## LAKEWATCH Report for CBA CTP-1 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA CTP-1
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.4009
Longitude	-86.5131

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 11	11 (1)
Total Nitrogen (µg/L)	211 - 211	211 (1)
Chlorophyll- uncorrected ( $\mu$ g/L)	1 - 1	1 (1)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	6 - 6	6 (1)
Specific Conductance (µS/cm@25 C)	31496 - 31496	31496 (1)
Salinity (ppt)	20 - 20	20 (1)

## LAKEWATCH Report for CBA CTP-2 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA CTP-2
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.4003
Longitude	-86.5133

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 11	11 (1)
Total Nitrogen (µg/L)	191 - 191	191 (1)
Chlorophyll- uncorrected (µg/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	7 - 7	7 (1)
Specific Conductance (µS/cm@25 C)	394204 - 394204	394204 (1)
Salinity (ppt)	246 - 246	246 (1)

## LAKEWATCH Report for CBA CTP-3 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA CTP-3
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.4001
Longitude	-86.5135

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	12 - 12	12 (1)
Total Nitrogen (µg/L)	177 - 177	177 (1)
Chlorophyll- uncorrected (µg/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	8 - 8	8 (1)
Specific Conductance (µS/cm@25 C)	34409 - 34409	34409 (1)
Salinity (ppt)	21 - 21	21 (1)

## LAKEWATCH Report for CBA CTP-4 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA CTP-4
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.4011
Longitude	-86.5133

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 11	11 (1)
Total Nitrogen (µg/L)	204 - 204	204 (1)
Chlorophyll- uncorrected (µg/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	7 - 7	7 (1)
Specific Conductance (µS/cm@25 C)	35875 - 35875	35875 (1)
Salinity (ppt)	22 - 22	22 (1)

## LAKEWATCH Report for CBA CTP-5 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA CTP-5
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.4005
Longitude	-86.5138

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 10	10 (1)
Total Nitrogen (µg/L)	218 - 218	218 (1)
Chlorophyll- uncorrected (µg/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	8 - 8	8 (1)
Specific Conductance (µS/cm@25 C)	40817 - 40817	40817 (1)
Salinity (ppt)	25 - 25	25 (1)

## LAKEWATCH Report for CBA CTP-6 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA CTP-6
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.4002
Longitude	-86.5138

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 10	10 (1)
Total Nitrogen (µg/L)	175 - 175	175 (1)
Chlorophyll- uncorrected ( $\mu$ g/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	8 - 8	8 (1)
Specific Conductance (µS/cm@25 C)	37762 - 37762	37762 (1)
Salinity (ppt)	23 - 23	23 (1)

#### LAKEWATCH Report for CBA Destin-1 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Destin-1
GNIS Number	284828
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4149
Longitude	-86.4938

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 18	13 (22)
Total Nitrogen (µg/L)	200 - 342	252 (22)
Chlorophyll- uncorrected (µg/L)	2 - 6	3 (22)
Secchi (ft)	3.3 - 10.5	5.7 (19)
Secchi (m)	1.0 - 3.2	1.7 (19)
Color (Pt-Co Units)	6 - 16	10 (21)
Specific Conductance (µS/cm@25 C)	17054 - 36917	24543 (21)
Salinity (ppt)	10 - 23	15 (21)

Figure 2. CBA Destin-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.03$ , p = 0.47), total nitrogen (TN No Trend,  $R^2 = 0.06$ , p = 0.29), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.92) and Secchi depth (Secchi No Trend,  $R^2 = 0.14$ , p = 0.11).



## LAKEWATCH Report for CBA Destin-2 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Destin-2
GNIS Number	284482
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.4031
Longitude	-86.4542

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	15 - 27	19 (20)
Total Nitrogen (µg/L)	228 - 463	339 (20)
Chlorophyll- uncorrected (µg/L)	4 - 7	5 (20)
Secchi (ft)	3.2 - 5.7	4.2 (20)
Secchi (m)	1.0 - 1.7	1.3 (20)
Color (Pt-Co Units)	9 - 49	19 (19)
Specific Conductance (µS/cm@25 C)	13458 - 32126	22195 (19)
Salinity (ppt)	8 - 20	14 (19)

Figure 2. CBA Destin-2 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.04$ , p = 0.40), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.80), chlorophyll (CHL No Trend,  $R^2 = 0.16$ , p = 0.08) and Secchi depth (Secchi Increasing,  $R^2 = 0.56$ , p = 0.00).



## LAKEWATCH Report for CBA Destin-3 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Destin-3
GNIS Number	284482
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4004
Longitude	-86.4486

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	14 - 24	18 (22)
Total Nitrogen (µg/L)	224 - 436	317 (22)
Chlorophyll- uncorrected ( $\mu$ g/L)	3 - 8	5 (22)
Secchi (ft)	3.4 - 6.0	4.5 (21)
Secchi (m)	1.0 - 1.8	1.4 (21)
Color (Pt-Co Units)	8 - 42	19 (21)
Specific Conductance (µS/cm@25 C)	13650 - 34019	23385 (21)
Salinity (ppt)	8 - 21	14 (21)

Figure 2. CBA Destin-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ , p = 0.75), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.98), chlorophyll (CHL No Trend,  $R^2 = 0.01$ , p = 0.61) and Secchi depth (Secchi Increasing,  $R^2 = 0.35$ , p = 0.00).



## LAKEWATCH Report for CBA Destin-4 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Destin-4
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4088
Longitude	-86.4314

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 17	13 (22)
Total Nitrogen (µg/L)	166 - 319	236 (22)
Chlorophyll- uncorrected (µg/L)	1 - 5	3 (22)
Secchi (ft)	3.3 - 6.0	4.4 (13)
Secchi (m)	1.0 - 1.8	1.3 (13)
Color (Pt-Co Units)	4 - 19	10 (21)
Specific Conductance (µS/cm@25 C)	16225 - 36077	24192 (21)
Salinity (ppt)	10 - 22	15 (21)

Figure 2. CBA Destin-4 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.03$ , p = 0.42), total nitrogen (TN No Trend,  $R^2 = 0.04$ , p = 0.40), chlorophyll (CHL No Trend,  $R^2 = 0.01$ , p = 0.72) and Secchi depth (Secchi No Trend,  $R^2 = 0.01$ , p = 0.70).



## LAKEWATCH Report for CBA Destin-11 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Destin-11
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.3955
Longitude	-86.5158

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 11	11 (2)
Total Nitrogen (µg/L)	200 - 200	200 (2)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (2)
Secchi (ft)	7.7 - 10.1	8.8 (2)
Secchi (m)	2.3 - 3.1	2.7 (2)
Color (Pt-Co Units)	6 - 7	6 (2)
Specific Conductance (µS/cm@25 C)	35208 - 38663	36895 (2)
Salinity (ppt)	22 - 24	23 (2)

## LAKEWATCH Report for CBA Destin-12 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Destin-12
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.4160
Longitude	-86.4248

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 12	11 (2)
Total Nitrogen (µg/L)	204 - 231	217 (2)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (2)
Secchi (ft)	9.8 - 12.2	10.9 (2)
Secchi (m)	3.0 - 3.7	3.3 (2)
Color (Pt-Co Units)	8 - 10	9 (2)
Specific Conductance (µS/cm@25 C)	26007 - 29100	27510 (2)
Salinity (ppt)	16 - 18	17 (2)

## LAKEWATCH Report for CBA Destin-13 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Destin-13
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.4015
Longitude	-86.3980

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 11	11 (2)
Total Nitrogen (µg/L)	202 - 206	204 (2)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (2)
Secchi (ft)	3.0 - 3.0	3.0 (1)
Secchi (m)	0.9 - 0.9	0.9 (1)
Color (Pt-Co Units)	8 - 9	8 (2)
Specific Conductance (µS/cm@25 C)	26434 - 26907	26669 (2)
Salinity (ppt)	16 - 17	16 (2)

#### LAKEWATCH Report for CBA Ft. Walton Beach-1 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-1
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.4330
Longitude	-86.6275

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 19	14 (20)
Total Nitrogen (µg/L)	230 - 402	286 (20)
Chlorophyll- uncorrected (µg/L)	1 - 6	4 (20)
Secchi (ft)	5.7 - 11.2	8.2 (20)
Secchi (m)	1.7 - 3.4	2.5 (20)
Color (Pt-Co Units)	5 - 19	11 (20)
Specific Conductance (µS/cm@25 C)	16134 - 38471	24636 (20)
Salinity (ppt)	10 - 24	15 (20)

Figure 2. CBA Ft. Walton Beach-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.01$ , p = 0.67), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.90), chlorophyll (CHL No Trend,  $R^2 = 0.09$ , p = 0.20) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ , p = 0.89).



#### LAKEWATCH Report for CBA Ft. Walton Beach-2 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-2
GNIS Number	280460
Water Body Type	Estuary
Period of Record (years, range)	23 (2000 to 2022)
Latitude	30.4271
Longitude	-86.5989

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 13	11 (23)
Total Nitrogen (µg/L)	194 - 328	246 (23)
Chlorophyll- uncorrected (µg/L)	1 - 4	3 (23)
Secchi (ft)	7.0 - 13.1	10.4 (23)
Secchi (m)	2.1 - 4.0	3.2 (23)
Color (Pt-Co Units)	6 - 17	9 (22)
Specific Conductance (µS/cm@25 C)	11790 - 42000	26490 (22)
Salinity (ppt)	7 - 26	16 (22)

Figure 2. CBA Ft. Walton Beach-2 trend plots of year by average. The R<sup>2</sup> value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R<sup>2</sup> the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend, R<sup>2</sup> = 0.00, p = 0.87), total nitrogen (TN No Trend, R<sup>2</sup> = 0.00, p = 0.98), chlorophyll (CHL No Trend, R<sup>2</sup> = 0.14, p = 0.08) and Secchi depth (Secchi No Trend, R<sup>2</sup> = 0.05, p = 0.31).


### LAKEWATCH Report for CBA Ft. Walton Beach-3 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Garnier Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-3
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	23 (2000 to 2022)
Latitude	30.4467
Longitude	-86.5889

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 17	11 (23)
Total Nitrogen (µg/L)	199 - 362	275 (23)
Chlorophyll- uncorrected (µg/L)	1 - 5	3 (23)
Secchi (ft)	6.9 - 14.0	10.3 (23)
Secchi (m)	2.1 - 4.3	3.1 (23)
Color (Pt-Co Units)	4 - 17	9 (22)
Specific Conductance (µS/cm@25 C)	12021 - 39987	25492 (22)
Salinity (ppt)	7 - 25	16 (22)

Figure 2. CBA Ft. Walton Beach-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.16$ , p = 0.06), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.91), chlorophyll (CHL No Trend,  $R^2 = 0.08$ , p = 0.18) and Secchi depth (Secchi No Trend,  $R^2 = 0.02$ , p = 0.49).



#### LAKEWATCH Report for CBA Ft. Walton Beach-4 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-4
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	23 (2000 to 2022)
Latitude	30.4016
Longitude	-86.5831

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 17	11 (23)
Total Nitrogen (µg/L)	181 - 512	234 (23)
Chlorophyll- uncorrected ( $\mu$ g/L)	2 - 4	3 (23)
Secchi (ft)	5.6 - 14.9	8.8 (22)
Secchi (m)	1.7 - 4.5	2.7 (22)
Color (Pt-Co Units)	5 - 16	9 (22)
Specific Conductance (µS/cm@25 C)	17368 - 40988	26743 (22)
Salinity (ppt)	11 - 25	16 (22)

Figure 2. CBA Ft. Walton Beach-4 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.01$ , p = 0.66), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.97), chlorophyll (CHL No Trend,  $R^2 = 0.03$ , p = 0.46) and Secchi depth (Secchi No Trend,  $R^2 = 0.07$ , p = 0.25).



