LAKEWATCH Report for Bayou Chico-1 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Lower Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Chico-1
Latitude	30.403
Longitude	-87.2638
Water Body Type	Estuary
Period of Record (year)	2014 to 2016

LAKEWATCH Report for Bayou Chico-1 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	21 - 96	47 (3)
Total Nitrogen (µg/L)	390 - 580	474 (3)
Chlorophyll- uncorrected (µg/L)	12.7 - 89.0	40.0 (3)
Secchi (ft)	2.7 - 3.2	3.0 (3)
Secchi (m)	0.8 - 1.0	0.9 (3)
Color (Pt-Co Units)	12 -19	15 (2)
Specific Conductance (µS/cm@25 C)	10500 - 17000	13750 (2)
Salinity (ppt)	6 - 10	8 (2)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Chico-1 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Chico-1 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Bayou Chico-2 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Lower Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Chico-2
Latitude	30.405
Longitude	-87.2594
Water Body Type	Estuary
Period of Record (year)	2014 to 2016

LAKEWATCH Report for Bayou Chico-2 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	16 - 93	43 (3)
Total Nitrogen (µg/L)	380 - 670	481 (3)
Chlorophyll- uncorrected (µg/L)	9.3 - 42.0	20.5 (3)
Secchi (ft)	2.8 - 3.8	3.2 (3)
Secchi (m)	0.9 - 1.2	1.0 (3)
Color (Pt-Co Units)	9 -11	10 (2)
Specific Conductance (µS/cm@25 C)	13000 - 17333	15167 (2)
Salinity (ppt)	8 - 11	9 (2)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Chico-2 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

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- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Chico-2 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Bayou Chico-3 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

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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:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Lower Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

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

County	Escambia
Name	Bayou Chico-3
Latitude	30.4004
Longitude	-87.2443
Water Body Type	Estuary
Period of Record (year)	2014 to 2016

LAKEWATCH Report for Bayou Chico-3 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: Definitions

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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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	15 - 36	24 (3)
Total Nitrogen (µg/L)	333 - 377	358 (3)
Chlorophyll- uncorrected (µg/L)	6.3 - 24.0	12.9 (3)
Secchi (ft)	3.4 - 5.7	4.4 (3)
Secchi (m)	1.0 - 1.7	1.3 (3)
Color (Pt-Co Units)	9 -10	9 (2)
Specific Conductance (µS/cm@25 C)	10000 - 19333	14667 (2)
Salinity (ppt)	6 - 12	9 (2)

Coastal Trophic State

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Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
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LAKEWATCH Report for Bayou Chico-3 in Escambia County
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Trend Analyses Estuary

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Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Chico-3 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Bayou Grande-1 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

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The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Lower Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
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- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Grande-1
Latitude	30.3718
Longitude	-87.3109
Water Body Type	Estuary
Period of Record (year)	2012 to 2016

LAKEWATCH Report for Bayou Grande-1 in Escambia County
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Long-Term Data Summary Estuary: Definitions

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Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	13 - 27	18 (5)
Total Nitrogen (µg/L)	273 - 475	362 (5)
Chlorophyll- uncorrected (µg/L)	3.0 - 9.5	6.1 (5)
Secchi (ft)	2.5 - 5.0	4.0 (5)
Secchi (m)	0.8 - 1.5	1.2 (5)
Color (Pt-Co Units)	10 -17	14 (4)
Specific Conductance (µS/cm@25 C)	26400 - 36000	29433 (4)
Salinity (ppt)	16 - 22	18 (4)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

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Trend Analyses Estuary

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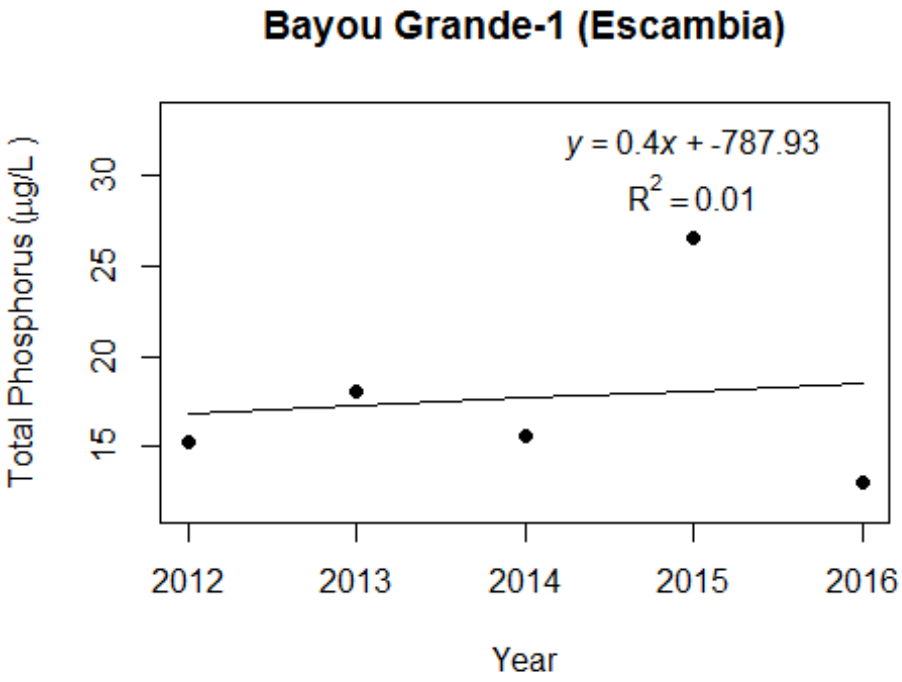
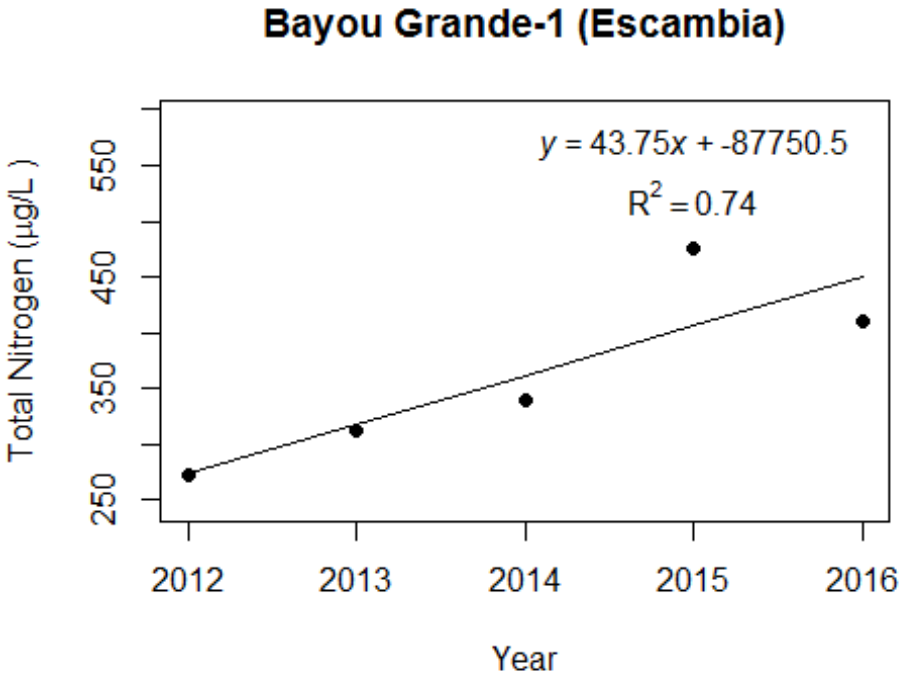
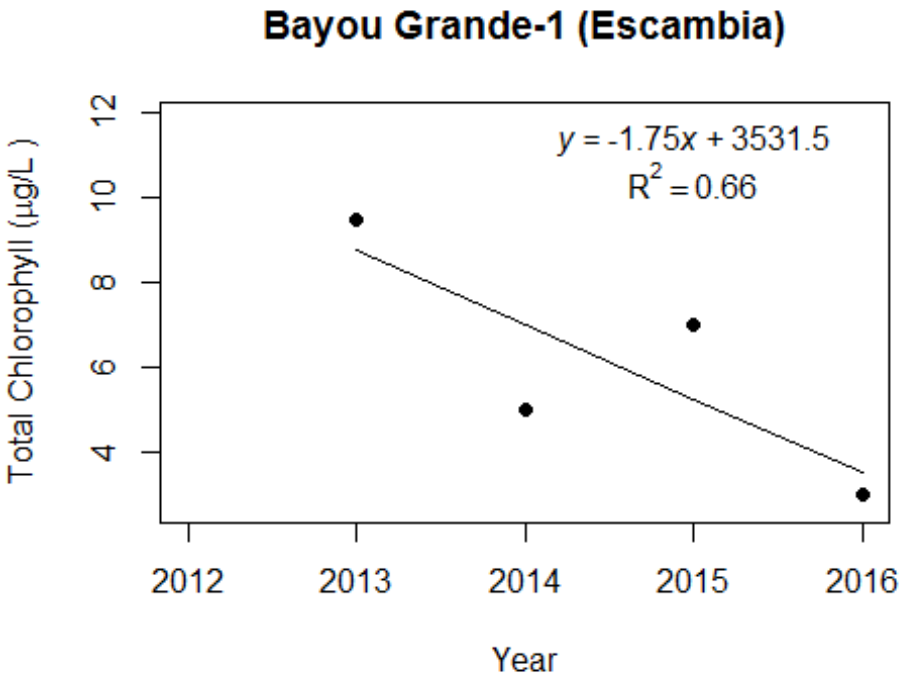
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

