

Community Flow Monitoring Network



Vancouver Island

SPRING 2024 Network Meeting

April 24, 2024

10:00 AM - 12:00 PM

Via Zoom

Project funding and support provided by:



PACIFIC SALMON
FOUNDATION



Ministry of
Environment and
Climate Change Strategy



BRITISH
COLUMBIA
Community Gaming Grants



HABITAT CONSERVATION
TRUST FOUNDATION



REGIONAL
DISTRICT
OF NANAIMO

The
McLean
Foundation

Meeting Agenda

1) Introduction

2) 2024 Update

-What's new

-What's next

3) Discussion – Flow Data to Action

5-10 minute break (~ 11:00)

4) Jon Jeffery – Aquarius Web Portal tutorial and how to use rating tables



Where are we?

Community
Flow Monitoring
Network



Vancouver Island



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Legend

- Current stations
- Proposed stations – 2024
- Interest in future involvement

2024 Update

- Data publication progress
- Station upgrades
- New Resources

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2024 Update

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- **Data publication progress**
 - Some data sets are now publicly available on Aquarius
 - Continuous discharge data review in progress
 - More info coming up in Jon's presentation

2024 Update

Station Upgrades

New Loggers

New housing set ups ->



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2024 Update

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New Resources

- Calendar / Field Schedule
 - Available on website & Google Drive

 <p>Vancouver Island Community Flow Monitoring Network</p> <p>Annual Field Work Schedule (General)</p>			
<u>Winter</u>	<u>Spring</u>	<u>Summer</u>	<u>Fall</u>
<p>January – early March:</p> <ul style="list-style-type: none">• Winter <i>high</i> flow measurement – FT2* stage + discharge• Logger downloads	<p>Late March – June:</p> <ul style="list-style-type: none">• Spring <i>moderate</i> flow measurement – FT2 stage + discharge• Station maintenance	<p>Late June/July:</p> <ul style="list-style-type: none">• Low flow measurement – FT2 or bucketfill stage + discharge• Station maintenance	<p>September/October:</p> <ul style="list-style-type: none">• Fall <i>moderate</i> flow measurement - FT stage + discharge• Level Survey

2024 Update



New Resources

- One-page Field Guide
 - Available on website & Google Drive

How to Read a Staff Gauge:

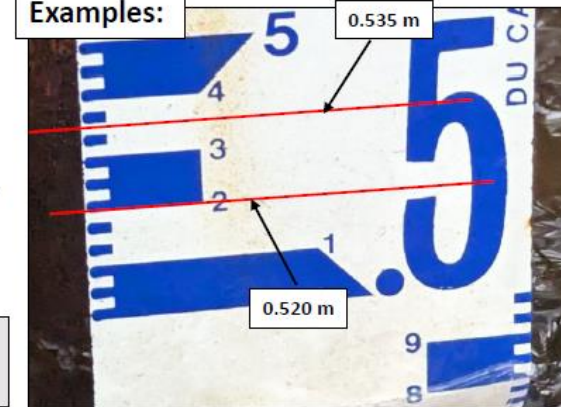
Always read to 3 decimal places.

Large numbers represent the 1st number after the decimal.

Smaller numbers represent the 2nd number after the decimal.

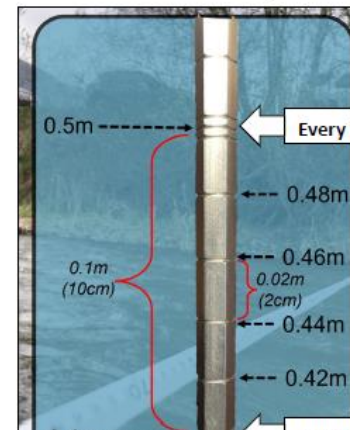
Small hatch marks are equivalent to 2 mm in height and represent the 3rd number after the decimal.

Examples:



Don't forget to note if the water is surging, and by how much.

How to Read a Wading Rod:



Tips:

Start at the top and work your way down

E.g., Find the closest triple line (50 cm) to the water level,

then count down by 10 cm (double lines) until the water level is near enough to count down by single lines (2 cm).

Remember to enter your

2024 Updates

Community
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cfmnvi.com

Home -
cfmnvi.com

HOME ABOUT OUR WORK **NEWS** RESOURCES DATA LINKS Q

7 Pilot stations
10+ Partner groups
100+ Field measurements completed
April 2022 Network started

Community Flow Monitoring Network

Vancouver Island Pilot Program

CFMN-VI is a network of community volunteers and eNGOs who are engaged in streamflow monitoring on the east coast of Vancouver Island.

2024 Updates

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cfmnvi.com/NEWS

The screenshot shows a web browser displaying the 'Winter 2024 Update' article on the website. The article is by 'cfmnvi_bccf' and includes a search bar, 'Recent Posts' list, and 'Recent Comments' section. A red arrow points from the 'News' page to the specific article page.

Winter 2024 Update

by cfmnvi_bccf

A big thank you to all of the partners, participants, and supporters of the Community Flow Monitoring Network in 2023!

Our 2nd year of the project finished strong with over **315 volunteer hours** dedicated to the Network in 2023 across 7 community run stations.

To start out a new year of monitoring in 2024, we have been working on collecting higher flow measurements throughout January and February at stations that are safe to wade into year-round.

Recent Posts

- Winter 2024 Update
- Fall 2023 Network Meeting
- Spring 2023 Network Meeting
- Fall 2022 Network Meeting
- Spring 2022 Network Meeting

Recent Comments

2024 – What's Next?

Community
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Network



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2024 – What's Next?

Spring Level Surveys

Community
Flow Monitoring
Network



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2024 – What's Next?

Spring Level Surveys

Flow Tracker

Community
Flow Monitoring
Network



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2024 – What's Next?

Spring Level Surveys

Flow Tracker

Flow Regatta

Community
Flow Monitoring
Network



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2024 – What's Next?

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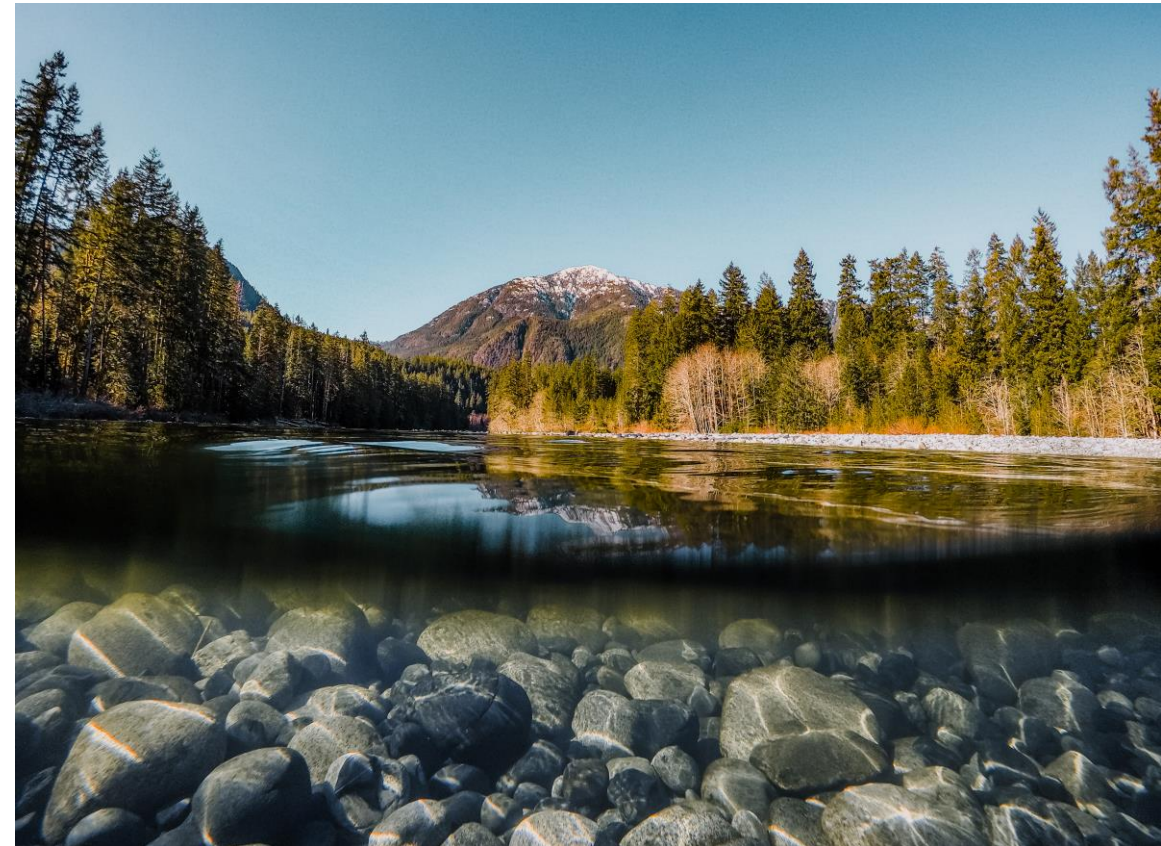
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Flow Regatta

July 2024 - Date TBD

Outdoors, in-person

Lunch, and snacks provided



2024 – What's Next?

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Flow Regatta – July 2024

Equipment demonstrations, skills testing

Flow -> habitat & watershed health

Guest speakers/presenters



2024 – What's Next?

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Flow Regatta

Location?? - TBD

Survey

- Where – i.e., how far are you willing to drive?
- When – Weekday, weekend?

2024 – What's Next?

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Station Summaries Report – 2024 Update

Vancouver Island Community Flow Monitoring Network Pilot Project

STATION SUMMARIES

2023-24



Discussion: Data to Action

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- What kinds of projects do you have planned for your stream in 2024?
- What are you most interested in learning about your stream in relation to flow?
- Have your goals for flow monitoring changed since you started?

Community Flow Monitoring Network



Vancouver Island

5 Minute Break

Project funding and support provided by:



Ministry of
Environment and
Climate Change Strategy



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Foundation**

The background image shows a stream flowing through a concrete-lined channel. The water is dark and turbulent, with white foam from rapids. The banks are lined with concrete blocks and are heavily overgrown with dense, tangled vegetation, including many bare, thin branches and some green leaves. The overall scene is somewhat desaturated and has a natural, slightly somber feel.

BCCF FloMo Meeting

Spring 2024

Data Discussion and Aquarius Web Portal Tutorial



Cooking with Hydrometrics

- Hydrometrics consists of **data collection** and **data review**
- Data Collection = getting the ingredients
- Data Review = cooking the ingredients



Hydrometric Chicken à la RISC

Ingredients:

- 1 cup - stage data
- 6-8 tbsp - field notes
- 1-2 tsp - benchmark level tie
- Meta-data to taste

Instructions:

- Bake according RISC standards

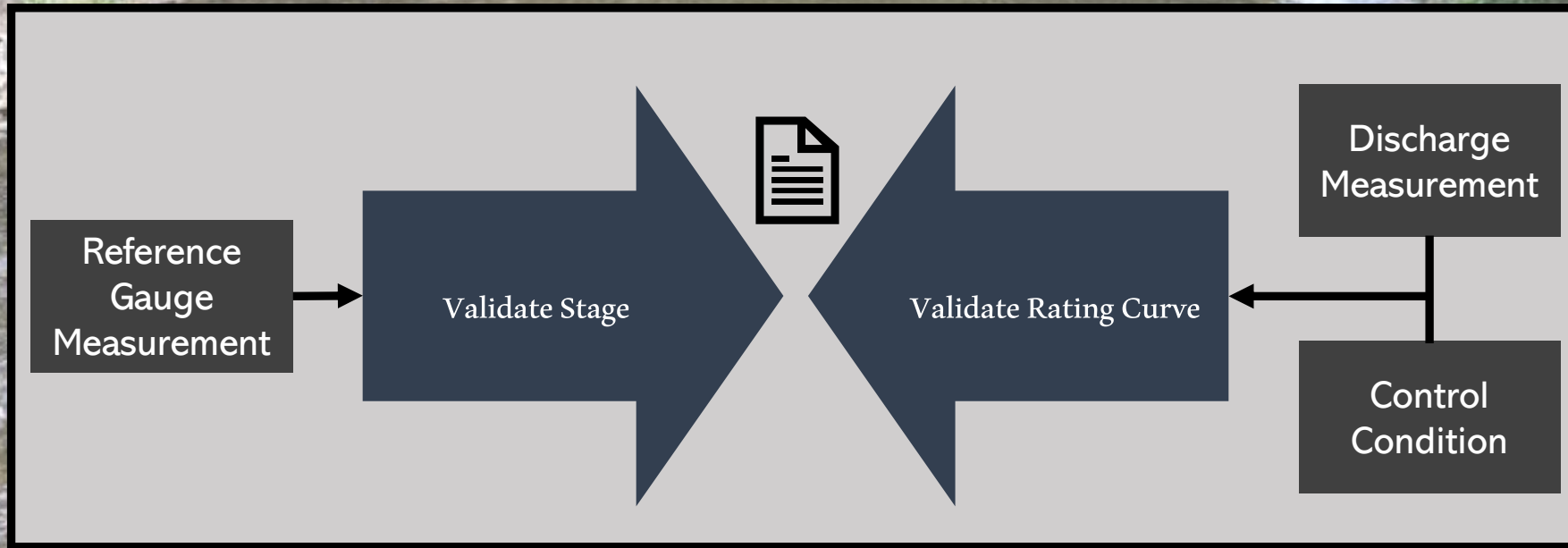


Manual of British Columbia Hydrometric Standards

Prepared by
Ministry of Environment and Climate Change Strategy
Knowledge Management Branch
for the
Resource Information Standards Committee

December 2018

Version 2.0



Hydrometric field visit: 2 purposes, 3 parameters

Data à la PHP: Instructions

1	Organize/Upload: Field Visits, Documentation and Raw Data	<input type="checkbox"/>
2	Review of Benchmark Stability	<input type="checkbox"/>
3	Stage: Review, Correction, Grading	<input type="checkbox"/>
4	Review/Development of Rating Curve	<input type="checkbox"/>
5	Application of Shifts (if applicable)	<input type="checkbox"/>
6	Discharge: Review, Correction, Grading	<input type="checkbox"/>
7	Final Reports Publication	<input type="checkbox"/>

1. Data Upload

Field Visits
Volunteers

- Upload
- Attach
- grade

Benchmark
Stability

- Review
- Assess GC

3. Rating Model

Assess

- Confirm Q quality
- Confirm cMGH
- Control observations

Develop

- PZF
- Channel conditions
- Hypotheses

Finalize

- Rating development template
- grading

5. Documents

BM
Stability
Report

Station
Description

Computation
Checklist

Rating
Development
Template

Station
Analysis

2. Stage

Upload

- Upload raw stage to .logger

BCCF

Correct

- Fill gaps >2h if possible
- Pre-process GC (if applicable)
- Apply estimated and validated SRC drifts
- Trim data

Grade

- Use RISC as guideline
- Include any notes/qualifiers for data approver
- Adjust approval to In Review

4. Discharge

Assess

- Assess measured discharge vs. rated discharge, adjust curve if necessary or consider shift scenario

Shift

- Apply shifts – time based or stage based – over perceived periods of stability

Grade

- Use RISC as guideline
- Include any notes/qualifiers for data approver
- Adjust approval to In Review

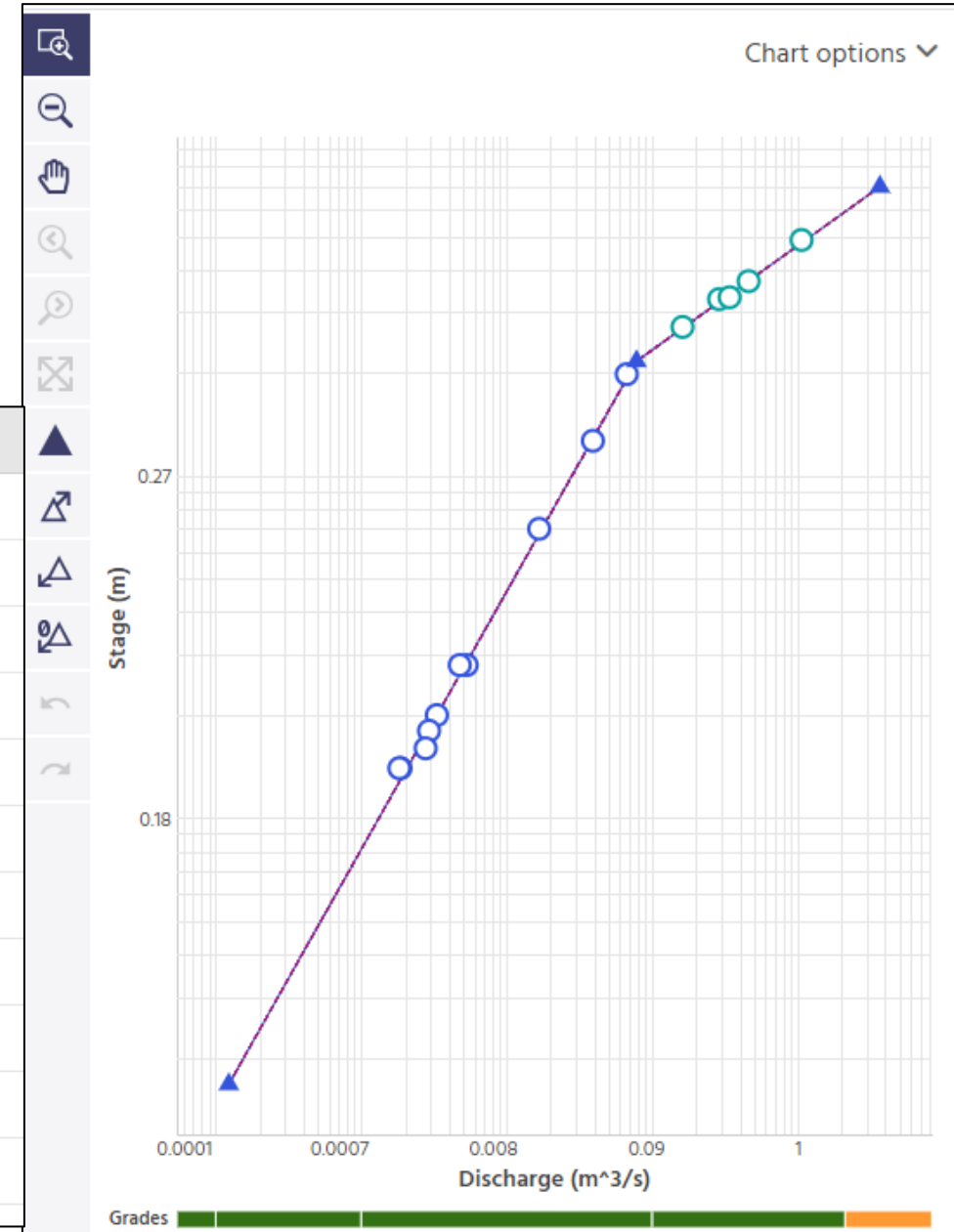
Data Update

Site	Status	Timeline
Grandon Creek	Historical (2012-2022)	Finalized and approved – grade unknown
	2023	Finalized and approved – grade C 😊
Beach Creek	Historical (2020-2022)	Started - In Review – rating curve needs development
	2023	Started - In Review
Cook Creek	Historical (2018-2022)	Started - In Review – prelim rating curve
	2023	Started - In Review
Tsolum Creek	Historical (2012-2022)	Started - In Review
	2023	Started - In Review
Departure Creek	Historical	N/A
	2023	Rating curve needs development
Wilfred Creek	Historical (2018-2022)	Not yet started – rating curve needs development
	2023	Not yet started
Morrison Creek	Historical	N/A
	2023	Rating curve needs development

Data Quality – Great work!

- Grandon Creek – stable control

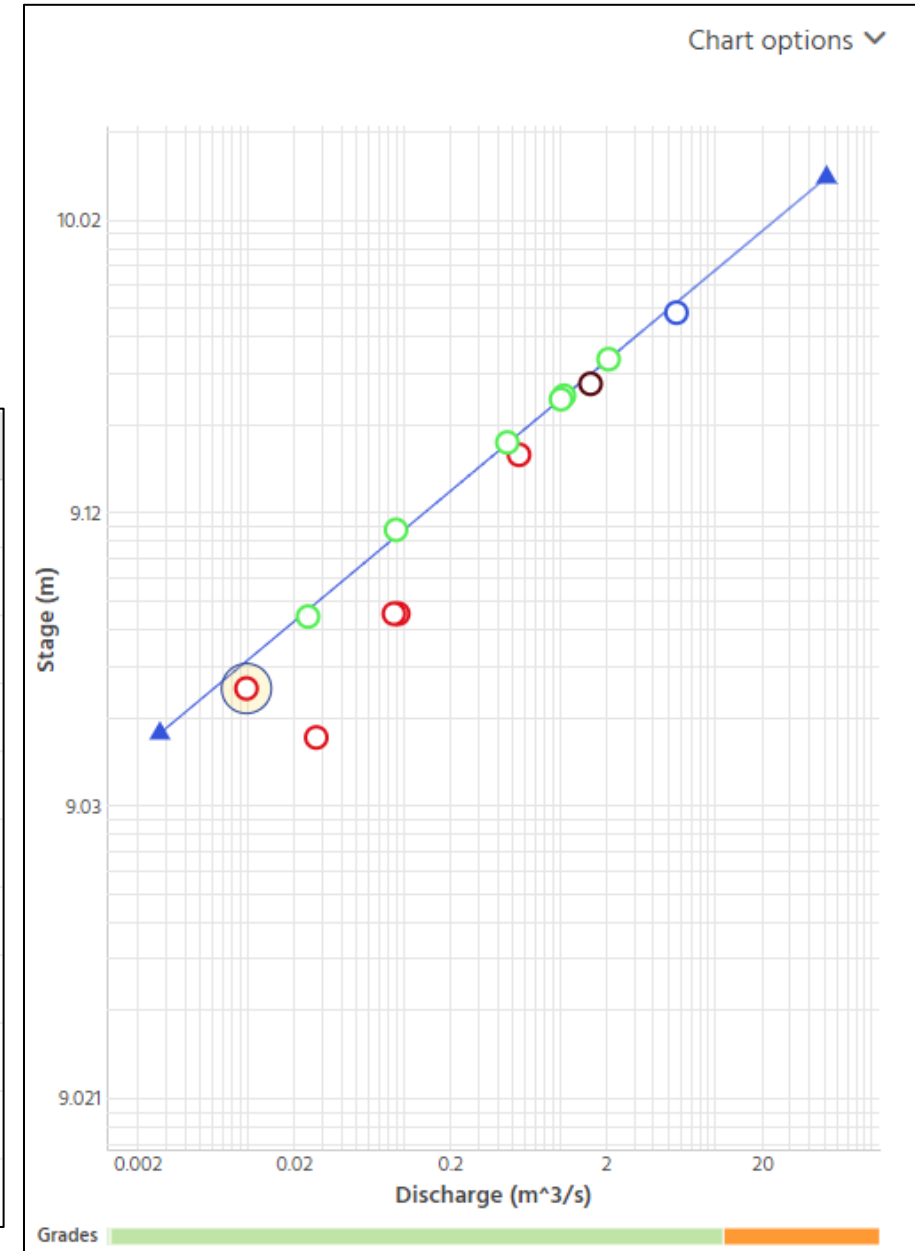
<input type="checkbox"/> Use	Chart view	Timestamp ↓	Stage m	Discharge m ³ /s	Shift m	R Error %	Method	Grade
<input checked="" type="checkbox"/>		2024-01-26 11:16:54	0.5020	0.341	0.0063	6.35	Mid-section	■ 51 - Excellent
<input checked="" type="checkbox"/>		2023-10-13 11:30:00	0.1980	0.00476	-0.0018	-8.23	Volumetric	■ 25 - Best Practice
<input checked="" type="checkbox"/>		2023-08-14 14:07:05	0.1840	0.00183	-0.0012	-11.49	Mid-section	■ 25 - Best Practice
<input checked="" type="checkbox"/>		2023-08-14 13:18:22	0.1840	0.00186	-0.0010	-9.78	Volumetric	■ 25 - Best Practice
<input checked="" type="checkbox"/>		2023-07-26 12:57:30	0.1860	0.00277	0.0015	12.41	Volumetric	■ 25 - Best Practice
<input checked="" type="checkbox"/>		2023-05-26 13:02:30	0.1980	0.00531	0.0005	2.43	Volumetric	■ 31 - Good
<input checked="" type="checkbox"/>		2023-04-19 13:51:15	0.2965	0.0391	0.0019	1.97	Mid-section	■ 31 - Good
<input checked="" type="checkbox"/>		2023-03-03 15:42:40	0.4420	0.162	-0.0024	-2.85	Mid-section	■ 51 - Excellent
<input checked="" type="checkbox"/>		2023-02-12 15:15:00	0.3680	0.0668	-0.0058	-3.87	Mid-section	■ 31 - Good
<input checked="" type="checkbox"/>		2022-11-04 13:00:00	0.2400	0.0167	-0.0024	-4.48	Volumetric	■ 25 - Best Practice
<input checked="" type="checkbox"/>		2022-09-19 16:00:00	0.1880	0.00292	0.0002	1.43	Volumetric	■ 25 - Best Practice



Data Quality – Great work!

- Cook Creek – changing control

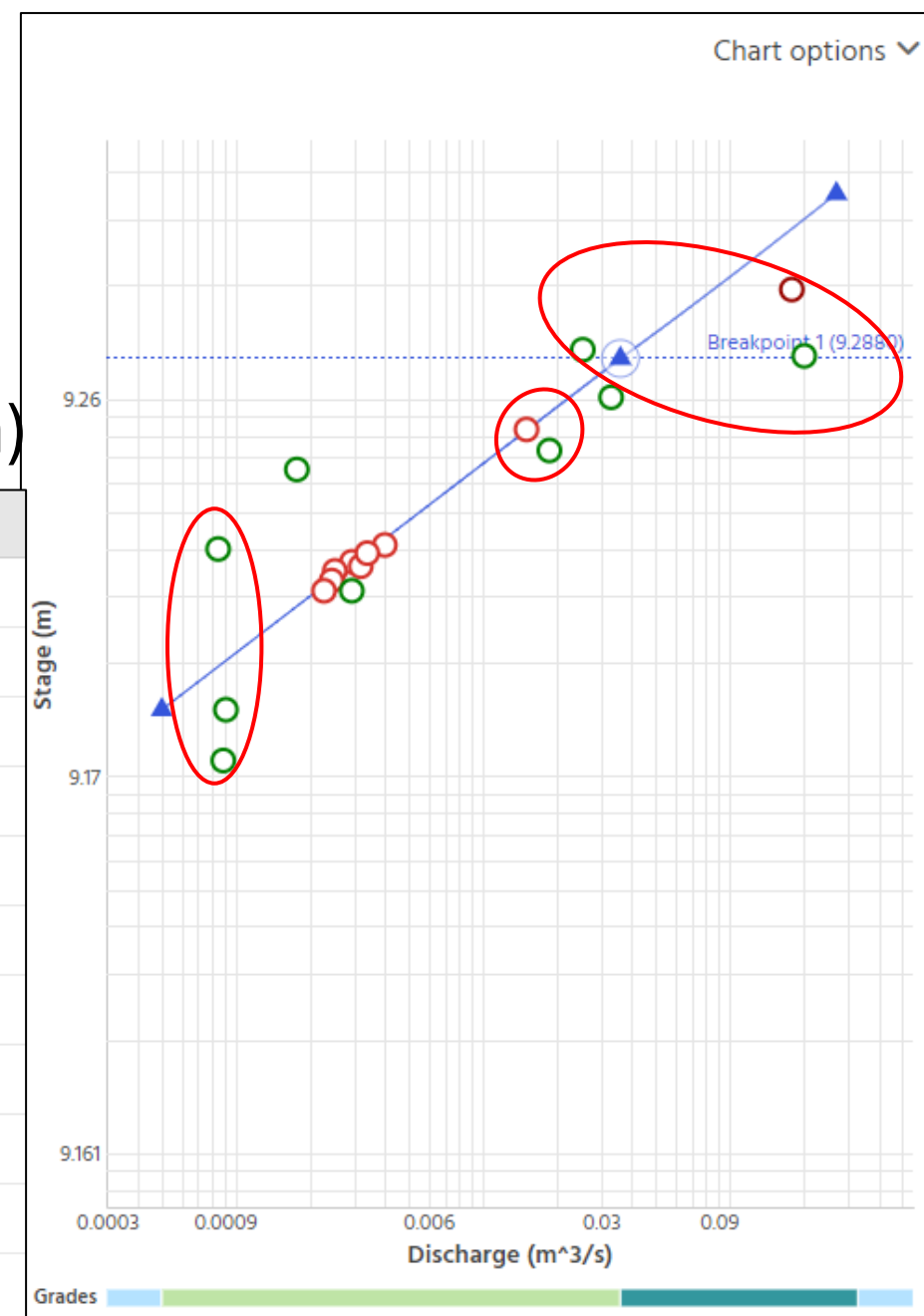
<input type="checkbox"/> Use	Chart view	Timestamp ↓	Stage m	Discharge m ³ /s	Shift m	R Error %	Method	Grade
<input checked="" type="checkbox"/>	○	2023-12-19 11:06:02	9.3530	2.09	0.0001	0.09	Mid-section	31 - Good
<input checked="" type="checkbox"/>	○	2023-10-04 10:40:45	9.1070	0.0908	-0.0044	-10.92	Mid-section	41 - Very Good
<input checked="" type="checkbox"/>	○	2023-07-25 10:50:09	9.0640	0.0248	0.0024	12.66	Mid-section	25 - Best Practice
<input checked="" type="checkbox"/>	○	2023-05-08 13:23:18	9.1930	0.469	-0.0015	-1.99	Mid-section	31 - Good
<input checked="" type="checkbox"/>	○	2023-04-18 12:45:03	9.2630	1.03	0.0007	0.66	Mid-section	41 - Very Good
<input checked="" type="checkbox"/>	○	2023-02-06 12:00:00	9.2700	1.08	-0.0014	-1.26	Mid-section	51 - Excellent
<input checked="" type="checkbox"/>	○	2022-10-05 10:30:00	9.0450	0.01	0.0060	62.04	Mid-section	21 - Estimated
<input checked="" type="checkbox"/>	○	2022-08-18 10:15:00	9.0370	0.028	0.0320		Mid-section	31 - Good
<input checked="" type="checkbox"/>	○	2022-07-19 10:45:00	9.0650	0.088	0.0365	280.20	Mid-section	41 - Very Good
<input checked="" type="checkbox"/>	○	2022-07-19 10:11:17	9.0650	0.0938	0.0389	305.43	Mid-section	51 - Excellent
<input checked="" type="checkbox"/>	○	2022-04-13 13:00:00	9.1770	0.557	0.0281	44.85	Mid-section	41 - Very Good



Data Quality – Great work!

- Beach Creek – unstable control (vegetation)

<input type="checkbox"/> Use	Chart view	Timestamp ↓	Stage m	Discharge m ³ /s	Shift m	R Error %	Method	Grade
<input checked="" type="checkbox"/>	○	2024-01-26 14:12:08	9.3550	0.178	0.0873	107.76	Mid-section	31 - Good
<input checked="" type="checkbox"/>	○	2023-11-27 13:08:53	9.2950	0.0254	-0.0276	-37.07	Mid-section	31 - Good
<input checked="" type="checkbox"/>	○	2023-10-13 14:11:31	9.2250	0.00176	-0.0368	-81.09	Mid-section	21 - Estimated
<input checked="" type="checkbox"/>	○	2023-09-16 11:27:30	9.2000	0.000846	-0.0205	-76.09	Volumetric	25 - Best Practice
<input type="checkbox"/>	○	2023-08-14 10:47:53	0.1740	0.000909	9.0062		Mid-section	25 - Best Practice
<input type="checkbox"/>	○	2023-07-05 11:31:00	0.1700	0.000887	9.0100		Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	○	2023-05-16 15:00:00	9.1910	0.00294	0.0055	38.16	Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	○	2023-04-19 11:17:50	9.2330	0.0186	0.0188	58.09	Mid-section	41 - Very Good
<input checked="" type="checkbox"/>	○	2023-03-03 13:22:30	9.2900	0.20	0.1696	437.59	Estimated	21 - Estimated
<input checked="" type="checkbox"/>	○	2023-02-12 16:05:00	9.2610	0.033	0.0216	47.12	Mid-section	25 - Best Practice
<input checked="" type="checkbox"/>	○	2022-11-12 10:32:30	9.1990	0.0034	0.0002	0.98	Volumetric	25 - Best Practice



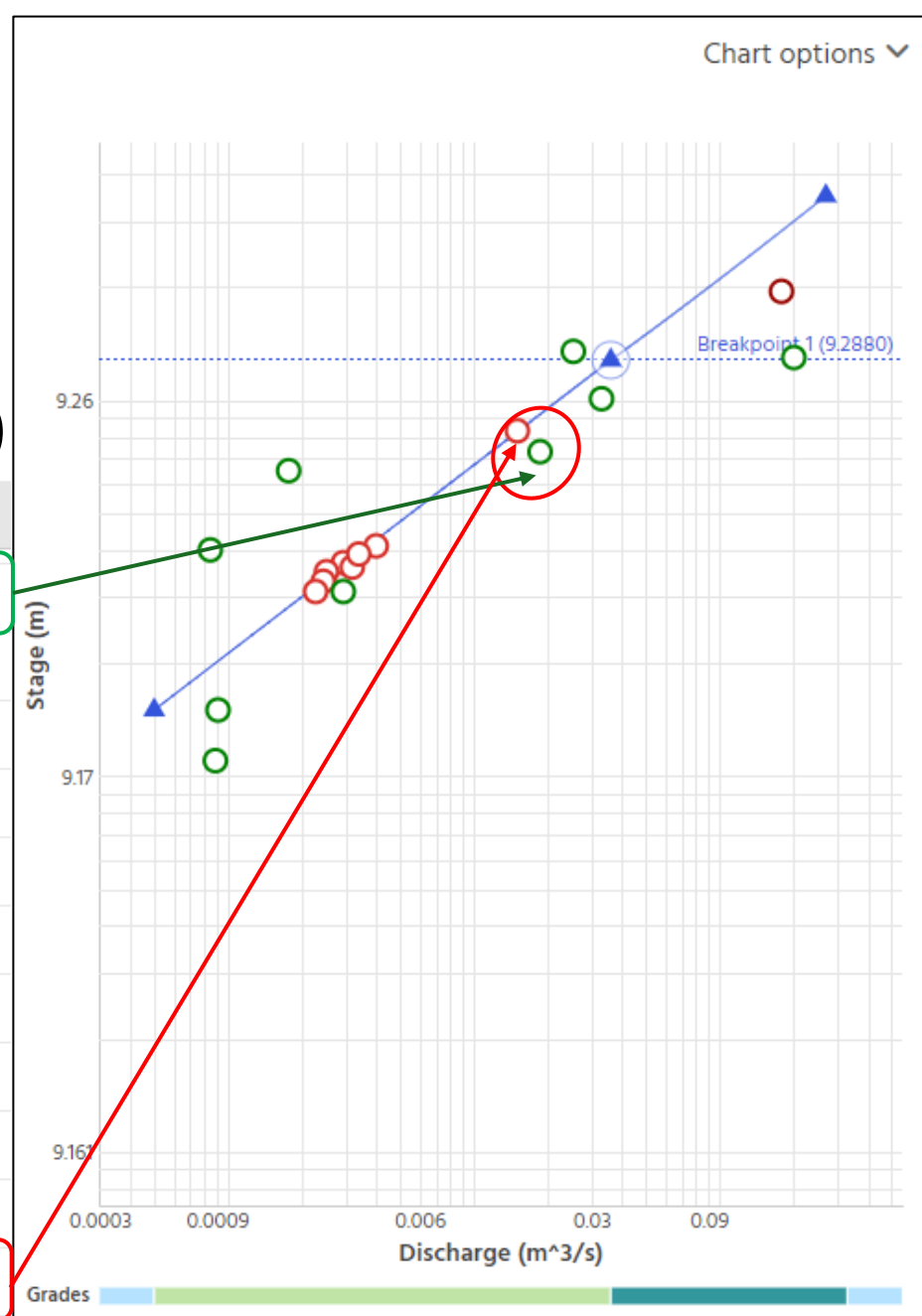


Use

-
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-09-20 14:00:00	9.1910	0.00227	0.0010	6.64	Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-08-29 10:26:30	9.1930	0.00244	0.0002	1.07	Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-08-17 11:10:00	9.1950	0.00251	-0.0013	-7.33	Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-08-03 10:24:00	9.1970	0.00294	-0.0005	-2.79	Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-07-18 12:30:00	9.1970	0.00294	-0.0005	-2.79	Volumetric	25 - Best Practice
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-05-22 15:00:00	9.2430	0.015	-0.0005	-1.13	Mid-section	25 - Best Practice

2022-05-22: Photo Missing 😞



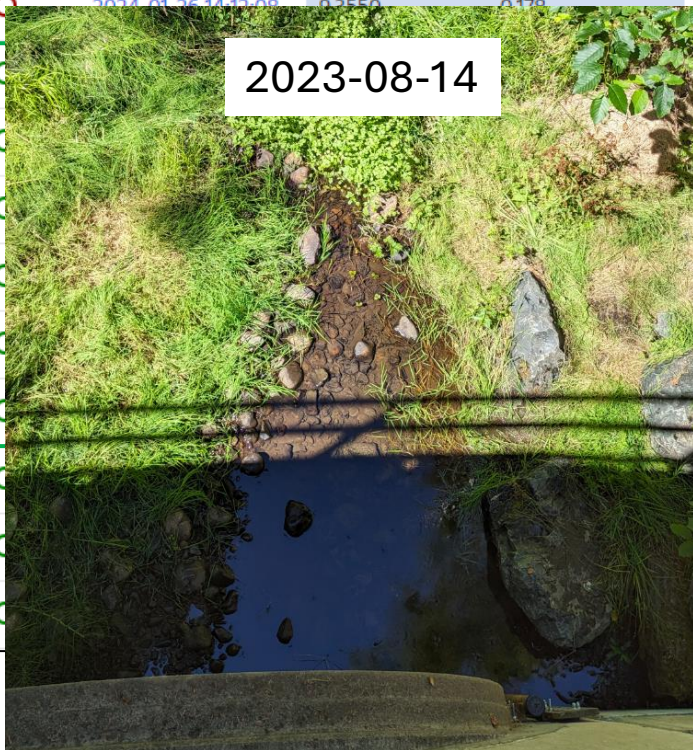
Data

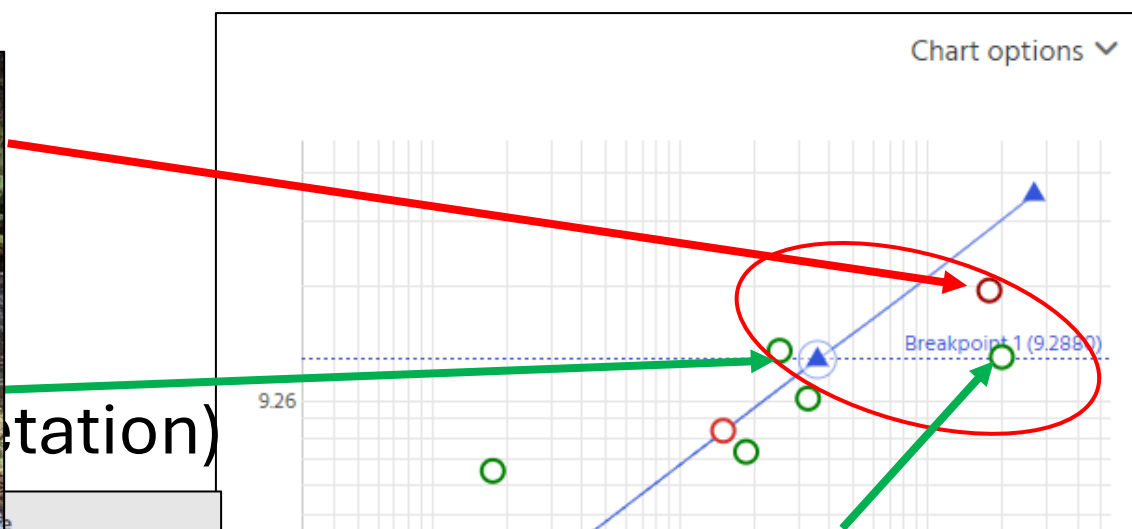
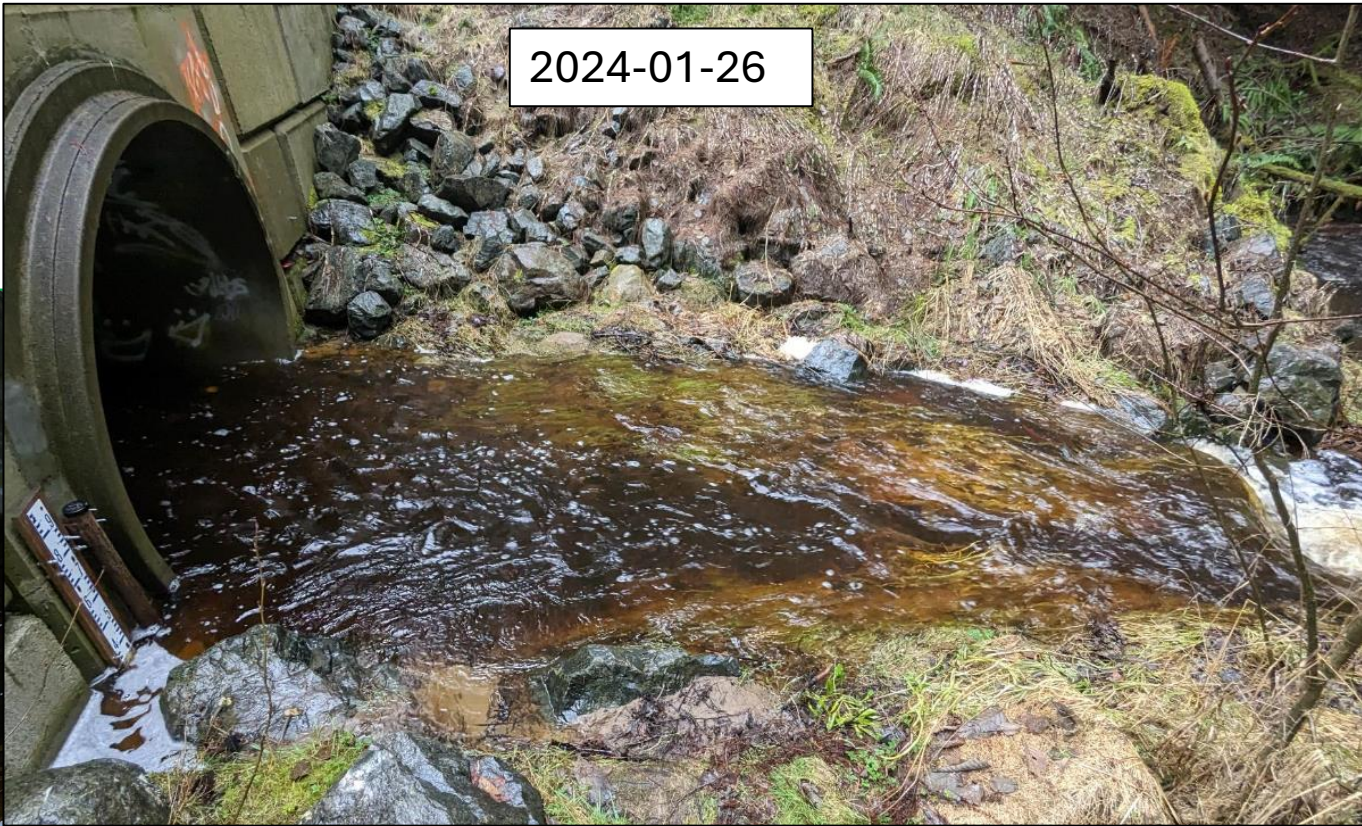
- Beach



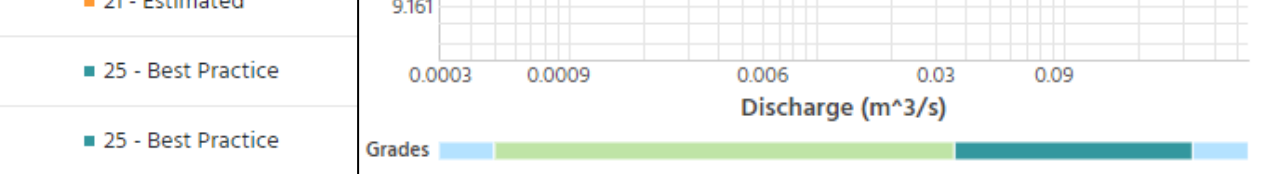
! (vegetation)

<input type="checkbox"/> Use	Chart view	Timestamp					
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2023-01-26 14:12:08	0.2550	0.178	0.0873	10.776	M11
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2023-08-14	-0.0276	-3	-0.0276	-3	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		-0.0368	-8	-0.0368	-8	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		-0.0205	-7	-0.0205	-7	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0.0052		0.0052		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0.0090		0.0090		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0.0055	38	0.0055	38	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0.0188	58	0.0188	58	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0.1696	43	0.1696	43	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		0.0216	47	0.0216	47	



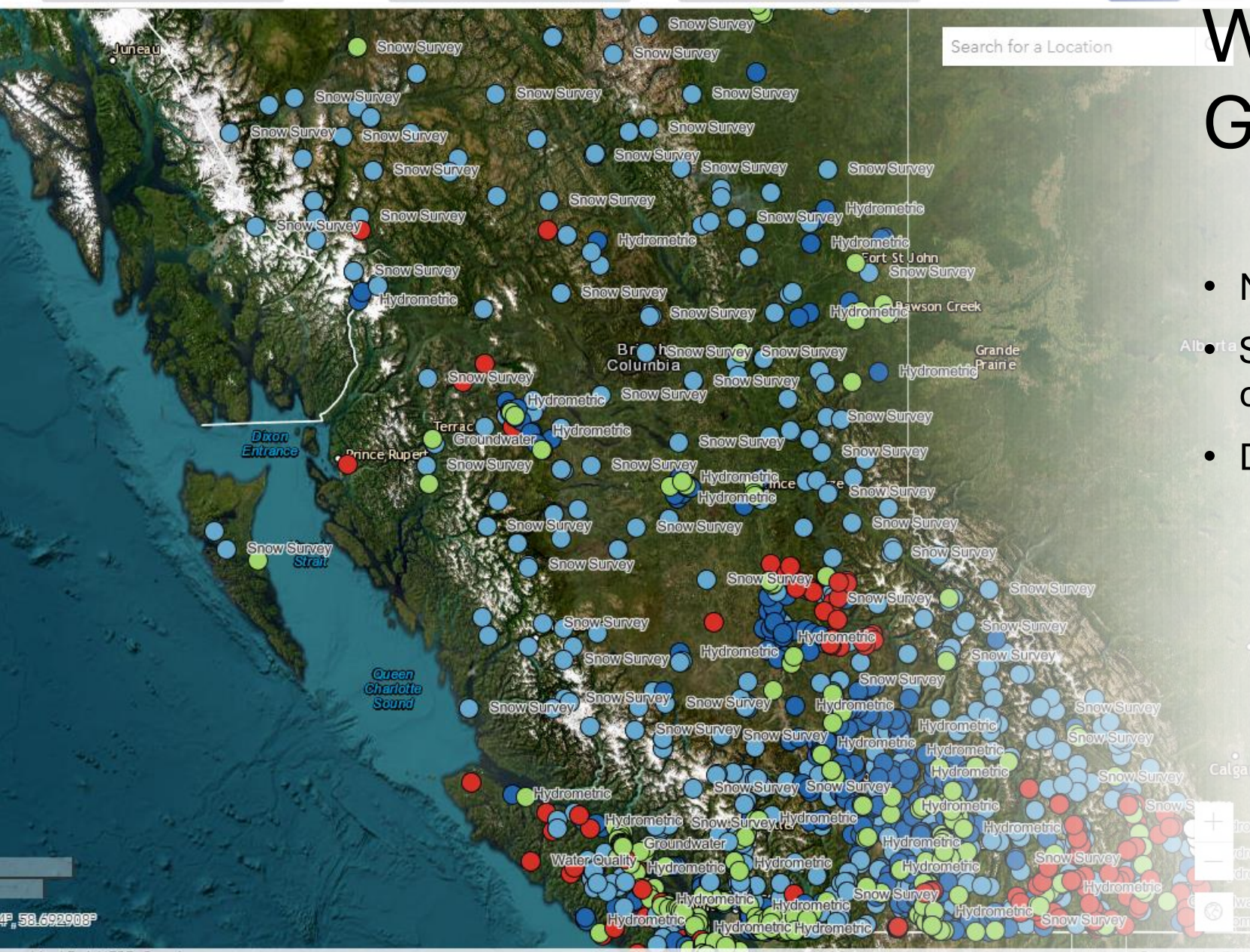


<input checked="" type="checkbox"/>	<input type="checkbox"/>	2023-04-19 11:17:50	9.2330	0.0186	0.0188	58.09	Mid-section
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2023-03-03 13:22:30	9.2900	0.20	0.1696	437.59	Estimated
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2023-02-12 16:05:00	9.2610	0.033	0.0216	47.12	Mid-section
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2022-11-12 10:32:30	9.1990	0.0034	0.0002	0.98	Volumetric



Knowing your sites

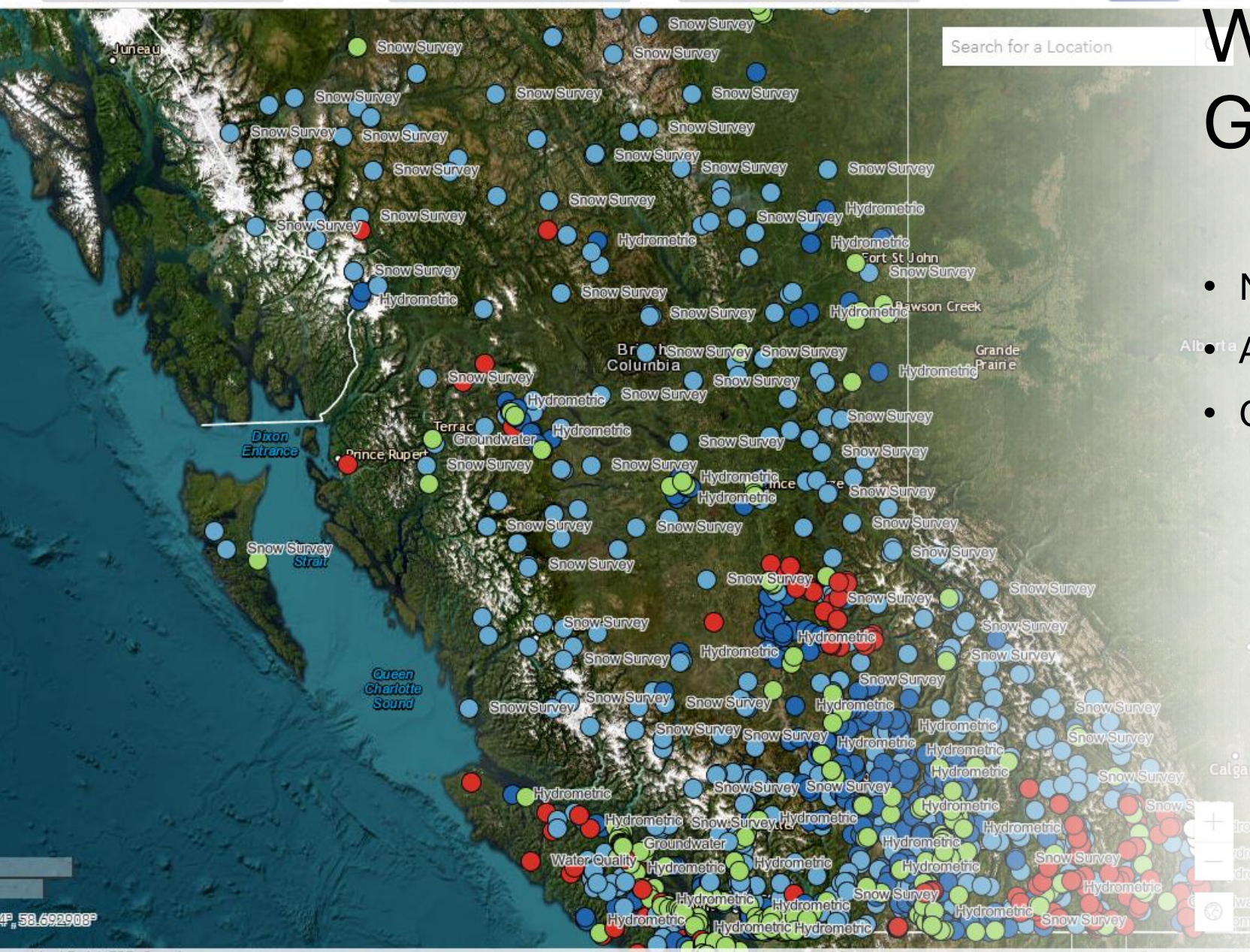
- Control observations
 - Photos are really helpful!
- Check the rating curve
 - Is the rating curve prediction the same as our discharge measurement?
 - Aim for <25% difference (actual discharge vs. rated discharge)
 - Aim for <0.010m difference (actual stage vs. rated stage)



Web Portal Tour – Grandon Creek

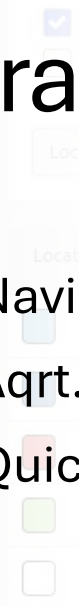
- Navigation of Web Portal
- Streamflow statistics and charts!
- Data Reports
 - Station Analysis
 - Rating Development doc
 - Rating Table

Search for a Location



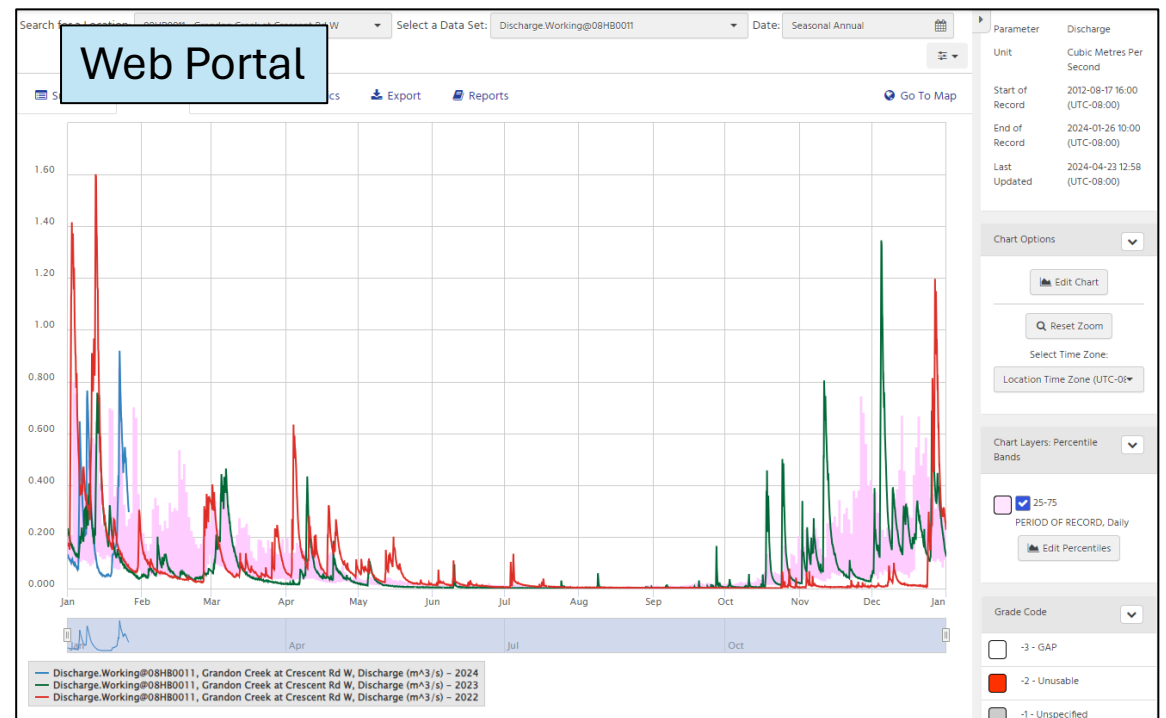
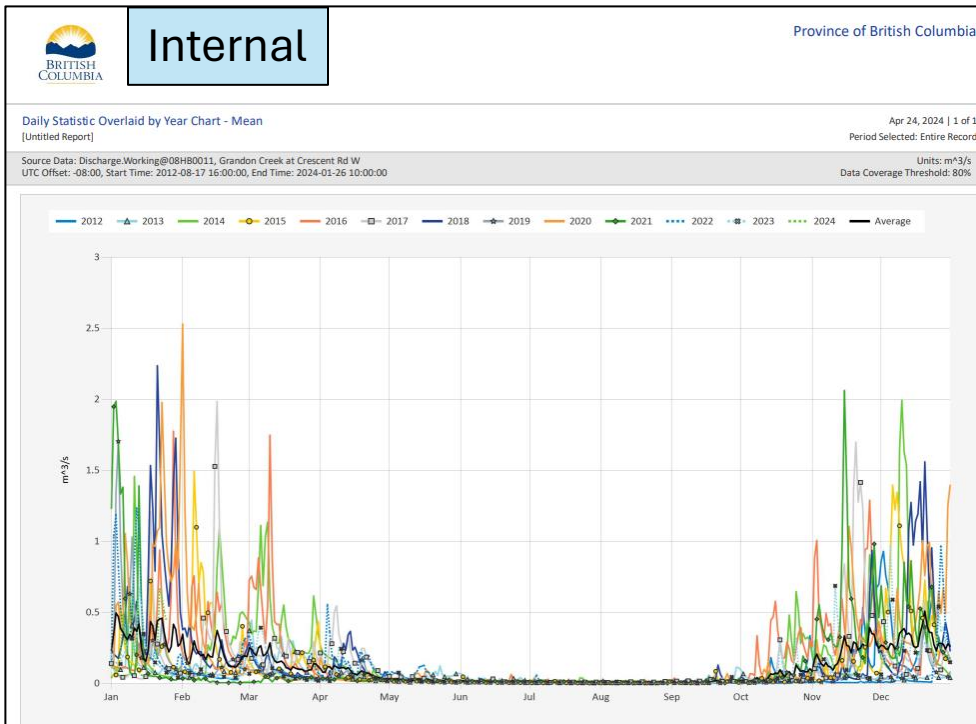
Web Portal Tour – Grandon Creek

- Navigation of Web Portal
- Aqrt.nrs.gov.bc.ca
- Quick start guide available



Web Portal Tour – Grandon Creek

- Streamflow statistics and charts!
- Internal reports being investigated (no firm timeline)
- Web Portal charts and displays available to public



Web Portal Tour – Grandon Creek

- Data Reports
 - Station Analysis
 - Rating Development doc
 - Rating Table

Search for a Location: 08HB0011 - Grandon Creek at Crescent Rd W

Summary Reports **3** Go To Map

Name ↑	Description	Download
Hydrometric.08HB0011.2012-2022.EHQ		Download
Hydrometric.08HB0011.2012-2022.Rating Development		Download
Hydrometric.08HB0011.2012-2022.Station Analysis		Download

Rating Table – How to Use

```
# Location: 08HB0011 Grandon Creek at Crescent Rd W
# Date processed: 2024-01-30 10:46:30 UTC-08:00 by Jonathan.Jeffery@gov.bc.ca
# Rating: Log Method-1.00
# Created: 2022-08-12 17:57:34 UTC-08:00
# Created by: TRODGERS
# Updated: 2024-01-30 10:34:19 UTC-08:00
# Updated by: Jonathan.Jeffery@gov.bc.ca
```

Offsets and Breakpoints

Offset1: 0.1700

Expanded Rating Table: 1.00

Stage (m)	Discharge (m ³ /s)										Difference in Discharge per 0.01 m
	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	
0.17			0.000156	0.000267	0.000392	0.000527	0.000671	0.000823	0.000983	0.00115	
0.18	0.00132	0.0015	0.00168	0.00187	0.00207	0.00226	0.00247	0.00267	0.00288	0.0031	0.00199
0.19	0.00332	0.00354	0.00376	0.00399	0.00422	0.00446	0.0047	0.00494	0.00518	0.00543	0.00236
0.20	0.00568	0.00593	0.00619	0.00645	0.00671	0.00697	0.00724	0.0075	0.00777	0.00805	0.00264
0.21	0.00832	0.0086	0.00888	0.00916	0.00944	0.00973	0.01	0.0103	0.0106	0.0109	0.00287
0.22	0.0112	0.0115	0.0118	0.0121	0.0124	0.0127	0.013	0.0133	0.0136	0.0139	0.00306
0.23	0.0143	0.0146	0.0149	0.0152	0.0155	0.0159	0.0162	0.0165	0.0168	0.0172	0.00324
0.24	0.0175	0.0178	0.0182	0.0185	0.0188	0.0192	0.0195	0.0198	0.0202	0.0205	0.00339
0.25	0.0209	0.0212	0.0216	0.0219	0.0223	0.0226	0.023	0.0233	0.0237	0.0241	0.00353
0.26	0.0244	0.0248	0.0251	0.0255	0.0259	0.0262	0.0266	0.027	0.0273	0.0277	0.00366
0.27	0.0281	0.0285	0.0288	0.0292	0.0296	0.03	0.0303	0.0307	0.0311	0.0315	0.00379
0.28	0.0319	0.0323	0.0326	0.033	0.0334	0.0338	0.0342	0.0346	0.035	0.0354	0.0039
0.29	0.0358	0.0362	0.0366	0.037	0.0374	0.0378	0.0382	0.0386	0.039	0.0394	0.00401
0.30	0.0398	0.0402	0.0406	0.041	0.0414	0.0418	0.0422	0.0426	0.0431	0.0435	0.00411
0.31	0.0439	0.0443	0.0447	0.0451	0.0456	0.046	0.0464	0.0468	0.0473	0.0477	0.00421
0.32	0.0481	0.0485	0.049	0.0494	0.0498	0.0502	0.0507	0.0511	0.0515	0.052	0.0043
0.33	0.0524	0.0528	0.0533	0.0537	0.0541	0.0546	0.055	0.0555	0.0559	0.0564	0.00439
0.34	0.0568	0.0572	0.0577	0.0581	0.0586	0.059	0.0595	0.0599	0.0604	0.0608	0.00448
0.35	0.0613	0.0617	0.0622	0.0626	0.0631	0.0635	0.064	0.0645	0.0649	0.0654	0.00456
0.36	0.0658	0.0663	0.0668	0.0672	0.0677	0.0681	0.0686	0.0691	0.0695	0.07	0.00464
0.37	0.0705	0.0709	0.0714	0.0719	0.0723	0.0728	0.0733	0.0738	0.0742	0.0747	0.00471
0.38	0.0752	0.0757	0.0761	0.0766	0.0771	0.0776	0.078*	0.0792	0.0804	0.0817	0.00771
0.39	0.0829	0.0841	0.0854	0.0867	0.0879	0.0892	0.0906	0.0919	0.0932	0.0946	0.013
0.40	0.0959	0.0973	0.0987	0.10	0.102	0.103	0.104	0.106	0.107	0.109	0.0144

Site Visit in Summer:

Staff Gauge = 0.295m

Measured Discharge = 0.015 m³/s

1. What is my expected stage at this discharge? (shift)
2. What is my expected discharge at this stage? (% diff)
3. What is the shift or percent difference?
(*ie. How off am I from the curve? Should I re-do my measurement or take a really good control photo?*)

Rating Table – How to Use

```
# Location: 08HB0011 Grandon Creek at Crescent Rd W
# Date processed: 2024-01-30 10:46:30 UTC-08:00 by Jonathan.Jeffery@gov.bc.ca
# Rating: Log Method-1.00
# Created: 2022-08-12 17:57:34 UTC-08:00
# Created by: TRODGERS
# Updated: 2024-01-30 10:34:19 UTC-08:00
# Updated by: Jonathan.Jeffery@gov.bc.ca
```

Offsets and Breakpoints

Offset1: 0.1700

Expanded Rating Table: 1.00

Stage (m)	Discharge (m ³ /s)										Difference in Discharge per 0.01 m
	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	
0.17			0.000156	0.000267	0.000392	0.000527	0.000671	0.000823	0.000983	0.00115	
0.18	0.00132	0.0015	0.00168	0.00187	0.00207	0.00226	0.00247	0.00267	0.00288	0.0031	0.00199
0.19	0.00332	0.00354	0.00376	0.00399	0.00422	0.00446	0.0047	0.00494	0.00518	0.00543	0.00236
0.20	0.00568	0.00593	0.00619	0.00645	0.00671	0.00697	0.00724	0.0075	0.00777	0.00805	0.00264
0.21	0.00832	0.0086	0.00888	0.00916	0.00944	0.00973	0.01	0.0103	0.0106	0.0109	0.00287
0.22	0.0112	0.0115	0.0118	0.0121	0.0124	0.0127	0.013	0.0133	0.0136	0.0139	0.00306
0.23	0.0143	0.0146	0.0149	0.0152	0.0155	0.0159	0.0162	0.0165	0.0168	0.0172	0.00324
0.24	0.0175	0.0178	0.0182	0.0185	0.0188	0.0192	0.0195	0.0198	0.0202	0.0205	0.00339
0.25	0.0209	0.0212	0.0216	0.0219	0.0223	0.0226	0.023	0.0233	0.0237	0.0241	0.00353
0.26	0.0244	0.0248	0.0251	0.0255	0.0259	0.0262	0.0266	0.027	0.0273	0.0277	0.00366
0.27	0.0281	0.0285	0.0288	0.0292	0.0296	0.03	0.0303	0.0307	0.0311	0.0315	0.00379
0.28	0.0319	0.0323	0.0326	0.033	0.0334	0.0338	0.0342	0.0346	0.035	0.0354	0.0039
0.29	0.0358	0.0362	0.0366	0.037	0.0374	0.0378	0.0382	0.0386	0.039	0.0394	0.00401
0.30	0.0398	0.0402	0.0406	0.041	0.0414	0.0418	0.0422	0.0426	0.0431	0.0435	0.00411
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0.40	0.0959	0.0973	0.0987	0.10	0.102	0.103	0.104	0.106	0.107	0.109	0.0144

Site Visit in Summer:

Staff Gauge = 0.295m

Measured Discharge = 0.015 m³/s

What is my expected stage at this discharge? (shift)

1. Find your measured discharge in the rating table
2. Determine the expected stage at this discharge (rated stage)
3. Calculate the difference between the observed stage and the rated stage

$$\begin{aligned} \text{Shift} &= 0.295\text{m} - 0.232\text{m} \\ &= -0.063\text{m} \end{aligned}$$

Rating Table – How to Use

```
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0.20	0.00568	0.00593	0.00619	0.00645	0.00671	0.00697	0.00724	0.0075	0.00777	0.00805	0.00264
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0.24	0.0175	0.0178	0.0182	0.0185	0.0188	0.0192	0.0195	0.0198	0.0202	0.0205	0.00339
0.25	0.0209	0.0212	0.0216	0.0219	0.0223	0.0226	0.023	0.0233	0.0237	0.0241	0.00353
0.26	0.0244	0.0248	0.0251	0.0255	0.0259	0.0262	0.0266	0.027	0.0273	0.0277	0.00366
0.27	0.0281	0.0285	0.0288	0.0292	0.0296	0.03	0.0303	0.0307	0.0311	0.0315	0.00379
0.28	0.0319	0.0323	0.0326	0.033	0.0334	0.0338	0.0342	0.0346	0.035	0.0354	0.0039
0.29	0.0358	0.0362	0.0366	0.037	0.0374	0.0378	0.0382	0.0386	0.039	0.0394	0.00401
0.30	0.0398	0.0402	0.0406	0.041	0.0414	0.0418	0.0422	0.0426	0.0431	0.0435	0.00411
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0.33	0.0524	0.0528	0.0533	0.0537	0.0541	0.0546	0.055	0.0555	0.0559	0.0564	0.00439
0.34	0.0568	0.0572	0.0577	0.0581	0.0586	0.059	0.0595	0.0599	0.0604	0.0608	0.00448
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0.37	0.0705	0.0709	0.0714	0.0719	0.0723	0.0728	0.0733	0.0738	0.0742	0.0747	0.00471
0.38	0.0752	0.0757	0.0761	0.0766	0.0771	0.0776	0.078*	0.0792	0.0804	0.0817	0.00771
0.39	0.0829	0.0841	0.0854	0.0867	0.0879	0.0892	0.0906	0.0919	0.0932	0.0946	0.013
0.40	0.0959	0.0973	0.0987	0.10	0.102	0.103	0.104	0.106	0.107	0.109	0.0144

Site Visit in Summer:
 Staff Gauge = 0.295m
 Measured Discharge = 0.015 m³/s

- What is my expected discharge at this stage?
1. Find the discharge in the table based on measured stage
 2. Calculate percent difference between rated and measured discharge

$$\% \text{ diff} = \frac{0.015\text{m}^3/\text{s} - 0.038\text{m}^3/\text{s}}{0.038\text{m}^3/\text{s}} * 100\%$$

$$= -60.5\%$$

A photograph of a river flowing through a forest. In the background, a concrete bridge with a metal railing spans across the river. The left bank is covered in dense, brown, leafless bushes and trees. A surveying tripod with an orange bag is set up on the left bank. The right bank is covered in lush green ferns and trees. The water is dark and rippling. The word "Questions?" is overlaid in white text in the center of the image.

Questions?