DRAFT RECOMMENDATION – SUBJECT TO CHANGE

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 instream flow water rights on Coyote Wash, located in Water Division 4.

Location and Land Status. Coyote Wash originates in Lisbon Valley in Utah. It flows across the Utah-Colorado border and then into the Dolores River approximately six miles southwest of Bedrock, CO. This recommendation covers the stream reach beginning at the Utah border and extends downstream to confluence with the Dolores River. This stream reach covers a distance of approximately 10.5 miles. BLM manages the entire stream reach, which is located within the Dolores River Wilderness Study Area.

Biological Summary. Coyote Wash is a warm-water, low to moderate-gradient stream in a narrow canyon less than 0.25 mile wide. The stream is typically wide and shallow, with limited vegetative cover. Substrate size is highly variable, ranging from sand to 3-foot diameter boulders. Bank stability is generally good because the stream is confined in most locations by bedrock.

Fishery surveys indicate that Coyote Wash supports sand shiners, fathead minnows, and red shiners. One survey documented use of Coyote Wash by roundtail chub, but native species have not been consistently found in the creek. Intensive macroinvertebrate surveys have not been performed, but spot surveys have documented abundant midges, craneflies, damselflies, and mayflies. Surveys have also documented use of Coyote Wash by red spotted toads and Woodhouse's toads.

Very high flow events driven by thunderstorms limit the extent and vigor of the riparian community. The riparian community is comprised of coyote willow, giant reeds, bulrushes, Baltic rush, sedges, Fremont cottonwood, reed grass, and tamarisk.

R2Cross Analysis. BLM collected the following R2Cross data from Coyote Wash:

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)
05/12/2010 #1	1.12 cfs	15.7 feet	1.65 cfs	2.19 cfs
05/12/2010 #2	1.04 cfs	21.1 feet	2.41 cfs	Out of confidence interval

Averages: 2.03 cfs 2.19 cfs

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

> 2.20 cubic feet per second is recommended for the high temperature period from March 1 through August 31. This recommendation is driven by the average velocity criteria. This creek experiences consistently low flows during fall and winter, so it is important to protect as much physical habitat as possible during the limited time when snowmelt runoff flows and monsoonal flows are available. This flow rate should also help maintain water in the rooting zone for the riparian community associated with this creek.
>
> 0.8 cubic feet per second is recommended for the base flow period between September 1 and February 28. This flow rate doesn't meet any of the instream flow criteria, but it does reflect limited water availability in this watershed. This flow rate should provide sufficient flow to prevent pools from freezing during the winter. It should also provide for connectivity between the limited physical habitat locations that are available during the low flow period.

Water Availability. Coyote Gulch has never been gaged. BLM reviewed all of the historic stream flow gages in the region, and none are located in watersheds with similar characteristics or similar timing of flow to Coyote Wash. As an alternative, BLM recommends consulting the StreamStats package developed jointly between the U.S. Geological Survey and the CWCB.

BLM is not aware of any ditches within the proposed intream flow reach. Upstream water rights in Utah are comprised primarily of spring developments, wells, and reservoirs constructed for livestock watering purposes. Several wells have been constructed to service a mining operation in Lisbon Valley. The upper portion of East Coyote Wash in Utah receives irrigation return flows of water imported to the Coyote Wash watershed from creeks that drain the south slope of the La Sal Mountains. Some irrigators have constructed wells to divert groundwater return flows in East Coyote Wash.

Relationship to Land Management Plans. BLM manages Coyote Wash as part of the Dolores River Wilderness Study. BLM's management mandate is to maintain primitive and undeveloped conditions within the study area. As such, BLM is not authorized to approve water developments within the study area that would deplete stream flows. However, groundwater and surface water development in landscapes adjacent to the wilderness study area have the potential to deplete flow rates in Coyote Wash. BLM is authorized to take actions that are designed to maintain and improve the wilderness values associated with the area. Appropriation of an instream flow water right would assist BLM in long-term management of riparian values, aquatic habitat, and amphibian values. BLM notes that this recommendation is based upon present management direction for the Dolores Wilderness Study Area. If the area is ultimately

designated by Congress as wilderness, BLM will submit a recommendation for an increased instream flow appropriation designed to fulfill wilderness management standards.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in February 2017. 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,

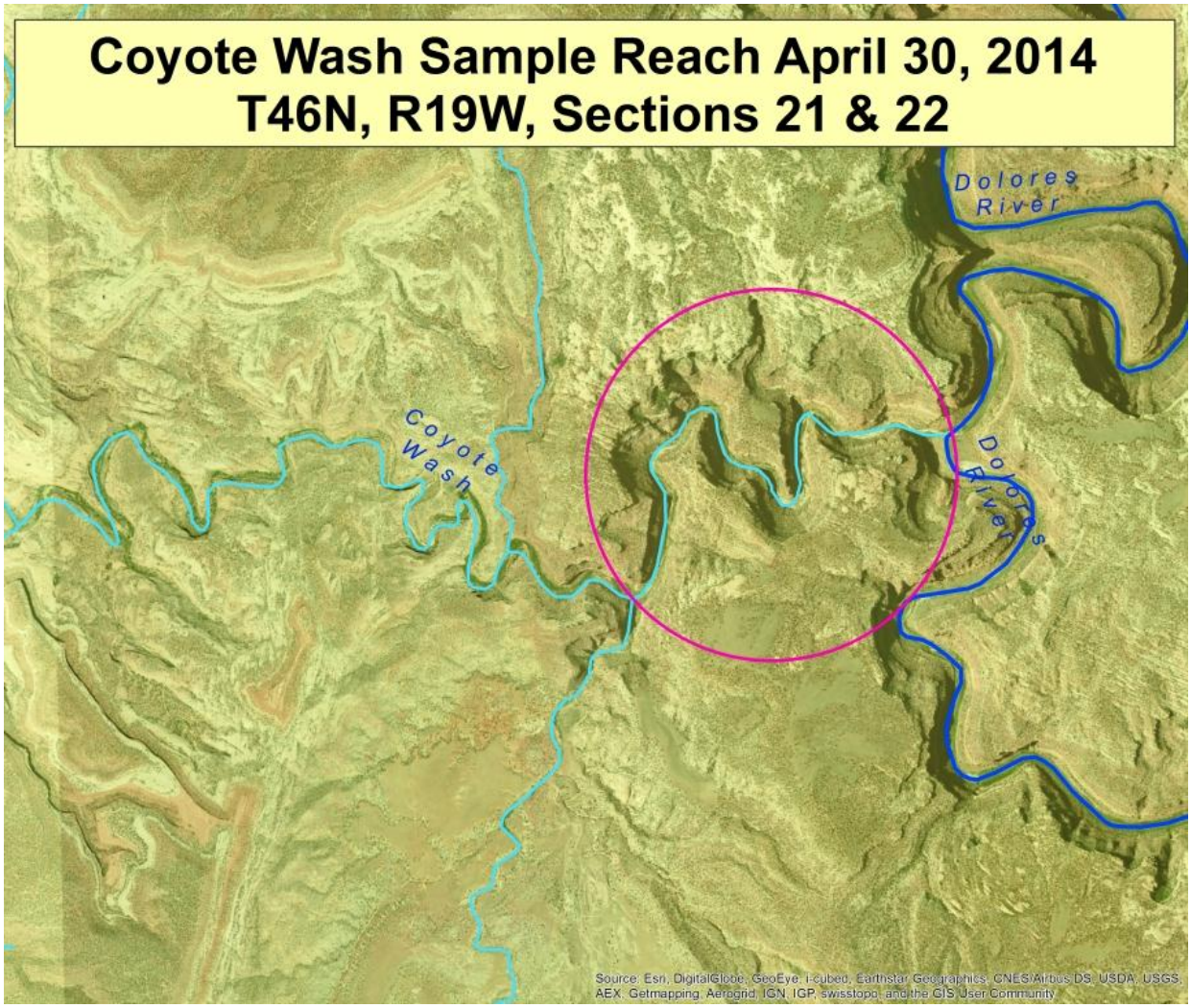
Brian St. George
Deputy State Director
Resources and Fire

Cc: Connie Clementson, Tres Rios FO
Nate West, Tres Rios FO
Russ Japuntich, Southwest District

Tres Rios Field Office Stream Surveys
April 2014

Coyote Wash- Water Code #39374

Coyote Wash, located in remote southwestern Colorado, on BLM lands managed by the Tres Rios Field Office, was sampled on April 30, 2014 to determine fishery status and species composition. Sampling was done earlier in the year compared to efforts conducted in 2009 in hopes of finding some adult native fish moving up out of the Dolores River. A one-pass sampling effort was completed. Sampling was conducted via backpack electroshocker. Personnel present were Tom Fresques, Mike Schmidt and his crew, BLM.



Coyote Wash

Coyote Wash

Near Confluence with Dolores River

Discussion:

Similar as back in 2009, the fishery consists primarily of nonnative sand shiners, fathead minnows, and red shiners. A few native speckled dace were also collected. Although no target species (bluehead sucker, flannelmouth sucker, roundtail chub) were collected as compared to 2009 when one small roundtail chub was collected.

Despite sampling earlier in the year, it was apparent based on flows that we missed the spring peak runoff flows. The watershed is relatively low elevation as the stream begins in Utah on the slopes of the La Sal Mountains. It appears peak spring flows likely occur in March of most years. Other large flow events appear to be associated with summer monsoonal thunderstorm activity.

Coyote Wash is a small desert stream with limited flow. Substrates are primarily sand with larger rock and some gravel. The stream experiences very high flow events during periodic summer thunderstorm activity. Despite the low flows, some large, deep residual pools persist in the tight canyon areas. These pools are too big to effectively sample with electricity.

Riparian vegetation consisted primarily of coyote willow, rushes, sedges, Freemont cottonwood, reed grass, tamarisk, knapweed, cheatgrass, and foxtail. Midges, craneflies, damselflies and mayflies were present and abundant.

Recommendations:

- Consider sampling in March under potentially higher flows to try and detect any 3 Species use by spawning adult fish

- Consider working with CPW to set nets or conduct seine hauls in the large residual pools as a more effective sampling method

- Consider weed control to limit the spread of tamarisk and knapweed

- Periodically monitor stream and riparian habitats

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Coyote Wash						CROSS-SECTION NO.: 2
CROSS-SECTION LOCATION: Approx. 1 mile upstream from conf. with Dolores River						
DATE: 5-12-10	OBSERVERS: R. Smith, J. Vanderbilt					
LEGAL DESCRIPTION	¼ SECTION: NW	SECTION: 22	TOWNSHIP: 46 (N)/S	RANGE: 19 E/(W)	PM: N.M.	
COUNTY: Montrose	WATERSHED: Dolores	WATER DIVISION: 7	DOW WATER CODE: 39374			
MAP(S): USGS: Anderson Mesa 7.5'						
USFS:						

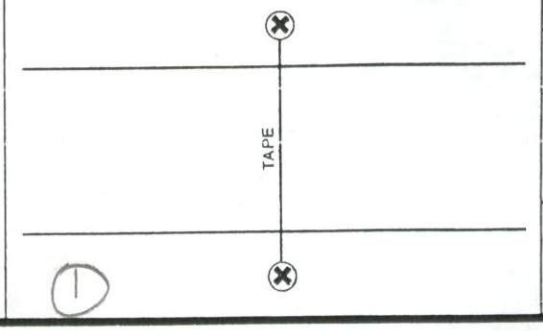
SUPPLEMENTAL DATA

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: sand to 6" cobbles	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
(X) Tape @ Stake LB	0.0	surveyed
(X) Tape @ Stake RB	0.0	surveyed
(1) WS @ Tape LB/RB	0.0	4.50 / 4.49
(2) WS Upstream	11.0'	4.45
(3) WS Downstream	11.0'	4.70
SLOPE	0.25 / 22.0 = .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
see previous survey																	

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

COMMENTS

TDS = >2000
Ph = 8.3
Temp = 13°C

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Coyote Wash	CROSS-SECTION NO.: 2	DATE: 5-12-10	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME: 12:05

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		2.58								
G	0.4		3.30								
	1.0		4.10								
W	1.5		4.50								
	2.0		4.60	.10				0.59			
	2.5		4.60	.10				0.25			
	3.0		4.60	.10				0.61			
	3.5		4.65	.15				0.55			
	4.0		4.7	.20				0.70			
	4.5		4.7	.20				0.66			
	5.0		4.7	.20				1.21			
	5.5		4.7	.20				0.41			
	6.0		4.8	.30				1.14			
	6.5		4.7	.20				1.05			
	7.0		4.65	.15				0.59			
	7.5		4.6	.10				0.19			
	8.0		4.6	.10				1.13			
	8.5		4.7	.20				0.66			
	9.0		4.6	.10				1.34			
	9.5		4.6	.10				0.35			
	10.0		4.65	.15				0.34			
	10.5		4.65	.15				0.51			
	11.0		4.6	.10				0.65			
	11.5		4.55	.05				Ø			
	12.0		4.55	.05				Ø			
W	12.3		4.50								
	20.5		4.21								
G	21.5		3.25								
RS	22.0		2.70								
TOTALS:											

End of Measurement	Time: 12:30	Gage Reading: _____ ft	CALCULATIONS PERFORMED BY:	CALCULATIONS CHECKED BY:

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: Coyote Wash						CROSS-SECTION NO.: 1
CROSS-SECTION LOCATION: Approx. 1 mile upstream from confluence with Dolores River						
DATE: 5-12-10	OBSERVERS: R. Smith, J. Vanderbilt					
LEGAL DESCRIPTION	¼ SECTION: NW	SECTION: 22	TOWNSHIP: 46 (N)/S	RANGE: 19 E/(W)	PM: N.M.	
COUNTY: Montrose	WATERSHED: Dolores	WATER DIVISION: 7	DOW WATER CODE: 39374			
MAP(S): USGS: Anderson Mesa 7.5'	GPS 12S 678399 4233327					
USFS:						

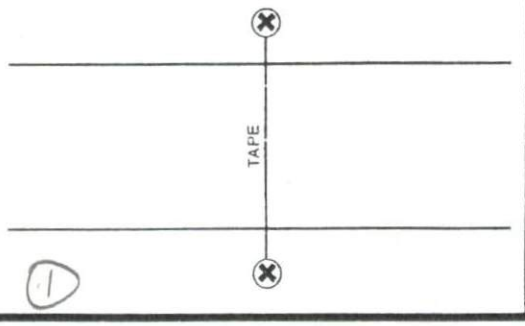
SUPPLEMENTAL DATA

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: sand to 6" cobbles	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
(X) Tape @ Stake LB	0.0	surveyed
(X) Tape @ Stake RB	0.0	surveyed
(1) WS @ Tape LB/RB	0.0	5.30/5.28
(2) WS Upstream	11.0	5.25
(3) WS Downstream	11.0	5.38
SLOPE	0.13/22.0 = .006	

SKETCH



AQUATIC SAMPLING SUMMARY

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

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

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

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

COMMENTS

TDS = >2000 µs
Temp = 13°C
pH = 8.3

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: Coyote Wash	CROSS-SECTION NO: 1	DATE: 5-12-10	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: _____ ft	TIME: 11:20 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)
LS	0.0		3.18								
G	1.1		3.85								
	2.0		5.10								
W	2.5		5.30								
	2.9		5.40	.1				.01			
	3.3		5.40	.1				.10			
	3.7		5.40	.1				.13			
	4.1		5.40	.1				.54			
	4.5		5.50	.2				.53			
	4.9		5.45	.15				.62			
	5.3		5.50	.20				.85			
	5.7		5.60	.30				.97			
	6.1		5.60	.30				1.08			
	6.5		5.55	.25				1.16			
	6.9		5.60	.30				.96			
	7.3		5.60	.30				1.22			
	7.7		5.60	.30				1.05			
	8.1		5.55	.25				1.00			
	8.5		5.50	.20				.78			
	8.9		5.40	.10				.38			
	9.3		5.40	.10				.27			
	9.7		5.35	.05				.20			
	10.1		5.35	.05				.18			
	10.5		5.35	.05				.24			
W	11		5.30								
	15.3		4.73								
	16.0		4.02								
G	17.5		3.71								
	18.9		3.40								
RS	25.0		2.60								
TOTALS:											

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

Data Input & Proofing

STREAM NAME:	Coyote Wash
XS LOCATION:	Approx 1 mile u/s fr Dolores River
XS NUMBER:	2
DATE:	5/12/2010
OBSERVERS:	R. Smith, J. Vanderbilt
1/4 SEC:	NW
SECTION:	22
TWP:	46N
RANGE:	19W
PM:	New Mexico
COUNTY:	Montrose
WATERSHED:	Dolores River
DIVISION:	7
DOW CODE:	39374
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.011 ft / ft

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

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

Total Data Points = 29

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
	LS	0.00	2.58			0.00	0.00	0.00
1	G	0.40	3.30			0.00	0.00	0.00
		1.00	4.10			0.00	0.00	0.00
	W	1.50	4.50	0.00	0.00	0.00	0.00	0.00
		2.00	4.60	0.10	0.59	0.05	0.03	4.50
		2.50	4.60	0.10	0.25	0.05	0.01	4.50
		3.00	4.60	0.10	0.61	0.05	0.03	4.50
		3.50	4.65	0.15	0.55	0.08	0.04	4.50
		4.00	4.70	0.20	0.70	0.10	0.07	4.50
		4.50	4.70	0.20	0.66	0.10	0.07	4.50
		5.00	4.70	0.20	1.21	0.10	0.12	4.50
		5.50	4.70	0.20	0.41	0.10	0.04	4.50
		6.00	4.80	0.30	1.14	0.15	0.17	4.50
		6.50	4.70	0.20	1.05	0.10	0.11	4.50
		7.00	4.65	0.15	0.59	0.08	0.04	4.50
		7.50	4.60	0.10	0.19	0.05	0.01	4.50
		8.00	4.60	0.10	1.13	0.05	0.06	4.50
		8.50	4.70	0.20	0.66	0.10	0.07	4.50
		9.00	4.60	0.10	1.34	0.05	0.07	4.50
		9.50	4.60	0.10	0.35	0.05	0.02	4.50
		10.00	4.65	0.15	0.34	0.08	0.03	4.50
		10.50	4.65	0.15	0.51	0.08	0.04	4.50
		11.00	4.60	0.10	0.65	0.05	0.03	4.50
		11.50	4.55	0.05	0.00	0.03	0.00	4.50
		12.00	4.55	0.05	0.00	0.02	0.00	4.50
	W	12.30	4.50	0.00	0.00	0.00	0.00	0.00
		20.50	4.21			0.00	0.00	0.00
1	G	21.50	3.25			0.00	0.00	0.00
	RS	22.00	2.70			0.00	0.00	0.00
					Totals	1.50	1.04	

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

LOCATION INFORMATION

STREAM NAME:	Coyote Wash
XS LOCATION:	Approx 1 mile u/s fr Dolores River
XS NUMBER:	2
DATE:	12-May-10
OBSERVERS:	R. Smith, J. Vanderbilt
1/4 SEC:	NW
SECTION:	22
TWP:	46N
RANGE:	19W
PM:	New Mexico
COUNTY:	Montrose
WATERSHED:	Dolores River
DIVISION:	7
DOW CODE:	39374
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: Coyote Wash
XS LOCATION: Approx 1 mile u/s fr Dolores River
XS NUMBER: 2

