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-932)

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

Dear Ms. Bassi:

The Bureau of Land Management (BLM) is writing this letter to formally communicate its recommendation for an instream flow water right on East Hawxhurst Creek, located in Water Division 5.

Location and Land Status. East Hawxhurst Creek originates on the south side of Battlement Mesa, approximately nine miles northeast of Collbran. This reach begins at the outlet of McCurry Reservoir (also known as Hawxhurst Reservoir) and extends downstream to the confluence with Hawxhurst Creek, a distance of approximately 4.0 miles. The BLM manages approximately 1.0 mile of this reach, while 2.5 miles are managed by the U.S. Forest Service and 0.5 mile is on private lands.

Biological Summary. East Hawxhurst Creek is a cold-water, high gradient stream. The stream is confined by bedrock in most locations. The stream generally has medium-sized substrate, consisting of gravels, small cobbles and small boulders. The stream has a good mix of pools, small riffles and runs. While deep pool habitat is absent, the existing pools are sufficient for overwintering fish.

Fisheries surveys have revealed a self-sustaining population of native cutthroat trout and rainbow trout. Intensive macro-invertebrate surveys have not been conducted, but spot samples have revealed various species of mayfly, caddisfly and stonefly.

The riparian community is very diverse and is comprised of box elder, red osier dogwood, birch, willow species and alder. The riparian community is in very good condition, and provides abundant shading and cover for fish habitat.

R2Cross Analysis. The BLM collected the following R2Cross data from East Hawxhurst Creek:

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)
10/04/2011 #1	0.69 cfs	10.89 feet	1.19 cfs	Out of range
07/22/2014 #1	1.09 cfs	14.47 feet	1.44 cfs	1.67 cfs
		Averages:	1.31 cfs	1.67 cfs

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

> 1.70 cubic feet per second is recommended during the snowmelt runoff period and early summer, from April 1 to July 31. This recommendation is driven by the wetted perimeter criteria. This creek is very steep and has limited usable habitat, so it is important to protect a flow rate that makes a high percentage of this habitat available to the fish population while they are completing critical life history functions during the warm weather months.
>
> 0.65 cubic feet per second is recommended during the base flow period from August 1 to March 31. This recommendation is driven by limited water availability. This flow rate should prevent pools from freezing, allowing the fish population to successfully overwinter. Even though the base flow in this creek is small, it is extremely consistent, allowing the fishery to persist.

Water Availability. The BLM recommends relying upon three sources of data for water availability analysis. United States Geological Survey (USGS) Gage 09097600 (Brush Creek near Collbran, CO) measures flow from another watershed within the larger Plateau Creek watershed that has roughly similar watershed characteristics. A basin apportionment analysis could be performed to derive flow rates for East Hawxhurst Creek. In addition, Streamstats should be consulted. The Streamstats model produces similar estimates of base flow as a basin apportionment calculation, but BLM believes the Streamstats model, when using the mountain region assumptions, may overestimate snowmelt runoff flows. Finally, diversion records for downstream diversions can be consulted to confirm flows available during base flow periods. These ditches include the McCurry Highline Ditch, McCurry Ditch, Hawxhurst Ditch and Dunlap Ditch.

The BLM is aware of one water right within the proposed instream flow reach:

Hawxhurst Reservoir – 283.2 acre feet

Relationship to Land Management Plans. The BLM's land use plan calls for East Hawxhurst

Creek to be managed to maintain, restore or improve riparian conditions, such that proper functioning conditions are achieved. It also specifies that instream flow appropriations will be pursued on fishery streams to ensure sufficient flows rates for fisheries protection. Appropriation of an instream flow water right would assist BLM in long-term management of outstanding riparian values and important fishery values.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in February 2015. We thank both Colorado Parks and Wildlife and the Colorado 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,

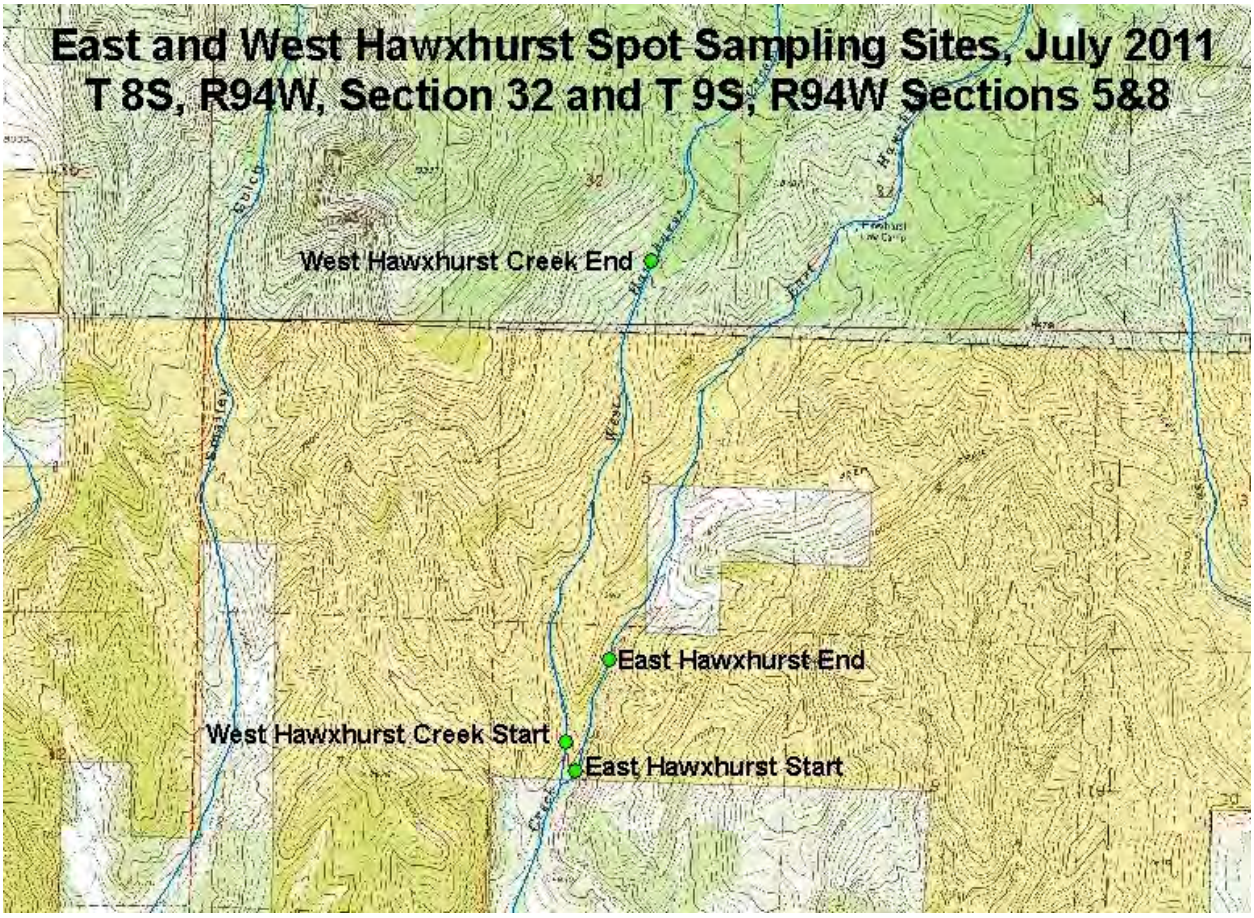
Brian St. George
Deputy State Director
Resources and Fire

Cc: Katie Stevens, Grand Junction Field Office
Kevin Hyatt, Grand Junction Field Office
Joseph Meyer, Northwest District

Grand Junction Field Office Stream Surveys
July 2011

East Hawxhurst Creek - Water Code #27993

East Hawxhurst Creek, located east of Colbran, Colorado on lands managed by the BLM's Grand Junction Field Office, was sampled on July 13, 2011. East Hawxhurst is tributary to Hawxhurst Creek, Buzzard Creek, and then Plateau Creek. The stream was sampled via a single backpack electroshocker. Sampling was conducted to follow up on sampling done in 2010 to determine the extent of greenback lineage cutthroat trout and rainbow trout on BLM lands within the watershed. In addition, genetic samples were collected to determine the purity of cutthroat trout. A secondary objective was to determine if there was a barrier to prevent upstream movement of Rainbow trout. Spot sampling was conducted to collect fin clips from throughout the reach of the stream on BLM and USFS. Personnel present included Gregor Dekleva and Clay Ramey, BLM, and Danielle Tremblay, Colorado Division of Wildlife, Matt Dare and Mike Carrillo, USFS.



East Hawxhurst Creek

Electrofishing East Hawxhurst Creek

Hybrized Cutbow trout

Discussion:

The BLM segment of the stream contained a good mix of runs, riffles, and pools. Riparian habitat was in excellent condition with an overstory of large cottonwood trees and a diverse understory consisting of willow, alder, birch, red osier dogwood, boxelder, horsetail, sedges, rush, houndstongue, and thistle.

Fish collected were a mix of both cutthroat trout and rainbow trout and what appeared to be hybrids. Fish density was low as few fish were seen or collected. Fin clips were obtained from those fish collected and will be analyzed to determine the genetic status of cutthroat on BLM managed lands within the watershed.

Due to the low density of fish and the extremely dense riparian area, catch rates were low. It was decided that USFS personnel and CDOW personnel would return the following day with ATV's and sample the top end of the stream to determine if fish phenotypically appeared different than the hybridized fish down lower in the stream, which would help determine if there is a barrier within the stream.

Lori Martin, Colorado Parks & Wildlife has the specific length & weight fish data.

Recommendations:

- Await genetic results and then meet with CDOW and USFS to discuss data and future management of this watershed

- Determine barrier status within the stream

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

LOCATION INFORMATION

STREAM NAME:	East Hawxhurst Creek
XS LOCATION:	400' upst fr conf w West Hawxhurst Ck.
XS NUMBER:	1
DATE:	4-Oct-11
OBSERVERS:	N. Dieterich, C. Ewing
1/4 SEC:	NW
SECTION:	8
TWP:	9S
RANGE:	94W
PM:	Sixth
COUNTY:	Mesa
WATERSHED:	Buzzard Creek
DIVISION:	5
DOW CODE:	27981
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:	0.048

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

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

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 400' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 1

DATA POINTS= 25

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	7.25			0.00		0.00	0.00	0.0%
1	G	0.80	7.82			0.00		0.00	0.00	0.0%
		2.00	8.35			0.00		0.00	0.00	0.0%
		3.00	8.68			0.00		0.00	0.00	0.0%
		4.00	8.85			0.00		0.00	0.00	0.0%
		5.00	9.07			0.00		0.00	0.00	0.0%
	W	5.40	9.20	0.00	0.00	0.00		0.00	0.00	0.0%
		5.70	9.35	0.15	0.30	0.34	0.15	0.05	0.01	2.0%
		6.00	9.37	0.17	0.79	0.30	0.17	0.05	0.04	5.8%
		6.30	9.35	0.15	1.56	0.30	0.15	0.05	0.07	10.2%
		6.60	9.39	0.19	1.57	0.30	0.19	0.06	0.09	13.0%
		6.90	9.65	0.45	0.72	0.40	0.45	0.14	0.10	14.1%
		7.20	9.43	0.23	1.89	0.37	0.23	0.07	0.13	18.9%
		7.50	9.54	0.34	0.41	0.32	0.34	0.10	0.04	6.1%
		7.80	9.42	0.22	0.15	0.32	0.22	0.07	0.01	1.4%
		8.10	9.41	0.21	1.35	0.30	0.21	0.06	0.09	12.3%
		8.40	9.47	0.27	1.37	0.31	0.27	0.08	0.11	16.1%
		8.70	9.63	0.43	0.00	0.34	0.43	0.11	0.00	0.0%
	W	8.90	9.20	0.00	0.00	0.47		0.00	0.00	0.0%
		9.10	8.83			0.00		0.00	0.00	0.0%
		10.00	8.65			0.00		0.00	0.00	0.0%
		10.50	8.50			0.00		0.00	0.00	0.0%
		11.00	8.35			0.00		0.00	0.00	0.0%
1	G	11.75	7.77			0.00		0.00	0.00	0.0%
	S	12.00	7.60			0.00		0.00	0.00	0.0%
	TOTALS ----------					4.07	0.45 (Max.)	0.82	0.69	100.0%

Manning's n = 0.1336
Hydraulic Radius= 0.20177374

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 400' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	0.82	0.82	0.0%
8.95	0.82	1.82	121.6%
8.97	0.82	1.73	110.5%
8.99	0.82	1.64	99.8%
9.01	0.82	1.55	89.2%
9.03	0.82	1.47	78.9%
9.05	0.82	1.39	68.9%
9.07	0.82	1.31	59.1%
9.09	0.82	1.23	49.5%
9.11	0.82	1.15	40.1%
9.13	0.82	1.08	30.9%
9.15	0.82	1.00	21.9%
9.16	0.82	0.96	17.4%
9.17	0.82	0.93	13.0%
9.18	0.82	0.89	8.6%
9.19	0.82	0.86	4.3%
9.20	0.82	0.82	0.0%
9.21	0.82	0.79	-4.2%
9.22	0.82	0.75	-8.5%
9.23	0.82	0.72	-12.6%
9.24	0.82	0.68	-16.8%
9.25	0.82	0.65	-20.9%
9.27	0.82	0.58	-29.1%
9.29	0.82	0.52	-37.1%
9.31	0.82	0.45	-45.0%
9.33	0.82	0.39	-52.9%
9.35	0.82	0.32	-60.5%
9.37	0.82	0.27	-67.2%
9.39	0.82	0.22	-72.8%
9.41	0.82	0.18	-78.2%
9.43	0.82	0.14	-82.7%
9.45	0.82	0.11	-86.6%

