

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 8



EL PASO COUNTY, TEXAS

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
ANTHONY, TOWN OF	480804
CLINT, TOWN OF	481260
EL PASO, CITY OF	480214
EL PASO COUNTY, UNINCORPORATED AREAS	480212
HORIZON CITY, TOWN OF	480322
SAN ELIZARIO, CITY OF	480561
SOCORRO, CITY OF	481658
VINTON, VILLAGE OF	481557
YSLETA DEL SUR PUEBLO OF TEXAS	480663



FEMA

PRELIMINARY
July 8, 2020

EFFECTIVE:

FLOOD INSURANCE STUDY NUMBER

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TABLE OF CONTENTS

Volume 1

	<u>Page</u>
SECTION 1.0 – INTRODUCTION	1
1.1 The National Flood Insurance Program	1
1.2 Purpose of this Flood Insurance Study Report	2
1.3 Jurisdictions Included in the Flood Insurance Study Project	2
1.4 Considerations for using this Flood Insurance Study Report	7
SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS	17
2.1 Floodplain Boundaries	17
2.2 Floodways	33
2.3 Base Flood Elevations	34
2.4 Non-Encroachment Zones	35
2.5 Coastal Flood Hazard Areas	35
2.5.1 Water Elevations and the Effects of Waves	35
2.5.2 Floodplain Boundaries and BFEs for Coastal Areas	36
2.5.3 Coastal High Hazard Areas	36
2.5.4 Limit of Moderate Wave Action	36
SECTION 3.0 – INSURANCE APPLICATIONS	36
3.1 National Flood Insurance Program Insurance Zones	36
SECTION 4.0 – AREA STUDIED	37
4.1 Basin Description	37
4.2 Principal Flood Problems	37
4.3 Non-Levee Flood Protection Measures	38
4.4 Levees	38
SECTION 5.0 – ENGINEERING METHODS	42
5.1 Hydrologic Analyses	42
5.2 Hydraulic Analyses	60
5.3 Coastal Analyses	75
5.3.1 Total Stillwater Elevations	75
5.3.2 Waves	76
5.3.3 Coastal Erosion	76
5.3.4 Wave Hazard Analyses	76
5.4 Alluvial Fan Analyses	76
SECTION 6.0 – MAPPING METHODS	78
6.1 Vertical and Horizontal Control	78
6.2 Base Map	80
6.3 Floodplain and Floodway Delineation	81
6.4 Coastal Flood Hazard Mapping	86
6.5 FIRM Revisions	86

6.5.1	Letters of Map Amendment	86
6.5.2	Letters of Map Revision Based on Fill	87
6.5.3	Letters of Map Revision	87
6.5.4	Physical Map Revisions	89
6.5.5	Contracted Restudies	90
6.5.6	Community Map History	90

Figures

	<u>Page</u>
Figure 1: FIRM Index	9
Figure 2: FIRM Notes to Users	10
Figure 3: Map Legend for FIRM	13
Figure 4: Floodway Schematic	34
Figure 5: Wave Runup Transect Schematic	35
Figure 6: Coastal Transect Schematic	36
Figure 7: Frequency Discharge-Drainage Area Curves	56
Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas	75
Figure 9: Transect Location Map	76

Tables

	<u>Page</u>
Table 1: Listing of NFIP Jurisdictions	2
Table 2: Flooding Sources Included in this FIS Report	18
Table 3: Flood Zone Designations by Community	36
Table 4: Basin Characteristics	37
Table 5: Principal Flood Problems	37
Table 6: Historic Flooding Elevations	38
Table 7: Non-Levee Flood Protection Measures	38
Table 8: Levees	40
Table 9: Summary of Discharges	44
Table 10: Summary of Non-Coastal Stillwater Elevations	57
Table 11: Stream Gage Information used to Determine Discharges	60
Table 12: Summary of Hydrologic and Hydraulic Analyses	61
Table 13: Roughness Coefficients	75
Table 14: Summary of Coastal Analyses	75
Table 15: Tide Gage Analysis Specifics	75
Table 16: Coastal Transect Parameters	76
Table 17: Summary of Alluvial Fan Analyses	77
Table 18: Results of Alluvial Fan Analyses	77
Table 19: Countywide Vertical Datum Conversion	78
Table 20: Stream-Based Vertical Datum Conversion	78
Table 21: Base Map Sources	81
Table 22: Summary of Topographic Elevation Data used in Mapping	82
Table 23: Floodway Data	83
Table 24: Flood Hazard and Non-Encroachment Data for Selected Streams	86
Table 25: Summary of Coastal Transect Mapping Considerations	86
Table 26: Incorporated Letters of Map Change	87
Table 27: Community Map History	91

Volume 2
Table of Contents (Continued)

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION	92
7.1 Contracted Studies	92
7.2 Community Meetings	99
 SECTION 8.0 – ADDITIONAL INFORMATION	101
 SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES	102

Tables (Continued)

Table 28: Summary of Contracted Studies Included in this FIS Report	92
Table 29: Community Meetings	100
Table 30: Map Repositories	101
Table 31: Additional Information	102
Table 32: Bibliography and References	103

Exhibits

<u>Flood Profiles</u>	<u>Panel</u>
Arroyo 1 (Channel 6, Ridgeview)	1P - 3P
Arroyo 1A	4P - 8P
Arroyo 2 (Ojo De Aqua)	9P - 17P
Arroyo 3 (Channel 9C Bandolero Channel)	18P - 28P
Arroyo 3A (Channel 10 Ganero Channel)	29P - 30P
Arroyo 3B (Channel 1B Belvidere Channel)	31P - 33P
Arroyo 3B Tributary 1	34P
Arroyo 4	35P - 45P
Arroyo 5	46P - 48P
Arroyo 8	48aP - 48bP
Arroyo 8 (Channel 15 Mesa Hills Channel)	49P - 52P
Arroyo 8A (Channel 11 Thunderbird Valley)	53P - 57P
Arroyo 8A.1	58P - 60P
Arroyo 8A.1.1	61P
Arroyo 8B (Channel 14 Buena Vista Channel)	62P - 63P
Arroyo 8B (Channel 21 Coronado Channel)	64P - 68P
Arroyo 8C (Channel 13 Spring Crest Channel)	69P - 71P
Arroyo 8D	72P - 74P
Channel 29	75P - 78P

Volume 3
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Channel 30	79P - 85P
Channel 30 Tributary 2	86P - 87P
Channel 30 Tributary 2 Split Flow 1	88P - 89P
Channel 30 Tributary 2 Split Flow 2	90P - 91P
EPWU Arroyo 2	92P
EPWU Arroyo 3	93P - 94P
Flow Path No. 11	95P - 107P
Flow Path No. 11 Split Flow	108P - 111P
Flow Path No. 11A	112P - 117P
Flow Path No. 11C	118P - 121P
Flow Path No. 12	122P
Flow Path No. 12A	123P
Flow Path No. 13	124P - 126P
Flow Path No. 13A	127P - 135P
Flow Path No. 13B	136P - 137P
Flow Path No. 14	138P - 142P
Flow Path No. 15	143P - 145P
Flow Path No. 15A	146P
Flow Path No. 15B	147P
Flow Path No. 15C	148P
Flow Path No. 15D	149P
Flow Path No. 15E	150P
Flow Path No. 15F	151P
Flow Path No. 17 (McKelligon Canyon Arroyo)	152P - 164P
Flow Path No. 17A (McKelligon Canyon Arroyo Tributary 6)	165P - 169P

Volume 4
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Flow Path No. 20	170P - 173P
Flow Path No. 20A (Channel 2 Paragon Channel)	174P - 179P
Flow Path No. 20A Tributary 1	180P - 183P
Flow Path No. 20A Tributary 2	184P - 185P
Flow Path No. 21	186P - 190P
Flow Path No. 21 Tributary 2	191P - 193P
Flow Path No. 21A (Channel 3 Canterbury Channel)	194P - 204P
Flow Path No. 22 (Van Buren Ditch)	205P - 207P
Flow Path No. 23 (Billy Rogers Arroyo)	208P - 223P
Flow Path No. 24 (Government Hills Channel)	224P - 225P
Flow Path No. 26 (Phelps Dodge)	226P - 227P
Flow Path No. 27 (Playa Drain)	228P - 232P
Flow Path No. 28 (Mesa Drain and Interceptor)	233P - 241P
Flow Path No. 28A (Mesa Drain below Interceptor)	242P
Flow Path No. 29	243P

Volume 4 (Continued)
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Flow Path No. 30	244P
Flow Path No. 32	245P
Flow Path No. 33 (Middle Drain)	246P
Flow Path No. 36 (Mercantile Channel)	247P
Flow Path No. 37 (Franklin Drain)	248P
Flow Path No. 38	249P - 252P
Flow Path No. 38A	253P - 257P
Flow Path No. 38B	258P - 260P

Volume 5
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Flow Path No. 39	261P - 266P
Flow Path No. 39N	267P - 273P
Flow Path No. 40	274P - 285P
Flow Path No. 41	286P - 295P
Flow Path No. 41A	296P - 305P
Flow Path No. 42	306P - 314P
Flow Path No. 42 Split Flow	315P
Flow Path No. 42A	316P
Flow Path No. 42A (Upper Reach)	317P - 318P
Flow Path No. 42B	319P - 320P
Flow Path No. 42C	321P
Flow Path No. 43	322P - 327P
Flow Path No. 44 (Avispa Canyon)	328P - 334P
Flow Path No. 44 Tributary 1	335P - 338P
Flow Path No. 45	339P - 349P
Flow Path No. 45 Split Flow	350P - 352P

Volume 6
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Flow Path No. 45A	353P 354P
Flow Path No. 45B	355P 358P
Flow Path No. 45C	359P 365P
Flow Path No. 45C Split Flow	366P
Flow Path No. 45C Tributary 5	367P
Flow Path No. 45D	368P - 370P
Flow Path No. 46	371P - 377P
Flow Path No. 46 Tributary 2	378P - 385P
Flow Path No. 47 (Vinton Canyon)	386P - 391P
Flow Path No. 47 Split Flow 1	392P
Flow Path No. 47 Split Flow 2	393P

Volume 6 (Continued)
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Flow Path No. 47 Split Flow 3	394P
Flow Path No. 47 Split Flow 4	395P - 396P
Flow Path No. 47 Split Flow 5	397P
Flow Path No. 47 Split Flow 6	398P
Flow Path No. 47 Tributary 2	399P - 400P
Flow Path No. 48	401P - 406P
Flow Path No. 48 Split Flow	407P
Flow Path No. 48 Tributary 1	408P
Flow Path No. 49	409P - 413P
Flow Path No. 49 Split Flow	414P - 415P
Flow Path No. 49B	416P - 420P
Flow Path No. 49B Split Flow	421P
Flow Path No. 49C	422P - 424P
Flow Path No. 49C Split Flow 1	425P
Flow Path No. 49C Split Flow 2	426P
Flow Path No. 49C Split Flow 3	427P
Flow Path No. 49C Split Flow 4	428P
Flow Path No. 49C Split Flow 5	429P
Flow Path No. 53	430P
Flow Path No. 54	431P - 433P
Flow Path No. 55	434P - 441P
Flow Path No. 55 Split Flow 1	442P
Flow Path No. 55 Split Flow 2	443P

Volume 7
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Flow Path No. 55 Split Flow 3	444P - 445P
Flow Path No. 55 Split Flow 4	446P -
Flow Path No. 55 Split Flow 5	447P -
Flow Path No. 55 Split Flow 6	448P -
Flow Path No. 55A	449P - 451P
Flow Path No. 55A Split Flow	452P -
Flow Path No. 55A Tributary 2	453P -
Flow Path No. 56	454P - 458P
Flow Path No. 56A	459P
Horizon Arroyo (Stream 2)	460P - 468P
Horizon Arroyo Split Path	469P -
Horizon Arroyo Tributary	470P - 473P
Horizon Arroyo Tributary 1	474P - 476P
Railroad Channel	477P - 478P
Range Dam Outlet Channel	479P
Rio Grande	480P - 487P
San Felipe Arroyo	488P - 490P

Volume 8
Exhibits (continued)

Flood Profiles	<u>Panel</u>
Stream 1 (Sparks Arroyo)	491P - 492P
Stream 3	493P - 494P
Stream 4 (Channel 25)	495P - 500P
Stream 4 Tributary 1 (Channel 25A)	501P - 503P
Stream 4 Tributary 2 (Channel 25B)	504P - 506P
Stream 4 Tributary 2.1	507P
Stream 4 Tributary 2.2	508P - 509P
Stream 5 (Channel 26)	510P - 515P
Stream 6	516P - 518P
Stream 7	519P - 521P
Stream 7 Tributary 1	522P
Stream 7 Tributary 2	523P
Stream 7 Tributary 3	524P
Stream 8	525P - 527P
Stream 9	528P - 531P
Stream 10	532P - 536P
Stream 11	537P - 541P
Stream 12	542P - 550P
Stream 13	551P - 555P
Stream 13.5	556P - 558P
Stream 13.5 Tributary 1	559P - 560P
War Road Channel	561P - 562P
Western Freeway Channel	563P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT EL PASO COUNTY, TEXAS

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 El Paso County, Texas.

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.

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

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Anthony, Town of	480804	13030102	48141C0013F, 48141C0014F, 48141C0176F, 48141C0177F	
Clint, Town of	481260	13040100	48141C0651F, 48141C0652F, 48141C0653F, 48141C0654F	

<p>El Paso, City of</p>	<p>480214</p>	<p>13030102, 13040100, 13050003</p>	<p>48141C0014F, 48141C0018F, 48141C0025F¹, 48141C0039F, 48141C0043F, 48141C0044F¹, 48141C0050F¹, 48141C0075F¹, 48141C0169F, 48141C0177F, 48141C0179F, 48171C0181F, 48171C0182F, 48171C0183F, 48141C0184F, 48141C0187F, 48171C0188F, 48171C0189F, 48141C0191F, 48141C0192F, 48141C0193F, 48141C0194F, 48141C0201F, 48141C0202F, 48141C0203F, 48141C0204F, 48141C0206F, 48141C0207F, 48141C0208F, 48141C0209F, 48141C0211F, 48141C0212F, 48121C0213F, 48141C0214F, 48141C0216F, 48141C0217F, 48141C0218F, 48141C0219F, 48141C0250F¹, 48141C0332F, 48141C0351F, 48141C0352F, 48141C0353F, 48141C0354F, 48141C0356F, 48141C0357F, 48141C0358F, 48141C0359F, 48141C0362F, 48141C0366F, 48141C0367F, 48141C0369F, 48141C0376F, 48171C0377F,</p>	
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El Paso, City of (continued)	480214	13030102, 13040100, 13050003	48171C0378F, 48171C0379F, 48171C0381F, 48171C0382F, 48171C0383F, 48171C0384F ¹ , 48141C0386F, 48141C0387F, 48171C0388F, 48141C0389F, 48141C0391F ¹ , 48141C0392F ¹ , 48141C0393F, 48141C0394F, 48141C0403F, 48141C0411F, 48141C0412F, 48141C0413F, 48141C0414F, 48141C0416F, 48141C0417F, 48141C0418F, 48141C0419F, 48141C0425F, 48141C0430F, 48141C0440F, 48141C0501F, 48141C0506F, 48141C0507F, 48171C0525F ¹ , 48141C0526F, 48141C0527F, 48141C0528F, 48141C0529F, 48141C0531F, 48121C0532F, 48141C0533F, 48141C0534F, 48141C0536F, 48141C0537F, 48141C0539F, 48141C0541F, 48141C0542F, 48141C0543F, 48141C0631F	
El Paso County, Unincorporated Areas	480212	13030102, 13040100, 13050003	48141C0013F, 48141C0075F ¹ , 48141C0100F ¹ , 48141C0125F ¹ , 48141C0150F ¹ , 48141C0157F, 48141C0159F ¹ , 48141C0167F,	

<p>El Paso County, Unincorporated Areas</p>	<p>480212</p>	<p>13030102, 13040100, 13050003</p>	<p>48141C0169F, 48141C0176F, 48141C0177F, 48171C0178F, 48141C0179F, 48141C0181F, 48141C0186F, 48141C0187F, 48141C0188F, 48141C0189F, 48141C0211F, 48141C0212F, 48141C0213F, 48141C0214F, 48141C0250F¹, 48141C0275F, 48141C0300F, 48141C0325F, 48141C0379F, 48141C0381F, 48141C0382F, 48141C0383F, 48141C0384F¹, 48141C0387F, 48141C0391F, 48141C0392F, 48141C0403F¹, 48141C0412F, 48141C0416F, 48141C0417F, 48141C0419F, 48141C0425F, 48141C0430F, 48141C0435F, 48141C0440F, 48141C0445F, 48141C0475F, 48141C0500F, 48141C0532F, 48141C0534F, 48141C0542F, 48141C0551F, 48141C0552F¹, 48141C0553F, 48141C0554F, 48141C0560F, 48141C0561F, 48141C0562F, 48141C0563F, 48141C0564F, 48141C0570F, 48141C0600F, 48141C0625F, 48141C0631F,</p>	
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El Paso County, Unincorporated Areas (continued)	480212	13030102, 13040100, 13050003	48141C0632F, 48141C0633F, 48141C0634F, 48141C0642F, 48141C0651F, 48141C0652F, 48141C0653F, 48141C0654F, 48141C0660F, 48141C0665F, 48141C0670F, 48141C0700F, 48171C0725F, 48141C0735F, 48141C0750F, 48141C0755F, 48141C0775F, 48141C0800F	
Horizon City, Town of	480322	13040100	48141C0553F, 48141C0554F, 48141C0560F, 48141C0562F, 48141C0564F, 48141C0570F	
San Elizario, City of	480561	13040100	48141C0631F, 48141C0632F, 48141C0633F, 48141C0634F, 48141C0642F, 48141C0653F, 48141C0665F	
Socorro, City of	481658	13040100	48141C0534F, 48141C0541F, 48141C0542F, 48141C0543F, 48141C0544F, 48141C0561F, 48141C0563F, 48141C0564F, 48141C0631F, 48141C0632F, 48141C0651F, 48141C0652F, 48141C0660F	
Vinton, Village of	481557	13030102	48141C0176F, 48141C0177F, 48141C0178F, 48141C0179F	

Ysleta Del Sur Pueblo of Texas	480663	13040100, 13050003	48141C0300F, 48141C0325F, 48141C0529F, 48141C0537F, 48141C0543F, 48141C0631F	
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¹ Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

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

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

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

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

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

The initial Countywide FIS Report for El Paso County became effective on Month XX, XXXX. Refer to Table 27 for information about subsequent revisions to the FIRMs.