DATA POINTS= 29

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	LS	0.00	2.58			0.00		0.00	0.00	0.0%
1	G	0.40	3.30			0.00		0.00	0.00	0.0%
		1.00	4.10			0.00		0.00	0.00	0.0%
	W	1.50	4.50	0.00	0.00	0.00		0.00	0.00	0.0%
		2.00	4.60	0.10	0.59	0.51	0.10	0.05	0.03	2.8%
		2.50	4.60	0.10	0.25	0.50	0.10	0.05	0.01	1.2%
		3.00	4.60	0.10	0.61	0.50	0.10	0.05	0.03	2.9%
		3.50	4.65	0.15	0.55	0.50	0.15	0.08	0.04	3.9%
		4.00	4.70	0.20	0.70	0.50	0.20	0.10	0.07	6.7%
		4.50	4.70	0.20	0.66	0.50	0.20	0.10	0.07	6.3%
		5.00	4.70	0.20	1.21	0.50	0.20	0.10	0.12	11.6%
		5.50	4.70	0.20	0.41	0.50	0.20	0.10	0.04	3.9%
		6.00	4.80	0.30	1.14	0.51	0.30	0.15	0.17	16.4%
		6.50	4.70	0.20	1.05	0.51	0.20	0.10	0.11	10.1%
		7.00	4.65	0.15	0.59	0.50	0.15	0.08	0.04	4.2%
		7.50	4.60	0.10	0.19	0.50	0.10	0.05	0.01	0.9%
		8.00	4.60	0.10	1.13	0.50	0.10	0.05	0.06	5.4%
		8.50	4.70	0.20	0.66	0.51	0.20	0.10	0.07	6.3%
		9.00	4.60	0.10	1.34	0.51	0.10	0.05	0.07	6.4%
		9.50	4.60	0.10	0.35	0.50	0.10	0.05	0.02	1.7%
		10.00	4.65	0.15	0.34	0.50	0.15	0.08	0.03	2.4%
		10.50	4.65	0.15	0.51	0.50	0.15	0.08	0.04	3.7%
		11.00	4.60	0.10	0.65	0.50	0.10	0.05	0.03	3.1%
		11.50	4.55	0.05	0.00	0.50	0.05	0.03	0.00	0.0%
		12.00	4.55	0.05	0.00	0.50	0.05	0.02	0.00	0.0%
	W	12.30	4.50	0.00	0.00	0.30		0.00	0.00	0.0%
		20.50	4.21			0.00		0.00	0.00	0.0%
1	G	21.50	3.25			0.00		0.00	0.00	0.0%
	RS	22.00	2.70			0.00		0.00	0.00	0.0%
	TOTALS ----------					10.87	0.3 (Max.)	1.50	1.04	100.0%

Manning's n = 0.0594
Hydraulic Radius= 0.13752053

STREAM NAME: Coyote Wash
XS LOCATION: Approx 1 mile u/s fr Dolores River
XS NUMBER: 2

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.50	1.50	0.0%
4.25	1.50	5.12	242.3%
4.27	1.50	4.76	218.4%
4.29	1.50	4.41	195.3%
4.31	1.50	4.08	172.9%
4.33	1.50	3.76	151.3%
4.35	1.50	3.45	130.6%
4.37	1.50	3.15	110.6%
4.39	1.50	2.86	91.4%
4.41	1.50	2.59	73.0%
4.43	1.50	2.32	55.4%
4.45	1.50	2.07	38.6%
4.46	1.50	1.95	30.5%
4.47	1.50	1.83	22.6%
4.48	1.50	1.72	14.8%
4.49	1.50	1.60	7.3%
4.50	1.50	1.50	0.0%
4.51	1.50	1.39	-7.2%
4.52	1.50	1.28	-14.3%
4.53	1.50	1.18	-21.3%
4.54	1.50	1.07	-28.3%
4.55	1.50	0.97	-35.2%
4.57	1.50	0.78	-48.0%
4.59	1.50	0.59	-60.5%
4.61	1.50	0.43	-71.1%
4.63	1.50	0.31	-79.1%
4.65	1.50	0.21	-85.8%
4.67	1.50	0.14	-90.7%
4.69	1.50	0.08	-94.9%
4.71	1.50	0.04	-97.3%
4.73	1.50	0.02	-98.4%
4.75	1.50	0.01	-99.2%

WATERLINE AT ZERO
AREA ERROR = 4.500

STREAM NAME: Coyote Wash
XS LOCATION: Approx 1 mile u/s fr Dolores River
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	3.30	21.05	1.15	1.50	24.28	22.03	100.0%	1.10	67.94	2.80
	3.50	20.69	0.97	1.30	20.10	21.49	97.6%	0.94	50.44	2.51
	3.55	20.60	0.93	1.25	19.07	21.36	96.9%	0.89	46.39	2.43
	3.60	20.51	0.88	1.20	18.04	21.22	96.3%	0.85	42.48	2.35
	3.65	20.42	0.83	1.15	17.02	21.09	95.7%	0.81	38.70	2.27
	3.70	20.33	0.79	1.10	16.00	20.95	95.1%	0.76	35.07	2.19
	3.75	20.24	0.74	1.05	14.99	20.82	94.5%	0.72	31.58	2.11
	3.80	20.15	0.69	1.00	13.98	20.68	93.9%	0.68	28.23	2.02
	3.85	20.06	0.65	0.95	12.97	20.55	93.3%	0.63	25.04	1.93
	3.90	19.97	0.60	0.90	11.97	20.41	92.7%	0.59	22.00	1.84
	3.95	19.88	0.55	0.85	10.97	20.28	92.1%	0.54	19.12	1.74
	4.00	19.79	0.50	0.80	9.98	20.14	91.4%	0.50	16.40	1.64
	4.05	19.70	0.46	0.75	9.00	20.01	90.8%	0.45	13.85	1.54
	4.10	19.61	0.41	0.70	8.01	19.88	90.2%	0.40	11.47	1.43
	4.15	19.50	0.36	0.65	7.03	19.72	89.5%	0.36	9.28	1.32
	4.20	19.39	0.31	0.60	6.06	19.57	88.8%	0.31	7.28	1.20
	4.25	18.18	0.28	0.55	5.12	18.34	83.3%	0.28	5.73	1.12
	4.30	16.71	0.25	0.50	4.25	16.85	76.5%	0.25	4.44	1.05
	4.35	15.23	0.23	0.45	3.45	15.36	69.7%	0.22	3.34	0.97
	4.40	13.75	0.20	0.40	2.72	13.86	62.9%	0.20	2.41	0.89
	4.45	12.28	0.17	0.35	2.07	12.37	56.1%	0.17	1.65	0.80
WL	4.50	10.80	0.14	0.30	1.49	10.87	49.3%	0.14	1.04	0.70
	4.55	9.75	0.10	0.25	0.97	9.81	44.5%	0.10	0.54	0.56
	4.60	7.00	0.07	0.20	0.50	7.05	32.0%	0.07	0.22	0.45
	4.65	4.00	0.05	0.15	0.21	4.03	18.3%	0.05	0.08	0.37
	4.70	1.00	0.05	0.10	0.05	1.02	4.6%	0.05	0.02	0.35
	4.75	0.50	0.03	0.05	0.01	0.51	2.3%	0.02	0.00	0.22
	4.80	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: Coyote Wash
XS LOCATION: Approx 1 mile u/s fr Dolores River
XS NUMBER: 2

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.04	cfs
CALCULATED FLOW (Qc)=	1.04	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	4.50	ft
CALCULATED WATERLINE (WLc)=	4.50	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=	0.70	ft/sec
MANNING'S N=	0.059	
SLOPE=	0.011	ft/ft
.4 * Qm =	0.4	cfs
2.5 * Qm=	2.6	cfs

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

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

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

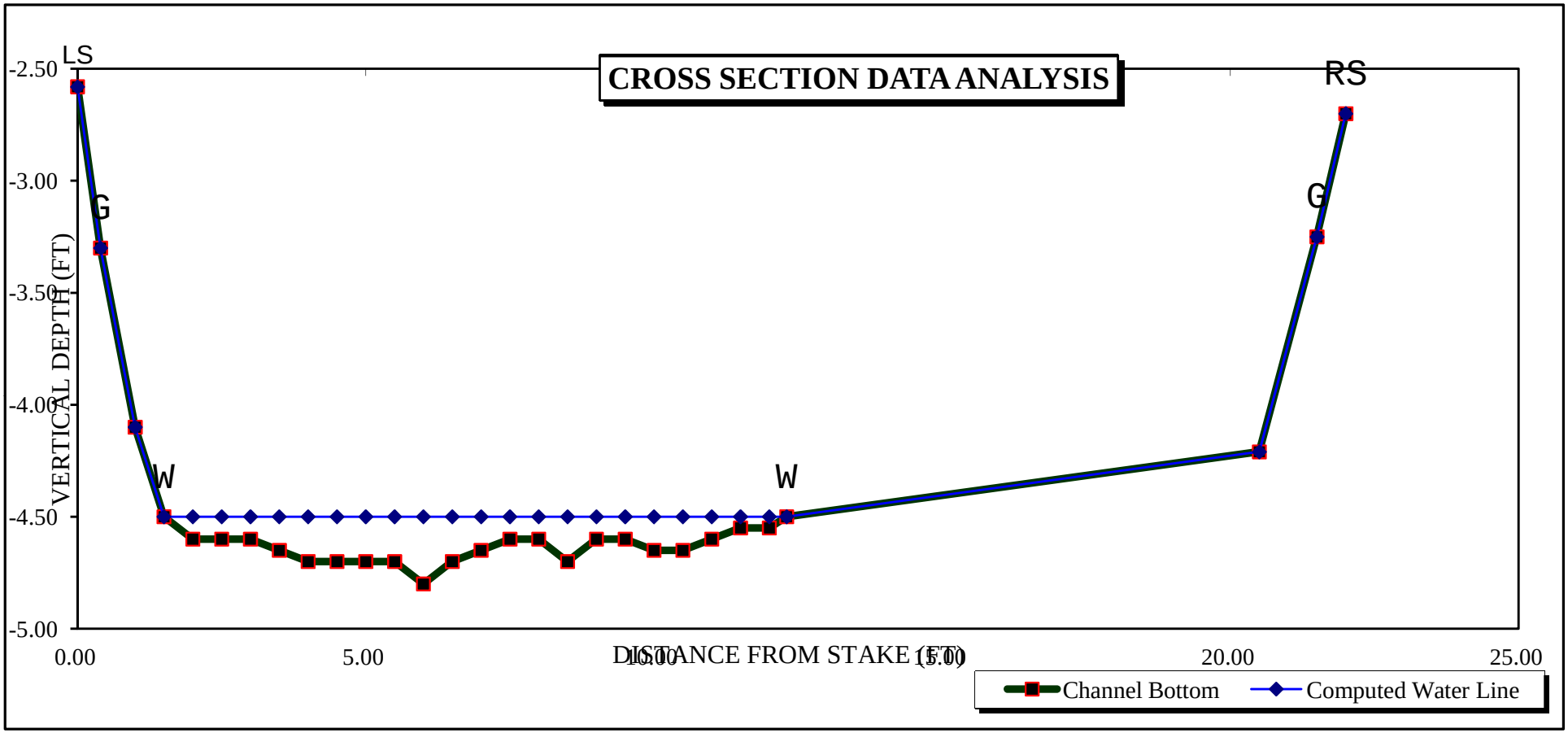
RECOMMENDATION BY: ……………………………………………… AGENCY……………………………………………… DATE:………………………………

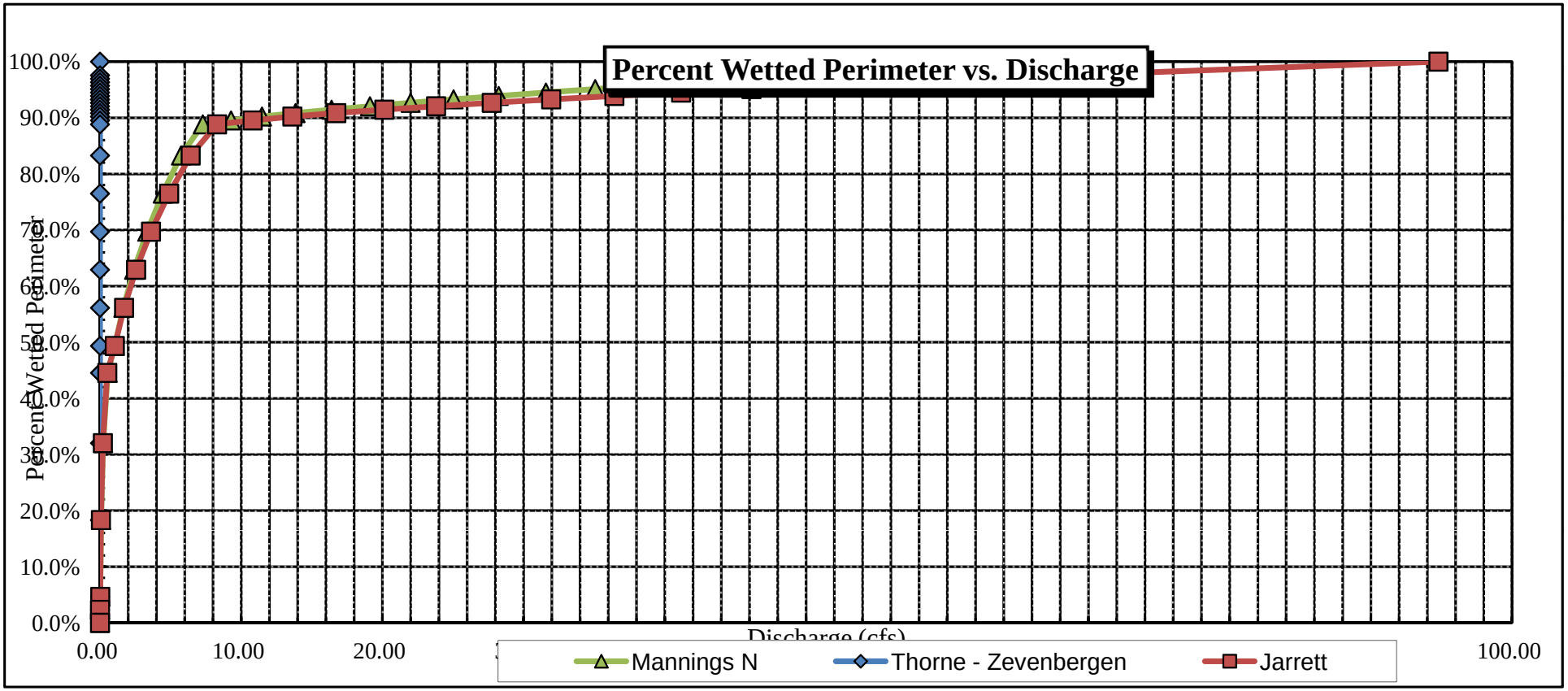
CWCB REVIEW BY: ……………………………………………………………………………………………………… DATE:………………………………

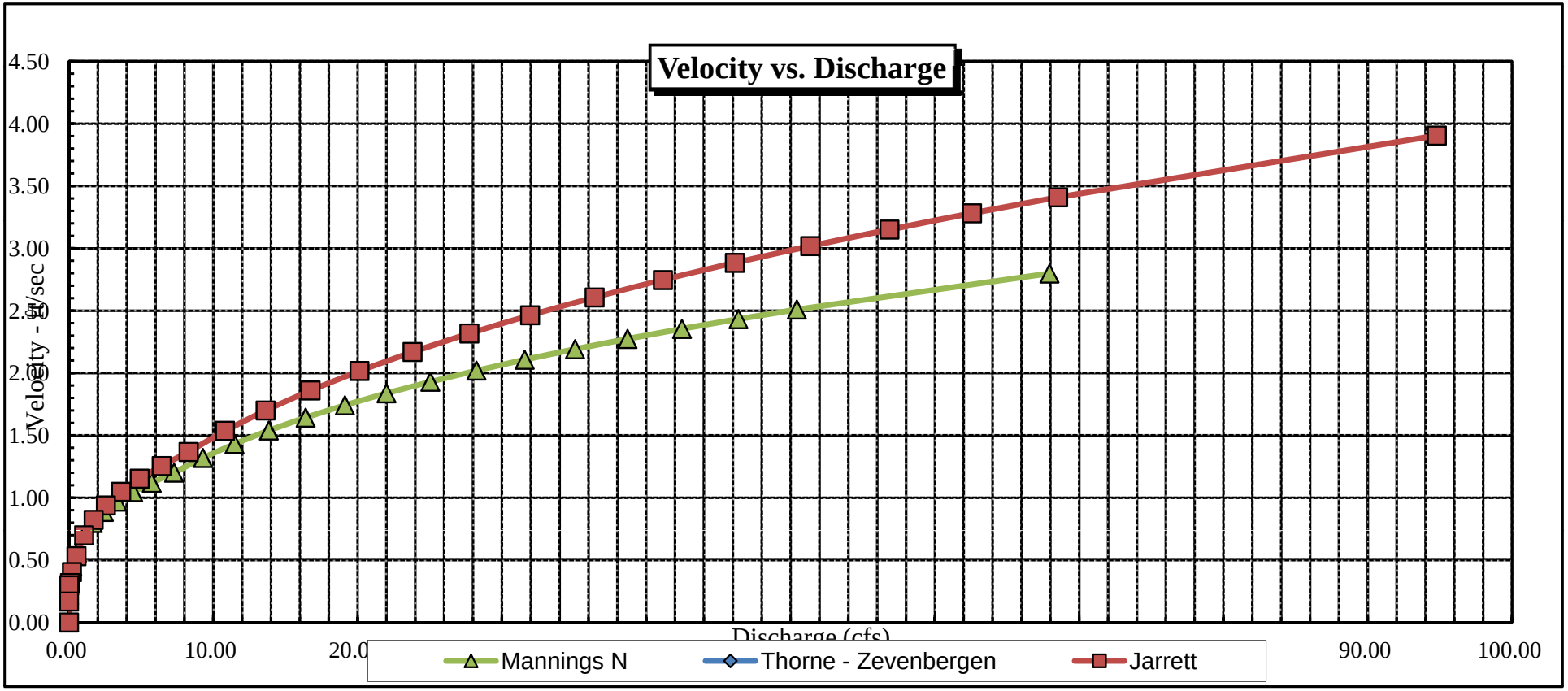
STREAM NAME: Coyote Wash
XS LOCATION: Approx 1 mile u/s fr Dolores River
XS NUMBER: 2 Jarrett Variable Manning's n Correction Applied

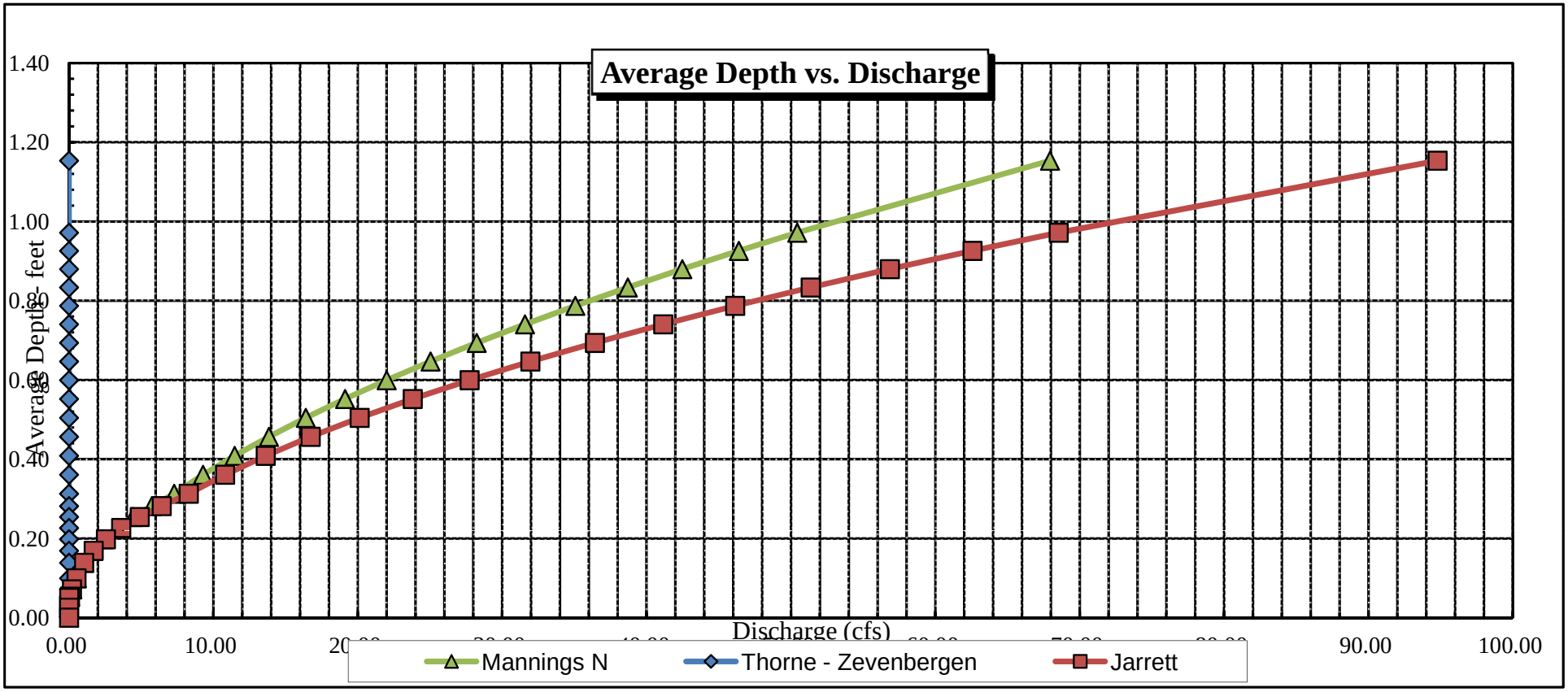
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

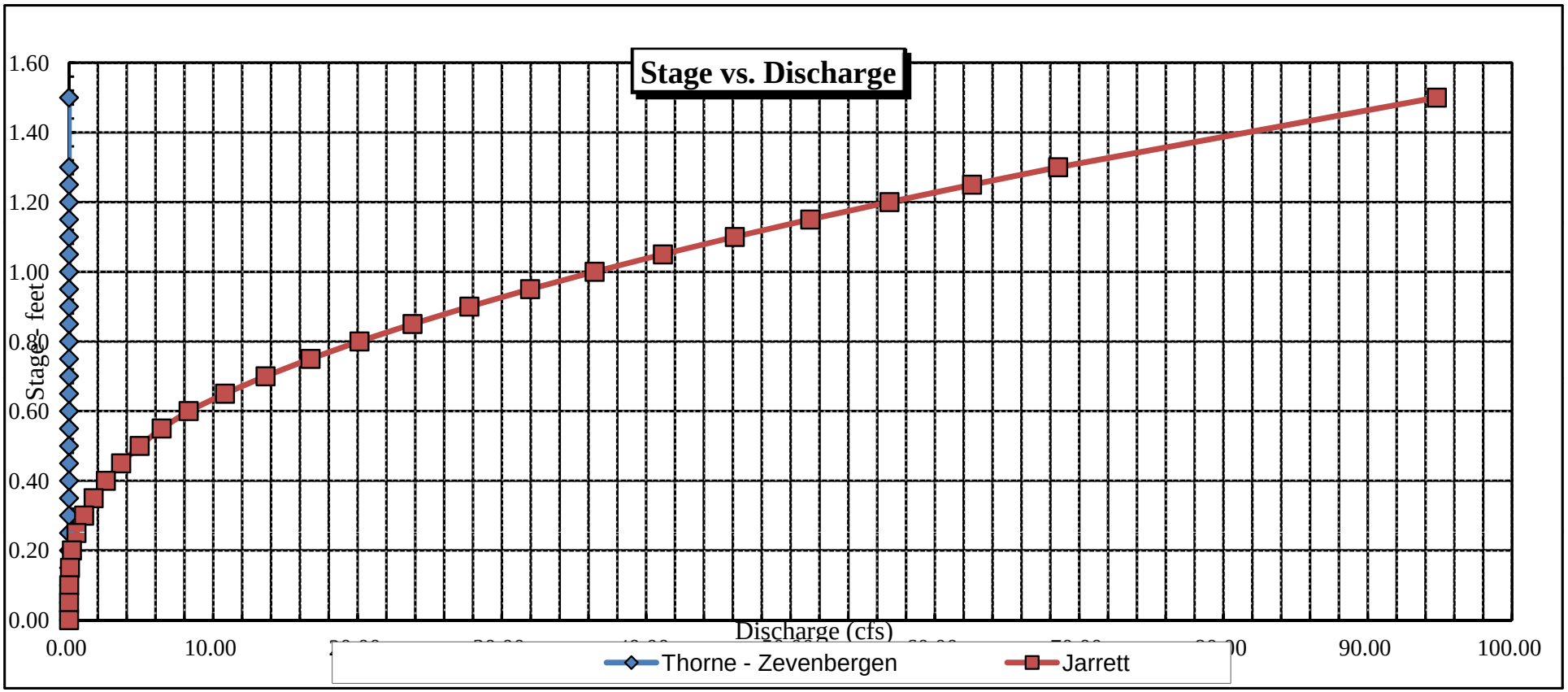
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	3.30	21.05	1.15	1.50	24.28	22.03	100.0%	1.10	94.79	3.90
	3.50	20.69	0.97	1.30	20.10	21.49	97.6%	0.94	68.55	3.41
	3.55	20.60	0.93	1.25	19.07	21.36	96.9%	0.89	62.58	3.28
	3.60	20.51	0.88	1.20	18.04	21.22	96.3%	0.85	56.85	3.15
	3.65	20.42	0.83	1.15	17.02	21.09	95.7%	0.81	51.37	3.02
	3.70	20.33	0.79	1.10	16.00	20.95	95.1%	0.76	46.14	2.88
	3.75	20.24	0.74	1.05	14.99	20.82	94.5%	0.72	41.15	2.75
	3.80	20.15	0.69	1.00	13.98	20.68	93.9%	0.68	36.42	2.61
	3.85	20.06	0.65	0.95	12.97	20.55	93.3%	0.63	31.95	2.46
	3.90	19.97	0.60	0.90	11.97	20.41	92.7%	0.59	27.75	2.32
	3.95	19.88	0.55	0.85	10.97	20.28	92.1%	0.54	23.80	2.17
	4.00	19.79	0.50	0.80	9.98	20.14	91.4%	0.50	20.13	2.02
	4.05	19.70	0.46	0.75	9.00	20.01	90.8%	0.45	16.74	1.86
	4.10	19.61	0.41	0.70	8.01	19.88	90.2%	0.40	13.62	1.70
	4.15	19.50	0.36	0.65	7.03	19.72	89.5%	0.36	10.81	1.54
	4.20	19.39	0.31	0.60	6.06	19.57	88.8%	0.31	8.29	1.37
	4.25	18.18	0.28	0.55	5.12	18.34	83.3%	0.28	6.42	1.25
	4.30	16.71	0.25	0.50	4.25	16.85	76.5%	0.25	4.89	1.15
	4.35	15.23	0.23	0.45	3.45	15.36	69.7%	0.22	3.61	1.05
	4.40	13.75	0.20	0.40	2.72	13.86	62.9%	0.20	2.55	0.94
	4.45	12.28	0.17	0.35	2.07	12.37	56.1%	0.17	1.70	0.82
WL	4.50	10.80	0.14	0.30	1.49	10.87	49.3%	0.14	1.04	0.70
	4.55	9.75	0.10	0.25	0.97	9.81	44.5%	0.10	0.51	0.53
	4.60	7.00	0.07	0.20	0.50	7.05	32.0%	0.07	0.20	0.40
	4.65	4.00	0.05	0.15	0.21	4.03	18.3%	0.05	0.07	0.32
	4.70	1.00	0.05	0.10	0.05	1.02	4.6%	0.05	0.01	0.30
	4.75	0.50	0.03	0.05	0.01	0.51	2.3%	0.02	0.00	0.17
	4.80	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!


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


Percent Wetted Perimeter vs. Discharge
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Percent Wetted Perimeter
0.00
10.00
20.00
100.00
Mannings N
Thorne - Zevenbergen
Jarrett


Velocity vs. Discharge
Velocity - ft/sec
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
10.00
90.00
100.00
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
90.00
100.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


Stage vs. Discharge
Stage, feet
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
90.00
100.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

Data Input & Proofing

STREAM NAME:	Coyote Wash
XS LOCATION:	Approx. 1 mile upstream fr Dolores R.
XS NUMBER:	1
DATE:	5/12/2010
OBSERVERS:	R. Smith, J. Vanderbilt
1/4 SEC:	NW
SECTION:	22
TWP:	46N
RANGE:	19W
PM:	New Mexico
COUNTY:	Montrose
WATERSHED:	Dolores River
DIVISION:	7
DOW CODE:	39374
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.006 ft / ft

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

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

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
		Total Data Points = 30						
	LS	0.00	3.18			0.00	0.00	0.00
1	G	1.10	3.85			0.00	0.00	0.00
		2.00	5.10			0.00	0.00	0.00
	W	2.50	5.30	0.00	0.00	0.00	0.00	0.00
		2.90	5.40	0.10	0.01	0.04	0.00	5.30
		3.30	5.40	0.10	0.10	0.04	0.00	5.30
		3.70	5.40	0.10	0.13	0.04	0.01	5.30
		4.10	5.40	0.10	0.54	0.04	0.02	5.30
		4.50	5.50	0.20	0.53	0.08	0.04	5.30
		4.90	5.45	0.15	0.62	0.06	0.04	5.30
		5.30	5.50	0.20	0.85	0.08	0.07	5.30
		5.70	5.60	0.30	0.97	0.12	0.12	5.30
		6.10	5.60	0.30	1.08	0.12	0.13	5.30
		6.50	5.55	0.25	1.16	0.10	0.12	5.30
		6.90	5.60	0.30	0.96	0.12	0.12	5.30
		7.30	5.60	0.30	1.22	0.12	0.15	5.30
		7.70	5.60	0.30	1.05	0.12	0.13	5.30
		8.10	5.55	0.25	1.00	0.10	0.10	5.30
		8.50	5.50	0.20	0.78	0.08	0.06	5.30
		8.90	5.40	0.10	0.38	0.04	0.02	5.30
		9.30	5.40	0.10	0.27	0.04	0.01	5.30
		9.70	5.35	0.05	0.20	0.02	0.00	5.30
		10.10	5.35	0.05	0.18	0.02	0.00	5.30
		10.50	5.35	0.00	0.24	0.00	0.00	0.00
	W	11.00	5.30			0.00	0.00	0.00
		15.30	4.73			0.00	0.00	0.00
		16.00	4.02			0.00	0.00	0.00
1	G	17.50	3.71			0.00	0.00	0.00
		18.90	3.40			0.00	0.00	0.00
					Totals	1.38	1.12	