WATERLINE AT ZERO
AREA ERROR = 9.200

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 400' upst fr conf w West Hawxhurst 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	7.82	10.89	1.03	1.83	11.20	12.14	100.0%	0.92	25.88	2.31
	8.20	9.53	0.77	1.45	7.32	10.58	87.1%	0.69	13.97	1.91
	8.25	9.36	0.73	1.40	6.85	10.38	85.4%	0.66	12.67	1.85
	8.30	9.18	0.70	1.35	6.39	10.17	83.8%	0.63	11.42	1.79
	8.35	9.00	0.66	1.30	5.93	9.97	82.1%	0.60	10.24	1.73
	8.40	8.68	0.63	1.25	5.49	9.63	79.3%	0.57	9.21	1.68
	8.45	8.36	0.61	1.20	5.07	9.30	76.6%	0.54	8.24	1.63
	8.50	8.05	0.58	1.15	4.66	8.97	73.8%	0.52	7.33	1.57
	8.55	7.73	0.55	1.10	4.26	8.63	71.1%	0.49	6.49	1.52
	8.60	7.41	0.52	1.05	3.88	8.30	68.3%	0.47	5.71	1.47
	8.65	7.09	0.50	1.00	3.52	7.96	65.6%	0.44	4.98	1.41
	8.70	6.63	0.48	0.95	3.18	7.49	61.7%	0.42	4.37	1.38
	8.75	6.09	0.47	0.90	2.86	6.94	57.2%	0.41	3.86	1.35
	8.80	5.54	0.46	0.85	2.57	6.39	52.6%	0.40	3.41	1.33
	8.85	5.09	0.45	0.80	2.30	5.91	48.7%	0.39	2.99	1.30
	8.90	4.83	0.43	0.75	2.06	5.62	46.3%	0.37	2.56	1.25
	8.95	4.58	0.40	0.70	1.82	5.33	43.9%	0.34	2.17	1.19
	9.00	4.33	0.37	0.65	1.60	5.05	41.5%	0.32	1.81	1.13
	9.05	4.07	0.34	0.60	1.39	4.76	39.2%	0.29	1.49	1.07
	9.10	3.86	0.31	0.55	1.19	4.51	37.1%	0.26	1.19	1.00
	9.15	3.68	0.27	0.50	1.00	4.29	35.3%	0.23	0.92	0.92
WL	9.20	3.50	0.23	0.45	0.82	4.07	33.5%	0.20	0.69	0.84
	9.25	3.38	0.19	0.40	0.65	3.90	32.2%	0.17	0.48	0.74
	9.30	3.25	0.15	0.35	0.48	3.74	30.8%	0.13	0.30	0.62
	9.35	3.13	0.10	0.30	0.32	3.57	29.4%	0.09	0.16	0.49
	9.40	2.20	0.09	0.25	0.20	2.60	21.4%	0.08	0.09	0.44
	9.45	1.46	0.08	0.20	0.11	1.79	14.7%	0.06	0.04	0.38
	9.50	0.89	0.06	0.15	0.05	1.13	9.3%	0.05	0.02	0.31
	9.55	0.44	0.05	0.10	0.02	0.58	4.8%	0.03	0.01	0.26
	9.60	0.20	0.02	0.05	0.00	0.26	2.1%	0.02	0.00	0.16
	9.65	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 400' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	0.69	cfs
CALCULATED FLOW (Qc)=	0.69	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	9.20	ft
CALCULATED WATERLINE (WLc)=	9.20	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.45	ft
MAX CALCULATED DEPTH (Dc)=	0.45	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	0.84	ft/sec
MANNING'S N=	0.134	
SLOPE=	0.048	ft/ft
.4 * Qm =	0.3	cfs
2.5 * Qm=	1.7	cfs

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

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

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

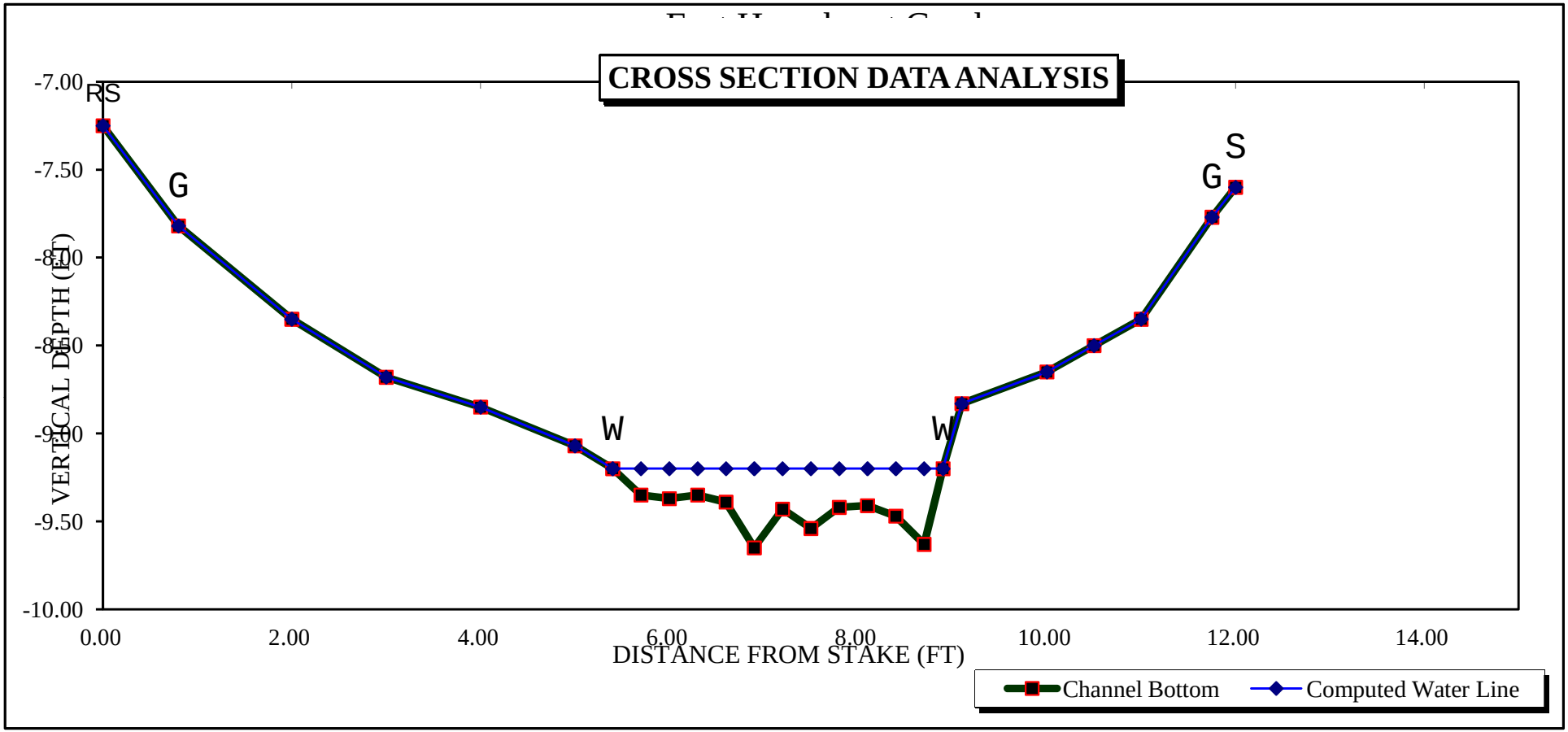
RECOMMENDATION BY: ………………….. AGENCY.. DATE:..............................

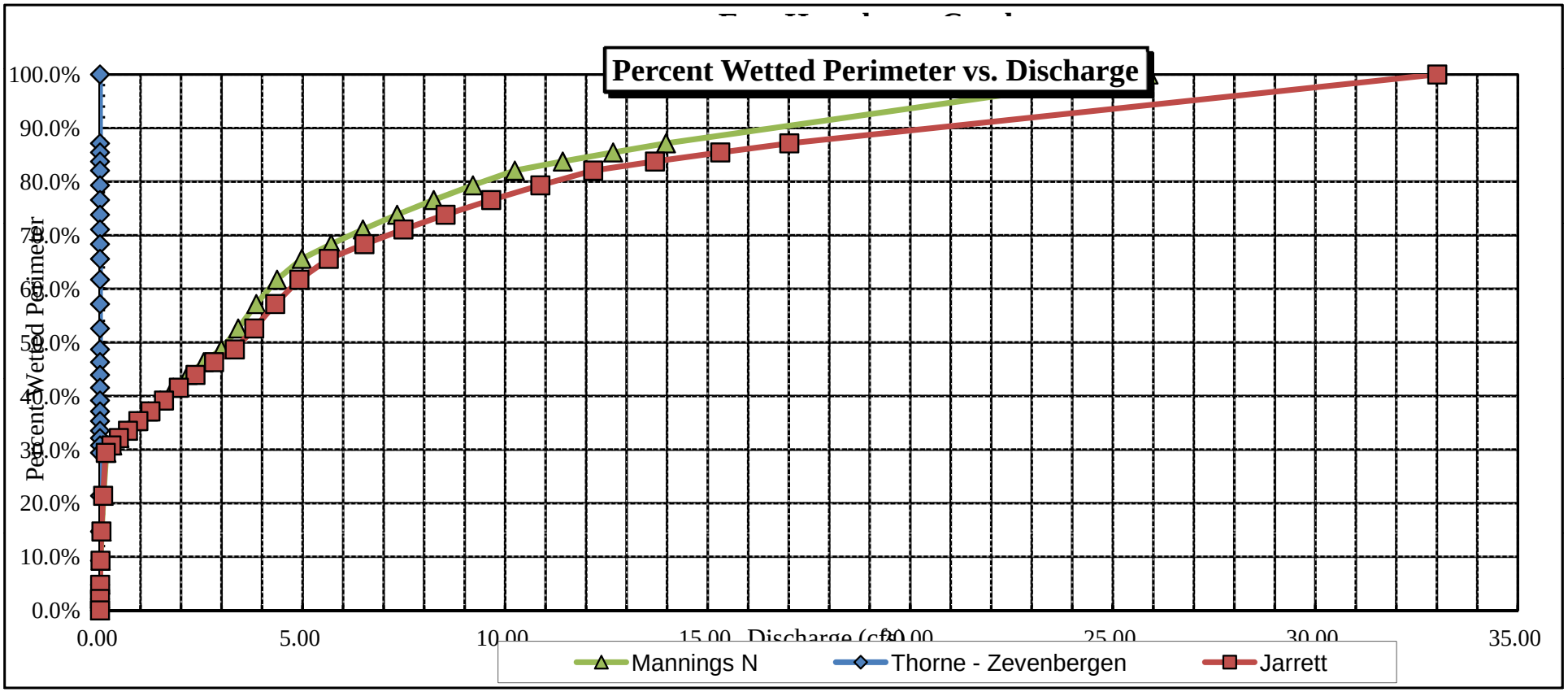
CWCB REVIEW BY: .... DATE:..............................

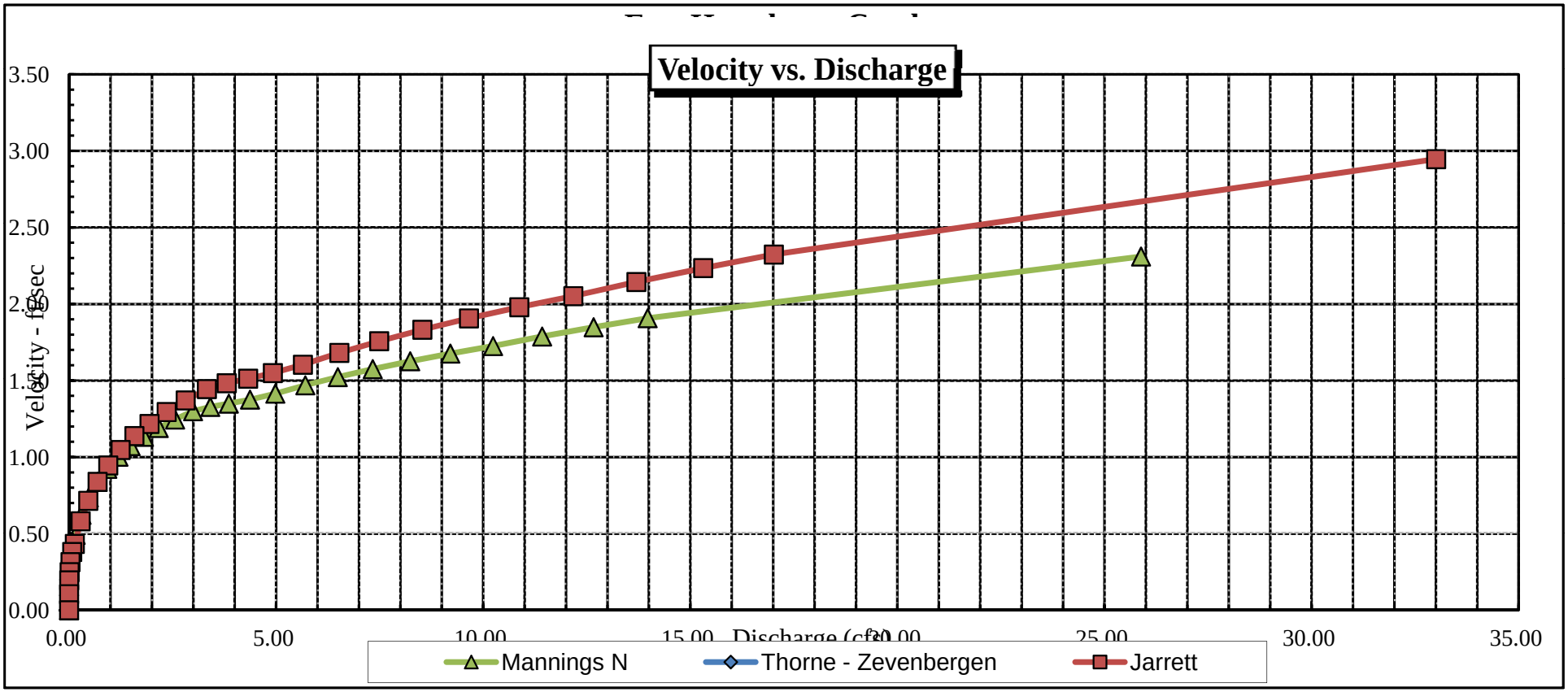
STREAM NAME: East Hawxhurst Creek
XS LOCATION: 400' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 1 Jarrett Variable Manning's n Correction Applied

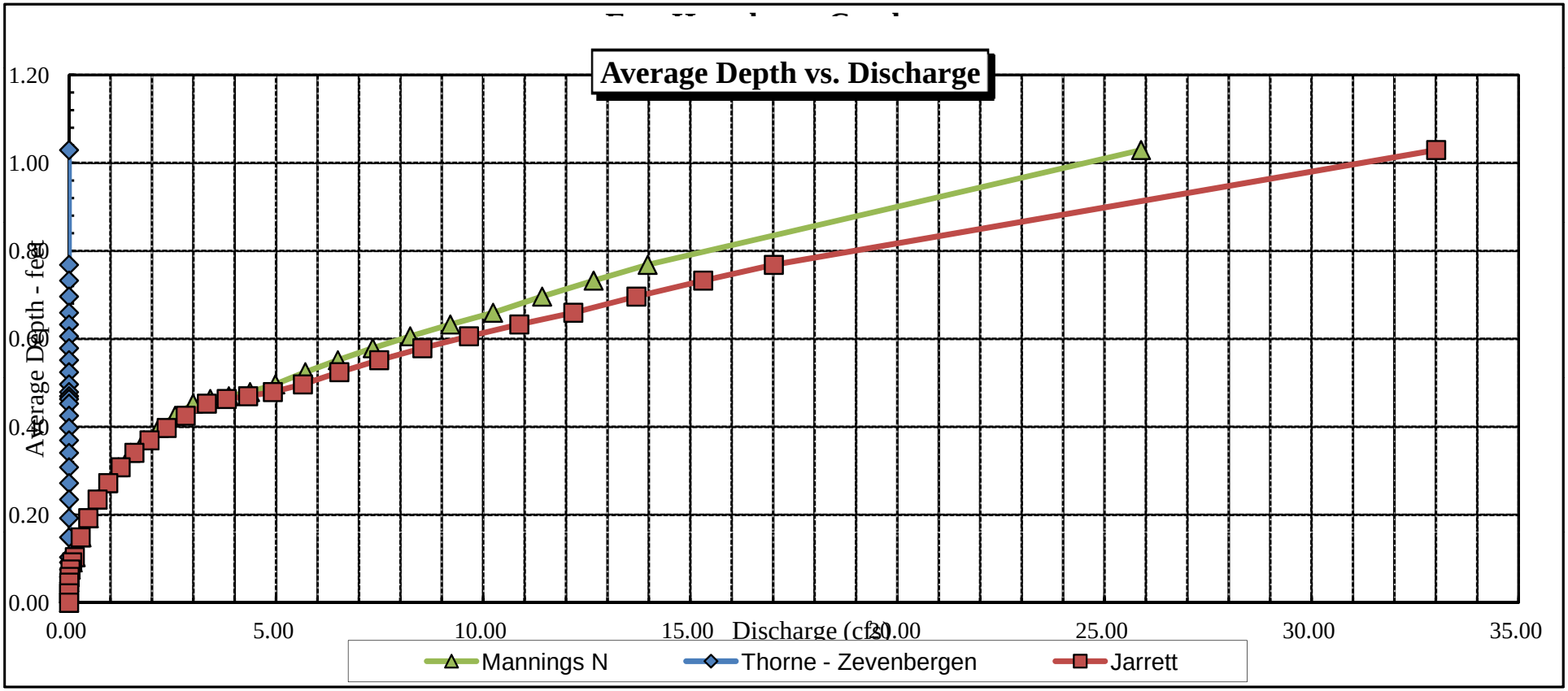
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

