Appendix 2A
Existing Condition Flood Risk Summary Table

Appendix Table 2A: Existing Condition Flood Risk Summary Table

County	Area in Flood Planning Region (sq. mi.)	1% Annual Chance Flood Risk										0.2% Annual Chance Flood Risk*							
		Area in Floodplain (sq. mi.)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nighttime)	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sq. mi.)	Critical Facilities (#)	Area in Floodplain (sq. mi.)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sq. mi.)	Critical Facilities (#)
Andrews	269	85	9	0	41	30	41	0	8	18	0	20	1	0	2	0	2	5	0
Brewster	6,171	1,238	2,640	1,615	4,943	7,217	7,217	81	210	43	7	170	351	213	838	16	30	6	0
Crane	782	227	277	0	293	591	591	7	41	3	1	74	94		189	0	19	0.9	2
Crockett	2,720	527	1,292	680	1,027	2,392	2,392	80	187	7	8	53	169	83	296	39	23	0.6	0
Culberson	3,799	843	567	115	362	1,382	1,382	90	317	32	0	116	87	32	183	17	33	4	0
Ector	282	63	340	234	346	606	606	0	26	0.4	0	18	100	80	152	2	8	0.1	0
Edwards	444	91	58	27	5	127	127	11	19	0.3	0	6	8	1	18	2	1	0.02	0
El Paso	1,010	179	21,377	16,860	68,858	70,260	70,260	457	458	61	37	66	8,450	6,416	33,947	245	149	15	24
Hudspeth	4,550	937	823	44	1,002	1,629	1,629	70	288	246	2	218	93	2	205	38	31	61	0
Jeff Davis	2,254	395	660	135	720	1,431	1,431	53	63	53	1	60	117	17	261	6	11	9	0
Loving	674	167	95	2	25	291	291	3	17	4	1	45	57	5	174	0	9	1	0
Midland	7	2	7	2	2	20	20	0	3	0.004	0	1	7	6	19	0	0	0.0001	0
Pecos	4,744	1,055	1,040	370	2,713	3,424	3,424	182	284	47	9	256	466	247	1,325	31	100	11	4
Presidio	3,841	734	1,353	696	1,081	2,973	2,973	101	122	45	0	114	272	138	518	24	24	9	1
Reagan	83	11	2	0	0	3	3	1	0.01	0.01	0	2	0	0	0	0	0	0.001	0
Reeves	2,632	717	3,535	1,580	6,287	10,707	10,707	72	337	18	10	238	1,174	473	3,805	38	133	9	2
Schleicher	332	50	33	5	6	73	73	29	5	4	0	8	7	0	21	0	2	1	0
Sutton	798	154	963	492	1,336	1,562	1,562	0	96	2	5	11	173	100	337	29	9	0.1	1
Terrell	2,349	453	391	146	149	945	945	50	51	3	2	49	105	43	246	13	11	0.3	0
Upton	759	140	331	185	388	599	599	21	28	1	3	26	313	198	773	2	15	0.1	2
Val Verde	2,871	656	577	147	102	1,393	1,393	38	163	22	0	45	95	15	235	17	14	0.9	0
Ward	833	281	2,071	470	2,508	4,189	4,189	30	196	4	4	70	1,131	294	2,152	29	73	1	3
Winkler	827	281	1,680	1,126	2,101	3,675	3,675	1	126	3	4	91	1,020	743	2,289	0	48	0.7	2
Total	43,031	9,285	40,121	24,931	94,295	115,519	115,530	1,377	3,047	615	94	1,755	14,290	9,106	47,985	548	746	135	41

*0.2% AC flood exposure results are reported separately from the 1% AC results and do not include cumulative flood hazard areas or property impacts from 1% AC flood hazard areas.

Appendix Table 2A: Existing Condition Flood Risk Summary Table (Continued)

County	Area (sq. mi.)	Number of Structures in Flood Prone Area	Residential Structures in Flood Prone Area	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sq. mi.)	Critical Facilities (#)	Average SVI of features in floodplain or flood prone areas
						Possible Flood Prone Areas			
Andrews	-	-	-	-	-	-	-	-	0.234
Brewster	0.3	151	134	404	2	5	0.001	0	0.515
Crane	-	-	-	-	-	-	-	-	0.559
Crockett	-	-	-	-	-	-	-	-	0.607
Culberson	-	-	-	-	-	-	-	-	0.935
Ector	-	-	-	-	-	-	-	-	0.593
Edwards	-	-	-	-	-	-	-	-	0.470
El Paso	24[a]	10,961	8,970	67,082	46	345	8	17	0.665
Hudspeth	251[b]	906	56	2,585	93	2	31	2	0.932
Jeff Davis	-	-	-	-	-	-	-	-	0.408
Loving	1	9	0	25	2	0	0.01	0	0.502
Midland	-	-	-	-	-	-	-	-	0.664
Pecos	-	-	-	-	-	-	-	-	0.502
Presidio	7[c]	53	43	138	3	1	0.1	0	0.916
Reagan	-	-	-	-	-	-	-	-	0.558
Reeves	1	45	12	107	1	0.4	0.01	0	0.646
Schleicher	-	-	-	-	-	-	-	-	0.534
Sutton	-	-	-	-	-	-	-	-	0.651
Terrell	-	-	-	-	-	-	-	-	0.453
Upton	-	-	-	-	-	-	-	-	0.539
Val Verde	-	-	-	-	-	-	-	-	0.549
Ward	1	268	0	695	0	0	0.001	0	0.531
Winkler	-	-	-	-	-	-	-	-	0.555
Total	285	12,393	9,215	71,036	147	353	39	19	

a. Approximately 6 sq. mi. of the area assigned to El Paso County is located in Mexico near the Texas-Mexico border

b. Approximately 111 sq. mi. of the area assigned to Hudspeth County is located in Mexico near the Texas-Mexico border

c. Approximately 3 sq. mi. of the area assigned to Presidio County is located in Mexico near the Texas-Mexico border