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

LOCATION INFORMATION

STREAM NAME:	Coyote Wash
XS LOCATION:	Approx. 1 mile upstream fr Dolores R.
XS NUMBER:	1
DATE:	12-May-10
OBSERVERS:	R. Smith, J. Vanderbilt
1/4 SEC:	NW
SECTION:	22
TWP:	46N
RANGE:	19W
PM:	New Mexico
COUNTY:	Montrose
WATERSHED:	Dolores River
DIVISION:	7
DOW CODE:	39374
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:	0.006

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

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

STREAM NAME: Coyote Wash
XS LOCATION: Approx. 1 mile upstream fr Dolores R.
XS NUMBER: 1

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
LS	0.00	3.18			0.00		0.00	0.00	0.0%
1 G	1.10	3.85			0.00		0.00	0.00	0.0%
	2.00	5.10			0.00		0.00	0.00	0.0%
W	2.50	5.30	0.00	0.00	0.00		0.00	0.00	0.0%
	2.90	5.40	0.10	0.01	0.41	0.10	0.04	0.00	0.0%
	3.30	5.40	0.10	0.10	0.40	0.10	0.04	0.00	0.4%
	3.70	5.40	0.10	0.13	0.40	0.10	0.04	0.01	0.5%
	4.10	5.40	0.10	0.54	0.40	0.10	0.04	0.02	1.9%
	4.50	5.50	0.20	0.53	0.41	0.20	0.08	0.04	3.8%
	4.90	5.45	0.15	0.62	0.40	0.15	0.06	0.04	3.3%
	5.30	5.50	0.20	0.85	0.40	0.20	0.08	0.07	6.0%
	5.70	5.60	0.30	0.97	0.41	0.30	0.12	0.12	10.4%
	6.10	5.60	0.30	1.08	0.40	0.30	0.12	0.13	11.5%
	6.50	5.55	0.25	1.16	0.40	0.25	0.10	0.12	10.3%
	6.90	5.60	0.30	0.96	0.40	0.30	0.12	0.12	10.2%
	7.30	5.60	0.30	1.22	0.40	0.30	0.12	0.15	13.0%
	7.70	5.60	0.30	1.05	0.40	0.30	0.12	0.13	11.2%
	8.10	5.55	0.25	1.00	0.40	0.25	0.10	0.10	8.9%
	8.50	5.50	0.20	0.78	0.40	0.20	0.08	0.06	5.5%
	8.90	5.40	0.10	0.38	0.41	0.10	0.04	0.02	1.4%
	9.30	5.40	0.10	0.27	0.40	0.10	0.04	0.01	1.0%
	9.70	5.35	0.05	0.20	0.40	0.05	0.02	0.00	0.4%
	10.10	5.35	0.05	0.18	0.40	0.05	0.02	0.00	0.3%
	10.50	5.35	0.00	0.24	0.40		0.00	0.00	0.0%
W	11.00	5.30			0.00		0.00	0.00	0.0%
	15.30	4.73			0.00		0.00	0.00	0.0%
	16.00	4.02			0.00		0.00	0.00	0.0%
1 G	17.50	3.71			0.00		0.00	0.00	0.0%
	18.90	3.40			0.00		0.00	0.00	0.0%
RS	25.00	2.60			0.00		0.00	0.00	0.0%
TOTALS ----------					8.07	0.3 (Max.)	1.38	1.12	100.0%

Manning's n = 0.0435
Hydraulic Radius= 0.17098184

STREAM NAME: Coyote Wash
XS LOCATION: Approx. 1 mile upstream fr Dolores R.
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	1.38	1.19	-13.5%
5.08	1.38	3.57	158.6%
5.10	1.38	3.36	143.2%
5.12	1.38	3.15	128.0%
5.14	1.38	2.94	113.2%
5.16	1.38	2.74	98.6%
5.18	1.38	2.54	84.3%
5.20	1.38	2.35	70.3%
5.22	1.38	2.16	56.6%
5.24	1.38	1.98	43.2%
5.26	1.38	1.80	30.1%
5.28	1.38	1.62	17.3%
5.29	1.38	1.53	11.0%
5.30	1.38	1.45	4.7%
5.31	1.38	1.36	-1.4%
5.32	1.38	1.28	-7.5%
5.33	1.38	1.19	-13.5%
5.34	1.38	1.11	-19.3%
5.35	1.38	1.03	-25.1%
5.36	1.38	0.96	-30.4%
5.37	1.38	0.89	-35.4%
5.38	1.38	0.82	-40.3%
5.40	1.38	0.69	-49.8%
5.42	1.38	0.59	-57.3%
5.44	1.38	0.50	-64.0%
5.46	1.38	0.41	-70.4%
5.48	1.38	0.33	-76.3%
5.50	1.38	0.26	-81.4%
5.52	1.38	0.19	-86.0%
5.54	1.38	0.14	-90.2%
5.56	1.38	0.08	-94.0%
5.58	1.38	0.04	-97.2%

WATERLINE AT ZERO
AREA ERROR = 5.303

STREAM NAME: Coyote Wash
XS LOCATION: Approx. 1 mile upstream fr Dolores R.
XS NUMBER: 1 Constant Manning's n

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

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	3.85	15.72	1.30	1.75	20.41	16.83	100.0%	1.21	61.41	3.01
	4.30	14.30	0.96	1.30	13.71	15.03	89.3%	0.91	34.11	2.49
	4.35	14.21	0.91	1.25	13.00	14.90	88.6%	0.87	31.39	2.41
	4.40	14.12	0.87	1.20	12.29	14.77	87.8%	0.83	28.76	2.34
	4.45	14.04	0.83	1.15	11.59	14.64	87.0%	0.79	26.22	2.26
	4.50	13.95	0.78	1.10	10.89	14.50	86.2%	0.75	23.78	2.18
	4.55	13.87	0.73	1.05	10.19	14.37	85.4%	0.71	21.43	2.10
	4.60	13.78	0.69	1.00	9.50	14.24	84.6%	0.67	19.18	2.02
	4.65	13.70	0.64	0.95	8.81	14.11	83.9%	0.62	17.03	1.93
	4.70	13.61	0.60	0.90	8.13	13.98	83.1%	0.58	14.98	1.84
	4.75	13.38	0.56	0.85	7.45	13.71	81.4%	0.54	13.13	1.76
	4.80	12.97	0.52	0.80	6.79	13.26	78.8%	0.51	11.50	1.69
	4.85	12.55	0.49	0.75	6.16	12.82	76.2%	0.48	9.98	1.62
	4.90	12.14	0.46	0.70	5.54	12.38	73.6%	0.45	8.57	1.55
	4.95	11.73	0.42	0.65	4.94	11.94	70.9%	0.41	7.26	1.47
	5.00	11.31	0.39	0.60	4.37	11.49	68.3%	0.38	6.06	1.39
	5.05	10.90	0.35	0.55	3.81	11.05	65.7%	0.34	4.95	1.30
	5.10	10.48	0.31	0.50	3.28	10.61	63.0%	0.31	3.96	1.21
	5.15	9.98	0.28	0.45	2.76	10.09	60.0%	0.27	3.08	1.12
	5.20	9.48	0.24	0.40	2.28	9.58	56.9%	0.24	2.31	1.02
	5.25	8.98	0.20	0.35	1.82	9.06	53.8%	0.20	1.65	0.91
WL	5.30	8.46	0.16	0.30	1.38	8.54	50.7%	0.16	1.08	0.78
	5.35	6.97	0.14	0.25	0.98	7.03	41.8%	0.14	0.69	0.71
	5.40	4.78	0.14	0.20	0.65	4.83	28.7%	0.13	0.45	0.69
	5.45	4.34	0.10	0.15	0.42	4.38	26.0%	0.10	0.23	0.55
	5.50	3.17	0.07	0.10	0.23	3.19	19.0%	0.07	0.11	0.46
	5.55	2.53	0.03	0.05	0.09	2.54	15.1%	0.03	0.02	0.28

STREAM NAME: Coyote Wash
XS LOCATION: Approx. 1 mile upstream fr Dolores R.
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.12	cfs
CALCULATED FLOW (Qc)=	1.08	cfs
(Qm-Qc)/Qm * 100 =	3.7	%
MEASURED WATERLINE (WLm)=	5.33	ft
CALCULATED WATERLINE (WLc)=	5.30	ft
(WLm-WLc)/WLm * 100 =	0.4	%
MAX MEASURED DEPTH (Dm)=	0.30	ft
MAX CALCULATED DEPTH (Dc)=	0.30	ft
(Dm-Dc)/Dm * 100	0.9	%
MEAN VELOCITY=	0.78	ft/sec
MANNING'S N=	0.044	
SLOPE=	0.006	ft/ft
.4 * Qm =	0.4	cfs
2.5 * Qm=	2.8	cfs

