

# Okanagan Lake (South) Phytoplankton Summary Report 2021-2022

## Overview

Samples were collected from EMS site #0500454 on Okanagan Lake during 2021 and 2022 (Figure 1; Table 1). Algae were identified to the taxonomic level of species and grouped into broad alga types for analysis.

Table 1: Sample sites and dates sampled in 2021 and 2022

Sample Site (EMS#)	Dates
OKANAGAN L SOUTH PRAIRIE C - OK1 - N	2021-06-15
SUMMERLAND S (0500454)	2021-07-13
	2021-08-17
	2021-09-08
	2022-03-07
	2022-04-12
	2022-05-17
	2022-06-15
	2022-07-14
	2022-08-16
	2022-09-07

**Total= 11 samples**

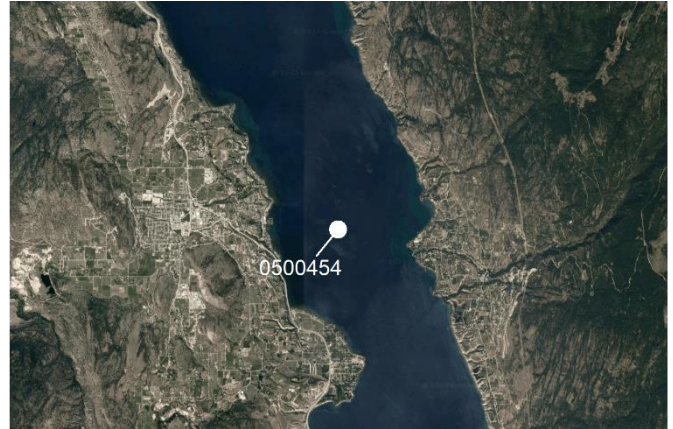


Figure 1: Aerial view of EMS site 0500454 Okanagan Lake

Samples demonstrated seasonal patterns with elevated diatoms in the spring. Diatom concentrations were slightly elevated from April to June compared to March, July, August, and September. Spring blooms of diatoms are common and reflective of increased temperatures, light penetration, and silica in the water following ice thaw (Kong et al., 2021). EMS site 0500454 collected on 2022-03-07 demonstrated diatom degradation indicative of lowering silica levels in the late spring (Figure 2).

Samples collected in at EMS site 0500454 demonstrated elevated concentrations of cyanobacteria compared to Northern sample points in Okanagan Lake (EMS 0500730 and 0500236).

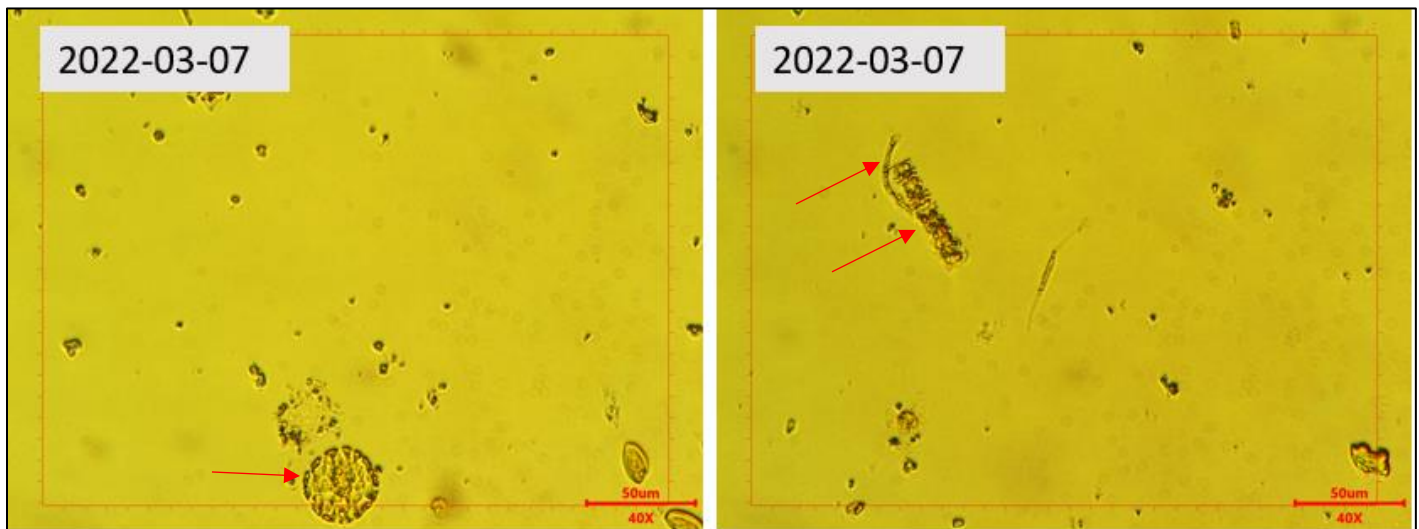


Figure 2: 400x magnification of EMS site 0500454 collected on 2022-03-07 highlighting the degraded diatoms (red arrows) observed in this sample

## Overview (continued)

Diatoms dominated biovolumes in Okanagan Lake (South), over 42% of sample biovolume was composed of diatoms (Figure 3; Figure 4). *Cryptomonas* species were also frequently encountered.

