DRAFT INSTREAM FLOW RECOMMENDATION

Ms. Linda Bassi
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Dear Ms. Bassi:

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 publically 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 Parks and Wildlife.

Biological Summary. Piceance Creek is a moderate gradient stream in a canyon with variable widths. In some locations, there is sufficient width in canyon bottom for the stream to meander over time. In other locations, stream movement is confined by bedrock. As such, the stream has a stable channel but has a highly variable substrate size. The stream has a good mix of riffle, run, and pool habitat to support native fish populations. Water quality, water temperatures, and food sources are also suitable for native species.

Fishery surveys indicate that the creek supports self-sustaining populations of flannelmouth suckers, speckled dace, and mountain sucker. Fish surveys have confirmed the presence of flannelmouth 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 flannelmouth sucker habitat. Accordingly, this tributary provides a very important extension of the flannelmouth sucker habitat in the White River. The creek is also known to provide habitat for leopard frogs, which appear on BLM's sensitive species list.

The creek supports a riparian community comprised of willows, sedges, and rushes. The riparian community has been impacted by historic grazing practices but is now on an upward trend.

R2Cross Analysis. BLM and CPW collected the following R2Cross data from Piceance Creek. Note that the selection of critical riffles was designed to reflect the high variability in riffle width along this segment.

Cross Section Date	Discharge Rate	Top Width	Winter Flow Recommendation (meets 2 of 3 hydraulic criteria)	Summer Flow Recommendation (meets 3 of 3 hydraulic criteria)
06/21/2005 #1	11.05 cfs	26.3 feet	Out of confidence interval	4.89 cfs
07/05/2006 #1	2.32 cfs	19.7 feet	5.00 cfs	5.00 cfs
09/18/2000 #1	4.63 cfs	29.2 feet	3.76 cfs	Out of confidence interval
09/18/2000 #2	3.82 cfs	34.0 feet	5.48 cfs	Out of confidence interval
09/12/2012 #2	5.36 cfs	19.7 feet	2.12 cfs	2.74 cfs
09/12/2012 #3	5.78 cfs	23.5 feet	3.29 cfs	3.79 cfs
		Averages:	**3.93 cfs**	**4.10 cfs**

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

> 4.0 cubic feet per second is recommended from January 1 to December 31. In most of the cross sections collected, the recommended flow rates are driven by the average depth and 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. Some portions of this reach have high width-to-depth ratio, so it is also important to maintain sufficient depth for fish passage and overwintering of fish. BLM believes that maintaining 4.0 cfs will maintain acceptable physical habitat characteristics over a wide variety of riffle widths, and will also serve to keep pools sufficiently free of ice to allow 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. In addition, there are a high number of 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. This gage shows that the recommended 4.0 cfs flow rate is available substantially in excess of 50% of the time, which is the standard the CWCB uses for water availability.

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.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in January 2013. We thank both Colorado Parks and Wildlife and the CWCB 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,

Brian St. George
Deputy State Director
Resources and Fire

cc: Keith Sauter, White River Field Office
Kent Walter, White River Field

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

LOCATION INFORMATION

STREAM NAME:	Piceance Creek
XS LOCATION:	South end of CPW property
XS NUMBER:	2
DATE:	12-Sep-12
OBSERVERS:	R. Smith, B. Lange
1/4 SEC:	SW
SECTION:	14
TWP:	1N
RANGE:	97W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

		*** NOTE ***
		Leave TAPE WT and TENSION
		at defaults for data collected
TAPE WT:	0.0106	with a survey level and rod
TENSION:	99999	

CHANNEL PROFILE DATA

SLOPE:	0.0087

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: Piceance Creek
XS LOCATION: South end of CPW property
XS NUMBER: 2

DATA POINTS= 39

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	RS	0.00	3.86			0.00		0.00	0.00	0.0%
1	G	2.00	4.88			0.00		0.00	0.00	0.0%
		3.00	5.08			0.00		0.00	0.00	0.0%
		4.50	5.37			0.00		0.00	0.00	0.0%
		5.00	5.76			0.00		0.00	0.00	0.0%
	W	5.60	6.10	0.00	0.00	0.00		0.00	0.00	0.0%
		6.00	6.35	0.25	0.00	0.47	0.25	0.11	0.00	0.0%
		6.50	6.20	0.10	0.14	0.52	0.10	0.05	0.01	0.1%
		7.00	6.20	0.10	0.54	0.50	0.10	0.05	0.03	0.5%
		7.50	6.30	0.20	1.17	0.51	0.20	0.10	0.12	2.2%
		8.00	6.35	0.25	1.30	0.50	0.25	0.13	0.16	3.0%
		8.50	6.55	0.45	1.28	0.54	0.45	0.23	0.29	5.4%
		9.00	6.50	0.40	1.93	0.50	0.40	0.20	0.39	7.2%
		9.50	6.45	0.35	0.78	0.50	0.35	0.18	0.14	2.5%
		10.00	6.40	0.30	1.41	0.50	0.30	0.15	0.21	3.9%
		10.50	6.35	0.25	1.67	0.50	0.25	0.13	0.21	3.9%
		11.00	6.50	0.40	1.32	0.52	0.40	0.20	0.26	4.9%
		11.50	6.45	0.35	1.23	0.50	0.35	0.18	0.22	4.0%
		12.00	6.50	0.40	1.14	0.50	0.40	0.20	0.23	4.3%
		12.50	6.45	0.35	1.12	0.50	0.35	0.18	0.20	3.7%
		13.00	6.60	0.50	0.00	0.52	0.50	0.25	0.00	0.0%
		13.50	6.60	0.50	2.09	0.50	0.50	0.25	0.52	9.7%
		14.00	6.50	0.40	2.04	0.51	0.40	0.20	0.41	7.6%
		14.50	6.40	0.30	2.37	0.51	0.30	0.15	0.36	6.6%
		15.00	6.35	0.25	2.42	0.50	0.25	0.13	0.30	5.6%
		15.50	6.35	0.25	1.76	0.50	0.25	0.13	0.22	4.1%
		16.00	6.30	0.20	1.35	0.50	0.20	0.10	0.14	2.5%
		16.50	6.35	0.25	1.46	0.50	0.25	0.13	0.18	3.4%
		17.00	6.25	0.15	1.84	0.51	0.15	0.08	0.14	2.6%
		17.50	6.20	0.10	0.97	0.50	0.10	0.05	0.05	0.9%
		18.00	6.20	0.10	1.34	0.50	0.10	0.05	0.07	1.2%
		18.50	6.40	0.30	1.11	0.54	0.30	0.15	0.17	3.1%
		19.00	6.35	0.25	1.88	0.50	0.25	0.13	0.24	4.4%
		19.50	6.35	0.25	1.53	0.50	0.25	0.09	0.13	2.5%
	W	19.70	6.10	0.00	0.00	0.32		0.00	0.00	0.0%
		20.00	5.33			0.00		0.00	0.00	0.0%
		21.00	4.99			0.00		0.00	0.00	0.0%
1	G	21.80	4.86			0.00		0.00	0.00	0.0%
	LS	23.00	4.62			0.00		0.00	0.00	0.0%
	TOTALS ----------					14.51	0.5 (Max.)	3.93	5.36	100.0%

Manning's n = 0.0424
Hydraulic Radius= 0.27055976

STREAM NAME: Piceance Creek
XS LOCATION: South end of CPW property
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	3.93	3.93	0.0%
5.85	3.93	7.52	91.5%
5.87	3.93	7.23	84.1%
5.89	3.93	6.93	76.7%
5.91	3.93	6.64	69.2%
5.93	3.93	6.35	61.9%
5.95	3.93	6.06	54.5%
5.97	3.93	5.78	47.2%
5.99	3.93	5.49	39.8%
6.01	3.93	5.20	32.6%
6.03	3.93	4.92	25.3%
6.05	3.93	4.63	18.0%
6.06	3.93	4.49	14.4%
6.07	3.93	4.35	10.8%
6.08	3.93	4.21	7.2%
6.09	3.93	4.07	3.6%
6.10	3.93	3.93	0.0%
6.11	3.93	3.78	-3.6%
6.12	3.93	3.64	-7.2%
6.13	3.93	3.50	-10.7%
6.14	3.93	3.36	-14.3%
6.15	3.93	3.22	-17.9%
6.17	3.93	2.94	-25.0%
6.19	3.93	2.67	-32.1%
6.21	3.93	2.40	-38.9%
6.23	3.93	2.15	-45.2%
6.25	3.93	1.91	-51.3%
6.27	3.93	1.68	-57.1%
6.29	3.93	1.46	-62.8%
6.31	3.93	1.25	-68.3%
6.33	3.93	1.05	-73.3%
6.35	3.93	0.87	-77.9%

WATERLINE AT ZERO
AREA ERROR = 6.100

STREAM NAME: Piceance Creek
XS LOCATION: South end of CPW property
XS NUMBER: 2

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	4.88	19.68	1.18	1.72	23.28	20.95	100.0%	1.11	81.61	3.50
	5.10	17.57	1.09	1.50	19.21	18.79	89.7%	1.02	63.64	3.31
	5.15	17.17	1.07	1.45	18.34	18.38	87.7%	1.00	59.81	3.26
	5.20	16.76	1.04	1.40	17.49	17.96	85.7%	0.97	56.13	3.21
	5.25	16.36	1.02	1.35	16.66	17.54	83.7%	0.95	52.59	3.16
	5.30	15.95	0.99	1.30	15.85	17.12	81.7%	0.93	49.20	3.10
	5.35	15.60	0.97	1.25	15.07	16.74	79.9%	0.90	45.87	3.04
	5.40	15.43	0.93	1.20	14.29	16.53	78.9%	0.86	42.36	2.96
	5.45	15.35	0.88	1.15	13.52	16.40	78.3%	0.82	38.84	2.87
	5.50	15.27	0.84	1.10	12.76	16.26	77.6%	0.78	35.44	2.78
	5.55	15.18	0.79	1.05	12.00	16.13	77.0%	0.74	32.16	2.68
	5.60	15.10	0.74	1.00	11.24	15.99	76.4%	0.70	29.01	2.58
	5.65	15.02	0.70	0.95	10.49	15.86	75.7%	0.66	25.99	2.48
	5.70	14.93	0.65	0.90	9.74	15.72	75.1%	0.62	23.10	2.37
	5.75	14.85	0.61	0.85	8.99	15.59	74.4%	0.58	20.35	2.26
	5.80	14.75	0.56	0.80	8.25	15.44	73.7%	0.53	17.75	2.15
	5.85	14.64	0.51	0.75	7.52	15.28	73.0%	0.49	15.30	2.04
	5.90	14.53	0.47	0.70	6.79	15.13	72.2%	0.45	12.99	1.91
	5.95	14.42	0.42	0.65	6.06	14.97	71.5%	0.41	10.84	1.79
	6.00	14.32	0.37	0.60	5.35	14.82	70.7%	0.36	8.85	1.66
	6.05	14.21	0.33	0.55	4.63	14.66	70.0%	0.32	7.02	1.52
WL	6.10	14.10	0.28	0.50	3.92	14.51	69.3%	0.27	5.36	1.37
	6.15	13.98	0.23	0.45	3.22	14.35	68.5%	0.22	3.89	1.21
	6.20	12.86	0.20	0.40	2.53	13.19	63.0%	0.19	2.74	1.09
	6.25	11.70	0.16	0.35	1.91	11.97	57.1%	0.16	1.84	0.96
	6.30	10.79	0.13	0.30	1.35	10.99	52.5%	0.12	1.09	0.81
	6.35	7.62	0.11	0.25	0.87	7.76	37.0%	0.11	0.66	0.76
	6.40	5.71	0.09	0.20	0.53	5.81	27.7%	0.09	0.35	0.66
	6.45	4.67	0.06	0.15	0.27	4.74	22.6%	0.06	0.13	0.49
	6.50	1.96	0.05	0.10	0.11	2.00	9.5%	0.05	0.05	0.47
	6.55	0.92	0.04	0.05	0.04	0.93	4.4%	0.04	0.01	0.37
	6.60	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: Piceance Creek
XS LOCATION: South end of CPW property
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	5.36	cfs
CALCULATED FLOW (Qc)=	5.36	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	6.10	ft
CALCULATED WATERLINE (WLc)=	6.10	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.50	ft
MAX CALCULATED DEPTH (Dc)=	0.50	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	1.37	ft/sec
MANNING'S N=	0.042	
SLOPE=	0.0087	ft/ft
.4 * Qm =	2.1	cfs
2.5 * Qm=	13.4	cfs

RECOMMENDED INSTREAM FLOW:
============================

FLOW (CFS)	PERIOD
___________________	___________________
___________________	___________________
___________________	___________________
___________________	___________________

RATIONALE FOR RECOMMENDATION:
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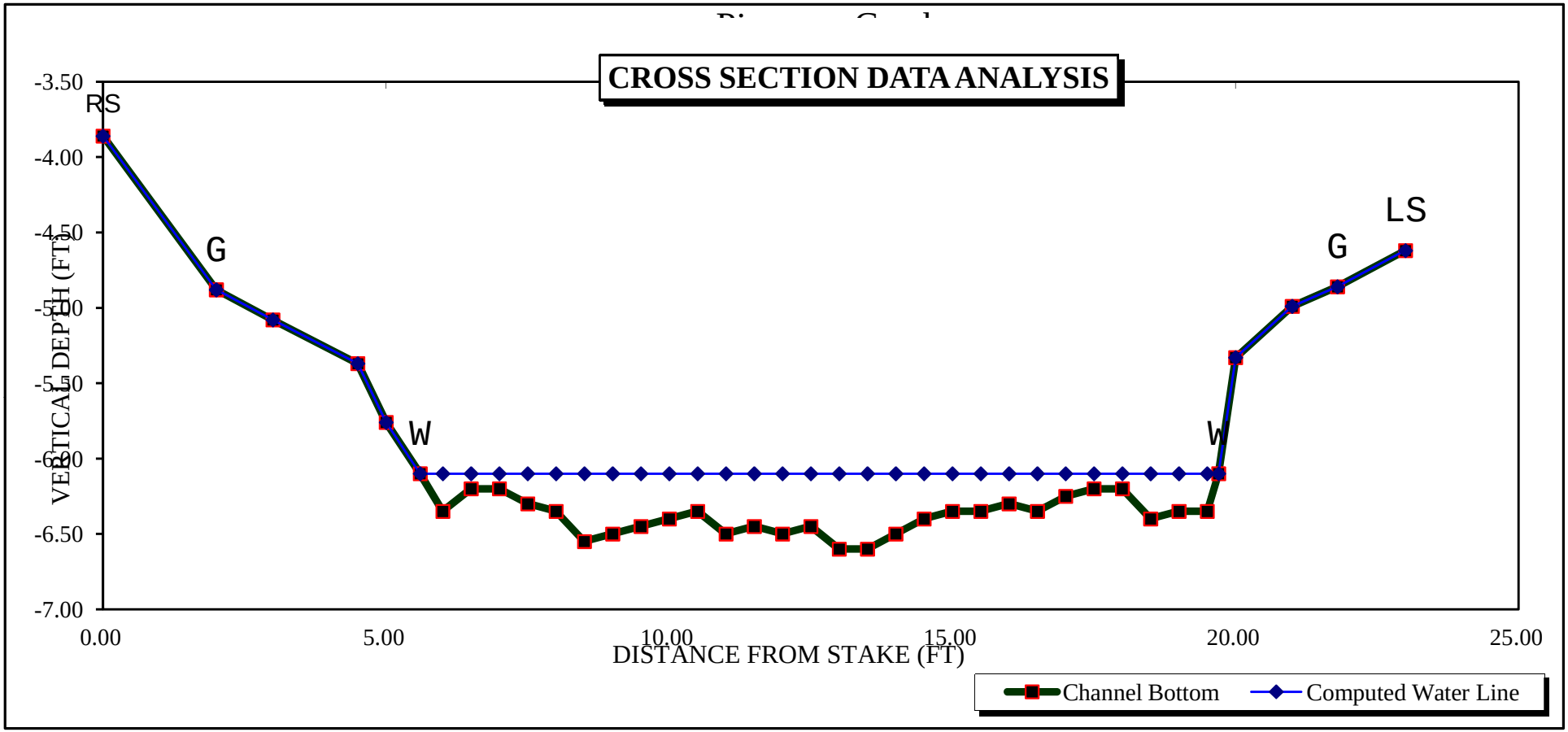
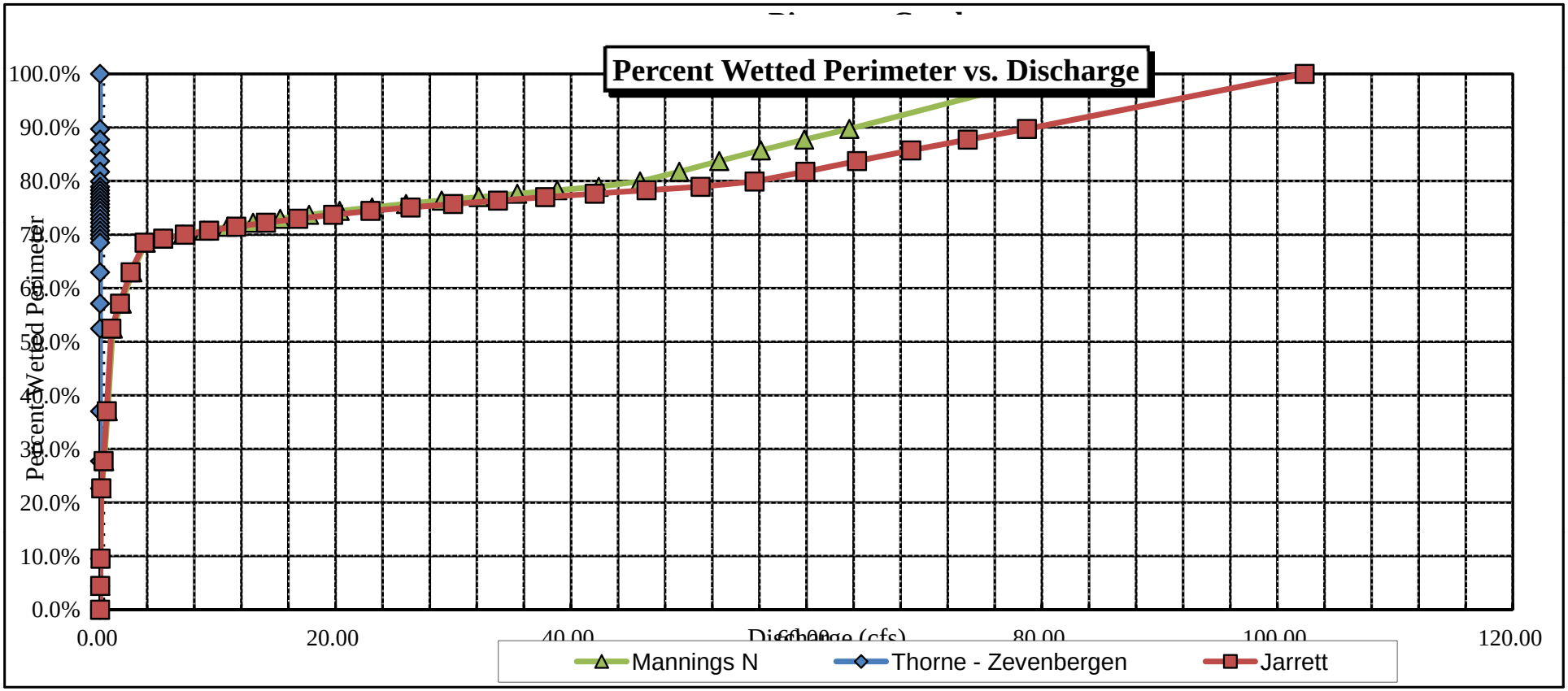
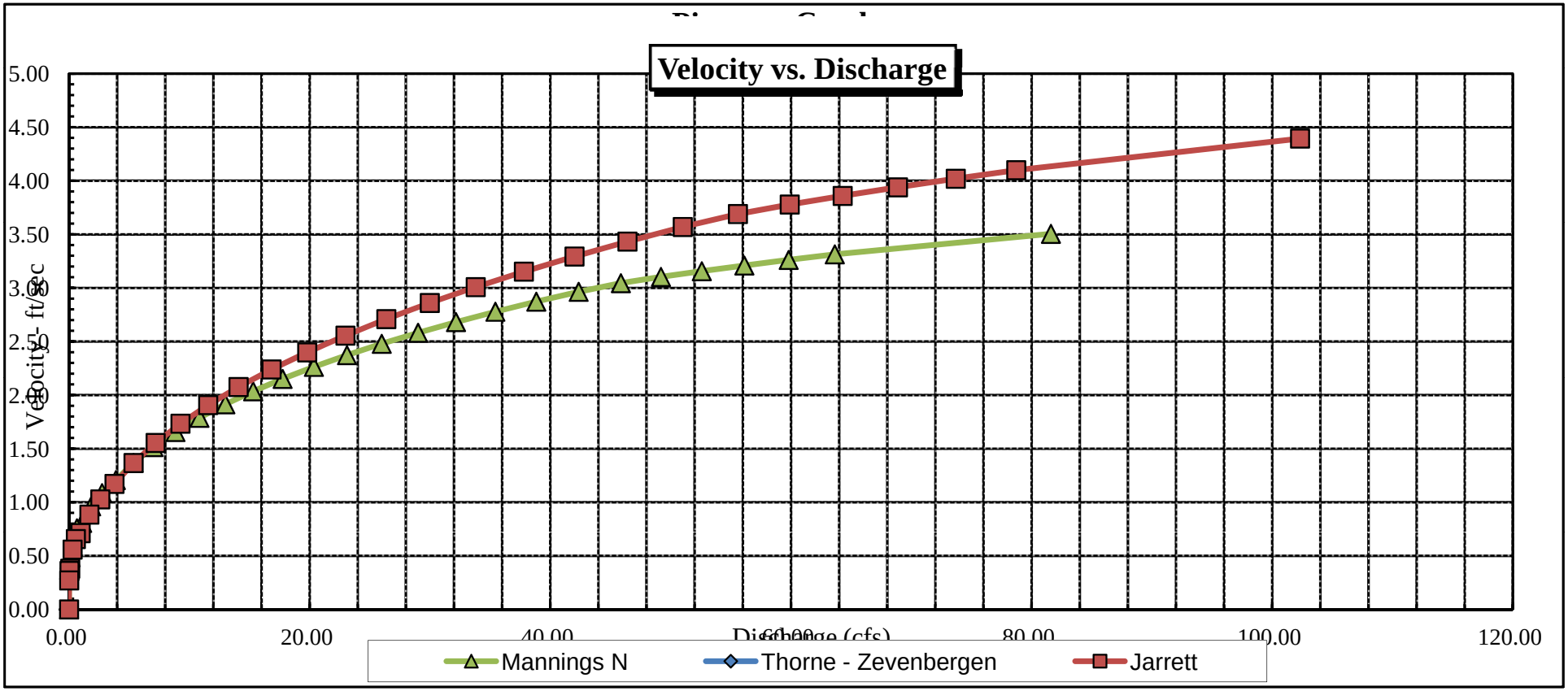
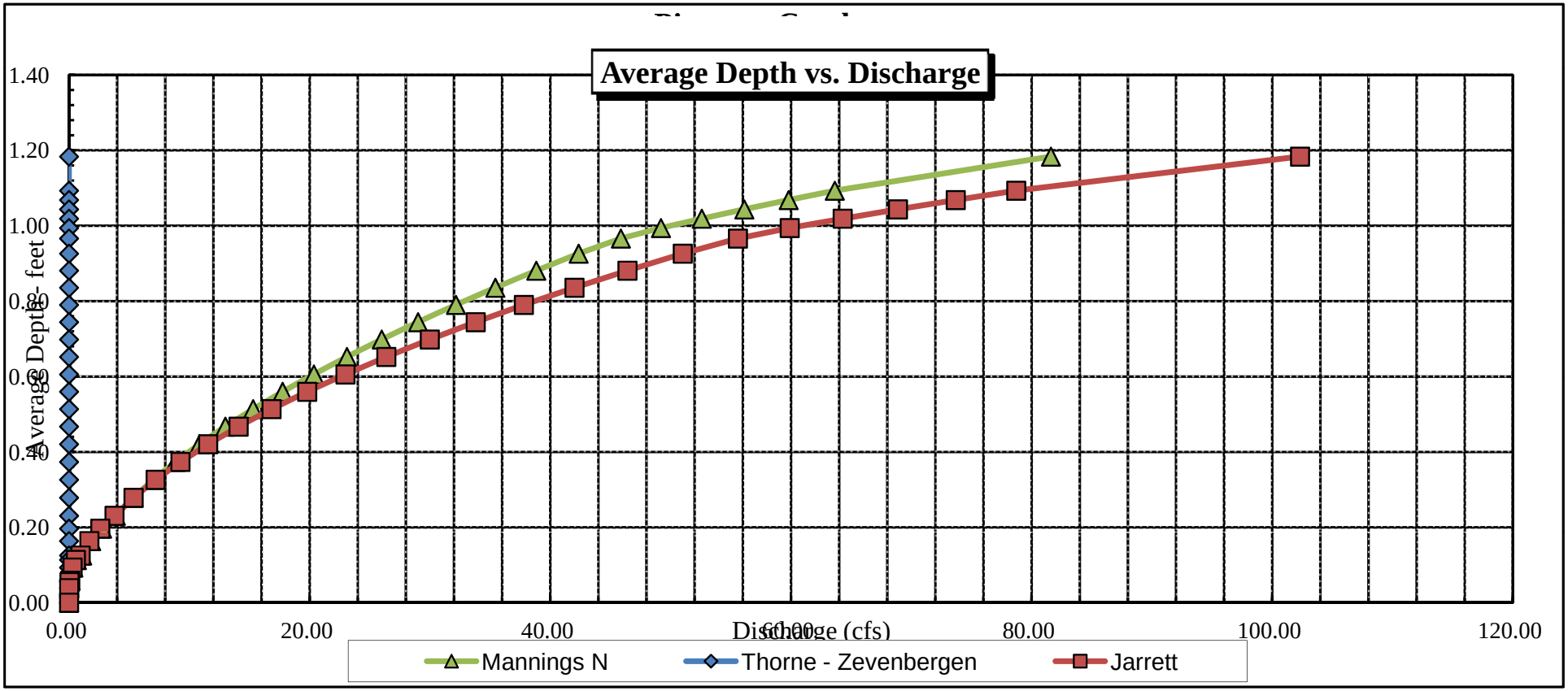
RECOMMENDATION BY: …………………...………..……............................... AGENCY...……………………......…....…...…….…..... DATE:.......….....…......……………