RECOMMENDED INSTREAM FLOW:
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FLOW (CFS)	PERIOD
___________	________

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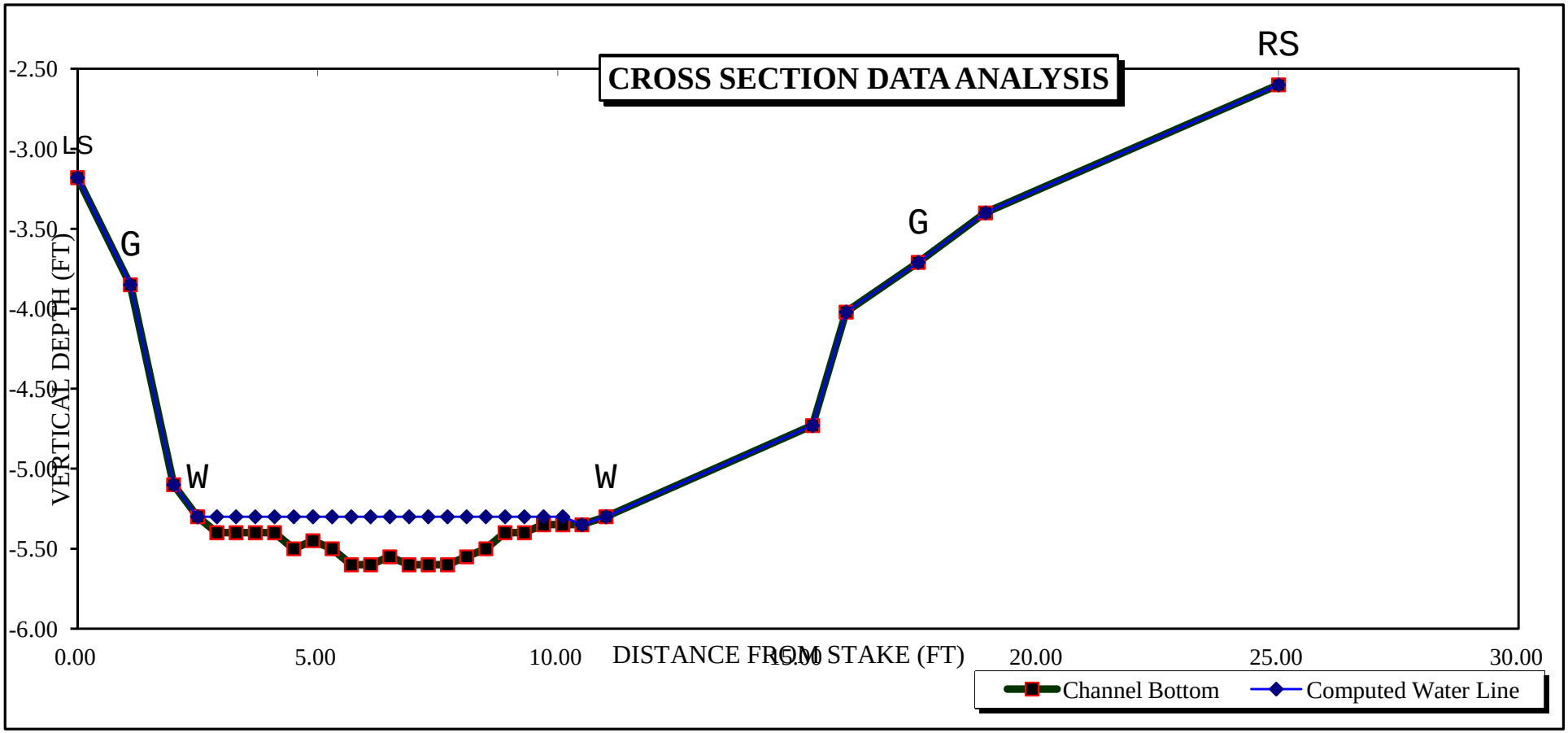
RECOMMENDATION BY: ………………...……..……............................... AGENCY..……………………......……...…...……....... DATE:.......…...….......……………

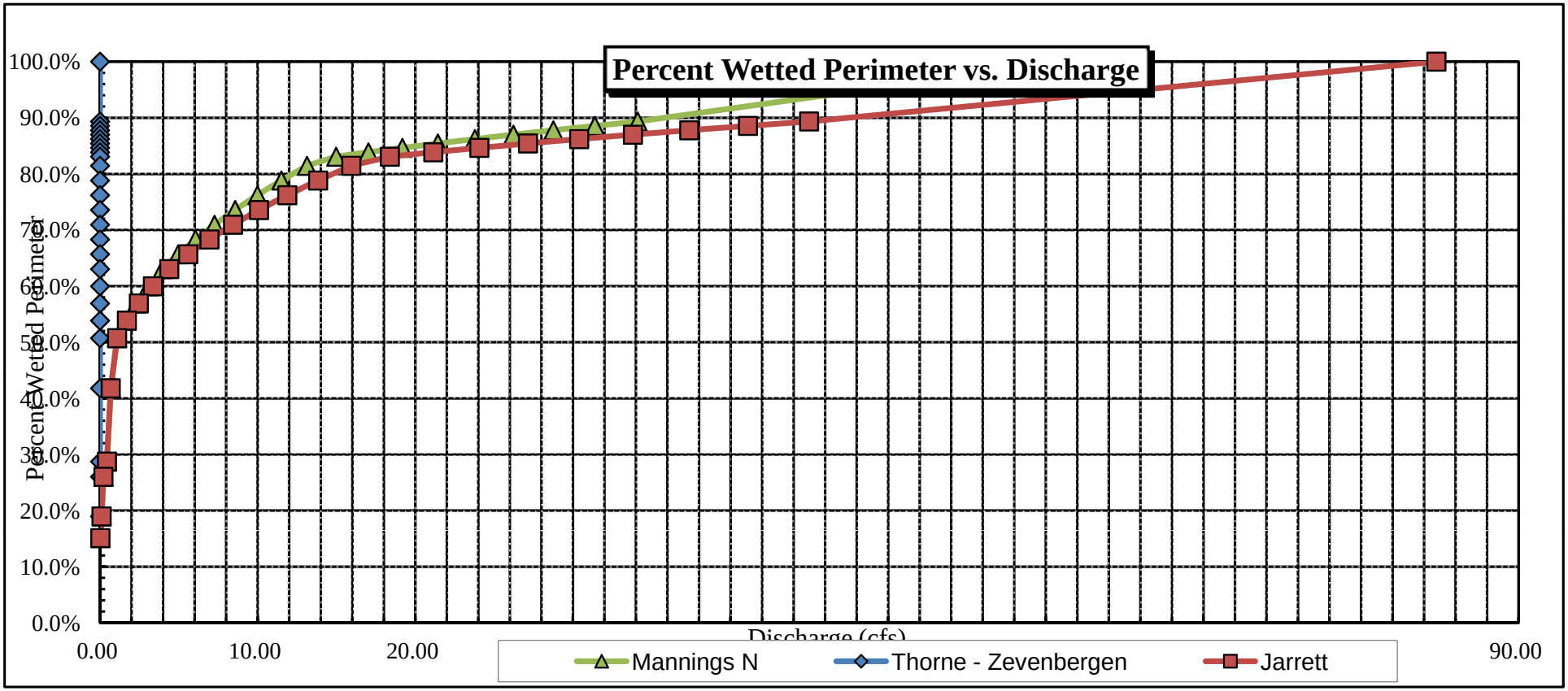
CWCB REVIEW BY: ..……………………….....……………………………………………………...…............. DATE:.................………….....…

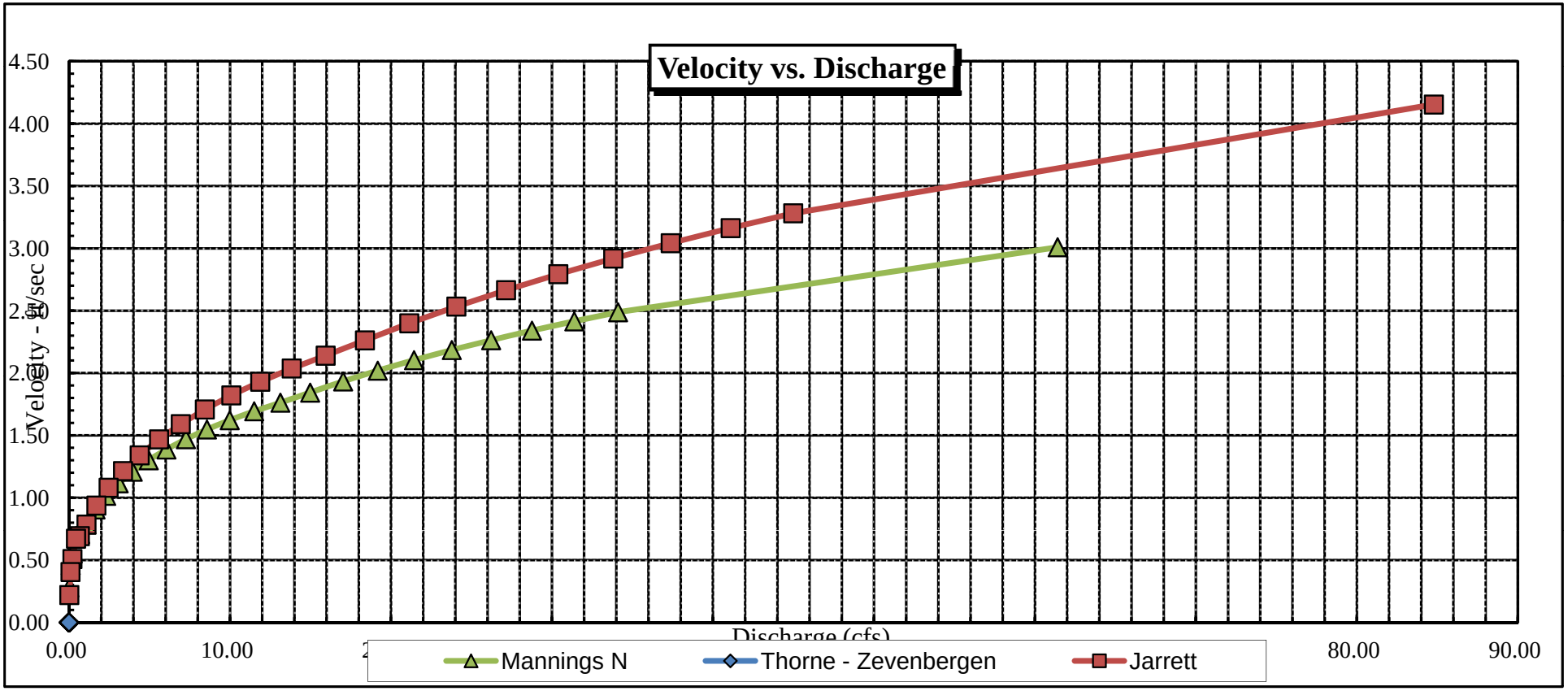
STREAM NAME: Coyote Wash
XS LOCATION: Approx. 1 mile upstream fr Dolores R.
XS NUMBER: 1 Jarrett Variable Manning's n Correction Applied

