United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Colorado State Office
2850 Youngfield Street
Lakewood, Colorado 80215-7210
www.co.blm.gov

In Reply Refer To:
7250 (CO-930)

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 update its instream flow recommendation for Yellow Creek, located in Water Division 6. BLM made a previous recommendation on this stream in a letter dated December 22, 2014. This updated recommendation incorporates additional data collected on Yellow Creek during 2015.

Location and Land Status. Yellow Creek is tributary to the White River approximately 27 miles northwest of Meeker, CO. This recommendation covers two stream reaches. The first reach begins at the confluence with Barcus Creek and extends downstream to the confluence with Lambert Springs, located in the SE ¼ NE ¼, Section 16, T2N R98W, Sixth P.M. The second reach begins at the confluence with Lambert Spring and extends to the confluence with the White River.

The first reach is 3.72 miles in length and is located entirely on public lands. The second reach is 3.45 miles in length. Of this length, 2.29 miles are on public lands and 1.16 miles are on private lands.

Biological Summary. Yellow Creek is a small, moderate gradient stream with a variable substrate size and a stable channel. Water quality, food sources and physical habitat characteristics are suitable for native species. Because of the small stream size, protection of flows is extremely important for continued existence of the fishery and riparian community.

Fishery surveys indicate that the creek supports self-sustaining populations of speckled dace and native mountain suckers, with the density of mountain suckers slightly exceeding densities of speckled dace. The creek also provides habitat for northern leopard frogs. It is important to note that both mountain suckers and northern leopard frog appear on BLM's sensitive species list.

The riparian community is in stable condition and comprised primarily of willows and grasses. Riparian community health has been impaired by historic grazing practices and invasion of tamarisk. The BLM is taking actions to modify management and place the riparian community on

an upward trend.

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

Reach 1 – Confluence with Barcus Creek to confluence with Lambert Spring

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)
09/09/2004 #1	0.49 cfs	5.18 feet	0.32 cfs	Out of confidence interval
09/09/2004 #2	0.57 cfs	4.58 feet	0.44 cfs	Out of confidence interval
09/27/2011 #3	0.39 cfs	7.50 feet	Out of confidence interval	Out of confidence interval
04/23/2015 #1	0.83 cfs	4.90 feet	0.36 cfs	0.77 cfs
04/23/2015 #2	0.94 cfs	6.00 feet	0.47 cfs	0.86 cfs
		Averages:	0.40 cfs	0.82 cfs

Reach 2 – Confluence with Lambert Spring to confluence with White River

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)
09/27/2011 #1	1.19 cfs	12.19 feet	1.18 cfs	Out of confidence interval
09/27/2011 #2	1.04 cfs	8.56 feet	0.91 cfs	1.65 cfs
07/07/2015 #1	1.31 cfs	10.5 feet	1.58 cfs	2.15 cfs
07/07/2015 #2	1.22 cfs	9.6 feet	1.20 cfs	1.70 cfs
		Averages:	1.22 cfs	1.83 cfs

The BLM's analysis of this data, coordinated with the Division of Parks and Wildlife, indicates that the following flows are needed to protect the fishery and natural environment to a reasonable degree:

Reach 1 – Confluence with Barcus Gulch to confluence with Lambert Spring

0.82 cubic feet per second is recommended for the snowmelt runoff period from March 1 through June 15. This recommendation is driven by the average depth criteria.

0.40 cubic feet per second is recommended from June 16 through February 28. This

recommendation is driven by either the average depth criteria or the average velocity criteria, depending upon the cross section geometry. Many portions of this reach have a high width-to-depth ratio, so it is important to maintain sufficient depth for fish passage and overwintering of fish. Since this creek is very small and has limited physical habitat, meeting the wetted perimeter and depth criteria will ensure that the limited usable habitat is available to the native fish population.

Reach 2 – Confluence with Lambert Spring to confluence with White River

1.80 cubic feet per second is recommended for the snowmelt runoff period from March 1 through June 15. Each surveyed reach had distinctly different hydraulic characteristics, so this recommendation is driven by both the average velocity and wetted perimeter criteria. Since this creek is very small and has limited physical habitat, it is important to meet all three instream flow criteria during the spawning season to insure the survival of the native fish population.

1.20 cubic feet per second is recommended for the remainder of year, from June 16 through February 28. This recommendation is driven by a variety of the instream flow criteria, since each surveyed reach had distinctly different hydraulic characteristics. Many portions of this reach have a high width-to-depth ratio, so it is important to maintain sufficient depth for fish passage and overwintering of fish. This flow rate also protects the inflow to the creek from Lambert Spring, which is critical in maintaining water quality and quantity that is capable of supporting a native fishery.

Water Availability. The BLM is not aware of any decreed surface diversions within this reach. However, there are numerous decreed diversions, reservoirs, springs and wells located upstream on Yellow Creek and its tributaries. A high percentage of these water rights are in conditional status. It is important to note that Yellow Creek has dry portions upstream from the reaches recommended in this letter, so diversions in upstream locations will not have a direct relationship to the flow rate in downstream locations. Specifically, BLM is aware of the following absolute water rights in upstream locations:

Lathan Ditch – 2.0 cfs – irrigation use
WH Violett Ditch – 5.0 cfs – irrigation use
Wilson Ditch – 2.4 cfs – irrigation use

The BLM recommends using United States Geological Survey Gage 09306255, Yellow Creek near White River, as an indicator of water availability. This gage has a long period of record, and indicates that water is available for the proposed appropriations.

Relationship to Management Plans. The White River Field Office Resource Management Plan identifies management of streams supporting native fish species as a priority for the BLM. The plan specifies that the 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.

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

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

Sincerely,

Brian St. George
Deputy State Director
Resources and Fire

4 Enclosures

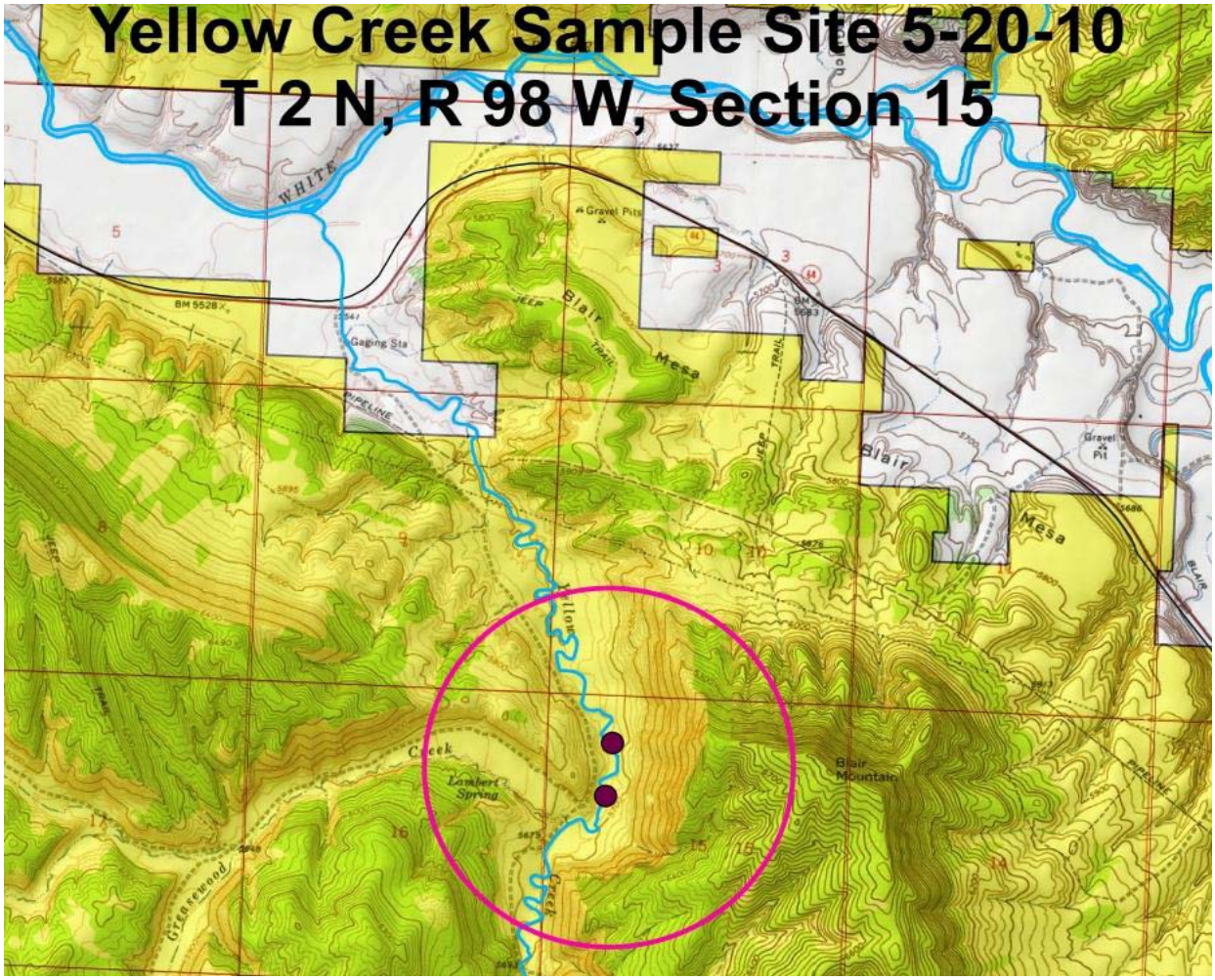
cc: Keith Sauter, White River Field Office
Kent Walter, White River Field

White River Field Office Stream Surveys
May 2010

Yellow Creek - Water Code #25242

On May 11, 2010 Yellow Creek, located on lands managed by the White River Field Office, was sampled just below the confluence with Barcus Creek. On May 20, 2010, the creek was sampled on BLM lands located approximately 2.5 miles above the confluence with the White River (See Map). Sampling was conducted to determine fishery status and to look specifically for the presence of resident mountain suckers. The site was sampled using a backpack electroshocker and a seine. Personnel present were Tom Fresques, Kristy Wallner, and Gregor Dekleva, BLM, and Jenn Logan, Dan, and Jesse with Colorado Division of Wildlife.

At the Barcus Creek site only native speckled dace were collected or seen. At the lower site, speckled dace and two mountain sucker were collected. In addition, northern leopard frogs were observed and appear common throughout the drainage. A population estimate was not completed.



STREAM SURVEY FISH SAMPLING FORM

Water Yellow Creek **H_2O Code** 25242 **Date** 5/11& 20/2010

Gear BPE **Effort** _____ **Station #** 1 **Pass #** 1

Crew Logan, Thompson, Fresques, Dan, Jesse **Drainage** White River **Location** GPS

PASS	SPECIES	LENGTH	WEIGHT		PASS	SPECIES	LENGTH	WEIGHT
1	SPD	100's						
	MOS							
	MOS							

GPS LOCATION:

STREAM WIDTH: _____ ft. REACH: _____ ft.

CONDUCTIVITY: ELECTROSHOCKER SETTINGS :

NOTES: Cows in riparian; alteration high
Sedges common
C/E Channel type
Mountain suckers in 2006 - Lori Martin

Several northern leopard frogs seen.

Yellow Creek – Seine Site

Northern leopard frog

Yellow Creek Shocking Site above beaver ponds

Mountain sucker

Mountain sucker

Discussion:

Yellow Creek was murky at the beaver pond seine site and mostly clear with a decent mix of runs and riffle habitats with a few decent pools along the stream portions located immediately upstream of the uppermost beaver dam. Deep pool habitat appears to be limiting other than the beaver ponds. The stream was in good condition with good bank stability and proper width to depth ratios. The stream appeared to be a Rosgen C channel type with good sinuosity and low gradient with a wide floodplain. Riparian vegetation consisted of herbaceous species including sedges and rush. Woody species were predominantly salt ceder (tamarisk) with a few willows noted. It appeared that many of the tamarisk were in poor condition due likely to beetle control.

The only fish species collected were speckled dace and mountain sucker, both native species. Fish were only collected during electrofishing efforts as no fish were collected during two seine hauls. In addition, the site contained a robust population of northern leopard frogs. Based on limited sampling, it does not appear that Yellow Creek within the BLM reach is an important tributary stream with regard to spawning habitat for other native species (flannelmouth sucker, bluehead sucker, and roundtail chub) as no adult or young of these species were seen or collected. It is not readily evident what is limiting the mountain sucker population. It could be that drought impacted stream flows and diminished the population, particularly the severe drought of 2002.

Recommendations:

- Determine the extent of the resident frog population
- Periodically sample/monitor the creek to assess fishery composition.
- If possible, look into connectivity to the White River with regard to diversions, barriers, etc. that might impede seasonal use of the creek by other native fish species.
- Perhaps more extensive sampling of the beaver ponds may help to determine if more extensive use of these habitats is occurring by native mountain suckers.

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

LOCATION INFORMATION

STREAM NAME:	Yellow Creek
XS LOCATION:	Betw Stinking Spg & Lambert Spg
XS NUMBER:	1
DATE:	23-Apr-15
OBSERVERS:	R. Smith, K. Sauter
1/4 SEC:	SE
SECTION:	16
TWP:	2N
RANGE:	98W
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:	0.0075

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

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

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spg & Lambert Spg
XS NUMBER: 1

DATA POINTS= 20

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	8.00			0.00		0.00	0.00	0.0%
		1.40	8.40			0.00		0.00	0.00	0.0%
		3.00	9.28			0.00		0.00	0.00	0.0%
1	G	4.50	9.54			0.00		0.00	0.00	0.0%
		5.50	10.04			0.00		0.00	0.00	0.0%
	W	6.10	10.18	0.00	0.00	0.00		0.00	0.00	0.0%
		6.40	10.38	0.20	0.38	0.36	0.20	0.06	0.02	2.7%
		6.70	10.38	0.20	1.69	0.30	0.20	0.06	0.10	12.2%
		7.00	10.38	0.20	1.14	0.30	0.20	0.06	0.07	8.2%
		7.30	10.38	0.20	1.52	0.30	0.20	0.06	0.09	10.9%
		7.60	10.38	0.20	1.48	0.30	0.20	0.06	0.09	10.6%
		7.90	10.43	0.25	1.46	0.30	0.25	0.08	0.11	13.1%
		8.20	10.43	0.25	1.52	0.30	0.25	0.08	0.11	13.7%
		8.50	10.43	0.25	1.43	0.30	0.25	0.08	0.11	12.9%
		8.80	10.48	0.30	1.45	0.30	0.30	0.09	0.13	15.7%
	W	9.10	10.18	0.00	0.00	0.42		0.00	0.00	0.0%
1	G	9.40	9.54			0.00		0.00	0.00	0.0%
		10.50	9.15			0.00		0.00	0.00	0.0%
		12.10	8.28			0.00		0.00	0.00	0.0%
	LS	12.50	8.12			0.00		0.00	0.00	0.0%
	TOTALS ----------					3.19	0.3 (Max.)	0.62	0.83	100.0%

Manning's n = 0.0317
Hydraulic Radius= 0.19260307

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spg & Lambert Spg
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	0.62	0.62	0.0%
9.93	0.62	1.50	143.9%
9.95	0.62	1.42	131.1%
9.97	0.62	1.34	118.6%
9.99	0.62	1.27	106.2%
10.01	0.62	1.19	93.9%
10.03	0.62	1.12	81.8%
10.05	0.62	1.05	69.9%
10.07	0.62	0.97	58.3%
10.09	0.62	0.90	47.0%
10.11	0.62	0.84	36.0%
10.13	0.62	0.77	25.4%
10.14	0.62	0.74	20.1%
10.15	0.62	0.71	15.0%
10.16	0.62	0.68	9.9%
10.17	0.62	0.65	4.9%
10.18	0.62	0.62	0.0%
10.19	0.62	0.59	-4.9%
10.20	0.62	0.56	-9.7%
10.21	0.62	0.53	-14.5%
10.22	0.62	0.50	-19.2%
10.23	0.62	0.47	-23.9%
10.25	0.62	0.41	-33.2%
10.27	0.62	0.36	-42.3%
10.29	0.62	0.30	-51.2%
10.31	0.62	0.25	-60.0%
10.33	0.62	0.19	-68.6%
10.35	0.62	0.14	-77.1%
10.37	0.62	0.09	-85.3%
10.39	0.62	0.05	-91.5%
10.41	0.62	0.03	-95.3%
10.43	0.62	0.01	-98.6%

WATERLINE AT ZERO
AREA ERROR = 10.180

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spg & Lambert Spg
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	9.54	4.90	0.66	0.94	3.22	5.63	100.0%	0.57	9.03	2.80
	9.58	4.80	0.63	0.90	3.03	5.50	97.6%	0.55	8.27	2.73
	9.63	4.68	0.60	0.85	2.79	5.33	94.7%	0.52	7.37	2.64
	9.68	4.55	0.56	0.80	2.56	5.17	91.7%	0.50	6.52	2.55
	9.73	4.43	0.53	0.75	2.34	5.00	88.7%	0.47	5.72	2.45
	9.78	4.31	0.49	0.70	2.12	4.83	85.8%	0.44	4.97	2.35
	9.83	4.18	0.46	0.65	1.91	4.67	82.8%	0.41	4.27	2.24
	9.88	4.06	0.42	0.60	1.70	4.50	79.8%	0.38	3.61	2.12
	9.93	3.94	0.38	0.55	1.50	4.33	76.9%	0.35	3.01	2.00
	9.98	3.81	0.34	0.50	1.31	4.16	73.9%	0.31	2.45	1.88
	10.03	3.69	0.30	0.45	1.12	4.00	70.9%	0.28	1.94	1.74
	10.08	3.48	0.27	0.40	0.94	3.74	66.4%	0.25	1.52	1.62
	10.13	3.24	0.24	0.35	0.77	3.47	61.6%	0.22	1.15	1.49
WL	10.18	3.00	0.21	0.30	0.61	3.19	56.7%	0.19	0.83	1.36
	10.23	2.87	0.16	0.25	0.47	3.03	53.8%	0.15	0.55	1.17
	10.28	2.75	0.12	0.20	0.33	2.87	51.0%	0.11	0.31	0.96
	10.33	2.62	0.07	0.15	0.19	2.71	48.1%	0.07	0.13	0.70
	10.38	1.30	0.05	0.10	0.07	1.35	24.0%	0.05	0.03	0.54
	10.43	0.35	0.02	0.05	0.01	0.37	6.7%	0.02	0.00	0.33

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spg & Lambert Spg
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	0.83	cfs
CALCULATED FLOW (Qc)=	0.83	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	10.18	ft
CALCULATED WATERLINE (WLc)=	10.18	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.30	ft
MAX CALCULATED DEPTH (Dc)=	0.30	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	1.36	ft/sec
MANNING'S N=	0.032	
SLOPE=	0.0075	ft/ft
.4 * Qm =	0.3	cfs
2.5 * Qm=	2.1	cfs

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

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

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

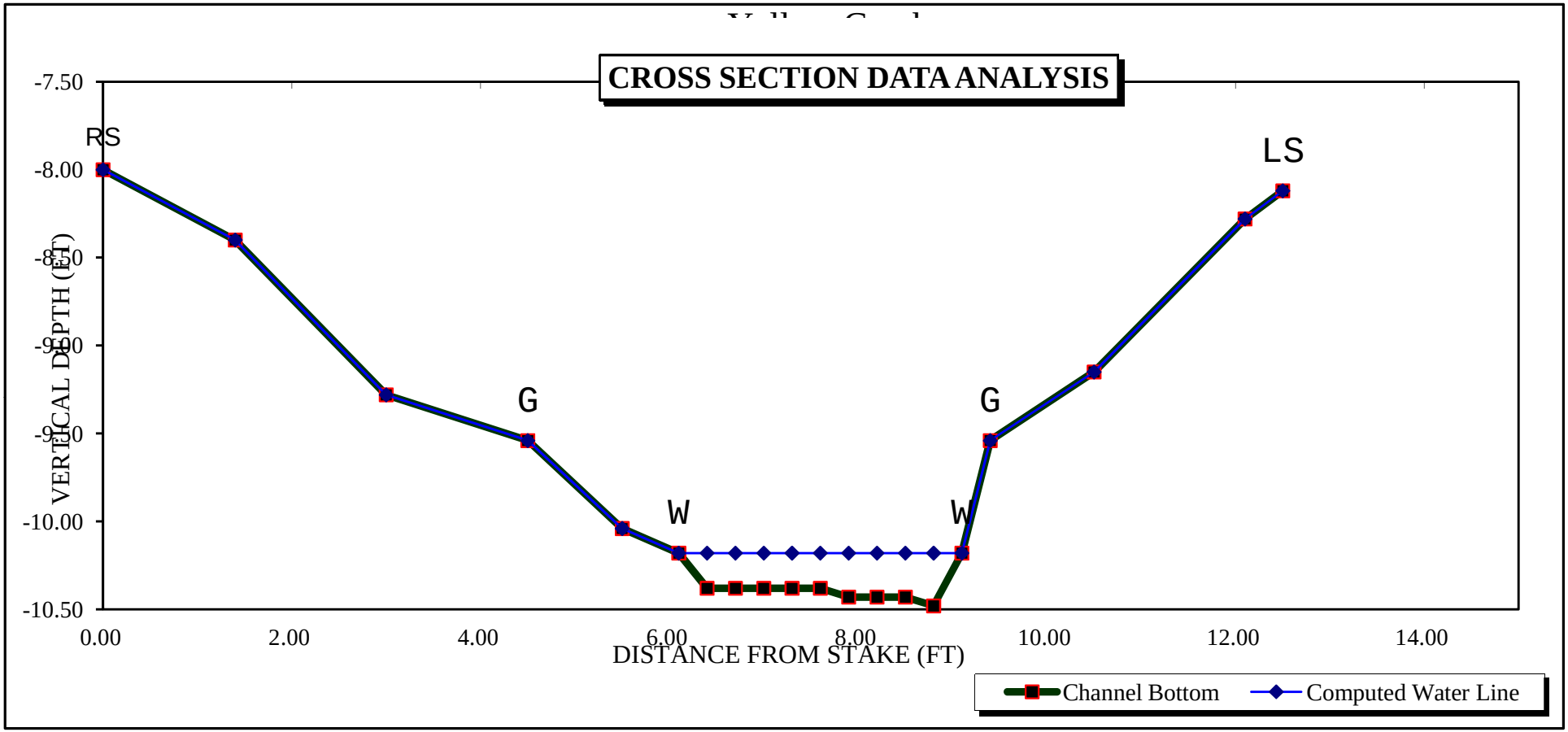
RECOMMENDATION BY: ………………...………..……............................... AGENCY...……………………......…….....…...……...... DATE:......…...…......……………

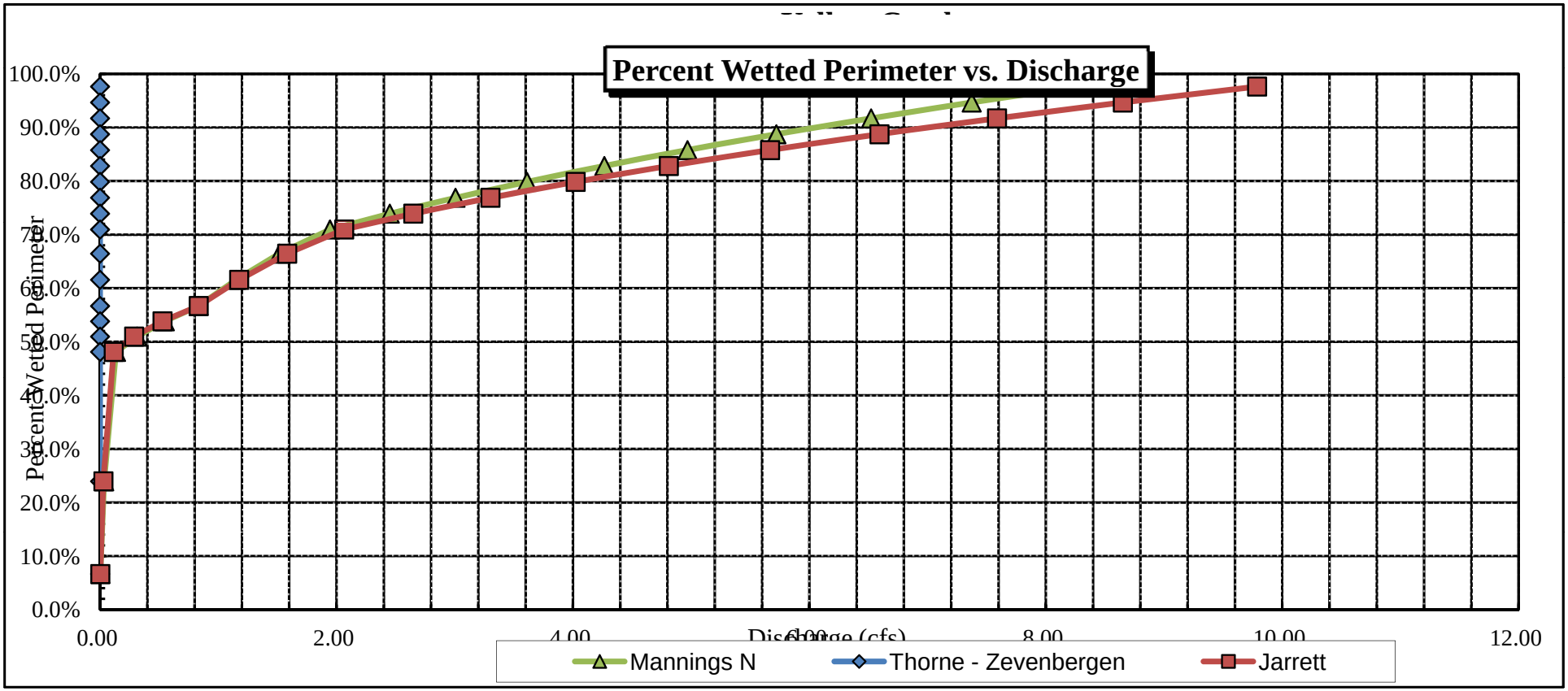
CWCB REVIEW BY: ..……………………….....……………………………………………...…............. DATE:.................….……………..…

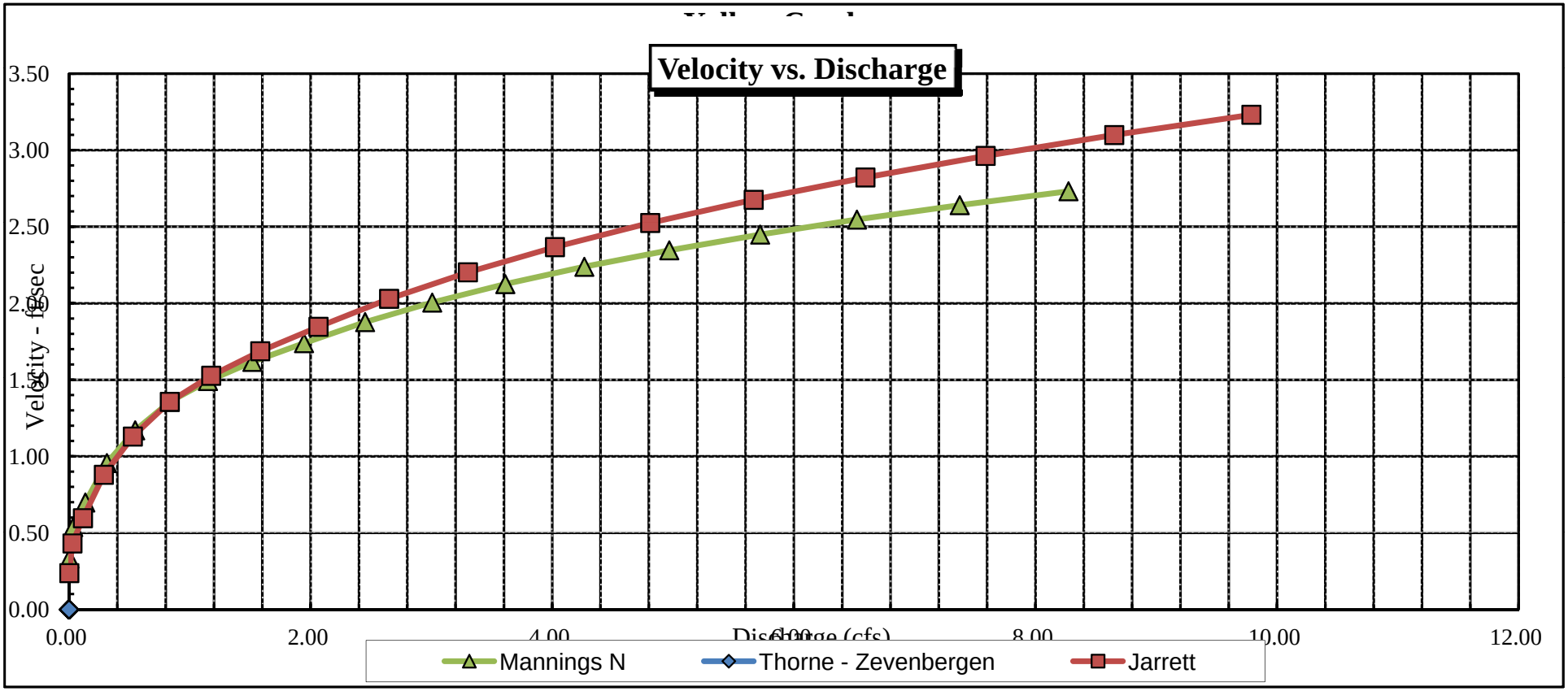
STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spg & Lambert Spg
XS NUMBER: 1 Jarrett Variable Manning's n Correction Applied

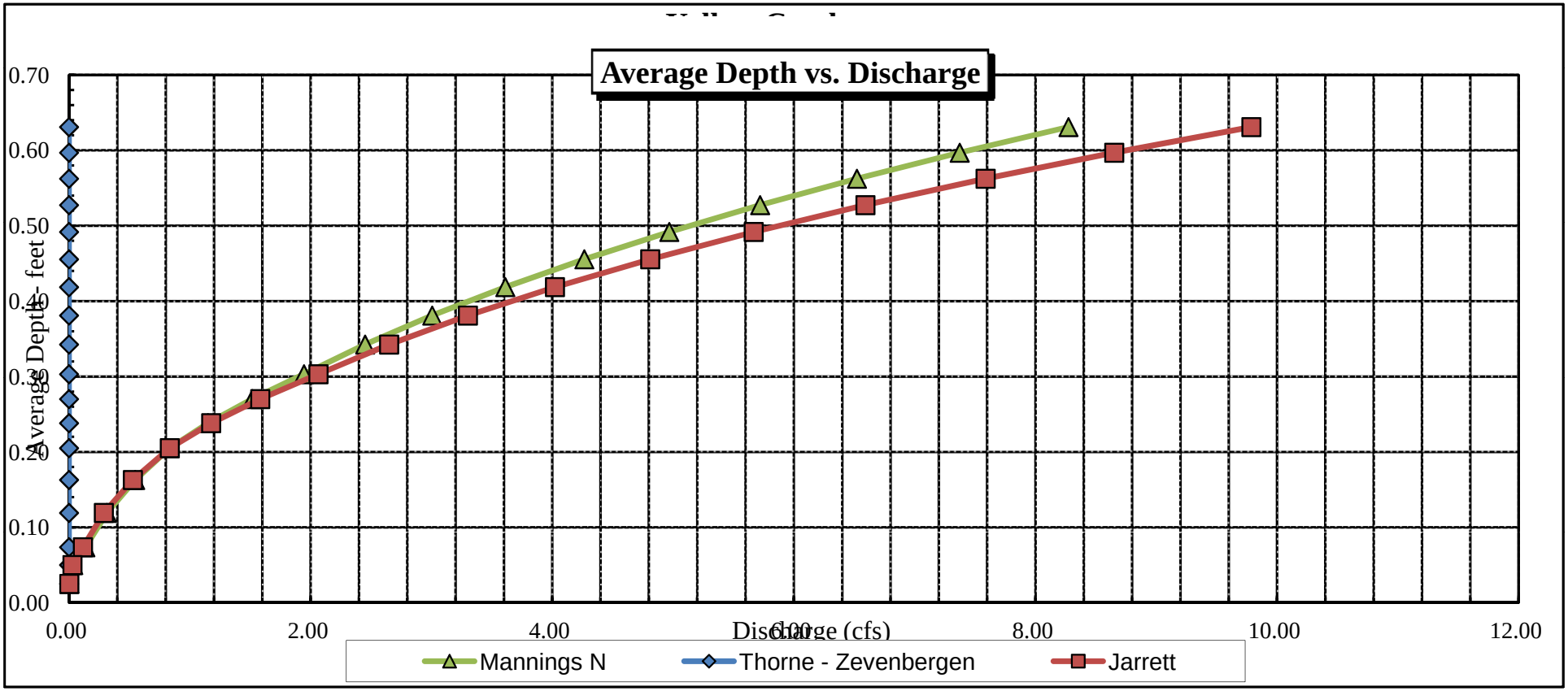
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

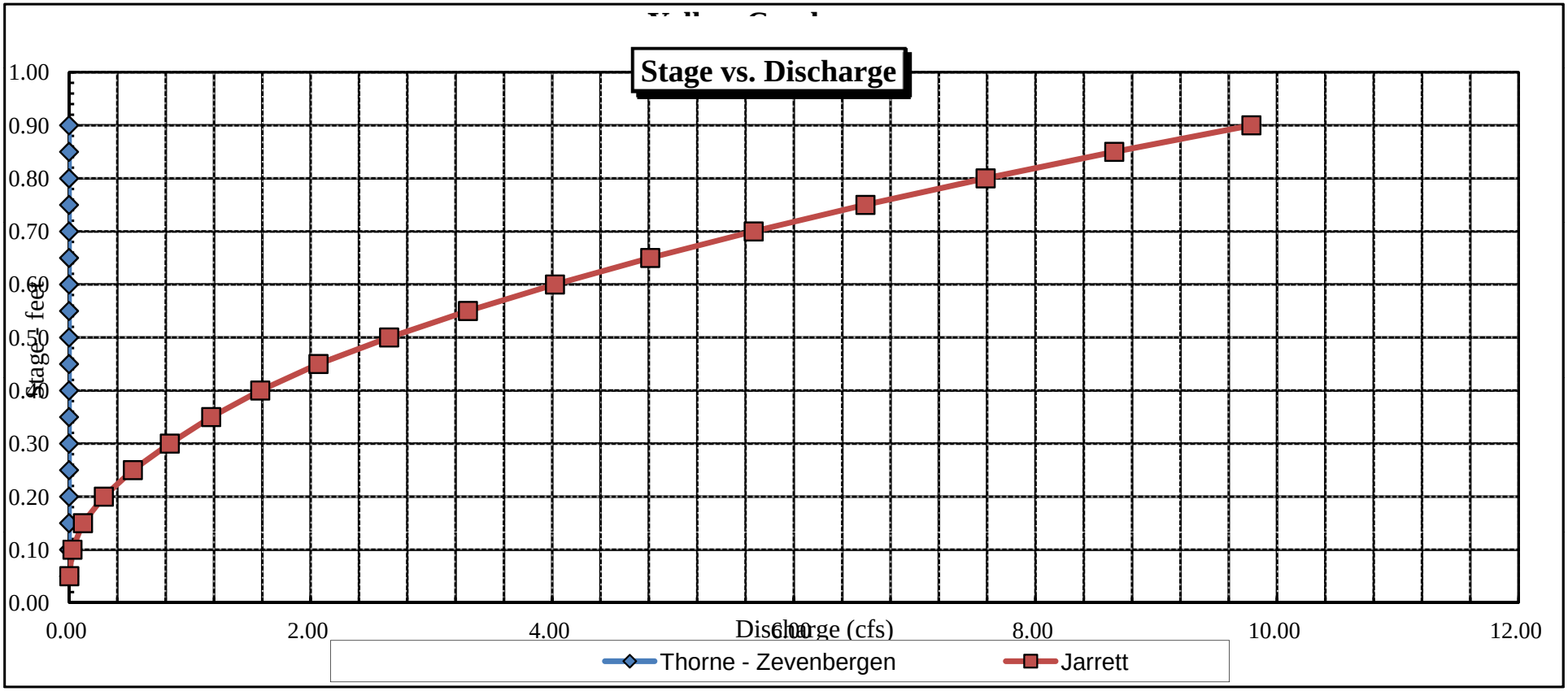
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	9.54	4.90	0.66	0.94	3.22	5.63	100.0%	0.57	10.75	3.33
	9.58	4.80	0.63	0.90	3.03	5.50	97.6%	0.55	9.79	3.23
	9.63	4.68	0.60	0.85	2.79	5.33	94.7%	0.52	8.65	3.10
	9.68	4.55	0.56	0.80	2.56	5.17	91.7%	0.50	7.59	2.96
	9.73	4.43	0.53	0.75	2.34	5.00	88.7%	0.47	6.59	2.82
	9.78	4.31	0.49	0.70	2.12	4.83	85.8%	0.44	5.67	2.68
	9.83	4.18	0.46	0.65	1.91	4.67	82.8%	0.41	4.81	2.52
	9.88	4.06	0.42	0.60	1.70	4.50	79.8%	0.38	4.02	2.37
	9.93	3.94	0.38	0.55	1.50	4.33	76.9%	0.35	3.30	2.20
	9.98	3.81	0.34	0.50	1.31	4.16	73.9%	0.31	2.65	2.03
	10.03	3.69	0.30	0.45	1.12	4.00	70.9%	0.28	2.06	1.85
	10.08	3.48	0.27	0.40	0.94	3.74	66.4%	0.25	1.58	1.69
	10.13	3.24	0.24	0.35	0.77	3.47	61.6%	0.22	1.18	1.53
WL	10.18	3.00	0.21	0.30	0.61	3.19	56.7%	0.19	0.83	1.36
	10.23	2.87	0.16	0.25	0.47	3.03	53.8%	0.15	0.53	1.13
	10.28	2.75	0.12	0.20	0.33	2.87	51.0%	0.11	0.29	0.88
	10.33	2.62	0.07	0.15	0.19	2.71	48.1%	0.07	0.12	0.60
	10.38	1.30	0.05	0.10	0.07	1.35	24.0%	0.05	0.03	0.43
	10.43	0.35	0.02	0.05	0.01	0.37	6.7%	0.02	0.00	0.24


CROSS SECTION DATA ANALYSIS
-7.50
-8.00
-8.50
-9.00
-9.50
-10.00
-10.50
VERTICAL DEPTH (FT)
RS
G
W
W
G
LS
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
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
2.00
4.00
8.00
10.00
12.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
2.00
4.00
8.00
10.00
12.00
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Stage - feet
0.00
2.00
4.00
6.00
8.00
10.00
12.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

Data Input & Proofing

STREAM NAME:	Yellow Creek
XS LOCATION:	Betw Stinking Spg & Lambert Spg
XS NUMBER:	1
DATE:	4/23/2015
OBSERVERS:	R. Smith, K. Sauter
1/4 SEC:	SE
SECTION:	16
TWP:	2N
RANGE:	98W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.0075 ft / ft

CHECKED BY:.....DATE.....

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

Total Data Points = 20

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
	RS	0.00	8.00			0.00	0.00	0.00
		1.40	8.40			0.00	0.00	0.00
		3.00	9.28			0.00	0.00	0.00
1	G	4.50	9.54			0.00	0.00	0.00
		5.50	10.04			0.00	0.00	0.00
	W	6.10	10.18	0.00	0.00	0.00	0.00	0.00
		6.40	10.38	0.20	0.38	0.06	0.02	10.18
		6.70	10.38	0.20	1.69	0.06	0.10	10.18
		7.00	10.38	0.20	1.14	0.06	0.07	10.18
		7.30	10.38	0.20	1.52	0.06	0.09	10.18
		7.60	10.38	0.20	1.48	0.06	0.09	10.18
		7.90	10.43	0.25	1.46	0.08	0.11	10.18
		8.20	10.43	0.25	1.52	0.08	0.11	10.18
		8.50	10.43	0.25	1.43	0.08	0.11	10.18
		8.80	10.48	0.30	1.45	0.09	0.13	10.18
	W	9.10	10.18	0.00	0.00	0.00	0.00	0.00
1	G	9.40	9.54			0.00	0.00	0.00
		10.50	9.15			0.00	0.00	0.00
		12.10	8.28			0.00	0.00	0.00
	LS	12.50	8.12			0.00	0.00	0.00

Totals	0.62	0.83

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Yellow Creek						CROSS-SECTION NO.: 1	
CROSS-SECTION LOCATION: between Strutting Spring & Lambert Spring							
DATE: 4-23-15	OBSERVERS: R. Smith, K. Sauder						
LEGAL DESCRIPTION	¼ SECTION: SE	SECTION: 16	TOWNSHIP: 2 N/S	RANGE: 98 E/W	PM: 6th		
COUNTY: Rio Blanco	WATERSHED: White River	WATER DIVISION: 6	DOW WATER CODE: 25343				
MAP(S): USGS:		N 40.13890					
USFS:		W 108.38768					

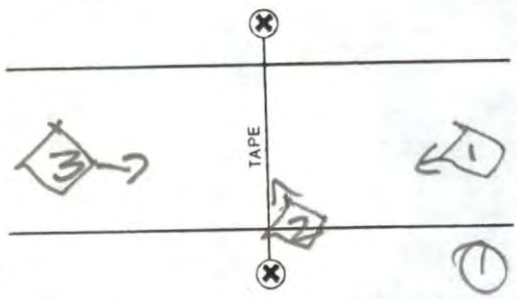
SUPPLEMENTAL DATA

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	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	10.18/10.18
② WS Upstream	24.4	9.94
③ WS Downstream	13.0	10.22
SLOPE	0.28/37.4 = .0075	

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: Yellow Creek	CROSS-SECTION NO.: 1	DATE 4-23-15	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME: 10:40

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		8.00								
	1.4		8.40								
	3.0		9.28								
G	4.5		9.54								
	5.5		10.04								
W	6.1		10.18								
	6.4		10.38	0.2				0.38			
	6.7		10.38	0.2				1.69			
	7.0		10.38	0.2				1.14			
	7.3		10.38	0.2				1.52			
	7.6		10.38	0.2				1.48			
	7.9		10.43	0.25				1.46			
	8.2		10.43	0.25				1.52			
	8.5		10.43	0.25				1.43			
	8.8		10.48	0.30				1.45			
W	9.1		10.18								
G	9.4		9.54								
	10.5		9.15								
	12.1		8.08								
LS	12.5		8.12								
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:	Yellow Creek
XS LOCATION:	Betw Stinking Spring & Lambert Spring
XS NUMBER:	2
DATE:	23-Apr-15
OBSERVERS:	R. Smith, K. Sauter
1/4 SEC:	SE
SECTION:	16
TWP:	2N
RANGE:	98W
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:	0.0055

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

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

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spring & Lambert Spring
XS NUMBER: 2

DATA POINTS= 19

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	3.70			0.00		0.00	0.00	0.0%
	1.00	4.45			0.00		0.00	0.00	0.0%
1 G	1.50	4.72			0.00		0.00	0.00	0.0%
W	2.00	5.30	0.00	0.00	0.00		0.00	0.00	0.0%
	2.30	5.40	0.10	0.00	0.32	0.10	0.03	0.00	0.0%
	2.60	5.50	0.20	1.07	0.32	0.20	0.06	0.06	6.8%
	2.90	5.50	0.20	1.18	0.30	0.20	0.06	0.07	7.5%
	3.20	5.50	0.20	1.34	0.30	0.20	0.06	0.08	8.6%
	3.50	5.55	0.25	1.63	0.30	0.25	0.08	0.12	13.0%
	3.80	5.55	0.25	1.48	0.30	0.25	0.08	0.11	11.8%
	4.10	5.55	0.25	1.48	0.30	0.25	0.08	0.11	11.8%
	4.40	5.60	0.30	1.60	0.30	0.30	0.09	0.14	15.3%
	4.70	5.60	0.30	1.48	0.30	0.30	0.09	0.13	14.2%
	5.00	5.50	0.20	1.14	0.32	0.20	0.06	0.07	7.3%
	5.30	5.55	0.25	0.70	0.30	0.25	0.05	0.04	3.7%
W	5.40	5.30	0.00	0.00	0.27		0.00	0.00	0.0%
1 G	7.50	4.72			0.00		0.00	0.00	0.0%
	9.90	4.45			0.00		0.00	0.00	0.0%
LS	14.60	3.33			0.00		0.00	0.00	0.0%
TOTALS ----------					3.63	0.3 (Max.)	0.73	0.94	100.0%

Manning's n = 0.0290
Hydraulic Radius= 0.19970494

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spring & Lambert Spring
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	0.73	0.73	0.0%
5.05	0.73	1.72	136.6%
5.07	0.73	1.63	124.2%
5.09	0.73	1.54	112.1%
5.11	0.73	1.45	100.3%
5.13	0.73	1.37	88.7%
5.15	0.73	1.29	77.3%
5.17	0.73	1.20	66.2%
5.19	0.73	1.13	55.3%
5.21	0.73	1.05	44.7%
5.23	0.73	0.97	34.3%
5.25	0.73	0.90	24.2%
5.26	0.73	0.86	19.3%
5.27	0.73	0.83	14.3%
5.28	0.73	0.79	9.5%
5.29	0.73	0.76	4.7%
5.30	0.73	0.73	0.0%
5.31	0.73	0.69	-4.7%
5.32	0.73	0.66	-9.3%
5.33	0.73	0.62	-13.9%
5.34	0.73	0.59	-18.4%
5.35	0.73	0.56	-22.9%
5.37	0.73	0.50	-31.7%
5.39	0.73	0.43	-40.3%
5.41	0.73	0.37	-48.7%
5.43	0.73	0.31	-57.0%
5.45	0.73	0.25	-65.1%
5.47	0.73	0.20	-72.9%
5.49	0.73	0.14	-80.6%
5.51	0.73	0.09	-87.2%
5.53	0.73	0.06	-92.2%
5.55	0.73	0.03	-96.4%

WATERLINE AT ZERO
AREA ERROR = 5.300

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spring & Lambert Spring
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	4.72	6.00	0.58	0.88	3.45	6.57	100.0%	0.52	8.52	2.47
	4.75	5.87	0.56	0.85	3.27	6.42	97.7%	0.51	7.93	2.42
	4.80	5.64	0.53	0.80	2.99	6.17	93.8%	0.48	6.99	2.34
	4.85	5.42	0.50	0.75	2.71	5.91	90.0%	0.46	6.11	2.26
	4.90	5.19	0.47	0.70	2.44	5.66	86.1%	0.43	5.30	2.17
	4.95	4.97	0.44	0.65	2.19	5.41	82.2%	0.40	4.55	2.08
	5.00	4.74	0.41	0.60	1.95	5.15	78.4%	0.38	3.86	1.98
	5.05	4.52	0.38	0.55	1.72	4.90	74.5%	0.35	3.23	1.89
	5.10	4.30	0.35	0.50	1.49	4.65	70.7%	0.32	2.66	1.78
	5.15	4.07	0.32	0.45	1.29	4.39	66.8%	0.29	2.15	1.67
	5.20	3.85	0.28	0.40	1.09	4.14	62.9%	0.26	1.69	1.56
	5.25	3.62	0.25	0.35	0.90	3.88	59.1%	0.23	1.29	1.43
WL	5.30	3.40	0.21	0.30	0.72	3.63	55.2%	0.20	0.94	1.30
	5.35	3.23	0.17	0.25	0.56	3.42	52.0%	0.16	0.63	1.14
	5.40	3.06	0.13	0.20	0.40	3.21	48.8%	0.13	0.38	0.95
	5.45	2.89	0.09	0.15	0.25	2.99	45.5%	0.08	0.19	0.73
	5.50	2.12	0.05	0.10	0.11	2.18	33.2%	0.05	0.06	0.53
	5.55	0.75	0.04	0.05	0.03	0.76	11.6%	0.03	0.01	0.40
	5.60	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spring & Lambert Spring
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	0.94	cfs
CALCULATED FLOW (Qc)=	0.94	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	5.30	ft
CALCULATED WATERLINE (WLc)=	5.30	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.30	ft
MAX CALCULATED DEPTH (Dc)=	0.30	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	1.30	ft/sec
MANNING'S N=	0.029	
SLOPE=	0.0055	ft/ft
.4 * Qm =	0.4	cfs
2.5 * Qm=	2.4	cfs

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

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

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

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

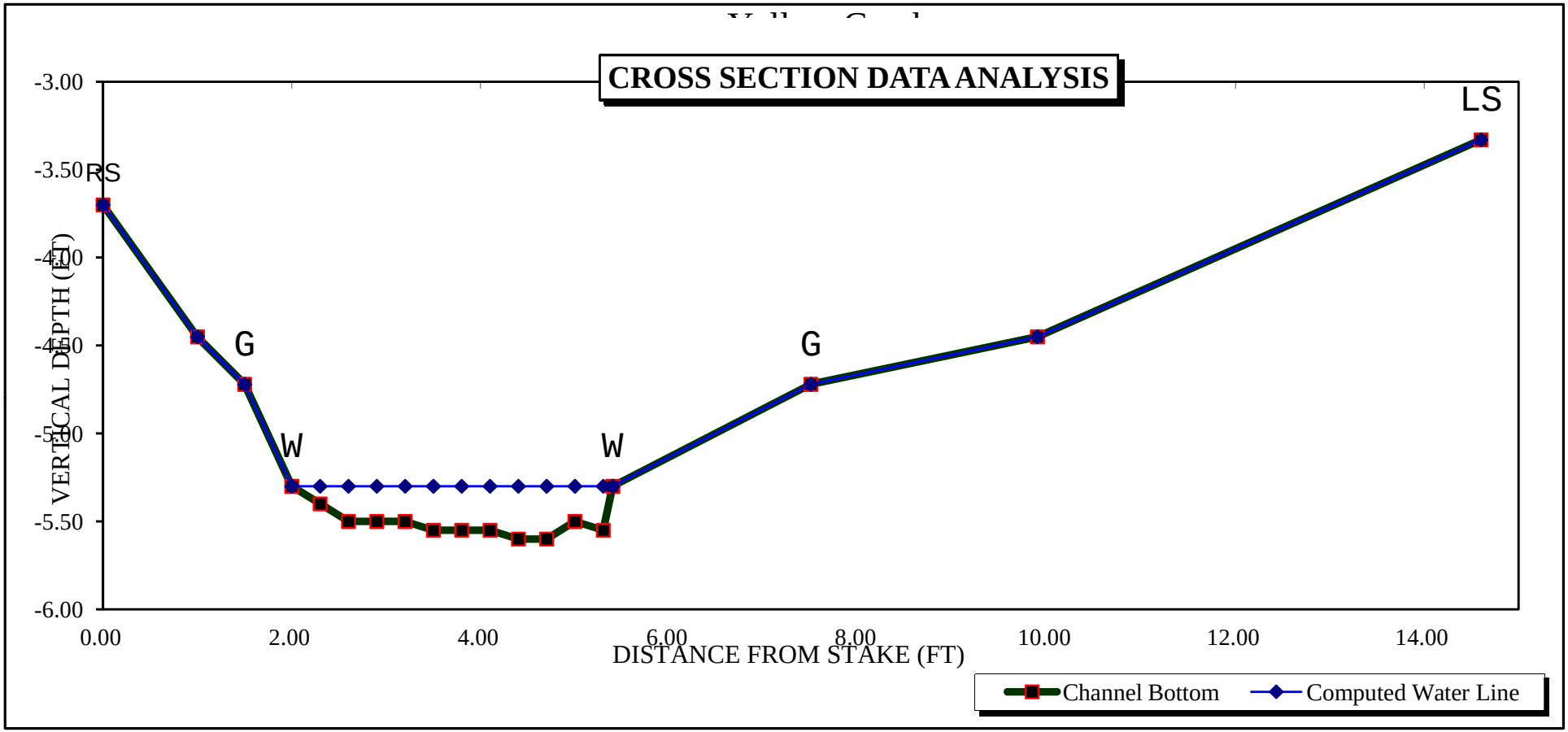
RECOMMENDATION BY: ..... AGENCY..... DATE:.....