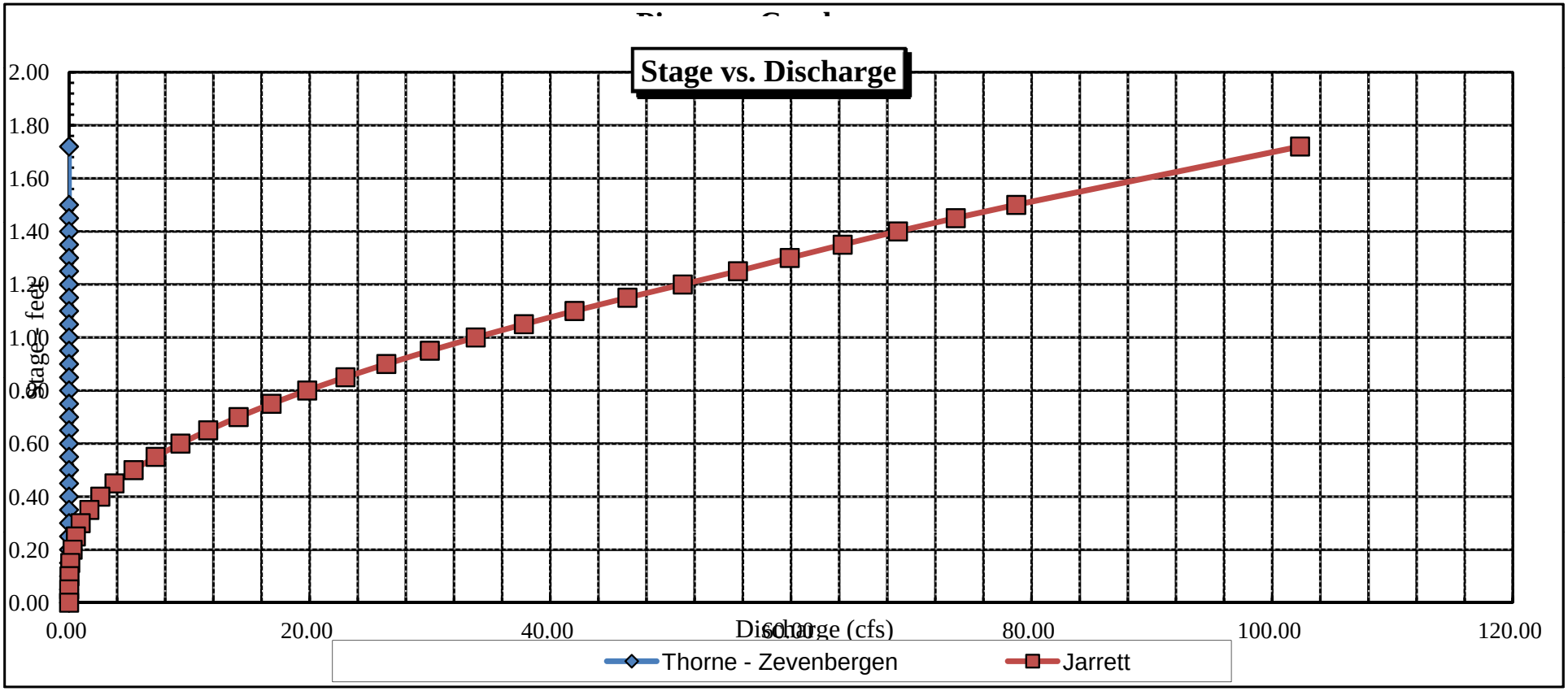
CWCB REVIEW BY: ..…………………………....………………………………………………...…............. DATE:.................…………….....…


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
LS
-3.50
-4.00
-4.50
-5.00
-5.50
-6.00
-6.50
-7.00
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
20.00
40.00
80.00
100.00
120.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Average Depth - feet
0.00
20.00
40.00
80.00
100.00
120.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Stage, feet
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Piceance Creek						CROSS-SECTION NO.: 2
CROSS-SECTION LOCATION: south end of CPW property						
DATE: 9-12-12	OBSERVERS: R. Smith, B. Lange					
LEGAL DESCRIPTION	¼ SECTION: SW	SECTION: 14	TOWNSHIP: 1 (N)S	RANGE: 97 E(W)	PM: 6th	
COUNTY: Rio Blanco	WATERSHED: White River	WATER DIVISION: 6	DOW WATER CODE: 25343			
MAP(S):	USGS:					
	USFS:					

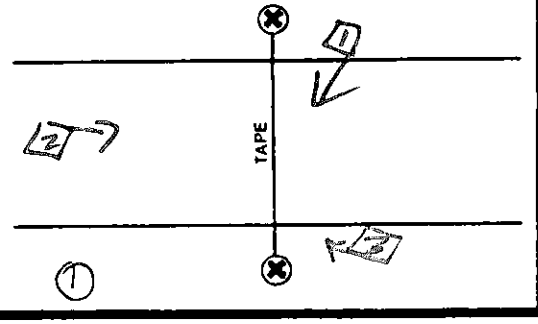
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION (YES/NO)	METER TYPE: M-M			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: surveyed ____ lbs/foot	TAPE TENSION: surveyed ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel to 4" cobble	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0	6.10 / 6.10
② WS Upstream	23.7	5.76
③ WS Downstream	50.7	6.41
SLOPE	0.65 / 74.4 = .0087	

SKETCH



LEGEND: Stake ⊗, Station ①, Photo ◇→, Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/(NO)	DISTANCE ELECTROFISHED: ____ ft	FISH CAUGHT: YES/NO	WATER CHEMISTRY SAMPLED: YES/(NO)

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

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

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME

COMMENTS

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Piceance Creek	CROSS-SECTION NO: 2	DATE: 9-12-12	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: ____ ft	TIME: 10:30 am

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec)		Area (ft^2)	Discharge (cfs)
								At Point	Mean in Vertical		
RS	0.0		3.86								
G	2.0		4.88								
	3.0		5.08								
	4.5		5.37								
	5.0		5.76								
W	5.6		6.10	Ø				Ø			
	6		6.35	0.25				Ø			
	6.5		6.2	0.10				0.14			
	7		6.2	0.10				0.54			
	7.5		6.3	0.20				1.17			
	8		6.35	0.25				1.30			
	8.5		6.55	0.45				1.28			
	9		6.50	0.40				1.93			
	9.5		6.45	0.35				0.78			
	10		6.40	0.30				1.41			
	10.5		6.35	0.25				1.67			
	11		6.50	0.40				1.32			
	11.5		6.45	0.35				1.23			
	12		6.50	0.40				1.14			
	12.5		6.45	0.35				1.12			
	13		6.6	0.50				Ø			
	13.5		6.6	0.50				2.09			
	14		6.5	0.40				2.04			
	14.5		6.4	0.30				2.37			
	15		6.35	0.25				2.42			
	15.5		6.35	0.25				1.76			
	16		6.3	0.20				1.35			
	16.5		6.35	0.25				1.46			
	17		6.25	0.15				1.84			
	17.5		6.20	0.10				0.97			
	18		6.20	0.10				1.34			
	18.5		6.40	0.30				1.11			
	19		6.35	0.25				1.88			
	19.5		6.35	0.25				0.53			
W	19.7		6.10	Ø				Ø			
	20.0		5.33								
	21.0		4.99								
G	21.8		4.86								
LS	23.0		4.62								
TOTALS											

End of Measurement	Time	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:	CPW property - middle portion
XS NUMBER:	3
DATE:	12-Sep-12
OBSERVERS:	R. Smith, B. Lange
1/4 SEC:	SE
SECTION:	11
TWP:	1N
RANGE:	97W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.005

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: Piceance Creek
XS LOCATION: CPW property - middle portion
XS NUMBER: 3

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
	RS	0.00	4.89			0.00		0.00	0.00	0.0%
1	G	7.50	5.52			0.00		0.00	0.00	0.0%
		9.50	7.30			0.00		0.00	0.00	0.0%
	W	17.70	7.55	0.00	0.00	0.00		0.00	0.00	0.0%
		18.00	7.70	0.15	0.48	0.34	0.15	0.06	0.03	0.5%
		18.50	7.75	0.20	0.43	0.50	0.20	0.10	0.04	0.7%
		19.00	7.75	0.20	0.31	0.50	0.20	0.10	0.03	0.5%
		19.50	7.75	0.20	0.35	0.50	0.20	0.10	0.04	0.6%
		20.00	7.75	0.20	0.60	0.50	0.20	0.10	0.06	1.0%
		20.50	7.80	0.25	0.33	0.50	0.25	0.13	0.04	0.7%
		21.00	7.85	0.30	0.50	0.50	0.30	0.15	0.08	1.3%
		21.50	7.90	0.35	0.89	0.50	0.35	0.18	0.16	2.7%
		22.00	7.90	0.35	1.07	0.50	0.35	0.18	0.19	3.2%
		22.50	7.85	0.30	1.28	0.50	0.30	0.15	0.19	3.3%
		23.00	7.90	0.35	1.55	0.50	0.35	0.18	0.27	4.7%
		23.50	7.95	0.40	1.71	0.50	0.40	0.20	0.34	5.9%
		24.00	7.95	0.40	1.79	0.50	0.40	0.20	0.36	6.2%
		24.50	7.95	0.40	2.01	0.50	0.40	0.20	0.40	7.0%
		25.00	7.95	0.40	1.59	0.50	0.40	0.20	0.32	5.5%
		25.50	7.95	0.40	1.71	0.50	0.40	0.20	0.34	5.9%
		26.00	7.95	0.40	1.79	0.50	0.40	0.20	0.36	6.2%
		26.50	7.95	0.40	1.92	0.50	0.40	0.20	0.38	6.6%
		27.00	7.95	0.40	1.89	0.50	0.40	0.20	0.38	6.5%
		27.50	7.95	0.40	1.77	0.50	0.40	0.20	0.35	6.1%
		28.00	7.95	0.40	1.46	0.50	0.40	0.20	0.29	5.1%
		28.50	8.00	0.45	1.70	0.50	0.45	0.23	0.38	6.6%
		29.00	7.95	0.40	1.81	0.50	0.40	0.20	0.36	6.3%
		29.50	7.95	0.40	1.27	0.50	0.40	0.20	0.25	4.4%
		30.00	7.95	0.40	0.65	0.50	0.40	0.20	0.13	2.3%
		30.50	8.00	0.45	0.00	0.50	0.45	0.20	0.00	0.0%
	W	30.90	7.55	0.00	0.00	0.60		0.00	0.00	0.0%
1	G	31.00	5.52			0.00		0.00	0.00	0.0%
	LS	35.30	4.60			0.00		0.00	0.00	0.0%
	TOTALS ----------					13.46	0.45 (Max.)	4.44	5.78	100.0%

Manning's n = 0.0385
Hydraulic Radius= 0.32962108

STREAM NAME: Piceance Creek
XS LOCATION: CPW property - middle portion
XS NUMBER: 3

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	4.44	4.44	0.0%
7.30	4.44	8.76	97.5%
7.32	4.44	8.34	88.0%
7.34	4.44	7.93	78.8%
7.36	4.44	7.54	69.9%
7.38	4.44	7.16	61.3%
7.40	4.44	6.79	52.9%
7.42	4.44	6.43	44.9%
7.44	4.44	6.09	37.2%
7.46	4.44	5.76	29.8%
7.48	4.44	5.44	22.6%
7.50	4.44	5.14	15.8%
7.51	4.44	4.99	12.5%
7.52	4.44	4.85	9.3%
7.53	4.44	4.71	6.1%
7.54	4.44	4.57	3.0%
7.55	4.44	4.44	0.0%
7.56	4.44	4.31	-3.0%
7.57	4.44	4.17	-5.9%
7.58	4.44	4.04	-8.9%
7.59	4.44	3.91	-11.8%
7.60	4.44	3.78	-14.8%
7.62	4.44	3.52	-20.7%
7.64	4.44	3.26	-26.5%
7.66	4.44	3.00	-32.3%
7.68	4.44	2.75	-38.1%
7.70	4.44	2.49	-43.9%
7.72	4.44	2.24	-49.6%
7.74	4.44	1.99	-55.2%
7.76	4.44	1.76	-60.4%
7.78	4.44	1.55	-65.1%
7.80	4.44	1.34	-69.7%

WATERLINE AT ZERO
AREA ERROR = 7.550

STREAM NAME: Piceance Creek
XS LOCATION: CPW property - middle portion
XS NUMBER: 3

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	5.52	23.50	2.07	2.48	48.74	26.38	100.0%	1.85	200.22	4.11
	6.55	22.29	1.13	1.45	25.15	23.80	90.2%	1.06	71.21	2.83
	6.60	22.23	1.08	1.40	24.04	23.67	89.7%	1.02	66.27	2.76
	6.65	22.17	1.03	1.35	22.93	23.55	89.3%	0.97	61.46	2.68
	6.70	22.12	0.99	1.30	21.82	23.42	88.8%	0.93	56.80	2.60
	6.75	22.06	0.94	1.25	20.72	23.29	88.3%	0.89	52.28	2.52
	6.80	22.00	0.89	1.20	19.62	23.17	87.8%	0.85	47.90	2.44
	6.85	21.94	0.84	1.15	18.52	23.04	87.4%	0.80	43.67	2.36
	6.90	21.88	0.80	1.10	17.42	22.92	86.9%	0.76	39.59	2.27
	6.95	21.82	0.75	1.05	16.33	22.79	86.4%	0.72	35.67	2.18
	7.00	21.76	0.70	1.00	15.24	22.67	85.9%	0.67	31.91	2.09
	7.05	21.71	0.65	0.95	14.15	22.54	85.5%	0.63	28.31	2.00
	7.10	21.65	0.60	0.90	13.07	22.42	85.0%	0.58	24.89	1.90
	7.15	21.59	0.56	0.85	11.99	22.29	84.5%	0.54	21.63	1.80
	7.20	21.53	0.51	0.80	10.91	22.17	84.0%	0.49	18.56	1.70
	7.25	21.47	0.46	0.75	9.84	22.04	83.6%	0.45	15.67	1.59
	7.30	21.41	0.41	0.70	8.76	21.92	83.1%	0.40	12.98	1.48
	7.35	19.77	0.39	0.65	7.73	20.23	76.7%	0.38	11.12	1.44
	7.40	18.13	0.37	0.60	6.79	18.53	70.3%	0.37	9.48	1.40
	7.45	16.48	0.36	0.55	5.92	16.84	63.9%	0.35	8.05	1.36
	7.50	14.84	0.35	0.50	5.14	15.15	57.5%	0.34	6.82	1.33
WL	7.55	13.20	0.34	0.45	4.44	13.46	51.0%	0.33	5.78	1.30
	7.60	13.06	0.29	0.40	3.78	13.28	50.4%	0.28	4.46	1.18
	7.65	12.91	0.24	0.35	3.13	13.11	49.7%	0.24	3.29	1.05
	7.70	12.77	0.20	0.30	2.49	12.93	49.0%	0.19	2.27	0.91
	7.75	10.72	0.17	0.25	1.87	10.86	41.2%	0.17	1.57	0.84
	7.80	10.18	0.13	0.20	1.34	10.29	39.0%	0.13	0.94	0.70
	7.85	9.63	0.09	0.15	0.85	9.72	36.8%	0.09	0.45	0.54
	7.90	7.59	0.05	0.10	0.40	7.64	29.0%	0.05	0.16	0.38
	7.95	1.54	0.02	0.05	0.04	1.57	6.0%	0.02	0.01	0.23

STREAM NAME:	Piceance Creek
XS LOCATION:	CPW property - middle portion
XS NUMBER:	3

SUMMARY SHEET

MEASURED FLOW (Qm)=	5.78	cfs
CALCULATED FLOW (Qc)=	5.78	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	7.55	ft
CALCULATED WATERLINE (WLc)=	7.55	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.45	ft
MAX CALCULATED DEPTH (Dc)=	0.45	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	1.30	ft/sec
MANNING'S N=	0.039	
SLOPE=	0.005	ft/ft
.4 * Qm =	2.3	cfs
2.5 * Qm=	14.4	cfs

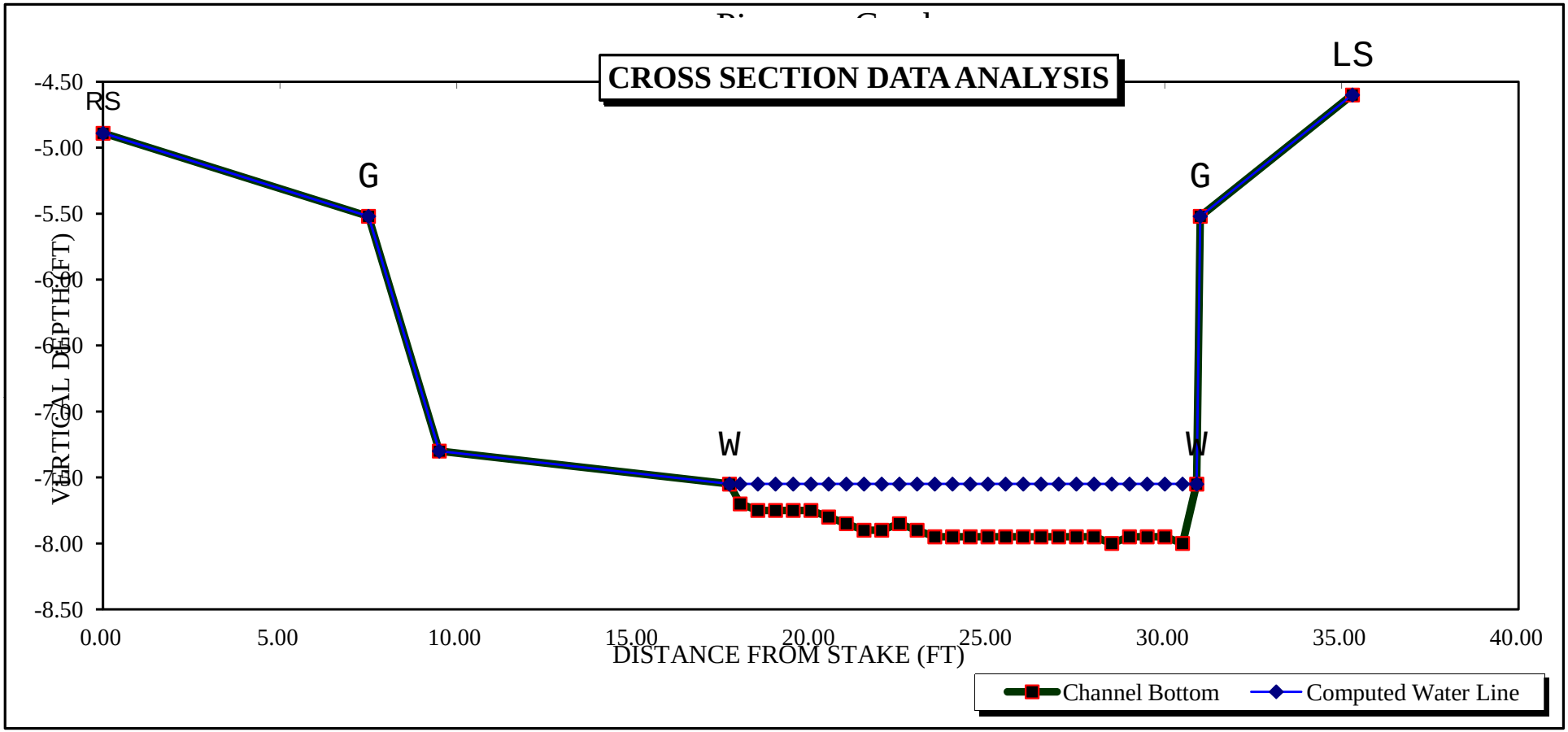
RECOMMENDED INSTREAM FLOW:
============================

