

LAKEWATCH Report for Bugg Springs in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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

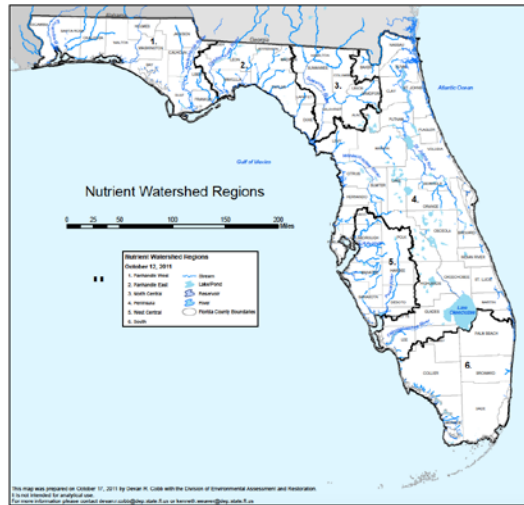


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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

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

County	Lake
Name	Bugg Springs
Latitude	28.7522
Longitude	-81.9016
Water Body Type	Spring
Period of Record (year)	1990 to 2016
Nutrient Watershed Region	Peninsula

LAKEWATCH Report for Bugg Springs in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	57 - 81	71 (27)
Total Nitrogen (µg/L)	385 - 741	573 (27)
Chlorophyll- uncorrected (µg/L)	6.3 - 17.6	12.2 (27)
Secchi (ft)	16.4 - 24.2	20.6 (27)
Secchi (m)	5.0 - 7.4	6.3 (27)
Color (Pt-Co Units)	3 - 30	7 (16)
Specific Conductance (µS/cm@25 C)	205 - 255	234 (10)

LAKEWATCH Report for Bugg Springs in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

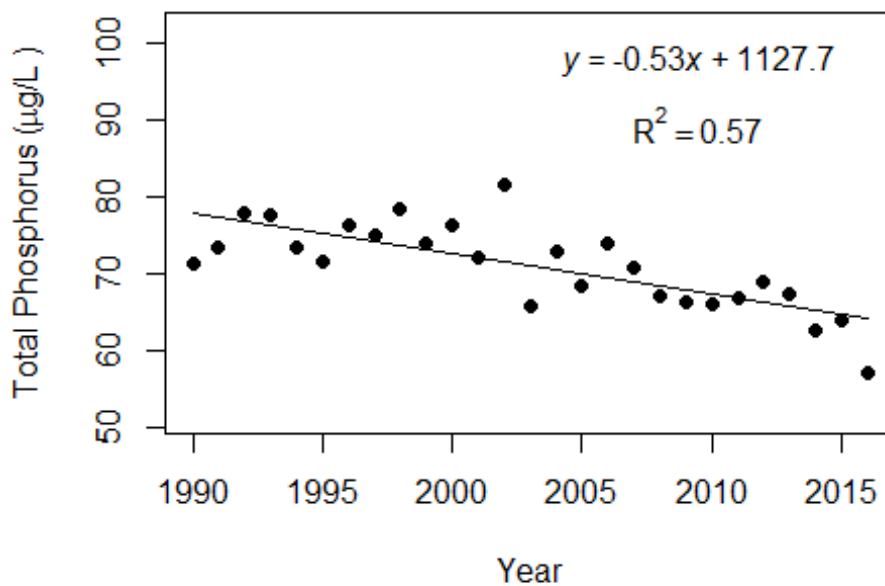
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

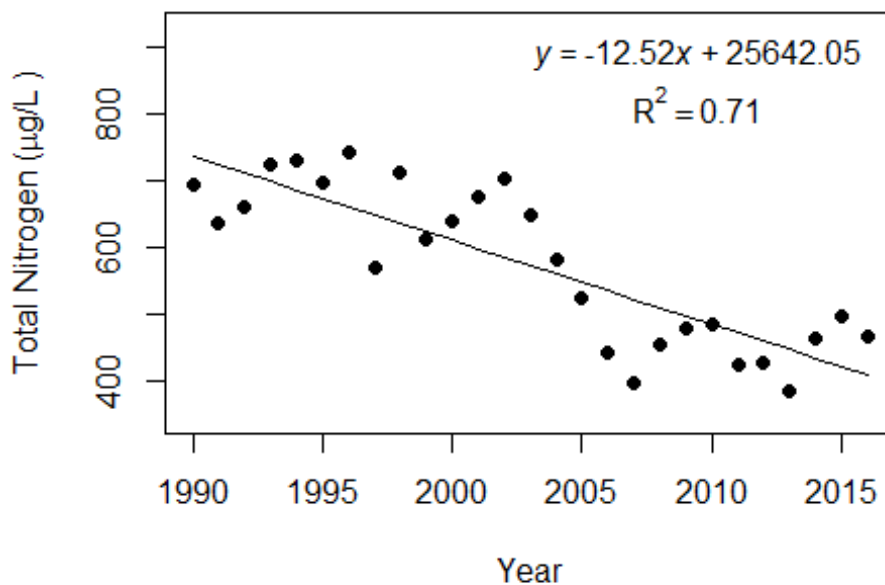
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	27	27	27	27
Intercept (a)	1128	25642	-9	108
Slope (b)	-0.53	-12.52	0.01	-0.04
Coefficient of Determination (R ²)	0.57	0.71	0.00	0.03
Probability of Significance (p)	0.00	0.00	0.90	0.42
Potential Trend	Decreasing	Decreasing	No Trend	No Trend

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

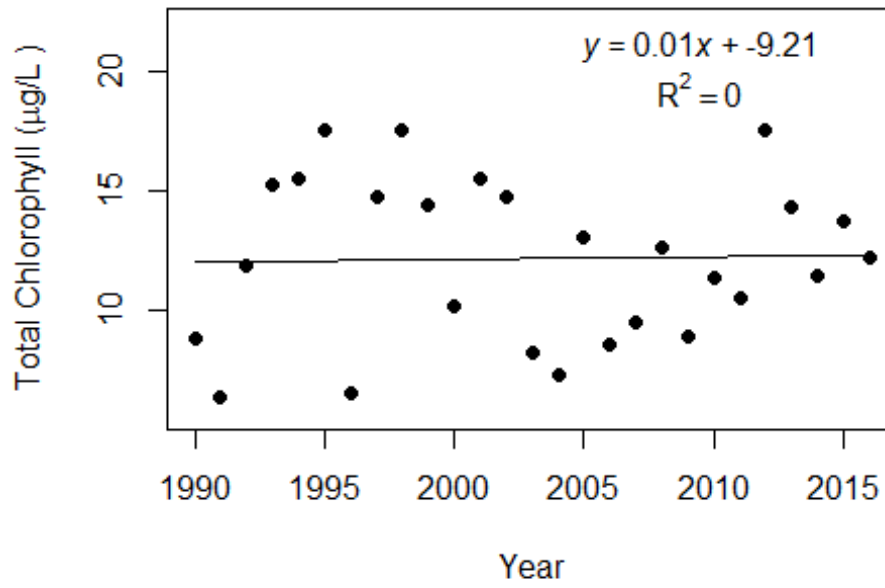
Bugg Springs (Lake)



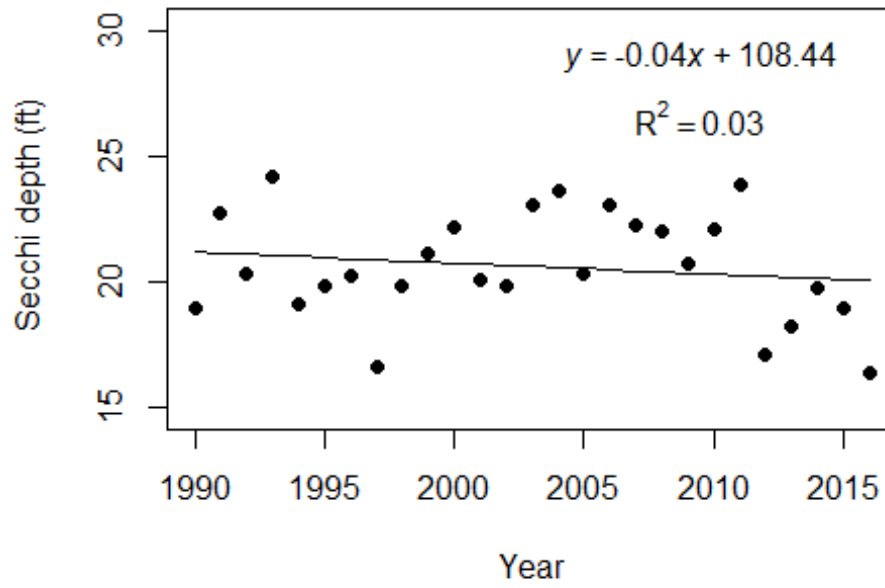
Bugg Springs (Lake)



Bugg Springs (Lake)



Bugg Springs (Lake)



LAKEWATCH Report for Bugg Springs-pipe in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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

