LOMR shall be approved prior to Plat approval for impacted lots

Meadowbrook Subdivision
Conditional Letter of Map Revision
El Paso County, Colorado

Prepared for:
Meadowbrook Crossing, LLC

Prepared by:

Kiowa Engineering Corporation
1604 South 21st Street
Colorado Springs, Colorado 80904
Ph: (719)630-7342

Kiowa Project No. 16039

December 13, 2016

PROJECT DESCRIPTION

This Conditional Letter of Map Revision (CLOMR) request has been prepared in conformance with Regional Floodplain Administrators Office and the Federal Emergency Management Agency (FEMA) guidelines and requirements. The flooding source is Sand Creek East Fork. The East Fork reach of Sand Creek is currently depicted on the effective Flood Insurance Study FIRM panel as a Zone AE flooding source. A 100-year floodplain boundary and floodway boundary are delineated but a 500-year floodplain boundary has not been delineated. Therefore, only the base flood elevations, boundary and floodway for the 100-year frequency were evaluated as part of this CLOMR. The 100-year floodplain and floodway information for Sand Creek East Fork is presented herein.

The portion of Sand Creek East Fork that is subject to this revision request is located within the proposed Meadowbrook subdivision in the Cimarron Hills area of unincorporated El Paso County. The Meadowbrook subdivision site and location of Sand Creek East Fork are shown on the Vicinity Map (Figure 1). The segment subject to this CLOMR begins approximately 850-feet upstream of Peterson Road and extends upstream approximately 2,100-feet to the crest of an existing check/drop structure adjacent to F Street on the west and Cole View on the east. This segment was studied using detailed methods by FEMA and is shown as a Zone AE boundary on FIRM panel 08041C0752F of the El Paso County Flood Insurance Study (FIS) effective March 17, 1997. A Letter of Map Revision (LOMR, Case No. 06-08-B137P) for Sand Creek East Fork was approved by FEMA and made effective on December 13, 2006. That LOMR revised the upstream portion of the segment subject to this CLOMR. The effective Zone AE boundary shown on the Annotated FIRM for Sand Creek East Fork reflects the floodplains and base flood elevations produced in the 2006 LOMR. The hydrology used in the 2006 LOMR was used in this CLOMR.

Contained within this Conditional Letter of Map Revision request are the following materials:

1. Effective Sand Creek East Fork HEC-RAS and HEC-2 model printouts, LOMR Case No. 06-08-B137P, (Appendix A)
2. Duplicate Effective Sand Creek East Fork HEC-RAS model, (Appendix B)
3. Existing Conditions Sand Creek East Fork HEC-RAS model, (Appendix C)
4. Proposed Conditions Sand Creek East Fork HEC-RAS model, (Appendix D).
5. Floodplain Workmaps, (Appendix E)
6. Annotated FIRM, (Appendix F)
7. FEMA MT-2 forms and attachments (Appendix G)

8. Meadowbrook Subdivision Design Drawings, (Appendix H)

MAPPING

A topographic survey of the site was completed by Clark Land Surveying, Inc. in November 2016 utilizing the Colorado Springs Utilities (CSU) Facilities Information Management System (FIMS) survey control network benchmarks. The project benchmark is FIMS Monument number 81. Horizontal control values are based on the North American Datum, 1983 and when represented as State Plane Coordinates are Colorado Central Zone – 1983. Vertical control values are based on National Geodetic Vertical Datum of 1929 (NGVD 29). The topography was compiled in accordance with national mapping standards for 1" = 200' and 2' contour interval detail.

HYDROLOGY

This CLOMR uses the same hydrology and flow rates that were used in the 2006 LOMR (Case No. 06-08-B137P).

HYDRAULICS

The 100-year flood profile for the flooding sources studied in this CLOMR request was determined using the U. S. Army Corps of Engineers HEC-RAS Water Surface Profile program. Cross-sectional data was obtained from the mapping described above. Roughness values were estimated using field observations in association with the City of Colorado Springs and El Paso County Storm Drainage Criteria Manual. Approximately 27 cross-sections were compiled for the hydraulic analysis. The locations of the cross-sections have been shown on the floodplain boundary work maps contained within Appendix E.

Downstream 100-Year Water Surface Tie-In

The Sand Creek East Fork hydraulic analysis was initialized using the effective 100-year water surface elevation from the FIRM Lettered Section V. This is cross section 118 in the effective and duplicate effective models. In the existing conditions and proposed conditions models this is cross section 416 matching the proposed alignment stationing. The channel improvements begin approximately 580-feet upstream of this tie-in but FIRM Lettered Section V was the closest effective section downstream of the project site. The effective 100-year base flood elevations are not affected by the project until the next upstream section which is located just within the project site. Even though the effective base flood elevations do not change downstream of the project site, the floodplain was revised for about 250-feet downstream of the project site due to updated topographic mapping.

Upstream 100-Year Water Surface Tie-In

The proposed upstream tie-in occurs at the crest of an existing check/drop structure located approximately 700-feet downstream of FIRM lettered section X and 1000-feet upstream of FIRM lettered section W. This is cross section 119.3382 from LOMR 06-08-B137P in the effective model and duplicate effective models. In the existing conditions and proposed conditions models this is cross section 2529 matching the proposed alignment stationing.

FLOODPLAINS AND FLOODWAY

The 100-year floodplain boundaries for the effective, existing and proposed conditions are presented on the floodplain boundary work maps contained within Appendix E. Since the proposed channel improvements contain the 100-year floodplain with freeboard there is no need for encroachment and the floodway will equal the floodplain throughout the project site. The floodway will match the effective floodway at the upstream and downstream tie-ins. Presented in Appendix F is the Annotated FIRM panel showing the effective Zone AE boundary from the 2006 LOMR and the proposed floodplain and floodway boundaries for Sand Creek East Fork.

HYDRAULIC JUMPS AND SEDIMENT TRANSPORT

The existing site consists of sandy soils with high erosion potential. The existing channel has an average slope of approximately 1% and is flowing at or below critical depth with velocities as high as 11 feet per second. The nature of the sandy soils and existing evidence of channel degradation at the project site suggest that the channel bed cannot support critical flows without resulting in severe erosion. The proposed channel improvements include two grouted boulder drop structures to reduce the channel slope to 0.5% or less producing sub-critical flows with less erosive potential. Hydraulic jumps are expected at the drop structures but will not affect the stability of the channel since it will be lined with grouted boulders at jump locations. There is no evidence sediment transport has affected the hydraulics of this channel in the past so it wasn't considered.

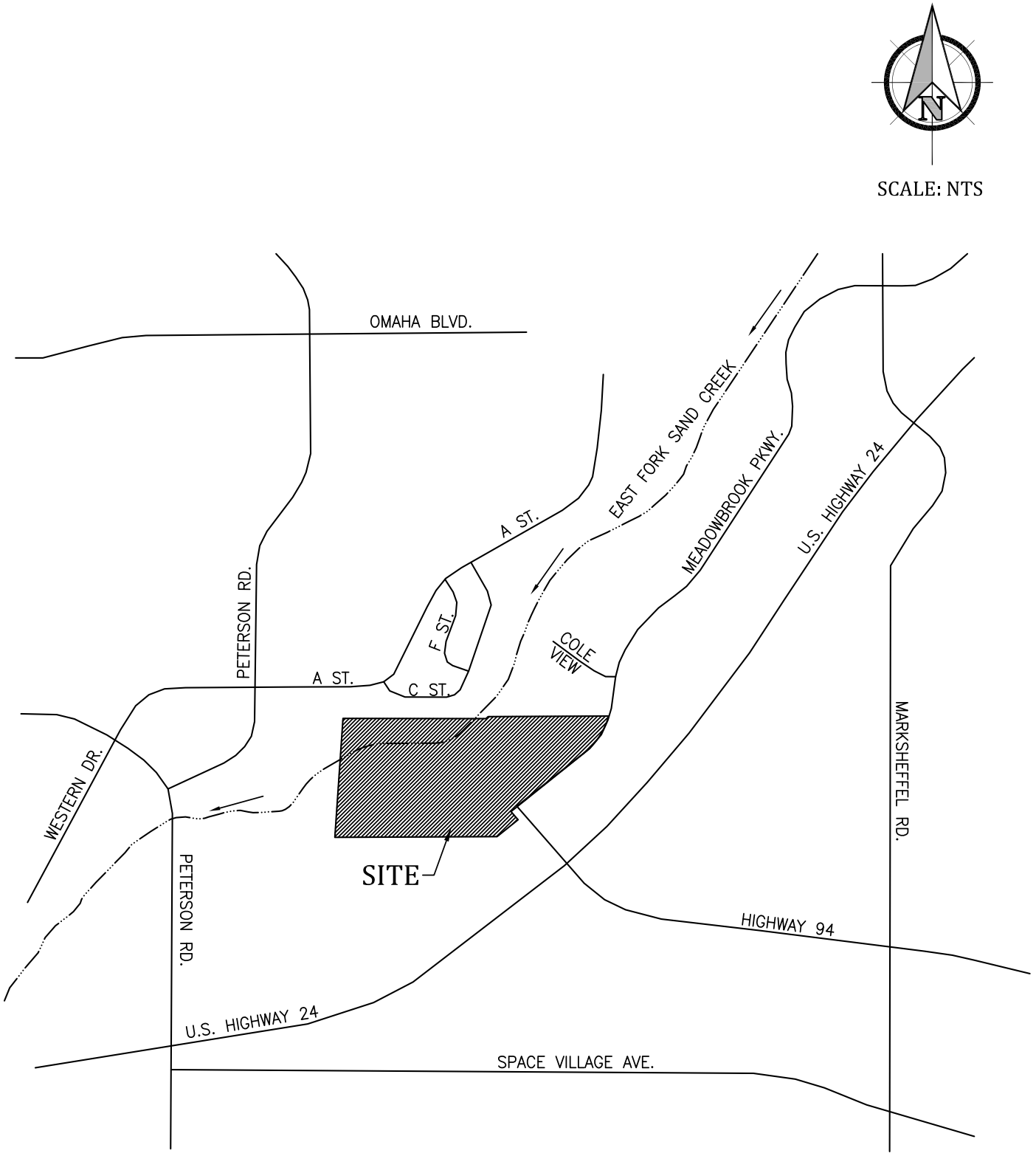


FIGURE 1
VICINITY MAP
MEADOWBROOK SUBDIVISION

16039 Base Drainageway.dwg/Dec 12, 2016

APPENDIX A

EFFECTIVE HEC-RAS AND HEC-2 MODEL PRINTOUTS
LOMR CASE NO. 06-08-B137P
SAND CREEK EAST FORK

FEMA FLOODPLAIN
LETTER OF MAP REVISION

for the

"Central Marksheffel Metropolitan District"

East Fork Sand Creek
El Paso County, Colorado

Prepared for:
El Paso County
Department of Public Works
Engineering Division

On Behalf of:
Marksheffel Business District

Prepared by:

Matrix Design Group Inc.
Integrated Design Solutions

2925 Professional Place, Suite 202
Colorado Springs, Colorado 80904
(719) 575-0100
fax (719) 575-0208

January 2006

Matrix Project No. 04.149.002

[redacted]

Federal Emergency Management Agency

Washington, D.C. 20472

NOV 13 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Sallie Clark
Chair, El Paso County
Board of Commissioners
27 East Vermijo Avenue
Colorado Springs, CO 80903

IN REPLY REFER TO:
Case No.: 06-08-B137P
Follows Conditional
Case No.: 04-08-0469R
Community Name: El Paso County, CO
Community No.: 080059
Effective Date of
This Revision: DEC 13 2006

Dear Ms. Clark:

The Flood Insurance Study Report and Flood Insurance Rate Map for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denver, Colorado, at (303) 235-4830, or the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Kevin C Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

For: William R. Blanton Jr., CFM, Chief
Engineering Management Section
Mitigation Division

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
Annotated Flood Insurance Study Report

cc: Mr. Kevin Stilson, P.E., CFM
Regional Floodplain Administrator

[redacted]
Central Marksheffel Business District

[redacted]
Matrix Design Group

 | Issue Date: NOV 13 2006 | Effective Date: NOV 13 2006 | Case No.: 06-08-B137P | LOMR-APP

Follows Conditional Case No.: 04-08-0469R

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	El Paso County Colorado (Unincorporated Areas)	CHANNELIZATION	FLOODWAY HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 080059		
IDENTIFIER	Marksheffel Business District	APPROXIMATE LATITUDE & LONGITUDE: 38.863, -104.674 SOURCE: USGS QUADRANGLE DATUM: NAD 27	

ANNOTATED MAPPING ENCLOSURES			ANNOTATED STUDY ENCLOSURES
TYPE: FIRM*	NO.: 08041C0752F	DATE: March 17, 1997	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 23, 1999 PROFILE: 212P FLOODWAY DATA TABLE 5
TYPE: FIRM*	NO.: 08041C0756F	DATE: March 17, 1997	

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

East Fork Sand Creek - from approximately 5,250 feet downstream to just upstream of Marksheffel Road

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
East Fork Sand Creek	Floodway	Floodway	YES	YES
	Zone AE	Zone AE	YES	YES
	BFEs	BFEs	NONE	YES
	Zone X (Shaded)	Zone X (Unshaded)	NONE	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Jeanine D. Petterson
Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267
(303) 235-4830

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD 29)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
East Fork Sand Creek	Approximately 5,150 feet downstream of Marksheffel Road	6,316	6,315	08041C0752F
	Approximately 210 feet downstream of Marksheffel Road	6,381	6,379	08041C0756F

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision will become effective 30 days from the date of this letter. However, until the 90-day period has elapsed, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER Name: *El Paso County News*
Dates: 11/29/2006 and 12/06/2006

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Engineering Management Section
Mitigation Division

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE UNINCORPORATED AREAS OF EL PASO COUNTY, COLORADO, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On March 17, 1997, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the unincorporated areas of El Paso County, Colorado, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Division has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified Base Flood Elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

A hydraulic analysis was performed to incorporate the effects of channel improvements along Sand Creek East Fork from approximately 5,250 feet downstream to just upstream of Marksheffel Road, and has resulted in a revised delineation of the regulatory floodway, an increase in SFHA width, a decrease in SFHA width, and decreased BFEs for Sand Creek East Fork. The aforementioned channelized portion of Sand Creek East Fork contains the base flood. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Sand Creek East Fork		
Approximately 5,150 feet downstream of Marksheffel Road	6,316	6,315
Approximately 210 feet downstream of Marksheffel Road	6,381	6,379

*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Division reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Division's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Sallie Clark
Chair, El Paso County
Board of Commissioners
27 East Vermijo Avenue
Colorado Springs, CO 80903

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						FEET (NGVD)		
Sand Creek East Fork					REVISED BY LOMR DATED OCTOBER 07, 2004			
A	1,100	100	455	11.9	6,038.7	6,038.7	6,038.7	0.0
B	2,400	100	446	12.2	6,054.3	6,054.3	6,054.3	0.0
C	3,330	100	450	12.0	6,069.9	6,069.9	6,069.9	0.0
D	4,240	100	449	12.1	6,085.1	6,085.1	6,085.1	0.0
E	4,870	100	451	12.0	6,095.2	6,095.2	6,095.2	0.0
F	5,820	250	602	8.9	6,118.4	6,118.4	6,118.9	0.5
G	6,690	150	518	10.3	6,128.1	6,128.1	6,129.1	1.0
H	7,795	125	477	11.2	6,155.2	6,155.2	6,155.2	0.0
I	8,665	150	505	10.6	6,168.8	6,168.8	6,168.8	0.0
J	9,675	100	443	12.0	6,188.4	6,188.4	6,188.4	0.0
K	10,565	115	465	11.5	6,196.2	6,196.2	6,196.2	0.0
L	11,325	166	525	10.2	6,207.3	6,207.3	6,207.3	0.0
M	11,375	173	632	8.4	6,207.9	6,207.9	6,207.9	0.0
N	12,610	367	699	7.6	6,228.8	6,228.8	6,228.8	0.1
O	13,720	188	570	10.0	6,241.7	6,241.7	6,241.7	0.0
P	14,805	125	479	11.1	6,257.9	6,257.9	6,257.9	0.0
Q	14,885	125	601	8.9	6,259.9	6,259.9	6,259.9	1.0
R	15,850	228	582	9.2	6,268.7	6,268.7	6,268.7	0.0
S	16,325	300	678	7.9	6,277.3	6,277.3	6,277.5	0.2
T	16,995	321	690	7.7	6,291.4	6,291.4	6,292.0	0.6
U	17,065	326	667	8.0	6,291.4	6,291.4	6,292.1	0.7
V	17,915	388	1,598	3.3	6,293.4	6,293.4	6,294.0	0.6
W	18,995	367	683	7.8	6,307.2	6,307.2	6,307.6	0.4
X	20,730	103	575	11.7	6,327.8	6,327.8	6,328.4	0.6
Y	22,560	142	506	11.0	6,348.8	6,348.8	6,349.4	0.6
Z	23,060	145	503	11.0	6,358.0	6,358.0	6,358.0	0.0
AA	24,835	418	3,156	7.0	6,383.5	6,383.5	6,383.5	0.0
AB	26,470	132	452	10.0	6,402.7	6,402.7	6,402.7	0.0
AC	27,715	112	419	10.8	6,416.6	6,416.6	6,416.6	0.0

REVISED AREA

[1]Feet Above Confluence With Sand Creek

REVISED BY LOMR DATED OCTOBER 30, 2006

REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO

AND INCORPORATED AREAS

FLOODWAY DATA

SAND CREEK EAST FORK

REVISED REACH

REACH REVISED BY LOMR DATED OCTOBER 30, 2006

ELEVATION IN FEET (NGVD 29)

6400
6380
6360
6340
6320
6300
6280

19500 20000 20500 21000 21500 22000 22500 23000 23500 24000 24500 25000 25500 26000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH SAND CREEK