Appendix 2B
Future Condition Flood Risk Summary Table

Appendix Table 2B: Future Condition Flood Risk Summary Table

County	Area in Flood Planning Region (sq. mi.)	1% Annual Chance Flood Risk								0.2% Annual Chance Flood Risk*							
		Area in Floodplain (sq. mi.)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sq. mi.)	Critical Facilities (#)	Area in Floodplain (sq. mi.)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sq. mi.)	Critical Facilities (#)
Andrews	269	85	9	0	41	0	8	18	0	20	1	0	2	0	2	5	0
Brewster	6,171	1,239	2,798	1,730	7,534	82	214	43	7	171	359	234	856	16	32	6	0
Crane	782	228	333	0	950	9	42	3	3	74	128	0	249	0	20	0.9	2
Crockett	2,720	527	1,396	764	2,577	80	189	7	8	53	77	7	135	40	23	0.6	0
Culberson	3,799	843	629	148	1,482	91	319	32	0	116	443	327	1,094	17	42	4	2
Ector	282	63	340	234	606	0	26	0.4	0	18	100	80	152	2	8	0.1	0
Edwards	444	91	58	27	127	11	19	0.3	0	6	8	1	18	2	1	0.02	0
El Paso	1,010	356	46,530	37,576	204,426	530	1,199	99	112	105	29,219	24,513	96,095	280	420	25	43
Hudspeth	4,550	1,004	936	45	1,868	75	296	270	2	229	121	4	283	39	37	65	0
Jeff Davis	2,254	395	686	145	1,474	53	64	53	1	61	185	43	391	6	14	9	1
Loving	674	167	104	6	311	3	17	4	1	45	52	4	164	0	9	1	0
Midland	7	2	7	2	20	0	3	0.004	0	1	7	6	19	0	0	0.0001	0
Pecos	4,744	1,056	1,269	539	4,023	184	293	48	10	256	418	185	953	31	103	11	3
Presidio	3,841	735	1,447	768	3,125	101	125	45	0	114	421	240	774	24	26	9	1
Reagan	83	11	2	0	3	1	0.01	0.01	0	2	0	0	0	0	0	0.001	0
Reeves	2,632	717	3,550	1,586	10,726	74	341	18	10	238	1,208	478	3,993	38	134	9	2
Schleicher	332	50	33	5	73	0	5	4	0	8	7	0	21	0	2	1	0
Sutton	798	154	1,101	590	1,784	31	98	2	6	11	85	42	190	29	8	0.1	0
Terrell	2,349	453	424	173	1,028	50	51	3	2	49	83	21	184	13	10	0.3	0
Upton	759	140	377	211	689	22	30	1	4	26	440	302	843	2	16	0.1	1
Val Verde	2,871	656	587	155	1,409	38	163	22	0	45	88	8	222	17	14	0.9	0
Ward	833	287	2,650	518	5,319	31	211	4	7	70	753	246	1,549	29	67	1	0
Winkler	827	283	1,868	1,266	4,083	1	131	3	5	92	964	700	2,115	0	46	0.7	1
Total	43,031	9,543	67,134	46,487	253,678	1,467	3,846	678	178	1,807	35,167	27,441	110,302	585	1,035	149	56

*0.2% AC flood exposure results are reported separately from the 1% AC results and do not include cumulative flood hazard areas or property impacts from 1% AC flood hazard areas.

Appendix Table 2B: Future Condition Flood Risk Summary Table (Continued)

County	Possible Flood Prone Areas								Average SVI of features in floodplain or flood prone areas
	Area (sq. mi.)	Number of Structures in Flood Prone Area	Residential Structures in Flood Prone Area	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sq. mi.)	Critical Facilities (#)	
Andrews	-	-	-	-	-	-	-	-	0.234
Brewster	0.3	151	134	404	2	5	0.001	0	0.515
Crane	-	-	-	-	-	-	-	-	0.559
Crockett	-	-	-	-	-	-	-	-	0.607
Culberson	-	-	-	-	-	-	-	-	0.935
Ector	-	-	-	-	-	-	-	-	0.593
Edwards	-	-	-	-	-	-	-	-	0.470
El Paso	24[a]	10,961	8,970	67,082	46	345	8	17	0.718
Hudspeth	251[b]	906	56	2,585	93	2	31	2	0.932
Jeff Davis	-	-	-	-	-	-	-	-	0.408
Loving	1	9	0	25	2	0	0.01	0	0.502
Midland	-	-	-	-	-	-	-	-	0.664
Pecos	-	-	-	-	-	-	-	-	0.502
Presidio	7[c]	53	43	138	3	1	0.1	0	0.916
Reagan	-	-	-	-	-	-	-	-	0.558
Reeves	1	45	12	107	1	0.4	0.01	0	0.646
Schleicher	-	-	-	-	-	-	-	-	0.534
Sutton	-	-	-	-	-	-	-	-	0.651
Terrell	-	-	-	-	-	-	-	-	0.453
Upton	-	-	-	-	-	-	-	-	0.545
Val Verde	-	-	-	-	-	-	-	-	0.549
Ward	1	268	0	695	0	0	0.001	0	0.532
Winkler	-	-	-	-	-	-	-	-	0.555
Total	285	12,393	9,215	71,036	147	353	39	19	

a. Approximately 6 sq. mi. of the area assigned to El Paso County is located in Mexico near the Texas-Mexico border
b. Approximately 111 sq. mi. of the area assigned to Hudspeth County is located in Mexico near the Texas-Mexico border
c. Approximately 3 sq. mi. of the area assigned to Presidio County is located in Mexico near the Texas-Mexico border

Appendix 2C
Comparison of Draft Fathom Floodplain Data in Region 14 (Memo)

AquaStrategies
Water Planning, Science & Engineering

Memorandum

TO: Jeff Irvin, AECOM

FROM: Paul Southard, Aqua Strategies

THROUGH: Barney Austin, Aqua Strategies

DATE: August 6th, 2021

RE: Comparison of Draft Fathom Floodplain with 1D-Derived Floodplain Maps used in TWDB
               Floodplain Quilt in Region 14, West Texas

This document details a comparison of floodplain maps produced by the Fathom pluvial and fluvial floodplain models at a 30m resolution and traditional 1D-derived floodplain mapping methods that are incorporated into the TWDB Flood Hazard Quilt[1] for TWDB flood mapping Region 14. Fathom results are compared to all four of the flood hazard maps available in the quilt, presented below in order of accuracy and subsequent prioritization in the TWDB flood quilt:

