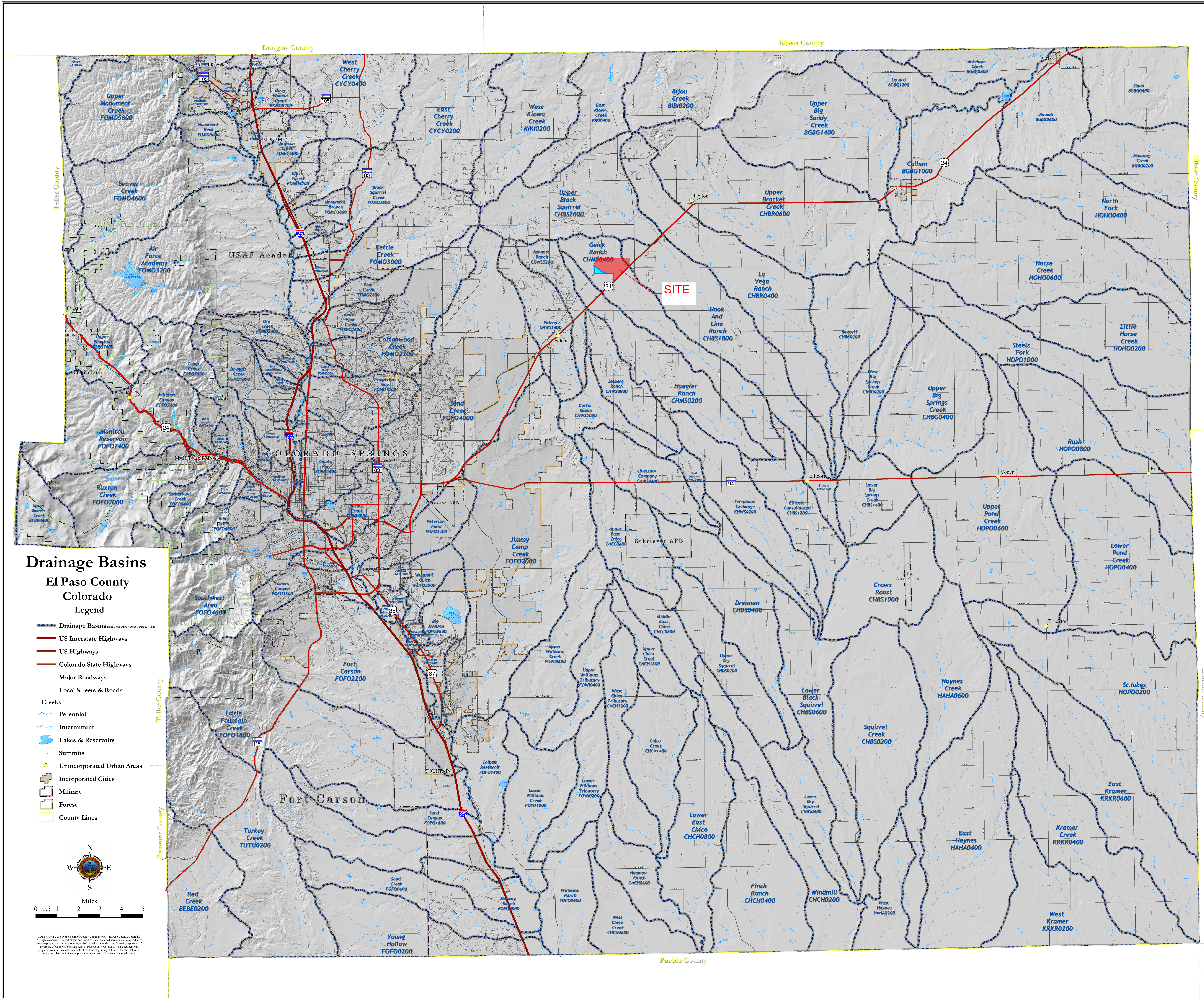
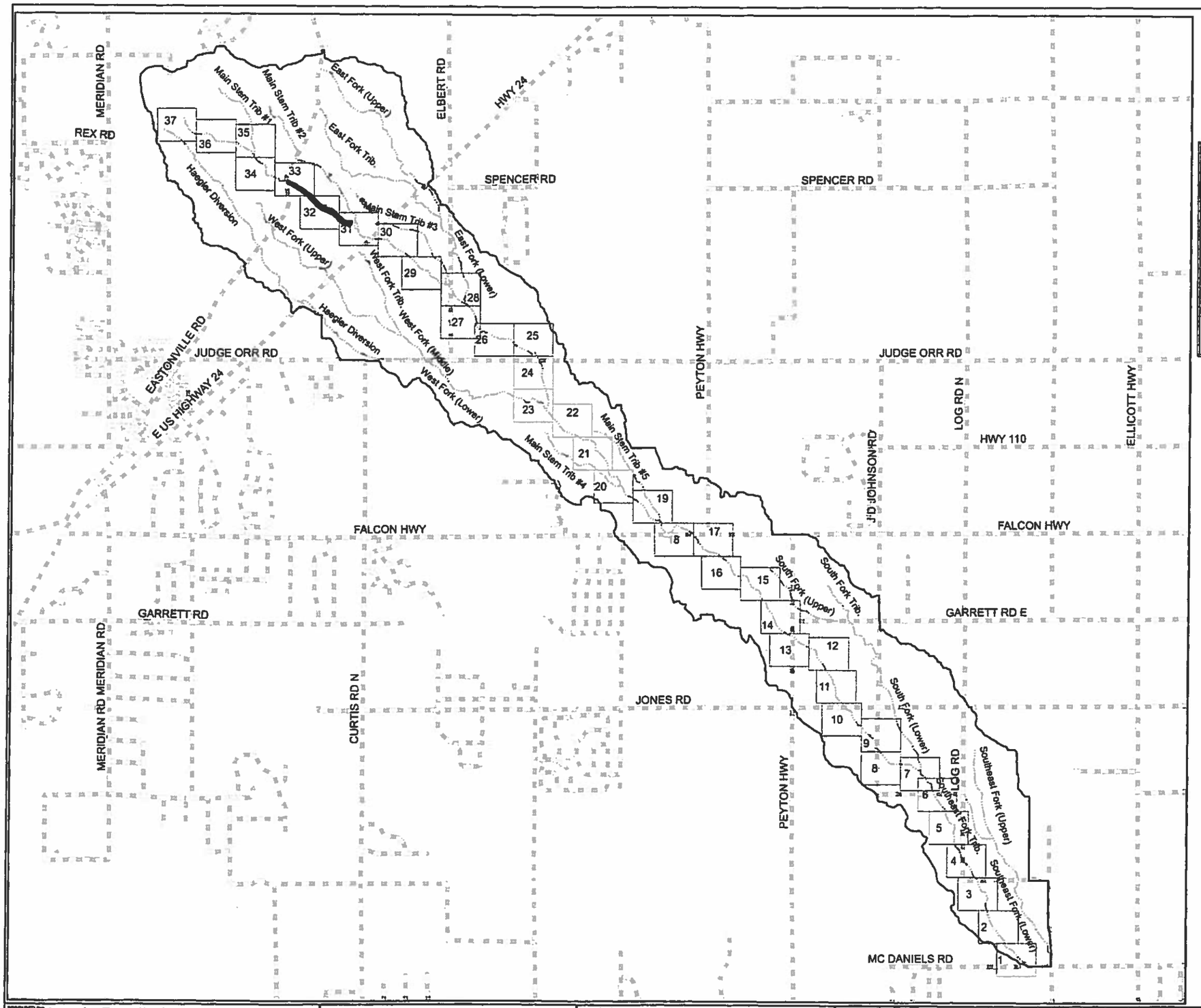
APPENDIX B

DBPS &, MDDP Sheet References



Drainage Basins
El Paso County
Colorado
Legend
Drainage Basins
US Interstate Highways
US Highways
Colorado State Highways
Major Roadways
Local Streets & Roads
Creeks
Perennial
Intermittent
Lakes & Reservoirs
Summits
Unincorporated Urban Areas
Incorporated Cities
Military
Forest
County Lines
N
S
E
W
Miles
0 0.5 1 2 3 4 5
SITE
Douglas County
Elbert County
Teller County
Fremont County
Pueblo County
Lincoln County
COLORADO SPRINGS
USAF Academy
Fort Carson
Schriever AFB
Peyton
Falcon
Ellicott
Yoder
Rush
Truckton
West Cherry Creek CYCY0400
East Cherry Creek CYCY0200
West Kiowa Creek KIKI0200
Bijou Creek BIBI0200
Upper Big Sandy Creek BGBG1400
Calhan BGBG1000
Upper Monument Creek FOMO5800
Beaver Creek FOMO4600
Air Force Academy FOMO3200
Kettle Creek FOMO3000
Upper Black Squirrel CHBS2000
Geick Ranch CHMS0400
Upper Bracket Creek CHBR0600
La Vega Ranch CHBR0400
North Fork HOHO0400
Horse Creek HOHO0600
Hook And Line Ranch CHBS1800
Little Horse Creek HOHO0200
Steels Fork HOPO1000
Cottonwood Creek FOMO2200
Haegler Ranch CHMS0200
Upper Big Springs Creek CHBG0400
Sand Creek FOFO4000
Manitou Reservoir FOFO7400
Ruxton Creek FOFO7000
Rush HOPO0800
Upper Pond Creek HOPO0600
Jimmy Camp Creek FOFO2000
Lower Pond Creek HOPO0400
Southwest Area FOFO4600
Crows Roost CHBS1000
Drennan CHBS0400
Fort Carson FOFO2200
Little Fountain Creek FOFO1800
Haynes Creek HAHA0600
Lower Black Squirrel CHBS0600
Squirrel Creek CHBS0200
St.lukes HOPO0200
East Kramer KRKR0600
Turkey Creek TUTU0200
Lower East Chico CHCH0800
East Haynes HAHA0400
Kramer Creek KRKR0400
Red Creek BEBE0200
Finch Ranch CHCH0400
Windmill CHCH0200
West Kramer KRKR0200
Young Hollow FOFO0200



THIS DRAWING IS CONCEPTUAL IN NATURE AND IS NOT TO BE USED AS THE SOLE BASIS FOR FINAL DESIGN, CONSTRUCTION, OR REMEDIAL ACTION. FURTHER STUDIES UNDER EPC DOT'S DIRECTION SHOULD BE PERFORMED PRIOR TO SUCH DECISIONS.

Legend

- Streams
- Roads
- Basin Boundary
- Matchlines

0 1 2 Miles

Drexel, Barrell & Co. Engineers · Surveyors
1800 38TH STREET, BOULDER, COLORADO 80301 (303) 442-4338
2 S 7TH STREET, COLORADO SPRINGS, COLORADO 80905 (719) 260-0887
6513 W 4TH STREET, GREELEY, COLORADO 80634 (970) 351-6645
CONTACT: ROBERT BENNETT

PREPARED FOR: REALTY DEVELOPMENT SERVICES
25 NORTH TEJON STREET, SUITE 300
COLORADO SPRINGS, COLORADO 80903
CONTACT: RAY O' SULLIVAN (719) 227-1622

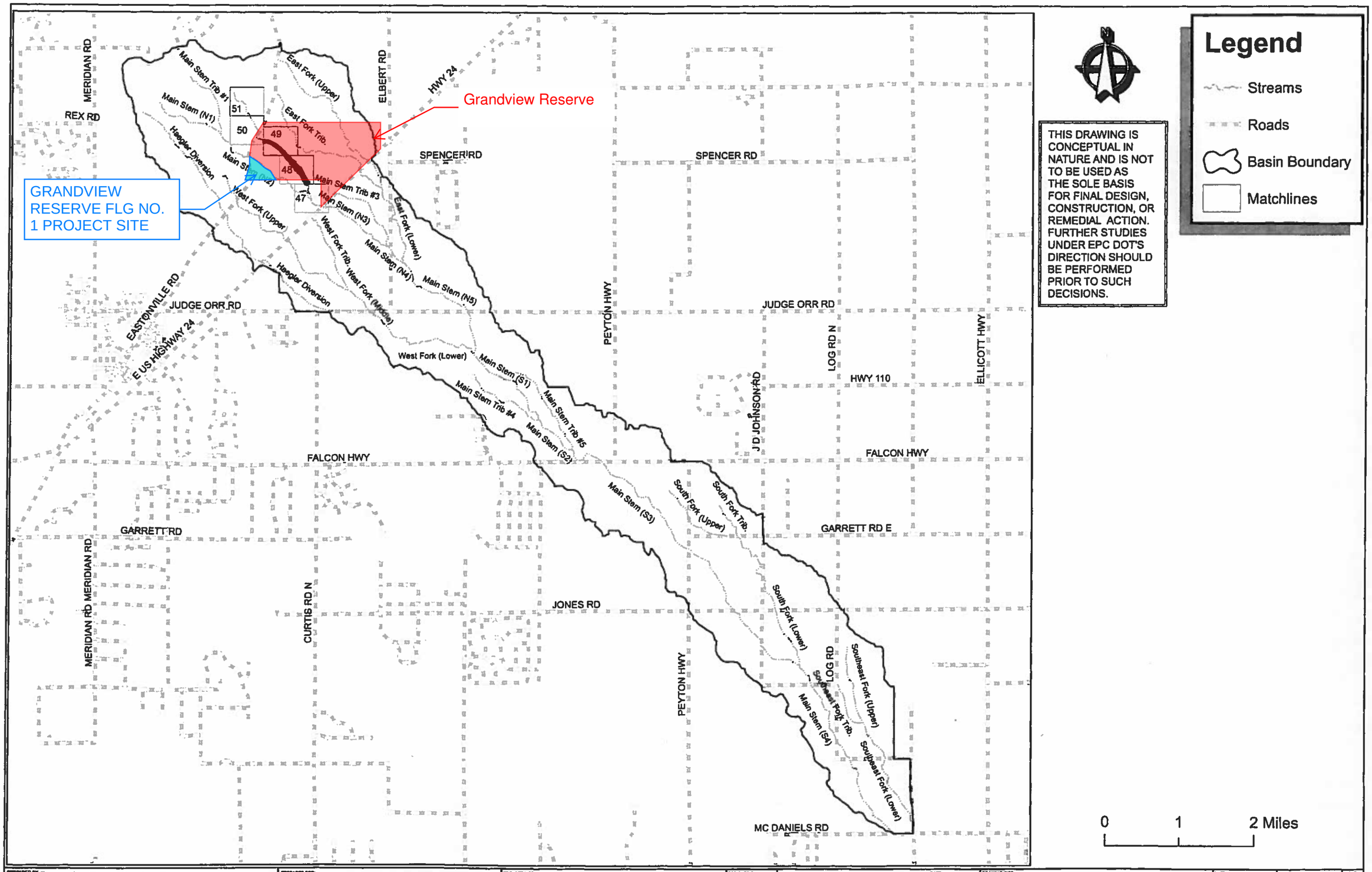
PROJECT INFO: GIECK RANCH
DRAINAGE BASIN PLANNING STUDY
EL PASO COUNTY, COLORADO