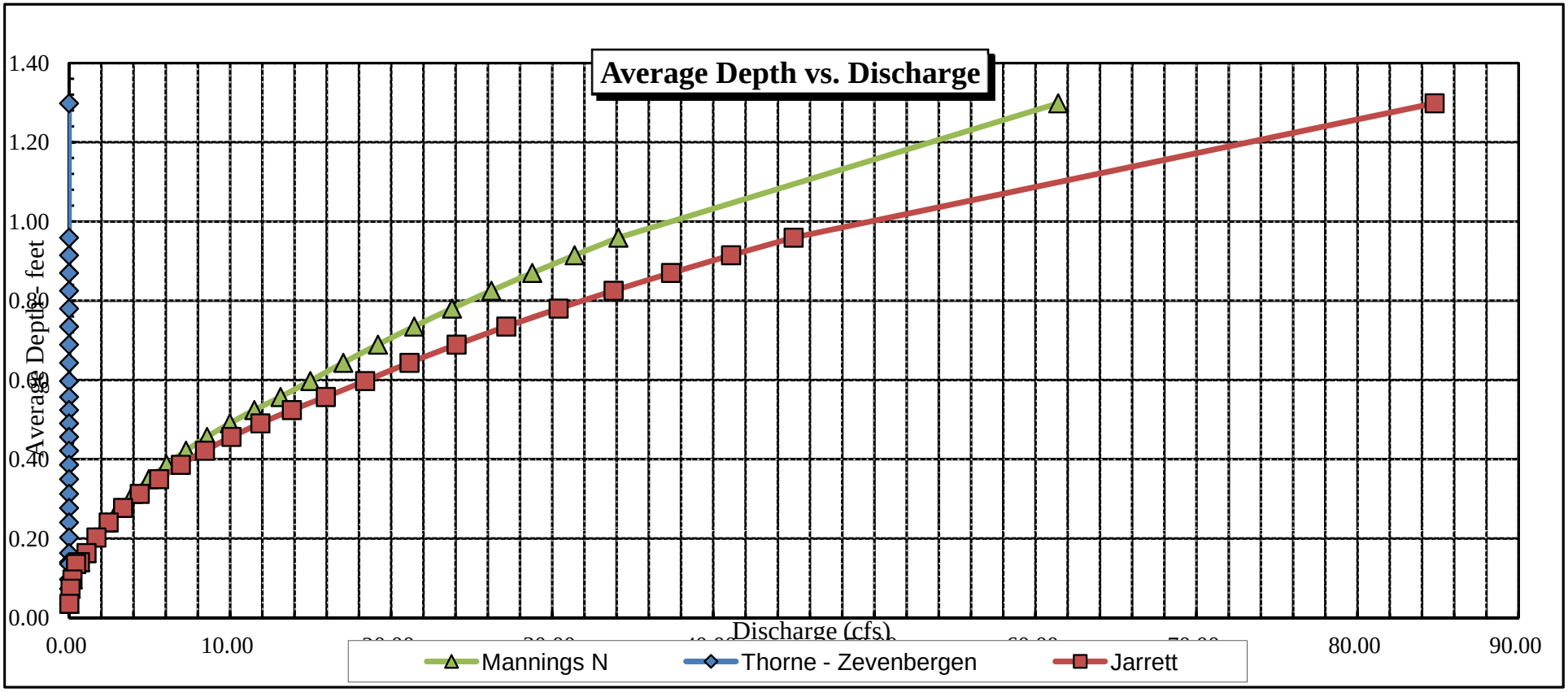
GL = lowest Grassline elevation corrected for sag
STAGING TABLE *WL* = Waterline corrected for variations in field measured water surface elevations and sag

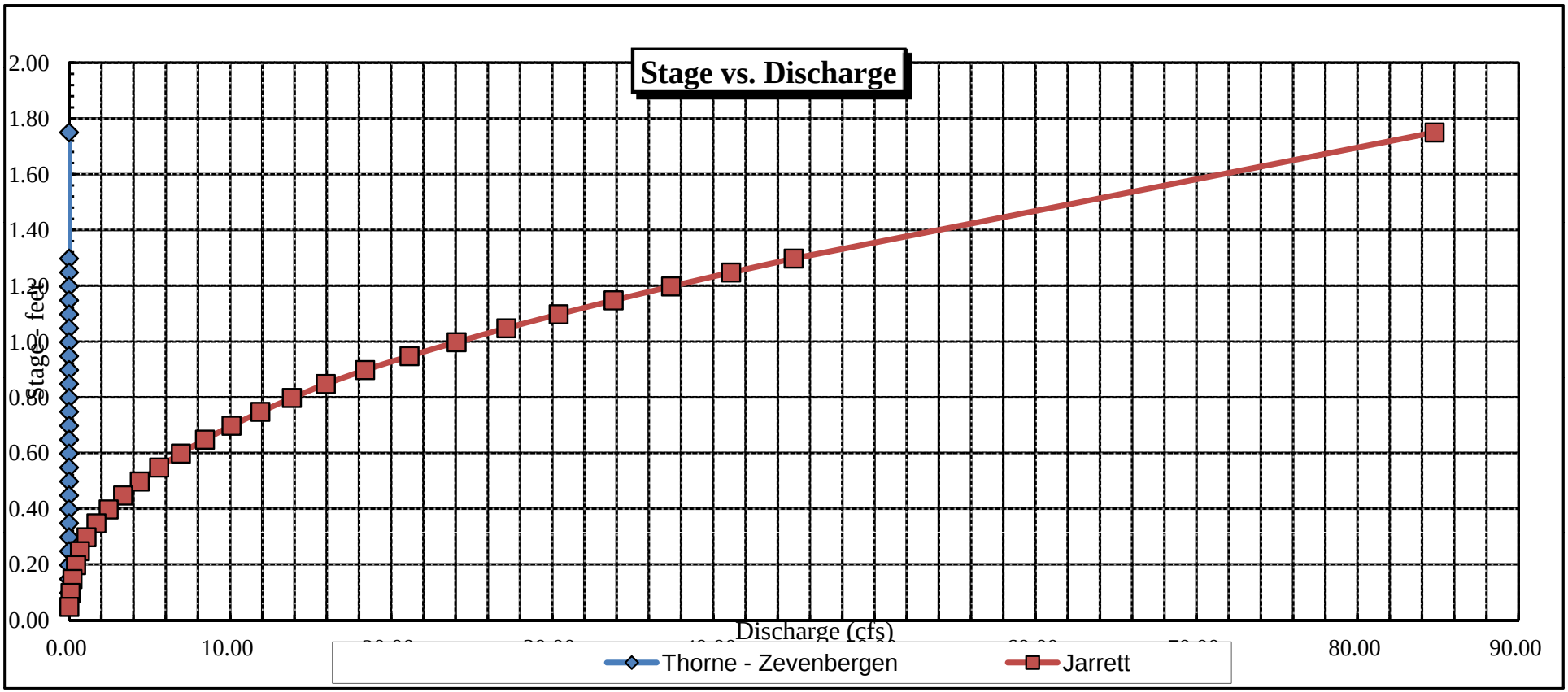
	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	3.85	15.72	1.30	1.75	20.41	16.83	100.0%	1.21	84.78	4.15
	4.30	14.30	0.96	1.30	13.71	15.03	89.3%	0.91	44.98	3.28
	4.35	14.21	0.91	1.25	13.00	14.90	88.6%	0.87	41.10	3.16
	4.40	14.12	0.87	1.20	12.29	14.77	87.8%	0.83	37.38	3.04
	4.45	14.04	0.83	1.15	11.59	14.64	87.0%	0.79	33.81	2.92
	4.50	13.95	0.78	1.10	10.89	14.50	86.2%	0.75	30.40	2.79
	4.55	13.87	0.73	1.05	10.19	14.37	85.4%	0.71	27.15	2.66
	4.60	13.78	0.69	1.00	9.50	14.24	84.6%	0.67	24.06	2.53
	4.65	13.70	0.64	0.95	8.81	14.11	83.9%	0.62	21.14	2.40
	4.70	13.61	0.60	0.90	8.13	13.98	83.1%	0.58	18.39	2.26
	4.75	13.38	0.56	0.85	7.45	13.71	81.4%	0.54	15.94	2.14
	4.80	12.97	0.52	0.80	6.79	13.26	78.8%	0.51	13.83	2.04
	4.85	12.55	0.49	0.75	6.16	12.82	76.2%	0.48	11.88	1.93
	4.90	12.14	0.46	0.70	5.54	12.38	73.6%	0.45	10.08	1.82
	4.95	11.73	0.42	0.65	4.94	11.94	70.9%	0.41	8.44	1.71
	5.00	11.31	0.39	0.60	4.37	11.49	68.3%	0.38	6.94	1.59
	5.05	10.90	0.35	0.55	3.81	11.05	65.7%	0.34	5.59	1.47
	5.10	10.48	0.31	0.50	3.28	10.61	63.0%	0.31	4.39	1.34
	5.15	9.98	0.28	0.45	2.76	10.09	60.0%	0.27	3.35	1.21
	5.20	9.48	0.24	0.40	2.28	9.58	56.9%	0.24	2.46	1.08
	5.25	8.98	0.20	0.35	1.82	9.06	53.8%	0.20	1.70	0.94
WL	5.30	8.46	0.16	0.30	1.38	8.54	50.7%	0.16	1.08	0.78
	5.35	6.97	0.14	0.25	0.98	7.03	41.8%	0.14	0.68	0.69
	5.40	4.78	0.14	0.20	0.65	4.83	28.7%	0.13	0.43	0.67
	5.45	4.34	0.10	0.15	0.42	4.38	26.0%	0.10	0.21	0.51
	5.50	3.17	0.07	0.10	0.23	3.19	19.0%	0.07	0.09	0.40
	5.55	2.53	0.03	0.05	0.09	2.54	15.1%	0.03	0.02	0.22


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


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


Velocity vs. Discharge
Velocity - ft/sec
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
10.00
80.00
90.00
Mannings N
Thorne - Zevenbergen
Jarrett


Average Depth vs. Discharge
Average Depth - feet
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.00
80.00
90.00
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
10.00
80.00
90.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett