



# Ecological Resource Consultants, LLC

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## CROSS-SECTIONAL CHANNEL SURVEY, SEDIMENT SAMPLING, AND ANALYSIS OF WILD & SCENIC STAKEHOLDER GROUP SEGMENTS 5 AND 6 OF THE UPPER COLORADO RIVER 2023

<b>I. PROJECT OVERVIEW</b>															
<b>1. Client:</b>	Northwest Colorado Council of Governments Upper Colorado River Wild and Scenic Stakeholder Group 308 Byers Ave., Hot Sulphur Springs, CO 80451 Ground County, CO  Kayli Foulk, Water Quality Specialist (kfoulk@co.grandco.us)														
<b>Monitoring By:</b>	Ecological Resource Consultants, LLC (ERC)														
<b>2. Project Description</b>	The primary purpose of this project was to conduct cross-sectional surveys and sediment sampling within Wild & Scenic Segments 5 and 6 on the Colorado River in accordance with The Amended and Restated Upper Colorado River Wild and Scenic Stakeholder Group Management Plan.														
<b>3. Location</b>	Six sites on the Upper Colorado River within Wild & Scenic Segments 5 and 6, generally located between Pumphouse and Dotsero. <table border="1"><thead><tr><th><b>Station Description</b></th><th><b>Monitoring Location Lat/Long</b></th></tr></thead><tbody><tr><td>Colorado River at Pumphouse</td><td>39.98471, -106.514</td></tr><tr><td>Colorado River at Radium</td><td>39.94985, -106.558</td></tr><tr><td>Colorado River at State Bridge</td><td>39.85783, -106.647</td></tr><tr><td>Colorado River upstream of Catamount</td><td>39.91239, -106.785</td></tr><tr><td>Colorado River downstream of Derby Creek</td><td>39.85826, -106.921</td></tr><tr><td>Colorado River downstream of Sweetwater</td><td>39.70996, -107.047</td></tr></tbody></table>	<b>Station Description</b>	<b>Monitoring Location Lat/Long</b>	Colorado River at Pumphouse	39.98471, -106.514	Colorado River at Radium	39.94985, -106.558	Colorado River at State Bridge	39.85783, -106.647	Colorado River upstream of Catamount	39.91239, -106.785	Colorado River downstream of Derby Creek	39.85826, -106.921	Colorado River downstream of Sweetwater	39.70996, -107.047
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<b>4. Field Work Dates</b>	November 13-16, 2023														

## 1.0 Introduction

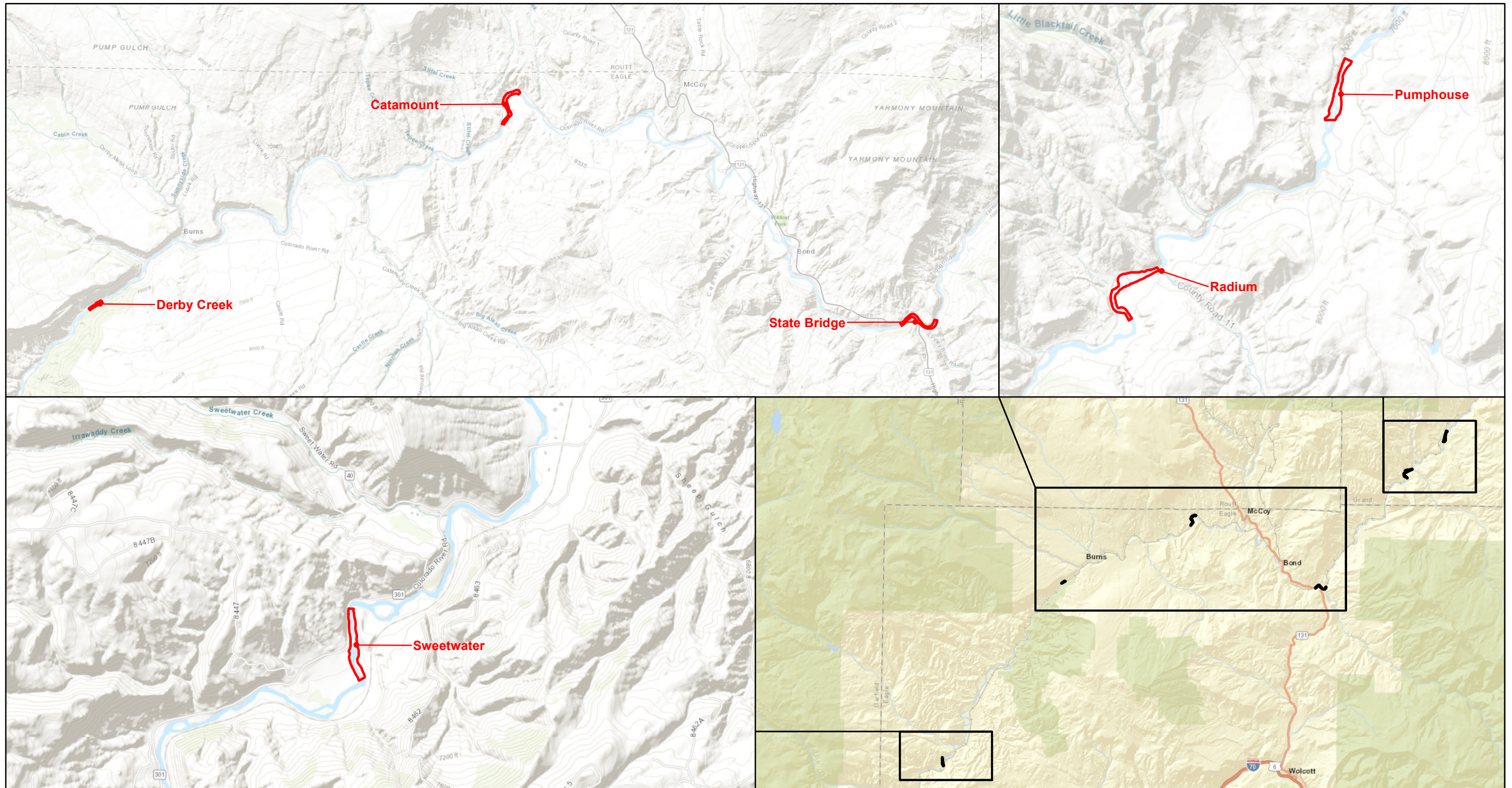
The goal and purpose of this monitoring report is to present high quality, reproducible data that can be used to evaluate potential future trends in channel evolution of the Upper Colorado River. Monitoring includes six (6) sites on the Colorado River, listed from upstream to downstream:

1. Pumphouse
2. Radium
3. State Bridge
4. Catamount
5. Derby
6. Sweetwater

The location of the individual stations is presented in **Figure 1.1**.

Monitoring that was part of this assessment included cross-sectional surveys and sediment sampling. Cross-sectional work included resurveying sections that had been previously surveyed by the United States Geological Survey (USGS), as well as two (2) additional cross sections (pool and glide) at each site. Sediment sampling was conducted to quantify substrate gradations, embeddedness, and presence of algae. Photographs were also taken at each site to document conditions at the time of the work.

Field work was conducted from November 13 through November 16, 2023. At the time of the field work, flows in the Colorado River ranged from 470 cubic feet per second (cfs) to 540 cfs as determined at the Kremling gage. Flows over the period of the field work are presented in **Figure 1.2**. In the spring and summer preceding the 2023 monitoring event, daily flows at the Kremling gaged peaked over 5,000 cfs. Flows in the spring and summer of 2023 were generally above average. Daily flows in 2023 compared to average conditions are presented in **Figure 1.3**.




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**LEGEND**

 Reach Survey Area

**Figure 1.1**  
**2023 MONITORING SITE LOCATIONS MAP**  
**UPPER COLORADO RIVER MONITORING**  
**GRAND COUNTY, COLORADO**





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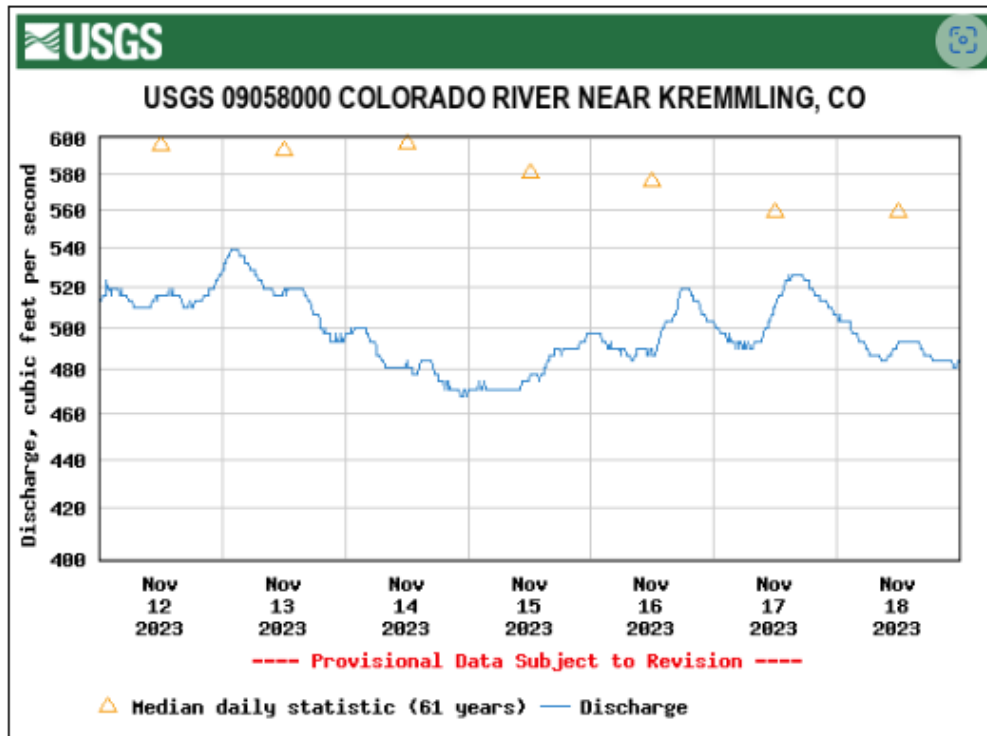


Figure 1.2 Colorado River at Kremling Flows During Monitoring

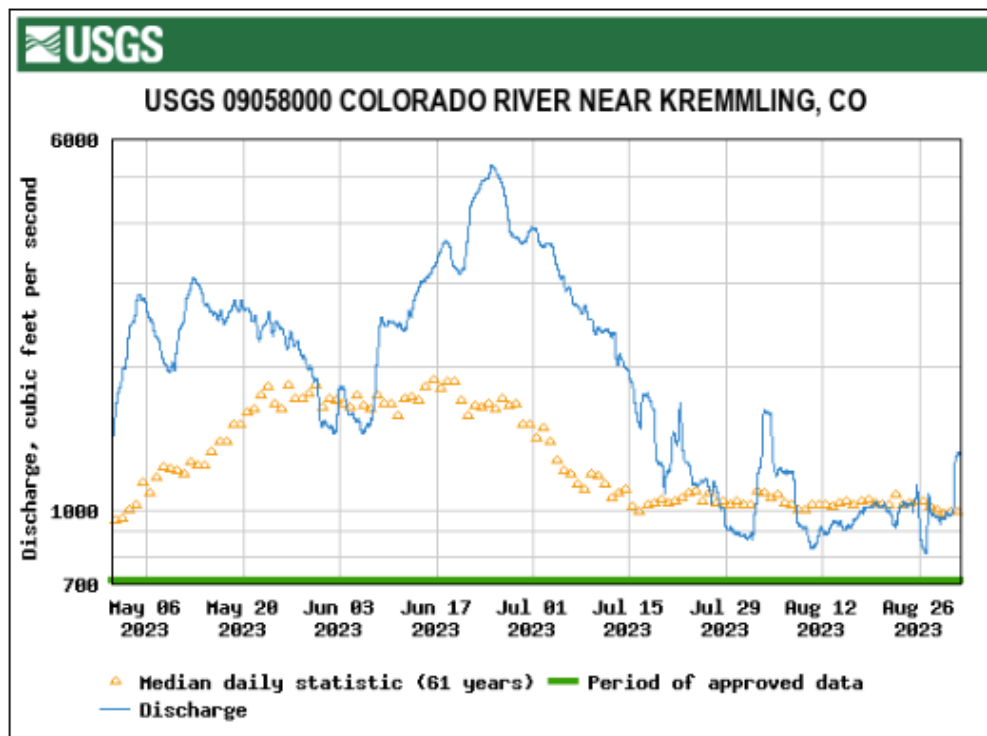


Figure 1.3 Colorado River at Kremling Flows, 2023 and Averages

Each of the monitored parameters is described below. Results obtained from the 2023 survey are then presented.

## 2.0 Parameters Monitored

### *2.1 Parameter 1: Channel Cross-section*

Method of Measurement – There are three channel cross-sectional monitoring locations representing riffle, pool, and run at each of the six monitoring sites. One existing cross-section was previously established by the USGS at each of the sites marked by t-posts, except at Derby Creek. Two new cross-sections were established at each of the six sites. To increase future repeatability of cross-sectional monitoring, rebar encased in concrete were installed on channel banks at each side of the cross sections. At the Derby Creek riffle, ERC placed a found piece of metal to establish the left bank cross-section benchmark, as no t-post was found. The cross-sections include the width of the riparian corridor.

A Trimble R12 GNSS (Global Navigation Satellite System) receiver with an RTK controller was used to collect cross-section data. The Trimble R12 provides centimeter accuracy for horizontal and vertical data. Per the Request for Proposal (RFP) from the Upper Colorado River Wild & Scenic Stakeholder Group (UCRW & SSF, 2023), data points were collected across each cross-section using NAD83 horizontal and NAVD88 vertical datum. A minimum of 30 data points were gathered at regular intervals and significant grade breaks throughout each cross-section. Cross-section data points were collected by a surveyor using the GNSS receiver and establishing a transect crossing the river channel in a straight line and capturing a minimum of 30-points. During the cross-section data collection, a second individual on the riverbank provided line-of-sight guidance to the surveyor within the river channel to ensure the collected data points were collected a straight-line cross-section.

The location of surveyed cross-sections at of the individual sites are presented in **Figures 2.1 – 2.6**.



**Figure 2.1 Pumphouse Cross-section Locations**



**Figure 2.2 Radium Cross-section Locations**



Figure 2.3 State Bridge Cross-section Locations





**Figure 2.4 Catamount Cross-section Locations**



**Figure 2.5 Derby Cross-section Locations**

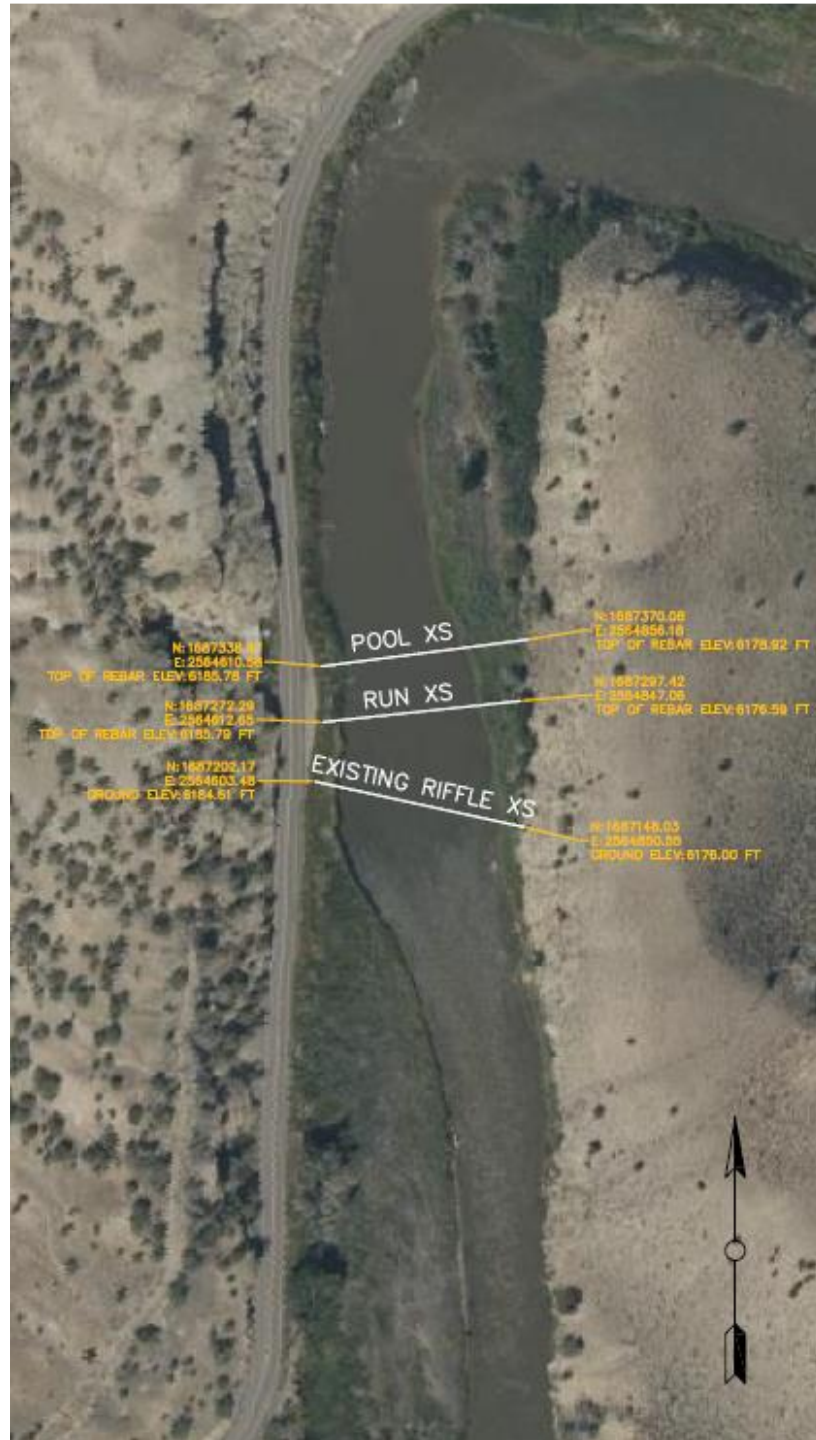


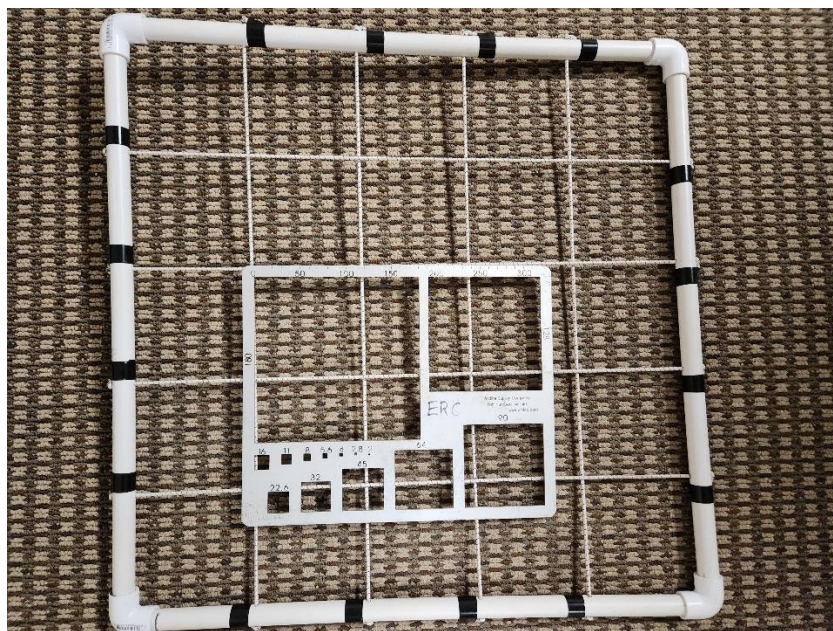
Figure 2.6 Sweetwater Cross-section Locations

**Notes** – In order to ensure cross-sectional surveys were completed in a safe manner and one that was most likely to allow for repeatable, future surveys, cross-sections were located at points within each site that met the intended different stream characteristics while still being wadable during encountered field conditions.

## 2.2 Parameter 2: Sediment Sampling

Method of Measurement – Pebble counts were performed at the riffle transect at each of the six sites. A square grid sampling frame measuring 60 cm per side was used for sampling. Following procedures outlined in the RFP, 25 equally spaced sampling locations were defined by installing vertical and horizontal elastic bands across the frame. The sampling frame was placed at 12 generally equally spaced locations along the riffle transect. At each frame placement, substrate size was defined by measuring the first particle touched by the field personnel at the intersection of bands. Sediment size was quantified using a gravelometer. The sampling frame and gravelometer used for sampling are shown in **Photo 1**. A total of approximately 300 individual particles were selected and measured at each monitored riffle transect.

Sampled sediment was graphed on a standard gradation plot. This allowed for the quantification of material size at different percentages of the overall material.



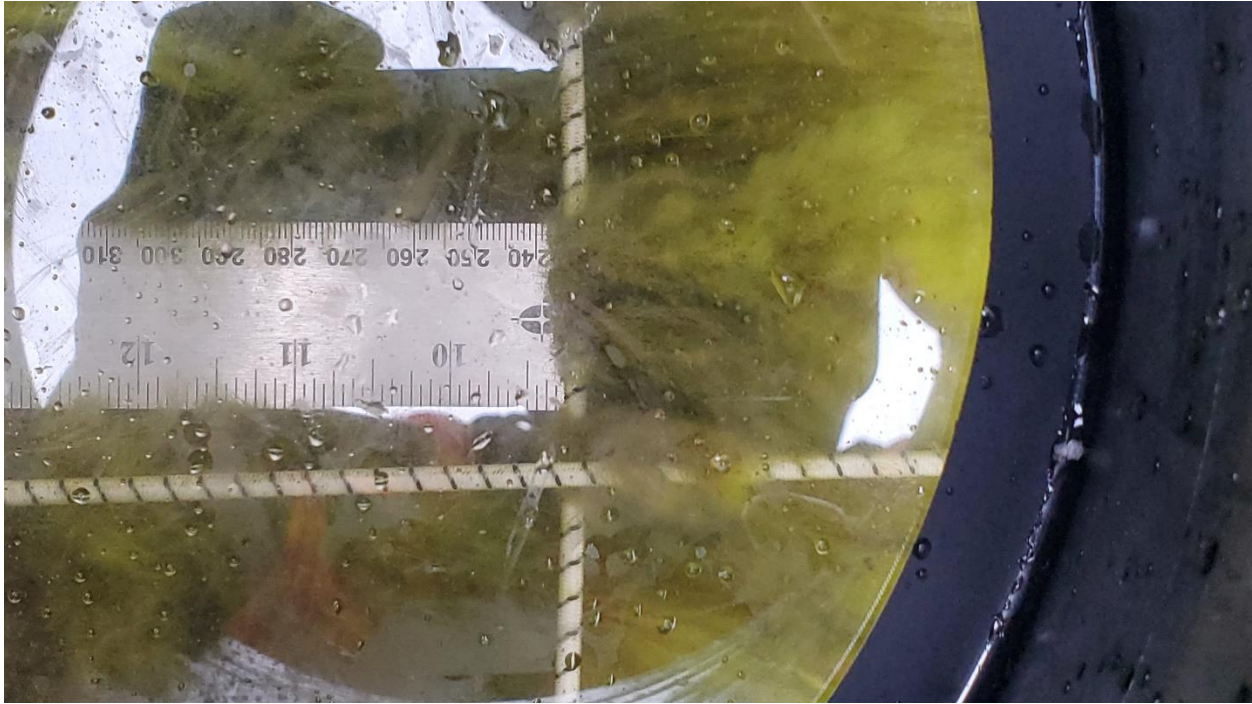
**Photo 1. Sampling Frame and Gravelometer**

Notes – Sampling accuracy for the pebble count was impacted by flow conditions and water/air temperatures. To provide as accurate and repeatable results as possible in as safe of a way as possible, the exact placement of the sampling frame was at times modified from 12 exactly equally spaced locations to 12 spaces that were shallow enough for sampling to be completed. In all cases, spacing and placement of the sampling frame was done ensuring that material along the entire transect was representatively sampled.

## 2.3 Parameter 3: Algae Assessment

Method of Measurement – Algal cover was measured at four evenly spaced points across the riffle transect at each of the six monitoring sites. A bucket viewer was utilized to document algae growth within the sampling frame. A photo of the bucket viewer with grid and ruler is provided in **Photo 2**. Following criteria established in the RFP, algae was monitored for presence/absence. Algae observed that was longer than

2 mm was considered to be present while areas with algae less than 2 mm or no algae was considered to be algae free.



**Photo 2. Bucket Viewer**

Notes – The algal assessment was conducted per methods listed in the RFP, the 60 cm grid frame was placed slightly offset of the transect to avoid areas where algae had been potentially disturbed from the cross-section data collection and sediment sampling.

#### *2.4 Parameter 4: Embeddedness*

Method of Measurement – Embeddedness was measured at each riffle transect at each of the six monitoring sites. Following procedures outlined in the RFP, 15 randomly selected rocks were collected along the transect for assessment. For each rock, the height of the portion not buried within the channel sediment was measured in mm. The height was subtracted from the total depth of the rock to determine the extent of embeddedness. The randomness ensures consistent data collection across all monitoring sites.

Notes – Particles larger than sand were measured for the embeddedness parameter. Rocks/cobbles collected and measured were generally larger than 64mm.

#### *2.5 Parameter 5: Visual Observations and Photographic Documentation*

Photographs were taken at each cross-section to document conditions at the time of the field work. Photos include views across the river from the left bank river monument, across the river from the right bank river monument, facing upstream from within the river and facing downstream within the river. Throughout the document, right bank and left bank refer to the side of the river viewed when looking downstream.

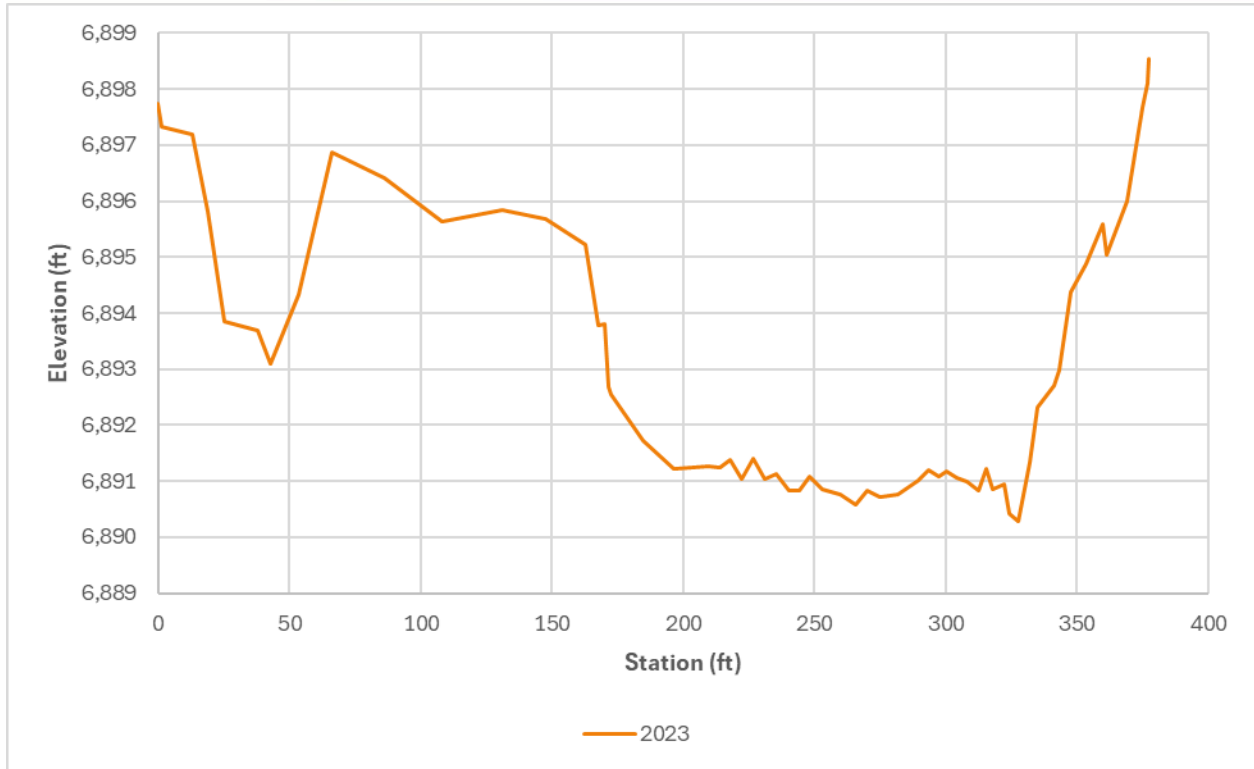
Notes – Visual observations and photographs are provided in **Section 7.0**.

### 3.0 Cross-section Results

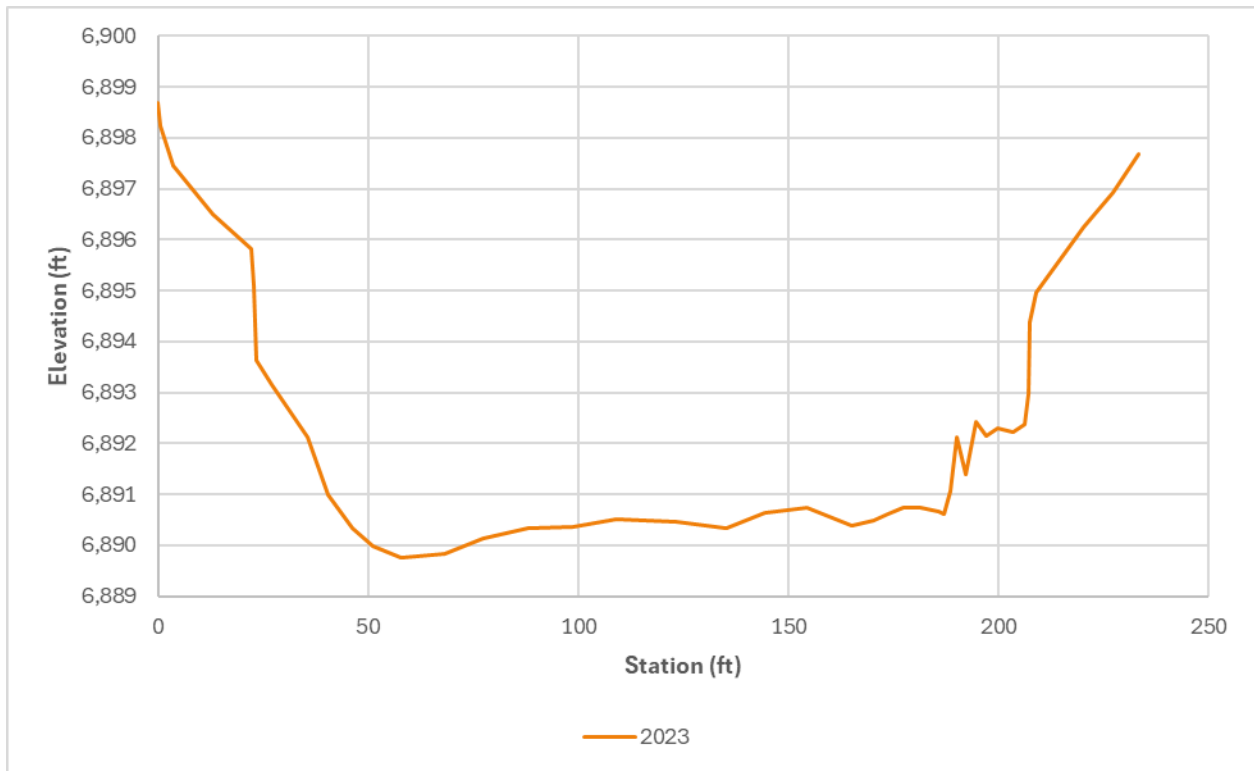
Survey data gathered as part of the cross-sectional survey work was plotted to provide a visual representation of each of the eighteen (18) surveyed cross sections. Results are presented in **Figures 3.1 – 3.18**. In all cases the plotted cross sections illustrate results as viewing the cross-section facing downstream. In instances where the cross-section had been previously surveyed by the USGS, both the ERC 2023 and the USGS results are provided on the same graph.

When compiling data from the previous USGS survey, it was found that the data was provided in metric units, and it was at an elevation that did not coincide with Colorado State Plane NAD83 and NAVD88 datum used for the 2023 survey. To facilitate direct comparison of the 2023 ERC data with earlier USGS data, ERC assumed the elevations on the ground at the start and end of the cross sections should be about the same between the 2022 and 2023 surveys. The difference in elevation of the 2022 end points from the 2023 end points were analyzed at the left and right banks. These were used as correction values to change the rest of the 2022 survey points for a better comparison with the 2023 survey. The left or right bank correction value was chosen depending on which one showed the minimal elevation change between the whole cross sections. Each existing cross section had a slightly different correction value with a minimum of 42.5, maximum of 45.4, and average of 43.7 feet.

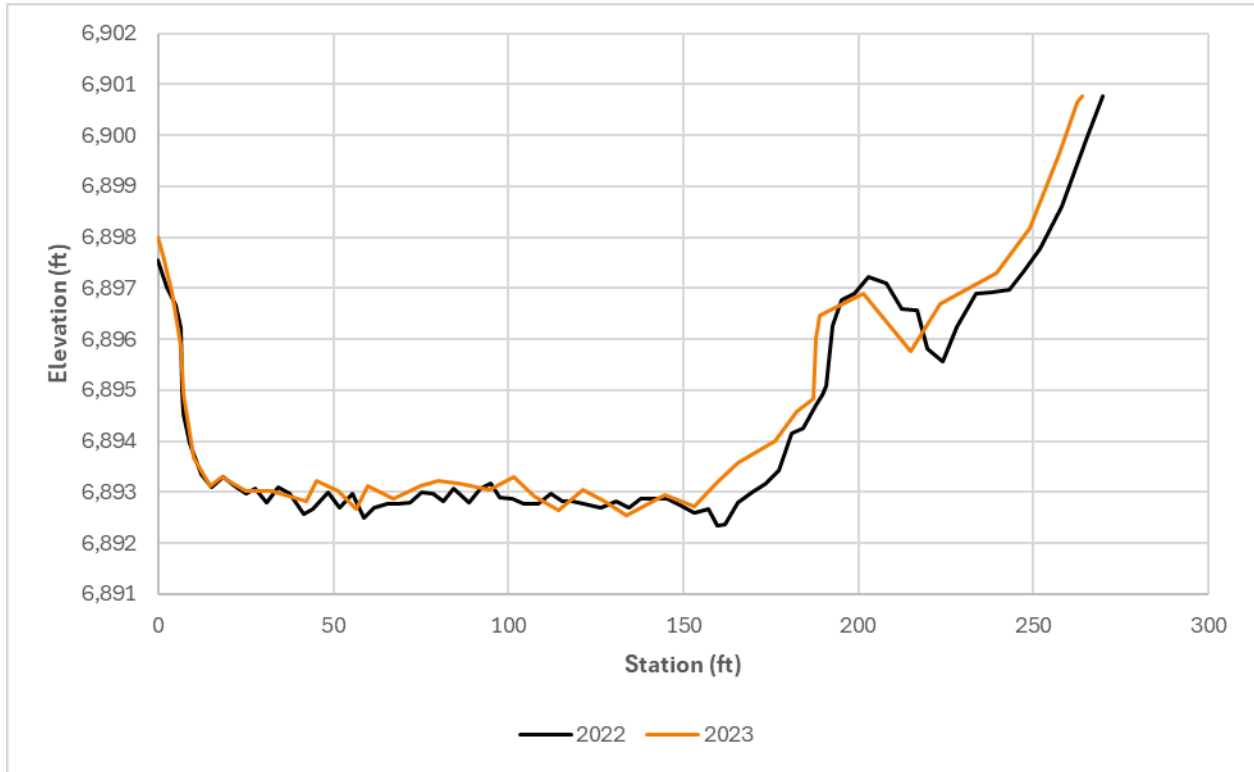
At the cross-sections that were surveyed by both the USGS and ERC, results show nearly identical cross-sections indicating the channel has remained stable with only minor natural adjustments between survey events. The only pair of surveys that do not match up almost perfectly are the two taken at Pumphouse (**Figure 3.3**). At this location the left banks match while there is an apparent difference as one moves across to the right bank. Review of the graph of these surveys show that the shape of the cross sections is nearly identical with the only difference being that the 2023 results suggest that the channel is narrower. Given the identical shape, this difference in width is believed to be an error in one of the two surveys and not an actual difference in channel cross section.



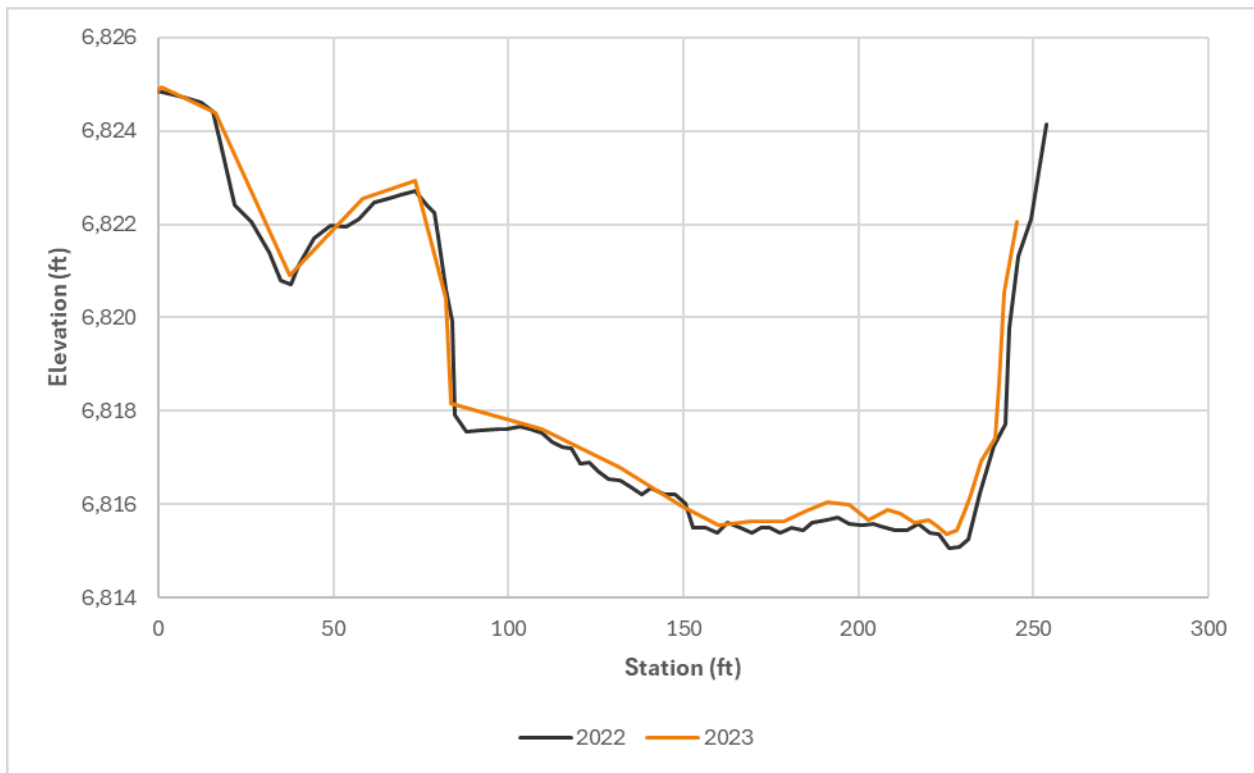
**Figure 3.1 Pumphouse Riffle Cross-section**



**Figure 3.2 Pumphouse Pool Cross-section**

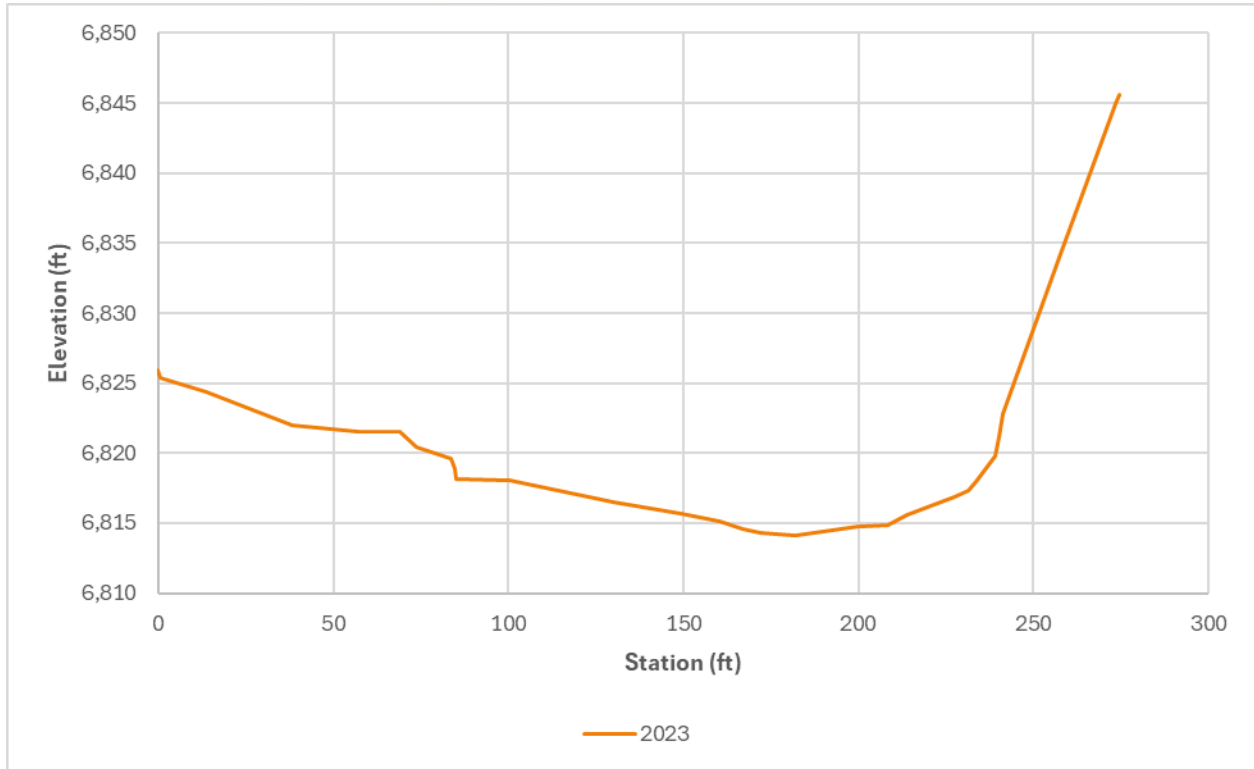
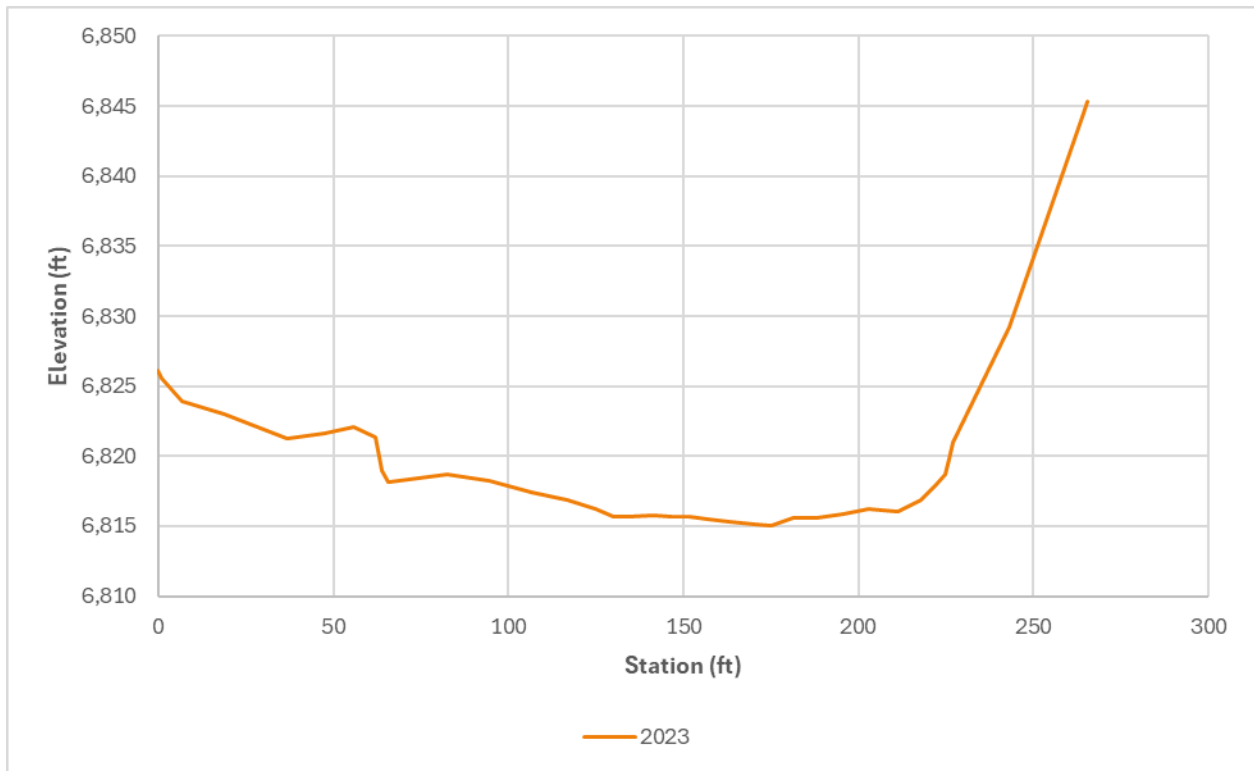


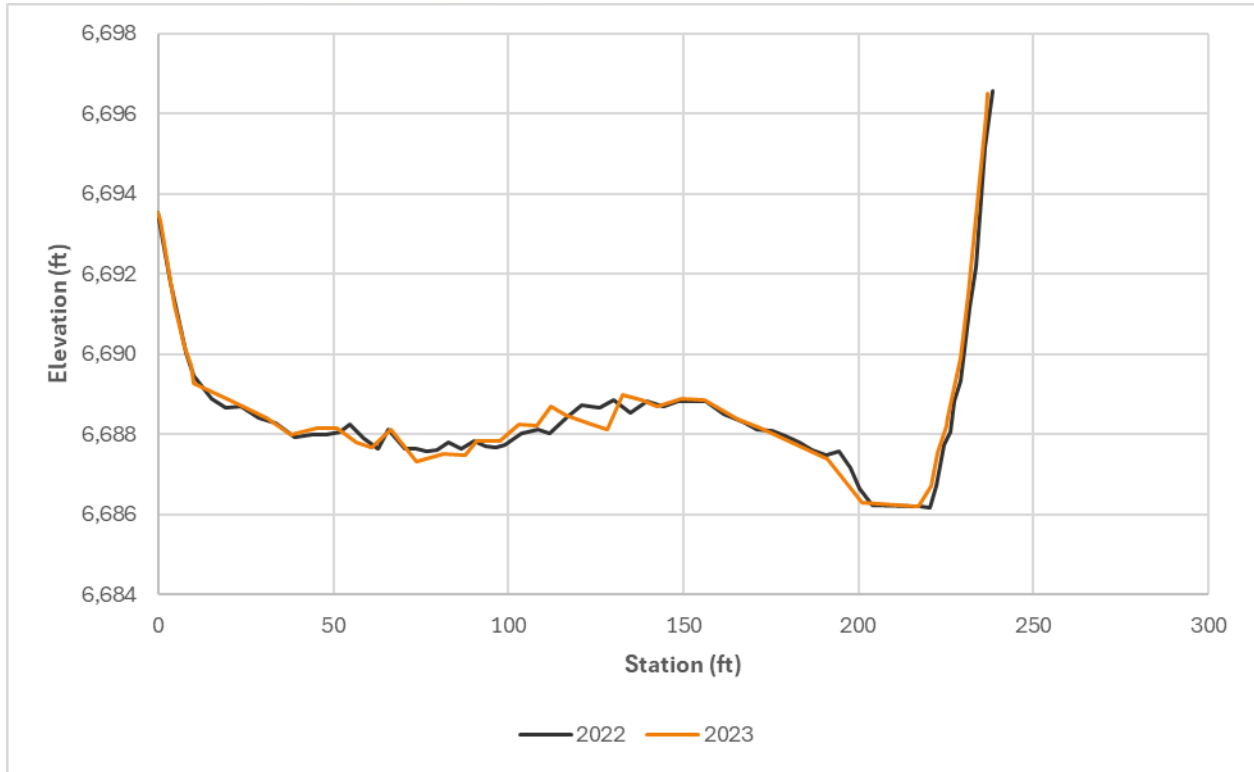
**Figure 3.3 Pumphouse Run Cross-section**



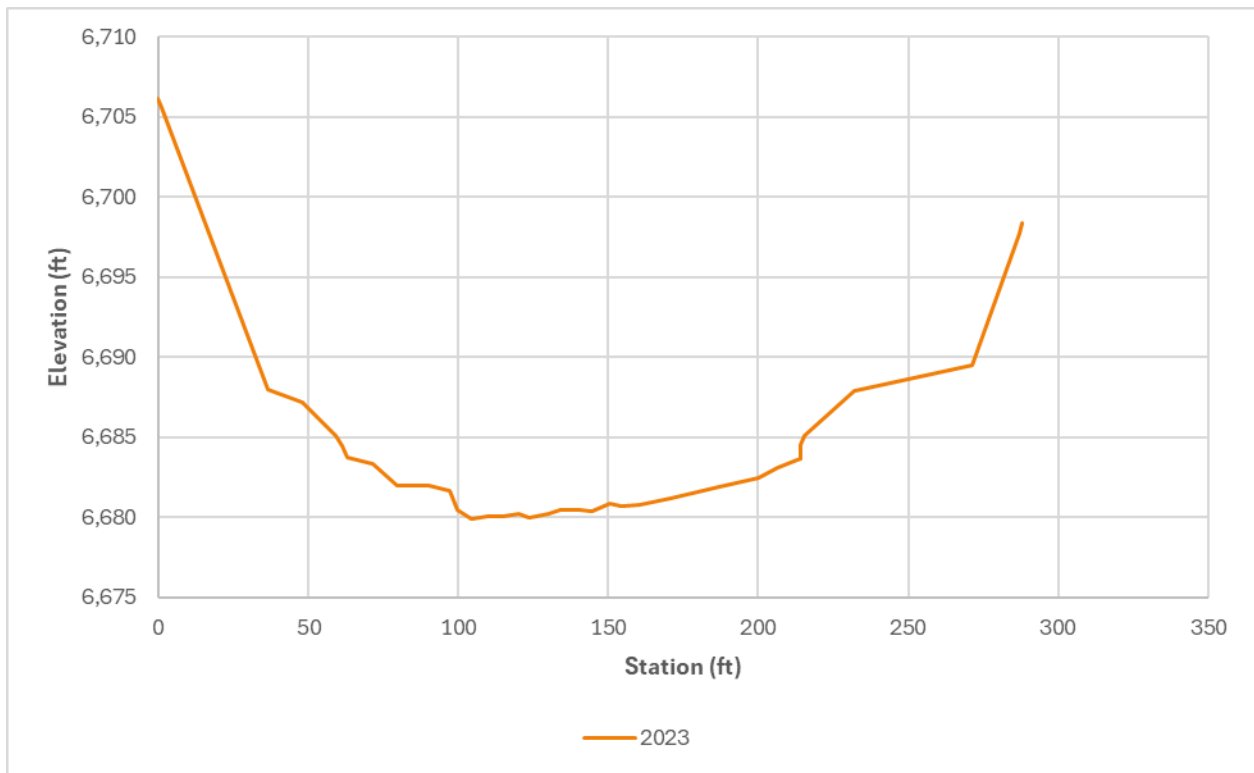
**Figure 3.4 Radium Riffle Cross-section**



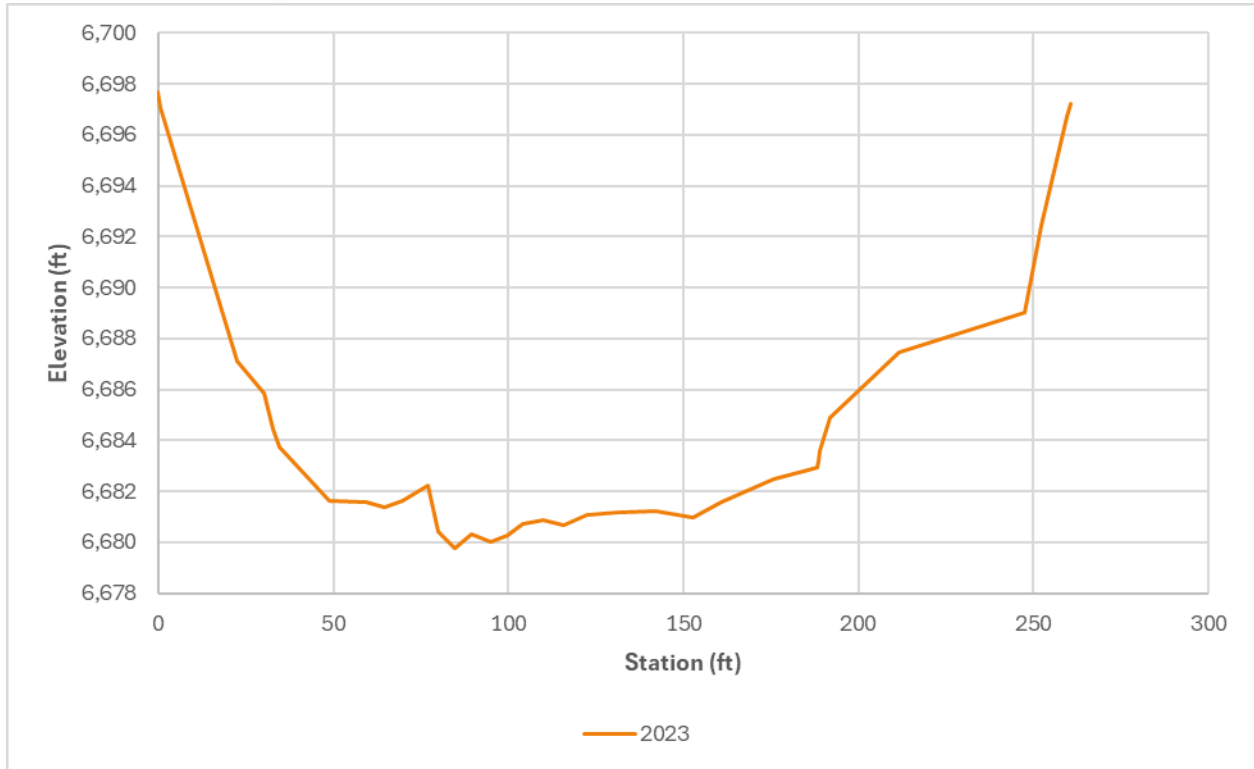
**Figure 3.5 Radium Pool Cross-section****Figure 3.6 Radium Run Cross-section**



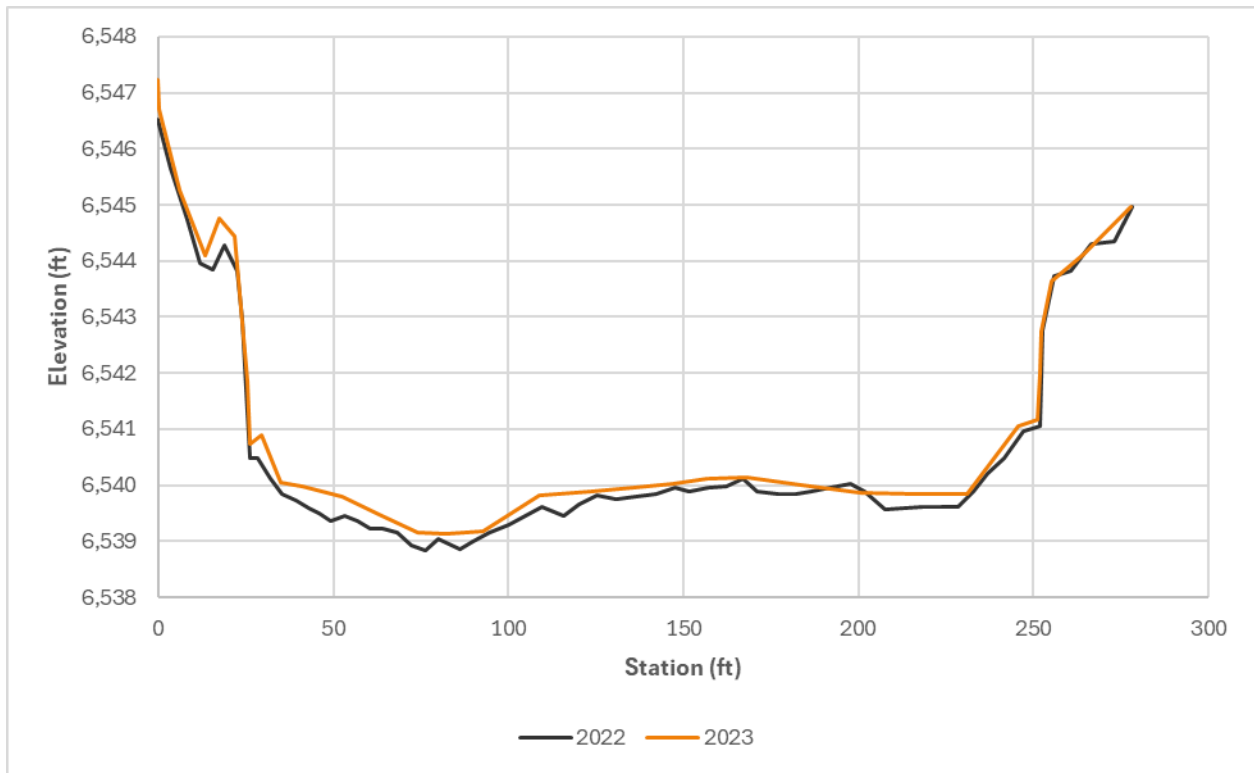
**Figure 3.7 State Bridge Riffle Cross-section**



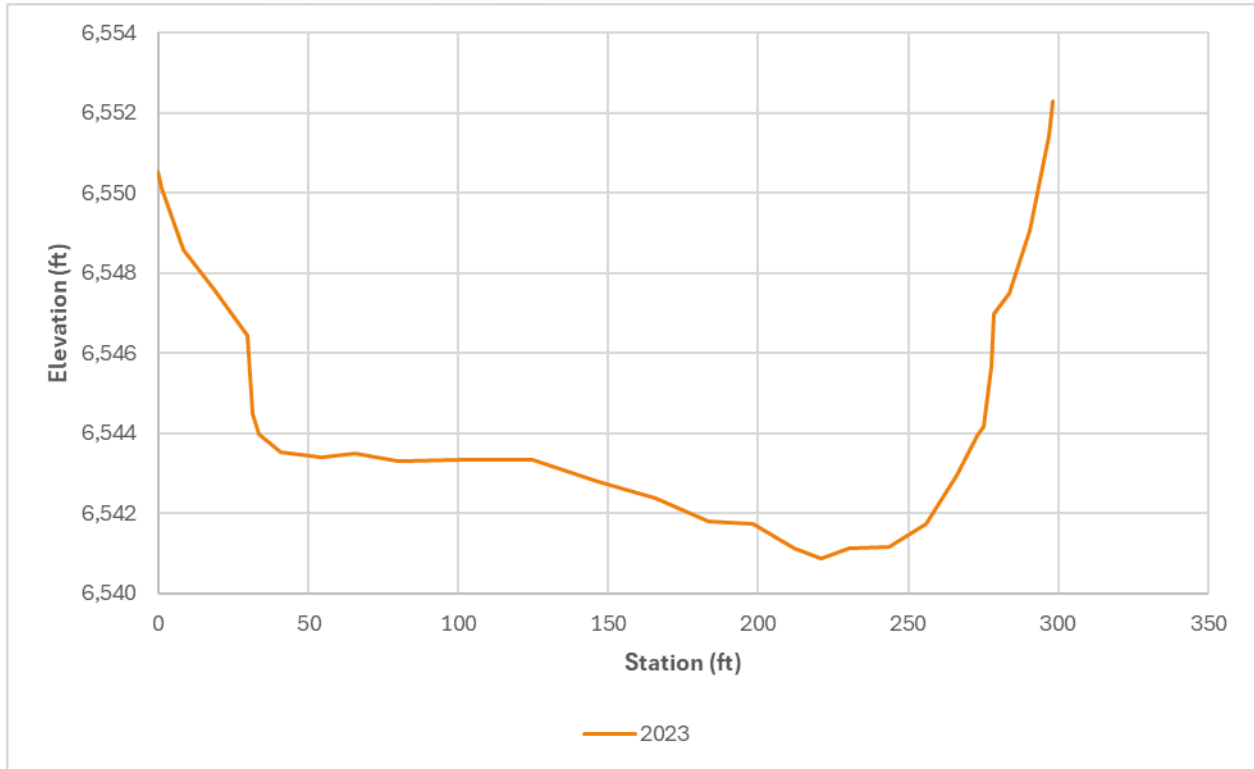
**Figure 3.8 State Bridge Pool Cross-section**



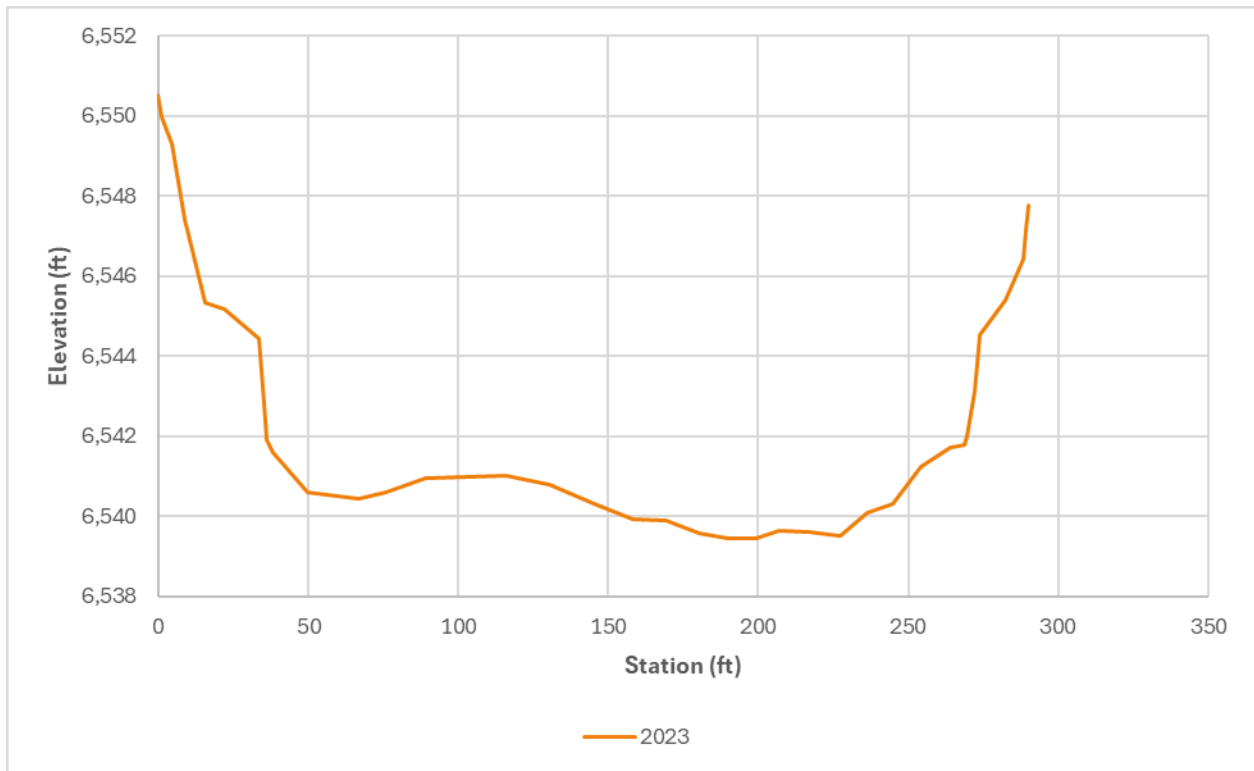
**Figure 3.9 State Bridge Run Cross-section**



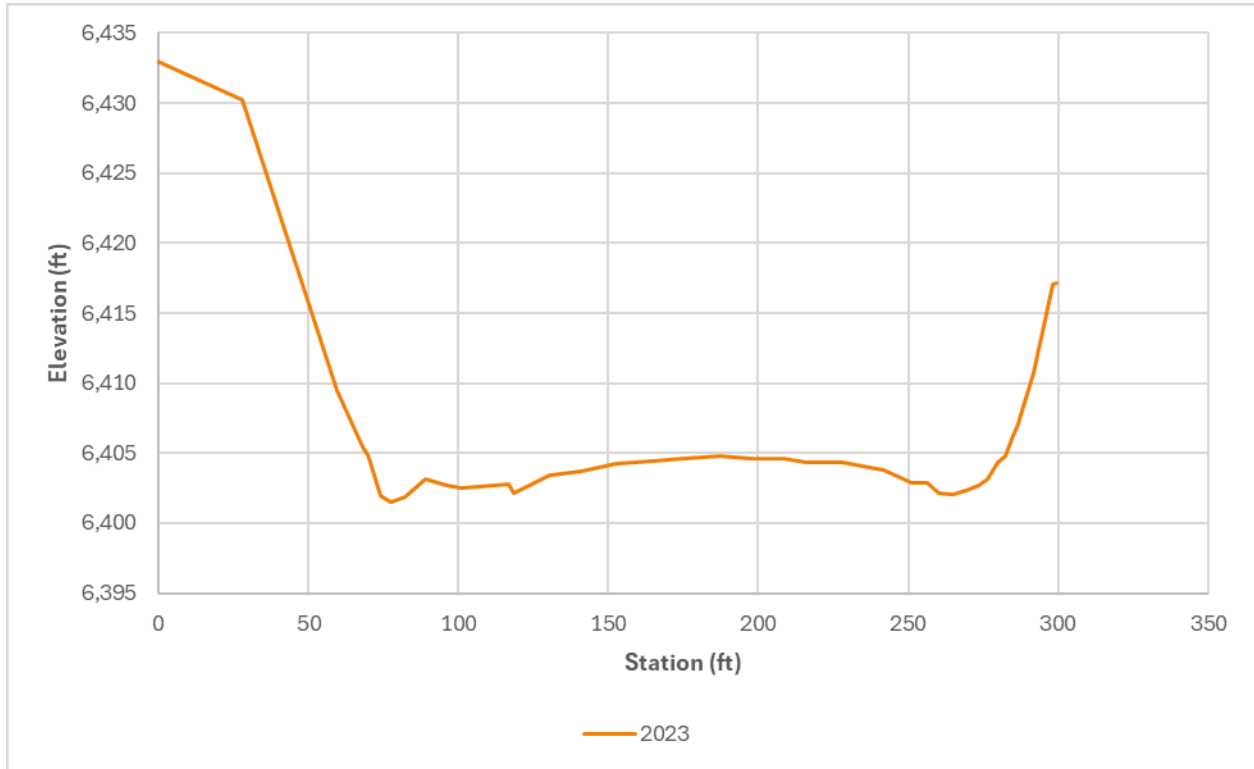
**Figure 3.10 Catamount Riffle Cross-section**



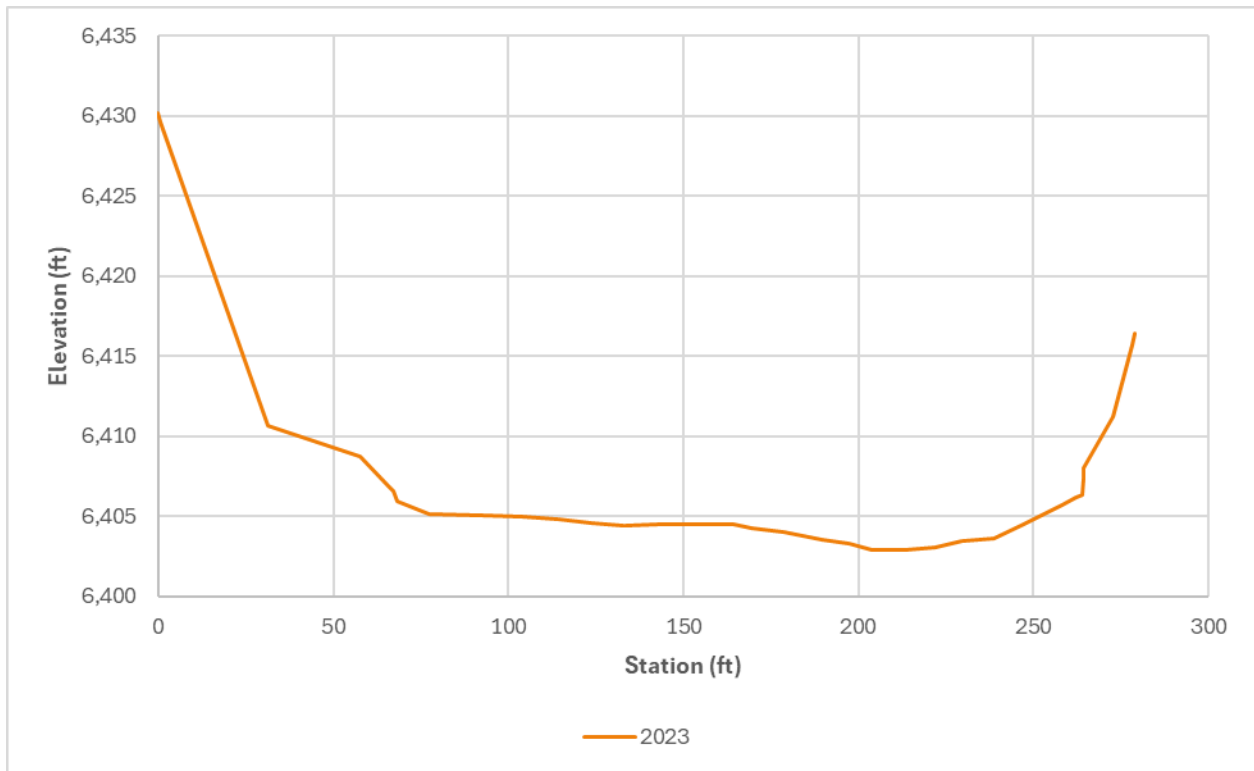
**Figure 3.11 Catamount Pool Cross-section**



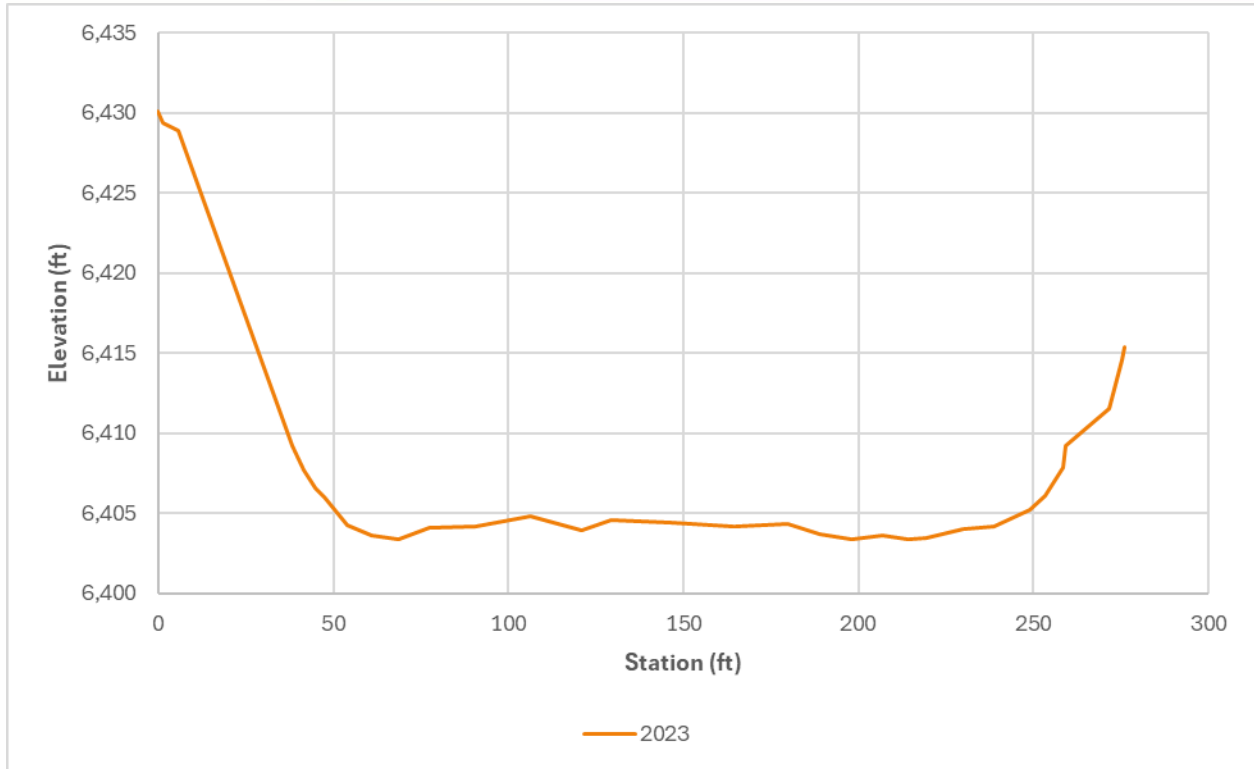
**Figure 3.12 Catamount Run Cross-section**



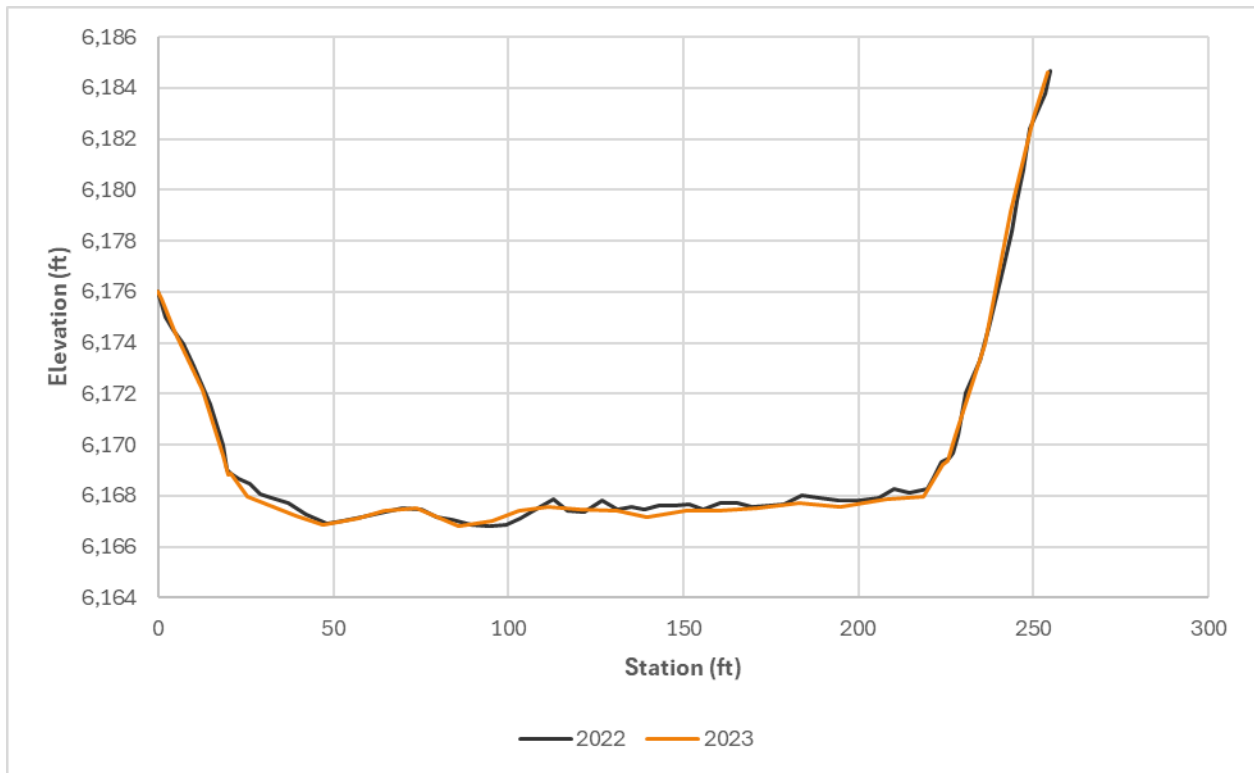
**Figure 3.13 Derby Riffle Cross-section**



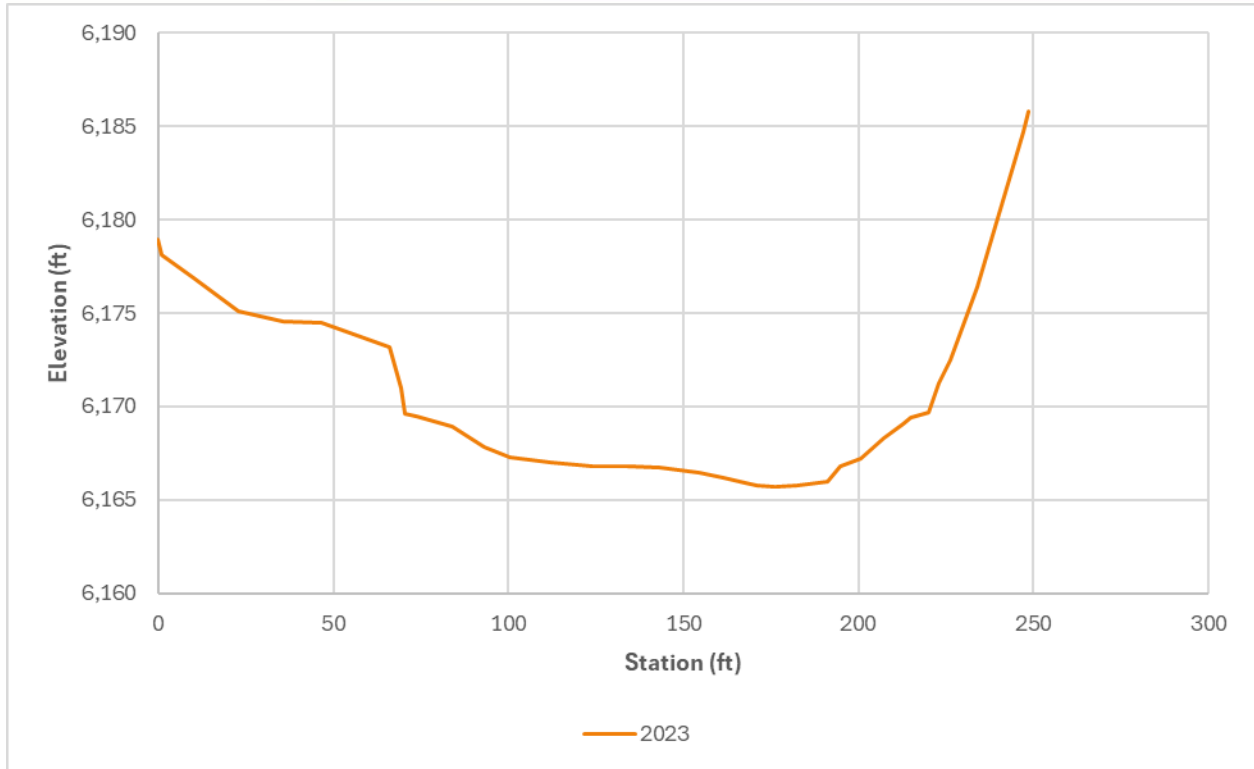
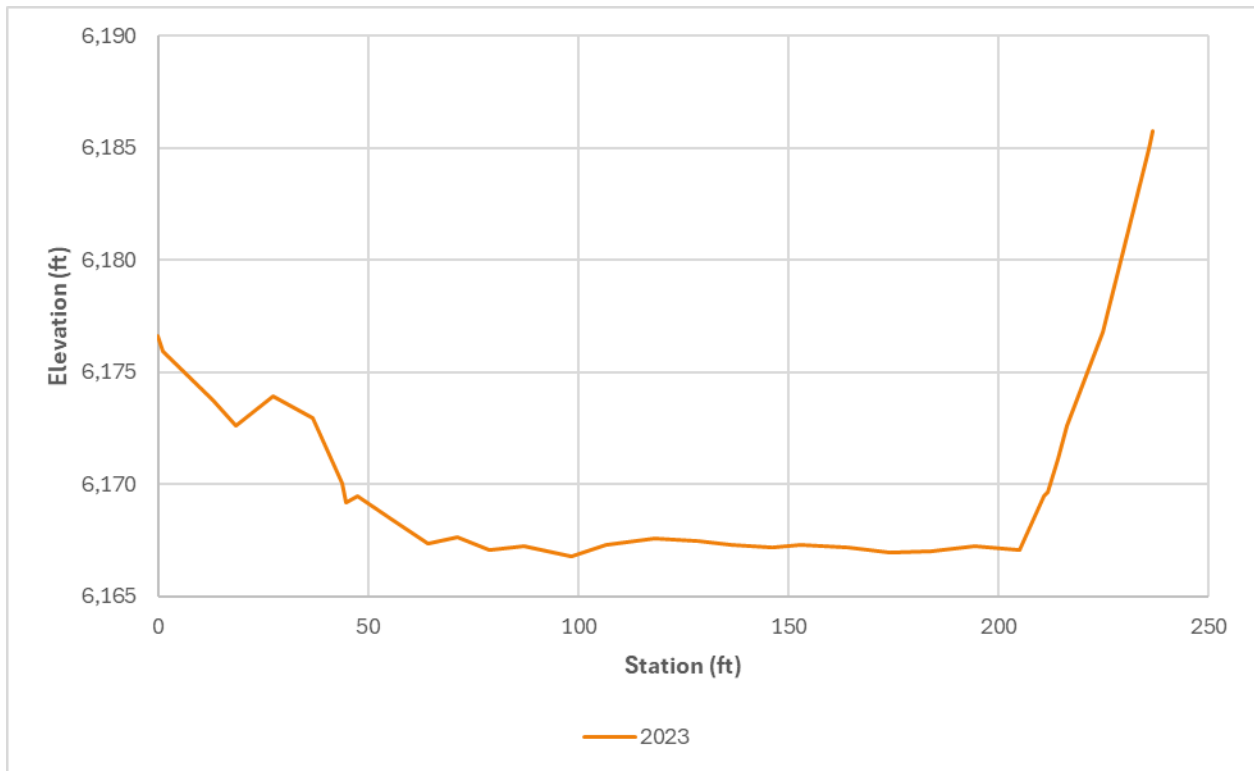
**Figure 3.14 Derby Pool Cross-section**



**Figure 3.15 Derby Run Cross-section**



**Figure 3.16 Sweetwater Riffle Cross-section**

**Figure 3.17 Sweetwater Pool Cross-section****Figure 3.18 Sweetwater Run Cross-section**

Tabulated data from the 2023 cross-sectional survey is provided in **Appendix A**.

As part of cross-sectional surveys, the width of the riparian area along the left and right bank of cross sections was measured. Measured widths are presented in **Table 3.1**.

**Table 3.1 Riparian Widths at Monitored Cross-sections**

<b>Site Name</b>	<b>Cross Section</b>	<b>Left Bank Riparian Corridor Width (ft)</b>	<b>Right Bank Riparian Corridor Width (feet)</b>
<b>Pumphouse</b>	Glide	150	34
<b>Pumphouse</b>	Pool	10	24
<b>Pumphouse</b>	Riffle	6	76
<b>Radium</b>	Glide	27	1
<b>Radium</b>	Pool	85	1
<b>Radium</b>	Riffle	46	2
<b>State Bridge</b>	Glide	10	63
<b>State Bridge</b>	Pool	25	57
<b>State Bridge</b>	Riffle	8	8
<b>Catamount</b>	Glide	26	18
<b>Catamount</b>	Pool	23	6
<b>Catamount</b>	Riffle	25	25
<b>Derby</b>	Glide	34	9
<b>Derby</b>	Pool	4	13
<b>Derby</b>	Riffle	9	7
<b>Sweetwater</b>	Glide	44	10
<b>Sweetwater</b>	Pool	69	11
<b>Sweetwater</b>	Riffle	14	16

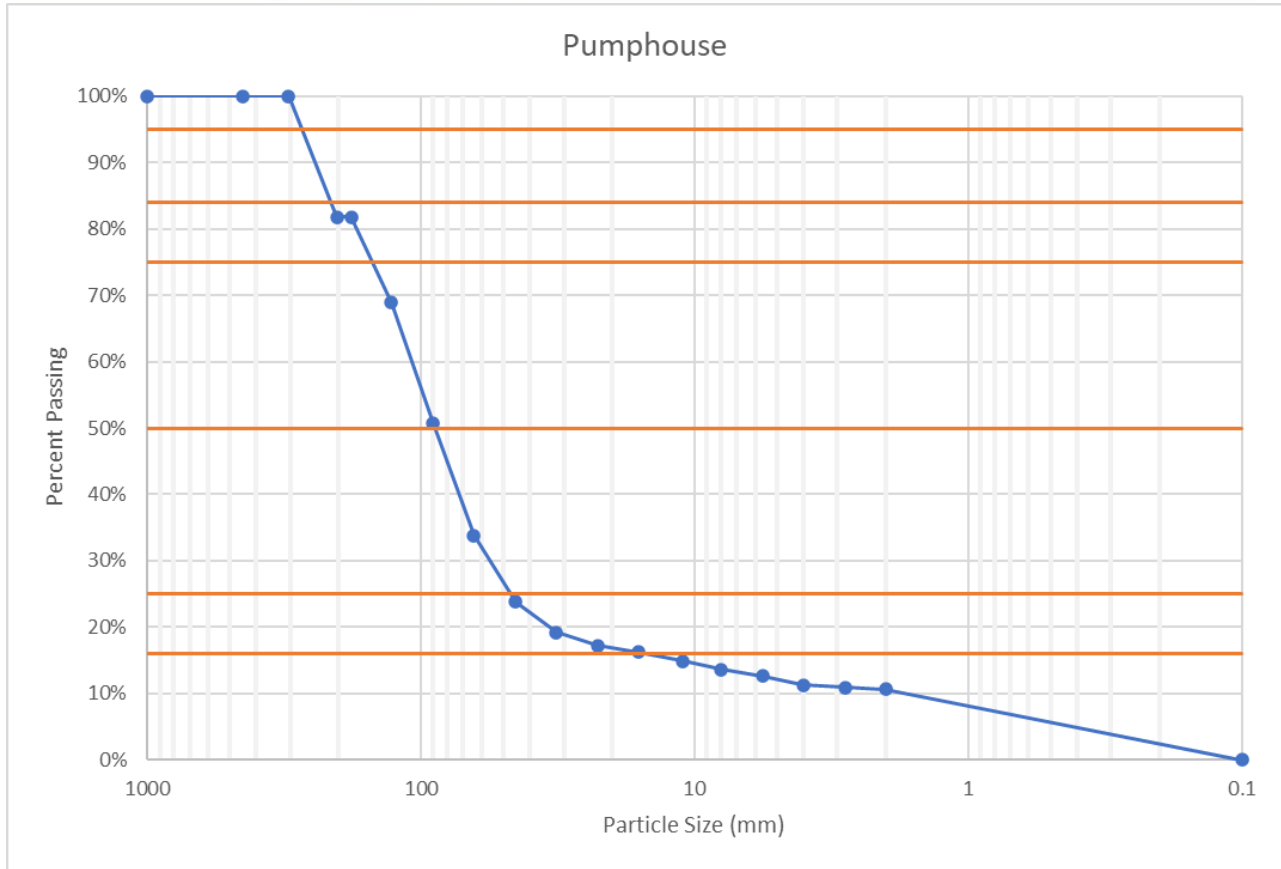
## 4.0 Sediment Sampling Results

Individual sediment particles sampled as part of the pebble count were graphed to present a cumulative distribution. From the graphs, the sized material associated with the D16, and D95 could be determined. The percent fines, which is defined as the portion of material smaller than 2 mm and the percent coarse, defined as the portion of material larger than 8 mm, were determined. Gradations determined at the six sites are presented in **Figures 4.1 – 4.6**. The number of particles in each size bin, cumulative percent finer and different particles sizes and percent fines and coarse material determined at each site are summarized in **Tables 4.1 – 4.12**.



Table 4.1 Pumphouse Riffle Pebble Count Results

Pumphouse Riffle				
Passing Screen		Lower Riffle		
Size (mm)	Size (IN)	Count	%	Cumulative % Finer
2	0.08	32	10.60	10.60
2.8	0.11	1	0.33	10.93
4	0.16	1	0.33	11.26
5.6	0.22	4	1.32	12.58
8	0.31	3	0.99	13.58
11	0.43	4	1.32	14.90
16	0.63	4	1.32	16.23
22.6	0.89	3	0.99	17.22
32	1.26	6	1.99	19.21
45	1.77	14	4.64	23.84
64	2.52	30	9.93	33.77
90	3.54	51	16.89	50.66
128	5.04	55	18.21	68.87
180	7.09	39	12.91	81.79
203	7.99	0	0.00	81.79
305	12.01	55	18.21	100.00
<b>Total</b>		<b>302</b>	<b>100.00</b>	



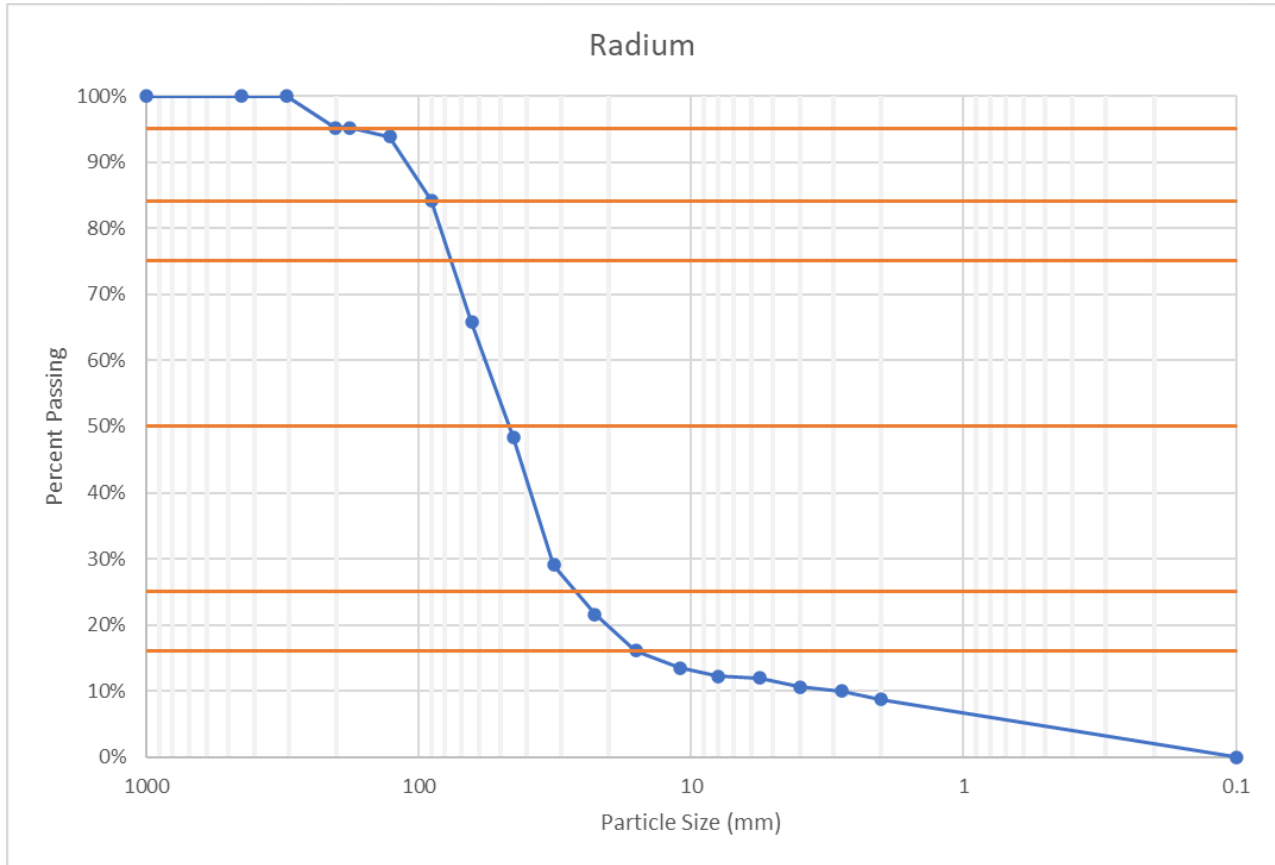
**Figure 4.1 Pumphouse Riffle Pebble Count Gradation**

**Table 4.2 Pumphouse Riffle Pebble Count Particle Size Distribution**

Parameter	Result (mm)
D <sub>16</sub>	14
D <sub>25</sub>	48
D <sub>50</sub>	90
D <sub>75</sub>	150
D <sub>84</sub>	205
D <sub>95</sub>	280
<2 mm (% Fines)	11%
<8 mm	14%
>8mm (% Coarse)	86%

**Table 4.3 Radium Riffle Pebble Count Results**

Radium Existing Riffle				
Passing Screen		Lower Riffle		
Size (mm)	Size (IN)	Count	%	Cumulative % Finer
2	0.08	27	8.71	8.71
2.8	0.11	4	1.29	10.00
4	0.16	2	0.65	10.65
5.6	0.22	4	1.29	11.94
8	0.31	1	0.32	12.26
11	0.43	4	1.29	13.55
16	0.63	8	2.58	16.13
22.6	0.89	17	5.48	21.61
32	1.26	23	7.42	29.03
45	1.77	60	19.35	48.39
64	2.52	54	17.42	65.81
90	3.54	57	18.39	84.19
128	5.04	30	9.68	93.87
180	7.09	4	1.29	95.16
203	7.99	0	0.00	95.16
305	12.01	15	4.84	100.00
<b>Total</b>		<b>310</b>	<b>100.00</b>	



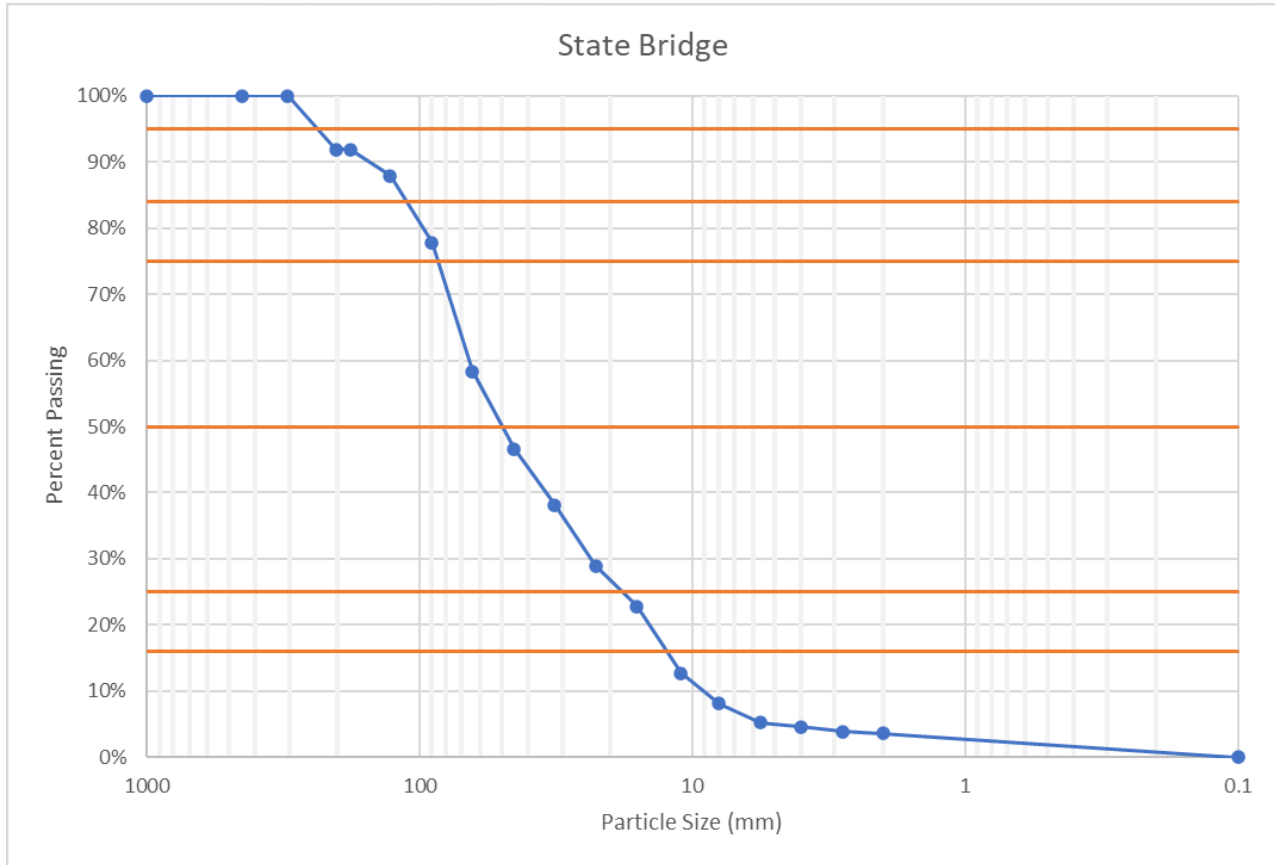
**Figure 4.2 Radium Riffle Pebble Count Gradation**

**Table 4.4 Radium Riffle Pebble Count Particle Size Distribution**

Parameter	Result (mm)
D <sub>16</sub>	17
D <sub>25</sub>	32
D <sub>50</sub>	46
D <sub>75</sub>	76
D <sub>84</sub>	90
D <sub>95</sub>	200
<2 mm (% Fines)	9%
<8 mm	12%
>8mm (% Coarse)	88%

Table 4.5 State Bridge Riffle Pebble Count Results

State Bridge Existing Riffle				
Passing Screen		Lower Riffle		
Size (mm)	Size (IN)	Count	%	Cumulative % Finer
2	0.08	11	3.58	3.58
2.8	0.11	1	0.33	3.91
4	0.16	2	0.65	4.56
5.6	0.22	2	0.65	5.21
8	0.31	9	2.93	8.14
11	0.43	14	4.56	12.70
16	0.63	31	10.10	22.80
22.6	0.89	19	6.19	28.99
32	1.26	28	9.12	38.11
45	1.77	26	8.47	46.58
64	2.52	36	11.73	58.31
90	3.54	60	19.54	77.85
128	5.04	31	10.10	87.95
180	7.09	12	3.91	91.86
203	7.99	0	0.00	91.86
305	12.01	25	8.14	100.00
<b>Total</b>		<b>307</b>	<b>100.00</b>	



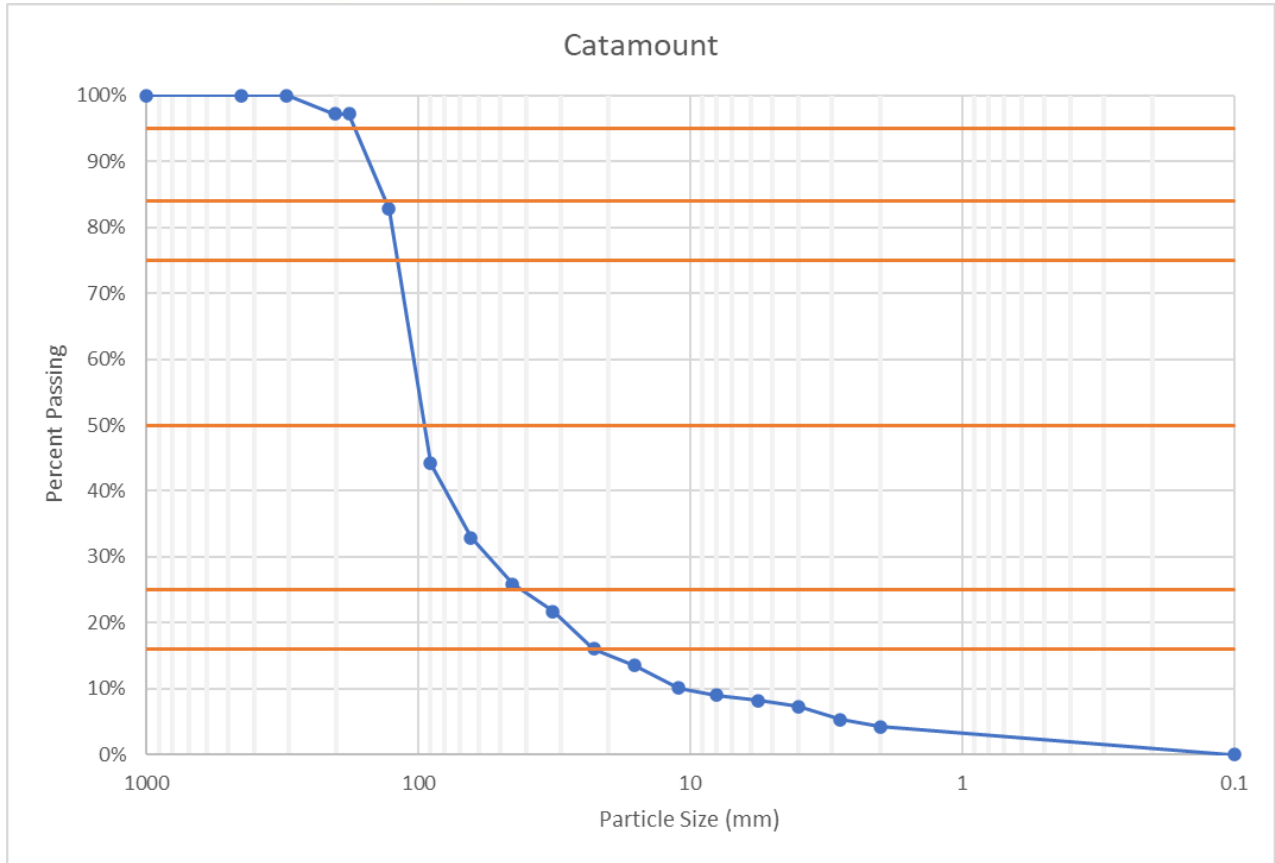
**Figure 4.3 State Bridge Riffle Pebble Count Gradation**

**Table 4.6 State Bridge Riffle Pebble Count Particle Size Distribution**

Parameter	Result (mm)
D <sub>16</sub>	13
D <sub>25</sub>	18
D <sub>50</sub>	50
D <sub>75</sub>	86
D <sub>84</sub>	110
D <sub>95</sub>	240
<2 mm (% Fines)	4%
<8 mm	8%
>8mm (% Coarse)	92%

Table 4.7 Catamount Riffle Pebble Count Results

Catamount Existing Riffle				
Passing Screen		Lower Riffle		
Size (mm)	Size (IN)	Count	%	Cumulative % Finer
2	0.08	15	4.23	4.23
2.8	0.11	4	1.13	5.35
4	0.16	7	1.97	7.32
5.6	0.22	3	0.85	8.17
8	0.31	3	0.85	9.01
11	0.43	4	1.13	10.14
16	0.63	12	3.38	13.52
22.6	0.89	9	2.54	16.06
32	1.26	20	5.63	21.69
45	1.77	15	4.23	25.92
64	2.52	25	7.04	32.96
90	3.54	40	11.27	44.23
128	5.04	137	38.59	82.82
180	7.09	51	14.37	97.18
203	7.99	0	0.00	97.18
305	12.01	10	2.82	100.00
<b>Total</b>		<b>355</b>	<b>100.00</b>	



**Figure 4.4 Catamount Riffle Pebble Count Gradation**

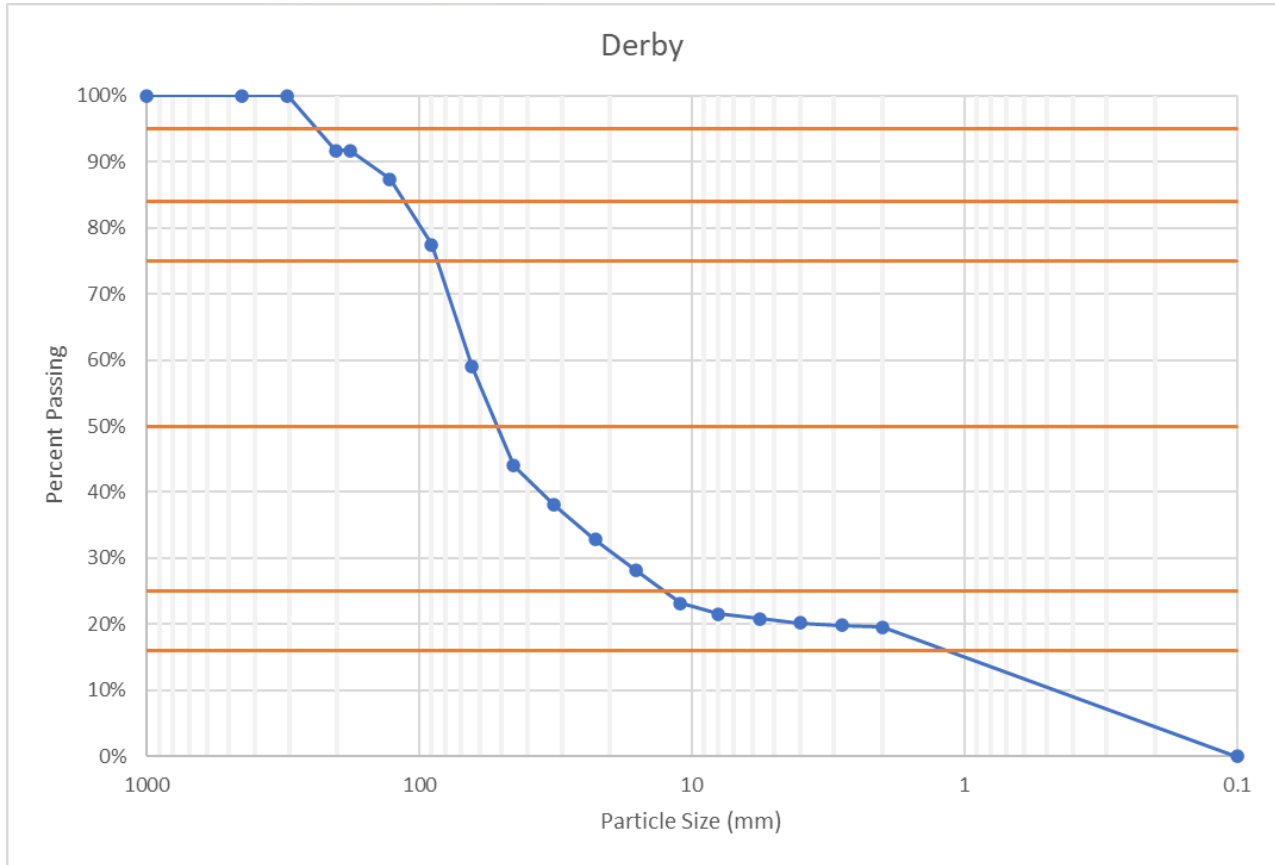
**Table 4.8 Catamount Riffle Pebble Count Particle Size Distribution**

Parameter	Result (mm)
D <sub>16</sub>	23
D <sub>25</sub>	43
D <sub>50</sub>	92
D <sub>75</sub>	110
D <sub>84</sub>	129
D <sub>95</sub>	170
<2 mm (% Fines)	4%
<8 mm	9%
>8mm (% Coarse)	91%



**Table 4.9 Derby Riffle Pebble Count Results**

Derby Existing Riffle				
Passing Screen		Lower Riffle		
Size (mm)	Size (IN)	Count	%	Cumulative % Finer
2	0.08	59	19.54	19.54
2.8	0.11	1	0.33	19.87
4	0.16	1	0.33	20.20
5.6	0.22	2	0.66	20.86
8	0.31	2	0.66	21.52
11	0.43	5	1.66	23.18
16	0.63	15	4.97	28.15
22.6	0.89	14	4.64	32.78
32	1.26	16	5.30	38.08
45	1.77	18	5.96	44.04
64	2.52	45	14.90	58.94
90	3.54	56	18.54	77.48
128	5.04	30	9.93	87.42
180	7.09	13	4.30	91.72
203	7.99	0	0.00	91.72
305	12.01	25	8.28	100.00
<b>Total</b>		<b>302</b>	<b>100.00</b>	



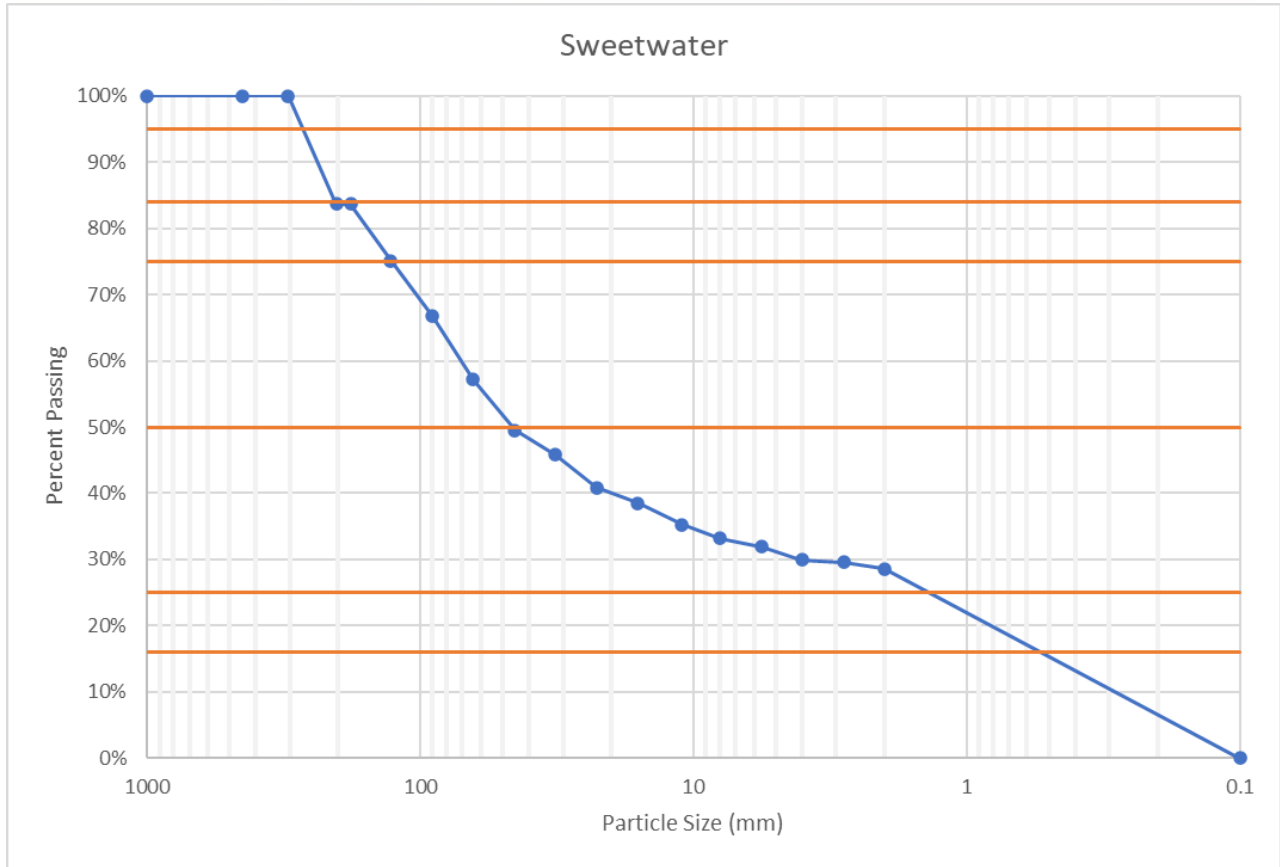
**Figure 4.5 Derby Riffle Pebble Count Gradation**

**Table 4.10 Derby Riffle Pebble Count Particle Size Distribution**

Parameter	Result (mm)
D <sub>16</sub>	1
D <sub>25</sub>	12
D <sub>50</sub>	51
D <sub>75</sub>	88
D <sub>84</sub>	110
D <sub>95</sub>	240
<2 mm (% Fines)	20%
<8 mm	22%
>8mm (% Coarse)	78%

Table 4.11 Sweetwater Riffle Pebble Count Results

Sweetwater Existing Riffle				
Passing Screen		Lower Riffle		
Size (mm)	Size (IN)	Count	%	Cumulative % Finer
2	0.08	86	28.57	28.57
2.8	0.11	3	1.00	29.57
4	0.16	1	0.33	29.90
5.6	0.22	6	1.99	31.89
8	0.31	4	1.33	33.22
11	0.43	6	1.99	35.22
16	0.63	10	3.32	38.54
22.6	0.89	7	2.33	40.86
32	1.26	15	4.98	45.85
45	1.77	11	3.65	49.50
64	2.52	23	7.64	57.14
90	3.54	29	9.63	66.78
128	5.04	25	8.31	75.08
180	7.09	26	8.64	83.72
203	7.99	0	0.00	83.72
305	12.01	49	16.28	100.00
<b>Total</b>		<b>301</b>	<b>100.00</b>	



