



INNOVATIVE DESIGN. **CLASSIC RESULTS.**

**DRAINAGE MEMO FOR
BANNING LEWIS RANCH NORTH
PUD CONCEPT PLAN**

June 2019

Prepared for:
BLH No.1, LLC
111 S. TEJON STREET
COLORADO SPRINGS, CO 80903
(719) 593-2600

Job no. 2505.00



DRAINAGE MEMO FOR BANNING LEWIS RANCH NORTH PUD CONCEPT PLAN

Engineer's Statement

This report and plan for the drainage design of Banning Lewis Ranch North PUD Concept Plan was prepared by me (or under my direct supervision) and is correct to the best of my knowledge and belief. Said report and plan has been prepared in accordance with the City of Colorado Springs Drainage Design and Technical Criteria and is in conformity with the master plan of the drainage basin. I understand that the City of Colorado Springs does not and will not assume liability for drainage facilities designed by others. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

SIGNATURE (Affix Seal): _____
Kyle Campbell, Colorado P.E. No. 29794 Date

Developer's Statement

BLH No. 1, LLC hereby certifies that the drainage facilities for Banning Lewis Ranch North PUD Concept Plan shall be constructed according to the design presented in this report. I understand that the City of Colorado Springs does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that are submitted to the City of Colorado Springs pursuant to section 7.7.906 of the City Code; and cannot, on behalf of Banning Lewis Ranch North PUD Concept Plan, guarantee that final drainage design review will absolve **BLH No. 1, LLC** and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat does not imply approval of my engineer's drainage design.

BLH No. 1, LLC

Name of Developer

Authorized Signature Date

Printed Name

Title

111 S. Tejon Street
Colorado Springs, CO 80903

Address:

City of Colorado Springs Statement:

Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended.

For City Engineer Date
Conditions:



GENERAL DESCRIPTION

The Banning Lewis Ranch North PUD Concept Plan reflects a proposed 807.50-acre mixed-use development generally located north and south of existing Woodmen Road and east and west of the proposed north-south alignment of future Banning Lewis Parkway. The site is vacant other than a single farm/ranch area at the northwest corner of the intersection of Woodmen Road and future Banning Lewis Parkway.

EXISTING DRAINAGE CONDITIONS

The proposed site currently predominantly drains in a southerly direction as sheet flow and within four drainage corridors that cross under Woodmen Road. This area was studied in the "Sand Creek Drainage Basin Planning Study" by Kiowa Engineering Corporation in 1989. The Drainage Basin Planning Study anticipated that a majority of the Banning Lewis Ranch North PUD area would be developed as "Office/Retail/Commercial" (see "proposed land use" DBPS map attached). From west to east, the four DBPS defined drainage corridors are segment 85, 84, and combined 83 and 82, and 81. The approved Sand Creek Drainage Basin Planning Study reflects improvements in the drainage segments in order to convey developed flows to downstream regional Detention Facilities. No Regional Detention Facilities were anticipated within the Banning Liew Ranch North PUD area (see attachments) per the original DBPS.

More importantly, the overall site was also previously studied in the "Phase I and II Banning Lewis Ranch Master Development Drainage Plan Update" dated March 2013 by Kiowa Engineering Corporation. The attached "off-site basin hydrology" map is from that approved Master Development Drainage Plan with the proposed PUD Concept Plan boundary indicated.

The approved MDDP (and update) reflects a composite CN value of 60 which is reflective of urban single-family development (1/4-acre lots) for the Banning Lewis Ranch North area. This deviated from the land uses reflected in the DBPS, but does better emulate the anticipated land uses of the Banning Lewis Ranch North Development. The main component of the MDDP update was to introduce sub-regional Full Spectrum Detention to the area south of this site, as well as this site.

