

DRAFT INSTREAM FLOW RECOMMENDATION

Mr. Dan Merriman
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Dear Mr. Merriman:

The Bureau of Land Management (BLM) is writing this letter to formally communicate its instream flow recommendation for Piceance Creek, located in Water Division 6.

Location and Land Status. Piceance Creek is tributary to the White River approximately 19 miles northwest of Meeker. This recommendation covers the stream reach beginning at the confluence with the Dry Fork and extends downstream to the confluence with the White River. Approximately 61% of the 7.72-mile reach is publicly owned, while the remaining 39% is privately owned. Of the 61% percent of the reach that is publicly owned, 59% is managed by BLM and 41% is managed by the Colorado Division of Wildlife.

Biological Summary. Piceance Creek is a moderate gradient stream with a highly variable substrate size and a stable channel. Water quality, food sources and physical habitat characteristics are suitable for native species. Fishery surveys indicate that the creek supports self-sustaining populations of flannemouth suckers, speckled dace, and mountain sucker. Fish surveys have confirmed the presence of flannemouth suckers during the fall, confirming that this species uses the creek year-round and not just during the spring spawning season. Very few significant tributaries enter the White River at the low elevations that are required for flannemouth sucker habitat. Accordingly, this tributary provides a very important extension of the flannemouth sucker habitat in the White River.

R2Cross Analysis. BLM's data analysis, coordinated with the Division of Wildlife, indicates that the following flows are needed to protect the fishery and natural environment to a reasonable degree.

8.5 cubic feet per second is recommended for the high temperature period from May 1 to October 31. This recommendation is driven by the average velocity criteria. Protecting average velocity for spawning habitat is important, because many portions of this reach that are suitable for spawning are low gradient. Protecting flows during this time period is also important for recharging the alluvial aquifer, which discharges water to the stream and maintains flow levels during later summer.

4.7 cubic feet per second is recommended from November 1 through April 30. This recommendation is driven by the average depth criteria. Many portions of this reach have high width-to-depth ratio, so it is important to maintain sufficient depth for fish passage and overwintering of fish.

Water Availability. BLM is aware of two surface diversions within this reach, the White River Mesa Ditch, and Burch Ditch No. 2. (*Are these owned by Division of Wildlife?*) In addition, there are multiple decreed diversions located upstream on Piceance Creek and its tributaries. BLM recommends using USGS gage 09306222 (Piceance Creek at White River, CO) as an indicator of water availability. This gage has a long period of record, and its records incorporate all the impacts to stream flows associated with upstream ditch diversions and return flows.

Relationship to Management Plans. The White River Resource Management Plan identifies management of streams supporting sensitive fish species as a priority for BLM. The plan specifies that BLM will work to improve riparian and aquatic conditions in these streams, and will also work to prevent surface disturbances close to them. In addition, the plan specifies that BLM will work with the Colorado Water Conservation Board to appropriate instream flow water rights to protect these fisheries. The objective of this cooperation is to protect habitats for sensitive species, thereby avoiding the listing of the species under the Endangered Species Act.

The BLM requests that the Board recognize that this recommendation is based only upon the minimum flows necessary to support cool-water fishery values. BLM may wish to work with the Board and/or through the Colorado water rights system to appropriate flows to optimally protect fish values and to protect other water-dependent values specified in BLM resource management plans.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section are enclosed to support this recommendation. We thank both the Division of Wildlife and the Water Conservation Board for their cooperation in this effort.

If you have any questions regarding our instream flow recommendation, please contact Roy Smith at 303-239-3940.

Sincerely,

Linda Anania
Deputy State Director
Resources and Fire

4 Enclosures

cc: Nate Dieterich, White River Field Office
Kent Walter, White River Field
Traute Parrie, White River Field Office

STATE OF COLORADO

Bill Owens, Governor

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WILDLIFE

AN EQUAL OPPORTUNITY EMPLOYER

Bruce McCloskey, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192



*For Wildlife-
For People*

DRAFT

February 14, 2006

Mr. Dan Merriman and Mr. Todd Doherty
Colorado Water Conservation Board
Stream and Lake Protection Section
1313 Sherman Street, Room 723
Denver, Colorado 80203

Re: Colorado Division of Wildlife Instream Flow Recommendation for Piceance Creek.

Dear Dan and Todd,

The purpose of this letter is to officially transmit the Colorado Division of Wildlife's (DOW) Instream Flow Recommendation for Piceance Creek in Rio Blanco County.

Location and Land Status

The reach of stream covered by this flow recommendation is from the confluence with the Dry Fork of Piceance Creek to the confluence with the White River, a distance of approximately 7.7 miles. Piceance Creek is one of the main tributaries to the White River and is located approximately 20 miles west of the Town of Meeker. The DOW and the Bureau of Land Management (BLM) manage approximately 60% of the 7.7 stream miles covered by this instream flow recommendation.

Biological Summary

The DOW and BLM have jointly collected stream cross section information, natural environment data, and other data needed to quantify the instream flow needs for this reach of Piceance Creek. Piceance Creek is classified as a medium stream (between 20 to 35 feet wide) and fishery surveys indicate the stream environment of Piceance Creek supports Mountain sucker (*Catostomus platyrhynchus*), Flannemouth sucker (*Catostomus latipinnis*) and Speckled dace (*Rhinichthys osculus*).

Mountain and Flannemouth suckers have been identified by the DOW, BLM and several other state and federal agencies as "species of greatest conservation need". DOW is involved in developing Conservation and Management Plans for these species. The intention of these plans is to increase populations and distributions of identified species, thereby assisting in the long-term persistence of each species. The success

DEPARTMENT OF NATURAL RESOURCES, Russell George, Executive Director
WILDLIFE COMMISSION, Jeffrey Crawford, Chair • Tom Burke, Vice Chair • Ken Torres, Secretary
Members, Bernard Black • Rick Enstrom • Philip James • Claire O'Neal • Brad Phelps • Robert Shoemaker
Ex Officio Members, Russell George and Don Ament

of such plans could potentially curtail the need for federal listing of these species under the Endangered Species Act (ESA). These species are not currently federally listed.

R2CROSS Analysis

The stream cross section data was analyzed using the R2CROSS program. The R2CROSS output was evaluated using the methods described in Nehring (1979) and Espegren (1996). The CDOW has reviewed the data collected to date and based on that review recommends that the CWCB appropriated the following flow amounts to preserve the natural environment of Piceance Creek to a reasonable degree:

- 8.5 cubic feet per second is recommended for May 1 through October 31. This flow is required to maintain the three principal hydraulic criteria of average depth, average velocity and percent wetted perimeter;
- 4.7 cubic feet per second is recommended for November 1 through April 30. This flow is required to maintain two of the three principal hydraulic criteria of average depth and percent wetted perimeter.

The above recommended flows are intended to provide adequate habitat for Flannelmouth suckers which inhabit medium to larger streams and rivers in all habitat types including riffles, runs, eddies and backwaters (Minckley 1973) and Mountain suckers which inhabit small to medium streams and rivers with gravel, sand and mud bottoms. Mountain suckers are found in areas of undercut banks, eddies, small pools and in areas of moderate current (NDIS).

Preliminary Water Availability Analysis

The drainage area of Piceance Creek at the confluence with the White River is approximately 652 square miles. There are a number of decreed absolute and conditional water rights located upstream of the proposed instream flow reach. However, the Piceance Creek USGS gage at White River (ID# 09306222) indicates water is available for appropriation in this reach of stream. The average daily flow value for each month for the period of record between 1964 through 2004 is displayed below:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
26	30	45	57	74	35	27	32	24	27	32	28

Basis for Instream Flow Recommendation

The DOW is forwarding this stream flow recommendation to the CWCB to meet 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). The DOW Strategic Plan states "Healthy aquatic environments are essential to maintain healthy and viable fisheries, and critical for self-sustaining populations. The Division desires to protect and enhance the quality and quantity of aquatic habitats."

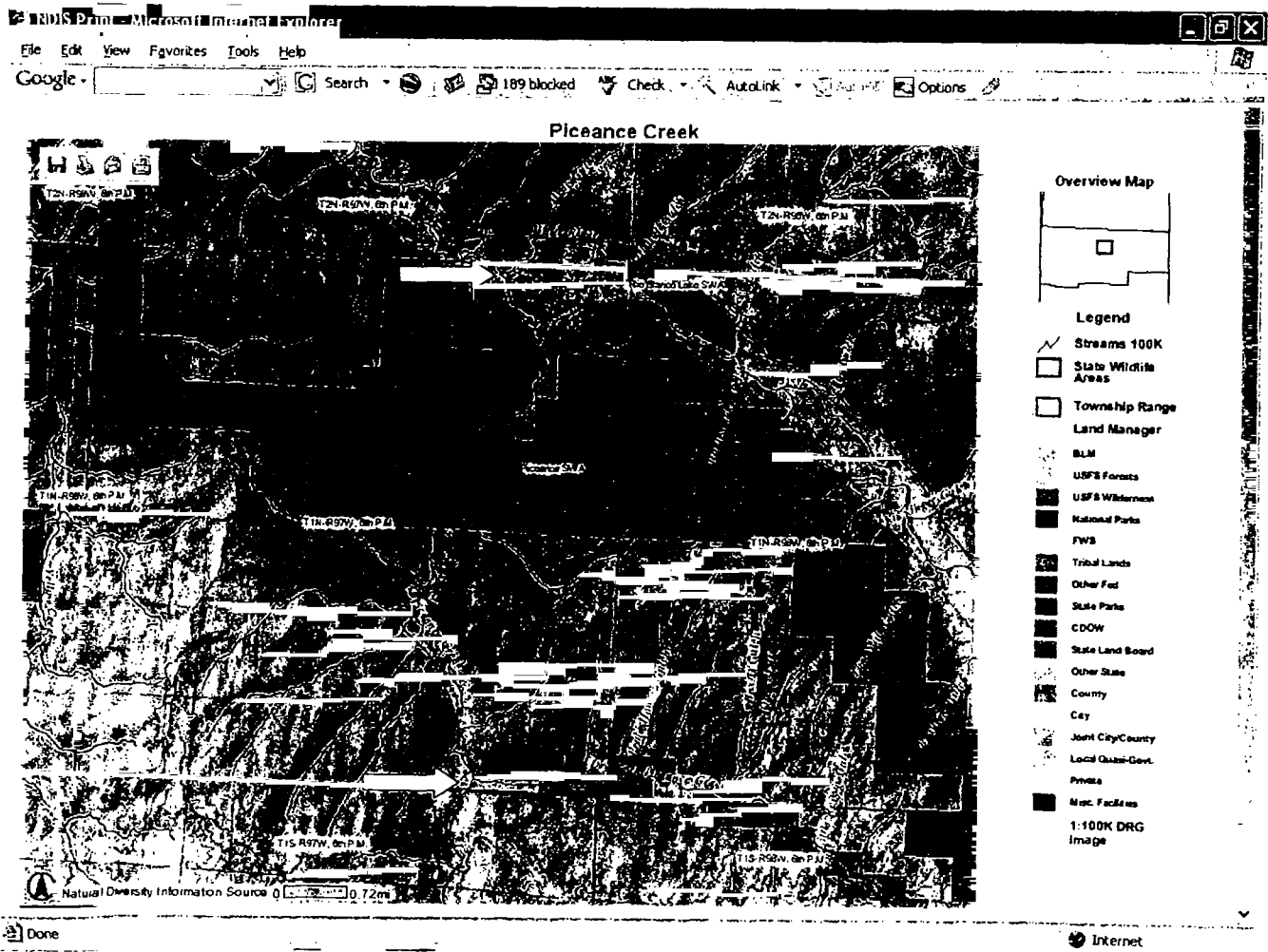
Please find attached, copies of the field data sheets, the R2CROSS modeling runs, fishery survey information and stream photographs. If you have any questions regarding the attached information or the instream flow recommendations, please feel free to contact me at (303)-291-7267.

Sincerely,

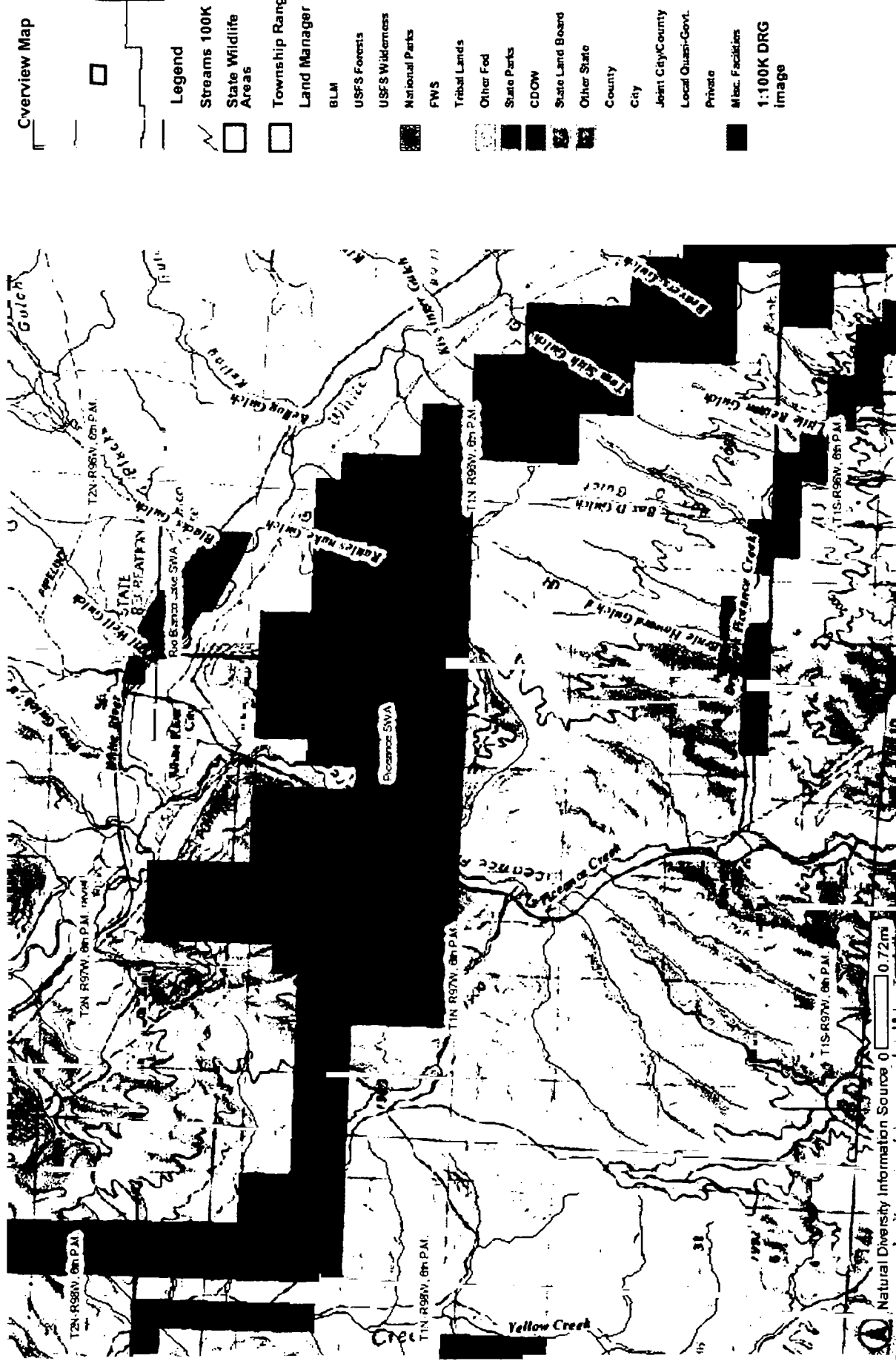
DRAFT

Mark Uppendahl
Colorado Division of Wildlife
Instream Flow Program Coordinator

Cc: Jay Skinner, CDOW Water Unit Program Manager – w/o attachments
Sherman Hebein, CDOW Senior Fish Biologist – West Regions – w/o attachments
Bill Elmlad, CDOW Aquatic Biologist – w/o attachments
Lori Martin, CDOW Aquatic Biologist - w/o attachments
Bill de Vergie, CDOW AWM Area 6 – w/o attachments



Piceance Creek



February 16th, 2006 09:57 am DISCLAIMER: This map is intended for display purposes only and is not intended for any legal representations.

COLORADO WATER CONSERVATION BOARD
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME: Piceance Creek
XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
XS NUMBER: 2062105

DATE: 21-Jun-05
OBSERVERS: Uppendahl, Graf & Dilger

1/4 SEC: SE
SECTION: 11
TWP: 1 N
RANGE: 97 W
PM: 6

COUNTY: RIO BLANCO
WATERSHED: PICEANCE CK
DIVISION: 6
DOW CODE: 0

USGS MAP: WHITE RIVER CITY
USFS MAP: 0

SUPPLEMENTAL DATA

*** NOTE ***

Leave TAPE WT and TENSION
at defaults for data collected
with a survey level and rod

TAPE WT: 0.0106
TENSION: 99999

CHANNEL PROFILE DATA

SLOPE: 0.01009615

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: Piceance Creek
 XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 XS NUMBER: 2062105

DATA POINTS=

34

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% \bar{Q} CELL
S	0.00	5.00			0.00		0.00	0.00	0.0%
TOP	0.50	4.90			0.00		0.00	0.00	0.0%
BF	2.50	5.30			0.00		0.00	0.00	0.0%
1 G	3.50	5.75			0.00		0.00	0.00	0.0%
	5.00	6.65			0.00		0.00	0.00	0.0%
	7.00	6.85			0.00		0.00	0.00	0.0%
W	8.50	6.91	0.00	0.00	0.00		0.00	0.00	0.0%
	9.25	7.10	0.20	0.00	0.77	0.20	0.15	0.00	0.0%
	10.00	7.35	0.45	0.00	0.79	0.45	0.34	0.00	0.0%
	10.75	7.40	0.50	0.77	0.75	0.50	0.31	0.24	2.2%
	11.25	7.45	0.55	1.56	0.50	0.55	0.34	0.54	4.8%
	12.00	7.50	0.60	1.73	0.75	0.60	0.45	0.78	7.0%
	12.75	7.55	0.65	1.66	0.75	0.65	0.49	0.81	7.3%
	13.50	7.60	0.70	2.27	0.75	0.70	0.53	1.19	10.8%
	14.25	7.40	0.50	2.27	0.78	0.50	0.38	0.85	7.7%
	15.00	7.25	0.35	2.66	0.76	0.35	0.26	0.70	6.3%
	15.75	7.20	0.30	2.92	0.75	0.30	0.23	0.66	5.9%
	16.50	7.20	0.30	2.35	0.75	0.30	0.23	0.53	4.8%
	17.25	7.30	0.40	1.57	0.76	0.40	0.30	0.47	4.3%
	18.00	7.40	0.50	1.41	0.76	0.50	0.38	0.53	4.8%
	18.75	7.35	0.50	2.27	0.75	0.50	0.38	0.85	7.7%
	19.50	7.40	0.50	1.64	0.75	0.50	0.38	0.62	5.6%
	20.25	7.40	0.50	1.92	0.75	0.50	0.38	0.72	6.5%
	21.00	7.40	0.50	2.24	0.75	0.50	0.38	0.84	7.6%
	21.75	7.50	0.60	1.12	0.76	0.60	0.45	0.50	4.6%
	22.50	7.55	0.65	0.42	0.75	0.65	0.49	0.20	1.9%
	23.25	7.80	0.90	0.05	0.79	0.90	0.68	0.03	0.3%
	24.00	7.35	0.45	0.01	0.87	0.45	0.34	0.00	0.0%
	24.75	7.35	0.45	0.00	0.75	0.45	0.36	0.00	0.0%
W	25.60	6.89	0.00	0.00	0.97		0.00	0.00	0.0%
	27.00	6.40			0.00		0.00	0.00	0.0%
	29.00	6.00			0.00		0.00	0.00	0.0%
1 G	29.75	5.75			0.00		0.00	0.00	0.0%
S	31.40	4.60			0.00		0.00	0.00	0.0%

TOTALS

17.52 0.9 8.18 11.06 100.0%
 (Max.)

Manning's n = 0.0664
 Hydraulic Radius= 0.466750409

STREAM NAME: Piceance Creek
 XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 XS NUMBER: 2062105

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	8.18	8.14	-0.4%
6.65	8.18	13.04	59.5%
6.67	8.18	12.62	54.3%
6.69	8.18	12.20	49.2%
6.71	8.18	11.79	44.1%
6.73	8.18	11.38	39.2%
6.75	8.18	10.98	34.2%
6.77	8.18	10.58	29.4%
6.79	8.18	10.19	24.6%
6.81	8.18	9.80	19.8%
6.83	8.18	9.42	15.2%
6.85	8.18	9.04	10.6%
6.86	8.18	8.86	8.3%
6.87	8.18	8.67	6.1%
6.88	8.18	8.49	3.9%
6.89	8.18	8.32	1.7%
6.90	8.18	8.14	-0.4%
6.91	8.18	7.97	-2.6%
6.92	8.18	7.80	-4.6%
6.93	8.18	7.63	-6.7%
6.94	8.18	7.46	-8.8%
6.95	8.18	7.29	-10.8%
6.97	8.18	6.96	-14.9%
6.99	8.18	6.62	-19.0%
7.01	8.18	6.29	-23.1%
7.03	8.18	5.96	-27.1%
7.05	8.18	5.64	-31.1%
7.07	8.18	5.31	-35.0%
7.09	8.18	4.99	-39.0%
7.11	8.18	4.67	-42.9%
7.13	8.18	4.36	-46.7%
7.15	8.18	4.04	-50.6%

WATERLINE AT ZERO
 AREA ERROR = 6.898

STREAM NAME: Piceance Creek
 XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 XS NUMBER: 2062105

Constant Manning's n

GL = lowest Grassline elevation corrected for sag

STAGING TABLE

WL = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG DEPTH (FT)	MAX DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	5.75	26.25	1.31	2.05	34.42	27.10	100.0%	1.27	90.77	2.64
	5.90	25.56	1.20	1.90	30.59	26.34	97.2%	1.16	75.98	2.48
	5.95	25.33	1.16	1.85	29.32	26.09	96.3%	1.12	71.25	2.43
	6.00	25.09	1.12	1.80	28.06	25.83	95.3%	1.09	66.66	2.38
	6.05	24.76	1.08	1.75	26.81	25.48	94.0%	1.05	62.36	2.33
	6.10	24.43	1.05	1.70	25.58	25.13	92.7%	1.02	58.20	2.28
	6.15	24.10	1.01	1.65	24.37	24.78	91.4%	0.98	54.18	2.22
	6.20	23.76	0.98	1.60	23.17	24.43	90.1%	0.95	50.30	2.17
	6.25	23.43	0.94	1.55	21.99	24.07	88.8%	0.91	46.55	2.12
	6.30	23.10	0.90	1.50	20.83	23.72	87.5%	0.88	42.94	2.06
	6.35	22.76	0.86	1.45	19.68	23.37	86.2%	0.84	39.46	2.00
	6.40	22.43	0.83	1.40	18.55	23.02	84.9%	0.81	36.12	1.95
	6.45	22.20	0.79	1.35	17.44	22.76	84.0%	0.77	32.82	1.88
	6.50	21.97	0.74	1.30	16.33	22.52	83.1%	0.73	29.64	1.81
	6.55	21.75	0.70	1.25	15.24	22.27	82.2%	0.68	26.61	1.75
	6.60	21.52	0.66	1.20	14.16	22.02	81.3%	0.64	23.71	1.67
	6.65	21.30	0.61	1.15	13.09	21.77	80.3%	0.60	20.96	1.60
	6.70	20.67	0.58	1.10	12.04	21.13	78.0%	0.57	18.60	1.54
	6.75	20.03	0.55	1.05	11.02	20.48	75.6%	0.54	16.39	1.49
	6.80	19.38	0.52	1.00	10.04	19.83	73.2%	0.51	14.33	1.43
	6.85	18.74	0.48	0.95	9.08	19.17	70.8%	0.47	12.41	1.37
WL	6.90	17.39	0.47	0.90	8.18	17.81	65.7%	0.46	10.94	1.34
	6.95	16.84	0.44	0.85	7.33	17.25	63.6%	0.42	9.31	1.27
	7.00	16.55	0.39	0.80	6.49	16.94	62.5%	0.38	7.70	1.19
	7.05	16.26	0.35	0.75	5.67	16.63	61.4%	0.34	6.23	1.10
	7.10	15.97	0.30	0.70	4.87	16.32	60.2%	0.30	4.88	1.00
	7.15	15.73	0.26	0.65	4.07	16.06	59.3%	0.25	3.67	0.90
	7.20	15.49	0.21	0.60	3.29	15.79	58.3%	0.21	2.60	0.79
	7.25	13.42	0.19	0.55	2.59	13.70	56.5%	0.19	1.91	0.74
	7.30	12.53	0.15	0.50	1.94	12.78	47.2%	0.15	1.24	0.64
	7.35	11.66	0.11	0.45	1.33	11.88	43.9%	0.11	0.70	0.52
	7.40	8.04	0.11	0.40	0.86	8.24	30.4%	0.10	0.43	0.50
	7.45	5.32	0.11	0.35	0.56	5.49	20.3%	0.10	0.27	0.49
	7.50	3.93	0.08	0.30	0.33	4.08	15.0%	0.08	0.14	0.42
	7.55	2.18	0.08	0.25	0.17	2.30	8.5%	0.08	0.07	0.40
	7.60	0.98	0.10	0.20	0.10	1.07	4.0%	0.09	0.04	0.45
	7.65	0.71	0.08	0.15	0.05	0.78	2.9%	0.07	0.02	0.38
	7.70	0.48	0.05	0.10	0.02	0.52	1.9%	0.05	0.01	0.29
	7.75	0.24	0.03	0.05	0.01	0.27	1.0%	0.02	0.00	0.19
	7.80	0.01	0.00	0.00	0.00	0.01	0.0%	0.00	0.00	0.02

$$3/3 = 4.9$$

$$2/3 = 4.06$$

STREAM NAME: Piceance Creek
 XS LOCATION 50 yds w/s of DOW fence 40 03' 57 6" 108 14' 29 6"
 XS NUMBER: 2062105

SUMMARY SHEET

MEASURED FLOW (Qm)=	11.06 cfs
CALCULATED FLOW (Qc)=	10.94 cfs
(Qm-Qc)/Qm * 100 =	1.1 %
MEASURED WATERLINE (Wlm)=	6.90 ft
CALCULATED WATERLINE (Wlc)=	6.90 ft
(Wlm-Wlc)/Wlm * 100 =	0.0 %
MAX MEASURED DEPTH (Dm)=	0.90 ft
MAX CALCULATED DEPTH (Dc)=	0.90 ft
(Dm-Dc)/Dm * 100	-0.2 %
MEAN VELOCITY=	1.34 ft/sec
MANNING'S N=	0.066
SLOPE=	0.01009615 ft/ft
.4 * Qm =	4.4 cfs
2.5 * Qm=	27.7 cfs

RECOMMENDED INSTREAM FLOW:

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FLOW (CFS)	PERIOD
=====	=====

RATIONALE FOR RECOMMENDATION:

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RECOMMENDATION BY: AGENCY DATE:

CWCB REVIEW BY: DATE:

Piceance Creek

CROSS SECTION DATA ANALYSIS



Data Input & Proofing			GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
STREAM NAME: Piceance Creek				S	0.00	5.00			0.00	0.00	0.00
XS LOCATION: 150 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"				TOP	0.50	4.90			0.00	0.00	0.00
XS NUMBER: 2062105				BF	2.50	5.30			0.00	0.00	0.00
DATE: 6/21/2005			1	G	3.50	5.75			0.00	0.00	0.00
OBSERVERS: Uppendahl, Graf & Dilger					5.00	6.65			0.00	0.00	0.00
					7.00	6.85			0.00	0.00	0.00
1/4 SEC: SE				W	8.50	6.91	0.00	0.00	0.00	0.00	0.00
SECTION: 11					9.25	7.10	0.20	0.00	0.15	0.00	6.90
TWP: 11 N					10.00	7.35	0.45	0.00	0.34	0.00	6.90
RANGE: 97 W					10.75	7.40	0.50	0.77	0.31	0.24	6.90
PM: 6					11.25	7.45	0.55	1.56	0.34	0.54	6.90
					12.00	7.50	0.60	1.73	0.45	0.78	6.90
COUNTY: RIO BLANCO					12.75	7.55	0.65	1.66	0.49	0.81	6.90
WATERSHED: PICEANCE CK					13.50	7.60	0.70	2.27	0.53	1.19	6.90
DIVISION: 6					14.25	7.40	0.50	2.27	0.38	0.85	6.90
DOW CODE:					15.00	7.25	0.35	2.66	0.26	0.70	6.90
USGS MAP: WHITE RIVER CITY					15.75	7.20	0.30	2.92	0.23	0.66	6.90
USFS MAP:					16.50	7.20	0.30	2.35	0.23	0.53	6.90
					17.25	7.30	0.40	1.57	0.30	0.47	6.90
TAPE WT: 0.0106					18.00	7.40	0.50	1.41	0.38	0.53	6.90
TENSION: 99999					18.75	7.35	0.50	2.27	0.38	0.85	6.85
					19.50	7.40	0.50	1.64	0.38	0.62	6.90
SLOPE: 0.010096154					20.25	7.40	0.50	1.92	0.38	0.72	6.90
					21.00	7.40	0.50	2.24	0.38	0.84	6.90
					21.75	7.50	0.60	1.12	0.45	0.50	6.90
CHECKED BY: DATE:					22.50	7.55	0.65	0.42	0.49	0.20	6.90
					23.25	7.80	0.90	0.05	0.68	0.03	6.90
ASSIGNED TO: DATE:					24.00	7.35	0.45	0.01	0.34	0.00	6.90
					24.75	7.35	0.45	0.00	0.36	0.00	6.90
				W	25.60	6.89	0.00	0.00	0.00	0.00	0.00
					27.00	6.40			0.00	0.00	0.00
					29.00	6.00			0.00	0.00	0.00
			1	G	29.75	5.75			0.00	0.00	0.00
				S	31.40	4.60			0.00	0.00	0.00
Totals									8.18	11.06	

Piceance Creek - 06/21/05



[Home](#)
[Hunting](#)
[Fishing](#)
[Wildlife Species](#)
[Exploring Habitat](#)
[Conservation Planning](#)



Natural Diversity Information Source

Colorado Division of Wildlife

Select a Major Topic

Wildlife Species

- ☐ Wildlife Home
- ☐ Amphibians
- ☐ Birds
- ☐ Fish
- ☐ Mammals
- ☐ Reptiles

Wildlife Flannemouth Sucker Page

[Return to species list...](#)

Flannemouth sucker *Catostomus latipinnis*

Habitat: The flannemouth sucker inhabits larger streams and rivers in all habitat types including riffles, runs, eddies, and backwaters. The species does not appear to maintain viable populations in impoundments (Minckley 1973).



Photo by: John Woodling

Description: An elongated sucker, oval in cross section; snout blunt and broad, overhanging ventral mouth; no notch or indentation at the lateral connection of lower and upper lips, thick upper lip with 5-8 rows of papillae, median indentation of lower lip complete, at most one row of papillae separating indentation and edge of lower jaw; dorsal fin is falcate (sickle-shaped) with 11-13 rays; scales are small, crowded near head; more than 90 scales along lateral line. Adults in clear water are greenish-blue-grey on the back, fading to yellow on the sides and to white on the belly. In turbid water, with a sand or mud bottom, flannemouths are light tan on the back, white and silver on the sides and belly. Young are lighter colored. Anal and pelvic fins yellowish. Dorsal and tail fin dusky. A large species, one specimen attained a weight of 3.5 pounds and was 22 inches long (McDonald and Dotson 1960).

Range in Colorado: The flannemouth is restricted to larger streams and rivers in the middle and upper Colorado River Drainage, including parts of Wyoming, Colorado, New Mexico, Utah, Arizona and Nevada. In Colorado, the flannemouth is found only in large rivers on the western slope. This species and the bluehead sucker have disappeared from some waters, such as the Gunnison River above Blue Mesa Reservoir, since the 1960's. The white and longnose suckers, introduced from East Slope waters, have replaced the flannemouth and bluehead in the upper Gunnison River. Competition with the introduced species and/or cold water temperatures from reservoir releases probably led to the disappearance of the flannemouth from the upper Gunnison.

Status: This species is not listed.

Species Occurrence Tool

Occurrence by County

Data Format:

- ☒ HTML
- ☐ Delimited Text
- ☐ MS-Excel

Fetch!

Reset

(*) NDIS has no county occurrence data for fish at this time.

Flannemouth Sucker NDIS Maps

[Sample Site Locations](#)

Flannemouth Sucker Specific Links

No Flannemouth Sucker links available!

General Wildlife Links

[Colorado Audubon](#)
[Colorado Birding Society](#)
[Colorado Field Ornithologist's](#)
[Rocky Mnt. Bird Observatory](#)
[TNC Migratory Bird Program](#)



Natural Diversity Information Source

Colorado Division of Wildlife

Select a Major Topic

Wildlife Species

Wildlife Mountain Sucker Page

- ☐ Wildlife Home
- ☐ Amphibians
- ☐ Birds
- ☐ Fish
- ☐ Mammals
- ☐ Reptiles

Mountain Sucker *Catostomus platyrhynchus*

Habitat: The mountain sucker is found in smaller rivers and streams with gravel, sand and mud bottoms. Colorado specimens are found in areas of undercut banks, eddies, small pools, and in areas of moderate current. Young prefer backwaters and eddies. A population of mature adults is found in at least one Colorado Impoundment, Steamboat Lake.



Photo by: John Woodling

Description: A stout sucker; head small and rounded; median incision of lower lip shallow; separated from margin of lower lip by 4 or more rows of papillae; there may be a well-developed fontanelle that can be exposed by removing skin overlaying skull; pigment on caudal fins mostly restricted to rays, inter-radial membranes may be clear or have a few small spots; an axillary process present; lining of body cavity black or dusky; lateral line scales 76-97, normally 80-85. Adults are dark brown or tan fading to white on the belly. Dark mottling shaped like saddles across the back may be present in some specimens. Breeding males with a red-orange stripe on sides. Young less than 2 inches long are silver-tan on the back fading to silver-white on the stomach with dark speckles on the back. A smallish fish, this species attains a maximum length of about 8 inches (Sigler and Miller 1963) with a normal range of 3.2-6.3 inches for adults.

Range in Colorado: A widely distributed species, the mountain sucker ranges from Washington north to Saskatchewan down to Montana, east to the western edge of South Dakota through Wyoming and west to Utah including the Green River in Colorado (Smith and Koehn 1971). Although reported by many investigators in Colorado, there are few known specimens of the mountain sucker. Mountain suckers have been collected in the White River Basin (Piceance Creek) and the Yampa River Basin (Steamboat Lake). Only one record of mountain sucker (Snyder 1981) exists from the upper reaches of the Colorado River system. No specimens have been reported from the drainage south of the Colorado River mainstem.

Status: State Special Concern

[Return to species list...](#)

Species Occurrence Tool

Occurrence by County

Data Format:

- ☒ HTML
- ☐ Delimited Text
- ☐ MS-Excel

[Fetch!](#)

[Reset](#)

(*) NDIS has no county occurrence data for fish at this time.

Mountain Sucker NDIS Maps
Sample Site Locations

Mountain Sucker Specific Link:
No Mountain Sucker links available!

General Wildlife Links
[Colorado Audubon](#)
[Colorado Birding Society](#)
[Colorado Field Ornithologist's](#)
[Rocky Mnt. Bird Observatory](#)
[TNC Migratory Bird Program](#)

[Home](#)
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[Conservation Planning](#)



Natural Diversity Information Source

Colorado Division of Wildlife

Select a Major Topic

Wildlife Species

Wildlife Speckled Dace Page

- ☐ [Wildlife Home](#)
- ☐ [Amphibians](#)
- ☐ [Birds](#)
- ☐ [Fish](#)
- ☐ [Mammals](#)
- ☐ [Reptiles](#)

[Return to species list...](#)

Speckled Dace *Rhinichthys osculus*

Status: This species is not listed.



Photographed by John Woodling

Photo by: John Woodling

[Help](#) [Map Index](#) [Contacts](#)
[Download Data](#) [Hunting](#) [Fishing](#)
[Wildlife](#) [Exploring Habitat](#) [Conservation Planning](#)

Species Occurrence Tool

Occurrence by County

Data Format:

- ☒ HTML
- ☐ Delimited Text
- ☐ MS-Excel

(*) NDIS has no county occurrence data for fish at this time.

Speckled Dace NDIS Maps

No Speckled Dace maps available!

Speckled Dace Specific Links

No Speckled Dace links available

General Wildlife Links

[Colorado Audubon](#)
[Colorado Birding Society](#)
[Colorado Field Ornithologist's](#)
[Rocky Mnt. Bird Observer](#)
[TNC Migratory Bird Program](#)



Natural Diversity Information Source

Colorado Division of Wildlife

Select a Major Topic

Wildlife Species

Wildlife Fathead Minnow Page

- ☐ Wildlife Home
- ☐ Amphibians
- ☐ Birds
- ☐ Fish
- ☐ Mammals
- ☐ Reptiles

Fathead Minnow *Pimephales promelas*

Habitat: Fathead minnows are tolerant of extremes in environmental conditions, able to withstand high temperatures, high nutrient concentrations, low dissolved oxygen levels, high turbidity and fairly stagnant conditions. In lakes or ponds, schools of adult fatheads can be observed on the bottom or at middle depths. Young-of-the-year school in the shallows. Propst (1982) found the fathead to be the most widely distributed species in the South Platte River Basin. The fish was found in foothills transition streams, the mainstream river, and potholes of intermittent high plains streams. In perennial streams fatheads are found along undercut banks or backwater areas with little or no current.

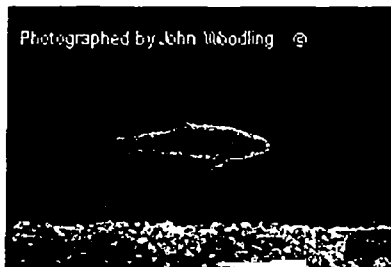


Photo by: John Woodling

Description: A full-bodied, stout minnow; mouth small, terminal, and oblique; snout round, blunt in adults; first ray of dorsal fin shorter, thick and split away from remainder of fin, connected by a membrane; lateral line incomplete ending below point of dorsal fin origin; intestine long, with several loops; lining of body cavity black; pharyngeal teeth 4-4. Young females and non-breeding adult males dark above, fading to white on the stomach with a distinct dark stripe along the sides. Breeding males dark-brown, purple with two broad yellowish bars on body and tubercles on chin and nout. Adults are a little less than 3 inches in length while one-year old fathead are about 1.5 inches long.

Range in Colorado: The species is native to the east slope rivers of Colorado. Through bait bucket transfers and/or accidental inclusion with fish plants of other species, the fathead minnow is now found in waters throughout the western portions of Colorado. Presently, the fathead minnow may be the most widely distributed fish in Colorado, being found in almost every drainage in the state.

Status: This species is not listed.

[Return to species list...](#)

Species Occurrence Tool

Occurrence by County

Data Format:

- ☒ HTML
- ☐ Delimited Text
- ☐ MS-Excel

[Fetch!](#)

[Reset](#)

(*) NDIS has no county occurrence data for fish at this time.

Fathead Minnow NDIS Maps

[Sample Site Locations](#)

Fathead Minnow Specific Links

No Fathead Minnow links available!

General Wildlife Links

[Colorado Audubon](#)
[Colorado Birding Society](#)
[Colorado Field Ornithologist's](#)
[Rocky Mnt. Bird Observatory](#)
[TNC Migratory Bird Program](#)



FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



LOCATION INFORMATION

COLORADO WATER
CONSERVATION BOARD

STREAM NAME:

Piceance Creek

CROSS-SECTION NO.:

2062105

CROSS-SECTION LOCATION:

50 YDS W/S OF LOW FENCE

40° 03' 57.6" 108° 14' 29.6"

DATE:

6/21/05

OBSERVERS:

UPPERNAHL / Dlaer / Grop

SECTION:

SE

SECTION:

11

TOWNSHIP:

1 (NS)

RANGE:

97 (W) PM: 6

LEGAL DESCRIPTION

COUNTY:

Blanco

WATERSHED:

Piceance CK

WATER DIVISION:

6 white

DOW WATER CODE:

MAPS:

USGS:

USFS:

SUPPLEMENTAL DATA

BAG TAPE SECTION SAME AS
DISCHARGE SECTION:

YES/NO

METER TYPE:

FLO-MATE

DATE RATED:

CALIB/SPIN:

890

TAPE WEIGHT:

lbs/100ft

TAPE TENSION: lbs

METER NUMBER:

PHOTOGRAPHS TAKEN: YES/NO

NUMBER OF PHOTOGRAPHS:

CHANNEL BED MATERIAL SIZE RANGE:

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)	LEGEND:
⊗ Tape @ Stake L/S	0.0	4.60	Stake ⊗
⊗ Tape @ Stake R/S	0.0	5.00	Station ①
① WS @ Tape L/S/R/S	0.0	6.89/6.91	Photo ①
② WS Upstream	62	6.60	Direction of Flow
③ WS Downstream	42	7.65	
SLOPE	0.05/104 = 0.010		

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.)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 >15 TOTAL

SPECIES (FILL IN)

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

COMMENTS

6A68 READING = STAKE 2.26 Q = 20.0 cfs

Internet

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:

Firestone Creek

CROSS-SECTION NO.:

03062105

DATE:

6/2/05

SHEET 1 OF 1

BEGINNING OF MEASUREMENT

EDGE OF WATER LOOKING DOWNSTREAM:
(0.0 AT STAKE)

LEFT / RIGHT

Gage Reading: _____ ft

TIME:

12:15

Features	Stake Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inet (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec)		Area (ft ²)	Discharge (cfs)
									At Point	Mean in Vertical		
S		0		5.00								
		.5		4.90								
BF		2.5		5.30								
LL		3.5		5.75								
		5.0		6.65								
		7.0		6.85								
W		8.5		6.91								
		9.25		7.1	.20							
		10.0		7.35	.45							
		10.75		7.40	.50							
		11.25		7.45	.55							
		12.0		7.50	.60							
		12.75		7.55	.65							
		13.50		7.60	.70							
		14.25		7.40	.50							
		15.0		7.25	.35							
		15.75		7.20	.30							
		16.5		7.20	.30							
		17.25		7.30	.40							
		18.0		7.40	.50							
		18.75		7.35	.50							
		19.60		7.40	.50							
		20.25		7.40	.50							
		21.0		7.40	.50							
		21.75		7.50	.60							
		22.5		7.55	.65							
		23.25		7.80	.90							
		24.0		7.35	.45							
		24.75		7.35	.45							
W		25.6		6.89								
		27.0		6.40								
		29.0		6.00								
BL		29.75		5.75								
S		31.4		4.60								

TOTALS:

End of Measurement

Time:

13:00

Gage Reading:

ft

CALCULATIONS PERFORMED BY:

CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME: Piceance Creek
XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
XS NUMBER: 2082105

DATE: 21-Jun-05
OBSERVERS: Uppendahl, Graf & Dliger

1/4 SEC: SE
SECTION: 11
TWP: 1 N
RANGE: 97 W
PM: 6

COUNTY: RIO BLANCO
WATERSHED: PICEANCE CK
DIVISION: 6
DOW CODE: 0

USGS MAP: WHITE RIVER CITY
USFS MAP: 0

SUPPLEMENTAL DATA

*** NOTE ***

Leave TAPE WT and TENSION
at defaults for data collected
with a survey level and rod

TAPE WT: 0.0108
TENSION: 99999

CHANNEL PROFILE DATA

SLOPE: 0.01009915

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: Piceance Creek
 XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 XS NUMBER: 2062105

DATA POINTS=

34

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
S	0.00	5.00			0.00		0.00	0.00	0.0%
TOP	0.50	4.90			0.00		0.00	0.00	0.0%
BF	2.50	5.30			0.00		0.00	0.00	0.0%
1 G	3.50	5.75			0.00		0.00	0.00	0.0%
	5.00	6.65			0.00		0.00	0.00	0.0%
	7.00	6.85			0.00		0.00	0.00	0.0%
W	8.50	6.91	0.00	0.00	0.00		0.00	0.00	0.0%
	9.25	7.10	0.20	0.00	0.77	0.20	0.15	0.00	0.0%
	10.00	7.35	0.45	0.00	0.79	0.45	0.34	0.00	0.0%
	10.75	7.40	0.50	0.77	0.75	0.50	0.31	0.24	2.2%
	11.25	7.45	0.55	1.56	0.50	0.55	0.34	0.54	4.8%
	12.00	7.50	0.60	1.73	0.75	0.60	0.45	0.78	7.0%
	12.75	7.55	0.65	1.88	0.75	0.65	0.49	0.81	7.3%
	13.60	7.80	0.70	2.27	0.75	0.70	0.53	1.19	10.8%
	14.25	7.40	0.50	2.27	0.78	0.50	0.38	0.65	7.7%
	15.00	7.25	0.35	2.66	0.76	0.35	0.28	0.70	6.3%
	16.75	7.20	0.30	2.92	0.75	0.30	0.23	0.66	5.9%
	16.50	7.20	0.30	2.35	0.75	0.30	0.23	0.63	4.8%
	17.25	7.30	0.40	1.67	0.76	0.40	0.30	0.47	4.3%
	18.00	7.40	0.50	1.41	0.76	0.50	0.38	0.53	4.8%
	18.75	7.35	0.50	2.27	0.75	0.50	0.38	0.65	7.7%
	19.50	7.40	0.50	1.64	0.75	0.50	0.38	0.62	5.6%
	20.25	7.40	0.50	1.92	0.75	0.50	0.38	0.72	6.5%
	21.00	7.40	0.50	2.24	0.75	0.50	0.38	0.64	7.6%
	21.75	7.50	0.60	1.12	0.78	0.60	0.45	0.50	4.6%
	22.50	7.55	0.65	0.42	0.75	0.65	0.49	0.20	1.9%
	23.25	7.80	0.90	0.05	0.79	0.90	0.68	0.03	0.3%
	24.00	7.35	0.45	0.01	0.87	0.45	0.34	0.00	0.0%
	24.75	7.35	0.45	0.00	0.75	0.45	0.36	0.00	0.0%
W	25.60	6.89	0.00	0.00	0.97		0.00	0.00	0.0%
	27.00	6.40			0.00		0.00	0.00	0.0%
	29.00	6.00			0.00		0.00	0.00	0.0%
1 G	29.75	5.75			0.00		0.00	0.00	0.0%
S	31.40	4.60			0.00		0.00	0.00	0.0%

TOTALS-----

17.52

0.9

8.18

11.08

100.0%

(Max.)

Manning's n =

0.0664

Hydraulic Radius=

0.468750409

STREAM NAME: Picaance Creek
 XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 XS NUMBER: 2062105

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	8.18	8.14	-0.4%
6.65	8.18	13.04	58.6%
6.67	8.18	12.62	54.3%
6.69	8.18	12.20	49.2%
6.71	8.18	11.79	44.1%
6.73	8.18	11.38	39.2%
6.75	8.18	10.98	34.2%
6.77	8.18	10.58	29.4%
6.79	8.18	10.19	24.6%
6.81	8.18	9.80	19.8%
6.83	8.18	9.42	15.2%
6.85	8.18	9.04	10.8%
6.86	8.18	8.86	8.3%
6.87	8.18	8.67	6.1%
6.88	8.18	8.49	3.9%
6.89	8.18	8.32	1.7%
6.90	8.18	8.14	-0.4%
6.91	8.18	7.97	-2.6%
6.92	8.18	7.80	-4.6%
6.93	8.18	7.63	-6.7%
6.94	8.18	7.46	-8.8%
6.95	8.18	7.29	-10.8%
6.97	8.18	6.90	-14.9%
6.99	8.18	6.52	-19.0%
7.01	8.18	6.29	-23.1%
7.03	8.18	5.96	-27.1%
7.05	8.18	5.64	-31.1%
7.07	8.18	5.31	-35.0%
7.09	8.18	4.99	-39.0%
7.11	8.18	4.67	-42.9%
7.13	8.18	4.36	-46.7%
7.15	8.18	4.04	-50.6%

WATERLINE AT ZERO

AREA ERROR = 6.898

STREAM NAME: Piceance Creek
 XS LOCATION: 50 yds u/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 XS NUMBER: 2062106

Constant Manning's n

STAGING TABLE

GL = lowest Grassline elevation corrected for sag

WL = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	5.75	28.25	1.31	2.05	34.42	27.10	100.0%	1.27	90.77	2.84
	5.90	25.58	1.20	1.90	30.59	26.34	97.2%	1.16	75.88	2.48
	6.06	25.33	1.18	1.85	29.32	26.09	96.3%	1.12	71.25	2.43
	6.00	25.09	1.12	1.80	28.05	25.83	95.3%	1.09	66.66	2.38
	6.05	24.76	1.08	1.75	26.81	25.48	94.0%	1.06	62.36	2.33
	6.10	24.43	1.05	1.70	25.58	25.13	92.7%	1.02	58.20	2.28
	6.15	24.10	1.01	1.65	24.37	24.78	91.4%	0.98	54.18	2.22
	6.20	23.78	0.98	1.60	23.17	24.43	90.1%	0.95	50.30	2.17
	6.25	23.43	0.94	1.55	21.99	24.07	88.8%	0.91	46.55	2.12
	6.30	23.10	0.90	1.50	20.83	23.72	87.5%	0.88	42.94	2.08
	6.35	22.78	0.86	1.45	19.68	23.37	86.2%	0.84	39.46	2.00
	6.40	22.43	0.83	1.40	18.55	23.02	84.9%	0.81	36.12	1.96
	6.45	22.20	0.79	1.35	17.44	22.76	84.0%	0.77	32.82	1.88
	6.50	21.97	0.74	1.30	16.33	22.52	83.1%	0.73	29.64	1.81
	6.55	21.75	0.70	1.25	15.24	22.27	82.2%	0.68	26.61	1.76
	6.60	21.52	0.66	1.20	14.16	22.02	81.3%	0.64	23.71	1.67
	6.65	21.30	0.61	1.15	13.09	21.77	80.3%	0.60	20.96	1.60
	6.70	20.67	0.58	1.10	12.04	21.13	78.0%	0.57	18.60	1.54
	6.75	20.03	0.55	1.05	11.02	20.48	75.6%	0.54	16.39	1.49
	6.80	19.38	0.52	1.00	10.04	19.83	73.2%	0.51	14.33	1.43
WL	6.85	18.74	0.48	0.95	9.08	19.17	70.8%	0.47	12.41	1.37
	6.90	17.39	0.47	0.90	8.18	17.81	65.7%	0.48	10.84	1.34
	6.95	16.84	0.44	0.85	7.33	17.25	63.8%	0.42	9.31	1.27
	7.00	16.55	0.39	0.80	6.49	16.94	62.5%	0.38	7.70	1.19
	7.05	16.25	0.35	0.75	5.67	16.63	61.4%	0.34	6.23	1.10
	7.10	15.97	0.30	0.70	4.87	16.32	60.2%	0.30	4.88	1.00
	7.15	16.73	0.28	0.65	4.07	16.08	59.3%	0.25	3.57	0.90
	7.20	15.48	0.21	0.60	3.29	15.79	58.3%	0.21	2.60	0.79
	7.25	13.42	0.19	0.55	2.59	15.70	56.5%	0.19	1.91	0.74
	7.30	12.53	0.15	0.50	1.94	12.78	47.2%	0.15	1.24	0.64
	7.35	11.66	0.11	0.45	1.33	11.88	43.8%	0.11	0.70	0.52
	7.40	8.04	0.11	0.40	0.88	8.24	30.4%	0.10	0.43	0.50
	7.45	5.32	0.11	0.35	0.58	5.49	20.3%	0.10	0.27	0.49
	7.50	3.93	0.08	0.30	0.33	4.08	15.0%	0.08	0.14	0.42
	7.55	2.18	0.08	0.25	0.17	2.30	8.6%	0.08	0.07	0.40
	7.60	0.98	0.10	0.20	0.10	1.07	4.0%	0.09	0.04	0.45
	7.65	0.71	0.08	0.15	0.06	0.78	2.9%	0.07	0.02	0.38
	7.70	0.46	0.05	0.10	0.02	0.52	1.9%	0.05	0.01	0.29
	7.75	0.24	0.03	0.05	0.01	0.27	1.0%	0.02	0.00	0.19
	7.80	0.01	0.00	0.00	0.00	0.01	0.0%	0.00	0.00	0.02

$$3/3 = 4.9$$

$$2/3 = 4.0$$

STREAM NAME: Piceance Creek
XS LOCATION: 50 yds w/a of DOW fence 40 03' 57.6" 108 14' 28.0"
XS NUMBER: 2082105

SUMMARY SHEET

MEASURED FLOW (Qm)= 11.05 cfs
CALCULATED FLOW (Qc)= 10.94 cfs
(Qm-Qc)/Qm * 100 = 1.1 %

MEASURED WATERLINE (WLM)= 6.90 ft
CALCULATED WATERLINE (WLC)= 6.90 ft
(WLM-WLC)/WLM * 100 = 0.0 %

MAX MEASURED DEPTH (Dm)= 0.90 ft
MAX CALCULATED DEPTH (Dc)= 0.90 ft
(Dm-Dc)/Dm * 100 = -0.2 %

MEAN VELOCITY= 1.34 ft/sec
MANNING'S N= 0.068
SLOPE= 0.01009816 ft/ft

.4 * Qm = 4.4 cfs
2.5 * Qm = 27.7 cfs

RECOMMENDED INSTREAM FLOW:

=====

FLOW (CFS)	PERIOD
=====	=====

RATIONALE FOR RECOMMENDATION:

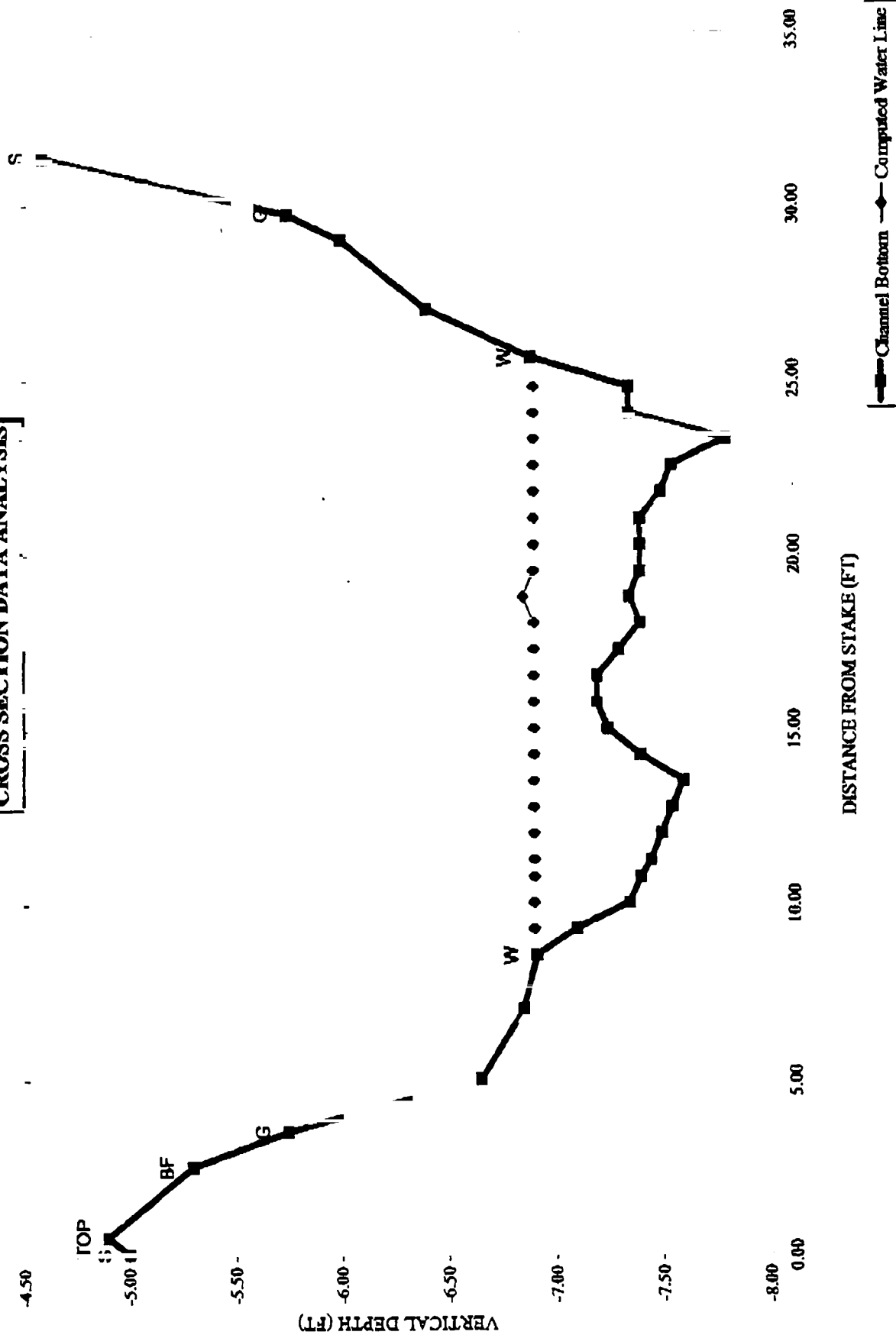
=====

RECOMMENDATION BY: AGENCY DATE:

CWCB REVIEW BY: DATE:

Piceance Creek

CROSS SECTION DATA ANALYSIS



Data Input & Proofing		ALST	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
				Total Data Points = 34						
STREAM NAME: Piceance Creek			S	0.00	5.00			0.00	0.00	0.00
XS LOCATION: 150 yds W/S of DOW fence 40 US' 57.8" 108 14' 29.6"			TOP	0.50	4.90			0.00	0.00	0.00
XS NUMBER: 12082106			BF	2.50	5.30			0.00	0.00	0.00
DATE: 10/21/2006		1	G	3.50	5.75			0.00	0.00	0.00
OBSERVERS: Juddendani, Gray & Diller				5.00	6.55			0.00	0.00	0.00
				7.00	6.85			0.00	0.00	0.00
1/4 SEC: 18s			W	8.50	6.91	0.00	0.00	0.00	0.00	0.00
SECTION: 111				9.25	7.10	0.20	0.00	0.15	0.00	6.90
TWP: 11 N				10.00	7.35	0.45	0.00	0.34	0.00	6.90
RANGE: 197 W				10.75	7.40	0.50	0.77	0.31	0.24	6.90
PM: 16				11.25	7.45	0.55	1.56	0.34	0.54	6.90
				12.00	7.50	0.60	1.73	0.45	0.78	6.90
COUNTY: IRIO BLANCO				12.75	7.55	0.65	1.66	0.49	0.81	6.90
WATERSHED: PICEANCE CK				13.50	7.60	0.70	2.27	0.53	1.19	6.90
DIVISION: 16				14.25	7.40	0.50	2.27	0.38	0.85	6.90
DOW CODE: 1				15.00	7.25	0.35	2.55	0.25	0.70	6.90
USGS MAP: WHITE RIVER CITY				15.75	7.20	0.30	2.82	0.23	0.66	6.90
USFS MAP: 1				16.50	7.20	0.30	2.35	0.23	0.53	6.90
				17.25	7.30	0.40	1.57	0.30	0.47	6.90
TAPE WT: 10.0106	Level and Rod Surve			18.00	7.40	0.50	1.41	0.38	0.53	6.90
TENSION: 99999				18.75	7.35	0.50	2.27	0.38	0.85	6.85
				19.50	7.40	0.50	1.64	0.38	0.62	6.90
SLOPE: 1	0.010095154 ft / ft			20.25	7.40	0.50	1.92	0.38	0.72	6.90
				21.00	7.40	0.50	2.24	0.38	0.84	6.90
				21.75	7.50	0.60	1.12	0.45	0.50	6.90
CHECKED BY:	DATE:			22.50	7.55	0.65	0.42	0.49	0.20	6.90
				23.25	7.80	0.90	0.05	0.68	0.03	6.90
ASSIGNED TO:	DATE:			24.00	7.35	0.45	0.01	0.34	0.00	6.90
				24.75	7.35	0.45	0.00	0.38	0.00	6.90
			W	25.50	6.99	0.00	0.00	0.00	0.00	0.00
				27.00	6.40			0.00	0.00	0.00
				29.00	6.00			0.00	0.00	0.00
		1	G	29.75	5.75			0.00	0.00	0.00
			S	31.40	4.60			0.00	0.00	0.00
								Totals	8.18	11.08

STREAM NAME: Piceance Creek
 X9 LOCATION: 50 yds w/s of DOW fence 40 03' 57.6" 108 14' 29.6"
 X8 NUMBER: 2062105

Thorne-Zevenbergen D84 Correction Applied
 Estimated D84 =

0.43

GL = lowest Grassline elevation corrected for sag

STAGING TABLE

WL = Waterline corrected for variations in field measured water surface elevations and sag

Velocity based on test of R/D84>1

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	5.75	26.25	1.31	2.05	34.42	27.10	100.0%	1.27	127.87	3.71
	5.90	25.66	1.20	1.90	30.59	26.34	97.2%	1.16	104.62	3.42
	5.95	25.33	1.18	1.85	29.32	26.09	96.3%	1.12	97.32	3.32
	6.00	25.09	1.12	1.80	28.06	25.83	95.3%	1.09	90.28	3.22
	6.05	24.76	1.08	1.75	26.81	25.48	94.0%	1.05	83.74	3.12
	6.10	24.43	1.05	1.70	25.58	25.13	92.7%	1.02	77.46	3.03
	6.15	24.10	1.01	1.65	24.37	24.78	91.4%	0.98	71.43	2.93
	6.20	23.76	0.98	1.60	23.17	24.43	90.1%	0.95	65.64	2.83
	6.25	23.43	0.94	1.55	21.99	24.07	88.8%	0.91	60.10	2.73
	6.30	23.10	0.90	1.50	20.83	23.72	87.5%	0.88	54.79	2.63
	6.35	22.76	0.86	1.45	19.68	23.37	86.2%	0.84	49.74	2.53
	6.40	22.43	0.83	1.40	18.55	23.02	84.8%	0.81	44.92	2.42
	6.45	22.20	0.79	1.35	17.44	22.76	84.0%	0.77	40.18	2.30
	6.50	21.97	0.74	1.30	16.33	22.52	83.1%	0.73	35.66	2.16
	6.55	21.75	0.70	1.25	15.24	22.27	82.2%	0.68	31.43	2.06
	6.60	21.52	0.66	1.20	14.16	22.02	81.3%	0.64	27.44	1.94
	6.65	21.30	0.61	1.15	13.09	21.77	80.3%	0.60	23.69	1.81
	6.70	20.87	0.58	1.10	12.04	21.13	78.0%	0.57	20.68	1.71
	6.75	20.03	0.55	1.05	11.02	20.48	75.6%	0.54	17.71	1.61
	6.80	19.38	0.52	1.00	10.04	19.83	73.2%	0.51	15.08	1.50
	6.85	18.74	0.48	0.95	9.08	19.17	70.8%	0.47	12.67	1.40
WL	6.90	17.38	0.47	0.90	8.16	17.61	65.7%	0.46	10.94	1.34
	6.95	16.84	0.44	0.85	7.33	17.26	63.6%	0.42	9.90	1.25
	7.00	16.55	0.39	0.80	6.49	16.94	62.5%	0.38	7.82	1.16
	7.05	16.26	0.35	0.75	5.67	16.63	61.4%	0.34	5.57	0.98
	7.10	15.97	0.30	0.70	4.87	16.32	60.2%	0.30	3.98	0.82
	7.15	15.73	0.28	0.65	4.07	16.06	59.3%	0.25	2.74	0.67
	7.20	15.49	0.21	0.60	3.28	15.79	58.3%	0.21	1.79	0.54
	7.25	13.42	0.19	0.55	2.69	13.70	50.5%	0.19	1.27	0.48
	7.30	12.53	0.15	0.50	1.94	12.76	47.2%	0.16	0.77	0.40
	7.35	11.66	0.11	0.45	1.33	11.88	43.8%	0.11	0.42	0.32
	7.40	8.04	0.11	0.40	0.86	8.24	30.4%	0.10	0.23	0.27
	7.45	5.32	0.11	0.35	0.58	5.48	20.3%	0.10	0.13	0.23
	7.50	3.93	0.08	0.30	0.33	4.08	15.0%	0.08	0.08	0.17
	7.55	2.18	0.08	0.25	0.17	2.30	8.5%	0.08	0.02	0.12
	7.60	0.98	0.10	0.20	0.10	1.07	4.0%	0.09	0.01	0.11
	7.65	0.71	0.08	0.15	0.05	0.76	2.9%	0.07	0.00	0.07
	7.70	0.48	0.05	0.10	0.02	0.52	1.8%	0.06	0.00	0.03
	7.75	0.24	0.03	0.05	0.01	0.27	1.0%	0.02	0.00	0.01
	7.80	0.01	0.00	0.00	0.00	0.01	0.0%	0.00	0.00	0.00



FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



COLORADO WATER
OBSERVATION BOARD

LOCATION INFORMATION

STREAM NAME: Piceance Creek - bridge location CROSS-SECTION NO. 1
CROSS-SECTION LOCATION: 500' upstream from County Rd. 5 bridge crossing

DATE: 9-18-00 OBSERVERS: R. Smith, P. Daggett, C. Hollowed
LEGAL DESCRIPTION: SECTION: NW NW SECTION: 12 TOWNSHIP: 1(N)S RANGE: 97 E/W PM: Sixth
COUNTY: Pio Blanco WATERSHED: White River WATER DIVISION: 5 DOW WATER CODE: 25343
IAP(SI): USGS: White River City, CO USFS:

SUPPLEMENTAL DATA

IS TAPE SECTION SAME AS PREVIOUS SECTION: (YES) NO METER TYPE: Marsh-McBirney
TAPES NUMBER: 1 DATE RATED: 10/1/00 CALIB/SPIN: sec TAPE WEIGHT: surveyed lbs/100ft TAPE TENSION: surveyed lbs
CHANNEL BED MATERIAL SIZE RANGE: silt to 2" cobbles PHOTOGRAPHS TAKEN: (YES) NO NUMBER OF PHOTOGRAPHS: 3

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)	LEGEND
1) Tape & Stake LB	0.0	surveyed	Stake (X)
2) Tape & Stake RB	0.0	surveyed	Station (1)
3) WS @ Tape LB/RB	0.0		Photo (1)
4) WS Upstream	15.0	5.04	
5) WS Downstream	15.0	5.07	

LOPE:

SKETCH:

Direction of Flow:

AQUATIC SAMPLING SUMMARY

BEAM 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.)

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

ADDITIONAL INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:
stone fly, snails, mayfly

COMMENTS

Ph = 8.8
TDS > 2000
Stream Temp = 22.0
Measurement taken after extremely dry water year.

DISCHARGE/CROSS SECTION NOTES

STREAM NAME:

Piceance Creek

CROSS-SECTION NO

DATE:

9-18-00

SHEET 1 OF 1

BEGINNING OF MEASUREMENT

EDGE OF WATER LOOKING DOWNSTREAM:
(0.0 AT STAKE)

LEFT / RIGHT

Gage Reading:

0.5 ft

TIME

3:50

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	Velocity (ft/sec)		Area (ft ²)	Discharge (cfs)
								Time (sec)	At Point	Mean in Vertical	
123		0.0		2.37							
		3.0		2.78							
		5.0		3.38							
GL		5.6		3.83							
		6.4		4.19							
		7.5		4.74							
WE		8.6		5.07	0				0		
		11.0	1.2	5.37	0.30				0.03		0.01
		12.0	1.0	5.55	0.50				0.58		0.290
		13.0		5.45	0.40				1.10		0.440
		14.0		5.42	0.40				1.00		0.400
		15.0		5.49	0.45				0.78		0.350
		16.0		5.39	0.35				0.85		0.278
		17.0		5.35	0.30				0.85		0.255
		18.0		5.36	0.30				0.75		0.225
		19.0		5.34	0.30				0.89		0.267
		20.0		5.32	0.30				0.40		0.120
		21.0		5.35	0.30				0.93		0.279
		22.0		5.33	0.30				1.11		0.355
		23.0		5.46	0.40				0.83		0.322
		24.0		5.56	0.50				0.78		0.390
		25.0		5.58	0.50				0.78		0.390
		26.0		5.57	0.50				0.49		0.245
		27.0	V	5.46	0.40				0.00		0
		28.0	1.5	5.18	0.10				0		0
WE		30.0		5.07	0				0		
		32.5		4.60							
GL		35.0		3.76							
LS		36.0		2.68							

14.40 cfs

TOTALS:

24

End of Measurement

Time: 4:00

Gage Reading

0.5 ft

CALCULATIONS PERFORMED BY

CALCULATIONS CHECKED BY:

 * COLORADO WATER CONSERVATION BOARD *
 * INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM *
 * STREAM CROSS-SECTION AND FLOW ANALYSIS *

LOCATION INFORMATION

STREAM NAME: Piceance Creek - bridge location
 XS LOCATION: 500 ft upstream of county Rd 5 Bridge
 XS NUMBER: 1

DATE: 9/18/00
 OBSERVERS: R. Smith, D. Daggett, C. Hollowed

1/4 SEC: NW NW
 SECTION: 12
 TWP: 1 N
 RANGE: 97 W
 PM: 6th

COUNTY: Rio Blanco
 WATERSHED: White River
 DIVISION: 5
 DOW CODE: 25343

USGS MAP: White River City 7.5
 USFS MAP:

SUPPLEMENTAL DATA

*** NOTE ***

Leave TAPE WT and TENSION
 at defaults for data collected

TAPE WT: 0.0001 with a survey level and rod
 TENSION: 99999

CHANNEL PROFILE DATA

SLOPE: 0.001

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: Piceance Creek - bridge location
 XS LOCATION: 500 ft upstream of county Rd 5 Bridge
 XS NUMBER: 1

INPUT DATA # DATA POINTS= 29

VALUES COMPUTED FROM RAW FIELD DATA

=====					=====				
FEATURE		VERT	WATER		WETTED	WATER	AREA	Q	% Q
	DIST	DEPTH	DEPTH	VEL	PERIM.	DEPTH	(Am)	(Qm)	CELL
=====					=====				
S	0.00	2.59	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	3.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	5.00	3.38	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 GL	5.60	3.83	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	6.40	4.19	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	7.50	4.74	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
WE	8.60	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	11.00	5.37	0.30	0.03	2.42	0.30	0.51	0.02	0.3%
	12.00	5.55	0.50	0.58	1.02	0.50	0.50	0.29	6.3%
	13.00	5.45	0.40	1.10	1.00	0.40	0.40	0.44	9.5%
	14.00	5.42	0.40	1.00	1.00	0.40	0.40	0.40	8.6%
	15.00	5.49	0.45	0.78	1.00	0.45	0.45	0.35	7.6%
	16.00	5.39	0.35	0.85	1.00	0.35	0.35	0.30	6.4%
	17.00	5.35	0.30	0.85	1.00	0.30	0.30	0.26	5.5%
	18.00	5.36	0.30	0.75	1.00	0.30	0.30	0.23	4.9%
	19.00	5.34	0.30	0.89	1.00	0.30	0.30	0.27	5.8%
	20.00	5.32	0.30	0.40	1.00	0.30	0.30	0.12	2.6%
	21.00	5.35	0.30	0.93	1.00	0.30	0.30	0.28	6.0%
	22.00	5.33	0.30	1.11	1.00	0.30	0.30	0.33	7.2%
	23.00	5.46	0.40	0.83	1.01	0.40	0.40	0.33	7.2%
	24.00	5.56	0.50	0.78	1.00	0.50	0.50	0.39	8.4%
	25.00	5.58	0.50	0.78	1.00	0.50	0.50	0.39	8.4%
	26.00	5.57	0.50	0.49	1.00	0.50	0.50	0.25	5.3%
	27.00	5.46	0.40	0.00	1.01	0.40	0.40	0.00	0.0%
	28.00	5.18	0.10	0.00	1.04	0.10	0.15	0.00	0.0%
WE	30.00	5.07	0.00	0.00	2.00	0.00	0.00	0.00	0.0%
	32.50	4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 GL	35.00	3.76	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
LS	36.00	2.68	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
=====					=====				
TOTALS -----					21.51	0.5	6.86	4.63	100.0%
(Max.)									

Manning's n = 0.0325

STREAM NAME: Piceance Creek - bridge locati
XS LOCATION: 500 ft upstream of county Rd 5
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
4.82	6.86	12.16	77.2%
4.84	6.86	11.69	70.3%
4.86	6.86	11.22	63.6%
4.88	6.86	10.76	56.8%
4.90	6.86	10.30	50.1%
4.92	6.86	9.84	43.5%
4.94	6.86	9.39	36.9%
4.96	6.86	8.94	30.3%
4.98	6.86	8.50	23.8%
5.00	6.86	8.05	17.4%
5.02	6.86	7.62	11.0%
5.03	6.86	7.40	7.8%
5.04	6.86	7.18	4.7%
5.05	6.86	6.96	1.5%
5.06	6.86	6.75	-1.6%
5.07	6.86	6.54	-4.7%
5.08	6.86	6.32	-7.8%
5.09	6.86	6.11	-10.9%
5.10	6.86	5.90	-13.9%
5.11	6.86	5.70	-16.9%
5.12	6.86	5.50	-19.9%
5.14	6.86	5.10	-25.6%
5.16	6.86	4.72	-31.3%
5.18	6.86	4.34	-36.7%
5.20	6.86	3.97	-42.1%
5.22	6.86	3.61	-47.4%
5.24	6.86	3.25	-52.6%
5.26	6.86	2.89	-57.8%
5.28	6.86	2.55	-62.9%
5.30	6.86	2.20	-67.9%
5.32	6.86	1.86	-72.9%

WATERLINE AT ZERO

AREA ERROR = 5.055

STREAM NAME: Piceance Creek - bridge location
 XS LOCATION: 500 ft upstream of county Rd 5 Bridge
 XS NUMBER: 1

GL = lowest Grassline elevation corrected for sag

STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO	TOP	AVG.	MAX.	AREA	WETTED	PERCENT	HYDR	FLOW	AVG.
	WATER	WIDTH	DEPTH	DEPTH	(SQ FT)	PERIM.	WET PER	RADIUS	(CFS)	VELOCITY
	(FT)	(FT)	(FT)	(FT)		(FT)	(%)	(FT)		(FT/SEC)
GL	3.83	29.19	1.32	1.75	38.49	29.73	100.0%	1.29	66.12	1.72
	4.05	28.02	1.14	1.53	32.06	28.47	95.8%	1.13	50.17	1.56
	4.10	27.76	1.10	1.48	30.66	28.19	94.8%	1.09	46.89	1.53
	4.15	27.50	1.06	1.43	29.28	27.92	93.9%	1.05	43.71	1.49
	4.20	27.25	1.02	1.38	27.91	27.64	93.0%	1.01	40.63	1.46
	4.25	27.00	0.98	1.33	26.56	27.37	92.1%	0.97	37.63	1.42
	4.30	26.75	0.94	1.28	25.21	27.10	91.2%	0.93	34.74	1.38
	4.35	26.50	0.90	1.23	23.88	26.83	90.3%	0.89	31.95	1.34
	4.40	26.25	0.86	1.18	22.56	26.56	89.4%	0.85	29.26	1.30
	4.45	26.00	0.82	1.13	21.26	26.30	88.5%	0.81	26.67	1.25
	4.50	25.75	0.78	1.08	19.96	26.03	87.6%	0.77	24.19	1.21
	4.55	25.50	0.73	1.03	18.68	25.76	86.6%	0.73	21.80	1.17
	4.60	25.24	0.69	0.98	17.41	25.48	85.7%	0.68	19.53	1.12
	4.65	24.88	0.65	0.93	16.16	25.10	84.4%	0.64	17.42	1.08
	4.70	24.51	0.61	0.88	14.92	24.71	83.1%	0.60	15.42	1.03
	4.75	24.13	0.57	0.83	13.71	24.31	81.8%	0.56	13.53	0.99
	4.80	23.69	0.53	0.78	12.51	23.87	80.3%	0.52	11.76	0.94
	4.85	23.26	0.49	0.73	11.34	23.42	78.8%	0.48	10.11	0.89
	4.90	22.83	0.45	0.68	10.19	22.98	77.3%	0.44	8.56	0.84
	4.95	22.40	0.40	0.63	9.06	22.53	75.8%	0.40	7.13	0.79
	5.00	21.96	0.36	0.58	7.95	22.09	74.3%	0.36	5.81	0.73
WL	5.05	21.53	0.32	0.53	6.86	21.65	72.8%	0.32	4.61	0.67
	5.10	20.49	0.28	0.48	5.80	20.59	69.3%	0.28	3.61	0.62
	5.15	19.18	0.25	0.43	4.81	19.28	64.9%	0.25	2.76	0.57
	5.20	18.23	0.21	0.38	3.88	18.33	61.7%	0.21	1.99	0.51
	5.25	17.65	0.17	0.33	2.99	17.74	59.7%	0.17	1.32	0.44
	5.30	17.08	0.12	0.28	2.12	17.15	57.7%	0.12	0.76	0.36
	5.35	11.95	0.11	0.23	1.35	12.02	40.4%	0.11	0.45	0.34
	5.40	9.28	0.09	0.18	0.84	9.33	31.4%	0.09	0.24	0.29
	5.45	6.39	0.07	0.13	0.44	6.42	21.6%	0.07	0.10	0.24
	5.50	3.85	0.05	0.08	0.19	3.86	13.0%	0.05	0.04	0.19
	5.55	2.19	0.02	0.03	0.04	2.19	7.4%	0.02	0.00	0.09

summer out
of range

Winter rec: 3.76 cfs

STREAM NAME: Piceance Creek - bridge location
 XS LOCATION: 500 ft upstream of county Rd 5 Bridge
 XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm) = 4.63 cfs
 CALCULATED FLOW (Qc) = 4.61 cfs
 (Qm-Qc)/Qm * 100 = 0.4 %

MEASURED WATERLINE (Wlm) = 5.07 ft
 CALCULATED WATERLINE (Wlc) = 5.05 ft
 (Wlm-Wlc)/Wlm * 100 = 0.3 %

MAX MEASURED DEPTH (Dm) = 0.50 ft
 MAX CALCULATED DEPTH (Dc) = 0.53 ft
 (Dm-Dc)/Dm * 100 = -5.0 %

MEAN VELOCITY = 0.67 ft/sec
 MANNING'S N = 0.032
 SLOPE = 0.001 ft/ft

.4 * Qm = 1.9 cfs
 2.5 * Qm = 11.6 cfs

RECOMMENDED INSTREAM FLOW:

=====

FLOW (CFS)	PERIOD
=====	=====

RATIONALE FOR RECOMMENDATION:

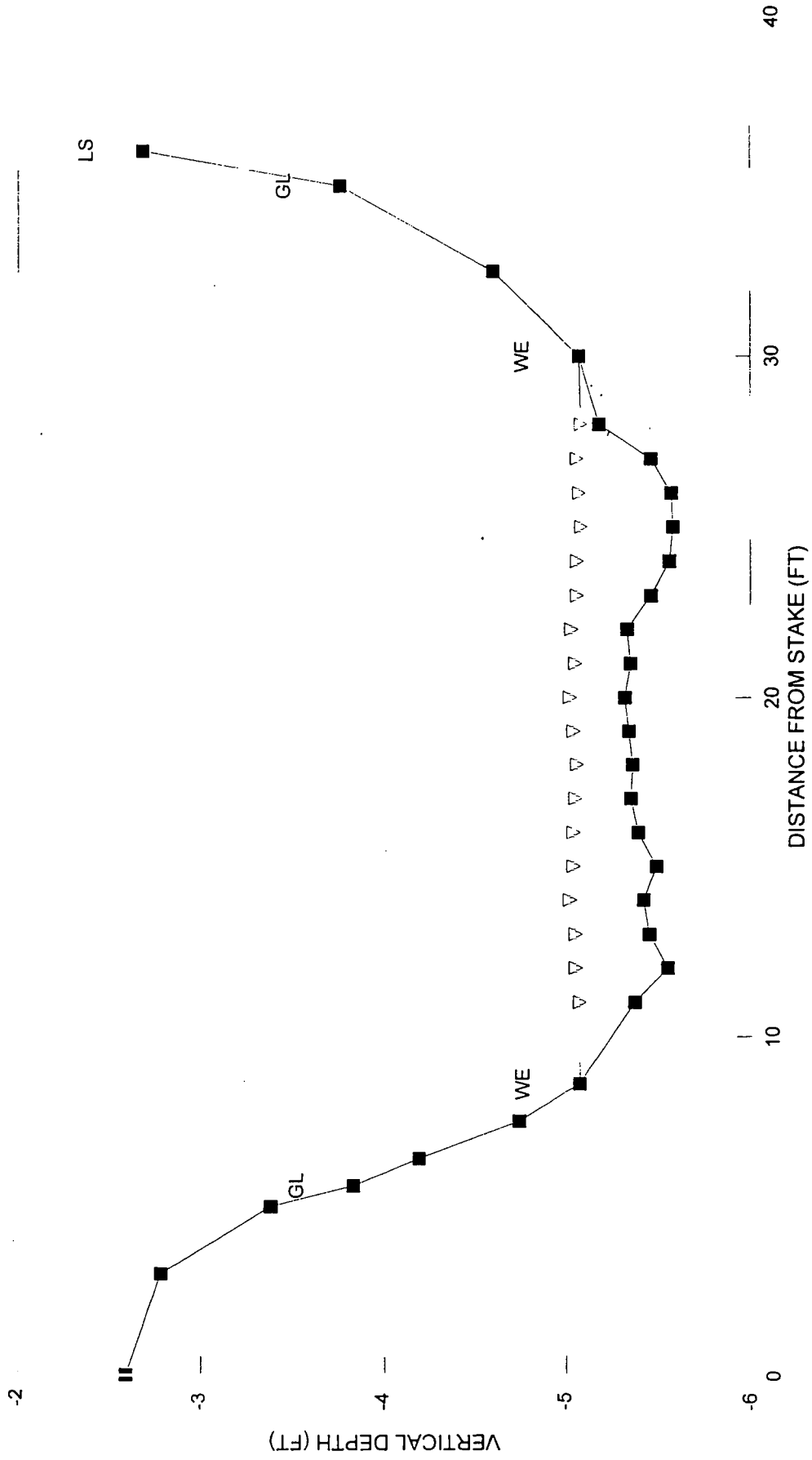
=====

RECOMMENDATION BY: AGENCY..... DATE:.....

CWCB REVIEW BY: DATE:.....

Piceance Creek - bridge location

CROSS SECTION DATA ANALYSIS





FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



COLORADO WATER
CONSERVATION BOARD

LOCATION INFORMATION

STREAM NAME Piceance Creek CROSS-SECTION NO. 2
CROSS-SECTION LOCATION 0.8 mile upstream from County Rd 5 bridge crossing
DATE 9-18-00 OBSERVERS R. Smith, C. Hollowed, P. Daggett
LEGAL DESCRIPTION SECTION: NW SE SECTION: 11 TOWNSHIP 10 N RANGE 97 E PM Sixth
COUNTY Rio Blanco WATERSHED White WATER DIVISION 5 DOW WATER CODE 25343
USGS: White River City, CO
USFS:

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES/NO METER TYPE: Marsh-McBirney
METER NUMBER: DATE RATED: surveyed surveyed surveyed
CALIB/SPIN: sec TAPE WEIGHT: lbs/foot TAPE TENSION: lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel to 5" slate cobbles PHOTOGRAPHS TAKEN (YES/NO) NUMBER OF PHOTOGRAPHS: 3

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)	LEGEND
① Tape @ Stake LB	0.0	<u>Surveyed</u>	Stake (X)
② Tape @ Stake RB	0.0	<u>surveyed</u>	Station (1)
③ WS @ Tape LB/RB	0.0	<u>4.57 / 4.56</u>	Photo (1)
④ WS Upstream	<u>15.0</u>	<u>4.50</u>	Direction of Flow (arrow)
⑤ WS Downstream	<u>15.0</u>	<u>4.67</u>	
SLOPE	<u>0.17 = 30.0</u>		

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
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	-----	-------

see previous sample

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME

stonefly, snails, leeches, mayfly

COMMENTS

ph = 8.7
Temp = 22.0
TDS > 2000

Measurement taken after extremely dry water year - calls on creek

STREAM NAME:

CROSS-SECTION NO. 1

 z

DATE:

DATE: 9-18-00

SHEET ____ OF ____

BEGINNING OF MEASUREMENT

EDGE OF WATER LOOKING DOWNSTREAM:
(0.0 AT STAKE)

LEFT / RIGHT

Gage Reading:

0.3.

TIME: 4:45 pm

TOTALS.

33

Kind of Measurement

Time: 5:10 P

Gage Reading:

Q.3.10

CALCULATIONS PERFORMED BY:

CALCULATIONS CHECKED BY:

PROOF SHEET

=====

LOCATION INFORMATION

INPUT DATA

DATA POINTS=

33

=====

FEATURE

VERT

WATER

TAPE TO

		DIST	DEPTH	DEPTH	VEL	A	Q	WATER
STREAM NAME:	Piceance Creek							
XS LOCATION:	0.8 mile upstream of County Rd 5 bri							
XS NUMBER:	2	S	0.00	2.25	0.00	0.00	0.00	0.00
		1 GL	1.00	2.45	0.00	0.00	0.00	0.00
DATE:	9/18/00		2.50	2.87	0.00	0.00	0.00	0.00
OBSERVERS:	R. Smith, D. Daggett, C. Hollowed		8.00	3.96	0.00	0.00	0.00	0.00
			12.00	4.13	0.00	0.00	0.00	0.00
1/4 SEC:	NW SE		15.00	4.10	0.00	0.00	0.00	0.00
SECTION:	11		18.00	4.47	0.00	0.00	0.00	0.00
TWP:	1 N	WE	19.00	4.56	0.00	0.00	0.00	0.00
RANGE:	97 W		21.00	4.79	0.25	0.00	0.31	0.00
PM:	6th		21.50	4.91	0.35	1.06	0.18	0.19
			22.00	4.88	0.30	0.96	0.15	0.14
COUNTY:	Rio Blanco		22.50	4.87	0.30	1.14	0.15	0.17
WATERSHED:	White River		23.00	4.85	0.30	1.58	0.15	0.24
DIVISION:	5		23.50	4.92	0.35	1.11	0.18	0.19
DOW CODE:	25343		24.00	4.94	0.35	1.06	0.18	0.19
			24.50	4.96	0.40	1.30	0.20	0.26
USGS MAP:	White River City 7.5		25.00	4.87	0.30	0.95	0.15	0.14
USFS MAP:			25.50	4.96	0.40	1.18	0.20	0.24
			26.00	4.99	0.40	1.61	0.20	0.32
SUPPLEMENTAL DATA			26.50	4.96	0.40	1.76	0.20	0.35
=====			27.00	4.91	0.35	1.68	0.18	0.29
			27.50	4.95	0.35	1.33	0.18	0.23
TAPE WT:	0.0001		28.00	4.91	0.35	1.42	0.18	0.25
TENSION:	99999		28.50	4.95	0.35	1.31	0.18	0.23
			29.00	4.95	0.35	0.60	0.18	0.11
CHANNEL PROFILE DATA			29.50	4.92	0.35	0.91	0.18	0.16
=====			30.00	4.86	0.30	0.48	0.23	0.11
SLOPE:	0.005667		31.00	4.76	0.20	0.07	0.13	0.01
		WE	31.30	4.57	0.00	0.00	0.00	0.00
			32.00	4.56	0.00	0.00	0.00	0.00
CHECKED BY:.....DATE.....			33.00	4.20	0.00	0.00	0.00	0.00
			34.00	3.16	0.00	0.00	0.00	0.00
ASSIGNED TO:.....DATE.....		1 LS&GL	35.00	2.45	0.00	0.00	0.00	0.00

TOTALS

3.64

3.82

 * COLORADO WATER CONSERVATION BOARD *
 * INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM *
 * STREAM CROSS-SECTION AND FLOW ANALYSIS *

LOCATION INFORMATION

=====

STREAM NAME: Piceance Creek
 XS LOCATION: 0.8 mile upstream of County Rd 5 bridge
 XS NUMBER: 2

DATE: 9/18/00
 OBSERVERS: R. Smith, D. Daggett, C. Hollowed

1/4 SEC: NW SE
 SECTION: 11
 TWP: 1 N
 RANGE: 97 W
 PM: 6th

COUNTY: Rio Blanco
 WATERSHED: White River
 DIVISION: 5
 DOW CODE: 25343

USGS MAP: White River City 7.5
 USFS MAP:

SUPPLEMENTAL DATA

*** NOTE ***

=====

Leave TAPE WT and TENSION
 at defaults for data collected

TAPE WT: 0.0001 with a survey level and rod
 TENSION: 99999

CHANNEL PROFILE DATA

=====

SLOPE: 0.0056667

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: -Piceance Creek
 XS LOCATION: 0.8 mile upstream of County Rd 5 bridge
 XS NUMBER: 2

INPUT DATA # DATA POINTS= 33

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
S	0.00	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 GL	1.00	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	2.50	2.87	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	8.00	3.96	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	12.00	4.13	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	15.00	4.10	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	18.00	4.47	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
WE	19.00	4.56	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	21.00	4.79	0.25	0.00	2.01	0.25	0.31	0.00	0.0%
	21.50	4.91	0.35	1.06	0.51	0.35	0.18	0.19	4.9%
	22.00	4.88	0.30	0.96	0.50	0.30	0.15	0.14	3.8%
	22.50	4.87	0.30	1.14	0.50	0.30	0.15	0.17	4.5%
	23.00	4.85	0.30	1.58	0.50	0.30	0.15	0.24	6.2%
	23.50	4.92	0.35	1.11	0.50	0.35	0.18	0.19	5.1%
	24.00	4.94	0.35	1.06	0.50	0.35	0.18	0.19	4.9%
	24.50	4.96	0.40	1.30	0.50	0.40	0.20	0.26	6.8%
	25.00	4.87	0.30	0.95	0.51	0.30	0.15	0.14	3.7%
	25.50	4.96	0.40	1.18	0.51	0.40	0.20	0.24	6.2%
	26.00	4.99	0.40	1.61	0.50	0.40	0.20	0.32	8.4%
	26.50	4.96	0.40	1.76	0.50	0.40	0.20	0.35	9.2%
	27.00	4.91	0.35	1.68	0.50	0.35	0.18	0.29	7.7%
	27.50	4.95	0.35	1.33	0.50	0.35	0.18	0.23	6.1%
	28.00	4.91	0.35	1.42	0.50	0.35	0.18	0.25	6.5%
	28.50	4.95	0.35	1.31	0.50	0.35	0.18	0.23	6.0%
	29.00	4.95	0.35	0.60	0.50	0.35	0.18	0.11	2.8%
	29.50	4.92	0.35	0.91	0.50	0.35	0.18	0.16	4.2%
	30.00	4.86	0.30	0.48	0.50	0.30	0.23	0.11	2.8%
	31.00	4.76	0.20	0.07	1.00	0.20	0.13	0.01	0.2%
WE	31.30	4.57	0.00	0.00	0.36	0.00	0.00	0.00	0.0%
	32.00	4.56	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	33.00	4.20	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	34.00	3.16	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 LS&GL	35.00	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
TOTALS					12.42	0.4	3.64	3.82	100.0%
					(Max.)				

Manning's n = 0.0471

STREAM NAME: Piceance Creek
 XS LOCATION: 0.8 mile upstream of County Rd
 XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
4.32	3.64	7.30	100.5%
4.34	3.64	6.99	91.8%
4.36	3.64	6.67	83.2%
4.38	3.64	6.37	74.8%
4.40	3.64	6.06	66.5%
4.42	3.64	5.76	58.2%
4.44	3.64	5.47	50.1%
4.46	3.64	5.18	42.2%
4.48	3.64	4.89	34.3%
4.50	3.64	4.61	26.6%
4.52	3.64	4.34	19.1%
4.53	3.64	4.20	15.3%
4.54	3.64	4.07	11.6%
4.55	3.64	3.93	8.0%
4.56	3.64	3.80	4.4%
4.57	3.64	3.67	0.9%
4.58	3.64	3.55	-2.5%
4.59	3.64	3.43	-5.9%
4.60	3.64	3.31	-9.1%
4.61	3.64	3.19	-12.4%
4.62	3.64	3.07	-15.7%
4.64	3.64	2.84	-22.1%
4.66	3.64	2.61	-28.3%
4.68	3.64	2.39	-34.5%
4.70	3.64	2.17	-40.6%
4.72	3.64	1.95	-46.5%
4.74	3.64	1.74	-52.3%
4.76	3.64	1.53	-58.1%
4.78	3.64	1.32	-63.6%
4.80	3.64	1.13	-69.0%
4.82	3.64	0.94	-74.2%

WATERLINE AT ZERO

AREA ERROR = 4.568

STREAM NAME: Piceance Creek
 XS LOCATION: 0.8 mile upstream of County Rd 5 bridge
 XS NUMBER: 2

GL = lowest Grassline elevation corrected for sag

STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PER (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	2.45	34.00	1.74	2.54	59.25	35.05	100.0%	1.69	199.58	3.37
	3.57	27.59	0.89	1.42	24.69	28.11	80.2%	0.88	53.73	2.18
	3.62	27.29	0.85	1.37	23.31	27.79	79.3%	0.84	49.23	2.11
	3.67	26.99	0.81	1.32	21.96	27.46	78.3%	0.80	44.90	2.04
	3.72	26.69	0.77	1.27	20.61	27.13	77.4%	0.76	40.74	1.98
	3.77	26.39	0.73	1.22	19.29	26.81	76.5%	0.72	36.76	1.91
	3.82	26.09	0.69	1.17	17.98	26.48	75.5%	0.68	32.96	1.83
	3.87	25.79	0.65	1.12	16.68	26.15	74.6%	0.64	29.33	1.76
	3.92	25.49	0.60	1.07	15.40	25.83	73.7%	0.60	25.89	1.68
	3.97	25.05	0.56	1.02	14.13	25.36	72.4%	0.56	22.71	1.61
	4.02	23.82	0.54	0.97	12.91	24.12	68.8%	0.54	20.20	1.56
	4.07	22.60	0.52	0.92	11.75	22.87	65.2%	0.51	17.89	1.52
	4.12	19.48	0.55	0.87	10.67	19.73	56.3%	0.54	16.80	1.58
	4.17	17.48	0.56	0.82	9.77	17.71	50.5%	0.55	15.60	1.60
	4.22	17.00	0.52	0.77	8.91	17.20	49.1%	0.52	13.64	1.53
	4.27	16.45	0.49	0.72	8.07	16.65	47.5%	0.48	11.83	1.47
	4.32	15.91	0.46	0.67	7.26	16.09	45.9%	0.45	10.15	1.40
	4.37	15.37	0.42	0.62	6.48	15.53	44.3%	0.42	8.59	1.33
	4.42	14.82	0.39	0.57	5.73	14.98	42.7%	0.38	7.16	1.25
	4.47	14.28	0.35	0.52	5.00	14.42	41.1%	0.35	5.86	1.17
	4.52	13.59	0.32	0.47	4.30	13.72	39.2%	0.31	4.71	1.10
WL	4.57	12.41	0.29	0.42	3.64	12.53	35.8%	0.29	3.79	1.04
	4.62	11.72	0.26	0.37	3.04	11.83	33.8%	0.26	2.92	0.96
	4.67	11.21	0.22	0.32	2.47	11.30	32.2%	0.22	2.13	0.86
	4.72	10.70	0.18	0.27	1.92	10.77	30.7%	0.18	1.45	0.75
	4.77	10.12	0.14	0.22	1.40	10.18	29.0%	0.14	0.89	0.63
	4.82	9.31	0.10	0.17	0.92	9.36	26.7%	0.10	0.46	0.50
	4.87	8.05	0.06	0.12	0.47	8.09	23.1%	0.06	0.17	0.36
	4.92	5.15	0.03	0.07	0.14	5.17	14.8%	0.03	0.03	0.22
	4.97	0.75	0.01	0.02	0.01	0.75	2.1%	0.01	0.00	0.12

Summer out
of range

winter rec. = 5.48 cfs

STREAM NAME: Piceance Creek
 XS LOCATION: 0.8 mile upstream of County Rd 5 bridge
 XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm) = 3.82 cfs
 CALCULATED FLOW (Qc) = 3.79 cfs
 (Qm-Qc)/Qm * 100 = 0.6 %

RECOMMENDED INSTREAM FLOW:
 =====

MEASURED WATERLINE (Wlm) = 4.57 ft
 CALCULATED WATERLINE (Wlc) = 4.57 ft
 (Wlm-Wlc)/Wlm * 100 = -0.1 %

FLOW (CFS) PERIOD
 =====

MAX MEASURED DEPTH (Dm) = 0.40 ft
 MAX CALCULATED DEPTH (Dc) = 0.42 ft
 (Dm-Dc)/Dm * 100 = -5.6 %

MEAN VELOCITY = 1.04 ft/sec
 MANNING'S N = 0.047
 SLOPE = 0.0056667 ft/ft

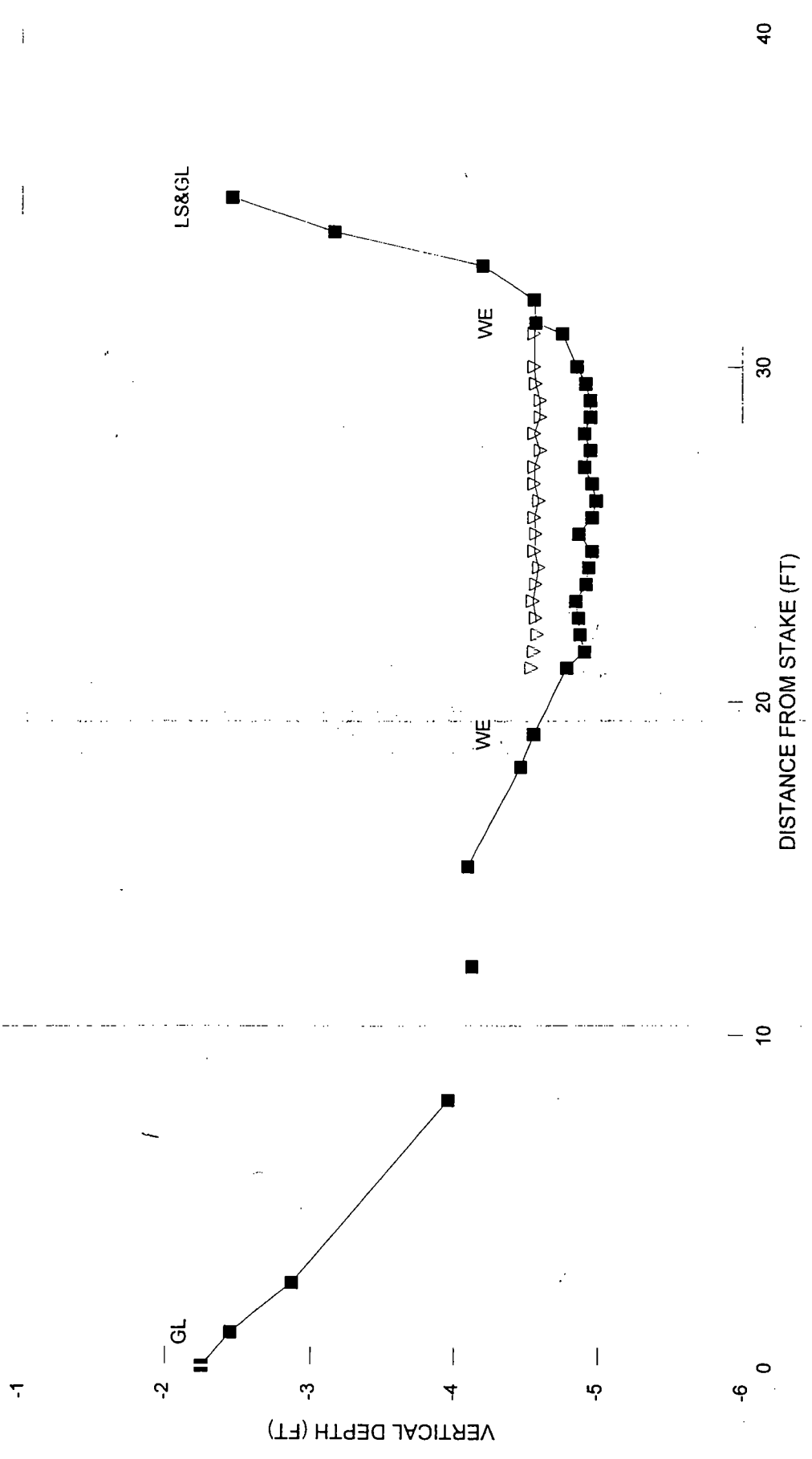
.4 * Qm = 1.5 cfs
 2.5 * Qm = 9.5 cfs

RATIONALE FOR RECOMMENDATION:
 =====

RECOMMENDATION BY: AGENCY: DATE:
 CWCB REVIEW BY: DATE:

Piceance Creek

CROSS SECTION DATA ANALYSIS



Channel Bottom
 Computed Water Line



COLORADO WATER
CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



LOCATION INFORMATION

STREAM NAME Piceance Creek CROSS-SECTION NO. 1
CROSS-SECTION LOCATION 4300' upstream of stream gage along
Ro Blanco County Road 5
DATE 9-9-97 OBSERVERS R. Smith, C. Hollowed
LEGAL DESCRIPTION SECTION: NW 34 SECTION: 11 TOWNSHIP: 1 N 5 RANGE: 97 E PM: 6:01
COUNTY: Ro Blanco WATERSHED: White River WATER DIVISION: 5 DOW WATER CODE: 25343
USGS: White River City, CO
USFS:

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: ☒ YES ☐ NO METER TYPE: Pigmy
METER NUMBER: DATE RATED: CALIB/SPIN: sec: Surveyed TAPE WEIGHT: lbs/foot: Surveyed TAPE TENSION: lbs
CHANNEL BED MATERIAL SIZE RANGE: sand to 8" cobbles PHOTOGRAPHS TAKEN: ☒ YES ☐ NO NUMBER OF PHOTOGRAPHS: 3

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)	LEGEND
(X) Tape & Stake LB	0.0	Surveyed	Stake (X)
(X) Tape & Stake RB	0.0	Surveyed	Station (1)
(1) WS & Tape LB/RB	0.0	8.11 / 8.11	Photo (1)
(2) WS Upstream	20.0	7.94	Direction of Flow
(3) WS Downstream	20.0	18.26	
SLOPE 0.32' / 40.0 = 0.00800			

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

Large Stono fly, Leeches, may fly

COMMENTS

Ph = 8.6 Conductivity = 1590 Stream Temp = 13.0 C°
Leopard Frogs sighted.

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Pleasant Creek

CROSS-SECTION NO: 1

DATE: 9-9-97

SHEET 1 OF 1

BEGINNING OF MEASUREMENT

EDGE OF WATER LOOKING DOWNSTREAM:
(0.0 AT STAKE)

LEFT / RIGHT

Gage Reading: 0.4 ft

TIME: 9:30 am

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)		Area (ft ²)	Discharge (cfs)
								At Point	Mean in Vertical		
S	0.7		5.07								
	5.1		5.32								
G	5.7		7.06								
	6.7		7.78								
W	7.7	0.65	8.11	0.0	0.0	0				0	0
	9.0	1.15	8.87	0.8	0.6	100	49	1.99	0.92	1.831	
	10.0	1.00	8.84	0.8		50	43	1.15	0.80	0.920	
	11.0	1.00	8.90	0.8		100	43	2.26	0.80	1.808	
	12.0	1.00	8.92	0.85		150	45	3.22	0.85	2.937	
	13.0	1.00	8.96	0.85		150	44	3.30	0.85	2.805	
	14.0	1.00	8.87	0.80		150	48	3.02	0.80	2.416	
	15.0	1.00	8.90	0.80		150	52	2.79	0.80	2.232	
	16.0	1.00	8.91	0.80		150	50	2.90	0.80	2.320	
	17.0	1.00	8.87	0.80		80	44	1.77	0.80	1.416	
	18.0	1.00	8.89	0.85		150	53	2.74	0.85	2.055	
	19.0	1.00	8.90	0.80		150	51	2.85	0.80	2.280	
	20.0	1.00	8.84	0.70		150	53	2.74	0.70	1.918	
	21.0	1.00	8.76	0.80		150	58	2.57	0.70	1.797	
	22.0	1.00	8.82	0.75		80	47	1.86	0.75	1.395	
	23.0	1.00	8.76	0.70		60	46	1.28	0.70	0.896	
	24.0	1.00	8.65	0.60		150	51	2.85	0.60	1.710	
	25.0	1.00	8.62	0.55		100	51	1.97	0.55	1.051	
	26.0	1.00	8.53	0.40		80	41	1.90	0.40	0.760	
	27.0	0.95	8.40	0.30		40	46	0.865	0.30	0.247	
W	27.9	0.45	8.11	0		0	0			0	0
	28.5		8.01								
	31.0		7.41								
	33.0		7.16								
G	34.0		7.09								
	37.0		6.90								
S	41.0		6.40								

TOTALS:

20.2

13.66 32.55

End of Measurement

Time: 9:30

Gage Reading: 0.4 ft

CALCULATIONS PERFORMED BY:

CALCULATIONS CHECKED BY:

PROOF SHEET

LOCATION INFORMATION

INPUT DATA

DATA POINTS-

31

		FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	TAPE TO WATER
STREAM NAME:	Piceance Creek								
XS LOCATION:	4300 ft upstream of gage along Rio B								
XS NUMBER:	1	S	0.70	5.07	0.00	0.00	0.00	0.00	0.00
			5.10	5.32	0.00	0.00	0.00	0.00	0.00
DATE:	09/09/97	1 G	5.70	7.06	0.00	0.00	0.00	0.00	0.00
OBSERVERS:	R. Smith, C. Hollowed		6.70	7.78	0.00	0.00	0.00	0.00	0.00
		W	7.70	8.11	0.00	0.00	0.00	0.00	0.00
1/4 SEC:	NW SE		9.00	8.87	0.80	1.99	0.92	1.83	8.07
SECTION:	11		10.00	8.84	0.80	1.15	0.80	0.92	8.04
TWP:	1 N		11.00	8.90	0.80	2.26	0.80	1.81	8.10
RANGE:	97 W		12.00	8.92	0.85	3.22	0.85	2.74	8.07
PM:	6th		13.00	8.96	0.85	3.30	0.85	2.80	8.11
			14.00	8.87	0.80	3.02	0.80	2.42	8.07
COUNTY:	Rio Blanco		15.00	8.90	0.80	2.79	0.80	2.23	8.10
WATERSHED:	White River		16.00	8.91	0.80	2.90	0.80	2.32	8.11
DIVISION:	5		17.00	8.87	0.80	1.77	0.80	1.42	8.07
DOW CODE:	25343		18.00	8.89	0.75	2.74	0.75	2.06	8.14
			19.00	8.90	0.80	2.85	0.80	2.28	8.10
USGS MAP:	White River City		20.00	8.84	0.70	2.74	0.70	1.92	8.14
USFS MAP:			21.00	8.76	0.70	2.51	0.70	1.76	8.06
			22.00	8.82	0.75	1.86	0.75	1.40	8.07
SUPPLEMENTAL DATA			23.00	8.76	0.70	1.28	0.70	0.90	8.06
			24.00	8.65	0.60	2.85	0.60	1.71	8.05
			25.00	8.62	0.55	1.91	0.55	1.05	8.07
TAPE WT:	0.0001		26.00	8.53	0.40	1.90	0.40	0.76	8.13
TENSION:	99999		27.00	8.40	0.30	0.87	0.28	0.25	8.10
		W	27.90	8.11	0.00	0.00	0.00	0.00	0.00
CHANNEL PROFILE DATA			28.50	8.01	0.00	0.00	0.00	0.00	0.00
			31.00	7.41	0.00	0.00	0.00	0.00	0.00
SLOPE:	0.008		33.00	7.16	0.00	0.00	0.00	0.00	0.00
		1 G	34.00	7.09	0.00	0.00	0.00	0.00	0.00
			37.00	6.90	0.00	0.00	0.00	0.00	0.00
CHECKED BY: <i>Bill Carey</i>	DATE: <i>2/2/98</i>	S	41.00	6.40	0.00	0.00	0.00	0.00	0.00

ASSIGNED TO:DATE.....

TOTALS

13.66 32.55 ✓

* COLORADO WATER CONSERVATION BOARD *
* INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM *
* STREAM CROSS-SECTION AND FLOW ANALYSIS *

LOCATION INFORMATION
=====

STREAM NAME: Piceance Creek
XS LOCATION: 4300 ft upstream of gage along Rio Blanco Cnty Rd S
XS NUMBER: 1

DATE: 09/09/97
OBSERVERS: R. Smith, C. Hollowed

1/4 SEC: NW SE
SECTION: 11
TWP: 1 N
RANGE: 97 W
PM: 6th

COUNTY: Rio Blanco
WATERSHED: White River
DIVISION: 5
DOW CODE: 25343

USGS MAP: White River City
USFS MAP:

SUPPLEMENTAL DATA
=====

*** NOTE ***

Leave TAPE WT and TENSION
at defaults for data collected

TAPE WT: 0.0001 with a survey level and rod
TENSION: 99999

CHANNEL PROFILE DATA
=====

SLOPE: 0.008

INPUT DATA CHECKED BY: *Bill Carey* DATE: *2/2/98*

ASSIGNED TO: DATE:

STREAM NAME: Piceance Creek
 XS LOCATION: 4300 ft upstream of gage along Rio Blanco Cnty Rd S
 XS NUMBER: 1

INPUT DATA # DATA POINTS= 31

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	VERT WATER				WETTED	WATER	AREA	Q	% Q
	DIST	DEPTH	DEPTH	VEL	PERIM.	DEPTH	(Am)	(Qm)	CELL
=====									
S	0.70	5.07	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	5.10	5.32	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 G	5.70	7.06	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	6.70	7.78	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
W	7.70	8.11	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	9.00	8.87	0.80	1.99	1.51	0.80	0.92	1.83	5.6%
	10.00	8.84	0.80	1.15	1.00	0.80	0.80	0.92	2.8%
	11.00	8.90	0.80	2.26	1.00	0.80	0.80	1.81	5.6%
	12.00	8.92	0.85	3.22	1.00	0.85	0.85	2.74	8.4%
	13.00	8.96	0.85	3.30	1.00	0.85	0.85	2.80	8.6%
	14.00	8.87	0.80	3.02	1.00	0.80	0.80	2.42	7.4%
	15.00	8.90	0.80	2.79	1.00	0.80	0.80	2.23	6.9%
	16.00	8.91	0.80	2.90	1.00	0.80	0.80	2.32	7.1%
	17.00	8.87	0.80	1.77	1.00	0.80	0.80	1.42	4.3%
	18.00	8.89	0.75	2.74	1.00	0.75	0.75	2.06	6.3%
	19.00	8.90	0.80	2.85	1.00	0.80	0.80	2.28	7.0%
	20.00	8.84	0.70	2.74	1.00	0.70	0.70	1.92	5.9%
	21.00	8.76	0.70	2.51	1.00	0.70	0.70	1.76	5.4%
	22.00	8.82	0.75	1.86	1.00	0.75	0.75	1.40	4.3%
	23.00	8.76	0.70	1.28	1.00	0.70	0.70	0.90	2.8%
	24.00	8.65	0.60	2.85	1.01	0.60	0.60	1.71	5.3%
	25.00	8.62	0.55	1.91	1.00	0.55	0.55	1.05	3.2%
	26.00	8.53	0.40	1.90	1.00	0.40	0.40	0.76	2.3%
	27.00	8.40	0.30	0.87	1.01	0.30	0.28	0.25	0.8%
W	27.90	8.11	0.00	0.00	0.95	0.00	0.00	0.00	0.0%
	28.50	8.01	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	31.00	7.41	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	33.00	7.16	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 G	34.00	7.09	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	37.00	6.90	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
S	41.00	6.40	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
=====									
TOTALS	-----				20.49	0.85	13.66	32.55	100.0%
(Max.)									

Manning's n = 0.0425

STREAM NAME: Piceance Creek
XS LOCATION: 4300 ft upstre
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
7.86	13.66	18.53	35.7%
7.88	13.66	18.09	32.5%
7.90	13.66	17.65	29.3%
7.92	13.66	17.21	26.1%
7.94	13.66	16.78	22.9%
7.96	13.66	16.35	19.7%
7.98	13.66	15.92	16.6%
8.00	13.66	15.50	13.5%
8.02	13.66	15.07	10.4%
8.04	13.66	14.66	7.3%
8.06	13.66	14.24	4.3%
8.07	13.66	14.03	2.8%
8.08	13.66	13.83	1.3%
8.09	13.66	13.63	-0.2%
8.10	13.66	13.42	-1.7%
8.11	13.66	13.22	-3.2%
8.12	13.66	13.02	-4.7%
8.13	13.66	12.82	-6.1%
8.14	13.66	12.62	-7.6%
8.15	13.66	12.42	-9.1%
8.16	13.66	12.22	-10.5%
8.18	13.66	11.82	-13.5%
8.20	13.66	11.42	-16.4%
8.22	13.66	11.03	-19.2%
8.24	13.66	10.63	-22.1%
8.26	13.66	10.24	-25.0%
8.28	13.66	9.86	-27.8%
8.30	13.66	9.47	-30.7%
8.32	13.66	9.08	-33.5%
8.34	13.66	8.70	-36.3%
8.36	13.66	8.32	-39.1%

WATERLINE AT ZERO
AREA ERROR = 8.089

STREAM NAME: Piceance Creek
 XS LOCATION: 4300 ft upstream of gage along Rio Blanco Cnty Rd S
 XS NUMBER: 1

GL = lowest Grassline elevation corrected for sag

STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PER (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	7.09	28.26	1.33	1.87	37.57	28.92	100.0%	1.30	139.74	3.72
	7.14	27.50	1.32	1.82	36.21	28.14	97.3%	1.29	133.86	3.70
	7.19	26.89	1.30	1.77	34.85	27.52	95.2%	1.27	127.49	3.66
	7.24	26.42	1.27	1.72	33.52	27.03	93.5%	1.24	120.90	3.61
	7.29	25.95	1.24	1.67	32.21	26.54	91.8%	1.21	114.52	3.56
	7.34	25.48	1.21	1.62	30.93	26.05	90.1%	1.19	108.34	3.50
	7.39	25.02	1.19	1.57	29.66	25.56	88.4%	1.16	102.35	3.45
	7.44	24.66	1.15	1.52	28.42	25.18	87.1%	1.13	96.27	3.39
	7.49	24.38	1.12	1.47	27.20	24.88	86.0%	1.09	90.17	3.32
	7.54	24.10	1.08	1.42	25.99	24.58	85.0%	1.06	84.25	3.24
	7.59	23.82	1.04	1.37	24.79	24.28	84.0%	1.02	78.52	3.17
	7.64	23.54	1.00	1.32	23.60	23.98	82.9%	0.98	72.97	3.09
	7.69	23.27	0.96	1.27	22.43	23.68	81.9%	0.95	67.60	3.01
	7.74	22.99	0.93	1.22	21.28	23.38	80.9%	0.91	62.42	2.93
	7.79	22.70	0.89	1.17	20.13	23.07	79.8%	0.87	57.45	2.85
	7.84	22.34	0.85	1.12	19.01	22.70	78.5%	0.84	52.77	2.78
	7.89	21.98	0.81	1.07	17.90	22.32	77.2%	0.80	48.27	2.70
	7.94	21.62	0.78	1.02	16.81	21.95	75.9%	0.77	43.97	2.62
	7.99	21.26	0.74	0.97	15.74	21.58	74.6%	0.73	39.85	2.53
	8.04	20.85	0.70	0.92	14.69	21.15	73.1%	0.69	35.98	2.45
WL	8.09	20.39	0.67	0.87	13.65	20.69	71.5%	0.66	32.34	2.37
	8.14	20.06	0.63	0.82	12.64	20.34	70.3%	0.62	28.78	2.28
	8.19	19.82	0.59	0.77	11.65	20.08	69.4%	0.58	25.32	2.17
	8.24	19.58	0.54	0.72	10.66	19.81	68.5%	0.54	22.04	2.07
	8.29	19.34	0.50	0.67	9.69	19.55	67.6%	0.50	18.96	1.96
	8.34	19.10	0.46	0.62	8.73	19.29	66.7%	0.45	16.07	1.84
	8.39	18.86	0.41	0.57	7.78	19.03	65.8%	0.41	13.39	1.72
	8.44	18.44	0.37	0.52	6.85	18.59	64.3%	0.37	10.99	1.61
	8.49	17.97	0.33	0.47	5.94	18.11	62.6%	0.33	8.82	1.49
	8.54	17.47	0.29	0.42	5.05	17.59	60.8%	0.29	6.86	1.36
	8.59	16.83	0.25	0.37	4.19	16.93	58.6%	0.25	5.16	1.23
	8.64	15.78	0.21	0.32	3.37	15.86	54.9%	0.21	3.75	1.11
	8.69	14.96	0.17	0.27	2.61	15.03	52.0%	0.17	2.53	0.97
	8.74	14.42	0.13	0.22	1.87	14.47	50.1%	0.13	1.50	0.80
	8.79	12.83	0.09	0.17	1.18	12.87	44.5%	0.09	0.75	0.64
	8.84	11.07	0.05	0.12	0.59	11.09	38.4%	0.05	0.26	0.44
	8.89	6.17	0.02	0.07	0.13	6.17	21.3%	0.02	0.03	0.24
	8.94	0.77	0.01	0.02	0.01	0.78	2.7%	0.01	0.00	0.15

$$\bar{F}_d = (0.01)(28.26) = 0.2826 \quad \frac{Q - 5.16}{6.86 - 5.16} = \frac{0.28 - 0.25}{0.29 - 0.25} \quad Q = 6.44$$

outside
of
range

$$\bar{F}_v = \frac{Q - 2.53}{3.75 - 2.53} = \frac{1 - 0.97}{1.11 - 0.97} \quad Q = 2.79$$

STREAM NAME: Piceance Creek
XS LOCATION: 4300 ft upstream of gage along Rio Blanco Cnty Rd S
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Q_m)= 32.55 cfs
CALCULATED FLOW (Q_c)= 32.34 cfs
($Q_m - Q_c$)/ $Q_m \times 100$ = 0.6 %

MEASURED WATERLINE (W_m)= 8.11 ft
CALCULATED WATERLINE (W_c)= 8.09 ft
($W_m - W_c$)/ $W_m \times 100$ = 0.3 %

MAX MEASURED DEPTH (D_m)= 0.85 ft
MAX CALCULATED DEPTH (D_c)= 0.87 ft
($D_m - D_c$)/ $D_m \times 100$ = -2.5 %

MEAN VELOCITY= 2.37 ft/sec
MANNING'S N= 0.043
SLOPE= 0.008 ft/ft

.4 * Q_m = 13.0 cfs
2.5 * Q_m = 81.4 cfs

RECOMMENDED INSTREAM FLOW:

=====

FLOW (CFS)

=====

PERIOD

=====

2.79

Winter

6.44

Summer

RATIONALE FOR RECOMMENDATION:

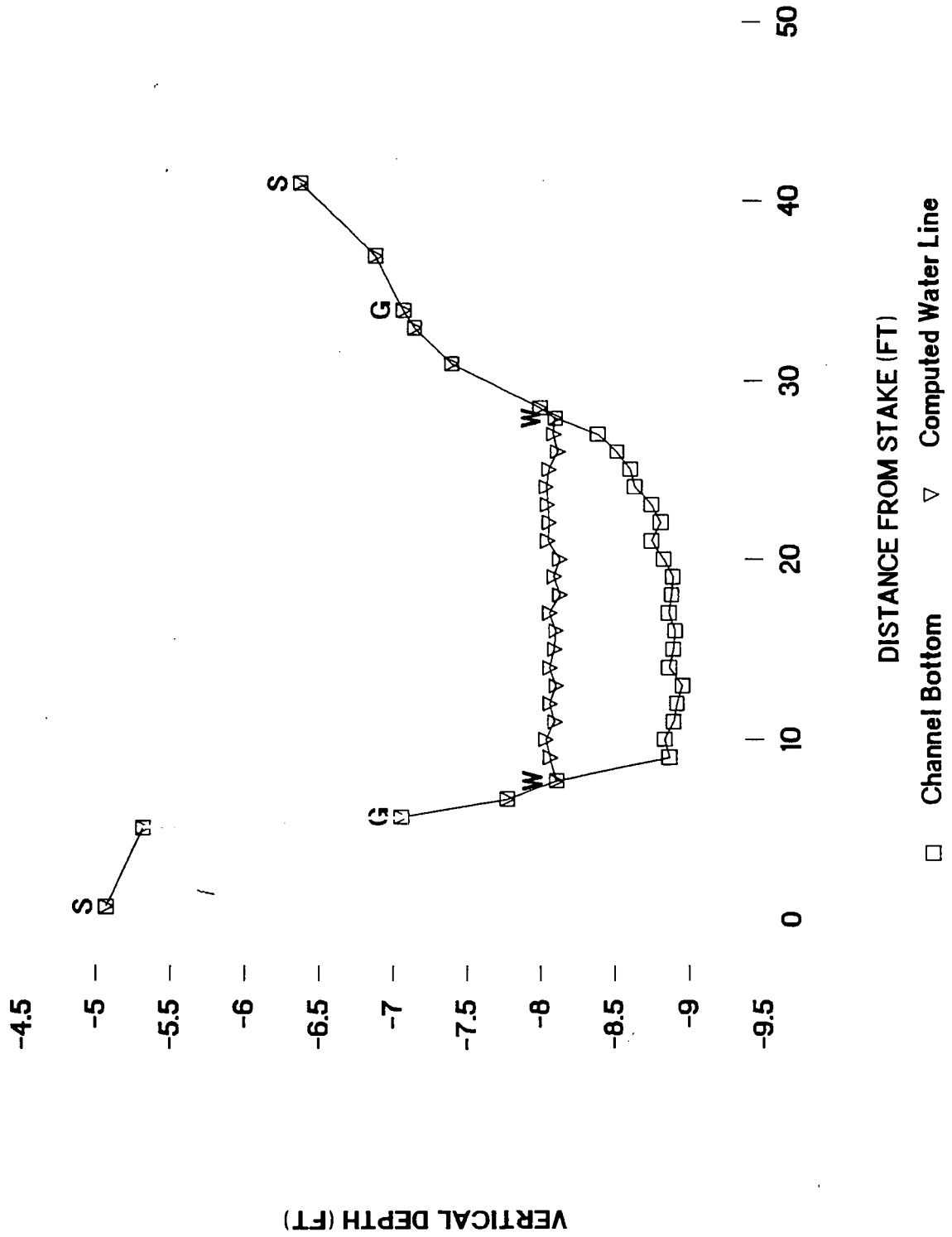
=====

Winter flow of 2.79 cfs would satisfy Kv and 90 WP
Summer flow of 6.44 cfs would satisfy all 3 criteria

RECOMMENDATION BY: Bill Carey AGENCY: BLM DATE: 2/2/98
CWCB REVIEW BY: DATE:

Piceance Creek

CROSS SECTION DATA ANALYSIS



PEANT-CK.WRI
CANT-CK.PIC



FIELD DATA FOR INSTREAM FLOW DETERMINATIONS



COLORADO WATER
CONSERVATION BOARD

LOCATION INFORMATION

STREAM NAME: Piceance Creek
CROSS-SECTION LOCATION: 4300' upstream of gauge along Rio Blanco County Road 5 (4300' along road)
DATE: 9-28-95 OBSERVERS: Carol Hollowed, Roy Smith, Paul Daggett
LEGAL DESCRIPTION: SECTION: NW SE SECTION: 11 TOWNSHIP: 1 N RANGE: 97 E/W PM: Sixth
COUNTY: Rio Blanco WATERSHED: White River WATER DIVISION: S DOW WATER CODE: 25343
MAP(S): USGS: White River City, CO USFS:
GPS: N 40° 03.975' W 108° 14.495' Locat:

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: ☒ YES ☐ NO METER TYPE: Pygmy
METER NUMBER: standard DATE RATED: CALIB/SPIN: sec TAPE WEIGHT: lbs/100' TAPE TENSION: 15 lbs
CHANNEL BED MATERIAL SIZE RANGE: sand to 6" cobbles PHOTOGRAPHS TAKEN: ☒ YES ☐ NO NUMBER OF PHOTOGRAPHS: 3

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)	
(X) Tape @ Stake LB	0.0	4.12	S K E T C H
(X) Tape @ Stake RB	0.0	4.10	
(1) WS @ Tape LB/RB	0.0	6.22 / 6.25	
(2) WS Upstream	14.5'	6.05	
(3) WS Downstream	14.5'	6.34	
SLOPE	<u>0.29 / 29.0' = 0.01</u>		

LEGEND

Stake (X)

Station (1)

Photo (1)

Direction of Flow

TAPE

(X) (16) (17) (18)

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.

mayfly, caddisfly, snails

COMMENTS

Stream Temp 12°C Sunny, breezy, warm

DEANT2CK.WK1
EY2CK.PSC

PROOF SHEET

LOCATION INFORMATION

INPUT DATA

DATA POINTS=

42

STREAM NAME:	Piceance Creek	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	TAPE TO WATER
XS LOCATION:	4300 ft. us. of gage along Rio Blar								
XS NUMBER:	1	S	0.00	0.30	0.00	0.00	0.00	0.00	0.00
			1.00	0.50	0.00	0.00	0.00	0.00	0.00
DATE:	9/28/95		1.50	0.90	0.00	0.00	0.00	0.00	0.00
OBSERVERS:	Carol Hollowed, Roy Smith, Paul Daggett		3.00	1.10	0.00	0.00	0.00	0.00	0.00
			5.00	1.80	0.00	0.00	0.00	0.00	0.00
1/4 SEC:	NW S6-		10.00	1.70	0.00	0.00	0.00	0.00	0.00
SECTION:	11	1 G	14.00	1.60	0.00	0.00	0.00	0.00	0.00
TWP:	1 N	W	20.00	1.70	0.00	0.00	0.00	0.00	0.00
RANGE:	97 W		21.50	1.90	0.20	0.00	0.25	0.00	2.08
PM:	6th		22.50	2.10	0.45	0.34	0.45	0.15	2.04
			23.50	2.00	0.35	0.26	0.35	0.09	2.04
COUNTY:	Rio Blanco		24.50	2.00	0.30	0.47	0.30	0.14	2.10
WATERSHED:	White River		25.50	2.00	0.35	0.76	0.53	0.40	2.06
DIVISION:	5		27.50	2.10	0.40	3.15	0.60	1.89	2.12
DOW CODE:	25343		28.50	2.20	0.60	3.52	0.45	1.58	2.03
			29.00	2.30	0.70	3.08	0.53	1.62	2.03
USGS MAP:	White River City		30.00	2.30	0.70	2.47	0.70	1.73	2.03
USFS MAP:			31.00	2.60	1.00	3.79	0.75	2.84	2.04
			31.50	2.50	0.90	3.08	0.68	2.08	2.04
SUPPLEMENTAL DATA			32.50	2.50	0.90	2.47	0.90	2.22	2.04
===			33.50	2.40	0.80	2.96	0.80	2.37	2.04
			34.50	2.20	0.60	2.35	0.60	1.41	2.05
TAPE WT:	0.0106		35.50	2.20	0.60	2.79	0.60	1.67	2.05
TENSION:	15		36.50	2.20	0.60	2.35	0.60	1.41	2.05
			37.50	2.10	0.50	3.21	0.50	1.61	2.04
CHANNEL PROFILE DATA			38.50	2.10	0.50	1.66	0.50	0.83	2.04
=====			39.50	2.15	0.55	1.89	0.55	1.04	2.04
SLOPE:	0.01		40.50	2.10	0.50	1.76	0.50	0.88	2.04
			41.50	2.00	0.35	2.25	0.35	0.79	2.08
			42.50	2.00	0.35	1.93	0.35	0.68	2.08
CHECKED BY:.....DATE.....			43.50	2.05	0.40	2.20	0.40	0.88	2.07
			44.50	2.00	0.35	2.47	0.35	0.86	2.07
ASSIGNED TO:DATE.....			45.50	2.05	0.40	2.30	0.40	0.92	2.06
			46.50	1.80	0.05	0.00	0.03	0.00	2.15
		W	46.70	1.70	0.00	0.00	0.00	0.00	0.00
		1 G	46.81	1.60	0.00	0.00	0.00	0.00	0.00
			47.50	1.00	0.00	0.00	0.00	0.00	0.00
			48.80	0.75	0.00	0.00	0.00	0.00	0.00
			49.10	0.45	0.00	0.00	0.00	0.00	0.00
			51.00	0.65	0.00	0.00	0.00	0.00	0.00
			63.50	0.40	0.00	0.00	0.00	0.00	0.00
		S	71.00	0.15	0.00	0.00	0.00	0.00	0.00

TOTALS 13.01 30.09

 * COLORADO WATER CONSERVATION BOARD *
 * INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM *
 * STREAM CROSS-SECTION AND FLOW ANALYSIS *

LOCATION INFORMATION

STREAM NAME: Piceance Creek
 XS LOCATION: 4300 ft. us. of gage along Rio Blanco Co. Rd. 5 (4300 ft. along road)
 XS NUMBER: 1

DATE: 9/28/95
 OBSERVERS: Carol Hollowed, Roy Smith, Paul Daggett

1/4 SEC: NW SE
 SECTION: 11
 TWP: 1 N
 RANGE: 97 W
 PM: 6th

COUNTY: Rio Blanco
 WATERSHED: White River
 DIVISION: 5
 DOW CODE: 25343

USGS MAP: White River City
 USFS MAP:

SUPPLEMENTAL DATA
 =====

*** NOTE ***

Leave TAPE WT and TENSION
 at defaults for data collected

TAPE WT: 0.0106 with a survey level and rod
 TENSION: 15

CHANNEL PROFILE DATA
 =====

SLOPE: 0.01

INPUT DATA CHECKED BY:DATE.....

ASSIGNED TO:DATE.....

STREAM NAME: Piceance Creek

XS LOCATION: 4300 ft. us. of gage along Rio Blanco Co. Rd. 5 (4300 ft. along road)

XS NUMBER: 1

INPUT DATA # DATA POINTS= 42

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
S	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	1.50	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	3.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	5.00	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	10.00	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
1 G W	14.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	20.00	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	21.50	1.90	0.20	0.00	1.51	0.20	0.25	0.00	0.0%
	22.50	2.10	0.45	0.34	1.02	0.45	0.45	0.15	0.5%
	23.50	2.00	0.35	0.26	1.00	0.35	0.35	0.09	0.3%
	24.50	2.00	0.30	0.47	1.00	0.30	0.30	0.14	0.5%
	25.50	2.00	0.35	0.76	1.00	0.35	0.53	0.40	1.3%
	27.50	2.10	0.40	3.15	2.00	0.40	0.60	1.89	6.3%
	28.50	2.20	0.60	3.52	1.00	0.60	0.45	1.58	5.3%
	29.00	2.30	0.70	3.08	0.51	0.70	0.53	1.62	5.4%
	30.00	2.30	0.70	2.47	1.00	0.70	0.70	1.73	5.7%
	31.00	2.60	1.00	3.79	1.04	1.00	0.75	2.84	9.4%
	31.50	2.50	0.90	3.08	0.51	0.90	0.68	2.08	6.9%
	32.50	2.50	0.90	2.47	1.00	0.90	0.90	2.22	7.4%
	33.50	2.40	0.80	2.96	1.00	0.80	0.80	2.37	7.9%
	34.50	2.20	0.60	2.35	1.02	0.60	0.60	1.41	4.7%
	35.50	2.20	0.60	2.79	1.00	0.60	0.60	1.67	5.6%
	36.50	2.20	0.60	2.35	1.00	0.60	0.60	1.41	4.7%
	37.50	2.10	0.50	3.21	1.00	0.50	0.50	1.61	5.3%
	38.50	2.10	0.50	1.66	1.00	0.50	0.50	0.83	2.8%
	39.50	2.15	0.55	1.89	1.00	0.55	0.55	1.04	3.5%
	40.50	2.10	0.50	1.76	1.00	0.50	0.50	0.88	2.9%
	41.50	2.00	0.35	2.25	1.00	0.35	0.35	0.79	2.6%
	42.50	2.00	0.35	1.93	1.00	0.35	0.35	0.68	2.2%
	43.50	2.05	0.40	2.20	1.00	0.40	0.40	0.88	2.9%
	44.50	2.00	0.35	2.47	1.00	0.35	0.35	0.86	2.9%
	45.50	2.05	0.40	2.30	1.00	0.40	0.40	0.92	3.1%
	46.50	1.80	0.05	0.00	1.03	0.05	0.03	0.00	0.0%
	46.70	1.70	0.00	0.00	0.22	0.00	0.00	0.00	0.0%
	46.81	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	47.50	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	48.80	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	49.10	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	51.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	63.50	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
	71.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
TOTALS -----					26.90	1	13.01	30.09	100.0%
					(Max.)				

Manning's n = 0.0396

STREAM NAME: Piceance Creek
XS LOCATION: 4300 ft. us. o
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
1.83	13.01	20.70	59.1%
1.85	13.01	19.85	52.7%
1.87	13.01	19.01	46.2%
1.89	13.01	18.48	39.8%
1.91	13.01	17.39	33.7%
1.93	13.01	16.73	28.7%
1.95	13.01	16.12	23.9%
1.97	13.01	15.51	19.3%
1.99	13.01	14.92	14.7%
2.01	13.01	14.34	10.3%
2.03	13.01	13.78	6.0%
2.04	13.01	13.51	3.9%
2.05	13.01	13.23	1.8%
2.06	13.01	12.96	-0.3%
2.07	13.01	12.70	-2.4%
2.08	13.01	12.43	-4.4%
2.09	13.01	12.17	-6.5%
2.10	13.01	11.90	-8.5%
2.11	13.01	11.64	-10.5%
2.12	13.01	11.37	-12.5%
2.13	13.01	11.11	-14.6%
2.15	13.01	10.59	-18.6%
2.17	13.01	10.07	-22.5%
2.19	13.01	9.56	-26.5%
2.21	13.01	9.05	-30.4%
2.23	13.01	8.54	-34.3%
2.25	13.01	8.04	-38.2%
2.27	13.01	7.54	-42.0%
2.29	13.01	7.05	-45.8%
2.31	13.01	6.56	-49.6%
2.33	13.01	6.07	-53.3%

WATERLINE AT ZERO
AREA ERROR = 2.059

STREAM NAME: Piceance Creek
 XS LOCATION: 4300 ft. us. of gage along Rio Blanco Co. Rd. 5 (4300 ft. along road)
 XS NUMBER: 1

GL = lowest Grassline elevation corrected for sag

STAGING TABLE

WL = Waterline corrected for variations in field measured water surface elevations and sag

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PER (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	2.00	28.84	0.51	1.04	14.65	29.09	100.0%	0.50	34.83	2.38
	2.01	28.52	0.50	1.03	14.39	28.77	98.9%	0.50	34.05	2.37
WL	2.06	26.79	0.49	0.98	13.00	27.02	92.9%	0.48	30.01	2.31
	2.11	26.34	0.44	0.93	11.68	26.55	91.3%	0.44	25.37	2.17
	2.16	25.90	0.40	0.88	10.37	26.09	89.7%	0.40	21.06	2.03
	2.21	25.44	0.36	0.83	9.09	25.62	88.1%	0.35	17.11	1.88
	2.26	24.90	0.31	0.78	7.83	25.06	86.2%	0.31	13.54	1.73
	2.31	24.43	0.27	0.73	6.60	24.58	84.5%	0.27	10.31	1.56
	2.36	23.99	0.22	0.68	5.39	24.14	83.0%	0.22	7.44	1.38
	2.41	21.41	0.20	0.63	4.21	21.55	74.1%	0.20	5.33	1.27
	2.46	15.83	0.21	0.58	3.27	15.94	54.8%	0.20	4.27	1.31
	2.51	13.50	0.19	0.53	2.55	13.61	46.8%	0.19	3.14	1.23
	2.56	10.72	0.18	0.48	1.93	10.82	37.2%	0.18	2.29	1.19
	2.61	8.53	0.17	0.43	1.46	8.63	29.6%	0.17	1.67	1.15
	2.66	5.78	0.19	0.38	1.08	5.86	20.1%	0.18	1.31	1.22
	2.71	5.28	0.15	0.33	0.80	5.36	18.4%	0.15	0.85	1.06
	2.76	3.85	0.15	0.28	0.58	3.91	13.4%	0.15	0.60	1.05
	2.81	3.43	0.12	0.23	0.39	3.48	12.0%	0.11	0.35	0.88
	2.86	2.93	0.08	0.18	0.23	2.97	10.2%	0.08	0.16	0.69
	2.91	2.26	0.05	0.13	0.10	2.29	7.9%	0.05	0.05	0.48
	2.96	0.66	0.04	0.08	0.03	0.68	2.3%	0.04	0.01	0.43
	3.01	0.24	0.01	0.03	0.00	0.25	0.9%	0.01	0.00	0.22

Using $TW = 28.84$ the following criteria must be satisfied:

$$\pi_d = 0.29, \% WP = 50, \pi_v = 1.0$$

From the table above, a flow that satisfies the π_d criterion will satisfy all 3 criteria, and a flow satisfying $\% WP$ will also satisfy the π_v criterion.

$$\textcircled{1} \pi_d \quad \frac{0.29 - 0.27}{0.31 - 0.27} = \frac{Q - 10.31}{13.54 - 10.31} \quad \frac{0.02}{0.04} = \frac{Q - 10.31}{3.23} \quad Q = 11.925$$

$$\textcircled{2} \% WP \quad \frac{50 - 46.8}{54.8 - 46.8} = \frac{Q - 3.14}{4.27 - 3.14} \quad \frac{3.2}{8} = \frac{Q - 3.14}{1.13} \quad Q = 3.592$$

STREAM NAME: Piceance Creek
 XS LOCATION: 4300 ft. us. of gage along Rio Blanco Co. Rd. 5 (4300 ft. along road)
 XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Q_m)= 30.09 cfs
 CALCULATED FLOW (Q_c)= 30.01 cfs
 $(Q_m - Q_c)/Q_m * 100 = 0.3 \%$

RECOMMENDED INSTREAM FLOW:

MEASURED WATERLINE (W_m)= 2.08 ft
 CALCULATED WATERLINE (W_c)= 2.06 ft
 $(W_m - W_c)/W_m * 100 = 1.0 \%$

FLOW (CFS) PERIOD

=====

=====

MAX MEASURED DEPTH (D_m)= 1.00 ft
 MAX CALCULATED DEPTH (D_c)= 0.98 ft
 $(D_m - D_c)/D_m * 100 = 2.1 \%$

MEAN VELOCITY= 2.31 ft/sec
 MANNING'S N= 0.040
 SLOPE= 0.01 ft/ft

$.4 * Q_m = 12.0$ cfs
 $2.5 * Q_m = 75.2$ cfs

RATIONALE FOR RECOMMENDATION:

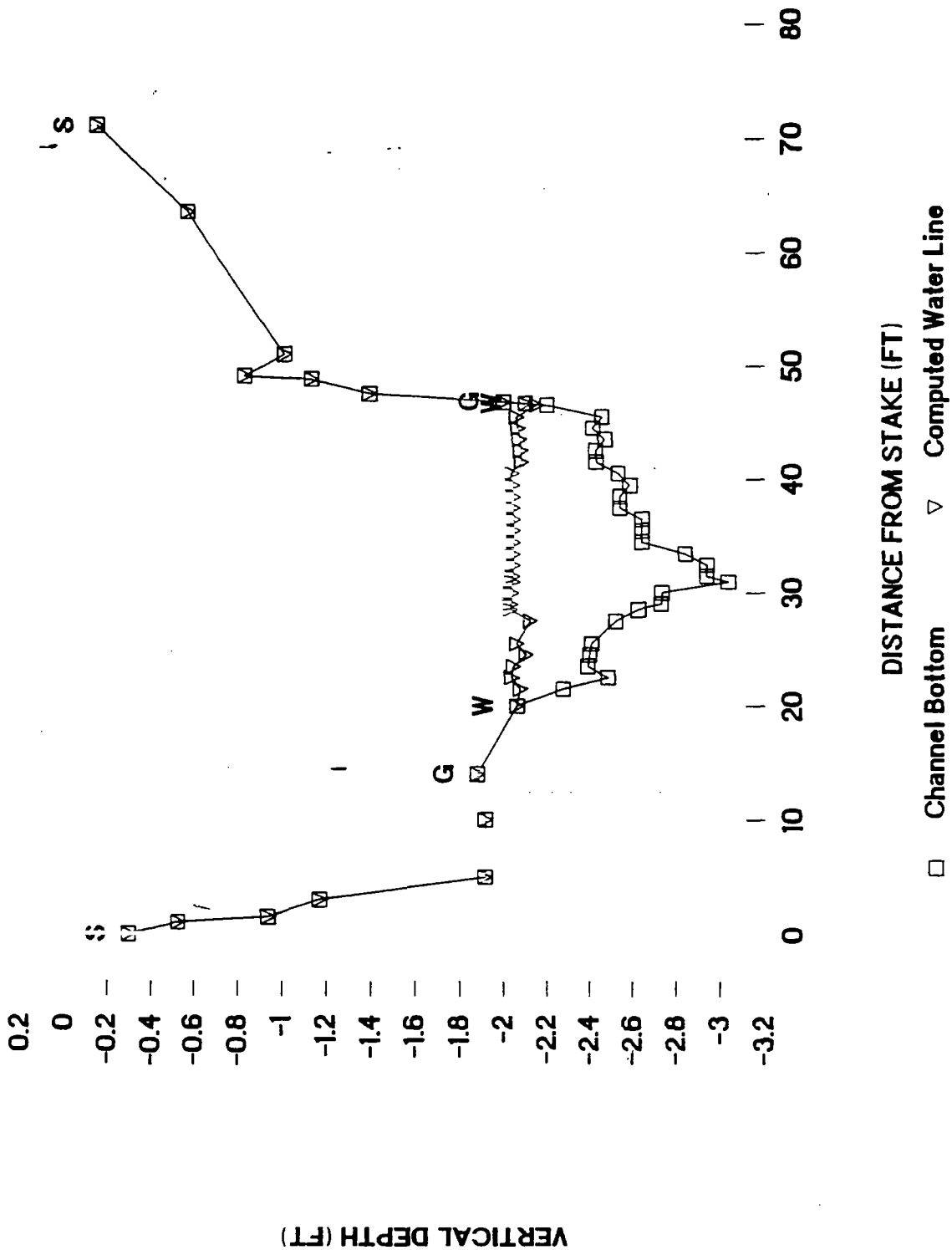
=====

RECOMMENDATION BY: AGENCY..... DATE:.....

CWCB REVIEW BY: DATE:.....

Piceance Creek

CROSS SECTION DATA ANALYSIS



R2Cross Calculations -- verified by the attached XSPRO Runs

STAGE-DISCHARGE DATA FOR CROSS-SECTION FILE PICEANCE.DAT

CROSS-SECTION NUMBER 1

DATE OF CROSS-SECTION MEASUREMENT: 950928

CHANNEL SLOPE RANGE: 0.0200 to 0.0100

VELOCITY FORMULA: User Supplied Mannings n 0.045-0.0396
D84 = 1.000 (ft)

cross-section treated as one section

STAGE ft	#SEC	AREA ft^2	PERIM ft	WIDTH ft	R ft	DAVG ft	SLOPE	n	VAVG ft/s	Q cfs
0.03	1	0.0	0.3	0.2	0.0	0.0	0.0200	0.045	0.3	0.00
0.08	1	0.0	0.7	0.7	0.0	0.0	0.0195	0.045	0.5	0.01
0.13	1	0.1	2.3	2.2	0.0	0.0	0.0190	0.044	0.6	0.06
0.18	1	0.2	2.9	2.9	0.1	0.1	0.0185	0.044	0.8	0.19
0.23	1	0.4	3.5	3.4	0.1	0.1	0.0180	0.044	1.1	0.41
0.28	1	0.6	3.9	3.8	0.1	0.1	0.0175	0.044	1.3	0.71
0.33	1	0.8	5.4	5.3	0.1	0.1	0.0170	0.043	1.2	0.99
0.38	1	1.1	5.9	5.8	0.2	0.2	0.0165	0.043	1.4	1.52
0.43	1	1.5	8.6	8.5	0.2	0.2	0.0160	0.043	1.3	1.95
0.48	1	1.9	10.8	10.7	0.2	0.2	0.0155	0.043	1.4	2.66
0.53	1	2.5	13.6	13.5	0.2	0.2	0.0150	0.042	1.4	3.59
0.58	1	3.3	15.8	15.7	0.2	0.2	0.0145	0.042	1.5	Q = 4.09 4.84
0.63	1	4.2	21.5	21.4	0.2	0.2	0.0140	0.042	1.4	5.96
0.68	1	5.4	24.2	24.0	0.2	0.2	0.0135	0.041	1.5	8.21
0.73	1	6.6	24.6	24.4	0.3	0.3	0.0130	0.041	1.7	11.25
0.78	1	7.8	25.1	24.9	0.3	0.3	0.0125	0.041	1.9	Q = 12.92 14.59
0.83	1	9.1	25.6	25.4	0.4	0.4	0.0120	0.041	2.0	18.20
0.88	1	10.4	26.1	25.9	0.4	0.4	0.0115	0.040	2.1	22.09
0.93	1	11.7	26.5	26.3	0.4	0.4	0.0110	0.040	2.2	26.21
0.98	1	13.0	27.0	26.7	0.5	0.5	0.0105	0.040	2.4	30.53
1.03	1	14.4	28.7	28.5	0.5	0.5	0.0100	0.040	2.4	34.05

STAGE-DISCHARGE DATA FOR CROSS-SECTION FILE PICEANCE.DAT

CROSS-SECTION NUMBER 1

DATE OF CROSS-SECTION MEASUREMENT: 950928

CHANNEL SLOPE RANGE: 0.0150 to 0.0100

VELOCITY FORMULA: User Supplied Mannings n 0.045-0.0396
D84 = 1.000 (ft)

cross-section treated as one section

STAGE ft	#SEC	AREA ft ²	PERIM ft	WIDTH ft	R ft	DAVG ft	SLOPE	n	VAVG ft/s	Q cfs
0.03	1	0.0	0.3	0.2	0.0	0.0	0.0150	0.045	0.2	0.00
0.08	1	0.0	0.7	0.7	0.0	0.0	0.0148	0.045	0.5	0.01
0.13	1	0.1	2.3	2.2	0.0	0.0	0.0145	0.044	0.5	0.05
0.18	1	0.2	2.9	2.9	0.1	0.1	0.0143	0.044	0.7	0.17
0.23	1	0.4	3.5	3.4	0.1	0.1	0.0140	0.044	0.9	0.36
0.28	1	0.6	3.9	3.8	0.1	0.1	0.0138	0.044	1.1	0.63
0.33	1	0.8	5.4	5.3	0.1	0.1	0.0135	0.043	1.1	0.88
0.38	1	1.1	5.9	5.8	0.2	0.2	0.0133	0.043	1.3	1.36
0.43	1	1.5	8.6	8.5	0.2	0.2	0.0130	0.043	1.2	1.76
0.48	1	1.9	10.8	10.7	0.2	0.2	0.0128	0.043	1.3	2.41
0.53	1	2.5	13.6	13.5	0.2	0.2	0.0125	0.042	1.3	3.27
0.58	1	3.3	15.8	15.7	0.2	0.2	0.0123	0.042	1.4	4.45
0.63	1	4.2	21.5	21.4	0.2	0.2	0.0120	0.042	1.3	5.52
0.68	1	5.4	24.2	24.0	0.2	0.2	0.0118	0.041	1.4	7.66
0.73	1	6.6	24.6	24.4	0.3	0.3	0.0115	0.041	1.6	10.58
0.78	1	7.8	25.1	24.9	0.3	0.3	0.0113	0.041	1.8	13.84
0.83	1	9.1	25.6	25.4	0.4	0.4	0.0110	0.041	1.9	17.43
0.88	1	10.4	26.1	25.9	0.4	0.4	0.0108	0.040	2.1	21.36
0.93	1	11.7	26.5	26.3	0.4	0.4	0.0105	0.040	2.2	25.61
0.98	1	13.0	27.0	26.7	0.5	0.5	0.0103	0.040	2.3	30.17
1.03	1	14.4	28.7	28.5	0.5	0.5	0.0100	0.040	2.4	34.06

Q=3.24

Q=12.21

STAGE-DISCHARGE DATA FOR CROSS-SECTION FILE PICEANCE.DAT

CROSS-SECTION NUMBER 1

DATE OF CROSS-SECTION MEASUREMENT: 950928

CHANNEL SLOPE RANGE: 0.0150 to 0.0100

VELOCITY FORMULA: User Supplied Mannings n

D84 = 1.000 (ft)

cross-section treated as one section

STAGE ft	#SEC	AREA ft^2	PERIM ft	WIDTH ft	R ft	DAVG ft	SLOPE	n	VAVG ft/s	Q cfs
0.03	1	0.0	0.3	0.2	0.0	0.0	0.0150	0.050	0.2	0.00
0.08	1	0.0	0.7	0.7	0.0	0.0	0.0148	0.050	0.4	0.01
0.13	1	0.1	2.3	2.2	0.0	0.0	0.0145	0.049	0.5	0.05
0.18	1	0.2	2.9	2.9	0.1	0.1	0.0143	0.048	0.7	0.15
0.23	1	0.4	3.5	3.4	0.1	0.1	0.0140	0.048	0.9	0.33
0.28	1	0.6	3.9	3.8	0.1	0.1	0.0138	0.047	1.0	0.58
0.33	1	0.8	5.4	5.3	0.1	0.1	0.0135	0.047	1.0	0.81
0.38	1	1.1	5.9	5.8	0.2	0.2	0.0133	0.046	1.2	1.27
0.43	1	1.5	8.6	8.5	0.2	0.2	0.0130	0.046	1.1	1.64
0.48	1	1.9	10.8	10.7	0.2	0.2	0.0128	0.045	1.2	2.26
0.53	1	2.5	13.6	13.5	0.2	0.2	0.0125	0.045	1.2	3.09
0.58	1	3.3	15.8	15.7	0.2	0.2	0.0123	0.044	1.3	4.22
0.63	1	4.2	21.5	21.4	0.2	0.2	0.0120	0.044	1.3	5.27
0.68	1	5.4	24.2	24.0	0.2	0.2	0.0118	0.043	1.4	7.35
0.73	1	6.6	24.6	24.4	0.3	0.3	0.0115	0.043	1.6	10.20
0.78	1	7.8	25.1	24.9	0.3	0.3	0.0113	0.042	1.7	13.43
0.83	1	9.1	25.6	25.4	0.4	0.4	0.0110	0.042	1.9	17.01
0.88	1	10.4	26.1	25.9	0.4	0.4	0.0108	0.041	2.0	20.97
0.93	1	11.7	26.5	26.3	0.4	0.4	0.0105	0.041	2.2	25.30
0.98	1	13.0	27.0	26.7	0.5	0.5	0.0103	0.040	2.3	29.98
1.03	1	14.4	28.7	28.5	0.5	0.5	0.0100	0.040	2.4	34.06

Q = 3.54

Q = 11.82

STAGE-DISCHARGE DATA FOR CROSS-SECTION FILE PICEANCE.DAT

CROSS-SECTION NUMBER 1

DATE OF CROSS-SECTION MEASUREMENT: 950928

CHANNEL SLOPE RANGE: 0.0100 to 0.0100

VELOCITY FORMULA: User Supplied Mannings n 0.045-0.0396
D84 = 1.000 (ft)

cross-section treated as one section

STAGE ft	#SEC	AREA ft^2	PERIM ft	WIDTH ft	R ft	DAVG ft	SLOPE	n	VAVG ft/s	Q cfs
0.03	1	0.0	0.3	0.2	0.0	0.0	0.0100	0.045	0.2	0.00
0.08	1	0.0	0.7	0.7	0.0	0.0	0.0100	0.045	0.4	0.01
0.13	1	0.1	2.3	2.2	0.0	0.0	0.0100	0.044	0.4	0.04
0.18	1	0.2	2.9	2.9	0.1	0.1	0.0100	0.044	0.6	0.14
0.23	1	0.4	3.5	3.4	0.1	0.1	0.0100	0.044	0.8	0.31
0.28	1	0.6	3.9	3.8	0.1	0.1	0.0100	0.044	0.9	0.54
0.33	1	0.8	5.4	5.3	0.1	0.1	0.0100	0.043	1.0	0.76
0.38	1	1.1	5.9	5.8	0.2	0.2	0.0100	0.043	1.1	1.18
0.43	1	1.5	8.6	8.5	0.2	0.2	0.0100	0.043	1.1	1.54
0.48	1	1.9	10.8	10.7	0.2	0.2	0.0100	0.043	1.1	2.13
0.53	1	2.5	13.6	13.5	0.2	0.2	0.0100	0.042	1.2	2.93
0.58	1	3.3	15.8	15.7	0.2	0.2	0.0100	0.042	1.2	Q=3.37 4.02
0.63	1	4.2	21.5	21.4	0.2	0.2	0.0100	0.042	1.2	5.04
0.68	1	5.4	24.2	24.0	0.2	0.2	0.0100	0.041	1.3	7.07
0.73	1	6.6	24.6	24.4	0.3	0.3	0.0100	0.041	1.5	9.86
0.78	1	7.8	25.1	24.9	0.3	0.3	0.0100	0.041	1.7	Q=11.46 13.05
0.83	1	9.1	25.6	25.4	0.4	0.4	0.0100	0.041	1.8	16.62
0.88	1	10.4	26.1	25.9	0.4	0.4	0.0100	0.040	2.0	20.60
0.93	1	11.7	26.5	26.3	0.4	0.4	0.0100	0.040	2.1	25.00
0.98	1	13.0	27.0	26.7	0.5	0.5	0.0100	0.040	2.3	29.80
1.03	1	14.4	28.7	28.5	0.5	0.5	0.0100	0.040	2.4	34.06

CDOW STREAM SURVEY (1991) (SECTION)

LEVEL 2: FIELD SURVEY SUMMARY

White River C. Ly. Quad

STREAM: Piceance Cr. Lower SEC#: - WATER CODE: 25343 CDOW REGION: W
 SURVEYORS: R Smith, D Smith, E & C Hallowed DATE OF SURVEY: 9 Sept 97
 SURVEY LOCATION: T 1N R 97W S 1 ELEVATION: 5.725 STATION #: 2 (downstream)
 UTM ZONE: 12 UTM X: 735800m UTM Y: 4439800m
 LOCATION DESCRIPTION: Barren at upstream side of bridge, shocked 200' upstream
 STREAM FLOW PROFILE (Y or N): Y IF YES-DATE AND TYPE 9 Sept 97 Rod & level
 HABITAT EVALUATION (Y or N): N IF YES-DATE AND TYPE -
 WATER CHEMISTRY ANALYSIS (Y or N): N IF YES-ATTACH SEPARATE ANALYSIS SHEET

FISH PRESENT (Y or N): Y POP. EST. METHOD: - STATION LENGTH: 200 (FEET)
 AVG. WIDTH: 18 (FEET) TOTAL STATION AREA: .083 (ACRES)
 FLOW (CFS) AT TIME OF SURVEY: 32.6 METHOD: .6 USGS
 LIMITING FACTORS TO FISHERY: C1
 COMMENTS:

LENGTH FREQUENCY RECORD (CM)

SPECIES	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
FMS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50

SUMMARY INFORMATION

SPECIES	NO. FISH CAUGHT	AVG. LENGTH (CM)	LENGTH RANGE (CM)	AVG. WEIGHT (Grams)	WEIGHT RANGE (Grams)	% TOTAL CATCH	BIOMASS lb/Acre	DENSITY No./Acre	Conf. Int.
FMS	9	17.3	11.3-29.5	67.8	14-270	24	16.2	108	
Small FMS	15	-	2.9-8.1	-	<1-5	38		181	
SPD	14	-	2.9-8.1	-	<1-5	37	34.2	169	

COLORADO DIVISION OF WILDLIFE

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Length-Weight Data File

Stream Name Piceance Cr. (Lower)

CDOW

Water Code 25343 Date 9 Sept 97

Gear Coffelt Electroshocker

Effort 15 min

Station No. 2

Species Code	Total Length	Weight	Species Code	Total Length	Weight	Species Code	Total Length	Weight
FMS	29.5	270						
"	18.1	61						
"	18.1	62						
"	19.4	68						
"	16.5	40						
"	14.9	32						
"	16.4	42						
"	11.6	21						
"	11.3	14						

15 (Small)
FMS 29-8.1 41-5

14 (Small)
SPD 29-8.1 41-5

Comments:

White River City Quad

STREAM: Piceance Cr. Lower SEC#: - WATER CODE: 25343 CDOW REGION: 14
 SURVEYORS: RS, JH, EC Hallowed DATE OF SURVEY: 9 Sept 97
 SURVEY LOCATION: T 14 N R 97 W S 11 ELEVATION: 5760 STATION #: 1 (center stream)
 UTM ZONE: 12 UTM X: 735240m UTM Y: 4438560m
 LOCATION DESCRIPTION: 4300' upstream from stream gauge. Access gained via old well pad road off RBC's.
 STREAM FLOW PROFILE (Y or N): Y IF YES-DATE AND TYPE 9 Sept 97, Rod #1000
 HABITAT EVALUATION (Y or N): N IF YES-DATE AND TYPE -
 WATER CHEMISTRY ANALYSIS (Y or N): N IF YES-ATTACH SEPARATE ANALYSIS SHEET

FISH PRESENT (Y or N): Y POP. EST. METHOD: - STATION LENGTH: 450 (FEET)
 AVG. WIDTH: 16 (FEET) TOTAL STATION AREA: .165 (ACRES)
 FLOW (CFS) AT TIME OF SURVEY: 32.6 METHOD: 86 USGS
 LIMITING FACTORS TO FISHERY: Irrigation, high temps
 COMMENTS:

LENGTH FREQUENCY RECORD (CM)

SPECIES	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	
DAC																										
£																										
SUC																										

SUMMARY INFORMATION

SPECIES	NO. FISH CAUGHT	AVG. LENGTH (CM)	LENGTH RANGE (CM)	AVG. WEIGHT (Grams)	WEIGHT RANGE (Grams)	% TOTAL CATCH	BIOMASS lb/Acre	DENSITY No./Acre	Conf. Int.
DAC & SUC	221	-	2.5-15.2	-	1-37	100	9	1,339	

COLORADO DIVISION OF WILDLIFE

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Length-Weight Data File

Stream Name Piceance Cr. Upper
Gear Cottell Electroshocker

CDOW
Water Code 25343 Date 9 Sept. 97
Effort 39 min. Station No. 1

Species Code	Total Length	Weight	Species Code	Total Length	Weight	Species Code	Total Length	Weight
DAC	Range	Total						
SUC	2.5-15.2	669						

Comments:

Stream: Piceance Creek
Date of Survey: 9/9/97
Survey Location: T1N R97W sec 1 SWSWSW
UTM Zone: 12 **UTM X:** 735800m **UTM Y:** 4439800m (midpoint of reach sampled)
Location Description: Beginning from upstream side of bridge, survey proceeded approx. 200' upstream.
Station length: 200'
Station width: 18'
Effort: 900 sec (estimated)
Total Station Area: 0.083 acre
Limiting Factors: Water diversion, irrigation primary

Fish collected from this site:

*9 larger flannelmouths (listed below)
 *29 smaller flannelmouths(15)/dace(14), varying from largest of 3-3/16"/5g to the smallest of 1-1/8"/<1g; total weight of 29 smaller fish=86g

larger flannelmouths	Length (in)	Weight (grams)
1	11-5/8	270
2	7-1/8	61
3	7-1/8	62
4	7-5/8	68
5	6-1/2	40
6	5-7/8	32
7	6-7/16	42
8	4-9/16	21
9	4-7/16	14

Stream: Piceance Creek
Date of Survey: 9/9/97
Survey Location: T1N R97W sec 1 SWSWSW
UTM Zone: 12 **UTM X:** 735800m **UTM Y:** 4439800m (midpoint of reach sampled)
Location Description: Beginning from upstream side of bridge, survey proceeded approx. 200' upstream.
Station length: 200'
Station width: 18'
Effort: 900 sec (estimated)
Total Station Area: 0.083 acre
Limiting Factors: Water diversion, irrigation primary

Fish collected from this site:

- *9 larger flannemouths (listed below)
- *29 smaller flannemouths(15)/dace(14), varying from largest of 3-3/16"/5g to the smallest of 1-1/8"/<1g; total weight of 29 smaller fish=86g

larger flannemouths	Length (in)	Weight (grams)
1	11-5/8	270
2	7-1/8	61
3	7-1/8	62
4	7-5/8	68
5	6-1/2	40
6	5-7/8	32
7	6-7/16	42
8	4-9/16	21
9	4-7/16	14

CDOW STREAM SURVEY (1991) VISION

LEVEL 2: FIELD SURVEY SUMMARY

White River City, Quad

STREAM: Pineapple Cr. Lower SEC#: - WATER CODE: 2 CDOW REGION: W

SURVEYORS: R. Smith, D. Smith, E. C. Holloway DATE OF SURVEY: 9 Sept 97

SURVEY LOCATION: T 1N R 97W S 1 ELEVATION: 5,725 STATION #: 2

UTM ZONE: 12 UTM X: 735820m UTM Y: 4439800m

LOCATION DESCRIPTION: Began at upstream side of bridge, shelled 200' upstream

STREAM FLOW PROFILE (Y or N): Y IF YES-DATE AND TYPE 9 Sept. 97 Rod Level

HABITAT EVALUATION (Y or N): N IF YES-DATE AND TYPE -

WATER CHEMISTRY ANALYSIS (Y or N): N IF YES-ATTACH SEPARATE ANALYSIS SHEET

FISH PRESENT (Y or N): Y POP. EST. METHOD: - STATION LENGTH: 200 (FEET)

AVG. WIDTH: 18 (FEET) TOTAL STATION AREA: .083 (ACRES)

FLOW (CFS) AT TIME OF SURVEY: 32.6 METHOD: .6 USGS

LIMITING FACTORS TO FISHERY: C1

COMMENTS:

LENGTH FREQUENCY RECORD (CM)

	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
SPECIES	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
FMS	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	

SUMMARY INFORMATION

SPECIES	NO. FISH CAUGHT	AVG. LENGTH (CM)	LENGTH RANGE (CM)	AVG. WEIGHT (Grams)	WEIGHT RANGE (Grams)	% TOTAL CATCH	BIOMASS lb/Acre	DENSITY No./Acre	Conf. Int.
FMS	9	17.3	11.3-29.5	67.8	14-270	24	16.2	108	
Small FMS	15	-	2.9-8.1	-	<1-5	37	4.2	181	
SPD	14	-	2.9-8.1	-	<1-5	37		169	

COLORADO DIVISION OF WILDLIFE

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Length-Weight Data File

Stream Name Piceance Cr. (Lower)

CDOW

Water Code 25373

Date 9 Sept 91

Gear Condit 2m stretch

Effort 15 min

Station No. 2

Species Code	Total Length	Weight	Species Code	Total Length	Weight	Species Code	Total Length	Weight
FMS	29.5	270						
"	18.1	61						
"	18.1	62						
"	19.1	68						
"	16.5	40						
"	14.9	32						
"	16.4	42						
"	11.6	21						
"	11.3	14						

15 (Small)
FMS 2.9-8.1 <1-5

14 (Small)
SPD 2.9-8.1 <1-5

Comments:

Water Resources

Data Category:

Geographic Area:

Monthly Streamflow Statistics for Colorado

USGS 09306222 PICEANCE CREEK AT WHITE RIVER, CO

Available data for this site

Rio Blanco County, Colorado

Hydrologic Unit Code 14050006

Latitude 40°04'39", Longitude 108°14'07" NAD27

Drainage area 652.00 square miles

Gage datum 5,730.00 feet above sea level NGVD29

Output formats

HTML table of all data

Tab-separated data

Reselect output format

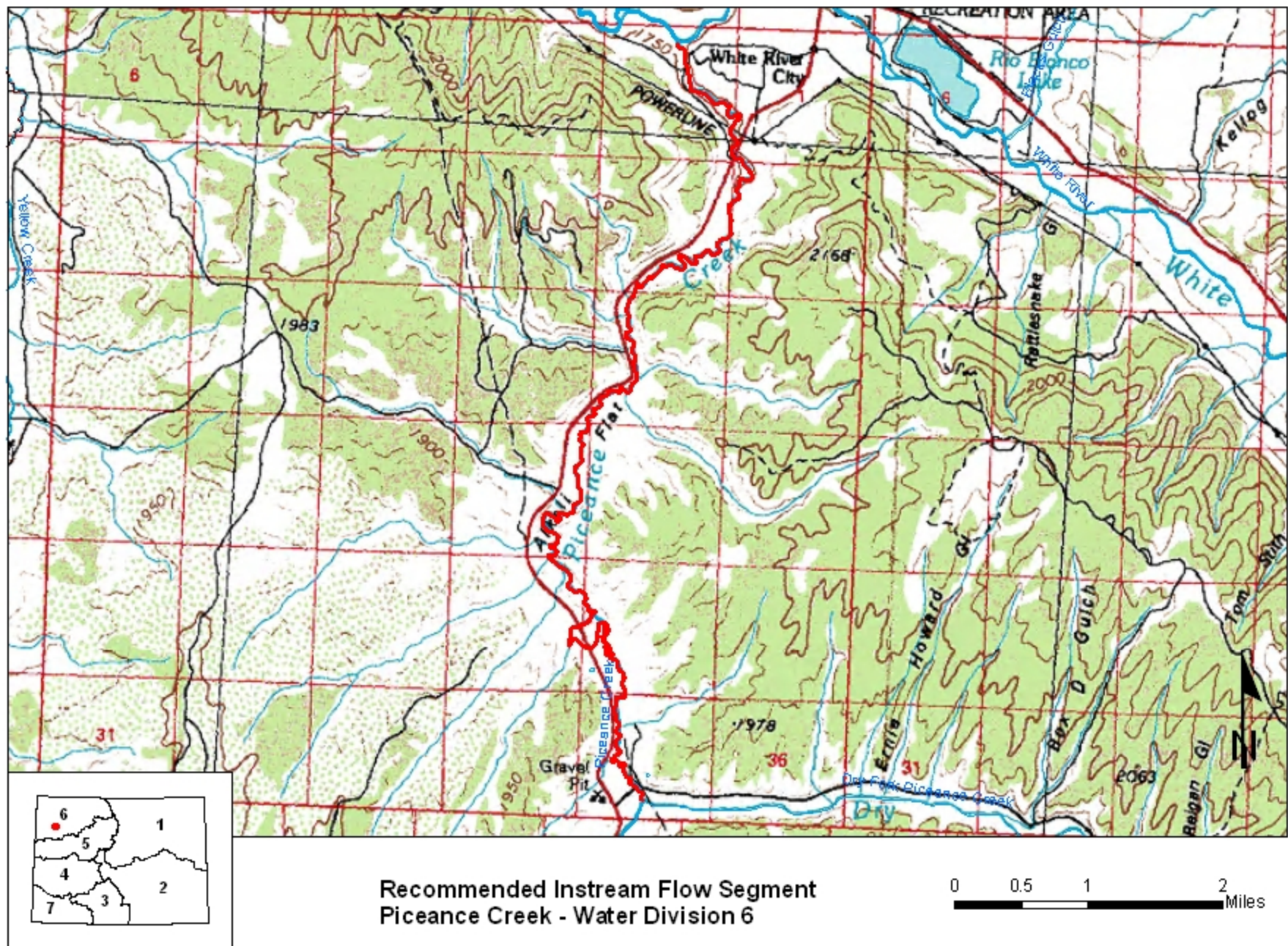
YEAR	Monthly mean streamflow, in ft ³ /s											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1964										1.60	10.1	16.3
1965	12.5	16.6	24.7	13.4	10.4	20.6	24.2	31.4	24.3	18.4	15.7	22.0
1966	21.1	20.6	75.9	11.0	2.41	1.64	2.36	3.08	2.03			
1970										24.2	25.9	23.9
1971	25.1	22.1	50.3	14.5	2.90	2.72	1.82	4.50	10.5	14.9	25.6	20.0
1972	22.6	38.5	17.2	3.54	2.27	2.86	1.56	5.10	4.29	8.32	20.9	13.9
1973	11.4	16.3	28.4	19.9	78.5	50.0	43.2	54.1	44.4	43.4	45.0	36.4
1974	34.6	33.5	52.5	56.7	24.5	11.7	17.6	34.6	19.0	21.5	37.8	31.4
1975	25.3	30.5	41.3	39.6	39.6	46.1	32.0	32.6	29.7	33.7	38.9	28.4
1976	24.4	37.9	41.5	38.2	13.0	10.8	14.0	24.8	18.7	23.2	25.6	21.5
1977	18.2	21.9	21.2	12.6	4.45	2.67	4.84	7.98	11.2	13.2	18.4	21.5
1978	20.5	21.3	29.5	46.3	13.7	7.66	5.10	6.75	7.41	10.6	24.7	25.1
1979	22.2	24.2	37.7	61.0	122	51.7	15.9	45.0	21.3	18.5	34.1	33.0
1980	33.7	40.9	37.1	54.7	135	28.2	22.0	32.3	23.2	29.5	47.2	41.5
1981	34.5	32.2	35.0	23.3	3.87	2.61	5.55	4.33	3.53	22.4	33.6	26.9
1982	24.0	35.8	35.0	21.1	5.54	1.89	5.87	19.4	34.4	29.5	27.7	22.4
1983	22.2	24.3	41.6	72.2	334	247	94.5	94.2	66.2	60.4	53.6	46.7
1984	41.7	24.8	65.1	116	269	185	125	109	75.4	76.1	61.6	47.3
1985	55.1	55.2	79.1	244	343	106	105	94.3	42.9	86.1	76.9	72.0

1986	64.9	86.6	123	245	195	61.2	90.9	89.6	60.5	65.5	50.2	37.1
1987	25.6	29.7	71.8	99.9	77.4	23.7	34.5	51.7	33.3	37.2	47.9	39.8
1988	30.8	38.5	61.3	67.9	29.9	8.07	12.2	25.8	20.1	24.4	32.2	30.9
1989	23.2	28.8	67.8	41.7	7.42	3.27	3.40	10.4	15.1	15.1	19.9	21.6
1990	16.3	21.9	28.6	7.63	5.54	2.96	3.50	1.67	6.36	10.7	15.2	13.5
1991	15.3	18.6	24.5	21.7	4.94	1.82	3.75	14.9	12.7	4.45	27.7	14.1
1992	21.4	22.1	28.6	14.3	7.91	1.99	10.6	19.5	6.09	8.67	26.2	22.5
1993	17.0	18.6	49.2	124	256	84.5	28.1	47.8	37.0	38.3	47.7	41.8
1994	34.1	39.6	41.5	26.7	5.26	1.40	4.13	5.11	4.16	10.6	17.8	19.5
1995	21.9	26.7	19.7	9.15	90.9	126	63.9	39.8	30.3	31.6	29.1	29.8
1996	20.9	30.7	58.5	72.4	40.0	3.74	12.2	24.7	15.9	30.3	36.0	32.3
1997	26.8	32.3	65.0	96.7	84.7	31.8	39.5	49.5	50.8	53.5	44.3	37.0
1998	34.7	38.6	100	284	369	104	85.3	71.5	49.8	51.6	51.3	38.2
1999	40.2	49.9	49.0	41.9	74.9	22.6	28.5	51.9	36.0	27.5	30.1	31.7
2000	31.9	30.7	32.0	25.7	6.69	3.96	4.38	6.63	5.30	6.47	26.1	20.2
2001	17.1	24.9	24.8	15.7	6.36	2.15	1.96	24.1	18.1	21.8	19.8	22.4
2002	12.3	16.6	17.8	11.9	4.20	3.46	3.83	4.47	6.35	4.91	5.66	5.65
2003	5.75	13.0	16.4	4.21	2.99	2.48	2.83	4.07	4.26			
Mean of monthly streamflows	26.0	30.4	45.5	58.8	76.4	36.2	27.3	32.8	24.3	27.9	32.9	28.8

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**Recommended Instream Flow Segment
Piceance Creek - Water Division 6**

0 0.5 1 2 Miles