MARKSHEFFEL ROAD

AA

X Y Z

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006

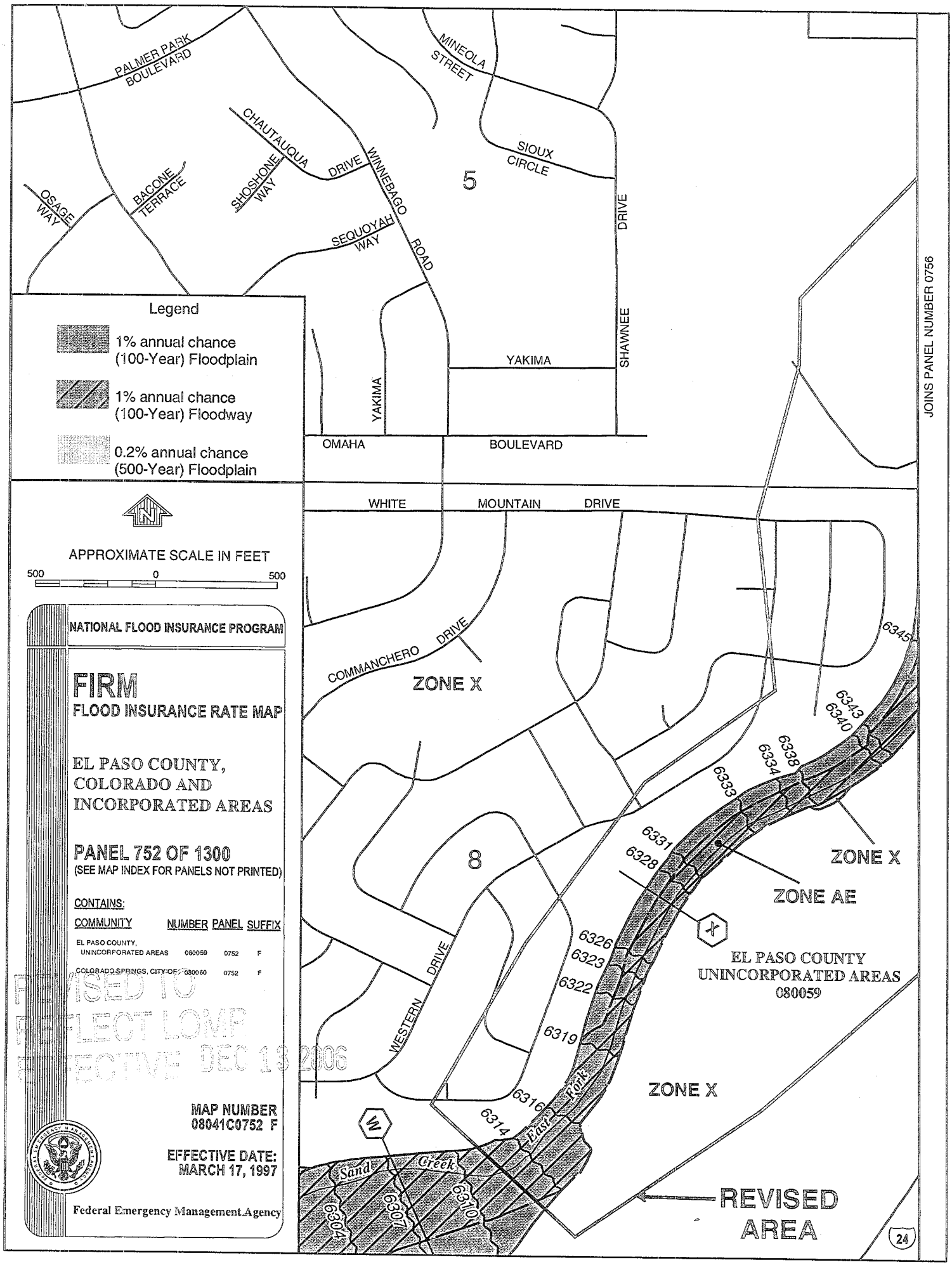
FLOOD PROFILES

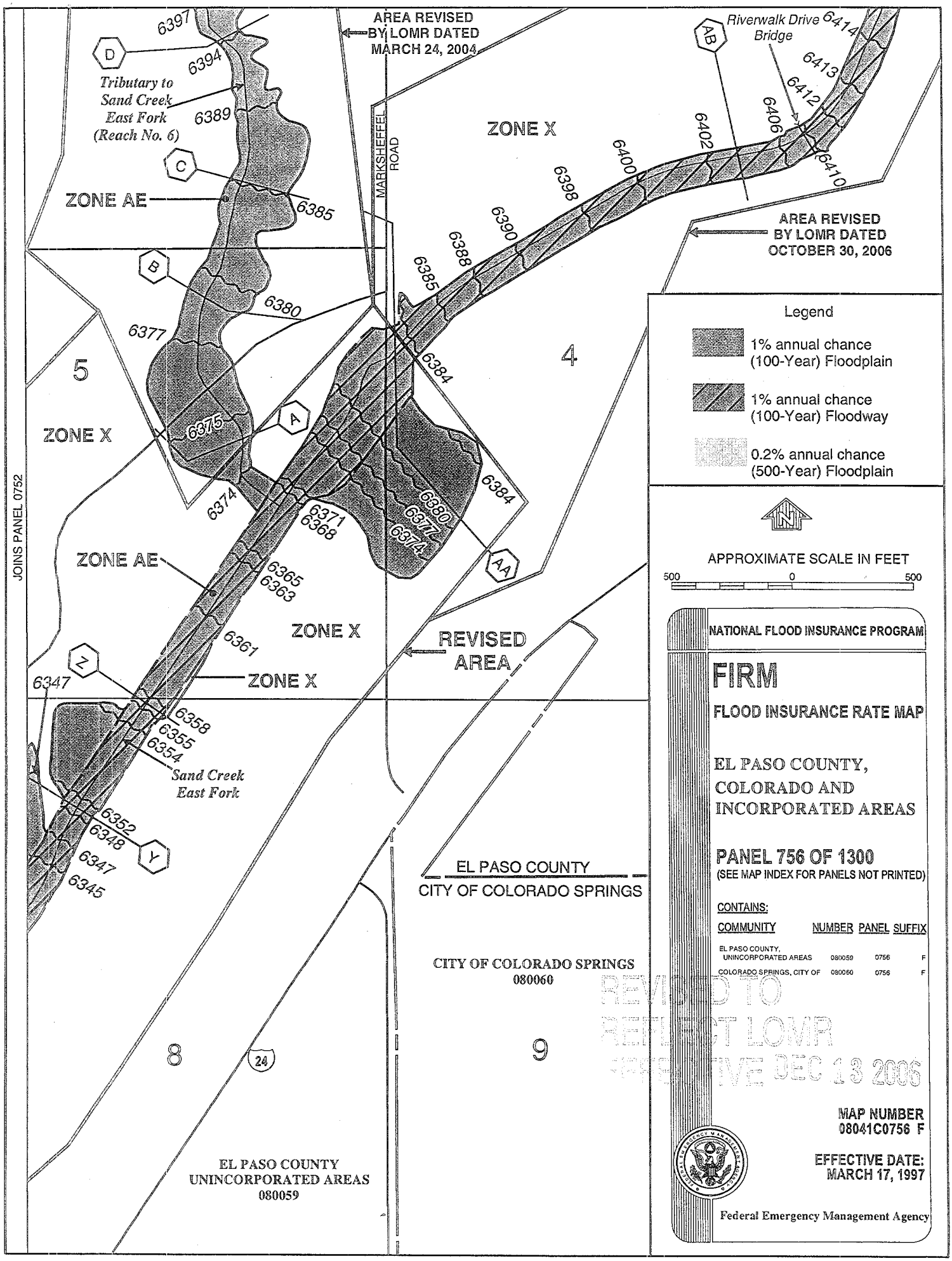
SAND CREEK EAST FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

212P


PALMER PARK BOULEVARD
MINEOLA STREET
CHAUTAUQUA DRIVE
WINNEBAGO ROAD
SIOUX CIRCLE
OSAGE WAY
BACONE TERRACE
SHOSHONE WAY
SEQUOYAH WAY
5
DRIVE
SHAWNEE
YAKIMA
YAKIMA
OMAHA
BOULEVARD
JOINS PANEL NUMBER 0756
Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
WHITE MOUNTAIN DRIVE
APPROXIMATE SCALE IN FEET
500 0 500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS
PANEL 752 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS 080059 0752 F
COLORADO SPRINGS, CITY OF 080060 0752 F
REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006
MAP NUMBER 08041C0752 F
EFFECTIVE DATE: MARCH 17, 1997
Federal Emergency Management Agency
COMMANCHERO DRIVE
ZONE X
6345
6343
6340
6338
6334
6333
6331
6328
8
ZONE X
ZONE AE
EL PASO COUNTY UNINCORPORATED AREAS 080059
6326
6323
6322
6319
WESTERN DRIVE
6316
6314
East Fork
ZONE X
Sand Creek
6310
6307
6304
REVISED AREA
24