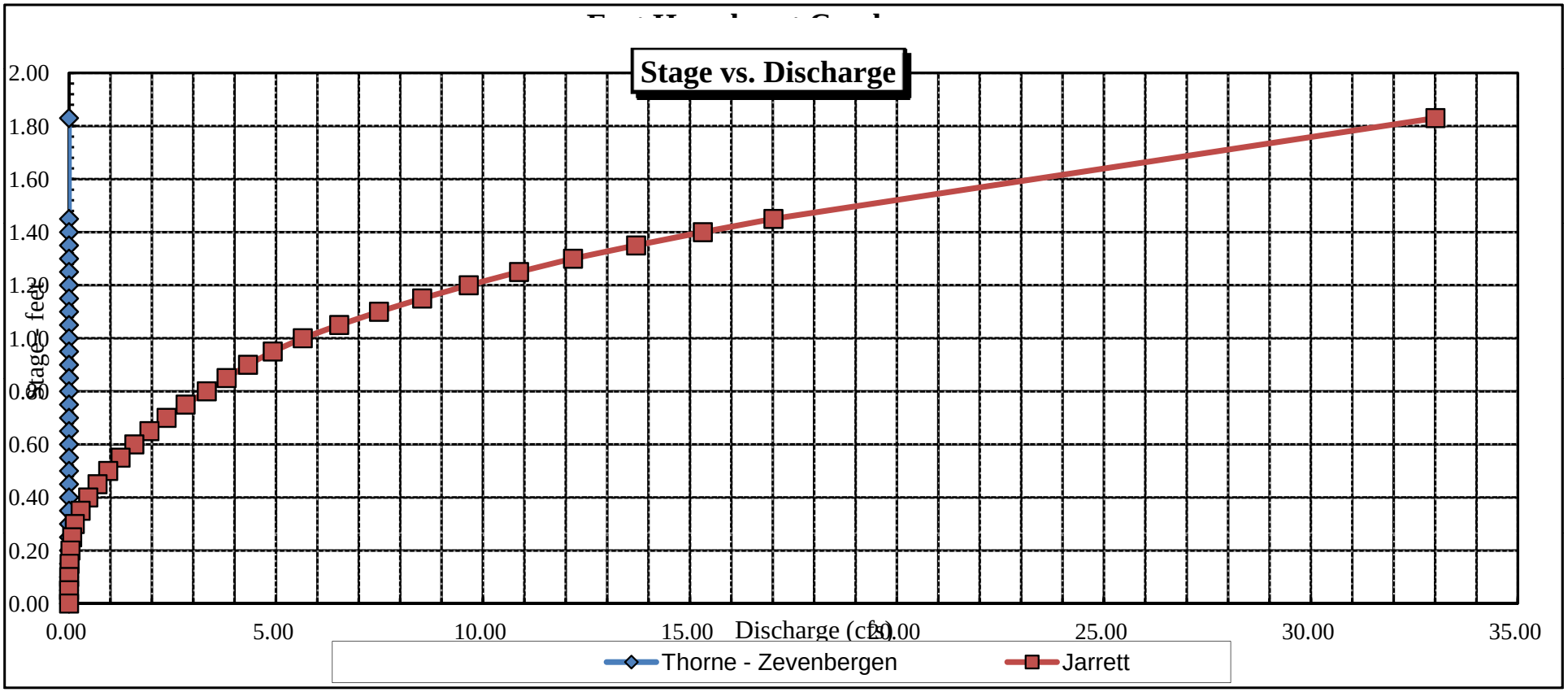
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	7.82	10.89	1.03	1.83	11.20	12.14	100.0%	0.92	33.01	2.95
	8.20	9.53	0.77	1.45	7.32	10.58	87.1%	0.69	17.02	2.32
	8.25	9.36	0.73	1.40	6.85	10.38	85.4%	0.66	15.31	2.23
	8.30	9.18	0.70	1.35	6.39	10.17	83.8%	0.63	13.70	2.14
	8.35	9.00	0.66	1.30	5.93	9.97	82.1%	0.60	12.17	2.05
	8.40	8.68	0.63	1.25	5.49	9.63	79.3%	0.57	10.87	1.98
	8.45	8.36	0.61	1.20	5.07	9.30	76.6%	0.54	9.66	1.91
	8.50	8.05	0.58	1.15	4.66	8.97	73.8%	0.52	8.53	1.83
	8.55	7.73	0.55	1.10	4.26	8.63	71.1%	0.49	7.49	1.76
	8.60	7.41	0.52	1.05	3.88	8.30	68.3%	0.47	6.53	1.68
	8.65	7.09	0.50	1.00	3.52	7.96	65.6%	0.44	5.65	1.60
	8.70	6.63	0.48	0.95	3.18	7.49	61.7%	0.42	4.92	1.55
	8.75	6.09	0.47	0.90	2.86	6.94	57.2%	0.41	4.32	1.51
	8.80	5.54	0.46	0.85	2.57	6.39	52.6%	0.40	3.81	1.48
	8.85	5.09	0.45	0.80	2.30	5.91	48.7%	0.39	3.33	1.44
	8.90	4.83	0.43	0.75	2.06	5.62	46.3%	0.37	2.82	1.37
	8.95	4.58	0.40	0.70	1.82	5.33	43.9%	0.34	2.36	1.29
	9.00	4.33	0.37	0.65	1.60	5.05	41.5%	0.32	1.94	1.22
	9.05	4.07	0.34	0.60	1.39	4.76	39.2%	0.29	1.58	1.14
	9.10	3.86	0.31	0.55	1.19	4.51	37.1%	0.26	1.25	1.05
	9.15	3.68	0.27	0.50	1.00	4.29	35.3%	0.23	0.95	0.95
WL	9.20	3.50	0.23	0.45	0.82	4.07	33.5%	0.20	0.69	0.84
	9.25	3.38	0.19	0.40	0.65	3.90	32.2%	0.17	0.46	0.71
	9.30	3.25	0.15	0.35	0.48	3.74	30.8%	0.13	0.28	0.58
	9.35	3.13	0.10	0.30	0.32	3.57	29.4%	0.09	0.14	0.43
	9.40	2.20	0.09	0.25	0.20	2.60	21.4%	0.08	0.08	0.38
	9.45	1.46	0.08	0.20	0.11	1.79	14.7%	0.06	0.03	0.31
	9.50	0.89	0.06	0.15	0.05	1.13	9.3%	0.05	0.01	0.25
	9.55	0.44	0.05	0.10	0.02	0.58	4.8%	0.03	0.00	0.20
	9.60	0.20	0.02	0.05	0.00	0.26	2.1%	0.02	0.00	0.10
	9.65	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!


CROSS SECTION DATA ANALYSIS
RS
G
W
W
G
S
-7.00
-7.50
-8.00
-8.50
-9.00
-9.50
-10.00
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
Discharge (cfs)
25.00
30.00
35.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
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
15.00
20.00
25.00
30.00
35.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
Stage (feet)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

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

LOCATION INFORMATION

STREAM NAME:	East Hawxhurst Creek
XS LOCATION:	500' upst fr conf w West Hawxhurst Ck.
XS NUMBER:	2
DATE:	22-Jul-14
OBSERVERS:	N. Dieterich, K. Jones
1/4 SEC:	NW
SECTION:	8
TWP:	9S
RANGE:	94W
PM:	Sixth
COUNTY:	Mesa
WATERSHED:	Buzzard Creek
DIVISION:	5
DOW CODE:	27981
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:	0.052

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

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

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 2

DATA POINTS= 37

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
S	0.00	6.36			0.00		0.00	0.00	0.0%
	1.00	7.10			0.00		0.00	0.00	0.0%
1 G	1.50	7.47			0.00		0.00	0.00	0.0%
	2.00	7.82			0.00		0.00	0.00	0.0%
	3.50	8.16			0.00		0.00	0.00	0.0%
W	4.50	8.37	0.00	0.00	0.00		0.00	0.00	0.0%
	4.80	8.41	0.05	0.00	0.30	0.05	0.02	0.00	0.0%
	5.10	8.44	0.05	0.00	0.30	0.05	0.02	0.00	0.0%
	5.40	8.50	0.10	0.00	0.31	0.10	0.03	0.00	0.0%
	5.70	8.55	0.15	0.55	0.30	0.15	0.05	0.02	2.5%
	6.00	8.57	0.20	0.60	0.30	0.20	0.06	0.04	3.6%
	6.30	8.60	0.15	0.45	0.30	0.15	0.05	0.02	2.0%
	6.60	8.72	0.35	0.67	0.32	0.35	0.11	0.07	7.0%
	6.90	8.70	0.30	0.87	0.30	0.30	0.09	0.08	7.8%
	7.20	8.77	0.50	0.74	0.31	0.50	0.15	0.11	11.1%
	7.50	8.77	0.50	0.66	0.30	0.50	0.15	0.10	9.9%
	7.80	8.80	0.50	0.71	0.30	0.50	0.15	0.11	10.7%
	8.10	8.81	0.35	0.84	0.30	0.35	0.11	0.09	8.8%
	8.40	8.77	0.40	0.56	0.30	0.40	0.12	0.07	6.7%
	8.70	8.78	0.40	0.59	0.30	0.40	0.12	0.07	7.1%
	9.00	8.80	0.40	0.63	0.30	0.40	0.12	0.08	7.6%
	9.30	8.65	0.30	0.68	0.34	0.30	0.09	0.06	6.1%
	9.60	8.65	0.25	0.61	0.30	0.25	0.08	0.05	4.6%
	9.90	8.56	0.10	0.63	0.31	0.10	0.03	0.02	1.9%
	10.20	8.41	0.10	0.50	0.34	0.10	0.03	0.02	1.5%
	10.50	8.44	0.05	0.62	0.30	0.05	0.02	0.01	0.9%
	10.80	8.36	0.05	0.00	0.31	0.05	0.02	0.00	0.0%
W	11.10	8.37	0.00	0.00	0.30		0.00	0.00	0.0%
	12.00	8.14			0.00		0.00	0.00	0.0%
	14.00	8.05			0.00		0.00	0.00	0.0%
	15.80	7.99			0.00		0.00	0.00	0.0%
	16.50	7.66			0.00		0.00	0.00	0.0%
	20.00	7.54			0.00		0.00	0.00	0.0%
	22.00	7.51			0.00		0.00	0.00	0.0%
1 G	22.65	7.47			0.00		0.00	0.00	0.0%
	24.00	7.20			0.00		0.00	0.00	0.0%
S	25.60	6.36			0.00		0.00	0.00	0.0%
TOTALS ----------					6.75	0.5 (Max.)	1.58	1.00	100.0%

Manning's n = 0.2027
Hydraulic Radius= 0.23334878

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.58	1.59	0.9%
8.12	1.58	3.51	123.0%
8.14	1.58	3.33	111.7%
8.16	1.58	3.16	100.9%
8.18	1.58	3.00	90.3%
8.20	1.58	2.83	80.0%
8.22	1.58	2.67	69.8%
8.24	1.58	2.52	59.9%
8.26	1.58	2.37	50.2%
8.28	1.58	2.22	40.7%
8.30	1.58	2.07	31.4%
8.32	1.58	1.93	22.4%
8.33	1.58	1.86	18.0%
8.34	1.58	1.79	13.6%
8.35	1.58	1.72	9.3%
8.36	1.58	1.65	5.0%
8.37	1.58	1.59	0.9%
8.38	1.58	1.53	-3.1%
8.39	1.58	1.47	-6.9%
8.40	1.58	1.41	-10.7%
8.41	1.58	1.35	-14.5%
8.42	1.58	1.29	-18.1%
8.44	1.58	1.18	-24.8%
8.46	1.58	1.09	-31.1%
8.48	1.58	0.99	-37.2%
8.50	1.58	0.89	-43.2%
8.52	1.58	0.80	-49.0%
8.54	1.58	0.72	-54.5%
8.56	1.58	0.63	-59.9%
8.58	1.58	0.55	-64.8%
8.60	1.58	0.48	-69.4%
8.62	1.58	0.41	-73.7%

WATERLINE AT ZERO
AREA ERROR = 8.372

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w West Hawxhurst 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	7.47	21.15	0.61	1.34	12.96	21.58	100.0%	0.60	15.43	1.19
	7.47	21.11	0.61	1.34	12.92	21.54	99.8%	0.60	15.36	1.19
	7.52	19.61	0.61	1.29	11.89	20.02	92.8%	0.59	14.04	1.18
	7.57	17.41	0.63	1.24	10.97	17.81	82.5%	0.62	13.28	1.21
	7.62	15.88	0.64	1.19	10.14	16.26	75.4%	0.62	12.37	1.22
	7.67	14.69	0.64	1.14	9.38	15.04	69.7%	0.62	11.45	1.22
	7.72	14.51	0.60	1.09	8.65	14.84	68.8%	0.58	10.09	1.17
	7.77	14.33	0.55	1.04	7.93	14.64	67.8%	0.54	8.81	1.11
	7.82	14.15	0.51	0.99	7.22	14.42	66.8%	0.50	7.61	1.05
	7.87	13.82	0.47	0.94	6.52	14.08	65.3%	0.46	6.52	1.00
	7.92	13.49	0.43	0.89	5.84	13.74	63.7%	0.42	5.51	0.94
	7.97	13.17	0.39	0.84	5.17	13.39	62.1%	0.39	4.58	0.89
	8.02	11.94	0.38	0.79	4.53	12.16	56.4%	0.37	3.93	0.87
	8.07	10.39	0.38	0.74	3.98	10.61	49.1%	0.38	3.46	0.87
	8.12	9.06	0.39	0.69	3.49	9.27	42.9%	0.38	3.05	0.87
	8.17	8.32	0.37	0.64	3.06	8.51	39.4%	0.36	2.59	0.85
	8.22	7.88	0.34	0.59	2.66	8.07	37.4%	0.33	2.12	0.80
	8.27	7.45	0.31	0.54	2.27	7.62	35.3%	0.30	1.70	0.75
	8.32	7.01	0.27	0.49	1.91	7.18	33.3%	0.27	1.32	0.69
WL	8.37	6.24	0.25	0.44	1.57	6.39	29.6%	0.25	1.04	0.66
	8.42	5.50	0.23	0.39	1.28	5.63	26.1%	0.23	0.80	0.62
	8.47	4.81	0.21	0.34	1.03	4.93	22.8%	0.21	0.60	0.59
	8.52	4.44	0.18	0.29	0.79	4.54	21.0%	0.17	0.42	0.52
	8.57	3.84	0.15	0.24	0.58	3.92	18.2%	0.15	0.27	0.47
	8.62	3.34	0.12	0.19	0.41	3.41	15.8%	0.12	0.17	0.41
	8.67	2.78	0.09	0.14	0.25	2.83	13.1%	0.09	0.09	0.34
	8.72	2.16	0.06	0.09	0.13	2.19	10.1%	0.06	0.03	0.25
	8.77	1.45	0.02	0.04	0.03	1.46	6.8%	0.02	0.00	0.11