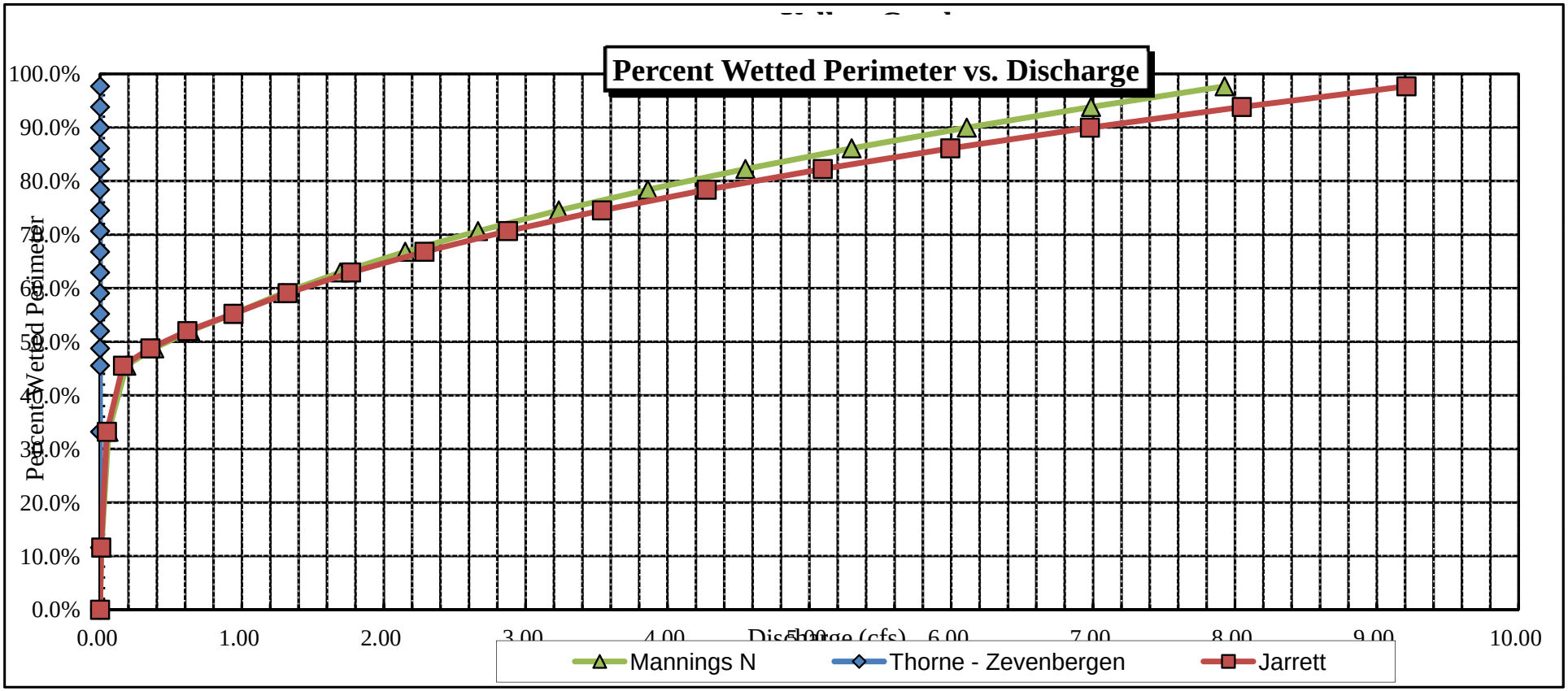
CWCB REVIEW BY: ..... DATE:.....

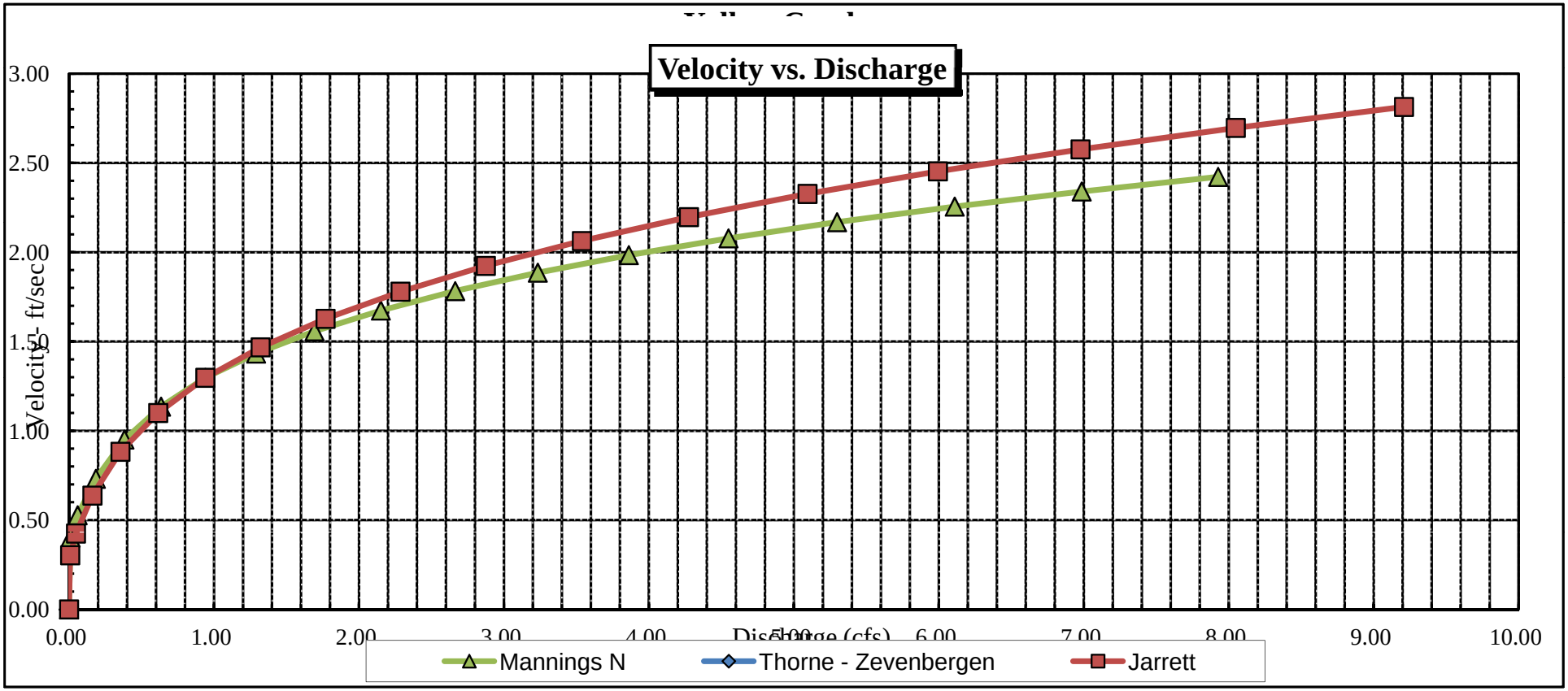
STREAM NAME: Yellow Creek
XS LOCATION: Betw Stinking Spring & Lambert Spring
XS NUMBER: 2 Jarrett Variable Manning's n Correction Applied

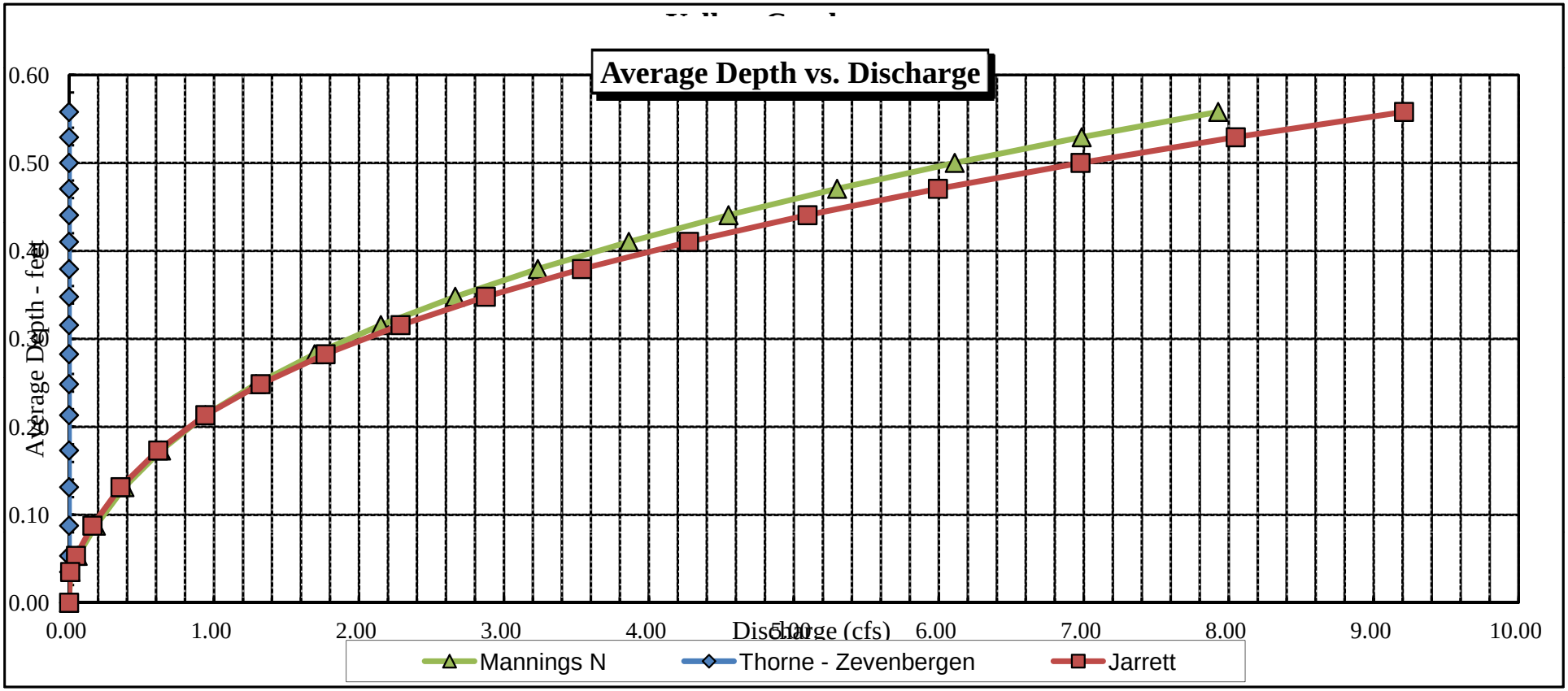
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

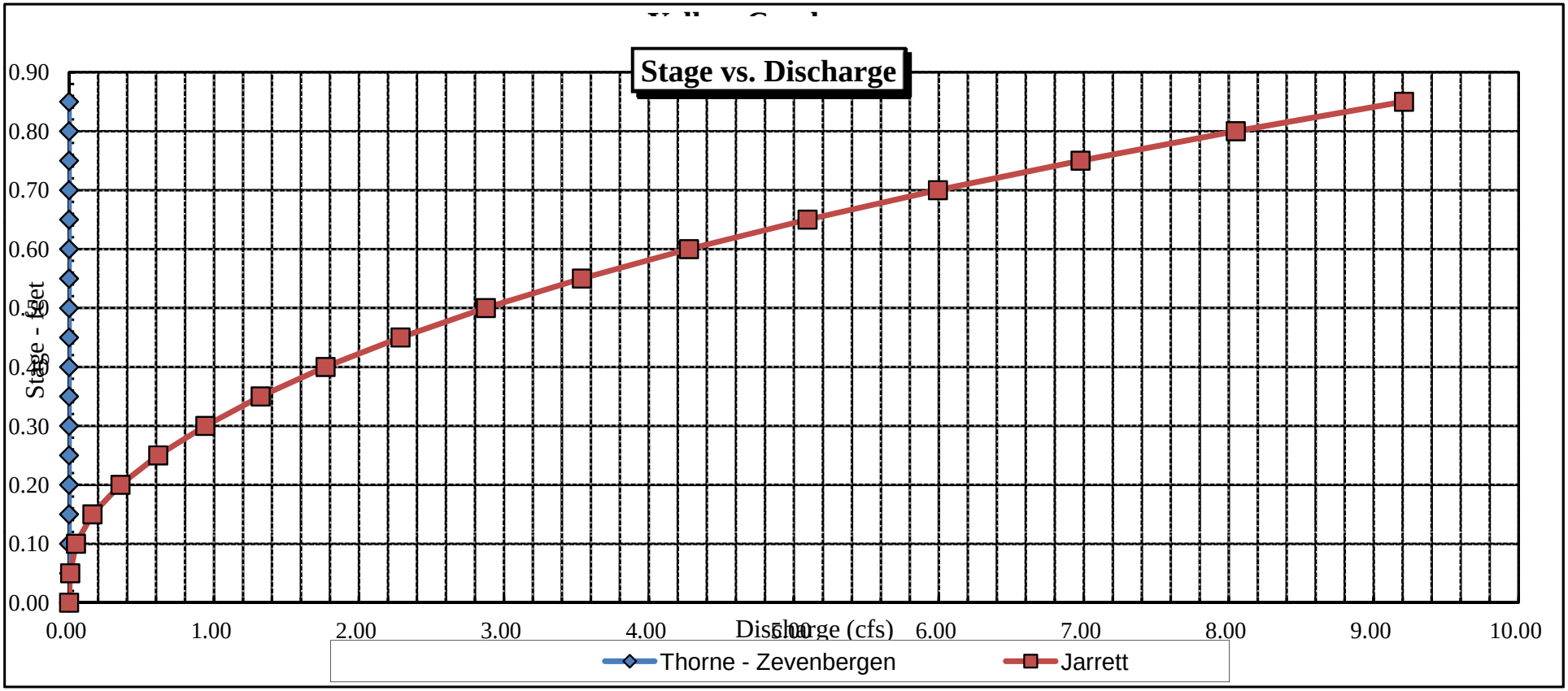
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	4.72	6.00	0.58	0.88	3.45	6.57	100.0%	0.52	9.95	2.88
	4.75	5.87	0.56	0.85	3.27	6.42	97.7%	0.51	9.21	2.81
	4.80	5.64	0.53	0.80	2.99	6.17	93.8%	0.48	8.05	2.70
	4.85	5.42	0.50	0.75	2.71	5.91	90.0%	0.46	6.98	2.58
	4.90	5.19	0.47	0.70	2.44	5.66	86.1%	0.43	5.99	2.45
	4.95	4.97	0.44	0.65	2.19	5.41	82.2%	0.40	5.09	2.33
	5.00	4.74	0.41	0.60	1.95	5.15	78.4%	0.38	4.28	2.20
	5.05	4.52	0.38	0.55	1.72	4.90	74.5%	0.35	3.54	2.06
	5.10	4.30	0.35	0.50	1.49	4.65	70.7%	0.32	2.88	1.92
	5.15	4.07	0.32	0.45	1.29	4.39	66.8%	0.29	2.29	1.78
	5.20	3.85	0.28	0.40	1.09	4.14	62.9%	0.26	1.77	1.63
	5.25	3.62	0.25	0.35	0.90	3.88	59.1%	0.23	1.32	1.47
WL	5.30	3.40	0.21	0.30	0.72	3.63	55.2%	0.20	0.94	1.30
	5.35	3.23	0.17	0.25	0.56	3.42	52.0%	0.16	0.62	1.10
	5.40	3.06	0.13	0.20	0.40	3.21	48.8%	0.13	0.35	0.88
	5.45	2.89	0.09	0.15	0.25	2.99	45.5%	0.08	0.16	0.64
	5.50	2.12	0.05	0.10	0.11	2.18	33.2%	0.05	0.05	0.42
	5.55	0.75	0.04	0.05	0.03	0.76	11.6%	0.03	0.01	0.30
	5.60	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!


CROSS SECTION DATA ANALYSIS
-3.00
-3.50
-4.00
-4.50
-5.00
-5.50
-6.00
VERTICAL DEPTH (FT)
RS
G
W
W
G
LS
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
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
1.00
2.00
3.00
4.00
Discharge (cfs)
6.00
7.00
8.00
9.00
10.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Velocity - ft/sec
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
Stage - feet
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

Data Input & Proofing

STREAM NAME:	Yellow Creek
XS LOCATION:	Betw Stinking Spring & Lambert Spring
XS NUMBER:	2
DATE:	4/23/2015
OBSERVERS:	R. Smith, K. Sauter
1/4 SEC:	SE
SECTION:	16
TWP:	2N
RANGE:	98W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25343
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.0055 ft / ft

CHECKED BY:.....DATE.....

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

Total Data Points = 19

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
	RS	0.00	3.70			0.00	0.00	0.00
		1.00	4.45			0.00	0.00	0.00
1	G	1.50	4.72			0.00	0.00	0.00
	W	2.00	5.30	0.00	0.00	0.00	0.00	0.00
		2.30	5.40	0.10	0.00	0.03	0.00	5.30
		2.60	5.50	0.20	1.07	0.06	0.06	5.30
		2.90	5.50	0.20	1.18	0.06	0.07	5.30
		3.20	5.50	0.20	1.34	0.06	0.08	5.30
		3.50	5.55	0.25	1.63	0.08	0.12	5.30
		3.80	5.55	0.25	1.48	0.08	0.11	5.30
		4.10	5.55	0.25	1.48	0.08	0.11	5.30
		4.40	5.60	0.30	1.60	0.09	0.14	5.30
		4.70	5.60	0.30	1.48	0.09	0.13	5.30
		5.00	5.50	0.20	1.14	0.06	0.07	5.30
		5.30	5.55	0.25	0.70	0.05	0.04	5.30
	W	5.40	5.30	0.00	0.00	0.00	0.00	0.00
1	G	7.50	4.72			0.00	0.00	0.00
		9.90	4.45			0.00	0.00	0.00
	LS	14.60	3.33			0.00	0.00	0.00

Totals	0.73	0.94

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Yellow Creek | CROSS-SECTION NO.: 2

CROSS-SECTION LOCATION: between Shutting Spring & Lambert Spring

DATE: 4-23-15 | OBSERVERS: R. Smith, K. Sauter

LEGAL DESCRIPTION | ¼ SECTION: NE | SECTION: 21 | TOWNSHIP: 2 (N)/S | RANGE: 98 E/(W) | PM: 6th

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

MAP(S): USGS: 40.13683

USFS: 108.38775

SUPPLEMENTAL DATA

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

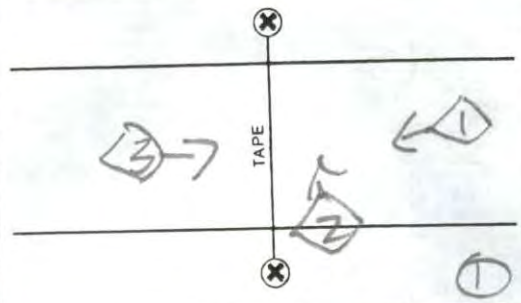
METER NUMBER: | DATE RATED: | CALIB/SPIN: ____ sec | TAPE WEIGHT: surveyed ____ lbs/foot | TAPE TENSION: surveyed ____ lbs

CHANNEL BED MATERIAL SIZE RANGE: gravels | 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	5.30 / 5.30
② WS Upstream	30.3	5.12
③ WS Downstream	130	5.36
SLOPE	0.24/43.3 = .0055	

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: Yellow Creek | CROSS-SECTION NO.: 2 | DATE: 4.23.15 | SHEET ___ OF ___

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: _____ ft | TIME: 11:32

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		3.70								
	1.0		4.45								
G	1.5		4.72								
W	2.0		5.30								
	2.3		5.40	.10				0			
	2.6		5.90	.20				1.07			
	2.9		5.50	.20				1.18			
	3.2		5.50	.20				1.34			
	3.5		5.55	.25				1.63			
	3.8		5.55	.25				1.48			
	4.1		5.55	.25				1.48			
	4.4		5.60	.30				1.60			
	4.7		5.60	.30				1.48			
	5.0		5.50	.20				1.14			
	5.3		5.55	.25				0.70			
W	5.4		5.30								
G	7.5		4.72								
	9.9		4.45								
LS	14.6		3.33								
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:	Yellow Creek
XS LOCATION:	Above Lambert Spring
XS NUMBER:	3
DATE:	27-Sep-11
OBSERVERS:	R. Smith, B. Lange, K. Sauter
1/4 SEC:	NW SE
SECTION:	16
TWP:	2N
RANGE:	98W
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:	0.011

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

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

STREAM NAME: Yellow Creek
XS LOCATION: Above Lambert Spring
XS NUMBER: 3

DATA POINTS= 18

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	LS	0.00	5.34			0.00		0.00	0.00	0.0%
		2.00	6.02			0.00		0.00	0.00	0.0%
1	G	2.70	5.96			0.00		0.00	0.00	0.0%
	W	3.00	6.96	0.00	0.00	0.00		0.00	0.00	0.0%
		3.30	7.25	0.30	0.04	0.42	0.30	0.09	0.00	0.9%
		3.60	7.25	0.30	0.09	0.30	0.30	0.09	0.01	2.1%
		3.90	7.15	0.20	0.34	0.32	0.20	0.06	0.02	5.2%
		4.20	7.15	0.20	0.69	0.30	0.20	0.06	0.04	10.6%
		4.50	7.25	0.30	0.94	0.32	0.30	0.09	0.08	21.6%
		4.80	7.25	0.30	1.14	0.30	0.30	0.09	0.10	26.2%
		5.10	7.20	0.25	1.09	0.30	0.25	0.08	0.08	20.9%
		5.40	7.15	0.20	0.59	0.30	0.20	0.06	0.04	9.1%
		5.70	7.15	0.20	0.22	0.30	0.20	0.06	0.01	3.4%
		6.00	7.05	0.10	0.00	0.32	0.10	0.03	0.00	0.0%
	W	6.20	6.96	0.00	0.00	0.22		0.00	0.00	0.0%
		7.50	6.42			0.00		0.00	0.00	0.0%
1	G	9.40	5.94			0.00		0.00	0.00	0.0%
	RS	11.40	5.36			0.00		0.00	0.00	0.0%
	TOTALS ----------					3.39	0.3 (Max.)	0.70	0.39	100.0%

Manning's n = 0.0974
Hydraulic Radius= 0.20627491

STREAM NAME: Yellow Creek
XS LOCATION: Above Lambert Spring
XS NUMBER: 3

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	0.70	0.67	-4.2%
6.71	0.70	1.56	122.2%
6.73	0.70	1.48	111.2%
6.75	0.70	1.40	100.3%
6.77	0.70	1.33	89.6%
6.79	0.70	1.25	79.1%
6.81	0.70	1.18	68.7%
6.83	0.70	1.11	58.5%
6.85	0.70	1.04	48.4%
6.87	0.70	0.97	38.5%
6.89	0.70	0.90	28.7%
6.91	0.70	0.83	19.1%
6.92	0.70	0.80	14.4%
6.93	0.70	0.77	9.7%
6.94	0.70	0.74	5.0%
6.95	0.70	0.70	0.4%
6.96	0.70	0.67	-4.2%
6.97	0.70	0.64	-8.8%
6.98	0.70	0.61	-13.3%
6.99	0.70	0.58	-17.7%
7.00	0.70	0.55	-22.1%
7.01	0.70	0.51	-26.5%
7.03	0.70	0.45	-35.1%
7.05	0.70	0.40	-43.5%
7.07	0.70	0.34	-51.7%
7.09	0.70	0.28	-59.6%
7.11	0.70	0.23	-67.4%
7.13	0.70	0.18	-74.9%
7.15	0.70	0.13	-82.1%
7.17	0.70	0.09	-87.2%
7.19	0.70	0.06	-91.5%
7.21	0.70	0.03	-95.1%

WATERLINE AT ZERO
AREA ERROR = 6.951

STREAM NAME: Yellow Creek
XS LOCATION: Above Lambert Spring
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	5.96	7.50	0.72	1.29	5.41	8.61	100.0%	0.63	6.36	1.17
	6.00	6.73	0.76	1.25	5.12	7.80	90.5%	0.66	6.20	1.21
	6.05	6.23	0.77	1.20	4.80	7.26	84.3%	0.66	5.84	1.22
	6.10	6.02	0.75	1.15	4.50	7.00	81.3%	0.64	5.36	1.19
	6.15	5.81	0.72	1.10	4.20	6.75	78.3%	0.62	4.91	1.17
	6.20	5.60	0.70	1.05	3.92	6.49	75.3%	0.60	4.48	1.14
	6.25	5.38	0.68	1.00	3.64	6.23	72.4%	0.58	4.08	1.12
	6.30	5.17	0.65	0.95	3.38	5.98	69.4%	0.57	3.70	1.09
	6.35	4.96	0.63	0.90	3.13	5.72	66.4%	0.55	3.34	1.07
	6.40	4.74	0.61	0.85	2.88	5.46	63.4%	0.53	3.01	1.05
	6.45	4.58	0.58	0.80	2.65	5.25	61.0%	0.50	2.69	1.01
	6.50	4.44	0.55	0.75	2.43	5.07	58.9%	0.48	2.37	0.98
	6.55	4.31	0.51	0.70	2.21	4.89	56.7%	0.45	2.08	0.94
	6.60	4.17	0.48	0.65	1.99	4.70	54.6%	0.42	1.80	0.90
	6.65	4.04	0.44	0.60	1.79	4.52	52.5%	0.40	1.54	0.86
	6.70	3.90	0.41	0.55	1.59	4.34	50.4%	0.37	1.30	0.82
	6.75	3.77	0.37	0.50	1.40	4.16	48.3%	0.34	1.08	0.77
	6.80	3.63	0.33	0.45	1.21	3.97	46.2%	0.31	0.88	0.73
	6.85	3.50	0.30	0.40	1.04	3.79	44.0%	0.27	0.70	0.67
	6.90	3.36	0.26	0.35	0.86	3.61	41.9%	0.24	0.53	0.62
WL	6.95	3.22	0.22	0.30	0.70	3.43	39.8%	0.20	0.39	0.55
	7.00	3.07	0.18	0.25	0.54	3.24	37.6%	0.17	0.26	0.49
	7.05	2.90	0.14	0.20	0.39	3.04	35.3%	0.13	0.16	0.41
	7.10	2.70	0.09	0.15	0.25	2.81	32.6%	0.09	0.08	0.32
	7.15	1.89	0.07	0.10	0.12	1.97	22.9%	0.06	0.03	0.25
	7.20	1.24	0.04	0.05	0.05	1.28	14.9%	0.04	0.01	0.17

STREAM NAME: Yellow Creek
XS LOCATION: Above Lambert Spring
XS NUMBER: 3

SUMMARY SHEET

MEASURED FLOW (Qm)=	0.39	cfs
CALCULATED FLOW (Qc)=	0.39	cfs
(Qm-Qc)/Qm * 100 =	0.7	%
MEASURED WATERLINE (WLm)=	6.96	ft
CALCULATED WATERLINE (WLc)=	6.95	ft
(WLm-WLc)/WLm * 100 =	0.1	%
MAX MEASURED DEPTH (Dm)=	0.30	ft
MAX CALCULATED DEPTH (Dc)=	0.30	ft
(Dm-Dc)/Dm * 100	0.3	%
MEAN VELOCITY=	0.55	ft/sec
MANNING'S N=	0.097	
SLOPE=	0.011	ft/ft
.4 * Qm =	0.2	cfs
2.5 * Qm=	1.0	cfs

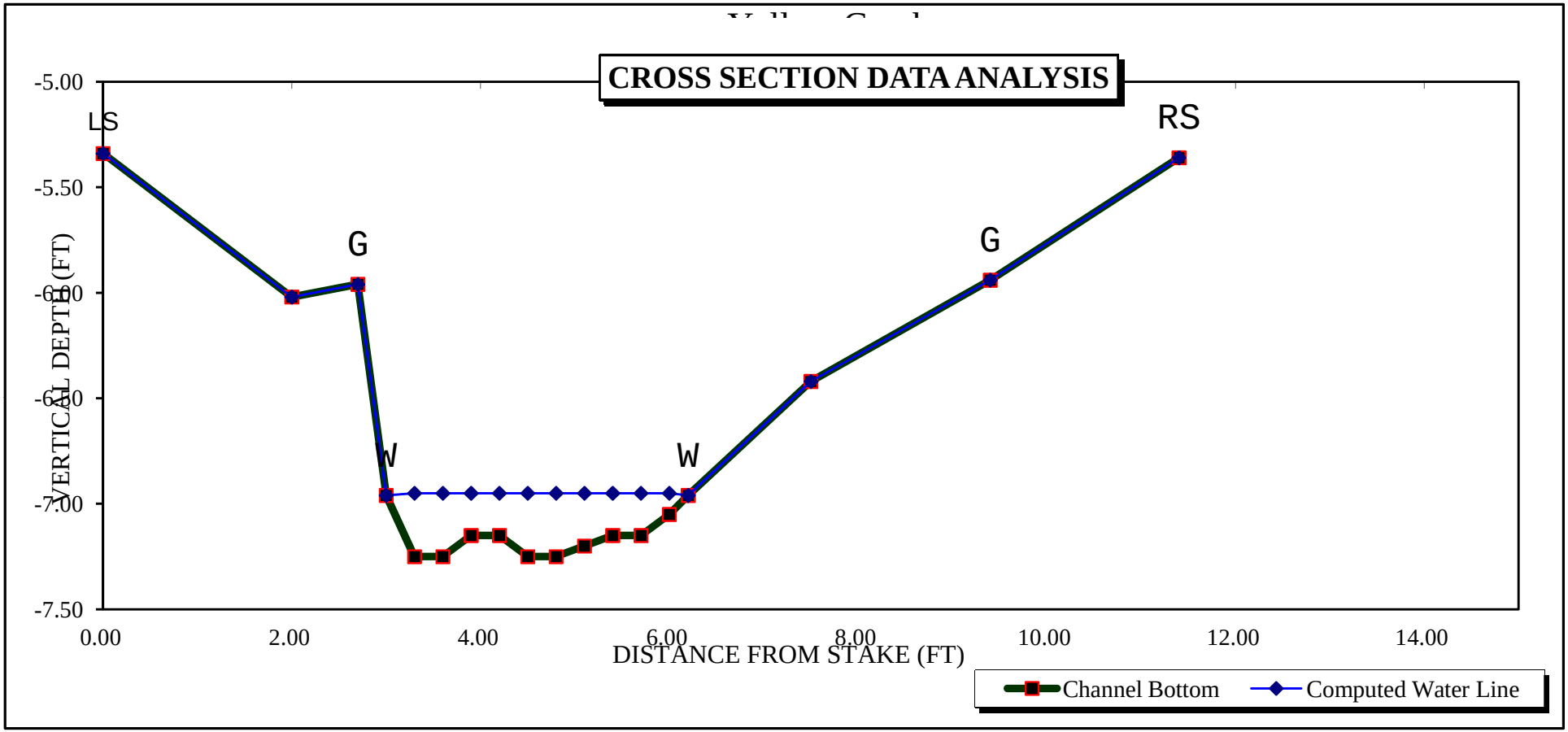
RECOMMENDED INSTREAM FLOW:
============================

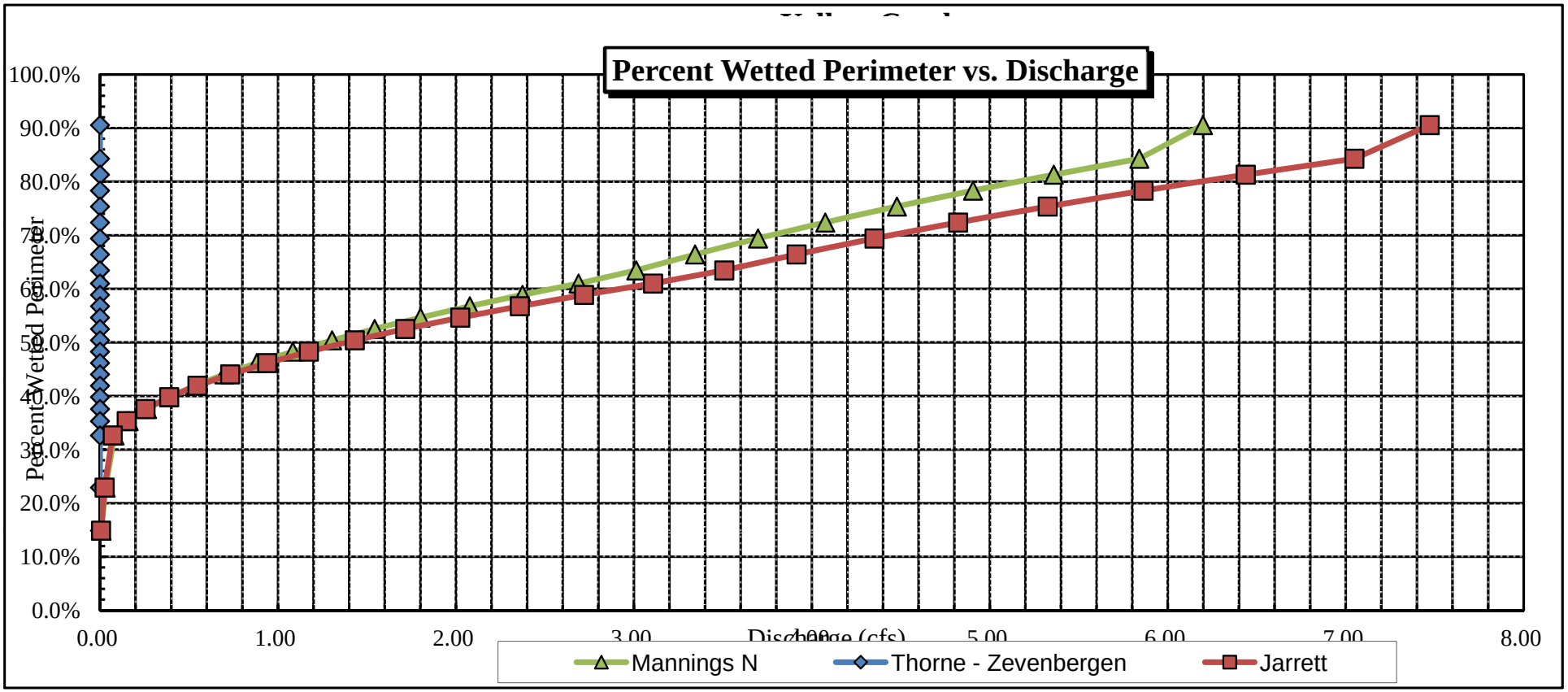
FLOW (CFS)	PERIOD
___________________	__________________
___________________	__________________
___________________	__________________
___________________	__________________

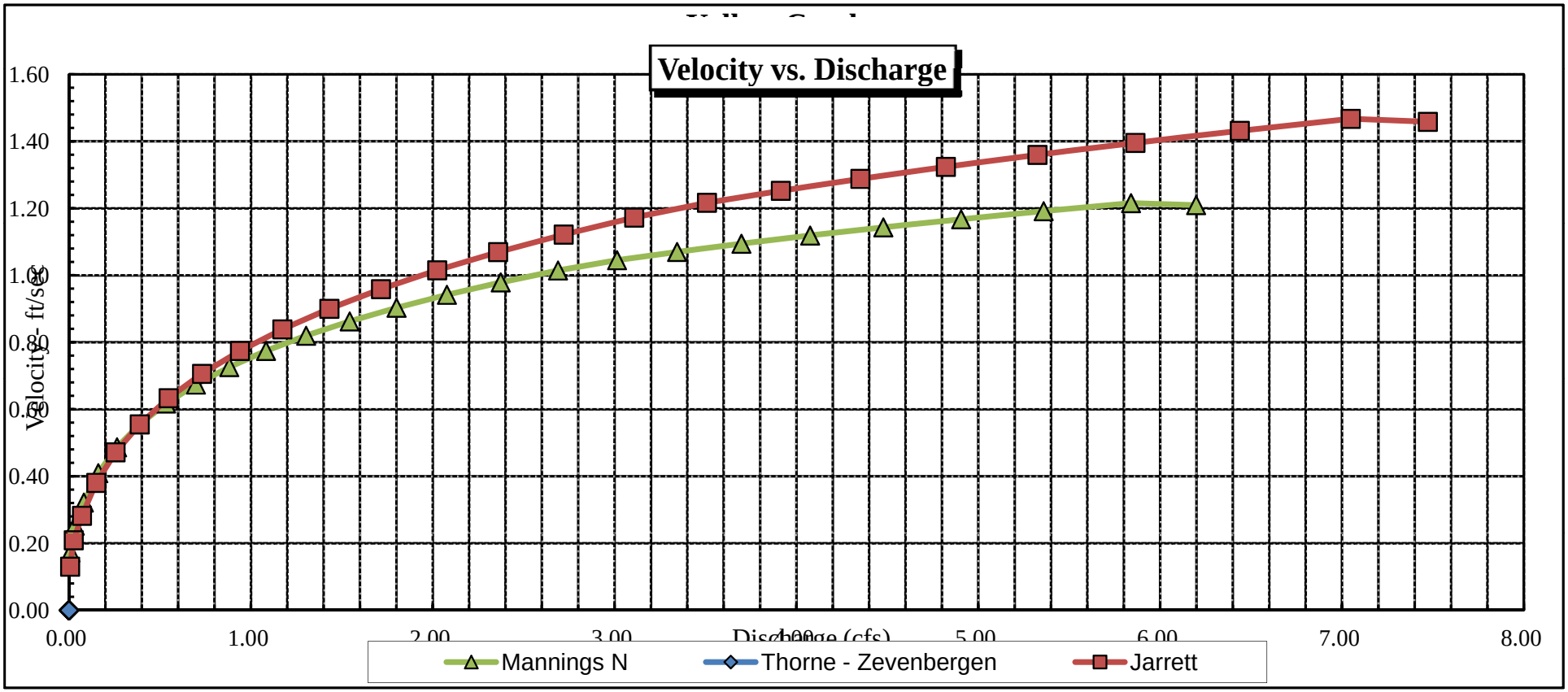
RATIONALE FOR RECOMMENDATION:
============================

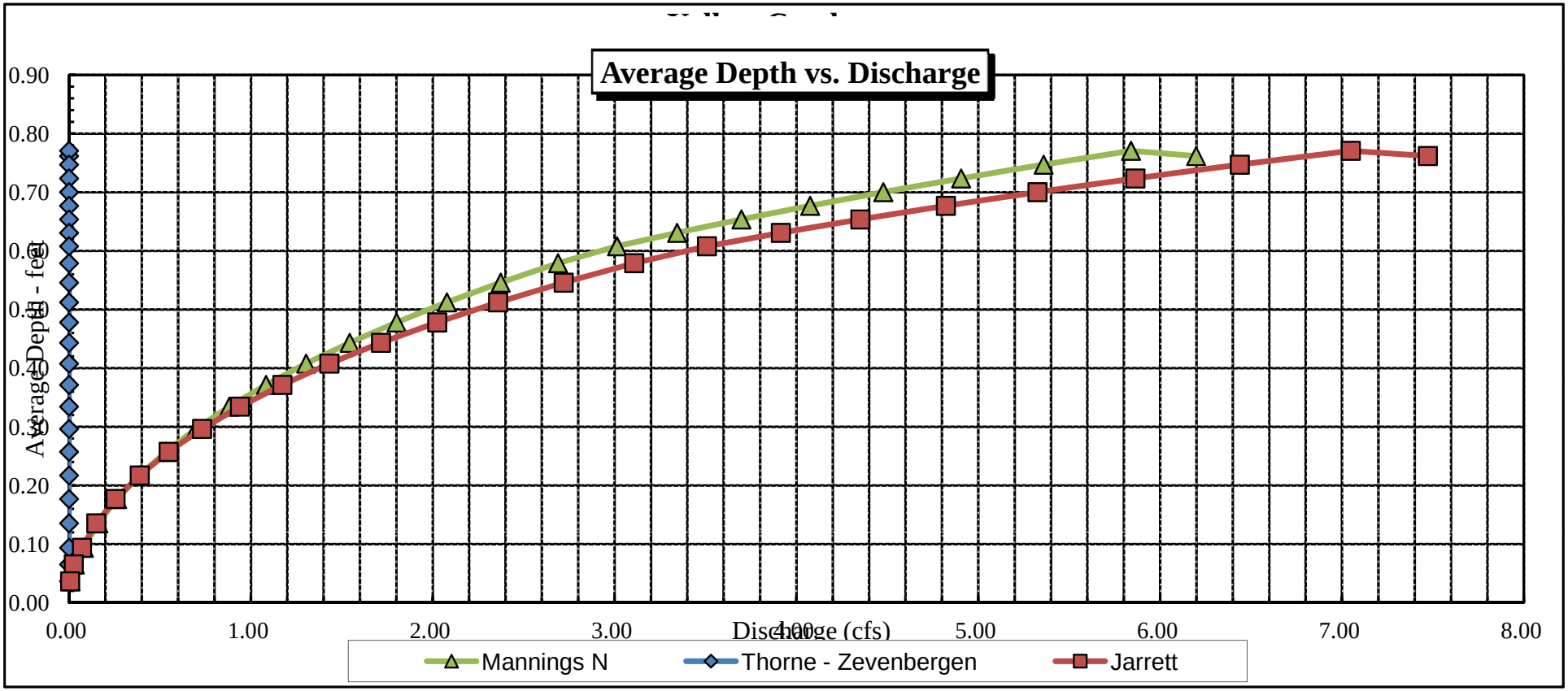
RECOMMENDATION BY: ………………....……...…….............................. AGENCY...……………………......…....…...….…...... DATE:......…...….......……………

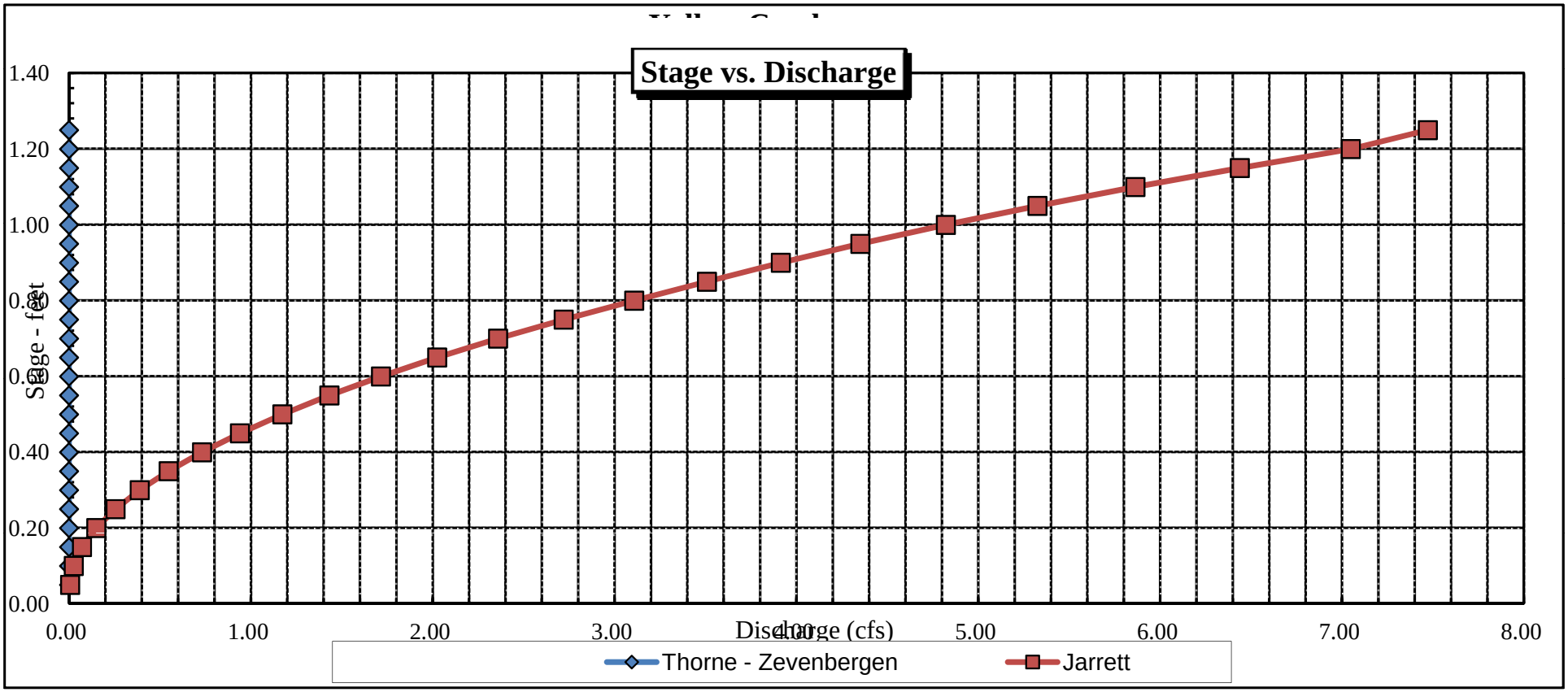
CWCB REVIEW BY: ..…………………………....………………………………………………...…............. DATE:.................…………….....


CROSS SECTION DATA ANALYSIS
LS
G
W
W
G
RS
-5.00
-5.50
-6.00
-6.50
-7.00
-7.50
VERTICAL DEPTH (FT)
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
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
1.00
2.00
3.00
5.00
6.00
7.00
8.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Stage - feet
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Yellow Creek						CROSS-SECTION NO.: 3
CROSS-SECTION LOCATION: above Lambert Spring						
DATE: 9-27-11	OBSERVERS: R. Smith, B. Lange					
LEGAL DESCRIPTION	¼ SECTION: NW SE	SECTION: 16	TOWNSHIP: 2 (N) S	RANGE: 98 E (W)	PM: Sixth	
COUNTY: Rio Blanco	WATERSHED: White River	WATER DIVISION: 6	DOW WATER CODE: 25343			
MAP(S): USGS:		utm zone 12 722547 4446441				
USFS:						

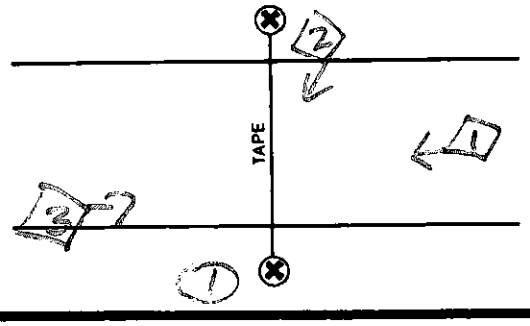
SUPPLEMENTAL DATA

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: gravels	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	6.96 / 6.96
(2) WS Upstream	10.3	6.88
(3) WS Downstream	9.1	7.10
SLOPE	0.22 / 19.4 = .011	

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

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

COMMENTS

pH = 8.65
Temp = 22.7°C
Cond = 3054
Sal = 1.6

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Creek	CROSS-SECTION NO.:	DATE: 9-27-11	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME: 2:10 pm

Features (Stake (S) Grassline (G) Waterline (W) Rock (R))	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
S	0.0		5.34								
	2.0		6.06								
G	2.7		5.96								
W	3.0		6.96								
	3.3		7.25	.3				.04			
	3.6		7.25	0.3				0.09			
	3.9		7.15	0.2				0.34			
	4.2		7.15	0.2				0.69			
	4.5		7.25	0.3				0.94			
	4.8		7.25	0.3				1.14			
	5.1		7.20	0.25				1.09			
	5.4		7.15	0.2				0.59			
	5.7		7.15	0.2				0.22			
	6.0		7.05	0.1				Ø			
W	6.2		6.96								
	7.5		6.12								
G	9.4		5.94								
RS	11.4		5.36								
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:	Yellow Creek
XS LOCATION:	1/8 mile d/s from conf. w/ Barcus Ck.
XS NUMBER:	1
DATE:	9-Sep-04
OBSERVERS:	R. Smith, P. Daggett
1/4 SEC:	NW
SECTION:	26
TWP:	2N
RANGE:	98W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25242
USGS MAP:	Rough Gulch 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:	0.01

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

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

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s from conf. w/ Barcus Ck.
XS NUMBER: 1

DATA POINTS= 17

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	5.04			0.00		0.00	0.00	0.0%
		0.50	5.30			0.00		0.00	0.00	0.0%
1	G	2.00	5.74			0.00		0.00	0.00	0.0%
		2.70	6.20			0.00		0.00	0.00	0.0%
	W	3.00	6.21	0.00	0.00	0.00		0.00	0.00	0.0%
		3.30	6.36	0.15	0.00	0.34	0.15	0.05	0.00	0.0%
		3.60	6.42	0.20	0.67	0.31	0.20	0.06	0.04	8.2%
		3.90	6.45	0.25	0.80	0.30	0.25	0.08	0.06	12.2%
		4.20	6.49	0.30	0.69	0.30	0.30	0.09	0.06	12.7%
		4.50	6.52	0.30	0.94	0.30	0.30	0.09	0.08	17.3%
		4.80	6.51	0.30	0.98	0.30	0.30	0.09	0.09	18.0%
		5.10	6.55	0.35	0.94	0.30	0.35	0.11	0.10	20.1%
		5.40	6.50	0.30	0.59	0.30	0.30	0.09	0.05	10.8%
		5.70	6.54	0.35	0.03	0.30	0.35	0.11	0.00	0.6%
	W	6.00	6.22	0.00	0.00	0.44		0.00	0.00	0.0%
1	G	7.20	5.75			0.00		0.00	0.00	0.0%
	LS	10.80	5.35			0.00		0.00	0.00	0.0%
	TOTALS ----------					3.20	0.35 (Max.)	0.75	0.49	100.0%

Manning's n = 0.0865
Hydraulic Radius= 0.23472359

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s from conf. w/ Barcus Ck.
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	0.75	0.72	-3.8%
5.97	0.75	1.67	122.5%
5.99	0.75	1.58	111.1%
6.01	0.75	1.50	99.9%
6.03	0.75	1.42	89.0%
6.05	0.75	1.34	78.3%
6.07	0.75	1.26	67.7%
6.09	0.75	1.18	57.4%
6.11	0.75	1.11	47.4%
6.13	0.75	1.03	37.5%
6.15	0.75	0.96	27.9%
6.17	0.75	0.89	18.4%
6.18	0.75	0.85	13.8%
6.19	0.75	0.82	9.2%
6.20	0.75	0.79	4.7%
6.21	0.75	0.75	0.3%
6.22	0.75	0.72	-3.8%
6.23	0.75	0.69	-7.8%
6.24	0.75	0.66	-11.7%
6.25	0.75	0.63	-15.6%
6.26	0.75	0.60	-19.5%
6.27	0.75	0.58	-23.3%
6.29	0.75	0.52	-30.8%
6.31	0.75	0.46	-38.1%
6.33	0.75	0.41	-45.3%
6.35	0.75	0.36	-52.4%
6.37	0.75	0.31	-59.3%
6.39	0.75	0.26	-65.9%
6.41	0.75	0.21	-72.2%
6.43	0.75	0.16	-78.2%
6.45	0.75	0.12	-83.6%
6.47	0.75	0.09	-88.5%

WATERLINE AT ZERO
AREA ERROR = 6.206

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s from conf. w/ Barcus Ck.
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	5.75	5.18	0.52	0.80	2.69	5.60	100.0%	0.48	2.83	1.05
	5.76	5.16	0.52	0.79	2.66	5.58	99.5%	0.48	2.79	1.05
	5.81	4.96	0.49	0.74	2.41	5.35	95.5%	0.45	2.43	1.01
	5.86	4.75	0.46	0.69	2.16	5.12	91.4%	0.42	2.09	0.97
	5.91	4.55	0.42	0.64	1.93	4.89	87.3%	0.39	1.78	0.92
	5.96	4.35	0.39	0.59	1.71	4.66	83.2%	0.37	1.50	0.88
	6.01	4.14	0.36	0.54	1.50	4.44	79.2%	0.34	1.25	0.83
	6.06	3.94	0.33	0.49	1.29	4.21	75.1%	0.31	1.01	0.78
	6.11	3.74	0.30	0.44	1.10	3.98	71.0%	0.28	0.80	0.73
	6.16	3.53	0.26	0.39	0.92	3.75	67.0%	0.25	0.62	0.67
WL	6.21	3.17	0.24	0.34	0.75	3.36	60.0%	0.22	0.47	0.63
	6.26	2.88	0.21	0.29	0.60	3.04	54.3%	0.20	0.35	0.58
	6.31	2.73	0.17	0.24	0.46	2.86	51.1%	0.16	0.24	0.51
	6.36	2.58	0.13	0.19	0.33	2.68	47.9%	0.12	0.14	0.42
	6.41	2.30	0.09	0.14	0.21	2.37	42.3%	0.09	0.07	0.34
	6.46	1.84	0.06	0.09	0.10	1.89	33.7%	0.05	0.03	0.25
	6.51	1.30	0.02	0.04	0.02	1.32	23.6%	0.02	0.00	0.11

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s from conf. w/ Barcus Ck.
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	0.49	cfs
CALCULATED FLOW (Qc)=	0.47	cfs
(Qm-Qc)/Qm * 100 =	3.4	%
MEASURED WATERLINE (WLm)=	6.22	ft
CALCULATED WATERLINE (WLc)=	6.21	ft
(WLm-WLc)/WLm * 100 =	0.1	%
MAX MEASURED DEPTH (Dm)=	0.35	ft
MAX CALCULATED DEPTH (Dc)=	0.34	ft
(Dm-Dc)/Dm * 100	1.6	%
MEAN VELOCITY=	0.63	ft/sec
MANNING'S N=	0.087	
SLOPE=	0.01	ft/ft
.4 * Qm =	0.2	cfs
2.5 * Qm=	1.2	cfs

RECOMMENDED INSTREAM FLOW:
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FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

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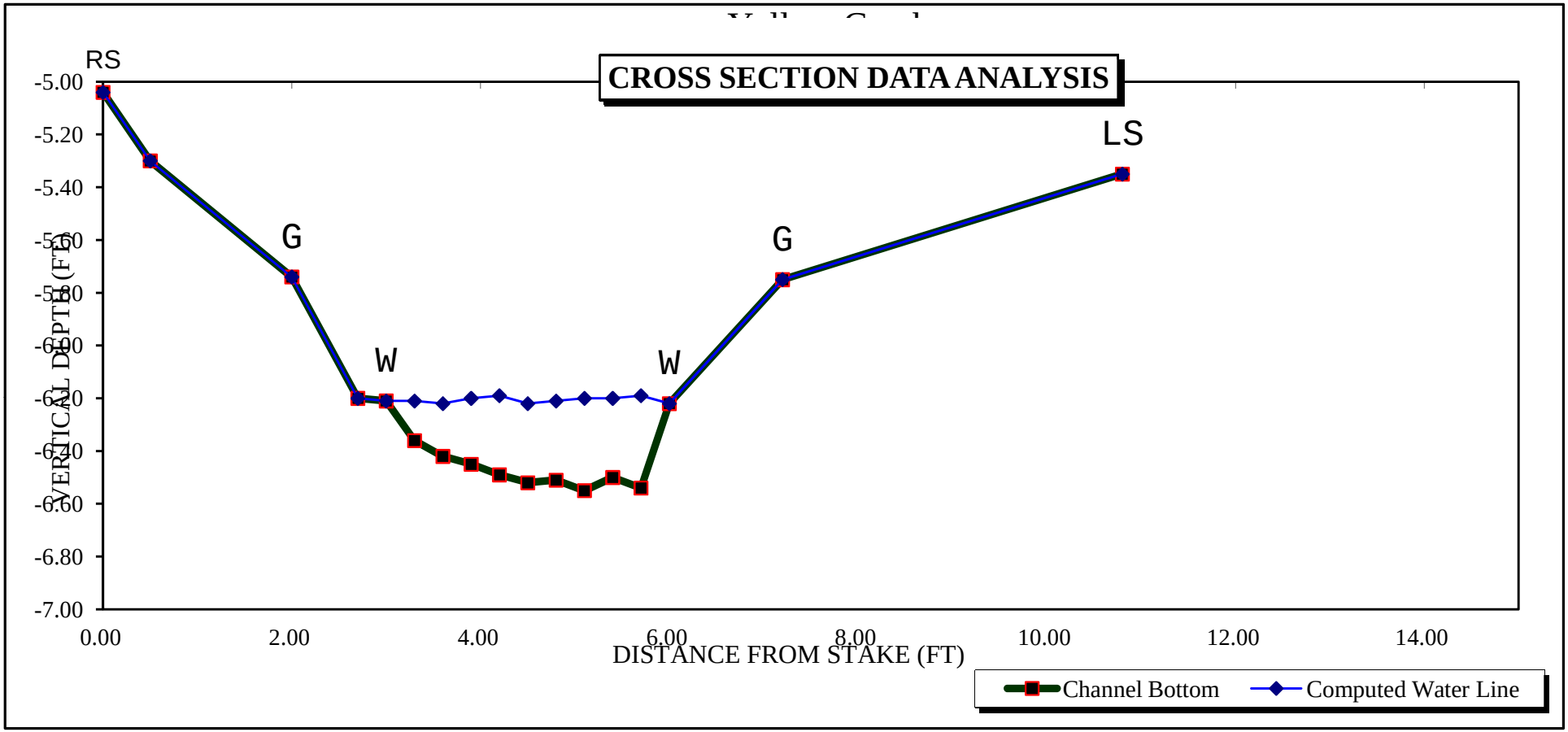
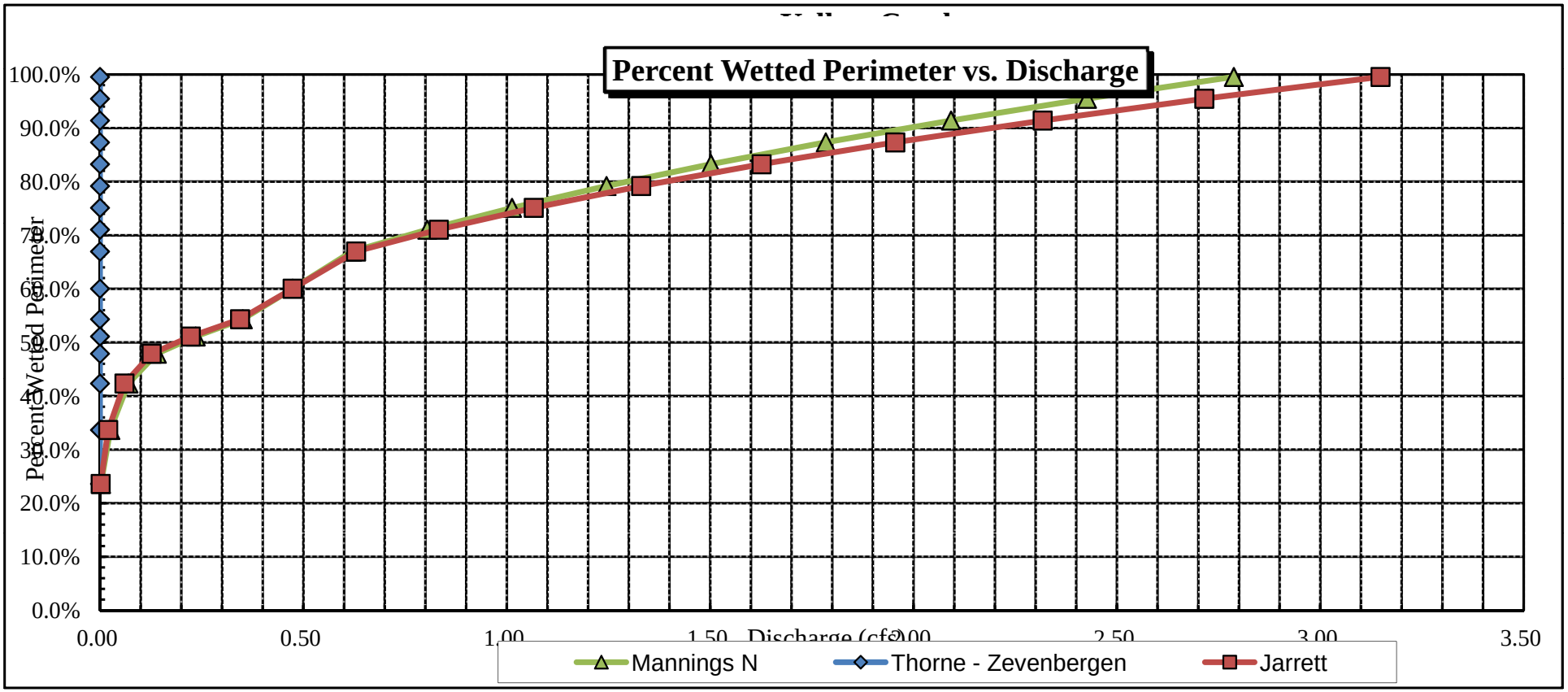
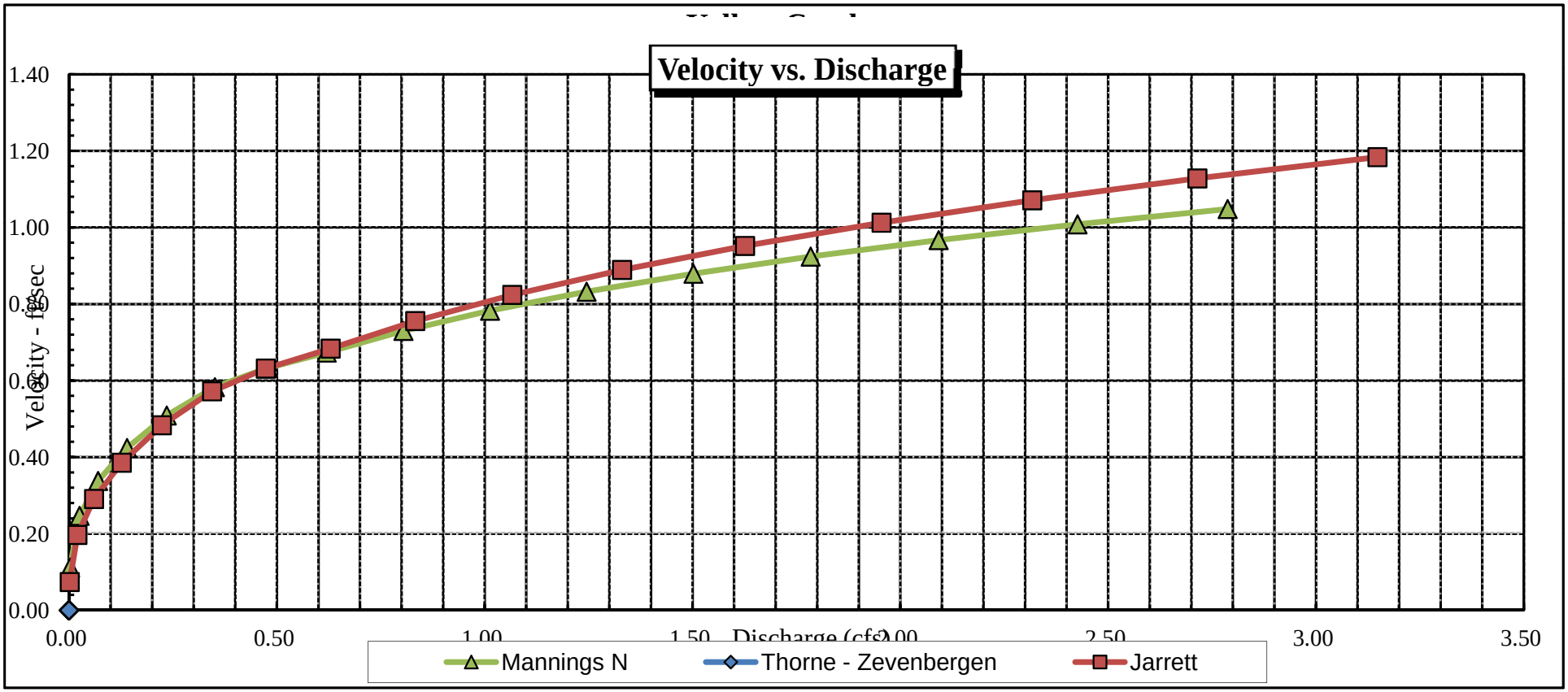
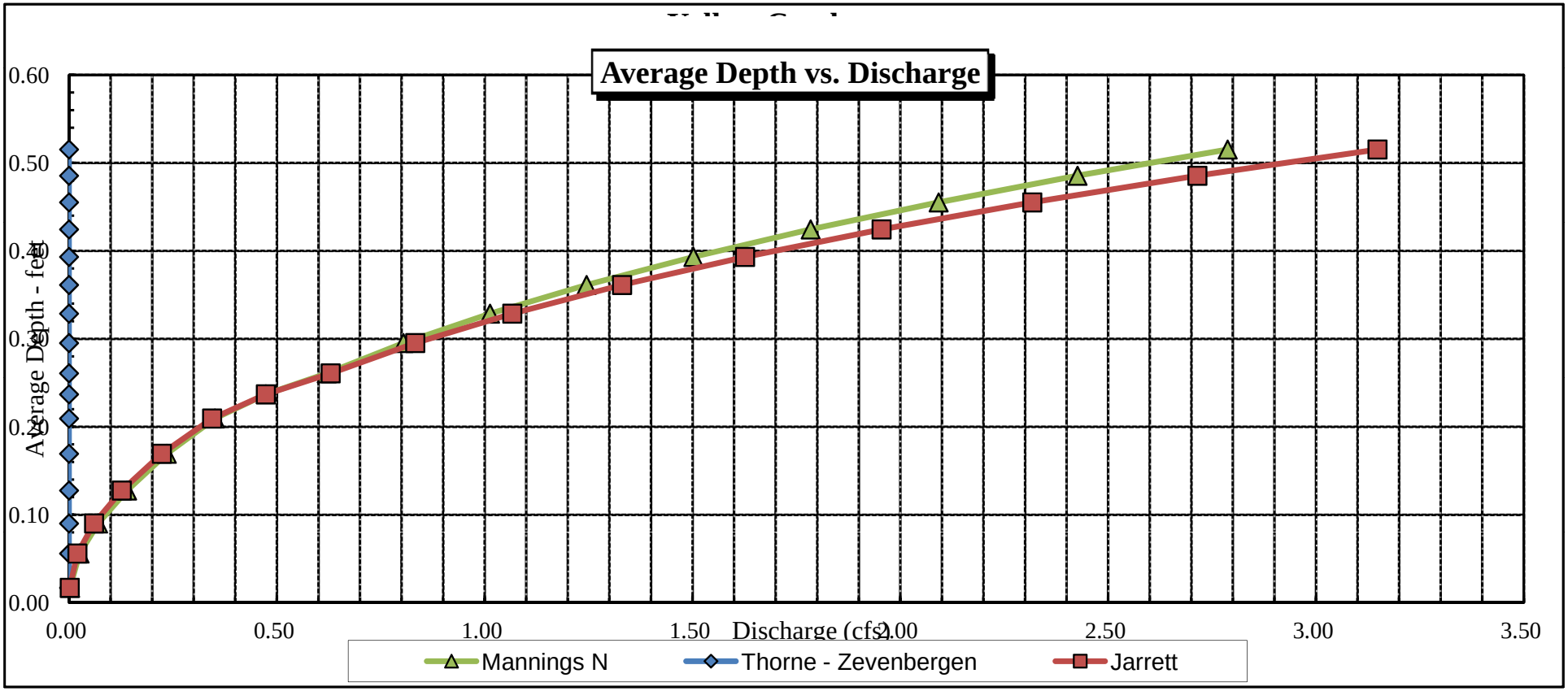
RECOMMENDATION BY: ……………………...……….…….............................. AGENCY...……………………….......……......…..…........ DATE:.......…...….......……………

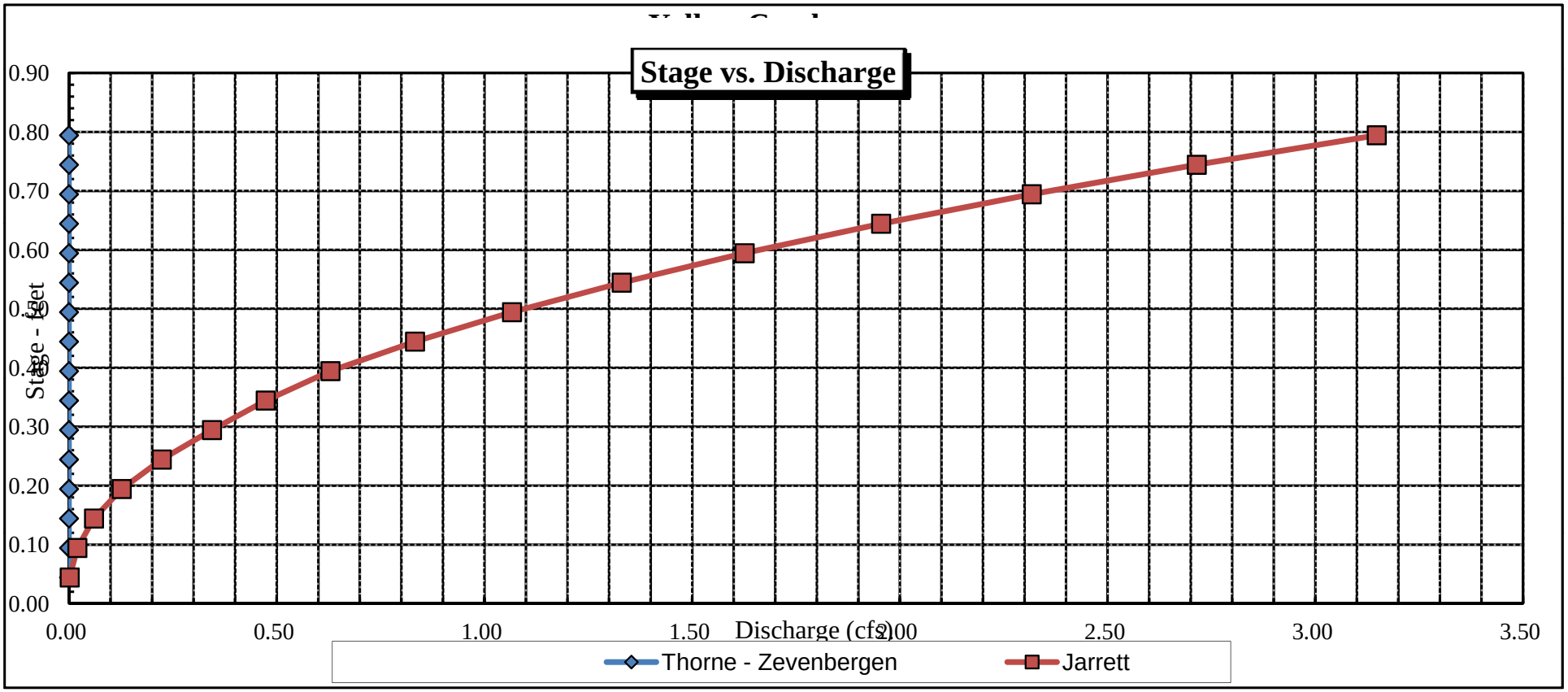
CWCB REVIEW BY: ..……………………………....……………………………………………………...…............. DATE:.................…………….....…


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
LS
-5.00
-5.20
-5.40
-6.60
-6.80
-7.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
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
0.50
1.00
1.50
2.00
2.50
3.00
3.50
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Stage - feet
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Yellow Creek | CROSS-SECTION NO.: 1

CROSS SECTION LOCATION: 1/8 downstream from confluence w/ Barcus Creek

DATE: 7-7-04 | OBSERVERS: R. Smith, P Daggett

LEGAL DESCRIPTION	¼ SECTION	SECTION	TOWNSHIP	RANGE	PM
	NW	26	2 (N)S	98 E/(W)	6th

COUNTY	WATERSHED	WATER DIVISION	DOW WATER CODE
Rio Blanco	White River	6	25242

MAP(S): USGS: Rough Gulch 7.5' 12 T 0725062 4444041

USFS:

SUPPLEMENTAL DATA

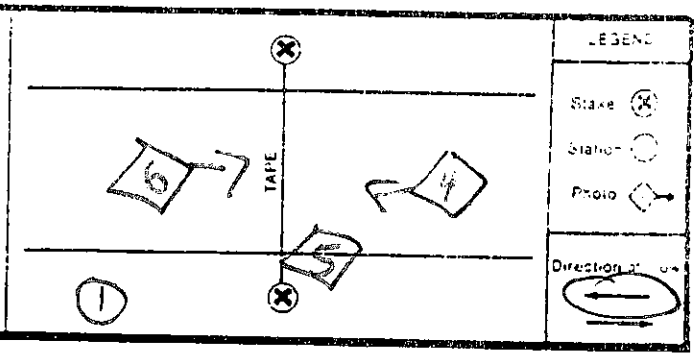
TAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO | METER TYPE: Marsh-McBirney

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: 5

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	6.22/6.21
② WS Upstream	15.0'	6.16
③ WS Downstream	15.0'	6.40
SLOPE	0.24/30.0' = 0.01	



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 attached survey																	

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME

mayfly, snails, annelids, caddisfly

COMMENTS

TDS: >2000 µs Ph: 8.5 Temp: 12°C

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Creek | CROSS-SECTION NO: | DATE: 9-9-04 | SHEET __ OF __

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM (0.0 AT STAKE) | LEFT / RIGHT | Gage Reading: 0.3 ft | TIME: 9:20 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 (ft²)	Discharge (cfs)
RS	0.0		5.04								
	0.5		5.30								
G	2.0		5.74								
	2.7		6.20								
W	3.0		6.21	0				0			
	3.3		6.36	0.15				0			
	3.6		6.42	0.20				0.67			
	3.9		6.45	0.25				0.80			
	4.2		6.49	0.30				0.69			
	4.5		6.52	0.30				0.94			
	4.8		6.51	0.30				0.98			
	5.1		6.55	0.35				0.94			
	5.4		6.50	0.30				0.59			
	5.7		6.54	0.35				0.03			
W	6.0		6.22	0				0			
G	7.2		5.75								
LS	10.8		5.35								
TOTALS											

End of Measurement | Time: 9:40 | Gage Reading: 0.3 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:	Yellow Creek
XS LOCATION:	1/8 mile d/s fr conf. w/ Barcus Ck.
XS NUMBER:	2
DATE:	9-Sep-04
OBSERVERS:	R. Smith, P. Daggett
1/4 SEC:	NW
SECTION:	26
TWP:	2N
RANGE:	98W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25242
USGS MAP:	Rough Gulch 7.5
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:	0.02

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

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

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s fr conf. w/ Barcus Ck.
XS NUMBER: 2

DATA POINTS= 21

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	4.60			0.00		0.00	0.00	0.0%
	0.40	4.94			0.00		0.00	0.00	0.0%
1 G	1.30	5.46			0.00		0.00	0.00	0.0%
W	2.00	5.70	0.00	0.00	0.00		0.00	0.00	0.0%
	2.30	6.06	0.35	0.00	0.47	0.35	0.11	0.00	0.0%
	2.60	5.88	0.20	0.00	0.35	0.20	0.06	0.00	0.0%
	2.90	5.89	0.20	0.11	0.30	0.20	0.06	0.01	1.2%
	3.20	5.85	0.15	0.38	0.30	0.15	0.05	0.02	3.0%
	3.50	6.00	0.30	0.70	0.34	0.30	0.09	0.06	11.0%
	3.80	6.02	0.30	1.09	0.30	0.30	0.09	0.10	17.1%
	4.10	6.01	0.30	1.13	0.30	0.30	0.09	0.10	17.8%
	4.40	6.00	0.30	1.61	0.30	0.30	0.09	0.14	25.3%
	4.70	5.97	0.30	1.09	0.30	0.30	0.09	0.10	17.1%
	5.00	5.96	0.25	0.52	0.30	0.25	0.08	0.04	6.8%
	5.30	5.86	0.15	0.09	0.32	0.15	0.05	0.00	0.7%
	5.60	5.80	0.10	0.00	0.31	0.10	0.03	0.00	0.0%
W	5.80	5.70	0.00	0.00	0.22		0.00	0.00	0.0%
1 G	5.90	5.41			0.00		0.00	0.00	0.0%
	6.40	5.16			0.00		0.00	0.00	0.0%
	9.00	5.00			0.00		0.00	0.00	0.0%
LS	10.60	4.88			0.00		0.00	0.00	0.0%
TOTALS ----------					4.11	0.35 (Max.)	0.87	0.57	100.0%

Manning's n = 0.1124
Hydraulic Radius= 0.21071137

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s fr conf. w/ Barcus Ck.
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	0.87	0.87	0.0%
5.45	0.87	1.92	121.6%
5.47	0.87	1.83	111.0%
5.49	0.87	1.73	100.6%
5.51	0.87	1.65	90.3%
5.53	0.87	1.56	80.1%
5.55	0.87	1.47	70.1%
5.57	0.87	1.39	60.3%
5.59	0.87	1.30	50.6%
5.61	0.87	1.22	41.1%
5.63	0.87	1.14	31.7%
5.65	0.87	1.06	22.4%
5.66	0.87	1.02	17.9%
5.67	0.87	0.98	13.3%
5.68	0.87	0.94	8.9%
5.69	0.87	0.90	4.4%
5.70	0.87	0.87	0.0%
5.71	0.87	0.83	-4.4%
5.72	0.87	0.79	-8.7%
5.73	0.87	0.75	-13.0%
5.74	0.87	0.72	-17.3%
5.75	0.87	0.68	-21.6%
5.77	0.87	0.61	-29.9%
5.79	0.87	0.53	-38.2%
5.81	0.87	0.46	-46.3%
5.83	0.87	0.40	-54.2%
5.85	0.87	0.33	-61.8%
5.87	0.87	0.27	-68.9%
5.89	0.87	0.21	-75.2%
5.91	0.87	0.17	-80.5%
5.93	0.87	0.13	-85.4%
5.95	0.87	0.09	-90.0%

WATERLINE AT ZERO
AREA ERROR = 5.700

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s fr conf. w/ Barcus Ck.
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	5.46	4.58	0.41	0.60	1.87	5.10	100.0%	0.37	1.79	0.96
	5.50	4.45	0.38	0.56	1.69	4.93	96.8%	0.34	1.55	0.92
	5.55	4.29	0.34	0.51	1.47	4.73	92.7%	0.31	1.26	0.86
	5.60	4.13	0.31	0.46	1.26	4.52	88.6%	0.28	1.01	0.80
	5.65	3.96	0.27	0.41	1.06	4.31	84.6%	0.25	0.78	0.73
WL	5.70	3.80	0.23	0.36	0.86	4.11	80.5%	0.21	0.57	0.66
	5.75	3.66	0.19	0.31	0.68	3.93	77.0%	0.17	0.39	0.58
	5.80	3.52	0.14	0.26	0.50	3.75	73.6%	0.13	0.24	0.49
	5.85	3.22	0.10	0.21	0.33	3.43	67.3%	0.10	0.13	0.39
	5.90	2.28	0.08	0.16	0.19	2.44	47.8%	0.08	0.07	0.34
	5.95	1.90	0.05	0.11	0.09	2.00	39.3%	0.04	0.02	0.23
	6.00	1.05	0.01	0.06	0.01	1.10	21.5%	0.01	0.00	0.10
	6.05	0.02	0.00	0.01	0.00	0.03	0.6%	0.00	0.00	0.05

STREAM NAME: Yellow Creek
XS LOCATION: 1/8 mile d/s fr conf. w/ Barcus Ck.
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	0.57	cfs
CALCULATED FLOW (Qc)=	0.57	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	5.70	ft
CALCULATED WATERLINE (WLc)=	5.70	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.35	ft
MAX CALCULATED DEPTH (Dc)=	0.36	ft
(Dm-Dc)/Dm * 100	-2.9	%
MEAN VELOCITY=	0.66	ft/sec
MANNING'S N=	0.112	
SLOPE=	0.02	ft/ft
.4 * Qm =	0.2	cfs
2.5 * Qm=	1.4	cfs

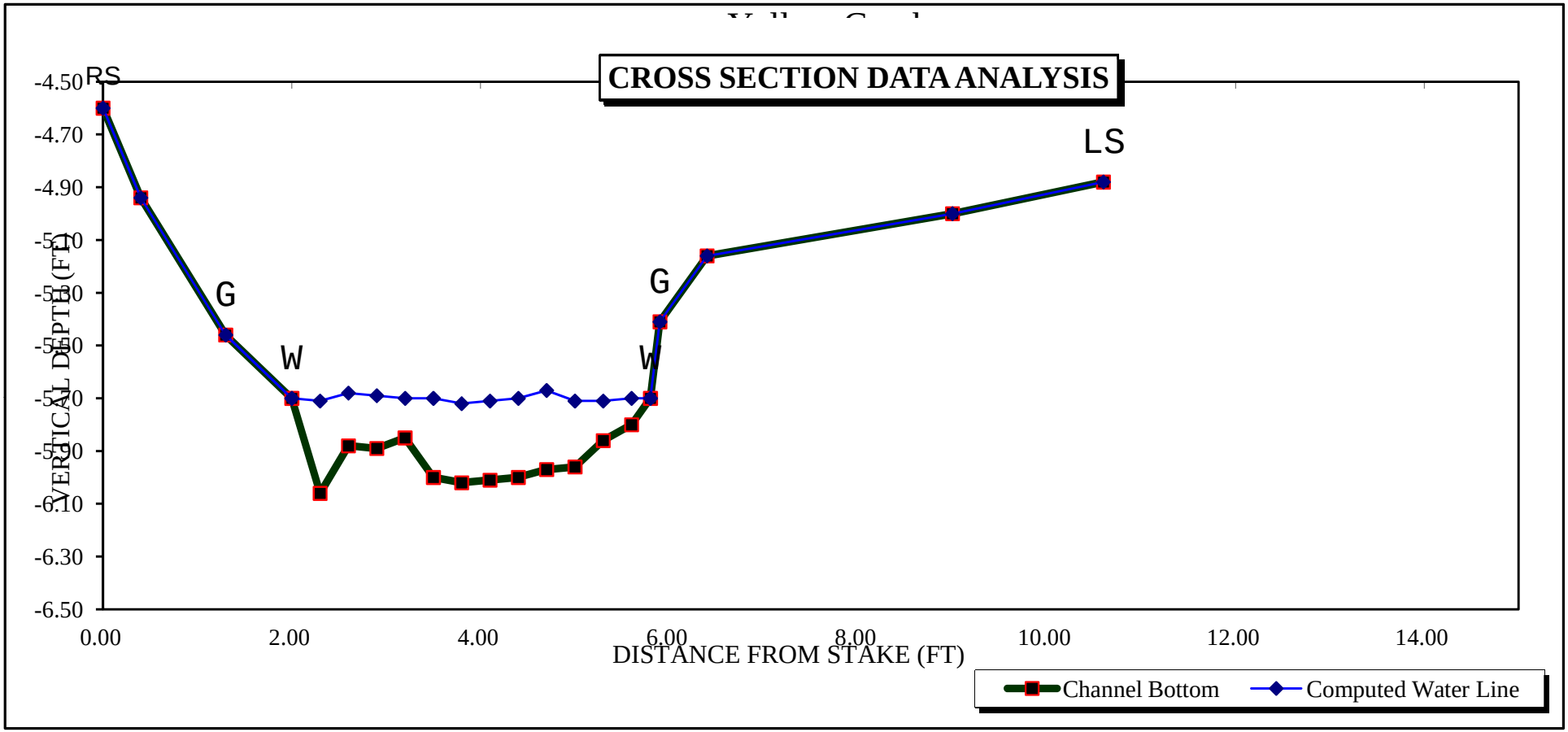
RECOMMENDED INSTREAM FLOW:
=============================

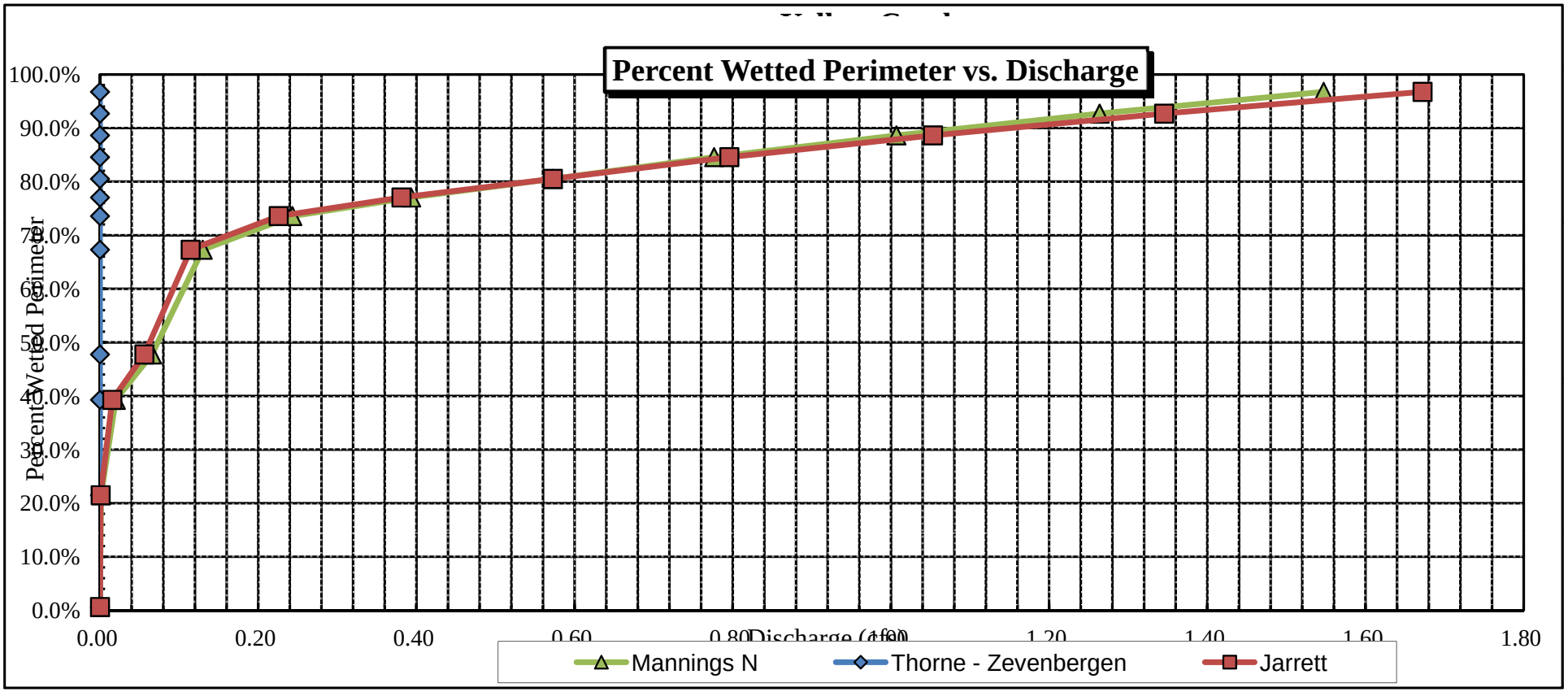
FLOW (CFS)	PERIOD
___________	___________
___________	___________
___________	___________
___________	___________

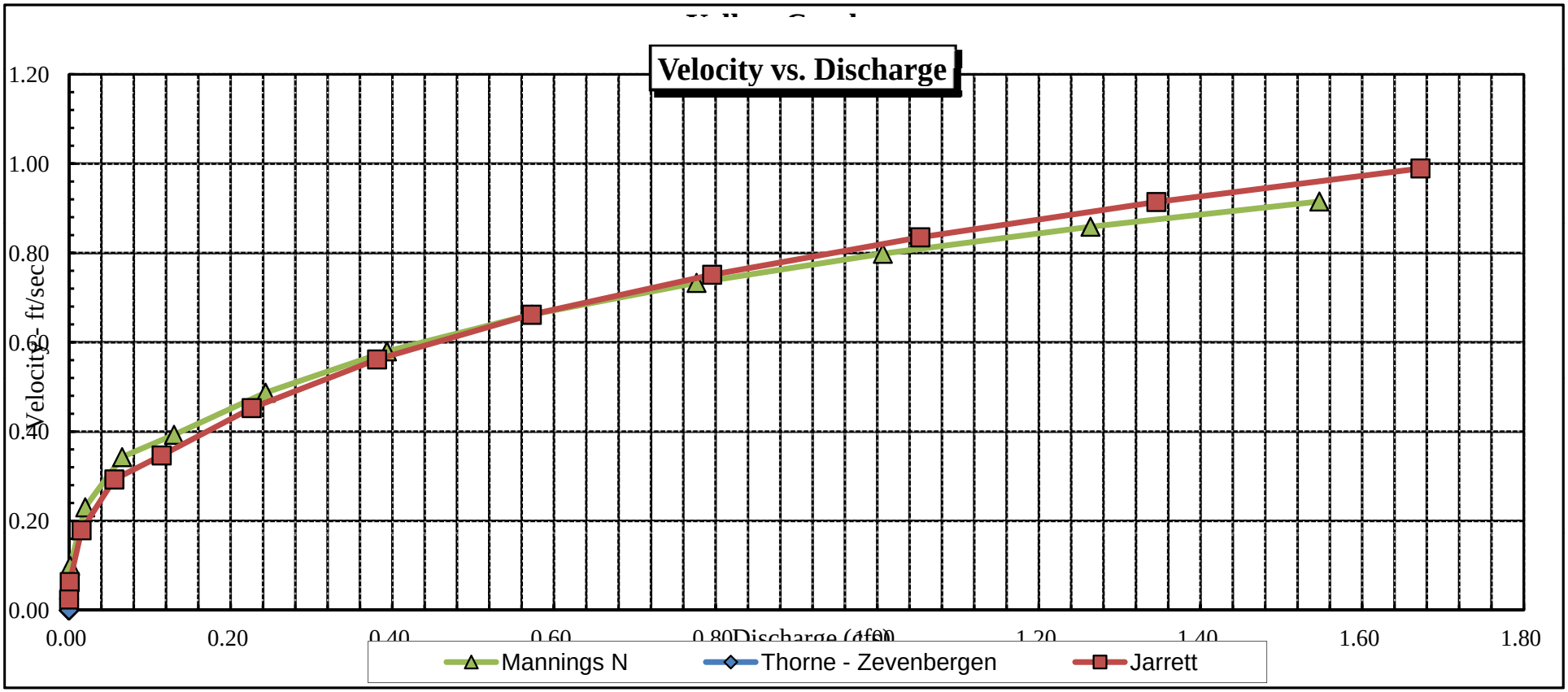
RATIONALE FOR RECOMMENDATION:
=============================

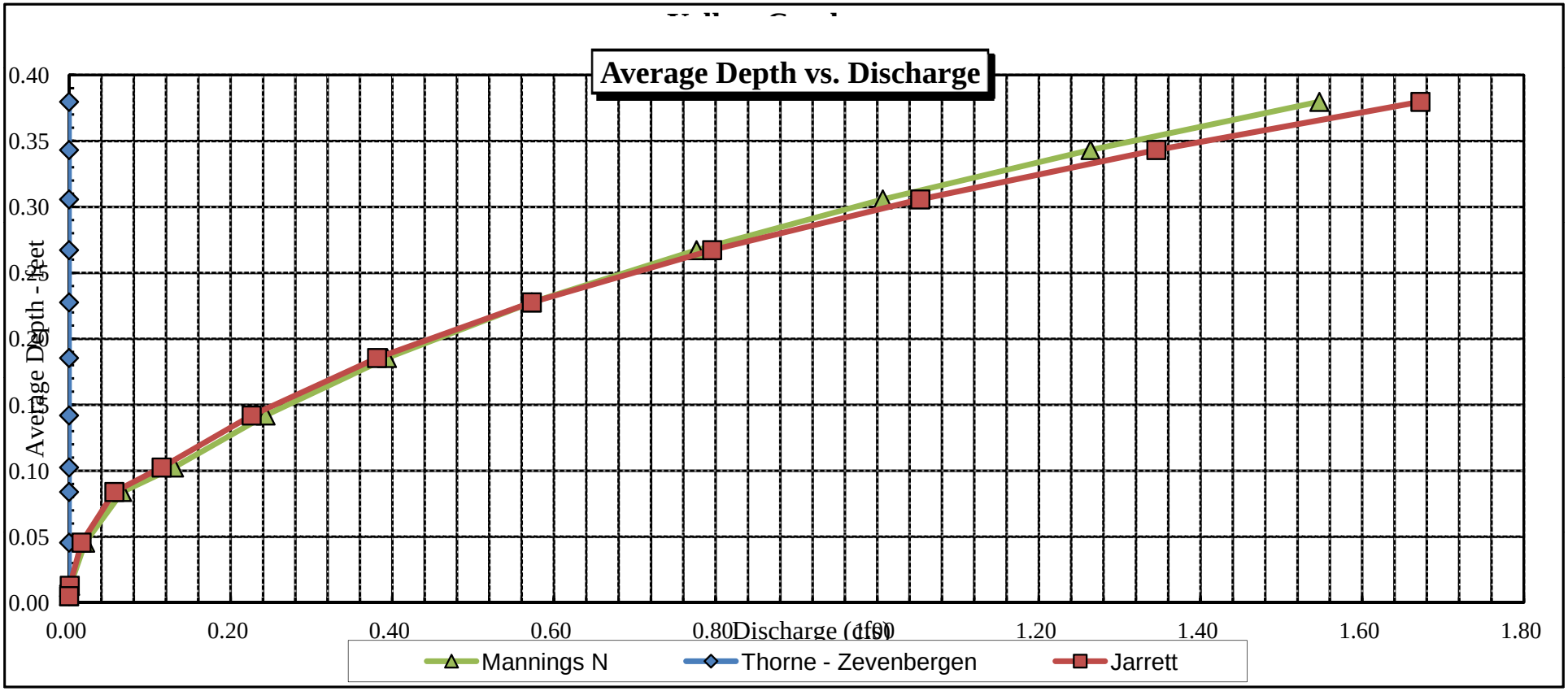
RECOMMENDATION BY: ………………...……...…….............................. AGENCY...………………………......…....…...…....... DATE:......…...….......……………

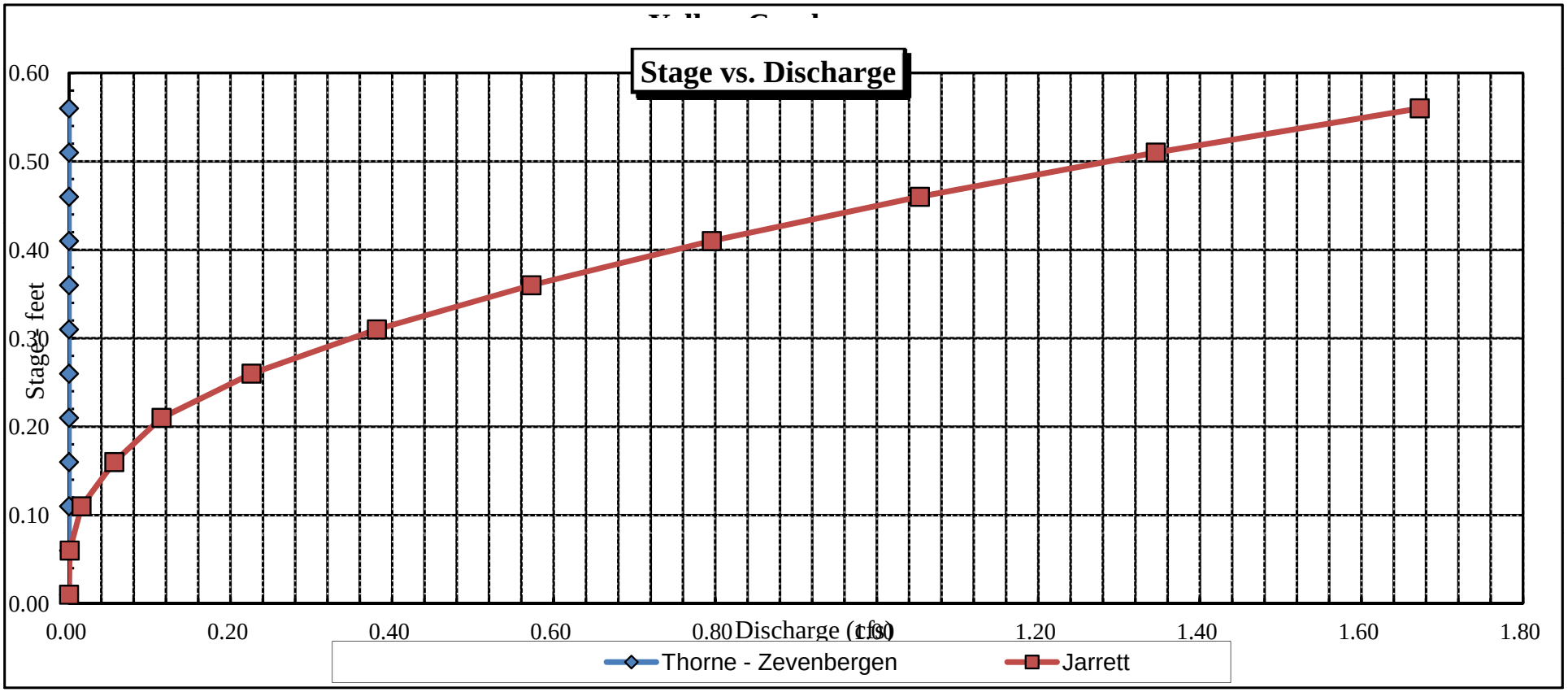
CWCB REVIEW BY: ..…………………………....………………………………………………...…............. DATE:.................…………….....