PROPOSED DRAINAGE CONDITIONS

At this time, while proposed land uses are known, no Development Plan or Final Plats are proposed to be submitted. Site specific Final Drainage Reports will be required for any development within this PUD

Concept Plan area that details full adherence to the City Drainage Criteria Manual, including the use of Full Spectrum Detention. Unless modified in future Final Drainage Reports, all previously approved drainage routing and detention facility design will be adhered to (see attached “developed” map from approved Master Development Drainage Plan). The design for this site will adhere to the approved MDDP approach of providing Full Spectrum Detention as Development takes place. Detention and stormwater treatment will take place both north and south of Woodmen Road, with exact locations of the facilities to be determined as development is proposed. The BLR MDDP update reflects basins OS-51, OS-52, OS-53, and OS-54 as the basins that incur the proposed PUD Concept Plan area. These basins correspond to Design Points at Woodman Road of 51, 52, 53, and 54. These Design Points correspond to the flowing available release rates from the area north of Woodman Road:

<u>BASIN</u>	<u>Q₅</u>	<u>Q₁₀₀</u>
51	32cfs	441cfs
52	41cfs	376cfs
53	77cfs	868cfs
54	32cfs	467cfs

Adherence to these anticipated flow rates entering the southerly existing portions of the Banning Lewis Ranch Development is proposed.

FLOODPLAIN STATEMENT

Portions of the PUD Concept Plan site are located within a designated F.E.M.A. 100-year floodplain, indicated on Map No. 08041C 0053 G of the Federal Emergency Management Agency’s Flood Insurance Rate Map of the City of Colorado Springs, El Paso County, Colorado, prepared by the National Flood Insurance Program, effective December 7, 2018. See appendix for map. The existing floodplain area is shown to be located within a proposed open space area.

DRAINAGE AND BRIDGE FEES

This site lies within Sand Creek Drainage Basin. Drainage and bridge fees will be defined in future Final Drainage Reports as Development Plans and Final Plats are submitted.



SUMMARY

In summary, the proposed PUD Concept Plan was previously included in the Phase I and II Banning Lewis Ranch Master Development Drainage Plan Update, and at this time, no changes to the approved drainage patterns are proposed. Future Final Drainage Reports will detail any possible modifications to proposed drainage patterns/systems once specific land uses and layouts are known. This development is proposed to conform with all previously approved reports which reflect this site.

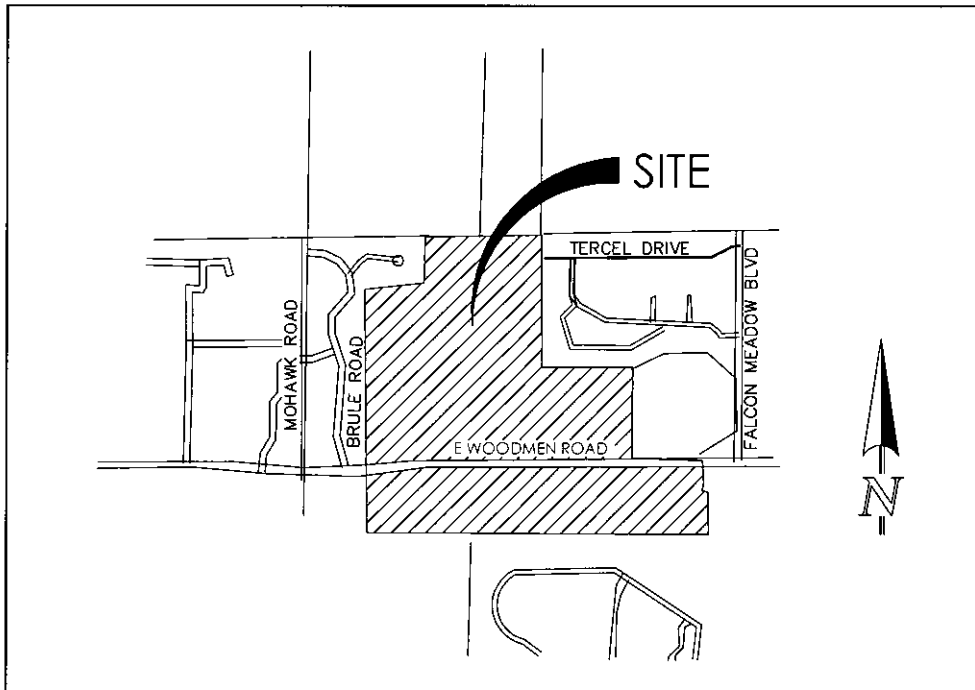
PREPARED BY:

Kyle R. Campbell, P.E.
Division Manager

db/250500/REPORTS/DRAINAGE MEMO.docx



VICINITY MAP



VICINITY MAP
NOT TO SCALE

**FEMA FLOODPLAIN
MAP**

**SAND CREEK
DBPS
PROPOSED LAND USE MAP**

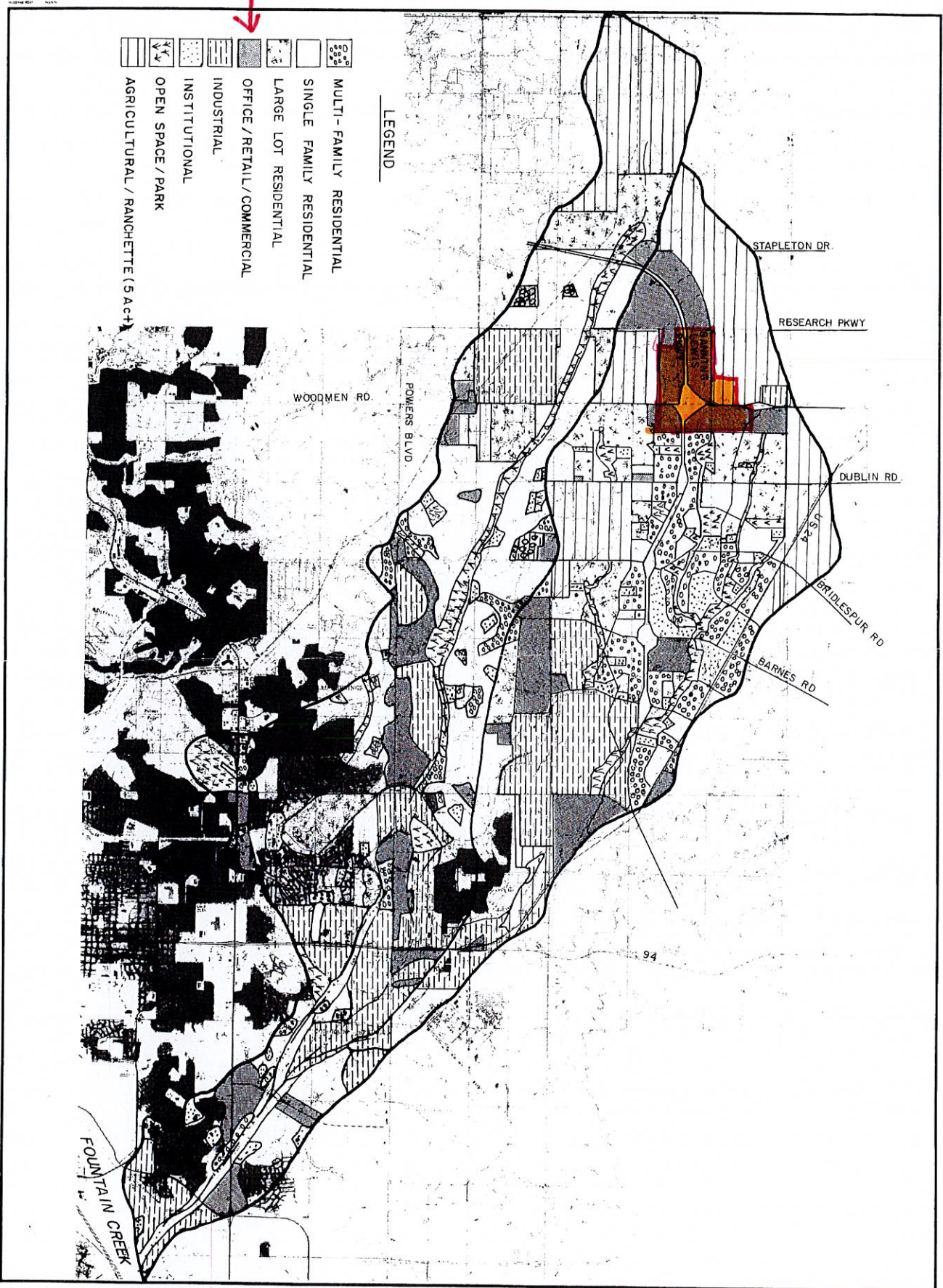


FIG. II-3
7

**SAND CREEK DRAINAGE
BASIN PLANNING STUDY**

PROPOSED LAND USE

Project No. 90-04-03
Date: 9/90
Drawn: EAK
Checked:
Reviewed:

Kiowa Engineering Corporation
419 W. Bijou Street
Colorado Springs, Colorado
80905-1308

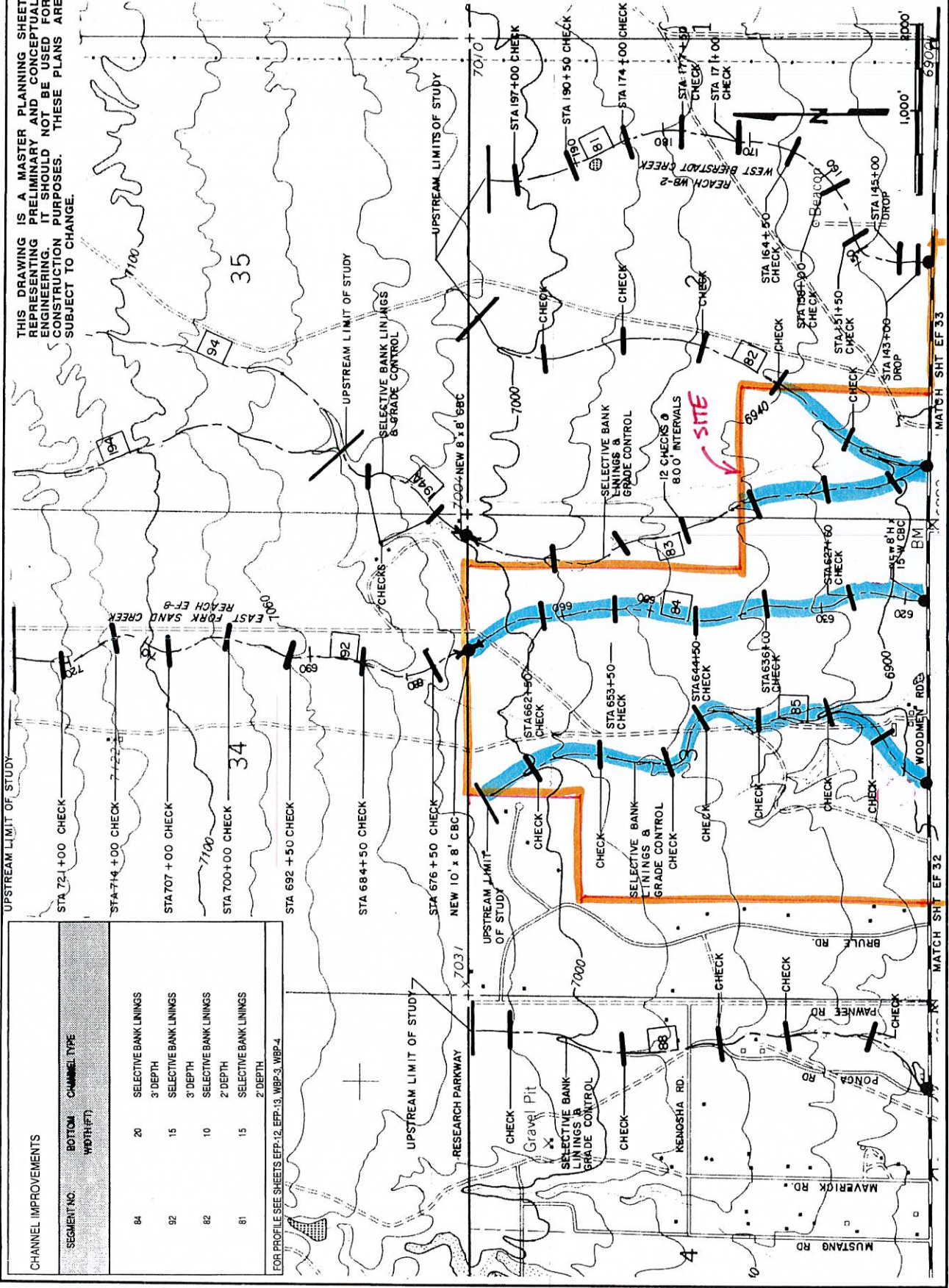
**SAND CREEK
DBPS
PRELIMINARY DESIGN PLANS**

THIS DRAWING IS A MASTER PLANNING SHEET REPRESENTING PRELIMINARY AND CONCEPTUAL ENGINEERING. IT SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES. THESE PLANS ARE SUBJECT TO CHANGE.

UPSTREAM LIMIT OF STUDY

CHANNEL IMPROVEMENTS	
SEGMENT NO.	BOTTOM WIDTH (FT) CHANNEL TYPE
84	20 SELECTIVE BANK LININGS 3' DEPTH
92	15 SELECTIVE BANK LININGS 3' DEPTH
82	10 SELECTIVE BANK LININGS 2' DEPTH
81	15 SELECTIVE BANK LININGS 2' DEPTH

FOR PROFILE SEE SHEETS EFP-12, EFP-13, WBP-3, WBP-4



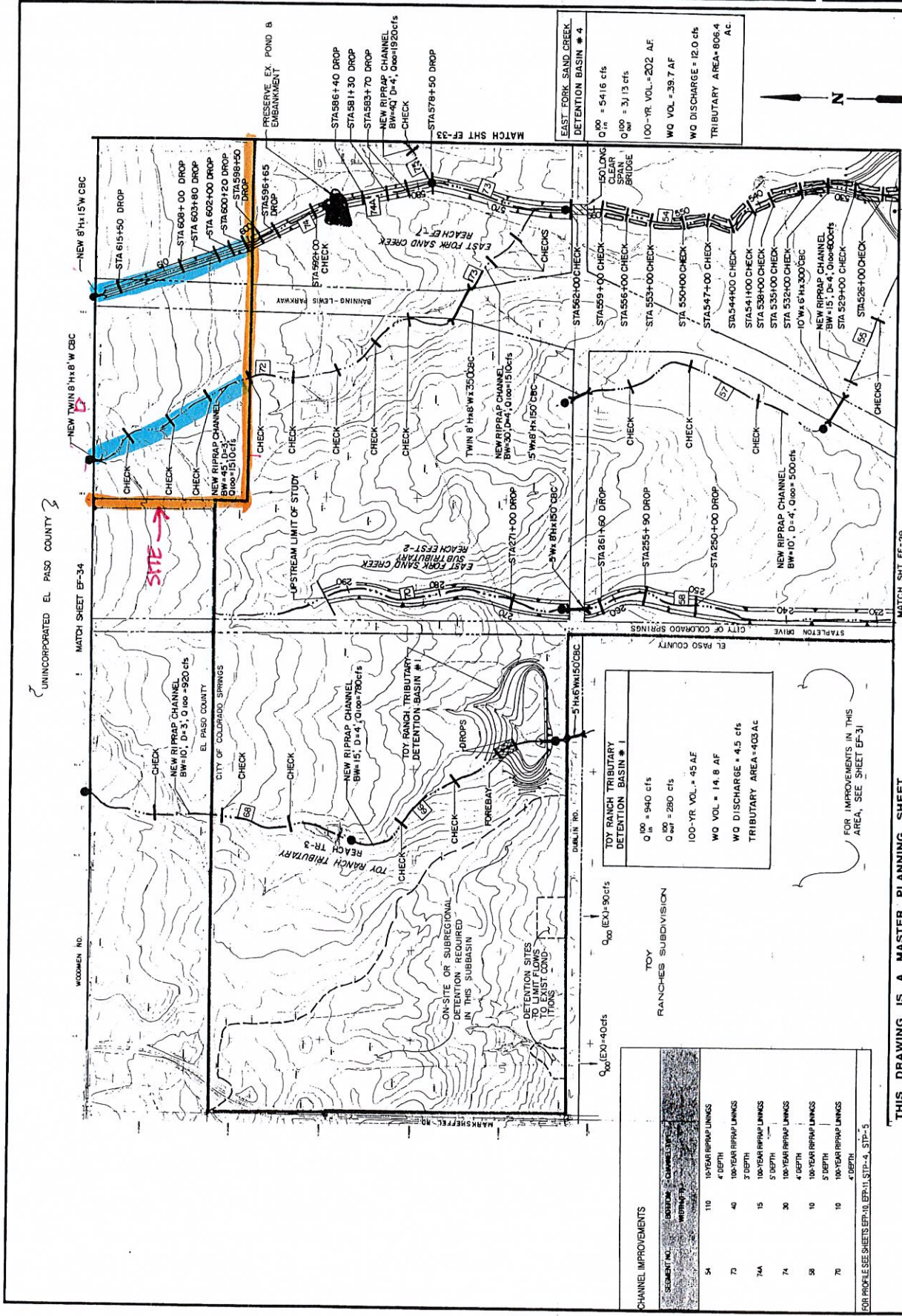
Kiowa Engineering Corporation
419 W. Bijou Street
Colorado Springs, Colorado
80905-1308

SAND CREEK DRAINAGE
BASIN PLANNING STUDY
PRELIMINARY DESIGN PLANS

Project No.	
Date	
Design	
Drawn	
Reviewed	

EF-34

Project No.	6811-23
Drawn By	JYC
Checked By	EAK
Scale	
Date	



UNINCORPORATED EL PASO COUNTY 3

MATCH SHEET EF-34

WOODMEN RD.

MARKSHEER RD.

EL PASO COUNTY

CITY OF COLORADO SPRINGS

EL PASO COUNTY

EL PASO COUNTY

NEW TWIN 8' Hx 8' W CBC
 STA 615+50 DROP

NEW TWIN 8' Hx 8' W CBC
 STA 600+00 DROP
 STA 603+80 DROP
 STA 602+00 DROP
 STA 600+20 DROP
 STA 598+50 DROP

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

RESERVE EX. POND B
 EMBANKMENT

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=15', D=4', Q=0.00=780cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=15', D=4', Q=0.00=800cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

NEW RIPRAP CHANNEL
 BW=10', D=4', Q=0.00=500cfs

SEGMENT NO.	DEPTH	CHANNEL TYPE	W/THIN P.
54	10	10-YEAR RIPRAP LINKS	4'-DEPTH
70	40	100-YEAR RIPRAP LINKS	3'-DEPTH
74A	15	100-YEAR RIPRAP LINKS	5'-DEPTH
74	30	100-YEAR RIPRAP LINKS	4'-DEPTH
58	10	100-YEAR RIPRAP LINKS	5'-DEPTH
70	10	100-YEAR RIPRAP LINKS	4'-DEPTH

TOY RANCH TRIBUTARY
 DETENTION BASIN # 1
 Q₁₀₀ = 540 cfs
 Q₅₀ = 280 cfs
 100-YR VOL. = 45 AF
 WQ VOL. = 14.8 AF
 WQ DISCHARGE = 4.5 cfs
 TRIBUTARY AREA = 403 ac