1. Preliminary recent National Flood Hazard Layer (NFHL) flood hazard zones
2. Effective NFHL flood hazard zones
3. Base Level Engineering (BLE) flood hazard maps.
4. First American Flood Data Services (FAFDS) flood hazard maps

In all cases, the comparison detailed here is of the 100-yr recurrence interval, 1% probability flood. Fathom fluvial defended and pluvial datasets are colored to show depth of flooding in cm, and any of the data sources from the TWDB Flood Hazard Quilt just show the areal extent of flooding. Note that Fathom pluvial and fluvial results are clipped for any depth less than 20 cm in an attempt to remove the many very small, disconnected, shallow areas of pluvial flooding in this dataset. Also, note that areas outside of the border of Texas, which can be seen somewhat in some of the figures, have invalid data and should not be considered in this comparison. Final Fathom datasets will be merged and combined with forthcoming coastal data to produce a final floodplain map. Final floodplain maps will also be converted to 3m resolution using downscaling techniques.

It is important to note that the Fathom model methodology in some cases differs from typical floodplain modeling that informs the NFHL and, subsequently, the FEMA Flood Insurance Rate Map (FIRM). For one thing, the Fathom model is a 2D model, and NFHL results are from 1D models. Fathom also uses high resolution topography data from LiDAR, which may only be implemented in some 1D modeling, or may be more recent than elevation datasets used in NFHL models. Additionally, Fathom may implement hydrologic structures that would affect flooding differently than NFHL models. It should be noted that levees in particular are implemented in the Fathom model by ensuring that water cannot enter service areas of levees for

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[1] https://twdb-flood-planning-resources-twdb.hub.arcgis.com/pages/flood-hazard-quilt

simulations where the return period is lower than the design standard of the levee. Levees that are represented in this way are those that are available in the USACE National Levees Database (NLD).

NFHL Preliminary Data

Preliminary NFHL data represents future updates to the NFHL map that have been released for review, and subsequently details results of very recent flood studies. In Region 14, preliminary data is only available in the vicinity of El Paso.

The Fathom data details floodplains north (Figure 1a upper left) and east (Figure 1b lower left and upper center) of the city that are not present in preliminary NFHL data. Additionally, wide swaths of the city adjacent to the Rio Grande are mapped as floodplains in the preliminary data and not included in the Fathom data (Figure 1a lower left), as well as large areas to the south and east of the city (Figure 1c lower center and top left). The Fathom and preliminary NFHL floodplains are reasonably similar in many of the smaller tributaries in this region (Figure 1a center, Figure 1b upper left, Figure 1c lower left).

NFHL Effective Data

Effective NFHL data is effective in the current FEMA FIRM (FIRM) and is available in some locations from "Detailed" studies and in others from "Approximate" studies. These data are combined here for the purposes of comparison against Fathom results. These data are only available in the southeast corner of El Paso, in an area that is much smaller than for the preliminary NFHL data.

In areas where NFHL data from a detailed study is available, it is typically much more extensive and continuous than Fathom results (Figure 2a and Figure 2b). That being said, there are also locations where NFHL detailed study flood zones are confined in narrow areas and are in close agreement with Fathom floodplains (Figure 2a lower right). Fathom also identifies more widespread, small areas of flooding than NFHL data (Figure 2b). Fathom does not identify flooding in portions of the Rio Grande that are available from NFHL approximate studies (Figure 2b lower left and Figure 2c).

BLE Data

BLE data can be used as best available information in areas that are Zone A's in the FIRM from approximate studies. For Region 14, BLE data is only available in the vicinity of El Paso, for the same area as the preliminary NFHL data. BLE data are quite similar to preliminary NFHL data, and the same areas are shown in Figure 3 as in Figure 1.

The Fathom data still details large, continuous floodplain running parallel to the Rio Grande (Figure 3a upper left) and north and east of El Paso (Figure 3b lower left and upper center) that are not present in the BLE data. Areas adjacent to the Rio Grande that are in the floodplain (Figure 3a lower left) are considerably less extensive and continuous than they were in the preliminary NFHL data. In these areas, the Fathom floodplain is still much narrower and less continuous, but it is closer than it was in the preliminary NFHL data. Large floodplain extents to the south and east of the city are also present in the BLE data that are considerably wider than Fathom floodplains (Figure 3b lower right and Figure 3c). The Fathom and BLE floodplains are reasonably similar in many of the smaller tributaries in this region (Figure 3a center, Figure 3b upper left, Figure 3c lower left), as they were for the preliminary NFHL data.

FAFDS Data

FAFDS flood hazard maps contain digitized flood hazard information from historical FIRMs and Flood Information Studies. For Region 14, FAFDS data are available throughout most of the planning region.