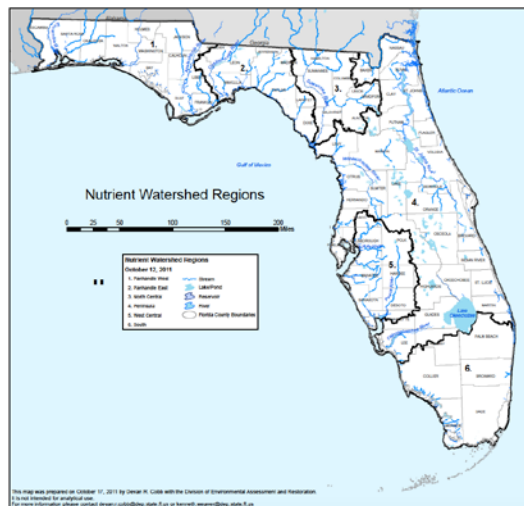


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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

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

County	Lake
Name	Bugg Springs-pipe
Latitude	28.752
Longitude	-81.9014
Water Body Type	Spring
Period of Record (year)	2004 to 2014
Nutrient Watershed Region	Peninsula

LAKEWATCH Report for Bugg Springs-pipe in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	58 - 86	71 (11)
Total Nitrogen (µg/L)	485 - 659	540 (11)
Chlorophyll- uncorrected (µg/L)	0.8 - 2.6	1.6 (11)
Secchi (ft)	41.0 - 41.0	41.0 (1)
Secchi (m)	12.5 - 12.5	12.5 (1)
Color (Pt-Co Units)	2 - 4	3 (3)
Specific Conductance (µS/cm@25 C)	202 - 267	229 (3)

LAKEWATCH Report for Bugg Springs-pipe in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

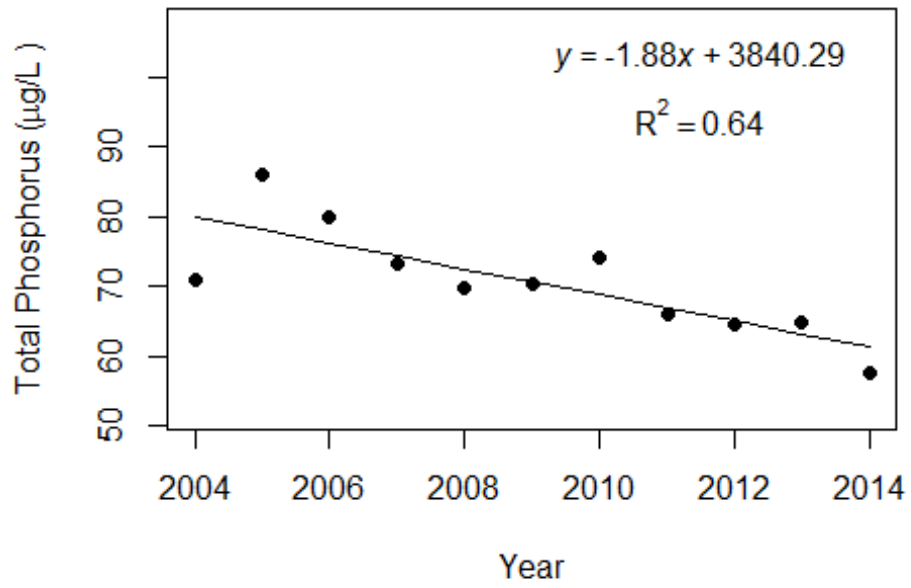
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

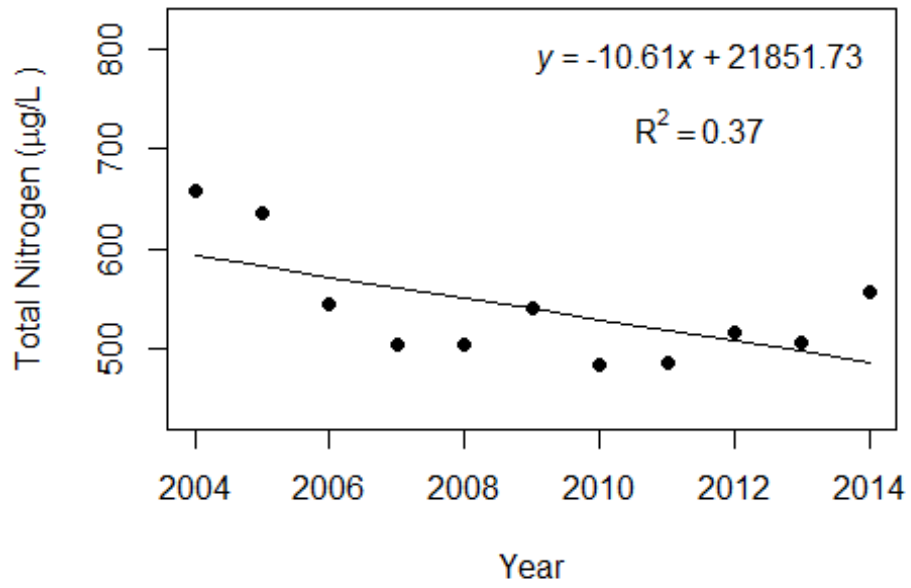
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	11	11	11	
Intercept (a)	3840	21852	-87	
Slope (b)	-1.88	-10.61	0.04	
Coefficient of Determination (R ²)	0.64	0.37	0.05	
Probability of Significance (p)	0.00	0.05	0.49	
Potential Trend	Decreasing	Decreasing	No Trend	

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

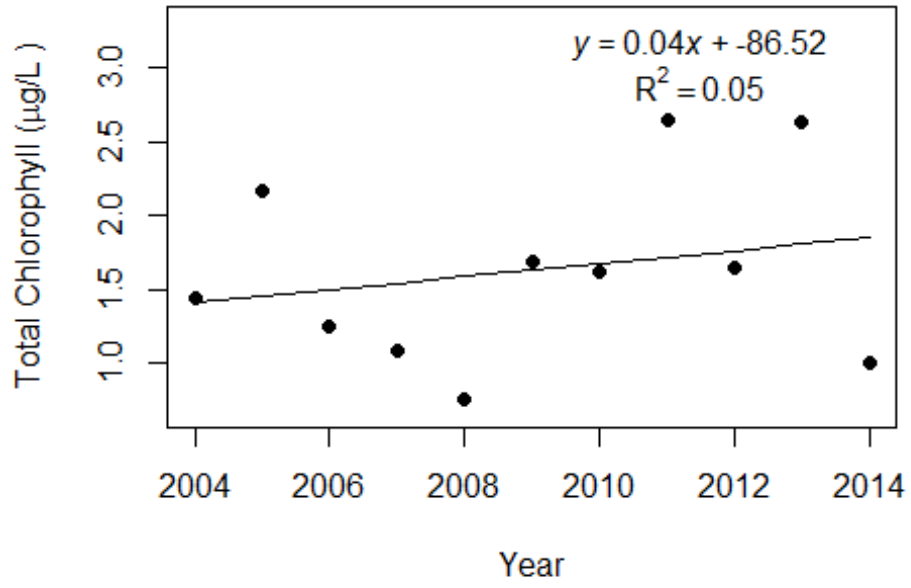
Bugg Springs-pipe (Lake)



Bugg Springs-pipe (Lake)



Bugg Springs-pipe (Lake)



LAKEWATCH Report for Dead River-1 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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



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

Base File Data: Definitions

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

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

County	Lake
Name	Dead River-1
Latitude	28.8126
Longitude	-81.7701
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Dead River-1 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	22 - 46	32 (14)
Total Nitrogen (µg/L)	1235 - 2075	1579 (14)
Chlorophyll- uncorrected (µg/L)	17.0 - 73.0	35.5 (14)
Secchi (ft)	1.5 - 3.6	2.5 (14)
Secchi (m)	0.4 - 1.1	0.8 (14)
Color (Pt-Co Units)	9 - 33	18 (13)
Specific Conductance (µS/cm@25 C)	198 - 306	247 (10)

LAKEWATCH Report for Dead River-1 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

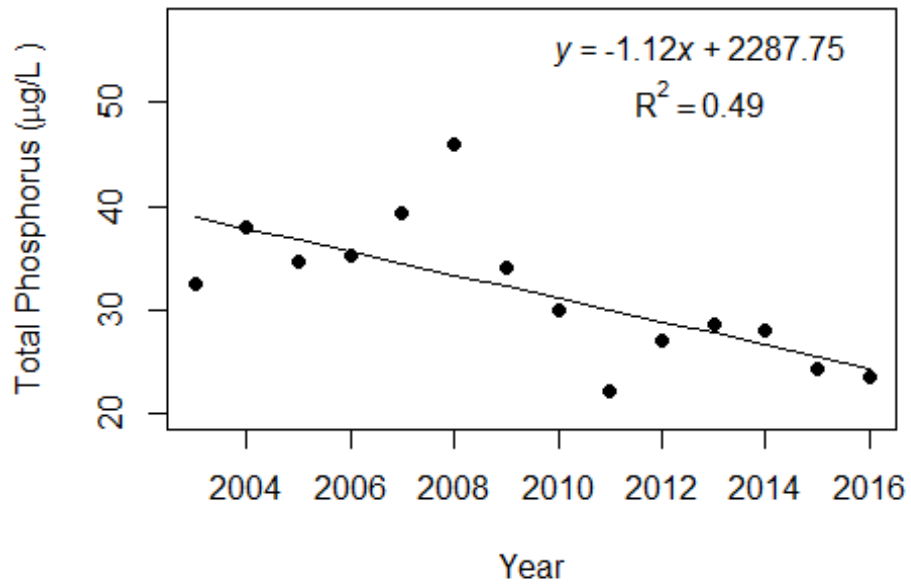
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