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.00	cfs
CALCULATED FLOW (Qc)=	1.04	cfs
(Qm-Qc)/Qm * 100 =	-3.8	%
MEASURED WATERLINE (WLm)=	8.37	ft
CALCULATED WATERLINE (WLc)=	8.37	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.50	ft
MAX CALCULATED DEPTH (Dc)=	0.44	ft
(Dm-Dc)/Dm * 100	12.4	%
MEAN VELOCITY=	0.66	ft/sec
MANNING'S N=	0.203	
SLOPE=	0.052	ft/ft
.4 * Qm =	0.4	cfs
2.5 * Qm=	2.5	cfs

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

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

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

____
____
____
____
____
____
____
____
____
____
____
____
____
____
____

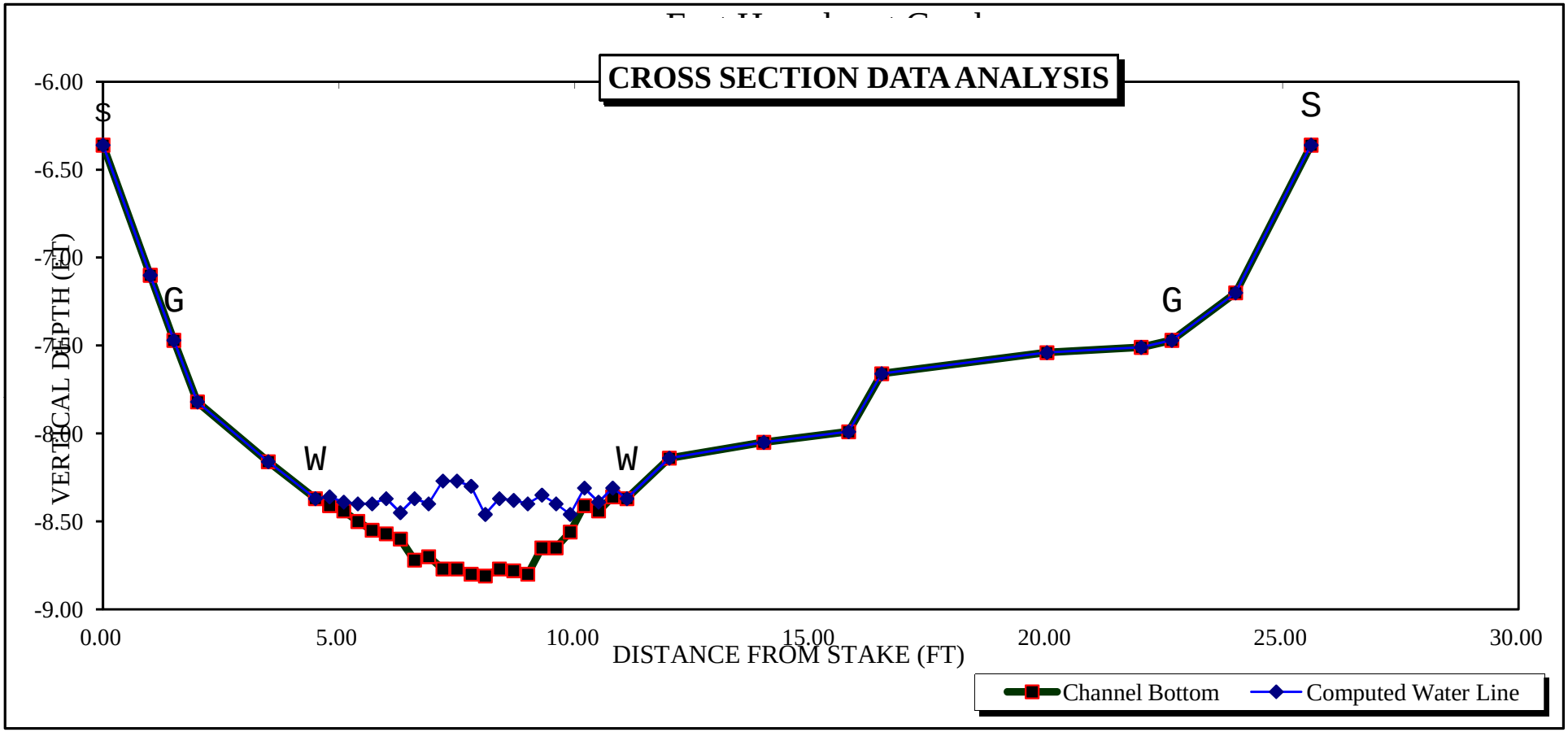
RECOMMENDATION BY: ………………………………………………… AGENCY……………………………………………… DATE:………………………

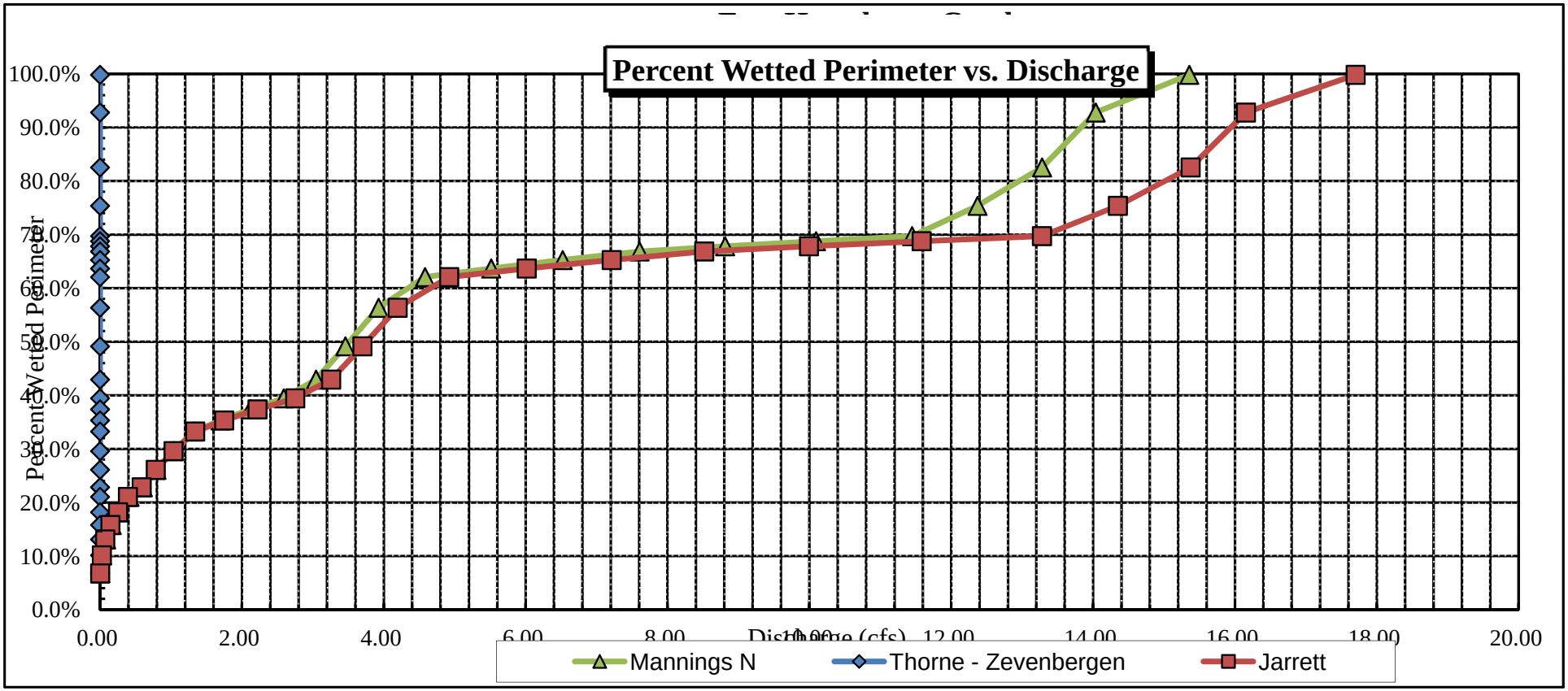
CWCB REVIEW BY: ……………………………………………………………………………………………………… DATE:………………………

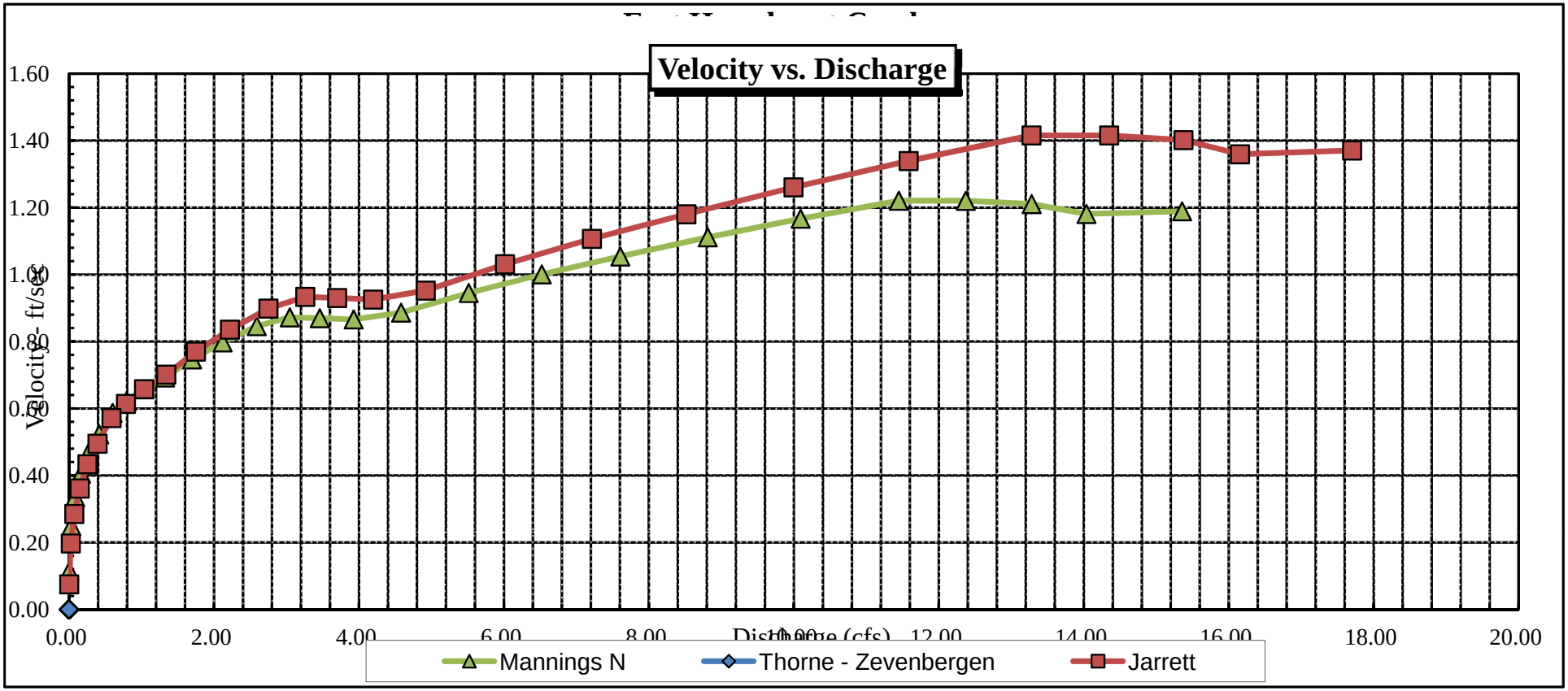
STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w West Hawxhurst Ck.
XS NUMBER: 2 Jarrett Variable Manning's n Correction Applied

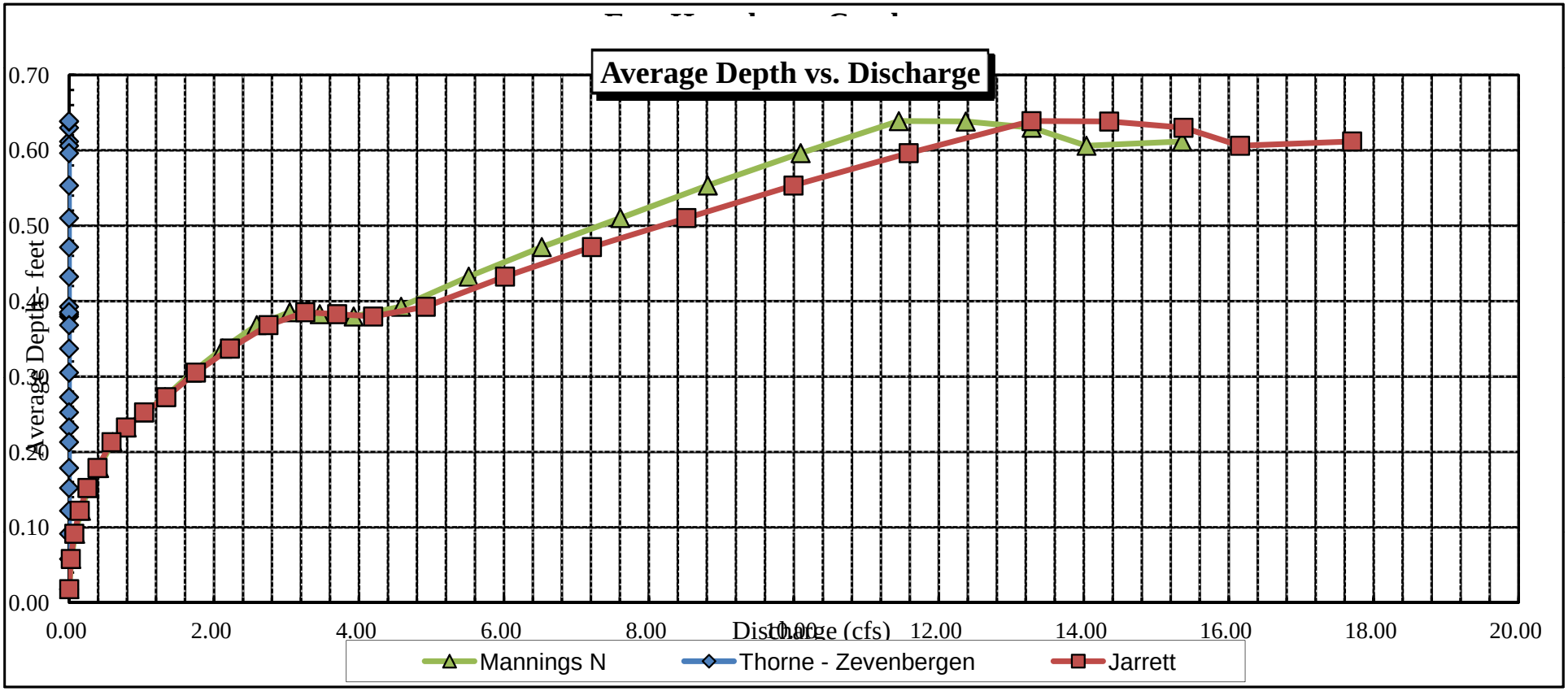
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