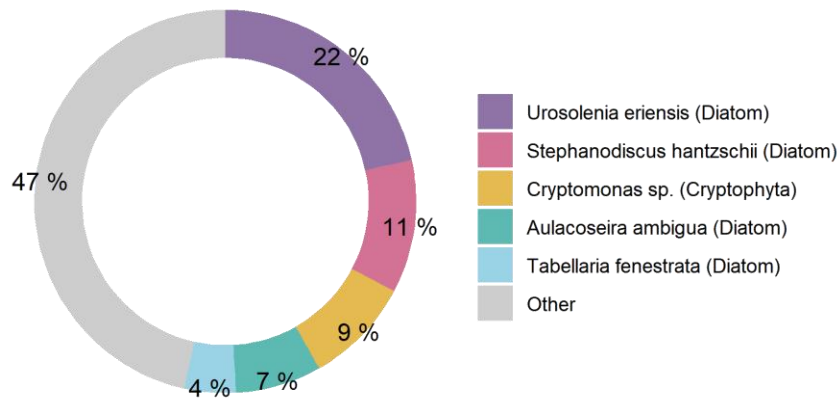


Figure 3: Dominant organisms from Okanagan Lake (Site 0500454) as percent of total biovolume

Diatoms are integral to aquatic food webs because they are the foundation of the food web (Jrobyn, 2019). Colony forming diatoms such as *Fragilaria* and *Tabellaria* sp. can avoid grazing pressures by developing into large colonies reducing their availability for zooplankton and microscopic invertebrates (Baker, 2012).

Cryptomonads are favored elements of freshwater food chains and are selectively consumed by several zooplankton, ciliates, and dinoflagellates (Wehr et al., 2015).

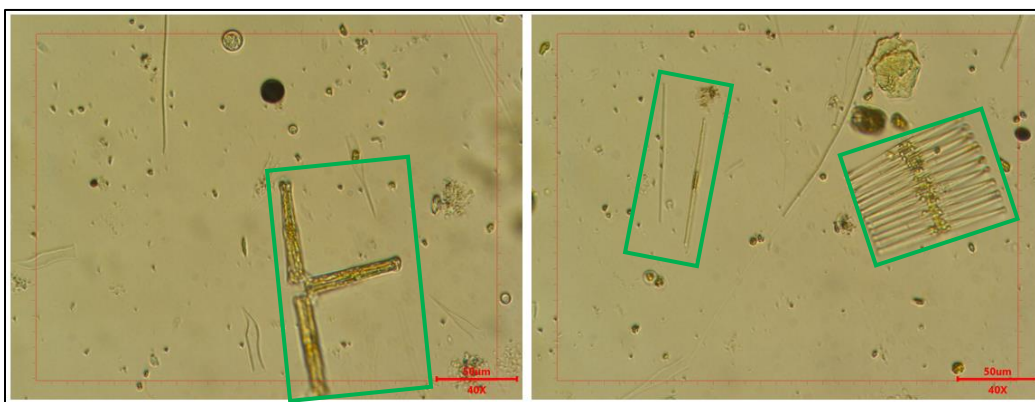


Figure 4: 400x magnification of EMS site 0500454 demonstrating the size of different diatoms (green boxes)

### Algae – why should we care?

Algae blooms are becoming more frequent and severe worldwide due to excessive nutrient loading and warming summer lake temperatures. Diatom blooms can cause filter clogging, and odor issues.

Intense cyanobacteria blooms can threaten human safety and aquatic health through their toxicity. Illness related to cyanotoxins can include liver, kidney, and nerve cell damage, cancer, skin and gut irritation, and neurological issues. Cyanotoxins, including microcystins, are now known to accumulate in the food chain (Lance et al., 2014). Fish from lakes with heavy cyanobacteria blooms can have higher toxin concentrations than the lake water (Greer et al. 2021) and consuming them can increase the risk of liver disease (Zhao et al., 2020).

## Cyanobacterial Presence

Samples collected during June 2021 and 2022 contained elevated counts of cyanobacteria. *Planktolyngbya* was the dominant genus counted, *Anacystis* and *Aphanocapsa* were also frequently encountered.

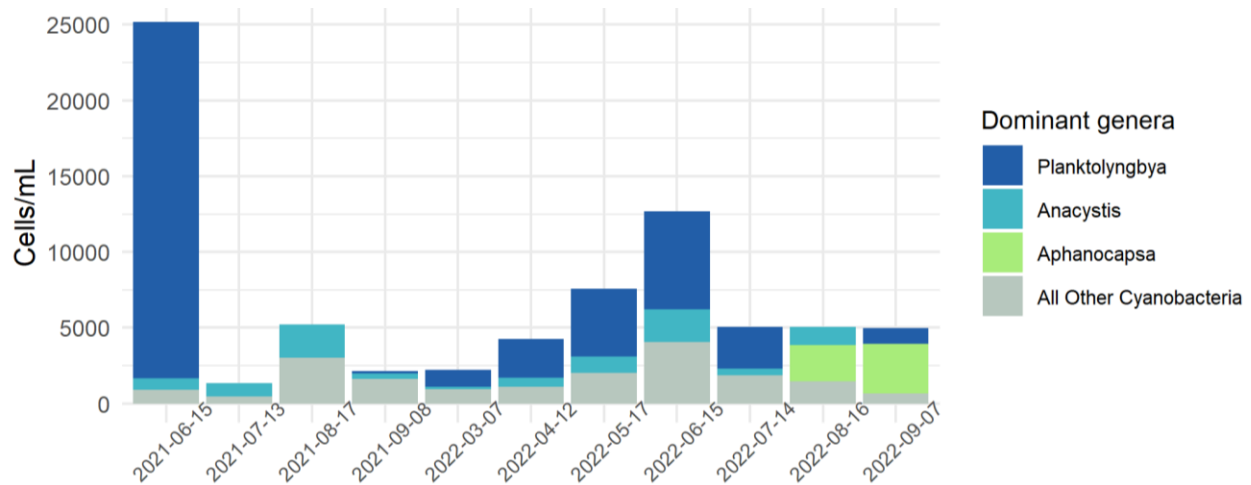


Figure 5: cell abundance for dominant cyanobacteria genera on Okanagan Lake (South)

Dominant cyanobacteria identified in the summer samples are also associated with several cyanotoxins that represent risks to public health (Table 2). Illness related to cyanotoxins can include liver, kidney, and nerve cell damage, cancer, skin and gut irritation, and neurological issues (Lance et al., 2014).

