Aquatic Wildlife Section
6060 Broadway
Denver, CO 80216

January 9, 2026

Rob Viehl, Section Chief
Stream and Lake Protection Section
Colorado Water Conservation Board
1313 Sherman Street, 7th Floor
Denver, CO 80203

Re: Instream Flow Recommendations for Streams in Water Division 6, Garfield County; Hauskins Creek, to be presented at the January 2026 CWCB Meeting

Dear Mr. Viehl:

The information contained within and referred to in this letter forms the scientific and biological basis for an instream flow (ISF) recommendation on Hauskins Creek in Water Division 6. Field investigations relating to this ISF recommendation were completed by Colorado Parks and Wildlife (CPW) staff in 2017 and 2018. Hauskins Creek is a first order stream that supports a recreational trout fishery and Colorado River cutthroat trout, a Tier 1 Species of Greatest Conservation Need (SGCN) according to CPW's State Wildlife Action Plan. This ISF recommendation was first presented to interested parties at the ISF Workshop in 2017. CPW and CWCB staff conducted outreach to the Garfield County Commissioners on numerous occasions but most recently in 2025. It is CPW staff's opinion that the information contained in this letter is sufficient for the CWCB's staff to recommend an ISF appropriation to the Board on Hauskins Creek as it specifically addresses the findings required in Rule 5(i) of the Instream Flow Program Rules.

CPW participates in the ISF Program and develops ISF recommendations for the Board's consideration in an effort to address CPW's legislative directives "… 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" [§33-1-101 (1) C.R.S.], and "… that the natural, scenic, scientific, and outdoor recreation areas … 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 acquisition, development, and management of … lands, waters, and facilities." [§33-10-101 (1) C.R.S.].

In addition to these broad statutory guidelines, CPW's strategic planning document (CPW Strategic Plan, 2015) explains the agency's current goals to, "[c]onserve wildlife and habitat to ensure healthy sustainable populations and ecosystems" in order to, "protect and enhance water resources for fish and wildlife populations," by pursuing, "partnerships and agreements to enhance instream flows, protect reservoir levels, and influence water management activities," and to, "[a]dvocate for water quality and quantities to conserve aquatic resources." In addition to the CPW Strategic Plan, the agency's fish and wildlife conservation activities are also informed by the State Wildlife Action Plan (SWAP 2015, Revised 2025). The aforementioned documents direct CPW to advocate for the preservation of the state's fish and wildlife resources and natural environment, and therefore link CPW's mission to the goals and priorities of CWCB's Instream Flow and Natural Lake Level Program.

Recommended Segments & Land Status

CPW is proposing an ISF recommendation on Hauskins Creek from its headwaters (13T 307884 4435226) to the confluence with the North Fork White River (13T 305643 4433485). The reach is 2.11 miles in length. Approximately 76 percent of the proposed reach is on White River National Forest on lands managed as Flat Tops Wilderness. Approximately 0.5 miles near the confluence of the North Fork White River is on private lands owned by the Rio Blanco Ranch.

Colorado Cutthroat Trout Conservation Goals
In 2001, CPW entered into a multi-state and multi-agency conservation agreement and strategy concerning Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*). Colorado's partners in this plan and agreement include the natural resource management agencies from Utah and Wyoming, a number of federal agencies including the USFS, USFWS, BLM and NPS, and the Ute Indian Tribe of the Uintah and Ouray Reservation. The purpose of the strategy is to provide a framework for the long-term conservation of the Colorado River cutthroat trout (CRCT), and to reduce or eliminate the threats that warrant its status as a sensitive species or species of concern by federal resource agencies. Essentially, the parties agreed that in order to prevent listing of the subspecies, and to reach desired recovery goals without hindering further development of our state resources, continued implementation of the conservation strategy was necessary.

The objectives of the strategy are to identify and characterize all CRCT core and conservation populations, secure and enhance conservation populations, restore populations, and secure and enhance watershed conditions they rely upon. CPW believes that flow protection can be achieved by establishing an ISF water right. This is a measurable conservation action aligned with the goal of "securing and enhancing watershed conditions" that will support the conservation populations of CRCT. Information about the species and CPW's conservation strategy can be found here: CPW Cutthroat Trout Research. CPW believes that securing ISF water rights for populations of CRCT is a critical step in the overall preservation of these important native species.

Natural Environment and Biological Summary

Hauskins Creek is a tributary of the North Fork of the White River located east of the Town of Meeker. Its headwaters originate at over 10,200 feet in the Flat Tops Wilderness. Hydrology is snowmelt-driven with stable baseflows following spring runoff. Average annual precipitation in the basin is approximately 34 inches. The watershed is approximately 1.3 square miles of forested land cover containing stands of aspen, lodgepole pine, spruce, and conifer. Hauskins Creek supports a healthy riparian area with dense plants and mosses. Upland and riparian communities support ample overhead cover and shading of the stream.

Hauskins Creek is a first to second order stream that is moderate to high gradient. The channel type is typical of a headwaters stream with an entrenched V-shaped channel and large substrate that ranges from fine gravels to small boulders. Substrate is predominantly fine gravel and medium-sized cobbles. Large cobble and small boulder features in the channel creates pocket pool habitat for fish. The channel is mainly single thread with some side channel formation. There is some large wood in the creek, which supports habitat complexity, shading, and nutrient cycling. Much of the aquatic habitat observed by CPW staff includes high gradient riffles, cascades, and pool features that offer good holding habitat. Fish sampling conducted by CPW in 2012 indicates the stream supports brook trout and Colorado River Cutthroat Trout (CRCT). CRCT are listed as a Tier 1 Species of Greatest Conservation Need (SGCN) in CPW's SWAP.

R2Cross Background

Initial biological instream flow rates were developed using the R2Cross methodology (CWCB, 2024[1]). R2Cross uses field data that has been collected in a riffle habitat type. Riffles are often the limiting habitat features in streams during low flow events, so maintaining specific hydraulic conditions across riffle habitat types will also maintain aquatic habitat in pools and runs for most life stages of fish and macroinvertebrates (Nehring, 1979[2]). The R2Cross model uses field data, including a survey of cross-sectional channel geometry, a longitudinal slope of the water surface, and a flow measurement as input to a single transect hydraulic model. R2Cross uses Ferguson's Variable-Power Equation (Ferguson, 2007[3]) to model a stage-discharge relationship and compute corresponding hydraulic parameters of average depth, average velocity, and percent wetted perimeter over modeled stages. Maintaining these three hydraulic parameters at specified levels should ensure conditions that allow movement of fish longitudinally across riffles and adequate depths, velocities, and oxygenation for production of macroinvertebrates and development of trout eggs. Baseflow recommendations are typically developed based on the flows that meet two of three hydraulic criteria and summer flow recommendations are based on hydraulic criteria that meet three of three hydraulic criteria (as described in Nehring 1979 and CWCB 2024).

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[1]Colorado Water Conservation Board, 2024, R2Cross field manual. https://dnrweblink.state.co.us/cwcbsearch/0/edoc/224685/R2Cross%20Field%20Manual%202024.pdf

[2]Nehring, B.R., 1979, Evaluation of Instream Flow Methods and Determination of Water Quantity Needs for Streams in the State of Colorado, Colorado Division of Wildlife.

[3] Ferguson, R.I., 2007. Flow resistance equations for gravel- and boulder-bed streams. Water Resources Research 43. https://doi.org/10.1029/2006WR005422

In 2017 and 2018, CPW collected two cross-sectional data sets on Hauskins Creek. The results of the R2Cross analysis are summarized below.

	Bankfull Top Width	Date Surveyed	Flow Measured	Flow Meeting Two Criteria	Flow Meeting Three Criteria
1	11.75'	7/11/2017	2.27 cfs	0.97 cfs	3.3 cfs
2	8.00'	7/11/2018	0.52 cfs	0.35 cfs	2.87 cfs
		Recommended Biological Flow Rates		0.65 cfs	3.1 cfs

The biological flow recommendation over the baseflow period is 0.65 cfs. This flow rate supports sufficient depth and wetted perimeter criteria and will provide habitat conditions which enabling overwintering fish. The biological flow recommendation during the high flow period is 3.1 cfs, which will maintain adequate average velocity of 1.0 feet per second (fps), as well as average depth of at least 0.2 feet and at least 50 percent wetted perimeter of the stream channel.

Water Availability

In order to make a preliminary determination whether water is available for the biological flow recommendations and to determine the appropriate seasonal transition dates, CPW examined basic hydrologic data and water rights information for the North Fork White River basin. Median hydrology was analyzed by CWCB staf was assessed using prorated gage data from the historic gage on the North Fork White River ("North Fork White River above Ripple Creek near Trappers Lake," USGS 09302420). This gage operated between 1965 to 1973. CPW is aware of the following water right within the reach: Lynx Creek Ditch (WDID:4300780) decreed for 4.65 cfs. Diversions from this ditch were accounted for in CWCB's water availability analysis.

Final Flow Recommendations:

CPW's analysis indicates that the following flows are needed to protect the natural environment to a reasonable degree. Based on median hydrology analyzed by CWCB staff, there are reductions to the biological flow recommendations due to water availability during May through July. Therefore CPW's water availability-refined flow recommendations are the following:

- Summer Flow Recommendation (May 21 through June 30): **2.9 cfs**

  - This flow rate has been reduced from 3.1 cfs due to water availability constraints. This flow rate will support adequate depth, wetted perimeter, and moderate velocities (less than 1.0 fps at cross-section 1). Maintaining these hydraulic criteria at riffles will also support habitat availability in pools, glides,

and runs. Increased habitat availability is beneficial to fish during late spring and summer when they are active feeding and moving longitudinally throughout the channel.

- Late Summer Flow Recommendation (July 1 through July 31): **0.5 cfs**

    o This flow rate has been reduced due to water availability constraints from active diversions. Sufficient depth and wetted perimeter will be maintained in some riffle cross-sections and there will be adequate habitat availability in deep habitat features like pools and glides.

- Late Summer, Fall, and Baseflow Recommendation (August 1 through May 20): **0.65 cfs**

    o This flow rate will support sufficient wetted perimeter and depth in riffles and will provide areas of holding habitat necessary to overwinter fish.

The purpose of this letter is to formally transmit this ISF recommendation to CWCB for the Board's consideration. Based on CPW's opinion, there is a flow-dependent natural environment in Hauskins Creek that can be preserved to a reasonable degree with an ISF water right in the recommended rates. Please refer to attachments which include; R2Cross field forms, R2Cross output, fish survey information, and photographs at each cross section location.

CPW personnel will be available at the January 2026 CWCB meeting to answer any questions that the Board might have regarding these flow recommendations. We appreciate your consideration.

Sincerely,

Katie Birch
Digitally signed by Katie Birch
Date: 2026.01.09 13:37:47
-07'00'

Katie Birch, CPW Instream Flow Program Coordinator

Hauskins Creek Fish Survey

Water **22090**	**Hauskins Creek**		Date **7/24/2012**
Station **WR0785**	**ABT 600 M ABV CONFLUENCE W/ WHITE RIVER, N FK**		

Drainage **White River**	UtmX **306134**	UtmY **4433725**	Elevation **2716 m**
	Length **61 m**	Width **1.07 m**	Area **0.01 Ha**
Surveyors **Battige et al**			
Gear **BPEF**	Effort	Metric **PASS**	Protocol **TWO-PASS REMOVAL**
Total catch **5**			

Species	Count	Length (mm)	Weight (gm)	Status	Mark	Tag ID	Habitat
CRN	1	180	65	1			
CRN	1	205	110	1			
BRK	1	105		1			
BRK	1	221	170	1			
BRK	1	253	255	1			

Notes: Very thick vegetation along stream made shocking difficult during population estimate. Hiked up to pond on Eastern most fork and saw/andled no fish-maybe to shallow and winterkills. Spring started creek right @ uppermost pond so we did not hike the rest of the drainage. Lower site-Bottom GPS= Hauskins lowbot (13 T 0306134,4433725) Top=Hauskins lowtop (13 T 0306175,4433754). About 3-4' wide, completely shaded with small waterfalls (lots of small barriers), low density of fish but fish present were fat and healthy, maybe came from pond/lake above. 0 fish on 2nd pass-pretty sure we got all fish on 1st pass.

10/09/2025

FIELD DATA
FOR
INSTREAM FLOW DETERMINATIONS

COLORADO WATER CONSERVATION BOARD

LOCATION INFORMATION

STREAM NAME: Hoskins Creek	CROSS-SECTION NO.:
CROSS-SECTION LOCATION: Ab Road	

DATE: 7/11/17	OBSERVERS: Skinner (Liser Level)

LEGAL DESCRIPTION	¼ SECTION:	SECTION:	TOWNSHIP: N/S	RANGE: E/W	PM:

COUNTY:	WATERSHED:	WATER DIVISION:	DOW WATER CODE:

MAP(S)	USGS:
	USFS: 0.012

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE:

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:

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	
⊗ Tape @ Stake RB	0.0	
① WS @ Tape LB/RB	0.0	
② WS Upstream		
③ WS Downstream		
SLOPE	0.012	

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

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

COMMENTS

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:	Hauskins CK		CROSS-SECTION NO.:		DATE: 7/11/17	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 (ft²)	Discharge (cfs)
	S	0		4.8								
	GL	0.5		5.5								
		1		5.7								
	WL	1.5		5.9	0							
		2		6.2	.3					.3		
		3		6.6	.6					1.15		
		4		6.5	.6					.3		
		5		6.4	.5					1.1		
		6		6.3	.3					1.05		
		7		6.3	.2					1.8		
		8		6.1	.2					.33		
		9		6.1	.1					.4		
		10		6.1	.1					0		
	WL	11		5.9	0							
	GL	12.5		5.6								
	S	14		5.2								

TOTALS:										

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

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO WATER CONSERVATION BOARD

LOCATION INFORMATION

STREAM NAME: HAUSKINS	2018 #1	**CROSS-SECTION NO.:**
CROSS-SECTION LOCATION: 40' AB ROAD		

DATE: 7/11/18 **OBSERVERS:** Birch Skinner Meeker Crew

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:	

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:

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	—
⊗ Tape @ Stake RB	0.0	—
① WS @ Tape LB/RB	0.0	7.52/7.50
② WS Upstream	3.8	6.76
③ WS Downstream	6.2	7.90
SLOPE	1.14 /10	

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

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

COMMENTS

DISCHARGE/CROSS SECTION NOTES

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)	Revolutions	Depth of Observation (ft)	Time (sec)	Velocity At Point (ft/sec)	Velocity Mean in Vertical (ft/sec)	Area (ft²)	Discharge (cfs)
S	0		5.65								
LS	1.5		6.00								
GL	2.1		6.80								
	2.3		7.50								
WL	2.9		7.52	0							
	3.2		7.60	0.1				0.76			
	.5		7.65	0.1				1.71			
	.8		7.65	0.1				0.67			
	3.2		7.60	0.15				0.23			
	4.4		7.60	0.1				0.22			
	3.3		7.60	0.1				0.73			
	3.3		7.35	0.2				1.46			
			7.40	0.1				1.09			
	3.5		7.70	0.2				0.54			
	4.9		7.65	0.15				0.43			
	4.7		7.70	0.2				0.67			
	5.3		7.65	0.1				1.08			
	5.8		7.80	0.2				1.22			
	7.1		7.80	0.25				0.28			
	7.4		8.00	0.55				0.25			
	7.3		8.15	0.65				0.02			
	8.?		8.15	0.7				0			
	3.?		7.95	0.5				0			
WL	8.6		7.50	0							
	8.4		7.30								
GL	10.1		7.80								
S	11.8		7.35								

TOTALS: ___

PEBBLE COUNT

Site: Hauskins Ck
Party:
Reach: upper 2019
Date: 7/11/2018

Inches	PARTICLE	Millimeters		PARTICLE COUNT 1 2 3		TOT #	ITEM %	% CUM	TOT #	ITEM %	% CUM	TOT #	ITEM %	% CUM
	Silt / Clay	< .062	SILT											
	Very Fine	.062 - .125	S											
	Fine	.125 - .25	A											
	Medium	.25 - .50	N											
	Coarse	.50 - 1.0	D											
.04 - .08	Very Coarse	1.0 - 2		II	2									
.08 - .16	Very Fine	2 - 4		II	2									
.16 - .22	Fine	4 - 5.7	G	II	2									
.22 - .31	Fine	5.7 - 8	R	III	3									
.31 - .44	Medium	8 - 11.3	A	I	1									
.44 - .63	Medium	11.3 - 16	V	IIII	4									
.63 - .89	Coarse	16 - 22.6	E	IIII	4									
.89 - 1.26	Coarse	22.6 - 32	L	HHT III	8									
1.26 - 1.77	Very Coarse	32 - 45		HHT HHT HHT	15									
1.77 - 2.5	Very Coarse	45 - 64		HHT HHT II	12									
2.5 - 3.5	Small	64 - 90	C	HHT HHT HHT III	18									
3.5 - 5.0	Small	90 - 128	O	HHT HHT	10									
5.0 - 7.1	Large	128 - 180	B	HHT HHT IIII	14									
7.1 - 10.1	Large	180 - 256	B/L/E	III	3									
10.1 - 14.3	Small	256 - 362	B	I	1									
14.3 - 20	Small	362 - 512	O	I	1									
20 - 40	Medium	512 - 1024	U/L/D/E/R	I	1									
40 - 80	Large-Vry Large	1024 - 2048			Ø									
	Bedrock		BDRK											
				TOTALS →										
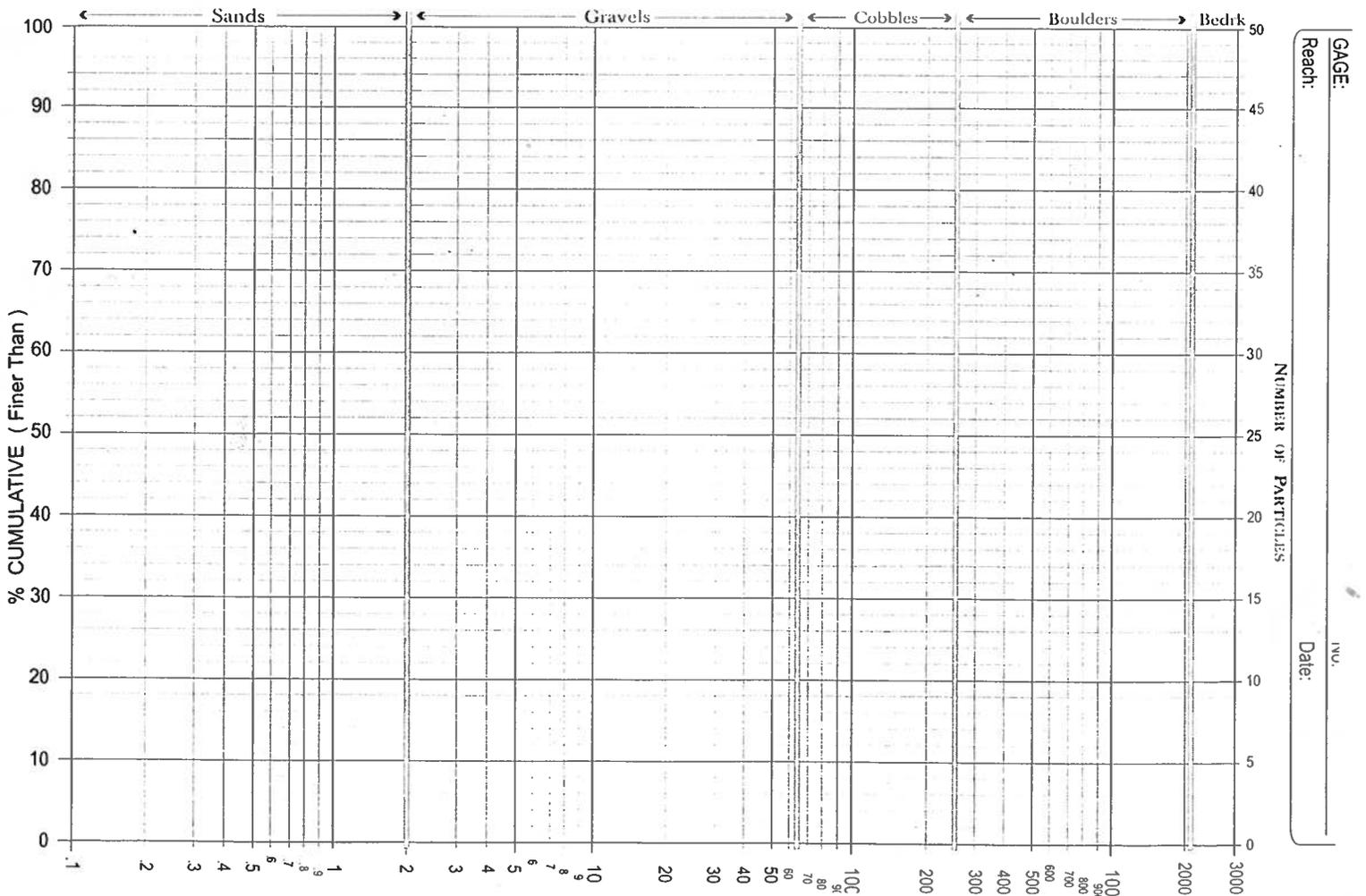
R2Cross RESULTS

Stream Name: Hauskins
Stream Locations: Above Trapper's Lake Road
Fieldwork Date: 07/01/2017
Cross-section: 1
Observers: Skinner
Coordinate System: UTM Zone 13
X (easting): 306054
Y (northing): 4433705
Date Processed: 08/26/2025
Slope: 0.012
Discharge: R2Cross data file: 2.27 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: R2Cross_Hauskins_1_07-11-2017.xlsx
R2Cross version: 2.0.4

LOCATION
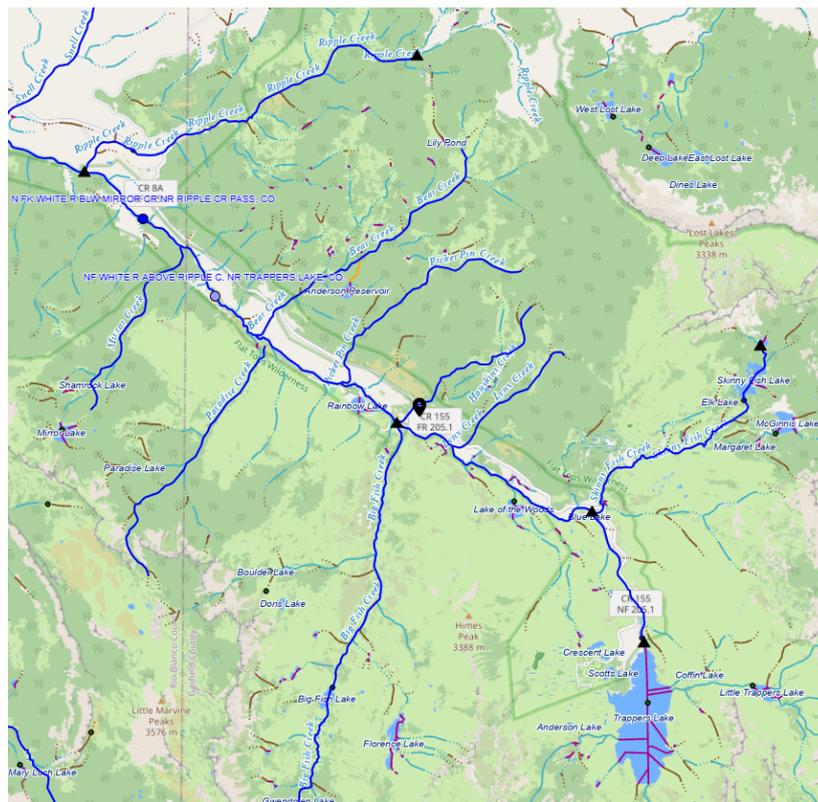
ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 11.75

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	0.5
Percent Wetted Perimeter (%)	50.0	0.97
Mean Velocity (ft/s)	1.0	3.3

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	5.6	11.75	0.56	1.0	6.54	12.05	100.0	0.54	0.06	1.83	11.98
	5.61	11.7	0.55	0.99	6.46	12.0	99.58	0.54	0.06	1.82	11.73
	5.66	11.33	0.52	0.94	5.89	11.61	96.35	0.51	0.06	1.68	9.91
	5.71	10.95	0.49	0.89	5.33	11.22	93.11	0.47	0.06	1.55	8.25
	5.76	10.58	0.45	0.84	4.79	10.83	89.88	0.44	0.07	1.41	6.77
	5.81	10.2	0.42	0.79	4.27	10.44	86.65	0.41	0.07	1.28	5.45
	5.86	9.83	0.38	0.74	3.77	10.05	83.41	0.38	0.07	1.14	4.28
	5.91	9.45	0.35	0.69	3.29	9.66	80.18	0.34	0.08	1.0	3.28
Waterline	5.96	9.08	0.31	0.64	2.83	9.27	76.95	0.3	0.09	0.86	2.42
	6.01	8.7	0.27	0.59	2.38	8.88	73.71	0.27	0.09	0.72	1.71
	6.06	8.33	0.23	0.54	1.95	8.49	70.48	0.23	0.11	0.58	1.13
	6.11	5.95	0.26	0.49	1.56	6.11	50.67	0.26	0.1	0.67	1.05
	6.16	5.6	0.23	0.44	1.27	5.74	47.63	0.22	0.11	0.55	0.7
	6.21	5.25	0.19	0.39	1.0	5.37	44.58	0.19	0.12	0.43	0.43
	6.26	4.9	0.15	0.34	0.75	5.0	41.54	0.15	0.15	0.31	0.23
	6.31	3.52	0.15	0.29	0.52	3.61	29.93	0.14	0.15	0.29	0.15
	6.36	2.92	0.12	0.24	0.36	2.99	24.83	0.12	0.18	0.22	0.08
	6.41	2.32	0.1	0.19	0.22	2.38	19.73	0.09	0.21	0.16	0.04
	6.46	1.72	0.07	0.14	0.12	1.76	14.63	0.07	0.27	0.1	0.01
	6.51	1.12	0.05	0.09	0.05	1.15	9.53	0.05	0.39	0.05	0.0
	6.56	0.52	0.02	0.04	0.01	0.53	4.43	0.02	0.73	0.02	0.0
	6.58	0.18	0.01	0.01	0.0	0.18	1.53	0.01	1.78	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) =	2.27	(cfs)
Calculated Flow (Qc) =	2.34	(cfs)
(Qm-Qc)/Qm * 100 =	-3.15%	
Measured Waterline (WLm) =	5.9	(ft)
Calculated Waterline (WLc) =	5.96	(ft)
(WLm-WLc)/WLm * 100 =	-0.96%	
Max Measured Depth (Dm) =	0.6	(ft)
Max Calculated Depth (Dc) =	0.64	(ft)
(Dm-Dc)/Dm * 100 =	-7.25%	
Mean Velocity =	0.83	(ft/s)
Manning's n =	0.089	
0.4 * Qm =	0.91	(cfs)
2.5 * Qm =	5.67	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	4.8		
Bankfull	0.5	5.5		
	1	5.7		
Waterline	1.5	5.9	0	0
	2	6.1	0.3	0.3
	3	6.6	0.6	1.15
	4	6.5	0.6	0.3
	5	6.4	0.5	1.1
	6	6.3	0.3	1.05
	7	6.3	0.2	1.8
	8	6.1	0.2	0.33
	9	6.1	0.1	0.4
	10	6.1	0.1	0
Waterline	11	5.9	0	0
Bankfull	12.5	5.6		
	14	5.2		

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
0.54	0.3	0.23	0.07	2.98
1.12	0.6	0.6	0.69	30.42
1	0.6	0.6	0.18	7.93
1	0.5	0.5	0.55	24.25
1	0.3	0.3	0.32	13.89
1	0.2	0.2	0.36	15.87
1.02	0.2	0.2	0.07	2.91
1	0.1	0.1	0.04	1.76
1	0.1	0.1	0	0
1.02	0	0	0	0
0	0	0	0	0
0	0	0	0	0

DISCLAIMER

"The Colorado Water Conservation Board makes no representations about the use of the software contained in the R2Cross platform for any purpose besides that for which it was designed. To the maximum extent permitted by applicable law, all information, modeling results, and software are provided "as is" without warranty or condition of any kind, including all implied warranties or conditions of merchantability, or fitness for a particular purpose. The user assumes all responsibility for the accuracy and suitability of this program for a specific application. In no event shall the Colorado Water Conservation Board or any state agency, official or employee be liable for any direct, indirect, punitive, incidental, special, consequential damages or any damages whatsoever including, without limitation, damages for loss of use, data, profits, or savings arising from the implementation, reliance on, or use of or inability to use the R2Cross platform.

R2Cross RESULTS

Stream Name: Hauskins
Stream Locations: Above Trapper's Lake Road
Fieldwork Date: 07/11/2018
Cross-section: 2
Observers: Skinner Birch
Coordinate System: UTM Zone 13
X (easting): 306054
Y (northing): 4433705
Date Processed: 08/04/2025
Slope: 0.114
Discharge: R2Cross data file: 0.52 (cfs)
Computation method: Ferguson VPE
R2Cross data filename: R2Cross_Hauskins_2_07-11-2018.xlsx
R2Cross version: 2.0.4

LOCATION

R2Cross RESULTS: Hauskins - 07/11/2018 XS 2, Analysis Method: [Ferguson VPE]

ANALYSIS RESULTS

Habitat Criteria Results

Bankfull top width (ft) = 8.0

	Habitat Criteria	Discharge (cfs) Meeting Criteria
Mean Depth (ft)	0.2	0.35
Percent Wetted Perimeter (%)	50.0	0.16
Mean Velocity (ft/s)	1.0	2.87

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	6.8	8.0	0.77	1.35	6.18	9.04	100.0	0.68	0.18	2.15	13.26
	6.82	7.94	0.76	1.33	6.05	8.97	99.22	0.67	0.18	2.1	12.73
	6.87	7.76	0.73	1.28	5.66	8.76	96.85	0.65	0.19	1.98	11.18
	6.92	7.57	0.7	1.23	5.27	8.55	94.48	0.62	0.2	1.85	9.75
	6.97	7.39	0.66	1.18	4.9	8.33	92.11	0.59	0.2	1.72	8.44
	7.02	7.21	0.63	1.13	4.53	8.12	89.74	0.56	0.21	1.6	7.25
	7.07	7.03	0.59	1.08	4.18	7.9	87.37	0.53	0.22	1.47	6.16
	7.12	6.84	0.56	1.03	3.83	7.69	84.99	0.5	0.23	1.35	5.18
	7.17	6.66	0.52	0.98	3.49	7.47	82.62	0.47	0.25	1.23	4.3
	7.22	6.48	0.49	0.93	3.17	7.26	80.25	0.44	0.26	1.11	3.51
	7.27	6.29	0.45	0.88	2.85	7.04	77.88	0.4	0.28	0.99	2.82
	7.32	6.15	0.41	0.83	2.54	6.86	75.84	0.37	0.3	0.87	2.2
	7.37	6.08	0.37	0.78	2.23	6.74	74.5	0.33	0.33	0.74	1.64
	7.42	6.01	0.32	0.73	1.93	6.62	73.15	0.29	0.36	0.61	1.18
	7.47	5.95	0.27	0.68	1.63	6.49	71.8	0.25	0.41	0.49	0.79
Waterline	7.52	5.73	0.23	0.63	1.33	6.23	68.86	0.21	0.47	0.39	0.51
	7.57	5.48	0.19	0.58	1.06	5.95	65.81	0.18	0.55	0.29	0.31
	7.62	4.9	0.16	0.53	0.79	5.33	58.89	0.15	0.63	0.22	0.18
	7.67	3.33	0.17	0.48	0.58	3.7	40.92	0.16	0.6	0.24	0.14
	7.72	2.09	0.21	0.43	0.45	2.4	26.58	0.19	0.52	0.31	0.14
	7.77	1.69	0.21	0.38	0.36	1.95	21.59	0.18	0.53	0.3	0.11
	7.82	1.26	0.22	0.33	0.28	1.49	16.45	0.19	0.52	0.32	0.09
	7.87	1.16	0.19	0.28	0.22	1.34	14.79	0.16	0.58	0.26	0.06
	7.92	1.05	0.16	0.23	0.16	1.19	13.13	0.14	0.67	0.2	0.03
	7.97	0.93	0.12	0.18	0.11	1.03	11.36	0.11	0.8	0.14	0.02

8.02	0.77	0.09	0.13	0.07	0.84	9.28	0.08	1.0	0.1	0.01
8.07	0.59	0.06	0.08	0.04	0.64	7.05	0.06	1.37	0.06	0.0
8.12	0.42	0.03	0.03	0.01	0.44	4.82	0.03	2.55	0.02	0.0
8.13	0.35	0.01	0.02	0.0	0.36	3.99	0.01	4.63	0.01	0.0

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

MODEL SUMMARY

Measured Flow (Qm) =	0.52	(cfs)
Calculated Flow (Qc) =	0.52	(cfs)
(Qm-Qc)/Qm * 100 =	0.19%	
Measured Waterline (WLm) =	7.51	(ft)
Calculated Waterline (WLc) =	7.52	(ft)
(WLm-WLc)/WLm * 100 =	-0.08%	
Max Measured Depth (Dm) =	0.7	(ft)
Max Calculated Depth (Dc) =	0.63	(ft)
(Dm-Dc)/Dm * 100 =	9.48%	
Mean Velocity =	0.39	(ft/s)
Manning's n =	0.465	
0.4 * Qm =	0.21	(cfs)
2.5 * Qm =	1.29	(cfs)

FIELD DATA

Feature	Station (ft)	Rod Height (ft)	Water depth (ft)	Velocity (ft/s)
	0	5.65		
	1.5	6		
Bankfull	2.1	6.8		
	2.7	7.5		
Waterline	2.9	7.52	0	0
	3.2	7.6	0.1	0.76
	3.5	7.65	0.1	1.71
	3.8	7.65	0.1	0.67
	4.1	7.6	0.15	0.23
	4.4	7.65	0.1	0.22
	4.7	7.6	0.1	0.73
	5	7.75	0.2	1.46
	5.3	7.7	0.1	1.09
	5.6	7.7	0.2	0.54
	5.9	7.65	0.15	0.43
	6.2	7.7	0.2	0.67
	6.5	7.65	0.1	1.08
	6.8	7.8	0.2	1.22
	7.1	7.8	0.25	0.28
	7.4	8	0.55	0.25
	7.7	8.15	0.65	0.02
	8	8.15	0.7	0
	8.3	7.95	0.5	0
Waterline	8.6	7.5	0	0
	8.7	7.3		
Bankfull	10.1	6.8		
	11.8	6.35		

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
0.31	0.1	0.03	0.02	4.41
0.3	0.1	0.03	0.05	9.92
0.3	0.1	0.03	0.02	3.89
0.3	0.15	0.04	0.01	2
0.3	0.1	0.03	0.01	1.28
0.3	0.1	0.03	0.02	4.24
0.34	0.2	0.06	0.09	16.94
0.3	0.1	0.03	0.03	6.32
0.3	0.2	0.06	0.03	6.27
0.3	0.15	0.04	0.02	3.74
0.3	0.2	0.06	0.04	7.78
0.3	0.1	0.03	0.03	6.27
0.34	0.2	0.06	0.07	14.16
0.3	0.25	0.08	0.02	4.06
0.36	0.55	0.17	0.04	7.98
0.34	0.65	0.2	0	0.75
0.3	0.7	0.21	0	0
0.36	0.5	0.15	0	0
0.54	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

DISCLAIMER

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Map and Statement

of

The Bear Creek Ditch and The Lynx Creek Ditch.

Scale 1/15840
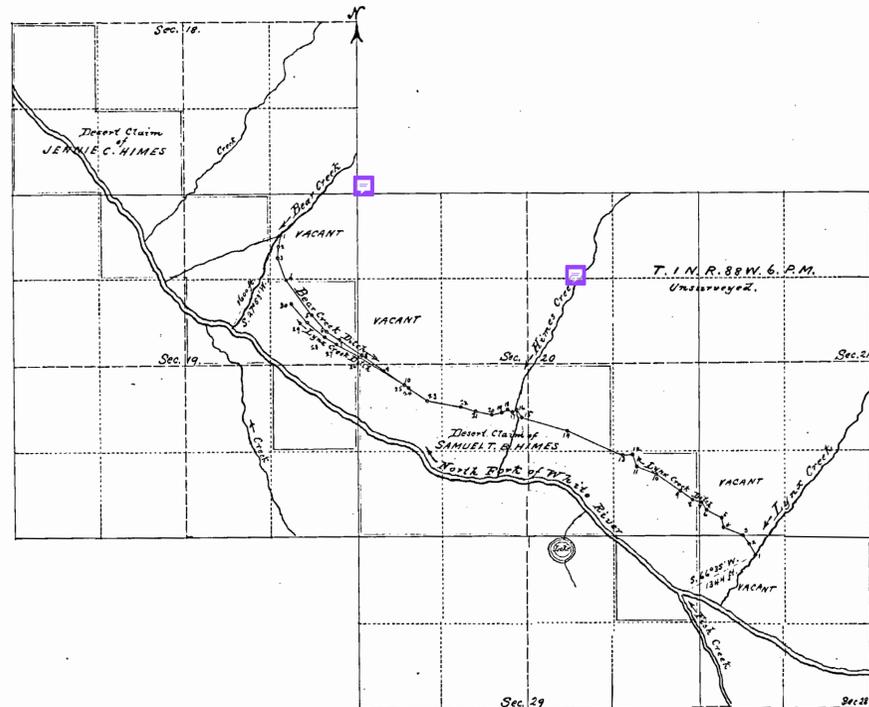
STATE OF COLORADO, } SS.
COUNTY OF GARFIELD.

STATEMENT OF CLAIM TO WATER RIGHT.

Irrigation Division No. 5 · Water District No. 43.

Samuel T. B. Himes and Jennie C. Himes the owners of the following described ditches, in compliance with the requirements of the provisions of chapter 126 of the Session Laws of 1903 of the State of Colorado, do hereby make this statement for filing.

The names of the said ditches are The Lynx Creek Ditch and The Bear Creek Ditch.

The names of the owners of said The Lynx Creek Ditch are Samuel T. B. Himes who owns three fourths (3/4) interest and Jennie C. Himes who owns one fourth (1/4) interest.

The names of the owners of the said The Bear Creek Ditch are Samuel T. B. Himes who owns one sixth (1/6) interest and Jennie C. Himes who owns five sixth interest.

The headgate of The Lynx Creek Ditch is situated on the right bank of Lynx Creek from which stream said ditch diverts its supply of water at a point whence the mouth of Fish Creek bears S. 66°59'W. 1304 ft. Said ditch is also fed by Himes Creek & Witcan &c. From the headgate The Lynx Creek Ditch runs as follows:

Stations	True Bearing	Distance	Stations	True Bearing	Distance	Stations	True Bearing	Distance	Stations	True Bearing	Distance
1-2	N. 51°00' W.	161 ft.	8-9	N. 55°51' W.	234 ft.	15-16	N. 27° 3' W.	108 ft.	22-23	N. 79° 5' W.	89 ft.
2-3	N. 30°31' W.	146 "	9-10	N. 52° 13' W.	204 "	16-17	S. 83° 21' W.	105 "	23-24	N. 56°0' W.	392 "
3-4	N. 62°05' W.	140 "	10-11	N. 65°55'	232 "	17-18	N. 26° 8' W.	75 "	24-25	N. 54°21' W.	93 "
4-5	N. 17°43' W.	126 "	11-12	N. 17° 3' W.	196 "	18-19	S. 82° 8' W.	163 "	25-26	N. 89° 4' W.	103 "
5-6	N. 60°36' W.	255 "	12-13	S. 89°	W.	166 "	19-20	S. 74° 33' W.	133 "	26-27	N. 84° 16' W. 167 "
6-7	N. 37°8' W.	133 "	13-14	N. 66°7' W.	946 "	20-21	N. 79° 6' W.	228 "	27-28	N. 87°h' W. 177 "
7-8	N. 58°8' W.	162 "	14-15	N. 73°08' W.	728 "	21-22	N. 73°30' W.	226 "	28-29	N. 51°04' W. 174 "

Said ditch is 3 ft. wide on the bottom, 5 ft. wide at high water line, 1 ft. deep, has a minimum grade of 2 in. and is 8482 ft. long.

The capacity of the said The Lynx Creek Ditch is 5.2 second feet, computed by Kutteri formula, Coefficient of roughness 1 most above 25 = .025.

Said ditch is built for the purpose of irrigating 175 acres of land on the N.E.¼ N.E.¼ Sec. 29, S.½ S.E.¼ N.W.¼, S.E.¼ and S.W.¼ Sec. 20, N.E.¼ S.E.¼ and S.½ N.E.¼ Sec. 19 T.1N. R.88W. 6.P.M. Unsurveyed.

We claim 5.2 cub. feet per second of the waters of Lynx Creek and Himes Creek for irrigation.

Work was commenced on said ditch on May 1st 1901.

The estimated cost of said ditch is $300.

The headgate of The Bear Creek Ditch is situated on the left bank of Bear Creek from which stream said ditch diverts its supply of water at a point whence the mouth of Bear Creek bears S.42°35'W. 100 ft. Ditch runs thence:

Stations	True Bearing	Distance
1-2	S. 15°55' W.	180 ft.
2-3	S. 11° 10' W.	"
3-4	S. 30° 22' W.	340 "
4-5	S. 40° 41' W.	690 "
5-6	S. 40°30' W.	337 "
6-7	S. 27°28' W.	229 "
7-8	S. 29° 21' W.	413 "
8-9	S. 49°1' W.	413 "
9-10	S. 58°9'	W.	406 "

Said ditch is 3 ft. wide on the bottom, 5 ft. wide at high water line, 1 ft. deep, has a minimum grade of 2 in. and is 3165 ft. long.

The capacity of the said The Bear Creek Ditch is 5.2 second feet, computed by Kutteri formula, coefficient of roughness n of .025.

Said ditch is built for the purpose of irrigating 100 acres of land on N.W.¼ N.E.¼, S.½ N.E.¼, N.E.¼ S.E.¼ Sec. 19 N.W.¼ S.W.¼ Sec. 20 T½. N. R. 88 W. 6.P.M. Unsurveyed.

We claim 5.2 cub. feet per second of the waters of Bear Creek for irrigation.

Work was commenced on said ditch, Oct. 15th 1903.

The estimated cost of said ditch is $150.

State of Colorado, } SS.
County of Rio Blanco.

Samuel T. B. Himes and Jennie C. Himes being first duly sworn, on oath say that they have read the above and foregoing statement and examined the plat thereto attached and that the matters therein set forth are true to their best knowledge and belief.

Gordon Goodwin
Notary Public

S. T. B. Himes

Subscribed and sworn to before me this 11th day of November A.D. 1904.

MY COMMISSION
EXPIRES JUNE 27 08

J. C. Himes

P.O. address
Meeker, Colo.

State of Colorado, } SS.
County of Rio Blanco.

J. D. Moog being first duly sworn says that he is the person who was employed to make the survey, that he has prepared the above statement and the attached plat and that the matters therein set forth are true of his own knowledge.

J. D. Moog

Subscribed and sworn to before me this 11th day of November A.D. 1904.

H. A. Wildhack
NOTARY PUBLIC.

My commission expires Jan. 12, 1907.

— State Engineer's Office. —
Denver, Colo.

State of Colorado, } SS.
City and County of Denver.

I hereby certify that the attached map and statement has been examined and approved by me as agreeing with the statutes of the State of Colorado and the regulations of this office, and was accepted for filing on the 7th day of February A.D. 1905.

L. G. Carpenter
State Engineer

By Perham J. Preston
Deputy.

Hauskins Creek, Cross-Section 1, Looking Upstream

Hauskins Creek, Cross-Section 1, Looking Across

Hauskins Creek, Cross-Section 2

Hauskins Creek , Cascade Habitat and Overhead Cover

Hauskins Creek, Upland and riparian habitat overview