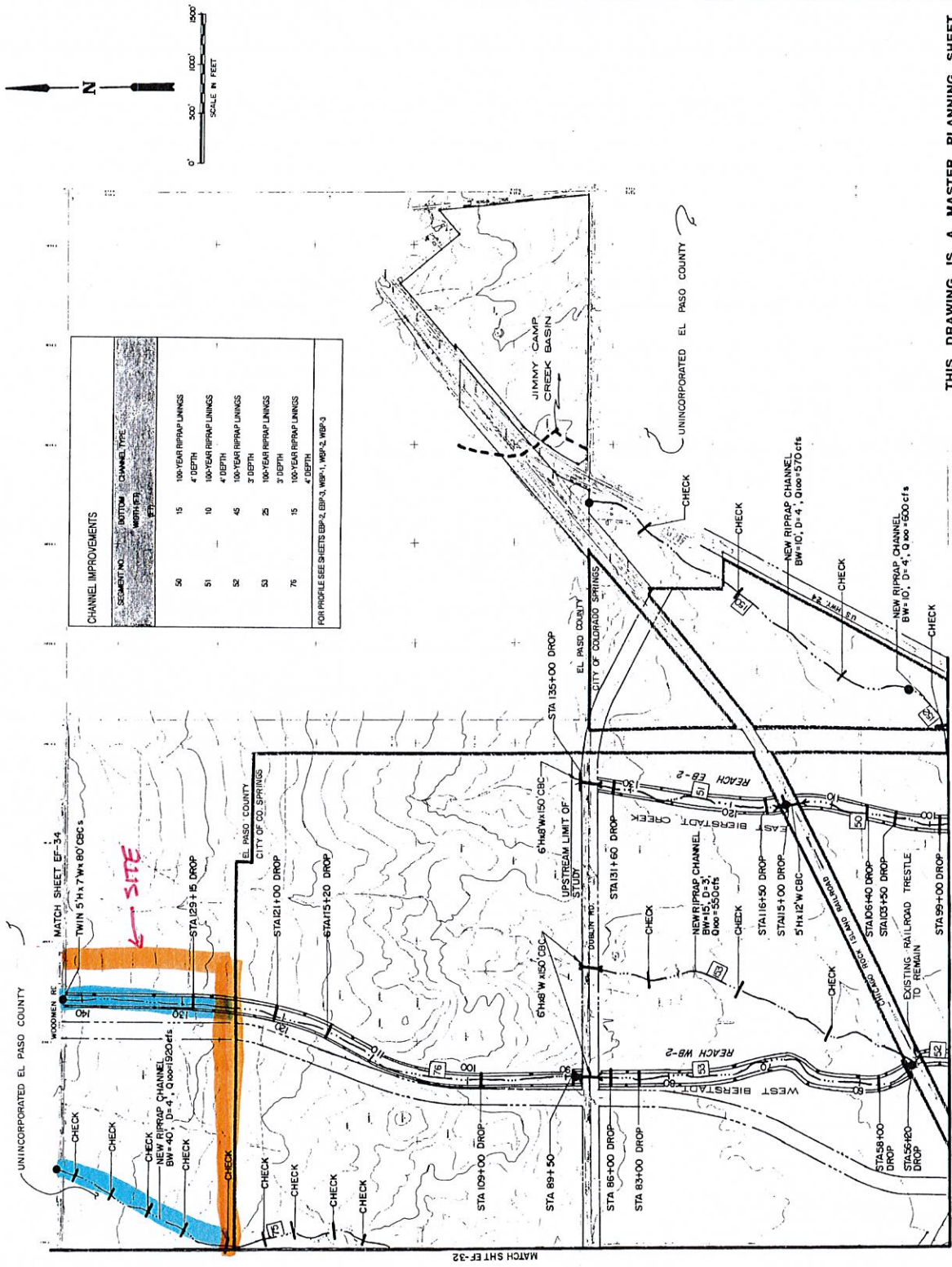
TOY RANCH TRIBUTARY
 DETENTION BASIN # 4
 Q₁₀₀ = 541.6 cfs
 Q₅₀ = 311.3 cfs
 100-YR VOL. = 202 AF
 WQ VOL. = 39.7 AF
 WQ DISCHARGE = 12.0 cfs
 TRIBUTARY AREA = 806.4 ac

FOR IMPROVEMENTS IN THIS AREA, SEE SHEET EF-31

THIS DRAWING IS A MASTER PLANNING SHEET REPRESENTING PRELIMINARY AND CONCEPTUAL ENGINEERING. IT SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES. THESE PLANS ARE SUBJECT TO CHANGE.

FOR PROFILES SEE SHEETS EF-10, EF-11, STP-4, STP-5

Project No.	BB11123
Date:	5/89
Drawn by:	JYC
Checked:	EAK
Reviewed:	