DESIGNED BY: RJB
DRAWN BY: SLF
CHECKED BY: RJB

REVISION DESCRIPTIONS | DATE

DRAWING INFO: GIECK RANCH
KEY MAP
MAIN STEM

DATE: AUGUST 2007
JOB NO: C7706-1
SHT: PL
SCALE: H: 1" = 6000' V:
DRAWING NO: 6D 038
SHEET: K1



Drexel, Barrell & Co. Engineers · Surveyors
1560 36TH STREET
3 S 7TH STREET
6513 W 4TH STREET
CONTACT: ROBERT BENNETT
SOULDER, COLORADO 80301 (303) 442-4338
COLORADO SPRINGS, COLORADO 80905 (719) 260-0887
GREELEY, COLORADO 80634 (970) 351-9646

PREPARED FOR: REALTY DEVELOPMENT SERVICES
25 NORTH TEJON STREET, SUITE 300
COLORADO SPRINGS, COLORADO 80903
CONTACT: RAY O' SULLIVAN (719) 227-1022

PROJECT INFO: GIECK RANCH
DRAINAGE BASIN PLANNING STUDY
EL PASO COUNTY, COLORADO

DESIGNED BY: RJB
DRAWN BY: BLF
CHECKED BY: RJB

REVISION DESCRIPTIONS | DATE

DRAWING INFO: GIECK RANCH
KEY MAP
MAIN STEM TRIBUTARY #2

DATE: AUGUST 2007
JOB NO: C7706-1
SET: PL
SCALE: H 1" = 6000' V
DRAWING NO.: 6D 038
SHEET: K5

OFFSITE CONTRIBUTION
Q100 ~ 280 CFS
Q5 ~ 59 CFS
OFFSITE AREA ~0.44 SQUARE MILES
CN VALUE~56.49
SEE STREAMSTATS MAP

OFFSITE CONTRIBUTION
Q100 ~ 217 CFS
Q5 ~ 61 CFS
OFFSITE AREA ~0.22 SQUARE MILES
CN VALUE~54.53
SEE STREAMSTATS MAP

OFFSITE CONTRIBUTION
Q100 ~ 595 CFS
Q5 ~ 180 CFS
OFFSITE AREA ~0.84 SQUARE MILES
CN VALUE~58.28
SEE STREAMSTATS MAP

OFFSITE CONTRIBUTION
Q100 ~ 413 CFS
Q5 ~ 67 CFS
OFFSITE AREA ~0.17 SQUARE MILES
CN VALUE ~55.04
SEE STREAMSTATS MAP

EASTONVILLE ROAD

EAST FORK

EAST FORK TRIBUTARY

MAIN STEM TRIBUTARY NUMBER 2

MAIN STEM

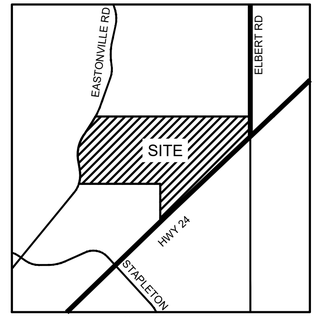
STATE HIGHWAY 24

EXISTING 24" CMP CULVERT

EXISTING 18" CMP CULVERT

EXISTING BRIDGE

Basin	Design Point	5 Year Pre Devlopment	100 Year Pre Development
A1	10	13.03	66.80
B1	20	4.33	48.76
B2	21	1.66	20.74
	22	11.85	140.35
	23	5.99	68.56
B3	24	21.23	249.20
C1	30	9.95	110.70
	31	9.95	110.70
D1	40	8.12	40.00
D2	41	22.23	114.87
	42	8.12	40.00
E1	50	32.34	157.99
	51	93.34	374.99
F1	60	9.70	49.45
F2	61	16.46	86.73
F3	62	3.65	18.42
F4	63	12.98	67.82
	64	13.35	67.87
	65	26.04	135.62
	66	16.46	86.73
	67	231.47	864.52
G1	70	5.57	28.46
G2	71	3.87	20.06
	72	3.87	20.06
	73	3.87	20.06
	74	189.42	643.48
H1	80	1.85	21.89
H2	81	5.37	27.12
H3	82	1.92	9.51
H4	83	8.07	40.86
	84	7.22	49.01
	85	1.92	9.51
OS1	OS1	67.00	413.00
OS2	OS2	59.00	280.00
OS3	OS3	61.00	217.00
OS4	OS4	180.00	595.00
	Outfall1	80.03	479.80
	Outfall2	85.96	597.41
	Outfall3	30.00	154.35
	Outfall4	341.05	1335.77



VICINITY MAP

LEGEND:

- PROPOSED MAJOR CONTOUR 5250
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR 5250
- EXISTING MINOR CONTOUR
- PROPOSED STORM DRAIN PIPE
- EXISTING STORM DRAIN PIPE
- PROPOSED DRAINAGE CHANNEL
- PROPOSED ROAD
- PROPERTY LINE
- DIRECTIONAL FLOW ARROW
- EMERGENCY OVERFLOW ARROW
- EXISTING 100-YR FLOODWAY
- EXISTING 100-YR FLOODPLAIN
- PROPOSED 100-YR FLOODPLAIN
- WATERSHED BOUNDARY
- MAJOR BASIN LINE
- 100YR ZONE A FLOODPLAIN
- PROPOSED DETENTION LOCATION (A)
- POTENTIAL WATER QUALITY LOCATION (WQ)
- SWMM CONVEYANCE ELEMENT (SWMM)
- PROPOSED PEAK FLOW RATE (CFS) (850)
- DESIGN POINT (X)
- PROPOSED BASIN LABEL (XX) BASIN DESIGNATION; AREA (AC.) (XX) C5 (XX) C100

LAND USE

- LOW DENSITY
- MEDIUM DENSITY
- HIGH/MED DENSITY
- HIGH DENSITY
- CHURCH
- COMMERCIAL
- ELEMENTARY SCHOOL
- COMMUNITY PARK

NOTES:

NORTH

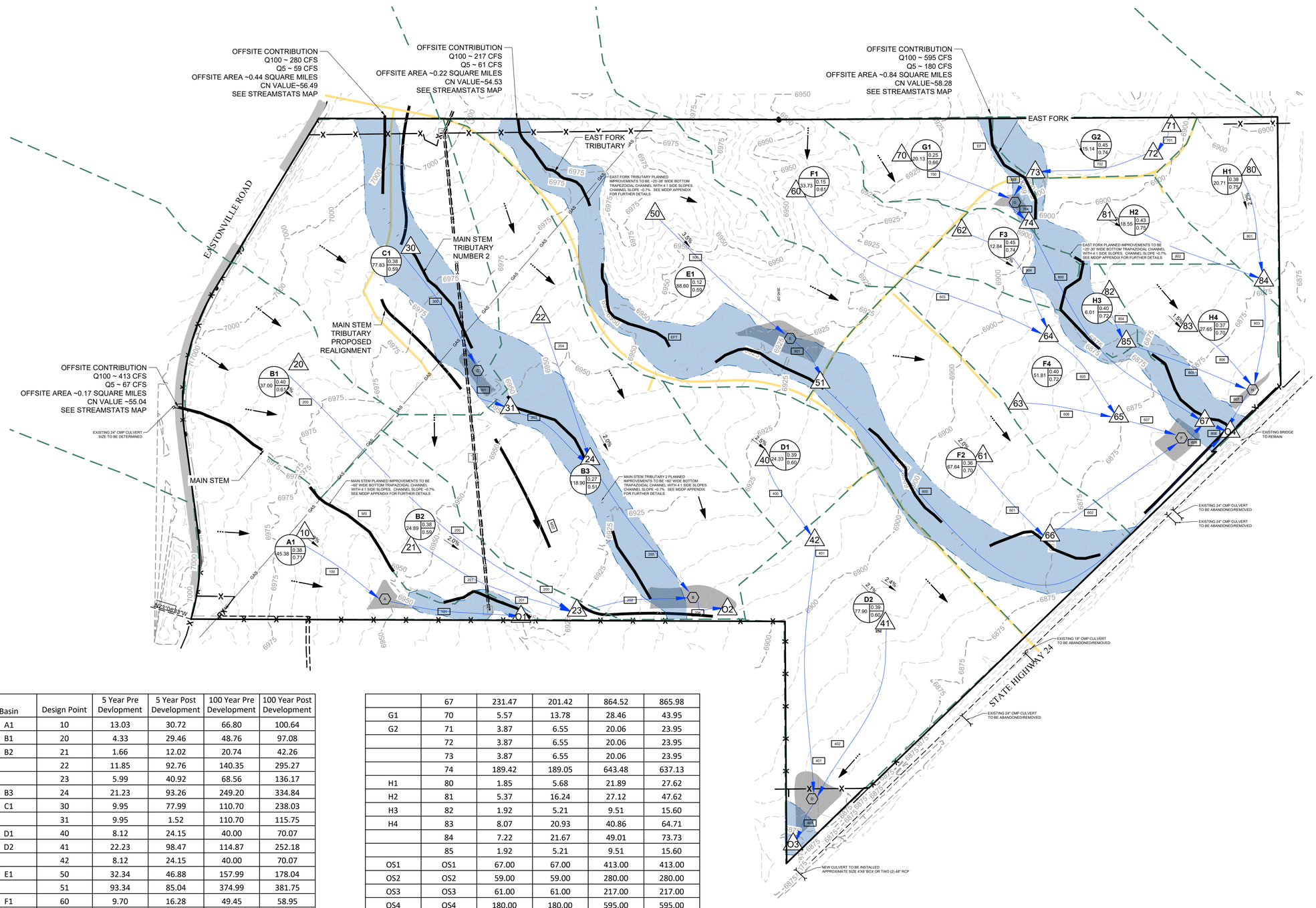
0 200 100

HRGreen

Job No.:	191897.01
Prepared By:	TBI
Date:	04/14/2020

EXISTING EX1

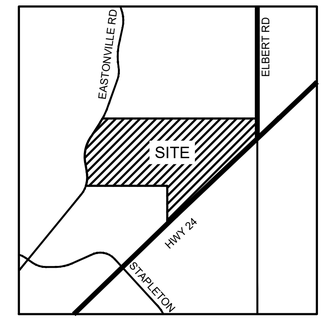
FIG.EX1



Basin	Design Point	5 Year Pre Devlopment	5 Year Post Development	100 Year Pre Development	100 Year Post Development
A1	10	13.03	30.72	66.80	100.64
B1	20	4.33	29.46	48.76	97.08
B2	21	1.66	12.02	20.74	42.26
	22	11.85	92.76	140.35	295.27
	23	5.99	40.92	68.56	136.17
B3	24	21.23	93.26	249.20	334.84
C1	30	9.95	77.99	110.70	238.03
	31	9.95	1.52	110.70	115.75
D1	40	8.12	24.15	40.00	70.07
D2	41	22.23	98.47	114.87	252.18
	42	8.12	24.15	40.00	70.07
E1	50	32.34	46.88	157.99	178.04
	51	93.34	85.04	374.99	381.75
F1	60	9.70	16.28	49.45	58.95
F2	61	16.46	60.11	86.73	170.90
F3	62	3.65	11.36	18.42	32.93
F4	63	12.98	42.32	67.82	124.89
	64	13.35	26.88	67.87	90.88
	65	26.04	69.12	135.62	215.63
	66	16.46	60.11	86.73	170.90