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

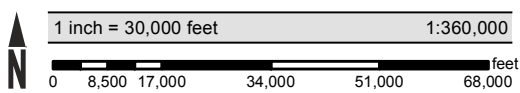
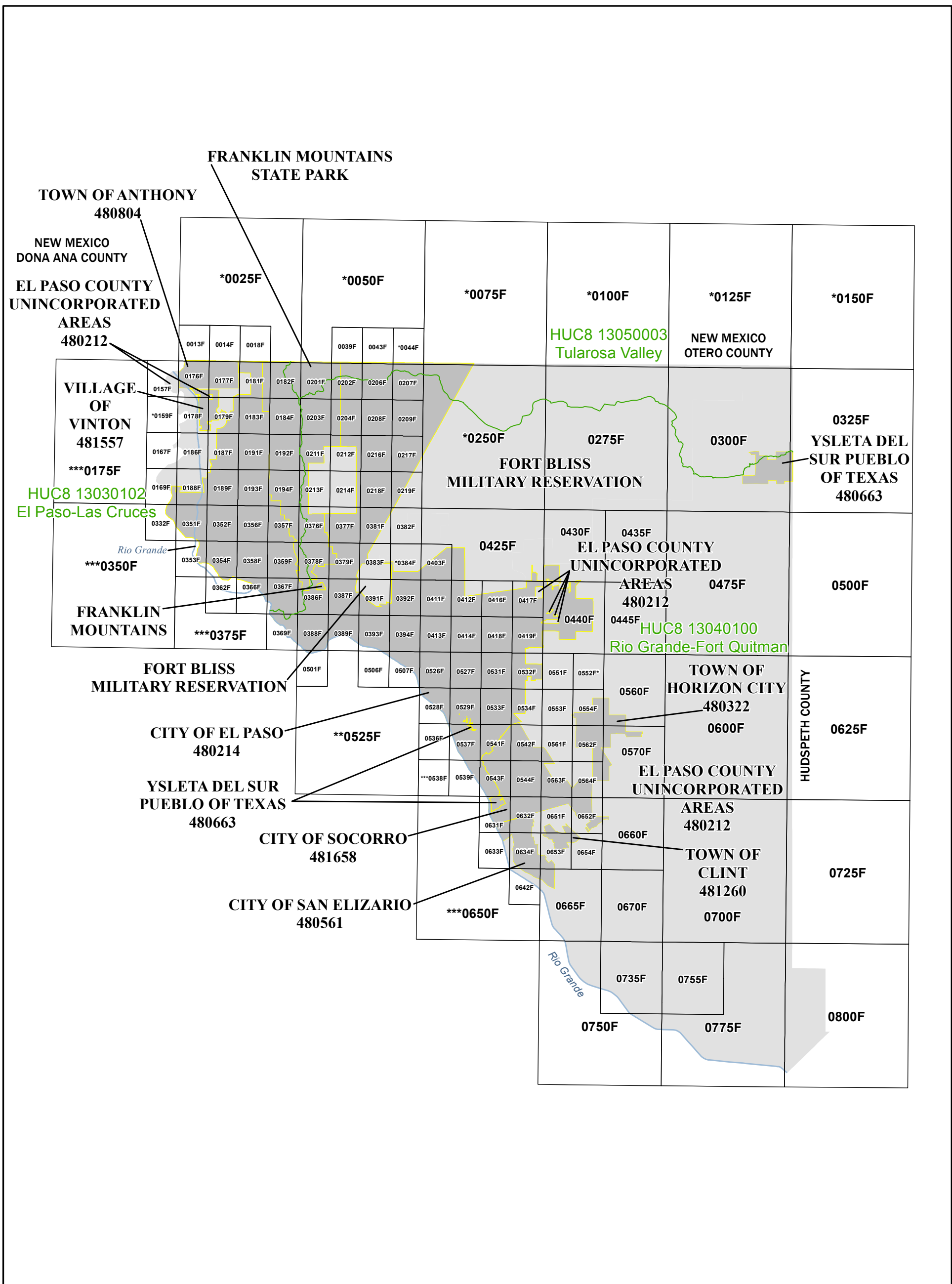
<u>Old Zone</u>	<u>New Zone</u>
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/national-flood-insurance-program-community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1-percent-annual-chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 8 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE National Levee Database (nld.usace.army.mil). For all other levees, the user is encouraged to contact the appropriate local community.

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

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



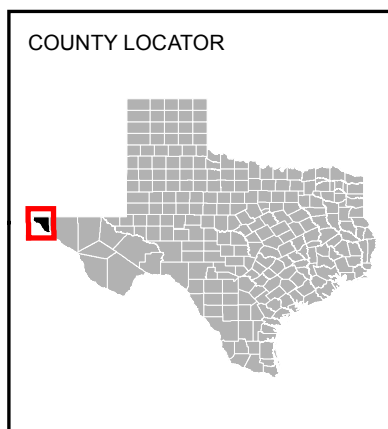
Map Projection:
 State Plane Texas Central FIPS 4203 Feet;
 North American Datum 1983

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

[HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
 ** PANEL NOT PRINTED - AREA ALL WITHIN ZONE A
 *** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY



NATIONAL FLOOD INSURANCE PROGRAM
 FLOOD INSURANCE RATE MAP INDEX

EL PASO COUNTY, TEXAS and Incorporated Areas

PANELS PRINTED:

0013, 0014, 0018, 0039, 0043, 0157, 0167, 0169, 0176, 0177, 0178, 0179, 0181, 0182, 0183, 0184, 0186, 0187, 0188, 0189, 0191, 0192, 0193, 0194, 0201, 0202, 0203, 0204, 0206, 0207, 0208, 0209, 0211, 0212, 0213, 0214, 0216, 0217, 0218, 0219, 0275, 0300, 0325, 0332, 0351, 0352, 0353, 0354, 0356, 0357, 0358, 0359, 0362, 0366, 0367, 0369, 0376, 0377, 0378, 0379, 0381, 0382, 0383, 0386, 0387, 0388, 0389, 0391, 0392, 0393, 0394, 0403, 0411, 0412, 0413, 0414, 0416, 0417, 0418, 0419, 0425, 0430, 0435, 0440, 0445, 0475, 0500, 0501, 0506, 0507, 0526, 0527, 0528, 0529, 0531, 0532, 0533, 0534, 0536, 0537, 0539, 0541, 0542, 0543, 0544, 0551, 0553, 0554, 0560, 0561, 0562, 0563, 0564, 0570, 0600, 0625, 0631, 0632, 0633, 0634, 0642, 0651, 0652, 0653, 0654, 0660, 0665, 0670, 0700, 0725, 0735, 0750, 0755, 0775, 0800



FEMA

PRELIMINARY
 JULY 8, 2020
 MAP NUMBER
 48141CIND0A
 EFFECTIVE DATE

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.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

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.

Figure 2. FIRM Notes to Users

Multiple flood hazard locations identified within El Paso County, Texas have been determined through the use of two-dimensional (2D) modeling techniques. Floodplains, flood profiles and BFEs are based on the 2D modeling results that provide highly detailed results and identify multiple flow paths and variation of the BFEs across the defined floodplain extent. The multiple profiles and the highlighted BFEs provide some detail that can be used to establish flood hazard at various locations across the floodplain. However, users may also reference the BFE contour mapping and 1% water surface elevation raster GIS data to ensure an accurate determination of BFEs for any given location.

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

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Texas Central FIPS 4203 (US Feet). The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

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

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

BASE MAP INFORMATION: Base map information shown on the FIRM was derived from multiple sources. Road centerlines and railroad tracks were provided by PdN Mapa. El Paso City Limits were provided by the City of El Paso. Vinton City limits were provided by the Village of Vinton. Watershed boundaries were provided by the US Department of Agriculture – Natural Resources Conservation Service (USDA/NRCS). Aerial Imagery was provided by the US Department of Agriculture – Farm Service Agency, dated 2018. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

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

Figure 2. FIRM Notes to Users

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 El Paso County, TX, 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 El Paso County, TX, effective Month XX, XXXX.

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

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 El Paso County.

Figure 3: Map Legend for FIRM

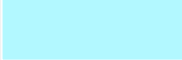

<p>SPECIAL FLOOD HAZARD AREAS: The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation 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.</p>	
	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.
	Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM

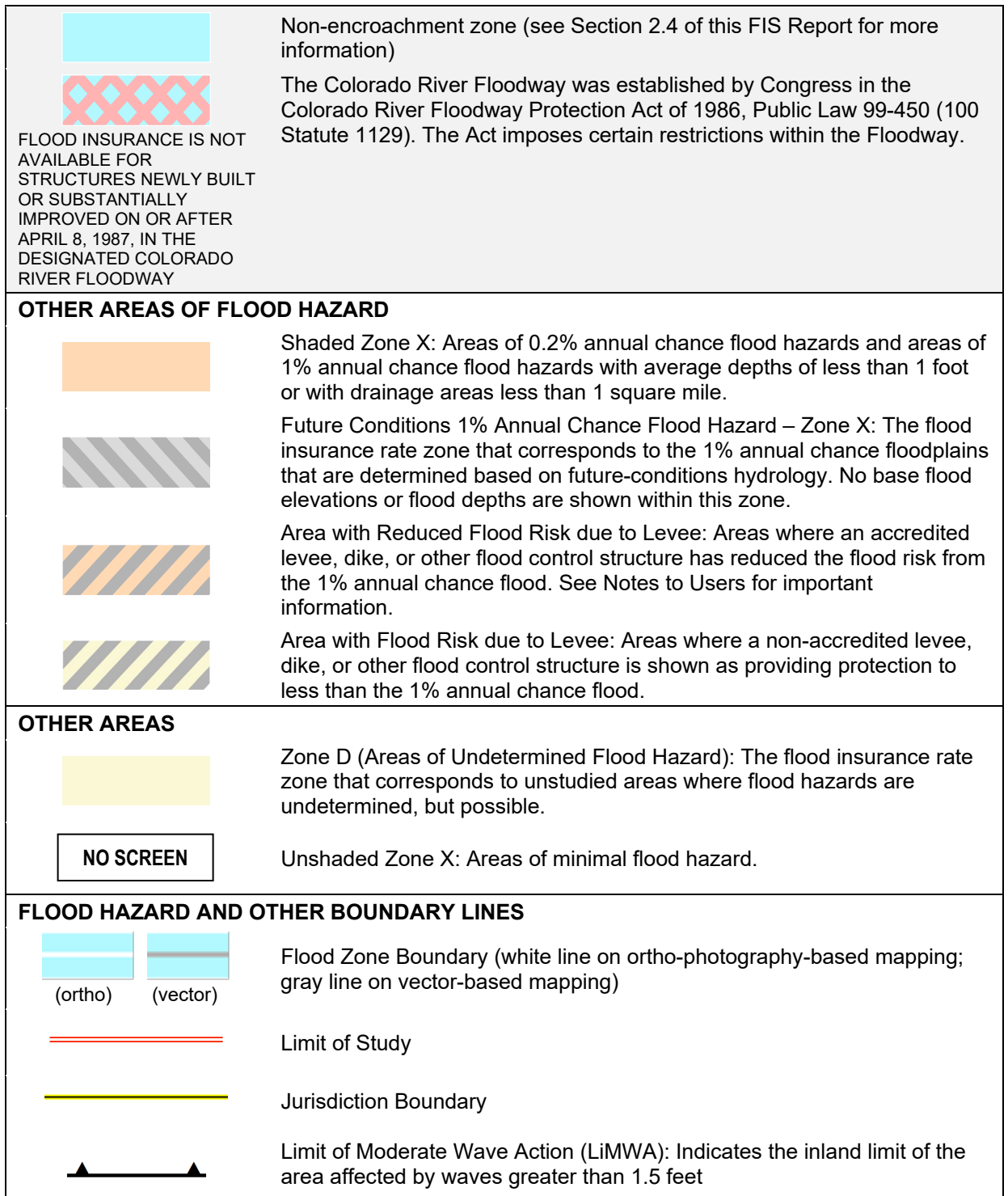


Figure 3: Map Legend for FIRM




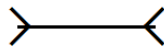

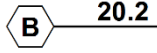

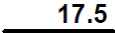
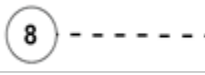


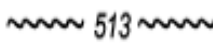










GENERAL STRUCTURES	
 Aqueduct Channel Culvert Storm Sewer	Channel, Culvert, Aqueduct, or Storm Sewer
 Dam Jetty Weir	Dam, Jetty, Weir
	Levee, Dike, or Floodwall
 Bridge	Bridge
REFERENCE MARKERS	
 22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water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

Figure 3: Map Legend for FIRM

BASE MAP FEATURES	
 <i>Missouri Creek</i>	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	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
4276⁰⁰⁰mE	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

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

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

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

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

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

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	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
Arroyo 1 (Channel 6, Ridgeview)	El Paso, City of	Contessa Ridge Drive	Approximately 2,200 ft. upstream of Franklin Hills St	13030102	1.17		N	AE	February 2007
Arroyo 1A	El Paso, City of	Approximately 2,740 ft. upstream of confluence with Arroyo 1	Approximately 3,360 ft. upstream of confluence with High Ridge Small Channel	13030102	2.22		N	AE	October 2004
Arroyo 2 (Ojo de Aqua)	El Paso, City of	Approximately 450 ft. downstream of Lakehurst Rd	Approximately 300 ft. downstream of Channel 8 (Via Serena Channel)	13030102	2.42		N	AE	June 2019
Arroyo 3 (Channel 9C Bandolero Channel)	El Paso, City of	Mesa Dam	Approximately 2025 ft. upstream of Bandolero Dr.	13030102	2.66		N	AE	June 2019
Arroyo 3A (Channel 10 Ganero Channel)	El Paso, City of	Confluence with Arroyo 3	Just downstream of Westwind Dr	13030102	0.56		N	AE	June 2019
Arroyo 3B (Channel 1B Belvidere Channel)	El Paso, City of	Mesa Dam	Just downstream of Villa Hermosa Dr	13030102	1.21		N	AE	June 2019
Arroyo 3B Tributary 1	El Paso, City of	Confluence with Arroyo 3B	Just upstream of Belvidere St	13030102	0.32		N	AE	June 2019
Arroyo 4	El Paso, City of	Keystone Dam	Approximately 1,335 ft. upstream of N. Mesa St	13030102	0.97		N	AE	June 2019
Arroyo 4	El Paso, City of	Approximately 1,335 ft. upstream of N. Mesa St	N. Resler Dr	13030102	0.23		N	AE	October 2019
Arroyo 4	El Paso, City of	N. Resler Dr	Westwind Dr	13030102	1.01		N	AE	June 2019
Arroyo 4	El Paso, City of	Westwind Dr	Just upstream of Broadmoor Dr	13030102	0.68		N	AE	November 2007
Arroyo 5	El Paso, City of	Just downstream of southbound I-10	Just downstream of N. Mesa St.	13030102	1.25		N	AE	June 2019
Arroyo 8 (Channel 15 Mesa Hills Channel)	El Paso, City of	Oxidation Dam	Cabaret Drive	13030102	0.89		N	AE	December 1981