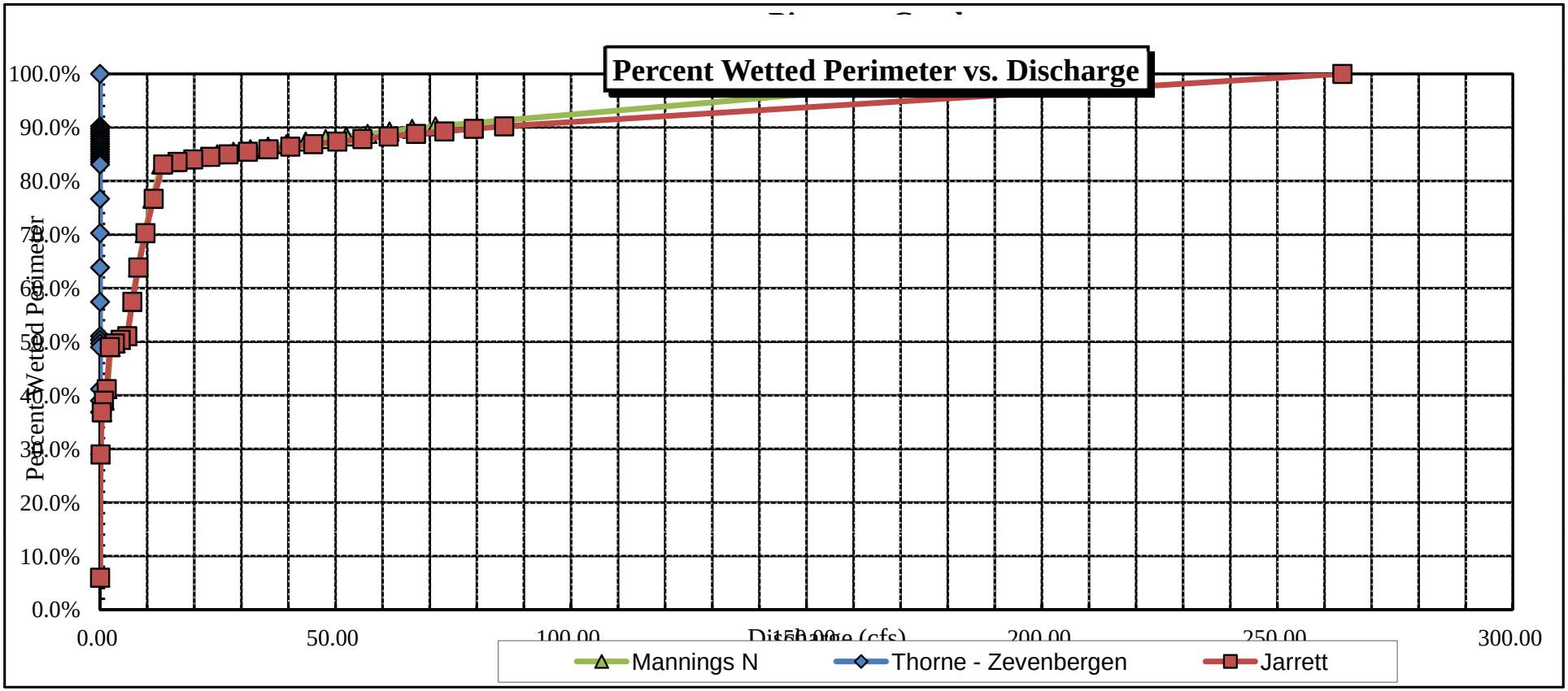
FLOW (CFS)	PERIOD
___________________	__________________
___________________	__________________
___________________	__________________
___________________	__________________

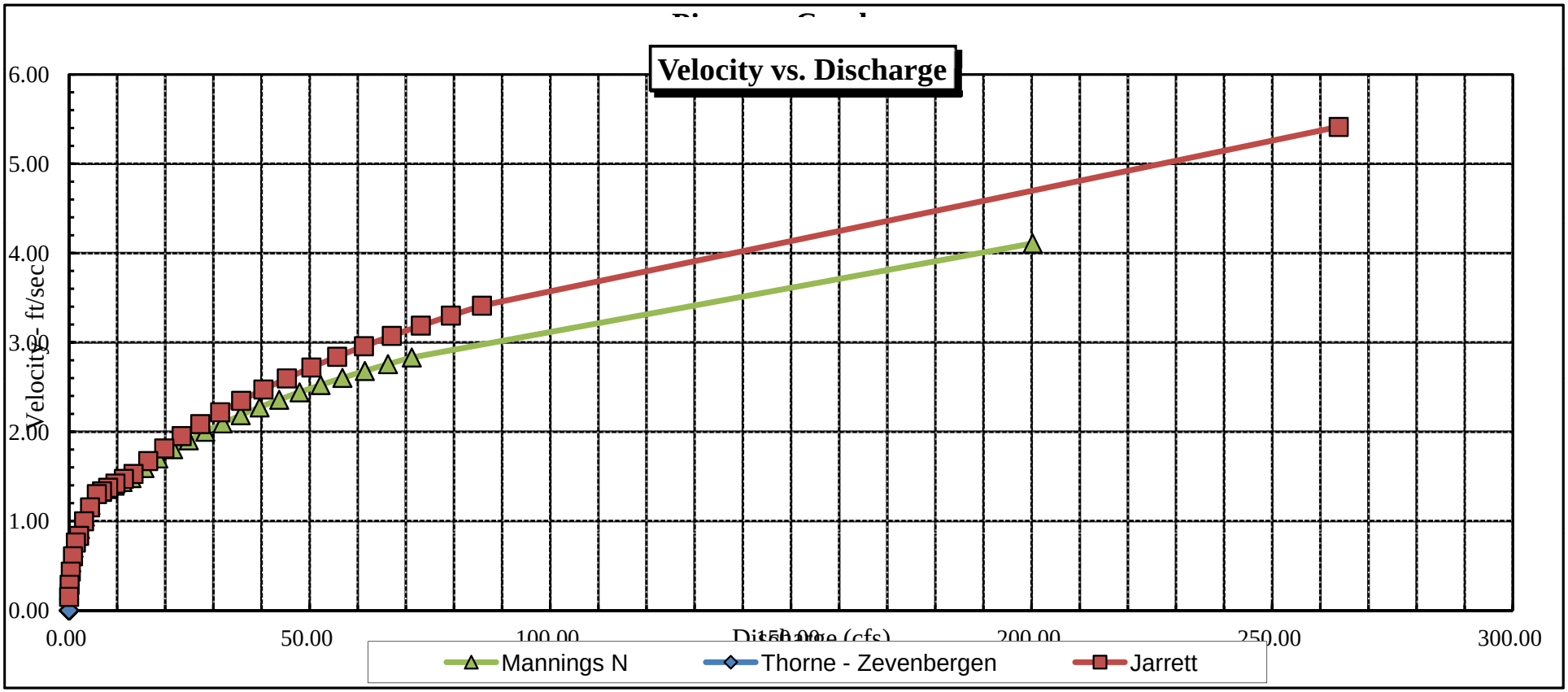
RATIONALE FOR RECOMMENDATION:
============================

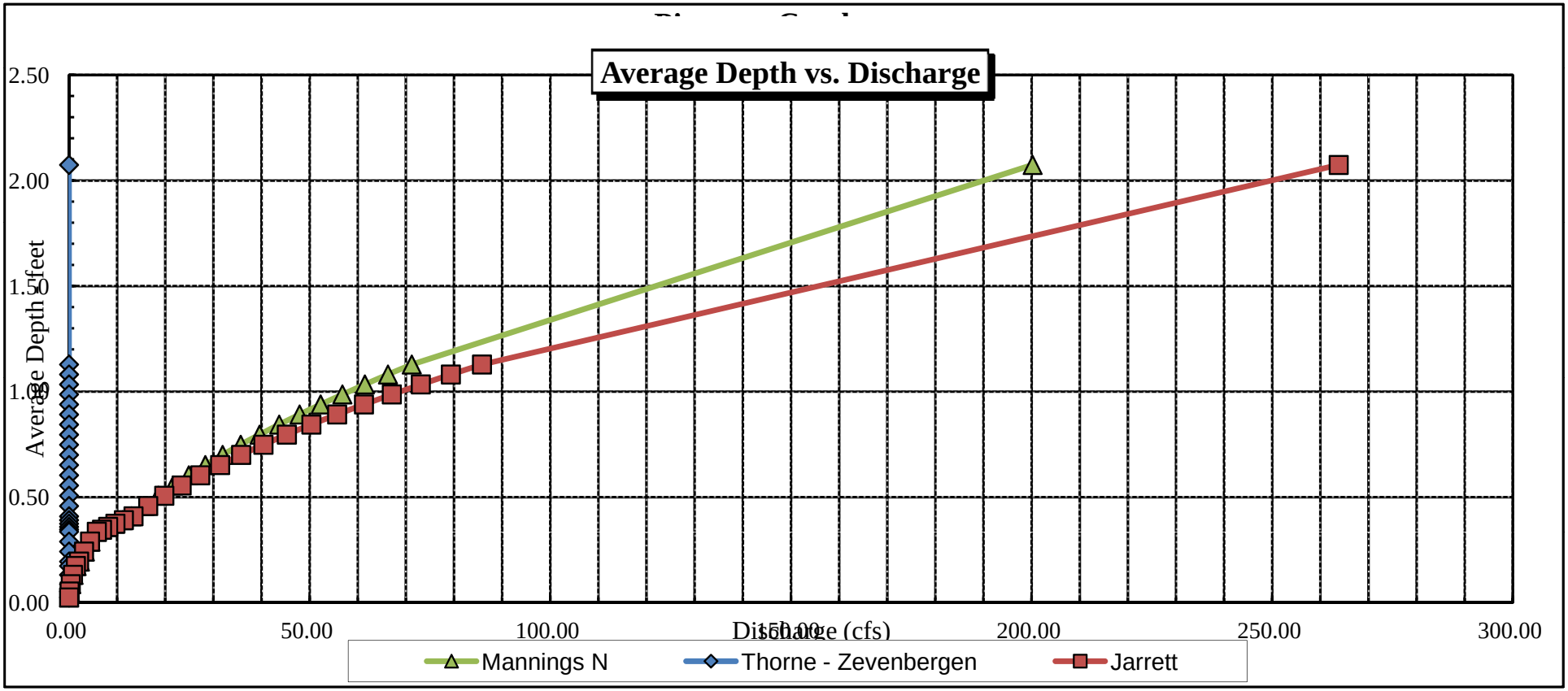
RECOMMENDATION BY: ……………………...………...……............................... AGENCY...………………………......…....…...…….….... DATE:.......…...…......……………

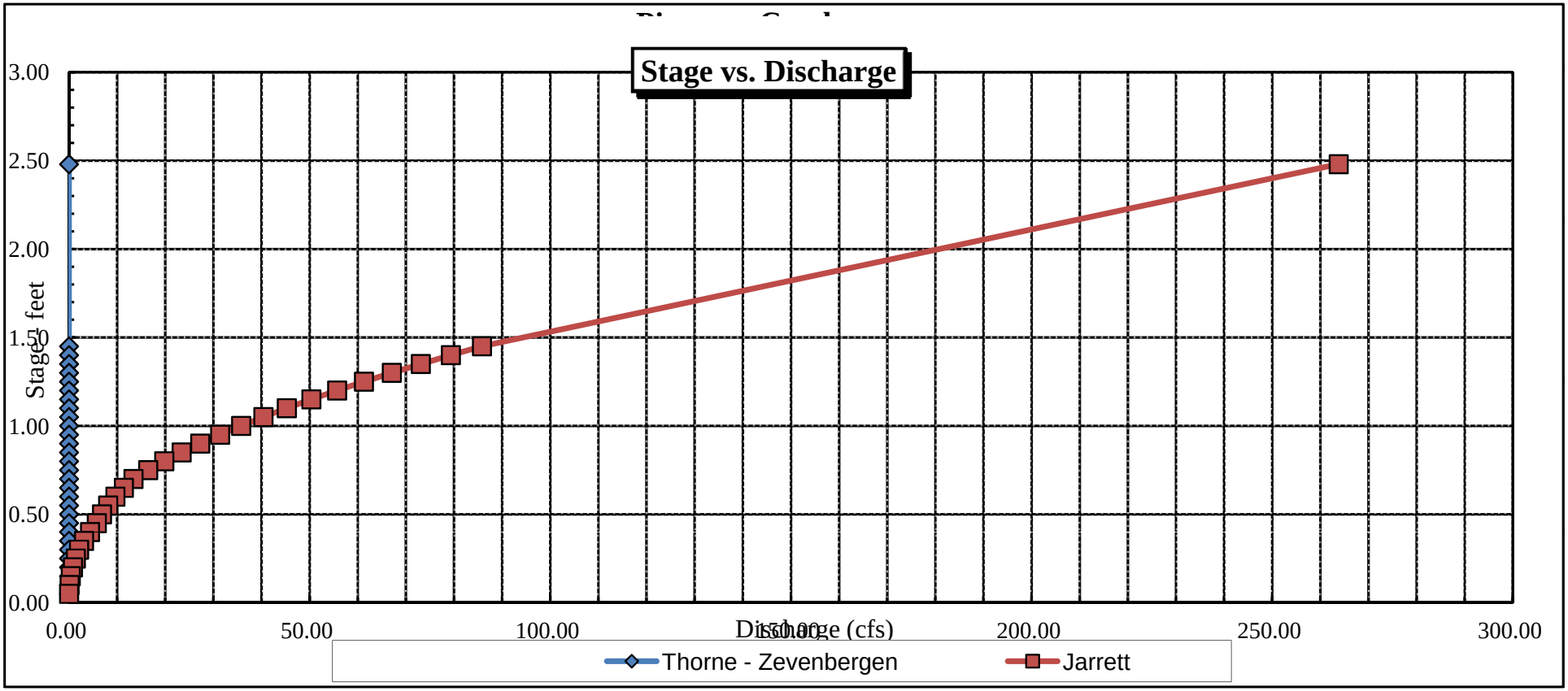
CWCB REVIEW BY: ..……………………………....……………………………………………………...…............. DATE:..................………………..…


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
LS
-4.50
-5.00
-5.50
-6.00
-6.50
-7.00
-7.50
-8.00
-8.50
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Velocity - ft/sec
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
2.50
2.00
1.50
1.00
0.50
0.00
Average Depth (feet
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Stage - feet
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: Piceance Creek | CROSS-SECTION NO.: 3

CROSS-SECTION LOCATION: on CPW property - middle portion

DATE: 9-12-12 | OBSERVERS: R. Smith, B. Lange

LEGAL DESCRIPTION: ¼ SECTION: SE | SECTION: 11 | TOWNSHIP: 1 (N) S | RANGE: 97 E (W) | PM: 6th

COUNTY: Rio Blanco | WATERSHED: White River | WATER DIVISION: 6 | DOW WATER CODE: 25343

MAP(S): USGS: GPS Zone 12 734971

USFS: NAD 83 4438665

SUPPLEMENTAL DATA

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

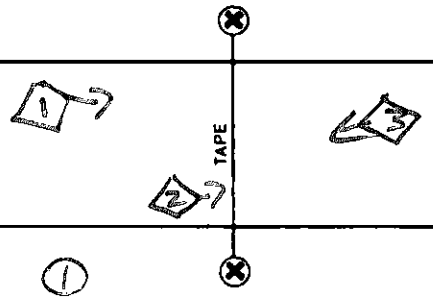
METER NUMBER: | DATE RATED: | CALIB/SPIN: ____ sec | TAPE WEIGHT: surveyed ____ lbs/foot | TAPE TENSION: surveyed ____ lbs

CHANNEL BED MATERIAL SIZE RANGE: silt to 8" boulders | PHOTOGRAPHS TAKEN: (YES) NO | NUMBER OF PHOTOGRAPHS: 3

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0	7.55 / 7.58
② WS Upstream	21.5	7.44
③ WS Downstream	30.7	7.70
SLOPE	0.26 / 52.2 = .005	

SKETCH



LEGEND: Stake ⊗ | Station ① | Photo ① | Direction of Flow

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES (NO) | DISTANCE ELECTROFISHED ____ ft | FISH CAUGHT YES/NO | WATER CHEMISTRY SAMPLED: YES (NO)

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

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

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

COMMENTS

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Piceance Creek | CROSS-SECTION NO.: | DATE: 9-12-12 | SHEET ___ OF ___

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: _____ ft | TIME: 11:30 am

Features (Stake (S), Grassline (G), Waterline (W), Rock (R))	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	0.0		4.89								
G	7.5		5.52								
	9.5		7.30								
W	17.7		7.55	0				0			
	18		7.70	.15				0.48			
	18.5		7.75	.20				0.43			
	19		7.75	.20				0.31			
	19.5		7.75	.20				0.35			
	20		7.75	.20				0.60			
	20.5		7.80	.25				0.33			
	21		7.85	.30				0.50			
	21.5		7.90	.35				0.89			
	22		7.90	.35				1.07			
	22.5		7.85	.30				1.28			
	23		7.90	.35				1.55			
	23.5		7.95	.40				1.71			
	24		7.95	.40				1.79			
	24.5		7.95	.40				2.01			
	25		7.95	.40				1.59			
	25.5		7.95	.40				1.71			
	26		7.95	.40				1.79			
	26.5		7.95	.40				1.92			
	27		7.95	.40				1.89			
	27.5		7.95	.40				1.77			
	28		7.95	.40				1.46			
	28.5		8.0	.45				1.70			
	29		7.95	.40				1.81			
	29.5		7.95	.40				1.27			
	30		7.95	.40				0.65			
	30.5		8.0	.45				0			
W	30.9		7.55	0				0			
G	31.0		5.52								
LS	35.3		4.60								
TOTALS:											

End of Measurement | Time | 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:	Below USGS Gage
XS NUMBER:	1
DATE:	5-Jul-06
OBSERVERS:	N. Dieterich
1/4 SEC:	SE
SECTION:	SE
TWP:	1N
RANGE:	97W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.0011

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: Piceance Creek
XS LOCATION: Below USGS Gage
XS NUMBER: 1

DATA POINTS= 44

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	LS	6.00	6.71			0.00		0.00	0.00	0.0%
1	G	7.00	6.78			0.00		0.00	0.00	0.0%
		8.00	7.45			0.00		0.00	0.00	0.0%
		9.00	7.72			0.00		0.00	0.00	0.0%
		9.50	7.84			0.00		0.00	0.00	0.0%
		10.00	8.22			0.00		0.00	0.00	0.0%
		12.00	8.78			0.00		0.00	0.00	0.0%
	W	13.20	9.13	0.00	0.00	0.00		0.00	0.00	0.0%
		13.50	9.20	0.10	0.00	0.31	0.10	0.03	0.00	0.0%
		13.70	9.20	0.10	0.00	0.20	0.10	0.03	0.00	0.0%
		14.10	9.25	0.15	0.00	0.40	0.15	0.05	0.00	0.0%
		14.40	9.25	0.15	0.10	0.30	0.15	0.05	0.00	0.2%
		14.70	9.25	0.15	0.15	0.30	0.15	0.05	0.01	0.3%
		15.00	9.35	0.25	0.58	0.32	0.25	0.08	0.04	1.9%
		15.30	9.40	0.30	0.83	0.30	0.30	0.09	0.07	3.2%
		15.60	9.50	0.40	1.00	0.32	0.40	0.12	0.12	5.2%
		15.90	9.50	0.40	0.99	0.30	0.40	0.12	0.12	5.1%
		16.20	9.50	0.40	1.01	0.30	0.40	0.12	0.12	5.2%
		16.50	9.50	0.40	0.90	0.30	0.40	0.12	0.11	4.7%
		16.80	9.50	0.40	0.96	0.30	0.40	0.12	0.12	5.0%
		17.10	9.55	0.45	0.97	0.30	0.45	0.14	0.13	5.7%
		17.40	9.60	0.50	1.03	0.30	0.50	0.15	0.15	6.7%
		17.70	9.60	0.50	0.79	0.30	0.50	0.15	0.12	5.1%
		18.00	9.60	0.50	0.90	0.30	0.50	0.15	0.14	5.8%
		18.30	9.50	0.40	0.91	0.32	0.40	0.12	0.11	4.7%
		18.60	9.50	0.40	0.88	0.30	0.40	0.12	0.11	4.6%
		18.90	9.55	0.45	0.94	0.30	0.45	0.14	0.13	5.5%
		19.20	9.55	0.45	1.02	0.30	0.45	0.14	0.14	5.9%
		19.50	9.50	0.40	0.72	0.30	0.40	0.12	0.09	3.7%
		19.80	9.50	0.40	0.77	0.30	0.40	0.12	0.09	4.0%
		20.10	9.50	0.40	0.82	0.30	0.40	0.12	0.10	4.3%
		20.40	9.50	0.40	0.71	0.30	0.40	0.12	0.09	3.7%
		20.70	9.50	0.40	0.75	0.30	0.40	0.12	0.09	3.9%
		21.00	9.45	0.35	0.69	0.30	0.35	0.11	0.07	3.1%
		21.30	9.40	0.30	0.66	0.30	0.30	0.09	0.06	2.6%
		21.60	9.35	0.25	0.00	0.30	0.25	0.07	0.00	0.0%
		21.90	9.25	0.15	0.00	0.32	0.15	0.04	0.00	0.0%
	W	22.10	9.08	0.00	0.00	0.26		0.00	0.00	0.0%
		23.00	8.73			0.00		0.00	0.00	0.0%
		24.50	8.57			0.00		0.00	0.00	0.0%
		25.00	8.07			0.00		0.00	0.00	0.0%
		26.00	7.79			0.00		0.00	0.00	0.0%
1	G	27.00	6.99			0.00		0.00	0.00	0.0%
	RS	28.00				0.00		0.00	0.00	0.0%
	TOTALS ----------					9.07	0.5 (Max.)	2.97	2.32	100.0%

Manning's n = 0.0299
Hydraulic Radius= 0.3268415

STREAM NAME: Piceance Creek
XS LOCATION: Below USGS Gage
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	2.97	2.92	-1.4%
8.86	2.97	5.34	80.2%
8.88	2.97	5.14	73.2%
8.90	2.97	4.93	66.3%
8.92	2.97	4.73	59.5%
8.94	2.97	4.53	52.7%
8.96	2.97	4.33	46.1%
8.98	2.97	4.14	39.5%
9.00	2.97	3.94	33.0%
9.02	2.97	3.75	26.5%
9.04	2.97	3.56	20.2%
9.06	2.97	3.38	13.9%
9.07	2.97	3.29	10.8%
9.08	2.97	3.20	7.8%
9.09	2.97	3.10	4.7%
9.10	2.97	3.01	1.7%
9.11	2.97	2.92	-1.4%
9.12	2.97	2.84	-4.4%
9.13	2.97	2.75	-7.4%
9.14	2.97	2.66	-10.4%
9.15	2.97	2.57	-13.3%
9.16	2.97	2.48	-16.3%
9.18	2.97	2.31	-22.1%
9.20	2.97	2.14	-27.9%
9.22	2.97	1.97	-33.4%
9.24	2.97	1.81	-38.9%
9.26	2.97	1.66	-44.0%
9.28	2.97	1.52	-48.8%
9.30	2.97	1.38	-53.6%
9.32	2.97	1.24	-58.2%
9.34	2.97	1.10	-62.7%
9.36	2.97	0.97	-67.2%