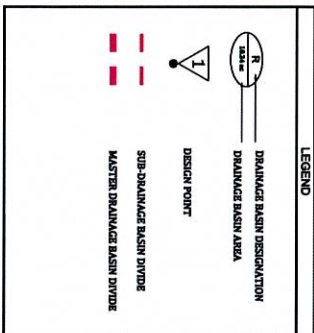
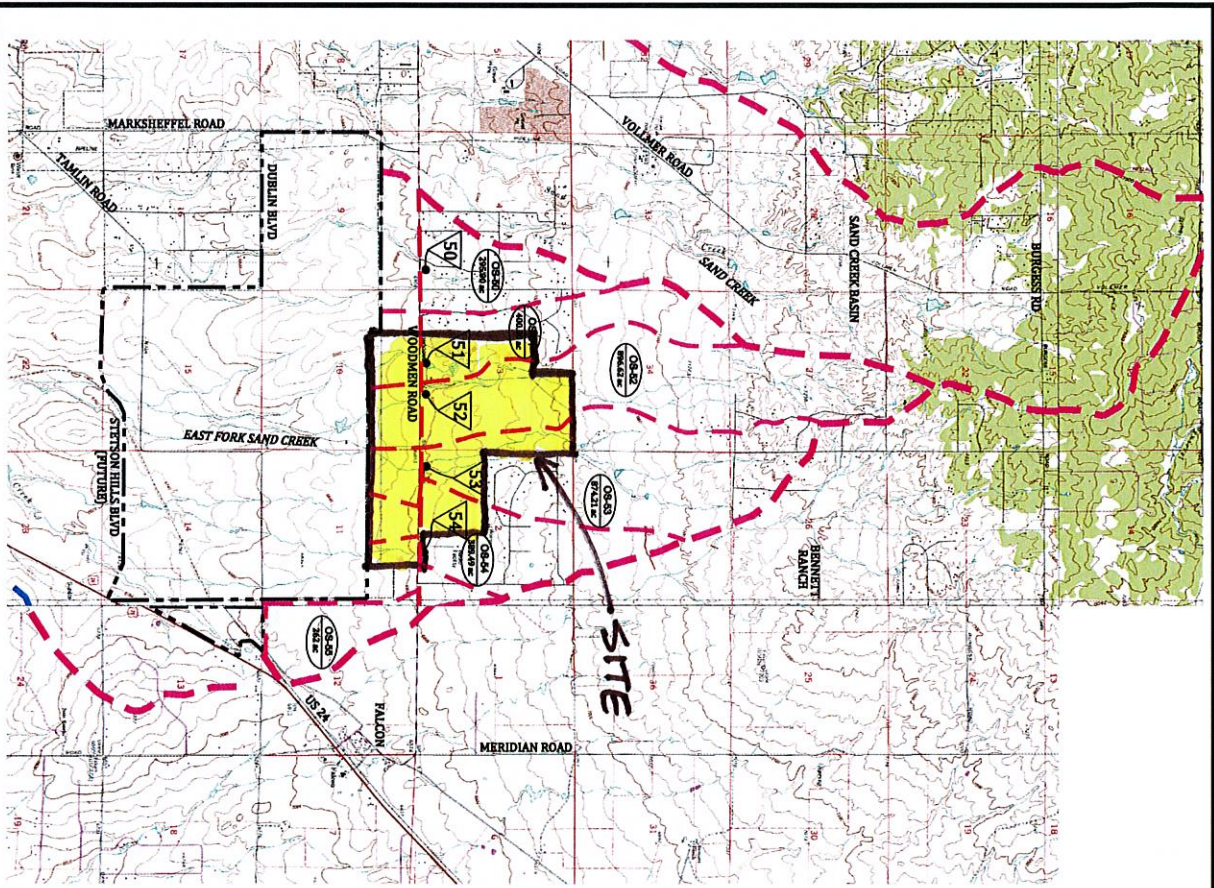


SEQUENCE NO.	SECTION	CHANNEL TYPE	DEPTH
56	15	100-YEAR RIPRAP LININGS	4' DEPTH
51	10	100-YEAR RIPRAP LININGS	4' DEPTH
52	45	100-YEAR RIPRAP LININGS	3' DEPTH
53	25	100-YEAR RIPRAP LININGS	3' DEPTH
76	15	100-YEAR RIPRAP LININGS	4' DEPTH

FOR PROFILE SEE SHEETS EP-2, EP-3, WP-1, WP-2, WP-3

THIS DRAWING IS A MASTER PLANNING SHEET
 REPRESENTING PRELIMINARY AND CONCEPTUAL
 ENGINEERING. IT SHOULD NOT BE USED FOR
 CONSTRUCTION PURPOSES. THESE PLANS ARE
 SUBJECT TO CHANGE.

**BANNING LEWIS RANCH
MDDP UPDATE
OFF-SITE BASIN
HYDROLOGY MAP**



Exh.1

Project No.	1282
Date	12/19/2012
Drawn By	BMV
Checked By	BMV
Approved	

**BANNING LEWIS RANCH
MASTER DEVELOPMENT DRAINAGE PLAN UPDATE
OFF-SITE BASIN HYDROLOGY MAP
CITY OF COLORADO SPRINGS, COLORADO**

Kiowa
Engineering Corporation

1804 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

2012 City of Colorado Springs, Planning Department. All Rights Reserved.