

APPENDIX

Project Area, Reach 1 Existing Condition & Restoration Treatment Maps

Longitudinal Profile & Cross - Sections - Reach 1

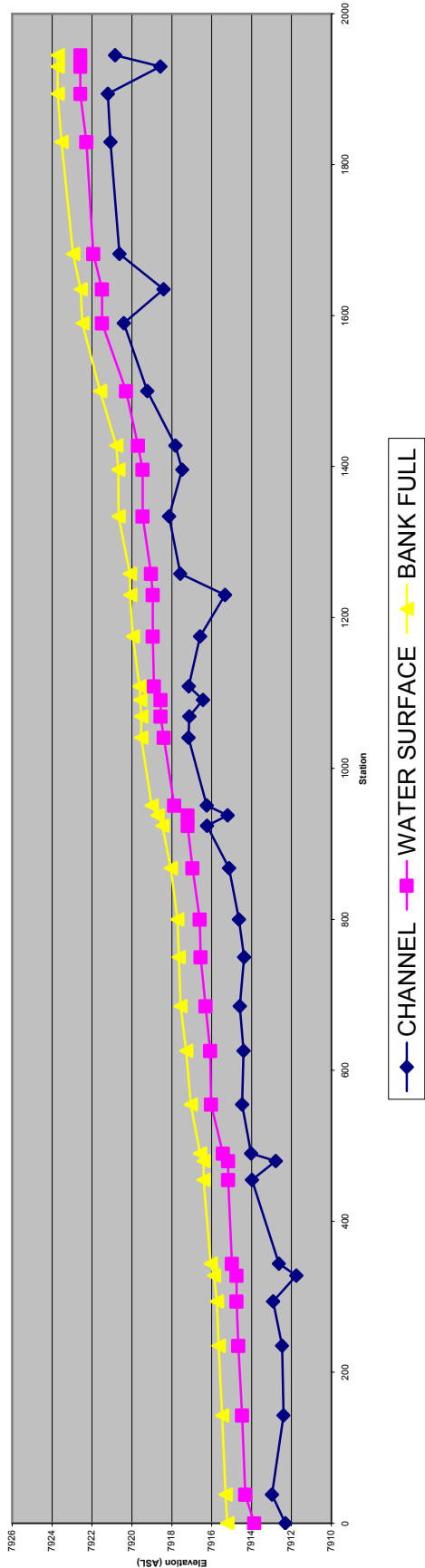
**Existing Structure / Boulder Elevations, Structure Fill Estimates,
and other Survey Data**

Proposed Treatments Designs and Conceptual Drawings

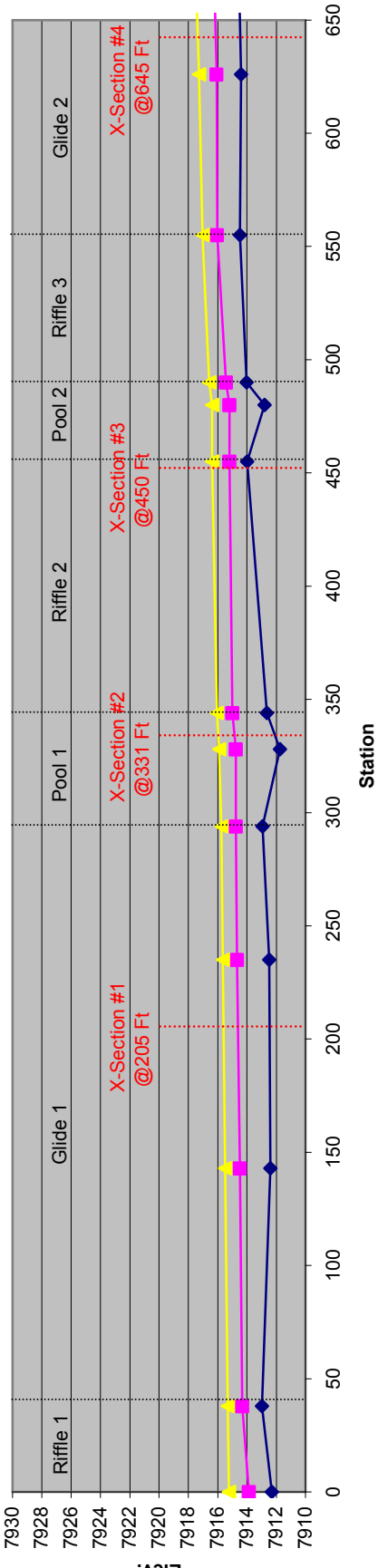
Photographs of Proposed Treatment Types

**Longitudinal Profile
And Channel Cross-Section Profiles
Within Reach 1**

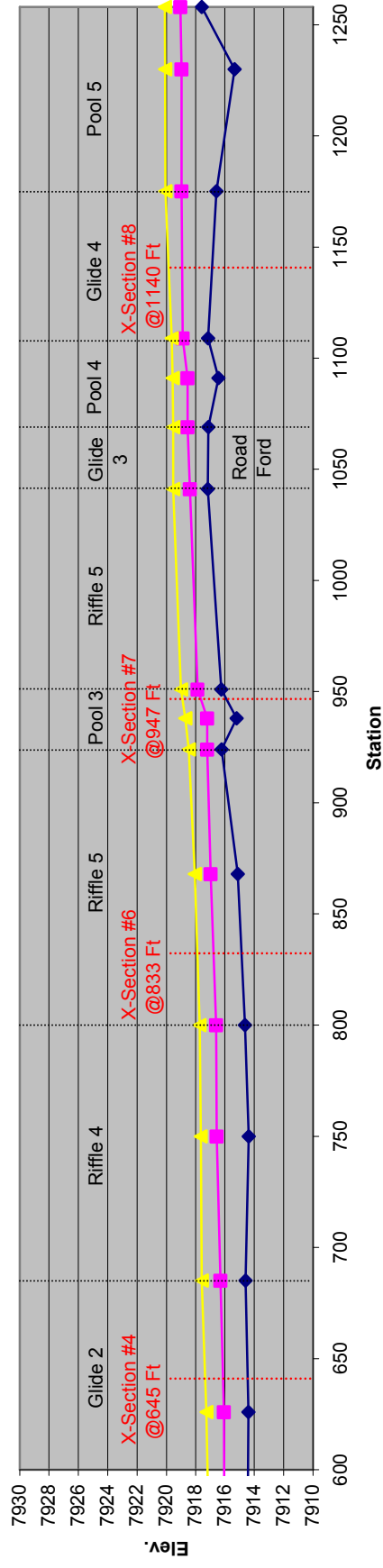
Lake George Reach 1 - Longitudinal Profile



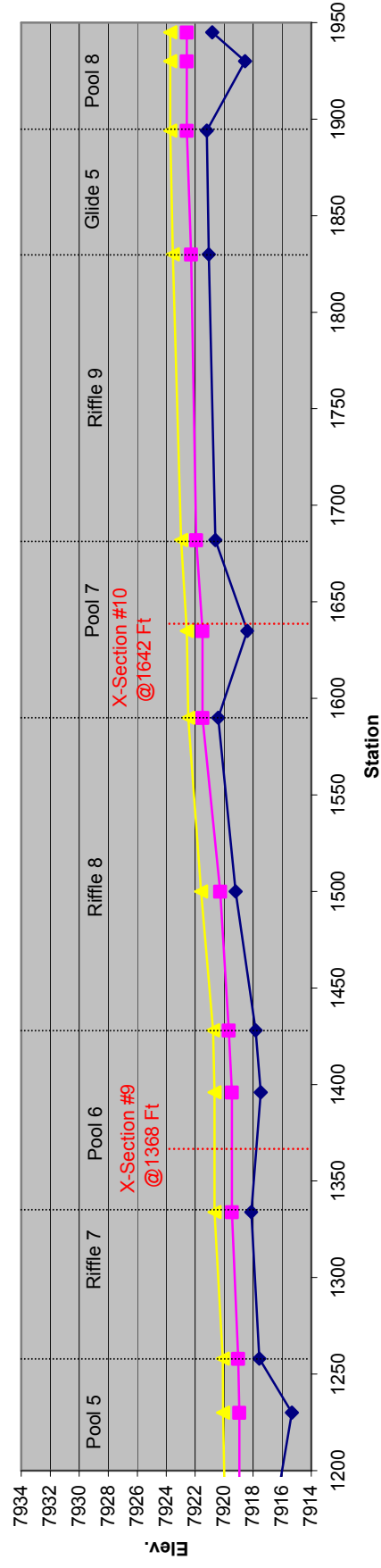
Lake George Reach 1 - South Platte River Logintudinal Profile - Lower Segment



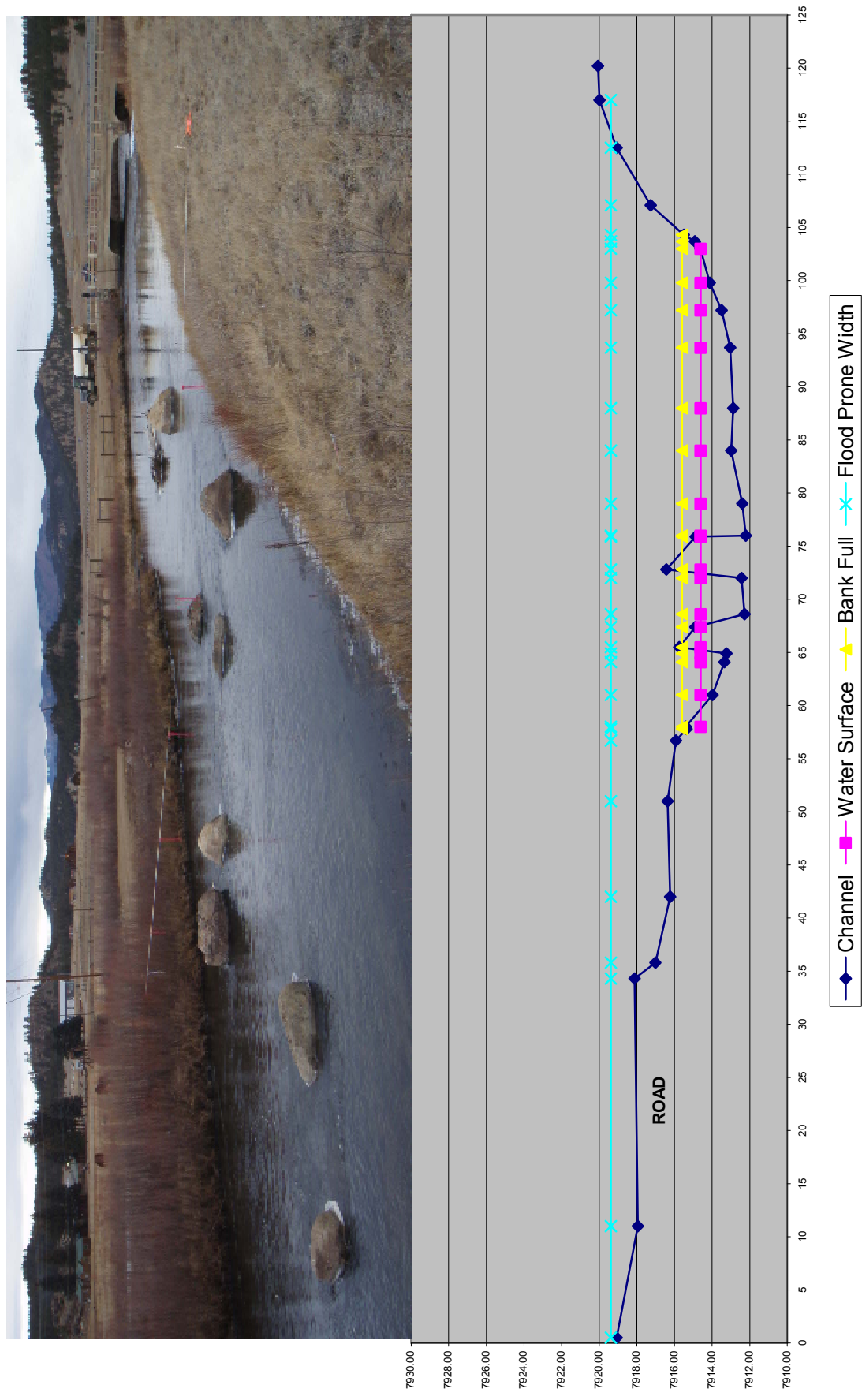
Lake George Reach 1 - South Platte River Logitudinal Profile - Middle Segment



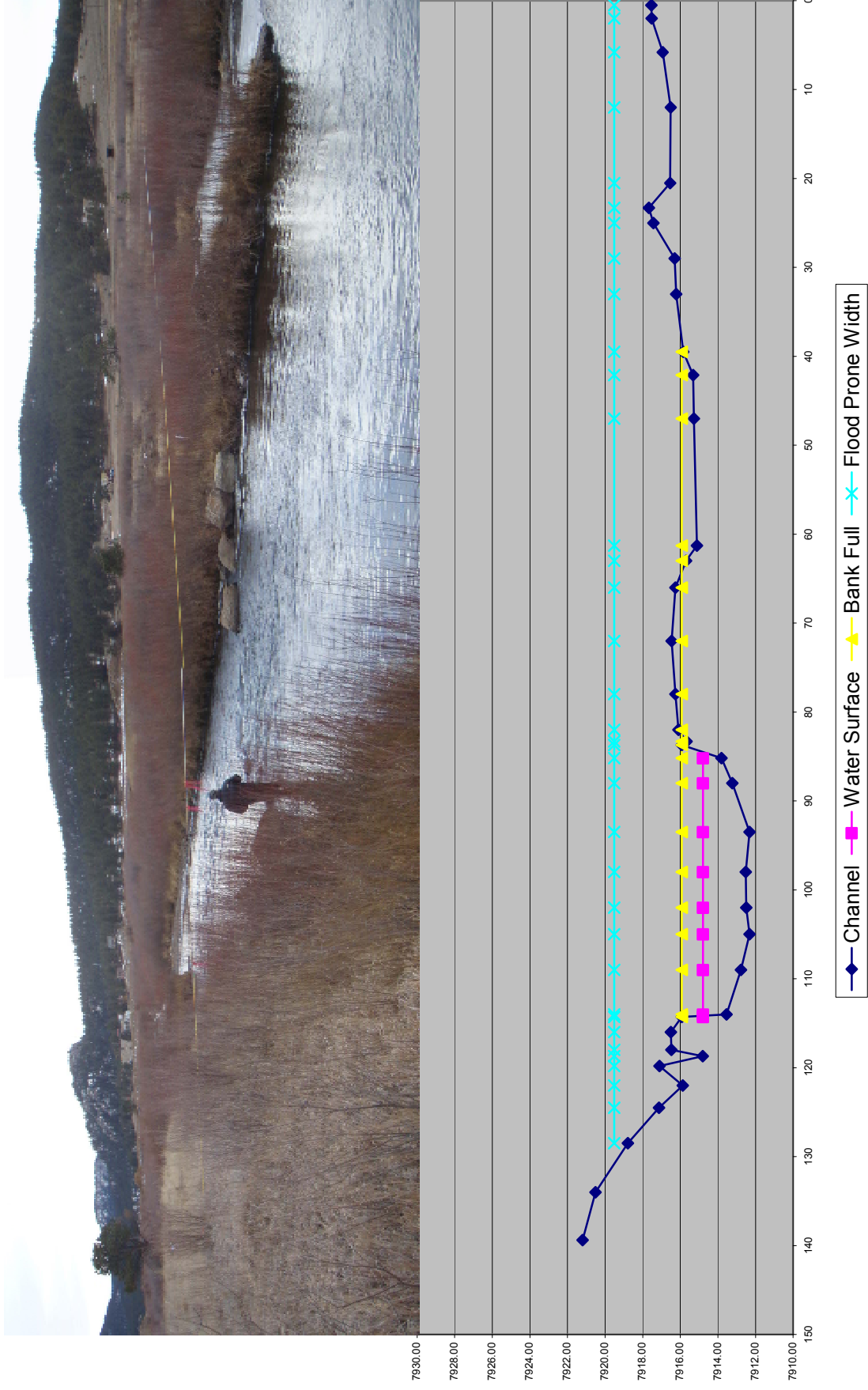
Lake George Reach 1 - South Platte River Logitudinal Profile - Upper Segment



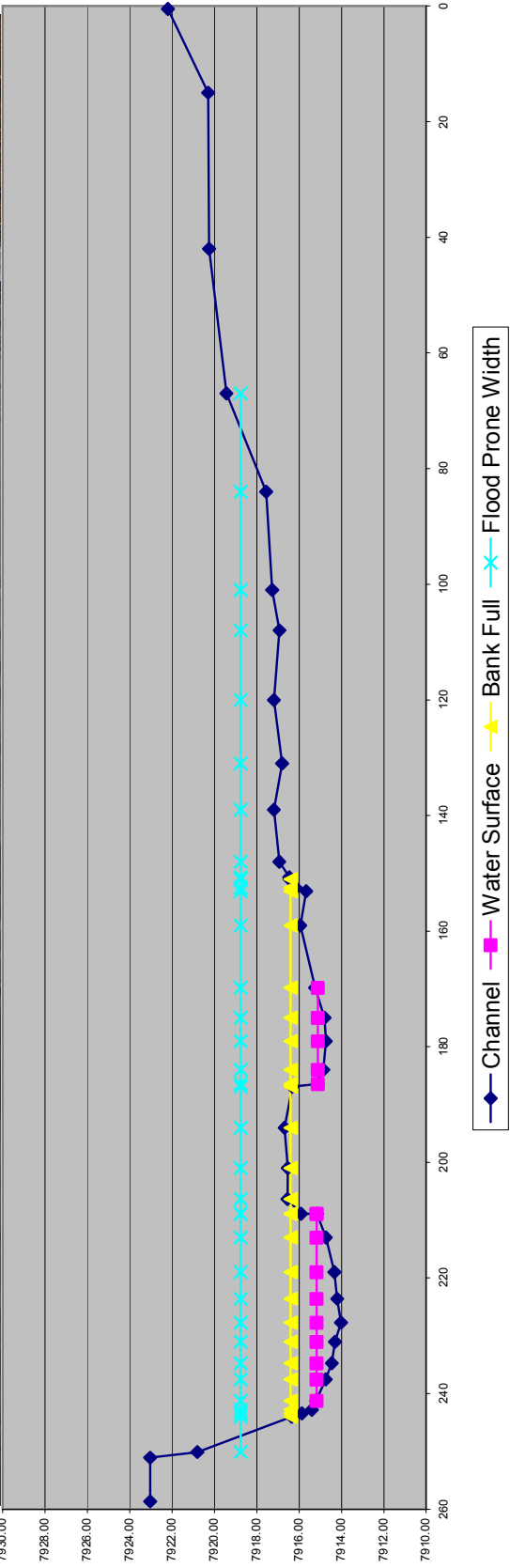
South Platte River - Lake George Reach 1 X Section #1 @ 205 ft Along the Longitudinal Profile of the Reach



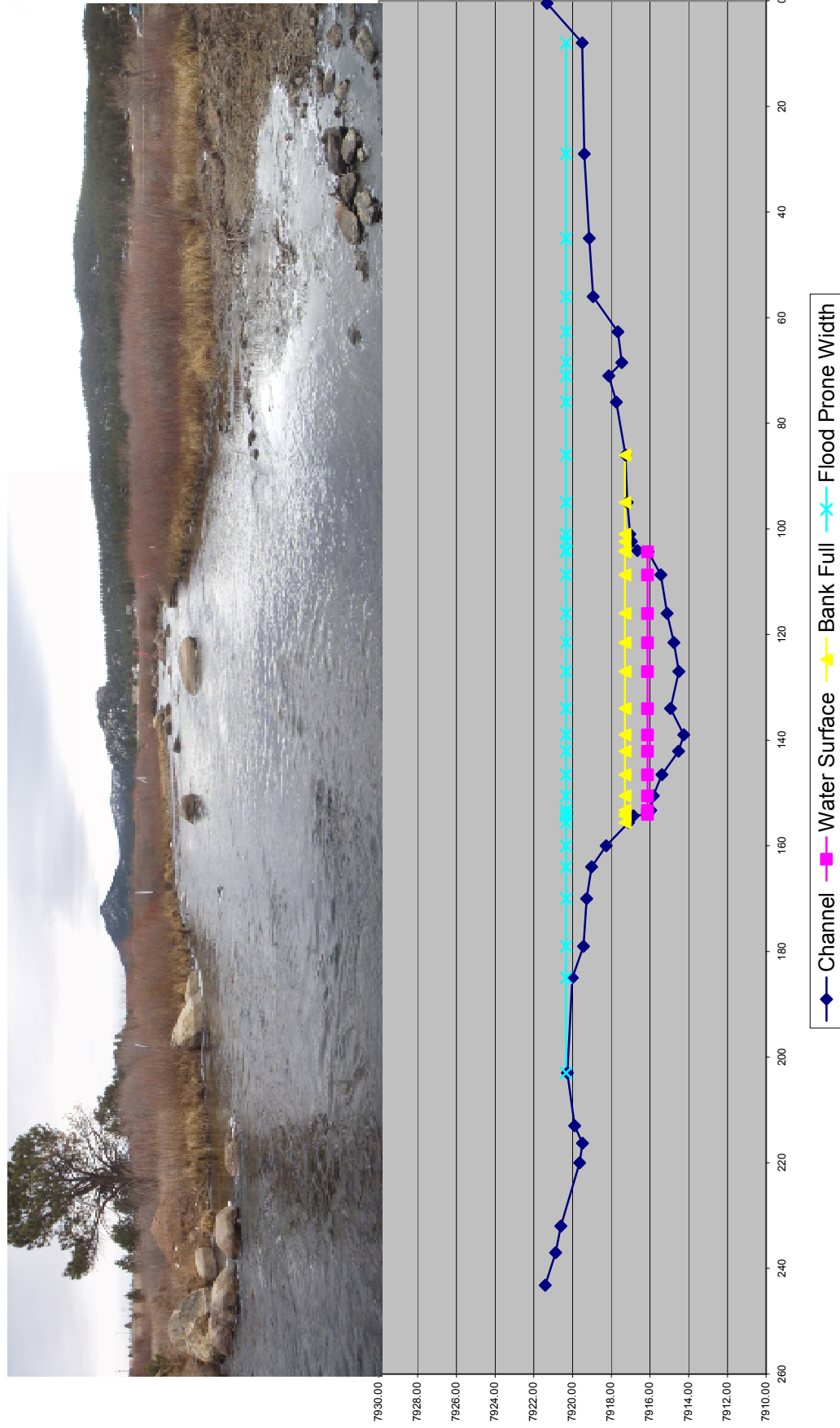
South Platte River - Lake George Reach 1 X Section #2 @ 331 ft Along the Longitudinal Profile of the Reach



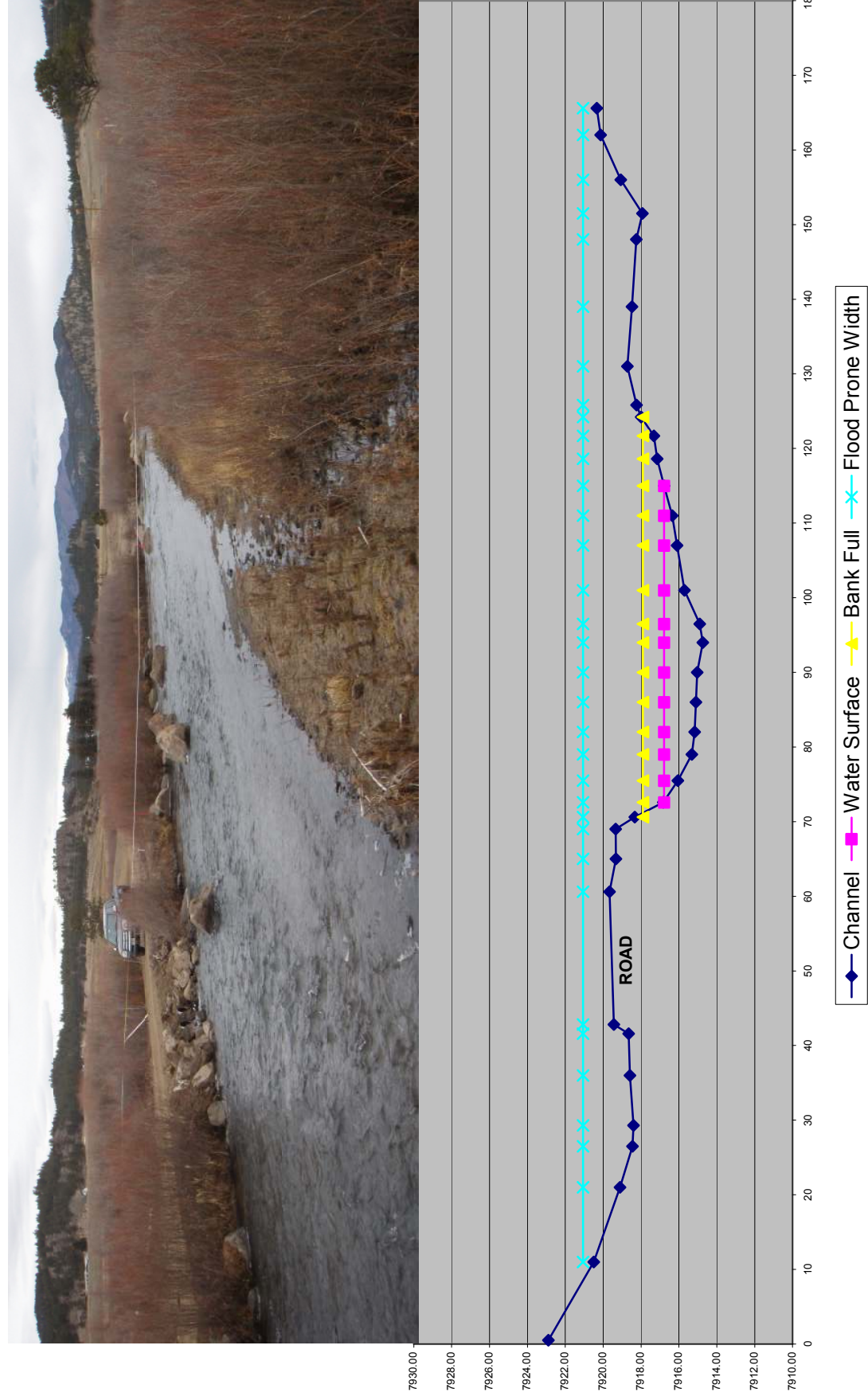
South Platte River - Lake George Reach 1
X Section #3 @ 450 ft Along the Longitudinal Profile of the Reach



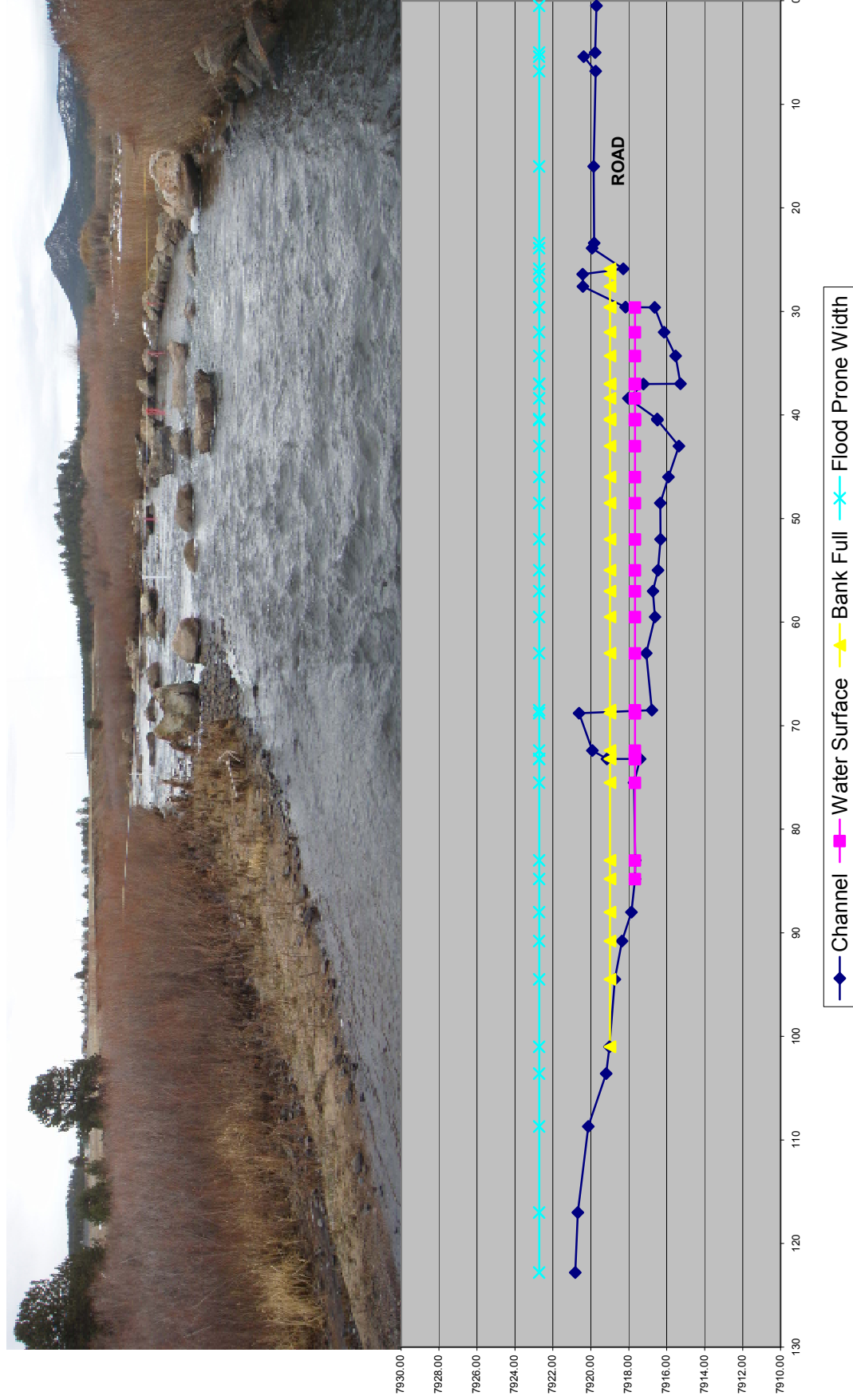
South Platte River - Lake George Reach 1 X Section #4 @ 645 ft Along the Longitudinal Profile of the Reach



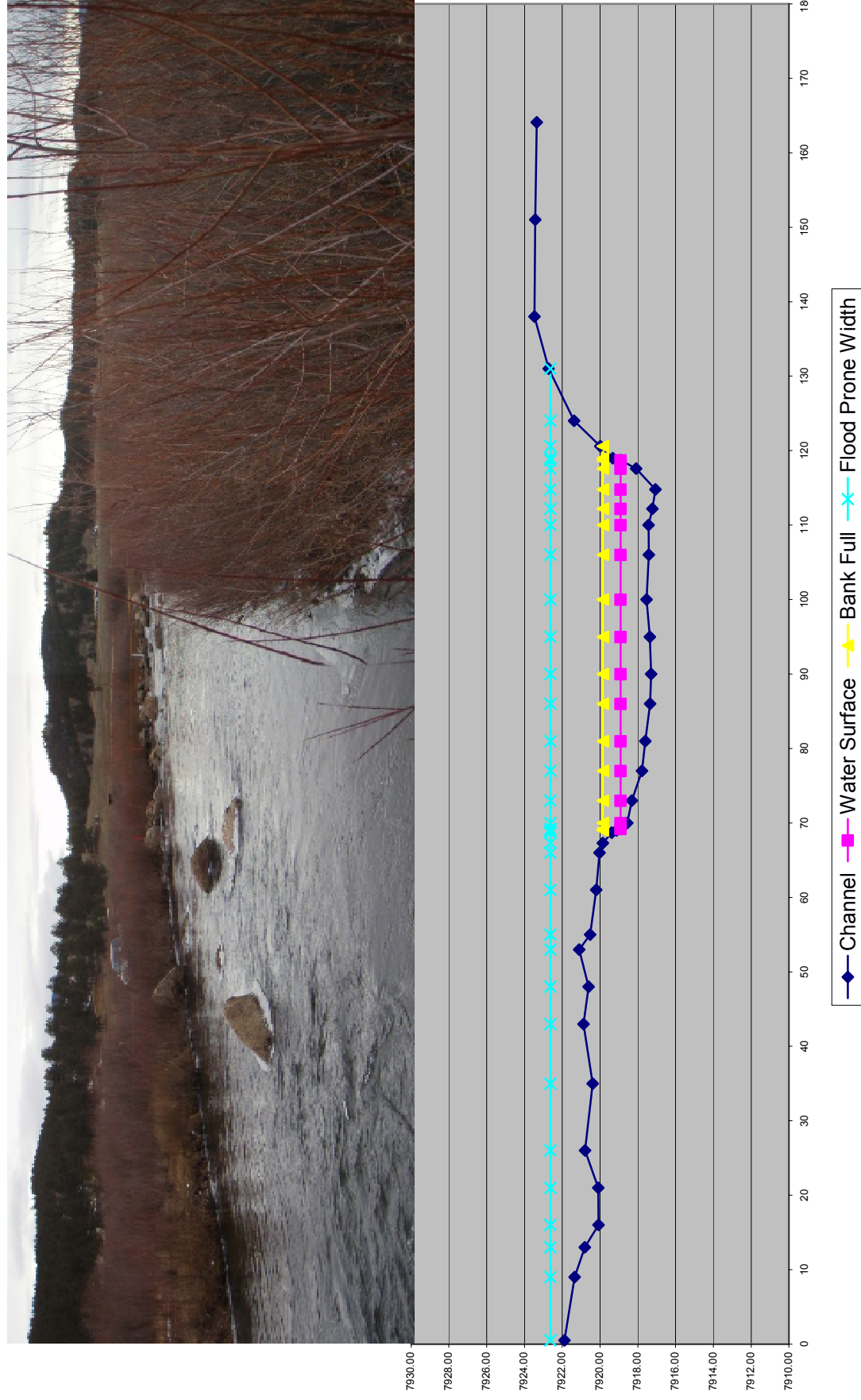
South Platte River - Lake George Reach 1 X Section #6 @ 833 ft Along the Longitudinal Profile of the Reach



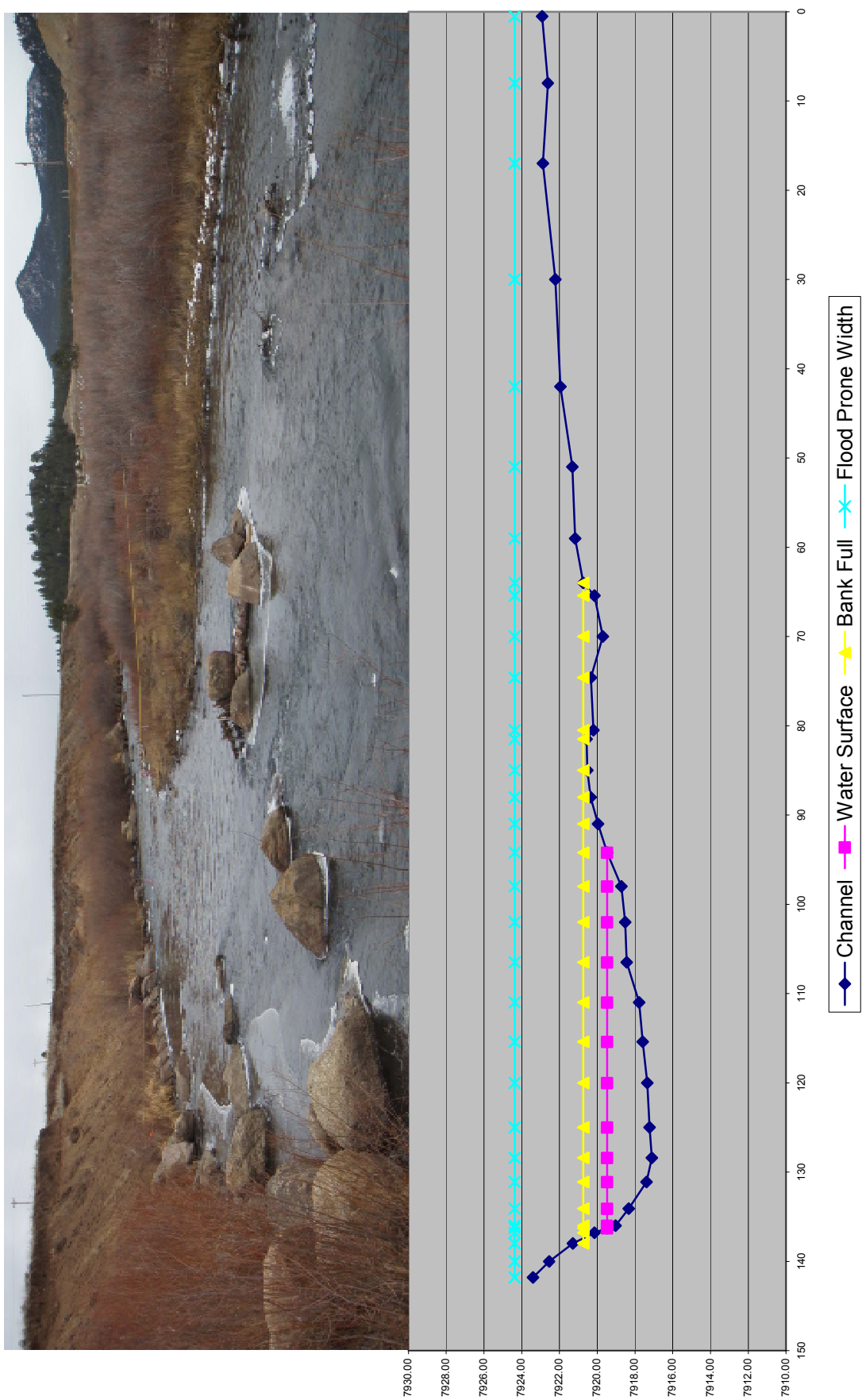
South Platte River - Lake George Reach 1 X Section #7 @ 947 ft Along the Longitudinal Profile of the Reach



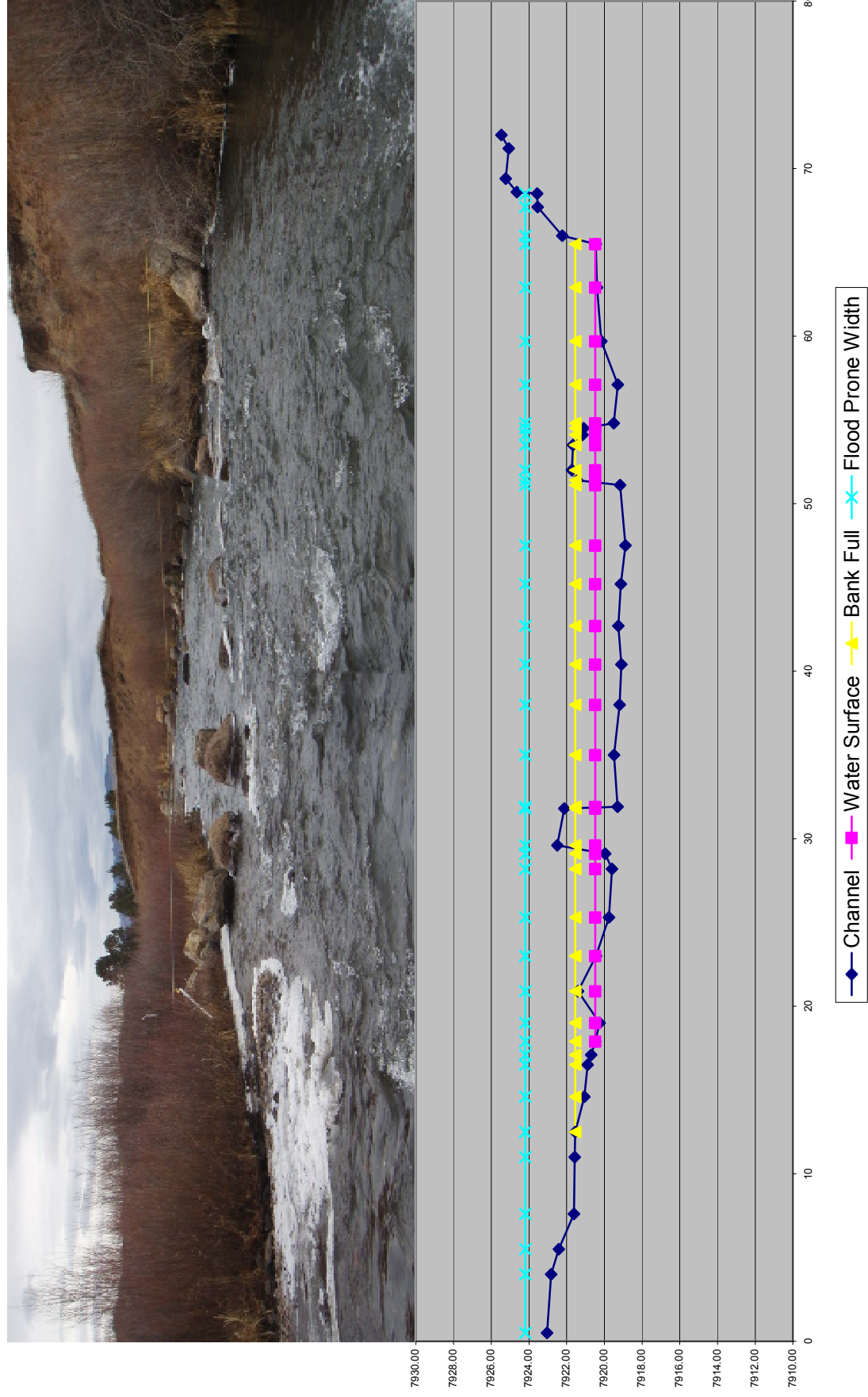
South Platte River - Lake George Reach 1 X Section #8 @ 1,140 ft Along the Longitudinal Profile of the Reach



South Platte River - Lake George Reach 1
X Section #9 @ 1,368 ft Along the Longitudinal Profile of the Reach



South Platte River - Lake George Reach 1 X Section #10 @ 1,542 ft Along the Longitudinal Profile of the Reach



Lake George Company - South Platte River

Existing Structure / Boulder Elevation Survey

Existing Structure Fill Below the Ordinary High Water Mark Estimates

Bench Mark / Head Pin Elevations

Stream: SOUTH PLATTE RIVER
Date: 6-Dec-08
Personnel: P. GALLAGHER

Reach: LAKE GEORGE COMPANY REACH 1
County: PARK
Owner: BART JOHNSON

Description: SURVEY OF BOULDER ELEVATIONS OF EXISTING STRUCTURES WITHIN PROJECT REACH

STRUCTURE #	Type	HI	BF	1/2 BF	BOULDER HEIGHT									
					1	2	3	4	5	6	7	8	9	10
Str. #1	Clusters	7927.05	7915.3	7913.95	7917.05	7916.55	7915.50	7915.30	7916.45	7916.65	7915.55	7915.55	7915.45	
Str. #2	Cluster/Log		7915.3	7913.95	7915.09	7914.60	7916.75	7916.71	7916.41					
Str. #3	X-Vane		7915.9	7914.35	7916.75	7917.63	7914.60							
Str. #4 Lower	BF Bench		7916.2	7914.75	7917.42	7916.88								
Str. #4 Mid	BF Bench		7916.5	7915.25			7918.41	7917.72						
Str. #4 Upper	BF Bench		7916.8	7915.55					7918.46	7918.32	7919.95	7916.55		
Str. #5	Clusters		7917.7	7916.15	7917.55	7917.83	7917.21	7916.34	7919.41	7917.68	7917.94	7918.67	7918.38	7918.25
Str. #6	Clusters		7918.1	7916.75	7918.50	7919.69	7919.80	7918.78	7916.77					
Str. #7	W Wier	7929.73	7918.7	7917.45	7918.58	7921.34	7919.09	7921.28						
Str. #9	Clusters		7919.3	7918	7920.03	7920.63	7919.66	7919.43	7920.18	7919.89	7919.76			
Str. #10	W Wier		7919.6	7918.35	7921.11	7919.88	7921.11	7919.38	7919.86	7921.23				
Str. #11	Clusters		7919.8	7918.35	7922.18	7919.63	7918.83	7920.38	7919.26	7919.50	7920.53			
Str. #12	Cluster/Log		7920.4	7919.15	7921.43	7920.88	7921.46							
Str. #13 Lower	BF Bench		7920.4	7919.15	7923.50	7923.21								
Str. #13 Mid	BF Bench		7920.7	7919.35			7922.91							
Str. #13 Upper	BF Bench		7921.6	7920.35				7924.13	7923.42	7921.17				
Str. #14	W Wier		7921.6	7920.35	7925.09	7922.33	7921.78	7922.48	7923.68					
Str. #15	W Wier		7922.7	7921.6				Mostly Failed - No Survey						
Str. #16	Bldr Vane	7934.47	7923.6	7922.35	7924.48	7922.98								
Str. #17	Bldr Vane		7923.6	7922.35	7924.82	7924.09	7923.42	7924.00	7924.37	7923.84				

Table 2: Individual Boulder Survey Elevations

Stream: SOUTH PLATTE RIVER
Date: 6-Dec-08
Personnel: P. GALLAGHER

Reach: LAKE GEORGE COMPANY REACH 1
County: PARK
Owner: BART JOHNSON

Description: **BOULDER ELEVATIONS COMPARED TO THE BANK FULL ELEVATION**

STRUCTURE #	Type	HI	BF	1/2 BF	BOULDER HEIGHT ABOVE / BELOW BANK FULL									
					1	2	3	4	5	6	7	8	9	10
Str. #1	Clusters	7927.05	7915.3	7913.95	1.75	1.25	0.20	0.00	1.15	1.35	0.25	0.25	0.15	
Str. #2	Cluster/Log		7915.3	7913.95	-0.21	-0.70	1.45	1.41	1.11					
Str. #3	X-Vane		7915.9	7914.35	0.85	1.73	-1.30							
Str. #4 Lower	BF Bench		7916.2	7914.75	1.22	0.68								
Str. #4 Mid	BF Bench		7916.5	7915.25			1.91	1.22						
Str. #4 Upper	BF Bench		7916.8	7915.55					1.66	1.52	3.15	-0.25		
Str. #5	Clusters		7917.7	7916.15	-0.15	0.13	-0.49	-1.36	1.71	-0.02	0.24	0.97	0.68	0.55
Str. #6	Clusters		7918.1	7916.75	0.40	1.59	1.70	0.68	-1.33					
Str. #7	W Wier	7929.73	7918.7	7917.45	-0.12	2.64	0.39	2.58						
Str. #9	Clusters		7919.3	7918	0.73	1.33	0.36	0.13	0.88	0.59	0.46			
Str. #10	W Wier		7919.6	7918.35	1.51	0.28	1.51	-0.22	0.26	1.63				
Str. #11	Clusters		7919.8	7918.35	2.38	-0.17	-0.97	0.58	-0.54	-0.30	0.73			
Str. #12	Cluster/Log		7920.4	7919.15	1.03	0.48	1.06							
Str. #13 Lower	BF Bench		7920.4	7919.15	3.10	2.81								
Str. #13 Mid	BF Bench		7920.7	7919.35			2.21							
Str. #13 Upper	BF Bench		7921.6	7920.35				2.53	1.82	-0.43				
Str. #14	W Wier		7921.6	7920.35	3.49	0.73	0.18	0.88	2.08					
Str. #15	W Wier		7922.7	7921.6										
Str. #16	Bldr Vane	7934.47	7923.6	7922.35	0.88	-0.62								
Str. #17	Bldr Vane		7923.6	7922.35	1.22	0.49	-0.18	0.40	0.77	0.24				
Mostly Failed - No Survey														

Table 3: Relationship of Individual Boulder Elevations to the Bank Full Stage of the River

Stream: SOUTH PLATTE RIVER
 Date: 6-Dec-08
 Personnel: P. GALLAGHER

Reach: LAKE GEORGE COMPANY REACH 1
 County: PARK
 Owner: BART JOHNSON

Description: **IN-CHANNEL OBJECT COVER BOULDER ELEVATIONS COMPARED TO 1/2 OF THE BANK FULL STAGE**

< 1/2 of the Bank Full Stage

STRUCTURE #	Type	HI	BF	1/2 BF	BOULDER HEIGHT ABOVE / BELOW 1/2 BANK FULL									
					1	2	3	4	5	6	7	8	9	10
Str. #1	Clusters	7927.05	7915.3	7913.95	3.10	2.60	1.55	1.35	2.50	2.70	1.60	1.60	1.50	
Str. #2	Cluster/Log		7915.3	7913.95	1.14	0.65	2.80	2.76	2.46					
Str. #3	X-Vane		7915.9	7914.35			0.25							
Str. #4 Lower	BF Bench		7916.2	7914.75										
Str. #4 Mid	BF Bench		7916.5	7915.25										
Str. #4 Upper	BF Bench		7916.8	7915.55										
Str. #5	Clusters		7917.7	7916.15	1.40	1.68	1.06	0.19	3.26	1.53	1.79	2.52	2.23	2.10
Str. #6	Clusters		7918.1	7916.75	1.75	2.94	3.05	2.03	0.02					
Str. #7	W Wier	7929.73	7918.7	7917.45	1.13		1.64							
Str. #9	Clusters		7919.3	7918	2.03	2.63	1.66	1.43	2.18	1.89	1.76			
Str. #10	W Wier		7919.6	7918.35	2.76	1.53		1.03	1.51					
Str. #11	Clusters		7919.8	7918.35		1.28	0.48	2.03	0.91	1.15	2.18			
Str. #12	Cluster/Log		7920.4	7919.15	2.28	1.73	2.31							
Str. #13 Lower	BF Bench		7920.4	7919.15										
Str. #13 Mid	BF Bench		7920.7	7919.35										
Str. #13 Upper	BF Bench		7921.6	7920.35										
Str. #14	W Wier		7921.6	7920.35		1.98	1.43	2.13						
Str. #15	W Wier		7922.7	7921.6	Mostly Failed - No Survey									
Str. #16	Bldr Vane	7934.47	7923.6	7922.35		0.63								
Str. #17	Bldr Vane		7923.6	7922.35		1.74	1.07	1.65	2.02	1.49				

Table 4: Relationship of Individual Boulder Elevations to 1/2 of the Bank Full Stage of the River

EXISTING STUCTURE VOLUMES

STRUCTURE #	TYPE	TOTAL # OF BOULDERS	ESTIMATED FILL	EST. FILL / FOOT
Un Designated	In-Channel Log	12 Boulders / 2 Logs	14 yd ³	
Structure #1	Boulder Cluster	11 Boulders	17 yd ³	
Structure #2	Boulder Cluster	6 Boulders	7 yd ³	
Structure #3	Cross Vane	15 Boulders	12 yd ³	
Structure #4 Lower	Bank Treatment	15 Boulders	16 yd ³	0.21yd ³ /Ft
Structure #4 Upper	Bank Treatment	14 Boulders	15 yd ³	0.21yd ³ /Ft
Structure #5	Boulder Cluster	13 Boulders	17 yd ³	
Structure #6	Boulder Cluster	6 Boulders	12 yd ³	
Structure #7	W - Weir	10 Boulders	13 yd ³	
Structure #8 Lower	Bank Treatment	27 Boulders	20 yd ³	0.12yd ³ /Ft
Structure #8 Upper	Bank Treatment	18 Boulders	15 yd ³	0.12yd ³ /Ft
Structure #9	Boulder Cluster	12 Boulders	16 yd ³	
Structure #10	W - Weir	21 Boulders	24 yd ³	
Structure #11	Boulder Cluster	7 Boulders	14 yd ³	
Structure #12	In-Channel Log	7 Boulders / 1 Log	6 yd ³	
Structure #13 Lower	Bank Treatment	20 Boulders	17 yd ³	0.22yd ³ /Ft
Structure #13 Lower Middle	Bank Treatment	19 Boulders	14 yd ³	0.22yd ³ /Ft
Structure #13 Upper Middle	Bank Treatment	21 Boulders	20 yd ³	0.22yd ³ /Ft
Structure #13 Upper	Bank Treatment	14 Boulders	15 yd ³	0.22yd ³ /Ft
Structure #14	W - Weir	18 Boulders	15 yd ³	
Structure #15	W - Weir	9 Boulders	7 yd ³	
Structure #16	Rock Vane	9 Boulders	7 yd ³	
Structure #17	Rock Vane	7 Boulders	7 yd ³	
Total		311 Boulders	322 yd ³	

Table 5: Estimation of Fill below the Ordinary High Water Mark (Bank Full Elevation) of the Existing Structures in Reach 1

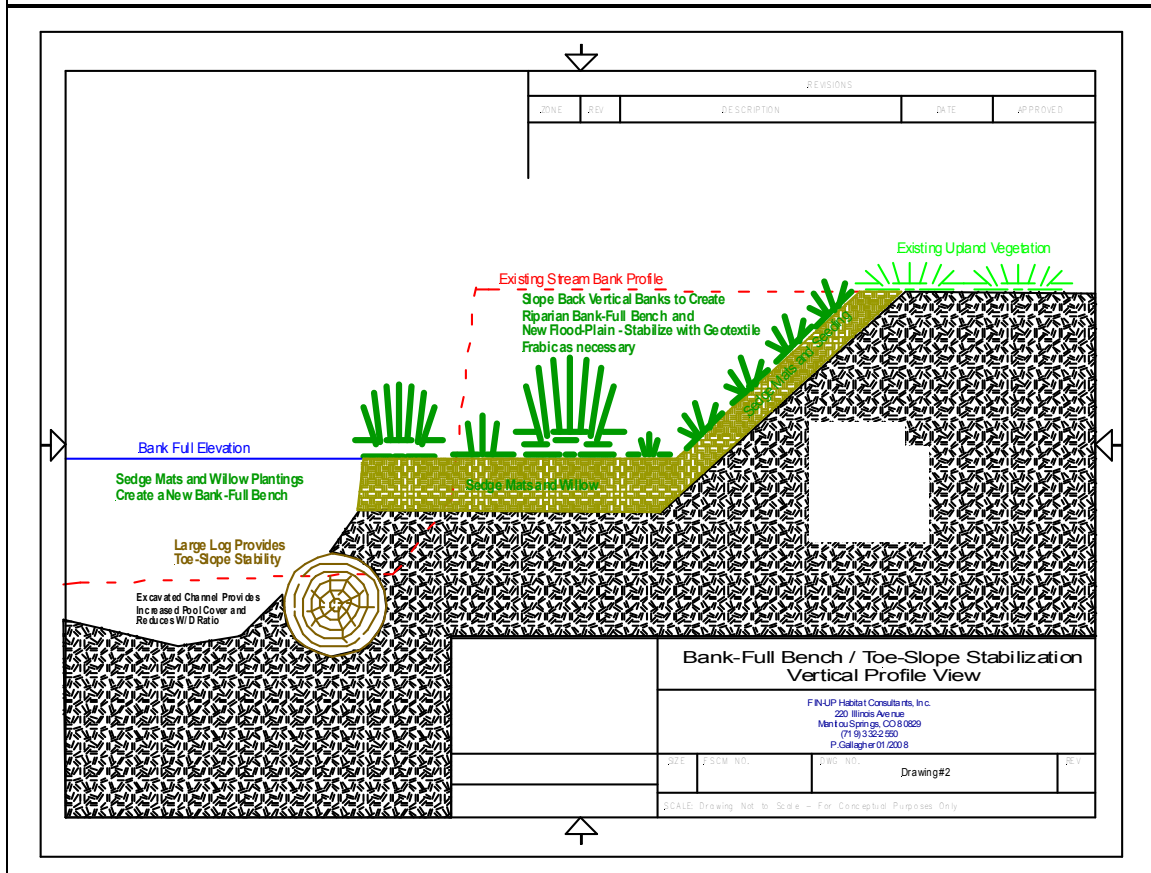
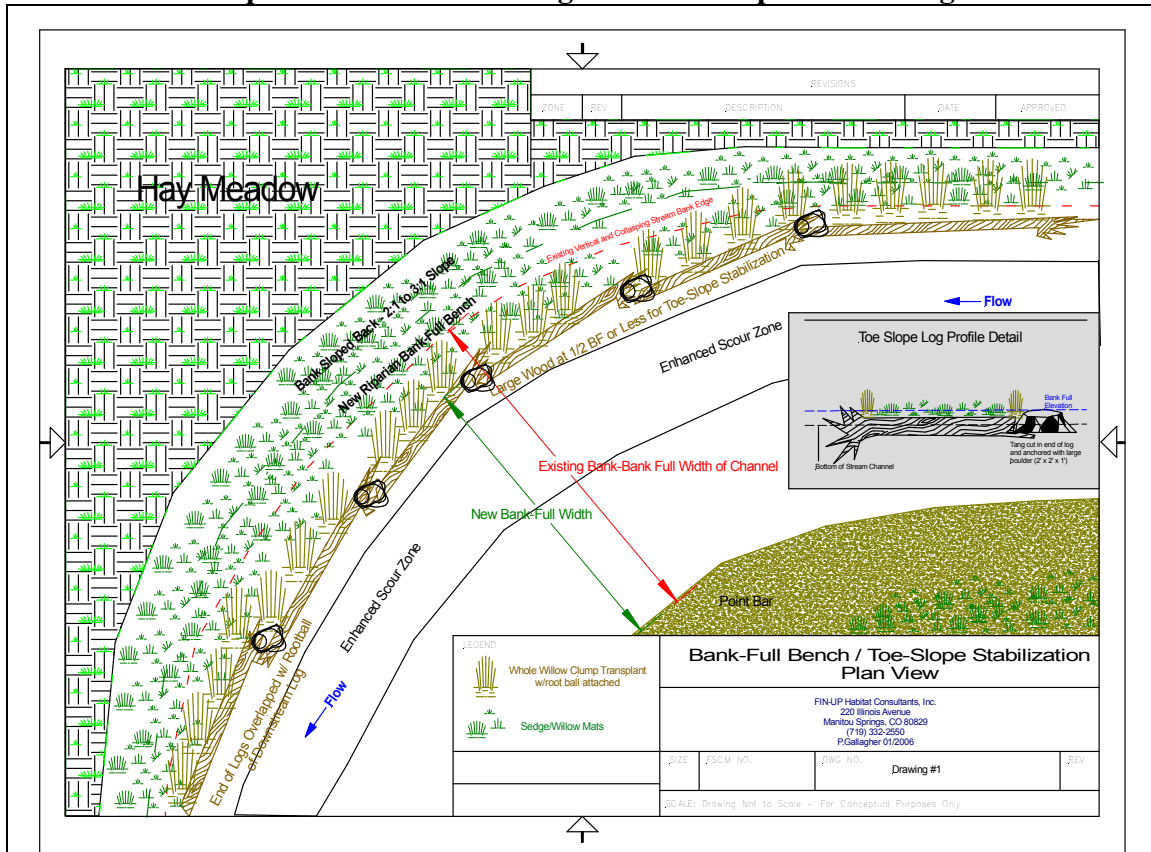
Lake George Company - Reach 1
 Client: Bart Johnson
 South Platte River - Park County, CO

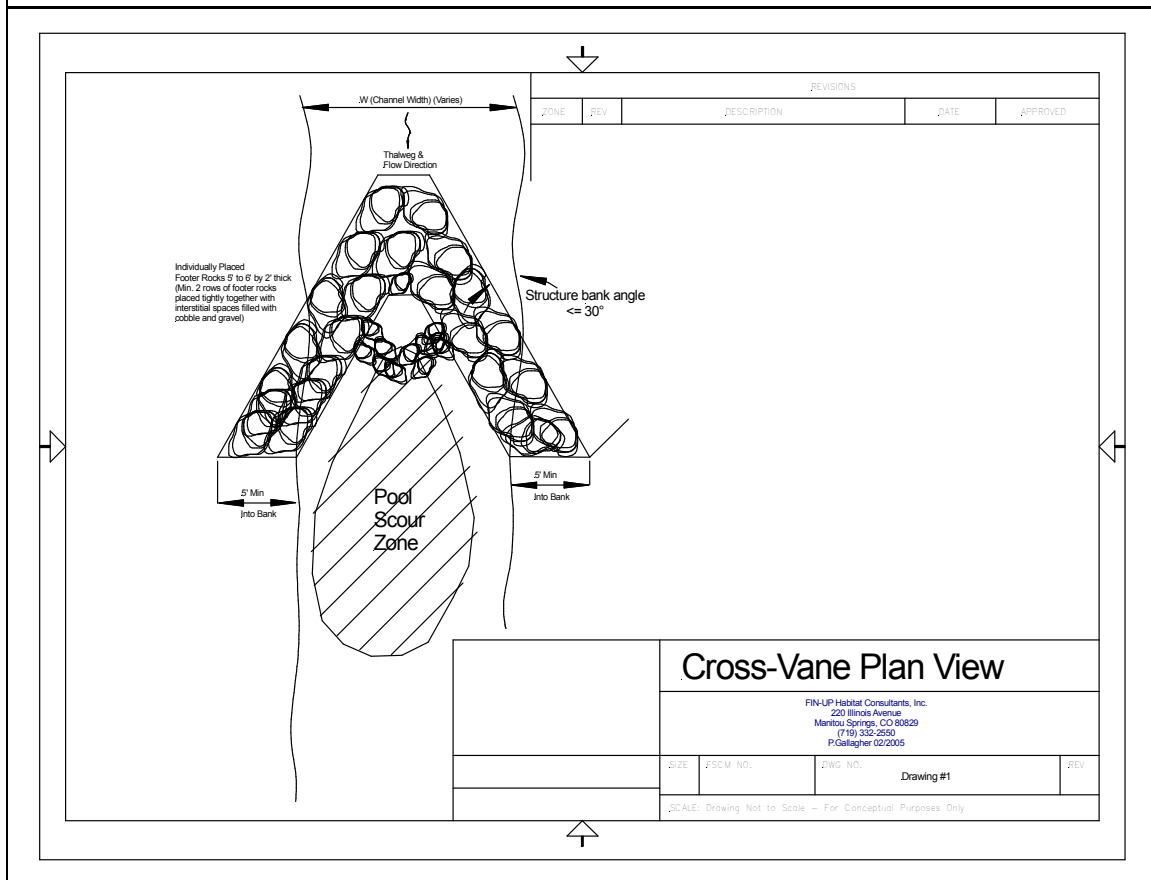
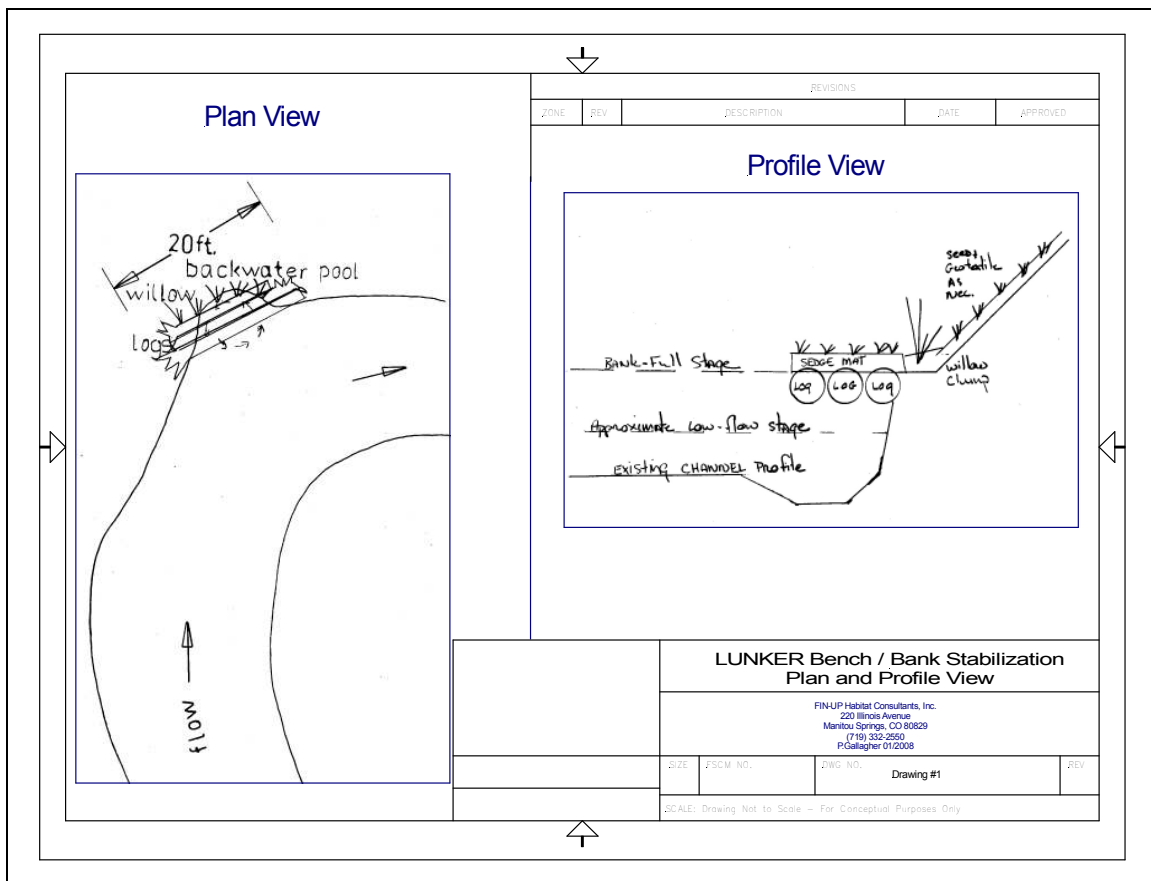
Dec. 7, 2008 BenchMark Elevations
 Personnel: Pete Gallagher

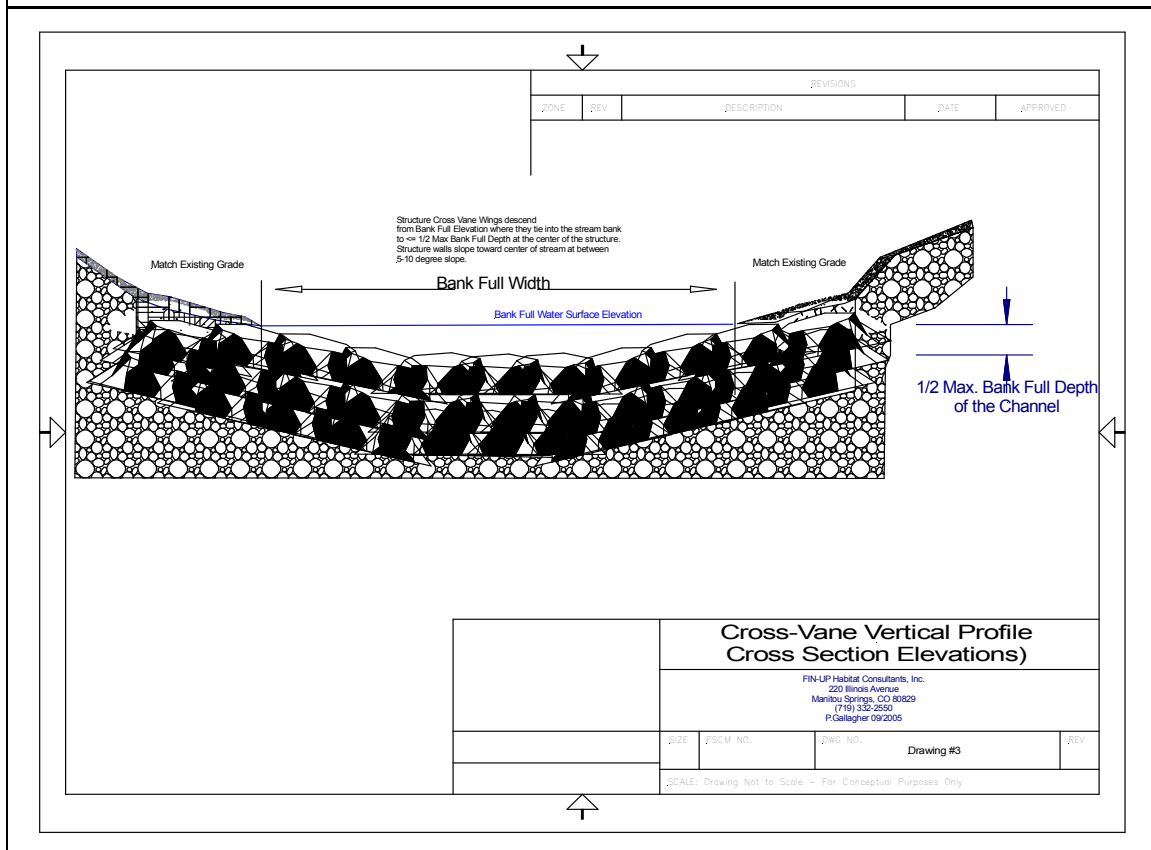
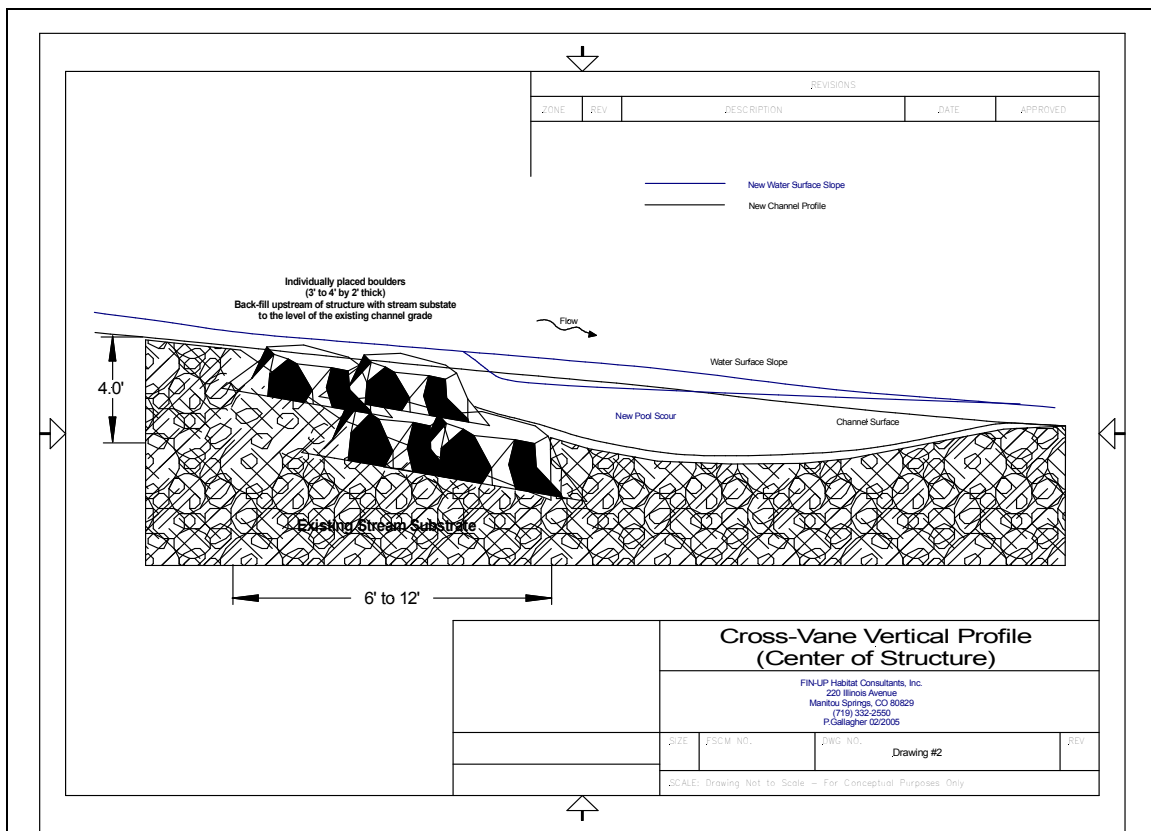
Station	Elevation	Notes
BM	7922.00	USGS Benchmark on County Bridge
BM1	7921.62	New 2' REBAR & CAIRN w/ Yellow Cap
BM2	7922.96	New 2' REBAR & CAIRN w/ Yellow Cap
LHP1	7919.75	Wood Stake Left Bank
RHP1	7920.94	Wood Stake Right Bank
LHP2	7918.65	Wood Stake Left Bank
RHP2	7921.77	Wood Stake Right Bank
LHP3 / 4	7922.16	Wood Stake Left Bank
RHP3	7923.11	Wood Stake Right Bank
RHP4	7922.61	Wood Stake Right Bank
LHP6	7923.77	Wood Stake Left Bank
RHP6	7921.17	Wood Stake Right Bank
LHP7	7920.53	Wood Stake Left Bank
RHP7	7921.60	Wood Stake Right Bank
LHP8	7923.10	Wood Stake Left Bank
RHP8	7924.22	Wood Stake Right Bank
LHP9	7923.89	Wood Stake Left Bank
RHP9	7924.03	Wood Stake Right Bank
LHP10	7924.31	Wood Stake Left Bank
RHP10	7926.09	Wood Stake Right Bank

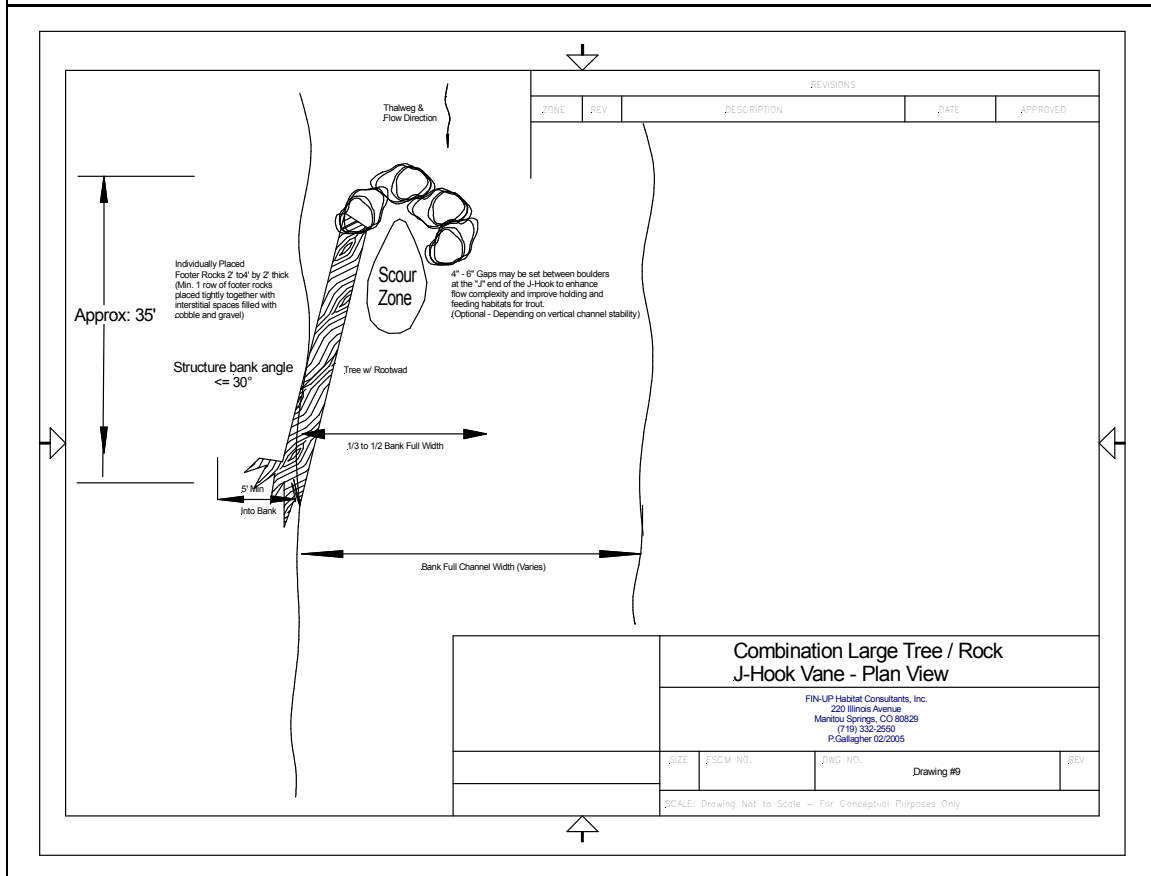
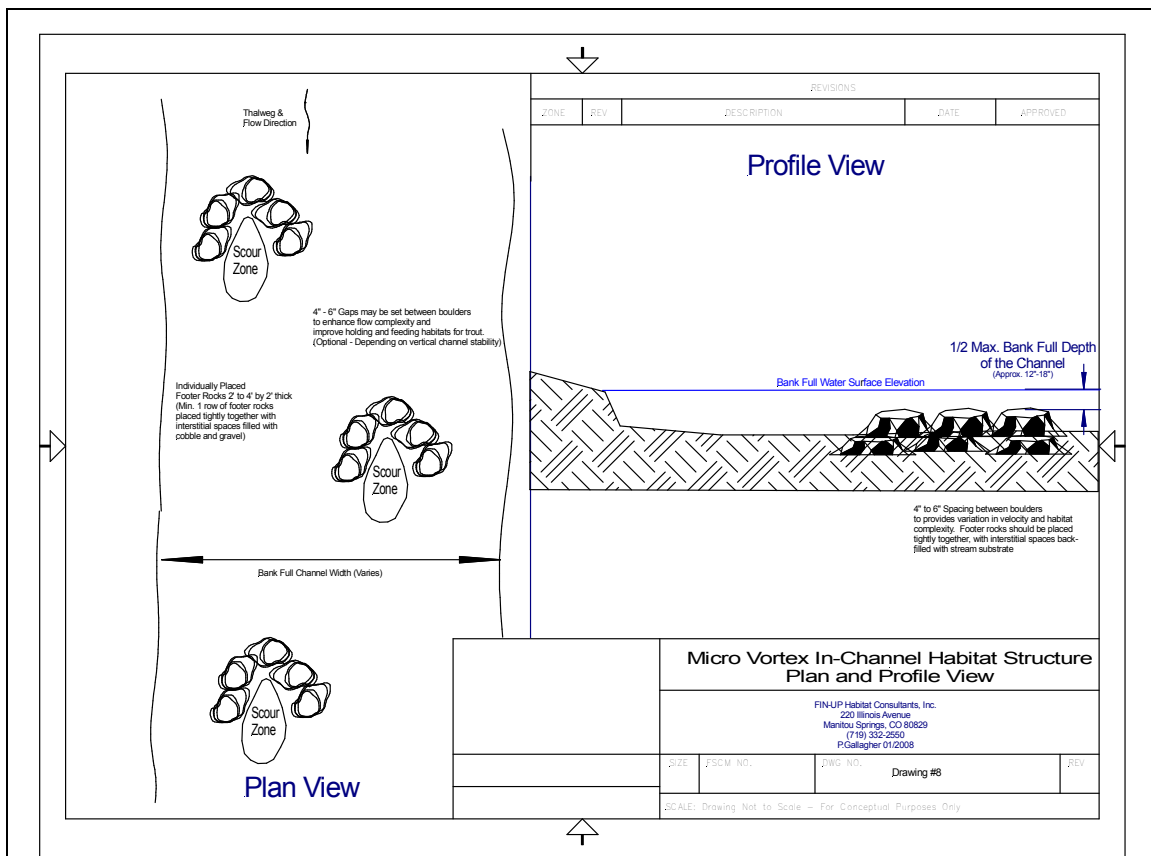
Table 6: Bench Mark and Cross-Section Pin Elevations

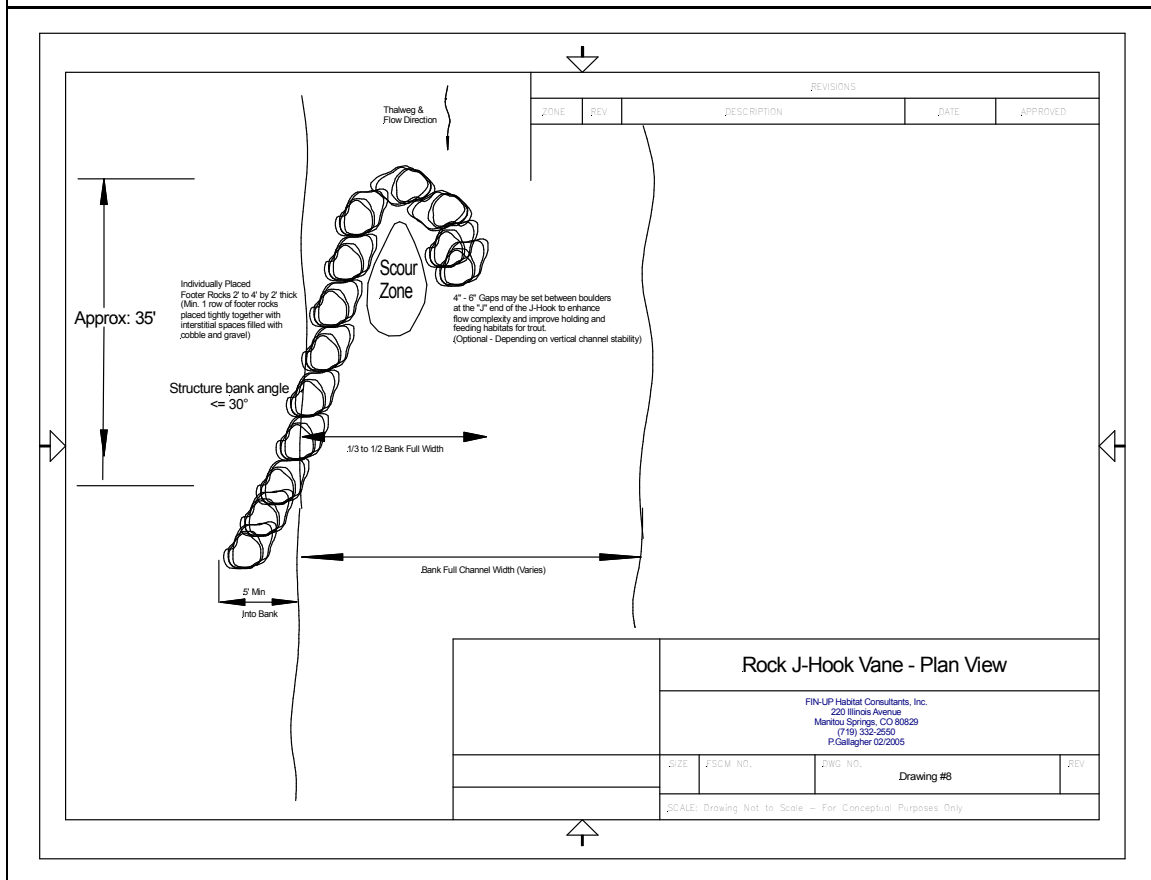
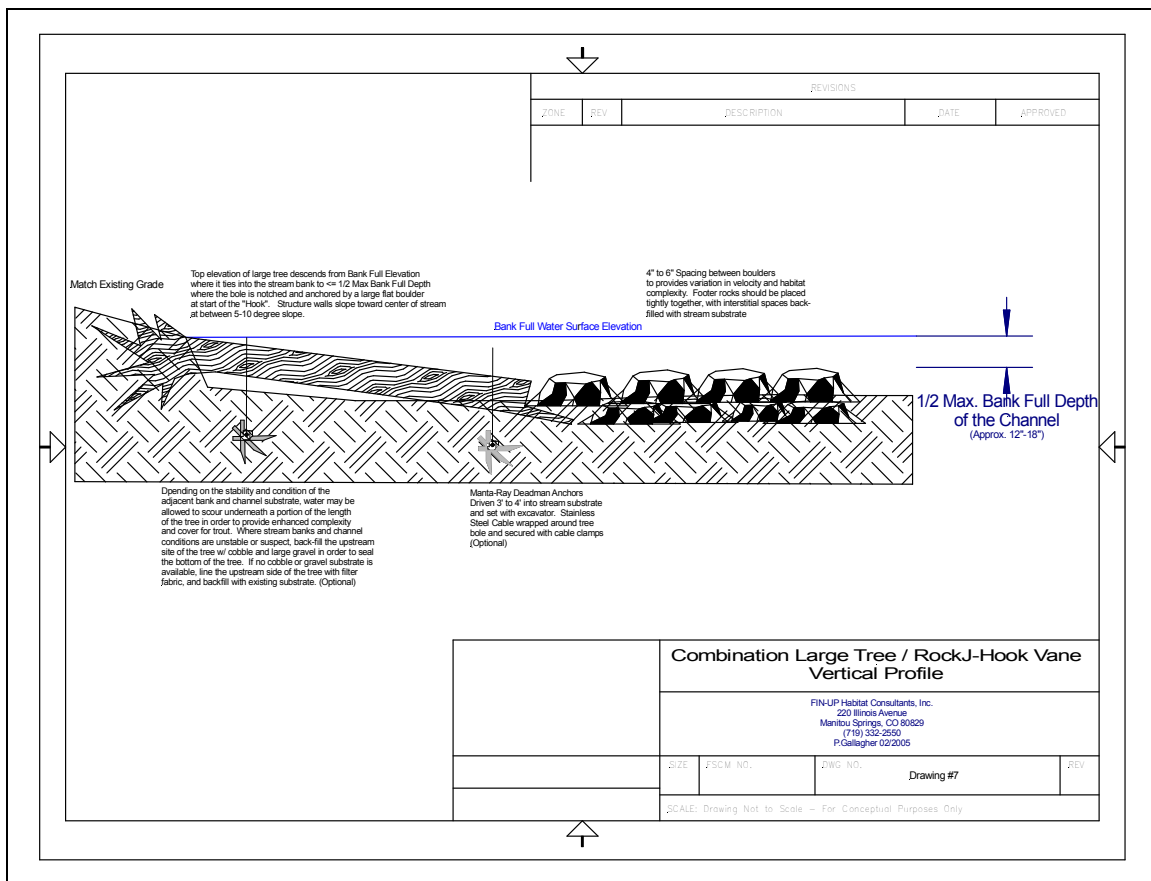
Proposed Treatments Designs and Conceptual Drawings

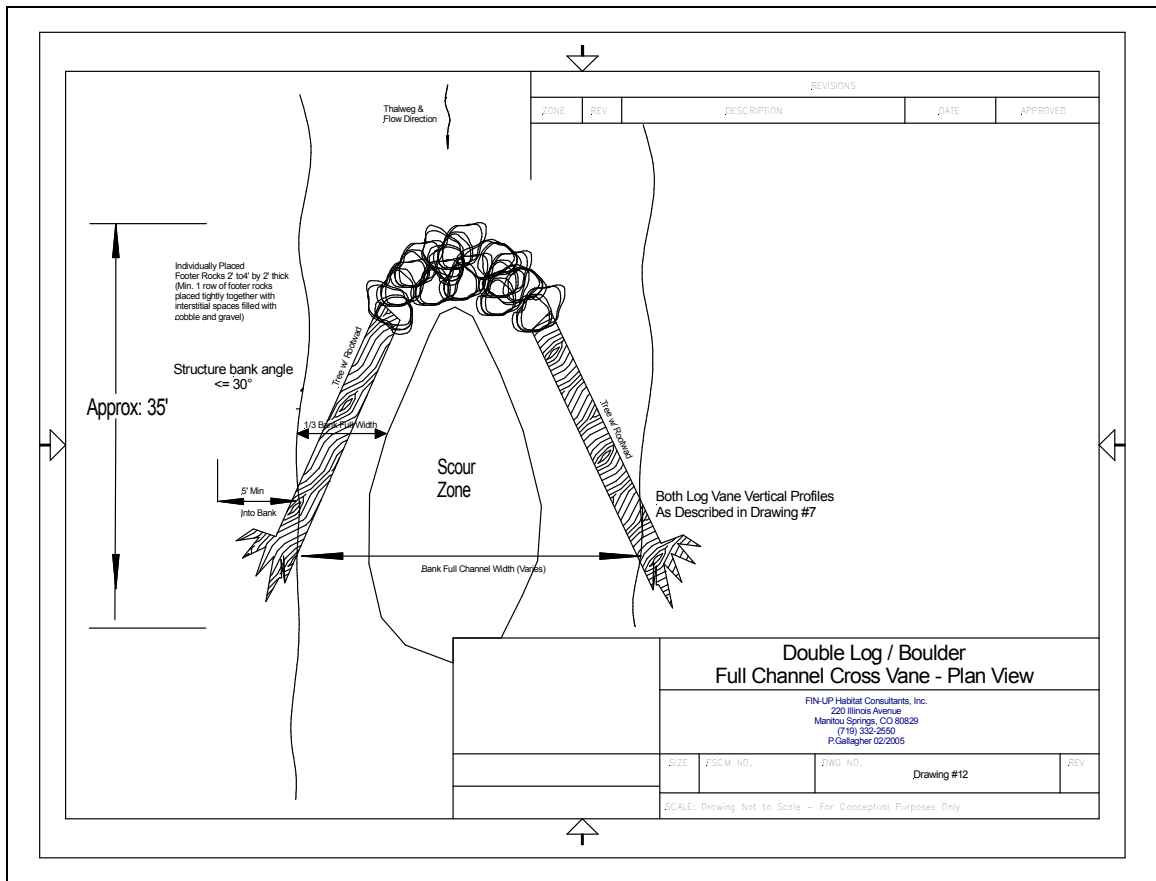












Cross Vane Structure on Fountain Creek below 21st Street Bridge, El Paso County, CO.



Double Log /Boulder Cross Vane Structure - Eagle Rock Ranch, Tarryall River, Park County, CO



Installing Bank Full Bench & Log Toe Slope Structure - South Platte River, Camp Alexander, Park County, CO



Installing a Log Vane - Camp Alexander, Elevenmile Canyon. Elevenmile Picnic Ground Channel Reconfiguration Project.



Removing the Mid-Channel Island - Elevenmile Picnic Ground Channel Reconfiguration Project - South Platte River.



Riparian Bench / Log Toe Slope Structures, one year after construction - Cucharas River, Huerfano County, CO.



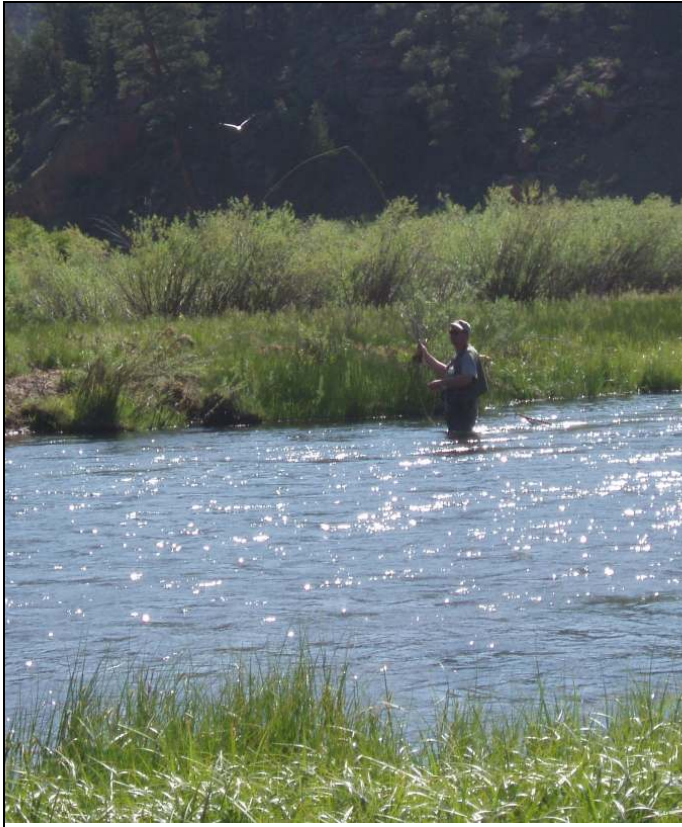
Double Log /Boulder Cross Vane with Restored Stream Bank Upstream - Beaver Creek Wildlife Area, CO.



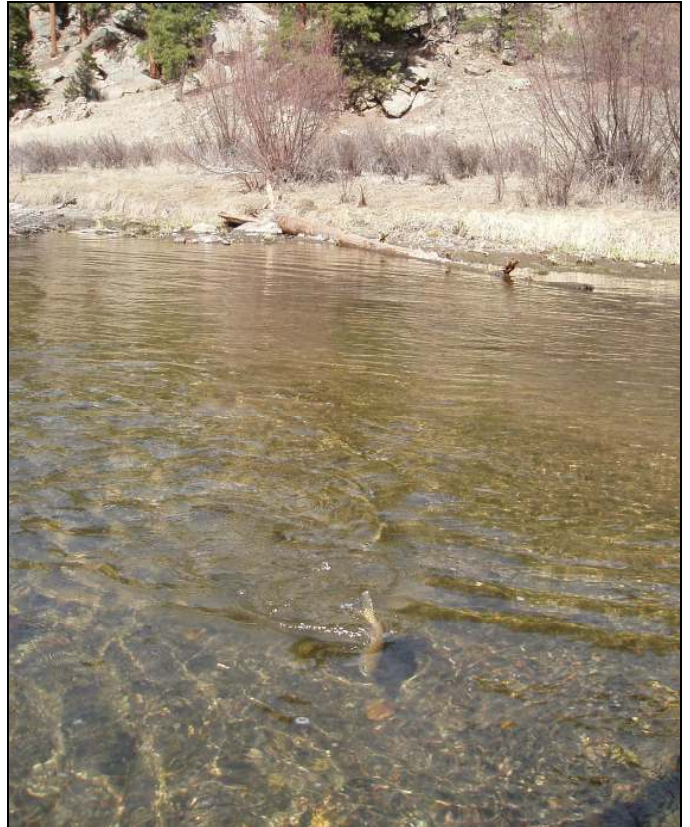
Newly Constructed Step-Pool System in a Greenback Cutthroat Stream - S. Prong of Hayden Creek, Freemont County, CO.



Constructing a LUNKER Stream Bank and Riparian Bench Structure - Elevenmile Canyon Trees for Trout Centennial Project.



Fisherman & Restored Stream Bank - Camp Alexander



Coaxing a Rainbow from one of the many Trees for Trout.



Forest Service Biologist Stephanie Shively holds a 27" Brown Trout electrofished from a T4T structure in 11Mile Canyon.



Picketwire Canyonlands, SE Colorado - Rock vanes used to protect dinosaur trackway. These structures were installed in 1998, and survived a 100 year event the following spring. Note the deposition and new willow vegetation taking hold in between the structures.



Aerial of Dinosaur Tracks along Purgatoire River
Picket Wire Canyonlands, Comanche National Grassland, southeastern Colorado
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