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# Long Creek Monitoring

Casco Bay Monitoring Network Meeting

Tuesday, May 14, 2024

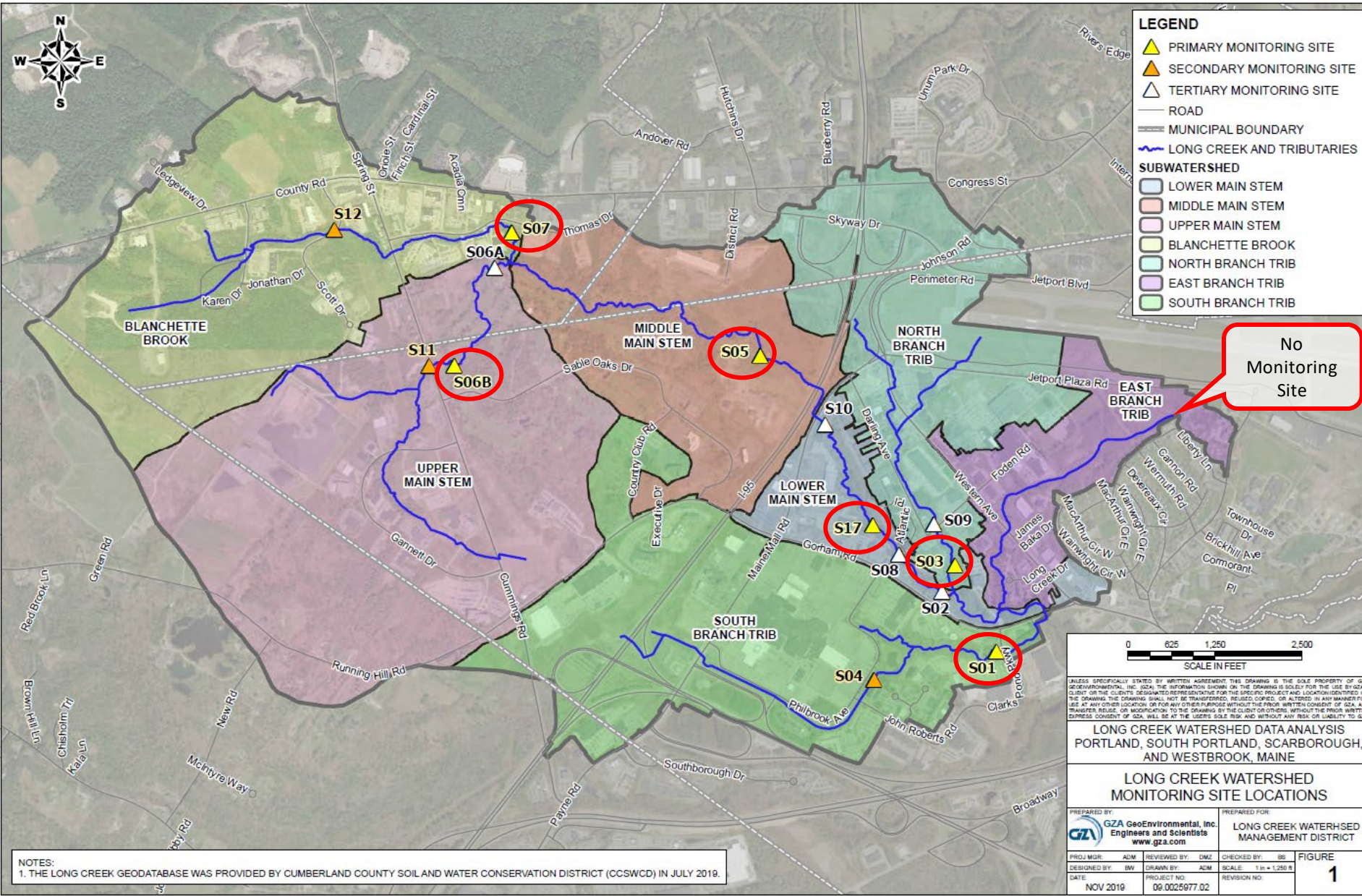
Aimee Mountain

GZA



**LONG CREEK**  
Watershed Management District

# Watershed Overview



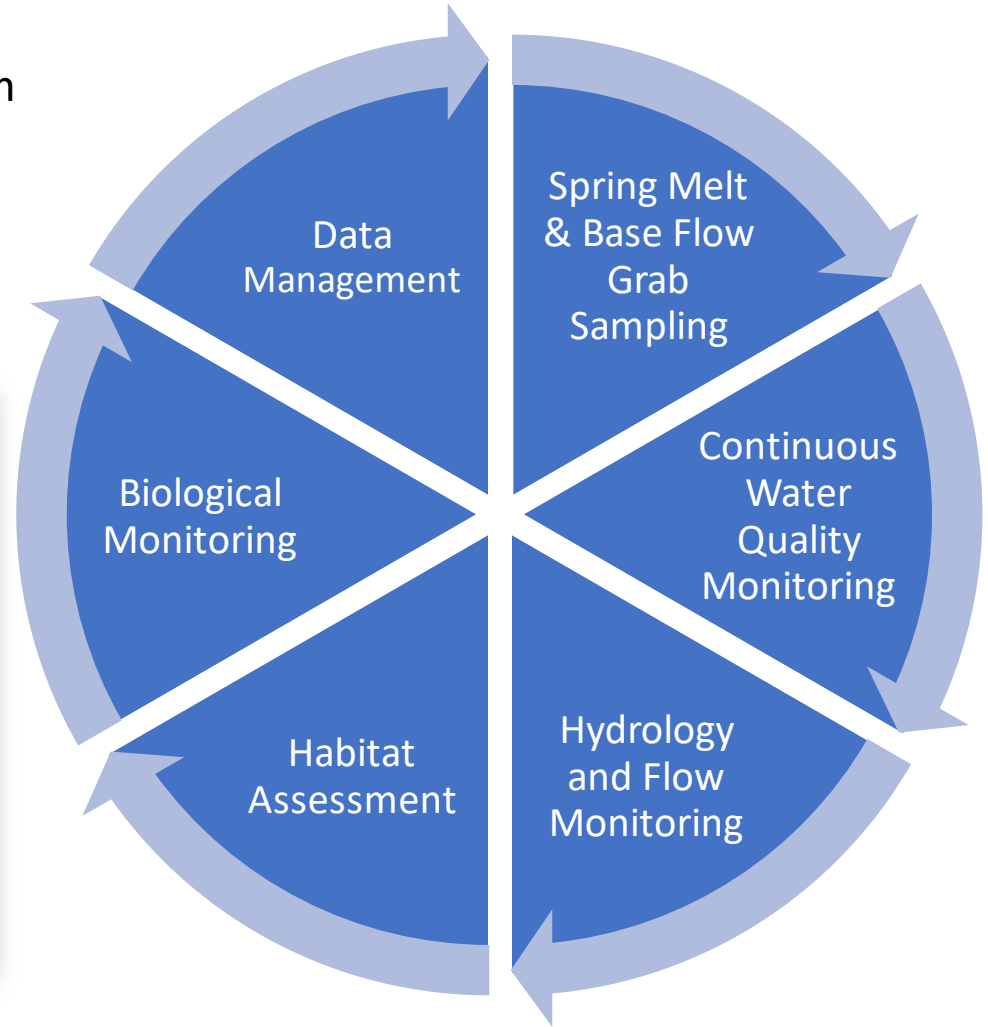
© 2019 - GZA GeoEnvironmental, Inc. vgsa0011800109 Job#002590669 0025977 00 - LCMWD - Mic Prep 09 002 5977 02 Figure 133 Fig 1 - Sampling Sites.mxd, November 13, 2019 - 3:33:10 PM, amsce.mxd



# Goal

## Attain Applicable Water Quality Standards

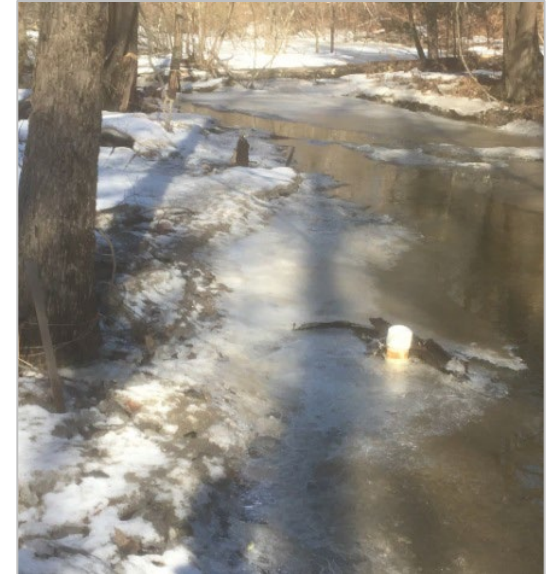
The monitoring and assessment program provide a means of evaluating progress towards this goal (*Revised Long Creek Monitoring Plan, 2013*).



# Grab Sampling

- Spring Melt Sampling
  - 3 – 4 rounds of sampling annually at the six primary monitoring locations
  - Samples analyzed for chloride
  - Field measurements for temperature, conductivity, and dissolved oxygen

Spring Melt Sampling at Site 05 in February 2018



Base Flow Sampling at Site 01 in July 2018

- Base Flow Sampling
  - May, July, and September annually at the six primary and three secondary sites
  - Samples analyzed for metals (total copper, lead, nickel, and zinc), hardness, chloride, and phosphorus
  - Field measurements for temperature, conductivity, and dissolved oxygen

# Continuous Water Quality Monitoring

- Continuous water quality monitoring with HOBO U-24 and U-26 data loggers at six primary sites from March to November
  - Data loggers deployed in protective baskets or cages
  - Programmed to record every 30 minutes
  - Data is downloaded every 4 – 6 weeks
  - Field measurements for temperature, conductivity, and dissolved oxygen are taken at deployment and download and used to adjust the logger data
  - QAPP requires at least 80% usable data annually



Site 1 Conductivity and Dissolved Oxygen Data Loggers

**LONG CREEK HOBO METERS CALIBRATION AND DEPLOYMENT FORM**

Site Number: S01      Logger Serial #: Dissolved Oxygen: 10745712  
 Conductivity: 10904804  
 Water Level: 20153580

**HOBO U-20, U-24, and U-26 Calibration and Launch**  
 DO loggers were initiated with new sensor caps prior to deployment (circle one):  No     NA  
 Date Initiated: 3/23/23      Expiration Date: 10/22/23

Parameter	Measurement	Check as Completed
Dissolved Oxygen	water saturated air (100%)	<input checked="" type="checkbox"/>
Dissolved Oxygen (mg/L)	zero DO solution (mg/L)	<input checked="" type="checkbox"/>

DO Logger Calibration      Date: 3/23/23      Time: 0950

DO Logger launched prior to deployment (circle one):  No     NA  
 Date: 3/23/23      Time: delayed start 3/24/23 9am

Level Logger launched prior to deployment (circle one):  No     NA  
 Date: 3/23/23      Time: delayed start 3/24/23 9am

Specific Conductivity Logger launched prior to deployment (circle one):  No     NA  
 Date: 3/15/23      Time: delayed start 3/20/23 9am

Comments:

**Field Installation**

Date: 3/29/2023      Time: 10:00      Technician: Emma Tomlinson

Weather: Sunny, 40°F

Condition of Stream: Shoals, clear, mod fast flow

Level Logger: Shoals, clear, mod fast flow

Benchmark elevation: NA      Length of cord: No change

Comments: off site @ 10:18

**Field Meter Comparison**

Meter make, model, & serial number: S01 Po 2030

Parameter	Measurement(s)
Temperature (°C)	10.3    10.4    10.5
Temperature (°F)	50.4    50.7    50.9
Dissolved Oxygen (mg/L)	13.25    13.19    13.16
Dissolved Oxygen (%)	99.2    98.7    98.7
Conductivity (mS/cm)	1.274    1.283    1.286
Specific Conductivity (mS/cm)	2.181    2.184    2.189

Comments: S01-032923-MELT, WL 3.5"

Last Updated: 03/18/2022      QAQC: EPT 4/3/23



# Hydrology and Flow Monitoring

- Continuous water level (stage) monitoring with HOBO U-20 from March to November
  - Data loggers deployed in stilling wells
  - Programmed to record every 30 minutes
  - Data is downloaded every 4 – 6 weeks
- Annual stream cross section surveys
- Annual flow monitoring with velocity meter

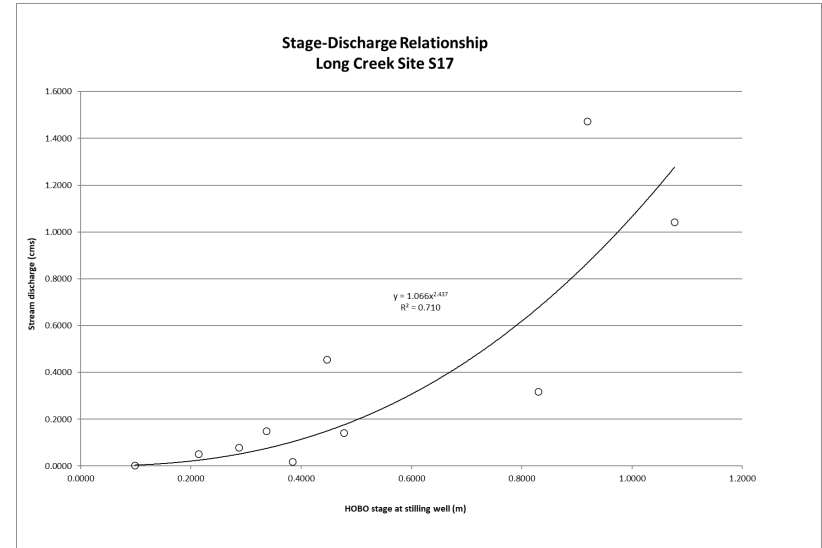
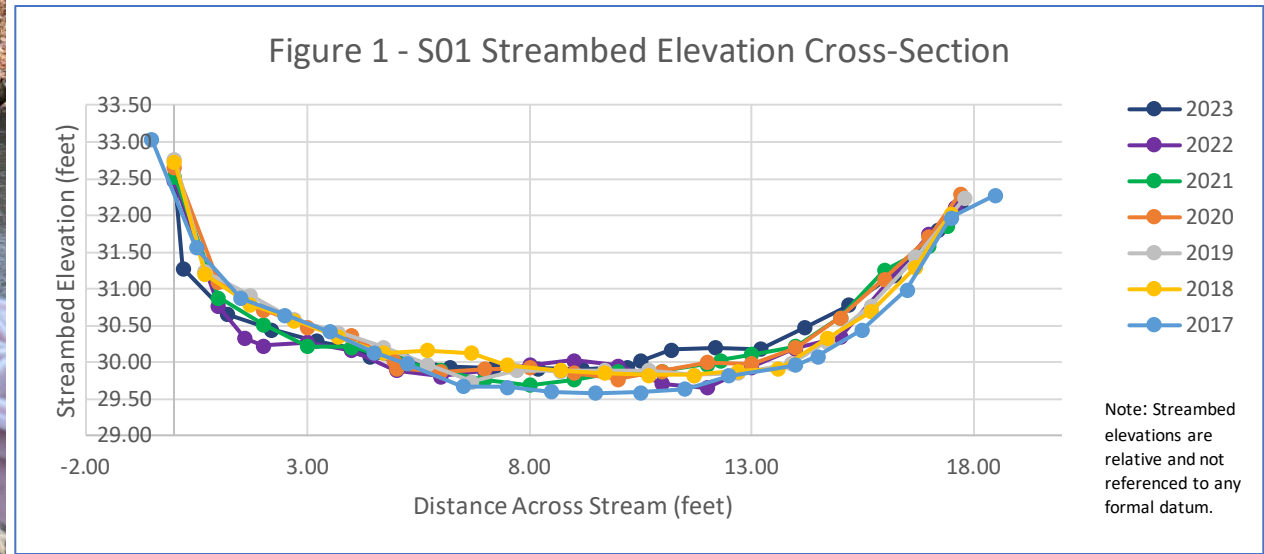


Figure 1 - S01 Streambed Elevation Cross-Section

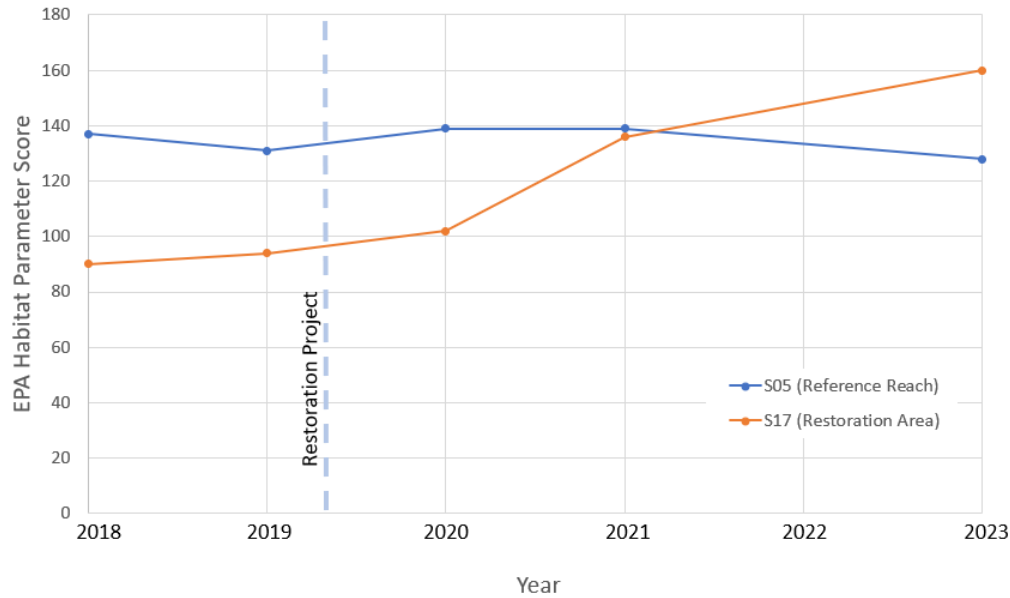


Flow Monitoring at Site 3  
in October 2023

# Habitat Assessment

- EPA Rapid Bioassessment
- Instream Micro-Habitat Assessment

STATION	2018	2019	2020	2021	2023
S05 (Reference Reach)	137	131	139	139	128
S17 (Restoration Area)	90	94	102	136	160



Year



Micro-Habitat Half-Meter Quadrat

	<p><b>LEGEND:</b></p> <ul style="list-style-type: none"> <li>Micro-Habitat Assessment Area</li> <li>Micro-Habitat Evaluation Reach</li> </ul> <p>0 150 300 600 FEET 1 INCH = 300 FEET</p>	<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Three quadrat plots were placed randomly within each micro-habitat assessment area.</li> <li>Micro-habitat assessment area locations along the Reference Reach were randomly selected during field work in 2019 over a distance similar to the Restoration Reach.</li> <li>Micro-habitat assessment area locations along the Restoration Reach were selected based on proposed locations of in-stream habitat restoration features (log jams, spawning sill logs, floodplain wood additions, and cobble/gravel additions) as outlined in the plans titled "Proposed Access and Restoration Plan" prepared by St. Germain Collins (Dated 2/23/2018).</li> <li>The same micro-habitat locations were used in 2019, 2020, 2021, and 2023.</li> </ol>	<p><b>Data Sources:</b></p> <p>Maine Geodiversity, MEGIS, Long Creek Watershed Management District (LWMD)</p> <p>GZA File No.: 09.0025906.07</p> <p>Drawn By: A. Mountain      01/24/2024</p>	<p><b>2023 INSTREAM MICRO-HABITAT ASSESSMENT PLOTS</b></p> <p>LONG CREEK WATERSHED</p>	<p><b>FIGURE:</b></p> <p>2</p>
			<p><small>DISCLAIMER: THE DATA CONTAINED WITHIN THE COVERED LOGO, INTENDED AS A QUALITY ASSURANCE OF SERVICE REPRESENTATION AS TO THE ACCURACY, TIMELINESS, OR COMPLETENESS OF THE DATA. LONG CREEK WATERSHED ASSUMES NO LIABILITY FOR THE DATA CONTAINED FOR QUESTIONS OR ANY OTHER USAGE OF ACTION TAKEN OR NOT TAKEN IN RELIANCE UPON ANY OF THE DATA.</small></p>		



# Biological Monitoring

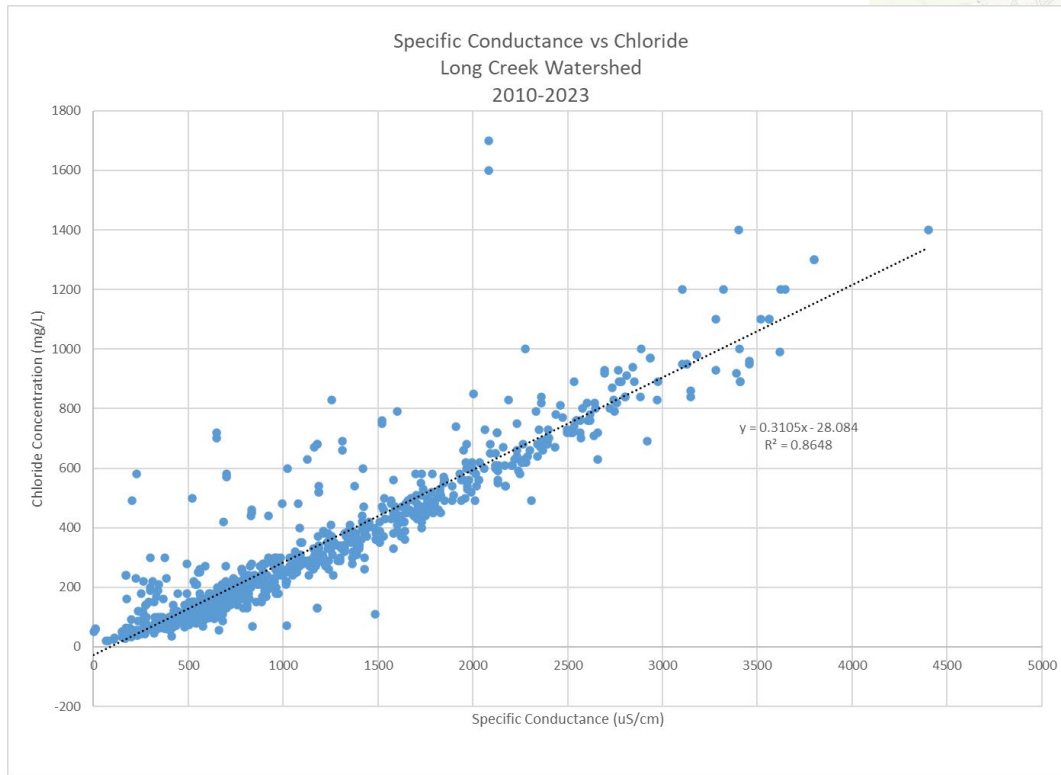
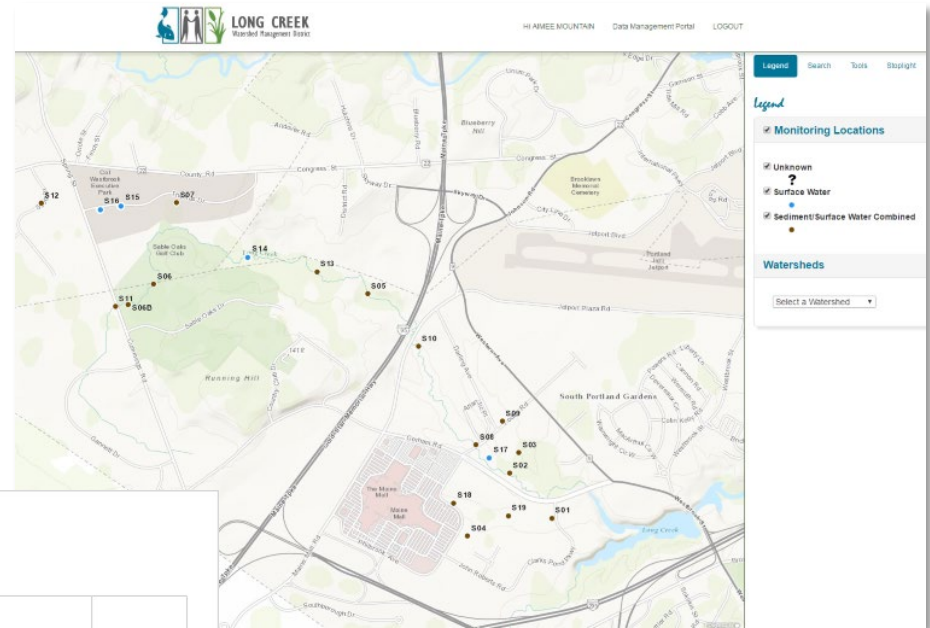
- Macroinvertebrates (Rock Bag and D-Frame Net) Sampling
- Fish Monitoring (Electrofishing)





# Data Management

- LCWMD Monitoring Database
  - Analytical Results
  - Field Parameters
  - HOB0 Loggers
  - Weather
- Chloride Regression



LONG CREEK  
Watershed Management District

Upload Edd File

Select EDD Type

Browse for Edd File

Choose File | No file chosen

Process File

This process could take some time, please be patient

run stoplight routines

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Questions