



# SISKIYOU RESOURCE CONSERVATION DISTRICT

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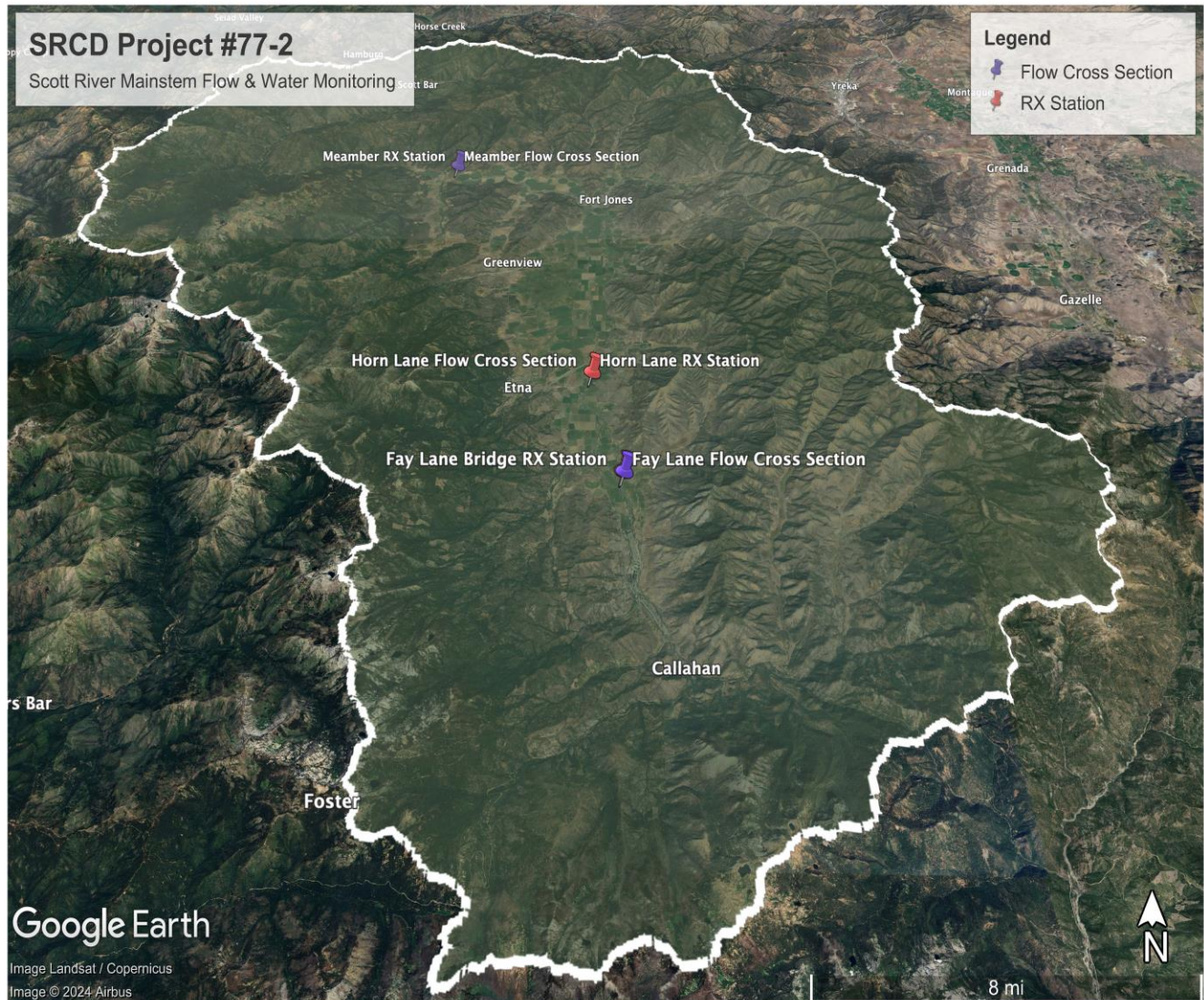
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## Annual Interim Performance Report

Performance Period: (June 6<sup>th</sup>, 2023 – December 31<sup>st</sup>, 2023)

Agreement #D2210006 (SRCD Project #77-2: Mainstem Flow and Water Quality Monitoring)



**Author:** Evan Senf. **Date:** March 2024. **Publisher:** SRCD.

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## Summary:

During the reporting period, the project team successfully implemented several critical tasks as part of the Mainstem Flow and Water Quality Monitoring initiative. Efforts were focused on enhancing our understanding and monitoring capabilities of the Scott River's hydrological dynamics. Key activities included the installation of flow stations and groundwater monitoring wells, the procurement and setup of real-time data transmission equipment, and the initiation of surface-water temperature monitoring. These activities have provided valuable data, contributing significantly to our ongoing research and environmental management efforts.

## Accomplishments:

- **Flow Monitoring Stations Installed:** Three flow station sites at the Meamber, Horn, and Fay sites were equipped with staff gages and Onset RX stations, enabling real-time water level and flow data transmission.
- **Ground-Water Monitoring Wells Operational:** Installed three new monitoring wells and utilized three existing ones to begin comprehensive groundwater monitoring at key locations.
- **Surface-Water Temperature Monitoring Initiated:** Deployed temperature loggers at four sites, providing real-time and archived temperature data accessible via the SRCD website.
- **Data Availability Enhanced:** Launched a public platform on the SRCD website for real-time and archived flow, stage, and temperature data, increasing data accessibility for the community and stakeholders.
- **Equipment Maintenance and Recovery:** Proactively managed and recovered monitoring equipment to prevent loss during high-water events, ensuring continuous data collection and system integrity.

Between June 6th, 2023, and December 31st, 2023, the SRCD team began an ambitious effort to advance the Mainstem Flow and Water Quality Monitoring project. This period saw the successful execution of strategically planned tasks aimed at strengthening our monitoring infrastructure and expanding our dataset to support comprehensive water resource management.

A notable achievement was the establishment of flow monitoring stations at the Meamber, Horn, and Fay sites. These stations, equipped with the latest technology, now provide continuous, real-time data on water levels and flow, integral for managing water resources and understanding environmental changes. The selection of these sites was strategic, designed to capture representative data across different sections of the Scott River, thereby enhancing the accuracy and reliability of our observations.

Groundwater monitoring also received a significant boost with the installation of three new wells and the integration of three existing ones into our monitoring network. This expansion has enabled us to gather data on groundwater dynamics, crucial for understanding the interplay between surface water and groundwater resources in the region.

The implementation of surface-water temperature monitoring across four critical sites marks another milestone in our commitment to environmental stewardship. By providing real-time temperature data, we are better positioned to assess the health of aquatic ecosystems and the impact of environmental factors on water quality.

The culmination of these efforts is reflected in the creation of a public platform on the SRCD website, where the community and stakeholders can access real-time and archived data on flow, stage, and temperature. This initiative not only promotes transparency but also encourages community engagement and informed decision-making.

As we move forward, the project team remains dedicated to building on these accomplishments. We are committed to enhancing our monitoring capabilities, refining our data analysis processes, and continuing to contribute valuable insights to water resource management and environmental conservation efforts.

Next steps:

- Survey precise elevations of ground-water monitoring wells, surface-water staff gages.
- Process provisional water surface elevation (WSE) data.
- Install surface-water (stage) gages more permanently to be stable through high-water events.
- Continue monitoring sites for WY2024.



Task 1.  
Scott River  
Flow  
Monitoring:

SRCD staff installed staff gages in the river at the Meamber, Horn and Fay sites. Staff gage locations were selected to represent the changes in water level as measured at the flow-discharge cross section. Staff

gages are linked to Onset RX stations (solar-powered, cellular connection) that send data to a cloud based private application. The application is calibrated with the actual flow-stage measurements (taken in the field at each site) to produce discharge data. This real-time data (from the Meamber and Fay sites) was then publicly displayed on our website's Streamflow Data page (SRCD public platform).

**Meamber site:** Flow station installation, monitoring, and first flow measurement took place on August 25<sup>th</sup>, 2023. Monitoring equipment at risk of washing away during high water was removed November 28<sup>th</sup>, 2023. A total of nine (9) flow measurements were taken with a Sontek Flow Tracker 1 and 2 acoustic Doppler Velocimeters.



**Horn site:** Flow station installation, monitoring, and first flow measurement took place on September 15<sup>th</sup>, 2023. Monitoring equipment at risk of washing away during high water was removed November 28th, 2023. Due to a damaged data cable, real-time monitoring was not possible on this site. A new cable was purchased for use during WY2024. Data was posted to the SRCD public platform as it became available. A total of six (6) flow measurements were taken with a Sontek Flow Tracker 1 and 2 acoustic Doppler Velocimeters.



Fay site: Flow station installation, monitoring, and first flow measurement took place on August 24<sup>th</sup>, 2023. Monitoring equipment at risk of washing away during high water was removed November 28<sup>th</sup>, 2023. A total of seven (7) flow measurements were taken with a Sontek Flow Tracker 1 and 2 acoustic Doppler Velocimeters.



**Task 2. Groundwater Monitoring:** Ground-water monitoring wells were installed at the Meamber site, Horn site, and Youngs Dam (approximately 1.5 miles upstream of the Horn site). An existing monitoring-well installed by the SRCD for a previous project was utilized at the Fay site. Two more existing monitoring wells located between the Fay and Horn sites were utilized. Six ground-water wells are being monitored. Monitoring initiated October 10<sup>th</sup>, 2023. Ground-water monitoring well sites are all outside of the hyporheic zone (saturated stream-channel) to accurately measure aquifer-stream interface. Four of the six wells are 2” diameter galvanized steel pipes between 8’-12’ long (custom fabricated with pointed ends and flow incisions) driven into the ground with a custom fabricated soil compactor fitted to an excavator (SRCD installed). The remaining two of six monitoring wells are existing agriculture pumps/wells.

**Task 3. Surface Water Temperature Monitoring:** Surface-water temperature was monitored at Meamber and Fay sites in real-time and posted to the SRCD public platform from August 24<sup>th</sup>, 2023, through November 28<sup>th</sup>, 2023. Surface-water temperature was also monitored at Horn site and Youngs Dam and posted to the SRCD public platform as it became available.

### Deliverables:

#### Task 1:

- ✓ Installed 3 flow station sites at Meamber, Horn and Fay sites.
- ✓ Created custom rating curves for each station.
- ✓ Created public platform for real-time and archived flow, stage, and temperature data on SRCD website.

#### Task 2:

- ✓ Installed 3 new ground-water monitoring wells and utilized 3 existing ground-water monitoring wells. Installed pressure transducers for monitoring the 6 ground-water monitoring wells.
- ✓ Publicized ground-water data on SRCD website.

#### Task 3:

- ✓ Installed 4 surface-water temperature loggers.
- ✓ Publicized surface-water temperature data on SRCD website.



## Discussion:

SRCD project 77-2: Mainstem Flow and Water Quality Monitoring initiative has significantly advanced our understanding of the Scott River's hydrological dynamics, offering insights critical for supporting the lifecycle of coho salmon. The correlation between streamflow conditions monitored under Project 77-2 and the spawning behaviors of coho salmon, as revealed by the Coho Salmon Spawning Ground Survey for the 2023-2024 season, underscores the profound impact of hydrology on salmonid ecology.

## Timing of Coho Salmon Migration:

One standout finding from the 2023-2024 Coho Salmon Spawning Ground Survey was the early observation of coho salmon at the California Department of Fish and Wildlife (CDFW) adult salmonid counting facilities. The first coho salmon of the season was observed on November 3rd, 2023, a notable advancement compared to previous years. Hydrologic conditions as recorded in SRCD project 77-2 not only enabled earlier access to spawning habitats but also allowed for a longer and potentially more successful spawning period.

This observation underscores the critical role of maintaining optimal flow conditions throughout the migration and spawning periods. The relationship between water levels, flow rates, and the distribution and density of coho salmon redds highlights the necessity of water management practices that are attuned to the ecological requirements of salmonids.

## Implications for Water Management and Salmonid Success:

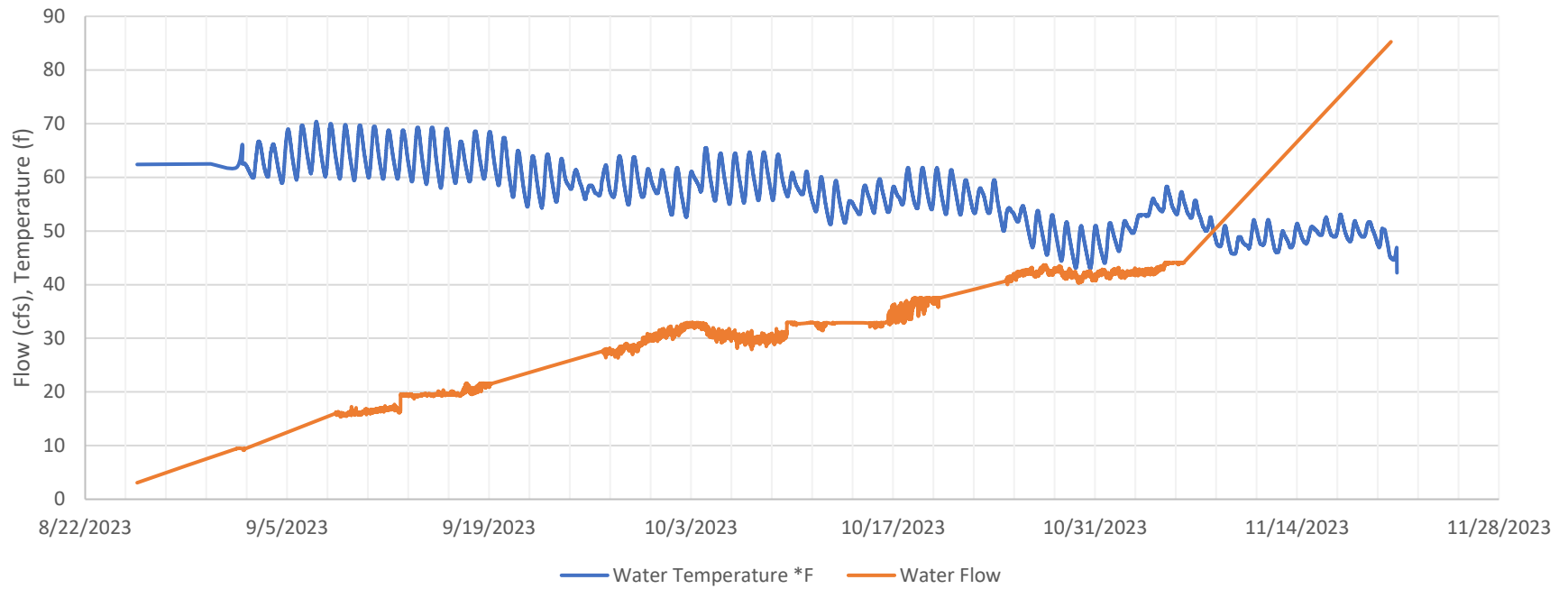
The integrated approach of Project 77-2, which focuses on detailed hydrological monitoring, combined with biological observations from the spawning ground survey, provides a compelling narrative on the importance of synchronized water management strategies. The data indicating an earlier migration of coho salmon into the Scott River watershed for WY2023 suggests that adjustments in water management to accommodate these patterns can significantly enhance the reproductive success and overall resilience of coho populations.

Incorporating specific observations, such as the early arrival of coho salmon, into our water management planning processes ensures that strategies are both data-driven and ecologically sensitive. By continuing to monitor hydrological conditions with precision and integrating these insights with biological data, we can develop water management practices that not only support human needs but also foster a thriving ecosystem.

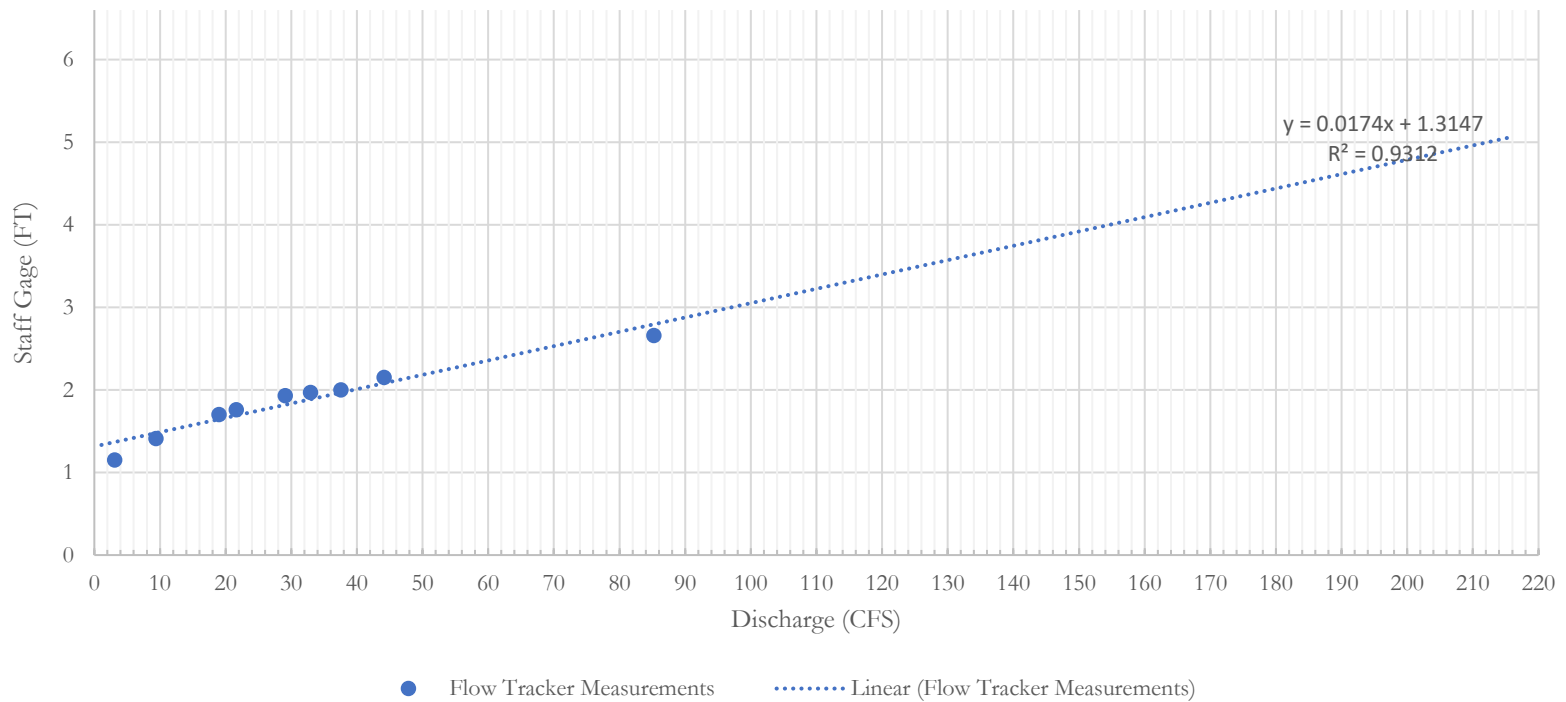
## Conclusion:

The interaction between hydrological monitoring from SRCD project 77-2 and coho salmon spawning behaviors, enriched by specific data on the timing of coho observations, exemplifies the interconnectedness of water management and salmonid conservation. The early migration of coho salmon in 2023, facilitated by favorable streamflow conditions, highlights the importance of informed, adaptive water management strategies that support both the ecological and human dimensions of the Scott River watershed. Continued collaboration and data sharing between hydrological and biological research efforts are essential for crafting sustainable management solutions that honor the intricate balance between water use and ecosystem health.

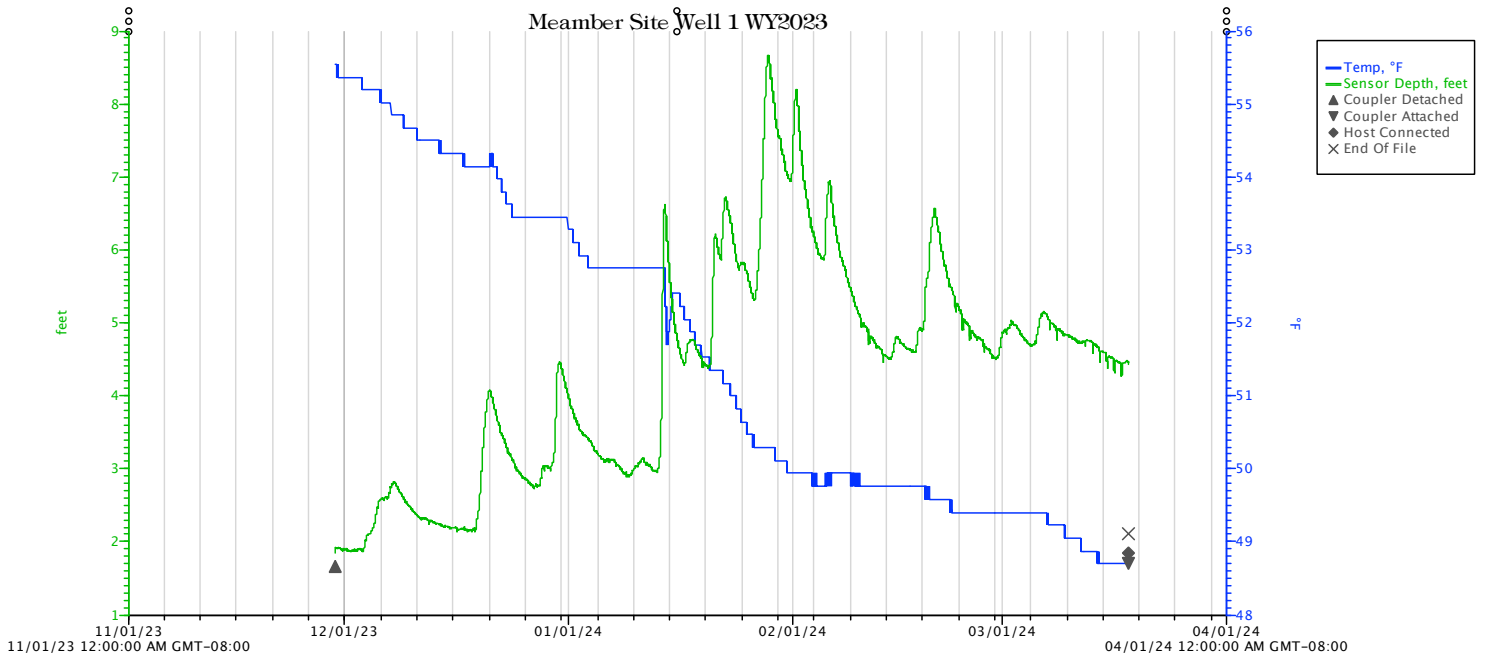
Member Site Water Flow and Temperature WY2023



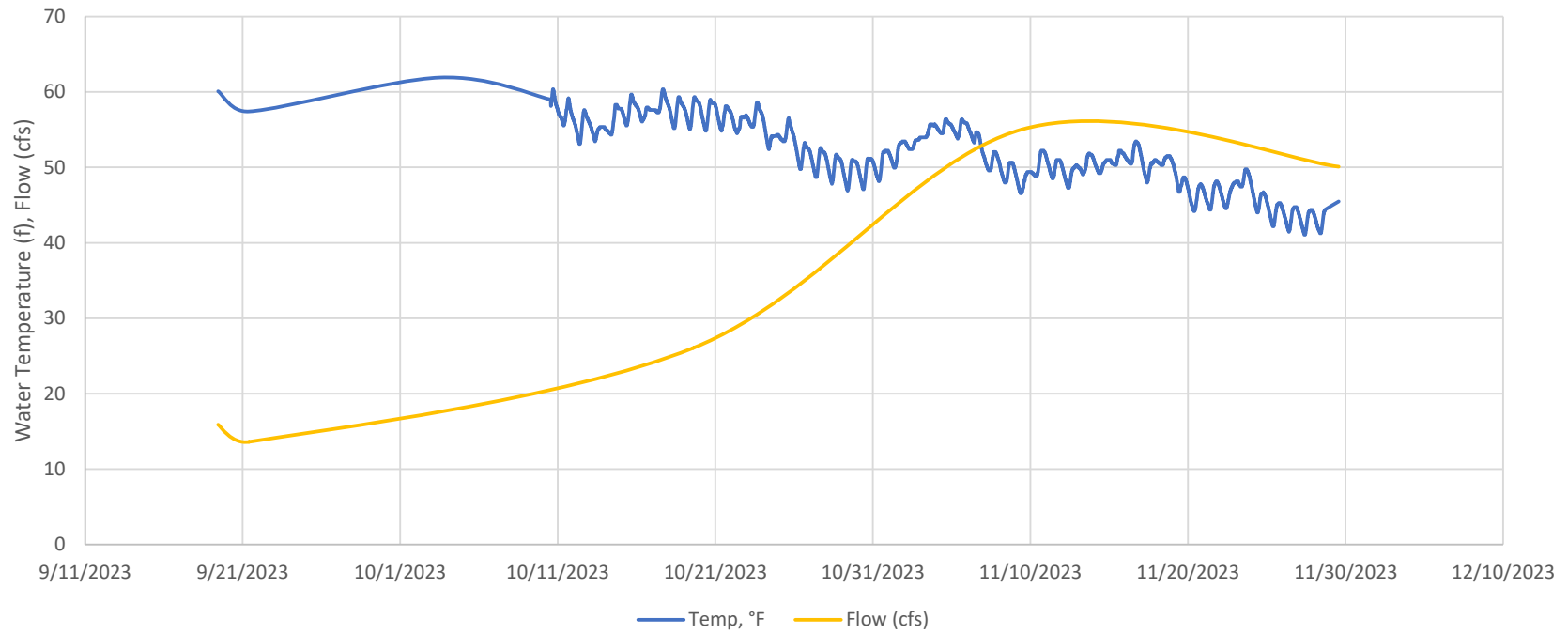
Rating Curve for Meamber Site WY23



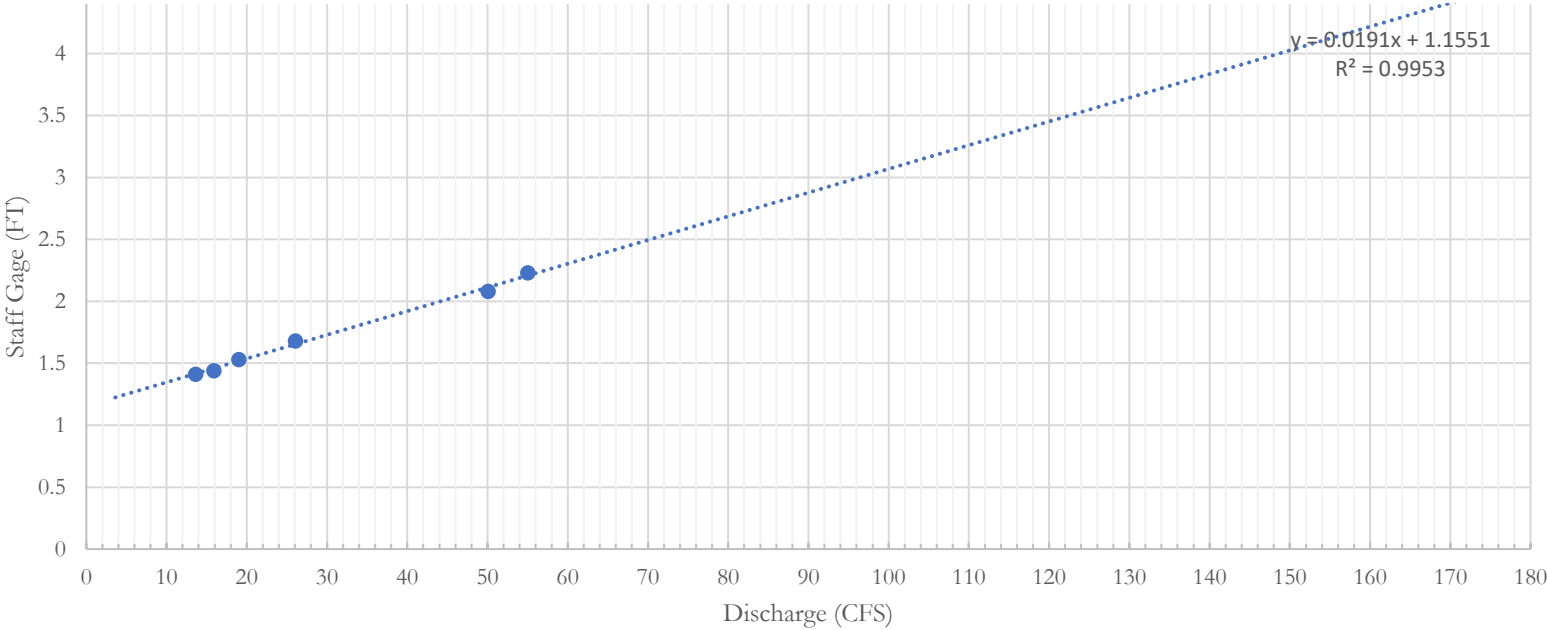
# Meamber Site Well 1 WY2023



### Horn Site Water Flow and Temperature WY2023

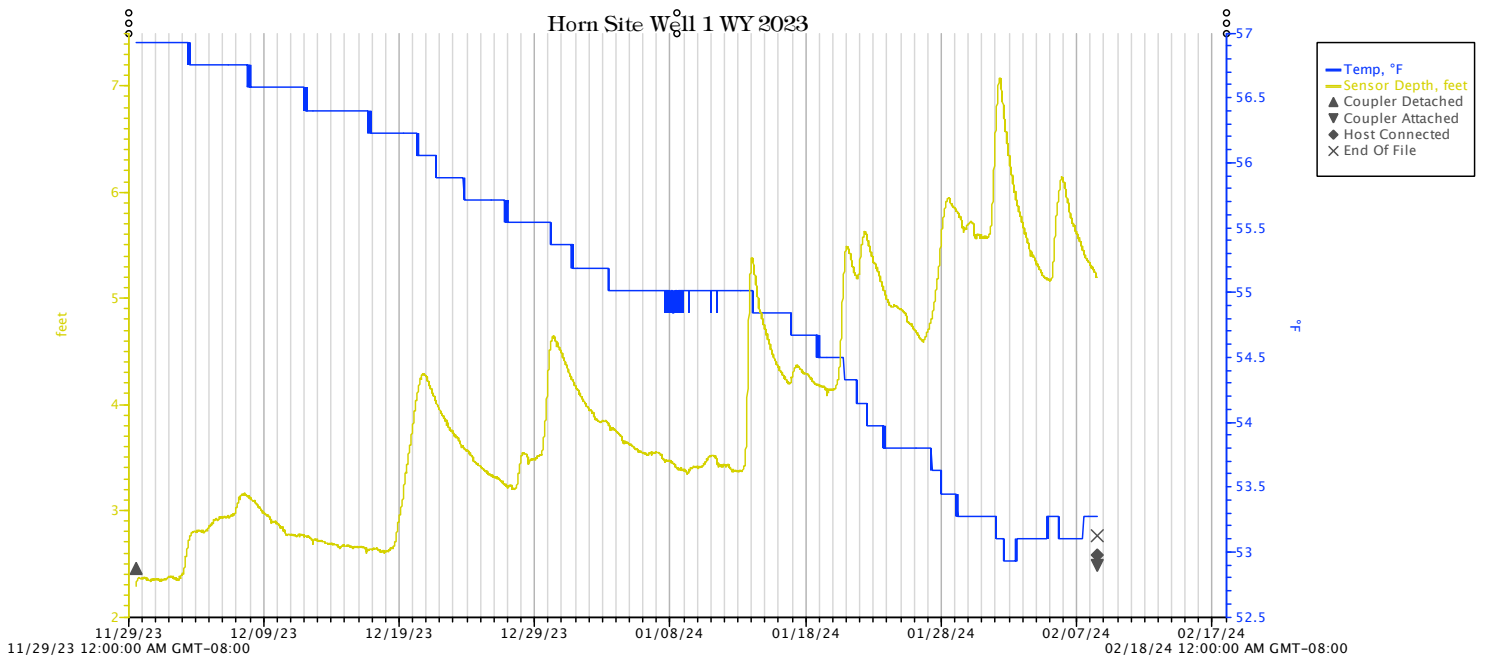


Rating Curve for Horn Site WY23

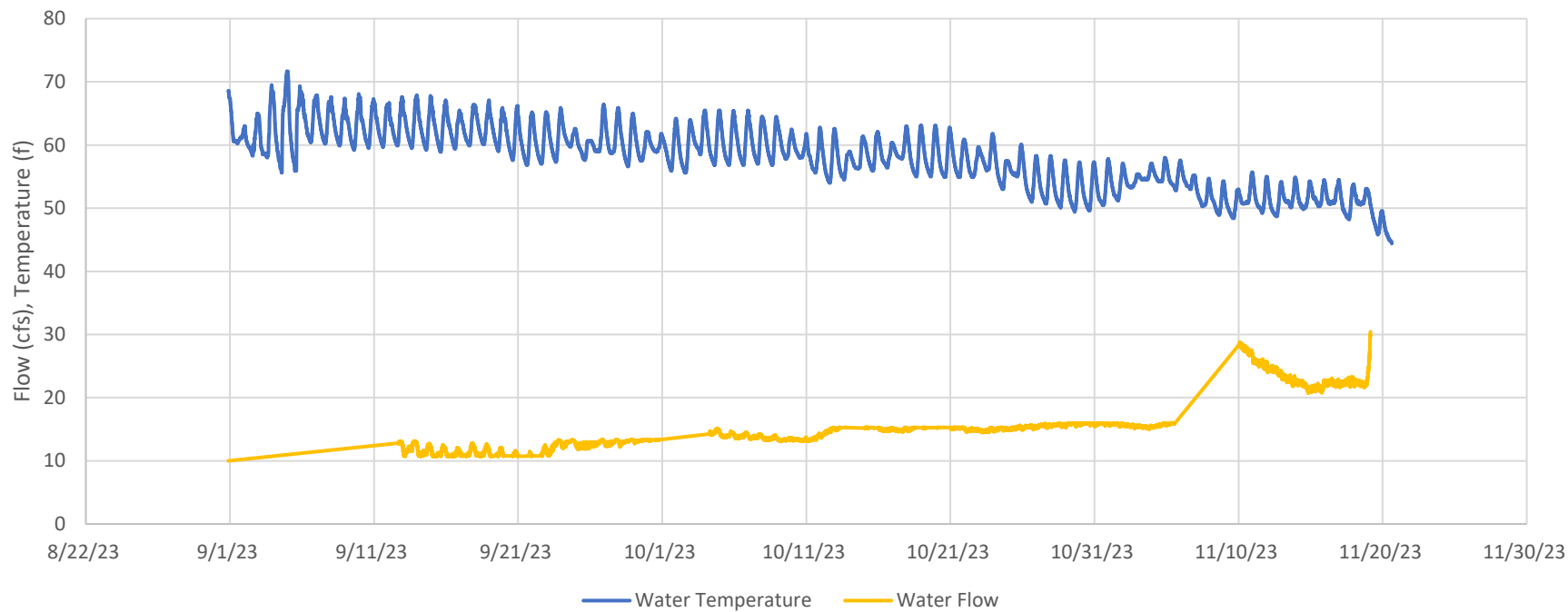


● Flow Tracker Measurements    ..... Linear (Flow Tracker Measurements)

# Horn Site Well 1 WY 2023

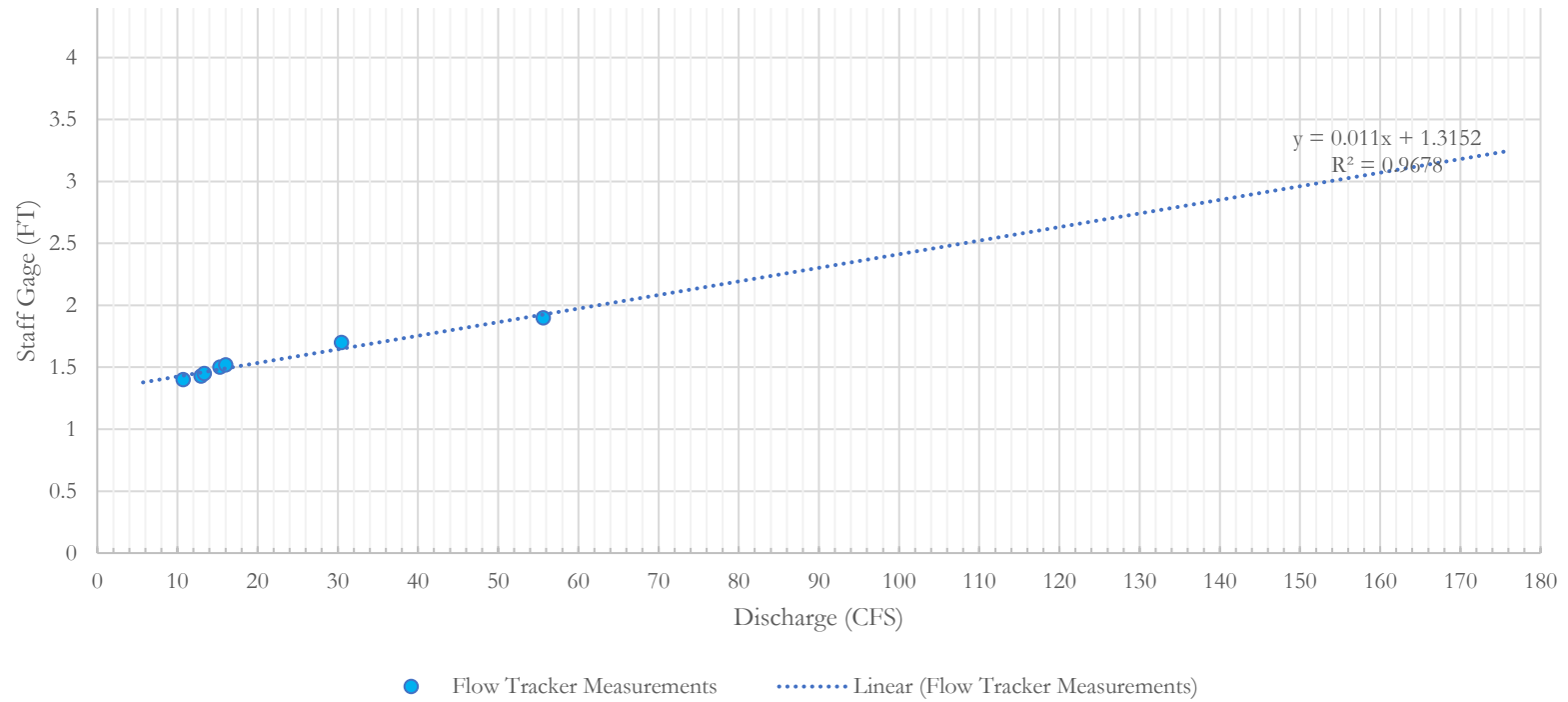


Fay Site Water Flow and Temperature WY2023

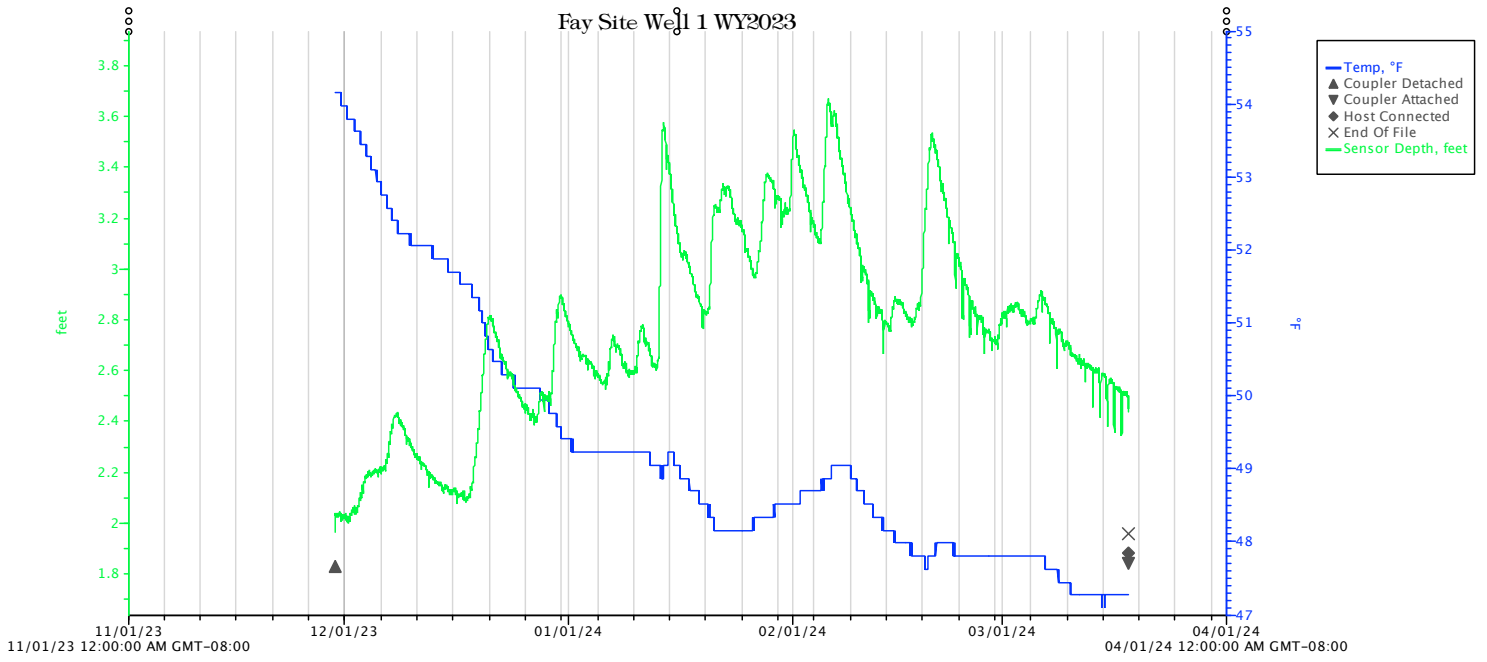


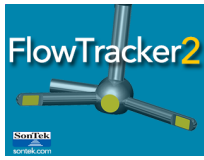


### Rating Curve for Fay Site WY2023



# Fay Site Well 1 WY2023





# Discharge Measurement Summary

**Site name** Meamber  
**Site number** ME  
**Operator(s)** Jm  
**File name** Meamber\_20230914-110110.ft  
**Comment**

<b>Start time</b>	9/14/2023 10:06 AM	<b>Sensor type</b>	Top Setting
<b>End time</b>	9/14/2023 10:57 AM	<b>Handheld serial number</b>	FT2H2333021
<b>Start location latitude</b>	41.629	<b>Probe serial number</b>	FT2P2334011
<b>Start location longitude</b>	-122.957	<b>Probe firmware</b>	1.30
<b>Calculations engine</b>	FlowTracker2	<b>Handheld software</b>	1.7

<b># Stations</b>	<b>Avg interval (s)</b>	<b>Total discharge (ft<sup>3</sup>/s)</b>
36	40	21.6357

<b>Total width (ft)</b>	<b>Total area (ft<sup>2</sup>)</b>	<b>Wetted Perimeter (ft)</b>
19.000	18.5975	19.201

<b>Mean SNR (dB)</b>	<b>Mean depth (ft)</b>	<b>Mean velocity (ft/s)</b>
27	0.979	1.1634

<b>Mean temp (°F)</b>	<b>Max depth (ft)</b>	<b>Max velocity (ft/s)</b>
60.319	1.340	1.5350

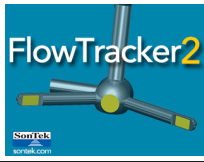
Discharge Uncertainty		
Category	ISO	IVE
Accuracy	1.0%	1.0%
Depth	0.1%	1.7%
Velocity	0.3%	0.8%
Width	0.1%	0.1%
Method	1.3%	
# Stations	1.4%	
<b>Overall</b>	<b>2.2%</b>	<b>2.1%</b>

<b>Discharge equation</b>	Mid Section
<b>Discharge uncertainty</b>	IVE
<b>Discharge reference</b>	Rated

Data Collection Settings	
<b>Salinity</b>	0.000 PSS-78
<b>Temperature</b>	-
<b>Sound speed</b>	-
<b>Mounting correction</b>	0.000 %

### Summary overview

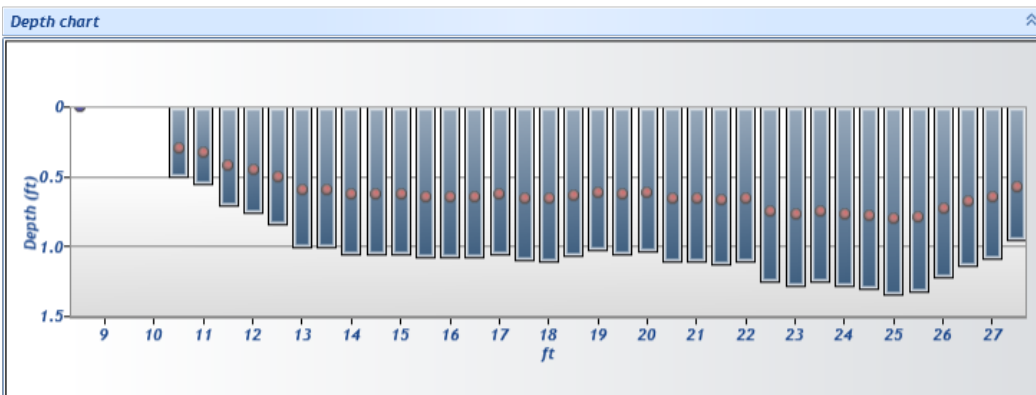
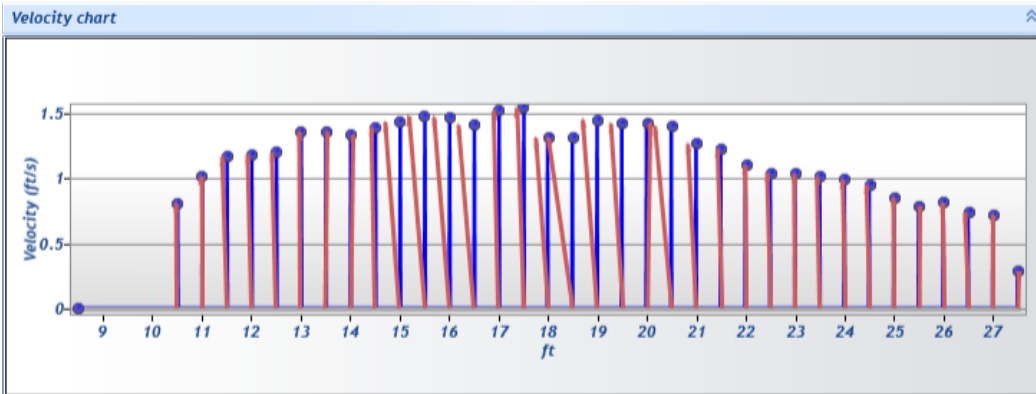
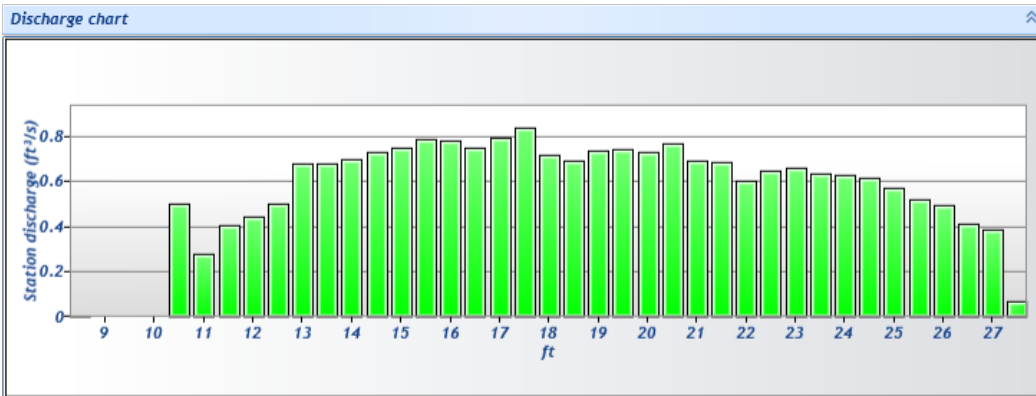
No changes were made to this file  
Quality control warnings

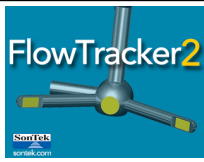


# Discharge Measurement Summary

**Site name** Meamber  
**Site number** ME  
**Operator(s)** Jm  
**File name** Meamber\_20230914-110110.ft  
**Comment**

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



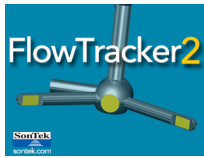


# Discharge Measurement Summary

**Site name** Meamber  
**Site number** ME  
**Operator(s)** Jm  
**File name** Meamber\_20230914-110110.ft  
**Comment**

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft <sup>2</sup> )	Flow (ft <sup>3</sup> /s)	%Q	
0	10:06 AM	8.500	None	0.000	0.0000	0.000	0	0.0000		0.8074	0.0000	0.0000	0.00	✓
1	10:07 AM	10.500	0.6	0.500	0.6000	0.300	80	0.8074	1.0000	0.8074	0.6250	0.5046	2.33	✓
2	10:09 AM	11.000	0.6	0.550	0.6000	0.330	80	1.0143	1.0000	1.0143	0.2750	0.2789	1.29	✓
3	10:11 AM	11.500	0.6	0.700	0.6000	0.420	80	1.1635	1.0000	1.1635	0.3500	0.4072	1.88	✓
4	10:12 AM	12.000	0.6	0.750	0.6000	0.450	80	1.1794	1.0000	1.1794	0.3750	0.4423	2.04	✓
5	10:14 AM	12.500	0.6	0.840	0.6000	0.504	80	1.1933	1.0000	1.1933	0.4200	0.5012	2.32	✓
6	10:16 AM	13.000	0.6	1.000	0.6000	0.600	80	1.3544	1.0000	1.3544	0.5000	0.6772	3.13	✓
7	10:17 AM	13.500	0.6	1.000	0.6000	0.600	80	1.3548	1.0000	1.3548	0.5000	0.6774	3.13	✓
8	10:19 AM	14.000	0.6	1.050	0.6000	0.630	80	1.3302	1.0000	1.3302	0.5250	0.6983	3.23	✓
9	10:20 AM	14.500	0.6	1.050	0.6000	0.630	80	1.3880	1.0000	1.3880	0.5250	0.7287	3.37	✓
10	10:22 AM	15.000	0.6	1.050	0.6000	0.630	80	1.4281	1.0000	1.4281	0.5250	0.7498	3.47	✓
11	10:23 AM	15.500	0.6	1.070	0.6000	0.642	80	1.4724	1.0000	1.4724	0.5350	0.7877	3.64	✓
12	10:25 AM	16.000	0.6	1.070	0.6000	0.642	80	1.4639	1.0000	1.4639	0.5350	0.7832	3.62	✓
13	10:27 AM	16.500	0.6	1.070	0.6000	0.642	80	1.4069	1.0000	1.4069	0.5350	0.7527	3.48	✓
14	10:28 AM	17.000	0.6	1.050	0.6000	0.630	80	1.5142	1.0000	1.5142	0.5250	0.7950	3.67	✓
15	10:30 AM	17.500	0.6	1.090	0.6000	0.654	80	1.5350	1.0000	1.5350	0.5450	0.8366	3.87	✓
16	10:31 AM	18.000	0.6	1.100	0.6000	0.660	80	1.3082	1.0000	1.3082	0.5500	0.7195	3.33	✓
17	10:33 AM	18.500	0.6	1.060	0.6000	0.636	80	1.3099	1.0000	1.3099	0.5300	0.6943	3.21	✓
18	10:35 AM	19.000	0.6	1.020	0.6000	0.612	80	1.4434	1.0000	1.4434	0.5100	0.7361	3.40	✓
19	10:36 AM	19.500	0.6	1.050	0.6000	0.630	80	1.4163	1.0000	1.4163	0.5250	0.7436	3.44	✓
20	10:38 AM	20.000	0.6	1.030	0.6000	0.618	80	1.4217	1.0000	1.4217	0.5150	0.7322	3.38	✓
21	10:39 AM	20.500	0.6	1.100	0.6000	0.660	80	1.3971	1.0000	1.3971	0.5500	0.7684	3.55	✓
22	10:40 AM	21.000	0.6	1.100	0.6000	0.660	80	1.2607	1.0000	1.2607	0.5500	0.6934	3.20	✓
23	10:41 AM	21.500	0.6	1.120	0.6000	0.672	80	1.2248	1.0000	1.2248	0.5600	0.6859	3.17	✓
24	10:43 AM	22.000	0.6	1.100	0.6000	0.660	80	1.0941	1.0000	1.0941	0.5500	0.6018	2.78	✓
25	10:44 AM	22.500	0.6	1.250	0.6000	0.750	80	1.0381	1.0000	1.0381	0.6250	0.6488	3.00	✓
26	10:45 AM	23.000	0.6	1.280	0.6000	0.768	80	1.0296	1.0000	1.0296	0.6400	0.6589	3.05	✓
27	10:47 AM	23.500	0.6	1.250	0.6000	0.750	80	1.0125	1.0000	1.0125	0.6250	0.6328	2.92	✓
28	10:48 AM	24.000	0.6	1.280	0.6000	0.768	80	0.9873	1.0000	0.9873	0.6400	0.6319	2.92	✓
29	10:49 AM	24.500	0.6	1.300	0.6000	0.780	80	0.9458	1.0000	0.9458	0.6500	0.6148	2.84	✓
30	10:51 AM	25.000	0.6	1.340	0.6000	0.804	80	0.8513	1.0000	0.8513	0.6700	0.5704	2.64	✓
31	10:52 AM	25.500	0.6	1.320	0.6000	0.792	80	0.7855	1.0000	0.7855	0.6600	0.5184	2.40	✓
32	10:53 AM	26.000	0.6	1.220	0.6000	0.732	80	0.8103	1.0000	0.8103	0.6100	0.4943	2.28	✓
33	10:54 AM	26.500	0.6	1.130	0.6000	0.678	80	0.7339	1.0000	0.7339	0.5650	0.4147	1.92	✓
34	10:56 AM	27.000	0.6	1.080	0.6000	0.648	80	0.7165	1.0000	0.7165	0.5400	0.3869	1.79	✓
35	10:57 AM	27.500	0.6	0.950	0.6000	0.570	80	0.2860	1.0000	0.2860	0.2375	0.0679	0.31	✓

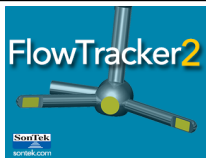


# Discharge Measurement Summary

**Site name** Meamber  
**Site number** ME  
**Operator(s)** Jm  
**File name** Meamber\_20230914-110110.ft  
**Comment**

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

Quality control warnings							
St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
3	10:11 AM	11.500	0.6	0.700	0.6000	0.420	Stn Spacing > QC
7	10:17 AM	13.500	0.6	1.000	0.6000	0.600	Standard Error > QC
12	10:25 AM	16.000	0.6	1.070	0.6000	0.642	Standard Error > QC
15	10:30 AM	17.500	0.6	1.090	0.6000	0.654	Standard Error > QC
17	10:33 AM	18.500	0.6	1.060	0.6000	0.636	Velocity Angle > QC



# Discharge Measurement Summary

<b>Site name</b>	Horn
<b>Site number</b>	HO230915
<b>Operator(s)</b>	
<b>File name</b>	Horn_20230915-142534.ft
<b>Comment</b>	

<b>Start time</b>	9/15/2023 1:27 PM	<b>Sensor type</b>	Top Setting
<b>End time</b>	9/15/2023 2:18 PM	<b>Handheld serial number</b>	FT2H2333021
<b>Start location latitude</b>	41.456	<b>Probe serial number</b>	FT2P2334011
<b>Start location longitude</b>	-122.853	<b>Probe firmware</b>	1.30
<b>Calculations engine</b>	FlowTracker2	<b>Handheld software</b>	1.7

<b># Stations</b>	<b>Avg interval (s)</b>	<b>Total discharge (ft<sup>3</sup>/s)</b>
35	40	13.6479

<b>Total width (ft)</b>	<b>Total area (ft<sup>2</sup>)</b>	<b>Wetted Perimeter (ft)</b>
15.500	11.2885	15.680

<b>Mean SNR (dB)</b>	<b>Mean depth (ft)</b>	<b>Mean velocity (ft/s)</b>
23	0.728	1.2090

<b>Mean temp (°F)</b>	<b>Max depth (ft)</b>	<b>Max velocity (ft/s)</b>
63.931	1.100	1.8888

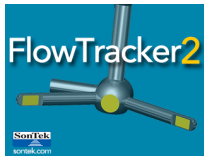
Discharge Uncertainty		
Category	ISO	IVE
Accuracy	1.0%	1.0%
Depth	0.3%	2.1%
Velocity	0.4%	2.8%
Width	0.1%	0.1%
Method	1.4%	
# Stations	1.5%	
<b>Overall</b>	<b>2.3%</b>	<b>3.7%</b>

<b>Discharge equation</b>	Mid Section
<b>Discharge uncertainty</b>	IVE
<b>Discharge reference</b>	Rated

Data Collection Settings	
<b>Salinity</b>	0.000 PSS-78
<b>Temperature</b>	-
<b>Sound speed</b>	-
<b>Mounting correction</b>	0.000 %




**Summary overview**

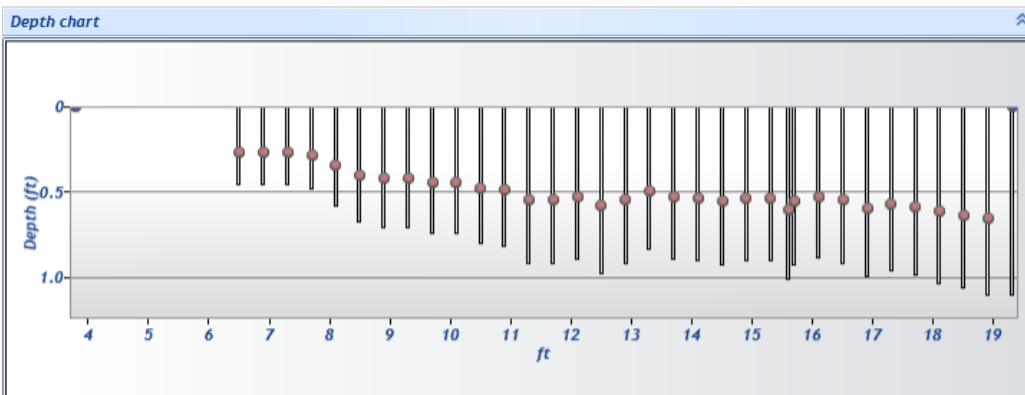
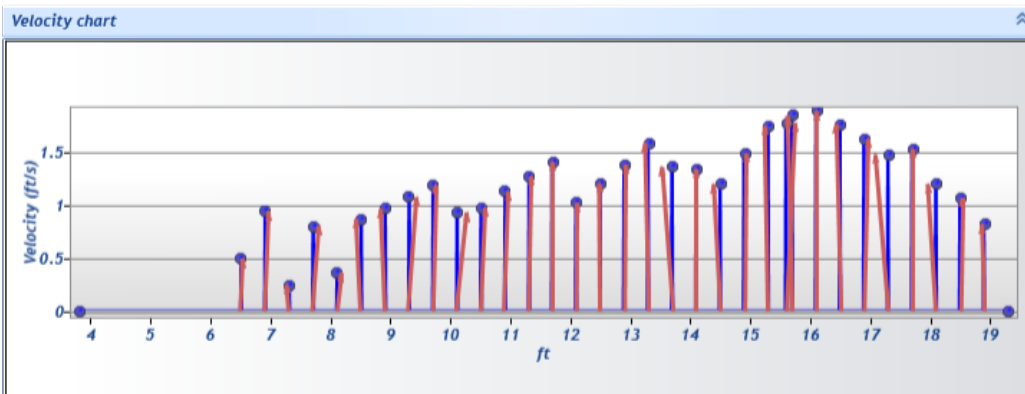
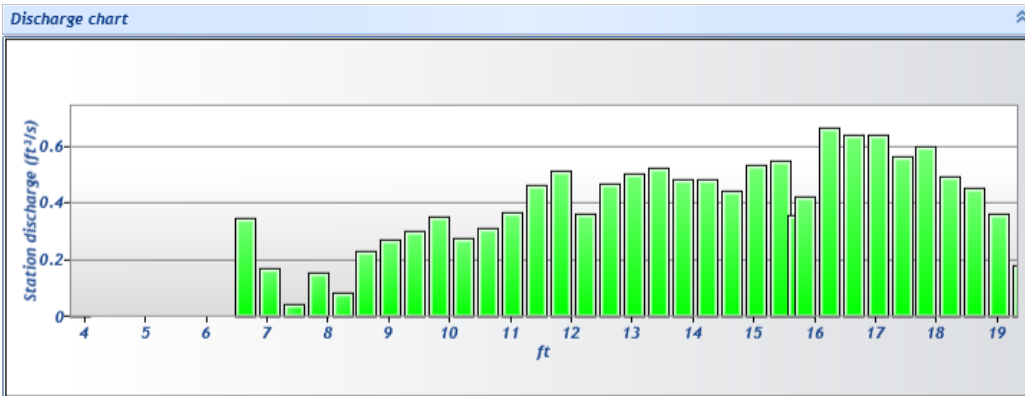
No changes were made to this file  
Quality control warnings



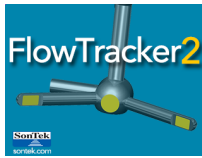
# Discharge Measurement Summary

**Site name** Horn  
**Site number** HO230915  
**Operator(s)**  
**File name** Horn\_20230915-142534.ft  
**Comment**

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





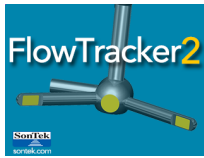


# Discharge Measurement Summary

**Site name**      Horn  
**Site number**    HO230915  
**Operator(s)**  
**File name**      Horn\_20230915-142534.ft  
**Comment**

## Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correction	Mean Velocity (ft/s)	Area (ft <sup>2</sup> )	Flow (ft <sup>3</sup> /s)	%Q	
0	1:27 PM	3.800	None	0.000	0.0000	0.000	0	0.0000		0.4983	0.0000	0.0000	0.00	✓
1	1:27 PM	6.500	0.6	0.450	0.6000	0.270	80	0.4983	1.0000	0.4983	0.6975	0.3476	2.55	✓
2	1:30 PM	6.900	0.6	0.450	0.6000	0.270	80	0.9448	1.0000	0.9448	0.1800	0.1701	1.25	✓
3	1:32 PM	7.300	0.6	0.450	0.6000	0.270	80	0.2482	1.0000	0.2482	0.1800	0.0447	0.33	✓
4	1:33 PM	7.700	0.6	0.480	0.6000	0.288	80	0.8046	1.0000	0.8046	0.1920	0.1545	1.13	✓
5	1:34 PM	8.100	0.6	0.580	0.6000	0.348	80	0.3626	1.0000	0.3626	0.2320	0.0841	0.62	✓
6	1:36 PM	8.500	0.6	0.670	0.6000	0.402	80	0.8687	1.0000	0.8687	0.2680	0.2328	1.71	✓
7	1:38 PM	8.900	0.6	0.700	0.6000	0.420	80	0.9697	1.0000	0.9697	0.2800	0.2715	1.99	✓
8	1:39 PM	9.300	0.6	0.700	0.6000	0.420	80	1.0773	1.0000	1.0773	0.2800	0.3017	2.21	✓
9	1:40 PM	9.700	0.6	0.740	0.6000	0.444	80	1.1896	1.0000	1.1896	0.2960	0.3521	2.58	✓
10	1:43 PM	10.100	0.6	0.740	0.6000	0.444	80	0.9308	1.0000	0.9308	0.2960	0.2755	2.02	✓
11	1:44 PM	10.500	0.6	0.800	0.6000	0.480	80	0.9805	1.0000	0.9805	0.3200	0.3138	2.30	✓
12	1:45 PM	10.900	0.6	0.810	0.6000	0.486	80	1.1301	1.0000	1.1301	0.3240	0.3662	2.68	✓
13	1:46 PM	11.300	0.6	0.910	0.6000	0.546	80	1.2751	1.0000	1.2751	0.3640	0.4641	3.40	✓
14	1:48 PM	11.700	0.6	0.910	0.6000	0.546	80	1.4098	1.0000	1.4098	0.3640	0.5132	3.76	✓
15	1:49 PM	12.100	0.6	0.890	0.6000	0.534	80	1.0247	1.0000	1.0247	0.3560	0.3648	2.67	✓
16	1:50 PM	12.500	0.6	0.970	0.6000	0.582	80	1.2081	1.0000	1.2081	0.3880	0.4687	3.43	✓
17	1:52 PM	12.900	0.6	0.910	0.6000	0.546	80	1.3853	1.0000	1.3853	0.3640	0.5042	3.69	✓
18	1:53 PM	13.300	0.6	0.830	0.6000	0.498	80	1.5889	1.0000	1.5889	0.3320	0.5275	3.87	✓
19	1:54 PM	13.700	0.6	0.890	0.6000	0.534	80	1.3634	1.0000	1.3634	0.3560	0.4854	3.56	✓
20	1:55 PM	14.100	0.6	0.900	0.6000	0.540	80	1.3410	1.0000	1.3410	0.3600	0.4827	3.54	✓
21	1:57 PM	14.500	0.6	0.920	0.6000	0.552	80	1.2013	1.0000	1.2013	0.3680	0.4421	3.24	✓
22	1:58 PM	14.900	0.6	0.900	0.6000	0.540	80	1.4900	1.0000	1.4900	0.3600	0.5364	3.93	✓
23	1:59 PM	15.300	0.6	0.900	0.6000	0.540	80	1.7432	1.0000	1.7432	0.3150	0.5491	4.02	✓
24	2:15 PM	15.600	0.6	1.010	0.6000	0.606	80	1.7750	1.0000	1.7750	0.2020	0.3586	2.63	✓
25	2:00 PM	15.700	0.6	0.920	0.6000	0.552	80	1.8480	1.0000	1.8480	0.2300	0.4250	3.11	✓
26	2:02 PM	16.100	0.6	0.880	0.6000	0.528	80	1.8888	1.0000	1.8888	0.3520	0.6648	4.87	✓
27	2:03 PM	16.500	0.6	0.910	0.6000	0.546	80	1.7646	1.0000	1.7646	0.3640	0.6423	4.71	✓
28	2:04 PM	16.900	0.6	0.990	0.6000	0.594	80	1.6262	1.0000	1.6262	0.3960	0.6440	4.72	✓
29	2:05 PM	17.300	0.6	0.960	0.6000	0.576	80	1.4772	1.0000	1.4772	0.3840	0.5672	4.16	✓
30	2:07 PM	17.700	0.6	0.980	0.6000	0.588	80	1.5307	1.0000	1.5307	0.3920	0.6000	4.40	✓
31	2:08 PM	18.100	0.6	1.030	0.6000	0.618	80	1.2037	1.0000	1.2037	0.4120	0.4959	3.63	✓
32	2:10 PM	18.500	0.6	1.060	0.6000	0.636	80	1.0708	1.0000	1.0708	0.4240	0.4540	3.33	✓
33	2:11 PM	18.900	0.6	1.100	0.6000	0.660	80	0.8231	1.0000	0.8231	0.4400	0.3622	2.65	✓
34	2:18 PM	19.300	None	1.100	0.0000	0.000	0	0.0000	1.0000	0.8231	0.2200	0.1811	1.33	✓

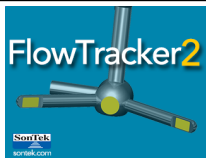


# Discharge Measurement Summary

**Site name**      Horn  
**Site number**    HO230915  
**Operator(s)**  
**File name**      Horn\_20230915-142534.ft  
**Comment**

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

Quality control warnings							
St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
2	1:30 PM	6.900	0.6	0.450	0.6000	0.270	Stn Spacing > QC
3	1:32 PM	7.300	0.6	0.450	0.6000	0.270	Stn Spacing > QC
4	1:33 PM	7.700	0.6	0.480	0.6000	0.288	Boundary Interference, Standard Error > QC
6	1:36 PM	8.500	0.6	0.670	0.6000	0.402	Standard Error > QC
9	1:40 PM	9.700	0.6	0.740	0.6000	0.444	Large SNR Variation
11	1:44 PM	10.500	0.6	0.800	0.6000	0.480	Standard Error > QC
19	1:54 PM	13.700	0.6	0.890	0.6000	0.534	Standard Error > QC
28	2:04 PM	16.900	0.6	0.990	0.6000	0.594	Standard Error > QC
29	2:05 PM	17.300	0.6	0.960	0.6000	0.576	Standard Error > QC



# Discharge Measurement Summary

**Site name** Fay  
**Site number** FA230914  
**Operator(s)** CG  
**File name** Fay\_20230914-151157.ft  
**Comment**

<b>Start time</b>	9/14/2023 1:10 PM	<b>Sensor type</b>	Top Setting
<b>End time</b>	9/14/2023 3:06 PM	<b>Handheld serial number</b>	FT2H2333021
<b>Start location latitude</b>	41.396	<b>Probe serial number</b>	FT2P2334011
<b>Start location longitude</b>	-122.833	<b>Probe firmware</b>	1.30
<b>Calculations engine</b>	FlowTracker2	<b>Handheld software</b>	1.7

# Stations	Avg interval (s)	Total discharge (ft <sup>3</sup> /s)
45	40	10.1050

Total width (ft)	Total area (ft <sup>2</sup> )	Wetted Perimeter (ft)
22.100	23.8320	23.405

Mean SNR (dB)	Mean depth (ft)	Mean velocity (ft/s)
32	1.078	0.4240

Mean temp (°F)	Max depth (ft)	Max velocity (ft/s)
68.744	1.500	0.8246

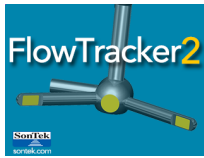
Discharge Uncertainty		
Category	ISO	IVE
Accuracy	1.0%	1.0%
Depth	0.1%	1.5%
Velocity	0.6%	2.6%
Width	0.1%	0.1%
Method	1.3%	
# Stations	1.2%	
<b>Overall</b>	<b>2.1%</b>	<b>3.2%</b>

<b>Discharge equation</b>	Mid Section
<b>Discharge uncertainty</b>	IVE
<b>Discharge reference</b>	Rated

Data Collection Settings	
<b>Salinity</b>	0.000 PSS-78
<b>Temperature</b>	-
<b>Sound speed</b>	-
<b>Mounting correction</b>	0.000 %




### Summary overview

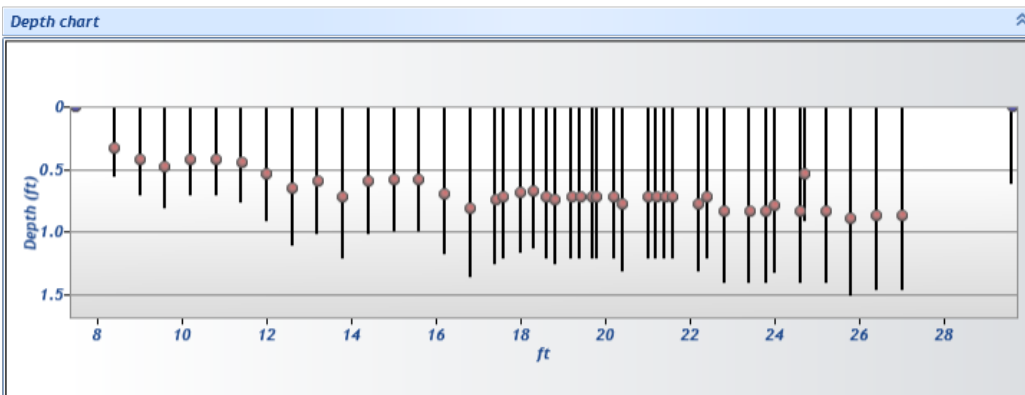
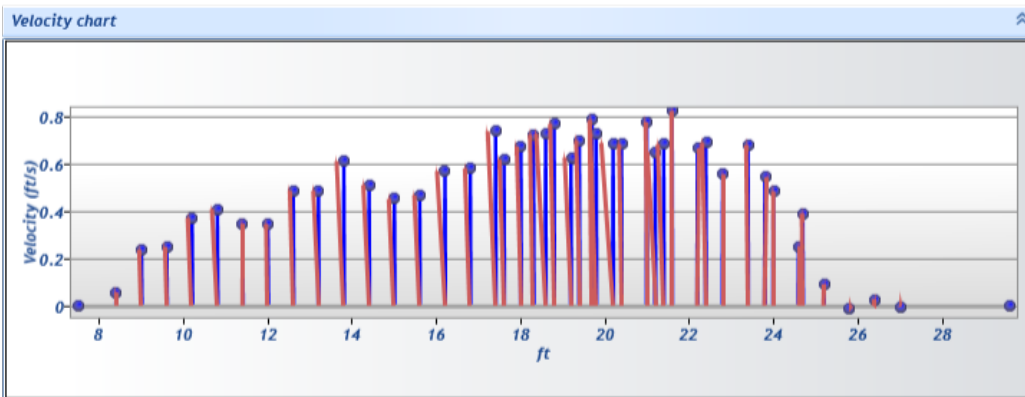
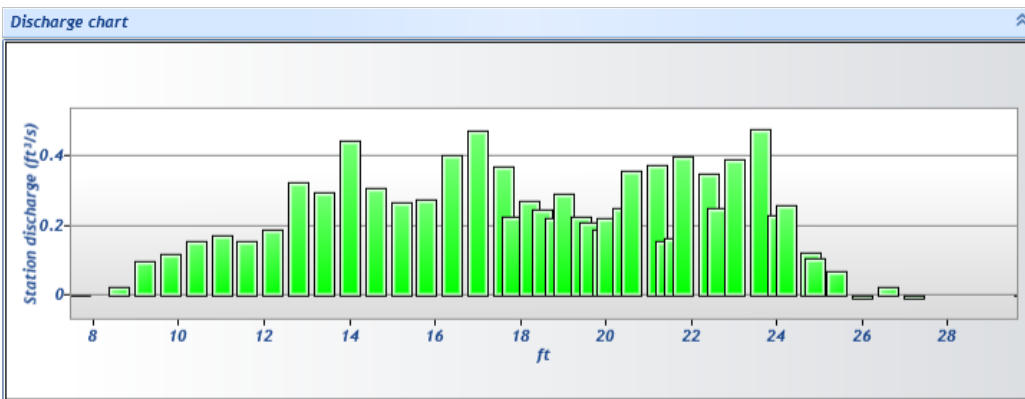
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Quality control warnings

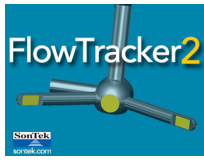


# Discharge Measurement Summary

**Site name** Fay  
**Site number** FA230914  
**Operator(s)** CG  
**File name** Fay\_20230914-151157.ft  
**Comment**

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



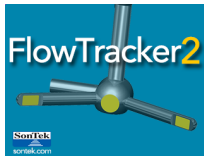


# Discharge Measurement Summary

**Site name** Fay  
**Site number** FA230914  
**Operator(s)** CG  
**File name** Fay\_20230914-151157.ft  
**Comment**

## Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correcti on	Mean Velocity (ft/s)	Area (ft <sup>2</sup> )	Flow (ft <sup>3</sup> /s)	%Q	
0	1:10 PM	7.500	None	0.000	0.0000	0.000	0	0.0000		0.0577	0.0000	0.0000	0.00	✓
1	1:11 PM	8.400	0.6	0.550	0.6000	0.330	80	0.0577	1.0000	0.0577	0.4125	0.0238	0.24	✓
2	1:20 PM	9.000	0.6	0.700	0.6000	0.420	80	0.2370	1.0000	0.2370	0.4200	0.0995	0.99	✓
3	1:22 PM	9.600	0.6	0.800	0.6000	0.480	80	0.2490	1.0000	0.2490	0.4800	0.1195	1.18	✓
4	1:25 PM	10.200	0.6	0.700	0.6000	0.420	80	0.3712	1.0000	0.3712	0.4200	0.1559	1.54	✓
5	1:27 PM	10.800	0.6	0.700	0.6000	0.420	80	0.4087	1.0000	0.4087	0.4200	0.1716	1.70	✓
6	1:29 PM	11.400	0.6	0.750	0.6000	0.450	80	0.3478	1.0000	0.3478	0.4500	0.1565	1.55	✓
7	1:31 PM	12.000	0.6	0.900	0.6000	0.540	80	0.3458	1.0000	0.3458	0.5400	0.1867	1.85	✓
8	1:33 PM	12.600	0.6	1.100	0.6000	0.660	80	0.4893	1.0000	0.4893	0.6600	0.3229	3.20	✓
9	1:36 PM	13.200	0.6	1.000	0.6000	0.600	80	0.4883	1.0000	0.4883	0.6000	0.2930	2.90	✓
10	1:40 PM	13.800	0.6	1.200	0.6000	0.720	80	0.6133	1.0000	0.6133	0.7200	0.4415	4.37	✓
11	1:42 PM	14.400	0.6	1.000	0.6000	0.600	80	0.5128	1.0000	0.5128	0.6000	0.3077	3.05	✓
12	1:45 PM	15.000	0.6	0.980	0.6000	0.588	80	0.4539	1.0000	0.4539	0.5880	0.2669	2.64	✓
13	1:48 PM	15.600	0.6	0.980	0.6000	0.588	80	0.4694	1.0000	0.4694	0.5880	0.2760	2.73	✓
14	1:50 PM	16.200	0.6	1.170	0.6000	0.702	80	0.5714	1.0000	0.5714	0.7020	0.4011	3.97	✓
15	1:53 PM	16.800	0.6	1.350	0.6000	0.810	80	0.5832	1.0000	0.5832	0.8100	0.4724	4.67	✓
16	1:55 PM	17.400	0.6	1.250	0.6000	0.750	80	0.7400	1.0000	0.7400	0.5000	0.3700	3.66	✓
17	2:38 PM	17.600	0.6	1.200	0.6000	0.720	80	0.6198	1.0000	0.6198	0.3600	0.2231	2.21	✓
18	1:56 PM	18.000	0.6	1.150	0.6000	0.690	80	0.6756	1.0000	0.6756	0.4025	0.2719	2.69	✓
19	2:32 PM	18.300	0.6	1.120	0.6000	0.672	80	0.7259	1.0000	0.7259	0.3360	0.2439	2.41	✓
20	1:58 PM	18.600	0.6	1.200	0.6000	0.720	80	0.7303	1.0000	0.7303	0.3000	0.2191	2.17	✓
21	2:35 PM	18.800	0.6	1.250	0.6000	0.750	80	0.7706	1.0000	0.7706	0.3750	0.2890	2.86	✓
22	2:01 PM	19.200	0.6	1.200	0.6000	0.720	80	0.6285	1.0000	0.6285	0.3600	0.2263	2.24	✓
23	2:42 PM	19.400	0.6	1.200	0.6000	0.720	80	0.7014	1.0000	0.7014	0.3000	0.2104	2.08	✓
24	2:44 PM	19.700	0.6	1.200	0.6000	0.720	80	0.7872	1.0000	0.7872	0.2400	0.1889	1.87	✓
25	2:02 PM	19.800	0.6	1.200	0.6000	0.720	80	0.7304	1.0000	0.7304	0.3000	0.2191	2.17	✓
26	2:45 PM	20.200	0.6	1.200	0.6000	0.720	80	0.6900	1.0000	0.6900	0.3600	0.2484	2.46	✓
27	2:04 PM	20.400	0.6	1.300	0.6000	0.780	80	0.6853	1.0000	0.6853	0.5200	0.3563	3.53	✓
28	2:07 PM	21.000	0.6	1.200	0.6000	0.720	80	0.7786	1.0000	0.7786	0.4800	0.3737	3.70	✓
29	2:48 PM	21.200	0.6	1.200	0.6000	0.720	80	0.6535	1.0000	0.6535	0.2400	0.1568	1.55	✓
30	2:50 PM	21.400	0.6	1.200	0.6000	0.720	80	0.6847	1.0000	0.6847	0.2400	0.1643	1.63	✓
31	2:08 PM	21.600	0.6	1.200	0.6000	0.720	80	0.8246	1.0000	0.8246	0.4800	0.3958	3.92	✓
32	2:10 PM	22.200	0.6	1.300	0.6000	0.780	80	0.6676	1.0000	0.6676	0.5200	0.3472	3.44	✓
33	2:52 PM	22.400	0.6	1.200	0.6000	0.720	80	0.6906	1.0000	0.6906	0.3600	0.2486	2.46	✓
34	2:12 PM	22.800	0.6	1.400	0.6000	0.840	80	0.5568	1.0000	0.5568	0.7000	0.3898	3.86	✓
35	2:13 PM	23.400	0.6	1.400	0.6000	0.840	80	0.6811	1.0000	0.6811	0.7000	0.4767	4.72	✓
36	2:58 PM	23.800	0.6	1.400	0.6000	0.840	80	0.5447	1.0000	0.5447	0.4200	0.2288	2.26	✓
37	2:15 PM	24.000	0.6	1.320	0.6000	0.792	80	0.4847	1.0000	0.4847	0.5280	0.2559	2.53	✓
38	2:16 PM	24.600	0.6	1.400	0.6000	0.840	80	0.2508	1.0000	0.2508	0.4900	0.1229	1.22	✓
39	2:55 PM	24.700	0.6	0.900	0.6000	0.540	80	0.3909	1.0000	0.3909	0.2700	0.1055	1.04	✓
40	2:18 PM	25.200	0.6	1.400	0.6000	0.840	80	0.0910	1.0000	0.0910	0.7700	0.0701	0.69	✓
41	2:19 PM	25.800	0.6	1.500	0.6000	0.900	80	-0.0081	1.0000	-0.0081	0.9000	-0.0073	-0.07	✓
42	2:22 PM	26.400	0.6	1.450	0.6000	0.870	80	0.0289	1.0000	0.0289	0.8700	0.0252	0.25	✓
43	2:27 PM	27.000	0.6	1.450	0.6000	0.870	80	-0.0035	1.0000	-0.0035	2.3200	-0.0081	-0.08	✓
44	3:06 PM	29.600	None	0.600	0.0000	0.000	0	0.0000	1.0000	-0.0035	0.7800	-0.0027	-0.03	✓

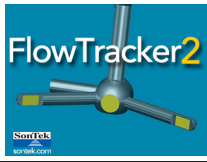


# Discharge Measurement Summary

**Site name** Fay  
**Site number** FA230914  
**Operator(s)** CG  
**File name** Fay\_20230914-151157.ft  
**Comment**

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

Quality control warnings							
St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
26	2:45 PM	20.200	0.6	1.200	0.6000	0.720	Velocity Angle > QC
30	2:50 PM	21.400	0.6	1.200	0.6000	0.720	Stn Spacing > QC, Boundary Interference
34	2:12 PM	22.800	0.6	1.400	0.6000	0.840	Stn Spacing > QC
40	2:18 PM	25.200	0.6	1.400	0.6000	0.840	Stn Spacing > QC
43	2:27 PM	27.000	0.6	1.450	0.6000	0.870	Large SNR Variation
44	3:06 PM	29.600	None	0.600	0.0000	0.000	Stn Spacing > QC, Water Depth > QC



# Discharge Measurement Summary

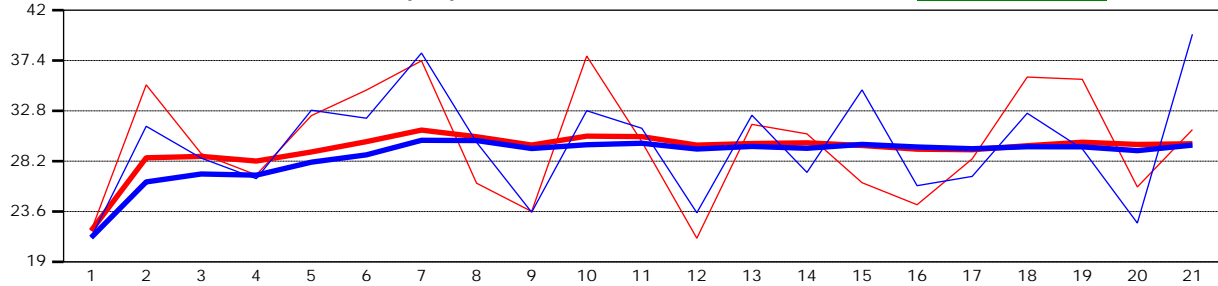
**Site name** Fay  
**Site number** FA230914  
**Operator(s)** CG  
**File name** Fay\_20230914-151157.ft  
**Comment**

<b>Beam 1</b>	
<b>Beam 2</b>	

Automated beam check Start time 9/14/2023 1:09:58 PM

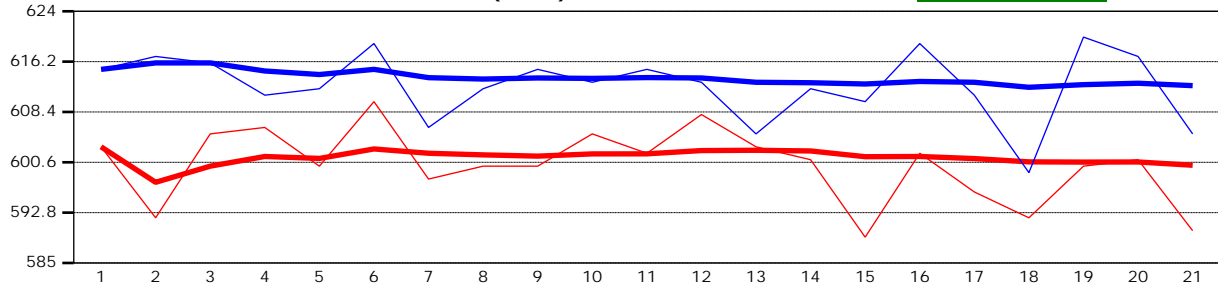
Automated beam check SNR(dB)

PASS

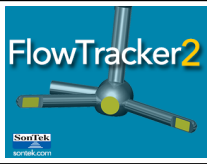


Automated beam check Noise level(cnts)

PASS



**Automated beam check Quality control warnings**  
 No quality control warnings



# Discharge Measurement Summary

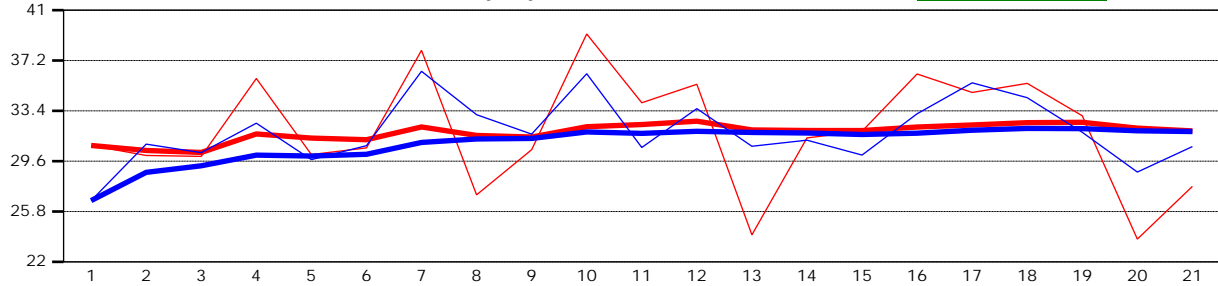
**Site name** Fay  
**Site number** FA230914  
**Operator(s)** CG  
**File name** Fay\_20230914-151157.ft  
**Comment**

<b>Beam 1</b>	<span style="color: red;">█</span>
<b>Beam 2</b>	<span style="color: blue;">█</span>

Automated beam check Start time 9/14/2023 1:09:58 PM

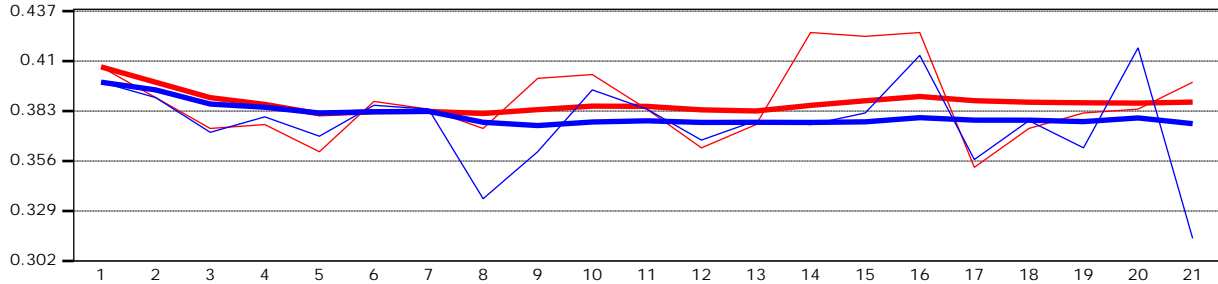
Automated beam check Peak level(dB)

**PASS**



Automated beam check Peak position(ft)

**PASS**



**Automated beam check Quality control warnings**  
No quality control warnings