

**LAKEWATCH Report for Halifax River-1 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Halifax River-1
GNIS Number	277637
Water Body Type	River/Stream
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.1604
Longitude	-80.9885

## Long-Term Data for River/Streams: Definitions

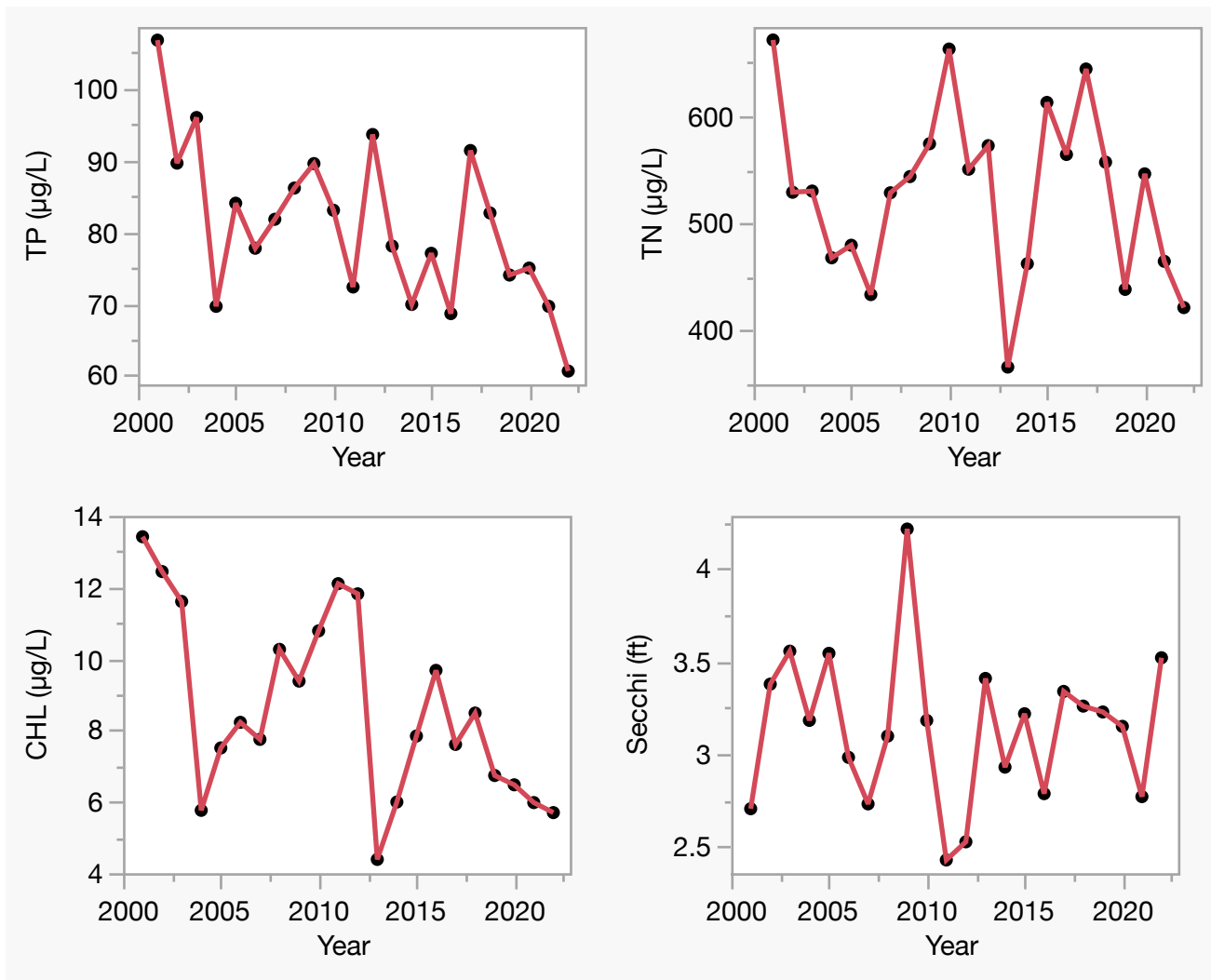
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	61 - 107	80 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	366 - 671	522 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	4 - 13	8 (22)
Secchi (ft)	2.4 - 4.2	3.1 (22)
Secchi (m)	0.7 - 1.3	1.0 (22)
Color (Pt-Co Units)	13 - 49	21 (22)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	5067 - 45000	33477 (22)

**Figure 2. Halifax River-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,  $R^2 = 0.36$ ,  $p = 0.00$ ), total nitrogen (TN No Trend,  $R^2 = 0.03$ ,  $p = 0.42$ ), chlorophyll (CHL Decreasing,  $R^2 = 0.31$ ,  $p = 0.01$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ ,  $p = 0.85$ ).**



**LAKEWATCH Report for Halifax River-2 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Halifax River-2
GNIS Number	277637
Water Body Type	River/Stream
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.1710
Longitude	-80.9939

