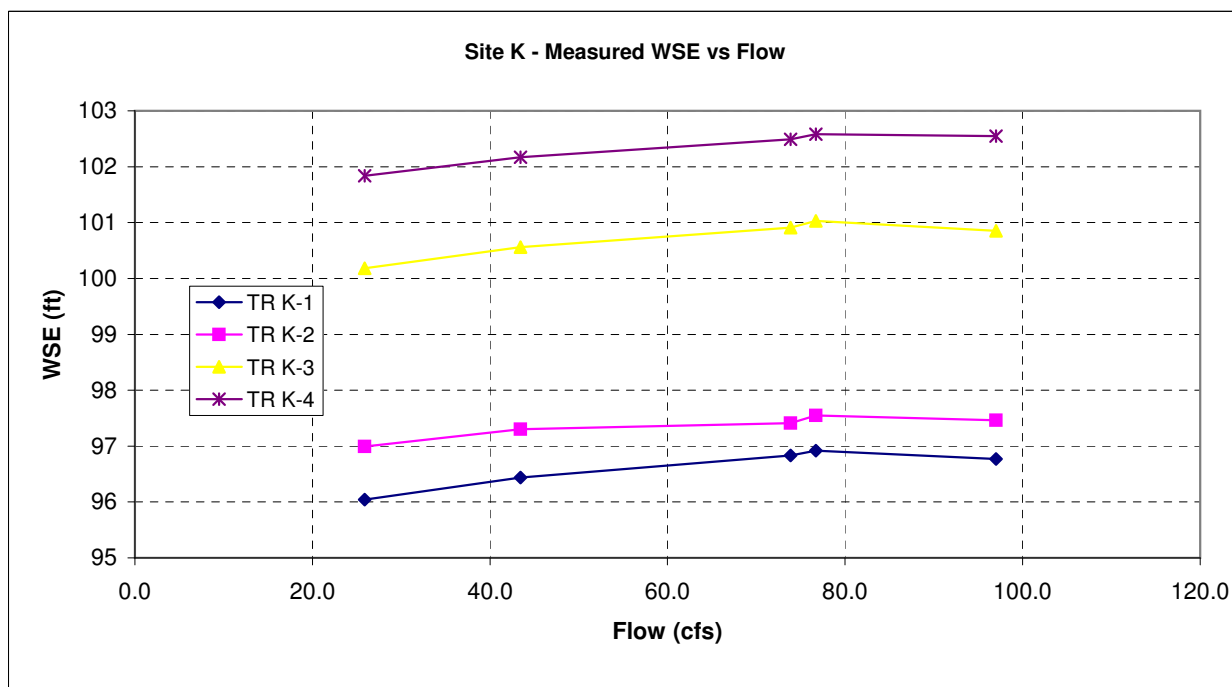
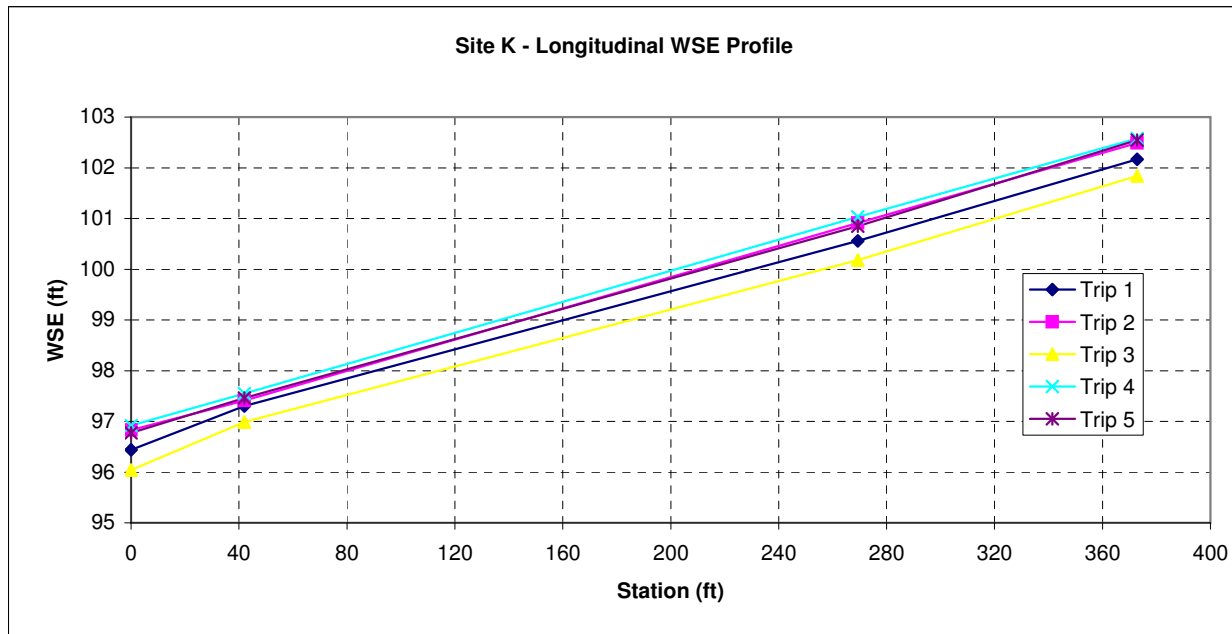


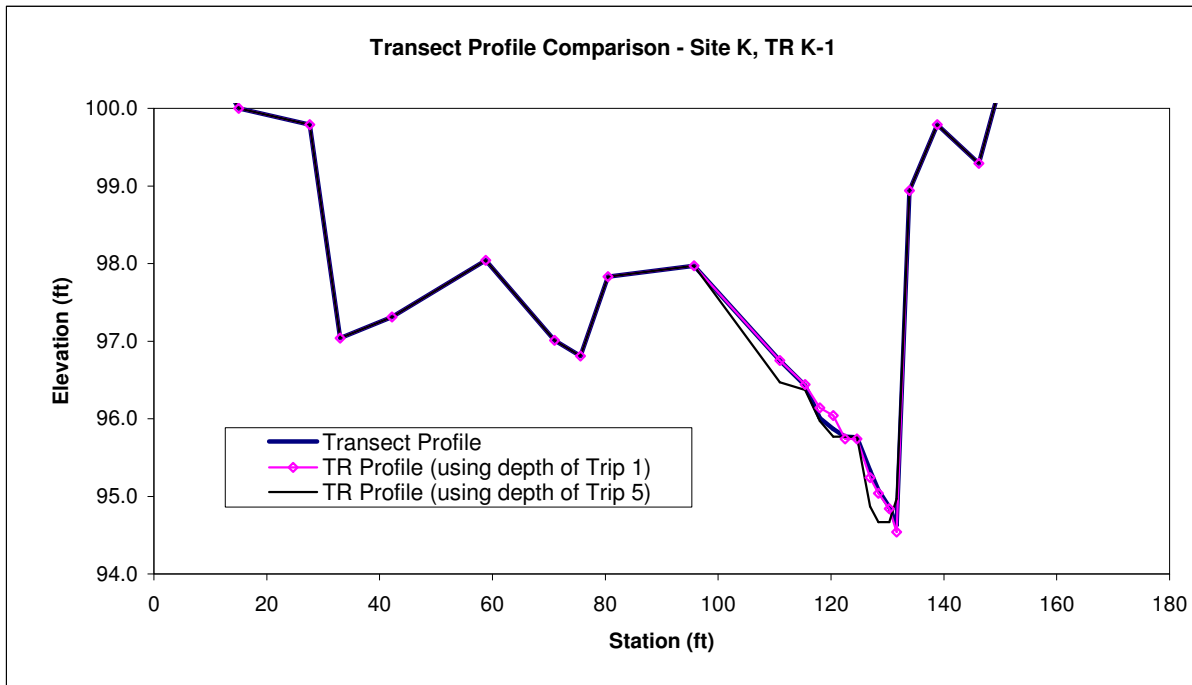
Reach: Alluvial Reach
 Stream: Cooper Creek
 Site: Site K
 Habitat Type: Riffle

			Q(cfs)					Vel-Depth Survey				
			25.9	43.4	73.8	76.7	97.0					
			WSE (ft)									
TR	length	Sta	Trip 3	Trip 1	Trip 2	Trip 4	Trip 5	Trip 3	Trip 1	Trip 2	Trip 4	Trip 5
TR K-1	-	0.0	96.04	96.44	96.83	96.92	96.77		Y			Y
TR K-2	42	42.0	96.99	97.30	97.41	97.55	97.46		Y			Y
TR K-3	227.3	269.3	100.18	100.56	100.91	101.03	100.85		Y			Y
TR K-4	103.5	372.8	101.84	102.17	102.49	102.58	102.55		Y			Y
Average WSE slope			1.56%	1.54%	1.52%	1.52%	1.55%					



Transect profile Comparison - Site K, TR K-1

Trip 1								Trip 5						
Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	subs	code	
0.4	102.31	0.51	101.8				101.80				101.80	org	0	
15	102.31	2.31	100				100.00				100.00	org	0	
27.6	102.31	2.52	99.79				99.79				99.79	org	0	
33	102.31	5.27	97.04				97.04				97.04	sand	1	
42.2	102.31	5	97.31				97.31				97.31	org	0	
58.8	102.31	4.27	98.04				98.04				98.04	org	0	
71	102.31	5.3	97.01				97.01				97.01	sand	1	
75.6	102.31	5.5	96.81				96.81				96.81	90	5	
80.5	102.31	4.48	97.83				97.83				97.83	sand	1	
95.7	102.31	4.34	97.97				97.97				97.97	sand	1	
110.9	102.31	5.56	96.75				96.75	0.30	1.00	1.4	96.47	45	4	
115.4	102.31	5.88	96.43	0.0	0.0	0.00	96.44	0.40	1.10	1.6	96.37	64	4	
118	102.31	6.3	96.01	0.30	2.00	1.50	96.14	0.80	3.70	7.4	95.97	90	5	
120.4	102.31	6.44	95.87	0.40	2.30	2.07	96.04	1.00	3.30	7.4	95.77	180	6	
122.5	102.31	6.54	95.77	0.70	2.40	3.53	95.74	1.00	3.90	8.2	95.77	90	5	
124.6	102.31	6.55	95.76	0.70	2.10	3.23	95.74	1.00	3.90	8.6	95.77	64	4	
126.9	102.31	6.98	95.33	1.20	3.40	7.75	95.24	1.90	4.40	15.9	94.87	128	5	
128.4	102.31	7.23	95.08	1.40	3.70	8.81	95.04	2.10	4.70	16.8	94.67	64	4	
130.3	102.31	7.45	94.86	1.60	3.70	9.47	94.84	2.10	6.20	20.8	94.67	128	5	
131.6	102.31	7.68	94.63	1.90	3.90	4.82	94.54	1.80	0.60	0.7	94.97	90	5	
133.9	102.31	3.37	98.94				98.94				98.94	org	0	
138.8	102.31	2.52	99.79				99.79				99.79	org	0	
146.2	102.31	3.02	99.29				99.29				99.29	org	0	
152.4	102.31	1.38	100.93				100.93				100.93	org	0	
158.3	102.31	1.5	100.81				100.81				100.81	org	0	
TR Q (cfs)=							41.2	TR Q (cfs)=				88.8		

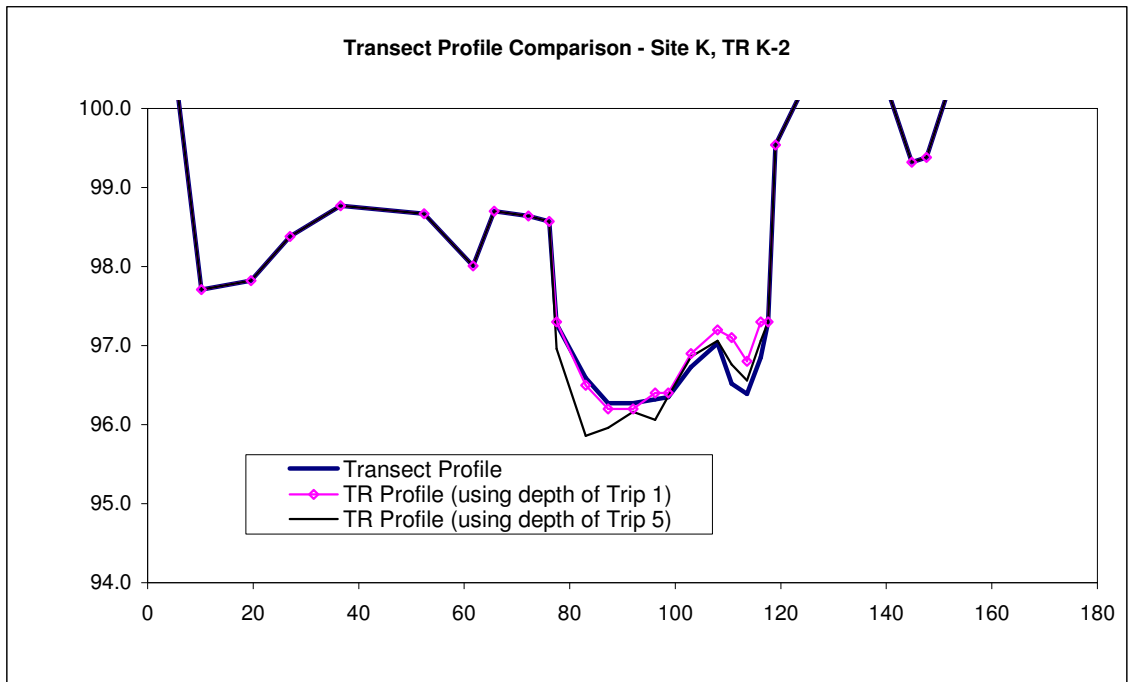


Transect profile Comparison - Site K, TR K-2
Transect is 25 degrees angle upstream

recorded Sta (ft)	Trip 1							Trip 5				subs	code	
	Corrected Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)			Bed Elev (ft)
1.2	0	102.1	1.50	100.6				100.60				100.60	org	0
5	3.4	102.1	1.50	100.6				100.60				100.60	org	0
10.2	8.2	102.1	4.39	97.71				97.71				97.71	org	0
19.6	16.7	102.1	4.28	97.82				97.82				97.82	org	0
27	23.4	102.1	3.72	98.38				98.38				98.38	org	0
36.6	32.1	102.1	3.33	98.77				98.77				98.77	org	0
52.4	46.4	102.1	3.43	98.67				98.67				98.67	org	0
61.7	54.8	102.1	4.09	98.01				98.01				98.01	org	0
65.7	58.5	102.1	3.40	98.7				98.70				98.70	org	0
72.2	64.4	102.1	3.46	98.64				98.64				98.64	org	0
76.1	67.9	102.1	3.53	98.57				98.57				98.57	org	0
77.5	69.2	102.1	4.83	97.27	0.00	0.00	0.00	97.30	0.50	0.00	0.0	96.96	8	2
83	74.1	102.1	5.51	96.59	0.80	2.70	9.59	96.50	1.60	2.70	19.2	95.86	90	5
87.3	78.0	102.1	5.83	96.27	1.10	2.80	12.56	96.20	1.50	2.90	17.7	95.96	11	3
92	82.3	102.1	5.83	96.27	1.10	2.50	11.09	96.20	1.30	3.70	19.4	96.16	128	5
96.2	86.1	102.1	5.78	96.32	0.90	3.10	8.47	96.40	1.40	3.60	15.3	96.06	128	5
98.7	88.4	102.1	5.75	96.35	0.90	2.80	7.77	96.40	1.10	3.40	11.5	96.36	90	5
103	92.3	102.1	5.37	96.73	0.40	1.90	3.20	96.90	0.60	3.10	7.8	96.86	90	5
108	96.8	102.1	5.07	97.03	0.10	1.00	0.35	97.20	0.40	2.80	3.9	97.06	64	4
110.7	99.3	102.1	5.58	96.52	0.20	0.00	0.00	97.10	0.70	0.00	0.0	96.76	16	3
113.6	101.9	102.1	5.71	96.39	0.50	0.00	0.00	96.80	0.90	0.00	0.0	96.56	sand	1
116.2	104.2	102.1	5.25	96.85	0.00	0.00	0.00	97.30	0.40	0.00	0.0	97.06	sand	1
117.6	105.5	102.1	4.80	97.3				97.30				97.30	4	2
119	106.8	102.1	2.56	99.54				99.54				99.54	org	0
126.7	113.8	102.1	1.51	100.59				100.59				100.59	org	0
137.6	123.6	102.1	1.34	100.76				100.76				100.76	org	0
144.8	130.2	102.1	2.78	99.32				99.32				99.32	org	0
147.6	132.7	102.1	2.72	99.38				99.38				99.38	org	0
153	137.6	102.1	1.61	100.49				100.49				100.49	org	0
157.7	141.9	102.1	1.45	100.65				100.65				100.65	org	0
160	143.9	102.1	0.35	101.75				101.75				101.75	org	0

TR Q (cfs)= 53.0

TR Q (cfs)= 94.9

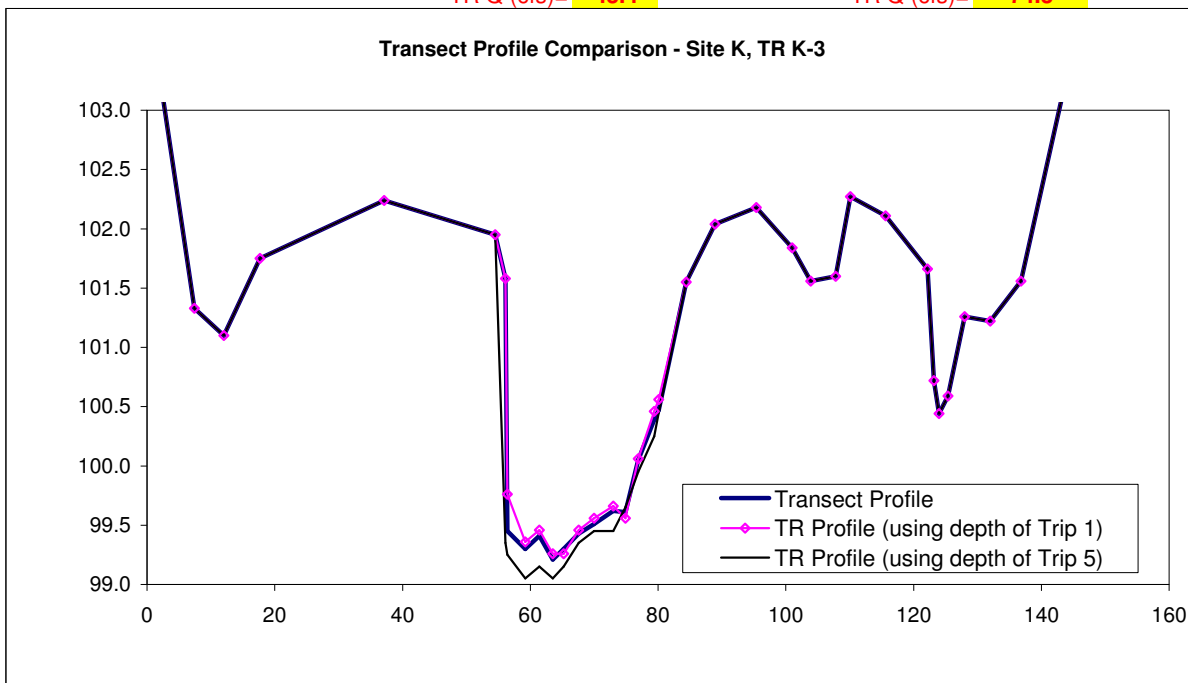


Transect profile Comparison - Site K, TR K-3

Trip 1							Trip 5						
Sta (ft)	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	subs	code
0.9	106.6	2.92	103.68				103.68				103.68	org	0
7.4	106.6	5.27	101.33				101.33				101.33	org	0
12	106.6	5.50	101.1				101.10				101.10	org	0
17.7	106.6	4.85	101.75				101.75				101.75	org	0
37.1	106.6	4.36	102.24				102.24				102.24	org	0
54.5	106.6	4.65	101.95				101.95				101.95	org	0
56.1	106.6	5.02	101.58				101.58	1.50	1.10	2.0	99.35	org	0
56.4	106.6	7.15	99.45	0.80	0.50	0.56	99.76	1.60	1.40	3.5	99.25	16	3
59.2	106.6	7.30	99.3	1.20	1.70	5.10	99.36	1.80	2.50	11.3	99.05	23	3
61.4	106.6	7.19	99.41	1.10	1.70	4.02	99.46	1.70	2.50	9.1	99.15	90	5
63.5	106.6	7.39	99.21	1.30	2.10	5.19	99.26	1.80	3.00	10.3	99.05	23	3
65.2	106.6	7.30	99.3	1.30	2.50	6.66	99.26	1.70	3.20	11.2	99.15	90	5
67.6	106.6	7.17	99.43	1.10	2.20	5.81	99.46	1.50	1.80	6.5	99.35	16	3
70	106.6	7.09	99.51	1.00	2.30	6.21	99.56	1.40	2.10	7.9	99.45	45	4
73	106.6	6.98	99.62	0.90	2.30	5.07	99.66	1.40	1.60	5.5	99.45	23	3
74.9	106.6	6.99	99.61	1.00	1.60	3.12	99.56	1.20	1.80	4.2	99.65	45	4
76.9	106.6	6.55	100.05	0.50	1.50	1.69	100.06	0.90	1.20	2.4	99.95	45	4
79.4	106.6	6.21	100.39	0.10	0.00	0.00	100.46	0.60	0.50	0.5	100.25	23	3
80.1	106.6	6.13	100.47	0.00	0.00	0.00	100.56	0.40	0.20	0.0	100.45	8	2
84.4	106.6	5.05	101.55				101.55				101.55	org	0
88.9	106.6	4.56	102.04				102.04				102.04	sand	1
95.4	106.6	4.42	102.18				102.18				102.18	silt	1
101	106.6	4.76	101.84				101.84				101.84	silt	1
103.9	106.6	5.04	101.56				101.56				101.56	silt	1
107.8	106.6	5.00	101.6				101.60				101.60	org	0
110.1	106.6	4.33	102.27				102.27				102.27	org	0
115.6	106.6	4.49	102.11				102.11				102.11	org	0
122.2	106.6	4.94	101.66				101.66				101.66	org	0
123.2	106.6	5.88	100.72				100.72				100.72	silt	1
124	106.6	6.16	100.44				100.44				100.44	45	4
125.4	106.6	6.01	100.59				100.59				100.59	8	2
128	106.6	5.34	101.26				101.26				101.26	sand	1
132	106.6	5.38	101.22				101.22				101.22	sand	1
136.8	106.6	5.04	101.56				101.56				101.56	sand	1
147.9	106.6	2.37	104.23				104.23				104.23	org	0

TR Q (cfs)= 43.4

TR Q (cfs)= 74.3

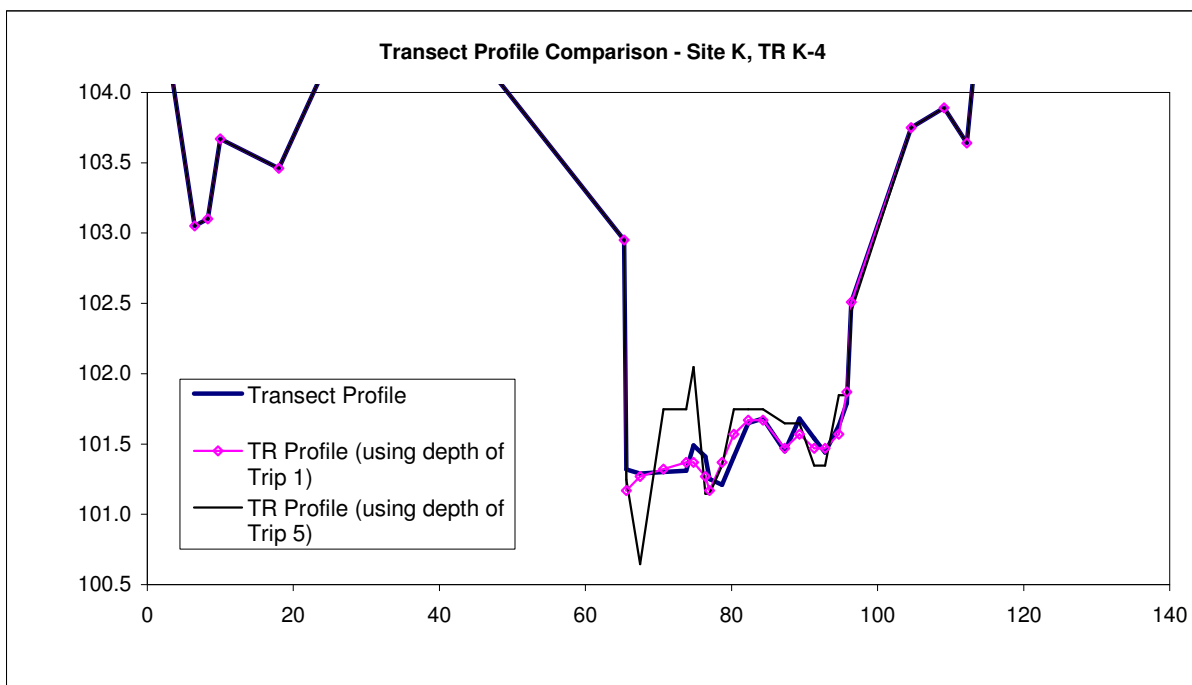


Transect profile Comparison - Site K, TR K-4

Sta (ft)	Trip 1							Trip 5				subs	code
	HI (ft)	FS (ft)	Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)	Depth (ft)	Velocity (ft/s)	q (cfs)	Bed Elev (ft)		
0.6	108.5	3.44	105.06				105.06				105.06	org	0
6.5	108.5	5.45	103.05				103.05				103.05	org	0
8.3	108.5	5.40	103.1				103.10				103.10	org	0
10	108.5	4.83	103.67				103.67				103.67	org	0
18	108.5	5.04	103.46				103.46				103.46	org	0
27.6	108.5	3.95	104.55				104.55				104.55	org	0
33.3	108.5	4.07	104.43				104.43				104.43	org	0
42.5	108.5	4.05	104.45				104.45				104.45	org	0
65.3	108.5	5.55	102.95				102.95				102.95	org	0
65.6	108.5	7.18	101.32	1.00	0.40	0.38	101.17	1.30	1.60	2.0	101.25	128	5
67.5	108.5	7.21	101.29	0.90	1.60	3.67	101.27	1.90	5.20	25.2	100.65	128	5
70.7	108.5	7.20	101.3	0.85	2.01	5.37	101.32	0.80	5.90	14.9	101.75	32	3
73.8	108.5	7.19	101.31	0.80	2.40	3.94	101.37	0.80	4.30	7.1	101.75	64	4
74.8	108.5	7.01	101.49	0.80	1.60	1.66	101.37	0.50	3.20	2.1	102.05	64	4
76.4	108.5	7.09	101.41	0.90	2.00	1.98	101.27	1.40	3.90	6.0	101.15	64	4
77	108.5	7.25	101.25	1.00	3.10	3.57	101.17	1.40	4.30	6.9	101.15	64	4
78.7	108.5	7.29	101.21	0.80	1.50	1.98	101.37	1.20	4.40	8.7	101.35	90	5
80.3	108.5	7.09	101.41	0.60	1.30	1.40	101.57	0.80	4.40	6.3	101.75	128	5
82.3	108.5	6.85	101.65	0.50	1.00	1.00	101.67	0.80	3.90	6.2	101.75	180	6
84.3	108.5	6.82	101.68	0.50	1.80	2.25	101.67	0.80	3.90	7.8	101.75	128	5
87.3	108.5	7.05	101.45	0.70	2.30	4.03	101.47	0.90	4.00	9.0	101.65	64	4
89.3	108.5	6.82	101.68	0.60	3.00	3.60	101.57	0.90	3.90	7.0	101.65	90	5
91.3	108.5	6.96	101.54	0.70	2.70	3.31	101.47	1.20	4.40	9.2	101.35	128	5
92.8	108.5	7.06	101.44	0.70	2.90	3.45	101.47	1.20	4.10	8.4	101.35	64	4
94.7	108.5	6.87	101.63	0.60	2.00	1.80	101.57	0.70	2.60	2.7	101.85	180	6
95.8	108.5	6.71	101.79	0.30	0.50	0.08	101.87	0.70	0.80	0.5	101.85	32	3
96.4	108.5	5.99	102.51				102.51	0.10	0.00	0.0	102.45	org	0
104.6	108.5	4.75	103.75				103.75				103.75	sand	1
109.1	108.5	4.61	103.89				103.89				103.89	sand	1
112.2	108.5	4.86	103.64				103.64				103.64	silt	1
115.3	108.5	3.22	105.28				105.28				105.28	silt	1
124	108.5	2.29	106.21				106.21				106.21	org	0
130.3	108.5	2.24	106.26				106.26				106.26	org	0

TR Q (cfs)= 43.5

TR Q (cfs)= 130.0



Reach: Alluvial Reach
Stream: Cooper Creek
Site: Site K
Habitat Type: Riffle

(1) Field Data

- (a) Field data were collected in five trips between 5/2003 and 5/2004.
- (b) Flow data were collected in Trip 1 on 5/15/2003 and in Trip 5 on 5/4/2004.
- (c) WSE data were collected in all five trips.
- (d) Because of no flows measured in Trip 2 to Trip 4, flows of these three trip were estimated. The estimated flows are plotted together with the measured flows and WSEs in worksheet "Measured hydraulics". The graphs showed WSE of highest flow was not the greatest, indicating possible errors in surveyed WSEs.

(2) WSE Calibration

WSE: Average WSE is used as the representative transect WSE.

Discharge: Trip 1 Q = Average discharge of TR K-3 and TR K-4. TR K-1 and TR K-2 were considered as outliers.
 Trip 5 Q = Average discharge of all four transects.

Slope: Use Trip 5's average WSE slope (from TR K-1 to TR K-4) = 1.55%

SZF:

TR	channel Invert (ft)		SZF (ft)
	Trip 1	Trip 5	
K-1	94.54	94.67	94.67
K-2	96.20	95.86	96.20
K-3	99.25	99.05	99.26
K-4	101.17	100.65	101.17

Note: Invert is the lowest elevation of the transect.

SZF of upstream transect must be equal or greater than the SZF of downstream transect.

Level Loop and Headpins:

Date	Trip	BM-A	BM-B
5/14/2003	1	100.00	103.36
6/24/2003	2	100.00	103.37
9/17/2003	3	100.00	103.42
10/8/2003	4	100.00	
5/4/2004	5		103.36

- (a) BM-B's elevation had a 0.05ft change relative to BM-A from 5/14/03 to 9/17/03. Not able to tell if the relative change was due to movement of BM-A or BM-B or both. Also not able to determine if the the control pin(s) continued to move or not after 9/17/03, because no level loops were performed after that date.
- (b) Control pins were not stable

Calibration Flow:

This site has five sets of measured WSEs and two sets of velocity-depth surveys. However, the data showed inconsistent flow-WSE relationship (see plots in worksheet "Measured hydraulics"). Due to inconsistent flow ~ WSE relationship, it was decided to only use flows taken in Trip 1 and Trip 5 for calibration. Estimated flows and measured WSEs of Trip 2 to Trip 4 will be not be included for calibration, and will be used for comparison only

WSE Calibration Method:

- (1) MANSQ was used to calibrate WSE for TR K-1.
- (2) WSP was selected to calibrate WSEs for TR K-2 to TR K-4. MANSQ results of TR K-1 was used as the boundary condition for WSP.

WSE Calibration Result:

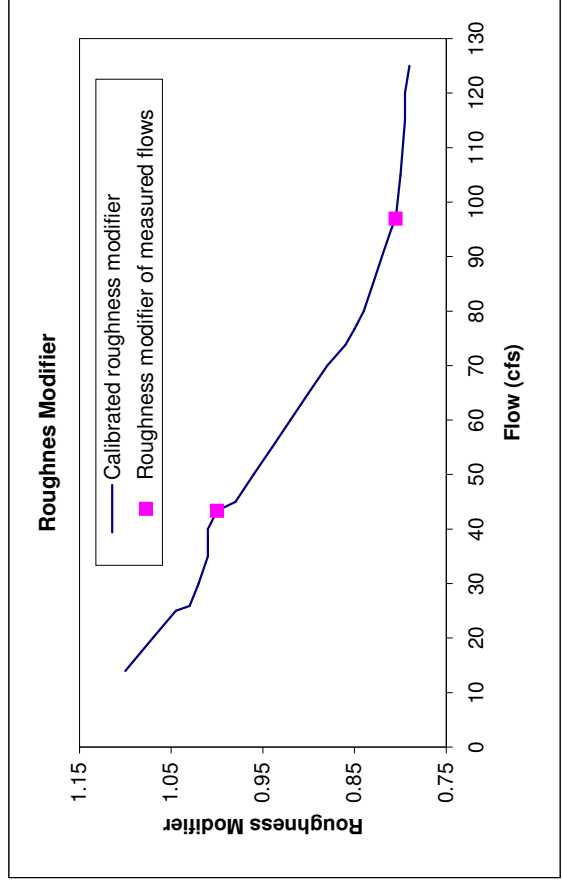
Trip	Survey Date	Q (cfs)	Modeling WSE(ft)				Calibrated WSE(ft)				ΔWSE (ft, measured-calib.)			
			TR-1	TR-2	TR-3	TR-4	TR-1	TR-2	TR-3	TR-4	TR-1	TR-2	TR-3	TR-4
1	5/14/2003	43.4	96.44	97.30	100.56	102.17	96.45	97.30	100.55	102.18	-0.01	0.00	0.01	-0.01
2	6/24/2003	73.8	96.83	97.41	100.91	102.49	96.66	97.60	100.82	102.40				
3	9/17/2003	25.9	96.04	96.99	100.18	101.84	96.21	97.01	100.27	101.97				
4	10/8/2003	76.7	96.92	97.55	101.03	102.58	96.67	97.62	100.84	102.41				
5	5/4/2004	97.0	96.77	97.46	100.85	102.55	96.77	97.79	100.99	102.53	0.00	-0.33	-0.14	0.02

- Note:
- (a) Calibration errors for TR K-2 and TR K-4 appear to be too big.
 - (b) Such great errors at TR K-2 are due to that TR K-2 has the highest measured WSEs of all four transects.
 - (c) WSEs of Trip 2 to Trip 4 are listed in the table only for comparison, not for calibration error calculation.

WSP Roughness Modifier

Flow	RAF
14	1.10
20	1.07
25	1.04
25.9	1.03
30	1.02
35	1.01
40	1.01
43.4	1.00
45	0.98
50	0.96
55	0.94
60	0.92
65	0.90
70	0.88
73.8	0.86
76.7	0.85
80	0.84
85	0.83
90	0.82
95	0.81
97	0.81

(*) The table on the left lists the roughness modifier used in the WSP WSE calibration.



105	0.80
115	0.80
120	0.80
125	0.79

(2) Calibrated Hydraulics

- (a) For MANSQ WSE calibration, $\beta_{TRI}=0.44$ and Trip 1 flow (43.4cfs) was used as the calibration flow.
- (b) For WSE calibration, Trip 1 data was used in order to obtain more reasonable results.
- (c) For velocity calibration, Trip 5 flow was used as the template for calibration.
- (d) Hydraulic calibration results are summarized in worksheets cTR K-y, where y=1, 2, 3, and 4.
- (e) WSE Calibration errors for TR K-2 and TR K-3 appears too big, which is mainly due to the errors in WSE survey.
- (f) TR K-1 and TR K-3: WSE, Froude number (Fr), Cross-sectional Manning's n, transect average velocity (V), wetted perimeter, and Velocity Adjustment Factor (VAF) all are acceptable and within reasonable ranges.
- (g) TR K-2 and TR K-4: WSE, wetted perimeter, and transect average velocity (V) are reasonable.
VAF, Manning's n, and Froude number didn't increase with flows, which reflected (a) the complexity of the channel hydraulics and/or (b) the effect of field data surveying errors.
- (h) Comparison of modeling and calibrated WSEs are shown in worksheet "SimWSE".
- (i) PHABSIM model did not calculate wetted perimeter and Manning's, both of which were calculated outside the model.

(3) Velocity calibration

TR K-1: Trip 5's flow velocity profile was used as velocity template for calibration.
The predicted velocity profile was reasonable, and no changes to the Manning's n in TR K-1 were made.

TR K-2: Trip 5's flow velocity profile was used as velocity template for calibration.
Slightly adjusted Manning's n values calculated by the PHABSIM to make the simulated velocity near the water edge more reasonable.

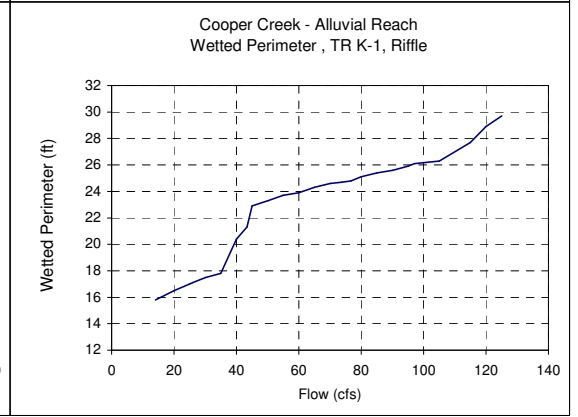
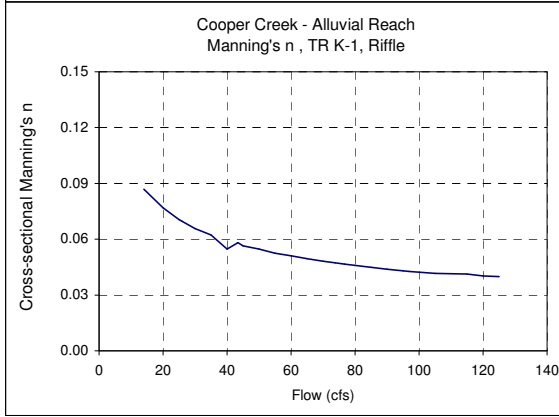
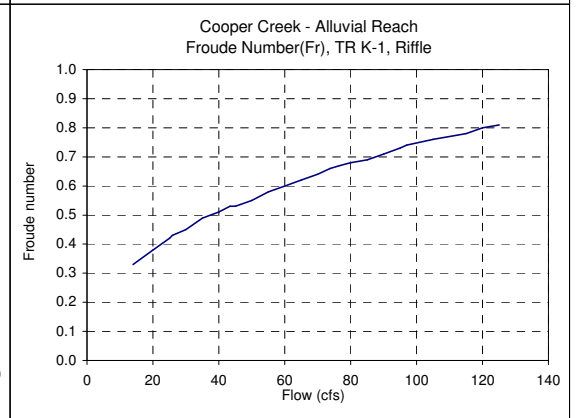
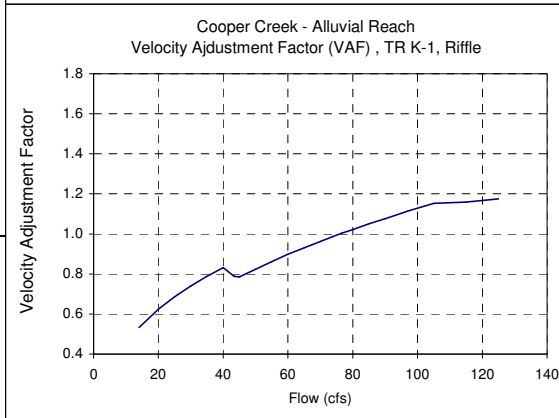
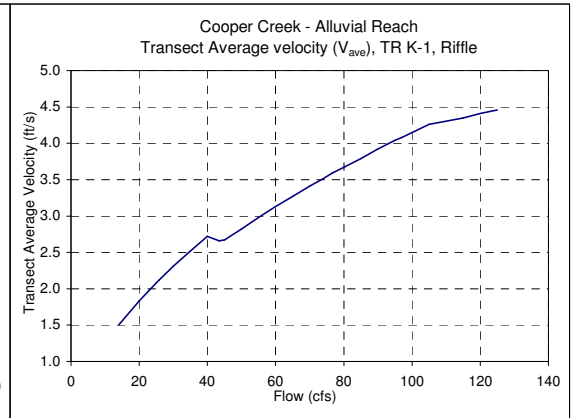
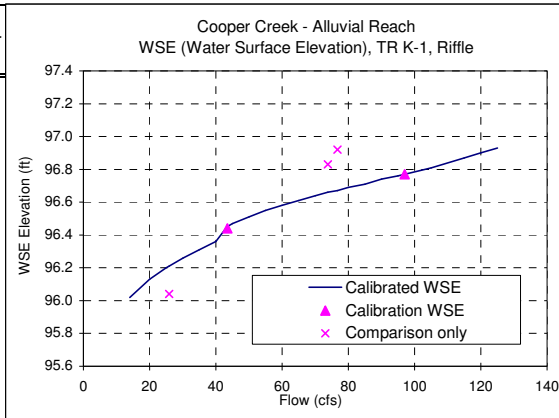
TR K-3: Trip 5's flow velocity profile was used as velocity template for calibration.
Slightly adjusted Manning's n values calculated by the PHABSIM to make the simulated velocity near the water edge more reasonable.

TR K-4: Trip 5's flow velocity profile was used as velocity template for calibration.
The predicted velocity profile was reasonable, and no changes to the Manning's n in TR K-4 were made.

The comparison of simulated and measured velocity profiles are included in worksheet "VelComp", which shows the simulated and measured velocity profiles have good match for TR K-1 and TR K-4. TR K-2 and TR K-3 did not have good match because of the significant WSE calibration errors. The calibration errors added the artificial flow conveyance area to the calibration flow, and as a result, the simulated velocities are lower (the pink curve) than the actual measured velocity in order to maintain continuity.

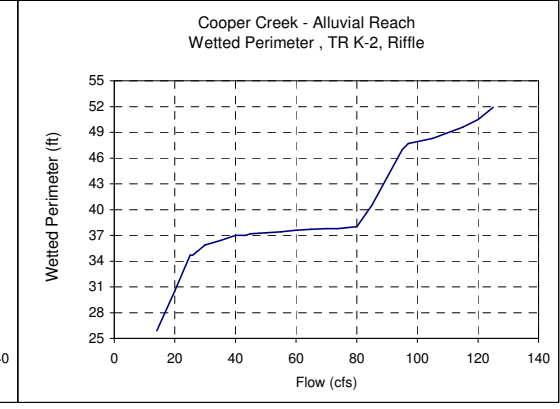
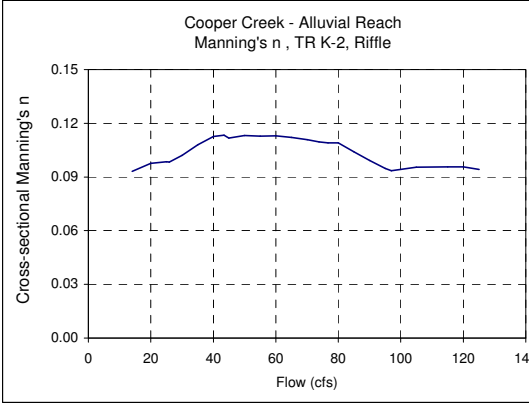
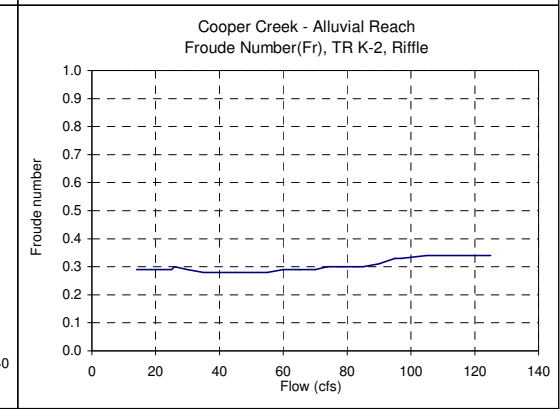
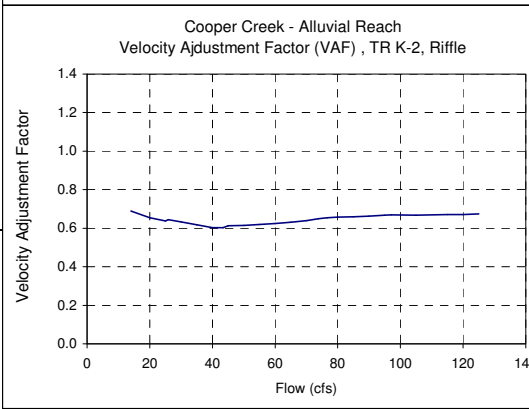
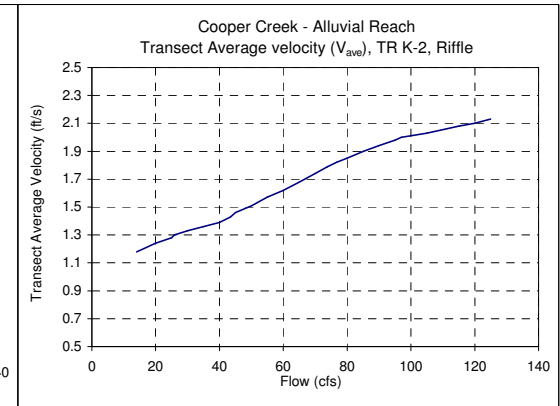
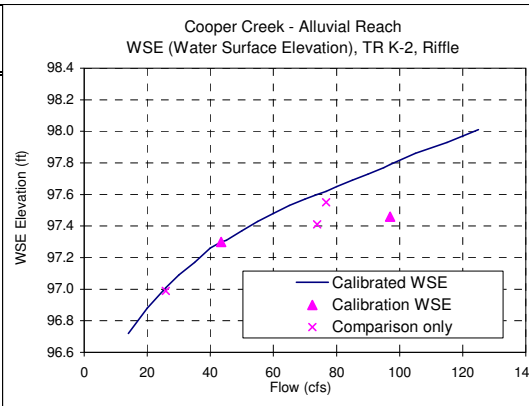
Reach: Alluvial Reach
 Stream: Cooper Creek
 Transect: K-1
 Habitat: Riffle

Modeling		Simul. Q (cfs)						wettered	
Q (cfs)	WSE (ft)		Cal'd WSE (ft)	VAF	Froude Number	Velocity (ft/s)	Manning's n	perimeter (ft)	
43.4	96.44	14	96.02	0.53	0.33	1.50	0.087	15.8	
73.8	96.83	20	96.13	0.62	0.38	1.83	0.077	16.5	
25.9	96.04	25	96.20	0.69	0.42	2.08	0.071	17	
76.7	96.92	25.9	96.21	0.70	0.43	2.12	0.070	17.1	
97.0	96.77	30	96.26	0.74	0.45	2.31	0.066	17.5	
		35	96.31	0.79	0.49	2.52	0.062	17.8	
		40	96.36	0.83	0.51	2.72	0.055	20.4	
43.4		45	96.45	0.79	0.53	2.66	0.058	21.3	
45		50	96.47	0.79	0.53	2.67	0.056	22.9	
50		55	96.51	0.82	0.55	2.82	0.055	23.3	
55		60	96.55	0.86	0.58	2.98	0.053	23.7	
60		65	96.58	0.90	0.60	3.13	0.051	23.9	
65		70	96.61	0.93	0.62	3.27	0.049	24.3	
70		73.8	96.64	0.96	0.64	3.41	0.048	24.6	
73.8		76.7	96.66	0.99	0.66	3.51	0.047	24.7	
76.7		80	96.67	1.00	0.67	3.59	0.047	24.8	
80		85	96.69	1.02	0.68	3.67	0.046	25.1	
85		90	96.71	1.05	0.69	3.79	0.045	25.4	
90		95	96.74	1.08	0.71	3.92	0.044	25.6	
95		97	96.76	1.10	0.73	4.04	0.043	25.9	
97		105	96.77	1.11	0.74	4.08	0.043	26.1	
105		115	96.81	1.15	0.76	4.26	0.042	26.3	
115		120	96.87	1.16	0.78	4.35	0.041	27.7	
120		125	96.90	1.17	0.80	4.41	0.040	28.9	
125			96.93	1.18	0.81	4.46	0.040	29.7	



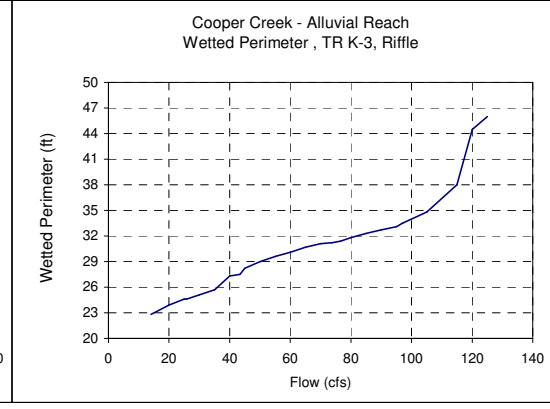
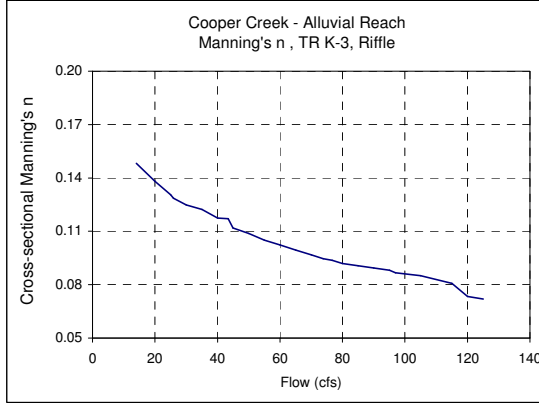
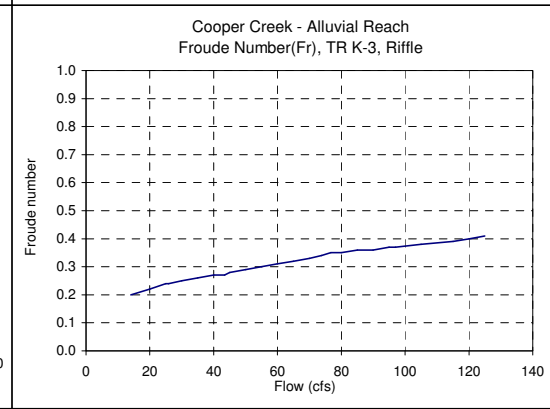
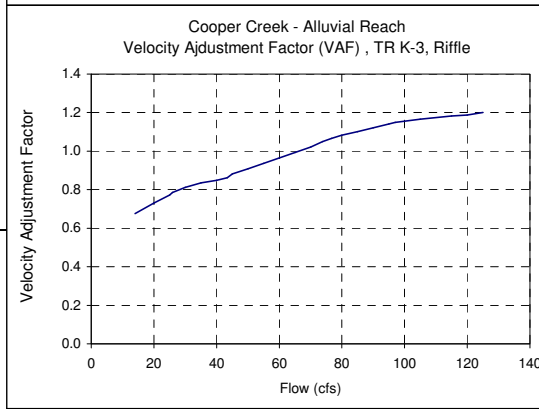
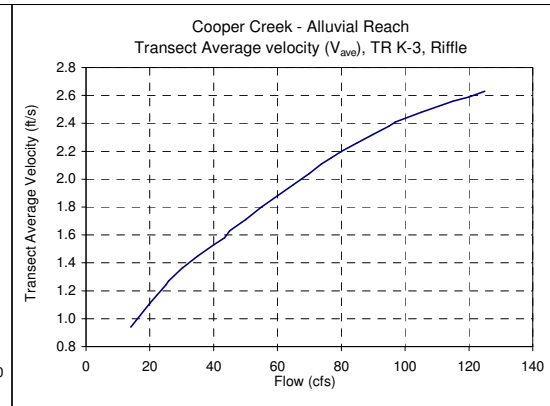
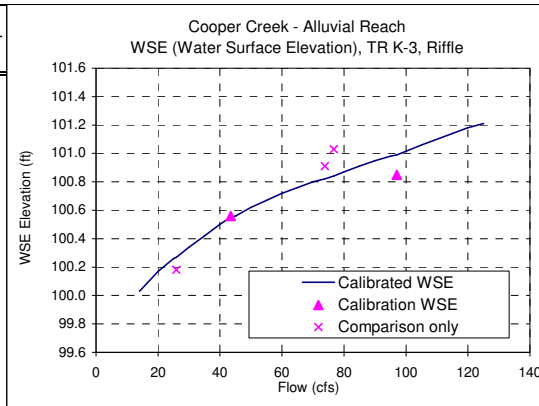
Reach: Alluvial Reach
 Stream: Cooper Creek
 Transect: K-2
 Habitat: Riffle

Modeling		Simul. Q (cfs)	Cal'd WSE (ft)	VAF	Froude Number	Velocity (ft/s)	Manning's n	wettered perimeter (ft)
Q (cfs)	WSE (ft)							
43.4	97.30	14	96.72	0.69	0.29	1.18	0.093	25.9
73.8	97.41	20	96.88	0.65	0.29	1.24	0.098	30.5
25.9	96.99	25	96.99	0.64	0.29	1.28	0.099	34.7
76.7	97.55	25.9	97.01	0.64	0.30	1.30	0.098	34.7
97.0	97.46	30	97.09	0.63	0.29	1.33	0.102	35.9
		35	97.17	0.62	0.28	1.36	0.108	36.4
		40	97.26	0.60	0.28	1.39	0.113	37
43.4	97.30	43.4	97.30	0.60	0.28	1.43	0.113	37
45	97.31	45	97.31	0.61	0.28	1.46	0.112	37.2
50	97.37	50	97.37	0.62	0.28	1.51	0.113	37.3
55	97.43	55	97.43	0.62	0.28	1.57	0.113	37.4
60	97.48	60	97.48	0.62	0.29	1.62	0.113	37.6
65	97.53	65	97.53	0.63	0.29	1.68	0.112	37.7
70	97.57	70	97.57	0.64	0.29	1.74	0.111	37.8
73.8	97.60	73.8	97.60	0.65	0.30	1.79	0.110	37.8
76.7	97.62	76.7	97.62	0.65	0.30	1.82	0.109	37.9
80	97.65	80	97.65	0.66	0.30	1.85	0.109	38
85	97.69	85	97.69	0.66	0.30	1.90	0.104	40.5
90	97.73	90	97.73	0.66	0.31	1.94	0.099	43.7
95	97.77	95	97.77	0.67	0.33	1.98	0.095	47
97	97.79	97	97.79	0.67	0.33	2.00	0.094	47.7
105	97.86	105	97.86	0.67	0.34	2.03	0.095	48.3
115	97.93	115	97.93	0.67	0.34	2.08	0.096	49.6
120	97.97	120	97.97	0.67	0.34	2.10	0.096	50.5
125	98.01	125	98.01	0.67	0.34	2.13	0.094	51.9



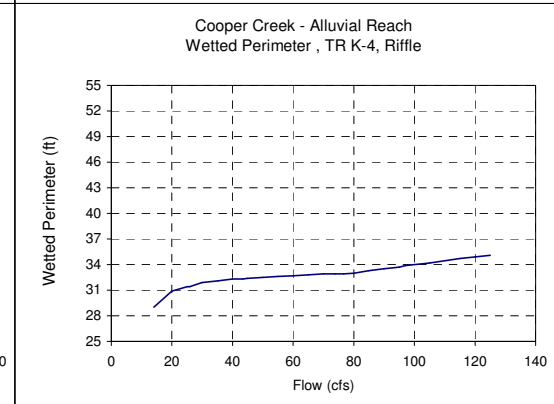
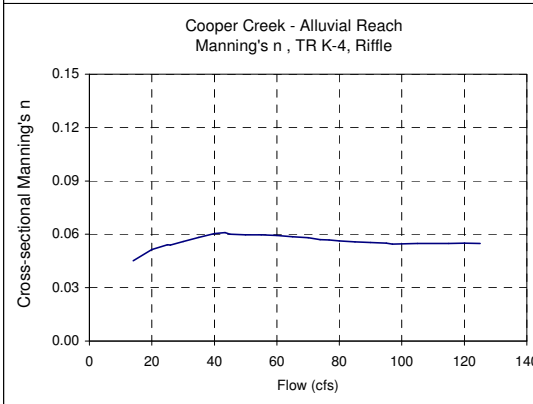
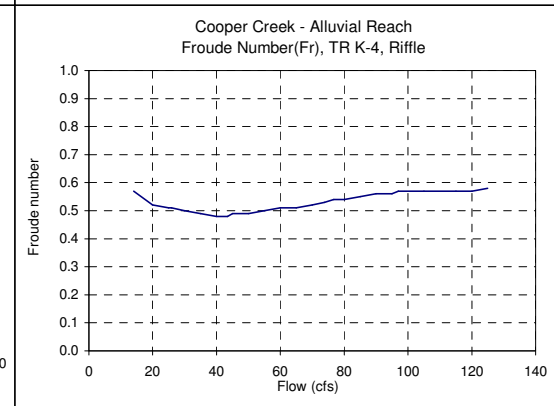
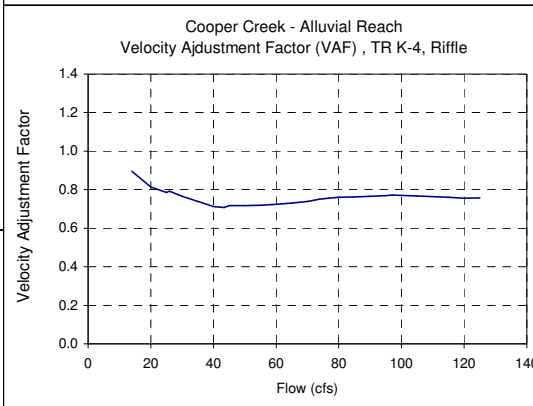
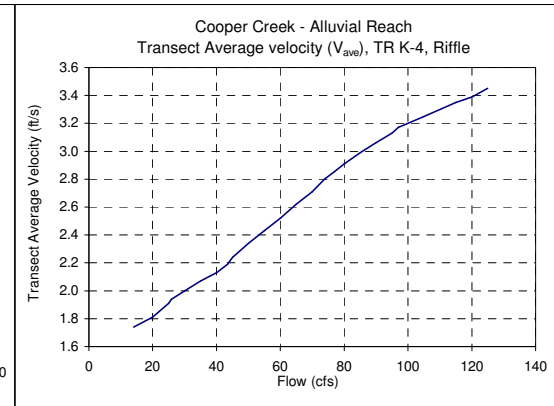
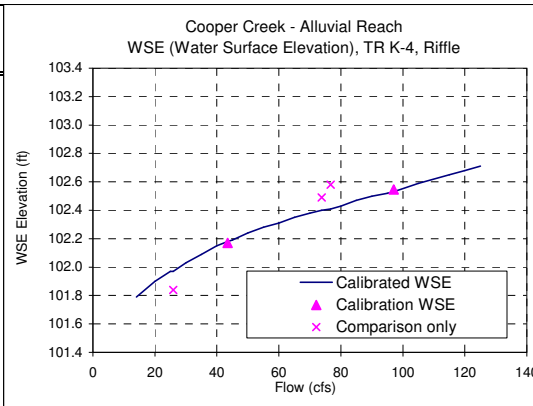
Reach: Alluvial Reach
 Stream: Cooper Creek
 Transect: K-3
 Habitat: Riffle

Modeling		Simul. Q (cfs)	Cal'd WSE (ft)	VAF	Froude Number	Velocity (ft/s)	Manning's n	wetted perimeter (ft)
Q (cfs)	WSE (ft)							
43.4	100.56	14	100.03	0.68	0.20	0.94	0.148	22.8
73.8	100.91	20	100.17	0.73	0.22	1.11	0.138	23.9
25.9	100.18	25	100.26	0.77	0.24	1.24	0.131	24.6
76.7	101.03	25.9	100.27	0.79	0.24	1.27	0.129	24.6
97.0	100.85	30	100.34	0.81	0.25	1.36	0.125	25.1
		35	100.42	0.84	0.26	1.45	0.122	25.7
		40	100.50	0.85	0.27	1.53	0.117	27.3
		43.4	100.55	0.86	0.27	1.58	0.117	27.5
		45	100.56	0.88	0.28	1.63	0.112	28.2
		50	100.62	0.91	0.29	1.71	0.109	29.0
		55	100.67	0.94	0.30	1.80	0.105	29.6
		60	100.72	0.96	0.31	1.88	0.102	30.1
		65	100.76	0.99	0.32	1.96	0.099	30.7
		70	100.80	1.02	0.33	2.04	0.097	31.1
		73.8	100.82	1.05	0.34	2.11	0.095	31.2
		76.7	100.84	1.07	0.35	2.15	0.094	31.4
		80	100.87	1.08	0.35	2.20	0.092	31.8
		85	100.91	1.10	0.36	2.26	0.091	32.3
		90	100.95	1.12	0.36	2.32	0.089	32.7
		95	100.98	1.14	0.37	2.38	0.088	33.1
		97	100.99	1.15	0.37	2.41	0.087	33.5
		105	101.06	1.17	0.38	2.48	0.085	34.8
		115	101.14	1.18	0.39	2.56	0.081	38.0
		120	101.18	1.19	0.40	2.59	0.073	44.5
		125	101.21	1.20	0.41	2.63	0.072	46.0



Reach: Alluvial Reach
 Stream: Cooper Creek
 Transect: K-4
 Habitat: Riffle

Modeling		Simul.	Cal'd					wetted
Q	WSE	Q	WSE	VAF	Froude	Velocity	Manning's	perimeter
(cfs)	(ft)	(cfs)	(ft)		Number	(ft/s)	n	(ft)
43.4	102.17	14	101.79	0.89	0.57	1.74	0.045	29
73.8	102.49	20	101.90	0.81	0.52	1.81	0.051	30.9
25.9	101.84	25	101.97	0.78	0.51	1.91	0.054	31.4
76.7	102.58	25.9	101.97	0.79	0.51	1.94	0.054	31.4
97.0	102.55	30	102.03	0.77	0.50	2.00	0.056	31.9
		35	102.09	0.74	0.49	2.07	0.058	32.1
		40	102.15	0.71	0.48	2.13	0.061	32.3
43.4		43.4	102.18	0.71	0.48	2.19	0.061	32.3
45		45	102.19	0.72	0.49	2.24	0.060	32.4
50		50	102.24	0.72	0.49	2.34	0.060	32.5
55		55	102.28	0.72	0.50	2.43	0.060	32.6
60		60	102.31	0.72	0.51	2.52	0.059	32.7
65		65	102.35	0.73	0.51	2.62	0.059	32.8
70		70	102.38	0.74	0.52	2.71	0.058	32.9
73.8		73.8	102.40	0.75	0.53	2.80	0.057	32.9
76.7		76.7	102.41	0.76	0.54	2.85	0.057	32.9
80		80	102.43	0.76	0.54	2.91	0.056	33
85		85	102.47	0.76	0.55	2.99	0.056	33.3
90		90	102.50	0.77	0.56	3.06	0.055	33.5
95		95	102.52	0.77	0.56	3.13	0.055	33.7
97		97	102.53	0.77	0.57	3.17	0.055	33.9
105		105	102.59	0.77	0.57	3.25	0.055	34.2
115		115	102.65	0.76	0.57	3.35	0.055	34.7
120		120	102.68	0.76	0.57	3.39	0.055	34.9
125		125	102.71	0.76	0.58	3.45	0.055	35.1



Cooper Creek - Alluvial Reach, Site K Comparison of Modeling and Simulated WSEs

