Appendix A. Prioritization Table





Town of Silverthorne Drainage Master Plan

Project Prioritization

Project ID	Project Description	Impacts to Public Health and Safety	Impacts to Critical Infrastructure	Frequency of Problem	Potential Damage	Water Quality / Environmental Impacts	Multi-Objective	Feasibility	Priority	Cost Estimate
PR010	Increase the capacity of the storm drain south of Highway 6.	Moderate	Moderate	High	High	Low	Low	Moderate	High	\$390,000 - \$580,000
PR020	Increase culvert capacity beneath South Adams Avenue.	Moderate	Low	High	Moderate	Low	Low	High	Moderate	-
PR030	Water Quality Facility along the Blue River beneath I70.	Moderate	Low	High	Low	High	Low	Moderate	Moderate	-
PR040	Increase the capacity of the culverts along Salt Lick Gulch beneath South Adams Avenue.	Low	Low	High	Moderate	Low	Low	Low	Low	-
PR050	Formalize an alternate flow path to route drainage to the northeast along 3rd Street.	Low	Moderate	Moderate	Moderate	Low	Low	Low	Low	-
PR060	Create an alternate flow path to route drainage to the northeast along 5th Street.	Moderate	Moderate	High	Moderate	Low	Moderate	Moderate	High	\$170,000 - \$260,000
PR061	Full Spectrum Detention within Highway 9 Right of Way north of 5th Street to accompany rerouted flow path of	Low	Low	High	Low	High	Moderate	High	High	\$200,000 - \$300,000
PR070	Create a split flow path to route flood flows into existing storm system along Annie Road.	Moderate	Moderate	High	High	Low	Low	Moderate	High	\$300,000 - \$450,000
PR071	Full Spectrum Detention east of Annie Road and Highway 9 intersection to accompany rerouted flow path of Project	Low	Low	High	Low	High	Moderate	Moderate	Moderate	-
PR080	Create an alternate flow path to route Smith Ranch drainage to culvert beneath Highway 9 at 13th Street.	Moderate	Moderate	High	Moderate	Low	Moderate	Moderate	High	\$440,000 - \$660,000
PR090	Full Spectrum Detention downstream of Smith Ranch and upstream of Highway 9 crossing.	Moderate	Moderate	High	Moderate	High	High	Moderate	High	\$400,000 - \$610,000
PR100	Increase culvert capacity beneath Highway 9 south of Golden Eagle Road.	Moderate	Moderate	Low	Moderate	Low	Low	Low	Low	-
PR101	Full Spectrum Detention at southeast corner of Highway 9 and Bald Eagle Road.	Low	Low	High	Moderate	Moderate	Moderate	Moderate	Moderate	-
PR110	Increase culvert capacity beneath Golden Eagle Road.	Low	Low	Moderate	Low	Low	Low	Low	Low	-
PR120	Increase culvert capacity beneath Arnica Lane.	Low	Low	Moderate	Low	Low	Low	Moderate	Low	-
PR130	Increase culvert capacity beneath Highway 9 south of Rancher's Road.	Moderate	Low	Moderate	Moderate	Low	Low	Low	Low	-
PR131	Full Spectrum Detention at southwest corner of Highway 9 and Rancher's Road to be coordinated with Project PR130.	Moderate	Low	Moderate	Low	High	Moderate	Moderate	Moderate	-

Notes:

1. Cost estimates were developed for high priority projects only. Per AACE Class 4 estimate level for planning purposes, the cost includes a high range estimate of +50%. See Section 8 of the Plan for further discussion.

Appendix B. Model Output Summary Tables





Subbasin	Subbasin Area Slope (%)		Imperviousness (%)	Snowmelt ¹	Combined Peak Runoff (cfs) ²					
Name	(ac)	Siope (70)		(Yes/No)	2-Year	5-Year	10-Year	25-Year	50-	
S0000	79.8	29	9	No	2.6	3.1	3.6	4.5		
S0005	25.2	18	25	No	2.3	2.8	3.2	3.9	2	
S0010	704	44	3	Yes	11	15	18	21		
S0015	97.1	57	7	Yes	2.9	3.8	4.5	5.4	6	
S0020	175	55	4	Yes	3.5	4.7	5.6	6.6	7	
S0025	247	52	3	Yes	4.1	5.7	6.8	8.0	0	
S0030	111	61	6	Yes	2.8	3.7	4.3	5.2	6	
S0035	243	53	5	Yes	5.8	7.8	9.2	11		
S0040	224	43	3	Yes	3.4	4.8	5.7	6.7	8	
S0045	109	51	3	Yes	1.6	2.3	2.8	3.3	(1)	
S0050	188	43	5	Yes	4.0	5.3	6.3	7.5	8	
S0055	371	43	9	Yes	14	17	20	25		
S0060	128	44	3	Yes	2.0	2.8	3.4	4.0	Z	
S0065	175	44	4	Yes	3.0	4.1	4.9	5.8	7	
S0070	231	43	3	Yes	3.5	4.9	5.9	6.9	8	
S0075	370	35	3	Yes	5.6	7.9	9.4	11		
S0080	129	42	3	Yes	2.0	2.8	3.3	3.9	Z	
S0085	112	43	3	Yes	1.7	2.4	2.9	3.4	Z	
S0090	128	52	7	Yes	3.6	4.7	5.5	6.6	7	
S0095	361	47	6	Yes	9.3	12	14	17		
S0100	533	41	4	Yes	10	14	17	20		
S0105	299	31	3	Yes	4.5	6.4	7.6	9.0		
S0110	129	24	3	Yes	2.0	2.8	3.3	3.9	Z	
S0115	216	33	3	Yes	3.3	4.6	5.5	6.5	-	
S0120	126	30	3	Yes	1.9	2.7	3.2	3.8	2	
S0125	215	36	3	Yes	3.3	4.6	5.5	6.4	-	
S0130	119	31	3	Yes	1.8	2.5	3.0	3.6	Z	
S0135	123	37	3	Yes	1.9	2.6	3.1	3.7	Z	
S0140	157	40	3	Yes	2.4	3.3	4.0	4.7		
S0145	201	35	3	Yes	3.0	4.3	5.1	6.0	-	
S0150	109	32	5	Yes	2.4	3.2	3.8	4.5	, C	
S0155	171	39	3	Yes	2.6	3.7	4.4	5.1	6	
S0160	201	41	7	Yes	5.8	7.6	8.9	11		
S0165	215	42	3	Yes	3.3	4.6	5.5	6.4		
S0170	244	45	7	Yes	7.0	9.2	11	13		
S0175	354	34	3	Yes	5.4	7.6	9.0	11		
S0180	218	40	6	Yes	5.7	7.5	8.9	11		

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

2	
50-Year	100-Year
5.1	5.9
4.5	5.2
25	28
6.4	7.1
7.9	8.7
9.6	10
6.1	6.8
13	14
8.1	8.8
3.9	4.3
8.9	9.9
29	32
4.8	5.2
7.0	7.6
8.3	9.0
13	14
4.6	5.1
4.0	4.4
7.8	8.7
20	23
24	26
11	12
4.6	5.1
7.8	8.5
4.5	4.9
7.7	8.4
4.3	4.7
4.4	4.8
5.6	6.1
7.2	7.9
5.3	5.9
6.2	6.7
13	14
7.7	8.4
15	17
13	14
13	14

Snowmelt¹ Subbasin Combined Peak Runoff (cfs)² Area Slope (%) Imperviousness (%) (ac) Name (Yes/No) 2-Year 5-Year 10-Year 25-Year 50-S0185 205 31 Yes 4.2 5.7 6.7 8.0 4 186 36 3.5 5.7 6.7 S0190 4 Yes 4.8 47 9.6 13 15 18 S0195 331 7 Yes 36 1.9 2.7 3.3 3.8 S0200 128 3 Yes 31 1.6 2.7 3.1 S0205 105 3 Yes 2.2 37 S0210 146 3 2.2 3.1 3.7 4.4 Yes 37 S0215 349 5.3 8.9 10 3 Yes 7.4 37 3.3 S0220 217 3 4.6 5.5 6.5 Yes 42 186 2.8 4.7 5.6 S0225 3 Yes 4.0 35 5.0 S0230 334 3 Yes 7.1 8.5 10 32 S0235 161 3 2.5 3.4 4.1 4.8 Yes 40 2.7 3.7 4.5 5.2 S0240 175 3 Yes 151 34 3 2.3 3.2 3.9 4.5 S0245 Yes 43 5.6 S0250 371 3 Yes 7.9 9.4 11 38 2.3 4.5 S0255 148 3 Yes 3.2 3.8 4.7 S0260 235 40 6.4 7.6 9.0 4 Yes S0265 36 9.1 12 14 17 240 9 Yes S0270 42.0 9.2 55 8.7 12 15 Yes 11 42 6.8 S0275 5 9.2 11 13 321 Yes 30 23 32 39 S0280 191 31 Yes 28 S0285 345 35 3 5.2 8.8 10 Yes 7.4 32 S0290 161 4 Yes 3.2 4.4 5.2 6.1 21 S0295 190 26 Yes 19 23 27 33 17 64 2.3 3.3 S0300 9.86 No 2.8 4.0 16 37 7.6 13 S0305 54.8 No 9.1 11 14 39 55 S0306 149 61 Yes 47 67 12 65 5.6 9.5 S0310 23.4 No 6.7 7.8 SO313 13.3 13 20 No 1.0 1.2 1.4 1.7 7.6 S0314 5.42 2 No 0.1 0.1 0.1 0.1 34 0.5 0.8 SO315 33.9 4 No 0.6 0.7 11 16 S0320 3.73 No 0.2 0.3 0.3 0.4 S0321 7.99 12 54 No 1.6 1.9 2.2 2.7 S0325 301 55 3 15 23 26 Yes 18 27 165 8.5 12 14 S0330 3 Yes 10 16 22 32 37 S0335 425 3 Yes 26 16 5.2 S0340 102 3 6.3 7.7 8.8 Yes S0345 336 29 8 Yes 23 27 33 39

Town of Silverthorne Drainage Master Plan: Modeling Results

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

-Year	100-Year
9.5	10
8.0	8.9
21	23
4.6	5.0
3.8	4.1
5.2	5.7
13	14
7.8	8.5
6.7	7.3
12	13
5.8	6.3
6.3	6.9
5.4	5.9
13	15
5.4	5.9
11	12
19	22
17	20
15	17
46	52
12	14
7.3	8.0
39	44
4.6	5.3
15	17
76	87
11	13
1.9	2.2
0.1	0.1
1.0	1.1
0.4	0.5
3.1	3.6
28	32
16	17
40	45
9.6	11
43	48

Snowmelt¹ Subbasin Combined Peak Runoff (cfs)² Area Slope (%) Imperviousness (%) (ac) Name (Yes/No) 2-Year 5-Year 10-Year 25-Year 50-S0350 206 23 Yes 11 13 16 18 3 178 16 10 15 17 S0355 4 Yes 12 20 12 25 37 43 S0356 307 Yes 30 21 17 0.8 1.4 S0358 13.2 No 1.0 1.2 24 10 12 17 20 S0360 153 Yes 14 19 100 12 8.4 12 14 S0365 Yes 10 16 S0370 244 11 20 29 34 Yes 24 14 S0375 193 38 35 42 49 59 Yes 18 S0380 160 27 23 27 32 38 Yes 32 3.0 5.0 S0385 36.1 11 3.6 4.3 Yes 15 S0390 14.9 45 2.5 3.0 3.5 4.3 No 13 0.6 64 0.7 0.8 1.0 S0395 2.55 No 2.89 6.7 61 0.7 0.8 0.9 1.1 S0399 No 7.3 S0400 6.78 43 No 1.1 1.3 1.5 1.9 12 47 S0405 3.65 No 0.6 0.8 0.9 1.1 4.2 7.2 S0410 16.9 11 67 5.0 5.9 No 158 21 28 23 27 32 39 S0415 Yes 9.3 S0420 22.5 57 4.8 5.7 6.6 8.1 No 4.8 67 1.5 S0425 No 1.8 2.6 6.07 2.1 6.3 63 2.7 3.3 2.0 S0430 8.35 No 2.4 10 33 0.2 0.3 0.3 0.4 S0435 2.01 No 10 2.5 S0440 16.7 23 No 1.4 1.7 2.0 8.6 1.7 S0445 11.0 41 No 2.0 2.3 2.8 S0450 12.1 8.8 44 2.0 2.7 3.4 No 2.4 7.5 1.7 2.9 S0455 13.4 34 No 2.0 2.3 5.6 3.1 S0460 11.5 74 No 3.8 4.4 5.4 5.5 S0465 8.79 69 No 2.3 2.7 3.1 3.8 S0470 5.35 5.4 45 No 0.9 1.2 1.5 1.1 S0475 8.20 9.3 34 No 1.0 1.3 1.5 1.8 5.1 58 1.3 2.3 S0480 6.14 No 1.6 1.8 4.8 69 7.2 S0485 28.3 No 8.6 10 12 S0490 10.7 7.3 24 No 1.0 1.2 1.3 1.7 S0495 4.9 73 3.4 4.0 4.7 5.7 12.3 No 5.7 58 1.1 1.5 1.8 S0500 5.03 No 1.3 6.9 23 2.4 2.9 S0505 20.4 No 1.7 2.1 8.6 S0510 34.2 29 3.6 4.3 5.0 6.2 No 25 0.9 S0515 22.5 9 No 0.8 1.1 1.3

Town of Silverthorne Drainage Master Plan: Modeling Results

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

-Year	100-Year
19	22
18	21
48	54
1.7	1.9
22	25
16	18
38	43
68	77
44	50
5.6	6.4
4.9	5.7
1.2	1.4
1.3	1.5
2.1	2.5
1.3	1.4
8.3	9.5
44	50
9.4	11
3.0	3.4
3.9	4.4
0.5	0.6
2.8	3.3
3.3	3.8
3.9	4.5
3.3	3.8
6.2	7.1
4.4	5.1
1.8	2.0
2.1	2.4
2.6	3.0
14	16
1.9	2.2
6.6	7.6
2.1	2.4
3.4	3.9
7.1	8.2
1.5	1.8

Snowmelt¹ Subbasin Combined Peak Runoff (cfs)² Area Slope (%) Imperviousness (%) (ac) Name (Yes/No) 5-Year 10-Year 25-Year 50-2-Year S0520 4.07 5.6 70 No 1.1 1.3 1.5 1.8 7.40 6.4 56 1.5 2.1 2.6 S0525 No 1.8 33 11 0.8 S0530 20.3 No 1.0 1.2 1.4 20 4.7 5.6 6.8 7.9 S0535 67.8 8 Yes 24 12 2.3 3.2 3.9 S0540 51.2 No 2.7 S0545 7.66 9.2 49 No 1.4 1.7 1.9 2.4 S0550 3.76 6.1 72 1.0 1.4 1.7 No 1.2 0.5 S0555 3.89 8.4 37 No 0.7 0.9 0.8 18 S0560 163 8.4 10 12 14 3 Yes 22 3 5.8 S0565 114 7.0 8.6 9.8 Yes 22 S0570 533 5 30 36 45 51 Yes 19 1.6 2.2 2.7 S0575 53.2 8 No 1.9 17 98.0 16 5.7 6.8 7.9 9.7 S0580 No 3.3 S0584 33.8 15 27 No 4.0 4.6 5.7 17 3.0 5.1 S0585 51.0 16 No 3.6 4.2 8.9 S0590 51.6 32 6.1 7.3 8.4 10 No S0595 174 21 18 19 23 27 32 Yes 3.7 S0600 22.2 8.2 27 2.2 2.6 3.0 No 23 8.0 13 6 Yes 9.6 12 S0605 131 2.4 6 S0610 28.9 22 No 2.9 3.3 4.1 21 5 20 30 34 S0615 348 Yes 24 8.1 2.3 3.9 S0620 29.7 21 No 2.7 3.2 46 3.9 7.7 S0625 193 3 Yes 5.5 6.5 38 3 2.8 4.6 5.5 S0630 139 Yes 3.9 31 3.7 S0635 92.5 3 Yes 1.9 2.6 3.1 3.0 5.9 S0640 147 41 3 Yes 4.2 4.9 34 5.6 S0645 276 3 Yes 7.8 9.2 11 S0650 187 60 3 Yes 3.8 5.3 6.2 7.5 S0655 114 56 3 Yes 2.3 3.2 3.8 4.6 36 2.1 3.5 4.2 S0660 106 3 Yes 3.0 S0665 236 74 3 Yes 4.8 6.7 7.9 9.4 S0670 337 73 3 6.8 9.5 11 13 Yes S0675 75 3 14 20 23 28 691 Yes 68 5.1 8.5 10 S0680 253 3 Yes 7.2 54 2.7 4.4 5.3 S0685 132 3 Yes 3.8 40 5.5 S0690 138 3 2.8 3.9 4.6 Yes 30 4.5 S0695 225 3 Yes 6.4 7.5 9.0

Town of Silverthorne Drainage Master Plan: Modeling Results

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

-Year	100-Year
2.1	2.4
3.0	3.5
1.6	1.9
8.8	9.9
4.5	5.2
2.8	3.2
2.0	2.3
1.1	1.2
15	17
11	12
56	63
3.2	3.6
11	13
6.6	7.6
5.9	6.8
12	14
36	41
4.3	5.0
15	17
4.7	5.4
38	42
4.5	5.2
9.0	9.9
6.5	7.1
4.3	4.7
6.9	7.5
13	14
8.8	9.6
5.4	5.9
5.0	5.4
11	12
16	17
32	35
12	13
6.2	6.8
6.5	7.1
11	12

Snowmelt¹ Subbasin Combined Peak Runoff (cfs)² Area Slope (%) Imperviousness (%) (ac) Name (Yes/No) 2-Year 5-Year 10-Year 25-Year 50-S0700 139 30 Yes 2.8 3.9 4.7 5.6 3 357 24 7.2 12 14 S0705 3 Yes 10 S0710 49 3.1 152 3 Yes 4.3 5.1 6.1 36 S0715 6.2 8.7 10 12 306 3 Yes 26 6.1 8.6 10 12 S0720 303 3 Yes S0725 487 32 3 9.8 16 19 Yes 14 S0730 163 26 3.3 5.5 6.5 3 Yes 4.6 90 S0735 192 3 3.9 5.5 6.4 7.7 Yes 98 S0740 103 2.1 3.5 4.1 3 Yes 2.9 61 3.9 7.8 S0745 196 3 Yes 5.6 6.6 78 S0750 384 3 7.7 13 15 Yes 11 81 6.5 9.2 11 13 S0755 324 3 Yes 102 42 3 2.1 2.9 3.4 4.1 S0760 Yes 73 S0765 161 3 Yes 3.2 4.6 5.4 6.4 47 4.2 S0770 209 3 Yes 5.9 7.0 8.4 47 S0775 401 8.1 13 16 3 Yes 11 32 S0780 6.4 9.1 11 13 320 3 Yes 27 S0785 104 3 2.1 3.0 3.5 4.2 Yes 25 4.4 8.7 S0790 6.1 7.3 217 3 Yes 33 5.2 8.6 10 S0795 259 3 Yes 7.3 27 S0800 147 3.0 5.0 5.9 3 Yes 4.2 8.3 2.2 S0805 13.4 44 No 2.6 3.1 3.7 17 6.7 S0810 231 8 No 8.0 9.3 11 12 S0815 11 0.4 0.5 0.6 9.09 No 0.4 21 7.4 S0820 85.0 3 Yes 4.4 5.3 6.5 0.6 S0825 58.8 8.3 3 No 0.8 0.9 1.1 9.8 S0830 16.8 17 No 1.1 1.3 1.5 1.9 S0835 22.0 18 14 No 1.1 1.3 1.5 1.9 23 S0840 33.7 8 Yes 2.3 2.8 3.4 3.9 14 22 1.3 2.1 S0845 15.6 No 1.5 1.7 13 16 2.2 S0850 26.7 No 1.6 1.9 2.7 S0855 140 16 7 No 3.8 4.5 5.2 6.4 S0860 11 34 2.0 2.4 2.8 3.4 16.0 No 8.8 33 No 4.6 5.5 6.4 7.9 S0865 37.5 8.5 17 1.9 S0870 17.7 No 1.1 1.3 1.6 11 S0875 8.60 24 No 0.8 0.9 1.1 1.3 27 S0880 153 3 Yes 7.8 9.4 12 13

Town of Silverthorne Drainage Master Plan: Modeling Results

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

-Year	100-Year
6.5	7.1
17	18
7.1	7.8
14	16
14	16
23	25
7.7	8.4
9.0	9.8
4.8	5.3
9.2	10
18	20
15	17
4.8	5.2
7.5	8.2
9.8	11
19	21
15	16
4.9	5.4
10	11
12	13
7.0	7.6
4.3	5.0
13	15
0.7	0.8
8.1	9.1
1.2	1.4
2.1	2.5
2.2	2.5
4.4	4.9
2.5	2.8
3.1	3.6
7.4	8.5
4.0	4.6
9.1	10
2.2	2.5
1.5	1.7
14	16

Snowmelt¹ Subbasin Combined Peak Runoff (cfs)² Area Slope (%) Imperviousness (%) (ac) Name (Yes/No) 2-Year 5-Year 10-Year 25-Year 50-S0885 301 35 Yes 15 18 23 26 3 28.1 23 1.4 2.1 2.4 S0890 3 Yes 1.7 24 3.0 3.6 5.2 S0895 141 6 No 4.2 5.9 5.76 45 No 1.0 1.3 1.6 S0900 1.1 42 3 14 21 24 S0905 277 Yes 17 S0910 89.0 36 10 6.7 8.0 9.7 11 Yes 30 S0915 188 6 12 17 20 Yes 14 22 S0920 92.5 11 3.9 4.6 5.3 6.6 No 22 72.9 12 No 3.2 3.9 4.5 5.5 S0925 12 22 0.6 S0930 7.36 No 0.7 0.8 1.0 2.9 S0935 24.2 8 19 1.7 2.1 2.4 No 0.5 10 6 0.6 0.7 0.9 S0940 22.3 No 17 11 No 0.7 0.8 0.9 1.1 S0945 15.5 12 S0950 17.4 20 No 1.3 1.6 1.8 2.2 18 2.5 S0955 33.9 19 No 2.9 3.4 4.2 18 1.4 S0960 9 1.7 2.0 2.3 19.1 Yes S0965 144 21 13 6.7 8.0 9.3 11 No 21 S0970 53.8 14 2.7 3.2 3.7 4.6 No 15 0.1 S0975 4 No 0.1 0.1 0.1 4.73 19 5 0.6 S0980 28.6 No 0.7 0.8 0.9 10 12 4.6 5.5 6.4 7.8 S0985 103 No 24 5.7 S0990 107 4 Yes 6.9 8.4 9.6 23 7.6 S0995 142 4 Yes 9.0 11 13 26 280 3 15 18 22 25 S1000 Yes 18 7 0.5 S1005 10.8 No 0.3 0.3 0.4 17 S1010 65.3 10 No 2.4 2.8 3.3 4.0 23 7.9 9.5 13 S1015 151 3 Yes 12 S1020 21.1 17 6 No 0.5 0.6 0.7 0.8 19 S1025 44.0 8 No 1.3 1.5 1.8 2.2 30 9.4 16 S1030 183 3 Yes 11 14 25 S1035 76.1 2 No 0.6 0.7 0.8 1.0 S1040 68.0 21 2 No 0.5 0.7 0.8 0.9 S1045 17 2 0.6 0.7 0.8 1.0 73.8 No 13 No 0.6 0.7 0.8 1.0 S1050 57.1 3 9.6 1.4 2.4 S1055 3 No 1.7 1.9 111 24 S1060 152 3 7.8 9.3 11 13 Yes 24 S1065 238 3 Yes 12 15 18 20

Town of Silverthorne Drainage Master Plan: Modeling Results

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

-Year	100-Year
28	32
2.6	3.0
6.0	6.9
1.9	2.2
26	29
13	14
22	25
7.6	8.7
6.4	7.3
1.2	1.4
3.4	3.9
1.0	1.1
1.3	1.5
2.6	2.9
4.8	5.6
2.6	2.9
13	15
5.3	6.1
0.1	0.2
1.1	1.3
9.1	10
11	12
14	16
27	30
0.5	0.6
4.7	5.4
14	16
0.9	1.1
2.5	2.9
17	19
1.1	1.3
1.1	1.2
1.2	1.4
1.1	1.3
2.7	3.1
14	16
22	25

Subbasin	Area	Slope (%)	Imperviouspess (%)	Snowmelt ¹	Combined Peak Runoff (cfs) ²							
Name	(ac)	Siope (78)	imperviousness (70)	(Yes/No)	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year		
S1070	115	24	3	Yes	5.9	7.1	8.7	9.9	11	12		
S1075	138	24	2	No	1.0	1.2	1.4	1.7	2.0	2.3		
S1080	107	18	2	No	0.8	1.0	1.1	1.4	1.6	1.8		
S1085	52.3	13	3	No	0.6	0.7	0.8	0.9	1.1	1.2		
S1090	127	19	2	No	1.1	1.3	1.5	1.8	2.1	2.4		

Subbasins

Notes:

1. Snowmelt runoff was applied only to subbasins above 9,000 feet as discussed in Section 3.6 of the Plan. No snowmelt runoff was applied to subbasins below 9,000 feet.

Storm Droin Nomo	Length	Drainage Area		Capacity (Year) ¹	Meets Existing	Peak Flow (cfs)						
Storm Drain Name	(ft)	(ac)			Drainage Criteria ²	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	
C0005	143	25	58	Exceeds 100YR	Yes	2.3	2.8	3.2	3.9	4.5	5.2	
C0292	114	12500	350	10YR	No	200	290	340	410	480	530	
C0295	80	12700	420	10YR	No	210	300	360	460	510	570	
C0300	387	10	14	Exceeds 100YR	Yes	2.3	2.8	3.3	4.0	4.6	5.3	
C0305	122	12700	1500	Exceeds 100YR	Yes	220	310	370	470	520	580	
C0306	971	149	81	50YR	Yes	39	47	55	67	76	87	
C0310	50	12900	930	Exceeds 100YR	Yes	250	350	420	530	590	650	
C0356	623	2020	190	50YR	No	99	120	150	170	190	210	
C0358	59	2190	11	Less Than 2YR	No	14	21	27	39	59	96	
C0362	477	2170	150	10YR	No	97	110	140	150	170	190	
C0376	147	537	80	5YR	No	64	77	92	110	120	140	
C0380	98	2870	82	Less Than 2YR	No	180	220	260	300	320	340	
C0385	577	36	18	Exceeds 100YR	Yes	0.0	0.0	0.0	0.0	0.0	0.0	
C0386	204	36	18	Exceeds 100YR	Yes	0.0	0.0	0.0	0.0	0.0	0.0	
C0390	329	51	32	Exceeds 100YR	Yes	2.5	3.0	3.5	4.3	4.9	5.7	
C0398	46	36	17	Exceeds 100YR	Yes	3.0	3.6	4.3	5.0	5.6	6.4	
C0399	72	39	31	Exceeds 100YR	Yes	3.7	4.4	5.3	6.3	7.0	8.0	
C0400	51	46	7	Exceeds 100YR	Yes	1.1	1.3	1.5	1.9	2.1	2.5	
C0415	679	158	62	Exceeds 100YR	Yes	23	27	32	39	44	50	
C0420	94	180	64	Exceeds 100YR	Yes	28	33	39	47	53	61	
C0425	87	52	2	5YR	Yes	1.5	1.8	2.1	2.6	3	3.4	
C0430	155	60	26	Exceeds 100YR	Yes	3.5	4.2	5.0	5.9	6.9	7.9	
C0440	97	17	25	Exceeds 100YR	Yes	1.4	1.7	2.0	2.5	2.8	3.3	
C0445	132	11	11	Exceeds 100YR	Yes	1.7	2.0	2.3	2.8	3.3	3.8	
C0446	164	28	20	Exceeds 100YR	Yes	3.1	3.7	4.3	5.3	6.2	7.1	
C0460	678	12	31	Exceeds 100YR	Yes	3.1	3.8	4.4	5.4	6.2	7.1	
C0465	496	20	32	Exceeds 100YR	Yes	5.4	6.5	7.5	9.2	11	12	
C0470	101	26	130	Exceeds 100YR	Yes	6.3	7.5	8.7	11	12	14	
C0480	305	6.1	7	Exceeds 100YR	Yes	1.3	1.6	1.8	2.3	2.6	3.0	
C0481	712	6.1	6	Exceeds 100YR	Yes	1.4	1.6	1.9	2.3	2.7	3.1	
C0485	127	34	65	Exceeds 100YR	Yes	8.5	10	12	15	17	19	
C0495	95	12	8	50YR	Yes	3.4	4.0	4.7	5.7	6.6	8.0	
C0500	117	17	13	Exceeds 100YR	Yes	4.4	5.3	6.1	7.5	8.7	10	
C0515	45	23	12	Exceeds 100YR	Yes	0.8	0.9	1.1	1.3	1.5	1.8	

Storm Drains

Notes:

1. Designation signifies the return period for which the storm drain has capacity to convey peak streamflows.

2. Based upon existing drainage criteria for the Town of Silverthorne. See Section 6 of the report.

Storm Droin Nomo	Length	Drainage Area	Consoity (ofa)	C_{α}	Meets Existing	Peak Flow (cfs)						
Storm Drain Name	(ft)	(ac)		Capacity (Year)	Drainage Criteria ²	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	
C0520	49	27	5	Exceeds 100YR	Yes	1.8	2.2	2.6	3.1	3.6	4.1	
C0525	54	34	6	25YR	Yes	3.4	4.0	4.7	5.7	6.6	7.6	
C0529	39	23	4	Exceeds 100YR	Yes	0.0	0.0	0.0	0.0	0.0	0.0	
C0530	90	43	6	Exceeds 100YR	Yes	0.8	1.0	1.2	1.4	1.6	1.9	
C0545	62	7.7	8	Exceeds 100YR	Yes	1.4	1.7	1.9	2.4	2.8	3.2	
C0550	63	11	5	50YR	Yes	2.4	2.9	3.3	4.1	4.7	5.4	
C0552	45	185	18	5YR	No	14	16	19	23	27	31	
C0555	61	189	11	Less Than 2YR	No	14	17	21	24	28	31	
C0575	160	1050	69	5YR	No	54	64	78	91	100	120	
C0580	137	1150	110	50YR	No	58	69	89	100	110	120	
C0590	49	136	10	Less Than 2YR	No	12	15	17	21	24	27	
C0595	79	174	13	Less Than 2YR	No	19	23	27	32	36	41	
C0600	51	333	10	Less Than 2YR	No	15	16	16	17	17	18	
C0605	54	464	14	Less Than 2YR	No	23	25	27	29	31	32	
C0610	56	493	9	Less Than 2YR	No	43	51	61	73	83	94	
C0615	634	348	11	Less Than 2YR	No	20	24	30	34	38	42	
C0805	137	13	18	Exceeds 100YR	Yes	2.2	2.6	3.1	3.7	4.3	5.0	
C0810	115	8540	1100	Exceeds 100YR	Yes	140	200	230	280	330	360	
C0811	44	8540	1200	Exceeds 100YR	Yes	140	200	230	280	330	360	
C0835	84	22	33	Exceeds 100YR	Yes	1.1	1.3	1.5	1.9	2.2	2.5	
C0840	85	34	120	Exceeds 100YR	Yes	2.3	2.8	3.4	3.9	4.4	4.9	
C0845	91	16	28	Exceeds 100YR	Yes	1.3	1.5	1.7	2.1	2.5	2.8	
C0850	55	27	20	Exceeds 100YR	Yes	1.6	1.9	2.2	2.7	3.1	3.6	
C0856	51	238	22	50YR	Yes	10	12	14	17	20	23	
C0860	135	254	23	25YR	No	12	14	17	20	23	27	
C0861	504	254	2	Less Than 2YR	No	12	14	17	20	24	28	
C0865	132	38	26	Exceeds 100YR	Yes	4.6	5.5	6.4	7.9	9.1	10	
C0870	346	309	8	Less Than 2YR	No	17	21	24	30	35	40	
C0900	163	5.8	6	Exceeds 100YR	Yes	1.0	1.1	1.3	1.6	1.9	2.2	
C0910	57	89	42	Exceeds 100YR	Yes	6.7	8.0	9.7	11	13	14	
C0915	120	554	120	Exceeds 100YR	Yes	33	39	48	55	61	68	
C0920	64	646	16	Less Than 2YR	No	37	44	53	62	69	77	
C0930	114	7.4	17	Exceeds 100YR	Yes	0.6	0.7	0.8	1.0	1.2	1.4	
C0935	60	32	19	Exceeds 100YR	Yes	2.0	2.5	2.9	3.7	4.3	5.0	

Storm Drains

Notes:

1. Designation signifies the return period for which the storm drain has capacity to convey peak streamflows.

2. Based upon existing drainage criteria for the Town of Silverthorne. See Section 6 of the report.

Storm Drain Nama	Length	Drainage Area	Capacity (ofc)	Capacity (Year) ¹	Meets Existing		Peak Flow (cfs)					
Storm Drain Name	(ft)	(ac)			Drainage Criteria ²	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	
C0945	517	16	17	Exceeds 100YR	Yes	0.7	0.8	0.9	1.1	1.3	1.5	
C0955	68	34	41	Exceeds 100YR	Yes	2.5	2.9	3.4	4.2	4.8	5.6	
C0960	87	19	50	Exceeds 100YR	Yes	1.4	1.7	2.0	2.3	2.6	2.9	
C0965	123	230	11	Less Than 2YR	No	12	15	17	21	24	28	
C0970	131	283	48	Exceeds 100YR	Yes	15	18	21	25	29	34	
C0975	71	4.7	160	Exceeds 100YR	Yes	0.1	0.1	0.1	0.1	0.1	0.2	
C0980	116	33	30	Exceeds 100YR	Yes	0.6	0.7	0.8	1.0	1.2	1.4	
C0990	70	107	110	Exceeds 100YR	Yes	5.7	6.9	8.4	9.6	11	12	
C0995	49	249	15	2YR	Yes	13	16	20	22	24	27	
C1000	73	529	210	Exceeds 100YR	Yes	28	34	41	47	51	58	
C1001	92	529	160	Exceeds 100YR	Yes	28	34	41	47	52	58	
C1005	103	540	220	Exceeds 100YR	Yes	28	35	42	47	52	58	
C1010	146	605	98	Exceeds 100YR	Yes	30	37	45	51	56	63	
C1015	94	151	190	Exceeds 100YR	Yes	7.9	9.5	12	13	14	16	
C1020	79	172	160	Exceeds 100YR	Yes	8.4	10	12	14	16	17	
C1025	163	216	14	5YR	No	9.6	12	14	16	18	20	
C1050	86	458	46	Exceeds 100YR	Yes	11	14	17	20	22	24	

Storm Drains

Notes:

1. Designation signifies the return period for which the storm drain has capacity to convey peak streamflows.

2. Based upon existing drainage criteria for the Town of Silverthorne. See Section 6 of the report.

Name of Model	Length	Drainage Area		Peak Flow (cfs)					
Element	(ft)	(ac)	100-Year Depth	2-Year	5-Year	10-Year	25-Year	50-Year	100
O0362	645	2170	Between 12in and 24in	0.0	0.0	0.0	3.0	17	
O0584	2290	34	Less than 6in	0.0	0.0	0.0	0.0	0.8	
O0586	476	85	Less than 6in	0.0	0.0	0.0	0.0	0.0	
O0591	355	136	Less than 6in	0.0	0.0	0.0	0.0	0.0	
00597	642	310	Between 6in and 12in	18	25	32	41	48	
O0602	1180	333	Between 12in and 24in	18	25	32	41	49	
R0005	73	25	Less than 6in	2.3	2.8	3.2	3.9	4.5	
R0015	2100	801	Between 6in and 12in	14	19	23	27	33	
R0020	2200	976	Between 6in and 12in	17	24	28	33	40	
R0030	1070	111	Between 6in and 12in	2.9	3.8	4.5	5.4	6.4	
R0031	4200	1330	Between 6in and 12in	24	33	39	47	56	
R0035	1430	243	Between 6in and 12in	6.2	8.1	9.6	11	14	
R0045	3070	333	Less than 6in	4.9	6.6	7.9	9.4	11	
R0050	976	764	Between 6in and 12in	15	20	23	28	33	1
R0051	764	2100	Between 12in and 24in	38	53	62	74	88	
R0055	905	2470	Between 12in and 24in	52	69	82	98	120	1
R0060	869	2600	Between 6in and 12in	53	72	85	100	120	
R0065	1390	2770	Between 12in and 24in	56	76	90	110	130	
R0070	2240	231	Less than 6in	3.6	5.1	6.1	7.2	8.6	
R0080	1700	730	Between 6in and 12in	11	15	18	21	25	
R0090	192	970	Between 6in and 12in	15	21	24	29	34	1
R0091	1010	970	Between 12in and 24in	15	21	25	29	35	1
R0092	4970	3740	Between 12in and 24in	69	94	110	130	160	
R0095	7850	4100	Between 12in and 24in	76	100	120	150	180	Ĩ
R0110	2810	428	Less than 6in	6.3	8.5	10	13	14	
R0120	4440	771	Between 6in and 12in	11	15	17	21	25	
R0130	2800	1100	Between 6in and 12in	15	20	24	29	35	
R0140	1490	1380	Between 6in and 12in	18	25	30	35	42	
R0145	1950	1580	Between 6in and 12in	21	29	34	41	49	1
R0146	2730	6220	Between 12in and 24in	100	140	170	200	240	
R0155	5860	6500	Greater than 24in	100	140	170	200	240	
R0170	4760	244	Less than 6in	7.4	9.7	11	14	16	1
R0175	1730	354	Between 6in and 12in	5.6	7.8	9.4	11	13	1
R0180	844	816	Between 12in and 24in	18	24	29	34	41	1
R0185	1490	1020	Between 6in and 12in	22	30	35	42	50	1
R0190	7400	1210	Between 12in and 24in	25	34	40	48	58	
R0205	2420	233	Less than 6in	3.2	4.3	5.1	6.1	7.2	
R0215	1090	728	Between 6in and 12in	9.8	12	14	17	20	1

Open Channels

Notes:

00-Year
37
2.1
0.0
0.0
56
58
5.2
36
44
7.1
61
15
12
36
97
130
130
140
9.4
27
38
38
180
190
16
27
38
47
54
260
270
18
15
45
55
64
8.1
23

Name of Model	Length	Drainage Area	100 Yes Dault ¹	Peak Flow (cfs)					
Element	(ft)	(ac)	100-Year Depth	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
R0220	1450	944	Between 6in and 12in	13	17	20	24	28	31
R0225	5600	1130	Between 12in and 24in	15	21	24	29	35	39
R0235	1580	495	Between 6in and 12in	7.1	9.6	11	14	16	18
R0240	2020	670	Between 6in and 12in	9.7	13	16	19	22	24
R0245	1110	821	Between 6in and 12in	12	16	19	23	27	30
R0250	2380	2320	Between 6in and 12in	32	44	53	63	75	83
R0255	1150	4010	Between 12in and 24in	66	91	110	130	160	170
R0256	1240	10900	Greater than 24in	170	230	280	330	390	430
R0260	5500	11200	Greater than 24in	170	240	280	330	400	440
R0265	3290	11400	Greater than 24in	170	240	290	340	410	450
R0270	318	11400	Greater than 24in	180	250	300	350	420	460
R0275	6500	321	Between 6in and 12in	7.2	9.7	12	14	16	18
R0276	282	11800	Greater than 24in	180	260	310	370	440	480
R0285	3420	345	Between 6in and 12in	5.6	7.8	9.3	11	13	14
R0290	265	506	Between 6in and 12in	8.4	12	14	16	20	22
R0291	879	12300	Greater than 24in	190	270	320	380	450	500
R0292	1450	12500	Greater than 24in	200	290	340	430	480	540
R0295	2770	12700	Greater than 24in	210	300	360	460	510	570
R0300	390	10	Less than 6in	2.4	2.8	3.3	4.1	4.7	5.4
R0305	99	12700	Greater than 24in	220	310	370	470	520	580
R0306	137	149	Between 12in and 24in	40	47	55	67	77	92
R0307	869	12900	Greater than 24in	250	340	410	520	580	650
R0310	147	12900	Greater than 24in	250	350	420	530	590	650
R0315	772	34	Less than 6in	0.5	0.6	0.8	0.9	1.1	1.2
R0325	1970	301	Between 6in and 12in	16	19	23	26	29	32
R0330	7490	466	Between 6in and 12in	23	28	35	40	43	49
R0335	1530	892	Between 12in and 24in	44	53	65	75	82	92
R0350	4590	543	Between 6in and 12in	26	31	38	44	49	56
R0355	6860	1710	Between 12in and 24in	76	91	110	130	140	160
R0356	1580	2020	Greater than 24in	99	120	150	170	190	220
R0357	1000	2020	Between 12in and 24in	13	20	26	35	41	57
R0358	227	2190	Greater than 24in	14	21	27	39	59	96
R0361	396	2020	Between 12in and 24in	91	110	120	140	160	170
R0362	136	2170	Greater than 24in	97	110	140	160	160	160
R0365	3090	100	Between 6in and 12in	8.7	10	12	15	16	19
R0370	604	344	Between 6in and 12in	29	34	41	48	54	61
R0375	3890	537	Between 12in and 24in	64	77	92	110	120	140
R0380	209	2710	Greater than 24in	160	190	230	260	280	290

Open Channels

Notes:

Name of Model	Length	Drainage Area		Peak Flow (cfs)					
Element	(ft)	(ac)	100-Year Depth	2-Year	5-Year	10-Year	25-Year	50-Year	100
R0390	210	2920	Greater than 24in	190	220	270	300	330	3
R0398	1160	36	Between 6in and 12in	3.1	3.7	4.5	5.2	5.8	f
R0399	167	39	Less than 6in	0.0	0.0	0.0	0.0	0.0	(
R0400	129	46	Less than 6in	1.1	1.3	1.5	1.9	2.2	
R0401	153	46	Less than 6in	4.8	5.7	6.8	8.1	9.2	
R0420	44	180	Between 6in and 12in	28	33	39	47	53	
R0424	791	46	Less than 6in	0.0	0.0	0.0	0.0	0.0	(
R0425	318	52	Between 6in and 12in	1.5	1.8	2.3	2.6	3.0	
R0430	130	60	Between 6in and 12in	3.5	4.2	5.0	5.9	6.9	
R0440	102	17	Between 6in and 12in	1.5	1.7	2.0	2.5	2.9	3
R0445	71	11	Between 6in and 12in	1.7	2.0	2.3	2.8	3.3	3
R0446	47	28	Less than 6in	3.1	3.7	4.3	5.3	6.2	
R0470	44	26	Less than 6in	6.3	7.5	8.7	11	12	
R0480	339	6.1	Less than 6in	1.4	1.6	1.9	2.3	2.7	3
R0485	410	34	Between 12in and 24in	8.6	10	12	15	17	
R0495	454	12	Between 6in and 12in	3.4	4.1	4.7	5.8	6.7	
R0500	300	17	Between 6in and 12in	4.4	5.3	6.2	7.6	8.7	
R0515	483	23	Between 6in and 12in	0.8	1.0	1.2	1.4	1.6	
R0520	848	27	Between 6in and 12in	1.9	2.2	2.6	3.2	3.7	4
R0529	517	23	Less than 6in	0.0	0.0	0.0	0.0	0.0	(
R0530	406	43	Less than 6in	0.9	1.0	1.2	1.5	1.7	
R0535	470	111	Between 6in and 12in	5.6	6.7	8.0	9.4	11	
R0540	634	173	Between 12in and 24in	11	14	16	19	22	
R0545	607	7.7	Between 6in and 12in	1.4	1.7	2.0	2.4	2.8	
R0550	115	11	Between 6in and 12in	2.4	2.9	3.3	4.1	4.7	Į,
R0551	514	185	Between 12in and 24in	14	16	19	23	27	
R0552	583	185	Between 12in and 24in	14	16	20	23	27	
R0555	957	189	Between 12in and 24in	14	17	21	24	28	
R0565	3590	277	Between 6in and 12in	9.9	12	14	17	18	
R0570	2410	999	Between 12in and 24in	53	63	77	89	99	1
R0575	1470	1050	Greater than 24in	53	64	83	92	100	1
R0580	255	1150	Between 12in and 24in	58	69	89	99	110	1
R0584	1610	34	Less than 6in	3.5	4.2	4.8	6.0	6.0	(
R0585	821	85	Between 6in and 12in	6.4	7.6	8.9	11	12	
R0586	445	85	Between 6in and 12in	6.3	7.6	8.8	11	13	
R0591	315	136	Between 12in and 24in	13	15	17	21	24	
R0595	730	174	Between 12in and 24in	19	23	28	33	37	
R0596	580	310	Between 6in and 12in	13	13	13	13	13	

Open Channels

Notes:

0-Year
340
6.6
0.0
2.5
10
61
0.0
3.5
7.9
3.3
3.8
7.1
14
3.1
19
7.8
10
1.9
4.3
0.0
2.0
12
25
3.3
5.6
31
30
31
21
110
110
130
6.0
13
14
28
42
13

Name of Model	Length	Drainage Area	400 Y D 11	Peak Flow (cfs)					
Element	(ft)	(ac)	100-Year Depth	2-Year	5-Year	10-Year	25-Year	50-Year	100
R0601	1170	333	Between 12in and 24in	15	16	16	16	16	
R0605	1110	464	Between 12in and 24in	42	49	58	69	78	
R0610	161	493	Greater than 24in	42	51	61	73	83	1
R0615	592	348	Between 12in and 24in	21	25	30	35	38	1
R0630	588	331	Less than 6in	5.6	7.5	8.8	11	12	
R0635	418	424	Between 6in and 12in	7.3	10	12	14	17	1
R0640	2030	571	Between 6in and 12in	10	14	17	20	24	
R0645	329	847	Between 6in and 12in	16	22	26	31	36	
R0655	304	301	Less than 6in	5.2	7.0	8.2	9.9	12	
R0660	2520	407	Between 6in and 12in	7.4	10	12	14	17	
R0665	915	1490	Between 12in and 24in	28	39	45	54	64	
R0670	8460	1830	Between 6in and 12in	34	48	57	68	80	
R0675	2300	2520	Between 12in and 24in	47	67	79	95	110	
R0685	564	2900	Between 12in and 24in	53	75	89	110	130	
R0690	3870	3040	Between 12in and 24in	55	77	91	110	130	
R0700	8880	3410	Between 12in and 24in	58	82	98	120	140	
R0710	11000	152	Between 6in and 12in	3.1	4.4	5.2	6.3	7.4	1
R0720	2600	761	Between 6in and 12in	Between 6in and 12in 13		21	25	29	1
R0725	3980	1250	Between 6in and 12in	22	31	36	44	51	1
R0730	718	5170	Greater than 24in	83	120	140	170	200	
R0740	5650	296	Less than 6in	5.3	7.2	8.5	10	12	1
R0750	2680	875	Between 6in and 12in	13	18	21	25	29	
R0760	2440	426	Between 6in and 12in	8.1	11	13	16	18	
R0765	2080	1460	Between 12in and 24in	24	33	39	46	54	
R0770	7970	1670	Between 6in and 12in	28	38	45	54	63	
R0775	1870	401	Between 6in and 12in	8.4	12	14	17	20	
R0780	1250	2390	Between 12in and 24in	40	56	67	80	94	
R0785	3210	2500	Between 12in and 24in	42	59	70	84	98	
R0790	1530	2710	Between 12in and 24in	46	65	76	91	110	
R0795	6760	2970	Between 12in and 24in	50	71	84	100	120	
R0800	4290	8290	Greater than 24in	130	190	230	270	320	
R0805	479	13	Less than 6in	2.3	2.7	3.1	3.8	4.4	
R0806	1310	8310	Greater than 24in	130	190	230	270	320	
R0810	104	8540	Greater than 24in	140	200	230	280	330	1
R0811	1100	8540	Greater than 24in	140	200	230	280	330	
R0820	3250	85	Less than 6in	4.4	5.3	6.5	7.5	8.2	
R0835	1020	22	Less than 6in	1.2	1.4	1.6	2.0	2.3	1
R0840	2800	34	Less than 6in	2.4	2.9	3.5	4.1	4.5	1

Open Channels

Notes:

00-Year
16
89
94
43
14
18
26
40
13
18
70
87
120
140
140
150
8.2
32
56
220
13
33
20
60
70
22
100
110
120
130
350
51
350
360
360
9.2
2.7
5.1
5.1

Name of Model	Length	Drainage Area	100 V D 11	Peak Flow (cfs)					
Element	(ft)	(ac)	100-Year Depth	2-Year	5-Year	10-Year	25-Year	50-Year	100
R0841	1410	56	Less than 6in	3.5	4.2	5.0	6.0	6.7	
R0845	1260	16	Less than 6in	1.3	1.6	1.8	2.2	2.6	3
R0850	559	27	Less than 6in	1.6	1.9	2.2	2.7	3.2	3
R0855	538	238	Between 6in and 12in	10	12	14	17	20	
R0856	845	238	Between 6in and 12in	10	12	14	17	20	
R0860	243	254	Between 12in and 24in	12	14	17	20	24	
R0865	448	38	Less than 6in	4.8	5.7	6.7	8.2	9.4	
R0866	533	291	Less than 6in	17	20	23	28	33	
R0870	93	309	Between 6in and 12in	17	21	24	30	35	4
R0880	839	153	Between 6in and 12in	7.9	9.5	12	13	15	
R0885	123	454	Between 12in and 24in	23	28	34	39	43	4
R0890	457	28	Less than 6in	1.5	1.7	2.1	2.4	2.7	
R0891	7480	482	Between 12in and 24in	25	30	37	42	46	ļ
R0900	219	5.8	Less than 6in	1.0	1.2	1.3	1.7	1.9	2
R0905	2960	277	Between 6in and 12in	14	17	21	24	27	
R0910	1920	89	Less than 6in	6.9	8.3	10	12	13	
R0911	659	366	Between 6in and 12in	21	25	31	36	39	
R0915	1540	554	Between 6in and 12in	Between 6in and 12in 33 40		48	56	62	(
R0920	1110	646	Between 12in and 24in	37	44	53	62	69	
R0930	1020	7.4	Less than 6in	0.6	0.7	0.8	1.0	1.2	-
R0935	1630	32	Less than 6in	2.0	2.4	2.9	3.6	4.2	Z
R0950	2710	33	Less than 6in	2.0	2.4	2.8	3.5	4.0	2
R0955	1540	34	Less than 6in	2.6	3.1	3.6	4.5	5.2	[
R0960	3330	19	Less than 6in	1.4	1.7	2.1	2.4	2.7	3
R0965	1030	230	Between 12in and 24in	13	15	17	21	25	
R0970	1270	283	Between 12in and 24in	15	17	20	25	29	
R0975	2920	4.7	Less than 6in	0.0	0.1	0.1	0.1	0.1	(
R0980	71	33	Less than 6in	0.6	0.7	0.8	1.0	1.2	1
R0981	179	317	Between 12in and 24in	16	18	21	26	30	
R0990	1610	107	Between 6in and 12in	5.8	7.0	8.6	9.8	11	
R0995	1000	249	Between 6in and 12in	13	17	20	22	25	
R1000	200	529	Between 6in and 12in	28	34	41	47	52	
R1001	478	529	Between 6in and 12in	28	34	41	47	52	Į
R1005	3510	540	Between 6in and 12in	28	35	42	48	52	ļ
R1010	321	605	Between 12in and 24in	31	37	45	51	57	
R1015	660	151	Less than 6in	8.0	9.6	12	13	15	
R1020	1280	172	Between 6in and 12in	8.4	10	12	14	16	
R1025	479	216	Between 6in and 12in	9.7	12	14	17	18	

Open Channels

Notes:

00-Year
7.6
3.0
3.7
23
23
28
11
37
40
16
48
3.0
51
2.2
30
15
44
69
77
1.4
4.9
4.6
5.9
3.0
28
33
0.1
1.4
35
12
28
58
58
59
64
16
18
20

Name of Model	Length	Drainage Area	100 Veer Depth ¹	Peak Flow (cfs)					
Element	(ft)	(ac)	100-Year Depth	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
R1030	3020	183	Between 6in and 12in	9.5	11	14	16	18	20
R1035	781	259	Between 6in and 12in	10	12	15	17	18	21
R1040	1650	327	Between 6in and 12in	10	13	15	18	19	22
R1045	1120	74	Less than 6in	0.7	0.8	0.9	1.1	1.3	1.5
R1050	3050	458	Between 12in and 24in	11	14	17	19	21	24
R1065	696	390	Between 6in and 12in	11	13	15	18	20	22
R1070	2110	505	Between 6in and 12in	17	20	24	28	31	35
R1075	1810	643	Between 6in and 12in	18	21	25	30	33	37
R1080	929	750	Less than 6in	18	21	26	30	34	38
R1085	1740	1260	Greater than 24in	29	35	43	50	55	63

Open Channels

Notes:

Appendix C. Cost Estimates



WRIGHT WATER ENGINEERS, INC.



AACE Class 4 Cost Estimate Summary								
Project	Са	pital Cost	Hi	gh Range [+50%]				
PR010	\$	390,000	\$	580,000				
PR060	\$	170,000	\$	260,000				
PR061	\$	200,000	\$	300,000				
PR070	\$	300,000	\$	450,000				
PR080	\$	440,000	\$	660,000				
PR090	\$	400,000	\$	610,000				

AACE International CLASS 4 Cost Estimate – Class 4 estimates are generally prepared based on limited information and subsequently have fairly wide accuracy ranges. Typically, engineering is 10% to 40% complete. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Virtually all Class 4 estimates use stochastic estimating methods such as cost curves, capacity factors, and other parametric and modeling techniques. Expected accuracy ranges are from -15% to -30% on the low side and +20% to 50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.

Project Info

Project Name : Silverthorne Drainage Master Plan Estimator : Drake Ludwig Date : 7/8/2020

Project Drainageways :

Drainageway	Drainageway Abbreviation	Length	Number of
Name	(Prefix for Reach ID)	(mi)	Reaches
PR010	PR010	0.19 mi	1
PR060	PR060	0.21 mi	1
PR061	PR061	0.03 mi	1
PR070	PR070	0.17 mi	1
PR080	PR080	0.25 mi	1
PR090	PR090	0.11 mi	1
		0.00 mi	0
	Totals :	0.96 mi	6

1	
Jurisalctions/Sponsors	÷

Jurisdiction
Silverthorne

CCI Base Year :
CCI Base Quarter :
Base CCI :
Most Recent CCI Year :
Most Recent CCI Quarter :
Most Recently Published CCI :
Elapsed Time (years) :
Percentage Change in CCI :
0 0

Construction Cost Index (CCI)
2012
1
1.0000
2020
1
1.2500
8
25.0%

Benefit Cost Analysis Effective Interest Rate (%):

UD-MP-Cost-Version-2.2_Silverthorne-MP.xls, Project Info

SUMMARY BY REACH

Project Name : Silverthorne Drainage Master Plan Estimator : Drake Ludwig Data : 7/8/2020

REACH	CAPITAL	EASEMENT / ROW	ENGINEERING	LEGAL / ADMINISTRATIVE	CONTRACT ADMIN/CM	CONTINGENCY	TOTAL CAPITAL COST	ANNUAL O&M COST	50-YEAR O&M COST
PR010-ReachPR010	\$299,713.00	\$0.00	\$44,957.00	\$14,986.00	\$29,971.00	\$74,928.00	\$464,555.00	\$515.00	\$25,750.00
PR060-ReachPR060	\$134,050.00	\$0.00	\$20,108.00	\$6,703.00	\$13,405.00	\$33,513.00	\$207,779.00	\$646.00	\$32,300.00
PR061-ReachPR061	\$152,254.00	\$0.00	\$22,838.00	\$7,613.00	\$15,225.00	\$38,064.00	\$235,994.00	\$970.00	\$48,500.00
PR070-ReachPR070	\$228,764.00	\$0.00	\$34,315.00	\$11,438.00	\$22,876.00	\$57,191.00	\$354,584.00	\$432.00	\$21,600.00
PR080-ReachPR080	\$339,891.00	\$0.00	\$50,984.00	\$16,995.00	\$33,989.00	\$84,973.00	\$526,832.00	\$512.00	\$25,600.00
PR090-ReachPR090	\$311,265.00	\$0.00	\$46,690.00	\$15,563.00	\$31,127.00	\$77,816.00	\$482,461.00	\$1,938.00	\$96,900.00
Totals	\$1,465,937	\$0	\$219,892	\$73,298	\$146,593	\$366,485	\$2,272,205	\$5,013	\$250,650

		1	MASTER PLAN CO	OST ESTIMA	TE FOR INDIVIDU	AL REACH					Ī
PROJECT :	Silverthorne Drain	nage Master Plan									
DRAINAGEWAY : REACH :	PR010 PR010										
JURISDICTION : REACH ID:	Silverthorne PR010-ReachPR01	0			ESTIMATED BY :	Drake Ludwig			DATE:	7/8/2020	
									1	TOTAL	-
DESCRIPTION		SUPPORTING	DATA (USER DEFI	NED AND CAL	CULATED)		QUANTITY	UNIT	UNIT COST	COST	USER COMMENTS
Circular Pipes	s	T					T	r	T	T	
Diameter (in) 42-inch	Length (ft) 1000	No. of Barrels 1					1000	LF.	\$158.00	\$158,000.00	
							0	LE.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
			Note : Prices reflect circuli	ar relatored concr	rate pine. For such or elliptic	al pipes uses shall	0	LF.	\$0.00	\$0.00	
			use equivalent circular pip	e diameter.			0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
Flare End Sections	Applicable	No. of Barrels	LUS FES	D/S FES	1				1		
42-inch	Yes	1	Yes	Yes			2	EA FA	\$2,125.00 \$0.00	\$4,250.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Headwalls Diameter (in)	Applicable	No. of Barrels	U'S Headwall	D'S Headwall	Concrete (C.Y.)	Steel (lbs)	I		1		
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes concrete apro Diameter (in)	on)	No. of Barrels	Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (lbs)	1		1		
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	-		0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00	
Manholas and Jointe			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Manhole, 4' Dia. (Pipe Dia. < 36") Manhole, 5' Dia. (Pipe Dia. 35", 42")		-					2	EA	\$3,625.00	\$0.00	
Manhole, 6' Dia. (Pipe Dia. = 48*) Type B Manhole (Pipe Dia. = 48*)	tion < 10 derawes)	1						EA FA	\$5,375.00	\$0.00	
Type P Manhole (Ppe Dia. 48" and larger, deflect Storm Inlet, Type R/Type 14, 5-foot	tion > 10 degrees)]					2	EA EA	\$18,750.00 \$5,750.00	\$0.00 \$11,500.00	
Concrete Box Culverts											
Individual Box Span (ft)	Box Height (ft)	No. of Barrels					Length (ft)	15	\$0.00	\$2.00	
			1				-	LF.	\$0.00 \$0.00	\$0.00	
							-	LF.	\$0.00	\$0.00	
							-	LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
Headwall and Toewalls			1					L.F.	\$0.00	\$0.00	
Individual Box Span (ft)	No. of Barrels	Total Span (ft) 0.00	Concrete (C.Y.) 0.00	Steel (lbs) 0.00	UIS Headwall	D/S Headwall	0	EA	\$0.00	\$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes wingwalls on	either side of channe	0.00 I and concrete apron)	0.00	0.00			0	EA	\$0.00	\$0.00	
Individual Box Span (ft)	Box Rise (ft)	No. of Barrels	Total Interior Span (ft) 0.00	Length (ft)	Concrete (C.Y.) 0.00	Steel (lbs) 0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Hydraulic Structures			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Sloping Drop Structures Height (ft)	Bottom Width (ft)	Yn (ft)		La (ft)	Hard Basin Length (ft)	Total Width (ft)	<u> </u>		L		
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00	\$0.00	

Check Structures	r								
Oneck Structure, Concrete	1					L.F.	\$338.00	30.00	
channel improvements							50.00	\$2.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
-							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
Detention Motor Quality Escilit							30.00	\$0.00	
Detention/water Quality Facilit	es								
Detention Facility 1 (Complete-in-Place)						AGET	\$57,000,00	\$0.00	
Detention Facility 2 (Complete-in-Place)						AC-FT	\$57,000.00	\$0.00	
Detention Facility 3 (Complete-in-Place)	l					AC-FT	\$57,000.00	\$0.00	
Detention (User Entered Quantitie:	a)								
Excavation, Low Range	4					C.Y.	\$14.00	\$0.00	
Excavation, Md Hange Excavation, High Bange	1					GY.	\$30.00	\$0.00	
Outlet Works			liser De	fined Unit Cost>		EA	\$39.00	\$0.00	
Water Quality Appurtenances			User De	afined Unit Cost>		EA		\$0.00	
Removals									
Removal of culvert pipe (D<48")					1000	L.F.	\$25.00	\$25,000.00	
Removal of culvert pipe (48" <d<84")< td=""><td>4</td><td></td><td></td><td></td><td></td><td>L.F.</td><td>\$63.00</td><td>\$0.00</td><td></td></d<84")<>	4					L.F.	\$63.00	\$0.00	
Removal of culvert pipe (D>84*)	4					L.F.	\$94.00	\$0.00	
Concrete Box Culvert						L.F./CBLL	\$125.00	\$0.00	
Landscaping and Maintenance	Improvements								
Wetlands Plantings						ACRE	\$31,250.00	\$0.00	
Reclamation & seeding (native grasses) Trail/Bith. Concrete (10' Width)						AUNE L F	\$1,250.00	\$0.00	
Tral/Path. Crusher Fines (10' Width)						LE.	\$14.00	\$0.00	
Special Items (User Defined)									
	<user defined="" items<="" td=""><td></td><td>User De</td><td>afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	afined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User De</td><td>fined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	fined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User De</td><td>afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	afined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User Do</td><td>afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	afined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User Do</td><td>afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	afined Unit Cost>				\$0.00	
-	could be a set of the		User Do	afined Unit Cost>				\$0.00	
	Securities and the security se		User Dr	miled one obar mile				\$0.00	
			0301 04	afined Unit Cost>				30.00	
	<user defined="" items<="" td=""><td></td><td>User De</td><td>afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	afined Unit Cost>				\$0.00	
	<user defined="" items<br=""><user defined="" items<="" td=""><td></td><td>User De User De</td><td>afined Unit Cost> afined Unit Cost> afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00 \$0.00 \$0.00</td><td></td></user></user>		User De User De	afined Unit Cost> afined Unit Cost> afined Unit Cost>				\$0.00 \$0.00 \$0.00	
Land Acquisition	<user defined="" items<br=""><user defined="" items<="" td=""><td></td><td>User De</td><td>afined Unit Cost> afined Unit Cost> afined Unit Cost></td><td></td><td></td><td></td><td>\$0.00 \$0.00</td><td></td></user></user>		User De	afined Unit Cost> afined Unit Cost> afined Unit Cost>				\$0.00 \$0.00	
Land Acquisition Temporary Easements	<user defined="" items<br=""><user defined="" items<="" td=""><td></td><td>User De</td><td>afined Unit Cost></td><td></td><td>EA</td><td></td><td>\$0.00 \$0.00 \$0.00</td><td></td></user></user>		User De	afined Unit Cost>		EA		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition	<user defined="" items<br=""><user defined="" items<="" td=""><td></td><td>User Do User Do</td><td>fined Unit Cost> fined Unit Cost> fined Unit Cost></td><td>0.50</td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$0.00</td><td></td></user></user>		User Do User Do	fined Unit Cost> fined Unit Cost> fined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Essements Essement/RDW Acquisition	<user defined="" items<br=""><user defined="" items<="" td=""><td>Mastar Dian Canital Januar</td><td>User De User De</td><td>rfined Unit Cost> rfined Unit Cost> rfined Unit Cost></td><td>0.50</td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$0.00</td><td></td></user></user>	Mastar Dian Canital Januar	User De User De	rfined Unit Cost> rfined Unit Cost> rfined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Essements Essement/ROW Acquisition	<user defined="" items<br=""><user defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User De User De User De</td><td>rfined Unit Cost> ofined Unit Cost> ofined Unit Cost></td><td>0.50</td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$0.00</td><td></td></user></user>	Master Plan Capital Impro	User De User De User De	rfined Unit Cost> ofined Unit Cost> ofined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Terporary Essenents Essenent/RDW Acquisition Genetal Improvement Costs Bep Culverts and Storm Dains	<user defined="" items<br=""><user defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User De User De</td><td>rfined Unit Cost> rfined Unit Cost> rfined Unit Cost></td><td>0.50</td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$188,375.00</td><td></td></user></user>	Master Plan Capital Impro	User De User De	rfined Unit Cost> rfined Unit Cost> rfined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$188,375.00	
Land Acquisition Terporary Easternatic EasternaticNN Acquisition Clipital Improvement Costs Bip Cilutest and Storm Darin Concrete Box Culvers	<user da="" fined="" items<="" td=""><td>Master Plan Capital Impre</td><td>User De User De</td><td>rfined Unit Cost> rfined Unit Cost> afined Unit Cost></td><td>0.50</td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$188,375.00 \$0.00</td><td></td></user>	Master Plan Capital Impre	User De User De	rfined Unit Cost> rfined Unit Cost> afined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$188,375.00 \$0.00	
Land Acquisition Terporary Essenteris Beserrer RTXW Acquistion Genetics Improvement Costs Bio Culvets and Storm Dates Concrete Bio Culvets Mydraub: Structures	< Under Defined tiens < Under Defined tiens	Master Plan Capital Impro	User be User be	rfined Unit Cost> rfined Unit Cost> rfined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$188,375.00 \$0.00 \$0.00	
Land Acquisition Terpory Basenets Example TeV Acquision Centre Instruction Description Control Base Description Control Base Occorted Base Calvers Hydraulic Structures Hydraulic Structures	6User Defined terms User Defined terms	Master Plan Capital Impro	User De User De	offined Unit Cost> offined Unit Cost> offined Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$188,375.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Tenpory Searchis Economic TOM Acquisition Capital Improvement Costs Pic Outers and Son Dans Controls Bio Calorts Octavity Bio Calorts Octavity Development Dana Tenporements Dana Tenporements	icBar Daffing fittens icBar Daffing fittens	Master Plan Capital Impro	Deer De User De User De	rfined Unit Cost> rfined Unit Cost> rfined Unit Cost> y	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Tarpor J Remains Tarpor J Remains Carolin Languages Carolin Languag	e-Ukar Defined Kens 	Master Plan Capital Impro	User Dr User Dr	rfned Unit Cost> rfned Unit Cost>	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Land Acquisition Temporary Eastworks EastworksTCM Acquisition EastworksTCM Acquisition Controls the Control Controls and Controls Controls the Control Controls the Controls Controls the Controls Control the Control Control the Control Control the Control Control the Control C	eUser Defined Items User Defined Items	Master Plan Capital Impro	User Dr User Dr	rfned Unit Cost> frined Unit Cost> rfned Unit Cost> y	0.50	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$128.375.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Tarpor J Controls Control Language Control Induced Security Control Induced Security Control Bio Colorets Control Bio Colorets Octored Security Colorets Colo	e-Ukar Oxfined Kens 6 Ukar Oxfined Kens 1	Master Plan Capital Impro	User Dr	rfned Unit Cost> rfned Unit Cost> rfned Unit Cost> y	0.50	EA ACRE		\$0.00 \$0.000 \$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000\$00 \$0.0000\$000\$	
Land Acquisition Land Acquisition tuppers Exercise tuppers Exercise tuppers Exercise tuppers Exercise tuppers	eUaro Moledatens 	Master Plan Capital Impre	User Dr User Dr	rined Unit Cost	0.50	EA ACRE		80.00 80	
Land Acquisition Tarpor J Revents Targory Targory Targory Control for Acquisito Control for Control Targory Control for Control Control Fo	eBar Oxfined Items 	Master Plan Capital Impro	User De User Dr Dovement Cost Summar	rfred Unit Cost	0.50 55.000.00 5%	EA ACRE		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.0000\$000 \$0.0000\$000 \$0.0000\$0000\$0000\$000\$	
Land Acquisition Land Acquisition Exprove Learning Confirm Improvements Confirm Confirm Improvements Confirm Con	eUser Difficiel Bans	Master Plan Capital Impro	User Dr User Dr Dovement Cost Summar	rifred Unit Cost> rifred Unit Cost> rifred Unit Cost> y 	0.50 55.000.00 5% 525.000.00	EA ACRE LS.		8000 80000 80000 80000 800000 80000 8000000 800000 800000 800000 800000 800000 8000000 800000 8000000 8000000 800000000	
Land Acquisition Targory Flammas Targory Canonics Targory Canonics Capital Improvement Control Capital Improvement Control Targory Control Targory Control Capital Improvement Control Targory Canonics Targory Control Targor	eUser Dafied Bens	Master Plan Capital Impro	User Dr User Dr Dovernent Cost Summar	rfred Unit Cost> rfred Unit Cost> rfred Unit Cost> y ump Sum Cost> ump Sum Cost>	0.50 55.000.00 5% 535.000.00	EA ACRE LS. LS.		80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 8108,00 8108,00 8108,00 810,000 810,0	
Land Acquisition Land Acquisition Exprove Learners Exprove the Costs Exprove the Costs Expression and Non-Drive Acquisition Drive Data Clance Acquisition Data Clance Data Cla	eUser Dafised Bans	Master Plan Capital Impre	User Dr User Dr Sverment Cost Summar User Doffmet L User Doffmet L User Drifmet L	rifred Unit Cost> rifred Unit Cost> rifred Unit Cost> y ump Sum Cost> ump Sum Cost> ump Sum Cost>	0.50 \$5.000.00 5% \$25.000.00 \$36.000.00 \$56.000.00	EA ACRE LS. LS. LS.		20.00 20.00 50	
Land Acquisition Lange of parents Exposed and the second s	eUser Defined Bens	Master Plan Capital Impre	User Dr User Dr overment Cost Summar User Ontwork User Ontwork User Ontwork	Iffred Unit Cost>	0.50 \$5.000.00 \$5.000.00 \$5.000.00 \$50.000.00 \$50.000.00	EA ACPE L.S. L.S. L.S.		80.00 90.00 90.00 \$188.375.00 \$0.	
Land Acquisition Land Acquisition Exprove Exercise Control Improvement Contro Exercise Control Data Control Control Data C	eUser Dafied Bans	Master Plan Capital Impre	User Dr User Dr Sverment Cost Summar User Driffiel L User Driffiel L User Driffiel L	Infrad Unit Cost> frand Unit Cost> frand Unit Cost> y ump Bum Cost> ump Bum Cost> ump Bum Cost>	0.00 85.000.00 95. 255.000.00 255.000.00 255.000.00 255.000.00	EA AGRE L.S. L.S. L.S. L.S. L.S.		20:00 20:00 20:00 30:00 30:00 30:00 30:00 4	
Land Acquisition Lange Acquisition Lange Acquisition Lange Acquisition Captor & Lange Acquisiton Captor & Lange Acquisiton Captor & Lange Acquisiton Captor & Lange Acquisiton Captor & Lange Acquisition Captor &	cUser Defined Bens	Master Plan Capital Impre	User Dr User Dr overnent Cost Summar User Ontinet L User Ontinet L User Ontinet L	rined bit Cost> rined bit Cost> rined bit Cost> y ump from Cost> ump from Cost> ump from Cost>	0.00 55.000.00 55 120.000.00 55	EA ACRE		80.05 80.05 80.00 80.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 910.669.00 910.669.00	
Land Acquisition Land Acquisition Exposure Examples Capital Improvement Costs Capital Improvement Costs Capital Improvement Costs Capital Improvement Capital Improvem	eDaro Minde Bans 	Master Plan Capital Impre	User Dr User Dr Sverment Cost Summar Sverment Cost Summar User Drifned L User Drifned L	y ump Bum Cost →	0.50 \$5.000.00 5% \$5.000.00 \$5.000.00 \$5.000.00 \$5.000.00	EA ACRE LS. LS.		80.00 80.00 9	
Land Acquisition Land Acquisition Langery Education Langery Education Capture Statement Capture Instruments Capture Capture Instruments Capture Captur	eLay to Mind dans	Master Plan Capital Impre	User Dr. Oser Dr. overment Cost Summar User Defined L User Defined L	y ump fum Cost → y ump fum Cost → ump fum Cost →	0.50 55.0000 55.0000 55.0000 9%	EA ACRE LS. LS. LS.		b0.07 b	
Land Acquisition Land Acquisition Exprove Example Craftel Improvement Costs Craftel Improvement Costs Craftel Improvement Costs Craftel Improvement Costs Craftel Improvement Craftel Impr	eDaro Minde Bans 	Master Plan Capital Impre	User Dr User Dr Sverment Cost Summar Sverment Cost Summar User Drifned L User Drifned L	A second	0.80 \$5,000.000 \$5,000.0000 \$5,000.0000 \$5,000.0000 \$5,000.0000 \$5,000.0000 \$5,000.0000 \$5,000.0000 \$5,00000000 \$5,00000000000000000000	EA ACRE LS. LS. LS.		2007 2007 2007 2007 2007 2007 2007 2007	
Land Acquisition Land Acquisition Engrang Examples Engrang Examples Example	User Defined Bens User Defined Bens User Defined Bens 	Master Plan Capital Impre	User Dr. Geer Dr. overment Cost Summar Swernent Cost Summar User Defined L User Defined L User Defined L	y ump fam Cost → y ump fam Cost → y	0.50 \$5.000.00 55. 55. 55. 55. 55. 55.	БА АСЛЯ LS. LS. LS.		9.00 9.00	
Land Acquisition Land Acquisition Experts Example Califal Improvement Costs Califal Improvement Costs Califal Improvement Costs Califal Improvement Costs Califal Improvement Califal Costs Califal Cost Califol Cost Califal Cost Califal Cost Califol Co	eDaro Minde Bans	Master Plan Capital Impre	User Der Gescher D	y	0.00 50.000.00 50.00	EA ACPE		2007 2007 2007 2007 2007 2007 2007 2007	
Land Acquisition Land Acquisition Tempora factorial Temporaria Concrete for Carlor	Lay to Mind Bans	Master Plan Capital Impre	User Dr Geer Dr overnent Cost Summar overnent Cost Summar user Driner L Geer Driner L Geor Driner L	y	0.00 \$5.000.00 \$5. \$5. \$5. \$5. \$5. \$5. \$5. \$5.	EA ACPE		9 0.0 9	
Land Acquisition Land Acquisition Emports: Example: Califal Improvement Costs Califal Improvement Costs Califal Improvement Costs Califal Improvement Califal Califal Califal Costs Califal Califal Califal Costs Califal Califal Costs Califal Califal Costs California Califal Califal Costs California California Califal Califal Costs California	 	Master Plan Capital Impre	User De User De Sverment Cost Summar User Defined L User Defined L	y	0.00 50.000.00 50.00	EA ACPE LS. LS. LS.		9.09 9.09 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Land Acquisition Tempora factors Tempora fact	cUser Defined tenss	Master Plan Capital Impre	User Darios (User D	Intered Unit Cost → Intered Unit Cost → y y uning Bum Cost → uning Bum Cost → uning Bum Cost →	0.00 550.000.00 9% 55% 55% 55% 55%	EA ACRE		900 900 900 900 900 900 900 900 900 900	
Land Acquisition Land Acquisition Experts Labored Califal Improvement Costs Califal Improvement Costs Califal Improvement Costs Califal Improvement Costs Califal Improvement Califal Califal Improvement Costs Califal Califal Improvement Costs Califal Califal Improvement Costs Califal Califal Improvement Costs CalifIl CalifII CalifIl CalifIl CalifII CalifII CalifII CalifII Ca	cUser Defined tenss	Master Plan Capital Impre	User De User De Sverment Cost Summar User Defined L User Defined L	y unp Bun Cost y y	0.00 50.000.00 50.00	EA ACRE L.S. L.S. L.S.	Unit Cest	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Land Acquisition Temporary Easternation	cUser Defined tenss	Master Plan Capital Impre	User Defined User	y ump fum Cost → y ump fum Cost → ump fum Cost → ump fum Cost → ump fum Cost →	0.00 55.000.00 9% 55.000.00 15.000 15.0000 15.000 15.000 15.00000 15.0000 15.0000 15.0000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.00000 15.000000 15.000000 15.000000 15.000000 15.0000000 15.0000000 15.00000000000 15.000000000000000000000000000000000000	EA ACRE L.S. L.S. L.S. L.S. L.S. L.S.	UniCost	9 0.0 9	
Land Acquisition Land Acquisition Experts Intervent Castella Improvement Costs Castella Improvement Costs Castella Improvement Costs Castella Castella Improvement Costs Castella Castella Improvement Castella Impro	c	Master Plan Capital Impre	User De User D	y unp Bum Cost	0.00 0.00	DA AGRE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cest \$10.0	9.09 9.09 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Land Acquisition Temporary Easternation Easternation Control Easternation Control Easternation Control Easternation Control Easternation Control Easternation Control and Control Easternation Control Eas		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan c.) Optical Optical	User Der Der Der Der Der Der Der Der Der D	y ump fum Cost → ump fum Cost → ump fum Cost →	0.00 95.000.00 95. 95.000.00 95. 95. 95. 95. 95. 95. 95. 95.	EA ACISE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.	Unit Cest 51:00 40:00 40:00	9 0.0 9 0.0	
Land Acquisition Land Acquisition Land Acquisition Exposure Insurantia Exposure Insurantia Exposure Insurantia Capital Improvement Costs Capital Improvement Costs Capital Capital Costs	 	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenaa c.) Optication Opticatio	User De User D	y unp fum Cost	0.30 55.000.00 	EA ACTE L.S. L.S. L.S. L.S. L.S. L.S. ACTE ACTE	Unif Cest \$10.0 \$1.00 \$1.00 \$1.00 \$1.00	9.09 9.09 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Land Acquisition Land Acquisition Executed Statements Executed Statements Executed Statements Executed Statements Control Control		Master Plan Capital Impre Master Plan Capital Impre stor Plan Operation and Maintenau stor Plan Operation and Maintenau (c) Optional Optional Optional Optional Optional	User Der Der Der Der Der Der Der Der Der D	y ump fum Cost → start → star	0.00 55.000.00 95. 55.000.00 95. 55.000.00 55. 95. 95. 95. 95. 95. 95. 95.	БА А.575 L.5. L.5. L.5. L.5. L.5. L.5. L.5.	Unit Cost 1 100 1 500 1 500 1 500 1 500 1 517 5 1 875 50	9 0.0 9 0.0	
Land Acquisition Land Acquisition Land Acquisition Experts Instantist	c	Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (*) Optional Optional Optional Optional	User Der Der Der Der Der Der Der Der Der D	y unp Sun Cost y y	0.00 \$5,000.00 55, 00 55, 105, 155,	БА. Асуте L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 1100 1100 100 100 100 100 100	9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Land Acquisition Land Acquisition Exprove flammonia Exprove flammonia Exprove flammonia Confirm Exprovement Control Decounting and Branchart Control Part Acquisition Control Part Acquisition Control Part Acquisition Control Part Control Decounting Control		Master Plan Capital Impre inter Plan Operation and Maintena tor Plan Operation and Maintena (b) Optional (c) O	User Particle Us	y ump fum Cost y y	0.00 55.000.00 96 95.000.000 95.000.0000000000	ВА АСРЕ LS LS LS LS LS LS LS LS LS LS LS LS LS	901 Cost 100 9030 0 9030 0 918250 918250 918250 918250 918250 918250	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Land Acquisition Experts Instantis Experts Instantis Experts Instantis Experts Instantis Experts Instantis Experts Instantis Calification Control Security Calification Ca		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (b) Optional Optional Optional Optional Optional Optional	User Driver of Cost Summar User Driver of Cost Summar User Driver of Cost Summar User Driver of Cost Summar User Driver of Cost Summary User Driver of Cost Summary	Prequency	0.00 55.000.00 55.00 55.00 95. 95. 95. 95. 95. 95. 95. 95. 95. 95.	ВА АСЯ L5 L5 L5 L5 L5 L5 L5 L5 L5 L5	Bhit Cost \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$10	900 900 900 800 914 0000 914 000 914 0000 914 000 914 0000 9100 9100 9100 9100 9100 9100 9100 9100 9100 9100 9100 9100 9100 9100 9100	
Land Acquisition Land Acquisition Land Acquisition Exprove Extension Exprove Teamore Confirm Improvement Contin Confirm Improvement Contin Confirm Improvement Confirm Improvement Continue Confirm Improvement Continue Co		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintena ter Que and Maintena ter Que and Appendix All Capital State Capital Sta	User Der Der Der Der Der Der Der Der Der D	Inter Unit Cost → Inter Unit Cost	0.00 55.000.00 9% 255.000.00 555.00 9% 9% 9% 9% 9% 25% 25% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	БА АСРЕ Ц.5. Ц.5. Ц.5. Ц.5. Ц.5. Ц.5. Ц.5. Ц.5	Unit Cost 51:00 51:00 51:00 50 50 50 50 50 50 50 50 50 50 50 50 5	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Land Acquisition Engrang Exercise ExerciteDVA Acquise ExerciteDVA Acquise ExerciteDVA Acquise ExerciteDVA Acquise ExerciteDVA Acquise ExerciteDVA Acquise ExerciseDVA Acquise ExerciseDVA Acquise ExerciseDVA Acquise ExerciseDVA Acquise ExerciseDVA Acquise ExerciseDVA AcquiseDVA ExerciseDVA		Master Plan Capital Impre Master Plan Capital Impre Ster Plan Operation and Maintenan (Contemport (Con	User Defined L User D	Inded Unit Cost → inded Unit Cost	0.00 58.000.00 58.000.00 58.000.00 59.000.000 59.000.000 59.000.000 59.000.000 50.0000.000	ВА <u>А</u> ОЯ <u>L</u> E <u>L</u> E	Unr Cost 1 (10) 1 (10)	9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Land Acquisition Land Acquisition Description Exercised Statements Exercised Statements Confirm Acquisition Description D		Master Plan Capital Impre Master Plan Capital Impre Ner Plan Operation and Maintenar (c) Optional actual reparts, etc.) Optional Optional Optional	User Der Der Der Der Der Der Der Der Der D	y unp Bun Cost → hard Unit Cost → hard Unit Cost → hard Unit Cost → y	0.00 85.000.00 96 95.000.00 96 95. 96 96 96 96 96 96 96 96 96 96	ВА АОТЕ LLS LLS LLS LLS LLS LLS LLS LLS LLS LL	Uhl Cest 31:00 49:0.0 90:05 10:000 10:00 1	9 0.0 9 0.0	
Land Acquisition Land Acquisition Temprary Exercise Temprary Tempr		Master Plan Capital Impre Master Plan Capital Impre Ver Plan Operation and Maintenan ter Plan Operation and Maintenan (optical optical optical optical optical optical	User Defined C	Inter Unit Cost → inter Unit Cost	0.00 \$10.00.00 9% 55.00.00 9% 55% 9% 15% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9	ВА <u>АОР</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u> <u>LL</u>	Unit Cest 11.00 9955 00 11.07 50 11.07 50 10.00 10.00 10.00 10.00	9 80 9 80	
Land Acquisition Land Acquisition Land Acquisition Engineeric Extended EngineericityOV Acquisition Confident and Born Devin Device Confident and Device Confident Device		Master Plan Capital Impre Master Plan Capital Impre scher Plan Operation and Maintena (c) Optional optional churd repair, dc) Optional optional churd repair, dc) Optional optional	User Defined La Cost	y amp Bun Cost	0.00 55 55 55 55 55 55 55 55 55	ВА АОТЯ LLS. L	bhr Cert 1 (3) 3 (9:00 9:00 9:00 9:00 <t>9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00<td></td></t>	
Land Acquisition Land Acquisition Temporary Exercise Exercise (CP) Acquisition Exercise Exercise (CP) Acquisition Exercise Exerci		Master Plan Capital Impre Master Plan Capital Impre iter Plan Operation and Maintenan (c) Optional (c) Optional (c) Optional (c) Optional (c) Optional (c) Optional	Leer Defined La Cest	y unp fun Cast→ y y	0.00 \$20,000.00 9% 525,000.00 15,000.00 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 9% 50% 50% 50% 50% 50% 50% 50% 50	ВА <u>АОРЕ</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u>	Unif Cest 51:00 200 21:0	8 00 8 00	
Land Accubilition Land Accubilition Engineeric Elaboratio Engineeric Elaboratio Engineeric Elaboratio Engineeric Elaboratio Engineeric Elaboratio Engineeric Elaboratio Elaboration Elabor	Law of Model tens	Master Plan Capital Impre	Lear Defined L Lear Def	y amp Ban Cost	0.00 55.000.00 55.000.00 55.000.00 95. 95. 95. 95. 95. 95. 95. 95. 95. 95.	ВА АОТЕ LLS LLS LLS LLS LLS LLS LLS LL	Unit Cest 1 f.02 1 f.02	9 0.0 9 0.0	
Land Acquisition Land Acquisition Temporary Essential Essenter/EVDM Acquisition Essenter/EVDM Acquisition Control and Control and Control Control and Control and Control Control and Control and Control Cont		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintena (c) Optical (c) Optical (c) Optical (c) Optical (c) Optical (c) Optical	User Defined UK Cost	y unp fum Cost → the d bit Cost → the d	0.00 9% 9% 25500.00 9% 25500.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	ВА АОТЯ LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cess 51:00 19:000 19:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 1	9.00 9.00 9.00 <td></td>	
Land Accubilition Land Accubilition Engineerin Elaboration Engineerin Elaboration Engineerin Elaboration Engineerin Elaboration Elaboratio		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (b) Optional Optional Optional Optional Optional	User Defined UK Cost	International Cost → Structure Cos	0.00 \$5,000.00 55, 00 55, 105,	Б. <u>А</u> СК <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u> <u>L5</u>	Unit Cost 8100 8200 8000 8000 8000 8000 8000 8000	9:00 9:00 9:00 <td></td>	

			MASTER PLAN CO	DST ESTIMA	TE FOR INDIVIDU	AL REACH]
PROJECT :	Silverthorne Drain	nage Master Plan									1
DRAINAGEWAY : REACH :	PR060 PR060										
JURISDICTION : REACH ID:	Silverthorne PR060-ReachPR06	0			ESTIMATED BY :	Drake Ludwig			DATE:	7/8/2020	
										TOTAL	
DESCRIPTION		SUPPORTING	DATA (USER DEFIN	IED AND CAI	LCULATED)		QUANTITY	UNIT	UNIT COST	COST	USER COMMENTS
Circular Pipes	1	1	r				1		1	1	
Diameter (in) 36-Inch	Length (ft) 70	No. of Barrels					70	LE.	\$135.00	\$9,450.00	
36-Inch 36-Inch	90	1					90	LE	\$135.00	\$9,450.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
			Note : Prices reflect circula	r relatored conc	rate pipe. For such or elliptic	al pipes uses shall	0	LF.	\$0.00	\$0.00	
			use equivalent circular pip	e diameter.			0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
Flare End Sections	Applicable	No. of Barrels	UIS FES	D/S FES	1						
35-inch 35-inch	Yes	1	Yes	Yes			2	EA FA	\$2,013.00	\$4,026.00	
36-inch	Yes No	1	Yes	Yes	-		2	EA	\$2,013.00 \$0.00	\$4,026.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				-		0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				-		0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Headwalls Diameter (in)	Applicable	No. of Barrels	U'S Headwall	D'S Headwall	Concrete (C.Y.)	Steel (lbs)					
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes concrete apro Diameter (in)	on)	No. of Barrels	Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (lbs)	1				
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	-		0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	-		0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
	-		0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	1
	-		0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Manhole, 4' Dia. (Pipe Dia. < 36')							2	EA	\$3,625.00	\$7,250.00	
Manhole, 5' Dia. (Hpe Dia. 36" - 42") Manhole, 6' Dia. (Rpe Dia. = 48") Tuna B. Manhole. (Par. Dia. 48")	5m < 10 + `	1						EA EA	\$4,875.00 \$5,375.00	\$0.00	
Type P Manhole (Ppe Dia, 48° and larger, deflect Type P Manhole (Ppe Dia, 48° and larger, deflect Storm Inlet, Type B(Type 14, 5 feet	tion > 10 degrees)	1						EA EA	\$18,750.00	\$0.00	
Concrete Box Culverts								~			
Box Culvert Pipe Individual Box Span (ft)	Box Height (ft)	No. of Barrels					Length (ft)				
								LF.	\$0.00	\$0.00 \$0.00	
								LF.	\$0.00	\$0.00	
								LE.	\$0.00	\$0.00	
								LE.	\$0.00	\$0.00	
Headwall and Toewalls			L					LF.	\$0.00	\$0.00	
Individual Box Span (ft)	No. of Barrels	Total Span (ft)	Concrete (C.Y.)	Steel (lbs)	UIS Headwall	D/S Headwall	0	EA	\$0.00	\$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes wingwalls on	either side of channe	0.00 I and concrete apron)	0.00	0.00			0	EA	\$0.00	\$0.00	
Individual Box Span (ft)	Box Rise (ft)	No. of Barrels	Total Interior Span (ft) 0.00	Length (ft) 0	Concrete (C.Y.) 0.00	Steel (lbs) 0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Hydraulic Structures			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Sloping Drop Structures Height (ft)	Bottom Width (ft)	Yn (ft)	[La (ft)	Hard Basin Length (ff)	Total Width (ft)			1	1	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00	\$0.00	

Check Structure, Concrete									
						L.F.	\$338.00	\$0.00	
Channel Improvements									
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
-							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
Detention/Water Quality Facilit	ies								
Detention (Complete-in-Place)									
Detention Facility 1 (Complete-in-Place)	1					AC-FT	\$57,000.00	\$0.00	
Detention Facility 2 (Complete-in-Place)						AC-FT	\$57,000.00	\$0.00	
Detention Facility 3 (Complete-in-Place)	I					AC-FT	\$57,000.00	\$0.00	
Detention (User Entered Quantitie	5)								
Excavation, Low Range	4					C.Y.	\$14.00	\$0.00	
Excavation, Mid Hange Excavation, High Bange	1					CY.	\$30.00	\$0.00	
Cutlet Works	1		liter	lefined linit Cost>		G.Y.	e3d.00	\$0.00	
Water Quality Appurtenances	1		User	lefined Unit Cost>		E4		\$0.00	
Removals	+		Julia						
Removal of culvert pipe (Ds48")	1				230	LE	\$25.00	\$5 750 00	
Removal of culvert pipe (48" <d<84")< td=""><td>1</td><td></td><td></td><td></td><td>200</td><td>LF.</td><td>\$63.00</td><td>\$0.00</td><td></td></d<84")<>	1				200	LF.	\$63.00	\$0.00	
Removal of culvert pipe (D>84*)	1					L.F.	\$94.00	\$0.00	
Concrete Box Culvert	1					LF/CBLL	\$125.00	\$0.00	
Landscaping and Maintenance	e Improvements								
Wetlands Bartings						ACRE	\$31,250.00	\$0.00	
Reclamation & seeding (native grasses)					1	ACRE	\$1,250.00	\$1,250.00	
Trail/Path, Concrete (10' Width)					470	L.F.	\$55.00	\$25,850.00	
Trail/Bath, Crusher Fines (10' Width)						L.F.	\$14.00	\$0.00	
Special Items (User Defined)									
	<user defined="" items<="" td=""><td></td><td>User</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	lefined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User (</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User (lefined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User (</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User (lefined Unit Cost>				\$0.00	
-	<user defined="" items<="" td=""><td></td><td>User</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	lefined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	lefined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	lefined Unit Cost>				\$0.00	
	coultor Defined Items		User	Infined Unit Cost>				\$0.00	
	Sumiliser Defined Items		liser	lefined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>lefined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	lefined Unit Cost>				\$0.00	
Land Acquisition		•							
Eand Adquisition									
lemporary Easements						EA		\$0.00	
Easement/ROW Acquisition						EA ACRE		\$0.00 \$0.00	
Easement/RDW Acquisition						EA ACRE		\$0.00 \$0.00	
Easement/ROW Acquisition	-	Master Plan Capital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00	
Easement/ROW Acquisition Capital Improvement Costs	-	Master Plan Capital Impro	ovement Cost Summa	ŋ		EA ACRE		\$0.00 \$0.00	
Temporary Essentens Essement/ROW Acquisition Capital Improvement Costs Ppe Culverts and Storm Drains	-	Master Plan Capital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00 \$50,378.00	
Emporary basements Basement/ROW Acquisition Capital Improvement Costs Ppe Culverts and Storm Drains Concrete Box Culverts	_	Master Plan Capital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00 \$50,378.00 \$0.00	
Emportary Lastements Essement/ROW Acquisition Crapitel Improvement Costs Page Culverts and Storm Drains Concrete Box Culverts Hydraulic Structures		Master Plan Capital Impro	ovement Cost Summa	ŋ		EA ACRE		\$0.00 \$0.00 \$50,378.00 \$0.00 \$0.00	
Interportary Lastements Basement/RDW Acquistion Capital Improvement Costs Pop Cuherts Born Datas Concrete Box Cuherts Hydraulis Structures Canand Improvements		Master Plan Capital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00 \$50,378.00 \$0.00 \$0.00 \$0.00 \$0.00	
Import y adventors Concernents Concernents Concernents Concernents Concernents Concernents Concernents Detertion/Water Coality Facilities Permovals	-	Master Plan Gapital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00 \$50.378.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Improve Sakhners ExementRVM Acquiston Benital Improvement Costs Penital Improvement Costs Penital Improvements Dannel Improvements Dannel Improvements PentonivMarc Costs FoolBes Removals		Master Plan Capital Impro	ovement Cost Summa	ny		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$20.00 \$20.00	
Improve Justiments Improvements Improvements Improv		Master Plan Capital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$5.750.00 \$27,100.00 \$0.00	
Employ 2 additions Employ 2 additions Collect and Storm Dates Concrete Root Annual Storm Dates Concrete Root Cuberts Pice Cuberts and Storm Dates Concrete Root Cuberts		Master Plan Capital Impro	ovement Cost Summa	ny		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$5.750.00 \$27,100.00 \$27,100.00 \$22,25.00	
Lingsony assembles Capital Intervenent COV Acquisitor Capital Intervenent COV Acquisitor Par Calvers and Som Dales Par Sale Toroches Destinative Coverses Destinative Cove	-	Master Plan Capital Impro	ovement Cost Summa	ry		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$5.750.00 \$27100.00 \$27100.00 \$23100.00	
Import y advances Carolin Manazowani and Constant Carolin Manazowani and Konn Davis Carolin Man Carolina Pao Cultures Davis Wing Carolina Sector Manazowani Carolina Carolina Sector Manazowani Sector Manazowani Sector Manazowani Sector Manazowani Sector Manazowani Carolina Carolina Advitoria Carolina Advitori Advitoria Advitori Advitoria Advitoria Carolina Advitoria	onte	Master Plan Capital Impro	ovement Cost Summa	ry Lump Sum Cost>	\$2,500.00	EA ACRE		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.000 \$0.000 \$0.00000 \$0.0000 \$0.00000 \$0.0000 \$0.0000 \$0.00000 \$0.0000 \$0.000000 \$0.0000 \$0.0000 \$0.0000000 \$0.00000000	
Unipplay additional Control Functional Control Control Functional Control Para Coheren and Neuro Dana Control Non Coheren Control Non Coheren Control Non Coheren Control Non-Coheren Control	and the second se	Master Plan Capital Impre	User Defined	ry Lump Sum Cost	\$2,500,00 5% 515 process	EA ACRE		\$0.00 \$0	
Import y advances Import y advances Cantol Manazowani era Conta Cantol Manazowani era Conta Cantol Manazowani Pao Culerto Dansel Importanti Secta Martina Cantol Brochers Manada Cantol Secta Martina Cantol Manazowani Secta Manazowani Secta Manazowani Cantol Manda Capital Improvement Cab Advances Advances Capital Manazowani Capital Manazowani Capital Manazowani Capital Manazowani	ont	Master Plan Capital Impre	User Defined	ry Lump Sum Cost> Lump Sum Cost>	\$2,500,00 5% \$15,000,00 \$25,000,00	EA ACRE LS. LS.		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000\$0 \$0.0000\$0 \$0.0000\$000\$	
Unippay apartminis Unippay apartminis Certific Improvements Control Page Calverts and Neuro Darse Concrete Non Calverts 4 data its Instrument Additional Instrument Descriptional Cally Facilities Neuropai Descriptional Cally Facilities Neuropai Additional Instrument Additional Instrument Additional Instrument Additional Instrument Material Instrument Additional Instrument Material Instrume	-	Master Plan Capital Impre	Devement Cost Summa	ry Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2,500,00 5% \$15,000,00 \$25,000,00 5%	EA ACRE L.S. L.S. L.S.		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.00000 \$0.0000 \$0.00000 \$0.0000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000000	
Import y advances Import y advances Calcil Manzowanie (Contra Res Culture) Res Cultures Res Cultures Res Cultures Res Cultures Res Cultures Control Non Cultures Sector Manzowanie Sector Manzowanie Sector Manzowanie Sector Manzowanie Sector Manzowanie (Control Mathetica) Calcilonal (Calcil Manzowanie) Control Sector Manzowanie) Sector Manzowanie (Control Mathetica) Sector Mathetica) Sector Mathe	onto	Master Plan Capital Impre	Uber Defined	ry Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2.500.00 5% \$15.000.00 \$25.000.00 5%	EA ACRE L.S. L.S. L.S.		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.0000\$000 \$0.0000\$000 \$0.0000\$000\$	
Lingborg and additional Capital Improvements Constant Capital Improvements Constant Capital Improvements Constant Capital Improvements Constant Capital Improvements Constant Capital Improvements Capital Improvements Capital Capital Improvements Capital	2008	Master Plan Capital Impre	User Defined	Ty Lump Sum Cost> Lump Sum Cost>	\$2.500.00 5% \$15,000.00 \$25,000.00 5%	EA ACRE L.S. L.S. L.S. L.S.		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.0000\$000 \$0.0000\$000 \$0.0000\$0000\$0000\$0000\$0000\$000\$	
Import y advances Castle Manazowanian Costs Castle Manazowanian Costs Castle Manazowanian Costs Pao Culeres Danse Nachon Sectores Marchanic Marchanic Castle Nachon Castle Statutures Castle Nachon Castle Statutures Advances Marchanol Paysonanti Sectores Advances	oots Soots	Master Plan Capital Impre	uvernent Cost Summa User Defined User Defined User Defined	ry Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2,500.00 5% \$15,000.00 5%	EA AGRE L.S. L.S. L.S.		\$2.07 \$20.07 \$20.078.00 \$0.000 \$0.0000 \$0.000 \$0.000 \$0.000 \$0.00000 \$0.0000 \$0.0000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.000000 \$0.00000000	
Import y additions Capital Improvement Contex Capital Improvement Capital Capital Improvement Capital		Master Plan Capital Impre	overnent Cost Summa User Ontmed User Ontmed User Terlined	Dy Lump Sum Cost> Lump Sum Cost>	\$2.500.00 5% \$15.000.00 \$25.000.00 5%	EA ACRE LS. LS.		\$0.00 \$00.0778.00 \$00.0778.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.00000 \$0.0000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000000	
Unput y additional Control Control Control Control Control Control Control Control Par Cuberra and Non-Daras Control Na Cuber Control Na Cuber Cu	sofs	Master Plan Capital Impre	overnent Cost Summa User Defined User Defined User Defined	ny Lump Sum Cost →→ Lump Sum Cost →→ Lump Sum Cost →→	\$2.500.00 9% \$19.000.00 9% 9%	EA AGRE		\$20.07 \$20.078.00 \$20.078.00 \$50.00 \$50.00 \$50.00 \$27.100.00 \$27.100.00 \$51.22.00 \$51.22.00 \$51.22.00 \$51.500.00 \$51.500.00 \$51.500.00 \$51.500.00 \$51.500.00 \$50.20 \$50.00 \$50.00 \$50.000 \$50.000 \$50.000 \$50.0000\$50 \$50.0000\$50 \$50.0000\$50\$50\$50\$50\$50\$50\$50\$50\$50\$50\$50\$50	
Import y additional Capital Improvement Control Capital Improvement Capital Improveme	anti ta seconda de la constante	Master Plan Capital Impre	overnent Cost Summa Leer Ontme Leer Ontme Leer Ontme	Cy Lump Bum Cost →→ Lump Bum Cost →→	\$2,000.00 9% \$15,000.00 9% 9%	EA ACPE		\$0.07 \$0.07 \$0.07 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.000 \$0.00000 \$0.0000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000000	
Unput yearbons and the second	oots Soots Soots	Master Plan Capital Impre	User Defined User Defined User Defined	Dy Lump Bum Cost →→ Lump Bum Cost →→ Lump Bum Cost →→	\$2.500.00 5% \$15.000.00 5% 5% 15%	EA ACKE LS. LS. LS.			
Unipoper yearshifting advances of the second	sols Colls	Master Plan Capital Impre	overnent Cost Summa Uber Ontmed Uber Ontmed Uber Ontmed	ry Lunp him Cost → Lunp him Cost →	\$2,000.00 \$6,000 \$5,000.00 \$5,000.00 \$9, \$9, \$9, \$9, \$9, \$9, \$9, \$9, \$9, \$9,	EA ACPE L.S. L.S. L.S. L.S.		95.00 95.000	
Unipplay additional additional Control Acquires Central Ref. Acquires Central Ref. Acquires Acquires test and them Dans Central Ref. Acquires Central Ref. Central Ref. Central Activities of Central Ref. Central Activities of Central Ref. Central Central Ref. Central Ref. Central Ref. Central Ref. Central Central Ref. Central Ref.	with	Master Plan Capital Impre	User Defined	ry Lump Bum Cost → Lump Bum Cost →	\$2.500.00 9% \$15.500.00 9% 19% 9% 19% 9%	EA ACPE L.S. L.S. L.S.		10.00 80.00 80.01 80.01 80.01 80.00 80.00 80.00 80.00 80.00 80.00 80.00 81.700.00 80.00 81.700.00 80.00 81.410.00 81.410.00 81.500.00 81.411.00 80.00 81.410.00 80.00 80.00 80.00 81.410.00 81.500.00 81.411.00 80.00 80.00 80.00 80.00 80.00 80.00 81.500.00 81.411.00 81.500.00 81.411.00 81.500.00 81.411.00 81.500.00 81.511.00 90.00 90.00 90.00 90.00 91.301.00 91.31.00 91.7208.00 91.720.00	
Import y additions Control Improvement Control Control Improvement Control Control Improvement Control Control Improvement Control	ools Costs d Improvement Costs)	Master Plan Capital Impre	User Drifted User Drifted User Drifted User Drifted	ty Lunp Bm Cott → Lunp Bm Cott →	\$2.000.00 560 1.000.00 95 95 1555 95 1055 295	EA ACPE		95.00 85.00 80.0111.00 85.00 90.0111.00 95.00 90.00 85.00 90.00 85.00 90.00 85.00 90.00 85.00 90.00 85.00 91.00 91.02 91.00 85.00 91.00 85.00 91.00 86.02 95.00 86.02 95.00 86.02 95.00 93.10 95.00 93.10 95.00 93.10 95.00 93.10 95.00 93.10 95.00 93.10 95.31 95.00	
Unipper yearborns Compiled Improvement of Contra Compiled Improvement of Contra Compiled Improvement of Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Additional Capital Improvement Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Contra Control Non-Control Control Control Control Non-Control Control Non-Control Non-Control Control Non-Control Non-Control Control Non-Control Non-Control Control Non-Control Non-Control Control Non-Control Non-Control Non-Control Control Non-Control Non-Control Non-Control Control Non-Control Non-Control Non-Control Control Non-Control Non-Control Non-Control Non-Control Control Non-Control Non-C	anto Costs M Improvement Costs)	Master Plan Capital Impre	overnent Cost Summa ber Defined ber Defined ber Defined	ry Lump Bum Cost → Lump Bum Cost →	\$2.500.00 9% 95.500.00 \$25.000.00 9% 10% 10% 10% 29%	EA ACPE L.S. L.S. L.S.		50.00 5	
Import y additions Control Improvement Control Control Improvement Control Control Improvement Control Control Improvement Control Contro	oots Costs If Im provement Costs) Sts	Master Plan Capital Impro	Devement Cost Summa User Drifted User Drifted User Drifted User Drifted	ry Lunp fim Cost →→ Lunp fim Cost →→	\$2.000.00 \$900.000 \$95.000.00 \$95. \$95. \$95. \$95. \$95. \$95. \$95. \$95.	EA ACPE		50.0 50.0	
Unipper yearbons Comparison of the Acquires Comparison of the Acquires Comparison of the Acquires Parc Coheren and Terror Davas Concrete Non Coheren Concrete Non Coheren Coheren of Year Coheren Coheren of Year Coheren Coheren of Year Coheren Coheren of Year Coheren And Statistica Coheren Coheren of Year Coheren And Statistica Coheren Statistica Capital Improvement Coheren Coheren of Year Coheren Statistica Coheren of Statistica Coheren of Year Coheren Statistica Capital Improvement Coheren Coheren of Year Coheren Coheren of Year Coheren Statistica Coheren of Statistica Coheren of Year Coheren Management Statistica Coheren Statistica Coheren of Statistica Coheren Coheren of Statistica Coheren Management Coheren Coheren of Statistica Coheren Coheren One Coheren Cohere	onto Costs Markets Sts	Master Plan Capital Impre	been and the second sec	cy Lump Bum Cost → Lump Bum Cost → Lump Bum Cost → Prequency	\$2.500.00 9% 9% 9% 9% 9% 9% 9% 19% 9% 9% 29%	EA ACPE	Unit Cost	90.01 90.01 90.01 80.00 90.01 80.00 90.00 90.00 90.00 <td></td>	
Import y additions Control Improvement Control Control Improvement Control Control Improvement Control Control Improvement Control Contro Control	onts costs c	Master Plan Capital Impre	User Defined User Defined	ry Lunp fun Cost → J Lunp fun Cost → J Lunp fun Cost → J	\$2.000.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	EA ACPE	Unif Cest 51.00	95.00 85.00 80.01 85.00 80.01 85.00 80.01 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 86.00 80.00 86.00 80.00 86.00 80.00 86.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 777.9.00 Tate Acoust Cest 920.00	
Lings of a subset of the second	international statution (see)	Master Plan Capital Impre	User Defined User Defined User Defined User Defined User Defined User Defined User Defined User Defined User Cost	ry Lung Bon Cost → Lung Bon Cost → Lung Bon Cost → Proquency	E2.400.00 95, 95,000.00 95, 95, 95, 95, 95, 95, 95, 95, 95, 95,	EA ACPE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 51:00	50.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 80.0 90.0 <td></td>	
Unput yearsets Center and Neurosciences Center and Neurosciences Para Cubers and Neuro Davas Center in the Center in Para Cubers and Neuro Davas Center in the Cubers Center in the Cubers Cancel Inso Cubers Cubers Cancel Inso Cubers Cubers Cubers Cubers Cubers Cancel Inso Cubers Cancel Inso Cubers Cancel Inso Cubers Cubers Cancel Inso Cubers Cancel Inso Cubers Can	onto Costs C	Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (c) Optical Optical	User Defined User Defined User Defined User Defined Des Cost Summary User Defined Dia Cost User Defined Dia Cost User Defined Dia Cost	ry Lunp Bun Cost → Lunp Bun Cost → Isang Bun Cost → Prequency 1	\$2.000.00 9% 31.000.00 35.000 9% 9% 9% 9% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	EA ACSE L.S. L.S. L.S. L.S. L.S. L.S. L.S. D.S. D	Unit Cost 1 1:00 1:5:00	95.00 85.00 85.01 85.00 85.01 85.00 85.01 85.00 85.00 85.00	
Telepide y additional Compared Control Acquired Control Res Control Control Para Cuberts and Store Dares Control Res Control Acquired Para Cuberts and Store Dares Control Res Control Acquired Para Cuberts and Store Dares Control Res Control Acquired Store Control Res Control Control Res Control Acquired Resonal Control Res Control Control Control Res Control Res Resonal Control Res Control Res Resonal Control Res Control Res Resonal Control Res Control Res Resonal Control Resonance Resonance Control Resonance Resonance Control Resonance Res	In the second se	Master Plan Capital Impre	Lear Defined User Defined User Defined User Defined User Statised	tump Bun Cost→ Lump Bun Cost→ Propuncy 1 1	22 200 20 255 3 55 000 20 3 55 000 20 3 55 000 20 3 55 5 55 105 105 20 20 20 20 20 20 20 20 20 20 20 20 20	EA AC/8 L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	940 Cost 5100 6000 8000 8000 8000 8000 8000 8000 8	9:0.0 8:0.0 80.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 71.00 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 9:0.0 90.0 10:0.0 10:0.0 10:0.0 10:0.0	
Uniput y additional Central Reference and Constantial	onts Souts sts sts sts sts sts sts sts sts sts	Master Plan Capital Impre Master Plan Capital Ampre Ster Plan Operation and Maintenan (s) Optional Optional actual (spars, ds.) Optional	User Defined User Defined User Defined User Defined User Defined User Defined Use Cost	ry Lump Bun Cost → Lump Bun Cost → Lump Bun Cost → I Prepanny I I I I	\$2.50.00 9% \$16.00.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	EA AC/E L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 51:00 100 1	95.00 80.00 80.0175.00 80.00 80.0175.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00	
Table 24 additional Capital Improvements Control Capital Improvements Control Capital Improvements Control Capital Improvements Control Capital Improvements Capital Im	notifi costs costs il improvement Costs) bis mage monor involve the order monor dire manage monor involved regions, etc.) monor in visco in the order monor dire monor in visco in the order monor dire in the order monor in the order monor dire monor in the order monor dire monor in the order monor dire monor in the order monor dire in the order monor director director director director in the order monor director director director in the order monor director director director in the order monor director director director director in the order monor director director director in the order monor director dire	Master Plan Capital Impre	ber Online Der On	ry Lung Bim Cost→→ Lung Bim Cost→→ Pregenency 1 1 1	22 200.00 355. 155.000 00 255.000 00 556. 1056. 255.	EA AC7E L.S.	Unit Cost 31:00 990:00 913:00 910 910 910 910 910 910 910 910 910 9	95.00 85.00 80.01 85.00 80.01 85.00 80.02 85.00 80.03 85.00 90.00 85.00 80.00 85.00 80.00 85.00 81.00 85.00 81.00.00 81.00 81.00.00 81.00 81.00.00 81.00 81.00.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 81.00 91.00 190.00 90.00 80.00	
Unipper yearshift in proceedings of the second seco	onto Sotts Sotts Sta Mapprovement Control Sta Control of endowney of the outprovement Control Sta Control of endowney of the outprovement of the o	Master Plan Capital Impre Master Plan Capital Marce Ster Plan Operation and Maintenan (Ster Plan Operation and Ster Plan Operation (Ster Plan Operation and Maintenan (Ster Plan Operation and Maintenan (Ster Plan Operation and Maintenan (Ster Plan Operation and Maintenan (Ster Plan Operation and Ster Plan Operation (Ster Plan Operation (User Defined User Defined User Defined User Defined User Defined User Defined Use Cost	y Lung Bun Cost → Lung Bun Cost → Lung Bun Cost → I Proponcy I I	\$2.00.00 9% \$15.00.00 5% 9% 9% 9% 9% 20% 20% 20%	EA ACCE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 15.00 1920 00 1945 0	95.00 95	
Import y advances Central Improvement Costs Central Improvement Costs Central Improvement Costs Central Resources Para Cultures Central Resources Central Resources Central Resources Central Costs Central Co	costs	Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenar (c) Optional Optional Optional Optional Optional Optional	User Defined Use Cost Summary User Defined User Cost Summary User	ry Lunp Bm Cott →→ Lunp Bm Cott →→ Lunp Bm Cott →→ Frequency 1 1 1	\$2,000.00 \$2,000.00 \$25,000 \$20,0	EA AGR LS LS LS LS LS LS AGR AGR LF. AGR LF.	Unit Cost 11.00 955.00 11.655.0 11.655.0 10.655.0 10.655.0	95.0 95.0	
Unipopy automotion Central Construction (Construction) Central Construction (Construction) Page Colorest and Neuro Dates Construction for Construction Construction (Construction) Construction (Construction) Const	The set of	Master Pian Capital Impre Master Pian Capital Impre ter Pian Operation and Maintenar (c) Optional (c) Optiona	Leer Defined Leer Defined Leer Defined Leer Defined Leer Defined Leer Defined Leer Defined Leer Defined Leer Defined Leer	y Lung Bim Cost → Lung Bim Cost → Frequency t t	E2.000.00 95, 115,000.00 95, 95, 95, 95, 95, 95, 95, 95, 95, 95,	EA AGRE LS LS LS LS LS LS LS LS LS LS	Unit Cest 5100 5100 53.00 53.00 53.00 53.00 53.00 53.00 53.00 53.00 54.00 56.00	50.0 80.0 80.0 <td></td>	
Unput y addentions Central Cell Academic Central Cell Academic Central Cell Academic Central Res Academic Para Cubrers and Non-Daras Central Res Academic Para Cubrers and Non-Daras Central Res Academic Central Res Academic Central Res Academic Central Res Academic Sector Sect	onts outs outs outs	Master Plan Capital Impre Master Plan Capital Impre Ver Plan Operation and Maintenan (Control operation and Control operation and Co	ber Defined Die Cost - Summary Der Defined Die Cost - Summary Die Zummer - Summary Die Zummer - Summary - Summary - Summary Die Zummer - Summary -	ry Lunp fun Cost→→ Lunp fun Cost→→ Lunp fun Cost→→ Prequency 1 1	\$2.000.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	54 A076 LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cost 51.00 2010 0 15.00 51.00 51.00 51.00 51.00 51.00 51.00 50.00 50.00	95.00 85.00 80.01 85.00 80.01 85.00 80.01 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 80.00 85.00 95.00 85.00 95.00 85.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00 95.00	
Import a submitted Construction of Acquire Construction Con	The second seco	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (c) Optional Optional Optional Optional Optional Optional Optional	User Defined User Defined User Defined User Defined User Defined User Defined Data Cost User Defined Data Cost User Defined Data Cost	ty Lung Bim Cost→ Lung Bim Cost→	E2 5000 5% 5% 55,000 5% 5% 5% 5% 15% 5% 9% 25% 25% 25% 10% 10%	56. AOTE LS. LS. LS. LS. LS. LS. LS. LS. LS. AOTE AOTE AOTE	Unit Cost \$1:00 \$60:00 \$60:00 \$61:000	50.0 80.0 80.0 <td></td>	
Unipue y automation Central Relations and them can be a Central Relation of the second of the second of the second Para Cuberts and them Dates Central Relations and them Dates Central Relations and them Dates Central Relations and them Dates Central Relations and the second of the second of the Central Relations and them Dates Central Relations and the second of the second of the Central Relations and the second of the second of the Central Relations and the second of the second of the Central Relations and the second of the second of the Second of the second of the second of the second of the Second		Master Plan Capital Impre Master Plan Capital Marce Science Plan Operation and Maintenan Science Plan Operation and Science Plan Operation and Science Plan Operation Science Plan Operation and Science Plan Opera	User Defined User Defined User Defined User Defined User Defined User Defined Use Cost	y Lunp Bun Cost → Lunp Bun Cost → Lunp Bun Cost → Frequency 1 1	\$2.000.00 9% 110.000 9% 9% 10% 20% 20% 20% 20% 20% 20% 20% 20% 20% 2	54 A076	Unit Cost 51:00 51:00 84	95.0 95.0 95.0 <td></td>	
Telepise y additional Commentation Acquired Commentation Commentati	Set15	Master Plan Capital Impre	Iver Online Cost Summary User Online Cost Summary User Online Cost Summary User Online Cost Summary User Cost Summary Us	ry Lung Bim Cost→→ Lung Bim Cost→→ Prequency 1 1 1 1	52 200.00 195. 155.000 00 55. 255.000 00 55. 255	54 A006	Unit Cost 3100 820.00 830.00 80.000 80.000 80.000	95.0 95.0 80.0 80.0 80.0 85.0 85.0 85.0 85.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 85.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0 95.0	
Unipoper yatakining Control February Caracteric Control February Caracteric Control February Control February Pac Coheren and Noon Dans Control Head Coheren Control Head Coheren Control Head Coheren Control Head Coheren Control Head Coheren Coheren and Management Additional Capital Improvement Coheren and Management Coheren and	Solo Solo Solo Solo Solo Solo Solo Sol	Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (a) Optimal Optimal (optimal (optimal (optimal) (optimal)	Lear Defined Lear Defined Lear Defined Lear Defined Lear Defined Defined Defined Lear Defined Defined Defined Defined Lear Defined Defined Defined Defined Lear Defined Defined Defined Defined Lear Defined Defined Defined Defined Der Defined Defined Defined Defined Defined Defined Defined Der Defined Defin	y Lump Bun Cost → Lump Bun Cost → Lump Bun Cost → Prequency 1 1 1	22 500.00 5% \$55.000.00 5% 5% 5% 25% 25% 25% 25% 25% 25% 25% 25	55. A0/E L6 L6 L6 L6 L6 L6 L6 L6 L6 L6 L6 L6 L6	Unit Cost 11.00 500 500 500 500 500 500 500 500 500	50.0 50.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 70.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 <td></td>	
Unput y automatics Central Central Central Central Central Central Central Central Central Central Central Central Encoder Decision in Sciences Central Encoder Central Ce	a improvement Coshi) a improvement Coshi) a improvement Coshi) bis mod extent of the other o	Master Plan Capital Impre	User Defined User Defined User Defined User Defined User Defined User Defined User Defined User Defined Use Cost User Defined Use Cost	ry Lunp hm Cost →→ Lunp hm Cost →→ Lunp hm Cost →→ I I I I I I I I	\$2,000.00 \$15,000.00 \$25,000 \$25,0000 \$25,00	54 A076	Unit Cost 1 1.00 1 5.00 1 5.000 1 5.000 1 5.000 1 5.000 1 5.000 1 5.000 1 5.000 1 5.0000 1 5.0000 1 5.000000000000000000000000000000000000	95.0 95.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 80.00 80.0 8	
Unipopy automatic Constantiation of Constantiati	The second seco	Master Pian Capital Impre	Luer Defined Luer Defined Luer Defined Luer Defined Luer Defined Luer Defined Lue Coll Luer Defined Lue Coll L	ry Lunp Son Cost→ Lunp Son Cost→ Trequency	E2 400.00 5% 15,500.00 25,500.00 5% 9% 9% 15% 25% 25% 25% 25% 25% 25% 25% 25% 25% 2	54 A01	Unit Cost 51:00 54:00 55:000 55:00 5	50.0 80.0 80.0 <td></td>	
Import Jackmens Control Information Control Information Control Information Page Control Information Control Information Page Control Informat		Master Plan Capital Impre Master Plan Operation and Maintenar ter Plan Operation and Maintenar (ter glan Operation and Maintenar)	User Defined Us Cost	ry Lunp fun Cost→→ Lunp fun Cost→→ Lunp fun Cost→→ Prequency 1 1 1	\$2.000.00 9% 10% 10% 10% 20% 20% 20% 20% 20% 20% 20% 2	54 A07E	Unit Cost 11.00 15.00	95.00 95.00 95.01 95.00 95.01 95.00 95.00 <td></td>	
Unipoper yatakining Consensativiti Acquisition Consensativiti Acquisition Deple Clambra and Reine Davies Concrete like CArefus 4 data illi Rinchares Concrete like CArefus 4 data illi Rinchares Concrete like CArefus 4 data illi Rinchares Acquisition Carefus Acquisition Carefus Constanting	The second seco	Master Plan Capital Impre	User Defined Usi Cost	ty Lung Bun Cost→ Lung Bun Cost→	E2 20020 255 5550000 5550000 555 555 25555 25555 2555 25555 2555 2555 25555 2555 25555 255555 25555 25555 25555 25555 25555 25555 2	55. AO/E L5. L5. L5. L5. L5. L5. L5. L5. L5. L5.	Unit Cose \$1.00 \$60.00 \$1.80.00 \$1.80.00 \$1.80.00 \$1.80.00 \$1.80.00 \$1.80.00 \$1.80.00	50.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 81.0 80.0 80.0 <td></td>	
Import justices Control for Acquires Control for Acquires Control for Acquires Pare Control for Acquires Control for Acquires		Master Plan Capital Impre	User Defined Use Cost - Summary	ry Lunp fun Cost→→ Lunp fun Cost→→ Lunp fun Cost→→ Prequency 1 1 1	\$2.000.00 9% 35.000.00 35.000.00 9% 9% 9% 9% 9% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	54 A076	Unit Cost 11:00 19:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10:00 10	95.00 95.00 95.01 95.00 95.01 95.00 95.00 <td></td>	

			MASTER PLAN CO	OST ESTIMA	TE FOR INDIVIDU	JAL REACH					J
PROJECT :	Silverthorne Drai	nage Master Plan									
DRAINAGEWAY : REACH :	PR061 PR061										
JURISDICTION : REACH ID:	Silverthorne PR061-ReachPR08	1			ESTIMATED BY :	Drake Ludwig			DATE:	7/8/2020	
										TOTAL	
DESCRIPTION Bing Culworts and Storm Drain		SUPPORTING	DATA (USER DEFI	NED AND CAL	CULATED)		QUANTITY	UNIT	UNIT COST	COST	USER COMMENTS
Circular Pipes	1	1	r				1	1	1	1	
Diameter (in) 36-inch	Length (ft) 70	No. of Barrels					70	L.F.	\$135.00	\$9,450.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
			Note : Prices reflect circul	ar relatored conc	ate pine. For such or elliptic	cal pipes, user shall	0	LF.	\$0.00	\$0.00	
			use equivalent circular pip	e diameter.			0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
Flare End Sections	Applicable	No of Parrols	11/2 552	DIS EES			, , , , , , , , , , , , , , , , , , ,	6.4.	40.00	\$	
36-inch	Yes	1	No	Yes			1	EA	\$2,013.00	\$2,013.00	
	No						0	EA	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No				1		0	EA	\$0.00	\$0.00 \$0.00	
	No				1		0	EA	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No						0	EA FA	\$0.00	\$0.00 \$0.00	
Headwalls Diameter (in)	Applicable	No. of Parrols	US Headwall	DS Headwar	Concrete (C.X.)	Steel (the)		10	40.00		
counterer (m)	No	NO. OF DEFIVES	GGTHADWall	o o ne dowall	0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
Wingwalls (includes concrete apre Diameter (in)	on)	No. of Barrels	Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (lbs)	T	-			
	-		0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Manholes and Inlets Manhole, 4' Dia. (Pipe Dia. < 36')]						EA	\$3,625.00	\$0.00	
Manhole, 5' Dia. (Pipe Dia. 36" - 42") Manhole, 6' Dia. (Pipe Dia. = 48")								EA	\$4,875.00 \$5,375.00	\$0.00 \$0.00	
Type B Manhole (Ppe Dia. 48" and larger, deflec Type P Manhole (Ppe Dia. 48" and larger, deflec	tion < 10 degrees) tion > 10 degrees)							EA EA	\$15,000.00 \$18,750.00	\$0.00 \$0.00	
Storm Inlet, Type R/Type 14, 5-foot Concrete Box Culverts		I						EA	\$5,750.00	\$0.00	
Box Culvert Pipe Individual Box Span (ft)	Box Height (ft)	No. of Barrels	[Length (ft)				
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
Headwall and Toewalls Individual Box Span (ft)	No. of Barrels	Total Span (ft)	Concrete (C.Y.)	Steel (lbs)	UIS Headwall	D/S Headwall	1				
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes wingwalls on Individual Box Span (ft)	either side of channe Box Rise (ft)	al and concrete apron) No. of Barrels	Total Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (Ibs)					
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Hydraulic Structures Sloping Drop Structures						_					
Height (ft)	Bottom Width (ft)	Yn (ft)		La (ft) 0.00	Hard Basin Length (ft) 0.00	Total Width (ft) 0.00		EA	\$0.00	\$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
						0.00					

Check Structure, Concrete									
						L.F.	\$338.00	\$0.00	
Channel Improvements									
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
-	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
]						\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
-	-						\$0.00	\$0.00	
	1						\$0.00	\$0.00	
							\$0.00	\$0.00	
	1						\$0.00	\$0.00	
							\$0.00	\$0.00	
	-						\$0.00	\$0.00	
	-						\$0.00	\$0.00	
Detention Motor Quality Escilit							\$0.00	\$0.00	
Detention/water Quality Facilit	les								
Detention (Complete-in-Place)					1	ACET	\$57,000,00	\$28,500,00	
Detention Facility 2 (Complete-in-Place)						AC-FT	\$57,000.00	\$0.00	
Detention Facility 3 (Complete-in-Place)	1					AC-FT	\$57,000.00	\$0.00	
Detention (User Entered Quantitie:	5)								
Excavation, Low Range	4					C.Y.	\$14.00	\$0.00	
Excervation, Mid Hange Excervation, High Bange	1				800	CY.	\$30.00	\$24,000.00	
Outlet Works	1		User I	Defined Unit Cost>	1	EA	\$5,000.00	\$5,000.00	
Water Quality Appurtenances	1		User	Defined Unit Cost>	1	EA	\$2,500.00	\$2,500.00	
Removals									
Removal of culvert pipe (D<48*)					350	L.F.	\$25.00	\$8,750.00	
Removal of culvert pipe (48" <d<84")< td=""><td>4</td><td></td><td></td><td></td><td></td><td>L.F.</td><td>\$63.00</td><td>\$0.00</td><td></td></d<84")<>	4					L.F.	\$63.00	\$0.00	
Removal of culvert pipe (D>84*)	4					L.F.	\$94.00	\$0.00	
Loncrete Box Culvert	1					LF/CELL	\$125.00	\$0.00	
Landscaping and Maintenance	Improvements								
Wetlands Plantings	4					ACRE	\$31,250.00	\$0.00	
Trai/Path. Concrete (10' Width)					350	LE	\$1,250.00	\$19,250,00	
Trail/Path, Crusher Fines (10' Width)						L.F.	\$14.00	\$0.00	
Special Items (User Defined)	•								
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	Sumiliser Defined Items		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
Land Acquisition	1							-	
Temporary Easements						F A		\$0.00	
						04		50.00	
Basellerich, Div Acquisitori						ACRE		\$0.00	
EBERERUNDAY ACQUISITION		Mastor Plan Canital Impr	overant Cost Summa	201		ACRE		\$0.00	
Capital Improvement Caste		Master Plan Capital Impro	ovement Cost Summa	iry		ACRE		\$0.00	
Capital Improvement Costs Ree Quiver's and Storm Drains		Master Plan Capital Impro	ovement Cost Summa	ıry		ACRE		\$0.00 \$11.463.00	
Capital Improvement Costs Ppe Oulverts and Storm Drains Concrete Box Culverts		Master Plan Capital Impro	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463.00 \$0.00	
Capital Improvement Costs Ppc Outverts and Storm Drains Concrete Box Culverts Hydraulic Structures		Master Plan Capital Impre	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463.00 \$0.00 \$0.00	
Gapital Improvement Costs Peo Culverts and Stom Drains Concrete Box Culverts Hydraulic Structures Channel Improvements		Master Plan Capital Impro	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463.00 \$0.00 \$0.00 \$0.00	
Capital Improvement Capital Improvement Pipe Quiveris and Storm Drains Concrete Box Calverts Hydrauld: Structures Obtained Improvements Detention/Water Quality Facilities	I	Master Plan Capital Impre	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Charles Provide Storm Constraints Charles and Storm Drains Concrete Ban Calverts Hydraid: Structures Charnel Ingrovements Detention/Wath Could Ficialities Removals Landscalaria and Balanemana Ingrovements		Master Plan Capital Impro	ovement Cost Summa	ıry		ACRE		\$0.00 \$11,463.00 \$0.00 \$0.00 \$0.00 \$50.00 \$50.00 \$50.00 \$50.00 \$19,663.00	
Clientering of Augustant Clienter and Storm Dans Discrete Box Clavers Hydraulis Structures Detertor/Water Coally Facilies Herrovals Landscaping and Maridenance Improvements Decisit Mark (User Defined)		Master Plan Capital Impre	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463.00 \$0.00 \$0.00 \$0.00 \$80,000.00 \$80,000.00 \$80,000.00 \$80,750.00 \$10,663.00 \$0.00	
Control of an announcements Reconstruction and Source Darin Reconstructions and Source Darin Reconstructions Reconstructions Darined Improvements Detertion/WHE Could Facilities Removals Landiscaping and Martenance Improvements Special Idens (User Defined) Balobatal Capital Improvement Capit		Master Plan Capital Impro	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$19,663.00 \$19,663.00 \$0.00 \$9,750.00 \$9,776.00	
Capital Improvement Costs Capital Improvement Costs Pie Outers and Rem Dans Controls Bio Charts Hydraulis Structures DemotryNation Costs DemotryNation Costs Londocquiry and Martinese Improvement Section Remote Londocquiry and Martinese Improvement Section Remote Costs Activities (Capital Improvement)	l soft	Master Plan Capital Impre	ovement Cost Summa	iry		ACRE		\$0.00 \$11,463,00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$19,663,00 \$19,663,00 \$19,663,00 \$19,663,00 \$19,663,00 \$19,653,00 \$19,650 \$19,650 \$19,7500	
Contraction Register	noti	Master Plan Capital Impro	ovement Cost Summa	ITY	\$2,500.00	LS.		\$0.00 \$11,463,00 \$0.00 \$0.00 \$0.00 \$0.00 \$0,750,00 \$19,663,00 \$99,776,00 \$99,776,00 \$99,776,00 \$99,776,00	
Control In processor Control In processor Control In Control Inter- Control Into Calvers Decarder Bio Calvers Ocardo Bio Calvers Ocardo Bioprovembra Calvera Intorecentrol Calvera Intorecentrol Calv	L Sth	Master Plan Capital Impro	Uber Defined	Iry I Lump Sum Cost>	\$2.500.00 5% \$15.000 mm	LS.		\$0.00 \$11,463,00 \$0.00 \$0.00 \$0.00 \$19,663,00 \$19,663,00 \$59,776,60 \$2,500,00 \$4,989,00 \$15,609,00 \$15,609,00 \$15,609,00	
Control Instrument of Control Control Instrument Control Instrument Control Contro Control Control Contro Control Control Con	notis	Master Plan Capital Impro	ovement Cost Summa	Iry Lump 8um Cost ↔→ Lump 8um Cost ↔→	\$2,500.00 5% \$15,000.00 \$25,000.00	LS. LS. LS.		\$0.00 \$11,463,00 \$0.00 \$0.00 \$60,000,00 \$60,000,00 \$60,000,00 \$60,750,00 \$50,000,00 \$50,000,00 \$50,000,00 \$50,000,00 \$50,000,00 \$50,000,00	
Control Teleponene Control Co	L Sth	Master Plan Capital Impro	User Defined User Defined	I ry I Lump 8um Cost> I Lump 8um Cost> Lump 8um Cost>	\$2,500,00 5% \$15,000,00 \$25,000,00 5%	LS. LS. LS.		\$9.00 \$11.463.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$119.63.00 \$10.63.00 \$10.60	
Construction of the second secon	sets	Master Plan Capital Impro	ovement Cost Summa	Iry I Lump Sum Cost →→ I Lump Sum Cost →→	\$2.500.00 5% \$15.000.00 \$25.000.00 5%	LS. LS. LS.		\$9.00 \$11,463.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$19,663.00 \$9,776.00 \$4,980.00 \$4,980.00 \$4,980.00 \$4,980.00 \$52,000.00 \$4,980.00 \$52,470.00 \$52,470.00	
Contractor registerior Contra de la consense contra Pocularia su consense contra Pocularia su consense Contra des Cuberts Ocurante las contras Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante Inpresentes Canante	L stip	Master Plan Capital Impro	Uker Defined	ILump Sum Cost	\$2,500.00 5% \$15.000.00 \$25.000.00 5%	LS. LS. LS.		\$9.00 \$11.463.00 \$0.00 \$0.00 \$0.000 \$0.000 \$11.463.00 \$0.00 \$15.463.00 \$5.77.80 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$14.603.00 \$15.603.000\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.603.00\$\$15.60\$	
Control of the Annual Control of	L	Master Plan Capital Impro	overnent Cost Summa ber Defined ber Defined ber Defined	ITY I Lump Sum Cost →→ I Lump Sum Cost →→ Lump Sum Cost →→	\$2.500.00 9% \$15.000.00 \$25.000.00 9%	LS. LS.		\$0.00 \$11.462.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$15.750.00 \$15.750.00 \$15.750.00 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.00000\$ \$15.0000\$\\\$15.0000\$\\\$15.0000\$\\\$	
Contraction registerior Contraction of the process areas of contra- Pop Caherts and the process areas Concrete Bios Caherts Channel Inprovements Channel International Internation Martine Channel Channel Additional Channel Channel Additional Channel Channel International Chann	stis oots	Master Plan Capital Impro	overnent Cost Summa User Drifned User Drifned User Drifned	Iry Lump Sum Cost →→ Lump Sum Cost →→ Lump Sum Cost →→	\$2.500.00 5% \$15.000.00 \$25.000.00 \$76.000.00 \$76.000.00	0% ACR LS. LS. LS.		\$1.00 \$11.463.00 \$0.0	
Constraint in proving and costs Constraint in proving and costs Constraint in the Costs C	oots oots d Im provensed Cots)	Master Plan Capital Impre	overnent Cost Summa Leer Defined Ger Defined	ITy I Lump Sum Cost	\$2,00.00 9% \$15,00.00 9%	LS. LS. LS.		\$0.00 \$11.461.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.000000 \$0.00000 \$0.0000 \$0.000000 \$0.00000000	
Control Teleponenese Control Control Teleponenese Control Control Teleponenese Control Control Teleponenese Control Contro	stin outs	Master Plan Capital Impro	user britned User britned User britned	Ity ILump Sum Cost> ILump Sum Cost> ILump Sum Cost>	92 200.00 90% 915 50000 90% 90% 15% 95%	LS LS LS		\$0.00 \$11.463.00 \$0.0	
Control Fundamental Costs Costs I Improvemental Costs Costs I Improvemental Costs Costs I Improvemental Costs Costs I Improvemental Landscappage of Marinesco Improvementa Costs I Improvemental Landscappage I Improvemental Costs Landscappage I Improvemental Costs I Improvemental Landscappage I Improvemental Costs I Improvemental Landscappage I Improveme	note	Master Plan Capital Impre	user Defined User Defined User Defined	ILump Sum Cost →→	£2.00.00 205 31.000 205 205 205 205 205 205 205 205 205	LS LS LS		\$0.00 \$11.463.00 \$50.00 \$50.00 \$50.00 \$50.00 \$50.00 \$51.863.00 \$51.863.00 \$51.863.00 \$51.863.00 \$54.980.00 \$54.980.00 \$54.980.00 \$54.980.00 \$54.980.00 \$54.980.00 \$54.780.00 \$55.780.000\$55.780.000\$55.780.000\$55.780.000\$55.780.000\$55.780.000\$55	
Control In processor (Control Proceedings) Control In processor (Control Proceedings) Control Biol Control Control Biol Control Biol Control	stite	Master Plan Capital Impro	user Drifted User Drifted User Drifted	Lunp Bun Cost → Lunp Bun Cost →	\$2,500.00 9% \$15,000.00 9% \$55,000.00 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.0000 \$55,000.0000 \$55,0000000000000000000000000000000	LS. LS. LS.		80.00 \$11,453,00 \$0,00 \$0,00 \$0,00 \$0,00 \$0,00 \$0,00 \$10,453,00 \$10,450,000 \$10,450,0000 \$10,450,0000 \$10,450,0000 \$10,450,0000 \$10,450,0000 \$10,450,0000 \$10,450,00000000000000000000000000	
Control Fundamental Costs Control Improvements Costs Percental Second	ante ante ante ante ante ante ante ante	Master Plan Capital Impre	ovement Cost Summa User Drined User Drined	iry I Lung Sun Cost → J Lung Sun Cost → J Lung Sun Cost → J	\$2,200,00 115,000,00 \$25,000,00 9% 10% 10% 20%			\$1.0 \$1.148.00 \$0.0 \$	
Control Insprements Control Control Insprements Control Control Insprements Control	stits stits stits stits stits stits stits stite	Master Plan Capital Impro	User Drifted User Drifted User Drifted	iry I Lung Jun Cost → I Lung Jun Cost → Lung Jun Cost →	\$2,500.00 9% \$15,000.00 9% \$25,000.00 9% \$26,00.00 9%	LS. LS. LS.		80.92 1114.60.00 200	
Control of Applications of Control Physics Of Contr	netti 2015 2015 2015 2015 2015 2015 2015 2015	Master Plan Capital Impre	user Dritted User Dritted User Dritted	Iry I Lung Bun Cost → Lung Bun Cost →	22.200.00 5% 15.500.00 9% 5% 5% 5% 25%	LS LS LS LS		8192 11140100 10100 1000 1000 10000 10000 100000 100000 111000 111000 111000 11100000 11100000 1110000 1100000 1110000 1110000 1110000 11100000 1110000 11100000 11100000 11100000000	
Control Instruments Control C	sata sata sata sata kim provensed Costs) sts Mas	Master Plan Capital Impro	ovement Cost Summa User Ontined User Ontined User Ontined User Ontined User Ontined	Iry I Lunp Bun Cost → Lunp Bun Cost → Lunp Bun Cost →	22.500.00 5% 55.500.00 5% 5% 5% 9% 9% 20%		Ubli Cost	90.00 1114.60.00 100	
Control of the provide set of the	2005 2015 2015 2015 2015 2015 2015 2015	Master Plan Capital Impre	User Dafined User Dafined User Dafined User Dafined	Iry I Lung Bun Cott→ Lung Bun Cott→ Lung Bun Cott→ Paquaty	E2 200 00 5% 115 500 20 9% 55 500 20 9% 55 500 20 9% 55 500 20 9% 50% 50% 50% 50% 50% 50% 50% 50% 50% 50	LS LS LS LS LS LS LS LS LS	Unit Cost 51.00	819 11.4010 10.00 80	
Control Instruments Control Control Instruments Control Contro Control Control Control Control Control Co	L State Stat	Master Plan Capital Impro	user Dafined User Dafined	Iry Lunp fun Cost → Lunp fun Cost → Lunp fun Cost → Paquancy	22.500.00 5% 55.500.00 5% 5% 5% 9% 26% 26%	LS. LS. LS. LS. LS. LS. LS. LS. LS. LS.	UNI Cost \$1:0	81.9 81.9 81.14.483.00 20.83 80.20 20.90 80.20 20.90 80.20 20.90 80.20 20.90 80.20 20.90 80.20 20.90 80.20 80.20 80.20 80.278.00 84.400.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 84.278.00 <td></td>	
Control Inspresent Costs Costs Inspresent Costs Pacification and Costs Costs Inspresent Costs Insp	etts etts etts etts etts etts etts etts	Master Plan Capital Impre	Leer Online User Online	Iry Liang Ban Cest→ Liang Ban Cest→ Frequency	22.000.00 115.000.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	LS. LS. LS. LS. LS. LS. LS. LS. LS. LS.	Unit Cost 5100 80.00 805.00	819 11.40.00 5	
Control Instrument Control Control Instrument Control Control Instrument Control Control Instrument Control Contro	ents ents ents sts sts sts sts sts sts sts sts sts	Master Plan Capital Impro	user Software User Software Softwa	Iry Lunp Bun Cost → Lunp Bun Cost → Prequency	25.00.00 9% 55.00.00 5% 5% 0% 5% 0% 25% 25% 25%	Unit L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost \$1:00 \$2:00 \$2:00 \$1:00	90.90 1114.65.00 20.00	
Control Inspresent Costs Costs Inspresent Costs Pacification Costs Costs Inspresent Costs Inspresent Costs Inspresent Costs Inspresent Costs Inspresent Landscappage of Materiance Inpresent Landscappage of Materiance Inpresent Landscappage of Materiance Inpresent Landscappage of Materiance Internet Landscappage of Materiance Internet Dataset Internet Internet Internet Cost Dataset Internetione Internet Internet Internet Mathematics Internet Internet Internet Internet Internet Dataset Internet Internet Internet Internet Internet Mathematics Internet Internet Internet Internet Internet Internet Mathematics Internet		Master Plan Capital Impre Master Plan Capital Marcel ter Plan Operation and Maintenar (c) Optional actual repars (c) Optional actual repars (c) Optional	Les Office Les Office	Ity Liang Ban Cest → Liang Ban Cest → Itang Ban Cest → Prequency T	22.0000 1150000 1150000 9% 9% 20% 20% 20% 20%	LS LS LS LS LS LS LS LS LS LS LS LS LS L	Unit Cost. 11:00 960:00 800 8	819 11.40.00 1	
Control Programs of Contro	state	Master Plan Capital Impre Master Plan Capital Impre Ver Plan Operation and Maintenan ter Plan Operation and Maintenan c) Optimit Optimit Capital capital report etc.) Optimit Optimit	ber Dafind Lear D	Iry Lung Bun Cost → Lung Bun Cost → Lung bun Cost → Frequency	2 500.00 9% 9% 955.000.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	LS. LS. LS. LS. LS. LS. LS. LS. LS. LS.	Unit Cost \$100 \$610 \$620 \$500 \$500	8.92 111482.00 120.00 100.0	
Control Programmers Control Beachanies and Stern Datas Decombe Stor Control Proceedings Control Programmers Technical Control Programmers Produces Datas Brockships Lendon and Produces Decombe Control Produces Decomber Datas Decomber Deco		Master Plan Capital Impre Master Plan Capital Marce ter Plan Operation and Maintena c) Optical optical chartropers etc.) Optical Opt	User Ontine Use Cost Summary User Ontine U	Ity Lunp fun Cost → Lunp fun Cost → Lunp fun Cost → Required	\$2,500.00 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Unit LS LS LS LS LS LS LS LS LS LS LS LS LS	00rd Cost 1 00 19.00 19.00 19.00 19.00 19.00 19.00 19.00 19.00 19.00 19.00 19.00 19.00	8190 11-40100 10000 1000 1000 1000 1000 1000 1000 1000 1000 1	
Control Programmers C		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan a) Operation Optional Optional Optional Optional Optional Optional Optional Optional Optional Optional Optional Optional Optional	Les Drined Da Cott-	Ity Lung Ban Cost → Lung Ban Cost → Lung Ban Cost → Prequency	2 200.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	LS. LS. LS. LS. LS. LS. LS. LS. LS. LS.	Unit Cost 1 100 3 200 3 2100 1 105 2 100 1 105 1 10	8:90 1114510 500 500 500 500 500 500 500	
Control of the processes of the second secon		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenna chur Inpers, etc.) Optional Optional Optional Optional	User Defined User Defined User Defined User Defined User Defined User Defined Data Cost	Ity Lunp him Cest → Lunp him Cest → Lunp him Cest → Frequency 1 1	52,500.00 5%, 1125,000.00 255,000.00 255,000.00 25%, 25%, 25%, 25%, 25%, 25%, 25%, 25%,	4/02 4/02 1/02	Unit Cost 5.0 95.00 95.00 96.00 96.00 96.00	8.99 11.461.00 50.00 80.00 80.00 10.00	
Control Telephone (Control Telephone) Control the Control Telephone (Control Telephone) Control	ots	Master Plan Capital Impre Master Plan Capital Martena ter Plan Operation and Maintena (c) Optional (c) Optiona	Les Drined Das Contonents	I Lung Sun Cost → Lung Sun Cost → Lung Sun Cost → Prequency	22.500.00 5% \$15.000.00 5% 5% 5% 5% 00% 20% 0% 0% 0% 0%	4.025 4.025 4.025 4.025 4.025 4.025 4.025 4.025 4.025 4.025 4.025 4.025 4.025	Unit Cost 6 1:00 8 2:00 8 3:00 8 3:00 8 4:00 8 4:00 8 4:00 8 4:00	8.99 8.99 11.441.00 80.00 90.00	
Control of a second sec		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenna a) Optical optical optical optical optical optical optical optical	User Defined User Defined User Defined User Defined User Defined User Defined User Defined Use Cost	It Lunp Sun Cost → Lunp Sun Cost → Lunp Sun Cost → Prequincy	25.00.00 5% 15.00.00 9% 9% 9% 9% 20% 20% 20% 20%	LS. LS. LS. LS. LS. LS. LS. LS.	Unit Cost 3 (10) 3 900 50 3 900 50 5 1 875.00 5 1 875.00 5 1 875.00 5 1 875.00	8.99 11.4.61.00 50.00	
Construction of the second sec	The second seco	Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (c) Optional citized regen, etc.) Optional Capit	User Darimed User Darimed User Darimed User Darimed User Darimed User Darimed User Darimed User Darimed Data Gata User Darimed Data Gata Data Data Data Data Data Data Data D	ILung Bun Cost → Lung Bun Cost → Lung Bun Cost → Prequency	22 200.00 150000 1500000 550 550 550 550	4.025 4.025 L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 9 100 24.00 8.107 8.00	8.90 8.10 11.40.00 8	
Control Instruments Control C		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenna () Optional Optional Optional Optional Optional	Lear Defined Lear Defined Lear Defined Lear Defined Lear Defined Lear Defined Lear Defined Lear Defined Lead Cost Lear Defined Lear Define	Itump fum Cost → Liump fum Cost → Liump fum Cost → Rum Cost →	22.00.00 9%. 9%. 9%. 9%. 9%. 9%. 9%. 9%. 9%. 9%.	Unit L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 5.0.0 405.00 805.00 50.	8.99 814.45.00 50.00 80.00	
Control Instruments Control C		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenan (c) Optional (c) Optional	User Defined User Defined User Defined User Defined User Defined User Strike User Strike User Strike Other User Strike O	ILung Bun Cost → Lung Bun Cost → Lung Bun Cost → Prequency	22,000,00 10,000 255,000,00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	4/02 4/02 LS LS LS LS LS LS LS LS LS LS	Unit Cost \$1.00 \$0.00 \$1.875.00 \$1.875.00 \$4.800 \$4.00 \$4.00	819 11.461.00 10.00	
Control Instruments C	ots ots the processed Cests the processed Cests the processed Cests to the processed Cests to the comparison of the comp	Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenna () Optional () Optio	Liver Darined Unit Cost	ILump from Cost → Lump from Cost → Lump from Cost → Prequency	22.00.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	Ц. С.	Unit Cost 5.00 50.00 80.00 81.05 50.00 51.05 50.00	819.9 819. 8114.60.00 80	
Control Inspresentation of the second		Master Plan Capital Impre Inter Plan Operation and Maintenan (c) Optional (c) Optio	Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lead Cost Lear Darlined	It Lung fun Cott → Lung fun Cott → Lung fun Cott → Requesty	22.0000 10000 1000000	4.02 4.02 1.02 1.02 1.02 1.02 1.02 1.02 1.02 1	Unit Cost \$1:0 \$0:0 \$1:0 \$1:075:0 \$1:075:0 \$1:075:0 \$4:000 \$4:000 \$4:000 \$4:000 \$4:000 \$4:000 \$4:000 \$4:000 \$4:00	819 11.4010 10.00 80	
Control Instrument Control Control Instrument Control Control Instrument Control Control Instrument Control Control Instrument Control C		Master Plan Capital Impre Master Plan Capital Impre ter Plan Operation and Maintenna c) Optional Optional Optional Optional Optional Optional Optional	User Darined Use Cost Summary	ILunp fun Cost → Lunp fun Cost → Lunp fun Cost → Requesty	22.500.00 9% 9%500.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	4.07E	Unit Cost 6 1.00 5 0.00 5 0.000 5 0.00 5 0.000 5 0.0000 5 0.00000 5 0.0000000000	81.9 81.445.00 50.00 80.00	
Control Improvement Control Control Improvement Control Prod Coherts and Storm Devise Control Improvement Control Provide Improvement Control Control Improvement Control Control Improvement Control Control Improvement Control Control Improvement Control Improvement Control Improvement Control Improvement Control Contro		Master Plan Capital Impre	Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Darlined Lear Con- Lear Darlined Lear Con-	It Lung fun Cet → Lung fun Cet → Lung fun Cet → Frequency	22.0000 500 500 500 500 500 500 500 500 50	4/02 4/02 1/02	Unit Cost 5100 4000 0 4005 00 1 1075	819 11.40.00 1	

		1	MASTER PLAN CO	OST ESTIMA	TE FOR INDIVIDU	IAL REACH					I
PROJECT :	Silverthorne Drain	nage Master Plan									
DRAINAGEWAY : REACH :	PR070 PR070										
JURISDICTION : REACH ID:	Silverthorne PR070-ReachPR07	ro			ESTIMATED BY :	Drake Ludwig			DATE:	7/8/2020	
										TOTAL	
DESCRIPTION		SUPPORTING	DATA (USER DEFIN	NED AND CAI	LCULATED)		QUANTITY	UNIT	UNIT COST	COST	USER COMMENTS
Circular Pipes	1	1	r				1	1	1	1	
Diameter (in) 30-inch	Length (ft) 900	No. of Barrels					900	LF.	\$113.00	\$101,700.00	
							0	LE.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
			Note : Prices reflect circula	ar relatorced conc	rate pipe. For such or elliptic	al pipes user shall	0	LF.	\$0.00	\$0.00	
			use equivalent circular pip	e diameter.			0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
Flare End Sections	Applicable	No of Barrels	UIS FFS	D/S FES	T				1.0		
30-inch	Yes	1	Yes	Yes	-		2	EA FA	\$1,963.00	\$3,926.00	
	No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				-		0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				-		0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				-		0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				-		0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Headwalls Diameter (in)	Applicable	No. of Barrels	U'S Headwall	D'S Headwall	Concrete (C.Y.)	Steel (Ibs)	1		1		
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes concrete apro Diameter (in)	on)	No. of Barrels	Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (lbs)	1				
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	-		0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	-		0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	-	-	0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00	
	-		0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00	
	-		0.00	0	0.00	0.00	0	EA EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Manhole, 4' Dia. (Pipe Dia. < 36*)		1					2	EA	\$3,625.00	\$7,250.00	
Manhole, 5' Uia. (Mpe Dia. 36" - 42") Manhole, 6' Dia. (Rpe Dia. = 48") Turse B. Manhole. (Proc. 91 - 48")	5m < 10 + `	1						EA EA	\$4,875.00 \$5,375.00	\$0.00	
Type B Mannole (Ppe Dia: 48° and larger, deflect Type P Manhole (Ppe Dia: 48° and larger, deflect Storm Inlet, Tune P(Tune 14, 5 foot	tion < 10 degrees)						2	EA EA	\$15,000.00 \$18,750.00	\$0.00	
Concrete Box Culverts											
Box Culvert Pipe Individual Box Span (ft)	Box Height (ft)	No. of Barrels					Length (ft)				
							-	LF.	\$0.00 \$0.00	\$0.00 \$0.00	
							-	LF.	\$0.00	\$0.00	
								LE.	\$0.00	\$0.00	
								LE.	\$0.00	\$0.00	
Headwall and Toewalls			L					LF.	\$0.00	\$0.00	
Individual Box Span (ft)	No. of Barrels	Total Span (ft)	Concrete (C.Y.)	Steel (lbs)	UIS Headwall	D/S Headwall	0	FA	\$0.00	\$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00	
		0.00	0.00	0.00			0	EA FA	\$0.00	\$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00	
	-	0.00	0.00	0.00			0	EA	\$0.00	\$0.00	
Wingwalls (includes wingwalls on	either side of channe	0.00 al and concrete apron)	0.00	0.00			0	EA	\$0.00	\$0.00	
Individual Box Span (ft)	Box Rise (ft)	No. of Barrels	Total Interior Span (ft) 0.00	Length (ft) 0	Concrete (C.Y.) 0.00	Steel (Ibs) 0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Hydraulic Structures			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Sloping Drop Structures Height (ft)	Bottom Width (ft)	Yn (ft)	[La (ft)	Hard Basin Lenoth (ff)	Total Width (ft)	1		T	[
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00	\$0.00	

Check Structure, Concrete									
						LF.	\$338.00	\$0.00	
Channel Improvements									
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
-							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
Detention/Water Quality Faciliti	es								
Detention (Complete-in-Place)									
Detention Facility 1 (Complete-in-Place)						AC-FT	\$57,000.00	\$0.00	
Detention Facility 2 (Complete-in-Place)						AC-FT	\$57,000.00	\$0.00	
Detention Facility 3 (Complete-In-Place)						AC-FT	\$57,000.00	\$0.00	
Detention (User Entered Quantities									
Excavation, Low Range						G.Y.	\$14.00	\$0.00	
Excavation, Md Range						C.Y.	\$30.00	\$0.00	
Excavation, High Range				Define of the C. C. C.		C.Y.	\$39.00	\$0.00	
Cuter WORS			User	Defined Unit Cost>		ЬA		\$0.00	
water quality Appurtenances			User	permed unit cost>		БА		\$0.00	
Kemovals									
Hemoval of culvert pipe (D<48*)						L.F.	\$25.00	\$0.00	
Hemoval of culvert pipe (48" <d<84")< td=""><td></td><td></td><td></td><td></td><td></td><td>L.F.</td><td>\$63.00</td><td>\$0.00</td><td></td></d<84")<>						L.F.	\$63.00	\$0.00	
menuovial of curvert pipe (D>84*)						L.F.	\$94.00	\$0.00	
Concrete Box Calvert	lass and a state					LFJUEL	\$125.00	\$0.00	
Landscaping and Maintenance	improvements								
Wetlands Plantings						ACRE	\$31,250.00	\$0.00	
Reclamation & seeding (native grasses)						ACRE	\$1,250.00	\$0.00	
Tral/Path, Concrete (10' Width)					900	LE.	\$55.00	\$49,500.00	
TrainHeth, Crusher Fines (10 Width)						LP.	\$14.00	\$0.00	
Special Items (User Defined)									
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	 User Defined items 	4	User	Defined Unit Cost				\$0.00	
	could be a patient items	-	User	Defined Unit Cost				\$0.00	
	could be a patient items	4	User	bernied unit cost				\$0.00	
			liser	Defined Unit Cost>				\$0.00	
Land Acquisition	and be med terns		User	Defined Unit Cost>				\$0.00	
Land Acquisition			User	Defined Unit Cost>				\$0.00	
Land Acquisition Temporary Easements Encompress/IROW Acquisition		1	User	Defined Unit Cost>		EA		\$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition			User	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/POW Acquisition		Master Dian Capital Impre	User	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Exements Exement/ROW Acquisition		Master Plan Capital Impro	ovement Cost Summa	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition Capital Improvement Costs Capital Improvement Costs		Master Plan Capital Impro	ovement Cost Summa	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition Capital Improvement Costs Rep Quests and Storm Drains Coperate Rev Cuests		Master Plan Capital Impro	ovement Cost Summa	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$124,376.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition Capital Improvement Costs Pop Culverts and Storm Drains Concrete Box Culverts Mortanie Thortenes		Master Plan Capital Impro	ovement Cost Summa	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00	
Land Acquisition Temporary Issements EssementsCOW Acquisition Capital Improvement Costs Be Culverts and Stom Dans Concrete Bio Culverts Hydraulic Structures Opamel Incovernets		Master Plan Capital Impro	ovement Cost Summa	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Terporary Essenteris EssenteritROW Acquiston Oriente Improvement of Costs Peo Cherka and Somo Dains Concrete Bas Calveris Hydrails: Structures Orannel Improvements Dament Improvements		Master Plan Capital Impro	ovement Cost Summa	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Terporary Esements EsementPUV Acquisition Centre Learnovs ment Content Res Charles and Born Daire Res Charles and Born Daire Res Charles Reschares Indext Brackares Detection/Water Coality Facilities Removal		Master Plan Capital Imprc	ovement Cost Summa	Iry		EA ACRE		\$0.00 \$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Tempory Barentis Central Tempory Barentis Central Tempory Barentis Central Tempory Barentis December 300 Calvetts Daranel Tepocrements Daranel Tepocrements Daranel Tepocrements Dentrot/Nature Cally Facilities Herrorals		Master Plan Capital Impro	ovement Cost Summa	Iry		EA ACRE		\$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$49,500.00	
Land Acquisition Engoury Example Engoury Example Control Registric Control Registric Control Represented Control Part County and Storm Dation Part County Storm Storm Part County Storm Storm Part County Facilities Patronola Landocupy and Materiance Represented Resolutions (Defined) Part College and Stormans Patronola Landocupy and Materiance Represented Resolutions (Defined) Patronola Landocupy and Materiance Represented Patronola Landocupy and Represented Patronola		Master Plan Capital Impro	ovement Cost Summa	nry		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Imposed Standards Imposed Standards Control Imposed Standards Control Bio Control Bio Control Bio Control Octority Bio Control Octority Bio Control Disconter Bio Conter B		Master Plan Capital Impre	ovement Cost Summa	Nry		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$173,876.00	
Land Acculation Langer	84	Master Plan Capital Impro	ovement Cost Summa	nry		EA ACRE		\$0.00 \$0.00 \$0.00 \$124.376.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$30.00 \$30.00 \$30.00 \$340.500.00 \$37.3876.60	
Land Acquisition Impose glasmins Executive Control Acquise Control For Acquise Control For Acquise Control For Accurs Data Control Version Control Control For Accurs Data Control Con	815	Master Plan Capital Impre	ovement Cost Summa	Iry	\$2,500.00	EA ACRE		\$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$50.000 \$50.000 \$50.000 \$50.0000\$50.000\$50.0000\$	
Land Acculation Import Education Import Education Import Education Import Education Calified Improvement Costs Calified Improvement Costs Calified Improvement Calified Improvement Dataset Equip Sectors Technology and Information Dataset Equip Sectors Technology Dataset Equip Sectors Da		Master Plan Capital Impro	ovement Cost Summa	Iry	\$2,500.00 5%	EA ACRE		\$0.00 \$0.00 \$0.00 \$124.176.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$100 \$1	
Land Acquisition Impose gramming Experimental Experimenta		Master Plan Capital Impre	ovement Cost Summa	Iry Lump Sum Cost Lump Sum Cost Lump Sum Cost	\$2,500.00 \$7% \$10.000.00 \$75.000.00	EA ACRE L.S. L.S.		\$0.00 \$0.00 \$124,376.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$173,475.60 \$2,500.00 \$3,604.40 \$3,600.00 \$3,604.40 \$3,600.00	
Land Acquisition Import of Galaxies Import of Galaxies Import of Galaxies Control file Important Contre Control file Control Table Control file Control file Control Control file Control file Control file Control Table Control		Master Plan Capital Impro	User Define User Define User Define User Define	ILump Sum Cost →→	\$2,500.00 5% \$10,000.00 \$%	EA ACRE LS. LS.		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$173,476.60 \$2,500.00 \$310,000.00 \$310,000.00 \$310,000.00 \$340,000.00 \$40,000.0000\$ \$40,000.0000\$ \$40,000.000\$ \$40,000.000\$ \$40,000.0000\$ \$40,000.0000\$ \$40,000.000\$ \$40,0000\$ \$40,000.000\$ \$40,000.000\$ \$40,0000\$ \$40,000.000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,0000\$ \$40,000\$ \$40,0000\$ \$40,0	
Land Acculation Langer Education Experient Exp	ath	Master Plan Capital Impro	User Define	ILump Bum Cost →→	\$2,500.00 5% \$10000.00 5%	EA ACPE LS. LS.		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$173,876.60 \$133,876.60 \$16,000.000\$10,000.000\$10,0000\$10,000\$10,0000\$10,000\$10,000\$10,0	
Land Acquisition Import Jammers Import Jammers Second 2014 Acquisits Centre Second 2014 Acquisits Centre Second 2014 Acquisits Centre Second 2014 Acquisits Centre Second 2014 Acquisits Descend 2014 Acquisit		Master Plan Capital Impro	verment Cost Summe uer Ortnor uer Ortnor uer Ortnor	Defined Unit Cost	\$2,500.00 5% \$10,000.00 \$25,000.00 5%	EA ACPE LS. LS.		\$0.00 \$0.00 \$124.174.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$133.676.00 \$133.676.00 \$133.676.00 \$133.676.00 \$133.676.00 \$133.676.00 \$135.000.00 \$146.00.00 \$154.885.00 \$154.885.00	
Land Acculation Land Acculation Control Internet Control	NH 2010	Master Plan Capital Impro	User Defined	Defined Unit Cost →→	\$2.500.00 5% \$10.000.00 \$25.000.00 5%	EA ACPE L.S. L.S. L.S.		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.0000\$000 \$0.0000\$0000\$0000\$0000\$0000\$0000\$0000\$0000\$0000	
Land Acquisition Unput a Gamma Section Organization Organ		Master Plan Capital Impre	User Define User Define User Define	NY I Lump Bum Cost	\$2,500.00 \$100.00 \$200.00 \$10.000 \$10.000 \$10.000 \$10.000 \$10.000 \$10.000\$100 \$10.000\$100 \$10.000\$100\$100\$100\$100\$100\$100\$100\$100\$	EA ACPE		\$0.00 \$0.00 \$124,576,00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$173,576,00 \$173,576,00 \$173,576,00 \$150,00 \$150,00 \$150,00 \$154,858,00 \$54,858,00 \$50,00 \$50,00 \$154,858,00 \$50,00 \$150,00 \$154,858,00 \$150,00 \$150,00 \$154,858,00 \$150,00 \$150,00 \$150,00 \$154,858,00 \$150,00 \$150,00 \$150,00 \$150,00 \$150,00 \$150,00 \$170,000 \$100,0000\$100,000\$100,000\$1000\$1	
Land Acculation Langer Learner Engran Extension Desperse Learner Central Improvement Costs Despersed To Acquastion Central Improvement Costs Despersed Central Improvement Costs Despersed	2010 2010 2010 2010 2010 2010 2010 2010	Master Plan Capital Impro	User Defined User Defined User Defined	Derfined Unit Cost	92.500.00 5% \$10.000.00 \$%	EA ACRE LS. LS.		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$10.00 \$173.00 \$173.00 \$173.00 \$150.00	
Land Acquisition Unput of Gaterials Capital Improvement Costs Capital Improvement Improvement Costs Capital Improvement Improvement Costs Capital Im	and a constraint of the second se	Master Plan Capital Impre	ovement Cost Summe user Define User Define User Define	Ity Ity Lunp Sun Cost → Lunp Sun Cost → Lunp Sun Cost →	\$2,000,00 0,000 100,000 0,000000	EA ACRE		\$0.00 \$0.00 \$1.04.376.00 \$0	
Land Acquisition Employ Education Employ Education Employ Education Celeficit Improvement Costs Celeficit Improvement Costs Celeficit Improvement Costs Celeficit Improvement Database Celeficit Employee Entering Celeficit E	and a constant of the sector o	Master Plan Capital Impro	User Defined	Items fun Cest →	22.500.00 9% 9% 9% 9% 9%	EA ACRE LLS. LLS.		0000 0000 1132 19100 1000	
Land Acculation Langer Education Engeneric Education Engeneric Education Engeneric Education Engeneric Education Control Responses Control Response Control Responses Control Response Control	and a constant of the second o	Master Plan Capital Impro	User Define	It was find that Cost →	\$2.0000 Ph \$100000 \$55 \$55 \$55 \$55 \$55 \$55 \$55 \$55 \$5	EA ACTE L.S. L.S. L.S.		000 000 10	
Land Acquisition Language and Acquisition Language and Acquisition Control for Acquisition Control Control for Acquisition Con	ente ente ente ente ente ente ente ente	Master Plan Capital Impro	User Define	I Lump Sum Cest →	£2.500.00 5% \$10,000.00 5% 5% 5% 5%	EA ACTE LS. LS. LS. LS.		0.00 0.00 10.0	
Land Acculation Langer Learner Langer Learner Langer Learner Langer Learner Calified langeovennest Costs Calified langeovennest Costs Calified langeovennest Cal	ant and a star	Master Plan Capital Impro	User Defined	Ity Itump Sum Cost → Lump Sum Cost → Lump Sum Cost →	E2.000.00 19.000.00 255.000.00 256. 19% 9% 10% 25%	EA ACITE L.S. L.S. L.S.		0.00 9.00	
Land Acquisition Ump or Journels Control Contr	and solutions temperature (Conta) temperature (Conta)	Master Plan Capital Impro	User Define	ILIND Sum Cost →	£2.500.00 5% 5%00.00 5% 5%00.00 5% 5% 5% 5%	EA ACRE		000 000 1124 7500 000 1124 7500 000 000 000 000 000 000 000	
Land Acculation Langer	ats state Stat	Master Plan Capital Impro	User Define	ILunp fun Cost →	£2,000,00 1900,000 255,000,000,00 255,000,000,00 255,000,000,00 255,000,000,000,000,000,000,000,000,000,	EA ACRE LS. LS. LS.		0.00 0.00 11.24,376,00 0.00 11.24,376,00 0.00 11.24,376,00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	
Land Acquisition Ump or Joanness Ump or Joanness Ump of Joanne	ant ant bin provem ant Conta) ts	Master Plan Capital Impro	vement Cost Summe vement Cost Summe user Define user Define user Cefine user Cefine	Itimg fam Cest →	2 200 00 5% \$100000 \$5% \$100000 \$5% \$5% \$5% \$5% \$5%	EA A076 L.S. L.S. L.S.		000 000 1124,7500 000 1000	
Land Acculation Langer Education Description Description Description Description Description Cetable Improvement Costs Description Descrip	ast ast Sala Sa	Master Plan Capital Impro	User Setting	I Lung Sun Cost → I Lung Sun Cost → Lung Sun Cost → Lung Sun Cost →	2,500.00 Pho Pho Pho Pho Pho Pho Pho Pho Pho Pho	EA ACTE LS. LS. LS.	Lant Cost	0.00 0.00 10	
Land Acculation Languar Education Exposure Education Exposure Education Exposure Education Control Interconvenient Costs Dec Output Interconvenient Costs Dec Output Interconvenient Costs Dec Output Interconvenient Decounter (Cost Decounter) Decounter) Decounter (Cost Decounter) Decounter) Decounter (Cost Decounter) Decounter) Decounter(Cost Decounter) Decounter) Decounter) Decounter(Cost Decounter) Decounter) Decounter) Decounter(Cost Decounter) Dec	the proventies of the sector o	Master Plan Capital Impro	User Dations	I Lung Bun Cost → Lung Bun Cost → Lung Bun Cost → Prequency 0.2	22.000.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	EA AGRE LS. LS. LS. LS. LS. LS. LS.	Unit Cost 51:00	0.00 9.00 9.00 1124,475,00 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.000 9.0000 9.0000 9.0000 9.0000 9.0000 9.0000 9.0000 9.00000 9.00000 9.00000 9.000000 9.0000000000	
Land Acquisition Argeners Education Argeners Education Center and Second	and a constrained and a set of a constrained and a set of a constrained and a law provement Constrained the provement Constrained the provement Constrained the constrained and a set of a s	Master Plan Capital Impro	User Defined User	I Lung Bun Cost → Lung Bun Cost → Lung Bun Cost → Lung Bun Cost → Proquency 0.2 1	25.00.00 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	ВА А.078 L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 1000 14000	0.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acculation Compare Extension Compare C	Atta Contro Contro Contro Atta Att	Master Plan Capital Impro	User Defined User Defined User Defined User Defined User Defined User Stringe Cost Summary User Entries Data Cost User Entries Data Cost User Entries Data Cost User Entries Data Cost	Ity	22.200.00 5% \$5.000.00 \$5.000.00 5% 5% 5% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	ВА АСРЕ LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cost 51:00 50:00 50:00	0.00 9.00	
Land Acquisition Argun y Canada and Acquisition Argun y Canada and Acquisition Argun y Canada and Argun y Ca	Ingrowment Crists) Ingrowment Crists) Its	Master Plan Capital Impro	User Define User Define User Define User Define User Define User Define User Define	Itamp fun Cost → Lump fun Cost → Lump fun Cost → Lump fun Cost → Prequency 02 1	22.500.00 9% \$100.00.00 25% 9% 9% 9% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	EA. ACCE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 51:00 51	000 000 000 000 000 000 000 000 000 00	
Land Acculation Langer J Editoria Central Improvement Cost Cost Improvement Cost Cost Improvement Cost Cost Improvement Cost Cos	and a construction of the sector of the sect	Master Plan Capital Impro	vement Cost Summs vement Cost Summary vement Cost Summar	Ity Ity Itung fun Cost → Itung fun Cost → Itung fun Cost → Requency of	22.0000 100000 100000 9% 9% 9% 20% 20% 20%	ВА АСРЕ LS LS LS LS LS LS LS LS LS LS LS LS LS	Del/Cost 110 150 150 150 150 10 10 10 10 10 10 10 10 10 10 10 10 10	0.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acculation Language Education Exposure Education Exposure Education Exposure Education Exposure Education Control Interpretent Control Control Interpretent Control Control Interpretent Control Co	the second sector	Master Plan Capital Impro	User Dations User	It lung fun Cest → Lung fun Cest → Lung fun Cest → Lung fun Cest → Frequo ney 0.2 1	22.0000 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	ВА. А.ОЗЕ 	Unit Cost 51:00 20:00 31	0.00 0.00	
Land Acculation Lange Acculation Description Descripti		Master Plan Capital Impro	User Defined User	Itemp film Cost → Lung film Cost → Lung film Cost → Lung film Cost → Prequency 0.2 1	52,500,00 5%,00 115,000,00 25%,000,00 9% 15%,50% 25% 00% 4	ВА. AG25 L.S.	Unit Cost 5100 5100 53.00 53.00 53.00 54.00 56.00 56.00	000 000 000 000 000 000 000 000 000 00	
Land Acculation Company Extension Company Compa	the second sector the second sector secto	Master Plan Capital Impro	User Defined User	Ity	22.200.00 5% 5% 55.000.00 5% 5% 5% 5% 20% 20% 20% 20% 4	EA ACSE LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cose 51:00 40:00 40:00 40:00 40:00 40:00 40:00 40:00 40:00 40:00 40:00 40:00 40:00	0.00 0.00	
Land Acculation Argunar Education Argunar Education Argunar Education Control and Argunation Control and Argunation Control and Argunaria Control and Argunaria Pac Cuberts and Storn Dates Control Res Cuberts Pac Cuberts Pac Cuberts Control Argunaria Arginaria Arginaria Arginaria Arginaria Control Arginaria Ar	the second	Master Plan Capital Impro	User Define User Defi	I Lump from Cest → Lump from Cest → Lump from Cest → Lump from Cest → Lump from Cest → Pacepancy 0.2 1	22.500.00 9% 9%.950.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	EA. ACRE.	Unit Cost \$1.00 \$40.00 \$1.105.00\$1.105.00\$1.105.00\$1.105.00\$1.105.00\$1.105.0	000 1000 1000 1000 1000 1000 1000 1000	
Land Acculation Langer Lander Acculation Desperse Lander Acculation Desperse Lander Acculation Desperse Lander Acculation Desperse Lander Acculation Catalatic Inspersonent Costs Catalatic Inspersonent Despersonent	the second sectors and a second sectors and second	Master Plan Capital Impro	User Defined User Defined User Defined User Defined User Defined User Defined User Defined User Defined User Cost Summary User Cost Summar	ILung Sun Cost → ILung Sun Cost → ILung Sun Cost → Requestory 1	22,000,00 50,000,00 255,000,00 9% 255,000,00 9% 255, 255, 255, 255, 255, 255, 255, 255	EA ACSE L.S. L.S. L.S. L.S. L.S. L.S. L.S. EA EA EA EA EA EA EA EA EA EA EA EA EA	Unit Cost 10.0 190.0 190.0 10.0 10.0 10.0 10.0 10	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	
Land Acculation Languar Education Exposure Education Exposure Education Exposure Education Exposure Education Compare Co	the second sector	Master Plan Capital Impro		ILIUM Sum Cost → LIUM Sum Cost → LIUM Sum Cost → LIUM Sum Cost → LIUM Sum Cost → Prequency 02 3	22.500.00 5% 5% 555.000.00 5% 5% 5% 5% 5% 5% 25% 25% 25% 25% 25% 2	EA. ACPE	Unit Cost \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$10	000 000 1000 114,700 000 10000 1000 1000 1000 1000 1000 1000	
Land Acculation Langer Schements Langer Acculation Langer Schements Langer Acculation Langer Schements Capture Langer Capture		Master Plan Capital Impro	User Defined User	I Lung Sun Cost → I Lung Sun Cost → Lung Sun Cost → Lung Sun Cost → Frequency 63 1	2,500.00 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	EA. AOE AOE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S.	Unit Cost 8100 8100 8100 8105 80500 8050 8050 8050 8050 8050 8050 8050 8050 8050	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	
Land Acculation Languar Education Conjunt Conj		Master Plan Capital Impro	User Dations User	ILung fun Cest → ILung fun Cest → Lung fun Cest → Lung fun Cest → Prequency 0.2 → 1	D 20000 9% \$10,000,00 \$5,000,00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 90 4	ВА АСУЕ LLS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cost 51:00 461:00 461:00 91:875:00 91:875:00 96:00 96:00 96:00	0.00 0.00	
Land Acculation Land Acculation A	the procession of Crists t	Master Plan Capital Impro	User Defined User	ILung Bun Cost → Lung Bun Cost → Lung Bun Cost → Lung Bun Cost → Prequency 0.2 1	52,500,00 5%,00 115,000,00 25%,000,00 25% 25% 00 4 4	ВА. ACCE L.S.	Unit Cost \$100 \$100 \$300 \$300 \$300 \$300 \$300 \$300 \$400	000 900 900 900 900 900 900 900 900 900	
Land Acculation Languar Education Engran Education Engran Education Engran Education Engran Education Engran Education Control Information Control Information Control Information Control Information Control Information Control Information Control		Master Plan Capital Impro	User Defined User	ILung Sun Cost → ILung Sun Cost → Lung Sun Cost → Requestly 1 3	22 200.00 100.00 25.000.00 25.000.00 5% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9	BA AC7E L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 51.00 51.00 190.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00	0.00 0.00	
Land Acculation Argener Education Argener Schemen Sche		Master Plan Capital Impro	User Defined User	Itamp from Cest → Lump from Cest → Lump from Cest → Lump from Cest → Prequency 0.2 1	22.00.00 9% 510.00.00 20% 20% 20% 20% 20% 20% 20% 20% 20% 2	EA. ACRE	Unit Cost 5100 450.00 451.00 4	000 000 000 000 000 000 000 000 000 00	
Land Acculation Langer J Editorial Description Editorial Description Editorial Description Editorial Description Editorial Description Catality Improvement Cost CataIIty Impr	sets sets sets sets sets sets sets sets	Master Plan Capital Impro	User Defined Dia Cost	Ity Ity Itung functor Itung f	22.0000 50 50 50 50 50 50 50 50 50 50 50 50	EA ACCE LS LS LS LS LS LS LS LS LS LS LS LS LS	Detr Cost 1 1:0 1 5:0 1 5:0 1 3:0 1 3:0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	
Land Acculation Darpar Editoria Darpar Acculation Desperse Editoria Desperse Editoria Desperse Editoria Desperse Editoria Desperse Editoria Desperse Editoria Desperse Despers		Master Plan Capital Impro	User Dations User	ILump Sum Cost → Lump Sum Cost → Lump Sum Cost → Lump Sum Cost → Prequency 02 1	E2.500.00 9% \$10,000.00 9% 9% 9% 9% 9% 20% 20% 20%	ВА АСРЕ LS. LS. LS. LS. LS. LS. LS. LS. LS. LF. LF. LF. LF. LF. LF.	Unit Cest 3100 8000 81,875.00 81,875.00 90,000 90,00000000	0.00 0.00	
Land Acculation Land Acculation Description Examines Description Formation Description Formation Description Center Information Description Descriptio		Master Plan Capital Impro	User Defined bit Cost	I Lung Bun Cost → I Lung Bun Cost → Lung Bun Cost → Lung Bun Cost → Frequency 63 1	2,500.00 Ph. 255.000.00 Ph. 255.000.00 Ph. 20% 20% 20% 20% 20% 20% 20% 20% 20% 20%	EA. AOE AOE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S.	Unit Cost 15100 19200 19200 192500 192500 192500 192500 192500 192500 192500 192500	0.00 1	

			MASTER PLAN CO	OST ESTIMA	TE FOR INDIVIDU	IAL REACH					I
PROJECT :	Silverthorne Drain	nage Master Plan									
DRAINAGEWAY : REACH :	PR080 PR080										
JURISDICTION : REACH ID:	PR080-ReachPR08	0			ESTIMATED BY :	Drake Ludwig			DATE:	7/8/2020	
										TOTAL	
DESCRIPTION Pipe Culverts and Storm Drain	s	SUPPORTING	DATA (USER DEFIN	NED AND CAI	LCULATED)		QUANTITY	UNIT	UNIT COST	COST	USER COMMENTS
Circular Pipes	l santh (ff)	No. of Description	I				1	1	T	1	
35-inch	1300	1					1300	LE.	\$135.00	\$175,500.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
	-		Note : Prices reflect circula	ar reinforced conc	rete pipe. For arch or elliptic	al pipes, user shall	0	LF.	\$0.00 \$0.00 \$0.00	\$0.00	
	-		use equivalent circular pip	e diameter.			0	LF.	\$0.00 \$0.00	\$0.00	
							0	LE.	\$0.00 \$0.00	\$0.00 \$0.00	
							0	LF.	\$0.00 \$0.00	\$0.00 \$0.00	
							0	LF.	\$0.00 \$0.00	\$0.00 \$0.00	
							0	L.F.	\$0.00 \$0.00	\$0.00 \$0.00	
Flare End Sections Diameter (in)	Applicable	No. of Barrels	UIS FES	D/S FES	1		1			[
35-inch	Yes No	1	Yes	Yes			2	EA EA	\$2,013.00 \$0.00	\$4,026.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No				-		0	EA	\$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Headwalls Diameter (in)	Applicable	No. of Barrels	U'S Headwall	D'S Headwall	Concrete (C.Y.)	Steel (Ibs)					
	No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00	\$0.00 \$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No No				0.00	0.00	0	EA	\$0.00	\$0.00 \$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes concrete apro Diameter (in)	on)	No. of Barrels	Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (lbs)			-		
	-		0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	6 6 1	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	6 6 1	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
	-		0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
	-		0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Manholes and Inlets			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Manhole, 4' Dia. (Pipe Dia. < 36") Manhole, 5' Dia. (Pipe Dia. 36" - 42")		-					2	EA	\$3,625.00 \$4.875.00	\$7,250.00 \$0.00	
Manhole, 6' Dia. (Pipe Dia. = 48*) Type B Manhole (Pipe Dia. 48* and larger, define	tion < 10 degrees)]						EA EA	\$5,375.00 \$15,000.00	\$0.00 \$0.00	
Type P Manhole (Ppe Dia. 48* and larger, deflect Storm Inlet, Type R/Type 14, 5-foot	tion > 10 degrees)						2	EA EA	\$18,750.00 \$5,750.00	\$0.00 \$11,500.00	
Concrete Box Culverts Box Culvert Pine	_										
Individual Box Span (ft)	Box Height (ft)	No. of Barrels					Length (ft)	LF.	\$0.00	\$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
								LF.	\$0.00 \$0.00	\$0.00 \$0.00	
Headwall and Toewalls								L.F.	\$0.00	\$0.00	
Individual Box Span (ft)	No. of Barrels	Total Span (ft) 0.00	Concrete (C.Y.) 0.00	Steel (lbs) 0.00	UIS Headwall	D/S Headwall	0	EA	\$0.00	\$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes wingwalls on	either side of channe	0.00 I and concrete apron)	0.00	0.00			0	EA	\$0.00	\$0.00	
Individual Box Span (ft)	Box Rise (ft)	No. of Barrels	Total Interior Span (ft) 0.00	Length (ft) 0	Concrete (C.Y.) 0.00	Steel (lbs) 0.00	0	EA	\$0.00	\$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Hydraulic Structures			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Sloping Drop Structures Height (ft)	Bottom Width (ft)	Yn (ft)	<u> </u>	La (ft)	Hard Basin Length (ft)	Total Width (ft)			<u> </u>		
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00	\$0.00	

Check Structure, Concrete									
						LF.	\$338.00	\$0.00	
Channel Improvements									
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
-							\$0.00	\$0.00	
-							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
							\$0.00	\$0.00	
Detention/Water Quality Faciliti	es								
Detention (Complete-in-Place)									
Detention Facility 1 (Complete-in-Place)						AC-FT	\$57,000.00	\$0.00	
Detention Facility 2 (Complete-in-Place)	4					AC-FT	\$57,000.00	\$0.00	
Detention Facility 3 (Complete-In-Place)	l					AC-FT	\$57,000.00	\$0.00	
Detention (User Entered Quantities	-)								
Excavation, Low Range						GY.	\$14.00	\$0.00	
Excavation, Mid Range	4					C.Y.	\$30.00	\$0.00	
Excavation, High Range	4			Define of the b Const		C.Y.	\$39.00	\$0.00	
Cuser WORKS	1		User	Defined Unit Cost>		ыA		\$0.00	
water quality Appurtenances	l		User	permed unit cost>		БА		\$0.00	
Kemovals									
Hemoval of culvert pipe (D<48*)	4				180	LF.	\$25.00	\$4,500.00	
Hemoval of culvert pipe (48" <d<84")< td=""><td>4</td><td></td><td></td><td></td><td></td><td>LF.</td><td>\$63.00</td><td>\$0.00</td><td></td></d<84")<>	4					LF.	\$63.00	\$0.00	
menuovial of curvert pipe (D>84*)	1					LF.	\$94.00	\$0.00	
Concrete Box Calvert	I					LEJUEL	\$125.00	\$0.00	
Landscaping and Maintenance	improvements								
Wetlands Plantings						ACRE	\$31,250.00	\$0.00	
Reclamation & seeding (native grasses)					1	ACRE	\$1,250.00	\$625.00	
Tral/Path, Concrete (10' Width)					1300	L.F.	\$55.00	\$71,500.00	
TrainHeth, Crusher Fines (10 Width)						LP.	\$14.00	20.00	
Special Items (User Defined)									
	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	<user defined="" items<="" td=""><td>-</td><td>User</td><td>Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	-	User	Defined Unit Cost>				\$0.00	
	 User Defined items 	4	User	Defined Unit Cost				\$0.00	
	coult or Defined Items	-	User	benned drift cost>				30.00	
	Caref Definite Cintenna			Defined Unit Cost				20100	
	suuliser Defined Items	1	User	Defined Unit Cost>				\$0.00	
Land Acquisition	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User	Defined Unit Cost> Defined Unit Cost>				\$0.00	
Land Acquisition	<user defined="" items<="" td=""><td>1</td><td>User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	1	User	Defined Unit Cost> Defined Unit Cost>				\$0.00	
Land Acquisition	<user defined="" items<="" td=""><td>1</td><td>User</td><td>Defined Unit Cost></td><td></td><td>EA</td><td></td><td>\$0.00</td><td></td></user>	1	User	Defined Unit Cost>		EA		\$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition	<user defined="" items<="" td=""><td></td><td>User</td><td>Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00</td><td></td></user>		User	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition	<user defined="" items<="" td=""><td>Notes Disc Capital Image</td><td>User User</td><td>Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00</td><td></td></user>	Notes Disc Capital Image	User User	Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition	<user defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00</td><td></td></user>	Master Plan Capital Impro	User User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Essements Essement/ROW Acquisition Capital Improvement Costs Capital Improvement Costs	<user defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00</td><td></td></user>	Master Plan Capital Impro	User User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/RDW Acquisition Gentrif Improvement Costs Rep Outwarts and Storm Datass Coverate New Cleards	<user defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00</td><td></td></user>	Master Plan Capital Impro	User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00	
Land Acquisition Improving Easements Easement/ROW Acquisition Gapital Improvement Costs De Culverts and Storm Drains Concrete Box Culverts	<user defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00 \$0.00</td><td></td></user>	Master Plan Capital Impro	User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00 \$0.00	
Land Acquisition Temporary Estements EstemestROW Acquisition Climital Improvement Costs De Guerts and Stom Datas Control Bio Culoris Hydrails Structures Datamel Incorvements	<laer defined="" items<="" td=""><td>Master Plan Capital Impro</td><td>User User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00 \$0.00 \$0.00 \$0.00</td><td></td></laer>	Master Plan Capital Impro	User User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Temporary Extensions Extension (EV) Acquisition Control for an extension of Control for an extension Control for Control for any Control for Control for Control Control for Control for Control for Control for Control for Control Control for Control for Control for Control for Control for Control Control for Control for Cont	<user de="" fined="" hems<="" td=""><td>Master Plan Capital Impro</td><td>User User</td><td>Defined Unit Cost> Defined Unit Cost></td><td></td><td>EA ACRE</td><td></td><td>\$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00</td><td></td></user>	Master Plan Capital Impro	User User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$198,276.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Tergory gasements Essements/DW Acquisten Genital Improvement Costs Dig Calvetta and Dig Costs Dig Cost	eUe ar De fine d Nams	Master Plan Capital Impro	User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$196,278.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$4,500.00	
Land Acquisition Empory Edentricit Exponents E	eUser Defined Bens	Master Plan Capital Impre	Over User	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$72,12,50	
Land Acquisition Tempory Externation Beammeth/OW Acquisition Centre Improvement Costs Ple Coherts and Den Dens Concells for Coherts Marcalac, Brouchus Concells for Coherts Marcalac, Brouchus Desteron/Nation Coherts Partners Marcalac, Paralles Personals Londocapa, and Martenace Represented Social Imp (Act Orthon)	e-uter Ontined Bans	Master Plan Capital Impro	overnent Cost Summa	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$196,276.00 \$0.00 \$0.00 \$0.00 \$0.00 \$4.60.00 \$0.00 \$3.00 \$0.00 \$0.00 \$0.00	
Land Acquisition Import planning Comment/OV Acquiston Comment/OV Acquiston Comment/OV Acquiston Comments and Series Dates Comments and Series Dates Comments and Comments Comments and Comments Dates	eUser Doffined Sems	Master Plan Capital Impro	Over	Defined Unit Cost> Defined Unit Cost>		EA ACRE		\$0.00 \$0.00 \$0.00 \$198,276,00 \$0.00 \$0.00 \$0.00 \$0.00 \$1,000 \$1,0000\$1,000 \$1,000 \$1,000\$1,000\$1,000\$1,000\$1,000\$1,000\$1,0	
Land Acquisition Tergray Extendes BeenerstROM Acquisiton Collid Improvement Collis Red Collectin and Demo Dars Concrete Ros Colerts Darce Tergravements Concrete Ros Colerts Darce Tergravements Darce Tergravements Darce Tergravements Second Improvements Second Improvements Second Improvements Second Improvement Collis	e-ukar Dafiled Bans	Master Plan Capital Impro	overnent Cost Summa	befined Unit Cost		EA ACRE		\$0.00 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.000 \$0.000 \$0.00000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.00000 \$0.0000 \$0.0000 \$0.00000 \$0.0000 \$0.000000 \$0.0000 \$0.0000 \$0.000000 \$0.00000 \$0.000000 \$0.00000000	
Land Acquisition Import processing and account of the connectifUR Acquisition account and account of the account and account of the account and account of the account of the account of the account of the account of the account of the account of the account of the account of the acco	cUsor Defined Tems	Master Plan Capital impro	overnent Cost Summa	Defined Unit Cost	\$2,500.00	EA ACRE		\$0.00 \$0.000 \$0.0000 \$0.000 \$0.000 \$0.00000 \$0.0000 \$0.0000 \$0.0000 \$0.0000 \$0.00000 \$0.0000 \$0.0000 \$0.00000 \$0.0000 \$0.0000 \$0.00000 \$0.00000 \$0.0000000 \$0.00000000	
Land Acquisition Temperay Desents ExerciteTOM Acquister Control Magnetic C	 User Ox fixed Sams 	Master Plan Capital Impro	User Over	Defined Unit Cost> Defined Unit Cost> Itump Sum Cost>	\$2.500.00 5%	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$2,20 \$0.00 \$2,20 \$0.00 \$2,20 \$0.00 \$2,20 \$0.00 \$2,20 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.000 \$0.00000 \$0.0000 \$0.00000 \$0.00000 \$0.00000 \$0.00000 \$0.00000000	
Land Acquisition temporary fatements Earned RCVM Acquisition temporary fatements Executed RCVM Acquisition Dot Conference on the second	cUsor Dafined Rams	Master Plan Capital Impro	User User Devenent Cost Summa User Define User Define User Define	Elemed Unit Cost →→ Defined Unit Cost →→ Iry Lump Sum Cost →→ Lump Sum Cost →→	\$2,500,00 5% \$10,000,00	EA ACRE LS. LS.		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$1.000\$100\$100\$100\$100\$100\$100\$100\$100\$1	
Land Acquisition Tempora plasments Example Control Security Control Interpreted Plasments Control Bio Control Discontrol Bio Control Disc	eUser Defined Sams	Master Plan Capital Impro	User Defined User Defined User Defined User Defined User Defined	Befined Unit Cost →→ Befined Unit Cost →→ If Lump Sum Cost →→ It Lump Sum Cost →→ Lump Sum Cost →→	\$2,500.00 5% 510.000.00 5%	EA ACRE		\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$12,45,00 \$12,45,00 \$13,745,00 \$13,745,00 \$13,745,00	
Land Acquisition Improve Jacomins Earner (2007 Acquisition Control Acquisition Control Acquisition Control Improvement Conts Control Improvement Control Control Improvement Control Control Improvement Control Contr	cuter Defined Bans	Master Plan Capital Impro	User User overment Cost Summa User Define User Define	Evened Unit Cost →→ Evened Unit Cost →→ Iry Lump Sum Cost →→ Lump Sum Cost →→	\$2.500.00 5% \$10.000.00 5%	EA ACPE LS. LS. LS.		\$0.00 \$0	
Land Acquisition Tempora placements Executed Vary Acquises Executed Executed Vary Acquises Executed Vary Acquises Executed Vary Acquises Executed Executed Var	cUser Defined fams	Master Plan Capital Impre	uer Define Uer Cost Summa Leer Define Uer Define	Defined Unit Cost →→ Defined Unit Cost →→ IFY I Lump Sum Cost →→ I Lump Sum Cost →→	\$2.500.00 5% \$10.000.00 \$25.000.00 5%	EA ACRE		80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 80.00 81.00 81.745.00 81.755.00 81.755.00 81.755.00 81.755.00 81.755.00 81.755.00 81.755.00 81.755.00 81.755.00 81.7	
Land Acquisition Improve Jacomins Control Acquisition Control Acquisition Control and Improvement Conts Pre-Charity and Improvement Conts Pre-Charity and Improvement Control Improvement	ex-utar Defined Bans	Master Plan Capital Impro	User User Sverment Cost Summa User Define User Define	Defined Unit Cost → Defined Unit Cost → Iry I Lump Bum Cost → I Lump Bum Cost →	\$2,500.00 50% \$1000.00 \$5100.00 \$5%	EA ACTE		\$0.00 \$0	
Land Acquisition Tempore yacements Experimental Construction Tempore yacements Construction Cons	 	Master Plan Capital Impro	User John sverment Cost Summu verment Cost Summu user Defined User Defined	Defined Unit Cost → Defined Unit Cost → Ity ILump Sum Cost → ILump Sum Cost →	\$2.500.00 5% \$10.000.00 \$25.000.00 5%	EA ACRE		\$20.00 \$20.00 \$20.00 \$198,276.00 \$198,276.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$276,901.60 \$13,745.00 \$11,745.00 \$1	
Land Acquisition Temperay Dearests Earnet STOP Acquise Catal Meansurement Constances Catal Meansurement Catal Constances Cat	cUser Defined Eans	Master Plan Capital Impre	User Joer	Safind Uni Cast →→	£2.00.00 Dis 00000 102.0000 20000	EA ACTRE LS LS LS		90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 91.00 92.75.00 92.7	
Land Acquisition Import paramete Exand Acquisition Import paramete Exand Acquisition Acquise and development Acquis	cUsor Defined Sems	Master Plan Capital Impro	User Joer overnent Cost Summa vernent Cost Summa User Define User Define	Strind Uni Cost → I Lung Bun Cost → Lung Bun Cost → Lung Bun Cost →	\$2,500.00 9% \$100.00 9% \$5%	EA ACRE LS. LS. LS.		50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 51.00 52.00.00 51.00 51.00 52.00 51.00 52.00 53.00 50.00	
Land Acquisition Tampera plasmits Tampera plasmits Cartel Instrument Control Cartel Instrument Control Cartel Instrument Control Cartel Instrument Control Cartel Instrument C	cUser Defined Sams	Master Plan Capital Impro	Juer Juer overnent Cost Summa vernent Cost Summa uer Define uer Define	Statisti Uni Cast → Iny II Lung Bun Cast → ILung Bun Cast → ILung Bun Cast →	£2.00.00 9% 100.00 100.00 100.00 100.00 105 105 105 105	EA ACTE LS. LS. LS.		8:00 9:00	
Land Acquisition Tempora planemic Exand Acquisition Tempora planemic Exand Science Control Registron Decount Registron D	cLaor Defined Tems	Master Plan Capital Impro	User User Sverment Cost Summa User Defined User Defined	Stand bil Cat → Iry I Lung Sun Cat → I Lung Sun Cat → Lung Sun Cat →	\$2,500.00 5% \$100.000 5% 5% 5% 5%	EA ACPE		9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Tempora placements Exercise Control Exer	ex-User Defined Bans	Master Plan Capital Impre	Juer Juer overment Cost Summa verment Cost Summa user Define user Define	Subind Uni Cat → I Ling Bin Cat → Ling Bin Cat → L	22.0000 5% 10.0000 9% 10% 9%	EA ACRE		9.00 90.00 9	
Land Acquisition Improve Jacomonis Control Control Control Control Control Control Control Control Control Control Control Control	 	Master Plan Capital Impro	User User overment Cost Summa User Define User Define	Suffixed Unit Cest → In p	\$2,500.00 9% \$16,000.00 \$25,000.00 \$25,000.00 \$55, \$55, \$55, \$55, \$25%	EA ACPE L.S. L.S. L.S. L.S.		9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Tempory Exernets ExernetSVD Acquises ExernetSVD A	cUser Defined fams	Master Plan Capital Impre	User Defined User Defined User Defined User Defined	Statistic Uni Cest → Ary	\$2,200,00 \$50 \$10,000,00 \$55,000,00 \$55,000,00 \$55, \$55,	EA ACRE LS LS LS		9 00 9 00 9 00 9 00 9 00 9 00 9 00 9 00	
Land Acquisition Tempers parents EnternetTOV Acquistre Cathol Acquistre Ca	c	Master Plan Capital Impre	User User overment Cost Summa User Define User Define	Suffind Uni Cest →	82.500.00 9% 9% 9% 9% 9% 9% 9% 9%	EA AOE LS. LS. LS.		8:00 8:00 8:00 8:00 8:00 8:00 8:00 8:00	
Land Acquisition Impose y learners Impose y lear	cUser Defined feams	Master Plan Capital Impre	overnent Cost Summa ber Define ber Define ber Define ber Define	Subind Uni Cest → ary	E2 000.00 90- 110.000 00 95- 95- 95- 95- 95- 95- 95- 95- 95- 95-	EA ACCE		9 00 9 00 9 00 9 00 9 00 9 00 9 00 9 00	
Land Acquisition Tempers plasments Earned Kay Acquise Tempers plasments Educate Management Constit Plac Cubres And Boon Dates Concrete Bio Cubres Plac Cubres Cubre	cUser Defined Tems	Master Plan Capital Impre	Juer beer overment Cost Summa user Define user Define user Define	Island Uni Casi → Isry ILump Sun Casi → Iump	2 200.00 5% 5% 5% 255.002.00 25% 5% 5% 25% 25% 25%	EA. AOPE	Unit Cost	0.00 0.00	
Land Acquisition Import Standards Import Impo	CLiker Defined Sems	Master Plan Capital impre Master Plan Capital impre ster Plan Operation and Maintenar	User Defined Use Cost Summary User Cost Summary User Cost Summary User Defined	Istind bil Cat → Isti	£2,500.00 5% 195.00 9% 9% 10% 9% 10% 20%	EA AGOE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost \$100	9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Trappersy Reserves Earls Acquisition Trappersy Reserves Economic DVA Acquise Economic DVA Economic Economic DVA Economic Evolution Evol	cker Defined Bans control of the defined Bans	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (c.) Optical	Deer Defines User Defines Defines User Defines	Refined bill Cast → I Ling Bill Cast → Ling Bi	22 500 00 5% \$10,000.00 5% 10% 25% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	5A. AC78 L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 11:00 401.00	B100 B100 B1000 B100 B113 B1000000 B1000000 B100 B1000000 B100 B10000000 B10000 B1000000000000 B1000000000000000000000000000000000000	
Land Acquisition Import Standards Import Stand	 	Master Plan Capital impre Master Plan Capital impre ster Plan Operation and Maintenan ster Plan Operation and Maintenan (optical Optical Optical	User Defined User	Isoland bill Cast → Isoland bill Cast →	52,500,00 9%, 100,000,00 100,000,00 100,000,00 100,000,0	EA AGYE	Unit Cost 51:00 402:00	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Tempory Externets Earnet KVV Acquister Tempory Externets Externet Externets Externets Externets Externets Externet		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenaa %) Optimal Optimal Optimal Optimal	Der Definer Uber Definer Uber Definer Uber Definer Uber Terfiner die Uber Gefiner Uber Terfiner die Uber Gefiner	Refined bill Cast → ary I Lump film Cast → Lump film Cast → Lump film Cast → Lump film Cast → Requestly 02 1	E 2 200 00 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	EA ACRE LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cost \$100 \$200; \$10	B100 B100 B111 B100 B111 B100 B100 B100 B111 B100 B100 B100 B111 B100 B100 B200 B111 B100 B100 B200 B111 B100 B100 B200 B111 B100 B100 B100 B100 <td></td>	
Land Acquisition Tempers parents Earned TWA Acquise Tempers parents Educate Management Cost Cost of Internet Cost Cost of Internet Cost Cost of Internet Cost Cost Cost Cost Cost Cost Cost Cos	c	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (c) Optimat Optimat Optimat Optimat	User Defined User	Istind Uni Cast → Istind Uni Cast → Isting Bun Cast → Isting Bun Cast → Isting Bun Cast → Isting Bun Cast → Preparty 22 1	\$2,500,00 9% \$10,000,00 \$25,000,000 \$25,000,000,000 \$25,000,000,000 \$25,000,000,000,000 \$25,000,000,000,000,000 \$25,000,000,000,000,000,000,000,000,000,0	БА АСРЕ Ц.5. Ц.5. Ц.5. Ц.5. Ц.5. Ц.5. Ц.5. Ц.5	Unit Cost 1 100 1 100 10	0.00 0.00	
Land Acquisition Impose y teaments Earner Acquisition Impose y teaments Control Information Control Informati	Control of the set of the se	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (c) Optional Optional Optional Optional Optional Optional	User Defined User	Island bil Cast → Island bil C	52,000,00 19,000,00 9% 55% 55% 26% 26% 26% 26% 26% 26% 26% 26% 26% 26	5A ACCE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 11:00 19:00 19:00 11:07:500 11:07:500	9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Trapport planetes Trapport planetes Trapport planetes Trapport planetes Trapport planetes Trapport Trap		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenar (c) Optiona (c) Optional (c) Optiona	Leer Define Leer Defi	Refined bill Cest → rry I Lung Bun Cest → I Lu	92 200 00 9% \$10 00 00 \$55 00 00 \$56 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	БА АСТЕ L.5.	Unit Cost 5100 5100 51,000	10.0 10.0 10.0 <td></td>	
Land Acquisition Import parameter Import Acquisition Import Impo		Master Plan Capital impre Master Plan Capital impre ster Plan Operation and Maintenar (c) Optional (c) Optional (c) Optional (c) Optional (c) Optional (c) Optional (c) Optional (c) Optional	User Defined User	Isoland bil Cast → Isoland bil Cast → Isola	£2,500.00 5% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	БА АСРЕ L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 1100 15100	9:00 9:00 9:00 9:00 9:00 9:00 9:00 9:00	
Land Acquisition Tempora placements Earner Acquisition Tempora placements Earner Acquisition Earner Acquisit		Master Plan Capital Impre Master Plan Capital Impre stor Plan Operation and Maintenar (a) Optional Optional Optional Optional Optional Optional	deer Define deer Defi	Refined bill Cast → ary I Lung Bun Cast → Lung Bun C	22 250 00 5% 5% 55 00 20 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	EA ACPE LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cost 81:00 80:00 80:00 80:00 80:00 80:00 80:00 80:00 80:00 80:00	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Tampers parents Eard Acquisition Tampers parents Control Mercanework Cost Control Mercanework Cost Cost Mercanework Cost Merc	e	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (c) Optional optional optional optional optional optional	User Defined ber Defined User D	Itania dui Cast> Itani Bun Ca	52,500,00 9% 160,000,00 180,000,00 180,000,00 9% 9% 15% 29% 29% 20% 20% 20% 20% 20% 20% 20% 20% 20% 20	EA ACCE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cast 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 1	0.00 0.00	
Land Acquisition Temporary Exernets Earnet XCV Acquister Temporary Exernets ExernetSVX Acquister ExernetSVX Acquis	c	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenar (a) Optional Optional Optional Optional Optional Optional	User Defined User Cotta Summary User Strended Use Cost	Refined Unit Cast> ary	22.200.00 39- 39- 39- 30- 30- 39- 39- 39- 39- 39- 39- 39- 39- 39- 39	EA ACVE LLS LS LS LS LS LS LS LS LS LS LS LS LS	Dati Cost \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0 \$10.0	B100 B100 B110 B100 B111 B100 B111 B100 B111 B100 B100 B100 B100 <td></td>	
Land Acquisition Trapport planetesis Earling Acquisition Trapport planetesis Cartier Any Acquise Cart		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenau (c) Optional (c) Optiona	Leer Define Leer Defi	Refined bill Cest →→ ry Liung Bun Cest →→ Liung Bun Cest →→ Liung Bun Cest →→ Prequency 0.2 1	22 200.00 5% 5 10.00.00 5% 5% 5% 20% 20%	БА АСУЕ L.5. L	Unit Cost 81:00 81	BLO BLO BLO	
Land Acquisition Tangeary Reserves Tangeary Rese	c	Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (b) Optional Optional Optional Optional Optional Optional	Juer Defined J	Islind bil Cat → Islind bil	12.0000 15000 150000 150000 155 155 155 155	БА АСРЕ L.S.	Lint Cost 3100 455.00 11/750 13/750 13/750 13/750	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Trapper placements Land Acquisition Trapper placements Land Acquisition La		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenan (c) Optional Optional Optional Optional Optional Optional	Loser Definition Lose	Refined bill Cast → ary I Lung Bun Cost → Lung Bun C	E2.00.00 9% \$10.00.00 9% 50% 5% 5% 5% 20% 20% 20% 4	EA ACRE L.S.	Unit Cost \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$10	B.0.0 B.0.0 B.0.0 <td></td>	
Land Acquisition Temperay Buenets Eard Acquisition Cathol Acquise Acquises Cathol Cath		Master Plan Capital Impre Master Plan Capital Maintenan (ster Plan Operation and Ster Plan Operation and Ster Plan Operation and Ster Plan Operation (ster Plan Operation and Ster Plan Operation and Ster Plan Operation (ster Plan Operation and Ster Plan Operation and Ster Plan Operation (ster Plan Operation and Ster Plan Operation and Ster Plan Operation (ster	User Defined User Defined Us	Itung fun Cost → Itung fun C	£2,500.00 95, 95, 95, 95, 95, 95, 95, 95, 95, 95,	БА АСРЕ L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 51:00 50 50 50 50 50 50 50 50 50 50 50 50 5	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	
Land Acquisition Tempora placements Land Acquisition Tempora placements Land Acquisition Tempora placements Land Acquisition Land Control to Control Land Control to Control Control to Control Control to Control Control to Control		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenar (a) Optional Optional Optional Optional Optional Optional	Leer Define Leer Defi	Refined Uni Cest → ary I Lump film Cest → L	E 2 200 00 5% \$10 000 00 \$5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5	EA ACRE LS LS LS LS LS LS LS LS LS LS LS LS LS	Unit Cost \$10.0 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000 \$0.000	B100 B100 B111 B100 B111 B100 B111 B100 B100 B20 B11 B100 B12 B100 B13 B100 B14 B100 B13 B100 B14 B100 B13 B100 B14 B100 B14 B100 B15 B100 B14 B100 B15 B100 B14 B100 B15 B100 B100 B100 B100 B100 B100 B100 B100 B100 B100	
Land Acquisition Tampers placeets Land Acquisition Tampers placeets Land Acquisition Tampers placeets Control		Master Plan Capital Impre Master Plan Operation and Maintenan (a) Optimal (b) Optimal (c) Optimal (c) Optimal (c) Optimal	User Defined Use Cost	Isolated bill Cast → Isolated bill Cast →	52 500.00 9% 9 50.00.00 555 555 9% 9% 9% 9% 9% 9% 9% 9% 9%	EA ACRE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 15:00 9000 15:15:50 9000 15:15:50 9000 16:10 9000 16:10 9000 16:10 10:10 1	0.00 0.00	
Land Acquisition Hampory Description Hampory Description Hampory Description Land Acquisition Hampory Description Land Acquisition		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenar (b) Optional Optional Optional Optional Optional Optional	User Defined User	Island Uni Cast → Island Uni Cast → Islan	22 200.00 39% 190.000 20 5% 255.000 20 5% 25% 25% 25% 25% 25% 25%	EA ACVE	Unit Cost 1 105 1 505 1 105 1	0.00 0.00	
Land Acquisition Temporary Exercises Control for Acquisition Control for Acqui		Master Plan Capital Impre Master Plan Capital Impre ster Plan Operation and Maintenar (c.) Optional (c.) Op	Liker Defines Liker	Refined bill Cest → rry I Lung Sun Cest → Lung Sun C	22 500.00 5% \$10.00.00 5% 5% 5% 5% 20% 20% 20% 20% 4	EA ACRE L.S.	Unit Cest 1100 1100 13.00 13.00 13.00 13.00 15.00	10.0 10.0 10.0 <td></td>	

			ASTER PLAN CO	OST ESTIMA	TE FOR INDIVIDU	AL REACH					J
PROJECT :	Silverthorne Drain	nage Master Plan									<u>.</u>
DRAINAGEWAY : REACH :	PR090 PR090										
JURISDICTION : REACH ID:	Silverthorne PR090-ReachPR09	0			ESTIMATED BY :	Drake Ludwig			DATE:	7/8/2020	1
										TOTAL	
DESCRIPTION Bing Culworts and Storm Drain		SUPPORTING	DATA (USER DEFIN	ED AND CAI	CULATED)		QUANTITY	UNIT	UNIT COST	COST	USER COMMENTS
Circular Pipes	5		Ī				1	1	1		
Diameter (in)	Length (ft)	No. of Barrels					0	L.F.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00 \$0.00	\$0.00 \$0.00	
							0	LF.	\$0.00	\$0.00 \$0.00	
			Note : Prices reflect circula use equivalent circular pip	e diameter.	ete pipe. For arch or elliptic	aipipes, user shall	0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
							0	LF.	\$0.00	\$0.00	
Flare End Sections	Anallashia	No. of Description	110 570	0.0 570				L7.	\$0.00	30.00	
Diameter (in)	No	No. of Barrels	UIS FES	U/S FES	-		0	EA	\$0.00	\$0.00	
	No No						0	EA CA	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No						0	6 6 1	\$0.00	\$0.00	
	No						0	EA	\$0.00	\$0.00	
	No No						0	EA	\$0.00	\$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No						0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Headw alls	No					r	0	EA	\$0.00	\$0.00	
Diameter (in)	Applicable No	No. of Barrels	U'S Headwall	DIS Headwall	Concrete (C.Y.) 0.00	Steel (lbs) 0.00	0	EA	\$0.00	\$0.00	
	No No				0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0 0	EA	\$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No No				0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No No				0.00	0.00	0	EA CA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
	No				0.00	0.00	0	EA	\$0.00	\$0.00	
Wingwalls (includes concrete apro Diameter (in)	on)	No. of Barrels	Interior Span (ft)	Length (ft)	Concrete (C.Y.)	Steel (lbs)					
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Manholes and Inlets Manhole, 4' Dia. (Ppe Dia. < 36')	•				•			EA	\$3,625.00	\$0.00	
Manhole, 5' Dia. (Pipe Dia. 36" - 42") Manhole, 6' Dia. (Pipe Dia. = 48")								EA	\$4,875.00 \$5,375.00	\$0.00 \$0.00	
Type B Manhole (Pipe Dia. 48" and larger, deflect Type P Manhole (Pipe Dia. 48" and larger, deflect	tion < 10 degrees) tion > 10 degrees)							EA EA	\$15,000.00 \$18,750.00	\$0.00 \$0.00	
Storm hiet, Type R/Type 14, 5-foot		I						EA	\$5,750.00	\$0.00	
Box Culvert Pipe	Box Heishe der	No of Parrols					Length (#)		-		
5	2	1					caulitu (iri)	LF.	\$508.25	\$0.00	
								LE.	\$0.00	\$0.00	
								LE.	\$0.00	\$0.00	
								LF.	\$0.00	\$0.00	
								LE.	\$0.00	\$0.00	
Headwall and Toewalls	No. 10	Total 6	0	Dia - 111 - 1	100.00	D.0.16	1	L.F.	\$0.00	\$0.00	
muwiduai Box span (ft) 5	NO. OF Barrels	7.00	0.60	ateer(lbs) 132.30	vis Headwall Yes	Yes	2	EA	\$578.55	\$1,157.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$U.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
		0.00	0.00	0.00			0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
Wingwalls (includes wingwalls on	either side of channe	0.00 I and concrete apron)	0.00	0.00			0	EA	\$0.00	\$0.00	
Individual Box Span (ft) 5	Box Rise (ft) 2	No. of Barrels	Total Interior Span (ft) 5.00	Length (ft) 12	Concrete (C.Y.) 6.81	Steel (lbs) 351.54	2	EA	\$5,462.00	\$10,924.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
			0.00	0	0.00	0.00	0	EA EA	\$0.00 \$0.00	\$0.00 \$0.00	
Hydraulic Structures			0.00	0	0.00	0.00	0	EA	\$0.00	\$0.00	
Sloping Drop Structures	Botto- Million of	5- AL		1 - 1011	Hard Broke Law 1997	Tot-1 Mind-		-	1		
Height (ft)	Bottom Width (ft)	TR (ft)		La (ft) 0.00	Haro Basin Length (ft) 0.00	i otai width (ft) 0.00		EA	\$0.00	\$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$U.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	
				0.00	0.00	0.00		EA	\$0.00 \$0.00	\$0.00 \$0.00	

Check Structure, Concrete Channel Improvements								
Channel Improvements					LF.	\$338.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
						\$0.00	\$0.00	
Detention/Water Quality Facilities								
Detention (Complete in Place)								
Detention Facility 1 (Complete-In-Place)				(AC-FT	\$57,000.00	\$0.00	
Detention Facility 2 (Complete-in-Place)				2	AC-FT	\$57,000.00	\$114,000.00	
Detention Facility 3 (Complete-in-Place)					AC-FT	\$57,000.00	\$0.00	
Detention (User Entered Quantities)								
Excavation, Low Range					C.Y.	\$14.00	\$0.00	
Excavation, Mid Hange				3300	C.Y.	\$30.00	\$99,000.00	
Contract Works		11 De	ofined Unit Cost		G.Y.	\$39.00	\$0.00	
Water Quality Amurtenances		User De	efined Unit Cost>	1	EA FA	\$5,000.00	\$10,000.00	
Pomovale		user be			54	40,000.00	90,000.00	
Perment of subset play (Dot07)				120	1.5	\$25.00	\$3,000,00	
Removal of culvert pipe (45°<0<84")				120	LF.	\$63.00	\$0,000.00	
Removal of culvert pipe (1>84*)					LF.	\$94.00	\$0.00	
Concrete Box Culvert					LF/CBLL	\$125.00	\$0.00	
Landscaping and Maintenance Improvements								
Wetlands Plantings					ACRE	\$31,250,00	\$2.00	
Reclamation & seeding (native grasses)				1	ACRE	\$1,250.00	\$1,250.00	
Tral/Path, Concrete (10' Width)					L.F.	\$55.00	\$0.00	
Trail/Path, Crusher Fines (10' Width)					L.F.	\$14.00	\$0.00	
Special Items (User Defined)								
<user defined="" items<="" td=""><td></td><td>User De</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User Do</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User Do</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User De</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User Do</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User Do</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User De</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User Do</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User Do	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td>_</td><td>User De</td><td>efined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>	_	User De	efined Unit Cost>				\$0.00	
<user defined="" items<="" td=""><td></td><td>User De</td><td>erined Unit Cost></td><td></td><td></td><td></td><td>\$0.00</td><td></td></user>		User De	erined Unit Cost>				\$0.00	
Land Acquisition								
Land Acquisition Temporary Easements Consensition					EA		\$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition					EA ACRE		\$0.00 \$0.00	
Land Acquisition Temporary Easements Easement/ROW Acquisition	Master Dian Canital Impre				EA ACRE		\$0.00 \$0.00	
Land Acquisition Terporary Exerninis Essement/ROW Acquisition	Master Plan Capital Impro	ovement Cost Summar	γ		EA ACRE		\$0.00 \$0.00	
Land Acquisition Tempary Essenth Essent ROW Acquisiton Capital Improvement Costs De Clast and Row Dates	Master Plan Capital Impre	ovement Cost Summar	ŷ		EA ACRE		\$0.00 \$0.00	
Land Acquisition Land Acquisition Esement Esement RDW Acquisition Esement RDW Acquisition Educate Insurancement Costs De Galants and Storm Dates Control Sex Charts De Control S	Master Plan Capital Impro	ovement Cost Summar	y		EA ACRE		\$0.00 \$0.00 \$0.00 \$12.081.00	
Land Acquisition Exempting Section Exempting Section Exempting Section Control Engeneration Control Engen	Master Plan Capital Impro	ovement Cost Summar	у		EA ACRE		\$0.00 \$0.00 \$0.00 \$12,081.00 \$0.00	
Land Acquisition Land Acquisition Import Security Acquisition Import Security Acquisition Control Responsement Sons Control Res Control Control Re	Master Plan Capital Impre	ovement Cost Summar	у		EA ACRE		\$0.00 \$0.00 \$12,081,00 \$0.00 \$0.00	
Land Acquisition Land Acquisition Exemetric/Acquisition Compary Sammers Compar	Master Plan Capital Impro	ovement Cost Summar	y		EA ACRE		\$0.00 \$0.00 \$12,081.00 \$0.00 \$0.00 \$228,000.00	
Land Acquisition Land Acquisition Compary Gamma Annual Compary	Master Plan Capital Impro	ovement Cost Summar	y		EA ACRE		\$0.00 \$0.00 \$12,081.00 \$0.00 \$0.00 \$228,000.00 \$3,000.00	
Land Acquisition Land Acquisition Dennert Civit Acquisition Control Information Control I	Master Plan Capital Impre	ovement Cost Summar	y		EA ACRE		\$0.00 \$0.00 \$12,081,00 \$0.00 \$0.00 \$228,000.00 \$3,000.00 \$1,250.00	
Land Acquisition Land Acquisition Characteria Control Instruments	Master Plan Capital Impro	ovement Cost Summar	y		EA ACRE		\$0.00 \$0.00 \$12,081.00 \$0.00 \$0.00 \$228,000.00 \$1,250.00 \$1,250.00 \$1,250.00 \$1,250.00	
Land Acquisition Land Acquisition Company Seconds Lander Seconds Lander Seconds Company Seconds Lander Seconds Company Seconds Lander	Master Plan Capital Impre	ovement Cost Summar	у 		EA ACRE		\$0.00 \$0.00 \$12,061,00 \$0.00 \$0.00 \$2,28,000,00 \$1,250,00 \$1,250,00 \$1,250,00 \$244,331,90	
Land Acquisition Land Acquisition Extension Contents Extension Contents Control Improvement Conts Producets and Genome Control Improvement Conts Producets Control Improvement Control Improvement Control Con	Master Plan Capital Impro	ovement Cost Summar	y ⊥umo Sum Cost	\$2.501 CD.	EA ACRE		\$0.00 \$0.00 \$12,081:00 \$0.00 \$2,000:00 \$1,000:00 \$1,250:00 \$1,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,250:00 \$2,000 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$20 \$2,0000\$2000\$2	
Land Acquisition Land Acquisition Company Tearing Company Tear	Master Plan Capital Impre	ovement Cost Summar	y Lump Sum Cost →→→	\$2.500.00 5%	EA ACRE		\$0.00 \$0.00 \$12,001.00 \$2,001.00 \$2,2001.00 \$1,000.00 \$1,000.00 \$2,4,331.00 \$2,4,331.00 \$2,24,341.00 \$2,24,35	
Land Acquisition Laneau Course and Acquisition Assessment Constant Assessment Constant Control Instructions of Monta Concrete Rouchers and General Concrete Rouchers Concrete Concrete Rouchers Concrete	Master Plan Capital Impro	ovement Cost Summar	y ∟ump Sum Cost> ∟ump Sum Cost>	\$2,500.00 5% \$15,000.00	EA ACRE		\$0.00 \$0.00 \$12,081.00 \$12,081.00 \$0.00 \$0.00 \$1,220.000.00 \$1,220.000.00 \$1,220.000.00 \$1,220.000 \$1,230.00 \$1,200.00 \$244,331.00 \$25,500.00 \$15,000.00	
Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Acquisition Control of the Ac	Master Plan Capital Impre	ovement Cost Summar	y Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2,500.00 5% \$15,000.00 \$25,000.00	EA ACRE L.S. L.S. L.S.		\$0.00 \$0.00 \$12,081:00 \$12,081:00 \$0.00 \$2,000 \$1,000 \$2,0000 \$2,0000 \$2,0000 \$2,0000 \$2,0000 \$2,0000 \$2,0000 \$2,0000 \$2,	
Land Acquisition Land Acquisition Company Gamming Land Acquisition Company Common Company Company Company Company Company Company	Master Plan Capital Impro	ovement Cost Summar	y Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2,500.00 5% \$15,000.00 \$25,000.00 5%	EA ACPE LS. LS.		\$0.00 \$0.00 \$12.08100 \$12.08100 \$0.000 \$0.000 \$0.000 \$0.000 \$0.0000 \$0.0000 \$0.0000\$00 \$0.0000\$000 \$0.0000\$000 \$0.0000\$000\$	
Land Acquisition Land Acquisition Land Acquisition Land Language and Land Land Land Land Land Land Land	Master Plan Capital Impre	User Defined L User Defined L User Defined L	y Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2.500.00 5% \$15.000.00 5%	EA ACRE LS. LS. LS.		\$0.00 \$0.00 \$12,081:00 \$12,081:00 \$0.00 \$2,20:000 \$2,20:0	
Land Acquisition Laneau Civilian Constant Constant Constant Civilian Constant ConstA	Master Plan Capital Impre	User Defined L	γ Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2.500.00 5% \$15.000.00 \$25.000.00 5%	EA ACRE LS. LS. LS.		\$0.00 \$0.00 \$12,01100 \$22,01100 \$228,000,00 \$129,000,00 \$129,000,00 \$129,000,00 \$129,000,00 \$12,217,00 \$15,000,00 \$12,217,00 \$15,000,00 \$12,217,00 \$15,000,00 \$12,17,0	
Land Acquisition Land Acquisition Compary Journal Compary Jour	Master Plan Capital Impre	User Defined L	y Lump Sum Cost> Lump Sum Cost> Lump Sum Cost>	\$2.500.00 9% \$15.000.00 \$25.000.00 \$55	EA ACRE L.S. L.S. L.S.		\$0.00 \$0.00 \$12.05 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$12.00.00 \$12.00.00 \$12.00.00 \$12.00.00 \$12.45.00 \$12.17.00 \$15.277.00 \$	
Land Acquisition Laneau Cipital Content Content Content Instruments Content Co	Master Plan Capital Impre	User Defined L	y ump Sum Cost> ump Sum Cost>	\$2.000.00 5% \$1500.00 9%	EA ACRE		50.00 50.00 51.2 GH 00 51.2 GH 00 50.00 50.00 52.20 0.00 51.2 0.00 50.0	
Land Acquisition Land Acquisition Compary Gaussian Compary Clauses Compary Cla	Master Plan Capital Impre	User Defined L	y 	\$2.500.00 9% \$55000.00 9%	EA ACRE LS. LS. LS.		\$0.00 \$0.00 \$12.081.00 \$0.00 \$0.00 \$0.00 \$0.00 \$12.00.00 \$12.00.00 \$12.00.00 \$12.00.00 \$12.45.00 \$12.171.00 \$15.2717.00 \$15.27	
Land Acquisition Land Acquisition Second Sec	Master Plan Capital Impre	Overnent Cost Summar Dear Oxfined L Dear Oxfined L Dear Oxfined L	y Lung Sun Cost →> Lung Sun Cost →>	\$2.00.00 9% \$15.00.00 \$25.00.00 9%	EA ACRE		\$0.00 \$0.00 \$12,015,00 \$50.00 \$50.00 \$12,001,00 \$13,000,00 \$13,000,00 \$13,000,00 \$13,000,00 \$12,207,00 \$12,217,00 \$12,217,00 \$15,000,00 \$15,217,00 \$15,000,00 \$15,217,00 \$15,000,000 \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000,000\$ \$15,000\$ \$15,000,000\$ \$15,000	
Land Acquisition Land Acquisition Acquisit	Master Plan Capital Impre	Overnent Cost Summar User Define t User Define t Der define t	y 	\$2.000.00 9% \$5500.00 9% 5% 15% 9%	EA ACTE LS LS LS.		\$2.00 \$0.00 \$2	
Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Insprement Costs Acquisition Costs C	Master Plan Capital Impre	User Defined L	y unp Bum Cost	\$2.00.00 9% \$15.00.00 9% 9% 9% 9% 9%	EA AG78 L.S. L.S. L.S.		80.00 90.00 91.00 90.000	
Land Acquisition Landscription Landscription Landscription Landscription Landscription Landscription Landscription Control Instruments Control Ins	Master Plan Capital Impre	User Defined L User Defined L User Defined L	y 	\$2.00.00 9% \$15.00.00 9% 19% 9% 9% 9%	EA AGRE L.S. L.S. L.S.		20.07 20.09 20.00 20.01 20.01.00 20.01.00 20.000	
Land Acquisition Land Acquisition Description Descript	Master Plan Capital Impre	User Defined L User Defined L	γ .unp flum Cost	\$2,000.00 10,000 \$25,000.00 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.000 \$55,000.0000 \$55,000.0000 \$55,000.0000 \$55,000.0000 \$55,00000 \$55,000000 \$55,0000000 \$55,00000000000000000000000000000000000	EA ACTE LS. LS.		20.07 20.000	
Land Acquisition Lance Acquisition Lance Acquisition Lance Acquisition Lance Acquisition Control Instruments Control Instrumen	Master Plan Capital Impre	User Defined L User Defined L User Defined L	γ 	\$2.00.00 9% 95.000.00 95.000.00 9% 9% 9% 9%	EA AGRE		20.07 20.00 30.00 312.001.00 312.001.00 312.001.00 312.001.00 312.000.00 312.000.00 312.000.00 312.000.00 312.000.00 312.000.00 312.000.00 314.000.00 312.000.00 315.000.00 315.000.00 315.000.00 315.000.00 315.000.00 315.000.00 316.000.00 316.000.00 316.000.00 313.077.00 317.076.00 314.076.00 344.000.00 314.076.00 314.076.00 314.076.00 314.076.00 314.076.00 314.076.00 314.076.00 344.080.00 314.076.00 344.080.00 314.076.00 344.080.00 344.080.00 344.080.00 314.076.00 344.080.00 34.082.461.00	
Land Acquisition Lange Acquisition Departy Teams Departy Teams Departy Teams Departy Teams Departy Teams Departy Teams Departs	Master Plan Capital Impre	User Defined L User Defined L User Defined L	y .unp tum Cost →> .unp tum Cost →>	\$2,000.00 \$200.00 \$25,000.00 \$25,000.00 \$95, \$95, \$95, \$95, \$95, \$95, \$95, \$95,	EA A078 LS LS LS		20.07 20.07	
Land Acquisition Landsacture and acquisition Landsacture and acquisition Landsacture and acquisition Collaboration	Master Plan Capital Impre	User Defined L Deer Defined L Deer Defined L Deer Defined L	y 	\$2.00.00 9% 95.00.00 9% 9% 9% 15% 9% 15% 9% 25% 25% 25% 25% 25% 25% 25% 25% 25% 25	EA AGRE	Unit Cost	80.0 90.0 12.041.00 12.041.00 12.041.00 12.041.00 12.020.00	
Land Acquisition Land Acquisition Second Import Costs Product Improvement Costs Product Improvement Costs Product Improvement Costs Product Improvement Costs Product Produc	Master Plan Capital Impre Master Plan Operation and Maintenan n. 40.) Optimal	User Defined L User Defined L	y 	£2.000.00 95. 00.00 95. 00.00 95. 00.00 95. 00. 00. 00. 00. 00. 00. 00. 00. 00. 0	EA ACPE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 11:00	20.07 20.07	
Land Acquisition Landscapition Landscapition Landscapition Landscapition Landscapition Landscapition Landscapition Control Improvement Costs Control Control Improvement Costs Control Con	Master Plan Capital Impre	Devenant Cost Summar	y Lung fun Cost → Lung fun Cost → In fan Cost →	52 500.00 9% 95.000.00 9% 9% 9% 9% 9% 9% 9% 29%	EA AGYE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cest 51:00 94:00	80.0 90.0	
Land Acquisition Land Acquisition Argent Cash Argent C	Master Plan Capital Impre Master Plan Operation and Maintenan s. etc.) Optional Optional	Les Datines L Les Datines L Le	γ 	\$2.00.00 9% 15.000.00 152.00 9% 9% 15% 9% 0% 25% 0% 25% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	EA ACTE LS. LS. LS. LS. LS. LS. LS. LS. LS. LS.	Unit Cest 51:00 2010 2010	20.07 20.07	
Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Land Land Land Land Land Land Land	Master Plan Capital Impre	User Defined L User DEFINED L USER D	y cump fum Cost → > ump fum Cost → > Prequency	E2 20030 555 555000 00 555 55500 00 555 555 555	EA ACTE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost \$100 \$400 \$1800 \$1800 \$1800	9100 9200 9201 9201 9201 9201 9201 9201 9202 9202 9203 9202 9204 9200 9202 9202 9202 9202 9202 9202 9203 922 9204 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9202 9205 9205 9205 9205 9205 9205 9205 <td></td>	
Land Acquisition Land Acquisition Acquisit	Master Plan Capital Impre Master Plan Operation and Maintenau rs. etc.) Optional (chucturd inpairs, etc.) Optional Optional Optional Optional Optional Optional Optional	User Defined L User Defined L User Defined L User Defined L User Defined L User Defined Use Cost	γ ump tum Cost→ ump tum Cost→ frequency frequency i	\$2.00.00 9% \$10.00.00 9% 9% 9% 10% 20% 20% 10% 10% 10% 10% 10% 10% 10% 10% 10% 1	EA A_C/E L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	Unit Cost 51:00 40:00 81	80.07 90.07 91.00 92.00 92.00 92.00 92.00 90.00 92.00 90.00 92.00 90.00 92	
Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Improvement Costs Cost Land Improvement Costs Cost Land Improvement Cost Land Improvement Cost Land Land Improvement Costs Cost Land Cost Land Cost Land Land Improvement Costs Cost Land Cost Lan	Master Plan Capital Impre Master Plan Operation and Maintena Master Plan Operation and Maintena () (de) Optional () (producting optional () (productin	User Defined L User Defined L User Control L User	y ump tum Cost →> amp tum Cost →> Prequency 1 1	E.2.000.0 10500.0 15500.0 55 1055 95 105 2055 2055 105 105 15 1 1 1 1 1 1 1 1 1 1 1 1 1	БА АСРЕ LLS LLS LLS LLS LLS LLS LLS LLS LLS LL	9ht Cost 51/0 951/0 951/0 951/0 951/0 91/0 91/0 91/0 91/0 91/0 91/0 91/0 9	20.07 20.02 40.00 10.00 10.00 20.00	
Land Acquisition Landset acquisition Landset acquisition Landset acquisition Landset acquisition Landset acquisition Landset acquisition Collaboration Colla	Master Plan Capital Impre Master Plan Coperation and Maintenna e, etc.) Optional Optional Optional Optional Optional Optional	User Defined L User D	γ Lung fun Cost → Lung fun Cost → Lung fun Cost → Frequency 1	\$2.00.00 9% \$5.000.00 5% 9% 9% 9% 20% 20% 19% 9% 19% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9	БА А.(2)) L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.	Unit Cost 51:0 15:00 15:00 10	80.07 90.00 112.08.00 122.08.0	
Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Langevertext Costs Performance Costs Langevertext Costs Costs Langevertext Costs C	Master Plan Capital Impre Master Plan Capital Impre Master Plan Operation and Maintenar (a. 66.) Optional Optical Optional Optional	User Defined L User Defined L User Defined L User Defined L User Defined L User Defined USE Cost User Defined USE Cost	y ump tum Cost> ump tum Cost> ump tum Cost> Frequency	82.000.00 95.000.000 95.000.000 95.000.000 95.0000.000 95.0000.0000	EA AGGE L.S. L.S. L.S. L.S. L.S. L.S. L.S. L.S	bhr Corl 1 60 1 50 0 1 50 0 1 1 50 0 1 1 50 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20.07 20.07	
Land Acquisition Landscription Landscription Landscription Landscription Landscription Landscription Landscription Colores Col	Master Plan Capital Impre Master Plan Operation and Maintenaa rs. etc.) Optional Optional Optional Optional Optional Optional Optional	Deer Serfined Law Forder Deer Series	y ump fum Cost →→ ump fum Cost →→ ump fum Cost →→ Frequency	\$2.00.00 9% 95.000.00 9% 9% 9% 15% 9% 15% 9% 15% 15% 9% 15% 15% 9% 15% 15% 15% 15% 15% 15% 15% 15% 15% 15	04 40% L5 L5 L5 L5 L5 L5 L5 L5 L5 L5	Unit Cest 51:00 2002 2002 2002 2002 2002 2002 2002	20.07 20.07 20.00 20.01 20.01.00 20.	
Land Acquisition Land Acquisition Control Improvement Costs Provide Costs Provide Cost Improvement Cost Improvement Costs Provide Cost Provide C	Master Plan Capital Impre Master Plan Operation and Maintenar ex, etc.) Optional Optional Optional Optional Optional Optional Optional Optional Optional	Less Defined L Less Defined Less Less	y ump fum Cost → amp fum Cost → frequency frequency 1 1	\$2.000.00 9% 35.000.00 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%	04 A076 L5 L5 L5 L5 L5 L5 L5 L5 L5 L5	Unit Cost 51.00 55.00 167.50 167.50 167.50 167.50 167.50 167.50	20.07 20.07	
Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Acquisition Land Land Land Land Land Land Land Land	Master Plan Capital Impre Master Plan Operation and Maintenna (s. etc.) Optional Optional Optional Optional Optional Optional	ber Dettind L ber Dettind L be	y cump fum Cost> ump fum Cost> Prequency 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	82 200.00 85. 9 5500 00 95. 95. 95. 95. 95. 95. 205. 205. 215. 155. 215. 1 1 1 1	26. 1002 15 16 16 16 16 16 16 16 16 16 16	Unit Cest \$1:0 \$5:00 \$5:20	9100 9200	
Land Acquisition Land Acquisition Acquisit	Master Plan Capital Impre Master Plan Operation and Maintenan es. e(L) Optional Optional Optional Optional Optional Optional	Les delles de la conservation de	γ ung tun Cost→ ung tun Cost→ ung tun Cost→	\$2.500.00 9% \$10.000.00 9% 9% 9% 9% 9% 9% 9% 10% 22%	а. а. а. а. а. а. а. а. а. а.	Unit Cost 5100 15100 51,875,500 51,875,500 56,000 56,000 56,000	20.07 20.07	
Land Acquisition Lange Acquisition Lange Acquisition Lange Acquisition Lange Acquisition Lange Acquisition Control Improvement Costs Control Improvement Costs Control Improvement Costs C	Master Plan Capital Impre Master Plan Operation and Maintenan Aster Plan Operation and Maintenan (s. dc) Optional Optional Optional Optional Optional Optional Optional Optional Optional		y unp fun Cat→→ unp fun Cat→→ Frequency	\$2,500,00 15,000,00 15,000,00 9% 25,500,00 9% 25% 35% 35% 35% 35% 35% 35% 35% 35% 35% 3	ВА 1000 11 12 12 12 12 12 12 12 12 12	Unit Cost 81:00 82:00 80:00 80:00 80:00 80:00 80:00 80:00 80:00	20.07 20.07 20.07 <td></td>	
Land Acquisition Landset Lands	Master Plan Capital Impre Master Plan Operation and Maintenna ex.etc) Optional Optional Optional Optional Optional Optional	Les Defined L Les Defined L Le	γ	82.00.00 9% 95.000.00 92.000.00 92.000.00 95.00 9% 9% 10% 20% 20%	р. <u>A076</u> <u>L5</u> <u>15</u> <u>15</u> <u>15</u> <u>16</u> <u>17</u> <u>16</u> <u>17</u> <u>17</u> <u>17</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u> <u>18</u>	Unit Cost 5100 55100 9187200 9187200 9187200 9187200	80.07 90.07 91.00 12.00 12.00	
Land Acquisition Langer Jeansen Jeansen Jeansen Jeansen Jeansen Jeansen Jeansen Jeansen Control Improvement Costs Control Improvement Costs Cost	Master Plan Capital Impre	User Defined L User D	y ump tum Cost→> ump tum Cost→> tump tum Cost→> Prequency	82.00.00 93.00.00 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.000 95.00000 95.00000 95.00000 95.00000 95.00000 95.000000 95.000000000000000000000000000000000000	64 507 15 15 15 15 15 15 15 15 15 15	0hit Cost 51.05 96.00 96.00 96.00 96.00 96.00 96.00 96.00 96.00	20.07 20.07	
Land Acquisition Land Acquisition Second Sec	Master Plan Capital Impre Master Plan Operation and Maintenau rs. etc.) Optional Optional Optional Optional Optional Optional Optional	Deer Serfine 4 Deer Ser	γ unp fun Cost → unp fun Cost →	\$2.00.00 9% \$5.000.00 9% 9% 9% 9% 20% 20% 19% 9% 19% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9	и. лобе ц. ц. ц. ц. ц. ц. ц. в. ц. В. Ц. В. В. В. В. В. В. В. В. В. В. В. В. В.	Unit Cost 51.00 101.00 81.00 81.00 11.075.00 161.00 161.00 161.00 161.00	10.00 10.01 10.01 10.01 10.01 10.01 10.01 10.01 10.01 10.00 10.00 <td></td>	
Land Acquisition	Master Plan Capital Impre	Lear Defined L Lear D	y ump fum Cost → amp fum Cost → frequency frequency 1 1	\$2,000.00 98, 35,000.00 99, 99, 99, 99, 99, 99, 99, 99, 99, 9	04 A076 L6 L6 L6 L6 L6 L6 L6 L6 L6 L	Unit Cost 11.0 15.0 16.0 1	20.07 20.07	
Land Acquisition Land a	Master Plan Capital Impre	User Patients Cost Summar User Patients Cost Summar User Patients Cost Summar User Patients Cost Summar User Patients Cost Summary User Patients Cost Summary	y cump fum Cost>ung fum Cost>ung fum Cost>ung fum Cost>	82 200,00 55, 35,500,00 55, 55,500,00 55, 95, 95, 95, 95, 225, 325, 325, 325, 325, 325, 325, 32	26. 1097 15 15 15 15 15 15 15 15 15 15	Unit Cost \$1.00 \$40.00 \$1.875.00 \$1.875.00 \$1.875.00 \$40.00 \$1.875.00 \$40.000\$ \$40.0	500 900 900 900 9100 <td></td>	

Appendix D. Model Calibration Memorandum






То:	Tom Daugherty Town of Silverthorne Via Email: TDaugherty@silverthorne.org
From:	Scott Schreiber, P.E., C.F.M and Drake Ludwig, P.E. Wright Water Engineers, Inc.
Date:	March 2020
Re:	Town of Silverthorne Drainage Master Plan Model Verification and Calibration

OVERVIEW

Wright Water Engineers, Inc. (WWE) has prepared this memorandum to summarize the verification and calibration analyses performed for the hydrologic modeling approach implemented in the Town of Silverthorne Drainage Master Plan (Plan). The Plan was prepared by WWE for the Town of Silverthorne (Town) to assess the function of the stormwater infrastructure throughout the Town and identify potential multi-objective improvement projects and recommendations. The Plan studied, evaluated, and documented the Town's current stormwater infrastructure through hydrologic and hydraulic modeling of storm events ranging from the 2-year to 100-year event. The hydrologic modeling approach utilized in this analysis was verified and calibrated against existing gage data in the region, this memorandum provides an overview of this analysis.

MODEL VERIFICATION AND CALIBRATION

A comprehensive comparison of the hydrologic modeling approach utilized in the Plan was completed for a nearby watershed tributary to Gore Creek through the Town of Vail. As the Study Area for this Plan and the Vail watershed both include headwaters originating in the Gore Range, and are within the same hydrologic region, it was determined that this comparison was also applicable to the Town.

Using the same modeling approach and input parameters outlined in Sections 3 and 4 of the Plan, a watershed model previously completed for the Town of Vail was run to compare the computed runoff against the observed, gaged runoff, for a gaged precipitation event. This analysis was used to verify that the hydrologic approach outlined in this Plan produced reasonable results for application in the identification of infrastructure deficiencies. This comparison indicated that the hydrologic modeling approach reasonably represents the runoff response from a recorded rainfall event within the same hydrologic region.

Results Compared to Observed Rainfall Runoff Response

To compare the hydrologic model's ability to estimate the runoff response following a rainfall event, recorded precipitation data from an actual event were run through the Vail model, and the

calculated runoff response was compared to the streamflow that was observed nearby during the event.

The U.S. Geologic Survey (USGS) operates a streamflow gage (Gore Creek above Red Sandstone Creek, at Vail, CO – USGS09066325) along Gore Creek, near the Eagle River Water and Sanitation District's building near the intersection of South Frontage Road West and Forest Road. Since early June of 2019, this gage has also collected precipitation information at fifteen-minute intervals. With this resolution of rainfall data, it was possible to evaluate the Vail model's ability to accurately simulate the rainfall-runoff response of a recorded event within the Vail watershed.

To perform this evaluation, the complete record of precipitation was downloaded from this gage and plotted against the streamflow record from USGS's Booth Creek gage (USGS09066200), a location included in the Vail hydrologic model. Because the intent of this analysis was to evaluate the reasonableness of the model in predicting the runoff response from a rainfall event alone, not including snowmelt runoff, an early September precipitation event was chosen. The Booth Creek hydrograph in Figure 4 shows that the runoff response to the precipitation recorded on September 9, 2019 was outside of the snowmelt-driven peak runoff season.



Figure 1. Observed Precipitation Data at Red Sandstone vs. Streamflow at Booth Creek

The precipitation data recorded for this event, shown on Figure 5, were included as rainfall input into the Vail model. The model was then run, and the output hydrograph (labeled as R1001) was

plotted against the recorded hydrograph for that day, adjusted for baseflow prior to the runoff response. As illustrated in Figure 5, the magnitude of the runoff response from the modeled rainfall event, approximately 2.3 cfs, generally agrees with the observed response, 2.7 cfs, recorded at the Booth Creek gage. This indicates that the hydrologic modeling approach reasonably represents the runoff response from rainfall, thus no adjustments to the input hydrologic parameters were deemed necessary to simulate rainfall-runoff processes.



Figure 2. September 9, 2019 Modeled vs. Observed Rainfall-Runoff at Booth Creek

This analysis assumed that the same rainfall depth and intensity recorded at the Red Sandstone gage fell uniformly across the watershed contributing to the Booth Creek gage, approximately four miles away. Although the orographic influence of the Gore Range may introduce some variation to the spatial and temporal distribution of rainfall, the analysis was based upon the best available data. While the timing of peak flows varied between the model and gage, this exercise demonstrated that the modeling approach produces peaks of a similar magnitude to what was observed at the gage for this rainfall event.

Results Compared to Observed Rainfall Runoff Response

WWE performed a flood frequency analysis using the streamflow data obtained from the Booth Creek gage to compare the estimated peak flow rate from the hydrologic model to that of observed events. The Booth Creek near Minturn, CO gage (USGS09066200) is located near the pedestrian trail

crossing, just north of the I-70 Frontage Road in East Vail. The gage has a drainage area of 6.18 square miles and is at an elevation of 8,325 feet. The gage has a 54-year period of record (1965-2018) from which a flood frequency analysis was performed using the methodology outlined in the USGS Bulletin 17B (Bulletin 17B). Bulletin 17B is a guidance document that outlines a statistical method for determining flood flow frequencies from historical peak flow records. A period of record of over 50-years is sufficient to make reasonable estimates of the 100-year event using this methodology. The flood frequency analysis was performed using the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) version 2.2. This software includes the statistical method outlined in Bulletin 17B for determining flood flow frequency.

Consistent with Bulletin 17B methodology, the Single Grubbs-Beck Low Outlier Test and Weibull plotting positions were utilized to develop flood estimates for a range of events. To account for irregularities in the peak flow frequency distribution, a skew coefficient is required to develop a frequency curve that best represents the sample data. To determine which skew value provided the best representation, the test was run three different times: once using the station skew coefficient as provided by USGS, once using the regional skew coefficient as provided by the Generalized Skew Coefficients of Logarithms of Annual Maximum Streamflow chart (Regional Skew Chart) shown on Plate 1 of Bulletin 17B, and once using the weighted skew coefficient as calculated by HEC-SSP from the provided station and regional skew coefficients. The regional skew coefficient was determined to be -0.55, and a mean square error of 0.302 is provided for all regional skew coefficients on the Regional Skew Chart. The station skew coefficient provided by USGS for the Gage is 0.133, and the mean square error is 0.104. The three computed curves were compared, and it was determined that station skew provided the optimal computed curve out of the three.

The resulting computed flows are provided in the table, below. As a final check for reasonableness of the computed flow frequency estimates, the flow rates published in the latest Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) report for Booth Creek are also included in Table 5.

Return	Percent Chance	2007 FEMA	Bulletin 17B Computed Flow	Confidence Limits, Flow (cfs)		
Period	Exceedance	F15 (CIS)	Estimate (cfs)	0.05	0.95	
2-Year	50%	-	190	160	130	
5-Year	20%	-	230	240	190	
10-Year	10%	245	280	300	230	
25-Year	4%	-	320	390	280	
50-Year	2%	330	350	460	320	
100-Year	1%	370	400	530	360	

 Table 1. Results of Flood Frequency Analysis at Booth Creek

As shown in Table 5, the flood frequency analysis for Booth Creek generally found flow estimates to be somewhat higher than those included in the FIS report; however, the published flow rates remain within the 95% confidence limits of the analysis. Due to the general agreement with the FIS flows, it

was determined that the computed flow estimates were suitable for comparison with modeled peak flow rates for each return period.

The Vail hydrologic model accounted for snowmelt runoff through the application of the same unit runoff rates outlined in Section 3.6 of the Plan. Using the same hydrologic methodology outlined in the Plan for both rainfall and snowmelt runoff, the Vail model produced the following peak flow estimates at the Booth Creek gage location, outline in Table 2.

Return	Percent Chance	B17B Flood Frequency	NOAA14 2 nd Quartile
Period	Exceedance	Flow Estimate (cfs)	10% + Snowmelt (cfs)
5-Year	20%	210	230
25-Year	4%	320	320
50-Year	2%	370	350
100-Year	1%	440	410

Table 2.	Modeled vs.	Flood	Frequency	Flow	Estimates	at L	ISGS	Booth	Creek	Gage

CONCLUSION

As shown in Table 2, the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, 2nd Quartile 10% temporal rainfall distribution, discussed in Section 3.5 of the Plan, produces peak flow rates within the computed confidence limits for all events. Because the hydrologic model was shown to reproduce an observed rainfall-runoff response with relative accuracy, and produced modeled peak flow rates which aligned with those estimated from the flood frequency analysis, the hydrologic modeling methodology was deemed to be an appropriate tool for hydrologic and hydraulic routing of storm events through the Town of Vail and other communities within the same hydrologic region, including the Town of Silverthorne.

Appendix E. Bulletin 17B Flood Frequency Analyses





Bulletin 17B Frequency Analysis 12 Sep 2019 11:45 AM -------- Input Data ---Analysis Name: Straight Creek 17B Description: Bulletin 17B flow frequency analysis for Straight Creek below Lasky Data Set Name: Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK DSS File Name: G:\WWE\181-061\030\000\Engr\17B Analyses\Straight Creek 17B Station Skew\Straight Creek 17B Station Skew.dss DSS Pathname: /STRAIGHT CR BLW LASKEY GULCH/DILLON, CO/FLOW-ANNUAL PEAK/01jan1900/IR-CENTURY/USGS/ Report File Name: G:\WWE\181-061\030\000\Engr\17B Analyses\Straight Creek 17B Station Skew\Bulletin17Results\Straight Creek 17B\Strai ght_Creek_17B.rpt XML File Name: G:\WWE\181-061\030\000\Engr\17B Analyses\Straight Creek 17B Station Skew\Bulletin17Results\Straight Creek 17B\Strai ght Creek 17B.xml Start Date: End Date: Skew Option: Use Station Skew Regional Skew: -Infinity Regional Skew MSE: -Infinity Plotting Position Type: Median Upper Confidence Level: 0.05 Lower Confidence Level: 0.95 Use non-standard frequencies Frequency: 0.2 Frequency: 0.5 Frequency: 1.0 Frequency: 2.0 Frequency: 4.0 Frequency: 10.0 Frequency: 20.0 Frequency: 50.0 Frequency: 80.0 Frequency: 90.0 Frequency: 95.0 Frequency: 99.0

Display ordinate values using 1 digits in fraction part of value

--- End of Input Data ---

--- Preliminary Results ---

<< Skew Weighting >> Based on 32 events, mean-square error of station skew = 0.216 Mean-square error of regional skew = -?

<< Frequency Curve >> Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK

Computed Curve FLOW,	Expected Probability CFS	Percent Chance Exceedance	Confidence Limi 0.05 FLOW, CFS	ts 0.95
466.6		0.2	703.6	349.8
426.7		0.5 1.0	630.5 571.2	323.8
357.6 318.4		2.0	508.2 441.5	277.7
260.5			347.0	209.6
		80.0	89.3	108.3 57.6
52.1 38.4		90.0	49.9	26.6
20.5		0.99 		LZ.Z

<< Systematic Statistics >>

Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK

Log Transf	orm: S	Number of Event	s
Mean Standard Dev Station Skew Regional Skew Weighted Skew Adopted Skew	2.086 0.277 -0.658 	Historic Events High Outliers Low Outliers Zero Events Missing Events Systematic Events	0 0 0 0 0

--- End of Preliminary Results ---

<< Low Outlier Test >>
Based on 32 events, 10 percent outlier test deviate K(N) = 2.591
Computed low outlier test value = 23.31
1 low outlier(s) identified below test value of 23.31

Statistics and frequency curve adjusted for 1 low outlier(s)

<< Systematic Statistics >> Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK

Log Transform	:	Number of Events	
Mean	2.110	Historic Events	0
Standard Dev	0.246	High Outliers	0
Station Skew	-0.306	Low Outliers	1
Regional Skew		Zero Events	0
Weighted Skew		Missing Events	0
Adopted Skew	-0.658	Systematic Events	32

<< High Outlier Test >>

Based on 31 events, 10 percent outlier test deviate K(N) = 2.577 Computed high outlier test value = 553.39

0 high outlier(s) identified above test value of 553.39

Note: Statistics and frequency curve were modified using conditional probablity adjustment.

--- Final Results ---

<< Plotting Positions >> Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK

Events Analy		Ordered	Events		
	FLOW		Water	FLOW	Median
Day Mon Year	CFS	Rank	Year	CFS	Plot Pos
07 Jun 1987	55.0	1	1995	416.0	2.16
10 Jun 1988	104.0	2	2010	339.0	5.25
29 May 1989	76.0	3	2003	289.0	8.33
05 Jul 1990	146.0	4	2011	261.0	11.42
11 Jun 1991	136.0	5	1997	205.0	14.51
13 Jun 1992	63.0	6	1996	205.0	17.59
16 Jun 1993	168.0	7	2014	185.0	20.68
31 May 1994	81.0	8	2000	177.0	23.77
17 Jun 1995	416.0	9	1993	168.0	26.85
22 Jun 1996	205.0	10	2013	160.0	29.94
19 Jun 1997	205.0	11	2016	156.0	33.02
10 Jul 1998	87.0	12	2015	151.0	36.11
23 Jun 1999	138.0	13	1990	146.0	39.20
30 May 2000	177.0	14	1999	138.0	42.28
02 Jun 2001	95.0	15	2017	136.0	45.37
20 May 2002	22.0	16	1991	136.0	48.46
19 Jun 2003	289.0	17	2009	135.0	51.54
07 Jun 2004	48.0	18	2008	133.0	54.63
22 Jun 2005	113.0	19	2006	130.0	57.72
06 Jun 2006	130.0	20	2007	127.0	60.80
17 Jun 2007	127.0	21	2005	113.0	63.89
20 Jun 2008	133.0	22	1988	104.0	66.98
26 Jun 2009	135.0	23	2001	95.0	70.06
28 May 2010	339.0	24	1998	87.0	73.15
18 Jul 2011	261.0	25	1994	81.0	76.23
22 May 2012	31.0	26	2018	79.9	79.32
09 Jun 2013	160.0	27	1989	76.0	82.41
02 Jun 2014	185.0	28	1992	63.0	85.49
11 Jun 2015	151.0	29	1987	55.0	88.58
11 Jun 2016	156.0	30	2004	48.0	91.67
12 Jun 2017	136.0	31	2012	31.0	94.75
25 May 2018	79.9	32	2002	22.0*	97.84

* Outlier

<< Skew Weighting >> Based on 32 events, mean-square error of station skew = 0.181 Mean-square error of regional skew = __?

<< Frequency Curve >> Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK

-					
Computed Expected			Percent	Confidence Limit	ts
	Curve	Probability	Chance	0.05	0.95
İ	FLOW,	CFS	Exceedance	FLOW, CFS	İ
i					·
İ	533.1	597.9	0.2	814.5	398.1
	468.8	512.8	0.5	694.8	356.6
İ	420.1	451.6	1.0	607.1	324.5
	371.4	392.7	2.0	521.9	291.7
	322.4	335.9	4.0	439.3	257.8
	256.6	262.7	10.0	333.6	210.6
	204.9	207.6	20.0	256.0	171.5
	129.5	129.5	50.0	153.7	109.4
	78.7	77.5	80.0	93.9	63.1
	59.7	57.8	90.0	73.0	45.6
	47.1	44.7	95.0	59.2	34.2
	29.6	26.3	99.0	39.6	19.3

<< Synthetic Statistics >> Straight_Creek-DILLON, CO-FLOW-ANNUAL PEAK

Log Transfo FLOW, CF	orm: 5	Number of Event	:S
Mean Standard Dev Station Skew Regional Skew Weighted Skew Adopted Skew	2.100 0.248 -0.292 -0.292	Historic Events High Outliers Low Outliers Zero Events Missing Events Systematic Events	0 0 1 0 0 32

--- End of Analytical Frequency Curve ---

Bulletin 17B Frequency Analysis 06 Jan 2020 10:10 AM -------- Input Data ---Analysis Name: Willow_Creek_17B Description: Data Set Name: WILLOW CREEK-DILLON, CO.-FLOW-ANNUAL PEAK DSS File Name: G:\WWE\181-061\030\000\Engr\17B Analyses\Willow_Creek\Willow_Creek_17B\Willow_Creek_17B.dss DSS Pathname: /WILLOW CREEK/DILLON, CO./FLOW-ANNUAL PEAK/01jan1900/IR-CENTURY/USGS/ Report File Name: G:\WWE\181-061\030\000\Engr\17B Analyses\Willow_Creek\Willow_Creek_17B\Bulletin17Results\Willow_Creek_17B\Willow_Cr eek 17B.rpt XML File Name: G:\WWE\181-061\030\000\Engr\17B Analyses\Willow Creek \Willow Creek 17B\Bulletin17Results\Willow Creek 17B\Willow Cr eek 17B.xml Start Date: End Date: Skew Option: Use Station Skew Regional Skew: -Infinity Regional Skew MSE: -Infinity Plotting Position Type: Median Upper Confidence Level: 0.05 Lower Confidence Level: 0.95 Display ordinate values using 1 digits in fraction part of value --- End of Input Data ---Warning: Less than 10 events for analysis, Bulletin 17B procedures are not applicable. << Low Outlier Test >> Based on 9 events, 10 percent outlier test deviate K(N) = 1.977Computed low outlier test value = 90.3

0 low outlier(s) identified below test value of 90.3

<< High Outlier Test >> Based on 9 events, 10 percent outlier test deviate K(N) = 1.977 Computed high outlier test value = 219.76

0 high outlier(s) identified above test value of 219.76

--- Final Results ---

<< Plotting Positions >> WILLOW CREEK-DILLON, CO.-FLOW-ANNUAL PEAK

Events Analy	zed		Ordere	d Events	
	FLOW		Water	FLOW	Median
Day Mon Year	CFS	Rank	Year	CFS	Plot Pos
02 Jun 1943	150.0	1	1951	210.0	7.45
30 May 1944	116.0	2	1950	166.0	18.09
24 Jun 1945	102.0	3	1947	162.0	28.72
18 Jun 1946	112.0	4	1943	150.0	39.36
20 Jun 1947	162.0	5	1948	141.0	50.00
03 Jun 1948	141.0	6	1949	138.0	60.64
17 Jun 1949	138.0	7	1944	116.0	71.28
16 Jun 1950	166.0	8	1946	112.0	81.91
21 Jun 1951	210.0	9	1945	102.0	92.55

<< Skew Weighting >> Based on 9 events, mean-square error of station skew = 0.537 Mean-square error of regional skew = -?

<< Frequency Curve >> WILLOW CREEK-DILLON, CO.-FLOW-ANNUAL PEAK

L	Computed	Expected	Percent	Confidence Limits	
Ì	Curve	Probability	Chance	0.05 0.9	95
	FLOW	N, CFS	Exceedance	FLOW, CFS	

288.6	425.3	0.2	488.2	228.4
265.3	349.1	0.5	424.5	214.5
247.8	303.3	1.0	379.3	203.8
230.4	265.7	2.0	336.5	192.8
207.1	224.8	5.0	283.1	177.3
189.0	198.3	10.0	244.7	164.5
169.7	173.7	20.0	207.5	149.6
139.5	139.5	50.0	159.5	121.6
116.3	114.1	80.0	132.0	94.8
106.3	102.4	90.0	121.9	82.7
99.0	93.2	95.0	114.9	73.8
87.1	76.7	99.0	103.8	60.1

<< Systematic Statistics >> WILLOW CREEK-DILLON, CO.-FLOW-ANNUAL PEAK

-								
	Log Transfo FLOW, CFS	rm:	 Number of Events					
	Mean Standard Dev Station Skew Regional Skew Weighted Skew Adopted Skew	2.149 0.098 0.254 0.254	Historic Events High Outliers Low Outliers Zero Events Missing Events Systematic Events	0 0 0 0 9				

--- End of Analytical Frequency Curve ---

Appendix F. NOAA Atlas 14 Rainfall Data





Precipitation Frequency Data Server



NOAA Atlas 14, Volume 8, Version 2 Location name: Silverthorne, Colorado, USA* Latitude: 39.6486°, Longitude: -106.0795° Elevation: 8705.74 ft** * source: ESRI Maps ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS	PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration				Averag	e recurrenc	e interval (y	ears)				
Duration	1	<mark>2</mark>	<mark>5</mark>	<mark>10</mark>	<mark>25</mark>	<mark>50</mark>	<mark>100</mark>	200	500	1000	
5-min	0.119	0.169	0.249	0.315	0.404	0.473	0.540	0.608	0.696	0.763	
	(0.094-0.155)	(0.133-0.220)	(0.195-0.325)	(0.245-0.413)	(0.302-0.551)	(0.345-0.655)	(0.381-0.772)	(0.410-0.897)	(0.452-1.06)	(0.483-1.19)	
10-min	0.175	0.247	0.364	0.461	0.592	0.692	0.791	0.890	1.02	1.12	
	(0.138-0.227)	(0.195-0.322)	(0.286-0.476)	(0.359-0.605)	(0.443-0.807)	(0.506-0.960)	(0.558-1.13)	(0.601-1.31)	(0.661-1.56)	(0.707-1.74)	
15-min	0.213	0.301	0.444	0.562	0.722	0.844	0.964	1.09	1.24	1.36	
	(0.168-0.277)	(0.237-0.392)	(0.349-0.581)	(0.438-0.738)	(0.540-0.984)	(0.617-1.17)	(0.680-1.38)	(0.733-1.60)	(0.807-1.90)	(0.862-2.12)	
30-min	0.306 (0.241-0.398)	0.393 (0.310-0.512)	0.544 (0.427-0.711)	0.678 (0.528-0.890)	0.873 (0.661-1.21)	1.03 (0.761-1.45)	1.20 (0.853-1.74)	1.38 (0.939-2.06)	1.63 (1.06-2.51)	1.83 (1.16-2.85)	
60-min	0.400 (0.315-0.520)	0.480 (0.378-0.625)	0.627 (0.492-0.819)	0.763 (0.595-1.00)	0.972 (0.741-1.36)	1.15 (0.851-1.62)	1.34 (0.957-1.95)	1.55 (1.06-2.33)	1.85 (1.21-2.86)	2.10 (1.33-3.27)	
2-hr	0.493	0.567	0.710	0.849	1.07	1.27	1.48	1.73	2.08	2.37	
	(0.393-0.634)	(0.451-0.730)	(0.563-0.916)	(0.669-1.10)	(0.829-1.49)	(0.951-1.78)	(1.07-2.14)	(1.19-2.57)	(1.38-3.19)	(1.52-3.66)	
3-hr	0.560	0.625	0.756	0.888	1.10	1.30	1.51	1.76	2.12	2.42	
	(0.449-0.715)	(0.501-0.799)	(0.603-0.970)	(0.704-1.15)	(0.862-1.52)	(0.981-1.81)	(1.10-2.17)	(1.22-2.60)	(1.41-3.23)	(1.56-3.71)	
<mark>6-hr</mark>	0.680	<mark>0.758</mark>	<mark>0.908</mark>	1.05	<mark>1.29</mark>	<mark>1.49</mark>	<mark>1.71</mark>	1.96	2.33	2.63	
	(0.551-0.858)	(0.614-0.958)	(0.733-1.15)	(0.845-1.34)	(1.01-1.74)	(1.14-2.04)	(1.26-2.42)	(1.38-2.86)	(1.57-3.50)	(1.71-3.99)	
12-hr	0.827	0.946	1.16	1.36	1.67	1.93	2.20	2.51	2.94	3.30	
	(0.679-1.03)	(0.775-1.18)	(0.949-1.46)	(1.11-1.72)	(1.32-2.22)	(1.48-2.60)	(1.63-3.07)	(1.78-3.61)	(2.00-4.38)	(2.17-4.96)	
24-hr	1.02	1.17	1.45	1.71	2.09	2.42	2.76	3.14	3.68	4.11	
	(0.845-1.25)	(0.972-1.45)	(1.20-1.80)	(1.40-2.12)	(1.67-2.75)	(1.88-3.22)	(2.07-3.80)	(2.25-4.47)	(2.52-5.41)	(2.73-6.12)	
2-day	1.25	1.42	1.73	2.02	2.46	2.83	3.23	3.67	4.29	4.80	
	(1.05-1.52)	(1.19-1.73)	(1.45-2.12)	(1.68-2.48)	(1.99-3.19)	(2.22-3.73)	(2.44-4.39)	(2.65-5.16)	(2.98-6.25)	(3.22-7.07)	
3-day	1.39 (1.17-1.68)	1.59 (1.34-1.92)	1.94 (1.63-2.35)	2.26 (1.89-2.76)	2.74 (2.23-3.53)	3.15 (2.49-4.12)	3.58 (2.73-4.84)	4.06 (2.95-5.66)	4.72 (3.30-6.83)	5.27 (3.56-7.70)	
4-day	1.50	1.72	2.09	2.44	2.95	3.37	3.82	4.31	5.00	5.56	
	(1.27-1.81)	(1.46-2.07)	(1.77-2.53)	(2.05-2.96)	(2.40-3.77)	(2.68-4.39)	(2.92-5.13)	(3.15-5.99)	(3.50-7.19)	(3.77-8.10)	
7-day	1.80	2.02	2.42	2.77	3.30	3.74	4.20	4.69	5.39	5.95	
	(1.54-2.14)	(1.73-2.41)	(2.06-2.89)	(2.35-3.33)	(2.72-4.17)	(2.99-4.80)	(3.24-5.57)	(3.46-6.45)	(3.81-7.67)	(4.07-8.60)	
10-day	2.06	2.30	2.71	3.07	3.62	4.06	4.54	5.04	5.75	6.32	
	(1.78-2.44)	(1.98-2.72)	(2.32-3.22)	(2.62-3.67)	(2.99-4.53)	(3.27-5.19)	(3.52-5.98)	(3.74-6.88)	(4.09-8.13)	(4.35-9.08)	
20-day	2.78 (2.42-3.24)	3.09 (2.69-3.61)	3.62 (3.14-4.24)	4.07 (3.52-4.81)	4.73 (3.95-5.83)	5.26 (4.28-6.61)	5.81 (4.55-7.54)	6.39 (4.78-8.60)	7.19 (5.16-10.0)	7.81 (5.44-11.1)	
30-day	3.36 (2.96-3.90)	3.75 (3.29-4.35)	4.39 (3.84-5.11)	4.93 (4.29-5.77)	5.69 (4.78-6.95)	6.30 (5.15-7.83)	6.91 (5.44-8.88)	7.54 (5.68-10.1)	8.40 (6.06-11.6)	9.06 (6.35-12.8)	
45-day	4.09	4.57	5.35	5.99	6.87	7.55	8.22	8.90	9.80	10.5	
	(3.62-4.71)	(4.04-5.26)	(4.71-6.18)	(5.24-6.96)	(5.79-8.29)	(6.21-9.29)	(6.51-10.5)	(6.73-11.8)	(7.11-13.4)	(7.39-14.7)	
60-day	4.71 (4.20-5.39)	5.26 (4.68-6.03)	6.15 (5.44-7.07)	6.86 (6.04-7.94)	7.83 (6.62-9.37)	8.55 (7.06-10.5)	9.26 (7.36-11.7)	9.96 (7.56-13.1)	10.9 (7.91-14.8)	11.5 (8.17-16.1)	

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical





Dura	ation
— 5-min	— 2-day
- 10-min	- 3-day
- 15-min	- 4-day
- 30-min	- 7-day
- 60-min	- 10-day
- 2-hr	- 20-day
- 3-hr	- 30-day
- 6-hr	- 45-day
- 12-hr	- 60-day
- 24-hr	

NOAA Atlas 14, Volume 8, Version 2

Created (GMT): Thu Jan 2 23:15:57 2020

Back to Top

Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

Precipitation Frequency Data Server



Back to Top

US Department of Commerce National Oceanic and Atmospheric Administration National Weather Service National Water Center 1325 East West Highway Silver Spring, MD 20910 Questions?: <u>HDSC.Questions@noaa.gov</u>

Disclaimer

Tabulated temporal distribution data for NOAA Atlas 14 Volume 8: Midwestern Region 2

This is a comma delimited file containing temporal distribution data for all four quartile cases and for all cases combined for the 6-hour duration.

First column of each table shows time from 0 to 6 hours in 0.5-hourly increments Second column shows cumulative percentages of total precipitation that occurred by given time in 90% of cases etc.

CUMULATIVE PERCENTAGES OF TOTAL PRECIPITATION FOR FIRST-QUARTILE CASES Percent of occurrence Time

TILLO		I CICCIII OI	occurrence							
hours		90%	80%	70%	60%	50%	40%	30%	20%	10%
	0	0	0	0	0	0	0	0	0	0
	0.5	8.33	9.95	12.82	16.96	21.58	28.76	36.5	42.21	48.13
	1	17.85	21.81	26.9	33.33	42.3	55.18	65.7	74.73	84.89
	1.5	30.71	37.4	47.71	54.43	64.03	73.91	82.42	90.78	97.69
	2	41.4	50	62.46	72.91	81.74	86.83	92.18	97.27	99.86
	2.5	49.34	58.07	70.45	82.61	90.09	94.63	97.53	99.46	99.96
	3	55.91	64.78	77.33	87.12	92.74	97.93	99.58	99.95	99.98
	3.5	61.36	72.04	83.31	90.91	95.56	99.03	99.97	99.98	99.99
	4	67.19	79.19	87.71	94.11	98.62	99.67	99.98	99.99	99.99
	4.5	74.92	85.09	92.24	96.44	99.67	99.96	99.99	99.99	100
	5	83.35	89.95	96.28	98.85	99.75	99.98	100	100	100
	5.5	91.67	95.05	98.3	99.88	99.95	100	100	100	100
	6	100	100	100	100	100	100	100	100	100

CUMULATIVE PERCENTAGES OF TOTAL PRECIPITATION FOR SECOND-QUARTILE CASES

Time		Percent of oc	currence							
hours		90%	80%	70%	60%	50%	40%	30%	20%	10%
	0	0	0	0	0	0	0	0	0	0
	0.5	1.14	2.15	3.38	4.62	5.56	6.25	7.14	7.83	<mark>9.51</mark>
	1	3.67	6.2	8.67	10.81	12.14	13.51	15.25	17.73	<mark>21.17</mark>
	1.5	7.96	14.08	17.97	20.93	24.29	27.16	30.36	35.5	<mark>42.06</mark>
	2	18.17	25.54	29.89	33.02	36.65	41.22	47.14	54.85	<mark>66.35</mark>
	2.5	35.81	41.58	45.14	48.17	52.29	56.84	64.43	72.78	<mark>85.25</mark>
	3	51.8	56.26	59.65	63.62	69.11	73.82	81.17	87.73	<mark>95.55</mark>
	3.5	60.32	64.79	69.44	74.34	80.26	86.35	92.66	96.77	<mark>99.27</mark>
	4	66.67	71.25	76.77	81	86.84	92.77	97.36	99.67	<mark>99.95</mark>
	4.5	75.09	79.56	84.17	87.61	93.24	96.86	98.92	99.89	<mark>99.97</mark>
	5	83	87.02	90.07	93.63	97.28	99.55	99.82	99.95	<mark>99.98</mark>
	5.5	91.82	93.83	95.33	97.08	98.72	99.93	99.96	99.96	<mark>99.99</mark>
	6	100	100	100	100	100	100	100	100	100

CUMULATIVE PERCENTAGES OF TOTAL PRECIPITATION FOR THIRD-QUARTILE CASES

Time	Р	ercent of oc	currence							
hours		90%	80%	70%	60%	50%	40%	30%	20%	10%
	0	0	0	0	0	0	0	0	0	0
	0.5	1.19	2.78	4.12	4.92	5.66	6.06	7.07	8.3	10.2
	1	2.58	5.75	8.49	10.22	11.39	12.72	14.75	17.02	21.2
	1.5	5.68	8.85	12.5	15.69	17.66	19.14	21.43	24.75	27.27
	2	8.39	11.96	17.24	21.23	24.15	26.18	28.87	32.16	34.47
	2.5	10.37	15.74	22.81	26.9	30.37	32.58	35.25	38.16	41.11
	3	17.89	26.03	32.57	36.09	39.92	41.91	44.05	46.87	50.29
	3.5	33.75	43.37	47.43	50.27	54	56.5	58.87	62.49	67.89
	4	52.24	59.67	62.45	65.28	68.13	71.33	74.89	80.41	87.27
	4.5	68.24	71.78	75	77.35	79.61	82.54	86.84	92.76	97.1
	5	81.58	83.54	86.35	87.14	89.26	91.6	95.64	98.5	99.23
	5.5	90.91	92.11	93.45	94.21	94.93	96.43	99.15	100	100
	6	100	100	100	100	100	100	100	100	100

CUMULATIVE PERCENTAGES OF TOTAL PRECIPITATION FOR FOURTH-QUARTILE CASES

Time		Percent of oc	currence							
hours		90%	80%	70%	60%	50%	40%	30%	20%	10%
	0	0	0	0	0	0	0	0	0	0
	0.5	1.24	2.08	3.24	4.55	5.72	6.22	7.52	9.09	11.11
	1	2.21	4.17	6.53	9.19	11.28	12.8	15	17.74	22.12
	1.5	3.95	8.71	12.28	13.94	16.79	19.87	22.17	25.42	31.47
	2	5.22	10.13	16.55	18.68	22.17	25.99	28.39	32.84	37.8
	2.5	6.24	12.79	22.22	24.7	28.21	31.65	34.34	38.99	43.33
	3	6.46	17.11	27.12	30.33	34.4	37.7	40.35	44.44	49.72
	3.5	7.36	20.8	29.31	34.65	39.92	43.66	46.13	50	55.15

4	12.12	28.17	35.72	41.73	46.81	50.48	53.18	56.44	60
4.5	20.56	41.58	49.82	55	58.24	61.58	64.18	66.66	69.7
5	34.75	56.56	65.14	70.9	72.77	76.26	77.79	80.04	83.73
5.5	64.43	76.61	82.14	85.46	86.23	88.38	89.18	89.81	92.41
6	100	100	100	100	100	100	100	100	100

CUMULATIVE PERCENTAGES OF TOTAL PRECIPITATION FOR ALL CASES

Time		Percent of o	occurrence							
hours		90%	80%	70%	60%	50%	40%	30%	20%	10%
	0	0	0	0	0	0	0	0	0	0
	0.5	2.62	5	6.5	8.33	10.49	14.41	21.15	33.21	44.26
	1	6.46	10.85	14.24	17.38	21.86	28.94	41.06	62.44	78.43
	1.5	12.68	19.57	24.11	30.82	38.45	49.57	63.07	79.28	93.43
	2	19.43	29.08	33.9	42.74	52.54	67.92	81.18	89.59	98.21
	2.5	27.73	39.2	44.38	52.83	63.43	79.11	90.6	96.4	99.62
	3	37.65	49.41	55.2	63.34	74.17	86.52	94.52	99.41	99.93
	3.5	47.95	58.28	64.79	73.21	83.33	92.53	97.25	99.94	99.94
	4	58.61	66.4	73.46	81.25	89.26	96.4	99.31	99.95	99.97
	4.5	69.69	75.63	81.93	88.33	94.02	98.3	99.94	99.98	99.98
	5	80.04	85.19	89.04	94.12	98.22	99.57	99.97	99.99	99.99
	5.5	90	92.9	94.7	97.39	99.48	100	100	100	100
	6	100	100	100	100	100	100	100	100	100

Appendix G. Soils Report







United States Department of Agriculture



Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants **Custom Soil Resource Report for** Arapaho-Roosevelt National Forest Area, Colorado, Parts of Boulder, Clear Creek, Gilpin, Grand, Park and Larimer Counties; Grand County Area, Colorado; Holy Cross Area, Colorado, Parts of Eagle, Garfield, Mesa, Pitkin, and Summit Counties; Pike and San Isabel NF, Colorado, Northern Part, Parts of Chaffee, Clear Creek, Fremont, Jefferson, Lake,



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	6
Soil Map	9
Soil Map	.10
Legend	. 11
Map Unit Legend	. 13
Map Unit Descriptions	. 15
Arapaho-Roosevelt National Forest Area, Colorado, Parts of Boulder,	
Clear Creek, Gilpin, Grand, Park and Larimer Counties	. 17
8700B—Bross-Matcher families-Lithic Cryorthents complex, 5 to 40	
percent slopes	17
8708D—Matcher family-Rock outcrop-Lithic Cryorthents complex, 40	
to 150 percent slopes	19
CQ—Cirque land, 40 to 150 percent slopes	.21
RR—Rubble land, 40 to 150 percent slopes	. 22
Grand County Area, Colorado	. 24
10—Bross-Mirror extremely stony sandy loams, 20 to 50 percent slopes.	. 24
41—Histic Cryaquolls, nearly level	.25
54—Meredith extremely stony sandy loam, 50 to 70 percent slopes	.27
64—Pergelic Cryorthents-Rock outcrop complex, extremely steep	. 28
73—Rubble land	.29
Holy Cross Area, Colorado, Parts of Eagle, Garfield, Mesa, Pitkin, and	
Summit Counties	. 31
104A—Haplocryolls-Cryaquolls complex, 0 to 15 percent slopes	.31
223B—Leighcan family-Rock outcrop-Cryaquolls complex, 0 to 40	
percent slopes	32
225B—Leighcan family-Cryaquolls complex, 0 to 25 percent slopes	. 34
290B—Leighcan family, 5 to 40 percent slopes	. 36
290C—Leighcan family, till substratum, 40 to 60 percent slopes	. 37
604D—Leighcan family-Rock outcrop complex, 40 to 75 percent slopes	. 38
NOTCOM—No Digital Data Available	. 39
Pike and San Isabel NF, Colorado, Northern Part, Parts of Chaffee,	
Clear Creek, Fremont, Jefferson, Lake, Park, and Saguache Counties	.40
NOTCOM—No Digital Data Available	. 40
Summit County Area, Colorado	. 41
1D—Anvik loam, 6 to 15 percent slopes	. 41
1F—Anvik loam, 15 to 35 percent slopes	.42
3D—Cimarron loam, 6 to 15 percent slopes	. 43
3F—Cimarron loam, 15 to 35 percent slopes	.44
4—Cumulic Cryaquolls, nearly level	.46
5E—Frisco-Peeler complex, 6 to 25 percent slopes	. 47
5F—Frisco-Peeler complex, 25 to 65 percent slopes	. 48
6—Gravel pits	.50
7C—Grenadier gravelly loam, 0 to 6 percent slopes	.51

7D—Grenadier gravelly loam, 6 to 15 percent slopes	52
8B—Handran gravelly loam, 0 to 3 percent slopes	53
8D—Handran gravelly loam, 3 to 15 percent slopes	54
10—Histic Cryaquolls, nearly level	55
14C—Muggins sandy loam, 0 to 6 percent slopes	56
14D—Muggins sandy loam, 6 to 15 percent slopes	57
14F—Muggins sandy loam, 15 to 35 percent slopes	58
16C—Quander cobbly loam, 0 to 6 percent slopes	59
16D—Quander cobbly loam, 6 to 15 percent slopes	60
16E—Quander cobbly loam, 15 to 55 percent slopes	61
18—Rock outcrop-Cryoborolls complex	62
19C—Youga loam, 1 to 6 percent slopes	64
19D—Youga loam, 6 to 15 percent slopes	65
19F—Youga loam, 15 to 45 percent slopes	67
20D—Youga loam, thick surface, 6 to 15 percent slopes	68
20F—Youga loam, thick surface, 15 to 50 percent slopes	69
21F—Yovimpa clay loam, 15 to 45 percent slopes	70
22—Borrow pits	72
W—Water	72
References	73

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



MAP LEGEND				
Area of Int	e rest (AOI) Area of Interest (AOI)	80	Spoil Area	The soil sur 1:24,000.
Soils	Soil Map Unit Polygons	0	Very Stony Spot	Please rely
~	Soil Map Unit Lines	Ŷ	Wet Spot	Source of M
Special	Soil Map Unit Points Point Features	-	Special Line Features	Web Soil Su Coordinate
്യ	Blowout	Water Fea	tures Streams and Canals	Maps from t
×	Borrow Pit	Transport	ation	projection, w distance and
×	Closed Depression	~	Rails Interstate Highways	Albers equa accurate cal
X	Gravel Pit	~	US Routes	This produc
ø	Landfill	~	Major Roads Local Roads	Soil Survey
A.	Lava Flow	Backgrou	nd	Colorado, P Larimer Cou
 ⊗	Marsh or swamp Mine or Quarry	and the second	Aerial Photography	Survey Area
0	Miscellaneous Water			Soil Survey Survey Area
0	Perennial Water Rock Outcrop			Soil Survey
÷	Saline Spot			Survey Area
;; •	Sandy Spot Severely Eroded Spot			Soil Survey Part, Parts c
۵ ۵	Sinkhole Slide or Slip			Park, and S Survey Area
ß	Sodic Spot			Soil Survey Survey Area

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Arapaho-Roosevelt National Forest Area, Colorado, Parts of Boulder, Clear Creek, Gilpin, Grand, Park and Larimer Counties Survey Area Data: Version 7, Sep 13, 2019

Soil Survey Area: Grand County Area, Colorado Survey Area Data: Version 13, Sep 13, 2019

Soil Survey Area: Holy Cross Area, Colorado, Parts of Eagle, Garfield, Mesa, Pitkin, and Summit Counties Survey Area Data: Version 2, Sep 13, 2019

Soil Survey Area: Pike and San Isabel NF, Colorado, Northern Part, Parts of Chaffee, Clear Creek, Fremont, Jefferson, Lake, Park, and Saguache Counties Survey Area Data: Version 2, Sep 13, 2019

Soil Survey Area: Summit County Area, Colorado Survey Area Data: Version 11, Sep 13, 2019

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different

MAP LEGEND	MAP INFORMATION		
	scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.		
	Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.		
	Date(s) aerial images were photographed: Jul 4, 2010—Aug 18, 2019		
	The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.		

Map Unit Legend

E

П

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8700B	Bross-Matcher families-Lithic Cryorthents complex, 5 to 40 percent slopes	13.5	0.0%
8708D	Matcher family-Rock outcrop- Lithic Cryorthents complex, 40 to 150 percent slopes	0.2	0.0%
CQ	Cirque land, 40 to 150 percent slopes	1.5	0.0%
RR	Rubble land, 40 to 150 percent slopes	4.1	0.0%
Subtotals for Soil Survey Area		19.3	0.1%
Totals for Area of Interest		31,613.2	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Bross-Mirror extremely stony sandy loams, 20 to 50 percent slopes	0.2	0.0%
41	Histic Cryaquolls, nearly level	1.2	0.0%
54	Meredith extremely stony sandy loam, 50 to 70 percent slopes	2.9	0.0%
64	Pergelic Cryorthents-Rock outcrop complex, extremely steep	0.6	0.0%
73	Rubble land	0.1	0.0%
Subtotals for Soil Survey Area		5.0	0.0%
Totals for Area of Interest		31,613.2	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
104A	Haplocryolls-Cryaquolls complex, 0 to 15 percent slopes	9.6	0.0%
223B	Leighcan family-Rock outcrop- Cryaquolls complex, 0 to 40 percent slopes	431.8	1.4%
225B	Leighcan family-Cryaquolls complex, 0 to 25 percent slopes	1,876.5	5.9%
290B	Leighcan family, 5 to 40 percent slopes	3,164.5	10.0%
290C	Leighcan family, till substratum, 40 to 60 percent slopes	354.3	1.1%

Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
604D	Leighcan family-Rock outcrop complex, 40 to 75 percent slopes	341.8	1.1%
NOTCOM	No Digital Data Available	4,873.1	15.4%
Subtotals for Soil Survey Area		11,051.4	35.0%
Totals for Area of Interest		31,613.2	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NOTCOM	No Digital Data Available	12,922.0	40.9%
Subtotals for Soil Survey Area		12,922.0	40.9%
Totals for Area of Interest		31,613.2	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1D	Anvik loam, 6 to 15 percent slopes	24.1	0.1%
1F	Anvik loam, 15 to 35 percent slopes	387.0	1.2%
3D	Cimarron loam, 6 to 15 percent slopes	254.6	0.8%
3F	Cimarron loam, 15 to 35 percent slopes	214.0	0.7%
4	Cumulic Cryaquolls, nearly level	513.8	1.6%
5E	Frisco-Peeler complex, 6 to 25 percent slopes	621.1	2.0%
5F	Frisco-Peeler complex, 25 to 65 percent slopes	1,343.1	4.2%
6	Gravel pits	31.5	0.1%
7C	Grenadier gravelly loam, 0 to 6 percent slopes	11.1	0.0%
7D	Grenadier gravelly loam, 6 to 15 percent slopes	79.5	0.3%
8B	Handran gravelly loam, 0 to 3 percent slopes	819.6	2.6%
8D	Handran gravelly loam, 3 to 15 percent slopes	42.9	0.1%
10	Histic Cryaquolls, nearly level	281.1	0.9%
14C	Muggins sandy loam, 0 to 6 percent slopes	394.5	1.2%
14D	Muggins sandy loam, 6 to 15 percent slopes	990.2	3.1%
14F	Muggins sandy loam, 15 to 35 percent slopes	46.2	0.1%
16C	Quander cobbly loam, 0 to 6 percent slopes	8.5	0.0%
16D	Quander cobbly loam, 6 to 15 percent slopes	69.6	0.2%
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
--------------------------------	--	--------------	----------------
16E	Quander cobbly loam, 15 to 55 percent slopes	181.4	0.6%
18	Rock outcrop-Cryoborolls complex	214.0	0.7%
19C	Youga loam, 1 to 6 percent slopes	121.0	0.4%
19D	Youga loam, 6 to 15 percent slopes	121.8	0.4%
19F	Youga loam, 15 to 45 percent slopes	116.7	0.4%
20D	Youga loam, thick surface, 6 to 15 percent slopes	212.5	0.7%
20F	Youga loam, thick surface, 15 to 50 percent slopes	24.8	0.1%
21F	Yovimpa clay loam, 15 to 45 percent slopes	353.2	1.1%
22	Borrow pits	28.9	0.1%
W	Water	108.5	0.3%
Subtotals for Soil Survey Area		7,615.4	24.1%
Totals for Area of Interest		31,613.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Arapaho-Roosevelt National Forest Area, Colorado, Parts of Boulder, Clear Creek, Gilpin, Grand, Park and Larimer Counties

8700B—Bross-Matcher families-Lithic Cryorthents complex, 5 to 40 percent slopes

Map Unit Setting

National map unit symbol: tlz3 Elevation: 11,000 to 13,000 feet Mean annual precipitation: 30 to 50 inches Mean annual air temperature: 34 to 37 degrees F Frost-free period: 10 to 30 days Farmland classification: Not prime farmland

Map Unit Composition

Bross family and similar soils: 50 percent Matcher family and similar soils: 20 percent Lithic cryorthents and similar soils: 20 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bross Family

Setting

Landform: Saddles, mountain slopes *Parent material:* Residuum weathered from igneous and metamorphic rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A1 - 2 to 15 inches:* very gravelly sandy loam *A2 - 15 to 20 inches:* very gravelly sandy loam *Bw1 - 20 to 28 inches:* very cobbly sandy loam *Bw2 - 28 to 33 inches:* very cobbly sandy loam *C - 33 to 64 inches:* extremely cobbly sandy loam

Properties and qualities

Slope: 5 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Hydrologic Soil Group: A Other vegetative classification: Ross' avens/rock sedge (GEROT/CASA10)

(F0208x), Bellardi kobresia/Ross' avens-curly sedge (KOMY/GEROT-CARU3)

(G2401x), Tufted hairgrass/Ross' avens (DECA18/GEROT) (G1503) *Hydric soil rating:* No

Description of Matcher Family

Setting

Landform: Solifluction lobes Parent material: Residuum weathered from igneous and metamorphic rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 11 inches: very stony fine sandy loam

AC - 11 to 19 inches: extremely stony sandy loam

- C1 19 to 44 inches: extremely stony loamy coarse sand
- C2 44 to 60 inches: extremely stony loamy sand

Properties and qualities

Slope: 5 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Hydrologic Soil Group: A

Other vegetative classification: Parry's clover - Ross' avens (TRPA5-GEROT) (F0604), Ross' avens - alpine bistort (GEROT-POVI3) (F0205x), Tufted hairgrass/alpine clover (DECA18/TRDA2) (G1599) *Hydric soil rating:* No

Description of Lithic Cryorthents

Setting

Landform: Mountain slopes

Parent material: Glaciofluvial and/or residuum derived from igneous and metamorphic rock

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 4 inches: very gravelly sandy loam

AC - 4 to 11 inches: very cobbly sandy loam

C - 11 to 17 inches: extremely cobbly sandy loam

R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 5 to 40 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Hydrologic Soil Group: D Other vegetative classification: Pennsylvania sedge/moss campion (CAPE6/ SIAC) (G1299), Timber oatgrass/varileaf cinquefoil (DAIN/PODI2) (G1301) Hydric soil rating: No

Minor Components

Moran family

Percent of map unit: 6 percent Hydric soil rating: No

Cryaquepts

Percent of map unit: 2 percent Hydric soil rating: Yes

Rubble land

Percent of map unit: 2 percent Hydric soil rating: Unranked

8708D—Matcher family-Rock outcrop-Lithic Cryorthents complex, 40 to 150 percent slopes

Map Unit Setting

National map unit symbol: tt44 Elevation: 11,000 to 13,000 feet Mean annual precipitation: 30 to 50 inches Mean annual air temperature: 34 to 37 degrees F Frost-free period: 10 to 30 days Farmland classification: Not prime farmland

Map Unit Composition

Matcher family and similar soils: 40 percent Rock outcrop: 25 percent Lithic cryorthents and similar soils: 20 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Matcher Family

Setting

Landform: Solifluction lobes Parent material: Residuum weathered from igneous and metamorphic rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 11 inches: very stony fine sandy loam
AC - 11 to 19 inches: extremely stony sandy loam
C1 - 19 to 44 inches: extremely stony loamy coarse sand
C2 - 44 to 60 inches: extremely stony loamy sand

Properties and qualities

Slope: 40 to 75 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Hydrologic Soil Group: A Other vegetative classification: Ross' avens/rock sedge (GEROT/CASA10) (F0208x), Bellardi kobresia/Ross' avens-curly sedge (KOMY/GEROT-CARU3) (G2401x) Hydric soil rating: No

Description of Rock Outcrop

Typical profile

R - 0 to 60 inches: bedrock

Properties and qualities

Slope: 60 to 150 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydrologic Soil Group: D Hydric soil rating: No

Description of Lithic Cryorthents

Setting

Landform: Mountain slopes Parent material: Glaciofluvial deposits and/or residuum derived from igneous and metamorphic rock

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 4 inches: very gravelly sandy loam

AC - 4 to 11 inches: very cobbly sandy loam

C - 11 to 17 inches: extremely cobbly sandy loam

R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 40 to 75 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Hydrologic Soil Group: D Other vegetative classification: Pennsylvania sedge/moss campion (CAPE6/ SIAC) (G1299), Ross' avens/rock sedge (GEROT/CASA10) (F0208x) Hydric soil rating: No

Minor Components

Rubble land

Percent of map unit: 5 percent *Hydric soil rating:* Unranked

Water

Percent of map unit: 5 percent *Hydric soil rating:* Unranked

Moran family

Percent of map unit: 5 percent Hydric soil rating: No

CQ—Cirque land, 40 to 150 percent slopes

Map Unit Setting

National map unit symbol: tlzd Elevation: 10,700 to 14,000 feet Mean annual precipitation: 30 to 50 inches Mean annual air temperature: 34 to 37 degrees F Frost-free period: 10 to 30 days Farmland classification: Not prime farmland

Map Unit Composition

Cirque land: 90 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Cirque Land

Setting

Landform: Cirque headwalls *Parent material:* Talus derived from igneous and metamorphic rock

Typical profile

R - 0 to 60 inches: bedrock

Properties and qualities

Slope: 40 to 150 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 to 99.90 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydric soil rating: Unranked

Minor Components

Cryorthents

Percent of map unit: 5 percent Hydric soil rating: No

Dystrocryepts

Percent of map unit: 5 percent Hydric soil rating: No

RR—Rubble land, 40 to 150 percent slopes

Map Unit Setting

National map unit symbol: tlzh Elevation: 11,200 to 14,000 feet Mean annual precipitation: 30 to 50 inches Mean annual air temperature: 34 to 37 degrees F Frost-free period: 10 to 30 days Farmland classification: Not prime farmland

Map Unit Composition

Rubble land: 90 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Rubble Land

Setting

Landform: Fans, mountainsides Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Side slope

Parent material: Colluvium and/or residuum derived from igneous, metamorphic and sedimentary rock

Typical profile

- 0 to 60 inches: boulders

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydric soil rating: Unranked

Minor Components

Cryorthents

Percent of map unit: 10 percent *Hydric soil rating:* No

Grand County Area, Colorado

10—Bross-Mirror extremely stony sandy loams, 20 to 50 percent slopes

Map Unit Setting

National map unit symbol: jq13 Elevation: 11,400 to 13,500 feet Mean annual precipitation: 30 to 40 inches Mean annual air temperature: 25 to 30 degrees F Frost-free period: 10 to 20 days Farmland classification: Not prime farmland

Map Unit Composition

Bross and similar soils: 60 percent Mirror and similar soils: 30 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bross

Setting

Landform: Mountain slopes

Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Deeply weathered residuum weathered from granite and gneiss and/or deeply weathered residuum weathered from schist and/or deeply weathered residuum weathered from metamorphic rock

Typical profile

H1 - 0 to 12 inches: extremely stony sandy loam

- H2 12 to 22 inches: very cobbly sandy loam, very gravelly sandy loam
- H2 12 to 22 inches: very gravelly loamy sand, very cobbly loamy sand
- H3 22 to 60 inches:
- H3 22 to 60 inches:

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: A Ecological site: Alpine Slopes (R048AY304CO) Hydric soil rating: No

Description of Mirror

Setting

Landform: Mountain slopes

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Deeply weathered residuum weathered from granite and gneiss and/or deeply weathered residuum weathered from schist and/or deeply weathered residuum weathered from metamorphic rock

Typical profile

- H1 0 to 8 inches: extremely stony sandy loam
- *H2 8 to 31 inches:* very stony sandy loam, very gravelly sandy loam, very gravelly loam
- H2 8 to 31 inches: unweathered bedrock
- H2 8 to 31 inches:
- H3 31 to 35 inches:

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: C Ecological site: Alpine Slopes (R048AY304CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 10 percent Hydric soil rating: No

41—Histic Cryaquolls, nearly level

Map Unit Setting

National map unit symbol: jq26 Elevation: 9,000 to 11,500 feet Mean annual precipitation: 20 to 30 inches Mean annual air temperature: 36 to 42 degrees F Frost-free period: 20 to 70 days Farmland classification: Not prime farmland

Map Unit Composition

Histic cryaquolls and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Histic Cryaquolls

Setting

Landform: Flood plains Landform position (three-dimensional): Talf, rise, dip Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: mucky peat
H2 - 10 to 20 inches: stratified sandy loam to clay
H3 - 20 to 60 inches: stratified sandy loam to clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 7w Land capability classification (nonirrigated): 7w Hydrologic Soil Group: C/D Hydric soil rating: Yes

Minor Components

Cumulic cryaquolls

Percent of map unit: 5 percent Landform: Depressions Hydric soil rating: Yes

Cryaquolls

Percent of map unit: 5 percent Landform: Depressions Hydric soil rating: Yes

Cryaquepts

Percent of map unit: 5 percent Landform: Slumps Hydric soil rating: Yes

54—Meredith extremely stony sandy loam, 50 to 70 percent slopes

Map Unit Setting

National map unit symbol: jq2n Elevation: 11,400 to 13,500 feet Frost-free period: 0 to 10 days Farmland classification: Not prime farmland

Map Unit Composition

Meredith and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meredith

Setting

Landform: Mountain slopes Landform position (three-dimensional): Mountainflank Down-slope shape: Convex Across-slope shape: Convex Parent material: Residuum weathered from granite and gneiss and/or residuum weathered from metamorphic rock and/or residuum weathered from schist

Typical profile

H1 - 0 to 9 inches: extremely stony sandy loam *H2 - 9 to 26 inches:* extremely stony sandy loam

H2 - 9 to 20 inches. Extremely story sandy loa

H3 - 26 to 60 inches: fragmental material

Properties and qualities

Slope: 50 to 70 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: A Ecological site: Alpine Slopes (R048AY304CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 10 percent Hydric soil rating: No

64—Pergelic Cryorthents-Rock outcrop complex, extremely steep

Map Unit Setting

National map unit symbol: jq30 *Elevation:* 11,400 to 13,550 feet Mean annual precipitation: 30 to 35 inches Mean annual air temperature: 26 to 29 degrees F Farmland classification: Not prime farmland

Map Unit Composition

Pergelic cryorthents and similar soils: 60 percent Rock outcrop: 30 percent *Minor components:* 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pergelic Cryorthents

Setting

Landform: Mountains Landform position (two-dimensional): Backslope, summit, shoulder Landform position (three-dimensional): Mountainbase, mountainflank, mountaintop *Down-slope shape:* Convex Across-slope shape: Convex Parent material: Weathered schist and/or weathered granite and gneiss and/or weathered metamorphic rock

Typical profile

H1 - 0 to 8 inches: gravelly sandy loam

- H2 8 to 30 inches: very stony sandy loam, very gravelly sandy loam, very gravelly loam
- H2 8 to 30 inches: unweathered bedrock
- H2 8 to 30 inches:
- H3 30 to 34 inches:

Properties and gualities

Slope: 30 to 70 percent *Depth to restrictive feature:* 20 to 40 inches to lithic bedrock Natural drainage class: Well drained Runoff class: Verv high Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None

Frequency of ponding: None *Available water storage in profile:* Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountains Landform position (two-dimensional): Backslope, summit, shoulder Landform position (three-dimensional): Mountaintop, mountainflank, mountainbase Down-slope shape: Linear Across-slope shape: Linear

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 99 percent Depth to restrictive feature: 0 to 4 inches to lithic bedrock Runoff class: Very high Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8s Hydrologic Soil Group: D Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 10 percent Hydric soil rating: No

73—Rubble land

Map Unit Setting

National map unit symbol: jq3b Elevation: 10,000 to 13,550 feet Mean annual precipitation: 36 to 50 inches Mean annual air temperature: 45 to 54 degrees F Frost-free period: 150 to 180 days Farmland classification: Not prime farmland

Map Unit Composition

Rubble land: 95 percent *Minor components:* 5 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Rubble Land

Setting

Landform: Talus slopes, mountains Landform position (three-dimensional): Mountaintop, mountainflank, mountainbase Down-slope shape: Linear, concave Across-slope shape: Linear Parent material: Residuum

Typical profile

H1 - 0 to 60 inches: fragmental material

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8s Hydrologic Soil Group: A Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 5 percent Hydric soil rating: No

Holy Cross Area, Colorado, Parts of Eagle, Garfield, Mesa, Pitkin, and Summit Counties

104A—Haplocryolls-Cryaquolls complex, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: 1jh8f Elevation: 6,990 to 11,640 feet Mean annual precipitation: 20 to 40 inches Mean annual air temperature: 36 to 40 degrees F Frost-free period: 20 to 60 days Farmland classification: Not prime farmland

Map Unit Composition

Haplocryolls and similar soils: 65 percent Cryaquolls and similar soils: 30 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haplocryolls

Setting

Landform: Stream terraces on mountain valleys Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium derived from igneous and sedimentary rock

Typical profile

A1 - 0 to 2 inches: cobbly silt loam A2 - 2 to 12 inches: silt loam AC - 12 to 20 inches: silt loam C1 - 20 to 47 inches: cobbly silt loam C2 - 47 to 60 inches: cobbly silt loam

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6c Hydrologic Soil Group: B Other vegetative classification: Quaking aspen/mountain snowberry (POTR5/ SYOR2) (D0511) Hydric soil rating: No

Description of Cryaquolls

Setting

Landform: Flood plains on mountain valleys Down-slope shape: Concave Across-slope shape: Concave Parent material: Alluvium derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 13 inches: silt loam

Bg - 13 to 22 inches: gravelly sandy clay loam

Cg - 22 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7w Hydrologic Soil Group: C/D Other vegetative classification: Planeleaf willow/water sedge (SAPLP2/CAAQ) (S1405) Hydric soil rating: Yes

223B—Leighcan family-Rock outcrop-Cryaquolls complex, 0 to 40 percent slopes

Map Unit Setting

National map unit symbol: 1jh9f Elevation: 7,540 to 10,990 feet Mean annual precipitation: 20 to 40 inches Mean annual air temperature: 36 to 40 degrees F Frost-free period: 20 to 60 days Farmland classification: Not prime farmland

Map Unit Composition

Leighcan family and similar soils: 40 percent Rock outcrop: 30 percent Cryaquolls and similar soils: 20 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leighcan Family

Setting

Landform: Glacial-valley floors Down-slope shape: Linear Across-slope shape: Linear Parent material: Till derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 4 inches:* very cobbly silt loam *BA - 4 to 9 inches:* very cobbly loamy coarse sand *Bw1 - 9 to 16 inches:* very cobbly sandy loam *Bw2 - 16 to 26 inches:* extremely stony sandy loam *BC - 26 to 33 inches:* extremely cobbly sandy loam *C - 33 to 72 inches:* extremely cobbly sandy loam

Properties and qualities

Slope: 0 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: B Other vegetative classification: Lodgepole pine/myrtle whortleberry (PICO/ VAMY2) (C0909) Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydric soil rating: No

Description of Cryaquolls

Setting

Landform: Flood plains Down-slope shape: Concave Across-slope shape: Concave Parent material: Till derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 17 inches:* silt loam *BC - 17 to 24 inches:* gravelly sandy clay loam *C - 24 to 59 inches:* clay loam

Properties and qualities

Slope: 0 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6w Hydrologic Soil Group: C/D Other vegetative classification: Planeleaf willow/water sedge (SAPLP2/CAAQ) (S1405) Hydric soil rating: Yes

225B—Leighcan family-Cryaquolls complex, 0 to 25 percent slopes

Map Unit Setting

National map unit symbol: 1jh9g Elevation: 8,990 to 11,610 feet Mean annual precipitation: 25 to 40 inches Mean annual air temperature: 36 to 40 degrees F Frost-free period: 20 to 60 days Farmland classification: Not prime farmland

Map Unit Composition

Leighcan family and similar soils: 70 percent Cryaquolls and similar soils: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leighcan Family

Setting

Landform: Glacial-valley floors Down-slope shape: Linear Across-slope shape: Linear Parent material: Till derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 4 inches:* very cobbly silt loam *BA - 4 to 9 inches:* very cobbly loamy coarse sand *Bw1 - 9 to 16 inches:* very cobbly sandy loam *Bw2 - 16 to 26 inches:* extremely stony sandy loam *BC - 26 to 33 inches:* extremely cobbly sandy loam

C - 33 to 72 inches: extremely cobbly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6s Hydrologic Soil Group: B Other vegetative classification: Lodgepole pine/myrtle whortleberry (PICO/ VAMY2) (C0909) Hydric soil rating: No

Description of Cryaquolls

Setting

Landform: Flood plains Down-slope shape: Concave Across-slope shape: Concave Parent material: Till derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 17 inches:* silt loam *BC - 17 to 24 inches:* gravelly sandy clay loam *C - 24 to 59 inches:* clay loam

Properties and qualities

Slope: 0 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6w Hydrologic Soil Group: C/D Other vegetative classification: Planeleaf willow/water sedge (SAPLP2/CAAQ) (S1405) Hydric soil rating: Yes

290B—Leighcan family, 5 to 40 percent slopes

Map Unit Setting

National map unit symbol: 1jh9s Elevation: 8,990 to 11,610 feet Mean annual precipitation: 25 to 40 inches Mean annual air temperature: 36 to 40 degrees F Frost-free period: 20 to 60 days Farmland classification: Not prime farmland

Map Unit Composition

Leighcan family and similar soils: 85 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Leighcan Family

Setting

Landform: Moraines Down-slope shape: Linear Across-slope shape: Linear Parent material: Till derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 4 inches:* very cobbly silt loam *BA - 4 to 9 inches:* very cobbly loamy coarse sand *Bw1 - 9 to 16 inches:* very cobbly sandy loam *Bw2 - 16 to 26 inches:* extremely stony sandy loam *BC - 26 to 33 inches:* extremely cobbly sandy loam *C - 33 to 72 inches:* extremely cobbly sandy loam

Properties and qualities

Slope: 5 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: B Other vegetative classification: Lodgepole pine/myrtle whortleberry (PICO/ VAMY2) (C0909) Hydric soil rating: No

290C—Leighcan family, till substratum, 40 to 60 percent slopes

Map Unit Setting

National map unit symbol: 1jh9t Elevation: 8,990 to 11,610 feet Mean annual precipitation: 25 to 40 inches Mean annual air temperature: 36 to 40 degrees F Frost-free period: 20 to 60 days Farmland classification: Not prime farmland

Map Unit Composition

Leighcan family, till substratum, and similar soils: 90 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Leighcan Family, Till Substratum

Setting

Landform: Moraines Down-slope shape: Linear Across-slope shape: Linear Parent material: Till derived from igneous and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 4 inches:* very cobbly silt loam *BA - 4 to 9 inches:* very cobbly loamy coarse sand *Bw1 - 9 to 16 inches:* very cobbly sandy loam *Bw2 - 16 to 26 inches:* extremely stony sandy loam *BC - 26 to 33 inches:* extremely cobbly sandy loam *C - 33 to 72 inches:* extremely cobbly sandy loam

Properties and qualities

Slope: 40 to 60 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Other vegetative classification: Lodgepole pine/myrtle whortleberry (PICO/ VAMY2) (C0909) Hydric soil rating: No

604D—Leighcan family-Rock outcrop complex, 40 to 75 percent slopes

Map Unit Setting

National map unit symbol: 1jhgb Elevation: 8,990 to 11,810 feet Mean annual precipitation: 20 to 40 inches Mean annual air temperature: 37 to 40 degrees F Frost-free period: 20 to 60 days Farmland classification: Not prime farmland

Map Unit Composition

Leighcan family and similar soils: 60 percent *Rock outcrop:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Leighcan Family

Setting

Landform: Mountain slopes Down-slope shape: Linear Across-slope shape: Linear Parent material: Colluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material *A - 2 to 4 inches:* very cobbly silt loam *BA - 4 to 9 inches:* very cobbly loamy coarse sand *Bw1 - 9 to 16 inches:* very cobbly sandy loam *Bw2 - 16 to 26 inches:* extremely stony sandy loam *BC - 26 to 33 inches:* extremely cobbly sandy loam *C - 33 to 72 inches:* extremely cobbly sandy loam

Properties and qualities

Slope: 40 to 75 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydrologic Soil Group: B Other vegetative classification: Subalpine fir - Engelmann spruce/myrtle whortleberry (ABLA-PIEN/VAMY2) (C0320) Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydric soil rating: No

NOTCOM—No Digital Data Available

Map Unit Composition

Notcom: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Notcom

Properties and qualities

Pike and San Isabel NF, Colorado, Northern Part, Parts of Chaffee, Clear Creek, Fremont, Jefferson, Lake, Park, and Saguache Counties

NOTCOM—No Digital Data Available

Map Unit Composition

Notcom: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Notcom

Properties and qualities

Summit County Area, Colorado

1D—Anvik loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: jpgy Frost-free period: 35 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Anvik and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anvik

Setting

Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Colluvium and/or glacial drift

Typical profile

- H1 0 to 10 inches: loam
- H2 10 to 15 inches: sandy loam, loam
- H2 10 to 15 inches: clay loam, cobbly loam, sandy clay loam
- H3 15 to 48 inches: loam, cobbly clay loam, sandy clay loam
- H3 15 to 48 inches:
- H3 15 to 48 inches:
- H4 48 to 60 inches:
- H4 48 to 60 inches:
- H4 48 to 60 inches:

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very high (about 26.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Ecological site: Subalpine Loam (R048AY250CO) Hydric soil rating: No

Minor Components

Youga

Percent of map unit: 5 percent

Hydric soil rating: No

Muggins

Percent of map unit: 5 percent Hydric soil rating: No

1F—Anvik loam, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: jpgz Elevation: 8,000 to 10,000 feet Frost-free period: 35 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Anvik and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anvik

Setting

Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Colluvium and/or glacial drift

Typical profile

H1 - 0 to 10 inches: loamH2 - 10 to 15 inches: sandy loam, loamH2 - 10 to 15 inches: clay loam, cobbly loam, sandy clay loamH3 - 15 to 48 inches:H3 - 15 to 48 inches:H3 - 15 to 48 inches:H3 - 15 to 48 inches:H4 - 48 to 60 inches:H4 - 48 to 60 inches:H4 - 48 to 60 inches:

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very high (about 26.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Ecological site: Subalpine Loam (R048AY250CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent *Hydric soil rating:* No

3D—Cimarron loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2tz4s Elevation: 7,460 to 9,000 feet Mean annual precipitation: 14 to 20 inches Mean annual air temperature: 37 to 42 degrees F Frost-free period: 35 to 75 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Cimarron and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Cimarron

Setting

Landform: Mountain slopes, colluvial aprons Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, base slope Down-slope shape: Linear Across-slope shape: Linear Parent material: Slope alluvium over residuum weathered from shale

Typical profile

A - 0 to 7 inches: loam AB - 7 to 12 inches: clay loam Bt - 12 to 26 inches: clay BC - 26 to 33 inches: clay loam C - 33 to 59 inches: gravelly clay loam

Properties and qualities

Slope: 6 to 15 percent *Depth to restrictive feature:* More than 80 inches *Natural drainage class:* Well drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.07 to 0.21 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 6c Land capability classification (nonirrigated): 6c Hydrologic Soil Group: C Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Minor Components

Mayoworth

Percent of map unit: 8 percent

Yovimpa

Percent of map unit: 5 percent

Youga

Percent of map unit: 5 percent Landform: Mountain slopes, colluvial aprons Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, base slope Down-slope shape: Linear Across-slope shape: Linear Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Woodhall

Percent of map unit: 2 percent

3F—Cimarron loam, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2tz4t Elevation: 7,460 to 9,020 feet Mean annual precipitation: 14 to 20 inches Mean annual air temperature: 37 to 42 degrees F Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Cimarron and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Cimarron

Setting

Landform: Mountain slopes Landform position (two-dimensional): Backslope Landform position (three-dimensional): Mountainbase, mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Slope alluvium over residuum weathered from shale

Typical profile

A - 0 to 7 inches: loam AB - 7 to 12 inches: clay loam Bt - 12 to 26 inches: clay BC - 26 to 33 inches: clay loam C - 33 to 59 inches: gravelly clay loam

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.07 to 0.21 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e Land capability classification (nonirrigated): 6e Hydrologic Soil Group: C Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Minor Components

Mayoworth

Percent of map unit: 8 percent

Yovimpa

Percent of map unit: 5 percent

Youga

Percent of map unit: 5 percent Landform: Mountain slopes Landform position (two-dimensional): Backslope Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Linear Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Woodhall

Percent of map unit: 2 percent

4—Cumulic Cryaquolls, nearly level

Map Unit Setting

National map unit symbol: jph7 Elevation: 7,500 to 8,500 feet Mean annual precipitation: 12 to 20 inches Mean annual air temperature: 37 to 43 degrees F Frost-free period: 30 to 80 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Cumulic cryaquolls and similar soils: 90 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Cumulic Cryaquolls

Setting

Landform: Flood plains Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Parent material: Stratified, loamy to clayey alluvium over sand & gravel

Typical profile

- H1 0 to 20 inches: variable
- *H2 20 to 60 inches:* extremely gravelly loamy sand, very cobbly loamy sand, very cobbly sandy loam
- H2 20 to 60 inches:
- H2 20 to 60 inches:

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 6.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 6w Land capability classification (nonirrigated): 6w Hydrologic Soil Group: A/D Ecological site: Mountain Meadow (R048AY241CO) Hydric soil rating: Yes

Minor Components

Histic cryaquolls

Percent of map unit: 10 percent Landform: Flood plains Hydric soil rating: Yes

5E—Frisco-Peeler complex, 6 to 25 percent slopes

Map Unit Setting

National map unit symbol: jph8 Elevation: 8,500 to 11,000 feet Frost-free period: 30 to 40 days Farmland classification: Not prime farmland

Map Unit Composition

Frisco and similar soils: 55 percent *Peeler and similar soils:* 35 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Frisco

Setting

Landform: Ridges, mountainsides, fans Landform position (three-dimensional): Mountainflank, mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 16 inches: sandy loam *H2 - 16 to 67 inches:* very stony sandy clay loam *H3 - 67 to 80 inches:* very stony sandy clay loam

Properties and qualities

Slope: 6 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B Hydric soil rating: No

Description of Peeler

Setting

Landform: Ridges, mountain slopes, fans Landform position (three-dimensional): Mountainflank, mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 15 inches: sandy loam H2 - 15 to 55 inches: cobbly sandy clay loam H3 - 55 to 60 inches: cobbly sandy clay loam

Properties and qualities

Slope: 6 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 8 percent *Hydric soil rating:* No

Cumulic cryaquolls

Percent of map unit: 2 percent Landform: Swales Hydric soil rating: Yes

5F—Frisco-Peeler complex, 25 to 65 percent slopes

Map Unit Setting

National map unit symbol: jph9 Elevation: 8,500 to 11,000 feet *Frost-free period:* 30 to 60 days *Farmland classification:* Not prime farmland

Map Unit Composition

Frisco and similar soils: 60 percent *Peeler and similar soils:* 30 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Frisco

Setting

Landform: Ridges, mountainsides Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 16 inches: sandy loam *H2 - 16 to 67 inches:* very stony sandy clay loam *H3 - 67 to 80 inches:* very stony sandy clay loam

Properties and qualities

Slope: 25 to 65 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Hydric soil rating: No

Description of Peeler

Setting

Landform: Mountainsides, ridges Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 15 inches: sandy loam H2 - 15 to 55 inches: cobbly sandy clay loam H3 - 55 to 60 inches: cobbly sandy clay loam

Properties and qualities

Slope: 25 to 60 percent *Depth to restrictive feature:* More than 80 inches Natural drainage class: Well drained Runoff class: High Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 8 percent Hydric soil rating: No

Cumulic cryaquolls

Percent of map unit: 2 percent Landform: Swales Hydric soil rating: Yes

6—Gravel pits

Map Unit Composition

Gravel pits: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Gravel Pits

Setting

Landform: Terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Parent material: Sand & gravel

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand

- H2 6 to 60 inches: extremely gravelly sand, extremely gravelly coarse sand, very gravelly coarse sand
- H2 6 to 60 inches:
- H2 6 to 60 inches:

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8s
Hydrologic Soil Group: A Hydric soil rating: No

7C—Grenadier gravelly loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: jphc Elevation: 9,000 to 13,000 feet Mean annual precipitation: 20 to 30 inches Mean annual air temperature: 30 to 34 degrees F Frost-free period: 30 to 50 days Farmland classification: Not prime farmland

Map Unit Composition

Grenadier and similar soils: 80 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Grenadier

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Cumulic cryaquolls

Percent of map unit: 5 percent Landform: Swales Hydric soil rating: Yes

Histic cryaquolls

Percent of map unit: 5 percent Landform: Swales Hydric soil rating: Yes

7D—Grenadier gravelly loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: jphd Elevation: 9,000 to 13,000 feet Frost-free period: 30 to 50 days Farmland classification: Not prime farmland

Map Unit Composition

Grenadier and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Grenadier

Setting

Landform: Fans Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 6 inches: gravelly loam H2 - 6 to 19 inches: gravelly sandy clay loam H3 - 19 to 60 inches: very cobbly sandy loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 10 percent *Hydric soil rating:* No

Cumulic cryaquolls

Percent of map unit: 5 percent Landform: Swales Hydric soil rating: Yes

Histic cryaquolls

Percent of map unit: 5 percent Landform: Swales Hydric soil rating: Yes

8B—Handran gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: jphg Elevation: 7,500 to 9,000 feet Frost-free period: 30 to 75 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Handran and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Handran

Setting

Landform: Terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: gravelly loam
H2 - 6 to 15 inches: gravelly sandy loam
H3 - 15 to 60 inches: very cobbly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s Hydrologic Soil Group: B Ecological site: Stony Loam (R048AY237CO) Hydric soil rating: No

Minor Components

Quander

Percent of map unit: 10 percent *Hydric soil rating:* No

Cumulic cryaquolls Percent of map unit: 5 percent Landform: Swales Hydric soil rating: Yes

8D—Handran gravelly loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: jphh Elevation: 7,500 to 9,000 feet Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Handran and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Handran

Setting

Landform: Alluvial fans Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: gravelly loam
H2 - 6 to 15 inches: gravelly sandy loam
H3 - 15 to 60 inches: very cobbly sandy loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None *Frequency of ponding:* None *Available water storage in profile:* Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Ecological site: Stony Loam (R048AY237CO) Hydric soil rating: No

Minor Components

Quander

Percent of map unit: 10 percent *Hydric soil rating:* No

10—Histic Cryaquolls, nearly level

Map Unit Setting

National map unit symbol: jpgc Elevation: 9,000 to feet Mean annual precipitation: 20 to 30 inches Mean annual air temperature: 36 to 43 degrees F Frost-free period: 20 to 70 days Farmland classification: Not prime farmland

Map Unit Composition

Histic cryaquolls and similar soils: 90 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Histic Cryaquolls

Setting

Landform: Flood plains, alluvial fans Landform position (three-dimensional): Mountainbase, tread Down-slope shape: Linear Across-slope shape: Linear Parent material: Organic material over stratified, sandy loam to clayey alluvium over sand and gravel

Typical profile

H1 - 0 to 8 inches: mucky peat H2 - 8 to 28 inches: stratified sandy loam to clay H3 - 28 to 60 inches: sand and gravel

Properties and qualities

Slope: 0 to 5 percent *Depth to restrictive feature:* More than 80 inches *Natural drainage class:* Poorly drained Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 6.00 in/hr) Depth to water table: About 0 to 24 inches Frequency of flooding: Frequent Frequency of ponding: None Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 7w Land capability classification (nonirrigated): 7w Hydrologic Soil Group: A/D Ecological site: Mountain Meadow (R048AY241CO) Hydric soil rating: Yes

Minor Components

Cumulic cryaquolls

Percent of map unit: 10 percent Landform: Flood plains Hydric soil rating: Yes

14C—Muggins sandy loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: jpgk Elevation: 7,600 to 10,000 feet Frost-free period: 30 to 50 days Farmland classification: Not prime farmland

Map Unit Composition

Muggins and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Muggins

Setting

Landform: Alluvial fans Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium and/or glacial drift

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 18 inches: sandy clay loam
H3 - 18 to 50 inches: sandy clay
H4 - 50 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: C Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent Hydric soil rating: No

14D—Muggins sandy loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: jpgl Elevation: 7,600 to 10,000 feet Frost-free period: 30 to 50 days Farmland classification: Not prime farmland

Map Unit Composition

Muggins and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Muggins

Setting

Landform: Alluvial fans Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium and/or glacial drift

Typical profile

H1 - 0 to 12 inches: sandy loam H2 - 12 to 18 inches: sandy clay loam H3 - 18 to 50 inches: sandy clay H4 - 50 to 60 inches: sandy clay loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: C Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent *Hydric soil rating:* No

14F—Muggins sandy loam, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: jpgm Elevation: 7,600 to 10,000 feet Frost-free period: 30 to 50 days Farmland classification: Not prime farmland

Map Unit Composition

Muggins and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Muggins

Setting

Landform: Ridges, mountainsides Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 12 inches: sandy loam *H2 - 12 to 18 inches:* sandy clay loam H3 - 18 to 50 inches: sandy clay

H4 - 50 to 60 inches: sandy clay loam

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: C Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent Hydric soil rating: No

16C—Quander cobbly loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: jpgp Elevation: 7,500 to 9,500 feet Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Quander and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Quander

Setting

Landform: Terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 10 inches: cobbly loam

H2 - 10 to 15 inches: very cobbly loam

H3 - 15 to 60 inches: very cobbly sandy clay loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Ecological site: Stony Loam (R048AY237CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent *Hydric soil rating:* No

16D—Quander cobbly loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: jpgq Elevation: 7,500 to 9,500 feet Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Quander and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Quander

Setting

Landform: Mountainsides, fans Landform position (three-dimensional): Lower third of mountainflank, mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 10 inches: cobbly loam
H2 - 10 to 15 inches: very cobbly loam
H3 - 15 to 60 inches: very cobbly sandy clay loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Ecological site: Stony Loam (R048AY237CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent *Hydric soil rating:* No

16E—Quander cobbly loam, 15 to 55 percent slopes

Map Unit Setting

National map unit symbol: jpgr Elevation: 7,500 to 9,500 feet Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Quander and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Quander

Setting

Landform: Ridges, mountainsides, moraines Landform position (three-dimensional): Lower third of mountainflank, mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 10 inches: cobbly loam
H2 - 10 to 15 inches: very cobbly loam
H3 - 15 to 60 inches: very cobbly sandy clay loam

Properties and qualities

Slope: 15 to 55 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Ecological site: Stony Loam (R048AY237CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent *Hydric soil rating:* No

18—Rock outcrop-Cryoborolls complex

Map Unit Setting

National map unit symbol: jpgt Elevation: 8,000 to 13,000 feet Mean annual precipitation: 15 to 30 inches Mean annual air temperature: 32 to 38 degrees F Frost-free period: 20 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 70 percent Cryoborolls and similar soils: 20 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Setting

Landform: Escarpments, ridges, mountainsides Landform position (three-dimensional): Free face, mountaintop, mountainflank Down-slope shape: Convex, linear Across-slope shape: Convex, linear Parent material: Exposed hard bedrock granite and/or sandstone and shale

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 70 percent Depth to restrictive feature: 0 inches to paralithic bedrock Runoff class: Very high Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8s Hydric soil rating: No

Description of Cryoborolls

Setting

Landform: Mountain slopes Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Slope alluvium derived from sandstone and shale and/or granite

Typical profile

H1 - 0 to 10 inches: extremely stony silty clay loam

- *H2 10 to 19 inches:* very cobbly silty clay loam, very cobbly clay, very cobbly clay loam
- H2 10 to 19 inches: unweathered bedrock
- H2 10 to 19 inches:
- H3 19 to 23 inches:

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: 10 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: D Hydric soil rating: No

Minor Components

Cryoboralfs

Percent of map unit: 5 percent Hydric soil rating: No

Cryochrepts

Percent of map unit: 5 percent Hydric soil rating: No

19C—Youga loam, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tz4z Elevation: 7,480 to 9,020 feet Mean annual precipitation: 18 to 20 inches Mean annual air temperature: 37 to 42 degrees F Frost-free period: 30 to 75 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Youga and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Youga

Setting

Landform: Colluvial aprons Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Linear Across-slope shape: Linear Parent material: Slope alluvium derived from sedimentary rock

Typical profile

A - 0 to 6 inches: loam BAt - 6 to 14 inches: loam Bt - 14 to 55 inches: clay loam C - 55 to 79 inches: clay loam

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None *Frequency of ponding:* None *Available water storage in profile:* High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 6c Land capability classification (nonirrigated): 6c Hydrologic Soil Group: C Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Minor Components

Lymanson

Percent of map unit: 5 percent Landform: Mountain slopes Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Convex Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Quander

Percent of map unit: 5 percent

Cimarron

Percent of map unit: 5 percent Landform: Mountain slopes, colluvial aprons Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, base slope Down-slope shape: Linear Across-slope shape: Linear Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

19D—Youga loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2tz4q Elevation: 7,480 to 9,020 feet Mean annual precipitation: 18 to 20 inches Mean annual air temperature: 37 to 42 degrees F Frost-free period: 30 to 75 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Youga and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Youga

Setting

Landform: Mountain slopes, colluvial aprons Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, base slope Down-slope shape: Linear Across-slope shape: Linear Parent material: Slope alluvium derived from sedimentary rock

Typical profile

A - 0 to 6 inches: loam BAt - 6 to 14 inches: loam Bt - 14 to 55 inches: clay loam C - 55 to 71 inches: clay loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e Land capability classification (nonirrigated): 6e Hydrologic Soil Group: C Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Minor Components

Quander

Percent of map unit: 5 percent

Cimarron

Percent of map unit: 5 percent Landform: Mountain slopes, colluvial aprons Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, base slope Down-slope shape: Linear Across-slope shape: Linear Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Lymanson

Percent of map unit: 5 percent Landform: Mountain slopes Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase Down-slope shape: Linear Across-slope shape: Convex *Ecological site:* Mountain Loam 13-18" PPT (R048BY226CO) *Hydric soil rating:* No

19F—Youga loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2tz4x Elevation: 8,000 to 9,020 feet Mean annual precipitation: 18 to 20 inches Mean annual air temperature: 37 to 42 degrees F Frost-free period: 30 to 60 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Youga and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Youga

Setting

Landform: Mountain slopes Landform position (two-dimensional): Backslope Landform position (three-dimensional): Mountainbase, mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Slope alluvium derived from sedimentary rock

Typical profile

A - 0 to 6 inches: loam BAt - 6 to 14 inches: loam Bt - 14 to 55 inches: clay loam C - 55 to 71 inches: clay loam

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 7e Land capability classification (nonirrigated): 7e Hydrologic Soil Group: C Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Minor Components

Quander

Percent of map unit: 5 percent

Lymanson

Percent of map unit: 5 percent Landform: Mountain slopes Landform position (two-dimensional): Backslope Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Convex Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

Cimarron

Percent of map unit: 5 percent Landform: Mountain slopes Landform position (two-dimensional): Backslope Landform position (three-dimensional): Mountainbase, mountainflank Down-slope shape: Linear Across-slope shape: Linear Ecological site: Mountain Loam 13-18" PPT (R048BY226CO) Hydric soil rating: No

20D—Youga loam, thick surface, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: jph0 Elevation: 8,500 to 10,000 feet Frost-free period: 30 to 75 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Youga, thick surface, and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Youga, Thick Surface

Setting

Landform: Mountainsides, fans Landform position (three-dimensional): Lower third of mountainflank, mountainbase Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 10 inches: loam

- H2 10 to 30 inches: gravelly loam
- H3 30 to 42 inches: gravelly sandy clay loam
- H4 42 to 60 inches: gravelly sandy clay loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: B Ecological site: Subalpine Loam (R048AY250CO) Hydric soil rating: No

Minor Components

Quander

Percent of map unit: 5 percent Hydric soil rating: No

Anvik

Percent of map unit: 5 percent Hydric soil rating: No

20F—Youga loam, thick surface, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: jph1 Elevation: 8,500 to 10,000 feet Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Youga, thick surface, and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Youga, Thick Surface

Setting

Landform: Ridges, mountainsides Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Glacial drift

Typical profile

H1 - 0 to 10 inches: loam H2 - 10 to 22 inches: gravelly sandy clay loam H3 - 22 to 60 inches: gravelly sandy clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: B Ecological site: Subalpine Loam (R048AY250CO) Hydric soil rating: No

Minor Components

Quander

Percent of map unit: 5 percent Hydric soil rating: No

Anvik

Percent of map unit: 5 percent Hydric soil rating: No

21F—Yovimpa clay loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: jph3 Elevation: 7,500 to 9,000 feet Frost-free period: 30 to 75 days Farmland classification: Not prime farmland

Map Unit Composition

Yovimpa and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yovimpa

Setting

Landform: Ridges, mountainsides Landform position (three-dimensional): Mountainflank Down-slope shape: Linear Across-slope shape: Linear Parent material: Material weathered from slate and/or shale

Typical profile

H1 - 0 to 2 inches: clay loam H2 - 2 to 7 inches: clay loam

H3 - 7 to 18 inches: clay loam, clay, silty clay

- H3 7 to 18 inches: unweathered bedrock
- H3 7 to 18 inches:
- H4 18 to 22 inches:

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: 15 to 20 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: D Ecological site: Mountain Shale (R048AY244CO) Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent *Hydric soil rating:* No

22—Borrow pits

Map Unit Composition

Borrow pits: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Borrow Pits

Setting

Parent material: Very gravelly alluvium

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand

- H2 6 to 60 inches: extremely gravelly sand, extremely gravelly coarse sand, very gravelly coarse sand
- H2 6 to 60 inches:

H2 - 6 to 60 inches:

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8s Hydrologic Soil Group: A Hydric soil rating: No

W-Water

Map Unit Composition

Water: 90 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Minor Components

Aquolls

Percent of map unit: 10 percent Landform: Marshes Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/ nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ home/?cid=nrcs142p2 053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/ detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/ nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/? cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix H. EPA SWMM Model Reports

(electronic appendix provided on flash drive)





Town of Silverthorne Drainage Master Plan



WWE

Wright Water Engineers, Inc. 818 Colorado Avenue Glenwood Springs, CO 81602 sschreiber@wrightwater.com

www.wrightwater.com

(970) 945-7755