## Long-Term Data for River/Streams: Definitions

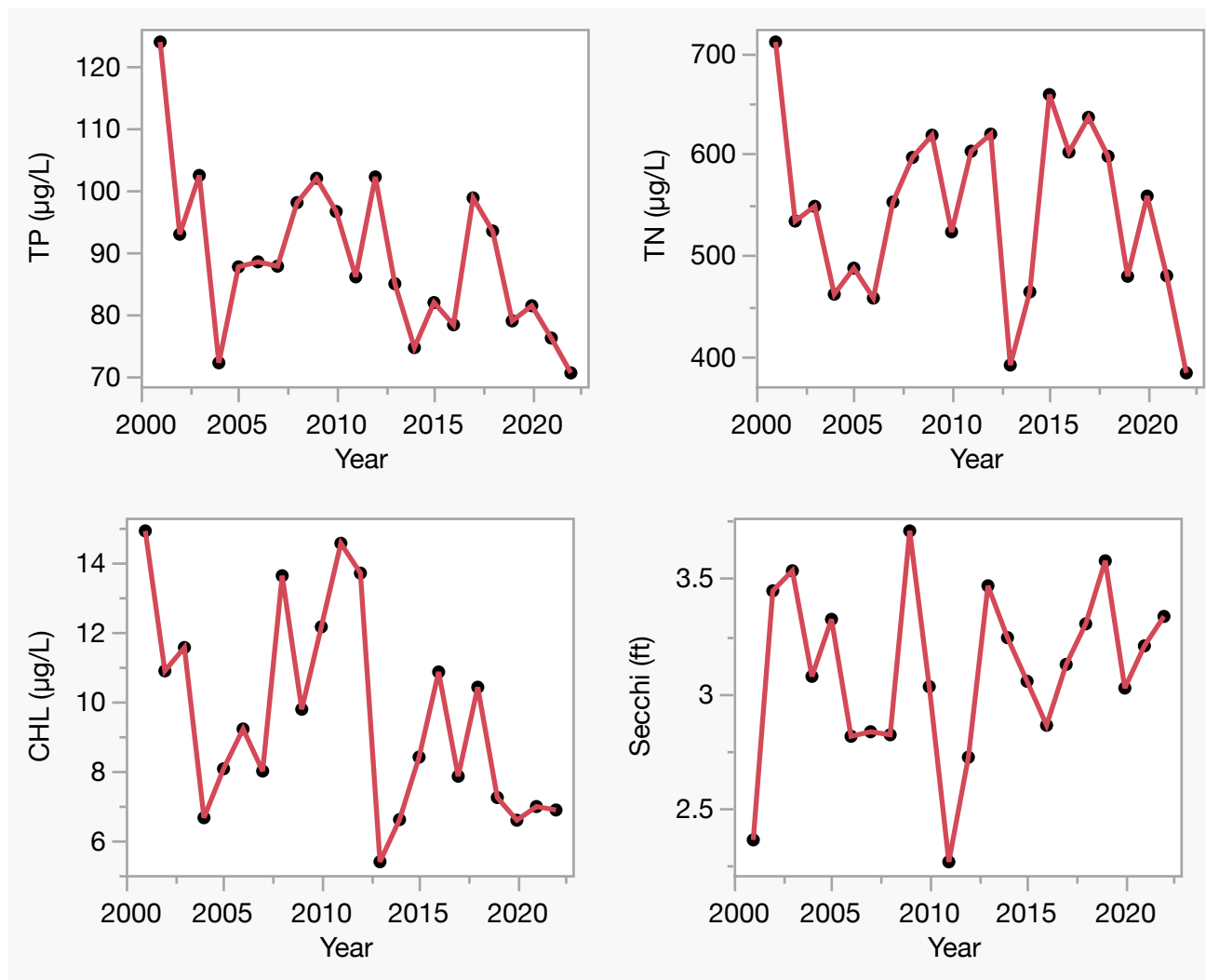
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	71 - 124	88 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	383 - 711	537 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	5 - 15	9 (22)
Secchi (ft)	2.3 - 3.7	3.1 (22)
Secchi (m)	0.7 - 1.1	0.9 (22)
Color (Pt-Co Units)	14 - 51	24 (22)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	4691 - 44000	32374 (22)

**Figure 2. Halifax River-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,  $R^2 = 0.29$ ,  $p = 0.01$ ), total nitrogen (TN No Trend,  $R^2 = 0.03$ ,  $p = 0.41$ ), chlorophyll (CHL Decreasing,  $R^2 = 0.20$ ,  $p = 0.04$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.04$ ,  $p = 0.40$ ).**



**LAKEWATCH Report for Halifax River-3 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Halifax River-3
GNIS Number	277637
Water Body Type	River/Stream
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.1921
Longitude	-81.0021

## Long-Term Data for River/Streams: 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):

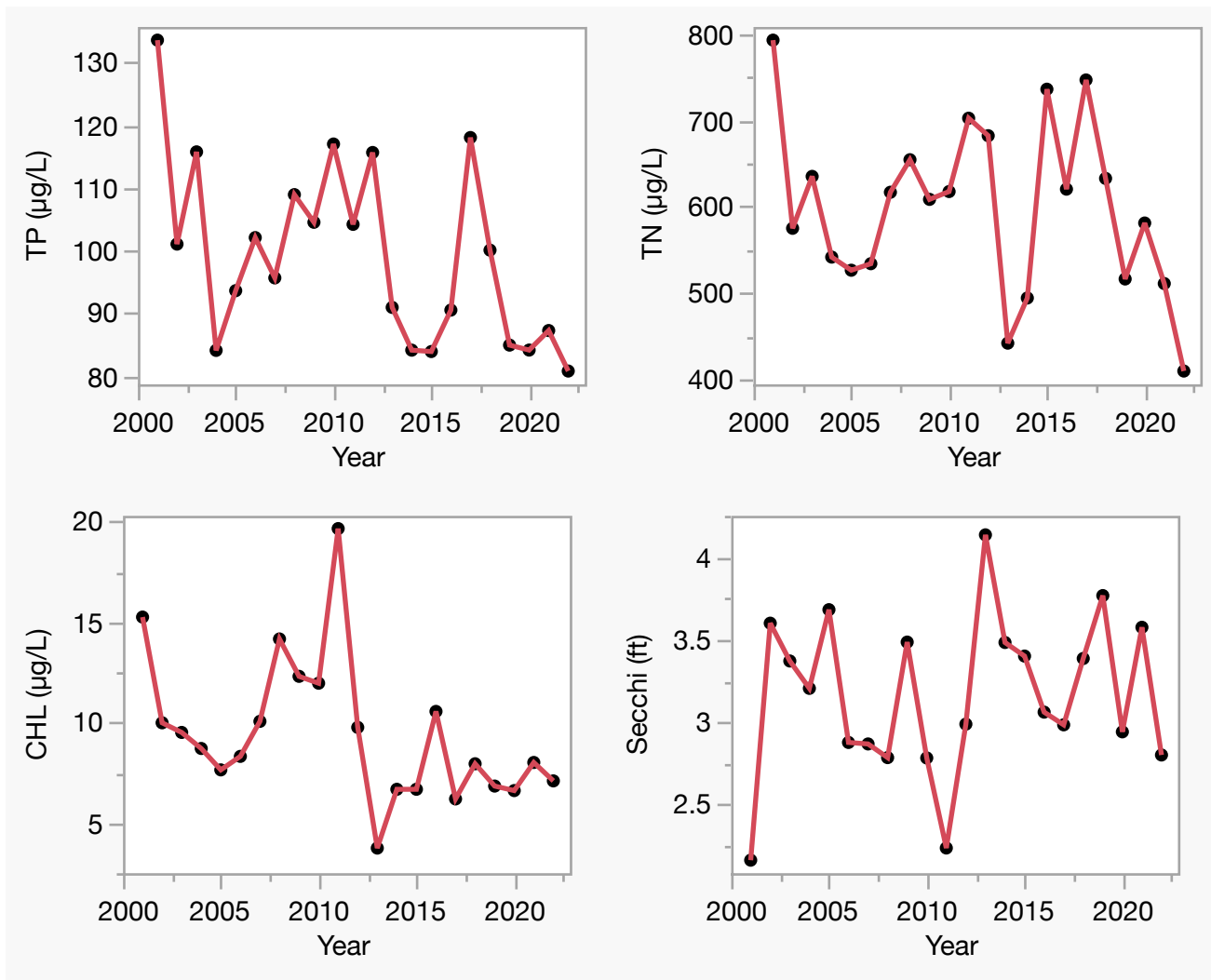
- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	81 - 134	98 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	410 - 793	591 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	4 - 20	9 (22)
Secchi (ft)	2.2 - 4.1	3.1 (22)
Secchi (m)	0.7 - 1.3	1.0 (22)
Color (Pt-Co Units)	16 - 57	26 (22)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	4691 - 43000	30866 (22)