#### LAKEWATCH Report for CBA Ft. Walton Beach-5 in Okaloosa County Estuary and Estuary Segment: Pensacola Bay Santa Rosa Sound Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-5
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.4010
Longitude	-86.6037

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 15	12 (20)
Total Nitrogen (µg/L)	192 - 341	239 (20)
Chlorophyll- uncorrected (µg/L)	1 - 4	3 (20)
Secchi (ft)	6.4 - 11.2	8.3 (20)
Secchi (m)	1.9 - 3.4	2.5 (20)
Color (Pt-Co Units)	4 - 17	9 (19)
Specific Conductance (µS/cm@25 C)	14978 - 35839	25570 (19)
Salinity (ppt)	9 - 22	16 (19)

Figure 2. CBA Ft. Walton Beach-5 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.01$ , p = 0.72), total nitrogen (TN No Trend,  $R^2 = 0.08$ , p = 0.24), chlorophyll (CHL Decreasing,  $R^2 = 0.45$ , p = 0.00) and Secchi depth (Secchi No Trend,  $R^2 = 0.07$ , p = 0.27).



#### LAKEWATCH Report for CBA Ft. Walton Beach-6 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-6
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	23 (2000 to 2022)
Latitude	30.3990
Longitude	-86.5501

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 13	10 (23)
Total Nitrogen (µg/L)	172 - 346	216 (23)
Chlorophyll- uncorrected (µg/L)	1 - 3	2 (23)
Secchi (ft)	4.9 - 45.0	7.7 (17)
Secchi (m)	1.5 - 13.7	2.3 (17)
Color (Pt-Co Units)	5 - 15	9 (22)
Specific Conductance (µS/cm@25 C)	10338 - 43497	26095 (22)
Salinity (ppt)	6 - 27	16 (22)

Figure 2. CBA Ft. Walton Beach-6 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.10$ , p = 0.15), total nitrogen (TN No Trend,  $R^2 = 0.02$ , p = 0.47), chlorophyll (CHL No Trend,  $R^2 = 0.07$ , p = 0.23) and Secchi depth (Secchi No Trend,  $R^2 = 0.01$ , p = 0.69).



#### LAKEWATCH Report for CBA Ft. Walton Beach-7 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-7
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	23 (2000 to 2022)
Latitude	30.4340
Longitude	-86.5424

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	6 - 14	11 (23)
Total Nitrogen (µg/L)	179 - 295	221 (23)
Chlorophyll- uncorrected (µg/L)	1 - 4	2 (23)
Secchi (ft)	7.8 - 13.8	11.0 (23)
Secchi (m)	2.4 - 4.2	3.3 (23)
Color (Pt-Co Units)	4 - 25	9 (22)
Specific Conductance (µS/cm@25 C)	10518 - 38531	25307 (22)
Salinity (ppt)	6 - 24	16 (22)

Figure 2. CBA Ft. Walton Beach-7 trend plots of year by average. The R<sup>2</sup> value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R<sup>2</sup> the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP Increasing, R<sup>2</sup> = 0.35, p = 0.00), total nitrogen (TN No Trend, R<sup>2</sup> = 0.01, p = 0.58), chlorophyll (CHL No Trend, R<sup>2</sup> = 0.02, p = 0.52) and Secchi depth (Secchi No Trend, R<sup>2</sup> = 0.04, p = 0.33).



#### LAKEWATCH Report for CBA Ft. Walton Beach-8 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-8
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.3938
Longitude	-86.5248

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 15	10 (22)
Total Nitrogen (µg/L)	146 - 273	197 (22)
Chlorophyll- uncorrected ( $\mu$ g/L)	1 - 3	2 (22)
Secchi (ft)	5.9 - 11.4	8.5 (20)
Secchi (m)	1.8 - 3.5	2.6 (20)
Color (Pt-Co Units)	2 - 15	7 (22)
Specific Conductance (µS/cm@25 C)	47 - 44670	24219 (22)
Salinity (ppt)	13 - 28	20 (21)

Figure 2. CBA Ft. Walton Beach-8 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ , p = 0.86), total nitrogen (TN No Trend,  $R^2 = 0.04$ , p = 0.37), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.91) and Secchi depth (Secchi No Trend,  $R^2 = 0.03$ , p = 0.49).



### LAKEWATCH Report for CBA Ft. Walton Beach-9 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Rocky Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-9
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.3907
Longitude	-86.5046

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	14 - 28	20 (22)
Total Nitrogen (µg/L)	195 - 325	245 (22)
Chlorophyll- uncorrected (µg/L)	2 - 6	4 (22)
Secchi (ft)	6.2 - 9.6	7.9 (22)
Secchi (m)	1.9 - 2.9	2.4 (22)
Color (Pt-Co Units)	5 - 16	9 (22)
Specific Conductance (µS/cm@25 C)	20858 - 46497	29804 (22)
Salinity (ppt)	13 - 29	18 (22)

Figure 2. CBA Ft. Walton Beach-9 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.03$ , p = 0.45), total nitrogen (TN No Trend,  $R^2 = 0.11$ , p = 0.13), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.90) and Secchi depth (Secchi No Trend,  $R^2 = 0.01$ , p = 0.69).



#### LAKEWATCH Report for CBA Ft. Walton Beach-10 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-10
GNIS Number	281517
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.3890
Longitude	-86.4923

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	14 - 32	25 (22)
Total Nitrogen (µg/L)	162 - 338	247 (22)
Chlorophyll- uncorrected (µg/L)	3 - 8	5 (22)
Secchi (ft)	6.6 - 13.0	8.6 (22)
Secchi (m)	2.0 - 4.0	2.6 (22)
Color (Pt-Co Units)	5 - 18	10 (21)
Specific Conductance (µS/cm@25 C)	8287 - 44331	29488 (21)
Salinity (ppt)	13 - 28	19 (21)

Figure 2. CBA Ft. Walton Beach-10 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.01$ , p = 0.66), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.78), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.87) and Secchi depth (Secchi No Trend,  $R^2 = 0.01$ , p = 0.69).



