*	459	705
Fivemile Creek	Just upstream of the confluence of Tributary No. 16	1.20	*	*	*	397	632
Hillsborough River	At the confluence with Blackwater Creek	84	2,600	*	4,130	4,890	6,800
Pithlachascotee River	Gaging Station at New Port Richey	182	1,084	*	2,060	2,600	4,170
Tributary No. 1	At confluence with Anclote River	0.95	*	*	*	409	633
Tributary No. 2	At confluence with Anclote River	11.87	*	*	*	2,323	3,396
Tributary No. 5	At confluence with Anclote River	1.92	*	*	*	603	920
Tributary No. 6	At confluence with Anclote River	0.78	*	*	*	252	382

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Tributary No. 9	At confluence with Anclote River	3.88	*	*	*	880	1,364
Tributary No. 9	At confluence of Tributary No. 10	3.07	*	*	*	706	1,109
Tributary No. 11	At Manatee Avenue	1.45	*	*	*	966	1,539
Tributary No. 12	At confluence with Bear Creek	3.88	*	*	*	434	671
Tributary No. 13	At confluence with Bear Creek	3.01	*	*	*	451	668
Tributary No. 14	At confluence with Pithlachascotee River	2.53	*	*	*	646	959
Tributary No. 15	At confluence with Pithlachascotee River	1.65	*	*	*	187	294
Tributary No. 16	At confluence with Fivemile Creek	2.29	*	*	*	268	418
Tributary No. 25	At confluence with Bear Creek	6.60	*	*	*	1,590	2,444
Withlacoochee River	At Trilby	570	3,880	*	7,260	9,080	14,400

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this Flood Risk Project]

Table 10: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area 1	Pasco County, Unincorporated Areas	*	*	*	34.0	35.2
Ponding Area 2	Pasco County, Unincorporated Areas	*	*	*	35.4	36.0
Ponding Area 3	Pasco County, Unincorporated Areas	*	*	*	34.0	35.2
Ponding Area 5	Pasco County, Unincorporated Areas	*	*	*	35.3	36.0
Ponding Area 6	Pasco County, Unincorporated Areas	*	*	*	36.0	36.6
Ponding Area 7	Pasco County, Unincorporated Areas	*	*	*	35.8	36.5
Ponding Area 8	Pasco County, Unincorporated Areas	*	*	*	34.0	35.2
Ponding Area 9	Pasco County, Unincorporated Areas	*	*	*	35.8	36.0
Ponding Area 10	Pasco County, Unincorporated Areas	*	*	*	36.5	37.0
Ponding Area 11	Pasco County, Unincorporated Areas	*	*	*	34.0	35.2
Ponding Area 12	Pasco County, Unincorporated Areas	*	*	*	34.6	35.3
Ponding Area 13 (10-04-8088P)	Pasco County, Unincorporated Areas	*	*	*	75.1	*

Table 10: Summary of Non-Coastal Stillwater Elevations (continued)

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area 13	Pasco County, Unincorporated Areas	*	*	*	36.3	37.0
Ponding Area 13a	Pasco County, Unincorporated Areas	*	*	*	75.1	*
Ponding Area 14 (10-04-8088P)	Pasco County, Unincorporated Areas	*	*	*	76.0	*
Ponding Area 14	Pasco County, Unincorporated Areas	*	*	*	37.8	39.2
Ponding Area 15 (10-04-8088P)	Pasco County, Unincorporated Areas	*	*	*	75.1	*
Ponding Area 15	Pasco County, Unincorporated Areas	*	*	*	37.6	38.3
Ponding Area 16	Pasco County, Unincorporated Areas	*	*	*	39.1	39.8
Ponding Area 17	Pasco County, Unincorporated Areas	*	*	*	36.9	37.7
Ponding Area 18	Pasco County, Unincorporated Areas	*	*	*	39.0	40.0
Ponding Area 19	Pasco County, Unincorporated Areas	*	*	*	37.4	37.6
Ponding Area 20	Pasco County, Unincorporated Areas	*	*	*	37.9	38.3
Ponding Area 21	Pasco County, Unincorporated Areas	*	*	*	37.7	37.8

Table 10: Summary of Non-Coastal Stillwater Elevations (continued)

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area 22	Pasco County, Unincorporated Areas	*	*	*	37.3	37.6
Ponding Area 23	Pasco County, Unincorporated Areas	*	*	*	37.3	37.6
Ponding Area 24	Pasco County, Unincorporated Areas	*	*	*	35.4	36.0
Ponding Area 25	Pasco County, Unincorporated Areas	*	*	*	35.8	36.5
Ponding Area 26	Pasco County, Unincorporated Areas	*	*	*	39.1	40.5
Ponding Area 28	Pasco County, Unincorporated Areas	*	*	*	36.9	37.4
Ponding Area 29	Pasco County, Unincorporated Areas	*	*	*	37.8	38.6
Ponding Area 30	Pasco County, Unincorporated Areas	*	*	*	41.8	42.9
Ponding Area 31	Pasco County, Unincorporated Areas	*	*	*	38.6	39.1
Ponding Area 32	Pasco County, Unincorporated Areas	*	*	*	38.8	39.4
Ponding Area 33	Pasco County, Unincorporated Areas	*	*	*	40.3	40.8
Ponding Area 34	Pasco County, Unincorporated Areas	*	*	*	38.4	38.7
Ponding Area 35	Pasco County, Unincorporated Areas	*	*	*	39.0	39.9

Table 10: Summary of Non-Coastal Stillwater Elevations (continued)

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area 36	Pasco County, Unincorporated Areas	*	*	*	39.6	39.9
Ponding Area 37	Pasco County, Unincorporated Areas	*	*	*	38.4	39.3
Ponding Area 38	Pasco County, Unincorporated Areas	*	*	*	38.0	38.3
Ponding Area 39	Pasco County, Unincorporated Areas	*	*	*	39.3	39.6
Ponding Area 40	Pasco County, Unincorporated Areas	*	*	*	39.6	40.1
Ponding Area C1	Pasco County, Unincorporated Areas	23.9	*	24.2	24.5	25.0
Ponding Area 3-1	Pasco County, Unincorporated Areas	24.4	*	24.8	25.1	25.6
Ponding Area 3-2	Pasco County, Unincorporated Areas	26.5	*	27.8	28.7	25.6
Ponding Area 3-3	Pasco County, Unincorporated Areas	24.9	*	25.8	26.7	28.3
Ponding Area 3-5	Pasco County, Unincorporated Areas	25.1	*	26.2	27.4	29.5
Ponding Area 3-7	Pasco County, Unincorporated Areas	28.6	*	29.0	29.2	29.5
Ponding Area 3-9	Pasco County, Unincorporated Areas	24.7	*	25.3	25.8	29.8
Ponding Area 3-10	Pasco County, Unincorporated Areas	24.5	*	24.9	25.3	25.8

Table 10: Summary of Non-Coastal Stillwater Elevations (continued)

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area 5-1	Pasco County, Unincorporated Areas	26.7	*	28.1	28.8	25.8
Ponding Area 5-3	Pasco County, Unincorporated Areas	30.6	*	31.0	31.1	31.9
Ponding Area 5-5	Pasco County, Unincorporated Areas	26.7	*	28.0	28.7	30.1
Ponding Area 5-9	Pasco County, Unincorporated Areas	26.9	*	28.1	28.9	30.1
Ponding Area 5-10	Pasco County, Unincorporated Areas	31.1	*	31.9	32.6	30.2
Tributary No. 2 Basin	Pasco County, Unincorporated Areas	*	*	*	21.2-39.5	33.5
Tributary No. 7 Basin	Pasco County, Unincorporated Areas	*	*	*	27.4-28.1	*

*Not calculated for this Flood Risk Project

Table 11: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Hillsborough River	02303000	USGS	Hillsborough River Near Zephyrhills FL	220	11/18/1939	1976
Pithlachascotee River	02310300	USGS	Pithlachascotee River Near New Port Richey FL	182	04/01/1963	1976

5.2 Hydraulic Analyses

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

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

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

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Anclote River	At county boundary	Approximately 320 feet upstream of the confluence of Tributary No. 6	*	Combined probability calculation spreadsheet	2016	AE w/ Floodway	Combined probability analysis was calculated for each riverine cross section that intersected the coastal surge.
Anclote River	Approximately 320 feet upstream of the confluence of Tributary No. 6	Approximately 0.8 miles upstream of Little Road	Log-Pearson Type III	HEC-2	1979	AE w/ Floodway	The starting water-surface elevations were taken from the FIS for the unincorporated areas of Pinellas County (FIA 1981).
Anclote River	Approximately 0.8 miles upstream of Little Road	At the confluence of Sandy Branch	*	*	*	AE	Approximate flood elevations were taken from floodplain information reports prepared by the SWFWMD (SWFWMD 1977; SWFWMD 1976a).
Anclote River Watershed	Suncoast Parkway	Eastern watershed boundary limits	ICPR v3	ICPR v3	2011	A, AE	
Bear Creek	Bruin Drive	Approximately 1.1 miles upstream of Cordel Street	Regional regression equations	HEC-2	1991	AE	
Bear Creek	Approximately 0.7 miles upstream of State Highway 52	Bruin Drive	*	*	*	AE	
Buckhorn Creek	Confluence with Bear Creek	Approximately 1.5 miles upstream of Sugar Creek Boulevard	Regional regression equations	HEC-2	1991	AE	
Cypress Creek Watershed	Entire reach of Cypress Creek watershed	Entire reach of Cypress Creek watershed	ICPR v3	ICPR v3	2010	A, AE	

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Duck Slough Watershed Ponding Areas 1-40	Within Duck Slough watershed	Within Duck Slough watershed	ICPR 2.11	ICPR 2.11	2000	AE	The flood hazard information was redelineated based on newly developed topographic data in the 2014 revision. No new flood hazard analysis was performed.
Duck Slough Watershed Ponding Areas 3-1, 3-2, 3-5, 3-9, 3-10, 5-1, 5-2, 5-3, 5-5, 5-9, 5-10 and C-1	Within Duck Slough watershed	Within Duck Slough watershed	ICPR 2.11	ICPR 2.11	2000	AE	The flood hazard information was redelineated based on newly developed topographic data in the 2014 revision. No new flood hazard analysis was performed.
Duck Slough Watershed Ponding Areas 13, 14 and 15	Within Duck Slough watershed	Within Duck Slough watershed	*	*	*	AE	
East Pasco Watershed	Entire reach of East Pasco watershed	Entire reach of East Pasco watershed	ICPR v3	ICPR v3	2010	A, AE	
Fivemile Creek	Confluence with Pithlachascotee River	Railroad	Regional regression equations	HEC-2	1991	AE	
Hillsborough River	Pasco/Hillsborough county boundary	Approximately 1.4 miles upstream of Crystal Springs Road	Log-Pearson Type III	HEC-2	1979	AE w/ Floodway	The starting water-surface elevations were taken from the FIS for the unincorporated areas of Hillsborough County (FIA 1980).
Hillsborough River	Approximately 1.4 miles upstream of Crystal Springs Road	At U.S. Highway 98	*	*	*	AE	
New River	Pasco/Hillsborough county boundary	At State Highway 54	*	*	*	AE	Approximate flood elevations were taken from the 1979 floodplain information report prepared by the SWFWMD (SWFWMD 1979).

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
New River	Approximately 0.1 mile upstream of Hilton Road	Approximately 4.1 miles upstream of Hilton Road	ICPR	ICPR	*	AH	
Pithlachascotee River	Approximately 0.7 mile downstream of Rowan Road	Approximately 0.8 mile upstream of Little Road	*	Combined probability calculation spreadsheet	2016	AE w/ Floodway	Combined probability analysis was calculated for each riverine cross section that intersected the coastal surge.
Pithlachascotee River	Approximately 0.8 mile upstream of Little Road	Approximately 70 feet upstream of Starkey Boulevard	Log-Pearson Type III	HEC-2	1979	AE w/ Floodway	Mean high tide was used as the starting water-surface elevation.
Pithlachascotee River	Approximately 70 feet upstream of Starkey Boulevard	Approximately 6.9 miles upstream of State Highway 52	*	*	*	AE	Approximate elevation was taken from reports prepared by the USGS (USGS 1978; USGS 1979).
South Fork Lower River	Confluence with Anclote River	Approximately 3.6 miles upstream of Anclote River	*	*	*	AE	Flood elevations were taken from floodplain information reports prepared by the SWFWMD (SWFWMD, 1976a).
Tributary No. 1	Confluence with Anclote River	Approximately 350 feet upstream of Ridge Top Drive	*	Combined probability calculation spreadsheet	2016	AE	Combined probability analysis was calculated for each riverine cross section that intersected the coastal surge.
Tributary No. 1	Approximately 350 feet upstream of Ridge Top Drive	Approximately 290 feet upstream of Summerfield Loop	Regional regression equations	HEC-2	1991	AE	
Tributary No. 2	Confluence with Anclote River	Approximately 0.6 mile upstream of confluence with Anclote River	*	Combined probability calculation spreadsheet	2016	AE	Combined probability analysis was calculated for each riverine cross section that intersected the coastal surge.
Tributary No. 2	Approximately 0.6 mile upstream of confluence with Anclote River	Approximately 0.6 mile upstream of Davenport Drive	Regional regression equations	HEC-2	1991	AE	

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Tributary No. 2 Basin	Approximately 1.3 miles upstream of Seven Springs Boulevard	Not provided	Route IV	Route IV	1991	AE	Water-surface elevations were computed using the Route IV hydrologic and hydraulic computer model (Digital Matrix Systems Inc., undated)
Tributary No. 5	Confluence with Anclote River	Approximately 0.5 mile upstream of confluence with Anclote River	*	Combined probability calculation spreadsheet	2016	AE	Combined probability analysis was calculated for each riverine cross section that intersected the coastal surge.
Tributary No. 5	Approximately 0.5 mile upstream of confluence with Anclote River	Approximately 615 feet upstream of Alcester Drive	Regional regression equations	HEC-2	1991	AE	
Tributary No. 6	Confluence with Anclote River	Approximately 1,615 feet upstream of Crete Street	Regional regression equations	HEC-2	1991	AE	
Tributary No. 7 Basin	Just upstream of State Highway 54	Approximately 0.7 mile upstream of Little Road	Route IV	Route IV	1991	AE	
Tributary No. 9	Confluence with Anclote River	Approximately 1,070 feet upstream of confluence of Tributary No. 10	Regional regression equations	HEC-2	1991	AE	
Tributary No. 11	Confluence with Bear Creek	At State Highway 52	Regional regression equations	HEC-2	1991	AE	
Tributary No. 12	Confluence with Bear Creek	Approximately 600 feet upstream of Midvale Avenue	Regional regression equations	HEC-2	1991	AE	

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

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Tributary No. 13	Confluence with Bear Creek	Approximately 0.7 mile upstream of Jasmine Boulevard	Regional regression equations	HEC-2	1991	AE	
Tributary No. 14	Confluence with Pithlachascotee River	Approximately 1.0 mile upstream of Decubellis Road	Regional regression equations	HEC-2	1991	AE	
Tributary No. 15	Confluence with Pithlachascotee River	Approximately 1.0 mile upstream of Roseland Drive	Regional regression equations	HEC-2	1991	AE	
Tributary No. 16	Confluence with Fivemile Creek	At Railroad	Regional regression equations	HEC-2	1991	AE	
Tributary No. 25	Confluence with Bear Creek	Approximately 0.6 mile upstream of Southwood Court	Regional regression equations	HEC-2	1991	AE	
Trout Creek Watershed	Entire reach of Trout Creek watershed	Entire reach of Trout Creek watershed	ICPR v3	ICPR v3	2010	A, AE	
Withlacoochee River	Pasco/Hernando county boundary	Approximately 1,550 feet upstream of State Highway 575	Log-Pearson Type III	HEC-2	1979	AE w/ Floodway	The starting water-surface elevations were taken from the floodplain information report prepared by the SWFWMD (SWFWMD 1976b).
Withlacoochee River	Approximately 1,550 feet upstream of State Highway 575	Pasco/Sumter county boundary	*	*	*	AE	Approximate elevations were taken from floodplain information reports prepared by the SWFWMD (SWFWMD 1976b; SWFWMD, 1979)

*Data not available

Table 13: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
Anclote River	0.040-0.130	0.070-0.300
Hillsborough River	0.040-0.130	0.070-0.300
Pithlachascotee River	0.040-0.130	0.070-0.300
Tributary No. 2 Basin	0.040-0.050	0.090-0.130
Tributary No. 7 Basin	0.040-0.050	0.090-0.130
Withlacoochee River	0.040-0.130	0.070-0.300

5.3 Coastal Analyses

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

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

Table 14: Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Gulf of Mexico	Entire shoreline of Pasco County	Entire shoreline of Pasco County	Storm Surge	ADCIRC	01/01/2016
Gulf of Mexico	Entire shoreline of Pasco County	Entire shoreline of Pasco County	Wave Setup	SWAN	01/01/2016
Gulf of Mexico	Entire shoreline of Pasco County	Entire shoreline of Pasco County	Statistical Analysis	JPM	01/01/2016
Gulf of Mexico	Entire shoreline of Pasco County	Entire shoreline of Pasco County	Wave Generation	SWAN	01/01/2016

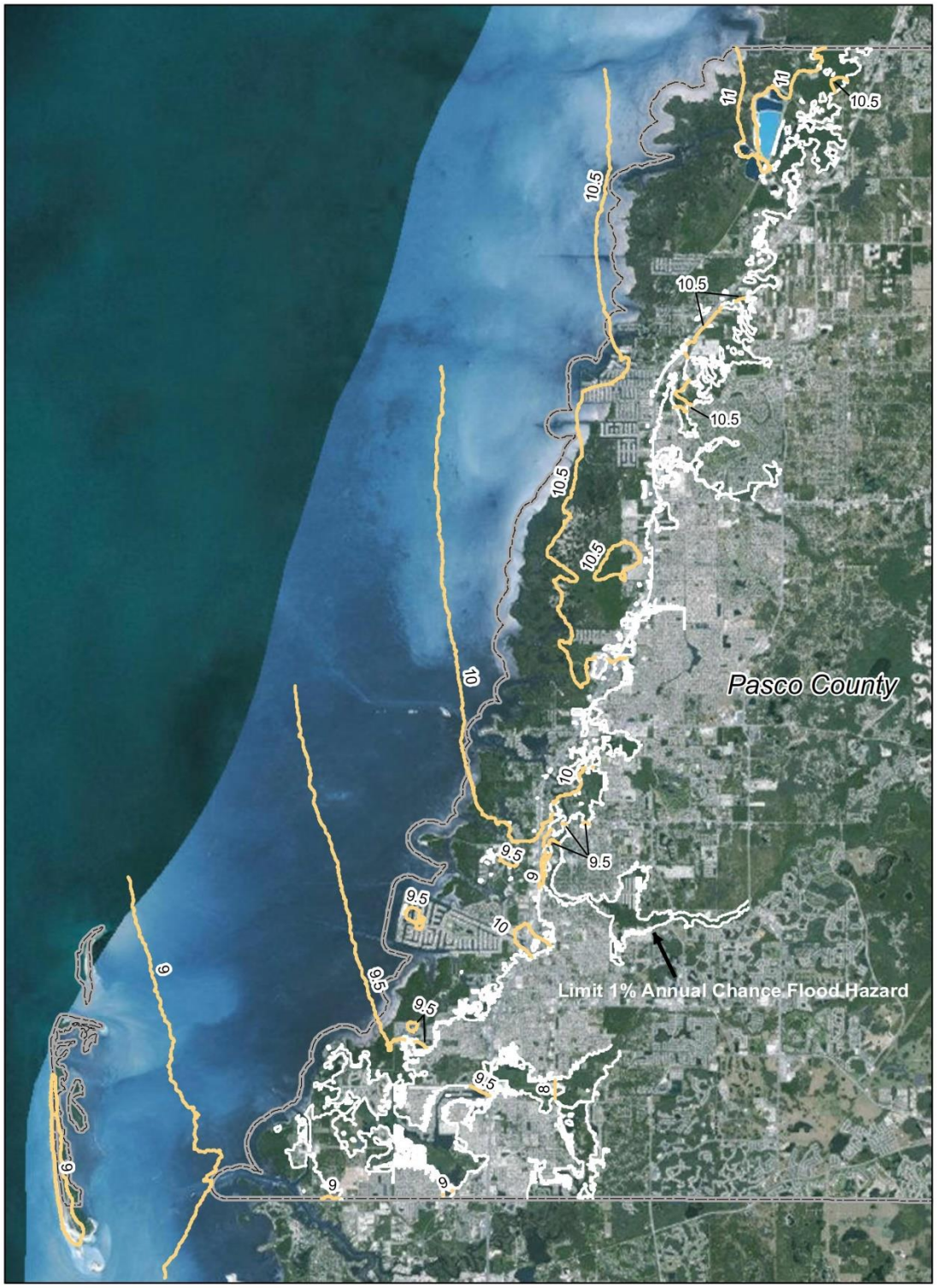
Table 14: Summary of Coastal Analyses (continued)

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Gulf of Mexico	Entire shoreline of Pasco County	Entire shoreline of Pasco County	Overland Wave Propagation	WHAFIS	01/01/2016

5.3.1 Total Stillwater Elevations

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

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



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

Storm Surge Statistics
Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms, specifically tropical storms, were determined by statistical study of the regional historical record of storms. Characteristics such as the strength, size, and track were used in the Joint Probability Method (JPM) to define tropical storm behavior for the West Florida Study Region. Storm data was used in conjunction with numerical hydrodynamic models to determine the corresponding storm surge levels. An extreme value analysis was performed on the storm surge modeling results to determine a stillwater elevation for the 1-percent-annual-chance event.

Table 15: Tide Gage Analysis Specifics

[Not Applicable to this Flood Risk Project]

Combined Riverine and Tidal Effects
A combined rate of occurrence analysis was conducted to compute a 1-percent-annual-chance BFE for areas subject to flooding by both coastal and riverine flooding mechanisms. Since riverine and coastal analyses were based on independent events, the resulting combined BFE would be higher than that of their individual occurrence. In other words, at the location where the computed 1-percent-annual-chance coastal flood level equals the computed 1-percent-annual-chance riverine flood level, there was a greater than 1-percent-annual-chance of this flood level being equaled or exceeded.

In Pasco County, combined probability calculations were performed for Anclote River, Pithlachascotee River, Tributary No. 1, Tributary No. 2, and Tributary No. 5.

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

5.3.2 Waves

The SWAN coastal wave model was used to calculate the nearshore wave field required for the addition of wave setup effects. The SWAN model is tightly coupled to the ADCIRC hydrodynamic model so that forces are passed between models as they run (Dietrich, et al., 2011). This results in the wave setup from breaking waves being part of the computed water elevations.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 14. The post-event eroded profile was used for the subsequent transect-based onshore wave hazard analyses.

5.3.4 Wave Hazard Analyses

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

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

Wave Height Analysis
Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Refer to Figure 6 for a schematic of a coastal transect evaluated for overland wave propagation hazards.

