North Fork St. Lucie Aquatic Preserve

SEACAR Water Quality Analysis

Last compiled on 30 September, 2025

Contents

Indicators

Nutrients

Total Nitrogen - Discrete

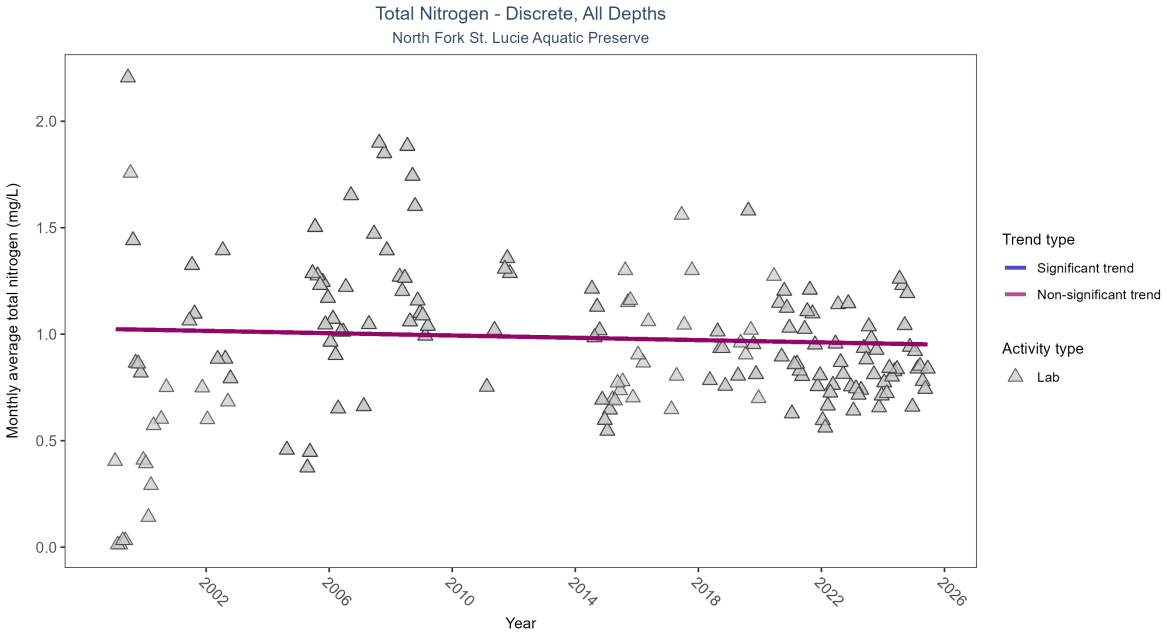

Figure 1: Scatter plot of monthly average total nitrogen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only nitrogen values obtained from laboratory analyses (triangles) are included in the plot.

Table 1: Seasonal Kendall-Tau Results for - Total Nitrogen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	614	23	1999 - 2025	0.9705	-0.04524	1.02371	-0.00271	0.3544

Total nitrogen showed no detectable trend between 1999 and 2025.

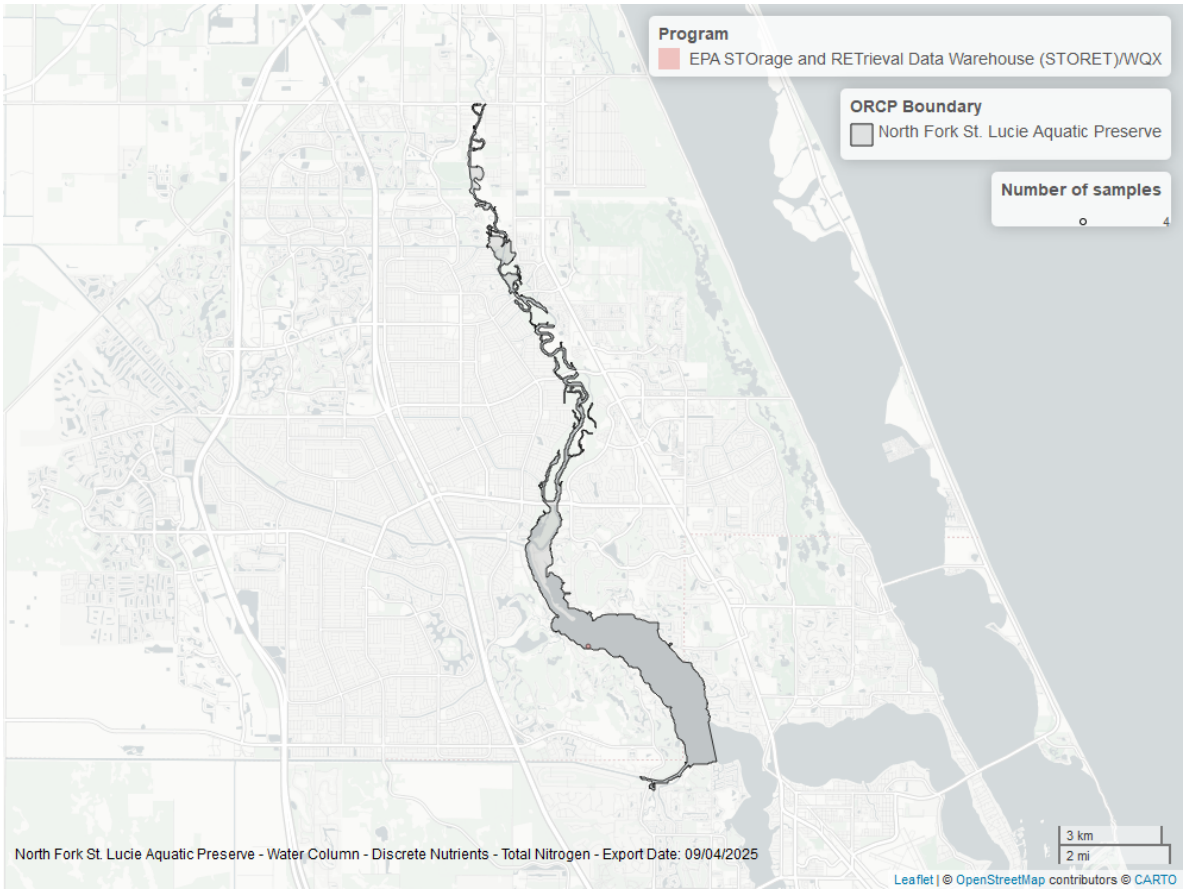

Figure 2: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Phosphorus - Discrete

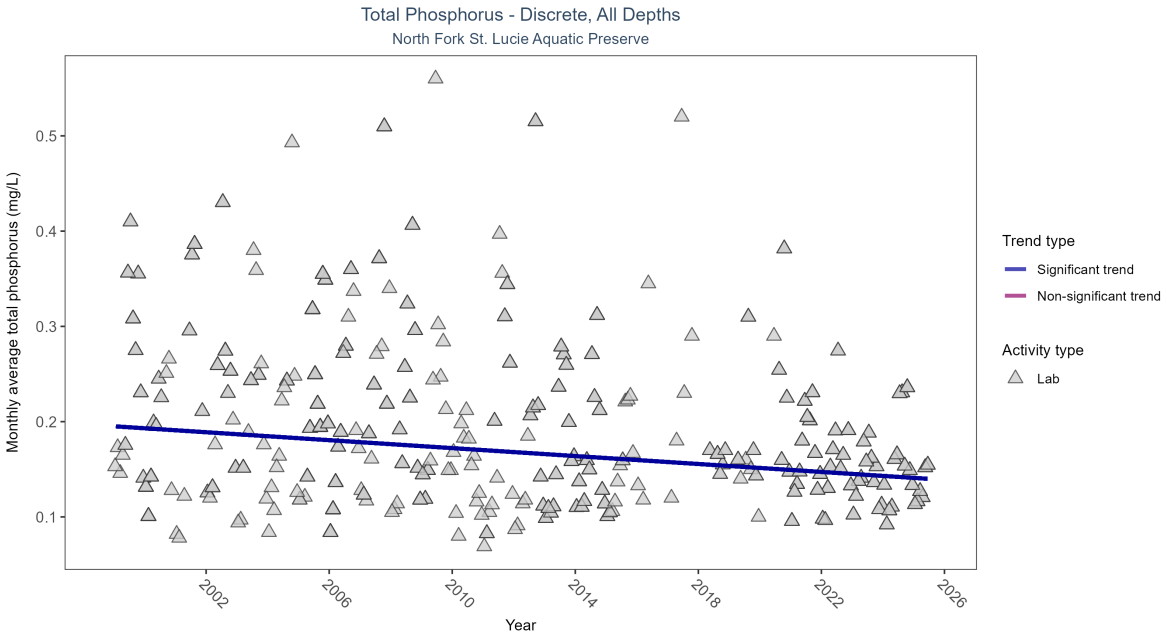

Figure 3: Scatter plot of monthly average total phosphorus over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only phosphorus values obtained from laboratory analyses (triangles) are included in the plot.

Table 2: Seasonal Kendall-Tau Results for - Total Phosphorus

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly decreasing trend	1042	27	1999 - 2025	0.176	-0.26551	0.19513	-0.00208	0

Monthly average total phosphorus decreased by less than 0.01 mg/L per year.

