
APPENDIX C

***BOULDER CREEK STARTING WATER
SURFACE ELEVATIONS AND
UPSTREAM TIE-IN INFORMATION***



Owner-Project

Boulder Creek

By

GTK

Date

7/2/2009

Subject

STATIONS WATER SURFACE ELEVATIONS

Checked By

Date

- ACE CROSS SECTION 112 (D/S LIMIT OF STUDY) IS LOCATED BETWEEN MULLER CROSS SECTIONS 103 AND 104.
- MULLER CROSS SECTIONS 103 AND 104 ARE LOCATED AT MULLER STATIONS 891+10 AND 897+10, RESPECTIVELY.
- ACE CROSS SECTION 112 IS LOCATED AT MULLER STATION 895+05

CROSS SECTION	WATER SURFACE ELEVATION (FT, NAVD)			
	10-YR	50-YR	100-YR	500-YR
MULLER 103 ^a	5143.6	5145.6	5146.1	5147.7
MULLER 104 ^a	5147.5	5149.0	5149.8	5151.0
ACE 112 ^b	5146.2	5147.8	5148.5	5149.9
ACE 112 (FT, NAVD) ^c	5149.2	5150.8	5151.5	5152.9

^a FROM "LOWER BOULDER CREEK FLOOD HAZARD AREA DELINEATION," MULLER ENGINEERING COMPANY, MARCH 1983

^b COMPUTED BY LINEAR INTERPOLATION

^c DETERMINED BY APPLYING +3.0 FT CONVERSION FROM NAVD TO NAD83, (CONVERSION FROM CITY OF BOULDER AT BM R-2-3 AT D/S LIMIT OF STUDY)

25-YR WSEL

Q₁₀ = 3,650 CFS

Q₆₀ = 10,100 CFS

Q₂₅ = 7,010 CFS

ESTIMATE 25-YR WSEL BY LINEAR INTERPOLATION:

WSEL₂₅ = 5149.2 + ((5150.8 - 5149.2) / (10,100 - 3,650)) * (7,010 - 3,650)

∴ WSEL₂₅ = 5150.0 FT, NAVD

THIS INFORMATION WAS SUPERSEDED OCTOBER 2012. WSEL TIE-INS ARE NOW BASED ON FLOOD PROFILES PUBLISHED IN THE DECEMBER 2012 FIS (SEE PRECEDING PAGES).



Owner-Project
 BOULDER CREEK

By
 GJK

Date
 10/6/2009

Subject
 UPSTREAM WATER SURFACE PROFILE TIE-IN

Checked By

Date

- ACE CROSS SECTION 37003 (U/S LIMIT OF STUDY) IS LOCATED VIRTUALLY AT MULLER CROSS SECTION 76.2 (MULLER STATION 1264+80)
- 100-YEAR WATER SURFACE ELEVATION AT MULLER CROSS SECTION 76.2 IS 5451.0 FT, NGVD (FROM "BOULDER CREEK FLOOD HAZARD AREA DELINEATION," MULLER ENGINEERING COMPANY, JANUARY 1983)
- CONVERSION FROM NGVD TO NAVD IS +3.25 FT (CONVERSION DATA FROM CITY OF BOULDER AT BM B-3N-1 AT U/S STUDY LIMIT)

MULLER
 WSEL |_{100 @ XS 76.2} = 5451.0 + 3.25 = 5454.25 FT, NAVD

ACE
 WSEL |_{100 @ 37003} = 5454.62 FT, NAVD

• $\Delta = \text{ACE WSEL} - \text{MULLER WSEL}$
 $= 5454.62 - 5454.25 = 0.37 \text{ FT} < 0.5 \text{ FT OK}$

THIS INFORMATION WAS SUPERSEDED OCTOBER 2012. WSEL TIE-INS ARE NOW BASED ON FLOOD PROFILES PUBLISHED IN THE DECEMBER 2012 FIS (SEE PRECEDING PAGES).

MATCH LINE - SHEET 5



E 2,085,000

E 2,084,000

E 2,083,000

E 2,082,000

E 2,085,000

E 2,084,000

E 2,083,000

E 2,082,000

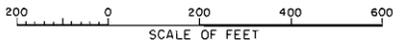
N 261,000

N 260,000

N 259,000

N 257,000

N 256,000



SCALE OF FEET

MATCH LINE - SHEET 3

DATUM IS MEAN SEA LEVEL

HYDROLOGY AND HYDRAULICS COMPLETED BY OMAHA DISTRICT CORPS OF ENGINEERS

GROUND CONTROL SURVEY;
AERIAL PHOTOGRAPHY;
TOPOGRAPHIC MAPPING BY
CONTOUR INTERVAL: 2 FEET

DELTA AERIAL SURVEYS,
INC.
DATE FLOWN 4/29/79

MULLER ENGINEERING COMPANY, INC.
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(303) 232-9340