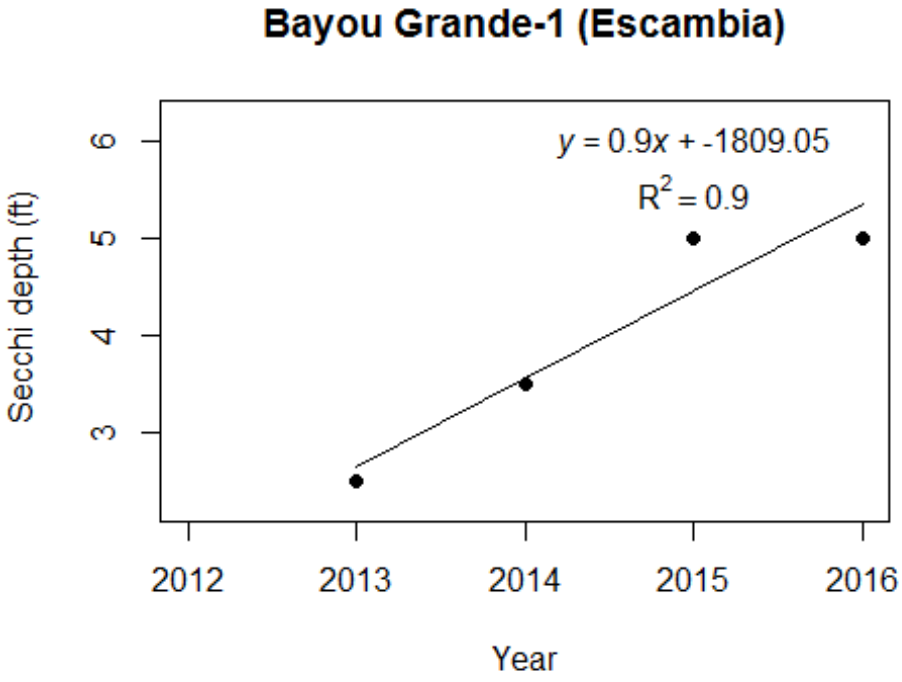
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	5	5	5	5
Intercept (a)	-788	-87751	3532	-1809
Slope (b)	0.40	43.75	-1.75	0.90
Coefficient of Determination (R^2)	0.01	0.74	0.66	0.90
Probability of Significance (p)	0.85	0.06	0.19	0.05
Potential Trend	No Trend	No Trend	No Trend	No Trend

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Grande-1 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.


Bayou Grande-1 (Escambia)
y = 0.4x + -787.93
R2 = 0.01
Total Phosphorus (µg/L)
15
20
25
30
2012
2013
2014
2015
2016
Year


Bayou Grande-1 (Escambia)
y = 43.75x + -87750.5
R2 = 0.74
Total Nitrogen (µg/L)
250
350
450
550
2012
2013
2014
2015
2016
Year


Bayou Grande-1 (Escambia)
y = -1.75x + 3531.5
R2 = 0.66
Total Chlorophyll (µg/L)
4
6
8
10
12
2012
2013
2014
2015
2016
Year


Bayou Grande-1 (Escambia)
y = 0.9x + -1809.05
R2 = 0.9
Secchi depth (ft)
3
4
5
6
2012
2013
2014
2015
2016
Year

LAKEWATCH Report for Bayou Grande-2 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Lower Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Grande-2
Latitude	30.3721
Longitude	-87.2947
Water Body Type	Estuary
Period of Record (year)	2012 to 2016

LAKEWATCH Report for Bayou Grande-2 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	12 - 24	17 (5)
Total Nitrogen (µg/L)	283 - 405	335 (5)
Chlorophyll- uncorrected (µg/L)	4.0 - 24.0	9.4 (5)
Secchi (ft)	3.0 - 6.5	5.4 (5)
Secchi (m)	0.9 - 2.0	1.7 (5)
Color (Pt-Co Units)	10 -17	13 (4)
Specific Conductance (µS/cm@25 C)	26400 - 34000	30038 (4)
Salinity (ppt)	16 - 21	19 (4)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Grande-2 in Escambia County
Using Data Downloaded 10/17/2016

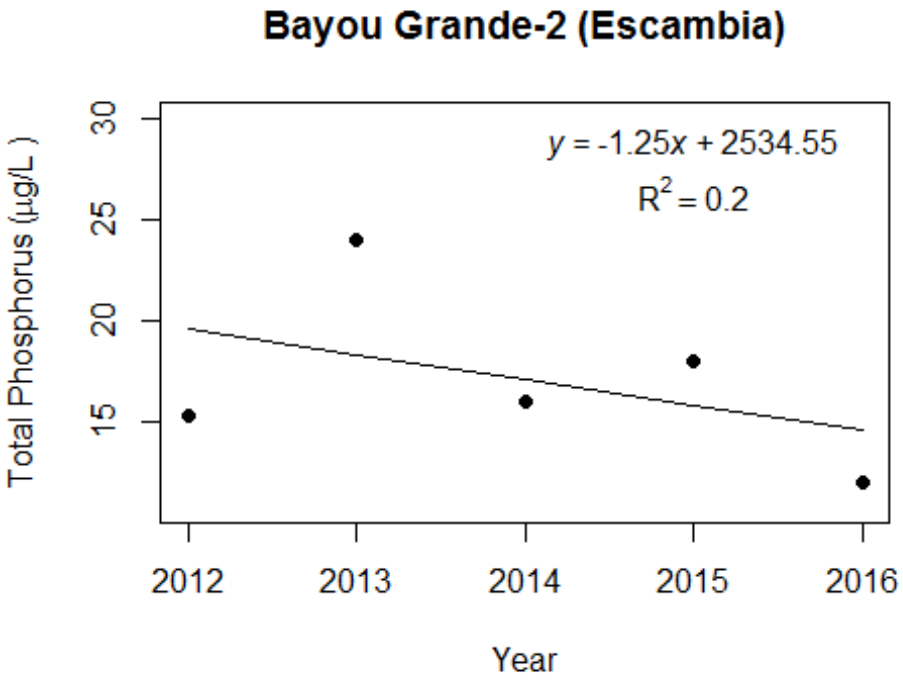
Trend Analyses Estuary

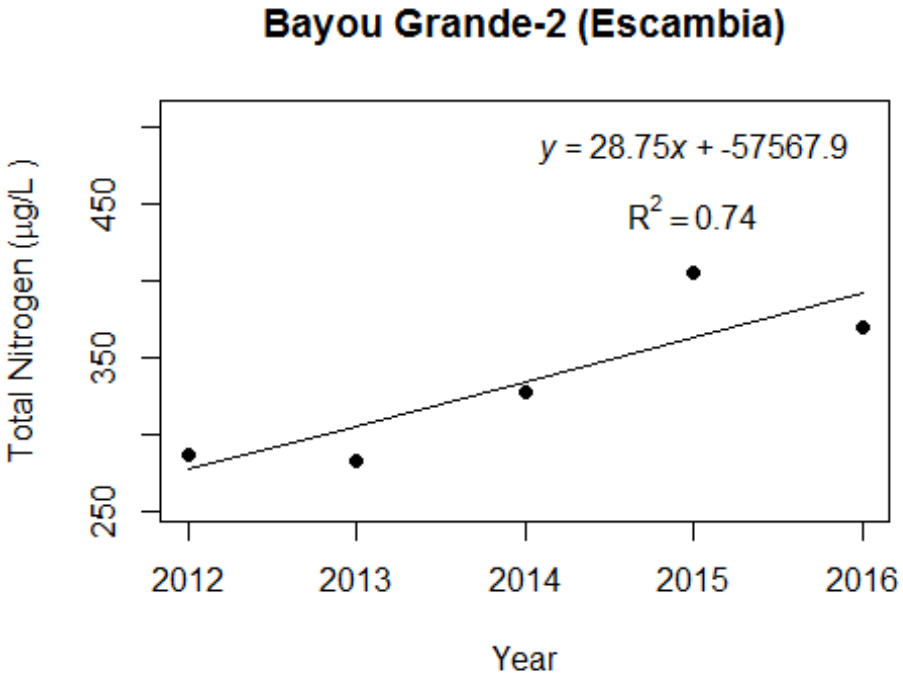
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

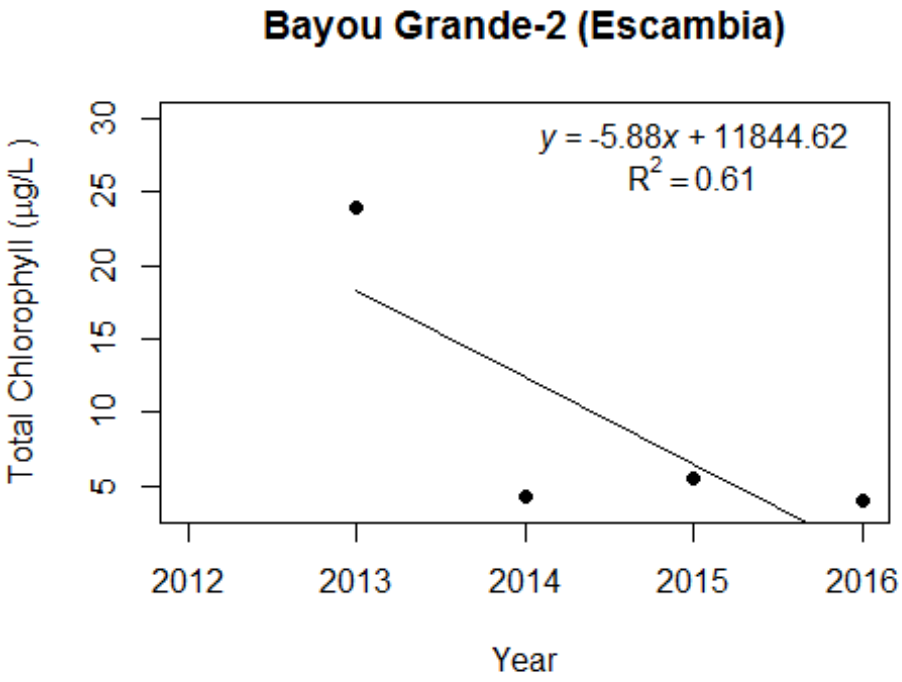
- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

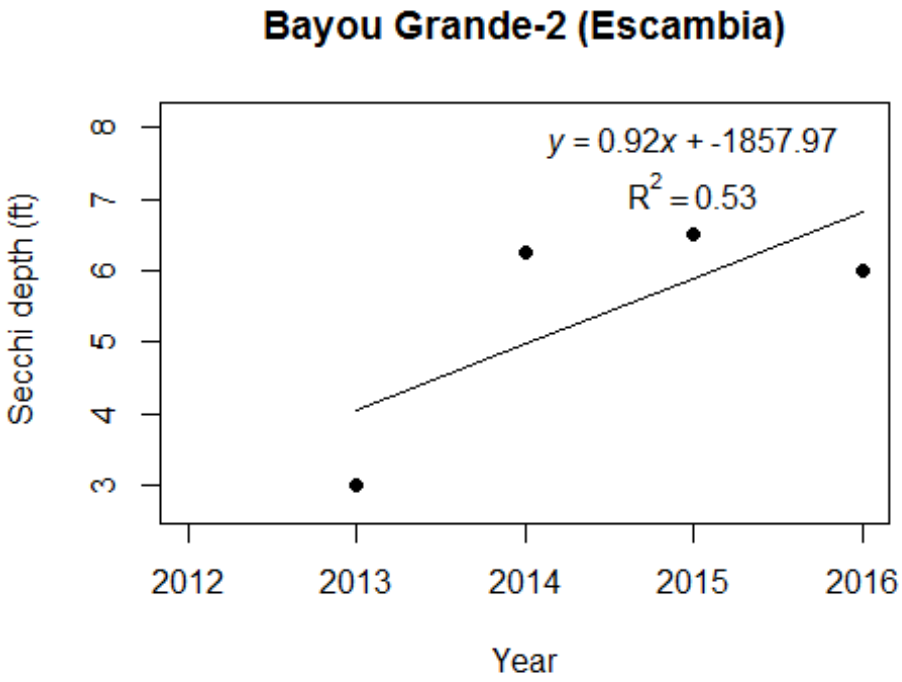
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	5	5	5	5
Intercept (a)	2535	-57568	11845	-1858
Slope (b)	-1.25	28.75	-5.88	0.93
Coefficient of Determination (R^2)	0.20	0.74	0.61	0.53
Probability of Significance (p)	0.45	0.06	0.22	0.27
Potential Trend	No Trend	No Trend	No Trend	No Trend

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Grande-2 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.


Bayou Grande-2 (Escambia)
y = -1.25x + 2534.55
R2 = 0.2
Total Phosphorus (µg/L)
15
20
25
30
2012
2013
2014
2015
2016
Year


Bayou Grande-2 (Escambia)
y = 28.75x + -57567.9
R2 = 0.74
Total Nitrogen (µg/L)
250
350
450
2012
2013
2014
2015
2016
Year


Bayou Grande-2 (Escambia)
y = -5.88x + 11844.62
R2 = 0.61
Total Chlorophyll (µg/L)
5
10
15
20
25
30
2012
2013
2014
2015
2016
Year


Bayou Grande-2 (Escambia)
y = 0.92x + -1857.97
R2 = 0.53
Secchi depth (ft)
3
4
5
6
7
8
2012
2013
2014
2015
2016
Year

LAKEWATCH Report for Bayou Grande-3 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Lower Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Grande-3
Latitude	30.3731
Longitude	-87.2792
Water Body Type	Estuary
Period of Record (year)	2012 to 2016

LAKEWATCH Report for Bayou Grande-3 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	17 - 28	21 (5)
Total Nitrogen (µg/L)	290 - 450	362 (5)
Chlorophyll- uncorrected (µg/L)	4.8 - 19.5	9.1 (5)
Secchi (ft)	4.3 - 6.5	5.5 (5)
Secchi (m)	1.3 - 2.0	1.7 (5)
Color (Pt-Co Units)	9 -18	12 (4)
Specific Conductance (µS/cm@25 C)	26400 - 36000	30704 (4)
Salinity (ppt)	16 - 22	19 (4)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Grande-3 in Escambia County
Using Data Downloaded 10/17/2016

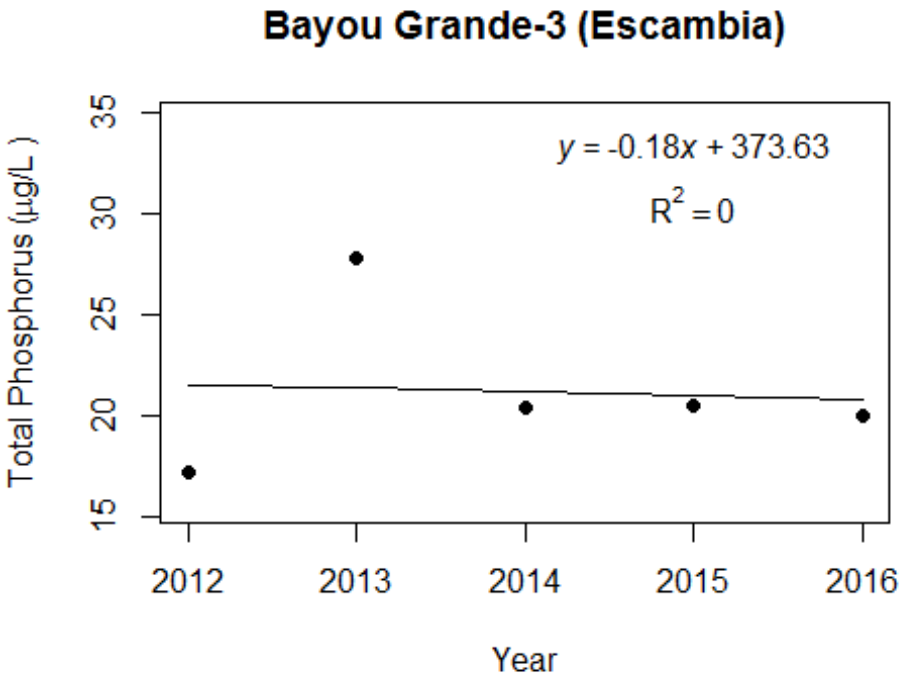
Trend Analyses Estuary

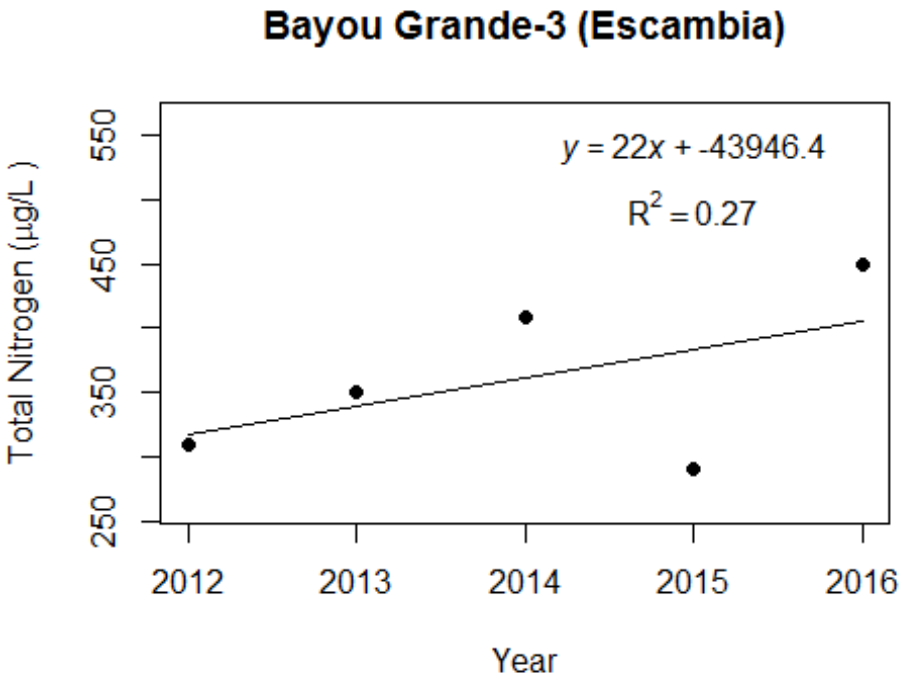
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

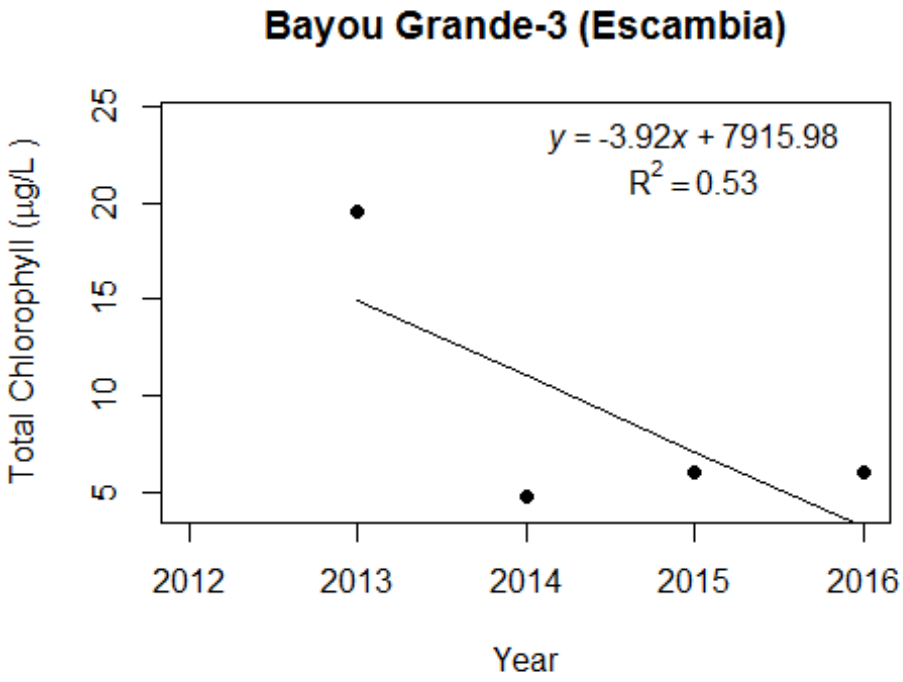
- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

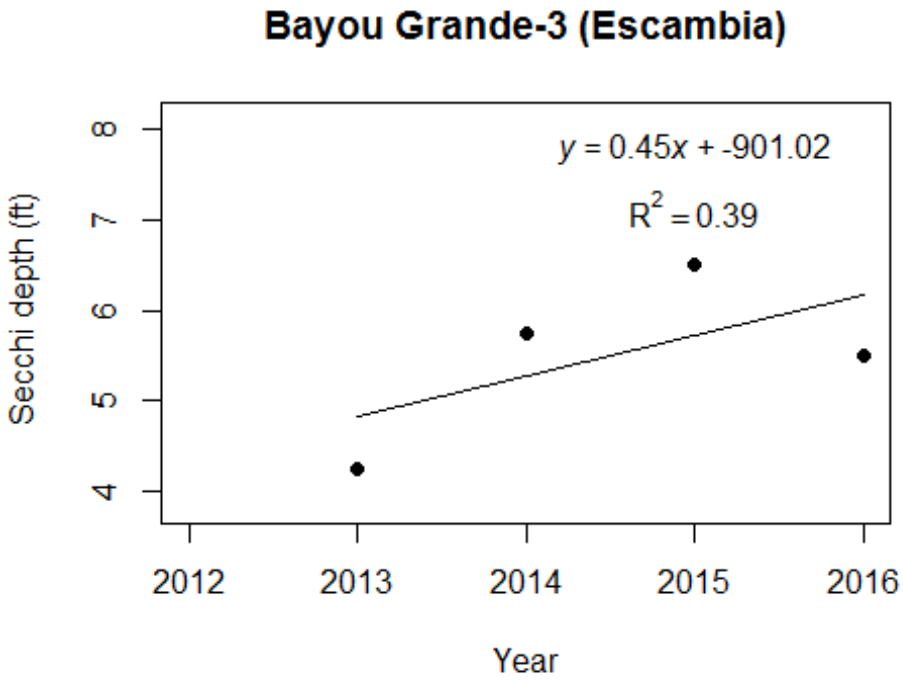
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	5	5	5	5
Intercept (a)	374	-43946	7916	-901
Slope (b)	-0.18	22.00	-3.93	0.45
Coefficient of Determination (R^2)	0.01	0.27	0.53	0.39
Probability of Significance (p)	0.91	0.37	0.27	0.38
Potential Trend	No Trend	No Trend	No Trend	No Trend

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Grande-3 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.


Bayou Grande-3 (Escambia)
y = -0.18x + 373.63
R2 = 0
Total Phosphorus (µg/L)
15
20
25
30
35
2012
2013
2014
2015
2016
Year


Bayou Grande-3 (Escambia)
y = 22x + -43946.4
R2 = 0.27
Total Nitrogen (µg/L)
250
350
450
550
2012
2013
2014
2015
2016
Year


Bayou Grande-3 (Escambia)
y = -3.92x + 7915.98
R2 = 0.53
Total Chlorophyll (µg/L)
5
10
15
20
25
2012
2013
2014
2015
2016
Year


Bayou Grande-3 (Escambia)
y = 0.45x + -901.02
R2 = 0.39
Secchi depth (ft)
4
5
6
7
8
2012
2013
2014
2015
2016
Year

LAKEWATCH Report for Bayou Texar South-1 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Upper Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Texar South-1
Latitude	30.4277
Longitude	-87.19
Water Body Type	Estuary
Period of Record (year)	2000 to 2002

LAKEWATCH Report for Bayou Texar South-1 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	19 - 37	26 (3)
Total Nitrogen (µg/L)	300 - 560	394 (3)
Chlorophyll- uncorrected (µg/L)	6.0 - 7.0	6.7 (3)
Secchi (ft)	2.1 - 4.0	3.0 (3)
Secchi (m)	0.6 - 1.2	0.9 (3)
Color (Pt-Co Units)	11 -25	18 (2)
Specific Conductance (µS/cm@25 C)	2000 - 13667	7833 (2)
Salinity (ppt)	1 - 8	5 (2)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Texar South-1 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Texar South-1 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Bayou Texar South-2 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Upper Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Texar South-2
Latitude	30.4244
Longitude	-87.1885
Water Body Type	Estuary
Period of Record (year)	2000 to 2002

LAKEWATCH Report for Bayou Texar South-2 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	24 - 39	29 (3)
Total Nitrogen (µg/L)	375 - 492	424 (3)
Chlorophyll- uncorrected (µg/L)	5.8 - 29.0	13.6 (3)
Secchi (ft)	1.9 - 4.0	3.0 (3)
Secchi (m)	0.6 - 1.2	0.9 (3)
Color (Pt-Co Units)	17 -19	18 (2)
Specific Conductance (µS/cm@25 C)	10500 - 14667	12583 (2)
Salinity (ppt)	6 - 9	8 (2)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Texar South-2 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Texar South-2 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Bayou Texar-1 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Upper Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Texar-1
Latitude	30.452
Longitude	-87.2003
Water Body Type	Estuary
Period of Record (year)	2007 to 2016

LAKEWATCH Report for Bayou Texar-1 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	16 - 25	19 (10)
Total Nitrogen (µg/L)	722 - 1088	837 (10)
Chlorophyll- uncorrected (µg/L)	5.3 - 12.5	8.8 (10)
Secchi (ft)	2.8 - 4.4	3.3 (10)
Secchi (m)	0.8 - 1.3	1.0 (10)
Color (Pt-Co Units)	7 -13	10 (10)
Specific Conductance (µS/cm@25 C)	5724 - 28667	13882 (10)
Salinity (ppt)	3 - 18	9 (10)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Texar-1 in Escambia County
Using Data Downloaded 10/17/2016

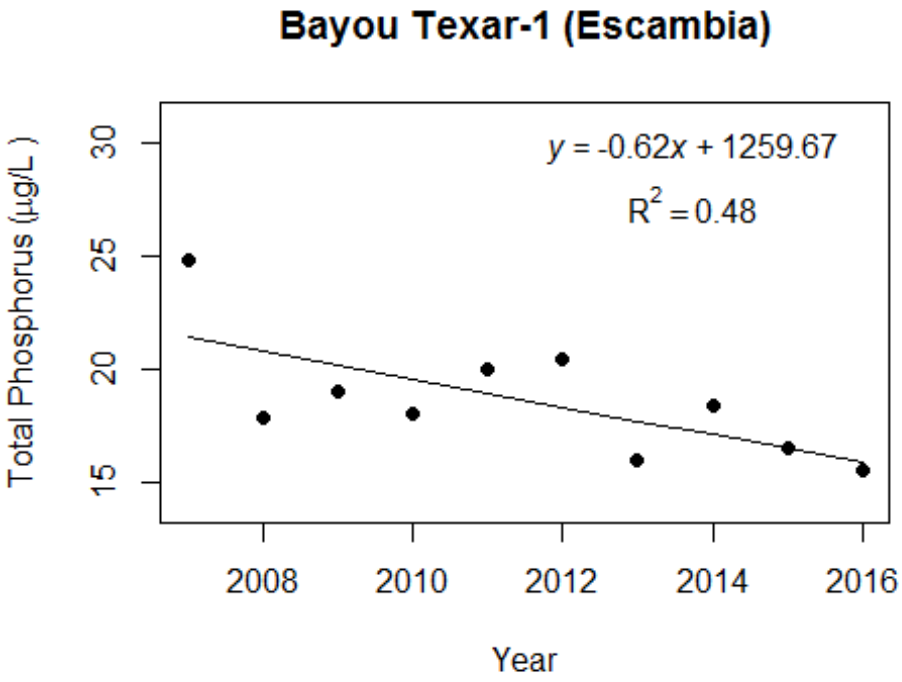
Trend Analyses Estuary

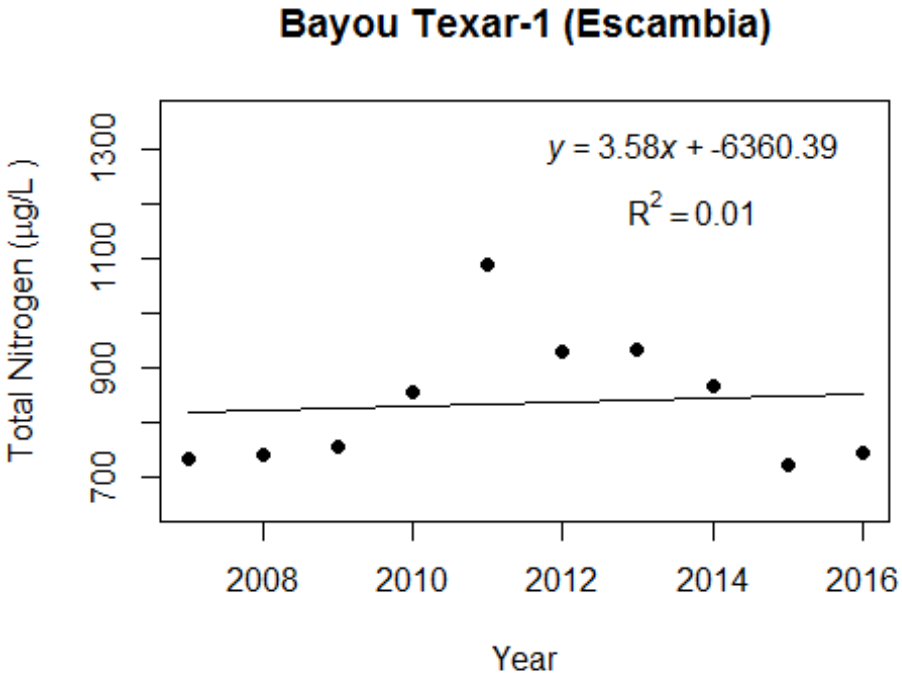
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

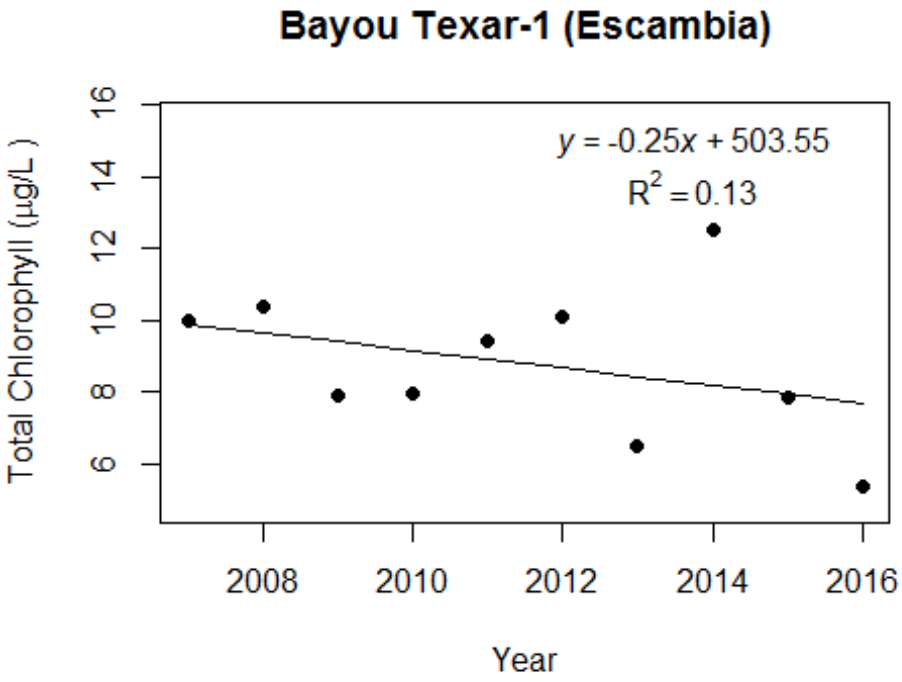
- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

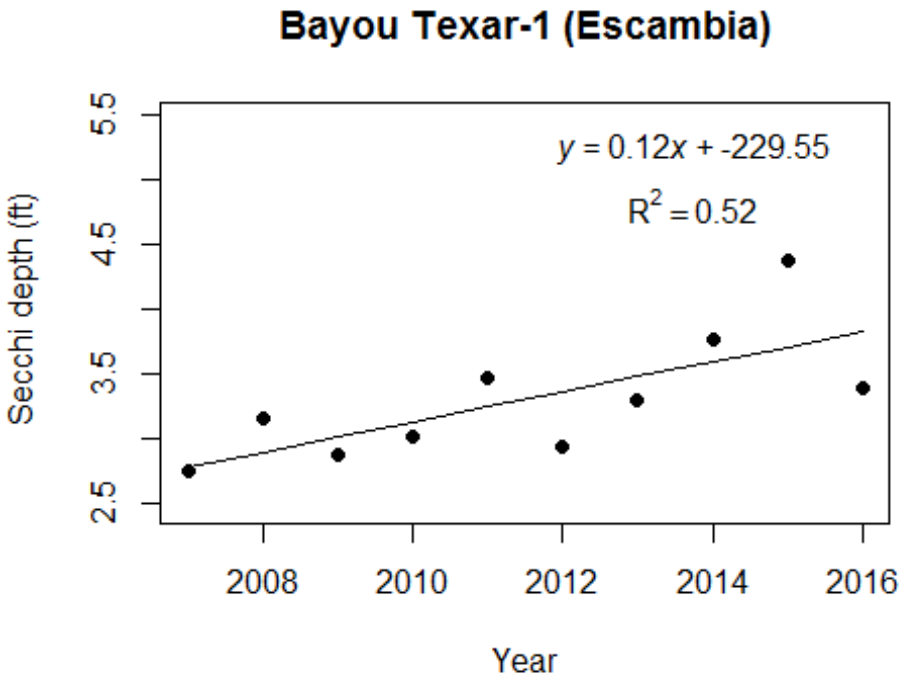
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	10	10	10	10
Intercept (a)	1260	-6360	504	-230
Slope (b)	-0.62	3.58	-0.25	0.12
Coefficient of Determination (R^2)	0.48	0.01	0.13	0.52
Probability of Significance (p)	0.03	0.80	0.31	0.02
Potential Trend	Decreasing	No Trend	No Trend	Increasing

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Texar-1 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.


Bayou Texar-1 (Escambia)
y = -0.62x + 1259.67
R2 = 0.48
Total Phosphorus (µg/L)
15
20
25
30
2008
2010
2012
2014
2016
Year


Bayou Texar-1 (Escambia)
y = 3.58x + -6360.39
R2 = 0.01
Total Nitrogen (µg/L)
700
900
1100
1300
2008
2010
2012
2014
2016
Year


Bayou Texar-1 (Escambia)
y = -0.25x + 503.55
R2 = 0.13
Total Chlorophyll (µg/L)
6
8
10
12
14
16
2008
2010
2012
2014
2016
Year


Bayou Texar-1 (Escambia)
y = 0.12x + -229.55
R2 = 0.52
Secchi depth (ft)
2.5
3.5
4.5
5.5
2008
2010
2012
2014
2016
Year

LAKEWATCH Report for Bayou Texar-2 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Upper Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Texar-2
Latitude	30.4456
Longitude	-87.1878
Water Body Type	Estuary
Period of Record (year)	2007 to 2016

LAKEWATCH Report for Bayou Texar-2 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	15 - 28	21 (10)
Total Nitrogen (µg/L)	617 - 848	696 (10)
Chlorophyll- uncorrected (µg/L)	6.3 - 14.8	10.8 (10)
Secchi (ft)	3.0 - 4.7	3.7 (10)
Secchi (m)	0.9 - 1.4	1.1 (10)
Color (Pt-Co Units)	8 -14	11 (10)
Specific Conductance (µS/cm@25 C)	7500 - 25000	18169 (10)
Salinity (ppt)	4 - 15	12 (10)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Texar-2 in Escambia County
Using Data Downloaded 10/17/2016

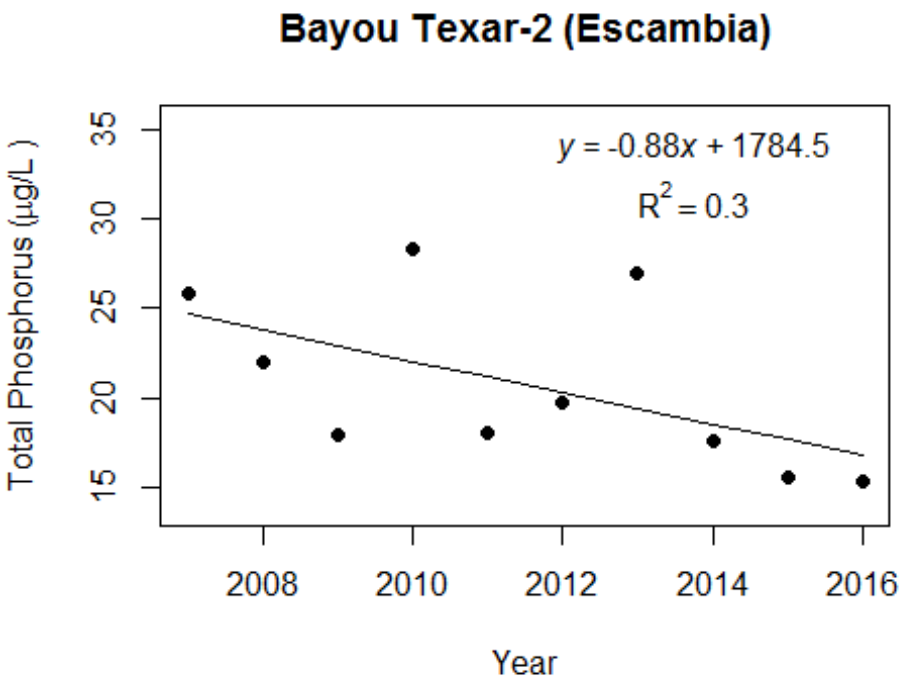
Trend Analyses Estuary

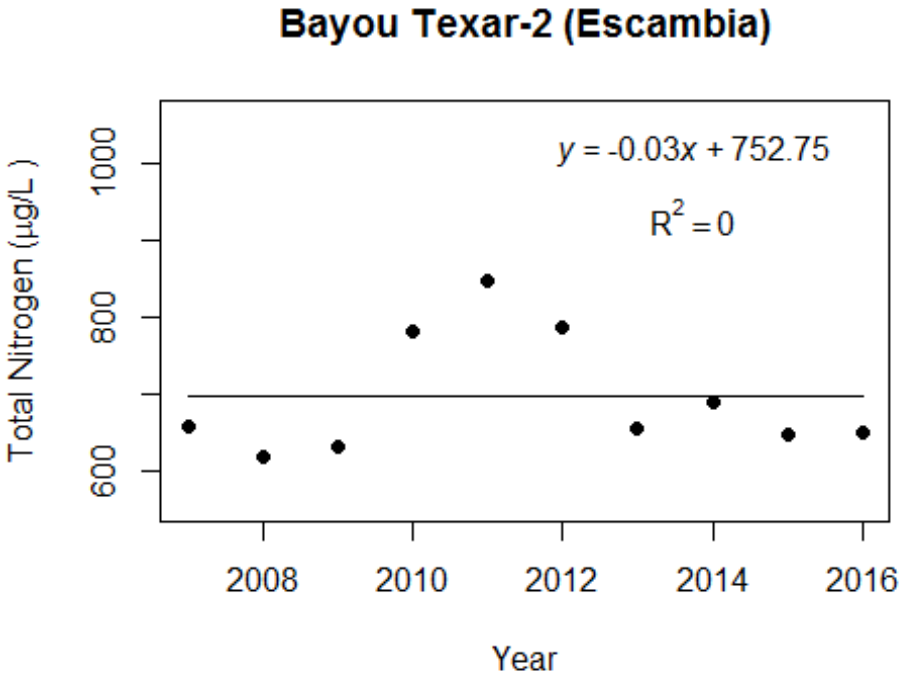
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

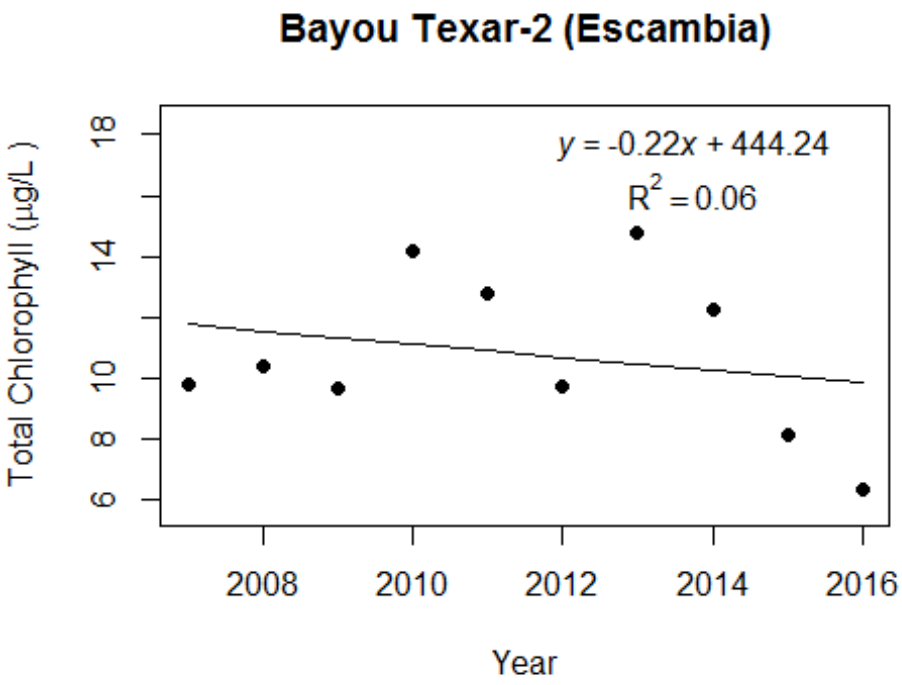
- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

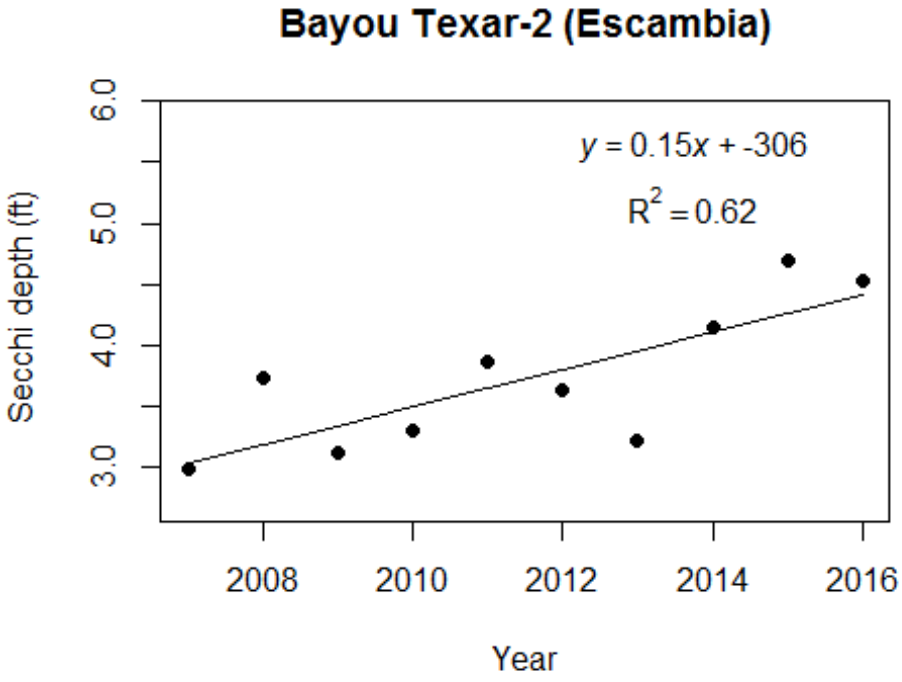
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	10	10	10	10
Intercept (a)	1785	753	444	-306
Slope (b)	-0.88	-0.03	-0.22	0.15
Coefficient of Determination (R^2)	0.30	0.00	0.06	0.62
Probability of Significance (p)	0.10	1.00	0.49	0.01
Potential Trend	No Trend	No Trend	No Trend	Increasing

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Texar-2 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.


Bayou Texar-2 (Escambia)
y = -0.88x + 1784.5
R2 = 0.3
Total Phosphorus (µg/L)
15
20
25
30
35
2008
2010
2012
2014
2016
Year


Bayou Texar-2 (Escambia)
y = -0.03x + 752.75
R2 = 0
Total Nitrogen (µg/L)
600
800
1000
2008
2010
2012
2014
2016
Year


Bayou Texar-2 (Escambia)
y = -0.22x + 444.24
R2 = 0.06
Total Chlorophyll (µg/L)
6
8
10
14
18
2008
2010
2012
2014
2016
Year


Bayou Texar-2 (Escambia)
y = 0.15x + -306
R2 = 0.62
Secchi depth (ft)
3.0
4.0
5.0
6.0
2008
2010
2012
2014
2016
Year

LAKEWATCH Report for Bayou Texar-3 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Pensacola Bay	Upper Pensacola Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Bayou Texar-3
Latitude	30.4344
Longitude	-87.186
Water Body Type	Estuary
Period of Record (year)	2007 to 2016

LAKEWATCH Report for Bayou Texar-3 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	15 - 29	21 (10)
Total Nitrogen (µg/L)	517 - 786	634 (10)
Chlorophyll- uncorrected (µg/L)	7.2 - 21.5	11.4 (10)
Secchi (ft)	3.1 - 5.3	3.8 (10)
Secchi (m)	0.9 - 1.6	1.2 (10)
Color (Pt-Co Units)	9 -16	13 (10)
Specific Conductance (µS/cm@25 C)	7500 - 28333	18440 (10)
Salinity (ppt)	4 - 18	11 (10)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Bayou Texar-3 in Escambia County
Using Data Downloaded 10/17/2016

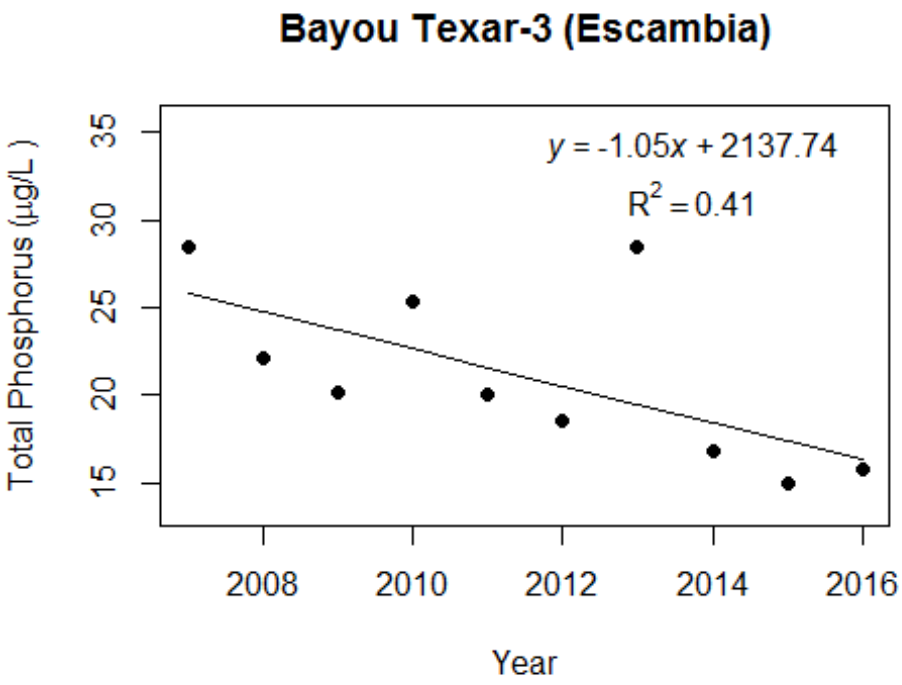
Trend Analyses Estuary

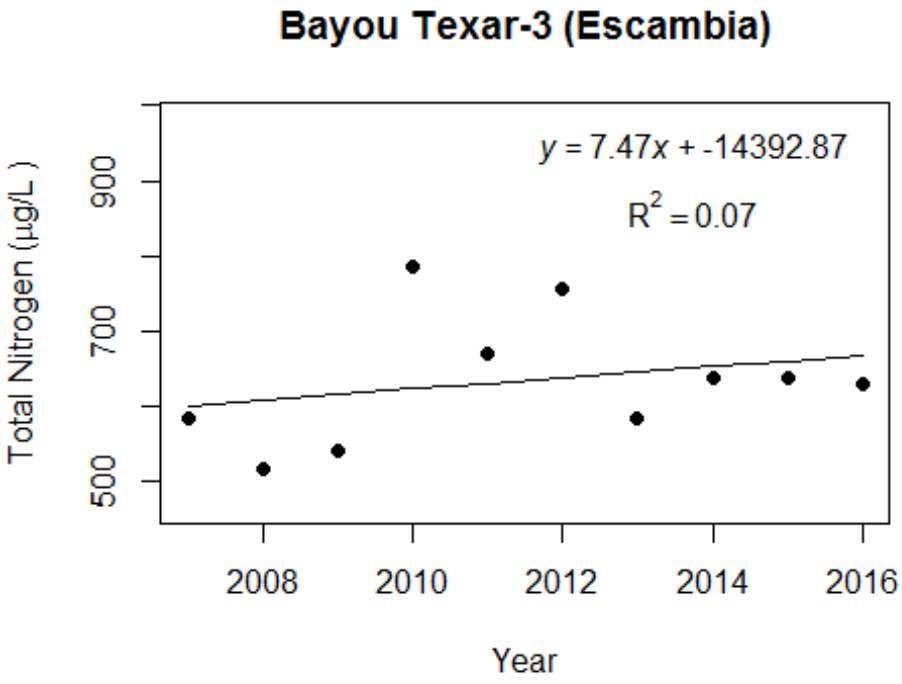
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

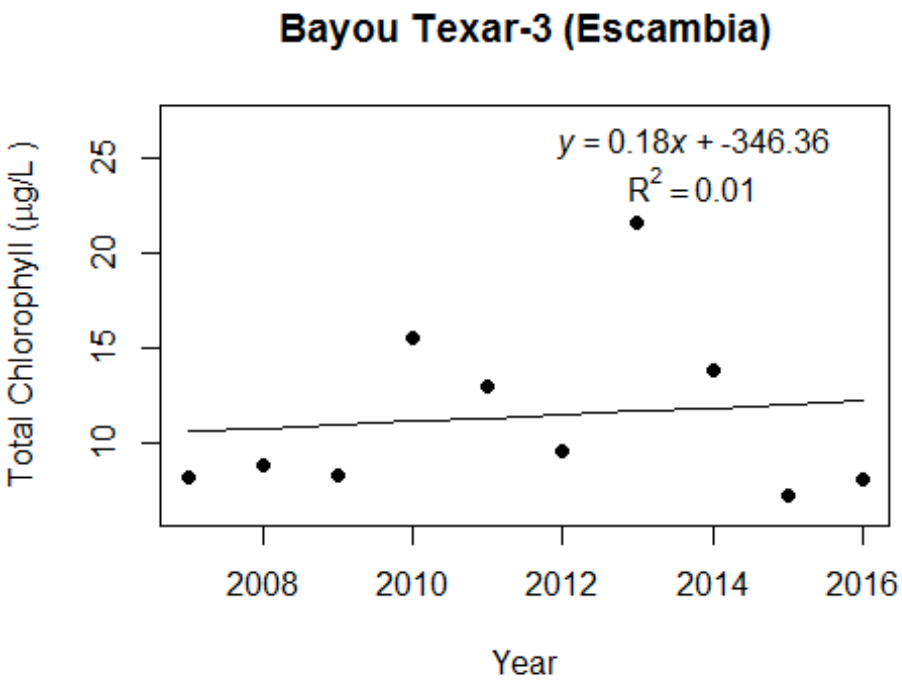
- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

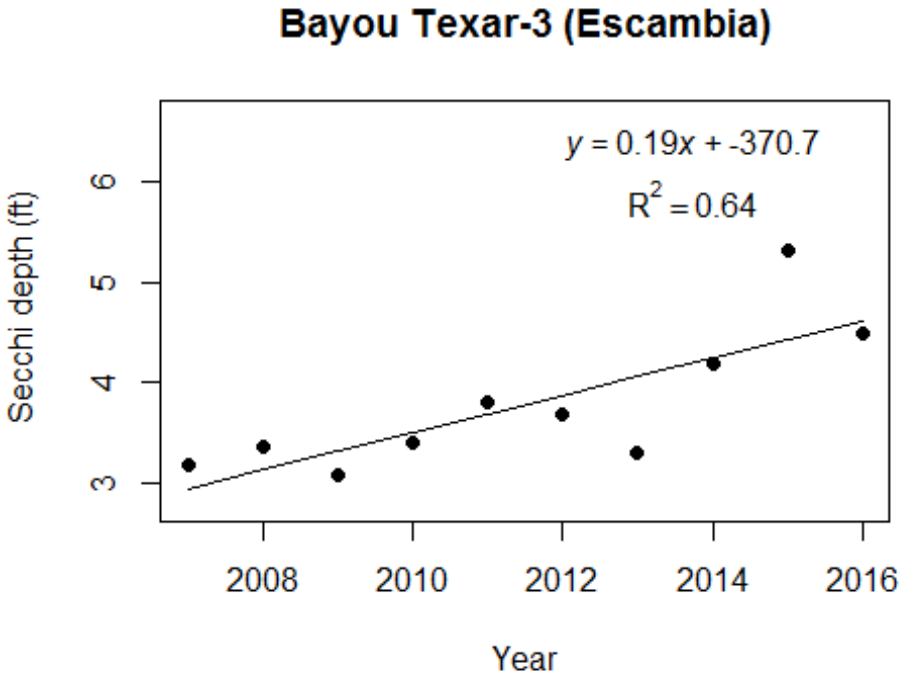
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	10	10	10	10
Intercept (a)	2138	-14393	-346	-371
Slope (b)	-1.05	7.47	0.18	0.19
Coefficient of Determination (R^2)	0.41	0.07	0.01	0.64
Probability of Significance (p)	0.05	0.46	0.75	0.01
Potential Trend	Decreasing	No Trend	No Trend	Increasing

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Bayou Texar-3 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.


Bayou Texar-3 (Escambia)
y = -1.05x + 2137.74
R2 = 0.41
Total Phosphorus (µg/L)
15
20
25
30
35
2008
2010
2012
2014
2016
Year


Bayou Texar-3 (Escambia)
y = 7.47x + -14392.87
R2 = 0.07
Total Nitrogen (µg/L)
500
700
900
2008
2010
2012
2014
2016
Year


Bayou Texar-3 (Escambia)
y = 0.18x + -346.36
R2 = 0.01
Total Chlorophyll (µg/L)
10
15
20
25
2008
2010
2012
2014
2016
Year


Bayou Texar-3 (Escambia)
y = 0.19x + -370.7
R2 = 0.64
Secchi depth (ft)
3
4
5
6
2008
2010
2012
2014
2016
Year

LAKEWATCH Report for Perdido Bay-1 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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: https://www.flrules.org/Gateway/reference.asp?No=Ref-05420.
The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Perdido Bay	Lower Perdido Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County**: Name of county in which the estuary resides.
- **Name**: Estuary name that LAKEWATCH uses for the system.
- **Latitude and Longitude**: Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type**: Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year)**: Years an estuary has been in the LAKEWATCH program.

County	Escambia
Name	Perdido Bay-1
Latitude	30.3239
Longitude	-87.5044
Water Body Type	Estuary
Period of Record (year)	2014 to 2016

LAKEWATCH Report for Perdido Bay-1 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	15 - 19	16 (3)
Total Nitrogen (µg/L)	352 - 398	368 (3)
Chlorophyll- uncorrected (µg/L)	5.2 - 6.3	5.6 (3)
Secchi (ft)	5.3 - 7.5	6.5 (3)
Secchi (m)	1.6 - 2.3	2.0 (3)
Color (Pt-Co Units)	15 -22	18 (3)
Specific Conductance (µS/cm@25 C)	19000 - 24000	22167 (3)
Salinity (ppt)	12 - 15	14 (3)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Perdido Bay-1 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

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- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Perdido Bay-1 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Perdido Bay-2 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Perdido Bay	Central Perdido Bay		

Base File Data: Definitions

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

County	Escambia
Name	Perdido Bay-2
Latitude	30.3222
Longitude	-87.4575
Water Body Type	Estuary
Period of Record (year)	2014 to 2016

LAKEWATCH Report for Perdido Bay-2 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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 filter 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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	15 - 17	16 (3)
Total Nitrogen (µg/L)	335 - 423	381 (3)
Chlorophyll- uncorrected (µg/L)	4.5 - 6.3	5.5 (3)
Secchi (ft)	5.3 - 7.0	6.1 (3)
Secchi (m)	1.6 - 2.1	1.8 (3)
Color (Pt-Co Units)	16 -23	19 (3)
Specific Conductance (µS/cm@25 C)	18000 - 28667	23389 (3)
Salinity (ppt)	11 - 18	14 (3)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Perdido Bay-2 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

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- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Perdido Bay-2 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Perdido Bay-3 in Escambia County
Using Data Downloaded 10/17/2016

Introduction Estuary

For many decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Estuaries and coastal segments: http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm).

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The individual nutrient criteria can be found at:
https://www.flrules.org/gateway/ruleNo.asp?id=62-302.532
Estuary lies in the following location:

Estuary	Estuary Segment	Coastal Nutrient Region	Coastal Nutrient Segment
Perdido Bay	Central Perdido Bay		

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

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

County	Escambia
Name	Perdido Bay-3
Latitude	30.3456
Longitude	-87.4417
Water Body Type	Estuary
Period of Record (year)	2014 to 2016

LAKEWATCH Report for Perdido Bay-3 in Escambia County
Using Data Downloaded 10/17/2016

Long-Term Data Summary Estuary: 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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- **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 dissolve materials in water.

Long-Term Data Summary Estuary: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	14 - 22	17 (3)
Total Nitrogen (µg/L)	347 - 433	391 (3)
Chlorophyll- uncorrected (µg/L)	5.5 - 7.0	6.2 (3)
Secchi (ft)	5.3 - 6.5	5.8 (3)
Secchi (m)	1.6 - 2.0	1.8 (3)
Color (Pt-Co Units)	17 -25	20 (3)
Specific Conductance (µS/cm@25 C)	17000 - 24667	22056 (3)
Salinity (ppt)	10 - 15	14 (3)

Coastal Trophic State

Trophic status is a measure of a systems biological productivity and LAKEWATCH uses total chlorophyll averages as a trophic state measure. Since the total chlorophyll measurement indicates how much algae is actually present in a water body, it is the most direct indicator of biological productivity. For freshwater lakes, LAKEWATCH uses the trophic state classification criteria proposed by Forsberg and Ryding (1980). LAKEWATCH staff sampled coastal systems around all of Florida (Hoyer et al. 2002) and discovered that chlorophyll concentrations are significantly less for the same amount of algae than freshwater lakes. Thus, to classify trophic status of coastal waters using similar classification terminology LAKEWATCH provided the table below accounting for the chlorophyll differences reported by Hoyer et al. (2002).

Trophic Status	Freshwater Chlorophyll (µg/L) (Forsberg and Ryding 1980)	Coastal Chlorophyll (µg/L) (Hoyer et al. 2002)
Oligotrophic	< 3.0	< 0.5
Mesotrophic	3.0 - 7.0	0.5 - 1.8
Eutrophic	7.0 - 40.0	1.8 – 12.4
Hypereutrophic	> 40.0	> 12.4

Hoyer, M. V., T. K. Frazer, S. K. Notestein and D. E. Canfield, Jr. 2002. Nutrient, chlorophyll, and water clarity relationships in Florida's nearshore coastal waters with comparisons to freshwater lakes. Canadian Journal of Fisheries and Aquatic Sciences 59:1-8.

LAKEWATCH Report for Perdido Bay-3 in Escambia County
Using Data Downloaded 10/17/2016

Trend Analyses Estuary

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R^2):** This value is an indication of how much variance above and below the fitted line there is in the data. This values ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R^2)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Perdido Bay-3 in Escambia County. If there are no plots then there is less than five years of data, which is not enough for the analysis.