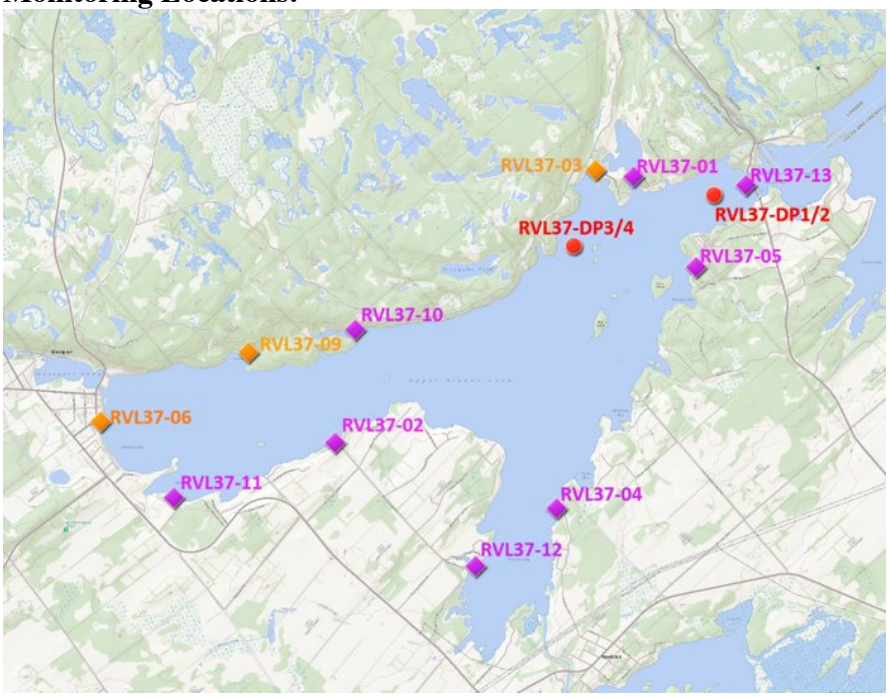
Upper Rideau Water Quality Update – RVCA Watershed Watch Monitoring:

- Deep points (DP1/2 & DP3/4) are monitored 4 times/ year, once during spring and fall turnover (May & October) and twice during the summer months (June-August)
- Nearshore environments are sampled twice during the summer months (June-August). All sites are sampled every 5 years, while 3 sites (3, 6, 9) are sampled every year.

Monitoring Locations:



2021 Lake Sampling Results:

*Records highlighted in Yellow represent an exceeded guideline

Deep Point								
Lake	Date Sampled	Site	Calcium (mg/L)	Carbon (mg/L)	E.Coli (CFU/100mL)	TP (mg/L)	TKN (mg/L)	Secchi (m)
Upper Rideau - RVL-37	5/12/2021	DP1				0.017	0.43	6.5
Upper Rideau - RVL-37	7/12/2021	DP1		4		0.016	0.36	4.5
Upper Rideau - RVL-37	8/26/2021	DP1	25.2			0.024	0.45	2
Upper Rideau - RVL-37	10/20/2021	DP1				0.015	0.38	6
Upper Rideau - RVL-37	5/12/2021	DP3				0.012	0.42	7
Upper Rideau - RVL-37	7/12/2021	DP3		4.6		0.007	0.35	5
Upper Rideau - RVL-37	8/26/2021	DP3	25.9			0.017	0.43	3
Upper Rideau - RVL-37	10/20/2021	DP3				0.013	0.36	5
Shoreline Samples								
Upper Rideau - RVL-37	7/12/2021	3			0	0.011	0.25	
Upper Rideau - RVL-37	8/26/2021	3			0	0.025	0.54	
Upper Rideau - RVL-37	7/12/2021	6			5	0.051	0.78	
Upper Rideau - RVL-37	8/26/2021	6			0	0.035	0.59	
Upper Rideau - RVL-37	7/12/2021	9			0	0.011	0.37	
Upper Rideau - RVL-37	8/26/2021	9			0	0.026	0.51	

Upper Rideau Updated CCME (Canadian Council for the Ministry of Environment) WQI (WATER QUALITY INDEX) Index Scores:

- Scores are calculated using collected data from both deep points (DP1 and DP3) and are based on the following parameters and their guidelines:
  - Secchi Depth – Guideline of 2m
  - Total Phosphorus Concentrations: Provincial Water Quality Objective – 0.02 mg/L
  - Total Kjeldahl Nitrogen – Guideline 0.5 mg/L

mg/L
- Total Kjeldahl Nitrogen – Guideline 0.5 mg/L
- Fish Habitat Suitability – Warm water fish species, <25C, >4mg/L Dissolved Oxygen
- pH ->6.5 <9

Table 1. CCME Water Quality Index Score Catergories and descriptions

WQI Ranking	WQI Scores	Water Body Description
Very Good	95 - 100	Water Quality is protected with virtual absence of threat or impairment. Conditions are very close to natural or pristine. This value is received when all guidelines fall within the appropriate range all of the time.
Good	80 - 94.9	Water Quality is protected with only a minor degree of threat or impairment. This value is received when conditions rarely depart from natural or desirable levels
Fair	65 - 79.9	Water Quality is usually protected by occasionally threatened or impaired. This value is received when conditions sometimes depart from natural or desirable levels.
Poor	45 - 64.9	Water Quality is frequently threatened or impaired. The value is received when conditions often depart from natural or desirable levels.
Very Poor	0 - 44.9	Water Quality is almost always threatened or impaired. This value is received when conditions usually depart fron the natural or desirable levels.

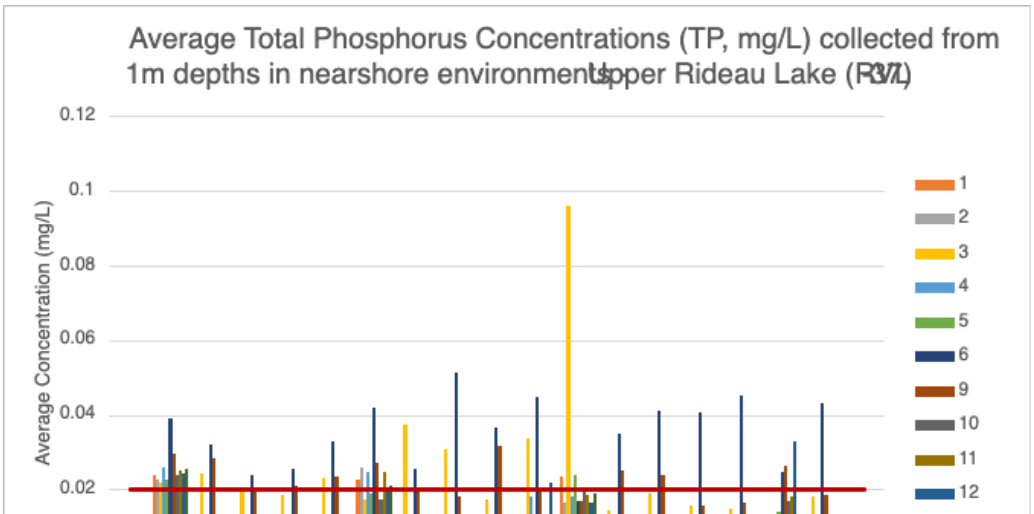
Lake	Median WQI Score	WQI Score Range	Trend	WQI Score and Category	
	2001 - 2020			2018 - 2020	
Rideau Lakes Subwatershed					
Upper Rideau (RVL37)*	63.8	Poor - Fair	↑	76.3	Fair

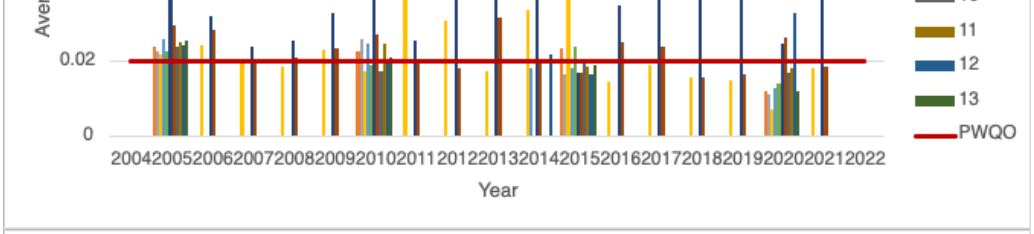
Lake	WQI Scores						
	2000 - 2002	2003 - 2005	2006 - 2008	2009 - 2011	2012 - 2014	2015 - 2017	2018 - 2020
Upper Rideau (RVL37)*		57.8	63.6	63.9	63.7	76.4	76.3
		Poor	Poor	Poor	Poor	Fair	Fair

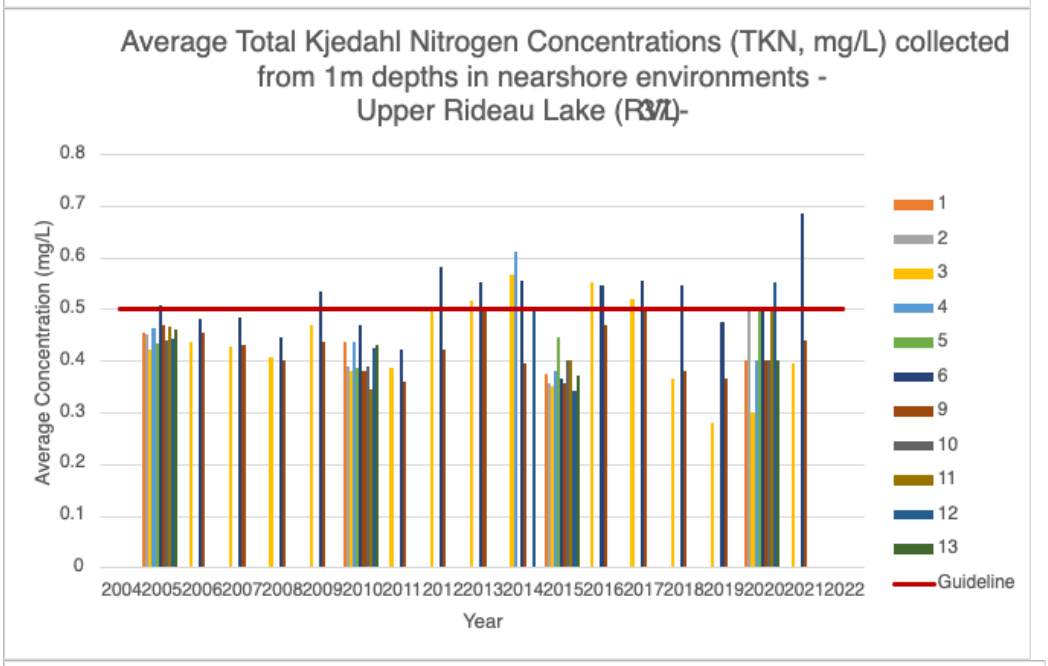
*Review of the data suggests that changes in score/ increasing trend is primarily driven by changes in the magnitude and frequency of TTP (Total Phosphorus) and TKN (Total Kjeldahl Nitrogen) exceedances in collected composite/water column samples collected from the deep point.

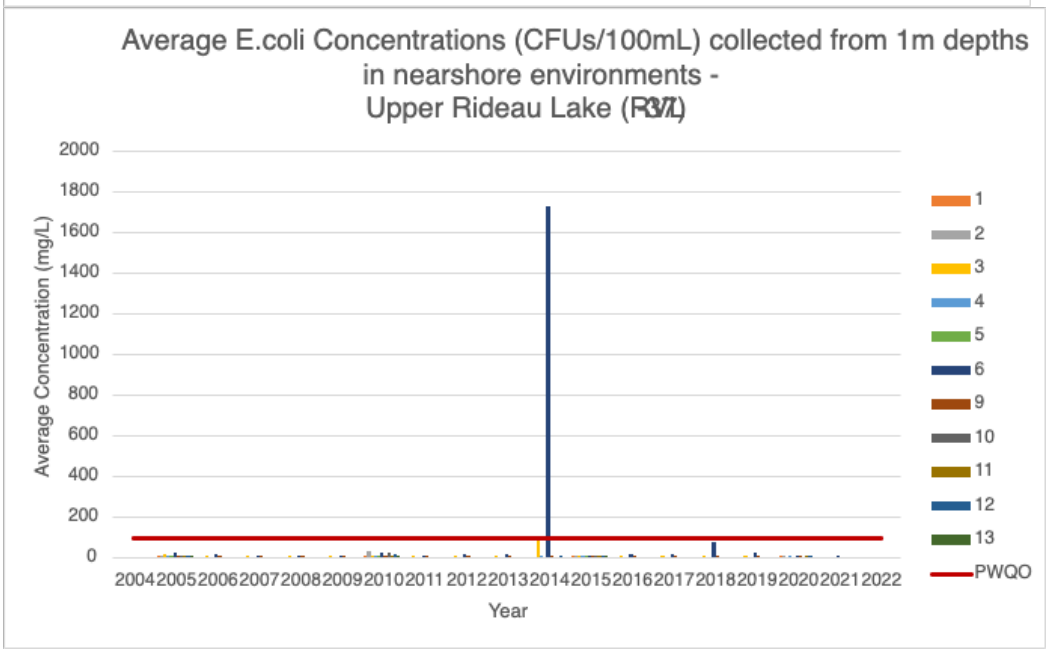
Nearshore Sampling Results:

- Samples are collected from 1m depths at the designated monitoring locations in nearshore environments.









Westport Dam – Water Quality Conditions (2003 – 2020)

- Part of the RVCA Baseline monitoring program- monitored 6 times/ year between April and November
- CCME WQI scores are calculated based on the following guidelines:

Parameter	Recommended Guideline
Aluminum (Al)	< 0.075 mg/L
Chloride (Cl)	< 120 mg/L
Copper (Cu)	< 0.005 mg/L
Iron (Fe)	< 0.3 mg/L
Zinc (Zn)	< 0.03 mg/L
Total Suspended Solids (TSS)	< 25 mg/L
pH	>6.5, <9.5
Escherichia Coli (E.Coli)	< 100 CFU (Coliform Forming Units)
Ammonia (NH3)	< 0.02 mg/L

Escherichia Coli (E.Coli)	< 100 CFU (Coliform Forming Units)
Ammonia (NH3)	< 0.02 mg/L
Nitrate (NO3)	< 13 mg/L
Total Kjeldahl Nitrogen (TKN)	< 0.5 mg/L
Total Phosphorus	< 0.03 mg/L

Table 5. Catchment Level calculated 3-year interval medians for all Streams and Tributary CCME Water Quality Index Scores and Ranges based on available data between 1998-2020.

Tributaries & Catchments	Median WQI Score	WQI Score Range	Trend
Rideau Lakes Subwatershed			
Westport Dam	83.85	Good	↑

Table 6. River, stream, and tributary median parameter values and trends based on collected data for the period on record (1998-2020).

System	Aluminum (Al,		Chloride (Cl, mg/L)		Copper (Cu, mg/L)		Iron (Fe, mg/L)		Zinc (Zn, mg/L)		Total Phosphorus	
	Median	Trend	Median	Trend	Median	Trend	Median	Trend	Median	Trend	Median	Trend
Westport Dam	0.01	⟷	11.4	⟷	0.0011	↓	0.04	↓	0.002	↓	0.02	↓
	Total Kjedahl		Ammonia (NH_3,		Nitrate (NO_3, mg/L)		Total Suspended		pH		*Escherichia coli*	
	Median	Trend	Median	Trend	Median	Trend	Median	Trend	Median	Trend	Median	Trend
	0.47	⟷	0.012	↑	0.02	↓	2	⟷	8.3	⟷	10	⟷