

Our ref: 11225022-06

November 28, 2022

Mr. Bruce Bernard
Manager of Field Operations
Calvin, Giordano & Associates, Inc.
1800 Eller Drive, Suite 600
Fort Lauderdale, FL 33316

Water Quality Monitoring - September 2022 - Esplanade Lakes CDD

Dear Mr. Bernard:

GHD Services Inc. (GHD) is pleased to present the results of our water quality sampling services for Esplanade Lakes CDD.

1. Water Quality Sampling – September 2022

The September 2022 sampling event consisted of the collection of six (6) surface water samples at six (6) sample locations (WQ Location #1 through #6) as identified on **Figure 1**.

All six (6) samples are collected using direct-dip sampling methods at a depth of 18 inches. Samples from locations #1 through #6 were collected using a boat. See **Figure 1** for all sample locations.

Conductivity, dissolved oxygen, pH, and temperature were measured in the field with a calibrated YSI Model 556 multi-parameter water quality meter. Turbidity and total water depth were also measured at each location. Surface Water Field Sheets are attached. Field data is summarized in **Table 1**.

The collected samples are capped, labeled, packed on ice, and transported to Benchmark EnviroAnalytical, Inc., in North Port, Florida. Benchmark EnviroAnalytical, Inc. is certified by the State of Florida and NELAP (National Environmental Laboratory Accreditation Conference). Laboratory analyses are conducted for 5-Day Biochemical Oxygen Demand (BOD5), Total Suspended Solids (TSS), Total Nitrogen, nitrogen speciation (ammonia, TKN, and nitrate + nitrite), Total Phosphorus, Ortho Phosphorus (Lab Filtered) and Chlorophyll-a.

All samples collected during the September 2022 sampling event were prepared and analyzed within the method required holding times. The laboratory data have been reviewed with respect to authenticity, precision, limits of detection, and accuracy of the data. The laboratory analytical results are summarized in the attached **Table 1**. The laboratory report and data compliance memorandum are also attached. Trend graphs have been prepared for each monitor location for laboratory analytical results and select field measurements.

2. Analytical Summary

The September 2022 sampling event represents the fourth sampling event for the select six (6) WQ Locations for Esplanade Lakes. Laboratory results are summarized in the **Laboratory Data Compliance Memo** and are displayed visually in the trend graphs, enclosed.

The following discussion highlights sample locations with notable trend increases in the attached graphs.

The biochemical oxygen demand concentration has increased at the WQ Locations 1, 4 and 6. since the previous June 2022 sampling event but are still within typical historic ranges.

The concentration of chlorophyll α has notably increased at the WQ Location 1 and is significantly higher in concentration when compared to the other five (5) sampling locations (24.4 mg/L).

Dissolved oxygen has decreased at all WQ Locations but remain within historical ranges.

The concentration of total phosphorus significantly increased at WQ Locations 1, 2, and 3 while remaining relatively stable at the rest of the WQ Locations.

The concentration of total suspended solids and turbidity has increased and is trending upwards at WQ Location 6, while the remaining locations slightly decreased or remained relatively stable.

All other water quality results remain relatively consistent with the previous sampling event.

A Trophic State Index calculation (defined by FAC 62-303.200 and the Water Quality Assessment for the State of Florida 305(b) Report) was used to help classify the quality of water based on each water body's Chlorophyll α , Total Phosphorous and Total Nitrogen concentration. A ratio of Total Nitrogen to Total Phosphorus was calculated for each water body to determine general conditions. For this sample event, the breakdown of the sample locations is:

- Nutrient Balanced ($10 < \text{TN}/\text{TP} < 30$) – none
- Phosphorus Limited ($\text{TN}/\text{TP} < 10$) – Location 1, 2, 3, 5, and 6
- Nitrogen Limited ($\text{TN}/\text{TP} > 30$) – Location 4

A TSI value was calculated based on the TN/TP ratio for each location. A TSI of 0-59 is “good”, a value of 60-69 is “fair”, and a value of 70+ is “poor”. Based on the results of this sampling event, each sampling location's calculated TSI value is:

Location 1	Location 2	Location 3	Location 4	Location 5	Location 6
55.8	49.8	48.8	45.1	42.7	41.3

3. Conclusions and Recommendations

With the exception of WQ Location #4 appearing to be in a nitrogen limited condition, the remaining locations appear to be in a phosphorous limited condition. However, when in combination with the levels of chlorophyll α , there do not appear to be any water quality concerns at this time.

The next tri-annual sampling event is planned for November 2022. Please call if you have questions or need additional information.

Sincerely,

GHD



Jessica Walsh, E.I.
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Geologist
Lori.Coolidge@ghd.com

Encl: Laboratory Data Compliance Memo
 Figure
 Trend Graphs
 Laboratory Analytical Report
 Surface Water Field Sheets

Laboratory Data Compliance Memo



Technical Memorandum

November 28, 2022

To	Mr. Bruce Bernard Manager of Field Operations Calvin, Giordano & Associates, Inc. 1800 Eller Drive, Suite 600 Fort Lauderdale, FL 33316	Tel	716.205-1977
Copy to	Connor Haydon	Email	Connor.Haydon@ghd.com
From	Sheri Finn/eew/18	Ref. No.	11225022
Subject	Analytical Results Compliance Report Surface Water Quality Monitoring Esplanade Lakes Fort Myers, Florida September 2022		

1. Compliance Review

Samples were collected in September 2022 in support of the Esplanade Lakes sampling. The analytical results are summarized in Table 1. All samples were prepared and analyzed within the method required holding times. The method blank results were non-detect. All reported laboratory control sample (LCS) analyses demonstrated acceptable accuracy. Laboratory duplicate analyses were performed for some analytes. All results were acceptable, indicating good analytical precision. The matrix spike (MS) results were evaluated per the laboratory limits. The MS analyses performed were acceptable, demonstrating good analytical accuracy.

Based on this compliance review, the results in Table 1 are acceptable for use.

Regards

Sheri Finn
Analyst

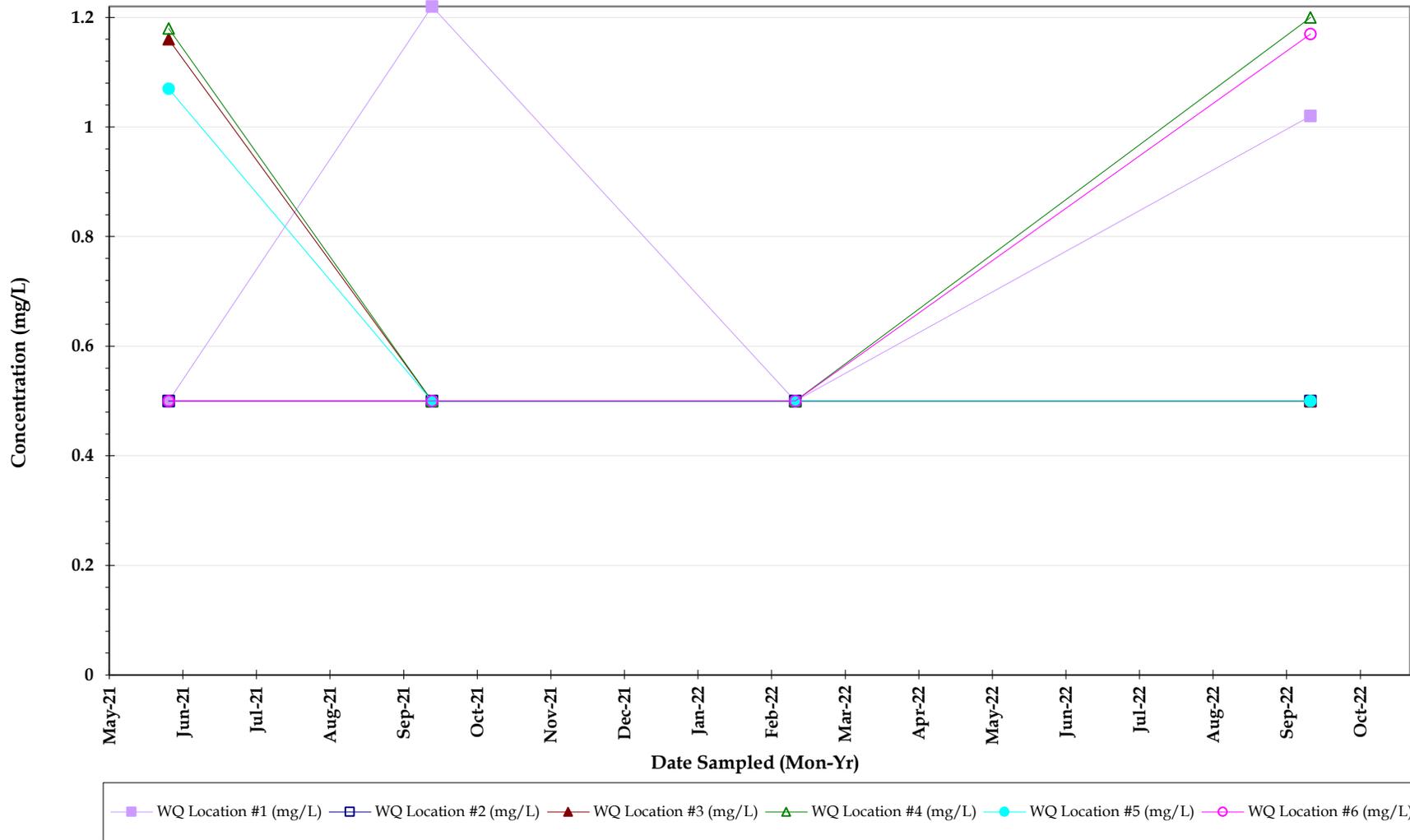
**Analytical Results Summary
Surface Water Quality Monitoring
Esplanade Lakes
Fort Myers, Florida
September 2022**