Several extensive floodplains in broad, flat basins located southwest of the Guadalupe mountains are detailed in FAFDS data for which Fathom floodplains are also present, but are considerably narrower (Figure 4a). The floodplains for the two datasets in drainage networks upslope of these basins are quite similar, but Fathom floodplains usually extend further upstream (Figure 4a lower left). In areas of Amistad's upland watershed with well-defined drainage networks, the floodplains for the two datasets are quite similar, with the Fathom floodplain being just slightly narrower (Figure 4b). Closer to Amistad, the FAFDS floodplain is considerably wider than the Fathom floodplain, but the Fathom floodplain extends farther upstream (Figure 4c).
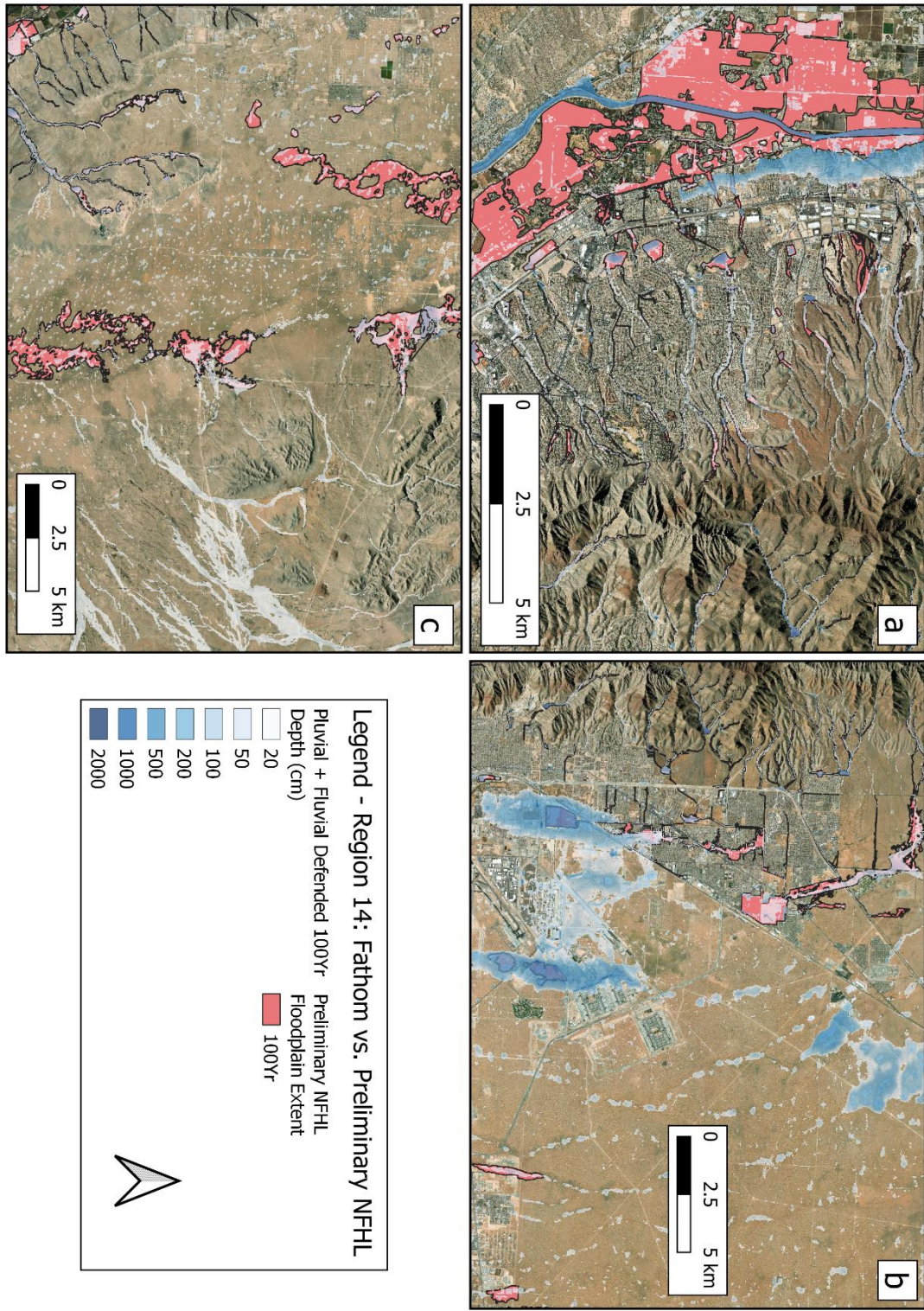
Figure 1: Comparison of Fathom floodplain with preliminary NFHL data just northwest of El Paso (a), just northeast of El Paso (b) and east of Horizon City (c).
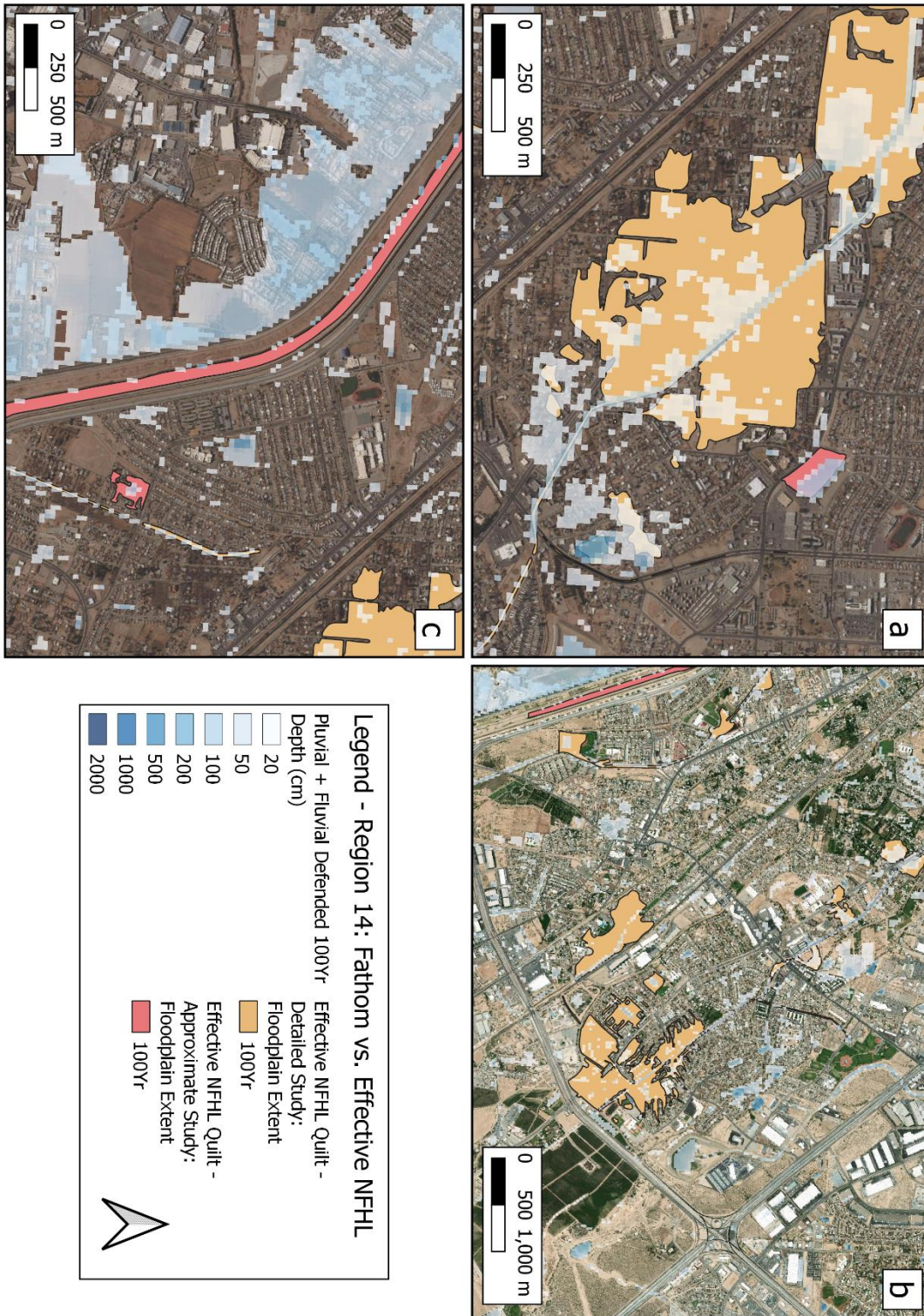
Figure 2: Comparison of Fathom floodplain with effective NFHL data just southeast of El Paso (a, b, c).
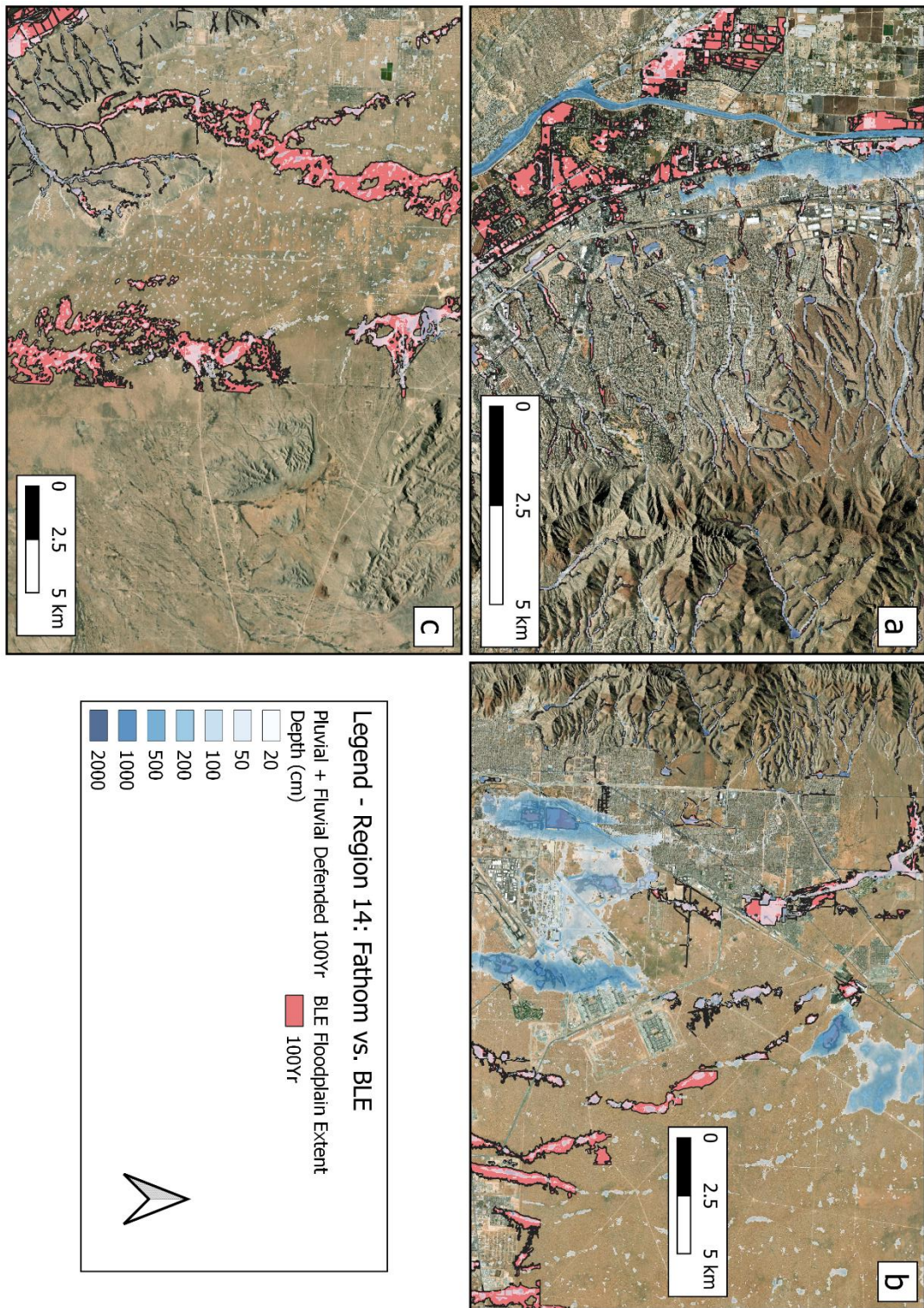
Figure 3: Comparison of Fathom floodplain with BLE data just northwest of El Paso (a), just northeast of El Paso (b) and east of Horizon City (c).
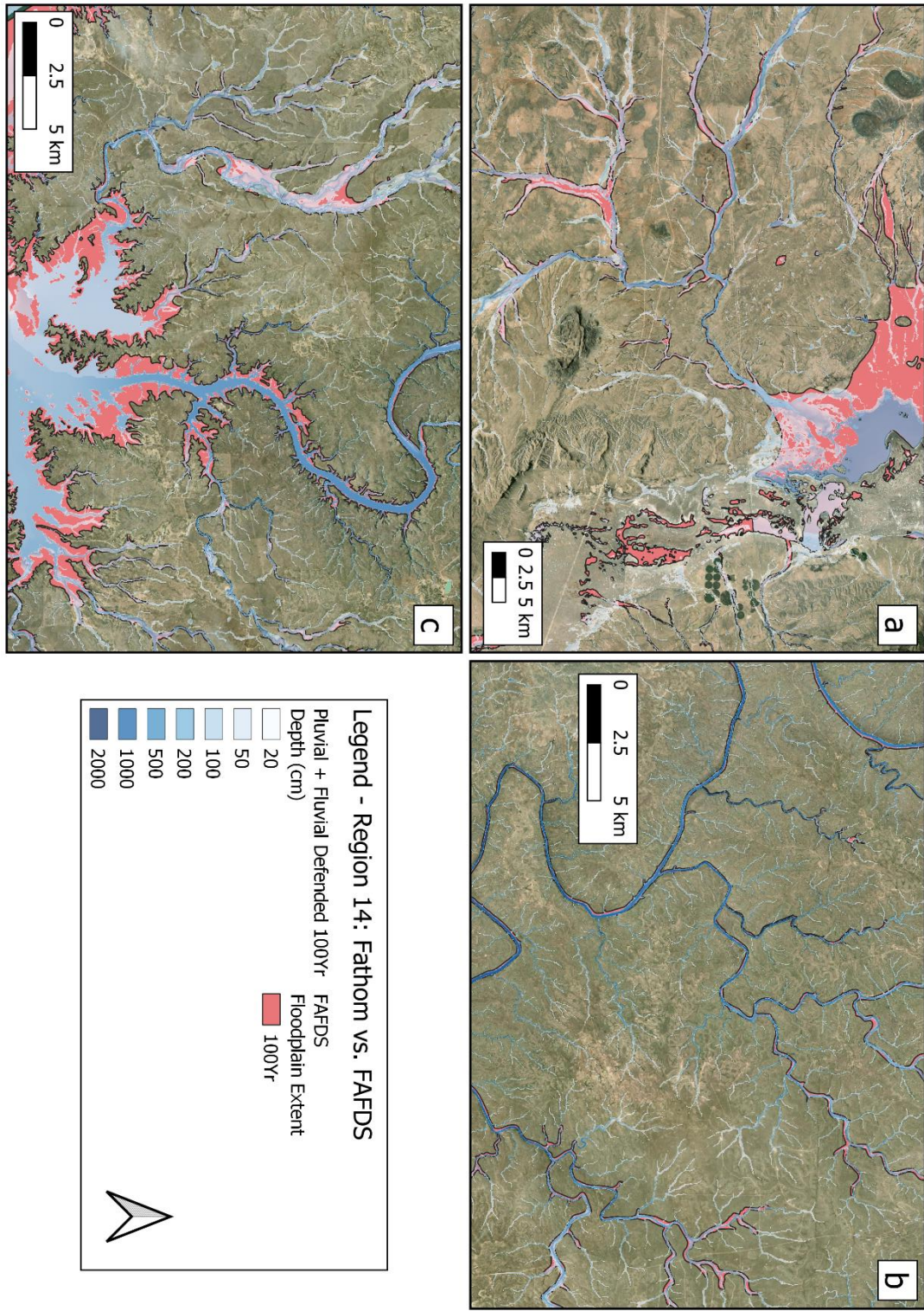
Figure 4: Comparison of Fathom floodplain with FAFDS data south of Dell City (a), northwest of Comstock (b) and at Lake Amistad (c).