Wave heights and wave crest elevations were modeled using the methods and models listed in Table 14, "Summary of Coastal Analyses". For the 0.2-percent-annual-chance event, wave profiles were created to indicate the results of the wave height analysis at each transect (FEMA 2007). Such wave profiles may show greater detail than the mapping product, due to limitations of the map scale and smoothing tolerances applied during boundary cleanup. Wave runup analysis for the 0.2-percent-annual-chance event was not performed for this study and is not included in the profiles.

Wave Runup Analysis
Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1-percent-annual-chance flood. Wave runup elevations were modeled using the methods and models listed in Table 14. Wave runup is defined as the maximum vertical extent of wave uprush on a beach or structure. FEMA's 2007 Guidelines and Specifications require the 2-percent wave runup level be computed for the coastal feature being evaluated (cliff, coastal bluff, dune, or structure) (FEMA 2007). The 2-percent runup level is the highest 2 percent of wave runup affecting the shoreline during the 1-percent-annual-chance flood event. Each transect defined within the study area was evaluated for the applicability of wave runup, and if necessary, the appropriate runup methodology was selected and applied to each transect. Runup elevations were then compared to WHAFIS results to determine the dominant process affecting BFEs and associated flood hazard levels. Based on wave runup rates, wave overtopping was computed following the FEMA 2007 Guidelines and Specifications. Wave runup analysis for the 0.2-percent-annual-chance event was not performed for this study and is not included in the profiles.

Table 16: Coastal Transect Parameters

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	1	5.0	4.1	6.3 6.3 - 6.4	7.9 7.9 - 7.9	9.4 9.1 - 9.4	11.0 10.3 - 11.0	14.8 13.4 - 14.8
Gulf of Mexico	2	4.9	4.1	6.3 6.2 - 6.3	7.8 7.8 - 7.8	9.3 9.1 - 9.3	10.9 10.6 - 10.9	14.6 14.2 - 14.6
Gulf of Mexico	3	4.9	4.0	6.3 6.2 - 6.3	7.8 7.7 - 7.8	9.3 9.1 - 9.3	10.9 10.5 - 10.9	14.7 14.2 - 14.7
Gulf of Mexico	4	5.0	4.1	6.2 6.2 - 6.2	7.7 7.7 - 7.7	9.1 9.0 - 9.1	10.7 10.5 - 10.7	14.4 14.3 - 14.4
Gulf of Mexico	5	5.0	4.1	6.2 6.0 - 6.2	7.7 7.4 - 7.7	9.1 9.1 - 9.1	10.7 10.6 - 10.7	14.4 13.9 - 14.4
Gulf of Mexico	6	5.0	4.1	6.2 6.0 - 6.2	7.7 7.5 - 7.7	9.1 9.0 - 9.1	10.7 10.7 - 10.8	14.5 14.5 - 14.9
Gulf of Mexico	7	5.0	4.2	6.1 6.1 - 6.1	7.6 7.6 - 7.6	9.0 9.0 - 9.2	10.6 10.6 - 10.8	14.3 14.3 - 14.9

Table 16: Coastal Transect Parameters (continued)

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	8	4.9	4.2	6.1 6.1 - 6.1	7.6 7.6 - 7.6	9.0 9.0 - 9.0	10.6 10.6 - 10.8	14.3 14.3 - 14.6
Gulf of Mexico	9	5.2	4.2	6.1 6.0 - 6.1	7.6 7.6 - 7.6	9.0 9.0 - 9.0	10.6 10.6 - 10.8	14.3 14.3 - 14.5
Gulf of Mexico	10	5.0	4.2	6.0 6.0 - 6.0	7.6 7.6 - 7.6	9.0 9.0 - 9.1	10.6 10.6 - 10.6	14.3 14.3 - 14.4
Gulf of Mexico	11	5.1	4.2	6.1 6.1 - 6.1	7.6 7.6 - 7.7	9.0 9.0 - 9.1	10.6 10.4 - 10.6	14.4 14.4 - 14.4
Gulf of Mexico	12	5.2	4.2	6.0 6.0 - 6.2	7.5 7.5 - 7.7	8.9 8.9 - 9.2	10.5 10.4 - 10.5	14.3 14.2 - 14.3
Gulf of Mexico	13	5.0	4.1	6.0 6.0 - 6.1	7.5 7.5 - 7.7	8.9 8.9 - 9.2	10.5 10.4 - 10.5	14.3 14.0 - 14.3
Gulf of Mexico	14	4.8	4.1	5.9 5.9 - 6.1	7.4 7.4 - 7.7	8.8 8.8 - 9.1	10.4 10.3 - 10.4	14.3 14.2 - 14.3

Table 16: Coastal Transect Parameters (continued)

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	15	5.0	4.2	6.0 5.9 - 6.0	7.4 7.4 - 7.4	8.8 8.8 - 9.0	10.5 10.5 - 10.5	14.3 14.2 - 14.3
Gulf of Mexico	16	4.9	4.1	6.0 6.0 - 6.0	7.5 7.5 - 7.5	8.9 8.9 - 9.0	10.5 10.4 - 10.5	14.5 14.1 - 14.5
Gulf of Mexico	17	4.9	4.1	6.0 6.0 - 6.0	7.4 7.4 - 7.5	8.8 8.8 - 8.9	10.5 10.5 - 10.6	14.4 14.4 - 14.4
Gulf of Mexico	18	5.0	4.2	5.9 5.9 - 6.0	7.4 7.4 - 7.5	8.8 8.8 - 8.9	10.4 10.4 - 10.6	14.3 14.1 - 14.3
Gulf of Mexico	19	5.4	4.3	5.9 5.9 - 5.9	7.4 7.3 - 7.4	8.7 8.7 - 8.7	10.3 10.3 - 10.5	14.2 14.2 - 14.7
Gulf of Mexico	20	5.2	4.3	5.9 5.9 - 5.9	7.3 7.3 - 7.3	8.7 8.7 - 8.7	10.3 10.3 - 10.5	14.1 14.1 - 14.8
Gulf of Mexico	21	5.0	4.2	5.9 5.9 - 5.9	7.4 7.4 - 7.4	8.7 8.7 - 8.9	10.3 10.3 - 10.6	14.3 14.3 - 14.8

Table 16: Coastal Transect Parameters (continued)

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	22	5.3	4.3	5.9 5.9 - 5.9	7.3 7.3 - 7.5	8.7 8.7 - 8.9	10.2 10.2 - 10.6	14.2 14.2 - 14.7
Gulf of Mexico	23	5.0	4.2	5.9 5.9 - 5.9	7.3 7.3 - 7.6	8.6 8.6 - 9.0	10.2 10.2 - 10.6	14.2 14.2 - 14.7
Gulf of Mexico	24	4.9	4.0	5.9 5.9 - 6.0	7.3 7.3 - 7.6	8.7 8.7 - 9.0	10.3 10.3 - 10.5	14.3 14.3 - 14.7
Gulf of Mexico	25	4.8	4.0	5.9 5.9 - 6.0	7.3 7.3 - 7.4	8.6 8.6 - 8.8	10.2 10.2 - 10.3	14.2 14.0 - 14.2
Gulf of Mexico	26	4.8	4.1	5.8 5.8 - 5.8	7.2 7.2 - 7.2	8.5 8.5 - 8.5	10.1 9.9 - 10.1	14.1 14.0 - 14.1
Gulf of Mexico	27	5.0	4.2	5.8 4.8 - 5.8	7.3 6.1 -7.3	8.6 7.1 - 8.6	10.1 9.9 - 10.1	14.0 14.0 - 14.0
Gulf of Mexico	28	5.2	4.1	5.8 4.8 - 5.8	7.2 6.1 - 7.2	8.5 7.3 - 8.5	10.1 9.8 - 10.1	14.0 13.7 - 14.0

Table 16: Coastal Transect Parameters (continued)

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	29	4.8	4.0	5.8 5.3 - 5.8	7.2 6.6 - 7.2	8.4 8.1 - 8.4	10.0 9.5 - 10.0	13.9 13.6 - 13.9
Gulf of Mexico	30	4.7	4.0	5.8 4.8 - 5.8	7.2 6.1 - 7.2	8.4 7.1 - 8.4	9.9 8.2 - 9.9	13.8 11.0 - 13.8
Gulf of Mexico	31	5.4	4.3	5.7 4.8 - 5.7	7.0 6.1 - 7.0	8.3 7.1 - 8.3	9.7 8.2 - 9.7	13.6 11.0 - 13.6
Gulf of Mexico	32	4.8	4.0	5.8 4.8 - 5.8	7.2 6.1 - 7.2	8.4 7.1 - 8.4	9.9 8.2 - 9.9	13.9 11.0 - 13.9
Gulf of Mexico	33	4.9	4.0	5.7 4.8 - 5.7	7.1 6.0 - 7.1	8.3 7.1 - 8.3	9.8 8.2 - 9.8	13.7 11.0 - 13.7
Gulf of Mexico	34	5.5	4.3	5.6 5.6 - 5.8	7.0 7.0 - 7.2	8.1 8.1 - 8.5	9.6 9.6 - 10.0	13.5 13.5 - 13.8
Gulf of Mexico	35	5.2	4.3	5.6 5.6 - 5.8	7.0 7.0 - 7.2	8.1 8.1 - 8.5	9.7 9.7 - 10.0	13.6 13.6 - 13.7

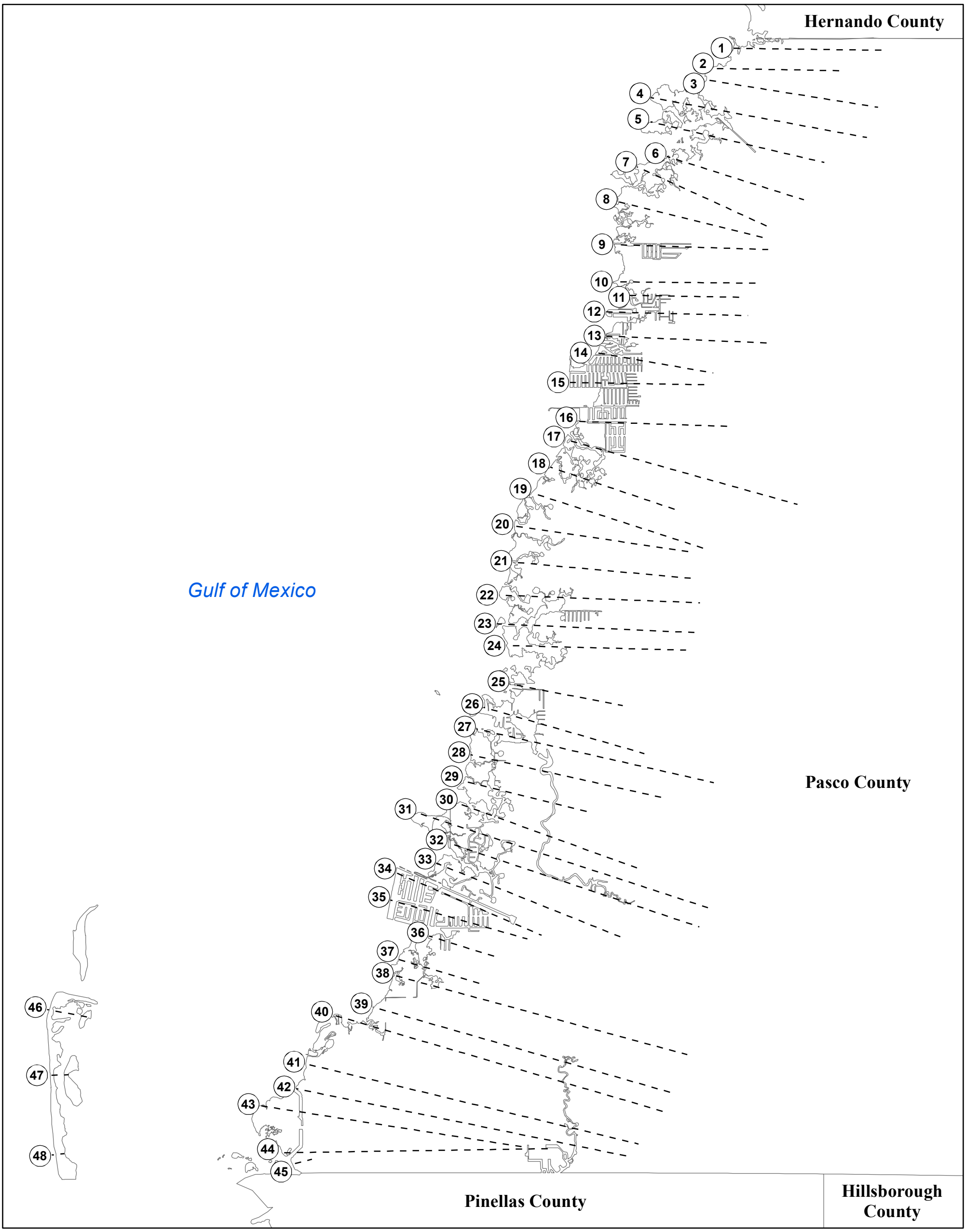
Table 16: Coastal Transect Parameters (continued)

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	36	4.6	3.9	5.7 5.6 - 5.7	7.1 7.0 - 7.1	8.3 8.2 - 8.3	9.8 9.8 - 9.8	13.8 13.8 - 13.8
Gulf of Mexico	37	5.0	4.0	5.6 5.6 - 5.6	7.0 7.0 - 7.0	8.2 8.1 - 8.2	9.7 9.6 - 9.7	13.6 13.6 - 13.6
Gulf of Mexico	38	4.6	3.9	5.6 4.8 - 5.6	6.9 6.9 - 6.0	8.2 6.9 - 8.2	9.6 7.9 - 9.6	13.6 10.2 - 13.6
Gulf of Mexico	39	4.4	4.0	5.6 4.9 - 5.6	6.9 6.0 - 6.9	8.1 6.9 - 8.1	9.5 7.9 - 9.5	13.4 10.2 - 13.4
Gulf of Mexico	40	5.7	4.4	5.5 4.9 - 5.5	6.8 6.0 - 6.8	7.9 6.9 - 7.9	9.3 7.9 - 9.3	13.2 10.2 - 13.2
Gulf of Mexico	41	5.5	4.3	5.5 4.9 - 5.5	6.8 6.0 - 6.8	7.9 6.9 - 7.9	9.3 7.9 - 9.3	13.1 10.2 - 13.1
Gulf of Mexico	42	5.1	4.0	5.5 4.9 - 5.5	6.7 6.1 - 6.7	7.9 6.9 - 7.9	9.2 7.9 - 9.2	13.0 10.3 - 13.0

Table 16: Coastal Transect Parameters (continued)

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Gulf of Mexico	43	5.1	4.1	5.4 4.9 - 5.4	6.7 6.0 - 6.7	7.8 6.9 - 7.8	9.1 7.9 - 9.1	12.8 10.3 - 12.8
Gulf of Mexico	44	4.9	3.6	5.4 4.9 - 5.4	6.7 6.0 - 6.7	7.8 6.9 - 7.8	9.2 7.9 - 9.2	13.0 10.3 - 13.0
Gulf of Mexico	45	4.2	3.5	5.4 5.4 - 5.4	6.7 6.7 - 6.7	7.8 7.8 - 7.8	9.1 9.1 - 9.2	12.9 12.9 - 13.1
Gulf of Mexico	46	7.6	6.2	5.4 5.4 - 5.4	6.6 6.6 - 6.6	7.7 7.6 - 7.7	8.9 8.9 - 8.9	12.7 12.7 - 12.7
Gulf of Mexico	47	8.4	6.0	5.4 5.4 - 5.4	6.7 6.6 - 6.7	7.8 7.6 - 7.8	9.1 8.8 - 9.1	12.6 12.6 - 12.6
Gulf of Mexico	48	8.1	5.9	5.4 5.3 - 5.4	6.6 6.5 - 6.6	7.7 7.5 - 7.7	9.0 8.7 - 9.0	12.7 12.7 - 12.7

Figure 9: Transect Location Map



1 inch = 7,717 feet 1:92,600

Feet
0 1,950 3,900 7,800 11,700 15,600

Map Projection:
HARN State Plane Transverse Mercator, Florida West, Zone 0902H; North American Datum 1983

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FEMA

Transect Locator Map

PANELS WITH TRANSECTS

0015, 0016, 0017, 0018, 0019, 0170, 0177, 0178, 0179, 0181, 0183, 0186, 0187, 0188, 0189, 0191, 0330, 0332, 0333, 0334, 0340, 0345, 0351, 0352, 0353, 0354, 0361, 0362

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Summary of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

Table 18: Results of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

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

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

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

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

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

Table 19: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Dade City	NE	28.370	-82.130	-0.866
Ehren	NE	28.370	-82.380	-0.817
Elfers	NE	28.500	-82.630	-0.843
Fivay Junction	NE	28.370	-82.500	-0.850
Lacoochee	NE	28.500	-82.130	-0.843
Lutz	NE	28.500	-82.380	-0.817
Odessa	NE	28.500	-82.500	-0.833
Port Richey	NE	28.370	-82.630	-0.846
San Antonio	NE	28.370	-82.250	-0.817
Spring Lake	NE	28.500	-82.250	-0.797
Tarpon Springs	NE	28.500	-82.740	-0.843
Wesley Chapel	NE	28.500	-82.500	-0.833
Zephyrhills	NE	28.500	-82.130	-0.873
Average Conversion from NGVD29 to NAVD88 = -0.837 feet				

Table 20: Stream-Based Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

6.2 Base Map

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

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

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Digital Orthophoto	Florida Department of Transportation	2017	1:100	Digital orthoimagery for Pasco County, Florida
Digital Orthophoto	Florida Department of Transportation	2017	1:100	Digital orthoimagery for Pinellas County, Florida
Digital Orthophoto	U.S. Department of Agriculture	2016	1 meter	Digital orthoimagery for open water areas in Pasco County, Florida
Political boundaries	Pasco County	2017	N/A	Municipal boundaries
Political boundaries	Pasco County	2010	N/A	Pasco County boundary
Public Land Survey System (PLSS)	Pasco County	2009	N/A	PLSS data
Surface Water Features	FEMA	2014	1:6,000	Water lines
Surface Water Features	U.S. Geological Survey	2006	N/A	Pasco County water areas
Transportation Features	Pasco County	2017	N/A	All roads within Pasco County
Watershed Boundary	U.S. Department of Agriculture	2014	1:12,000	Watershed boundary dataset HUC8

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 22. For each coastal flooding source studied as part of this FIS Report, the mapped floodplain boundaries on the FIRM have been delineated using the flood and wave elevations determined at each transect; between transects, boundaries were delineated using land use and land cover data, the topographic elevation data described in Table 22, and knowledge of coastal flood processes. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 22.

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

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

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Pasco County	Gulf of Mexico	Light Detection and Ranging data (LiDAR)	0.43 feet RMSEz	N/A	FDEM 2007
Pasco County	All effective 2014 studies	Light Detection and Ranging data (LiDAR)	N/A	N/A	SWFWMD 2004

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

Table 23: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	38,800	184	2,146	3.2	8.2[2]	7.9[3]	8.8	0.9
B	43,000	1,232	5,981	1.1	9.1[2]	8.2[3]	9.0	0.8
C	46,400	1,185	6,034	1.1	9.2[2]	8.4[3]	9.3	0.9
D	48,750	1,625	11,065	0.6	9.5[2]	8.7[3]	9.6	0.9
E	54,750	980	8,110	0.8	10.1[2]	9.6[3]	10.4	0.8
F	57,350	919	4,347	1.5	10.6[2]	10.4[3]	11.2	0.8
G	61,150	459	4,120	1.6	12.7	12.4	13.4	1.0
H	64,450	361	2,556	2.5	16.1	16.1	17.1	1.0
I	67,200	775	3,424	1.9	19.1	19.1	20.1	1.0
J	70,350	556	4,643	1.4	21.7	21.7	22.7	1.0
K	72,950	275	3,250	2.0	23.2	23.2	24.1	1.0
L	76,750	232	2,125	3.0	27.7	27.7	28.7	1.0
M	81,100	272	7,426	0.9	30.2	30.2	31.2	1.0

[1]Feet above confluence with Gulf of Mexico

[2]Combined coastal and riverine effects from Gulf of Mexico and Anclote River

[3]Elevation computed without consideration of storm surge effects from Gulf of Mexico

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	19,650	964	7,808	0.6	57.6	57.6	58.6	1.0
B	21,250	1,190	10,440	0.5	58.5	58.5	59.5	1.0
C	24,200	1,348	11,272	0.4	59.5	59.5	60.5	1.0
D	25,200	1,613	13,806	0.4	60.2	60.2	61.2	1.0
E	26,000	1,736	15,263	0.3	60.3	60.3	61.3	1.0
F	28,100	1,973	11,207	0.4	61.0	61.0	62.0	1.0
G	30,200	1,145	7,449	0.7	62.5	62.5	63.5	1.0
H	31,700	1,042	7,654	0.6	64.2	64.2	65.2	1.0

[1]Feet above U.S. Highway 301

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASCO COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: HILLSBOROUGH RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	24,390	103	856	3.0	8.4[2]	5.3[3]	6.3	1.0
B	24,950	462	2,501	1.0	8.4[2]	5.6[3]	6.6	1.0
C	28,170	127	747	3.5	9.0[2]	7.8[3]	8.6	0.8
D	28,820	209	1,876	1.4	9.4[2]	8.5[3]	9.3	0.8
E	31,070	237	1,849	1.4	9.9[2]	9.3[3]	10.0	0.7
F	33,262	338	2,331	1.1	11.0[2]	10.7[3]	11.3	0.6
G	34,962	359	2,834	0.9	11.7[2]	11.5[3]	12.2	0.7
H	37,162	270	2,252	1.2	13.0[2]	12.9[3]	13.6	0.7
I	40,942	240	1,618	1.6	15.4	15.4	16.1	0.7
J	43,792	235	2,025	1.3	17.8	17.8	18.6	0.8
K	45,692	454	3,344	0.8	19.7	19.7	20.5	0.8
L	50,652	450	1,976	1.3	22.3	22.3	23.8	0.9

[1]Feet above U.S. Highway 19

[2]Combined coastal and riverine effects from Gulf of Mexico and Pithlachascotee River

[3]Elevation computed without consideration of storm surge effects from Gulf of Mexico

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASCO COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PITHLACHASCOTEE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,100	823	9,485	1.0	66.6	66.6	67.6	1.0
B	2,400	413	5,958	1.5	67.2	67.2	68.2	1.0
C	3,450	610	8,251	1.1	68.3	68.3	69.2	0.9
D	5,800	1,887[2]	26,634	0.3	69.1	69.1	70.0	0.9
E	9,850	1,023[2]	11,453	0.8	69.6	69.6	70.5	0.9
F	12,477	1,236[2]	16,136	0.6	70.2	70.2	71.1	0.9
G	15,050	1,180[2]	16,330	0.6	70.3	70.3	71.2	0.9
H	21,664	1,414	7,672	1.2	71.5	71.5	72.4	0.9

[1]Feet above county boundary

[2]Width extends beyond county boundary

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASCO COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WITHLACOOCHEE RIVER

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

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

Flood insurance zones and BFEs including the wave effects were identified on each transect based on the results from the onshore wave hazard analyses. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and knowledge of coastal flood processes to determine the aerial extent of flooding. Sources for topographic data are shown in Table 22.

Zone VE is subdivided into elevation zones and BFEs are provided on the FIRM.

The limit of Zone VE shown on the FIRM is defined as the farthest inland extent of any of these criteria (determined for the 1% annual chance flood condition):

- The *primary frontal dune zone* is defined in 44 CFR Section 59.1 of the NFIP regulations. The primary frontal dune represents a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes that occur immediately landward and adjacent to the beach. The primary frontal dune zone is subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune zone occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope.

- The *wave runup zone* occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation.

- The *wave overtopping splash zone* is the area landward of the crest of an overtopped barrier, in cases where the potential 2-percent wave runup exceeds the barrier crest elevation by 3.0 feet or more.

- The *breaking wave height zone* occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the total stillwater elevation).

- The *high-velocity flow zone* is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flow velocity squared (hv^2) is greater than or equal to 200 ft^3/sec^2. This zone may only be used on the Pacific Coast.

The SFHA boundary indicates the limit of SFHAs shown on the FIRM as either “V” zones or “A” zones.

Table 25 indicates the coastal analyses used for floodplain mapping and the criteria used to determine the inland limit of the open-coast Zone VE and the SFHA boundary at each transect.

Table 25: Summary of Coastal Transect Mapping Considerations

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD88)	Zone Designation and BFE (ft NAVD88)		
1		N/A	VE 13-16 AE 11-13	Wave Height	SWEL
2		N/A	VE 13-16 AE 11-13	Wave Height	SWEL
3		N/A	VE 13-16 AE 11-12	Wave Height	SWEL
4		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
5		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
6		N/A	VE 14-15 AE 11-13	Wave Height	SWEL
7		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
8		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
9		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
10		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
11		N/A	VE 13-15 AE 10-12	Wave Height	SWEL
12		N/A	VE 14-15 AE 10-12	Wave Height	SWEL
13		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
14		N/A	VE 13-15 AE 10-12	Wave Height	SWEL
15		N/A	VE 15 AE 11-12	Wave Height	SWEL
16		N/A	VE 14-15 AE 10-13	Wave Height	SWEL
17		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
18		N/A	VE 13-15 AE 11-13	Wave Height	SWEL

Table 25: Summary of Coastal Transect Mapping Consideration (continued)

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD88)	Zone Designation and BFE (ft NAVD88)		
19		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
20		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
21		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
22		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
23		N/A	VE 13-15 AE 11-13	Wave Height	SWEL
24		N/A	VE 13-15 AE 11-12	Wave Height	SWEL
25		N/A	VE 13-15 AE 10-12	Wave Height	SWEL
26		N/A	VE 15 AE 10-12	Wave Height	SWEL
27		N/A	VE 13-15 AE 10-12	Wave Height	SWEL
28		N/A	VE 15 AE 10-11	Wave Height	SWEL
29		N/A	VE 14 AE 10-12	Wave Height	SWEL
30		N/A	VE 14 AE 8-12	Wave Height	SWEL
31		N/A	VE 14 AE 8-11	Wave Height	SWEL
32		N/A	VE 14 AE 8-11	Wave Height	SWEL
33		N/A	VE 14 AE 8-11	Wave Height	SWEL
34		N/A	VE 14 AE 10-11	Wave Height	SWEL
35		N/A	VE 14 AE 10-11	Wave Height	SWEL
36		N/A	VE 14 AE 10-12	Wave Height	SWEL

Table 25: Summary of Coastal Transect Mapping Consideration (continued)

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD88)	Zone Designation and BFE (ft NAVD88)		
37		N/A	VE 14 AE 10-11	Wave Height	SWEL
38		N/A	VE 14 AE 8-11	Wave Height	SWEL
39		N/A	VE 14 AE 8-11	Wave Height	SWEL
40		N/A	VE 12-14 AE 8-11	Wave Height	SWEL
41		N/A	VE 12-14 AE 8-11	Wave Height	SWEL
42		N/A	VE 12-13 AE 8-10	Wave Height	SWEL
43		N/A	VE 13 AE 8-10	Wave Height	SWEL
44		N/A	VE 13 AE 8-11	Wave Height	SWEL
45		N/A	VE 13 AE 10-11	Wave Height	SWEL
46		N/A	VE 11-13 AE 10-11	Wave Height	SWEL
47	✓	N/A	VE 11-14 AE 9-11	Wave Height	SWEL
48	✓	N/A	VE 12-14 AE 10-11	Wave Height	SWEL

A LiMWA boundary has also been added in coastal areas subject to wave action for use by local communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave.

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further

described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 30, "Map Repositories").

6.5.1 Letters of Map Amendment

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

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

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

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

6.5.2 Letters of Map Revision Based on Fill

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

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

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

6.5.3 Letters of Map Revision

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

To obtain an application for a LOMR, visit www.fema.gov/media-library/assets/documents/1343 and download the form "MT-2 Application Forms and

Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Pasco County FIRM are listed in Table 26. Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

Table 26: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

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

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

For more information about the PMR process, please visit www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

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

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Pasco County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the

incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 27, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

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

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

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

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

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

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

The initial effective date for the Pasco County FIRMs in countywide format was 09/26/2014.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Dade City, City of	01/04/1974	01/04/1974	08/06/1976	08/17/1981	09/26/2014
New Port Richey, City of	01/04/1974	01/04/1974	03/18/1977 06/18/1976	08/17/1981	06/05/2020 09/26/2014 07/05/1983

Table 27: Community Map History (continued)

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Pasco County, Unincorporated Areas	11/04/1977	11/04/1977	N/A	11/18/1981	06/05/2020 09/26/2014 06/30/1999 09/30/1992 02/17/1989 03/15/1984
Port Richey, City of	01/16/1974	01/16/1974	N/A	08/17/1981	06/05/2020 09/26/2014 07/05/1983
San Antonio, City of	09/26/2014	N/A	N/A	09/26/2014	06/05/2020
St. Leo, Town of	09/26/2014	N/A	N/A	09/26/2014	06/05/2020
Zephyrhills, City of	02/01/1974	02/01/1974	02/20/1976	04/08/1983	09/26/2014 12/17/1991

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

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

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Anclote River	06/05/2020	RAMPP	HSFEHQ-09-D-0369	January 2016	Pasco County, Unincorporated Areas
Anclote River	05/18/1981	Tetra Tech, Inc.	H-4510	May 1979	New Port Richey, City of; Pasco County, Unincorporated Areas
Anclote River	09/30/1992	*	*	*	Pasco County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Anclote River Watershed	09/26/2014	Atkins for SWFWMD	IAA No. 06CC0000047, 07CC0000073, and 07CC0000075	February 2011	Pasco County, Unincorporated Areas
Bear Creek	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Bear Creek	09/30/1992	*	*	*	Pasco County, Unincorporated Areas
Buckhorn Creek	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Cypress Creek Watershed	09/26/2014	Parsons Water & Infrastructure Inc. for SWFWMD	B206, Work Order 5	March 2010	Pasco County, Unincorporated Areas; San Antonio, City of
East Pasco Watershed	09/26/2014	URS for SWFWMD	03CONC00016	March 2010	Pasco County, Unincorporated Areas; St. Leo, Town of; Zephyrhills, City of
Fivemile Creek	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Gulf of Mexico	06/05/2020	RAMPP	HSFEHQ-09-D-0369	January 2016	New Port Richey, City of; Pasco County, Unincorporated Areas; Port Richey, City of
Hillsborough River	05/18/1981	Tetra Tech, Inc.	H-4510	May 1979	Pasco County, Unincorporated Areas
Hillsborough River	09/30/1992	*	*	*	Pasco County, Unincorporated Areas
New River	09/30/1992	*	*	*	Pasco County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Pithlachascotee River	06/05/2020	RAMPP	HSFEHQ-09-D-0369	January 2016	New Port Richey, City of; Pasco County, Unincorporated Areas
Pithlachascotee River	05/18/1981	Tetra Tech, Inc.	H-4510	May 1979	Pasco County, Unincorporated Areas
Pithlachascotee River	09/30/1992	*	*	*	Pasco County, Unincorporated Areas
South Fork Lower River	09/30/1992	*	*	*	Pasco County, Unincorporated Areas
Tributary No. 1	06/05/2020	RAMPP	HSFEHQ-09-D-0369	January 2016	Pasco County, Unincorporated Areas
Tributary No. 1	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 2	06/05/2020	RAMPP	HSFEHQ-09-D-0369	January 2016	Pasco County, Unincorporated Areas
Tributary No. 2	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 2 Basin	09/30/1992	Boyle Engineering Corporation	*	1991	Pasco County, Unincorporated Areas
Tributary No. 5	06/05/2020	RAMPP	HSFEHQ-09-D-0369	January 2016	Pasco County, Unincorporated Areas
Tributary No. 5	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 6	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 7 Basin	09/30/1992	Boyle Engineering Corporation	*	1991	Pasco County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Tributary No. 9	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 11	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 12	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 13	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 14	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 15	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 16	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Tributary No. 25	09/30/1992	Atkins	EMW-88-R-2613	1991	Pasco County, Unincorporated Areas
Trout Creek Watershed	09/26/2014	Ayres Associates for SWFWMD	IAA No. 6CC0000051	April 2010	Pasco County, Unincorporated Areas
Withlacoochee River	05/18/1981	Tetra Tech, Inc.	H-4510	May 1979	Dade City, City of; Pasco County, Unincorporated Areas
Withlacoochee River	09/30/1992	*	*	*	Pasco County, Unincorporated Areas

*Data not available

7.2 Community Meetings

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

Table 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Dade City, City of	09/26/2014	03/04/2004	Scoping	FEMA, the community, and Southwest Florida Water Management District
		06/16/2013	CCO Meeting	FEMA, the State, the community, and the study contractor
New Port Richey, City of	06/05/2020	06/06/2013	Discovery	FEMA, Florida Department of Emergency Management, Southwest Florida Water Management District, the community, and RAMPP
		12/14/2017	FRR Meeting	FEMA, RAMPP, BakerAECOM, and the community
		08/30/2018	CCO Meeting	FEMA, RAMPP, BakerAECOM, and the community
Pasco County, Unincorporated Areas	06/05/2020	06/06/2013	Discovery	FEMA, Florida Department of Emergency Management, Southwest Florida Water Management District, the community, and RAMPP
		12/14/2017	FRR Meeting	FEMA, RAMPP, BakerAECOM, and the community
		08/30/2018	CCO Meeting	FEMA, RAMPP, BakerAECOM, and the community
Port Richey, City of	06/05/2020	06/06/2013	Discovery	FEMA, Florida Department of Emergency Management, Southwest Florida Water Management District, the community, and RAMPP
		12/14/2017	FRR Meeting	FEMA, RAMPP, BakerAECOM, and the community
		08/30/2018	CCO Meeting	FEMA, RAMPP, BakerAECOM, and the community
San Antonio, City of	09/26/2014	03/04/2004	Scoping	FEMA, the community, and Southwest Florida Water Management District
		06/16/2013	CCO Meeting	FEMA, the State, the community, and the study contractor
St. Leo, Town of	09/26/2014	03/04/2004	Scoping	FEMA, the community, and Southwest Florida Water Management District
		06/16/2013	CCO Meeting	FEMA, the State, the community, and the study contractor

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Zephyrhills, City of	09/26/2014	03/04/2004	Scoping	FEMA, the community, and Southwest Florida Water Management District
		06/16/2013	CCO Meeting	FEMA, the State, the community, and the study contractor

SECTION 8.0 – ADDITIONAL INFORMATION

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

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

Table 30: Map Repositories

Community	Address	City	State	Zip Code
Dade City, City of	Building Department 38020 Meridian Avenue	Dade City	FL	33525
New Port Richey, City of	City Hall 5919 Main Street	New Port Richey	FL	34652
Pasco County, Unincorporated Areas	Pasco County Construction Services Department 8731 Citizens Drive Suite 230	New Port Richey	FL	34654
Port Richey, City of	City Hall, Planning Department 6333 Ridge Road	Port Richey	FL	34668
San Antonio, City of	City Hall 32819 Pennsylvania Avenue	San Antonio	FL	33576
St. Leo, Town of	Town Hall 34544 State Road 52	St. Leo	FL	33574
Zephyrhills, City of	Building Department 5335 8th Street	Zephyrhills	FL	33542

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

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

Table 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region IV	FEMA-R4 (Hollins Building) 3003 Chamblee-Tucker Road Atlanta, GA 30341 (770) 220-3174
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Steve Martin, CFM, State NIP and Floodplain Manager Florida Division of Emergency Management 2555 Shumard Oak Boulevard Tallahassee, Florida 32399-2100 (850) 922-5269 steve.martin@em.myflorida.com
State GIS Coordinator	Richard Butgereit GIS Administrator Florida Division of Emergency Management 2555 Shumard Oak Boulevard Tallahassee, Florida 32399-2100 Phone: (850) 413-9907 richard.butgereit@dca.state.fl.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

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

Table 32: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Dietrich, et al., 2011		*"Modeling Hurricane Waves and Strom Surge using Integrally-Coupled, Scalable Computations," Coastal Engineering, 58, 45-65*	Dietrich, J.C.; M. Zijlema; J.J. Westerink; L.H., Holthuijsen; C. Dawson; R.A. Luettich; R. Jensen; J.M. Smith; G.S. Stellcing; G.W. Stone		2011	
Digital Matrix Systems, Inc. undated	Digital Matrix Systems, Inc.	*Route IV, A Water Management Analysis Program*			undated	
FDEM 2007	Florida Division of Emergency Management	*LiDAR project*			2007	
FEMA 2007	Federal Emergency Management Agency	*Procedure memorandum No. 47 – Guidance for the Determination of the 0.2-Percent-Annual-Chance Wave Envelope along the Atlantic Ocean and Gulf of Mexico Coasts*			September 2007	
FIA 1980	Federal Insurance Administration	*Flood Insurance Study, Hillsborough County, Florida (Unincorporated Areas)*			June 1980	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FIA 1981	Federal Insurance Administration	*Flood Insurance Study, Pinellas County, Florida (Unincorporated Areas)*			September 1981	
Greiner, Inc. 1989	Greiner, Inc.	*Lake Zephyr Watershed, Stormwater, and Flood Management Master Plan, Pasco County, Florida*		Tampa, Florida	April 1989	
SWFWMD 2004	Southwest Florida Water Management District	*LiDAR and DEM data for Pasco County, Florida, Florida State Plane Coordinate System, West Zone, North American Vertical Datum 1988 (NAVD 88)*			February 8, 2004	
SWFWMD 1979	Southwest Florida Water Management District	*Flood Plain Information on the Hillsborough River Watershed, Hillsborough River and New River*			1979	
SWFWMD 1976(a)	Southwest Florida Water Management District	*Flood Plain Information on the Anclote River From Mouth to South Branch Anclote River at S.R. 54, Pasco and Pinellas Counties, Florida*			April 1976	
SWFWMD 1976(b)	Southwest Florida Water Management District	*Flood Plain Information on the Withlacoochee River from Nobleton at S.R. 476 to Cumpressco at S.R. 471, Sumter, Hernando, and Pasco Counties, Florida*			October 1976	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS 1978	U.S. Geological Survey	*Flood Profiles for Cypress Creek, West-Central Florida*	W.R. Murphy Jr., and SWFWMD		April 1978	
USGS 1979	U.S. Geological Survey	*Water-Resources Investigations Report 78-100, Flood Profiles of the Pithlachascotee River, West-Central Florida*	J.F. Turner, Jr., W.R. Murphy, Jr., and C.V. Reeter		1979	