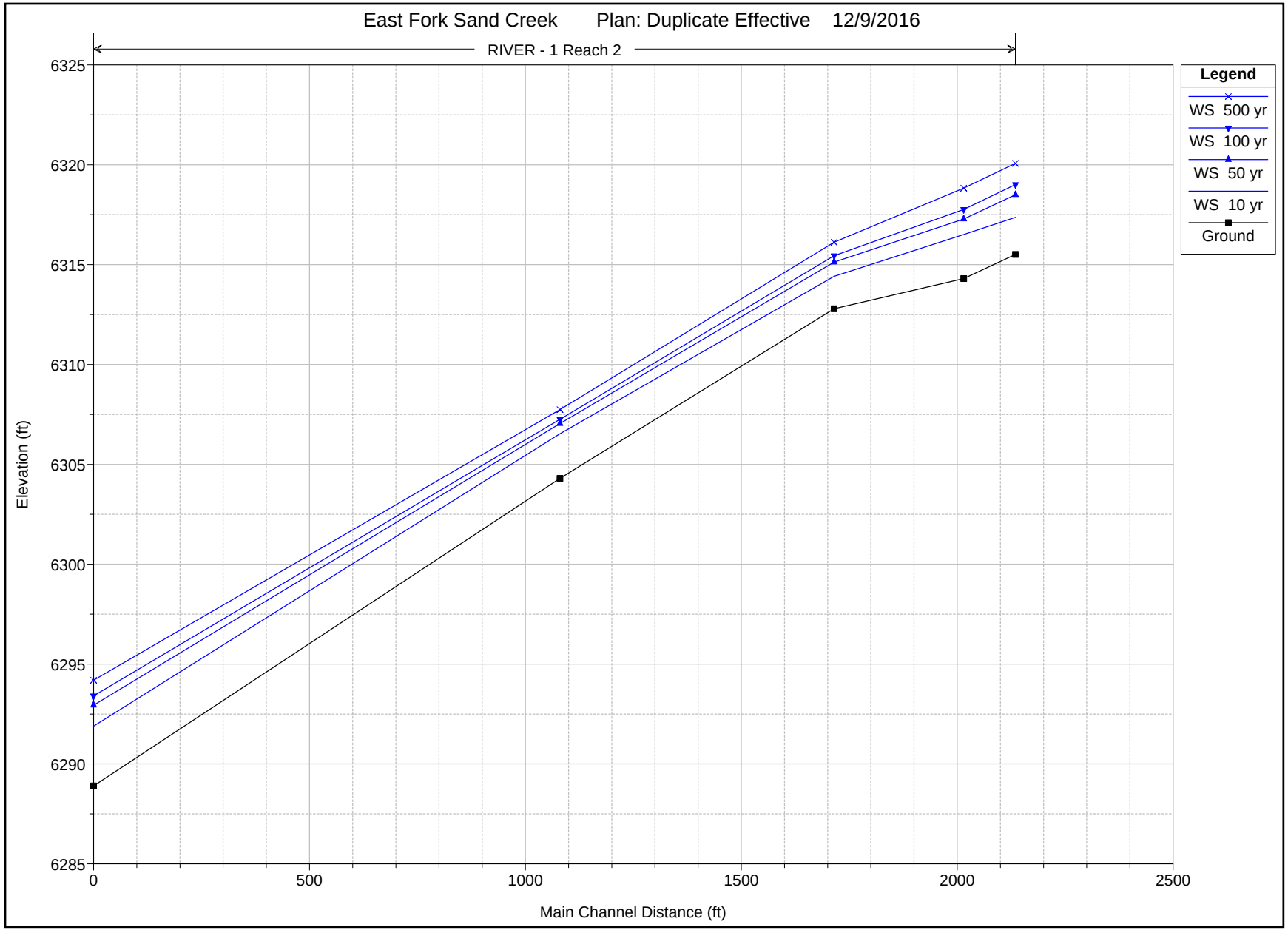

AREA REVISED BY LOMR DATED MARCH 24, 2004
AREA REVISED BY LOMR DATED OCTOBER 30, 2006
Riverwalk Drive Bridge
Tributary to Sand Creek East Fork (Reach No. 6)
Sand Creek East Fork
MARKSHEFFEL ROAD
ZONE X
ZONE AE
ZONE X
ZONE AE
ZONE X
ZONE X
REVISED AREA
JOINS PANEL 0752
5
4
8
9
24
6397
6394
6389
6385
6380
6377
6375
6374
6371
6368
6365
6363
6361
6347
6358
6355
6354
6352
6348
6347
6345
6414
6413
6412
6406
6402
6400
6398
6390
6388
6385
6384
6384
6380
6377
6374
A
AA
AB
B
C
D
Y
Z
EL PASO COUNTY
CITY OF COLORADO SPRINGS
CITY OF COLORADO SPRINGS
080060
EL PASO COUNTY
UNINCORPORATED AREAS
080059
Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
APPROXIMATE SCALE IN FEET
500
0
500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS
PANEL 756 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS 080059 0756 F
COLORADO SPRINGS, CITY OF 080060 0756 F
REVISED TO REFLECT LOMR EFFECTIVE DEC 13 2006
MAP NUMBER
08041C0756 F
EFFECTIVE DATE:
MARCH 17, 1997
Federal Emergency Management Agency

APPENDIX B

DUPLICATE EFFECTIVE HEC-RAS MODEL
SAND CREEK EAST FORK

HEC-RAS Plan: Duplicate Eff River: RIVER - 1 Reach: Reach 2

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	119.3382	10 yr	1940.00	6315.51	6317.37	6317.37	6318.22	0.010914	7.44	265.01	158.37	1.00
Reach 2	119.3382	50 yr	4180.00	6315.51	6318.50	6318.50	6319.90	0.009240	9.59	448.05	164.65	1.00
Reach 2	119.3382	100 yr	5330.00	6315.51	6319.01	6319.01	6320.63	0.008638	10.34	532.37	167.46	0.99
Reach 2	119.3382	500 yr	8120.00	6315.51	6320.07	6320.07	6322.20	0.007903	11.87	713.25	173.34	0.99
Reach 2	119.337	10 yr	1940.00	6314.30	6316.51		6317.08	0.005573	6.08	324.97	159.21	0.74
Reach 2	119.337	50 yr	4180.00	6314.30	6317.28	6317.26	6318.67	0.009021	9.53	449.72	162.97	0.99
Reach 2	119.337	100 yr	5330.00	6314.30	6317.76	6317.76	6319.41	0.008728	10.39	528.34	165.30	1.00
Reach 2	119.337	500 yr	8120.00	6314.30	6318.83	6318.83	6320.98	0.007947	11.91	707.88	170.50	1.00
Reach 2	119.3340	10 yr	1940.00	6312.79	6314.41	6314.41	6314.96	0.009199	5.91	328.14	310.51	1.01
Reach 2	119.3340	50 yr	4180.00	6312.79	6315.13	6315.13	6316.01	0.007761	7.55	553.59	319.39	1.01
Reach 2	119.3340	100 yr	5330.00	6312.79	6315.44	6315.44	6316.47	0.007324	8.14	654.95	323.30	1.01
Reach 2	119.3340	500 yr	8120.00	6312.79	6316.12	6316.12	6317.45	0.006662	9.26	876.59	331.75	1.00
Reach 2	119	10 yr	1940.00	6304.30	6306.53	6306.53	6306.91	0.008819	5.23	412.10	525.32	0.97
Reach 2	119	50 yr	4180.00	6304.30	6307.04	6307.04	6307.66	0.008429	6.71	683.93	546.96	1.01
Reach 2	119	100 yr	5330.00	6304.30	6307.26	6307.26	6307.98	0.008262	7.26	802.47	554.12	1.02
Reach 2	119	500 yr	8120.00	6304.30	6307.74	6307.74	6308.67	0.007651	8.23	1073.39	570.15	1.03
Reach 2	118	10 yr	1940.00	6288.90	6291.89	6290.55	6291.98	0.000608	2.41	803.56	401.77	0.29
Reach 2	118	50 yr	4180.00	6288.90	6292.94	6291.28	6293.13	0.000741	3.46	1216.45	559.98	0.34
Reach 2	118	100 yr	5330.00	6288.90	6293.41	6291.57	6293.64	0.000755	3.82	1410.69	600.55	0.36
Reach 2	118	500 yr	8120.00	6288.90	6294.19	6292.19	6294.54	0.000905	4.75	1745.52	666.50	0.40

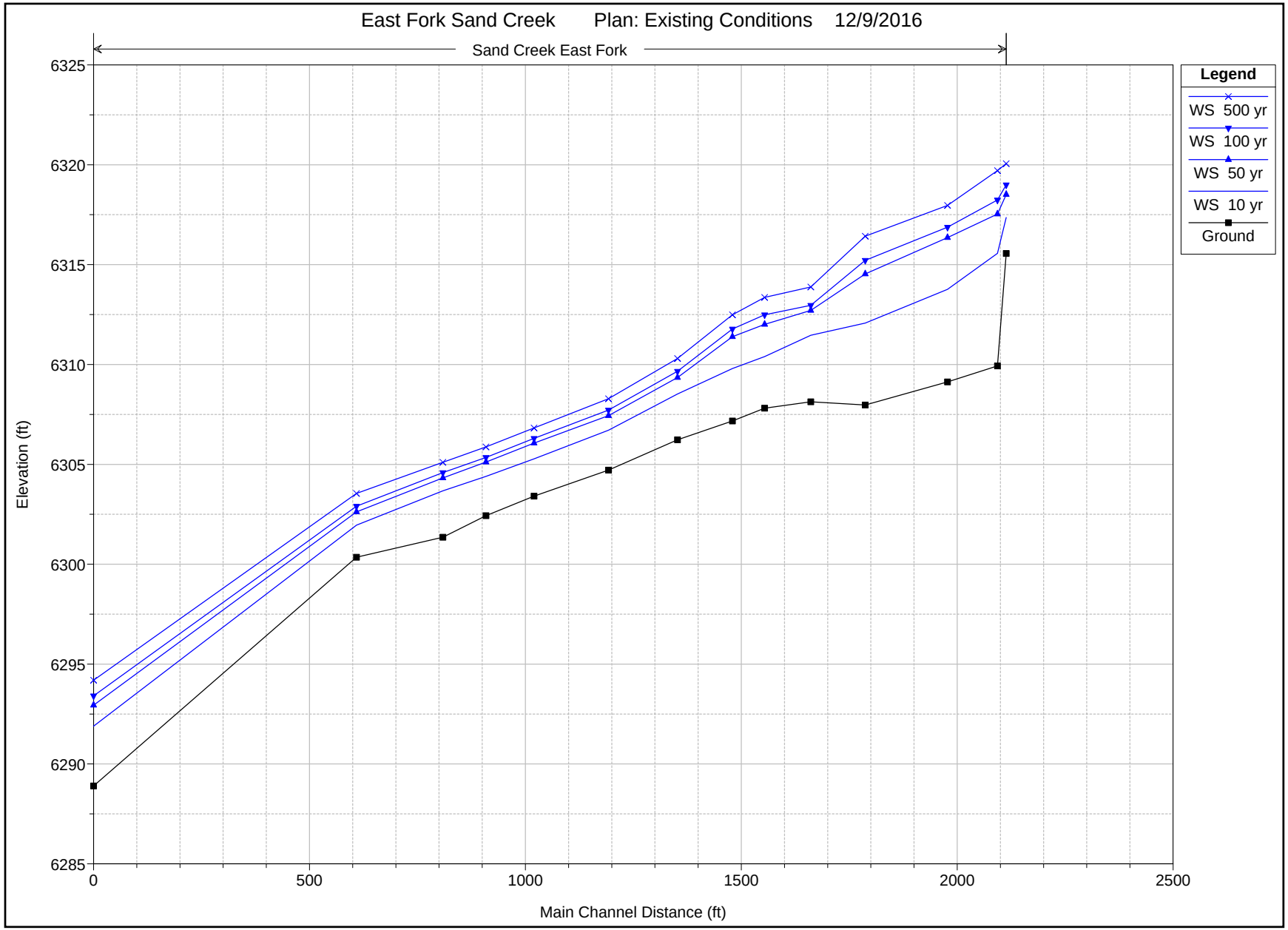

East Fork Sand Creek Plan: Duplicate Effective 12/9/2016
RIVER - 1 Reach 2
Legend
WS 500 yr
WS 100 yr
WS 50 yr
WS 10 yr
Ground
Elevation (ft)
6325
6320
6315
6310
6305
6300
6295
6290
6285
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

APPENDIX C

EXISTING CONDITIONS HEC-RAS MODEL
SAND CREEK EAST FORK

HEC-RAS Plan: Existing River: Sand Creek Reach: East Fork

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East Fork	2529	10 yr	1940.00	6315.56	6317.36	6317.36	6318.21	0.010874	7.47	264.75	157.62	1.00
East Fork	2529	50 yr	4180.00	6315.56	6318.51	6318.51	6319.89	0.009018	9.55	454.04	168.43	0.99
East Fork	2529	100 yr	5330.00	6315.56	6319.00	6319.00	6320.62	0.008627	10.35	536.56	171.26	0.99
East Fork	2529	500 yr	8120.00	6315.56	6320.06	6320.06	6322.16	0.007871	11.86	721.20	177.43	0.99
East Fork	2509	10 yr	1940.00	6309.93	6315.56	6312.08	6315.67	0.000301	2.62	773.78	155.67	0.20
East Fork	2509	50 yr	4180.00	6309.93	6317.53	6313.30	6317.78	0.000477	4.07	1089.75	164.93	0.27
East Fork	2509	100 yr	5330.00	6309.93	6318.24	6313.83	6318.57	0.000566	4.72	1206.71	168.23	0.29
East Fork	2509	500 yr	8120.00	6309.93	6319.71	6314.99	6320.24	0.000735	6.01	1459.29	175.58	0.34
East Fork	2394	10 yr	1940.00	6309.13	6313.76	6313.69	6315.41	0.008513	10.57	194.39	57.35	0.98
East Fork	2394	50 yr	4180.00	6309.13	6316.35	6316.06	6317.55	0.007483	8.93	481.89	158.55	0.90
East Fork	2394	100 yr	5330.00	6309.13	6316.88	6316.57	6318.30	0.007254	9.78	565.55	161.12	0.91
East Fork	2394	500 yr	8120.00	6309.13	6317.96	6317.67	6319.90	0.006992	11.46	743.98	166.46	0.94
East Fork	2203	10 yr	1940.00	6307.97	6312.08	6312.08	6313.53	0.010793	9.68	200.37	68.92	1.00
East Fork	2203	50 yr	4180.00	6307.97	6314.53	6314.53	6316.14	0.006808	10.38	436.29	145.47	0.84
East Fork	2203	100 yr	5330.00	6307.97	6315.22	6315.22	6316.95	0.006654	10.95	537.57	150.03	0.84
East Fork	2203	500 yr	8120.00	6307.97	6316.43	6316.43	6318.56	0.007002	12.37	723.25	166.64	0.87
East Fork	2077	10 yr	1940.00	6308.13	6311.46	6310.87	6312.00	0.003337	5.87	330.38	147.51	0.69
East Fork	2077	50 yr	4180.00	6308.13	6312.71	6312.20	6313.66	0.004085	7.83	534.18	180.37	0.80
East Fork	2077	100 yr	5330.00	6308.13	6312.96	6312.74	6314.27	0.005192	9.17	581.40	185.29	0.91
East Fork	2077	500 yr	8120.00	6308.13	6313.88	6313.88	6315.63	0.005097	10.65	790.88	260.09	0.94
East Fork	1970	10 yr	1940.00	6307.81	6310.40	6310.40	6311.44	0.007262	8.18	237.13	115.17	1.00
East Fork	1970	50 yr	4180.00	6307.81	6312.01	6312.01	6313.17	0.004656	8.87	527.16	267.01	0.87
East Fork	1970	100 yr	5330.00	6307.81	6312.49	6312.49	6313.75	0.004364	9.42	657.50	275.52	0.86
East Fork	1970	500 yr	8120.00	6307.81	6313.36	6313.36	6314.93	0.004316	10.78	907.83	297.15	0.89
East Fork	1895	10 yr	1940.00	6307.17	6309.80	6309.80	6310.88	0.007325	8.34	232.63	110.43	1.01
East Fork	1895	50 yr	4180.00	6307.17	6311.39	6311.39	6312.34	0.004156	8.35	623.77	345.33	0.82
East Fork	1895	100 yr	5330.00	6307.17	6311.78	6311.78	6312.82	0.004106	8.94	757.51	353.42	0.83
East Fork	1895	500 yr	8120.00	6307.17	6312.49	6312.49	6313.80	0.004300	10.32	1015.54	368.51	0.87
East Fork	1768	10 yr	1940.00	6306.23	6308.52	6308.52	6309.12	0.006457	6.37	336.76	304.34	0.90
East Fork	1768	50 yr	4180.00	6306.23	6309.35	6309.35	6310.16	0.006047	7.71	625.42	374.84	0.92
East Fork	1768	100 yr	5330.00	6306.23	6309.66	6309.66	6310.58	0.005834	8.25	751.65	459.71	0.93
East Fork	1768	500 yr	8120.00	6306.23	6310.30	6310.30	6311.41	0.005357	9.23	1059.97	493.00	0.92
East Fork	1609	10 yr	1940.00	6304.71	6306.71	6306.71	6307.25	0.007042	6.00	350.32	348.42	0.92
East Fork	1609	50 yr	4180.00	6304.71	6307.44	6307.44	6308.16	0.007187	7.14	641.28	437.24	0.97
East Fork	1609	100 yr	5330.00	6304.71	6307.72	6307.72	6308.53	0.007221	7.58	768.30	469.12	0.98
East Fork	1609	500 yr	8120.00	6304.71	6308.29	6308.29	6309.27	0.007060	8.40	1052.41	531.68	1.00
East Fork	1436	10 yr	1940.00	6303.41	6305.28	6305.28	6305.86	0.008595	6.11	318.97	307.89	1.00
East Fork	1436	50 yr	4180.00	6303.41	6306.06	6306.06	6306.73	0.005894	6.85	696.18	529.87	0.89
East Fork	1436	100 yr	5330.00	6303.41	6306.30	6306.30	6307.08	0.005976	7.47	821.46	537.00	0.91
East Fork	1436	500 yr	8120.00	6303.41	6306.83	6306.83	6307.80	0.005741	8.52	1108.92	556.45	0.93
East Fork	1325	10 yr	1940.00	6302.43	6304.40	6304.40	6304.91	0.005885	5.88	372.37	415.51	0.86
East Fork	1325	50 yr	4180.00	6302.43	6305.12	6305.12	6305.78	0.005574	7.09	714.71	515.92	0.88
East Fork	1325	100 yr	5330.00	6302.43	6305.35	6305.35	6306.13	0.005807	7.77	833.90	525.06	0.91
East Fork	1325	500 yr	8120.00	6302.43	6305.88	6305.88	6306.86	0.005671	8.85	1119.32	550.10	0.94
East Fork	1225	10 yr	1940.00	6301.35	6303.68	6303.68	6304.16	0.005482	5.70	390.95	475.62	0.83
East Fork	1225	50 yr	4180.00	6301.35	6304.32	6304.32	6305.02	0.005490	7.27	711.40	515.75	0.88
East Fork	1225	100 yr	5330.00	6301.35	6304.59	6304.59	6305.37	0.005435	7.82	850.33	532.21	0.89
East Fork	1225	500 yr	8120.00	6301.35	6305.10	6305.10	6306.10	0.005592	9.04	1131.94	562.60	0.94
East Fork	1025	10 yr	1940.00	6300.35	6301.96	6301.96	6302.46	0.009371	5.66	342.67	350.92	1.01
East Fork	1025	50 yr	4180.00	6300.35	6302.62	6302.62	6303.43	0.007997	7.19	581.19	369.04	1.01
East Fork	1025	100 yr	5330.00	6300.35	6302.91	6302.91	6303.84	0.007631	7.75	687.72	376.86	1.01
East Fork	1025	500 yr	8120.00	6300.35	6303.55	6303.55	6304.71	0.007035	8.66	937.51	409.11	1.01
East Fork	416	10 yr	1940.00	6288.90	6291.89	6290.55	6291.98	0.000608	2.41	803.56	379.37	0.29
East Fork	416	50 yr	4180.00	6288.90	6292.94	6291.28	6293.13	0.000741	3.46	1216.45	406.98	0.34
East Fork	416	100 yr	5330.00	6288.90	6293.41	6291.57	6293.64	0.000755	3.82	1410.69	419.23	0.36
East Fork	416	500 yr	8120.00	6288.90	6294.19	6292.19	6294.54	0.000905	4.75	1745.52	439.53	0.40


East Fork Sand Creek Plan: Existing Conditions 12/9/2016
Sand Creek East Fork
Legend
WS 500 yr
WS 100 yr
WS 50 yr
WS 10 yr
Ground
Elevation (ft)
6325
6320
6315
6310
6305
6300
6295
6290
6285
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

APPENDIX D

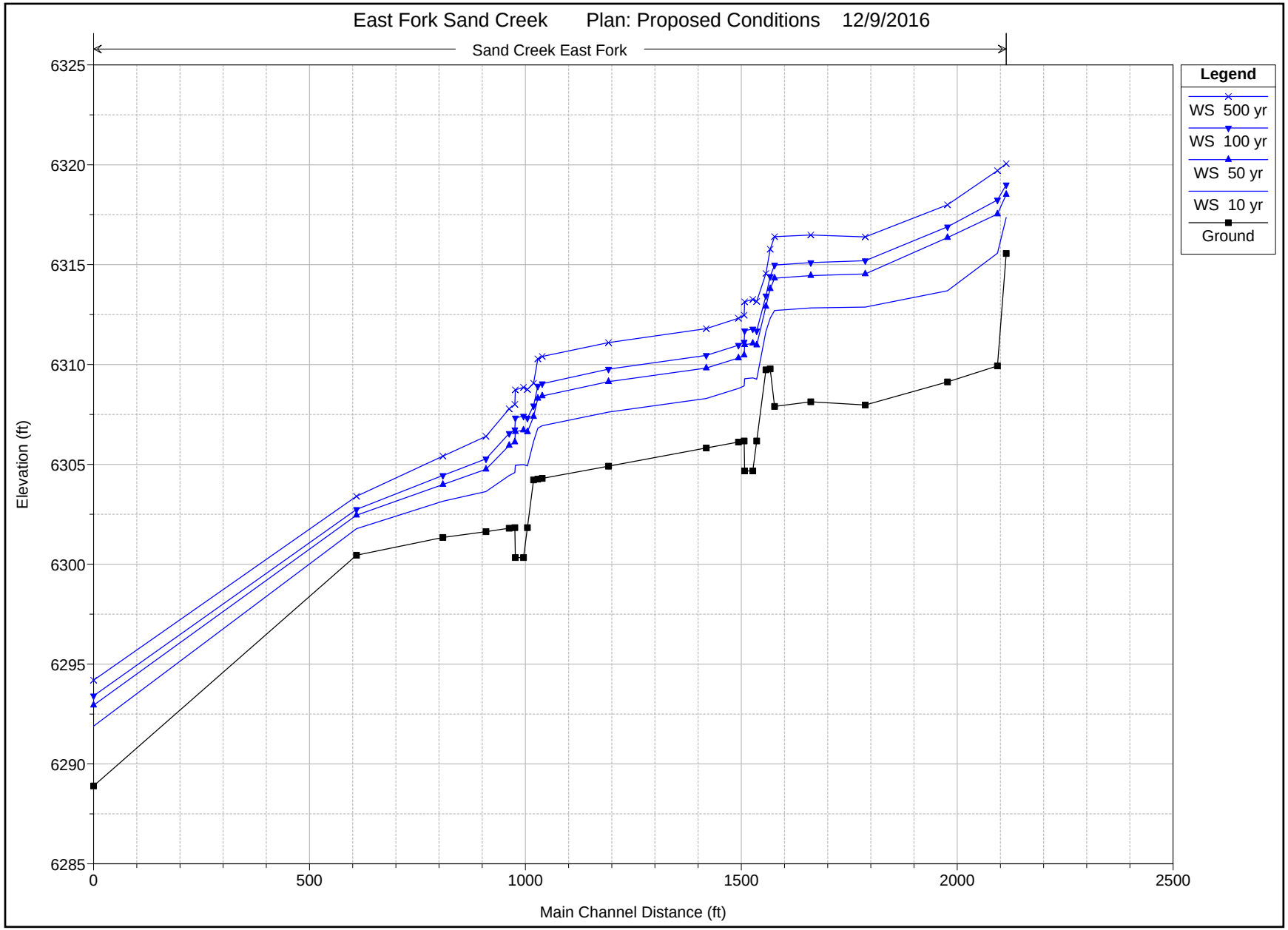
PROPOSED CONDITIONS HEC-RAS MODEL
SAND CREEK EAST FORK

HEC-RAS Plan: Proposed River: Sand Creek Reach: East Fork

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East Fork	2529	10 yr	1940.00	6315.56	6317.36	6317.36	6318.21	0.010874	7.47	264.75	157.62	1.00
East Fork	2529	50 yr	4180.00	6315.56	6318.51	6318.51	6319.89	0.009018	9.55	454.04	168.43	0.99
East Fork	2529	100 yr	5330.00	6315.56	6319.00	6319.00	6320.62	0.008627	10.35	536.56	171.26	0.99
East Fork	2529	500 yr	8120.00	6315.56	6320.06	6320.06	6322.16	0.007871	11.86	721.20	177.43	0.99
East Fork	2509	10 yr	1940.00	6309.93	6315.57	6312.08	6315.67	0.000299	2.62	774.85	155.71	0.20
East Fork	2509	50 yr	4180.00	6309.93	6317.53	6313.30	6317.78	0.000477	4.07	1089.67	164.92	0.27
East Fork	2509	100 yr	5330.00	6309.93	6318.24	6313.83	6318.57	0.000566	4.71	1207.04	168.24	0.29
East Fork	2509	500 yr	8120.00	6309.93	6319.71	6314.99	6320.24	0.000734	6.01	1459.63	175.59	0.34
East Fork	2394	10 yr	1940.00	6309.13	6313.69	6313.69	6315.41	0.009070	10.78	190.40	57.12	1.01
East Fork	2394	50 yr	4180.00	6309.13	6316.35	6316.06	6317.54	0.007487	8.93	481.81	158.55	0.90
East Fork	2394	100 yr	5330.00	6309.13	6316.89	6316.57	6318.30	0.007151	9.73	568.07	161.19	0.91
East Fork	2394	500 yr	8120.00	6309.13	6318.00	6317.67	6319.91	0.006831	11.38	749.42	166.62	0.93
East Fork	2203	10 yr	1940.00	6307.97	6312.87	6312.08	6313.76	0.005206	7.55	257.12	73.25	0.71
East Fork	2203	50 yr	4180.00	6307.97	6314.53	6314.53	6316.14	0.006806	10.38	436.36	145.48	0.84
East Fork	2203	100 yr	5330.00	6307.97	6315.20	6315.20	6316.95	0.006750	11.01	534.57	149.92	0.84
East Fork	2203	500 yr	8120.00	6307.97	6316.39	6316.39	6318.56	0.007154	12.47	717.43	156.67	0.88
East Fork	2077	10 yr	1940.00	6308.13	6312.83	6311.37	6313.19	0.002246	4.80	403.95	132.73	0.49
East Fork	2077	50 yr	4180.00	6308.13	6314.45	6312.92	6315.13	0.002661	6.63	632.51	148.04	0.56
East Fork	2077	100 yr	5330.00	6308.13	6315.10	6313.51	6315.94	0.002788	7.34	731.09	153.31	0.58
East Fork	2077	500 yr	8120.00	6308.13	6316.48	6314.69	6317.65	0.002964	8.67	950.49	164.18	0.62
East Fork	1993	10 yr	1940.00	6307.90	6312.71	6310.98	6312.95	0.002596	4.00	485.61	146.24	0.39
East Fork	1993	50 yr	4180.00	6307.90	6314.32	6312.27	6314.82	0.003453	5.70	732.70	159.90	0.47
East Fork	1993	100 yr	5330.00	6307.90	6314.98	6312.83	6315.61	0.003726	6.34	840.34	165.50	0.50
East Fork	1993	500 yr	8120.00	6307.90	6316.40	6314.00	6317.27	0.004027	7.49	1090.46	193.44	0.53
East Fork	1983	10 yr	1940.00	6309.78	6312.32	6311.71	6312.83	0.008467	5.74	337.88	143.65	0.66
East Fork	1983	50 yr	4180.00	6309.78	6313.79	6312.96	6314.66	0.008216	7.48	558.82	155.91	0.70
East Fork	1983	100 yr	5330.00	6309.78	6314.41	6313.48	6315.43	0.008167	8.12	656.31	161.02	0.71
East Fork	1983	500 yr	8120.00	6309.78	6315.77	6314.63	6317.08	0.007592	9.19	886.72	198.29	0.71
East Fork	1973	10 yr	1940.00	6309.73	6311.66	6311.66	6312.58	0.021384	7.69	252.16	138.59	1.01
East Fork	1973	50 yr	4180.00	6309.73	6312.91	6312.91	6314.37	0.018303	9.69	431.30	148.93	1.00
East Fork	1973	100 yr	5330.00	6309.73	6313.44	6313.44	6315.12	0.017513	10.42	511.74	153.35	1.00
East Fork	1973	500 yr	8120.00	6309.73	6314.56	6314.56	6316.72	0.016341	11.80	688.20	164.27	1.01
East Fork	1952	10 yr	1940.00	6306.17	6309.26	6308.10	6309.60	0.004332	4.64	417.75	147.56	0.49
East Fork	1952	50 yr	4180.00	6306.17	6310.97	6309.35	6311.56	0.004440	6.13	681.68	161.32	0.53
East Fork	1952	100 yr	5330.00	6306.17	6311.68	6309.89	6312.37	0.004469	6.68	798.49	167.05	0.54
East Fork	1952	500 yr	8120.00	6306.17	6313.16	6311.03	6314.08	0.004456	7.70	1058.17	206.27	0.56
East Fork	1943	10 yr	1940.00	6304.67	6309.33	6306.73	6309.49	0.001287	3.22	601.93	147.64	0.28
East Fork	1943	50 yr	4180.00	6304.67	6311.06	6308.04	6311.42	0.001985	4.81	869.52	161.72	0.37
East Fork	1943	100 yr	5330.00	6304.67	6311.77	6308.61	6312.23	0.002217	5.40	987.37	167.54	0.39
East Fork	1943	500 yr	8120.00	6304.67	6313.26	6309.81	6313.92	0.002545	6.52	1251.83	216.83	0.43
East Fork	1924	10 yr	1940.00	6304.67	6309.29	6306.76	6309.46	0.001389	3.32	583.68	144.69	0.29
East Fork	1924	50 yr	4180.00	6304.67	6310.99	6308.10	6311.37	0.002159	4.97	840.79	158.28	0.38
East Fork	1924	100 yr	5330.00	6304.67	6311.69	6308.68	6312.17	0.002416	5.59	953.90	163.89	0.41
East Fork	1924	500 yr	8120.00	6304.67	6313.14	6309.89	6313.85	0.002807	6.77	1203.63	201.13	0.45
East Fork	1923	10 yr	1940.00	6306.17	6308.93	6308.14	6309.38	0.006665	5.37	361.53	142.09	0.59
East Fork	1923	50 yr	4180.00	6306.17	6310.47	6309.39	6311.25	0.006794	7.09	589.47	154.40	0.64
East Fork	1923	100 yr	5330.00	6306.17	6311.12	6309.93	6312.04	0.006786	7.71	691.59	159.61	0.65
East Fork	1923	500 yr	8120.00	6306.17	6312.47	6311.08	6313.69	0.006776	8.87	914.96	170.45	0.68
East Fork	1910	10 yr	1940.00	6306.12	6308.80	6308.09	6309.28	0.007354	5.54	350.37	141.45	0.62
East Fork	1910	50 yr	4180.00	6306.12	6310.32	6309.34	6311.14	0.007331	7.27	574.99	153.63	0.66
East Fork	1910	100 yr	5330.00	6306.12	6310.97	6309.88	6311.93	0.007285	7.89	675.60	158.79	0.67
East Fork	1910	500 yr	8120.00	6306.12	6312.32	6311.03	6313.59	0.007190	9.05	896.94	169.58	0.69
East Fork	1835	10 yr	1940.00	6305.82	6308.30	6307.79	6308.86	0.003848	6.03	321.73	139.83	0.70
East Fork	1835	50 yr	4180.00	6305.82	6309.82	6309.04	6310.74	0.003674	7.68	543.97	152.01	0.72
East Fork	1835	100 yr	5330.00	6305.82	6310.46	6309.58	6311.53	0.003654	8.29	642.83	157.12	0.72
East Fork	1835	500 yr	8120.00	6305.82	6311.79	6310.73	6313.18	0.003649	9.44	859.87	167.80	0.74
East Fork	1609	10 yr	1940.00	6304.91	6307.62	6306.87	6308.08	0.002874	5.48	354.14	141.73	0.61
East Fork	1609	50 yr	4180.00	6304.91	6309.14	6308.13	6309.95	0.003060	7.22	578.98	153.93	0.66
East Fork	1609	100 yr	5330.00	6304.91	6309.77	6308.68	6310.73	0.003135	7.86	677.77	158.99	0.67
East Fork	1609	500 yr	8120.00	6304.91	6311.10	6309.82	6312.37	0.003223	9.06	897.12	183.30	0.69
East Fork	1455	10 yr	1940.00	6304.30	6306.94	6306.23	6307.41	0.007459	5.52	351.55	144.22	0.62
East Fork	1455	50 yr	4180.00	6304.30	6308.43	6307.47	6309.25	0.007493	7.26	575.41	156.51	0.67
East Fork	1455	100 yr	5330.00	6304.30	6309.04	6308.01	6310.01	0.007533	7.91	673.43	161.60	0.68
East Fork	1455	500 yr	8120.00	6304.30	6310.40	6309.15	6311.66	0.007162	8.99	914.58	228.27	0.69

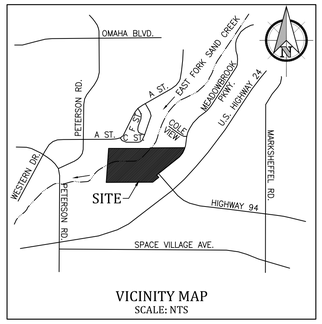
HEC-RAS Plan: Proposed River: Sand Creek Reach: East Fork (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East Fork	1445	10 yr	1940.00	6304.26	6306.81	6306.19	6307.32	0.008325	5.71	339.56	143.59	0.65
East Fork	1445	50 yr	4180.00	6304.26	6308.30	6307.43	6309.16	0.008029	7.43	562.75	155.94	0.69
East Fork	1445	100 yr	5330.00	6304.26	6308.92	6307.97	6309.93	0.008001	8.07	660.42	161.05	0.70
East Fork	1445	500 yr	8120.00	6304.26	6310.29	6309.10	6311.58	0.007418	9.12	901.10	235.71	0.70
East Fork	1435	10 yr	1940.00	6304.22	6306.15	6306.15	6307.07	0.021555	7.72	251.43	138.42	1.01
East Fork	1435	50 yr	4180.00	6304.22	6307.39	6307.39	6308.86	0.018407	9.71	430.34	148.74	1.01
East Fork	1435	100 yr	5330.00	6304.22	6307.93	6307.93	6309.62	0.017525	10.42	511.43	153.19	1.01
East Fork	1435	500 yr	8120.00	6304.22	6309.06	6309.06	6311.21	0.016192	11.77	689.92	163.68	1.01
East Fork	1421	10 yr	1940.00	6301.83	6304.92	6303.76	6305.26	0.004333	4.64	418.39	148.20	0.49
East Fork	1421	50 yr	4180.00	6301.83	6306.63	6305.01	6307.21	0.004448	6.12	683.03	162.39	0.53
East Fork	1421	100 yr	5330.00	6301.83	6307.32	6305.54	6308.01	0.004518	6.68	797.87	168.18	0.54
East Fork	1421	500 yr	8120.00	6301.83	6308.75	6306.68	6309.69	0.004602	7.75	1048.00	186.19	0.56
East Fork	1412	10 yr	1940.00	6300.33	6304.99	6302.40	6305.15	0.001294	3.22	602.72	148.79	0.28
East Fork	1412	50 yr	4180.00	6300.33	6306.71	6303.72	6307.07	0.001991	4.80	871.74	163.19	0.37
East Fork	1412	100 yr	5330.00	6300.33	6307.41	6304.28	6307.87	0.002237	5.39	988.05	169.04	0.39
East Fork	1412	500 yr	8120.00	6300.33	6308.86	6305.48	6309.52	0.002625	6.54	1242.82	195.93	0.44
East Fork	1393	10 yr	1940.00	6300.33	6304.95	6302.42	6305.12	0.001388	3.32	584.54	145.15	0.29
East Fork	1393	50 yr	4180.00	6300.33	6306.64	6303.76	6307.02	0.002161	4.97	841.51	158.80	0.38
East Fork	1393	100 yr	5330.00	6300.33	6307.33	6304.34	6307.81	0.002441	5.60	951.95	164.32	0.41
East Fork	1393	500 yr	8120.00	6300.33	6308.73	6305.55	6309.45	0.002915	6.82	1191.57	183.06	0.46
East Fork	1392	10 yr	1940.00	6301.83	6304.59	6303.79	6305.04	0.006645	5.36	362.06	142.30	0.59
East Fork	1392	50 yr	4180.00	6301.83	6306.12	6305.05	6306.90	0.006843	7.10	588.50	154.60	0.64
East Fork	1392	100 yr	5330.00	6301.83	6306.73	6305.59	6307.67	0.006983	7.77	685.61	159.58	0.66
East Fork	1392	500 yr	8120.00	6301.83	6308.00	6306.74	6309.28	0.007273	9.08	894.28	169.80	0.70
East Fork	1379	10 yr	1940.00	6301.80	6304.44	6303.76	6304.93	0.007737	5.62	345.18	141.59	0.63
East Fork	1379	50 yr	4180.00	6301.80	6305.95	6305.03	6306.79	0.007664	7.36	567.74	153.91	0.68
East Fork	1379	100 yr	5330.00	6301.80	6306.55	6305.56	6307.56	0.007789	8.05	662.19	158.85	0.69
East Fork	1379	500 yr	8120.00	6301.80	6307.78	6306.71	6309.15	0.008082	9.39	864.58	168.94	0.73
East Fork	1325	10 yr	1940.00	6301.63	6303.64	6303.53	6304.44	0.006933	7.19	269.84	142.64	0.92
East Fork	1325	50 yr	4180.00	6301.63	6304.75	6304.75	6306.20	0.007524	9.64	433.51	151.65	1.01
East Fork	1325	100 yr	5330.00	6301.63	6305.27	6305.27	6306.95	0.007352	10.38	513.55	155.88	1.01
East Fork	1325	500 yr	8120.00	6301.63	6306.40	6306.40	6308.52	0.006972	11.68	694.93	165.06	1.00
East Fork	1225	10 yr	1940.00	6301.34	6303.15	6302.94	6303.76	0.005726	6.22	311.90	180.24	0.83
East Fork	1225	50 yr	4180.00	6301.34	6303.99	6303.99	6305.24	0.007609	8.97	466.06	187.93	1.00
East Fork	1225	100 yr	5330.00	6301.34	6304.45	6304.45	6305.89	0.007360	9.65	552.17	192.16	1.00
East Fork	1225	500 yr	8120.00	6301.34	6305.41	6305.41	6307.27	0.006995	10.94	742.46	201.32	1.00
East Fork	1025	10 yr	1940.00	6300.45	6301.78	6301.78	6302.29	0.009390	5.71	339.84	340.55	1.01
East Fork	1025	50 yr	4180.00	6300.45	6302.46	6302.46	6303.28	0.008056	7.27	574.82	355.38	1.01
East Fork	1025	100 yr	5330.00	6300.45	6302.75	6302.75	6303.70	0.007725	7.85	678.82	361.75	1.01
East Fork	1025	500 yr	8120.00	6300.45	6303.40	6303.40	6304.60	0.007073	8.80	922.65	386.42	1.00
East Fork	416	10 yr	1940.00	6288.90	6291.89	6290.55	6291.98	0.000608	2.41	803.56	379.37	0.29
East Fork	416	50 yr	4180.00	6288.90	6292.94	6291.28	6293.13	0.000741	3.46	1216.45	406.98	0.34
East Fork	416	100 yr	5330.00	6288.90	6293.41	6291.57	6293.64	0.000755	3.82	1410.69	419.23	0.36
East Fork	416	500 yr	8120.00	6288.90	6294.19	6292.19	6294.54	0.000905	4.75	1745.52	439.53	0.40


East Fork Sand Creek Plan: Proposed Conditions 12/9/2016
Sand Creek East Fork
Legend
WS 500 yr
WS 100 yr
WS 50 yr
WS 10 yr
Ground
Elevation (ft)
6325
6320
6315
6310
6305
6300
6295
6290
6285
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

APPENDIX E

EXISTING CONDITIONS AND PROPOSED CONDITIONS FLOODPLAIN WORKMAPS SAND CREEK EAST FORK



VICINITY MAP
SCALE: NTS

TOPOGRAPHIC MAPPING IS BASED UPON COLORADO SPRINGS UTILITIES FACILITIES INFORMATION SYSTEM MAPPING, COLORADO STATE PLANE COORDINATES 1983, AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.

THE TOPOGRAPHY WAS COMPILED IN ACCORDANCE WITH NATIONAL MAPPING STANDARDS FOR 1"=200' & 2' CONTOUR INTERVAL DETAIL.