#### LAKEWATCH Report for CBA Ft. Walton Beach-11 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-11
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	3 (2000 to 2002)
Latitude	30.4158
Longitude	-86.5849

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 10	9 (3)
Total Nitrogen (µg/L)	206 - 250	223 (3)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (3)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	6 - 6	6 (2)
Specific Conductance (µS/cm@25 C)	26918 - 34733	30577 (2)
Salinity (ppt)	17 - 22	19 (2)

## LAKEWATCH Report for CBA Ft. Walton Beach-12 in Okaloosa County Estuary and Estuary Segment: Pensacola Bay Santa Rosa Sound Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Ft. Walton Beach-12
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	3 (2000 to 2002)
Latitude	30.4023
Longitude	-86.5947

#### Table 1. Base File Data.

### Long-Term Data for Estuaries: Definitions

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

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 11	10 (3)
Total Nitrogen (µg/L)	200 - 210	206 (3)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (3)
Secchi (ft)	8.0 - 8.0	8.0 (1)
Secchi (m)	2.4 - 2.4	2.4 (1)
Color (Pt-Co Units)	6 - 7	7 (2)
Specific Conductance (µS/cm@25 C)	29017 - 34411	31599 (2)
Salinity (ppt)	18 - 21	20 (2)

### LAKEWATCH Report for CBA Ft. Walton Beach-13 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Ft. Walton Beach-13
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	3 (2000 to 2002)
Latitude	30.4008
Longitude	-86.5622

#### Table 1. Base File Data.

### Long-Term Data for Estuaries: Definitions

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

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 10	9 (3)
Total Nitrogen (µg/L)	173 - 250	204 (3)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (3)
Secchi (ft)	11.5 - 11.7	11.6 (3)
Secchi (m)	3.5 - 3.6	3.5 (3)
Color (Pt-Co Units)	8 - 8	8 (2)
Specific Conductance (µS/cm@25 C)	29880 - 35767	32691 (2)
Salinity (ppt)	18 - 22	20 (2)

### LAKEWATCH Report for CBA Ft. Walton Beach-14 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Ft. Walton Beach-14
GNIS Number	278300
Water Body Type	Estuary
Period of Record (years, range)	3 (2000 to 2002)
Latitude	30.4543
Longitude	-86.5300

#### Table 1. Base File Data.

### Long-Term Data for Estuaries: Definitions

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

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 10	9 (3)
Total Nitrogen (µg/L)	178 - 204	194 (3)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (3)
Secchi (ft)	6.0 - 6.0	6.0 (1)
Secchi (m)	1.8 - 1.8	1.8 (1)
Color (Pt-Co Units)	6 - 6	6 (2)
Specific Conductance (µS/cm@25 C)	23284 - 30037	26446 (2)
Salinity (ppt)	14 - 19	16 (2)

### LAKEWATCH Report for CBA Ft. Walton Beach-15 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Ft. Walton Beach-15
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	3 (2000 to 2002)
Latitude	30.4312
Longitude	-86.5679

#### Table 1. Base File Data.

### Long-Term Data for Estuaries: Definitions

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

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 10	9 (3)
Total Nitrogen (µg/L)	191 - 216	202 (3)
Chlorophyll- uncorrected (µg/L)	2 - 2	2 (3)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	7 - 8	7 (2)
Specific Conductance (µS/cm@25 C)	27724 - 33530	30489 (2)
Salinity (ppt)	17 - 21	19 (2)

#### LAKEWATCH Report for CBA Ft. Walton Beach-16 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

#### **Base File Data for Estuaries: Definitions:**

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

#### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-16
GNIS Number	280460
Water Body Type	Estuary
Period of Record (years, range)	17 (2006 to 2022)
Latitude	30.4291
Longitude	-86.6146

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	9 - 16	12 (17)
Total Nitrogen (µg/L)	197 - 342	255 (17)
Chlorophyll- uncorrected (µg/L)	2 - 5	3 (17)
Secchi (ft)	6.3 - 13.4	9.6 (17)
Secchi (m)	1.9 - 4.1	2.9 (17)
Color (Pt-Co Units)	5 - 16	10 (17)
Specific Conductance (µS/cm@25 C)	14496 - 40988	26165 (17)
Salinity (ppt)	9 - 25	16 (17)
Figure 2. CBA Ft. Walton Beach-16 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.01$ , p = 0.76), total nitrogen (TN No Trend,  $R^2 = 0.04$ , p = 0.42), chlorophyll (CHL No Trend,  $R^2 = 0.01$ , p = 0.69) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ , p = 0.93).



### LAKEWATCH Report for CBA Ft. Walton Beach-17 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Ft. Walton Beach-17
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	2 (2013 to 2014)
Latitude	30.4252
Longitude	-86.6092

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	12 - 15	13 (2)
Total Nitrogen (µg/L)	180 - 280	224 (2)
Chlorophyll- uncorrected ( $\mu$ g/L)	8 - 10	9 (2)
Secchi (ft)	5.7 - 5.7	5.7 (1)
Secchi (m)	1.7 - 1.7	1.7 (1)
Color (Pt-Co Units)	12 - 15	13 (2)
Specific Conductance (µS/cm@25 C)	13000 - 13000	13000 (2)
Salinity (ppt)	8 - 8	8 (2)

### LAKEWATCH Report for CBA Ft. Walton Beach-18 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Garnier Bayou Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Ft. Walton Beach-18
GNIS Number	281677
Water Body Type	Estuary
Period of Record (years, range)	2 (2013 to 2014)
Latitude	30.4503
Longitude	-86.6009

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 13	12 (2)
Total Nitrogen (µg/L)	220 - 380	289 (2)
Chlorophyll- uncorrected ( $\mu$ g/L)	5 - 11	7 (2)
Secchi (ft)	4.9 - 9.3	6.7 (2)
Secchi (m)	1.5 - 2.8	2.1 (2)
Color (Pt-Co Units)	12 - 13	12 (2)
Specific Conductance (µS/cm@25 C)	6000 - 15000	9487 (2)
Salinity (ppt)	3 - 9	6 (2)

### LAKEWATCH Report for CBA Ft. Walton Beach-19 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Ft. Walton Beach-19
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	10 (2013 to 2022)
Latitude	30.4162
Longitude	-86.5343

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 14	11 (10)
Total Nitrogen (µg/L)	176 - 290	215 (10)
Chlorophyll- uncorrected (µg/L)	2 - 4	2 (10)
Secchi (ft)	9.5 - 17.8	11.9 (10)
Secchi (m)	2.9 - 5.4	3.6 (10)
Color (Pt-Co Units)	7 - 14	9 (10)
Specific Conductance (µS/cm@25 C)	14228 - 27274	20996 (10)
Salinity (ppt)	9 - 17	13 (10)

Figure 2. CBA Ft. Walton Beach-19 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.16$ , p = 0.25), total nitrogen (TN No Trend,  $R^2 = 0.23$ , p = 0.16), chlorophyll (CHL No Trend,  $R^2 = 0.07$ , p = 0.44) and Secchi depth (Secchi No Trend,  $R^2 = 0.17$ , p = 0.23).