Appendix 3A
Existing Floodplain Management Practices

Appendix Table 3A: Existing Floodplain Management Practices Summary Table

Entity	Floodplain Management Regulations (Yes/No/Unknown)	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/No)	NFIP Participant (Yes/No)	Higher Standards Adopted (Yes/No)
Alpine city	Yes	Yes	Yes	No
Andrews County	Yes	No	No	No
Anthony town	Yes	Yes	Yes	No
Balmorhea city	Yes	Yes	Yes	No
Barstow city	Unknown	No	No	No
Brewster County	Yes	Yes	Yes	No
Clint town	Yes	Yes	Yes	No
Crane city	Yes	Yes	Yes	No
Crane County	Yes	Yes	Yes	No
Crockett County	Yes	Yes	Yes	No
Culberson County	Yes	Yes	Yes	No
Dell City	Yes	Yes	Yes	No
Ector County	Yes	Yes	Yes	No
Edwards County	Yes	No	No	No
El Paso city	Yes	Yes	Yes	Yes
El Paso County	Yes	Yes	Yes	No
Fort Stockton city	Yes	Yes	Yes	No
Grandfalls town	Yes	Yes	Yes	No
Horizon City	Yes	Yes	Yes	No
Hudspeth County	Yes	Yes	Yes	No
Iraan city	Yes	Yes	Yes	No
Jeff Davis County	Yes	Yes	Yes	No
Kermit city	Unknown	No	No	No
Loving County	Yes	Yes	Yes	No
Marfa city	Yes	Yes	Yes	No
McCamey city	Yes	Yes	Yes	No
Midland County	Yes	Yes	Yes	No
Monahans city	Yes	Yes	Yes	No
Pecos city	Yes	Yes	Yes	No
Pecos County	Unknown	No	No	No
Presidio city	Yes	Yes	Yes	No
Presidio County	Yes	Yes	Yes	No

Entity	Floodplain Management Regulations (Yes/No/Unknown)	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/No)	NFIP Participant (Yes/No)	Higher Standards Adopted (Yes/No)
Pyote town	No	No	No	No
Rankin city	Unknown	No	No	No
Reagan County	Yes	Yes	Yes	No
Reeves County	Yes	No	No	No
San Elizario city	Yes	Yes	Yes	No
Schleicher County	Yes	Yes	Yes	No
Socorro city	Yes	Yes	Yes	No
Sonora city	Yes	Yes	Yes	No
Sutton County	Yes	Yes	Yes	No
Terrell County	Yes	Yes	Yes	No
Thorntonville town	Unknown	No	No	No
Toyah town	Yes	Yes	Yes	No
Upton County	Yes	Yes	Yes	No
Val Verde County	Yes	Yes	Yes	No
Valentine town	Unknown	No	No	No
Van Horn town	Yes	Yes	Yes	No
Vinton village	Yes	Yes	Yes	No
Ward County	Yes	Yes	Yes	No
Wickett town	Unknown	No	No	No
Wink city	Unknown	No	No	No
Winkler County	Unknown	No	No	No