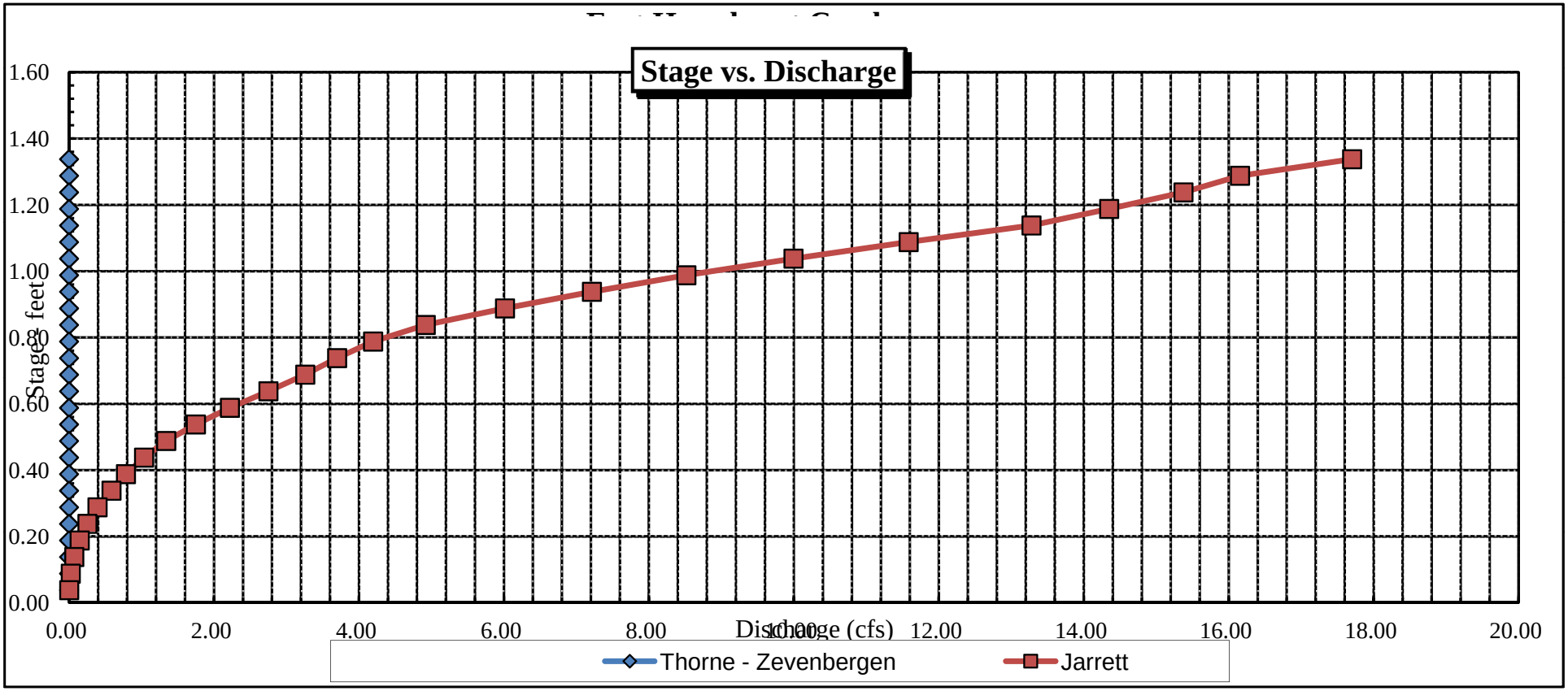
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	7.47	21.15	0.61	1.34	12.96	21.58	100.0%	0.60	17.79	1.37
	7.47	21.11	0.61	1.34	12.92	21.54	99.8%	0.60	17.70	1.37
	7.52	19.61	0.61	1.29	11.89	20.02	92.8%	0.59	16.16	1.36
	7.57	17.41	0.63	1.24	10.97	17.81	82.5%	0.62	15.38	1.40
	7.62	15.88	0.64	1.19	10.14	16.26	75.4%	0.62	14.35	1.42
	7.67	14.69	0.64	1.14	9.38	15.04	69.7%	0.62	13.28	1.42
	7.72	14.51	0.60	1.09	8.65	14.84	68.8%	0.58	11.58	1.34
	7.77	14.33	0.55	1.04	7.93	14.64	67.8%	0.54	9.99	1.26
	7.82	14.15	0.51	0.99	7.22	14.42	66.8%	0.50	8.52	1.18
	7.87	13.82	0.47	0.94	6.52	14.08	65.3%	0.46	7.21	1.11
	7.92	13.49	0.43	0.89	5.84	13.74	63.7%	0.42	6.02	1.03
	7.97	13.17	0.39	0.84	5.17	13.39	62.1%	0.39	4.92	0.95
	8.02	11.94	0.38	0.79	4.53	12.16	56.4%	0.37	4.20	0.93
	8.07	10.39	0.38	0.74	3.98	10.61	49.1%	0.38	3.70	0.93
	8.12	9.06	0.39	0.69	3.49	9.27	42.9%	0.38	3.26	0.93
	8.17	8.32	0.37	0.64	3.06	8.51	39.4%	0.36	2.75	0.90
	8.22	7.88	0.34	0.59	2.66	8.07	37.4%	0.33	2.22	0.84
	8.27	7.45	0.31	0.54	2.27	7.62	35.3%	0.30	1.75	0.77
	8.32	7.01	0.27	0.49	1.91	7.18	33.3%	0.27	1.34	0.70
WL	8.37	6.24	0.25	0.44	1.57	6.39	29.6%	0.25	1.04	0.66
	8.42	5.50	0.23	0.39	1.28	5.63	26.1%	0.23	0.78	0.61
	8.47	4.81	0.21	0.34	1.03	4.93	22.8%	0.21	0.59	0.57
	8.52	4.44	0.18	0.29	0.79	4.54	21.0%	0.17	0.39	0.49
	8.57	3.84	0.15	0.24	0.58	3.92	18.2%	0.15	0.25	0.43
	8.62	3.34	0.12	0.19	0.41	3.41	15.8%	0.12	0.15	0.36
	8.67	2.78	0.09	0.14	0.25	2.83	13.1%	0.09	0.07	0.29
	8.72	2.16	0.06	0.09	0.13	2.19	10.1%	0.06	0.02	0.20
	8.77	1.45	0.02	0.04	0.03	1.46	6.8%	0.02	0.00	0.07


CROSS SECTION DATA ANALYSIS
-6.00
-6.50
-7.00
-7.50
-8.00
-8.50
-9.00
VERTICAL DEPTH (FT)
S
G
W
W
G
S
0.00
5.00
10.00
15.00
20.00
25.00
30.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
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


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
2.00
4.00
6.00
8.00
12.00
14.00
16.00
18.00
20.00
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
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
INSTREAM FLOW / NATURAL LAKE LEVEL PROGRAM
STREAM CROSS-SECTION AND FLOW ANALYSIS

LOCATION INFORMATION

STREAM NAME:	East Hawxhurst Creek
XS LOCATION:	500' upst fr conf w/ W. Hawxhurst Ck
XS NUMBER:	11
DATE:	22-Jul-14
OBSERVERS:	N. Dieterich, K. Jones
1/4 SEC:	NW
SECTION:	8
TWP:	9S
RANGE:	94W
PM:	Sixth
COUNTY:	Mesa
WATERSHED:	Buzzard Creek
DIVISION:	5
DOW CODE:	27981
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:	0.052

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

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

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w/ W. Hawxhurst Ck
XS NUMBER: 11

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
S	0.00	7.66			0.00		0.00	0.00	0.0%
	1.00	8.24			0.00		0.00	0.00	0.0%
	2.00	8.58			0.00		0.00	0.00	0.0%
1 G	2.40	8.86			0.00		0.00	0.00	0.0%
	3.00	9.16			0.00		0.00	0.00	0.0%
W	4.10	9.55	0.00	0.00	0.00		0.00	0.00	0.0%
	4.40	9.66	0.05	0.00	0.32	0.05	0.02	0.00	0.0%
	4.80	9.66	0.05	0.00	0.40	0.05	0.02	0.00	0.0%
	5.20	9.65	0.05	0.00	0.40	0.05	0.02	0.00	0.0%
	5.60	9.60	0.10	0.48	0.40	0.10	0.04	0.02	1.8%
	6.00	9.49	0.10	0.07	0.41	0.10	0.04	0.00	0.3%
	6.40	9.42	0.05	0.00	0.41	0.05	0.02	0.00	0.0%
	6.80	9.44	0.00	0.00	0.40		0.00	0.00	0.0%
	7.20	9.72	0.05	0.73	0.49	0.05	0.02	0.01	1.3%
	7.60	9.74	0.20	0.90	0.40	0.20	0.08	0.07	6.6%
	8.00	9.75	0.10	0.39	0.40	0.10	0.04	0.02	1.4%
	8.40	9.72	0.20	0.57	0.40	0.20	0.08	0.05	4.2%
	8.80	9.82	0.30	1.31	0.41	0.30	0.12	0.16	14.4%
	9.20	9.79	0.35	1.86	0.40	0.35	0.14	0.26	23.9%
	9.60	9.79	0.25	1.80	0.40	0.25	0.10	0.18	16.5%
	10.00	9.94	0.25	1.21	0.43	0.25	0.10	0.12	11.1%
	10.40	9.80	0.30	0.56	0.42	0.30	0.12	0.07	6.2%
	10.80	9.85	0.30	0.60	0.40	0.30	0.12	0.07	6.6%
	11.20	9.85	0.30	0.52	0.40	0.30	0.12	0.06	5.7%
	11.60	9.68	0.20	0.00	0.43	0.20	0.08	0.00	0.0%
W	12.00	9.55	0.00	0.00	0.42		0.00	0.00	0.0%
	13.00	9.23			0.00		0.00	0.00	0.0%
	15.00	9.06			0.00		0.00	0.00	0.0%
	16.70	8.98			0.00		0.00	0.00	0.0%
1 G	16.90	8.84			0.00		0.00	0.00	0.0%
	18.00	8.40			0.00		0.00	0.00	0.0%
S	19.20	7.66			0.00		0.00	0.00	0.0%
TOTALS ----------					8.16	0.35 (Max.)	1.28	1.09	100.0%

Manning's n = 0.1154
Hydraulic Radius= 0.15661457

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w/ W. Hawxhurst Ck
XS NUMBER: 11

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.28	1.26	-1.1%
9.30	1.28	3.32	160.1%
9.32	1.28	3.14	145.5%
9.34	1.28	2.95	131.1%
9.36	1.28	2.77	116.9%
9.38	1.28	2.59	102.9%
9.40	1.28	2.41	89.0%
9.42	1.28	2.24	75.3%
9.44	1.28	2.07	62.2%
9.46	1.28	1.91	49.9%
9.48	1.28	1.76	37.9%
9.50	1.28	1.61	26.3%
9.51	1.28	1.54	20.7%
9.52	1.28	1.47	15.1%
9.53	1.28	1.40	9.6%
9.54	1.28	1.33	4.2%
9.55	1.28	1.26	-1.1%
9.56	1.28	1.20	-6.3%
9.57	1.28	1.13	-11.4%
9.58	1.28	1.07	-16.5%
9.59	1.28	1.00	-21.5%
9.60	1.28	0.94	-26.3%
9.62	1.28	0.82	-35.8%
9.64	1.28	0.71	-44.7%
9.66	1.28	0.60	-53.1%
9.68	1.28	0.51	-60.1%
9.70	1.28	0.42	-67.1%
9.72	1.28	0.33	-73.9%
9.74	1.28	0.26	-80.0%
9.76	1.28	0.19	-84.8%
9.78	1.28	0.14	-89.1%
9.80	1.28	0.09	-92.9%

WATERLINE AT ZERO
AREA ERROR = 9.548

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w/ W. Hawxhurst Ck
XS NUMBER: 11 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	8.86	14.47	0.60	1.08	8.63	14.96	100.0%	0.58	17.56	2.03
	8.90	14.34	0.56	1.04	8.08	14.81	99.0%	0.55	15.85	1.96
	8.95	14.17	0.52	0.99	7.37	14.61	97.7%	0.50	13.72	1.86
	9.00	13.64	0.49	0.94	6.67	14.06	94.0%	0.47	11.91	1.79
	9.05	12.48	0.48	0.89	6.02	12.89	86.1%	0.47	10.63	1.77
	9.10	11.68	0.46	0.84	5.41	12.07	80.7%	0.45	9.32	1.72
	9.15	10.99	0.44	0.79	4.85	11.37	76.0%	0.43	8.07	1.66
	9.20	10.27	0.42	0.74	4.32	10.64	71.1%	0.41	6.95	1.61
	9.25	9.70	0.39	0.69	3.82	10.05	67.2%	0.38	5.89	1.54
	9.30	9.40	0.36	0.64	3.34	9.74	65.1%	0.34	4.81	1.44
	9.35	9.10	0.32	0.59	2.88	9.42	63.0%	0.31	3.84	1.33
	9.40	8.80	0.28	0.54	2.43	9.11	60.9%	0.27	2.96	1.22
	9.45	7.94	0.25	0.49	2.01	8.22	54.9%	0.24	2.31	1.15
	9.50	7.30	0.22	0.44	1.63	7.55	50.4%	0.22	1.72	1.06
WL	9.55	6.75	0.19	0.39	1.28	6.96	46.5%	0.18	1.21	0.95
	9.60	6.20	0.15	0.34	0.95	6.37	42.6%	0.15	0.79	0.83
	9.65	5.45	0.12	0.29	0.66	5.58	37.3%	0.12	0.47	0.71
	9.70	4.39	0.10	0.24	0.43	4.50	30.0%	0.10	0.26	0.61
	9.75	3.04	0.08	0.19	0.23	3.12	20.9%	0.07	0.12	0.52
	9.80	2.08	0.05	0.14	0.09	2.15	14.4%	0.04	0.03	0.37
	9.85	0.93	0.03	0.09	0.02	0.96	6.4%	0.03	0.01	0.25
	9.90	0.23	0.02	0.04	0.00	0.25	1.7%	0.02	0.00	0.21

STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w/ W. Hawxhurst Ck
XS NUMBER: 11

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.09	cfs
CALCULATED FLOW (Qc)=	1.21	cfs
(Qm-Qc)/Qm * 100 =	-11.2	%
MEASURED WATERLINE (WLm)=	9.55	ft
CALCULATED WATERLINE (WLc)=	9.55	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.35	ft
MAX CALCULATED DEPTH (Dc)=	0.39	ft
(Dm-Dc)/Dm * 100	-12.0	%
MEAN VELOCITY=	0.95	ft/sec
MANNING'S N=	0.115	
SLOPE=	0.052	ft/ft
.4 * Qm =	0.4	cfs
2.5 * Qm=	2.7	cfs