Table 2: Dominant genera of cyanobacteria on Okanagan Lake (South) and their associated toxins

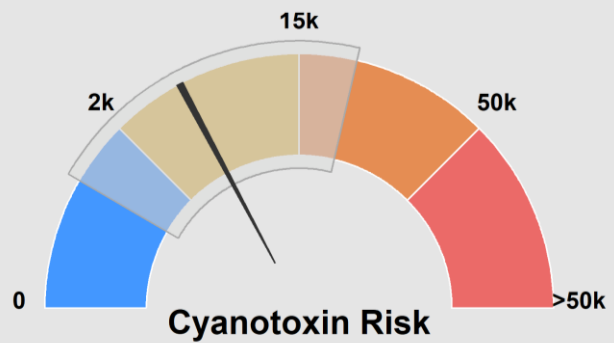
Genus	Maximum Abundance* (cells/mL)	Toxins Produced
<i>Planktolyngbya</i>	20036	Lyngbyatoxin LYN, Microcystin MC, BMAA
<i>Aphanocapsa</i>	3263	Lyngbyatoxin LYN, Lipopolysaccharide LPS, Microcystin MC, BMAA
<i>Anacystis</i>	1821	Lyngbyatoxin LYN, Lipopolysaccharide LPS, Microcystin MC, Nodularins NOD, Anatoxins (-a) ATX, BMAA, Cyanopeptolins CPL, Anabaenopeptins APT

Note: \* = counted in samples

## Cyanobacterial Presence (Continued)

Dominant species of cyanobacteria found in Okanagan Lake (South) can produce cyanotoxins (Table 2).

Okanagan Lake (South) displayed cyanobacteria levels in the negligible to moderate-risk category, with a mean cyanobacteria abundance of 6,887 cells/mL (Figure 6). Figure 6 exhibits the range of cyanobacterial abundance observed in Okanagan Lake (South) compared to alert levels defined by several authorities including the WHO and EPA.



Cyanobacteria Abundance (cells/mL) [Blue] Negligible [Yellow] Low Risk [Orange] Mod Risk [Red] High Risk [Grey] Range  
Figure 6: Cyanotoxin risk posed by cyanobacteria blooms in Okanagan Lake (South)

Cyanobacteria frequently dominate algal communities in total cell count, but because of their small cell size their biovolume is usually low relative to the other types of algae present. This is highlighted in Figure 7 where a half of an *Ulnaria ulna* cell (diatom) is an equivalent length to approximately 100 cyanobacteria cell on an adjacent filament.

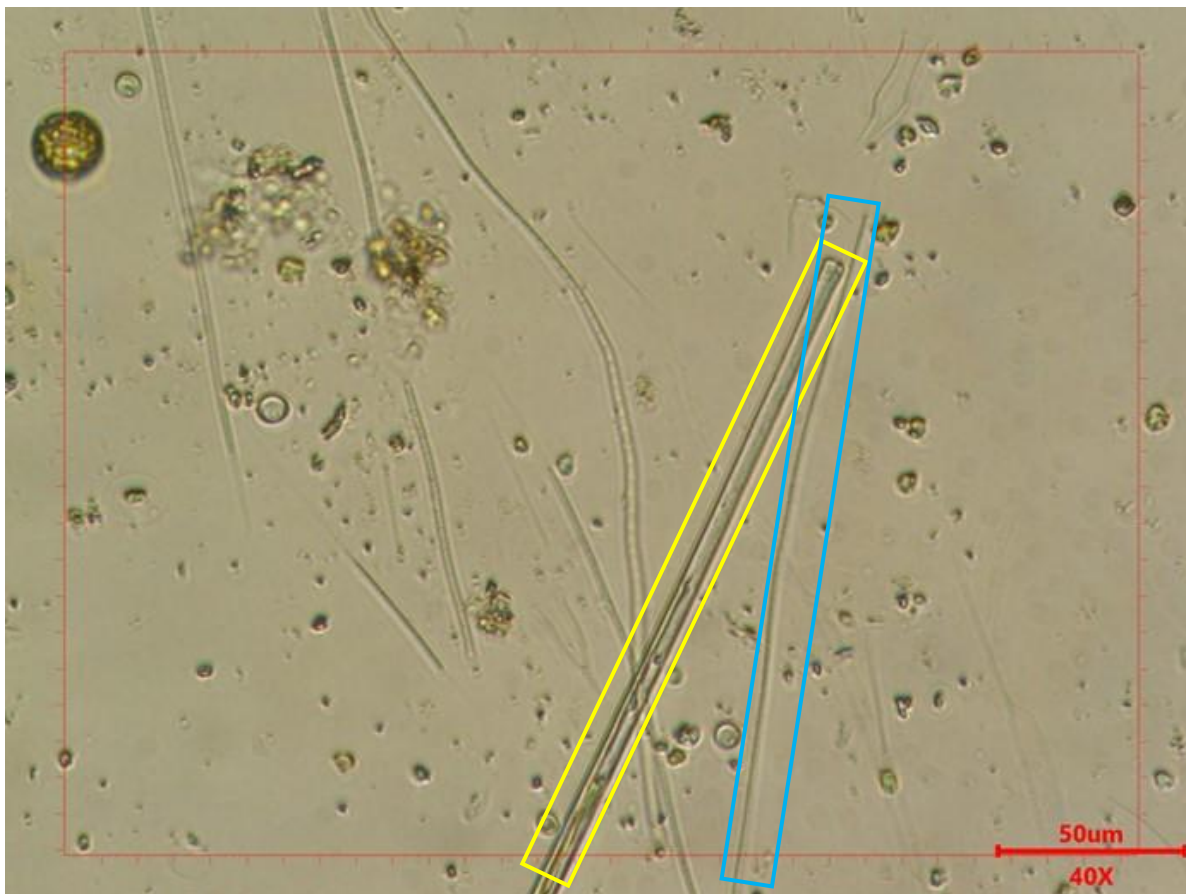


Figure 7: Size comparison of a half *Ulnaria ulna* cell (yellow box) to a filament of *Planktolyngbya* (blue box) approximately 100 long

## Species Composition

Algae samples were identified to the species level and grouped into broad algae types for analysis. The figures below display the total cell counts for each broad algae group alongside the biovolume represented by each of these groups. The difference between Figure 8 (cell abundance) and Figure 9 (biovolume) illuminates the difference between cell abundance and biovolume.

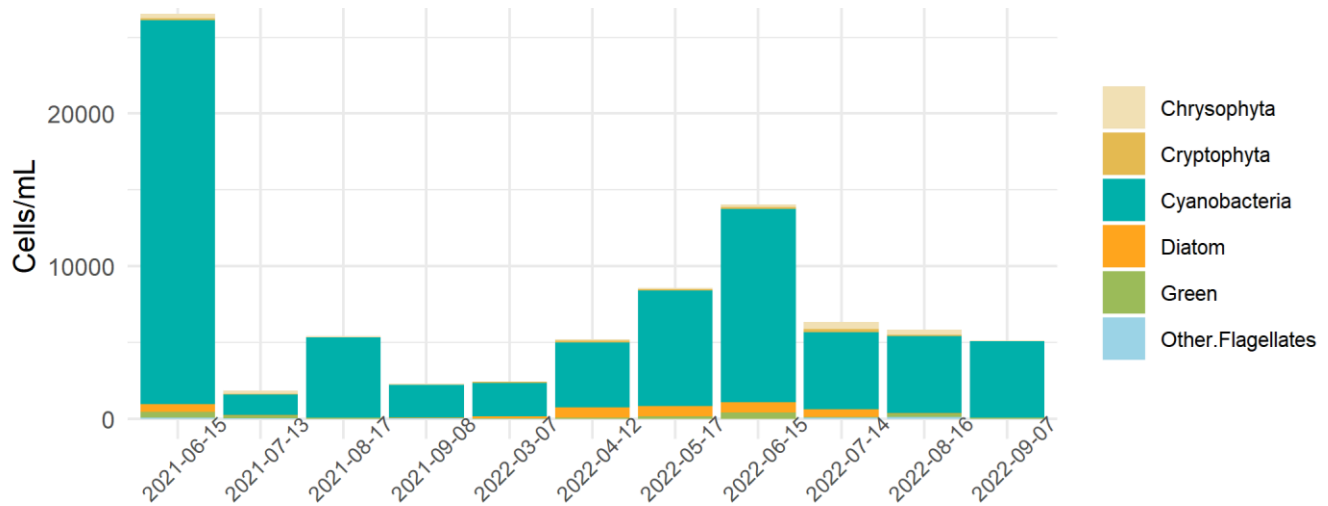


Figure 8: Cell abundance of high-level taxa groups on Okanagan Lake (South)

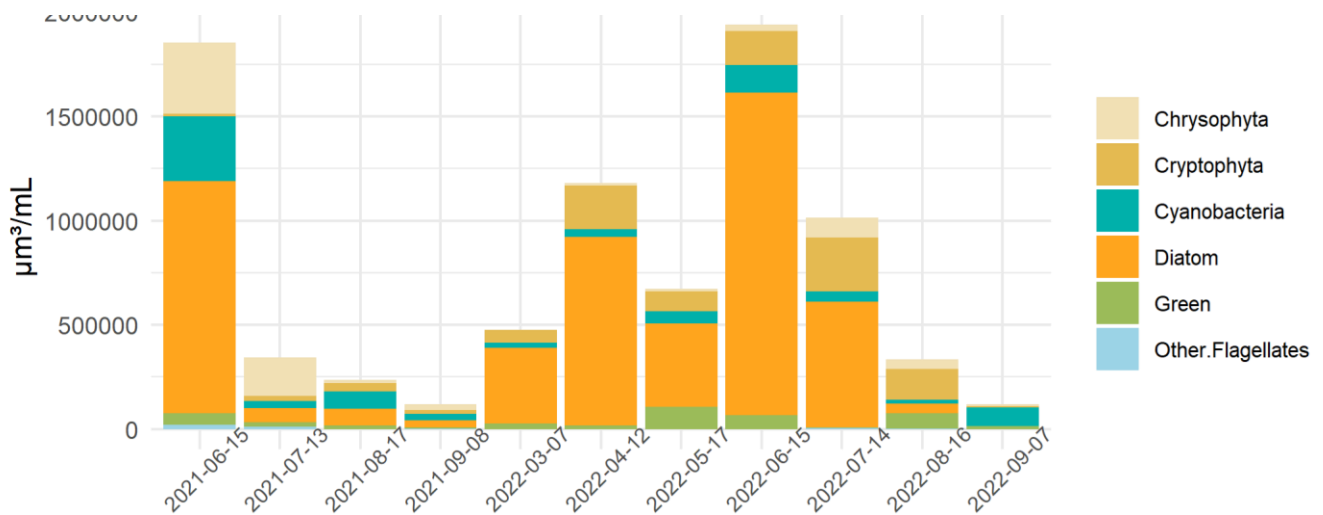


Figure 9: Biovolume of high-level taxa groups on Okanagan Lake (South)

## References

- jrobyn. (2019). *How Diatoms Benefit a Body of Water - BioNova®*. BioNova. <https://bionovanaturalpools.com/how-diatoms-benefit-a-body-of-water/>
- Kong, X., Seewald, M., Dadi, T., Friese, K., Mi, C., Boehrer, B., Schultze, M., Rinke, K., & Shatwell, T. (2021). Unravelling winter diatom blooms in temperate lakes using high frequency data and ecological modeling. *Water Research*, 190, 116681. <https://doi.org/10.1016/J.WATRES.2020.116681>
- Lance, E., Petit, A., Sanchez, W., Paty, C., Gérard, C., & Bormans, M. (2014). Evidence of trophic transfer of microcystins from the gastropod *Lymnaea stagnalis* to the fish *Gasterosteus aculeatus*. *Harmful Algae*, 31, 9–17. <https://doi.org/10.1016/J.HAL.2013.09.006>
- Wehr, J. D., Sheath, R. G., & Kociolek, P. (2015). *Freshwater Algae of North America* (Second). Elsevier Inc.
- Zhao, Y., Yan, Y., Xie, L., Wang, L., He, Y., Wan, X., & Xue, Q. (2020). Long-term environmental exposure to microcystins increases the risk of nonalcoholic fatty liver disease in humans: A combined fisher-based investigation and murine model study. *Environment International*, 138, 105648. <https://doi.org/10.1016/J.ENVINT.2020.105648>

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## Appendix

Additional figures and raw data are listed below:

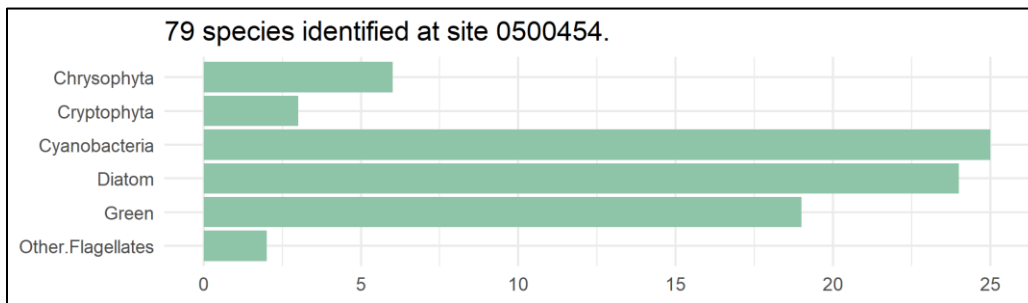


Figure 10: Unique species observed in Okanagan Lake (South) sorted into higher level taxa

Table 3: Raw data from 2021

Report Name	High Level Taxa	ITIS		Abundance (cells/ mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number	Date Sampled		
Cocconeis placentula	Diatom	3577	2021-09-08	5	8146
Caloneis sp.	Diatom	4369	2021-09-08	5	14255
Fragilaria crotonensis	Diatom	2932	2021-09-08	15	7283
Ulnaria acus	Diatom	970000	2021-09-08	5	5209
Chlorella vulgaris	Green	5811	2021-09-08	25	1745
Crucigenia rectangularis	Green	6225	2021-09-08	10	3063
Tetraedron minimum	Green	5661	2021-09-08	5	615
Anathece cf. clathrata	Cyanobacteria	NA	2021-09-08	835	3498
Aphanothece sp.	Cyanobacteria	636	2021-09-08	111	354
Anacystis sp.	Cyanobacteria	609	2021-09-08	379	721
Chroococcus limneticus	Cyanobacteria	654	2021-09-08	162	20687
Gloeothece rupestris	Cyanobacteria	703	2021-09-08	15	982
Planktolyngbya limnetica	Cyanobacteria	NA	2021-09-08	152	778
Merismopedia punctata	Cyanobacteria	727	2021-09-08	81	524
Oscillatoria sp.	Cyanobacteria	917	2021-09-08	329	2946
Oscillatoria tenuis	Cyanobacteria	917	2021-09-08	76	680
Dinobryon sp.	Chrysophyta	1515	2021-09-08	5	7510
Cryptomonas sp.	Cryptophyta	10635	2021-09-08	10	18520
Ochromonas sp.	Chrysophyta	1455	2021-09-08	81	17340
Rhodomonas lacustris	Cryptophyta	10663	2021-09-08	5	543
UID flagellate	Other.Flagellates	NA	2021-09-08	5	1739
Aulacoseira ambigua	Diatom	590863	2021-09-08	15	4641
Aulacoseira granulata	Diatom	590863	2021-09-08	10	3289
Cyclotella meneghiniana	Diatom	2439	2021-09-08	10	3967
Fragilaria crotonensis	Diatom	2932	2021-09-08	20	9711
Ulnaria acus	Diatom	970000	2021-09-08	15	15627
Chlorella vulgaris	Green	5811	2021-09-08	15	1047

Report Name	High Level Taxa	ITIS		Abundance (cells/ mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number	Date Sampled		
Crucigenia rectangularis	Green	6225	2021-09-08	10	3063
Oocystis parva	Green	5827	2021-09-08	25	5620
Tetraedron minimum	Green	5661	2021-09-08	5	615
Anathece cf. clathrata	Cyanobacteria	NA	2021-09-08	845	3540
Aphanothece sp.	Cyanobacteria	636	2021-09-08	91	290
Anacystis cyanea	Cyanobacteria	609	2021-09-08	202	304
Anacystis sp.	Cyanobacteria	609	2021-09-08	76	145
Chroococcus limneticus	Cyanobacteria	654	2021-09-08	172	21964
Anabaena sp.	Cyanobacteria	1100	2021-09-08	76	5698
Gloeothece rupestris	Cyanobacteria	703	2021-09-08	10	654
Planktolyngbya sp.	Cyanobacteria	NA	2021-09-08	25	311
Planktolyngbya limnetica	Cyanobacteria	NA	2021-09-08	491	2512
Limnothrix redekei	Cyanobacteria	NA	2021-09-08	51	6409
Merismopedia punctata	Cyanobacteria	727	2021-09-08	61	395
Oscillatoria sp.	Cyanobacteria	917	2021-09-08	101	904
Synechocystis diplococca	Cyanobacteria	799	2021-09-08	40	1340
Snowella lacustris	Cyanobacteria	NA	2021-09-08	101	1059
Dinobryon sp.	Chrysophyta	1515	2021-09-08	25	37550
Cryptomonas sp.	Cryptophyta	10635	2021-09-08	5	9260
Ochromonas sp.	Chrysophyta	1455	2021-09-08	81	17340
UID flagellate	Other.Flagellates	NA	2021-09-08	15	5218
Gymnodinium sp.	Dinoflagellate	10031	2021-09-08	5	10592
Asterionella formosa	Diatom	3116	2021-06-15	91	63365
Lindavia ocellata	Diatom	NA	2021-06-15	15	2489
Fragilaria crotonensis	Diatom	2932	2021-06-15	30	14567
Stephanodiscus hantzschii	Diatom	2415	2021-06-15	91	725779
Ulnaria acus	Diatom	970000	2021-06-15	258	268791
Ulnaria nana	Diatom	970000	2021-06-15	15	39375
Ankistrodesmus sp.	Green	5877	2021-06-15	46	7232
Chlorella vulgaris	Green	5811	2021-06-15	152	10607
Chlorococcum sp.	Green	5648	2021-06-15	46	5202
Crucigenia tetrapedia	Green	6225	2021-06-15	61	7472
Elakatothrix gelatinosa	Green	9412	2021-06-15	61	10774
Mougeotia sp.	Green	7055	2021-06-15	15	11576
Anacystis cyanea	Cyanobacteria	609	2021-06-15	759	1143
Chroococcus limneticus	Cyanobacteria	654	2021-06-15	61	7790
Gloeothece rupestris	Cyanobacteria	703	2021-06-15	46	3011
Planktolyngbya sp.	Cyanobacteria	NA	2021-06-15	20036	249048
Planktolyngbya limnetica	Cyanobacteria	NA	2021-06-15	3491	17859
Limnothrix redekei	Cyanobacteria	NA	2021-06-15	182	22871
Oscillatoria tenuis	Cyanobacteria	917	2021-06-15	531	4754
Snowella litoralis	Cyanobacteria	NA	2021-06-15	76	3626
Dinobryon sertularia	Chrysophyta	1515	2021-06-15	121	148783
Dinobryon sp.	Chrysophyta	1515	2021-06-15	121	181742



Report Name	High Level Taxa	ITIS		Abundance (cells/ mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number	Date Sampled		
Ochromonas sp.	Chrysophyta	1455	2021-06-15	46	9847
Rhodomonas lacustris	Cryptophyta	10663	2021-06-15	137	14875
UID flagellate	Other.Flagellates	NA	2021-06-15	61	21219
Cymbella sp.	Diatom	4795	2021-07-13	5	8467
Diatoma elongatum	Diatom	3214	2021-07-13	5	6451
Fragilaria crotonensis	Diatom	2932	2021-07-13	25	12139
Stephanodiscus hantzschii	Diatom	2415	2021-07-13	5	39878
Ankistrodesmus sp.	Green	5877	2021-07-13	5	786
Chlorella vulgaris	Green	5811	2021-07-13	51	3559
Elakatothrix gelatinosa	Green	9412	2021-07-13	101	17839
Schroederia sp.	Green	NA	2021-07-13	5	1272
Aphanizomenon flos aquae	Cyanobacteria	1191	2021-07-13	101	21803
Anacystis cyanea	Cyanobacteria	609	2021-07-13	860	1295
Anabaena sp.	Cyanobacteria	1100	2021-07-13	71	5324
Gloeothece sp.	Cyanobacteria	703	2021-07-13	56	3665
Oscillatoria tenuis	Cyanobacteria	917	2021-07-13	253	2265
Dinobryon sertularia	Chrysophyta	1515	2021-07-13	30	36888
Dinobryon sp.	Chrysophyta	1515	2021-07-13	86	129172
Cryptomonas sp.	Cryptophyta	10635	2021-07-13	10	18520
Ochromonas sp.	Chrysophyta	1455	2021-07-13	91	19480
Rhodomonas lacustris	Cryptophyta	10663	2021-07-13	46	4995
UID flagellate	Other.Flagellates	NA	2021-07-13	30	10436
Stephanodiscus hantzschii	Diatom	2415	2021-08-17	10	79756
Oocystis parva	Green	5827	2021-08-17	20	4496
Quadrigula chodatii	Green	5938	2021-08-17	40	11700
Tetraedron minimum	Green	5661	2021-08-17	10	1230
Anathece cf. clathrata	Cyanobacteria	NA	2021-08-17	1811	7586
Anacystis cyanea	Cyanobacteria	609	2021-08-17	1821	2741
Anacystis cf. delicatissima	Cyanobacteria	609	2021-08-17	405	1009
Chroococcus limneticus	Cyanobacteria	654	2021-08-17	182	23241
Anabaena sp.	Cyanobacteria	1100	2021-08-17	30	2249
Gloeothece rupestris	Cyanobacteria	703	2021-08-17	40	2618
Snowella litoralis	Cyanobacteria	NA	2021-08-17	941	44898
Cryptomonas sp.	Cryptophyta	10635	2021-08-17	20	37041
Ochromonas sp.	Chrysophyta	1455	2021-08-17	81	17340
Rhodomonas lacustris	Cryptophyta	10663	2021-08-17	10	1086

Table 4: Raw data from 2022

Report Name	High Level Taxa	ITIS		Abundance (cells/mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number	Date Sampled		
Aulacoseira granulata	Diatom	590863	2022-03-07	83	20371
Stephanodiscus niagarae	Diatom	2415	2022-03-07	8	343612
Ankistrodesmus falcatus	Green	5877	2022-03-07	23	8373
Schroederia setigera	Green	NA	2022-03-07	8	2262
Staurodesmus subtriangularis	Green	7182	2022-03-07	8	15014
Anathece clathrata	Cyanobacteria	NA	2022-03-07	106	111
Anacystis cyanea	Cyanobacteria	609	2022-03-07	190	336
Planktolyngbya sp.	Cyanobacteria	NA	2022-03-07	266	1671
Planktolyngbya limnetica	Cyanobacteria	NA	2022-03-07	842	7088
Pseudanabaena limnetica	Cyanobacteria	1175	2022-03-07	30	542
Pseudanabaena catenata	Cyanobacteria	1175	2022-03-07	182	4467
Phormidium granulatum	Cyanobacteria	992	2022-03-07	607	9331
Cryptomonas sp.	Cryptophyta	10635	2022-03-07	8	31022
Rhodomonas lacustris	Cryptophyta	10663	2022-03-07	61	31045
Crucigenia rectangularis	Green	6225	2022-09-07	61	9662
Schroederia setigera	Green	NA	2022-09-07	15	4241
Anathece clathrata	Cyanobacteria	NA	2022-09-07	182	191
Aphanocapsa sp.	Cyanobacteria	625	2022-09-07	3263	19461
Anabaena sp.	Cyanobacteria	1100	2022-09-07	167	6962
Anabaena affinis	Cyanobacteria	1100	2022-09-07	319	54117
Planktolyngbya sp.	Cyanobacteria	NA	2022-09-07	455	2859
Planktolyngbya limnetica	Cyanobacteria	NA	2022-09-07	607	5110
Dinobryon sertularia	Chrysophyta	1515	2022-09-07	15	5475
cf. Dinobryon cyst	Chrysophyta	NA	2022-09-07	15	1374
Ochromonas sp.	Chrysophyta	1455	2022-09-07	15	1696
Rhodomonas lacustris	Cryptophyta	10663	2022-09-07	15	7634
Achnantheidium minutissimum	Diatom	590864	2022-04-12	15	1272
Aulacoseira ambigua	Diatom	590863	2022-04-12	395	341256
Aulacoseira sp.	Diatom	590863	2022-04-12	15	8247
Asterionella formosa	Diatom	3116	2022-04-12	46	8625
Lindavia ocellata	Diatom	NA	2022-04-12	46	9032
Diatoma ehrenbergii	Diatom	3214	2022-04-12	15	45570
Eunotia cf. metamonodon	Diatom	3337	2022-04-12	15	36937
Pinnularia cf. brebissonii	Diatom	4428	2022-04-12	15	27195
Urosolenia eriensis	Diatom	590843	2022-04-12	15	135717
Stauroneis anceps	Diatom	4127	2022-04-12	15	162860
Stephanodiscus hantzschii	Diatom	2415	2022-04-12	15	42412
Ulnaria acus	Diatom	970000	2022-04-12	30	15159
Ulnaria nana	Diatom	970000	2022-04-12	15	9000
Tabellaria fenestrata	Diatom	3241	2022-04-12	15	59606
Ankistrodesmus falcatus	Green	5877	2022-04-12	46	16745
Chlorella vulgaris	Green	5811	2022-04-12	15	1696
Anacystis cyanea	Cyanobacteria	609	2022-04-12	592	1046
Planktolyngbya sp.	Cyanobacteria	NA	2022-04-12	1366	8583

Report Name	High Level Taxa	ITIS		Abundance (cells/mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number	Date Sampled		
Planktolyngbya limnetica	Cyanobacteria	NA	2022-04-12	1214	10220
Merismopedia tenuissima	Cyanobacteria	727	2022-04-12	304	668
Oscillatoria sp.	Cyanobacteria	917	2022-04-12	61	767
Oscillatoria tenuis	Cyanobacteria	917	2022-04-12	273	13304
Snowella litoralis	Cyanobacteria	NA	2022-04-12	455	1906
cf. Dinobryon cyst	Chrysophyta	NA	2022-04-12	76	6964
Cryptomonas sp.	Cryptophyta	10635	2022-04-12	46	178378
Ochromonas sp.	Chrysophyta	1455	2022-04-12	46	5202
Rhodomonas lacustris	Cryptophyta	10663	2022-04-12	61	31045
Aulacoseira ambigua	Diatom	590863	2022-06-15	91	78618
Aulacoseira granulata	Diatom	590863	2022-06-15	91	22335
Asterionella formosa	Diatom	3116	2022-06-15	212	39750
Cyclotella meneghiniana	Diatom	2439	2022-06-15	30	5890
Lindavia ocellata	Diatom	NA	2022-06-15	61	11977
Urosolenia eriensis	Diatom	590843	2022-06-15	152	1375264
Ulnaria acus	Diatom	970000	2022-06-15	30	15159
Chlorella vulgaris	Green	5811	2022-06-15	30	3393
Kirchneriella cf. obesa	Green	5895	2022-06-15	91	5360
Oocystis parva	Green	5827	2022-06-15	212	30526
Cosmarium cf. depressum	Green	7848	2022-06-15	61	26463
Anacystis cyanea	Cyanobacteria	609	2022-06-15	1366	2414
Anacystis cf. delicatissima	Cyanobacteria	609	2022-06-15	789	714
Chroococcus limneticus	Cyanobacteria	654	2022-06-15	61	4299
Gloeothece rupestris	Cyanobacteria	703	2022-06-15	212	5854
Planktolyngbya sp.	Cyanobacteria	NA	2022-06-15	4280	26892
Planktolyngbya limnetica	Cyanobacteria	NA	2022-06-15	2186	18403
Limnothrix redekei	Cyanobacteria	NA	2022-06-15	91	12865
Pseudanabaena limnetica	Cyanobacteria	1175	2022-06-15	1427	25778
Phormidium granulatum	Cyanobacteria	992	2022-06-15	2277	35003
Dinobryon sertularia	Chrysophyta	1515	2022-06-15	61	22266
cf. Dinobryon cyst	Chrysophyta	NA	2022-06-15	91	8338
Cryptomonas sp.	Cryptophyta	10635	2022-06-15	30	116333
Rhodomonas lacustris	Cryptophyta	10663	2022-06-15	91	46313
Achnantheidium minutissimum	Diatom	590864	2022-05-17	15	1272
Aulacoseira ambigua	Diatom	590863	2022-05-17	212	183155
Aulacoseira granulata	Diatom	590863	2022-05-17	197	48351
Asterionella formosa	Diatom	3116	2022-05-17	46	8625
Lindavia ocellata	Diatom	NA	2022-05-17	106	20813
Fragilaria crotonensis	Diatom	2932	2022-05-17	30	7500
Ulnaria acus	Diatom	970000	2022-05-17	15	7580
Tabellaria fenestrata	Diatom	3241	2022-05-17	30	119212
UID Pennate Diatom	Diatom	NA	2022-05-17	30	5027
Ankistrodesmus falcatus	Green	5877	2022-05-17	61	22206
Chlorella vulgaris	Green	5811	2022-05-17	30	3393
Kirchneriella cf. obesa	Green	5895	2022-05-17	15	884

Report Name	High Level Taxa	ITIS		Abundance (cells/mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number	Date Sampled		
UID green coccoid	Green	NA	2022-05-17	30	7351
Closteriopsis acicularis	Green	5926	2022-05-17	15	72106
Anathece clathrata	Cyanobacteria	NA	2022-05-17	349	365
Anacystis cyanea	Cyanobacteria	609	2022-05-17	516	912
Anacystis cf. delicatissima	Cyanobacteria	609	2022-05-17	531	480
Gloeothece rupestris	Cyanobacteria	703	2022-05-17	61	1684
Planktolyngbya sp.	Cyanobacteria	NA	2022-05-17	3992	25082
Planktolyngbya limnetica	Cyanobacteria	NA	2022-05-17	501	4218
Merismopedia tenuissima	Cyanobacteria	727	2022-05-17	607	1334
Oscillatoria tenuis	Cyanobacteria	917	2022-05-17	182	8869
Pseudanabaena limnetica	Cyanobacteria	1175	2022-05-17	744	13440
Snowella lacustris	Cyanobacteria	NA	2022-05-17	91	381
Dinobryon sertularia	Chrysophyta	1515	2022-05-17	15	5475
cf. Dinobryon cyst	Chrysophyta	NA	2022-05-17	30	2749
Cryptomonas sp.	Cryptophyta	10635	2022-05-17	15	58167
Ochromonas sp.	Chrysophyta	1455	2022-05-17	15	1696
Rhodomonas lacustris	Cryptophyta	10663	2022-05-17	76	38679
Aulacoseira granulata	Diatom	590863	2022-07-14	46	11290
Asterionella formosa	Diatom	3116	2022-07-14	15	2812
Cyclotella meneghiniana	Diatom	2439	2022-07-14	106	20813
Lindavia ocellata	Diatom	NA	2022-07-14	15	2945
Fragilaria crotonensis	Diatom	2932	2022-07-14	182	45500
Urosolenia eriensis	Diatom	590843	2022-07-14	30	271434
Stephanodiscus hantzschii	Diatom	2415	2022-07-14	15	42412
Ulnaria acus	Diatom	970000	2022-07-14	46	23244
Tabellaria fenestrata	Diatom	3241	2022-07-14	46	182792
cf. Coelastrum microporum	Green	NA	2022-07-14	30	3393
Elakatothrix gelatinosa	Green	9412	2022-07-14	15	1268
Anathece clathrata	Cyanobacteria	NA	2022-07-14	425	445
Anacystis cyanea	Cyanobacteria	609	2022-07-14	440	778
Gloeothece rupestris	Cyanobacteria	703	2022-07-14	76	2098
Planktolyngbya sp.	Cyanobacteria	NA	2022-07-14	729	4580
Planktolyngbya limnetica	Cyanobacteria	NA	2022-07-14	2049	17249
Pseudanabaena limnetica	Cyanobacteria	1175	2022-07-14	1351	24405
Dinobryon sertularia	Chrysophyta	1515	2022-07-14	182	66433
cf. Dinobryon cyst	Chrysophyta	NA	2022-07-14	121	11087
Cryptomonas sp.	Cryptophyta	10635	2022-07-14	46	178378
Ochromonas sp.	Chrysophyta	1455	2022-07-14	152	17191
Rhodomonas lacustris	Cryptophyta	10663	2022-07-14	152	77359
Chrysochromulina sp.	Chrysophyta	2160	2022-07-14	15	337
UID flagellate	Other.Flagellates	NA	2022-07-14	30	3927
Chrysococcus sp.	Chrysophyta	1751	2022-07-14	15	2415
nanoflagellates	Other.Flagellates	NA	2022-07-14	30	188
Cocconeis placentula	Diatom	3577	2022-08-16	15	18075
Sellaphora pupula	Diatom	590842	2022-08-16	15	30536

Report Name	High Level Taxa	ITIS	Date Sampled	Abundance (cells/mL)	Biovolume ( $\mu\text{m}^3/\text{mL}$ )
		Genus Number			
Crucigenia rectangularis	Green	6225	2022-08-16	182	28827
Schroederia setigera	Green	NA	2022-08-16	15	4241
Closteriopsis acicularis	Green	5926	2022-08-16	8	38457
Anathece clathrata	Cyanobacteria	NA	2022-08-16	1442	1510
Aphanocapsa sp.	Cyanobacteria	625	2022-08-16	2398	14302
Anacystis cyanea	Cyanobacteria	609	2022-08-16	1184	2092
Gleothoece rupestris	Cyanobacteria	703	2022-08-16	30	828
Dinobryon sertularia	Chrysophyta	1515	2022-08-16	46	16791
cf. Dinobryon cyst	Chrysophyta	NA	2022-08-16	61	5589
Cryptomonas sp.	Cryptophyta	10635	2022-08-16	30	116333
Nano Cryptomonads	Cryptophyta	NA	2022-08-16	30	5498
Ochromonas sp.	Chrysophyta	1455	2022-08-16	212	23977
Rhodomonas lacustris	Cryptophyta	10663	2022-08-16	46	23411
UID flagellate	Other.Flagellates	NA	2022-08-16	15	1963
nanoflagellates	Other.Flagellates	NA	2022-08-16	106	666