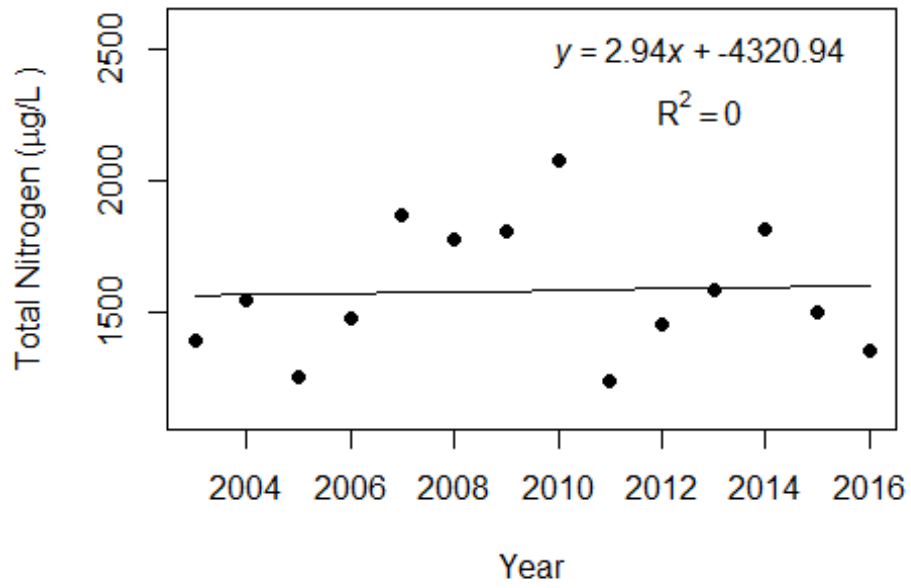
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	2288	-4321	3849	71
Slope (b)	-1.12	2.94	-1.90	-0.03
Coefficient of Determination (R ²)	0.49	0.00	0.30	0.06
Probability of Significance (p)	0.01	0.87	0.04	0.42
Potential Trend	Decreasing	No Trend	Decreasing	No Trend

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

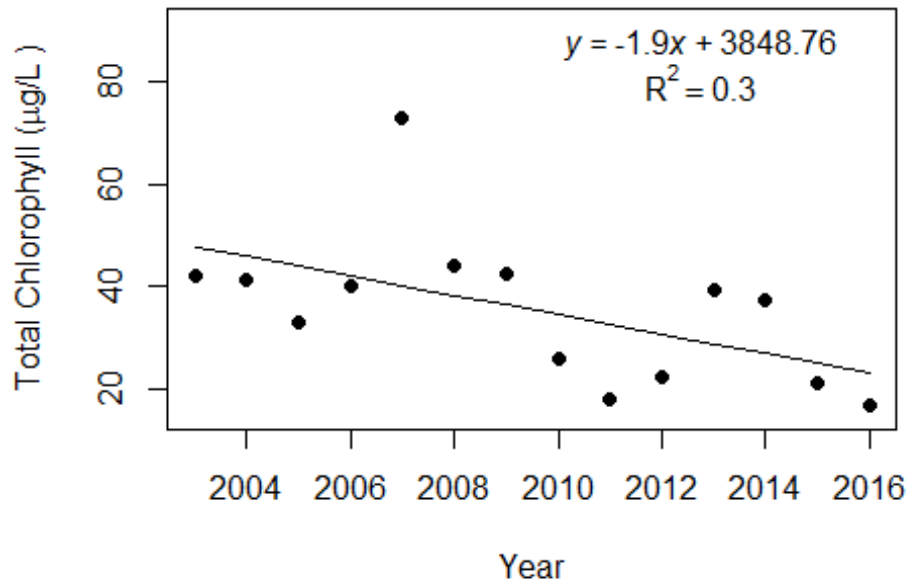
Dead River-1 (Lake)



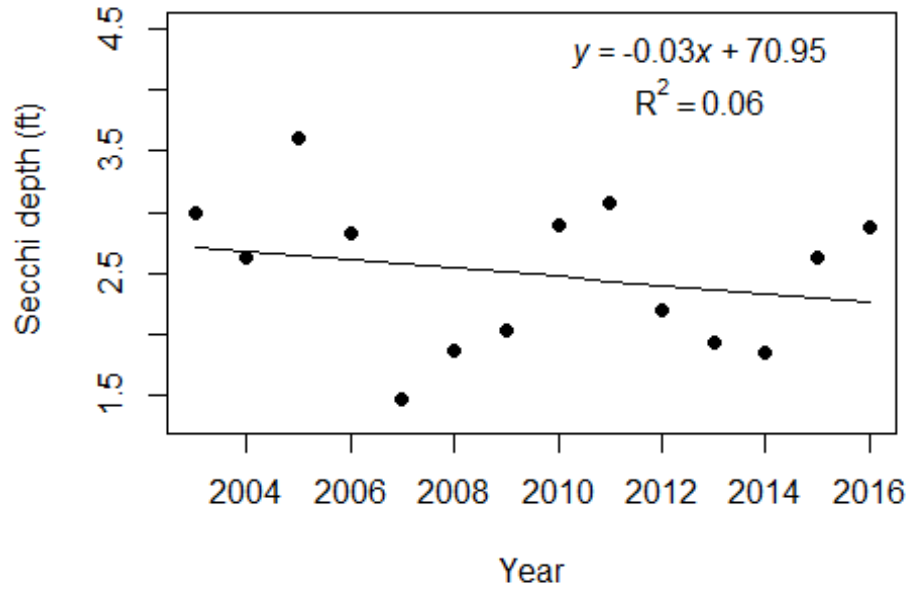
Dead River-1 (Lake)



Dead River-1 (Lake)



Dead River-1 (Lake)



LAKEWATCH Report for Dead River-2 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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

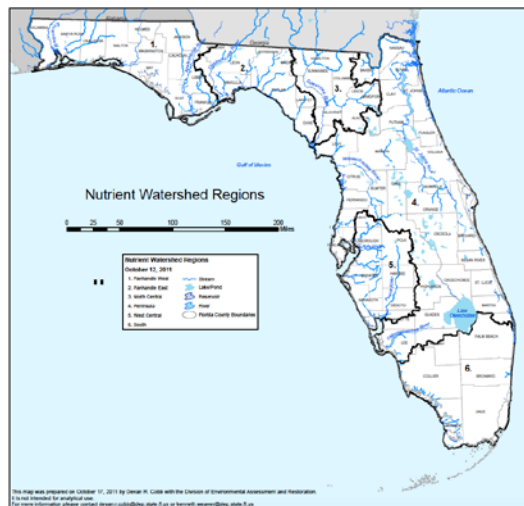


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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

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

County	Lake
Name	Dead River-2
Latitude	28.8136
Longitude	-81.8139
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Dead River-2 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	23 - 49	32 (14)
Total Nitrogen (µg/L)	1290 - 2235	1623 (14)
Chlorophyll- uncorrected (µg/L)	16.0 - 59.6	33.4 (14)
Secchi (ft)	1.8 - 3.2	2.5 (14)
Secchi (m)	0.5 - 1.0	0.8 (14)
Color (Pt-Co Units)	10 - 33	18 (13)
Specific Conductance (µS/cm@25 C)	124 - 294	251 (10)

LAKEWATCH Report for Dead River-2 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

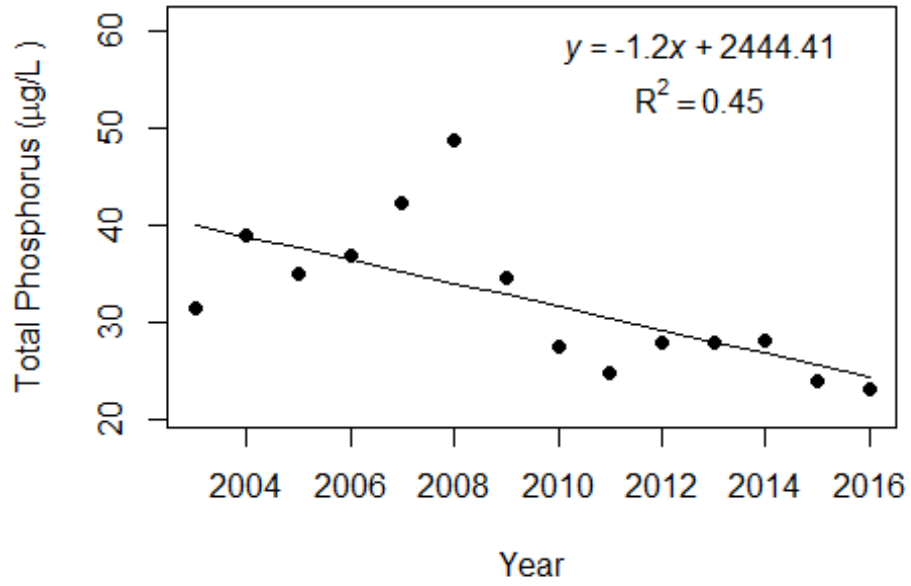
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

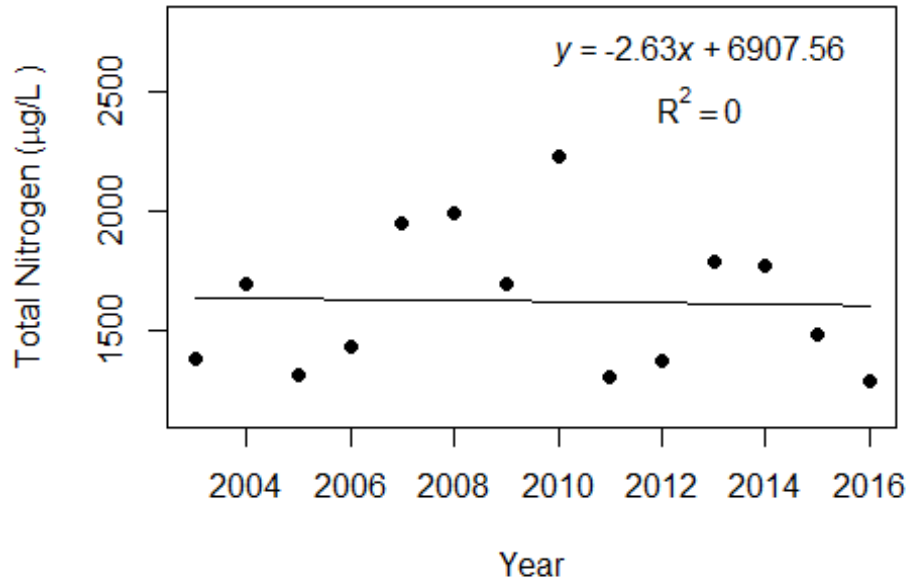
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	2444	6908	3279	33
Slope (b)	-1.20	-2.63	-1.62	-0.02
Coefficient of Determination (R ²)	0.45	0.00	0.33	0.02
Probability of Significance (p)	0.01	0.90	0.03	0.66
Potential Trend	Decreasing	No Trend	Decreasing	No Trend

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

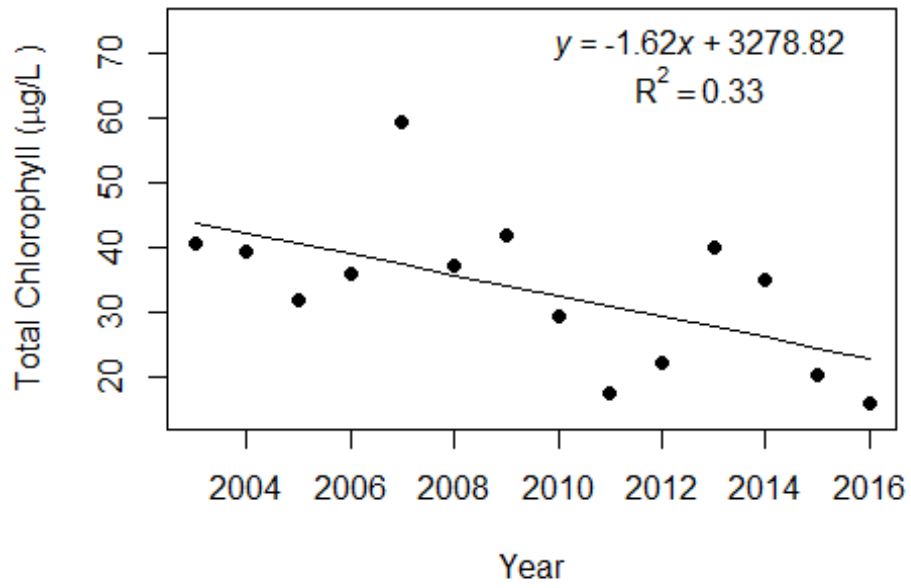
Dead River-2 (Lake)



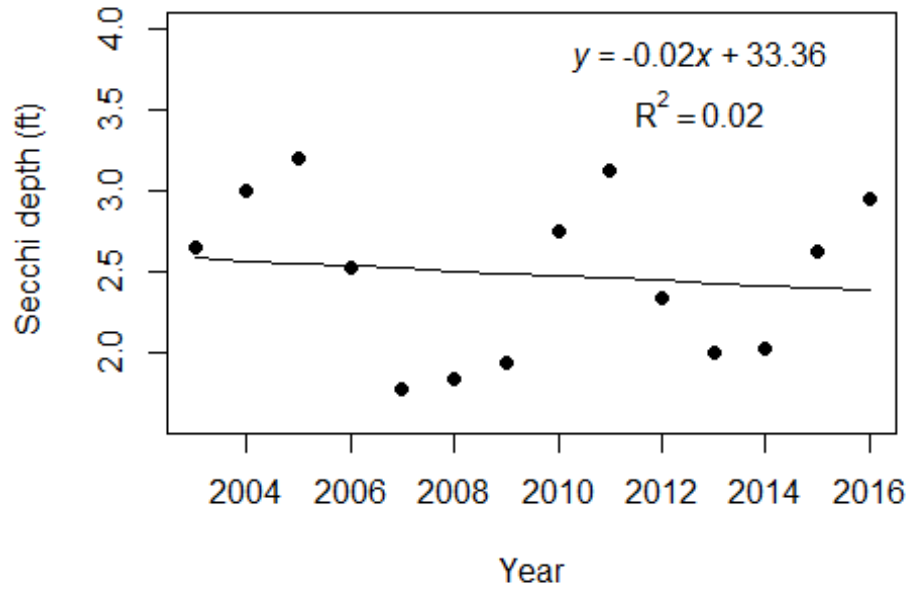
Dead River-2 (Lake)



Dead River-2 (Lake)



Dead River-2 (Lake)



LAKEWATCH Report for Dead River-3 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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



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

Base File Data: Definitions

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

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

County	Lake
Name	Dead River-3
Latitude	28.8189
Longitude	-81.7602
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Dead River-3 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	23 - 57	35 (14)
Total Nitrogen (µg/L)	1238 - 2413	1720 (14)
Chlorophyll- uncorrected (µg/L)	17.0 - 89.4	36.1 (14)
Secchi (ft)	1.3 - 3.4	2.4 (14)
Secchi (m)	0.4 - 1.0	0.7 (14)
Color (Pt-Co Units)	8 - 32	17 (13)
Specific Conductance (µS/cm@25 C)	148 - 328	265 (10)

LAKEWATCH Report for Dead River-3 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

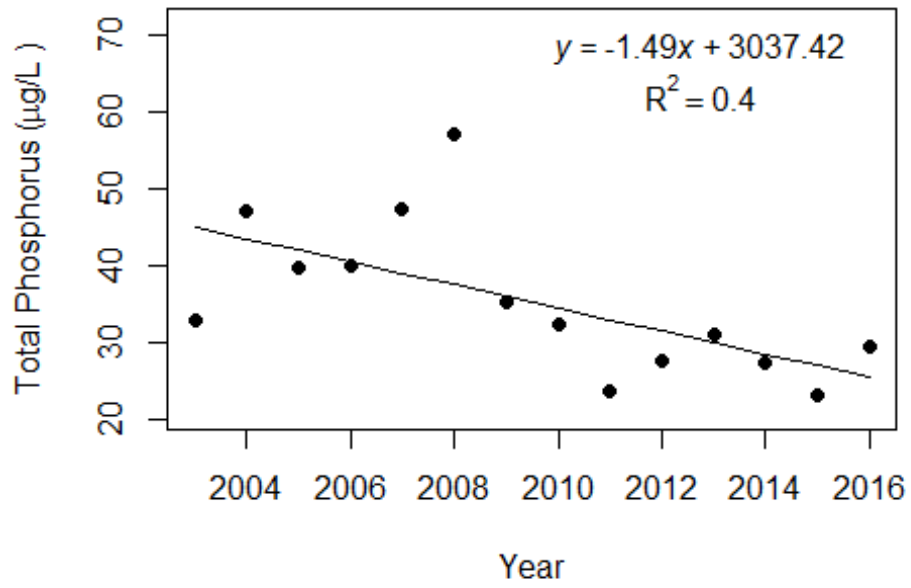
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

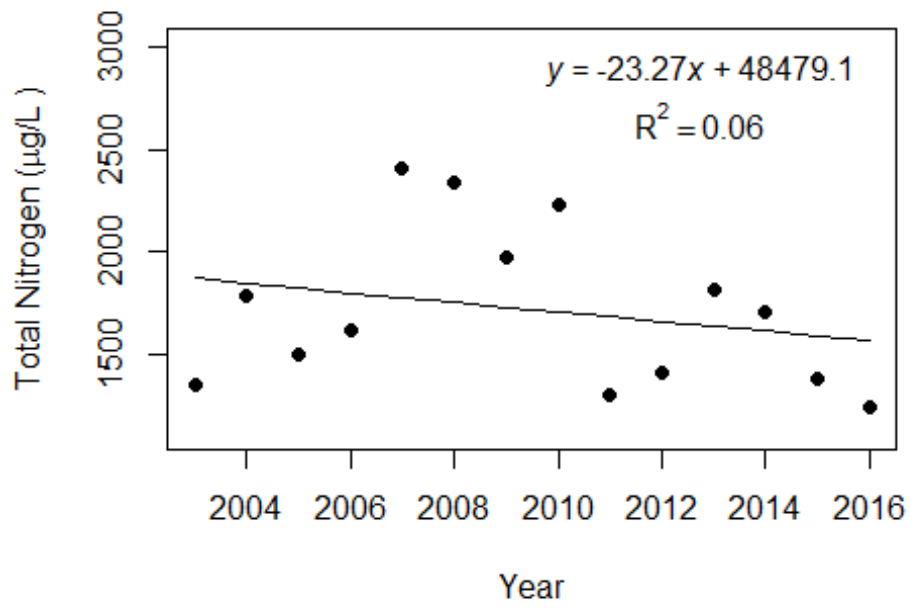
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	3037	48479	4608	69
Slope (b)	-1.49	-23.27	-2.28	-0.03
Coefficient of Determination (R ²)	0.40	0.06	0.26	0.05
Probability of Significance (p)	0.01	0.39	0.06	0.45
Potential Trend	Decreasing	No Trend	No Trend	No Trend

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

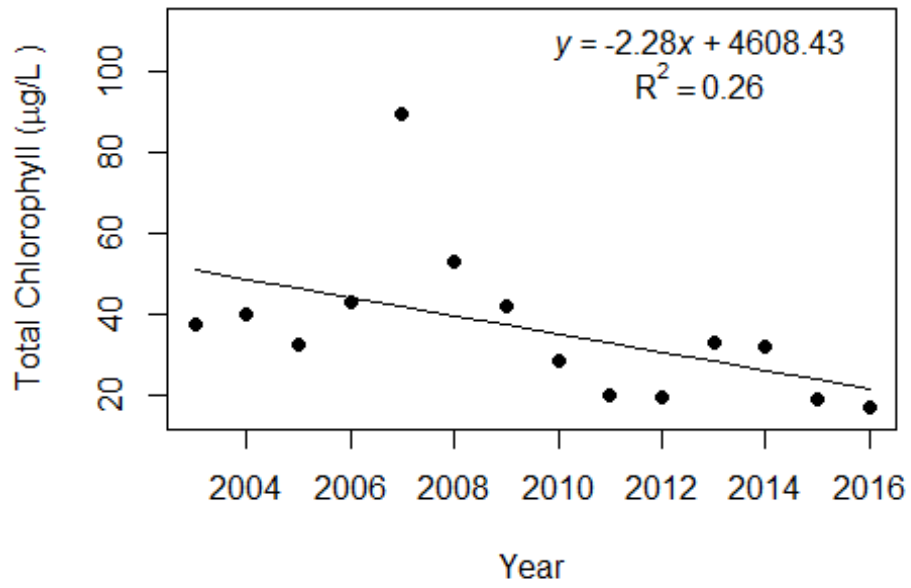
Dead River-3 (Lake)



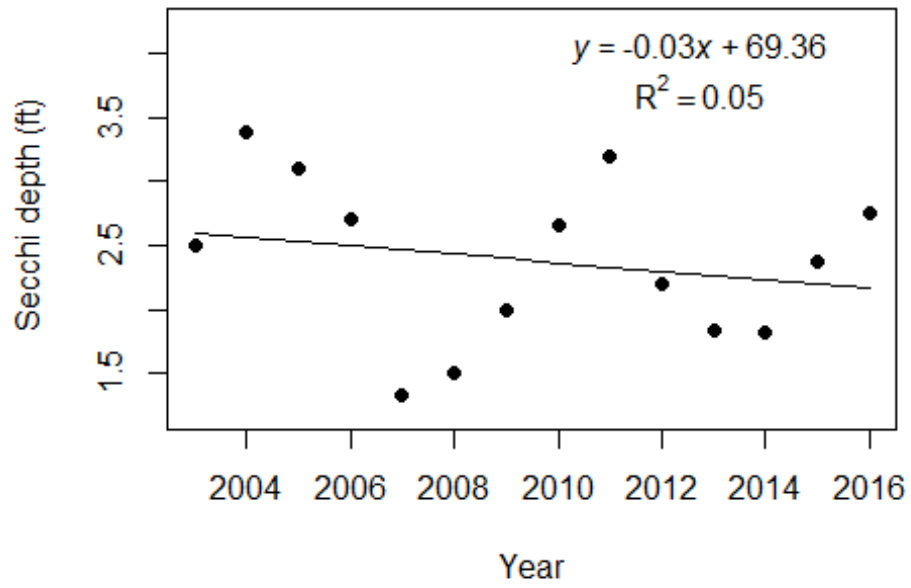
Dead River-3 (Lake)



Dead River-3 (Lake)



Dead River-3 (Lake)



LAKEWATCH Report for Haines Creek-1 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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

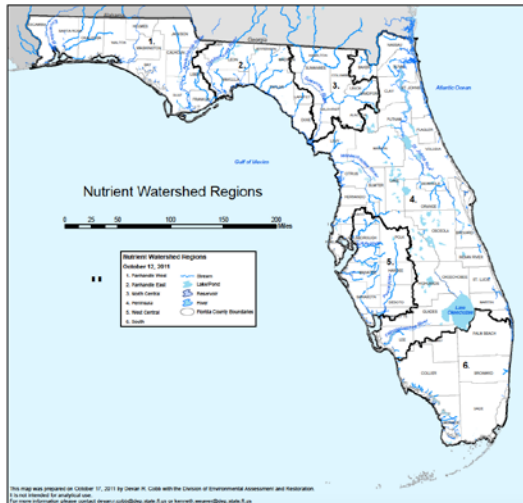


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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

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

County	Lake
Name	Haines Creek-1
Latitude	28.887
Longitude	-81.8184
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Haines Creek-1 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	27 - 82	45 (14)
Total Nitrogen (µg/L)	1096 - 2568	1675 (14)
Chlorophyll- uncorrected (µg/L)	9.3 - 58.3	25.1 (14)
Secchi (ft)	1.6 - 5.6	3.5 (14)
Secchi (m)	0.5 - 1.7	1.1 (14)
Color (Pt-Co Units)	19 - 50	30 (14)
Specific Conductance (µS/cm@25 C)	269 - 360	319 (10)

LAKEWATCH Report for Haines Creek-1 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

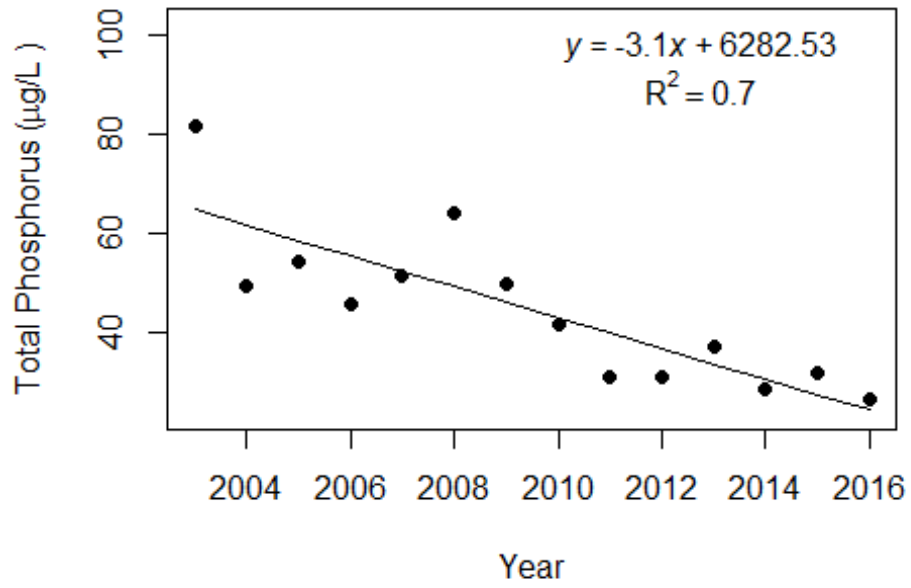
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

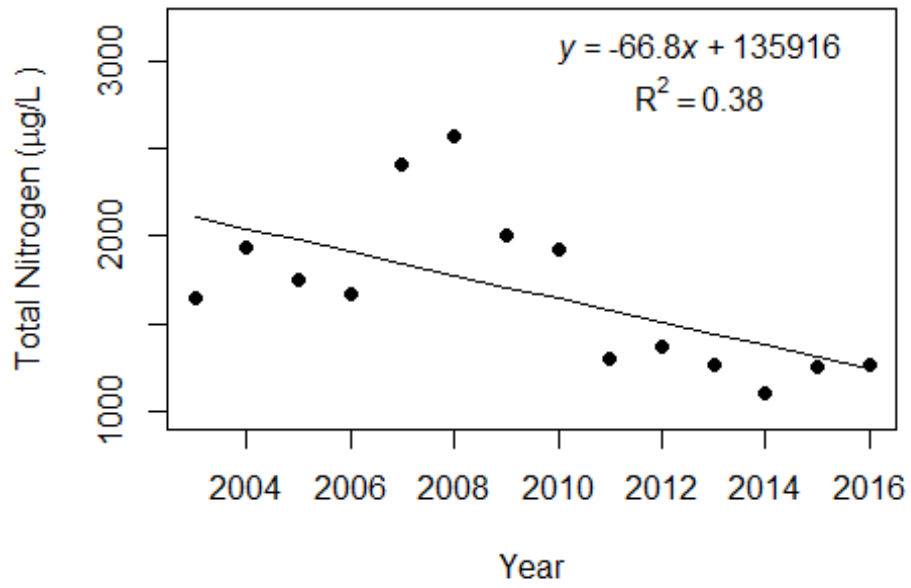
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	6283	135916	4884	-307
Slope (b)	-3.10	-66.80	-2.42	0.15
Coefficient of Determination (R ²)	0.70	0.38	0.40	0.30
Probability of Significance (p)	0.00	0.02	0.02	0.04
Potential Trend	Decreasing	Decreasing	Decreasing	Increasing