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

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

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

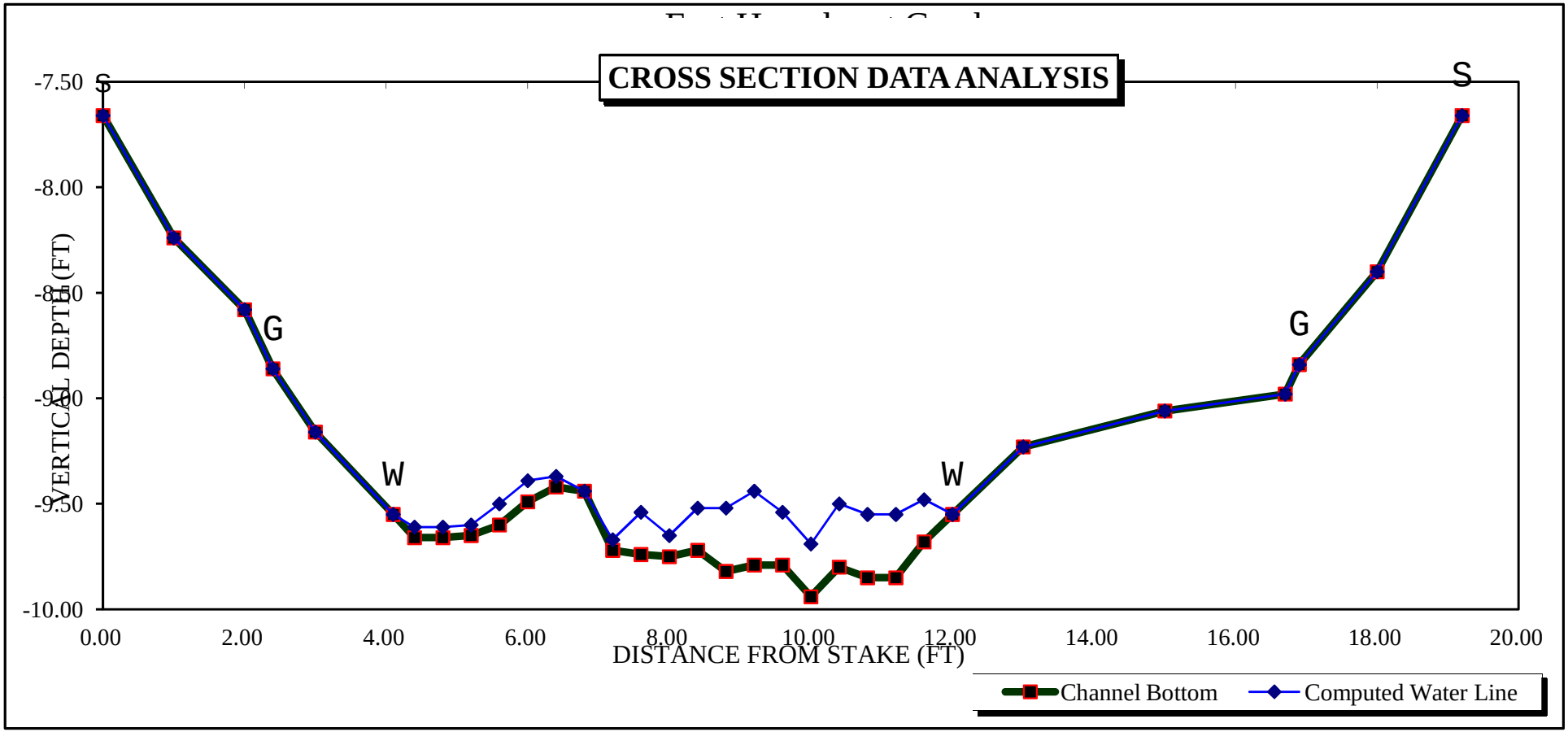
RECOMMENDATION BY: ………………...………..…….............................. AGENCY..……………………......……...…...……...... DATE:.......…..…......……………

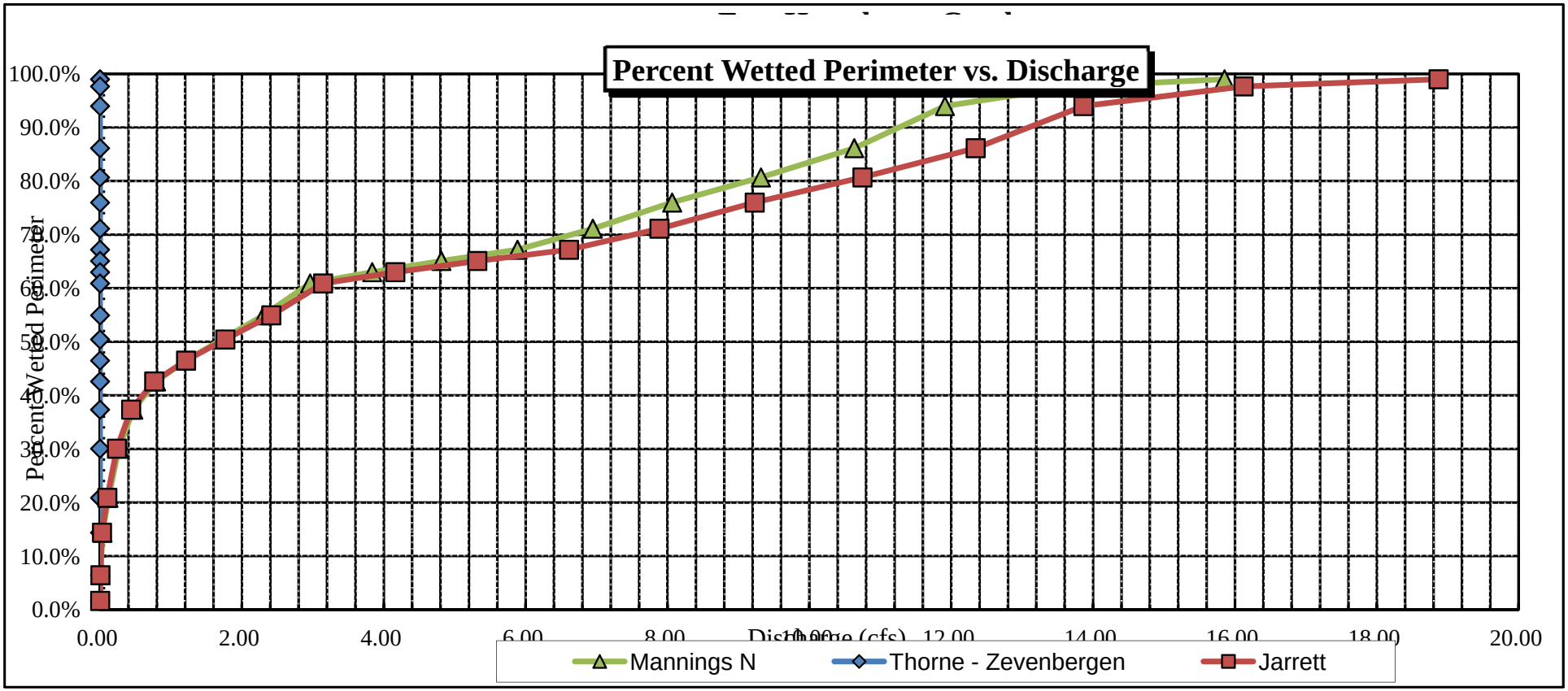
CWCB REVIEW BY: ..……………………….....………………………………………………..…............ DATE:.................…………….....

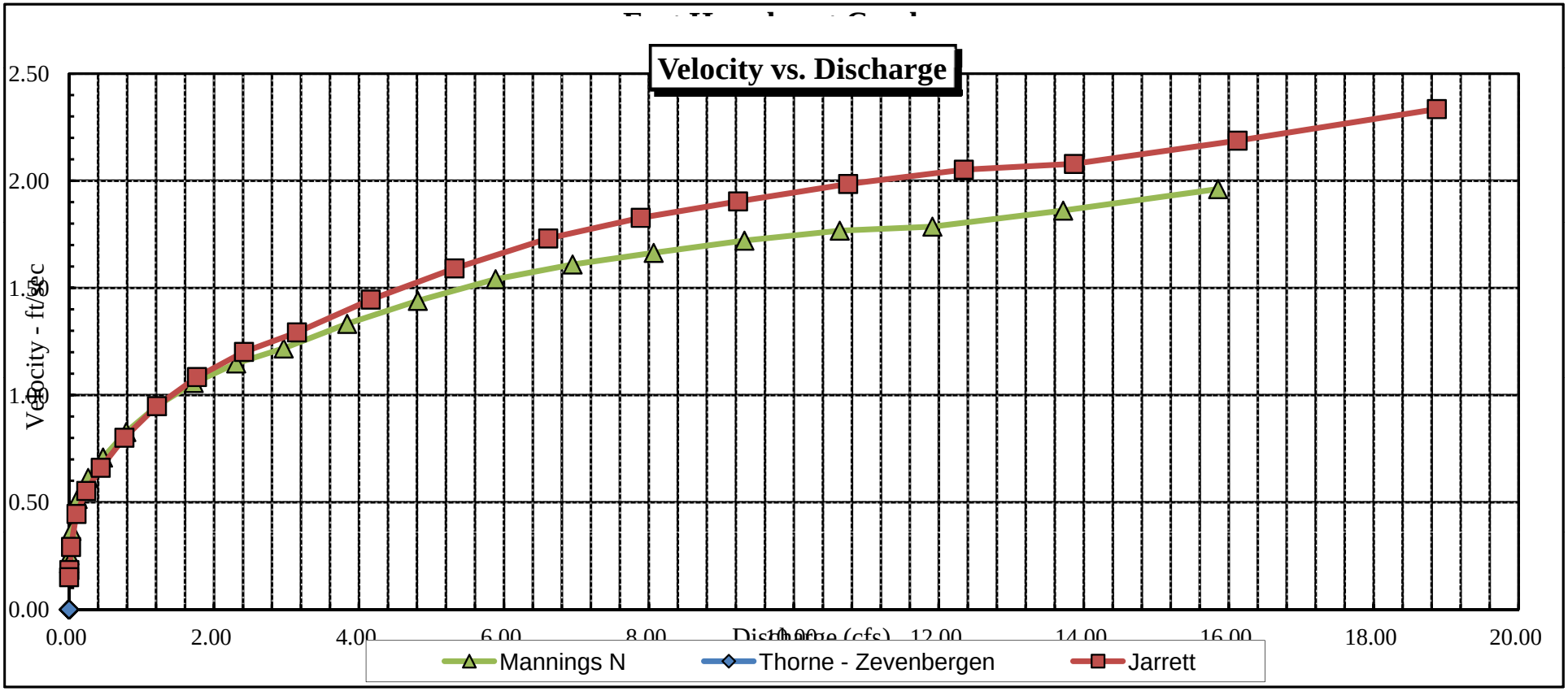
STREAM NAME: East Hawxhurst Creek
XS LOCATION: 500' upst fr conf w/ W. Hawxhurst Ck
XS NUMBER: 11 Jarrett Variable Manning's n Correction Applied

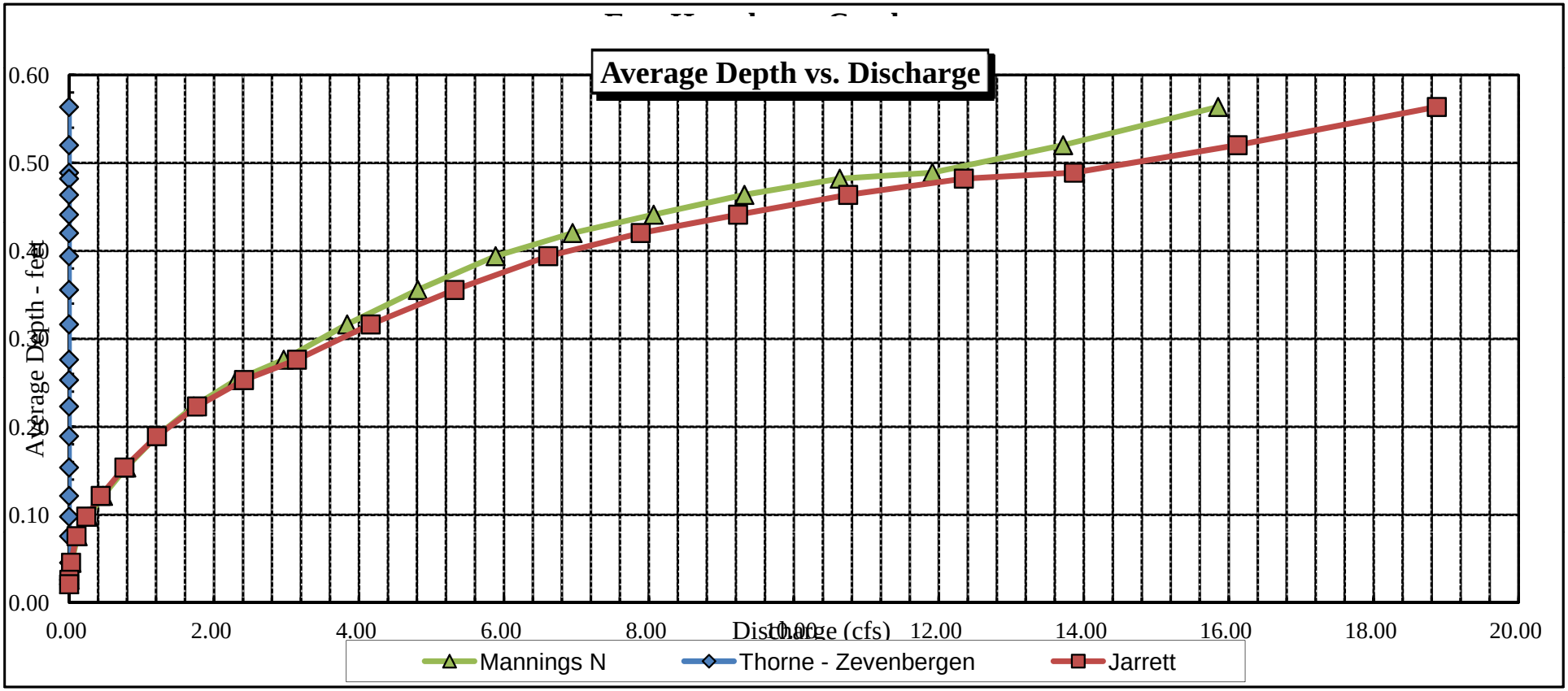
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