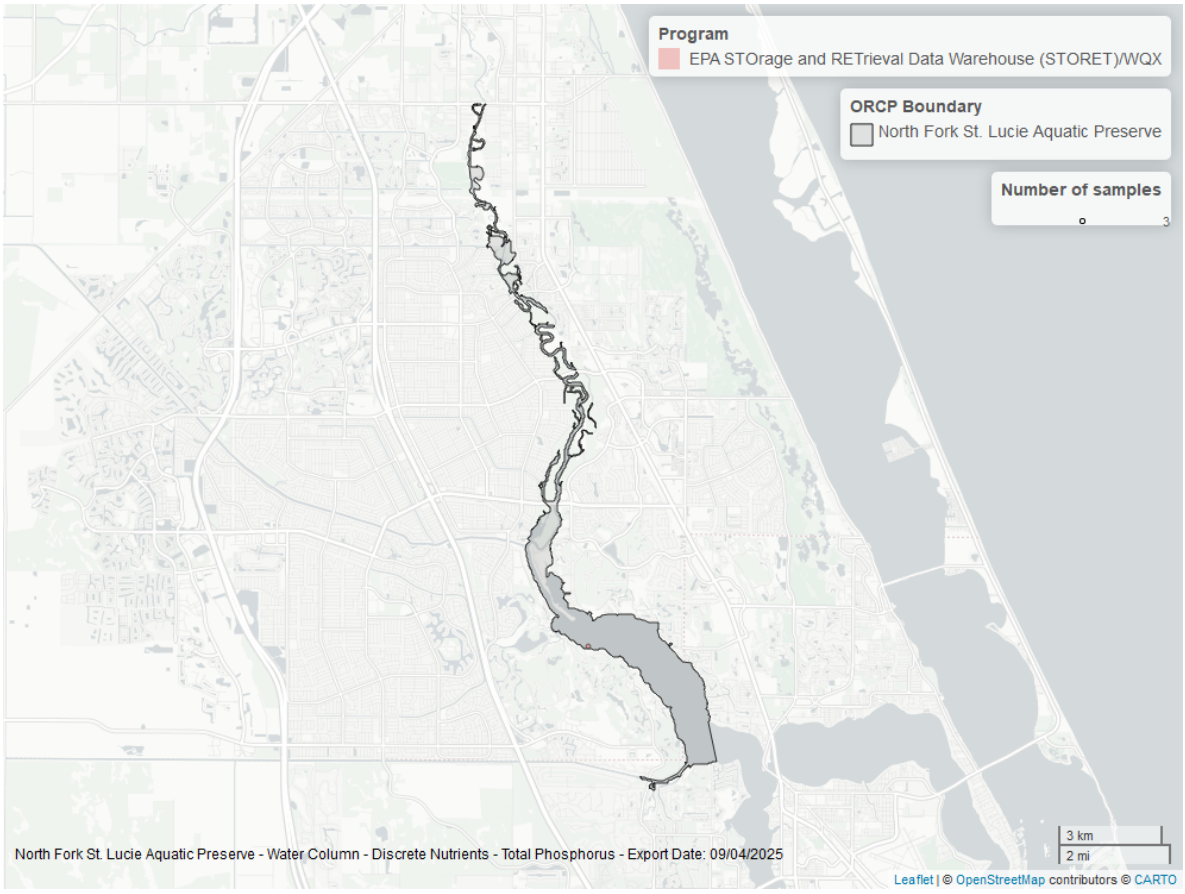

Figure 4: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Quality

Dissolved Oxygen - Discrete

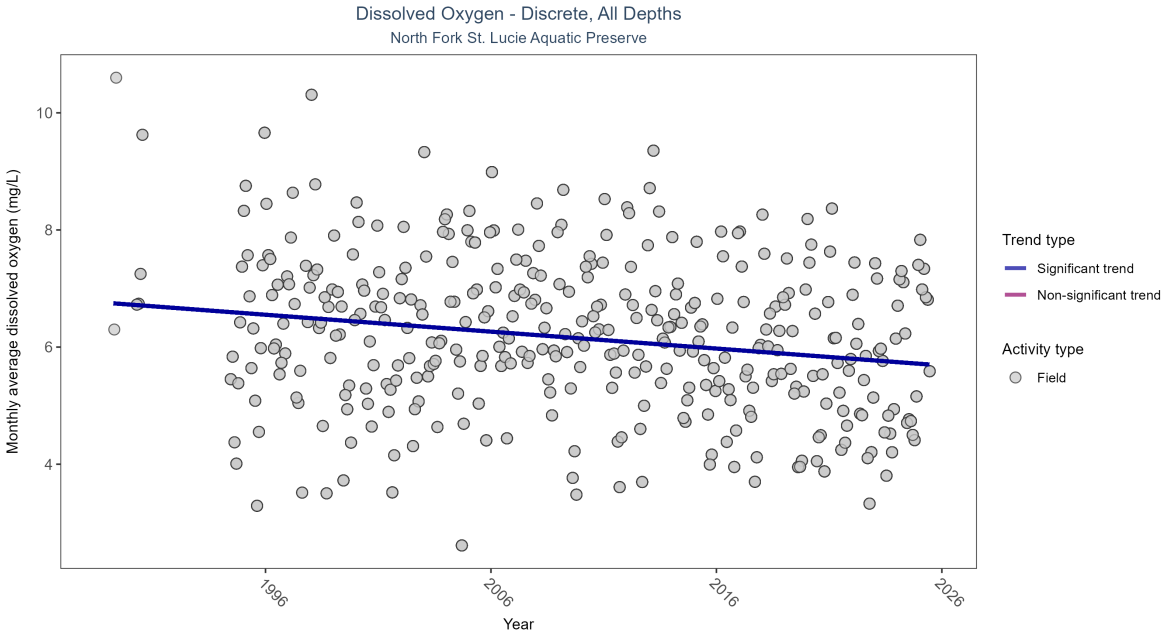

Figure 5: Scatter plot of monthly average dissolved oxygen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen values measured in the field (circles) are included in the plot.

Table 3: Seasonal Kendall-Tau Results for - Dissolved Oxygen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly decreasing trend	7465	34	1989 - 2025	6.2	-0.21809	6.75437	-0.02887	0

Monthly average dissolved oxygen decreased by 0.03 mg/L per year.

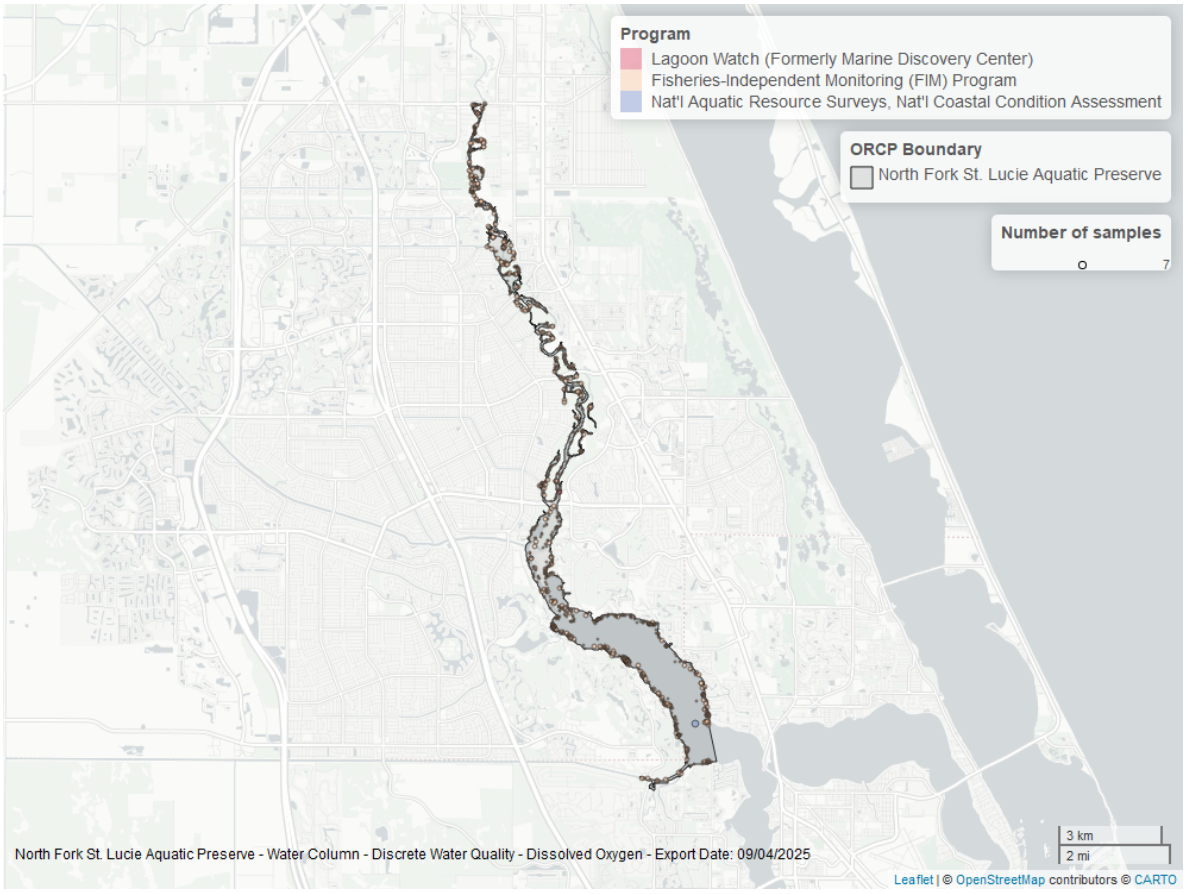

Figure 6: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Dissolved Oxygen Saturation - Discrete

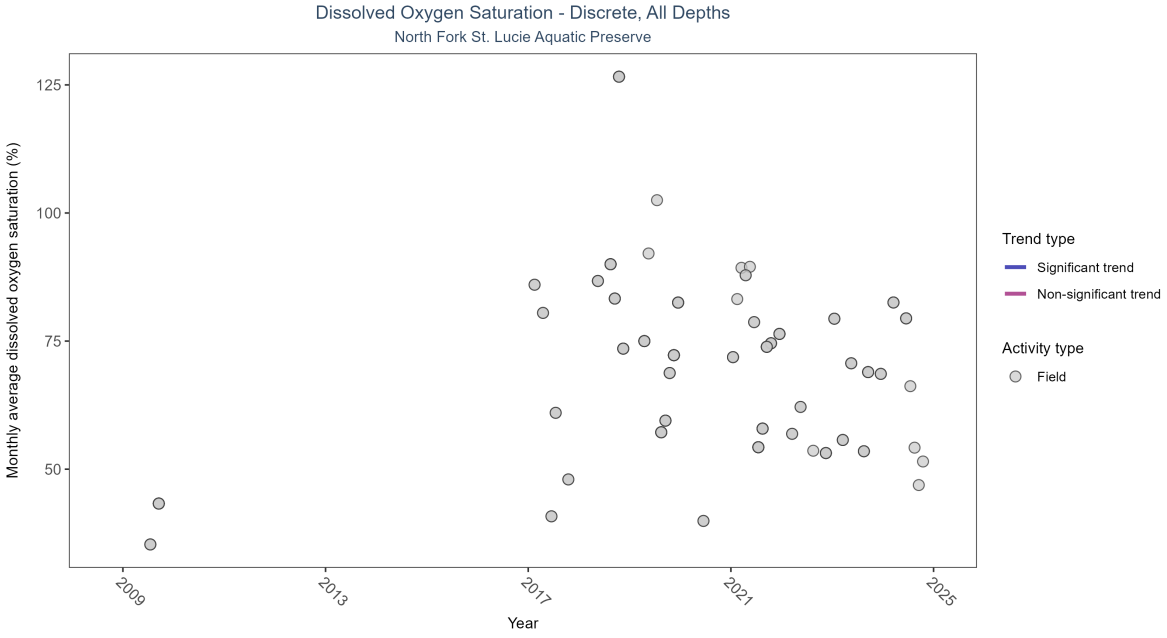

Figure 7: Scatter plot of monthly average dissolved oxygen saturation over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen saturation values measured in the field (circles) are included in the plot.

Table 4: Seasonal Kendall-Tau Results for - Dissolved Oxygen Saturation

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Insufficient data to calculate trend	149	9	2009 - 2024	70.7	-	-	-	-

There was insufficient data to fit a model for dissolved oxygen saturation.

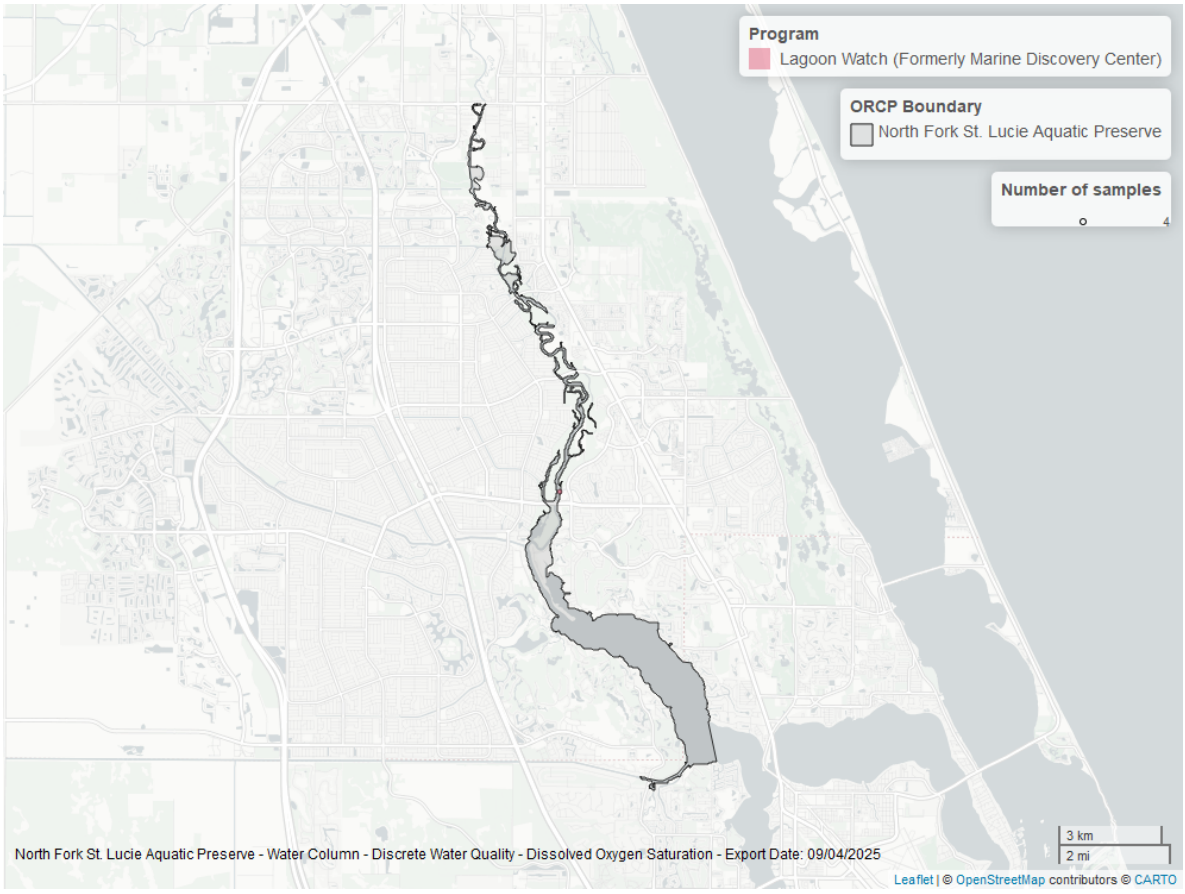

Figure 8: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Discrete

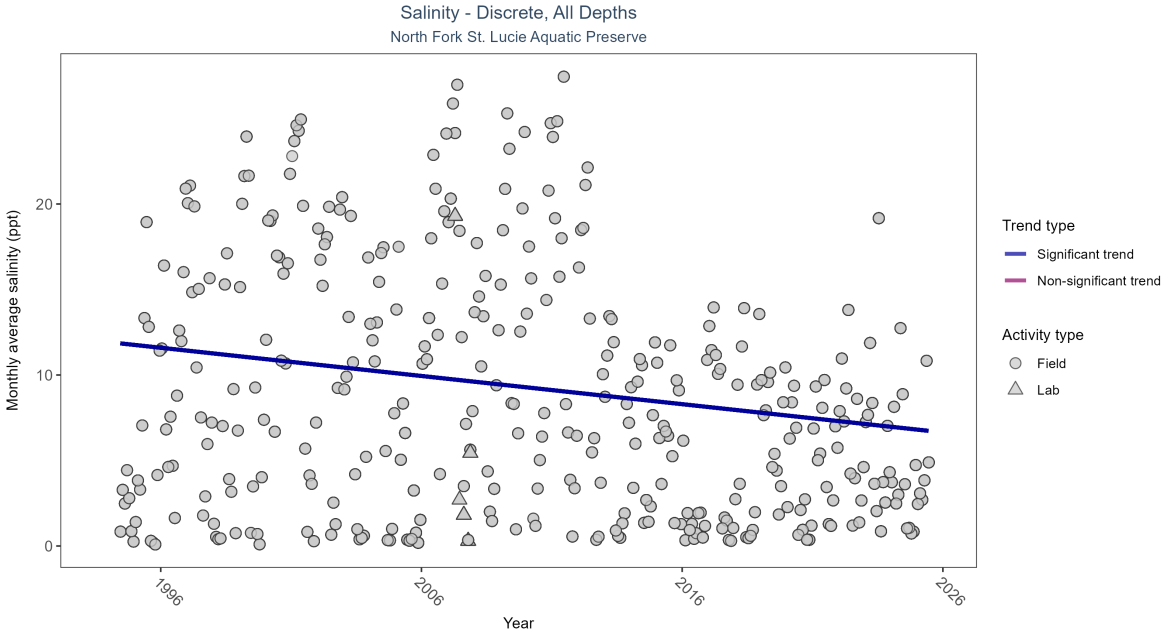

Figure 9: Scatter plot of monthly average salinity over time. If the time series included ten or more years of discrete observations, significant (blue) or non-significant (magenta) trend lines are also shown. Discrete salinity values derived from grab samples analyzed in the field (circles) or the laboratory (triangles) are both included in the plot.

Table 5: Seasonal Kendall-Tau Results for - Salinity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
All	Significantly decreasing trend	7157	32	1994 - 2025	3.98	-0.18899	11.92252	-0.16496	0

Monthly average salinity decreased by 0.16 ppt per year.

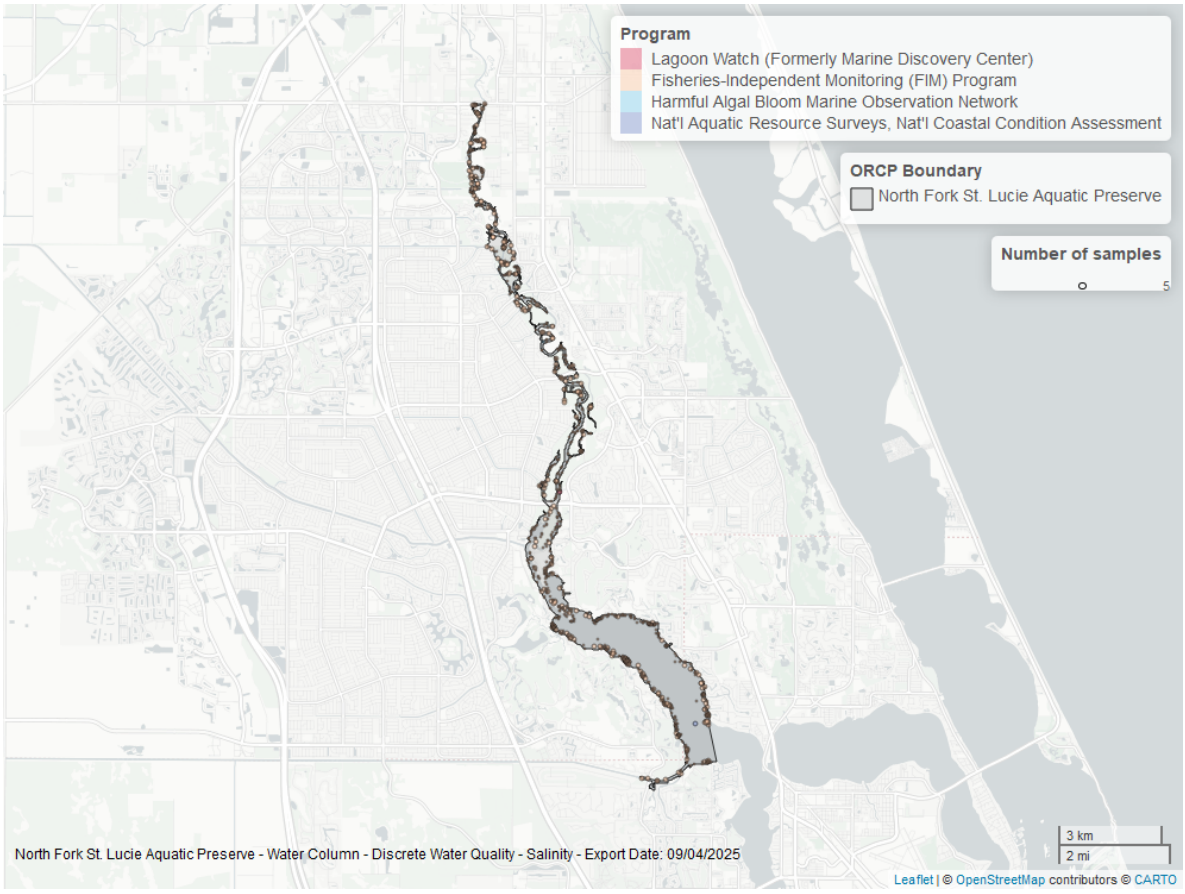

Figure 10: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Continuous

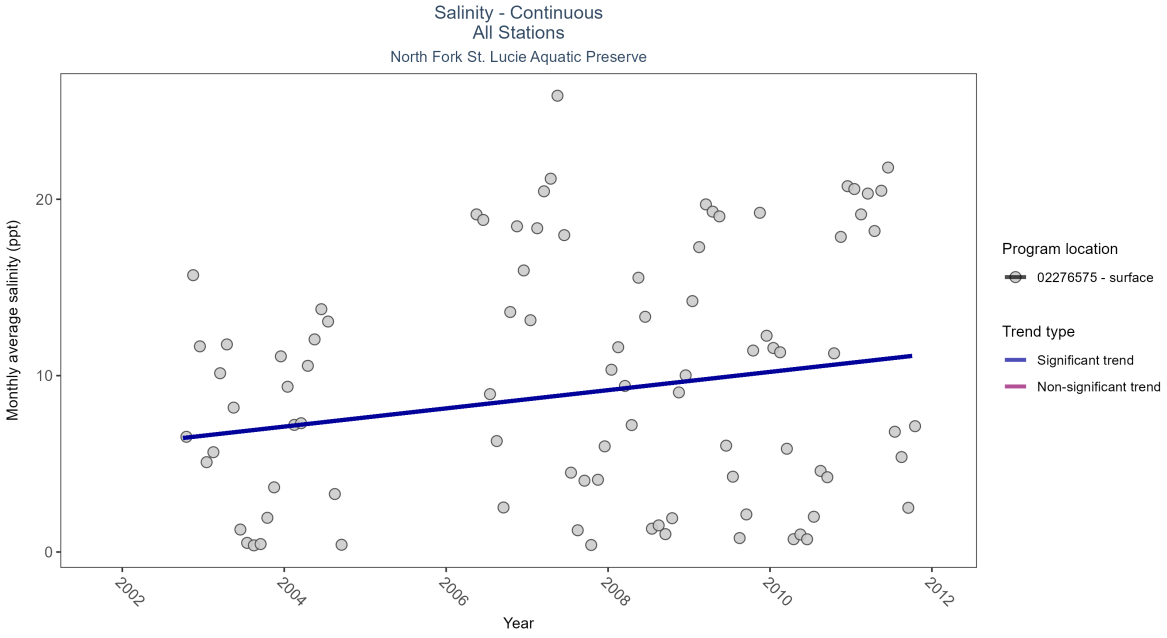

Figure 11: Scatter plot of monthly average salinity over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 6: Seasonal Kendall-Tau Results - Salinity

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
02276575	Significantly increasing trend	2666	9	2002 - 2011	9.1	0.22	6.08	0.52	0.0174

At one program location, monthly average salinity increased by 0.52 ppt per year.

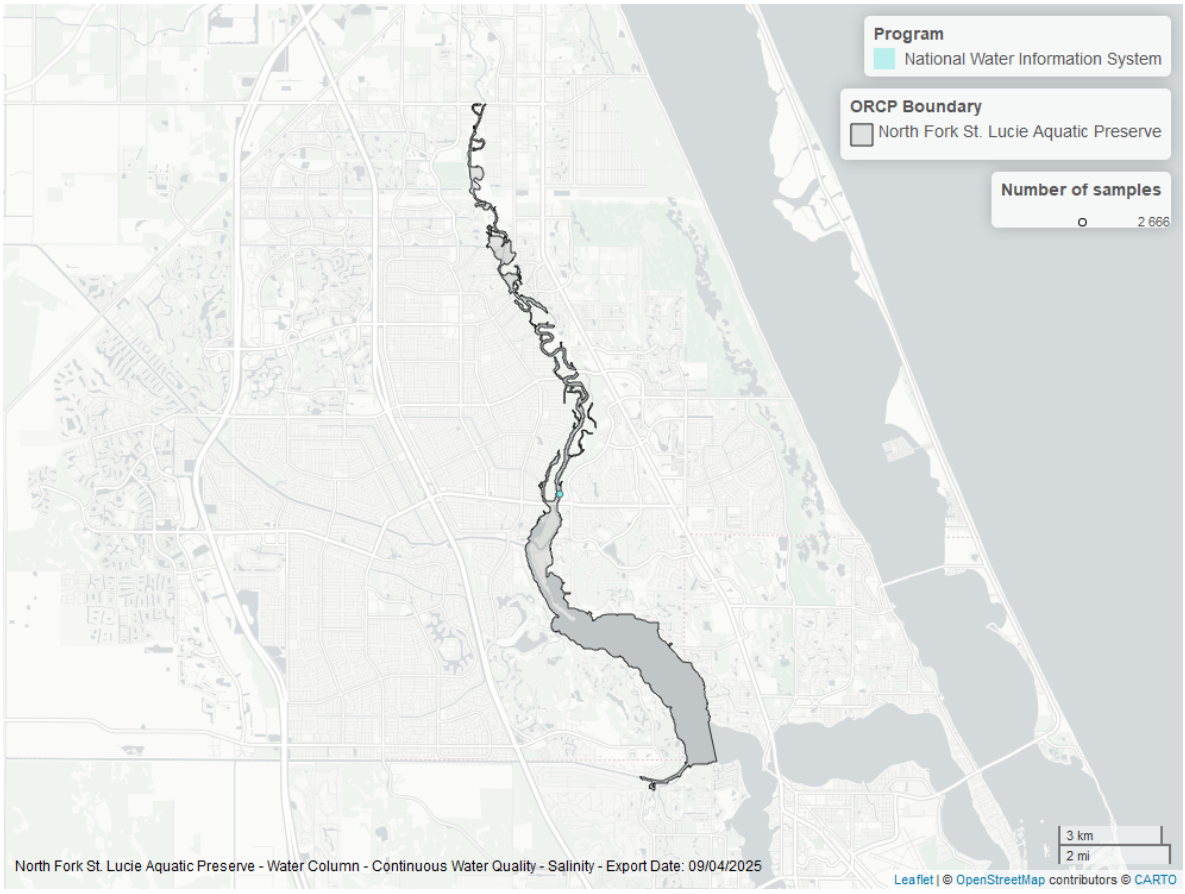

Figure 12: Map showing location of salinity continuous water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Discrete

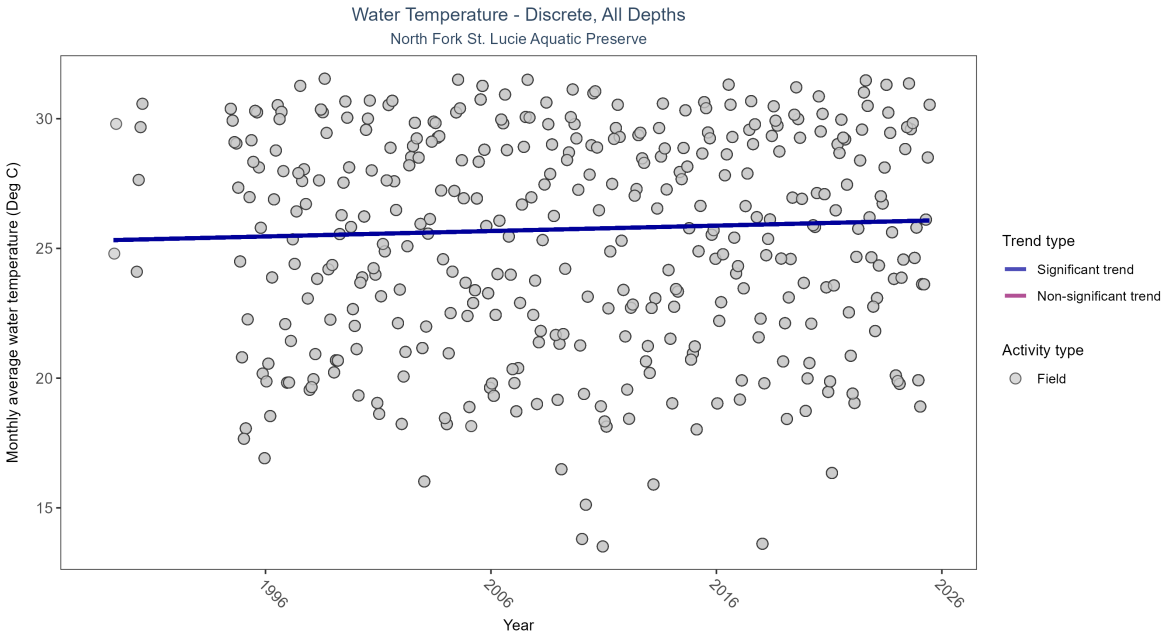

Figure 13: Scatter plot of monthly average water temperature over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only water temperature measurements taken in the field (circles) are included in the plot.

Table 7: Seasonal Kendall-Tau Results for - Water Temperature

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly increasing trend	7614	34	1989 - 2025	25.9	0.09878	25.31518	0.02087	0.0066

Monthly average water temperature increased by 0.02°C per year.

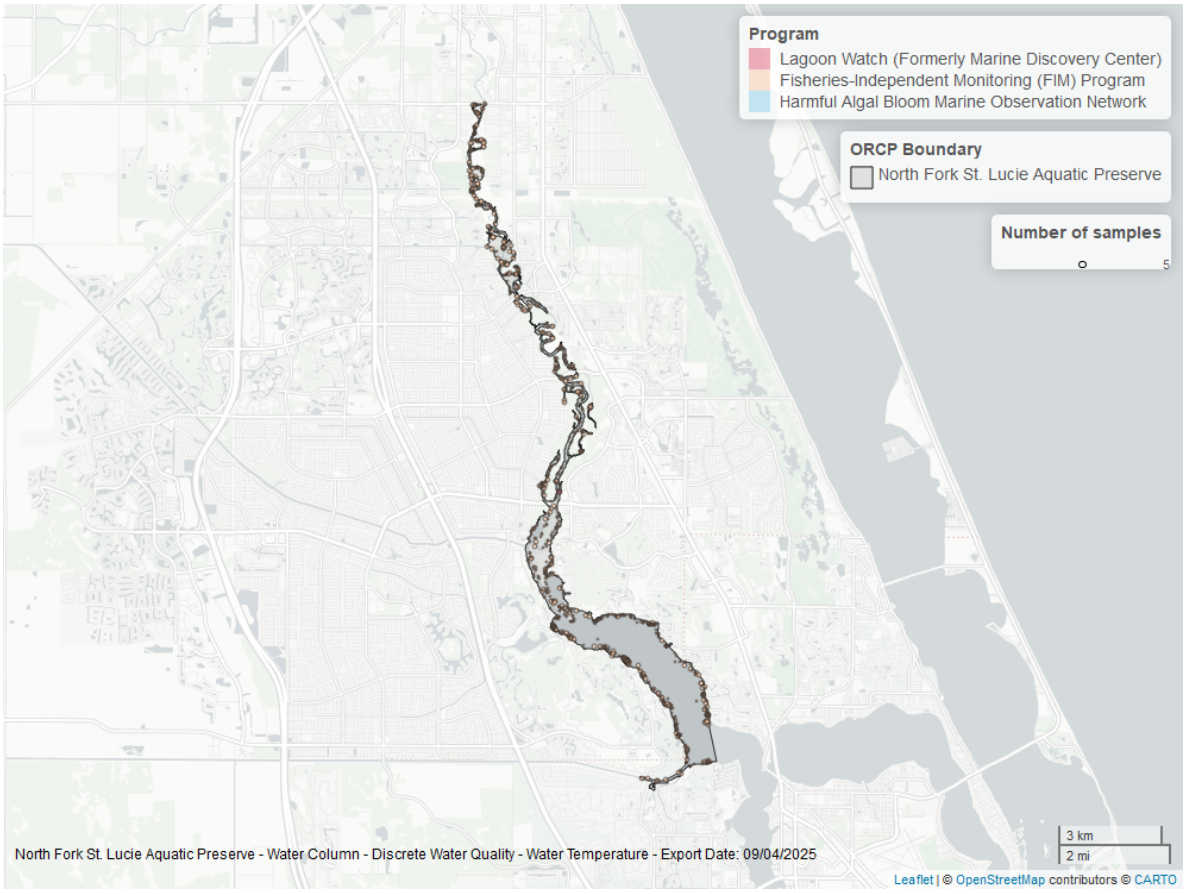

Figure 14: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Continuous

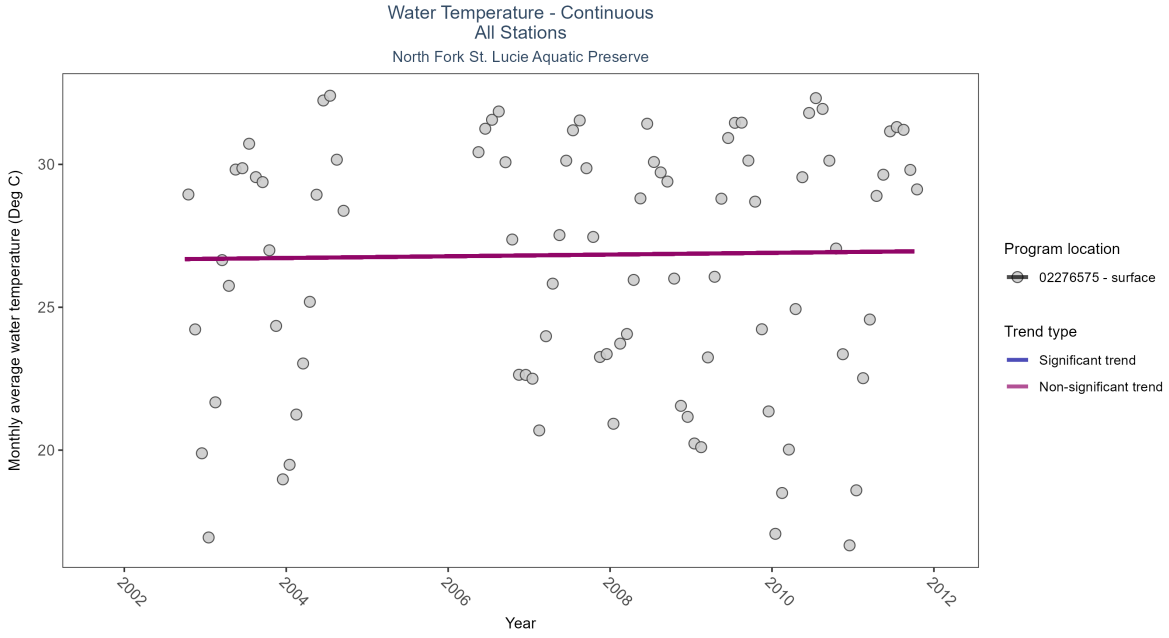

Figure 15: Scatter plot of monthly average water temperature over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 8: Seasonal Kendall-Tau Results - Water Temperature

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
02276575	No significant trend	2664	9	2002 - 2011	27.3	0.06	26.66	0.03	0.4589

No detectable change in monthly average water temperature was observed at one location.

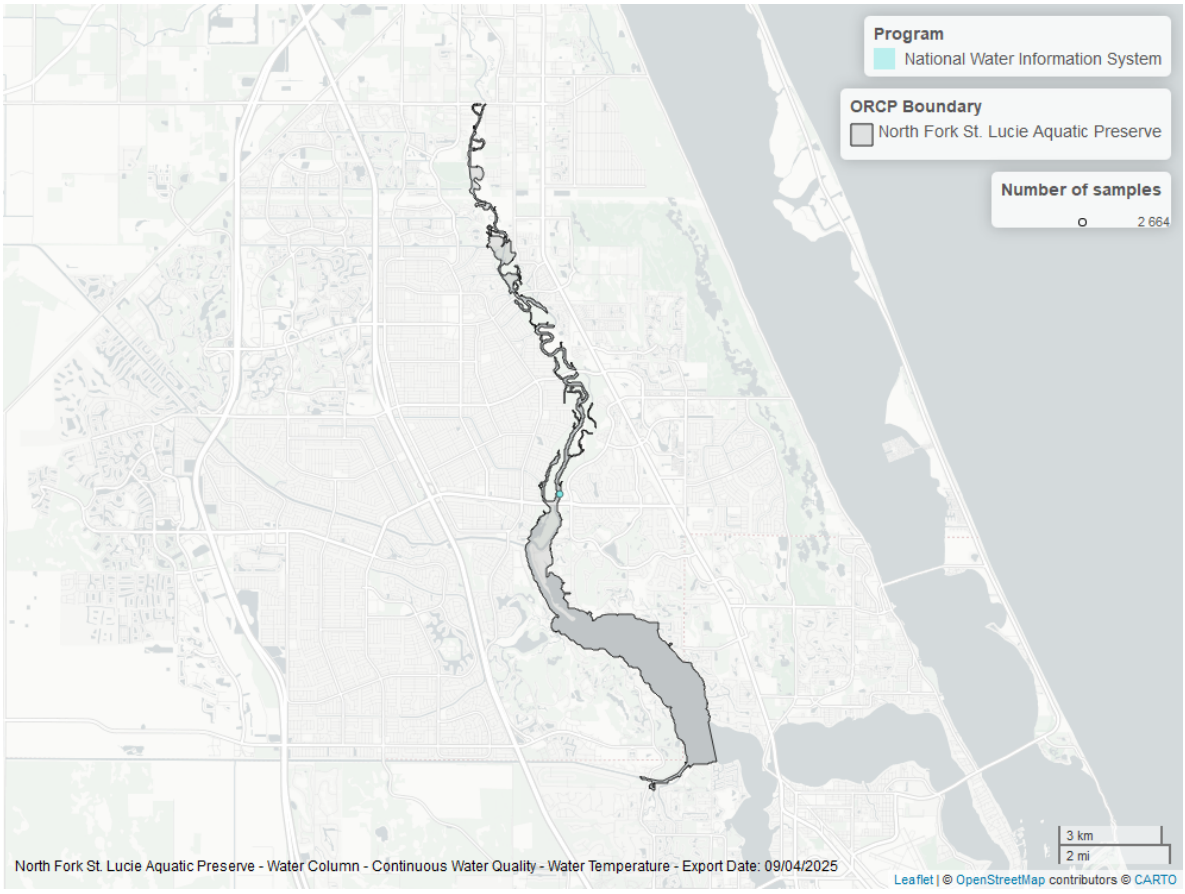

Figure 16: Map showing location of water temperature continuous water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

pH - Discrete

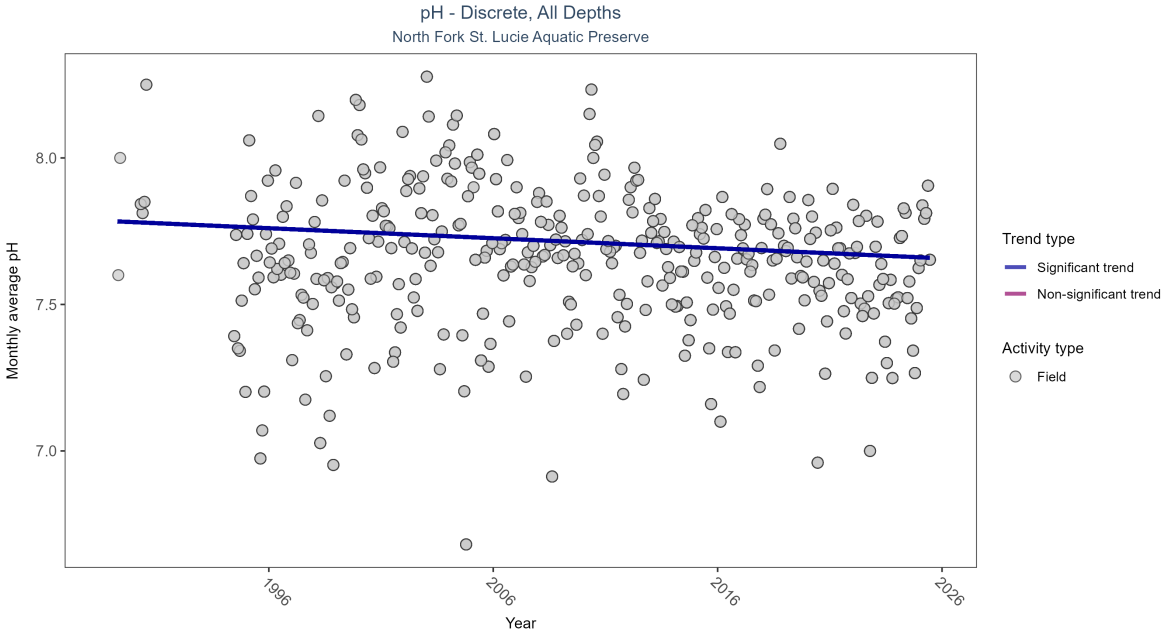

Figure 17: Scatter plot of monthly average pH over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only pH values measured in the field (circles) are included in the plot.

Table 9: Seasonal Kendall-Tau Results for - pH

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly decreasing trend	7519	34	1989 - 2025	7.63	-0.11064	7.78418	-0.00342	0.0023

Monthly average pH decreased by less than 0.01 pH units per year.

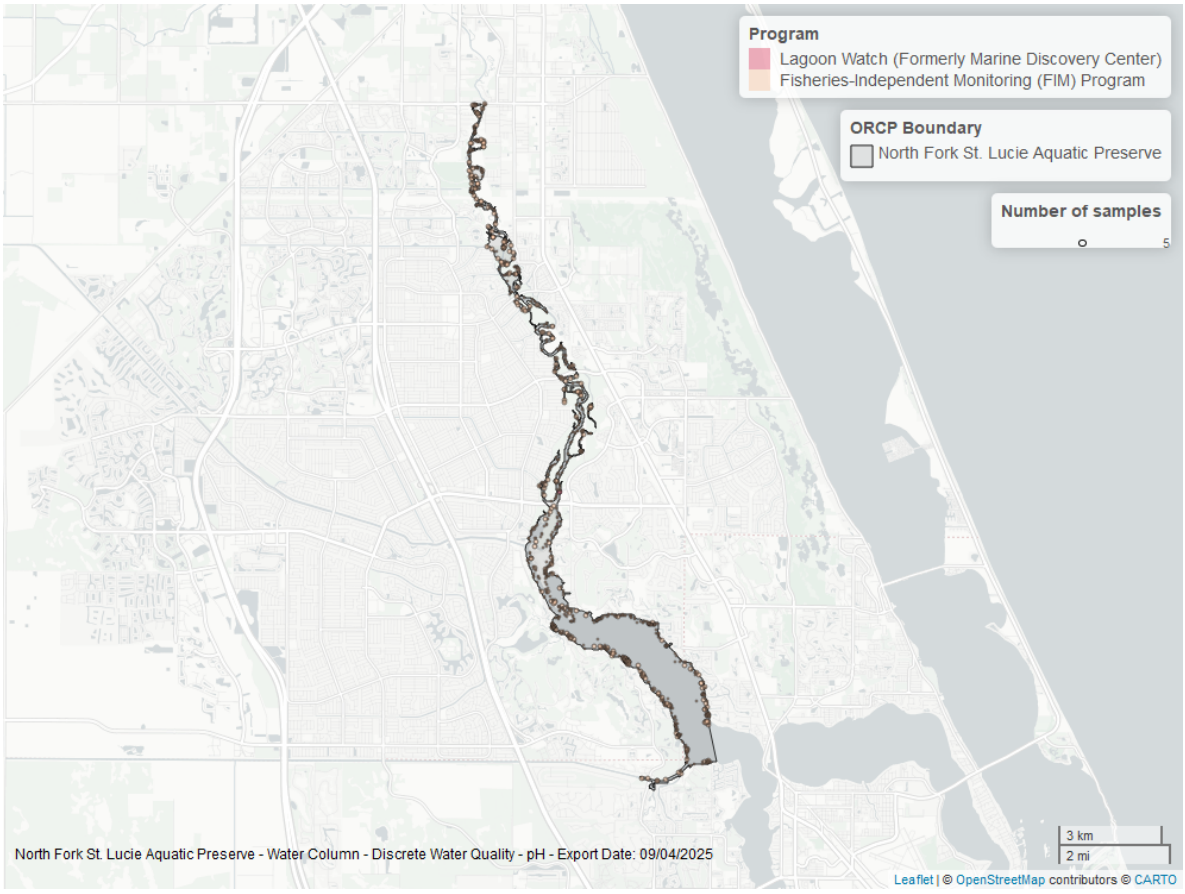

Figure 18: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Clarity

Turbidity - Discrete

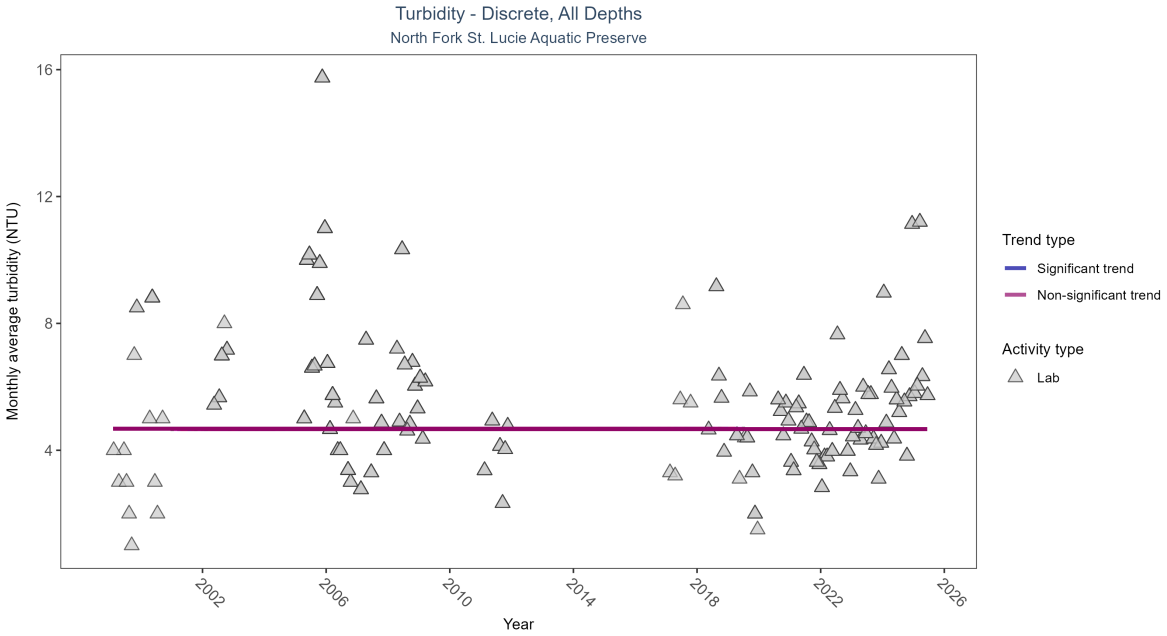

Figure 19: Scatter plot of monthly average turbidity over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only turbidity values measured in the laboratory (triangles) are included in the plot.

Table 10: Seasonal Kendall-Tau Results for - Turbidity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	574	18	1999 - 2025	5.1	0.012	4.67844	-0.00042	0.9515

Turbidity showed no detectable trend between 1999 and 2025.

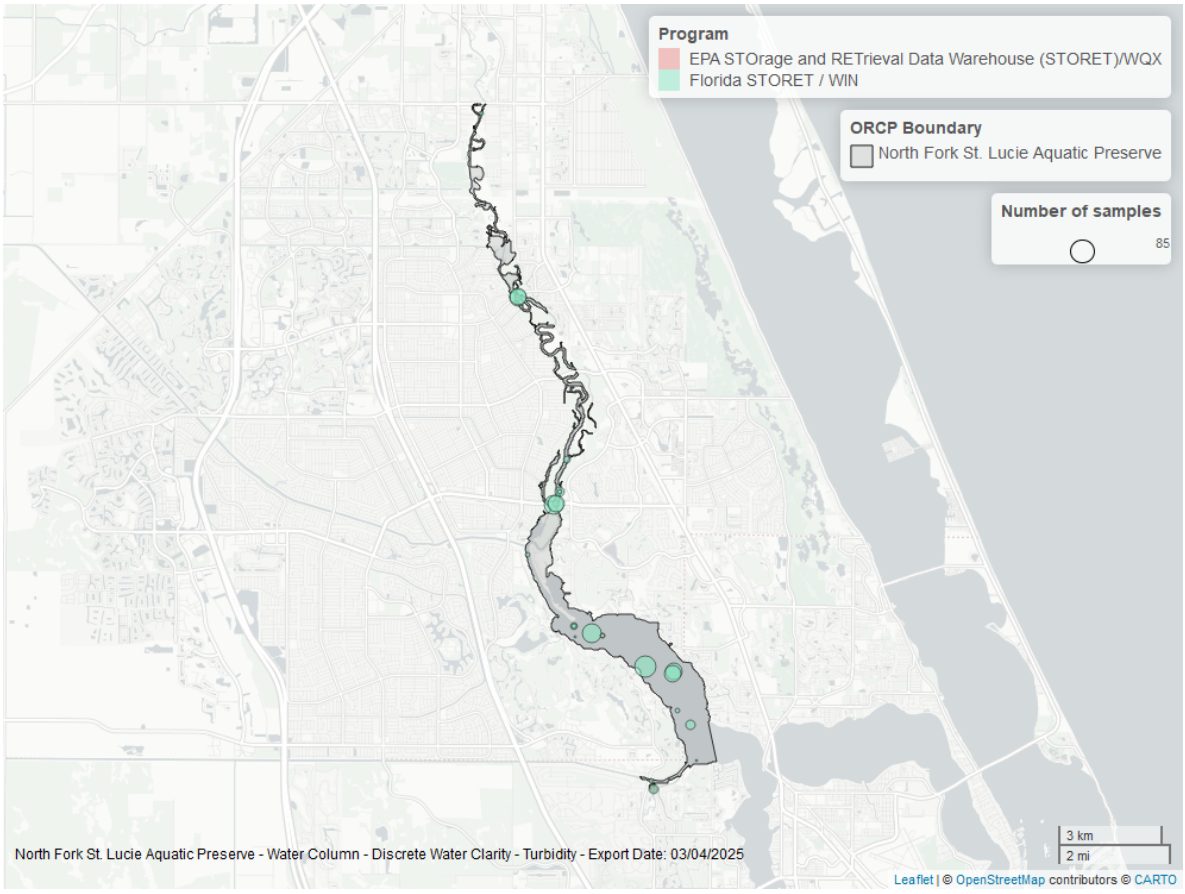

Figure 20: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Suspended Solids - Discrete

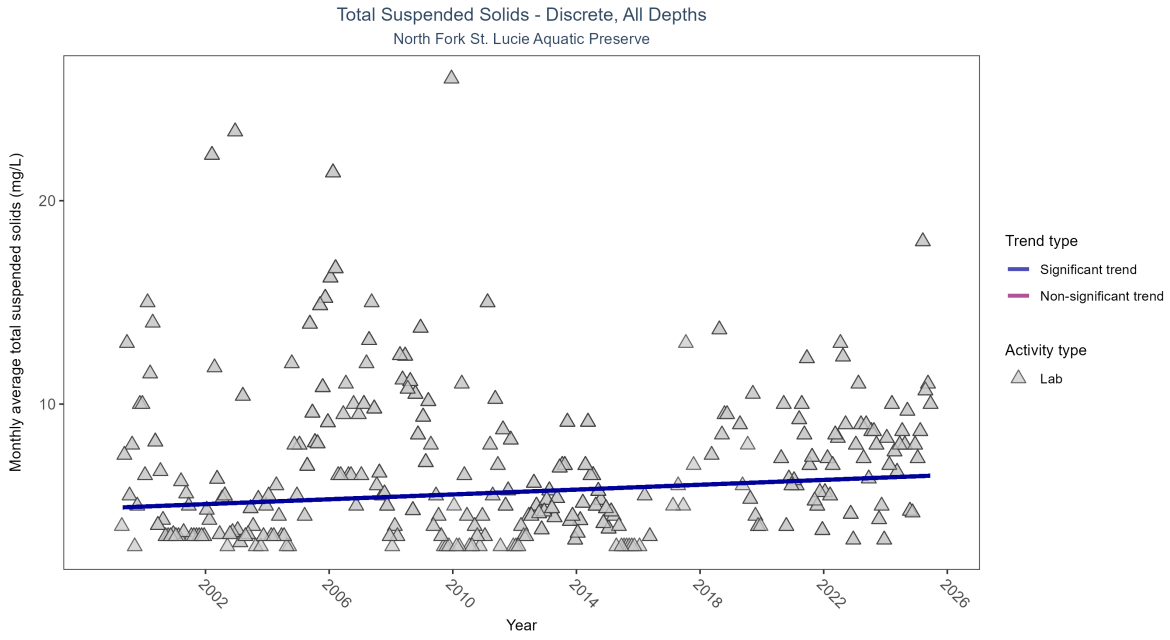

Figure 21: Scatter plot of monthly average total suspended solids (TSS) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only TSS values obtained from laboratory analyses (triangles) are included in the plot.

Table 11: Seasonal Kendall-Tau Results for - Total Suspended Solids

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly increasing trend	1064	27	1999 - 2025	6	0.11316	4.90195	0.05952	0.0076

Monthly average total suspended solids increased by 0.06 mg/L per year, indicating a decrease in water clarity.

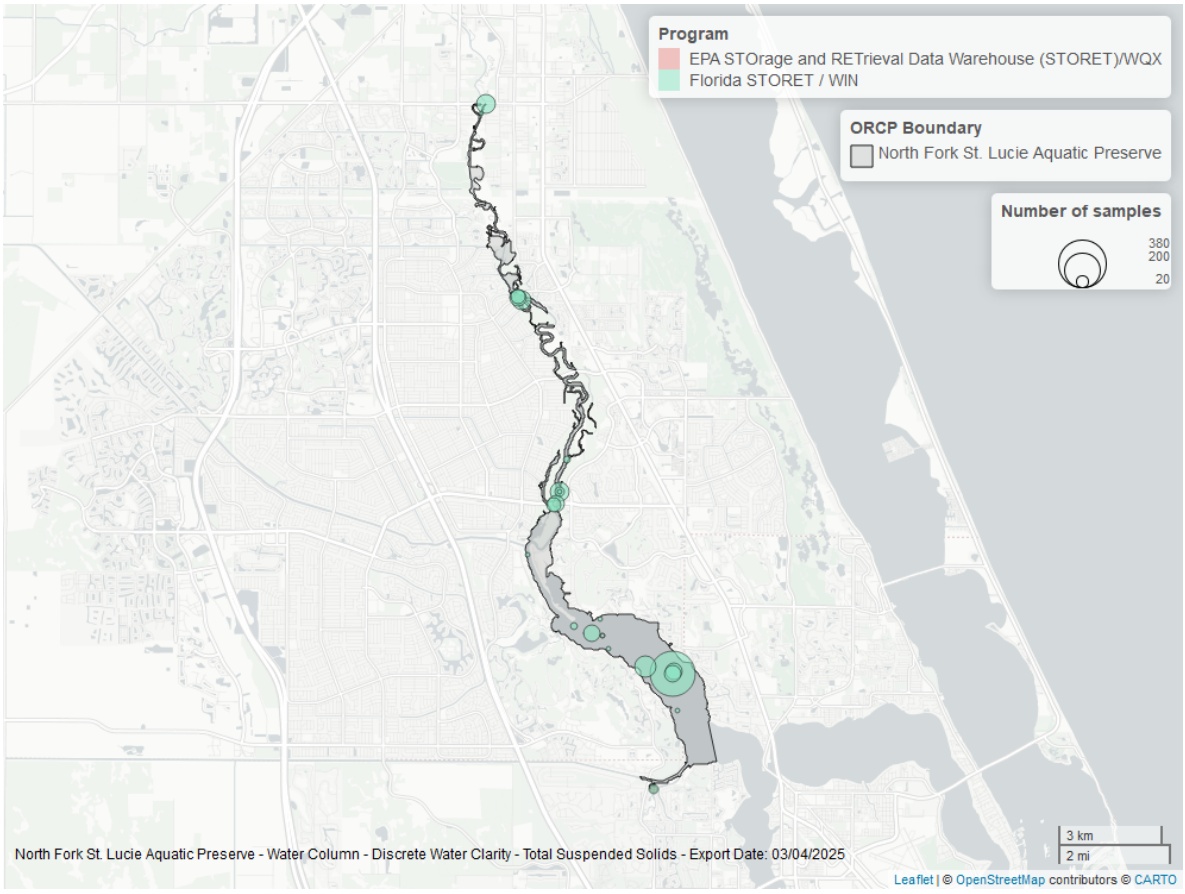

Figure 22: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Uncorrected for Pheophytin - Discrete

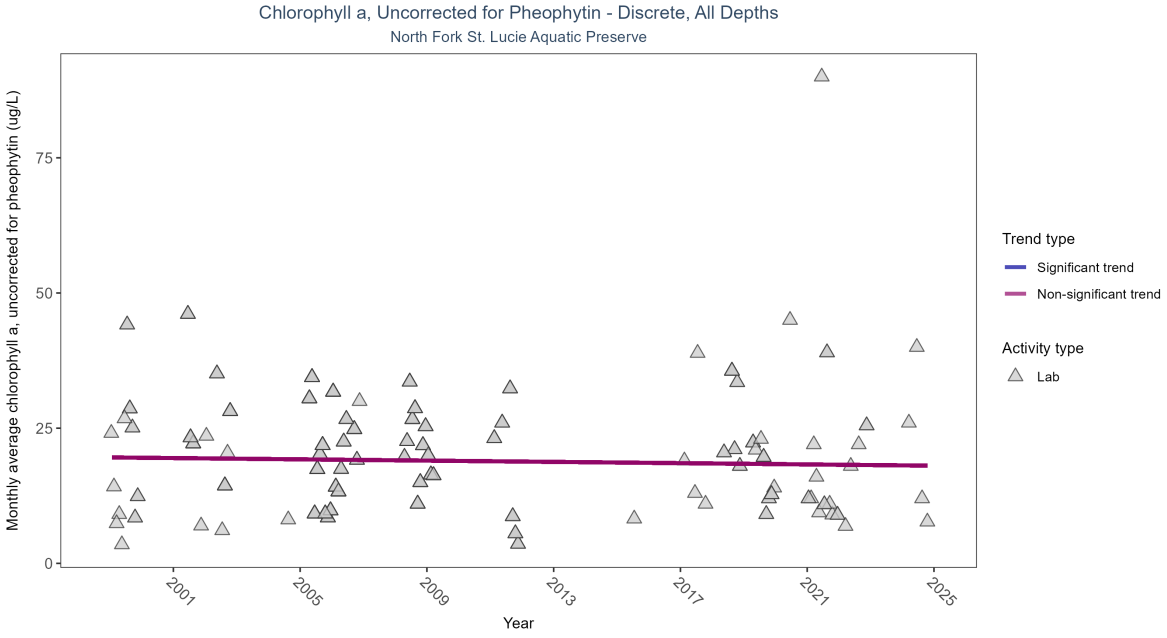

Figure 23: Scatter plot of monthly average levels of chlorophyll a, uncorrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) is included in the plot.

Table 12: Seasonal Kendall-Tau Results for - Chlorophyll a, Uncorrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	378	17	1999 - 2024	15.18	-0.07	19.59048	-0.05877	0.4435

Chlorophyll a, uncorrected for pheophytin, showed no detectable trend between 1999 and 2024.

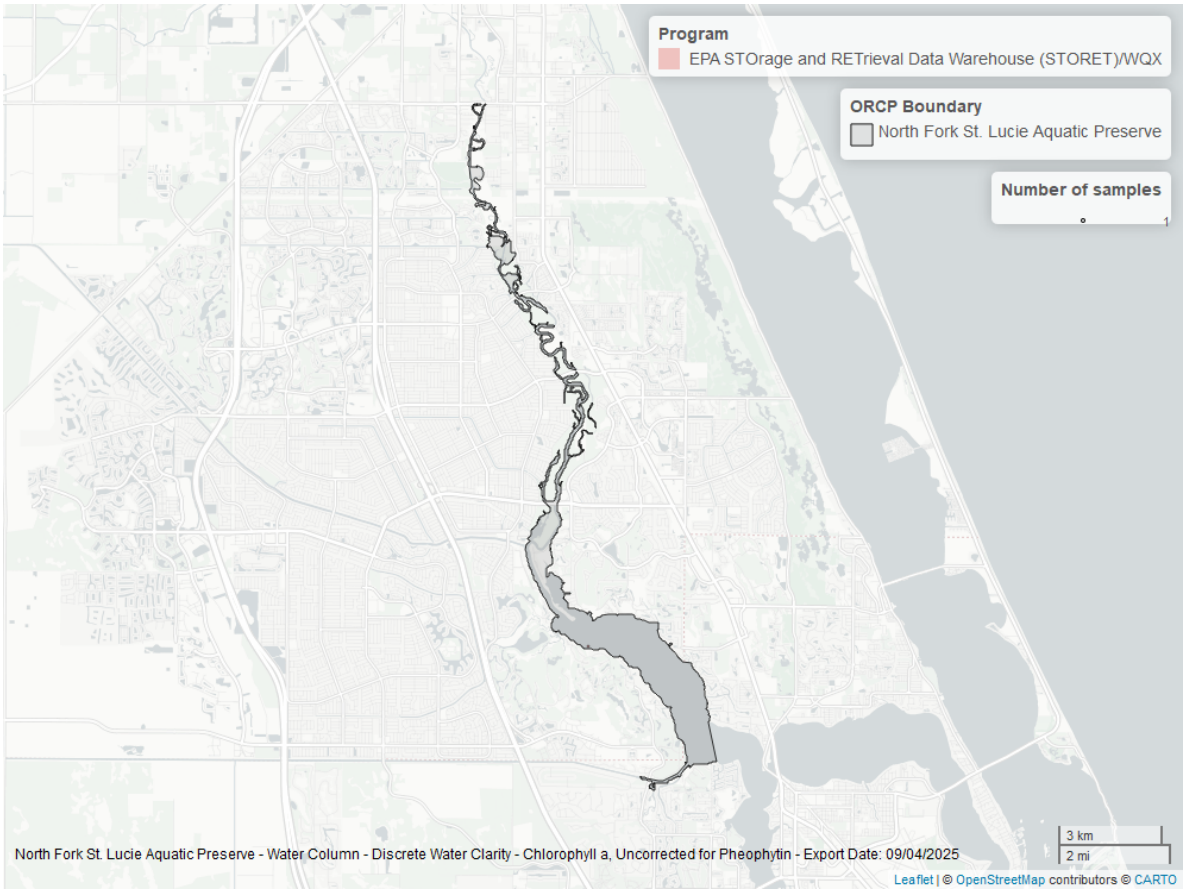

Figure 24: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Corrected for Pheophytin - Discrete

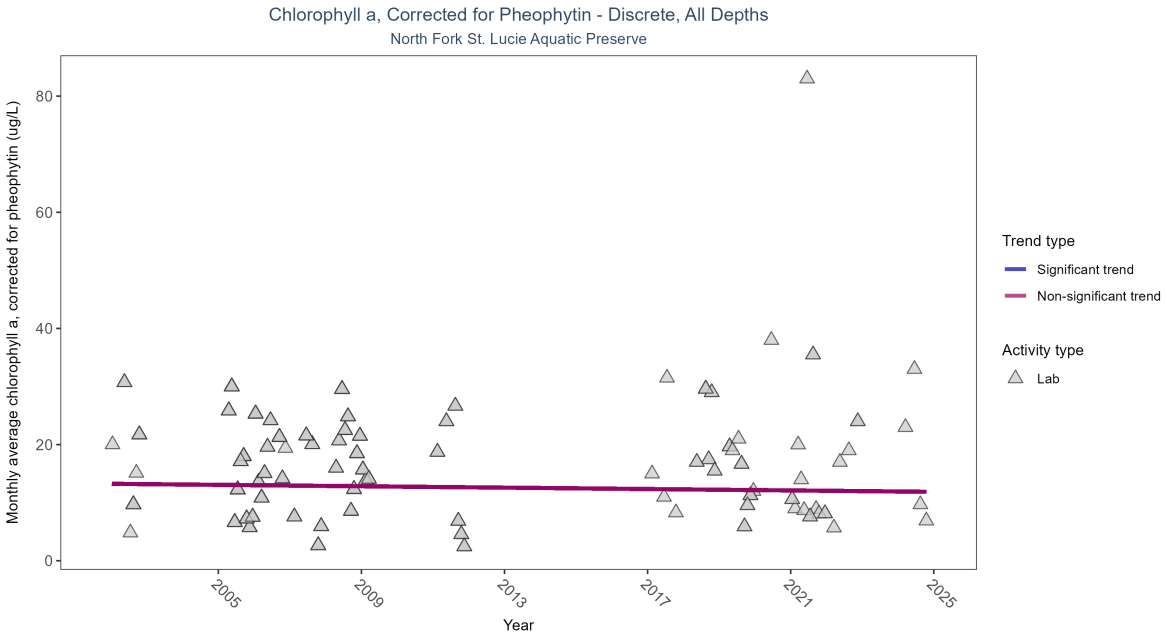

Figure 25: Scatter plot of monthly average levels of chlorophyll a, corrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) is included in the plot.

Table 13: Seasonal Kendall-Tau Results for - Chlorophyll a, Corrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	372	14	2002 - 2024	12	-0.03967	13.24892	-0.06	0.6464

Chlorophyll a, corrected for pheophytin, showed no detectable trend between 2002 and 2024.

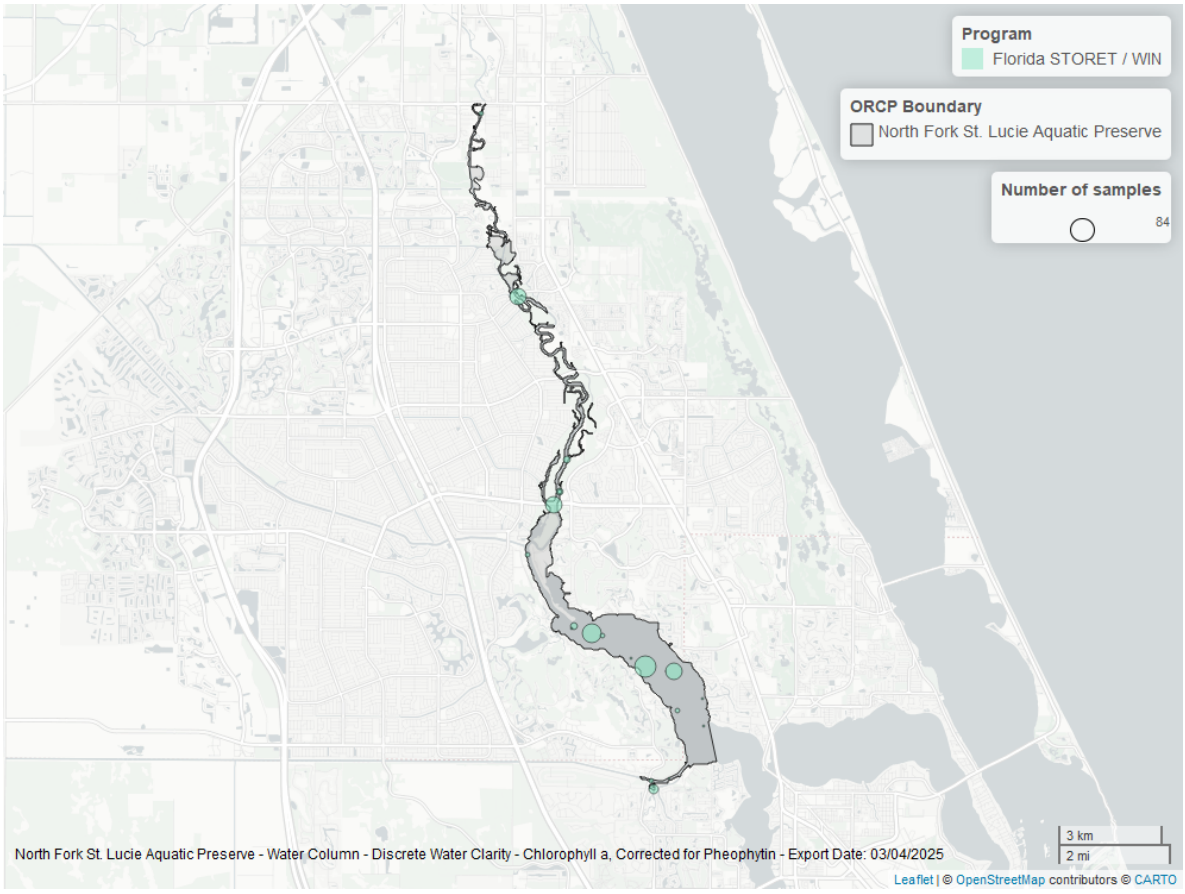

Figure 26: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Secchi Depth - Discrete

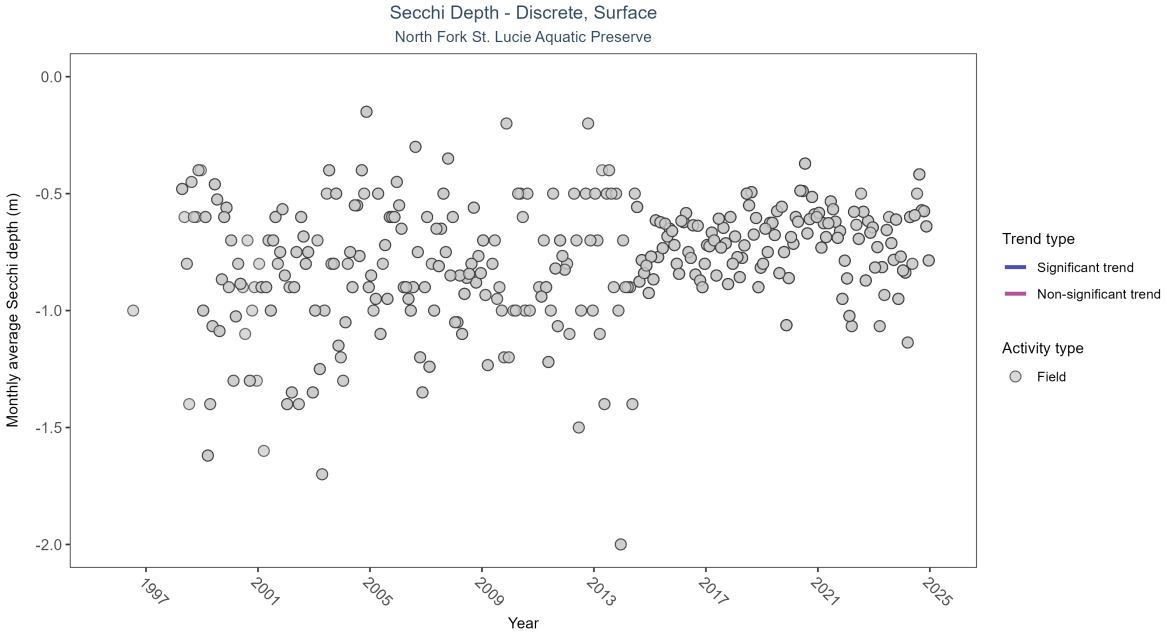

Figure 27: Scatter plot of monthly average Secchi depth over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Secchi depth is only measured in the field (circles).

Table 14: Seasonal Kendall-Tau Results for - Secchi Depth

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly increasing trend	2883	29	1996 - 2025	-0.7	0.14788	-0.84264	0.00556	2e-04

Monthly average Secchi depth became shallower by 0.01 m per year, indicating a decrease in water clarity.

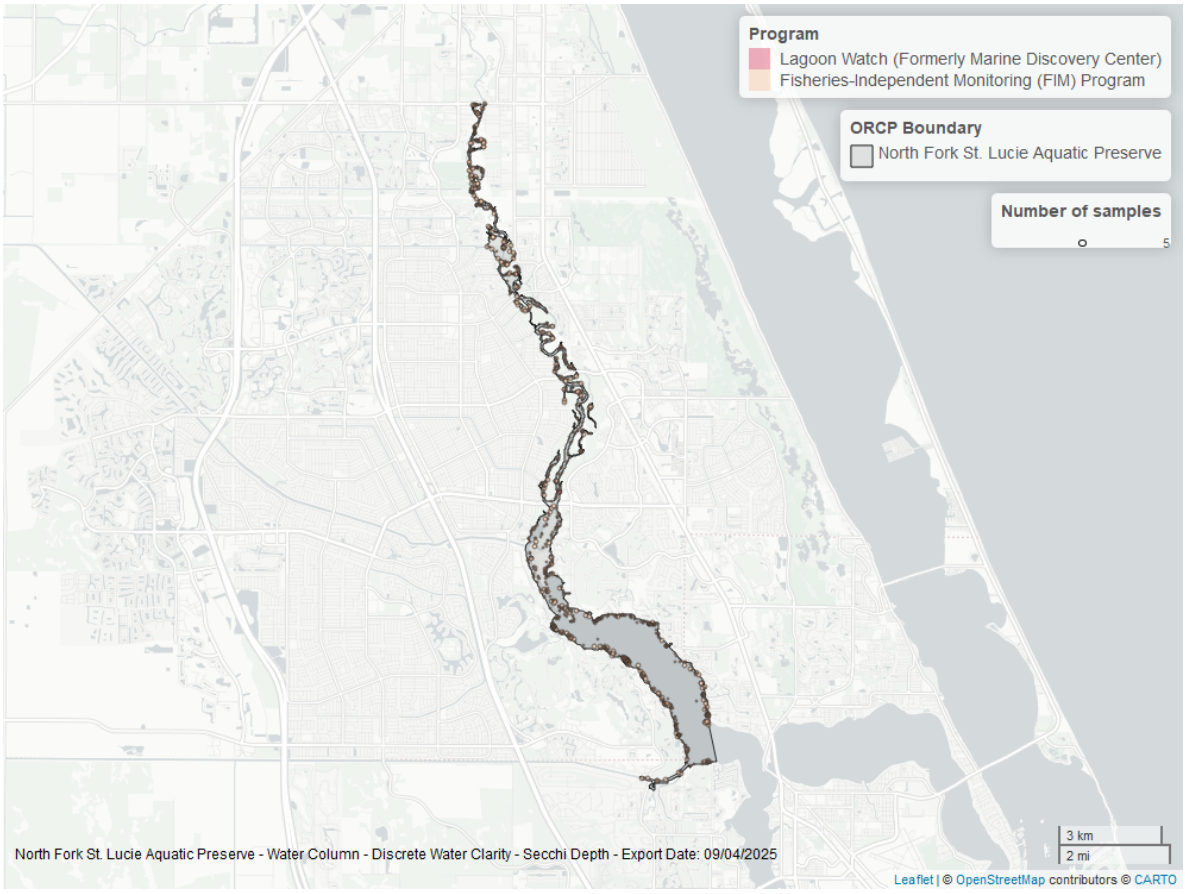

Figure 28: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Colored Dissolved Organic Matter - Discrete

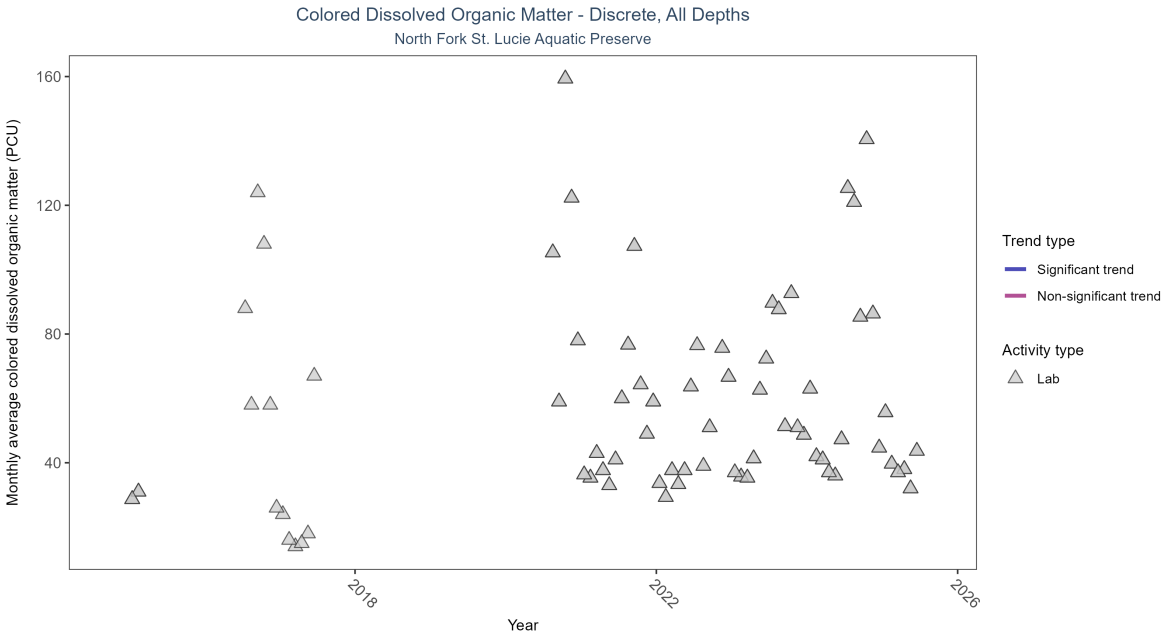

Figure 29: Scatter plot of monthly average colored dissolved organic matter (CDOM) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed CDOM (triangles) is included in the plot.

Table 15: Seasonal Kendall-Tau Results for - Colored Dissolved Organic Matter

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Insufficient data to calculate trend	193	9	2015 - 2025	48	-	-	-	-

There was insufficient data to fit a model for colored dissolved organic matter.

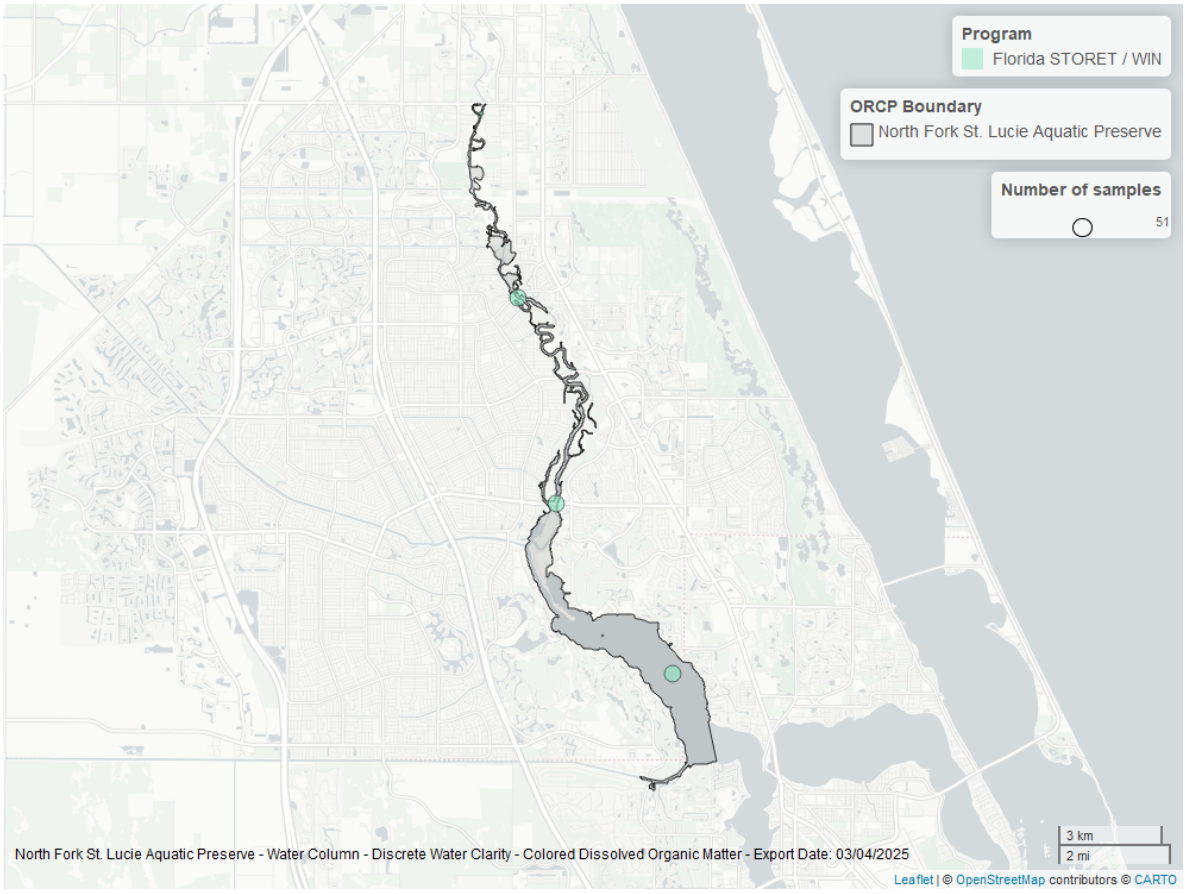

Figure 30: Map showing location of discrete water quality sampling locations within the boundaries of *North Fork St. Lucie Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.