DESIGNED COE
DRAWN JHK, JDM
CHECKED KGS, LAM
REVISED

DATE 1/83
DATE 1/83
DATE

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
COLORADO WATER CONSERVATION BOARD
BOULDER COUNTY

FLOOD HAZARD AREA DELINEATION
LOWER BOULDER CREEK

FLOODPLAIN MAP
STA 92+00 TO 870+90

SHEET 4
OF 23
MEC JOB NO. 8218

FLOODING SOURCE			10-YEAR FLOODPLAIN DATA		50-YEAR FLOODPLAIN DATA		500-YEAR FLOODPLAIN DATA	
IDENTIFICATION	CROSS SECTION	STATION ¹	DISCHARGE	FLOOD ELEV. (MSL)	DISCHARGE	FLOOD ELEV. (MSL)	DISCHARGE	FLOOD ELEV. (MSL)
Fourmile Canyon Creek	97	856+10	3550	5131.6	9950	5134.0	29,300	5136.0
	98	864+50	3600	5133.1	10,000	5135.5	29,400	5137.9
	99	869+20	3600	5134.8	10,000	5136.9	29,400	5140.0
	100	874+00	3600	5138.1	10,050	5139.2	29,500	5141.3
	101	881+20	3600	5140.3	10,050	5142.0	29,500	5143.4
	102	885+75	3650	5141.0	10,100	5142.8	29,600	5145.1
	103	891+10	3650	5143.6	10,100	5145.6	29,600	5147.7
	104	897+10	3650	5147.5	10,100	5149.0	29,600	5151.0
	105	902+60	3400	5148.2	9400	5150.6	27,200	5153.1
	106	909+80	3400	5148.7	9400	5151.4	27,200	5154.8
North 66th Street	107	915+60	3400	5149.0	9400	5151.8	27,200	5155.4
	108	922+40	3400	5149.9	9400	5152.7	27,200	5156.9
	109	929+00	3400	5159.5	9400	5161.6	27,200	5164.0
	110	934+05	3400	5161.9	9400	5164.5	27,200	5166.6
	112	935+00	3400	5162.2	9400	5166.4	27,200	5168.6
	113	939+60	3400	5164.2	9400	5166.8	27,200	5169.2
	114	946+20	3400	5166.9	9400	5168.5	27,200	5171.6
South Boulder Creek	115	954+06	3400	5169.8	9400	5171.1	27,200	5173.7
	116	959+00	3500	5172.0	9400	5173.4	27,200	5175.9
	117	965+00	3500	5174.7	9400	5176.0	27,200	5178.4
	118	970+00	3500	5177.5	9400	5178.9	27,200	5181.3
	119	974+90	3450	5179.5	(4450)	5180.7	(5,400)	5182.9
	120	983+60	3450	5182.2	(4450)	5182.5	(5,400)	5183.6
Valmont Drive	121	990+30	3450	5186.5	(4450)	5187.2	(5,400)	5188.0
	122	993+00	3450	5189.7	(4450)	5190.9	(5,400)	5191.8
	124	994+50	3450	5191.7	(4450)	5194.5	(5,400)	5196.8
Union Pacific Railroad	125	996+90	3450	5191.9	(3550)	5194.6	(1,200)	5196.9
	127	998+90	3450	5192.2	(3550)	5194.7	(1,200)	5196.9
Valley View Road	128	1005+20	3450	5193.2	8400	5196.0	18,600	5197.9
	129	1010+50	3450	5197.1	8400	5198.7	18,600	5200.7
Upstream Study Limit								

¹Distance in feet above mouth

() Discharge represents estimated flow in Cross Section. For total discharge refer to Figure 3 "Discharge Probability Profiles"

Hydrology and Hydraulics completed
by Omaha District Corps of Engineers.

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URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
COLORADO WATER CONSERVATION BOARD
BOULDER COUNTY

FLOODPLAIN REFERENCE DATA
LOWER BOULDER CREEK

TABLE
III
CONT.