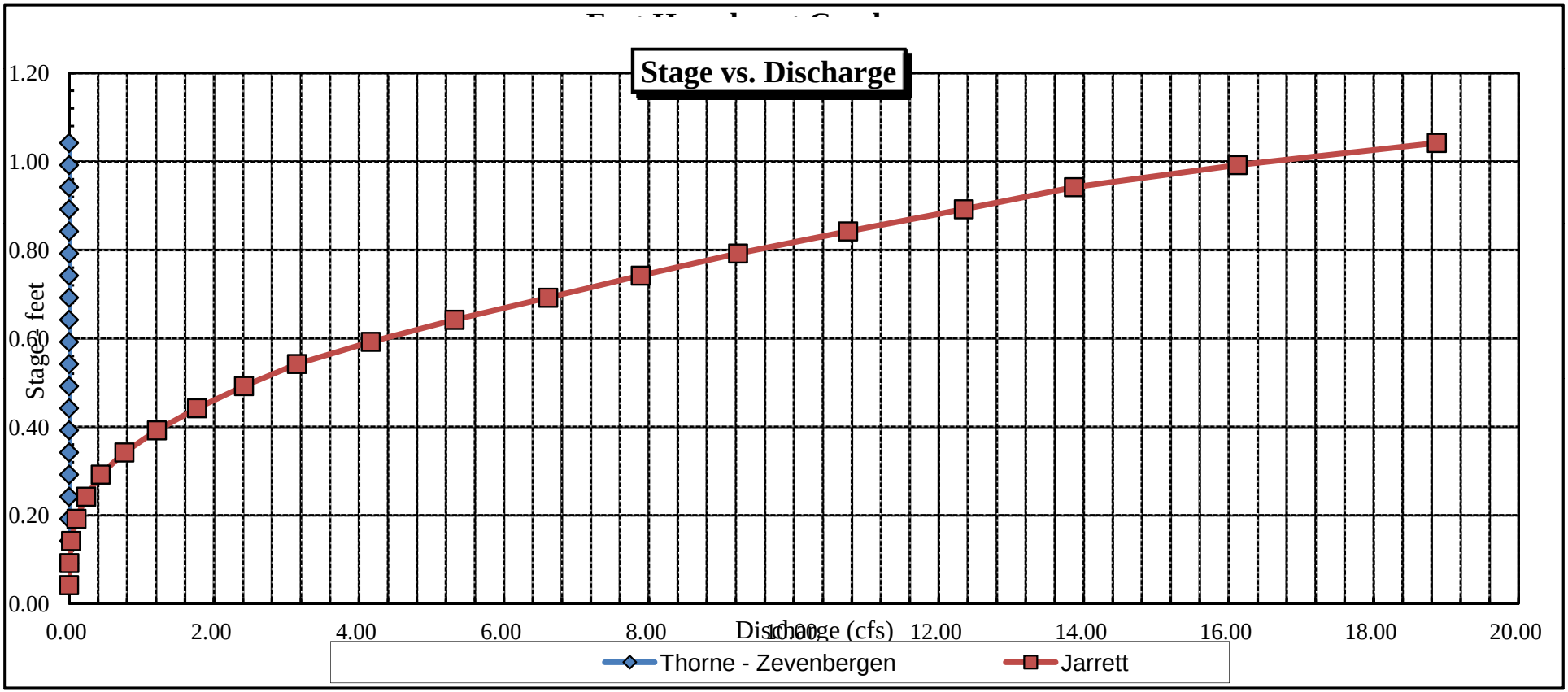
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	8.86	14.47	0.60	1.08	8.63	14.96	100.0%	0.58	21.09	2.44
	8.90	14.34	0.56	1.04	8.08	14.81	99.0%	0.55	18.87	2.33
	8.95	14.17	0.52	0.99	7.37	14.61	97.7%	0.50	16.12	2.19
	9.00	13.64	0.49	0.94	6.67	14.06	94.0%	0.47	13.86	2.08
	9.05	12.48	0.48	0.89	6.02	12.89	86.1%	0.47	12.34	2.05
	9.10	11.68	0.46	0.84	5.41	12.07	80.7%	0.45	10.75	1.99
	9.15	10.99	0.44	0.79	4.85	11.37	76.0%	0.43	9.23	1.90
	9.20	10.27	0.42	0.74	4.32	10.64	71.1%	0.41	7.89	1.83
	9.25	9.70	0.39	0.69	3.82	10.05	67.2%	0.38	6.61	1.73
	9.30	9.40	0.36	0.64	3.34	9.74	65.1%	0.34	5.32	1.59
	9.35	9.10	0.32	0.59	2.88	9.42	63.0%	0.31	4.16	1.45
	9.40	8.80	0.28	0.54	2.43	9.11	60.9%	0.27	3.14	1.29
	9.45	7.94	0.25	0.49	2.01	8.22	54.9%	0.24	2.41	1.20
	9.50	7.30	0.22	0.44	1.63	7.55	50.4%	0.22	1.77	1.08
WL	9.55	6.75	0.19	0.39	1.28	6.96	46.5%	0.18	1.21	0.95
	9.60	6.20	0.15	0.34	0.95	6.37	42.6%	0.15	0.76	0.80
	9.65	5.45	0.12	0.29	0.66	5.58	37.3%	0.12	0.44	0.66
	9.70	4.39	0.10	0.24	0.43	4.50	30.0%	0.10	0.24	0.55
	9.75	3.04	0.08	0.19	0.23	3.12	20.9%	0.07	0.10	0.45
	9.80	2.08	0.05	0.14	0.09	2.15	14.4%	0.04	0.03	0.29
	9.85	0.93	0.03	0.09	0.02	0.96	6.4%	0.03	0.00	0.18
	9.90	0.23	0.02	0.04	0.00	0.25	1.7%	0.02	0.00	0.15


CROSS SECTION DATA ANALYSIS
S
G
W
W
G
S
-7.50
-8.00
-8.50
-9.00
-9.50
-10.00
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
0.60
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
1.20
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: East Hawxhurst Creek						CROSS-SECTION NO.: 1
CROSS-SECTION LOCATION: Nad 1983 Zone 13S 0249078 4353182						
DATE: 10/4/11	OBSERVERS: N. Dieterich / C. Ewing					
LEGAL DESCRIPTION	¼ SECTION: NW	SECTION: 8	TOWNSHIP: 9 N/S	RANGE: 94 E/W	PM: 6th	
COUNTY: Mesa	WATERSHED: Buzzard Creek	WATER DIVISION: Division 5 (Lower Colorado)	DOW WATER CODE: 27981			
MAP(S): USGS: Hawxhurst Cr. ~~USFS:~~						

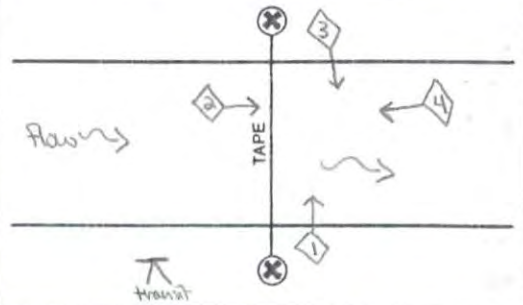
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO	METER TYPE: Marsh Mcbirney			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: Cobble	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS: 4		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	7.16
⊗ Tape @ Stake RB	0.0	7.25
① WS @ Tape LB/RB	0.0	9.23 / 9.20
② WS Upstream	33.7'	7.88
③ WS Downstream	32.0'	11.06
SLOPE	4.84%	

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:

- No fish observed

COMMENTS

pH = 8.48
SC = 231 µS
temp = 11.3°C

*See comment on W. Hawxhurst pertaining to reservoir maint on USFS scheduled for spring/summer 2012.

Nad 1983 Zone 13S 0249078 4353182

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: East Hawkhurst Creek | CROSS-SECTION NO.: 1 | DATE: 10/4/11 | SHEET 1 OF 1

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT (RIGHT) | Gage Reading: N/A ft | TIME: 1030

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)
BM#1	—	—	8.7+								
S	0	—	7.25								
G	0.8	0.8	7.82								
	2	1.2	8.35								
	3	1	8.68								
	4	1	8.85								
	5	1	9.07								
right W	5.4	0.4	9.20	0	0.6d		20	0		0	0
	5.7	0.3	9.35	0.15				0.3		0.05	0.14
	6		9.37	0.17				0.79		0.05	0.04
	6.3		9.35	0.15				1.56		0.05	0.07
	6.6		9.39	0.19				1.57		0.06	0.09
	6.9		9.65	0.45				0.72		0.14	0.1
	7.2		9.43	0.23				1.89		0.07	0.13
	7.5		9.54	0.34				0.41		0.1	0.04
	7.8		9.42	0.22				0.15		0.7	0.01
	8.1		9.41	0.21				1.35		0.06	0.09
	8.4		9.47	0.27				1.37		0.08	0.11
	8.7		9.63	0.43				0		0.13	0
left W	8.9	0.2	9.2	0				0		0	0
	9.1	0.2	8.83								
	10	0.9	8.65								
	10.5	0.5	8.5								
	11	0.5	8.35								
G	11.75	0.75	7.77								
S	12	0.25	7.6								
TOTALS:											

total = 0.81 cfs

HI = 108.7'
BM#1 = 100' (arbitrary datum)

End of Measurement | Time: 1130 | Gage Reading: _____ ft | CALCULATIONS PERFORMED BY: N. Dietrich | CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: East Hawxhurst Creek						CROSS-SECTION NO.: 1
CROSS-SECTION LOCATION: Nad 1983 Zone 12S 0249098 4353242						
DATE: 7/22/14	OBSERVERS: N. Dieterian / K. Jones					
LEGAL DESCRIPTION	¼ SECTION	SECTION	TOWNSHIP: 9 N/S	RANGE: 94 E/W	PM: 6th	
COUNTY: Mesa	WATERSHED: Buzzard Creek	WATER DIVISION: Division 5 (Lower Colorado)	DOW WATER CODE:			
MAP(S): USGS: Hawxhurst	USFS					

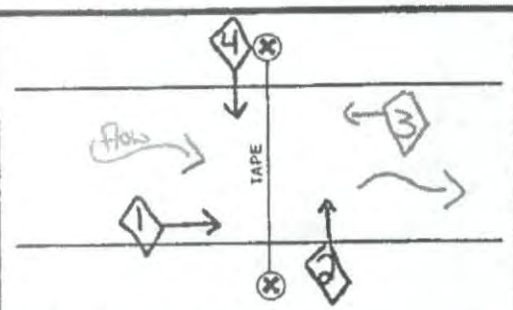
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO	METER TYPE: Marsh McBirney			
METER NUMBER	DATE RATED: 4/14.	CALIB/SPIN: ____ sec	TAPE WEIGHT: ____ lbs/foot	TAPE TENSION: ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel/cobble	PHOTOGRAPHS TAKEN: (YES) NO	NUMBER OF PHOTOGRAPHS: x 4		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	
⊗ Tape @ Stake RB	0.0	
① WS @ Tape LB/RB	0.0	
② WS Upstream		
③ WS Downstream		
SLOPE: Ave = 5.2%		

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

pH = 8.2 SC = 161.4 µS @ 25°C Temp = 17.5°C

BM#1 = 5.37

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: East Hawxhurst Creek | CROSS-SECTION NO: 1 | DATE 7/22/14 | 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)
S	0	—	0.62		7.66						
	1	1			8.24						
	2	1			8.58						
(BF) G	2.4	0.4			8.86						
	3	0.6			9.16						
W	4.1	1.1		0	9.55		20	0		1	
	4.4	0.3		0.05	9.66			0			
	4.8	0.4		0.05	9.66			0			
	5.2	0.4		0.05	9.65			0		0.04	0
	5.6	0.4		0.1	9.6			0.48		0.02	.010
R	6	0.4		0.1	9.49			0.07		0	0
R	6.4	0.4		0.05	9.42			0		0	0
R	6.8	0.4		0	9.44			0		0	0
	7.2	0.4		0.05	9.72			0.73		0.068	.05
	7.6	0.4		0.2	9.74			0.9		0.076	.068
	8	0.4		0.1	9.75			0.39		0.08	.031
	8.4	0.4		0.2	9.72			0.57		0.068	.039
	8.8	0.4		0.3	9.82			1.31		0.108	.141
	9.2	0.4		0.35	9.79			1.86		0.096	.179
	9.6	0.4		0.25	9.79			1.8		0.096	.173
	10	0.4		0.25	9.94			1.21		0.156	.189
	10.4	0.4		0.3	9.8			0.56		0.1	.056
	10.8	0.4		0.3	9.85			0.16		0.12	.072
	11.2	0.4		0.3	9.85			0.52		0.12	.062
	11.6	0.4		0.2	9.68			0		0.052	0
W	12	0.4		0	9.55			0		0	0
	13	1			9.23						Total = 1.07
	15	2			9.06						
	16.7	1.7			8.98						
(BF) G	16.9	0.2			8.84						
	18	1.1			8.4						
S	19.2	1.2			7.66						

Long Profile		Station	H_2O Surface		H_2O Surface Elevation	% Slope	BM = 8.19 for CS#2	TP#1 = 9.25
		0	7.37		100.82			
	CS#2	18	8.34		99.85	5.39		
		31	8.79		99.4	3.46		
		TP#1 IS	9.25	rock	98.94	New HI!	Avg % Slope =	5.42
		" " BS	6.95		98.94			
		45	8.19		97.7	12.1		
	CS#1	68	8.58		97.31	1.7		
		85	9.32		96.57	4.4		
TOTALS:		100	20.14		95.75	5.5		

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

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Mon Nov 30 2015

File Information

File Name	EHAWXALT.001.WAD
Start Date and Time	2015/06/23 15:07:26

Site Details

Site Name	EAST HAWXHURST
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%	2.9%
Velocity	1.5%	5.0%
Width	0.2%	0.2%
Method	2.3%	-
# Stations	3.0%	-
Overall	**4.2%**	**5.9%**

Summary

Averaging Int.	40	# Stations	17
Start Edge	REW	Total Width	5.003
Mean SNR	44.5 dB	Total Area	3.153
Mean Temp	57.29 °F	Mean Depth	0.630
Disch. Equation	Mid-Section	Mean Velocity	2.0209
		Total Discharge	**6.3719**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:07	5.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*15:07*	*6.00*	*0.6*	*0.840*	*0.6*	*0.336*	*0.5394*	*1.00*	*0.5394*	*0.336*	*0.1812*	*2.8*
2	*15:08*	*6.40*	*0.6*	*1.050*	*0.6*	*0.420*	*2.4094*	*1.00*	*2.4094*	*0.368*	*0.8855*	*13.9*
3	15:10	6.70	0.6	1.100	0.6	0.440	2.4288	1.00	2.4288	0.330	0.8021	12.6
4	15:11	7.00	0.6	0.700	0.6	0.280	3.2969	1.00	3.2969	0.210	0.6929	10.9
5	15:12	7.30	0.6	0.650	0.6	0.260	3.5154	1.00	3.5154	0.195	0.6859	10.8
6	15:13	7.60	0.6	0.650	0.6	0.260	3.5075	1.00	3.5075	0.195	0.6844	10.7
7	15:14	7.90	0.6	0.700	0.6	0.280	2.3064	1.00	2.3064	0.210	0.4848	7.6
8	*15:15*	*8.20*	*0.6*	*0.680*	*0.6*	*0.272*	*2.3373*	*1.00*	*2.3373*	*0.204*	*0.4772*	*7.5*
9	15:17	8.50	0.6	0.700	0.6	0.280	2.7618	1.00	2.7618	0.210	0.5805	9.1
10	*15:19*	*8.80*	*0.6*	*0.670*	*0.6*	*0.268*	*1.7894*	*1.00*	*1.7894*	*0.201*	*0.3599*	*5.6*
11	*15:20*	*9.10*	*0.6*	*0.590*	*0.6*	*0.236*	*0.7592*	*1.00*	*0.7592*	*0.177*	*0.1344*	*2.1*
12	15:21	9.40	0.6	0.550	0.6	0.220	1.0177	1.00	1.0177	0.165	0.1680	2.6
13	15:22	9.70	0.6	0.400	0.6	0.160	0.7339	1.00	0.7339	0.120	0.0881	1.4
14	15:24	10.00	0.6	0.400	0.6	0.160	0.7057	1.00	0.7057	0.120	0.0847	1.3
15	15:25	10.30	0.6	0.370	0.6	0.148	0.5617	1.00	0.5617	0.111	0.0624	1.0
16	15:25	10.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