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

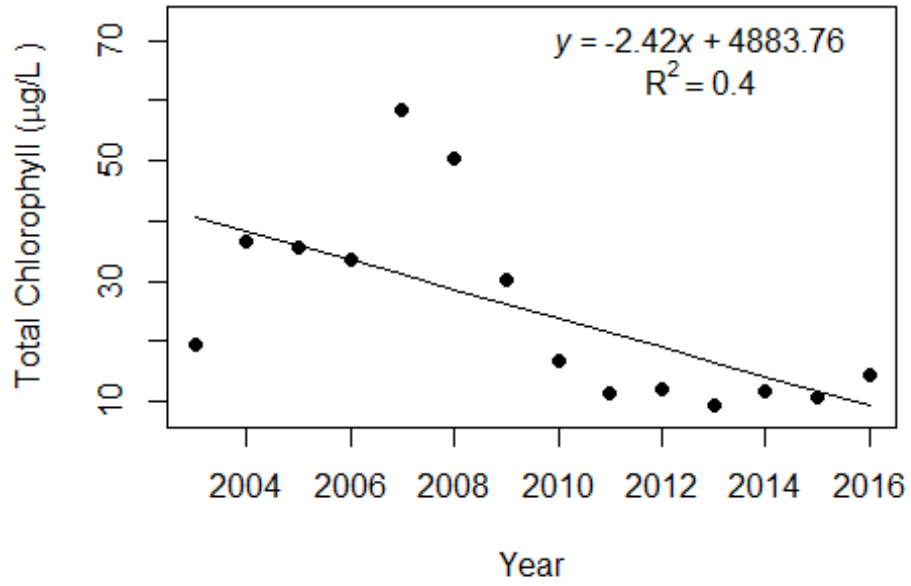
Haines Creek-1 (Lake)



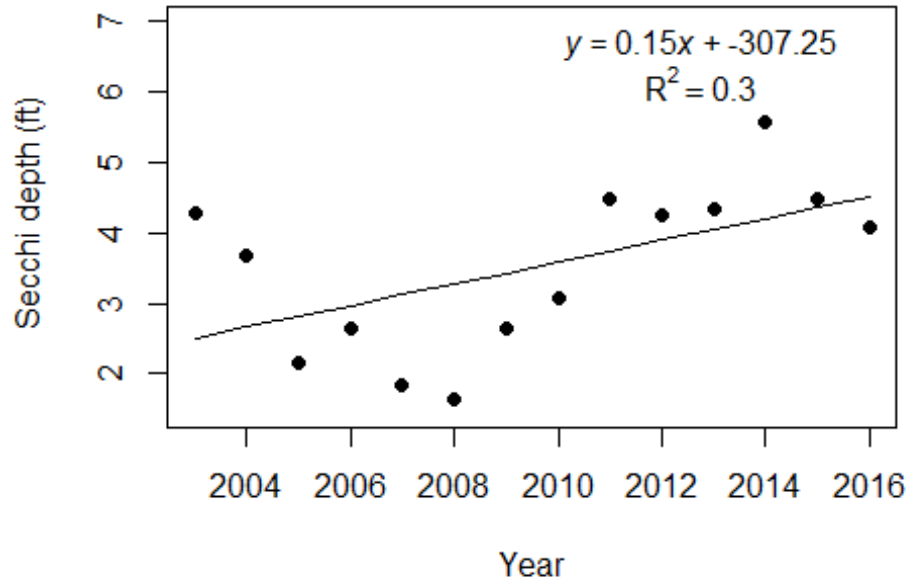
Haines Creek-1 (Lake)



Haines Creek-1 (Lake)



Haines Creek-1 (Lake)



LAKEWATCH Report for Haines Creek-2 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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



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

Base File Data: Definitions

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

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

County	Lake
Name	Haines Creek-2
Latitude	28.8814
Longitude	-81.8074
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Haines Creek-2 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	27 - 64	42 (14)
Total Nitrogen (µg/L)	1176 - 2605	1674 (14)
Chlorophyll- uncorrected (µg/L)	10.3 - 56.7	25.7 (14)
Secchi (ft)	1.7 - 4.6	3.3 (14)
Secchi (m)	0.5 - 1.4	1.0 (14)
Color (Pt-Co Units)	21 - 41	28 (14)
Specific Conductance (µS/cm@25 C)	261 - 361	315 (10)

LAKEWATCH Report for Haines Creek-2 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

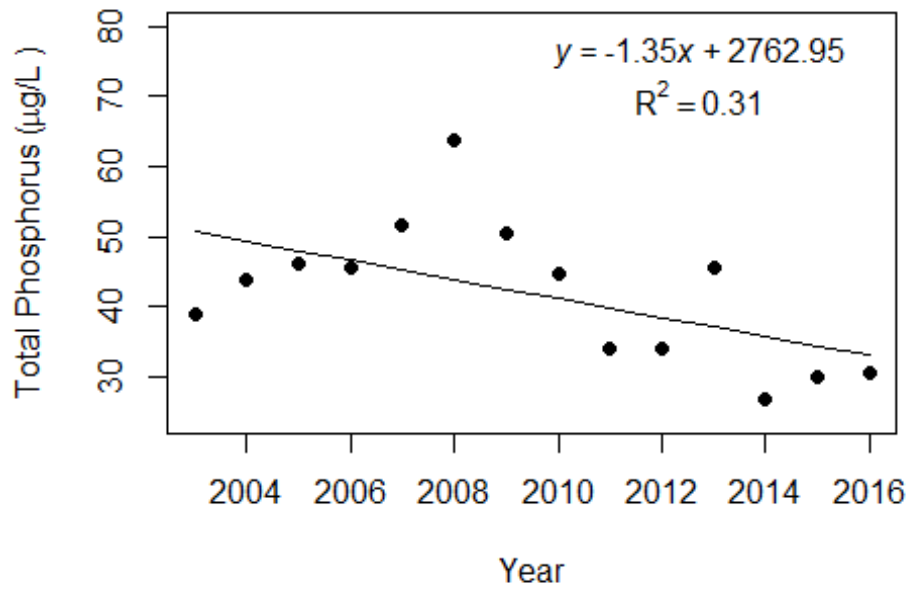
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

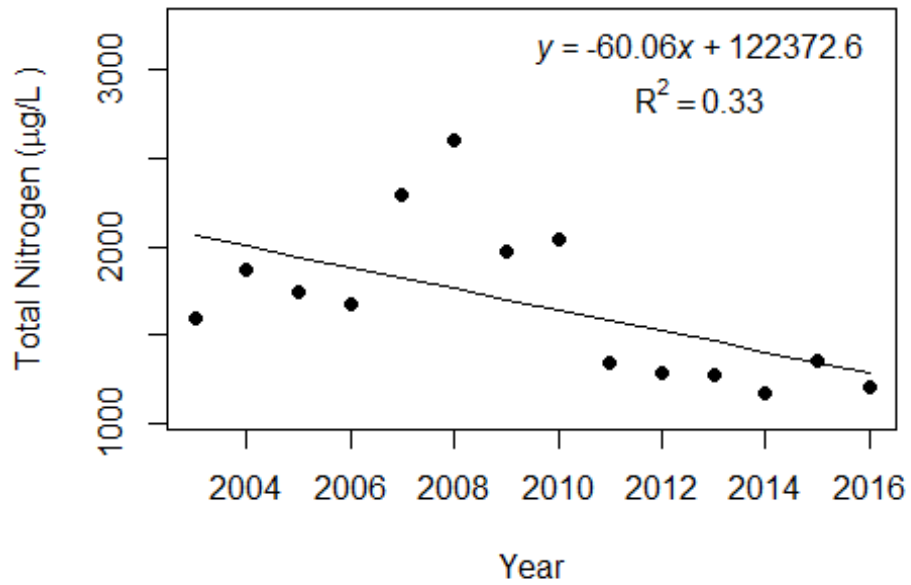
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	2763	122373	4653	-228
Slope (b)	-1.35	-60.06	-2.30	0.12
Coefficient of Determination (R ²)	0.31	0.33	0.38	0.25
Probability of Significance (p)	0.04	0.03	0.02	0.07
Potential Trend	Decreasing	Decreasing	Decreasing	No Trend

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

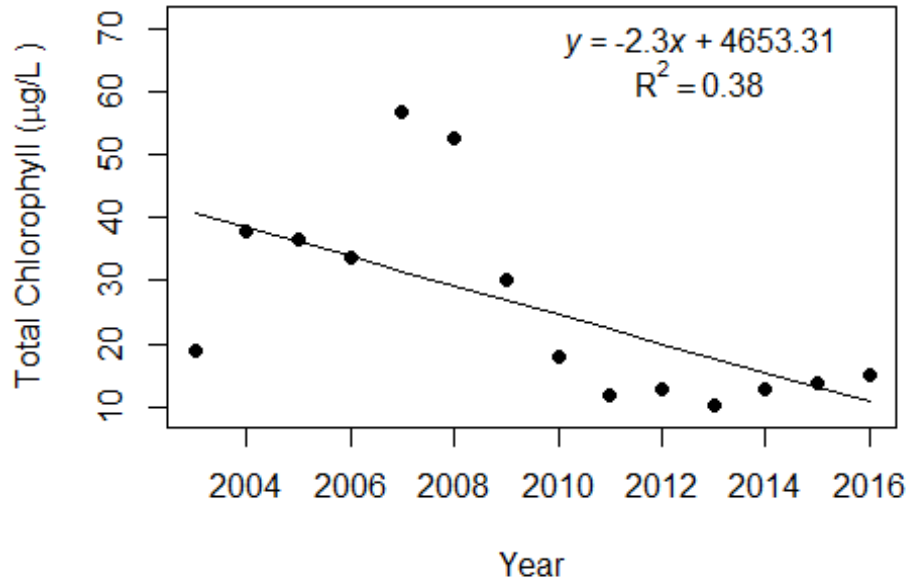
Haines Creek-2 (Lake)