### LAKEWATCH Report for CBA Gulf of Mexico-2 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Gulf of Mexico-2
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.3667
Longitude	-86.5083

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	6 - 6	6 (1)
Total Nitrogen (µg/L)	140 - 140	140 (1)
Chlorophyll- uncorrected (µg/L)	1 - 1	1 (1)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Gulf of Mexico-4 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Gulf of Mexico-4
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.3333
Longitude	-86.5083

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	6 - 6	6 (1)
Total Nitrogen (µg/L)	170 - 170	170 (1)
Chlorophyll- uncorrected (µg/L)	1 - 1	1 (1)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Gulf of Mexico-6 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Gulf of Mexico-6
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.3000
Longitude	-86.5083

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 10	10 (1)
Total Nitrogen (µg/L)	160 - 160	160 (1)
Chlorophyll- uncorrected (µg/L)	1 - 1	1 (1)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Gulf of Mexico-8 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Gulf of Mexico-8
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.2667
Longitude	-86.5083

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 8	8 (1)
Total Nitrogen (µg/L)	170 - 170	170 (1)
Chlorophyll- uncorrected (µg/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Gulf of Mexico-10 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Gulf of Mexico-10
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	1 (2008 to 2008)
Latitude	30.2333
Longitude	-86.5083

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	6 - 6	6 (1)
Total Nitrogen (µg/L)	180 - 180	180 (1)
Chlorophyll- uncorrected (µg/L)	-	(0)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Kidd Bayou-1 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Kidd Bayou-1
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	2 (2007 to 2008)
Latitude	30.4263
Longitude	-86.6119

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	12 - 12	12 (2)
Total Nitrogen (µg/L)	269 - 359	311 (2)
Chlorophyll- uncorrected ( $\mu$ g/L)	3 - 3	3 (2)
Secchi (ft)	9.9 - 11.9	10.8 (2)
Secchi (m)	3.0 - 3.6	3.3 (2)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Kidd Bayou-2 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay West Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Kidd Bayou-2
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	2 (2007 to 2008)
Latitude	30.4243
Longitude	-86.6131

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	13 - 17	15 (2)
Total Nitrogen (µg/L)	280 - 312	296 (2)
Chlorophyll- uncorrected (µg/L)	3 - 4	4 (2)
Secchi (ft)	8.7 - 10.2	9.4 (2)
Secchi (m)	2.7 - 3.1	2.9 (2)
Color (Pt-Co Units)	-	(0)
Specific Conductance (µS/cm@25 C)	-	(0)
Salinity (ppt)	-	(0)

### LAKEWATCH Report for CBA Niceville-1 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Boggy Bayou Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-1
GNIS Number	289870
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.5035
Longitude	-86.4328

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 14	11 (22)
Total Nitrogen (µg/L)	210 - 304	244 (22)
Chlorophyll- uncorrected (µg/L)	2 - 5	3 (22)
Secchi (ft)	5.3 - 9.9	7.5 (22)
Secchi (m)	1.6 - 3.0	2.3 (22)
Color (Pt-Co Units)	6 - 33	15 (22)
Specific Conductance (µS/cm@25 C)	3000 - 38000	13431 (22)
Salinity (ppt)	2 - 24	8 (22)

Figure 2. CBA Niceville-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP Increasing,  $R^2 = 0.25$ , p = 0.02), total nitrogen (TN No Trend,  $R^2 = 0.03$ , p = 0.42), chlorophyll (CHL No Trend,  $R^2 = 0.02$ , p = 0.50) and Secchi depth (Secchi No Trend,  $R^2 = 0.10$ , p = 0.15).



### LAKEWATCH Report for CBA Niceville-2 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Rocky Bayou Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-2
GNIS Number	289870
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.5073
Longitude	-86.4527

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 16	11 (20)
Total Nitrogen (µg/L)	220 - 314	263 (20)
Chlorophyll- uncorrected ( $\mu$ g/L)	2 - 5	3 (20)
Secchi (ft)	5.5 - 8.4	7.0 (20)
Secchi (m)	1.7 - 2.6	2.1 (20)
Color (Pt-Co Units)	8 - 32	15 (20)
Specific Conductance (µS/cm@25 C)	5886 - 41000	13299 (20)
Salinity (ppt)	3 - 25	8 (20)

Figure 2. CBA Niceville-2 trend plots of year by average. The R<sup>2</sup> value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R<sup>2</sup> the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend, R<sup>2</sup> = 0.12, p = 0.13), total nitrogen (TN No Trend, R<sup>2</sup> = 0.00, p = 0.89), chlorophyll (CHL No Trend, R<sup>2</sup> = 0.02, p = 0.59) and Secchi depth (Secchi No Trend, R<sup>2</sup> = 0.07, p = 0.27).



### LAKEWATCH Report for CBA Niceville-3 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-3
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4853
Longitude	-86.4529

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	9 - 17	13 (22)
Total Nitrogen (µg/L)	210 - 302	246 (22)
Chlorophyll- uncorrected (µg/L)	2 - 5	3 (22)
Secchi (ft)	5.5 - 10.3	7.4 (22)
Secchi (m)	1.7 - 3.2	2.3 (22)
Color (Pt-Co Units)	5 - 21	11 (22)
Specific Conductance (µS/cm@25 C)	10241 - 42000	21381 (22)
Salinity (ppt)	6 - 26	13 (22)

Figure 2. CBA Niceville-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.13$ , p = 0.10), total nitrogen (TN No Trend,  $R^2 = 0.04$ , p = 0.38), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.86) and Secchi depth (Secchi No Trend,  $R^2 = 0.09$ , p = 0.16).



### LAKEWATCH Report for CBA Niceville-4 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-4
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4620
Longitude	-86.4338

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	9 - 16	13 (22)
Total Nitrogen (µg/L)	202 - 329	244 (22)
Chlorophyll- uncorrected (µg/L)	2 - 6	3 (22)
Secchi (ft)	5.7 - 10.8	7.9 (22)
Secchi (m)	1.7 - 3.3	2.4 (22)
Color (Pt-Co Units)	5 - 19	10 (22)
Specific Conductance (µS/cm@25 C)	14897 - 44000	24201 (22)
Salinity (ppt)	9 - 27	15 (22)

Figure 2. CBA Niceville-4 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP Increasing,  $R^2 = 0.31$ , p = 0.01), total nitrogen (TN Increasing,  $R^2 = 0.24$ , p = 0.02), chlorophyll (CHL No Trend,  $R^2 = 0.01$ , p = 0.64) and Secchi depth (Secchi No Trend,  $R^2 = 0.03$ , p = 0.41).



### LAKEWATCH Report for CBA Niceville-5 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

### **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-5
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4361
Longitude	-86.4253

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	9 - 16	12 (22)
Total Nitrogen (µg/L)	189 - 304	232 (22)
Chlorophyll- uncorrected (µg/L)	2 - 6	3 (22)
Secchi (ft)	6.0 - 14.4	10.0 (22)
Secchi (m)	1.8 - 4.4	3.1 (22)
Color (Pt-Co Units)	5 - 29	10 (22)
Specific Conductance (µS/cm@25 C)	8062 - 44000	23032 (22)
Salinity (ppt)	5 - 27	14 (22)
Figure 2. CBA Niceville-5 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.05$ , p = 0.29), total nitrogen (TN No Trend,  $R^2 = 0.00$ , p = 0.90), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.97) and Secchi depth (Secchi No Trend,  $R^2 = 0.01$ , p = 0.70).



## LAKEWATCH Report for CBA Niceville-6 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

## Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-6
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.4436
Longitude	-86.4714

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 16	12 (22)
Total Nitrogen (µg/L)	184 - 298	223 (22)
Chlorophyll- uncorrected (µg/L)	2 - 5	3 (22)
Secchi (ft)	7.0 - 15.2	10.9 (22)
Secchi (m)	2.1 - 4.6	3.3 (22)
Color (Pt-Co Units)	4 - 27	10 (22)
Specific Conductance (µS/cm@25 C)	10298 - 44000	23032 (22)
Salinity (ppt)	6 - 27	14 (22)

Figure 2. CBA Niceville-6 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.12$ , p = 0.12), total nitrogen (TN No Trend,  $R^2 = 0.02$ , p = 0.53), chlorophyll (CHL No Trend,  $R^2 = 0.01$ , p = 0.70) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ , p = 0.81).



## LAKEWATCH Report for CBA Niceville-7 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Boggy Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

## Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-7
GNIS Number	279143
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.4920
Longitude	-86.4810

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 15	11 (20)
Total Nitrogen (µg/L)	141 - 304	214 (20)
Chlorophyll- uncorrected (µg/L)	2 - 5	3 (20)
Secchi (ft)	7.2 - 11.2	8.8 (20)
Secchi (m)	2.2 - 3.4	2.7 (20)
Color (Pt-Co Units)	6 - 23	12 (20)
Specific Conductance (µS/cm@25 C)	4057 - 30194	14651 (20)
Salinity (ppt)	2 - 19	9 (20)

Figure 2. CBA Niceville-7 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ , p = 0.93), total nitrogen (TN No Trend,  $R^2 = 0.16$ , p = 0.08), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.96) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ , p = 0.82).



## LAKEWATCH Report for CBA Niceville-8 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Boggy Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

## Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-8
GNIS Number	292349
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.5022
Longitude	-86.4927

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 12	10 (20)
Total Nitrogen (µg/L)	131 - 272	216 (20)
Chlorophyll- uncorrected ( $\mu$ g/L)	2 - 5	3 (20)
Secchi (ft)	6.8 - 9.7	8.5 (20)
Secchi (m)	2.1 - 3.0	2.6 (20)
Color (Pt-Co Units)	6 - 19	11 (20)
Specific Conductance (µS/cm@25 C)	2934 - 37000	11287 (20)
Salinity (ppt)	1 - 23	7 (20)

Figure 2. CBA Niceville-8 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.14$ , p = 0.11), total nitrogen (TN Decreasing,  $R^2 = 0.32$ , p = 0.01), chlorophyll (CHL Decreasing,  $R^2 = 0.22$ , p = 0.04) and Secchi depth (Secchi No Trend,  $R^2 = 0.11$ , p = 0.15).



## LAKEWATCH Report for CBA Niceville-9 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Boggy Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

## Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-9
GNIS Number	279143
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	30.5104
Longitude	-86.4840

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus (µg/L)	8 - 14	11 (22)
Total Nitrogen (µg/L)	141 - 274	212 (22)
Chlorophyll- uncorrected (µg/L)	2 - 6	4 (22)
Secchi (ft)	6.1 - 10.2	8.4 (22)
Secchi (m)	1.9 - 3.1	2.6 (22)
Color (Pt-Co Units)	5 - 22	11 (22)
Specific Conductance (µS/cm@25 C)	3154 - 37000	14584 (22)
Salinity (ppt)	2 - 23	9 (22)

Figure 2. CBA Niceville-9 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ , p = 0.90), total nitrogen (TN Decreasing,  $R^2 = 0.22$ , p = 0.03), chlorophyll (CHL No Trend,  $R^2 = 0.00$ , p = 0.78) and Secchi depth (Secchi No Trend,  $R^2 = 0.07$ , p = 0.24).



## LAKEWATCH Report for CBA Niceville-10 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Boggy Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

## Table 1. Base File Data.

County	Okaloosa
Name	CBA Niceville-10
GNIS Number	279143
Water Body Type	Estuary
Period of Record (years, range)	20 (2003 to 2022)
Latitude	30.5195
Longitude	-86.4972

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	5 - 12	8 (20)
Total Nitrogen (µg/L)	154 - 261	209 (20)
Chlorophyll- uncorrected (µg/L)	1 - 4	2 (20)
Secchi (ft)	5.9 - 9.3	7.8 (20)
Secchi (m)	1.8 - 2.8	2.4 (20)
Color (Pt-Co Units)	6 - 52	16 (20)
Specific Conductance (µS/cm@25 C)	126 - 41000	2867 (20)
Salinity (ppt)	0 - 25	2 (19)

Figure 2. CBA Niceville-10 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP Decreasing,  $R^2 = 0.35$ , p = 0.01), total nitrogen (TN Decreasing,  $R^2 = 0.64$ , p = 0.00), chlorophyll (CHL Decreasing,  $R^2 = 0.53$ , p = 0.00) and Secchi depth (Secchi No Trend,  $R^2 = 0.17$ , p = 0.07).



## LAKEWATCH Report for CBA Niceville-11 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Niceville-11
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.4730
Longitude	-86.4403

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 12	12 (2)
Total Nitrogen (µg/L)	207 - 221	214 (2)
Chlorophyll- uncorrected (µg/L)	2 - 3	2 (2)
Secchi (ft)	8.0 - 8.9	8.4 (2)
Secchi (m)	2.4 - 2.7	2.6 (2)
Color (Pt-Co Units)	7 - 10	8 (2)
Specific Conductance (µS/cm@25 C)	25327 - 34739	29662 (2)
Salinity (ppt)	16 - 22	18 (2)

## LAKEWATCH Report for CBA Niceville-12 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Niceville-12
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.4396
Longitude	-86.4369

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 11	11 (2)
Total Nitrogen (µg/L)	202 - 243	221 (2)
Chlorophyll- uncorrected (µg/L)	2 - 3	2 (2)
Secchi (ft)	9.6 - 12.3	10.9 (2)
Secchi (m)	2.9 - 3.8	3.3 (2)
Color (Pt-Co Units)	7 - 9	8 (2)
Specific Conductance (µS/cm@25 C)	24125 - 36721	29764 (2)
Salinity (ppt)	15 - 23	18 (2)

## LAKEWATCH Report for CBA Niceville-13 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Boggy Bayou Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Niceville-13
GNIS Number	279143
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.4854
Longitude	-86.4811

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	10 - 13	11 (2)
Total Nitrogen (µg/L)	219 - 255	237 (2)
Chlorophyll- uncorrected (µg/L)	2 - 4	3 (2)
Secchi (ft)	8.7 - 9.5	9.1 (2)
Secchi (m)	2.7 - 2.9	2.8 (2)
Color (Pt-Co Units)	9 - 10	9 (2)
Specific Conductance (µS/cm@25 C)	25088 - 28659	26814 (2)
Salinity (ppt)	15 - 18	17 (2)

## LAKEWATCH Report for CBA Niceville-14 in Okaloosa County Estuary and Estuary Segment: Choctawhatchee Bay Middle Bay Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Niceville-14
GNIS Number	293962
Water Body Type	Estuary
Period of Record (years, range)	2 (2001 to 2002)
Latitude	30.4807
Longitude	-86.4622

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	11 - 12	11 (2)
Total Nitrogen (µg/L)	207 - 254	229 (2)
Chlorophyll- uncorrected (µg/L)	2 - 3	3 (2)
Secchi (ft)	6.6 - 7.7	7.2 (2)
Secchi (m)	2.0 - 2.4	2.2 (2)
Color (Pt-Co Units)	7 - 10	8 (2)
Specific Conductance (µS/cm@25 C)	23969 - 34064	28574 (2)
Salinity (ppt)	15 - 21	18 (2)

## LAKEWATCH Report for CBA OKA-4 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA OKA-4
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	4 (2010 to 2013)
Latitude	30.3821
Longitude	-86.5384

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	9 - 10	9 (4)
Total Nitrogen (µg/L)	130 - 220	168 (4)
Chlorophyll- uncorrected (µg/L)	1 - 2	1 (4)
Secchi (ft)	22.4 - 22.4	22.4 (1)
Secchi (m)	6.8 - 6.8	6.8 (1)
Color (Pt-Co Units)	3 - 5	4 (3)
Specific Conductance (µS/cm@25 C)	37000 - 45614	42012 (3)
Salinity (ppt)	23 - 28	26 (3)

## LAKEWATCH Report for CBA OKA-5 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA OKA-5
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	4 (2010 to 2013)
Latitude	30.3797
Longitude	-86.5161

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	9 - 17	10 (4)
Total Nitrogen (µg/L)	140 - 230	174 (4)
Chlorophyll- uncorrected ( $\mu$ g/L)	1 - 2	1 (4)
Secchi (ft)	23.9 - 23.9	23.9 (1)
Secchi (m)	7.3 - 7.3	7.3 (1)
Color (Pt-Co Units)	3 - 5	4 (4)
Specific Conductance (µS/cm@25 C)	41000 - 45169	43630 (4)
Salinity (ppt)	25 - 28	27 (4)

## LAKEWATCH Report for CBA OKA-6 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA OKA-6
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	4 (2010 to 2013)
Latitude	30.3766
Longitude	-86.4875

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	4 - 9	7 (4)
Total Nitrogen (µg/L)	110 - 260	164 (4)
Chlorophyll- uncorrected (µg/L)	1 - 1	1 (4)
Secchi (ft)	20.0 - 38.0	29.2 (3)
Secchi (m)	6.1 - 11.6	8.9 (3)
Color (Pt-Co Units)	3 - 5	3 (4)
Specific Conductance (µS/cm@25 C)	44000 - 47637	46357 (4)
Salinity (ppt)	27 - 30	29 (4)

## LAKEWATCH Report for CBA OKA-7 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA OKA-7
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	4 (2010 to 2013)
Latitude	30.3524
Longitude	-86.4968

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	4 - 14	9 (4)
Total Nitrogen (µg/L)	110 - 290	180 (4)
Chlorophyll- uncorrected (µg/L)	1 - 2	1 (4)
Secchi (ft)	28.6 - 40.0	33.8 (2)
Secchi (m)	8.7 - 12.2	10.3 (2)
Color (Pt-Co Units)	3 - 8	5 (4)
Specific Conductance (µS/cm@25 C)	40000 - 47000	43679 (4)
Salinity (ppt)	25 - 29	27 (4)

## LAKEWATCH Report for CBA OKA-8 in Okaloosa County Estuary and Estuary Segment: Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA OKA-8
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	4 (2010 to 2013)
Latitude	30.3244
Longitude	-86.5376

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): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	6 - 9	8 (4)
Total Nitrogen (µg/L)	155 - 280	193 (4)
Chlorophyll- uncorrected (µg/L)	1 - 1	1 (4)
Secchi (ft)	40.0 - 40.0	40.0 (2)
Secchi (m)	12.2 - 12.2	12.2 (2)
Color (Pt-Co Units)	4 - 4	4 (3)
Specific Conductance (µS/cm@25 C)	40000 - 46688	44038 (3)
Salinity (ppt)	25 - 29	27 (3)

## LAKEWATCH Report for CBA Santa Rosa Sound-1 in Okaloosa County Estuary and Estuary Segment: Pensacola Bay Santa Rosa Sound Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

## **Base File Data for Estuaries: Definitions:**

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

## Table 1. Base File Data.

County	Okaloosa
Name	CBA Santa Rosa Sound-1
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	17 (2006 to 2022)
Latitude	30.4039
Longitude	-86.6316

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	8 - 16	13 (17)
Total Nitrogen (µg/L)	148 - 330	244 (17)
Chlorophyll- uncorrected ( $\mu$ g/L)	1 - 5	3 (17)
Secchi (ft)	4.0 - 8.1	5.5 (15)
Secchi (m)	1.2 - 2.5	1.7 (15)
Color (Pt-Co Units)	6 - 32	10 (16)
Specific Conductance (µS/cm@25 C)	15761 - 35712	25917 (16)
Salinity (ppt)	10 - 22	16 (16)
Figure 2. CBA Santa Rosa Sound-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP Decreasing,  $R^2 = 0.48$ , p = 0.00), total nitrogen (TN Decreasing,  $R^2 = 0.47$ , p = 0.00), chlorophyll (CHL Decreasing,  $R^2 = 0.47$ , p = 0.00) and Secchi depth (Secchi No Trend,  $R^2 = 0.13$ , p = 0.20).



### LAKEWATCH Report for CBA Santa Rosa Sound-2 in Okaloosa County Estuary and Estuary Segment: Pensacola Bay Santa Rosa Sound Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

### Table 1. Base File Data.

County	Okaloosa
Name	CBA Santa Rosa Sound-2
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	17 (2006 to 2022)
Latitude	30.4030
Longitude	-86.6169

Long-Term Data for Estuaries: Definitions

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

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen (µg/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units)**: LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

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

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	7 - 15	12 (17)
Total Nitrogen (µg/L)	155 - 297	239 (17)
Chlorophyll- uncorrected (µg/L)	1 - 4	3 (17)
Secchi (ft)	5.9 - 11.0	7.9 (17)
Secchi (m)	1.8 - 3.4	2.4 (17)
Color (Pt-Co Units)	6 - 15	9 (16)
Specific Conductance (µS/cm@25 C)	16468 - 37468	26573 (16)
Salinity (ppt)	10 - 23	16 (16)

Figure 2. CBA Santa Rosa Sound-2 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP Decreasing,  $R^2 = 0.37$ , p = 0.01), total nitrogen (TN Decreasing,  $R^2 = 0.35$ , p = 0.01), chlorophyll (CHL Decreasing,  $R^2 = 0.57$ , p = 0.00) and Secchi depth (Secchi Increasing,  $R^2 = 0.37$ , p = 0.01).



## LAKEWATCH Report for CBA Santa Rosa Sound-3 in Okaloosa County Estuary and Estuary Segment: Pensacola Bay Santa Rosa Sound Using Data Downloaded 12/9/2022

## **Introduction for Estuaries**

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

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

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

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

### **Base File Data for Estuaries: Definitions:**

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

County	Okaloosa
Name	CBA Santa Rosa Sound-3
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	17 (2006 to 2022)
Latitude	30.4018
Longitude	-86.6080

#### Table 1. Base File Data.

## Long-Term Data for Estuaries: Definitions

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

- Total Phosphorus (µg/L): Nutrient most often limiting growth of plant/algae.
- Total Nitrogen ( $\mu$ g/L): Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- Chlorophyll-uncorrected (µg/L): Chlorophyll concentrations are used to measure relative abundances of open water algae.
- Secchi (ft), Secchi (m): Secchi measurements are estimates of water clarity.
- Color (Pt-Co Units): LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- Specific Conductance (µS/cm@25°C), Salinity (ppt): Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

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

Parameter	Minimum and Maximum	Grand Geometric Mean
	Annual Geometric Means	(Sampling years)
Total Phosphorus (µg/L)	6 - 16	12 (17)
Total Nitrogen (µg/L)	168 - 306	239 (17)
Chlorophyll- uncorrected (µg/L)	1 - 4	3 (17)
Secchi (ft)	5.5 - 9.8	7.3 (17)
Secchi (m)	1.7 - 3.0	2.2 (17)
Color (Pt-Co Units)	4 - 16	9 (16)
Specific Conductance (µS/cm@25 C)	16134 - 36429	26387 (16)
Salinity (ppt)	10 - 23	16 (16)

Figure 2. CBA Santa Rosa Sound-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant (p < 0.05 is significant). Total phosphorus (TP No Trend,  $R^2 = 0.20$ , p = 0.07), total nitrogen (TN Decreasing,  $R^2 = 0.32$ , p = 0.02), chlorophyll (CHL Decreasing,  $R^2 = 0.45$ , p = 0.00) and Secchi depth (Secchi No Trend,  $R^2 = 0.21$ , p = 0.07).