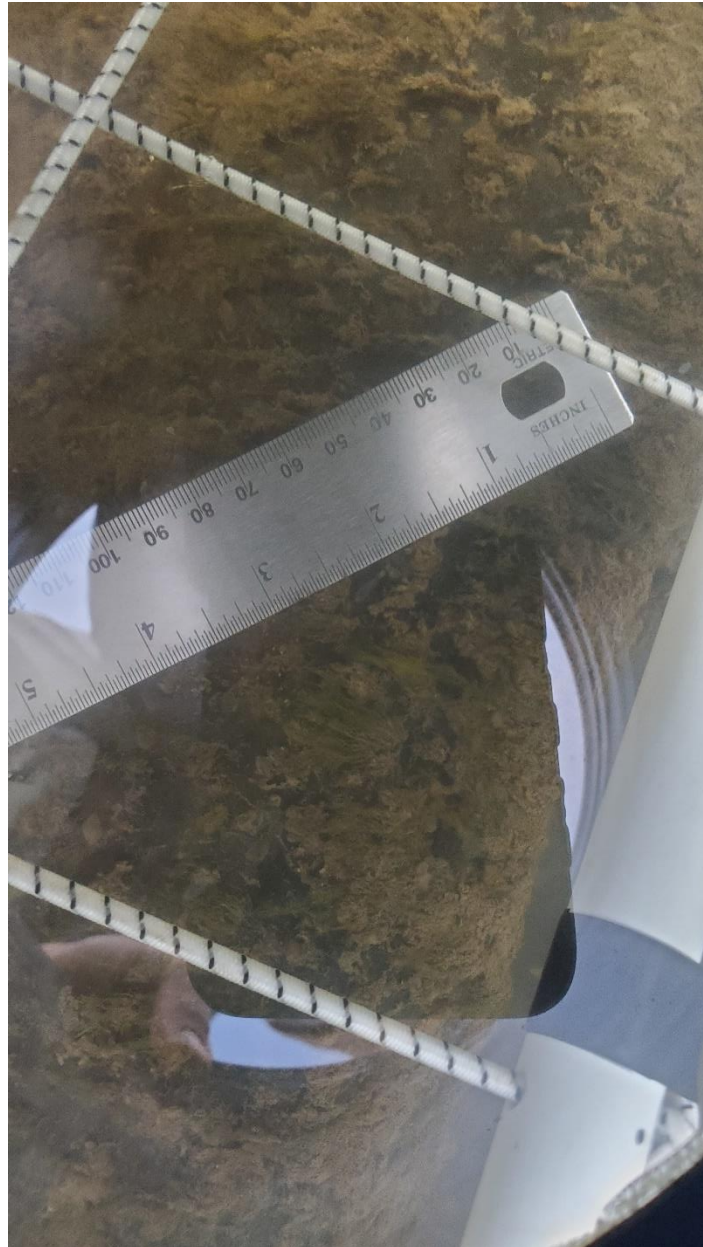
**Figure 4.6 Sweetwater Riffle Pebble Count Gradation**

**Table 4.12 Sweetwater Riffle Pebble Count Particle Size Distribution**

Parameter	Result (mm)
D <sub>16</sub>	0.5
D <sub>25</sub>	1.4
D <sub>50</sub>	46
D <sub>75</sub>	128
D <sub>84</sub>	180
D <sub>95</sub>	270
<2 mm (% Fines)	29%
<8 mm	33%
>8mm (% Coarse)	67%

## 5.0 Algae Monitoring Results

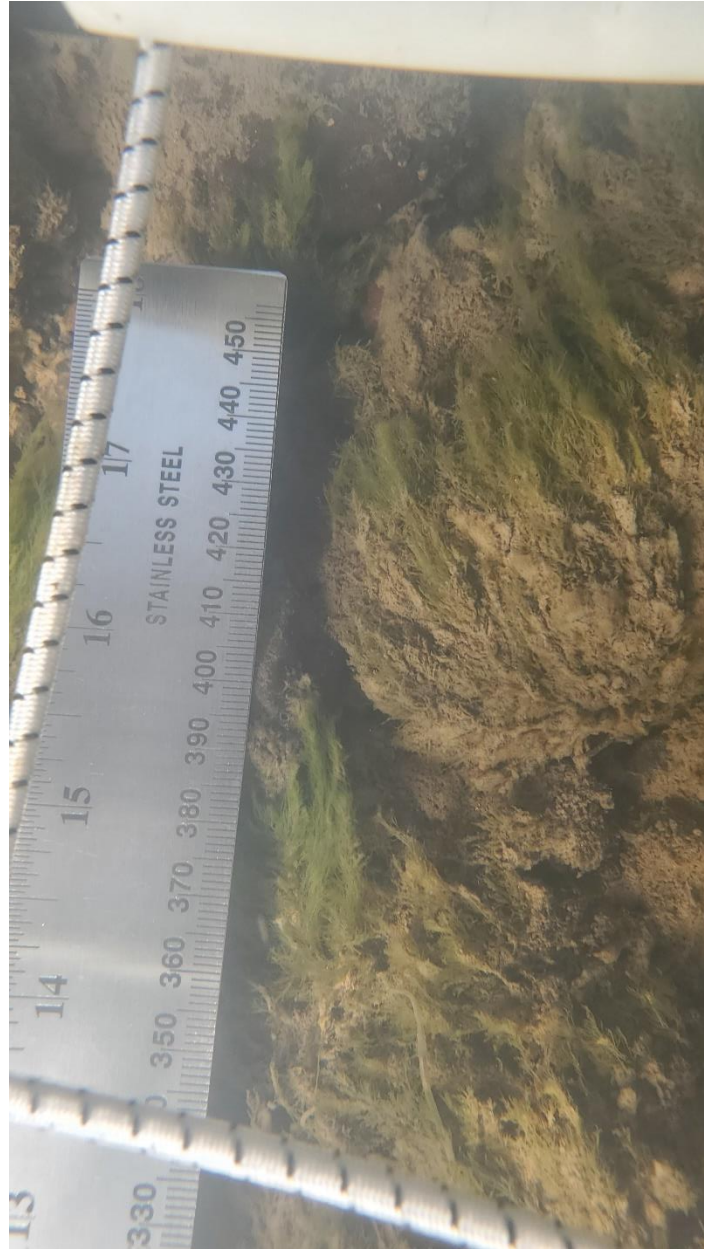
Algal cover was evaluated visually using the bucket viewer. At each of the six sites, algal cover was found to be directly related to particle size, which is in turn related to likely recent mobility. Algae was observed to be present on all larger particles (cobble and larger) and absent from finer material (small gravels and finer). Documentation of algal coverage is provided in **Photos 3 - 8**. As the images illustrate, the length of algae strands increased when progressing downstream.



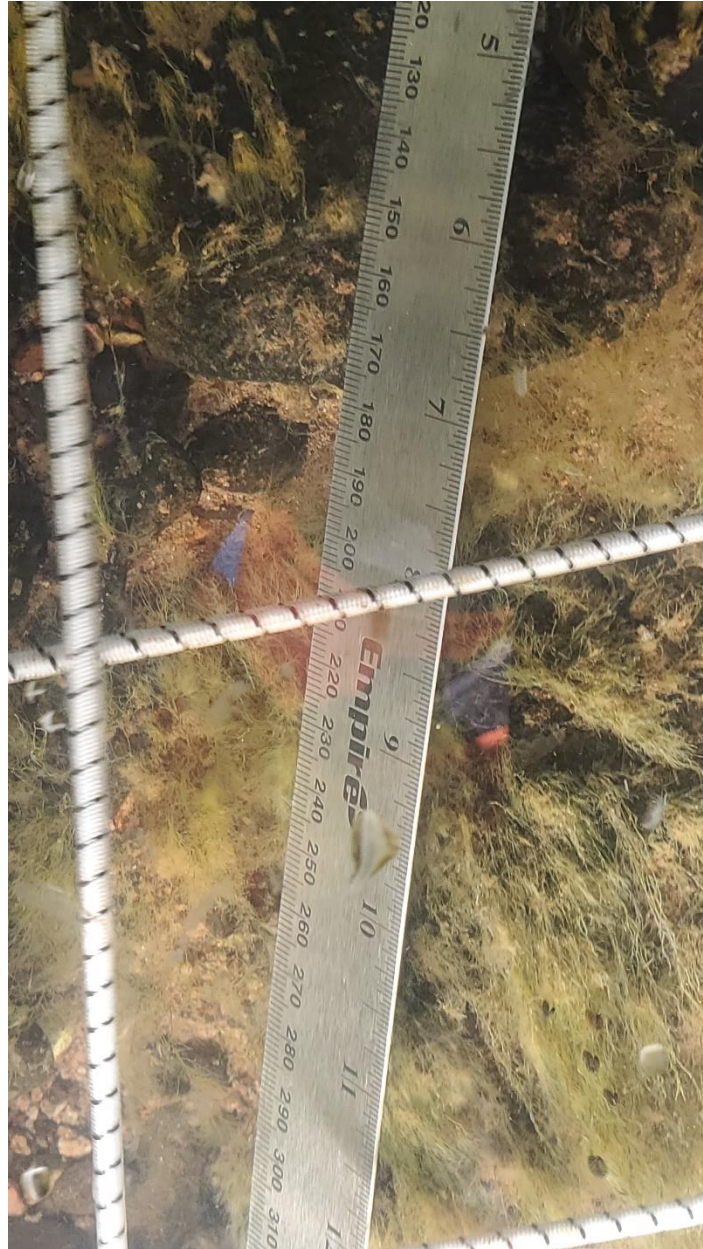
**Photo 3. Pumphouse Riffle Algae**



**Photo 4. Radium Riffle Algae**

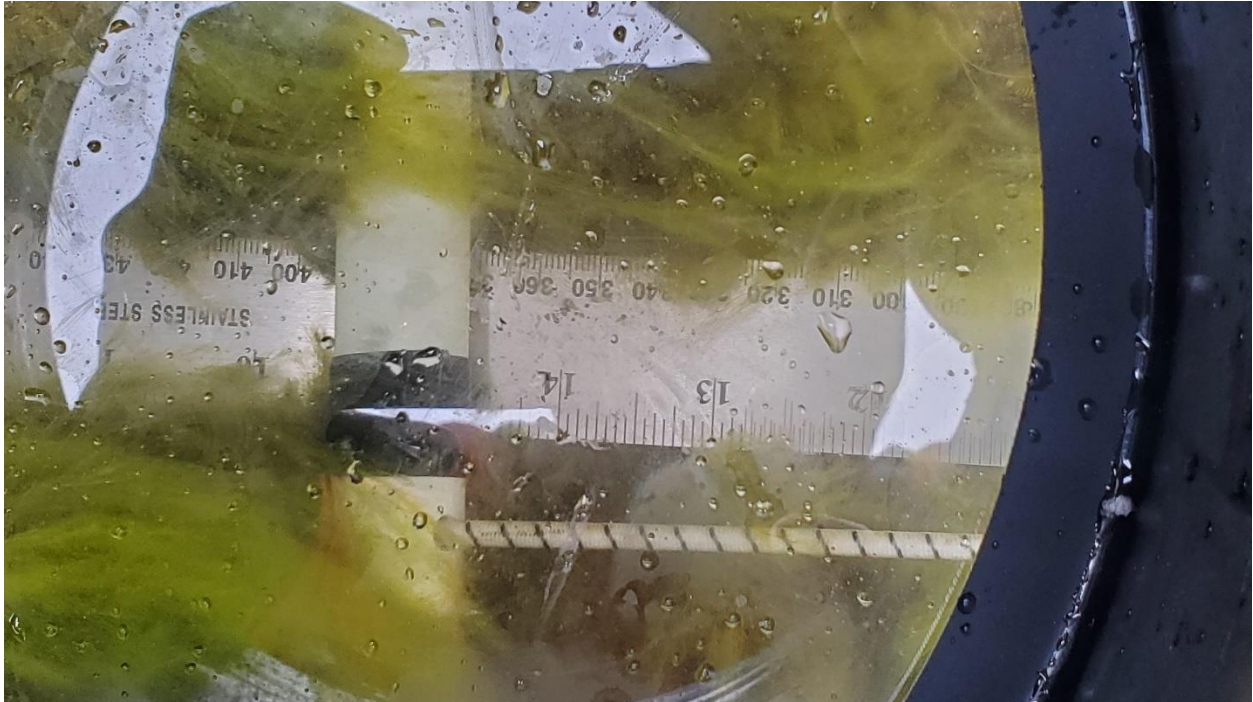


**Photo 5. State Bridge Riffle Algae**

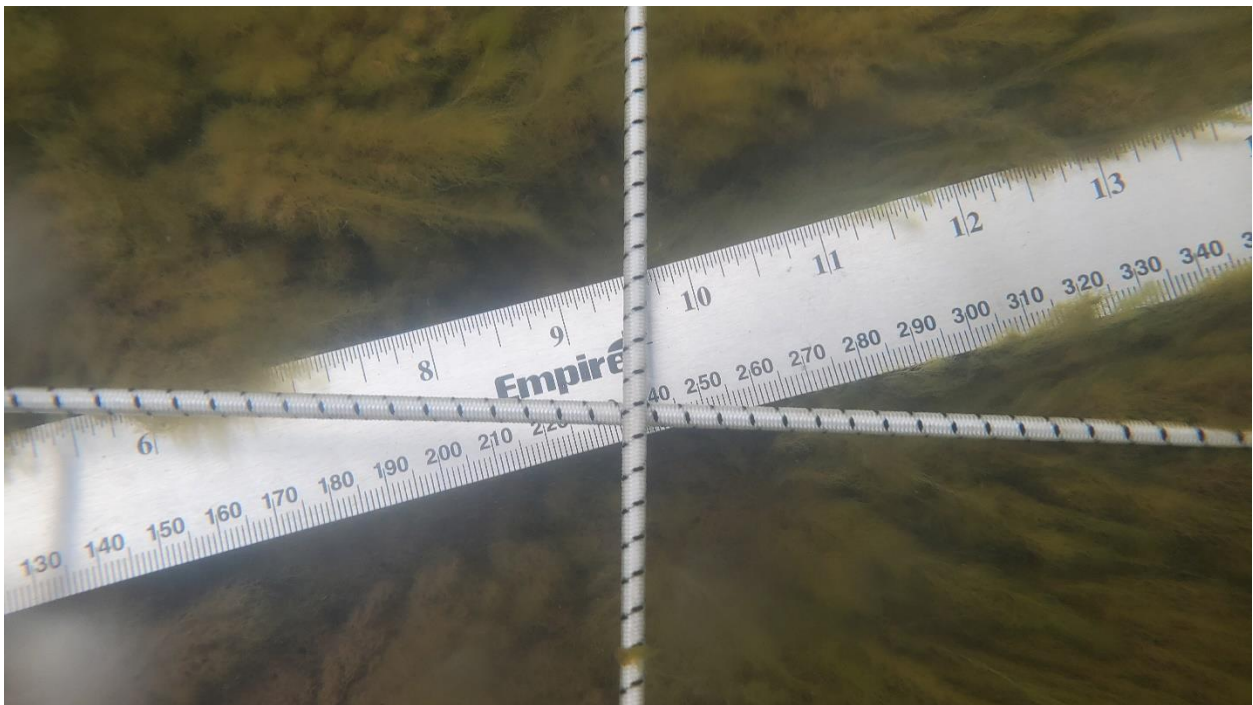


**Photo 6. Catamount Riffle Algae**





**Photo 7. Derby Riffle Algae**



**Photo 8. Sweetwater Riffle Algae**

## 6.0 Embeddedness Results

Embeddedness was quantified by comparing the total size of rocks to the portion of the rock that is buried below the surface. This was accomplished by measuring 15 individual particles from the riffle section at each of the six sites. Results obtained from individual rocks as well as averages at each site are presented in **Tables 6.1 – 6.6**.

**Table 6.1 Pumphouse Riffle Embeddedness**

Pumphouse				
Embeddedness				
	In (mm)	Out (mm)	Total (mm)	Embed (%)
1	90	50	140	64%
2	70	35	105	67%
3	85	10	95	89%
4	60	35	95	63%
5	100	20	120	83%
6	60	40	100	60%
7	140	40	180	78%
8	45	40	85	53%
9	50	60	110	45%
10	60	50	110	55%
11	60	40	100	60%
12	70	40	110	64%
13	50	80	130	38%
14	70	40	110	64%
15	40	40	80	50%
<b>Avg</b>	70	41	111	62%

Table 6.2 Radium Riffle Embeddedness

Radium				
Embeddenness				
	In (mm)	Out (mm)	Total (mm)	Embed (%)
1	30	40	70	43%
2	55	30	85	65%
3	65	40	105	62%
4	35	40	75	47%
5	95	50	145	66%
6	70	35	105	67%
7	55	75	130	42%
8	30	20	50	60%
9	50	20	70	71%
10	55	25	80	69%
11	40	20	60	67%
12	50	20	70	71%
13	25	10	35	71%
14	55	20	75	73%
15	60	80	140	43%
<b>Avg</b>	51	35	86	61%

Table 6.3 State Bridge Riffle Embeddedness

State Bridge				
Embeddenness				
	In (mm)	Out (mm)	Total (mm)	Embed (%)
1	20	30	50	40%
2	35	15	50	70%
3	120	15	135	89%
4	60	60	120	50%
5	40	40	80	50%
6	50	50	100	50%
7	45	45	90	50%
8	60	20	80	75%
9	35	90	125	28%
10	45	25	70	64%
11	60	45	105	57%
12	40	75	115	35%
13	20	40	60	33%
14	30	60	90	33%
15	50	40	90	56%
<b>Avg</b>	47	43	91	52%

Table 6.4 Catamount Riffle Embeddedness

Catamount				
Embeddenness				
	In (mm)	Out (mm)	Total (mm)	Embed (%)
1	50	50	100	50%
2	30	25	55	55%
3	40	50	90	44%
4	25	30	55	45%
5	55	40	95	58%
6	60	25	85	71%
7	50	40	90	56%
8	45	20	65	69%
9	55	50	105	52%
10	25	50	75	33%
11	50	30	80	63%
12	50	40	90	56%
13	60	50	110	55%
14	25	50	75	33%
15	65	40	105	62%
<b>Avg</b>	46	39	85	53%

Table 6.5 Derby Riffle Embeddedness

Derby				
Embeddenness				
	In (mm)	Out (mm)	Total (mm)	Embed (%)
1	35	45	80	44%
2	40	35	75	53%
3	50	60	110	45%
4	30	15	45	67%
5	70	20	90	78%
6	80	20	100	80%
7	120	20	140	86%
8	50	10	60	83%
9	45	20	65	69%
10	60	10	70	86%
11	110	25	135	81%
12	80	35	115	70%
13	60	20	80	75%
14	65	60	125	52%
15	80	50	130	62%
<b>Avg</b>	65	30	95	69%

Table 6.6 Sweetwater Riffle Embeddedness

Sweetwater				
Embeddenness				
	In (mm)	Out (mm)	Total (mm)	Embed (%)
1	40	5	45	89%
2	65	10	75	87%
3	35	10	45	78%
4	60	10	70	86%
5	60	5	65	92%
6	50	5	55	91%
7	60	5	65	92%
8	110	15	125	88%
9	40	15	55	73%
10	55	5	60	92%
11	45	5	50	90%
12	45	25	70	64%
13	100	15	115	87%
14	50	10	60	83%
15	45	10	55	82%
<b>Avg</b>	57	10	67	85%

## 7.0 Visual Observations and Photographic Documentation

Photographs taken documenting the conditions of each site at the time of the monitoring event are included in this section. Notes taken during the monitoring are provided below.

### 7.1 Pumphouse

Near the left bank, a gravel bar exists which creates a small side channel during low flow conditions. The gravel bar is comprised of large cobble approximately 4-6" in size. The channel, between the bank and sandbar, was observed to contain approximately 85% cobble and 15% fine sands. During higher flows, this side channel becomes inundated and part of the main Colorado River channel.

The left bank overstory is comprised primarily of Rocky Mountain Juniper (*Juniperus scopulorum*) and the midstory is dominated by Bebb willow (*Salix bebbiana*). The understory, generally dense, is comprised of a mixture of upland and riparian species, including redtop (*Agrostis gigantea*), creeping bentgrass (*Agrostis stolonifera*), bluejoint reedgrass (*Calamagrostis canadensis*), and alpine meadowrue (*Thalictrum alpinum*). A section of rebar was set in concrete to mark the existing riffle cross-section.

The river channel was observed to be comprised of approximately 70% cobble and 30% finer sands and sediment. Algae is present within the channel and appears to be growing primarily on the larger cobbles.

On the right bank, the overstory was minimal and consisted of the rocky mountain juniper trees, a fairly open midstory with Bebb willow and an herbaceous understory of Nebraska sedge (*Carex nebrascensis*), creeping bentgrass and bluejoint reedgrass.

The pumphouse existing riffle cross-section was marked by a t-post on either side of the river channel and marked with pink flagging.

The pool and glide cross-sections were established by ERC. The two cross-sections were marked by setting concrete rebar in concrete on either side of the river channel and were marked with pink flagging. The riparian area at the two established pool and glide cross-sections were identical to the existing USGS-marked riffle cross-section. The river channel substrate at both the pool and glide cross-sections was noted to be a 50/50 mix of cobble and gravel with fine sand.



**Photo 9. Pumphouse Riffle from Right Bank**



**Photo 10. Pumphouse Riffle from Left Bank**



**Photo 11. Pumphouse Riffle Facing Upstream**



**Photo 12. Pumphouse Riffle Facing Downstream**





**Photo 13. Pumphouse Pool from Right Bank**



**Photo 14. Pumphouse Pool from Left Bank**



**Photo 15. Pumphouse Pool Facing Upstream**



**Photo 16. Pumphouse Pool Facing Downstream**



**Photo 17. Pumphouse Glide from Right Bank**



**Photo 18. Pumphouse Glide from Left Bank**



**Photo 19. Pumphouse Glide Facing Upstream**



Photo 20. Pumphouse Glide Facing Downstream

## 7.2 Radium

At the left bank at Radium the riparian area consists of an overstory that is very sparse with Rocky Mountain maple (*Acer glabrum*). The midstory is dense with a mixture of park willow and Bebb willow present. The understory contains primarily redtop with Nebraska sedge, creeping bentgrass, and meadow barley (*Hordeum brachyantherum*). Outside of the riparian area, the upland is comprised of big sagebrush, Douglas rabbitbrush, mountain brome (*Bromus marginatus*), winterfat (*Krascheninnikovia lanata*), and yellow Sweetclover (*Melilotus officinalis*). Topography is generally level along the left bank.

The river channel, at the left bank, was observed to contain primarily fine sediment extending from the bank edge to 75 feet into the river channel. Near the right bank, the river channel bottom transitions to cobble. Algae is present within the channel and appears to be growing primarily on the cobble substrate.

The right bank is steep and comprised of sandy gravel. The riparian area is limited by the steep, rising topography. At the top of the bank and near the existing railroad tracks, big sagebrush (*Artemisia tridentata*) and Douglas rabbitbrush (*Chrysothamnus viscidiflorus*) are present with no herbaceous understory. The mid slope is comprised of narrowleaf willow (*Salix exigua*) and contains a bare herbaceous understory. Near the toe of the slope on the left bank, the midstory is comprised of planeleaf willow (*Salix planifolia*) with an understory of reed canarygrass (*Phalaris arundinacea*).

The radium existing riffle cross-section was marked by a t-post on the left bank of the river channel with pink flagging. The right bank t-post was not found during the monitoring event. ERC placed rebar set in concrete on the right bank and marked with pink flagging to mark the right bank existing riffle cross-section.

The pool and glide cross-sections were established by ERC. The two cross-sections were marked by setting concrete rebar in concrete on either side of the river channel and were marked with pink flagging. The riparian area at the two established pool and glide cross-sections were identical to the existing USGS-marked riffle cross-section. The river channel substrate at the pool and glide cross sections was noted as primarily cobble near the right bank which transitioned to a finer material near the left bank.



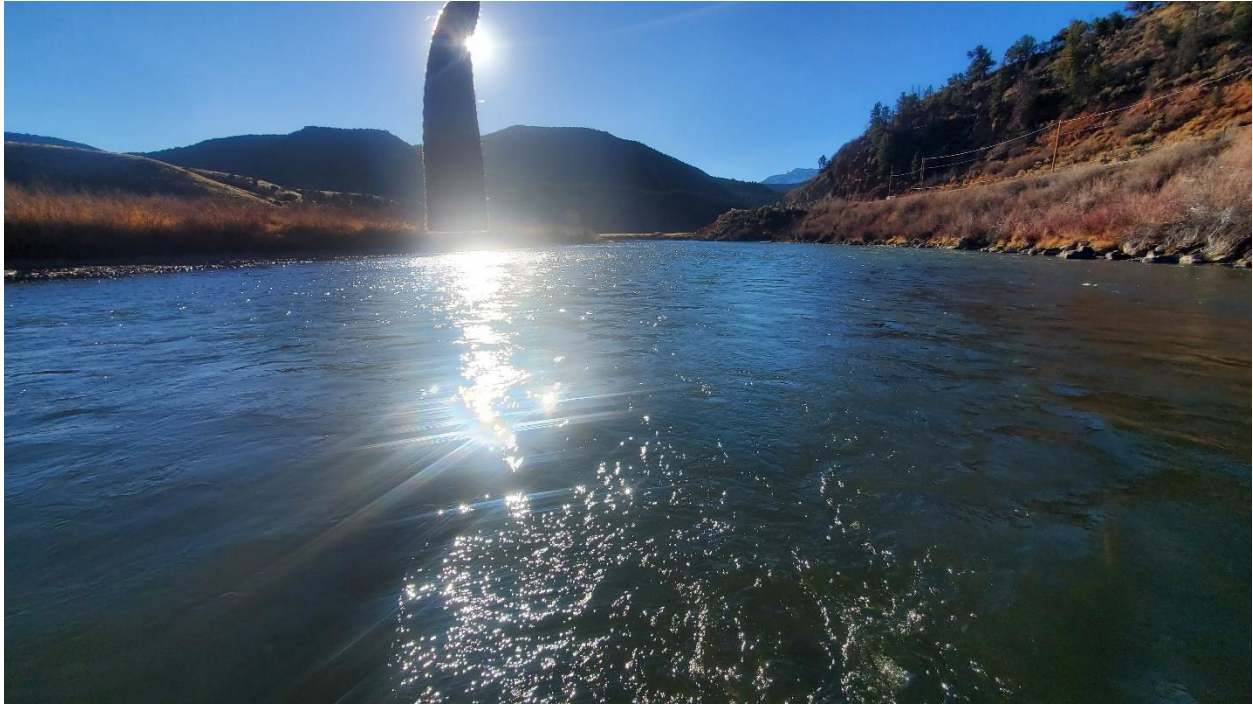
**Photo 21. Radium Riffle from Right Bank**



**Photo 22. Radium Riffle from Left Bank**



**Photo 23. Radium Riffle Facing Upstream**



**Photo 24. Radium Riffle Facing Downstream**



**Photo 25. Radium Pool from Right Bank**





**Photo 26. Radium Pool from Left Bank**



**Photo 27. Radium Pool Facing Upstream**



**Photo 28. Radium Pool Facing Downstream**



**Photo 29. Radium Glide from Right Bank**



**Photo 30. Radium Glide from Left Bank**



**Photo 31. Radium Glide Facing Upstream**



**Photo 32. Radium Glide Facing Downstream**

### 7.3 State Bridge

The left bank at State Bridge consists of a small portion of a sandy, cobbly substrate that has formed as a point bar. Immediately above the point bar and on top of the riverbank, the riparian area begins. The riparian area is comprised of Bebb willow and park willow with a limited overstory comprised of Rocky Mountain juniper, Rocky Mountain maple, and lodgepole pine. An herbaceous understory is absent along the right bank. The USGS-marked existing riffle cross-section was marked by a t-post with pink flagging.

The river channel was comprised of large cobbles. Near the center of the river channel, a cobble bar exists though still submerged by flows at the time of the monitoring. Algae is present throughout the cross-section and appears to be growing primarily on the cobble substrate.

The right bank is steep and comprised of a sandy, cobbly substrate. The existing t-post, placed by the USGS, identifies the riffle cross-section at State Bridge and is situated about halfway up the slope and between the existing railroad tracks and the riverbank. The riparian area is limited by the steep rising topography. The right bank midstory is dominated by Douglas rabbitbrush and big sagebrush with no herbaceous understory. Mid slope near the existing t-post and continuing to the toe of slope near the river channel, the midstory is comprised of a mix of upland and riparian plant species, including Douglas rabbitbrush, park willow, Bebb willow, and Scouler's willow (*Salix scouleriana*). The herbaceous understory is immediately above the top of bank, consisting primarily of redtop and creeping bentgrass.

The pool and glide cross-sections were established by ERC. The two cross-sections were marked by setting concrete rebar in concrete on either side of the river channel and were marked with pink flagging. The riparian area at the two established pool and glide cross-sections were identical to the existing USGS-

marked riffle cross-section. The river channel substrate at the pool and glide cross sections was noted as primarily cobble throughout with fine sands.



**Photo 33. State Bridge Riffle from Right Bank**



**Photo 34. State Bridge Riffle from Left Bank**



**Photo 35. State Bridge Riffle Facing Upstream**



**Photo 36. State Bridge Riffle Facing Downstream**



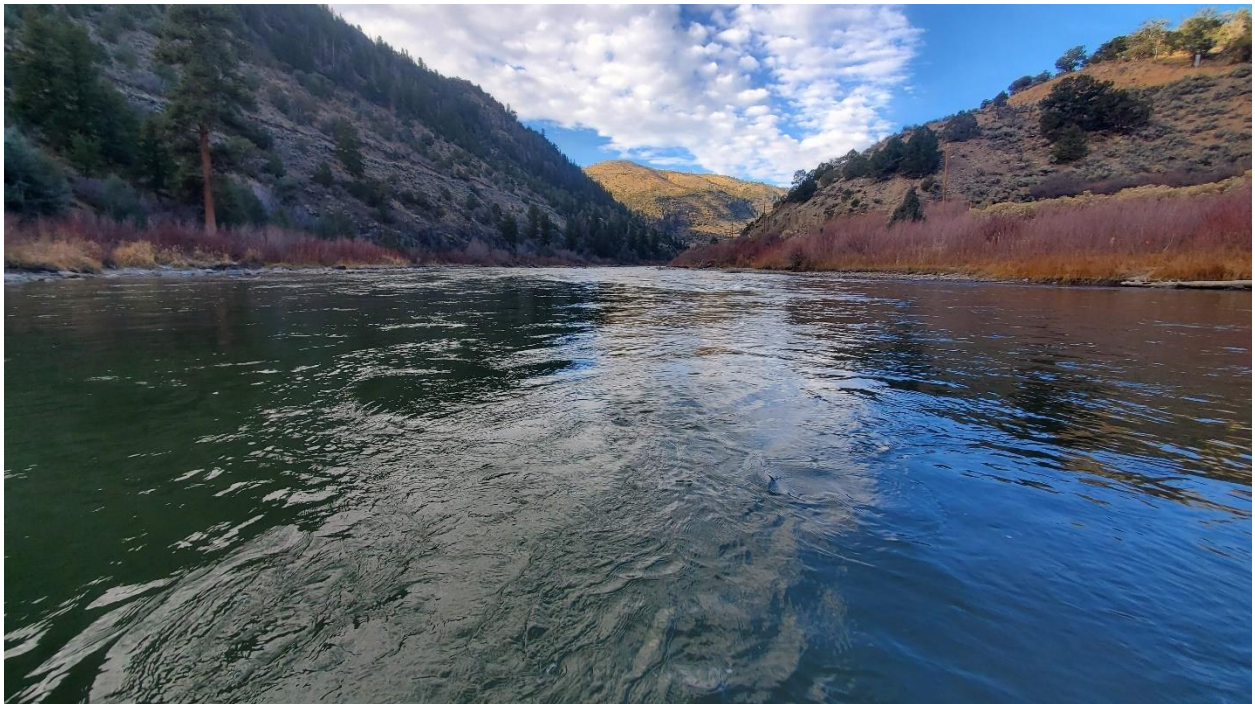
**Photo 37. State Bridge Pool from Right Bank**



**Photo 38. State Bridge Pool from Left Bank**



**Photo 39. State Bridge Pool Facing Upstream**



**Photo 40. State Bridge Pool Facing Downstream**

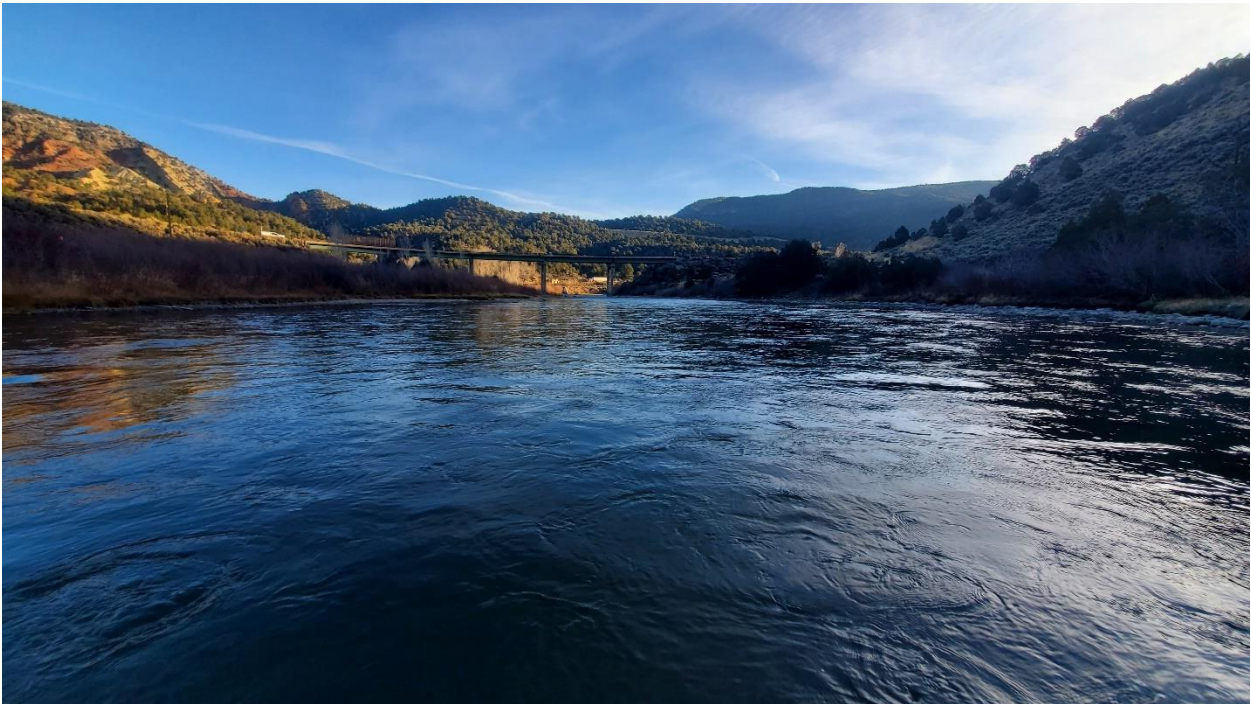




**Photo 41. State Bridge Glide from Right Bank**



**Photo 42. State Bridge Glide from Left Bank**



**Photo 43. State Bridge Glide Facing Upstream**



**Photo 44. State Bridge Glide Facing Downstream**

#### 7.4 Catamount

The left bank at Catamount consists of a short, riparian area, a sporadic midstory of Bebb willow, and an herbaceous understory of reed canarygrass. As the bank continues landward, the riparian area ends, and an upland vegetation community is observed with sandy soil. Upland plant species along the right bank consist of a midstory dominated by big sagebrush, fringed sage (*Artemisia frigida*), and an herbaceous understory comprised of Indian ricegrass (*Oryzopsis hymenoides*), western wheatgrass (*Pascopyrum smithii*), blue grama (*Bouteloua hirsuta*) and streambank wheatgrass (*Elymus lanceolatus* spp. *psammophilus*). The USGS-marked existing riffle cross-section was marked by a t-post with orange flagging.

The river channel substrate varies, with cobbles being primarily present near the left bank. Near the center of the river channel, the substrate transitions to a 70/30 cobble and sand substrate. Near the right bank, the substrate transitions again and was observed to be a 50/50 cobble and gravel substrate. Algae is present throughout the entire cross-section on the large cobble and on the smaller, gravelly substrate within the channel.

The right bank is situated at the toe of the slope from the existing railroad grade and is comprised of a sandy loam substrate. The existing t-post, placed by the USGS identifies the riffle cross-section at Catamount. The right bank riparian area contains a sparse overstory consisting of chokecherry (*Prunus virginiana*). The midstory is sporadic and is comprised primarily of Bebb Willow. The herbaceous understory is dominated by reed canarygrass.

The pool and glide cross-sections were established by ERC. The two cross-sections were marked by setting concrete rebar in concrete on either side of the river channel and were marked with pink flagging. The riparian area at the two established pool and glide cross-sections were identical to the existing USGS-marked riffle cross-section. The pool was observed to contain a thalweg near the right bank and contained an 80/30 cobble and sand mix. The glide was observed to contain cobble near the left bank, with a 90/10 cobble and sand mix.



**Photo 45. Catamount Riffle from Right**



**Photo 46. Catamount Riffle from Left Bank**



**Photo 47. Catamount Riffle Facing Upstream**



**Photo 48. Catamount Riffle Facing Downstream**



**Photo 49. Catamount Pool from Right Bank**



**Photo 50. Catamount Pool from Left Bank**



**Photo 51. Catamount Pool Facing Upstream**



**Photo 52. Catamount Pool Facing Downstream**



**Photo 53. Catamount Glide from Right Bank**





**Photo 54. Catamount Glide from Left Bank**



**Photo 55. Catamount Glide Facing Upstream**



**Photo 56. Catamount Glide Facing Downstream**

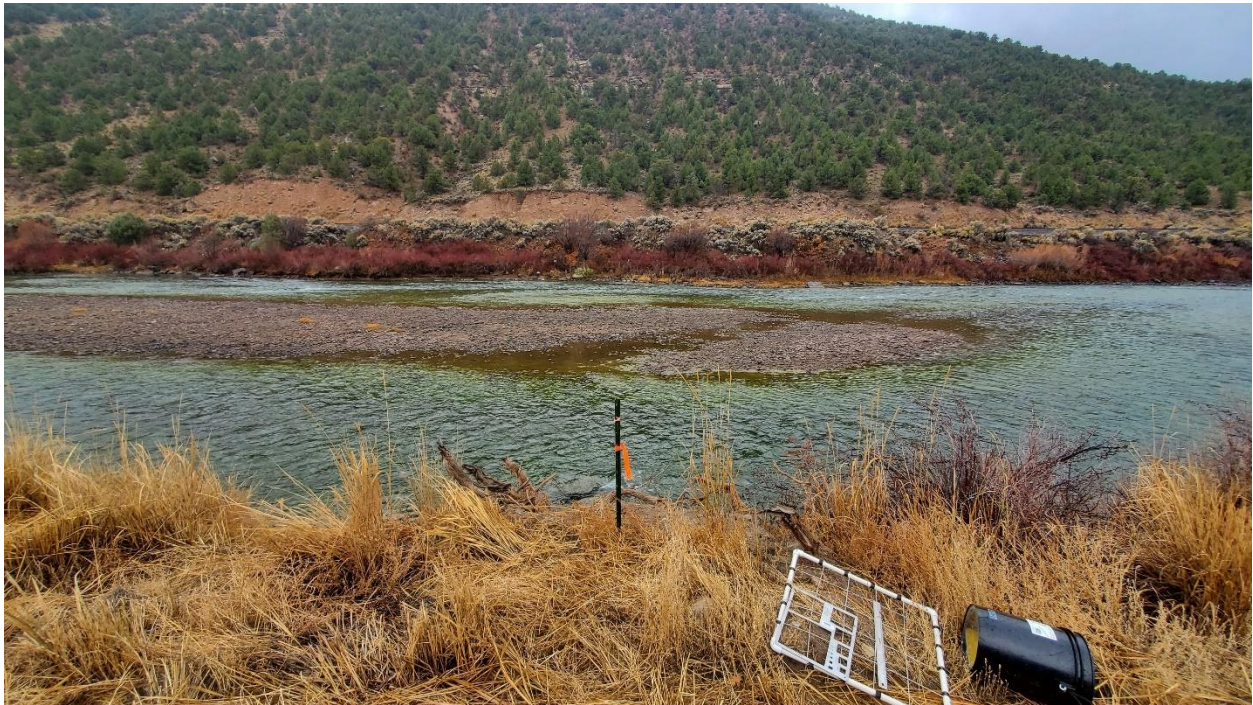
### 7.5 Derby

The left bank at Derby is situated immediately at the toe of the slope of the existing railroad grade. The bank consists of large boulders with a riparian area containing sporadic overstory trees consisting of Rocky Mountain maple. The mid story is dominated by Bebb willow with an herbaceous understory comprised of redtop and reed canary grass. The slope to the railroad berm is steep with large boulders and a gravelly substrate. A midstory dominates the slope and is comprised primarily of big sagebrush. The t-post placed by USGS to mark the riffle cross-section was not found during the monitoring event. ERC placed a piece of flat steel approximately 1-inch x 8-inch found on site and set in concrete to mark the existing riffle cross-section. The flat steel is adjacent to the railroad and has been marked with orange flagging.

The river channel near the left bank is comprised of large boulders (3 to 4-feet in diameter) with smaller cobbles throughout. The river channel is deep, greater than 5 feet, and near the center of the river channel the substrate transitions to a sand and cobble substrate which forms a gravel bar in the center of the river channel. During low flows this gravel bar is exposed. The gravel bar contains gravelly cobble. Near the right bank, the river channel deepens to around 3.5 feet with large boulders and cobbles present.

The right bank begins immediately, and a riparian area is absent. The right bank slopes immediately upwards and towards Eagle County Road 301 where the existing t-post, placed by the USGS, identifies the riffle cross-section at Derby. The t-post is situated just off the County Road in a compacted gravelly substrate. The herbaceous layer is dominated by slender wheatgrass (*Elymus trachycaulus*). The right-of-way along County Road 301 is narrow, between 5 and 7-feet wide. The pool and glide cross-sections were established by ERC. The two cross-sections were marked by setting concrete rebar in concrete on either side of the river channel and were marked with orange flagging. The riparian area at the two established

pool and glide cross-sections were identical to the existing USGS-marked riffle cross-section. The river channel substrate at the pool and glide cross sections was noted as primarily cobble throughout.



**Photo 57. Derby Riffle from Right Bank**



**Photo 58. Derby Riffle from Left Bank**



**Photo 59. Derby Riffle Facing Upstream**



**Photo 60. Derby Riffle Facing Downstream**



**Photo 61. Derby Pool from Right Bank**



**Photo 62. Derby Pool from Left Bank**



**Photo 63. Derby Pool Facing Upstream**



**Photo 64. Derby Pool Facing Downstream**



**Photo 65. Derby Glide from Right Bank**



**Photo 66. Derby Glide from Left Bank**



**Photo 67. Derby Glide Facing Upstream**



**Photo 68. Derby Glide Facing Downstream**

### *7.6 Sweetwater*

The left bank at Sweetwater is situated below an escarpment. Below the escarpment, a slope with upland vegetation is present which includes an overstory of rocky mountain juniper trees and rocky mountain



maple trees. The midstory is comprised of big sagebrush and Douglas rabbitbrush. At the toe of this slope, the riparian area begins and contains primarily Bebb willow and reed canarygrass. The USGS-marked existing riffle cross-section was marked by a t-post with orange flagging.

The river channel immediately below the left bank consists of cobbles and rocks that appear to be more angular than the previous cross-sections, likely as talus or scree from the escarpment adjacent to the river. Nearing the center of the river channel, the channel substrate transitions to a 50/50 mix of sand and cobble throughout.

The right bank consists of a riparian area and is dominated by reed canarygrass. The riparian area ends abruptly, as the ground immediately slopes upward toward Colorado River Road, a paved two-lane highway. The slope is dominated by Douglas rabbitbrush and the existing t-post, placed by the USGS identifies the riffle cross-section at Derby.

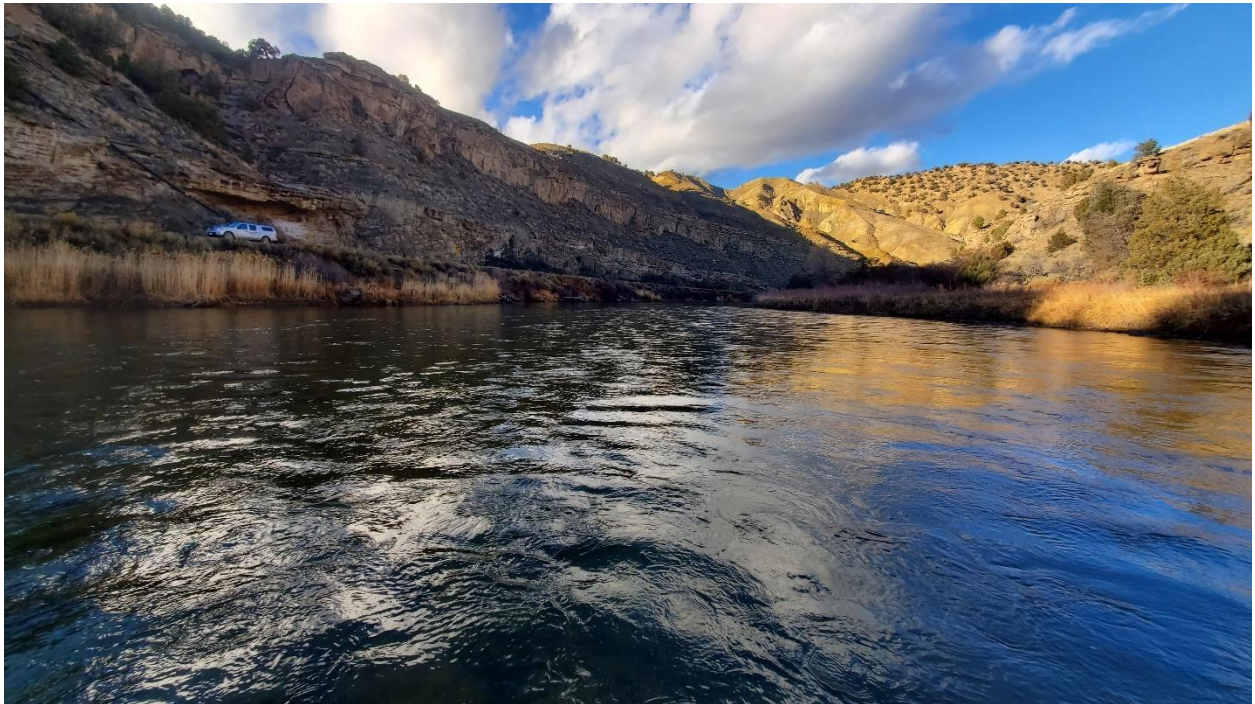
The pool and glide cross-sections were established by ERC. The two cross-sections were marked by setting concrete rebar in concrete on either side of the river channel and were marked with orange flagging. The riparian area at the two established pool and glide cross-sections were identical to the existing USGS-marked riffle cross-section. The pool cross-section was observed to have a 70/30 sand and cobble mix. The glide cross-section was observed to contain a 60.40 sand cobble mix.



**Photo 69. Sweetwater Riffle from Right Bank**



**Photo 70. Sweetwater Riffle from Left Bank**



**Photo 71. Sweetwater Riffle Facing Upstream**



**Photo 72. Sweetwater Riffle Facing Downstream**



**Photo 73. Sweetwater Pool from Right Bank**



**Photo 74. Sweetwater Pool from Left Bank**



**Photo 75. Sweetwater Pool Facing Upstream**



**Photo 76. Sweetwater Pool Facing Downstream**



**Photo 77. Sweetwater Glide from Right Bank**



**Photo 78. Sweetwater Glide from Left Bank**



**Photo 79. Sweetwater Glide Facing Upstream**



**Photo 80. Sweetwater Glide Facing Downstream**

## 8.0 Lessons Learned

Over the course of monitoring there were several lessons learned that ERC believes are worth noting. These lessons are included with the intent of helping future monitoring events be completed efficiently and safely. Additionally, it is our hope that these lessons allow for an understanding of limitations in terms of collection and interpretation of collected data.

- Flows at the time of the 2023 monitoring events were approximately 500 cfs, which are about 100 cfs below average for this time of the year. The accuracy of data collection, especially sediment sampling, would likely decrease as flows increase.
- Weather during the 2023 monitoring events were somewhat warm for the time of year (mid-November). The accuracy of data collection, especially sediment sampling, would likely decrease with colder temperatures. If temperatures are freezing or a snowpack exists, poor weather has the potential to significantly impact the time and costs necessary to complete the work.
- The Pumphouse campground was closed for the season at the time of the monitoring event. This impacted access to the site by requiring a significant walk.
- Accuracy of sediment sampling is challenging when completed in the fall (November for this monitoring period). The schedule was dictated by procedures that required the work presented herein to be completed within two-weeks of the macroinvertebrates monitoring that was done by others. Pebble count sediment sampling following the prescribed methods requires that the field crew select the first particle that they encounter via touch. Cold temperatures limit the ability

of the field crew to discern individual particles. It is unknown if these impacted gradations obtained in 2023, but if it did it is likely that temperatures biased the field crew in selecting larger particles as very small substrate may not have been detected via feel.

- Cross-sections that were first surveyed by the USGS had T-posts installed along the banks. T-posts are prone to movement. The repeatability of cross-section surveys would be improved if rebar benchmarks encased in concrete were installed.
- Algae was measured for presence/absence. As it was present throughout, this parameter may not be overly useful. It is possible that additional information could be gained by modifying what is measured.

## 9.0 References

United States Department of Interior. United States Geological Survey (USGS). 2019. Incipient Bed-Movement and Flood-Frequency Analysis using Hydrophones to Estimate Flushing Flows on the Upper Colorado River, Colorado, 2019.

Upper Colorado River Wild & Scenic Stakeholder Group. 2022. Annual Monitoring Report.

Upper Colorado River Wild & Scenic Stakeholder Group. Request for Proposals to Provide: Cross-Sectional Channel Survey, Sediment Sampling, and Analysis of Wild & Scenic Stakeholder Group Segments 5 and 6 of the Colorado River. Consistent with the Amended and Restated Upper Colorado River Wild and Scenic Stakeholder Group Management Plan, Channel Maintenance Flows and Observational Monitoring Plan. February 1, 2023.

This report has been prepared by:

**Ecological Resource Consultants, LLC**

A handwritten signature in black ink, appearing to read "Jon Wulff".

Jon Wulff, Senior Engineer

A handwritten signature in black ink, appearing to read "Troy D. Thompson".

Troy D. Thompson, PE, President



## APPENDIX A

Data was collected at each survey point taken across the 3 cross-sections in all six (6) river reach survey areas. The data provided below includes the point ID, cross-section name, point name, northing and easting coordinates, elevation, and notes for each survey point.

*Pumphouse Reach*

Point ID	Cross Section	Point Name	Northing	Easting	Elevation <sup>1</sup>	Notes
2	Glide	PHR	1784087.65	2715712.58	6897.75	Top of Rebar - Left Bank
3	Glide	PHR 0	1784087.16	2715711.65	6897.33	Bottom of Rebar
4	Glide	PHR 1	1784090.15	2715700.07	6897.18	(Upland)
5	Glide	PHR 2	1784091.66	2715694.24	6895.81	(Edge of Riparian)
6	Glide	PHR 3	1784094.67	2715688.72	6893.84	(Riparian)
7	Glide	PHR 4	1784097.86	2715676.74	6893.70	(Riparian)
8	Glide	PHR 5	1784099.24	2715671.89	6893.11	(Riparian)
9	Glide	PHR 6	1784102.33	2715661.58	6894.34	(Riparian)
10	Glide	PHR 7	1784106.04	2715649.32	6896.88	(Riparian)
11	Glide	PHR 8	1784111.77	2715630.39	6896.41	(Riparian)
12	Glide	PHR 9	1784118.65	2715609.39	6895.63	(Riparian)
13	Glide	PHR 10	1784124.32	2715587.51	6895.83	(Riparian)
14	Glide	PHR 11	1784130.09	2715571.77	6895.69	(Riparian)
15	Glide	PHR 12	1784134.11	2715556.94	6895.23	(Riparian)
16	Glide	PHR 13	1784135.79	2715552.32	6893.79	Top of Bank - Left Bank (Riparian)
17	Glide	PHR 14	1784135.12	2715550.28	6893.80	Bankfull (Edge of Riparian)
18	Glide	PHR 15	1784135.83	2715549.12	6892.68	Bottom of Bank
19	Glide	PHR 16	1784136.02	2715548.19	6892.55	Elevation of Water
20	Glide	PHR 17	1784140.33	2715536.74	6891.72	Channel
21	Glide	PHR 18	1784143.67	2715525.56	6891.22	Channel
22	Glide	PHR 19	1784147.98	2715512.90	6891.26	Channel
23	Glide	PHR 20	1784149.31	2715508.85	6891.24	Channel
24	Glide	PHR 21	1784150.35	2715504.86	6891.39	Channel
25	Glide	PHR 22	1784151.75	2715500.56	6891.04	Channel
26	Glide	PHR 23	1784153.11	2715496.55	6891.40	Channel
27	Glide	PHR 24	1784153.67	2715492.50	6891.04	Channel
28	Glide	PHR 25	1784155.16	2715487.98	6891.13	Channel
29	Glide	PHR 26	1784156.60	2715483.40	6890.84	Channel
30	Glide	PHR 27	1784157.76	2715479.67	6890.83	Channel
31	Glide	PHR 28	1784158.90	2715475.94	6891.08	Channel
32	Glide	PHR 29	1784159.78	2715471.14	6890.85	Channel
33	Glide	PHR 30	1784161.90	2715464.66	6890.76	Channel
34	Glide	PHR 31	1784163.92	2715458.98	6890.57	Channel
35	Glide	PHR 32	1784165.55	2715455.02	6890.84	Channel
36	Glide	PHR 33	1784166.78	2715450.60	6890.71	Channel
37	Glide	PHR 34	1784169.28	2715443.97	6890.77	Channel
38	Glide	PHR 35	1784171.43	2715436.63	6891.01	Channel
39	Glide	PHR 36	1784172.21	2715432.73	6891.21	Channel
40	Glide	PHR 37	1784172.45	2715429.08	6891.08	Channel
41	Glide	PHR 38	1784173.23	2715425.83	6891.17	Channel
42	Glide	PHR 39	1784174.10	2715422.34	6891.05	Channel
43	Glide	PHR 40	1784175.63	2715418.69	6890.98	Channel
44	Glide	PHR 41	1784176.79	2715414.47	6890.83	Channel
45	Glide	PHR 42	1784177.00	2715411.45	6891.23	Channel
46	Glide	PHR 43	1784177.67	2715408.90	6890.86	Channel
47	Glide	PHR 44	1784179.69	2715405.12	6890.94	Channel

<sup>1</sup> WGS 1984



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

48	Glide	PHR 45	1784180.30	2715403.43	6890.41	Channel
49	Glide	PHR 46	1784181.94	2715400.33	6890.27	Channel
50	Glide	PHR 47	1784183.21	2715396.37	6891.33	Channel
51	Glide	PHR 48	1784184.16	2715393.46	6892.32	Elevation of Water
52	Glide	PHR 49	1784185.14	2715387.14	6892.70	Bottom of Bank
53	Glide	PHR 50	1784185.26	2715384.96	6892.97	Bankfull (Edge of Riparian)
54	Glide	PHR 51	1784185.96	2715381.05	6894.37	Top of Bank - Right Bank (Riparian)
55	Glide	PHR 52	1784187.64	2715375.18	6894.87	(Riparian)
56	Glide	PHR 53	1784189.99	2715369.41	6895.58	(Riparian)
57	Glide	PHR 54	1784189.82	2715367.66	6895.04	(Riparian)
58	Glide	PHR 55	1784192.79	2715360.65	6895.99	(Riparian)
59	Glide	PHR 56	1784194.01	2715354.77	6897.66	(Riparian)
60	Glide	PHR 57	1784194.19	2715353.24	6898.11	Bottom of Rebar (Riparian)
61	Glide	PHR 58	1784194.19	2715352.55	6898.54	Top of Rebar - Right Bank (Edge of Riparian)
62	Pool	PHP	1784534.32	2715450.32	6901.17	Top of Rebar - Right Bank
63	Pool	PHP 1	1784534.26	2715451.23	6900.51	Bottom of Rebar
64	Pool	PHP 2	1784531.30	2715457.18	6899.34	(Upland)
65	Pool	PHP 3	1784527.01	2715465.75	6897.67	(Edge of Riparian)
66	Pool	PHP 4	1784523.46	2715470.71	6896.94	(Riparian)
67	Pool	PHP 5	1784520.40	2715476.86	6896.26	(Riparian)
68	Pool	PHP 6	1784516.85	2715487.78	6894.96	Top of Bank - Right Bank (Riparian)
69	Pool	PHP 7	1784515.86	2715488.81	6894.38	Bankfull (Edge of Riparian)
70	Pool	PHP 8	1784515.72	2715489.01	6892.98	Bottom of Bank and Elevation of Water
71	Pool	PHP 9	1784515.45	2715489.89	6892.37	Channel
72	Pool	PHP 10	1784514.22	2715492.36	6892.23	Channel
73	Pool	PHP 11	1784513.19	2715495.71	6892.30	Channel
74	Pool	PHP 12	1784512.04	2715498.20	6892.14	Channel
75	Pool	PHP 13	1784511.03	2715500.72	6892.42	Channel
76	Pool	PHP 14	1784509.65	2715502.62	6891.39	Channel
77	Pool	PHP 15	1784508.85	2715504.47	6892.12	Channel
78	Pool	PHP 16	1784508.20	2715505.88	6891.07	Channel
79	Pool	PHP 17	1784507.18	2715506.99	6890.61	Channel
80	Pool	PHP 18	1784506.78	2715508.27	6890.67	Channel
81	Pool	PHP 19	1784505.14	2715512.06	6890.73	Channel
82	Pool	PHP 20	1784503.59	2715516.11	6890.73	Channel
83	Pool	PHP 21	1784502.01	2715519.52	6890.62	Channel
84	Pool	PHP 22	1784500.26	2715522.27	6890.49	Channel
85	Pool	PHP 23	1784498.77	2715527.27	6890.39	Channel
86	Pool	PHP 24	1784492.93	2715536.20	6890.73	Channel
87	Pool	PHP 25	1784489.39	2715545.63	6890.65	Channel
88	Pool	PHP 26	1784485.56	2715554.06	6890.34	Channel
89	Pool	PHP 27	1784480.93	2715564.78	6890.45	Channel
90	Pool	PHP 28	1784475.59	2715578.04	6890.52	Channel
91	Pool	PHP 29	1784471.73	2715587.81	6890.36	Channel
92	Pool	PHP 30	1784467.25	2715597.38	6890.33	Channel
93	Pool	PHP 31	1784462.77	2715607.31	6890.12	Channel
94	Pool	PHP 32	1784459.05	2715615.58	6889.83	Channel
95	Pool	PHP 33	1784454.79	2715624.93	6889.76	Channel
96	Pool	PHP 34	1784452.04	2715631.13	6889.98	Channel
97	Pool	PHP 35	1784450.24	2715635.64	6890.33	Channel
98	Pool	PHP 36	1784448.04	2715640.93	6891.00	Channel
99	Pool	PHP 37	1784446.39	2715645.44	6892.12	Channel
100	Pool	PHP 38	1784442.23	2715652.85	6893.14	Elevation of Water
101	Pool	PHP 39	1784441.26	2715656.41	6893.63	Bottom of Bank
102	Pool	PHP 40	1784441.06	2715657.15	6895.10	Bankfull (Edge of Riparian)



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

103	Pool	PHP 41	1784440.77	2715657.76	6895.81	Top of Bank - Left Bank (Riparian)
104	Pool	PHP 42	1784435.83	2715665.17	6896.51	(Edge of Riparian)
105	Pool	PHP 43	1784432.41	2715674.28	6897.45	(Upland)
106	Pool	PHP 44	1784431.37	2715676.90	6898.24	Bottom of Rebar
107	Pool	PHP 45	1784431.26	2715677.46	6898.68	Top of Rebar - Left Bank
108	Riffle	PHEX	1785501.88	2715717.37	6900.77	Existing Tpost - Right Bank (Edge of Riparian)
109	Riffle	PHEX 1	1785501.42	2715718.71	6900.64	(Riparian)
110	Riffle	PHEX 2	1785498.94	2715722.94	6899.65	(Riparian)
111	Riffle	PHEX 3	1785493.39	2715729.63	6898.17	(Riparian)
112	Riffle	PHEX 4	1785486.84	2715736.48	6897.29	(Riparian)
113	Riffle	PHEX 5	1785475.95	2715748.24	6896.70	(Riparian)
114	Riffle	PHEX 6	1785471.15	2715755.15	6895.77	(Riparian)
115	Riffle	PHEX 7	1785461.92	2715764.92	6896.90	(Riparian)
116	Riffle	PHEX 8	1785452.92	2715773.45	6896.47	Top of Bank - Right Bank (Riparian)
117	Riffle	PHEX 9	1785451.91	2715774.42	6896.01	Bankfull (Edge of Riparian)
118	Riffle	PHEX 10	1785451.57	2715774.85	6894.84	Bottom of Bank
119	Riffle	PHEX 11	1785447.85	2715777.90	6894.57	Channel
120	Riffle	PHEX 12	1785444.50	2715783.07	6893.99	Channel
121	Riffle	PHEX 13	1785437.46	2715790.84	6893.58	Channel
122	Riffle	PHEX 14	1785432.92	2715795.33	6893.18	Channel
123	Riffle	PHEX 15	1785428.83	2715799.84	6892.73	Channel
124	Riffle	PHEX 16	1785423.02	2715806.09	6892.95	Channel
125	Riffle	PHEX 17	1785415.48	2715814.29	6892.54	Channel
126	Riffle	PHEX 18	1785410.81	2715818.38	6892.82	Channel
127	Riffle	PHEX 19	1785406.72	2715823.03	6893.05	Channel
128	Riffle	PHEX 20	1785401.94	2715827.91	6892.64	Channel
129	Riffle	PHEX 21	1785397.47	2715833.13	6892.93	Channel
130	Riffle	PHEX 22	1785393.13	2715837.10	6893.30	Channel
131	Riffle	PHEX 23	1785388.06	2715842.14	6893.05	Channel
132	Riffle	PHEX 24	1785382.47	2715848.69	6893.18	Channel
133	Riffle	PHEX 25	1785378.25	2715852.83	6893.23	Channel
134	Riffle	PHEX 26	1785374.84	2715856.44	6893.12	Channel
135	Riffle	PHEX 27	1785369.50	2715862.15	6892.87	Channel
136	Riffle	PHEX 28	1785365.02	2715867.73	6893.12	Channel
137	Riffle	PHEX 29	1785363.05	2715870.56	6892.66	Channel
138	Riffle	PHEX 30	1785359.55	2715874.25	6893.02	Channel
139	Riffle	PHEX 31	1785355.02	2715878.73	6893.21	Channel
140	Riffle	PHEX 32	1785352.99	2715880.61	6892.81	Channel
141	Riffle	PHEX 33	1785345.72	2715887.47	6893.01	Channel
142	Riffle	PHEX 34	1785340.82	2715892.59	6893.03	Channel
143	Riffle	PHEX 35	1785336.41	2715898.02	6893.29	Channel
144	Riffle	PHEX 36	1785333.91	2715900.44	6893.12	Channel
145	Riffle	PHEX 37	1785330.58	2715903.94	6893.68	Channel
146	Riffle	PHEX 38	1785329.07	2715906.28	6894.93	Elevation of Water
147	Riffle	PHEX 39	1785328.42	2715906.18	6895.87	Bankfull (Edge of Riparian)
148	Riffle	PHEX 40	1785326.44	2715907.76	6896.92	Top of Bank - Left Bank (Riparian)
149	Riffle	PHEX 41	1785324.61	2715909.57	6897.66	(Riparian)
150	Riffle	PHEX 42	1785324.28	2715910.91	6898.01	Existing Tpost - Left Bank (Edge of Riparian)

*Radium Reach*

Point ID	Cross Section	Point Name	Northing	Easting	Elevation	Notes
228	Pool	Rdm P 7	1772755.77	2703333.32	6825.94	Top of Rebar - Left Bank (Edge of Riparian)
229	Pool	Rdm P 8	1772755.85	2703332.63	6825.38	Bottom of Rebar (Riparian)
230	Pool	Rdm P 9	1772756.09	2703319.59	6824.40	(Riparian)
231	Pool	Rdm P 10	1772756.26	2703295.09	6822.02	(Riparian)
232	Pool	Rdm P 11	1772756.54	2703276.02	6821.53	(Riparian)
233	Pool	Rdm P 12	1772756.73	2703264.37	6821.55	(Riparian)
234	Pool	Rdm P 13	1772756.31	2703259.41	6820.45	(Riparian)
235	Pool	Rdm P 14	1772755.72	2703249.81	6819.64	Top of Bank - Left Bank (Riparian)
236	Pool	Rdm P 15	1772755.35	2703248.82	6818.88	Bankfull (Edge of Riparian)
237	Pool	Rdm P 16	1772755.42	2703248.23	6818.10	Bottom of Bank
238	Pool	Rdm P 17	1772756.20	2703232.86	6818.05	Channel
239	Pool	Rdm P 18	1772758.26	2703203.61	6816.51	Channel
240	Pool	Rdm P 19	1772759.16	2703183.97	6815.70	Channel
241	Pool	Rdm P 20	1772758.91	2703172.94	6815.11	Channel
242	Pool	Rdm P 21	1772758.72	2703166.36	6814.55	Channel
243	Pool	Rdm P 22	1772758.61	2703161.22	6814.32	Channel
244	Pool	Rdm P 23	1772758.89	2703151.39	6814.16	Channel
245	Pool	Rdm P 24	1772759.40	2703141.29	6814.47	Channel
246	Pool	Rdm P 25	1772759.73	2703133.53	6814.79	Channel
247	Pool	Rdm P 26	1772759.80	2703125.29	6814.88	Channel
248	Pool	Rdm P 27	1772760.22	2703119.62	6815.62	Channel
249	Pool	Rdm P 28	1772759.98	2703111.94	6816.33	Channel
250	Pool	Rdm P 29	1772760.20	2703106.01	6816.87	Channel
251	Pool	Rdm P 30	1772759.94	2703102.02	6817.33	Channel
157	Pool	Rdm P 6	1772759.83	2703099.86	6817.93	Elevation of Water
156	Pool	Rdm P 5	1772760.40	2703094.64	6819.79	Bottom of Bank
155	Pool	Rdm P 4	1772760.72	2703093.50	6821.19	Bankfull (Edge of Riparian)
154	Pool	Rdm P 3	1772759.73	2703092.96	6822.80	Top of Bank - Right Bank (Edge of Riparian)
153	Pool	Rdm P 2	1772760.62	2703076.91	6834.00	(Upland)
152	Pool	Rdm P 1	1772760.64	2703060.63	6844.94	Top of Rebar - Right Bank (Upland)
151	Pool	Rdm P	1772760.57	2703059.77	6845.62	(Upland)
158	Glide	Rdm G	1772692.40	2703063.59	6845.29	Top of Rebar - Right Bank (Upland)
159	Glide	Rdm G 1	1772692.32	2703064.78	6844.48	Bottom of Rebar (Upland)
160	Glide	Rdm G 2	1772691.87	2703086.05	6829.26	(Upland)
161	Glide	Rdm G 3	1772694.64	2703101.88	6820.97	Top of Bank - Right Bank (Edge of Riparian)
162	Glide	Rdm G 4	1772694.57	2703102.89	6819.76	Bankfull (Edge of Riparian)
163	Glide	Rdm G 5	1772694.48	2703104.09	6818.70	Bottom of Bank
164	Glide	Rdm G 6	1772693.62	2703106.93	6817.88	Elevation of Water
198	Glide	Rdm G 7	1772695.00	2703110.81	6816.88	Channel
199	Glide	Rdm G 8	1772696.35	2703117.07	6816.00	Channel
200	Glide	Rdm G 9	1772695.87	2703125.51	6816.21	Channel
201	Glide	Rdm G 10	1772696.75	2703132.87	6815.88	Channel
202	Glide	Rdm G 11	1772697.12	2703140.38	6815.61	Channel
203	Glide	Rdm G 12	1772698.64	2703146.68	6815.54	Channel
204	Glide	Rdm G 13	1772699.22	2703153.21	6815.05	Channel
205	Glide	Rdm G 14	1772699.43	2703157.35	6815.10	Channel
206	Glide	Rdm G 15	1772699.79	2703164.80	6815.30	Channel
207	Glide	Rdm G 16	1772700.61	2703170.76	6815.51	Channel
208	Glide	Rdm G 17	1772701.51	2703176.25	6815.69	Channel
209	Glide	Rdm G 18	1772702.38	2703181.00	6815.63	Channel
210	Glide	Rdm G 19	1772702.45	2703186.52	6815.72	Channel
211	Glide	Rdm G 20	1772702.94	2703193.82	6815.71	Channel
212	Glide	Rdm G 21	1772704.18	2703197.70	6815.70	Channel



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

213	Glide	Rdm G 22	1772704.54	2703202.56	6816.23	Channel
214	Glide	Rdm G 23	1772705.00	2703210.78	6816.82	Channel
215	Glide	Rdm G 24	1772705.70	2703220.79	6817.37	Channel
216	Glide	Rdm G 25	1772705.69	2703232.93	6818.24	Channel
217	Glide	Rdm G 26	1772706.56	2703245.22	6818.68	Channel
218	Glide	Rdm G 27	1772707.19	2703261.79	6818.12	Bottom of Bank
219	Glide	Rdm G 28	1772707.34	2703263.80	6818.99	Bankfull (Edge of Riparian)
220	Glide	Rdm G 29	1772707.28	2703265.74	6821.38	Top of Bank - Left Bank (Riparian)
221	Glide	Rdm G 30	1772708.54	2703271.74	6822.08	(Riparian)
222	Glide	Rdm G 31	1772709.44	2703279.97	6821.64	(Riparian)
223	Glide	Rdm G 32	1772709.58	2703290.63	6821.30	(Edge of Riparian)
224	Glide	Rdm G 33	1772710.48	2703308.39	6823.02	(Upland)
225	Glide	Rdm G 34	1772711.40	2703320.53	6823.95	(Upland)
226	Glide	Rdm G 35	1772711.80	2703326.57	6825.57	Bottom of Rebar (Upland)
227	Glide	Rdm G 36	1772711.77	2703327.36	6826.11	Top of Rebar - Left Bank (Upland)
165	Riffle	Rdm EX	1772675.54	2703347.68	6824.87	Existing Tpost - Left Bank (Upland)
166	Riffle	Rdm EX 1	1772675.45	2703346.64	6824.95	(Upland)
167	Riffle	Rdm EX 2	1772672.74	2703331.73	6824.39	(Upland)
168	Riffle	Rdm EX 3	1772667.90	2703311.05	6820.91	(Edge of Riparian)
169	Riffle	Rdm EX 4	1772663.60	2703290.62	6822.55	(Riparian)
170	Riffle	Rdm EX 5	1772659.78	2703275.93	6822.94	(Riparian)
171	Riffle	Rdm EX 6	1772657.83	2703267.58	6820.40	Top of Bank - Left Bank (Riparian)
172	Riffle	Rdm EX 7	1772657.46	2703266.67	6819.28	Bankfull (Edge of Riparian)
173	Riffle	Rdm EX 8	1772657.32	2703266.27	6818.15	Bottom of Bank
174	Riffle	Rdm EX 9	1772651.54	2703240.74	6817.60	Elevation of Water
175	Riffle	Rdm EX 10	1772647.40	2703218.73	6816.78	Channel
176	Riffle	Rdm EX 11	1772643.52	2703201.77	6815.95	Channel
177	Riffle	Rdm EX 12	1772641.56	2703191.38	6815.55	Channel
178	Riffle	Rdm EX 13	1772639.17	2703182.64	6815.64	Channel
179	Riffle	Rdm EX 14	1772636.44	2703173.35	6815.63	Channel
180	Riffle	Rdm EX 15	1772635.36	2703167.23	6815.86	Channel
181	Riffle	Rdm EX 16	1772634.07	2703161.03	6816.04	Channel
182	Riffle	Rdm EX 17	1772632.98	2703155.14	6816.00	Channel
183	Riffle	Rdm EX 18	1772632.30	2703149.46	6815.67	Channel
184	Riffle	Rdm EX 19	1772631.33	2703144.04	6815.87	Channel
185	Riffle	Rdm EX 20	1772630.64	2703140.75	6815.81	Channel
186	Riffle	Rdm EX 21	1772630.01	2703136.75	6815.60	Channel
187	Riffle	Rdm EX 22	1772628.88	2703132.89	6815.66	Channel
188	Riffle	Rdm EX 23	1772628.51	2703130.11	6815.52	Channel
189	Riffle	Rdm EX 24	1772627.84	2703127.73	6815.36	Channel
190	Riffle	Rdm EX 25	1772627.42	2703124.97	6815.43	Channel
191	Riffle	Rdm EX 26	1772627.00	2703122.46	6815.90	Channel
192	Riffle	Rdm EX 27	1772626.28	2703120.86	6816.22	Channel
193	Riffle	Rdm EX 28	1772625.40	2703118.10	6816.92	Channel
194	Riffle	Rdm EX 29	1772623.53	2703114.56	6817.41	Bottom of Bank
195	Riffle	Rdm EX 30	1772623.46	2703113.62	6818.61	Bankfull (Edge of Riparian)
196	Riffle	Rdm EX 31	1772623.51	2703112.06	6820.54	Top of Bank - Right Bank (Edge of Riparian)
197	Riffle	Rdm EX 32	1772622.45	2703108.49	6822.06	Existing Tpost - Right Bank (Upland)



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

State Bridge Reach

Point ID	Cross Section	Point Name	Northing	Easting	Elevation	Notes
252	Glide	StBr G	1738873.66	2676619.39	6697.24	Top of Rebar - Right Bank (Upland)
253	Glide	StBr G 1	1738872.95	2676620.11	6696.72	Bottom of Rebar (Upland)
254	Glide	StBr G 2	1738866.08	2676623.45	6692.43	(Edge of Riparian)
255	Glide	StBr G 3	1738862.14	2676625.70	6689.02	(Riparian)
256	Glide	StBr G 4	1738829.15	2676639.77	6687.44	(Riparian)
257	Glide	StBr G 5	1738811.29	2676648.75	6684.88	Top of Bank - Right Bank (Riparian)
258	Glide	StBr G 6	1738809.39	2676650.83	6683.58	Bankfull (Edge of Riparian)
259	Glide	StBr G 7	1738808.93	2676650.78	6683.19	Elevation of Water
260	Glide	StBr G 8	1738808.63	2676650.61	6682.94	Bottom of Bank
261	Glide	StBr G 9	1738797.84	2676656.20	6682.48	Channel
262	Glide	StBr G 10	1738784.40	2676663.02	6681.56	Channel
263	Glide	StBr G 11	1738777.09	2676666.96	6680.98	Channel
264	Glide	StBr G 12	1738767.16	2676670.71	6681.20	Channel
265	Glide	StBr G 13	1738757.21	2676674.51	6681.15	Channel
266	Glide	StBr G 14	1738749.25	2676678.68	6681.06	Channel
267	Glide	StBr G 15	1738743.57	2676681.74	6680.69	Channel
268	Glide	StBr G 16	1738738.25	2676684.73	6680.89	Channel
269	Glide	StBr G 17	1738732.85	2676687.00	6680.71	Channel
270	Glide	StBr G 18	1738729.48	2676689.43	6680.27	Channel
271	Glide	StBr G 19	1738724.66	2676690.23	6680.00	Channel
272	Glide	StBr G 20	1738719.82	2676692.48	6680.30	Channel
273	Glide	StBr G 21	1738715.14	2676693.69	6679.76	Channel
274	Glide	StBr G 22	1738711.37	2676696.73	6680.40	Channel
275	Glide	StBr G 23	1738709.93	2676699.20	6682.21	Channel
276	Glide	StBr G 24	1738703.00	2676701.31	6681.64	Channel
277	Glide	StBr G 25	1738698.08	2676703.25	6681.36	Channel
278	Glide	StBr G 26	1738693.53	2676705.10	6681.56	Channel
279	Glide	StBr G 27	1738683.81	2676709.22	6681.63	Channel
280	Glide	StBr G 28	1738670.11	2676714.04	6683.73	Bottom of Bank
281	Glide	StBr G 29	1738668.78	2676715.34	6684.43	Bankfull (Edge of Riparian)
282	Glide	StBr G 30	1738666.35	2676715.98	6685.84	Top of Bank - Left Bank (Riparian)
283	Glide	StBr G 31	1738659.14	2676718.60	6687.10	(Edge of Riparian)
284	Glide	StBr G 32	1738639.95	2676729.06	6697.06	Bottom of Rebar (Upland)
285	Glide	StBr G 33	1738639.39	2676729.33	6697.67	Top of Rebar - Left Bank (Upland)
286	Pool	StBr P	1738657.97	2676790.29	6706.13	Top of Rebar - Left Bank (Upland)
287	Pool	StBr P 1	1738658.85	2676789.97	6705.55	Bottom of Rebar (Upland)
288	Pool	StBr P 2	1738689.43	2676772.04	6687.97	(Edge of Riparian)
289	Pool	StBr P 3	1738699.62	2676766.23	6687.16	(Riparian)
290	Pool	StBr P 4	1738710.07	2676763.17	6685.09	Top of Bank - Left Bank (Riparian)
291	Pool	StBr P 5	1738712.03	2676762.03	6684.43	Bankfull (Edge of Riparian)
292	Pool	StBr P 6	1738713.51	2676761.19	6683.76	Bottom of Bank
293	Pool	StBr P 7	1738721.90	2676758.87	6683.36	Elevation of Water
294	Pool	StBr P 8	1738727.61	2676753.35	6681.95	Channel
295	Pool	StBr P 9	1738737.59	2676749.27	6682.01	Channel
296	Pool	StBr P 10	1738743.87	2676746.82	6681.67	Channel
297	Pool	StBr P 11	1738746.20	2676746.04	6680.46	Channel
298	Pool	StBr P 12	1738749.61	2676742.55	6679.89	Channel
299	Pool	StBr P 13	1738754.25	2676740.57	6680.08	Channel
300	Pool	StBr P 14	1738758.89	2676738.13	6680.01	Channel
301	Pool	StBr P 15	1738764.22	2676736.50	6680.24	Channel
302	Pool	StBr P 16	1738767.20	2676735.77	6679.98	Channel
303	Pool	StBr P 17	1738773.05	2676732.82	6680.22	Channel
304	Pool	StBr P 18	1738776.83	2676731.36	6680.42	Channel



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

305	Pool	StBr P 19	1738782.96	2676729.05	6680.48	Channel
306	Pool	StBr P 20	1738786.66	2676727.74	6680.33	Channel
307	Pool	StBr P 21	1738791.71	2676724.66	6680.86	Channel
308	Pool	StBr P 22	1738795.52	2676724.41	6680.67	Channel
309	Pool	StBr P 23	1738799.95	2676720.47	6680.78	Channel
310	Pool	StBr P 24	1738809.03	2676714.97	6681.21	Channel
311	Pool	StBr P 25	1738815.16	2676711.60	6681.51	Channel
312	Pool	StBr P 26	1738823.44	2676707.72	6681.89	Channel
313	Pool	StBr P 27	1738834.92	2676701.11	6682.48	Channel
314	Pool	StBr P 28	1738840.47	2676698.33	6683.12	Channel
315	Pool	StBr P 29	1738846.03	2676695.42	6683.56	Channel
316	Pool	StBr P 30	1738847.19	2676694.65	6683.65	Bottom of Bank
317	Pool	StBr P 31	1738847.32	2676694.71	6684.52	Bankfull (Edge of Riparian)
318	Pool	StBr P 32	1738848.39	2676693.91	6685.05	Top of Bank - Right Bank (Riparian)
319	Pool	StBr P 33	1738862.41	2676685.02	6687.89	(Riparian)
320	Pool	StBr P 34	1738894.65	2676662.67	6689.46	(Edge of Riparian)
321	Pool	StBr P 35	1738909.27	2676657.05	6697.72	(Upland)
322	Pool	StBr P 36	1738909.89	2676656.39	6698.32	Bottom of Rebar (Upland)
323	Pool	StBr P 37	1738909.87	2676656.42	6698.39	Top of Rebar - Right Bank (Upland)
324	Riffle	StBr EX R	1739426.55	2678014.50	6696.52	Existing Tpost - Right Bank (Edge of Riparian)
325	Riffle	StBr EX R 1	1739426.14	2678013.94	6696.00	(Riparian)
326	Riffle	StBr EX R 2	1739423.73	2678009.46	6691.52	Top of Bank - Right Bank (Riparian)
327	Riffle	StBr EX R 3	1739422.53	2678007.86	6689.90	Bankfull (Edge of Riparian)
328	Riffle	StBr EX R 4	1739419.83	2678005.57	6688.43	Bottom of Bank
329	Riffle	StBr EX R 5	1739419.26	2678005.34	6688.20	Elevation of Water
330	Riffle	StBr EX R 6	1739418.09	2678003.18	6687.53	Channel
331	Riffle	StBr EX R 7	1739416.65	2678001.78	6686.71	Channel
332	Riffle	StBr EX R 8	1739413.48	2678000.53	6686.18	Channel
333	Riffle	StBr EX R 9	1739404.49	2677986.91	6686.28	Channel
334	Riffle	StBr EX R 10	1739399.20	2677978.72	6687.39	Channel
335	Riffle	StBr EX R 11	1739393.90	2677970.85	6687.77	Channel
336	Riffle	StBr EX R 12	1739388.88	2677962.76	6688.14	Channel
337	Riffle	StBr EX R 13	1739384.76	2677957.61	6688.37	Channel
338	Riffle	StBr EX R 14	1739379.08	2677949.79	6688.86	Channel
339	Riffle	StBr EX R 15	1739375.08	2677944.71	6688.87	Channel
340	Riffle	StBr EX R 16	1739370.83	2677939.28	6688.69	Channel
341	Riffle	StBr EX R 17	1739368.02	2677935.85	6688.86	Channel
342	Riffle	StBr EX R 18	1739364.76	2677931.26	6688.99	Channel
343	Riffle	StBr EX R 19	1739362.92	2677927.48	6688.12	Channel
344	Riffle	StBr EX R 20	1739359.48	2677923.02	6688.29	Channel
345	Riffle	StBr EX R 21	1739355.78	2677918.37	6688.46	Channel
346	Riffle	StBr EX R 22	1739353.33	2677914.48	6688.70	Channel
347	Riffle	StBr EX R 23	1739351.29	2677911.16	6688.21	Channel
348	Riffle	StBr EX R 24	1739348.24	2677906.92	6688.24	Channel
349	Riffle	StBr EX R 25	1739345.10	2677902.48	6687.83	Channel
350	Riffle	StBr EX R 26	1739341.43	2677897.11	6687.83	Channel
351	Riffle	StBr EX R 27	1739339.58	2677894.22	6687.48	Channel
352	Riffle	StBr EX R 28	1739335.96	2677889.07	6687.52	Channel
353	Riffle	StBr EX R 29	1739330.42	2677883.62	6687.30	Channel
354	Riffle	StBr EX R 30	1739325.79	2677878.00	6688.10	Channel
355	Riffle	StBr EX R 31	1739322.69	2677873.66	6687.66	Channel
356	Riffle	StBr EX R 32	1739320.15	2677869.99	6687.81	Channel
357	Riffle	StBr EX R 33	1739317.40	2677865.35	6688.15	Channel
358	Riffle	StBr EX R 34	1739313.94	2677860.54	6688.16	Channel
359	Riffle	StBr EX R 35	1739309.73	2677854.69	6687.98	Channel





**2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6**

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<b>360</b>	Riffle	StBr EX R 36	1739305.66	2677849.01	6688.42	Channel
<b>361</b>	Riffle	StBr EX R 37	1739299.59	2677840.32	6688.85	Channel
<b>362</b>	Riffle	StBr EX R 38	1739292.19	2677832.94	6689.28	Elevation of Water
<b>363</b>	Riffle	StBr EX R 39	1739291.80	2677832.71	6689.72	Bottom of Bank
<b>364</b>	Riffle	StBr EX R 40	1739290.89	2677831.09	6690.15	Bankfull (Edge of Riparian)
<b>365</b>	Riffle	StBr EX R 41	1739289.30	2677828.72	6691.22	Top of Bank - Left Bank (Riparian)
<b>366</b>	Riffle	StBr EX R 42	1739286.61	2677825.29	6693.34	(Riparian)
<b>367</b>	Riffle	StBr EX R 43	1739286.30	2677825.01	6693.53	Existing Tpost - Left Bank (Edge of Riparian)

*Catamount Reach*

Point ID	Cross Section	Point Name	Northing	Easting	Elevation	Notes
368	Pool	CM P	1760158.91	2639432.76	6552.30	Top of Rebar - Right Bank (Upland)
369	Pool	CM P 1	1760158.38	2639433.62	6551.45	Bottom of Rebar (Upland)
370	Pool	CM P 2	1760155.20	2639439.42	6549.07	(Upland)
371	Pool	CM P 3	1760151.97	2639445.14	6547.50	(Edge of Riparian)
372	Pool	CM P 4	1760149.17	2639449.70	6546.98	Top of Bank - Right Bank (Riparian)
373	Pool	CM P 5	1760148.51	2639450.38	6545.66	Bankfull (Edge of Riparian)
374	Pool	CM P 6	1760147.62	2639452.44	6544.17	Bottom of Bank
375	Pool	CM P 7	1760145.66	2639453.37	6543.93	Elevation of Water
376	Pool	CM P 8	1760142.66	2639459.40	6542.96	Channel
377	Pool	CM P 9	1760136.93	2639468.07	6541.72	Channel
378	Pool	CM P 10	1760130.06	2639478.64	6541.16	Channel
379	Pool	CM P 11	1760122.46	2639489.19	6541.12	Channel
380	Pool	CM P 12	1760117.95	2639497.68	6540.87	Channel
381	Pool	CM P 13	1760112.02	2639504.46	6541.12	Channel
382	Pool	CM P 14	1760104.30	2639515.52	6541.72	Channel
383	Pool	CM P 15	1760096.17	2639527.85	6541.79	Channel
384	Pool	CM P 16	1760086.17	2639542.33	6542.36	Channel
385	Pool	CM P 17	1760074.78	2639557.86	6542.79	Channel
386	Pool	CM P 18	1760062.50	2639575.59	6543.32	Channel
387	Pool	CM P 19	1760047.94	2639595.85	6543.33	Channel
388	Pool	CM P 20	1760037.72	2639613.01	6543.30	Channel
389	Pool	CM P 21	1760028.57	2639624.42	6543.48	Channel
390	Pool	CM P 22	1760021.78	2639633.01	6543.38	Channel
391	Pool	CM P 23	1760014.17	2639644.36	6543.51	Channel
392	Pool	CM P 24	1760011.63	2639651.36	6543.96	Elevation of Water
393	Pool	CM P 25	1760010.21	2639653.07	6544.48	Bankfull (Edge of Riparian)
394	Pool	CM P 26	1760008.92	2639654.18	6546.45	Top of Bank - Left Bank (Riparian)
395	Pool	CM P 27	1760003.07	2639663.32	6547.60	(Riparian)
396	Pool	CM P 28	1759997.06	2639671.87	6548.58	(Edge of Riparian)
397	Pool	CM P 29	1759992.85	2639677.66	6550.13	Bottom of Rebar (Upland)
398	Pool	CM P 30	1759992.09	2639678.46	6550.53	Top of Rebar - Left Bank (Upland)
399	Glide	CM G	1759904.62	2639614.46	6550.53	Top of Rebar - Left Bank (Upland)
400	Glide	CM G 1	1759905.24	2639613.49	6549.98	Bottom of Rebar (Upland)
401	Glide	CM G 2	1759906.81	2639610.46	6549.31	(Upland)
402	Glide	CM G 3	1759909.83	2639607.22	6547.42	(Edge of Riparian)
403	Glide	CM G 4	1759913.18	2639601.59	6545.32	(Riparian)
404	Glide	CM G 5	1759917.61	2639596.62	6545.19	(Riparian)
405	Glide	CM G 6	1759924.49	2639587.46	6544.45	Top of Bank - Left Bank (Riparian)
406	Glide	CM G 7	1759925.55	2639586.12	6542.79	Bankfull (Edge of Riparian)
407	Glide	CM G 8	1759925.88	2639585.45	6541.92	Bottom of Bank
408	Glide	CM G 9	1759927.16	2639583.99	6541.60	Elevation of Water
409	Glide	CM G 10	1759934.67	2639575.17	6540.61	Channel
410	Glide	CM G 11	1759945.14	2639561.45	6540.45	Channel
411	Glide	CM G 12	1759951.12	2639554.80	6540.58	Channel
412	Glide	CM G 13	1759959.81	2639544.84	6540.96	Channel
413	Glide	CM G 14	1759976.44	2639523.95	6541.02	Channel
414	Glide	CM G 15	1759985.40	2639512.24	6540.78	Channel
415	Glide	CM G 16	1759994.66	2639500.81	6540.31	Channel
416	Glide	CM G 17	1760003.14	2639490.93	6539.92	Channel
417	Glide	CM G 18	1760009.76	2639482.01	6539.90	Channel
418	Glide	CM G 19	1760016.98	2639473.44	6539.57	Channel
419	Glide	CM G 20	1760022.97	2639465.78	6539.44	Channel
420	Glide	CM G 21	1760028.75	2639459.18	6539.43	Channel



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

421	Glide	CM G 22	1760032.74	2639452.35	6539.63	Channel
422	Glide	CM G 23	1760039.29	2639444.56	6539.59	Channel
423	Glide	CM G 24	1760046.17	2639436.88	6539.51	Channel
424	Glide	CM G 25	1760051.31	2639429.80	6540.07	Channel
425	Glide	CM G 26	1760056.16	2639422.87	6540.30	Channel
426	Glide	CM G 27	1760062.36	2639415.28	6541.22	Channel
427	Glide	CM G 28	1760068.24	2639407.86	6541.72	Channel
428	Glide	CM G 29	1760070.48	2639403.80	6541.77	Elevation of Water
429	Glide	CM G 30	1760071.17	2639402.85	6542.01	Bottom of Bank
430	Glide	CM G 31	1760072.81	2639401.09	6543.13	Bankfull (Edge of Riparian)
431	Glide	CM G 32	1760073.76	2639399.74	6544.53	Top of Bank - Right Bank (Riparian)
432	Glide	CM G 33	1760079.64	2639393.39	6545.41	(Riparian)
433	Glide	CM G 34	1760083.37	2639389.00	6546.44	(Riparian)
434	Glide	CM G 35	1760084.00	2639388.13	6547.17	Bottom of Rebar (Riparian)
435	Glide	CM G 36	1760084.67	2639387.38	6547.77	Top of Rebar - Right Bank (Edge of Riparian)
436	Riffle	CM EX R	1759787.92	2639262.96	6544.97	Existing Tpost - Right Bank (Edge of Riparian)
437	Riffle	CM EX R 1	1759787.75	2639263.91	6544.89	(Riparian)
438	Riffle	CM EX R 2	1759786.94	2639276.30	6544.11	(Riparian)
439	Riffle	CM EX R 3	1759785.48	2639285.45	6543.65	(Riparian)
440	Riffle	CM EX R 4	1759785.30	2639288.22	6542.75	Top of Bank - Right Bank (Riparian)
441	Riffle	CM EX R 5	1759785.48	2639288.78	6542.01	Bankfull (Edge of Riparian)
442	Riffle	CM EX R 6	1759785.55	2639289.38	6541.16	Bottom of Bank
443	Riffle	CM EX R 7	1759783.79	2639294.45	6541.06	Elevation of Water
444	Riffle	CM EX R 8	1759781.68	2639308.95	6539.85	Channel
445	Riffle	CM EX R 9	1759778.23	2639322.11	6539.84	Channel
446	Riffle	CM EX R 10	1759775.11	2639338.63	6539.87	Channel
447	Riffle	CM EX R 11	1759772.83	2639355.17	6540.01	Channel
448	Riffle	CM EX R 12	1759770.33	2639370.96	6540.15	Channel
449	Riffle	CM EX R 13	1759767.17	2639381.89	6540.12	Channel
450	Riffle	CM EX R 14	1759765.45	2639391.58	6540.02	Channel
451	Riffle	CM EX R 15	1759763.36	2639402.64	6539.95	Channel
452	Riffle	CM EX R 16	1759760.64	2639414.52	6539.89	Channel
453	Riffle	CM EX R 17	1759758.26	2639428.95	6539.82	Channel
454	Riffle	CM EX R 18	1759754.48	2639444.43	6539.17	Channel
455	Riffle	CM EX R 19	1759753.94	2639454.98	6539.14	Channel
456	Riffle	CM EX R 20	1759752.80	2639463.15	6539.16	Channel
457	Riffle	CM EX R 21	1759751.83	2639473.82	6539.47	Channel
458	Riffle	CM EX R 22	1759749.24	2639484.27	6539.79	Channel
459	Riffle	CM EX R 23	1759747.52	2639495.44	6539.98	Channel
460	Riffle	CM EX R 24	1759746.63	2639501.75	6540.04	Channel
461	Riffle	CM EX R 25	1759745.31	2639507.16	6540.90	Elevation of Water
462	Riffle	CM EX R 26	1759745.68	2639510.28	6540.73	Bottom of Bank
463	Riffle	CM EX R 27	1759745.84	2639511.16	6541.85	Bankfull (Edge of Riparian)
464	Riffle	CM EX R 28	1759743.99	2639514.06	6544.44	Top of Bank - Left Bank (Riparian)
465	Riffle	CM EX R 29	1759743.35	2639518.48	6544.76	(Riparian)
466	Riffle	CM EX R 30	1759742.43	2639522.47	6544.10	(Riparian)
467	Riffle	CM EX R 31	1759740.84	2639529.66	6545.26	(Riparian)
468	Riffle	CM EX R 32	1759739.82	2639534.76	6546.62	(Riparian)
469	Riffle	CM EX R 33	1759739.64	2639535.32	6546.71	Bottom of Rebar (Riparian)
470	Riffle	CM EX R 34	1759739.72	2639535.43	6547.24	Top of Rebar - Left Bank (Edge of Riparian)

*Derby Reach*

Point ID	Cross Section	Point Name	Northing	Easting	Elevation	Notes
471	Glide	Derby G	1740901.82	2601517.30	6416.39	Top of Rebar - Right Bank (Upland)
472	Glide	Derby G 1	1740900.93	2601517.75	6415.70	Bottom of Rebar (Upland)
473	Glide	Derby G 2	1740895.70	2601519.23	6411.25	(Edge of Riparian)
474	Glide	Derby G 3	1740888.33	2601522.82	6408.00	Top of Bank - Right Bank (Riparian)
475	Glide	Derby G 4	1740888.01	2601522.82	6407.40	Bankfull (Edge of Riparian)
476	Glide	Derby G 5	1740887.88	2601522.66	6406.36	Bottom of Bank
477	Glide	Derby G 6	1740886.22	2601523.63	6406.19	Elevation of Water
493	Glide	Derby G 7	1740883.64	2601526.72	6405.65	Channel
494	Glide	Derby G 8	1740874.23	2601532.34	6404.45	Channel
495	Glide	Derby G 9	1740866.39	2601535.08	6403.61	Channel
496	Glide	Derby G 10	1740858.33	2601539.41	6403.44	Channel
497	Glide	Derby G 11	1740851.72	2601543.12	6403.02	Channel
498	Glide	Derby G 12	1740843.54	2601546.79	6402.85	Channel
499	Glide	Derby G 13	1740835.21	2601550.69	6402.90	Channel
500	Glide	Derby G 14	1740829.04	2601552.41	6403.32	Channel
501	Glide	Derby G 15	1740822.04	2601556.00	6403.53	Channel
502	Glide	Derby G 16	1740812.16	2601560.55	6404.00	Channel
503	Glide	Derby G 17	1740803.86	2601564.31	6404.25	Channel
504	Glide	Derby G 18	1740799.37	2601566.88	6404.51	Channel
505	Glide	Derby G 19	1740790.22	2601572.57	6404.48	Channel
506	Glide	Derby G 20	1740780.34	2601577.76	6404.46	Channel
507	Glide	Derby G 21	1740771.38	2601581.00	6404.41	Channel
508	Glide	Derby G 22	1740763.20	2601585.23	6404.59	Channel
509	Glide	Derby G 23	1740754.72	2601589.35	6404.84	Channel
510	Glide	Derby G 24	1740745.38	2601593.66	6404.95	Channel
511	Glide	Derby G 25	1740734.95	2601597.93	6405.05	Channel
512	Glide	Derby G 26	1740721.06	2601604.42	6405.11	Channel
513	Glide	Derby G 27	1740713.08	2601608.95	6405.96	Elevation of Water
514	Glide	Derby G 28	1740712.20	2601609.51	6406.54	Bottom of Bank
515	Glide	Derby G 29	1740710.61	2601610.80	6406.94	Bankfull (Edge of Riparian)
516	Glide	Derby G 30	1740704.12	2601614.54	6408.72	Top of Bank - Left Bank (Riparian)
517	Glide	Derby G 31	1740680.34	2601625.75	6410.69	(Edge of Riparian)
518	Glide	Derby G 32	1740652.14	2601637.88	6429.66	Bottom of Rebar (Upland)
519	Glide	Derby G 33	1740651.59	2601638.37	6430.22	Top of Rebar - Left Bank (Upland)
484	Pool	Derby P 0	1740872.40	2601462.03	6415.35	Top of Rebar - Right Bank (Upland)
483	Pool	Derby P 1	1740871.54	2601462.39	6414.56	(Upland)
482	Pool	Derby P 2	1740868.07	2601463.37	6411.52	(Edge of Riparian)
481	Pool	Derby P 3	1740858.17	2601470.64	6409.23	Top of Bank - Right Bank (Riparian)
480	Pool	Derby P 4	1740857.46	2601471.19	6407.88	Bankfull (Edge of Riparian)
479	Pool	Derby P 5	1740854.01	2601472.80	6406.38	Bottom of Bank
478	Pool	Derby P 6	1740853.08	2601473.69	6406.13	Elevation of Water
557	Pool	Derby P 30	1740848.94	2601474.78	6405.17	Channel
556	Pool	Derby P 29	1740839.43	2601479.35	6404.20	Channel
555	Pool	Derby P 28	1740831.85	2601483.46	6404.01	Channel
554	Pool	Derby P 27	1740822.87	2601488.93	6403.42	Channel
553	Pool	Derby P 26	1740818.25	2601491.25	6403.33	Channel
552	Pool	Derby P 25	1740811.32	2601494.13	6403.63	Channel
551	Pool	Derby P 24	1740803.68	2601497.87	6403.36	Channel
550	Pool	Derby P 23	1740795.69	2601502.81	6403.66	Channel
549	Pool	Derby P 22	1740787.99	2601507.27	6404.30	Channel
548	Pool	Derby P 21	1740773.97	2601514.05	6404.19	Channel
547	Pool	Derby P 20	1740757.51	2601521.04	6404.44	Channel
546	Pool	Derby P 19	1740742.69	2601529.53	6404.53	Channel



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

545	Pool	Derby P 18	1740735.47	2601534.07	6403.95	Channel
544	Pool	Derby P 17	1740722.83	2601541.49	6404.77	Channel
543	Pool	Derby P 16	1740708.52	2601548.18	6404.17	Channel
542	Pool	Derby P 15	1740697.58	2601555.35	6404.05	Channel
541	Pool	Derby P 14	1740690.16	2601560.11	6403.34	Channel
540	Pool	Derby P 13	1740683.58	2601563.74	6403.62	Channel
539	Pool	Derby P 12	1740677.01	2601566.45	6404.28	Channel
538	Pool	Derby P 12b	1740671.40	2601569.80	6405.97	Elevation of Water
537	Pool	Derby P 11	1740668.87	2601570.84	6406.58	Bottom of Bank
536	Pool	Derby P 10	1740666.49	2601572.71	6407.70	Bankfull (Edge of Riparian)
535	Pool	Derby P 9	1740663.06	2601573.53	6409.18	Top of Bank - Left Bank (Edge of Riparian)
522	Pool	Derby P 8	1740633.31	2601586.88	6428.89	(Upland)
521	Pool	Derby P 7	1740629.29	2601587.87	6429.42	Bottom of Rebar (Upland)
520	Pool	Derby P	1740627.98	2601588.37	6430.10	Top of Rebar - Left Bank (Upland)
485	Riffle	Derby EX R	1740708.42	2601106.78	6417.18	Existing Tpost - Right Bank (Upland)
486	Riffle	Derby EX R 1	1740707.17	2601107.29	6417.04	(Upland)
487	Riffle	Derby EX R 2	1740701.28	2601110.16	6410.75	(Edge of Riparian)
488	Riffle	Derby EX R 3	1740697.25	2601112.29	6407.42	(Riparian)
489	Riffle	Derby EX R 4	1740696.81	2601112.87	6407.10	Top of Bank - Right Bank (Riparian)
490	Riffle	Derby EX R 5	1740695.65	2601113.52	6406.27	Bankfull (Edge of Riparian)
491	Riffle	Derby EX R 6	1740693.13	2601114.33	6404.83	Bottom of Bank
492	Riffle	Derby EX R 7	1740690.90	2601115.52	6404.34	Elevation of Water
558	Riffle	Derby EX R 18	1740687.83	2601117.62	6403.17	Channel
559	Riffle	Derby EX R 19	1740685.37	2601118.93	6402.71	Channel
560	Riffle	Derby EX R 20	1740681.55	2601120.81	6402.29	Channel
561	Riffle	Derby EX R 21	1740677.95	2601122.94	6402.04	Channel
562	Riffle	Derby EX R 22	1740673.83	2601125.39	6402.13	Channel
563	Riffle	Derby EX R 23	1740669.92	2601126.42	6402.85	Channel
564	Riffle	Derby EX R 24	1740665.38	2601128.18	6402.89	Channel
565	Riffle	Derby EX R 25	1740656.90	2601132.27	6403.75	Channel
566	Riffle	Derby EX R 26	1740644.39	2601138.18	6404.30	Channel
567	Riffle	Derby EX R 27	1740633.76	2601143.30	6404.31	Channel
568	Riffle	Derby EX R 28	1740627.08	2601146.81	6404.62	Elevation of Water
569	Riffle	Derby EX R 29	1740617.26	2601151.63	6404.62	Channel
570	Riffle	Derby EX R 30	1740607.54	2601155.48	6404.77	Channel
571	Riffle	Derby EX R 31	1740596.15	2601160.70	6404.59	Elevation of Water
572	Riffle	Derby EX R 32	1740586.86	2601166.11	6404.39	Channel
573	Riffle	Derby EX R 33	1740576.73	2601171.30	6404.20	Channel
574	Riffle	Derby EX R 34	1740565.79	2601176.36	6403.71	Channel
575	Riffle	Derby EX R 35	1740556.66	2601180.60	6403.41	Channel
576	Riffle	Derby EX R 36	1740550.22	2601183.04	6402.72	Channel
577	Riffle	Derby EX R 37	1740546.27	2601186.15	6402.11	Channel
578	Riffle	Derby EX R 38	1740544.60	2601186.83	6402.74	Bottom of Rebar
532	Riffle	Derby EX R 17	1740531.11	2601195.29	6402.54	Channel
531	Riffle	Derby EX R 16	1740527.00	2601197.67	6402.66	Channel
530	Riffle	Derby EX R 15	1740520.78	2601200.80	6403.11	Channel
529	Riffle	Derby EX R 14	1740514.04	2601203.30	6401.82	Channel
528	Riffle	Derby EX R 13	1740510.42	2601205.89	6401.46	Channel
527	Riffle	Derby EX R 12	1740507.21	2601207.21	6401.99	Channel
523	Riffle	Derby EX R 8	1740503.49	2601207.96	6404.62	Elevation of Water
524	Riffle	Derby EX R 9	1740503.11	2601208.12	6404.85	Bottom of Bank
525	Riffle	Derby EX R 10	1740501.54	2601208.26	6405.40	Bankfull (Edge of Riparian)
526	Riffle	Derby EX R 11	1740493.12	2601209.63	6409.47	Top of Bank - Left Bank (Edge of Riparian)
533	Riffle	Derby EX R 39	1740465.05	2601224.64	6430.27	Top of Rebar - Left Bank (Upland)
534	Riffle	Derby EX R 40	1740439.94	2601236.87	6432.98	Railroad Berm (Upland)

*Sweetwater Reach*

Point ID	Cross Section	Point Name	Northing	Easting	Elevation	Notes
579	Pool	SW P 0	1687338.47	2564610.58	6185.78	Top of Rebar - Right Bank (Upland)
580	Pool	SW P 1	1687338.84	2564611.93	6184.72	Bottom of Rebar (Upland)
581	Pool	SW P 2	1687340.75	2564624.93	6176.43	(Edge of Riparian)
582	Pool	SW P 3	1687341.71	2564632.77	6172.51	Top of Bank - Right Bank (Riparian)
583	Pool	SW P 4	1687342.88	2564635.77	6171.25	Bankfull (Edge of Riparian)
584	Pool	SW P 5	1687342.68	2564638.74	6169.68	Bottom of Bank
585	Pool	SW P 6	1687343.04	2564643.55	6169.41	Elevation of Water
613	Pool	SW P 33	1687344.17	2564645.50	6169.06	Channel
612	Pool	SW P 32	1687344.68	2564651.22	6168.28	Channel
611	Pool	SW P 31	1687345.07	2564657.57	6167.19	Channel
610	Pool	SW P 30	1687345.07	2564663.46	6166.79	Channel
609	Pool	SW P 29	1687345.38	2564667.32	6166.01	Channel
608	Pool	SW P 28	1687345.96	2564675.89	6165.79	Channel
607	Pool	SW P 27	1687346.27	2564682.00	6165.68	Channel
606	Pool	SW P 26	1687348.05	2564686.97	6165.78	Channel
605	Pool	SW P 25	1687348.90	2564690.19	6165.88	Channel
604	Pool	SW P 24	1687349.24	2564696.45	6166.15	Channel
603	Pool	SW P 23	1687350.00	2564703.39	6166.42	Channel
602	Pool	SW P 22	1687352.35	2564714.44	6166.75	Channel
601	Pool	SW P 21	1687353.40	2564723.50	6166.81	Channel
600	Pool	SW P 20	1687354.93	2564732.98	6166.81	Channel
599	Pool	SW P 19	1687355.73	2564745.36	6166.98	Channel
598	Pool	SW P 18	1687356.64	2564756.74	6167.27	Channel
597	Pool	SW P 17	1687357.17	2564764.36	6167.84	Channel
596	Pool	SW P 16	1687359.09	2564773.12	6168.95	Channel
595	Pool	SW P 15	1687360.64	2564783.42	6169.47	Elevation of Water
594	Pool	SW P 14	1687361.60	2564786.23	6169.62	Bottom of Bank
593	Pool	SW P 13	1687361.91	2564787.39	6170.97	Bankfull (Edge of Riparian)
592	Pool	SW P 12	1687363.05	2564790.51	6173.21	Top of Bank - Left Bank (Riparian)
591	Pool	SW P 11	1687365.65	2564809.90	6174.49	(Riparian)
590	Pool	SW P 10	1687366.40	2564820.58	6174.56	(Riparian)
589	Pool	SW P 9	1687367.41	2564833.42	6175.10	(Riparian)
588	Pool	SW P 8	1687369.18	2564846.10	6176.89	(Riparian)
587	Pool	SW P 7	1687370.19	2564855.07	6178.13	Bottom of Rebar (Riparian)
586	Pool	SW P	1687370.08	2564856.18	6178.92	Top of Rebar - Left Bank (Edge of Riparian)
615	Glide	SW G	1687272.29	2564612.65	6185.79	Top of Rebar - Right Bank (Upland)
616	Glide	SW G 1	1687272.26	2564613.71	6184.99	Bottom of Rebar (Upland)
617	Glide	SW G 2	1687272.50	2564624.70	6176.78	(Edge of Riparian)
618	Glide	SW G 3	1687273.52	2564632.96	6172.59	Top of Bank - Right Bank (Riparian)
619	Glide	SW G 4	1687273.23	2564635.15	6171.10	Bankfull (Edge of Riparian)
620	Glide	SW G 5	1687273.52	2564637.50	6169.65	Bottom of Bank
621	Glide	SW G 6	1687273.52	2564638.44	6169.47	Elevation of Water
622	Glide	SW G 7	1687274.14	2564644.36	6167.06	Channel
623	Glide	SW G 8	1687276.33	2564654.80	6167.22	Channel
624	Glide	SW G 9	1687277.61	2564665.10	6167.00	Channel
625	Glide	SW G 10	1687279.02	2564674.67	6166.96	Channel
626	Glide	SW G 11	1687280.14	2564684.62	6167.15	Channel
627	Glide	SW G 12	1687281.31	2564695.73	6167.31	Channel
628	Glide	SW G 13	1687281.60	2564702.68	6167.15	Channel
629	Glide	SW G 14	1687283.45	2564712.13	6167.30	Channel
630	Glide	SW G 15	1687281.83	2564720.03	6167.45	Channel
631	Glide	SW G 16	1687284.44	2564730.01	6167.57	Channel



2023 Cross-Sectional Channel Survey, Sediment Sampling, and Analysis  
Upper Colorado River Monitoring Segments 5 and 6

632	Glide	SW G 17	1687284.76	2564741.47	6167.26	Channel
633	Glide	SW G 18	1687285.58	2564749.82	6166.77	Channel
634	Glide	SW G 19	1687287.05	2564760.84	6167.25	Channel
635	Glide	SW G 20	1687287.68	2564769.06	6167.06	Channel
636	Glide	SW G 21	1687289.71	2564776.33	6167.65	Channel
637	Glide	SW G 22	1687290.93	2564783.23	6167.37	Channel
638	Glide	SW G 23	1687291.17	2564791.48	6168.41	Channel
639	Glide	SW G 24	1687292.30	2564799.95	6169.48	Elevation of Water
640	Glide	SW G 25	1687292.94	2564802.80	6169.17	Bottom of Bank
641	Glide	SW G 26	1687293.13	2564803.58	6170.01	Bankfull (Edge of Riparian)
642	Glide	SW G 27	1687293.06	2564810.54	6172.97	Top of Bank - Left Bank (Riparian)
643	Glide	SW G 28	1687294.59	2564819.84	6173.93	(Riparian)
644	Glide	SW G 29	1687295.94	2564828.68	6172.58	(Riparian)
645	Glide	SW G 30	1687296.89	2564834.13	6173.75	(Riparian)
646	Glide	SW G 31	1687297.19	2564845.85	6175.90	Bottom of Rebar (Riparian)
647	Glide	SW G 32	1687297.43	2564847.06	6176.59	Top of Rebar - Left Bank (Edge of Riparian)
648	Riffle	SW EX R	1687148.03	2564850.55	6176.00	Existing Tpost - Left Bank (Upland)
649	Riffle	SW EX R 1	1687148.17	2564849.46	6175.73	(Upland)
650	Riffle	SW EX R 2	1687147.96	2564845.83	6174.44	(Edge of Riparian)
651	Riffle	SW EX R 3	1687149.33	2564838.20	6172.13	Top of Bank - Left Bank (Riparian)
652	Riffle	SW EX R 4	1687150.68	2564832.21	6169.57	Bankfull (Edge of Riparian)
653	Riffle	SW EX R 5	1687151.31	2564830.96	6168.80	Bottom of Bank
654	Riffle	SW EX R 6	1687151.52	2564830.48	6168.87	Elevation of Water
655	Riffle	SW EX R 7	1687153.93	2564826.21	6167.96	Channel
656	Riffle	SW EX R 8	1687157.70	2564812.83	6167.20	Channel
657	Riffle	SW EX R 9	1687159.19	2564805.42	6166.84	Channel
658	Riffle	SW EX R 10	1687160.47	2564795.54	6167.13	Channel
659	Riffle	SW EX R 11	1687162.55	2564788.17	6167.42	Channel
660	Riffle	SW EX R 12	1687164.74	2564779.23	6167.50	Channel
661	Riffle	SW EX R 13	1687167.37	2564767.26	6166.81	Channel
662	Riffle	SW EX R 14	1687169.59	2564758.19	6167.01	Channel
663	Riffle	SW EX R 15	1687170.56	2564750.71	6167.39	Channel
664	Riffle	SW EX R 16	1687172.35	2564742.17	6167.54	Channel
665	Riffle	SW EX R 17	1687174.35	2564733.24	6167.47	Channel
666	Riffle	SW EX R 18	1687176.33	2564722.96	6167.41	Channel
667	Riffle	SW EX R 19	1687179.85	2564715.16	6167.16	Channel
668	Riffle	SW EX R 20	1687180.36	2564704.37	6167.40	Channel
669	Riffle	SW EX R 21	1687183.04	2564695.67	6167.43	Channel
670	Riffle	SW EX R 22	1687185.54	2564684.51	6167.49	Channel
671	Riffle	SW EX R 23	1687187.99	2564672.80	6167.71	Channel
672	Riffle	SW EX R 24	1687190.49	2564661.44	6167.55	Channel
673	Riffle	SW EX R 25	1687192.56	2564648.09	6167.88	Channel
674	Riffle	SW EX R 26	1687195.70	2564637.98	6167.97	Channel
675	Riffle	SW EX R 27	1687196.74	2564632.58	6169.23	Elevation of Water
676	Riffle	SW EX R 28	1687196.67	2564631.14	6169.39	Bottom of Bank
677	Riffle	SW EX R 29	1687197.26	2564629.07	6170.37	Bankfull (Edge of Riparian)
678	Riffle	SW EX R 30	1687199.71	2564621.03	6173.96	Top of Bank - Right Bank (Riparian)
679	Riffle	SW EX R 31	1687201.72	2564614.13	6179.14	(Edge of Riparian)
680	Riffle	SW EX R 32	1687202.45	2564607.49	6182.84	New Tpost - Right Bank (Upland)
681	Riffle	SW EX R 33	1687202.17	2564603.48	6184.61	Existing Tpost - Right Bank (Upland)