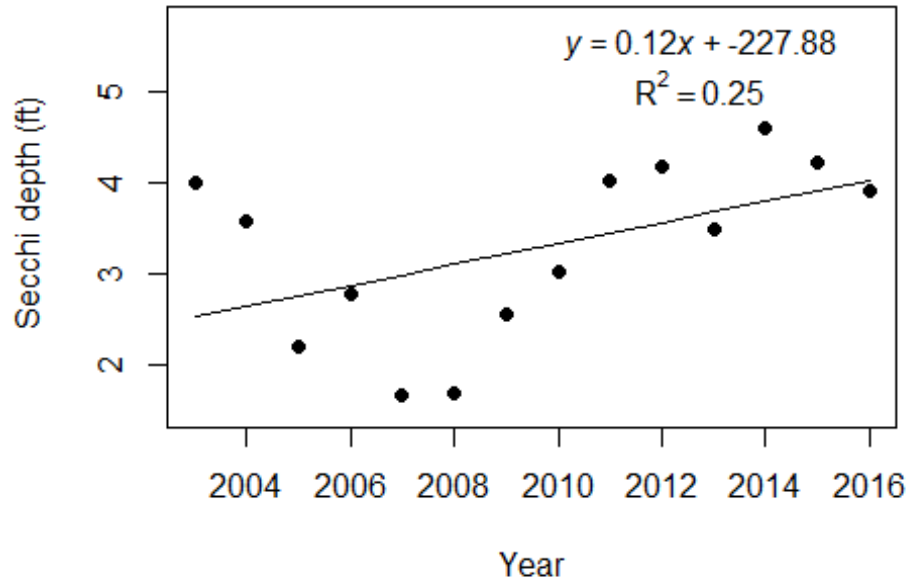
Haines Creek-2 (Lake)



Haines Creek-2 (Lake)



Haines Creek-2 (Lake)



LAKEWATCH Report for Haines Creek-3 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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

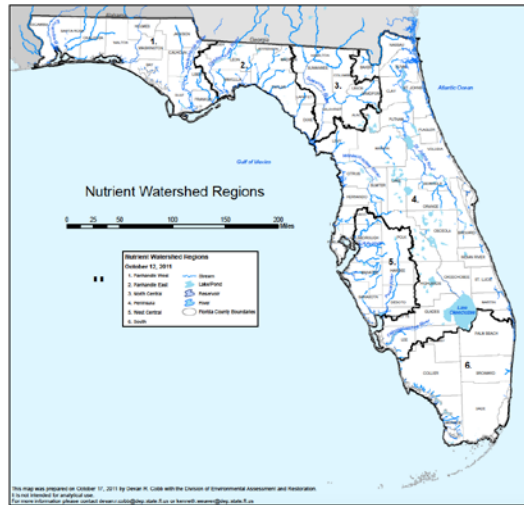


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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

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

County	Lake
Name	Haines Creek-3
Latitude	28.8564
Longitude	-81.7679
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Haines Creek-3 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	22 - 61	36 (14)
Total Nitrogen (µg/L)	1278 - 2829	1833 (14)
Chlorophyll- uncorrected (µg/L)	14.4 - 71.7	31.7 (14)
Secchi (ft)	1.4 - 3.7	2.7 (14)
Secchi (m)	0.4 - 1.1	0.8 (14)
Color (Pt-Co Units)	12 - 30	20 (14)
Specific Conductance (µS/cm@25 C)	253 - 356	301 (10)

LAKEWATCH Report for Haines Creek-3 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

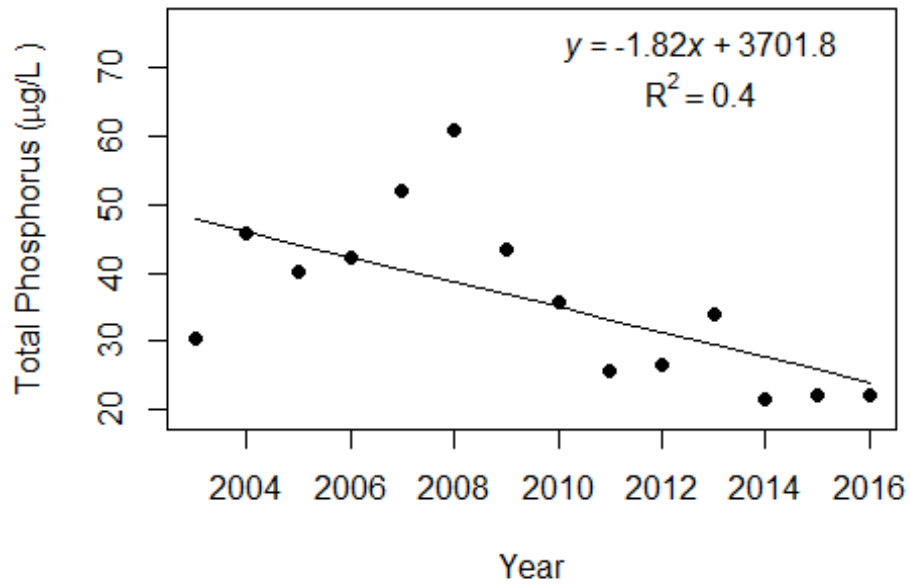
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

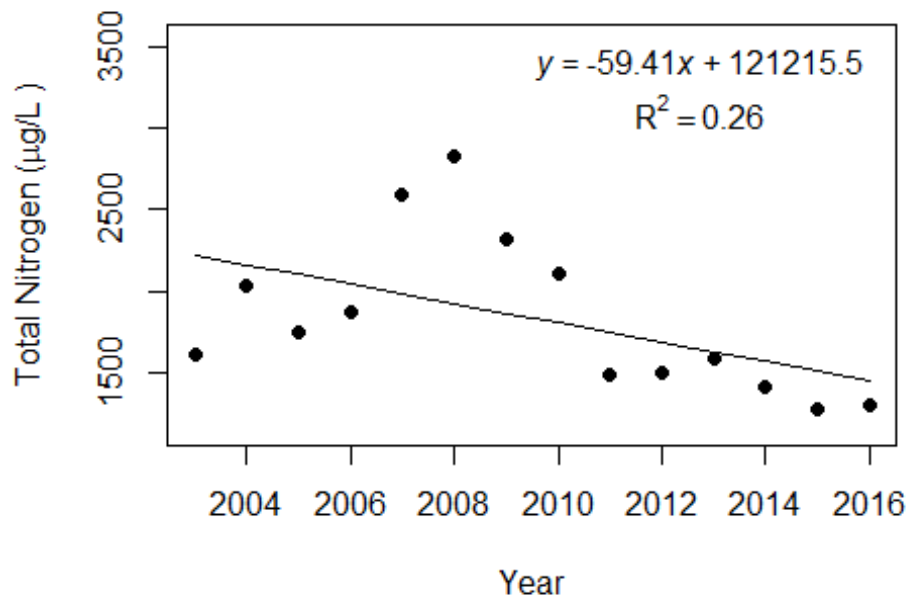
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	3702	121216	5768	-199
Slope (b)	-1.82	-59.41	-2.85	0.10
Coefficient of Determination (R ²)	0.40	0.26	0.45	0.28
Probability of Significance (p)	0.02	0.06	0.01	0.05
Potential Trend	Decreasing	No Trend	Decreasing	No Trend

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

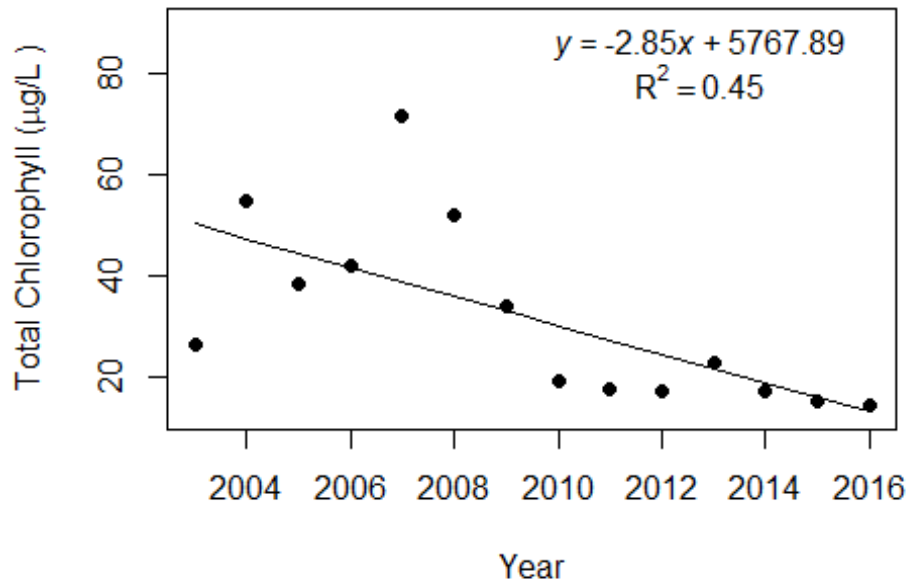
Haines Creek-3 (Lake)



