Long Creek Monitoring

Casco Bay Monitoring Network Meeting

Tuesday, May 14, 2024

Aimee Mountain

GZA

Watershed Overview

Long Creek Watershed Monitoring Site Locations
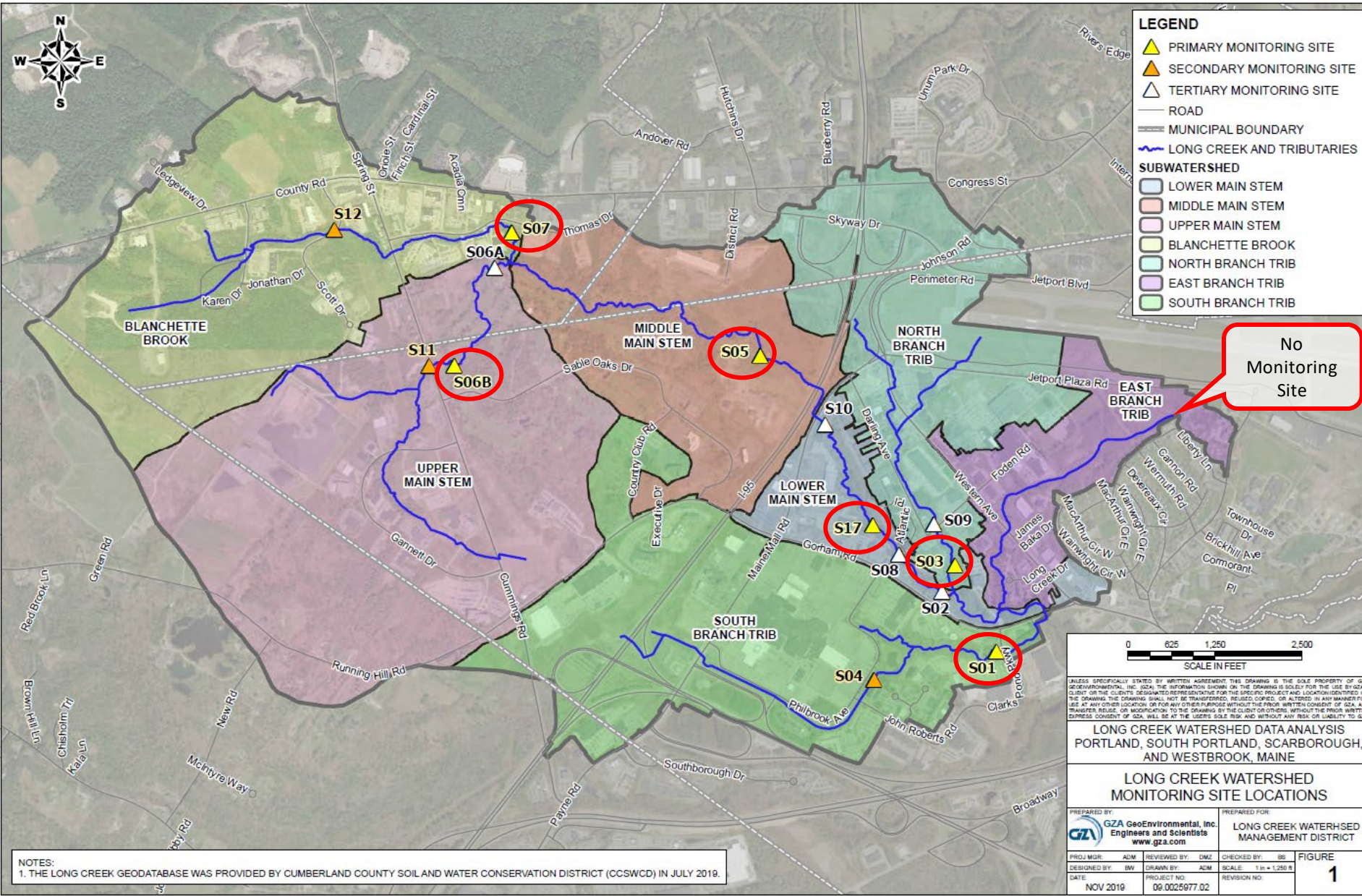
Goal

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).

Data Management

Spring Melt & Base Flow Grab Sampling

Continuous Water Quality Monitoring

Hydrology and Flow Monitoring

Habitat Assessment

Biological Monitoring

LONG CREEK
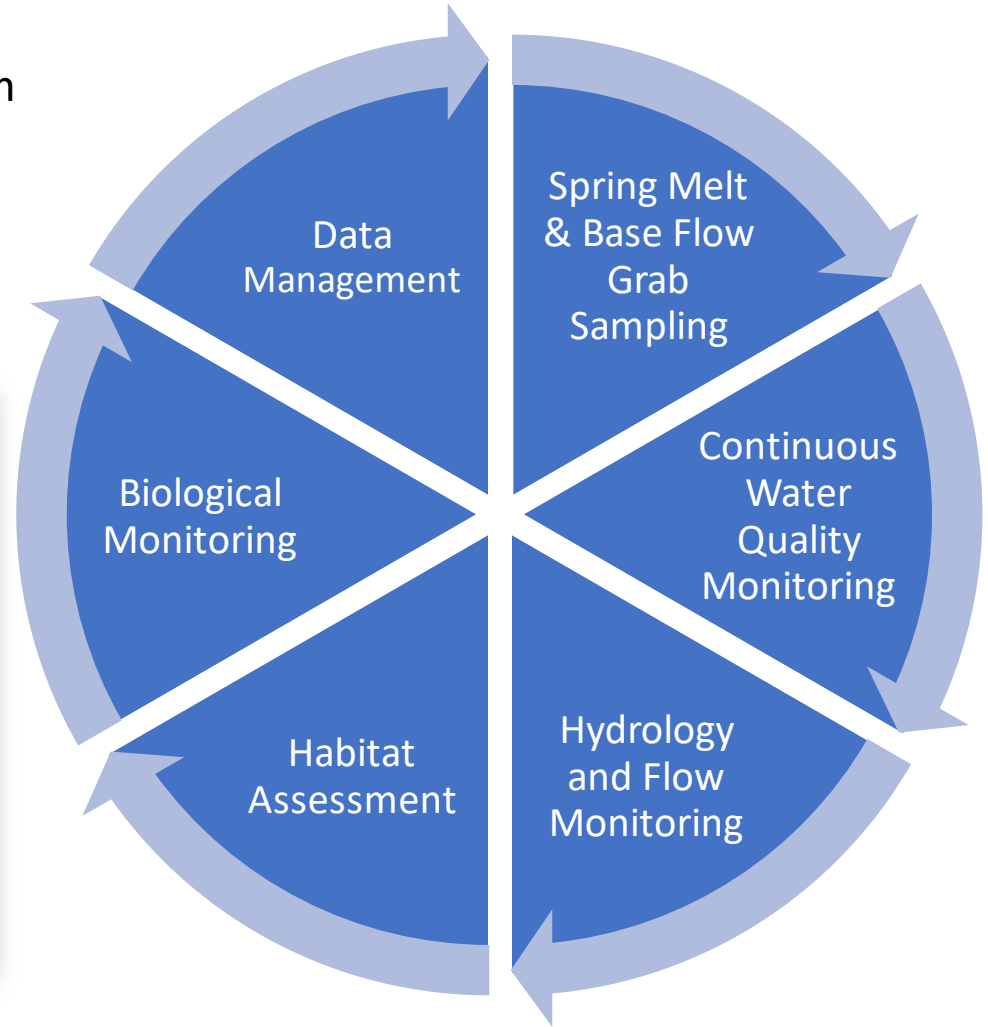
Grab Sampling

- 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
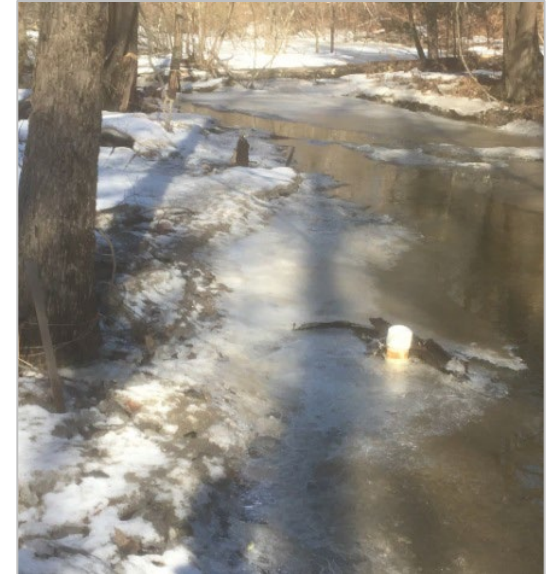
Base Flow Sampling at Site 01 in July 2018

- 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

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
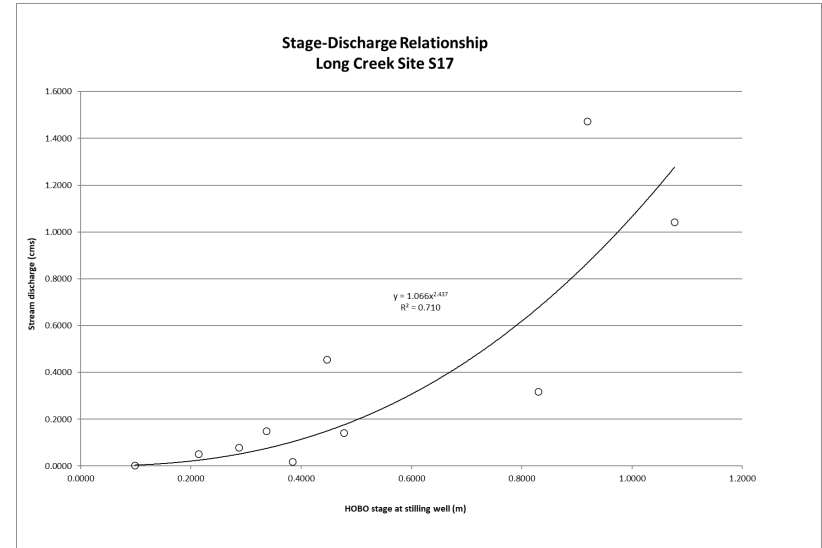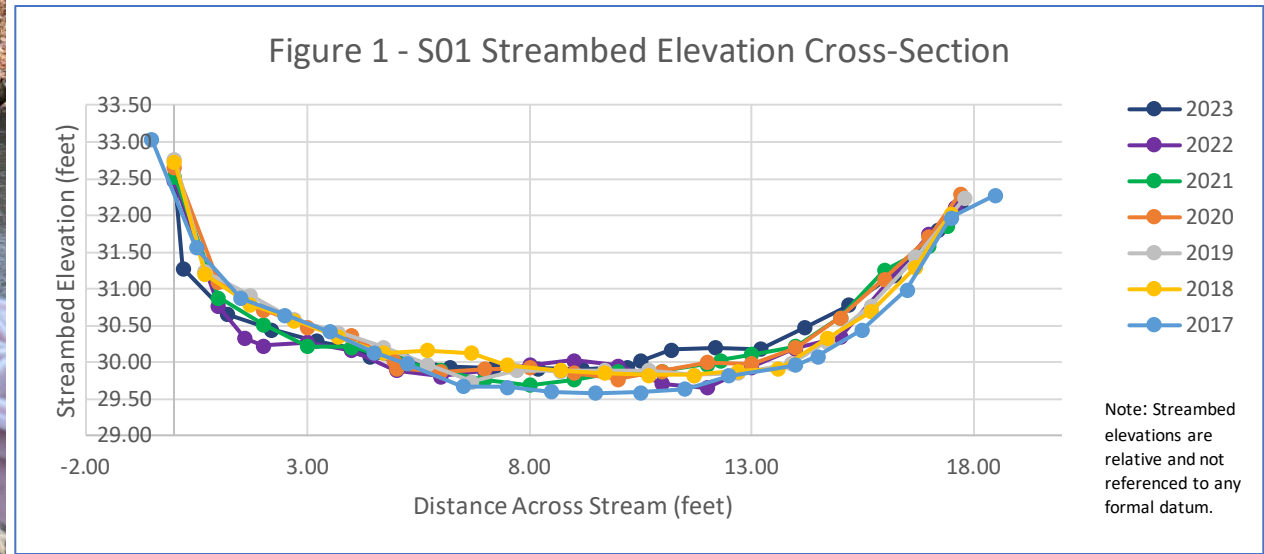- Annual flow monitoring with velocity meter

Stage-Discharge Relationship
Long Creek Site S17

$$y = 1.066x^{2.437}$$
$$R^2 = 0.710$$

x-axis: HOBO stage at stilling well (m)
y-axis: Stream discharge (cms)

Figure 1 - S01 Streambed Elevation Cross-Section

Legend: 2023, 2022, 2021, 2020, 2019, 2018, 2017

y-axis: Streambed Elevation (feet)
x-axis: Distance Across Stream (feet)

Note: Streambed elevations are relative and not referenced to any formal datum.
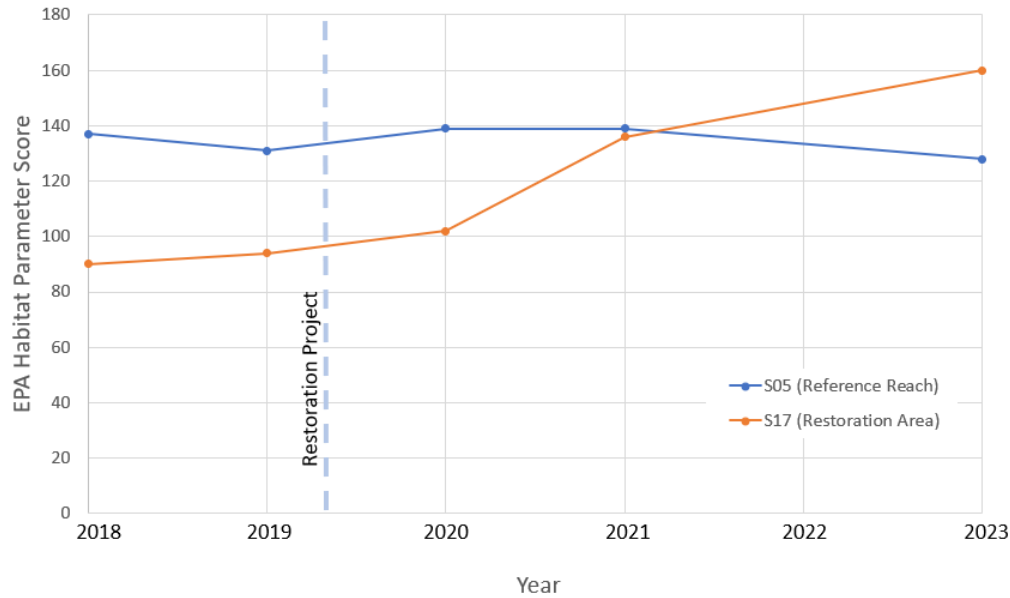
Flow Monitoring at Site 3 in October 2023

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

Micro-Habitat Half-Meter Quadrat

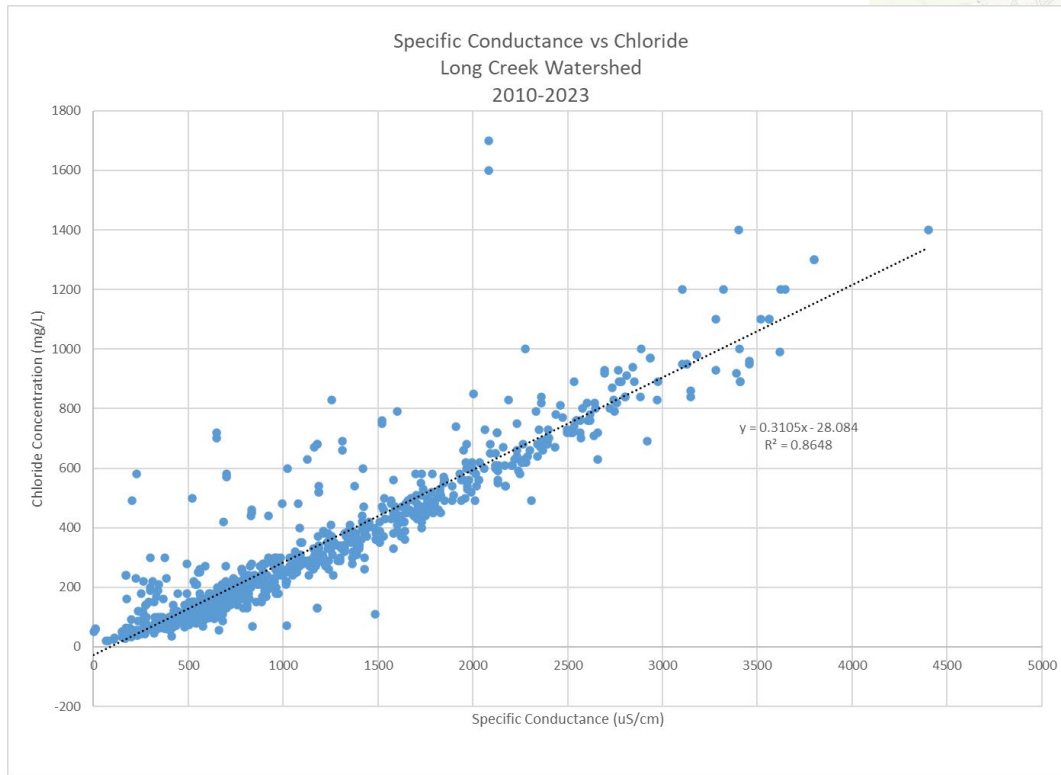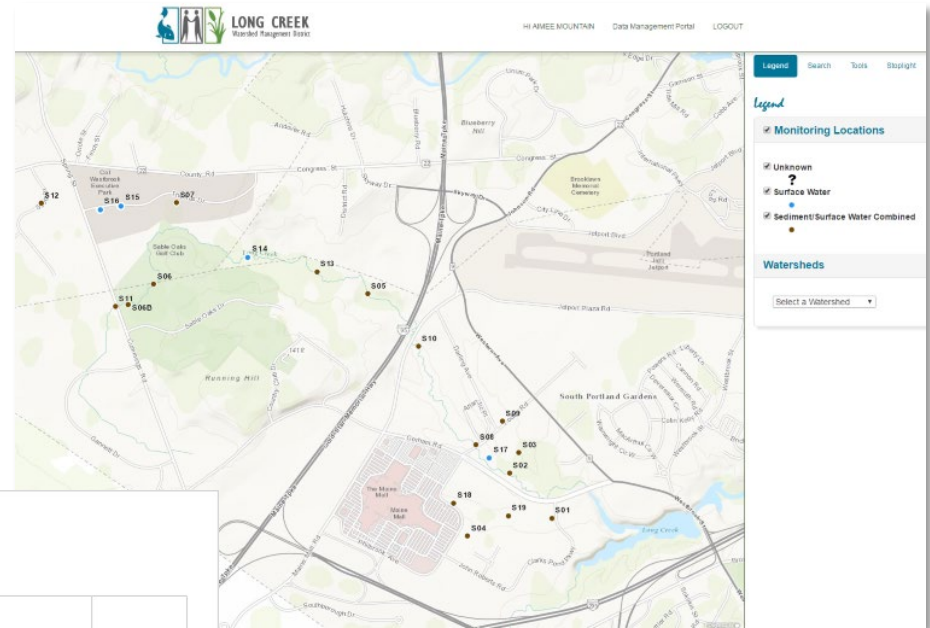# Biological Monitoring

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

LONG CREEK

Data Management

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

Specific Conductance vs Chloride
Long Creek Watershed
2010-2023

$y = 0.3105x - 28.084$
$R^2 = 0.8648$

Chloride Concentration (mg/L)

Specific Conductance (uS/cm)

Upload Edd File

Select EDD Type 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

Aimee Mountain
Senior Consultant
Aimee.Mountain@gza.com

Questions