Loxahatchee River-Lake Worth Creek Aquatic Preserve

SEACAR Water Quality Analysis

Last compiled on 30 September, 2025

Contents

Indicators

Nutrients

Total Nitrogen - Discrete

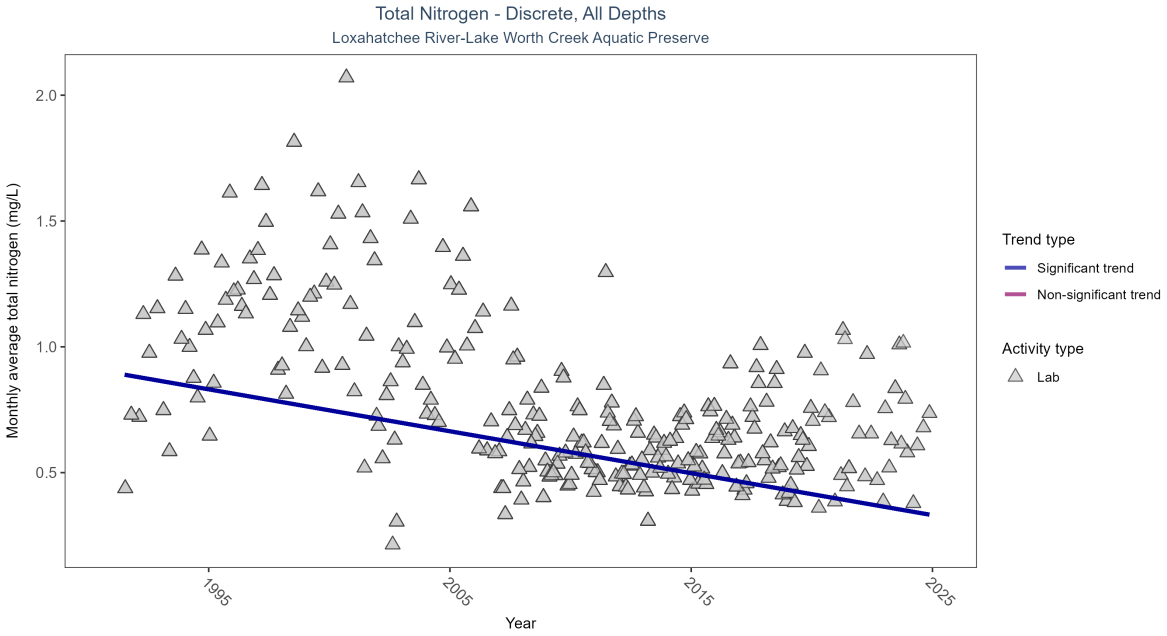

Figure 1: Scatter plot of monthly average total nitrogen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only nitrogen values obtained from laboratory analyses (triangles) are included in the 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	Significantly decreasing trend	4771	34	1991 - 2024	0.706	-0.27413	0.89775	-0.01667	0

Monthly average total nitrogen decreased by 0.02 mg/L per year.

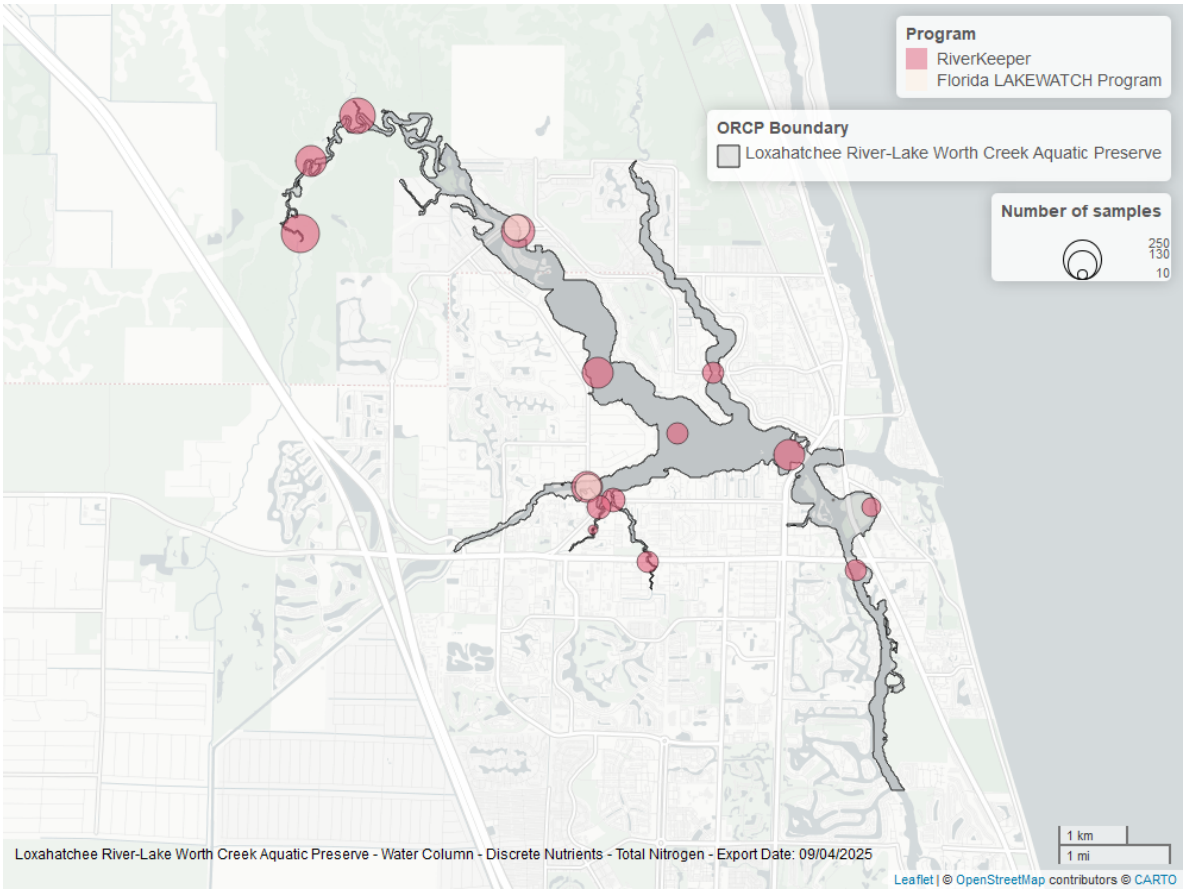

Figure 2: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Phosphorus - Discrete

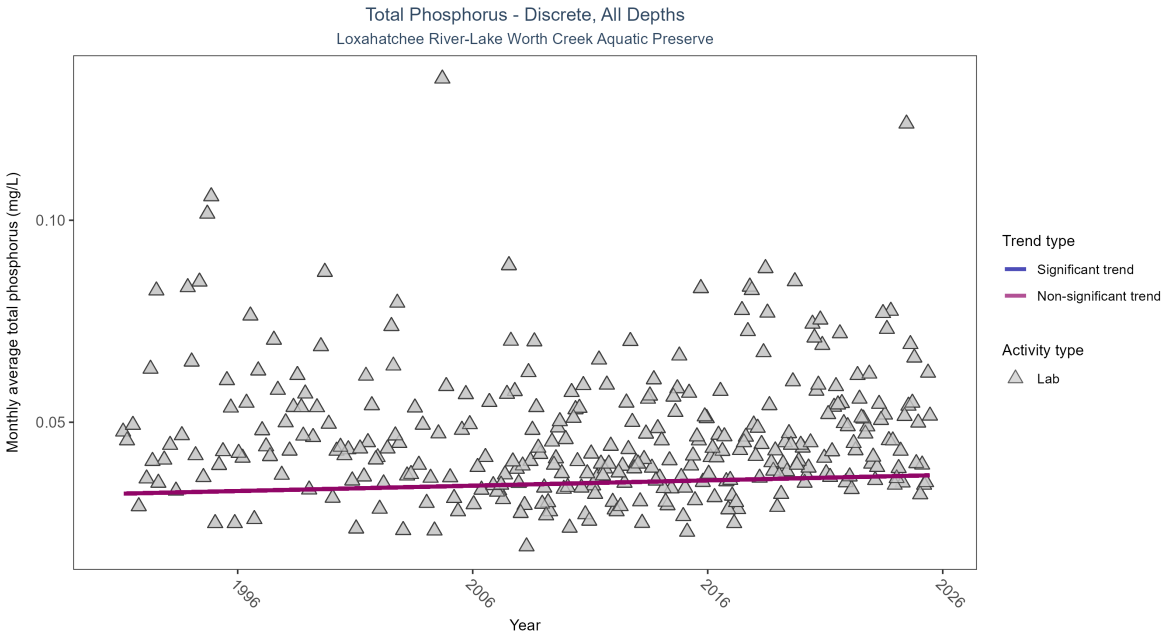

Figure 3: Scatter plot of monthly average total phosphorus over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only phosphorus values obtained from laboratory analyses (triangles) are included in 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	No significant trend	6692	35	1991 - 2025	0.042	0.08371	0.03232	0.00013	0.1088

Total phosphorus showed no detectable trend between 1991 and 2025.

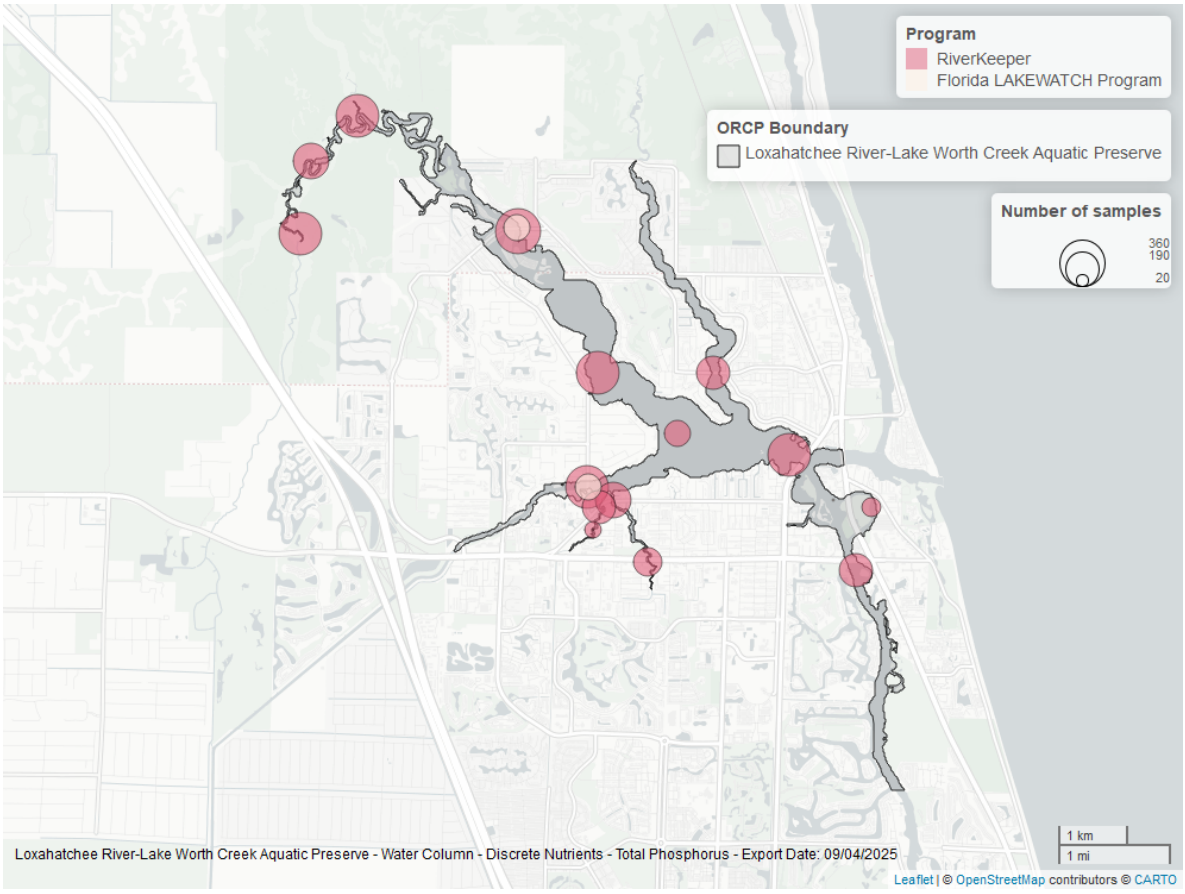

Figure 4: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Quality

Dissolved Oxygen - Discrete

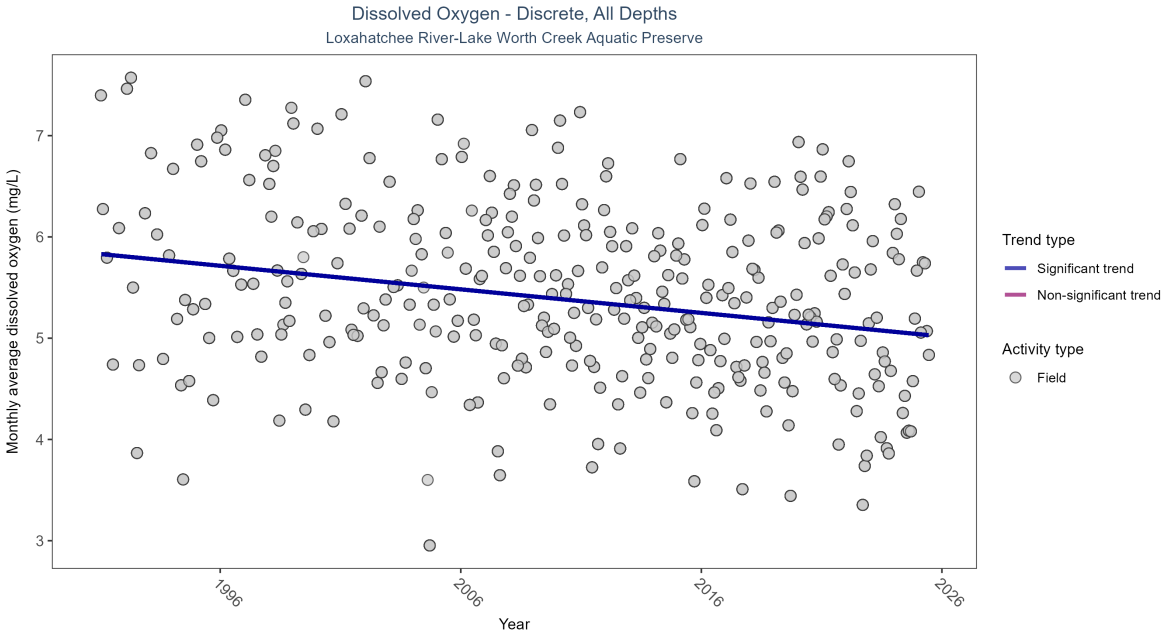

Figure 5: Scatter plot of monthly average dissolved oxygen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen values measured in the field (circles) are included in the plot.

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	13060	35	1991 - 2025	5.6	-0.26119	5.83131	-0.02327	0

Monthly average dissolved oxygen decreased by 0.02 mg/L per year.

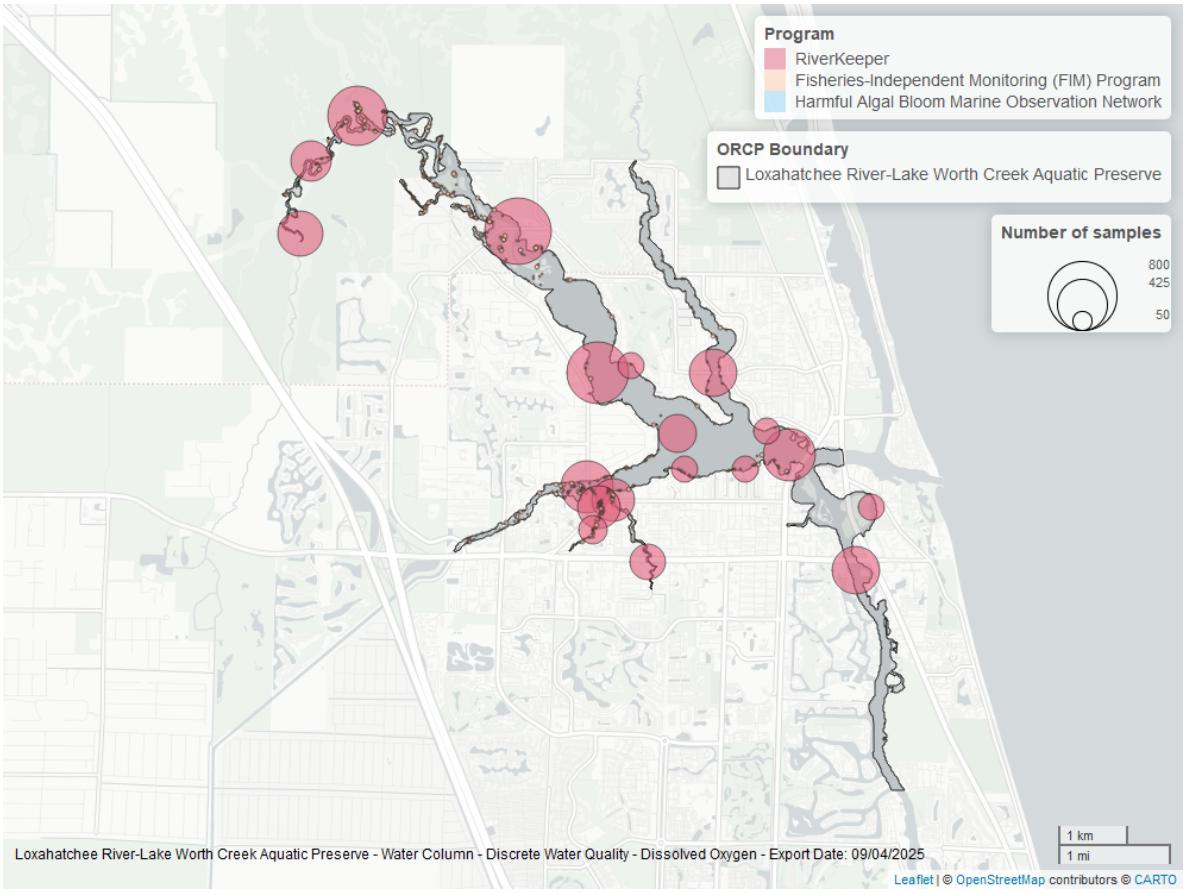

Figure 6: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Dissolved Oxygen Saturation - Discrete

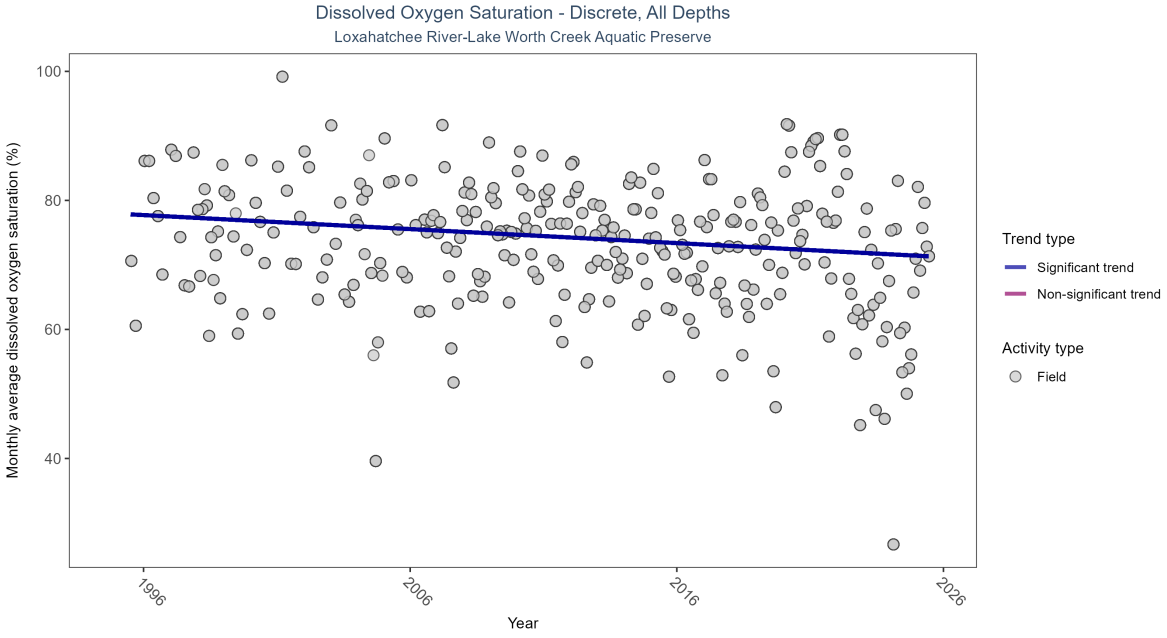

Figure 7: Scatter plot of monthly average dissolved oxygen saturation over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen saturation values measured in the field (circles) 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	Significantly decreasing trend	11076	31	1995 - 2025	76.1	-0.15507	77.94169	-0.21707	1e-04

Monthly average dissolved oxygen saturation decreased by 0.22% per year.

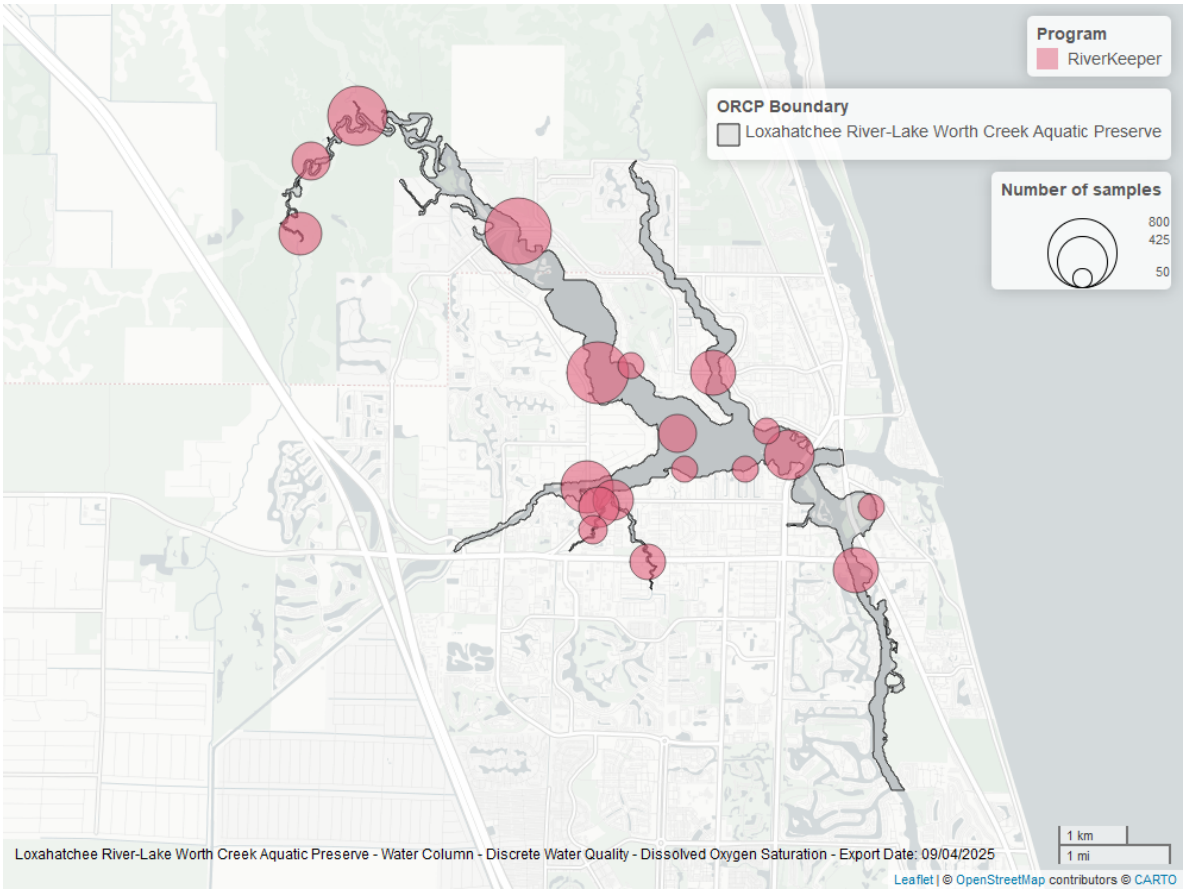

Figure 8: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Discrete

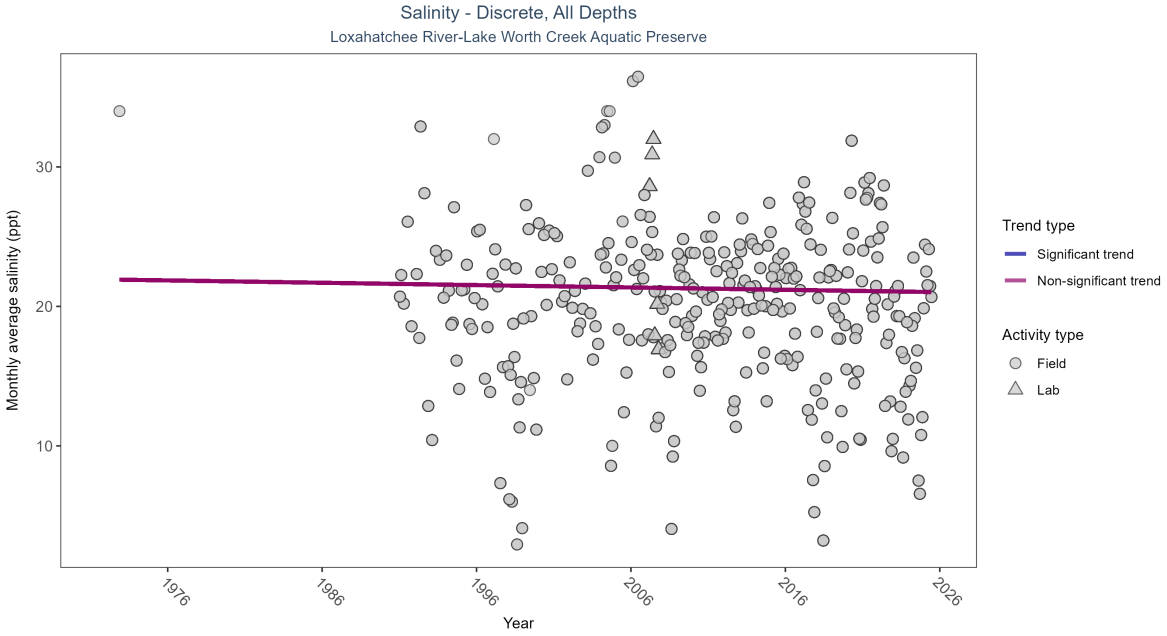

Figure 9: Scatter plot of monthly average salinity over time. If the time series included ten or more years of discrete observations, significant (blue) or non-significant (magenta) trend lines are also shown. Discrete salinity values derived from grab samples analyzed in the field (circles) or the laboratory (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	No significant trend	12160	36	1972 - 2025	24.5	-0.02242	21.93032	-0.01682	0.6149

Salinity showed no detectable trend between 1972 and 2025.

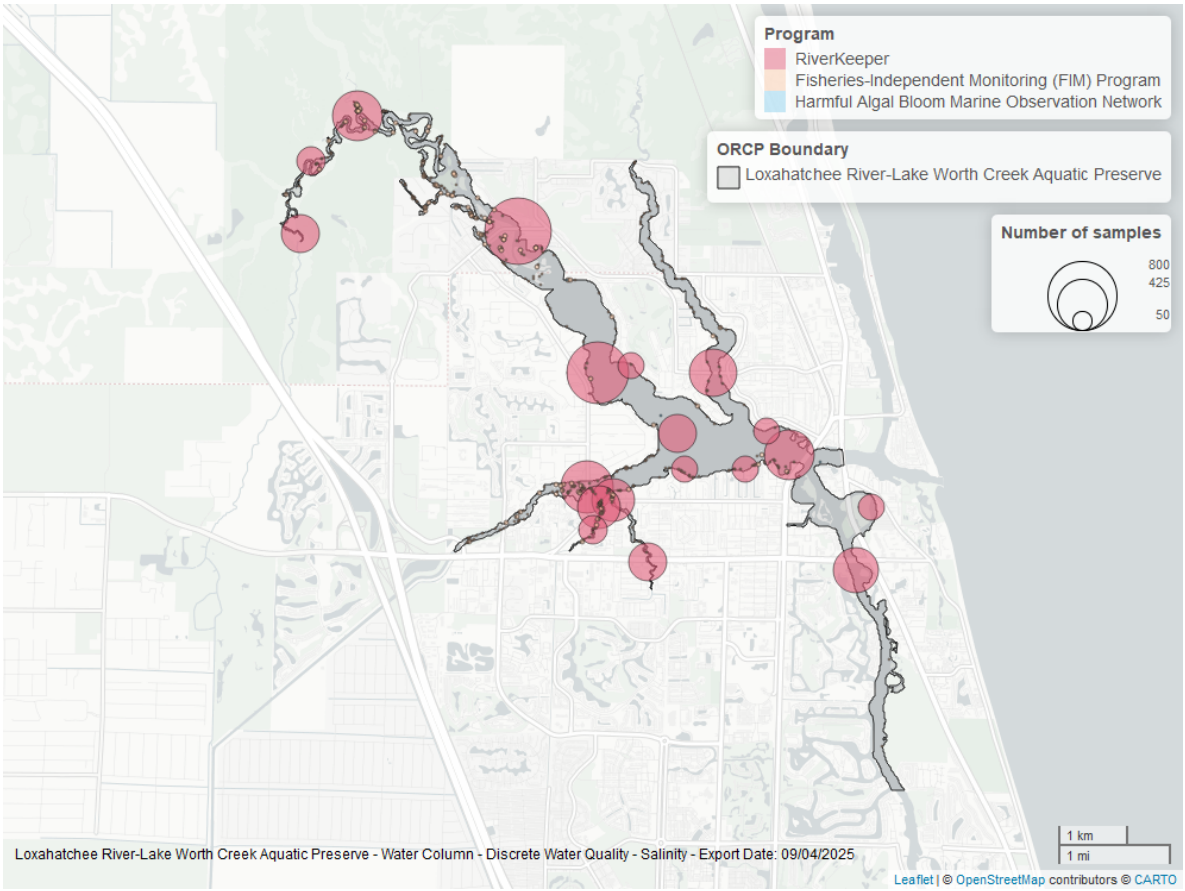

Figure 10: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Continuous

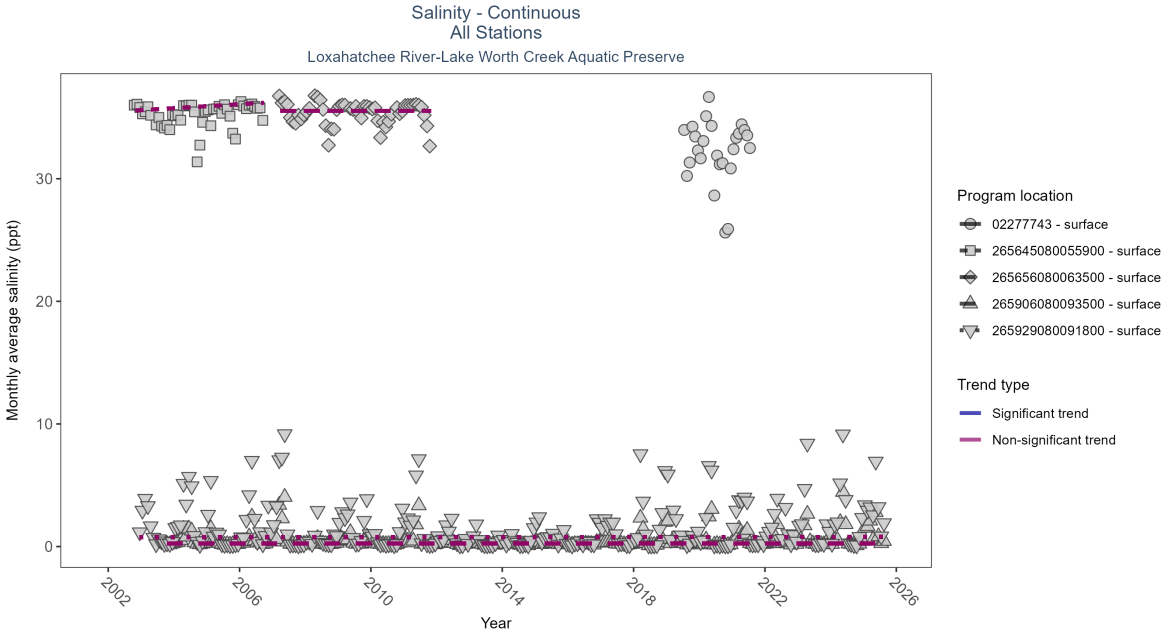

Figure 11: Scatter plot of monthly average salinity over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

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
265906080093500	No significant trend	9312	23	2003 - 2025	0.3	0.03	0.25	0	0.4913
02277743	Insufficient data to calculate trend	1144	3	2019 - 2021	32.0	-	-	-	-
265929080091800	No significant trend	8103	24	2002 - 2025	0.4	0.02	0.76	0	0.6274
265656080063500	No significant trend	2046	5	2007 - 2011	36.0	0.01	35.53	0	1
265645080055900	No significant trend	1354	5	2002 - 2006	36.0	0.22	35.43	0.16	0.1594

No detectable change in monthly average salinity was observed at four locations. There was insufficient data to fit a model for one location.

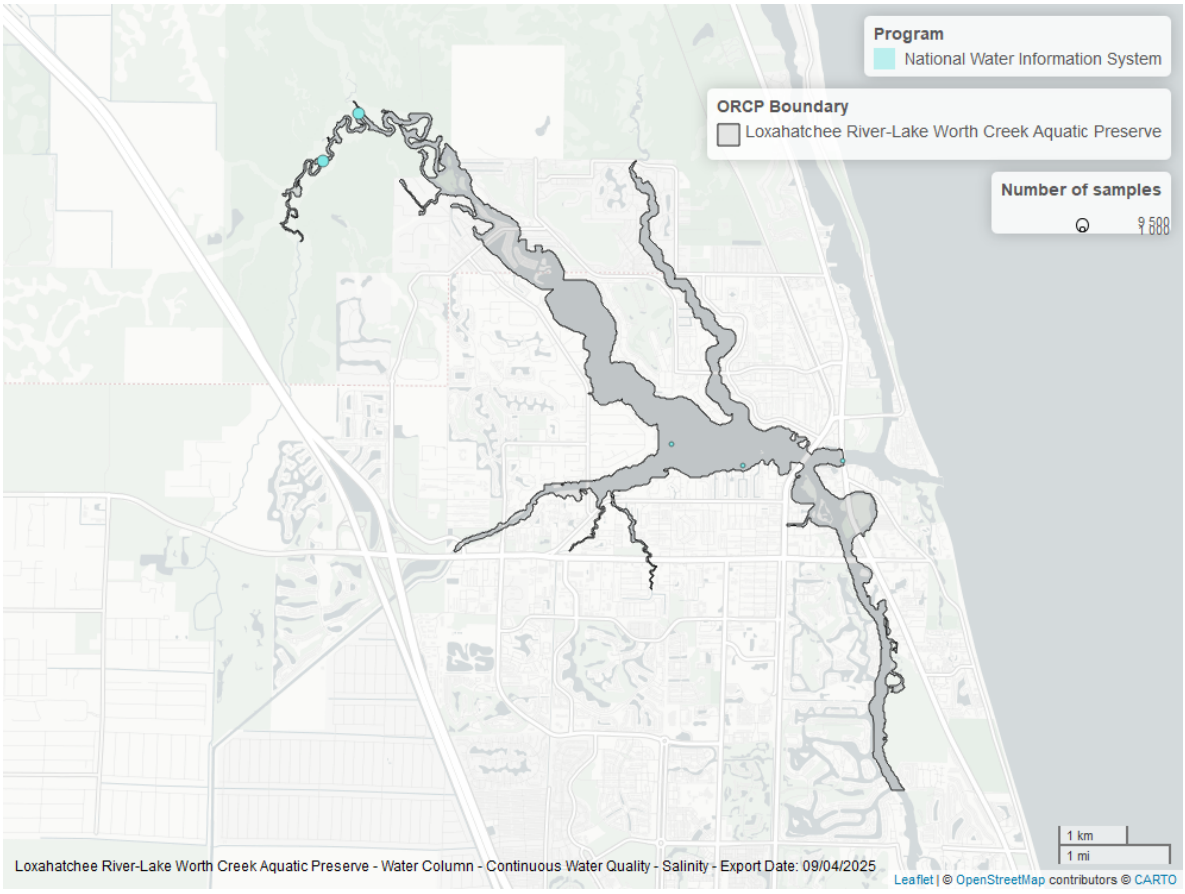

Figure 12: Map showing location of salinity continuous water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Discrete

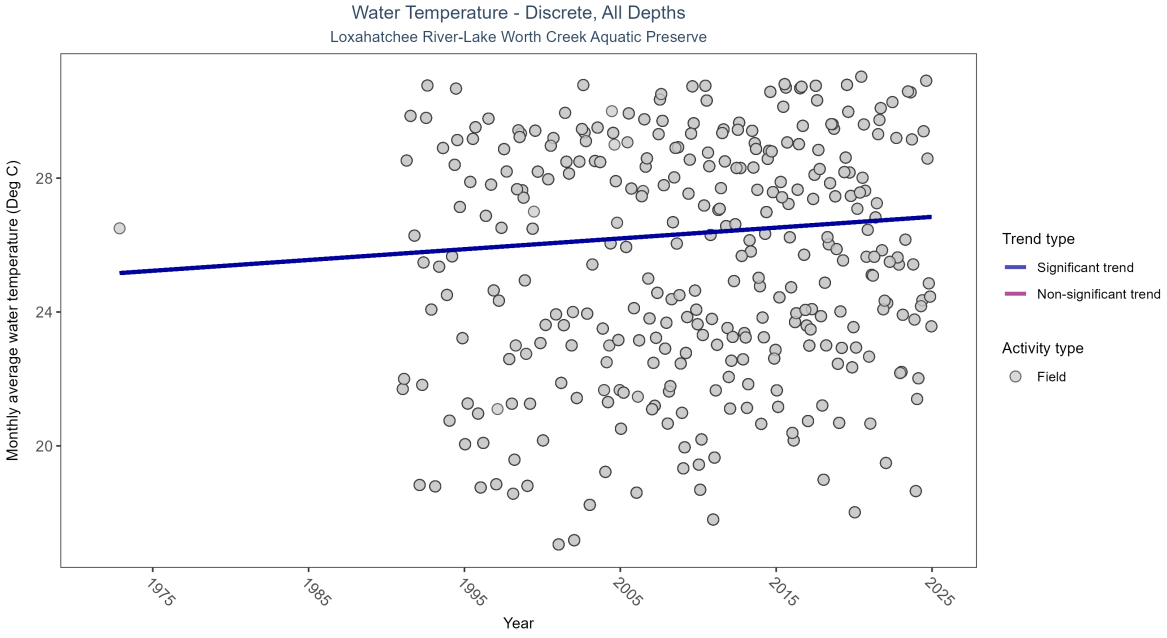

Figure 13: Scatter plot of monthly average water temperature over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only water temperature measurements taken in the field (circles) are included in 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	10839	35	1972 - 2024	25.6	0.1487	25.13528	0.03221	2e-04

Monthly average water temperature increased by 0.03°C per year.

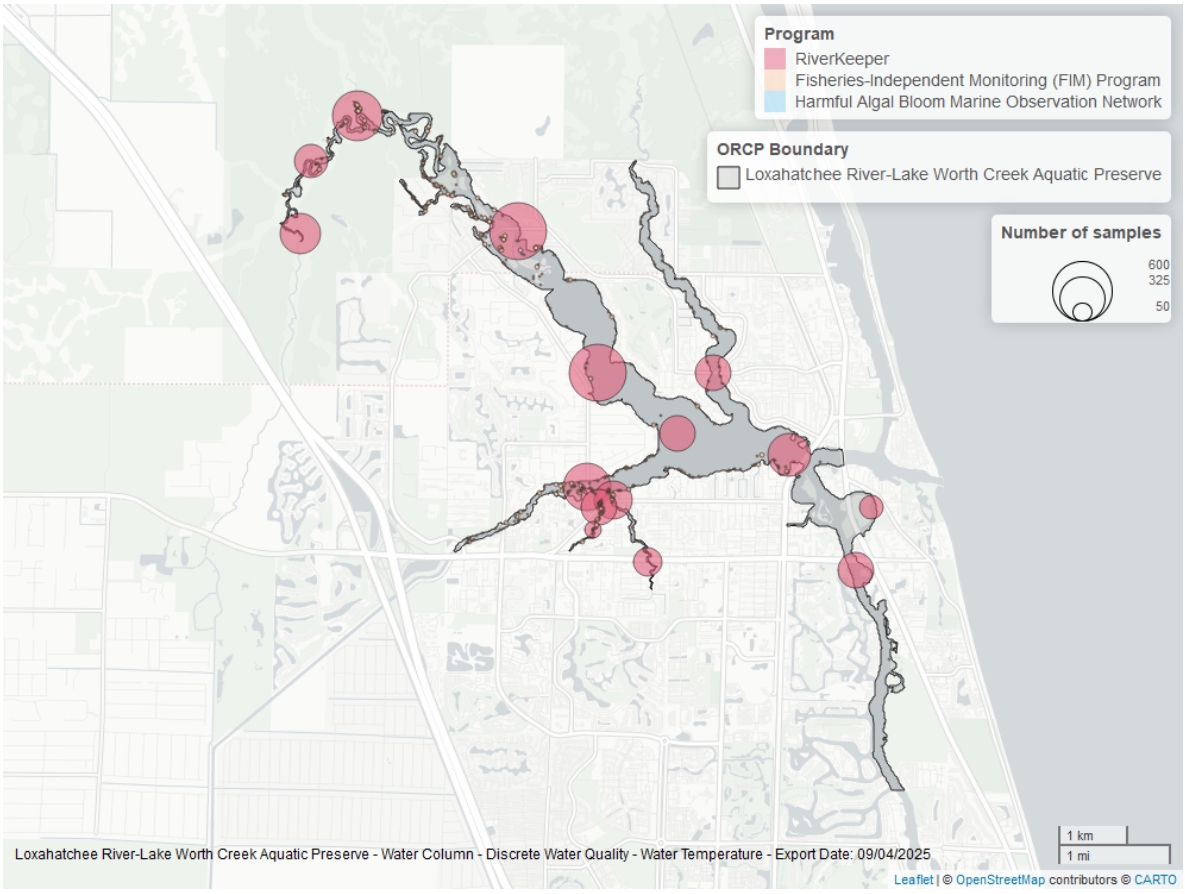

Figure 14: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Continuous

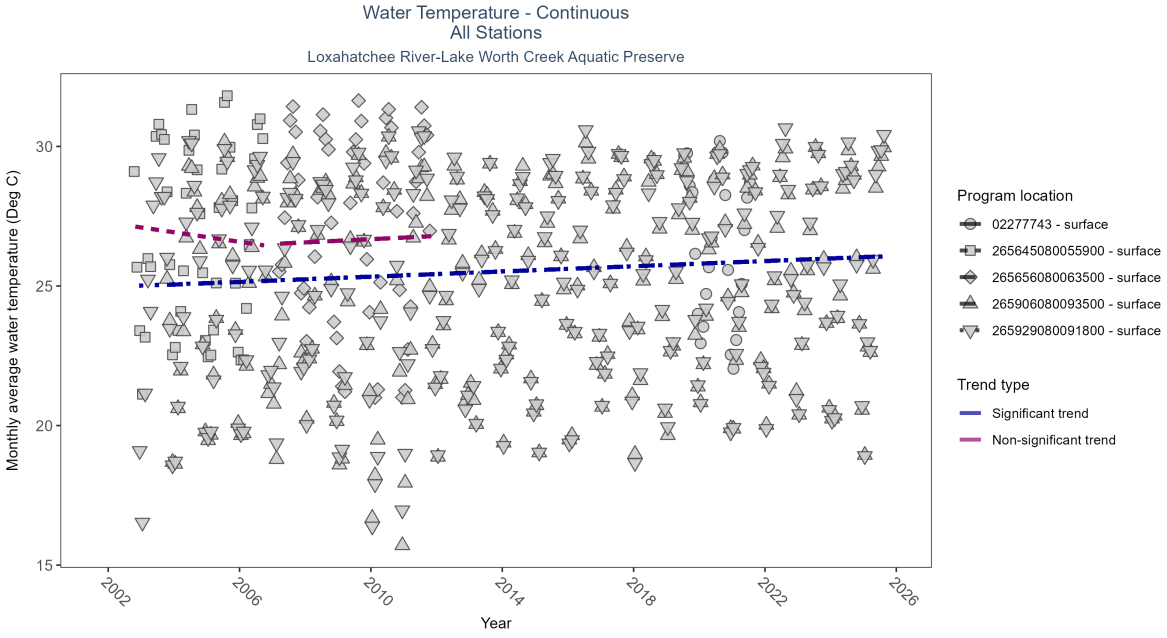

Figure 15: Scatter plot of monthly average water temperature over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

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
265929080091800	Significantly increasing trend	8122	24	2002 - 2025	25.8	0.25	24.97	0.05	0
265906080093500	Significantly increasing trend	12333	23	2003 - 2025	25.7	0.29	25	0.05	0
02277743	Insufficient data to calculate trend	1122	3	2019 - 2021	26.3	-	-	-	-
265645080055900	No significant trend	1354	5	2002 - 2006	26.6	-0.29	27.27	-0.17	0.0704
265656080063500	No significant trend	2664	5	2007 - 2011	27.6	0.08	26.5	0.06	0.4533

At two program locations, monthly average water temperature increased by 0.05°C per year. No detectable change in monthly average water temperature was observed at two locations. There was insufficient data to fit a model for one location.

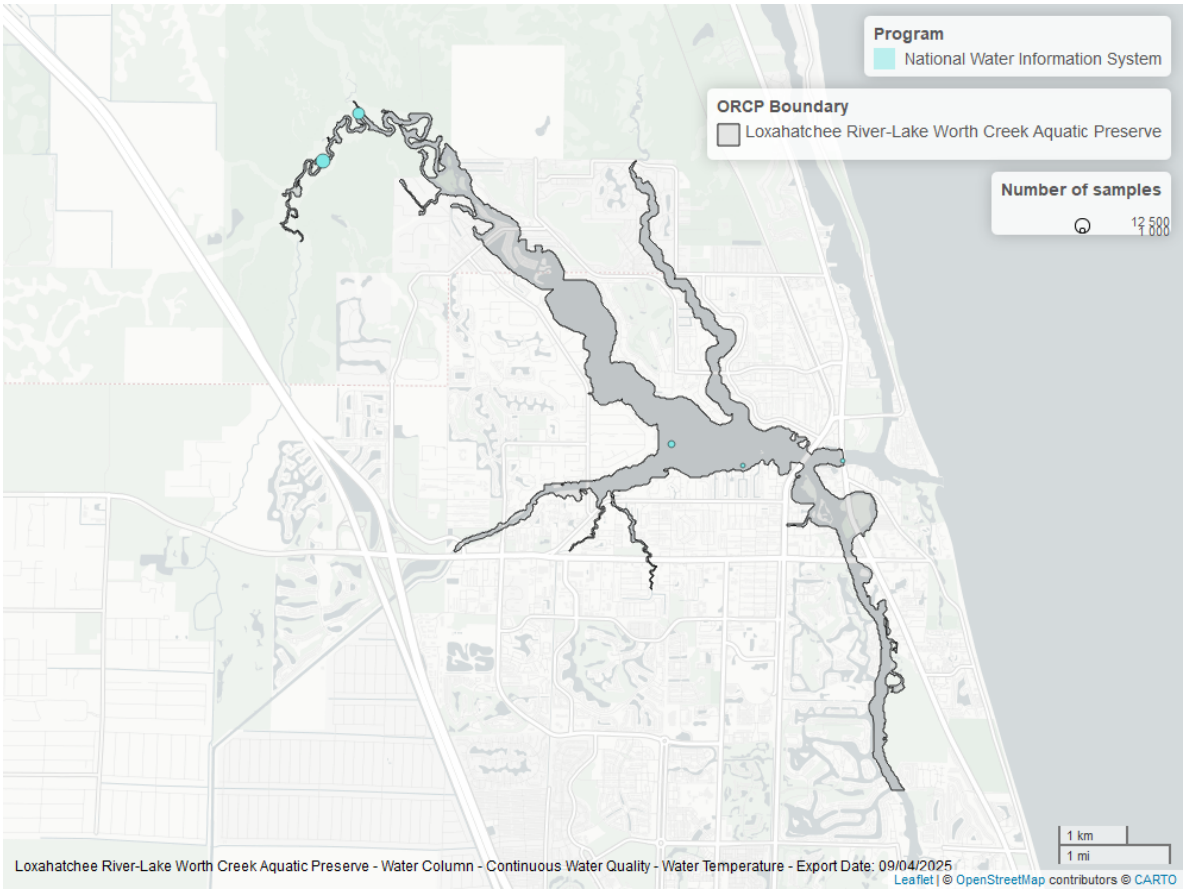

Figure 16: Map showing location of water temperature continuous water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

pH - Discrete

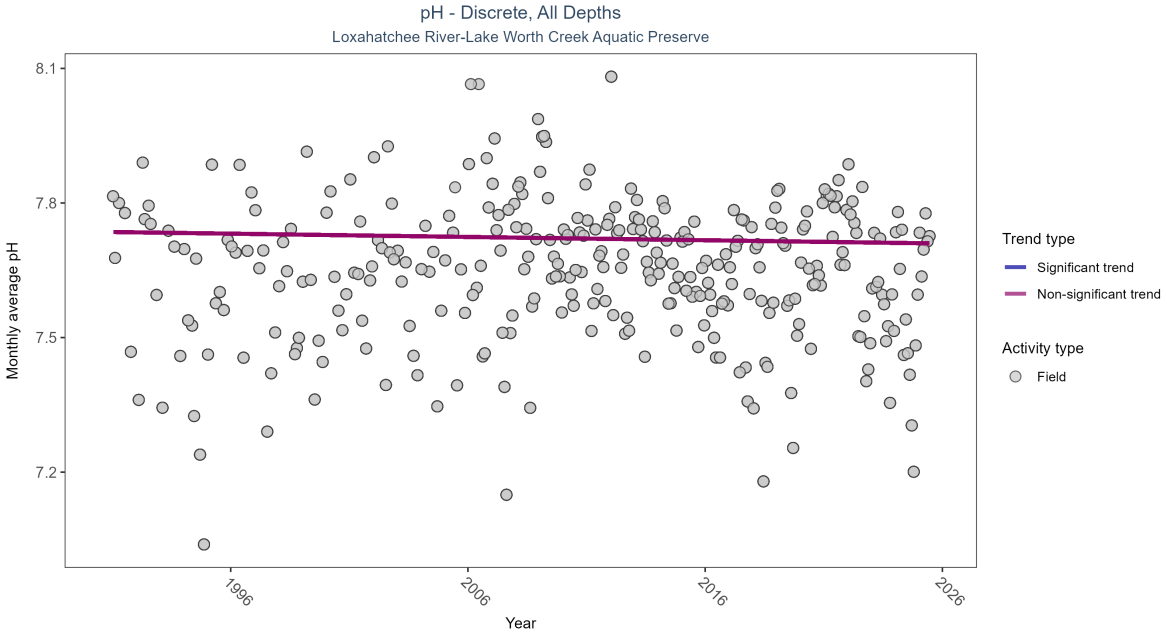

Figure 17: Scatter plot of monthly average pH over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only pH values measured in the field (circles) are included in the plot.

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	No significant trend	12766	35	1991 - 2025	7.7	-0.04998	7.73528	-0.00073	0.431

pH showed no detectable trend between 1991 and 2025.

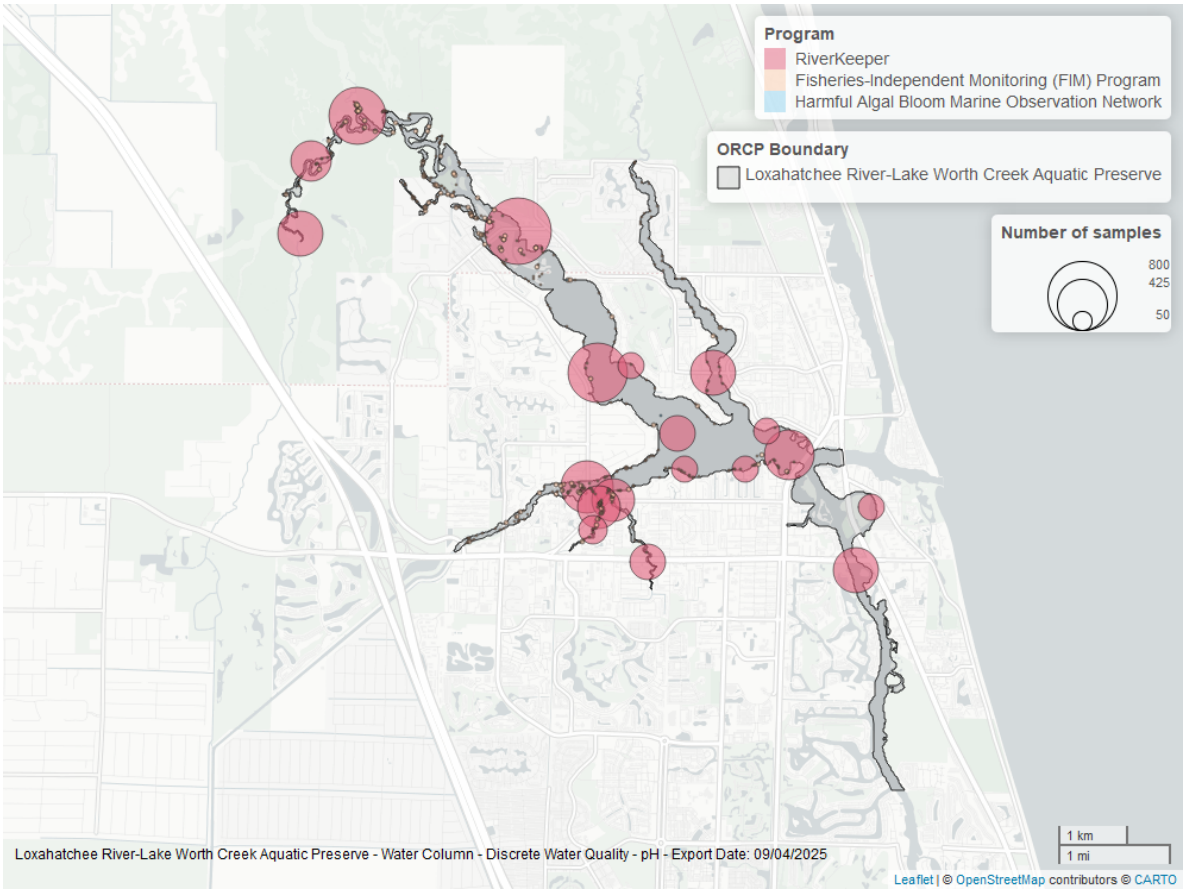

Figure 18: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Clarity

Turbidity - Discrete

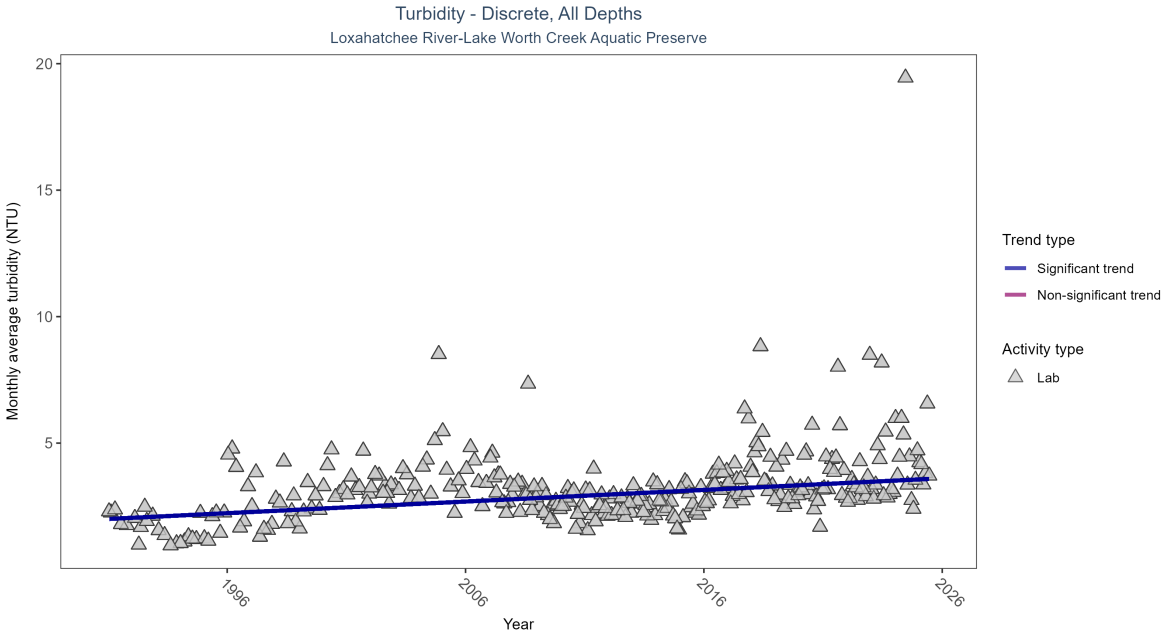

Figure 19: Scatter plot of monthly average turbidity over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only turbidity values measured in the laboratory (triangles) are included in the plot.

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	Significantly increasing trend	6568	35	1991 - 2025	2.7	0.32926	2.00023	0.04596	0

Monthly average turbidity increased by 0.05 NTU per year, indicating a decrease in water clarity.

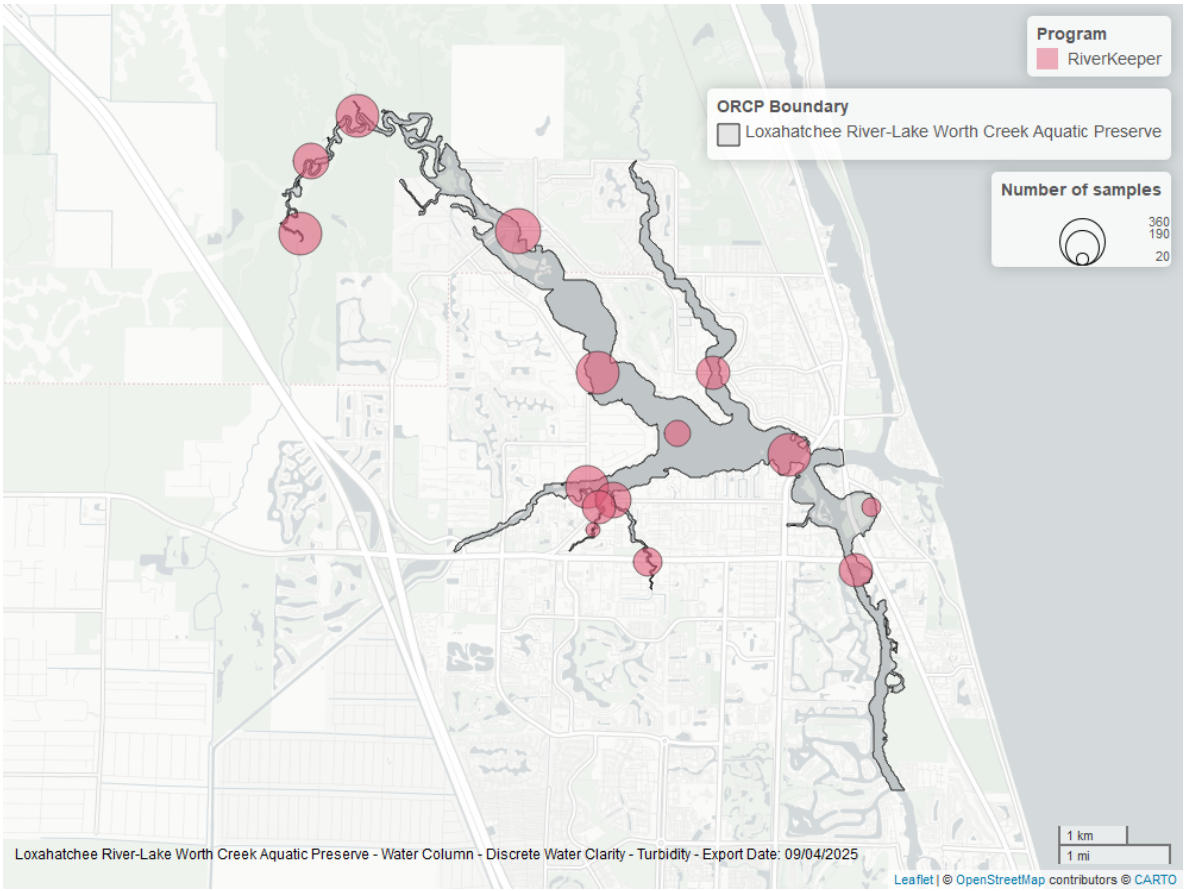

Figure 20: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Suspended Solids - Discrete

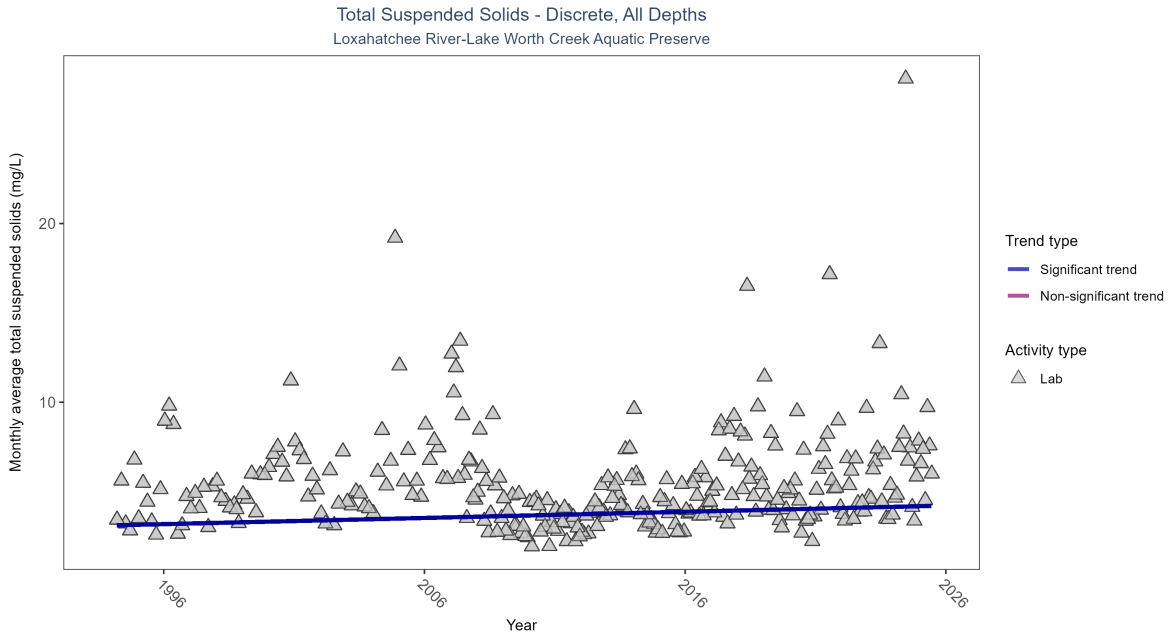

Figure 21: Scatter plot of monthly average total suspended solids (TSS) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only TSS values obtained from laboratory analyses (triangles) are included 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	6200	32	1994 - 2025	4	0.14543	3.10253	0.03459	0.0067

Monthly average total suspended solids increased by 0.03 mg/L per year, indicating a decrease in water clarity.

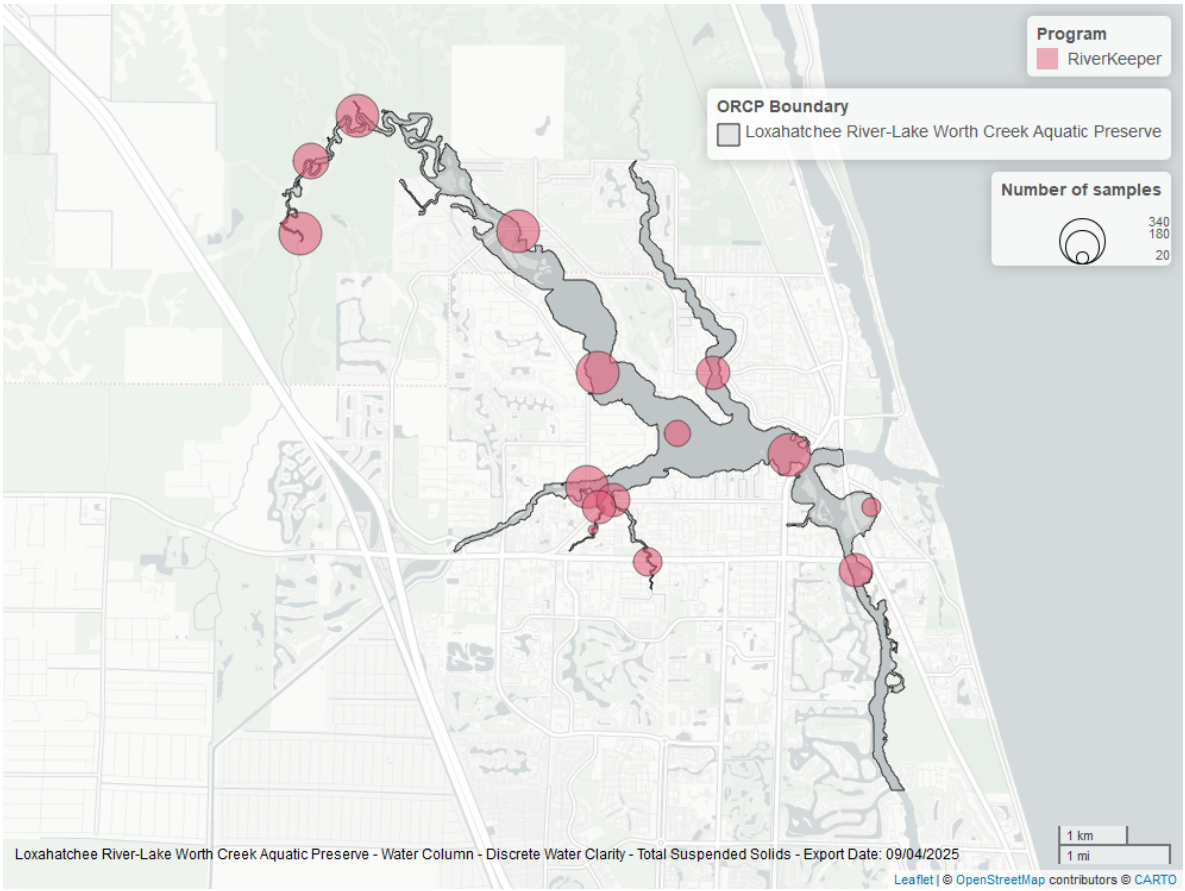

Figure 22: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Uncorrected for Pheophytin - Discrete

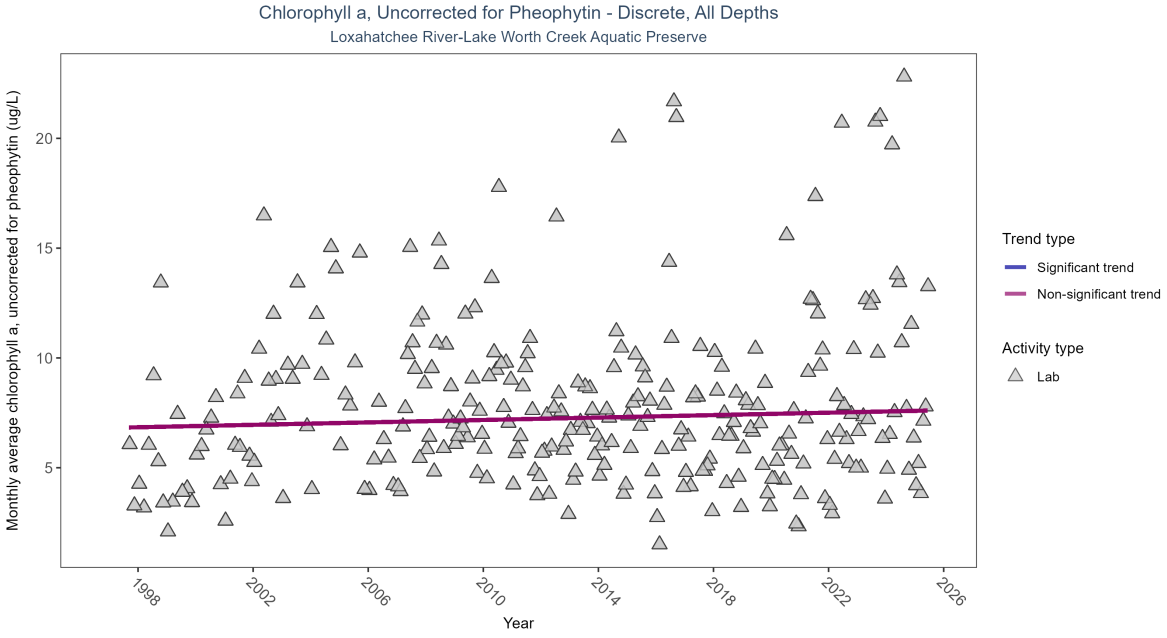

Figure 23: Scatter plot of monthly average levels of chlorophyll a, uncorrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) 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	5939	29	1997 - 2025	5.6	0.04779	6.81532	0.02769	0.2409

Chlorophyll a, uncorrected for pheophytin, showed no detectable trend between 1997 and 2025.

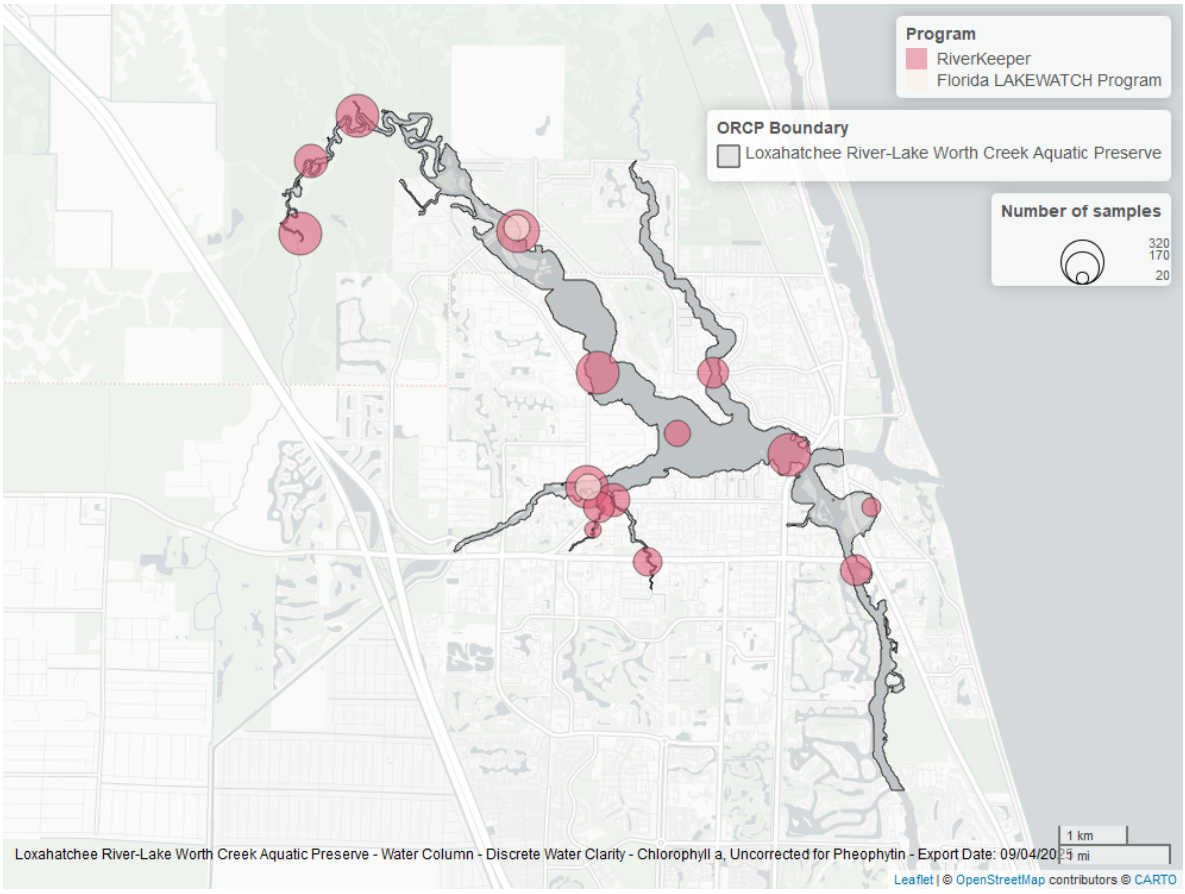

Figure 24: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Corrected for Pheophytin - Discrete

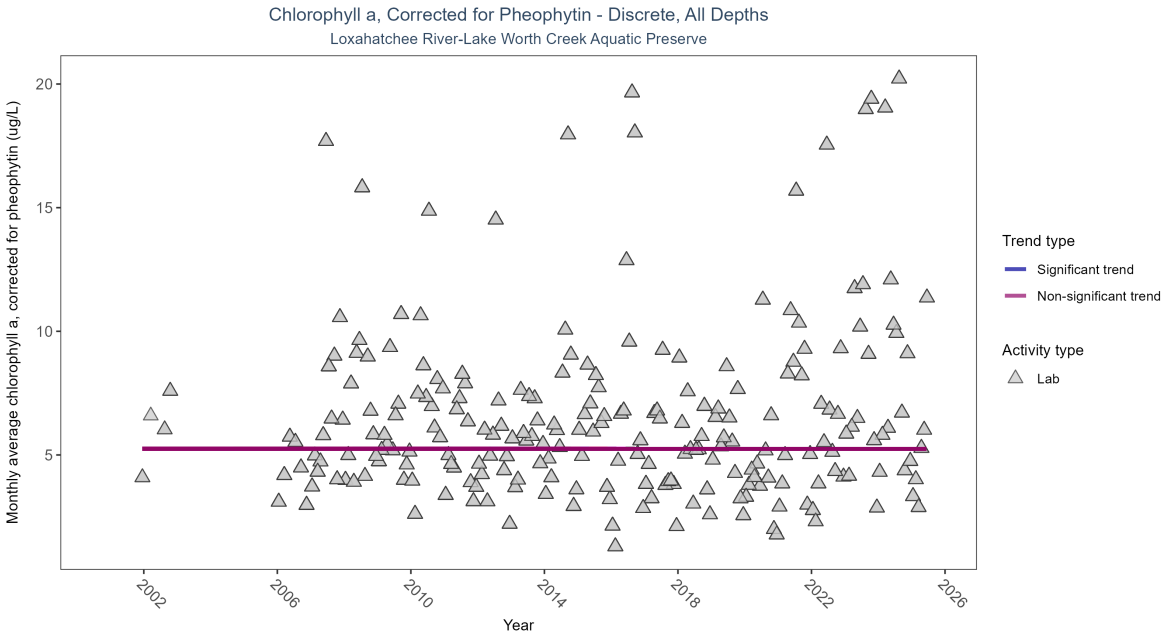

Figure 25: Scatter plot of monthly average levels of chlorophyll a, corrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) 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	4570	22	2001 - 2025	4.5	0.00073	5.24927	-0.00021	1

Chlorophyll a, corrected for pheophytin, showed no detectable trend between 2001 and 2025.

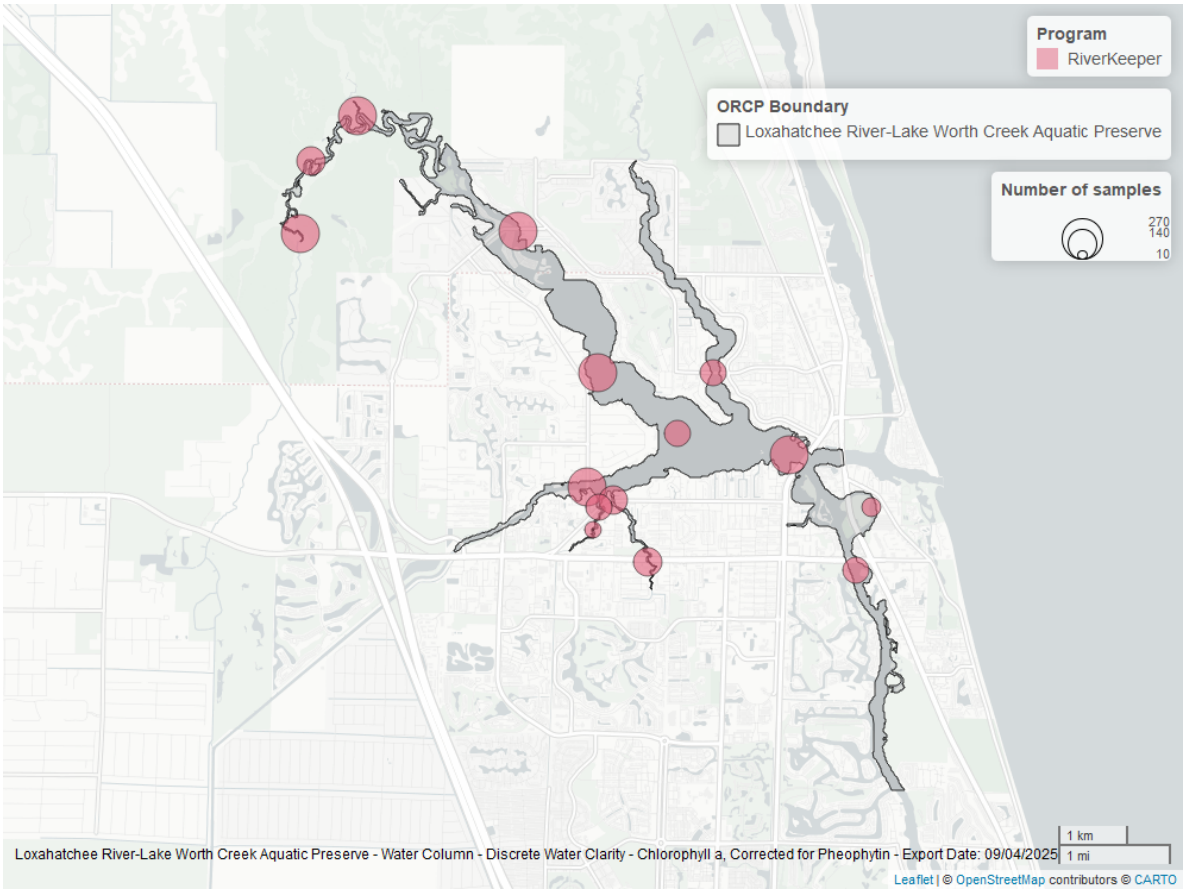

Figure 26: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Secchi Depth - Discrete

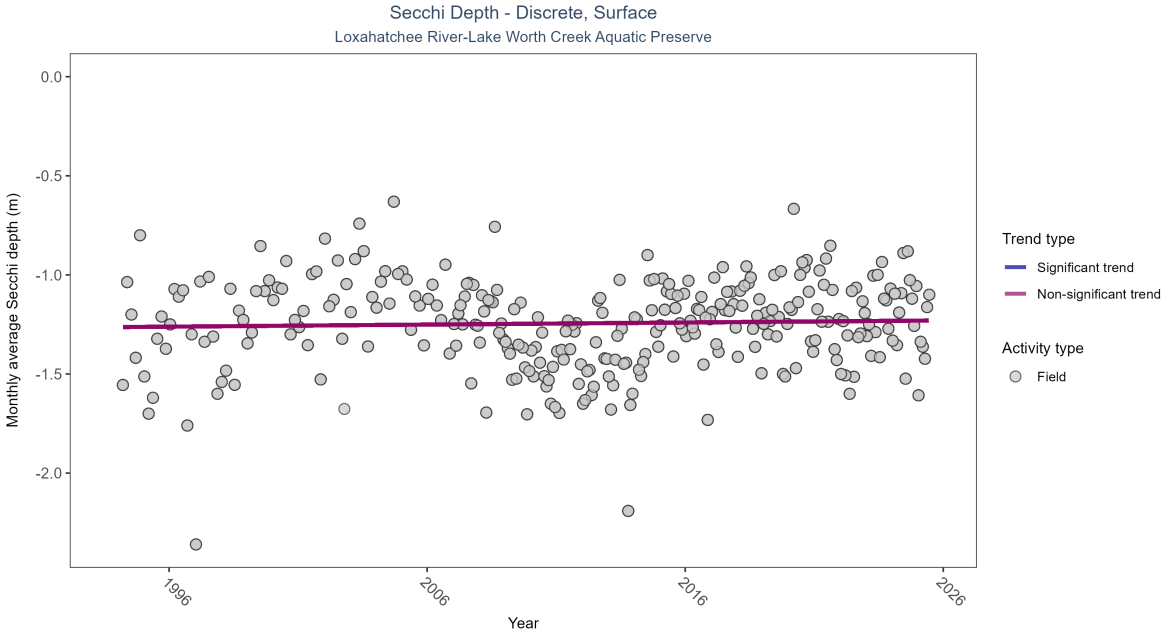

Figure 27: Scatter plot of monthly average Secchi depth over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Secchi depth is only measured in the field (circles).

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	No significant trend	4973	32	1994 - 2025	-1.2	0.06041	-1.26334	0.00105	0.5816

Secchi depth showed no detectable trend between 1994 and 2025.

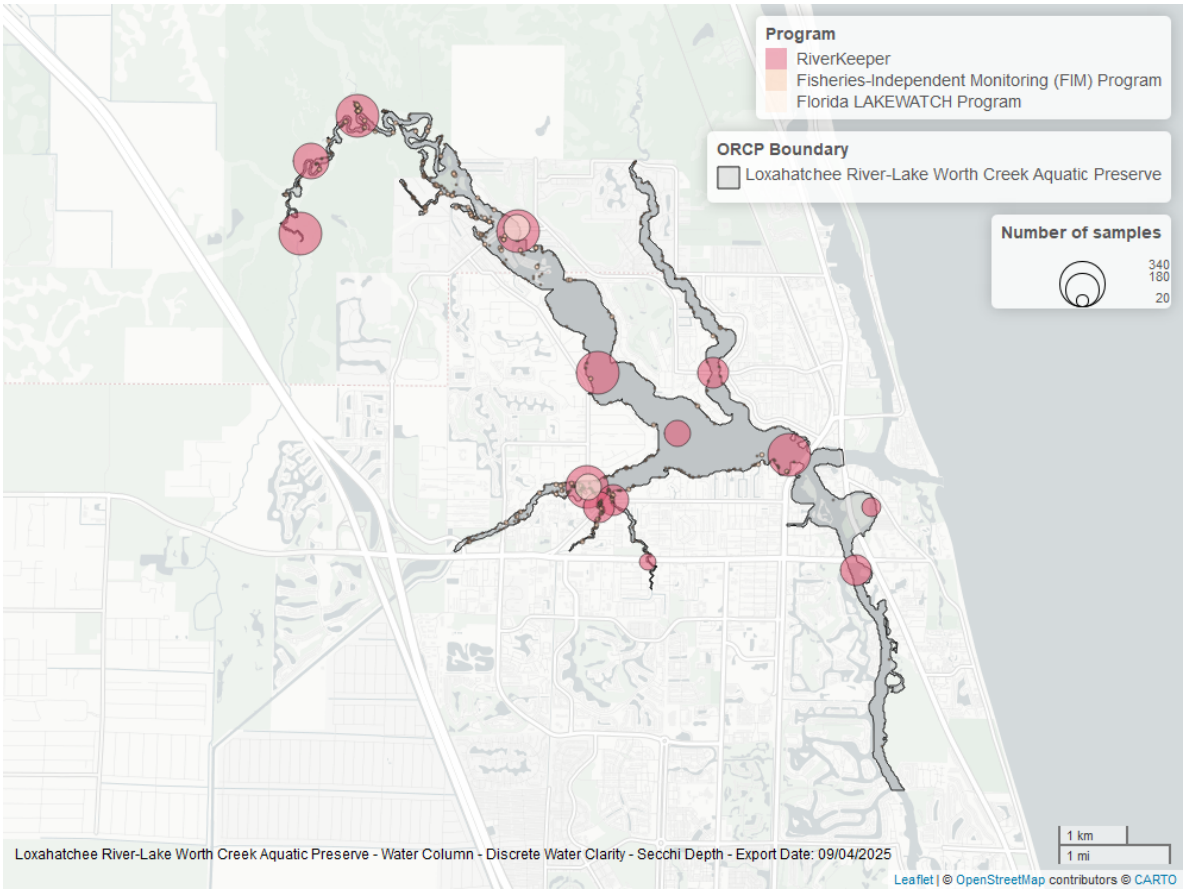

Figure 28: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Colored Dissolved Organic Matter - Discrete

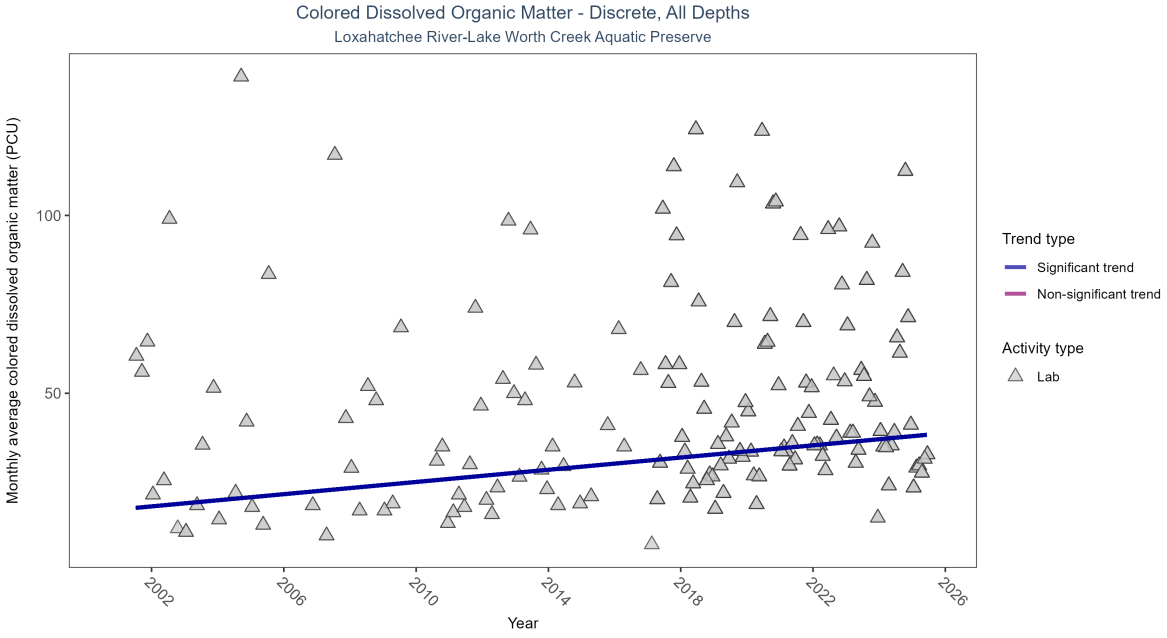

Figure 29: Scatter plot of monthly average colored dissolved organic matter (CDOM) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed CDOM (triangles) is included in the 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	Significantly increasing trend	1227	25	2001 - 2025	45	0.27345	17.33823	0.85829	0

Monthly average colored dissolved organic matter increased by 0.86 PCU per year, indicating a decrease in water clarity.

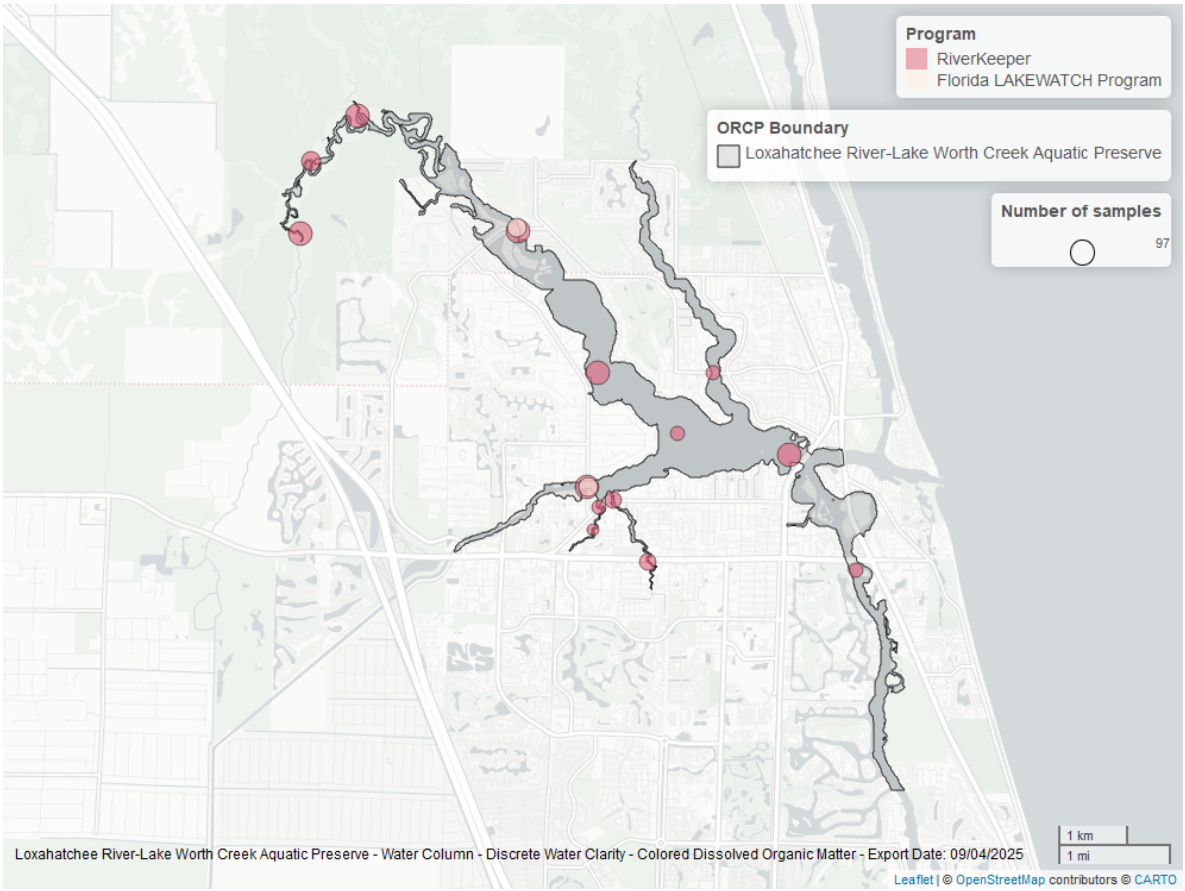

Figure 30: Map showing location of discrete water quality sampling locations within the boundaries of *Loxahatchee River-Lake Worth Creek Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.