CROSS SECTION DATA ANALYSIS
RS
LS
G
W
G
W
-4.50
-4.70
-4.90
-6.10
-6.30
-6.50
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
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
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Velocity - ft/sec
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - Feet
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Stage, feet
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: Yellow Creek | CROSS-SECTION NO: 2

CROSS SECTION LOCATION: 1/8 mile downstream from confluence w/ Baraus Creek

DATE: 9-9-04 | OBSERVERS: R. Smith, P. Daggett

LEGAL DESCRIPTION: ¼ SECTION: NW | SECTION: 26 | TOWNSHIP: 2 (N)/S | RANGE: 98 E/(W) | PM: 6th

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

MAP(S): USGS: Rough Gulch 7.5' | USFS:

Zone 12 729462 NAD 27 4444 [illegible]

SUPPLEMENTAL DATA

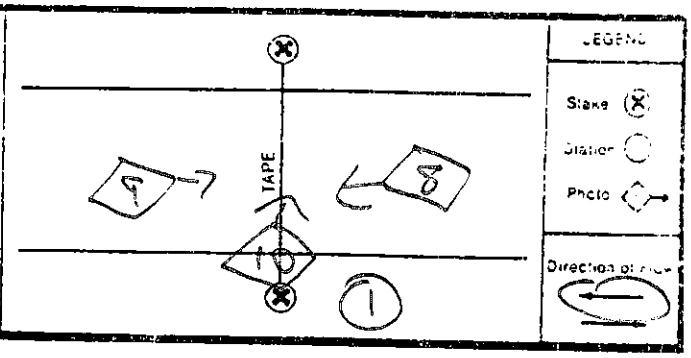
TAG TAPE SECTION SAME AS DISCHARGE SECTION (YES/NO) | METER TYPE: Marsh-McBirney

METER NUMBER | DATE RATED: | CALIB/SPIN ____ sec | TAPE WEIGHT surveyed ____ lbs/100' | 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	5.70/5.70
② WS Upstream	15.0'	5.31
③ WS Downstream	15.0'	5.90
SLOPE	0.59 / 30.0 = 0.02	



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 attached																	

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME

mayfly, caddisfly, snails

COMMENTS

TDS = >2000 µs Ph: 8.5 Temp: 12°C

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Creek | CROSS-SECTION NO: 2 | DATE: 9-9-04 | SHEET: __ OF __

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM (0.0 AT STAKE) | LEFT / RIGHT | Gage Reading: 0.3 ft | TIME: 10:30

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		4.60								
G	0.4		4.94								
	1.3		5.46								
W	2.0		5.70	Ø				Ø			
	2.3		6.06	0.35							
	2.6		5.88	0.20				0			
	2.9		5.89	0.20				0.11			
	3.2		5.85	0.15				0.33			
	3.5		6.00	0.30				0.70			
	3.8		6.02	0.30				1.09			
	4.1		6.01	0.30				1.13			
	4.4		6.00	0.30				1.61			
	4.7		5.97	0.30				1.03			
	5.0		5.96	0.25				0.52			
	5.3		5.86	0.15				0.09			
	5.6		5.80	0.10				0			
W	5.8		5.70	Ø				Ø			
	5.9		5.41								
G	6.4		5.16								
	9.0		5.00								
LS	10.6		4.88								
TOTALS											

End of Measurement | Time: 10:50 | Gage Reading: 0.3 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:	Yellow Creek
XS LOCATION:	0.25 mi dwnstr from conf w Lambert Spg.
XS NUMBER:	1
DATE:	7-Jul-15
OBSERVERS:	R. Smith, B. Logan, B. Epstein
1/4 SEC:	SW NW
SECTION:	15
TWP:	2N
RANGE:	98W
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	*** NOTE *** Leave TAPE WT and TENSION at defaults for data collected with a survey level and rod
TENSION:	99999	

CHANNEL PROFILE DATA

SLOPE:	0.007

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

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

STREAM NAME: Yellow Creek
XS LOCATION: 0.25 mi dwnstr from conf w Lambert Spg.
XS NUMBER: 1

DATA POINTS= 32

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	4.07			0.00		0.00	0.00	0.0%
1	G	0.80	4.70			0.00		0.00	0.00	0.0%
		1.80	5.46			0.00		0.00	0.00	0.0%
	W	3.00	5.70	0.00	0.00	0.00		0.00	0.00	0.0%
		3.20	5.80	0.10	0.00	0.22	0.10	0.02	0.00	0.0%
		3.40	5.85	0.15	0.00	0.21	0.15	0.03	0.00	0.0%
		3.60	5.87	0.17	0.00	0.20	0.17	0.03	0.00	0.0%
		3.80	6.05	0.35	0.66	0.27	0.35	0.07	0.05	3.5%
		4.00	6.11	0.41	0.71	0.21	0.41	0.08	0.06	4.4%
		4.20	6.11	0.41	1.26	0.20	0.41	0.08	0.10	7.9%
		4.40	6.13	0.43	0.47	0.20	0.43	0.09	0.04	3.1%
		4.60	6.12	0.42	0.75	0.20	0.42	0.08	0.06	4.8%
		4.80	6.08	0.38	0.52	0.20	0.38	0.08	0.04	3.0%
		5.00	6.08	0.38	1.00	0.20	0.38	0.08	0.08	5.8%
		5.20	6.05	0.35	0.82	0.20	0.35	0.07	0.06	4.4%
		5.40	6.08	0.38	0.51	0.20	0.38	0.08	0.04	3.0%
		5.60	6.04	0.34	0.95	0.20	0.34	0.07	0.06	4.9%
		5.80	6.03	0.33	0.87	0.20	0.33	0.07	0.06	4.4%
		6.00	6.00	0.30	1.12	0.20	0.30	0.06	0.07	5.1%
		6.20	6.00	0.30	1.75	0.20	0.30	0.06	0.11	8.0%
		6.40	6.00	0.30	1.01	0.20	0.30	0.06	0.06	4.6%
		6.60	6.00	0.30	2.03	0.20	0.30	0.06	0.12	9.3%
		6.80	5.96	0.26	2.07	0.20	0.26	0.05	0.11	8.2%
		7.00	5.98	0.28	1.62	0.20	0.28	0.06	0.09	6.9%
		7.20	6.00	0.30	1.90	0.20	0.30	0.06	0.11	8.7%
		7.40	6.05	0.35	0.00	0.21	0.35	0.05	0.00	0.0%
	W	7.50	5.70	0.00	0.00	0.36		0.00	0.00	0.0%
		8.00	5.25			0.00		0.00	0.00	0.0%
		9.00	5.00			0.00		0.00	0.00	0.0%
		10.20	4.82			0.00		0.00	0.00	0.0%
1	G	11.30	4.70			0.00		0.00	0.00	0.0%
	LS	15.00	4.52			0.00		0.00	0.00	0.0%
	TOTALS ----------					4.90	0.43 (Max.)	1.38	1.31	100.0%

Manning's n = 0.0562
Hydraulic Radius= 0.28168376

STREAM NAME: Yellow Creek
XS LOCATION: 0.25 mi dwnstr from conf w Lambert Spg.
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.38	1.38	0.0%
5.45	1.38	2.70	95.3%
5.47	1.38	2.58	86.7%
5.49	1.38	2.46	78.2%
5.51	1.38	2.35	69.9%
5.53	1.38	2.23	61.8%
5.55	1.38	2.12	53.9%
5.57	1.38	2.02	46.1%
5.59	1.38	1.91	38.5%
5.61	1.38	1.81	31.1%
5.63	1.38	1.71	23.9%
5.65	1.38	1.61	16.9%
5.66	1.38	1.57	13.4%
5.67	1.38	1.52	10.0%
5.68	1.38	1.47	6.6%
5.69	1.38	1.43	3.3%
5.70	1.38	1.38	0.0%
5.71	1.38	1.34	-3.3%
5.72	1.38	1.29	-6.5%
5.73	1.38	1.25	-9.7%
5.74	1.38	1.20	-12.9%
5.75	1.38	1.16	-16.1%
5.77	1.38	1.07	-22.4%
5.79	1.38	0.98	-28.7%
5.81	1.38	0.90	-34.8%
5.83	1.38	0.82	-40.9%
5.85	1.38	0.73	-46.9%
5.87	1.38	0.65	-52.6%
5.89	1.38	0.58	-58.1%
5.91	1.38	0.50	-63.7%
5.93	1.38	0.43	-69.1%
5.95	1.38	0.35	-74.6%

WATERLINE AT ZERO
AREA ERROR = 5.700

STREAM NAME: Yellow Creek
XS LOCATION: 0.25 mi dwnstr from conf w Lambert Spg.
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	4.70	10.50	0.80	1.43	8.45	11.40	100.0%	0.74	15.29	1.81
	4.70	10.50	0.80	1.43	8.45	11.40	100.0%	0.74	15.29	1.81
	4.75	9.98	0.80	1.38	7.94	10.86	95.2%	0.73	14.24	1.79
	4.80	9.45	0.79	1.33	7.45	10.32	90.5%	0.72	13.26	1.78
	4.85	9.00	0.78	1.28	6.99	9.85	86.3%	0.71	12.30	1.76
	4.90	8.60	0.76	1.23	6.55	9.43	82.7%	0.69	11.36	1.73
	4.95	8.20	0.75	1.18	6.13	9.01	79.0%	0.68	10.48	1.71
	5.00	7.81	0.73	1.13	5.73	8.59	75.3%	0.67	9.67	1.69
	5.05	7.54	0.71	1.08	5.34	8.30	72.8%	0.64	8.81	1.65
	5.10	7.27	0.68	1.03	4.97	8.01	70.2%	0.62	8.01	1.61
	5.15	7.01	0.66	0.98	4.62	7.72	67.7%	0.60	7.25	1.57
	5.20	6.74	0.63	0.93	4.27	7.43	65.2%	0.57	6.53	1.53
	5.25	6.48	0.61	0.88	3.94	7.14	62.6%	0.55	5.87	1.49
	5.30	6.35	0.57	0.83	3.62	6.99	61.3%	0.52	5.17	1.43
	5.35	6.23	0.53	0.78	3.31	6.83	59.9%	0.48	4.51	1.36
	5.40	6.11	0.49	0.73	3.00	6.67	58.5%	0.45	3.89	1.30
	5.45	5.99	0.45	0.68	2.70	6.51	57.1%	0.41	3.31	1.23
	5.50	5.72	0.42	0.63	2.40	6.22	54.5%	0.39	2.82	1.17
	5.55	5.42	0.39	0.58	2.12	5.89	51.6%	0.36	2.38	1.12
	5.60	5.11	0.36	0.53	1.86	5.56	48.8%	0.33	1.98	1.07
	5.65	4.81	0.34	0.48	1.61	5.23	45.9%	0.31	1.63	1.01
WL	5.70	4.50	0.31	0.43	1.38	4.90	43.0%	0.28	1.31	0.95
	5.75	4.39	0.26	0.38	1.16	4.74	41.5%	0.24	1.00	0.86
	5.80	4.27	0.22	0.33	0.94	4.57	40.1%	0.21	0.73	0.77
	5.85	4.06	0.18	0.28	0.73	4.32	37.8%	0.17	0.50	0.68
	5.90	3.81	0.14	0.23	0.54	4.02	35.2%	0.13	0.31	0.58
	5.95	3.74	0.09	0.18	0.35	3.89	34.1%	0.09	0.16	0.44
	6.00	2.47	0.07	0.13	0.18	2.56	22.4%	0.07	0.07	0.37
	6.05	1.75	0.04	0.08	0.07	1.77	15.5%	0.04	0.02	0.26
	6.10	0.73	0.02	0.03	0.01	0.74	6.5%	0.02	0.00	0.14

STREAM NAME: Yellow Creek
XS LOCATION: 0.25 mi dwnstr from conf w Lambert Spg.
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.31	cfs
CALCULATED FLOW (Qc)=	1.31	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	5.70	ft
CALCULATED WATERLINE (WLc)=	5.70	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.43	ft
MAX CALCULATED DEPTH (Dc)=	0.43	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	0.95	ft/sec
MANNING'S N=	0.056	
SLOPE=	0.007	ft/ft
.4 * Qm =	0.5	cfs
2.5 * Qm=	3.3	cfs

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

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

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

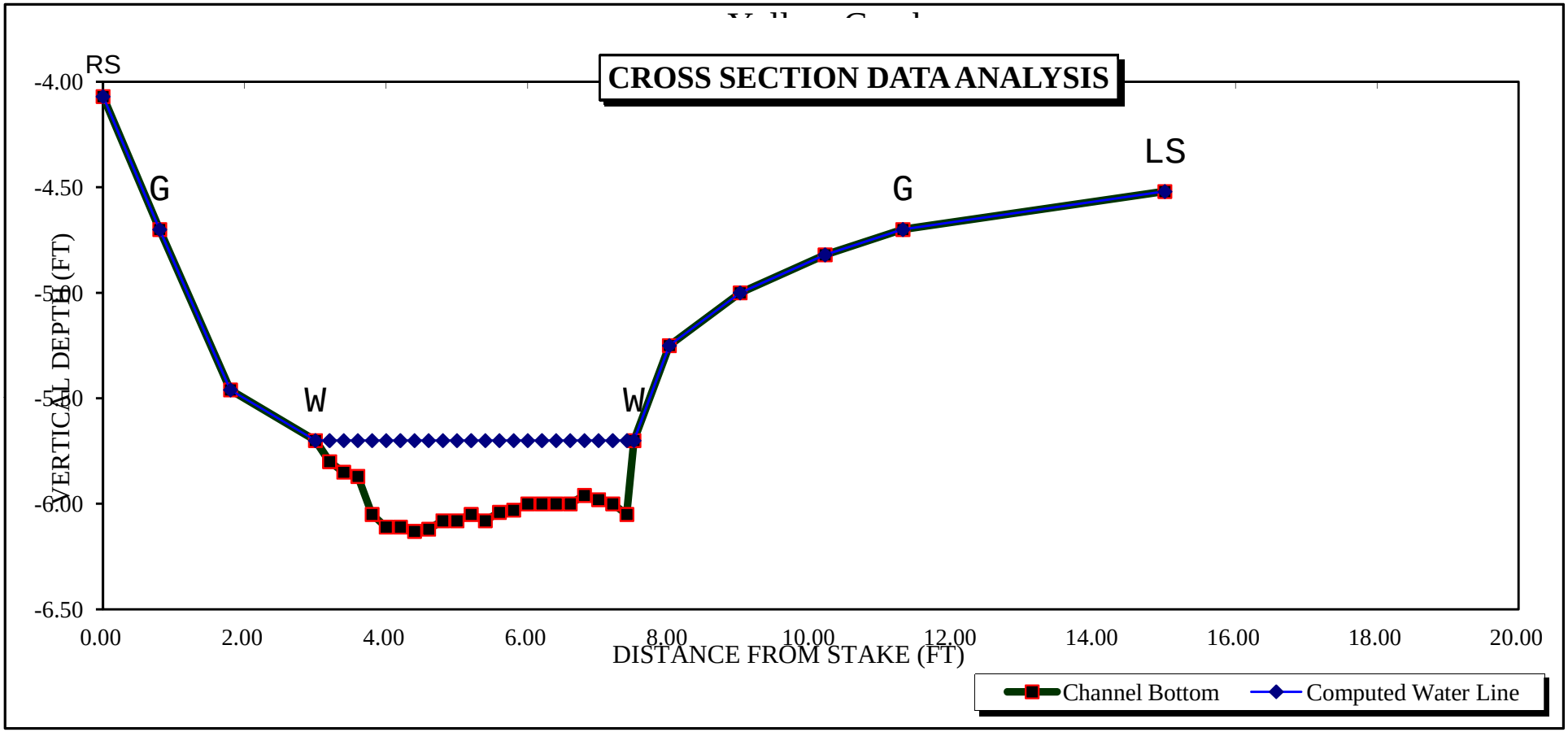
RECOMMENDATION BY: …………………...………..……............................... AGENCY...……………………......…….....…...……....... DATE:......…...…......……………

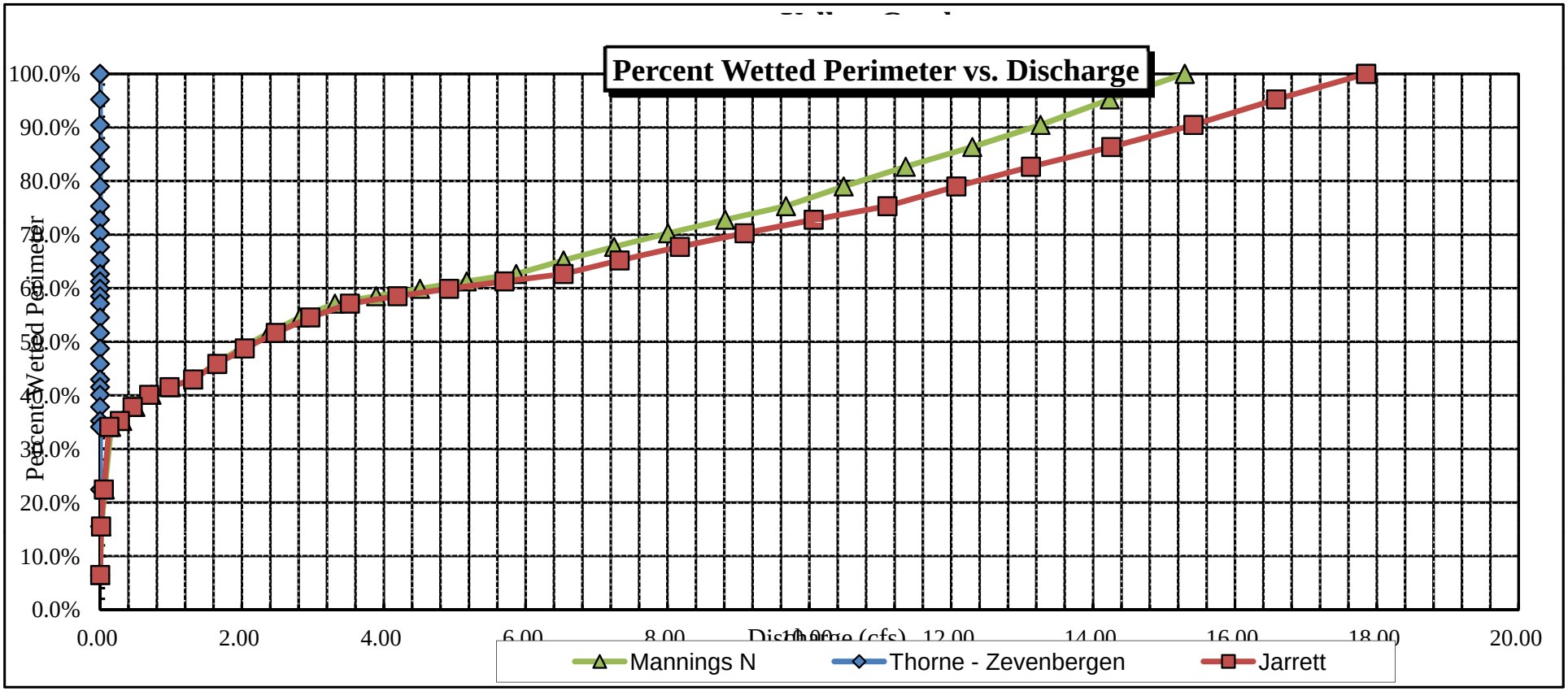
CWCB REVIEW BY: ..……………………….....…………………………………………………...…............. DATE:................…………….....

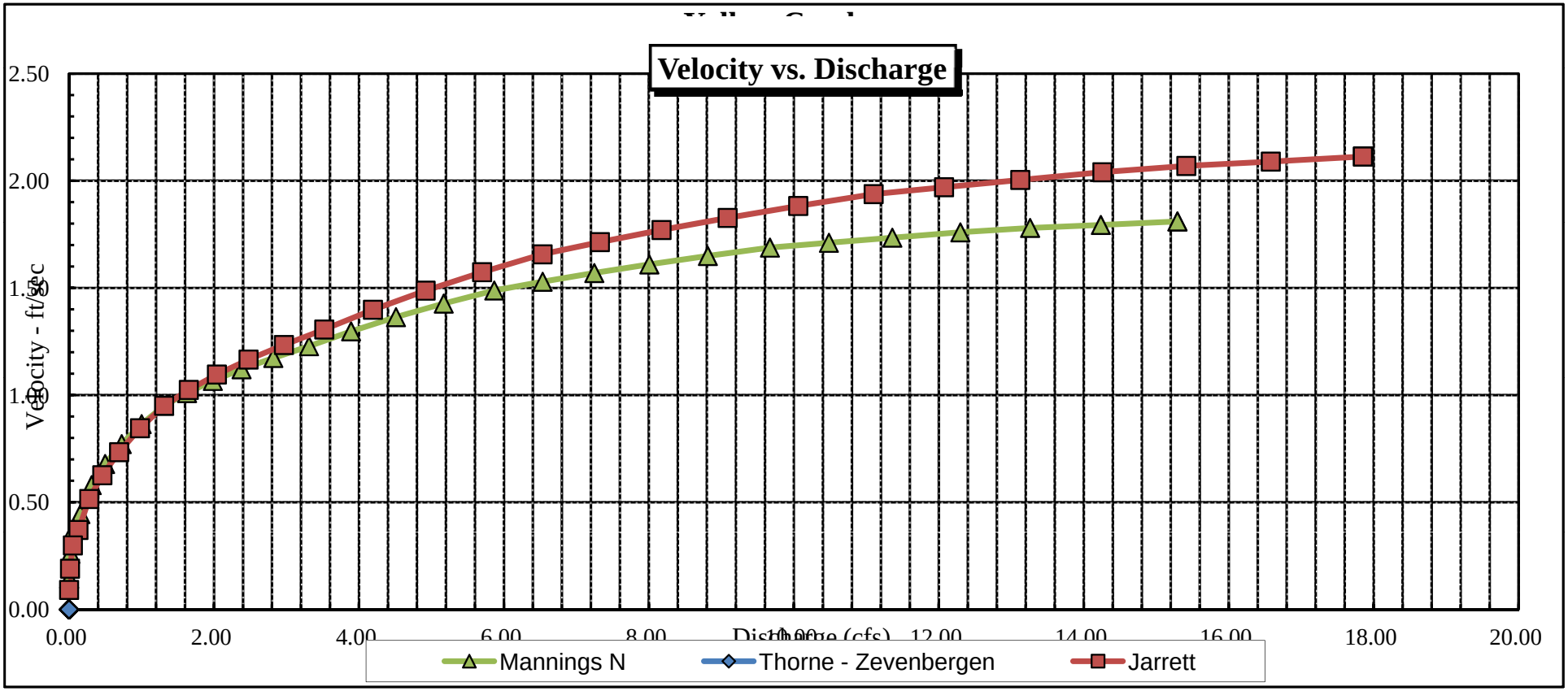
STREAM NAME: Yellow Creek
XS LOCATION: 0.25 mi dwnstr from conf w Lambert Spg.
XS NUMBER: 1 Jarrett Variable Manning's n Correction Applied

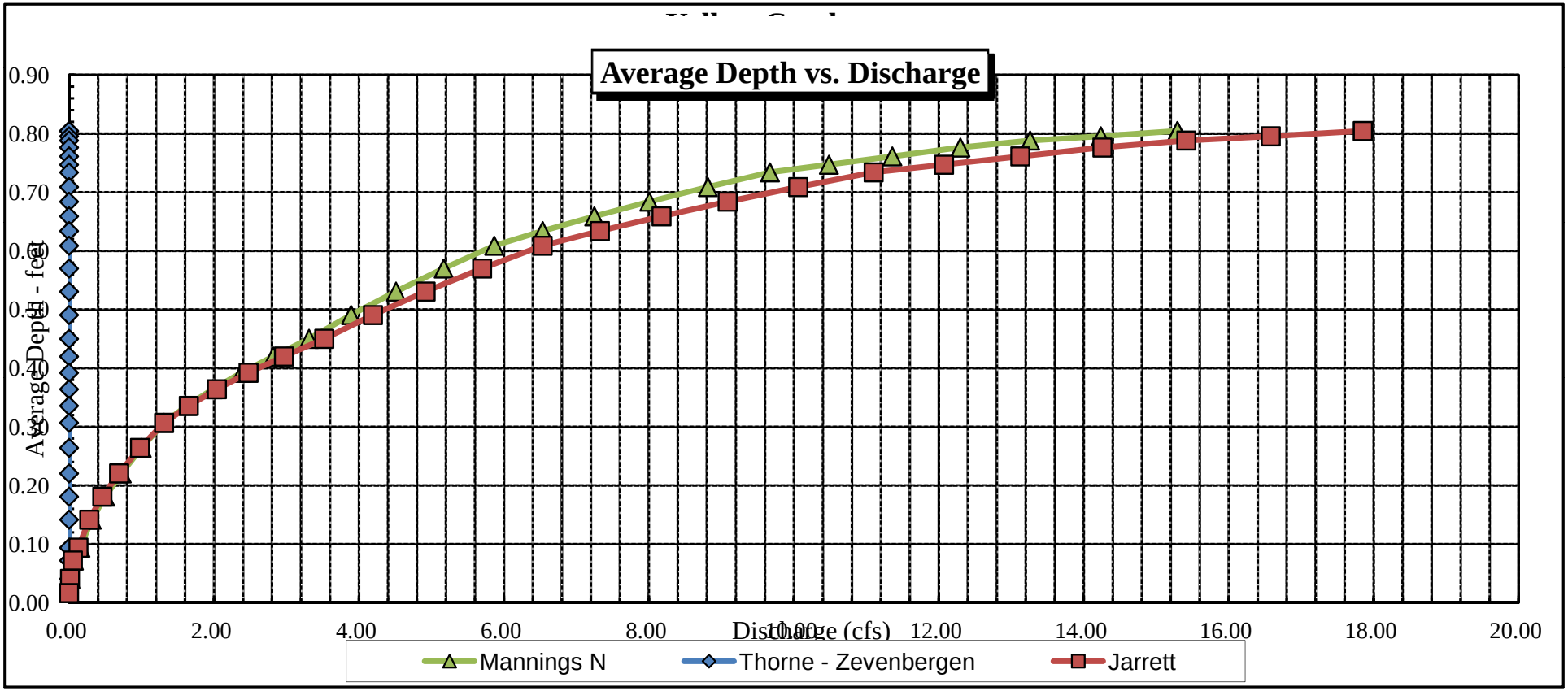
STAGING TABLE *GL* = lowest Grassline elevation corrected for sag
WL = Waterline corrected for variations in field measured water surface elevations and sag

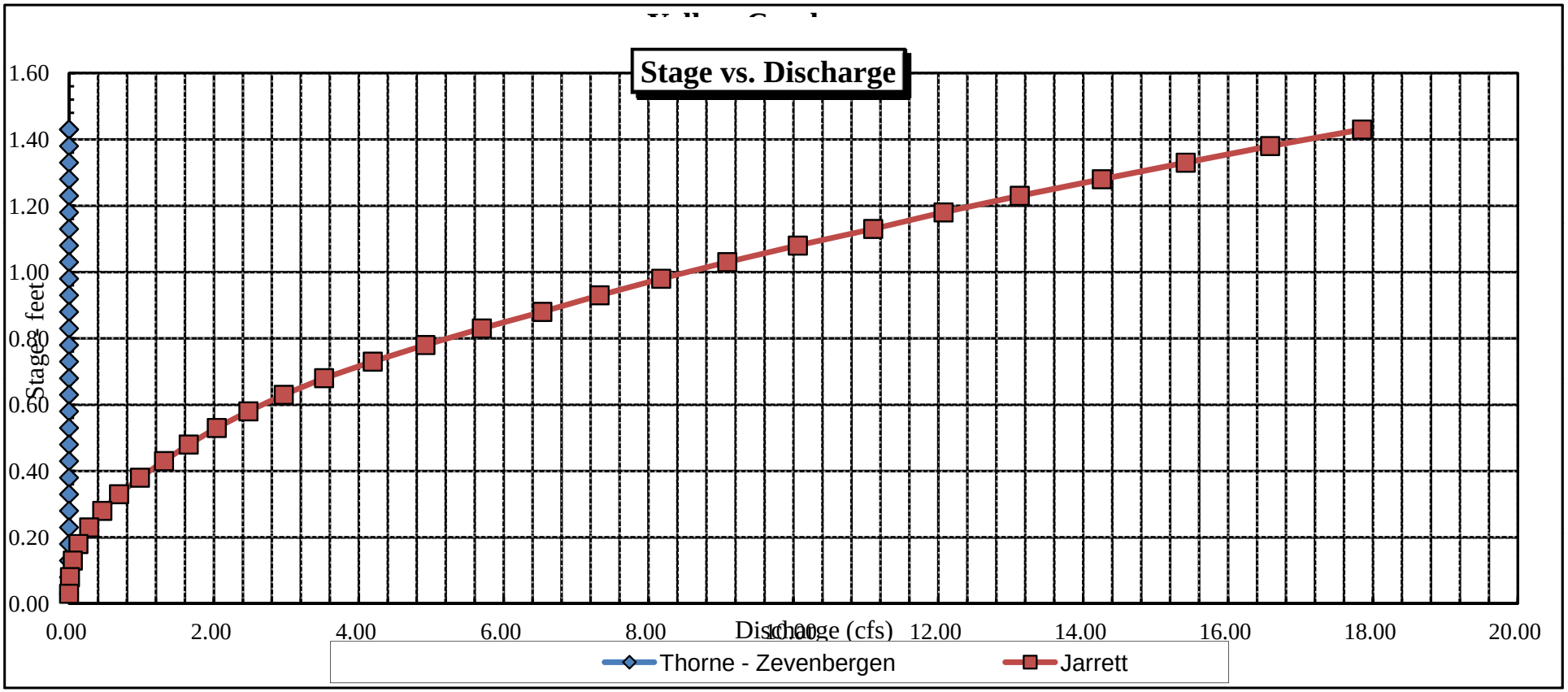
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	4.70	10.50	0.80	1.43	8.45	11.40	100.0%	0.74	17.85	2.11
	4.70	10.50	0.80	1.43	8.45	11.40	100.0%	0.74	17.85	2.11
	4.75	9.98	0.80	1.38	7.94	10.86	95.2%	0.73	16.58	2.09
	4.80	9.45	0.79	1.33	7.45	10.32	90.5%	0.72	15.41	2.07
	4.85	9.00	0.78	1.28	6.99	9.85	86.3%	0.71	14.26	2.04
	4.90	8.60	0.76	1.23	6.55	9.43	82.7%	0.69	13.12	2.00
	4.95	8.20	0.75	1.18	6.13	9.01	79.0%	0.68	12.07	1.97
	5.00	7.81	0.73	1.13	5.73	8.59	75.3%	0.67	11.10	1.94
	5.05	7.54	0.71	1.08	5.34	8.30	72.8%	0.64	10.06	1.88
	5.10	7.27	0.68	1.03	4.97	8.01	70.2%	0.62	9.09	1.83
	5.15	7.01	0.66	0.98	4.62	7.72	67.7%	0.60	8.17	1.77
	5.20	6.74	0.63	0.93	4.27	7.43	65.2%	0.57	7.32	1.71
	5.25	6.48	0.61	0.88	3.94	7.14	62.6%	0.55	6.53	1.66
	5.30	6.35	0.57	0.83	3.62	6.99	61.3%	0.52	5.70	1.57
	5.35	6.23	0.53	0.78	3.31	6.83	59.9%	0.48	4.92	1.49
	5.40	6.11	0.49	0.73	3.00	6.67	58.5%	0.45	4.19	1.40
	5.45	5.99	0.45	0.68	2.70	6.51	57.1%	0.41	3.52	1.31
	5.50	5.72	0.42	0.63	2.40	6.22	54.5%	0.39	2.96	1.23
	5.55	5.42	0.39	0.58	2.12	5.89	51.6%	0.36	2.48	1.17
	5.60	5.11	0.36	0.53	1.86	5.56	48.8%	0.33	2.04	1.10
	5.65	4.81	0.34	0.48	1.61	5.23	45.9%	0.31	1.65	1.02
WL	5.70	4.50	0.31	0.43	1.38	4.90	43.0%	0.28	1.31	0.95
	5.75	4.39	0.26	0.38	1.16	4.74	41.5%	0.24	0.98	0.85
	5.80	4.27	0.22	0.33	0.94	4.57	40.1%	0.21	0.69	0.73
	5.85	4.06	0.18	0.28	0.73	4.32	37.8%	0.17	0.46	0.63
	5.90	3.81	0.14	0.23	0.54	4.02	35.2%	0.13	0.28	0.52
	5.95	3.74	0.09	0.18	0.35	3.89	34.1%	0.09	0.13	0.37
	6.00	2.47	0.07	0.13	0.18	2.56	22.4%	0.07	0.05	0.30
	6.05	1.75	0.04	0.08	0.07	1.77	15.5%	0.04	0.01	0.19
	6.10	0.73	0.02	0.03	0.01	0.74	6.5%	0.02	0.00	0.09


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
LS
-4.00
-4.50
-5.00
-5.50
-6.00
-6.50
VERTICAL DEPTH (FT)
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
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
2.00
4.00
6.00
8.00
12.00
14.00
16.00
18.00
20.00
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
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Stage, feet
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: Yellow Creek | CROSS-SECTION NO.: 1

CROSS-SECTION LOCATION: Approx. 0.25 miles downstream from confluence with Lambert Spring

DATE: 7-7-15 | OBSERVERS: R. Smith, B. Logan, B. Epstein

LEGAL DESCRIPTION | ¼ SECTION: SW NW | SECTION: 15 | TOWNSHIP: 2 N/S | RANGE: 98 E/W | PM: 6th

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

MAP(S): USGS: 12T 722909 4447284 5,778 A

USFS:

SUPPLEMENTAL DATA

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

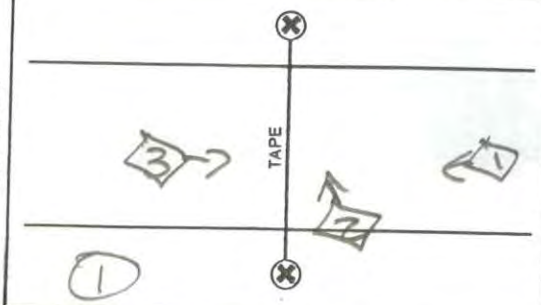
METER NUMBER: | DATE RATED: | CALIB/SPIN: _____ sec | TAPE WEIGHT: surveyed lbs/foot | TAPE TENSION: surveyed lbs

CHANNEL BED MATERIAL SIZE RANGE: sand + gravel | 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	5.70 / 5.70
② WS Upstream	13.0	5.56
③ WS Downstream	31.0	5.86
SLOPE	.30 / 44.0 = .007	

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

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Creek	CROSS-SECTION NO.: 1	DATE: 7-7-15	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: LEFT / RIGHT	Gage Reading: ____ ft	TIME: 8:50 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)
RLS	0.0		4.07								
G	0.8		4.70								
	1.8		5.46								
W	3.0		5.70								
	3.2		5.80	.1				Ø			
	3.4		5.85	.15				Ø			
	3.6		5.87	.17				Ø			
	3.8		6.05	.35				0.66			
	4.0		6.11	.41				0.71			
	4.2		6.11	.41				1.26			
	4.4		6.13	.43				0.47			
	4.6		6.12	.42				0.75			
	4.8		6.08	.38				0.52			
	5.0		6.08	.38				1.00			
	5.2		6.05	.35				0.82			
	5.4		6.08	.38				0.51			
	5.6		6.04	.34				0.95			
	5.8		6.03	.33				0.87			
	6.0		6.00	.30				1.12			
	6.2		6.00	.30				1.75			
	6.4		6.00	.30				1.01			
	6.6		6.00	.30				2.03			
	6.8		5.96	.26				2.07			
	7.0		5.98	.28				1.62			
	7.2		6.00	.30				1.90			
	7.4		6.05	.35				Ø			
W	7.5		5.70								
	8.0		5.25								
	9.0		5.00								
	10.2		4.82								
G	11.3		4.70								
LS	15.0		4.52								
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:	Yellow Creek
XS LOCATION:	0.2 mi dwnstr fr conf w Lambert Spg.
XS NUMBER:	2
DATE:	7-Jul-15
OBSERVERS:	R. Smith, B. Logan, B. Epstein
1/4 SEC:	SW NW
SECTION:	15
TWP:	2N
RANGE:	98W
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:	0.011

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

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

STREAM NAME: Yellow Creek
XS LOCATION: 0.2 mi dwnstr fr conf w Lambert Spg.
XS NUMBER: 2

DATA POINTS= 30

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	3.54			0.00		0.00	0.00	0.0%
		0.80	4.04			0.00		0.00	0.00	0.0%
1	G	1.40	4.80			0.00		0.00	0.00	0.0%
		1.70	6.05			0.00		0.00	0.00	0.0%
	W	2.80	5.95	0.00	0.00	0.00		0.00	0.00	0.0%
		3.00	6.21	0.26	0.34	0.33	0.26	0.05	0.02	1.5%
		3.20	6.17	0.22	0.68	0.20	0.22	0.04	0.03	2.5%
		3.40	6.17	0.22	1.27	0.20	0.22	0.04	0.06	4.6%
		3.60	6.19	0.24	1.26	0.20	0.24	0.05	0.06	5.0%
		3.80	6.25	0.30	1.23	0.21	0.30	0.06	0.07	6.1%
		4.00	6.28	0.33	0.65	0.20	0.33	0.07	0.04	3.5%
		4.20	6.26	0.31	0.62	0.20	0.31	0.06	0.04	3.2%
		4.40	6.23	0.28	0.88	0.20	0.28	0.06	0.05	4.1%
		4.60	6.23	0.28	0.44	0.20	0.28	0.06	0.02	2.0%
		4.80	6.25	0.30	0.49	0.20	0.30	0.06	0.03	2.4%
		5.00	6.33	0.38	1.12	0.22	0.38	0.08	0.09	7.0%
		5.20	6.36	0.41	1.29	0.20	0.41	0.08	0.11	8.7%
		5.40	6.39	0.44	1.02	0.20	0.44	0.09	0.09	7.4%
		5.60	6.37	0.42	1.28	0.20	0.42	0.08	0.11	8.8%
		5.80	6.37	0.42	1.28	0.20	0.42	0.08	0.11	8.8%
		6.00	6.35	0.40	0.78	0.20	0.40	0.08	0.06	5.1%
		6.20	6.33	0.38	0.78	0.20	0.38	0.08	0.06	4.9%
		6.40	6.35	0.40	1.52	0.20	0.40	0.08	0.12	10.0%
		6.60	6.16	0.21	1.31	0.28	0.21	0.04	0.06	4.5%
	W	6.80	5.95	0.00	0.00	0.29		0.00	0.00	0.0%
		7.60	5.55			0.00		0.00	0.00	0.0%
		9.00	5.20			0.00		0.00	0.00	0.0%
		10.30	5.08			0.00		0.00	0.00	0.0%
1	G	11.00	4.80			0.00		0.00	0.00	0.0%
	LS	13.60	3.95			0.00		0.00	0.00	0.0%
	TOTALS ----------					4.34	0.44 (Max.)	1.24	1.22	100.0%

Manning's n = 0.0689
Hydraulic Radius= 0.28584649

STREAM NAME: Yellow Creek
XS LOCATION: 0.2 mi dwnstr fr conf w Lambert Spg.
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.24	1.30	4.5%
5.70	1.24	2.65	113.5%
5.72	1.24	2.53	104.4%
5.74	1.24	2.42	95.3%
5.76	1.24	2.31	86.3%
5.78	1.24	2.20	77.4%
5.80	1.24	2.09	68.5%
5.82	1.24	1.98	59.8%
5.84	1.24	1.87	51.1%
5.86	1.24	1.77	42.5%
5.88	1.24	1.66	33.9%
5.90	1.24	1.56	25.4%
5.91	1.24	1.50	21.2%
5.92	1.24	1.45	17.0%
5.93	1.24	1.40	12.8%
5.94	1.24	1.35	8.7%
5.95	1.24	1.30	4.5%
5.96	1.24	1.25	0.5%
5.97	1.24	1.20	-3.5%
5.98	1.24	1.15	-7.4%
5.99	1.24	1.10	-11.2%
6.00	1.24	1.06	-14.8%
6.02	1.24	0.97	-21.8%
6.04	1.24	0.89	-28.4%
6.06	1.24	0.81	-34.6%
6.08	1.24	0.73	-40.8%
6.10	1.24	0.66	-46.8%
6.12	1.24	0.58	-52.8%
6.14	1.24	0.51	-58.8%
6.16	1.24	0.44	-64.7%
6.18	1.24	0.37	-70.3%
6.20	1.24	0.31	-75.3%

WATERLINE AT ZERO
AREA ERROR = 5.961

STREAM NAME: Yellow Creek
XS LOCATION: 0.2 mi dwnstr fr conf w Lambert Spg.
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	4.80	9.60	0.98	1.59	9.45	11.12	100.0%	0.85	19.17	2.03
	4.96	9.16	0.87	1.43	7.94	10.53	94.6%	0.75	14.88	1.87
	5.01	9.02	0.83	1.38	7.49	10.34	92.9%	0.72	13.65	1.82
	5.06	8.88	0.79	1.33	7.04	10.15	91.3%	0.69	12.47	1.77
	5.11	8.49	0.78	1.28	6.60	9.71	87.3%	0.68	11.54	1.75
	5.16	7.93	0.78	1.23	6.19	9.12	82.0%	0.68	10.82	1.75
	5.21	7.46	0.78	1.18	5.81	8.60	77.3%	0.68	10.11	1.74
	5.26	7.24	0.75	1.13	5.44	8.34	75.0%	0.65	9.25	1.70
	5.31	7.03	0.72	1.08	5.08	8.08	72.6%	0.63	8.44	1.66
	5.36	6.82	0.69	1.03	4.74	7.82	70.3%	0.61	7.67	1.62
	5.41	6.61	0.67	0.98	4.40	7.57	68.0%	0.58	6.93	1.58
	5.46	6.40	0.64	0.93	4.08	7.31	65.7%	0.56	6.24	1.53
	5.51	6.18	0.61	0.88	3.76	7.05	63.4%	0.53	5.59	1.49
	5.56	6.00	0.58	0.83	3.46	6.81	61.3%	0.51	4.97	1.44
	5.61	5.88	0.54	0.78	3.16	6.65	59.8%	0.48	4.35	1.38
	5.66	5.77	0.50	0.73	2.87	6.49	58.3%	0.44	3.77	1.31
	5.71	5.66	0.46	0.68	2.58	6.33	56.9%	0.41	3.22	1.24
	5.76	5.55	0.42	0.63	2.30	6.16	55.4%	0.37	2.70	1.17
	5.81	5.44	0.37	0.58	2.03	6.00	53.9%	0.34	2.23	1.10
	5.86	5.32	0.33	0.53	1.76	5.84	52.5%	0.30	1.79	1.02
	5.91	5.21	0.29	0.48	1.50	5.67	51.0%	0.26	1.39	0.93
WL	5.96	4.98	0.25	0.43	1.24	5.38	48.4%	0.23	1.05	0.85
	6.01	4.33	0.23	0.38	1.01	4.65	41.8%	0.22	0.82	0.82
	6.06	3.81	0.21	0.33	0.81	4.04	36.4%	0.20	0.62	0.77
	6.11	3.72	0.17	0.28	0.62	3.91	35.2%	0.16	0.41	0.66
	6.16	3.64	0.12	0.23	0.43	3.78	34.0%	0.11	0.23	0.53
	6.21	2.88	0.10	0.18	0.27	2.97	26.7%	0.09	0.13	0.46
	6.26	1.98	0.08	0.13	0.15	2.04	18.3%	0.07	0.06	0.40
	6.31	1.49	0.05	0.08	0.07	1.52	13.6%	0.04	0.02	0.28
	6.36	0.68	0.01	0.03	0.01	0.68	6.2%	0.01	0.00	0.12

STREAM NAME: Yellow Creek
XS LOCATION: 0.2 mi dwnstr fr conf w Lambert Spg.
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.22	cfs
CALCULATED FLOW (Qc)=	1.05	cfs
(Qm-Qc)/Qm * 100 =	13.4	%
MEASURED WATERLINE (WLm)=	5.95	ft
CALCULATED WATERLINE (WLc)=	5.96	ft
(WLm-WLc)/WLm * 100 =	-0.2	%
MAX MEASURED DEPTH (Dm)=	0.44	ft
MAX CALCULATED DEPTH (Dc)=	0.43	ft
(Dm-Dc)/Dm * 100	2.5	%
MEAN VELOCITY=	0.85	ft/sec
MANNING'S N=	0.069	
SLOPE=	0.011	ft/ft
.4 * Qm =	0.5	cfs
2.5 * Qm=	3.0	cfs

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

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

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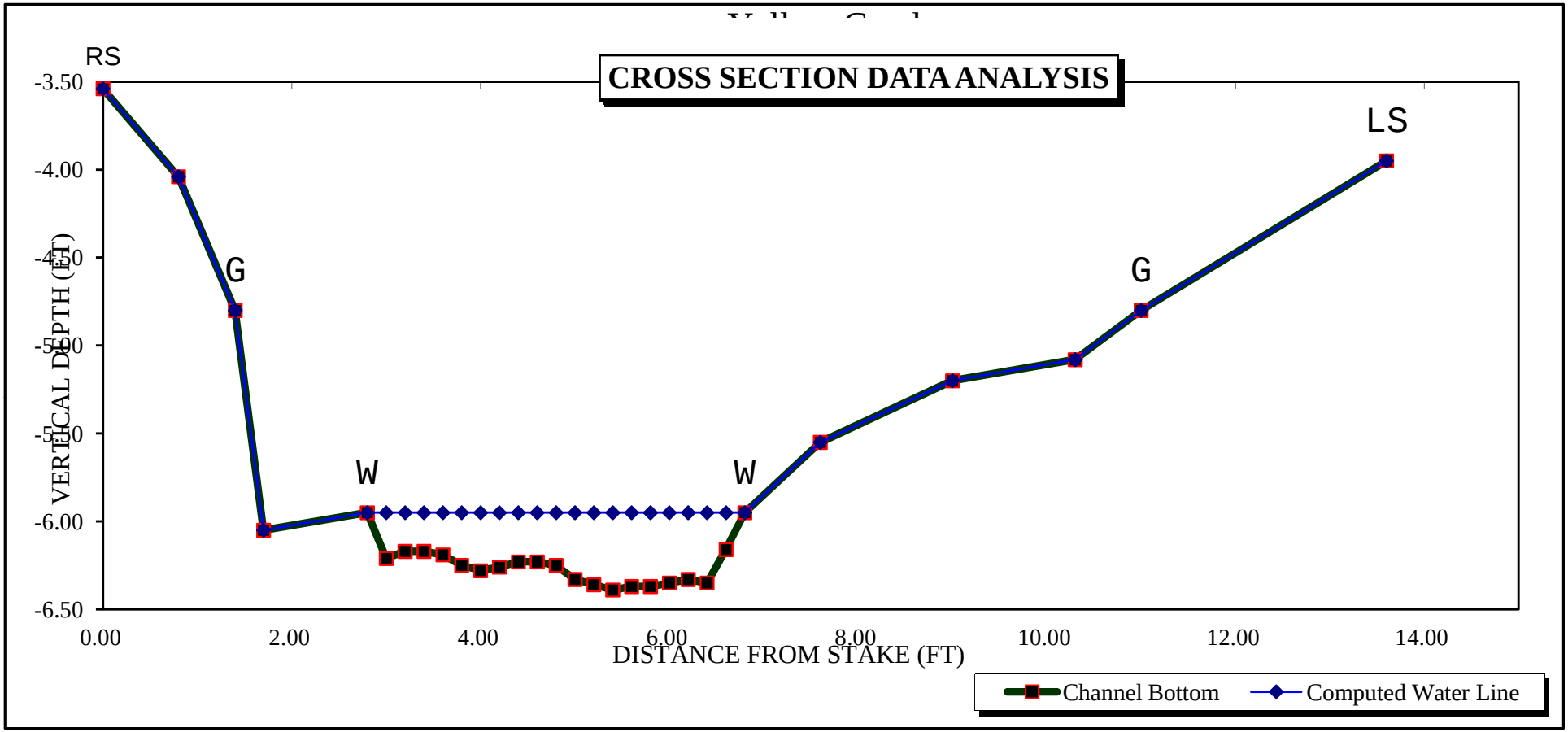
RECOMMENDATION BY: ……………………………………………… AGENCY……………………………………………… DATE:………………………

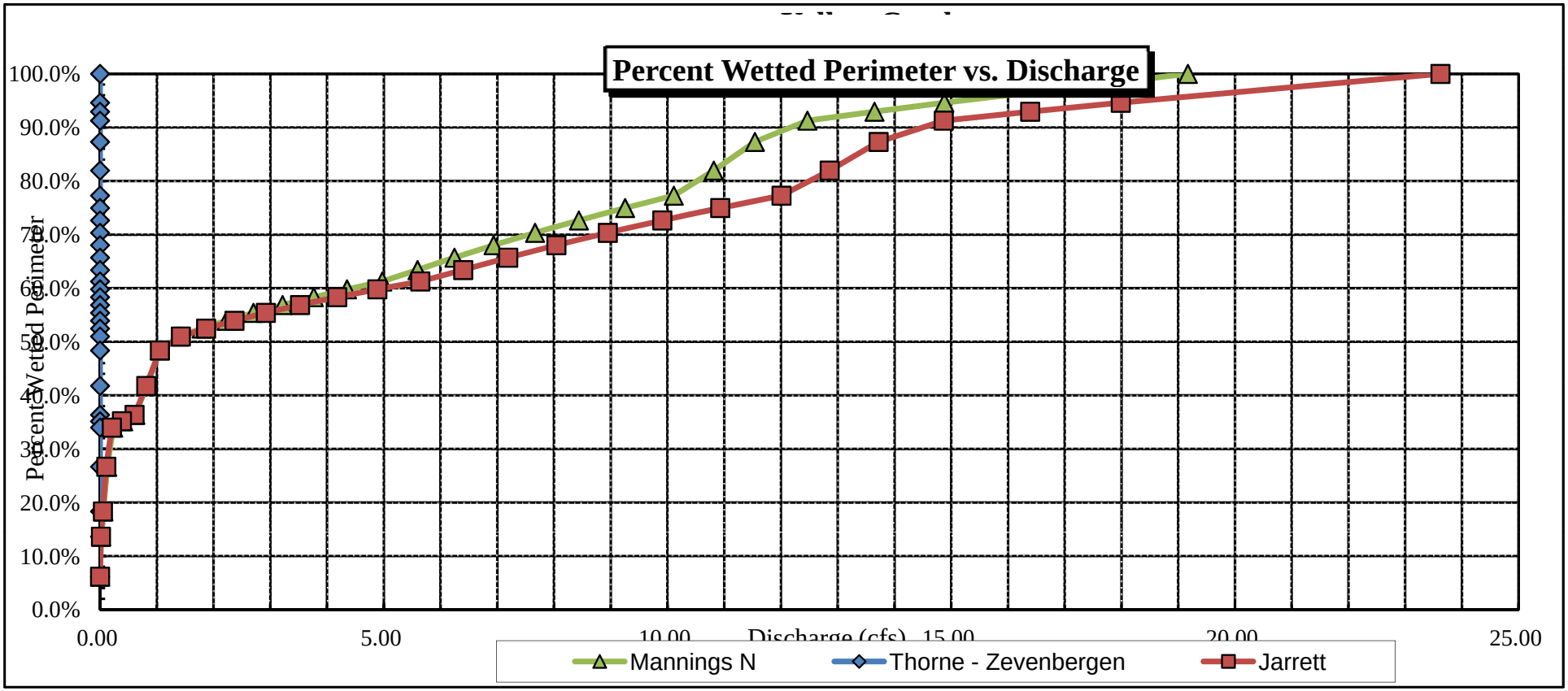
CWCB REVIEW BY: …………………………………………………………………………………………………… DATE:………………………

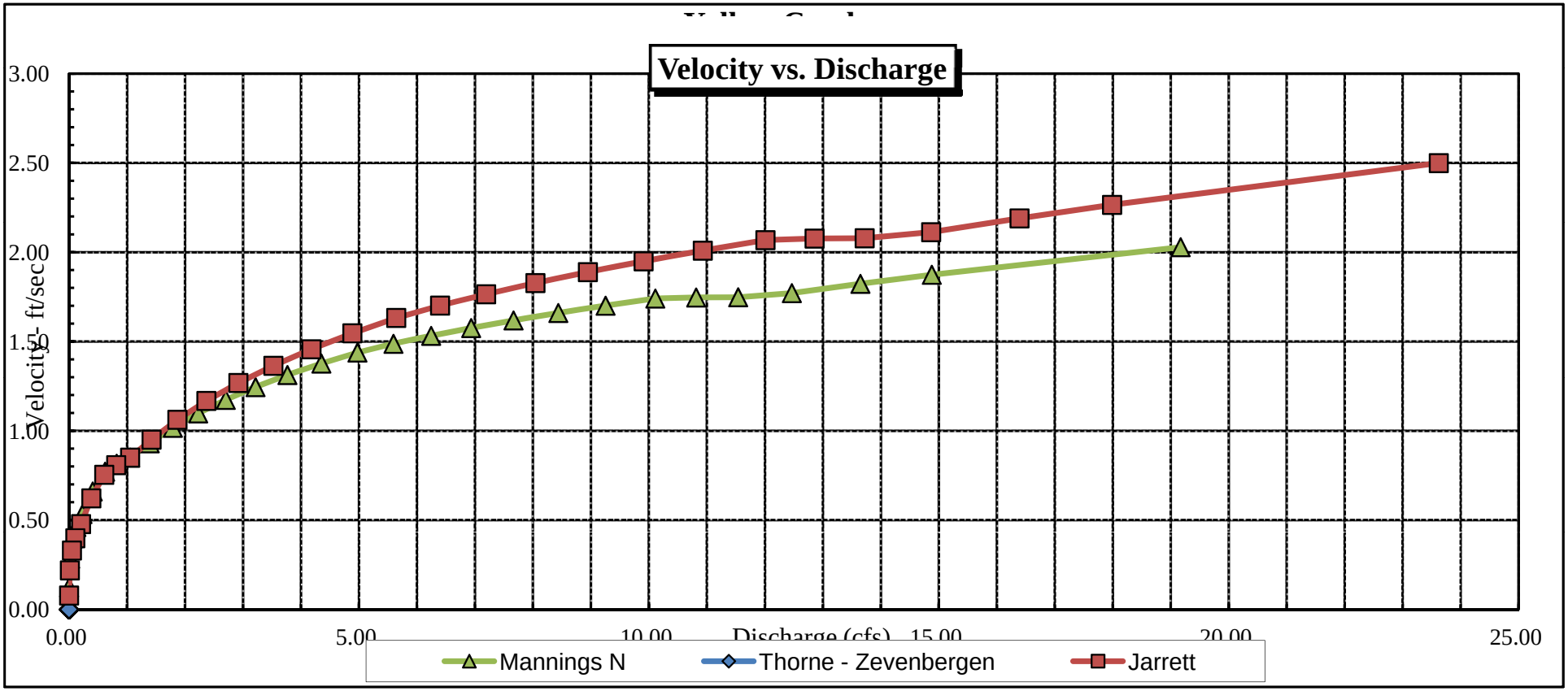
STREAM NAME: Yellow Creek
XS LOCATION: 0.2 mi dwnstr fr conf w Lambert Spg.
XS NUMBER: 2 Jarrett Variable Manning's n Correction Applied

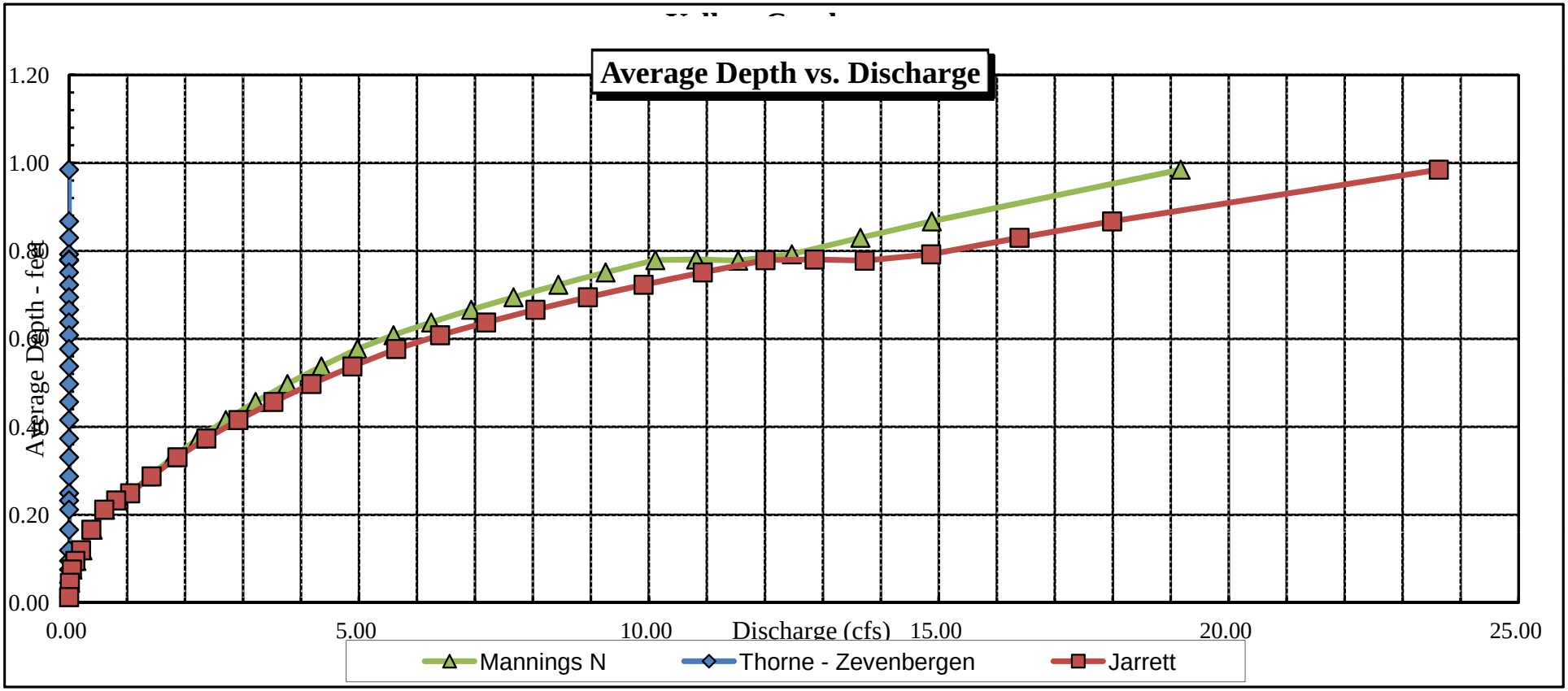
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

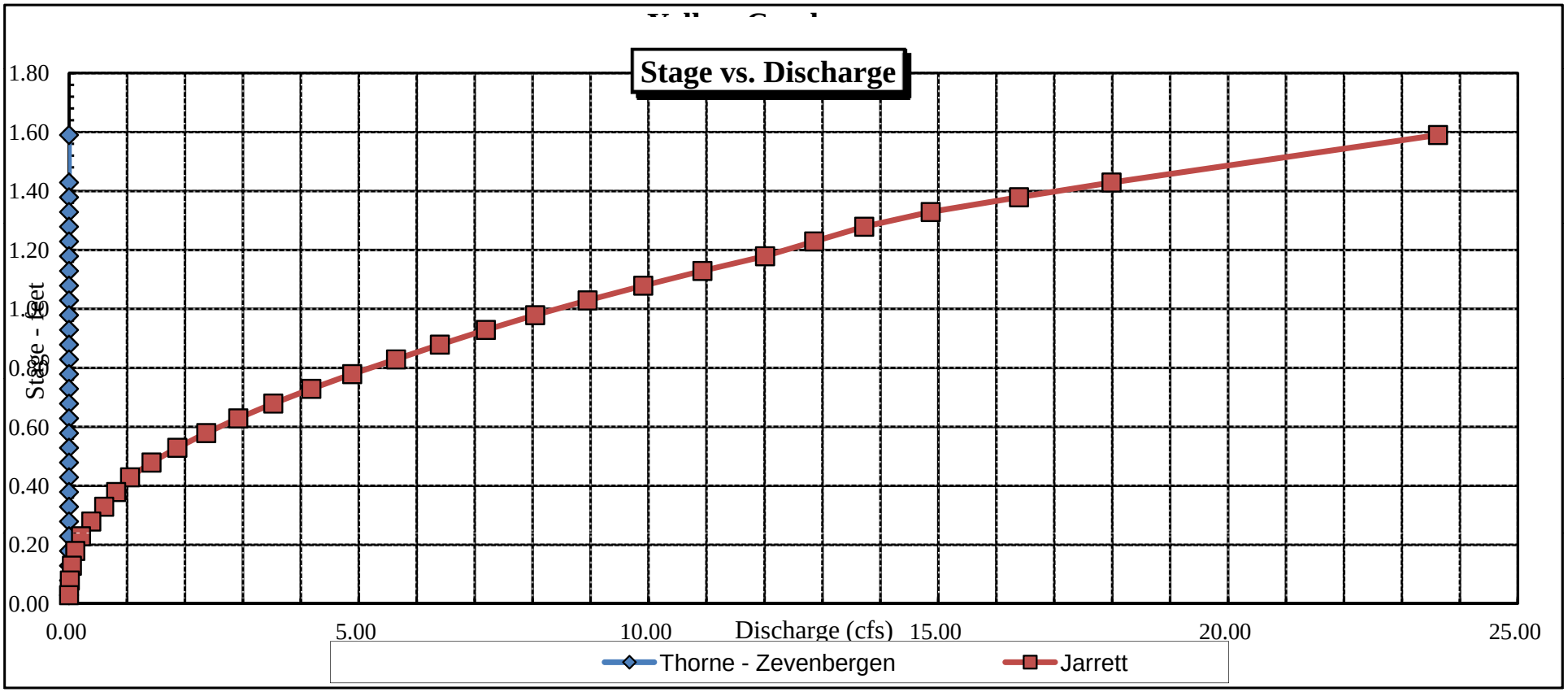
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	4.80	9.60	0.98	1.59	9.45	11.12	100.0%	0.85	23.62	2.50
	4.96	9.16	0.87	1.43	7.94	10.53	94.6%	0.75	17.99	2.27
	5.01	9.02	0.83	1.38	7.49	10.34	92.9%	0.72	16.39	2.19
	5.06	8.88	0.79	1.33	7.04	10.15	91.3%	0.69	14.87	2.11
	5.11	8.49	0.78	1.28	6.60	9.71	87.3%	0.68	13.72	2.08
	5.16	7.93	0.78	1.23	6.19	9.12	82.0%	0.68	12.86	2.08
	5.21	7.46	0.78	1.18	5.81	8.60	77.3%	0.68	12.01	2.07
	5.26	7.24	0.75	1.13	5.44	8.34	75.0%	0.65	10.93	2.01
	5.31	7.03	0.72	1.08	5.08	8.08	72.6%	0.63	9.91	1.95
	5.36	6.82	0.69	1.03	4.74	7.82	70.3%	0.61	8.95	1.89
	5.41	6.61	0.67	0.98	4.40	7.57	68.0%	0.58	8.04	1.83
	5.46	6.40	0.64	0.93	4.08	7.31	65.7%	0.56	7.19	1.76
	5.51	6.18	0.61	0.88	3.76	7.05	63.4%	0.53	6.40	1.70
	5.56	6.00	0.58	0.83	3.46	6.81	61.3%	0.51	5.64	1.63
	5.61	5.88	0.54	0.78	3.16	6.65	59.8%	0.48	4.89	1.55
	5.66	5.77	0.50	0.73	2.87	6.49	58.3%	0.44	4.18	1.46
	5.71	5.66	0.46	0.68	2.58	6.33	56.9%	0.41	3.52	1.36
	5.76	5.55	0.42	0.63	2.30	6.16	55.4%	0.37	2.92	1.27
	5.81	5.44	0.37	0.58	2.03	6.00	53.9%	0.34	2.37	1.17
	5.86	5.32	0.33	0.53	1.76	5.84	52.5%	0.30	1.87	1.06
	5.91	5.21	0.29	0.48	1.50	5.67	51.0%	0.26	1.42	0.95
WL	5.96	4.98	0.25	0.43	1.24	5.38	48.4%	0.23	1.05	0.85
	6.01	4.33	0.23	0.38	1.01	4.65	41.8%	0.22	0.81	0.81
	6.06	3.81	0.21	0.33	0.81	4.04	36.4%	0.20	0.61	0.75
	6.11	3.72	0.17	0.28	0.62	3.91	35.2%	0.16	0.38	0.62
	6.16	3.64	0.12	0.23	0.43	3.78	34.0%	0.11	0.21	0.48
	6.21	2.88	0.10	0.18	0.27	2.97	26.7%	0.09	0.11	0.40
	6.26	1.98	0.08	0.13	0.15	2.04	18.3%	0.07	0.05	0.33
	6.31	1.49	0.05	0.08	0.07	1.52	13.6%	0.04	0.01	0.22
	6.36	0.68	0.01	0.03	0.01	0.68	6.2%	0.01	0.00	0.08


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
LS
-3.50
-4.00
-6.00
-6.50
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
VERTICAL DEPTH (FT)
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
5.00
10.00
Discharge (cfs)
15.00
20.00
25.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
5.00
10.00
Discharge (cfs)
15.00
20.00
25.00
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
1.80
1.60
1.40
1.20
0.60
0.40
0.20
0.00
0.00
5.00
10.00
Discharge (cfs)
15.00
20.00
25.00
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: Yellow Creek | CROSS-SECTION NO.: 2

CROSS-SECTION LOCATION: Approx. 0.2 miles downstream from confluence with Lambert Spring

DATE: 7-7-15 | OBSERVERS: R. Smith, B. Logan, B. Epstein

LEGAL DESCRIPTION | ¼ SECTION: SW NW | SECTION: 15 | TOWNSHIP: 2 (N)/S | RANGE: 98 E/(W) | PM: 6th

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

MAP(S): USGS: 12T 722915 4447241

USFS:

SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) / NO | METER TYPE: Flow Tracker

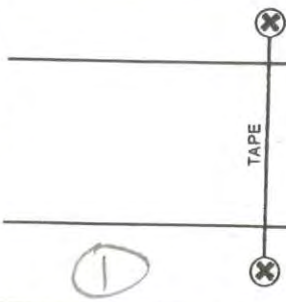
METER NUMBER: | DATE RATED: | CALIB/SPIN: _____ sec | TAPE WEIGHT: surveyed _____ lbs/foot | TAPE TENSION: surveyed _____ lbs

CHANNEL BED MATERIAL SIZE RANGE: sands and gravel | 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	5.95/5.95
② WS Upstream	11.5	6.02
③ WS Downstream	35.3	5.50
SLOPE	0.52/46.8 = 0.011	

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

FORM #ISF FD 1-85

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Creek	CROSS-SECTION NO.: 2	DATE: 7-7-15	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME: 10:20 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		3.54								
	0.8		4.04								
G	1.4		4.80								
	1.7		6.05								
W	2.8		5.95								
	3.0		6.21	.26				.34			
	3.2		6.17	.22				.68			
	3.4		6.17	.22				1.27			
	3.6		6.19	.24				1.26			
	3.8		6.25	.30				1.23			
	4.0		6.28	.33				.65			
	4.2		6.26	.31				.62			
	4.4		6.23	.28				.88			
	4.6		6.23	.28				.44			
	4.8		6.25	.30				.49			
	5.0		6.33	.38				1.12			
	5.2		6.36	.41				1.29			
	5.4		6.39	.44				1.02			
	5.6		6.37	.42				1.28			
	5.8		6.37	.42				1.28			
	6.0		6.35	.40				.78			
	6.2		6.33	.38				.78			
	6.4		6.35	.40				1.52			
	6.6		6.16	.21				1.31			
W	6.8		5.95								
	7.6		5.55								
	9.0		5.20								
	10.3		5.08								
G	11.0		4.80								
LS	13.6		3.95								
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:	Yellow Creek
XS LOCATION:	below Lambert Spring
XS NUMBER:	1
DATE:	27-Sep-11
OBSERVERS:	R. Smith, B. Lange, K. Sauter
1/4 SEC:	SW NW
SECTION:	15
TWP:	2N
RANGE:	98W
PM:	Sixth
COUNTY:	Rio Blanco
WATERSHED:	White River
DIVISION:	6
DOW CODE:	25242
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

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

CHANNEL PROFILE DATA

SLOPE:	0.008

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

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

STREAM NAME: Yellow Creek
XS LOCATION: below Lambert Spring
XS NUMBER: 1

DATA POINTS= 26

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	3.22			0.00		0.00	0.00	0.0%
1	G	1.80	4.01			0.00		0.00	0.00	0.0%
		2.20	4.39			0.00		0.00	0.00	0.0%
	W	2.70	4.82	0.00	0.00	0.00		0.00	0.00	0.0%
		3.00	4.85	0.05	0.00	0.30	0.05	0.02	0.00	0.0%
		3.30	4.90	0.10	0.06	0.30	0.10	0.03	0.00	0.2%
		3.60	5.00	0.20	0.67	0.32	0.20	0.06	0.04	3.4%
		3.90	5.00	0.20	1.21	0.30	0.20	0.06	0.07	6.1%
		4.20	5.00	0.20	1.62	0.30	0.20	0.06	0.10	8.2%
		4.50	5.00	0.20	1.41	0.30	0.20	0.06	0.08	7.1%
		4.80	5.00	0.20	1.47	0.30	0.20	0.06	0.09	7.4%
		5.10	5.05	0.25	1.55	0.30	0.25	0.08	0.12	9.8%
		5.40	5.10	0.30	1.42	0.30	0.30	0.09	0.13	10.7%
		5.70	5.10	0.30	1.40	0.30	0.30	0.09	0.13	10.6%
		6.00	5.10	0.30	1.48	0.30	0.30	0.09	0.13	11.2%
		6.30	5.05	0.25	1.30	0.30	0.25	0.08	0.10	8.2%
		6.60	5.10	0.30	0.88	0.30	0.30	0.09	0.08	6.6%
		6.90	5.05	0.25	1.09	0.30	0.25	0.08	0.08	6.9%
		7.20	5.00	0.20	0.67	0.30	0.20	0.06	0.04	3.4%
		7.50	5.00	0.20	0.07	0.30	0.20	0.08	0.01	0.5%
	W	8.00	4.81	0.00	0.00	0.53		0.00	0.00	0.0%
		9.00	4.38			0.00		0.00	0.00	0.0%
		11.00	4.34			0.00		0.00	0.00	0.0%
		13.60	4.65			0.00		0.00	0.00	0.0%
1	G	14.00	4.00			0.00		0.00	0.00	0.0%
	LS	14.70	3.50			0.00		0.00	0.00	0.0%
	TOTALS ----------					5.38	0.3 (Max.)	1.07	1.19	100.0%

Manning's n = 0.0406
Hydraulic Radius= 0.19882659

STREAM NAME: Yellow Creek
XS LOCATION: below Lambert Spring
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.07	1.00	-6.9%
4.57	1.07	2.46	130.0%
4.59	1.07	2.32	117.3%
4.61	1.07	2.19	105.0%
4.63	1.07	2.07	93.2%
4.65	1.07	1.95	81.9%
4.67	1.07	1.83	71.0%
4.69	1.07	1.71	60.2%
4.71	1.07	1.60	49.5%
4.73	1.07	1.49	38.9%
4.75	1.07	1.38	28.5%
4.77	1.07	1.27	18.2%
4.78	1.07	1.21	13.1%
4.79	1.07	1.16	8.1%
4.80	1.07	1.10	3.0%
4.81	1.07	1.05	-1.9%
4.82	1.07	1.00	-6.9%
4.83	1.07	0.94	-11.8%
4.84	1.07	0.89	-16.6%
4.85	1.07	0.84	-21.3%
4.86	1.07	0.79	-25.9%
4.87	1.07	0.74	-30.4%
4.89	1.07	0.65	-39.2%
4.91	1.07	0.56	-47.6%
4.93	1.07	0.47	-55.8%
4.95	1.07	0.39	-63.7%
4.97	1.07	0.30	-71.5%
4.99	1.07	0.22	-79.1%
5.01	1.07	0.15	-85.7%
5.03	1.07	0.11	-89.8%
5.05	1.07	0.07	-93.5%
5.07	1.07	0.04	-96.7%

WATERLINE AT ZERO
AREA ERROR = 4.801

STREAM NAME: Yellow Creek
XS LOCATION: below Lambert Spring
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	4.01	12.19	0.68	1.09	8.31	13.05	100.0%	0.64	20.11	2.42
	4.05	12.13	0.64	1.05	7.81	12.94	99.2%	0.60	18.23	2.34
	4.10	12.04	0.60	1.00	7.20	12.81	98.2%	0.56	16.05	2.23
	4.15	11.96	0.55	0.95	6.60	12.68	97.2%	0.52	13.98	2.12
	4.20	11.88	0.51	0.90	6.01	12.55	96.2%	0.48	12.03	2.00
	4.25	11.79	0.46	0.85	5.42	12.42	95.1%	0.44	10.19	1.88
	4.30	11.71	0.41	0.80	4.83	12.29	94.1%	0.39	8.47	1.75
	4.35	10.98	0.39	0.75	4.25	11.51	88.2%	0.37	7.15	1.68
	4.40	8.98	0.42	0.70	3.76	9.45	72.4%	0.40	6.67	1.77
	4.45	8.35	0.40	0.65	3.33	8.77	67.2%	0.38	5.72	1.72
	4.50	7.73	0.38	0.60	2.93	8.09	61.9%	0.36	4.87	1.66
	4.55	7.11	0.36	0.55	2.56	7.40	56.7%	0.35	4.12	1.61
	4.60	6.48	0.34	0.50	2.22	6.72	51.5%	0.33	3.47	1.56
	4.65	5.87	0.33	0.45	1.91	6.04	46.3%	0.32	2.90	1.52
	4.70	5.69	0.28	0.40	1.62	5.84	44.7%	0.28	2.26	1.39
	4.75	5.52	0.24	0.35	1.34	5.64	43.2%	0.24	1.68	1.26
WL	4.80	5.34	0.20	0.30	1.07	5.43	41.6%	0.20	1.18	1.11
	4.85	4.89	0.17	0.25	0.81	4.96	38.0%	0.16	0.79	0.98
	4.90	4.46	0.13	0.20	0.58	4.52	34.6%	0.13	0.48	0.83
	4.95	4.18	0.09	0.15	0.36	4.22	32.3%	0.09	0.23	0.64
	5.00	2.39	0.07	0.10	0.16	2.41	18.5%	0.07	0.09	0.54
	5.05	1.77	0.03	0.05	0.06	1.79	13.7%	0.03	0.02	0.33

STREAM NAME: Yellow Creek
XS LOCATION: below Lambert Spring
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.19	cfs
CALCULATED FLOW (Qc)=	1.18	cfs
(Qm-Qc)/Qm * 100 =	0.6	%
MEASURED WATERLINE (WLm)=	4.82	ft
CALCULATED WATERLINE (WLc)=	4.80	ft
(WLm-WLc)/WLm * 100 =	0.3	%
MAX MEASURED DEPTH (Dm)=	0.30	ft
MAX CALCULATED DEPTH (Dc)=	0.30	ft
(Dm-Dc)/Dm * 100	0.4	%
MEAN VELOCITY=	1.11	ft/sec
MANNING'S N=	0.041	
SLOPE=	0.008	ft/ft
.4 * Qm =	0.5	cfs
2.5 * Qm=	3.0	cfs

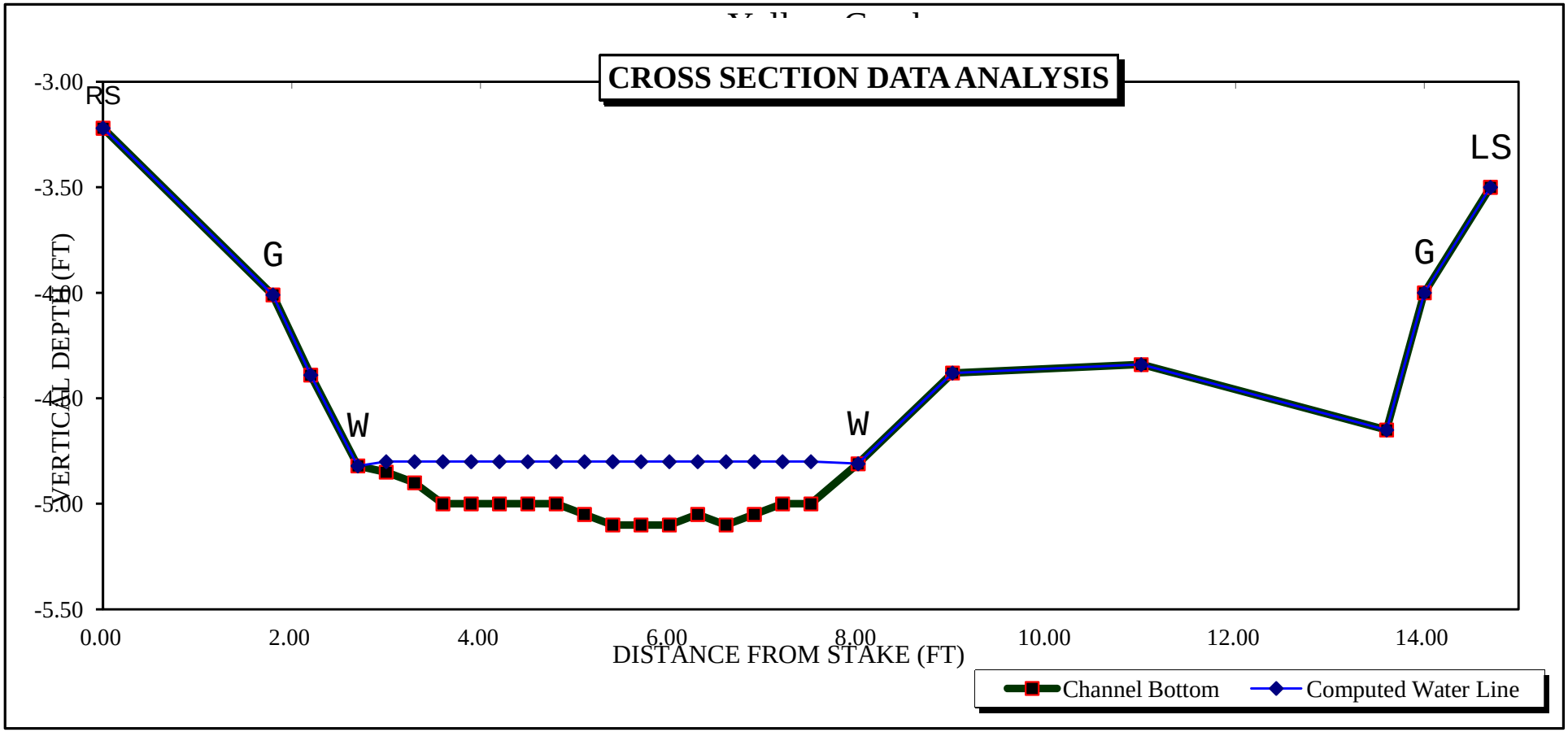
RECOMMENDED INSTREAM FLOW:
=============================

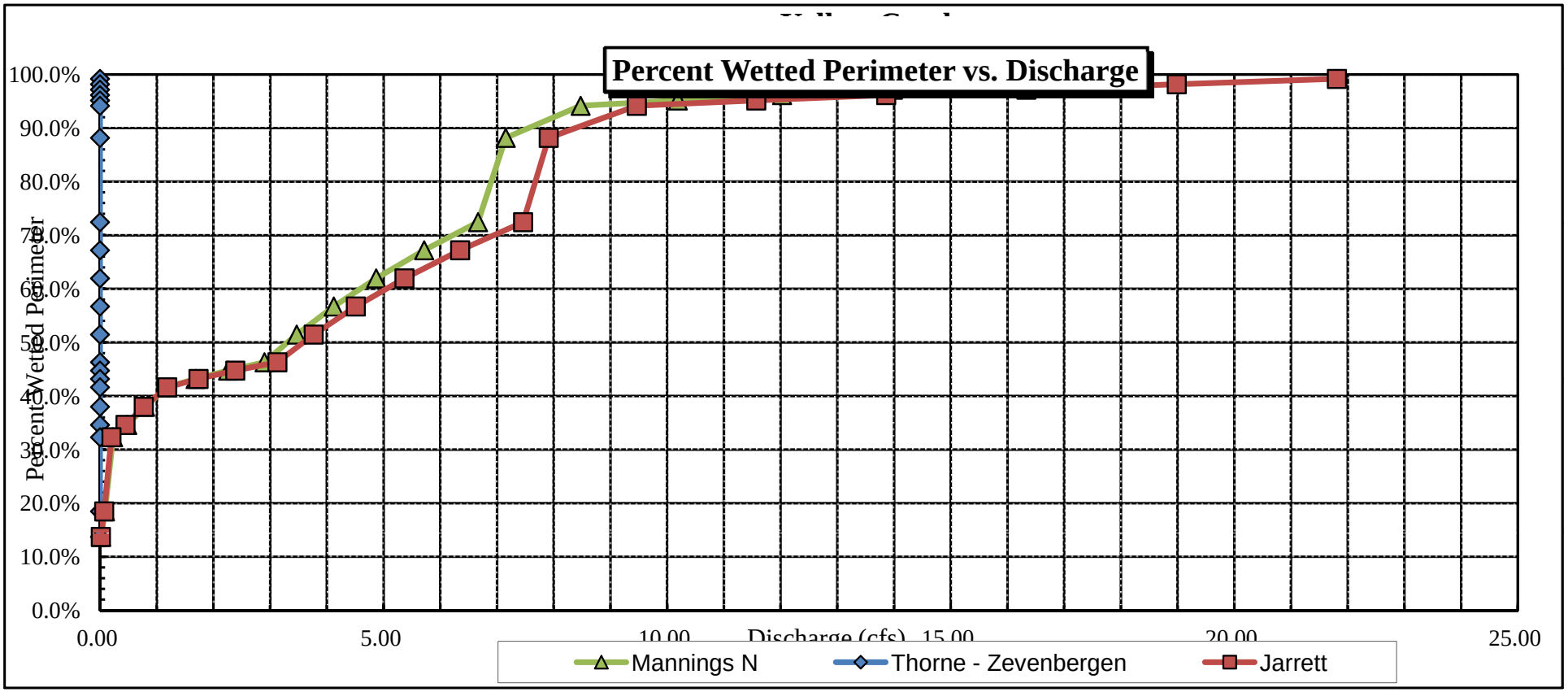
FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

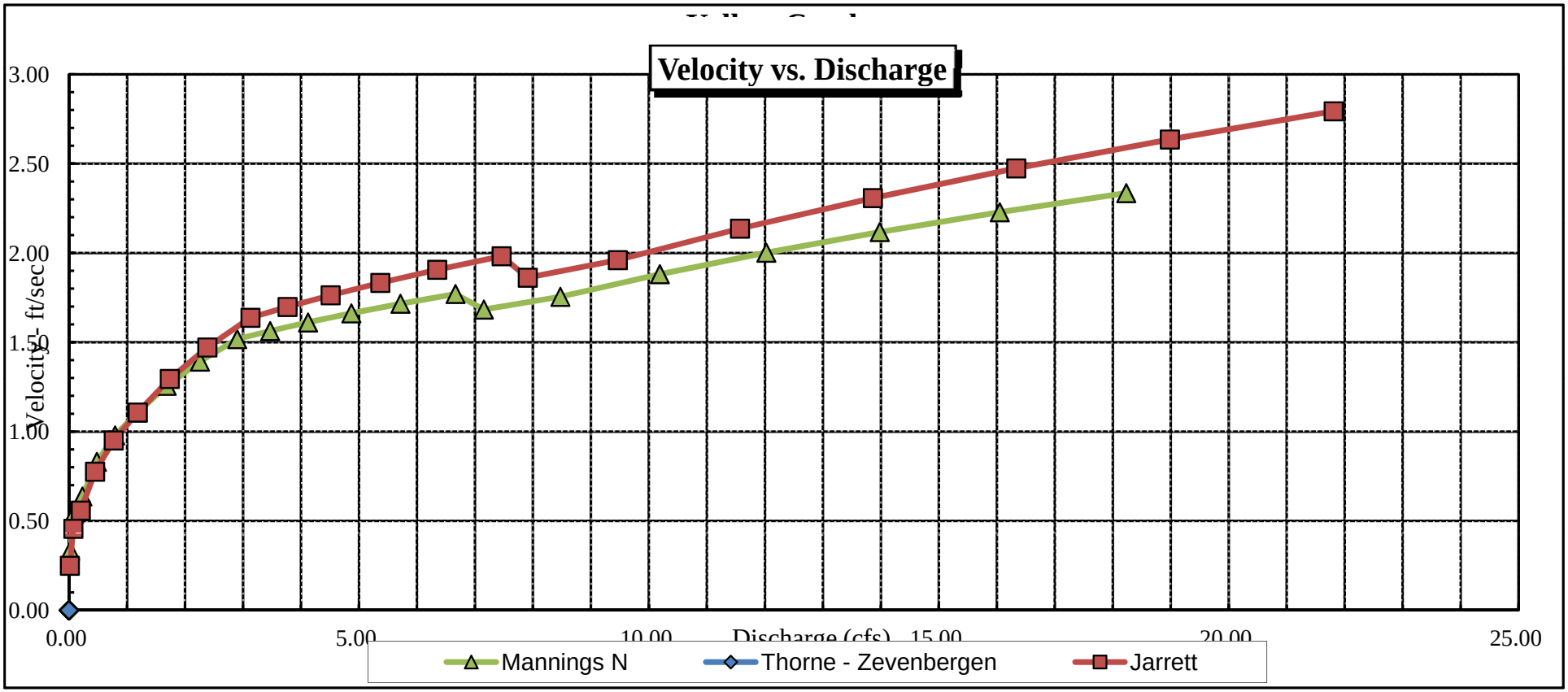
RATIONALE FOR RECOMMENDATION:
=============================

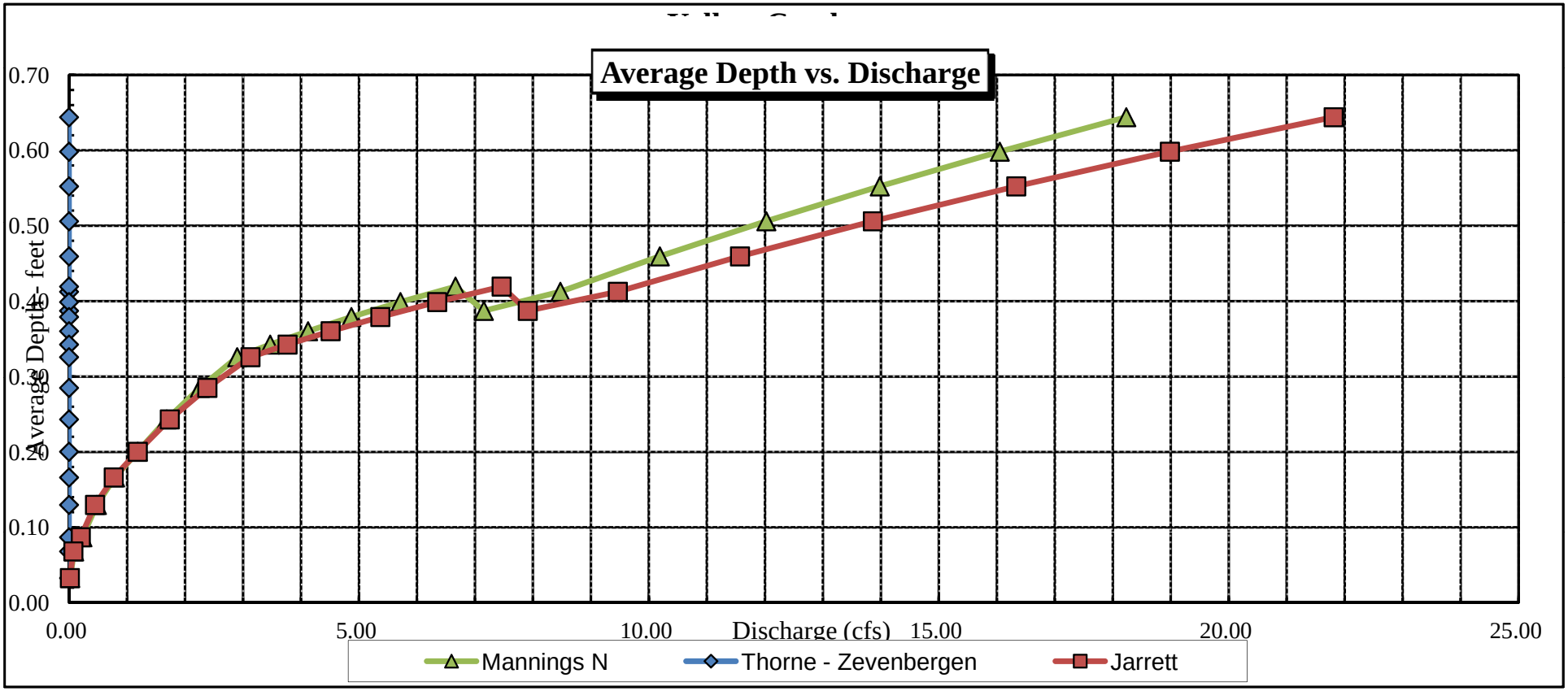
RECOMMENDATION BY: ………………...………..…….............................. AGENCY..……………………......…….....…...……...... DATE:......…...…......……………

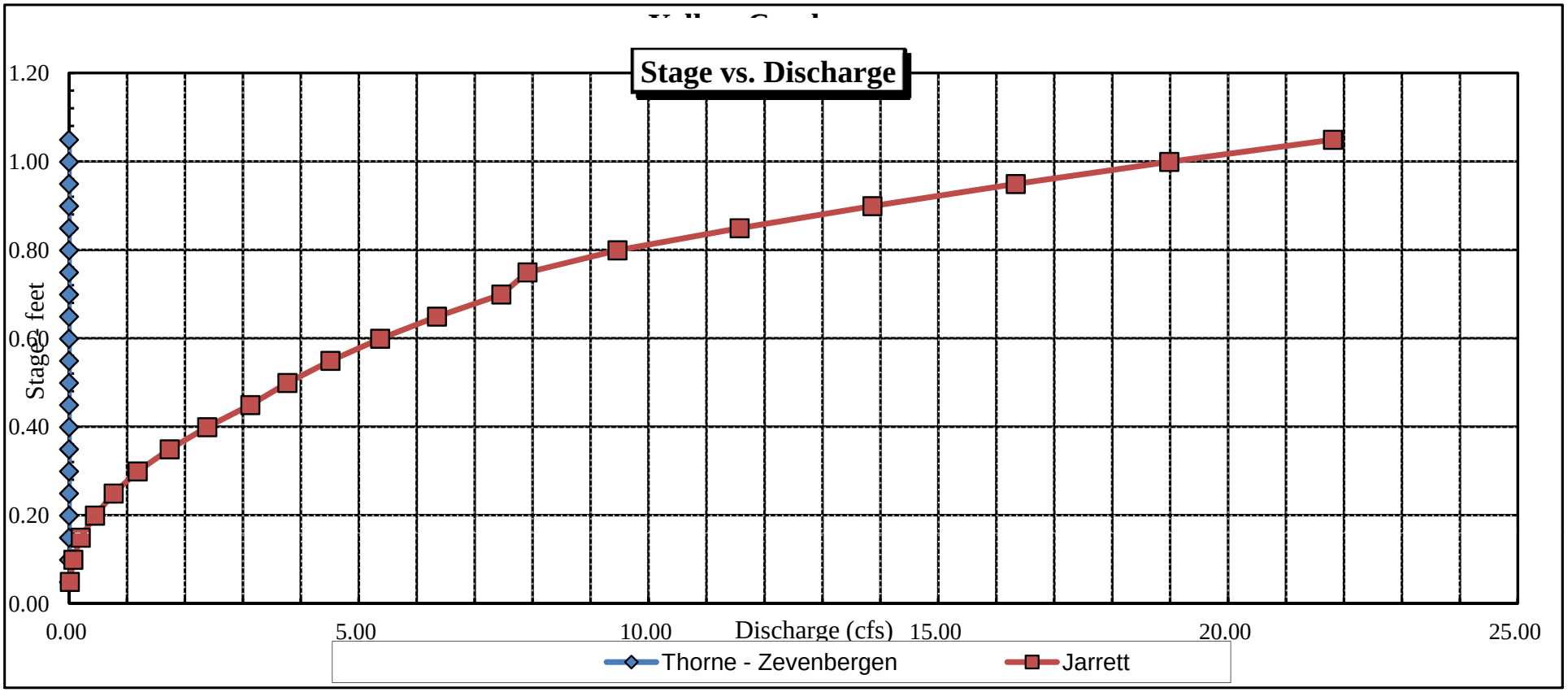
CWCB REVIEW BY: ..…………………………...……………………………………………………...…............. DATE:.................…………….....


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
LS
-3.00
-3.50
-4.00
-4.50
-5.00
-5.50
VERTICAL DEPTH (FT)
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
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
5.00
10.00
15.00
20.00
25.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Velocity - ft/sec
0.00
5.00
10.00
15.00
20.00
25.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Stage, feet
0.00
5.00
10.00
15.00
20.00
25.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Yellow Creek						CROSS-SECTION NO.: 1	
CROSS-SECTION LOCATION: Below Lambert Spring							
DATE: 9-27-11	OBSERVERS: R. Smith, B. Lange						
LEGAL DESCRIPTION	¼ SECTION: SW NW	SECTION: 15	TOWNSHIP: 2 (N)/S	RANGE: 98 E/(W)	PM: Sixth		
COUNTY: Rio Blanco	WATERSHED: White River	WATER DIVISION: 6	DOW WATER CODE: 25343				
MAP(S): USGS:			GPS Zone 12 722903				
USFS:			4447247				

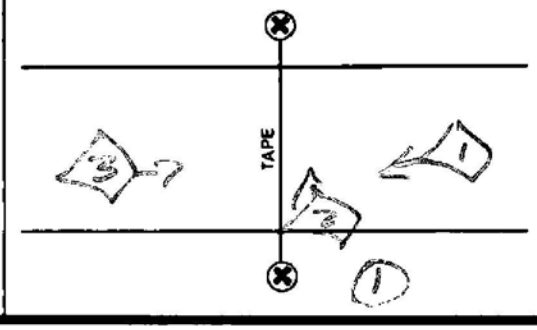
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION (YES)/NO	METER TYPE: AA-M			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: surveyed ____ lbs/foot	TAPE TENSION: surveyed ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravels	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	4.81/4.82
② WS Upstream	12.7	4.70
③ WS Downstream	10.9	4.88
SLOPE	0.19 / 23.6 = .009	

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:
mayfly, blackfly

COMMENTS

PH = 8.35
Temp = 15.4°
Cond = 332
Salinity = 1.7

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Crk | CROSS-SECTION NO. | DATE: 9/27/11 | SHEET 1 OF 1

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: — ft | TIME: 1300

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		3.22								
RG	1.8		4.01								
	2.2		4.39								
RW	2.7		4.82								
LW	8.0		4.81								
	9.0		4.38								
	11.0		4.34								
	13.6		4.65								
LG	14.0		4.0								
LS	14.7		3.50								
	T V			0				V			
	3.0		4.85	0.05				Ø			
	3.3		4.9	0.1				0.06			
	3.6		5.0	0.2				0.67			
	3.9		5.0	0.2				1.21			
	4.2		5.0	0.2				1.62			
	4.5		5.0	0.2				1.41			
	4.8		5.0	0.2				1.47			
	5.1		5.05	0.25				1.55			
	5.4		5.10	0.3				1.42			
	5.7		5.10	0.3				1.40			
	6.0		5.10	0.3				1.48			
	6.3		5.05	0.25				1.30			
	6.6		5.10	0.3				0.88			
	6.9		5.05	0.25				1.09			
	7.2		5.0	0.2				0.67			
	7.5		5.0	0.2				0.07			
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:	Yellow Creek
XS LOCATION:	Downstream from Lambert Spring
XS NUMBER:	2
DATE:	27-Sep-11
OBSERVERS:	R. Smith, B. Lange, K. Sauter
1/4 SEC:	SW NW
SECTION:	15
TWP:	2N
RANGE:	98W
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:	0.008

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

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

STREAM NAME: Yellow Creek
XS LOCATION: Downstream from Lambert Spring
XS NUMBER: 2

DATA POINTS= 27

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	LS	0.00	3.90			0.00		0.00	0.00	0.0%
1	G	2.70	4.80			0.00		0.00	0.00	0.0%
		4.00	5.47			0.00		0.00	0.00	0.0%
	W	4.50	5.74	0.00		0.00		0.00	0.00	0.0%
		4.80	6.00	0.25	0.00	0.40	0.25	0.08	0.00	0.0%
		5.10	6.05	0.30	0.01	0.30	0.30	0.09	0.00	0.1%
		5.40	5.95	0.20	0.17	0.32	0.20	0.06	0.01	1.0%
		5.70	5.95	0.20	0.50	0.30	0.20	0.06	0.03	2.9%
		6.00	5.95	0.20	0.92	0.30	0.20	0.06	0.06	5.3%
		6.30	5.95	0.20	1.42	0.30	0.20	0.06	0.09	8.2%
		6.60	5.95	0.20	1.51	0.30	0.20	0.06	0.09	8.7%
		6.90	5.95	0.20	1.30	0.30	0.20	0.06	0.08	7.5%
		7.20	5.95	0.20	0.80	0.30	0.20	0.06	0.05	4.6%
		7.50	5.95	0.20	0.89	0.30	0.20	0.06	0.05	5.1%
		7.80	5.95	0.20	0.90	0.30	0.20	0.06	0.05	5.2%
		8.10	5.95	0.20	0.96	0.30	0.20	0.06	0.06	5.5%
		8.40	5.95	0.20	1.10	0.30	0.20	0.06	0.07	6.3%
		8.70	5.95	0.20	1.81	0.30	0.20	0.06	0.11	10.4%
		9.00	5.95	0.20	1.63	0.30	0.20	0.06	0.10	9.4%
		9.30	6.05	0.30	1.40	0.32	0.30	0.09	0.13	12.1%
		9.60	6.10	0.35	0.69	0.30	0.35	0.11	0.07	6.9%
		9.90	6.10	0.35	0.10	0.30	0.35	0.09	0.01	0.8%
	W	10.10	5.74	0.00	0.00	0.41		0.00	0.00	0.0%
		10.80	5.35			0.00		0.00	0.00	0.0%
1	G	11.30	4.82			0.00		0.00	0.00	0.0%
		12.00	4.50			0.00		0.00	0.00	0.0%
	RS	15.50	4.20			0.00		0.00	0.00	0.0%
	TOTALS ----------					5.95	0.35	1.23	1.04	100.0%
							(Max.)			

Manning's n = 0.0546
Hydraulic Radius= 0.20631828

STREAM NAME: Yellow Creek
XS LOCATION: Downstream from Lambert Spring
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.23	1.28	4.4%
5.49	1.23	2.79	127.7%
5.51	1.23	2.67	117.1%
5.53	1.23	2.54	106.7%
5.55	1.23	2.41	96.4%
5.57	1.23	2.29	86.2%
5.59	1.23	2.16	76.1%
5.61	1.23	2.04	66.2%
5.63	1.23	1.92	56.3%
5.65	1.23	1.80	46.6%
5.67	1.23	1.68	37.0%
5.69	1.23	1.57	27.5%
5.70	1.23	1.51	22.8%
5.71	1.23	1.45	18.2%
5.72	1.23	1.39	13.5%
5.73	1.23	1.34	8.9%
5.74	1.23	1.28	4.4%
5.75	1.23	1.23	-0.2%
5.76	1.23	1.17	-4.7%
5.77	1.23	1.11	-9.3%
5.78	1.23	1.06	-13.8%
5.79	1.23	1.00	-18.3%
5.81	1.23	0.89	-27.2%
5.83	1.23	0.78	-36.1%
5.85	1.23	0.68	-45.0%
5.87	1.23	0.57	-53.8%
5.89	1.23	0.46	-62.5%
5.91	1.23	0.35	-71.2%
5.93	1.23	0.25	-79.8%
5.95	1.23	0.14	-88.4%
5.97	1.23	0.11	-90.9%
5.99	1.23	0.08	-93.2%

WATERLINE AT ZERO
AREA ERROR = 5.750

STREAM NAME: Yellow Creek
XS LOCATION: Downstream from Lambert Spring
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	4.82	8.56	0.92	1.28	7.88	9.47	100.0%	0.83	16.95	2.15
	4.85	8.48	0.90	1.25	7.62	9.36	98.9%	0.81	16.17	2.12
	4.90	8.33	0.86	1.20	7.20	9.18	97.0%	0.78	14.91	2.07
	4.95	8.19	0.83	1.15	6.79	9.01	95.1%	0.75	13.69	2.02
	5.00	8.04	0.79	1.10	6.38	8.83	93.3%	0.72	12.52	1.96
	5.05	7.90	0.76	1.05	5.99	8.65	91.4%	0.69	11.39	1.90
	5.10	7.76	0.72	1.00	5.59	8.47	89.5%	0.66	10.32	1.84
	5.15	7.61	0.68	0.95	5.21	8.29	87.6%	0.63	9.30	1.78
	5.20	7.47	0.65	0.90	4.83	8.12	85.7%	0.60	8.32	1.72
	5.25	7.32	0.61	0.85	4.46	7.94	83.9%	0.56	7.40	1.66
	5.30	7.18	0.57	0.80	4.10	7.76	82.0%	0.53	6.52	1.59
	5.35	7.03	0.53	0.75	3.75	7.58	80.1%	0.49	5.70	1.52
	5.40	6.85	0.50	0.70	3.40	7.37	77.9%	0.46	4.94	1.45
	5.45	6.66	0.46	0.65	3.06	7.16	75.6%	0.43	4.23	1.38
	5.50	6.48	0.42	0.60	2.73	6.95	73.4%	0.39	3.57	1.31
	5.55	6.29	0.38	0.55	2.41	6.74	71.2%	0.36	2.96	1.23
	5.60	6.11	0.34	0.50	2.10	6.53	69.0%	0.32	2.40	1.14
	5.65	5.93	0.30	0.45	1.80	6.33	66.8%	0.28	1.90	1.05
	5.70	5.75	0.26	0.40	1.51	6.12	64.6%	0.25	1.45	0.96
WL	5.75	5.58	0.22	0.35	1.23	5.92	62.6%	0.21	1.05	0.85
	5.80	5.50	0.17	0.30	0.95	5.79	61.2%	0.16	0.69	0.73
	5.85	5.41	0.13	0.25	0.68	5.66	59.8%	0.12	0.40	0.59
	5.90	5.33	0.08	0.20	0.41	5.52	58.3%	0.07	0.18	0.43
	5.95	1.64	0.09	0.15	0.14	1.79	18.9%	0.08	0.07	0.45
	6.00	1.26	0.06	0.10	0.07	1.34	14.2%	0.05	0.02	0.34
	6.05	0.63	0.04	0.05	0.02	0.66	7.0%	0.04	0.01	0.26
	6.10	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: Yellow Creek
XS LOCATION: Downstream from Lambert Spring
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.04	cfs
CALCULATED FLOW (Qc)=	1.05	cfs
(Qm-Qc)/Qm * 100 =	-0.3	%
MEASURED WATERLINE (WLm)=	5.74	ft
CALCULATED WATERLINE (WLc)=	5.75	ft
(WLm-WLc)/WLm * 100 =	-0.2	%
MAX MEASURED DEPTH (Dm)=	0.35	ft
MAX CALCULATED DEPTH (Dc)=	0.35	ft
(Dm-Dc)/Dm * 100	-0.1	%
MEAN VELOCITY=	0.85	ft/sec
MANNING'S N=	0.055	
SLOPE=	0.008	ft/ft
.4 * Qm =	0.4	cfs
2.5 * Qm=	2.6	cfs

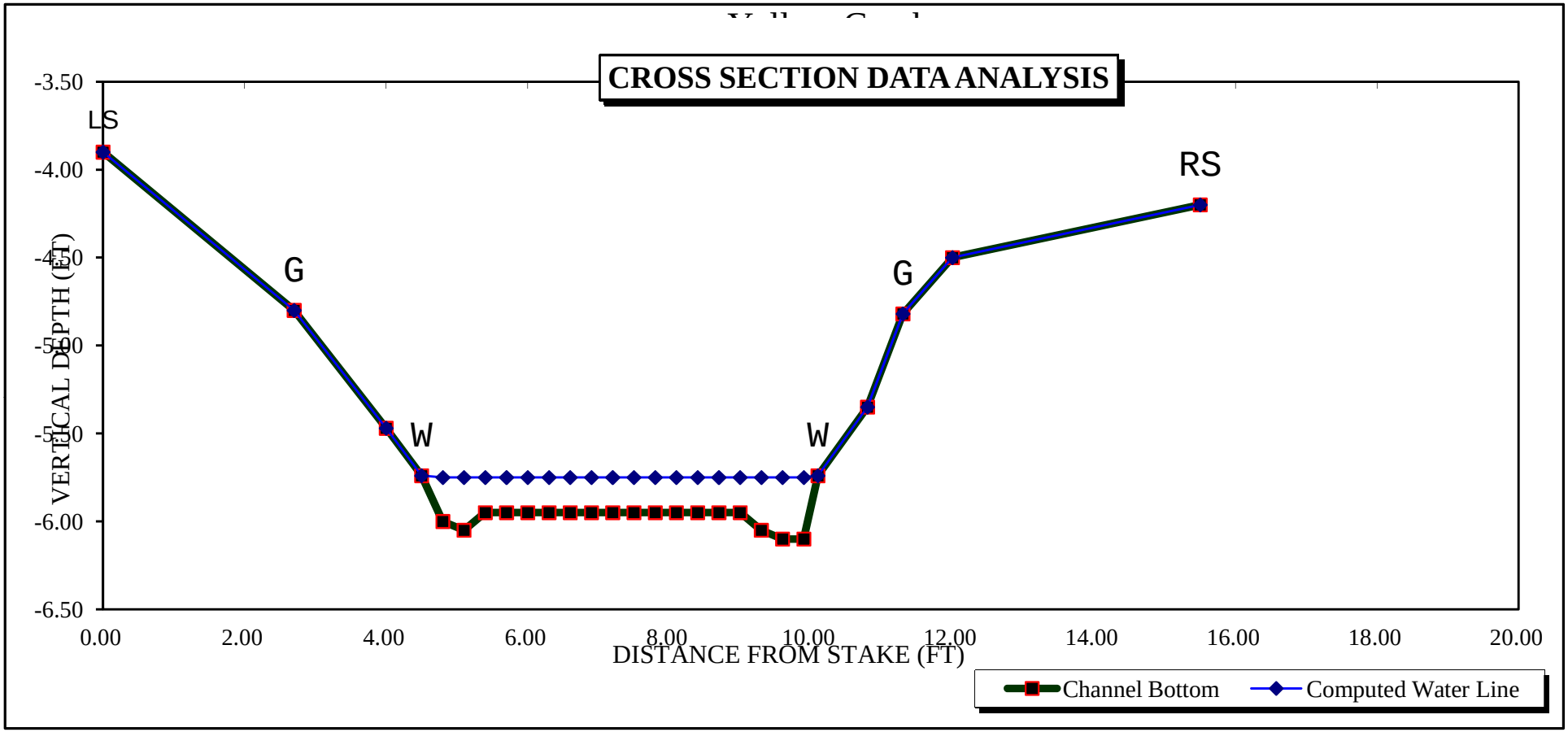
RECOMMENDED INSTREAM FLOW:
=============================

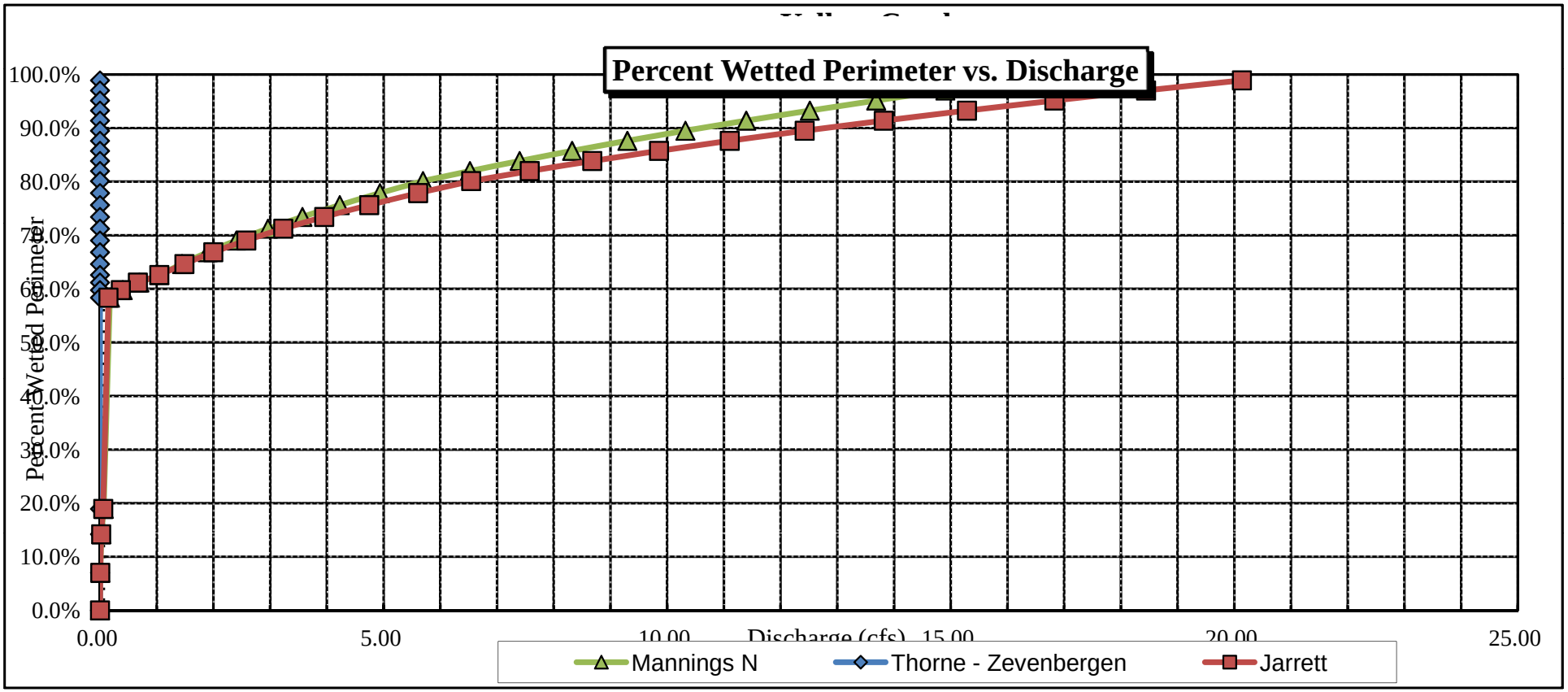
FLOW (CFS)	PERIOD
===========	========
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

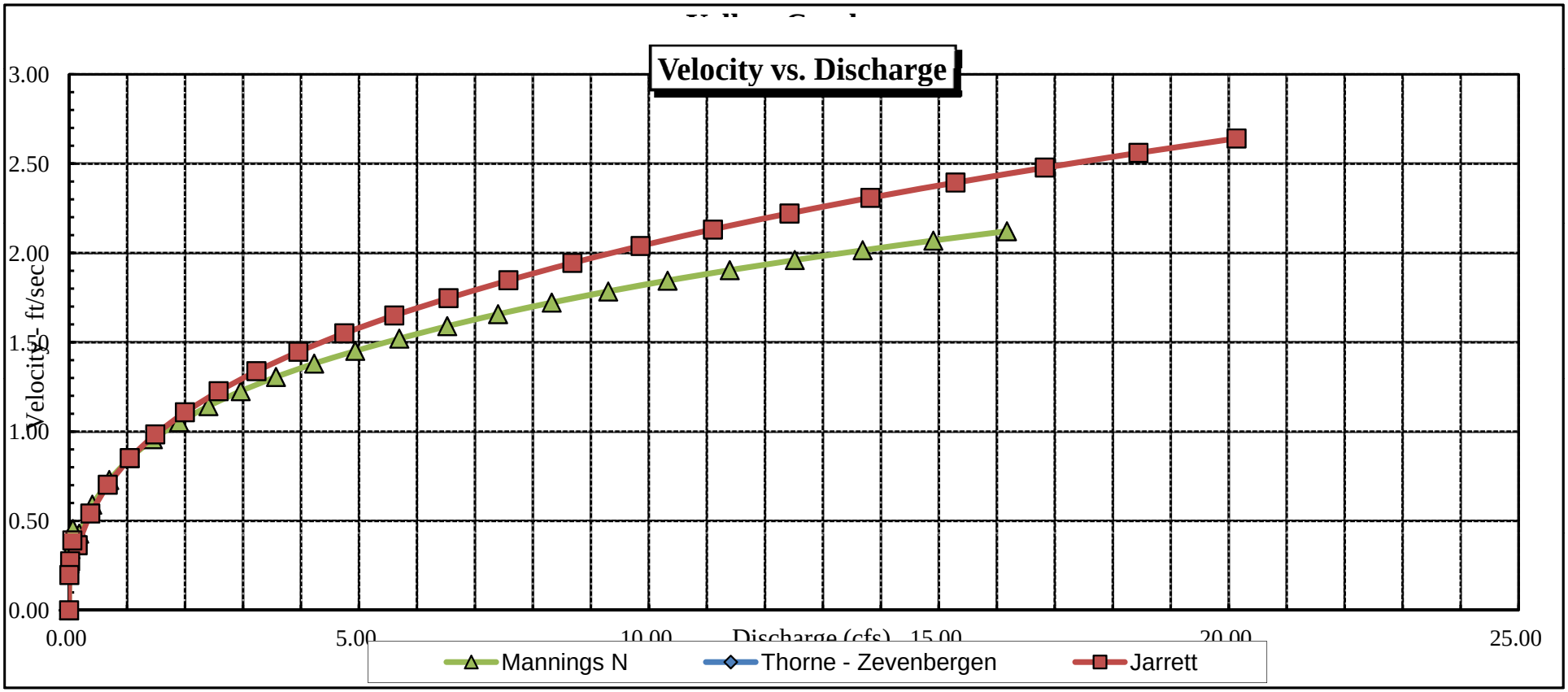
RATIONALE FOR RECOMMENDATION:
=============================

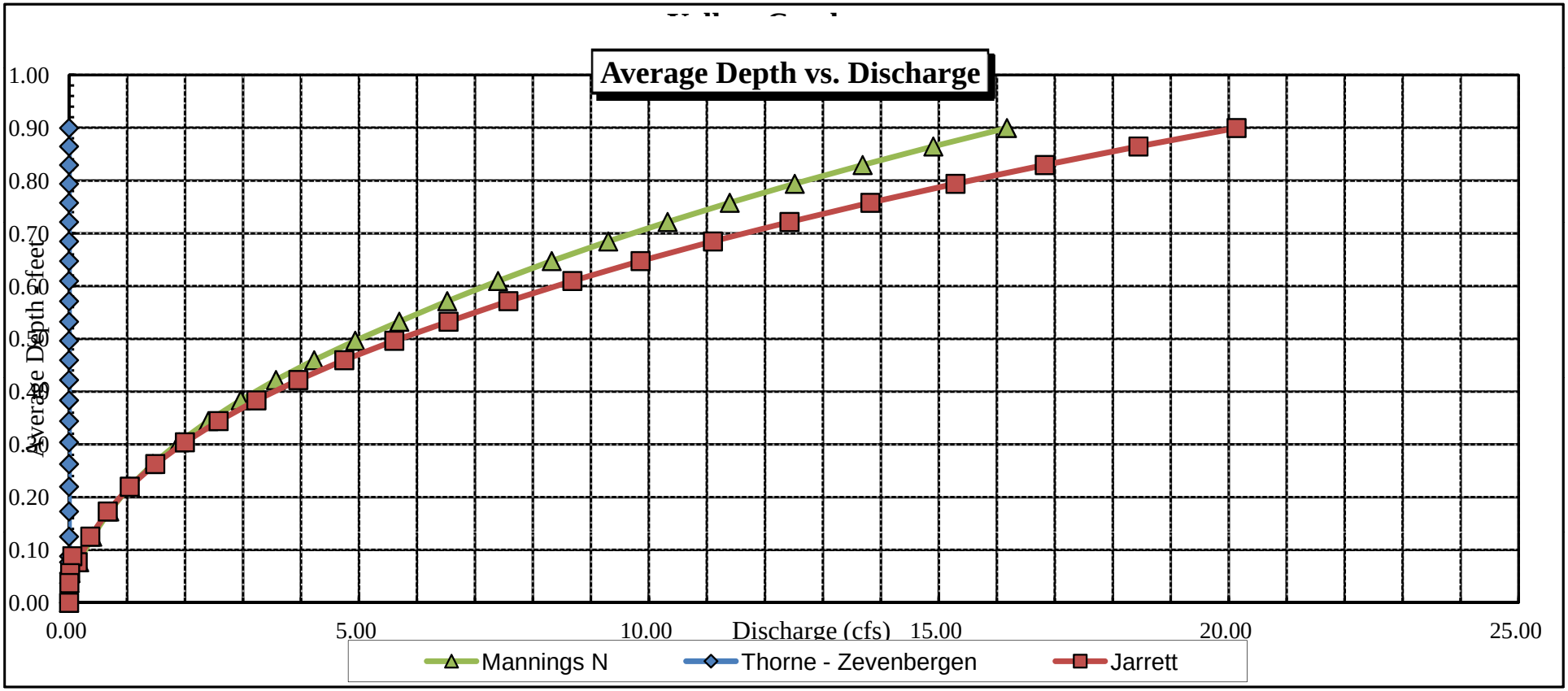
RECOMMENDATION BY: ………………...………..……............................... AGENCY..………………………......……......…......……....... DATE:.......…...….......……………

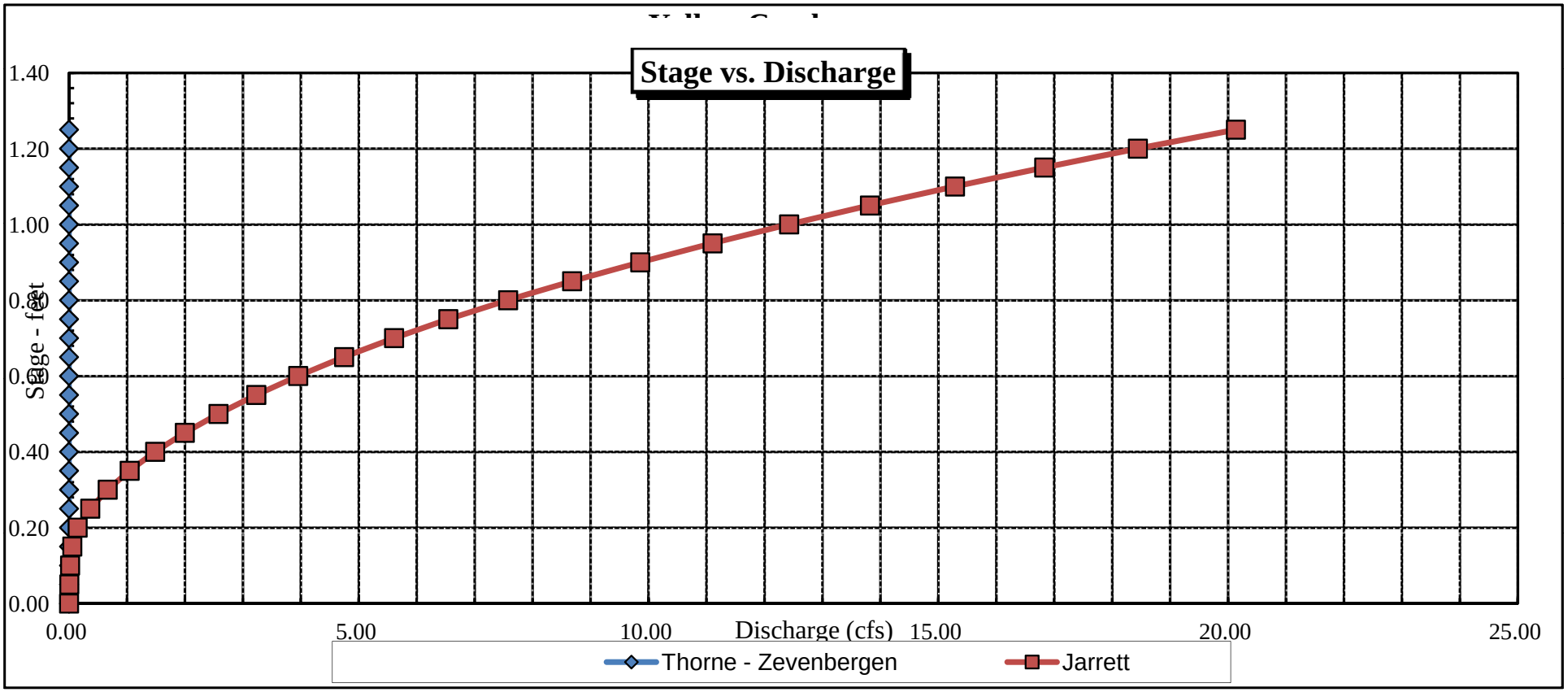
CWCB REVIEW BY: ..……………………………....…………………………………………………..…............. DATE:.................…………….....…


CROSS SECTION DATA ANALYSIS
LS
G
W
W
G
RS
-3.50
-4.00
-4.50
-5.00
-5.50
-6.00
-6.50
VERTICAL DEPTH (FT)
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
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
5.00
10.00
Discharge (cfs)
15.00
20.00
25.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Velocity - ft/sec
0.00
5.00
10.00
15.00
20.00
25.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth (feet)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
5.00
10.00
Discharge (cfs)
15.00
20.00
25.00
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Stage - feet
0.00
5.00
10.00
Discharge (cfs)
15.00
20.00
25.00
Thorne - Zevenbergen
Jarrett

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Yellow Creek | CROSS-SECTION NO.: 2

CROSS-SECTION LOCATION: Below Lambert Spring

DATE: 9-27-11 | OBSERVERS: R. Smith, B. Lange

LEGAL DESCRIPTION | ¼ SECTION: SW NW | SECTION: 15 | TOWNSHIP: 2 (N) S | RANGE: 98 E (W) | PM: Sixth

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

MAP(S): USGS: 7328SW

USFS: GPS Zone 12 4497036

SUPPLEMENTAL DATA

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

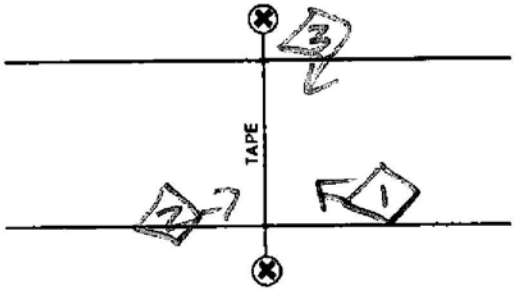
METER NUMBER: | DATE RATED: | CALIB/SPIN: ____ sec | TAPE WEIGHT: surveyed ____ lbs/foot | TAPE TENSION: surveyed ____ lbs

CHANNEL BED MATERIAL SIZE RANGE: gravels | 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	5.74/5.74
② WS Upstream	22.7	5.52
③ WS Downstream	14.0	5.82
SLOPE	0.30 / 36.7 = .008	

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:

mayfly, black fly

COMMENTS

Ph = 8.35

Temp = 15.4°

Cond = 3324

Salinity = 1.7

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Yellow Crk.	CROSS-SECTION NO: 2	DATE: 9/27	SHEET 1 OF 1
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: ____ ft	TIME: 1325

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)
LS	0.0		3.90								
LG	2.7		4.80								
	4.0		5.47								
LW	4.5		5.74								
			I		D		V				
			4.8	6.0	0.25		0.01				
			5.1	6.05	0.3		0.17				
			5.4	5.95	0.2		0.50				
			5.7	5.95	0.2		0.92				
			6.0	5.95	0.2		1.42				
			6.3	5.95	0.2		1.51				
			6.6	5.95	0.2		1.30				
			6.9	5.95	0.2		0.80				
			7.2	5.95	0.2		0.89				
			7.5	5.95	0.2		0.96				
			7.8	5.95	0.2		0.96				
			8.1	5.95	0.2		1.10				
			8.4	5.95	0.2		1.31				
			8.7	5.95	0.2		1.63				
			9.0	5.95	0.2		1.40				
			9.3	6.05	0.3		0.67				
			9.6	6.10	0.35		0.10				
			9.9	6.10	0.35		0				
RW	10.1		5.74								
	10.2		5.35								
RG	11.3		4.82								
	12.0		4.50								
RS	15.5		4.20								
TOTALS											

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

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Colorado Water Conservation Board
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information

File Name	YLWR2X11.001.WAD
Start Date and Time	2015/07/07 10:19:17

Site Details

Site Name	YELLOW CR R2X 11
Operator(s)	BRIAN EPSTEIN

System Information

Sensor Type	FlowTracker
Serial #	P2354
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	1.6%
Velocity	0.8%	5.5%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.4%	-
Overall	**3.4%**	**5.8%**

Summary

Averaging Int.	40	# Stations	21
Start Edge	REW	Total Width	4.003
Mean SNR	36.0 dB	Total Area	1.253
Mean Temp	60.37 °F	Mean Depth	0.313
Disch. Equation	Mid-Section	Mean Velocity	0.9965
		Total Discharge	**1.2483**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:19	2.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:21*	*3.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.3360*	*1.00*	*0.3360*	*0.052*	*0.0175*	*1.4*
2	10:22	3.20	0.6	0.220	0.6	0.088	0.6844	1.00	0.6844	0.044	0.0302	2.4
3	10:24	3.40	0.6	0.220	0.6	0.088	1.2749	1.00	1.2749	0.044	0.0562	4.5
4	10:26	3.60	0.6	0.240	0.6	0.096	1.2621	1.00	1.2621	0.048	0.0607	4.9
5	10:27	3.80	0.6	0.300	0.6	0.120	1.2290	1.00	1.2290	0.060	0.0738	5.9
6	10:30	4.00	0.6	0.330	0.6	0.132	0.6496	1.00	0.6496	0.066	0.0429	3.4
7	10:31	4.20	0.6	0.310	0.6	0.124	0.6198	1.00	0.6198	0.062	0.0385	3.1
8	10:33	4.40	0.6	0.280	0.6	0.112	0.8819	1.00	0.8819	0.056	0.0494	4.0
9	10:34	4.60	0.6	0.280	0.6	0.112	0.4357	1.00	0.4357	0.056	0.0244	2.0
10	10:35	4.80	0.6	0.300	0.6	0.120	0.4892	1.00	0.4892	0.060	0.0294	2.4
11	10:37	5.00	0.6	0.380	0.6	0.152	1.1155	1.00	1.1155	0.076	0.0848	6.8
12	10:38	5.20	0.6	0.410	0.6	0.164	1.2890	1.00	1.2890	0.082	0.1058	8.5
13	10:40	5.40	0.6	0.440	0.6	0.176	1.0328	1.00	1.0328	0.088	0.0909	7.3
14	10:41	5.60	0.6	0.440	0.6	0.176	1.0187	1.00	1.0187	0.088	0.0897	7.2
15	10:43	5.80	0.6	0.420	0.6	0.168	1.2825	1.00	1.2825	0.084	0.1078	8.6
16	10:44	6.00	0.6	0.420	0.6	0.168	1.2812	1.00	1.2812	0.084	0.1077	8.6
17	*10:45*	*6.20*	*0.6*	*0.400*	*0.6*	*0.160*	*0.7769*	*1.00*	*0.7769*	*0.080*	*0.0622*	*5.0*
18	*10:48*	*6.40*	*0.6*	*0.400*	*0.6*	*0.160*	*-1.5207*	*-1.00*	*1.5207*	*0.080*	*0.1217*	*9.8*
19	*10:51*	*6.60*	*0.6*	*0.210*	*0.6*	*0.084*	*-1.3081*	*-1.00*	*1.3081*	*0.042*	*0.0550*	*4.4*
20	10:51	6.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

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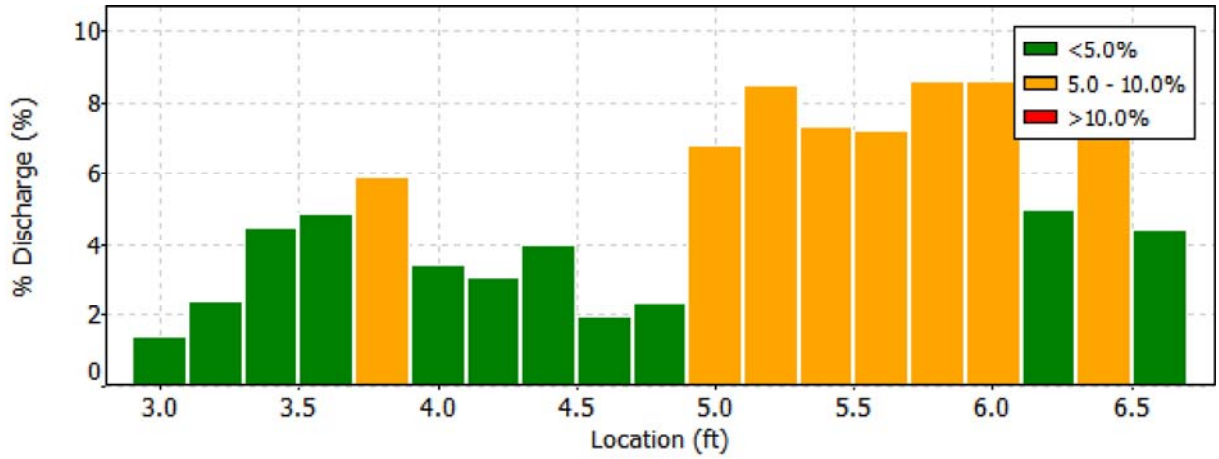
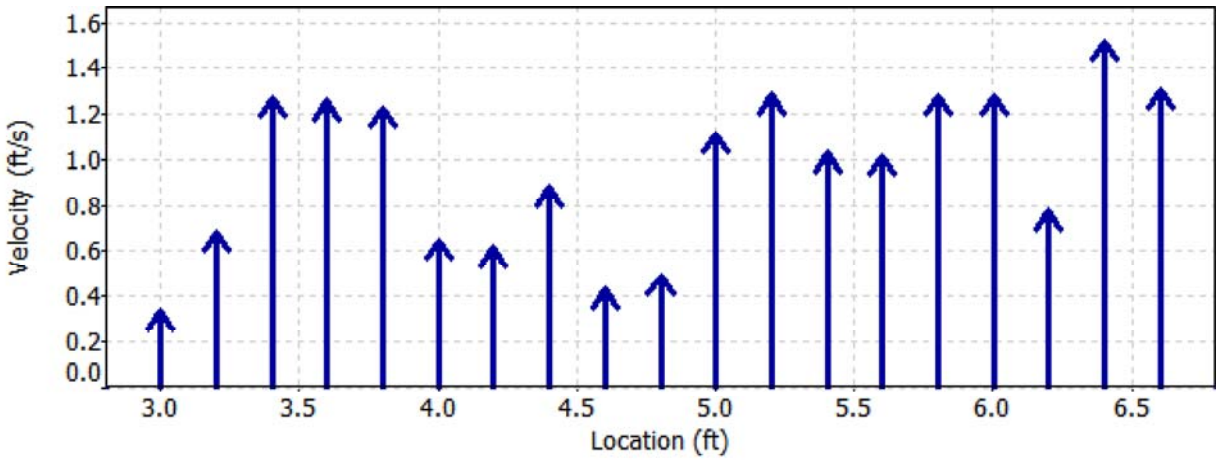
Department of Natural Resources

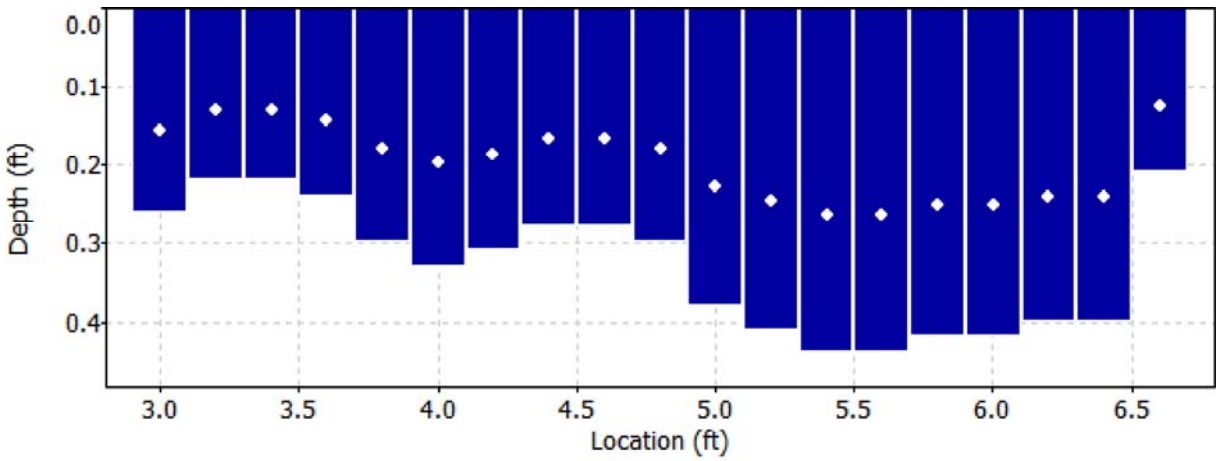
Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information		Site Details	
File Name	YLWR2X11.001.WAD	Site Name	YELLOW CR R2X 11
Start Date and Time	2015/07/07 10:19:17	Operator(s)	BRIAN EPSTEIN







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Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information

File Name	YLWR2X11.001.WAD
Start Date and Time	2015/07/07 10:19:17

Site Details

Site Name	YELLOW CR R2X 11
Operator(s)	BRIAN EPSTEIN

Quality Control

St	Loc	%Dep	Message
1	3.00	0.6	High angle: 38
17	6.20	0.6	High standard error: 0.073
18	6.40	0.6	High angle: -172
19	6.60	0.6	High angle: 176

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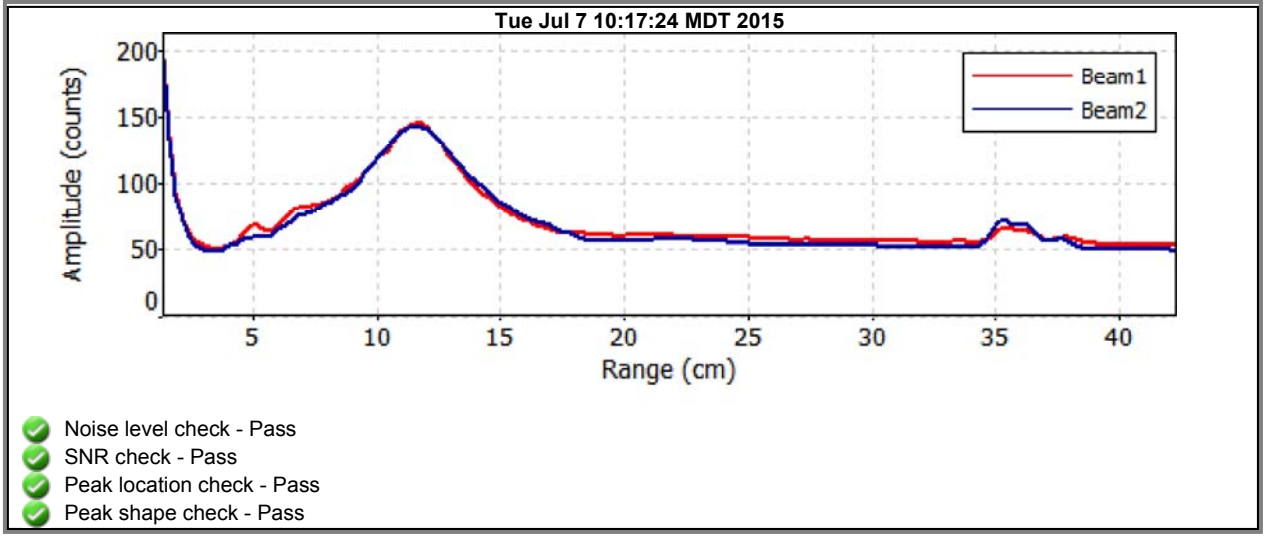
Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information		Site Details	
File Name	YLWR2X11.001.WAD	Site Name	YELLOW CR R2X 11
Start Date and Time	2015/07/07 10:19:17	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

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Department of Natural Resources

Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information

File Name	YLWR2X10.001.WAD
Start Date and Time	2015/07/07 08:49:47

Site Details

Site Name	YELLOW CR R2X 10
Operator(s)	BRIAN EPSTEIN

System Information

Sensor Type	FlowTracker
Serial #	P2354
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	1.8%
Velocity	2.1%	7.1%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	2.5%	-
Overall	**3.9%**	**7.4%**

Summary

Averaging Int.	40	# Stations	24
Start Edge	REW	Total Width	4.200
Mean SNR	29.8 dB	Total Area	1.332
Mean Temp	58.16 °F	Mean Depth	0.317
Disch. Equation	Mid-Section	Mean Velocity	1.0593
		Total Discharge	**1.4107**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:49	3.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:49	3.20	None	0.100	0.0	0.0	0.0000	1.00	0.0000	0.020	0.0000	0.0
2	08:49	3.40	None	0.150	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
3	08:49	3.60	None	0.170	0.0	0.0	0.0000	1.00	0.6621	0.017	0.0112	0.8
4	08:52	3.80	0.6	0.350	0.6	0.140	0.6621	1.00	0.6621	0.070	0.0463	3.3
5	*08:54*	*4.00*	*0.6*	*0.410*	*0.6*	*0.164*	*0.7096*	*1.00*	*0.7096*	*0.082*	*0.0581*	*4.1*
6	08:55	4.20	0.6	0.410	0.6	0.164	1.2575	1.00	1.2575	0.082	0.1030	7.3
7	*08:56*	*4.40*	*0.6*	*0.430*	*0.6*	*0.172*	*0.4698*	*1.00*	*0.4698*	*0.086*	*0.0404*	*2.9*
8	*08:59*	*4.60*	*0.6*	*0.420*	*0.6*	*0.168*	*0.7546*	*1.00*	*0.7546*	*0.084*	*0.0635*	*4.5*
9	09:12	4.80	0.6	0.380	0.6	0.152	0.5233	1.00	0.5233	0.076	0.0400	2.8
10	*09:09*	*5.00*	*0.6*	*0.380*	*0.6*	*0.152*	*0.9957*	*1.00*	*0.9957*	*0.076*	*0.0761*	*5.4*
11	09:16	5.20	0.6	0.350	0.6	0.140	0.8228	1.00	0.8228	0.070	0.0579	4.1
12	09:18	5.40	0.6	0.380	0.6	0.152	0.5069	1.00	0.5069	0.076	0.0387	2.7
13	09:19	5.60	0.6	0.380	0.6	0.152	0.9518	1.00	0.9518	0.075	0.0717	5.1
14	09:21	5.80	0.6	0.330	0.6	0.132	0.8747	1.00	0.8747	0.065	0.0571	4.0
15	09:25	6.00	0.6	0.300	0.6	0.120	1.1188	1.00	1.1188	0.060	0.0671	4.8
16	09:28	6.20	0.6	0.300	0.6	0.120	1.7523	1.00	1.7523	0.060	0.1052	7.5
17	09:30	6.40	0.6	0.300	0.6	0.120	1.0141	1.00	1.0141	0.060	0.0609	4.3
18	09:31	6.60	0.6	0.250	0.6	0.100	2.0272	1.00	2.0272	0.050	0.1014	7.2
19	09:35	6.80	0.6	0.260	0.6	0.104	2.0653	1.00	2.0653	0.052	0.1074	7.6
20	*09:37*	*7.00*	*0.6*	*0.280*	*0.6*	*0.112*	*1.6155*	*1.00*	*1.6155*	*0.056*	*0.0905*	*6.4*
21	*09:41*	*7.20*	*0.6*	*0.300*	*0.6*	*0.120*	*-1.9045*	*-1.00*	*1.9045*	*0.060*	*0.1143*	*8.1*
22	09:41	7.40	None	0.350	0.0	0.0	0.0000	1.00	1.9045	0.052	0.0997	7.1
23	09:41	7.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

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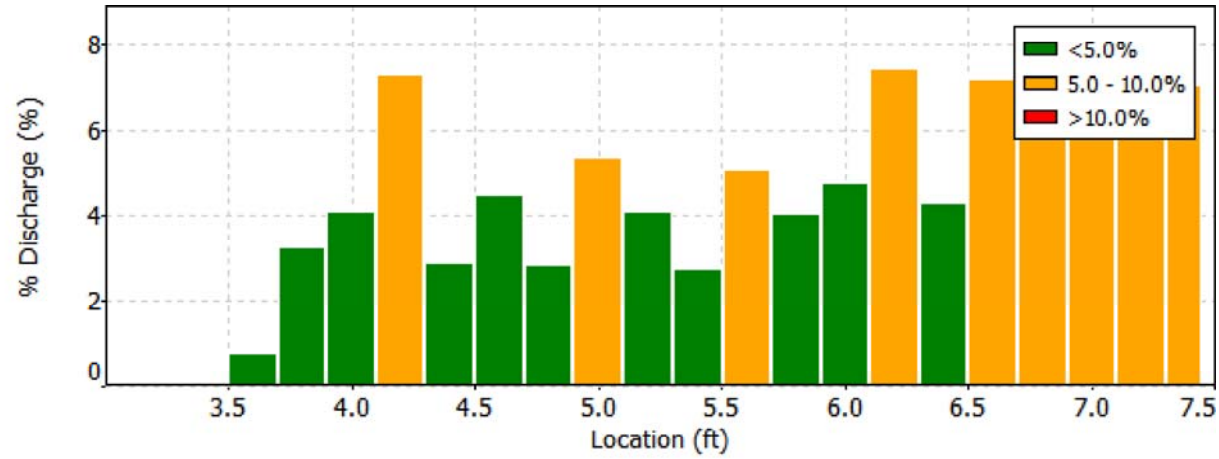
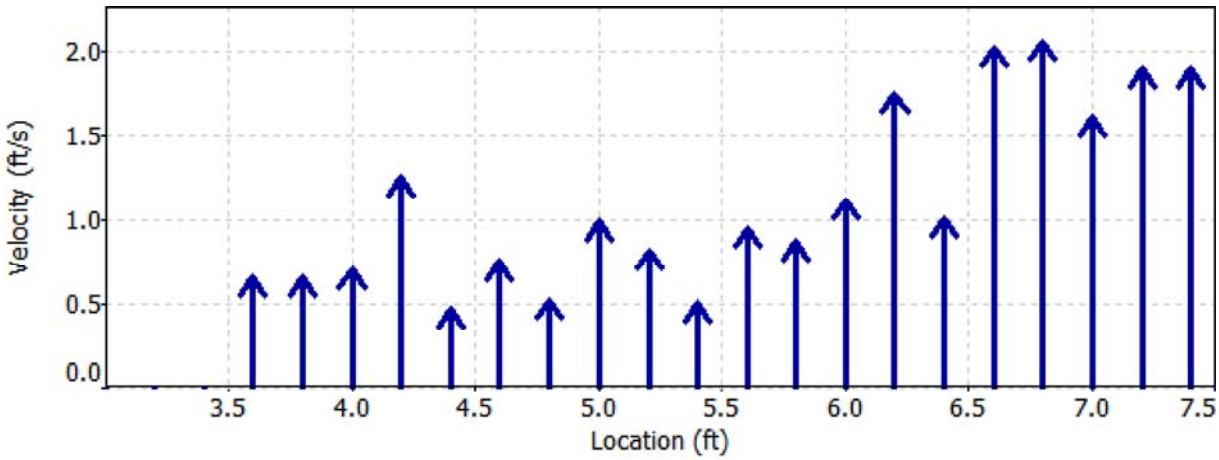
Department of Natural Resources

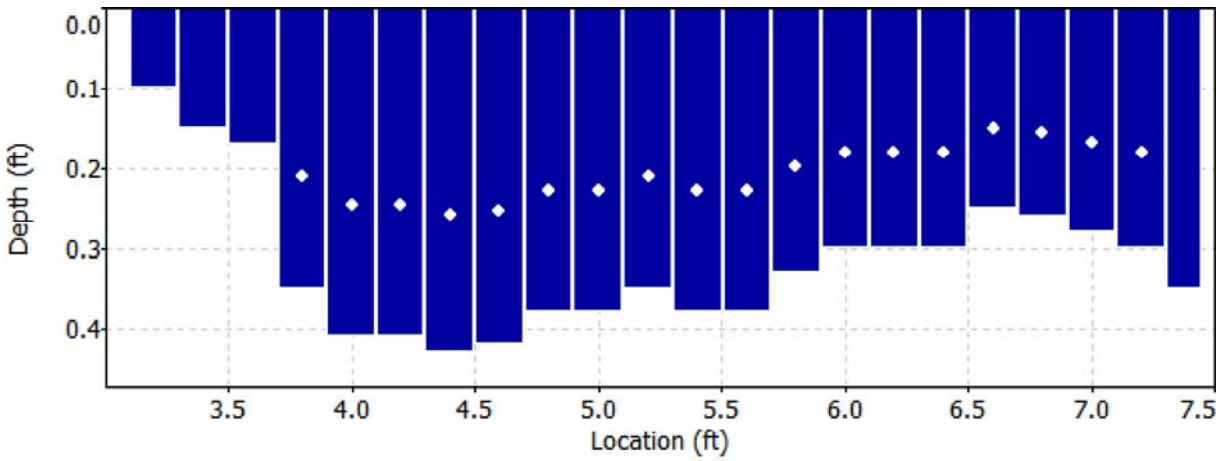
Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information		Site Details	
File Name	YLWR2X10.001.WAD	Site Name	YELLOW CR R2X 10
Start Date and Time	2015/07/07 08:49:47	Operator(s)	BRIAN EPSTEIN







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Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information		Site Details	
File Name	YLWR2X10.001.WAD	Site Name	YELLOW CR R2X 10
Start Date and Time	2015/07/07 08:49:47	Operator(s)	BRIAN EPSTEIN

Quality Control

St	Loc	%Dep	Message
5	4.00	0.6	SNR (43.2) is different from typical SNR (29.8)
		0.6	High SNR variation during measurement: 5.6,6.9
7	4.40	0.6	SNR (40.8) is different from typical SNR (29.8)
		0.6	High SNR variation during measurement: 8.6,10.3
8	4.60	0.6	High standard error: 0.115
10	5.00	0.6	High SNR variation during measurement: 5.6,4.3
		0.6	High standard error: 0.103
20	7.00	0.6	High standard error: 0.094
21	7.20	0.6	High angle: -177

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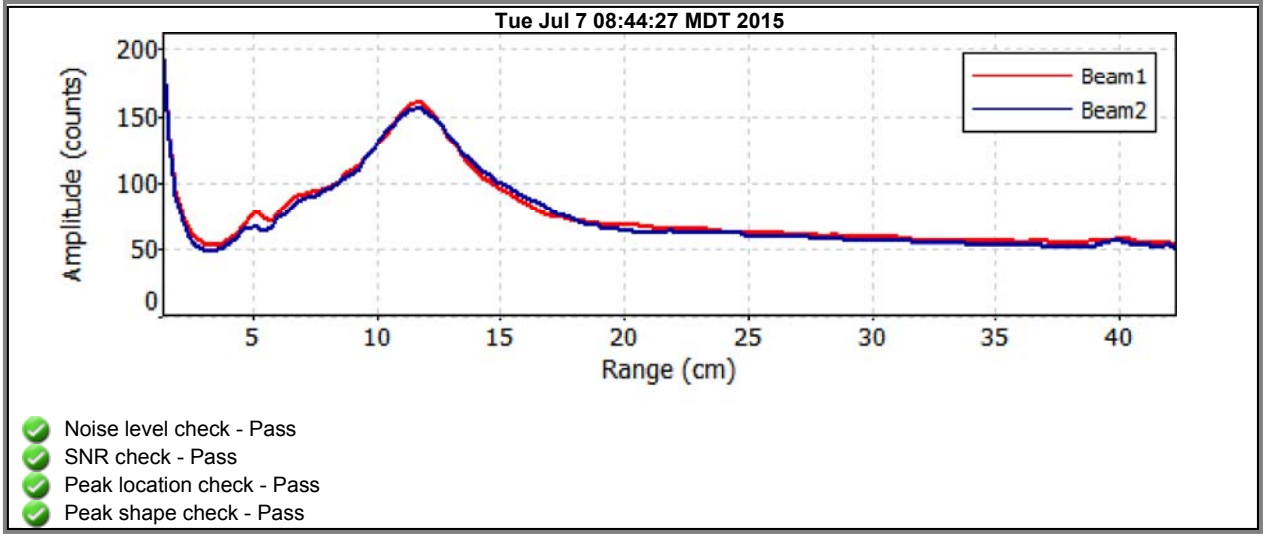
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Tue Dec 29 2015

File Information		Site Details	
File Name	YLWR2X10.001.WAD	Site Name	YELLOW CR R2X 10
Start Date and Time	2015/07/07 08:49:47	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

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Department of Natural Resources

Discharge Measurement Summary

Date Generated: Wed Jun 3 2015

File Information

File Name	YCOBS118.001.WAD
Start Date and Time	2015/04/23 14:18:14

Site Details

Site Name	YELLOW CR BLW BARCUS
Operator(s)	BRIAN EPSTEIN

System Information

Sensor Type	FlowTracker
Serial #	P2354
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	1.2%
Velocity	0.9%	3.5%
Width	0.2%	0.2%
Method	2.9%	-
# Stations	5.8%	-
Overall	**6.6%**	**3.8%**

Summary

Averaging Int.	40	# Stations	9
Start Edge	REW	Total Width	1.601
Mean SNR	35.5 dB	Total Area	0.524
Mean Temp	57.58 °F	Mean Depth	0.327
Disch. Equation	Mid-Section	Mean Velocity	1.9110
		Total Discharge	**1.0020**

Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Thu Apr 23 14:30:40 MDT 2015	6.200			REV MTR CF NEG 1
2	Thu Apr 23 14:31:58 MDT 2015	6.401			REV MTR CF NEG 1

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:18	5.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*14:19*	*5.20*	*0.6*	*0.380*	*0.6*	*0.152*	*1.3678*	*1.00*	*1.3678*	*0.076*	*0.1040*	*10.4*
2	14:20	5.40	0.6	0.400	0.6	0.160	1.2011	1.00	1.2011	0.080	0.0961	9.6
3	14:22	5.60	0.6	0.390	0.6	0.156	1.8885	1.00	1.8885	0.078	0.1474	14.7
4	14:23	5.80	0.6	0.360	0.6	0.144	2.2369	1.00	2.2369	0.072	0.1611	16.1
5	14:24	6.00	0.6	0.360	0.6	0.144	2.3156	1.00	2.3156	0.072	0.1668	16.6
6	*14:27*	*6.20*	*0.6*	*0.350*	*0.6*	*0.140*	*-2.2484*	*-1.00*	*2.2484*	*0.070*	*0.1575*	*15.7*
7	*14:32*	*6.40*	*0.6*	*0.380*	*0.6*	*0.152*	*-2.2221*	*-1.00*	*2.2221*	*0.076*	*0.1690*	*16.9*
8	14:32	6.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

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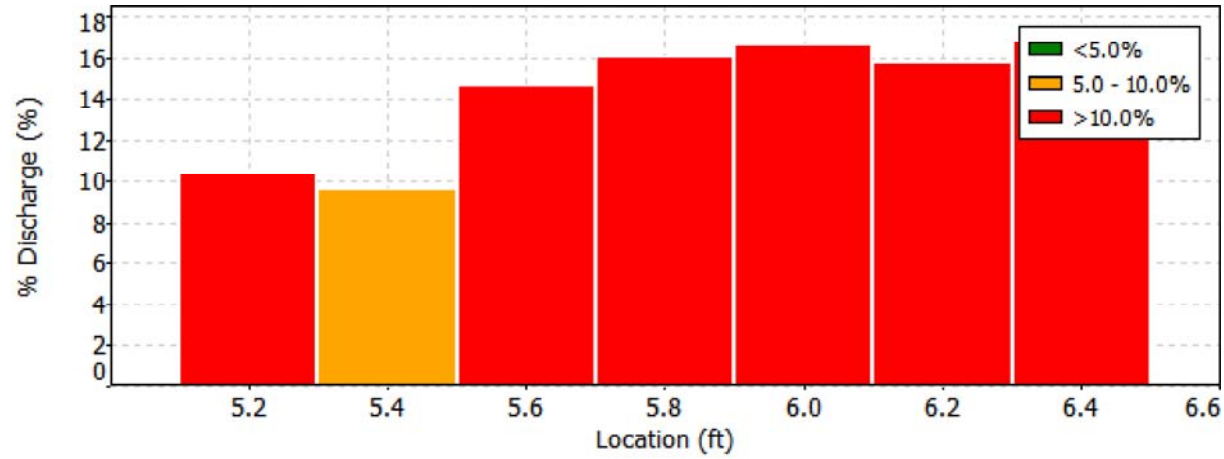
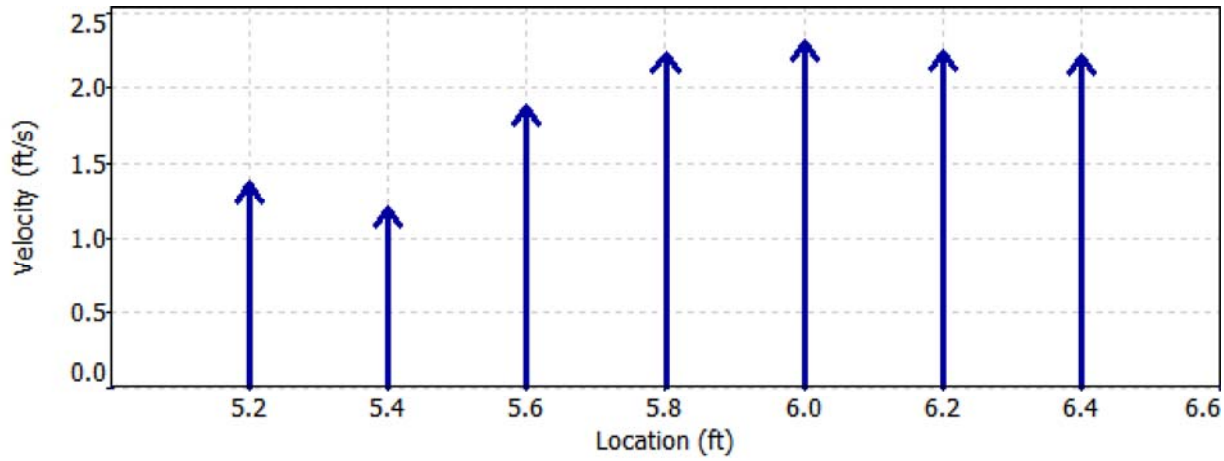
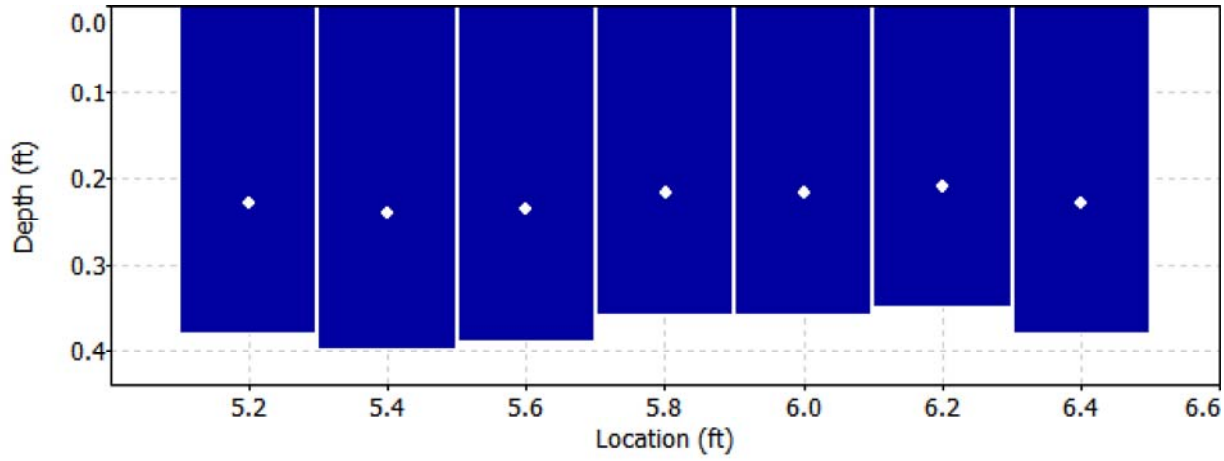
Discharge Measurement Summary

Date Generated: Wed Jun 3 2015

File Information		Site Details	
File Name	YCOBS118.001.WAD	Site Name	YELLOW CR BLW BARCUS
Start Date and Time	2015/04/23 14:18:14	Operator(s)	BRIAN EPSTEIN







COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Wed Jun 3 2015

File Information

File Name	YCOBS118.001.WAD
Start Date and Time	2015/04/23 14:18:14

Site Details

Site Name	YELLOW CR BLW BARCUS
Operator(s)	BRIAN EPSTEIN

Quality Control

St	Loc	%Dep	Message
1	5.20	0.6	High number of spikes: 5
6	6.20	0.6	High angle: -172
7	6.40	0.6	High angle: -172

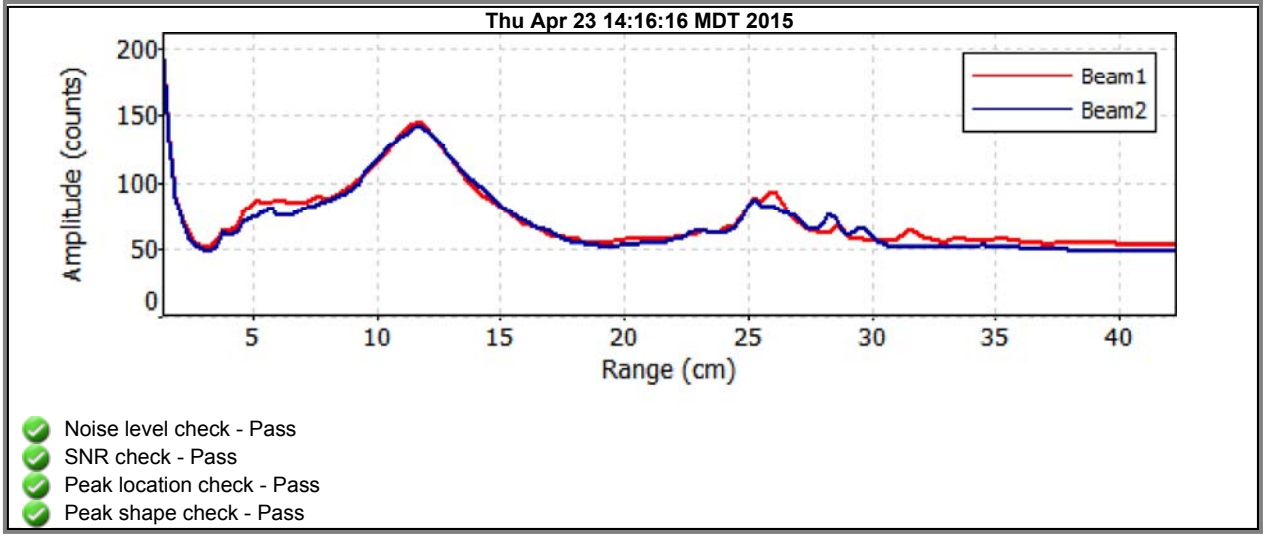
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Wed Jun 3 2015

File Information		Site Details	
File Name	YCOBS118.001.WAD	Site Name	YELLOW CR BLW BARCUS
Start Date and Time	2015/04/23 14:18:14	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information

File Name	YCUSSS01.001.WAD
Start Date and Time	2014/09/16 10:07:27

Site Details

Site Name	
Operator(s)	BJE

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.8%	2.4%
Velocity	1.7%	18.1%
Width	0.3%	0.3%
Method	3.9%	-
# Stations	7.8%	-
Overall	**8.9%**	**18.3%**

Summary

Averaging Int.	40	# Stations	7
Start Edge	REW	Total Width	1.800
Mean SNR	33.4 dB	Total Area	0.607
Mean Temp	53.16 °F	Mean Depth	0.337
Disch. Equation	Mid-Section	Mean Velocity	0.8826
		Total Discharge	**0.5356**

Measurement Results

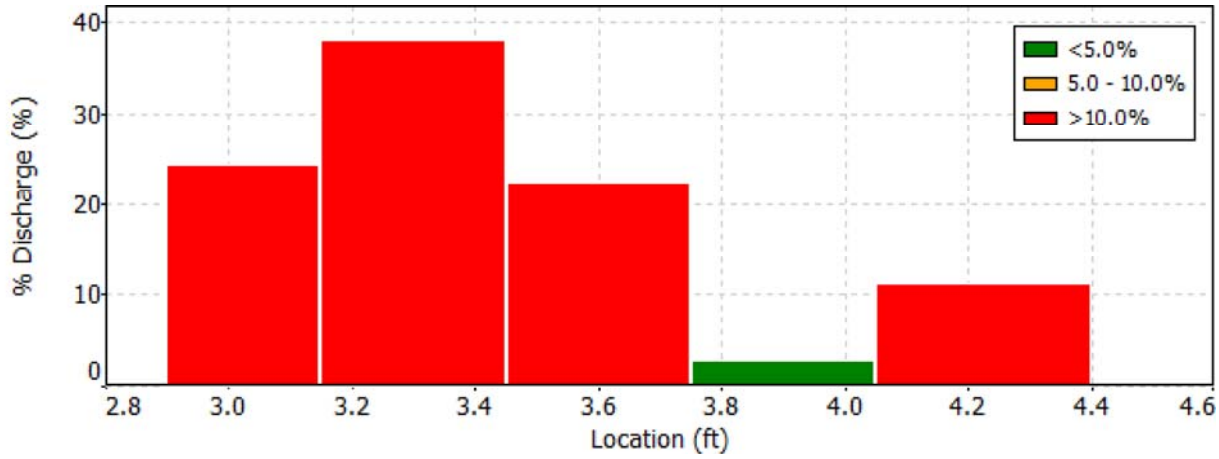
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:07	2.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:07	3.00	0.6	0.400	0.6	0.160	1.3245	1.00	1.3245	0.100	0.1324	24.7
2	10:08	3.30	0.6	0.420	0.6	0.168	1.6234	1.00	1.6234	0.126	0.2044	38.2
3	10:09	3.60	0.6	0.450	0.6	0.180	0.9009	1.00	0.9009	0.135	0.1216	22.7
4	*10:10*	*3.90*	*0.6*	*0.400*	*0.6*	*0.160*	*0.1365*	*1.00*	*0.1365*	*0.120*	*0.0164*	*3.1*
5	*10:14*	*4.20*	*0.6*	*0.360*	*0.6*	*0.144*	*-0.4823*	*-1.00*	*0.4823*	*0.126*	*0.0608*	*11.3*
6	10:14	4.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

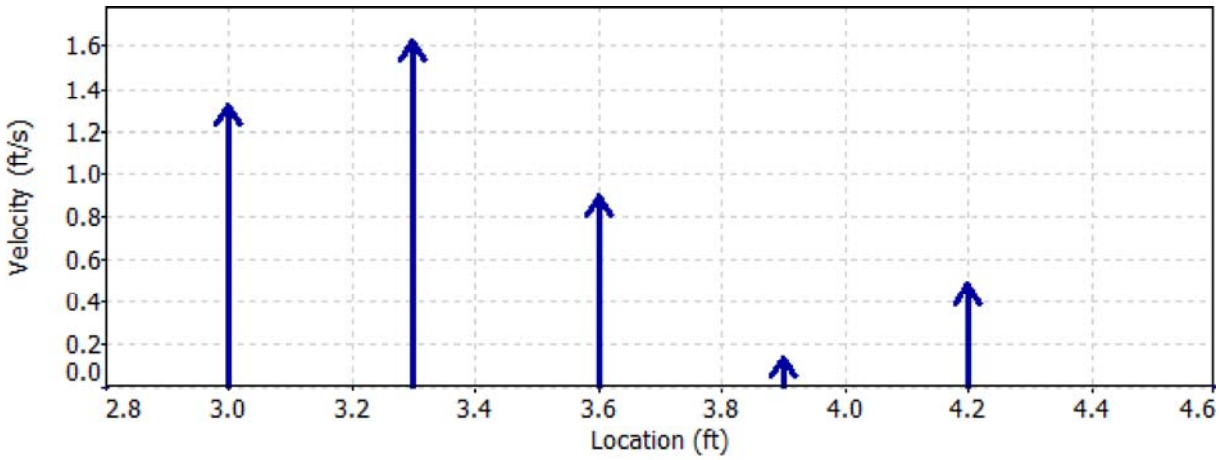
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

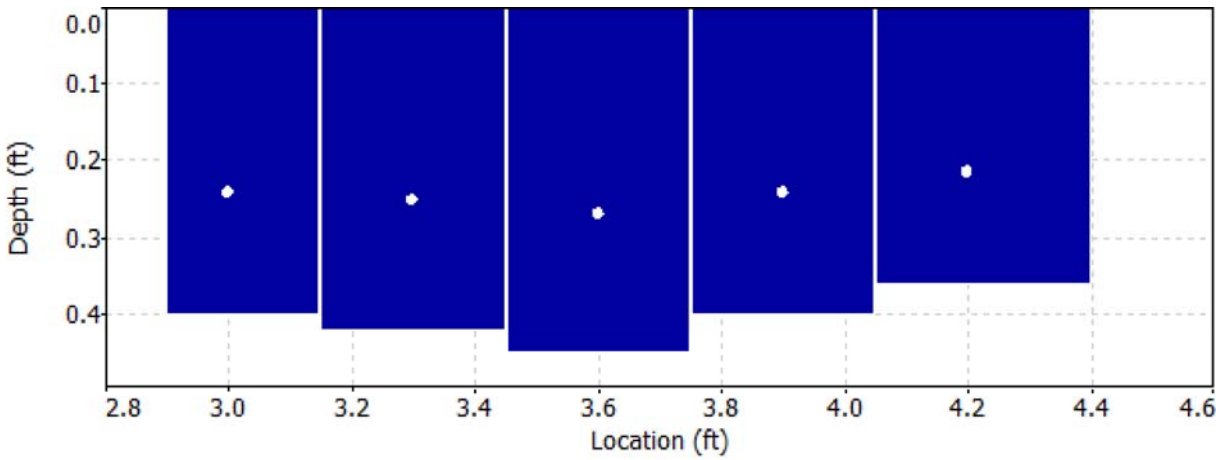
Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSSS01.001.WAD	Site Name	
Start Date and Time	2014/09/16 10:07:27	Operator(s)	BJE







Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information

File Name	YCUSSS01.001.WAD
Start Date and Time	2014/09/16 10:07:27

Site Details

Site Name	
Operator(s)	BJE

Quality Control

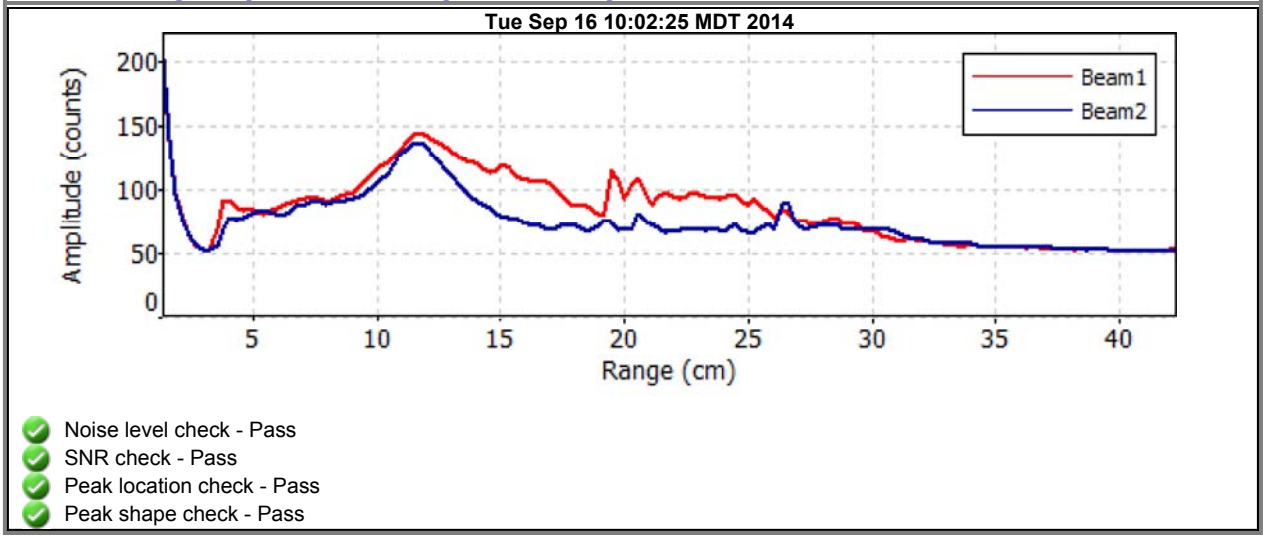
St	Loc	%Dep	Message
4	3.90	0.6	High SNR variation during measurement: 6.0,6.0
5	4.20	0.6	High angle: -171

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSSS01.001.WAD	Site Name	
Start Date and Time	2014/09/16 10:07:27	Operator(s)	BJE

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information

File Name	YCUSLS03.001.WAD
Start Date and Time	2014/09/16 12:07:11

Site Details

Site Name	
Operator(s)	BJE

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	1.6%
Velocity	1.5%	4.3%
Width	0.2%	0.2%
Method	2.8%	-
# Stations	5.1%	-
Overall	**6.2%**	**4.7%**

Summary

Averaging Int.	40	# Stations	10
Start Edge	REW	Total Width	3.100
Mean SNR	29.8 dB	Total Area	1.146
Mean Temp	63.06 °F	Mean Depth	0.370
Disch. Equation	Mid-Section	Mean Velocity	0.3776
		Total Discharge	**0.4327**

Measurement Results

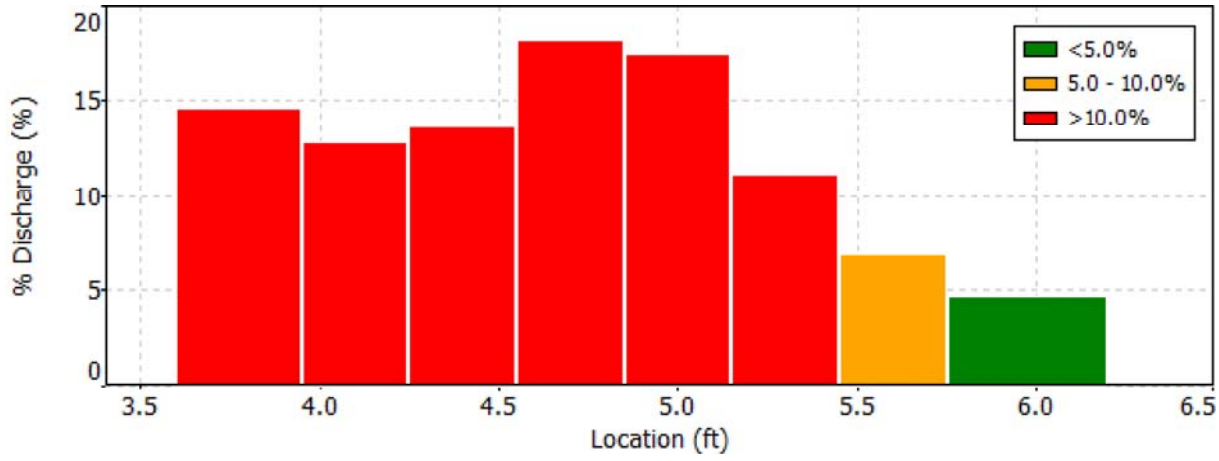
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:07	3.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:07	3.80	0.6	0.350	0.6	0.140	0.5184	1.00	0.5184	0.123	0.0635	14.7
2	12:09	4.10	0.6	0.400	0.6	0.160	0.4639	1.00	0.4639	0.120	0.0557	12.9
3	12:10	4.40	0.6	0.430	0.6	0.172	0.4603	1.00	0.4603	0.129	0.0594	13.7
4	12:12	4.70	0.6	0.450	0.6	0.180	0.5823	1.00	0.5823	0.135	0.0787	18.2
5	12:14	5.00	0.6	0.490	0.6	0.196	0.5144	1.00	0.5144	0.147	0.0757	17.5
6	12:15	5.30	0.6	0.500	0.6	0.200	0.3245	1.00	0.3245	0.150	0.0487	11.3
7	12:17	5.60	0.6	0.510	0.6	0.204	0.1985	1.00	0.1985	0.153	0.0304	7.0
8	*12:20*	*5.90*	*0.6*	*0.420*	*0.6*	*0.168*	*0.1093*	*1.00*	*0.1093*	*0.189*	*0.0206*	*4.8*
9	12:20	6.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

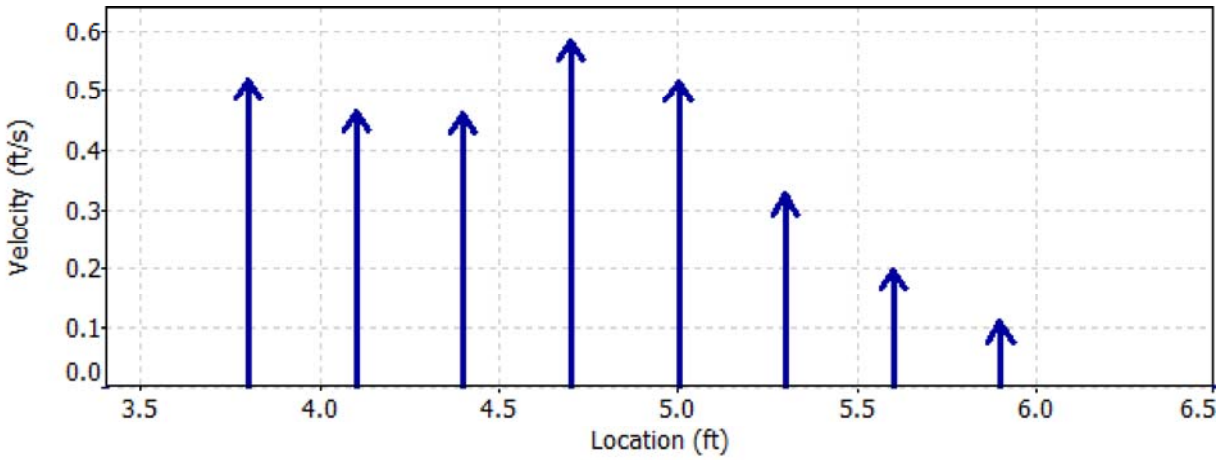
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

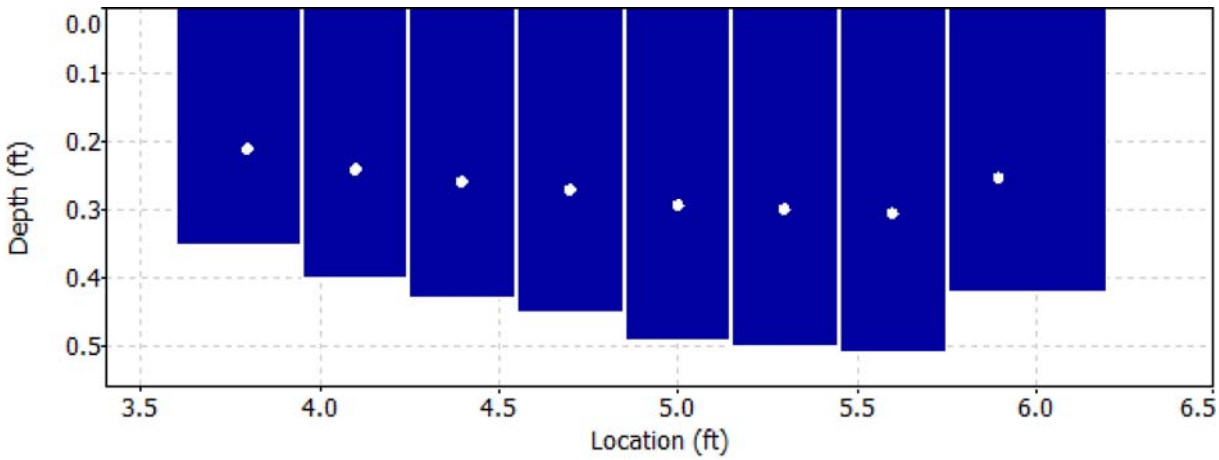
Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSLS03.001.WAD	Site Name	
Start Date and Time	2014/09/16 12:07:11	Operator(s)	BJE







Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSLS03.001.WAD	Site Name	
Start Date and Time	2014/09/16 12:07:11	Operator(s)	BJE

Quality Control

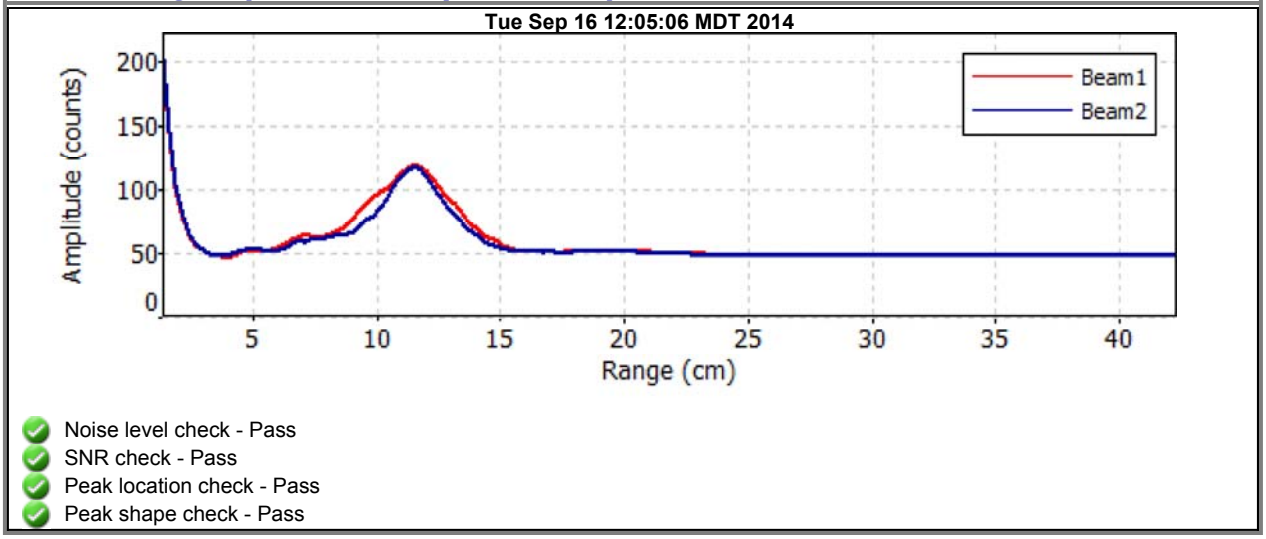
St	Loc	%Dep	Message
8	5.90	0.6	High angle: 24

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSLS03.001.WAD	Site Name	
Start Date and Time	2014/09/16 12:07:11	Operator(s)	BJE

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information	
File Name	YCUSGS05.001.WAD
Start Date and Time	2014/09/16 15:11:16

Site Details	
Site Name	
Operator(s)	BJE

System Information	
Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(English Units)
Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.9%
Velocity	1.1%	2.2%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	3.6%	-
Overall	**4.5%**	**3.8%**

Summary

Averaging Int.	40	# Stations	15
Start Edge	REW	Total Width	6.200
Mean SNR	38.0 dB	Total Area	2.287
Mean Temp	73.10 °F	Mean Depth	0.369
Disch. Equation	Mid-Section	Mean Velocity	0.6095
		Total Discharge	**1.3937**

Measurement Results

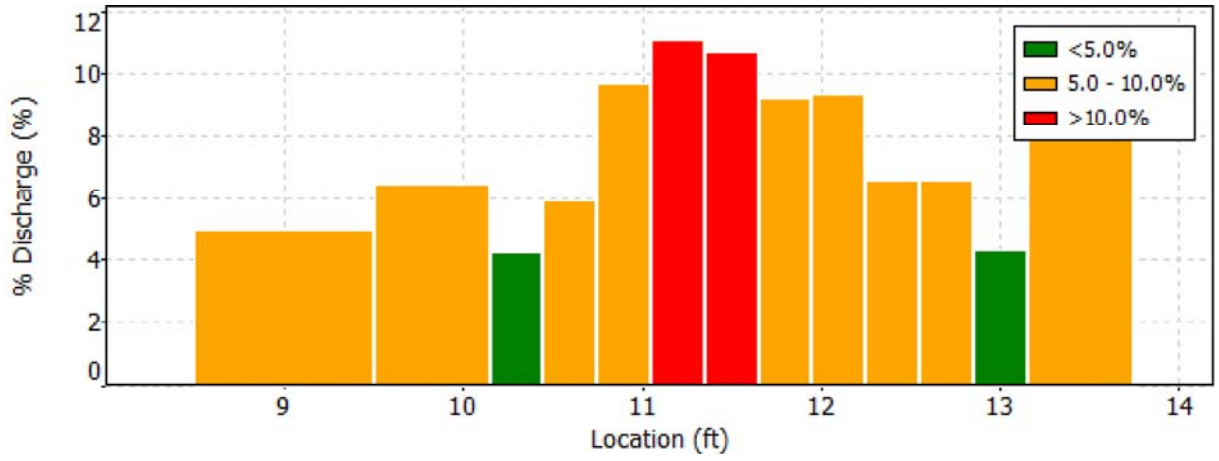
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:11	8.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:11	9.00	None	0.200	0.0	0.0	0.0000	1.00	0.3504	0.200	0.0701	5.0
2	15:11	10.00	0.6	0.400	0.6	0.160	0.3504	1.00	0.3504	0.260	0.0911	6.5
3	15:12	10.30	0.6	0.400	0.6	0.160	0.5030	1.00	0.5030	0.120	0.0603	4.3
4	15:13	10.60	0.6	0.470	0.6	0.188	0.5961	1.00	0.5961	0.141	0.0840	6.0
5	15:15	10.90	0.6	0.640	0.6	0.256	0.7077	1.00	0.7077	0.192	0.1358	9.7
6	15:16	11.20	0.6	0.660	0.6	0.264	0.7835	1.00	0.7835	0.198	0.1551	11.1
7	15:17	11.50	0.6	0.630	0.6	0.252	0.7953	1.00	0.7953	0.189	0.1502	10.8
8	15:18	11.80	0.6	0.620	0.6	0.248	0.6982	1.00	0.6982	0.186	0.1298	9.3
9	15:20	12.10	0.6	0.620	0.6	0.248	0.7051	1.00	0.7051	0.186	0.1311	9.4
10	15:21	12.40	0.6	0.450	0.6	0.180	0.6916	1.00	0.6916	0.135	0.0934	6.7
11	15:22	12.70	0.6	0.500	0.6	0.200	0.6191	1.00	0.6191	0.150	0.0928	6.7
12	15:24	13.00	0.6	0.400	0.6	0.160	0.5164	1.00	0.5164	0.120	0.0619	4.4
13	*15:27*	*13.30*	*0.6*	*0.350*	*0.6*	*0.140*	*-0.6562*	*-1.00*	*0.6562*	*0.210*	*0.1380*	*9.9*
14	15:27	14.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

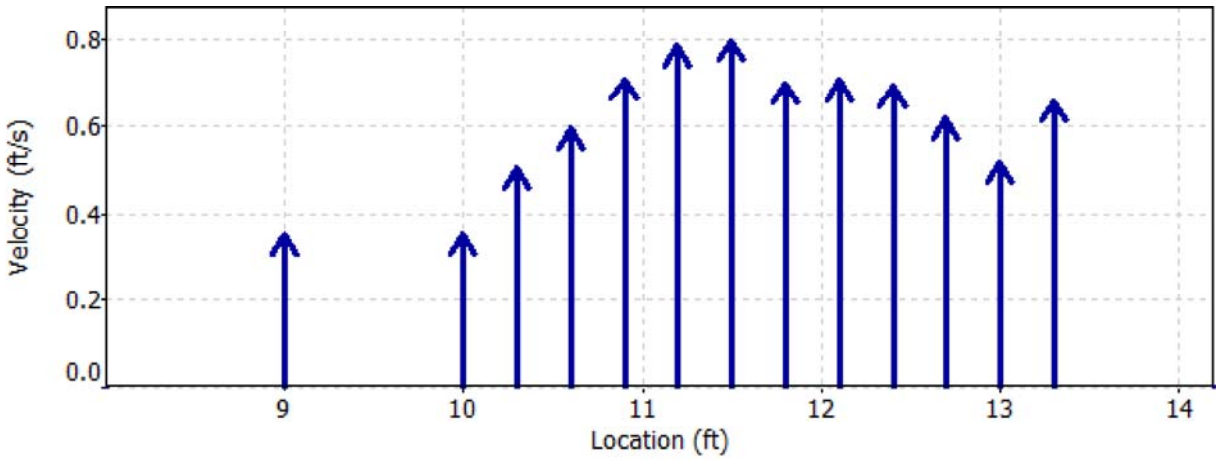
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

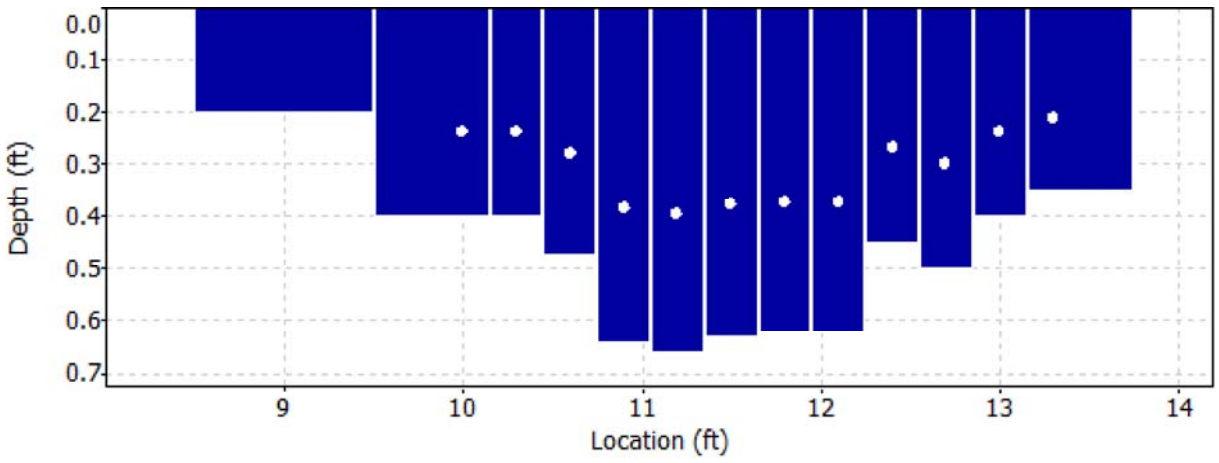
Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSGS05.001.WAD	Site Name	
Start Date and Time	2014/09/16 15:11:16	Operator(s)	BJE







Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information	
File Name	YCUSGS05.001.WAD
Start Date and Time	2014/09/16 15:11:16

Site Details	
Site Name	
Operator(s)	BJE

Quality Control

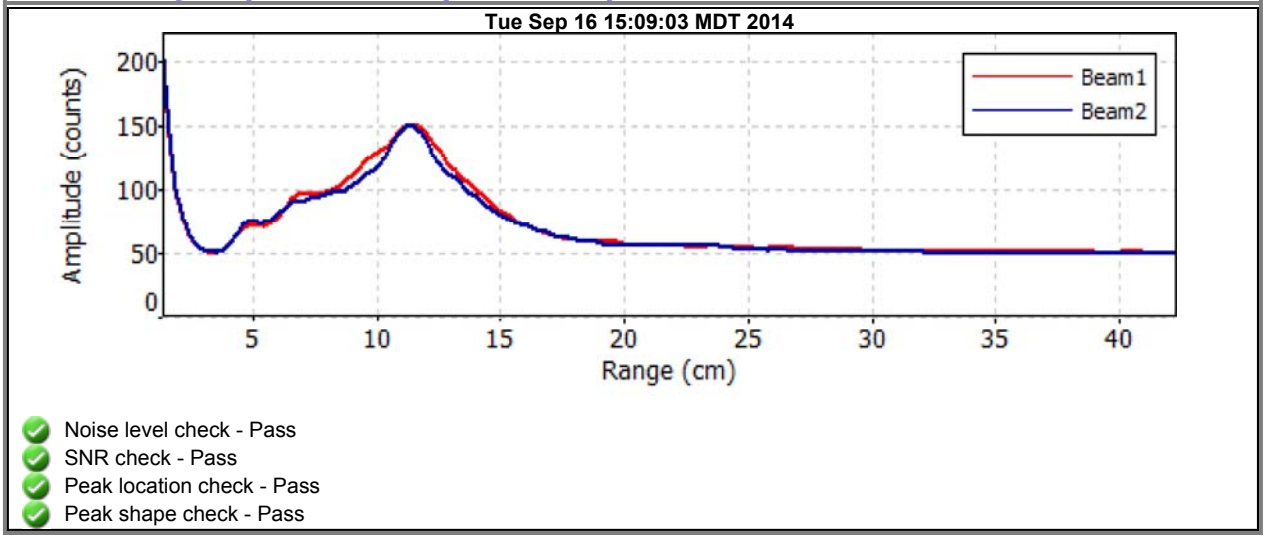
St	Loc	%Dep	Message
13	13.30	0.6	High angle: -167

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCUSGS05.001.WAD	Site Name	
Start Date and Time	2014/09/16 15:11:16	Operator(s)	BJE

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information

File Name	YCDSSS02.001.WAD
Start Date and Time	2014/09/16 11:02:31

Site Details

Site Name	
Operator(s)	BJE

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	1.5%
Velocity	1.2%	11.3%
Width	0.2%	0.2%
Method	2.6%	-
# Stations	4.6%	-
Overall	**5.6%**	**11.5%**

Summary

Averaging Int.	40	# Stations	11
Start Edge	REW	Total Width	3.400
Mean SNR	33.6 dB	Total Area	0.505
Mean Temp	63.46 °F	Mean Depth	0.149
Disch. Equation	Mid-Section	Mean Velocity	1.1492
		Total Discharge	**0.5804**

Measurement Results

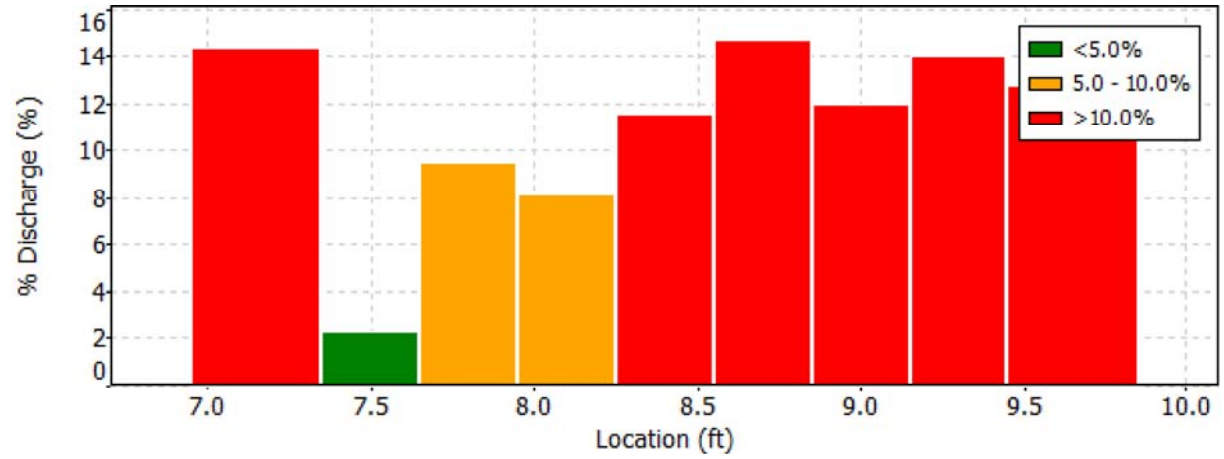
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:02	6.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:02	7.20	0.6	0.170	0.6	0.068	1.2343	1.00	1.2343	0.068	0.0839	14.5
2	11:04	7.50	0.6	0.170	0.6	0.068	0.2625	1.00	0.2625	0.051	0.0134	2.3
3	11:05	7.80	0.6	0.160	0.6	0.064	1.1608	1.00	1.1608	0.048	0.0557	9.6
4	11:06	8.10	0.6	0.170	0.6	0.068	0.9383	1.00	0.9383	0.051	0.0478	8.2
5	11:07	8.40	0.6	0.160	0.6	0.064	1.4094	1.00	1.4094	0.048	0.0677	11.7
6	11:08	8.70	0.6	0.160	0.6	0.064	1.7789	1.00	1.7789	0.048	0.0854	14.7
7	11:09	9.00	0.6	0.170	0.6	0.068	1.3753	1.00	1.3753	0.051	0.0701	12.1
8	11:11	9.30	0.6	0.200	0.6	0.080	1.3629	1.00	1.3629	0.060	0.0818	14.1
9	11:12	9.60	0.6	0.200	0.6	0.080	0.9311	1.00	0.9311	0.080	0.0746	12.9
10	11:12	10.10	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

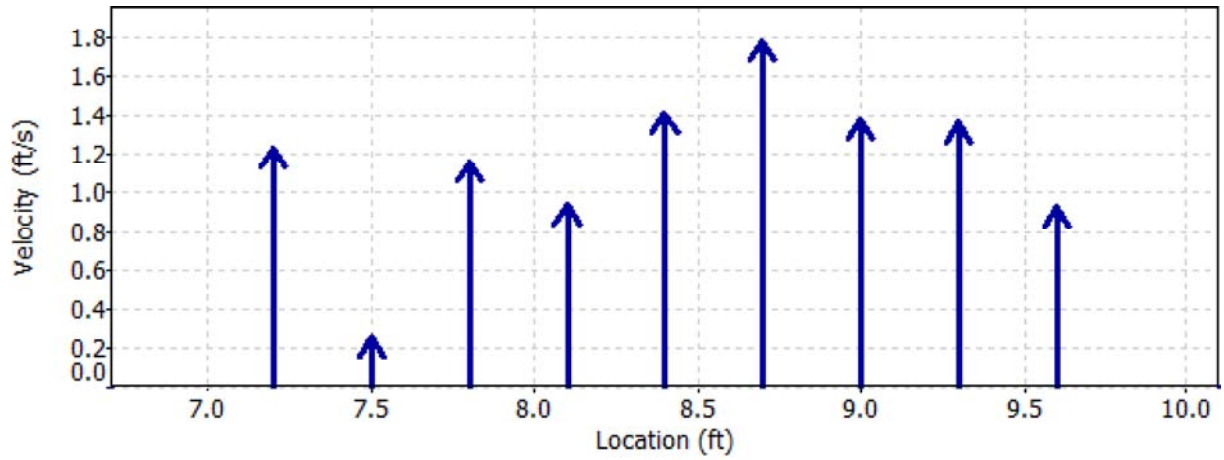
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

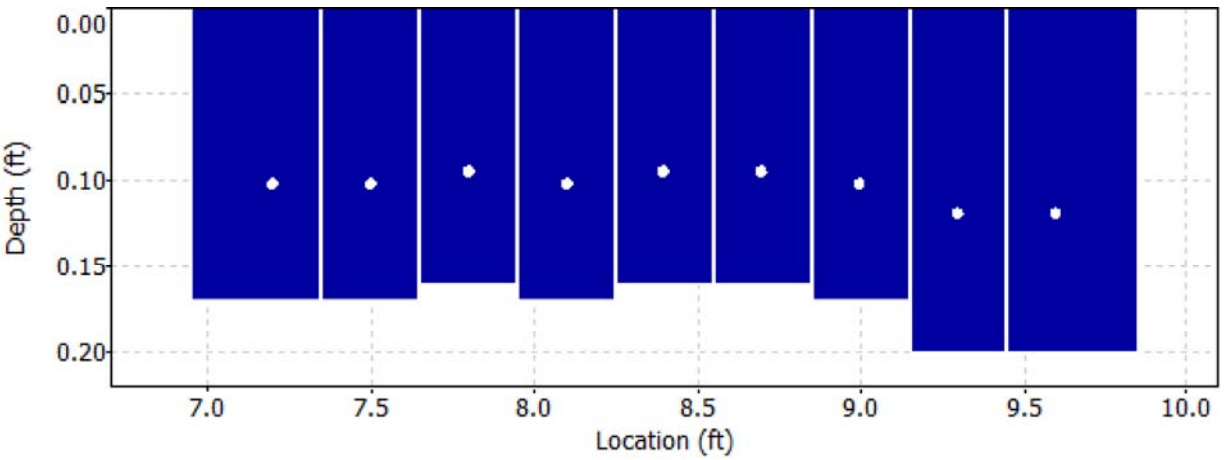
Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCDSSS02.001.WAD	Site Name	
Start Date and Time	2014/09/16 11:02:31	Operator(s)	BJE







Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCDSSS02.001.WAD	Site Name	
Start Date and Time	2014/09/16 11:02:31	Operator(s)	BJE

Quality Control

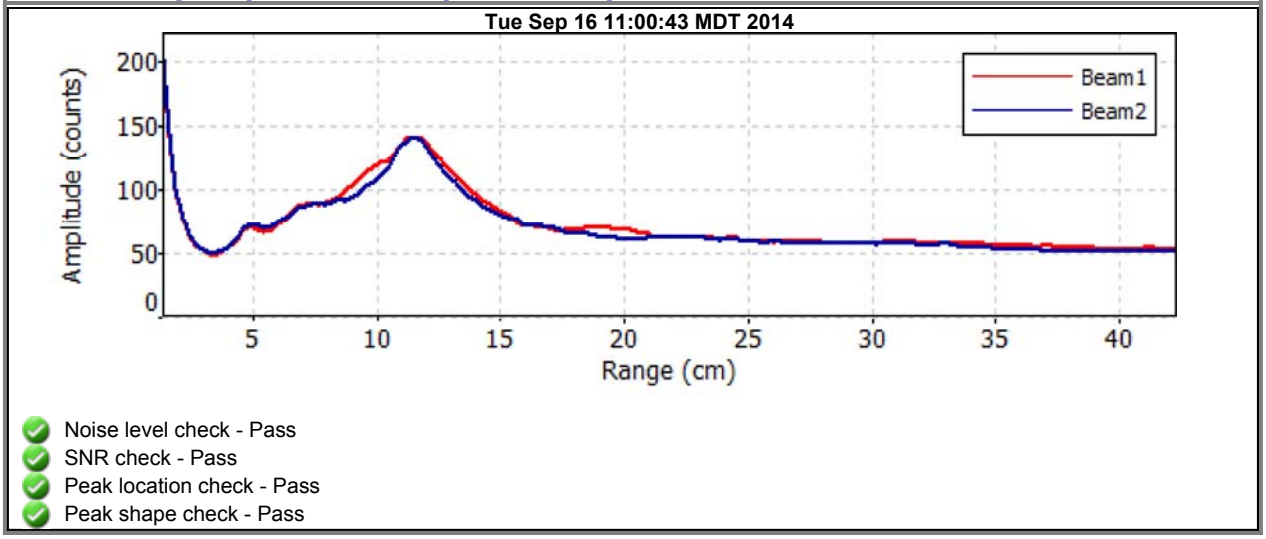
No Quality Control warnings

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCDSSS02.001.WAD	Site Name	
Start Date and Time	2014/09/16 11:02:31	Operator(s)	BJE

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information

File Name	YCDSLS04.001.WAD
Start Date and Time	2014/09/16 13:41:04

Site Details

Site Name	
Operator(s)	BJE

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	4.2%
Velocity	1.4%	7.6%
Width	0.2%	0.2%
Method	2.6%	-
# Stations	3.9%	-
Overall	**5.0%**	**8.7%**

Summary

Averaging Int.	40	# Stations	13
Start Edge	REW	Total Width	6.200
Mean SNR	32.1 dB	Total Area	1.336
Mean Temp	61.75 °F	Mean Depth	0.215
Disch. Equation	Mid-Section	Mean Velocity	0.8419
		Total Discharge	**1.1247**

Measurement Results

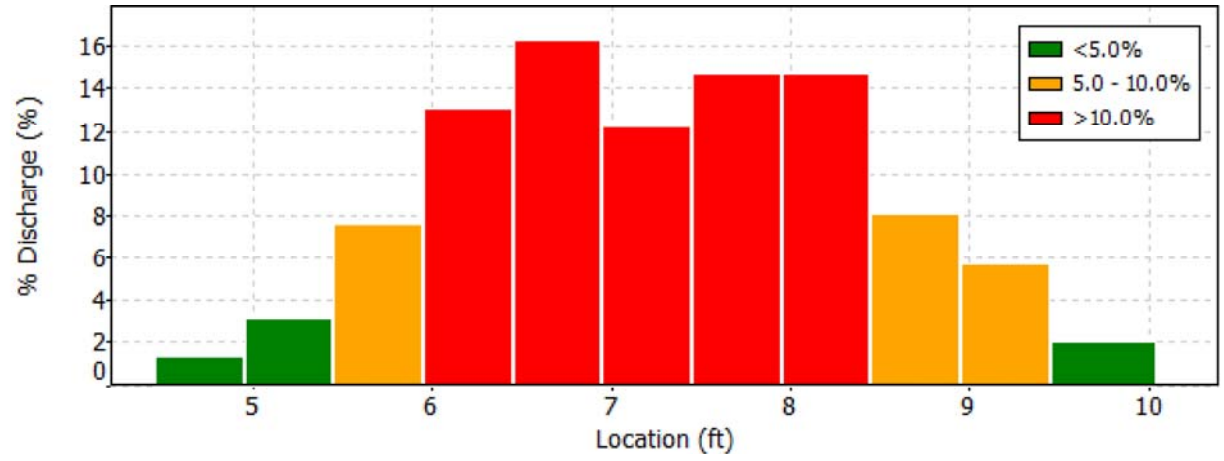
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:41	4.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:41	4.70	0.6	0.120	0.6	0.048	0.2713	1.00	0.2713	0.060	0.0163	1.4
2	13:42	5.20	0.6	0.130	0.6	0.052	0.5610	1.00	0.5610	0.065	0.0364	3.2
3	13:43	5.70	0.6	0.220	0.6	0.088	0.7887	1.00	0.7887	0.110	0.0868	7.7
4	13:44	6.20	0.6	0.280	0.6	0.112	1.0594	1.00	1.0594	0.140	0.1482	13.2
5	13:45	6.70	0.6	0.280	0.6	0.112	1.3127	1.00	1.3127	0.140	0.1837	16.3
6	13:47	7.20	0.6	0.310	0.6	0.124	0.8983	1.00	0.8983	0.155	0.1393	12.4
7	13:48	7.70	0.6	0.280	0.6	0.112	1.1896	1.00	1.1896	0.140	0.1665	14.8
8	13:49	8.20	0.6	0.270	0.6	0.108	1.2306	1.00	1.2306	0.135	0.1661	14.8
9	13:52	8.70	0.6	0.320	0.6	0.128	0.5725	1.00	0.5725	0.160	0.0916	8.1
10	13:53	9.20	0.6	0.210	0.6	0.084	0.6266	1.00	0.6266	0.105	0.0658	5.8
11	13:54	9.70	0.6	0.210	0.6	0.084	0.1903	1.00	0.1903	0.126	0.0240	2.1
12	13:54	10.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

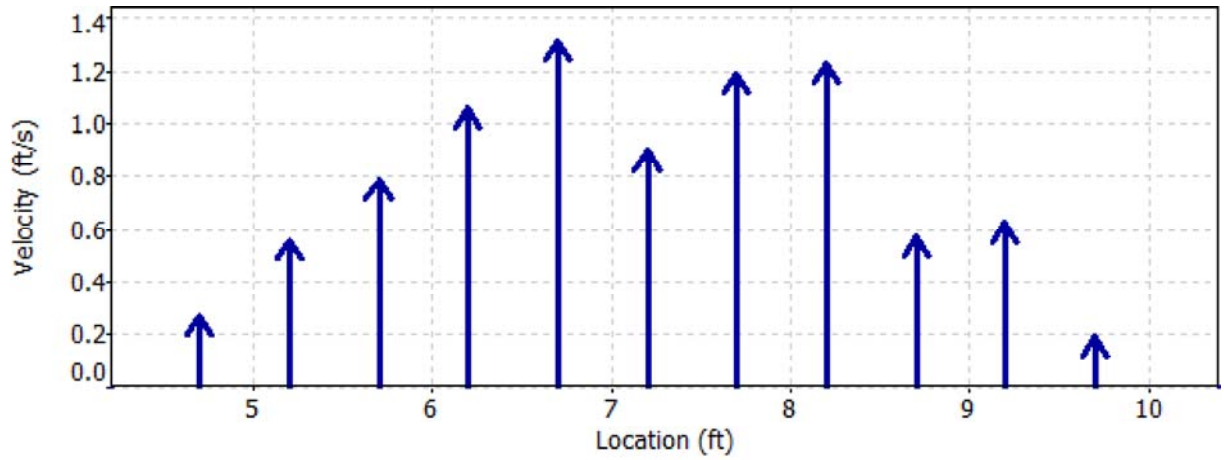
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

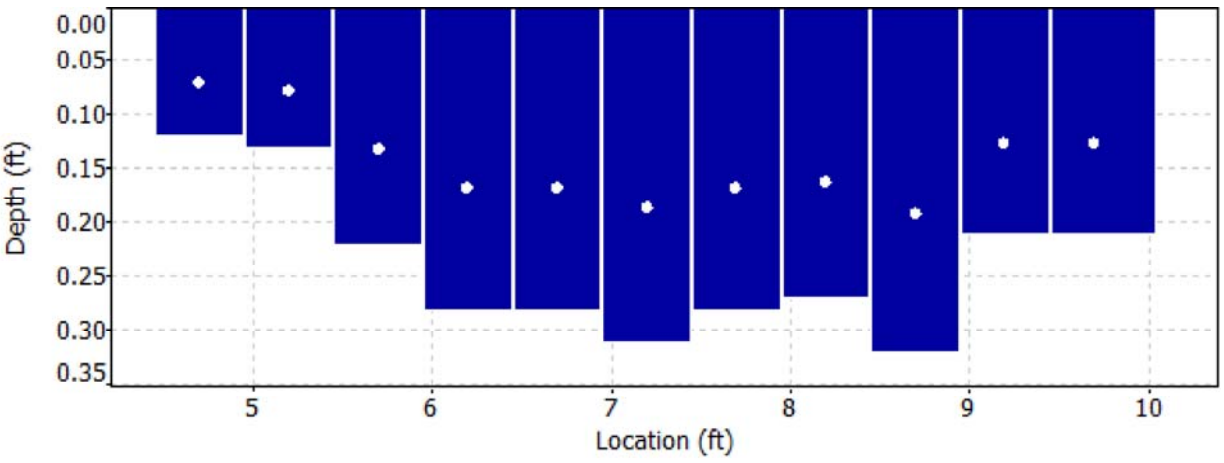
Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCDSLS04.001.WAD	Site Name	
Start Date and Time	2014/09/16 13:41:04	Operator(s)	BJE







Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCDSLS04.001.WAD	Site Name	
Start Date and Time	2014/09/16 13:41:04	Operator(s)	BJE

Quality Control

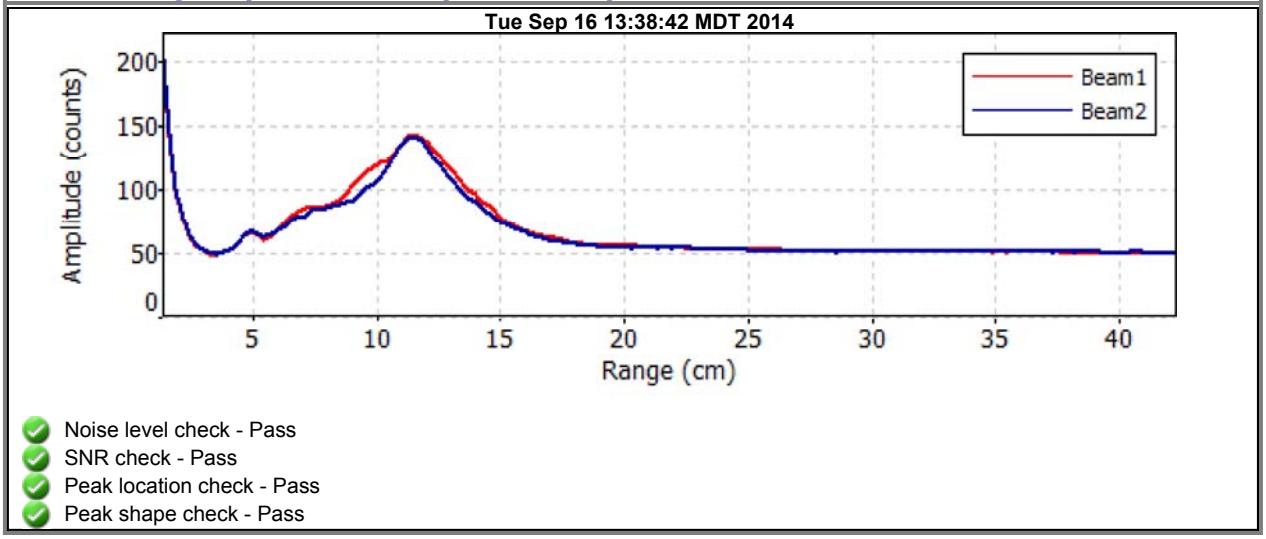
No Quality Control warnings

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	YCDSLS04.001.WAD	Site Name	
Start Date and Time	2014/09/16 13:41:04	Operator(s)	BJE

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information

File Name	LAMBTSPG.001.WAD
Start Date and Time	2014/09/16 13:01:01

Site Details

Site Name	
Operator(s)	BJE

System Information

Sensor Type	FlowTracker
Serial #	P2355
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (English Units)

Distance	ft
Velocity	ft/s
Area	ft^2
Discharge	cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.8%	10.5%
Velocity	1.7%	18.3%
Width	0.3%	0.3%
Method	4.1%	-
# Stations	9.4%	-
Overall	**10.5%**	**21.1%**

Summary

Averaging Int.	40	# Stations	6
Start Edge	REW	Total Width	2.000
Mean SNR	30.8 dB	Total Area	0.270
Mean Temp	52.21 °F	Mean Depth	0.135
Disch. Equation	Mid-Section	Mean Velocity	0.7922
		Total Discharge	**0.2139**

Measurement Results

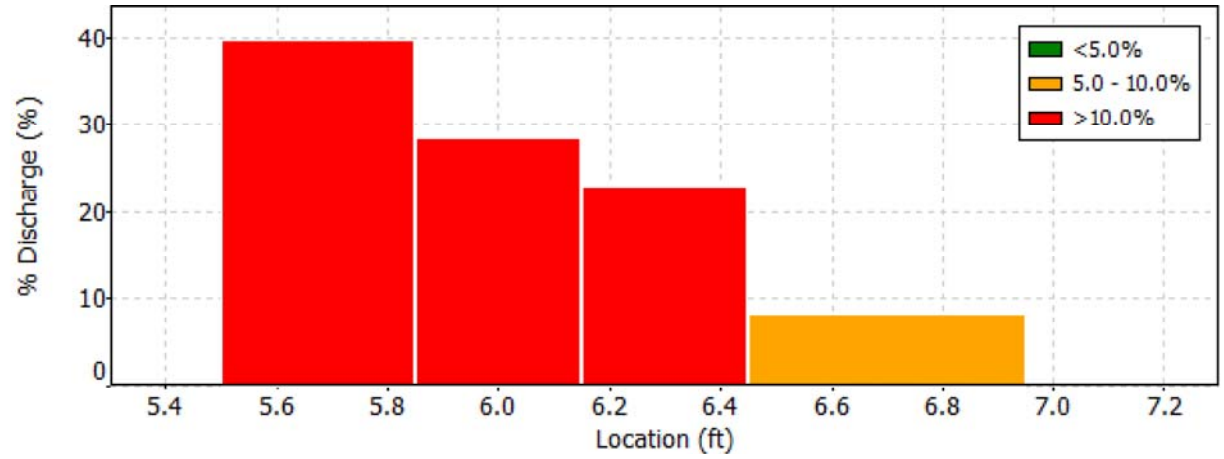
St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:01	5.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:01	5.70	0.6	0.160	0.6	0.064	1.5190	1.00	1.5190	0.056	0.0851	39.8
2	13:02	6.00	0.6	0.210	0.6	0.084	0.9724	1.00	0.9724	0.063	0.0612	28.6
3	13:04	6.30	0.6	0.170	0.6	0.068	0.9741	1.00	0.9741	0.051	0.0496	23.2
4	13:05	6.60	0.6	0.200	0.6	0.080	0.1791	1.00	0.1791	0.100	0.0179	8.4
5	13:05	7.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

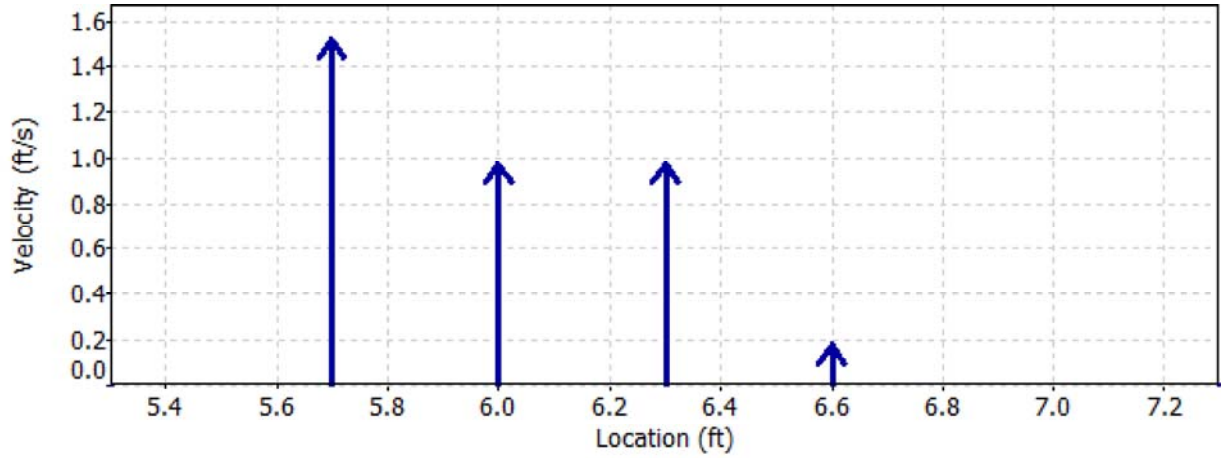
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

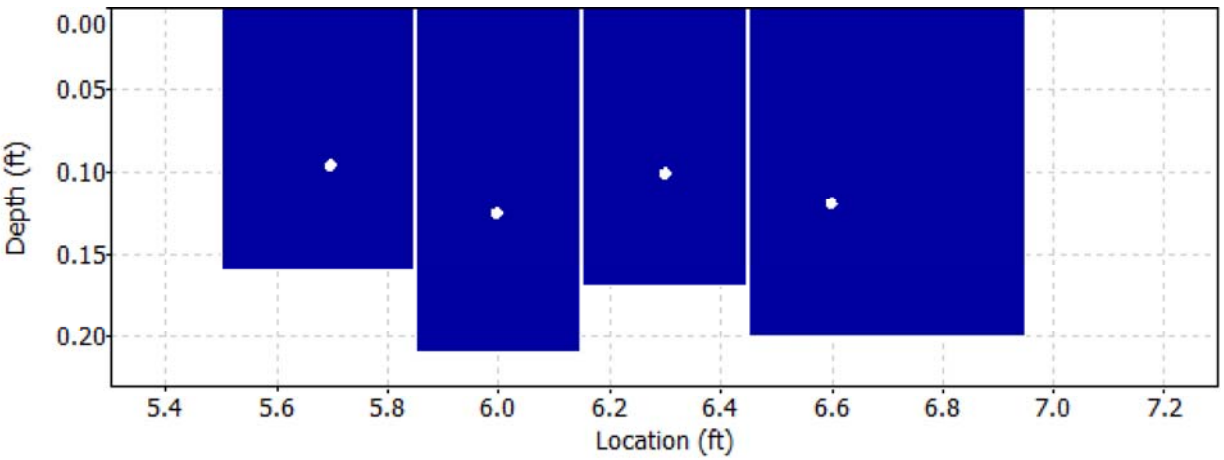
Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	LAMBTSPG.001.WAD	Site Name	
Start Date and Time	2014/09/16 13:01:01	Operator(s)	BJE







Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	LAMBTSPG.001.WAD	Site Name	
Start Date and Time	2014/09/16 13:01:01	Operator(s)	BJE

Quality Control

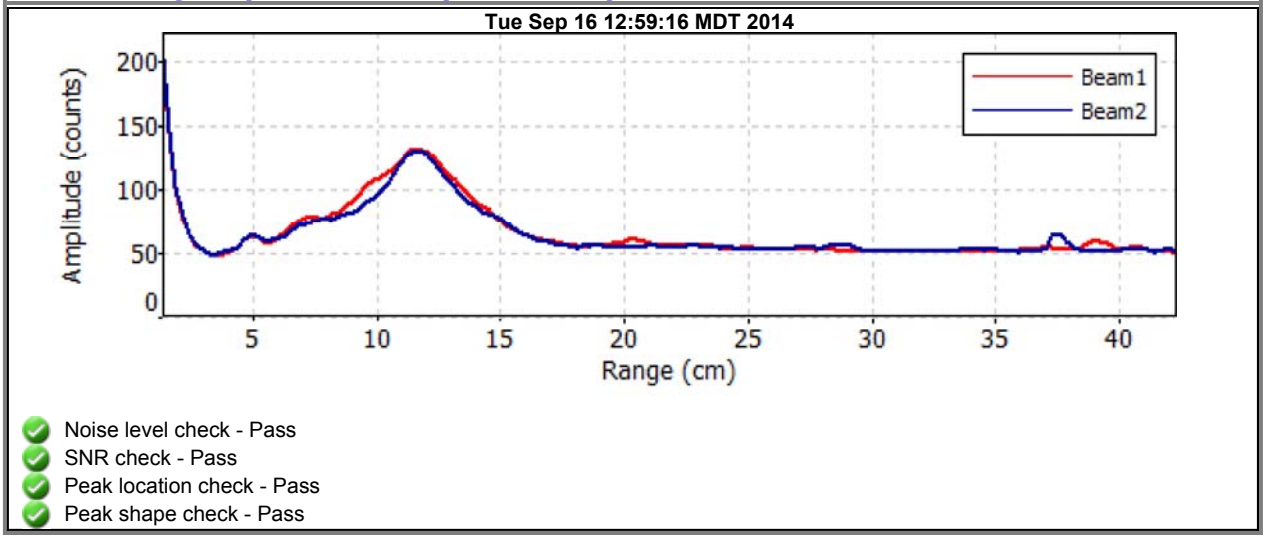
No Quality Control warnings

Discharge Measurement Summary

Date Generated: Mon Sep 22 2014

File Information		Site Details	
File Name	LAMBTSPG.001.WAD	Site Name	
Start Date and Time	2014/09/16 13:01:01	Operator(s)	BJE

Automatic Quality Control Test (BeamCheck)



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Page 1 of 2	State of Colorado	Meas. No.: 001
YYYY: 2015	**Colorado Water Conservation Board**	Division: 6
MM-DD: 07-07	ADV Discharge Measurement Notes	District: 43

Station Name: YLWR2X11

Yellow — River (Creek), Canal, Ditch

At, Near, Above, (Below) Lambert

Latitude: 40° 8' 45.41" Longitude: 108° 22' 58.94"

Party: B. Epstein, R. Smith B Logan

Conditions

Weather: Overcast, calm

Wind Spd / Dir: Water Temp:

X-Sec Desc: Sand and gravels

Flow Conds: uniform

Control Desc.: NA

Measurement Rated: Excelent (2%) / Good (5%) / Fair (8%) / (Poor (>8%)) [based on the above conditions]

Water Level Reading

Time	Staff Gage	Pressure Trans.	Time	Staff Gage	Pressure Trans.

Pressure Transducer Download		Weighted MGH		
File Name:	NA	GH Corr.		
Time:		Correct MGH		

Discharge Measurement

Manufacturer:	SonTek	Model:	FlowTracker	S/N:	(P2354) / P2355
Firmware:	3.9	Software:	2.20		
Diag Test File:	(Yes) or No	Raw Data File:	YLWR2X11.001		
Meas Type:	(Wading) / Boat / Bridge / Cableway			Method:	0.6
	N/A	ft. or mi / upstream or downstream of gage			
Start Edge:	LEW 2.8	End Edge:	REW 6.8	Total Width:	4.0
Start Time:	10:19	End Time:	10:54		
Discharge:	1.248	Unsertainty:	3.4	# Stations:	21
Mean v:	0.996	Width	4.003	Mean d:	0.31
Max v:	1.521	Area:	1.253	Max d:	0.44
Mean SNR:	35.9	σv:	0.032	Mean Temp:	60.4

Meas. By:	BE	Notes By:	BE, BL
Processed By:		Reviewed By:	

Remarks:

Photos

1	1808	Looking ds
2	1809	Right pin
3	1810	From right bank looking left
4	1811	"
5	1812	From left bank looking right
6	1813	Looking US
7	1814	BE making measurements

Page 1 of 2	State of Colorado	Meas. No.: 001
YYYY: 2015	**Colorado Water Conservation Board**	Division: 6
MM-DD: 07-07	ADV Discharge Measurement Notes	District: 43

Station Name:	YLWR2X10
	Yellow River, (Creek), Canal, Ditch
(At), Near, Above, Below	R2X below Lambert Springs
Latitude:	N 40°09' ~~40.94~~" 46.84" Longitude: W 108° ~~23' 65.37~~" 22' 59.36" NAD83
Party:	Brian Epstein, Brandy Logan, Roy Smith

Conditions

Weather:	70°F Calm Cloudy
Wind Spd / Dir:	0 mph — Water Temp:
X-Sec Desc:	top of riffle, muddy bed
Flow Conds:	mostly laminar
Control Desc.:	N/A

Measurement Rated: Excelent (2%) / Good (5%) / Fair (8%) / (Poor (>8%)) [based on the above conditions]

Water Level Reading

Time	Staff Gage	Pressure Trans.	Time	Staff Gage	Pressure Trans.

Pressure Transducer Download			
File Name:	N/A	Weighted MGH	
Time:		GH Corr.	
		Correct MGH	

Discharge Measurement

Manufacturer:	SonTek	Model:	FlowTracker	S/N:	(P2354) / P2355
Firmware:	3.9	Software:	2.20		
Diag Test File:	(Yes) or No	Raw Data File:	YLWR2X10		
Meas Type:	(Wading) / Boat / Bridge / Cableway			Method:	0.6
	N/A	ft. or mi / upstream or downstream of gage			
Start Edge:	REW 3.0	End Edge:	LEW 7.5	Total Width:	4.2
Start Time:	08:49	End Time:	09:41		
Discharge:	1.411	Unsertainty:	3.9%	# Stations:	24
Mean v:	1.059	Width	4.2	Mean d:	.32 ft
Max v:	2.065	Area:	1.332	Max d:	.43 ft
Mean SNR:	29.7	σV:	0.063 ft/s	Mean Temp:	58.2 °F

Meas. By:	BJE	Notes By:	BJE / BLL
Processed By:		Reviewed By:	

Remarks:

Photos

1	1796	Looking upstream
2	1797	Datasheet
3	1798	Looking upstream
4	1799	Left bank pin
5	1800	From LP looking towards right ba.
6	1801	Looking downstream
7	1802	From right bank looking left
8	1803	"
9	1804	View of reach
10	1805	BE making Q measurement
11	1806	Frog
12	1807	

State of Colorado
Colorado Water Conservation Board
Field Notes

Brandy Logan
Jay Skinner
Brian Epstein

Yellow Creek
11:00 Arrive at Yellow Creek Road crossing
11:15 BLM gage 0.68' staff plate
*Brandy Canera Pic 1596 - waterfall below gage (to 1599)
11:35 GPS Point: YellowCr obs 119
- Riffle
  - top width bankfull
    upper 11.0'
    middle 10.0'
    lower 9.0'
  - 11:38 Pic 151 - riffle
    *Brandy ~~took~~ pictures 1603-1616
    (Brandy Canera set to MST)
11:43 GPS Point: YellowCr obs 120
- Glide/Riffle (micro riffle)
  - could get measurement
  - top width bankfull 8.9'
  - wetted width 4.0'
    - flow in center 2.0' with grass impeding flow on outside 1.0' sections
  - 11:47 Pic 152
    * Brandy took pictures 1617 ~~1703~~ - 1622
11:56 GPS Point: YellowCr obs 121
0.0' left edge woody veg
5.5' left edge rush/sedge
10.4' left edge water
11.7' right edge water
15.0' right edge rush/sedge (wetland veg)
18.0' right edge woody veg
- Slope break riffle in ruderal environment
- 11:55 Pic 153 Brandy straddling wet area
  *Brandy Canera 1623-1627
Brandy Canera Pics frog 1628-1636

12:31 GPS Point: YellowCrObs122
0.0' left edge riparian veg
6.2' left edge water
7.7' right edge water
13.8' right edge riparian veg
× Brandy Pictures 1644 - 1649
- similar form down ~400 feet to bank water
- similar form up ~100 feet to choke
12:44 GPS Point: YellowCrObs123
0.0' left edge woody veg
3.3' left edge riparian veg
~~10.4' R~~
4.4' left bank soggy
6.8' left edge water
7.7' right edge water
10.0' right bank soggy
10.4' right edge riparian veg
12.1' right edge woody veg
* Brandy Pictures 1653 - 1657

Yellow Creek (Cont'd)
Jay Skinner, Brandy Logan & Brian Epstein

15:07 GPS Point: YellowCrOhs124
0.0 right sedge line
3.8 ~~4.8~~ right water line
4.5 right moving water
6.0 left moving water
7.3 left edge of water line
10.5 left sedge line
* Brandy Pictures

15:12 10 ft downstream of above GPS
- Brandy picture of debris from high flow event
- width 32.9'

15:17 GPS Point: YellowCrOhs125
0.0 right sedge line
3.5 right water line
4.0 right moving water
6.8 left moving water
7.8 left water line
13.0 left sedge line
* Brandy Pictures - camera failed

15:40 GPS Point: YellowCrOhs126
0.0 left sedge line
5.0 left water edge
8.0 left flowing water
15.3 right flowing water / water edge
19.5 ~~right~~ sedge line
* Brandy Pictures

Yellow Creek (cont'd)

State of Colorado - Colorado Water Conservation Board - Field Notes (Continued)

15:51 GPS Point: YellowCrObs127
0.0 left grass line
2.4 left water edge / flowing water
6.8 right end flowing water
8.4 right water edge
10.5 right grass line
* Brandy pictures

15:56 GPS Point: YellowCrObs128
0.0 left grass line
1.0 left water edge
~~2.~~ 1.4 left flowing water
3.7 right flowing water
5.2 right water edge
7.7 right grass line
*Brandy Picture

Notes By: Brian Epstein YYYY-MM-DD: 2015-06-19 Page 4 of 4

Field Investigation Notes: Yellow Creek Page 1 of 4

09:15 Meet Roy Smith at HWY 64 & CO Rd 89
Brent
Shana
- discussed BLM objective for Yellow Creek
  - restoration
  - need to make sure water will be secure
- discussed IFF program & process
- drove up to Lambert Springs pull off
  - BLM/DWR hiked up to a point between Lambert Springs & stinking Springs to conduct an RJX
- I hiked on to observe portions of Creek I haven't seen

10:57 GPS Point: Yellow Cr Cross 114
- Slope failure left side blocked former creek bed, Yellow Cr began new course
- Pic 936 standing on debris pile looking upstream at former channel
- Pic 937 standing on debris pile looking downstream at former channel
- Pic 938 from bonded area on right bank looking down stream at new channel
- Pic 939 (same as above)
- observed two mallards

1:20 GPS Point: Yellow Cr Cross 115
- accreation to Yellow Creek
- Pic 940 from right bank, looking downstream at accreation from right bank into Yellow Creek

1:30 Stinking Springs
- diffuse
- Vid 941 one spring bubbling up and flowing toward others

:35 Partly cloudy, breeze picked up, first sprinkles of rain

1:58 No longer raining
- at historic gps point YCUSSS01.001 observed three small leopard frogs, rabbit, and a robbin

Date: April 23 2015

Field Investigation Notes: Yellow Creek (continued)

12:05 GPS Point: Yellow Cr Obs 116
- spring into Yellow Creek
- smells like sulfur
- a few raindrops began again
- Pic 942 left edge of water spring contributing to Yellow Cr
- observed two mallards & red breasted blackbird
- Pic 943 from left side cliff edge upstream, looking downstream to gps point, overview of creek form, gulley debris caused widening above

12:41 Pic 944 spider that is very prolific along Yellow Creek right now

13:39 GPS Point: YellowCr Obs 117
- older slope failure
- Pic 945 slope failure ~~left~~ from left of creek into old channel. creek worked its way around

14:07 GPS Point: YellowCrObs 118
- took discharge measurment YCObs118.001 (see pages 3 and 4)
- Pic 946 looking upstream at measurment location picture center

15:30 historic GPS Point Yellow CrArchive Fan 001
- Pic 947 bird in pond above achive fan dam

Page 3 of 4	State of Colorado	Meas. No.: 001
YYYY: 2015	**Colorado Water Conservation Board**	Division: 6
MM-DD: 04-23	ADV Discharge Measurement Notes	District: ~~43~~

Station Name: Yellow Creek Observation 118

GPS Point: Yellow Cr Obs 118 River, Creek, Canal, Ditch

At, Near, Above, (Below) 2/3 miles Below Barrus Creek

Latitude: N 40°07'13.59" Longitude: W 108°22'14.25" NAD 83

Party: Brian Epstein

Conditions

Weather: Cloudy ~58°F

Wind Spd / Dir: Variable Water Temp:

X-Sec Desc: bed sand and cobble

Flow Conds: laminar steady

Control Desc.: N/A

Measurement Rated: Excelent (2%) / Good (5%) / Fair (8%) (Poor (>8%)) [based on the above conditions]

Water Level Reading

Time	Staff Gage	Pressure Trans.	Time	Staff Gage	Pressure Trans.
N/A					

Pressure Transducer Download

File Name: N/A

Time:

Weighted MGH		
GH Corr.		
Correct MGH		

Discharge Measurement

Manufacturer: SonTek Model: FlowTracker S/N: (P2354) / P2355

Firmware: 3.9 Software: 2.20

Diag Test File: Yes or No Raw Data File: YCOBS118.001

Meas Type: (Wading) / Boat / Bridge / Cableway Method: 0.6

N/A ft. or mi / upstream or downstream of gage

Start Edge: REW 5.0 End Edge: LEW 6.6 Total Width: 1.6

Start Time: 14:17 End Time: 14:35

Discharge:	1.002	Unsertainty:	6.6	# Stations:	9
Mean v:	1.991	Width	1.601	Mean d:	0.33
Max v:	2.316	Area:	0.524	Max d:	0.40
Mean SNR:	35.5	σv:	0.042	Mean Temp:	57.6

Meas. By: BJE Notes By: BJE

Processed By: Reviewed By:

Remarks:

6.2 { reversed water and used correction factor
6.4 { negative one

Field Investigation: Yellow Creek

Party: Brian Epstein

13:40 ~56°F Partly Cloudy
(driving in previously there was rain when on County Rd 20)

13:43 GPS Point: Barcus Cr Obs 001
- Pic 907 Barcus Creek dry creek bed, from right bank
- Pic 908 " " " " " close up
- Pic 909 Barcus Creek from right bank looking up valley, incised ~10 feet

13:53 GPS Point: Yellow Cr Obs 100 [note: started obs # at 100]
- Yellow Creek at County Road 88
- Pic 910 from left bank looking downstream, Yellow Creek
- Pic 911 from left bank looking upstream @ County Road 88 crossing Yellow Creek (surface stream) 40 feet / average velocity ≈ 55 second / average depth ≈ 0.35 Fe
- downstream side of road width = 3.4 feet
- by road livestock disturbed banks and bed

14:28 GPS Point: Yellow Cr Obs 101
- Yellow Creek ~35 downstream of Barcus Creek confluence
- Barcus Creek dry at mouth
  - area livestock disturbed banks and bed
- Pic 912 From Yellow Creek right bank, Yellow Creek running from center left of picture jogging to lower right of picture, Barcus Creek (Dry) center of picture by lone fence post (wooden), spring area center right by longer grass
- Pic 913 close up spring area from downstream
- Pic 914 " " " " cross stream
- Pic 915 from left edge of spring, starts looking at Barcus Cr and pans down to spring surfacing, following to where it runs into Yellow Creek

14:46 GPS Point: Barcus Spring Obs 102
- current origin of Barcus Spring

15:25 GPS Point: Spring Obs 103
- circumnavigated marsh area w/ gps track on
- Pic 916 picture of main spring area
- gps point at main spring area

15:30 GPS Point: Acr Obs 104
- point where above spring accrets to Yellow Creek

Field Investigation Notes: Yellow Creek (continued)

15:37 Spring Obs 105
GPS Point
- spring on Yellow Creek
- rock outcrop in creek
- temperature of water colder at fissure in rocks, creek left
- Pic 917 from right bank Yellow Creek, looking at spring
- Pic 918 from right bank Yellow creek, looking upstream of spring
- Pic 919 from right bank Yellow Creek, looking downstream of spring, spring in lower left of picture
- Pic 920 from upstream left bank of Yellow, looking downstream toward spring (photo center)

15:53 GPS Point: Gage Obs 106
- Bureau of Land Management stickers on gage station
- Pic 921 gage from left edge water
- natural control, not stable because consists of plant material and mud
- Staff = 0.42' (read at center of plate)
- water fall from geologic outcrop ~20' below gage
  - fish barrier
- Pic 922 from left bank yellow creek, looking upstream at waterfall and gage
- ducks observed in low gradient portion of creek downstream of water fall, rabbit scured away from creek

16:20 GPS Point: Sed Acc Obs 107
- sedimentary rock contributing water to Yellow Creek
- Pic 923 sedimentary rock on left bank that has visible water flow
- Pic 924 " (same as above)

6:50 GPS Point: Breeding Obs 108
- spotted northern leopard frog, many of them and eggs
- Pic ~~10:11~~ 925 - 929 northern leopard frogs and picture of eggs
- Vid 930 northern leopard frog calling around egg mass

ran 13:53 @ Yellow Cr Obs 100 to 16:50 @ Breeding Obs 108 walked creek downstream and then back upstream returning to starting point at 17:37
- Yellow Creek is flowing along observed route

Notes By: Brian Epstein Date: April 22, 2015

Field Investigation Notes: Yellow Creek (continued)

17:42 Begin at Yellow Creek @ County Road 98 crossing (GPS: YellowCrObs100), driving up CO Rd 98 and taking observations periodically

17:46 GPS Point: YellowCrObs 109
- creek flowing
- Pic 931 from Right bank looking upstream along Yellow Creek

17:50 GPS Point: Yellow Cr Obs 110
- Pic 932 from right bank looking upstream along Yellow Creek
- flowing

18:00 GPS Point: YellowCrObs111
- flowing
- Pic 933 from right bank looking upstream along Yellow Creek

18:07 GPS Point: YellowCrObs 112
- flowing
- Pic 934 from right bank looking upstream along Yellow Creek
- heard spotted
- Saw two elk

18:14 GPS Point: YellowCrObs 113
- Pic 935 from road looking upstream at Yellow Creek
- flowing

State of Colorado
Colorado Water Conservation Board
Field Notes

Brian Epstein
Ray Smith

Yellow Creek September 16, 2014

YCUSSS01.001 (File & GPS Name)
Yellow Creek Up Stream of Stinking Springs #1
REW 2.8 LEW 4.8
→ 3.0 to 4.0 defined channel
→ removed organic veg
→ flow laminar
Summary: Q = 0.54 Quncertainty = 8.9%
(typical reach) End Time: 10:17 W = 1.8
Vmean = 0.98 Vmax = 1.62
Pictures
10:03 Pic 537 Cross section from ds
10:03 Vid 538 " " from Right bank

YellowCrActiveFan001 (GPS Name) – toe of fan
10:34 Pic 539 Active fan intruding on Yellow Creek from right bank

10:38 Picture 540 Two Sand Pipers in Stinking Sulfur Spring, from upstream
10:38 Pic 541 A portion of Stinking Sulfer Spring, from upstream

YellowCrActiveFan002 (GPS Name) – toe of fan
10:43 Pic 542 Active Fan recently intruded on Creek from left bank

YCDSSS02.001 (File & GPS Name)
10:54 Pic 543 X-section from ds
REW 6.7 LEW 10.1 end time 11:13
→ mostly laminar flow, cobble bed
Summary: Q = 0.58 Quncert = 5.6% W = 3.4
Vmean = 1.15 Vmax = 1.78

Yellow Creek (Continued)
Weather: Sunny
11:42 Pic 544 Landform overview, Stv SS & LS
YCUSLS03.001 (FlowTracker File & GPS Name)
Yellow Creek Up Stream of Lambert Springs
12:00 Pic 545 x-section from ds
12:00 Pic 546 " " Left bank
REW 9.4 LEW 6.5 W = 3.1
Start Time: 12:06 End Time: 12:23
bed sand & cobbles, flow laminar
Summary: Q = 0.43 Q_{uncert} = 6.3%
V_{mean} = 0.38 V_{max} = 0.58
Good Meas

Lambert Spg (GPS Name)
- upper side of spring
12:38 Picture 547 alluvial debris flow from gulch w/ Lambert Spring
12:39 Picture 548 "
12:41 Picture 549 Lambert Spring from ds left bank
12:41 Video 550 Lambert Spring from left bank
12:42 Picture 551 up gulch of Lambert Spg, dry

LAMBTSPG.001 (FlowTracker & GPS Name)
Lambert Springs ~20 feet downstream
Picture 552 x-section from ds
REW 5.3 LEW 7.3 W = 2.0
Start Time: 12:59 End Time 13:09
Summary: Q = 0.21 Q_{uncert} = 10.5%
V_{mean} = 0.79 V_{max} = 1.52
Fair Meas

YCDSLS01.001 (FlowTracker & GPS File Name)
Yellow Creek Downstream of Lambert Springs
13:30 Picture 553 x-section from ds
REW 4.2 LEW 10.4 W = 6.2
Start 13:39 End 13:56
Mostly laminar, riffle, sand and cobbly bed
Summary: Q = 1.13 Q_{uncert} = 5.0%
V_{mean} = 0.84 V_{max} = 1.31

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Field Notes

Yellow Creek (continued)
14:30 dropped Roy off at his truck, continued work solo

YCUSGS05.001
Yellow Creek Upstream USGS Gauge
15:02 Picture 554 X-section looking ds
Laminar Flow, sand-silt bed, straight
REW 8.0 LEW 14.2 w = 6.2
Start 15:09 End 15:30
Summary: Q = 1.39 Quncert = 4.5%
V_{mean} = 0.61 V_{max} = 0.80
iPhone photo Leopard frog
→ observed many Leopard Frogs all day

(Good news)

Lambert Spring 120.01 (9/14/2005)

Photo #1

Stinking Spring 120-02 (9/14/2005)

Photo #1