

**FINAL DRAINAGE REPORT  
FOR  
SADDLEHORN RANCH – FILING 3**

**Prepared For:  
ROI Property Group, LLC  
2495 Rigdon Street  
Napa, CA 94558  
(707) 365-6891**

**February 1st, 2024  
Project No. 25142.05**

**Prepared By:  
JR Engineering, LLC  
5475 Tech Center Drive  
Colorado Springs, CO 80919  
719-593-2593**

**El Paso County PCD File No.:  
SF234**

east to Drainageway MS-06. Basin UD5 flows east to Drainageway MS-06. Basin UD4 represents Drainageway MS-06 and the runoff generated along the Filing 3 boundary. In the proposed condition, Basins UD1, UD2, UD3, and most of UD5 will be rural 2.5 acre lots with an Imperviousness = 6.2% and will be excluded from permanent stormwater quality management per Section I.7.1.B.5 of the ECM – Stormwater Quality Policy and Procedures. Per the MS4 Permit Exclusion Map, 0.53 acres of Basin UD5, which consists of paved roads at 45% imperviousness, will be excluded per Section I.7.1.C.1. shown in red. Additionally, the entirety of Basin UD4, which is a non-jurisdictional wetland to remain undeveloped at 2% impervious, will not be detained in PBMP per section I.7.1.B.7.

Basin OS consists of Sub-basins OS1-OS5 combining for a total of 9.35 acres of offsite area. In their existing condition, these basins are paved roadway (Curtis Road & Judge Orr Road) and undeveloped area. In the proposed condition, these basins will be improved with 8’ of pavement width for both the Curtis Road and Judge Orr Road stretches. Basins OS1-OS4 will flow on-site prior to being captured in a roadside swale and conveyed to a proposed full spectrum detention pond prior to being released into Drainageway MS-06 or Drainageway WF-R7A. Basin OS5 will not be detained by a pond due to its location relative to the site. Basin OS5 adds an additional paved area of 0.55 acres to the existing Curtis Road. Per Appendix I Section 7.1.B.2 of the El Paso County Engineering Criteria Manual, this is allowable as less than 1 acre of paved area per mile is being added to the existing roadway. The undisturbed pervious area within Basin OS5, which comprises the rest of the basin, will be excluded per Exclusion I.7.1.C.1 of the El Paso County Engineering Criteria Manual. The other portion that could not be captured due to its proximity to Drainageway MS-06, is located along San Isidro Trail. This area is 0.54 acres and is comprised of open space and asphalt. Due to topography this area will be excluded per Exclusion I.7.1.C.1 of the El Paso County Engineering Criteria Manual

A summary table of proposed basin parameters and flow rates are presented in Appendix B.

Basin C runoff along with runoff from Sub-Basins OS1 and OS2 will be captured in roadside swales and conveyed to the proposed Pond C. This full spectrum pond will release treated flows at less than historic rates to minimize adverse impacts downstream. Basin D along with runoff from Sub-Basins OS3 and OS4 will be captured in roadside swales and conveyed to the proposed Pond D. Basin E will be captured in roadside swales and conveyed to the proposed Pond E. Pond C and Pond E will discharge into Drainageway MS-06. Pond D will discharge into Drainageway WF-R7A.

See Table 3 below for proposed Filing 3 pond parameters.

Table 3: Pond Summary

Tributary Sub-Basin	Pond Name	Tributary Acres	WQ Volume (ac-ft)	Total Detention Volume (ac-ft)	Provided Volume (ac-ft)	Maximum 100-Year Discharge (cfs)
C	POND C	96.84	0.737	3.064	4.235	41.2
D	POND D	78.02	0.673	3.026	3.127	60.9
E	POND E	18.37	0.086	0.419	0.424	9.2

If the rest of Basin OS5 is not being disturbed it does not require treatment, because no development is occurring. I.7.1.C.1 allows for 20% of the applicable development to be excluded up to 1 acre, but since this area is greater than 1 acre if there is disturbance here that would not apply. Clarify what is happening in this area.

2023 Financial Assurance Estimate Form  
(with pre-plat construction)

Updated: 12/8/2022

PROJECT INFORMATION		
Saddlehorn Filing 3	4/13/2023	SF-23-004
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction)		
						% Complete	Remaining	
<b>SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)</b>								
<b>Earthwork</b>								
less than 1,000; \$5,300 min		CY	\$ 8.00	=	\$ -		\$ -	
1,000-5,000; \$8,000 min		CY	\$ 6.00	=	\$ -		\$ -	
5,001-20,000; \$30,000 min		CY	\$ 5.00	=	\$ -		\$ -	
20,001-50,000; \$100,000 min		CY	\$ 3.50	=	\$ -		\$ -	
50,001-200,000; \$175,000 min	147,182	CY	\$ 2.50	=	\$ 367,955.00		\$ 367,955.00	
greater than 200,000; \$500,000 min		CY	\$ 2.00	=	\$ -		\$ -	
Permanent Erosion Control Blanket	11,656.00	SY	\$ 8.00	=	\$ 93,248.00		\$ 93,248.00	
Permanent Seeding (inc. noxious weed mgmnt.) & Mulching	26.00	AC	\$ 1,875.00	=	\$ 48,750.00		\$ 48,750.00	
Permanent Pond/BMP (provide engineer's estimate)	1	EA	\$ 398,297	=	\$ 398,297.00		\$ 398,297.00	
Concrete Washout Basin	1	EA	\$ 1,089.00	=	\$ 1,089.00		\$ 1,089.00	
Inlet Protection	19	EA	\$ 202.00	=	\$ 3,838.00		\$ 3,838.00	
Outlet Protection	19	EA	\$ 202.00	=	\$ 3,838.00		\$ 3,838.00	
Rock Check Dam	107	EA	\$ 605.00	=	\$ 64,735.00		\$ 64,735.00	
Safety Fence	11,960	LF	\$ 3.00	=	\$ 35,880.00		\$ 35,880.00	
Sediment Basin	3	EA	\$ 2,132.00	=	\$ 6,396.00		\$ 6,396.00	
Sediment Trap		EA	\$ 500.00	=	\$ -		\$ -	
Silt Fence	22,874	LF	\$ 3.00	=	\$ 68,622.00		\$ 68,622.00	
Slope Drain	266	LF	\$ 40.00	=	\$ 10,640.00		\$ 10,640.00	
Straw Bale		EA	\$ 31.00	=	\$ -		\$ -	
Straw Wattle/Rock Sock	1,640	LF	\$ 7.00	=	\$ 11,480.00		\$ 11,480.00	
Surface Roughening		AC	\$ 250.00	=	\$ -		\$ -	
Temporary Erosion Control Blanket	62,284	SY	\$ 3.00	=	\$ 186,852.00		\$ 186,852.00	
Temporary Seeding and Mulching		AC	\$ 1,666.00	=	\$ -		\$ -	
Vehicle Tracking Control	4	EA	\$ 2,867.00	=	\$ 11,468.00		\$ 11,468.00	
*Gravel Maintenance Access Road	3,486	SY	\$ 50.00	=	\$ 174,300.00		\$ 174,300.00	
<i>[insert items not listed but part of construction plans]</i>				=	\$ -		\$ -	
MAINTENANCE (35% of Construction BMPs)					=	\$ 202,317.15		\$ 202,317.15
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)								
<b>Section 1 Subtotal</b>					=	\$ 1,689,705.15		\$ 1,689,705.15

**SECTION 2 - PUBLIC IMPROVEMENTS \***

<b>ROADWAY IMPROVEMENTS</b>							
Construction Traffic Control	1.0	LS	\$ 50,000.00	=	\$ 50,000.00		\$ 50,000.00
Removal of Asphalt (Full Depth)	515	SY	\$ 10.00	=	\$ 5,150.00		\$ 5,150.00
Removal of Asphalt (Planing-2")	2,354	SY	\$ 5.00	=	\$ 11,770.00		\$ 11,770.00
Removal of Striping	3,117	LF	\$ 1.00	=	\$ 3,117.00		\$ 3,117.00
Removal of Fencing	3,021	LF	\$ 5.00	=	\$ 15,105.00		\$ 15,105.00
Aggregate Base Course (135 lbs/cf)	2,086.0	Tons	\$ 34.00	=	\$ 70,924.00		\$ 70,924.00
Aggregate Base Course (135 lbs/cf)		CY	\$ 61.00	=	\$ -		\$ -
Asphalt Pavement (3" thick)		SY	\$ 17.00	=	\$ -		\$ -
Asphalt Pavement (4" thick)		SY	\$ 23.00	=	\$ -		\$ -
Asphalt Pavement (6" thick)		SY	\$ 35.00	=	\$ -		\$ -
Asphalt Pavement (147 lbs/cf) 7" thick	23,267.0	Tons	\$ 106.00	=	\$ 2,466,302.00		\$ 2,466,302.00
Raised Median, Paved		SF	\$ 10.00	=	\$ -		\$ -
Regulatory Sign/Advisory Sign	25	EA	\$ 364.00	=	\$ 9,100.00		\$ 9,100.00
Guide/Street Name Sign	22	EA	\$ 250.00	=	\$ 5,500.00		\$ 5,500.00
Epoxy Pavement Marking	9,005	SF	\$ 16.00	=	\$ 144,080.00		\$ 144,080.00
Thermoplastic Pavement Marking	289	SF	\$ 28.00	=	\$ 8,092.00		\$ 8,092.00
Barricade - Type 3	3.0	EA	\$ 241.00	=	\$ 723.00		\$ 723.00
Delineator - Type I		EA	\$ 29.00	=	\$ -		\$ -
Curb and Gutter, Type A (6" Vertical)		LF	\$ 35.00	=	\$ -		\$ -
Curb and Gutter, Type B (Median)		LF	\$ 35.00	=	\$ -		\$ -
Curb and Gutter, Type C (Ramp)		LF	\$ 35.00	=	\$ -		\$ -
4" Sidewalk (common areas only)		SY	\$ 58.00	=	\$ -		\$ -
5" Sidewalk		SY	\$ 72.00	=	\$ -		\$ -
6" Sidewalk		SY	\$ 87.00	=	\$ -		\$ -
8" Sidewalk		SY	\$ 116.00	=	\$ -		\$ -
Pedestrian Ramp		EA	\$ 1,390.00	=	\$ -		\$ -
Cross Pan, local (8" thick, 6' wide to include return)		LF	\$ 73.00	=	\$ -		\$ -
Cross Pan, collector (9" thick, 8' wide to include return)		LF	\$ 111.00	=	\$ -		\$ -
Curb Opening with Drainage Chase		EA	\$ 1,790.00	=	\$ -		\$ -
Guardrail Type 3 (W-Beam)		LF	\$ 60.00	=	\$ -		\$ -
Guardrail Type 7 (Concrete)		LF	\$ 87.00	=	\$ -		\$ -
Guardrail End Anchorage		EA	\$ 2,538.00	=	\$ -		\$ -
Guardrail Impact Attenuator		EA	\$ 4,556.00	=	\$ -		\$ -
Sound Barrier Fence (CMU block, 6' high)		LF	\$ 95.00	=	\$ -		\$ -
Sound Barrier Fence (panels, 6' high)		LF	\$ 97.00	=	\$ -		\$ -
Electrical Conduit, Size =		LF	\$ 20.00	=	\$ -		\$ -
Traffic Signal, (provide engineer's estimate)		EA		=	\$ -		\$ -

HEC-RAS Plan: Default Scenario Profile: 100 yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Froude # Chl	Shear Total (lb/sq ft)
Main Channel	1000	100 yr	505.00	6765.90	6768.13	1.05	0.15	0.05
Main Channel	999.9		Lat Struct					
Main Channel	999	100 yr	486.12	6765.40	6768.12	0.81	0.10	0.03
Main Channel	998.53		Culvert					
Main Channel	998	100 yr	486.12	6764.00	6765.41	2.91	0.56	0.52
Main Channel	997	100 yr	486.12	6763.48	6764.56	2.56	0.56	0.49
Main Channel	996	100 yr	486.12	6762.40	6763.92	1.81	0.29	0.18
Main Channel	995.2		Lat Struct					
Main Channel	995	100 yr	474.21	6761.50	6763.42	3.12	0.55	0.56
Main Channel	994	100 yr	413.73	6760.30	6762.01	4.34	0.82	1.14
Main Channel	993	100 yr	353.31	6758.70	6760.31	4.27	0.68	0.97
Main Channel	992	100 yr	287.87	6756.10	6757.33	3.94	0.77	0.95
Main Channel	991	100 yr	251.38	6754.30	6755.49	4.13	0.75	1.00
Main Channel	990	100 yr	227.11	6753.00	6754.24	3.10	0.56	0.56
Main Channel	989	100 yr	219.27	6751.90	6752.85	3.64	0.80	0.88
Main Channel	988	100 yr	217.94	6750.10	6751.07	3.18	0.67	0.65
Main Channel	987	100 yr	218.20	6748.20	6749.27	3.67	0.80	0.88
Main Channel	986	100 yr	218.20	6746.20	6747.42	3.35	0.69	0.71
Main Channel	985	100 yr	215.70	6744.80	6745.93	3.22	0.66	0.66
Main Channel	984	100 yr	210.81	6743.50	6744.70	2.68	0.57	0.47
Main Channel	983	100 yr	202.32	6742.10	6742.63	3.30	1.00	0.90
Overflow 1-DS-0	1007	100 yr	0.00	6745.24	6745.02		0.00	0.00
Overflow 1-DS-0	1006.6	100 yr	0.00	6743.40	6743.42	0.00	0.01	0.00
Overflow 1-DS-0	1006	100 yr	0.00	6740.87	6740.22		0.00	0.00
Overflow 1-DS-0	1005	100 yr	31.98	6737.80	6738.13	1.40	0.59	0.20
Overflow 1-DS-0	1004	100 yr	35.60	6735.50	6735.93	1.39	0.50	0.18
Overflow 1-DS-0	1003	100 yr	35.60	6733.70	6734.17	1.51	0.51	0.20
Overflow 1-DS-0	1002	100 yr	35.60	6731.50	6732.21	1.81	0.58	0.28
Overflow 1-DS-0	1001	100 yr	36.20	6728.30	6728.81	2.96	1.01	0.78
Overflow 1-DS-0	1000	100 yr	36.20	6722.90	6724.11	0.83	0.20	0.05
2nd Culvert	1000	100 yr	0.00	6765.70	6766.02	0.00	0.00	0.00
2nd Culvert	999	100 yr	18.88	6765.20	6766.02	0.13	0.03	0.00
2nd Culvert	998.52		Culvert					
2nd Culvert	998	100 yr	18.88	6763.10	6763.42	1.28	0.68	0.20
2nd Culvert	997	100 yr	18.88	6762.10	6762.28	0.98	0.43	0.10
2nd Culvert	996	100 yr	38.77	6761.20	6761.59	1.00	0.34	0.09
2nd Culvert	995	100 yr	76.38	6760.20	6760.81	1.68	0.55	0.25
2nd Culvert	994	100 yr	164.79	6757.30	6758.35	2.17	0.53	0.33
2nd Culvert	991	100 yr	270.90	6753.90	6754.53	2.21	0.64	0.37
2nd Culvert	990	100 yr	284.89	6752.00	6752.94	2.38	0.62	0.42
2nd Culvert	989	100 yr	287.06	6750.20	6750.86	3.58	0.92	0.94
2nd Culvert	988	100 yr	286.80	6747.82	6749.07	1.82	0.43	0.22
2nd Culvert	987	100 yr	286.80	6747.50	6748.18	2.35	0.57	0.36
2nd Culvert	986.3		Lat Struct					
2nd Culvert	985	100 yr	288.50	6744.90	6745.31	2.27	0.68	0.43
2nd Culvert	984	100 yr	292.47	6743.30	6743.84	1.99	0.53	0.32
2nd Culvert	983	100 yr	302.68	6741.30	6741.98	3.86	1.00	1.10
Main Channel-0-2	1007	100 yr	505.00	6740.00	6740.87	2.35	0.51	0.30
Main Channel-0-2	1006.8		Lat Struct					
Main Channel-0-2	1006	100 yr	486.37	6738.70	6739.72	2.94	0.72	0.51
Main Channel-0-2	1005	100 yr	469.40	6736.60	6737.40	2.20	0.60	0.41
Main Channel-0-2	1004	100 yr	469.40	6733.80	6734.73	3.54	0.86	0.84
Main Channel-0-2	1003	100 yr	469.01	6730.80	6732.27	2.72	0.54	0.43
Main Channel-0-2	1002	100 yr	468.80	6729.30	6730.20	4.15	0.90	1.13
Main Channel-0-2	1001	100 yr	468.80	6725.00	6727.95	3.08	0.49	0.51

Supercritical (and close) flows in highlighted areas are of concern. Verify modeling, Address the results and these locations specifically in the report. If deviations are needed and justification exists, discuss with Staff. If stabilization is required, address that.



HEC-RAS Plan: Default Scenario Profile: 100 yr (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Froude # Chl	Shear Total (lb/sq ft)
Main Channel-0-2	1000	100 yr	468.80	6724.20	6726.10	5.42	0.99	1.72
Main Channel-0	6421.55	100 yr	505.00	6721.40	6723.94	3.27	0.53	0.18
Main Channel-0	6320.67	100 yr	505.00	6720.20	6723.88	1.49	0.17	0.05
Main Channel-0	6280.5	100 yr	505.00	6719.90	6723.81	2.29	0.26	0.12
Main Channel-0	6228.06		Culvert					
Main Channel-0	6182.26	100 yr	505.00	6719.30	6721.60	8.46	0.98	1.67
Main Channel-0	6167.82	100 yr	505.00	6719.10	6721.14	3.78	0.54	0.37
Main Channel-0	5932.07	100 yr	505.00	6717.50	6719.88	4.43	0.67	0.49
Main Channel-0	5689.93	100 yr	505.00	6716.10	6718.47	4.18	0.62	0.40
Main Channel-0	5498.04	100 yr	505.00	6714.90	6717.13	4.71	0.75	0.29
Main Channel-0	5317.92	100 yr	505.00	6713.80	6715.23	5.60	1.00	0.55
Main Channel-0	5162.59	100 yr	505.00	6712.50	6713.42	1.96	0.38	0.38
Main Channel-0	5007.63	100 yr	505.00	6710.60	6711.71	2.61	0.52	0.72
Main Channel-0	4854.19	100 yr	505.00	6708.40	6710.39	1.35	0.22	0.16
Main Channel-0	4700.74	100 yr	505.00	6706.70	6709.73	2.40	0.43	0.59
Main Channel-0	4546.95	100 yr	505.00	6704.90	6708.42	2.76	0.39	0.67
Main Channel-0	4395.39	100 yr	505.00	6704.10	6707.53	2.51	0.33	0.53
Main Channel-0	4243.45	100 yr	505.00	6704.10	6706.62	2.45	0.40	0.58
Main Channel-0	4086.97	100 yr	505.00	6702.50	6705.00	3.09	0.51	0.93
Main Channel-0	3886.97	100 yr	505.00	6700.60	6702.92	2.74	0.41	0.68
Main Channel-0	3735.02	100 yr	505.00	6699.00	6701.65	2.91	0.43	0.77
Main Channel-0	3583.08	100 yr	505.00	6697.80	6700.63	2.15	0.33	0.43
Main Channel-0	3431.13	100 yr	505.00	6696.40	6699.53	3.17	0.45	0.89
Main Channel-0	3279.19	100 yr	505.00	6694.20	6697.38	4.50	0.67	1.84
Main Channel-0	3127.24	100 yr	505.00	6692.20	6695.26	3.35	0.44	0.94
Main Channel-0	2975.3	100 yr	505.00	6691.00	6692.92	5.59	0.82	2.82
Main Channel-0	2823.35	100 yr	505.00	6687.30	6690.54	2.43	0.29	0.47
Main Channel-0	2671.4	100 yr	505.00	6685.40	6689.31	5.08	0.64	2.10
Main Channel-0	2519.46	100 yr	505.00	6683.40	6687.45	3.75	0.46	1.13
Main Channel-0	2367.51	100 yr	505.00	6683.00	6686.23	2.36	0.40	0.48
Main Channel-0	2215.57	100 yr	505.00	6683.00	6685.15	2.03	0.34	0.39
Main Channel-0	2098		Lat Struct					
Main Channel-0	2063.62	100 yr	464.58	6682.30	6683.76	2.88	0.54	0.87
Main Channel-0	1911.67	100 yr	227.22	6681.00	6681.71	1.94	0.43	0.44
Main Channel-0	1759.73	100 yr	90.09	6679.50	6680.09	1.46	0.38	0.28
Main Channel-0	1607.78	100 yr	57.98	6678.00	6678.58	1.28	0.37	0.22
Main Channel-0	1455.84	100 yr	57.98	6676.30	6676.91	1.32	0.41	0.24
Main Channel-0	1303.89	100 yr	57.88	6674.30	6674.71	1.38	0.46	0.29
Main Channel-0	1151.95	100 yr	51.97	6672.30	6672.75	0.99	0.33	0.15
Main Channel-0	1000	100 yr	37.73	6670.00	6670.30	2.43	0.96	1.02

Highlighted items are for Fr #'s which are outside of the criteria limits. What is being done to ensure channel remains stable?

# Weir Report

## Pond D Forebay 1 Notch

### V-Notch Weir

Crest = Sharp  
Angle (Deg) = 15  
Total Depth (ft) = 1.50

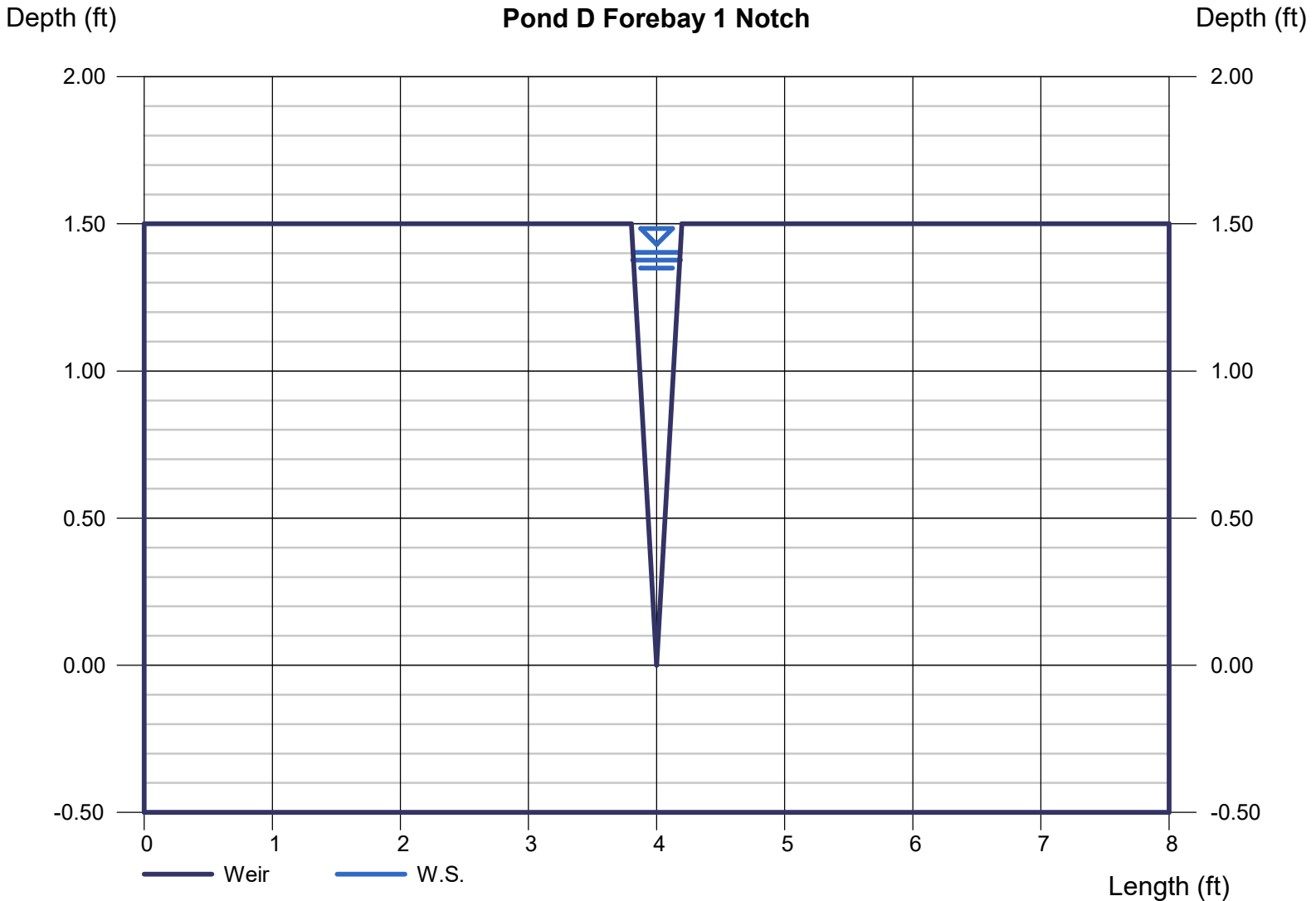
### Highlighted

Depth (ft) = 1.40  
Q (cfs) = 0.770  
Area (sqft) = 0.26  
Velocity (ft/s) = 2.97  
Top Width (ft) = 0.37

### Calculations

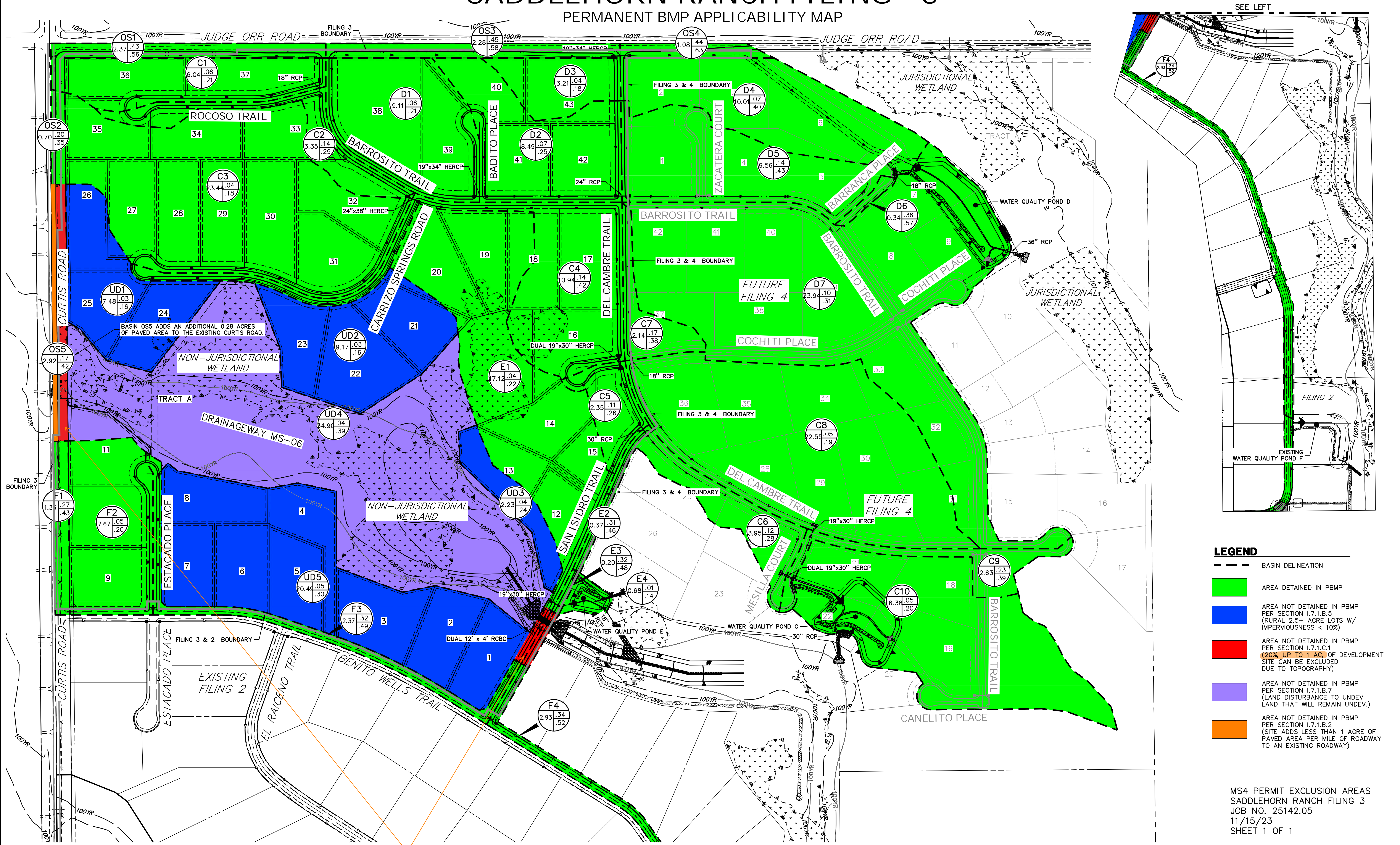
Weir Coeff. Cw = 0.33  
Compute by: Known Q  
Known Q (cfs) = 0.77

Proposed flow is 1.03 cfs



# SADDLEHORN RANCH FILING - 3

## PERMANENT BMP APPLICABILITY MAP



- LEGEND**
- BASIN DELINEATION
  - AREA DETAINED IN PBMP
  - AREA NOT DETAINED IN PBMP PER SECTION 1.7.1.B.5 (RURAL 2.5+ ACRE LOTS W/ IMPERVIOUSNESS < 10%)
  - AREA NOT DETAINED IN PBMP PER SECTION 1.7.1.C.1 (20% UP TO 1 AC. OF DEVELOPMENT SITE CAN BE EXCLUDED - DUE TO TOPOGRAPHY)
  - AREA NOT DETAINED IN PBMP PER SECTION 1.7.1.B.7 (LAND DISTURBANCE TO UNDEV. LAND THAT WILL REMAIN UNDEV.)
  - AREA NOT DETAINED IN PBMP PER SECTION 1.7.1.B.2 (SITE ADDS LESS THAN 1 ACRE OF PAVED AREA PER MILE OF ROADWAY TO AN EXISTING ROADWAY)

MS4 PERMIT EXCLUSION AREAS  
 SADDLEHORN RANCH FILING 3  
 JOB NO. 25142.05  
 11/15/23  
 SHEET 1 OF 1

These red total areas account for more than 1 acre and as such, Per the drainage report text, the pervious area in Basin OS5 is not disturbed and as such it would not require treatment. If this is true indicate, and that area would not fall under the 1.7.1.C.1 exclusion and potentially the other red area may be less than 1 acre. Clarify this and ensure that only 20% up to 1 acre of the site is not treated per 1.7.1.C.1.



Centennial 303-740-9393 • Colorado Springs 719-593-2593  
 Fort Collins 970-491-9888 • www.jrengineering.com