**Figure 2. Halifax River-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 Decreasing,  $R^2 = 0.27$ ,  $p = 0.01$ ), total nitrogen (TN No Trend,  $R^2 = 0.08$ ,  $p = 0.22$ ), chlorophyll (CHL Decreasing,  $R^2 = 0.18$ ,  $p = 0.05$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.03$ ,  $p = 0.45$ ).**



**LAKEWATCH Report for Indian River North-1 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Indian River North-1
GNIS Number	284534
Water Body Type	River/Stream
Period of Record (years, range)	8 (2003 to 2010)
Latitude	29.0196
Longitude	-80.9164

## Long-Term Data for River/Streams: Definitions

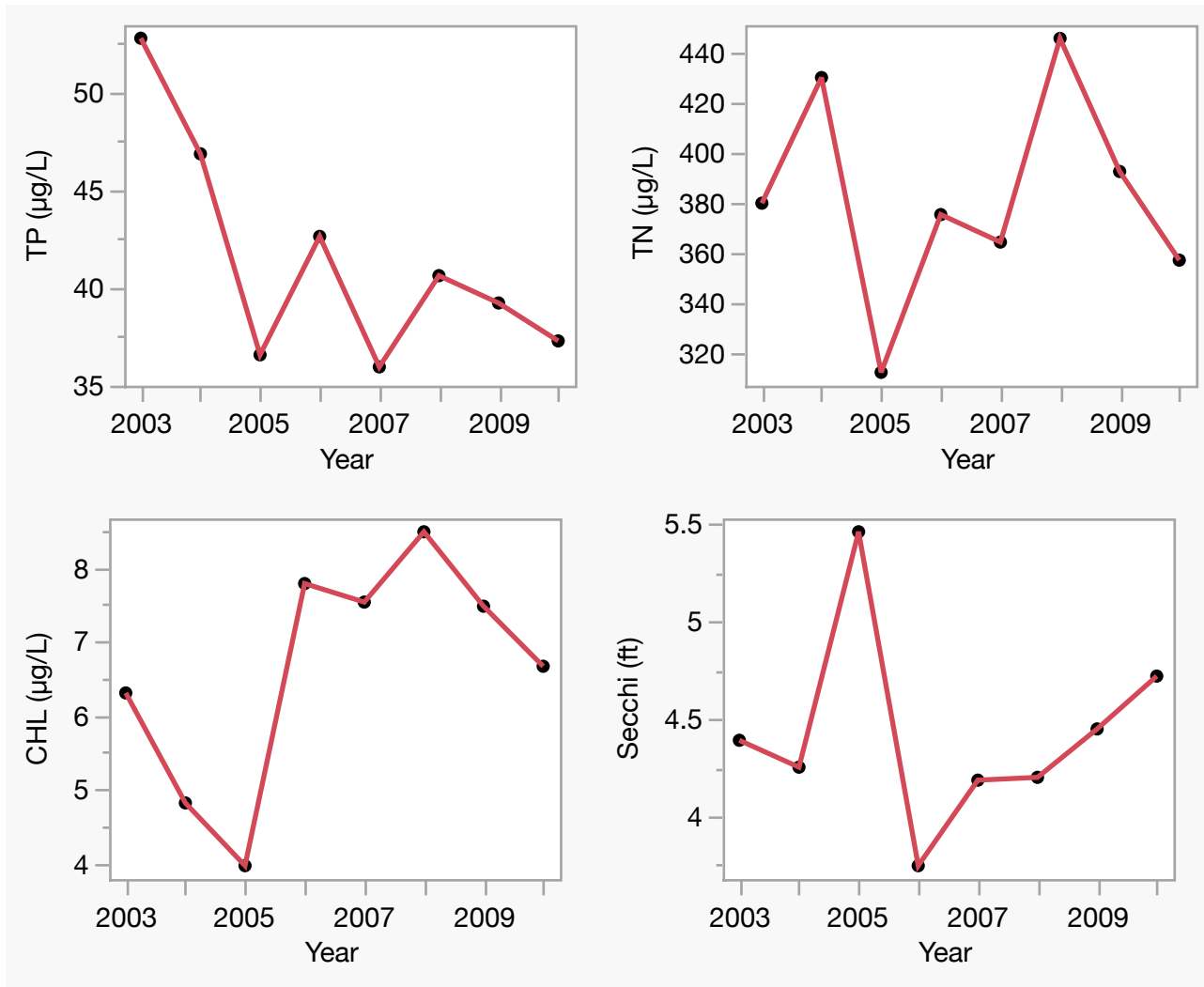
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	36 - 53	41 (8)
Total Nitrogen ( $\mu\text{g/L}$ )	312 - 446	380 (8)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	4 - 8	6 (8)
Secchi (ft)	3.7 - 5.5	4.4 (8)
Secchi (m)	1.1 - 1.7	1.3 (8)
Color (Pt-Co Units)	5 - 13	9 (7)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	1485 - 53294	29304 (7)

**Figure 2. Indian River North-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,  $R^2 = 0.50$ ,  $p = 0.05$ ), total nitrogen (TN No Trend,  $R^2 = 0.00$ ,  $p = 0.94$ ), chlorophyll (CHL No Trend,  $R^2 = 0.30$ ,  $p = 0.16$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ ,  $p = 0.99$ ).**



**LAKEWATCH Report for Indian River North-2 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Indian River North-2
GNIS Number	284534
Water Body Type	River/Stream
Period of Record (years, range)	8 (2003 to 2010)
Latitude	29.0261
Longitude	-80.9201

## Long-Term Data for River/Streams: Definitions

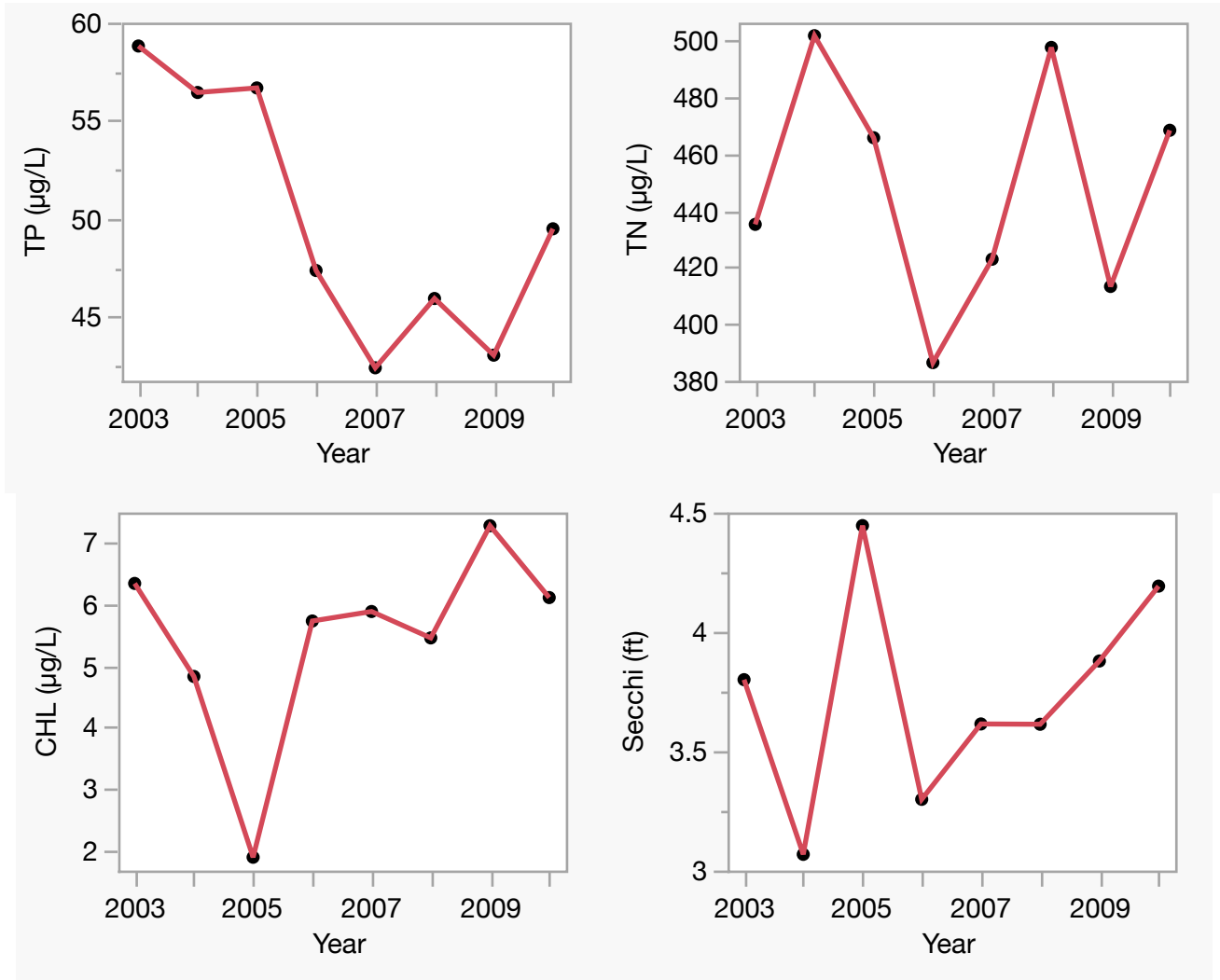
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	42 - 59	50 (8)
Total Nitrogen ( $\mu\text{g/L}$ )	386 - 502	447 (8)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	2 - 7	5 (8)
Secchi (ft)	3.1 - 4.4	3.7 (8)
Secchi (m)	0.9 -1.4	1.1 (8)
Color (Pt-Co Units)	7 - 14	9 (7)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	1327 - 53498	28316 (7)

**Figure 2. Indian River North-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,  $R^2 = 0.58$ ,  $p = 0.03$ ), total nitrogen (TN No Trend,  $R^2 = 0.00$ ,  $p = 0.90$ ), chlorophyll (CHL No Trend,  $R^2 = 0.15$ ,  $p = 0.34$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.09$ ,  $p = 0.47$ ).**



**LAKEWATCH Report for Indian River North-3 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.



## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Indian River North-3
GNIS Number	284534
Water Body Type	River/Stream
Period of Record (years, range)	8 (2003 to 2010)
Latitude	29.0268
Longitude	-80.9163

## Long-Term Data for River/Streams: Definitions

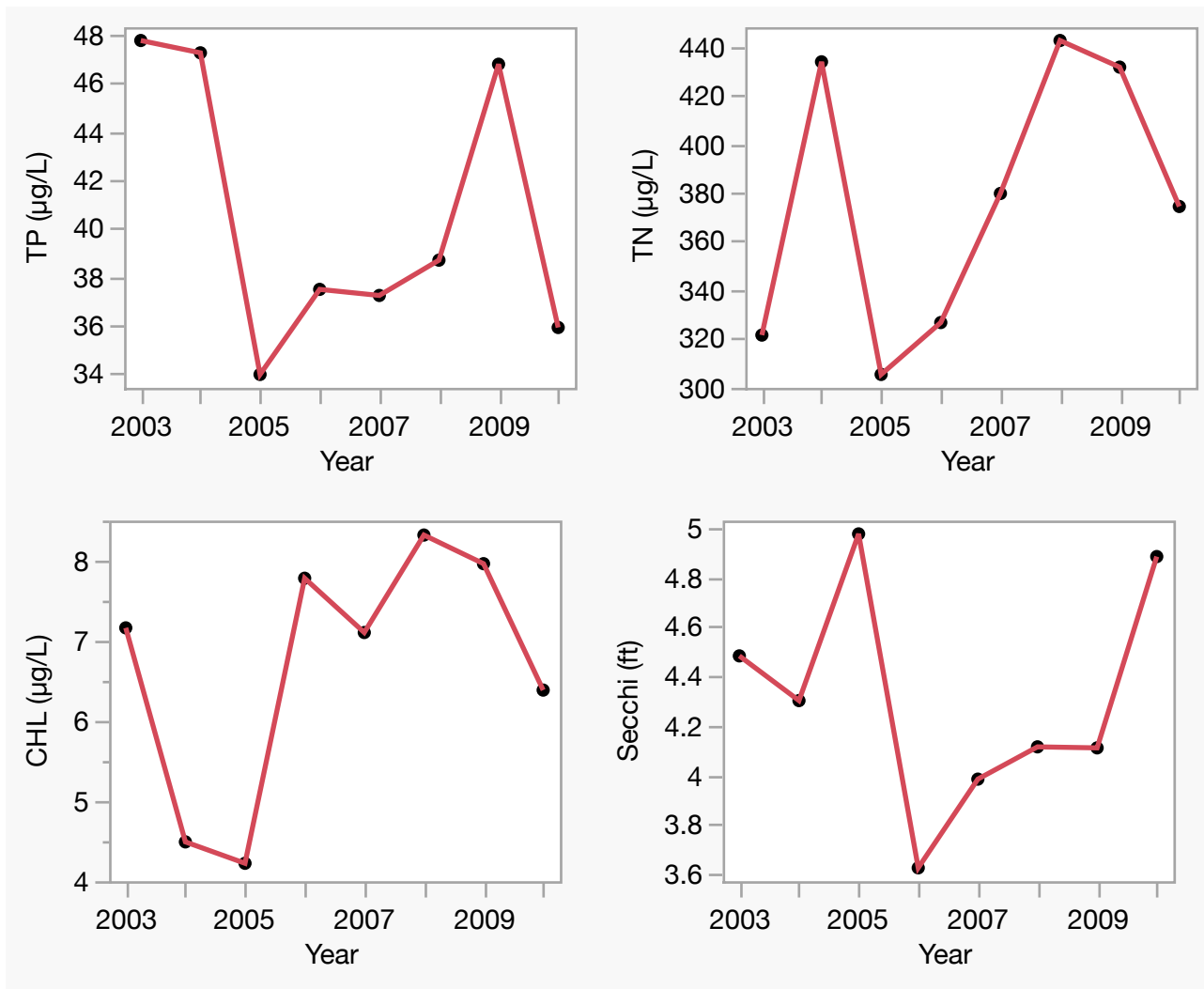
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	34 - 48	40 (8)
Total Nitrogen ( $\mu\text{g/L}$ )	305 - 442	373 (8)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	4 - 8	6 (8)
Secchi (ft)	3.6 - 5.0	4.3 (8)
Secchi (m)	1.1 -1.5	1.3 (8)
Color (Pt-Co Units)	5 - 11	8 (7)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	1488 - 53498	28715 (7)

**Figure 2. Indian River North-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,  $R^2 = 0.14$ ,  $p = 0.37$ ), total nitrogen (TN No Trend,  $R^2 = 0.19$ ,  $p = 0.28$ ), chlorophyll (CHL No Trend,  $R^2 = 0.20$ ,  $p = 0.27$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ ,  $p = 0.96$ ).**



**LAKEWATCH Report for Indian River North-4 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Indian River North-4
GNIS Number	284534
Water Body Type	River/Stream
Period of Record (years, range)	8 (2003 to 2010)
Latitude	29.0299
Longitude	-80.9161

## Long-Term Data for River/Streams: Definitions

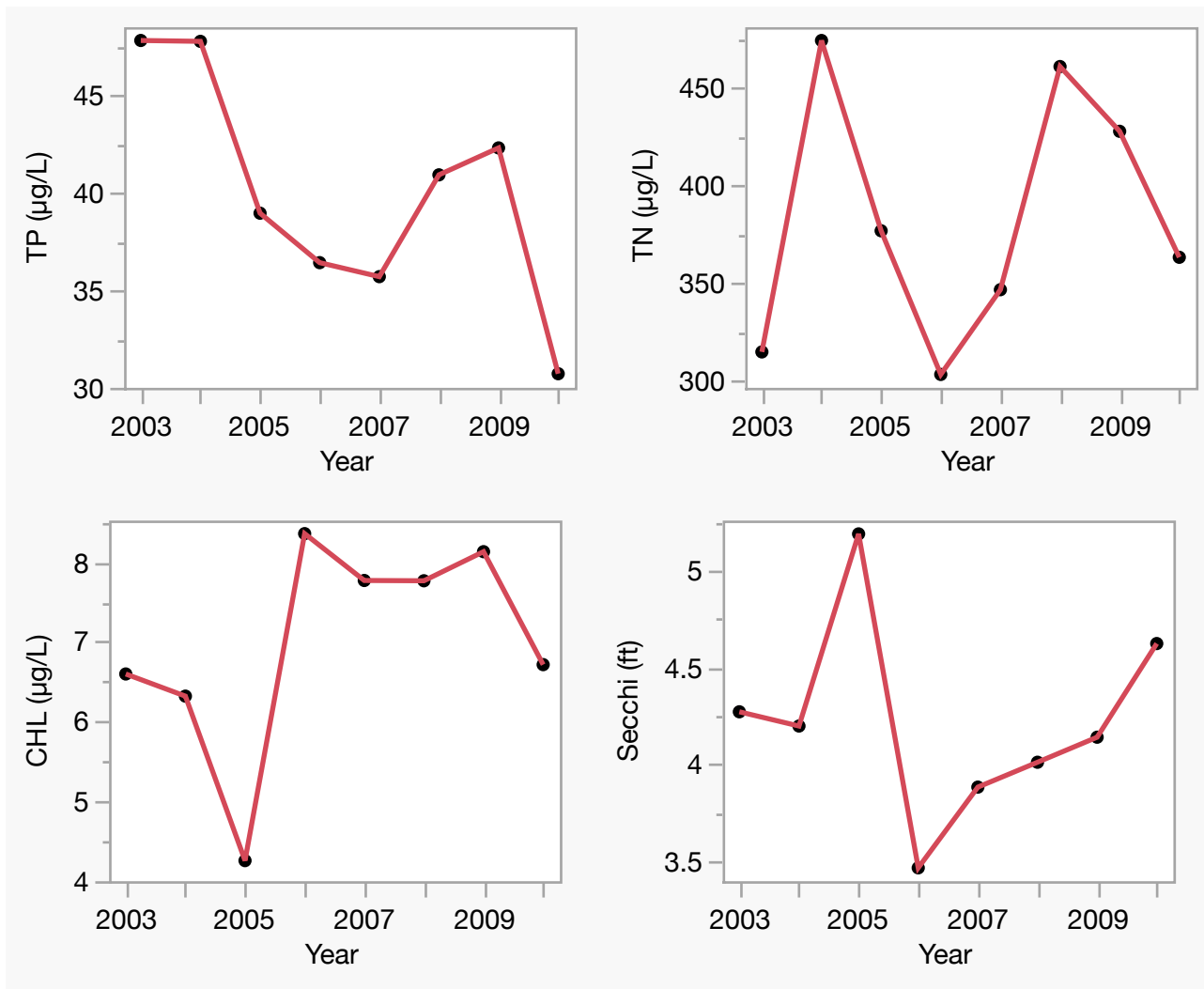
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	31 - 48	40 (8)
Total Nitrogen ( $\mu\text{g/L}$ )	303 - 474	379 (8)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	4 - 8	7 (8)
Secchi (ft)	3.5 - 5.2	4.2 (8)
Secchi (m)	1.1 -1.6	1.3 (8)
Color (Pt-Co Units)	5 - 12	9 (7)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	1224 - 53498	26955 (7)