FLOODING SOURCE			100-YEAR FLOODPLAIN DATA				FLOODWAY DATA			
IDENTIFICATION	CROSS SECTION	STATION ¹	100yr. DISCHARGE (CFS)	THALWEG ELEV.(MSL)	FLOOD ELEV. (MSL)	FLOODPLAIN WIDTH (FT)	FLOODWAY WIDTH ²			FLOODWAY ELEV. (MSL)
							LEFT (FT)	RIGHT (FT)	TOTAL (FT)	
Fourmile Canyon Creek	97	856+10	14,200	5125.3	5135.1	3850 *	180	360	540	5135.6
	98	864+50	14,300	5128.9	5136.6	3850 *	600	40	640	5137.0
	99	869+20	14,300	5131.9	5137.9	3440 *	735	45	780	5138.4
	100	874+00	14,350	5133.6	5139.9	2975 *#	960	100	1060	5140.3
	101	881+20	14,350	5137.3	5142.6	3570 *#	1450	80	1530	5143.1
	102	885+75	14,400	5138.3	5143.6	2670 #	1400	90	1490	5144.5
	103	891+10	14,400	5138.8	5146.1	1775 #	1280	50	1330	5146.9
	104	897+10	14,400	5140.5	5149.8	2040 *	350	138	488	5150.1
	105	902+60	13,300	5141.3	5151.6	1045	530	80	610	5152.2
	106	909+80	13,300	5141.2	5152.6	1255	1140	86	1226	5153.0
North 66th Street	107	915+60	13,300	5141.8	5153.0	1260 *	1210	30	1240	5153.4
	108	922+40	13,300	5144.5	5154.0	1965 *	838	10	848	5154.2
	109	929+00	13,300	5154.6	5162.5	2240	450	250	700	5162.6
	110	934+05	13,300	5156.2	5165.2	1250	260	540	800	5165.4
	112	935+00	13,300	5157.7	5167.1	2040	320	630	950	5167.4
	113	939+60	13,300	5158.6	5167.6	1140	320	560	880	5168.0
	114	946+20	13,300	5161.4	5169.3	1610	250	650	900	5169.6
South Boulder Creek	115	954+06	13,300	5165.2	5171.8	1540 *#	750	150	900	5172.8
	116	959+00	13,300	5167.9	5174.1	1700 *	735	135	870	5174.6
	117	965+00	13,300	5169.8	5176.7	2190	460	280	740	5177.4
	118	970+00	13,300	5172.6	5179.5	2140	310	620	930	5180.4
	119	974+90	(4,800)	5173.7	5181.2	1850 *#	80	360 800 1060**	700	5182.0
	120	983+60	(4,800)	5177.1	5182.8	1290 #	20	295	315	5183.8
	121	990+30	(4,800)	5179.9	5187.5	940 *#	30	20	50	5188.3
Valmont Drive	122	993+00	(4,800)	5180.9	5191.2	2250 *	20	28 1365 1620**	303	5192.1
	124	994+50	(4,800)	5181.9	5195.4	2990	85	60 1140 1565**	570	5196.0
	125	996+90	(2,800)	5183.9	5195.5	1370 #	400	46	446	5196.1
Union Pacific R.R.	127	998+90	(2,800)	5184.9	5195.6	2675 #	700	63 450 1480**	1793	5196.2
	128	1005+20	(11,000)	5187.2	5196.5	2600 *#+	370	910	1280	5197.0
Valley View Road	129	1010+50	(11,000)	5189.1	5199.5	2750 *#°	680 ++	51	731	5199.9
Upstream Study Limit										

¹Distance in feet above mouth

²From center of channel looking downstream

* Width includes island area(s) and/or other high ground between outer floodplain boundaries

Cross Section does not extend to high ground

+ Width measured to $\frac{1}{2}$ of South Boulder Creek channel

° Width does not include South Boulder Creek channel

** Split floodway; Area between 1st and 2nd numbers not included in floodway

++ Floodway limit located 130 feet past end of Cross Section

() Discharge represents estimated flow in Cross Section. For total discharge refer to Figure 3 "Discharge Probability Profiles"

Hydrology and Hydraulics completed by Omaha District Corps of Engineers.

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COLORADO WATER CONSERVATION BOARD
BOULDER COUNTY

100-YEAR FLOODPLAIN AND FLOODWAY
REFERENCE DATA
LOWER BOULDER CREEK

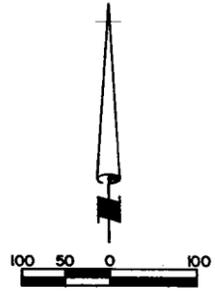
TABLE
IV
CONT.