Appendix 3B
Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Appendix Table 3B: Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14001001	Increase NFIP participation or adoption of equivalent standards with 90% of communities meeting qualifying standards	Short Term (10-year)	2033	Entire RFPG	Improved floodplain management practices limit flood risk increases to existing structures; annual flood risk to new construction in participating communities will be less than 1%	Number of entities participating in NFIP; number of entities with equivalent standards	Adoption of floodplain management practices to reduce future flood risk (362.3.b.6)	14001002
14001002	Enroll all current non-participating communities into the NFIP and maintain 100% community enrollment with no suspensions or sanctions	Long Term (30-year)	2053	Entire RFPG	Improved floodplain management practices limit flood risk increases to existing structures; annual flood risk to new construction will be less than 1%	Number of entities participating in NFIP; number of entities with equivalent standards	Adoption of floodplain management practices to reduce future flood risk (362.3.b.6)	14001001
14002001	Increase number of communities that have adopted higher-than-NFIP-minimum standards	Short Term (10-year)	2033	Entire RFPG	Adopting higher floodplain management standards may help to reduce flood risk to existing and new structures; residual flood risk to structures will remain for flood events with less than 1% annual occurrence	Number of communities that have adopted higher-than-NFIP-minimum standards	Adoption of floodplain management practices to reduce future flood risk (362.3.b.6)	14002002, 14002003
14002002	Increase number of communities enrolled in CRS Program	Short Term (10-year)	2033	Entire RFPG	Enrolling in the CRS Program may help to increase community flood awareness and reduce flood risk to existing and new structures; residual flood risk to structures will remain for flood events with less than 1% annual occurrence	Number of communities that have enrolled in CRS Program	Adoption of floodplain management practices to reduce future flood risk (362.3.b.6)	14002001, 14002003

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14002003	Improve CRS rating for the City of El Paso (which has a current CRS Rating of 9)	Short Term (10-year)	2033	HUC 8 Watersheds 13040100, 13030102	Improving CRS Rating will help to increase community flood awareness and reduce flood risk to existing and new structures; residual flood risk to structures will remain for flood events with less than 1% annual occurrence	Improvement in City of El Paso CRS Rating	Adoption of floodplain management practices to reduce future flood risk (362.3.b.6)	14002002, 14002003
14003001	Adopt recommended minimum stormwater infrastructure design standards applicable across the region	Short Term (10-year)	2033	Entire RFPG	Region-wide recommended minimum design standards would serve as a guide for communities to implement; residual flood risk will remain for flood events not typically covered in design standards or for communities that do not adopt	Development of recommended minimum stormwater infrastructure design standards	Adoption of floodplain management practices to reduce future flood risk (362.3.b.6)	n/a
14004001	Increase flood protection of unaccredited levees in El Paso County watersheds to meet FEMA levee accreditation requirements and update flood mapping to account for any changes in levee accreditation status	Short Term (10-year)	2033	HUC 8 Watersheds 13040100, 13030102	Residual flood risk will remain for flood events exceeding the design capacity of the accredited levees or for areas where levees remain unaccredited	Accreditation of current unaccredited levees by FEMA followed by associated risk map updates	Protect against loss of life and property (362.3.b.13-14)	14004002

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14004002	Increase flood protection of unaccredited levees in the region <u>outside of El Paso County watersheds</u> to meet FEMA levee accreditation requirements and update flood mapping to account for any changes in levee accreditation status	Long Term (30-year)	2053	Entire RFPG Except for HUC 8 Watersheds 13040100, 13030102	Residual flood risk will remain for flood events exceeding the design capacity of the accredited levees or for areas where levees remain unaccredited	Accreditation of current unaccredited levees by FEMA followed by associated risk map updates	Protect against loss of life and property (362.3.b.13-14)	14004001
14005001	Increase the number of flood gages (rainfall and/or stream gages) in the region	Short Term (10-year)	2033	Entire RFPG	No changes in flood risk; additional flood gages would improve ability to validate or calibrate existing and new flood models	Number of rainfall and/or stream gages installed	Utilize best available science, data, models, and flood risk mapping (362.3.b.2)	n/a
14006001	Develop and implement region-wide flood warning and emergency response program	Short Term (10-year)	2033	Entire RFPG	No physical changes in flood risk; a flood warning and emergency response program would provide advanced warning of flood risks to mitigate loss of life and property during a flood event	Implementation of regional flood warning system	Protect against loss of life and property (362.3.b.13-14)	14006002
14006002	Increase the number of entities that use flood warning signs, traffic message boards, and other media (TV, radio, social media) to communicate flood warnings	Short Term (10-year)	2033	Entire RFPG	No physical changes in flood risk; improved flood warning messaging services would provide critical information to communities to mitigate loss of life and property during a flood event	Number of entities using flood warning signs, traffic message boards, and other media to communicate flood warnings	Protect against loss of life and property (362.3.b.13-14)	14006001

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14007001	Establish community-led flood outreach and awareness programs (addressing risk, resiliency, and mitigation) in 30% of communities in the region	Short Term (10-year)	2033	Entire RFPG	Flood risk for communities without flood outreach and awareness programs will be greater than in communities with these programs; in addition, outreach programs will only reach a portion of community members	Percentage of communities with community-led flood outreach and awareness programs	Enhanced public understanding of flood risk; equity and accountability in decision-making (362.3.b.3, 20-21, 26)	14007002, 14007003
14007002	Establish community-led flood outreach and awareness programs (addressing risk, resiliency, and mitigation) in 90% of communities in the region	Long Term (30-year)	2053	Entire RFPG	Flood risk for communities without flood outreach and awareness programs will be greater than in communities with these programs; in addition, outreach programs will only reach a portion of community members	Percentage of communities with community-led flood outreach and awareness programs	Enhanced public understanding of flood risk; equity and accountability in decision-making (362.3.b.3, 20-21, 26)	14007001, 14007003
14007003	Increase entity and public stakeholder participation in the regional flood planning process	Short Term (10-year)	2033	Entire RFPG	No direct change in short-term flood risk; increased stakeholder participation will lead to more comprehensive future regional flood plans and indirect flood risk reduction in the long-term	Number of entities and public stakeholders contributing to future-cycle RFPs	Cooperative planning with local, state, and federal partners (362.3.b.29)	14007002, 14007003
14008001	Increase the coverage of flood hazard data across the region by completing studies in 40% of the areas identified as having current gaps in flood mapping in the first cycle Flood Plan	Short Term (10-year)	2033	Entire RFPG	No physical change in flood risk; completing FMEs will help to better identify flood risk, exposure, and vulnerabilities to life and property	Percentage of FMEs completed from the first-cycle RFP	Evaluate flood risk, exposure, and vulnerabilities to life and property (362.3.b.3-5)	14008002