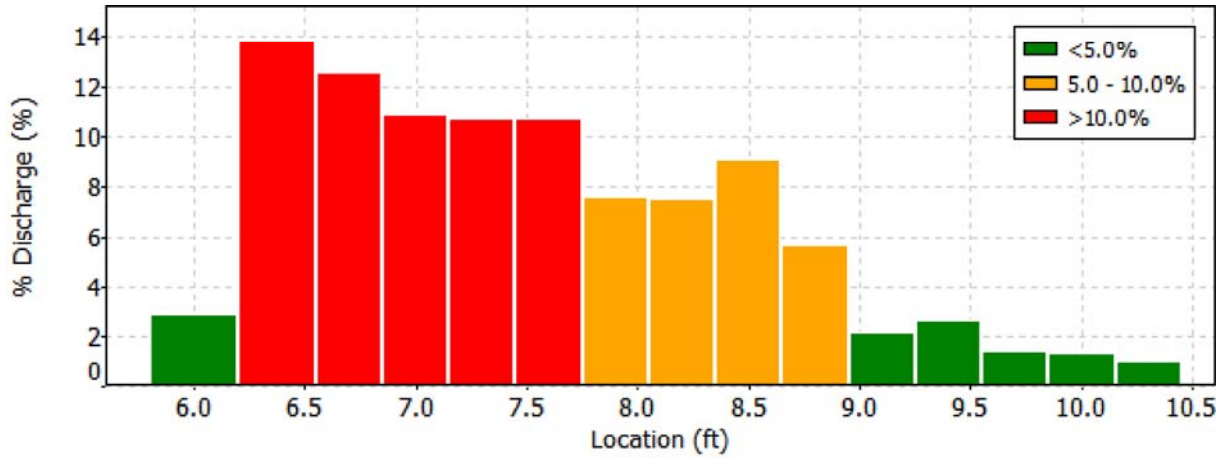
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

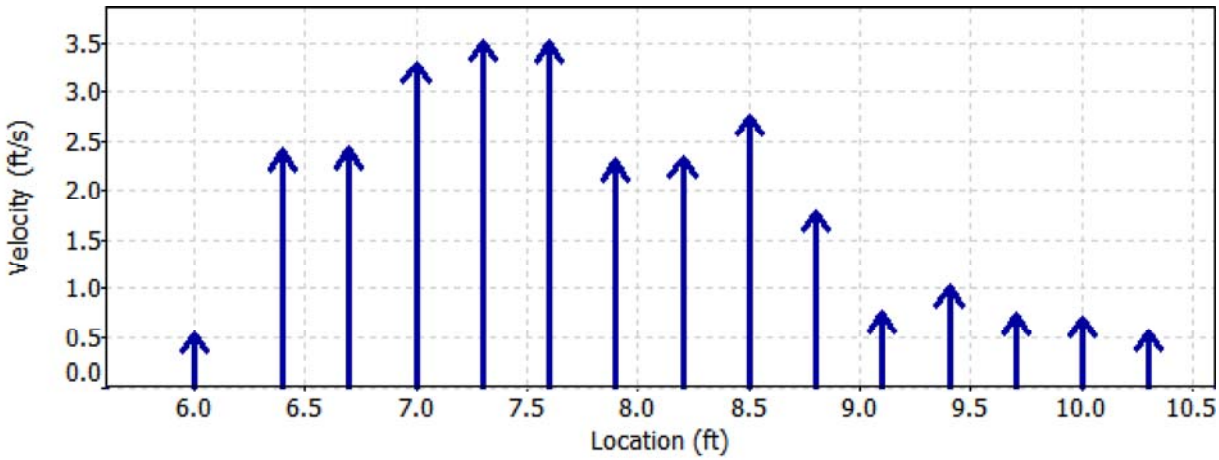
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

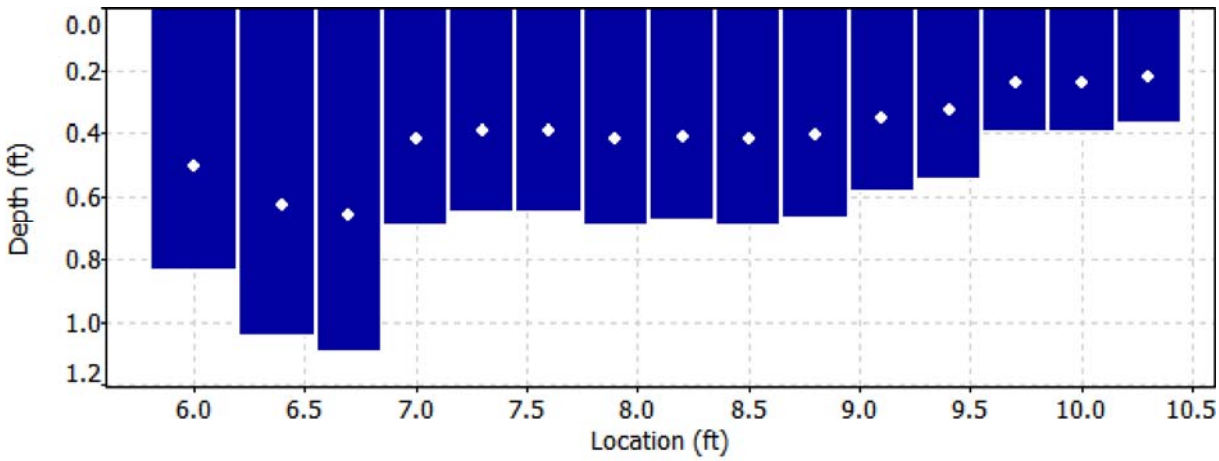
Discharge Measurement Summary

Date Generated: Mon Nov 30 2015

File Information		Site Details	
File Name	EHAWXALT.001.WAD	Site Name	EAST HAWXHURST
Start Date and Time	2015/06/23 15:07:26	Operator(s)	BRIAN EPSTEIN







COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Mon Nov 30 2015

File Information

File Name	EHAWXALT.001.WAD
Start Date and Time	2015/06/23 15:07:26

Site Details

Site Name	EAST HAWXHURST
Operator(s)	BRIAN EPSTEIN

Quality Control

St	Loc	%Dep	Message
1	6.00	0.6	High angle: 34
		0.6	High standard error: 0.154
2	6.40	0.6	High angle: 25
8	8.20	0.6	High angle: 22
10	8.80	0.6	High standard error: 0.115
11	9.10	0.6	High angle: 24

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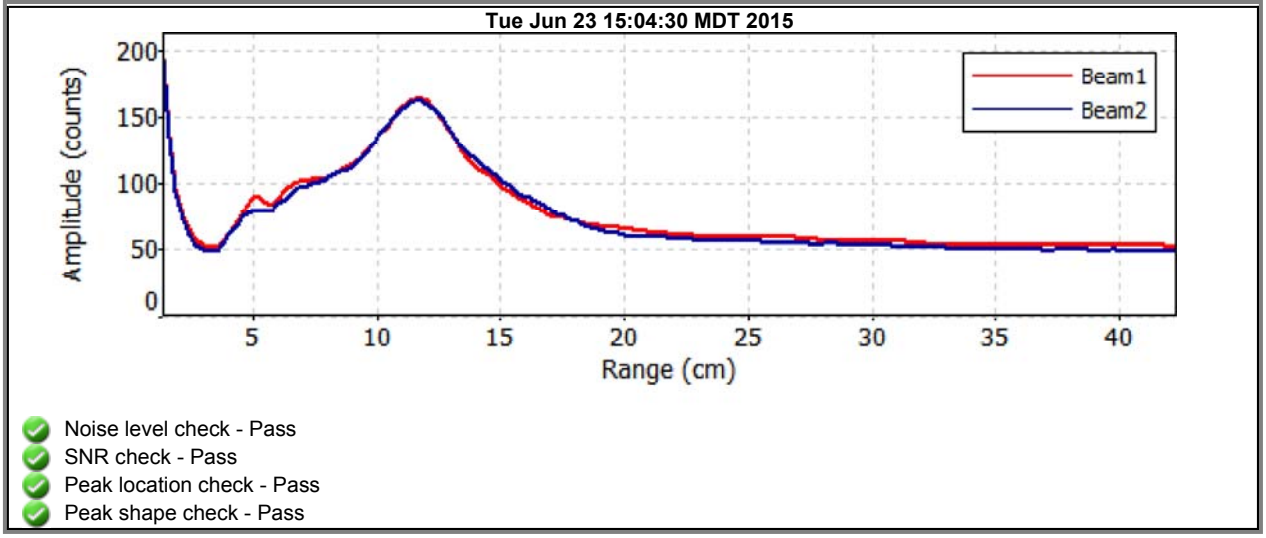
Colorado Water Conservation Board
Department of Natural Resources

Discharge Measurement Summary

Date Generated: Mon Nov 30 2015

File Information		Site Details	
File Name	EHAWXALT.001.WAD	Site Name	EAST HAWXHURST
Start Date and Time	2015/06/23 15:07:26	Operator(s)	BRIAN EPSTEIN

Automatic Quality Control Test (BeamCheck)



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

State of Colorado

Colorado Water Conservation Board

Field Notes

Hawxhurst Creek

09:28 GPS Point: HawxhurstCrObs001
- Headgate of new diversion structure on Hawxhurst Creek right

09:33 Pic 0154 from upstream, diversion structure
- Parshall Flume W = 0.75'
  - not level from right to left slope 0.5' run : 0.06' rise, right side high
  - staff plate right side 0.46' / left side 0.38'
  - not level from upstream to downstream 0.4' run : 0.04' rise, upstream high
  - ~50' downstream of headgate

09:55 GPS Point: HawxhurstCrObs002
- Headgate of older diversion structures on Hawxhurst Creek left side

09:56 Pic 0155 from upstream left bank, diversion structure

10:01 Pic 0156 beat up flume
- Parshall Flume W = 0.75'
  - ~40' downstream of headgate
  - small amount H_2O leaking under flume
  - staff plate left side h = 0.26'
    - → gravel build up left side ∴ $h_{flowing} = 0.20'$
    - 0.06' height of gravel build up at staff
  - right side h = 0.15', clean bottom (i.e. no gravel)
  - right side high rise 0.65' : run 0.06'
  - front to back almost level

11:08 GPS Point: HawxhurstCrObs003
- Diversion structure, headgate left bank

11:09 Pic 158 from right bank looking at Div structure

Hawxhurst Creek (cont'd)
11:32 GPS Point: Hawxhurst Cr Obs 004
- 10 ~~feet~~ feet downstream of confluence East & West Hawxhurst Creeks
11:33 Pic 159 from ds looking at confluence E&W Hawxhurst Creeks, right picture is East and left picture is West
11:34 Pictures 160-161 Panorama same as above
11:35 Video 162 same as above

West Hawxhurst Creek
12:01 GPS Point: Hawxhurst Cr Obs 005
- hiked up from confluence, whole way step pool environment with heavy veg up to banks
- 12:01 Pic 163 from GPS looking downstream

12:46 GPS Point: Hawhurst Cr Obs 006
- step pool environment with heavy veg and volcanic boulder/cobble bed
- 12:48 Pic 164 from gps looking upstream
- 12:48 Pic 165 from gps looking downstream

13:01 GPS Point: WHAWXALT
- West Hawxhurst Creek discharge measurement
- See page 3 for notes
- 13:05 Pic 166 x-section from right edge
- 13:05 Pic 167 x-section from downstream

East Hawxhurst Creek
14:49 GPS Point: EHAWXALT
- East Hawxhurst discharge measurement
- See page 5 for notes
- 14:53 Pic 168 from ds looking at X-section
- 14:54 Pic 169 from right bank at X-section
- 14:54 Pic 170 from gps looking downstream

Page 3 of 6	State of Colorado	Meas. No.: 001
YYYY: 2015	**Colorado Water Conservation Board**	Division: 5
MM-DD: 06-23	ADV Discharge Measurement Notes	District: 72

Station Name: WHAWXALT

West Hawxhurst River, (Creek), Canal, Ditch

At, Near, (Above), Below Lower Terminus

Latitude: N 39°17' 46.20" Longitude: W 107°54' 38.83" NAD83

Party: Brian Epstein

Conditions

Weather: Mostly Sunny ~95°F

Wind Spd / Dir: 0 mph Water Temp:

X-Sec Desc: boulder, cobble, sand bed, dramatic changes in bed

Flow Conds: slightly turbulent because U.S. plunge

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

Time:

Weighted MGH

GH Corr.

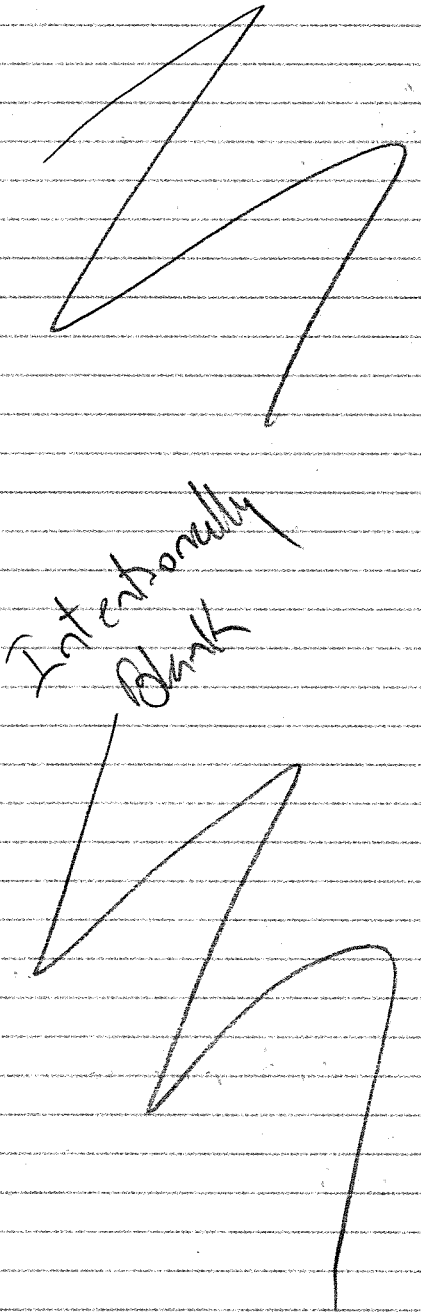
Correct MGH

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:	WHAWXALT.001		
Meas Type:	(Wading) / Boat / Bridge / Cableway			Method:	0.6
	N/A	ft. or mi / upstream or downstream of gage			
Start Edge:	REW 6.7'	End Edge:	LEW 1.3'	Total Width:	5.4'
Start Time:	13:28	End Time:	13:54		
Discharge:	6.90	Unsertainty:	4.0	# Stations:	18
Mean v:	1.801	Width	5.40	Mean d:	0.70
Max v:	3.007	Area:	3.776	Max d:	1.15
Mean SNR:	47.4	σv:	0.106	Mean Temp:	59.1

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

Remarks:



Page 5 of 6	State of Colorado	Meas. No.: 001
YYYY: 2025	**Colorado Water Conservation Board**	Division: 5
MM-DD: 06-23	ADV Discharge Measurement Notes	District: 72

Station Name: EHAWXALT

East Hawxhurst — River, (Creek), Canal, Ditch

At, Near, (Above), Below — Lower Terminus

Latitude: N 39° 17.5380" Longitude: W 107° 54.5664" NDDS

Party: Brian Epstein

Conditions

Weather: high cloudcover ~80°F

Wind Spd / Dir: 0mph — Water Temp:

X-Sec Desc: sandy bed

Flow Conds: bowled causes eddy right side

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

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:	EHAWXALT.001		
Meas Type:	(Wading) / Boat / Bridge / Cableway			Method:	0.6
	5.6	N/A	ft. or mi / upstream or downstream of gage		
Start Edge:	REW 6.6	End Edge:	LEW 10.6	Total Width:	5.0
Start Time:	15:05	End Time:	15:26		
Discharge:	6.372	Unsertainty:	4.2	# Stations:	17
Mean v:	2.021	Width	5.002	Mean d:	0.63
Max v:	3.515	Area:	3.153	Max d:	1.10
Mean SNR:	44.5	σv:	0.081	Mean Temp:	57.3

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

Remarks: