

# Calgary Bow River Water Quality Data

## School Program Spring Season 2019

### RiverWatch Institute of Alberta

Award-winning RiverWatch School Programs engage Alberta's secondary students in authentic science. Students are provided the tools and guided instruction that help them answer "How healthy is our river?". Using first-hand observations of their local river combined with data collection conducted at water quality test sites located above and below a wastewater treatment plant (WWTP), students generate their own conclusions on river health and stewardship actions. This type of citizen science is best described as "community-based environmental monitoring".

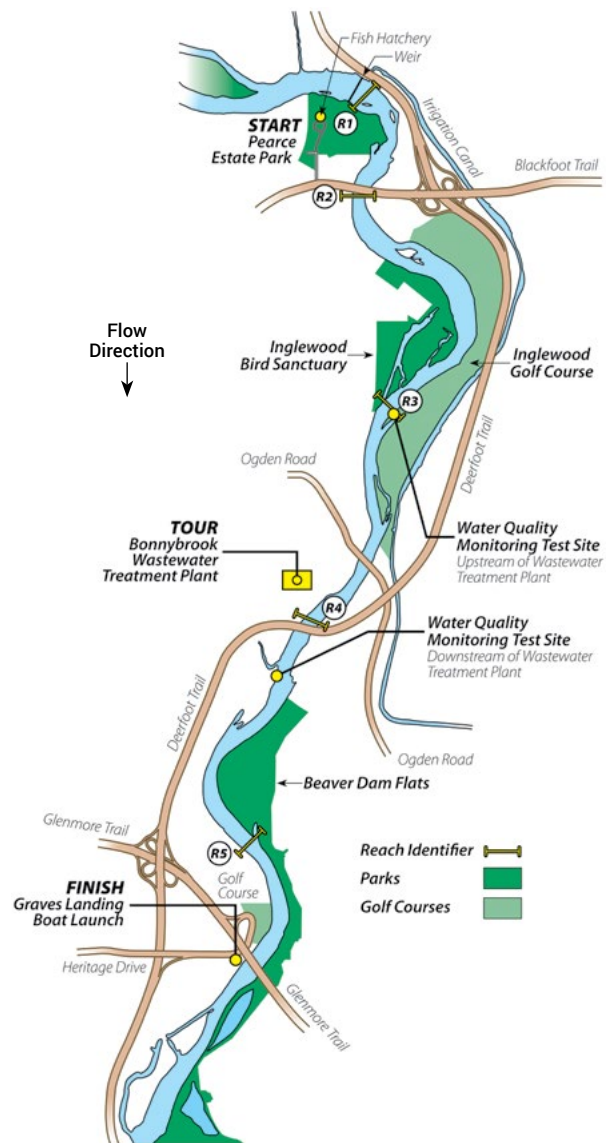
The combined efforts of approximately 150,000 thousand students across Alberta for more than two decades has generated substantial water quality data regarding the health of our rivers. You can view a data snapshot in the attached graphs generated by our website's user-friendly and responsive [graphing tool](#). This season's data suggests some water quality impact associated with wastewater treatment effluent.

#### Calgary By-the-Numbers Spring Season 2019

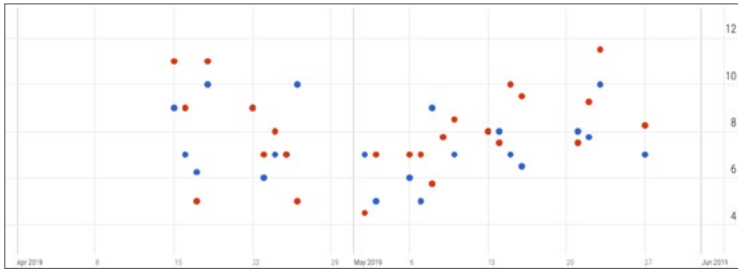
Number of Monitoring Days	24
Number of Schools	40
Number of Students	3,228
Number of Data Points	4,193

#### Bow River Water Quality Data Comparisons Spring Season April – May 2019 Median Values

Parameter	Above WWTP (a.m.)	Below WWTP (p.m.)
Dissolved Oxygen mg/L	7.0	7.9
Water Temperature °C	6.1	8.2
Turbidity NTU	14	14
pH	7.9	8.1
Ammonia Nitrogen mg/L	0.25	0.25
Phosphate mg/L	0.03	0.04
Stonefly Nymph m <sup>2</sup>	6	2
Mayfly Nymph m <sup>2</sup>	16	7
Caddisfly Larva m <sup>2</sup>	0	0
Cranefly Larva m <sup>2</sup>	0	0
Midge Larva m <sup>2</sup>	0	0
Blackfly Larva m <sup>2</sup>	0	0



### Dissolved Oxygen (mg/L)

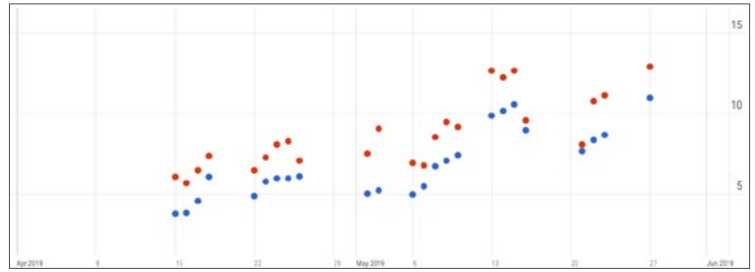


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

**Median**      **7**                                      **8**

Dissolved oxygen concentrations are measured using Hach kits with a drop-by-drop titration to show a change in water color until totally clear. Dissolved oxygen is tested during daylight while macrophyte and algae photosynthesis is underway and generating oxygen. The first upstream test site is sampled in the morning; the second downstream test site is sampled in the early afternoon.

### Water Temperature (°C)

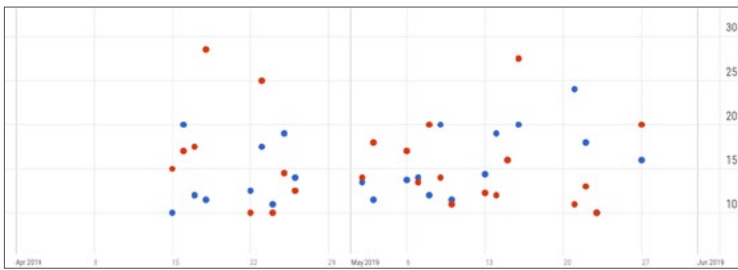


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

**Median**      **6.1**                                      **8.2**

Water temperatures are measured using a digital thermometer placed in flowing, shallow water near shore. The first upstream test site is sampled in the morning; the second downstream test site is sampled in the early afternoon.

### Turbidity (NTU)

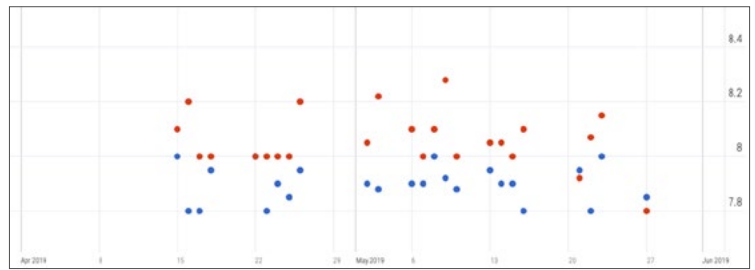


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

**Median**      **14**                                      **14**

Turbidity is measured by slowly pouring water into a graduated cylinder marked with "Nephelometric Turbidity Units" or NTU's.

### pH

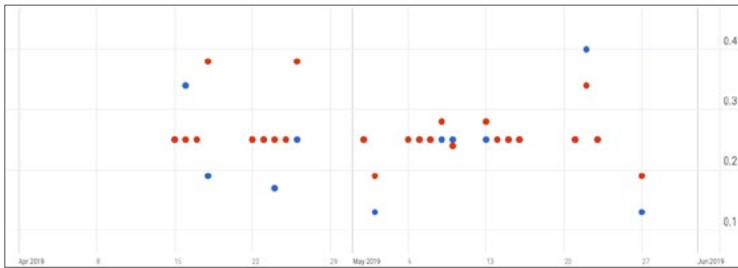


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

**Median**      **7.9**                                      **8.1**

River pH is measured using Hach kits that compare a change in water color.

### Ammonia Nitrogen (mg/L)

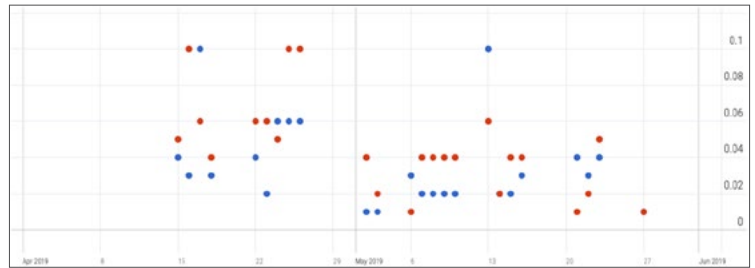


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

**Median**      **0.25**                                      **0.25**

Ammonia nitrogen concentrations are measured by dipping Hach test strips into water and noting the color change.

### Phosphorus (mg/L)



● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

**Median**      **0.03**                                      **0.04**

Orthophosphate concentrations are measured with Hach kits that compare a change in water color.

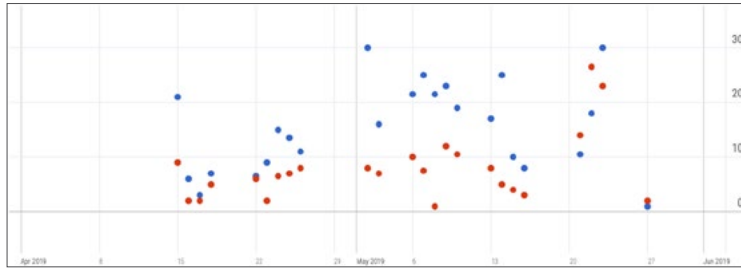
To review data with our online graphing tool, visit [www.riverwatch.ab.ca/science/data](http://www.riverwatch.ab.ca/science/data)

# Aquatic Invertebrates

Benthic or bottom-hiding aquatic insects are dislodged when students use their boots to kick-up a square meter of river gravel, and then capture floating organisms in a net.

## Pollution Sensitive Aquatic Invertebrates

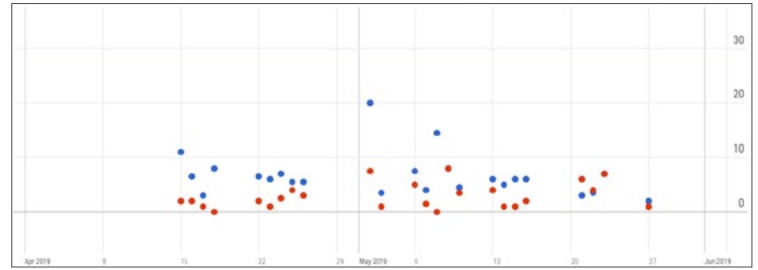
### Mayfly Nymph (m<sup>2</sup>)



● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

Median 16 7

### Stonefly Nymph (m<sup>2</sup>)

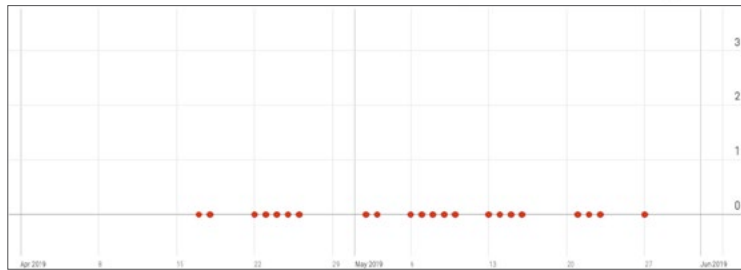


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

Median 6 2

## Moderately Pollution Tolerant Aquatic Invertebrates

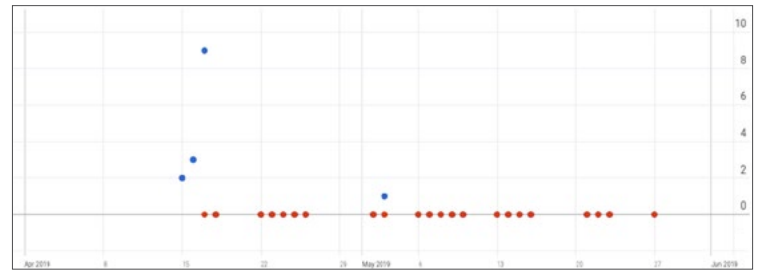
### Cranefly Larva (m<sup>2</sup>)



● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

Median 0 0

### Caddisfly Larva (m<sup>2</sup>)

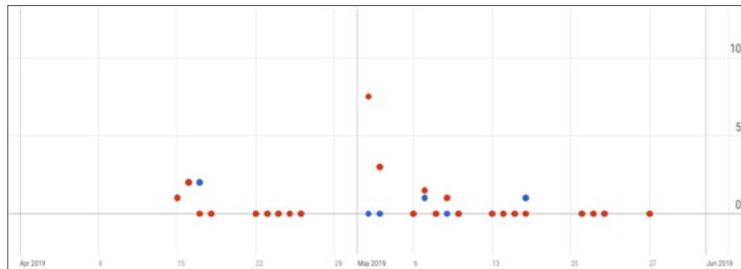


● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

Median 0 0

## Pollution Tolerant Aquatic Invertebrates

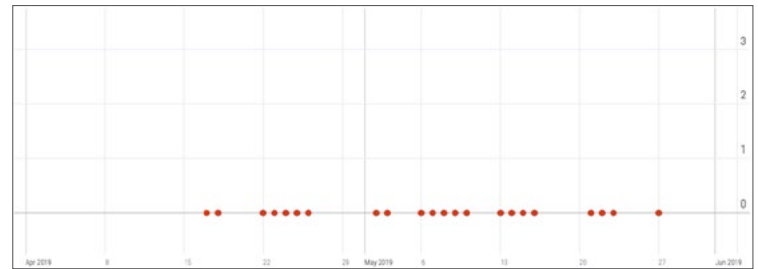
### Midge Larva (m<sup>2</sup>)



● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

Median 0 0

### Blackfly Larva (m<sup>2</sup>)



● Bow River at Inglewood Bird Sanctuary (Upstream) ● Bow River at Beaver Dam Flats (Downstream)

Median 0 0

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