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
Arroyo 8 (Channel 15 Mesa Hills Channel)	El Paso, City of	Cabaret Drive	Approximately 800 ft. upstream of North Hills Detention Basin	13030102	0.95		N	AE	June 2019
Arroyo 8A (Channel 11 Thunderbird Valley)	El Paso, City of	Confluence with Arroyo 8B	Just downstream of Martindale Ln	13030102	2.20		N	AE	June 2019
Arroyo 8A.1	El Paso, City of	Confluence with Arroyo 8A	Just downstream of N. Stanton St	13030102	0.79		N	AE	June 2019
Arroyo 8A.1.1	El Paso, City of	Confluence with Arroyo 8A.1	Just downstream of N. Stanton St	13030102	0.27		N	AE	June 2019
Arroyo 8B (Channel 14 Buena Vista Channel)	El Paso, City of	Confluence with Arroyo 8	Confluence with Arroyo 8A	13030102	0.41		N	AE	June 2019
Arroyo 8B (Channel 21 Coronado Channel)	El Paso, City of	Confluence with Arroyo 8A	Just downstream of Silver Springs Dr	13030102	4.05		N	AE	June 2019
Arroyo 8C (Channel 13 Spring Crest Channel)	El Paso, City of	Confluence with Arroyo 8B	Just upstream of Singing Hills Dr	13030102	1.30		N	AE	June 2019
Arroyo 8D	El Paso, City of	Confluence with Arroyo 8A	Just downstream of Mesa Hills Dr	13030102	0.68		N	AE	June 2019
Channel 29	Anthony, Town of; El Paso, City of	Just downstream of Wildcat Dr	Approximately 1.7 miles upstream of Wildcat Dr	13030102	1.56		N	AE	December 2017
Channel 30	Anthony, Town of; El Paso County, Unincorporated Areas	Just downstream of Frontage Rd	Approximately 1.4 miles upstream of Frontage Rd	13030102	1.42		N	AE	December 2017
Channel 30	El Paso, City of; El Paso County, Unincorporated Areas	Approximately 1.4 miles upstream of Frontage Rd	Approximately 2.8 miles upstream of Frontage Rd	13030102	1.43		N	AE	June 2019
Channel 30 Tributary 2	El Paso, City of; El Paso County, Unincorporated Areas	Confluence with Channel 30	Approximately 3,375 ft. upstream of Confluence with Channel 30	13030102	0.64		N	AE	June 2019
Channel 30 Tributary 2 Split Flow 1	El Paso, City of	Confluence with Channel 30 Tributary 2	Divergence From Channel 30 Tributary 2	13030102	0.29		N	AE	June 2019

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
Channel 30 Tributary 2 Split Flow 2	El Paso, City of	Confluence with Flow Path No. 47	Divergence From Channel 30 Tributary 2	13030102	0.35		N	AE	June 2019
EPWU Arroyo 2	El Paso County, Unincorporated Areas	Approximately 600 ft. downstream of I-10	Approximately 2,560 ft. upstream of I-10	13040100	0.56		N	AE	January 2018
EPWU Arroyo 3	El Paso County, Unincorporated Areas	North Pond	Approximately 1,200 ft. upstream of Covington Ridge Way	13040100	0.52		N	AE	June 2019
Flow Path No. 11	El Paso, City of	Confluence with Eastern Freeway Channel	Approximately 3,685 ft. upstream of Confluence with Flow Path No. 11A	13040100	6.14		N	AE	June 2019
Flow Path No. 11 Split Flow	El Paso, City of	Confluence with Flow Path No. 11	Divergence from Flow Path No. 11	13040100	1.72		N	AE	June 2019
Flow Path No. 11A	El Paso, City of	Confluence with Flow Path No. 11	Approximately 1.4 miles upstream of Confluence with Flow Path No. 11	13040100	1.41		N	AE	June 2019
Flow Path No. 11C	El Paso, City of	Confluence with Flow Path No. 11	Approximately 1.5 miles upstream of confluence with Flow Path No. 11	13040100	1.52		N	AE	June 2019
Flow Path No. 12	El Paso, City of	Confluence with Eastern Freeway Channel	Approximately 2,450 ft. upstream of Confluence with Eastern Freeway Channel	13040100	0.55		N	AE	April 1997
Flow Path No. 12A	El Paso, City of	Confluence with Flow Path No. 11C	Approximately 4,900 ft. upstream of Confluence with Flow Path No. 11	13040100	0.97		N	AE	April 1997
Flow Path No. 13	El Paso, City of	Northeast Pond	Approximately 1,850 ft. upstream of Kenworthy St	13040100	2.87		N	AE	June 2018
Flow Path No. 13A	El Paso, City of	North Hills Detention Basin 2	Approximately 2.2 miles upstream of North Hills Detention Basin 2	13040100	2.23		N	AE	June 2019

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
Flow Path No. 13B	El Paso, City of	Confluence with Flow Path No. 13A	Approximately 4,140 ft. upstream of Confluence with Flow Path No. 13A	13040100	0.78		N	AE	June 2019
Flow Path No. 14	El Paso, City of	Confluence with Flow Path No. 13	Approximately 880 ft. upstream of Sun Valley Dr	13040100	2.82		N	AE	June 2018
Flow Path No. 15	El Paso, City of	Railroad Drive	Junction of Flow Path No. 14	13040100	5.09		N	AE	June 2018
Flow Path No. 15A	El Paso, City of	Confluence with Flow Path No. 15	Threadgill Ave	13040100	0.36		N	AE	June 2018
Flow Path No. 15B	El Paso, City of	Apollo Ave	Hondo Pass Rd	13040100	1.44		N	AE	June 2018
Flow Path No. 15C	El Paso, City of	Confluence with Flow Path No. 15B	Gateway North Blvd	13040100	1.00		N	AE	June 2018
Flow Path No. 15D	El Paso, City of	Confluence with Flow Path No. 15B	Gateway North Blvd	13040100	1.04		N	AE	June 2018
Flow Path No. 15E	El Paso, City of	Confluence with Flow Path No. 15B	State Route 54 (Dyer Street)	13040100	1.07		N	AE	June 2018
Flow Path No. 15F	El Paso, City of	Confluence with Flow Path No. 15B	State Route 54 (Dyer Street)	13040100	1.07		N	AE	June 2018
Flow Path No. 17 (McKelligon Canyon Arroyo)	El Paso, City of	Alabama St	Approximately 1.2 miles upstream of Confluence with Flow Path No. 17A	13040100	3.14		N	AE	June 2019
Flow Path No. 17A (McKelligon Canyon Arroyo Tributary 6)	El Paso, City of	Confluence with Flow Path No. 17	Approximately 1.1 miles upstream of Confluence with Flow Path No. 17	13040100	1.13		N	AE	June 2019
Flow Path No. 20	El Paso, City of	Confluence with Rio Grande	Vaquero Lane	13030102	1.42		N	AE	June 2019
Flow Path No. 20A (Channel 2 Paragon Channel)	El Paso, City of	Confluence with Flow Path No. 20	Approximately 500 ft. upstream of N. Stanton St.	13030102	2.52		N	AE	June 2019
Flow Path No. 20A Tributary 1	El Paso, City of	Confluence with Flow Path No. 20A	Approximately 2,440 ft. upstream of confluence with Flow Path No. 20A	13030102	0.46		N	AE	June 2019

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
Flow Path No. 20A Tributary 2	El Paso, City of	Confluence with Flow Path No. 20A	Approximately 2,090 ft. upstream of confluence with Flow Path No. 20A	13030102	0.40		N	AE	June 2019
Flow Path No. 21	El Paso, City of	Confluence with Rio Grande	Confluence with Flow Path No. 21 Tributary 2	13030102	2.26		N	AE	June 2019
Flow Path No. 21 Tributary 2	El Paso, City of	Confluence with Flow Path No. 21	Approximately 1,530 ft. upstream of confluence with Flow Path No. 21	13030102	0.30		N	AE	June 2019
Flow Path No. 21A (Channel 3 Canterbury Channel)	El Paso, City of	Confluence with Flow Path No. 21	Approximately 3,860 ft. upstream of N. Stanton St.	13030102	2.46		N	AE	June 2019
Flow Path No. 22 (Van Buren Ditch)	El Paso, City of	Van Buren Dam	Approximately 3,270 ft. upstream of Van Buren Dam	13040100	0.62		N	AE	June 2019
Flow Path No. 23 (Billy Rogers Arroyo)	El Paso, City of	Confluence with Rio Grande	Approximately 1.1 miles upstream of E. Robinson Ave	13040100	3.77		N	AE	June 2019
Flow Path No. 24 (Government Hills Channel)	El Paso, City of; Fort Bliss Military Reservation	Outlet to Upper Duranzo Basin	Pershing Dam	13040100	1.75		N	AE	June 2019
Flow Path No. 26 (Phelps Dodge)	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Approximately 1,825 ft. upstream of Hawkins Blvd.	13040100	1.74		N	AE	October 2002
Flow Path No. 27 (Playa Drain)	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Cargill St	13040100	11.0		N	AE	June 2016
Flow Path No. 28 (Mesa Drain and Interceptor)	El Paso, City of	Confluence with Flow Path No. 27 (Playa Drain)	Just downstream of Nichols Rd	13040100	12.4		N	AE	June 2019
Flow Path No. 28A (Mesa Drain Below Interceptor)	El Paso, City of	TX Loop 375	Divergence from Flow Path No. 28	13040100	0.39		N	AE	June 2019
Flow Path No. 29	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Giles Road Detention Basin	13040100	1.78		N	AE	October 2002

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
Flow Path No. 30	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Approximately 1,000 ft. upstream of North Carolina Drive	13040100	0.80		N	AE	October 2002
Flow Path No. 31 (Jesuit Draw)	El Paso, City of	Inlet to Lomaland Basin	Just downstream of Rojas Drive	13040100	0.90		N	AE	October 2002
Flow Path No. 32	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Escobar Drive	13040100	0.68		N	AE	October 2002
Flow Path No. 33 (Middle Drain)	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Prespa Pl	13040100	1.3		N	AE	June 2016
Flow Path No. 36 (Mercantile Channel)	El Paso, City of	Americas Ten Basin	I-10	13040100	0.47		N	AE	June 2019
Flow Path No. 37 (Franklin Drain)	El Paso, City of	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Approximately 1500 ft. above Carl Longuemare Rd	13040100	1.6		N	AE	June 2016
Flow Path No. 38	El Paso, City of	Confluence with Flow Path No. 39	S. Desert Blvd	13040100	0.64		N	AE	January 2015
Flow Path No. 38	El Paso, City of	S. Desert Blvd	Just upstream of Northwestern Dr	13030102	0.61		N	AE	October 2017
Flow Path No. 38	El Paso, City of	Resler Pond 1	Approximately 980 ft. upstream of Resler Pond 1	13030102	0.20		N	AE	August 2007
Flow Path No. 38A	El Paso, City of	A Point 142 feet below Pond 4 Inlet	Northern Pass Pond 3	13030102	0.75		N	AE	June 2011
Flow Path No. 38A	El Paso, City of	Northern Pass Pond 3	Approximately 10,800 ft. upstream of Resler Pond 4	13030102	1.13		N	AE	August 2007
Flow Path No. 38B	El Paso, City of	Northern Pass Pond 3	Approximately 5,800 ft. upstream of Northern Pass Pond 3	13030102	1.13		N	AE	August 2007
Flow Path No. 39	El Paso, City of	Confluence with Rio Grande	800 ft. upstream of Interstate 10	13030102	1.20		N	AE	January 2015
Flow Path No. 39	El Paso, City of	800 ft. upstream of Interstate 10	Approximately 6,935 ft. upstream of Resler Dr	13030102	1.62		N	AE	December 2017

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
Flow Path No. 39N	El Paso, City of	Confluence with Flow Path No. 39	Confluence with Flow Path No. 39B	13030102	1.41		N	AE	December 2017
Flow Path No. 40	El Paso, City of	Confluence with Channel 23	Approximately 5.0 miles upstream of Bluff Creek St.	13030102	5.72		N	AE	June 2019
Flow Path No. 41	El Paso, City of	Approximately 270 ft. upstream of Talbot Ave	Just Upstream of N. Desert Blvd	13030102	0.39		N	AE	September 2009
Flow Path No. 41	El Paso, City of	Just Upstream of N. Desert Blvd	Approximately 0.5 miles upstream of Confluence with Flow Path No. 41 Tributary	13030102	2.35		N	AE	October 2015
Flow Path No. 41	El Paso, City of	Approximately 0.5 miles upstream of Confluence with Flow Path No. 41 Tributary	Approximately 1.6 miles upstream of Confluence with Flow Path No. 41 Tributary	13030102	1.11		N	AE	June 2019
Flow Path No. 41A	El Paso, City of	Confluence with Flow Path No. 41	Confluence with Flow Path No. 41A Tributary 2	13030102	2.57		N	AE	October 2015
Flow Path No. 41A	El Paso, City of	Confluence with Flow Path No. 41A Tributary 2	Approximately 1.6 miles upstream of confluence with Flow Path No. 41A Tributary 2	13030102	1.66		N	AE	June 2019
Flow Path No. 42	El Paso County, Unincorporated Areas	Confluence with Rio Grande	Los Mochis Drive	13030102	0.64		N	AE	June 2019
Flow Path No. 42	El Paso, City of; El Paso County, Unincorporated Areas	Los Mochis Drive	S. Desert Blvd	13030102	0.91		Y	AE	March 2015
Flow Path No. 42	El Paso, City of	S. Desert Blvd	Approximately 3.4 miles upstream of I-10	13030102	3.43		N	AE	June 2019
Flow Path No. 42 Split Flow	El Paso, City of	Confluence with Flow Path No. 42	Divergence from Flow Path No. 42	13030102	0.99		N	AE	June 2019
Flow Path No. 42A	El Paso, City of; El Paso County, Unincorporated Areas	Confluence with Flow Path No. 42	Approximately 200 ft. upstream of Los Mochis Dr	13030102	0.48		Y	AE	March 2015

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
Flow Path No. 42A (Upper Reach)	El Paso, City of	I-10	Approximately 3,260 ft. upstream of I-10	13030102	0.61		N	AE	June 2018
Flow Path No. 42B	El Paso, City of	I-10	Approximately 3070 ft. upstream of I-10	13030102	0.58		N	AE	December 2016
Flow Path No. 42C	El Paso, City of	I-10	Approximately 1325 ft. upstream of Northwestern Dr	13030102	0.87		N	AE	December 2016
Flow Path No. 43	El Paso, City of	Approximately 650 ft. downstream of I-10	Approximately 2.6 miles upstream of I-10	13030102	2.61		N	AE	June 2019
Flow Path No. 44 (Avispa Canyon)	El Paso, City of; El Paso County, Unincorporated Areas	Just downstream of S. Desert Blvd.	Approximately 1.5 miles upstream of S Desert Blvd	13030102	1.53		N	AE	December 2017
Flow Path No. 44 Tributary 1	El Paso, City of;	Confluence with Flow Path No. 44	Approximately 3.6 miles of Confluence with Flow Path No. 42	13030102	3.64		N	AE	June 2019
Flow Path No. 45	El Paso, City of; El Paso County, Unincorporated Areas; Vinton, Village of	Confluence with the Rio Grande	Approximately 1.5 miles upstream of confluence with Flow Path No. 45B	13030102	5.26		N	AE	June 2019
Flow Path No. 45 Split Flow	El Paso, City of; El Paso County, Unincorporated Areas;	Just downstream of S. Desert Blvd	Divergence from Flow Path No. 45	13030102	1.53		N	AE	June 2019
Flow Path No. 45A	El Paso, City of; El Paso County, Unincorporated Areas; Vinton, Village of	Confluence with Flow Path No. 45	Just upstream of Remington Dr.	13030102	1.75		N	AE	June 2019
Flow Path No. 45B	El Paso, City of;	Confluence with Flow Path No. 45	Approximately 1.6 miles upstream of confluence with Flow Path No. 45	13030102	1.61		N	AE	June 2019
Flow Path No. 45C	El Paso, City of;	Confluence with Flow Path No. 45	Approximately 1,200 ft. upstream of confluence with Flow Path No. 45C Tributary 5	13030102	3.21		N	AE	June 2019
Flow Path No. 45C Split Flow	El Paso, City of;	Confluence with Flow Path No. 45	Divergence from Flow Path No. 45C	13030102	0.58		N	AE	June 2019

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
Flow Path No. 45C Tributary 5	El Paso, City of;	Confluence with Flow Path No. 45C	Approximately 1,425 ft. upstream of confluence with Flow Path No. 45C	13030102	0.27		N	AE	June 2019
Flow Path No. 45D	El Paso, City of	Confluence with Flow Path No. 45B	Approximately 1.2 miles upstream of confluence with Flow Path No. 45B	13030102	1.21		N	AE	June 2019
Flow Path No. 46	El Paso County, Unincorporated Areas; Vinton, Village of	Just downstream of Frontage Rd	Confluence with Flow Path No. 46 Tributary 4	13030102	1.51		N	AE	December 2017
Flow Path No. 46 Tributary 2	El Paso, City of; El Paso County, Unincorporated Areas	Confluence with Flow Path No. 46	Approximately 1.8 miles upstream of confluence with Flow Path No. 46	13030102	1.80		N	AE	June 2019
Flow Path No. 47 (Vinton Canyon)	El Paso, City of; El Paso County, Unincorporated Areas	Confluence with Channel 30	Approximately 2.9 miles upstream of confluence with Channel 30	13030102	2.93		N	AE	June 2019
Flow Path No 47 Split Flow 1	El Paso, City of	Confluence with Flow Path No. 47 Split Flow 2	Divergence from Flow Path No. 47	13030102	0.11		N	AE	June 2019
Flow Path No 47 Split Flow 2	El Paso, City of	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	13030102	0.18		N	AE	June 2019
Flow Path No 47 Split Flow 3	El Paso, City of	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	13030102	0.21		N	AE	June 2019
Flow Path No 47 Split Flow 4	El Paso, City of	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	13030102	0.41		N	AE	June 2019
Flow Path No 47 Split Flow 5	El Paso, City of	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	13030102	0.16		N	AE	June 2019
Flow Path No 47 Split Flow 6	El Paso County, Unincorporated Areas	Confluence with Channel 30	Divergence from Flow Path No. 47	13030102	0.35		N	AE	June 2019
Flow Path No. 47 Tributary 2	El Paso, City of	Confluence with Flow Path No. 47	Approximately 3,860 ft. upstream of Confluence with Flow Path No. 47	13030102	0.73		N	AE	June 2019