**Figure 2. Indian River North-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,  $R^2 = 0.49$ ,  $p = 0.05$ ), total nitrogen (TN No Trend,  $R^2 = 0.03$ ,  $p = 0.67$ ), chlorophyll (CHL No Trend,  $R^2 = 0.19$ ,  $p = 0.29$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ ,  $p = 0.90$ ).**



**LAKEWATCH Report for Spruce Creek-1 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Spruce Creek-1
GNIS Number	291585
Water Body Type	River/Stream
Period of Record (years, range)	26 (1995 to 2020)
Latitude	29.0725
Longitude	-81.0683

## Long-Term Data for River/Streams: Definitions

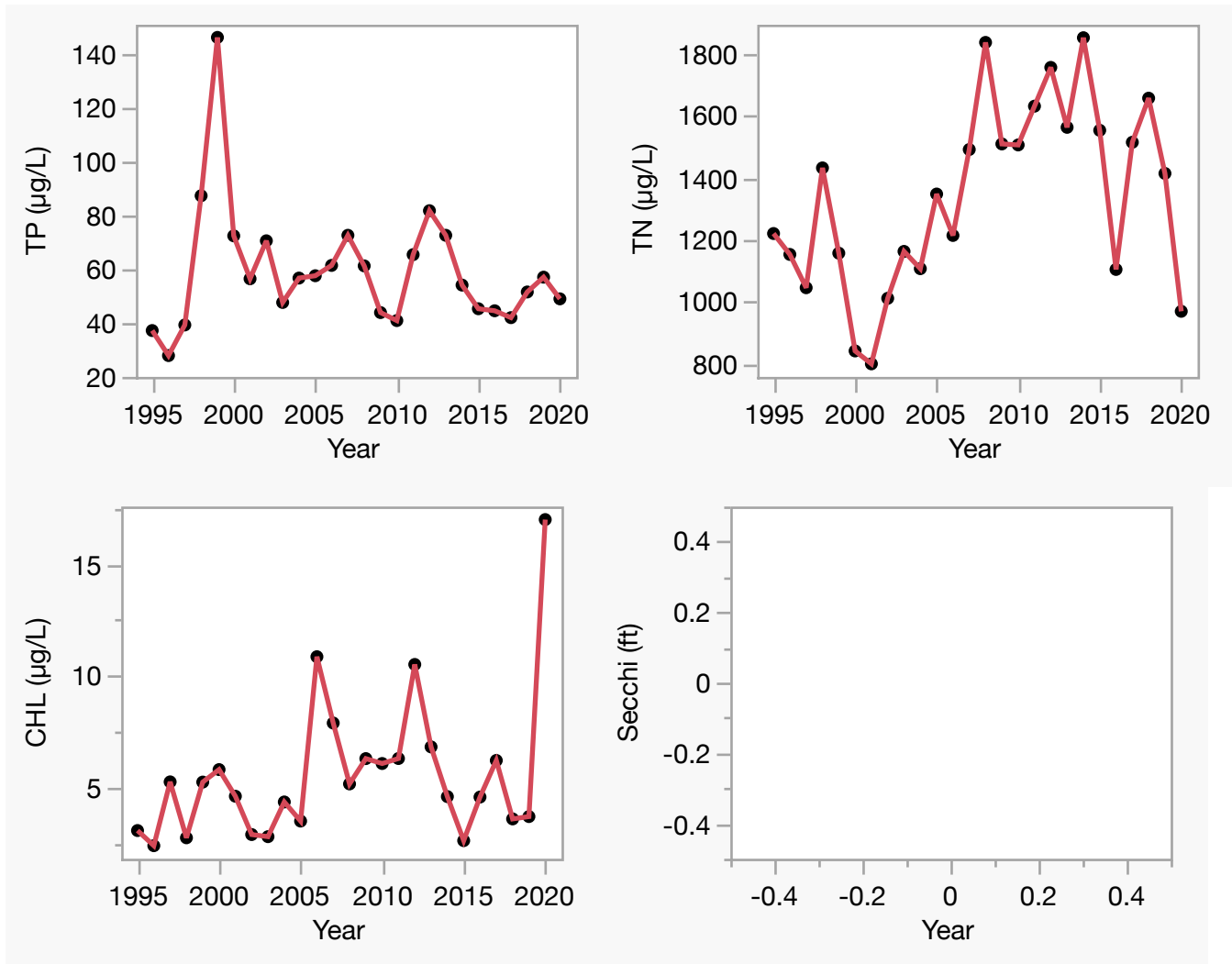
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	28 - 146	56 (26)
Total Nitrogen ( $\mu\text{g/L}$ )	801 - 1852	1308 (26)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	2 - 17	5 (26)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	41 - 614	146 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	147 - 351	246 (14)

**Figure 2. Spruce Creek-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,  $R^2 = 0.03$ ,  $p = 0.38$ ), total nitrogen (TN Increasing,  $R^2 = 0.23$ ,  $p = 0.01$ ), chlorophyll (CHL No Trend,  $R^2 = 0.15$ ,  $p = 0.05$ ) and Secchi depth (Secchi ,  $R^2 =$ ,  $p =$ ).**





**LAKEWATCH Report for Spruce Creek-2 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Spruce Creek-2
GNIS Number	291585
Water Body Type	River/Stream
Period of Record (years, range)	26 (1995 to 2020)
Latitude	29.0569
Longitude	-81.0508

## Long-Term Data for River/Streams: Definitions

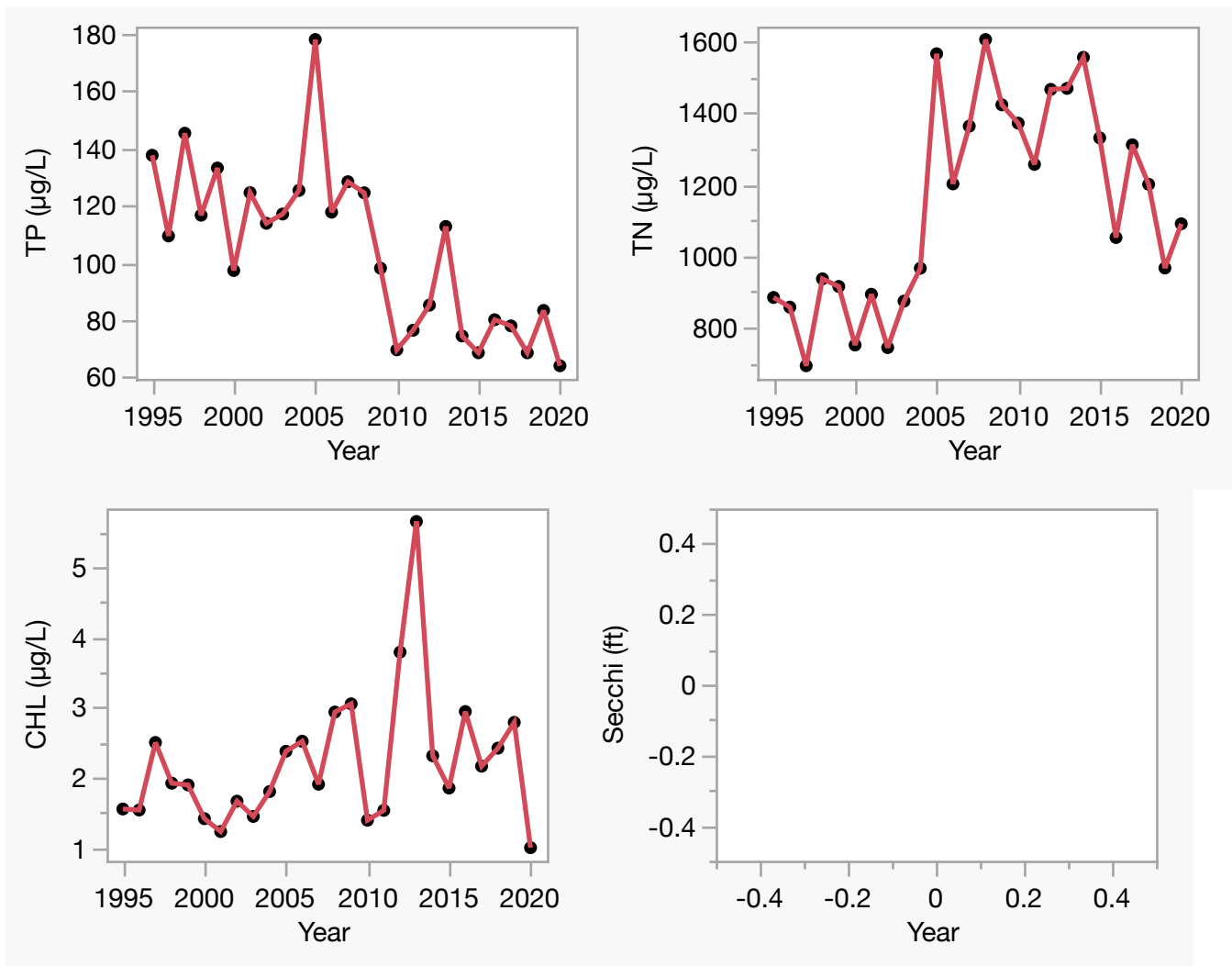
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	64 - 178	101 (26)
Total Nitrogen ( $\mu\text{g/L}$ )	693 - 1605	1109 (26)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 6	2 (26)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	23 - 434	89 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	189 - 463	307 (14)

**Figure 2. Spruce Creek-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,  $R^2 = 0.53$ ,  $p = 0.00$ ), total nitrogen (TN Increasing,  $R^2 = 0.31$ ,  $p = 0.00$ ), chlorophyll (CHL No Trend,  $R^2 = 0.10$ ,  $p = 0.11$ ) and Secchi depth (Secchi ,  $R^2 = , p =$  ).**



**LAKEWATCH Report for Spruce Creek-3 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	Spruce Creek-3
GNIS Number	291585
Water Body Type	River/Stream
Period of Record (years, range)	26 (1995 to 2020)
Latitude	29.0692
Longitude	-81.0267

## Long-Term Data for River/Streams: Definitions

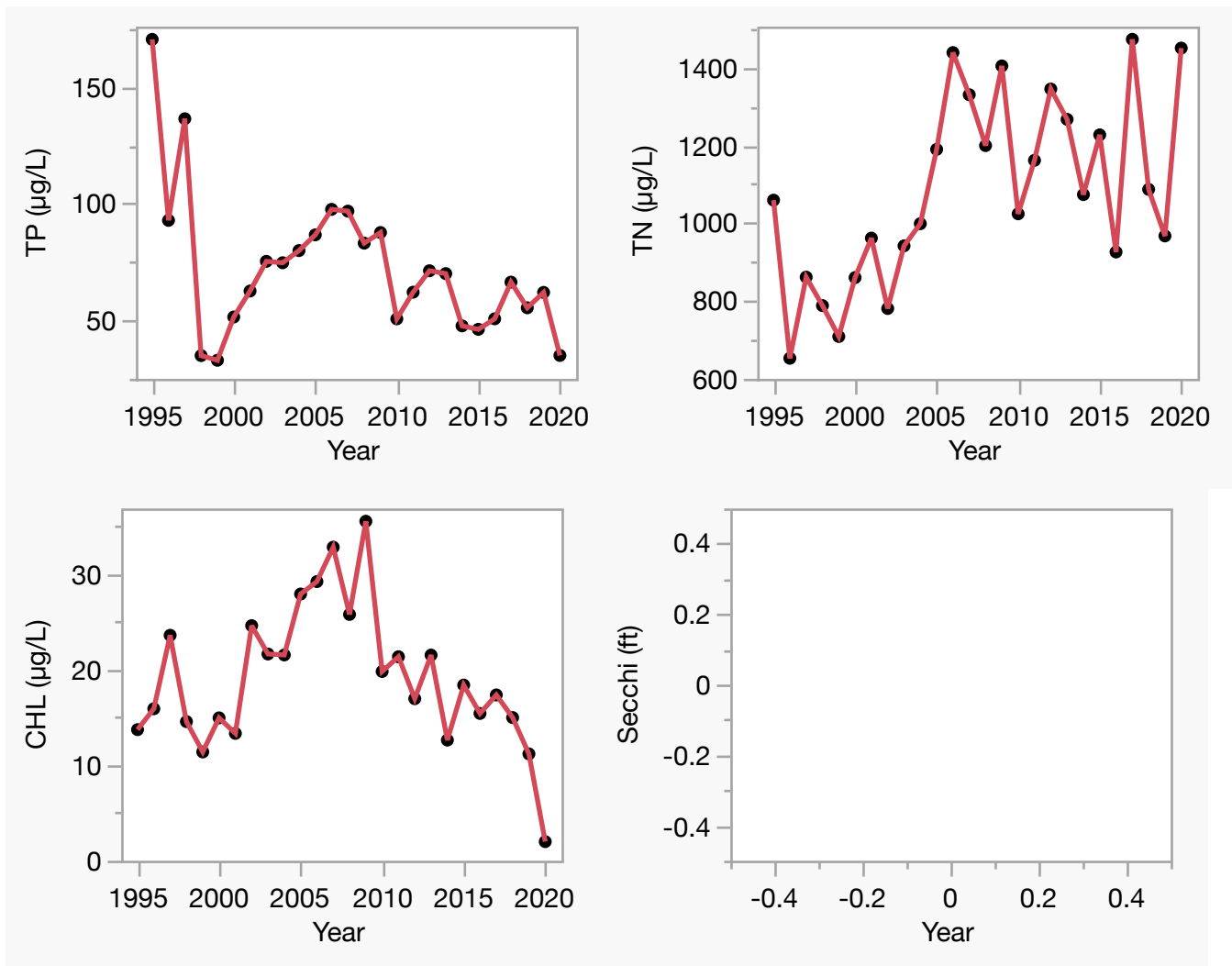
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	33 - 170	67 (26)
Total Nitrogen ( $\mu\text{g/L}$ )	653 - 1473	1058 (26)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	2 - 36	17 (26)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	19 - 533	39 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	116 - 405	285 (14)

**Figure 2. Spruce Creek-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 Decreasing,  $R^2 = 0.23$ ,  $p = 0.01$ ), total nitrogen (TN Increasing,  $R^2 = 0.36$ ,  $p = 0.00$ ), chlorophyll (CHL No Trend,  $R^2 = 0.03$ ,  $p = 0.36$ ) and Secchi depth (Secchi ,  $R^2 = , p = )$ .**



**LAKEWATCH Report for St. John's Harney-3 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria's for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	St. John's Harney-3
GNIS Number	
Water Body Type	River/Stream
Period of Record (years, range)	2 (2021 to 2022)
Latitude	28.7954
Longitude	-81.0594

## Long-Term Data for River/Streams: 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 ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	52 - 57	54 (2)
Total Nitrogen ( $\mu\text{g/L}$ )	1134 - 1252	1191 (2)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	3 - 4	3 (2)
Secchi (ft)	3.8 - 4.4	4.1 (2)
Secchi (m)	1.2 -1.3	1.2 (2)
Color (Pt-Co Units)	86 - 194	129 (2)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	952 - 1520	1203 (2)



**LAKEWATCH Report for St. John's Jesup-1 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida's waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida's waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria's for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	St. John's Jesup-1
GNIS Number	
Water Body Type	River/Stream
Period of Record (years, range)	2 (2021 to 2022)
Latitude	28.7873
Longitude	-81.1797

## Long-Term Data for River/Streams: 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 ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	68 - 71	70 (2)
Total Nitrogen ( $\mu\text{g/L}$ )	1351 - 1421	1385 (2)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	6 - 17	10 (2)
Secchi (ft)	2.4 - 2.4	2.4 (2)
Secchi (m)	0.7 -0.7	0.7 (2)
Color (Pt-Co Units)	125 - 167	145 (2)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	935 - 982	958 (2)

**LAKEWATCH Report for St. John's Lemon Bluff-2 in Volusia County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

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 geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **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 2. Base File Data.**

County	Volusia
Name	St. John's Lemon Bluff-2
GNIS Number	
Water Body Type	River/Stream
Period of Record (years, range)	2 (2021 to 2022)
Latitude	28.8036
Longitude	-81.1296

## Long-Term Data for River/Streams: 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 ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	53 - 58	55 (2)
Total Nitrogen ( $\mu\text{g/L}$ )	1105 - 1160	1132 (2)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	3 - 4	3 (2)
Secchi (ft)	3.1 - 3.6	3.3 (2)
Secchi (m)	0.9 -1.1	1.0 (2)
Color (Pt-Co Units)	132 - 201	163 (2)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	950 - 1060	1003 (2)