WATERLINE AT ZERO
AREA ERROR = 9.100

STREAM NAME: Piceance Creek
XS LOCATION: Below USGS Gage
XS NUMBER: 1

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	6.99	19.69	1.78	2.61	35.01	20.90	100.0%	1.67	81.26	2.32
	8.10	15.13	1.02	1.50	15.36	15.73	75.3%	0.98	24.86	1.62
	8.15	15.01	0.97	1.45	14.60	15.58	74.5%	0.94	23.01	1.58
	8.20	14.90	0.93	1.40	13.85	15.43	73.8%	0.90	21.22	1.53
	8.25	14.71	0.89	1.35	13.11	15.21	72.8%	0.86	19.55	1.49
	8.30	14.48	0.86	1.30	12.38	14.96	71.5%	0.83	17.97	1.45
	8.35	14.25	0.82	1.25	11.67	14.70	70.3%	0.79	16.46	1.41
	8.40	14.02	0.78	1.20	10.96	14.44	69.1%	0.76	15.00	1.37
	8.45	13.80	0.74	1.15	10.26	14.19	67.9%	0.72	13.61	1.33
	8.50	13.57	0.71	1.10	9.58	13.93	66.6%	0.69	12.28	1.28
	8.55	13.34	0.67	1.05	8.91	13.67	65.4%	0.65	11.01	1.24
	8.60	12.86	0.64	1.00	8.25	13.17	63.0%	0.63	9.94	1.20
	8.65	12.21	0.62	0.95	7.62	12.52	59.9%	0.61	9.01	1.18
	8.70	11.56	0.61	0.90	7.03	11.86	56.7%	0.59	8.16	1.16
	8.75	11.05	0.58	0.85	6.46	11.34	54.3%	0.57	7.31	1.13
	8.80	10.75	0.55	0.80	5.92	11.02	52.7%	0.54	6.44	1.09
	8.85	10.45	0.52	0.75	5.39	10.70	51.2%	0.50	5.61	1.04
	8.90	10.15	0.48	0.70	4.87	10.39	49.7%	0.47	4.85	0.99
	8.95	9.85	0.44	0.65	4.38	10.07	48.2%	0.43	4.13	0.94
	9.00	9.55	0.41	0.60	3.89	9.75	46.7%	0.40	3.47	0.89
	9.05	9.25	0.37	0.55	3.42	9.44	45.1%	0.36	2.86	0.84
WL	9.10	8.98	0.33	0.50	2.96	9.15	43.8%	0.32	2.30	0.78
	9.15	8.73	0.29	0.45	2.52	8.87	42.4%	0.28	1.79	0.71
	9.20	8.25	0.25	0.40	2.09	8.37	40.1%	0.25	1.37	0.65
	9.25	7.20	0.24	0.35	1.69	7.29	34.9%	0.23	1.05	0.62
	9.30	6.90	0.19	0.30	1.34	6.98	33.4%	0.19	0.73	0.55
	9.35	6.59	0.15	0.25	1.00	6.66	31.9%	0.15	0.47	0.47
	9.40	6.00	0.11	0.20	0.69	6.05	29.0%	0.11	0.27	0.39
	9.45	5.55	0.07	0.15	0.40	5.59	26.7%	0.07	0.11	0.28
	9.50	2.39	0.06	0.10	0.13	2.42	11.6%	0.06	0.03	0.24
	9.55	1.05	0.04	0.05	0.04	1.06	5.1%	0.04	0.01	0.19

STREAM NAME: Piceance Creek
XS LOCATION: Below USGS Gage
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	2.32	cfs
CALCULATED FLOW (Qc)=	2.30	cfs
(Qm-Qc)/Qm * 100 =	0.5	%
MEASURED WATERLINE (WLm)=	9.11	ft
CALCULATED WATERLINE (WLc)=	9.10	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.50	ft
MAX CALCULATED DEPTH (Dc)=	0.50	ft
(Dm-Dc)/Dm * 100	0.1	%
MEAN VELOCITY=	0.78	ft/sec
MANNING'S N=	0.030	
SLOPE=	0.0011	ft/ft
.4 * Qm =	0.9	cfs
2.5 * Qm=	5.8	cfs

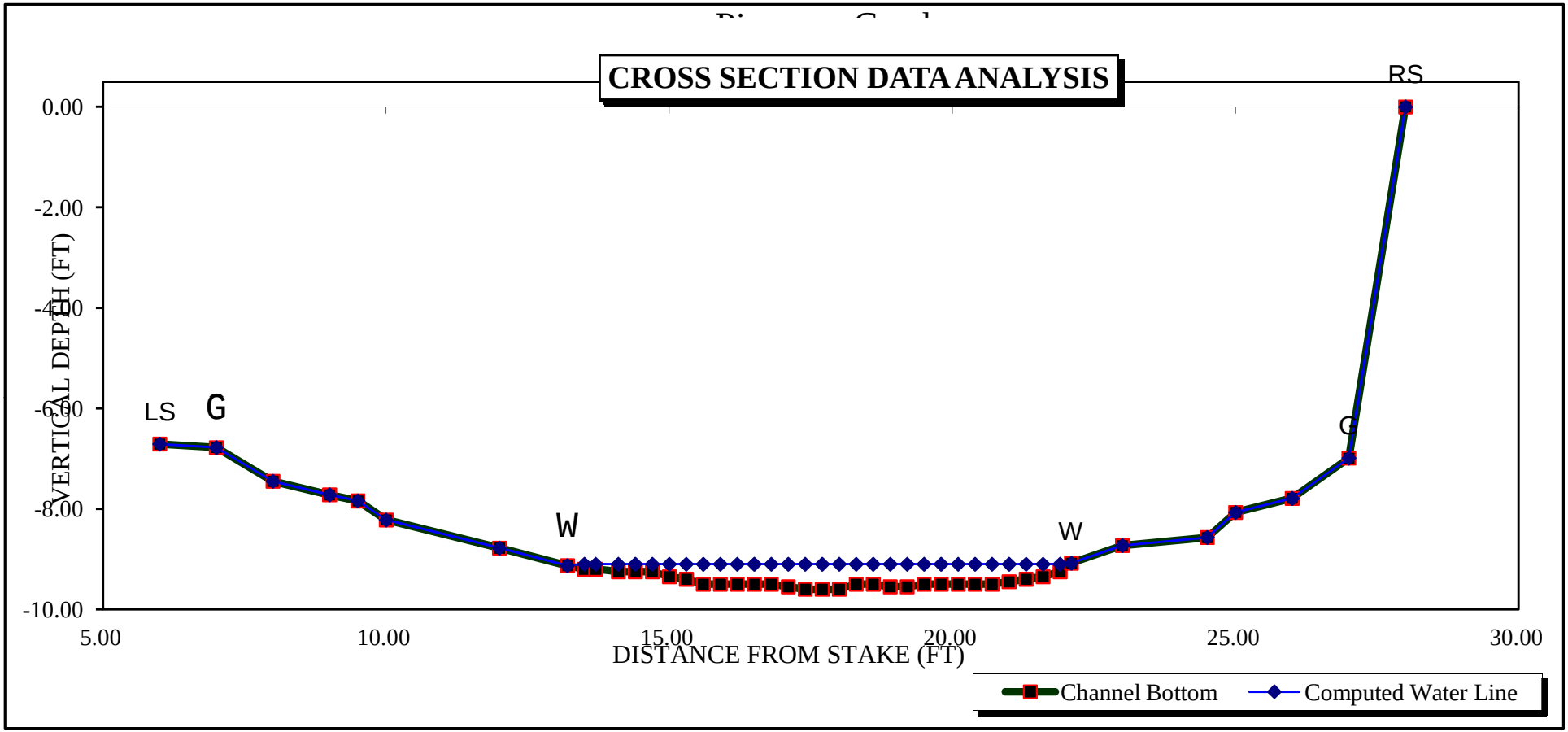
RECOMMENDED INSTREAM FLOW:
==========

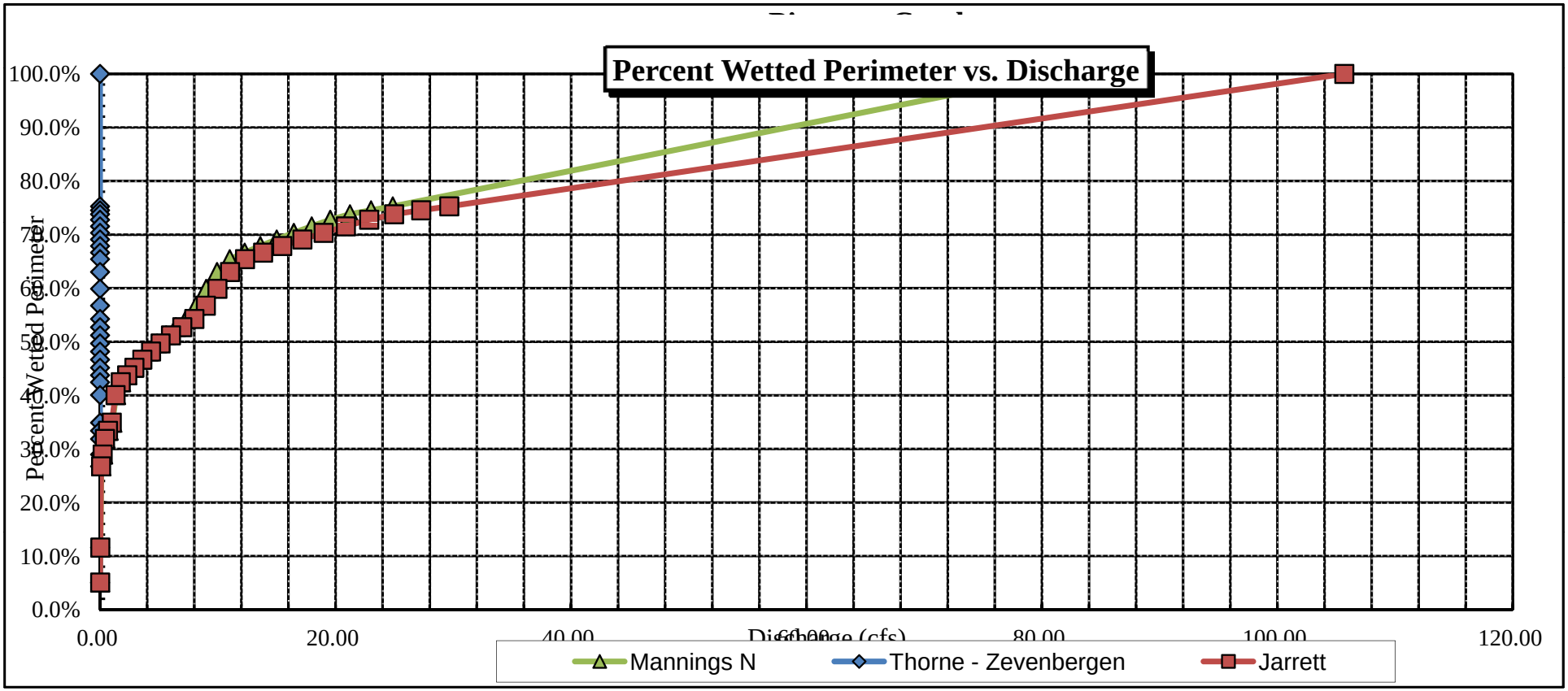
FLOW (CFS)	PERIOD
==========	========
_____	_____
_____	_____
_____	_____
_____	_____

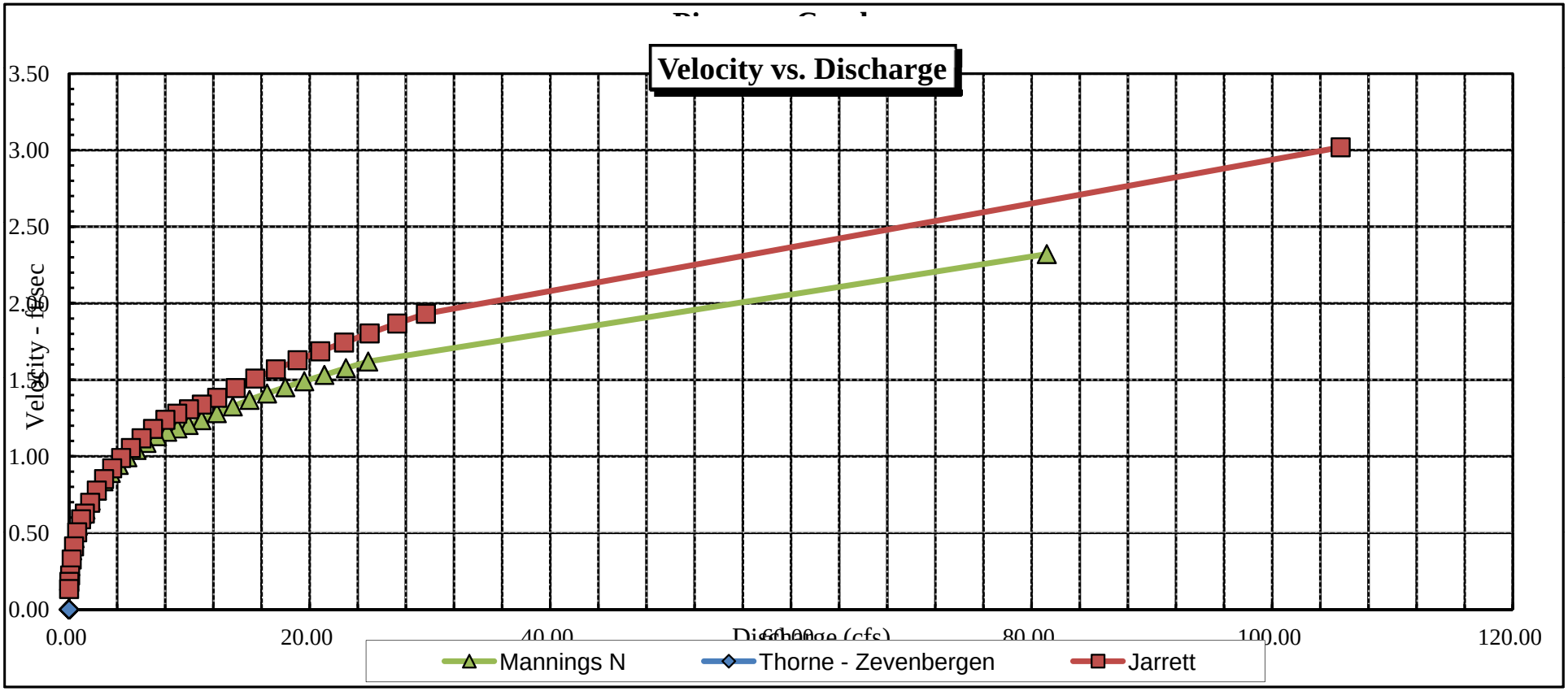
RATIONALE FOR RECOMMENDATION:
==========

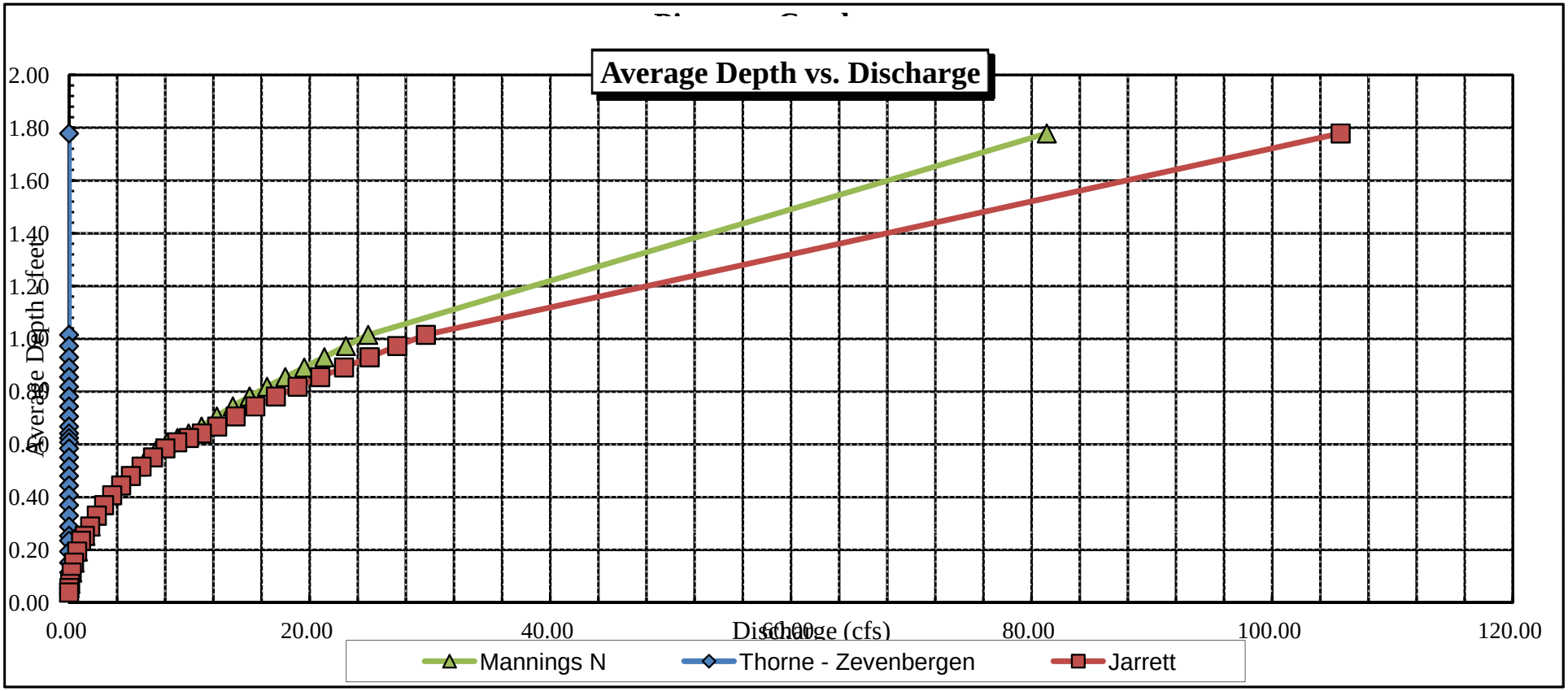
RECOMMENDATION BY: …….. AGENCY..…….. DATE:.....……

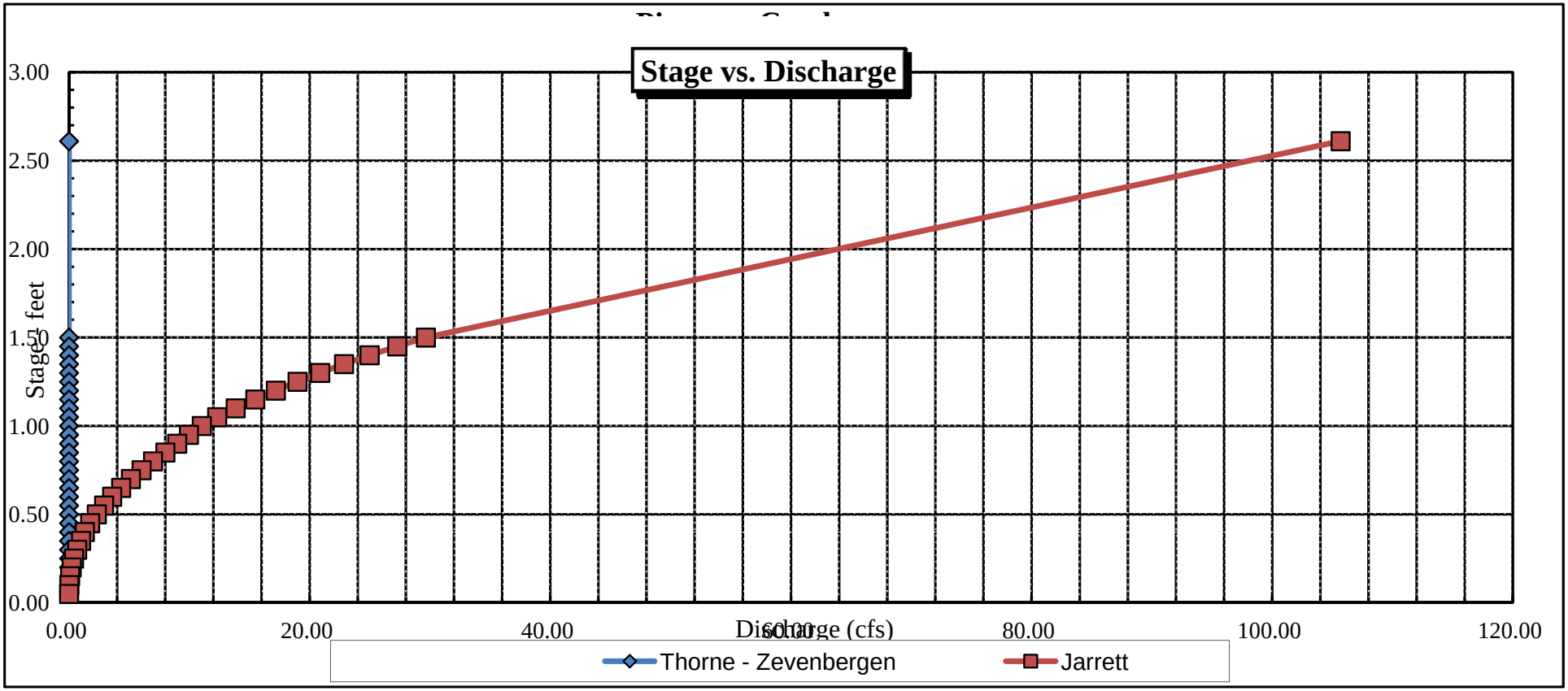
CWCB REVIEW BY: ..…….....…….. DATE:.....……..…


CROSS SECTION DATA ANALYSIS
RS
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
VERTICAL DEPTH (FT)
LS
G
W
W
G
5.00
10.00
15.00
20.00
25.00
30.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
20.00
40.00
80.00
100.00
120.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth (feet)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Stage - feet
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: Pleasant Creek

CROSS-SECTION NO.: 1

CROSS-SECTION LOCATION: Below USGS Gage (09306222) Lat 40°04'41", Long 108°14'09" TIN R97W Section 2 SESE

DATE: 7/5/06 OBSERVERS: Dieterich / Hollaved

LEGAL DESCRIPTION: ¼ SECTION: SESE SECTION: 2 TOWNSHIP: 1 (N)/S RANGE: 97 E(W) PM:

COUNTY: Rio Blanco WATERSHED: Pleasant Creek (WR) WATER DIVISION: 6 DOW WATER CODE: HUC 14050006

MAP(S): USGS: USFS:

SUPPLEMENTAL DATA

BAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO METER TYPE: Marsh McBirney Flow Mate

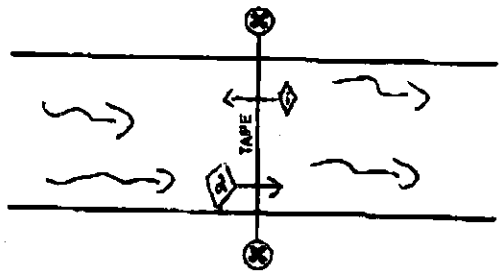
METER NUMBER: DATE RATED: CALIB/5 PIN: _____ sec TAPE WEIGHT: _____ lbs/feet TAPE TENSION: _____ lbs

CHANNEL BED MATERIAL SIZE RANGE: Sand – fine gravels PHOTOGRAPHS TAKEN: (YES)/NO NUMBER OF PHOTOGRAPHS:

CHANNEL PROFILE DATA

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

SKETCH



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

9.0 = 9.08 93.5' 9.13 106.7' 9.3
9.47 9.58 9.75

AQUATIC SAMPLING SUMMARY

STREAM ELECTROFISHED: YES/(NO) DISTANCE ELECTROFISHED: _____ ft FISH CAUGHT: YES/NO WATER CHEMISTRY SAMPLED: YES/NO

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

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

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

COMMENTS

air temp = 68° F
H2O temp = 64° F
pH = 6.63
sc = 3420

BLM-White River Field Office: Watershed Field Data Sheet
ROSGEN CHANNEL CLASSIFICATION

Stream Name: Piceance Cr. (below USGS [illegible]) Reach ID: Riffle Date: 7/5/2006 (English)/Metri

Crew: Dietrich [illegible], Holloway [illegible]

Channel Type: ______ Elev. Start Reach: ______ Reach Length: ______

Reviewed Channel Type: ______ Permanent X-section (Y)/N Basin Survey: Y/(N) Reference: Y/N Stream Order: ______

Reviewer(s): ______ Date: ______

1) **Thread:**
- ✓ single no side channels
- __ single w/ side channels
- __ multiple channels

2) **Entrenchment:** (Measured)/Estimated
- ____/____/____/____/ BF widths/____
- 20 BF width @ station
- 2.6 max BF depth
- 97.2 FPW (width @ 2x max BFD) 4.38
- ____ Entrenchment Ratio (FPW/BFW)

3) **W/D Ratio:** (Measured)/Estimated
- ____ computed BF Area
- ____ Ave.BF Depth (BFA/BFW @ station)
- ____ W/D Ratio (BFW @ station/Ave. BFD)

4) **Sinuosity:** (Measured)/Estimated Air Photo
- ____ Stream length (thalweg)
- ____ Valley length (strait line)
- ____ Sinuosity (stream length/valley length)

5) **Gradient:** (Measured)/Estimated
- ____/____/____/____ Elev. Change
- ____/____/____/____ Distance
- ____/____/____/____ Gradient
- ____ Ave. Gradient

6) **Particle Size Distribution:** Measured/(Est.)
- ____ dominant size class (mm)
- ____ D 50 (mm) Description: ____
- ____ D 85 (mm)

7) **Depositional Pattern:**
- ✓ point bars
- [illegible] point bars w/ mid channel bars
- __ many side-channel bars
- __ side or diagonal bars
- __ channel composed of bars/islands
- __ none

8) **Bed Features:**
- __ Cascade
- __ Cascade/Pool
- __ Step/Pool
- ✓ Plane bed/Glide
- __ Pool/Riffle
- __ Other: ______

(1) — Channel 9.41 H2O 9.08, 93.5 } length

X-sect — Channel 9.58 H2O 9.13 } length 106.7

(3) — Channel 9.75 H2O 9.3 } length

Station (ft)	BS (ft)	HI (ft)	FS (ft)	Elevation (ft)	BF Elevation (ft)	Ave BFD ((E - BFE)+(E prev.-BFE))/2	BF Area W x Ave. BFD	Notes BF/WE
—	4.86	104.86	✓	100	✓			
1			4.81					BM#
1			4.28					LBP(6
4			6.40					LBP(T
5			5.86					
6			6.71					
7			6.98					
8			7.45					LBF.
9			7.72					
9.5			7.84					
10			8.22					
12			8.18					
13.2			9.13					
15			9.45					LWE
16			9.41					
17			9.52					
18			9.58					
19			9.55					
20			9.53					
21			9.48					
22.1			9.08					
23			8.73					RWE
24.5			8.51					
25			8.07					
26			7.79					
27			6.99					
28			6.5					RBF
33			6.03					
35			5.47					
36			5.19					
38			4.84					Terrace

RBP 4.85

Additional Remarks: TRBP - 4.19 [illegible]

RBP = [illegible] 4.81 LBP - 4.87 (behind tamarask)

BM#1 = 100 ft RBP = 41.4 LBP = 1

BF = 7 ft (8.99), (27.1)

4.38 (

Photos:

1 Description: Bench Mark, pole next to gauging station (Base of [illegible]

2 Description: looking US from riffle X-section

3 Description: looking DS from riffle X-section

____ Description:

____ Description:

____ Description:

Riffle

DISCHARGE/CROSS SECTION NOTES

22.1 - 13.2 = 8.9 @ 1040

STREAM NAME: Pleasant Creek

CROSS-SECTION NO.: Riffle 1 | DATE: 7/5/06 | SHEET ___ OF ___

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: ____ ft | TIME: 1045

Features: Stake (S), Grassline (G), Waterline (W), Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/rod (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec): At Point	Velocity (ft/sec): Mean in Vertical	Area (ft^2)	Discharge (cfs)
LWE	13.2	0.3		0	0.6		20s	0		0	0
	13.5	↓		0.05	↓			0		0.015	0
	13.8			0.1				0		0.03	0
	14.1			0.15				0		0.045	0
	14.4			0.15				0.1		0.045	0.0045
	14.7			0.15				0.15		0.045	0.00675
	15			0.25				0.58		0.075	0.0435
	15.3			0.30				0.83		0.09	0.0747
	15.6			0.40				1.0		0.12	0.12
	15.9			0.40				0.99		0.12	0.188
	16.2			0.40				1.01		0.12	0.1212
	16.5			0.40				0.90		0.12	0.108
	16.8			0.40				0.96		0.12	0.1152
	17.1			0.45				0.97		0.135	0.13095
	17.4			0.50				1.03		0.15	0.1545
	17.7			0.50				0.79		0.15	0.1185
	18.0			0.50				0.90		0.15	0.135
	18.3			0.40				0.91		0.12	0.1092
	18.6			0.40				0.88		0.12	0.1056
	18.9			0.45				0.94		0.135	0.1269
	19.2			0.45				1.02		0.135	0.1377
	19.5			0.40				0.72		0.12	0.0864
	19.8			0.40				0.77		0.12	0.0924
	20.1			0.40				0.82		0.12	0.0984
	20.4			0.40				0.71		0.12	0.0852
	20.7			0.40				0.75		0.12	0.09
	21.0			0.35				0.69		0.105	0.07245
	21.3			0.30				0.66		0.09	0.0594
	21.6			0.25				0		0.075	0
	21.9	↓		0.15				0		0.045	0
	22.1	0.2		0				0		0	0

Total = 2.385 cfs

TOTALS:

End of Measurement | Time: | 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 CPW fence 40 03'57.6" 108 14' 29.6"
XS NUMBER:	1
DATE:	21-Jun-05
OBSERVERS:	Uppendahl, Graf, Dilger
1/4 SEC:	SE
SECTION:	11
TWP:	1N
RANGE:	97W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	White River City 7.5'
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:	0.01009515

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: Piceance Creek
XS LOCATION: 50 yds u/s of CPW fence 40 03'57.6" 108 14' 29.6"
XS NUMBER: 1

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%
		0.50	4.90			0.00		0.00	0.00	0.0%
		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	1.8%
		23.25	7.80	0.90	0.06	0.79	0.90	0.68	0.04	0.4%
		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	11.07	100.0%
							(Max.)			

Manning's n = 0.0664
Hydraulic Radius= 0.46675041

STREAM NAME: Piceance Creek
XS LOCATION: 50 yds u/s of CPW fence 40 03'57.6" 108 14' 29.6"
XS NUMBER: 1

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 CPW fence 40 03'57.6" 108 14' 29.6"
XS NUMBER: 1 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	26.25	1.31	2.05	34.42	27.10	100.0%	1.27	90.83	2.64
	5.90	25.56	1.20	1.90	30.59	26.34	97.2%	1.16	76.03	2.49
	5.95	25.33	1.16	1.85	29.32	26.09	96.3%	1.12	71.30	2.43
	6.00	25.09	1.12	1.80	28.06	25.83	95.3%	1.09	66.70	2.38
	6.05	24.76	1.08	1.75	26.81	25.48	94.0%	1.05	62.39	2.33
	6.10	24.43	1.05	1.70	25.58	25.13	92.7%	1.02	58.23	2.28
	6.15	24.10	1.01	1.65	24.37	24.78	91.4%	0.98	54.21	2.22
	6.20	23.76	0.98	1.60	23.17	24.43	90.1%	0.95	50.33	2.17
	6.25	23.43	0.94	1.55	21.99	24.07	88.8%	0.91	46.58	2.12
	6.30	23.10	0.90	1.50	20.83	23.72	87.5%	0.88	42.96	2.06
	6.35	22.76	0.86	1.45	19.68	23.37	86.2%	0.84	39.49	2.01
	6.40	22.43	0.83	1.40	18.55	23.02	84.9%	0.81	36.15	1.95
	6.45	22.20	0.79	1.35	17.44	22.76	84.0%	0.77	32.84	1.88
	6.50	21.97	0.74	1.30	16.33	22.52	83.1%	0.73	29.66	1.82
	6.55	21.75	0.70	1.25	15.24	22.27	82.2%	0.68	26.62	1.75
	6.60	21.52	0.66	1.20	14.16	22.02	81.3%	0.64	23.73	1.68
	6.65	21.30	0.61	1.15	13.09	21.77	80.3%	0.60	20.97	1.60
	6.70	20.67	0.58	1.10	12.04	21.13	78.0%	0.57	18.61	1.55
	6.75	20.03	0.55	1.05	11.02	20.48	75.6%	0.54	16.40	1.49
	6.80	19.38	0.52	1.00	10.04	19.83	73.2%	0.51	14.34	1.43
	6.85	18.74	0.48	0.95	9.08	19.17	70.8%	0.47	12.42	1.37
WL	6.90	17.39	0.47	0.90	8.18	17.81	65.7%	0.46	10.95	1.34
	6.95	16.84	0.44	0.85	7.33	17.25	63.6%	0.42	9.32	1.27
	7.00	16.55	0.39	0.80	6.49	16.94	62.5%	0.38	7.71	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	4.89	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	2.61	0.79
	7.25	13.42	0.19	0.55	2.59	13.70	50.5%	0.19	1.92	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

STREAM NAME: Piceance Creek
XS LOCATION: 50 yds u/s of CPW fence 40 03'57.6" 108 14' 29.6"
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	11.07	cfs
CALCULATED FLOW (Qc)=	10.95	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=	0.01009515	ft/ft
.4 * Qm =	4.4	cfs
2.5 * Qm=	27.7	cfs

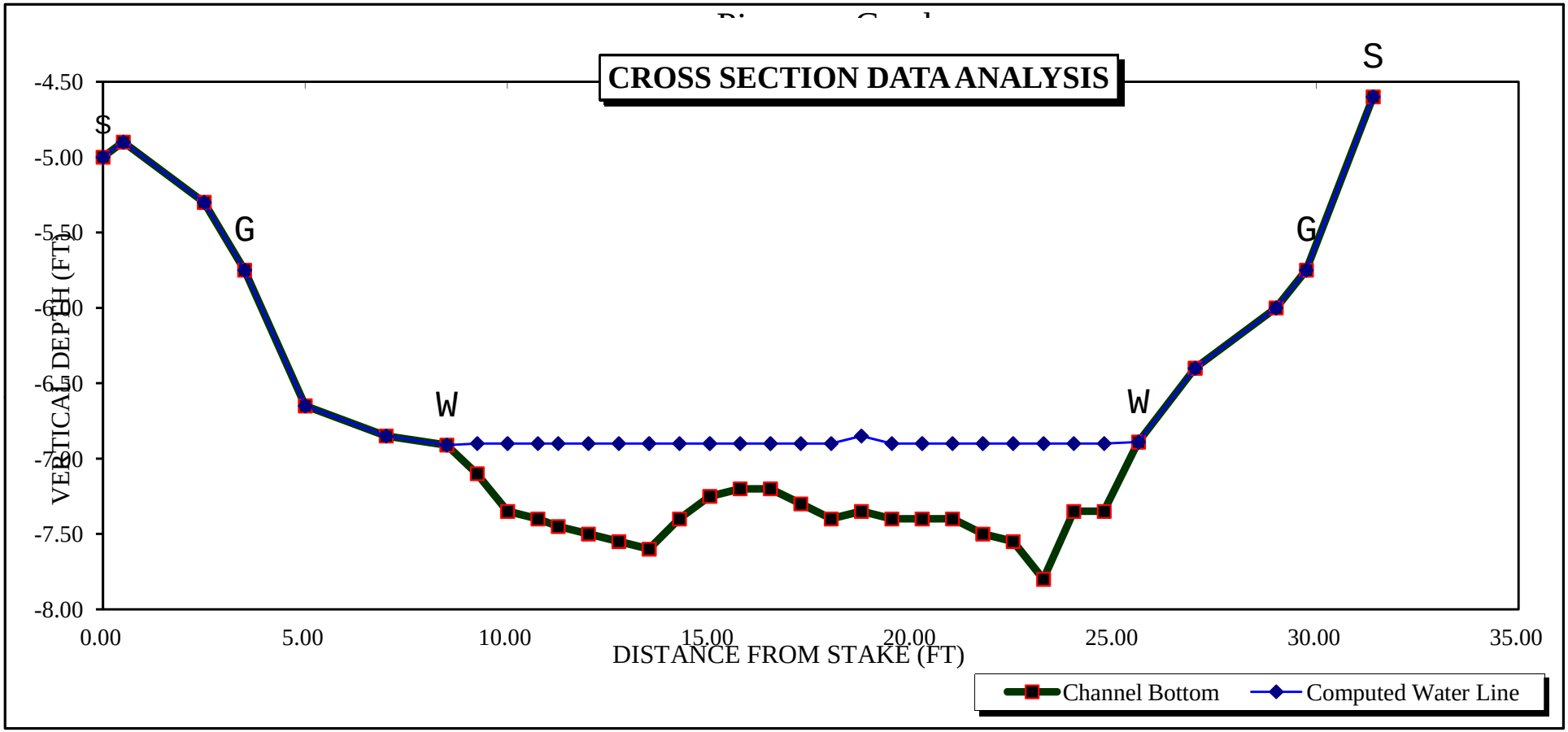
RECOMMENDED INSTREAM FLOW:
=============================

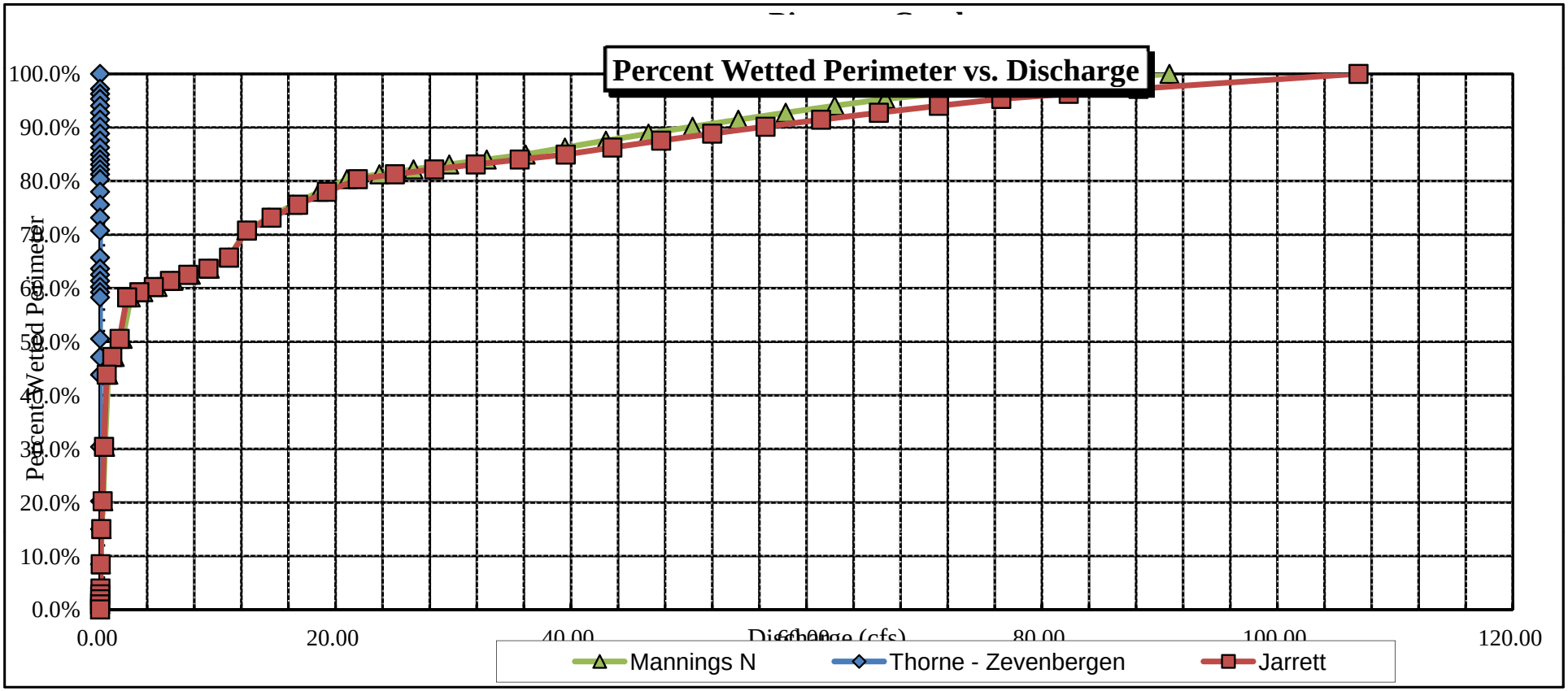
FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

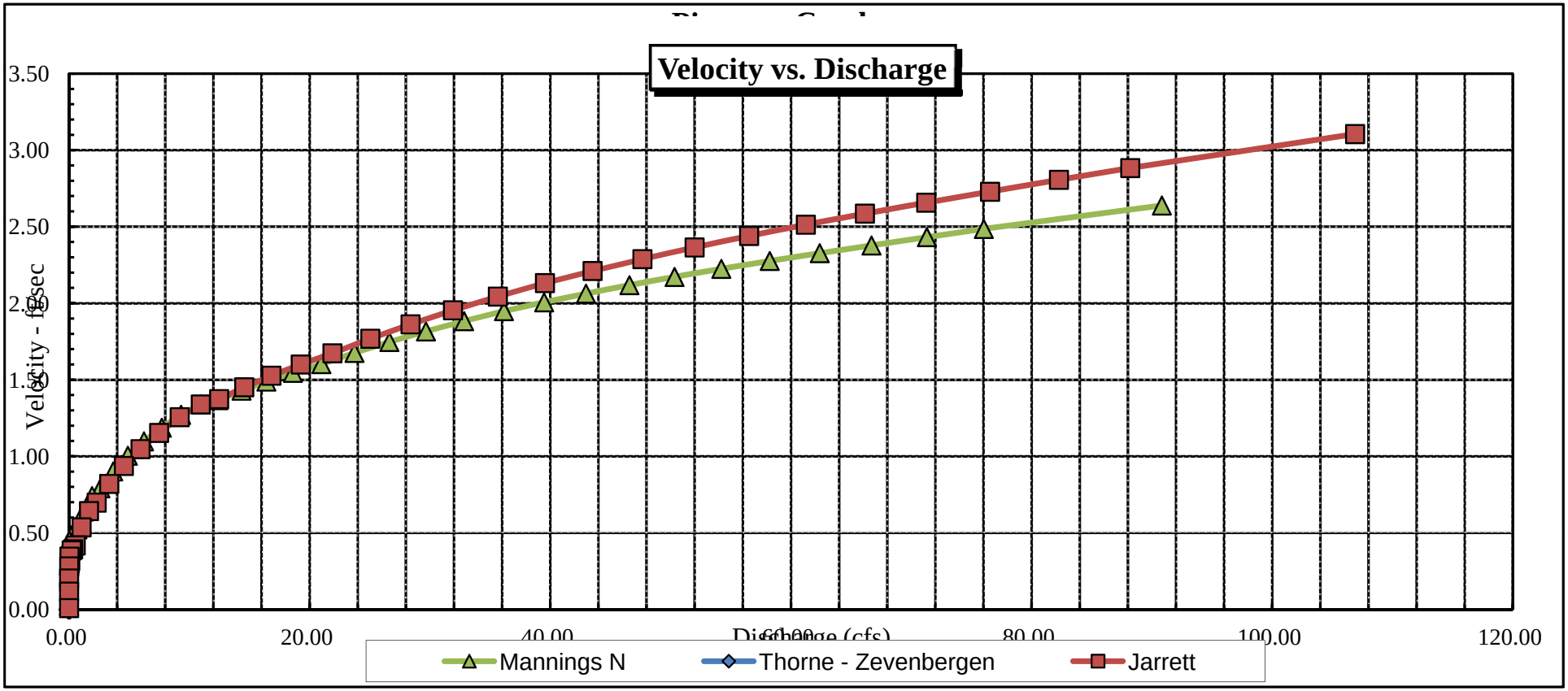
RATIONALE FOR RECOMMENDATION:
=============================

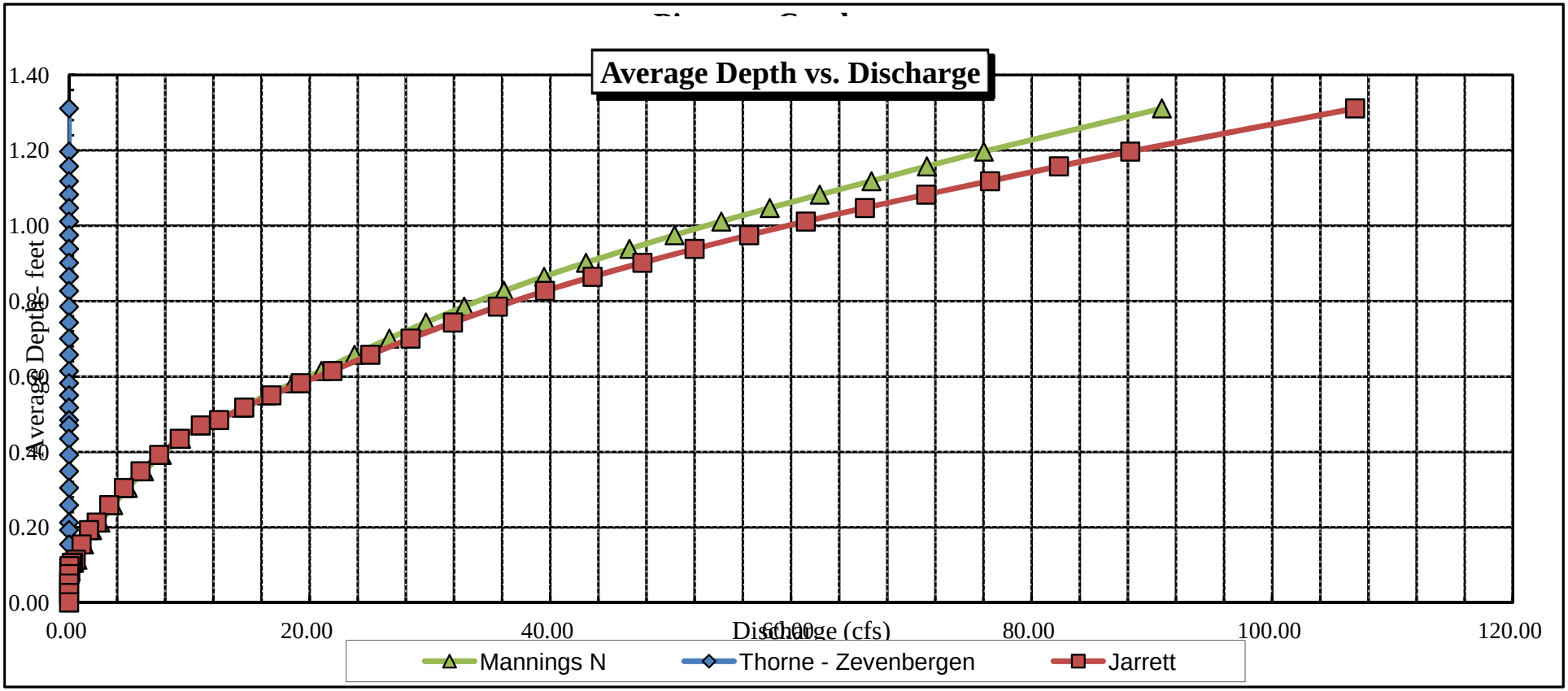
RECOMMENDATION BY: ……………………...………..……............................... AGENCY...……………………….....…….....…...……....... DATE:......…...…......……………

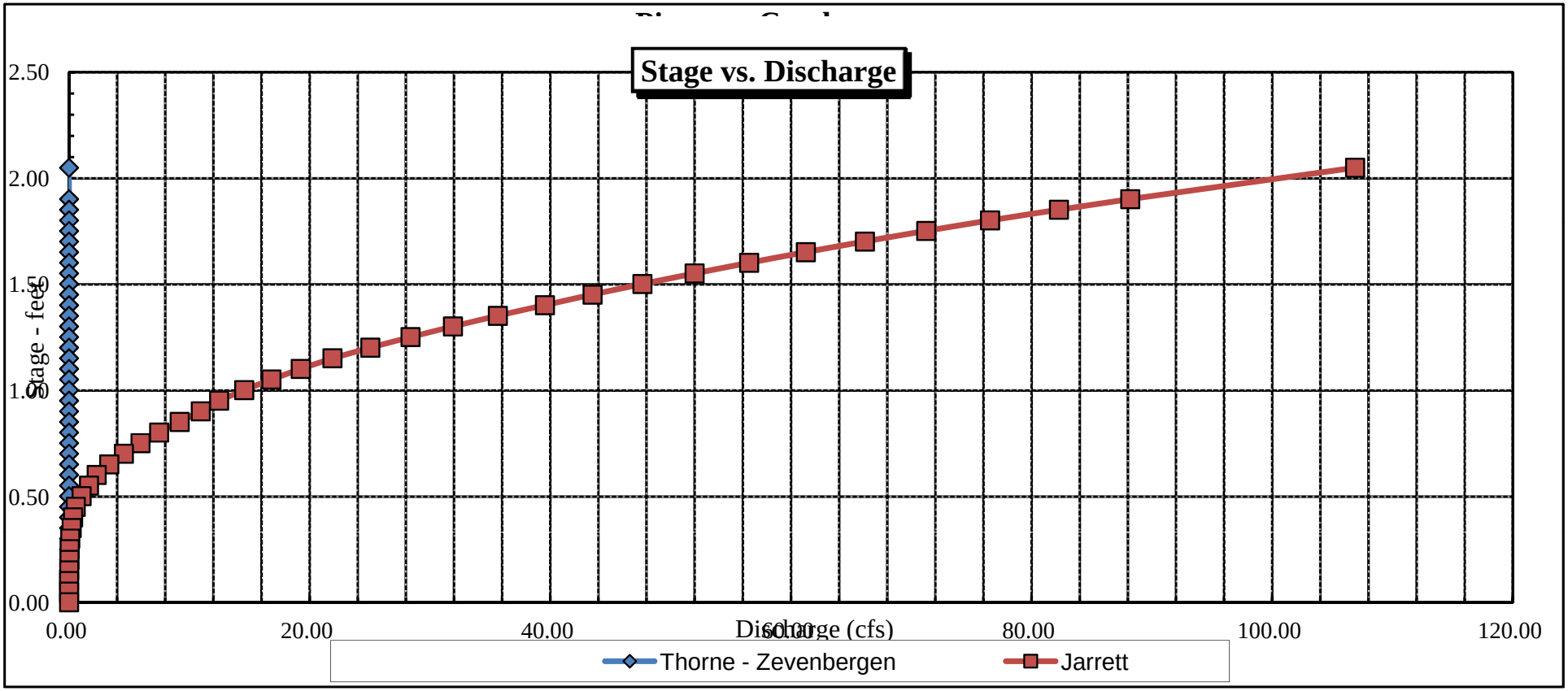
CWCB REVIEW BY: ..…………………………...……………………………………………………...…............. DATE:.................…………….....…


CROSS SECTION DATA ANALYSIS
S
G
W
W
G
S
-4.50
-5.00
-5.50
-6.00
-6.50
-7.00
-7.50
-8.00
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
20.00
40.00
80.00
100.00
120.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
20.00
40.00
80.00
100.00
120.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
2.50
2.00
1.50
1.00
0.50
0.00
Stage - feet
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO WATER CONSERVATION BOARD

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Piceance Creek — CROSS-SECTION NO.: 2067105

CROSS-SECTION LOCATION: 50 YDS u/s of low fence

40° 05' 57.6" 108 14 29.6

OBSERVERS: UPPENDAHL / Dilger / Greg

DATE: 6/21/05 — PM SECTION: SE — SECTION: 11 — TOWNSHIP: 1 N/S — RANGE: 97 E/W — PM: 6

LEGAL DESCRIPTION

COUNTY: Rio Blanco — WATERSHED: Piceance CK — WATER DIVISION: 6 White — DOW WATER CODE:

MAP(S): USGS: White River City

USFS:

SUPPLEMENTAL DATA

BAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO — METER TYPE: FLO-MATE

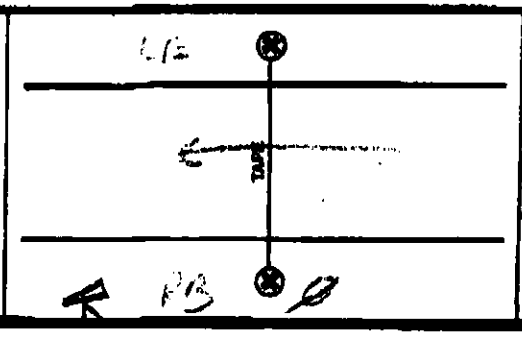
METER NUMBER: — DATE RATED: — CALIB/SPIN: ____ sec — TAPE WEIGHT: ____ lbs/foot — TAPE TENSION: ____ lbs

CHANNEL BED MATERIAL SIZE RANGE: — PHOTOGRAPHS TAKEN: (YES) NO — NUMBER OF PHOTOGRAPHS:

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
Tape @ Stake LB	0.0	4.60
Tape @ Stake RB	0.0	5.00
WS @ Tape LB/RB	0.0	6.89/6.91
WS Upstream	62	6.60
WS Downstream	42	7.65
SLOPE	1.05/104 = 0.010	

SKETCH



LEGEND: Stake ⊗ Station ① Photo ◇ Direction of Flow

AQUATIC SAMPLING SUMMARY

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

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

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

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

COMMENTS

Interval: GAGE READING = STAGE 2.26 Q = 20.0 CFS

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Florence Creek	CROSS-SECTION NO.: 03062105	DATE: 6/2/05	SHEET 1 OF 1
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (LEFT) RIGHT (0.0 AT STAKE)	Gage Reading: ____ ft	TIME: 1215

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	0		5.00								
TOE in	.5		4.90								
BE	2.5		5.30								
GL	3.5		5.75								
	5.0		6.65								
	7.0		6.85								
W	8.5		6.91	0					0		
	9.25		7.1	.20					0		
	10.0		7.35	.45					0		
	10.75		7.40	.50					.77		
	11.25		7.45	.55					1.56		
	12.0		7.50	.60					1.73		
	12.75		7.55	.65					1.66		
	13.50		7.60	.70					2.27		
	14.25		7.40	.50					2.27		
	15.0		7.25	.35					2.66		
	15.75		7.20	.30					2.92		
	16.5		7.20	.30					2.35		
	17.25		7.30	.40					1.57		
	18.0		7.40	.50					1.41		
	18.75		7.35	.50					2.27		
	19.60		7.40	.50					1.64		
	20.25		7.40	.50					1.92		
	21.0		7.40	.50					2.24		
	21.75		7.50	.60					1.12		
	22.5		7.55	.65					0.47		
	23.25		7.80	.90					0.05		
	24.0		7.35	.45					0.01		
	24.75		7.35	.45					0		
W	25.6		6.89	0					0		
	27.0		6.40								
OF	29.0		6.00								
GL	29.75		5.75								
S	31.4		4.60								
TOTALS:											

End of Measurement	Time: 1300	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:	500 ft upst from County Rd 5 bridge
XS NUMBER:	1
DATE:	18-Sep-00
OBSERVERS:	R.Smith, P. Daggett, C. Hollowed
1/4 SEC:	NW NW
SECTION:	12
TWP:	1N
RANGE:	97W
PM:	6th
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	5
DOW CODE:	25343
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.001

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: Piceance Creek
XS LOCATION: 500 ft upst from County Rd 5 bridge
XS NUMBER: 1

DATA POINTS= 29

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	2.59	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	0.0%
		5.00	3.38	0.00	0.00	0.00		0.00	0.00	0.0%
1	G	5.60	3.83	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	0.0%
		7.50	4.74	0.00	0.00	0.00		0.00	0.00	0.0%
	W	8.60	5.07	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%
	W	30.00	5.07	0.00	0.00	2.00		0.00	0.00	0.0%
		32.50	4.60	0.00	0.00	0.00		0.00	0.00	0.0%
1	G	35.00	3.76	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	0.0%
	TOTALS ----------					21.51	0.5	6.86	4.63	100.0%
							(Max.)			

Manning's n = 0.0325
Hydraulic Radius= 0.31891125

STREAM NAME: Piceance Creek
XS LOCATION: 500 ft upst from County Rd 5 bridge
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	6.86	6.54	-4.7%
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	23.9%
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
XS LOCATION: 500 ft upst from County Rd 5 bridge
XS NUMBER: 1 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	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

STREAM NAME: Piceance Creek
XS LOCATION: 500 ft upst from County Rd 5 bridge
XS NUMBER: 1 Jarrett Variable Manning's n Correction Applied

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	3.83	29.19	1.32	1.75	38.49	29.73	100.0%	1.29	82.81	2.15
	4.05	28.02	1.14	1.53	32.06	28.47	95.8%	1.13	61.45	1.92
	4.10	27.76	1.10	1.48	30.66	28.19	94.8%	1.09	57.11	1.86
	4.15	27.50	1.06	1.43	29.28	27.92	93.9%	1.05	52.93	1.81
	4.20	27.25	1.02	1.38	27.91	27.64	93.0%	1.01	48.90	1.75
	4.25	27.00	0.98	1.33	26.56	27.37	92.1%	0.97	45.01	1.69
	4.30	26.75	0.94	1.28	25.21	27.10	91.2%	0.93	41.27	1.64
	4.35	26.50	0.90	1.23	23.88	26.83	90.3%	0.89	37.69	1.58
	4.40	26.25	0.86	1.18	22.56	26.56	89.4%	0.85	34.26	1.52
	4.45	26.00	0.82	1.13	21.26	26.30	88.5%	0.81	30.98	1.46
	4.50	25.75	0.78	1.08	19.96	26.03	87.6%	0.77	27.86	1.40
	4.55	25.50	0.73	1.03	18.68	25.76	86.6%	0.73	24.89	1.33
	4.60	25.24	0.69	0.98	17.41	25.48	85.7%	0.68	22.09	1.27
	4.65	24.88	0.65	0.93	16.16	25.10	84.4%	0.64	19.52	1.21
	4.70	24.51	0.61	0.88	14.92	24.71	83.1%	0.60	17.09	1.15
	4.75	24.13	0.57	0.83	13.71	24.31	81.8%	0.56	14.83	1.08
	4.80	23.69	0.53	0.78	12.51	23.87	80.3%	0.52	12.75	1.02
	4.85	23.26	0.49	0.73	11.34	23.42	78.8%	0.48	10.82	0.95
	4.90	22.83	0.45	0.68	10.19	22.98	77.3%	0.44	9.04	0.89
	4.95	22.40	0.40	0.63	9.06	22.53	75.8%	0.40	7.41	0.82
	5.00	21.96	0.36	0.58	7.95	22.09	74.3%	0.36	5.93	0.75
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	3.54	0.61
	5.15	19.18	0.25	0.43	4.81	19.28	64.9%	0.25	2.66	0.55
	5.20	18.23	0.21	0.38	3.88	18.33	61.7%	0.21	1.87	0.48
	5.25	17.65	0.17	0.33	2.99	17.74	59.7%	0.17	1.19	0.40
	5.30	17.08	0.12	0.28	2.12	17.15	57.7%	0.12	0.65	0.31
	5.35	11.95	0.11	0.23	1.35	12.02	40.4%	0.11	0.38	0.28
	5.40	9.28	0.09	0.18	0.84	9.33	31.4%	0.09	0.20	0.24
	5.45	6.39	0.07	0.13	0.44	6.42	21.6%	0.07	0.08	0.19
	5.50	3.85	0.05	0.08	0.19	3.86	13.0%	0.05	0.03	0.14
	5.55	2.19	0.02	0.03	0.04	2.19	7.4%	0.02	0.00	0.06

STREAM NAME: Piceance Creek
XS LOCATION: 500 ft upst from 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:
==========

_____
_____
_____
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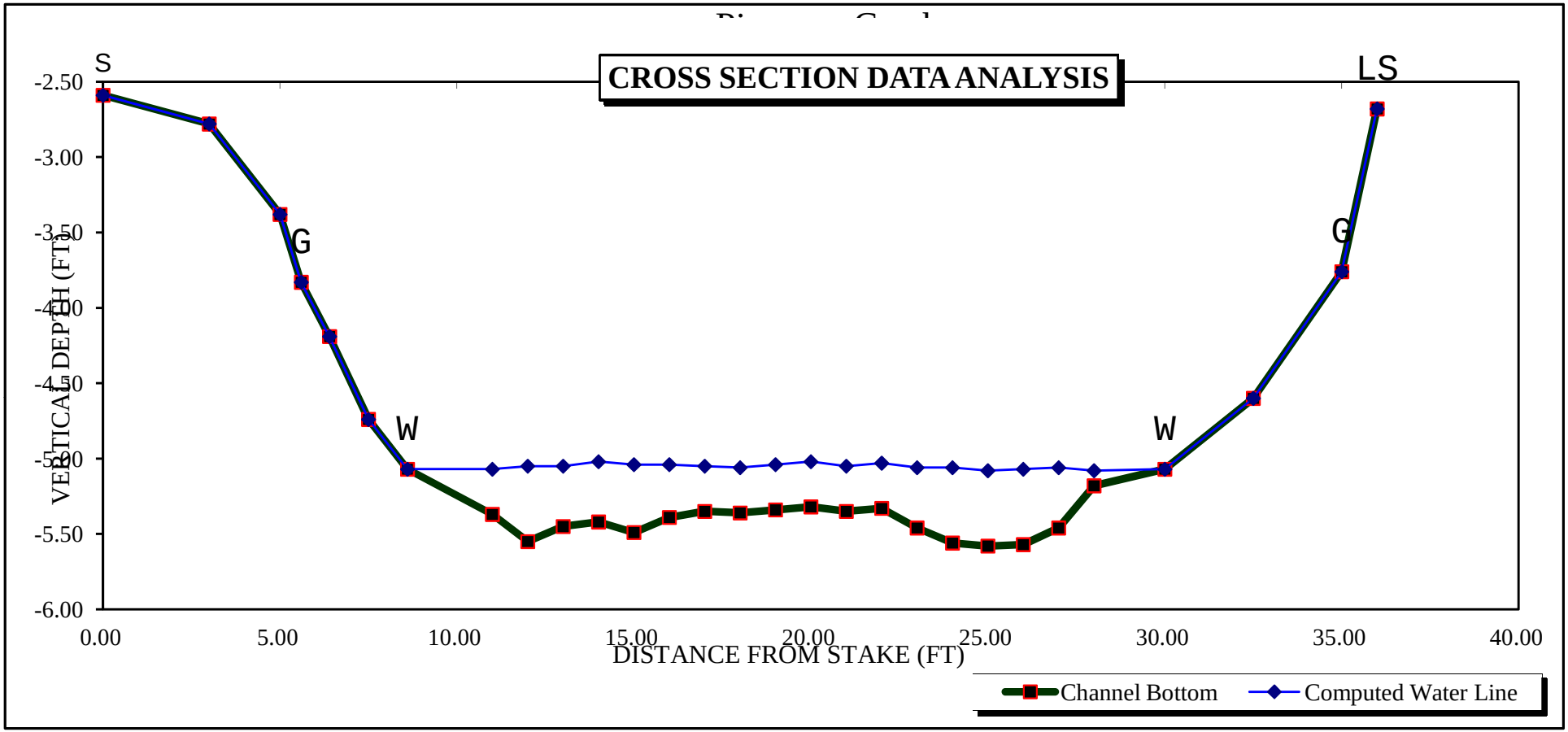
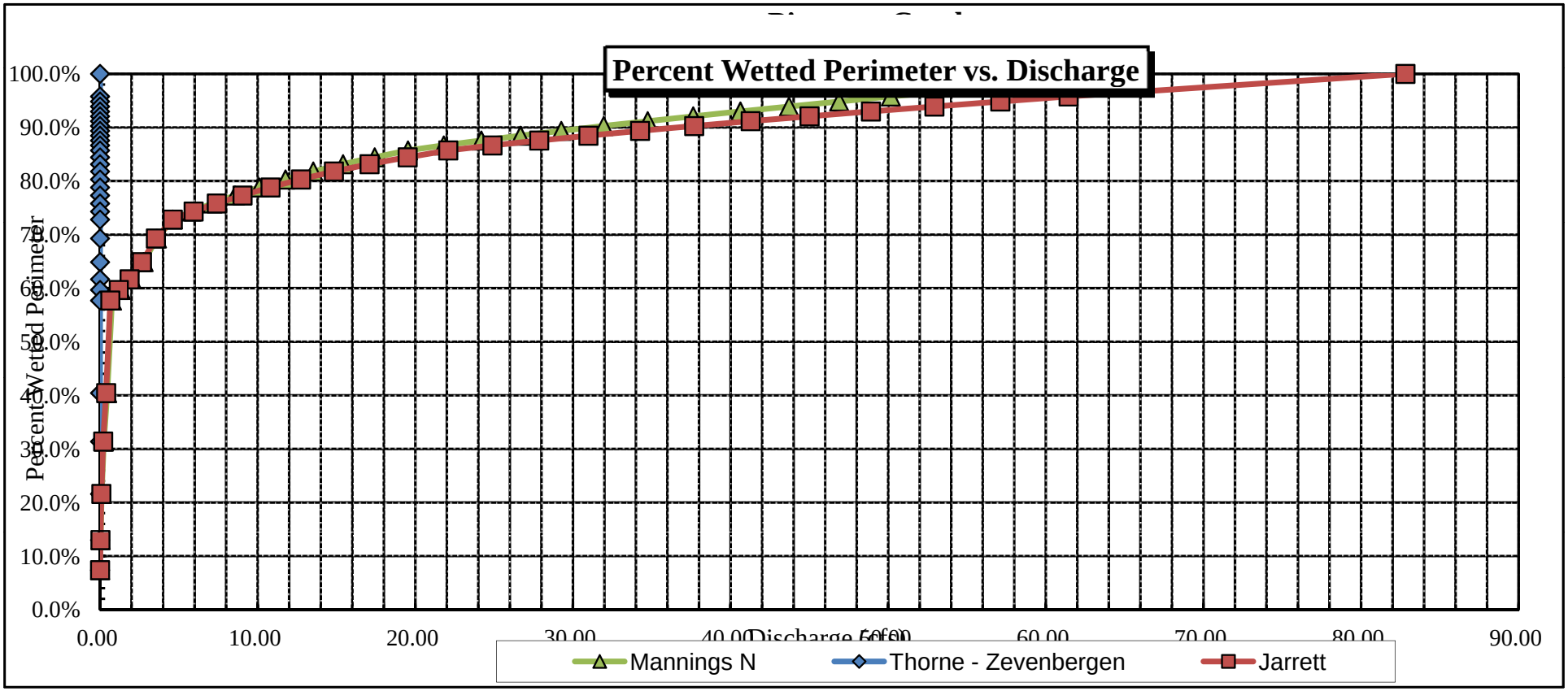
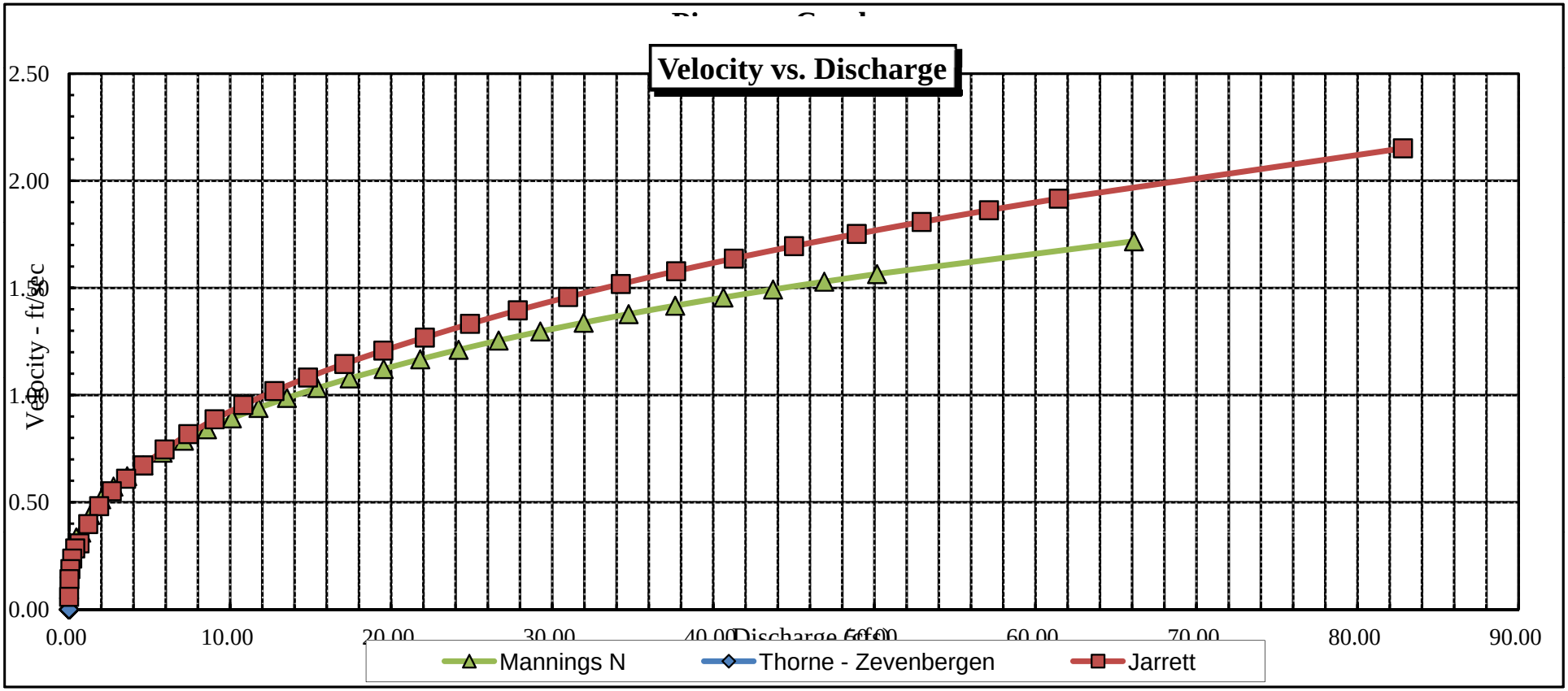
_____

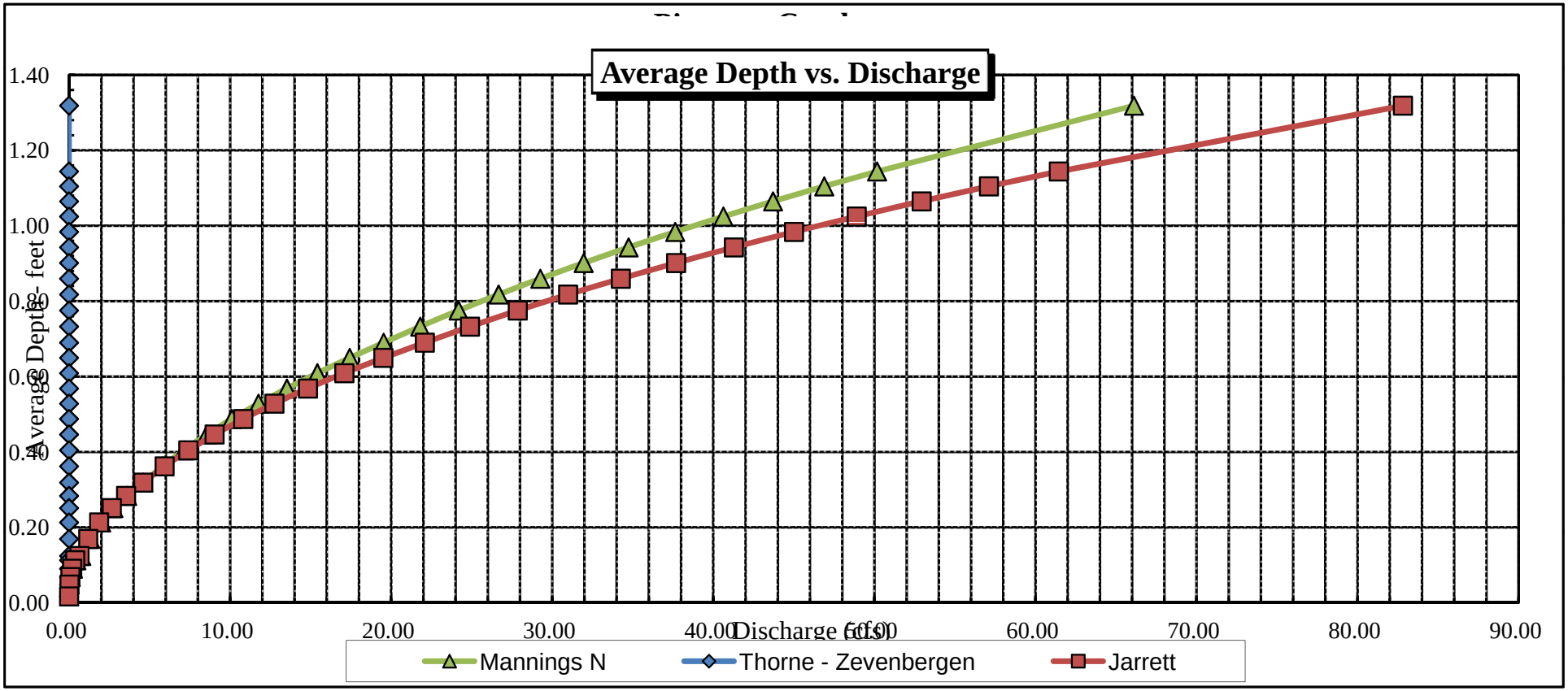
RECOMMENDATION BY: …….....……..... AGENCY..……..……..……..... DATE:.....……..……..……

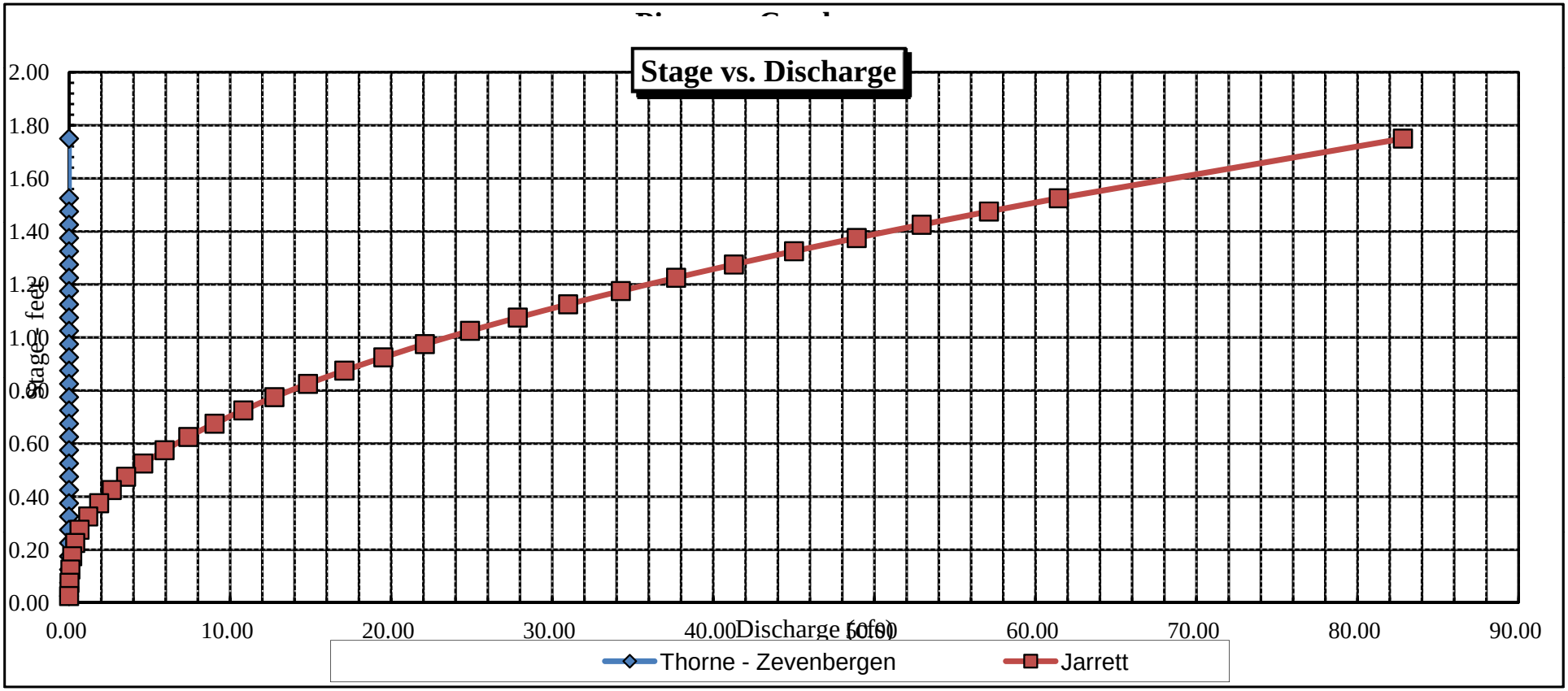
CWCB REVIEW BY: ..……..……..... DATE:.....……..……..…


CROSS SECTION DATA ANALYSIS
S
G
W
W
G
LS
-2.50
-3.00
-3.50
-4.00
-4.50
-5.00
-5.50
-6.00
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
10.00
20.00
30.00
40.00
Discharge (cfs)
60.00
70.00
80.00
90.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
2.50
2.00
1.50
1.00
0.50
0.00
0.00
10.00
20.00
30.00
40.00
60.00
70.00
80.00
90.00
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
20.00
30.00
40.00
Discharge cfs
60.00
70.00
80.00
90.00
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
Stage (feet)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

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: ¼ SECTION: NW NW | SECTION: 12 | TOWNSHIP: 1 (N)/S | RANGE: 97 E/W | PM: Sixth

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

MAP(S): USGS: White River City, CO | USFS:

SUPPLEMENTAL DATA

TAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES)/NO | METER TYPE: Marsh-McBirney

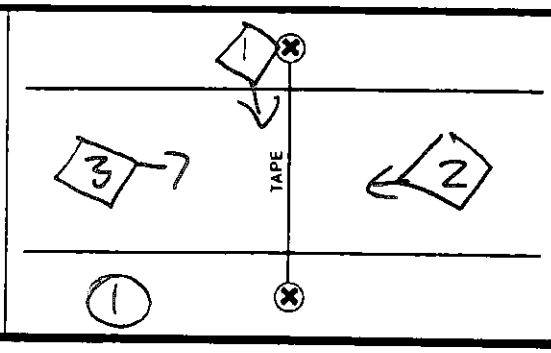
METER NUMBER: | DATE RATED: | CALIB/SPIN: ____ sec | TAPE WEIGHT: surveyed ____ lbs/foot | TAPE TENSION: surveyed ____ lbs

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)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0	
② WS Upstream	15.0	5.04
③ WS Downstream	15.0	5.07
SLOPE		

SKETCH



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

AQUATIC SAMPLING SUMMARY

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

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

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

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

stonefly, snails, mayfly

COMMENTS

Ph = 8.8
TDS > 2000
Stream Temp = 22°

Measurement taken after extremely dry water year.

DRM #ISF FD 1-85

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	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	0.0		2.59								
	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	Ø				Ø			
	11.0	1.2	5.37	0.30				0.03		0.36	0.011
	12.0	1.0	5.55	0.50				0.58		0.5	0.290
	13.0	|	5.45	0.40				1.10		0.4	0.440
	14.0	|	5.42	0.40				1.00		0.4	0.400
	15.0	|	5.49	0.45				0.78		0.45	0.350
	16.0	|	5.39	0.35				0.85		0.35	0.298
	17.0	|	5.35	0.30				0.85		0.30	0.255
	18.0	|	5.36	0.30				0.75		0.30	0.225
	19.0	|	5.34	0.30				0.89		0.30	0.267
	20.0	|	5.32	0.30				0.40		0.30	0.120
	21.0	|	5.35	0.30				0.93		0.30	0.279
	22.0	|	5.33	0.30				1.11		0.30	0.333
	23.0	|	5.46	0.40				0.83		0.40	0.332
	24.0	|	5.58	0.50				0.78		0.50	0.390
	25.0	|	5.58	0.50				0.78		0.50	0.390
	26.0	|	5.57	0.50				0.49		0.50	0.245
	27.0	V	5.46	0.40				0.00		0.40	Ø
	28.0	1.5	5.18	0.10				Ø		0.15	Ø
WE	30.0		5.07	Ø				Ø			
	32.5		4.60								4.40 cfs
GL	35.0		3.76								
LS	36.0		2.68								
TOTALS:	29										

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
XS LOCATION:	0.8 mi u/s fr County Rd 5 bridge
XS NUMBER:	2
DATE:	18-Sep-00
OBSERVERS:	R. Smith, C. Hollowed, P. Daggett
1/4 SEC:	NW SE
SECTION:	11
TWP:	1N
RANGE:	97W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	White River City 7.5'
USFS MAP:	0

SUPPLEMENTAL DATA

		*** NOTE ***
		Leave TAPE WT and TENSION
		at defaults for data collected
TAPE WT:	0.0106	with a survey level and rod
TENSION:	99999	

CHANNEL PROFILE DATA

SLOPE:	0.05667

INPUT DATA CHECKED BY: .....DATE.....

ASSIGNED TO: ….....……..…….....DATE.....

STREAM NAME: Piceance Creek
XS LOCATION: 0.8 mi u/s fr County Rd 5 bridge
XS NUMBER: 2

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
RS	0.00	2.25			0.00		0.00	0.00	0.0%
1 G	1.00	2.45			0.00		0.00	0.00	0.0%
	2.50	2.87			0.00		0.00	0.00	0.0%
	8.00	3.96			0.00		0.00	0.00	0.0%
	12.00	4.13			0.00		0.00	0.00	0.0%
	15.00	4.10			0.00		0.00	0.00	0.0%
	18.00	4.47			0.00		0.00	0.00	0.0%
W	19.00	4.56	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%
W	31.30	4.57	0.00	0.00	0.36		0.00	0.00	0.0%
	32.00	4.56			0.00		0.00	0.00	0.0%
	33.00	4.20			0.00		0.00	0.00	0.0%
	34.00	3.16			0.00		0.00	0.00	0.0%
1 LS & G	35.00	2.45			0.00		0.00	0.00	0.0%
TOTALS ----------					12.42	0.4 (Max.)	3.64	3.82	100.0%

Manning's n = 0.1490
Hydraulic Radius= 0.29317807

STREAM NAME: Piceance Creek
XS LOCATION: 0.8 mi u/s fr County Rd 5 bridge
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	3.64	3.67	0.9%
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	11.7%
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 mi u/s fr County Rd 5 bridge
XS NUMBER: 2

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	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

STREAM NAME: Piceance Creek
XS LOCATION: 0.8 mi u/s fr 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	%
MEASURED WATERLINE (WLm)=	4.57	ft
CALCULATED WATERLINE (WLc)=	4.57	ft
(WLm-WLc)/WLm * 100 =	-0.1	%
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=	0.149	
SLOPE=	0.05667	ft/ft
.4 * Qm =	1.5	cfs
2.5 * Qm=	9.5	cfs

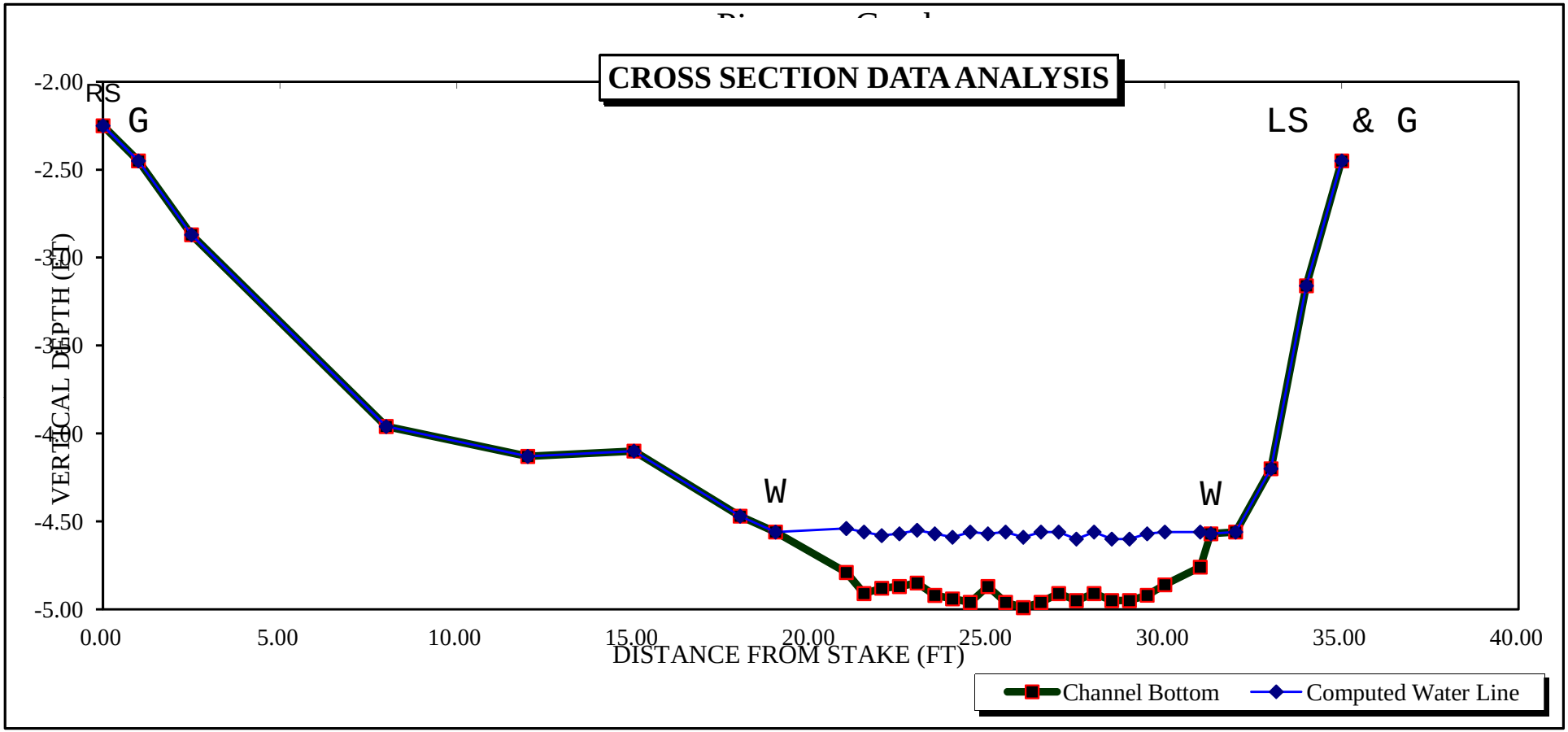
RECOMMENDED INSTREAM FLOW:
==========

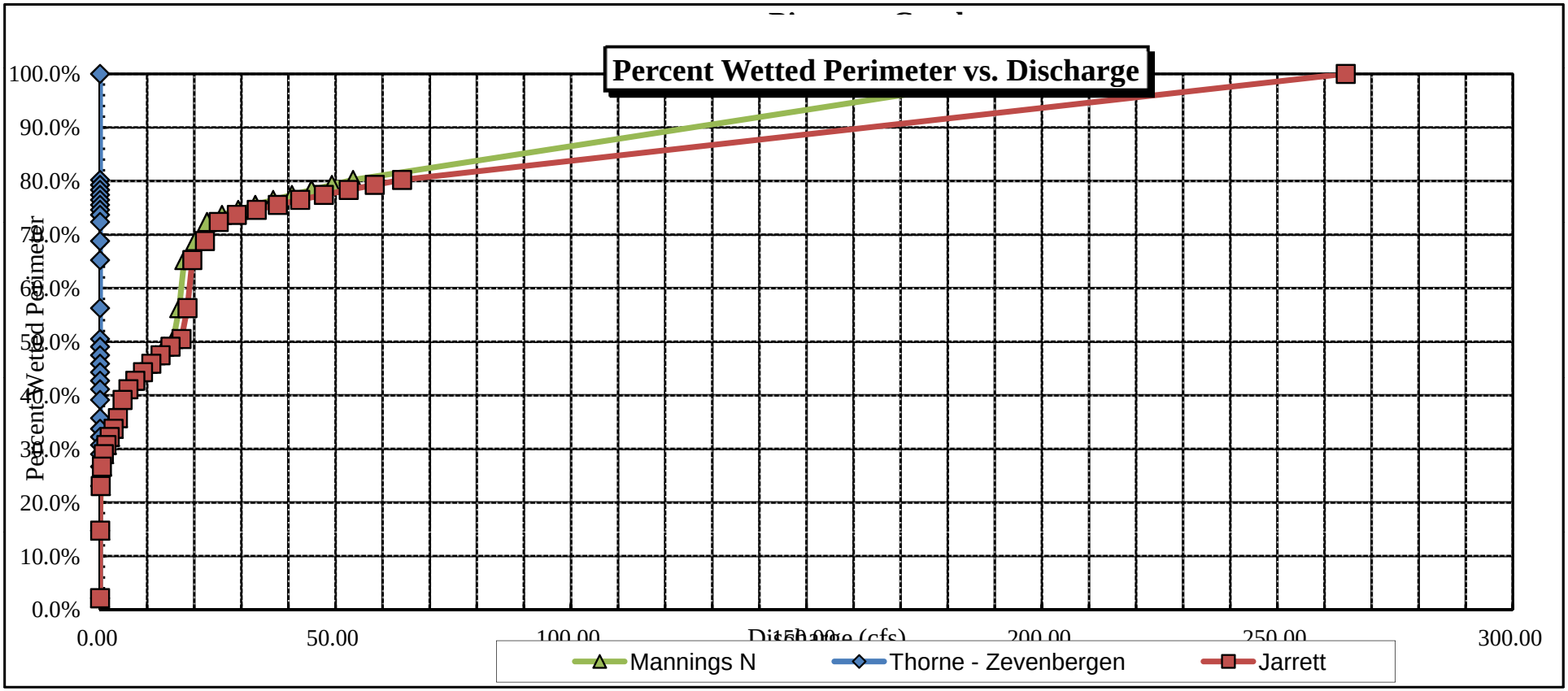
FLOW (CFS)	PERIOD
==========	========
_____	_____
_____	_____
_____	_____
_____	_____

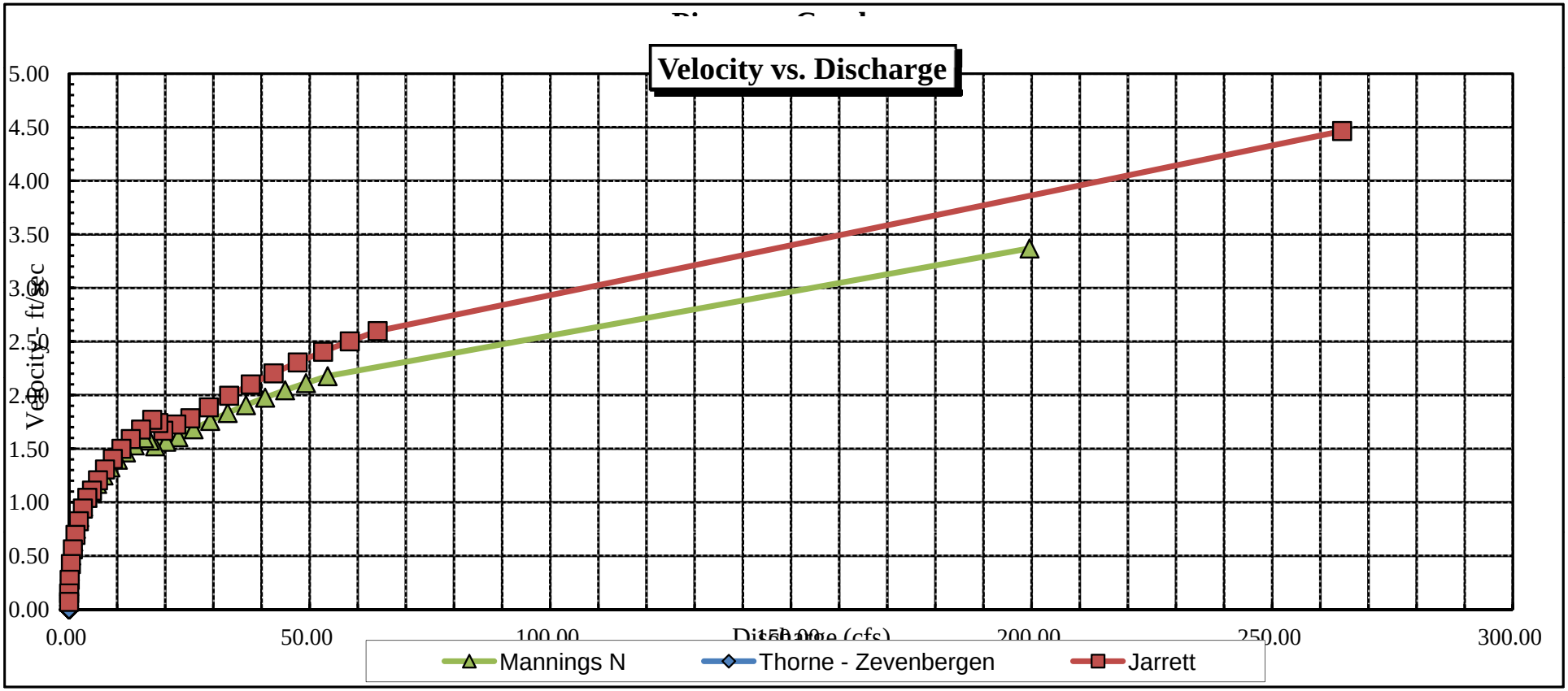
RATIONALE FOR RECOMMENDATION:
==========

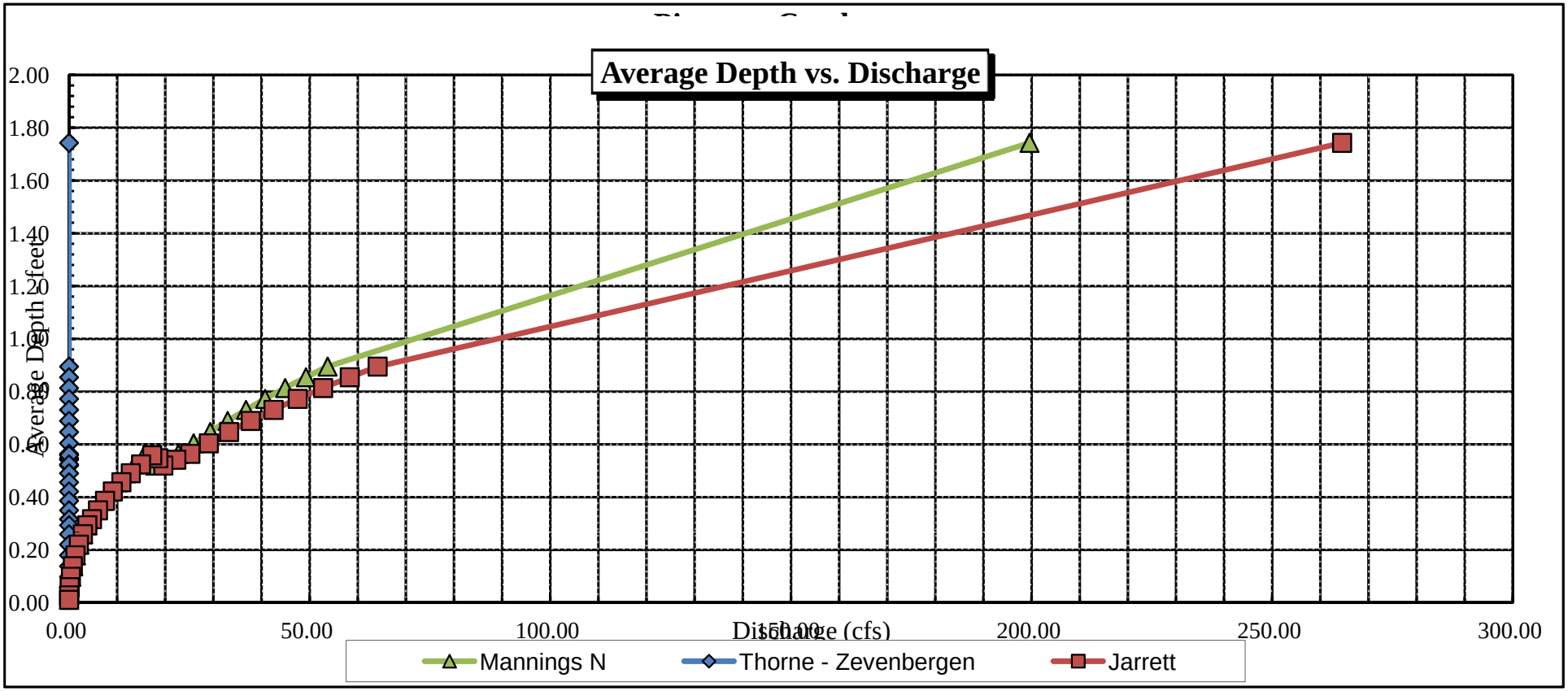
RECOMMENDATION BY: …….. AGENCY……..…….. DATE:.....……

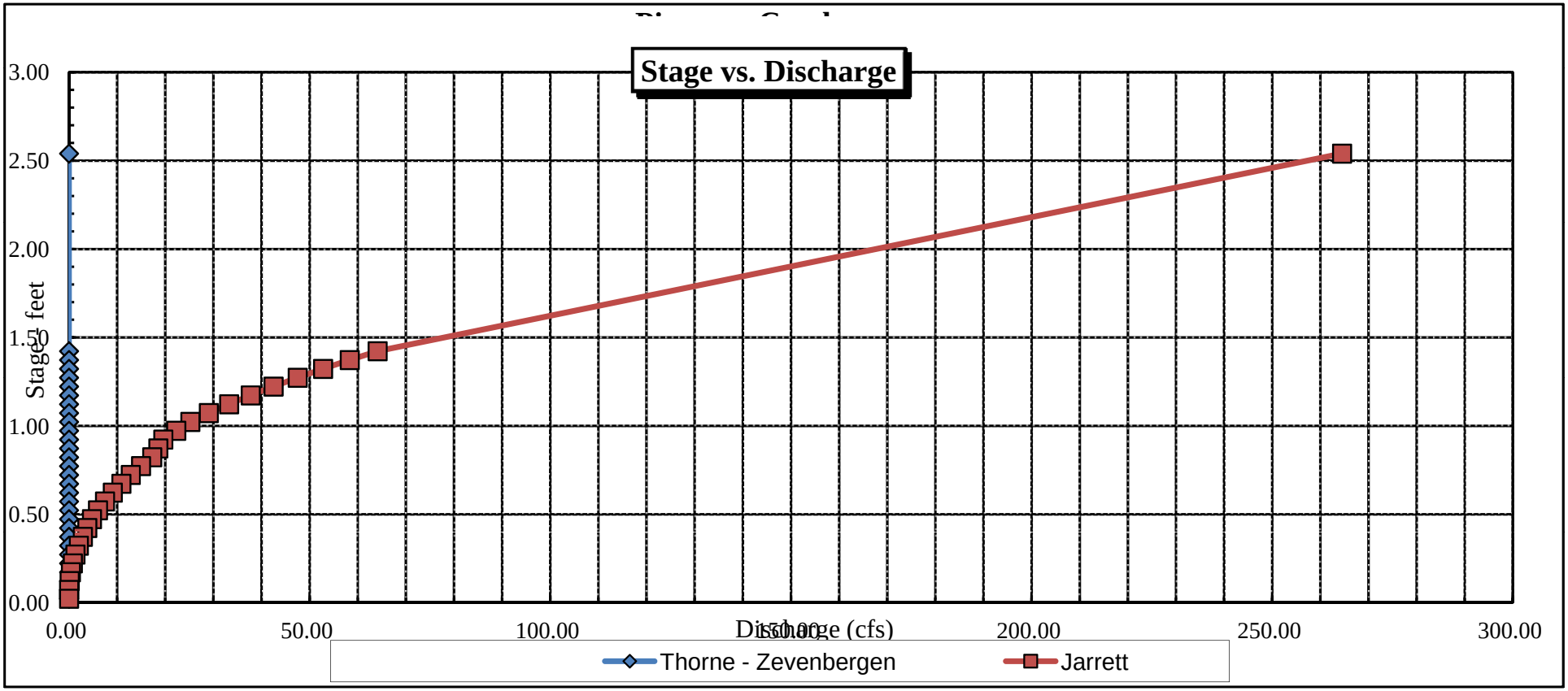
CWCB REVIEW BY: ……..…….. DATE:.....……


CROSS SECTION DATA ANALYSIS
RS
G
LS & G
W
W
-2.00
-2.50
-3.00
-3.50
-4.00
-4.50
-5.00
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth (feet)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Stage, feet
0.00
50.00
100.00
150.00
200.00
250.00
300.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Piceance Creek						CROSS-SECTION NO.: 2	
CROSS SECTION LOCATION: 0.6 mile upstream from County Rd. 5 bridge crossing							
DATE: 9-18-00	OBSERVERS: R. Smith, C. Hollowed, P. Daggett						
LEGAL DESCRIPTION	¼ SECTION: NW SE	SECTION: 11	TOWNSHIP: 1 (N)/S	RANGE: 97 E(W)	PM: Sixth		
COUNTY: Rio Blanco	WATERSHED: White	WATER DIVISION: 5	DOW WATER CODE: 25343				
MAP(S): USGS: White River City, CO							
USFS:							

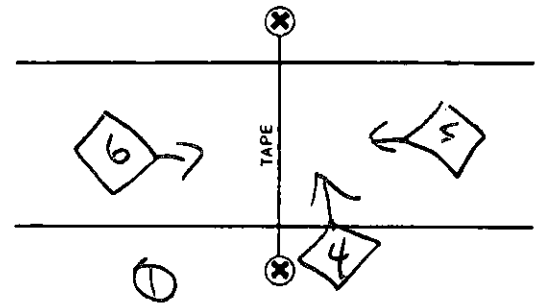
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: YES / NO	METER TYPE: Marsh-McBirney			
METER NUMBER:	DATE RATED:	CALIB/SPIN: surveyed ____ sec	TAPE WEIGHT: surveyed ____ lbs/foot	TAPE TENSION: surveyed ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel to 8" slate 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	surveyed
(X) Tape @ Stake RB	0.0	surveyed
(1) WS @ Tape LB/RB	0.0	4.57 / 4.56
(2) WS Upstream	15.0	4.50
(3) WS Downstream	15.0	4.67
SLOPE	0.17 = 30.0	

SKETCH



LEGEND: Stake (X); Station (1); Photo (1); Direction of Flow

AQUATIC SAMPLING SUMMARY

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

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

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

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

stonefly, snails, leeches, mayfly

COMMENTS

Ph = 8.7
Temp = 22°
TDS > 2000

Measurement taken after extremely dry water year - calls on creek.

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Piceance Creek | CROSS-SECTION NO: 2 | DATE: 9-18-00 | SHEET __ OF __

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: 0.3 ft | TIME: 4:45 pm

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	0.0		2.25								
GL	1.0		2.45								
	2.5		2.87								
	8.0		3.96								
	12.0		4.13								
	15.0		4.10								
	18.0		4.47								
WE	19.0		4.56	Ø							
	21.0	0.75	4.79	.25				Ø			Ø
	21.5	0.75	4.91	.35				Ø			Ø
	22.0	0.5	4.88	.30				1.06		0.26	0.276
	22.5		4.87	.30				0.96		0.15	0.144
	23.0		4.85	.30				1.14		0.15	0.171
	23.5		4.92	.35				1.58		0.15	0.237
	24.0		4.94	.35				1.11		0.175	0.194
	24.5		4.96	.40				1.06		0.175	0.186
	25.0		4.87	.30				1.30		0.20	0.260
	25.5		4.96	.40				0.95		0.15	0.145
	26.0		4.99	.40				1.18		0.20	0.236
	26.5		4.96	.40				1.61		0.20	0.322
	27.0		4.91	.35				1.76		0.20	0.352
	27.5		4.95	.35				1.68		0.175	0.294
	28.0		4.91	.35				1.33		0.175	0.233
	28.5		4.95	.35				1.42		0.175	0.249
	29.0		4.95	.35				1.31		0.175	0.230
	29.5	↓	4.92	.35				0.60		0.175	0.105
	30.0	0.75	4.86	.30				0.91		0.175	0.159
	31.0	0.65	4.76	.20				0.48		0.225	0.108
WE	31.3		4.57	Ø				0.07		0.130	0.009
	32.0		4.56					Ø			
	33.0		4.20								
	34.0		3.16								
LS+GL	35.0		2.45								
TOTALS	33										3.91 cfs

End of Measurement | Time: 5:10p | Gage Reading: 0.3 ft | CALCULATIONS PERFORMED BY: | CALCULATIONS CHECKED BY:

LEVEL 2 - STREAM SURVEY (2 PASS REMOVAL)

SAVE | PRINT | PRINT | DONE

Water: Piceance Creek
Location: Gauging station to upstream of bridge near monitor
Drainage: White River
Crew: "G. Fraser, A. Nordick"
Notes: Exploratory sampling using 1 LR-24 backpack shocker.

Date: 4/14/2011
Water Code: 25343
UTM Zone: 12T
UTM X: 735657
UTM Y: 4440166
Station Length (ft): 300
Station Width (ft): 16.2

SUMMARY INFORMATION

Species	# Caught	% Catch	Min Size	Capture P	#/Mile	95% CI	#/Acre	95% CI	Lbs/Acre	95% CI
FMS	8	53	50	1.00	141	0	72	0	14	0
FMW	0	0	150	1.00	NaN	NaN	NaN	NaN	NaN	NaN
LOC	4	27	119	1.00	70	0	36	0	22	0
SPD	3	20	3	1.00	53	0	27	0	0	0

LENGTH FREQUENCY RECORD (cm)

Species	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22	22-24	24-26	26-28	28-30	30-32	32-34	34-36	36-38	38-40	40-42	42-44	44-46	46-48	48-50	50-52	52-54	54-56	56-58	58-60	>60
FMS			3	2			1						1							1											
FMW		1	1																												
LOC							1							2								1									
SPD			2	1																											

LEVEL 2 - STREAM SURVEY (2 PASS REMOVAL)

SAVE | PRINT | PRINT | DONE

Water: Piceance Creek
Location: "Square S campground, starting at #1PICE temp monitor,
Drainage: White River
Crew: "G. Fraser, A. Nordick"
Notes: "E.C.=2080 microsiemens, Water Temp=18.8C, E.F. Time=2239, 2080" Exploratory sampling using 2 LR-24 backpack shockers.

Date: 6/23/2011
Water Code: 25343
UTM Zone: 12S
UTM X: 733402
UTM Y: 4427467
Station Length (ft): 1000
Station Width (ft): 15.1

SUMMARY INFORMATION

Species	# Caught	% Catch	Min Size	Capture P	#/Mile	95% CI	#/Acre	95% CI	Lbs/Acre	95% CI
FMS	8	73	50	1.00	42	0	23	0	43	0
MOS	2	18	60	1.00	11	0	6	0	0	0
SPD	1	9	3	1.00	5	0	3	0	0	0

LENGTH FREQUENCY RECORD (cm)

Species	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22	22-24	24-26	26-28	28-30	30-32	32-34	34-36	36-38	38-40	40-42	42-44	44-46	46-48	48-50	50-52	52-54	54-56	56-58	58-60	>60
FMS												1			1									2	2	2					
MOS				1				1																							
SPD			1																												

LEVEL 2 - STREAM SURVEY (2 PASS REMOVAL)

SAVE | PRINT | PRINT | DONE

Water: Piceance Creek
Location: First bridge upstream of White River confluence
Drainage: White River
Crew: "G. Fraser, A. Nordick, A. Gipson, J.Lamb"
Notes: " E.F. time=1083, 1063 Exploratory sampling using 2 LR-24 backpack shockers"

Date: 6/8/2011
Water Code: 25343
UTM Zone: 12T
UTM X: 735728
UTM Y: 444016
Station Length (ft): 550
Station Width (ft): 19.6

SUMMARY INFORMATION

Species	# Caught	% Catch	Min Size	Capture P	#/Mile	95% CI	#/Acre	95% CI	Lbs/Acre	95% CI
FMS	5	83	50	1.00	48	0	20	0	35	0
SPD	1	17	3	1.00	10	0	4	0	0	0

LENGTH FREQUENCY RECORD (cm)

Species	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	20-22	22-24	24-26	26-28	28-30	30-32	32-34	34-36	36-38	38-40	40-42	42-44	44-46	46-48	48-50	50-52	52-54	54-56	56-58	58-60	>60
FMS				1																	1		1		1	1					
SPD					1																										

WaterId	WaterName	Location	Station	Elevation	SampleDate	StationLength	AvgWidth	TotalCatch	TotalWeight	TotalEffort	EffortMetric	SpeciesCode
25343	Piceance Creek	750 M BLW Black Sulphur Creek	WR0422	6134	8/4/2006			80	20918.5	2	PASS	FMS
25343	Piceance Creek	750 M BLW Black Sulphur Creek	WR0422	6134	8/4/2006			80	20918.5	2	PASS	LOC
25343	Piceance Creek	750 M BLW Black Sulphur Creek	WR0422	6134	8/4/2006			80	20918.5	2	PASS	MOS
25343	Piceance Creek	750 M BLW Black Sulphur Creek	WR0422	6134	8/4/2006			80	20918.5	2	PASS	RBT
25343	Piceance Creek	750 M BLW Black Sulphur Creek	WR0422	6134	8/4/2006			80	20918.5	2	PASS	RXN
25343	Piceance Creek	750 M BLW Black Sulphur Creek	WR0422	6134	8/4/2006			80	20918.5	2	PASS	SPD
25343	Piceance Creek	ABV CO RD 24	WR0028	6075	7/21/1993	150		72		1	PASS	MOS
25343	Piceance Creek	ABV CO RD 24	WR0028	6075	7/21/1993	150		72		1	PASS	SPD
25343	Piceance Creek	ABV Bear Gulch On Piceance SWA (EMAP WCOP 04-R010)	WR0287	6008	8/3/2004	656.17	16.4	127		1	PASS	MOS
25343	Piceance Creek	ABV Bear Gulch On Piceance SWA (EMAP WCOP 04-R010)	WR0287	6008	8/3/2004	656.17	16.4	127		1	PASS	SPD
25343	Piceance Creek	ABV Bear Gulch On Piceance SWA (EMAP WCOP 04-R010)	WR0287	6008	11/14/2005	408	17	51	11987	2	PASS	FMS
25343	Piceance Creek	ABV Bear Gulch On Piceance SWA (EMAP WCOP 04-R010)	WR0287	6008	11/14/2005	408	17	51	11987	2	PASS	MOS
25343	Piceance Creek	ABV Bear Gulch On Piceance SWA (EMAP WCOP 04-R010)	WR0287	6008	11/14/2005	408	17	51	11987	2	PASS	SPD
25343	Piceance Creek	250 M ABV Dry Fk Piceance Creek	WR0306	5890	8/3/2001			32		1	PASS	SPD
25343	Piceance Creek	250 M ABV Dry Fk Piceance Creek	WR0306	5890	8/1/2006	458	13.6	261	2248	2	PASS	FMS
25343	Piceance Creek	250 M ABV Dry Fk Piceance Creek	WR0306	5890	8/1/2006	458	13.6	261	2248	2	PASS	MOS
25343	Piceance Creek	250 M ABV Dry Fk Piceance Creek	WR0306	5890	8/1/2006	458	13.6	261	2248	2	PASS	SPD
25343	Piceance Creek	1.75 MI S On CO RD 5 From Co Rd 5 & Piceance Creek Crossing	WR0476	5822	8/1/2006	400	12.9	95	303	2	PASS	SPD
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	7/19/2000	400	10	92		1	PASS	FMW
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	7/19/2000	400	10	92		1	PASS	MOS
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	7/19/2000	400	10	92		1	PASS	SPD
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	6/8/2011	1190	19.6	36	10157	1	PASS	FMS
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	6/8/2011	1190	19.6	36	10157	1	PASS	FMW
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	6/8/2011	1190	19.6	36	10157	1	PASS	LOC
25343	Piceance Creek	BLW Gauging station to bridge	WR0004	5738	6/8/2011	1190	19.6	36	10157	1	PASS	SPD
25343	Piceance Creek	800 M BLW CO RD 5	WR0228	5719	7/21/1993	250		0		1	PASS	

CommonName	SpeciesCatch	Threshold	NumBlwThreshold	PercentCatch	SpeciesWeight	MeanWeight	WeightRange	AvgWr	MeanLength	NumberPerMile	PSD	SRSD	QRSD	PRSD	MRSD	TRSD
FLANNELMOUTH SUCKER	17	150	0	21.25	17238	1014	42 - 1508	104.7	451.12							
BROWN TROUT	1	120	0	1.25	886	886	886 - 886	73.71	484		100					1
MOUNTAIN SUCKER	27	0	0	33.75	756.5	15.8	6 - 43		112.04							
RAINBOW TROUT	2	200	0	2.5	502	251	216 - 286	103.3	273		0	100				
RAINBOW X CUTTHROAT HYBRID	5	150	0	6.25	2734	349.6	100 - 542	101.3	310.2		0	100				
SPECKLED DACE	28	0	0	35	820	4.21	2 - 10		75							
MOUNTAIN SUCKER	13	0	0	18.06					114.62	457.6015						
SPECKLED DACE	59	0	0	81.94					74.75	2076.8066						
MOUNTAIN SUCKER	8	0	0	6.3					93	64.3734						
SPECKLED DACE	119	0	0	93.7					69.13	957.5538						
FLANNELMOUTH SUCKER	14	150	2	27.45	16662	941	570 - 1240	109.7	405.43	190.8817						
MOUNTAIN SUCKER	22	0	0	43.14	1754	29.27	13 - 56		131.91	352.6458						
SPECKLED DACE	15	0	0	29.41	159	3.4	2 - 6		68.27	737.6445						
SPECKLED DACE	32	0	0	100												
FLANNELMOUTH SUCKER	5	150	3	1.92	1721	847.5	845 - 850	89.5	242.8	57.6422						
MOUNTAIN SUCKER	5	0	0	1.92	141	20.2	14 - 27		124.8	80.6991						
SPECKLED DACE	251	0	0	96.17	866	3.45	1 - 12		66.69	2421.3449						
SPECKLED DACE	95	0	0	100	331	3.48	1 - 13		68.4	1393.5347						
FATHEAD MINNOW	1	0	0	1.09						13.1999						
MOUNTAIN SUCKER	1	0	0	1.09						13.1999						
SPECKLED DACE	90	0	0	97.83						1187.9933						
FLANNELMOUTH SUCKER	16	150	3	44.44	149024	715.23	46 - 1260	103.7	336.31	70.9915						
FATHEAD MINNOW	3	0	0	8.33	39	4.33	4 - 5		64.33	13.3109						
BROWN TROUT	2	120	0	5.56	1534	383.5	47 - 720	91.65	295.5	8.8739	50	50			50	
SPECKLED DACE	15	0	0	41.67	1185	5.27	1 - 10		72.6	66.5546						
	0		0													

Surveyors	DataSource
L.MARTIN AND CREW	Northwest Region Fisheries Management
L.MARTIN AND CREW	Northwest Region Fisheries Management
L.MARTIN AND CREW	Northwest Region Fisheries Management
L.MARTIN AND CREW	Northwest Region Fisheries Management
L.MARTIN AND CREW	Northwest Region Fisheries Management
L.MARTIN AND CREW	Northwest Region Fisheries Management
WMS, HORSTMN	Northwest Region Fisheries Management
WMS, HORSTMN	Northwest Region Fisheries Management
ACKERMAN, VIOSCA, QUINN, KUNDTZ	CDOW Water Quality
ACKERMAN, VIOSCA, QUINN, KUNDTZ	CDOW Water Quality
ELMBLAD, MCKENNA, TALLEY	Northwest Region Fisheries Management
ELMBLAD, MCKENNA, TALLEY	Northwest Region Fisheries Management
ELMBLAD, MCKENNA, TALLEY	Northwest Region Fisheries Management
DAVE LANGLOIS	Scientific Collections Permit
ELMBLAD, KRIZMAN, RICE, BOUGH	Northwest Region Fisheries Management
ELMBLAD, KRIZMAN, RICE, BOUGH	Northwest Region Fisheries Management
ELMBLAD, KRIZMAN, RICE, BOUGH	Northwest Region Fisheries Management
ELMBLAD, KRIZMAN, RICE, BOUGH	Northwest Region Fisheries Management
NOT LISTED	CDOW Water Quality
NOT LISTED	CDOW Water Quality
NOT LISTED	CDOW Water Quality
Amanda G, Jesse L, Greg F, Andrew N	Species Conservation
Amanda G, Jesse L, Greg F, Andrew N	Species Conservation
Amanda G, Jesse L, Greg F, Andrew N	Species Conservation
Amanda G, Jesse L, Greg F, Andrew N	Species Conservation
WMS, HORSTMN	elmbladb