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14008002	Have complete coverage of flood hazard data across the region by completing studies in 100% of the areas identified as having current gaps in flood mapping in the first cycle Flood Plan and have an ongoing, funded maintenance plan for updates	Long Term (30-year)	2053	Entire RFPG	No physical change in flood risk; completing FMEs will help to better identify flood risk, exposure, and vulnerabilities to life and property	Percentage of FMEs completed from the first-cycle RFP	Evaluate flood risk, exposure, and vulnerabilities to life and property (362.3.b.3-5)	14008001
14009001	Remove 10% of the existing structures in El Paso County watersheds from 1% annual chance floodplain in the region (either by remapping or flood risk reduction)	Short Term (10-year)	2033	HUC 8 Watersheds 13040100, 13030102	90% of identified structures will have an annual risk of flooding of >1%; 10% of structures will have an annual risk of flooding of <1%	Number of structures removed from 1% annual chance existing flood hazard layer	Protect against loss of life and property (362.3.b.13-14)	14009002, 14009003, 14009004
14009002	Remove 25% of the existing structures outside of El Paso County watersheds from 1% annual chance floodplain in the region (either by remapping or flood risk reduction)	Short Term (10-year)	2033	Entire RFPG Except for HUC 8 Watersheds 13040100, 13030102	75% of identified structures will have an annual risk of flooding of >1%; 25% of structures will have an annual risk of flooding of <1%	Number of structures removed from 1% annual chance existing flood hazard layer	Protect against loss of life and property (362.3.b.13-14)	14009001, 14009003, 14009004
14009003	Remove 20% of the existing structures in El Paso County watersheds from 1% annual chance floodplain in the region (either by remapping or flood risk reduction)	Long Term (30-year)	2053	HUC 8 Watersheds 13040100, 13030102	80% of identified structures will have an annual risk of flooding of >1%; 20% of structures will have an annual risk of flooding of <1%	Number of structures removed from 1% annual chance existing flood hazard layer	Protect against loss of life and property (362.3.b.13-14)	14009001, 14009002, 14009004

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14009004	Remove 50% of the existing structures <u>outside of El Paso County watersheds</u> from 1% annual chance floodplain in the region (either by remapping or flood risk reduction)	Long Term (30-year)	2053	Entire RFPG Except for HUC 8 Watersheds 13040100, 13030102	50% of identified structures will have an annual risk of flooding of >1%; 50% of structures will have an annual risk of flooding of <1%	Number of structures removed from 1% annual chance existing flood hazard layer	Protect against loss of life and property (362.3.b.13-14)	14009001, 14009002, 14009003
14010001	Remove 40% of the low water crossings from 10% annual chance floodplain in the region (either by remapping or flood risk reduction)	Short Term (10-year)	2033	Entire RFPG	60% of identified low water crossings will have an annual risk of flooding of >10%; 40% of low water crossings will have an annual risk of flooding of <10%	Number of low water crossings removed from 10% annual chance existing flood hazard layer	Protect against loss of life and property (362.3.b.13-14)	14010002
14010002	Remove 90% of the low water crossings from 10% annual chance floodplain in the region (either by remapping or flood risk reduction)	Long Term (30-year)	2053	Entire RFPG	10% of identified low water crossings will have an annual risk of flooding of >10%; 90% of low water crossings will have an annual risk of flooding of <10%	Number of low water crossings removed from 10% annual chance existing flood hazard layer	Protect against loss of life and property (362.3.b.13-14)	14010001
14011001	Increase the number of entities that utilize regional detention for floodplain management	Short Term (10-year)	2033	Entire RFPG	No change in flood risk for communities that do not utilize regional detention; regional detention does not fully remove flood risk but mitigates flooding for a specified area and design flood event	Number of entities utilizing regional detention	Protect against loss of life and property (362.3.b.13-14)	n/a
14012001	Consider and incorporate nature-based practices in flood risk reduction projects	Short Term (10-year)	2033	Entire RFPG	No additional change in flood risk relative to other project types; nature-based solutions will reduce impacts to the environment	Number of flood risk reduction projects with nature-based components	Include strategies and projects that use nature-based features (362.3.b.17)	n/a

Goal ID	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How Will the Goal Be Measured	Overarching Goal	Associated Goal IDs
14013001	Establish dual usage regional storage facilities for flood mitigation and water supply	Short Term (10-year)	2033	Entire RFPG	No changes in flood risk; dual-use projects will contribute to the water supply	Establishment of new dual-use flood mitigation/water supply structures	Contribute to the water supply where possible (362.3.b.18-19)	n/a
14014001	Increase the number of communities with documented, operational, and fully funded stormwater asset management plans	Short Term (10-year)	2033	Entire RFPG	Entities without stormwater asset management plans have no change in flood risk; entities with new stormwater asset management plans have reduced risk due to better stormwater O&M practices	Number of new entities with stormwater asset management plans	Consideration of funding and long-term operation and maintenance (362.3.b.38)	n/a
14015001	Increase number of new funding sources used to pay for implementation of flood management activities and decrease number of communities without a local funding source	Short Term (10-year)	2033	Entire RFPG	Entities without additional funding have no change in flood risk; entities with new funding sources have reduced flood risk as stormwater O&M and capital projects are funded and implemented	Number of entities with new funding sources for implementation of flood management activities	Consideration of funding and long-term operation and maintenance (362.3.b.38)	14015002
14015002	Increase the number of entities that have a dedicated drainage fee to help implement future Flood Mitigation Evaluations (FMEs) and Flood Mitigation Projects (FMPs)	Short Term (10-year)	2033	Entire RFPG	Entities without dedicated drainage fee have no change in flood risk; entities with dedicated drainage fee have reduced flood risk as stormwater O&M and capital projects are funded and implemented	Number of new entities with dedicated drainage fee for implementation of flood management activities	Consideration of funding and long-term operation and maintenance (362.3.b.38)	14015001