United States Department of the Interior

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

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 the East Fork Arkansas River, located in Water Division 2.

Location and Land Status. The East Fork of the Arkansas River originates on the south slope of Mount Arkansas approximately six miles northeast of Leadville, and flows into the Arkansas River approximately two miles west of Leadville. This recommendation addresses the reach that begins at the headwaters and extends to the confluence with Chalk Creek. Along this reach, the BLM manages 0.4 miles, the United States Forest Service manages 1.2 miles, and 3.3 miles are in private ownership.

Existing Instream Flow Water Rights. In 1977, the Colorado Water Conservation Board appropriated an instream flow water right on East Fork Arkansas River that begins at the confluence with Chalk Creek and extends to the confluence with Tennessee Creek. The protected flow rate is 15.0 cubic feet per second, year-round. The purpose of this recommendation is to recommend establishment of an instream flow water right above the confluence with Chalk Creek where no instream flow protection currently exists.

Biological Summary. The East Fork of the Arkansas River is a cold-water stream with moderate to high gradient. The river flows through a high mountain valley with a valley floor approximately one-half mile in width. The river alternates between reaches where stream migration is limited by bedrock to reaches where the stream channel migrates through alluvial deposits.

Portions of the river that flow through bedrock controls tend to have large substrate, with boulders up to two feet in diameter. Portions of the river that flow through alluvial deposits have smaller substrate comprised of gravels and cobbles up to six inches in diameter. The bedrock-

controlled portions tend to have an abundance of pools, while portions of the river flowing through alluvium have more riffle habitat. Together, this habitat variety provides good fish habitat, but riffles lack undercut banks that provide cover. Water quality is excellent for supporting salmonid fish species.

Fish surveys indicate the river supports a self-sustaining population of brook trout. Spot surveys indicate abundant populations of mayfly, stonefly and caddisfly.

The creek also supports a vigorous riparian community comprised of willow, spruce, river birch, and sedges. The riparian community provides only limited cover and shading for the river because of the substantial channel size, but the riparian community contributes substantially to bank stability.

R2Cross Analysis. The BLM collected the following R2Cross data:

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)
08/08/2017 #1	17.50 cfs	27.83 feet	Out of range	7.02 cfs
09/17/2018 #1	1.62 cfs	22.77 feet	2.83 cfs	Out of range
		Averages:	2.80 cfs	7.02 cfs

BLM's analysis of this data indicates that the following flows are needed to protect the natural environment to a reasonable degree.

> 7.0 cubic feet per second is recommended during the snowmelt runoff period from May 1 to July 31. This recommendation is driven by the average depth criteria. BLM notes that this entire reach is above 10,500 feet elevation, so the brook trout population has a very short season during which young of the year and adult fish accumulate sufficient weight to survive the next winter. When riffles have sufficient depth during the spring, it means that much of the habitat in the stream channel is usable by the fish population for this growth period.
>
> 2.8 cubic feet per second is recommended during late summer, from August 1 to September 30. This recommendation is driven by the average velocity criteria. This flow rate will maintain sufficient physical habitat in the creek for the fish population to complete important parts of its life cycle before cold temperatures reduce fish activity for the winter.
>
> 1.2 cubic feet per second is recommended from October 1 to April 30. This recommendation is driven by limited water availability. This flow rate should prevent complete icing of the numerous pools in this reach, allowing the fish population to overwinter.

Water Availability. The BLM recommends relying upon USGS Stream Gage 07079300 (East Fork Arkansas River at U.S. Highway 24 near Leadville) for an indication of water

availability. The downstream gage data will need to be apportioned to account for the smaller watershed size above the confluence with Chalk Creek. The gage data will also need to be adjusted for water diversions that occur between the confluence with Chalk Creek and the gage.

BLM is aware that Climax Molybdenum Mine owns three trans-basin diversions approximately two miles upstream from the lower terminus of the proposed instream flow reach.

Relationship to Land Management Plans. The BLM land use plan calls for managing this creek to support riparian, wildlife, and water quality values and to continue meeting land health standards. The BLM has invested substantially in improving riparian and water quality conditions along the river. These efforts have included the closure of roads and access points that were immediately adjacent and degrading water quality and supporting water quality remediation efforts at historical mines. Establishing an instream flow water right would assist in meeting BLM's overall objectives for managing its lands along this river.

Data sheets, R2Cross output, fishery survey information, and photographs of the cross section were included with BLM's draft recommendation in February 2019. 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,

ALAN BITTNER Digitally signed by ALAN BITTNER
Date: 2021.03.24 14:28:43 -06'00'

Alan Bittner
Deputy State Director, Resources

Combined Summaries

Water **29086** **Arkansas River, East Fork** Date **7/2/2012**

Station **AR3368** **BLW road xing BLW climax mine**

Drainage **Arkansas River** UtmX **396960** UtmY **4357251** Elevation **10888 ft**

Length **320 ft** Width **12.93 ft** Area **0.10 acre**

Surveyors **Johanna Kraus, Peter Leipzig-Scott, Justin Pomeran**

Gear **BPEF** Effort **2.00** Metric **PASS** Protocol **TWO-PASS REMOVAL**

Proportional Stocking Density and Catch/Unit Effort

Species	Total Catch	Min Cut inch	Max Cut inch	Total used	Proportional Stock Density (%)	Percent Stock Size	Percent Quality Size	Percent Preferred Size	Percent Memorable Size	Percent Trophy Size	Max Length inches
BROOK TROUT	20	5.12		20	0.00	5.00					7.91

Mean, Minimum and Maximum Length and Weight

Species	Total Catch	Min cut inch	Max cut inch	Total Used	Length (inches) Mean	Minimum	Maximum	Weight (lb) Mean	Minimum	Maximum
BROOK TROUT	20	5.12		20	6.38	5.51	7.91	0.12	0.07	0.20

Relative Abundance and Catch/Unit Effort

Species	Total Catch	Min.Cut inch	Max.Cut inch	Total used	Weight Lbs	Percent Number	Percent Weight	Catch per Unit Effort Number/Effort	Catch per Unit Effort Lbs/Effort
BROOK TROUT	20	5.12		20	2.77	100.00	100.00	10.00	1.38

Abundance and Biomass

Species	Total Catch	Min.Cut inch	Max.Cut inch	Total Used	Population estimate	Biomass Lbs	Percent Number	Percent Weight	Density estimates Lb/Acre	Density estimates Fish/Acre	Density estimates Fish/Mile
BROOK TROUT	20	5.12		20	24	2.77	100.00	100.00	29.11	249.88	391.62

Notes: Length is actually fork length

Combined Summaries

Water **29086** **Arkansas River, East Fork** Date **8/8/2016**

Station **AR0783** **JUST ABOVE HWY 91 CROSSING (EF1)**

Drainage **Arkansas River** UtmX **389673** UtmY **4349046** Elevation **9995 ft**

Length **634 ft** Width **26.10 ft** Area **0.38 acre**

Surveyors **POLICKY, CMC, COLE (13)**

Gear **BKEF** Effort Metric **PASS** Protocol **TWO-PASS REMOVAL**

Proportional Stocking Density and Catch/Unit Effort

Species	Total Catch	Min Cut inch	Max Cut inch	Total used	Proportional Stock Density (%)	Percent Stock Size	Percent Quality Size	Percent Preferred Size	Percent Memorable Size	Percent Trophy Size	Max Length inches
BROOK TROUT	3	3.15		3	0.00	33.33					8.35
BROWN TROUT	284	3.15		284	25.35	25.00	24.65	0.70			11.89
RAINBOW TROUT	9			0							0.00

Mean, Minimum and Maximum Length and Weight

Species	Total Catch	Min cut inch	Max cut inch	Total Used	Length (inches) Mean	Length (inches) Minimum	Length (inches) Maximum	Weight (lb) Mean	Weight (lb) Minimum	Weight (lb) Maximum
BROOK TROUT	3	3.15		3	4.02	1.57	8.35	0.07	0.00	0.19
BROWN TROUT	284	3.15		284	6.01	1.30	11.89	0.15	0.00	0.65
RAINBOW TROUT	9			0		0.00	0.00		0.00	0.00

Relative Abundance and Catch/Unit Effort

Species	Total Catch	Min.Cut inch	Max.Cut inch	Total used	Weight Lbs	Percent Number	Percent Weight	Catch per Unit Effort Number/Effort	Catch per Unit Effort Lbs/Effort
BROOK TROUT	3	3.15		3	0.20	1.05	0.47		
BROWN TROUT	284	3.15		284	42.40	98.95	99.53		

Combined Summaries

Water **29086** **Arkansas River, East Fork** Date **8/8/2016**

Station **AR0783** **JUST ABOVE HWY 91 CROSSING (EF1)**

Abundance and Biomass

Species	Total Catch	Min.Cut inch	Max.Cut inch	Total Used	Population estimate	Biomass Lbs	Percent Number	Percent Weight	Density estimates Lb/Acre	Density estimates Fish/Acre	Density estimates Fish/Mile
BROOK TROUT	3	3.15		3	3	0.20	1.05	0.47	0.53	7.90	24.98
BROWN TROUT	284	3.15		284	290	42.40	98.95	99.53	111.61	764.31	2,418.00

Notes: 1+ brown trout marked with orange VIE in 2002-2005. RBT are stocked, and therefore not used in population estimates. no VIE tags observed. 4 electrode array.

Combined Summaries

Water **29086** **Arkansas River, East Fork** Date **8/11/2008**

Station **AR0784** **100 M BLW HWY 24 (ef2)**

Drainage **Arkansas River** UtmX **387241** UtmY **4347585** Elevation **9900 ft**

Length **509 ft** Width **24.40 ft** Area **0.29 acre**

Surveyors **POLICKY, BRINKMAN, GEI CREWS**

Gear **NOT LISTED** Effort **2.00** Metric **PASS** Protocol **TWO-PASS REMOVAL**

Proportional Stocking Density and Catch/Unit Effort

Species	Total Catch	Min Cut inch	Max Cut inch	Total used	Proportional Stock Density (%)	Percent Stock Size	Percent Quality Size	Percent Preferred Size	Percent Memorable Size	Percent Trophy Size	Max Length inches
BROOK TROUT	2	5.12		2	0.00						2.95
BROWN TROUT	148	4.72		148	46.62	35.14	45.27	1.35			13.66

Mean, Minimum and Maximum Length and Weight

Species	Total Catch	Min cut inch	Max cut inch	Total Used	Length (inches) Mean	Minimum	Maximum	Weight (lb) Mean	Minimum	Maximum
BROOK TROUT	2	5.12		2	2.64	2.32	2.95	0.01	0.00	0.01
BROWN TROUT	148	4.72		148	8.16	3.43	13.66	0.23	0.02	0.91

Relative Abundance and Catch/Unit Effort

Species	Total Catch	Min.Cut inch	Max.Cut inch	Total used	Weight Lbs	Percent Number	Percent Weight	Catch per Unit Effort Number/Effort	Catch per Unit Effort Lbs/Effort
BROOK TROUT	2	5.12		2	0.00	1.33	0.00	1.00	0.00
BROWN TROUT	148	4.72		148	35.80	98.67	100.00	74.00	17.90

Combined Summaries

Water **29086** **Arkansas River, East Fork** Date **8/11/2008**

Station **AR0784** **100 M BLW HWY 24 (ef2)**

Abundance and Biomass

Species	Total Catch	Min.Cut inch	Max.Cut inch	Total Used	Population estimate	Biomass Lbs	Percent Number	Percent Weight	Density estimates Lb/Acre	Density estimates Fish/Acre	Density estimates Fish/Mile
BROOK TROUT	2	5.12		2		0.00	1.33	0.00	0.00		
BROWN TROUT	148	4.72		148	156	35.80	98.67	100.00	125.58	547.91	1,620.49

Notes: 1+ brown trout marked with flourescent orange VIE in pre-adipose tissue behind right eye in 2002, behind left eye in 2003, right posterior opercular in 2004, and left posterior opercular in 2005. No VIE marking in 2006 or 2007. See raw data for recapture data. Twenty LOC older than fry sacrificed for disease and heavy metal bioaccumulation analysis.

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

COLORADO DIVISION OF WILDLIFE

LOCATION INFORMATION

STREAM NAME: East Fork Arkansas River | CROSS-SECTION NO.: 1

CROSS-SECTION LOCATION: Approx. 500 feet upstream from confluence with Chalk Creek

DATE: 8-8-17 | OBSERVERS: R. Smith, J. Thompson, D. Gilbert

LEGAL DESCRIPTION | ¼ SECTION: SE | SECTION: 16 | TOWNSHIP: 8 (N/S) | RANGE: 79 E/W | PM: 6th

COUNTY: Lake | WATERSHED: Arkansas | WATER DIVISION: 2 | DOW WATER CODE: 29086

MAP(S): USGS: Zone 13 395024.6 mE

USFS: 4356479.0 mN

SUPPLEMENTAL DATA

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

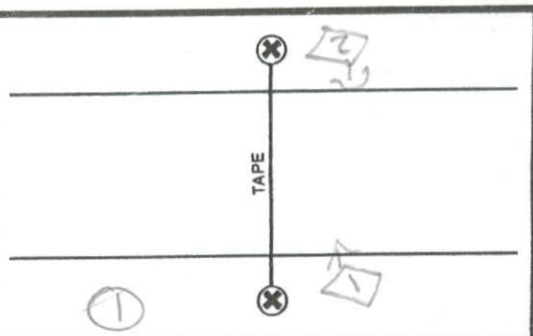
METER NUMBER: | DATE RATED: | CALIB/SPIN: _____ sec | TAPE WEIGHT: _____ lbs/foot | TAPE TENSION: _____ lbs

CHANNEL BED MATERIAL SIZE RANGE: 4" cobble to 2' foot boulder | PHOTOGRAPHS TAKEN: (YES/NO) | NUMBER OF PHOTOGRAPHS: 7

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
⊗ Tape @ Stake LB	0.0	surveyed
⊗ Tape @ Stake RB	0.0	surveyed
① WS @ Tape LB/RB	0.0	9.60 / 9.60
② WS Upstream	26.0	8.98
③ WS Downstream	14.5	10.04
SLOPE	1.06 / 40.5 = .026	

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:

mayfly, caddisfly, stonefly

COMMENTS

Ph = 7.17
Temp = 11° C
Cond = 60 µS

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: East Fork Arkansas River	CROSS-SECTION NO.: 1	DATE: 8-8-17	SHEET ___ OF ___
BEGINNING OF MEASUREMENT	EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT	Gage Reading: ____ ft	TIME: 11:00 am

Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	1.0		8.03								
	2.0		8.30								
G	2.5		8.62								
	3.0		9.00								
	4.0		9.16								
RW	4.8		9.6								
	6.0		9.95	.35				0.35			
	7		10.05	.45				2.23			
	8		10.15	.55				1.97			
	9		10	.40				1.52			
	10		10.1	.50				2.13			
~~11.5~~	11		~~10.05~~ 10.05	.45	<.45			2.13	<1.71		
	12		10.05	.45				2.21			
	13		9.95	.35				1.38			
	14		10	.40				1.97			
	15		9.85	.25				1.54			
	16		9.85	.25				1.91			
	17		10.05	.45				1.53			
~~18.5~~	18		~~10.05~~ 10.05	.45	<.45			2.37	<2.59		
	19		10.25	.65				2.17			
	20		10.25	.65				1.99			
	21		10.5	.90				1.58			
	21.5		10.5	.90				1.49			
	22		10.4	.80				1.89			
	22.5		10.4	.80				2.61			
	23		10.2	.60				2.99			
	24		10.1	.50				0			
	25		10	.40				.80			
	26		9.65	.05				0			
LW	27.0		9.60								
	28.0		9.36								
	29.0		9.10								
	29.8		8.94								
G	30.6		8.46								
	31.0		7.56								
LS	32.0		7.04								
TOTALS:											

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

COLORADO WATER CONSERVATION BOARD

FIELD DATA FOR INSTREAM FLOW DETERMINATIONS

LOCATION INFORMATION

STREAM NAME: East Fork Arkansas River						CROSS-SECTION NO.: 1
CROSS-SECTION LOCATION: Approx. 500' upstream from confluence with Chalk Creek						
DATE: 9-17-15	OBSERVERS: R. Smith, J. Thompson, J. Abeles					
LEGAL DESCRIPTION	¼ SECTION: SE	SECTION: 16	TOWNSHIP: 8 N/S	RANGE: 79 E/W	PM: 6th	
COUNTY: Lake	WATERSHED: Arkansas R.	WATER DIVISION: 2	DOW WATER CODE: 29086			
MAP(S): USGS:						
USFS: GPS: Zone 13 395030E 4356480N						

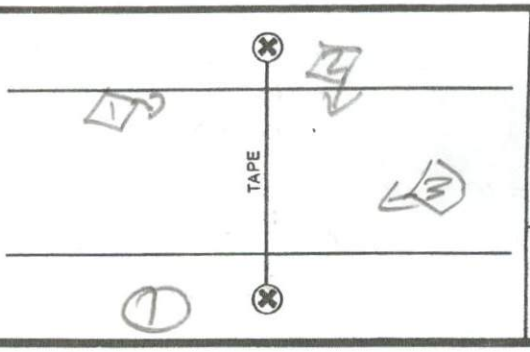
SUPPLEMENTAL DATA

SAG TAPE SECTION SAME AS DISCHARGE SECTION: (YES) NO	METER TYPE: M-M			
METER NUMBER:	DATE RATED:	CALIB/SPIN: ____ sec	TAPE WEIGHT: surveyed ____ lbs/foot	TAPE TENSION: surveyed ____ lbs
CHANNEL BED MATERIAL SIZE RANGE: gravel to 2-foot boulders	PHOTOGRAPHS TAKEN: (YES)/NO	NUMBER OF PHOTOGRAPHS: 3		

CHANNEL PROFILE DATA

STATION	DISTANCE FROM TAPE (ft)	ROD READING (ft)
(X) Tape @ Stake LB	0.0	surveyed
(X) Tape @ Stake RB	0.0	surveyed
(1) WS @ Tape LB/RB	0.0	6.25 / 6.15
(2) WS Upstream	24.5	5.54
(3) WS Downstream	19.0	6.60
SLOPE	1.06 / 43.5 = .024	

SKETCH



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

AQUATIC SAMPLING SUMMARY

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

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

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

AQUATIC INSECTS IN STREAM SECTION BY COMMON OR SCIENTIFIC ORDER NAME:
Stoneflies, caddis, mayflies

COMMENTS

pH = 7.28 Temp = 7.4°C
Spec conductivity = 144.3 Salinity = 0.1

willow/spruce/sedge riparian community

DISCHARGE/CROSS SECTION NOTES

STREAM NAME: East Fork Arkansas River | CROSS-SECTION NO.: 1 | DATE: 9-17-18 | SHEET ___ OF ___

BEGINNING OF MEASUREMENT | EDGE OF WATER LOOKING DOWNSTREAM: (0.0 AT STAKE) LEFT / RIGHT | Gage Reading: _____ ft | TIME: 9:45 am.

Features: Stake (S) Grassline (G) Waterline (W) Rock (R)	Distance From Initial Point (ft)	Width (ft)	Total Vertical Depth From Tape/Inst (ft)	Water Depth (ft)	Depth of Observation (ft)	Revolutions	Time (sec)	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Area (ft^2)	Discharge (cfs)
RS	0.0		3.05								
G	3.0		4.91								
	4.8		5.48								
	5.3		5.88								
RW	5.8		6.15								
	6.5		6.45	0.30				0.06			
	7		6.45	0.30				0.06			
	7.5		6.35	0.20				0.09			
	8		6.45	0.30				0.75			
	8.5		6.35	0.20				0.66			
	9		6.30	0.15				0.23			
	9.5		6.35	0.20				0.72			
	10		6.35	0.20				1.25			
	10.5		6.35	0.20				0.97			
	11		6.35	0.20				1.06			
	11.5		6.40	0.25				1.09			
	12		6.35	0.20				1.41			
	12.5		6.35	0.20				0.95			
	13		6.40	0.25				0.81			
	13.5		6.25	0.10				0.21			
	14		6.25	0.05				0.59			
	14.5		6.30	0.05				0.04			
	15		6.35	0.10				0.44			
	15.5		6.35	0.10				0.33			
	16		6.35	0.10				0.46			
	16.5		6.35	0.10				0.71			
	17		6.35	0.10				0.38			
	17.5		6.30	0.05				0.65			
	18		6.35	0.10				0.60			
	18.5		6.35	0.10				0.58			
	19		6.45	0.20				0.65			
	19.5		6.45	0.20				0.23			
	20		6.55	0.30				0.22			
	20.5		6.55	0.30				0.82			
	21		6.4	0.15				0.80			
	21.5		6.4	0.15				0.02			
	22		6.25	0				0			
	22.5		6.25	0				0			
LW	22.8		6.25								
	23.3		6.02								
	23.8		5.61								
	25.6		5.11								
G TOTALS:	25.9	4.7									

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

LS 27.0 4.02

Data Input & Proofing

STREAM NAME:	East Fork Arkansas River
XS LOCATION:	300' upst from conf with Chalk Cr.
XS NUMBER:	1
DATE:	8/8/2017
OBSERVERS:	R. Smith, D. Gilbert, J. Thompson
1/4 SEC:	SE
SECTION:	16
TWP:	8S
RANGE:	79W
PM:	Sixth
COUNTY:	Lake
WATERSHED:	Arkansas River
DIVISION:	2
DOW CODE:	29086
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.026 ft / ft

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

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

Total Data Points = 38

GL=1	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	A	Q	Tape to Water
	RS	1.00	8.03			0.00	0.00	0.00
		2.00	8.30			0.00	0.00	0.00
1	G	2.50	8.62			0.00	0.00	0.00
		3.00	9.00			0.00	0.00	0.00
		4.00	9.16			0.00	0.00	0.00
	RW	4.80	9.60	0.00	0.00	0.00	0.00	0.00
		6.00	9.95	0.35	0.35	0.39	0.13	9.60
		7.00	10.05	0.45	2.23	0.45	1.00	9.60
		8.00	10.15	0.55	1.97	0.55	1.08	9.60
		9.00	10.00	0.40	1.52	0.40	0.61	9.60
		10.00	10.10	0.50	2.13	0.50	1.07	9.60
		11.00	10.05	0.45	2.13	0.34	0.72	9.60
		11.50	10.05	0.45	1.71	0.23	0.38	9.60
		12.00	10.05	0.45	2.21	0.34	0.75	9.60
		13.00	9.95	0.35	1.38	0.35	0.48	9.60
		14.00	10.00	0.40	1.97	0.40	0.79	9.60
		15.00	9.85	0.25	1.54	0.25	0.39	9.60
		16.00	9.85	0.25	1.91	0.25	0.48	9.60
		17.00	10.05	0.45	1.53	0.45	0.69	9.60
		18.00	10.05	0.45	2.37	0.34	0.80	9.60
		18.50	10.05	0.45	2.59	0.23	0.58	9.60
		19.00	10.25	0.65	2.17	0.49	1.06	9.60
		20.00	10.25	0.65	1.99	0.65	1.29	9.60
		21.00	10.50	0.90	1.58	0.68	1.07	9.60
		21.50	10.50	0.90	1.49	0.45	0.67	9.60
		22.00	10.40	0.80	1.89	0.40	0.76	9.60
		22.50	10.40	0.80	2.61	0.40	1.04	9.60
		23.00	10.20	0.60	2.99	0.45	1.35	9.60
		24.00	10.10	0.50	0.00	0.50	0.00	9.60
		25.00	10.00	0.40	0.80	0.40	0.32	9.60
		26.00	9.65	0.05	0.00	0.05	0.00	9.60
	LW	27.00	9.60	0.00	0.00	0.00	0.00	0.00
		28.00	9.36			0.00	0.00	0.00
		29.00	9.10			0.00	0.00	0.00
		29.80	8.94			0.00	0.00	0.00
1	G	30.60	8.46			0.00	0.00	0.00
		31.00	7.56			0.00	0.00	0.00
	LS	32.00	7.04			0.00	0.00	0.00
					Totals	9.91	17.50	

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

LOCATION INFORMATION

STREAM NAME:	East Fork Arkansas River
XS LOCATION:	300' upst from conf with Chalk Cr.
XS NUMBER:	1
DATE:	8-Aug-17
OBSERVERS:	R. Smith, D. Gilbert, J. Thompson
1/4 SEC:	SE
SECTION:	16
TWP:	8S
RANGE:	79W
PM:	Sixth
COUNTY:	Lake
WATERSHED:	Arkansas River
DIVISION:	2
DOW CODE:	29086
USGS MAP:	0
USFS MAP:	0

SUPPLEMENTAL DATA

TAPE WT:	0.0106
TENSION:	99999

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

CHANNEL PROFILE DATA

SLOPE:	0.026

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

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

STREAM NAME: East Fork Arkansas River
XS LOCATION: 300' upst from conf with Chalk Cr.
XS NUMBER: 1

DATA POINTS= 38

VALUES COMPUTED FROM RAW FIELD DATA

FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
RS	1.00	8.03			0.00		0.00	0.00	0.0%
	2.00	8.30			0.00		0.00	0.00	0.0%
1 G	2.50	8.62			0.00		0.00	0.00	0.0%
	3.00	9.00			0.00		0.00	0.00	0.0%
	4.00	9.16			0.00		0.00	0.00	0.0%
RW	4.80	9.60	0.00	0.00	0.00		0.00	0.00	0.0%
	6.00	9.95	0.35	0.35	1.25	0.35	0.39	0.13	0.8%
	7.00	10.05	0.45	2.23	1.00	0.45	0.45	1.00	5.7%
	8.00	10.15	0.55	1.97	1.00	0.55	0.55	1.08	6.2%
	9.00	10.00	0.40	1.52	1.01	0.40	0.40	0.61	3.5%
	10.00	10.10	0.50	2.13	1.00	0.50	0.50	1.07	6.1%
	11.00	10.05	0.45	2.13	1.00	0.45	0.34	0.72	4.1%
	11.50	10.05	0.45	1.71	0.50	0.45	0.23	0.38	2.2%
	12.00	10.05	0.45	2.21	0.50	0.45	0.34	0.75	4.3%
	13.00	9.95	0.35	1.38	1.00	0.35	0.35	0.48	2.8%
	14.00	10.00	0.40	1.97	1.00	0.40	0.40	0.79	4.5%
	15.00	9.85	0.25	1.54	1.01	0.25	0.25	0.39	2.2%
	16.00	9.85	0.25	1.91	1.00	0.25	0.25	0.48	2.7%
	17.00	10.05	0.45	1.53	1.02	0.45	0.45	0.69	3.9%
	18.00	10.05	0.45	2.37	1.00	0.45	0.34	0.80	4.6%
	18.50	10.05	0.45	2.59	0.50	0.45	0.23	0.58	3.3%
	19.00	10.25	0.65	2.17	0.54	0.65	0.49	1.06	6.0%
	20.00	10.25	0.65	1.99	1.00	0.65	0.65	1.29	7.4%
	21.00	10.50	0.90	1.58	1.03	0.90	0.68	1.07	6.1%
	21.50	10.50	0.90	1.49	0.50	0.90	0.45	0.67	3.8%
	22.00	10.40	0.80	1.89	0.51	0.80	0.40	0.76	4.3%
	22.50	10.40	0.80	2.61	0.50	0.80	0.40	1.04	6.0%
	23.00	10.20	0.60	2.99	0.54	0.60	0.45	1.35	7.7%
	24.00	10.10	0.50	0.00	1.00	0.50	0.50	0.00	0.0%
	25.00	10.00	0.40	0.80	1.00	0.40	0.40	0.32	1.8%
	26.00	9.65	0.05	0.00	1.06	0.05	0.05	0.00	0.0%
LW	27.00	9.60	0.00	0.00	1.00		0.00	0.00	0.0%
	28.00	9.36			0.00		0.00	0.00	0.0%
	29.00	9.10			0.00		0.00	0.00	0.0%
	29.80	8.94			0.00		0.00	0.00	0.0%
1 G	30.60	8.46			0.00		0.00	0.00	0.0%
	31.00	7.56			0.00		0.00	0.00	0.0%
LS	32.00	7.04			0.00		0.00	0.00	0.0%
TOTALS ----------					22.50	0.9 (Max.)	9.91	17.50	100.0%

Manning's n = 0.0785
Hydraulic Radius= 0.44038486

STREAM NAME: East Fork Arkansas River
XS LOCATION: 300' upst from conf with Chalk Cr.
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	9.91	9.91	0.0%
9.35	9.91	15.65	57.9%
9.37	9.91	15.17	53.1%
9.39	9.91	14.70	48.4%
9.41	9.91	14.24	43.7%
9.43	9.91	13.77	39.0%
9.45	9.91	13.31	34.3%
9.47	9.91	12.85	29.6%
9.49	9.91	12.39	25.0%
9.51	9.91	11.93	20.4%
9.53	9.91	11.48	15.8%
9.55	9.91	11.03	11.3%
9.56	9.91	10.80	9.0%
9.57	9.91	10.58	6.7%
9.58	9.91	10.36	4.5%
9.59	9.91	10.13	2.2%
9.60	9.91	9.91	0.0%
9.61	9.91	9.69	-2.2%
9.62	9.91	9.47	-4.4%
9.63	9.91	9.25	-6.6%
9.64	9.91	9.04	-8.8%
9.65	9.91	8.83	-10.9%
9.67	9.91	8.41	-15.1%
9.69	9.91	7.99	-19.3%
9.71	9.91	7.58	-23.5%
9.73	9.91	7.17	-27.7%
9.75	9.91	6.76	-31.8%
9.77	9.91	6.35	-35.9%
9.79	9.91	5.95	-40.0%
9.81	9.91	5.55	-44.0%
9.83	9.91	5.15	-48.1%
9.85	9.91	4.75	-52.1%

WATERLINE AT ZERO
AREA ERROR = 9.600

STREAM NAME: East Fork Arkansas River
XS LOCATION: 300' upst from conf with Chalk Cr.
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	8.62	27.83	1.25	1.88	34.70	28.56	100.0%	1.22	120.60	3.47
	8.65	27.74	1.22	1.85	33.87	28.45	99.6%	1.19	116.10	3.43
	8.70	27.59	1.18	1.80	32.49	28.27	99.0%	1.15	108.76	3.35
	8.75	27.45	1.13	1.75	31.11	28.09	98.4%	1.11	101.62	3.27
	8.80	27.30	1.09	1.70	29.74	27.91	97.7%	1.07	94.69	3.18
	8.85	27.15	1.05	1.65	28.38	27.73	97.1%	1.02	87.95	3.10
	8.90	27.00	1.00	1.60	27.03	27.55	96.5%	0.98	81.43	3.01
	8.95	26.82	0.96	1.55	25.68	27.34	95.7%	0.94	75.17	2.93
	9.00	26.50	0.92	1.50	24.35	27.00	94.6%	0.90	69.35	2.85
	9.05	25.94	0.89	1.45	23.04	26.43	92.6%	0.87	64.15	2.78
	9.10	25.37	0.86	1.40	21.76	25.86	90.5%	0.84	59.16	2.72
	9.15	24.87	0.82	1.35	20.50	25.34	88.7%	0.81	54.30	2.65
	9.20	24.54	0.78	1.30	19.26	25.00	87.5%	0.77	49.41	2.56
	9.25	24.26	0.74	1.25	18.04	24.69	86.5%	0.73	44.67	2.48
	9.30	23.98	0.70	1.20	16.84	24.39	85.4%	0.69	40.13	2.38
	9.35	23.69	0.66	1.15	15.65	24.09	84.4%	0.65	35.81	2.29
	9.40	23.40	0.62	1.10	14.47	23.78	83.3%	0.61	31.71	2.19
	9.45	23.10	0.58	1.05	13.31	23.46	82.1%	0.57	27.83	2.09
	9.50	22.80	0.53	1.00	12.16	23.14	81.0%	0.53	24.16	1.99
	9.55	22.50	0.49	0.95	11.03	22.82	79.9%	0.48	20.72	1.88
WL	9.60	22.20	0.45	0.90	9.91	22.50	78.8%	0.44	17.50	1.77
	9.65	21.03	0.42	0.85	8.83	21.32	74.7%	0.41	14.97	1.70
	9.70	20.71	0.38	0.80	7.79	20.99	73.5%	0.37	12.26	1.58
	9.75	20.40	0.33	0.75	6.76	20.66	72.4%	0.33	9.79	1.45
	9.80	20.09	0.29	0.70	5.75	20.33	71.2%	0.28	7.55	1.31
	9.85	18.77	0.25	0.65	4.75	19.00	66.5%	0.25	5.75	1.21
	9.90	17.87	0.21	0.60	3.83	18.08	63.3%	0.21	4.16	1.08
	9.95	16.98	0.17	0.55	2.96	17.16	60.1%	0.17	2.80	0.95
	10.00	14.25	0.15	0.50	2.18	14.41	50.5%	0.15	1.89	0.87
	10.05	9.17	0.17	0.45	1.53	9.31	32.6%	0.16	1.41	0.92
	10.10	6.21	0.19	0.40	1.15	6.33	22.2%	0.18	1.12	0.98
	10.15	4.75	0.18	0.35	0.88	4.85	17.0%	0.18	0.85	0.97
	10.20	4.13	0.16	0.30	0.65	4.21	14.8%	0.15	0.58	0.88
	10.25	2.88	0.16	0.25	0.45	2.94	10.3%	0.15	0.40	0.88
	10.30	2.55	0.12	0.20	0.32	2.60	9.1%	0.12	0.24	0.75
	10.35	2.23	0.09	0.15	0.20	2.26	7.9%	0.09	0.12	0.60
	10.40	1.40	0.07	0.10	0.10	1.42	5.0%	0.07	0.05	0.50
	10.45	0.95	0.04	0.05	0.04	0.96	3.4%	0.04	0.01	0.34
	10.50	0.00	#DIV/0!	0.00	0.00	0.00	0.0%	#DIV/0!	#DIV/0!	#DIV/0!

STREAM NAME: East Fork Arkansas River
XS LOCATION: 300' upst from conf with Chalk Cr.
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	17.50	cfs
CALCULATED FLOW (Qc)=	17.50	cfs
(Qm-Qc)/Qm * 100 =	0.0	%
MEASURED WATERLINE (WLm)=	9.60	ft
CALCULATED WATERLINE (WLc)=	9.60	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.90	ft
MAX CALCULATED DEPTH (Dc)=	0.90	ft
(Dm-Dc)/Dm * 100	0.0	%
MEAN VELOCITY=	1.77	ft/sec
MANNING'S N=	0.079	
SLOPE=	0.026	ft/ft
.4 * Qm =	7.0	cfs
2.5 * Qm=	43.8	cfs

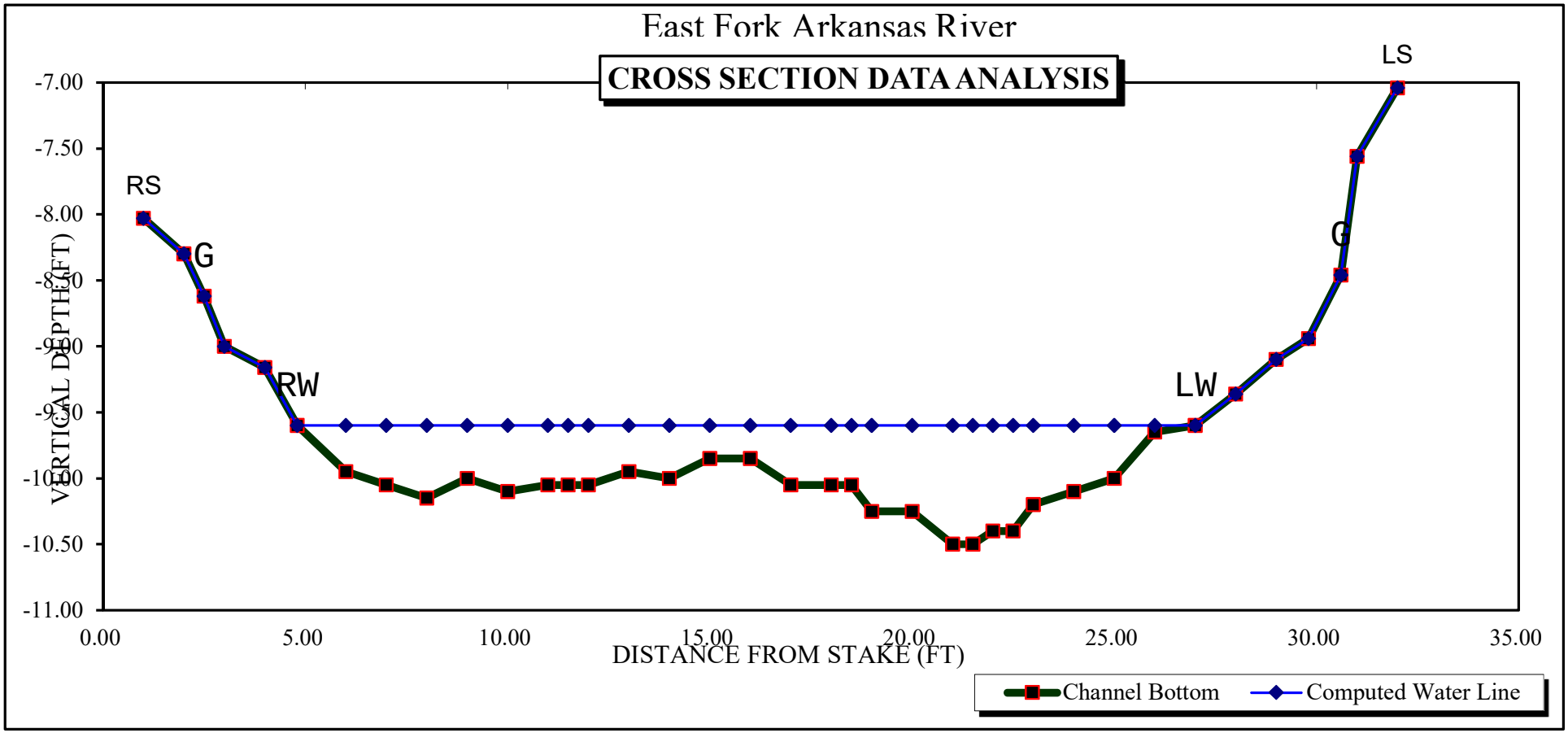
RECOMMENDED INSTREAM FLOW:
============================

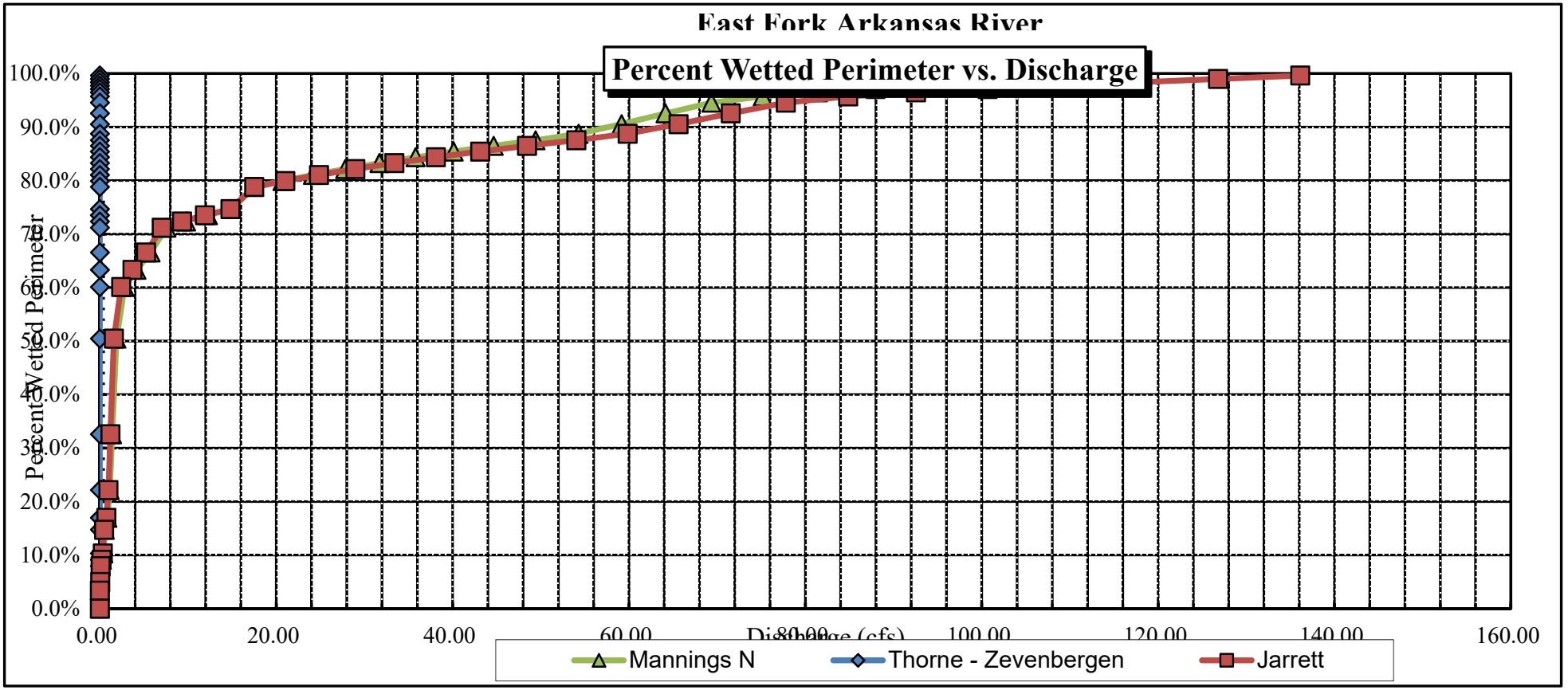
FLOW (CFS)	PERIOD
___________	________

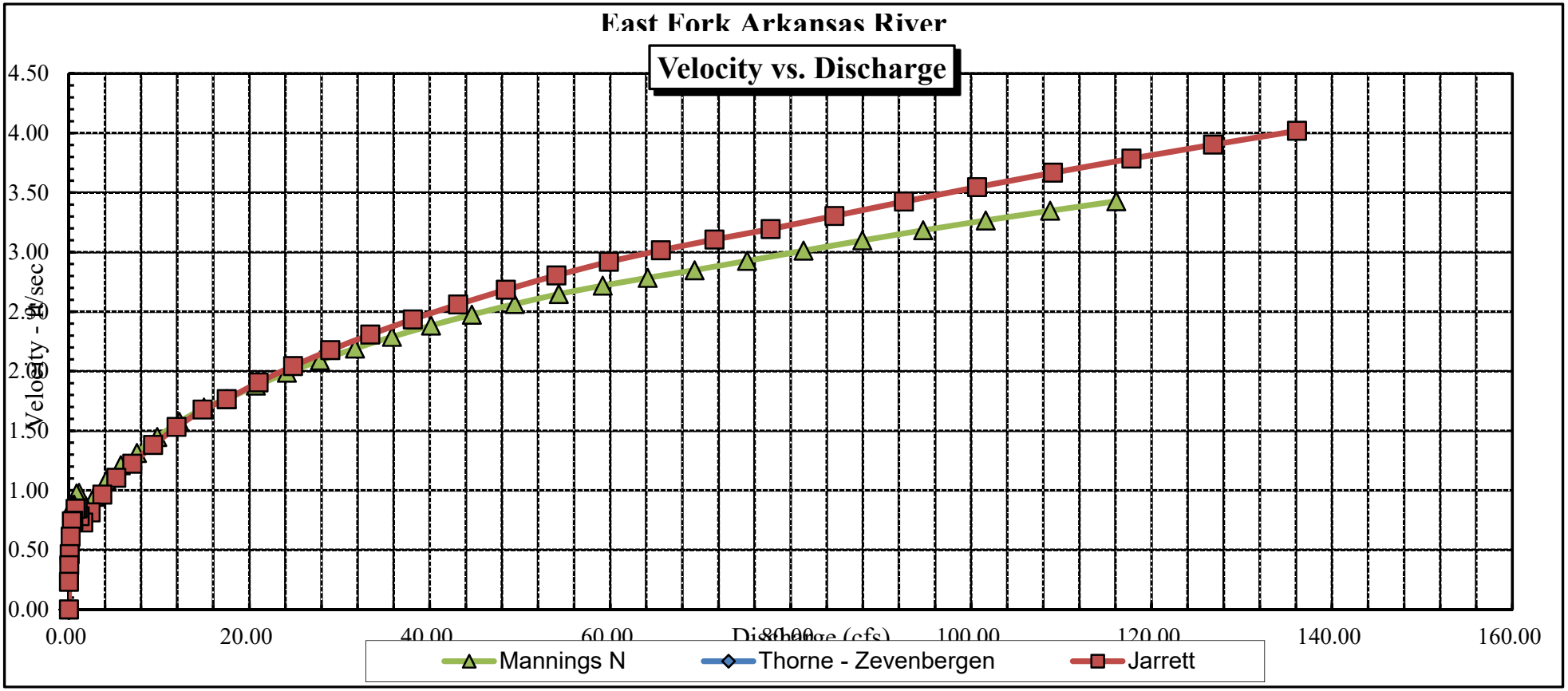
RATIONALE FOR RECOMMENDATION:
============================

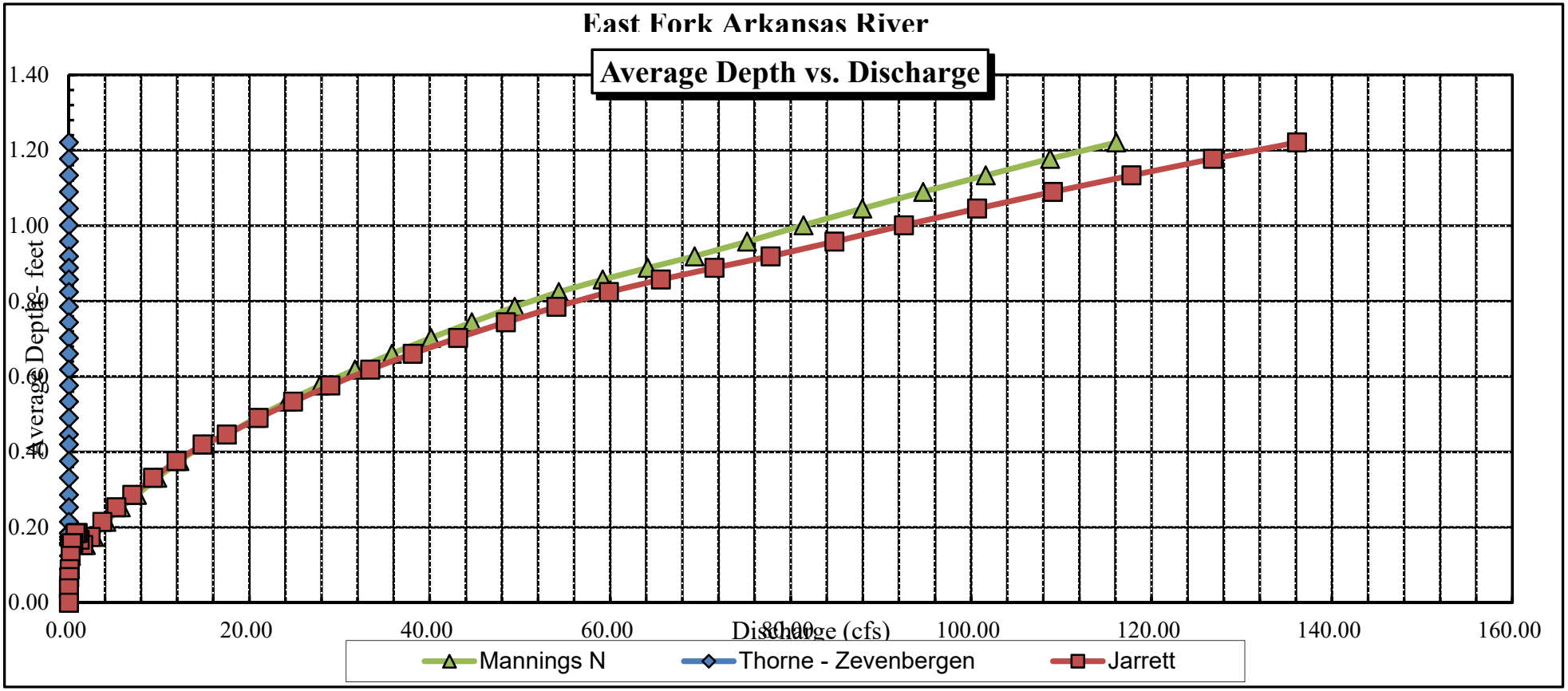
RECOMMENDATION BY: ……………….………..…….............................. AGENCY..……………………......……...…....……...... DATE:.......…...….......……………

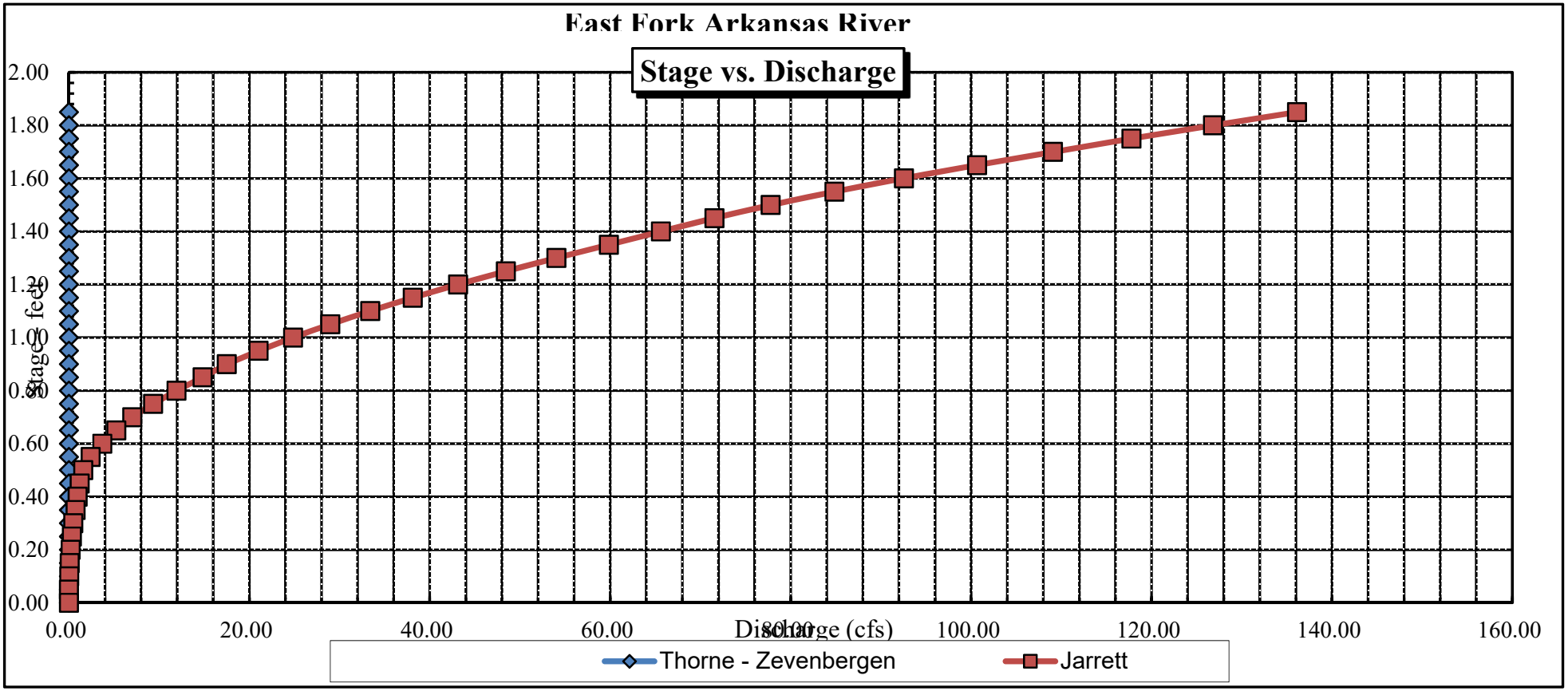
CWCB REVIEW BY: ..……………………….....……………………………………………...…............. DATE:.................…………….....…


East Fork Arkansas River
CROSS SECTION DATA ANALYSIS
LS
RS
G
RW
LW
G
-7.00
-7.50
-8.00
-8.50
-9.00
-9.50
-10.00
-10.50
-11.00
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


East Fork Arkansas River
Percent Wetted Perimeter vs. Discharge
Percent Wetted Perimeter
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
Mannings N
Thorne - Zevenbergen
Jarrett


East Fork Arkansas River
Velocity vs. Discharge
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
Mannings N
Thorne - Zevenbergen
Jarrett


East Fork Arkansas River
Average Depth vs. Discharge
Average Depth - feet
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
Discharge (cfs)
Mannings N
Thorne - Zevenbergen
Jarrett


East Fork Arkansas River
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
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
Discharge (cfs)
Thorne - Zevenbergen
Jarrett

Data Input & Proofing

STREAM NAME:	East Fork Arkansas River
XS LOCATION:	500 ft upst fr conf w Chalk Creek
XS NUMBER:	1
DATE:	9/17/2018
OBSERVERS:	R. Smith, J. Thompson, J. Abeles
1/4 SEC:	SE
SECTION:	16
TWP:	8S
RANGE:	79W
PM:	Sixth
COUNTY:	Lake
WATERSHED:	Arkansas River
DIVISION:	2
DOW CODE:	29086
USGS MAP:	
USFS MAP:	
	Level and Rod Survey
TAPE WT:	0.0106 lbs / ft
TENSION:	99999 lbs
SLOPE:	0.024 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 = 44					
	RS	0.00	3.05			0.00	0.00	0.00
1	G	3.00	4.91			0.00	0.00	0.00
		4.80	5.48			0.00	0.00	0.00
		5.30	5.88			0.00	0.00	0.00
	RW	5.80	6.15	0.00	0.00	0.00	0.00	0.00
		6.50	6.45	0.30	0.06	0.18	0.01	6.15
		7.00	6.45	0.30	0.06	0.15	0.01	6.15
		7.50	6.35	0.20	0.06	0.10	0.01	6.15
		8.00	6.45	0.30	0.75	0.15	0.11	6.15
		8.50	6.35	0.20	0.66	0.10	0.07	6.15
		9.00	6.30	0.15	0.23	0.08	0.02	6.15
		9.50	6.35	0.20	0.72	0.10	0.07	6.15
		10.00	6.35	0.20	1.25	0.10	0.13	6.15
		10.50	6.35	0.20	0.97	0.10	0.10	6.15
		11.00	6.35	0.20	1.06	0.10	0.11	6.15
		11.50	6.40	0.25	1.08	0.13	0.14	6.15
		12.00	6.35	0.20	1.41	0.10	0.14	6.15
		12.50	6.35	0.20	0.95	0.10	0.10	6.15
		13.00	6.40	0.25	0.81	0.13	0.10	6.15
		13.50	6.25	0.10	0.21	0.05	0.01	6.15
		14.00	6.25	0.05	0.59	0.03	0.01	6.20
		14.50	6.30	0.05	0.04	0.03	0.00	6.25
		15.00	6.35	0.10	0.44	0.05	0.02	6.25
		15.50	6.35	0.10	0.33	0.05	0.02	6.25
		16.00	6.35	0.10	0.46	0.05	0.02	6.25
		16.50	6.35	0.10	0.71	0.05	0.04	6.25
		17.00	6.35	0.10	0.38	0.05	0.02	6.25
		17.50	6.30	0.05	0.65	0.03	0.02	6.25
		18.00	6.35	0.10	0.60	0.05	0.03	6.25
		18.50	6.35	0.10	0.58	0.05	0.03	6.25
		19.00	6.45	0.20	0.65	0.10	0.07	6.25
		19.50	6.45	0.20	0.23	0.10	0.02	6.25
		20.00	6.55	0.30	0.22	0.15	0.03	6.25
		20.50	6.55	0.30	0.82	0.15	0.12	6.25
		21.00	6.40	0.15	0.80	0.08	0.06	6.25
		21.50	6.40	0.15	0.02	0.08	0.00	6.25
		22.00	6.25	0.00	0.00	0.00	0.00	0.00
		22.50	6.25	0.00	0.00	0.00	0.00	0.00
	LW	22.80	6.25	0.00	0.00	0.00	0.00	0.00
		23.30	6.03			0.00	0.00	0.00
		23.80	5.61			0.00	0.00	0.00
		25.60	5.11			0.00	0.00	0.00
1	G	25.90	4.75			0.00	0.00	0.00
	LS	27.00	4.02			0.00	0.00	0.00
					Totals	2.73	1.62	

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

LOCATION INFORMATION

STREAM NAME:	East Fork Arkansas River
XS LOCATION:	500 ft upst fr conf w Chalk Creek
XS NUMBER:	1
DATE:	17-Sep-18
OBSERVERS:	R. Smith, J. Thompson, J. Abeles
1/4 SEC:	SE
SECTION:	16
TWP:	8S
RANGE:	79W
PM:	Sixth
COUNTY:	Lake
WATERSHED:	Arkansas River
DIVISION:	2
DOW CODE:	29086
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:	0.024

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

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

STREAM NAME: East Fork Arkansas River
XS LOCATION: 500 ft upst fr conf w Chalk Creek
XS NUMBER: 1

DATA POINTS= 44

VALUES COMPUTED FROM RAW FIELD DATA

	FEATURE	DIST	VERT DEPTH	WATER DEPTH	VEL	WETTED PERIM.	WATER DEPTH	AREA (Am)	Q (Qm)	% Q CELL
	RS	0.00	3.05			0.00		0.00	0.00	0.0%
1	G	3.00	4.91			0.00		0.00	0.00	0.0%
		4.80	5.48			0.00		0.00	0.00	0.0%
		5.30	5.88			0.00		0.00	0.00	0.0%
	RW	5.80	6.15	0.00	0.00	0.00		0.00	0.00	0.0%
		6.50	6.45	0.30	0.06	0.76	0.30	0.18	0.01	0.7%
		7.00	6.45	0.30	0.06	0.50	0.30	0.15	0.01	0.6%
		7.50	6.35	0.20	0.06	0.51	0.20	0.10	0.01	0.4%
		8.00	6.45	0.30	0.75	0.51	0.30	0.15	0.11	7.0%
		8.50	6.35	0.20	0.66	0.51	0.20	0.10	0.07	4.1%
		9.00	6.30	0.15	0.23	0.50	0.15	0.08	0.02	1.1%
		9.50	6.35	0.20	0.72	0.50	0.20	0.10	0.07	4.5%
		10.00	6.35	0.20	1.25	0.50	0.20	0.10	0.13	7.7%
		10.50	6.35	0.20	0.97	0.50	0.20	0.10	0.10	6.0%
		11.00	6.35	0.20	1.06	0.50	0.20	0.10	0.11	6.6%
		11.50	6.40	0.25	1.08	0.50	0.25	0.13	0.14	8.3%
		12.00	6.35	0.20	1.41	0.50	0.20	0.10	0.14	8.7%
		12.50	6.35	0.20	0.95	0.50	0.20	0.10	0.10	5.9%
		13.00	6.40	0.25	0.81	0.50	0.25	0.13	0.10	6.3%
		13.50	6.25	0.10	0.21	0.52	0.10	0.05	0.01	0.6%
		14.00	6.25	0.05	0.59	0.50	0.05	0.03	0.01	0.9%
		14.50	6.30	0.05	0.04	0.50	0.05	0.03	0.00	0.1%
		15.00	6.35	0.10	0.44	0.50	0.10	0.05	0.02	1.4%
		15.50	6.35	0.10	0.33	0.50	0.10	0.05	0.02	1.0%
		16.00	6.35	0.10	0.46	0.50	0.10	0.05	0.02	1.4%
		16.50	6.35	0.10	0.71	0.50	0.10	0.05	0.04	2.2%
		17.00	6.35	0.10	0.38	0.50	0.10	0.05	0.02	1.2%
		17.50	6.30	0.05	0.65	0.50	0.05	0.03	0.02	1.0%
		18.00	6.35	0.10	0.60	0.50	0.10	0.05	0.03	1.9%
		18.50	6.35	0.10	0.58	0.50	0.10	0.05	0.03	1.8%
		19.00	6.45	0.20	0.65	0.51	0.20	0.10	0.07	4.0%
		19.50	6.45	0.20	0.23	0.50	0.20	0.10	0.02	1.4%
		20.00	6.55	0.30	0.22	0.51	0.30	0.15	0.03	2.0%
		20.50	6.55	0.30	0.82	0.50	0.30	0.15	0.12	7.6%
		21.00	6.40	0.15	0.80	0.52	0.15	0.08	0.06	3.7%
		21.50	6.40	0.15	0.02	0.50	0.15	0.08	0.00	0.1%
		22.00	6.25	0.00	0.00	0.52		0.00	0.00	0.0%
		22.50	6.25	0.00	0.00	0.00		0.00	0.00	0.0%
	LW	22.80	6.25	0.00	0.00	0.00		0.00	0.00	0.0%
		23.30	6.03			0.00		0.00	0.00	0.0%
		23.80	5.61			0.00		0.00	0.00	0.0%
		25.60	5.11			0.00		0.00	0.00	0.0%
1	G	25.90	4.75			0.00		0.00	0.00	0.0%
	LS	27.00	4.02			0.00		0.00	0.00	0.0%
	TOTALS ----------					16.40	0.3 (Max.)	2.73	1.62	100.0%

Manning's n = 0.1176
Hydraulic Radius= 0.166467708

STREAM NAME: East Fork Arkansas River
XS LOCATION: 500 ft upst fr conf w Chalk Creek
XS NUMBER: 1

WATER LINE COMPARISON TABLE

WATER LINE	MEAS AREA	COMP AREA	AREA ERROR
	2.73	2.77	1.3%
5.95	2.73	7.15	161.8%
5.97	2.73	6.79	148.6%
5.99	2.73	6.43	135.5%
6.01	2.73	6.07	122.5%
6.03	2.73	5.72	109.5%
6.05	2.73	5.36	96.5%
6.07	2.73	5.01	83.6%
6.09	2.73	4.66	70.8%
6.11	2.73	4.31	58.0%
6.13	2.73	3.97	45.3%
6.15	2.73	3.62	32.7%
6.16	2.73	3.45	26.4%
6.17	2.73	3.28	20.1%
6.18	2.73	3.11	13.8%
6.19	2.73	2.94	7.5%
6.20	2.73	2.77	1.3%
6.21	2.73	2.60	-4.9%
6.22	2.73	2.43	-11.1%
6.23	2.73	2.26	-17.3%
6.24	2.73	2.09	-23.5%
6.25	2.73	1.92	-29.6%
6.27	2.73	1.62	-40.8%
6.29	2.73	1.32	-51.7%
6.31	2.73	1.03	-62.3%
6.33	2.73	0.76	-72.0%
6.35	2.73	0.52	-81.0%
6.37	2.73	0.39	-85.7%
6.39	2.73	0.28	-89.6%
6.41	2.73	0.21	-92.5%
6.43	2.73	0.14	-94.7%
6.45	2.73	0.09	-96.6%

WATERLINE AT ZERO
AREA ERROR = 6.202

STREAM NAME: East Fork Arkansas River
XS LOCATION: 500 ft upst fr conf w Chalk Creek
XS NUMBER: 1

Constant Manning's n

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

	DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
GL	4.91	22.77	1.23	1.64	28.04	23.62	100.0%	1.19	61.51	2.19
	5.20	21.35	1.01	1.35	21.57	22.05	93.3%	0.98	41.60	1.93
	5.25	21.01	0.98	1.30	20.51	21.70	91.9%	0.95	38.66	1.88
	5.30	20.67	0.94	1.25	19.47	21.35	90.4%	0.91	35.83	1.84
	5.35	20.33	0.91	1.20	18.44	20.99	88.9%	0.88	33.11	1.80
	5.40	19.99	0.87	1.15	17.43	20.64	87.4%	0.84	30.49	1.75
	5.45	19.66	0.84	1.10	16.44	20.29	85.9%	0.81	27.98	1.70
	5.50	19.36	0.80	1.05	15.47	19.98	84.6%	0.77	25.53	1.65
	5.55	19.12	0.76	1.00	14.51	19.71	83.4%	0.74	23.15	1.60
	5.60	18.88	0.72	0.95	13.56	19.44	82.3%	0.70	20.86	1.54
	5.65	18.73	0.67	0.90	12.62	19.27	81.6%	0.65	18.62	1.48
	5.70	18.61	0.63	0.85	11.68	19.11	80.9%	0.61	16.47	1.41
	5.75	18.49	0.58	0.80	10.76	18.95	80.2%	0.57	14.43	1.34
	5.80	18.37	0.54	0.75	9.83	18.79	79.6%	0.52	12.50	1.27
	5.85	18.25	0.49	0.70	8.92	18.64	78.9%	0.48	10.68	1.20
	5.90	18.11	0.44	0.65	8.01	18.47	78.2%	0.43	8.98	1.12
	5.95	17.96	0.40	0.60	7.11	18.28	77.4%	0.39	7.41	1.04
	6.00	17.81	0.35	0.55	6.21	18.10	76.6%	0.34	5.96	0.96
	6.05	17.63	0.30	0.50	5.33	17.90	75.8%	0.30	4.65	0.87
	6.10	17.42	0.26	0.45	4.45	17.67	74.8%	0.25	3.47	0.78
	6.15	17.22	0.21	0.40	3.59	17.44	73.8%	0.21	2.44	0.68
WL	6.20	16.99	0.16	0.35	2.73	17.19	72.7%	0.16	1.57	0.57
	6.25	15.43	0.12	0.30	1.89	15.60	66.1%	0.12	0.90	0.48
	6.30	14.39	0.08	0.25	1.14	14.54	61.6%	0.08	0.41	0.36
	6.35	6.94	0.07	0.20	0.51	7.05	29.9%	0.07	0.17	0.34
	6.40	3.56	0.07	0.15	0.23	3.62	15.3%	0.06	0.07	0.31
	6.45	1.32	0.07	0.10	0.09	1.34	5.7%	0.07	0.03	0.32
	6.50	0.90	0.04	0.05	0.03	0.91	3.9%	0.04	0.01	0.22

STREAM NAME: East Fork Arkansas River
XS LOCATION: 500 ft upst fr conf w Chalk Creek
XS NUMBER: 1

SUMMARY SHEET

MEASURED FLOW (Qm)=	1.62	cfs
CALCULATED FLOW (Qc)=	1.57	cfs
(Qm-Qc)/Qm * 100 =	3.1	%
MEASURED WATERLINE (WLm)=	6.20	ft
CALCULATED WATERLINE (WLc)=	6.20	ft
(WLm-WLc)/WLm * 100 =	0.0	%
MAX MEASURED DEPTH (Dm)=	0.30	ft
MAX CALCULATED DEPTH (Dc)=	0.35	ft
(Dm-Dc)/Dm * 100	-16.0	%
MEAN VELOCITY=	0.57	ft/sec
MANNING'S N=	0.118	
SLOPE=	0.024	ft/ft
.4 * Qm =	0.6	cfs
2.5 * Qm=	4.0	cfs

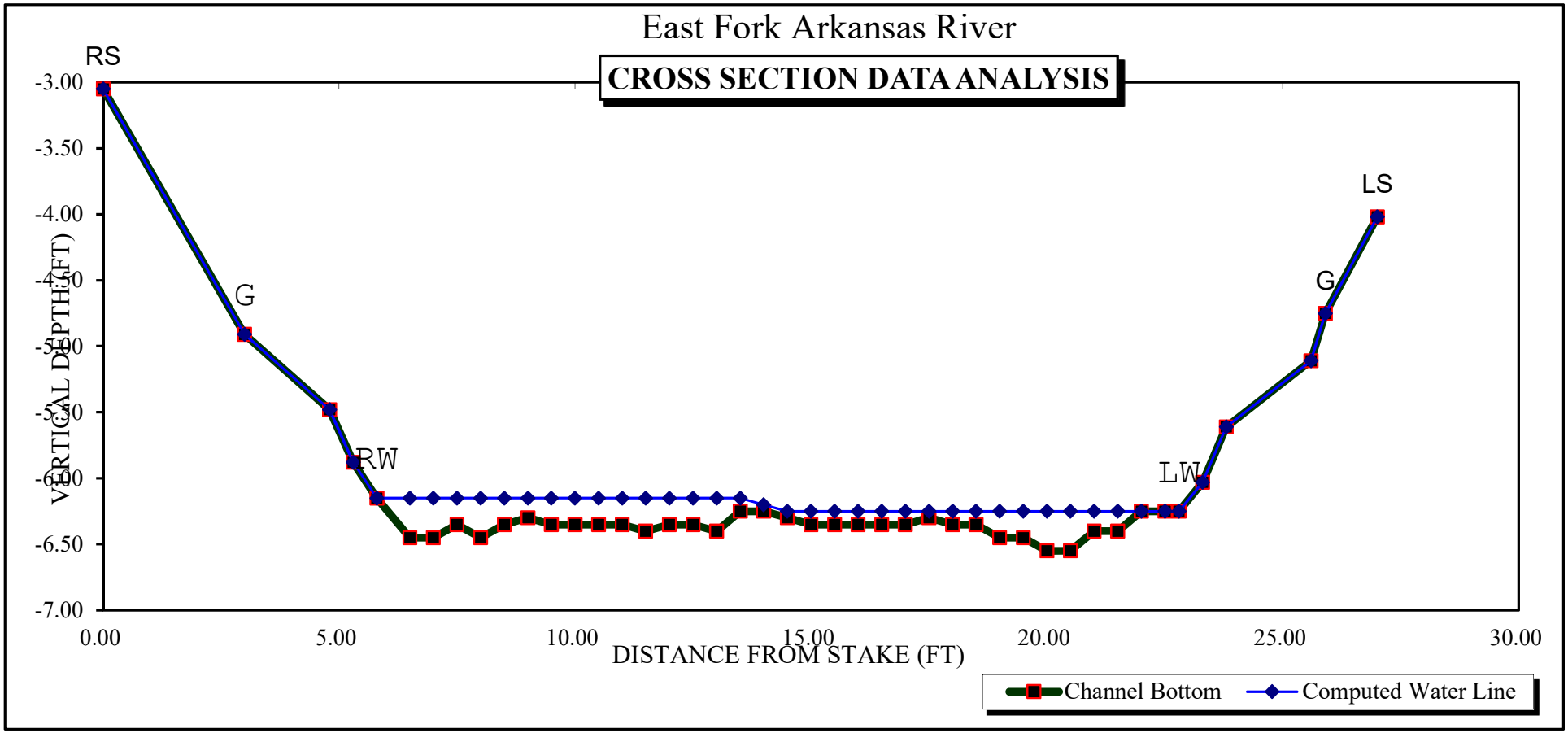
RECOMMENDED INSTREAM FLOW:
==========

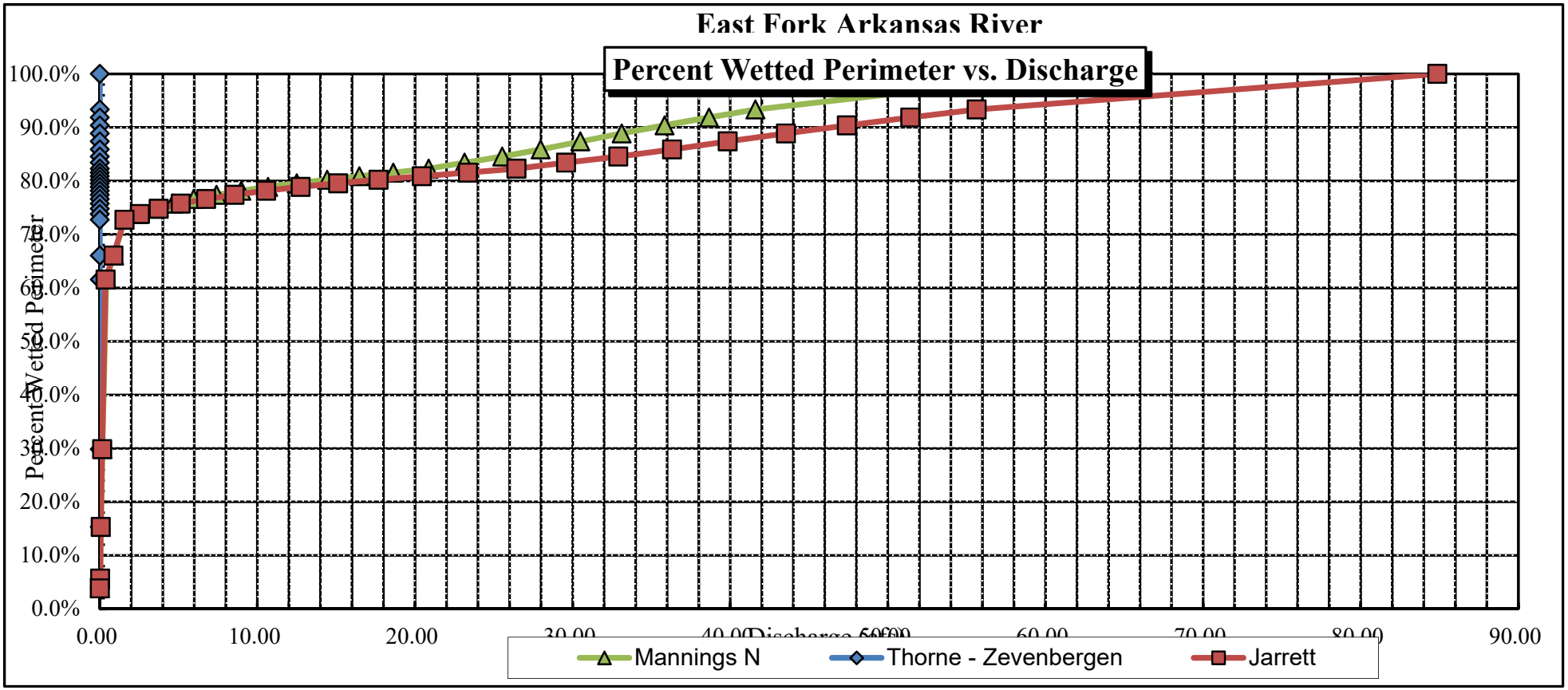
FLOW (CFS)	PERIOD
==========	========
_____	_____
_____	_____
_____	_____
_____	_____

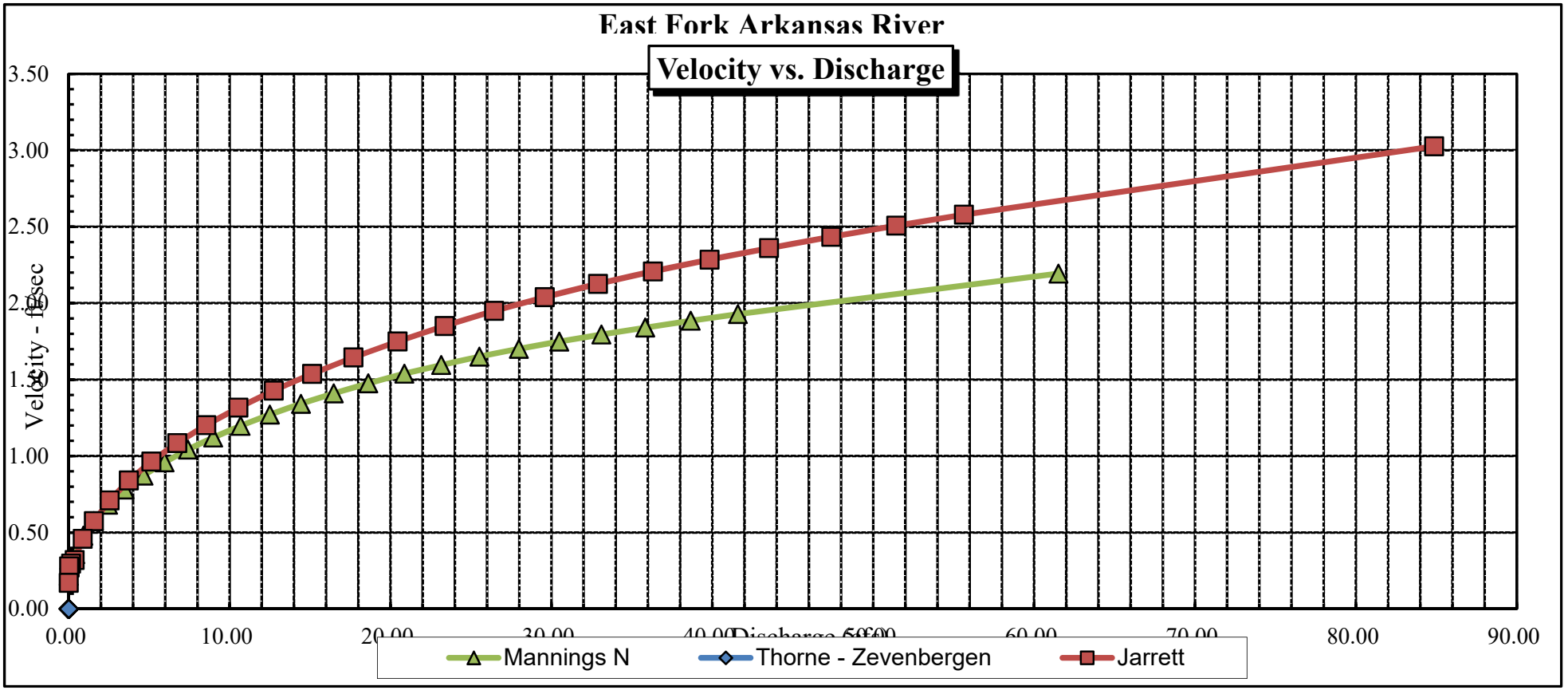
RATIONALE FOR RECOMMENDATION:
==========

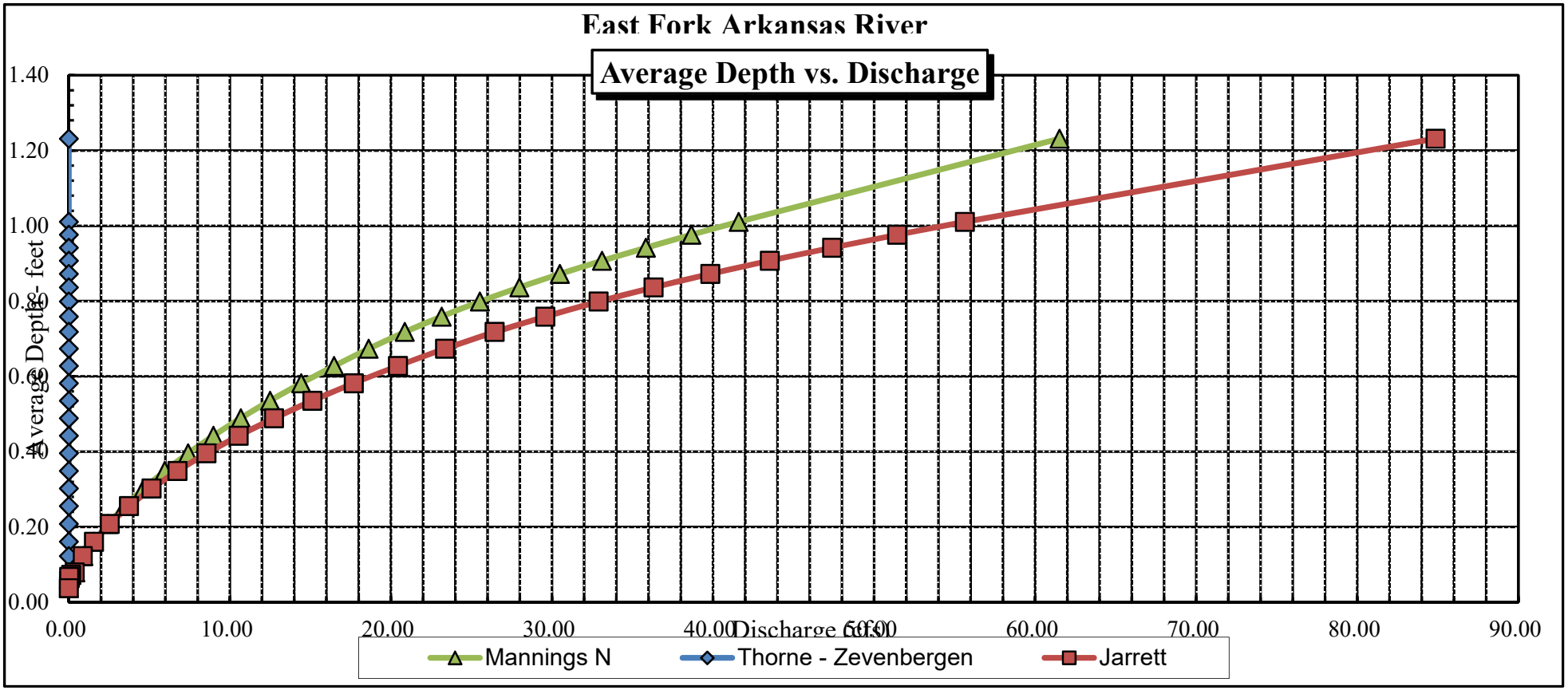
RECOMMENDATION BY: ..... AGENCY..... DATE:.....

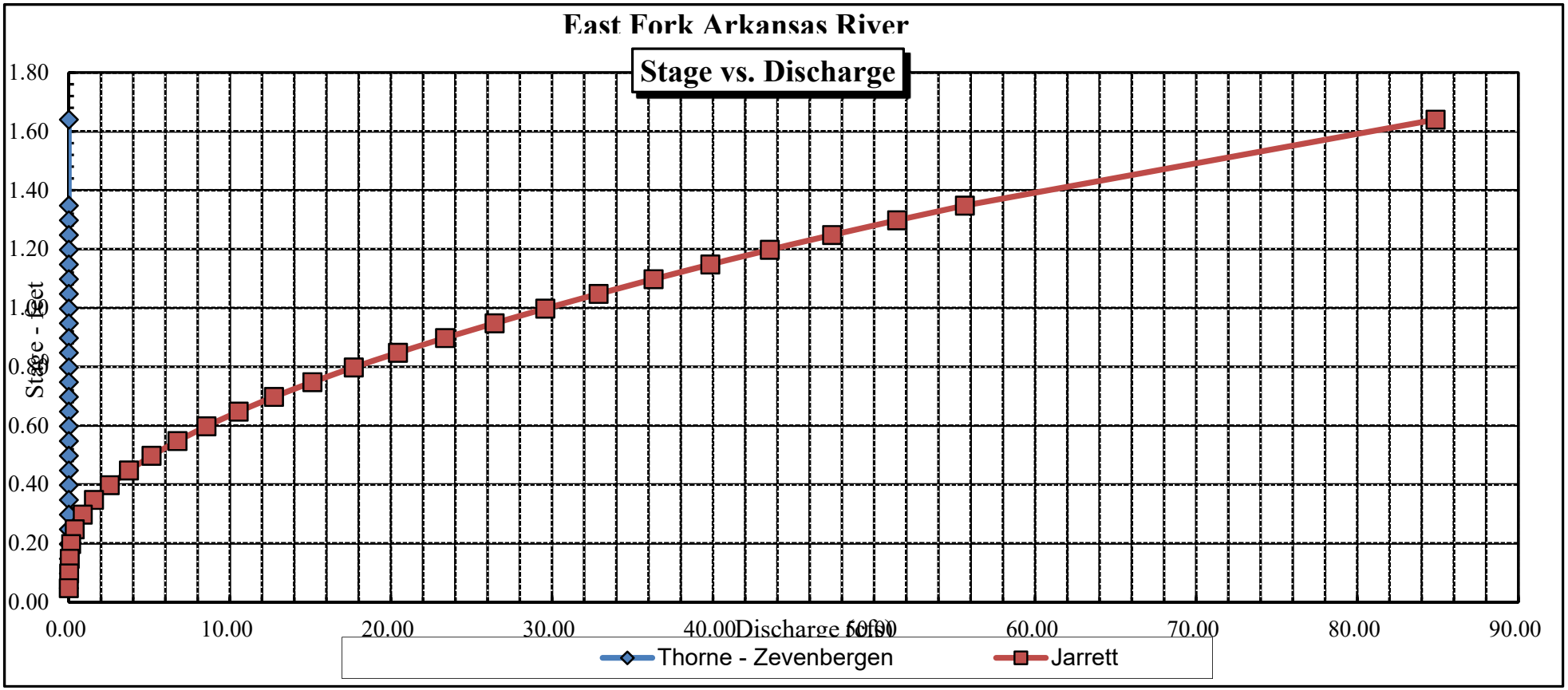
CWCB REVIEW BY: ..... DATE:.....


East Fork Arkansas River
CROSS SECTION DATA ANALYSIS
RS
G
RW
LW
G
LS
-3.00
-3.50
-4.00
-4.50
-5.00
-5.50
-6.00
-6.50
-7.00
VERTICAL DEPTH (FT)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
DISTANCE FROM STAKE (FT)
Channel Bottom
Computed Water Line


East Fork Arkansas River
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
Mannings N
Thorne - Zevenbergen
Jarrett


East Fork Arkansas River
Velocity vs. Discharge
Velocity - ft/sec
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
10.00
20.00
30.00
40.00
60.00
70.00
80.00
90.00
Mannings N
Thorne - Zevenbergen
Jarrett


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


East Fork Arkansas River
Stage vs. Discharge
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Stage - feet
0.00
10.00
20.00
30.00
40.00
60.00
70.00
80.00
90.00
Thorne - Zevenbergen
Jarrett

COLORADO
Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 718
Denver, CO 80203

East Fork Arkansas CWCB Temporary Streamgage

Location: 13N 394843 4356219

Installation Date: 7/17/2019

Equipment: Onset Hobo MX2001 water level logger, staff gage

Description: The streamgage consists of a data logger and pressure transducer protected in a 2 inch PVC pipe, secured to the bank with a t-pot fence post. The pressure transducer measured water level and temperature on 15 minute intervals in a large pool formed by stable boulder control. A co-located staff gage was used as a secondary water level measurement device.

Discharge Measurment Field Visit Data Report *(Filters: Name begins with East Fork Arkansas;)*

Div	Name	CWCB Case Number	Segment ID	Meas. Date	UTM	Location	Flow Amount (cfs)	Meas #	Rating	Station ID
2	East Fork Arkansas River		20/2/A-001	07/17/2019	UTMx: 394837 UTMy: 4356200	E Fk Arkanasas River 500 ft US of temp gage	72.52	1	F	EFARKRD2
2	East Fork Arkansas River		20/2/A-001	08/13/2019	UTMx: 394843 UTMy: 4356219	East Fork Arkansas River 20ft US of temp gage	20.11	2	F	EFKARKD2
2	East Fork Arkansas River		20/2/A-001	10/09/2019	UTMx: 394843 UTMy: 4356219	E Fk Arkansas 15ft US of temp gage	2.02	3	G	EFKARKD2
2	East Fork Arkansas River		20/2/A-001	07/13/2020	UTMx: 394843 UTMy: 4356219	3ft dwst of gage	18.43	4	F	EFKARKD2
2	East Fork Arkansas River		20/2/A-001	08/05/2020	UTMx: 394843 UTMy: 4356219	At East Fork Arkansas gage	8.79	5	G	EFKARKD2
2	East Fork Arkansas River		20/2/A-001	09/23/2020	UTMx: 394843 UTMy: 4356219	5ft dwnst pt gage	3.89	6	G	EFKARKD2
2	East Fork Arkansas River		20/2/A-001	12/08/2020	UTMx: 394843 UTMy: 4356219	East Fork Arkansas just upstream of gage pool.	0.74	7	P	EFKARKD2
2	East Fork Arkansas River		20/2/A-001	02/01/2021	UTMx: 394843 UTMy: 4356219	Above riffle that creates the upstream end of gage pool	0.42	8	P	EFKARKD2

Discharge Measurement Summary

Site name	Efarkrd2
Site number	1
Operator(s)	Kas
File name	Efarkrd2_20190717-120107.ft
Comment	

Start time	7/17/2019 11:00 AM
End time	7/17/2019 12:00 PM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
22	40	72.579

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
20.000	1.890	21.014

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
48.819	1.017	1.087

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
9.070	1.900	1.598

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	2.1%
Velocity	0.6%	4.3%
Width	0.1%	0.1%
Method	1.6%	
# Stations	2.3%	
Overall	**3.0%**	**4.9%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

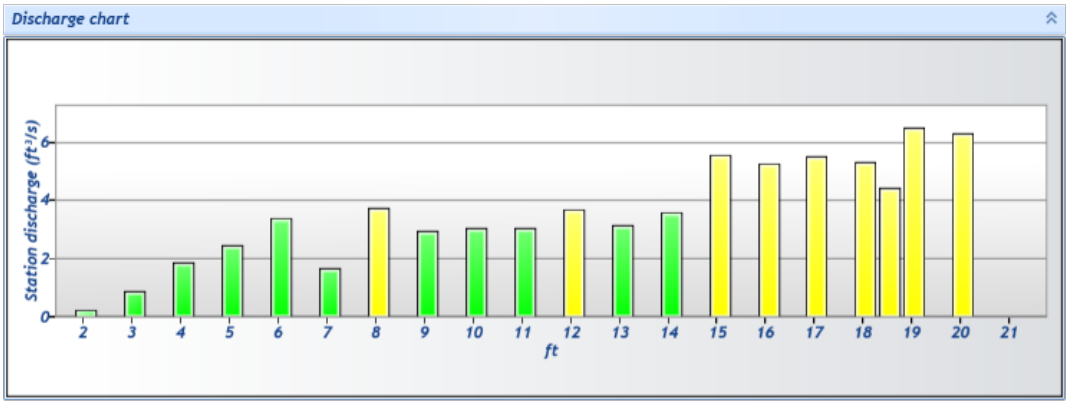
Summary overview

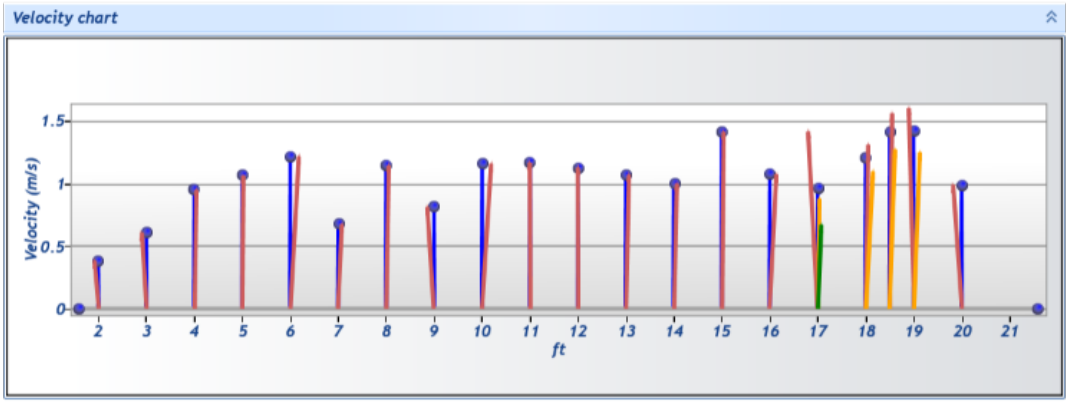
No changes were made to this file
Quality control warnings

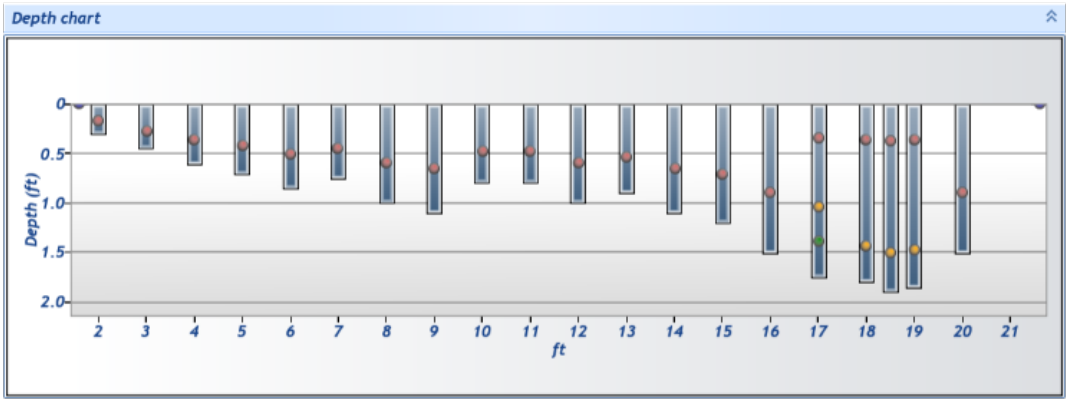
Discharge Measurement Summary

Site name	Efarkrd2
Site number	1
Operator(s)	Kas
File name	Efarkrd2_20190717-120107.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%







Discharge Measurement Summary

Site name	Efarkrd2
Site number	1
Operator(s)	Kas
File name	Efarkrd2_20190717-120107.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	11:00 AM	1.600	None	0.000	0.000	0.000	0	0.000	1.000	0.385	0.000	0.000	0.000	✓
1	11:01 AM	2.000	0.6	0.300	0.600	0.180	80	0.385	1.000	0.385	0.020	0.265	0.365	✓
2	11:05 AM	3.000	0.6	0.450	0.600	0.270	80	0.607	1.000	0.607	0.042	0.896	1.235	✓
3	11:07 AM	4.000	0.6	0.600	0.600	0.360	80	0.949	1.000	0.949	0.056	1.867	2.573	✓
4	11:11 AM	5.000	0.6	0.700	0.600	0.420	80	1.061	1.000	1.061	0.065	2.437	3.358	✓
5	11:13 AM	6.000	0.6	0.850	0.600	0.510	80	1.213	1.000	1.213	0.079	3.381	4.659	✓
6	11:16 AM	7.000	0.6	0.750	0.600	0.450	80	0.675	1.000	0.675	0.070	1.662	2.290	✓
7	11:18 AM	8.000	0.6	1.000	0.600	0.600	80	1.142	1.000	1.142	0.093	3.746	5.162	✓
8	11:20 AM	9.000	0.6	1.100	0.600	0.660	80	0.812	1.000	0.812	0.102	2.930	4.036	✓
9	11:22 AM	10.000	0.6	0.800	0.600	0.480	80	1.157	1.000	1.157	0.074	3.036	4.183	✓
10	11:24 AM	11.000	0.6	0.800	0.600	0.480	80	1.164	1.000	1.164	0.074	3.056	4.211	✓
11	11:26 AM	12.000	0.6	1.000	0.600	0.600	80	1.125	1.000	1.125	0.093	3.692	5.087	✓
12	11:27 AM	13.000	0.6	0.900	0.600	0.540	80	1.068	1.000	1.068	0.084	3.154	4.346	✓
13	11:29 AM	14.000	0.6	1.100	0.600	0.660	80	0.998	1.000	0.998	0.102	3.600	4.960	✓
14	11:31 AM	15.000	0.6	1.200	0.600	0.720	80	1.411	1.000	1.411	0.111	5.555	7.654	✓
15	11:33 AM	16.000	0.6	1.500	0.600	0.900	80	1.072	1.000	1.072	0.139	5.276	7.269	✓
16	11:39 AM	17.000	0.2/0.6/0.8	1.750	0.200	0.350	80	1.412	1.000	0.959	0.163	5.508	7.589	✓
16	11:39 AM	17.000	0.2/0.6/0.8	1.750	0.600	1.050	80	0.878	1.000	0.959	0.163	5.508	7.589	✓
16	11:39 AM	17.000	0.2/0.6/0.8	1.750	0.800	1.400	80	0.670	1.000	0.959	0.163	5.508	7.589	✓
17	11:44 AM	18.000	0.2/0.8	1.800	0.200	0.360	80	1.307	1.000	1.200	0.125	5.316	7.325	✓
17	11:44 AM	18.000	0.2/0.8	1.800	0.800	1.440	80	1.093	1.000	1.200	0.125	5.316	7.325	✓
18	11:56 AM	18.500	0.2/0.8	1.900	0.200	0.380	80	1.557	1.000	1.413	0.088	4.405	6.069	✓
18	11:56 AM	18.500	0.2/0.8	1.900	0.800	1.520	80	1.269	1.000	1.413	0.088	4.405	6.069	✓
19	11:47 AM	19.000	0.2/0.8	1.850	0.200	0.370	80	1.598	1.000	1.423	0.129	6.477	8.924	✓
19	11:47 AM	19.000	0.2/0.8	1.850	0.800	1.480	80	1.247	1.000	1.423	0.129	6.477	8.924	✓
20	11:52 AM	20.000	0.6	1.500	0.600	0.900	80	0.988	1.000	0.988	0.181	6.320	8.707	✓
21	12:00 PM	21.600	None	0.000	0.000	0.000	0	0.000	1.000	0.988	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	Efarkrd2
Site number	1
Operator(s)	Kas
File name	Efarkrd2_20190717-120107.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	11:01 AM	2.000	0.6	0.300	0.600	0.180	Standard Error > QC
2	11:05 AM	3.000	0.6	0.450	0.600	0.270	Standard Error > QC
3	11:07 AM	4.000	0.6	0.600	0.600	0.360	Standard Error > QC
4	11:11 AM	5.000	0.6	0.700	0.600	0.420	Standard Error > QC
5	11:13 AM	6.000	0.6	0.850	0.600	0.510	Standard Error > QC
6	11:16 AM	7.000	0.6	0.750	0.600	0.450	Standard Error > QC
7	11:18 AM	8.000	0.6	1.000	0.600	0.600	Standard Error > QC
8	11:20 AM	9.000	0.6	1.100	0.600	0.660	Standard Error > QC
9	11:22 AM	10.000	0.6	0.800	0.600	0.480	Standard Error > QC
10	11:24 AM	11.000	0.6	0.800	0.600	0.480	Standard Error > QC
11	11:26 AM	12.000	0.6	1.000	0.600	0.600	Standard Error > QC
12	11:27 AM	13.000	0.6	0.900	0.600	0.540	Standard Error > QC
13	11:29 AM	14.000	0.6	1.100	0.600	0.660	Standard Error > QC
14	11:31 AM	15.000	0.6	1.200	0.600	0.720	Standard Error > QC
15	11:33 AM	16.000	0.6	1.500	0.600	0.900	Standard Error > QC
16	11:39 AM	17.000	0.2/0.6/0.8	1.750	0.200	0.350	Standard Error > QC
16	11:39 AM	17.000	0.2/0.6/0.8	1.750	0.600	1.050	Standard Error > QC
16	11:39 AM	17.000	0.2/0.6/0.8	1.750	0.800	1.400	Standard Error > QC
17	11:44 AM	18.000	0.2/0.8	1.800	0.200	0.360	Standard Error > QC
17	11:44 AM	18.000	0.2/0.8	1.800	0.800	1.440	Standard Error > QC
18	11:56 AM	18.500	0.2/0.8	1.900	0.200	0.380	Standard Error > QC
18	11:56 AM	18.500	0.2/0.8	1.900	0.800	1.520	Standard Error > QC
19	11:47 AM	19.000	0.2/0.8	1.850	0.200	0.370	Standard Error > QC
19	11:47 AM	19.000	0.2/0.8	1.850	0.800	1.480	Standard Error > QC
20	11:52 AM	20.000	0.6	1.500	0.600	0.900	Standard Error > QC
21	12:00 PM	21.600	None	0.000	0.000	0.000	Water Depth > QC

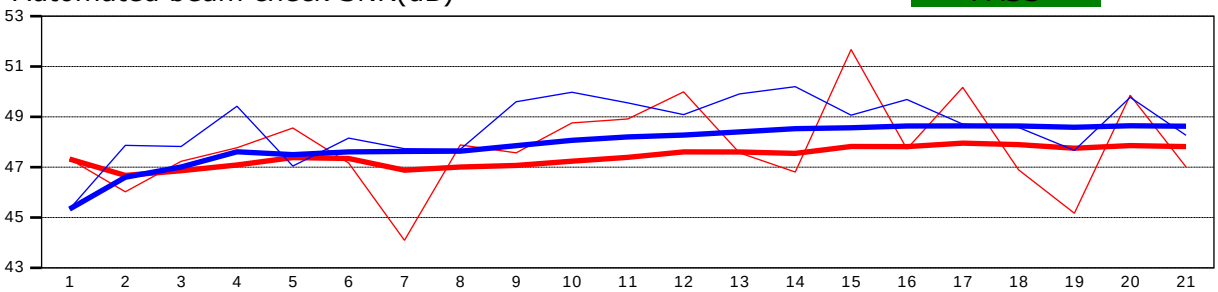
Discharge Measurement Summary

Site name	Efarkrd2
Site number	1
Operator(s)	Kas
File name	Efarkrd2_20190717-120107.ft
Comment	

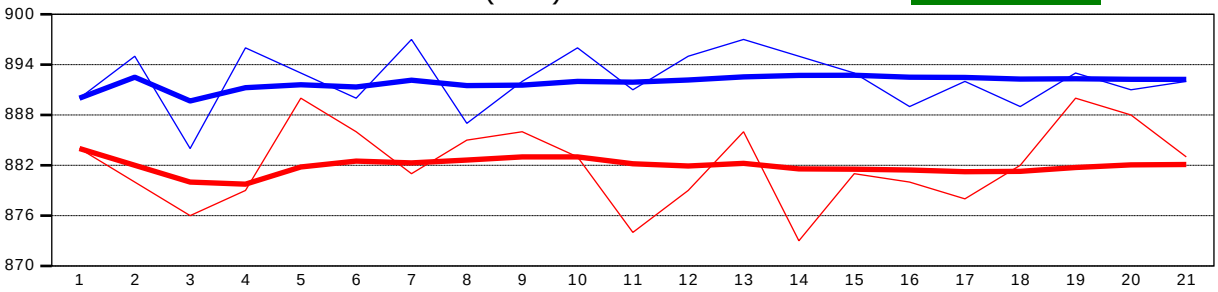
Beam 1	
Beam 2	

Automated beam check Start time 7/17/2019 11:00:00 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

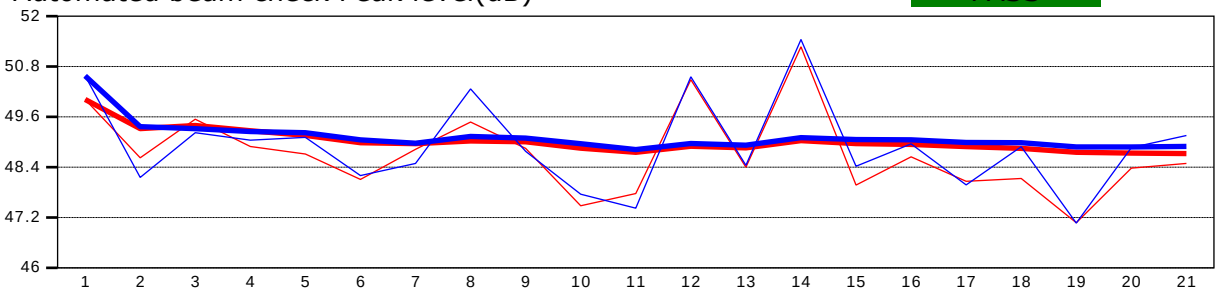
Discharge Measurement Summary

Site name	Efarkrd2
Site number	1
Operator(s)	Kas
File name	Efarkrd2_20190717-120107.ft
Comment	

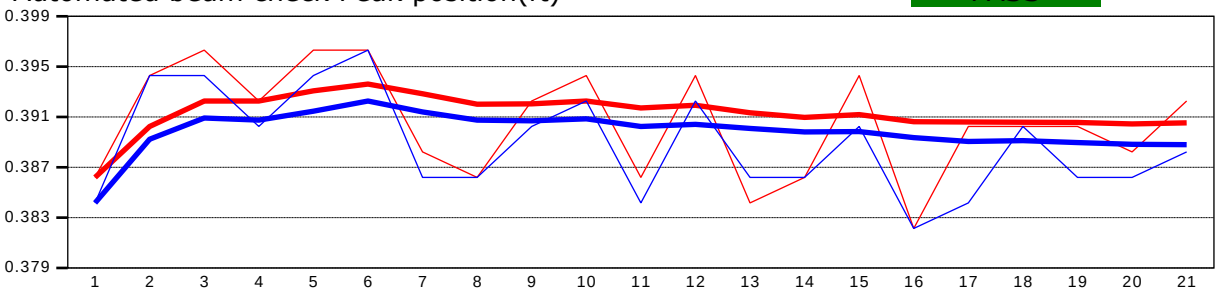
Beam 1	
Beam 2	

Automated beam check Start time 7/17/2019 11:00:00 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

9/23/2020 7:51:59 PM

Discharge Measurement Summary

Site name	E Fk Arkansas
Site number	002
Operator(s)	JEL
File name	E Fk Arkansas_20190813-160728.ft
Comment	Temp gage

Start time	8/13/2019 3:35 PM
End time	8/13/2019 4:06 PM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
23	40	20.107

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
11.700	1.092	12.520

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
44.269	1.005	0.521

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
12.310	1.400	0.997

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	2.4%
Velocity	1.3%	5.1%
Width	0.2%	0.2%
Method	2.4%	
# Stations	2.2%	
Overall	**3.6%**	**5.8%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

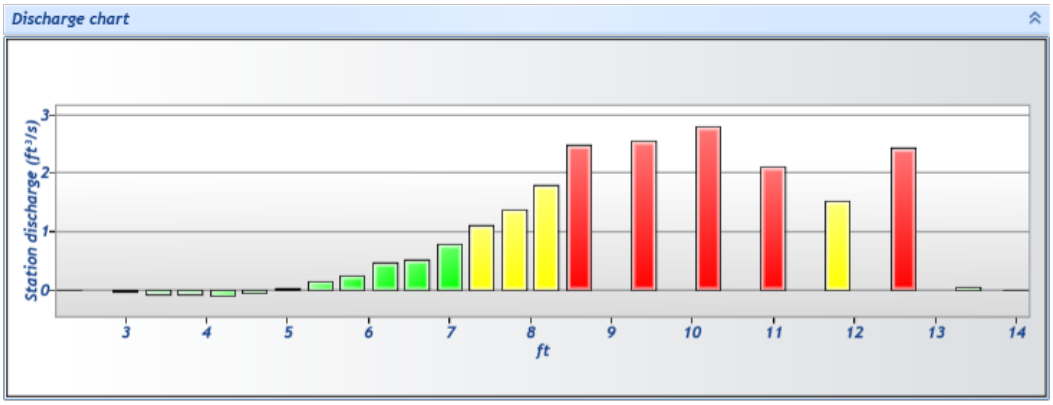
Summary overview

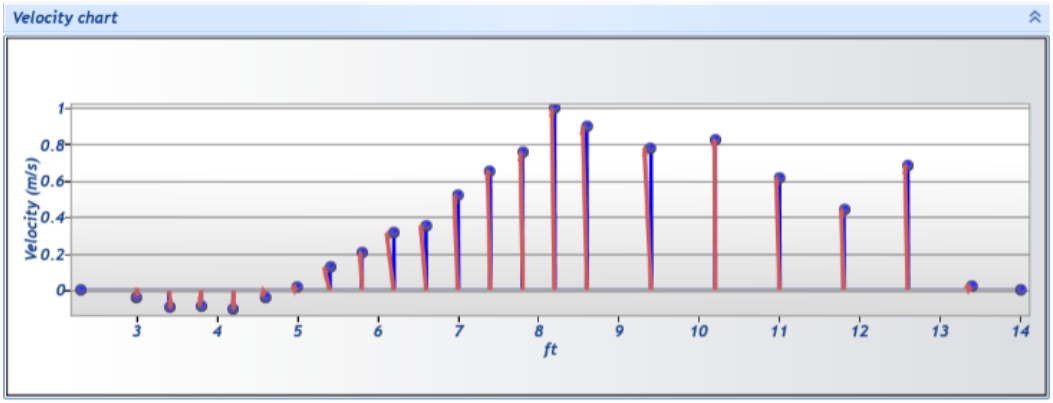
No changes were made to this file
Quality control warnings

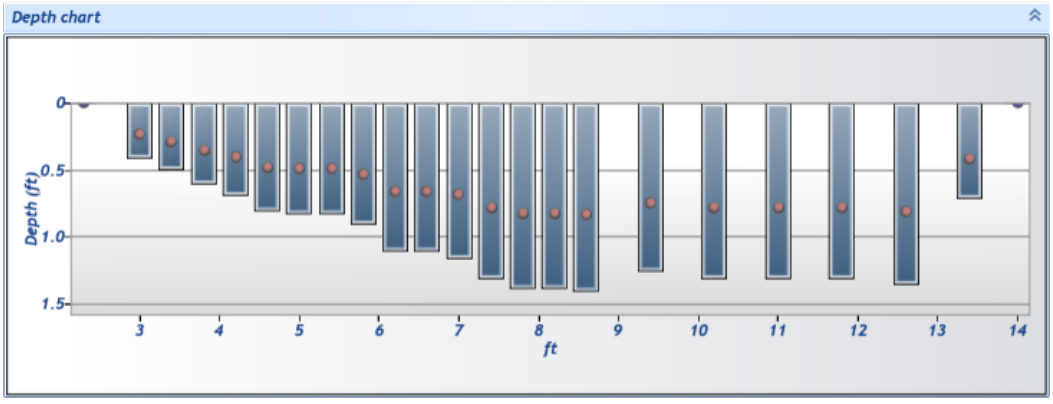
Discharge Measurement Summary

Site name	E Fk Arkansas
Site number	002
Operator(s)	JEL
File name	E Fk Arkansas_20190813-160728.ft
Comment	Temp gage

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%







Discharge Measurement Summary

Site name	E Fk Arkansas
Site number	002
Operator(s)	JEL
File name	E Fk Arkansas_20190813-160728.ft
Comment	Temp gage

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	3:35 PM	2.300	None	0.000	0.000	0.000	0	0.000	1.000	-0.034	0.000	0.000	0.000	✓
1	3:35 PM	3.000	0.6	0.400	0.600	0.240	80	-0.034	1.000	-0.034	0.020	-0.025	-0.122	✓
2	3:36 PM	3.400	0.6	0.490	0.600	0.294	80	-0.095	1.000	-0.095	0.018	-0.061	-0.305	✓
3	3:38 PM	3.800	0.6	0.590	0.600	0.354	80	-0.088	1.000	-0.088	0.022	-0.068	-0.340	✓
4	3:39 PM	4.200	0.6	0.680	0.600	0.408	80	-0.102	1.000	-0.102	0.025	-0.091	-0.453	✓
5	3:40 PM	4.600	0.6	0.800	0.600	0.480	80	-0.035	1.000	-0.035	0.030	-0.037	-0.183	✓
6	3:41 PM	5.000	0.6	0.820	0.600	0.492	80	0.015	1.000	0.015	0.030	0.016	0.080	✓
7	3:42 PM	5.400	0.6	0.820	0.600	0.492	80	0.126	1.000	0.126	0.030	0.136	0.675	✓
8	3:43 PM	5.800	0.6	0.900	0.600	0.540	80	0.207	1.000	0.207	0.033	0.245	1.216	✓
9	3:44 PM	6.200	0.6	1.100	0.600	0.660	80	0.316	1.000	0.316	0.041	0.456	2.268	✓
10	3:46 PM	6.600	0.6	1.100	0.600	0.660	80	0.358	1.000	0.358	0.041	0.517	2.571	✓
11	3:47 PM	7.000	0.6	1.150	0.600	0.690	80	0.520	1.000	0.520	0.043	0.785	3.905	✓
12	3:48 PM	7.400	0.6	1.300	0.600	0.780	80	0.655	1.000	0.655	0.048	1.118	5.559	✓
13	3:49 PM	7.800	0.6	1.380	0.600	0.828	80	0.755	1.000	0.755	0.051	1.368	6.802	✓
14	3:50 PM	8.200	0.6	1.380	0.600	0.828	80	0.997	1.000	0.997	0.051	1.805	8.978	✓
15	3:51 PM	8.600	0.6	1.400	0.600	0.840	80	0.899	1.000	0.899	0.078	2.478	12.324	✓
16	3:52 PM	9.400	0.6	1.250	0.600	0.750	80	0.779	1.000	0.779	0.093	2.555	12.709	✓
17	3:54 PM	10.200	0.6	1.300	0.600	0.780	80	0.824	1.000	0.824	0.097	2.812	13.985	✓
18	3:55 PM	11.000	0.6	1.300	0.600	0.780	80	0.618	1.000	0.618	0.097	2.109	10.491	✓
19	3:56 PM	11.800	0.6	1.300	0.600	0.780	80	0.444	1.000	0.444	0.097	1.514	7.531	✓
20	3:57 PM	12.600	0.6	1.350	0.600	0.810	80	0.687	1.000	0.687	0.100	2.435	12.112	✓
21	3:58 PM	13.400	0.6	0.700	0.600	0.420	31	0.025	1.000	0.025	0.046	0.039	0.196	✓
22	4:06 PM	14.000	None	0.000	0.000	0.000	0	0.000	1.000	0.025	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	E Fk Arkansas
Site number	002
Operator(s)	JEL
File name	E Fk Arkansas_20190813-160728.ft
Comment	Temp gage

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	3:35 PM	3.000	0.6	0.400	0.600	0.240	Large SNR Variation,Velocity Angle > QC
2	3:36 PM	3.400	0.6	0.490	0.600	0.294	Velocity Angle > QC
3	3:38 PM	3.800	0.6	0.590	0.600	0.354	Velocity Angle > QC
4	3:39 PM	4.200	0.6	0.680	0.600	0.408	Velocity Angle > QC
5	3:40 PM	4.600	0.6	0.800	0.600	0.480	Velocity Angle > QC
7	3:42 PM	5.400	0.6	0.820	0.600	0.492	Standard Error > QC,Velocity Angle > QC
8	3:43 PM	5.800	0.6	0.900	0.600	0.540	Standard Error > QC
9	3:44 PM	6.200	0.6	1.100	0.600	0.660	Standard Error > QC
10	3:46 PM	6.600	0.6	1.100	0.600	0.660	Standard Error > QC
11	3:47 PM	7.000	0.6	1.150	0.600	0.690	Standard Error > QC
12	3:48 PM	7.400	0.6	1.300	0.600	0.780	Standard Error > QC
13	3:49 PM	7.800	0.6	1.380	0.600	0.828	Standard Error > QC
14	3:50 PM	8.200	0.6	1.380	0.600	0.828	Standard Error > QC
15	3:51 PM	8.600	0.6	1.400	0.600	0.840	Standard Error > QC,High Stn % Discharge
16	3:52 PM	9.400	0.6	1.250	0.600	0.750	Standard Error > QC,High Stn % Discharge
17	3:54 PM	10.200	0.6	1.300	0.600	0.780	Standard Error > QC,High Stn % Discharge
18	3:55 PM	11.000	0.6	1.300	0.600	0.780	Standard Error > QC,High Stn % Discharge
19	3:56 PM	11.800	0.6	1.300	0.600	0.780	Standard Error > QC
20	3:57 PM	12.600	0.6	1.350	0.600	0.810	Standard Error > QC,High Stn % Discharge
21	3:58 PM	13.400	0.6	0.700	0.600	0.420	Standard Error > QC,Velocity Angle > QC
22	4:06 PM	14.000	None	0.000	0.000	0.000	Water Depth > QC

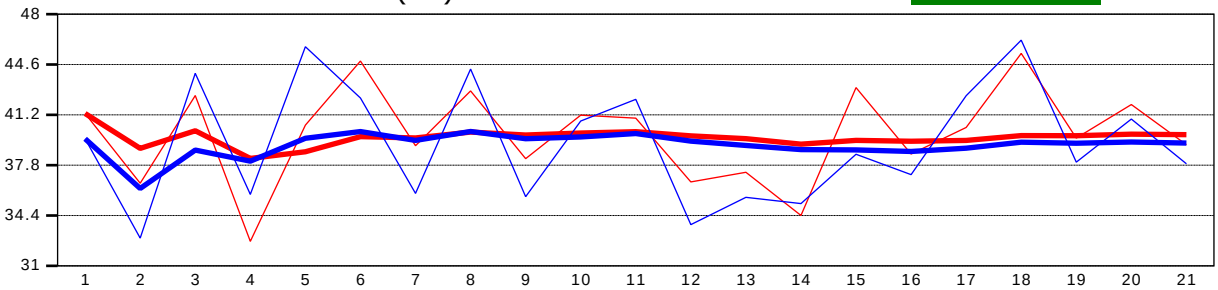
Discharge Measurement Summary

Site name	E Fk Arkansas
Site number	002
Operator(s)	JEL
File name	E Fk Arkansas_20190813-160728.ft
Comment	Temp gage

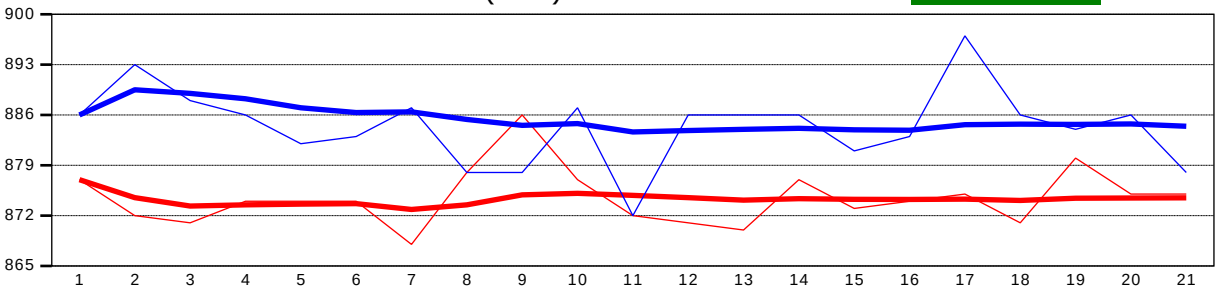
Beam 1	
Beam 2	

Automated beam check Start time 8/13/2019 3:34:15 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

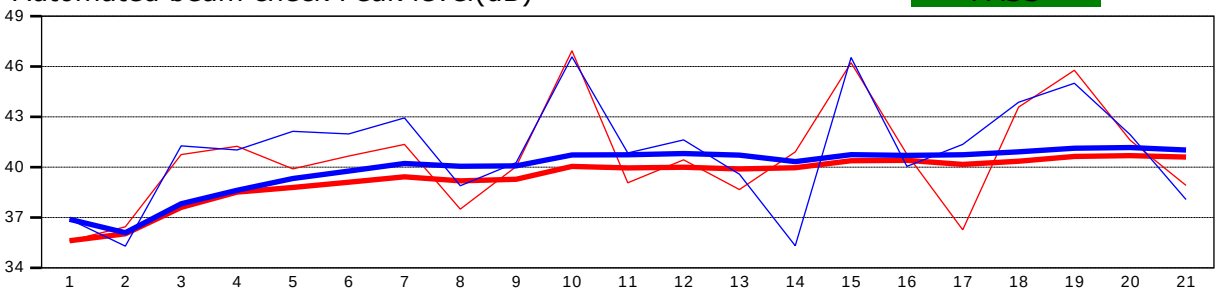
Discharge Measurement Summary

Site name	E Fk Arkansas
Site number	002
Operator(s)	JEL
File name	E Fk Arkansas_20190813-160728.ft
Comment	Temp gage

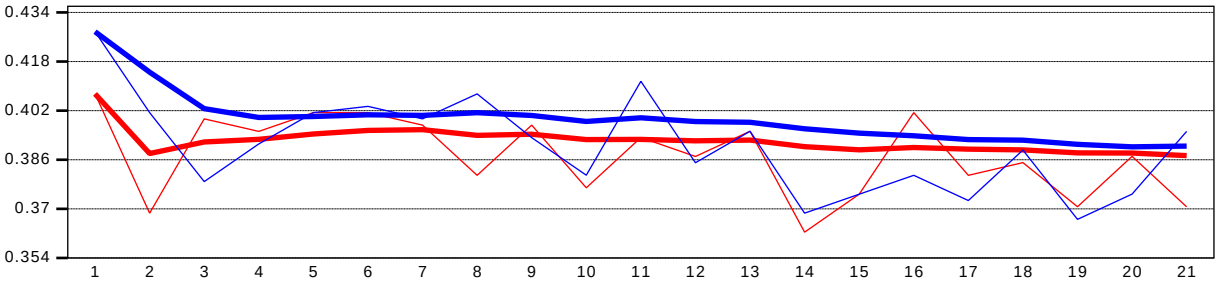
Beam 1	
Beam 2	

Automated beam check Start time 8/13/2019 3:34:15 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

Start time	10/9/2019 1:41 PM
End time	10/9/2019 2:12 PM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.23
Handheld software	1.4

# Stations	Avg interval (s)	Total discharge (ft³/s)
28	40	2.023

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
9.400	0.548	10.387

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
31.840	0.627	0.105

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
5.975	1.040	0.301

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.4%	3.6%
Velocity	1.2%	9.9%
Width	0.1%	0.1%
Method	1.9%	
# Stations	1.8%	
Overall	**3.1%**	**10.5%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

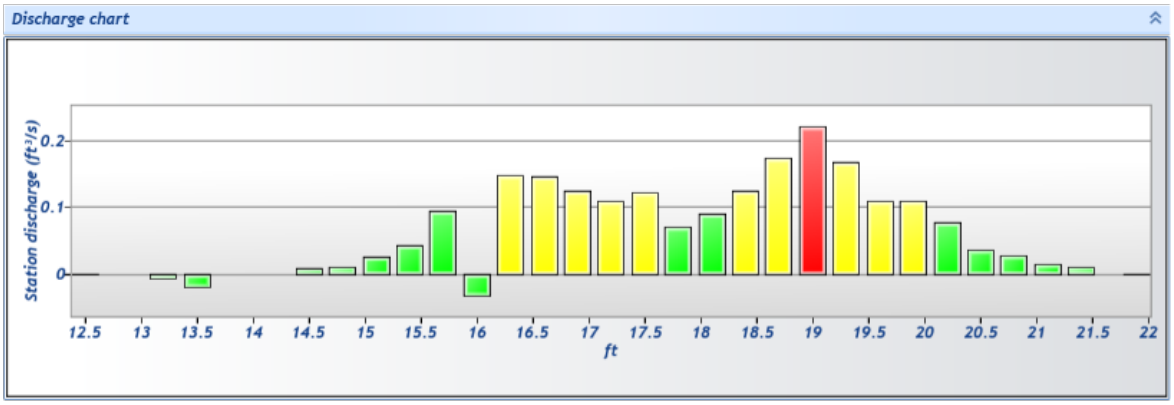
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

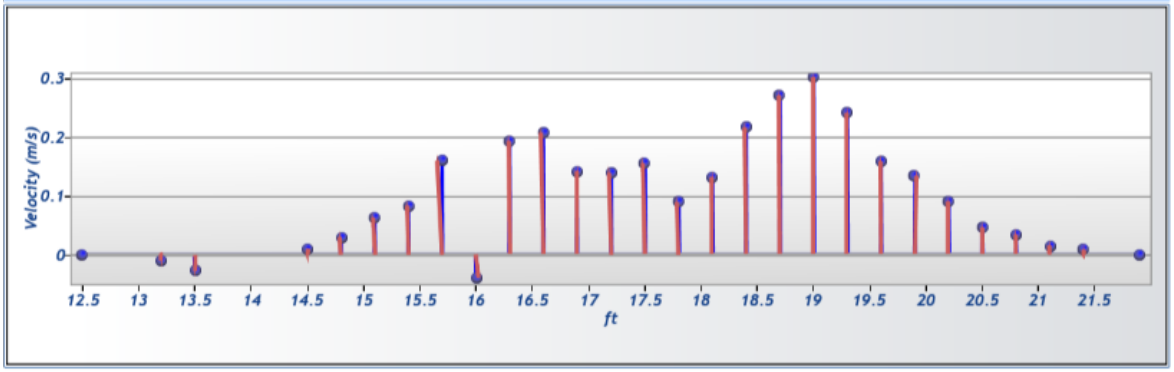
Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%

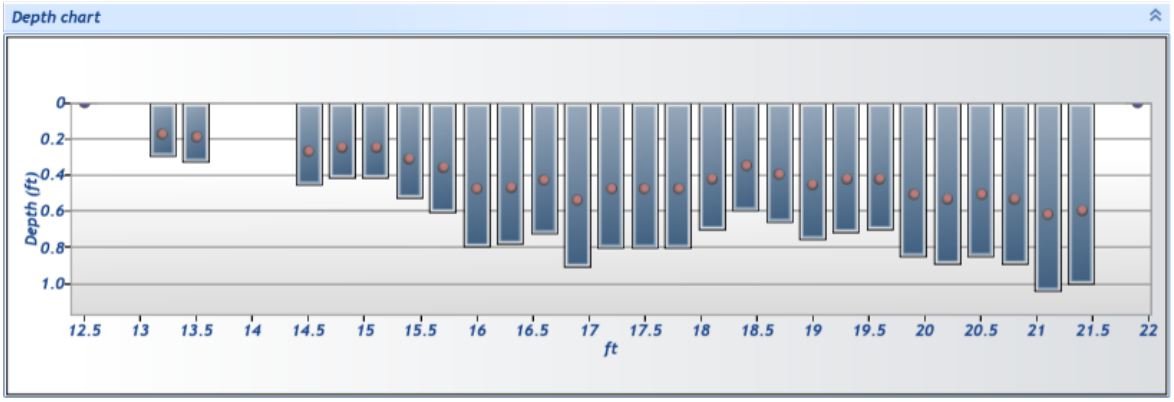
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	1:41 PM	12.500	None	0.000	0.000	0.000	0	0.000	1.000	-0.011	0.000	0.000	0.000	✓
1	1:42 PM	13.200	0.6	0.290	0.600	0.174	80	-0.011	1.000	-0.011	0.013	-0.005	-0.251	✓
2	1:43 PM	13.500	0.6	0.320	0.600	0.192	80	-0.028	1.000	-0.028	0.019	-0.019	-0.940	✓
3	1:44 PM	14.500	0.6	0.450	0.600	0.270	80	0.010	1.000	0.010	0.027	0.010	0.490	✓
4	1:45 PM	14.800	0.6	0.410	0.600	0.246	80	0.030	1.000	0.030	0.011	0.012	0.599	✓
5	1:47 PM	15.100	0.6	0.410	0.600	0.246	80	0.063	1.000	0.063	0.011	0.026	1.263	✓
6	1:48 PM	15.400	0.6	0.520	0.600	0.312	80	0.084	1.000	0.084	0.014	0.043	2.119	✓
7	1:49 PM	15.700	0.6	0.600	0.600	0.360	80	0.159	1.000	0.159	0.017	0.094	4.647	✓
8	1:50 PM	16.000	0.6	0.790	0.600	0.474	80	-0.039	1.000	-0.039	0.022	-0.031	-1.516	✓
9	1:51 PM	16.300	0.6	0.780	0.600	0.468	80	0.193	1.000	0.193	0.022	0.148	7.312	✓
10	1:53 PM	16.600	0.6	0.720	0.600	0.432	80	0.207	1.000	0.207	0.020	0.147	7.244	✓
11	1:54 PM	16.900	0.6	0.900	0.600	0.540	80	0.141	1.000	0.141	0.025	0.125	6.165	✓
12	1:55 PM	17.200	0.6	0.800	0.600	0.480	80	0.139	1.000	0.139	0.022	0.110	5.414	✓
13	1:56 PM	17.500	0.6	0.800	0.600	0.480	80	0.155	1.000	0.155	0.022	0.122	6.034	✓
14	1:57 PM	17.800	0.6	0.800	0.600	0.480	80	0.090	1.000	0.090	0.022	0.071	3.488	✓
15	1:58 PM	18.100	0.6	0.700	0.600	0.420	80	0.131	1.000	0.131	0.020	0.090	4.447	✓
16	1:59 PM	18.400	0.6	0.590	0.600	0.354	80	0.215	1.000	0.215	0.016	0.125	6.177	✓
17	2:01 PM	18.700	0.6	0.660	0.600	0.396	80	0.270	1.000	0.270	0.018	0.175	8.664	✓
18	2:02 PM	19.000	0.6	0.750	0.600	0.450	80	0.301	1.000	0.301	0.021	0.222	10.966	✓
19	2:03 PM	19.300	0.6	0.710	0.600	0.426	80	0.240	1.000	0.240	0.020	0.168	8.289	✓
20	2:04 PM	19.600	0.6	0.700	0.600	0.420	80	0.158	1.000	0.158	0.020	0.109	5.390	✓
21	2:06 PM	19.900	0.6	0.850	0.600	0.510	80	0.133	1.000	0.133	0.024	0.111	5.488	✓
22	2:07 PM	20.200	0.6	0.890	0.600	0.534	80	0.090	1.000	0.090	0.025	0.078	3.877	✓
23	2:08 PM	20.500	0.6	0.850	0.600	0.510	80	0.045	1.000	0.045	0.024	0.038	1.868	✓
24	2:09 PM	20.800	0.6	0.890	0.600	0.534	80	0.033	1.000	0.033	0.025	0.029	1.444	✓
25	2:10 PM	21.100	0.6	1.040	0.600	0.624	80	0.015	1.000	0.015	0.029	0.015	0.749	✓
26	2:11 PM	21.400	0.6	1.000	0.600	0.600	80	0.009	1.000	0.009	0.037	0.012	0.574	✓
27	2:12 PM	21.900	None	0.000	0.000	0.000	0	0.000	1.000	0.009	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	1:42 PM	13.200	0.6	0.290	0.600	0.174	Boundary Interference
2	1:43 PM	13.500	0.6	0.320	0.600	0.192	Large SNR Variation,Velocity Angle > QC
3	1:44 PM	14.500	0.6	0.450	0.600	0.270	Boundary Interference
4	1:45 PM	14.800	0.6	0.410	0.600	0.246	Large SNR Variation
8	1:50 PM	16.000	0.6	0.790	0.600	0.474	Velocity Angle > QC
17	2:01 PM	18.700	0.6	0.660	0.600	0.396	Standard Error > QC
18	2:02 PM	19.000	0.6	0.750	0.600	0.450	High Stn % Discharge
24	2:09 PM	20.800	0.6	0.890	0.600	0.534	Large SNR Variation
25	2:10 PM	21.100	0.6	1.040	0.600	0.624	Large SNR Variation,SNR Threshold Variation
26	2:11 PM	21.400	0.6	1.000	0.600	0.600	Large SNR Variation,SNR Threshold Variation
27	2:12 PM	21.900	None	0.000	0.000	0.000	Water Depth > QC

Discharge Measurement Summary

Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

Supplemental data summary

Gauge height time	Gauge height (ft)	Rated discharge (ft³/s)	Temperature (°C)	Salinity (PSS-78)	Gauge height comments
10/9/2019 1:41 PM	1.090				

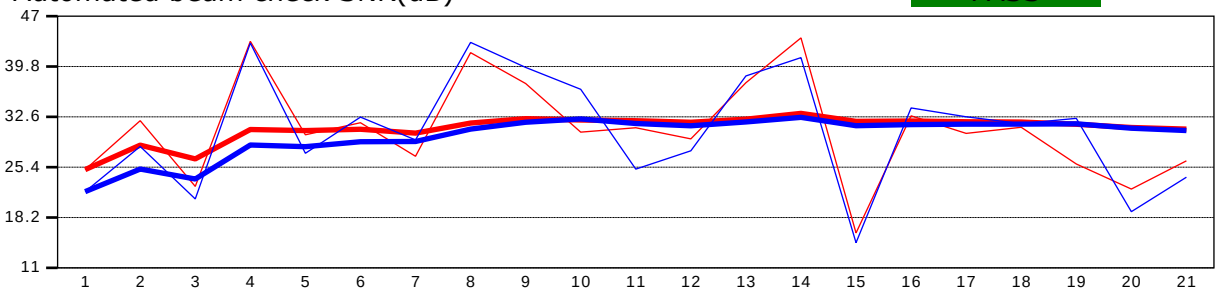
Discharge Measurement Summary

Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

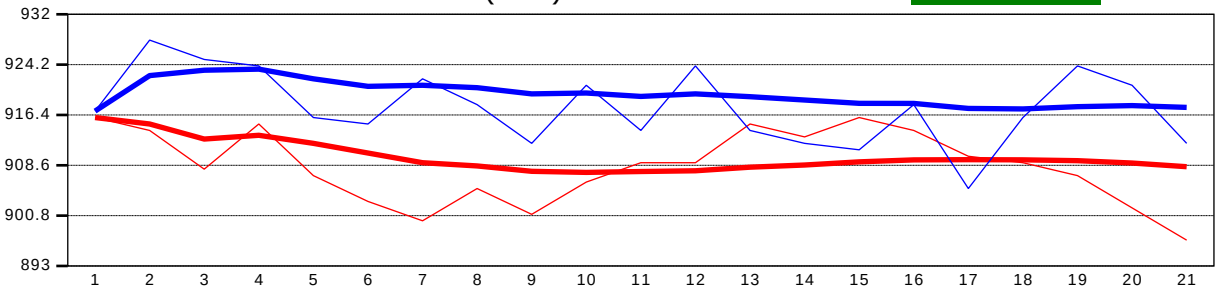
Beam 1	
Beam 2	

Automated beam check Start time 10/9/2019 1:40:41 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

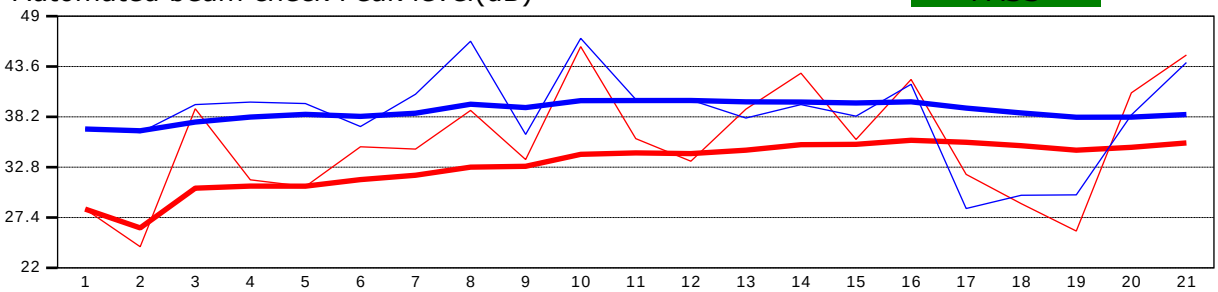
Discharge Measurement Summary

Site name	EFKARKD2
Site number	003
Operator(s)	JEL
File name	EFKARKD2_20191009-141439.ft
Comment	Temp gage

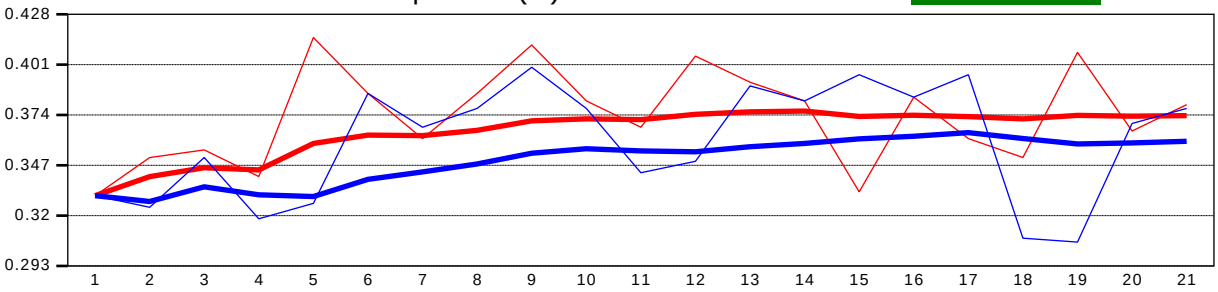
Beam 1	
Beam 2	

Automated beam check Start time 10/9/2019 1:40:41 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	Efkark
Site number	071320
Operator(s)	Kara
File name	Efkark_20200713-092909.ft
Comment	

Start time	7/13/2020 8:38 AM
End time	7/13/2020 9:28 AM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.30
Handheld software	1.7

# Stations	Avg interval (s)	Total discharge (ft³/s)
34	40	18.434

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
13.800	1.157	15.499

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
46.153	0.903	0.451

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
10.377	1.300	1.223

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	2.1%
Velocity	1.0%	7.8%
Width	0.1%	0.1%
Method	1.6%	
# Stations	1.5%	
Overall	**2.6%**	**8.2%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

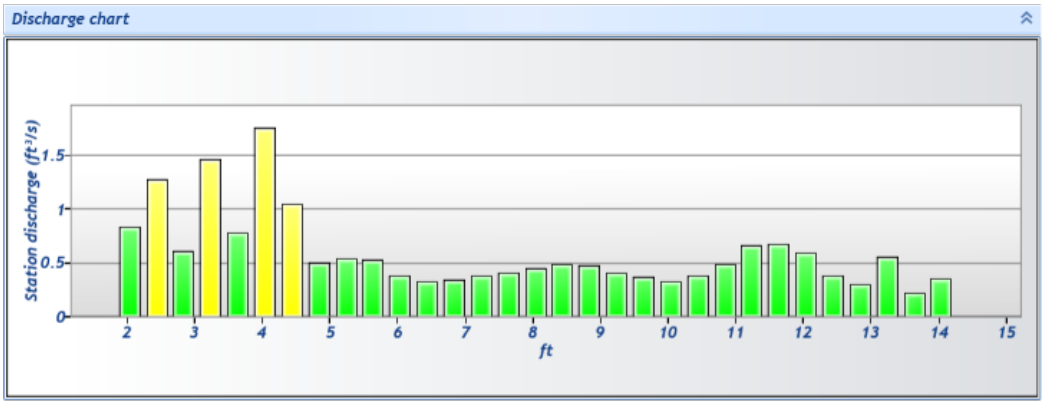
Summary overview

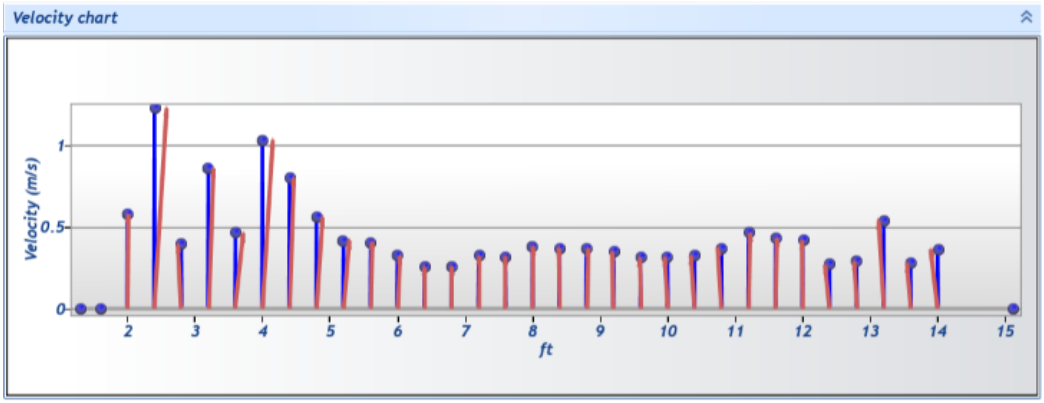
No changes were made to this file
Quality control warnings

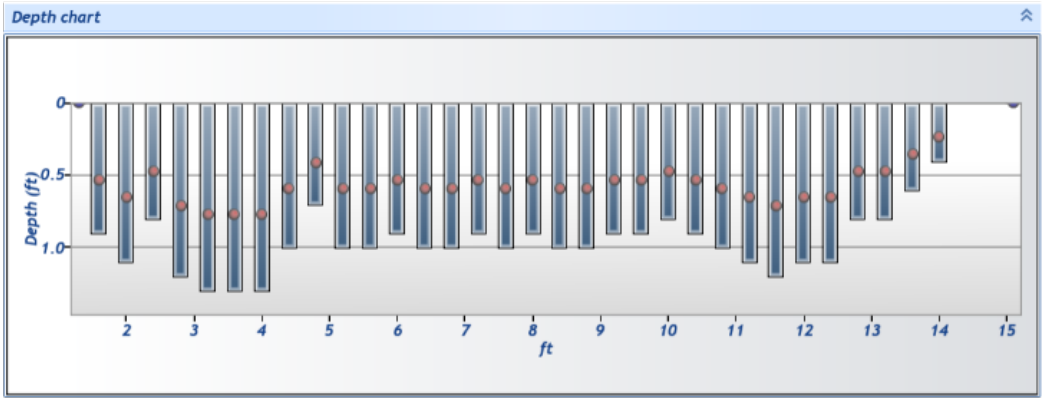
Discharge Measurement Summary

Site name	Efkark
Site number	071320
Operator(s)	Kara
File name	Efkark_20200713-092909.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%







Discharge Measurement Summary

Site name	Efkark
Site number	071320
Operator(s)	Kara
File name	Efkark_20200713-092909.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
0	8:38 AM	1.300	None	0.000	0.000	0.000	0	0.000	1.000	0.001	0.000	0.000	0.000	✓
1	8:39 AM	1.600	0.6	0.900	0.600	0.540	80	0.001	1.000	0.001	0.029	0.001	0.005	✓
2	8:41 AM	2.000	0.6	1.100	0.600	0.660	80	0.577	1.000	0.577	0.041	0.833	4.521	✓
3	8:44 AM	2.400	0.6	0.800	0.600	0.480	80	1.223	1.000	1.223	0.030	1.284	6.965	✓
4	8:46 AM	2.800	0.6	1.200	0.600	0.720	80	0.393	1.000	0.393	0.045	0.619	3.358	✓
5	8:47 AM	3.200	0.6	1.300	0.600	0.780	80	0.856	1.000	0.856	0.048	1.460	7.922	✓
6	8:49 AM	3.600	0.6	1.300	0.600	0.780	80	0.461	1.000	0.461	0.048	0.786	4.266	✓
7	8:54 AM	4.000	0.6	1.300	0.600	0.780	80	1.028	1.000	1.028	0.048	1.754	9.514	✓
8	8:55 AM	4.400	0.6	1.000	0.600	0.600	80	0.799	1.000	0.799	0.037	1.048	5.687	✓
9	8:56 AM	4.800	0.6	0.700	0.600	0.420	80	0.557	1.000	0.557	0.026	0.512	2.777	✓
10	8:58 AM	5.200	0.6	1.000	0.600	0.600	80	0.416	1.000	0.416	0.037	0.546	2.965	✓
11	8:59 AM	5.600	0.6	1.000	0.600	0.600	80	0.408	1.000	0.408	0.037	0.536	2.906	✓
12	9:01 AM	6.000	0.6	0.900	0.600	0.540	80	0.322	1.000	0.322	0.033	0.380	2.062	✓
13	9:03 AM	6.400	0.6	1.000	0.600	0.600	80	0.256	1.000	0.256	0.037	0.336	1.821	✓
14	9:04 AM	6.800	0.6	1.000	0.600	0.600	80	0.260	1.000	0.260	0.037	0.341	1.848	✓
15	9:05 AM	7.200	0.6	0.900	0.600	0.540	80	0.322	1.000	0.322	0.033	0.380	2.062	✓
16	9:06 AM	7.600	0.6	1.000	0.600	0.600	80	0.319	1.000	0.319	0.037	0.419	2.273	✓
17	9:07 AM	8.000	0.6	0.900	0.600	0.540	80	0.382	1.000	0.382	0.033	0.451	2.447	✓
18	9:08 AM	8.400	0.6	1.000	0.600	0.600	80	0.372	1.000	0.372	0.037	0.488	2.650	✓
19	9:10 AM	8.800	0.6	1.000	0.600	0.600	80	0.369	1.000	0.369	0.037	0.484	2.628	✓
20	9:11 AM	9.200	0.6	0.900	0.600	0.540	80	0.349	1.000	0.349	0.033	0.412	2.234	✓
21	9:12 AM	9.600	0.6	0.900	0.600	0.540	80	0.313	1.000	0.313	0.033	0.369	2.004	✓
22	9:13 AM	10.000	0.6	0.800	0.600	0.480	80	0.316	1.000	0.316	0.030	0.332	1.799	✓
23	9:14 AM	10.400	0.6	0.900	0.600	0.540	80	0.326	1.000	0.326	0.033	0.386	2.092	✓
24	9:16 AM	10.800	0.6	1.000	0.600	0.600	80	0.373	1.000	0.373	0.037	0.490	2.657	✓
25	9:17 AM	11.200	0.6	1.100	0.600	0.660	80	0.463	1.000	0.463	0.041	0.668	3.625	✓
26	9:18 AM	11.600	0.6	1.200	0.600	0.720	80	0.432	1.000	0.432	0.045	0.680	3.690	✓
27	9:20 AM	12.000	0.6	1.100	0.600	0.660	80	0.418	1.000	0.418	0.041	0.603	3.270	✓
28	9:21 AM	12.400	0.6	1.100	0.600	0.660	80	0.269	1.000	0.269	0.041	0.388	2.104	✓
29	9:22 AM	12.800	0.6	0.800	0.600	0.480	80	0.289	1.000	0.289	0.030	0.303	1.645	✓
30	9:24 AM	13.200	0.6	0.800	0.600	0.480	80	0.539	1.000	0.539	0.030	0.565	3.067	✓
31	9:25 AM	13.600	0.6	0.600	0.600	0.360	80	0.280	1.000	0.280	0.022	0.220	1.195	✓
32	9:26 AM	14.000	0.6	0.400	0.600	0.240	80	0.363	1.000	0.363	0.028	0.358	1.940	✓
33	9:28 AM	15.100	None	0.000	0.000	0.000	0	0.000	1.000	0.363	0.000	0.000	0.000	✓

Discharge Measurement Summary

Site name	Efkark
Site number	071320
Operator(s)	Kara
File name	Efkark_20200713-092909.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	8:39 AM	1.600	0.6	0.900	0.600	0.540	Boundary Interference,Large SNR Variation,SNR Threshold Variation
2	8:41 AM	2.000	0.6	1.100	0.600	0.660	Standard Error > QC
3	8:44 AM	2.400	0.6	0.800	0.600	0.480	Standard Error > QC
4	8:46 AM	2.800	0.6	1.200	0.600	0.720	Standard Error > QC
5	8:47 AM	3.200	0.6	1.300	0.600	0.780	Standard Error > QC
6	8:49 AM	3.600	0.6	1.300	0.600	0.780	Boundary Interference,Large SNR Variation,Standard Error > QC
7	8:54 AM	4.000	0.6	1.300	0.600	0.780	Standard Error > QC
8	8:55 AM	4.400	0.6	1.000	0.600	0.600	Standard Error > QC
9	8:56 AM	4.800	0.6	0.700	0.600	0.420	Standard Error > QC
10	8:58 AM	5.200	0.6	1.000	0.600	0.600	Standard Error > QC
11	8:59 AM	5.600	0.6	1.000	0.600	0.600	Standard Error > QC
12	9:01 AM	6.000	0.6	0.900	0.600	0.540	Standard Error > QC
15	9:05 AM	7.200	0.6	0.900	0.600	0.540	Standard Error > QC
16	9:06 AM	7.600	0.6	1.000	0.600	0.600	Standard Error > QC
18	9:08 AM	8.400	0.6	1.000	0.600	0.600	Standard Error > QC
19	9:10 AM	8.800	0.6	1.000	0.600	0.600	Standard Error > QC
20	9:11 AM	9.200	0.6	0.900	0.600	0.540	Standard Error > QC
21	9:12 AM	9.600	0.6	0.900	0.600	0.540	Standard Error > QC
22	9:13 AM	10.000	0.6	0.800	0.600	0.480	Standard Error > QC
24	9:16 AM	10.800	0.6	1.000	0.600	0.600	Standard Error > QC
25	9:17 AM	11.200	0.6	1.100	0.600	0.660	Standard Error > QC
26	9:18 AM	11.600	0.6	1.200	0.600	0.720	Standard Error > QC
27	9:20 AM	12.000	0.6	1.100	0.600	0.660	Standard Error > QC
28	9:21 AM	12.400	0.6	1.100	0.600	0.660	Standard Error > QC
29	9:22 AM	12.800	0.6	0.800	0.600	0.480	Standard Error > QC
30	9:24 AM	13.200	0.6	0.800	0.600	0.480	Standard Error > QC
31	9:25 AM	13.600	0.6	0.600	0.600	0.360	Large SNR Variation,Standard Error > QC
32	9:26 AM	14.000	0.6	0.400	0.600	0.240	Large SNR Variation,Standard Error > QC
33	9:28 AM	15.100	None	0.000	0.000	0.000	Stn Spacing > QC

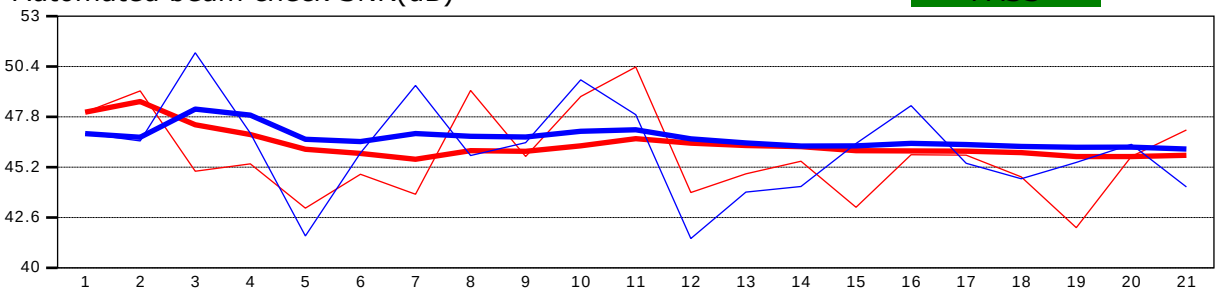
Discharge Measurement Summary

Site name	Efkark
Site number	071320
Operator(s)	Kara
File name	Efkark_20200713-092909.ft
Comment	

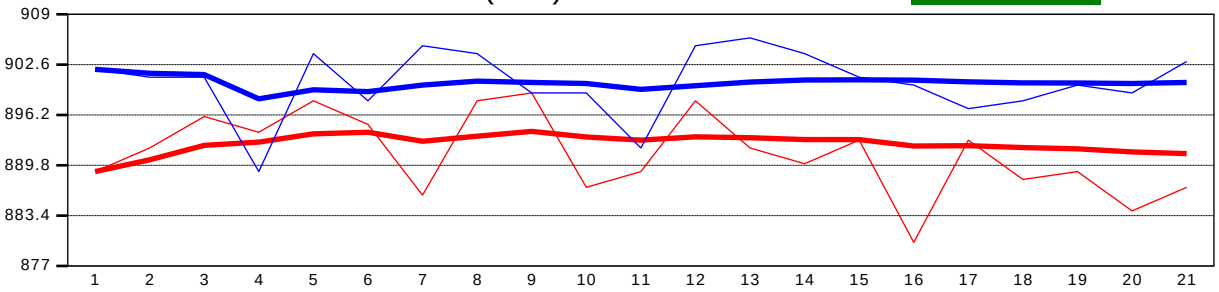
Beam 1	
Beam 2	

Automated beam check Start time 7/13/2020 8:36:24 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

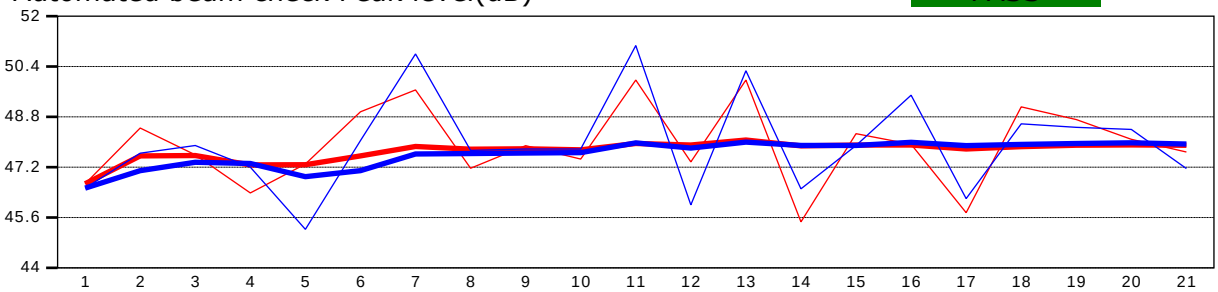
Discharge Measurement Summary

Site name	Efkark
Site number	071320
Operator(s)	Kara
File name	Efkark_20200713-092909.ft
Comment	

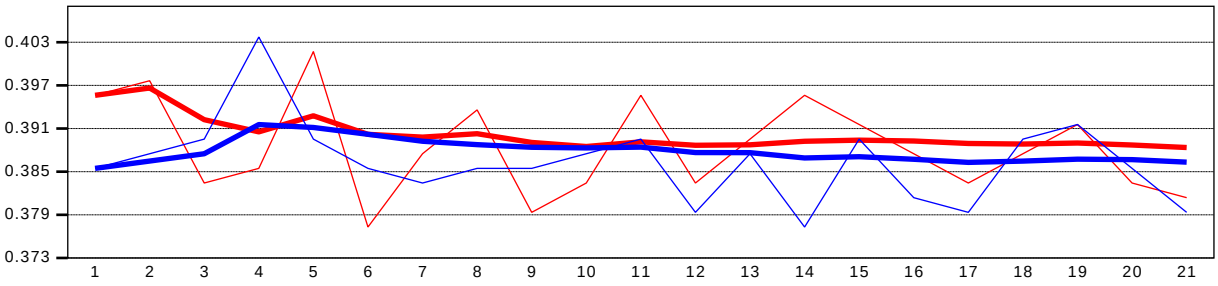
Beam 1	
Beam 2	

Automated beam check Start time 7/13/2020 8:36:24 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	EFAR8420.FlowTracker2.ft
Comment	Measured with Flowtracker1 and recalculated with Flowtracker2 algorithms

Start time	8/5/2020 3:59 PM
End time	8/5/2020 4:41 PM
Start location latitude	-
Start location longitude	-
Calculations engine	FlowTracker2

Sensor type	Unknown
Handheld serial number	n/a
Probe serial number	P2355
Probe firmware	3.90
Handheld software	n/a

# Stations	Avg interval (s)	Total discharge (ft³/s)
35	40	8.7923

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
10.700	8.1059	11.707

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
34	0.758	1.0847

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
57.840	1.180	1.6965

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.2%	1.3%
Velocity	1.0%	2.2%
Width	0.1%	0.1%
Method	1.5%	
# Stations	1.5%	
Overall	**2.5%**	**2.8%**

Discharge equation	Mid Section
Discharge uncertainty	ISO
Discharge reference	Measured

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

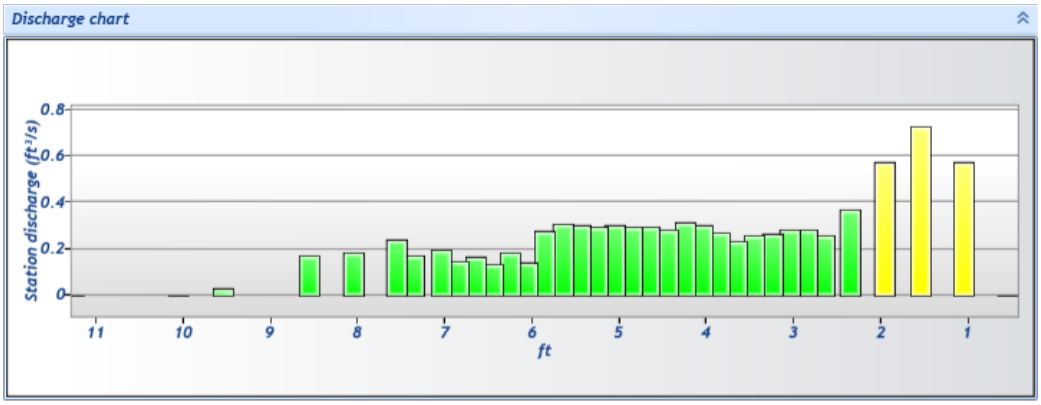
Summary overview

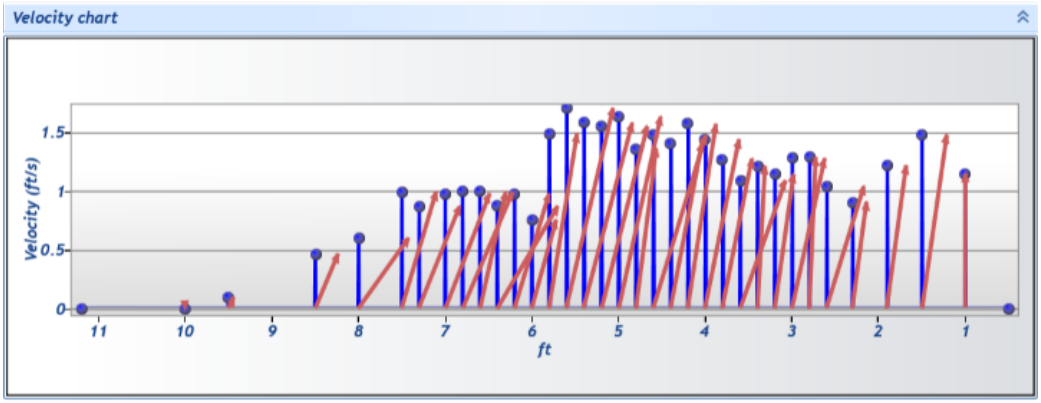
No changes were made to this file
Quality control warnings

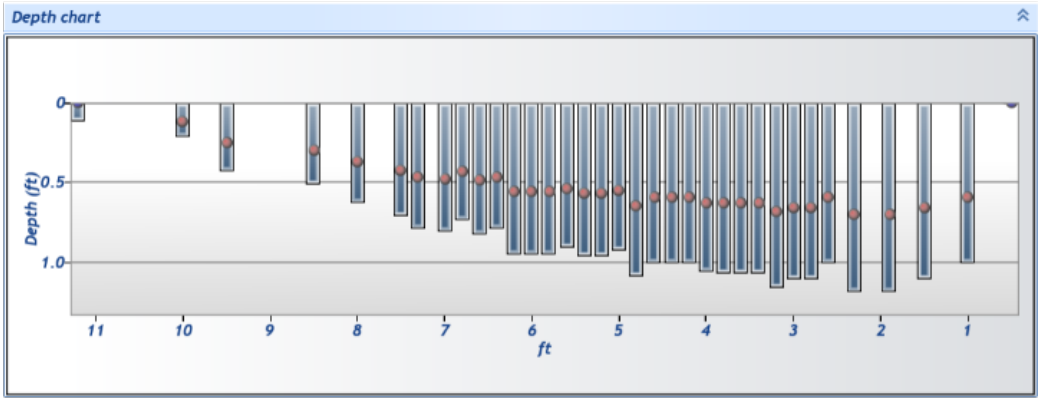
Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	EFAR8420.FlowTracker2.ft
Comment	

Station Warning Settings		
Station discharge OK	Station discharge < 5.00%	
Station discharge caution	5.00% >= Station discharge < 10.00%	
Station discharge warning	Station discharge >= 10.00%	







Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	EFAR8420.FlowTracker2.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
34	4:41 PM	0.500	None	0.000	0.0000	0.000	0	0.0000	1.0000	1.1402	0.0000	0.0000	0.00	√
33	4:41 PM	1.000	0.6	1.000	0.6000	0.600	40	1.1402	1.0000	1.1402	0.5000	0.5701	6.48	√
32	4:40 PM	1.500	0.6	1.100	0.6000	0.660	40	1.4720	1.0000	1.4720	0.4950	0.7287	8.29	√
31	4:39 PM	1.900	0.6	1.180	0.6000	0.708	40	1.2122	1.0000	1.2122	0.4720	0.5721	6.51	√
30	4:38 PM	2.300	0.6	1.180	0.6000	0.708	40	0.9018	1.0000	0.9018	0.4114	0.3710	4.22	√
29	4:36 PM	2.597	0.6	1.000	0.6000	0.600	40	1.0327	1.0000	1.0327	0.2487	0.2568	2.92	√
28	4:35 PM	2.797	0.6	1.100	0.6000	0.660	40	1.2837	1.0000	1.2837	0.2202	0.2826	3.21	√
27	4:34 PM	2.997	0.6	1.100	0.6000	0.660	40	1.2736	1.0000	1.2736	0.2202	0.2804	3.19	√
26	4:33 PM	3.198	0.6	1.150	0.6000	0.690	40	1.1368	1.0000	1.1368	0.2301	0.2616	2.98	√
25	4:32 PM	3.398	0.6	1.060	0.6000	0.636	40	1.2062	1.0000	1.2062	0.2121	0.2559	2.91	√
24	4:31 PM	3.598	0.6	1.060	0.6000	0.636	40	1.0834	1.0000	1.0834	0.2121	0.2298	2.61	√
23	4:30 PM	3.798	0.6	1.060	0.6000	0.636	40	1.2687	1.0000	1.2687	0.2121	0.2692	3.06	√
22	4:29 PM	3.998	0.6	1.050	0.6000	0.630	40	1.4327	1.0000	1.4327	0.2101	0.3010	3.42	√
21	4:28 PM	4.198	0.6	1.000	0.6000	0.600	40	1.5635	1.0000	1.5635	0.2001	0.3129	3.56	√
20	4:27 PM	4.398	0.6	1.000	0.6000	0.600	40	1.3986	1.0000	1.3986	0.2001	0.2799	3.18	√
19	4:26 PM	4.598	0.6	1.000	0.6000	0.600	40	1.4649	1.0000	1.4649	0.2001	0.2932	3.33	√
18	4:25 PM	4.799	0.6	1.080	0.6000	0.648	40	1.3538	1.0000	1.3538	0.2162	0.2926	3.33	√
17	4:24 PM	4.999	0.6	0.920	0.6000	0.552	40	1.6245	1.0000	1.6245	0.1841	0.2991	3.40	√
16	4:23 PM	5.199	0.6	0.950	0.6000	0.570	40	1.5419	1.0000	1.5419	0.1902	0.2932	3.33	√
15	4:22 PM	5.399	0.6	0.950	0.6000	0.570	40	1.5735	1.0000	1.5735	0.1902	0.2992	3.40	√
14	4:21 PM	5.599	0.6	0.900	0.6000	0.540	40	1.6965	1.0000	1.6965	0.1801	0.3056	3.48	√
13	4:20 PM	5.799	0.6	0.940	0.6000	0.564	40	1.4790	1.0000	1.4790	0.1881	0.2782	3.16	√
12	4:19 PM	5.999	0.6	0.940	0.6000	0.564	40	0.7500	1.0000	0.7500	0.1881	0.1411	1.60	√
11	4:18 PM	6.199	0.6	0.940	0.6000	0.564	40	0.9725	1.0000	0.9725	0.1881	0.1829	2.08	√
10	4:17 PM	6.400	0.6	0.780	0.6000	0.468	40	0.8685	1.0000	0.8685	0.1561	0.1356	1.54	√
9	4:16 PM	6.600	0.6	0.820	0.6000	0.492	40	0.9897	1.0000	0.9897	0.1641	0.1624	1.85	√
8	4:14 PM	6.800	0.6	0.730	0.6000	0.438	40	0.9896	1.0000	0.9896	0.1461	0.1446	1.64	√
7	4:13 PM	7.000	0.6	0.800	0.6000	0.480	40	0.9746	1.0000	0.9746	0.2000	0.1949	2.22	√
6	4:11 PM	7.300	0.6	0.780	0.6000	0.468	40	0.8639	1.0000	0.8639	0.1950	0.1684	1.92	√
5	4:10 PM	7.500	0.6	0.700	0.6000	0.420	40	0.9861	1.0000	0.9861	0.2451	0.2417	2.75	√
4	4:08 PM	8.000	0.6	0.620	0.6000	0.372	40	0.5988	1.0000	0.5988	0.3100	0.1857	2.11	√
3	4:07 PM	8.500	0.6	0.500	0.6000	0.300	40	0.4611	1.0000	0.4611	0.3750	0.1729	1.97	√
2	4:05 PM	9.500	0.6	0.420	0.6000	0.252	40	0.0943	1.0000	0.0943	0.3150	0.0297	0.34	√
1	4:03 PM	10.000	0.6	0.200	0.6000	0.120	40	-0.0031	1.0000	-0.0031	0.1701	-0.0005	-0.01	√
0	3:59 PM	11.200	None	0.100	0.0000	0.000	0	0.0000	1.0000	-0.0031	0.0600	-0.0002	0.00	√

Discharge Measurement Summary

Site name	
Site number	
Operator(s)	LFS
File name	EFAR8420.FlowTracker2.ft
Comment	

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	4 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
33	4:41 PM	1.000	0.6	1.000	0.6000	0.600	Standard Error > QC
32	4:40 PM	1.500	0.6	1.100	0.6000	0.660	Standard Error > QC,High % Spikes
31	4:39 PM	1.900	0.6	1.180	0.6000	0.708	Standard Error > QC
30	4:38 PM	2.300	0.6	1.180	0.6000	0.708	Standard Error > QC
29	4:36 PM	2.597	0.6	1.000	0.6000	0.600	Standard Error > QC,Velocity Angle > QC
28	4:35 PM	2.797	0.6	1.100	0.6000	0.660	Standard Error > QC
27	4:34 PM	2.997	0.6	1.100	0.6000	0.660	Standard Error > QC
26	4:33 PM	3.198	0.6	1.150	0.6000	0.690	Standard Error > QC
25	4:32 PM	3.398	0.6	1.060	0.6000	0.636	Standard Error > QC
24	4:31 PM	3.598	0.6	1.060	0.6000	0.636	Standard Error > QC,Velocity Angle > QC
23	4:30 PM	3.798	0.6	1.060	0.6000	0.636	Standard Error > QC
22	4:29 PM	3.998	0.6	1.050	0.6000	0.630	Standard Error > QC
21	4:28 PM	4.198	0.6	1.000	0.6000	0.600	Standard Error > QC
20	4:27 PM	4.398	0.6	1.000	0.6000	0.600	Standard Error > QC
19	4:26 PM	4.598	0.6	1.000	0.6000	0.600	Standard Error > QC,High % Spikes,Velocity Angle > QC
18	4:25 PM	4.799	0.6	1.080	0.6000	0.648	Standard Error > QC
17	4:24 PM	4.999	0.6	0.920	0.6000	0.552	Standard Error > QC
16	4:23 PM	5.199	0.6	0.950	0.6000	0.570	Standard Error > QC
15	4:22 PM	5.399	0.6	0.950	0.6000	0.570	Standard Error > QC
14	4:21 PM	5.599	0.6	0.900	0.6000	0.540	Standard Error > QC
13	4:20 PM	5.799	0.6	0.940	0.6000	0.564	Standard Error > QC
12	4:19 PM	5.999	0.6	0.940	0.6000	0.564	Standard Error > QC,Velocity Angle > QC
11	4:18 PM	6.199	0.6	0.940	0.6000	0.564	Standard Error > QC,Velocity Angle > QC
10	4:17 PM	6.400	0.6	0.780	0.6000	0.468	Standard Error > QC,Velocity Angle > QC
9	4:16 PM	6.600	0.6	0.820	0.6000	0.492	Standard Error > QC
8	4:14 PM	6.800	0.6	0.730	0.6000	0.438	Standard Error > QC,Velocity Angle > QC
7	4:13 PM	7.000	0.6	0.800	0.6000	0.480	Standard Error > QC,Velocity Angle > QC
6	4:11 PM	7.300	0.6	0.780	0.6000	0.468	Standard Error > QC,Velocity Angle > QC
5	4:10 PM	7.500	0.6	0.700	0.6000	0.420	Standard Error > QC,Velocity Angle > QC
4	4:08 PM	8.000	0.6	0.620	0.6000	0.372	Velocity Angle > QC
3	4:07 PM	8.500	0.6	0.500	0.6000	0.300	Velocity Angle > QC
2	4:05 PM	9.500	0.6	0.420	0.6000	0.252	Boundary Interference,SNR Threshold Variation,Velocity Angle > QC
1	4:03 PM	10.000	0.6	0.200	0.6000	0.120	Large SNR Variation,SNR Threshold Variation
0	3:59 PM	11.200	None	0.100	0.0000	0.000	Stn Spacing > QC

Discharge Measurement Summary

Site name	EFAR
Site number	923
Operator(s)	LFS
File name	EFAR_20200923-095551.ft
Comment	

Start time	9/23/2020 9:17 AM
End time	9/23/2020 9:53 AM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.30
Handheld software	1.7

# Stations	Avg interval (s)	Total discharge (ft³/s)
27	40	3.892

Total width (ft)	Total area (m²)	Wetted Perimeter (ft)
12.800	0.595	13.191

Mean SNR (dB)	Mean depth (ft)	Mean velocity (m/s)
44.239	0.500	0.185

Mean temp (°C)	Max depth (ft)	Max velocity (m/s)
6.220	0.880	0.360

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.3%	3.8%
Velocity	0.7%	3.5%
Width	0.1%	0.1%
Method	1.6%	
# Stations	1.9%	
Overall	**2.8%**	**5.3%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

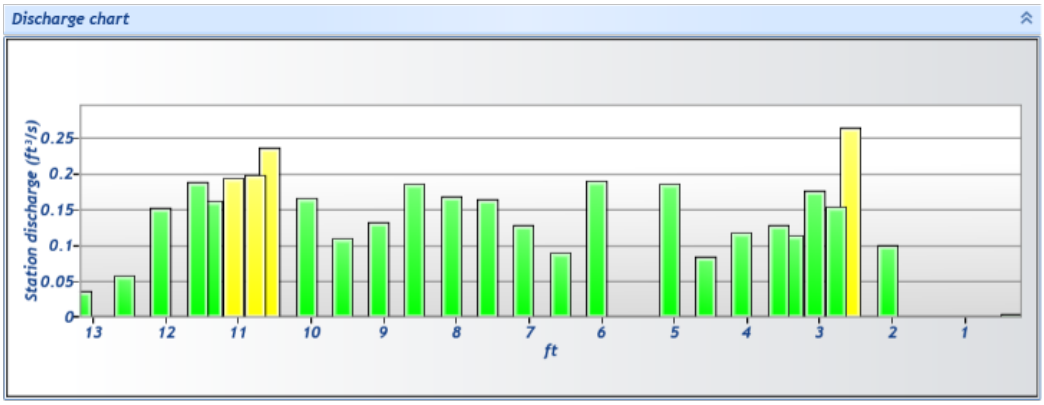
No changes were made to this file
Quality control warnings

Discharge Measurement Summary

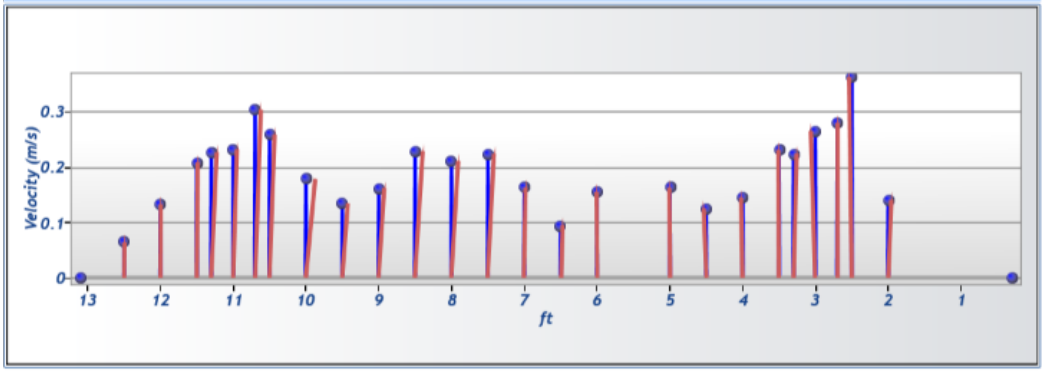
Site name	EFAR
Site number	923
Operator(s)	LFS
File name	EFAR_20200923-095551.ft
Comment	

Station Warning Settings	
Station discharge OK	Station discharge < 5.000%
Station discharge caution	5.000% >= Station discharge < 10.000%
Station discharge warning	Station discharge >= 10.000%

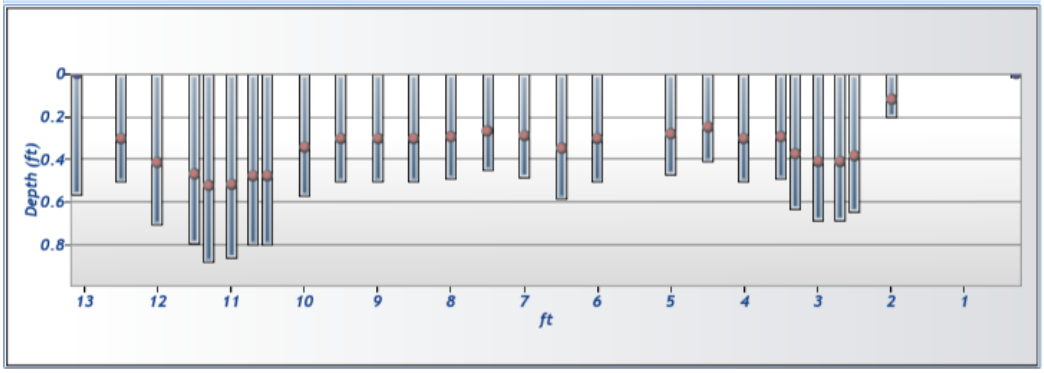
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	EFAR
Site number	923
Operator(s)	LFS
File name	EFAR_20200923-095551.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (m/s)	Correction	Mean Velocity (m/s)	Area (m²)	Flow (ft³/s)	%Q	
26	9:40 AM	0.300	None	0.010	0.000	0.000	0	0.000	1.000	0.140	0.001	0.004	0.100	✓
25	9:38 AM	2.000	0.6	0.200	0.600	0.120	80	0.140	1.000	0.140	0.020	0.101	2.598	✓
24	9:42 AM	2.500	0.6	0.640	0.600	0.384	80	0.360	1.000	0.360	0.021	0.265	6.797	✓
23	9:44 AM	2.700	0.6	0.680	0.600	0.408	80	0.278	1.000	0.278	0.016	0.155	3.985	✓
22	9:37 AM	3.000	0.6	0.680	0.600	0.408	80	0.263	1.000	0.263	0.019	0.176	4.528	✓
21	9:41 AM	3.300	0.6	0.630	0.600	0.378	80	0.223	1.000	0.223	0.015	0.115	2.959	✓
20	9:35 AM	3.500	0.6	0.490	0.600	0.294	80	0.230	1.000	0.230	0.016	0.129	3.321	✓
19	9:34 AM	4.000	0.6	0.500	0.600	0.300	80	0.144	1.000	0.144	0.023	0.118	3.030	✓
18	9:32 AM	4.500	0.6	0.410	0.600	0.246	80	0.125	1.000	0.125	0.019	0.084	2.156	✓
17	9:31 AM	5.000	0.6	0.470	0.600	0.282	80	0.161	1.000	0.161	0.033	0.187	4.798	✓
16	9:29 AM	6.000	0.6	0.500	0.600	0.300	80	0.154	1.000	0.154	0.035	0.190	4.881	✓
15	9:46 AM	6.500	0.6	0.580	0.600	0.348	80	0.094	1.000	0.094	0.027	0.090	2.304	✓
14	9:28 AM	7.000	0.6	0.480	0.600	0.288	80	0.163	1.000	0.163	0.022	0.128	3.290	✓
13	9:47 AM	7.500	0.6	0.450	0.600	0.270	80	0.223	1.000	0.223	0.021	0.164	4.222	✓
12	9:27 AM	8.000	0.6	0.490	0.600	0.294	80	0.210	1.000	0.210	0.023	0.169	4.332	✓
11	9:49 AM	8.500	0.6	0.500	0.600	0.300	80	0.227	1.000	0.227	0.023	0.186	4.787	✓
10	9:26 AM	9.000	0.6	0.500	0.600	0.300	80	0.161	1.000	0.161	0.023	0.132	3.391	✓
9	9:50 AM	9.500	0.6	0.500	0.600	0.300	80	0.134	1.000	0.134	0.023	0.110	2.815	✓
8	9:24 AM	10.000	0.6	0.570	0.600	0.342	80	0.177	1.000	0.177	0.026	0.166	4.257	✓
7	9:22 AM	10.500	0.6	0.800	0.600	0.480	80	0.257	1.000	0.257	0.026	0.236	6.061	✓
6	9:52 AM	10.700	0.6	0.800	0.600	0.480	80	0.302	1.000	0.302	0.019	0.198	5.088	✓
5	9:21 AM	11.000	0.6	0.860	0.600	0.516	80	0.230	1.000	0.230	0.024	0.195	5.012	✓
4	9:53 AM	11.300	0.6	0.880	0.600	0.528	80	0.225	1.000	0.225	0.020	0.162	4.172	✓
3	9:20 AM	11.500	0.6	0.790	0.600	0.474	80	0.207	1.000	0.207	0.026	0.188	4.828	✓
2	9:19 AM	12.000	0.6	0.700	0.600	0.420	80	0.132	1.000	0.132	0.033	0.152	3.897	✓
1	9:17 AM	12.500	0.6	0.500	0.600	0.300	80	0.064	1.000	0.064	0.026	0.058	1.484	✓
0	9:17 AM	13.100	None	0.560	0.000	0.000	0	0.000	1.000	0.064	0.016	0.035	0.906	✓

Discharge Measurement Summary

Site name	EFAR
Site number	923
Operator(s)	LFS
File name	EFAR_20200923-095551.ft
Comment	

Quality Control Settings	
Maximum depth change	50.000%
Maximum spacing change	100.000%
SNR threshold	10.000 dB
Standard error threshold	0.010 m/s
Spike threshold	10.000%
Maximum velocity angle	20.000 deg
Maximum tilt angle	5.000 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
24	9:42 AM	2.500	0.6	0.640	0.600	0.384	Stn Spacing > QC
23	9:44 AM	2.700	0.6	0.680	0.600	0.408	Stn Spacing > QC,Beam SNRs Not Similar
22	9:37 AM	3.000	0.6	0.680	0.600	0.408	Stn Spacing > QC
13	9:47 AM	7.500	0.6	0.450	0.600	0.270	Velocity Angle > QC
12	9:27 AM	8.000	0.6	0.490	0.600	0.294	Velocity Angle > QC
11	9:49 AM	8.500	0.6	0.500	0.600	0.300	Velocity Angle > QC
10	9:26 AM	9.000	0.6	0.500	0.600	0.300	Velocity Angle > QC
9	9:50 AM	9.500	0.6	0.500	0.600	0.300	Velocity Angle > QC
8	9:24 AM	10.000	0.6	0.570	0.600	0.342	Velocity Angle > QC
7	9:22 AM	10.500	0.6	0.800	0.600	0.480	Standard Error > QC
6	9:52 AM	10.700	0.6	0.800	0.600	0.480	Standard Error > QC
5	9:21 AM	11.000	0.6	0.860	0.600	0.516	Stn Spacing > QC

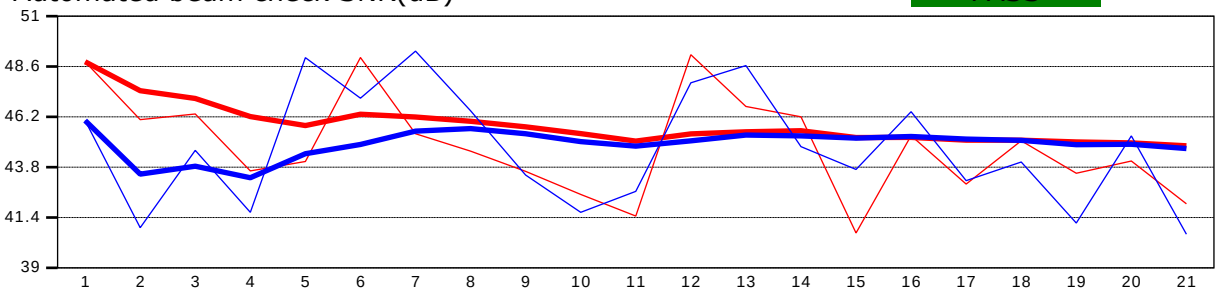
Discharge Measurement Summary

Site name	EFAR
Site number	923
Operator(s)	LFS
File name	EFAR_20200923-095551.ft
Comment	

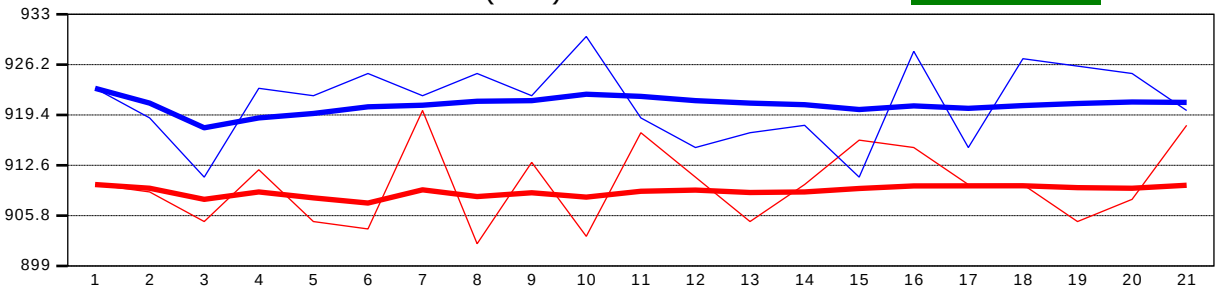
Beam 1	
Beam 2	

Automated beam check Start time 9/23/2020 9:16:41 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

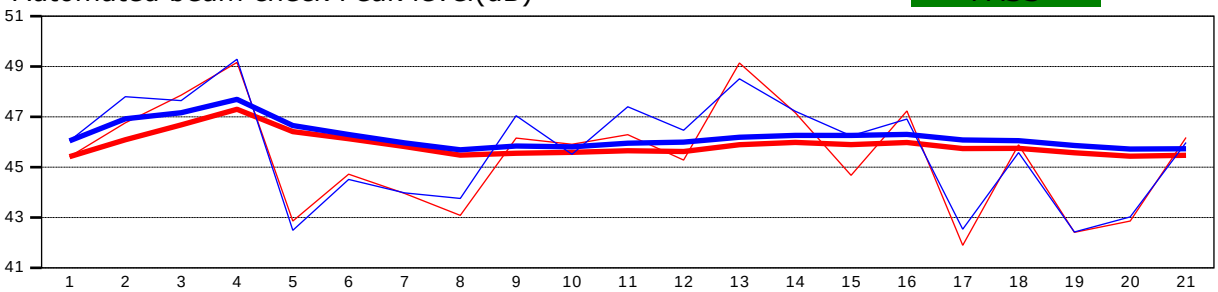
Discharge Measurement Summary

Site name	EFAR
Site number	923
Operator(s)	LFS
File name	EFAR_20200923-095551.ft
Comment	

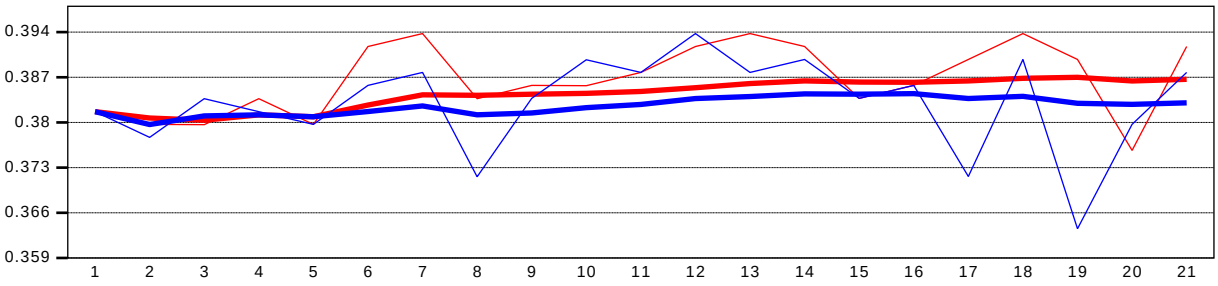
Beam 1	
Beam 2	

Automated beam check Start time 9/23/2020 9:16:41 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	EFKARKD2
Site number	12082020
Operator(s)	LFS
File name	IEFKARKD2_20201208-131442.ft
Comment	

Start time	12/8/2020 11:37 PM
End time	12/8/2020 12:12 PM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.30
Handheld software	1.7

# Stations	Avg interval (s)	Total discharge (ft³/s)
19	40	0.7354

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
12.700	4.9431	12.885

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
13	0.389	0.1488

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
32.153	0.650	0.7234

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.5%	6.0%
Velocity	6.9%	20.6%
Width	0.2%	0.1%
Method	2.3%	
# Stations	2.6%	
Overall	**7.8%**	**21.5%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

Summary overview

2 measurements were edited
Quality control warnings

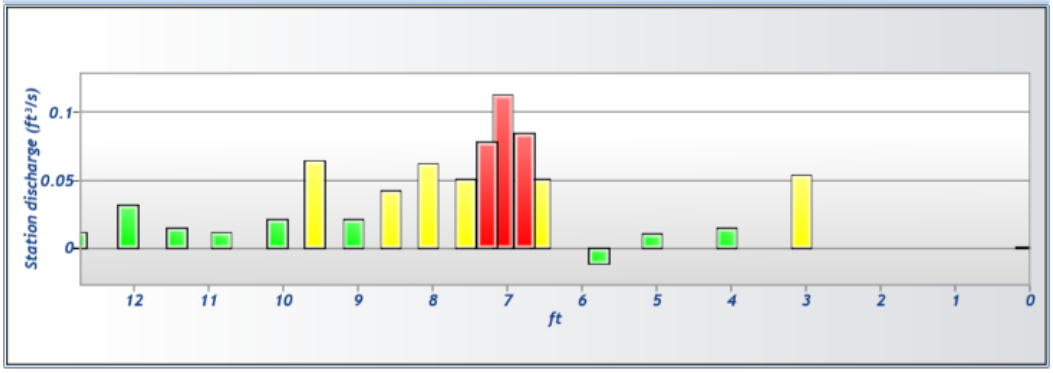
**The data in brackets [] are the original data before editing*

Discharge Measurement Summary

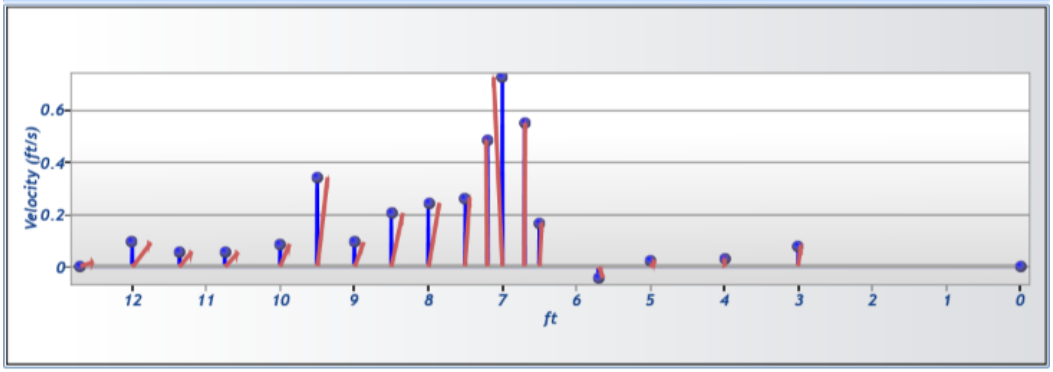
Site name	EFKARKD2
Site number	12082020
Operator(s)	LFS
File name	EFKARKD2_20201208-131442.ft
Comment	

Station Warning Settings		
Station discharge OK	Station discharge < 5.00%	
Station discharge caution	5.00% >= Station discharge < 10.00%	
Station discharge warning	Station discharge >= 10.00%	

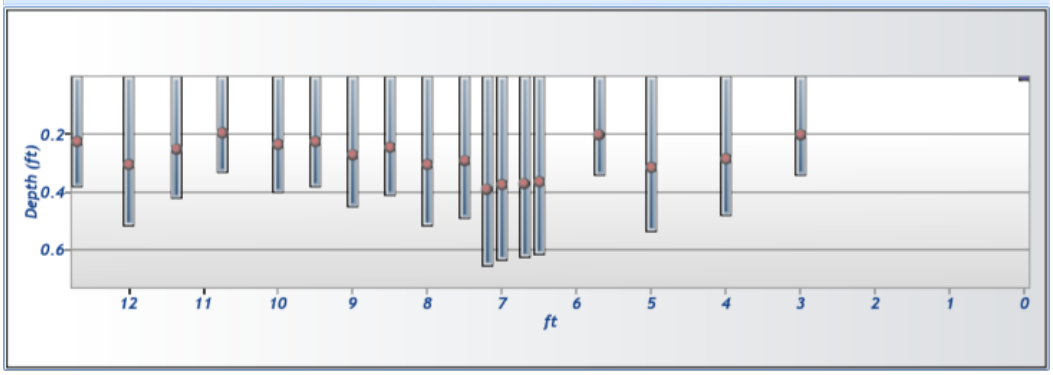
Discharge chart



Velocity chart



Depth chart



Discharge Measurement Summary

Site name	EFKARKD2
Site number	12082020
Operator(s)	LFS
File name	EFKARKD2_20201208-131442.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	*12:37 PM*	*0.000*	*None*	*0.010*	*0.0000*	*0.000*	*0*	*0.0000*	*1.0000*	*0.0808*	*0.0150*	*0.0012*	*0.16*	✓
18	1:06 PM	3.000	0.6	0.340	0.6000	0.204	80	0.0808	1.0000	0.0808	0.6800	0.0549	7.47	✓
17	1:04 PM	4.000	0.6	0.480	0.6000	0.288	80	0.0313	1.0000	0.0313	0.4800	0.0150	2.04	✓
16	1:03 PM	5.000	0.6	0.530	0.6000	0.318	80	0.0249	1.0000	0.0249	0.4505	0.0112	1.53	✓
15	1:01 PM	5.700	0.6	0.340	0.6000	0.204	80	-0.0426	1.0000	-0.0426	0.2550	-0.0109	-1.48	✓
14	12:59 PM	6.500	0.6	0.610	0.6000	0.366	80	0.1668	1.0000	0.1668	0.3050	0.0509	6.92	✓
13	1:09 PM	6.700	0.6	0.620	0.6000	0.372	80	0.5484	1.0000	0.5484	0.1550	0.0850	11.56	✓
12	12:57 PM	7.000	0.6	0.630	0.6000	0.378	80	0.7234	1.0000	0.7234	0.1575	0.1139	15.49	✓
11	1:12 PM	7.200	0.6	0.650	0.6000	0.390	80	0.4827	1.0000	0.4827	0.1625	0.0784	10.67	✓
10	12:55 PM	7.500	0.6	0.490	0.6000	0.294	80	0.2621	1.0000	0.2621	0.1960	0.0514	6.98	✓
9	12:54 PM	8.000	0.6	0.510	0.6000	0.306	80	0.2451	1.0000	0.2451	0.2550	0.0625	8.50	✓
8	12:52 PM	8.500	0.6	0.410	0.6000	0.246	80	0.2067	1.0000	0.2067	0.2050	0.0424	5.76	✓
7	12:51 PM	9.000	0.6	0.450	0.6000	0.270	80	0.0944	1.0000	0.0944	0.2250	0.0212	2.89	✓
6	12:48 PM	9.500	0.6	0.380	0.6000	0.228	80	0.3395	1.0000	0.3395	0.1900	0.0645	8.77	✓
5	12:47 PM	10.000	0.6	0.400	0.6000	0.240	80	0.0866	1.0000	0.0866	0.2500	0.0217	2.94	✓
4	12:44 PM	10.750	0.6	0.330	0.6000	0.198	80	0.0559	1.0000	0.0559	0.2244	0.0125	1.70	✓
3	12:42 PM	11.360	0.6	0.420	0.6000	0.252	80	0.0581	1.0000	0.0581	0.2625	0.0152	2.07	✓
2	12:40 PM	12.000	0.6	0.510	0.6000	0.306	80	0.0932	1.0000	0.0932	0.3417	0.0318	4.33	✓
1	*12:38 PM*	*12.700*	*None*	*0.380*	*0.6000*	*0.228*	*80*	*0.0172*	*1.0000*	*0.0932*	*0.1330*	*0.0124*	*1.69*	✓

Discharge Measurement Summary

Site name	EFKARKD2
Site number	12082020
Operator(s)	LFS
File name	EFKARKD2_20201208-131442.ft
Comment	

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	10 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
18	1:06 PM	3.000	0.6	0.340	0.6000	0.204	Boundary Interference,Standard Error > QC,Velocity Angle > QC
17	1:04 PM	4.000	0.6	0.480	0.6000	0.288	Large SNR Variation
15	1:01 PM	5.700	0.6	0.340	0.6000	0.204	Large SNR Variation
13	1:09 PM	6.700	0.6	0.620	0.6000	0.372	High Stn % Discharge
12	12:57 PM	7.000	0.6	0.630	0.6000	0.378	High Stn % Discharge
11	1:12 PM	7.200	0.6	0.650	0.6000	0.390	High Stn % Discharge
9	12:54 PM	8.000	0.6	0.510	0.6000	0.306	Velocity Angle > QC
8	12:52 PM	8.500	0.6	0.410	0.6000	0.246	Boundary Interference,Standard Error > QC,Velocity Angle > QC
7	12:51 PM	9.000	0.6	0.450	0.6000	0.270	Boundary Interference,Velocity Angle > QC
6	12:48 PM	9.500	0.6	0.380	0.6000	0.228	Velocity Angle > QC
5	12:47 PM	10.000	0.6	0.400	0.6000	0.240	Boundary Interference,Velocity Angle > QC
3	12:42 PM	11.360	0.6	0.420	0.6000	0.252	Boundary Interference
2	12:40 PM	12.000	0.6	0.510	0.6000	0.306	Velocity Angle > QC
1	12:38 PM	12.700	None	0.380	0.6000	0.228	Boundary Interference

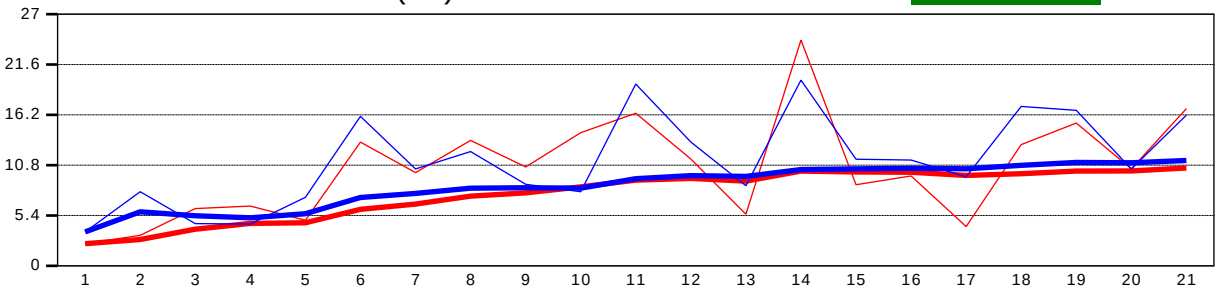
Discharge Measurement Summary

Site name	EFKARKD2
Site number	12082020
Operator(s)	LFS
File name	EFKARKD2_20201208-131442.ft
Comment	

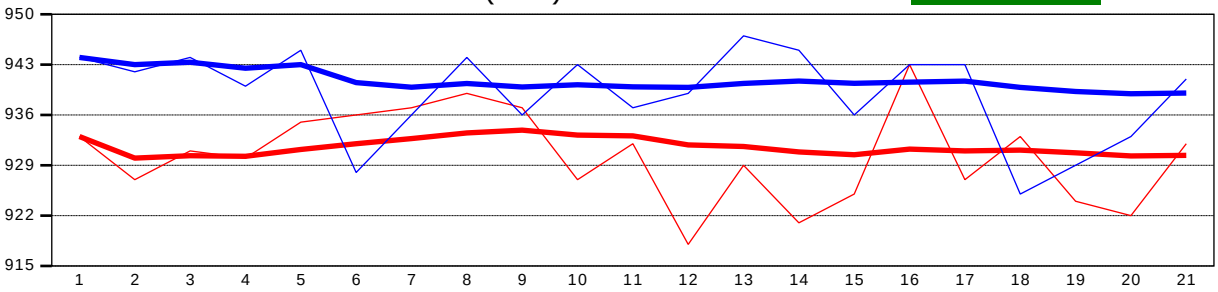
Beam 1	
Beam 2	

Automated beam check Start time 12/8/2020 12:37:10 PM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

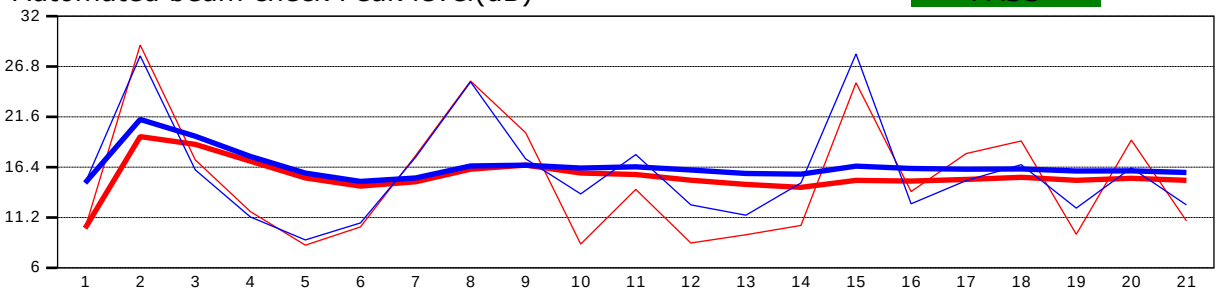
Discharge Measurement Summary

Site name	EFKARKD2
Site number	12082020
Operator(s)	LFS
File name	EFKARKD2_20201208-131442.ft
Comment	

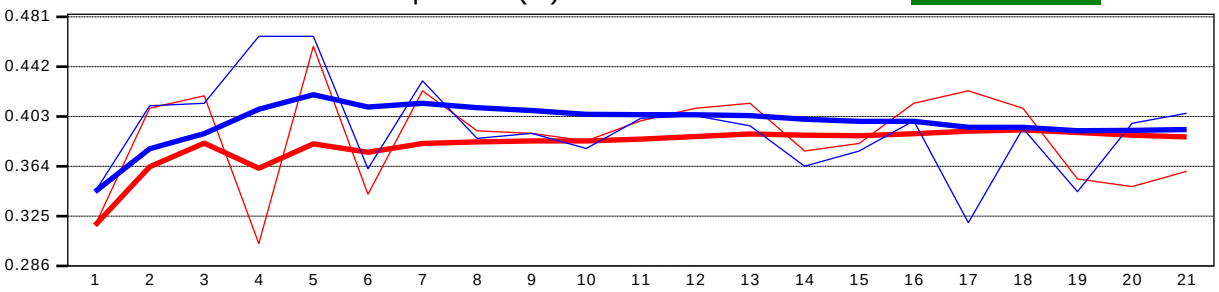
Beam 1	
Beam 2	

Automated beam check Start time 12/8/2020 12:37:10 PM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS



Automated beam check Quality control warnings

No quality control warnings

Discharge Measurement Summary

Site name	Efak
Site number	02012021
Operator(s)	Lfs
File name	Efak_20210201-121008.ft
Comment	

Start time	2/1/2021 11:33 AM
End time	2/1/2021 12:03 PM
Start location latitude	39.349
Start location longitude	-106.220
Calculations engine	FlowTracker2

Sensor type	Top Setting
Handheld serial number	FT2H1747037
Probe serial number	FT2P1747048
Probe firmware	1.30
Handheld software	1.7

# Stations	Avg interval (s)	Total discharge (ft³/s)
17	40	0.4165

Total width (ft)	Total area (ft²)	Wetted Perimeter (ft)
6.400	2.8820	6.709

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
11	0.450	0.1445

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
32.235	0.580	0.3158

Discharge Uncertainty		
Category	**ISO**	**IVE**
Accuracy	1.0%	1.0%
Depth	0.4%	5.7%
Velocity	4.0%	8.3%
Width	0.1%	0.1%
Method	2.1%	
# Stations	3.0%	
Overall	**5.5%**	**10.1%**

Discharge equation	Mid Section
Discharge uncertainty	IVE
Discharge reference	Rated

Data Collection Settings	
Salinity	0.000 PSS-78
Temperature	-
Sound speed	-
Mounting correction	0.000 %

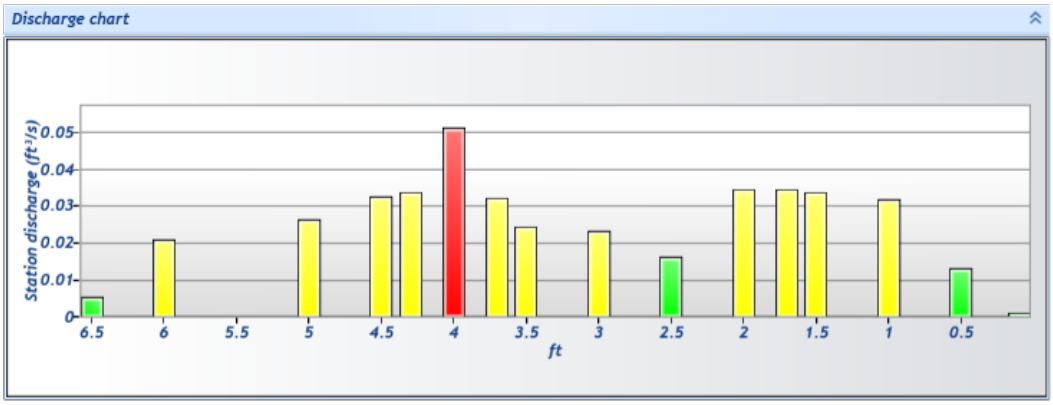
Summary overview

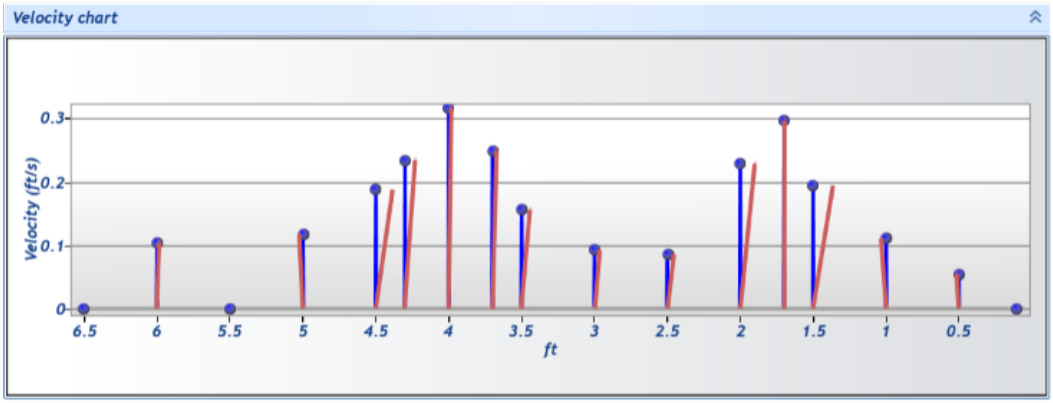
No changes were made to this file
Quality control warnings

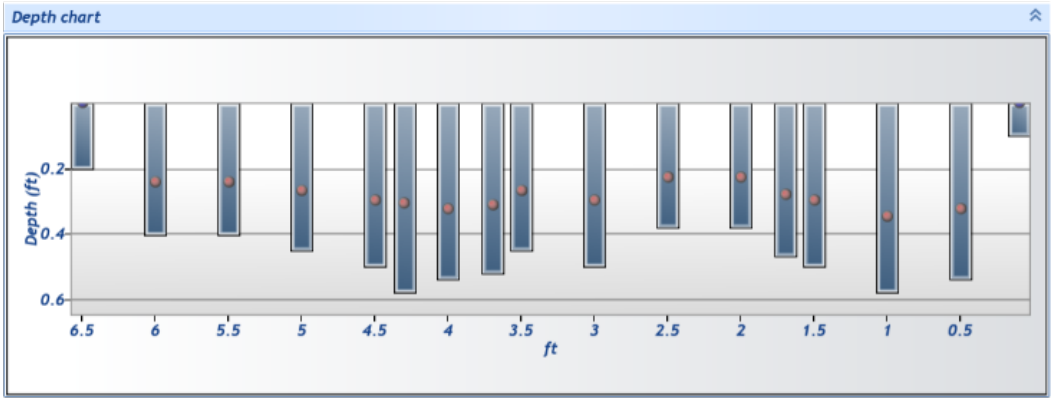
Discharge Measurement Summary

Site name	Efak
Site number	02012021
Operator(s)	Lfs
File name	Efak_20210201-121008.ft
Comment	

Station Warning Settings		
Station discharge OK	Station discharge < 5.00%	
Station discharge caution	5.00% >= Station discharge < 10.00%	
Station discharge warning	Station discharge >= 10.00%	







Discharge Measurement Summary

Site name	Efak
Site number	02012021
Operator(s)	Lfs
File name	Efak_20210201-121008.ft
Comment	

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q	
0	11:33 AM	0.100	None	0.100	0.0000	0.000	0	0.0000	1.0000	0.0551	0.0200	0.0011	0.26	✓
1	11:35 AM	0.500	0.6	0.540	0.6000	0.324	80	0.0551	1.0000	0.0551	0.2430	0.0134	3.21	✓
2	11:37 AM	1.000	0.6	0.580	0.6000	0.348	80	0.1105	1.0000	0.1105	0.2900	0.0320	7.70	✓
3	11:39 AM	1.500	0.6	0.500	0.6000	0.300	80	0.1940	1.0000	0.1940	0.1750	0.0340	8.15	✓
4	12:03 PM	1.700	0.6	0.470	0.6000	0.282	80	0.2951	1.0000	0.2951	0.1175	0.0347	8.33	✓
5	11:44 AM	2.000	0.6	0.380	0.6000	0.228	80	0.2281	1.0000	0.2281	0.1520	0.0347	8.32	✓
6	11:41 AM	2.500	0.6	0.380	0.6000	0.228	80	0.0853	1.0000	0.0853	0.1900	0.0162	3.89	✓
7	11:45 AM	3.000	0.6	0.500	0.6000	0.300	80	0.0925	1.0000	0.0925	0.2500	0.0231	5.55	✓
8	11:47 AM	3.500	0.6	0.450	0.6000	0.270	80	0.1556	1.0000	0.1556	0.1575	0.0245	5.89	✓
9	12:01 PM	3.700	0.6	0.520	0.6000	0.312	80	0.2486	1.0000	0.2486	0.1300	0.0323	7.76	✓
10	11:49 AM	4.000	0.6	0.540	0.6000	0.324	80	0.3158	1.0000	0.3158	0.1620	0.0512	12.28	✓
11	11:58 AM	4.300	0.6	0.580	0.6000	0.308	80	0.2337	1.0000	0.2337	0.1450	0.0339	8.14	✓
12	11:51 AM	4.500	0.6	0.500	0.6000	0.300	80	0.1874	1.0000	0.1874	0.1750	0.0328	7.87	✓
13	11:52 AM	5.000	0.6	0.450	0.6000	0.270	80	0.1174	1.0000	0.1174	0.2250	0.0264	6.34	✓
14	11:54 AM	5.500	0.6	0.400	0.6000	0.240	80	0.0002	1.0000	0.0002	0.2000	0.0000	0.01	✓
15	11:56 AM	6.000	0.6	0.400	0.6000	0.240	80	0.1046	1.0000	0.1046	0.2000	0.0209	5.03	✓
16	11:57 AM	6.500	None	0.200	0.0000	0.000	0	0.0000	1.0000	0.1046	0.0500	0.0052	1.26	✓

Discharge Measurement Summary

Site name	Efak
Site number	02012021
Operator(s)	Lfs
File name	Efak_20210201-121008.ft
Comment	

Quality Control Settings	
Maximum depth change	50.00%
Maximum spacing change	100.00%
SNR threshold	10 dB
Standard error threshold	0.0328 ft/s
Spike threshold	10.00%
Maximum velocity angle	20.0 deg
Maximum tilt angle	5.0 deg

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	11:35 AM	0.500	0.6	0.540	0.6000	0.324	Boundary Interference,Large SNR Variation
3	11:39 AM	1.500	0.6	0.500	0.6000	0.300	Low SNR,Velocity Angle > QC
4	12:03 PM	1.700	0.6	0.470	0.6000	0.282	Low SNR
5	11:44 AM	2.000	0.6	0.380	0.6000	0.228	Stn Spacing > QC,Low SNR,Velocity Angle > QC
6	11:41 AM	2.500	0.6	0.380	0.6000	0.228	Low SNR,Approaching Low SNR,Velocity Angle > QC
7	11:45 AM	3.000	0.6	0.500	0.6000	0.300	Boundary Interference,Low SNR,Approaching Low SNR,Velocity Angle > QC
8	11:47 AM	3.500	0.6	0.450	0.6000	0.270	Low SNR,Velocity Angle > QC
9	12:01 PM	3.700	0.6	0.520	0.6000	0.312	Boundary Interference,Low SNR,Approaching Low SNR
10	11:49 AM	4.000	0.6	0.540	0.6000	0.324	Stn Spacing > QC,Low SNR,High Stn % Discharge
11	11:58 AM	4.300	0.6	0.580	0.6000	0.308	Low SNR,Approaching Low SNR
12	11:51 AM	4.500	0.6	0.500	0.6000	0.300	Low SNR,Approaching Low SNR,Velocity Angle > QC
13	11:52 AM	5.000	0.6	0.450	0.6000	0.270	Boundary Interference
14	11:54 AM	5.500	0.6	0.400	0.6000	0.240	Boundary Interference,Beam SNRs Not Similar,SNR Threshold Variation
15	11:56 AM	6.000	0.6	0.400	0.6000	0.240	Boundary Interference,SNR Threshold Variation,Standard Error > QC

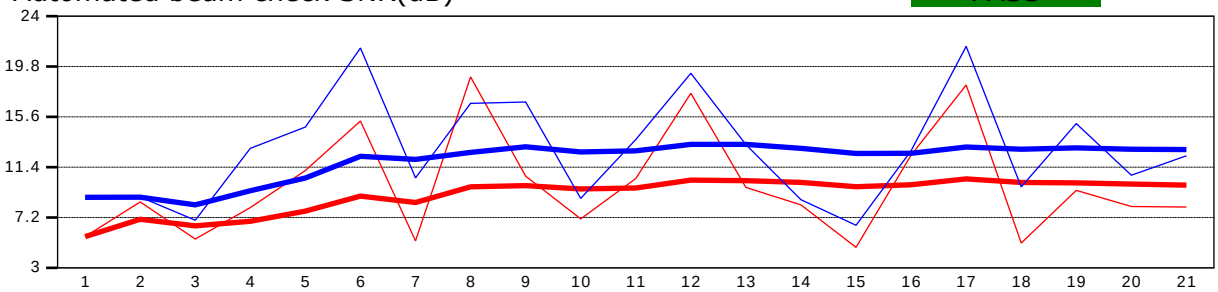
Discharge Measurement Summary

Site name	Efak
Site number	02012021
Operator(s)	Lfs
File name	Efak_20210201-121008.ft
Comment	

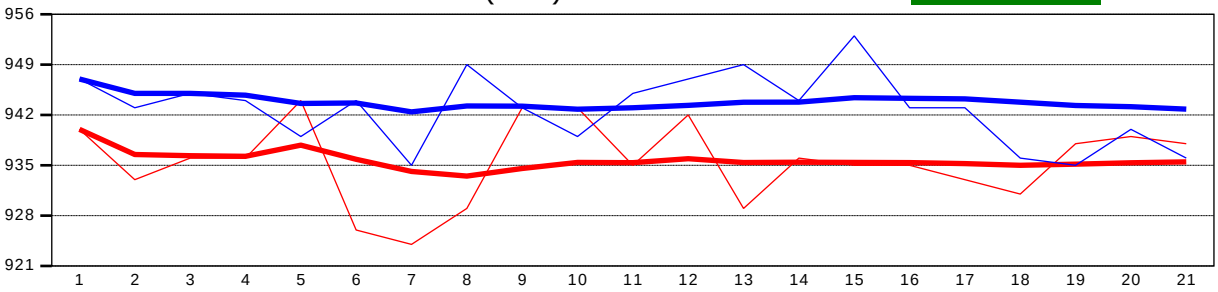
Beam 1	
Beam 2	

Automated beam check Start time 2/1/2021 11:32:03 AM

Automated beam check SNR(dB) PASS



Automated beam check Noise level(cnts) PASS



Automated beam check Quality control warnings

No quality control warnings

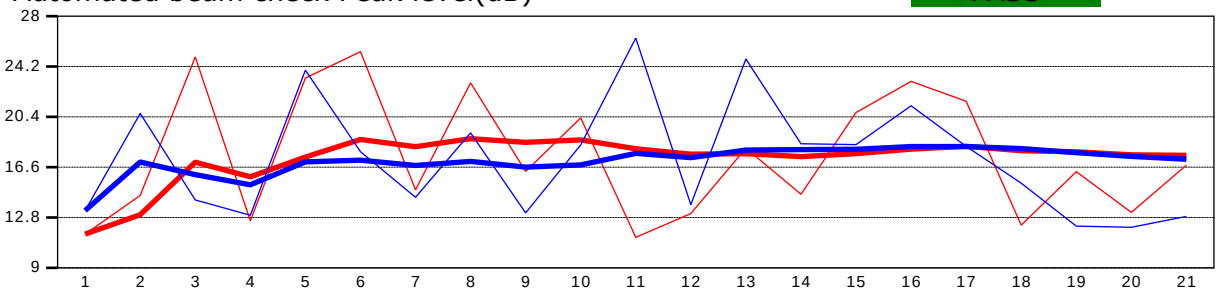
Discharge Measurement Summary

Site name	Efak
Site number	02012021
Operator(s)	Lfs
File name	Efak_20210201-121008.ft
Comment	

Beam 1	
Beam 2	

Automated beam check Start time 2/1/2021 11:32:03 AM

Automated beam check Peak level(dB) PASS



Automated beam check Peak position(ft) PASS

Automated beam check Quality control warnings

No quality control warnings