Sample Location/Sample ID:		WQ Location #1				WQ Location #2				WQ Location #3			
Sample Date:		5/26/2021	09/14/2021	02/14/2022	09/19/2022	5/26/2021	09/14/2021	02/14/2022	09/19/2022	5/26/2021	09/14/2021	02/14/2022	09/19/2022
Field Parameters	Units												
Total Water Depth	Feet	NM	27.0	27.5	31.5	NM	27.0	27.5	28.7	NM	18.0	18.5	19.9
Sample Depth	Feet	1.5	1.5	1.5	1.5	6.5	13	13.5	1.5	1.5	1.5	1.5	1.5
Conductivity, field	umhos/cm	434	289	332	291.5	434	291	331	291.0	452	292	334	291.5
Dissolved oxygen (DO), field	mg/L	7.47	6.29	8.85	6.41	7.06	5.86	9.35	6.27	7.24	5.12	9.26	6.11
Dissolved oxygen (DO), field	%	94.1	82.8	86.2	86.3	89	76.9	100.7	82.6	89.3	67.3	92.9	82.2
pH, field	s.u.	8.75	8.54	8.33	8.33	8.75	8.50	8.19	8.47	8.62	8.46	8.27	8.35
Temperature, field	Deg C	26.5	29.9	19.0	29.8	26.4	29.9	19.0	29.8	26.0	29.9	18.9	29.7
Turbidity, field	NTU	5.58	3.64	4.05	3.94	5.09	4.48	3.74	3.98	17.7	4.48	4.77	4.15
Secchi Disk	Feet	6.20	5.0	6.75	2.7	6.20	5.0	6.75	3.6	3.0	5.5	5.0	3.3
Wet Parameters	Units												
Ammonia-N	mg/L	0.013 I	0.009 I	0.122	0.008 U	0.008 U	0.015 I	0.008 U	0.008 U	0.008 U	0.014 I	0.008 U	0.008 U
Total kjeldahl nitrogen (TKN)	mg/L	0.482	0.927	0.687	0.619	0.451	0.973	0.542	0.746	0.552	1.51	0.521	0.652
Total nitrogen	mg/L	0.482	0.936	0.687	0.629	0.451	0.973	0.542	0.756	0.552	1.51	0.521	0.662
Nitrite/Nitrate	mg/L	0.006 U	0.009 I	0.006 U	0.010 I	0.006 U	0.006 U	0.006 U	0.010 I	0.006 U	0.006 U	0.006 U	0.010 I
Ortho phosphorus (Field Filtered)	mg/L	0.029	0.007 I	0.010	0.014	0.019	0.008	0.010	0.009	0.034	0.011	0.009	0.012
Total phosphorus	mg/L	0.037	0.008 U	0.074	0.669	0.023 I	0.009 I	0.076	0.455	0.049	0.014 I	0.077	0.253
Chlorophyll	mg/m3	4.53	9.43	3.95	24.4	4.39	8.45	3.89	7.93	7.37	7.13	4.61	8.40
Total suspended solids (TSS)	mg/L	3.39	1.60 I	3.00	3.00	1.91 I	0.667 I	4.25	4.00	2.40	1.33 I	5.00	3.33
Biochemical oxygen demand (total BOD5)	mg/L	1 U	1.22 I	1.0 U	1.02 I	1 U	1 U	1.0 U	1 U	1.16 I	1 U	1.0 U	1 U
Sample Location/Sample ID:		WQ Location #4				WQ Location #5				WQ Location #6			
Sample Date:		5/26/2021	09/14/2021	02/14/2022	09/19/2022	5/26/2021	09/14/2021	02/14/2022	09/19/2022	5/26/2021	09/14/2021	02/14/2022	09/19/2022
Field Parameters	Units												
Total Water Depth	Feet	NM	7.0	7.0	7.7	NM	10.0	10.0	8.7	NM	8.0	4.0	10.6
Sample Depth	Feet	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Conductivity, field	umhos/cm	465	297	342	292.2	451	287	331	292.3	495	295	362	276.7
Dissolved oxygen (DO), field	mg/L	6.78	5.43	9.32	5.93	7.33	5.59	9.33	6.06	4.07	6.61	9.38	6.30
Dissolved oxygen (DO), field	%	83.6	72.6	100.8	79.4	81.4	73.4	100.2	79.6	50.6	84.6	100.7	82.7
pH, field	s.u.	8.56	8.22	8.31	8.13	8.40	8.53	8.39	8.39	8.05	8.23	8.08	8.2
Temperature, field	Deg C	25.9	29.2	19.1	29.6	26.6	29.7	19.0	29.7	26.4	29.4	19.9	28.8
Turbidity, field	NTU	23.60	16.37	6.56	9.05	8.76	2.58	3.36	4.42	11.55	15.64	3.44	15.82
Secchi Disk	Feet	2.0	2.5	4.5	2.7	3.4	7.0	5.75	2.6	2.5	3.0	3.5	2.2
Wet Parameters	Units												
Ammonia-N	mg/L	0.008 U	0.019 I	0.030 I	0.008 U	0.012 I	0.019 I	0.008 U	0.008 U	0.022 I	0.023 I	0.008 U	0.047
Total kjeldahl nitrogen (TKN)	mg/L	0.639	2.31	0.645	1.28	0.494	3.44	0.489	0.358	0.459	0.285	0.745	0.328
Total nitrogen	mg/L	0.639	2.31	0.645	1.29	0.494	3.44	0.489	0.368	0.459	0.285	0.745	0.338
Nitrite/Nitrate	mg/L	0.006 U	0.006 U	0.006 U	0.009 I	0.006 U	0.006 U	0.006 U	0.010 I	0.006 U	0.006 U	0.006 U	0.010 I
Ortho phosphorus (Field Filtered)	mg/L	0.024	0.021	0.011	0.013	0.039	0.014	0.010	0.010	0.054	0.009	0.009	0.019
Total phosphorus	mg/L	0.049	0.022 I	0.080	0.017 I	0.040	0.008 U	0.078	0.054	0.096	0.011 I	0.080	0.043
Chlorophyll	mg/m3	10.1	8.01	5.08	8.65	6.89	6.47	3.92	8.70	8.54	4.76	4.56	8.03
Total suspended solids (TSS)	mg/L	7.60	5.67	8.00	5.33	6.80	1.67 I	4.50	2.67	0.570 U	4.33	4.75	10.0
Biochemical oxygen demand (total BOD5)	mg/L	1.18 I	1 U	1.0 U	1.20 I	1.07 I	1 U	1.0 U	1 U	1 U	1 U	1.0 U	1.17 I

- Notes:
- U - Not detected at the associated reporting limit
 - I - Reported value is between method detection limit and the practical quantitation limit
 - NM - Not measured during noted event
 - * - DO values at or above 100% are possible super-saturation conditions due to high water temperatures and/or high volume of algae.

Figure

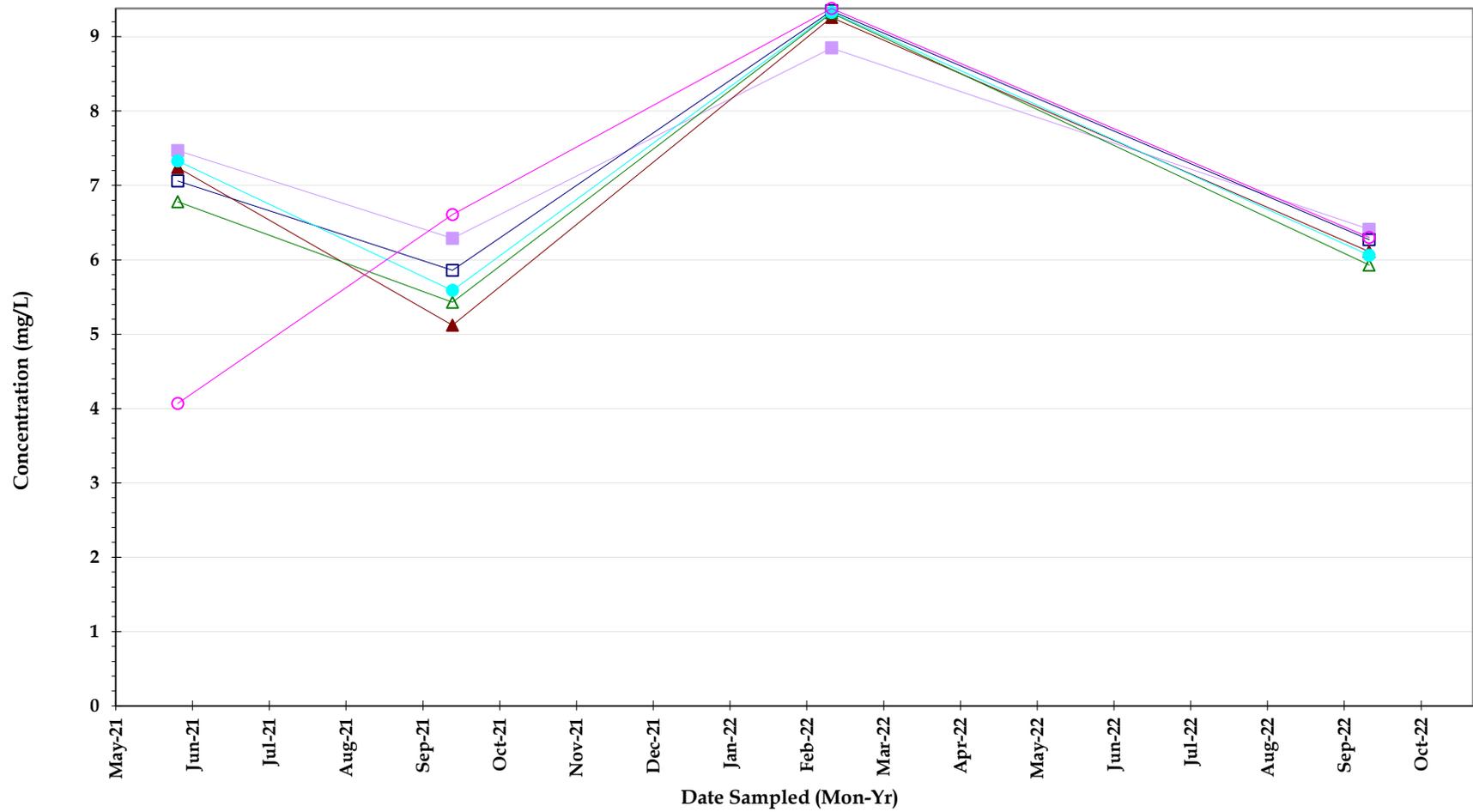
Trend Graphs



Biochemical Oxygen Demand



Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022

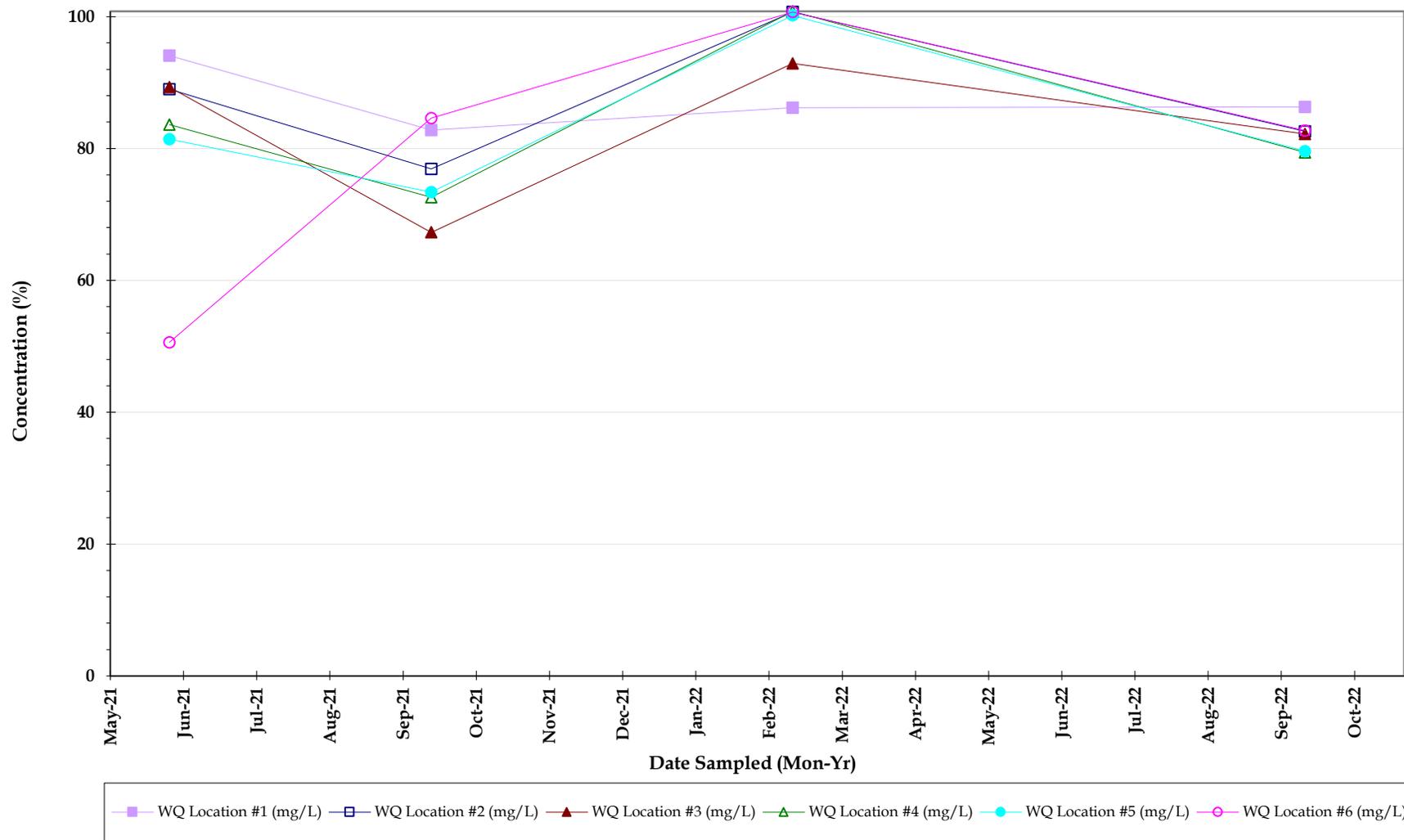


■ WQ Location #1 (mg/L)
 ■ WQ Location #2 (mg/L)
 ▲ WQ Location #3 (mg/L)
 ▲ WQ Location #4 (mg/L)
 ● WQ Location #5 (mg/L)
 ○ WQ Location #6 (mg/L)

Dissolved Oxygen (mg/L)



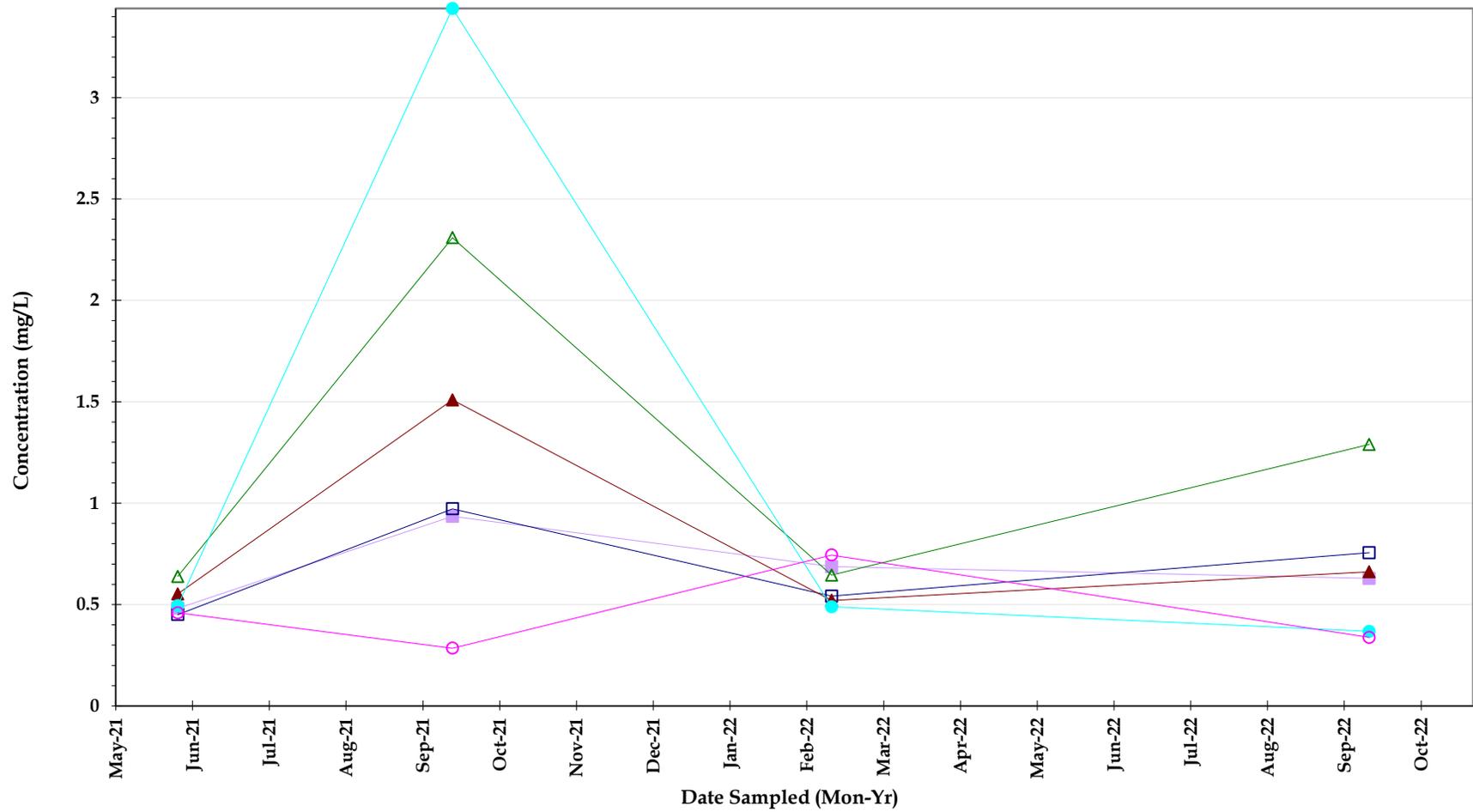
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 Water Quality Surface Water Sample results
 SEPTEMBER 2022



Dissolved Oxygen (%)



Esplanade Lakes
Water Quality Surface Water Sample results
SEPTEMBER 2022

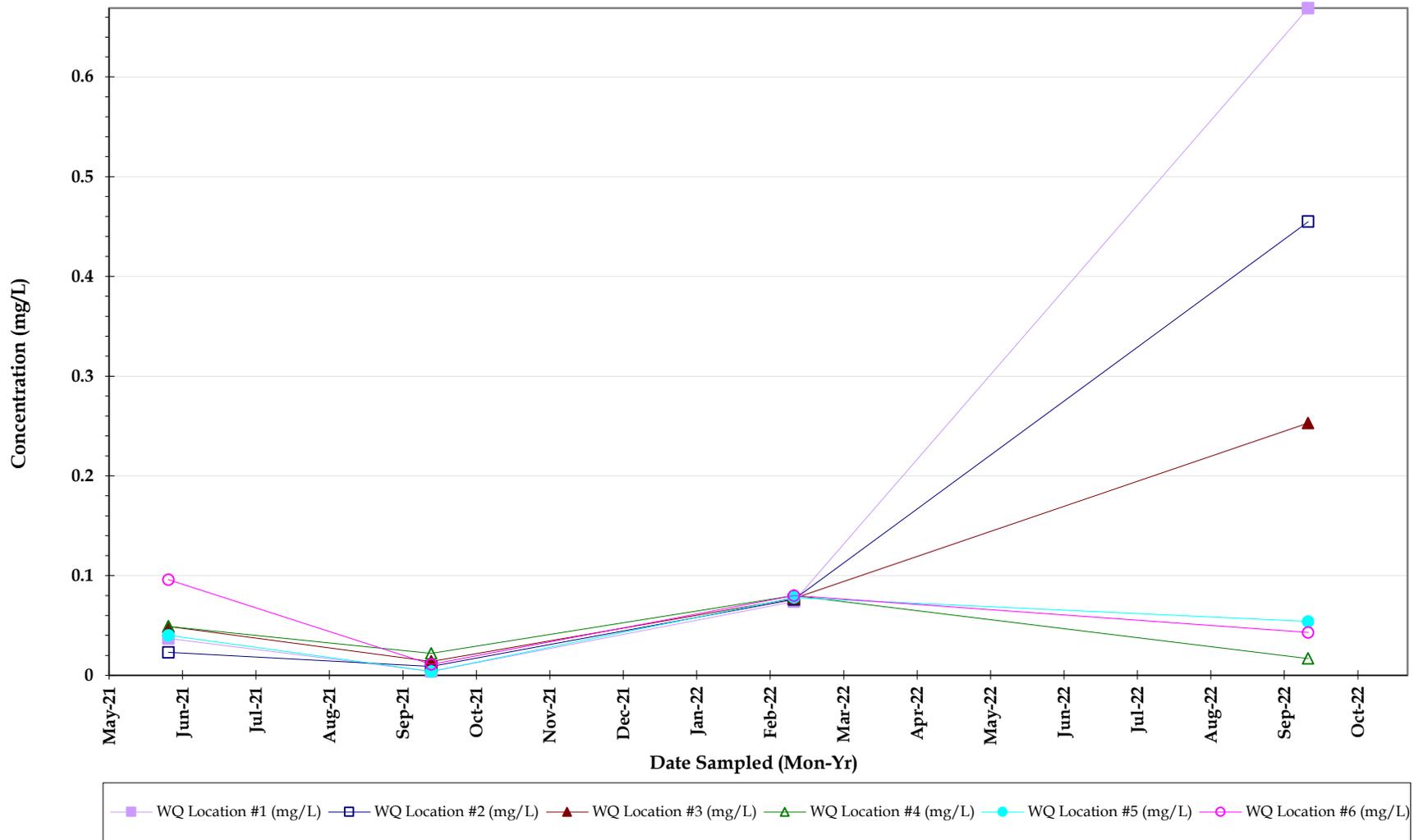


■ WQ Location #1 (mg/L)
 ■ WQ Location #2 (mg/L)
 ▲ WQ Location #3 (mg/L)
 ▲ WQ Location #4 (mg/L)
 ● WQ Location #5 (mg/L)
 ○ WQ Location #6 (mg/L)



Total Nitrogen

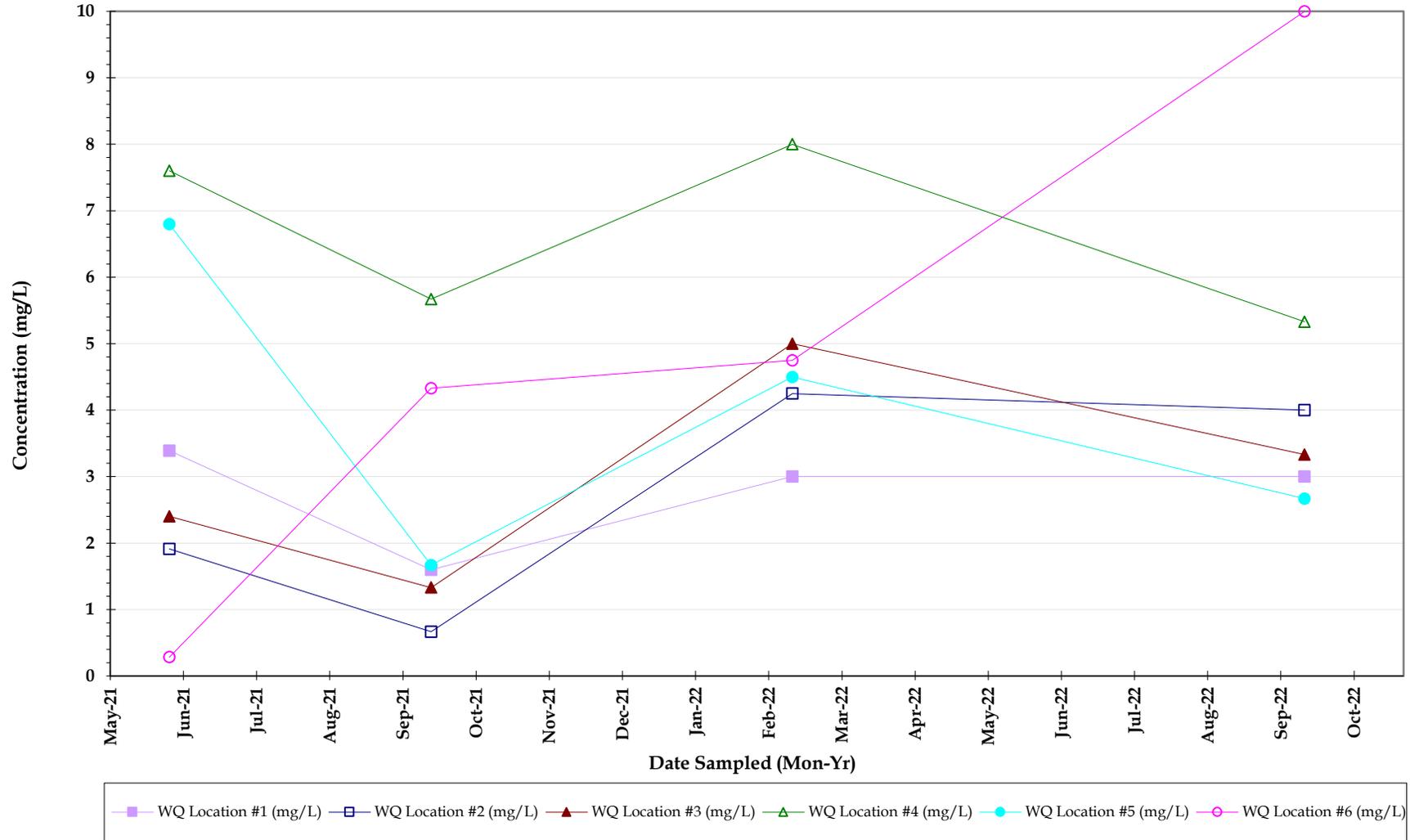
Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022



Total Phosphorus



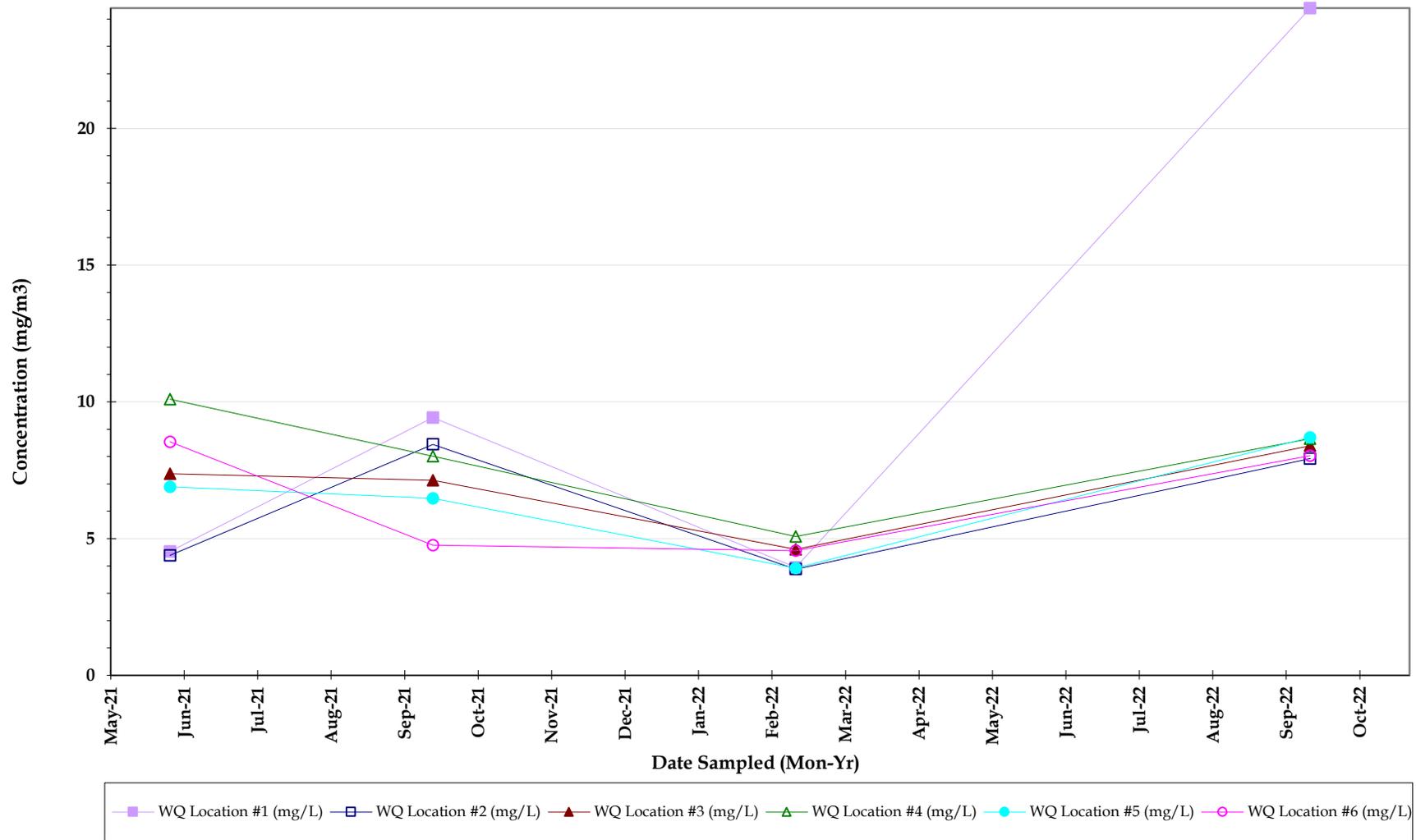
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 Water Quality Surface Water Sample results
 SEPTEMBER 2022



Total Suspended Solids

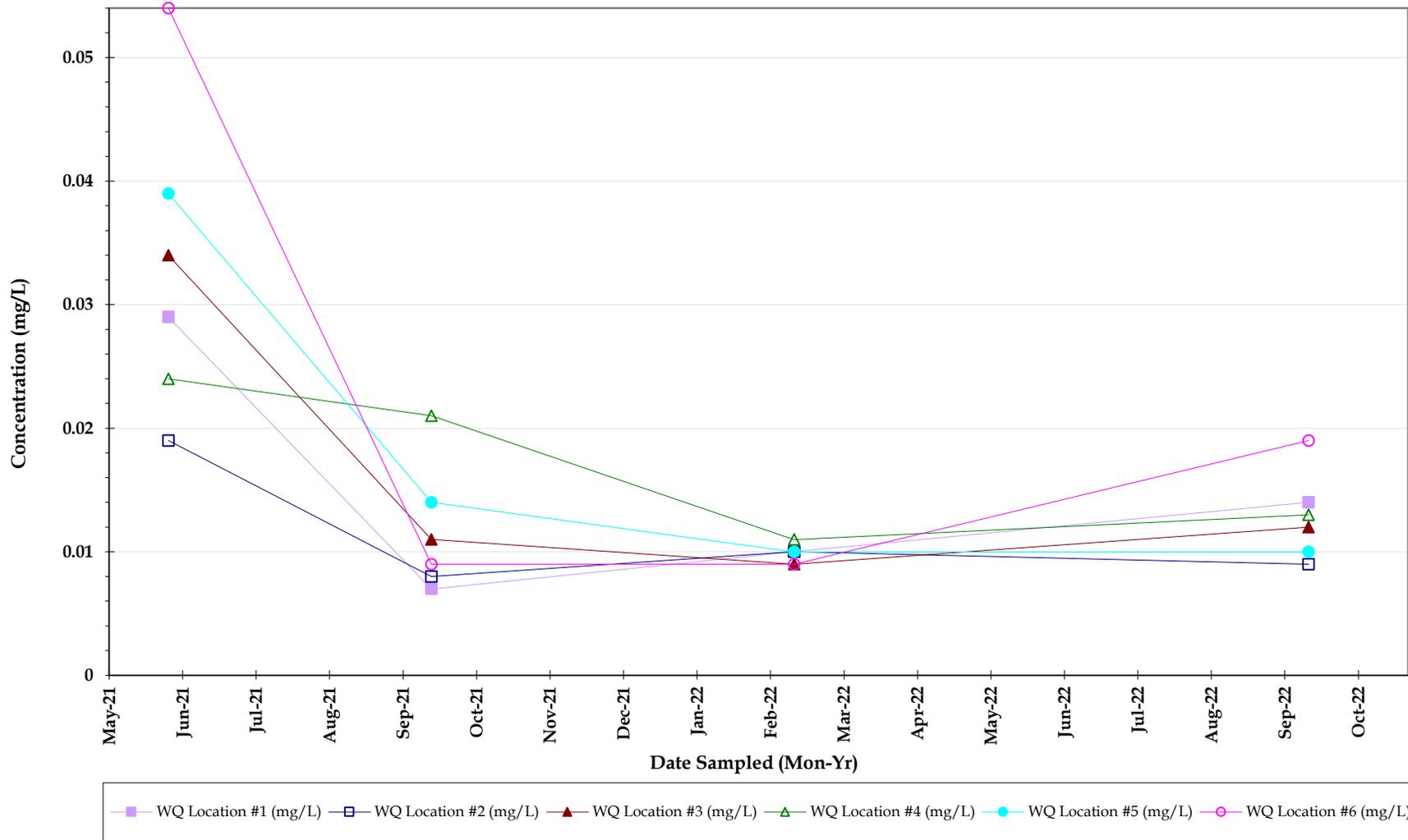


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Chlorophyll a

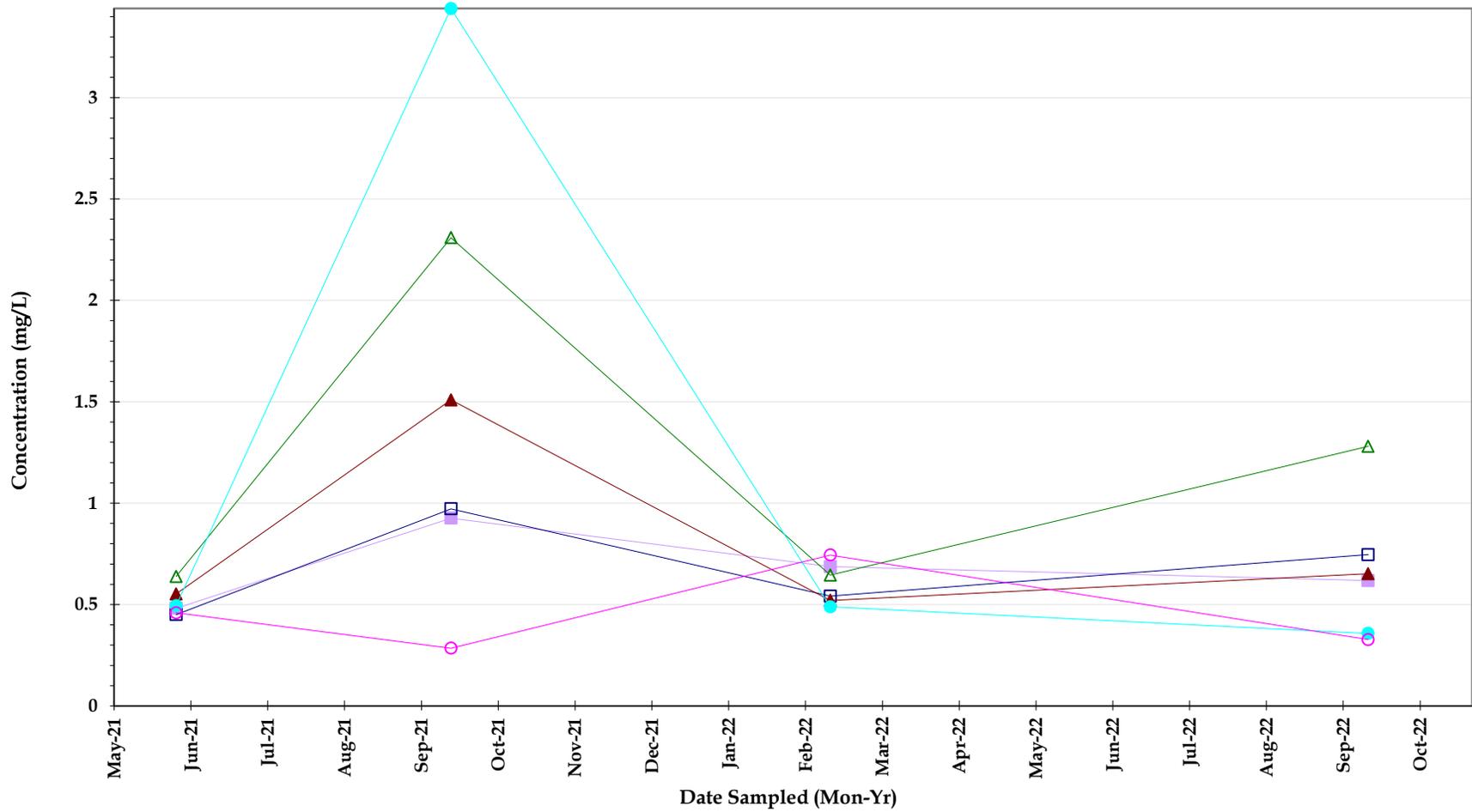
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 SEPTEMBER 2022



Orthophosphate



Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022

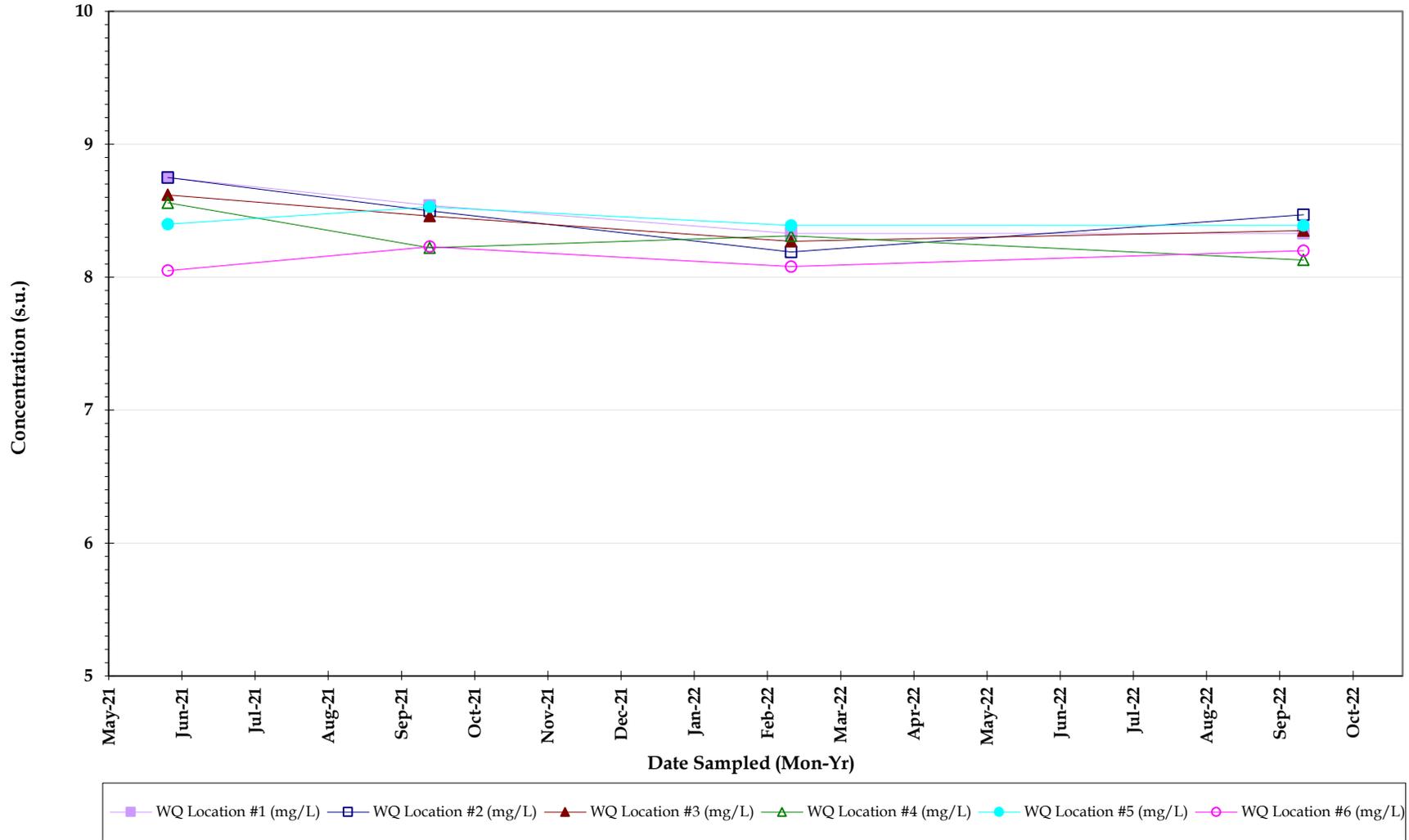


■ WQ Location #1 (mg/L)
 ■ WQ Location #2 (mg/L)
 ▲ WQ Location #3 (mg/L)
 ▲ WQ Location #4 (mg/L)
 ● WQ Location #5 (mg/L)
 ○ WQ Location #6 (mg/L)

Total kjeldahl nitrogen (TKN)



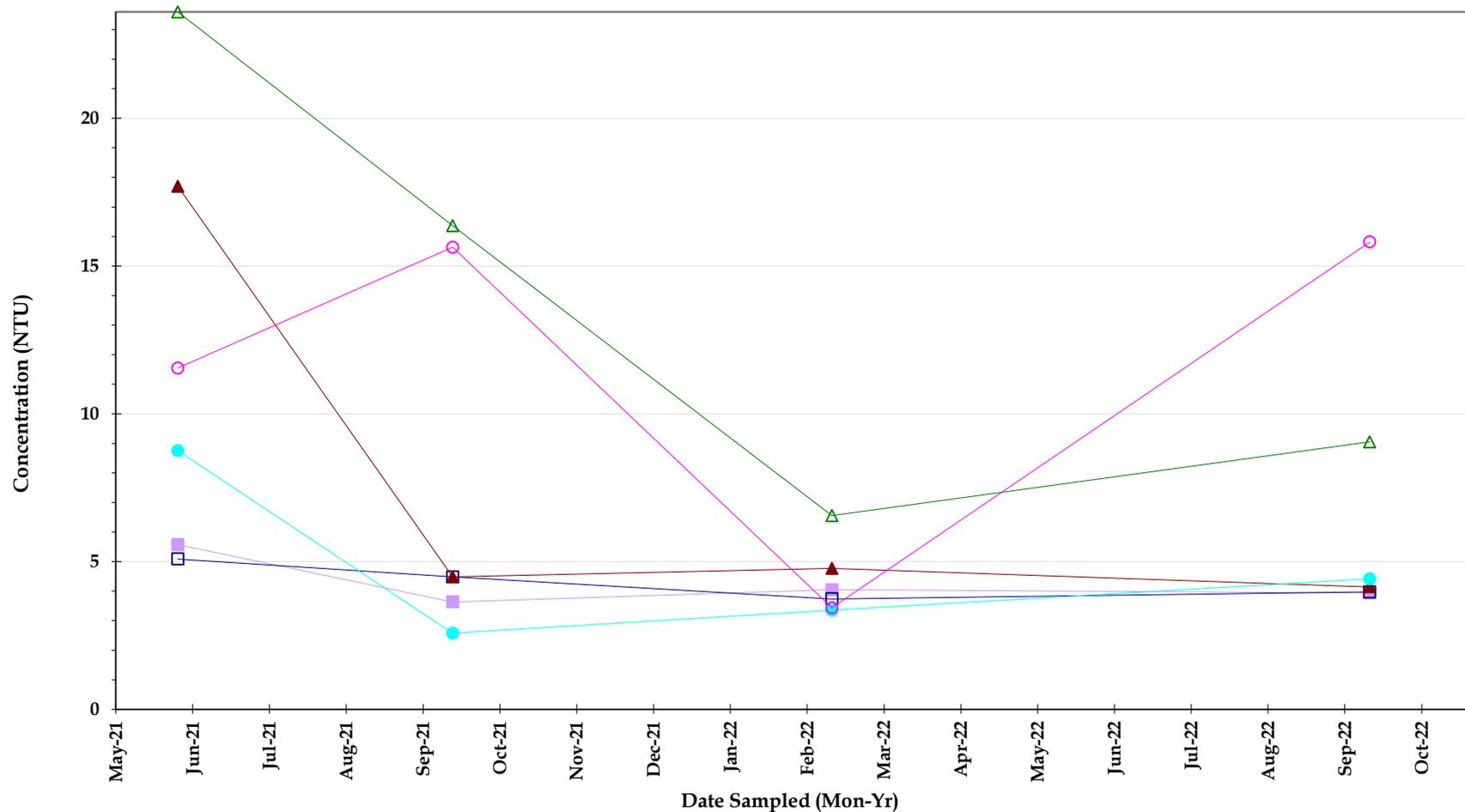
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 Water Quality Surface Water Sample results
 SEPTEMBER 2022



pH, Field



Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022

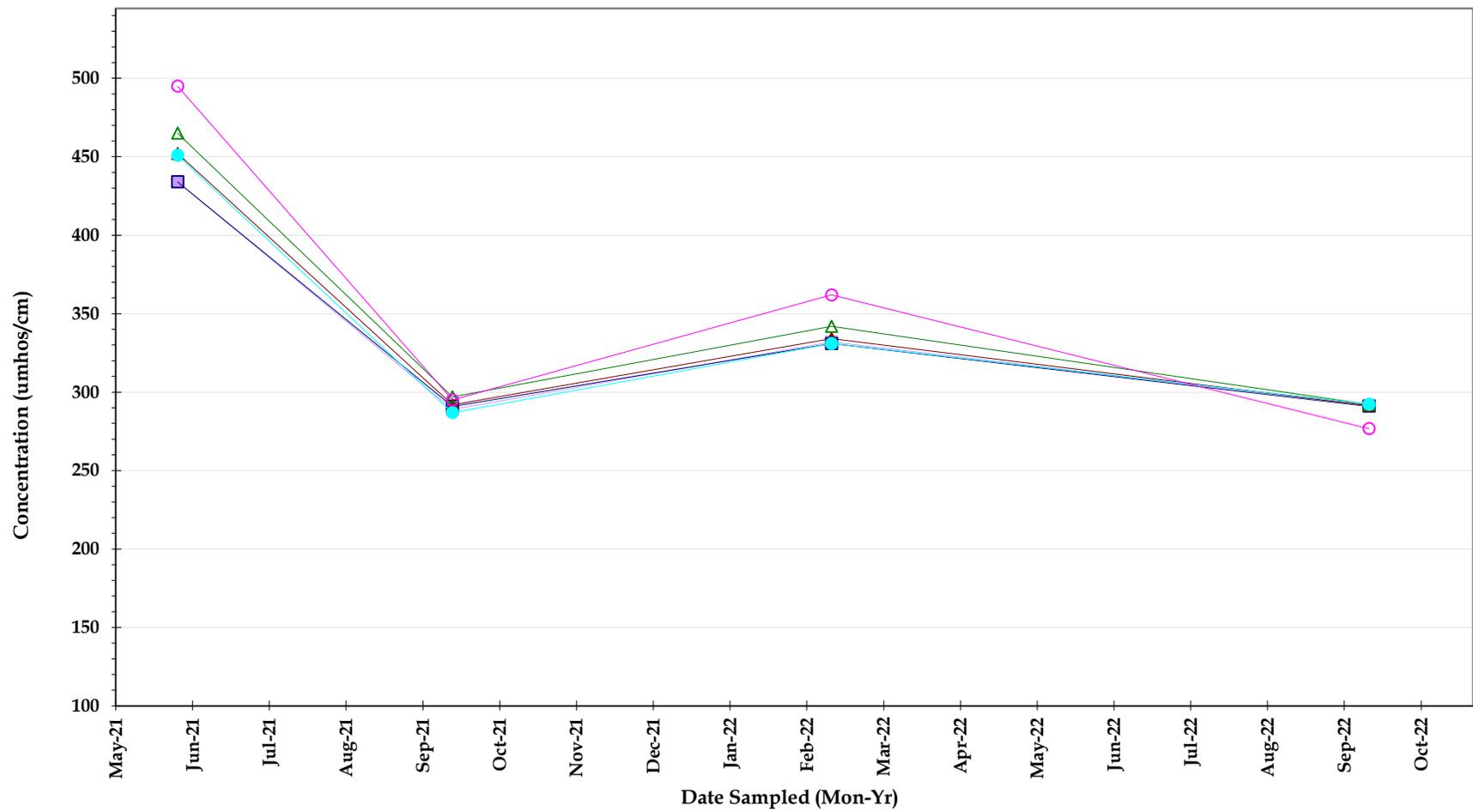


■ WQ Location #1 (mg/L)
 □ WQ Location #2 (mg/L)
 ▲ WQ Location #3 (mg/L)
 △ WQ Location #4 (mg/L)
 ● WQ Location #5 (mg/L)
 ○ WQ Location #6 (mg/L)



Turbidity

Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022

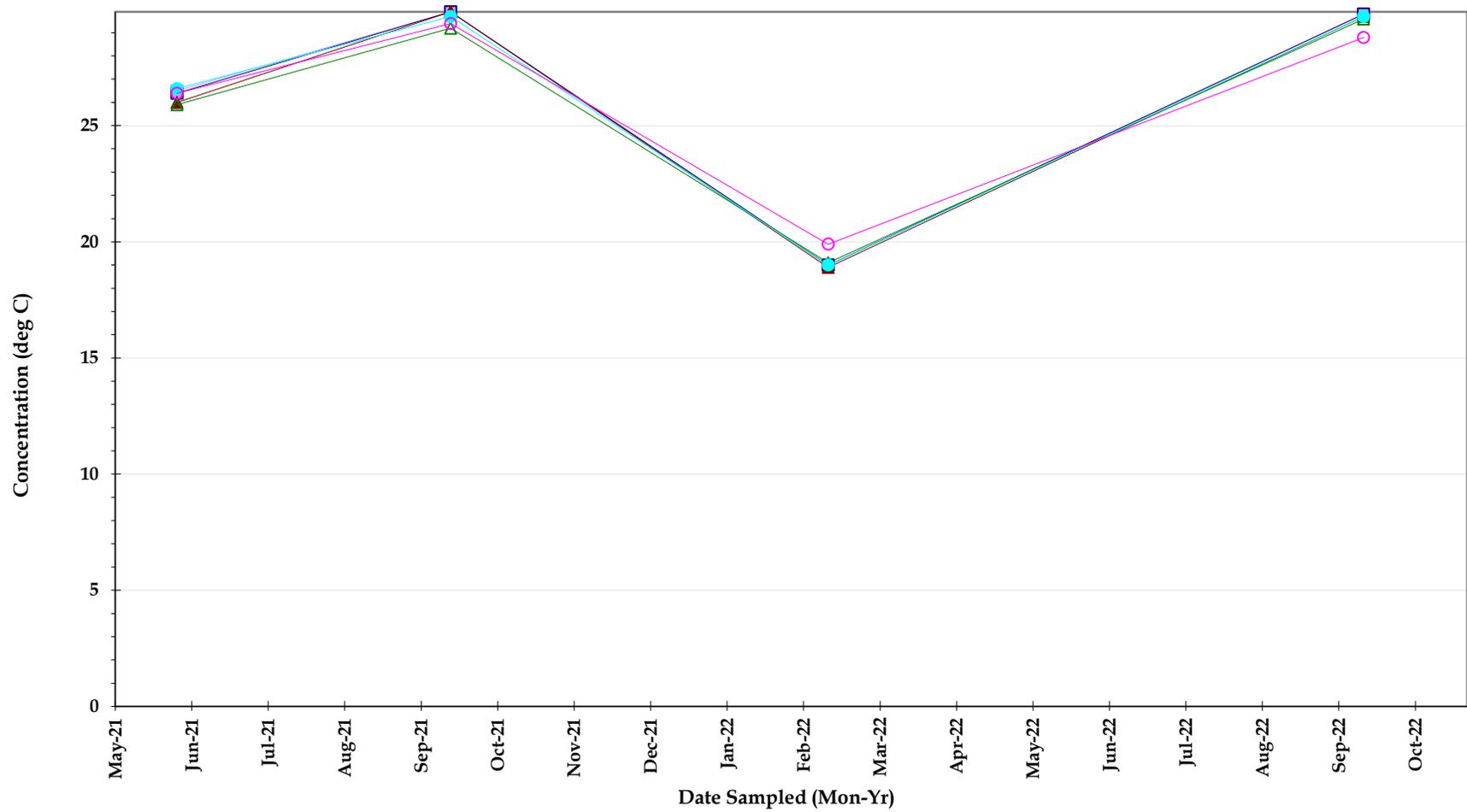


■ WQ Location #1 (mg/L)
 ■ WQ Location #2 (mg/L)
 ▲ WQ Location #3 (mg/L)
 ▲ WQ Location #4 (mg/L)
 ● WQ Location #5 (mg/L)
 ○ WQ Location #6 (mg/L)



Conductivity

Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022



■ WQ Location #1 (mg/L)
 ■ WQ Location #2 (mg/L)
 ▲ WQ Location #3 (mg/L)
 ▲ WQ Location #4 (mg/L)
 ● WQ Location #5 (mg/L)
 ○ WQ Location #6 (mg/L)



Temperature, sample

Esplanade Lakes
 Water Quality Surface Water Sample results
 SEPTEMBER 2022

Laboratory Analytical Report

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 22091205

G H D Services, Inc.
2675 Winkler Ave., Ste.180
Fort Myers, FL 33901

Project Name : ESPLANADE LAKES

Date Received : 09/20/2022

Time Received : 14:30

Project #:

Submission Number: 22091205

Sample Number: 001

Sample Description: WQ Location #1

Sample Date: 09/19/2022

Sample Time: 11:10

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	10/07/2022 14:09	MV
TOTAL KJELDAHL NITROGEN	0.619	MG/L	0.05	0.20	351.2	09/22/2022 12:19	EO
ORTHO PHOSPHORUS AS P	0.014	MG/L	0.002	0.008	365.3	09/21/2022 09:31	YQ
TOTAL PHOSPHORUS AS P	0.669	MG/L	0.008	0.032	365.3	09/23/2022 13:02	YQ
CHLOROPHYLL A	24.4	MG/M3	0.25	1.00	445.0	10/18/2022 09:56	CH
TOTAL SUSPENDED SOLIDS	3.00	MG/L	0.570	2.280	SM2540D	09/22/2022 10:53	TG
BIOCHEMICAL OXYGEN DEMAND	1.02 I	MG/L	1	4	SM5210B	09/21/2022 14:04	LD/LD
NITRATE+NITRITE AS N	0.010 I	MG/L	0.006	0.024	SYSTEAS EASY	10/10/2022 15:44	MV
TOTAL NITROGEN	0.629	MG/L	0.05	0.20	SYSTEAS+351	10/10/2022 15:44	EO/MV

Submission Number: 22091205

Sample Number: 002

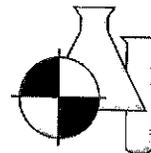
Sample Description: WQ Location #2

Sample Date: 09/19/2022

Sample Time: 11:20

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	10/07/2022 14:15	MV
TOTAL KJELDAHL NITROGEN	0.746	MG/L	0.05	0.20	351.2	09/22/2022 12:20	EO
ORTHO PHOSPHORUS AS P	0.009	MG/L	0.002	0.008	365.3	09/21/2022 09:34	YQ
TOTAL PHOSPHORUS AS P	0.455	MG/L	0.008	0.032	365.3	09/23/2022 13:03	YQ
CHLOROPHYLL A	7.93	MG/M3	0.25	1.00	445.0	10/18/2022 09:56	CH
TOTAL SUSPENDED SOLIDS	4.00	MG/L	0.570	2.280	SM2540D	09/22/2022 10:53	TG
BIOCHEMICAL OXYGEN DEMAND	1 U	MG/L	1	4	SM5210B	09/21/2022 14:04	LD/LD
NITRATE+NITRITE AS N	0.010 I	MG/L	0.006	0.024	SYSTEAS EASY	10/10/2022 15:45	MV
TOTAL NITROGEN	0.756	MG/L	0.05	0.20	SYSTEAS+351	10/10/2022 15:45	EO/MV



Submission Number: 22091205 **Sample Date:** 09/19/2022
Sample Number: 003 **Sample Time:** 11:05
Sample Description: WQ Location #3 **Sample Method:** Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	10/07/2022 14:23	MV
TOTAL KJELDAHL NITROGEN	0.652	MG/L	0.05	0.20	351.2	09/22/2022 12:22	EO
ORTHO PHOSPHORUS AS P	0.012	MG/L	0.002	0.008	365.3	09/21/2022 09:35	YQ
TOTAL PHOSPHORUS AS P	0.253	MG/L	0.008	0.032	365.3	09/23/2022 11:50	YQ
CHLOROPHYLL A	8.40	MG/M3	0.25	1.00	445.0	10/18/2022 09:56	CH
TOTAL SUSPENDED SOLIDS	3.33	MG/L	0.570	2.280	SM2540D	09/22/2022 10:53	TG
BIOCHEMICAL OXYGEN DEMAND	1 U	MG/L	1	4	SM5210B	09/21/2022 14:04	LD/LD
NITRATE+NITRITE AS N	0.010 I	MG/L	0.006	0.024	SYSTEAS EASY	10/10/2022 15:46	MV
TOTAL NITROGEN	0.662	MG/L	0.05	0.20	SYSTEAS+351	10/10/2022 15:46	EO/MV

Submission Number: 22091205 **Sample Date:** 09/19/2022
Sample Number: 004 **Sample Time:** 10:55
Sample Description: WQ Location #4 **Sample Method:** Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	10/07/2022 14:25	MV
TOTAL KJELDAHL NITROGEN	1.28	MG/L	0.05	0.20	351.2	09/26/2022 11:34	EO
ORTHO PHOSPHORUS AS P	0.013	MG/L	0.002	0.008	365.3	09/21/2022 09:38	YQ
TOTAL PHOSPHORUS AS P	0.017 I	MG/L	0.008	0.032	365.3	09/23/2022 14:02	YQ
CHLOROPHYLL A	8.65	MG/M3	0.25	1.00	445.0	10/18/2022 09:56	CH
TOTAL SUSPENDED SOLIDS	5.33	MG/L	0.570	2.280	SM2540D	09/22/2022 10:53	TG
BIOCHEMICAL OXYGEN DEMAND	1.20 I	MG/L	1	4	SM5210B	09/21/2022 14:04	LD/LD
NITRATE+NITRITE AS N	0.009 I	MG/L	0.006	0.024	SYSTEAS EASY	10/10/2022 15:47	MV
TOTAL NITROGEN	1.29	MG/L	0.05	0.20	SYSTEAS+351	10/10/2022 15:47	EO/MV

Submission Number: 22091205 **Sample Date:** 09/19/2022
Sample Number: 005 **Sample Time:** 12:00
Sample Description: WQ Location #5 **Sample Method:** Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	10/07/2022 14:27	MV
TOTAL KJELDAHL NITROGEN	0.358	MG/L	0.05	0.20	351.2	09/22/2022 18:05	EO
ORTHO PHOSPHORUS AS P	0.010	MG/L	0.002	0.008	365.3	09/21/2022 09:38	YQ
TOTAL PHOSPHORUS AS P	0.054	MG/L	0.008	0.032	365.3	09/23/2022 16:00	YQ
CHLOROPHYLL A	8.70	MG/M3	0.25	1.00	445.0	10/18/2022 09:56	CH
TOTAL SUSPENDED SOLIDS	2.67	MG/L	0.570	2.280	SM2540D	09/22/2022 10:53	TG
BIOCHEMICAL OXYGEN DEMAND	1 U	MG/L	1	4	SM5210B	09/21/2022 14:04	LD/LD

NITRATE+NITRITE AS N	0.010 I	MG/L	0.006	0.024	SYSTEAS EASY	10/10/2022 15:48	MV
TOTAL NITROGEN	0.368	MG/L	0.05	0.20	SYSTEAS+351	10/10/2022 15:48	EO/MV

Submission Number: 22091205	Sample Date: 09/19/2022
Sample Number: 006	Sample Time: 11:40
Sample Description: WQ Location #6	Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.047	MG/L	0.008	0.032	350.1	10/10/2022 15:23	MV
TOTAL KJELDAHL NITROGEN	0.328	MG/L	0.05	0.20	351.2	09/22/2022 16:06	EO
ORTHO PHOSPHORUS AS P	0.019	MG/L	0.002	0.008	365.3	09/21/2022 09:28	YQ
TOTAL PHOSPHORUS AS P	0.043	MG/L	0.008	0.032	365.3	09/23/2022 11:59	YQ
CHLOROPHYLL A	8.03	MG/M3	0.25	1.00	445.0	10/18/2022 09:56	CH
TOTAL SUSPENDED SOLIDS	10.0	MG/L	0.570	2.280	SM2540D	09/22/2022 10:53	TG
BIOCHEMICAL OXYGEN DEMAND	1.17 I	MG/L	1	4	SM5210B	09/21/2022 14:04	LD/LD
NITRATE+NITRITE AS N	0.010 I	MG/L	0.006	0.024	SYSTEAS EASY	10/14/2022 12:18	MV
TOTAL NITROGEN	0.338	MG/L	0.05	0.20	SYSTEAS+351	10/14/2022 12:18	EO/MV

Haley Rin _____ 10/26/2022
 Dale D. Dixon / Laboratory Director Date
 Tülay Tanrisever - Technical Director/QC Officer
 Haley Richardson - QA Officer

DATA QUALIFIERS THAT MAY APPLY:

- A = Value reported is an average of two or more determinations.
- B = Results based upon colony counts outside the ideal range.
- H = Value based on field kit determination. Results may not be accurate.
- I = Reported value is between the laboratory MDL and the PQL.
- J1 = Estimated value. Surrogate recovery limits exceeded.
- J2 = Estimated value. No quality control criteria exists for component.
- J3 = Estimated value. Quality control criteria for precision or accuracy not met.
- J4 = Estimated value. Sample matrix interference suspected.
- J5 = Estimated value. Data questionable due to improper lab or field protocols.
- K = Off-scale low. Value is known to be < the value reported.
- L = Off-scale high. Value is known to be > the value reported.
- N = Presumptive evidence of presence of material.
- O = Sampled, but analysis lost or not performed.
- Q = Sample held beyond accepted hold time.

- T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
- U = Analyte analyzed but not detected at the value indicated.
- V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.
- Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
- Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
- I = Data deviate from historically established concentration ranges.
- ? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
- * = Not reported due to interference.
- Oil & Grease - If client does not send sufficient sample quantity for spike evaluation surface water samples are supplied by the laboratory.

NOTES:

MBAS calculated as LAS; molecular weight = 340.
 PQL = 4xMDL.
 ND = Not detected at or above the adjusted reporting limit.
 G1 = Accuracy standard does not meet method control limits, but does meet lab control limits that are in agreement with USEPA generated data. USEPA letter available upon request.
 G2 = Accuracy standard exceeds acceptable control limits. Duplicate and spike values are within control limits. Reported data are usable.

COMMENTS:

For questions or comments regarding these results, please contact us at (941) 723-9986.
 Results relate only to the samples.

Benchmark EA South
 1001 Corporate Avenue, Suite 102
 North Port, FL 34289
 (941) 625-3137 / (800) 736-9986
 (941) 423-7336 fax
 Sample Temperature checked upon receipt at
 BEAS with Temperature Gun ID #7

Benchmark EA, Inc.
 1711 12th St. East
 Palmato, FL 34221
 (941) 723-9986 / (800) 736-9986
 (941) 723-6061-fax
 Sample Temperature checked upon receipt at
 BEA with Temperature Gun ID #258

Client: GHD Services, Inc. (HSA ENG)
 2675 Winkler Ave, Suite 180
 Ft. Myers FL 33901
 Erik Issem (239) 213-3914
 Email EDD Reports to: ~~Andrew.Hyatt@ghd.com~~
 2020 PO# 34043123
 Shannon Tucker 239-210-8653
~~Andrew.Hyatt@ghd.com~~
~~Andrew.Hyatt@ghd.com~~
 Jessica Walsen ~~Liessica@ghd.com~~
 ghd.com
 ghd.com
 ghd.com

Chain of Custody Form: Esplanade Lakes WQ
 Project Number:

Profile: 840, QC Report

Laboratory Submission #: 22091205

Station ID	Sample Type ¹	Sample Matrix ²	Parameters, Preservative ⁴ , Container Type ⁵ / Total # of Containers = 4				Laboratory Submission #
			Unique bottle ID 1A	Unique bottle ID 1B	Unique bottle ID 1C	Unique bottle ID ID	
WQ Location #1	Grab	SW	NO ₃ -NO ₂ (355.2) TKN (351.2) NH ₃ (350.1) TP (665.3) T-N (Calc.) 1.1mL 1.4 H ₂ SO ₄ pH < 2 Lot # 22-16	BOD5 (SM5210S) TSS (SM2540D)	Ortho-Phos (Lab Filtered) (665.3)	Chlorophyll a (445.0) Filtered @ BEAS 9/20/22 0914	1
WQ Location #2	Grab	SW	1 x 1/2 Pint Plastic	1 x 2 Quart Plastic	1 x 1/2 Pint Plastic	1 x 500mL Opaque Plastic	2
WQ Location #3	Grab	SW	9/19/2022 1110	9/19/2022 1120	9/19/2022 1105	9/19/2022 1055	3
WQ Location #4	Grab	SW	9/19/2022 1105	9/19/2022 1200	9/19/2022 1140	9/19/2022 1140	4
WQ Location #5	Grab	SW	9/19/2022 1140				5
WQ Location #6	Grab	SW					6

Notes:

- "Sample Type" is used to indicate whether the sample was a grab (G) or whether it was a composite (C).
- "Sample Matrix" is used to indicate whether the sample is being discharged to drinking water (DW), groundwater (GW), surface water (SW), fish surface water (FSW), saline surface water (SSW), soil sediment (SDMNRT), or sludge (SLDG).
- "Container Type" is used to indicate whether the container is plastic (P) or glass (G).
- Sample must be refrigerated or stored in wet ice after collection. The temperature during storage should be less than or equal to 6°C (42.8°F). Under "Preservative", list any preservatives that were added to the sample container. Lot Number of preservative used is specific to the bottle included in the kit. NADPH, H₂SO₄, and HNO₃ do not have expiration dates per the manufacturer. Micro bottles are pre-pressured at manufacturing stage. 40mL vials are pre-pressured at manufacturing stage.
- Each bottle has a label identifying sample ID, preservative contained in the bottle, sample type, client ID, and parameters for analysis.
- The following information should be added to each bottle label after collection with permanent black ink: date and time of collection, sampler's name or initials, and any field number or ID.
- All bottles not containing preservative may be rinsed with appropriate sample prior to collection.
- The client is responsible for documentation of the sampling event. Please note special sampling events on the sample custody form.
- Sample that has been created by BEA using new certified bottles unless otherwise noted.

Laboratory Sample Acceptability:
 pH < 2 ✓ BEA Temperature: 0.8 °C
 BEAS Temp: 5.2 °C

Collector & Affiliation: (Print & Sign)	Date:	Time:	Received By & Affiliation: (Print & Sign)	Date:	Time:
Justin LeBlanc GHD	19 SEP 22		Broke Watkinson BEAS	9/19/22	1446
Justin LeBlanc GHD	19 SEP 22	1446	Broke Watkinson BEAS	9/19/22	1446
Reinquished By & Affiliation: (Print & Sign)	Date:	Time:	Received By & Affiliation: (Print & Sign)	Date:	Time:
Broke Watkinson BEAS	9/20/22	1150	Nathan Haddell	9/20/22	1430
Reinquished By & Affiliation: (Print & Sign)	Date:	Time:	Received By & Affiliation: (Print & Sign)	Date:	Time:
Nathan Haddell BEAS	9/20/22	1430			

BEAS



Submission Number: 22091205
 Project Name: ESPLANADE LAKES

QC REPORT

SUBMISSION NUMBER	SAMPLE NUMBER	METHOD	ANALYTE	ANALYSIS DATE/TIME	QC FLAG	QC VALUE	SAMPLE RESULT	LR RESULT	LR %RSD	SPK RESULT	STD-SPK %REC
22091759 - 001	661622	350.1	AMMONIA NITROGEN	10/10/2022 15:10	LR	-0.025	-0.036	0.00			
		350.1	AMMONIA NITROGEN	10/07/2022 12:19	MB	0.00	0.000				
		350.1	AMMONIA NITROGEN	10/10/2022 12:32	POL	0.03	0.034				108.0
22090875 - 001	660032	350.1	AMMONIA NITROGEN	10/07/2022 11:00	SPK	1.00	1.440			1.410	97.3
		350.1	AMMONIA NITROGEN	10/10/2022 17:10	STD	1.00	0.953				95.3
22091216 - 001	660639	351.2	TOTAL KJELDAHL NITROGEN	09/22/2022 09:48	LR	412.000	417.000	0.78			
		351.2	TOTAL KJELDAHL NITROGEN	09/26/2022 12:15	MB	0.00	0.000				
		351.2	TOTAL KJELDAHL NITROGEN	09/22/2022 15:55	POL	0.25	0.235			2.770	94.0
22091219 - 010	660683	351.2	TOTAL KJELDAHL NITROGEN	09/22/2022 08:57	STD	2.50	2.570				103.0
		351.2	TOTAL KJELDAHL NITROGEN	09/22/2022 18:24	STD	2.00	2.090				105.0
22091205 - 006		365.3	ORTHO PHOSPHORUS AS P	09/21/2022 10:57	LR	0.019	0.021	4.24			
		365.3	ORTHO PHOSPHORUS AS P	09/21/2022 09:24	MB	0.00	0.000				
		365.3	ORTHO PHOSPHORUS AS P	09/21/2022 10:38	SPK	0.20	0.008			0.205	102.5
22091199 - 011		365.3	ORTHO PHOSPHORUS AS P	09/21/2022 10:16	STD	0.20	0.194				
22091193 - 002	660561	365.3	TOTAL PHOSPHORUS AS P	09/23/2022 13:41	LR	3.850	3.840	0.09			
		365.3	TOTAL PHOSPHORUS AS P	09/23/2022 12:07	MB	0.00	0.000				
		365.3	TOTAL PHOSPHORUS AS P	09/23/2022 12:24	POL	0.02	0.020				102.0
22091094 - 004	660370	365.3	TOTAL PHOSPHORUS AS P	09/23/2022 15:57	SPK	0.20	2.410			2.430	109.0
		365.3	TOTAL PHOSPHORUS AS P	09/23/2022 14:04	STD	0.20	0.200				100.0
22091427 - 001	661029	445.0	CHLOROPHYLL A	10/16/2022 09:56	LR	82.396	79.230	2.77			
		SM2540D	TOTAL SUSPENDED SOLIDS	09/22/2022 10:53	MB	0.00	0.000				
		SM2540D	TOTAL SUSPENDED SOLIDS	09/22/2022 10:53	STD	951.00	916.000				96.3
22091290 - 001	660745	SM5210B	BIOCHEMICAL OXYGEN DEMAND	09/21/2022 14:04	LR	0.353	0.353	0.00			0.0
		SM5210B	BIOCHEMICAL OXYGEN DEMAND	09/21/2022 14:04	STD	198.00	205.150				103.6

QC FLAGS: MB or BLK = METHOD BLANK LR = LAB REPLICATE MSD = MATRIX SPIKE DUPLICATE STD or LCS = STANDARD SPK or MS = MATRIX SPIKE

SUBMISSION NUMBER	SAMPLE NUMBER	METHOD	ANALYTE	ANALYSIS DATE/TIME	QC FLAG	QC VALUE	SAMPLE RESULT	LR RESULT	LR %RSD	SPK RESULT	STD-SPK %REC
22091302 - 002		SYSTEMA EASY	NITRATE+NITRITE AS N	10/14/2022	LR		3.810	3.820	0.27		
		SYSTEMA EASY	NITRATE+NITRITE AS N	10/14/2022	MB	0.00	0.000				
		SYSTEMA EASY	NITRATE+NITRITE AS N	10/14/2022	SPK	2.00	3.840			3.810	98.1
22100849 - 002	662563	SYSTEMA EASY	NITRATE+NITRITE AS N	10/14/2022	STD	0.25	0.247				98.9

Comments:

Surface Water Field Sheets

SURFACE WATER FIELD SHEET
Station Information

STATION ID:	WA Location #1
LOCATION:	Middle of lake
DATE/TIME:	9/19/22 1110
ALL TIMES ARE:	<input checked="" type="radio"/> ETZ or <input type="radio"/> CTZ (circle one)

WATERBODY TYPE: (Circle One)	Small Lake (>4 and <10HA) (collect samples in middle of open water)	<input checked="" type="radio"/> Large Lake (>10HA) (collect samples at selected location point)
	Small Stream (collect samples in representative area)	<input type="radio"/> Large River (collect samples in representative area)

Water Characteristics

TOTAL WATER DEPTH: (Average of 2 measurements)	31.5 (feet)	Sample Depth:	1.5 (feet)
STREAM FLOW: (Circle One if applicable)	No Flow	<input checked="" type="radio"/> Flow within Banks	Flood Conditions
WATER LEVEL: (Circle One)	Low	Normal	<input checked="" type="radio"/> High
WATER SAMPLE COLLECTION DEVICE (Circle One)	Van Dorn	<input checked="" type="radio"/> Direct Grab with Sample Bottle	Dipper Other

Field Measurements		Meter ID#		Field Measurements			
Time (24 hr.)	Surface Depth Collected (feet)	pH* (SU)	D.O. (mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)
1110	1.5	8.38	6.41	86.3	29.8	291.5	3.94
Time (24 hr.)	Bottom Depth Collected (feet)	pH (SU)	D.O. (mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)

*pH of preserved sample: number of drops of sulfuric acid added in field to achieve pH of less than 2:

Samples immediately placed on ice?

Yes No

WEATHER CONDITIONS: (circle) raining, clear, partly cloudy, windy

PERSONNEL ON SITE: Jessie Walsh, Justin LeBlanc

REMARKS: Secchi disk: 2.7 ft
note: sun behind clouds

SURFACE WATER FIELD SHEET
Station Information

STATION ID:	WQ Location #2
LOCATION:	Middle of lake
DATE/TIME:	9/19/22 1120
ALL TIMES ARE:	<input checked="" type="radio"/> ETZ or <input type="radio"/> CTZ (circle one)

WATERBODY TYPE: <input type="radio"/> Small Lake (>4 and <10HA) (Circle One) <input type="radio"/> (collect samples in middle of open water)	<input checked="" type="radio"/> Large Lake (>10HA) (collect samples at selected location point)
<input type="radio"/> Small Stream (collect samples in representative area)	<input type="radio"/> Large River (collect samples in representative area)

Water Characteristics

TOTAL WATER DEPTH: <u>28.7</u> (feet) (Average of 2 measurements)	Sample Depth: <u>1.5</u> (feet)
STREAM FLOW: <input type="radio"/> (Circle One if applicable) <input type="radio"/> No Flow <input checked="" type="radio"/> Flow within Banks <input type="radio"/> Flood Conditions	
WATER LEVEL: <input type="radio"/> (Circle One) <input type="radio"/> Low <input type="radio"/> Normal <input checked="" type="radio"/> High	
WATER SAMPLE COLLECTION DEVICE <input type="radio"/> (Circle One) <input type="radio"/> Van Dorn <input checked="" type="radio"/> Direct Grab with Sample Bottle <input type="radio"/> Dipper <input type="radio"/> Other _____	

Field Measurements
Read By: (initials)

Field Measurements		Meter ID#		Field Measurements			
Time (24 hr.)	Surface Depth Collected (feet)	pH* (SU)	D.O.(mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)
1120	1.5	8.47	6.27	82.6	29.8	2910	3.98
Time (24 hr.)	Bottom Depth Collected (feet)	pH (SU)	D.O.(mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)

*pH of preserved sample: number of drops of sulfuric acid added in field to achieve pH of less than 2: _____

Samples immediately placed on ice? Yes No

WEATHER CONDITIONS: (circle) raining, clear, partly cloudy, windy

PERSONNEL ON SITE: JW, JL

REMARKS: Secchi Disk: 3.6 ft

SURFACE WATER FIELD SHEET
Station Information

STATION ID:	WQ Location #3
LOCATION:	West of bridge
DATE/TIME:	9/19/22 1105
ALL TIMES ARE:	<u>ETZ</u> or CTZ (circle one)

WATERBODY TYPE: (Circle One)	Small Lake (>4 and <10HA) (collect samples in middle of open water)	Large Lake (>10HA) (collect samples at selected location point)
	Small Stream (collect samples in representative area)	Large River (collect samples in representative area)

Water Characteristics

TOTAL WATER DEPTH: (Average of 2 measurements) (Circle One if applicable)	19.9 19.9 (feet)	Sample Depth:	1.5 (feet)
STREAM FLOW:	No Flow	<u>Flow within Banks</u>	Flood Conditions
WATER LEVEL:	(Circle One)	Low	Normal <u>High</u>
WATER SAMPLE COLLECTION DEVICE (Circle One)	Van Dorn	<u>Direct Grab with Sample Bottle</u>	Dipper Other _____

Field Measurements		Meter ID#		Field Measurements			
				Read By: (initials)			
Time (24 hr.)	Surface Depth Collected (feet)	pH* (SU)	D.O.(mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)
1105	1.5	8.35	6.11	82.2	29.7	291.5	4.15
Time (24 hr.)	Bottom Depth Collected (feet)	pH (SU)	D.O.(mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)

*pH of preserved sample: number of drops of sulfuric acid added in field to achieve pH of less than 2:

Samples immediately placed on ice?

Yes No

WEATHER CONDITIONS: (circle) raining, clear, partly cloudy, windy

PERSONNEL ON SITE:

Jessie Walsen, Justin Leblanc

REMARKS:

Secchi disk = 3.3 ft

SURFACE WATER FIELD SHEET
Station Information

STATION ID: WQ Location #4

LOCATION: At Bridge (JL)

DATE/TIME: 9/19/22 10:55

ALL TIMES ARE: ETZ or CTZ
(circle one)

WATERBODY TYPE: (Circle One)

Small Lake (>4 and <10HA)
(collect samples in middle of open water)

Large Lake (>10HA)
(collect samples at selected location point)

Small Stream
(collect samples in representative area)

Large River
(collect samples in representative area)

Water Characteristics

TOTAL WATER DEPTH: 7.7 (feet) Sample Depth: 1.5 (feet)

(Average of 2 measurements)

STREAM FLOW: (Circle One if applicable) No Flow Flow within Banks Flood Conditions

WATER LEVEL: (Circle One) Low Normal High

WATER SAMPLE COLLECTION DEVICE: (Circle One) Van Dorn Direct Grab with Sample Bottle Dipper Other _____

Field Measurements		Meter ID#	Field Measurements					Read By: (initials)
Time (24 hr.)	Surface Depth Collected (feet)	pH* (SU)	D.O. (mg/L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)	
<u>10:55</u>	<u>1.5</u>	<u>8.13</u>	<u>5.93</u>	<u>79.4</u>	<u>29.6</u>	<u>292.2</u>	<u>9.05</u>	
Time (24 hr.)	Bottom Depth Collected (feet)	pH (SU)	D.O. (mg/L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)	

*pH of preserved sample: number of drops of sulfuric acid added in field to achieve pH of less than 2: _____

Samples immediately placed on ice? Yes No

WEATHER CONDITIONS: (circle) raining, clear, partly cloudy, windy

PERSONNEL ON SITE: Jessie Watson, Justin Leblanc (JL)

REMARKS: Sechi disk : 2.7 JL

SURFACE WATER FIELD SHEET
Station Information

STATION ID:	WQ Location #5
LOCATION:	outfall of canal
DATE/TIME:	9/19/22 1200
ALL TIMES ARE:	<input checked="" type="radio"/> ETZ or <input type="radio"/> CTZ (circle one)

WATERBODY TYPE: (Circle One)	<input type="radio"/> Small Lake (>4 and <10HA) (collect samples in middle of open water)	<input checked="" type="radio"/> Large Lake (>10HA) (collect samples at selected location point)
	<input type="radio"/> Small Stream (collect samples in representative area)	<input type="radio"/> Large River (collect samples in representative area)

Water Characteristics

TOTAL WATER DEPTH: 8.7 (feet) (Average of 2 measurements)	Sample Depth: 1.5 (feet)
STREAM FLOW: <input type="radio"/> applicable (Circle One if applicable)	<input type="radio"/> No Flow <input checked="" type="radio"/> Flow within Banks <input type="radio"/> Flood Conditions
WATER LEVEL: <input type="radio"/> (Circle One)	<input type="radio"/> Low <input type="radio"/> Normal <input checked="" type="radio"/> High
WATER SAMPLE COLLECTION DEVICE: <input type="radio"/> (Circle One)	<input type="radio"/> Van Dorn <input checked="" type="radio"/> Direct Grab with Sample Bottle <input type="radio"/> Dipper <input type="radio"/> Other

Field Measurements		Meter ID#		Field Measurements Read By: (initials)			
Time (24 hr.)	Surface Depth Collected (feet)	pH* (SU)	D.O. (mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)
1200	1.5	8.39	6.06	74.6	29.7	292.3	4.42
Time (24 hr.)	Bottom Depth Collected (feet)	pH (SU)	D.O. (mg./L)	D.O. (%)	Temp (°C)	Conductivity (µmhos/cm)	Turbidity (NTU)

*pH of preserved sample: number of drops of sulfuric acid added in field to achieve pH of less than 2: _____

Samples immediately placed on ice? Yes No

WEATHER CONDITIONS: (circle) raining, clear, partly cloudy, windy

PERSONNEL ON SITE: JW, JL

REMARKS: ~~secchi~~ secchi disk: 2.6
 JW

SURFACE WATER FIELD SHEET
Station Information

STATION ID: WQ Location #6

LOCATION: South end of canal

DATE/TIME: 9/19/22 1140

ALL TIMES ARE: ETZ or CTZ
(circle one)

WATERBODY TYPE: Small Lake (>4 and <10HA) Large Lake (>10HA)
(Circle One) (collect samples in middle of open water) (collect samples at selected location point)

Small Stream Large River
(collect samples in representative area) (collect samples in representative area)

Water Characteristics

TOTAL WATER DEPTH: 10.6 (feet) Sample Depth: 1.5 (feet)
(Average of 2 measurements) (Circle One if applicable)

STREAM FLOW: No Flow Flow within Banks Flood Conditions

WATER LEVEL: (Circle One) Low Normal High

WATER SAMPLE COLLECTION DEVICE (Circle One) Van Dorn Direct Grab with Sample Bottle Dipper Other

Field Measurements		Meter ID#		Field Measurements			
Time (24 hr.)	Surface Depth Collected (feet)	pH* (SU)	D.O.(mg./L)	D.O. (%)	Temp (°C)	Conductivity (umhos/cm)	Turbidity (NTU)
<u>1140</u>	<u>1.5</u>	<u>8.2</u>	<u>6.30</u>	<u>82.7</u>	<u>28.8</u>	<u>276.7</u>	<u>15.82</u>
Time (24 hr.)	Bottom Depth Collected (feet)	pH (SU)	D.O.(mg./L)	D.O. (%)	Temp (°C)	Conductivity (umhos/cm)	Turbidity (NTU)

*pH of preserved sample: number of drops of sulfuric acid added in field to achieve pH of less than 2: _____

Samples immediately placed on ice? Yes No

WEATHER CONDITIONS: (circle) raining, clear, partly cloudy, windy

PERSONNEL ON SITE: TW, JL

REMARKS: Sevi Disk: # 2.2 JL
note: water murky, trash along shore, active construction