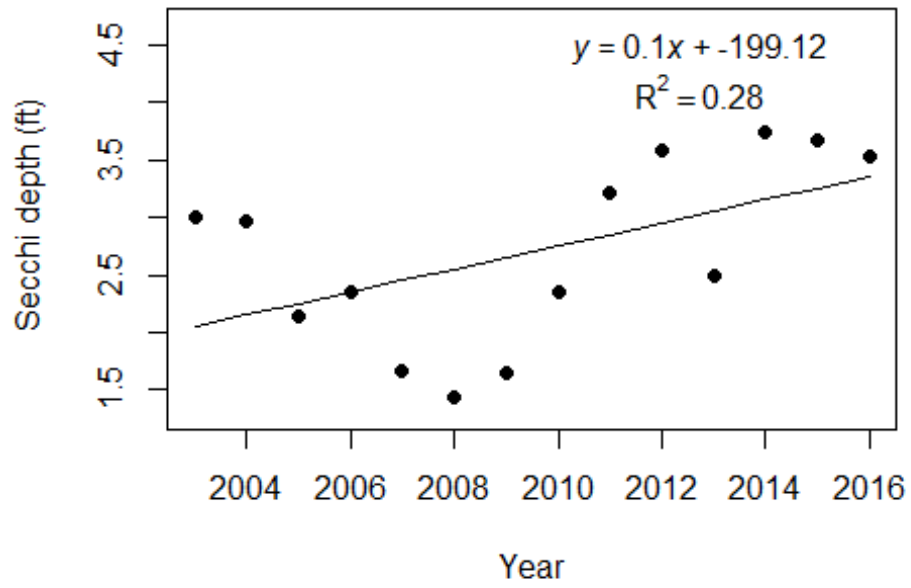
Haines Creek-3 (Lake)



Haines Creek-3 (Lake)



Haines Creek-3 (Lake)



LAKEWATCH Report for Haines Creek-4 in Lake County Using Data Downloaded 10/17/2016

Introduction Streams

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

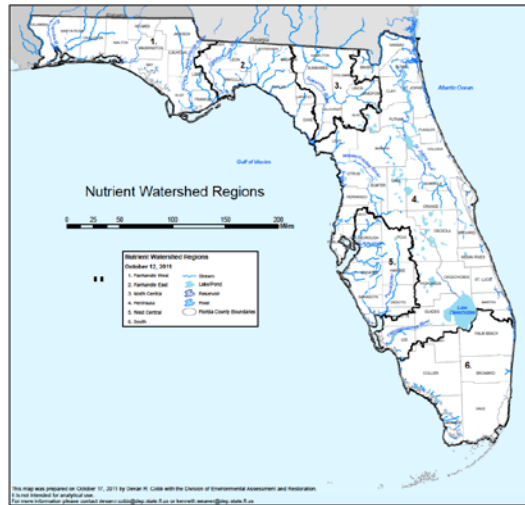


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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

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

County	Lake
Name	Haines Creek-4
Latitude	28.8665
Longitude	-81.7748
Water Body Type	Stream
Period of Record (year)	2003 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Haines Creek-4 in Lake County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

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

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	22 - 57	35 (14)
Total Nitrogen (µg/L)	1257 - 2569	1729 (14)
Chlorophyll- uncorrected (µg/L)	11.9 - 63.7	28.1 (14)
Secchi (ft)	1.6 - 4.8	3.2 (14)
Secchi (m)	0.5 - 1.5	1.0 (14)
Color (Pt-Co Units)	16 - 37	26 (14)
Specific Conductance (µS/cm@25 C)	247 - 359	313 (10)

LAKEWATCH Report for Haines Creek-4 in Lake County Using Data Downloaded 10/17/2016

Trend Analyses Streams

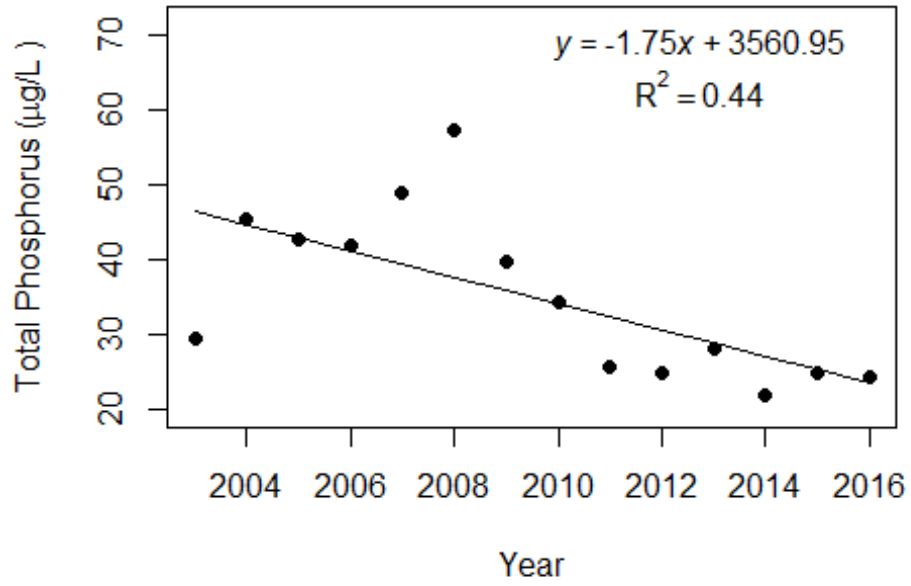
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over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

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

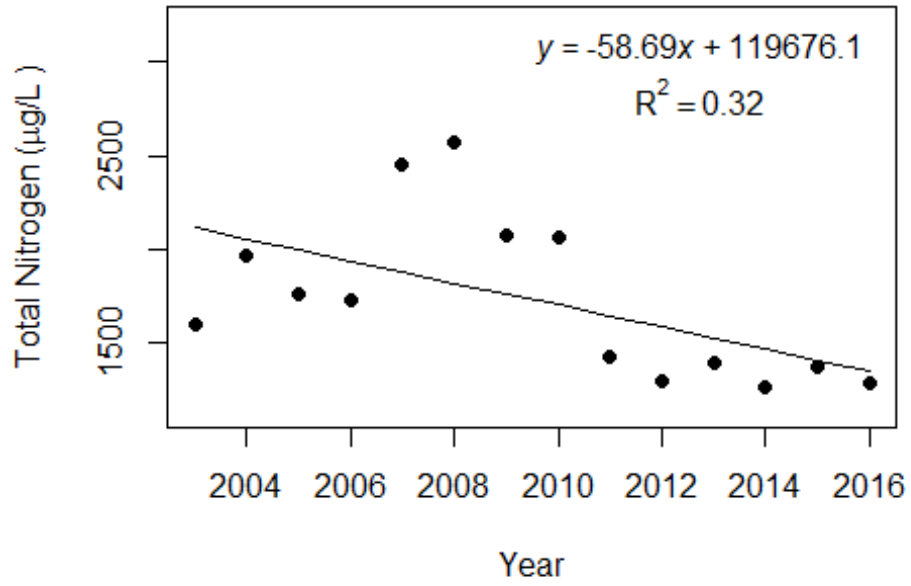
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	14	14	14	14
Intercept (a)	3561	119676	5154	-315
Slope (b)	-1.75	-58.69	-2.55	0.16
Coefficient of Determination (R ²)	0.44	0.32	0.43	0.38
Probability of Significance (p)	0.01	0.04	0.01	0.02
Potential Trend	Decreasing	Decreasing	Decreasing	Increasing

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Haines Creek-4 in Lake County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

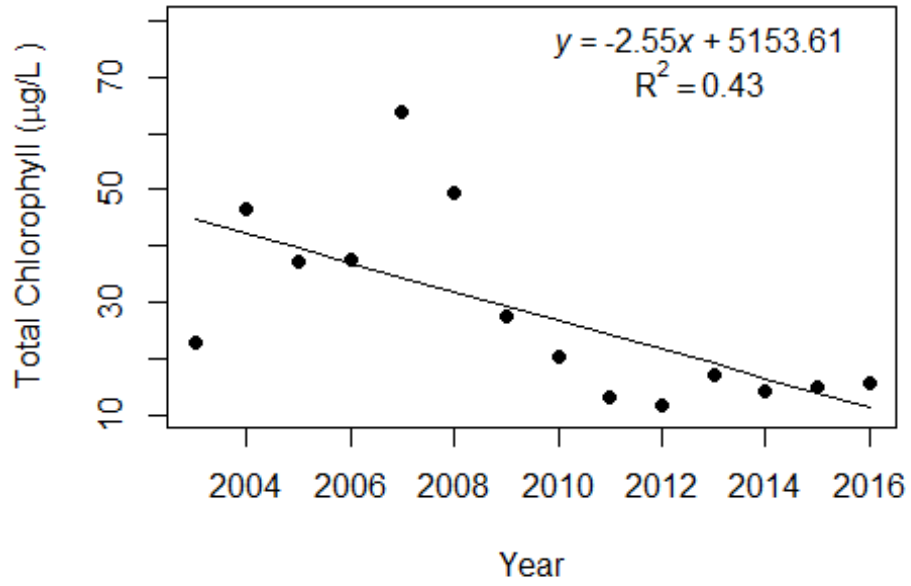
Haines Creek-4 (Lake)



Haines Creek-4 (Lake)



Haines Creek-4 (Lake)



Haines Creek-4 (Lake)

