October 27, 2022

Mr. Robert Viehl
Colorado Water Conservation Board
1313 Sherman Street
Denver, CO 80203

Dear Mr. Viehl,

High Country Conservation Advocates (HCCA) submits this instream flow recommendation for Splains Gulch, located in Gunnison County, Water Division 4.

HCCA's mission is to protect the health and natural beauty of the land, rivers, and wildlife in and around Gunnison County. Many of our members live and work here and enjoy recreational opportunities and a quality of life that is preserved by our valley's wildlife, habitat, and water resources. HCCA's 30 year-old water program has a long history of protecting waters in the Upper Gunnison Basin and in developing an environmental voice within key regional and state forums.

In the past HCCA has partnered with the Bureau of Land Management to support instream flow proposals on the Slate River and Oh-Be-Joyful Creek. In 2016 HCCA submitted proposals to protect updated instream flows for Coal Creek and Brush Creek. HCCA partnered with Western Resource Advocates in 2017 to submit an instream flow proposal on Dutchman Creek. More recently HCCA submitted instream flow proposals for Gold Creek, Italian Creek, Lottis Creek, Elk Creek, Wildcat Creek, Cameron Creek, and Cross Creek, all in Division 4.

The headwaters of Splains Gulch originate on United States Forest Service lands in Gunnison County. The Splains Gulch riparian area supports high-quality habitat dominated by willows. HCCA staff observed several small trout and macroinvertebrates when completing R2Cross assessments in 2022. Sampling of Splains Gulch by Colorado Parks and Wildlife (CPW) documented a healthy brook trout population.

HCCA has coordinated with local consultants to arrive at a preliminary instream flow recommendation. In considering this application, the Colorado Water Conservation Board (CWCB) has an opportunity to protect an important stream ecosystem by moving forward with an instream flow protection that would preserve the natural environment to a reasonable degree.

Enclosed you will find the preliminary instream flow proposal, R2Cross modeling runs, stream photos, and maps of the relevant reach. If you have any further questions regarding this recommendation, please feel free to contact Julie Nania at (509) 999-0012. HCCA thanks CPW and the CWCB for their support in developing this recommendation.

Sincerely,

Julie Nania
High Country Conservation Advocates
Water Director

Enclosure

ENCLOSURE - INSTREAM FLOW RECOMMENDATIONS FOR SPLAINS GULCH

Below is a description of the proposed instream flow. Additional details can be found in Attachments A-C.

Location

Splains Gulch is located within the Coal Creek watershed (HUC-12: 140200010204) in Gunnison County, Water Division 4. The headwaters of Splains Gulch originate below Lily's Lake (a.k.a. Splains Lake) in a small sub-alpine basin west of Mt. Axtell. Splains Gulch flows north to the confluence with the Coal Creek, approximately 6 miles west of the Town of Crested Butte, a tributary to the Slate River. The Splains Gulch Watershed is about 2.3 square miles and is on the Mt. Axtell United States Geologic Survey quad map (Attachment A).

The stream segment identified for the proposed instream flow appropriation is approximately 2.3 miles long from its headwaters to the confluence with Coal Creek.

Table 1. Land Status in the Splains Gulch Watershed.

Upper Terminus	Lower Terminus	Total Length (miles)	Land Ownership	
			Private (%)	Public (%)[1]
Headwaters	Confluence with Coal Creek	2.3	Riparian Corridor[2] 0%	Riparian Corridor 100%
			Watershed Composition 0%	Watershed Composition 100%

1. The public land in the Splains Gulch Watershed is managed by the USFS.
2. The riparian corridor ownership percentages were estimated using stream length.

The Splains Gulch Watershed is 100 percent public land managed by the United States Forest Service (USFS). The riparian corridor of the proposed segment is 100 percent public land managed by the USFS.

Existing Instream Flow Rights

Splains Gulch does not have an existing instream flow water right. Lily's Lake lacks a natural lake level water right.

Water Availability

Physical Availability

There is not a gage in Splains Gulch; however, there are three gages in the Coal Creek Watershed that may provide useful data:

- Elk Creek at Coal Creek (USGS gage 09110990) is a seasonal gage located across the valley, and less than a mile, from Splains Gulch.

- Coal Creek above McCormick Ditch at Crested Butte is (USGS gage 09111250) operated seasonally; with a period of record of 2014 to present.
- USGS recently installed a new gage in Coal Creek where Splains Gulch Road crosses Coal Creek which is just upstream of the confluence of Coal Creek and Splains Gulch. The new gage on Coal Creek relies upon provisional technology. Following formal approval, USGS will publish the flow data from Coal Creek at Splains Gulch Road[1].

Legal Availability

There are no active diversions on Splains Gulch. A water rights search on Colorado's Decision Support System (CDSS) did not identify any existing water rights in the Splains Gulch watershed.[2]

[1] Based on conversations with USGS staff, we expect that USGS will publish the flow data from Coal Creek at Splains Gulch Road in late 2022 or early 2023. This gage is a part of the Next Generation Water Observing System (NGWOS).

[2] Water rights were assessed via Colorado's Decision Support System database. Accessed on 10/16/2022 at https://maps.dnrgis.state.co.us/dwr/Index.html?viewer=mapviewer.

Biological Summary

The headwaters of Splains Gulch form at the outlet of Lily's Lake in a small basin west of Mt. Axtell as a cold-water, high gradient stream. The area downstream of Lily's Lake supports a large wetland complex that supports a healthy riparian community and increases flows to Splains Gulch. The riparian area of the creek is primarily composed of willow communities. The confluence of Splains Gulch and Coal Creek also supports a high-quality wetland.

Generally, Splains Gulch has gravel and cobble-sized substrate and ample woody debris. Flows from Splains Gulch support a robust riparian area that provides shade and cover for the extant fish community.

While conducting R2Cross assessments, we saw numerous macroinvertebrates and small fish (unknown species). CPW surveyed Splains Gulch in 2007, 2008, 2009 and 2016. All passes demonstrated the presence of Brook Trout in the stream. See Attachment B for CPW Biological Data.

Photo 1. Macroinvertebrate housing from Splains Gulch (7/7/2022).

Preliminary R2Cross Analysis

HCCA relied on the expertise of Alpine Environmental Consultants LLC to interpret output from the R2Cross model and develop a preliminary instream flow recommendation that will protect Splains Gulch's natural environment to a reasonable degree.

An R2Cross field survey was completed at one location on July 7, 2022. The cross-section was in Splains Gulch approximately 0.2 miles upstream of the confluence with Coal Creek. R2Cross data entry, analysis, and interpretation were completed following fieldwork. These data were used to create the preliminary instream flow recommendations for Splains Gulch (Table 2). The R2Cross output and field forms are attached for review (Attachment C).

A summer flow rate of 1.4 cfs and a winter flow rate of 1.1 cfs are recommended based on the results of the 2022 cross-section (Table 2). The winter flow rate could be refined based on gage data from the Coal Creek Watershed.

Initially, the proposed dates for the winter ISF rate are October 1 to April 30. The proposed dates for the summer ISF rate are May 1 to September 30. The dates may be revised based upon additional review of physical and legal water availability.

Table 2. R2CROSS analysis summary and preliminary instream flow recommendations.

Cross Section (Date)	Measured Discharge (cfs)	Bankfull Top Width (ft)	Winter Flow Recommendation[1] (cfs)	Summer Flow Recommendation[2] (cfs)
Splains Gulch #1 (7-7-22)	1.71	7.1	1.07	1.36
Preliminary Proposed ISF Rates:			**1.1 cfs**	**1.4 cfs**

1) The proposed dates for the winter flow rate are October 1 to April 30. Flow data from the gages in the Coal Creek Watershed could be used to refine the preliminary recommendation for the flow rate and season.
2) The proposed dates for the summer flow recommendation are May 1 to September 30. Flow data from the gages in the Coal Creek Watershed could be used to refine the preliminary recommendation for the flow rate and season.

Photographs

Photo 1. Splains Gulch near cross-section looking downstream (7-7-2022).

Photo 2. Splains Gulch near cross-section looking upstream (7-7-2022).

Photo 3. Splains Gulch cross-section view from the river-left bank (7-7-2022).

Photo 4. Splains Gulch cross-section view from the river-right bank (7-7-2022).

Relationship to Existing State Policy

HCCA is proposing this instream flow to the CWCB in furtherance of the State of Colorado's policy "that the wildlife and their environment are to be protected, preserved, enhanced, and managed for the use, benefit, and enjoyment of the people of this state and its visitors… and that, to carry out such program and policy, there shall be a continuous operation of planning, acquisition, and development of wildlife habitats and facilities for wildlife-related opportunities." C.R.S. 33-1-101(1).

Attachments

A – USGS Topographic Quadrangle Map
B – CPW Biological Data
C –R2Cross Analysis

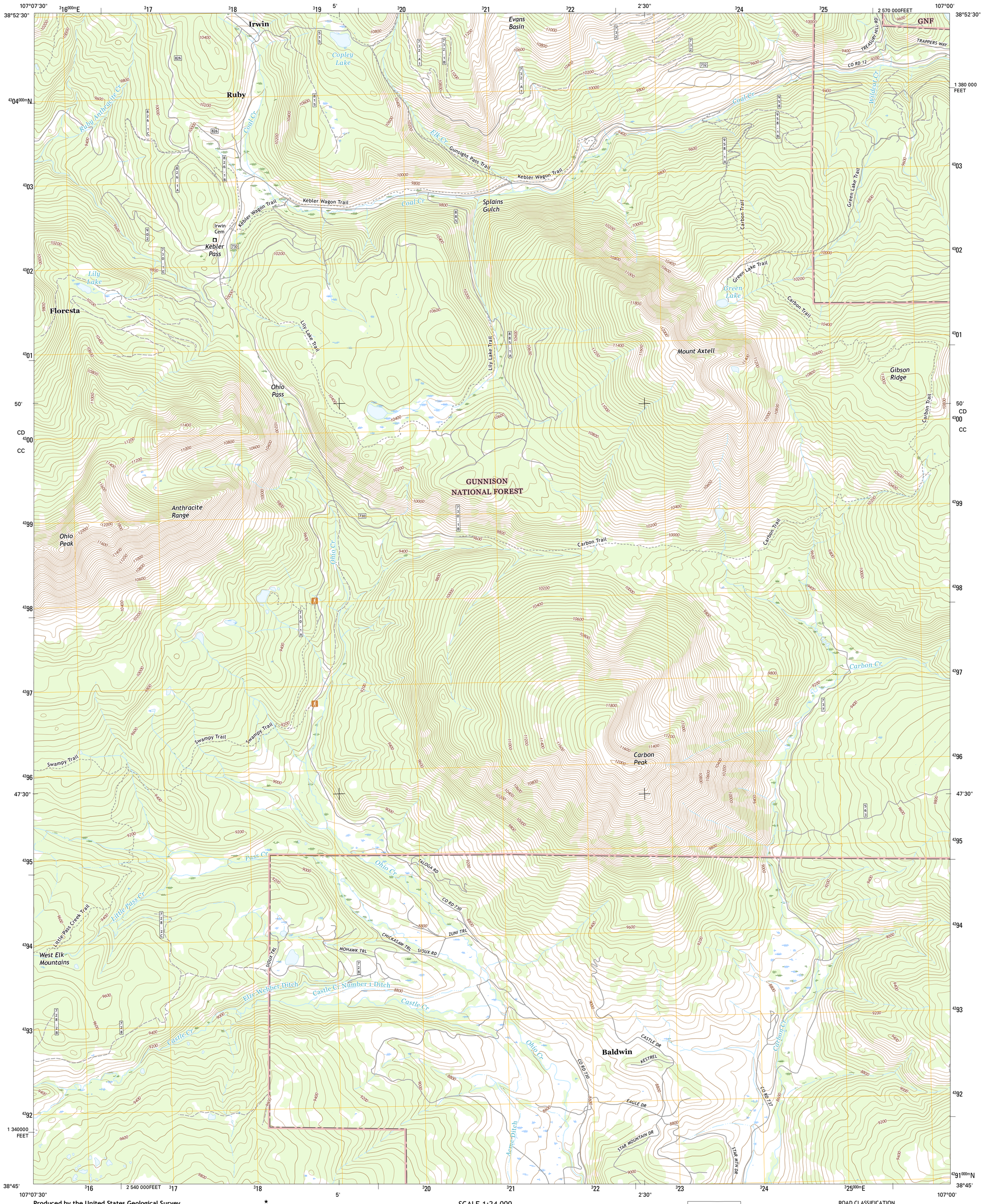
Attachment A- USGS Topographic Quadrangle Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

USGS science for a changing world

The National Map US Topo

MOUNT AXTELL QUADRANGLE
COLORADO-GUNNISON CO.
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 13S
10 000-foot ticks: Colorado Coordinate System of 1983 (central zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2013
Roads..... U.S. Census Bureau, 2015 - 2016
Roads within US Forest Service Lands.....FSTopo Data with limited Forest Service updates, 2012 - 2016
Names.....GNIS, 2016
Hydrography.....National Hydrography Dataset, 2013
Contours.....National Elevation Dataset, 2003
Boundaries.....Multiple sources; see metadata file 1972 - 2016
Public Land Survey System.....BLM, 2011
Wetlands.....FWS National Wetlands Inventory 1977 - 2014

UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
MN 9° 21' 166 MILS
GN 1° 17' 23 MILS

U.S. National Grid
100,000-m Square ID
CD / CC
Grid Zone Designation 13S

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 40 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.19

COLORADO
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Marcellina Mountain
2 Oh-be-joyful
3 Gothic
4 Anthracite Range
5 Crested Butte
6 West Elk Peak
7 Squirrel Creek
8 Flat Top

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route
FS Primary Route
FS Passenger Route
FS High Clearance Route

Check with local Forest Service unit for current travel conditions and restrictions.

MOUNT AXTELL, CO
2016

NSN 7643016359397
NGA REF NO. USGSX24K30473

Attachment B- CPW Biological Data

Requestee: Julie Nania
Affiliation: High Country Conservation Advocates
Appoved By: John Alves
Conditions: All data associated with Elk and Red Creeks (north of Blue Mesa Reservoir), Splains Gulch, and Deer Creek near Crested Butte (no data)
Details:
Date Extracted: Thursday, July 14, 2022

Data Request Disclaimer

Colorado Parks and Wildlife ("CPW") collects aquatic data from both internal sources and a variety of external governmental and non-governmental agencies. CPW provides this data, upon request, solely as a public service. As a significant proportion of this data comes from an outside agency, over which CPW lacks the ability to verify the protocols and data collection procedures, CPW makes no warranty, representation, or guarantee as to the content, accuracy or completeness of any of the data provided. CPW makes this data available on an "as is" basis and explicitly disclaims any representations and warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. The CPW shall assume no liability for: 1. any errors, omissions, or inaccuracies in the data provided, regardless how it was caused; or, 2. any decision made or action taken or not taken by anyone using or relying upon data provided.

Use of Data

CPW may require a user of this data to terminate any and all display, distribution or other use of any or all of the data for any reason including, without limitation, violation of these Terms of Use.

CalYear	SurveyID	Region	Drainage	WQCD_Segment	NHD_CommID	WaterType	WaterId	WaterName	StationID
2007	11053	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	281
2008	11054	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	281
2007	8583	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	282
2008	8584	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	282
2009	23023	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	281
2009	23060	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	282
2016	52197	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	281
2016	52189	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	282
1977	11052	Southwest	Gunnison River	COGUUG09	1332242	Stream	49,254	Splains Gulch	281

Station	SiteName	Location	StationOnPrivate
GU1402	1 MI ABV CNFL WITH COAL CRK BLW FS RD 885	1800 M BLW Splains Gulch Lake	N
GU1402	1 MI ABV CNFL WITH COAL CRK BLW FS RD 885	1800 M BLW Splains Gulch Lake	N
GU2254	ABOVE CONFLUENCE WITH COAL CREEK	100 M ABV Coal Creek	N
GU2254	ABOVE CONFLUENCE WITH COAL CREEK	100 M ABV Coal Creek	N
GU1402	1 MI ABV CNFL WITH COAL CRK BLW FS RD 885	1800 M BLW Splains Gulch Lake	N
GU2254	ABOVE CONFLUENCE WITH COAL CREEK	100 M ABV Coal Creek	N
GU1402	1 MI ABV CNFL WITH COAL CRK BLW FS RD 885	1800 M BLW Splains Gulch Lake	N
GU2254	ABOVE CONFLUENCE WITH COAL CREEK	100 M ABV Coal Creek	N
GU1402	1 MI ABV CNFL WITH COAL CRK BLW FS RD 885	1800 M BLW Splains Gulch Lake	N

Elevation	Lat	Lon	UTMX	UTMY	HUC12	County	AreaBio	SampleDate
10199	38.83893645	-107.0619965	321058	4300923	140200010204	Gunnison	Dan Brauch	9/19/07
10199	38.83893645	-107.0619965	321058	4300923	140200010204	Gunnison	Dan Brauch	9/11/08
9607	38.85446627	-107.0650024	320856	4302652	140200010204	Gunnison	Dan Brauch	9/19/07
9607	38.85446627	-107.0650024	320856	4302652	140200010204	Gunnison	Dan Brauch	9/11/08
10199	38.83893645	-107.0619965	321058	4300923	140200010204	Gunnison	Dan Brauch	9/17/09
9607	38.85446627	-107.0650024	320856	4302652	140200010204	Gunnison	Dan Brauch	9/17/09
10199	38.83893645	-107.0619965	321058	4300923	140200010204	Gunnison	Dan Brauch	9/15/16
9607	38.85446627	-107.0650024	320856	4302652	140200010204	Gunnison	Dan Brauch	9/15/16
10199	38.83893645	-107.0619965	321058	4300923	140200010204	Gunnison	Dan Brauch	6/21/77

Survey_Purpose	Protocol	Gear	NumNets
NULL	TWO-PASS REMOVAL	NOT LISTED	NULL
NULL	TWO-PASS REMOVAL	EF	NULL
NULL	TWO-PASS REMOVAL	NOT LISTED	NULL
NULL	TWO-PASS REMOVAL	NOT LISTED	NULL
NULL	THREE-PASS REMOVAL	NOT LISTED	NULL
NULL	TWO-PASS REMOVAL	EF	NULL
Species Presence, Community Composition and Relative Abundance	TWO-PASS REMOVAL	BPEF	NULL
Species Presence, Community Composition and Relative Abundance	TWO-PASS REMOVAL	BPEF	NULL
Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL

NumPasses	NumAnglers	StationLength	StationAsMiles	StationAsKilometers	AvgWidth	StationAsAcres	StationAsHectares
2	NULL	300	0.056818	0.09144	0	NULL	NULL
2	NULL	300	0.056818	0.09144	8.2	0.056473826	0.022854148
2	NULL	NULL	NULL	NULL	NULL	NULL	NULL
2	NULL	300	0.056818	0.09144	7.6	0.052341595	0.021181893
3	NULL	300	0.056818	0.09144	8.2	0.056473826	0.022854148
2	NULL	300	0.056818	0.09144	7.6	0.052341595	0.021181893
2	NULL	300	0.056818	0.09144	8.2	0.056473826	0.022854148
2	NULL	300	0.056818	0.09144	7.6	0.052341595	0.021181893
NULL	NULL	150	0.028409	0.04572	6	0.020661156	0.008361274

TotalCatch	TotalWeight	ElecEffort	GillEffort	TrapEffort	SeinEffort	TotalEffort	EffortMetric	SpeciesID	SpeciesCode
65	593	0	0	0	0	2	PASS	24	BRK
38	96	2	NULL	NULL	NULL	2	PASS	24	BRK
93	1484	0	0	0	0	2	PASS	24	BRK
49	431.5	NULL	NULL	NULL	NULL	2	PASS	24	BRK
16	333	NULL	NULL	NULL	NULL	3	PASS	24	BRK
39	644	2	NULL	NULL	NULL	2	PASS	24	BRK
13	271	NULL	NULL	NULL	NULL	2	PASS	24	BRK
104	994	NULL	NULL	NULL	NULL	2	PASS	24	BRK
0	NULL	1	NULL	NULL	NULL	1	PASS	NULL	XXX

Family	CommonName	GenusSpecies	SpeciesMethod	SpeciesCatch	RelAbun	Threshold
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	65	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	38	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	93	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	49	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	3-Pass Estimator	16	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	39	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	13	1	130
SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Seber Lecren	104	1	130
NULL	No Fish Caught	NULL	Counts	0	NULL	NULL

NumBlwThreshold	PercentCatch	FirstCatch	SecondCatch	ThirdCatch	AdditionalCatch	Marked	Recaptured	Captured
56	100	55	10	NULL	NULL	NULL	NULL	NULL
36	100	32	6	NULL	NULL	NULL	NULL	NULL
52	100	79	14	NULL	NULL	NULL	NULL	NULL
39	100	35	14	NULL	NULL	NULL	NULL	NULL
8	100	10	5	1	0	NULL	NULL	NULL
24	100	34	5	NULL	NULL	NULL	NULL	NULL
7	100	9	4	NULL	NULL	NULL	NULL	NULL
83	100	87	17	NULL	NULL	NULL	NULL	NULL
0	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

SpeciesWeight	Weighed	WeightCalcd	FirstWeight	SecondWeight	ThirdWeight	MarkedWeight	RecapturedWeight
703	9	0	617	86	NULL	NULL	NULL
553	2	0	481	72	NULL	NULL	NULL
2535	24	0	1614	250	NULL	NULL	NULL
887.5	10	0	722.5	165	NULL	NULL	NULL
333	8	0	240.5	206.5	21.5	NULL	NULL
952	15	0	883	69	NULL	NULL	NULL
366	6	0	277	89	NULL	NULL	NULL
1590	21	0	1340	250	NULL	NULL	NULL
NULL	0	0	NULL	NULL	NULL	NULL	NULL

CapturedWeight	MeanWeight	WeightRange	AvgWr	Measured	MeanLength	LengthRange	ProbabilityOfCapture
NULL	65.89	30 - 88	121.2	65	78.31	42 - 186	0.8182
NULL	48	33 - 63	110.58	38	104.58	49 - 168	0.8125
NULL	61.83	37 - 119	121.68	76	102.37	44 - 215	0.8228
NULL	43.15	22 - 67	101.01	49	110.49	47 - 191	0.6
NULL	41.63	22 - 79	139.62	16	124.13	54 - 160	0.621072456
NULL	42.93	23 - 121	104.51	39	119.92	47 - 214	0.8529
NULL	45.17	28 - 59	113.29	13	124	56 - 167	0.5556
NULL	47.33	24 - 80	108.49	104	104.71	43 - 195	0.8046
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

PopulationEstimate	POP_Variance	LOWER_POP_CI	UPPER_POP_CI	EstimatedSpeciesWeight	NumberPerAcre
67.2222	4.795000762	62.9303	71.5141	5191	NULL
39.3846	3.065438885	35.953	42.8162	2017	697.3956
96.0154	6.372939211	91.0674	100.9634	6997	NULL
58.3333	60.49382716	43.0889	73.5777	2136	1114.4731
16.92062985	1.48329098	16.10025902	24.45369613	930	299.619
39.8621	1.593567479	37.3879	42.3363	1750	761.5759
16.2	26.9568	6.0237	26.3763	665	286.8586
108.1286	9.474963099	102.0954	114.1618	5340	2065.8255
0	NULL	NULL	NULL	NULL	NULL

PoundsPerAcre	NumberPerMile	PoundsPerMile	NumberPerHectare	kilogramsPerHectare	NumberPerkilometer
NULL	1183.1145	201.4185	NULL	NULL	735.1509
78.7396	693.1712	78.2626	1723.3021	88.2553	430.7152
NULL	NULL	NULL	NULL	NULL	NULL
89.9681	1026.6694	82.88	2753.9229	100.8408	637.9407
36.3053	297.804	36.0854	740.3746	40.6928	185.0463
73.7098	701.5752	67.9026	1881.8951	82.6177	435.9372
25.9602	285.1209	25.803	708.8429	29.0976	177.1654
224.9203	1903.0694	207.1999	5104.7656	252.1021	1182.5087
NULL	NULL	NULL	NULL	NULL	NULL

kilogramsPerkilometer	CPUE	CPUEMetric	WPUE	WPUEMetric	PSD	SRSD	QRSD	PRSD	MRSD	TRSD
56.7695	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
22.0582	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
NULL	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL
23.3596	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10.1706	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
19.1382	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL
7.2725	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
58.399	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

DataSource	SciColl	Surveyors
Southwest Region Fisheries Management	NULL	
Southwest Region Fisheries Management	NULL	BRAUCH, MELICK, KRISTENSEN
Southwest Region Fisheries Management	NULL	
Southwest Region Fisheries Management	NULL	BRAUCH, CALLAWAY, CAPPS
Southwest Region Fisheries Management	NULL	Brauch
Southwest Region Fisheries Management	NULL	Brauch, Paonia HS
Southwest Region Fisheries Management	NULL	Brauch, Kesler, Bennet, Sanderson
Southwest Region Fisheries Management	NULL	Brauch, Kesler, Samuelsen, sanderson
Stream and lake databank	NULL	WEILER

Comments

UTM's in NAD83
3100 shocking seconds
UTM's in NAD83; One third of flow going down side channel to east (Dry in 2006)
No notes recorded
No notes recorded
Much of channel split east. Electrofished both channels.
No fish found pass 3. Site sampled is about 300 M below Station GU1402
Backpack1 seconds P1: 2276 P2: 1180 Backpack 2 P1+P2: 2087. Channel is split in lower half, both channels shocked.
NO FISH SAMPLED.

SurveyFlag	SpeciesFlag	SPCNStatus	CreatedBy	CreatedWhen	ModifiedBy	ModifiedWhen	timestamp
NULL	NULL	NULL	brauchd	58:29.0	RivermanC	26:57.6	0x000000006C9AABE7
NULL	NULL	NULL	brauchd	53:18.0	RivermanC	17:00.9	0x000000006C9AABE8
NULL	NULL	NULL	brauchd	57:31.0	RivermanC	46:15.2	0x000000006C9AAD45
NULL	NULL	NULL	brauchd	53:17.0	RivermanC	17:00.9	0x000000006C9AAD46
NULL	NULL	NULL	brauchd	33:20.0	RivermanC	11:49.5	0x000000006C9B4221
NULL	NULL	NULL	brauchd	33:19.0	RivermanC	11:49.5	0x000000006C9B42AE
NULL	NULL	NULL	KESLERJ	38:46.6	BRAUCHD	00:00.0	0x000000006C9CABB6
NULL	NULL	NULL	KESLERJ	08:50.5	BRAUCHD	00:00.0	0x000000006C9CB88A
NULL	NULL	NULL	stauffera	00:00.0	RivermanC	30:54.3	0x000000006C9DAB85

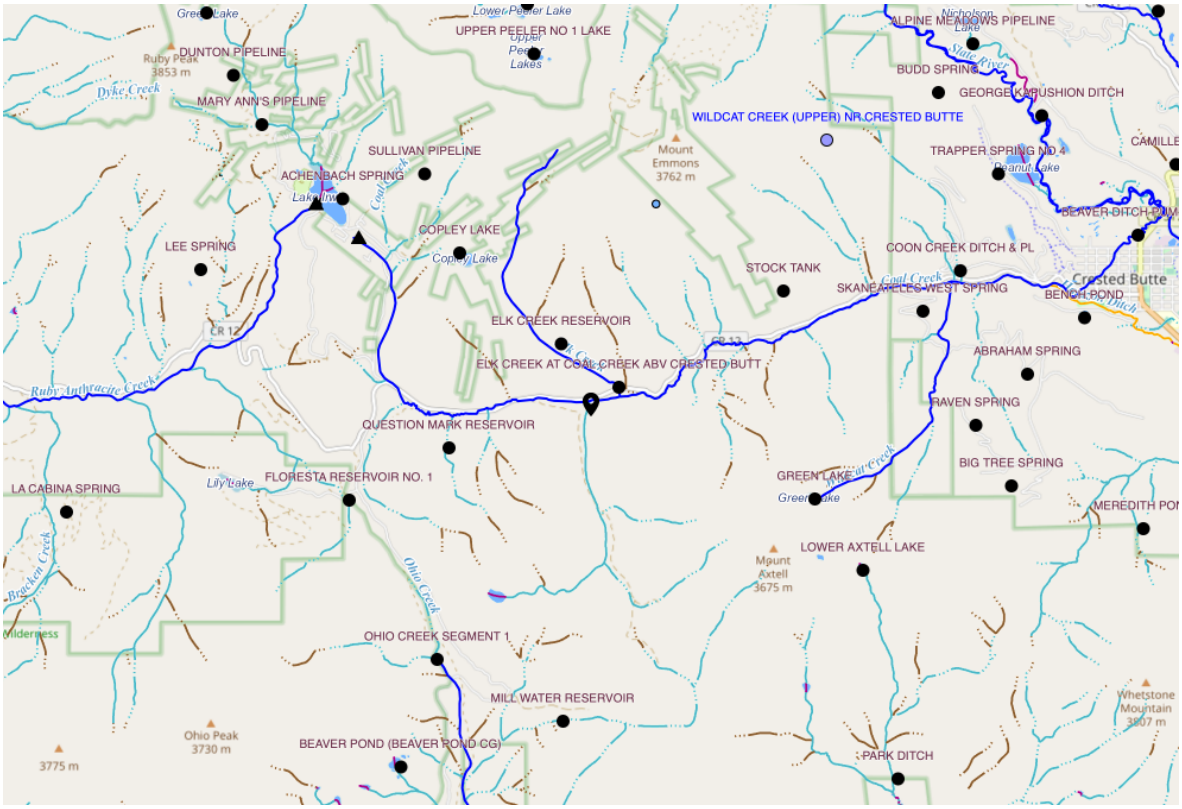
TableLastUpdated
36:02.2
36:02.2
36:02.2
36:02.2
36:02.2
36:02.2
36:02.2
36:02.2
36:02.2

Attachment C- R2Cross Analysis

R2Cross RESULTS

Stream Name: Splains Gulch
Stream Locations: Splains Gulch upstream of the confluence with Coal Creek
Fieldwork Date: 07/07/2022
Cross-section: 1
Observers: J. Nania, A. Bembenek
Coordinate System: UTM Zone 13
X (easting): 320903
Y (northing): 4302734
Date Processed: 08/26/2022
Slope: 0.0082
Discharge: R2Cross data file: 1.71 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: Splains Gulch R2Cross Data File 22-08-26.xlsx
R2Cross version: 2.0.0

LOCATION



ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 7.1

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	1.36
Percent Wetted Perimeter (%)	50.0	0.06
Mean Velocity (ft/s)	1.0	1.07

STAGING TABLE

Feature	Distance to Water (ft)	Top Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Area (sq ft)	Wetted Perimeter (ft)	Percent Wetted Perimeter	Hydraulic Radius (ft)	Manning's n	Mean Velocity (ft/s)	Discharge (cfs)
Bankfull	2.5	7.1	0.33	0.55	2.36	7.46	100.0	0.32	0.03	1.91	4.51
	2.51	7.02	0.32	0.54	2.27	7.36	98.78	0.31	0.03	1.85	4.2
	2.53	6.93	0.31	0.52	2.17	7.27	97.56	0.3	0.03	1.8	3.9
	2.54	6.85	0.3	0.51	2.07	7.18	96.33	0.29	0.03	1.74	3.61
	2.56	6.77	0.29	0.49	1.98	7.09	95.11	0.28	0.03	1.68	3.33
	2.57	6.69	0.28	0.48	1.89	7.0	93.89	0.27	0.03	1.62	3.07
	2.58	6.61	0.27	0.47	1.8	6.91	92.67	0.26	0.04	1.56	2.81
	2.6	6.52	0.26	0.45	1.71	6.82	91.44	0.25	0.04	1.5	2.56
	2.61	6.44	0.25	0.44	1.62	6.73	90.22	0.24	0.04	1.44	2.33
	2.62	6.36	0.24	0.43	1.53	6.63	89.0	0.23	0.04	1.38	2.1
	2.64	6.28	0.23	0.41	1.44	6.54	87.78	0.22	0.04	1.31	1.89
Waterline	2.65	6.2	0.22	0.4	1.37	6.46	86.67	0.21	0.04	1.25	1.71
	2.65	6.19	0.22	0.4	1.36	6.45	86.55	0.21	0.04	1.24	1.69
	2.67	6.11	0.21	0.39	1.27	6.36	85.29	0.2	0.04	1.18	1.5
	2.68	6.02	0.2	0.37	1.19	6.26	84.03	0.19	0.04	1.11	1.32
	2.69	5.93	0.19	0.36	1.11	6.17	82.76	0.18	0.04	1.04	1.15
	2.71	5.84	0.18	0.34	1.03	6.08	81.5	0.17	0.04	0.97	0.99
	2.72	5.76	0.16	0.33	0.95	5.98	80.24	0.16	0.04	0.89	0.85
	2.73	5.67	0.15	0.32	0.87	5.89	78.98	0.15	0.05	0.82	0.71
	2.75	5.58	0.14	0.3	0.79	5.79	77.72	0.14	0.05	0.74	0.59
	2.76	5.5	0.13	0.29	0.71	5.7	76.46	0.13	0.05	0.67	0.48
	2.77	5.41	0.12	0.28	0.64	5.61	75.19	0.11	0.05	0.59	0.38
	2.79	5.32	0.11	0.26	0.57	5.51	73.93	0.1	0.06	0.52	0.29
	2.8	4.91	0.1	0.25	0.49	5.09	68.28	0.1	0.06	0.48	0.24
	2.82	4.67	0.09	0.23	0.43	4.85	65.0	0.09	0.06	0.42	0.18

	2.83	4.44	0.08	0.22	0.37	4.6	61.71	0.08	0.07	0.36	0.13
	2.84	4.21	0.07	0.21	0.31	4.36	58.43	0.07	0.07	0.31	0.09
	2.86	3.85	0.07	0.19	0.25	3.98	53.41	0.06	0.08	0.26	0.07
	2.87	3.38	0.06	0.18	0.2	3.5	46.93	0.06	0.09	0.23	0.05
	2.88	2.91	0.05	0.17	0.16	3.02	40.45	0.05	0.09	0.2	0.03
	2.9	2.44	0.05	0.15	0.12	2.53	33.97	0.05	0.1	0.18	0.02
	2.91	1.98	0.05	0.14	0.09	2.05	27.49	0.04	0.11	0.16	0.01
	2.93	1.51	0.04	0.12	0.07	1.57	21.01	0.04	0.11	0.15	0.01
	2.94	1.04	0.05	0.11	0.05	1.08	14.53	0.04	0.11	0.16	0.01
	2.95	0.68	0.05	0.1	0.04	0.71	9.55	0.05	0.09	0.2	0.01
	2.97	0.61	0.05	0.08	0.03	0.64	8.55	0.04	0.11	0.16	0.0
	2.98	0.54	0.04	0.07	0.02	0.56	7.56	0.04	0.12	0.12	0.0
	3.0	0.47	0.03	0.05	0.01	0.49	6.56	0.03	0.15	0.08	0.0
	3.01	0.37	0.02	0.04	0.01	0.38	5.12	0.02	0.2	0.05	0.0
	3.02	0.25	0.01	0.03	0.0	0.25	3.41	0.01	0.28	0.03	0.0

This Manning's roughness coefficient was calculated based on velocity estimates from the Ferguson VPE method

MODEL SUMMARY

Measured Flow (Qm) =	1.71	(cfs)
Calculated Flow (Qc) =	1.71	(cfs)
(Qm-Qc)/Qm * 100 =	-0.01%	
Measured Waterline (WLm) =	2.65	(ft)
Calculated Waterline (WLc) =	2.65	(ft)
(WLm-WLc)/WLm * 100 =	0.00%	
Max Measured Depth (Dm) =	0.4	(ft)
Max Calculated Depth (Dc) =	0.4	(ft)
(Dm-Dc)/Dm * 100 =	-0.00%	
Mean Velocity =	1.25	(ft/s)
Manning's n =	0.038	
0.4 * Qm =	0.68	(cfs)
2.5 * Qm =	4.27	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	1	1.05		
	2	1.2		
	3	1.25		
	3.9	1.55		
	4	1.6		
	4.3	1.8		
Bankfull	4.7	2.5		
Waterline	4.8	2.65	0	0
	5	2.85	0.2	0.72
	5.3	2.95	0.3	0.74
	5.6	2.85	0.2	1.2
	5.9	2.9	0.25	1.64
	6.2	2.85	0.2	1.79
	6.5	2.9	0.25	1.62
	6.8	2.85	0.2	1.66
	7.1	3	0.35	1.59
	7.4	3.05	0.4	1.42
	7.7	2.95	0.3	1.55
	8	2.9	0.25	1.56
	8.3	2.95	0.3	1.32
	8.6	2.9	0.25	1.45
	8.9	2.95	0.3	1.18
	9.2	2.8	0.15	1.04
	9.5	2.85	0.2	0.64
	9.9	2.8	0.15	0.53
	10.2	2.8	0.15	0.4
Waterline	11	2.65	0	0
Bankfull	11.8	2.5		
	12	2.45		
	12.5	2.3		

	13	2.1
	14	1.9
	15	1.45
	16	1.2
	17	1.35
	18	1.4

COMPUTED FROM MEASURED FIELD DATA

Wetted Perimeter (ft)	Water Depth (ft)	Area (ft^2)	Discharge (cfs)	Percent Discharge
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.28	0.2	0.05	0.04	2.11
0.32	0.3	0.09	0.07	3.9
0.32	0.2	0.06	0.07	4.22
0.3	0.25	0.08	0.12	7.21
0.3	0.2	0.06	0.11	6.29
0.3	0.25	0.07	0.12	7.12
0.3	0.2	0.06	0.1	5.84
0.34	0.35	0.1	0.17	9.79
0.3	0.4	0.12	0.17	9.99
0.32	0.3	0.09	0.14	8.18
0.3	0.25	0.08	0.12	6.86
0.3	0.3	0.09	0.12	6.96
0.3	0.25	0.07	0.11	6.37
0.3	0.3	0.09	0.11	6.22
0.34	0.15	0.04	0.05	2.74
0.3	0.2	0.07	0.04	2.63
0.4	0.15	0.05	0.03	1.63
0.3	0.15	0.08	0.03	1.93
0.81	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

DISCLAIMER

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COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: SPLAINS GULCH #1					CROSS-SECTION NO.: 1
CROSS-SECTION LOCATION: Splains Gulch upstream of confluence w/ Coal Creek					
DATE: 7July'22	OBSERVERS: J. Nania, A. Bembenek				
LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:
COUNTY: Gunnison	WATERSHED: Coal Creek/Slate/East		WATER DIVISION 4		DOW WATER CODE:
MAP(S): USGS: GPS Point: Splains 1 13S 0320903, 4302734 Elevation: 9,103 ft.					
USFS:					

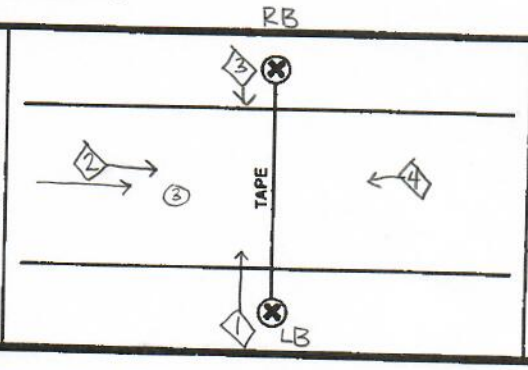
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: Hach FH950			
METER NUMBER: NA	DATE RATED: NA	CALIB/SPIN NA sec	TAPE WEIGHT NA lbs/foot	TAPE TENSION: NA lbs
CHANNEL BED MATERIAL SIZE RANGE: Sand to small boulder	PHOTOGRAPHS TAKEN YES/NO	NUMBER OF PHOTOGRAPHS: Many		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	~~0.0~~ 1.0'	
⊗ Tape @ Stake RB	~~0.0~~ 18.0'	
① WS @ Tape LB/RB	0.0	2.65 / 2.65
② WS Upstream	13.0'	4.88
③ WS Downstream	4.0'	5.02'
SLOPE	0.14' / 17' = 0.00823529	

SKETCH



AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED NA ft	FISH CAUGHT YES/NO	WATER CHEMISTRY SAMPLED: YES/NO

LENGTH - FREQUENCY DISTRIBUTION BY ONE-INCH SIZE GROUPS (1.0-1.9, 2.0-2.9, ETC.)

SPECIES (FILL IN)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	>15	TOTAL

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME

COMMENTS

* Saw many macroinvertebrates during the pebble count & while setting up cross-section. Julie took several extra photos. Approximately 50' downstream of SP-00, a CCWC Water Quality Monitoring station (inactive).

FORM #ISF FD 1-85 Flow meter file name - 77SP01

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Splains Gulch | CROSS-SECTION NO.: 1 | DATE: 7/7/22 | SHEET 2 OF 3

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) (LEFT / RIGHT) | Gage Reading: ____ ft | TIME: 12:00 pm

Features (Stake (S), Grassline (G), Waterline (W), Rock (R))	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	1		1.05								
	2		1.20								
	3		1.25								
	3.9		1.55								
	4.0		1.60								
	4.3		1.80								
(BF)	4.7		2.50								
(W)	4.8		2.65	0				—			
	5		2.85	0.20				0.72			
	5.3		2.95	0.30				0.74			
	5.6		2.85	0.20				1.20			
	5.9		2.90	0.25				1.64			
(ROCK)	6.2		2.85	0.20				1.79			
	6.5		2.90	0.25				1.62			
	6.8		2.85	0.20				1.66			
	7.1		3.00	0.35				1.59			
	7.4		3.05	0.40				1.42			
	7.7		2.95	0.30				1.55			
	8.0		2.90	0.25				1.56			
	8.3		2.95	0.30				1.32			
	8.6		2.90	0.25				1.45			
	8.9		2.95	0.30				1.18			
	9.2		2.80	0.15				1.04			
	9.5		2.85	0.20				0.64			
	9.9		2.80	0.15				0.53			
	10.2		2.80	0.15				0.40			
(W)	11.0		2.65	0				—			
(BF)	11.8		2.50								
	12.0		2.45								
	12.5		2.30								
	13.0		2.10								
	14.0		1.90								
	15.0		1.45								
log	16.0		1.20								
	17.0		1.35								
	18		1.4								
TOTALS											

End of Measurement | Time 12:45 pm | Gage Reading ____ ft | CALCULATIONS PERFORMED BY: | CALCULATIONS CHECKED BY

1.71 cfs actual discharge

Julie Nania
Ashley Bembeno
7/7/2022
Splains
Cross Sec 1

Riffle Pebble Count Actual Measurements (mm)

1	82	26	166	51	29	76	34	101	
2	105	27	82	52	36	77	131	102	
3	56	28	30	53	22	78	115	103	
4	80	29	68	54	146	79	72	104	
5	31	30	11	55	59	80	105	105	
6	31	31	82	56	9	81	136	106	
7	10	32	72	57	27	82	83	107	
8	59	33	225 E	58	14	83	43	108	
9	195	34	52	59	102	84	30	109	
10	145	35	7	60	34	85	26	110	
11	38	36	5	61	27	86	31	111	
12	27	37	63(E)	62	282 (E)	87	16	112	
13	147(E)	38	19	63	92	88	28	113	
14	19	39	63	64	93	89	12	114	
15	176 (E)	40	12	65	113	90	26	115	
16	sand	41	41	66	31	91	33		
17	41	42	21	67	29	92	35		
18	53	43	24	68	67	93	78		
19	24	44	68	69	12	94	38		
20	21	45	130 (E)	70	fines	95	135 (E)		
21	101	46	134	71	274	96	67		
22	93	47	43	72	14	97	69		
23	98	48	23	73	9	98	21		
24	34	49	91	74	19	99	34		
25	15	50	20	75	25	100	71		

****Please be sure to measure at least 100 pebbles (10 in 10 transects or 5 in 20 transects- depending on stream size, for accurate distributional representation.****

EMBEDDEDNESS:

If intermediate particle axis is less than 32 mm chose the nearest cobble for embeddedness.
If no cobble >32 mm is present without taking a step, record 100% embedded.

	Random pebble for **Percent Embeddedness** (one per transect)									
5	7	10	9	3	8	5	2	1	7	#
										D(e)/ D(t)

D(e) = embedded depth; D(t) = total depth