2056000E

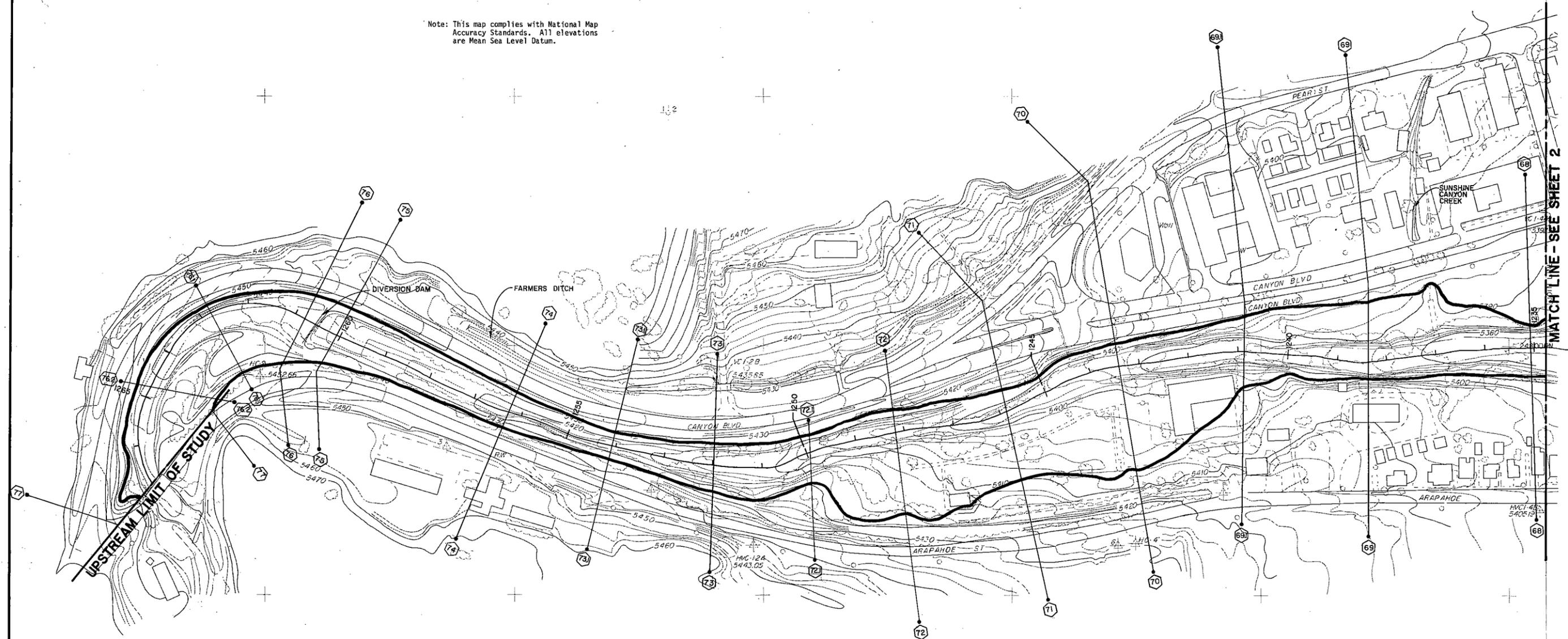
2057000E

2058000E

249000N



Note: This map complies with National Map Accuracy Standards. All elevations are Mean Sea Level Datum.



FLOOD PROFILE: SHEET 17
BRIDGE CROSSINGS: SHEET 19

GROUND CONTROL SURVEY BY: MILLER & ERNSTSEN ASSOC.
AERIAL PHOTOGRAPHY BY: SCHARF AND ASSOC. INC.
TOPOGRAPHIC MAPPING BY: REIDS AERIAL MAPPING
CONTOUR INTERVAL: 2' DATE FLOWN: 4-23-81

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DESIGNED KGS, BLE DATE
DRAWN JHK, JDM DATE 7/82
CHECKED LAM DATE 12/82
REVISED DATE

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CITY OF BOULDER

FLOOD HAZARD AREA DELINEATION
BOULDER CREEK

BOULDER CREEK
FLOOD PLAIN: 1266+80 TO 1234+80

SHEET 1
OF 19
MEC JOB NO. 8130

FLOODING SOURCE			FLOODPLAIN DATA				FLOODWAY DATA			
IDENTIFICATION	CROSS SECTION	STATION ¹	100 yr. DISCHARGE (CFS)	THALWEG ELEV (MSL)	100 yr. FLOOD ELEV. (MSL)	100 yr. FLOODPLAIN WIDTH (FT)	FLOODWAY WIDTH ²			FLOODWAY ELEV. (MSL)
							LEFT (FT)	RIGHT (FT)	TOTAL (FT)	
Arapahoe Ave. (Canyon Mouth)	74	1256+25	11,650	5419.6	5433.7	84				
	75	1260+10	11,650	5426.1	5441.0	128				
	76	1260+80	11,650	5431.2	5441.2	152				
	76.1	1262+80	11,650	5435.7	5445.5	147				
	76.2	1264+80	11,650	5441.2	5451.0	160				
	77	1266+80	11,650	5444.1	5455.6	220				
								FLOODWAY DATA WILL BE PUBLISHED AT A LATER DATE. CONTACT: URBAN DRAINAGE & FLOOD CONTROL DISTRICT OR CITY OF BOULDER FOR DETAILS.		

1. Distance in feet above mouth.
2. From center of channel looking downstream.

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FLOODPLAIN AND FLOODWAY REFERENCE DATA
BOULDER CREEK

URBAN DRAINAGE & FLOOD CONTROL DISTRICT
 FLOOD HAZARD AREA DELINEATION
CITY OF BOULDER

TABLE
 II
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