SITE BENCHMARK: FIMS MONUMENT NUMBER 81

Kiowa Engineering Corporation
7175 West Jefferson Avenue, Suite 1300
Lakewood, Colorado 80235
(303) 692-0369

MEADOWBROOK SUBDIVISION CLOMR

EAST FORK SAND CREEK

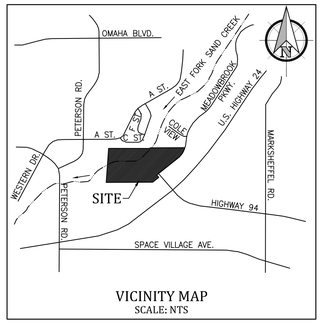
EXISTING CONDITIONS FLOODPLAIN WORKMAP

EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	December 9, 2016
Design:	CJC
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET 1

16039 Base Topography.dwg Dec 12, 2016



VICINITY MAP
SCALE: NTS

Kiowa
Engineering Corporation
7175 West Jefferson Avenue, Suite 1300
Lakewood, Colorado 80235
(303) 692-0369

MEADOWBROOK SUBDIVISION CLOMR

EAST FORK SAND CREEK

PROPOSED CONDITIONS FLOODPLAIN WORKMAP

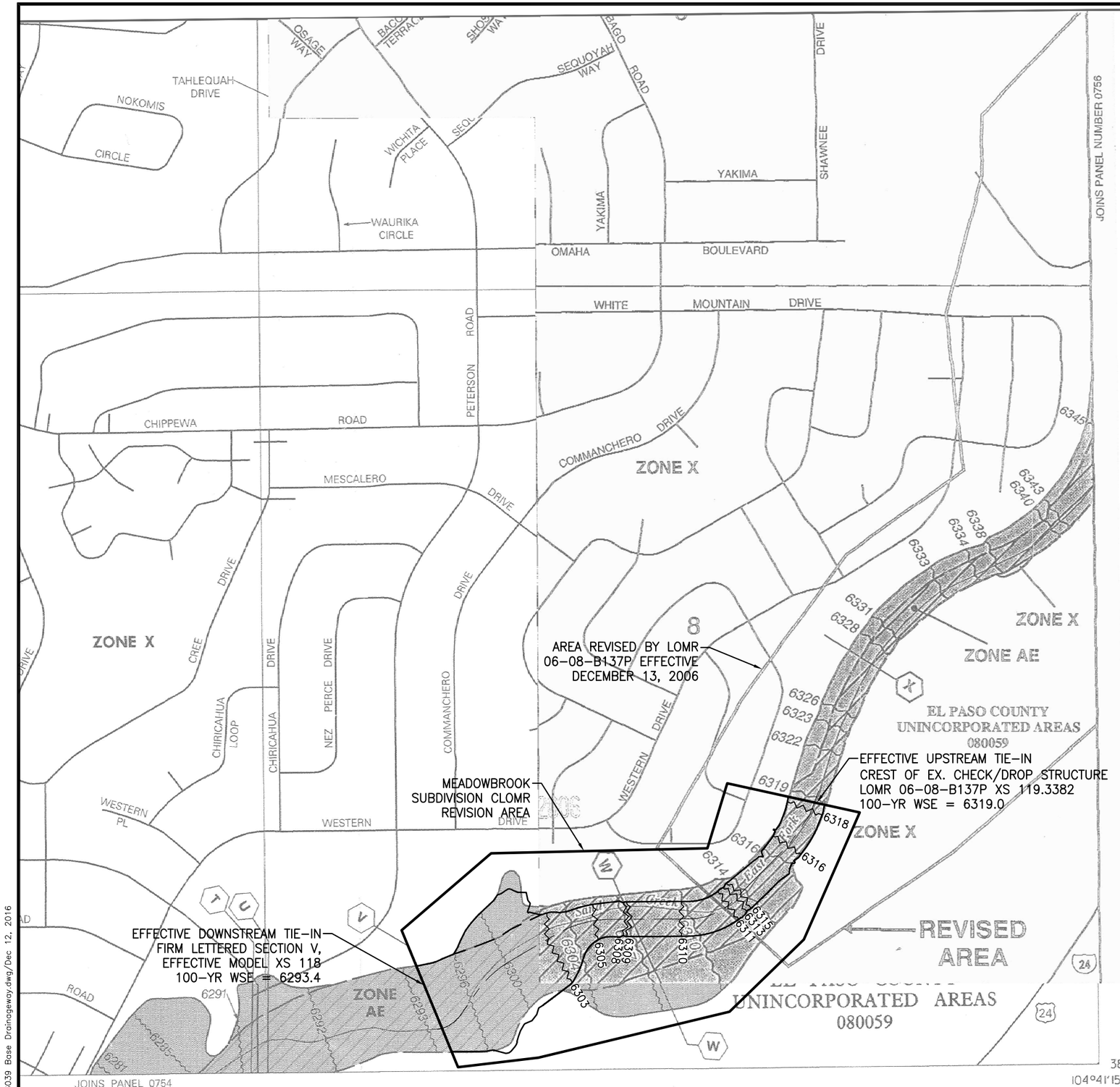
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	December 9, 2016
Design:	CJC
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
1

APPENDIX F

ANNOTATED FIRM
SAND CREEK EAST FORK



APPROXIMATE SCALE IN FEET
500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 752 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0752	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0752	F

MAP NUMBER
08041C0752 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

MEADOWBROOK
SUBDIVISION CLOMR
ANNOTATED FIRM

16039 Base Drainageway.dwg/Dec 12, 2016

APPENDIX G

FEMA MT-2 FORMS AND ATTACHMENTS
SAND CREEK EAST FORK

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, Unincorporated Areas	CO	08041C	0752F	03/17/97

2. a. Flooding Source: Sand Creek East Fork

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

3. Project Name/Identifier: Meadowbrook Subdivision CLOMR

4. FEMA zone designations affected: AE (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: $6,750

☐ 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: Richard N. Wray, P.E.	Company: Kiowa Engineering Corporation	
Mailing Address: 1604 South 21st Street Colorado Springs, CO 80904-4208	Daytime Telephone No.: 719--630-7342	Fax No.:
	E-Mail Address: rwray@kiowaengineering.com	
Signature of Requester (required):	Date: 12/14/16	

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 Flood Plain Adm.	Community Name: El Paso County, Colorado	
Mailing Address: ~~2810~~ 2550 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: 12-14-16	

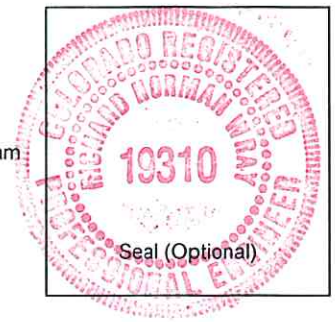
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

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: Richard N. Wray, P.E.	License No.: 19310	Expiration Date: 10-31-17	
Company Name: Kiowa Engineering Corporation	Telephone No.: 719--630-7342	Fax No.:	
Signature:	Date: 12/14/16	E-Mail Address: rwray@kiowaengineering.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



Seal (Optional)

ESA COMPLIANCE
MEADOWBROOK SUBDIVISION CLOMR
SAND CREEK EAST FORK, EL PASO COUNTY, COLORADO

According to the Unit 11 Map from the “Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Preble’s Meadow Jumping Mouse in Colorado”, the project site for the Meadowbrook Subdivision CLOMR is not located within the critical habitat for the Preble’s Meadow Jumping Mouse.

Furthermore according to the Information for Planning and Conservation (IPaC) on U.S. Fish and Wildlife Service website, there are no critical habitats at the location of the Meadowbrook Subdivision LOMR project site.

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: Sand Creek East Fork

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)

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

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model → Specify Model: _____
☐ 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*	FIRM Section V	416	6293.41	6293.41
Upstream Limit*	700' d/s of FIRM section X	2529	6319.02	6319.00

*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 4.1.0

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: EastForkSandCrk.prj	Plan Name: Duplicate Effective	File Name: EastForkSandCrk.prj	Plan Name: Duplicate Eff. Fldwy	NGVD 29
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
Existing or Pre-Project Conditions Model	File Name: EastForkSandCrk.prj	Plan Name: Existing Conditions	File Name:	Plan Name:	NGVD 29
Revised or Post-Project Conditions Model	File Name: EastForkSandCrk.prj	Plan Name: Proposed Conditions	File Name: EastForkSandCrk.prj	Plan Name: Proposed Floodway	NGVD 29
Other - (attach description)	File Name:	Plan Name:	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: NAD 83 State Plane U.S. feet, NGVD 1929

Source: Clark Land Surveying, Inc. Date: November, 2016

Accuracy: 1"=200', 1-foot contour interval

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.

NOTICE OF PUBLICATION

SPECIAL FLOOD HAZARD AREA AND BASE FLOOD ELEVATION REVISIONS FOR SAND CREEK EAST FORK IN EL PASO COUNTY, COLORADO

The El Paso County in cooperation with the Pikes Peak Regional Building Department Floodplain Administrator's Office, in accordance with National Flood Insurance Program regulation 65.7 (b)(1), hereby gives notice of the County's intent to revise the flood hazard information on Sand Creek East Fork generally located between Peterson Road and Marksheffel Road. Specifically, the flood hazards shall be revised for a segment of the Sand Creek East Fork beginning approximately 850 feet upstream of Peterson Road and continuing upstream a distance of approximately 2,100 feet to a point adjacent to F Street on the west and Cole View on the east. The flood hazard revisions are being proposed as part of a Conditional Letter of Map Revision (CLOMR) for a proposed project along Sand Creek East Fork. Channel improvements to stabilize the creek are being proposed as part of the Meadowbrook Subdivision development. Once the project has been completed, a Letter of Map Revision (LOMR) request should be submitted that will, in part, revise the following flood hazards along Sand Creek East Fork.

The floodway will be revised from approximately 850 feet upstream of Peterson Road to approximately 2,950 feet upstream of Peterson Road along Sand Creek East Fork.

Base Flood Elevations (BFEs) will increase and decrease along Sand Creek East Fork.

The SFHA will increase and decrease along Sand Creek East Fork.

Maps and detailed analysis of the floodplain revisions can be reviewed at the Pikes Peak Regional Building Department floodplain administration office located at 2880 International Circle, Colorado Springs, Colorado as well as at the offices of the El Paso County Development Services, 2880 International Circle Suite 110, Colorado Springs, Colorado 80910. Interested persons may call the PPRBD floodplain administrator at (719) 327-2898 Monday through Friday during normal business hours.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

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

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Flooding Source: Sand Creek East Fork

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: Channel Improvements

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

   Location of Structure: Approximately 2100-feet of channel near Meadowbrook Parkway and Highway 94

   Downstream Limit/Cross Section: Sta. 4+16 or FIRM lettered section V

   Upstream Limit/Cross Section: Sta. 25+29 or 700-feet downstream of FIRM lettered section X

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: Sand Creek East Fork

Name of Structure: Channel Improvements

1. Hydraulic Considerations

The channel was designed to carry 5,330 (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.

C. BRIDGE/CULVERT

Flooding Source: _____

Name of Structure: _____

1. This revision reflects (check one):

☐ Bridge/culvert not modeled in the 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): _____
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

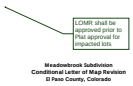
4. Sediment Transport Considerations

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.

Markup Summary

dsdparsons (1)



Subject: Callout
Page Label: 1
Lock: Unlocked
Status:
Checkmark: Unchecked
Author: dsdparsons
Date: 6/5/2017 1:41:22 PM
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LOMR shall be approved prior to Plat approval for impacted lots