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
Flow Path No. 48	El Paso, City of; El Paso County, Unincorporated Areas	Confluence with Flow Path No. 47	Approximately 3.1 miles upstream of Confluence with Flow Path No. 47	13030102	2.90		N	AE	June 2019
Flow Path No. 48 Split Flow	El Paso, City of	Confluence with Flow Path No. 48	Divergence from Flow Path No. 48	13030102	0.35		N	AE	June 2019
Flow Path No. 48 Tributary 1	El Paso, City of	Confluence with Flow Path No. 48	Approximately 2,720 ft. upstream of Confluence with Flow Path No. 47	13030102	0.52		N	AE	June 2019
Flow Path No. 49	El Paso, City of	North Hills Detention Basin 2	Approximately 2.2 miles upstream of North Hills Detention Basin 2	13040100	2.22		N	AE	June 2019
Flow Path No. 49 Split Flow	El Paso, City of	Confluence with Flow Path No. 49	Divergence from Flow Path No. 49	13040100	0.29		N	AE	June 2019
Flow Path No. 49B	El Paso, City of	North Hills Detention Basin 2	Approximately 2.2 miles upstream of North Hills Detention Basin 2	13040100	2.17		N	AE	June 2019
Flow Path No. 49B Split Flow 1	El Paso, City of	Confluence with Flow Path No. 49B	Divergence from Flow Path No. 49B	13040100	0.17		N	AE	June 2019
Flow Path No. 49C	El Paso, City of	Confluence with Flow Path No. 49B	Approximately 1.5 miles upstream of Confluence with Flow Path No. 49B	13040100	1.46		N	AE	June 2019
Flow Path No. 49C Split Flow 1	El Paso, City of	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	13040100	0.13		N	AE	June 2019
Flow Path No. 49C Split Flow 2	El Paso, City of	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	13040100	0.18		N	AE	June 2019
Flow Path No. 49C Split Flow 3	El Paso, City of	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	13040100	0.13		N	AE	June 2019
Flow Path No. 49C Split Flow 4	El Paso, City of	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	13040100	0.19		N	AE	June 2019

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
Flow Path No. 49C Split Flow 5	El Paso, City of	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C Split Flow 4	13040100	0.10		N	AE	June 2019
Flow Path No. 53	El Paso, City of	Confluence with Western Freeway Channel	Approximately 2,840 ft. upstream of confluence with Western Freeway Channel	13040100	0.54		N	AE	June 2019
Flow Path No. 54	El Paso, City of	Confluence with Flow Path No. 11	Martin Luther King Jr. Blvd	13040100	2.17		N	AE	June 2019
Flow Path No. 55	El Paso, City of	Confluence with Flow Path No. 56	Approximately 7.1 miles upstream of Confluence with Flow Path No. 56	13050003	7.07		N	AE	June 2019
Flow Path No. 55 Split Flow 1	El Paso, City of	Confluence with Flow Path No. 55	Divergence from Flow Path No. 55	13050003	0.18		N	AE	June 2019
Flow Path No. 55 Split Flow 2	El Paso, City of	Confluence with Flow Path No. 55	Divergence from Flow Path No. 55	13050003	0.10		N	AE	June 2019
Flow Path No. 55 Split Flow 3	El Paso, City of	Confluence with Flow Path No. 55	Divergence from Flow Path No. 55	13050003	0.32		N	AE	June 2019
Flow Path No. 55 Split Flow 4	El Paso, City of	Confluence with Flow Path No. 55	Divergence from Flow Path No. 55	13050003	0.14		N	AE	June 2019
Flow Path No. 55 Split Flow 5	El Paso, City of	Confluence with Flow Path No. 55	Divergence from Flow Path No. 55	13050003	0.10		N	AE	June 2019
Flow Path No. 55 Split Flow 6	El Paso, City of	Confluence with Flow Path No. 55	Divergence from Flow Path No. 55	13050003	0.11		N	AE	June 2019
Flow Path No. 55A	El Paso, City of	Confluence with Flow Path No. 55	Approximately 1.4 miles upstream of Confluence with Flow Path No. 55	13050003	1.41		N	AE	June 2019
Flow Path No. 55A Split Flow	El Paso, City of	Confluence with Flow Path No. 55A	Divergence from Flow Path No. 55A	13050003	0.09		N	AE	June 2019
Flow Path No. 55A Tributary 2	El Paso, City of	Confluence with Flow Path No. 55A	Approximately 600 ft. upstream of Confluence with Flow Path No. 55A	13050003	0.11		N	AE	June 2019

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
Flow Path No. 56	El Paso, City of	McCombes St	Approximately 4.2 miles upstream of McCombes St	13050003	4.19		N	AE	June 2019
Flow Path No. 56A	El Paso, City of	Confluence with Flow Path No. 56	Approximately 5,720 ft. upstream of Confluence with Flow Path No. 56	13050003	0.99		N	AE	June 2019
Horizon Arroyo (Stream 2)	Socorro, City of	Approximately 1,728 ft. downstream of Nancy Drive	Just downstream of Gateway East Blvd	13040100	2.06		Y	AE	June 2019
Horizon Arroyo (Stream 2)	El Paso County, Unincorporated Areas; Socorro, City of	Just downstream of Gateway East Blvd	Approximately 2,860 ft. upstream of Confluence with Horizon Arroyo Tributary	13040100	2.06		N	AE	June 2019
Horizon Arroyo Split Path	Socorro, City of	Divergence from Stream 2	Confluence with Stream 2	13040100	0.18		N	AE	June 2019
Horizon Arroyo Tributary	El Paso County, Unincorporated Areas; Horizon City, Town of	Confluence with Stream 2 (Horizon Arroyo)	Approximately 4,880 ft. upstream of Confluence with Stream 2 (Horizon Arroyo)	13040100	0.92		N	AE	June 2019
Horizon Arroyo Tributary 1	El Paso County, Unincorporated Areas	Confluence with Horizon Arroyo Tributary	Approximately 3,255 ft. upstream of Confluence with Horizon Arroyo Tributary	13040100	0.62		N	AE	June 2019
Railroad Channel	El Paso, City of	Confluence with Ft. Bliss Drainage Channel	Falcon Ave	13040100	1.48		N	AE	June 2019
Range Dam Outlet Channel	El Paso, City of	Confluence with Flow Path No. 15	Range Dam	13040100	0.92		N	AE	October 2007
Rio Grande River	El Paso, City of; El Paso County, Unincorporated Areas; Socorro, City of; San Elizario, City of; Ysleta Del Sur Pueblo of Texas	Approximately 4.6 miles upstream of intersection with FM 1088 in Hudspeth County	Zaragoza Bridge	13040100	30.9		N	A	November 2019

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
Rio Grande River	El Paso, City of; Ysleta Del Sur Pueblo of Texas	Zaragoza Bridge	American Dam	13040100	16.2		N	A	November 2019
Rio Grande River	Anthony, Town of; El Paso, City of; El Paso County, Unincorporated Areas; Vinton, Village of	American Dam	Approximately 1.8 miles downstream of intersection with Route 187 in Dona Ana County, New Mexico	13030102	18.5		N	AE	November 2019
San Felipe Arroyo	El Paso County, Unincorporated Areas	Confluence with River Outlet Drain	Approximately 3,040 ft. upstream of Fabens Dam	13040100	3.15		N	AE	June 2019
Stream 1 (Sparks Arroyo)	El Paso County, Unincorporated Areas; Socorro, City of	Confluence with Mesa Spur Drain	Confluence with Stream 1 Tributary 2	13040100	2.44		N	AE	June 2019
Stream 3	El Paso County, Unincorporated Areas; Socorro, City of	Confluence with Mesa Spur Drain	Approximately 4,950 ft. upstream of I-10	13040100	1.90		N	AE	June 2019
Stream 4 (Channel 25)	El Paso County, Unincorporated Areas; Horizon City, Town of; Socorro, City of	Confluence with Mesa Spur Drain	Approximately 4,500 ft. upstream of Stream 4 Tributary 1	13040100	4.16		N	AE	June 2019
Stream 4 Tributary 1 (Channel 25A)	El Paso County, Unincorporated Areas	Confluence with Stream 4 (Channel 25)	Approximately 2,780 ft. upstream of Confluence with Stream 4 (Channel 25)	13040100	0.53		N	AE	June 2019
Stream 4 Tributary 2 (Channel 25B)	El Paso County, Unincorporated Areas; Horizon City, Town of	Confluence with Stream 4 (Channel 25)	Approximately 1.0 miles upstream of Confluence with Stream 4 (Channel 25)	13040100	1.00		N	AE	June 2019
Stream 4 Tributary 2.1	El Paso County, Unincorporated Areas	Confluence with Stream 4 Tributary 2 (Channel 25B)	Approximately 1,850 ft. upstream of Confluence with Stream 4 Tributary 2 (Channel 25B)	13040100	0.35		N	AE	June 2019

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
Stream 4 Tributary 2.2	El Paso County, Unincorporated Areas	Confluence with Stream 4 Tributary 2 (Channel 25B)	Approximately 3,315 ft. upstream of Confluence with Stream 4 Tributary 2 (Channel 25B)	13040100	0.63		N	AE	June 2019
Stream 5 (Channel 26)	El Paso, City of; El Paso County, Unincorporated Areas; Horizon City, Town of; Socorro, City of	Confluence with Mesa Spur Drain	Approximately 1.6 miles upstream of I-10	13040100	2.61		N	AE	June 2019
Stream 6	El Paso County, Unincorporated Areas; Socorro, City of	Outlet to HAC1 Basin	Approximately 1.6 miles upstream of I-10	13040100	1.25		N	AE	June 2019
Stream 7	Clint, Town of; El Paso County, Unincorporated Areas; Socorro, City of	Approximately 3,700 ft. downstream of Brideway Dr	Approximately 4,985 ft. upstream of confluence with Stream 7 Tributary 2	13040100	3.50		N	AE	June 2019
Stream 7 Tributary 1	El Paso County, Unincorporated Areas	Confluence with Stream 7	Approximately 4,040 ft. upstream of Confluence with Stream 7	13040100	0.77		N	AE	June 2019
Stream 7 Tributary 2	El Paso County, Unincorporated Areas	Confluence with Stream 7	Approximately 2,810 ft. upstream of Confluence with Stream 7	13040100	0.53		N	AE	June 2019
Stream 7 Tributary 3	Socorro, City of	Confluence with Stream 7	Approximately 710 ft. upstream of Confluence with Stream 7	13040100	0.13		N	AE	June 2019
Stream 8	El Paso County, Unincorporated Areas	Confluence with Salatral Lateral	Approximately 2,700 ft. upstream of Find St	13040100	2.98		N	AE	June 2019
Stream 9	El Paso County, Unincorporated Areas	Confluence with Stream 10	I-10	13040100	0.88		N	AE	June 2019
Stream 10	El Paso County, Unincorporated Areas	Confluence with Salatral Lateral	Approximately 890 ft. upstream of I-10	13040100	1.67		N	AE	June 2019
Stream 11	El Paso County, Unincorporated Areas	Approximately 2920 ft. downstream of I-10	Approximately 2470 ft. upstream of I-10	13040100	1.02		N	AE	June 2019

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
Stream 12	El Paso County, Unincorporated Areas	Approximately 4050 ft. downstream of confluence with Stream 13	Approximately 4,780 ft. upstream of I-10	13040100	2.01		N	AE	June 2019
Stream 13	El Paso County, Unincorporated Areas	Confluence with Stream 12	Approximately 4,480 ft. upstream of I-10	13040100	1.20		N	AE	June 2019
Stream 13.5	El Paso County, Unincorporated Areas	Crismore Lateral	Approximately 1.3 miles upstream of I-10	13040100	3.00		N	AE	June 2019
Stream 13.5 Tributary 1	El Paso County, Unincorporated Areas	Confluence with Stream 13.5	Approximately 1,690 ft. upstream of Confluence with Stream 13.5	13040100	0.32		N	AE	June 2019
War Road Channel	El Paso, City of	Confluence with Western Freeway Channel	Approximately 400 ft. downstream of Loma Clara Ct	13040100	0.79		N	AE	June 2019
Western Freeway Channel	El Paso, City of	Just downstream of Sean Haggerty Dr	Confluence with War Road Channel	13040100	1.08		N	AE	June 2019
All Other Zone A Streams in El Paso County	El Paso County and Incorporated Areas	Various	Various	13030102, 13040100, 13050003	607		N	A	June 2019

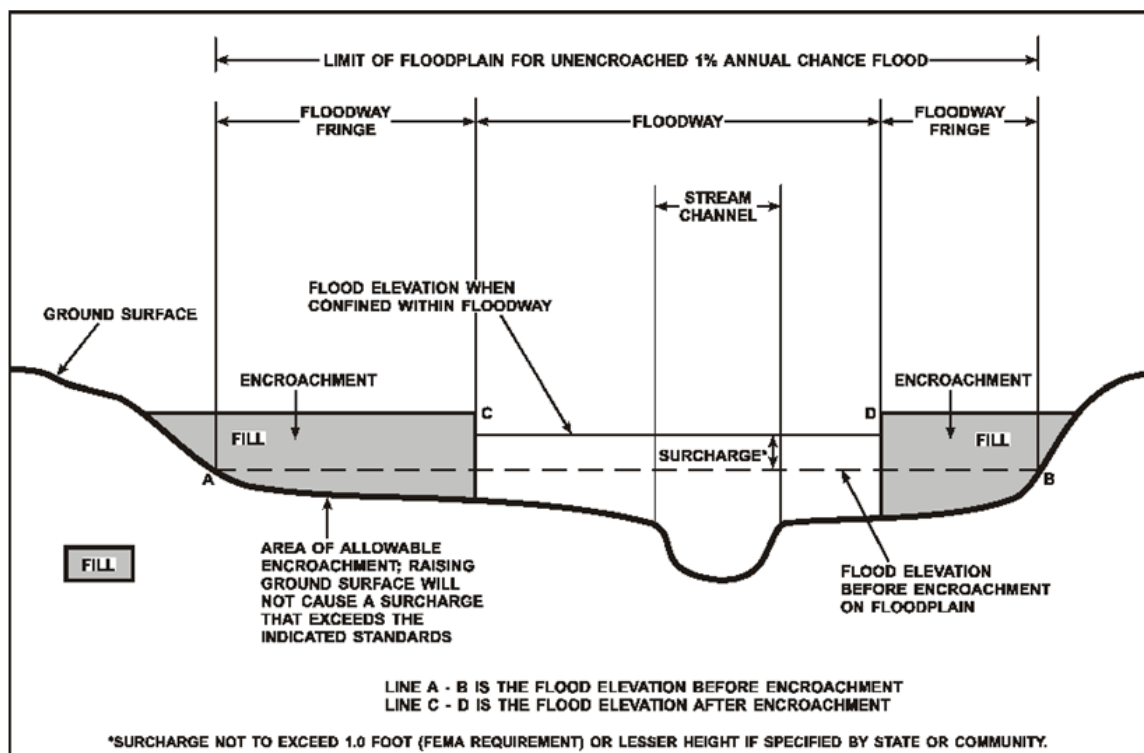
2.2 Floodways

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

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

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for State require communities in El Paso County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



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

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

2.3 Base Flood Elevations

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

BFEs are primarily intended for flood insurance rating purposes. Cross sections with

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

2.4 Non-Encroachment Zones

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

General setbacks can be used in areas of lower risk (e.g. unnumbered Zone A), but these are not considered sufficient where unnumbered Zone A is replaced by Zone AE. The NFIP requires communities to ensure that any development in a non-encroachment area causes no increase in BFEs. Communities must generally prohibit development within the area defined by the non-encroachment width to meet the NFIP requirement.

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

2.5 Coastal Flood Hazard Areas

This Section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This Section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to This Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This Section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This Section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not Applicable to This Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This Section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

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

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

Table 3 lists the flood insurance zones in El Paso County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Anthony, Town of	A, AE, X
Clint, Town of	A, X
El Paso, City of	A, AE, AO, X
El Paso County, Unincorporated Areas	A, AE, AO, X
Horizon City, Town of	A, AE, X
San Elizario, City of	A, X
Socorro, City of	A, AE, AO, X
Vinton, Village of	A, AE, AO, X
Ysleta Del Sur Pueblo of Texas	A, 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)
El Paso – Las Cruces	13030102	Rio Grande River	Watershed, encompassing the western portion of the county	5,519
Rio Grande – Fort Quitman	13040100	Rio Grande River	Largest watershed within El Paso County, encompassing three fourths of the entire county	3,104
Tularosa Valley	13050003	Three Rivers Creek	Watershed, encompassing the northern portion of the county	6,718

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Doniphan Ditch	The Doniphan Ditch at the City of El Paso experienced a flash flood in August 1966. The flash flood occurred with a low volume of water during a brief time. The peak flow resulted in ponding, overtopping of the embankments for Atchison, Topeka, and Santa Fe Railways, and washing out of another embankment. A natural constriction of low-laying areas around Doniphan Ditch, caused by a man-made catchment area, facilitated the flooding of urban and suburban areas up to 3ft in depth.
Various	Flooding damages roads and railroads in the foothills of the Franklin Mountains. Recent development, including cut and fill operations, created graded terraces which subvert the natural flowpaths and drainage systems. In recent flood events these areas experience flooding in new and unpredictable flow paths and damage transportation embankments. Some areas pond floodwater using sumps during high rainfall events and these areas are often developed.

Table 6 contains information about historic flood elevations in the communities within El Paso 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 El Paso 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

[Not Applicable to This Flood Risk Project]

4.4 Levees

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

Levee systems that are determined to reduce the risk from the 1-percent-annual-chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA is awaiting data and/or documentation to demonstrate compliance with Section 65.10. These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3 and in Table 8. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system no longer meets Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

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

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within El Paso County. Table 8, "Levees," lists all accredited levees, PALs, and de-accredited levees shown on the FIRM for this FIS

Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 8 is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE National Levee Database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 30.

Table 8: Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
Anthony, Town of; El Paso, City of; El Paso County, Unincorporated Areas; Vinton, Village of	Rio Grande River	Left Bank	IBWC	No	1601000023	No	48141C0157F 48141C0176F 48141C0178F 48141C0186F 48141C0188F 48141C0351F
Anthony, Town of; El Paso, City of; El Paso County, Unincorporated Areas	Rio Grande River	Right Bank	IBWC	No	1601000912	No	48141C0157F 48141C0176F 48141C0178F 48141C0186F 48141C0188F 48141C0351F
El Paso City, of	Rio Grande River	Left Bank	IBWC	No	1601000055	No	48141C0537F 48141C0539F 48141C0543F
El Paso, City of	Rio Grande River	Left Bank	IBWC	No	1601000057	No	48141C0351F
El Paso, City of	Flow Path No. 11	Left Bank	City of El Paso	No	1601000064	No	48141C0209F 48141C0217F
El Paso, City of	Flow Path No. 11	Right Bank	City of El Paso	No	1601000065	No	48141C0209F 48141C0217F
El Paso, City of	Rio Grande River	Left Bank	IBWC	No	1601000067	No	48141C0366F 48141C0367F
El Paso, City of	Rio Grande River	Right Bank	IBWC	No	1601001089	No	48141C0366F
El Paso, City of	Rio Grande River	Left Bank	IBWC	No	1601001097	No	48141C0369F 48141C0388F 48141C0501F

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
El Paso, City of	Rio Grande River	Left Bank	IBWC	No	1601001101	No	48141C0388F 48141C0389F 48141C0393F 48141C0501F 48141C0506F 48141C0507F 48141C0526F 48141C0528F 48141C0536F 48141C0537F
El Paso, City of; El Paso County, Unincorporated Areas; San Elizario, City of; Socorro, City of; Ysleta Del Sur Pueblo of Texas	Rio Grande River	Left Bank	IBWC	No	1601001087	No	48141C0543F 48141C0631F 48141C0633F 48141C0634F 48141C0642F 48141C0665F
El Paso County, Unincorporated Areas	Rio Grande River	Left Bank	IBWC	No	1601000137	No	48141C0735F 48141C0750F 48141C0775F
El Paso County, Unincorporated Areas	Rio Grande River	Left Bank	IBWC	No	1601000138	No	48141C0665F 48141C0750F
El Paso County, Unincorporated Areas	Rio Grande River	Left Bank	IBWC	No	1601001088	No	48141C0775F 48141C0800F

SECTION 5.0 – ENGINEERING METHODS

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

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

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

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

5.1 Hydrologic Analyses

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

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

A summary of the discharges is provided in Table 9. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 14.) 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 Existing	1% Annual Chance Future	0.2% Annual Chance
Arroyo 1 (Channel 6, Ridgeview)	Approximately 1,500 ft. upstream of confluence with Arroyo 1A	1.43	960	*	1,200	1,580	*	2,040
Arroyo 1A	Approximately 1,325 feet downstream of Franklin Crest Dr.	1.6	1,264	*	1,478	1,928	*	2,446
Arroyo 1A	Just Downstream of Franklin Crest Drive	1.4	1,151	*	1,344	1,756	*	2,222
Arroyo 1A	Approximately 3,250 feet upstream of Franklin Hills Street	0.97	803	*	936	1,227	*	1,549
Arroyo 2 (Ojo de Aqua)	At Lakehurst Road	2.47	140.57	274.39	498.11	798.5	*	1461.65
Arroyo 3 (Channel 9C Bandolero Channel)	Just upstream of Belvidere Street	2.61	35.08	73.78	120.11	191.48	*	400.79
Arroyo 3A (Channel 10 Ganero Channel)	At Ramada Drive	0.89	8.46	16.12	21.08	36.87	*	60.31
Arroyo 3B (Channel 1B Belvidere Channel)	At Belvidere Street	0.27	49.56	112.04	176.09	251.9	*	460.87
Arroyo 3B Tributary 1	Approximately 675 feet upstream of confluence with Arroyo 3B	0.1	15	29	38	46	*	64
Arroyo 4	At N Resler Drive	0.53	423	*	787	868	*	1,036

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Arroyo 4	Upstream of Westwind Drive	0.19	164	*	320	383	*	504
Arroyo 4	Upstream of Broadmoor Drive	0.06	43	*	66	74	*	94
Arroyo 5	Approximately 150 feet upstream of Interstate 10	0.83	15.32	38.56	65.08	110.91	*	295.49
Arroyo 8 (Channel 15 Mesa Hills Channel)	At Cabaret Drive	0.77	35.22	80.26	129.44	177.49	*	322.38
Arroyo 8A (Channel 11 Thunderbird Valley)	At Fiesta Drive	1.05	38.73	95.18	140.71	256.07	*	593.27
Arroyo 8A.1	Approximately 250 feet upstream of the confluence with Arroyo 8A	0.24	10.79	31.77	41.57	46.29	*	60.53
Arroyo 8A.1.1	Approximately 300 feet upstream of the confluence with Arroyo 8A.1	0.05	2.22	3.13	3.92	4.74	*	17.69
Arroyo 8B (Channel 14 Buena Vista Channel)	At S Mesa Hills Drive	0.02	47.47	96.32	121.54	161.75	*	357.22
Arroyo 8B (Channel 21 Coronado Channel)	At Isabella Drive	1.98	93	215	346	545	*	1,218

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Arroyo 8C (Channel 13 Spring Crest Channel)	At Silver Springs Drive	1.06	36.65	98.11	169.73	198.26	*	232.37
Arroyo 8D	At Lawndale Drive	0.25	10.05	23.67	46.67	57.7	*	81.58
Channel 29	At I-10	5.65	2,477	3,650	4,564	5,577	*	7,216
Channel 30	At I-10	1.9	810	1,190	1,826	1,491	*	2,765
Channel 30 Tributary 2	Approximately 130 feet upstream of the downstream limit of study	0.24	30.92	47.91	70.91	108.49	*	161.47
EPWU Arroyo 2	Approximately 650 ft. downstream of I-10	5.4	*	*	*	1,014	*	*
EPWU Arroyo 3	At Covington Ridge Way	1.92	5.59	26.29	60.88	116.24	*	368.74
Flow Path No. 11	At Gateway Blvd / Patriot Freeway	31.98	593	1184	1493	2455	*	5502
Flow Path No. 11A	Approximately 450 feet upstream of the confluence with Flow Path No. 11	1.04	62	75	84	96	*	290
Flow Path No. 11C	At Sean Haggerty Drive	0.82	59	87	111	136	*	211
Flow Path No. 12	Just upstream of confluence with eastern Freeway Channel	0.37	583	*	815	942	*	1,128
Flow Path No. 12A	Approximately 1000 ft. upstream of confluence with Flow Path 11C	0.74	486	*	675	777	*	881
Flow Path No. 13	Just downstream of confluence with Flow Path No. 14	5.6	2,298	*	4,866	5,775	*	7,235

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 13	At McCombs Street	2.6	1,758	*	2,584	2,985	*	4,177
Flow Path No. 13	At Rushing Road	2.0	1,195	*	1,737	2,000	*	2,814
Flow Path No. 13	At Kenworthy Street	1.7	1,059	*	1,526	1,754	*	2,470
Flow Path No. 13A	Approximately 750 feet upstream of Northhills Dam	1.4	22	27	31	35	*	155
Flow Path No. 13B	Just upstream of confluence with Flow Path No. 13A	0.35	15	19	22	26	*	114
Flow Path No. 14	At confluence with Flow Path No. 13	3.0	1,284	*	2,335	2,850	*	3,141
Flow Path No. 14	At Rushing Road	2.2	1,222	*	1,957	2,315	*	3,708
Flow Path No. 14	At Bon Aire Drive	1.4	904	*	1,308	1,505	*	2,105
Flow Path No. 15	Downstream of Hercules Avenue	13.7	3,115	*	4,175	4,689	*	7,192
Flow Path No. 15	Just downstream of Loop 375	1.7	2,448	*	3,191	3,552	*	5,635
Flow Path No. 15	At Loop 375	0.9	1,636	*	2,013	2,196	*	3,863
Flow Path No. 15A	At Confluence with Flow Path No. 15	0.22	239	*	348	401	*	547
Flow Path No. 15B	At Confluence with Flow Path No. 15F	2.57	2,106	*	3,073	3,540	*	4,847
Flow Path No. 15B	At Confluence with Flow Path No. 15E	2.45	1,972	*	2,877	3,313	*	4,536
Flow Path No. 15B	At Confluence with Flow Path No. 15D	0.80	910	*	1,326	1,528	*	2,088
Flow Path No. 15B	At Confluence with Flow Path No. 15C	0.57	619	*	902	1,039	*	1,419
Flow Path No. 15C	At Confluence with Flow Path No. 15B	0.27	325	*	472	543	*	740

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 15D	At Confluence with Flow Path No. 15B	0.23	340	*	492	565	*	768
Flow Path No. 15E	At Confluence with Flow Path No. 15B	0.20	248	*	360	414	*	564
Flow Path No. 15F	At Confluence with Flow Path No. 15B	0.12	146	*	212	243	*	332
Flow Path No. 17 (McKelligon Canyon Arroyo)	At Davis Seamon Road	2.31	85	129	150	161	*	178
Flow Path No. 17A (McKelligon Canyon Arroyo Tributary 6)	Approximately 470 feet upstream of confluence with Flow Path No. 17	0.43	23	28	33	38	*	111
Flow Path No. 20	At Highway 85	2.88	111.72	244.4	354.63	470.43	*	1339.17
Flow Path No. 20A (Channel 2 Paragon Channel)	At Interstate 10	1.33	76.59	159.67	241.64	524.41	*	856.2
Flow Path No. 20A Tributary 1	Just upstream of the confluence with Flow Path No. 20A	0.34	20.52	29.2	34.29	39.57	*	60.47
Flow Path No. 20A Tributary 2	Approximately 110 feet upstream of the confluence with Flow Path No. 20 A	0.21	4.56	6.89	8.52	10.11	*	14.31
Flow Path No. 21	At W Paisano Drive / Highway 85	2.72	72.58	126.17	154.26	186.66	*	458.37
Flow Path No. 21 Tributary 2	Approximately 400 feet upstream of the confluence with Flow Path No. 21	0.05	5	7	8	10	*	41

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 21A (Channel 3 Canterbury Channel)	At Interstate 10	1.15	1.573	4.32	7.93	10.65	*	34.55
Flow Path No. 22 (Van Buren Ditch)	At Van Buren Dam	1.26	44	88	142	204	*	388
Flow Path No. 23 (Billy Rogers Arroyo)	At Rim Road	1.71	167	300	483	724	*	1176
Flow Path No. 24 (Government Hills Channel)	At Hueco Avenue	0.64	73	110	157	222	*	372
Flow Path No. 26 (Phelps Dodge)	At station 5390	2.2	800	*	2,000	2,600	*	2,100
Flow Path No. 26 (Phelps Dodge)	At station 7590	1.5	700	*	1,600	2,000	*	3,000
Flow Path No. 26 (Phelps Dodge)	At station 8110	1.5	700	*	1,600	2,000	*	2,000
Flow Path No. 26 (Phelps Dodge)	At station 9240	1.3	700	*	1,200	1,400	*	2,100
Flow Path No. 27 (Playa Drain)	At Basin A	0.6	*	*	*	770	*	*
Flow Path No. 27 (Playa Drain)	At Basin G	5.7	*	*	*	2,733	*	*
Flow Path No. 28 (Mesa Drain and Interceptor)	At Franklin Drive	3.6	6.18	23.71	32.65	52.33	*	194.15
Flow Path No. 28A (Mesa Drain Below Interceptor)	Just upstream of Americas Avenue	1.44	0.22	0.20	0.67	3.12	*	5.65
Flow Path No. 29	Giles Basin Outlet	0.97	21	*	27	29	*	201

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 30	Approximately 330 feet upstream of Carolina Drive	0.3	231	*	400	436	*	592
Flow Path No. 32	Approximately 40 feet downstream of Betel Drive	0.22	200	*	364	693	*	516
Flow Path No. 32	Approximately 575 feet upstream of Geranium Drive	0.14	126	*	233	253	*	328
Flow Path No. 33 (Middle Drain)	At Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	*	*	*	*	*	*	*
Flow Path No. 36 (Mercantile Channel)	At Interstate 10	163.65	9.34	30.75	52.98	85.86	*	251.18
Flow Path No. 37 (Franklin Drain)	At Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	*	*	*	*	*	*	*
Flow Path No. 38	At Confluence with Flow Path No. 39	3.2	697	*	868	1,018	*	1,217
Flow Path No. 38	Just upstream of Resler Dr	3.1	601 ¹	*	662 ¹	894 ¹	*	2,101 ¹
Flow Path No. 38	Just upstream of Resler Pond 1	0.6	731	*	858	1,153	*	1,397
Flow Path No. 38A	5,200 ft. upstream of Resler Pond 4	1.8	815	*	1,260	1,450	*	1,910
Flow Path No. 38B	9,500 ft. upstream of Resler Pond 4	0.80	430	*	655	750	*	980
Flow Path No. 39	3,760 feet downstream of Interstate 10	6.7	2,398	*	3,294	3,722	*	4,839

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 39	At I-10	3.3	2,093	*	2,896	3,315	*	4,306
Flow Path No. 39	At Confluence with Arroyo Z	2.72	1,152	1,716	2,161	2,652	*	4,062
Flow Path No. 39N	At Pipeline	1.91	914	1,343	1,677	2,033	*	3,075
Flow Path No. 40	At Transmountain Road	2.96	23.81	50.45	97.18	115.22		406.79
Flow Path No. 41	400 feet upstream of I-10 North Bound	3.81	666 ¹	*	939 ¹	1,057 ¹	*	2,419 ¹
Flow Path No. 41	Just upstream of Pond 2	1.42	1,262	*	1,733	1,927	*	2,470
Flow Path No. 41A	Approximately 1,800 feet downstream of Resler Drive	1.89	416	*	568	680	*	848
Flow Path No. 42	At Los Mochis Drive	2.56	248	459	554	843		1,403
Flow Path No. 42A	At 90-Degree Bend in Channel	0.5	415	*	877	1,032	*	1,570
Flow Path No. 42A	Just downstream of Los Mochis crossing	0.5	362	*	797	852	*	1,260
Flow Path No. 42A	Just upstream of Los Mochis crossing	0.3	178	*	255	255	*	255
Flow Path No. 42A	Upstream of Limit of Detailed Study Area	0.1	178	*	468	533	*	875
Flow Path No. 42A (Upper Reach)	Just Upstream of I-10	0.25	*	*	*	576	*	*
Flow Path No. 42B	At I-10	0.17	155	*	238	280	*	382
Flow Path No. 42C	At I-10	0.18	72	*	116	136	*	199
Flow Path No. 43	At Interstate 10	0.98	82.49	265.63	384.04	541.41		1044.59

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 44 (Avispa Canyon)	At I-10	2.15	958	1,398	1,756	2,131	*	3,206
Flow Path No. 44 Tributary 1	At downstream limit of study	2.02	167.02	293.39	526.83	949.52	*	1961.65
Flow Path No. 45	At Interstate 10	4.59	189.93	473.78	685.27	826.18	*	2365.46
Flow Path No. 45A	Approximately 130 feet upstream of the confluence with Flow Path No. 45	0.75	25.47	60.7	107.12	170.12	*	347.55
Flow Path No. 45B	Just upstream of Confluence with Flow Path No. 45D	1.08	60.59	131.35	150.27	458.76	*	615.05
Flow Path No. 45C	Just upstream of the confluence with Flow Path No. 45	2.19	89.95	214.93	272.63	577.65	*	1246.9
Flow Path No. 45C Tributary 5	Approximately 200 feet upstream of the confluence with Flow Path No. 45C	0.02	0.66	3.62	5.02	5.92	*	7.76
Flow Path No. 45D	Just upstream of the confluence with Flow Path No. 45B	0.42	11.62	21.22	30	53.4	*	96.9
Flow Path No. 46	At I-10	2.39	856	1,257	1,574	1,926	*	2,923
Flow Path No. 46 Tributary 2	At EPNG Pipeline Road	0.31	53.8	80.83	107.03	130.93	*	189.995
Flow Path No. 47 (Vinton Canyon)	At Sotol	2.11	175.99	334.37	590.08	1053.21	*	1514.29
Flow Path No. 47 Tributary 2	At confluence with Flow Path No. 47 (Vinton Canyon)	0.39	22.06	57.28	75.31	89.69	*	133.62
Flow Path No. 48	Approximately 2500 feet upstream of Sotol	2.46	221.96	587.69	955.48	1337.31	*	1784.53

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Flow Path No. 48 Tributary 1	Approximately 250 feet upstream of the confluence with Flow Path No. 48	1.53	164.37	400.95	522.41	621.56	*	799.48
Flow Path No. 49	Just upstream of Northhills Dam	1.3	86	104	117	133	*	473
Flow Path No. 49B	At Northhills Dam	2.2	302	722	1,228	1,863	*	4,084
Flow Path No. 49C	Approximately 190 feet upstream of the confluence with Flow Path No. 49B	1.01	42	52	61	70	*	232
Flow Path No. 53	Approximately 2,420 feet upstream of the confluence with Western Freeway Channel	0.01	8	15	19	23	*	50
Flow Path No. 54	At McCombs St	1.41	20	25	29	32	*	50
Flow Path No. 55	At Martin Luther King Blvd	4.29	15	152	575	1,220	*	2765
Flow Path No. 55A	At confluence with Flow Path No. 55	0.79	37	46	52	60	*	200
Flow Path No. 55A Tributary 2	At confluence with Flow Path No. 55A	0.12	5	6	8	9	*	50
Flow Path No. 56	At Martin Luther King Blvd	0.28	81	156	190	214	*	465
Flow Path No. 56A	At Martin Luther King Blvd	0.09	33	49	64	76	*	96
Horizon Arroyo (Stream 2)	Just upstream of Nancy Drive	3.9	88	205	382	442	*	557

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Horizon Arroyo (Stream 2)	Just upstream of Doy Drive	3.7	87.9	205	440	694	1,458	1,292
Horizon Arroyo (Stream 2)	Downstream of the Confluence with Horizon Arroyo Tributary	0.6	69.9	195	326	451	1,098	1,021
Horizon Arroyo (Stream 2)	Upstream of the Confluence with Horizon Arroyo Tributary	0.5	34.8	64.3	85.2	150	248	236
Horizon Arroyo (Stream 2)	Upstream limit of detailed study	0.4	22.7	43.5	58.1	75	188	179
Horizon Arroyo Tributary	Approximately 700 feet upstream of the confluence with Horizon Arroyo (Stream 2)	2.85	42.86	118.30	191.81	261.29	*	645.19
Horizon Arroyo Tributary 1	At confluence with Horizon Arroyo Tributary	0.23	24.3	71.41	101.09	145.06	*	307.07
Railroad Channel	At McCombs Street	0.02	9	16	23	34	*	60
Range Dam Outlet Channel	800 feet Downstream of Dyer Street	12.1	0	*	104	241	*	711
Range Dam Outlet Channel	At Dyer Street	11.3	0	*	95	99	*	163
Rio Grande	American Dam	*	*	*	*	9,169	*	*
San Felipe Arroyo	At Interstate 10	23.6	18	211	536	1148	*	4807
Stream 1 (Sparks Arroyo)	At Interstate 10	6.25	65.73	192.07	364.75	621.2	*	1459.52
Stream 3	At Interstate 10	0.5	36.09	95.67	171.6	282.31	*	738.47
Stream 4 (Channel 25)	Approximately 575 feet upstream of Kenstrom Court	3.07	121.75	328.33	531.03	670.81	*	2402.26

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Stream 4 Tributary 1 (Channel 25A)	At confluence with Stream 4 (Channel 25)	0.28	7.95	30.58	43.10	55.52	*	86.02
Stream 4 Tributary 2 (Channel 25B)	Approximately 1700 feet upstream of the confluence with Stream 4 (Channel I 25)	0.55	30.08	68.31	96.79	117.25	*	181.15
Stream 4 Tributary 2.1	Approximately 500 feet upstream of confluence with Stream 4 Tributary 2	0.13	7	16	22	27	*	48
Stream 4 Tributary 2.2	At confluence with Stream 4 Tributary 2 (Channel 25 B)	0.16	11.88	24.79	34.31	42.14	*	67.46
Stream 5 (Channel 26)	At Interstate 10	0.73	53.91	138.03	249.3	427.57	*	1222.39
Stream 6	At Interstate 10	0.48	29.81	78.75	132.25	235.24	*	520.23
Stream 7	At Bridgway Dr	4.91	72.92	204.88	361.42	617.77	*	1112.19
Stream 7 Tributary 1	Approximately 750 feet upstream of the confluence with Stream 7	0.26	12.86	33.09	45.38	55.01	*	80.28
Stream 7 Tributary 2	At confluence with Stream 7	0.76	4.37	11.58	16.92	21.43	*	33.91
Stream 7 Tributary 3	At confluence with Stream 7	0.04	65.43	186.17	339.19	577.85	*	1617.36
Stream 8	At Interstate 10	1.17	34.81	105.14	187.4	311.95	*	882.41
Stream 9	At Interstate 10	0.22	15.88	48.52	95.87	168.53	*	492.38
Stream 10	Approximately 2750 feet upstream of N Loop Rd	0.69	25.55	57.61	104.73	158.53	*	281.35
Stream 11	At Interstate 10	0.26	4.94	14.43	28.6	51.25	*	155.81

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Stream 12	At Interstate 10	0.67	27.68	92.18	172.31	274.32	*	705.19
Stream 13	Just upstream of Interstate 10	0.48	11.40	40.52	77.57	111.88	*	157.44
Stream 13.5	Just downstream of Interstate 10	6.75	86	236	384	526	*	893
Stream 13.5 Tributary 1	Approximately 735 feet upstream of the confluence with Stream 13.5	5.76	16	43	74	115	*	349
War Road Channel	Just downstream of Jon Cunningham Blvd	5.65	62	113	146	164	*	276
Western Freeway Channel	Just upstream of Sean Haggerty Dr	7.00	94	206	326	387	*	1,133

*Not calculated for this Flood Risk Project

¹ Flow Rate Reduction due to a number of ponds upstream

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
Cebada Reservoir	El Paso, City of	*	*	*	3,703.0	*
Flow Path No. 41 Pond 2	El Paso, City of	4,031.2	*	4,036.0	4,036.6	4,043.7
Flow Path No. 41A Pond 3	El Paso, City of	4,026.4	*	4,030.4	4,030.8	4,032.5
Gateway East Pond	El Paso, City of	*	*	*	3,687.0	*
Gateway West Pond	El Paso, City of	*	*	*	3,687.0	*
Giles Road Detention Basin	El Paso, City of	*	*	*	3,812.8	*
Keystone Dam	El Paso, City of	*	*	*	3,778.0	*
Mesa Dam	El Paso, City of	*	*	*	3,890.0	*
Mulberry Dam	El Paso, City of	*	*	*	3,992.0	*
North Hills Detention Basin 1	El Paso, City of	*	*	*	4,215.0	*
North Hills Detention Basin 2	El Paso, City of	*	*	*	4,209.0	*
Northeast Pond	El Paso, City of	3,915.5	*	3,918.2	3,919.5	3,922.7
North Pass Pond 3	El Paso, City of	4,075.1	*	4,075.5	4,075.6	4,075.9
Oxidation Dam	El Paso, City of	*	*	*	3,856.0	*
Phelps Dodge Detention Basin	El Paso, City of	*	*	*	3,752.0	*
Pico Norte Park Pond	El Paso, City of	3,915.1	*	3,926.0	3,931.4	3,942.8
Pond N2	El Paso, City of	3,948.8	*	3,949.4	3,950.5	*
Pond NA	El Paso, City of	3,972.9	*	3,974.4	3,977.6	*
Pond NB	El Paso, City of	3,955.1	*	3,956.7	3,959.9	*
Pond NC	El Paso, City of	3,987.8	*	3,990.0	3,994.1	*

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area A	El Paso, City of	3,954.5	*	*	3,960.9	3,965.1
Ponding Area B	El Paso, City of	3,968.4	*	*	3,974.3	3,978.2
Ponding Area C	El Paso, City of	3,963.7	*	*	3,971.7	3,976.7
Ponding Area D	El Paso, City of	3,972.8	*	*	3,979.0	3,983.3
Ponding Area E	El Paso, City of	3,980.6	*	*	3,985.1	3,989.1
Ponding Area F	El Paso, City of	3,990.5	*	*	3,998.4	4,005.3
Ponding Area F1	El Paso, City of	4,010.8	*	4,010.8	4,010.9	*
Ponding Area G	El Paso, City of	3,964.1	*	*	3,969.9	3,973.7
Ponding Area L	El Paso, City of	3,988.1	*	*	3,992.6	3,995.5
Ponding Area P1B	El Paso, City of; Fort Bliss Military Reservation	3,932.3	*	3,932.9	3,933.0	3,933.9
Ponding Area P2	El Paso, City of	3,936.4	*	3,936.9	3,936.9	3,937.5
Ponding Area P3	El Paso, City of	*	*	*	3,939.0	*
Ponding Area P3 (Carnegie Pond)	El Paso, City of	*	*	*	3,939.0	*
Ponding Area P3 (Killarney Pond)	El Paso, City of	*	*	*	3,939.0	*
Ponding Area P3 (Orkney Retention Basin)	El Paso, City of	*	*	*	3,939.0	*
Ponding Area P3b	El Paso, City of	*	*	*	3,939.0	*
Ponding Area P4	El Paso, City of	3,958.9	*	3,965.1	3,967.0	3,970.7
Ponding Area P5	El Paso, City of	3,959.0	*	3,964.3	3,968.0	3,972.0
Ponding Area P5a	El Paso, City of	*	*	*	3,968.0	*
Ponding Area P6	El Paso, City of	*	*	*	3,943.0	*
Ponding Area P7	El Paso, City of	3,957.1	*	3,965.5	3,967.0	3,969.2
Ponding Area P8	El Paso, City of	3,942.4	*	3,967.4	3,970.6	3,971.8
Ponding Area P9	El Paso, City of	3,963.5	*	3,965.4	3,965.6	3,966.0
Ponding Area P11	El Paso, City of	3,965.8	*	3,696.4	3,966.6	3,966.7

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ponding Area P12	El Paso, City of	3,966.8	*	3,968.4	3,968.6	3,968.8
Ponding Area P13	El Paso, City of	3,958.3	*	3,963.8	3,964.6	3,965.9
Ponding Area P16	El Paso, City of	3,983.0	*	3,986.3	3,988.4	3,993.5
Ponding Area P16A	El Paso, City of	3,985.9	*	3,990.6	3,991.7	3,994.8
Ponding Area P16B	El Paso, City of	3,998.1	*	3,998.5	3,998.7	3,999.1
Ponding Area P16C	El Paso, City of	3,994.7	*	3,995.9	3,996.6	3,997.4
Ponding Area P18	El Paso, City of	*	*	*	3,969.1	*
Resler Pond 1	El Paso, City of	4,213.8	*	4,219.2	4,222.6	4,223.6
Resler Pond 2	El Paso, City of	4,130.8	*	4,132.6	4,135.7	4,139.9
Resler Pond 4	El Paso, City of	3,939.9	*	3,945.0	3,947.3	3,951.7
Resler Pond 5	El Paso, City of	4,082.5	*	4,084.8	4,087.7	4,089.7
Thorn Dam	El Paso, City of	*	*	*	3,887.0	*
Vista Real Pond P1	El Paso, City of	3,970.2	*	3,972.6	3,974.6	3,978.4
Vista Real Pond P2	El Paso, City of	3,985.1	*	3,987.5	3,989.4	3,993.0
Vista Real Pond P3	El Paso, City of	3,991.9	*	3,994.4	3,996.5	4,000.2
Vista Real Pond P4	El Paso, City of	3,972.9	*	3,975.9	3,978.2	3,982.3
Vista Real Pond P5	El Paso, City of	3,971.2	*	3,974.2	3,976.5	3,980.7
Vista Real Pond P6	El Paso, City of	3,978.7	*	3,982.4	3,985.4	3,990.6
Vista Real Pond P7	El Paso, City of	3,978.8	*	3,982.2	3,984.8	3,988.6
Vista Real Pond P8	El Paso, City of	3,995.1	*	3,997.6	3,999.8	4,003.7

*Not calculated for this Flood Risk Project

Table 11: Stream Gage Information used to Determine Discharges

[Not Applicable to This Flood Risk Project]

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
Arroyo 1 (Channel 6, Ridgeview)	Contessa Ridge Drive	Approximately 2,200 ft. upstream of Franklin Hills St	Unknown	HEC-RAS 3.1	February 2007	AE	Letter of Map Revision
Arroyo 1A	Approximately 2,670 ft. upstream of confluence with Arroyo 1A	Approximately 3,360 ft. upstream of confluence with High Ridge Small Channel	HEC-1	HEC-RAS 3.1	October 2004	AE	Letter of Map Revision
Arroyo 2 (Ojo de Aqua)	Thorn Dam	Approximately 300 ft. downstream of Channel 8 (Via Serena Channel)	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 3 (Channel 9C Bandolero Channel)	Mesa Dam	Approximately 2,025 ft. upstream of Bandolero Dr.	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 3A (Channel 10 Ganero Channel)	Confluence with Arroyo 3	Just downstream of Westwind Dr	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 3B (Channel 1B Belvidere Channel)	Mesa Dam	Just downstream of Villa Hermosa Dr	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 3B Tributary 1	Confluence with Arroyo 3B	Just upstream of Belvidere St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 4	Keystone Dam	Approximately 1,335 ft. upstream of N. Mesa St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	Letter of Map Revision
Arroyo 4	Approximately 1,335 ft. upstream of N. Mesa St	N. Resler Dr	HEC-HMS	HEC-RAS 5.0	October 2019	AE	Letter of Map Revision
Arroyo 4	N. Resler Dr	Westwind Dr	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	Letter of Map Revision
Arroyo 4	Westwind Dr	Just upstream of Broadmoor Dr	HEC-1	HEC-RAS 3.1 Storm CAD	November 2007	AE	Letter of Map Revision
Arroyo 5	Just downstream of southbound I-10	Just downstream of N. Mesa St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8 (Channel 15 Mesa Hills Channel)	Oxidation Dam	Cabaret Drive	Hydrograph	HEC-2	December 1981	AE	

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
Arroyo 8 (Channel 15 Mesa Hills Channel)	Cabaret Drive	Approximately 800 ft. upstream of North Hills Detention Basin	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8A (Channel 11 Thunderbird Valley)	Confluence with Arroyo 8B	Just downstream of Martindale Ln	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8A.1	Confluence with Arroyo 8A	Just downstream of N. Stanton St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8A.1.1	Confluence with Arroyo 8A.1	Just downstream of N. Stanton St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8B (Channel 14 Buena Vista Channel)	Confluence with Arroyo 8	Confluence with Arroyo 8A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8B (Channel 21 Coronado Channel)	Confluence with Arroyo 8A	Approximately 4,120 ft. upstream of Camino Estancia Dr	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8C (Channel 13 Spring Crest Channel)	Confluence with Arroyo 8B	Just upstream of Singing Hills Dr	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Arroyo 8D	Confluence with Arroyo 8A	Just downstream of Mesa Hills Dr	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Channel 29	Just downstream of Wildcat Dr	Approximately 1.7 miles upstream of Wildcat Dr	HEC-HMS	FLO-2D	December 2017	AE	2D Mapping
Channel 30	Just downstream of Frontage Rd	Approximately 1.4 miles upstream of Frontage Rd	HEC-HMS	FLO-2D	December 2017	AE	2D Mapping
Channel 30	Approximately 1.4 miles upstream of Frontage Rd	Approximately 2.8 miles upstream of Frontage Rd	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Channel 30 Tributary 2	Confluence with Channel 30	Approximately 3,375 ft. upstream of Confluence with Channel 30	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Channel 30 Tributary 2 Split Flow 1	Confluence with Channel 30 Tributary 2	Divergence From Channel 30 Tributary 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Channel 30 Tributary 2 Split Flow 2	Confluence with Flow Path No. 47	Divergence From Channel 30 Tributary 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
EPWU Arroyo 2	Approximately 600 ft. downstream of I-10	Approximately 2,560 ft. upstream of I-10	HEC-HMS	HEC-RAS 4.1.0	January 2018	AE	Letter of Map Revision
EPWU Arroyo 3	North Pond	Approximately 1,200 ft. upstream of Covington Ridge Way	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 11	Confluence with Eastern Freeway Channel	Divergence of Flow Path No. 11 Split Flow	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 11	Confluence with Eastern Freeway Channel	Approximately 3,685 ft. upstream of Confluence with Flow Path No. 11A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 11A	Confluence with Flow Path No. 11	Approximately 1.4 miles upstream of Confluence with Flow Path No. 11	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 11C	Confluence with Flow Path No. 11	Approximately 1.5 miles upstream of confluence with Flow Path No. 11	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 12	Confluence with Eastern Freeway Channel	Approximately 2,450 ft. upstream of Confluence with Eastern Freeway Channel	HEC-1	HEC-2	April 1997	AE	
Flow Path No. 12A	Confluence with Flow Path No. 11C	Approximately 4,900 ft. upstream of Confluence with Flow Path No. 11	HEC-1	HEC-2	April 1997	AE	
Flow Path No. 13	Northeast Pond	Approximately 1,850 ft. upstream of Kenworthy St	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 13A	North Hills Detention Basin 2	Approximately 2.2 miles upstream of North Hills Detention Basin 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Flow Path No. 13B	Confluence with Flow Path No. 13A	Approximately 4,140 ft. upstream of Confluence with Flow Path No. 13A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 14	Confluence with Flow Path No. 13	Approximately 880 ft. upstream of Sun Valley Dr	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15	Railroad Drive	Junction of Flow Path No. 14	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15A	Confluence with Flow Path No. 15	Threadgill Ave	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15B	Apollo Ave	Hondo Pass Rd	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15C	Confluence with Flow Path No. 15B	Gateway North Blvd	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15D	Confluence with Flow Path No. 15B	Gateway North Blvd	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15E	Confluence with Flow Path No. 15B	State Route 54 (Dyer Street)	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 15E	Confluence with Flow Path No. 15B	State Route 54 (Dyer Street)	FLO-2D	FLO-2D	June 2018	AE	Letter of Map Revision
Flow Path No. 17 (McKelligon Canyon Arroyo)	Alabama St	Approximately 1.2 miles upstream of Confluence with Flow Path No. 17A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 17A (McKelligon Canyon Arroyo Tributary 6)	Confluence with Flow Path No. 17	Approximately 1.1 miles upstream of Confluence with Flow Path No. 17	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 20	Confluence with Rio Grande	Vaquero Lane	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 20A (Channel 2 Paragon Channel)	Confluence with Flow Path No. 20	Approximately 500 ft. upstream of N. Stanton St.	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 20A Tributary 1	Confluence with Flow Path No. 20A	Approximately 2,440 ft. upstream of confluence with Flow Path No. 20A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Flow Path No. 20A Tributary 2	Confluence with Flow Path No. 20A	Approximately 2,090 ft. upstream of confluence with Flow Path No. 20A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 21	Confluence with Rio Grande	Confluence with Flow Path No. 21 Tributary 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 21 Tributary 2	Confluence with Flow Path No. 21	Approximately 1,570 ft. upstream of confluence with Flow Path No. 21A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 21A (Channel 3 Canterbury Channel)	Confluence with Flow Path No. 21	Approximately 3,860 ft. upstream of N. Stanton St.	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 22 (Van Buren Ditch)	Van Buren Dam	Approximately 3270 ft. upstream of Van Buren Dam	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 23 (Billy Rogers Arroyo)	Confluence with Rio Grande	Approximately 1.1 miles upstream of E. Robinson Ave	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 24 (Government Hills Channel)	Outlet to Upper Duranzo Basin	Pershing Dam	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 26 (Phelps Dodge)	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Approximately 1,825 ft. upstream of Hawkins Blvd.	HEC-1	HEC-RAS 3.0	October 2002	AE	
Flow Path No. 27 (Playa Drain)	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Cargill St	HEC-HMS	FLO-2D, StormCad	June 2016	AE	2D Mapping
Flow Path No. 28 (Mesa Drain and Interceptor)	Confluence with Flow Path No. 27 (Playa Drain)	Just downstream of Nichols Rd	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 28A (Mesa Drain Below Interceptor)	TX Loop 375	Divergence from Flow Path No. 28	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 29	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Giles Road Detention Basin	HEC-1	HEC-RAS 3.0	October 2002	AE	

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
Flow Path No. 30	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Approximately 1,000 ft. upstream of North Carolina Drive	HEC-1	HEC-RAS 3.0	October 2002	AE	
Flow Path No. 31 (Jesuit Draw)	Inlet to Lomaland Basin	Just downstream of Rojas Drive	HEC-1	HEC-RAS 3.0	October 2002	AE	Contained in storm system, no profile
Flow Path No. 32	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Escobar Drive	HEC-1	HEC-RAS 3.0	October 2002	AE	
Flow Path No. 33 (Middle Drain)	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Presa Pl	HEC-HMS	FLO-2D, StormCad	June 2016	AE	2D Mapping
Flow Path No. 36 (Mercantile Channel)	Americas Ten Basin	I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 37 (Franklin Drain)	Confluence with Flow Path No. 28 (Mesa Drain and Interceptor)	Approximately 1500 ft. above Carl Longuemare Rd	HEC-HMS	FLO-2D, StormCad	June 2016	AE	2D Mapping
Flow Path No. 38	Confluence with Flow Path No. 39	S. Desert Blvd	HEC-HMS	HEC-RAS 4.0	January 2015	AE	Letter of Map Revision
Flow Path No. 38	S. Desert Blvd	Just upstream of Northwestern Dr	Unknown	HEC-RAS 4.0	October 2017	AE	Letter of Map Revision
Flow Path No. 38	Resler Pond 1	Approximately 980 ft. upstream of Resler Pond 1	HEC-1	HEC-RAS 3.1.3	August 2007	AE	Letter of Map Revision
Flow Path No. 38A	A Point 142 feet below Pond 4 Inlet	Northern Pass Pond 3	HEC-HMS	HEC-RAS 3.1.3	June 2011	AE	Letter of Map Revision
Flow Path No. 38A	Northern Pass Pond 3	Approximately 10,800 ft. upstream of Resler Pond 4	HEC-1	HEC-RAS 3.1.3	August 2007	AE	Letter of Map Revision
Flow Path No. 38B	Northern Pass Pond 3	Approximately 5800 ft. upstream of Northern Pass Pond 3	HEC-1	HEC-RAS 3.1.3	August 2007	AE	Letter of Map Revision
Flow Path No. 39	Confluence with Rio Grande	Northbound Interstate Highway I-10	HEC-HMS	HEC-RAS 4.0	January 2015	AE	Letter of Map Revision
Flow Path No. 39	Northbound Interstate Highway I-10	Approximately 6935 ft. upstream of Resler Dr	HEC-HMS	FLO-2D	December 2017	AE	2D Mapping

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
Flow Path No. 39N	Confluence with Flow Path No. 39	Confluence with Flow Path No. 39B	HEC-HMS	FLO-2D	December 2017	AE	2D Mapping
Flow Path No. 40	Confluence with Channel 23	Approximately 5.0 miles upstream of Bluff Creek St.	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 41	Approximately 270 ft. upstream of Talbot Ave	Just Upstream of N. Desert Blvd	HEC-1	HEC-RAS 3.0	September 2009	AE	Letter of Map Revision
Flow Path No. 41	Just Upstream of N. Desert Blvd	Approximately 0.5 miles upstream of Confluence with Flow Path No. 41 Tributary	HEC-HMS	HEC-RAS 4.0	October 2015	AE	Letter of Map Revision
Flow Path No. 41	Approximately 0.5 miles upstream of Confluence with Flow Path No. 41 Tributary	Approximately 1.6 miles upstream of Confluence with Flow Path No. 41 Tributary	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 41A	Confluence with Flow Path No. 41	Confluence with Flow Path No. 41A Tributary 2	HEC-HMS	HEC-RAS 4.0	October 2015	AE	Letter of Map Revision
Flow Path No. 41A	Confluence with Flow Path No. 41A Tributary 2	Approximately 1.6 miles upstream of Confluence with Flow Path No. 41A Tributary 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 42	Confluence with Rio Grande	Los Mochis Drive	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 42	Los Mochis Drive	I-10	Unknown	HEC-RAS 3.0	March 2015	AE w / Floodway	Letter of Map Revision
Flow Path No. 42	I-10	Approximately 3.4 miles upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 42 Split Flow	Confluence with Flow Path No. 42	Divergence from Flow Path No. 42	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 42A	Confluence with Flow Path No. 42	Approximately 200 ft. upstream of Los Mochis Dr	Unknown	HEC-RAS 3.0	March 2015	AE w / Floodway	Letter of Map Revision
Flow Path No. 42A (Upper Reaches)	I-10	Approximately 3,260 ft. upstream of I-10	HEC-HMS	HEC-RAS 4.1.0	June 2018	AE	Letter of Map Revision

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
Flow Path No. 42B	I-10	Approximately 3,070 ft. upstream of I-10	HEC-HMS	HEC-RAS 4.1.0	December 2016	AE	Letter of Map Revision
Flow Path No. 42C	I-10	Approximately 1,325 ft. upstream of Northwestern Dr	HEC-HMS	HEC-RAS 4.1.0	December 2016	AE	Letter of Map Revision
Flow Path No. 43	Approximately 650 ft. downstream of I-10	Approximately 2.6 miles upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 44 (Avispa Canyon)	Just downstream of S. Desert Blvd.	Approximately 1.5 miles upstream of S. Desert Blvd	HEC-HMS	FLO-2D	December 2017	AE	2D Mapping
Flow Path No. 44 Tributary 1	Confluence with Flow Path No. 44	Approximately 3.6 miles of Confluence with Flow Path No. 42	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45	Confluence with the Rio Grande	Approximately 1.5 miles upstream of confluence with Flow Path No. 45B	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45 Split Flow	I-10	Divergence from Flow Path No. 45	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45A	Confluence with Flow Path No. 45	Just upstream of Remington Dr.	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45B	Confluence with Flow Path No. 45	Approximately 1.6 miles upstream of confluence with Flow Path No. 45	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45C	Confluence with Flow Path No. 45	Approximately 1,200 ft. upstream of confluence with Flow Path No. 45C Tributary 5	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45C Split Flow	Confluence with Flow Path No. 45	Divergence from Flow Path No. 45C	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 45C Tributary 5	Confluence with Flow Path No. 45C	Approximately 1,425 ft. upstream of confluence with Flow Path No. 45C	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Flow Path No. 45D	Confluence with Flow Path No. 45B	Approximately 1.2 miles upstream of confluence with Flow Path No. 45B	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 46	Just downstream of Frontage Rd	Confluence with Flow Path No. 46 Tributary 4	HEC-HMS	FLO-2D	December 2017	AE	2D Mapping
Flow Path No. 46 Tributary 2	Confluence with Flow Path No. 46	Approximately 1.8 miles upstream of confluence with Flow Path No. 46	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 47 (Vinton Canyon)	Confluence with Channel 30	Approximately 2.9 miles upstream of confluence with Channel 30	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No 47 Split Flow 1	Confluence with Flow Path No. 47 Split Flow 2	Divergence from Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No 47 Split Flow 2	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No 47 Split Flow 3	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No 47 Split Flow 4	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No 47 Split Flow 5	Confluence with Flow Path No. 47	Divergence from Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No 47 Split Flow 6	Confluence with Channel 30	Divergence from Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 47 Tributary 2	Confluence with Flow Path No. 47	Approximately 3,860 ft. upstream of Confluence with Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 48	Confluence with Flow Path No. 47	Approximately 3.1 miles upstream of Confluence with Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Flow Path No. 48 Split Flow	Confluence with Flow Path No. 48	Divergence from Flow Path No. 48	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 48 Tributary 1	Confluence with Flow Path No. 48	Approximately 2,720 ft. upstream of Confluence with Flow Path No. 47	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49	North Hills Detention Basin 2	Approximately 2.2 miles upstream of North Hills Detention Basin 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49 Split Flow	Confluence with Flow Path No. 49	Divergence from Flow Path No. 49	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49B	North Hills Detention Basin 2	Approximately 2.2 miles upstream of North Hills Detention Basin 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49B Split Flow	Confluence with Flow Path No. 49B	Divergence from Flow Path No. 49B	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49C	Confluence with Flow Path No. 49B	Approximately 1.5 miles upstream of Confluence with Flow Path No. 49B	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49C Split Flow 1	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49C Split Flow 2	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49C Split Flow 3	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49C Split Flow 4	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 49C Split Flow 5	Confluence with Flow Path No. 49C	Divergence from Flow Path No. 49C Split Flow 4	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Flow Path No. 53	Confluence with Western Freeway Channel	Approximately 2,840 ft. upstream of confluence with Western Freeway Channel	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 54	Confluence with Flow Path No. 11	Martin Luther King Jr. Blvd	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 55	Confluence with Flow Path No. 56	Approximately 7.1 miles upstream of Confluence with Flow Path No. 56	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 55A	Confluence with Flow Path No. 55	Approximately 1.4 miles upstream of Confluence with Flow Path No. 55	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 55A Split Flow	Confluence with Flow Path No. 55A	Divergence from Flow Path No. 55A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 55A Tributary 2	Confluence with Flow Path No. 55A	Approximately 600 ft. upstream of Confluence with Flow Path No. 55A	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 56	McCombes St	Approximately 4.2 miles upstream of McCombes St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Flow Path No. 56A	Confluence with Flow Path No. 56	Approximately 5,720 ft. upstream of Confluence with Flow Path No. 56	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Horizon Arroyo (Stream 2)	Approximately 1,728 ft. downstream of Nancy Drive	Just downstream of Gateway East Blvd	HEC-RAS Rain on Grid	HEC-RAS 5.0	June 2019	AE w / Floodway	
Horizon Arroyo (Stream 2)	Just downstream of Gateway East Blvd	Approximately 2,860 ft. upstream of Confluence with Horizon Arroyo Tributary	HEC-RAS Rain on Grid	HEC-RAS 5.0	June 2019	AE	
Horizon Arroyo Split Path	Divergence from Stream 2	Confluence with Stream 2	HEC-RAS Rain on Grid	HEC-RAS 5.0	June 2019	AE	

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
Horizon Arroyo Tributary	Confluence with Stream 2 (Horizon Arroyo)	Approximately 4,880 ft. upstream of Confluence with Stream 2 (Horizon Arroyo)	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Horizon Arroyo Tributary 1	Confluence with Horizon Arroyo Tributary	Approximately 3,255 ft. upstream of Confluence with Horizon Arroyo Tributary	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Railroad Channel	Confluence with Ft. Bliss Drainage Channel	Falcon Ave	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Range Dam Outlet Channel	Confluence with Flow Path No. 15	Range Dam	HEC-HMS	HEC-RAS	October 2007	AE	
Rio Grande River	Approximately 4.6 miles upstream of intersection with FM 1088 in Hudspeth County	Zaragoza Bridge	HEC-1, HEC-HMS, FLO-2D	FLO-2D	November 2019	A	2D Mapping
Rio Grande River	Zaragoza Bridge	American Dam	HEC-1, HEC-HMS, FLO-2D	FLO-2D	November 2019	A	2D Mapping, Accredited Levee
Rio Grande River	American Dam	Approximately 1.8 miles downstream of intersection with Route 187 in Dona Ana County, New Mexico	HEC-1, HEC-HMS, FLO-2D	FLO-2D	November 2019	AE	2D Mapping
San Felipe Arroyo	Confluence with River Outlet Drain	Approximately 3,040 ft. upstream of Fabens Dam	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 1 (Sparks Arroyo)	Confluence with Mesa Spur Drain	Confluence with Stream 1 Tributary 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 3	Confluence with Mesa Spur Drain	Approximately 4,950 ft. upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 4 (Channel 25)	Confluence with Mesa Spur Drain	Approximately 4,500 ft. upstream of Stream 4 Tributary 1	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Stream 4 Tributary 1 (Channel 25A)	Confluence with Stream 4 (Channel 25)	Approximately 2,780 ft. upstream of Confluence with Stream 4 (Channel 25)	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 4 Tributary 2 (Channel 25B)	Confluence with Stream 4 (Channel 25)	Approximately 1.4 miles upstream of Confluence with Stream 4 (Channel 25)	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 4 Tributary 2.1	Confluence with Stream 4 Tributary 2 (Channel 25B)	Approximately 1,850 ft. upstream of Confluence with Stream 4 Tributary 2 (Channel 25B)	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 4 Tributary 2.2	Confluence with Stream 4 Tributary 2 (Channel 25B)	Approximately 3,315 ft. upstream of Confluence with Stream 4 Tributary 2 (Channel 25B)	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 5 (Channel 26)	Confluence with Mesa Spur Drain	Approximately 1.6 miles upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 6	Outlet to HAC1 Basin	Approximately 1.6 miles upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 7	Approximately 3,700 ft. downstream of Brideway Dr	Approximately 4,985 ft. upstream of confluence with Stream 7 Tributary 2	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 7 Tributary 1	Confluence with Stream 7	Approximately 4,040 ft. upstream of Confluence with Stream 7	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 7 Tributary 2	Confluence with Stream 7	Approximately 2,810 ft. upstream of Confluence with Stream 7	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 7 Tributary 3	Confluence with Stream 7	Approximately 710 ft. upstream of Confluence with Stream 7	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping

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
Stream 8	Confluence with Salatral Lateral	Approximately 2,700 ft. upstream of Find St	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 9	Confluence with Stream 10	I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 10	Confluence with Salatral Lateral	Approximately 890 ft. upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 11	Approximately 2,920 ft. downstream of I-10	Approximately 2,470 ft. upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 12	Approximately 4050 ft. downstream of Confluence with Stream 13	Approximately 4780 ft. upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 13	Confluence with Stream 12	Approximately 4480 ft. upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 13.5	Crismore Lateral	Approximately 1.3 miles upstream of I-10	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Stream 13.5 Tributary 1	Confluence with Stream 13.5	Approximately 1690 ft. upstream of Confluence with Stream 13.5	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
War Road Channel	Confluence with Western Freeway Channel	Approximately 400 ft. downstream of Loma Clara Ct	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
Western Freeway Channel	Just downstream of Sean Haggerty Dr	Confluence with War Road Channel	HEC-RAS Rain on Grid	HEC-RAS 5.0.5 2D	June 2019	AE	2D Mapping
All Other Zone A Streams in El Paso County	Various	Various	HEC-RAS Rain on Grid	HEC-RAS 5.0.3 2D	June 2019	A	2D Mapping

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Channel 30	0.100	0.065
Channel 29	0.100	0.065
Flow Path No. 46	0.100	0.065
Flow Path No. 44	0.100	0.065
Flow Path No. 39N	0.018-0.065	0.100-0.200
Flow Path No. 39	0.013-0.065	0.100-0.200
Stream 2 (Horizon Arroyo)	0.015-0.035	0.015-0.075
Range Dam Outlet Channel	0.016-0.033	0.04-0.20
Flow Path No. 26 (Phelps Dodge)	0.013-0.030	0.017-0.045
Flow Path No. 29	0.013-0.030	0.017-0.045
Flow Path No. 30	0.013-0.030	0.017-0.045
Flow Path No. 32	0.013-0.030	0.017-0.045
Work Area 8 Streams	0.013-0.120	0.013-0.120
Work Area 9 Streams	0.013-0.100	0.013-0.100
Work Area 10 Streams	0.013-0.100	0.013-0.100
Work Area 11 Streams	0.013-0.100	0.013-0.100
Work Area 4 Streams	0.013-0.100	0.013-0.100
Work Area 3 Streams	0.013-0.120	0.013-0.120
Work Area 1 Streams	0.025-0.150	0.025-0.150
Work Area 2 Streams	0.050-0.160	0.050-0.160
Work Area 5 Streams	0.013-0.120	0.013-0.120
Work Area 6 Streams	0.013-0.120	0.013-0.120
Work Area 7 Streams	0.050-0.150	0.050-0.150

5.3 Coastal Analyses

This Section is not applicable to this Flood Risk Project.

Table 14: Summary of Coastal Analyses

[Not Applicable to This Flood Risk Project]

5.3.1 Total Stillwater Elevations

This Section is not applicable to this Flood Risk Project.

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

[Not Applicable to This Flood Risk Project]

Table 15: Tide Gage Analysis Specifics

[Not Applicable to This Flood Risk Project]

5.3.2 Waves

This Section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This Section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This Section is not applicable to this Flood Risk Project.

Table 16: Coastal Transect Parameters

[Not Applicable to This Flood Risk Project]

Figure 9: Transect Location Map

[Not Applicable to This Flood Risk Project]

5.4 Alluvial Fan Analyses

Alluvial fan flooding can pose significant risk to communities due to uncertain flow paths and the potential for mud and debris flows. Alluvial fans and flooding on alluvial fans show great diversity because of variations in climate, fan history, rates and styles of tectonism, source area lithology, vegetation, and land use. Acknowledging this diversity, FEMA developed an approach that considers site-specific conditions in the identification and mapping of flood hazards on alluvial fans. The FEMA alluvial fan methodology was used to determine the flood depths and velocities on the alluvial fans described in Table 17.

A summary of the peak discharge at the fan apex and results for the 1-percent-annual-chance determinations for all the streams studied by alluvial fan analyses is shown in Table 18, "Results of Alluvial Fan Analyses."

Table 17: Summary of Alluvial Fan Analyses

Flooding Source	Location From (apex)	Location To (toe)	Drainage Area above Apex (sq. mi)	Model(s) Used	Date Analysis was Completed	Method Description
Flow Path No. 44	From apex of fan	Approximately 1,000 ft. east of Caps Carter Road	590	HEC-RAS 5.0.5 2D	May 2019	NRCS Soils Mapping, Surficial Geologic Mapping, Topographic Mapping, and Aerial Photography were all utilized to identify areas with potential active alluvial fan landforms.

Table 18: Results of Alluvial Fan Analyses

Flooding Source	Location From (apex)	Location To (toe)	1% Annual Chance Peak Flow at Fan Apex (cfs)	Flood Zones and Depths (ft.)	Minimum Velocity (fps)	Maximum Velocity (fps)
Flow Path No. 44	From apex of fan	Approximately 1,000 ft. east of Caps Carter Road	2,131	AO 1-3', A	1	4

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 El Paso County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

[Not Applicable to This Flood Risk Project]

A countywide conversion factor could not be generated for El Paso County because the maximum variance from average exceeds 0.25 feet. Calculations for the vertical offsets on a stream by stream basis are depicted in Table 20.

Table 20: Stream-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Arroyo 1 (Channel 6, Ridgeview)	+ 1.75
Arroyo 1A	+ 1.74
Arroyo 2 (Ojo de Aqua)	+ 1.74
Arroyo 4	+ 1.74
EPWU Arroyo 2	+ 1.85
Flow Path No. 12	+ 1.85
Flow Path No. 12A	+ 1.85

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Flow Path No. 13	+ 1.78
Flow Path No. 14	+ 1.78
Flow Path No. 15	+ 1.78
Flow Path No. 15A	+ 1.78
Flow Path No. 15B	+ 1.78
Flow Path No. 15C	+ 1.78
Flow Path No. 15D	+ 1.78
Flow Path No. 15E	+ 1.78
Flow Path No. 15F	+ 1.78
Flow Path No. 26 (Phelps Dodge)	+ 1.76
Flow Path No. 29	+ 1.76
Flow Path No. 30	+ 1.76
Flow Path No. 32	+ 1.76
Flow Path No. 38	+ 1.74
Flow Path No. 38A	+ 1.74
Flow Path No. 38B	+ 1.74
Flow Path No. 41	+ 1.74
Flow Path No. 41A	+ 1.74
Flow Path No. 42	+ 1.74
Flow Path No. 42A	+ 1.74
Flow Path No. 42A (Upper Reach)	+ 1.74
Flow Path No. 42B	+ 1.74
Flow Path No. 42C	+ 1.74
Keystone Dam	+ 1.74
Mesa Dam	+ 1.74
Mulberry Dam	+ 1.74
Northeast Pond	+ 1.78
Northern Pass Pond 3	+ 1.74
Oxidation Dam	+ 1.74
Pond N2	+ 2.03
Pond NA	+ 2.05
Pond NB	+ 2.03
Pond NC	+ 2.05
Ponding Area A	+ 1.98
Ponding Area B	+ 1.99
Ponding Area C	+ 2.01
Ponding Area D	+ 1.98
Ponding Area E	+ 1.99
Ponding Area F	+ 2.02
Ponding Area F1	+ 2.04
Ponding Area G	+ 2.01
Ponding Area L	+ 2.01
Ponding Area P1B	+ 1.86

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Ponding Area P2	+ 1.92
Ponding Area P3	+ 2.00
Ponding Area P3	+ 2.00
Ponding Area P3b	+ 2.00
Ponding Area P4	+ 2.01
Ponding Area P5	+ 2.02
Ponding Area P5A	+ 2.03
Ponding Area P7	+ 2.00
Ponding Area P8	+ 1.60
Ponding Area P9	+ 1.60
Ponding Area P11	+ 1.60
Ponding Area P12	+ 1.60
Ponding Area P3	+ 1.60
Ponding Area P16	+ 1.99
Ponding Area P16A	+ 2.00
Ponding Area P16B	+ 2.00
Ponding Area P16C	+ 1.99
Ponding Area P18	+ 2.09
Resler Pond 1	+ 1.74
Resler Pond 2	+ 1.74
Resler Pond 4	+ 1.74
Resler Pond 5	+ 1.74
Thorn Dam	+ 1.74
Vista Real Pond P1	+ 2.05
Vista Real Pond P2	+ 2.07
Vista Real Pond P3	+ 2.08
Vista Real Pond P4	+ 2.08
Vista Real Pond P5	+ 2.08
Vista Real Pond P6	+ 2.08
Vista Real Pond P7	+ 2.08
Vista Real Pond P8	+ 2.07

6.2 Base Map

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

and Mapping, www.fema.gov/media-library/resources-documents/collections/361.

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	USDA/FSA	2018	1:12,000	NAIP Orthophotography
Political boundaries	PdN Mapa	2016	1:6,000	Municipal boundaries
Political boundaries	Vinton, Village of	2019	1:6,000	Municipal boundaries
Political boundaries	El Paso, City of	2014	1:6,000	Municipal boundaries
Political boundaries	El Paso, City of	2004	1:6,000	County boundaries
Transportation Features	PdN Mapa	2018	1:6,000	Roads and railroads
Water Features	USDA/NRCS	2016	1:24,000	HUC-8 boundaries

6.3 Floodplain and Floodway Delineation

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

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 22.

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

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

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Clint, Town of; El Paso, City of; El Paso County, Unincorporated Areas; Horizon City, Town of; San Elizario, City of; Socorro, City of; Ysleta Del Sur Pueblo of Texas	All within Rio Grande-Fort Quitman Watershed	Airborne LiDAR	5.3 cm RMSEz	1 meter at 95% confidence level	USGS 2015
Anthony, Town of; Clint, Town of; El Paso, City of; El Paso County, Unincorporated Areas; Horizon City, Town of; San Elizario, City of; Socorro, City of; Vinton, Village of; Ysleta Del Sur Pueblo of Texas	All within El Paso County	DEM from Contours	83.5 cm RMSEz	0.8 meter at 95% confidence level	TxDOT 2005

BFEs shown at cross sections on the FIRM represent the 1-percent-annual-chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 23: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Flow Path No. 42								
A	4,234 ¹	170	638	5.6	3,823.4	3,823.4	3,823.4	0.0
B	5,186 ¹	74	548	5.2	3,841.0	3,841.0	3,841.0	0.0
C	6,234 ¹	134	484	5.8	3,862.5	3,862.5	3,862.5	0.0

¹ Feet above confluence with Rio Grande River

TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY EL PASO COUNTY, TEXAS AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: FLOW PATH NO. 42

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	599 ¹	42	88	11.8	3,883.2	3,883.2	3,883.2	0.0
B	1,797 ¹	34	128	6.6	3,910.8	3,910.8	3,910.8	0.0
C	2,299 ¹	52	159	3.7	3,917.2	3,917.2	3,917.3	0.1

¹ Feet above confluence with Flow Path No. 42

TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY EL PASO COUNTY, TEXAS AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: FLOW PATH NO. 42A

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	5	305	6,611	0.1	3,708.2	3,708.2	3,709.2	1.0
B	1,372	45	59	6.4	3,714.1	3,714.1	3,714.1	0.0
C ²	2,824							
D ²	4,260							
E ²	5,948							
F ²	7,483							
G ²	9,279							
H ²	10,863							

¹Approximately 1,728 feet below Nancy Drive

² Floodway not computed

TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY EL PASO COUNTY, TEXAS AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: HORIZON ARROYO (STREAM 2)
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Non-encroachment areas may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 24. The non-encroachment width indicates the measured distance left and right (looking downstream) from the mapped center of the stream to the non-encroachment boundary based on a surcharge of 1.0 foot or less.

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

[Not Applicable to This Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This Section is not applicable to this Flood Risk Project.

Table 25: Summary of Coastal Transect Mapping Considerations

[Not Applicable to This Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 30, “Map Repositories”).

6.5.1 Letters of Map Amendment

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

To obtain an application for a LOMA, visit www.fema.gov/letter-map-amendment-loma 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/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 El Paso 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

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
19-06-2306P	12/23/2019	Pico Del Norte Pond	
		Ponding Area P8	48141C0412F
		Ponding Area P9	48141C0414F
		Ponding Area P11	48141C0418F
		Ponding Area P12	
19-06-0075P	10/7/2019	Arroyo 4	48141C0358F

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
19-06-0854P	8/20/2019	Unnamed Ponding Areas	48141C0391F
16-06-3207P	10/15/2018	Flow Path No. 41A, Flow Path No. 41	48141C0187F 48141C0191F
18-06-0747P	6/18/2018	Flow Path No. 42A (Upper Reach)	48141C0187F
18-06-0885P	06/12/2018	Flow Path No. 13	48141C0212F 48141C0216F 48141C0217F 48141C0218F 48141C0219F 48141C0377F 48141C0381F 48141C0382F
17-06-1021P	1/22/2018	Unnamed Tributary to Mesa Spur Drain	48141C0534F 48141C0542F
17-06-1734P	10/31/2017	Flow Path No. 38	48141C0189F
16-06-0755P	12/01/2016	Flow Path No. 42B, Flow Path No. 42C	48141C0187F
15-06-0864P	6/09/2016	Flow Path No. 38A	48141C0189F
15-06-1599P	2/05/2016	Airport Pond	48141C0392F
13-06-3651P	3/04/2015	Flow Path No. 42	48141C0186F 48141C0187F
14-06-0855P	1/21/2015	Flow Path No. 39	48141C0188F 48141C0189F
14-06-1602P	12/12/2014	Unnamed Tributary, North Pond, South Pond	48141C0534F
14-06-2375P	10/27/2014	Keystone Dam Ponding	48141C0354F 48141C0358F
10-06-2130P	6/08/2011	Flow Path No. 38A	48141C0189F 48141C0193F
10-06-3638P	5/13/2011	Ponding Area P1B	48141C0403F 48141C0411F
09-06-1731P	4/30/2010	Cielo Vista Basin B	48141C0413F
09-06-0832P	9/17/2009	Flow Path No. 41	48141C0187F
07-06-2485P	3/27/2008	Flow Path No. 53	48141C0208F
07-06-2364P	11/30/2007	Arroyo 4	48141C0358F 48141C0359F
06-06-B807P	8/06/2007	Flow Path 38A	48141C0189F 48141C0193F 48141C0194F 48141C0356F

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
06-06-B414P	2/15/2007	Arroyo 1A	48141C0193F 48141C0194F 48141C0356F 48141C0357F
06-06-BE34P	8/30/2006	Ponding Area P16	48141C0419F
04-06-1606P	10/29/2004	Arroyo 1	48141C0356F 48141C0357F
03-06-107P	5/02/2003	Ponding Area P18	48141C0417F
02-06-1543P	11/18/2002	Unnamed Tributary to Flow Path No. 38	48141C0193F 48141C0356F
01-06-1394P	10/04/2001	Unnamed Tributary to Flow Path No. 38	48141C0193F
99-06-793P	8/30/1999	Ponding Area P16	48141C0419F
98-06-732P	3/23/1998	Arroyo 2	48141C0357F
97-06-103P	2/26/1997	Ponding Areas P & N	48141C0416F 48141C0417F 48141C0418F 48141C0419F
99-06-449P	3/26/1996	Ponding Area P14	48141C0416F 48141C0417F

¹ Panel Not Printed

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 El Paso County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) 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 El Paso County FIRMs in countywide format was Month XX, XXXX.

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)
Anthony, Town of	01/24/1975	01/24/1975	N/A	08/01/1987	N/A
Clint, Town of	11/19/1976	11/19/1976	N/A	07/01/1987	N/A
El Paso, City of	11/29/1977	11/29/1977	N/A	10/15/1982	TBD 02/16/2006, 01/03/1997, 08/05/1991, 06/15/1988, 02/05/1986
El Paso County, Unincorporated Areas	09/13/1974	09/13/1974	7/19/1977	09/04/1991	TBD
Horizon City, Town of	09/13/1974 ¹	N/A	N/A	09/04/1991	N/A
San Elizario, City of	09/13/1974 ¹	N/A	N/A	09/04/1991	N/A
Socorro, City of	09/13/1974 ¹	N/A	N/A	09/04/1991	N/A
Vinton, Village of	06/24/1980	06/24/1980	N/A	N/A	N/A
Ysleta Del Sur Pueblo of Texas ²	11/19/1977	N/A	N/A	10/15/1982	N/A

¹ Dates for this community were taken from El Paso County, Unincorporated Areas

² Dates for this community were taken from the City of El Paso