LAKEWATCH Report for Money Bayou-1 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data averages and ranges and the final part are trend plots for nutrients, chlorophyll and Secchi depth. Plots were only made for systems with five or more years of data.

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420

The individual nutrient criteria can be found at the following link:
https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532

Base File Data for Estuaries: Definitions:

- **County**: Name of county adjacent to the system.
- **Name**: System name that LAKEWATCH uses for the station.
- **GNIS** Number: Number created by USGS's Geographic Names Information System.
- **Water Body Type**: Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years)**: Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	Money Bayou-1
GNIS Number	287060
Water Body Type	Estuary
Period of Record (years, range)	4 (2016 to 2019)
Latitude	29.6946
Longitude	-85.2818

Long-Term Data for Estuaries: Definitions

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus (µg/L)**: The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L)**: Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/L)**: Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m)**: Secchi measurements are estimates of water clarity (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- **Specific Conductance (µS/cm@25°C), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	45 - 146	76 (4)
Total Nitrogen (µg/L)	1024 - 1365	1167 (4)
Chlorophyll- uncorrected (µg/L)	13 - 34	24 (4)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	60 - 241	96 (4)
Specific Conductance (µS/cm@25 C)	1689 - 22407	9718 (4)
Salinity (ppt)	1 - 14	5 (4)

LAKEWATCH Report for Simmons Bayou-1 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

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The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

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The individual nutrient criteria can be found at the following link:
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Base File Data for Estuaries: Definitions:

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Table 1. Base File Data.

County	Gulf
Name	Simmons Bayou-1
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	4 (2016 to 2019)
Latitude	29.7538
Longitude	-85.3028

Long-Term Data for Estuaries: Definitions

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- **Chlorophyll-uncorrected (µg/L)**: Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m)**: Secchi measurements are estimates of water clarity (how far one can see into the water) and are listed with English and metric units.
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Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	8 - 23	16 (4)
Total Nitrogen (µg/L)	420 - 887	581 (4)
Chlorophyll- uncorrected (µg/L)	2 - 17	7 (4)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	10 - 47	30 (4)
Specific Conductance (µS/cm@25 C)	6647 - 14000	9362 (4)
Salinity (ppt)	4 - 8	6 (4)

LAKEWATCH Report for St. Joseph Bay-1 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

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- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-1
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	10 (2001 to 2019)
Latitude	29.6932
Longitude	-85.3205

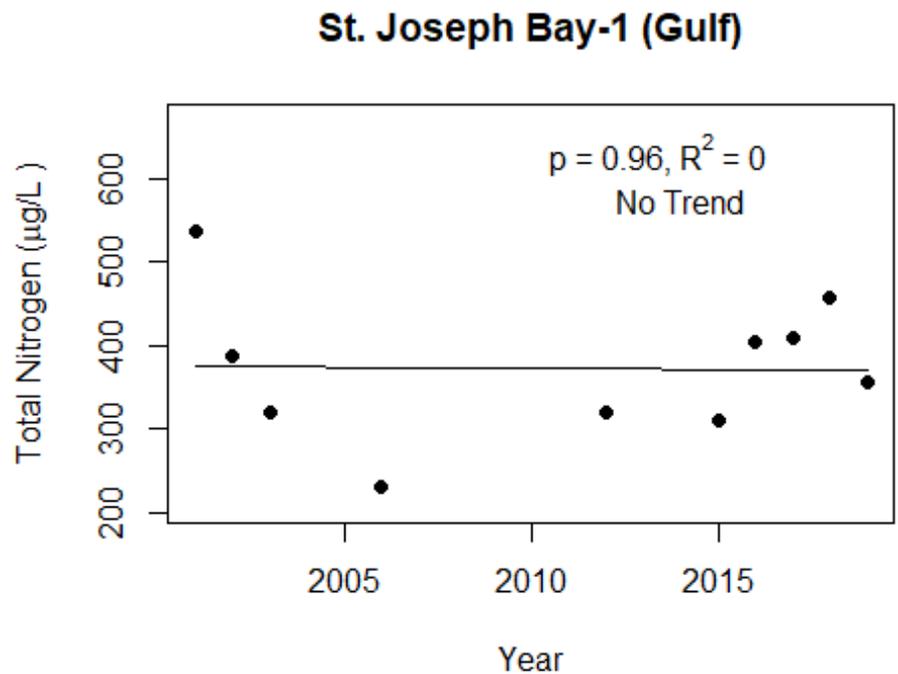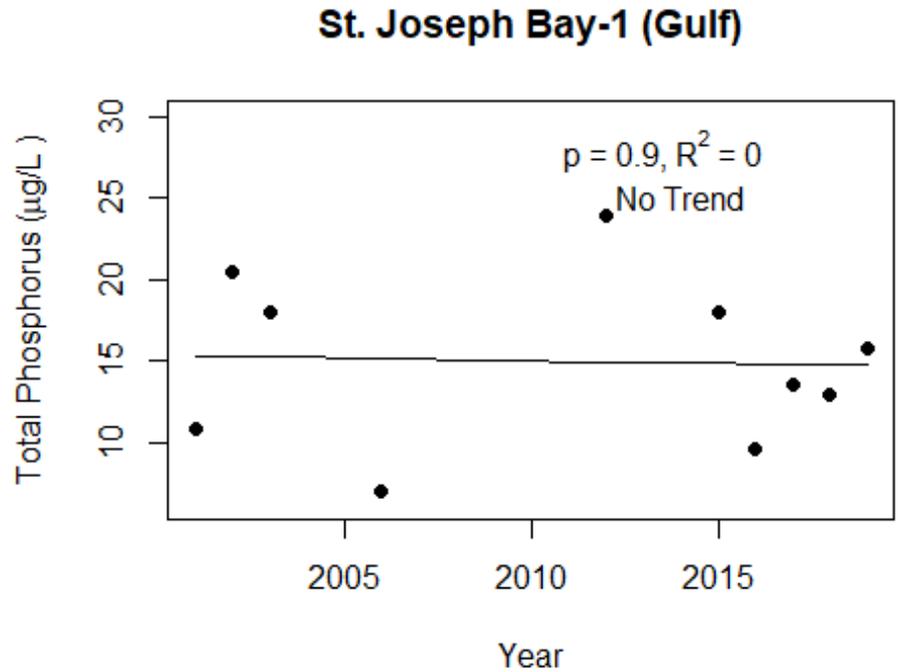**Long-Term Data for Estuaries: Definitions**

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Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	7 - 24	13 (10)
Total Nitrogen (µg/L)	230 - 512	349 (10)
Chlorophyll- uncorrected (µg/L)	1 - 4	1 (9)
Secchi (ft)	3.0 - 3.0	3.0 (1)
Secchi (m)	0.9 - 0.9	0.9 (1)
Color (Pt-Co Units)	5 - 14	8 (8)
Specific Conductance (µS/cm@25 C)	31401 - 49000	40198 (8)
Salinity (ppt)	19 - 31	25 (8)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.

St. Joseph Bay-1 (Gulf)

$p = 0.55$, $R^2 = 0.05$

No Trend

St. Joseph Bay-1 (Gulf)

$p = NA$, $R^2 = NA$
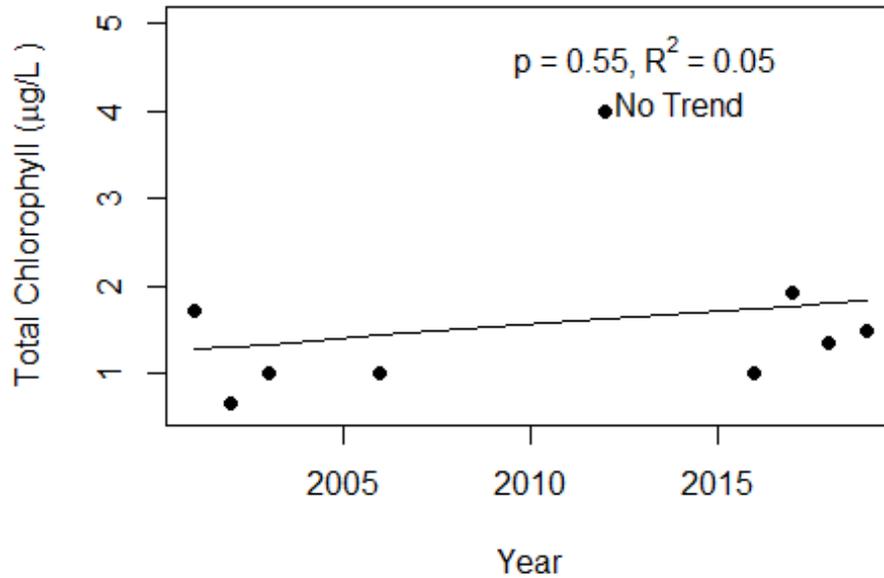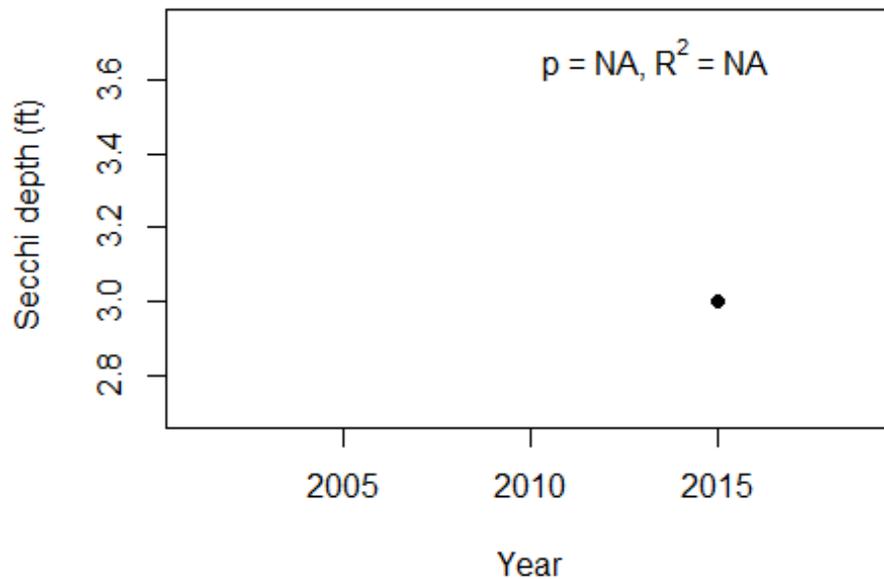
LAKEWATCH Report for St. Joseph Bay-2 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data averages and ranges and the final part are trend plots for nutrients, chlorophyll and Secchi depth. Plots were only made for systems with five or more years of data.

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The maps defining individual estuaries and coastal segments can be found at the following link: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420

The individual nutrient criteria can be found at the following link:
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- **Period of Record (years)**: Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-2
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	19 (2001 to 2019)
Latitude	29.719
Longitude	-85.3327

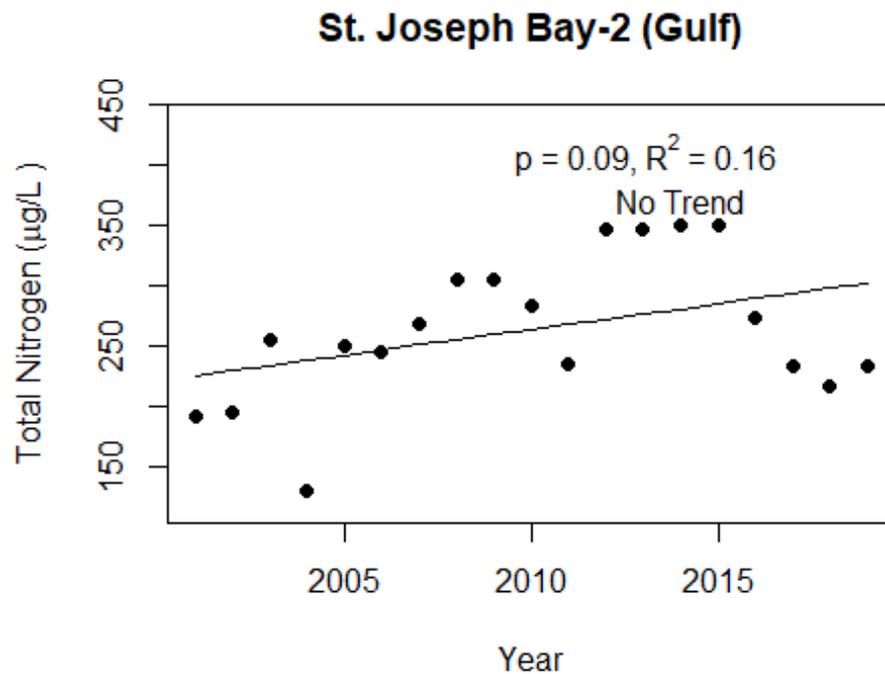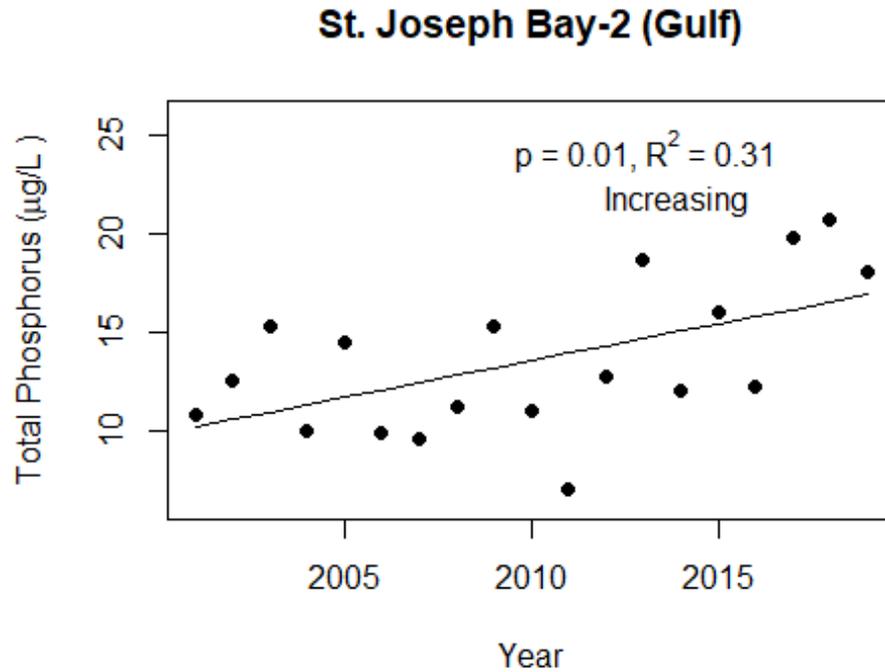**Long-Term Data for Estuaries: Definitions**

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Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).
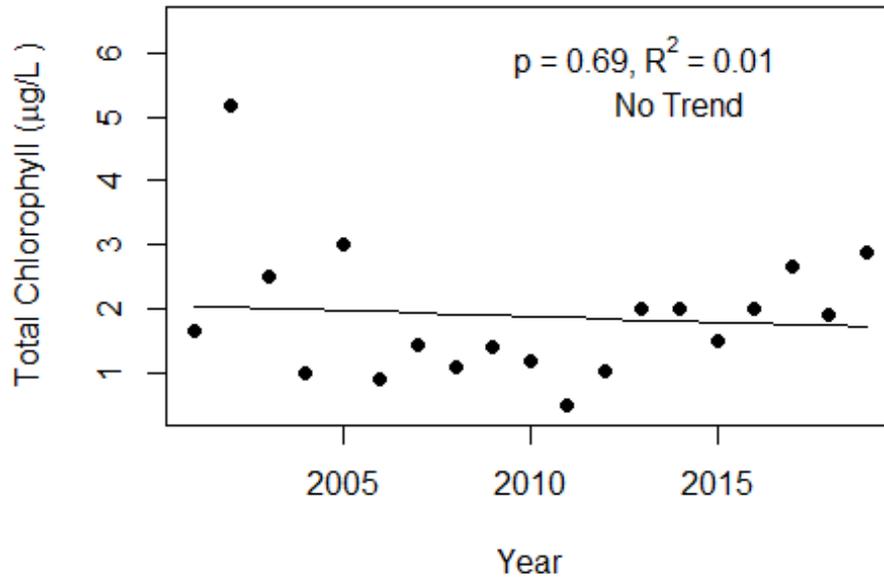
Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	7 - 18	12 (19)
Total Nitrogen (µg/L)	130 - 350	245 (19)
Chlorophyll- uncorrected (µg/L)	0 - 3	1 (19)
Secchi (ft)	5.0 - 11.3	8.8 (8)
Secchi (m)	1.5 - 3.4	2.7 (8)
Color (Pt-Co Units)	2 - 11	6 (17)
Specific Conductance (µS/cm@25 C)	25690 - 46979	37842 (17)
Salinity (ppt)	16 - 29	24 (17)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.
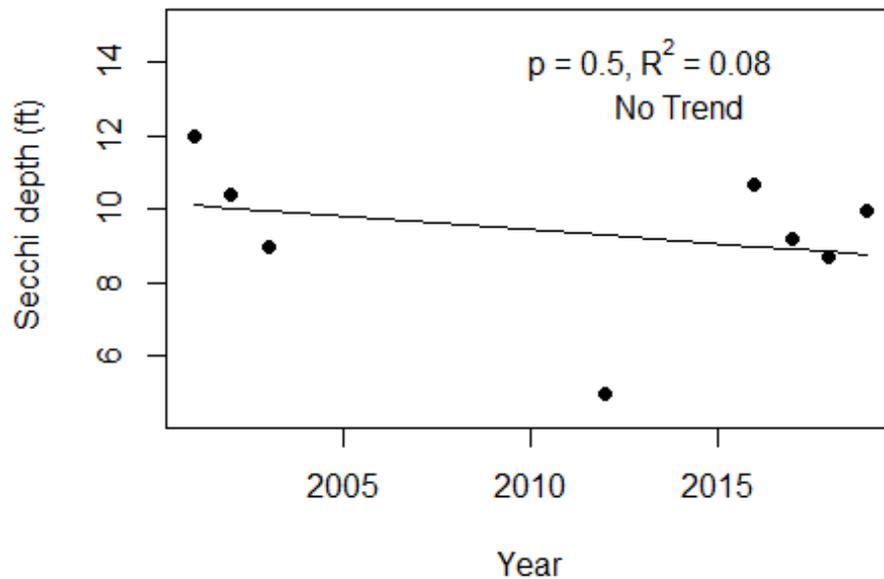
St. Joseph Bay-2 (Gulf)

$p = 0.01$, $R^2 = 0.31$
Increasing

Total Phosphorus (µg/L)

Year

St. Joseph Bay-2 (Gulf)

$p = 0.09$, $R^2 = 0.16$
No Trend

Total Nitrogen (µg/L)

Year

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.

St. Joseph Bay-2 (Gulf)

$p = 0.69, R^2 = 0.01$

No Trend

Total Chlorophyll (µg/L)

Year

St. Joseph Bay-2 (Gulf)

$p = 0.5, R^2 = 0.08$

No Trend

Secchi depth (ft)

Year

LAKEWATCH Report for St. Joseph Bay-3 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

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Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-3
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	19 (2001 to 2019)
Latitude	29.6994
Longitude	-85.3632

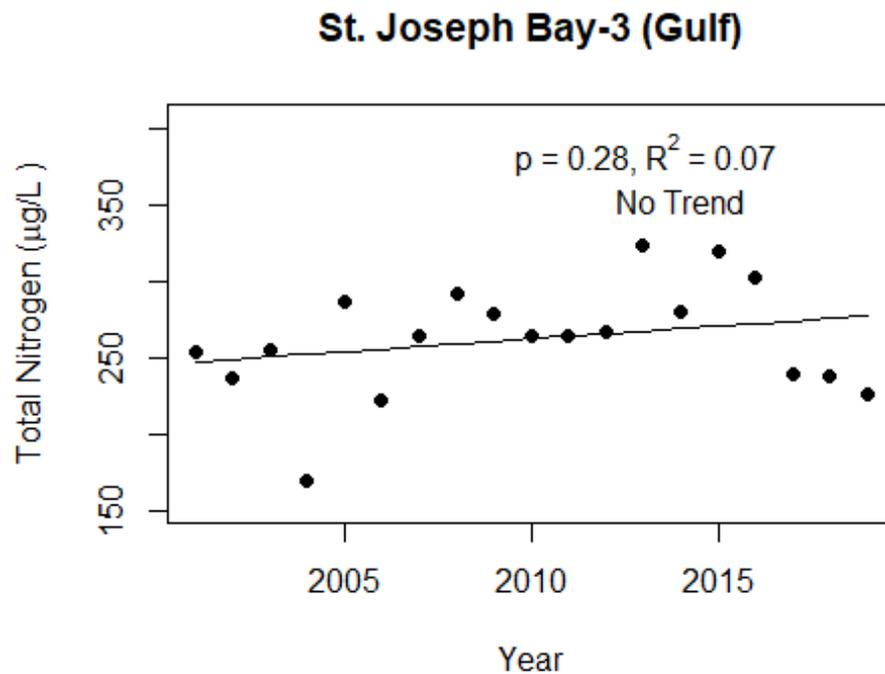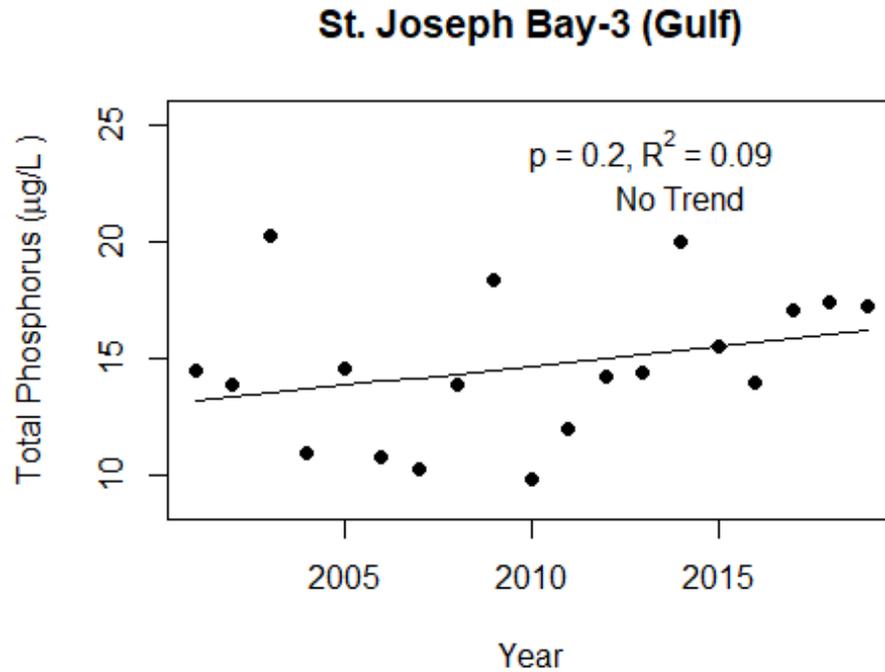**Long-Term Data for Estuaries: Definitions**

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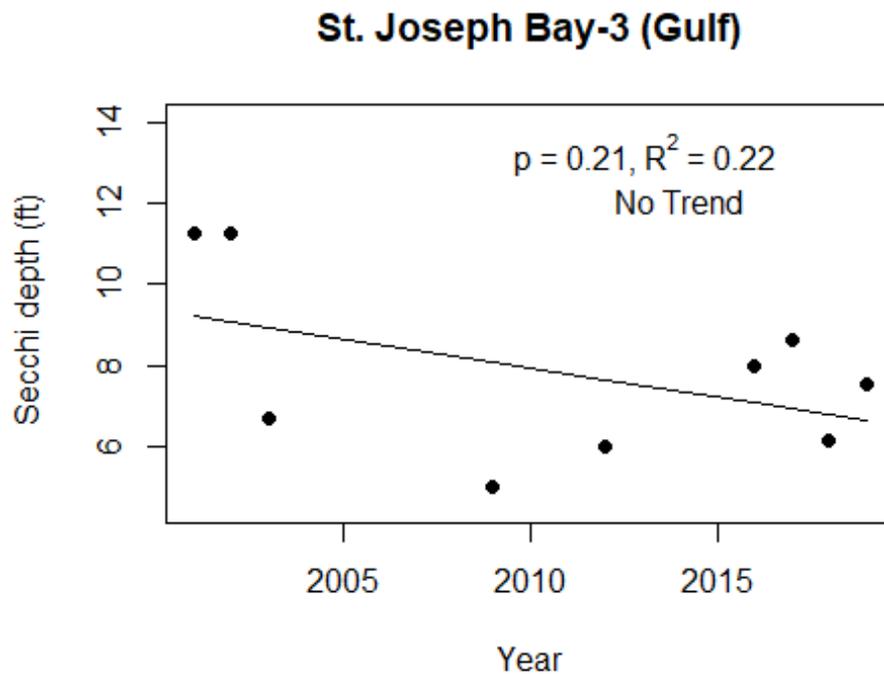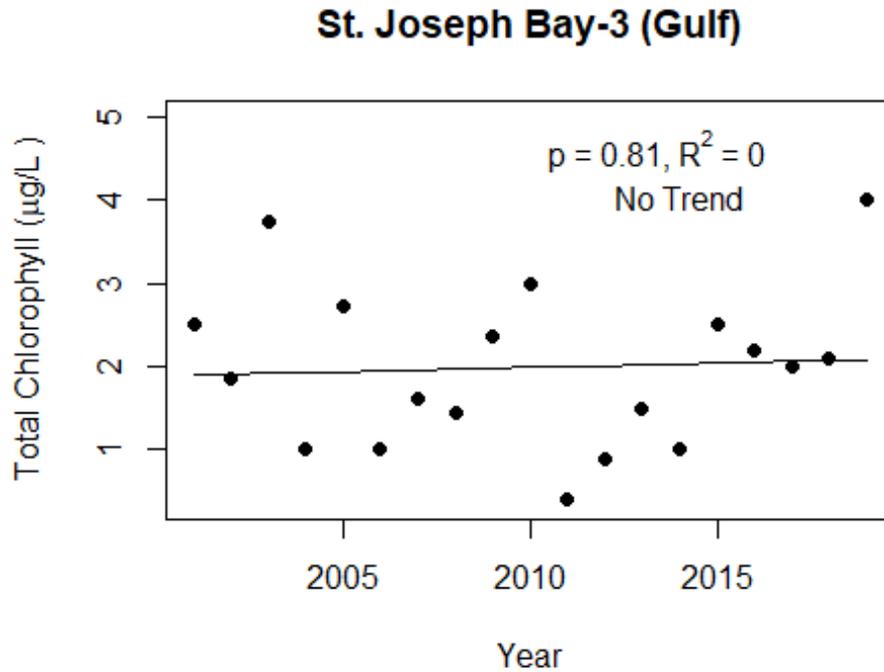
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Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	9 - 20	14 (19)
Total Nitrogen (µg/L)	170 - 316	250 (19)
Chlorophyll- uncorrected (µg/L)	0 - 4	2 (19)
Secchi (ft)	5.0 - 10.8	7.4 (9)
Secchi (m)	1.5 - 3.3	2.3 (9)
Color (Pt-Co Units)	3 - 8	6 (17)
Specific Conductance (µS/cm@25 C)	24495 - 47476	39499 (17)
Salinity (ppt)	15 - 30	25 (17)

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St. Joseph Bay-3 (Gulf)

$p = 0.2$, $R^2 = 0.09$
No Trend

St. Joseph Bay-3 (Gulf)

$p = 0.28$, $R^2 = 0.07$
No Trend

13

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relations and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.

St. Joseph Bay-3 (Gulf)

$p = 0.81, R^2 = 0$

No Trend

Total Chlorophyll (µg/L)

Year

St. Joseph Bay-3 (Gulf)

$p = 0.21, R^2 = 0.22$

No Trend

Secchi depth (ft)

Year

LAKEWATCH Report for St. Joseph Bay-4 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
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Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-4
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	18 (2001 to 2019)
Latitude	29.7698
Longitude	-85.4021

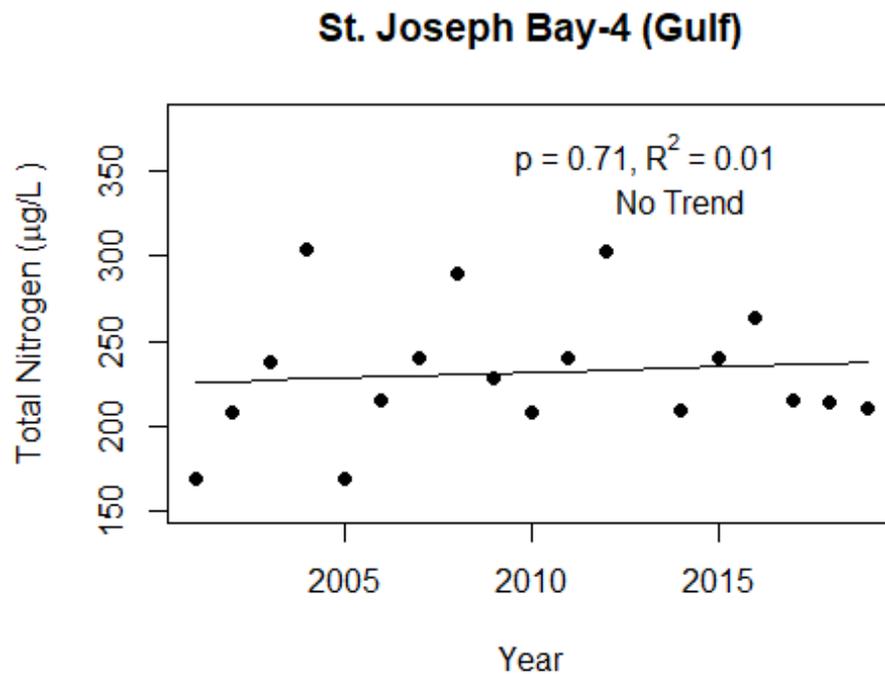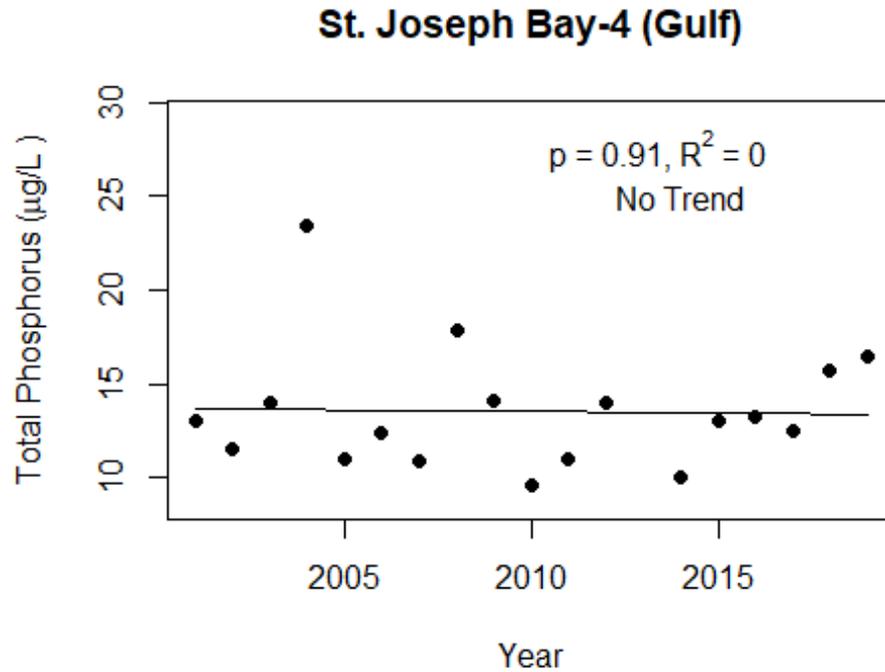**Long-Term Data for Estuaries: Definitions**

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- **Secchi (ft), Secchi (m)**: Secchi measurements are estimates of water clarity (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- **Specific Conductance (µS/cm@25°C), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).
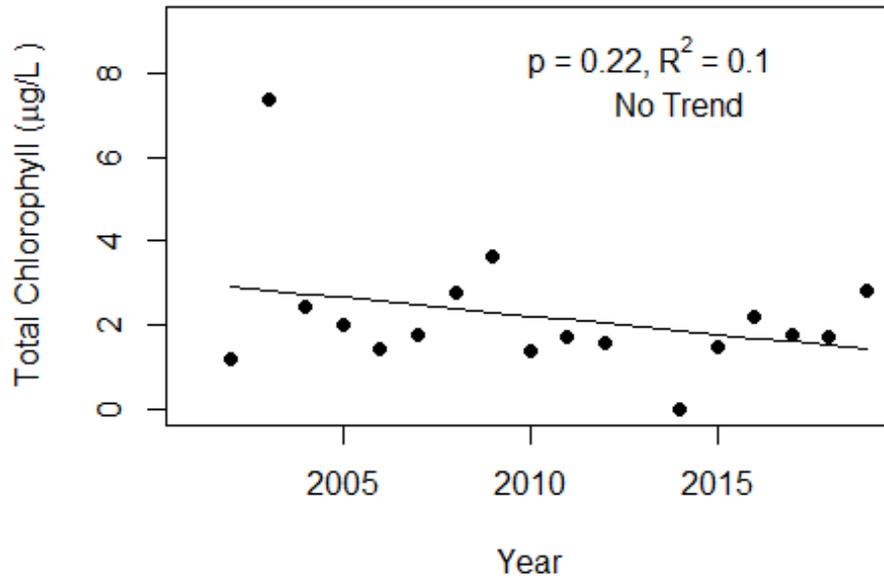
Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	10 - 22	13 (18)
Total Nitrogen (µg/L)	169 - 292	221 (18)
Chlorophyll- uncorrected (µg/L)	1 - 4	2 (16)
Secchi (ft)	4.0 - 8.0	6.1 (6)
Secchi (m)	1.2 - 2.4	1.9 (6)
Color (Pt-Co Units)	2 - 10	5 (16)
Specific Conductance (µS/cm@25 C)	27982 - 48980	38918 (16)
Salinity (ppt)	17 - 31	24 (16)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.
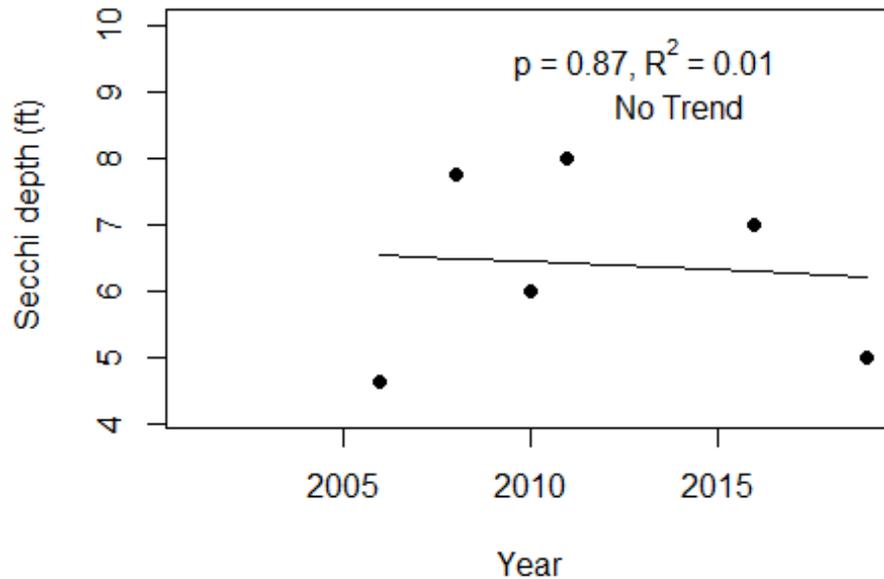

St. Joseph Bay-4 (Gulf)

$p = 0.91, R^2 = 0$

No Trend

St. Joseph Bay-4 (Gulf)

$p = 0.71, R^2 = 0.01$

No Trend

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.

St. Joseph Bay-4 (Gulf)

$p = 0.22, R^2 = 0.1$

No Trend

Total Chlorophyll (µg/L)

Year

St. Joseph Bay-4 (Gulf)

$p = 0.87, R^2 = 0.01$

No Trend

Secchi depth (ft)

Year

Introduction for Estuaries

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data averages and ranges and the final part are trend plots for nutrients, chlorophyll and Secchi depth. Plots were only made for systems with five or more years of data.

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420

The individual nutrient criteria can be found at the following link: https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532

Base File Data for Estuaries: Definitions:

- **County**: Name of county adjacent to the system.
- **Name**: System name that LAKEWATCH uses for the station.
- **GNIS** Number: Number created by USGS's Geographic Names Information System.
- **Water Body Type**: Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years)**: Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-5
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	17 (2001 to 2019)
Latitude	29.7585
Longitude	-85.3844

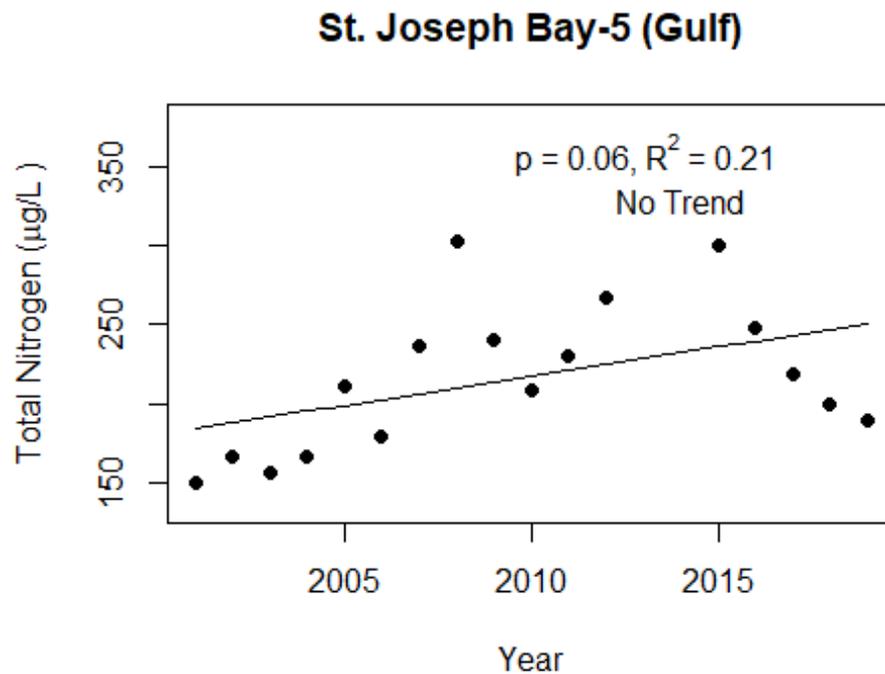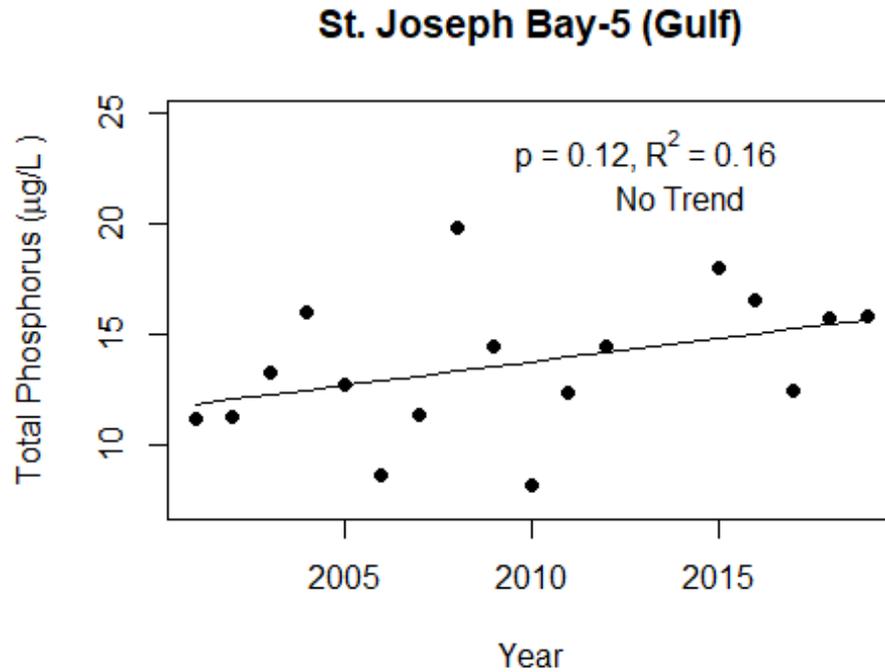**Long-Term Data for Estuaries: Definitions**

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus (µg/L)**: The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
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- **Specific Conductance (µS/cm@25°C), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).
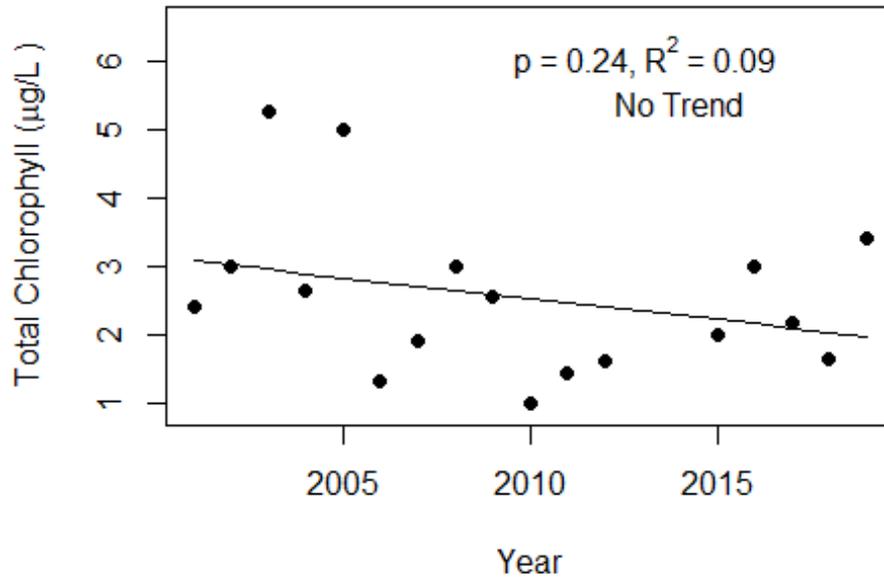
Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	8 - 18	13 (17)
Total Nitrogen (µg/L)	146 - 300	205 (17)
Chlorophyll- uncorrected (µg/L)	1 - 4	2 (17)
Secchi (ft)	3.3 - 7.0	5.3 (7)
Secchi (m)	1.0 - 2.1	1.6 (7)
Color (Pt-Co Units)	3 - 7	5 (17)
Specific Conductance (µS/cm@25 C)	25324 - 45116	37771 (17)
Salinity (ppt)	16 - 28	23 (17)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.
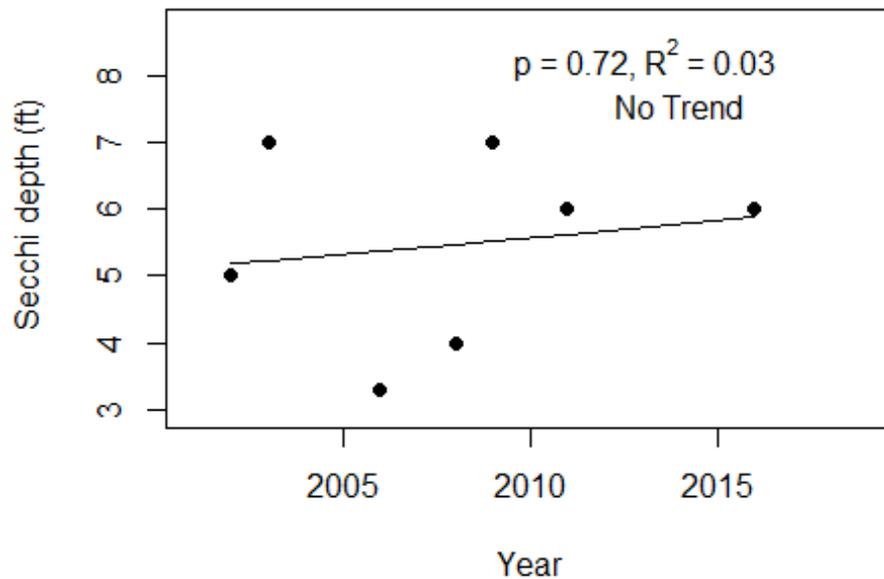

St. Joseph Bay-5 (Gulf)

$p = 0.12$, $R^2 = 0.16$
No Trend

St. Joseph Bay-5 (Gulf)

$p = 0.06$, $R^2 = 0.21$
No Trend

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.

St. Joseph Bay-5 (Gulf)

$p = 0.24, R^2 = 0.09$

No Trend

Total Chlorophyll (μg/L)

Year

St. Joseph Bay-5 (Gulf)

$p = 0.72, R^2 = 0.03$

No Trend

Secchi depth (ft)

Year

LAKEWATCH Report for St. Joseph Bay-6 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

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The individual nutrient criteria can be found at the following link:
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Base File Data for Estuaries: Definitions:

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- **Period of Record (years)**: Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-6
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	19 (2001 to 2019)
Latitude	29.7984
Longitude	-85.3047

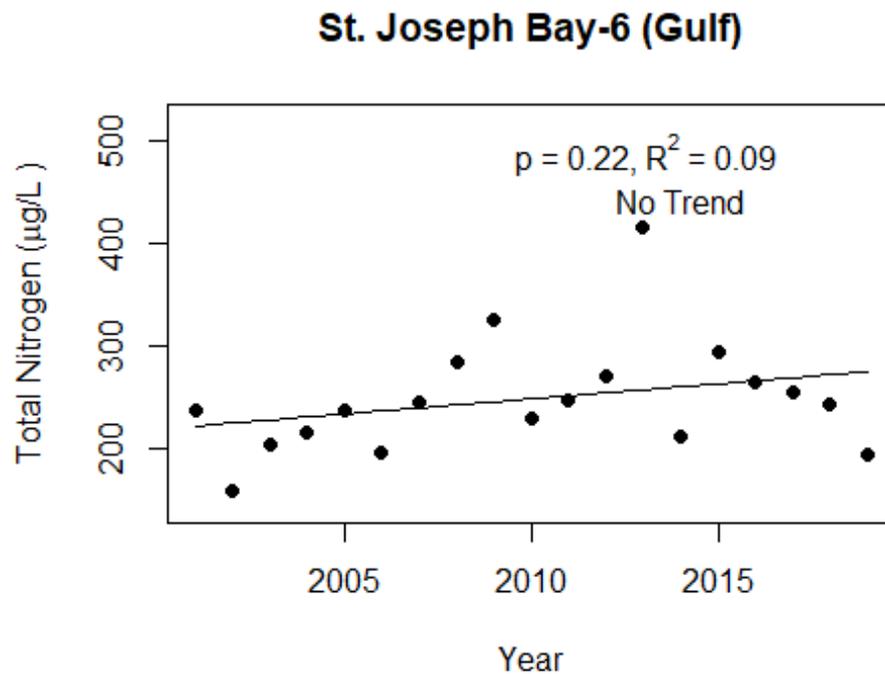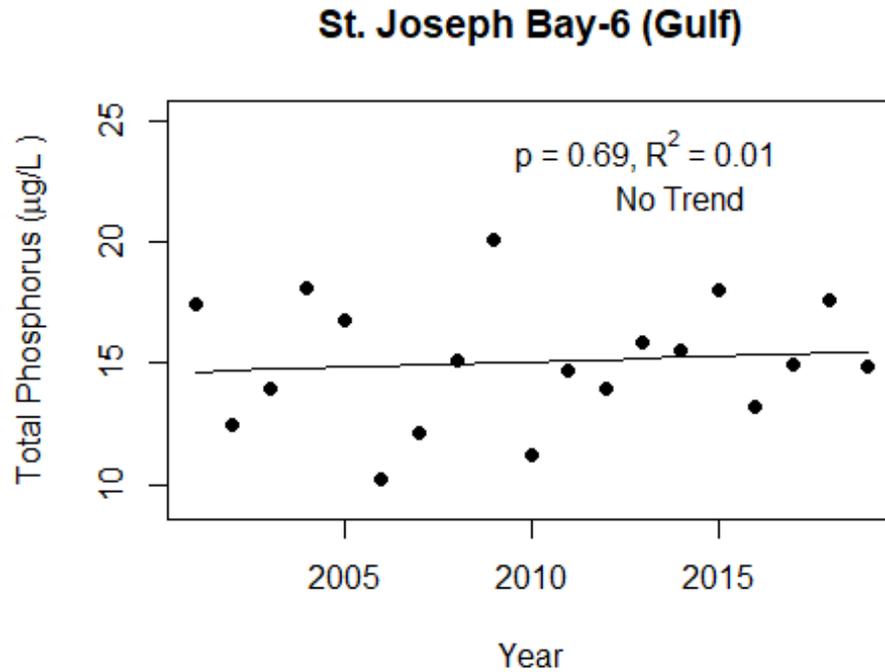**Long-Term Data for Estuaries: Definitions**

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus (µg/L)**: The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L)**: Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/L)**: Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m)**: Secchi measurements are estimates of water clarity (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- **Specific Conductance (µS/cm@25°C), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).
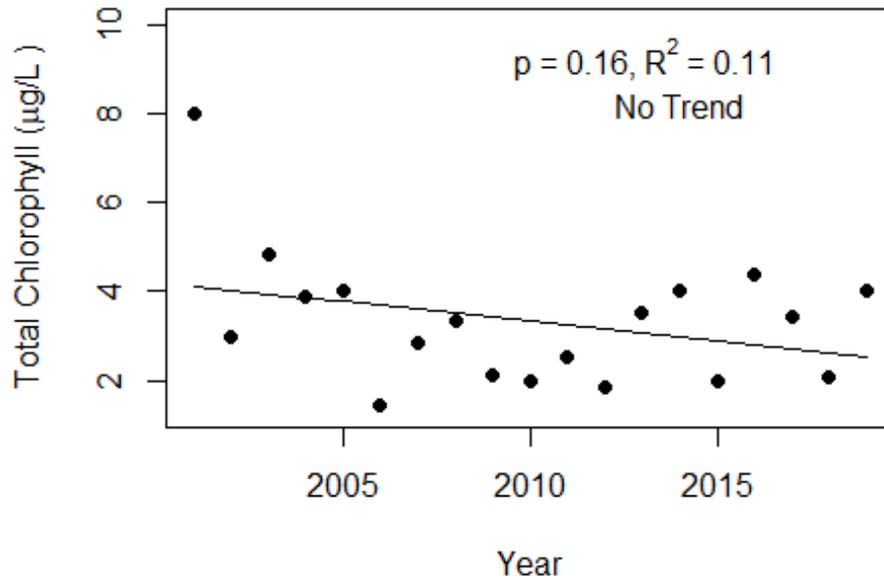
Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	10 - 19	14 (19)
Total Nitrogen (µg/L)	153 - 348	231 (19)
Chlorophyll- uncorrected (µg/L)	1 - 5	3 (19)
Secchi (ft)	3.5 - 8.0	4.5 (8)
Secchi (m)	1.1 - 2.4	1.4 (8)
Color (Pt-Co Units)	4 - 20	7 (19)
Specific Conductance (µS/cm@25 C)	11997 - 48000	34611 (19)
Salinity (ppt)	7 - 30	21 (19)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.
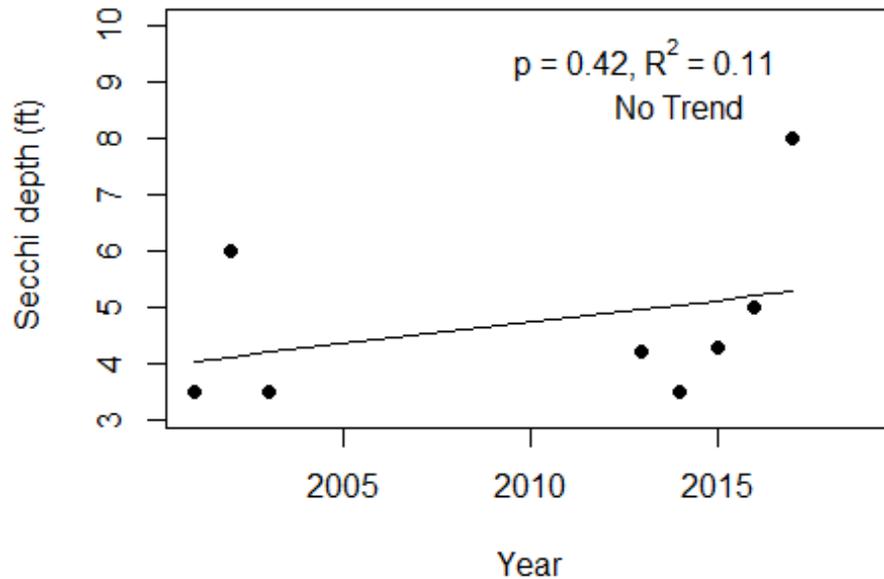
St. Joseph Bay-6 (Gulf)

$p = 0.69$, $R^2 = 0.01$
No Trend

St. Joseph Bay-6 (Gulf)

$p = 0.22$, $R^2 = 0.09$
No Trend

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.

St. Joseph Bay-6 (Gulf)

$p = 0.16, R^2 = 0.11$

No Trend

Total Chlorophyll (µg/L)

Year

St. Joseph Bay-6 (Gulf)

$p = 0.42, R^2 = 0.11$

No Trend

Secchi depth (ft)

Year

LAKEWATCH Report for St. Joseph Bay-7 in Gulf County
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay
Using Data Downloaded 1/17/2020

Introduction for Estuaries

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data averages and ranges and the final part are trend plots for nutrients, chlorophyll and Secchi depth. Plots were only made for systems with five or more years of data.

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The maps defining individual estuaries and coastal segments can be found at the following link: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420

The individual nutrient criteria can be found at the following link: https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532

Base File Data for Estuaries: Definitions:

- **County**: Name of county adjacent to the system.
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- **Period of Record (years)**: Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-7
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	19 (2001 to 2019)
Latitude	29.7436
Longitude	-85.3274

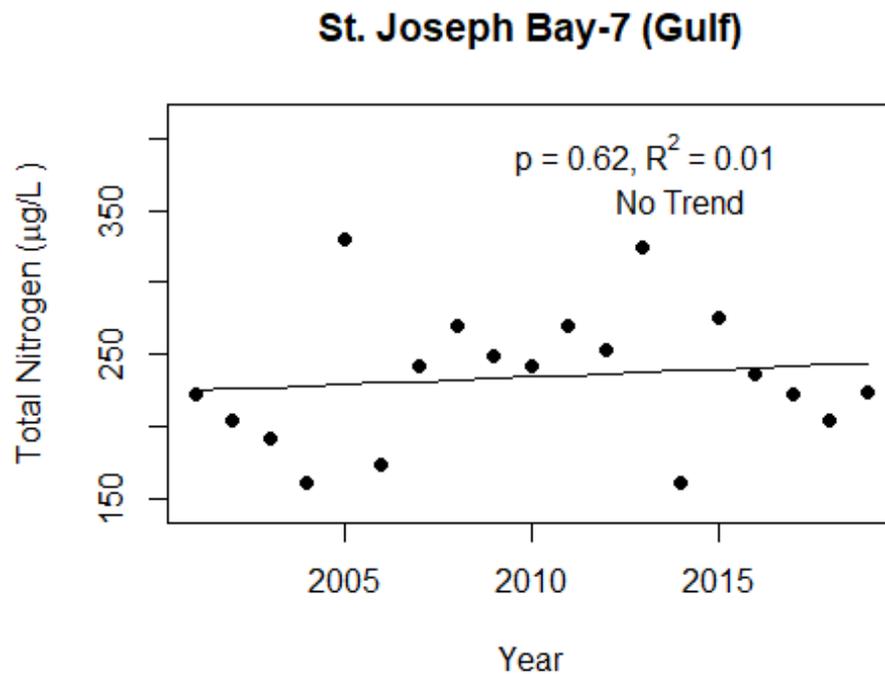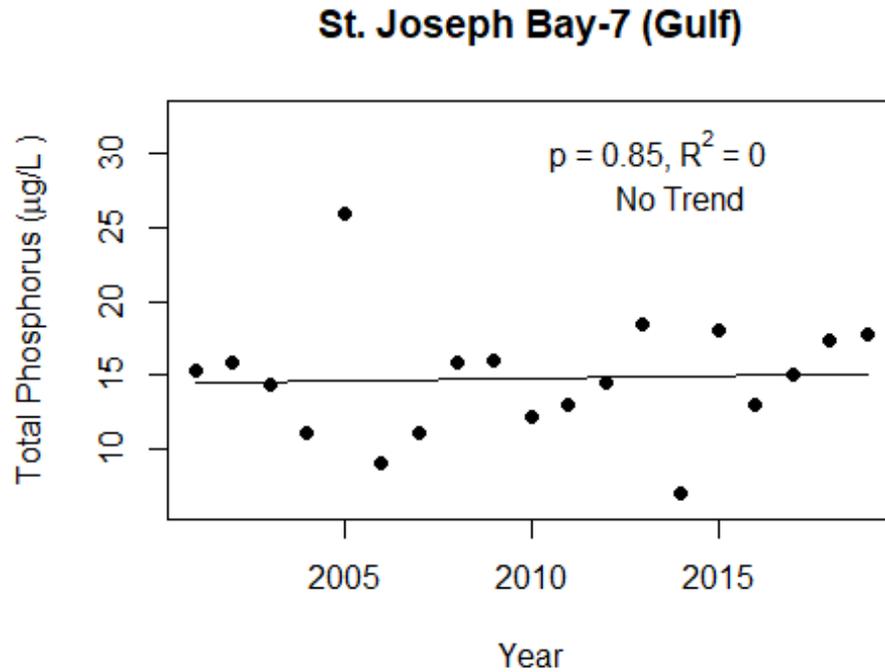**Long-Term Data for Estuaries: Definitions**

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

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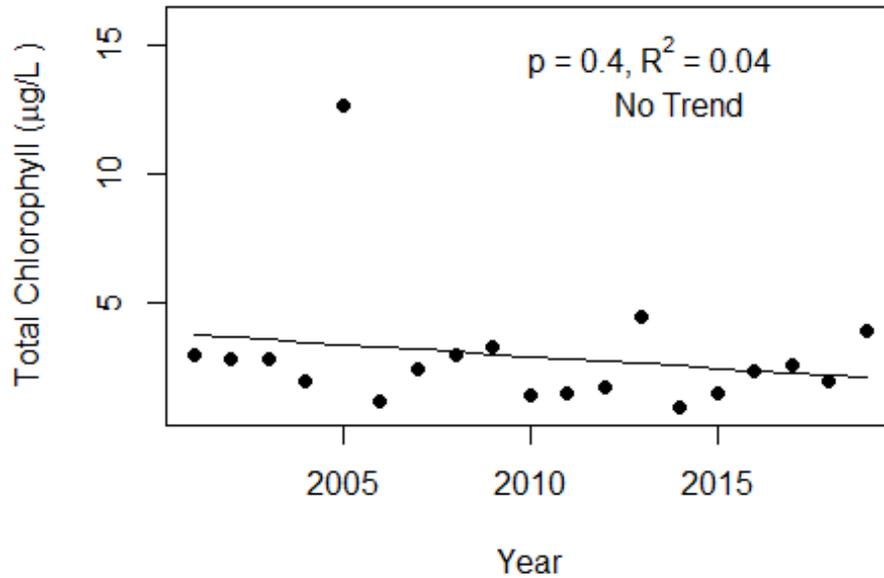
Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	7 - 18	13 (19)
Total Nitrogen (µg/L)	160 - 296	220 (19)
Chlorophyll- uncorrected (µg/L)	1 - 7	2 (19)
Secchi (ft)	5.5 - 10.8	8.7 (17)
Secchi (m)	1.7 - 3.3	2.6 (17)
Color (Pt-Co Units)	2 - 8	6 (17)
Specific Conductance (µS/cm@25 C)	26981 - 47727	39019 (16)
Salinity (ppt)	17 - 30	24 (16)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.

St. Joseph Bay-7 (Gulf)

$p = 0.85, R^2 = 0$
No Trend

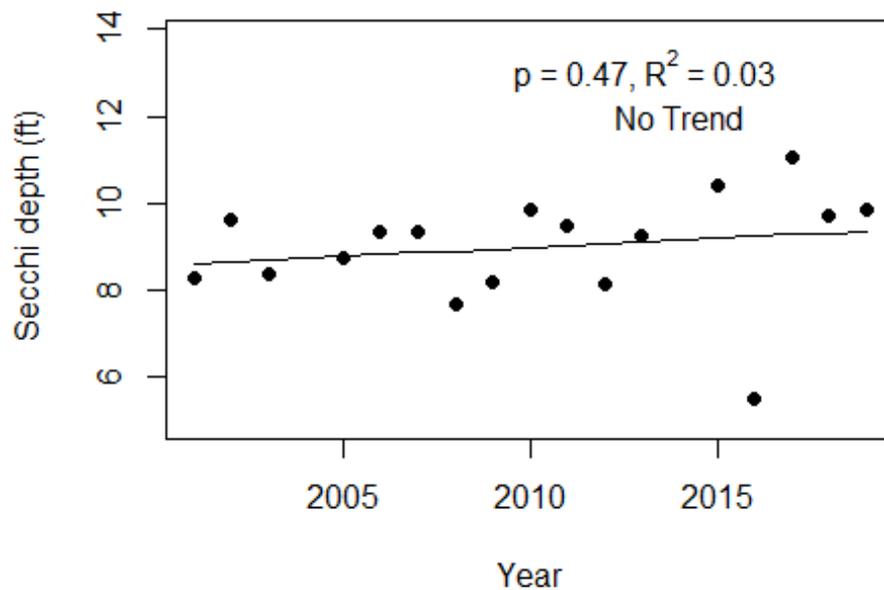## St. Joseph Bay-7 (Gulf)

$p = 0.62, R^2 = 0.01$
No Trend

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.

St. Joseph Bay-7 (Gulf)

$p = 0.4$, $R^2 = 0.04$
No Trend

St. Joseph Bay-7 (Gulf)

$p = 0.47$, $R^2 = 0.03$
No Trend

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- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

County	Gulf
Name	St. Joseph Bay-8
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	9 (2007 to 2019)
Latitude	29.8285
Longitude	-85.3287

Long-Term Data for Estuaries: Definitions

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus (µg/L)**: The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
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- **Specific Conductance (µS/cm@25°C), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	10 - 18	15 (9)
Total Nitrogen (µg/L)	223 - 292	253 (9)
Chlorophyll- uncorrected (µg/L)	1 - 4	2 (9)
Secchi (ft)	6.6 - 11.2	8.9 (9)
Secchi (m)	2.0 - 3.4	2.7 (9)
Color (Pt-Co Units)	4 - 22	9 (9)
Specific Conductance (µS/cm@25 C)	19065 - 43689	29131 (9)
Salinity (ppt)	12 - 27	18 (9)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.

St. Joseph Bay-8 (Gulf)

$p = 0.2$, $R^2 = 0.23$
No Trend

Total Phosphorus (µg/L)

Year

St. Joseph Bay-8 (Gulf)

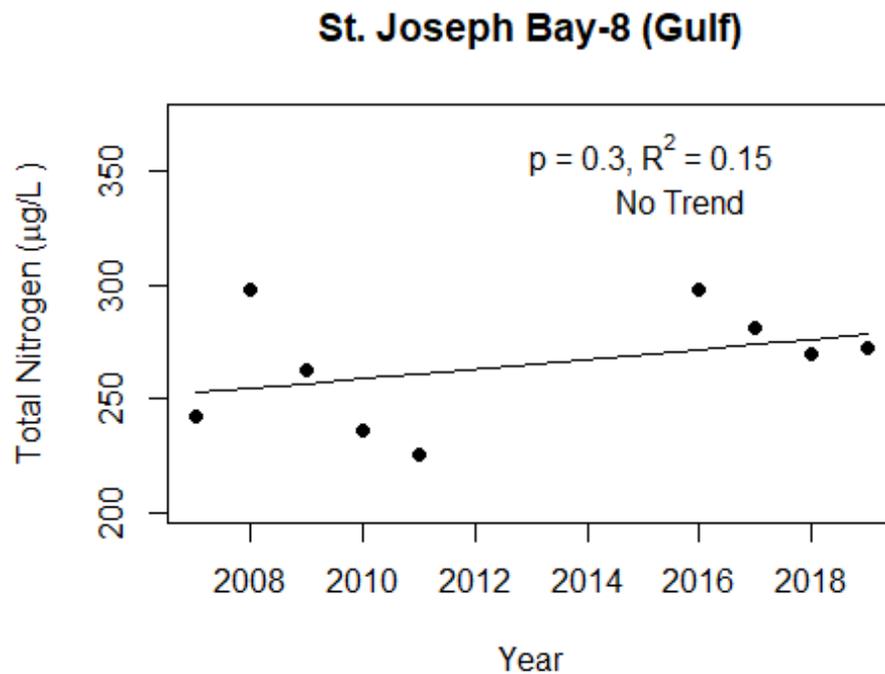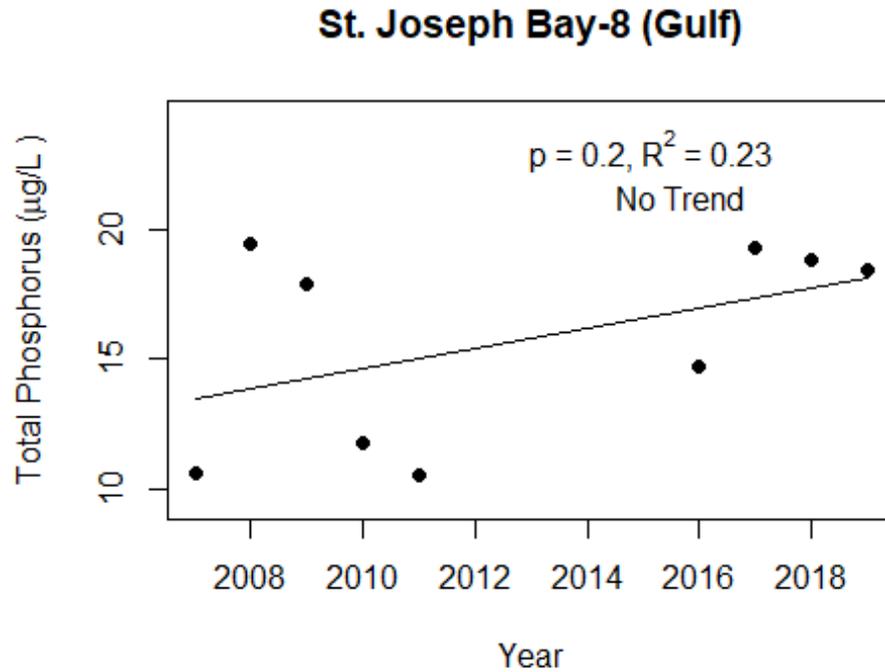$p = 0.3$, $R^2 = 0.15$
No Trend

Total Nitrogen (µg/L)

Year

33

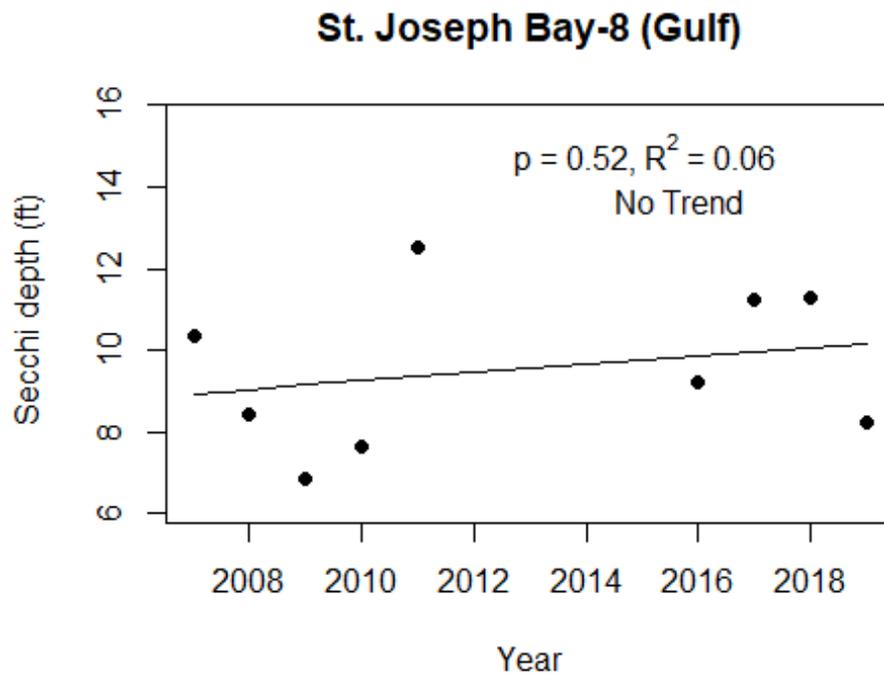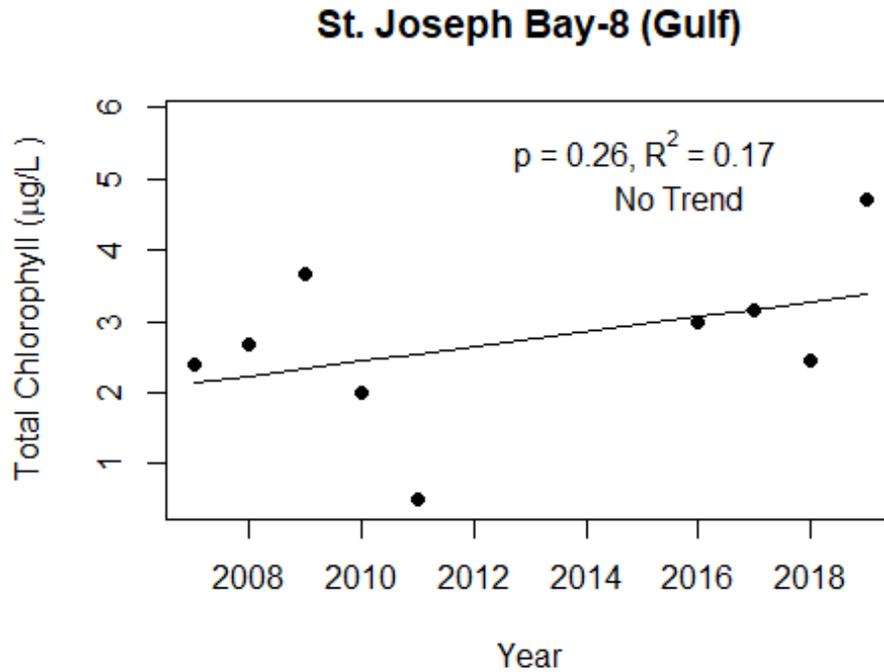**Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R² value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R² the stronger the relations and the p value indicates if the relation is significant (p < 0.05 is significant). Trend status are reported on plots.**

St. Joseph Bay-8 (Gulf)

$p = 0.26$, $R^2 = 0.17$

No Trend

St. Joseph Bay-8 (Gulf)

$p = 0.52$, $R^2 = 0.06$

No Trend

Introduction for Estuaries

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- **Water Body Type**: Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years)**: Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.

Table 1. Base File Data.

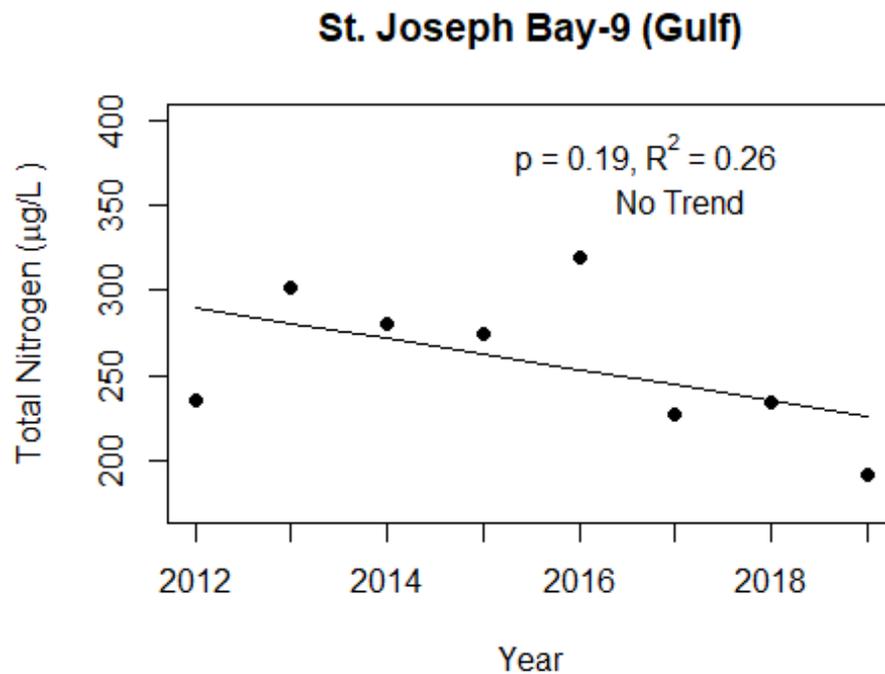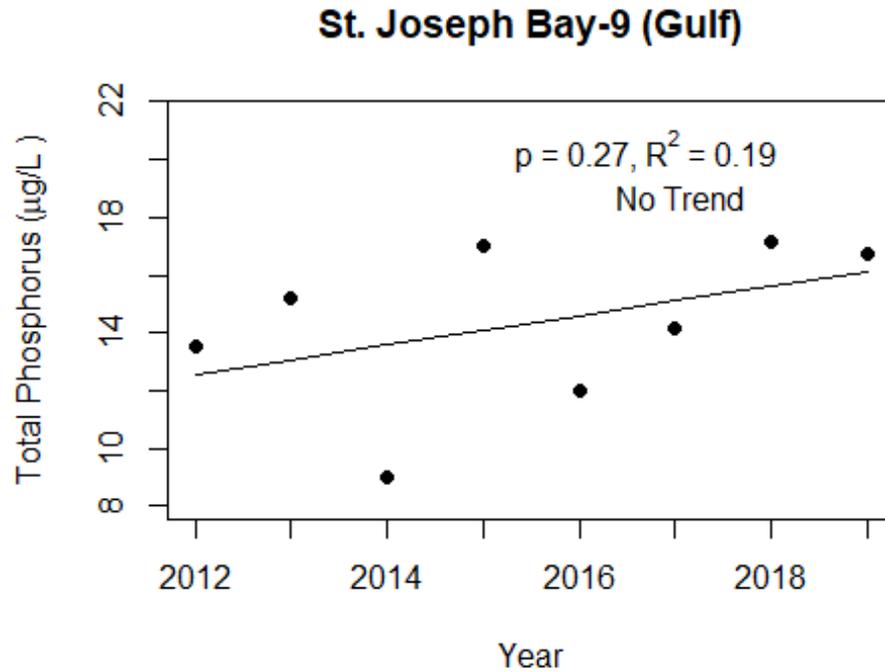| County	Gulf
Name	St. Joseph Bay-9
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	8 (2012 to 2019)
Latitude	29.7357
Longitude	-85.3849

Long-Term Data for Estuaries: Definitions

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus (µg/L)**: The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L)**: Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/L)**: Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m)**: Secchi measurements are estimates of water clarity (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- **Specific Conductance (µS/cm@25°C), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	9 - 17	14 (8)
Total Nitrogen (µg/L)	188 - 316	245 (8)
Chlorophyll- uncorrected (µg/L)	1 - 3	1 (8)
Secchi (ft)	5.5 - 8.0	6.6 (2)
Secchi (m)	1.7 - 2.4	2.0 (2)
Color (Pt-Co Units)	4 - 9	6 (7)
Specific Conductance (µS/cm@25 C)	36701 - 47664	42476 (7)
Salinity (ppt)	23 - 30	26 (7)

Figure 1 and Figure 2. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.

St. Joseph Bay-9 (Gulf)

$p = 0.27$, $R^2 = 0.19$
No Trend

St. Joseph Bay-9 (Gulf)

$p = 0.19$, $R^2 = 0.26$
No Trend

Figure 3 and Figure 4. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R^2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R^2 the stronger the relations and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.

St. Joseph Bay-9 (Gulf)

$p = 0.03, R^2 = 0.59$
Increasing

Total Chlorophyll (µg/L)

Year

St. Joseph Bay-9 (Gulf)

$p = NA, R^2 = 1$

Secchi depth (ft)

Year