	67	231.47	201.42	864.52	865.98
G1	70	5.57	13.78	28.46	43.95
G2	71	3.87	6.55	20.06	23.95
	72	3.87	6.55	20.06	23.95
	73	3.87	6.55	20.06	23.95
	74	189.42	189.05	643.48	637.13
H1	80	1.85	5.68	21.89	27.62
H2	81	5.37	16.24	27.12	47.62
H3	82	1.92	5.21	9.51	15.60
H4	83	8.07	20.93	40.86	64.71
	84	7.22	21.67	49.01	73.73
	85	1.92	5.21	9.51	15.60
OS1	OS1	67.00	67.00	413.00	413.00
OS2	OS2	59.00	59.00	280.00	280.00
OS3	OS3	61.00	61.00	217.00	217.00
OS4	OS4	180.00	180.00	595.00	595.00
	Outfall1	80.03	67.69	479.80	466.95
	Outfall2	85.96	61.68	597.41	536.11
	Outfall3	30.00	8.58	154.35	160.70*
	Outfall4	341.05	276.10	1335.77	1291.25

*THIS VALUE IS HIGHER THAN PRE-EXISTING AND WILL BE ADJUSTED TO MEET CRITERIA WITH THE PRELIMINARY DRAINAGE REPORT



VICINITY MAP

LEGEND:

- PROPOSED MAJOR CONTOUR — 5250
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- PROPOSED STORM DRAIN PIPE
- EXISTING STORM DRAIN PIPE
- PROPOSED DRAINAGE CHANNEL
- PROPOSED ROAD
- PROPERTY LINE
- DIRECTIONAL FLOW ARROW
- EMERGENCY OVERFLOW ARROW
- EXISTING 100–YR FLOODWAY
- EXISTING 100–YR FLOODPLAIN
- PROPOSED 100–YR FLOODPLAIN
- WATERSHED BOUNDARY
- MAJOR BASIN LINE
- 100YR ZONE A FLOODPLAIN
- PROPOSED DETENTION LOCATION (A)
- POTENTIAL WATER QUALITY LOCATION (WQ)
- SWMM CONVEYANCE ELEMENT (SWMM)
- PROPOSED PEAK FLOW RATE (CFS) (850)
- DESIGN POINT (X)
- PROPOSED BASIN LABEL (XX) — BASIN DESIGNATION; AREA (AC.) (XX C5 / XX C100)

LAND USE

- LOW DENSITY
- MEDIUM DENSITY
- HIGH/MED DENSITY
- HIGH DENSITY
- CHURCH
- COMMERCIAL
- ELEMENTARY SCHOOL
- COMMUNITY PARK

NOTES:

PRELIMINARY CHANNEL GEOMETRY (BY OTHERS)

MAIN STEM
BOTTOM WIDTH: 60'
SIDE SLOPES: 4:1

MAIN STEM TRIBUTARY 2
BOTTOM WIDTH: 60'
SIDE SLOPES: 4:1

EAST FORK TRIBUTARY 1 REACH 2
BOTTOM WIDTH: 38'
SIDE SLOPES: 4:1

EAST FORK TRIBUTARY 1 REACH 1
BOTTOM WIDTH: 25'
SIDE SLOPES: 4:1

NORTH
0 400
200

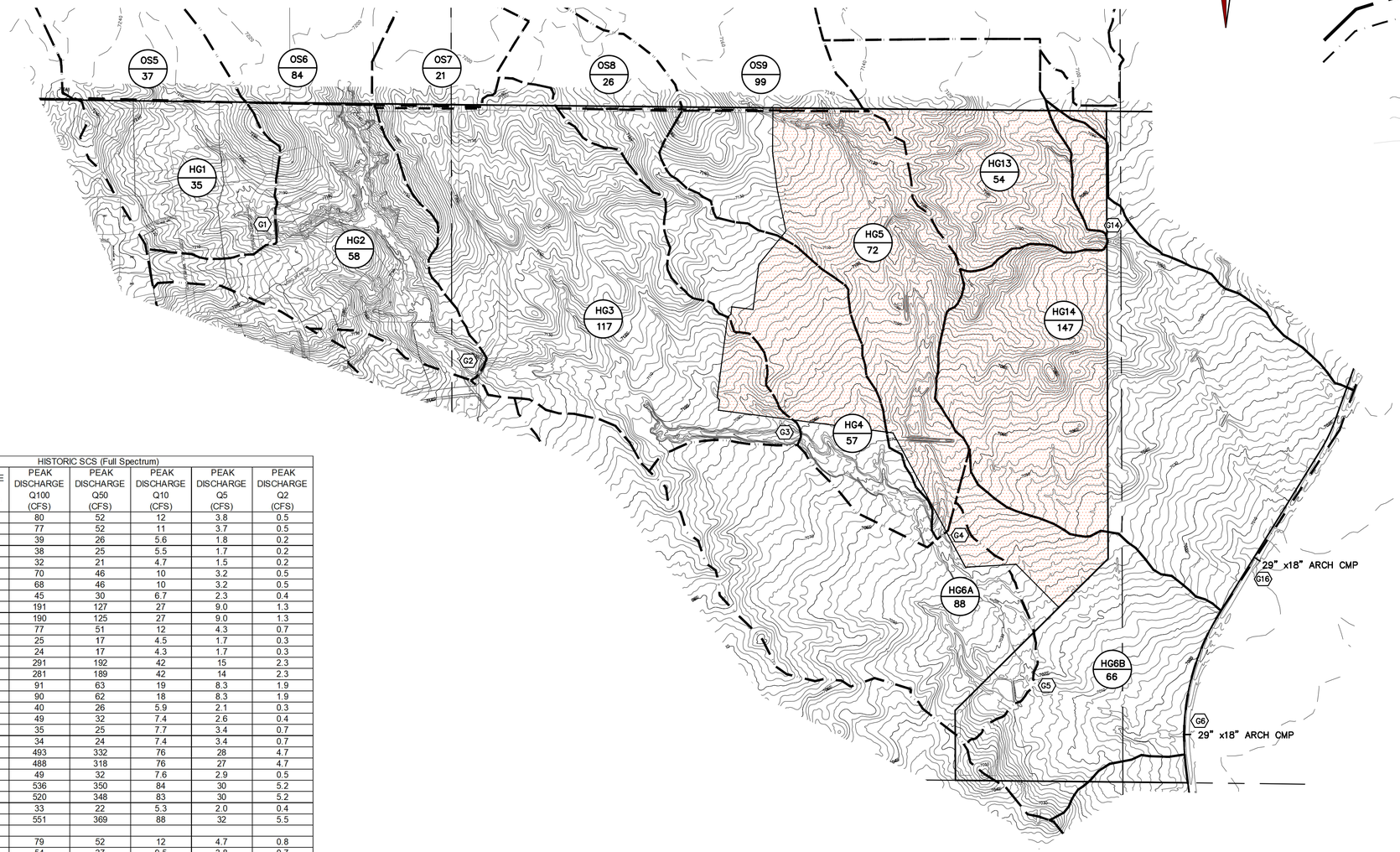
HRGreen

Job No.:	191897.01
Prepared By:	TBI
Date:	04/14/2020

PROPOSED DR1

FIG.DR1

2021 MDDP REVISION



N

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)

1 inch = 500 ft.

LEGEND

- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNARY
- SCS MODEL ID / SIZE ACRES — EB15 / 65 — BASIN IDENTIFICATION
- H8 B10 DESIGN POINTS
- MAJOR CONTOUR INTERVAL
- MINOR CONTOUR INTERVAL
- 100 YEAR FLOOD PLAIN

HISTORIC SCS (Full Spectrum)

HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	PEAK DISCHARGE Q100 (CFS)	PEAK DISCHARGE Q50 (CFS)	PEAK DISCHARGE Q10 (CFS)	PEAK DISCHARGE Q5 (CFS)	PEAK DISCHARGE Q2 (CFS)
OS06	0.1313	80	52	12	3.8	0.5
OS06-G02	0.1313	77	52	11	3.7	0.5
OS05	0.0578	39	26	5.6	1.8	0.2
OS05-G01	0.0578	38	25	5.5	1.7	0.2
HG01	0.0547	32	21	4.7	1.5	0.2
G01	0.1125	70	46	10	3.2	0.5
G01-G02	0.1125	68	46	10	3.2	0.5
HG02	0.0906	45	30	6.7	2.3	0.4
G02	0.3344	191	127	27	9.0	1.3
G02-G03	0.3344	190	125	27	9.0	1.3
HG03	0.1828	77	51	12	4.3	0.7
OS07	0.0328	25	17	4.5	1.7	0.3
OS07-G03	0.0328	24	17	4.3	1.7	0.3
G03	0.5500	291	192	42	15	2.3
G03-G04	0.5500	281	189	42	14	2.3
OS09	0.1547	91	63	19	8.3	1.9
OS09-G04	0.1547	90	62	18	8.3	1.9
HG04	0.0891	40	26	5.9	2.1	0.3
HG05	0.1125	49	32	7.4	2.6	0.4
OS08	0.0406	35	25	7.7	3.4	0.7
OS08-G04	0.0406	34	24	7.4	3.4	0.7
G04	0.9469	493	332	76	28	4.7
G04-G05	0.9469	488	318	76	27	4.7
HG06A	0.1375	49	32	7.6	2.9	0.5
G05	1.0844	536	350	84	30	5.2
G05-G06	1.0844	520	348	83	30	5.2
HG06B	0.1031	33	22	5.3	2.0	0.4
G06	1.1875	551	369	88	32	5.5
HG14	0.2297	79	52	12	4.7	0.8
HG13	0.0844	54	37	9.5	3.8	0.7
G14	0.0844	54	37	9.5	3.8	0.7
G14-G16	0.0844	53	36	9.4	3.7	0.6
G16	0.3141	117	77	19	7.4	1.4

HISTORIC CONDITION - SCS MAP

FIGURE 4

No.	Revisions	Date	Init.	Appr.	Date
-					
-					
-					

TECH CONTRACTORS
11886 STAPLETON DRIVE
FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.3349

MERIDIAN RANCH

HISTORIC CONDITIONS - SCS MAP
2021 SKETCH PLAN AMENDMENT
REVISED MDDP

Drawn by TJK | Checked by RG | Date MARCH 2021

Scale AS SHOWN

- of -

MERIDIAN RANCH 2021
MDDP AMENDMENT

GRAPHIC SCALE
500 0 250 500 1000 2000
(IN FEET)
1 inch = 500 ft.

FUTURE SCS (Full Spectrum)						
	DRAINAGE AREA (SQ. MI.)	PEAK DISCHARGE Q100 (CFS)	PEAK DISCHARGE Q50 (CFS)	PEAK DISCHARGE Q10 (CFS)	PEAK DISCHARGE Q5 (CFS)	PEAK DISCHARGE Q2 (CFS)
OS06	0.1313	80	52	11.6	3.8	0.5
G1a	0.1313	80	52	11.6	3.8	0.5
G1a-G2	0.1313	79	52	11.5	3.7	0.5
OS05	0.0578	39	26	5.6	1.8	0.2
OS05-G1	0.0578	39	25	5.5	1.7	0.2
FG01	0.0538	31	22	7.0	3.4	0.9
FG01-G1	0.0538	31	22	7.0	3.4	0.9
G1	0.1116	61	41	11.0	4.9	1.1
G1-G2	0.1116	61	41	10.9	4.8	1.1
FG02	0.0391	32	22	6.4	2.7	0.5
G2	0.2820	167	112	27.3	10.3	1.9
G2-G3	0.2820	164	109	27.1	10.2	1.9
FG03	0.0203	24	17	5.9	3.0	0.8
FG04	0.0172	22	16	5.8	3.1	0.9
G3	0.3195	185	123	30.9	12.1	2.4
FG06	0.0675	56	40	12.2	5.8	1.3
FG05	0.0580	45	33	12.2	6.7	2.4
OS07ab	0.0170	14	9	2.5	0.9	0.1
OS07a-POND F	0.0170	13	9	2.3	0.9	0.1
POND F IN	0.4620	295	202	55.8	23.4	5.1
POND F	0.4620	178	122	16.4	8.1	2.1
POND F-G7	0.4620	178	121	16.4	8.1	2.1
OS07c	0.0156	15	10	2.6	1.0	0.1
OS07c-G4	0.0156	14	9	2.5	0.9	0.1
FG21a	0.0095	6	4	1.0	0.4	0.1
G4	0.0251	20	13	3.5	1.3	0.2
G4-G7	0.0251	18	13	3.3	1.2	0.2
FG21b	0.0150	21	16	6.5	3.9	1.7
G7	0.5021	192	130	18.0	8.9	2.3
G7-G8	0.5021	191	130	18.0	8.9	2.3
FG22	0.1409	125	90	32.4	17.1	5.4
OS08	0.0394	34	24	7.5	3.3	0.7
OS08-G8	0.0394	33	23	7.3	3.3	0.7
FG23a	0.0216	21	15	5.2	2.7	0.8
G8	0.7040	285	181	50.6	26.8	8.3
G8-G10	0.7040	284	181	49.7	26.2	8.1
OS09	0.1527	90	62	18.3	8.2	1.9
OS09-G9	0.1527	89	62	18.0	8.2	1.9
FG24	0.1372	134	100	41.1	24.2	10.4
G9	0.2899	200	141	44.2	24.2	10.4
G9-G10	0.2899	179	120	32.3	12.9	2.6
FG23b	0.0247	17	11	2.6	0.9	0.1
G10	1.0186	470	302	65.8	27.9	8.5
G10-G11	1.0186	466	300	65.8	27.7	8.2
FG23c	0.0113	11	7	2.4	1.1	0.2
G11	1.0299	470	302	66.4	28.3	8.3
FG25	0.1086	112	85	36.0	21.9	9.9
FG26	0.0970	101	77	35.2	22.7	11.3
FG26-POND G	0.0970	100	77	35.0	22.4	11.1
FG27	0.0614	82	65	33.8	23.7	14.0
FG28	0.0166	13	9	2.6	1.0	0.2
POND G IN	1.3135	697	449	151.5	61.3	34.8
POND G	1.3135	487	342	61.7	25.1	5.6
G12	1.3135	487	342	61.7	25.1	5.6
G12-G06	1.3135	487	342	61.6	25.1	5.6
FG29	0.0997	64	42	10.3	3.6	0.6
FG32	0.0402	72	57	28.7	19.8	11.1
FG32-G06	0.0402	69	54	26.6	18.2	10.5
G06	1.4534	514	360	66.1	27.0	10.6
FG37	0.0828	58	90	41.4	26.8	13.4
FG34	0.0516	40	86	40.6	26.5	13.1
G14	0.0516	40	67	30.9	20.1	10.2
G14-G15	0.0516	39	65	29.5	19.5	10.0
FG35	0.0263	15	36	14.3	8.3	3.2
G15	0.0779	54	36	14.0	8.0	3.2
G15-G08	0.0779	52	31	12.2	7.0	2.7
FG36	0.0273	17	215	94.1	58.8	28.7
FG36-G08	0.0273	17	77	32.4	19.8	8.6
G16	0.1880	124	59	28.1	18.6	9.8

LEGEND

- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY
- SCS MODEL ID / SIZE ACRES — FG31 / 2 — BASIN IDENTIFICATION
- DESIGN POINT
- MAJOR CONTOUR INTERVAL
- MINOR CONTOUR INTERVAL

*NOTE: PRELIMINARY STORAGE VOLUMES AND OUTFLOW QUANTITIES HAVE BEEN PROVIDED FOR EACH OF THE FUTURE DETENTION FACILITIES LOCATED WITHIN THE DEVELOPMENT. THE ACTUAL STORAGE VOLUMES AND DISCHARGE RATES WILL BE DETERMINED UPON A COMPLETE ANALYSIS FOR EACH DETENTION FACILITY PRIOR TO CONSTRUCTION. THE VALUES GIVEN FOR DISCHARGE AND VOLUME ARE ESTIMATES FOR PLANNING PURPOSES ONLY.

FUTURE CONDITIONS - SCS MAP

FIGURE 5

No.	Revisions	Date	Init.	Appr.	Date
-					
-					
-					

TECH CONTRACTORS
11886 STAPLETON DRIVE
FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.3349

MERIDIAN RANCH

FUTURE CONDITIONS - SCS MAP
2021 SKETCH PLAN AMENDMENT
REVISED MDDP

Drawn by: TAK
Checked by: RG
Date: MAR 2021
Scale: AS SHOWN
- of -

PRELIMINARY DRAINAGE REPORT

GRANDVIEW RESERVE FILING NO. 1

El Paso County, Colorado

PREPARED FOR:
D.R. Horton
9555 S. Kingston Court
Englewood, CO

PREPARED BY:
Galloway & Company, Inc.
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920

DATE:
January 19, 2024

PCD Filing No.: PUDSP2110

3. Provide Water Quality Capture Volume (WQCV)

This step utilizes formalized water quality capture volume to slow the release of runoff from the site. The EURV volume will release in 72 hours, while the WQCV will release in no less than 40 hours. On-site water quality control volume detention ponds will provide water quality treatment for all of the developed areas, prior to the runoff being released into either of the major drainage ways. Refer to WQCV Plan in **Appendix E.**

4. Consider Need for Industrial and Commercial BMPs

As this project is all residential development and no commercial or industrial development is proposed, there will be no need for any specialized BMPs which would be associated with an industrial or commercial site.

VI. Interim Drainage Conditions

In the interim condition, overlot grading operations will be taking place within the Grandview Reserve Subdivision in preparation for the ultimate proposed condition. While this activity is taking place within the proposed subdivision, no activity is anticipated west of Eastonville Road, including the construction of Eastonville Road. Removal of existing drainage infrastructure will take place with the construction of Eastonville Road in the future. The proposed development lies completely within the Gieck Ranch Drainage Basin and consists of six (6) larger basins (EA, A, B, C, D, & E) which have been broken down into fourteen (14) smaller sub-basins for the Interim Condition. Site runoff will be collected via swales and diverted to one of the eleven proposed temporary sediment basins. All necessary calculations can be found within the appendices of this report.

OFF-SITE FLOWS

Existing upstream tributary analysis (the areas west of Eastonville Road) was performed as part of the **E-PDR** and was discussed earlier in the report under **Section IV – Off-Site Flows**. These design basins remain the same as the existing condition during the interim phase and discussion of them are not included in this section.

ON-SITE FLOWS

Basin A-1 (2.29 AC, Q_5 = 0.7 cfs, Q_{100} = 5.0 cfs): Located on the northwest corner of the site, East of Eastonville Rd. In the interim condition, Sub-basin A-1 will remain un-developed. Runoff from this basin will sheet flow from the northwest to the southeast. Sheet flows will then be captured by a proposed 4’ bottom x 2’ deep trapezoidal swale (Swale A-1) and conveyed east directly into Channel B at **DP 8** as to not interfere with the early grading efforts to the south and mitigate any potential erosion that runoff from this basin would cause.

Basin A-2 (3.96 AC, Q_5 = 1.2 cfs, Q_{100} = 8.8 cfs): Located along the northwest property line, East of Eastonville Rd. In the interim condition, Sub-basin A-1 will remain un-developed along Eastonville Rd & a temporary diversion swale will be put in place to convey existing off-site flows from **Design Point 3** through the site to Channel B, as they had in the existing condition. Runoff from this will be captured in an existing roadside ditch on the east side of Eastonville Rd. Flows are then conveyed to an opening in the existing earthen berm adjacent to the east side of the roadside ditch where flows will then be captured by a proposed 10’ bottom x 3’ deep trapezoidal swale (Swale A-2) and conveyed east directly into Channel B at **DP 10**.

from this basin will sheet flow to the south where it is intercepted by proposed TSB-C1 at **DP 15**. From there, treated runoff from TSB-C1 will be discharged downstream directly to **Basin TSB-C3**.

Basin TSB-C2 (11.92 AC, Q_5 = 3.5 cfs, Q_{100} = 25.2 cfs): Located at the eastern portion of the site, Basin TSB-C2 consists of future residential lots and future roadways. In the interim overland graded phase of development, imperviousness for this sub-basin can be described as nearly bare ground (2%). Runoff from this basin will sheet flow to the south where it is intercepted by proposed TSB-C2 at **DP 16**. From there, treated runoff from TSB-C2 will be discharged downstream directly to existing Channel A.

Basin TSB-C3 (15.29 AC, Q_5 = 4.1 cfs, Q_{100} = 29.0 cfs): Located at the southeastern portion of the site, Basin TSB-C3 consists of future residential lots and future roadways. In the interim overland graded phase of development, imperviousness for this sub-basin can be described as nearly bare ground (2%). Runoff from this basin will sheet flow to the southeast where it is intercepted by proposed TSB-C3 at **DP 17**. From there, treated runoff from TSB-C3 will be discharged downstream directly to existing Channel B.

Design Point 17 (Q_5 = 7.3 cfs, Q_{100} = 52.0 cfs): Located at the southeast portion of the site, this design point accounts for the total combined flows from **Basin TSB-C1** & **TSB-C3**. Flows from this design point are discharged directly into the existing Channel B.

Basin TSB-D1 (10.09 AC, Q_5 = 2.8 cfs, Q_{100} = 20.0 cfs): Located at the southwestern portion of the site, Basin TSB-D1 consists of future residential lots and future roadways. In the interim overland graded phase of development, imperviousness for this sub-basin can be described as nearly bare ground (2%). Runoff from this basin will sheet flow to the east where it is intercepted by proposed TSB-D1 at **DP 18**. From there, treated runoff from TSB-D1 will be discharged downstream directly to existing Channel A.

Basin TSB-E1 (8.21 AC, Q_5 = 2.5 cfs, Q_{100} = 18.0 cfs): Located at the southern portion of the site, Basin TSB-E1 consists of future residential lots and future roadways. In the interim overland graded phase of development, imperviousness for this sub-basin can be described as nearly bare ground (2%). Runoff from this basin will sheet flow to the east where it is intercepted by proposed TSB-E1 at **DP 19**. From there, treated runoff from TSB-E1 will be discharged downstream directly to **Basin TSB-E2**.

Basin TSB-E2 (13.57 AC, Q_5 = 4.0 cfs, Q_{100} = 28.3 cfs): Located at the southeastern portion of the site, Basin TSB-E2 consists of future residential lots and future roadways. In the interim overland graded phase of development, imperviousness for this sub-basin can be described as nearly bare ground (2%). Runoff from this basin will sheet flow to the east where it is intercepted by proposed TSB-E2 at **DP 20**. From there, treated runoff from TSB-E2 will be discharged downstream directly to existing Channel A.

Design Point 20 (Q_5 = 6.5 cfs, Q_{100} = 46.3 cfs): Located at the south portion of the site, this design point accounts for the total combined flows from **Basin TSB-E1** & **TSB-E2**. Flows from this design point are discharged directly into the existing Channel A.

Basin EA-1 (2.50 AC, Q_5 = 0.7 cfs, Q_{100} = 5.1 cfs): Located along the southeastern property line, Basin EA-1 consists primarily of un-developed disturbed area with a temporary diversion swale put in place to convey existing off-site flows from **DP 5 & 6** through the site to Channel A, as they had in the existing condition. Runoff from this basin will sheet flow into a temporary trapezoidal diversion swale (Swale OS-1) with a 4’ bottom width and 3’ deep. Flows will then be conveyed north and discharge directly into Channel A at **DP 21**.

HRGreen

HRGREEN.COM

Grandview Reserve
CLOMR REPORT

July 2022

Revised: March 22, 2023

HR Green Project No: 201662.03

PCD File No. CDR228

Prepared By:

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Table of Contents

Grandview Reserve CLOMR Report

Project Narrative

This report was prepared by HR Green to support the submission of MT-2 forms and documents in a request for a Conditional Letter of Map Revision (CLOMR) for channel improvements along Geick Ranch Tributary 1 and Geick Ranch Tributary 2. This request impacts the current delineation of the 100-year boundary on Flood Insurance Rate Maps (FIRMs) 08041C0552G and 08041C0556G.

Grandview Reserve is located in Falcon, Colorado within El Paso County and contains approximately 776 acres within the south half of section 21 and 22 and the north half of section 27 and 28, Township 12 South, and Range 66 West of the Sixth Principal Meridian in Ela Paso County, Colorado.

Grandview Reserve (GVR) falls within the Gieck Ranch Drainage Basin which covers approximately 22 square miles. This drainage basin is tributary to Black Squirrel Creek and joins said creek just to the south of Elicott, CO about 18 miles to the south. Black Squirrel Creek eventually drains to the Arkansas River in Pueblo Colorado. Much of the Gieck Ranch Drainage basin is undeveloped consisting of rural farmland. The Gieck Ranch Drainage basin lies north of the Haegler Ranch drainage basin. The channels through the Grandview property can all be described as gently sloping drainages that roll through the site towards the creeks, they are tributary too.

Per the NRCS web soil survey, the site is made up entirely of Type A and B soils. The majority of which are Type A soils. The predominate soils are Blakeland loamy sand, Columbine gravelly sandy loam, and Stapleton sandy loam. The first two soils are Type A soil and cover approximately 55.1% of the site and the later soil is a Type B soil and covers the remaining 44.9% of the site.

The vegetation found within Grandview Reserve consists of wetland communities in the floodplain with a transitional area to shortgrass prairie communities that dominate the site. The primary species found in the shortgrass prairie regions include little bluestem, blue grama, and buffalograss. The transitional area between the wetlands and shortgrass prairie includes patches of snowberry, and wood's rose. There are a few plains cottonwoods along the main channels. The area has historically been heavily grazed and there are weeds throughout the site. Weeds found onsite include Canada thistle, Russian thistle, common mullein and yellow toadflax spp.

Observations of the existing channels suggest that they are at equilibrium with their watershed flows; evidence including relatively stable bankfull channels, adequate floodplain (above bankfull channel elevations) and in-tact plant communities that would be expected in this type of reach support the notion that the reach is in equilibrium.

At present, the preliminary analysis and design of Geick Ranch Tributary 1 (GRT1) and Geick Ranch Tributary 2 (GRT2) has been completed. Geick Ranch Tributary 1 is to be left in its current state with the exception of the reach surrounding the existing breached stock pond berm. This berm is to be removed and the surrounding region is to be regraded and stabilized to match the existing channel conditions.

Proposed improvements for Geick Ranch Tributary 2 include the realignment of the channel, generally shifting the channel towards the west to accommodate the proposed land plan. There is to be a dedicated 100' wide corridor in which the valley will meander. The valley is the area needed to fully contain the 100-year event plus freeboard requirements. Preliminary analysis indicates the valley will have an average width of approximately 63'; initial sizing approximates the bankfull width to be 8.8' – 13.8'. The valley and channel thalweg will generally follow the same profile, with some deviation as the bankfull channel meanders through the valley in turn decreasing the low flow channels average slope. The average valley profile is to be approximately 1% with a series of grade control

structures to both decrease elevation and dissipate energy to meet natural channel criteria as outlined in El Paso County criteria.

Hydrology

Proposed flows were used for the existing and proposed HEC-RAS models for GR1 and GR2.

Offsite flows entering the site were assumed to remain the same as presented in the locally approved and accepted basin study referred to as the Meridian Ranch Master Development Drainage Plan (MDDP). This report was published by Tech Contractors in July of 2021. Flows were pulled from the most current version of the HEC-HMS model for the Meridian Ranch MDDP for Gieck Ranch Tributary 1 (GRT1) at design point G06 and for Gieck Ranch Tributary 2 (GRT2) at design point G16. The location of these drainage basins and design points can be visualized in the Grandview Proposed Drainage Map exhibit in Appendix J. The proposed HEC- HMS model did not have a 100-year peak discharges for design point G18, basin OS10, basin OS10, and basin FG38. These values were calculated, and the existing model was updated to assess flows entering Geick Ranch Tributary 2 at Eastonville Road. Calculations can be found in Appendix J.

Per the proposed Meridian Ranch HEC-HMS model, the 100-year flow entering GRT2 on the north boundary of the site at design point G18 is 365.2 CFS (station 70+29.02 along the existing channel alignment). As the channel works through the existing site, the 100-year flow increases to 528.6 cfs at station 35+75 along the existing channel where design point G16 (112.1 CFS) is expected to enter the channel. The 100-year flow entering GRT1 on the west boundary of the site via design point G06 is 491 CFS.

Onsite flows will remain the same as historic or runoff due to development will be controlled by the various ponds that are to be constructed near the channel. Proposed onsite flows were calculated via CUHP and preliminary pond sizing/peak discharge rates can be found in Appendix K. Peak discharges were used in the HEC-RAS model for a more conservative approach. The locations of the proposed ponds can be found on the Grandview Proposed Drainage Map exhibit in Appendix J.

See Table 1 and Table 2 for summaries of proposed flows for the existing GRT1 and GRT2 respectively.

Table 1 – PROPOSED FLOWS FOR THE EXISTING GEICK RANCH TRIBUTARY 1

STATION	CUMULATIVE 100-YR STORM (CFS)	INPUT DESCRIPTION AND FLOW (CFS)
37+12.84	491.0	Design Point G06 (491.0 cfs)
34+24+50	521.0	Tributary 1 Flows (30.0 cfs)
23+03.17	541.4	Pond B (14.7 cfs) and Pond D (5.7 cfs)
12+97.03	551.9	Pond E (10.5 cfs)

Table 2 – PROPOSED FLOWS FOR THE EXISTING GEICK RANCH TRIBUTARY 2

STATION	CUMULATIVE 100-YR STORM (CFS)	INPUT DESCRIPTION AND FLOW (CFS)
70+29.02	365.2	Design Point G18 (365.2 cfs)
53+21.63	477.3	Tributary 2 flows + OS-11 (14.0 cfs)
35+75.47	528.6	Design Point G16 (112.1 cfs)
29+55.21	544	Pond A (15.4 cfs)
25+59.12	591.9	Pond F (18.6 cfs)
8+02.78	614.4	Pond G (69.2 cfs)
4+60.25	702.5	Pond C (22.5 cfs)

Table 3 and Table 4 summarize the proposed flows for GRT1 and the realigned portion of GRT2 respectively.

Table 3 - FUTURE FLOWS FOR PROPOSED GEICK RANCH TRIBUTARY 1

STATION	CUMULATIVE 100-YR STORM (CFS)	INPUT DESCRIPTION AND FLOW (CFS)
37+12.84	491.0	Design Point G06 (491.0 cfs)
34+24+50	521.0	Tributary 1 Flows (30.0 cfs)
24+78.84	541.4	Pond B (14.7 cfs) and Pond D (5.7 cfs)
12+97.03	551.9	Pond E (10.5 cfs)

Table 4- FUTURE FLOWS FOR PROPOSED GEICK RANCH TRIBUTARY 2

STATION	CUMULATIVE 100-YR STORM (CFS)	INPUT DESCRIPTION AND FLOW (CFS)
70+29.02	365.2	Design Point G18 (365.2 cfs)
56+42	477.3	Tributary 2 flows + OS-11 (14.0 cfs)
38+80	528.6	Design Point G16 (112.1 cfs)
30+40	544	Pond A (15.4 cfs)
27+15	591.9	Pond A (18.6 cfs)
10+50	614.4	Pond B (69.2 cfs)
7+45	702.5	Pond C (22.5 cfs)

Hydraulics

Design criteria were developed to guide a preliminary layout of channel dimension, planform, and profile for the realigned segment of GRT2. Published criteria from the Urban Stormwater Drainage Criteria Manual, Volume 1 (USDCM; Urban Drainage and Flood Control District, 2016), El Paso County DCM and various other reports currently in process for the drainages through GVR and completed for GVR drainages were used for initial design parameter and flow rates. Parameters used and minimum bankfull geometry is summarized in Table 5.

Table 5 - DESIGN PARAMETERS

Design Parameter	Design Value
Roughness values	EPC Table 10-2
Maximum 5-year velocity, main channel (within bankfull channel width) (ft/s)	EPC: 2.5 ft/s MHFD: 5 ft/s*
Maximum 100-year velocity, main channel (within bankfull channel width) (ft/s)	EPC: 2.5 ft/s MHFD: 7 ft/s*
Froude No., 5-year, main channel (within bankfull channel width)	0.7
Froude No., 100-year, main channel (within bankfull channel width)	0.85
Maximum shear stress, 100-year, main channel (within bankfull channel width)	1.2 lb/sf
Minimum bankfull capacity of bankfull channel (based on future development conditions)	2 year, 19 - 33.5 cfs
Minimum bankfull channel geometry[1]	
Design Channel Type	C4
Entrenchment Ratio	2.7-31.65 (x=5.26)
Width to depth ratio	13.5-75.0 (x=29.28)
Sinuosity	1.43-2.80 (x=1.92)

Slope	0.0001-0.0184 (x=0.0045)
D_{50}	12-14mm (~0.5 in)
d_{84}	32-48mm (~1.6in)
Meander Length[2]	34-92 (x=56)
Belt Width[2]	18-55 (x=32)
Radius of Curvature[2]	7-28 (x=11)
Minimum Floodplain Terrace	6 ft
Maximum overbank side slope	4(H):1(V)
Maximum bankfull side slope	2.5(H):1(V)
Maximum bankfull side slope	2.5(H):1(V)
Minimum bottom width[3]	4.8 ft
Freeboard	1.5 ft

[1] These values were derived from empirical data and will be used as guidelines for design and will be used in conjunction with hydraulic regime equations as outlined in "Spreadsheet Tools for River Evaluation, Assessment, and Monitoring: The STREAM Diagnostic Modules"
[2] These values are derived from "Spreadsheet Tools for River Evaluation, Assessment, and Monitoring: The STREAM Diagnostic Modules"
[3] Minimum bottom width shown is for the low flow channel only. The main channel will be ~41 ft wide

The 2-year frequency was selected for the design of the bankfull channel to approximate the flow most likely to govern a stable geometry. Prior reports estimated future 2-year flow as ~15-cfs and assumes no culvert effects; i.e., open channel flow un-affected by a culvert. The future 2-year flow (19-33.5 cfs) was used to size the low flow channel. This resulted in a channel with a minimum bottom width varying from 4.8 feet - 9.8 feet, 0.8 feet deep with 2.5:1 side slopes for a bankfull width varying from 8.8 feet to 13.8 feet, assuming a mean channel longitudinal slope of 0.9%. Equations as shown in the spreadsheet should produce low shear values within the channel section however further analysis using HEC-RAS was completed to determine the final geometry of said channel. The effective discharge channel is highly correlated to the “bankfull” channel (Leopold 1994) As several channel geometrics are derived from bankfull channel width, depth, cross sectional area and sinuosity, and that USDCM and the OSP report design criteria parameters relate to bankfull width, we have chosen bankfull width to serve as the foundation of design.

To determine an appropriate bankfull width, Leopold’s generalized width estimate was first calculated (1994, as presented in USDCM Vol 1):

$W = aQ^{0.5}$

Where:

w = bankfull width of channel (top width when conveying bankfull discharge)

Q = bankfull discharge (10.5 cfs)

a = 2.7 (wide bankfull channel)
2.1 (average bankfull channel width)
1.5 (narrow bankfull channel)

Assuming an average bankfull width, the equation would estimate a 6.8-ft bankfull width. It is important to note that the Leopold equation lumps all channel types of varying width-to-depth rations. To perform a check on this estimation, worksheet alternative iterations of channel width from 4-12 feet were performed to find the depth associated with the 2-year flow. Chanel slope was set to 0.09 to best fit the average valley slope, side slopes were assumed to be 2.5:1 and manning’s “n” was assumed to be 0.035. The resulting channel depth was divided into each iteration’s width to identify the iteration with a width-to-depth ratio most closely associated with a Type-C

channel. Given the valley type of the proposed project (Unconfined Alluvial Valley), we can expect Type-C and Type-E channels to represent stable channel geomorphologies. Given the setting and valley slope, we have chosen a Type-C (riffle-pool morphology) channel. Type-C channels typical have width-to-depth ratios >12, with gravel and sand bottomed systems averaging 29 and 27, respectively (13.5-28.7 for 60% of gravel bed streams 12.6-29.2 for 50% of sand bed streams; Rosgen 1996). Given these ranges, the channel alternative with a OPC 2-yr flow-dependent channel depth that, when divided into its corresponding width, yielded a W/D between 10.7 – 36.7.

The resulting channel, then, has the following general dimensions:

- Bottom width = 4.8 ft – 9.8 ft
- Top Width = 8.8 ft – 13.8 ft
- Average $Depth_{Riffle}$ = 0.8 ft
- Width:Depth (W/D) Ratio = 11.3
- Cross Sectional Area = 5.44 ft^2 - 9.44 ft^2

The resulting channel dimensions listed above were then used to do the initial site grading of GRT2. The channel was then modeled in HEC- RAS and the geometry was further refined to reduce velocities, shear stresses, and the Froude number to fall within acceptable ranges.

GRT1 is to be left in its current state as analysis indicates it will remain in a stable state after development. The only proposed change is to remove the existing stock pond; that segment of the channel is to be graded to match the adjacent existing geometry.

Ultimate project hydraulics were evaluated through HEC-RAS 5.0.5. The following sections delve into the use and evaluation of the duplicate effective model and the development of the proposed conditions model.

a. Duplicate Effective Model

There is no existing effective model.

b. Existing Conditions Model

The existing conditions models were created to serve as a baseline for comparing future conditions to existing conditions. The existing conditions models were created by exporting cross sections from CAD along the existing channel alignments. Manning's roughness "n" values were selected to represent the existing conditions of the channel by following EPC's guidance in table 10-2. Existing flow rates were derived as described in the hydrology section above and are summarized in Table 1 and Table 2. Resulting water surface elevation for the 100-year event can be found in Appendix H.

c. Proposed Conditions Model

The proposed conditions model for GRT1 was developed by copying the geometry for the existing channel and updating the cross sections surrounding the existing stock pond to account for its removal and regrading of that segment of the channel. Manning's roughness "n" values were selected to represent the proposed conditions of the project area and follow EPC's guidance in table 10-2.

In the existing GRT1 model, the steady flow rate data included four changes in flow rate to account for flow contributions from the project site, which correspond to the same sections in the proposed condition model. Flows were modeled in the future condition using flow rates that remained the same as future detention along the channel is to release at historic rates, these flows are summarized in the preceding hydrology section in Table 2

and Table 3. The last three cross sections were used to confirm the water surface elevation remained within tolerance. Cross sections can be referenced in Appendix I.

The proposed conditions model for GRT2 was developed to account for changes to the channel alignment, geometry, and the proposed culverts along the new channel alignment. The proposed conditions model was created by exporting sample lines along the new alignment that sampled the proposed grading. Manning's roughness "n" values were selected to represent the proposed conditions of the project area and follow EPC's guidance in table 10-2.

In the existing GRT2 model, the steady flow rate data included seven changes in flow rate along the channel, these changes are described in the preceding hydrology section in Table 2 and Table 4. Ineffective flow areas were added to cross sections within the project reach upstream and downstream of culverts to account for areas not actively conveying water due to turbulence. The last three cross sections along the modeled channel are identical to the last three cross sections in the existing conditions model and were used to confirm the water surface elevation remained within tolerance and to adequately evaluate the tailwater. Cross sections can be referenced in Appendix I.

Maintenance Considerations

Natural stream design approaches take into consideration short and long term maintenance needs by providing a high functioning low maintenance stream (HFLMS). By spreading more frequent storm events into the floodplain terrace, water is introduced into the uplands species of the riparian corridor to provide irrigation flows. Additionally using naturally armored rundown riffles and pools vs larger grade control structures maintenance is limited to mainly trash removal and noxious weed control. Additionally as outlined above the design takes into consideration various flow regimes in order to analyze proposed stream corridor stresses and apply low maintenance stabilization measures to help stabilize and control sediment degradation and aggradation within the channel.

Conclusion

After evaluating the impacts of the proposed channel improvements to the segment of GRT1 and GRT2 between Eastonville Road to the northwest (upstream) and the south-central project boundary (downstream) it is not anticipated that the BFE will change outside of the project. The reevaluation of the 1% chance of annual occurrence event limits has been delineated and has a footprint for GRT2 that does not fall entirely within the boundary delineated in the FIRM effective 2018; this is largely due to the realignment of the channel, improved topography within the Zone A area and the overall footprint of the 1% chance of annual occurrence is significantly narrower than the previous delineation. BFEs at the location of tie in at the boundary of the site is not shown to rise more than 0.00' in the modeling completed in this assessment. Cross sections for GRT1 and GRT2 can be found in Appendix H and Appendix I to compare the 100year water surface elevation for both the existing and proposed conditions.

Appendix A
MT-2 Forms

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☒ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
080059	EL PASO COUNTY	CO	08041C0552G	0552G	12/7/2018
080059	EL PASO COUNTY	CO	08041C0556G	0556G	12/7/2018

2. a. Flooding Source: Geick Ranch Tributary 2

b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: GRANDVIEW RESERVE GEICK RANCH TRIBUTARY 1 AND 2 IMPROVEMENTS

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☒ Improved Methodology/Data ☒ Regulatory Floodway Revision ☐ Base Map Changes
☐ Coastal Analysis ☒ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
☒ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: ☒ Channelization ☐ Levee/Floodwall ☒ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other (Attach Description)

6. ☐ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $_____

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: GREG PANZA	Company: HR GREEN	
Mailing Address: 5619 DTC PARKWAY SUITE 1150 GREENWOOD VILLAGE, CO 80111	Daytime Telephone No.: 720-602-4939	Fax No.:
	E-Mail Address: gpanza@hrgreen.com	
Signature of Requester (required):	Date: 7/22/2022	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: KEITH CURTIS, CFM, FLOODPLAIN ADMINISTRATOR	Community Name: EL PASO COUNTY/PPRBD	
Mailing Address: 2880 INTERNATIONAL CIRCLE COLORADO SPRINGS, CO 80910	Daytime Telephone No.: 719-327-2898	Fax No.:
	E-Mail Address: KEITH@PPRBD.ORG	
Community Official's Signature (required):	Date: 7/22/2022	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: GREG PANZA	License No.: 37081	Expiration Date: 10-31-2023	
Company Name: HR GREEN	Telephone No.: 720-602-4939	Fax No.:	
Signature:	Date: 7/22/2022	E-Mail Address: gpanza@hrgreen.com	

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if …
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 1

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section B) ☐ No existing analysis ■ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)
Upstream of project site, west of Eastonville Road	1.04	413	491

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ■ Precipitation/Runoff Model → Specify Model: SCS Curve Number Method/HEC-HMS Model from Meridian Ranch MDDP Approved July 2021 by Tech Contractors
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? ☐ Yes ■ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit*	IMMEDIATELY DS OF IMPROVEMENTS	2121.94	6961.58	6961.58
Upstream Limit*	IMMEDIATELY US OF IMPROVEMENTS	3424.5	6987.63	6987.63

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC RAS 5.0.5 (with vertical datum: North American Vertical Datum of 1988 (NAVD88))

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

Models Submitted	Natural Run File Name:	Natural Run Plan Name:	Floodway Run File Name:	Floodway Run Plan Name:	Datum
Duplicate Effective Model*		N/A			
Corrected Effective Model*					
Existing or Pre-Project Conditions Model	GRT1.prj	GRT1_EXISTING		N/A	
Revised or Post-Project Conditions Model	GRT1.prj	GRT1_PROPOSED			
Other - (attach description)		N/A			

* For details, refer to the corresponding section of the instructions.

☒ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

☐ Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information: vertical datum: North American Vertical Datum of 1988 (NAVD88)

Source: EDWARD JAMES Date: 7/22/2022

Accuracy: +/- 0.08 ft

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ■ No

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:

   - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
   - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.

   b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? ☐ Yes ■ No

   If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notifications can be found in the MT-2 Form 2 Instructions.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ■ No

   If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ■ No

   If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. NO. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

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PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program; Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 1

Note**:** Fill out one form for each flooding source studied.

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam.....complete Section D
Levee/Floodwall.....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Modeled Structure

1. Name of Structure: Tributary 1

   Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: LOCATED EAST OF EASTONVILLE ROAD AND NORTHWEST OF HIGHWAY 24

   Downstream Limit/Cross Section: SECTION 2882.47

   Upstream Limit/Cross Section: SECTION 2592.31

2. Name of Structure: _____

   Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: _____

   Downstream Limit/Cross Section: _____

   Upstream Limit/Cross Section: _____

3. Name of Structure: _____

   Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: _____

   Downstream Limit/Cross Section: _____

Upstream Limit/Cross Section: _____

NOTE: FOR MORE STRUCTURES, ATTACH ADDITIONAL PAGES AS NEEDED.

B. CHANNELIZATION

Flooding Source: Geick Ranch Tributary 1

Name of Structure: Tributary 1

1. Hydraulic Considerations

The channel was designed to carry _____ (cfs) and/or the 100 -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ■ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions

☐ Other locations (specify): _____

2. Channel Design Plans

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Accessory Structures

The channelization includes (check one):

☐ Levees [Attach Section E (Levee/Floodwall)] ☐ Drop structures ☐ Superelevated sections

■ Transitions in cross sectional geometry ☐ Debris basin/detention basin [Attach Section D (Dam/Basin)] ☐ Energy dissipator

☐ Weir ☐ Other (Describe):

4. Sediment Transport Considerations

Are the hydraulics of the channel affected by sediment transport? ☐ Yes ■ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered. THE CHANNEL WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

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DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 2

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section B) ☐ No existing analysis ■ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)
Upstream of project site, west of Eastonville Road	0.5	280	365.2

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ■ Precipitation/Runoff Model → Specify Model: SCS Curve Number Method/HEC-HMS Model from Meridian Ranch MDDP Approved July 2021 by Tech Contractors. Calcs provided.
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? ☐ Yes ■ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit*	IMMEDIATELY DS OF PROJECT	-296.57	6909.26	6909.26
Upstream Limit*	EASTONVILLE RD	5964.05	7034.59	7034.59

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC RAS 5.0.5

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name:	Plan Name: N/A	File Name:	Plan Name:	
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
Existing or Pre-Project Conditions Model	File Name: GRT2.prj	Plan Name: GRT2_EXISTING	File Name:	Plan Name:	
Revised or Post-Project Conditions Model	File Name: GRT2.prj	Plan Name: GRT2_PROPOSED	File Name:	Plan Name: N/A	
Other - (attach description)	File Name:	Plan Name: N/A	File Name:	Plan Name:	

* For details, refer to the corresponding section of the instructions.

■ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

☐ Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information:

Source: EDWARD JAMES Date: 7/22/2022

Accuracy: +/- 0.08 ft

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

■ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ■ No

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:

   - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
   - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.

   b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? ☐ Yes ■ No

   If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notifications can be found in the MT-2 Form 2 Instructions.

2. Does the request involve the placement or proposed placement of fill? ■ Yes ☐ No

   If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ■ Yes ☐ No

   If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. NO. 1660-0016
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Flooding Source: Geick Ranch Tributary 2

Note**:** Fill out one form for each flooding source studied.

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam.....complete Section D
Levee/Floodwall.....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Modeled Structure

1. Name of Structure: Tributary 2

   Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: LOCATED BETWEEN EASTONVILLE ROAD AND NORTHWEST OF HIGHWAY 24

   Downstream Limit/Cross Section: SOUTHERN BOUNDARY OF GRANDVIEW RESERVE, SECTION 70.18

   Upstream Limit/Cross Section: EAST SIDE OF EASTONVILLE ROAD, SECTION 5642

2. Name of Structure: 10' X 4' BOX Culvert at US end of project

   Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: UNDER THE FUTURE REX ROAD

   Downstream Limit/Cross Section: SECTION 5043.56

   Upstream Limit/Cross Section: SECTION 4748.5

3. Name of Structure: 3 - 8' x 4' BOX Culverts MID project

   Type (check one) ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

   Location of Structure: MID GEICK RANCH TRIB 2, UNDER PROPSOED ROAD THROUGH FUTURE DEVELOPMENT

   Downstream Limit/Cross Section: SECTION 3760 UPSTREAM LIMIT / CROSS SECTION: SECTION 3880

NAME OF STRUCTURE: 3 - 8' x 4' BOX CULVERTSOUTHERN END OF PROJECT
TYPE: BRIDGE CULVERT
LOCATION OF STRUCTURE: MID GEICK RANCH TRIB 2, UNDER PROPSOED ROAD THROUGH FUTURE DEVELOPMENT
DOWNSTREAM LIMIT: 1285
UPSTREAM LIMIT: 1385

NOTE: FOR MORE STRUCTURES, ATTACH ADDITIONAL PAGES AS NEEDED.

B. CHANNELIZATION

Flooding Source: Geick Ranch Tributary 2

Name of Structure: Tributary 2

1. Hydraulic Considerations

The channel was designed to carry _____ (cfs) and/or the 100 -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ■ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ■ At Drop Structures ☐ At Transitions

☐ Other locations (specify): _____

2. Channel Design Plans

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Accessory Structures

The channelization includes (check one):

☐ Levees [Attach Section E (Levee/Floodwall)] ■ Drop structures ☐ Superelevated sections

☐ Transitions in cross sectional geometry ☐ Debris basin/detention basin [Attach Section D (Dam/Basin)] ☐ Energy dissipator

☐ Weir ☐ Other (Describe):

4. Sediment Transport Considerations

Are the hydraulics of the channel affected by sediment transport? ☐ Yes ■ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered. THE CHANNEL WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

C. BRIDGE/CULVERT

Flooding Source: Geick Ranch Tributary 2

Name of Structure: 10' X 4' BOX Culvert at US end of project

1. This revision reflects (check one):

   ☒ Bridge/culvert not modeled in the FIS There is no existing FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

   ☐ Dimensions (height, width, span, radius, length)
   ☐ Shape (culverts only)
   ☐ Material
   ☐ Beveling or Rounding
   ☐ Wing Wall Angle
   ☐ Skew Angle
   ☐ Distances Between Cross Sections
   ☐ Erosion Protection
   ☐ Low Chord Elevations – Upstream and Downstream
   ☐ Top of Road Elevations – Upstream and Downstream
   ☐ Structure Invert Elevations – Upstream and Downstream
   ☐ Stream Invert Elevations – Upstream and Downstream
   ☐ Cross-Section Locations

4. Sediment Transport Considerations

   Are the hydraulics of the structure affected by sediment transport? ☐ Yes ☒ No

   If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

THE CULVERT WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

C. BRIDGE/CULVERT

Flooding Source: Geick Ranch Tributary 2

Name of Structure: 3 - 8' x 4' BOX Culverts MID project

1. This revision reflects (check one):

   ☒ Bridge/culvert not modeled in the FIS There is no existing FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

   ☐ Dimensions (height, width, span, radius, length)
   ☐ Shape (culverts only)
   ☐ Material
   ☐ Beveling or Rounding
   ☐ Wing Wall Angle
   ☐ Skew Angle
   ☐ Distances Between Cross Sections
   ☐ Erosion Protection
   ☐ Low Chord Elevations – Upstream and Downstream
   ☐ Top of Road Elevations – Upstream and Downstream
   ☐ Structure Invert Elevations – Upstream and Downstream
   ☐ Stream Invert Elevations – Upstream and Downstream
   ☐ Cross-Section Locations

4. Sediment Transport Considerations

   Are the hydraulics of the structure affected by sediment transport? ☐ Yes ☒ No

   If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

THE CULVERT WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

C. BRIDGE/CULVERT

Flooding Source: Geick Ranch Tributary 2

Name of Structure: 3 - 8' x 4' BOX CULVERTS SOUTHERN END OF PROJECT

1. This revision reflects (check one):

   ☒ Bridge/culvert not modeled in the FIS There is no existing FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

   ☐ Dimensions (height, width, span, radius, length)
   ☐ Shape (culverts only)
   ☐ Material
   ☐ Beveling or Rounding
   ☐ Wing Wall Angle
   ☐ Skew Angle
   ☐ Distances Between Cross Sections
   ☐ Erosion Protection
   ☐ Low Chord Elevations – Upstream and Downstream
   ☐ Top of Road Elevations – Upstream and Downstream
   ☐ Structure Invert Elevations – Upstream and Downstream
   ☐ Stream Invert Elevations – Upstream and Downstream
   ☐ Cross-Section Locations

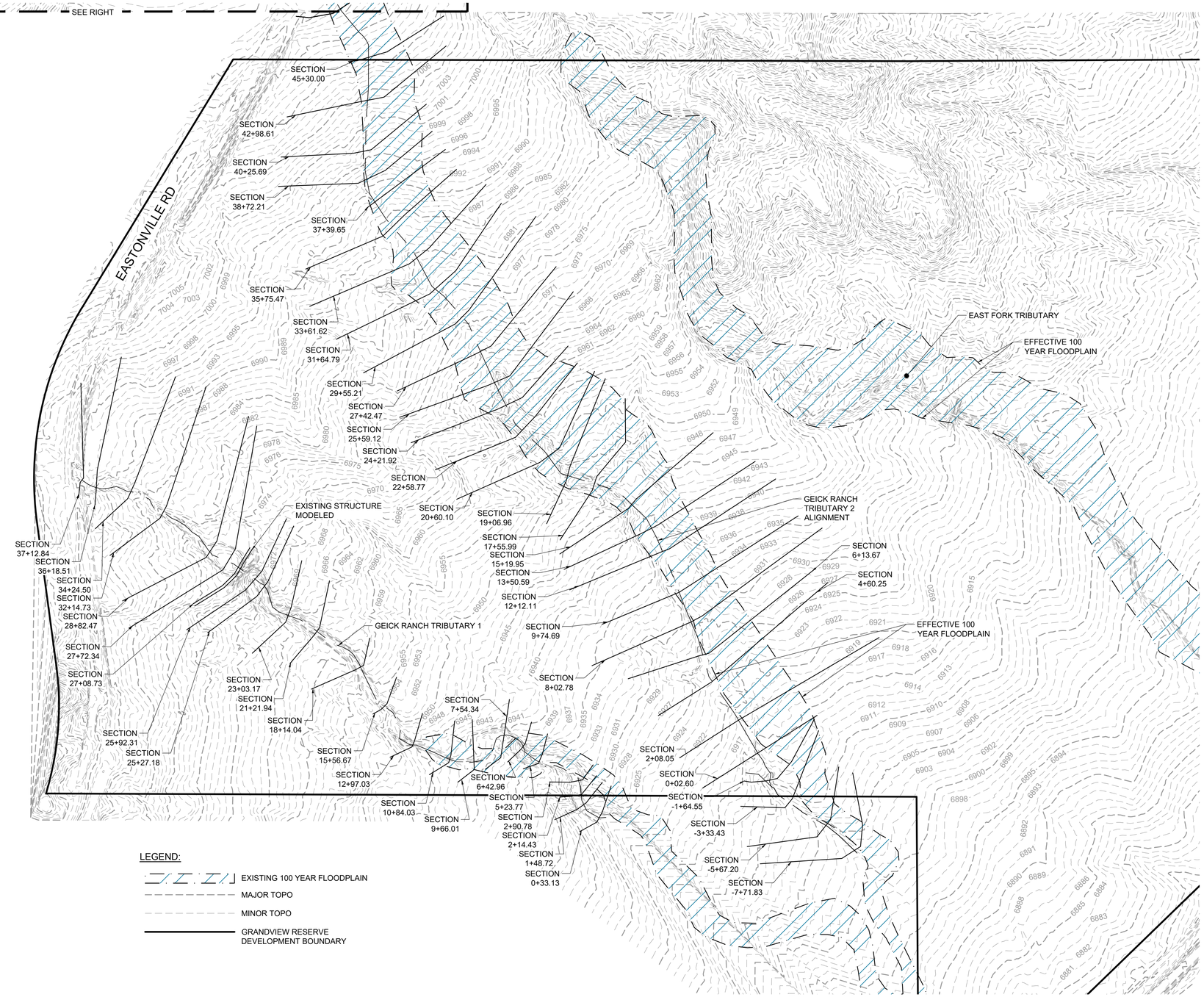
4. Sediment Transport Considerations

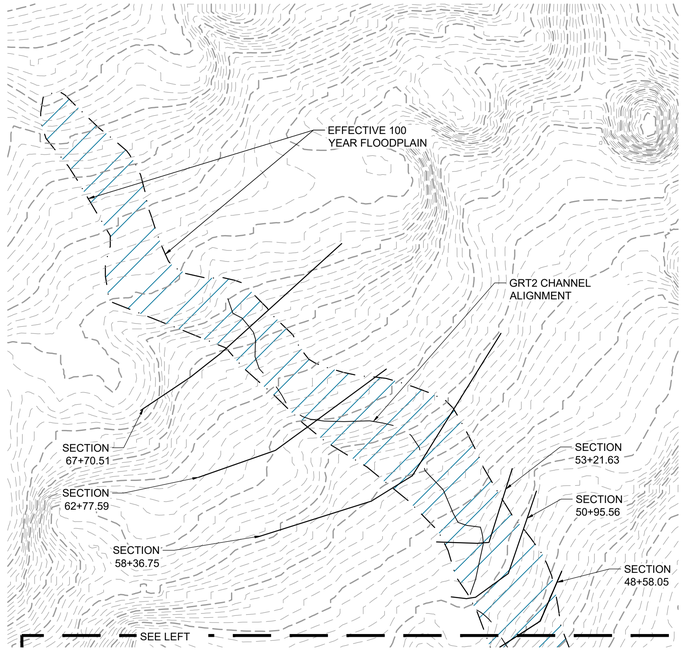
   Are the hydraulics of the structure affected by sediment transport? ☐ Yes ☒ No

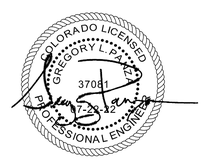
   If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

THE CULVERT WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

Appendix B
Certified Topo







NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

   NAVD88 6866.33

NORTH

0 300

150

HRGreen

Job No.:	201662
Prepared By:	SJF
Date:	3/20/2023

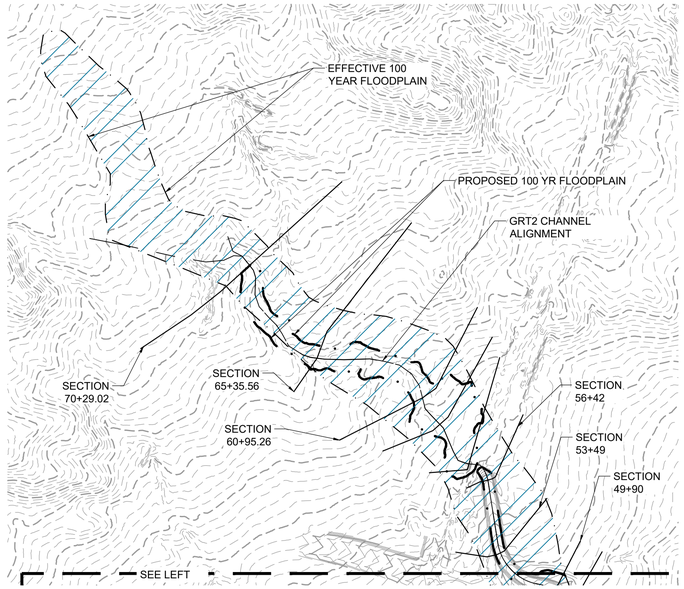
EXISTING FLOODPLAIN EXHIBIT

FIG.1

SEE RIGHT

EASTONVILLE RD

SECTION 49+90
PR 10'x4' CULVERT
SECTION 45+80
SECTION 45+20
SECTION 43+65
SECTION 43+20
SECTION 42+10
SECTION 40+70
SECTION 40+25
SECTION 39+25
SECTION 38+80
SECTION 38+30
SECTION 36+50
SECTION 34+05
SECTION 33+60
SECTION 30+40
SECTION 27+15
SECTION 26+75
SECTION 24+60
SECTION 24+20
SECTION 22+60
SECTION 47+30
SECTION 47+00
SECTION 46+62.7
SECTION 46+36.94
SECTION 44+85
SECTION 44+40
PR(3) 8'x4' CULVERTS
SECTION 37+60
SECTION 36+85
SECTION 25+70
SECTION 25+45
SECTION 20+45
SECTION -20+00
SECTION 37+12.84
SECTION 36+18.51
SECTION 34+24.50
SECTION 32+14.73
SECTION 28+82.47
SECTION 27+72.34
SECTION 27+08.73
SECTION 25+92.31
SECTION 25+27.18
SECTION 23+03.17
SECTION 21+21.94
SECTION 18+14.04
SECTION 17+40
SECTION 14+90
SECTION 13+64
SECTION 15+56.67
SECTION 12+97.03
SECTION 10+84.03
SECTION 9+66.01
SECTION 15+35
SECTION 14+40
SECTION 13+85
SECTION 12+30
SECTION 10+50
SECTION 7+45
SECTION 7+00
SECTION 7+54.34
SECTION 6+42.96
SECTION 5+23.77
SECTION 2+90.78
SECTION 2+14.43
SECTION 1+48.72
SECTION 0+33.13
SECTION 5+90
SECTION 4+45
SECTION 4+00
SECTION 2+00
SECTION 0+70.18
SECTION -0+90.21
SECTION -2+96.57
SECTION -5+30.97
SECTION -7+34.97
PROPOSED 100 YR FLOODPLAIN
GEICK RANCH TRIBUTARY
PROPOSED 100 YR FLOODPLAIN
PROPOSED GRT2 CHANNEL ALIGNMENT
EAST FORK TRIBUTARY
EFFECTIVE 100 YEAR FLOODPLAIN
EXISTING GEICK RANCH TRIBUTARY 2 ALIGNMENT
EFFECTIVE 100 YEAR FLOODPLAIN



LEGEND:

- EFFECTIVE 100 YEAR FLOODPLAIN
- PROPOSED 100 YEAR FLOODPLAIN
- MAJOR TOPO
- MINOR TOPO
- GRANDVIEW RESERVE DEVELOPMENT BOUNDARY

COLORADO LICENSED
GREGORY L. PAZ
37081
3-23-23
PROFESSIONAL ENGINEER

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

NAVD88

NORTH
0 150 300
HRGreen

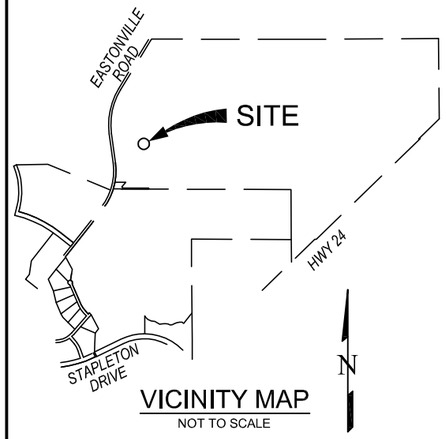
Job No.:	201662
Prepared By:	SJF
Date:	3/21/2023

FLOODPLAIN EXHIBIT

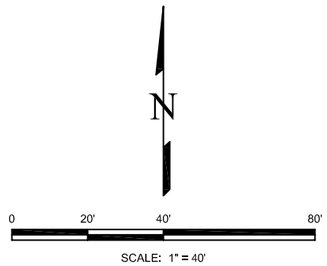
FIG.2

ASBUILT EXHIBIT

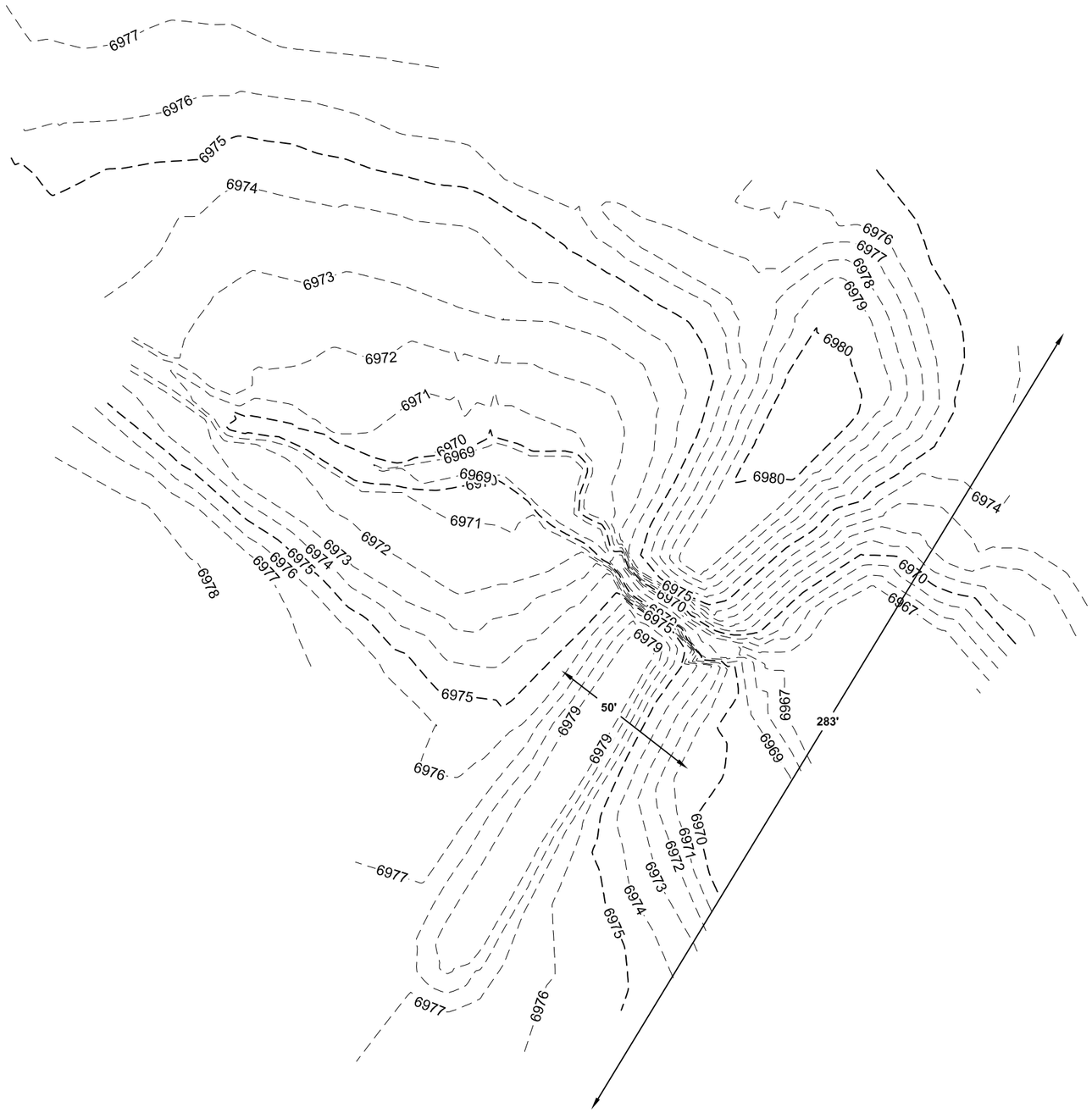
EXISTING BERM



VICINITY MAP
NOT TO SCALE



SCALE: 1" = 40'

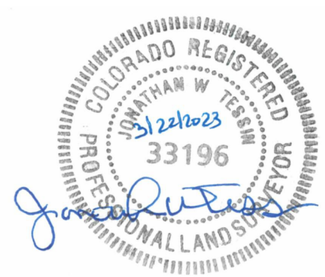


GENERAL NOTES:

1. THIS TOPOGRAPHIC MAP WAS CREATED FROM DATA GATHERED FROM A FIELD SURVEY CONDUCTED ON THE GROUND MARCH 21, 2023.
2. THIS TOPOGRAPHIC MAP DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND CAN NOT BE RELIED UPON FOR DEFINITIVE PROPERTY BOUNDARY INFORMATION. THE BOUNDARY IS SHOWN PLACED PER FOUND MONUMENTS. NO MONUMENTATION WAS SET AT TIME OF SURVEY. FURTHER SURVEY WORK REQUIRED IS TO ESTABLISH ADDITIONAL BOUNDARY MONUMENTS.
3. VERTICAL CONTOUR INTERVAL FOR THIS MAP IS 1 FOOT.
4. BENCHMARK(BM): THE BENCHMARK FOR THIS TOPOGRAPHIC MAP IS NGS MONUMENT F24, WITH AN ASSUMED ELEVATION OF 6866.33 FEET. NAVD88
5. NO UTILITY LOCATES WERE ORDERED.

SURVEYOR'S STATEMENT:

I, JONATHAN W. TESSIN, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY STATE THAT THIS TOPOGRAPHIC SURVEY HAS BEEN PREPARED UNDER MY DIRECTION, AND THAT THIS SURVEY DOES ACCURATELY SHOW THE DESCRIED TRACT OF LAND TO THE BEST OF MY KNOWLEDGE AND BELIEF.



JONATHAN W. TESSIN, PROFESSIONAL LAND SURVEYOR
COLORADO P.L.S. NO. 33196
FOR AND ON BEHALF OF EDWARD-JAMES SURVEYING, INC.

REVISIONS NO.	DESCRIPTION	DATE

EDWARD-JAMES SURVEYING, INC.
926 Elkton Drive
Colorado Springs, CO 80907
Office: (719) 576-1216
Fax: (719) 576-1206
4732 Eagleridge Circle
Pueblo, CO 81008
Office: (719) 545-6240
Fax: (719) 545-6247

ASBUILT EXHIBIT
EXISTING BERM

A PORTION OF THE NORTHWEST QUARTER OF SECTION 28
TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH P.M.
EL PASO COUNTY, COLORADO

DRAWN BY	JWT
CHECKED BY	ERF
H-SCALE	1" = 40'
JOB NO.	2217-01
DATE CREATED	3/22/23
DATE ISSUED	3/22/23
SHEET NO.	1 OF 1

Appendix C
Annotated Firm

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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 Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones 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 this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. 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 http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** 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 in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this 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 this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

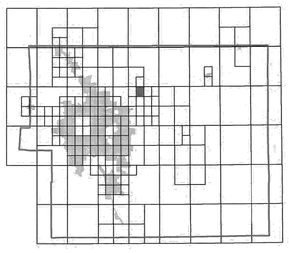
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

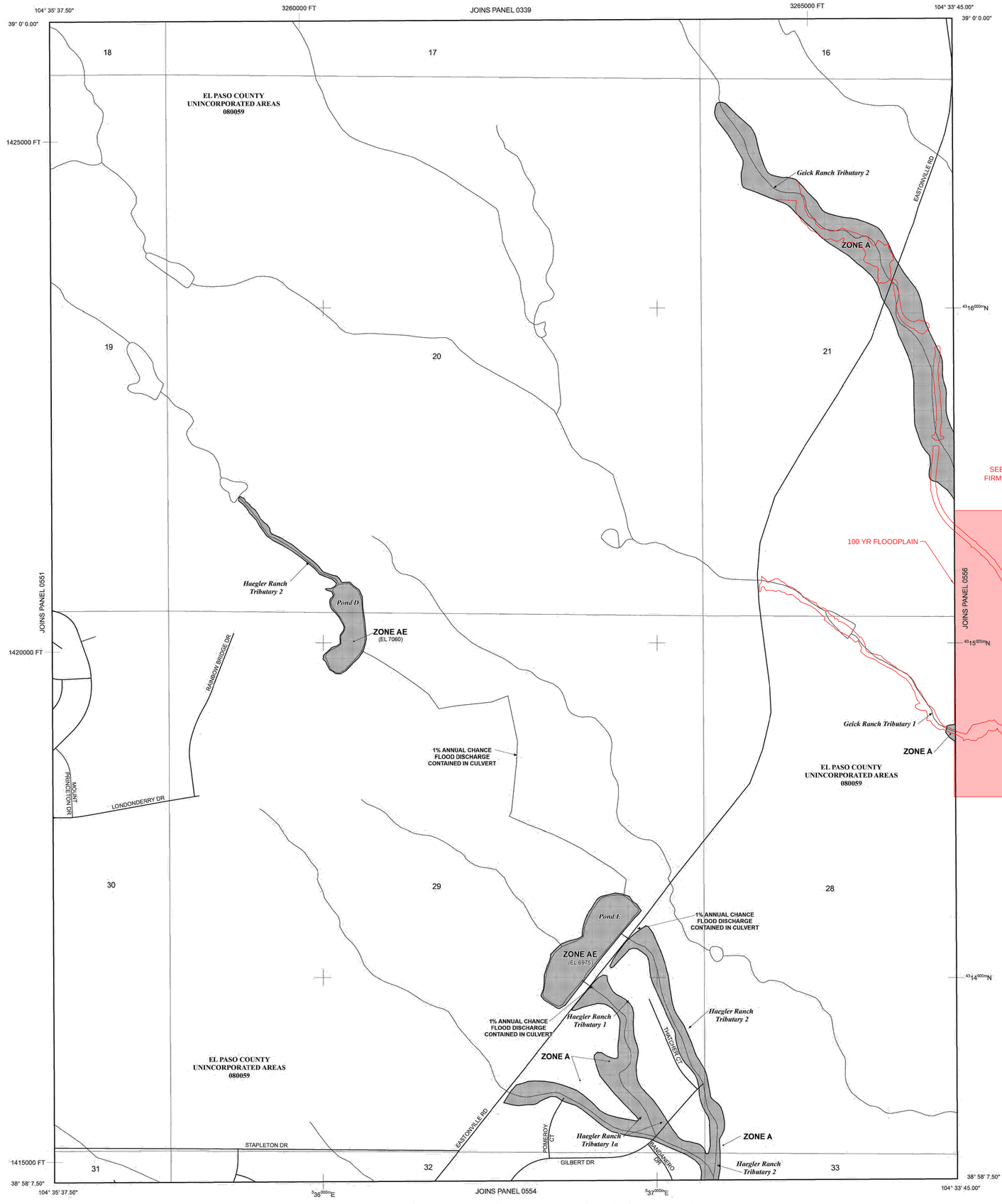
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Area 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 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line
23 — 23 — Transect line
97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4775000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 ● — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0552G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 552 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0552	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08041C0552G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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 Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones 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 this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. 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 http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, and Anderson Consulting Engineers, Inc. These data are current as of 2008.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** 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 in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this 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 this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

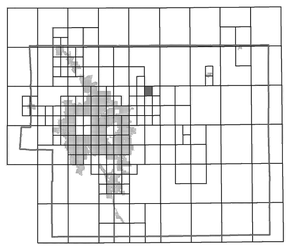
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

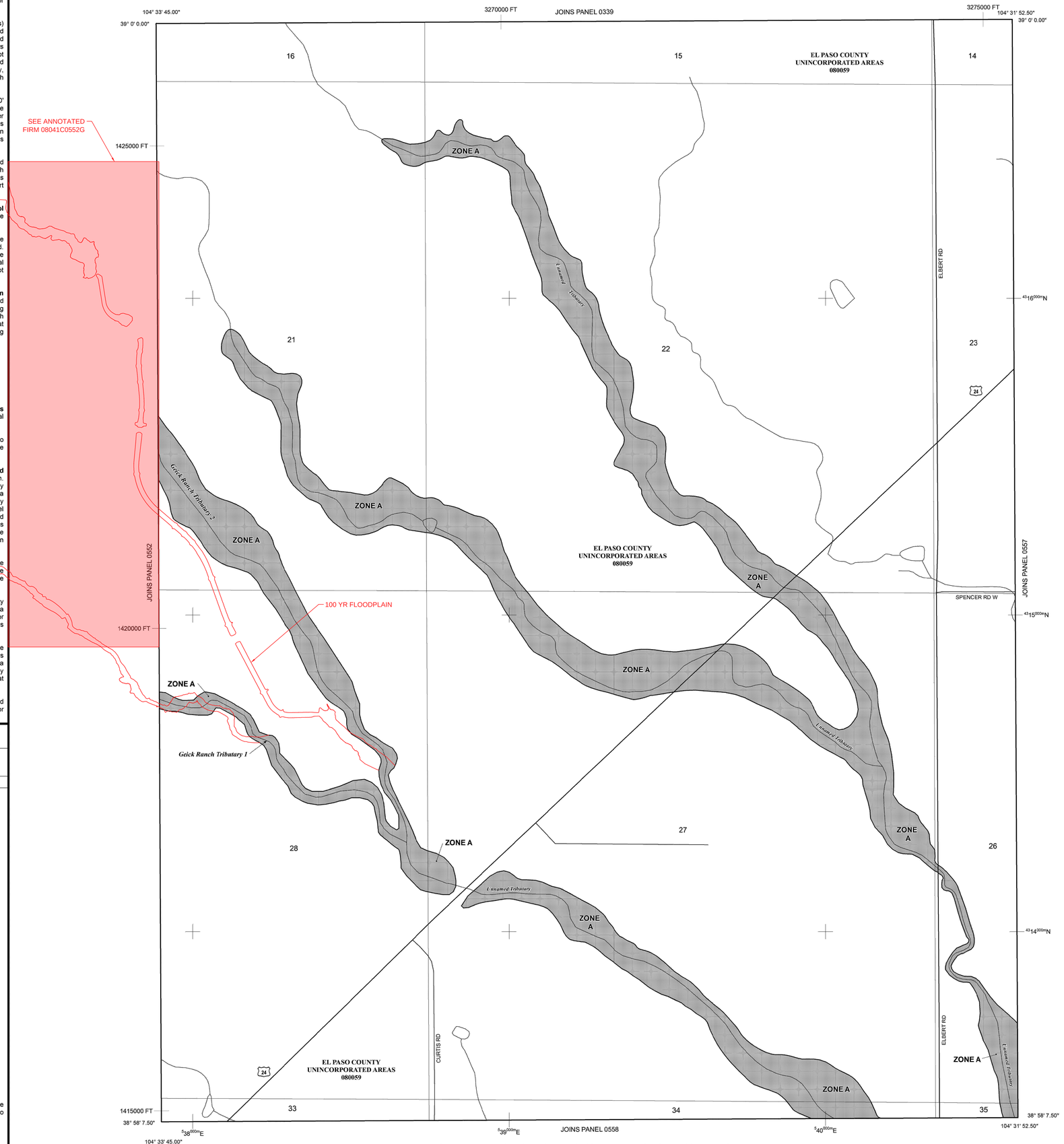
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Area 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 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A Cross section line
23 — 23 Transect line
97° 07' 30.00" / 32° 22' 30.00" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN 1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0556G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 556 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0556	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 08041C0556G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency