November 5, 2024

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

Dear Mr. Viehl,

High Country Conservation Advocates (HCCA) and the National Park Service (NPS) are submitting this instream flow recommendation for Red Creek, located in Gunnison County, Water Division 4.

HCCA protects the health and natural beauty of the land, rivers, and wildlife in and around Gunnison County. Many of HCCA's members live and work in Gunnison County and enjoy the outdoor opportunities and quality of life available in the headwaters of the Colorado Rockies. HCCA has a long history of protecting waters in the Upper Gunnison Basin and of partnering with federal agencies and other non-profits to support a number of instream flow proposals in our region.

The National Park Service (NPS) preserves unimpaired the natural and cultural resources of the parks in perpetuity, and provides for the enjoyment of those resources to this–and future-generations. The Curecanti National Recreation Area Foundation Document (2013) identifies both riparian habitats and aquatic resources as core resources for protection both in the park and in the surrounding, connected landscape. The mainstem of Red Creek is partially within the park—where it is directly protected—and upstream of the park—where the NPS seeks to protect water and habitat quality through cooperative conservation. Colorado Parks and Wildlife assisted with the fieldwork to collect R2Cross data. This proposal is an example of cooperative conservation.

The headwaters of Red Creek originate in the West Elk Wilderness on land managed by the United States Forest Service. Red Creek has been designated an outstanding waters by the state of Colorado, sustains a fishery, and provides important riparian habitat for a broad range of wildlife species. Enclosed you will find an instream flow proposal. If you have any questions regarding this recommendation, please feel free to contact High Country Conservation Advocates at Office@hccacb.org or Brinnen Carter, Brinnen_Carter@nps.gov.

Sincerely,

Julie Nania
Contractor
High Country Conservation Advocates

Brinnen Carter
Brinnen Carter
Integrated Resource Manager
Curecanti NRA/Black Canyon NP

Enclosure: Instream Flow Proposal for Red Creek.

ENCLOSURE - INSTREAM FLOW RECOMMENDATIONS FOR RED CREEK

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

Location

Red Creek is located in Gunnison County, Water Division 4. The headwaters of Red Creek originate in a small basin located in the West Elk Wilderness. Red Creek flows south into Blue Mesa Reservoir, a reservoir on the Gunnison River located west of the City of Gunnison. The Red Creek Watershed is about 14.3 square miles and is on the West Elk Peak SW and Carpenter Ridge United States Geological Survey quad maps (Attachment A).

The stream segment identified for the proposed instream flow appropriation is approximately 6.7 miles long from the confluence of East and West Red Creek (below the wilderness boundary) to the confluence with Blue Mesa Reservoir.

Table 1. Land Status in the Red Creek Watershed.

Upper Terminus	Lower Terminus	Total Length (miles)	Land Ownership	
			Private (%)	Public (%)
Confluence of East &West Red Creek	Confluence with Blue Mesa Reservoir	6.7	Riparian Corridor[2] 0%	Riparian Corridor 100%
			Watershed Composition 0%	Watershed Composition 100%

1. The public land in the Red Creek watershed is managed by the National Park Service, Bureau of Land Management and Colorado Parks and Wildlife.

The Red Creek Watershed is 100 percent public land managed by the National Park Service (NPS), Bureau of Land Management (BLM), and Colorado Parks and Wildlife (CPW). This instream flow proposal aligns with the NPS goals and mission in managing Curecanti NRA. As stated in the Curecanti NRA Final Resource Protection Study / Environmental Impact Statement (2008), the NPS will continue to work with neighboring landowners, assisted by conservation partners, to utilize cooperative conservation efforts that could maintain and/or improve resources such as animal habitat and water quality throughout the area; would better ensure the preservation of the area's spectacular natural scenery; and would enhance the enjoyment and recreational opportunities for residents and visitors alike.

Existing Instream Flow Rights

Red Creek has an existing year-round instream flow water right of 1.5 cfs (4-84CW379) with an appropriation date of 05/04/1984. This instream flow extends 6.7 miles, from the confluence of East and West Red Creek to the terminus where Red Creek enters Blue Mesa.

In addition to the instream flow on the mainstem of Red Creek, there is also an instream flow on West Red Creek of 1 cfs (4-84CW380). This instream flow right has the same priority date as the mainstem of Red Creek (05/04/1984) and extends 5 miles from the headwaters to the confluence of West Red Creek and East Red Creek (also the headwaters of Red Creek mainstem). Both of these instream flows are flat-rate, year-round instream flows that do not reflect the annual variability in the hydrograph.

Water Availability

Physical Availability

There is not a gage on Red Creek. Proponents relied on initial modeling results from Streamstats to provide an estimate of the basin's hydrology. Streamstats models a June mean flow of 41.2 cfs and a December mean flow of 1.63 cfs. Please see the Streamstats attachment for complete modeling results (Attachment B).

Legal Availability

There is one spring right and one diversion decreed on Red Creek, the Carpenter Ditch. The Carpenter Ditch is decreed for 4.5 cfs with a priority date of 6/10/1914. However, the comments maintained by the Division of Water Resources (DWR) note that the ditch may need to be abandoned (CA1635) and this ditch appears to be no longer operational. During development of this proposal the proponents reached out to our local water commissioner to discuss this right. He noted that this is a historical structure that is no longer in operation. Please see the attached Water Rights Summary for more information (Attachment C).

Biological Summary

The headwaters of Red Creek form in the West Elk Wilderness area. The upper portion of Red Creek within the West Elk Wilderness area has been designated as an outstanding water by the state of Colorado.

In 1979 CPW sampled Red Creek and found brook trout present. In 1986 CPW sampled and also noted the presence of brown trout and rainbow trout. In 2016 sampling below the confluence of West and East Red Creek demonstrated the presence of brook trout.

While conducting R2Cross assessments, we saw numerous macroinvertebrates, a crawdad and a small fish (unknown species). Please see the attached CPW data demonstrating the Red Creek fish community (Attachment D).



Photo 1. Red Creek Crawdad 8/10/2022.



Photo 2. Red Creek Macroinvertebrates 8/10/2022.

The NPS manages the lower half mile of stream before the creek enters Blue Mesa Reservoir as part of Curecanti National Recreation Area (NRA). As part of the foundational document for Curecanti NRA the aquatic resources are identified as Fundamental Resources essential to the purpose of the park and maintaining its significance. The NPS has been monitoring the aquatic macroinvertebrate community in Red Creek going back to 2013. Red Creek has shown consistently high index scores and no impairment, as seen in Table 2.

Table 2. Red Creek Aquatic Macroinvertebrate Sampling Results

Model Method: CO Ecological Data Application System Multimetric Index - Transition

Collection Date	Fixed Count	MMI Score	Condition Result
2013-08-29	96	79.4	Not impaired
2014-09-02	204	72.2	Not impaired
2016-08-11	6	41	Inconclusive
2017-08-15	60	53.9	Not impaired
2018-09-06	51	55	Not impaired
2020-09-10	300	65.1	Not impaired
2022-09-14	300	61.2	Not impaired

R2Cross Analysis

CPW completed the initial interpretation of output from the R2Cross model to develop a instream flow recommendation that will protect the Red Creek natural environment to a reasonable degree. The proponents have worked with CWCB to review these recommendations.

An R2Cross field survey was completed at one location on August 10, 2022. Measured streamflow was extremely low (0.3 cfs), so results from this dataset were not used in the final flow recommendations.

NPS, CPW, and HCCA collected two additional cross-sectional data in 2023 after the reconnaissance-level investigation in 2022. Two additional cross-sections were collected on June 12, 2023 under more suitable flow conditions (7.5 cfs). These data were used to create the instream flow recommendations for Red Creek (Table 2). The R2Cross output and field forms are attached for review (Attachment E).

A summer flow rate of 4.0 cfs (2.5 cfs enlargement) and a shoulder season flow rate of 2.5 cfs (1 cfs enlargement) are recommended after reviewing the physical availability. The proposed dates for the shoulder season ISF rate are August 1 to September 30. The proposed dates for the summer ISF rate are May 1st to July 31st.

Table 3. R2Cross analysis summary and instream flow recommendations.

Cross Section (Date)	Measured Discharge (cfs)	Bankfull Top Width (ft)	Shoulder Season Flow [1] (cfs) Recommendation	Summer Flow Recommendation[2] (cfs)
Red Creek #2 (6-12-2023)	7.46 cfs	14.2 ft	2.71 cfs	2.86 cfs
Red Creek #3 (6-12-2023)	7.46 cfs	15.5 ft	1.29 cfs	5.1 cfs
Proposed ISF Rates:			**2.5 cfs**	**4.0 cfs**

1) The proposed dates for the shoulder season flow rate are August 1 through September 30th.
2) The proposed dates for the summer flow recommendation are May 1 through July 31st.

Photographs

Photo 3. Cross Section 1 Red Creek: right bank to left bank view (6-12-2023).



Photo 4. Cross Section 1 Red Creek: downstream (6-12-2023).



Photo 5. Cross Section 1 Red Creek: upstream (6-12-2023).



Photo 6. Cross Section 2 Red Creek: upstream (6-12-2023).



Photo 7. Cross Section 2 Red Creek: Left bank to right bank/upstream (6-12-2023).



Photo 8. Cross Section 2 Red Creek: Downstream (6-12-2023).



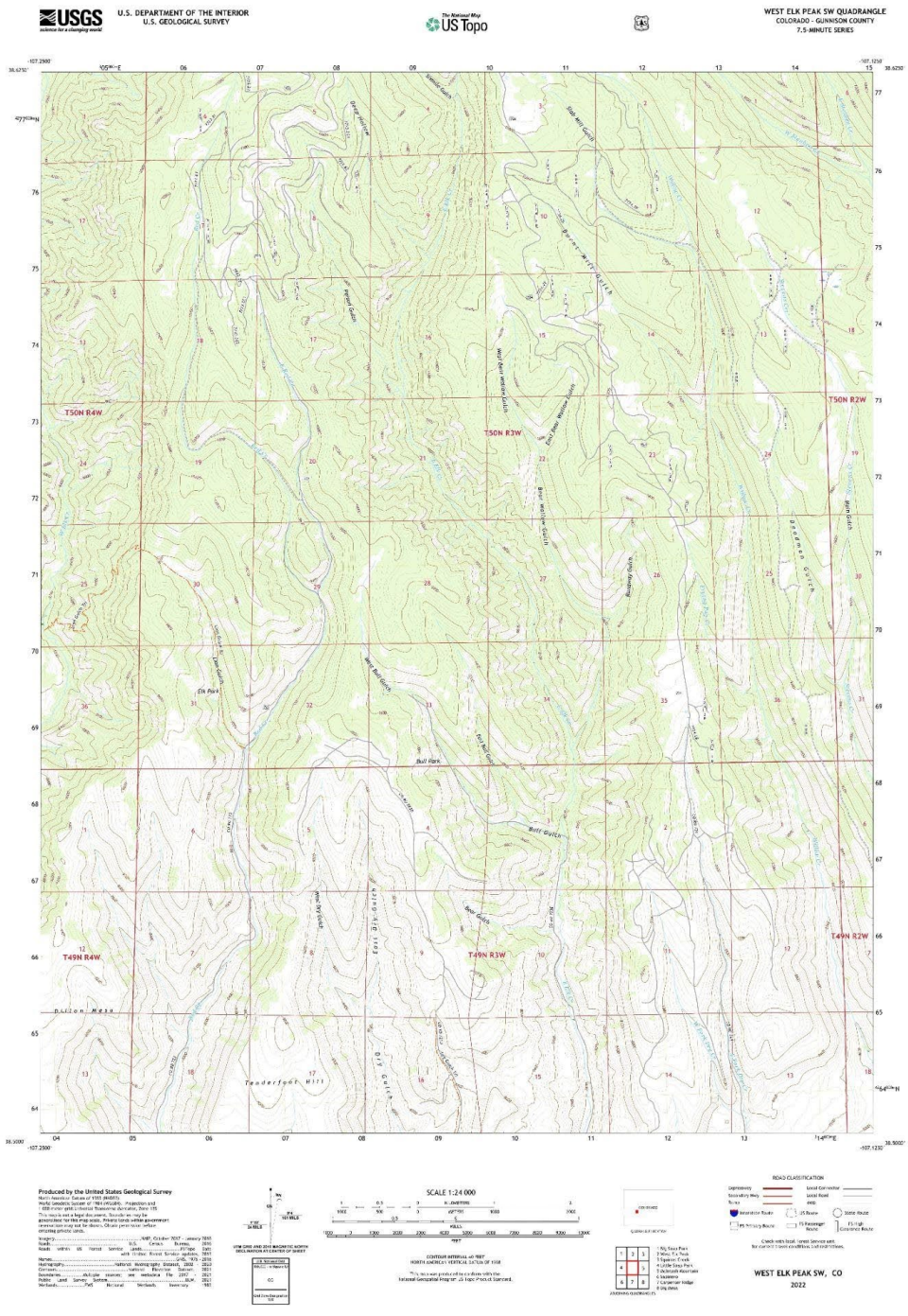
Relationship to Existing State Policy

HCCA and NPS are 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 Maps
B – Streamstats
C – Water Rights Summary
D – CPW Fisheries Data
E – R2Cross

Attachment A- USGS Quad Maps



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

The National Map
US Topo

CARPENTER RIDGE QUADRANGLE
COLORADO - GUNNISON COUNTY
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
This map is not a legal document. Boundaries may be generalized for this map scale. Private land within government reservations may not be shown. Obtain permission before entering private lands.
Imagery ..... NAIP, October 2019 - January 2020
Roads ..... U.S. Census Bureau, TIGER, 2019
Names ..... GNIS, 2019
Hydrography ..... National Hydrography Dataset, 2020
Contours ..... National Elevation Dataset, 2021
Boundaries ..... PLSS/BLM; BIA/DOI; MIRIS Nebraska; Nat. Atlas; USGS
Public Land Survey System ..... None
Wetlands ..... None Received Wetlands Inventory 1983

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 80 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

ROAD CLASSIFICATION

Expressway
Secondary Hwy
Ramp
Interstate Route
US Route
State Route
Local, Connector
Local Road
4WD

1 Little Soda Pass
2 West Pa Peak SW
3 Tenderfoot Mtn
4 Squaw
5 Pa Peak
6 Pyramid Peak
7 Carpenter
8 Meridian Park

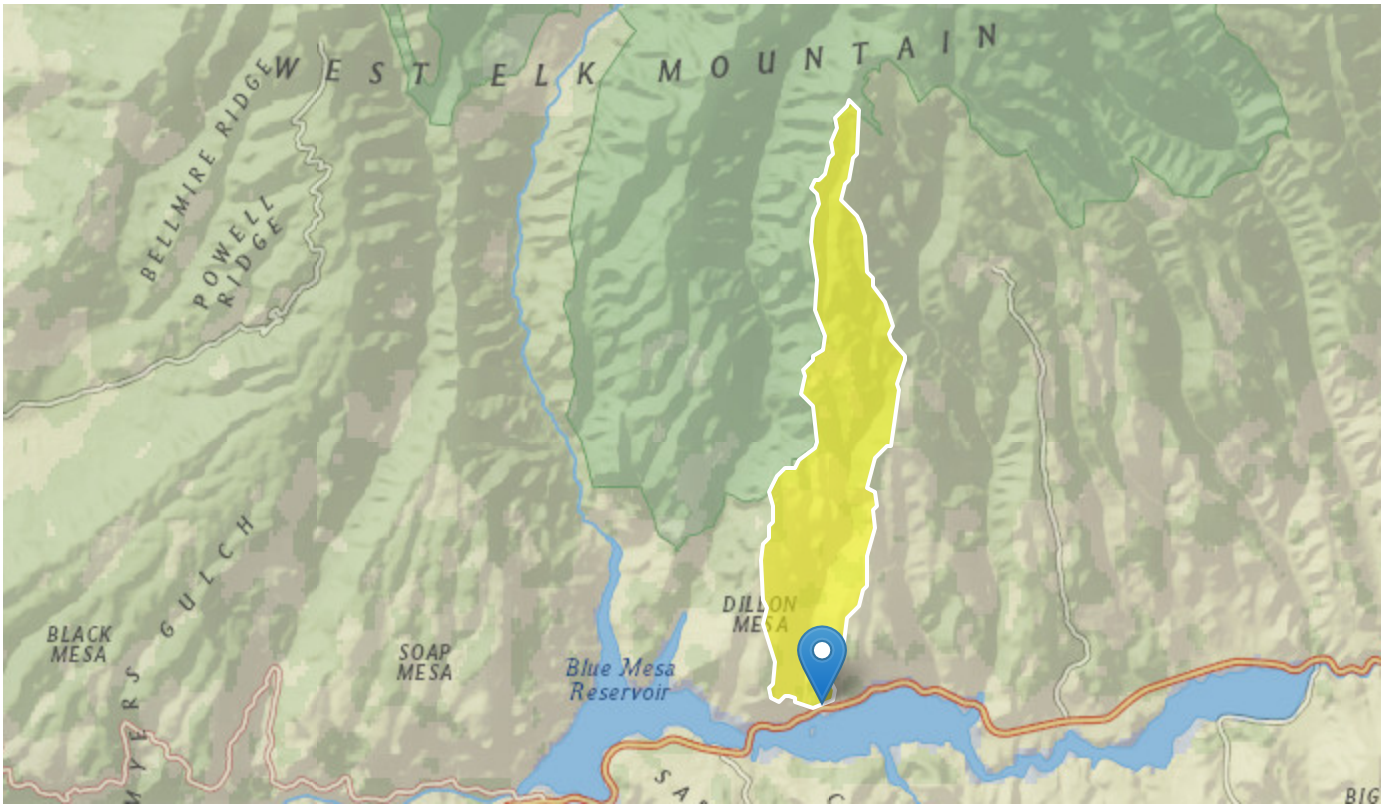
MAP REF NO. U.S. GOVERNMENT PRINTING OFFICE: 2022-646-736/00016

CARPENTER RIDGE, CO
2022

Attachment B- Streamstats

StreamStats Report

Region ID: CO
Workspace ID: CO20240126180807589000
Clicked Point (Latitude, Longitude): 38.47728, -107.22952
Time: 2024-01-26 11:08:32 -0700



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	34	percent
DRNAREA	Area that drains to a point on a stream	14.3	square miles
ELEV	Mean Basin Elevation	9322	feet
PRECIP	Mean Annual Precipitation	19.4	inches

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Mountain Region Peak Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	14.3	square miles	1	1060
BSLDEM10M	Mean Basin Slope from 10m DEM	34	percent	7.6	60.2
PRECIP	Mean Annual Precipitation	19.4	inches	18	47

Peak-Flow Statistics Flow Report [Mountain Region Peak Flow]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
50-percent AEP flood	65.4	ft^3/s	49
20-percent AEP flood	102	ft^3/s	44
10-percent AEP flood	128	ft^3/s	41
4-percent AEP flood	161	ft^3/s	40
2-percent AEP flood	199	ft^3/s	39
1-percent AEP flood	229	ft^3/s	36
0.5-percent AEP flood	256	ft^3/s	36
0.2-percent AEP flood	311	ft^3/s	33

Peak-Flow Statistics Citations

Capesius, J.P., and Stephens, V. C.,2009, Regional Regression Equations for Estimation of Natural Streamflow Statistics in Colorado: U. S. Geological Survey Scientific Investigations Report 2009-5136, 32 p. (http://pubs.usgs.gov/sir/2009/5136/)

Flow-Duration Statistics

Flow-Duration Statistics Parameters [Mountain Region Flow Duration]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	14.3	square miles	1	1060
PRECIP	Mean Annual Precipitation	19.4	inches	18	47

Flow-Duration Statistics Flow Report [Mountain Region Flow Duration]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
10 Percent Duration	17.7	ft^3/s	45
25 Percent Duration	5.27	ft^3/s	55
50 Percent Duration	2.3	ft^3/s	55
75 Percent Duration	1.32	ft^3/s	64
90 Percent Duration	0.722	ft^3/s	85

Flow-Duration Statistics Citations

Capesius, J.P., and Stephens, V. C.,2009, Regional Regression Equations for Estimation of Natural Streamflow Statistics in Colorado: U. S. Geological Survey Scientific Investigations Report 2009-5136, 32 p. (http://pubs.usgs.gov/sir/2009/5136/)

Annual Flow Statistics

Annual Flow Statistics Parameters [Mountain Region Mean Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	14.3	square miles	1	1060

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
PRECIP	Mean Annual Precipitation	19.4	inches	18	47

Annual Flow Statistics Flow Report [Mountain Region Mean Flow]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Mean Annual Flow	8.11	ft^3/s	33

Annual Flow Statistics Citations

Capesius, J.P., and Stephens, V. C.,2009, Regional Regression Equations for Estimation of Natural Streamflow Statistics in Colorado: U. S. Geological Survey Scientific Investigations Report 2009-5136, 32 p. (http://pubs.usgs.gov/sir/2009/5136/)

Monthly Flow Statistics

Monthly Flow Statistics Parameters [Mountain Region Mean Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	14.3	square miles	1	1060
PRECIP	Mean Annual Precipitation	19.4	inches	18	47

Monthly Flow Statistics Flow Report [Mountain Region Mean Flow]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
January Mean Flow	1.44	ft^3/s	50
February Mean Flow	1.38	ft^3/s	51
March Mean Flow	1.53	ft^3/s	49
April Mean Flow	3.01	ft^3/s	44

Statistic	Value	Unit	ASEp
May Mean Flow	21.9	ft^3/s	46
June Mean Flow	41.2	ft^3/s	46
July Mean Flow	11	ft^3/s	76
August Mean Flow	5.15	ft^3/s	80
September Mean Flow	3.18	ft^3/s	59
October Mean Flow	2.4	ft^3/s	45
November Mean Flow	1.93	ft^3/s	46
December Mean Flow	1.63	ft^3/s	47

Monthly Flow Statistics Citations

Capesius, J.P., and Stephens, V. C.,2009, Regional Regression Equations for Estimation of Natural Streamflow Statistics in Colorado: U. S. Geological Survey Scientific Investigations Report 2009-5136, 32 p. (http://pubs.usgs.gov/sir/2009/5136/)

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment C- Water Rights Summary

There are three decreed water rights in the Red Creek watershed. The first is a spring right (WDID 5907305) referred to as RC8. This spring right is held by the USFS and has a 1905 priority date.

The second decreed right is a 4.5 cfs diversion rate for the Carpenter Ditch (WDID 5900795). The structure notes record this structure may need to be abandoned (2006/2007). There are no active diversion records associated with the DWR files. However, the appropriation date for the ditch is 6/10/1914 making this a pre-Colorado River Compact water right. A conversation with the local water commissioner confirmed that this is a historical structure. A copy of the CDSS diversion structure information for the Carpenter Ditch is included below.

The final water right identified in the basin is a historical structure only, the Red Creek Ditch (WDID 5901075).

COLORADO
Division of Water Resources
Department of Natural Resources

Structure Summary Report

Structure Name: CARPENTER DITCH (5900795)

Structure Type: DITCH

CIU Code: Active structure but diversion records are not maintained (U)

Associated Permits:

Water Source Type: Tributary

Water Source: GUNNISON RIVER [00201748] @ Stream Mile: 131.45

Physical Location

Feature Type	Dist N/S	Dist E/W	Q10	Q40	Q160	Sec	Township	Range	PM	UTMx	UTMy	Latitude	Longitude	Location Accuracy
Point of Diversion			NE	NW	NW	30	49.0 N	3.0 W	N	304925.5	4261665.7	38.482004	-107.236472	Spotted from quarters

Division: 4 District: 59

County: GUNNISON

Designated Basin:

Management District:

Water Rights - Net Amounts

Adj Date	Appro Date	Priority Admin No	Order No	Priority No	Associated Case Numbers	Net Absolute	Net Conditional	Net APEX Absolute	Net APEX Conditional	Decreed Units	Seasonal Limits	Comments
10/25/1921	6/10/1914	23536.00000	0	210	CA1635	4.5000	0.0000	0.0000	0.0000	C	No	SOURCE RED CREEK P137

Atachment D- CPW Fisheries Data

Event	Site	Sampling Date	Event Purpose	Project	Sampling Method	Gear Type	Gear Size	Gear Size Unit	Gear Mesh Size	Gear Mesh Size Unit	Gear Length	Gear Length Unit	Gear Depth	Gear Depth Unit	Gear Area	Gear Area Unit	Gear Volume	Gear Volume Unit	Gear Number	Gear Number Unit	Gear Duration	Gear Duration Unit	Gear Comments	Species Code	Species Name	Species Common Name	Number Caught	Number Caught Unit	Count Adults	Count Juveniles	Count Young of Year	Count Unknown	Count Total	Count Total Unit	Count Comments	Weight	Weight Unit	Weight Comments	Length Measure	Length Measure Unit	Length Measure Comments	Length Measure 2	Length Measure 2 Unit	Length Measure 2 Comments	Length Measure 3	Length Measure 3 Unit	Length Measure 3 Comments	Length Measure 4	Length Measure 4 Unit	Length Measure 4 Comments	Length Measure 5	Length Measure 5 Unit	Length Measure 5 Comments	Age	Age Unit	Age Comments	Sex	Maturity	Maturity Comments	Fish Comments	Fish Condition Index
Gunnison	Dan Bruch	9/17/1991 0:00	NULL	PRESENCE/ABSENCE	NOT LISTED	NULL	NULL	NULL	100	0.018939	0.03048	5	0.01147842	0.004645152	52	680	NULL	NULL	NULL	NULL	1	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Counts	20	0.938461538	130	21	53.85	28	NULL	NULL	NULL	NULL	NULL	NULL	580	0	7	NULL	NULL	NULL	NULL	NULL	82.86	38 - 136	NULL	28	90.75	25 - 229	NULL	
Gunnison	Dan Bruch	9/17/1991 0:00	NULL	PRESENCE/ABSENCE	NOT LISTED	NULL	NULL	NULL	100	0.018939	0.03048	5	0.01147842	0.004645152	52	680	NULL	NULL	NULL	NULL	1	PASS	181	RBT	SALMONIDAE	RAINBOW TROUT	Oncorhynchus mykiss	Counts	24	0.461538462	200	23	46.15	24	NULL	NULL	NULL	NULL	NULL	NULL	100	0	1	NULL	NULL	NULL	NULL	NULL	100	100 - 100	NULL	24	112.17	25 - 203	NULL	
Gunnison	Dan Bruch	7/20/2007 0:00	NULL	PRESENCE/ABSENCE	NOT LISTED	NULL	NULL	NULL	75	0.014205	0.02286	9	0.010495867	0.006270903	10	182	NULL	NULL	NULL	NULL	1	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Counts	10		130	2	100	10	NULL	NULL	NULL	NULL	NULL	NULL	382	0	8	NULL	NULL	NULL	NULL	NULL	47.75	29 - 100	NULL	10	153.5	114 - 207	NULL	
Gunnison	Dan Bruch	8/17/1979 0:00	Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	200	0.037879	0.06096	5	0.02295684	0.009290304	62	872	0	0	0	NULL	1	Nets	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Counts	62	1	130	47	100	62	NULL	NULL	NULL	NULL	NULL	NULL	872	0	15	NULL	NULL	NULL	NULL	NULL	58.13	18 - 188	NULL	62	109.9	51 - 214	NULL	
Gunnison	Dan Bruch	9/13/2007 0:00	NULL	TWO-PASS REMOVAL	NOT LISTED	NULL		2	NULL	300	0.056818	0.09144	5	NULL		NULL	85	593	0	0	0	0	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	65	1	130	56	100	55	10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	703	0	0	617	86	NULL	NULL	NULL	NULL	NULL	NULL	69.89	30 - 98	121.2	65	78.31	42 - 146		0.8182
Gunnison	Dan Bruch	9/11/2008 0:00	NULL	TWO-PASS REMOVAL	ST	NULL		2	NULL	300	0.056818	0.09144	8.2	0.056473826	NULL	0.022854148	38	96	2	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	38	1	130	36	100	32	6	NULL	NULL	NULL	NULL	NULL	NULL	553	2	0	481	72	NULL	NULL	NULL	NULL	NULL	NULL	48	33 - 63	110.58	38	104.58	49 - 168		0.8125
Gunnison	Dan Bruch	9/11/2008 0:00	NULL	TWO-PASS REMOVAL	NOT LISTED	NULL		2	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	0	NULL	0	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	24	1	130	21	100	21	3	NULL	NULL	NULL	NULL	NULL	NULL	256	0	0	223	33	NULL	NULL	NULL	NULL	NULL	NULL	43.5	22 - 67	101.01	24	110.49	47 - 191		0.6
Gunnison	Dan Bruch	9/17/2008 0:00	NULL	TWO-PASS REMOVAL	NOT LISTED	NULL		2	NULL	300	0.056818	0.09144	7.6	0.052343355		0.021181893	49	415.5	NULL	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	49	1	130	39	100	35	14	NULL	NULL	NULL	NULL	NULL	NULL	887.5	10	0	722.5	165	NULL	NULL	NULL	NULL	NULL	NULL	43.55	22 - 67	101.01	49	110.49	47 - 191		0.6
Gunnison	Dan Bruch	9/17/2009 0:00	NULL	THREE-PASS REMOVAL	NOT LISTED	NULL		3	NULL	300	0.056818	0.09144	8.2	0.056473826	0.022854148	16	333	NULL	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	3-Pass Estimator	16	1	130	8	100	10	5	1	0	NULL	NULL	NULL	NULL	333	8	0	240.5	206.5	215	NULL	NULL	NULL	NULL	NULL	41.63	22 - 79	139.62	16	124.13	54 - 160		0.823372456
Gunnison	Dan Bruch	9/17/2009 0:00	NULL	TWO-PASS REMOVAL	ST	NULL		2	NULL	300	0.056818	0.09144	7.6	0.052343355		0.021181893	39	644	2	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	39	1	130	24	100	24	5	NULL	NULL	NULL	NULL	NULL	NULL	912	15	0	883	69	NULL	NULL	NULL	NULL	NULL	NULL	42.93	23 - 121	194.51	39	119.92	47 - 214		0.8529
Gunnison	Dan Bruch	9/17/1991 0:00	NULL	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	100	0.018939	0.03048	5	0.01147842	0.004645152	18	226	NULL	NULL	NULL	NULL	1	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Counts	3	0.222222222	130	3	22.22	4	NULL	NULL	NULL	NULL	NULL	NULL	38	0	1	NULL	NULL	NULL	NULL	NULL	38	38 - 38	NULL	4	88.75	51 - 152	NULL	
Gunnison	Dan Bruch	9/17/1991 0:00	NULL	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	100	0.018939	0.03048	5	0.01147842	0.004645152	18	220	NULL	NULL	NULL	NULL	1	PASS	123	LOC	SALMONIDAE	BROWN TROUT	Salmo trutta	Counts	14	0.777777778	120	12	77.78	14	NULL	NULL	NULL	NULL	NULL	NULL	182	0	2	NULL	NULL	NULL	NULL	NULL	91	91 - 91	NULL	14	78.07	51 - 203	NULL	
Gunnison	Dan Bruch	8/31/1986 0:00	Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	183.9	0.03483	0.056053	9.68	0.028202376	0.011412693	43	145	NULL	NULL	NULL	NULL	1	PASS	123	LOC	SALMONIDAE	BROWN TROUT	Salmo trutta	Counts	5	0.116279907	120	5	11.63	5	NULL	NULL	NULL	NULL	NULL	NULL	NULL	0	0	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	5	74	70 - 80	NULL		
Gunnison	Dan Bruch	8/31/1979 0:00	Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	1350	0.256061	0.10668	6	0.044029564	0.015959638	60	967	NULL	NULL	NULL	NULL	1	PASS	123	LOC	SALMONIDAE	BROWN TROUT	Salmo trutta	Brachyrhynchus mutus	141	0.344146341	410	141	34.39	97	44	NULL	NULL	NULL	NULL	NULL	1	145	0	0	NULL	NULL	NULL	NULL	NULL	145	145 - 145	NULL	97	1147.82	300 - 820	NULL	
Gunnison	Dan Bruch	8/31/1979 0:00	Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	1350	0.256061	0.10668	6	0.044029564	0.015959638	60	967	NULL	NULL	NULL	NULL	1	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Counts	37	0.644666667	130	29	61.67	37	NULL	NULL	NULL	NULL	NULL	NULL	328	0	5	NULL	NULL	NULL	NULL	NULL	41	35 - 61	NULL	37	93.49	51 - 178	NULL	
Gunnison	Dan Bruch	8/31/1979 0:00	Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	350	0.066288	0.10668	6	0.044029564	0.015959638	60	967	NULL	NULL	NULL	NULL	1	PASS	181	RBT	SALMONIDAE	RAINBOW TROUT	Oncorhynchus mykiss	Counts	21	0.383333333	200	18	38.33	23	NULL	NULL	NULL	NULL	NULL	NULL	639	0	5	NULL	NULL	NULL	NULL	NULL	127.8	100 - 196	NULL	23	171.04	127 - 254	NULL	
Gunnison	Dan Bruch	9/15/2016 0:00	Species Presence, Community Composition and Relative Abundance	TWO-PASS REMOVAL	BPEF	NULL		2	NULL	300	0.056818	0.09144	8.2	0.056473826	0.022854148	13	271	NULL	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	13	1	130	7	100	6	4	NULL	NULL	NULL	NULL	NULL	NULL	366	6	0	277	89	NULL	NULL	NULL	NULL	NULL	NULL	45.17	26 - 59	113.29	13	124	56 - 167		0.5556
Gunnison	Dan Bruch	9/20/2016 0:00	Species Presence, Community Composition and Relative Abundance	Backpack EF	NULL			2	NULL	280	0.05303	0.085344	5	0.032139576	0.013006426	108	960	NULL	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	108	1	130	87	100	87	21	NULL	NULL	NULL	NULL	NULL	NULL	1455	21	0	1254	201	NULL	NULL	NULL	NULL	NULL	NULL	45.71	19 - 130	93.96	108	93.41	55 - 225		0.7586
Gunnison	Dan Bruch	9/15/2016 0:00	Species Presence, Community Composition and Relative Abundance	TWO-PASS REMOVAL	BPEF	NULL		2	NULL	300	0.056818	0.09144	7.6	0.052343355	0.021181893	104	994	NULL	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	104	1	130	83	100	87	17	NULL	NULL	NULL	NULL	NULL	NULL	1590	21	0	1349	218	NULL	NULL	NULL	NULL	NULL	NULL	47.33	24 - 90	108.69	104	106.71	43 - 195		0.8696
Gunnison	Dan Bruch	8/29/2017 0:00	Standard Survey or Population Estimate	TWO-PASS REMOVAL	BPEF	NULL		2	NULL	473	0.089583	0.14417	11.08	0.120313125	0.046868997	79	1881	NULL	NULL	NULL	NULL	2	PASS	24	RM	SALMONIDAE	BROOK TROUT	Salvelinus fontinalis	Saber lacren	31	0.392405063	130	8	39.24	24	7	NULL	NULL	NULL	NULL	NULL	NULL	1376	23	0	1116	260	NULL	NULL	NULL	NULL	NULL	NULL	57.91	26 - 152	86.63	31	151.61	62 - 240		0.7083
Gunnison	Dan Bruch	8/29/2017 0:00	Standard Survey or Population Estimate	TWO-PASS REMOVAL	BPEF	NULL		2	NULL	473	0.089583	0.14417	11.08	0.120313125	0.046868997	79	1881	NULL	NULL	NULL	NULL	2	PASS	123	LOC	SALMONIDAE	BROWN TROUT	Salmo trutta	Saber lacren	11	0.132530506	120	1	13.92	8	3	NULL	NULL	NULL	NULL	NULL	NULL	358	10	0	260	98	NULL	NULL	NULL	NULL	NULL	NULL	39.6	24 - 54	87.2	11	149	134 - 178		0.625
Gunnison	Dan Bruch	8/29/2017 0:00	Standard Survey or Population Estimate	TWO-PASS REMOVAL	BPEF	NULL		2	NULL	473	0.089583	0.14417	11.08	0.120313125	0.046868997	79	1881	NULL	NULL	NULL	NULL	2	PASS	181	RBT	SALMONIDAE	RAINBOW TROUT	Oncorhynchus mykiss	Saber lacren	37	0.46835443	200	35	46.84	30	7	NULL	NULL	NULL	NULL	NULL	NULL	1074	2	0	838	236	NULL	NULL	NULL	NULL	NULL	NULL	101.5	96 - 107	87.89	37	134.08	48 - 217		0.7667
Gunnison	Dan Bruch	8/31/1977 0:00	Standard Survey or Population Estimate	PRESENCE/ABSENCE	BPEF	NULL	NULL	NULL	150	0.039409	0.04572	6	0.009863156	0.008363274	0	NULL	1	NULL	NULL	NULL	1	PASS	NULL	FAK	NULL	No Fish Caught	NULL	Counts	0	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

PassSpotCodeCount	PassCount	PassCountCV	PassCountSE	EstimatedPassDensity	EstimatedPassDensityCV	EstimatedPassDensitySE	EstimatedPassArea	EstimatedPassAreaCV	EstimatedPassAreaSE	EstimatedPassLength	EstimatedPassLengthCV	EstimatedPassLengthSE	PassCI	PassCICode	PassCI95	PassCI95Code	Pass100	Pass100Code	Pass95	Pass95Code	Pass90	Pass90Code	SurveyName	SiteCode	SiteName	SiteComments
28	NULL	NULL	NULL	NULL	2439.3681	NULL	1478.4308	NULL	6027.7898	NULL	918.6352	NULL	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	HEBRN	Partial barrier (old diversion) exists at top of reach, but fish can pass. Could be improved if stream was considered for stocking with cutthroat trout. Many bower ponds upstream could complicate removal of non-native trout.
24	NULL	NULL	NULL	NULL	2090.8801	NULL	1267.2264	NULL	5166.677	NULL	787.4016	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	HEBRN	Partial barrier (old diversion) exists at top of reach, but fish can pass. Could be improved if stream was considered for stocking with cutthroat trout. Many bower ponds upstream could complicate removal of non-native trout.
10	NULL	NULL	NULL	NULL	845.3334	NULL	703.9775	NULL	1594.8334	NULL	437.4453	NULL	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Scientific Collections Permit	ETHQ0972	FREDQUEL HARES, SMITH, BOYUM	Conducted presence/absence sampling to determine fishery status and species composition.
62	NULL	NULL	NULL	NULL	2700.7201	NULL	1636.7908	NULL	6673.6245	NULL	1017.0604	NULL	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Stream and lake databank	NULL	WEILER	BRK 992 g TTL
67.2222	4.795000762	62.8303	73.5141	5193	NULL	NULL	1183.1345	201.4185	NULL	NULL	735.1509	56.7695	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL		UTM's in NAD83
39.3846	3.041438885	35.953	42.8162	2017	697.3956	78.7396	693.1712	78.2626	NULL	1723.3021	88.2553	NULL	430.7152	22.0582	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	BRAUCH, MELICK, KRISTENSEN	3100 shocking seconds
58.3333	4.082482853	53.8462	63.2203	2536	NULL	NULL	1216.6694	82.88	NULL	2753.9229	109.8408	NULL	637.9407	23.3596	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL		Fish observed in upper third of flow going down side channel to east (Dry in 2006)
58.3333	60.49382716	43.0889	73.5777	2536	1114.4731	89.9441	1016.6694	82.88	NULL	2753.9229	109.8408	NULL	637.9407	23.3596	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	BRAUCH, CALLAWAY, CAPPS	No notes recorded
16.92062985	1.483290998	16.10025902	24.45369513	930	299.619	36.3053	297.804	36.0854	740.3746	40.6928	185.0463	10.1706	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Braoch	No notes recorded
39.8621	1.593567479	37.3879	42.3363	1750	761.5759	73.7098	701.5752	67.8026	1681.8951	82.6177	435.9372	19.1182	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Brauch, Pazos-Yi5	Much of channel split east. Electrofished both channels.
4	NULL	NULL	NULL	NULL	348.48	NULL	231.2064	NULL	861.1128	NULL	131.2336	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Hebein	NULL
14	NULL	NULL	NULL	NULL	1219.6801	NULL	739.2154	NULL	3013.8949	NULL	459.3176	NULL	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Hebein	NULL
5	NULL	NULL	NULL	NULL	177.2963	NULL	143.5544	NULL	438.1087	NULL	89.2013	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Stream and lake databank	NULL	KEHWEIER, SHIRLEY	NULL
5	NULL	NULL	NULL	NULL	177.2963	NULL	143.5544	NULL	438.1087	NULL	89.2013	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Stream and lake databank	NULL	KEHWEIER, SHIRLEY	NULL
37	NULL	NULL	NULL	NULL	787.4858	NULL	558.1704	NULL	1896.4985	NULL	348.8318	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Stream and lake databank	NULL	WEILER, SMITH	BRK 444 g TTL, RBT 1449 g TTL
23	NULL	NULL	NULL	NULL	477.0857	NULL	346.9708	NULL	1178.9045	NULL	215.5981	NULL	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Stream and lake databank	NULL	WEILER, SMITH	BRK 444 g TTL, RBT 1449 g TTL
16.2	26.9568	6.0237	26.3763	665	286.8585	25.9602	285.1209	25.803	708.8419	29.0976	177.1654	7.2725	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Brauch, Kesler, Bennet, Sanderson	No fish found past 3. Site sampled is about 300 M below Station GU1402
114.6818	18.9987535	106.1396	123.225	4639	3568.2425	318.2134	2162.5834	192.8177	8817.3187	356.6699	1343.7594	54.3565	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Brauch, Kesler, Samuelson	Pass 1: 1773 seconds, Pass 2: 951 seconds
108.1286	9.474936399	102.0954	114.1618	5340	2065.8255	224.9203	1903.0694	207.1999	5104.7656	252.1021	1182.1087	58.399	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	NULL	Brauch, Kesler, Samuelson, Sanderson	Backpack1 seconds P1: 2270 P2: 1180 Backpack 2 P1 nP2: 2087. Channel is split in lower half, both channels shocked.
33.8824	10.47573664	27.5386	40.2262	1555	281.6185	28.4939	378.2235	38.2683	695.8944	33.9374	235.017	10.7859	NULL	NULL	NULL	NULL	0	100	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	brauchd	Brauch, Samuelson	NULL
12.8	10.1376	9.9266	19.0406	334	198.2891	8.3202	142.8903	8.2197	262.8931	6.8099	88.7841	2.3167	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	brauchd	Brauch, Samuelson	NULL
39.3304	5.830811068	34.3976	43.8632	3301	325.238	60.4877	436.8061	81.2371	865.8406	67.7977	271.4185	22.8966	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Southwest Region Fisheries Management	brauchd	Brauch, Samuelson	NULL
0	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	Stream and lake databank	NULL	WEILER	NO FISH SAMPLED.

Cross 2

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Red Creek					CROSS-SECTION NO.: 2
CROSS-SECTION LOCATION: 2-23					
DATE: 6/12/23	OBSERVERS: Katie Birch, Nikki Gibney, Brinnen Carter, Julie Nang				
LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:
COUNTY: Gunnison	WATERSHED: Upper Gunni		WATER DIVISION: 4		DOW WATER CODE:
MAP(S):	USGS:				
	USFS:				

Lat. 30 S 055 Long. 4261897

SUPPLEMENTAL DATA

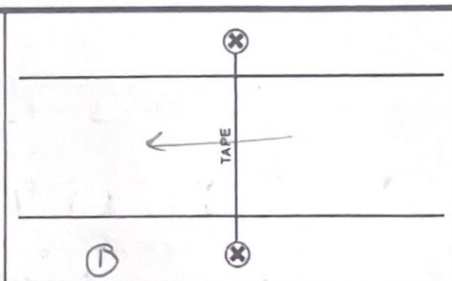
SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES (NO)	METER TYPE: Flow measured 300' d/s by KB Flowtracker 2			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE:		PHOTOGRAPHS TAKEN: YES/NO	NUMBER OF PHOTOGRAPHS: KB	

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	~~0.0~~ 20.8	
⊗ Tape @ Stake RB	0.0 0	
① WS @ Tape LB/RB	0.0	
② WS Upstream		
③ WS Downstream		
SLOPE	0.0357142	

RB

SKETCH



LB.

LEGEND:
- Stake ⊗
- Station ①
- Photo ◇
- Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: ____ 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
Caddis(2) - case-less + case																	

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:

COMMENTS

Alders @ W, dense willows, scrub oak up gradient, historic beaver activity

FORM #ISF FD 1-85

Up TV 5.15
Down TV 5.60
.45

12.6 Total length
12 (down)
.6 (upstream

LB W 15.6 5.21

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:	CROSS-SECTION NO.:	DATE:	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME:

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)
RB S	0										
BF	3		4.70								
	3.4		4.75								
	3.8		4.75								
	4.2		4.80								
	4.6		4.9								
	5.0		4.8								
	5.4		4.9								
	5.8		4.9								
	6.2		4.9								
	6.6		4.9								
	7.0		4.9								
	7.4		5.0								
W	7.8		5.2	0							
	8.2		5.2	.05							
	8.6		5.4	.25							
	9.0		5.4	.25							
	9.4		5.5	.35							
	9.8		5.6	.45							
	10.2		5.6	.45							
	10.6		5.6	.45							
	11.0		5.6	.45							
	11.4		5.75	.60							
	11.8		5.75	.60							
★	12.2		5.9	.80							
	12.6		5.85	.75							
Rock	13.0		5.80	.70							
Grav	13.4		6.0	.90							
	13.8		6.05	.95							
	14.2		6.15	1.05							
	14.6		6.05	.95							
	14.8		6.05	.90							
	15.2		6.05	.90							
W	15.4		5.60	.45							
W	15.6		5.21	0							
	15.8		5.21	0							
	16.0		5.13								
	16.4		4.96								
	16.8		4.85								
BF	17.2		4.70								
	17.6		4.65								
	18.6		4.75								
TOTALS:											

End of Measurement	Time:	Gage Reading: _____ ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

LB S 20.8

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: Red					CROSS-SECTION NO.: 3-25
CROSS-SECTION LOCATION: UTM 13S 305061 4262036					
DATE: 6/12/23	OBSERVERS: Birch Nanila				
LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:
COUNTY:	WATERSHED:	WATER DIVISION:	DOW WATER CODE:		
MAP(S): USGS:					
USFS:					

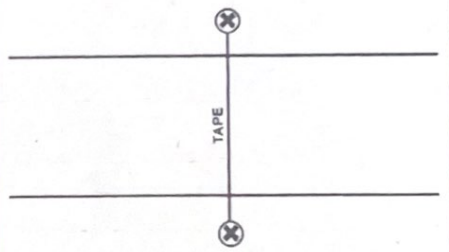
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: measured d/s @ XS 2			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE:	PHOTOGRAPHS TAKEN: YES/NO YB	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
Tape @ Stake LB	0.0	5.26
Tape @ Stake RB	0.0	
1 WS @ Tape LB/RB	0.0	5.3 / 5.32
2 WS Upstream	3.8	5.23
3 WS Downstream		5.56
SLOPE	/15.4 = 0.0214	

SKETCH



LEGEND:
- Stake
- Station (1)
- Photo (1)
- Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/NO	DISTANCE ELECTROFISHED: ____ 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

Alder, willow

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Red Ck | CROSS-SECTION NO: 3 | DATE: 6/12/23 | SHEET 2 OF 2

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / (RIGHT) | Gage Reading: _____ ft | TIME: 4 00 PM

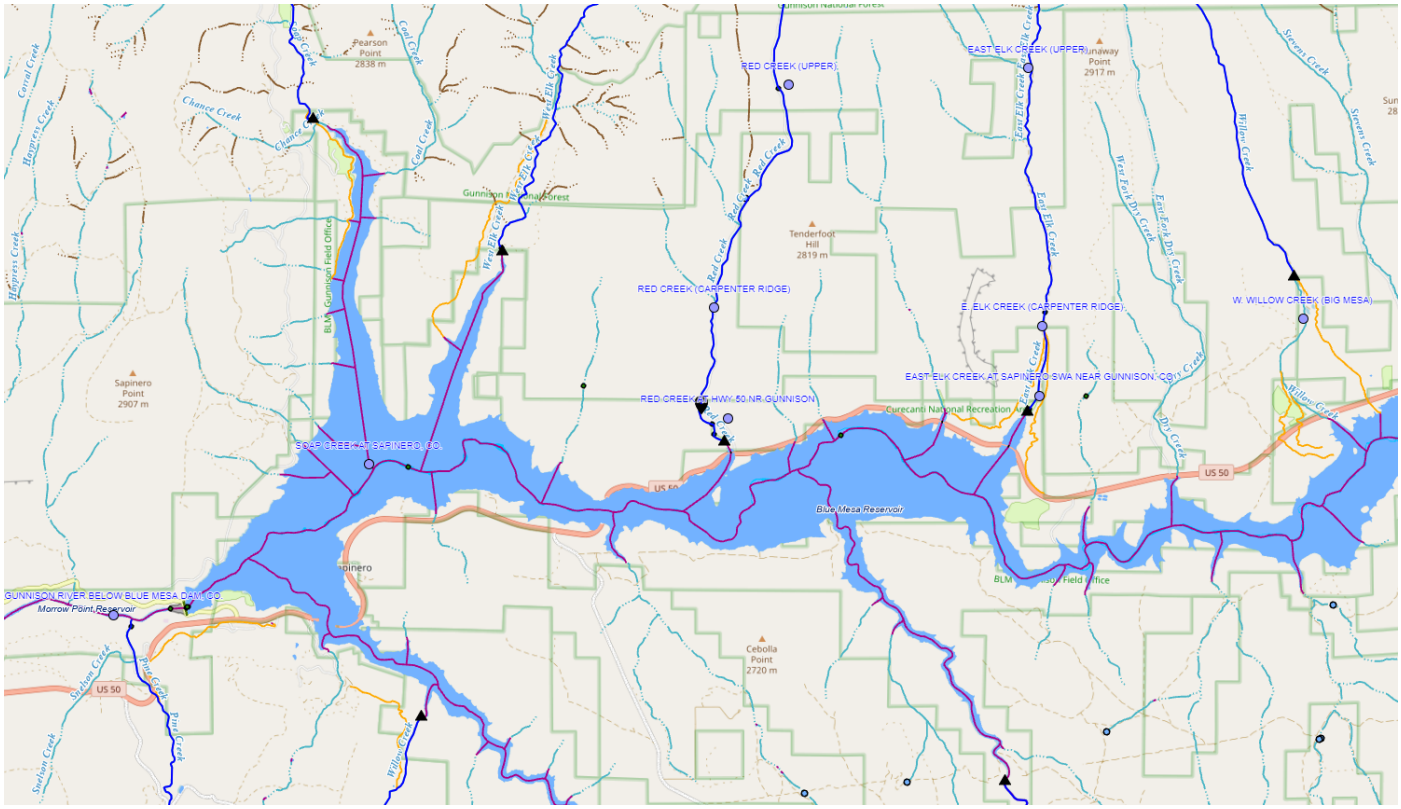
Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec): At Point	Velocity (ft/sec): Mean in Vertical	Area (ft^2)	Discharge (cfs)
DS	0.5		4.18								
	1.0		4.5								
	1.4		4.6								
	1.8		4.65								
E	2.0		4.75								
BF	2.2		4.90								
	2.6		4.94								
	3.0		4.97								
	3.4		5.00								
	3.8		4.95								
	4.2		4.99								
	4.4		5.04			18.2		4.95	BF		
	4.8		5.07			20.8		4.01	S		
*	5.2		5.2								
	5.6		5.25								
RWS	6.6		5.31	.0							
	7.0		5.40	.14							
	7.4		5.53	.28							
	7.8		5.59	.32							
	8.2		5.70	.46							
	8.6		5.68	.44							
	9.0		5.93	0.7							
	9.4		6.04	0.9							
	9.9		6.13	1.1							
	10.2		6.16	1.15							
	10.6		6.16	1.1							
	11.0		6.05	0.98							
	11.4		5.96	0.88							
	11.8		5.95	0.88							
	12.2		5.87	0.8							
	12.6		5.79	0.66							
	13.0		5.75	0.6							
	13.4		5.65	0.5							
	13.8		5.64	0.48							
	14.2		5.6	0.4							
	14.6		5.68	0.38							
	15.0		5.50	0.3							
LWS	15.4		5.31	0							
	15.8		5.16								
	16.2		5.15								
	17.0		5.03								
	18.0		5.1								
TOTALS:											

End of Measurement | Time: | Gage Reading: _____ ft | CALCULATIONS PERFORMED BY: | CALCULATIONS CHECKED BY:

R2Cross RESULTS

Stream Name: Red Creek
Stream Locations: Upstream of Curecanti NRA campground
Fieldwork Date: 06/12/2023
Cross-section: 2
Observers: KB NG BC JN
Coordinate System: UTM Zone 13
X (easting): 305055
Y (northing): 4261897
Date Processed: 09/19/2024
Slope: 0.0357
Discharge: Entered Value: 7.46 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: Red_Creek_XS2_6-12-2023_Q=7.457 cfs corrected.xlsx
R2Cross version: 2.0.3

LOCATION



ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 14.2

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	0.28
Percent Wetted Perimeter (%)	50.0	2.71
Mean Velocity (ft/s)	1.0	2.86

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	4.7	14.2	0.65	1.45	9.19	15.13	100.0	0.61	0.1	1.98	18.24
	4.74	13.8	0.63	1.41	8.66	14.72	97.27	0.59	0.1	1.9	16.44
	4.79	12.86	0.62	1.36	8.0	13.77	91.02	0.58	0.1	1.86	14.91
	4.84	12.18	0.61	1.31	7.37	13.06	86.33	0.56	0.11	1.79	13.2
	4.89	11.41	0.59	1.26	6.78	12.27	81.07	0.55	0.11	1.74	11.8
	4.94	9.33	0.67	1.21	6.29	10.17	67.23	0.62	0.1	2.03	12.77
	4.99	8.98	0.65	1.16	5.83	9.81	64.85	0.59	0.1	1.92	11.21
	5.04	8.74	0.62	1.11	5.39	9.55	63.12	0.56	0.11	1.79	9.64
	5.09	8.52	0.58	1.06	4.96	9.31	61.53	0.53	0.11	1.65	8.17
Waterline	5.14	8.3	0.55	1.01	4.53	9.07	59.94	0.5	0.12	1.51	6.85
	5.19	8.08	0.51	0.96	4.13	8.82	58.31	0.47	0.12	1.37	5.66
	5.24	7.31	0.51	0.91	3.75	8.02	53.01	0.47	0.12	1.37	5.14
	5.29	7.18	0.47	0.86	3.38	7.85	51.9	0.43	0.13	1.22	4.13
	5.34	7.06	0.43	0.81	3.03	7.69	50.79	0.39	0.14	1.07	3.25
	5.39	6.93	0.39	0.76	2.68	7.52	49.68	0.36	0.15	0.93	2.49
	5.44	6.33	0.37	0.71	2.35	6.88	45.45	0.34	0.16	0.87	2.06
	5.49	6.11	0.33	0.66	2.04	6.62	43.72	0.31	0.17	0.75	1.54
	5.54	5.88	0.3	0.61	1.74	6.35	41.99	0.27	0.19	0.63	1.1
	5.59	5.65	0.26	0.56	1.45	6.09	40.25	0.24	0.21	0.52	0.75
	5.64	4.28	0.28	0.51	1.22	4.68	30.92	0.26	0.19	0.59	0.72
	5.69	4.13	0.24	0.46	1.01	4.48	29.61	0.23	0.22	0.47	0.48
	5.74	3.97	0.2	0.41	0.81	4.28	28.31	0.19	0.25	0.36	0.29
	5.79	3.42	0.18	0.36	0.63	3.69	24.36	0.17	0.28	0.31	0.2
	5.84	2.88	0.16	0.31	0.47	3.1	20.48	0.15	0.3	0.26	0.12
	5.89	2.22	0.15	0.26	0.34	2.39	15.78	0.14	0.32	0.24	0.08

	5.94	1.97	0.12	0.21	0.24	2.09	13.81	0.11	0.38	0.17	0.04
	5.99	1.85	0.08	0.16	0.14	1.92	12.7	0.07	0.55	0.09	0.01
	6.04	1.5	0.04	0.11	0.06	1.54	10.14	0.04	0.96	0.03	0.0
	6.09	0.5	0.03	0.06	0.02	0.51	3.38	0.03	1.16	0.02	0.0
	6.13	0.12	0.01	0.01	0.0	0.12	0.82	0.01	3.78	0.0	0.0

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

MODEL SUMMARY

Measured Flow (Qm) =	7.46	(cfs)
Calculated Flow (Qc) =	7.16	(cfs)
(Qm-Qc)/Qm * 100 =	3.96%	
Measured Waterline (WLm) =	5.21	(ft)
Calculated Waterline (WLc) =	5.14	(ft)
(WLm-WLc)/WLm * 100 =	1.29%	
Max Measured Depth (Dm) =	1.05	(ft)
Max Calculated Depth (Dc) =	1.01	(ft)
(Dm-Dc)/Dm * 100 =	3.61%	
Mean Velocity =	1.58	(ft/s)
Manning's n =	0.112	
0.4 * Qm =	2.98	(cfs)
2.5 * Qm =	18.64	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
Bankfull	3	4.7		
	3.4	4.75		
	3.8	4.75		
	4.2	4.8		
	4.6	4.9		
	5	4.8		
	5.4	4.9		
	5.8	4.9		
	6.2	4.9		
	6.6	4.9		
	7	4.9		
	7.4	5		
Waterline	7.8	5.2	0	
	8.2	5.2	0.05	
	8.6	5.4	0.25	
	9	5.4	0.25	
	9.4	5.5	0.35	
	9.8	5.6	0.45	
	10.2	5.6	0.45	
	10.6	5.6	0.45	
	11	5.6	0.45	
	11.4	5.75	0.6	
	11.8	5.75	0.6	
	12.2	5.9	0.8	
	12.6	5.85	0.75	
	13	5.8	0.7	
	13.4	6	0.9	
	13.8	6.05	0.95	
	14.2	6.15	1.05	
	14.6	6.05	0.95	

	14.8	6.05	0.9
	15.2	6.05	0.9
	15.4	5.6	0.45
Waterline	15.6	5.21	0
	15.8	5.21	
	16	5.13	
	16.4	4.96	
	16.8	4.85	
Bankfull	17.2	4.7	
	17.6	4.65	
	18.6	4.75	

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	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
0.4	0.05	0.02	0.03	0.44
0.45	0.25	0.1	0.16	2.21
0.4	0.25	0.1	0.16	2.21
0.41	0.35	0.14	0.23	3.09
0.41	0.45	0.18	0.3	3.97
0.4	0.45	0.18	0.3	3.97
0.4	0.45	0.18	0.3	3.97
0.4	0.45	0.18	0.3	3.97
0.43	0.6	0.24	0.39	5.29
0.4	0.6	0.24	0.39	5.29
0.43	0.8	0.32	0.53	7.06
0.4	0.75	0.3	0.49	6.62
0.4	0.7	0.28	0.46	6.17
0.45	0.9	0.36	0.59	7.94
0.4	0.95	0.38	0.62	8.38
0.41	1.05	0.42	0.69	9.26
0.41	0.95	0.29	0.47	6.28

0.2	0.9	0.27	0.44	5.95
0.4	0.9	0.27	0.44	5.95
0.49	0.45	0.09	0.15	1.99
0.44	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

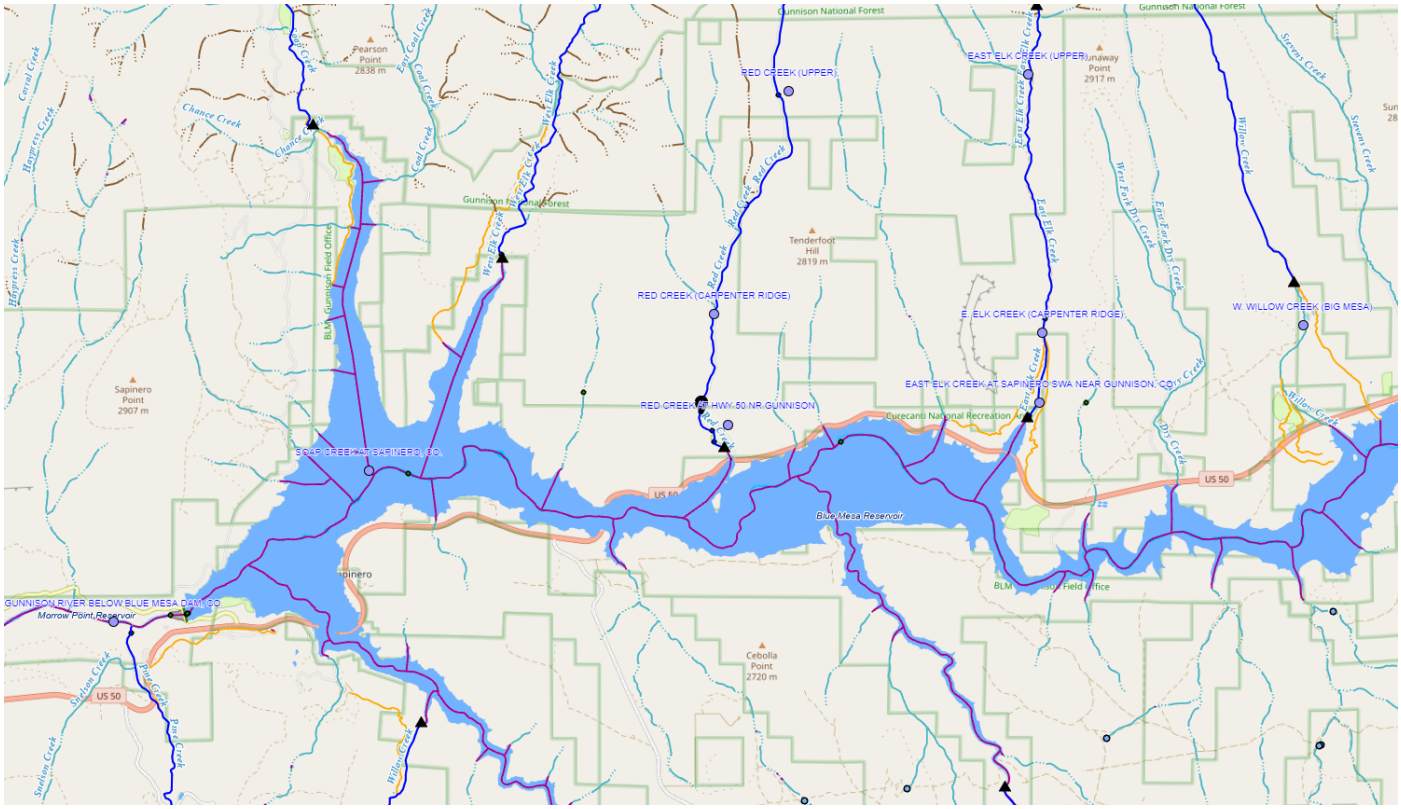
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R2Cross RESULTS

Stream Name: Red Creek
Stream Locations: Upstream of Curecanti NRA campground
Fieldwork Date: 06/12/2023
Cross-section: 3
Observers: KB JN
Coordinate System: UTM Zone 13
X (easting): 305061
Y (northing): 4262036
Date Processed: 09/19/2024
Slope: 0.0214
Discharge: Entered Value: 7.46 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: Red_Creek_XS3_6-12-2023_Q=7.457 cfs_corrected.xlsx
R2Cross version: 2.0.3

LOCATION



ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 15.47

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	0.2
Percent Wetted Perimeter (%)	50.0	1.29
Mean Velocity (ft/s)	1.0	5.17

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	4.95	15.47	0.54	1.21	8.33	15.92	100.0	0.52	0.12	1.13	9.44
	4.98	14.41	0.54	1.18	7.85	14.85	93.28	0.53	0.12	1.15	9.02
	5.03	13.67	0.52	1.13	7.15	14.08	88.48	0.51	0.13	1.09	7.76
	5.08	12.09	0.54	1.08	6.51	12.47	78.37	0.52	0.12	1.13	7.34
	5.13	11.33	0.52	1.03	5.93	11.69	73.46	0.51	0.13	1.08	6.42
Waterline	5.18	10.6	0.51	0.98	5.38	10.95	68.78	0.49	0.13	1.04	5.58
	5.23	10.15	0.48	0.93	4.86	10.49	65.89	0.46	0.14	0.95	4.63
	5.28	9.23	0.47	0.88	4.37	9.56	60.04	0.46	0.14	0.94	4.09
	5.33	8.52	0.46	0.83	3.94	8.83	55.46	0.45	0.14	0.9	3.55
	5.38	8.33	0.42	0.78	3.52	8.62	54.14	0.41	0.15	0.79	2.78
	5.43	8.12	0.38	0.73	3.1	8.38	52.65	0.37	0.16	0.69	2.14
	5.48	7.89	0.34	0.68	2.7	8.13	51.07	0.33	0.18	0.59	1.59
	5.53	7.66	0.3	0.63	2.31	7.87	49.44	0.29	0.2	0.49	1.14
	5.58	7.24	0.27	0.58	1.94	7.44	46.73	0.26	0.22	0.41	0.8
	5.63	6.39	0.25	0.53	1.6	6.57	41.26	0.24	0.23	0.37	0.59
	5.68	5.15	0.26	0.48	1.31	5.3	33.31	0.25	0.22	0.38	0.5
	5.73	4.39	0.25	0.43	1.08	4.51	28.37	0.24	0.23	0.36	0.39
	5.78	3.91	0.22	0.38	0.87	4.02	25.28	0.22	0.25	0.31	0.27
	5.83	3.54	0.19	0.33	0.69	3.64	22.84	0.19	0.28	0.26	0.18
	5.88	3.21	0.16	0.28	0.52	3.29	20.65	0.16	0.32	0.2	0.1
	5.93	2.88	0.13	0.23	0.37	2.93	18.43	0.12	0.39	0.14	0.05
	5.98	2.11	0.11	0.18	0.24	2.15	13.52	0.11	0.43	0.12	0.03
	6.03	1.71	0.09	0.13	0.15	1.74	10.91	0.08	0.54	0.08	0.01
	6.08	1.29	0.06	0.08	0.07	1.31	8.24	0.06	0.78	0.04	0.0
	6.13	0.87	0.02	0.03	0.02	0.88	5.5	0.02	1.8	0.01	0.0

	6.14	0.65	0.01	0.01	0.01	0.66	4.13	0.01	2.76	0.0	0.0

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

MODEL SUMMARY

Measured Flow (Qm) =	7.46	(cfs)
Calculated Flow (Qc) =	6.51	(cfs)
(Qm-Qc)/Qm * 100 =	12.75%	
Measured Waterline (WLm) =	5.31	(ft)
Calculated Waterline (WLc) =	5.18	(ft)
(WLm-WLc)/WLm * 100 =	2.41%	
Max Measured Depth (Dm) =	1.15	(ft)
Max Calculated Depth (Dc) =	0.98	(ft)
(Dm-Dc)/Dm * 100 =	14.98%	
Mean Velocity =	1.21	(ft/s)
Manning's n =	0.112	
0.4 * Qm =	2.98	(cfs)
2.5 * Qm =	18.64	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	4.15		
	1	4.5		
	1.4	4.6		
	1.8	4.65		
	2	4.75		
Bankfull	2.2	4.9		
	2.6	4.94		
	3	4.97		
	3.4	5		
	3.8	4.95		
	4.2	4.99		
	4.4	5.04		
	4.8	5.07		
	5.2	5.2		
	5.6	5.25		
Waterline	6.8	5.31	0	
	7	5.4	0.14	
	7.4	5.53	0.28	
	7.8	5.59	0.32	
	8.2	5.7	0.46	
	8.6	5.68	0.44	
	9	5.93	0.74	
	9.4	6.04	0.9	
	9.8	6.13	1.1	
	10.2	6.16	1.15	
	10.6	6.16	1.1	
	11	6.05	0.98	
	11.4	5.96	0.88	
	11.8	5.95	0.88	
	12.2	5.87	0.8	

	12.6	5.79	0.66
	13	5.75	0.6
	13.4	5.65	0.5
	13.8	5.64	0.48
	14.2	5.6	0.4
	14.6	5.69	0.38
	15	5.58	0.3
Waterline	15.4	5.31	0
	15.8	5.16	
	16.2	5.15	
	17	5.03	
	18	5.1	
Bankfull	18.2	4.95	
	20.8	4.01	

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	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
0	0	0	0	0
0.22	0.14	0.04	0.06	0.78
0.42	0.28	0.11	0.16	2.08
0.4	0.32	0.13	0.18	2.38
0.41	0.46	0.18	0.25	3.42
0.4	0.44	0.18	0.24	3.27
0.47	0.74	0.3	0.41	5.5
0.41	0.9	0.36	0.5	6.69
0.41	1.1	0.44	0.61	8.18
0.4	1.15	0.46	0.64	8.55
0.4	1.1	0.44	0.61	8.18
0.41	0.98	0.39	0.54	7.28
0.41	0.88	0.35	0.49	6.54
0.4	0.88	0.35	0.49	6.54
0.41	0.8	0.32	0.44	5.95

0.41	0.66	0.26	0.37	4.91
0.4	0.6	0.24	0.33	4.46
0.41	0.5	0.2	0.28	3.72
0.4	0.48	0.19	0.27	3.57
0.4	0.4	0.16	0.22	2.97
0.41	0.38	0.15	0.21	2.82
0.41	0.3	0.12	0.17	2.23
0.48	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

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Discharge Measurment Field Visit Data Report *(Filters: Name begins with Red Creek; Division = 4;)*

Div	Name	CWCB Case Number	Segment ID	Meas. Date	UTM	Location	Flow Amount (cfs)	Meas #	Rating	Station ID
4	Red Creek		25/4/A-003	08/28/2024	UTMx: 305414.6337 UTMy: 4261272.8005	Near pumphouse at Rec Creek Campground	0.42			

Discharge Measurement Summary

Site name	Red cr abv blue mesa
Site number	8282024
Operator(s)	Lfsc
File name	20240828-143853_Red cr abv blue mesa.ft
Comment	

Start time	8/28/2024 2:22 PM
End time	8/28/2024 2:38 PM
Start location latitude	38.479
Start location longitude	-107.231
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H2322006
Probe serial number	FT2P2319001
Probe firmware	1.30
Handheld software	1.7

# Stations	Avg interval (s)	Total discharge (ft³/s)
15	40	0.4162

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
3.100	0.8845	3.196

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
47	0.285	0.4705

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
58.640	0.410	1.5701

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.6%	11.7%
Velocity	1.6%	21.7%
Width	0.2%	0.2%
Method	3.0%	
# Stations	3.3%	
Overall	**4.9%**	**24.7%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

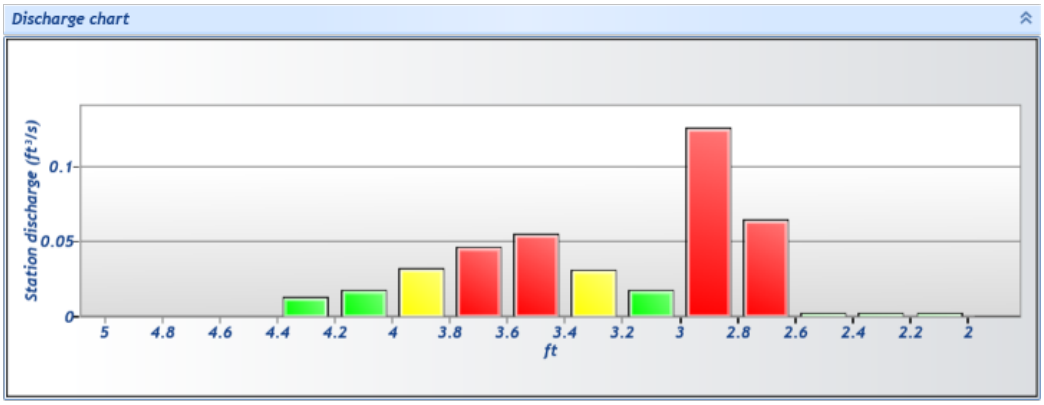
Summary overview

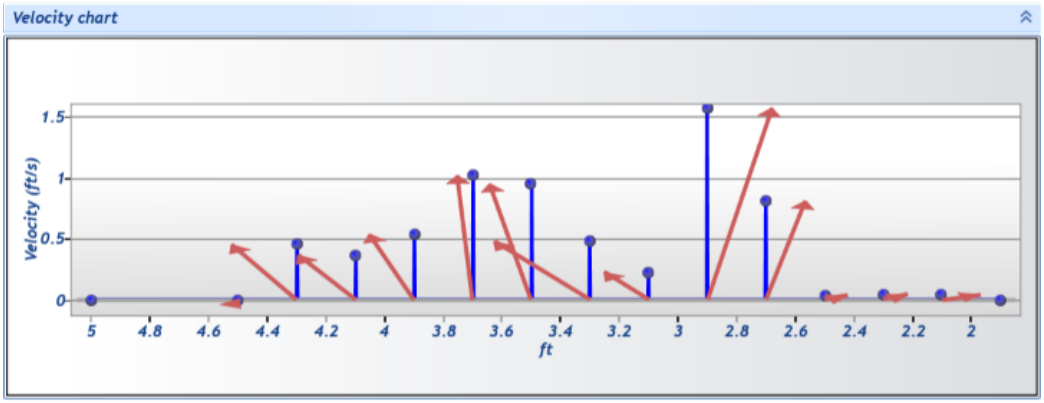
No changes were made to this file
Quality control warnings

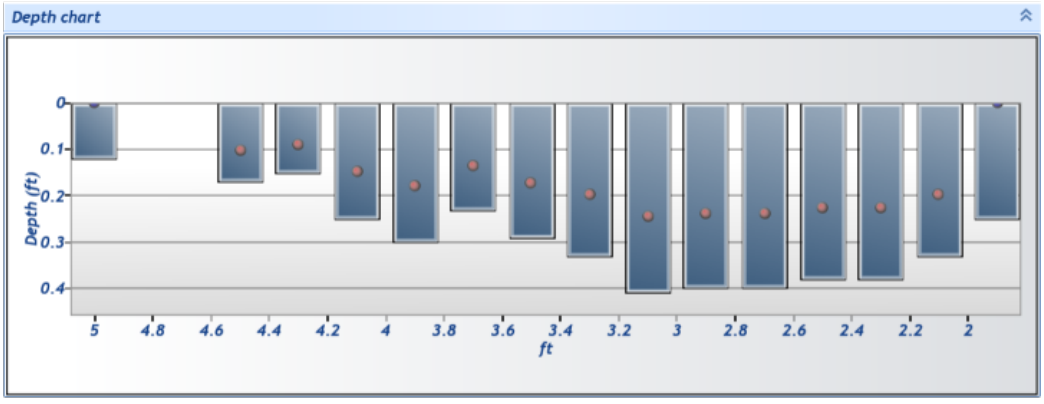
Discharge Measurement Summary

Site name	Red cr abv blue mesa
Site number	8282024
Operator(s)	Lfsc
File name	20240828-143853_Red cr abv blue mesa.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.00%
Station discharge caution	5.00% >= Station discharge < 10.00%
Station discharge warning	Station discharge >= 10.00%







Discharge Measurement Summary

Site name	Red cr abv blue mesa
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Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	2:22 PM	1.900	None	0.250	0.0000	0.000	0	0.0000	1.0000	0.0441	0.0250	0.0011	0.26	✓
1	2:22 PM	2.100	0.6	0.330	0.6000	0.198	80	0.0441	1.0000	0.0441	0.0660	0.0029	0.70	✓
2	2:23 PM	2.300	0.6	0.380	0.6000	0.228	80	0.0420	1.0000	0.0420	0.0760	0.0032	0.77	✓
3	2:24 PM	2.500	0.6	0.380	0.6000	0.228	80	0.0330	1.0000	0.0330	0.0760	0.0025	0.60	✓
4	2:25 PM	2.700	0.6	0.400	0.6000	0.240	80	0.8099	1.0000	0.8099	0.0800	0.0648	15.57	✓
5	2:27 PM	2.900	0.6	0.400	0.6000	0.240	80	1.5701	1.0000	1.5701	0.0800	0.1256	30.18	✓
6	2:28 PM	3.100	0.6	0.410	0.6000	0.246	80	0.2264	1.0000	0.2264	0.0820	0.0186	4.46	✓
7	2:29 PM	3.300	0.6	0.330	0.6000	0.198	80	0.4783	1.0000	0.4783	0.0660	0.0316	7.58	✓
8	2:30 PM	3.500	0.6	0.290	0.6000	0.174	80	0.9468	1.0000	0.9468	0.0580	0.0549	13.19	✓
9	2:32 PM	3.700	0.6	0.230	0.6000	0.138	80	1.0202	1.0000	1.0202	0.0460	0.0469	11.28	✓
10	2:34 PM	3.900	0.6	0.300	0.6000	0.180	80	0.5336	1.0000	0.5336	0.0600	0.0320	7.69	✓
11	2:35 PM	4.100	0.6	0.250	0.6000	0.150	80	0.3648	1.0000	0.3648	0.0500	0.0182	4.38	✓
12	2:36 PM	4.300	0.6	0.150	0.6000	0.090	80	0.4526	1.0000	0.4526	0.0300	0.0136	3.26	✓
13	2:37 PM	4.500	0.6	0.170	0.6000	0.102	21	0.0032	1.0000	0.0032	0.0595	0.0002	0.05	✓
14	2:38 PM	5.000	None	0.120	0.0000	0.000	0	0.0000	1.0000	0.0032	0.0300	0.0001	0.02	✓

Discharge Measurement Summary

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Operator(s)	Lfsc
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Comment	

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	10 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings	
3	2:24 PM	2.500	0.6	0.380	0.6000	0.228	High % Spikes	
4	2:25 PM	2.700	0.6	0.400	0.6000	0.240	High Stn % Discharge	
5	2:27 PM	2.900	0.6	0.400	0.6000	0.240	Standard Error > QC,High Stn % Discharge	
6	2:28 PM	3.100	0.6	0.410	0.6000	0.246	Standard Error > QC,Velocity Angle > QC	
7	2:29 PM	3.300	0.6	0.330	0.6000	0.198	Standard Error > QC,Velocity Angle > QC	
8	2:30 PM	3.500	0.6	0.290	0.6000	0.174	High Stn % Discharge	
9	2:32 PM	3.700	0.6	0.230	0.6000	0.138	High Stn % Discharge	
11	2:35 PM	4.100	0.6	0.250	0.6000	0.150	Velocity Angle > QC	
12	2:36 PM	4.300	0.6	0.150	0.6000	0.090	Velocity Angle > QC	
13	2:37 PM	4.500	0.6	0.170	0.6000	0.102	Boundary Interference	
14	2:38 PM	5.000	None	0.120	0.0000	0.000	Stn Spacing > QC	

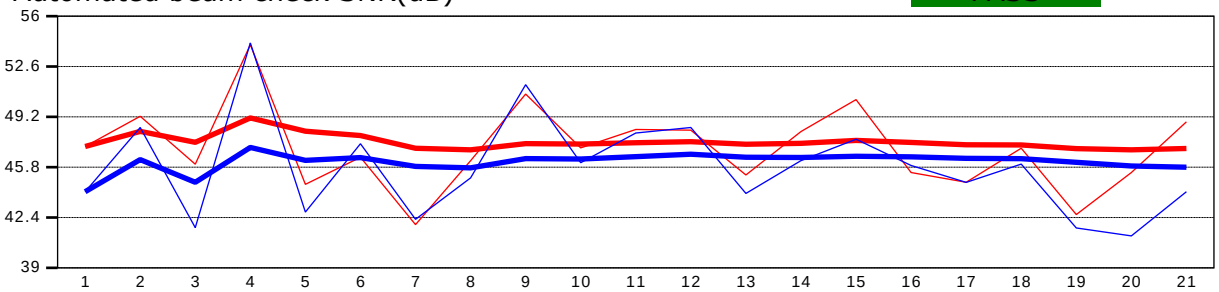
Discharge Measurement Summary

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Site number	8282024
Operator(s)	Lfsc
File name	20240828-143853_Red cr abv blue mesa.ft
Comment	

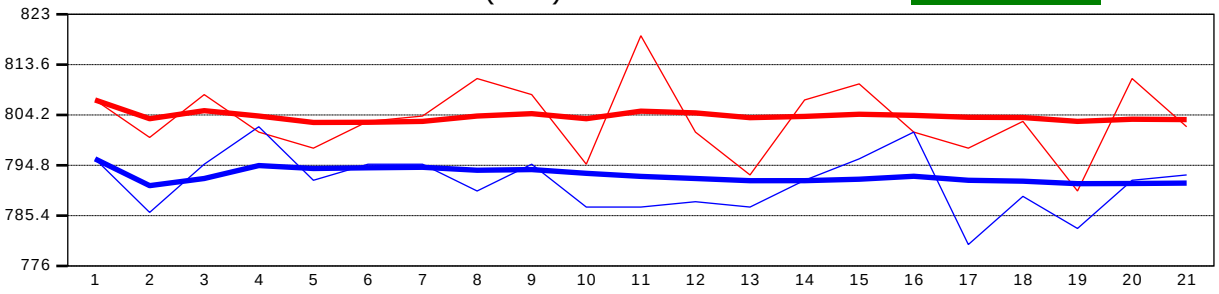
Beam 1	
Beam 2	

Automated beam check Start time 8/28/2024 2:21:25 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

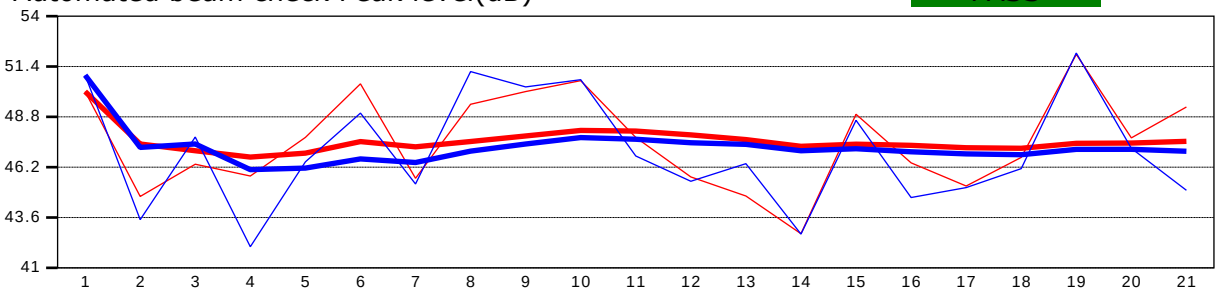
Discharge Measurement Summary

Site name	Red cr abv blue mesa
Site number	8282024
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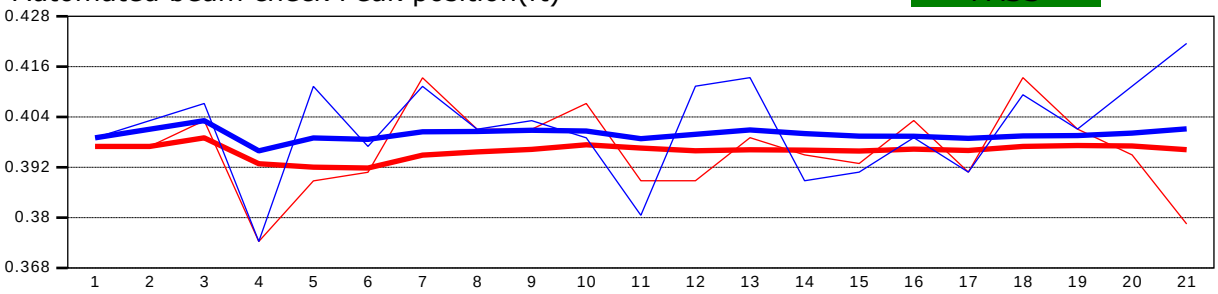
Beam 1	
Beam 2	

Automated beam check Start time 8/28/2024 2:21:25 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings





