

Ashby (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°55'29", Longitude 81°5'58"

Period of record: 101 sampling dates; June 27, 1993 to December 1, 2001

Surface Area (Shafer et al. 1986): 1030 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Wet Prairie division of the Eastern Flatwoods District

Supplemental water chemistry data

Data reported are means from 3 sampling dates:

pH	6.9	Total alkalinity (mg/L as CaCO ₃)	12.7
Conductance (µS/cm @ 25 °C)	80	Color (Pt-Co units)	146
Chloride (mg/L)	13.5	Silicon (mg/L)	1.8
Sulfate (mg/L)	6.8	Calcium (mg/L)	6.9
Magnesium (mg/L)	6.8	Sodium (mg/L)	7.3
Potassium (mg/L)	0.8	Iron (mg/L)	0.5

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	61	141	337

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 101 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	32	96	182
Long-term total nitrogen concentrations (µg/L)	393	798	1467
Long-term total chlorophyll concentrations (µg/L)	0.7	5.7	97.3
Long-term Secchi depth (ft)	1.0	1.7	4.3

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-13	62	603	4.0	2.0
Feb-10	59	600	6.3	2.0
Mar-10	60	517	4.3	2.0
Apr-14	78	670	10.7	2.0
Jun-09	68	677	8.7	2.0
Jul-14	68	630	4.7	2.0
Aug-11	114	923	13.7	1.5
Sep-03	146	847	5.3	1.0
Oct-13	168	1000	1.3	1.0
Nov-10	157	1060	1.0	1.0
Dec-01	142	843	3.7	1.3
2001 Average	102	761	5.8	1.6

Ashby (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

Aquatic plant data collected on August 4, 1994

Percent area covered with aquatic vegetation (PAC, %)	34.0
Percent of lake's volume filled with vegetation (PVI, %)	4.5
Average emergent plant biomass (kg wet wt/m ²)	3.2
Average floating-leaved plant biomass (kg wet wt/m ²)	3.4
Average submersed plant biomass (kg wet wt/m ²)	1.2
Average width of emergent and floating-leaved zone (ft)	166.5
Average lake depth (m)	1.9

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
spatterdock	<i>Nuphar luteum</i>	100
cat-tail	<i>Typha spp.</i>	100
water primrose	<i>Ludwigia octovalvis</i>	90
alligator-weed	<i>Alternanthera philoxeroides</i>	80
floating water-hyacinth	<i>Eichhornia crassipes</i>	60
tapegrass	<i>Vallisneria americana</i>	60
common salvinia	<i>Salvinia rotundifolia</i>	50
smartweed	<i>Polygonum hydropiperoides</i>	40
wax myrtle	<i>Myrica cerifera</i>	40
azolla	<i>Azolla caroliniana</i>	30
duck-potato	<i>Sagittaria lancifolia</i>	30
water-pennywort	<i>Hydrocotyle umbellata</i>	30
hydrilla	<i>Hydrilla verticillata</i>	30
maidencane	<i>Panicum hemitomon</i>	30
pickerelweed	<i>Pontederia cordata</i>	20
willow	<i>Salix spp.</i>	20
flat-sedge	<i>Cyperus odoratus</i>	20
parrot's-feather	<i>Myriophyllum aquaticum</i>	10
southern naiad	<i>Najas guadalupensis</i>	10
buttonbush	<i>Cephalanthus occidentalis</i>	10
giant bulrush	<i>Scirpus californicus</i>	10
torpedograss	<i>Panicum repens</i>	10
rush fuirena	<i>Fuirena scirpoidea</i>	10
red root	<i>Lachnanthes caroliniana</i>	10

Beresford (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°59'10", Longitude 81°20'34"

Period of record: 113 sampling dates; July 15, 1991 to December 19, 2001

Surface Area (LAKEWATCH 1999): 1199 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 3 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	43	62	96

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 113 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	35	72	149
Long-term total nitrogen concentrations (µg/L)	640	1281	2133
Long-term total chlorophyll concentrations (µg/L)	2.7	41.8	156.7
Long-term Secchi depth (ft)	1.1	2.3	3.9

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-17	77	1197	36.0	2.0
Mar-14	70	1000	31.7	2.0
Apr-18	104	1503	56.7	2.0
May-20	71	1177	43.7	2.0
Jun-20	106	1987	112.3	2.0
Jul-20	93	1463	93.7	2.0
Aug-23	75	1633	72.7	2.0
Oct-21	149	1513	2.7	2.0
Nov-29	99	1473	3.7	2.0
Dec-19	108	1493	10.7	2.0
2001 Average	95	1444	46.4	2.0

Beresford (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

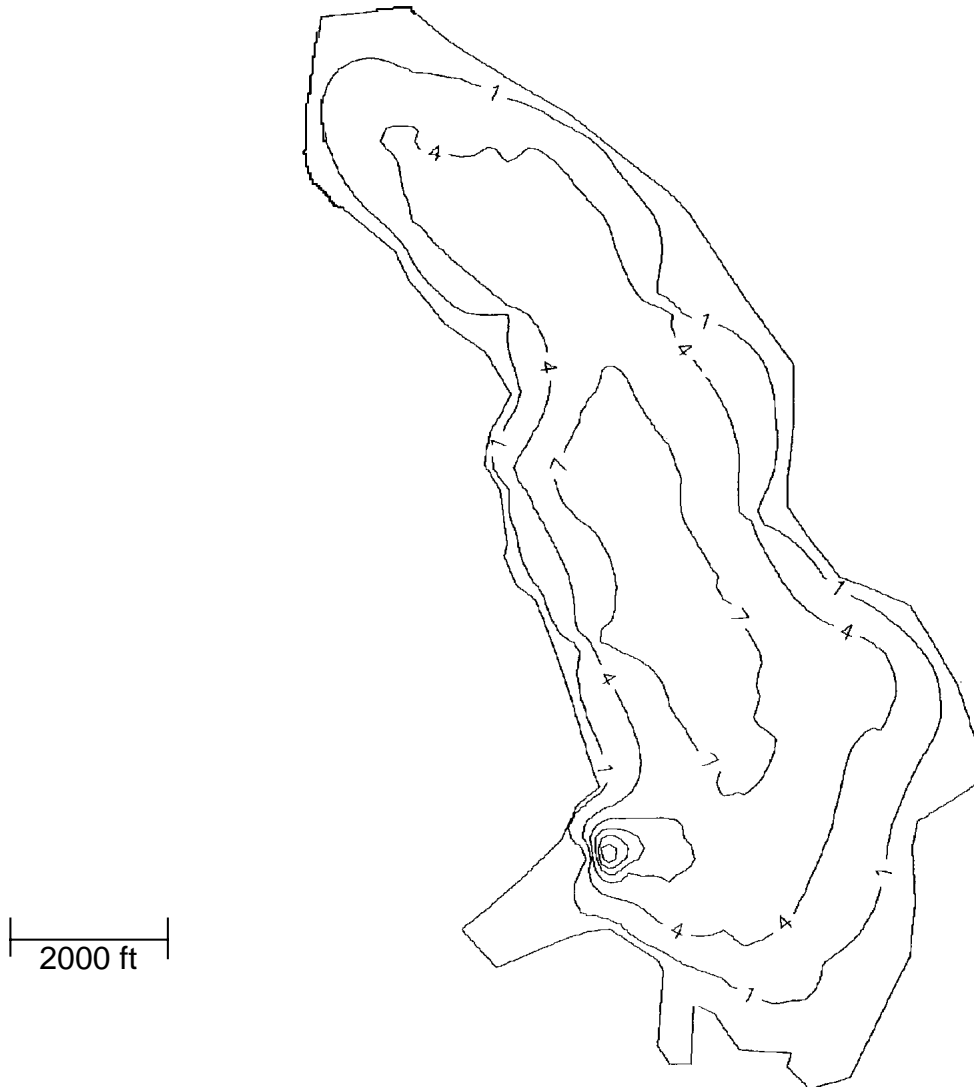
Aquatic plant data collected on June 22, 1999

Percent area covered with aquatic vegetation (PAC, %)	22.0
Percent of lake's volume filled with vegetation (PVI, %)	16.3
Average emergent plant biomass (kg wet wt/m ²)	10.7
Average floating-leaved plant biomass (kg wet wt/m ²)	5.8
Average submersed plant biomass (kg wet wt/m ²)	1.1
Average width of emergent and floating-leaved zone (ft)	67.8
Average lake depth (m)	1.7

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
para grass	<i>Brachiaria mutica</i>	90
water-pennywort	<i>Hydrocotyle umbellata</i>	80
bald cypress	<i>Taxodium distichum</i>	80
red maple	<i>Acer rubrum</i>	80
floating water-hyacinth	<i>Eichhornia crassipes</i>	70
alligator-weed	<i>Alternanthera philoxeroides</i>	70
spatterdock	<i>Nuphar luteum</i>	70
giant reed	<i>Phragmites australis</i>	70
buttonbush	<i>Cephalanthus occidentalis</i>	60
tapegrass	<i>Vallisneria americana</i>	50
musk-grass	<i>Chara spp.</i>	50
water-lettuce	<i>Pistia stratiotes</i>	40
willow	<i>Salix spp.</i>	40
big rose mallow	<i>Hibiscus grandiflorus</i>	40
common salvinia	<i>Salvinia rotundifolia</i>	30
cat-tail	<i>Typha spp.</i>	30
elephant-ear	<i>Colocasia esculenta</i>	20
maidencane	<i>Panicum hemitomon</i>	20
three-square	<i>Scirpus americanus</i>	20
common duckweed	<i>Lemna minor</i>	10
bacopa	<i>Bacopa monnieri</i>	10
hydrilla	<i>Hydrilla verticillata</i>	10
salt-bush	<i>Baccharis spp.</i>	10
wax myrtle	<i>Myrica cerifera</i>	10
water primrose	<i>Ludwigia octovalvis</i>	10
Egyptian paspalidium	<i>Paspalidium geminatum</i>	10
elderberry	<i>Sambucus canadensis</i>	10
water hemlock	<i>Cicuta mexicana</i>	10
jointed flat sedge	<i>Cyperus haspan</i>	10
sword grass	<i>Scirpus pungens</i>	10
canna	<i>Canna spp.</i>	10

**Beresford (Volusia County)
Florida LAKEWATCH Bathymetric Map**



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected June 22, 1999. Map contours are in feet and were generated using kriging technique in Surfer® software package (Golden Software, Golden CO). The center of the lake is located at Latitude 28°59'10" and Longitude 81°20'34". On this date, the lake surface area was calculated at 1,199 acres (485 hectares). This is only an approximate bathymetric map and should not be used for navigation.

Bethel (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°50'57", Longitude 81°12'45"

Period of record: 42 sampling dates; April 23, 1990 to December 8, 2001

Surface Area (Shafer et al. 1986): 213 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 2 sampling dates:

pH	6.9	Total alkalinity (mg/L as CaCO ₃)	180.5
Conductance (µS/cm @ 25 °C)	907	Color (Pt-Co units)	214
Chloride (mg/L)	220.3		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 1 sampling date:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	388	388	388

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 42 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	21	96	471
Long-term total nitrogen concentrations (µg/L)	470	1199	2887
Long-term total chlorophyll concentrations (µg/L)	4.7	28.6	145.0
Long-term Secchi depth (ft)	1.0	3.4	7.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Oct-12	135	2090	20.0	1.0
Nov-10	81	1610	50.7	1.0
Dec-08	63	1593	44.0	1.6
2001 Average	93	1764	38.2	1.2

Bethel (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

Aquatic plant data collected on May 28, 1992

Percent area covered with aquatic vegetation (PAC, %)	98.0
Percent of lake's volume filled with vegetation (PVI, %)	56.6
Average emergent plant biomass (kg wet wt/m ²)	6.4
Average floating-leaved plant biomass (kg wet wt/m ²)	7.7
Average submersed plant biomass (kg wet wt/m ²)	22.1
Average width of emergent and floating-leaved zone (ft)	264.3
Average lake depth (m)	0.8

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
cat-tail	<i>Typha spp.</i>	100
water-pennywort	<i>Hydrocotyle umbellata</i>	100
southern naiad	<i>Najas guadalupensis</i>	100
floating water-hyacinth	<i>Eichhornia crassipes</i>	90
coontail	<i>Ceratophyllum demersum</i>	90
green algae	<i>Chlorophyta</i>	90
pickerelweed	<i>Pontederia cordata</i>	40
duck-potato	<i>Sagittaria lancifolia</i>	30
water hemlock	<i>Cicuta mexicana</i>	30
common salvinia	<i>Salvinia rotundifolia</i>	20
water primrose	<i>Ludwigia octovalvis</i>	20
giant bulrush	<i>Scirpus californicus</i>	20
smartweed	<i>Polygonum hydropiperoides</i>	10
willow	<i>Salix spp.</i>	10

Big (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°52'6", Longitude 81°12'52"

Period of record: 25 sampling dates; February 19, 2000 to December 22, 2001

Surface Area (LAKEWATCH 2001): 121 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 2 sampling dates:

pH	6.9	Total alkalinity (mg/L as CaCO ₃)	15.2
Conductance (µS/cm @ 25 °C)	174	Color (Pt-Co units)	97
Chloride (mg/L)	40.2	Silicon (mg/L)	1.5
Sulfate (mg/L)	6.2	Calcium (mg/L)	9.8
Magnesium (mg/L)	2.3	Sodium (mg/L)	17.7
Potassium (mg/L)	2.0	Iron (mg/L)	0.1

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 5 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	40	56	104

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 25 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	12	17	26
Long-term total nitrogen concentrations (µg/L)	500	690	873
Long-term total chlorophyll concentrations (µg/L)	3.3	6.2	10.0
Long-term Secchi depth (ft)	4.0	5.8	8.3

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-06	12	690	3.7	8.0
Feb-10	15	727	4.3	7.7
Mar-17	16	703	4.0	7.2
Apr-07	16	673	3.3	8.3
Apr-28	19	670	3.7	6.3
Jun-02	15	677	5.0	6.0
Jun-23	18	743	6.7	6.5
Jul-22	19	703	9.0	6.7
Aug-05	23	630	7.3	5.7
Aug-26	20	823	7.3	5.5
Sep-30	26	740	8.3	4.0
Oct-21	20	737	9.7	4.0
Nov-17	18	653	6.7	4.0
Dec-22	23	737	4.0	4.2
2001 Average	19	708	5.9	6.0

Big (Volusia County)
Florida LAKEWATCH Bacteria Summary

The following table lists bacteria concentrations found in Big (Volusia County). These data are part of a statewide survey that Florida LAKEWATCH is conducting to determine patterns in the abundance of total coliforms and fecal coliforms among Florida water bodies. This is a one-time sample and can be used to describe the bacteria concentrations for that day and not throughout a year. It is important to remember that results could differ over the course of one year or several years based on varying environmental factors such as changes in water temperature, rainfall, aquatic plant abundance, algae blooms and others.

May 31, 2001

Lake	County	Station	Station Location	Total Coliforms (MPN)	Fecal Coliforms (MPN)
Big	Volusia	1	Off vegetation	4230	30
Big	Volusia	2	Off vegetation	9630	30
Big	Volusia	3	Off vegetation	7040	40
Big	Volusia	4	Off vegetation	8600	0
Big	Volusia	5	Off vegetation	2500	0
Big	Volusia	6	Off vegetation	1900	0
Big	Volusia	7	Off vegetation	2050	50
Big	Volusia	8	Off vegetation	3030	30
Big	Volusia	9	Off vegetation	3210	10
Big	Volusia	10	Open water	4300	0
Big	Volusia	11	Open water	7600	0
Big	Volusia	12	Open water	8560	60

The Florida Administrative Code (FAC), Section 62-302.530 defines criteria for both total and fecal coliform bacteria for Class III waters. The FAC states that total coliform bacteria shall not exceed a count or Most Probable Number (MPN) of 1,000 bacteria per 100 milliliters of water in 20% or more of the samples examined during any month, nor exceed a MPN of 2,400 at any individual station. The FAC also states that fecal coliform bacteria shall not exceed a MPN of 400 in 10% or more of the samples, nor exceed a MPN of 800 at any individual station.

Total coliform bacteria counts for Big on May 31, 2001 ranged from 1900 to 9600 MPN. Total coliform bacteria exceeded 1,000 MPN in 100% of the samples. Total coliform bacteria did exceed 2,400 at ten stations. Total coliform bacteria were not within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Fecal coliform bacteria counts for Big on May 31, 2001 ranged from 0 to 60 MPN. Fecal coliform bacteria exceeded 400 MPN in 0% of the samples. Fecal coliform bacteria did not exceed 800 at any station. Fecal coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Big (Volusia County) Florida LAKEWATCH Aquatic Plant Summary

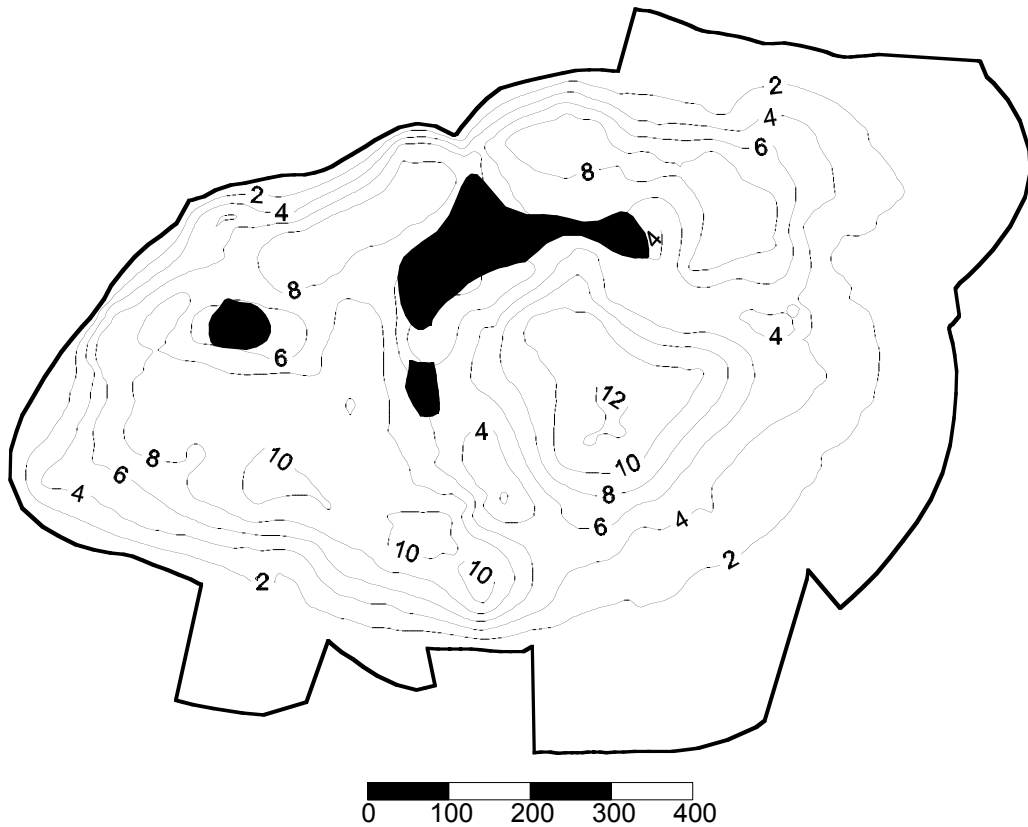
Aquatic plant data collected on May 31, 2001

Percent area covered with aquatic vegetation (PAC, %)	28.0
Percent of lake's volume filled with vegetation (PVI, %)	2.0
Average emergent plant biomass (kg wet wt/m ²)	1.9
Average floating-leaved plant biomass (kg wet wt/m ²)	3.5
Average submersed plant biomass (kg wet wt/m ²)	0.7
Average width of emergent and floating-leaved zone (ft)	108.9
Average lake depth (m)	1.8

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
slender spikerush	<i>Eleocharis baldwinii</i>	100
fragrant water-lily	<i>Nymphaea odorata</i>	90
buttonbush	<i>Cephalanthus occidentalis</i>	90
maidencane	<i>Panicum hemitomon</i>	90
rush fuirena	<i>Fuirena scirpoidea</i>	70
cat-tail	<i>Typha spp.</i>	60
banana-lily	<i>Nymphoides aquatica</i>	50
spatterdock	<i>Nuphar luteum</i>	50
pickerelweed	<i>Pontederia cordata</i>	50
water-pennywort	<i>Hydrocotyle umbellata</i>	40
tapegrass	<i>Vallisneria americana</i>	40
southern naiad	<i>Najas guadalupensis</i>	40
wax myrtle	<i>Myrica cerifera</i>	40
water primrose	<i>Ludwigia octovalvis</i>	30
swamp tupelo	<i>Nyssa sylvatica</i>	30
smartweed	<i>Polygonum hydropiperoides</i>	20
lemon bacopa	<i>Bacopa caroliniana</i>	20
cone-spur bladderwort	<i>Utricularia gibba</i>	20
torpedograss	<i>Panicum repens</i>	20
stonewort	<i>Nitella spp.</i>	20
southern cutgrass	<i>Leersia hexandra</i>	20
inundated beak-rush	<i>Rhynchospora inundata</i>	20
giant spikerush	<i>Eleocharis interstincta</i>	20
common salvinia	<i>Salvinia rotundifolia</i>	10
dwarf arrowhead	<i>Sagittaria subulata</i>	10
elephant-ear	<i>Colocasia esculenta</i>	10
willow	<i>Salix spp.</i>	10
flat-sedge	<i>Cyperus odoratus</i>	10
para grass	<i>Brachiaria mutica</i>	10
green algae	<i>Chlorophyta</i>	10
yellow-eyed grass	<i>Xyris spp.</i>	10

Big (Volusia County)
Florida LAKEWATCH Bathymetric Map



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected May 31, 2001. Scale and map contours are in feet and were generated using kriging technique in Surfer® software package (Golden CO). Islands are shaded in black. The center of the lake is located at Latitude 28°52'6" and Longitude 81°12'52". On this date, the lake surface area was calculated at 121 acres (49 hectares). This is only an approximate bathymetric map and should not be used for navigation.

Blue (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°1'58", Longitude 81°16'7"

Period of record: 57 sampling dates; November 30, 1991 to November 17, 2001

Surface Area (LAKEWATCH 2000): 44 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 2 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	51	61	71

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 57 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	14	35	84
Long-term total nitrogen concentrations (µg/L)	693	1045	1390
Long-term total chlorophyll concentrations (µg/L)	2.0	15.1	73.3
Long-term Secchi depth (ft)	1.9	4.1	7.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-12	42	1073	10.0	5.0
Mar-12	39	1083	14.0	4.1
Apr-15	40	1070	13.7	4.4
May-09	39	983	7.0	3.6
Jun-09	33	817	7.3	4.8
Jul-07	31	807	11.3	5.6
Aug-10	45	1137	30.7	3.9
Sep-22	84	1380	73.3	1.9
Nov-17	43	1180	11.0	3.0
2001 Average	44	1059	19.8	4.0

Blue (Volusia County)
Florida LAKEWATCH Bacteria Summary

The following table lists bacteria concentrations found in Blue (Volusia County). These data are part of a statewide survey that Florida LAKEWATCH is conducting to determine patterns in the abundance of total coliforms and fecal coliforms among Florida water bodies. This is a one-time sample and can be used to describe the bacteria concentrations for that day and not throughout a year. It is important to remember that results could differ over the course of one year or several years based on varying environmental factors such as changes in water temperature, rainfall, aquatic plant abundance, algae blooms and others.

May 30, 2000

Lake	County	Station	Station Location	Total Coliforms (MPN)	Fecal Coliforms (MPN)
Blue	Volusia	1	Off vegetation	1300	0
Blue	Volusia	2	Off vegetation	2600	0
Blue	Volusia	3	Off vegetation	1000	300
Blue	Volusia	4	Off vegetation	1400	100
Blue	Volusia	5	Off vegetation	1200	100
Blue	Volusia	6	Off vegetation	1300	100
Blue	Volusia	7	Off vegetation	700	100
Blue	Volusia	8	Off vegetation	2200	200
Blue	Volusia	9	Off vegetation	1500	100
Blue	Volusia	10	Open water	300	100
Blue	Volusia	11	Open water	600	100
Blue	Volusia	12	Open water	400	0

The Florida Administrative Code (FAC), Section 62-302.530 defines criteria for both total and fecal coliform bacteria for Class III waters. The FAC states that total coliform bacteria shall not exceed a count or Most Probable Number (MPN) of 1,000 bacteria per 100 milliliters of water in 20% or more of the samples examined during any month, nor exceed a MPN of 2,400 at any individual station. The FAC also states that fecal coliform bacteria shall not exceed a MPN of 400 in 10% or more of the samples, nor exceed a MPN of 800 at any individual station.

Total coliform bacteria counts for Blue on May 30, 2000 ranged from 300 to 2600 MPN. Total coliform bacteria exceeded 1,000 MPN in 58% of the samples. Total coliform bacteria did exceed 2,400 at one station. Total coliform bacteria were not within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Fecal coliform bacteria counts for Blue on May 30, 2000 ranged from 0 to 300 MPN. Fecal coliform bacteria exceeded 400 MPN in 0% of the samples. Fecal coliform bacteria did not exceed 800 at any station. Fecal coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

**Blue (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary**

Aquatic plant data collected on July 30, 1992

Percent area covered with aquatic vegetation (PAC, %)	58.0
Percent of lake's volume filled with vegetation (PVI, %)	14.1
Average emergent plant biomass (kg wet wt/m ²)	3.1
Average floating-leaved plant biomass (kg wet wt/m ²)	5.8
Average submersed plant biomass (kg wet wt/m ²)	4.7
Average width of emergent and floating-leaved zone (ft)	25.3
Average lake depth (m)	1.5

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
southern naiad	<i>Najas guadalupensis</i>	100
coontail	<i>Ceratophyllum demersum</i>	80
floating water-hyacinth	<i>Eichhornia crassipes</i>	70
alligator-weed	<i>Alternanthera philoxeroides</i>	70
sedge family	<i>Cyperaceae</i>	60
water primrose	<i>Ludwigia octovalvis</i>	60
common salvinia	<i>Salvinia rotundifolia</i>	40
spatterdock	<i>Nuphar luteum</i>	40
water-pennywort	<i>Hydrocotyle umbellata</i>	40
willow	<i>Salix spp.</i>	20
giant bulrush	<i>Scirpus californicus</i>	20
slender spikerush	<i>Eleocharis baldwinii</i>	10
parrot's-feather	<i>Myriophyllum aquaticum</i>	10
red ludwigia	<i>Ludwigia repens</i>	10
cat-tail	<i>Typha spp.</i>	10
Brazilian elodea	<i>Egeria densa</i>	10
buttonbush	<i>Cephalanthus occidentalis</i>	10
sawgrass	<i>Cladium jamaicense</i>	10
torpedograss	<i>Panicum repens</i>	10
soft rush	<i>Juncus effusus</i>	10
red root	<i>Lachnanthes caroliniana</i>	10

Blue (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

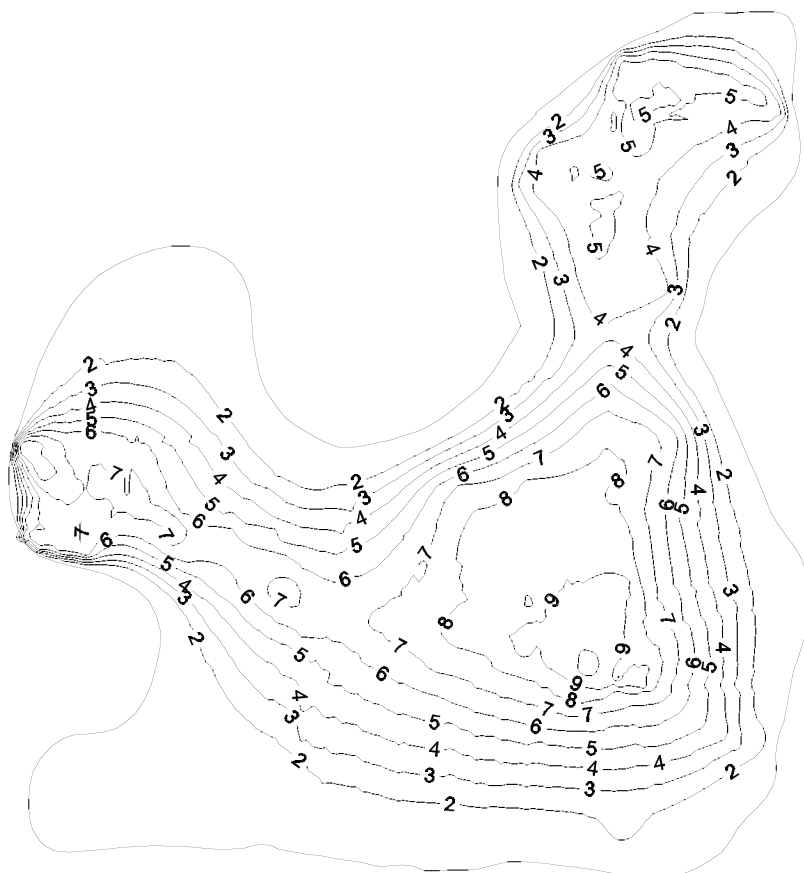
Aquatic plant data collected on May 30, 2000

Percent area covered with aquatic vegetation (PAC, %)	13.2
Percent of lake's volume filled with vegetation (PVI, %)	1.3
Average emergent plant biomass (kg wet wt/m ²)	2.0
Average floating-leaved plant biomass (kg wet wt/m ²)	1.9
Average submersed plant biomass (kg wet wt/m ²)	0.0
Average width of emergent and floating-leaved zone (ft)	48.3
Average lake depth (m)	1.9

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
spatterdock	<i>Nuphar luteum</i>	100
wax myrtle	<i>Myrica cerifera</i>	70
water primrose	<i>Ludwigia octovalvis</i>	70
torpedograss	<i>Panicum repens</i>	60
cat-tail	<i>Typha spp.</i>	50
water-pennywort	<i>Hydrocotyle umbellata</i>	50
maidencane	<i>Panicum hemitomom</i>	50
pickerelweed	<i>Pontederia cordata</i>	40
elephant-ear	<i>Colocasia esculenta</i>	40
salt-bush	<i>Baccharis spp.</i>	40
buttonbush	<i>Cephalanthus occidentalis</i>	40
willow	<i>Salix spp.</i>	40
green algae	<i>Chlorophyta</i>	40
alligator-weed	<i>Alternanthera philoxeroides</i>	30
.	<i>Scirpus cubensis</i>	20
elderberry	<i>Sambucus canadensis</i>	20
bulrush spp.	<i>Juncus spp.</i>	20
common salvinia	<i>Salvinia rotundifolia</i>	10
parrot's-feather	<i>Myriophyllum aquaticum</i>	10
coontail	<i>Ceratophyllum demersum</i>	10
sawgrass	<i>Cladium jamaicense</i>	10
stonewort	<i>Nitella spp.</i>	10
smartweed	<i>Polygonum densiflorum</i>	10
sweetbay	<i>Magnolia virginiana</i>	10
red maple	<i>Acer rubrum</i>	10
sweetgum	<i>Liquidambar styraciflua</i>	10

**Blue (Volusia County)
Florida LAKEWATCH Bathymetric Map**



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected May 30, 2000. Map contours and map scale are in feet and were generated using kriging technique in Surfer® software package (Golden CO). The center of the lake is located at Latitude 29°1'58" and Longitude 81°16'7". On this date, the lake surface area was calculated at 44 acres (18 hectares). This is only an approximate bathymetric map and should not be used for navigation.

Broken Arrow (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°52'10", Longitude 81°13'52"

Period of record: 144 sampling dates; January 15, 1988 to December 1, 2001

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is a mixture of two major types dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation and coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	7	9	11

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 144 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	1	6	14
Long-term total nitrogen concentrations (µg/L)	70	285	503
Long-term total chlorophyll concentrations (µg/L)	0.0	2.7	17.3
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-01	12	483	6.0	.
Feb-01	9	470	4.0	.
Mar-01	9	410	2.3	.
Apr-01	6	243	2.0	.
May-01	5	287	2.0	.
Jun-01	5	283	2.0	.
Jul-01	6	307	2.0	.
Aug-01	6	270	4.0	.
Sep-01	6	250	4.7	.
Oct-01	7	250	7.0	.
Nov-01	7	320	6.0	.
Dec-01	7	283	6.0	.
2001 Average	7	321	4.0	.

Charles (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°2'0", Longitude 81°15'10"

Period of record: 110 sampling dates; December 22, 1991 to December 20, 2001

Surface Area (Shafer et al. 1986): 32 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	5.6	Total alkalinity (mg/L as CaCO ₃)	12.0
Conductance (µS/cm @ 25 °C)	147	Color (Pt-Co units)	6
Chloride (mg/L)	26.0		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 5 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	4	7	8

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 110 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	3	8	19
Long-term total nitrogen concentrations (µg/L)	167	306	700
Long-term total chlorophyll concentrations (µg/L)	1.0	3.6	11.3
Long-term Secchi depth (ft)	2.9	11.9	17.6

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-01	19	700	3.0	3.0
Jan-28	17	690	3.0	3.2
Mar-03	11	440	2.0	7.3
Apr-01	10	500	2.7	8.0
Jul-11	9	333	4.0	7.6
Aug-12	7	293	2.3	9.0
Sep-09	9	260	4.3	6.9
Oct-14	10	287	4.0	7.1
Nov-11	9	357	4.0	7.2
Dec-20	10	493	5.0	6.8
2001 Average	11	435	3.4	6.6

Clough (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°59'37", Longitude 81°13'60"

Period of record: 5 sampling dates; March 1, 1999 to June 27, 1999

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	5.9	Total alkalinity (mg/L as CaCO ₃)	0.8
Conductance (µS/cm @ 25 °C)	80	Color (Pt-Co units)	12
Chloride (mg/L)	20.0		

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 5 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	11	14	17
Long-term total nitrogen concentrations (µg/L)	407	454	490
Long-term total chlorophyll concentrations (µg/L)	7.7	8.3	9.0
Long-term Secchi depth (ft)	5.7	6.9	8.2

2001 Florida LAKEWATCH Data

No samples collected in 2001

Colby (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°57'52", Longitude 81°13'55"

Period of record: 20 sampling dates; August 3, 1998 to June 3, 2000

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 2 sampling dates:

pH	6.7	Total alkalinity (mg/L as CaCO ₃)	10.2
Conductance (µS/cm @ 25 °C)	82	Color (Pt-Co units)	93
Chloride (mg/L)	16.1	Silicon (mg/L)	0.2
Sulfate (mg/L)	8.8	Calcium (mg/L)	7.1
Magnesium (mg/L)	1.6	Sodium (mg/L)	7.1
Potassium (mg/L)	1.5	Iron (mg/L)	0.1

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 20 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	18	25	43
Long-term total nitrogen concentrations (µg/L)	530	843	1323
Long-term total chlorophyll concentrations (µg/L)	3.5	14.4	42.7
Long-term Secchi depth (ft)	2.4	4.7	6.5

2001 Florida LAKEWATCH Data

No samples collected in 2001

Daytona (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°3'1", Longitude 81°15'18"

Period of record: 9 sampling dates; March 1, 1999 to November 7, 1999

Surface Area (Shafer et al. 1986): 9 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	5.6	Total alkalinity (mg/L as CaCO ₃)	0.8
Conductance (µS/cm @ 25 °C)	128	Color (Pt-Co units)	32
Chloride (mg/L)	36.0		

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 9 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	4	7	9
Long-term total nitrogen concentrations (µg/L)	480	548	633
Long-term total chlorophyll concentrations (µg/L)	2.0	4.2	7.3
Long-term Secchi depth (ft)	3.5	5.4	7.0

2001 Florida LAKEWATCH Data

No samples collected in 2001

Dexter (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°6'26", Longitude 81°28'44"

Period of record: 4 sampling dates; May 21, 2001 to November 15, 2001

Surface Area (Shafer et al. 1986): 1902 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 3 sampling dates:

pH	7.2	Total alkalinity (mg/L as CaCO ₃)	51.3
Conductance (µS/cm @ 25 °C)	730	Color (Pt-Co units)	136
Chloride (mg/L)	190.4	Silicon (mg/L)	5.7
Sulfate (mg/L)	54.2	Calcium (mg/L)	39.9
Magnesium (mg/L)	47.9	Sodium (mg/L)	104.4
Potassium (mg/L)	4.5	Iron (mg/L)	0.2

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 1 sampling date:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	43	43	43

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 4 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	51	71	106
Long-term total nitrogen concentrations (µg/L)	973	1209	1503
Long-term total chlorophyll concentrations (µg/L)	2.7	13.2	34.0
Long-term Secchi depth (ft)	1.8	2.1	2.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

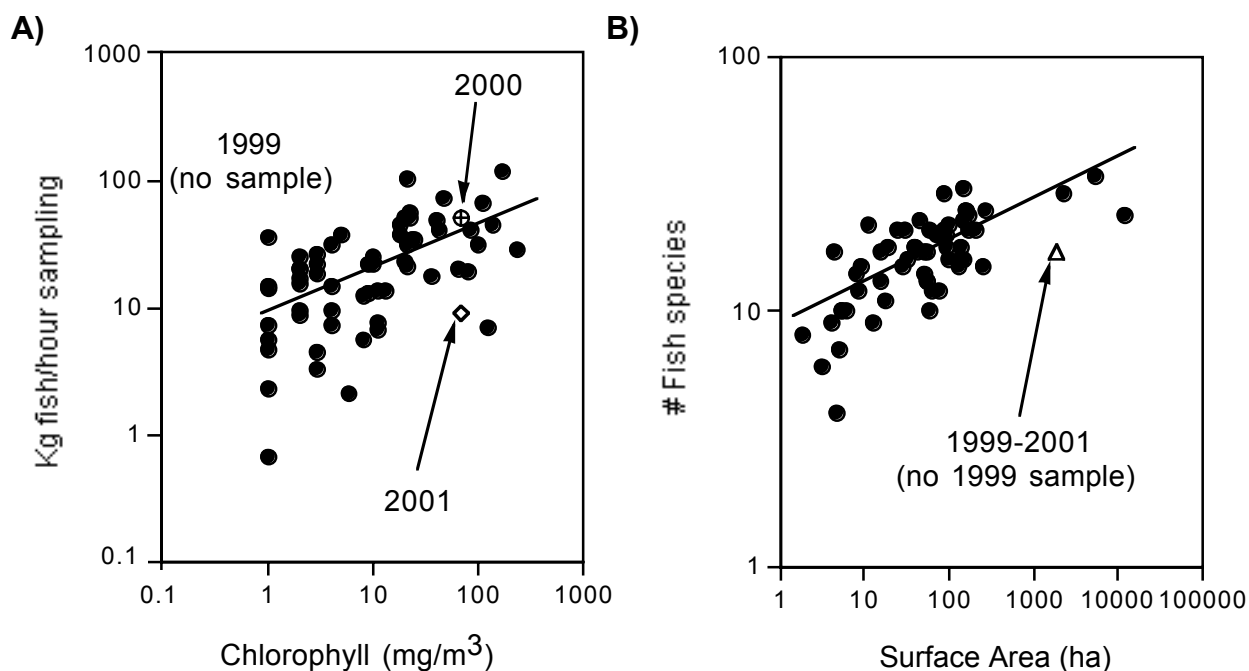
<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
May-21	59	973	34.0	2.1
Jul-18	51	1207	.	2.1
Sep-18	106	1503	2.7	1.8
Nov-15	69	1153	3.0	2.5
2001 Average	71	1209	13.2	2.1

Dexter (Volusia County)
2001 LAKEWATCH Electrofishing Data

Species [†]	#/hr	kg/hr [‡]	Canfield and Hoyer (1992) Ranges		
			min weight (kg/hr)	mean weight (kg/hr)	max weight (kg/hr)
Black crappie	2	263	0.008	0.667	2.866
Bluegill	8	523	0.039	4.966	44.702
Florida gar	1	497	0.08	5.393	32.858
Gizzard shad	3	1265	0.019	1.099	3.95
Golden shiner	1	64	0.004	0.625	6.504
Lake chubsucker	2	978	0.03	4.234	16.19
Largemouth bass	5	1845	0.112	9.084	32.667
Longnose gar	1	3183	1.648	1.648	1.648
Redear sunfish	5	416	0.037	2.615	18.31
Warmouth	1	20	0	0.151	1.196
Total	29	9054			

[†] Total # of species = 10.

[‡] Weights calculated using regressions from Hoyer and Canfield 1994 and from Bill Schaeffer, Florida Fish and Wildlife Conservation Commission (personal communication).



A) Catch per unit of effort (kg of fish / hour of sampling) versus total chlorophyll (mg/m³) for 60 Florida lakes sampled by Canfield and Hoyer (1992) (●) and Lake Dexter (Volusia County) 1999 (○) and 2000 (⊕) and 2001 electrofishing sampling (◇). B) Number of fish species collected versus surface area of lake for 60 Florida lakes sampled by Canfield and Hoyer (1992) (●), and cumulative Lake Dexter (1999-2001) (△) electrofishing sampling. The lines represent linear regressions for log values of the 60 Florida lakes.

DuPont South (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°55'34", Longitude 81°12'26"

Period of record: 26 sampling dates; July 24, 1996 to August 16, 1998

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	6.5	Total alkalinity (mg/L as CaCO ₃)	2.7
Conductance (µS/cm @ 25 °C)	62	Color (Pt-Co units)	21
Chloride (mg/L)	13.3	Silicon (mg/L)	0.0
Sulfate (mg/L)	7.0	Calcium (mg/L)	2.7
Magnesium (mg/L)	1.0	Sodium (mg/L)	6.8
Potassium (mg/L)	1.5	Iron (mg/L)	0.0

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 26 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	7	13	21
Long-term total nitrogen concentrations (µg/L)	377	694	1027
Long-term total chlorophyll concentrations (µg/L)	2.3	7.0	16.0
Long-term Secchi depth (ft)	7.0	9.8	13.3

2001 Florida LAKEWATCH Data

No samples collected in 2001

Emporia (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°11'40", Longitude 81°28'16"

Period of record: 99 sampling dates; June 27, 1990 to July 12, 1999

Surface Area (LAKEWATCH 1999): 82 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 99 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	7	14	24
Long-term total nitrogen concentrations (µg/L)	447	735	1157
Long-term total chlorophyll concentrations (µg/L)	1.0	4.8	17.0
Long-term Secchi depth (ft)	4.2	7.6	13.0

2001 Florida LAKEWATCH Data

No samples collected in 2001

Emporia (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

Aquatic plant data collected on May 28, 1992

Percent area covered with aquatic vegetation (PAC, %)	10.0
Percent of lake's volume filled with vegetation (PVI, %)	0.5
Average emergent plant biomass (kg wet wt/m ²)	6.3
Average floating-leaved plant biomass (kg wet wt/m ²)	0.8
Average submersed plant biomass (kg wet wt/m ²)	1.2
Average width of emergent and floating-leaved zone (ft)	37.1
Average lake depth (m)	1.9

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
cat-tail	<i>Typha spp.</i>	80
southern naiad	<i>Najas guadalupensis</i>	80
water-pennywort	<i>Hydrocotyle umbellata</i>	60
torpedograss	<i>Panicum repens</i>	50
maidencane	<i>Panicum hemitomon</i>	40
pickerelweed	<i>Pontederia cordata</i>	30
rush fuirena	<i>Fuirena scirpoidea</i>	30
slender spikerush	<i>Eleocharis baldwinii</i>	20
water primrose	<i>Ludwigia octovalvis</i>	20
St. John's wort	<i>Hypericum spp.</i>	20
spatterdock	<i>Nuphar luteum</i>	10
fragrant water-lily	<i>Nymphaea odorata</i>	10
smartweed	<i>Polygonum hydropiperoides</i>	10
willow	<i>Salix spp.</i>	10
flat-sedge	<i>Cyperus odoratus</i>	10
soft rush	<i>Juncus effusus</i>	10
musk-grass	<i>Chara spp.</i>	10
pipewort	<i>Eriocaulon spp.</i>	10
rush spp.	<i>Juncus dichotomus</i>	10

Emporia (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

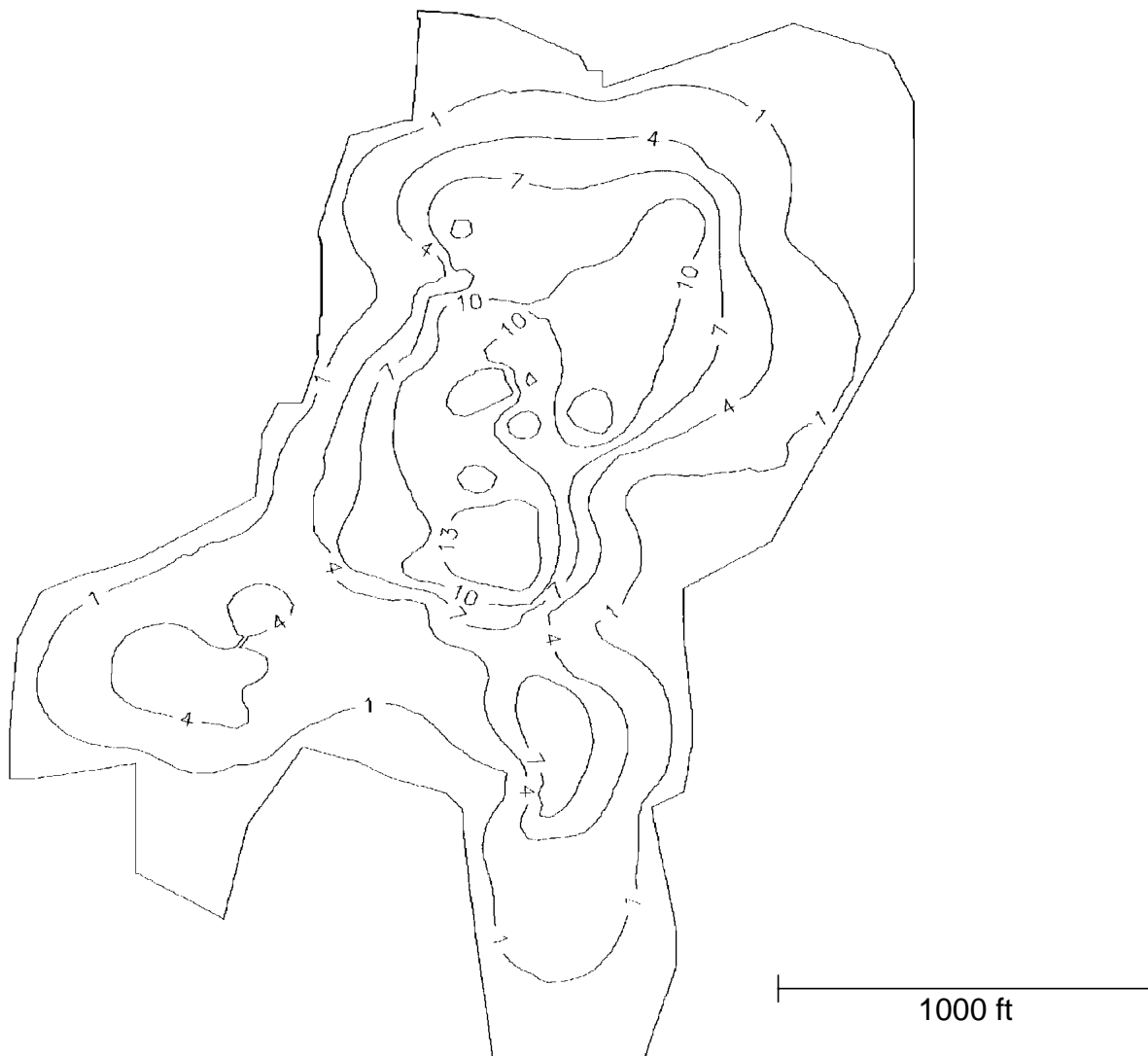
Aquatic plant data collected on July 1, 1999

Percent area covered with aquatic vegetation (PAC, %)	36.0
Percent of lake's volume filled with vegetation (PVI, %)	11.8
Average emergent plant biomass (kg wet wt/m ²)	2.4
Average floating-leaved plant biomass (kg wet wt/m ²)	2.7
Average submersed plant biomass (kg wet wt/m ²)	0.2
Average width of emergent and floating-leaved zone (ft)	64.5
Average lake depth (m)	2.1

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
cat-tail	<i>Typha spp.</i>	90
torpedograss	<i>Panicum repens</i>	80
spatterdock	<i>Nuphar luteum</i>	70
water primrose	<i>Ludwigia octovalvis</i>	70
fragrant water-lily	<i>Nymphaea odorata</i>	60
buttonbush	<i>Cephalanthus occidentalis</i>	60
wax myrtle	<i>Myrica cerifera</i>	50
rush fuirena	<i>Fuirena scirpoidea</i>	50
red maple	<i>Acer rubrum</i>	50
maidencane	<i>Panicum hemitomon</i>	40
water-pennywort	<i>Hydrocotyle umbellata</i>	30
slender spikerush	<i>Eleocharis baldwinii</i>	20
pickerelweed	<i>Pontederia cordata</i>	20
elephant-ear	<i>Colocasia esculenta</i>	20
green algae	<i>Chlorophyta</i>	20
jointed flat sedge	<i>Cyperus haspan</i>	20
musk-grass	<i>Chara spp.</i>	10
St. John's wort	<i>Hypericum spp.</i>	10

**Emporia (Volusia County)
Florida LAKEWATCH Bathymetric Map**



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected July 1, 1999. Map contours are in feet and were generated using kriging technique in Surfer® software package (Golden Software, Golden CO). The center of the lake is located at Latitude 29°11'40" and Longitude 81°28'16". On this date, the lake surface area was calculated at 82 acres (33 hectares). This is only an approximate bathymetric map and should not be used for navigation.

Gemini Springs (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°51'44", Longitude 81°18'39"

Period of record: 1 sampling date; September 10, 1992

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 1 month sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	57	57	57
Long-term total nitrogen concentrations (µg/L)	737	737	737
Long-term total chlorophyll concentrations (µg/L)	1.0	1.0	1.0
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

No samples collected in 2001

Gleason (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°53'37", Longitude 81°15'57"

Period of record: 5 sampling dates; August 11, 1991 to July 19, 1992

Surface Area (Shafer et al. 1986): 91 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is a mixture of two major types dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation and coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset and Crescent City-Deland Ridge divisions of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	7.2	Total alkalinity (mg/L as CaCO ₃)	38.3
Conductance (µS/cm @ 25 °C)	157	Color (Pt-Co units)	33
Chloride (mg/L)	22.7	Silicon (mg/L)	0.1
Sulfate (mg/L)	3.8	Calcium (mg/L)	16.3
Magnesium (mg/L)	1.7	Sodium (mg/L)	9.9
Potassium (mg/L)	2.4	Iron (mg/L)	0.0

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 5 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	7	10	13
Long-term total nitrogen concentrations (µg/L)	850	891	920
Long-term total chlorophyll concentrations (µg/L)	2.3	3.4	4.3
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

No samples collected in 2001

Halifax River-1 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°9'37", Longitude 80°59'19"

Period of record: 11 sampling dates; February 26, 2001 to December 29, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 8 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	12	50	188
Long-term specific conductance (mmhos)	13	37	48

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 11 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	61	111	166
Long-term total nitrogen concentrations (µg/L)	490	686	990
Long-term total chlorophyll concentrations (µg/L)	5.0	16.5	49.0
Long-term Secchi depth (ft)	1.5	2.9	5.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-26	61	490	10.0	3.8
Mar-24	75	550	13.0	3.0
Apr-28	74	610	10.0	3.5
May-28	119	540	15.0	2.5
Jun-30	115	630	21.0	2.5
Jul-28	166	930	49.0	2.0
Aug-26	137	670	19.0	2.5
Oct-07	165	990	6.0	1.5
Nov-03	116	810	5.0	2.7
Dec-01	103	710	26.0	3.3
Dec-29	86	620	7.0	5.0
2001 Average	111	686	16.5	2.9

Halifax River-2 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°10'16", Longitude 80°59'38"

Period of record: 11 sampling dates; February 26, 2001 to December 29, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 8 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	13	50	186
Long-term specific conductance (mmhos)	14	37	47

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 11 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	82	125	189
Long-term total nitrogen concentrations (µg/L)	480	722	980
Long-term total chlorophyll concentrations (µg/L)	5.0	19.0	52.0
Long-term Secchi depth (ft)	1.5	2.6	5.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-26	82	480	15.0	2.5
Mar-24	92	600	21.0	2.5
Apr-28	104	690	18.0	2.8
May-28	134	660	22.0	2.5
Jun-30	131	660	29.0	2.0
Jul-28	189	980	52.0	1.5
Aug-26	154	690	16.0	2.5
Oct-07	156	970	5.0	1.8
Nov-03	133	850	6.0	2.3
Dec-01	103	720	.	3.0
Dec-29	102	640	6.0	5.0
2001 Average	125	722	19.0	2.6

Halifax River-3 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°11'32", Longitude 81°0'8"

Period of record: 11 sampling dates; February 26, 2001 to December 29, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 8 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	14	54	192
Long-term specific conductance (mmhos)	15	36	46

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 11 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	87	136	184
Long-term total nitrogen concentrations (µg/L)	590	798	1050
Long-term total chlorophyll concentrations (µg/L)	4.0	17.7	34.0
Long-term Secchi depth (ft)	1.5	2.4	4.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-26	87	590	15.0	2.3
Mar-24	98	720	15.0	2.0
Apr-28	109	730	21.0	3.0
May-28	164	740	32.0	2.0
Jun-30	177	860	34.0	1.5
Jul-28	184	1050	28.0	1.5
Aug-26	179	790	18.0	2.5
Oct-07	129	930	4.0	1.8
Nov-03	134	850	6.0	2.3
Dec-01	130	820	15.0	2.5
Dec-29	105	700	7.0	4.5
2001 Average	136	798	17.7	2.4

Harney (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°45'16", Longitude 81°3'6"

Period of record: 86 sampling dates; May 20, 1990 to November 11, 2001

Surface Area (LAKEWATCH 2000): 5333 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Wet Prairie division of the Eastern Flatwoods District

Supplemental water chemistry data

Data reported are means from 5 sampling dates:

pH	7.5	Total alkalinity (mg/L as CaCO ₃)	48.3
Conductance (µS/cm @ 25 °C)	913	Color (Pt-Co units)	105
Chloride (mg/L)	254.8	Silicon (mg/L)	4.1
Sulfate (mg/L)	79.1	Calcium (mg/L)	44.3
Magnesium (mg/L)	70.6	Sodium (mg/L)	150.8
Potassium (mg/L)	7.6	Iron (mg/L)	0.2

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 3 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	38	60	101

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 86 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	20	62	227
Long-term total nitrogen concentrations (µg/L)	923	1346	2967
Long-term total chlorophyll concentrations (µg/L)	1.0	21.5	163.0
Long-term Secchi depth (ft)	0.8	2.6	4.4

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-14	63	1753	26.7	1.7
Feb-12	58	1497	18.7	2.0
Apr-02	59	1017	20.3	1.8
May-11	134	1880	81.3	1.0
Jun-03	170	2967	163.0	0.8
Jul-21	104	1630	91.3	1.0
Aug-18	227	1837	14.3	0.9
Sep-21	141	1503	5.3	1.0
Nov-11	68	1583	3.7	1.5
2001 Average	114	1741	47.2	1.3

Harney (Volusia County)
Florida LAKEWATCH Bacteria Summary

The following table lists bacteria concentrations found in Harney (Volusia County). These data are part of a statewide survey that Florida LAKEWATCH is conducting to determine patterns in the abundance of total coliforms and fecal coliforms among Florida water bodies. This is a one-time sample and can be used to describe the bacteria concentrations for that day and not throughout a year. It is important to remember that results could differ over the course of one year or several years based on varying environmental factors such as changes in water temperature, rainfall, aquatic plant abundance, algae blooms and others.

July 11, 2000

Lake	County	Station	Station Location	Total Coliforms (MPN)	Fecal Coliforms (MPN)
Harney	Volusia	1	Off vegetation	2000	0
Harney	Volusia	2	Off vegetation	1000	0
Harney	Volusia	3	Off vegetation	1800	0
Harney	Volusia	4	Off vegetation	1400	0
Harney	Volusia	5	Off vegetation	100	0
Harney	Volusia	6	Off vegetation	800	0
Harney	Volusia	7	Off vegetation	500	0
Harney	Volusia	8	Off vegetation	600	0
Harney	Volusia	9	Off vegetation	700	0
Harney	Volusia	10	Open water	800	0
Harney	Volusia	11	Open water	1200	0
Harney	Volusia	12	Open water	900	0

The Florida Administrative Code (FAC), Section 62-302.530 defines criteria for both total and fecal coliform bacteria for Class III waters. The FAC states that total coliform bacteria shall not exceed a count or Most Probable Number (MPN) of 1,000 bacteria per 100 milliliters of water in 20% or more of the samples examined during any month, nor exceed a MPN of 2,400 at any individual station. The FAC also states that fecal coliform bacteria shall not exceed a MPN of 400 in 10% or more of the samples, nor exceed a MPN of 800 at any individual station.

Total coliform bacteria counts for Harney on July 11, 2000 ranged from 100 to 2000 MPN. Total coliform bacteria exceeded 1,000 MPN in 33% of the samples. Total coliform bacteria did not exceed 2,400 at any station. Total coliform bacteria were not within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Fecal coliform bacteria counts for Harney on July 11, 2000 ranged from 0 to 0 MPN. Fecal coliform bacteria exceeded 400 MPN in 0% of the samples. Fecal coliform bacteria did not exceed 800 at any station. Fecal coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Harney (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

Aquatic plant data collected on July 27, 1993

Percent area covered with aquatic vegetation (PAC, %)	10.0
Percent of lake's volume filled with vegetation (PVI, %)	2.4
Average emergent plant biomass (kg wet wt/m ²)	1.2
Average floating-leaved plant biomass (kg wet wt/m ²)	1.1
Average submersed plant biomass (kg wet wt/m ²)	5.7
Average width of emergent and floating-leaved zone (ft)	322.4
Average lake depth (m)	1.7

Frequency that plant species occur in 20 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
tapegrass	<i>Vallisneria americana</i>	100
three-square	<i>Scirpus americanus</i>	100
hydrilla	<i>Hydrilla verticillata</i>	95
water-lettuce	<i>Pistia stratiotes</i>	90
common salvinia	<i>Salvinia rotundifolia</i>	80
azolla	<i>Azolla caroliniana</i>	70
torpedograss	<i>Panicum repens</i>	60
southern naiad	<i>Najas guadalupensis</i>	55
green algae	<i>Chlorophyta</i>	45
floating water-hyacinth	<i>Eichhornia crassipes</i>	40
alligator-weed	<i>Alternanthera philoxeroides</i>	40
widgeon grass	<i>Ruppia maritima</i>	35
musk-grass	<i>Chara spp.</i>	25
knot grass	<i>Paspalum distichum</i>	25
cat-tail	<i>Typha spp.</i>	20
willow	<i>Salix spp.</i>	20
.	<i>Eleocharis equisetoides</i>	20
spatterdock	<i>Nuphar luteum</i>	15
red ludwigia	<i>Ludwigia repens</i>	15
.	<i>Sagittaria stagonorum</i>	15
parrot's-feather	<i>Myriophyllum aquaticum</i>	10
water-pennywort	<i>Hydrocotyle umbellata</i>	10
coontail	<i>Ceratophyllum demersum</i>	10
buttonbush	<i>Cephalanthus occidentalis</i>	10
yellow-eyed grass	<i>Xyris spp.</i>	10
giant duckweed	<i>Spirodela polyrhiza</i>	5
slender spikerush	<i>Eleocharis baldwinii</i>	5
smartweed	<i>Polygonum hydropiperoides</i>	5
wax myrtle	<i>Myrica cerifera</i>	5
giant bulrush	<i>Scirpus californicus</i>	5
soft stem bulrush	<i>Scirpus validus</i>	5
southern water-grass	<i>Hydrochloa caroliniensis</i>	5
southern cutgrass	<i>Leersia hexandra</i>	5
bladderwort	<i>Utricularia foliosa</i>	5
bald cypress	<i>Taxodium distichum</i>	5
spider orchid	<i>Habenaria spp.</i>	5
.	<i>Rhexia mariana</i>	5

Harney (Volusia County) Florida LAKEWATCH Aquatic Plant Summary

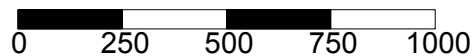
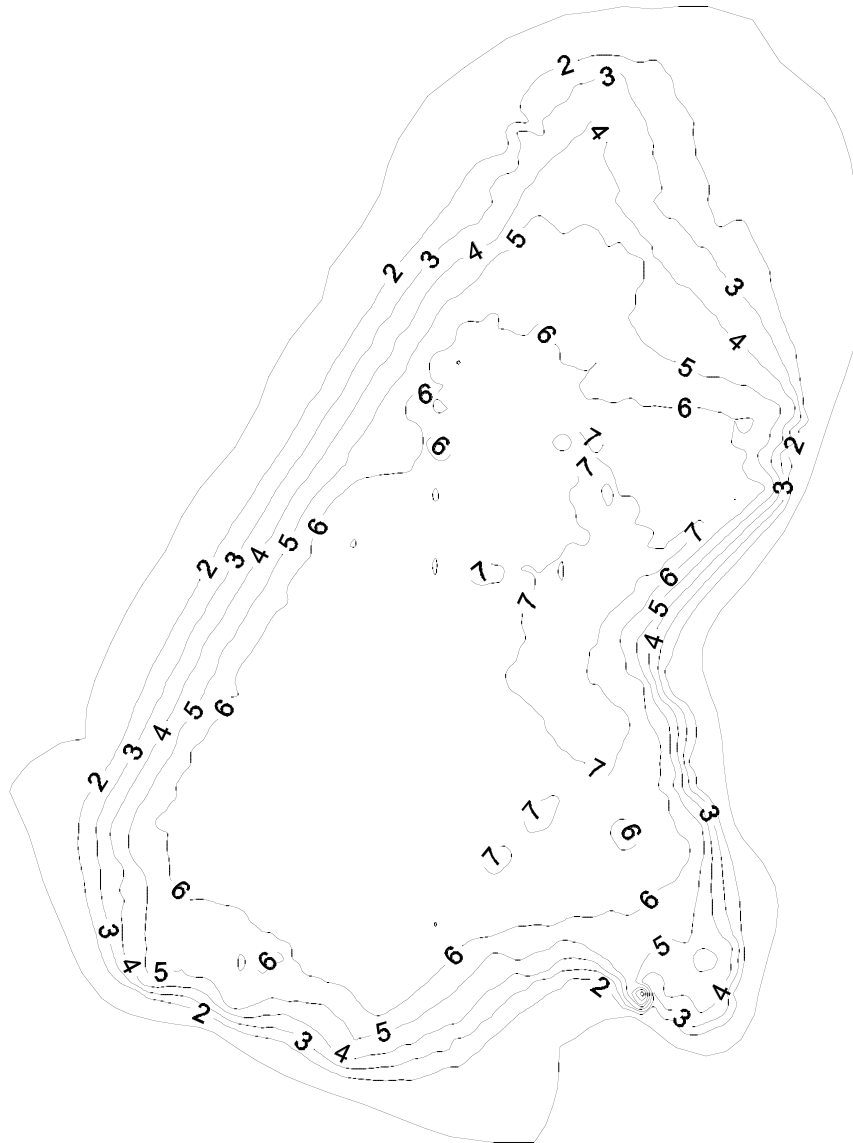
Aquatic plant data collected on July 11, 2000

Percent area covered with aquatic vegetation (PAC, %)	.
Percent of lake's volume filled with vegetation (PVI, %)	.
Average emergent plant biomass (kg wet wt/m ²)	1.5
Average floating-leaved plant biomass (kg wet wt/m ²)	0.0
Average submersed plant biomass (kg wet wt/m ²)	4.2
Average width of emergent and floating-leaved zone (ft)	39.6
Average lake depth (m)	.

Frequency that plant species occur in 20 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
tapegrass	<i>Vallisneria americana</i>	100
three-square	<i>Scirpus americanus</i>	95
southern naiad	<i>Najas guadalupensis</i>	90
musk-grass	<i>Chara spp.</i>	80
hydrilla	<i>Hydrilla verticillata</i>	75
flat-sedge	<i>Cyperus odoratus</i>	60
slender spikerush	<i>Eleocharis baldwinii</i>	55
torpedograss	<i>Panicum repens</i>	55
fragrant water-lily	<i>Nymphaea odorata</i>	40
Egyptian paspalidium	<i>Paspalidium geminatum</i>	30
widgeon grass	<i>Ruppia maritima</i>	25
para grass	<i>Brachiaria mutica</i>	20
.	<i>Eleocharis spp.</i>	20
duck-potato	<i>Sagittaria lancifolia</i>	15
alligator-weed	<i>Alternanthera philoxeroides</i>	15
smartweed	<i>Polygonum hydropiperoides</i>	15
giant bulrush	<i>Scirpus californicus</i>	15
water-lettuce	<i>Pistia stratiotes</i>	10
red ludwigia	<i>Ludwigia repens</i>	10
bacopa	<i>Bacopa monnieri</i>	10
giant reed	<i>Phragmites australis</i>	10
bald cypress	<i>Taxodium distichum</i>	10
jointed flat-sedge	<i>Cyperus articulatus</i>	10
maidencane	<i>Panicum hemitommon</i>	5
jointed flat sedge	<i>Cyperus haspan</i>	5
.	<i>Ludwigia spp.</i>	5

**Harney (Volusia County)
Florida LAKEWATCH Bathymetric Map**



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected July 11, 2000. Map contours and map scale are in feet and were generated using kriging technique in Surfer® software package (Golden CO). The center of the lake is located at Latitude 28°45'16" and Longitude 81°3'6". On this date, the lake surface area was calculated at 5,333 acres (2,158 hectares). This is only an approximate bathymetric map and should not be used for navigation.

Helen (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°59'6", Longitude 81°13'48"

Period of record: 44 sampling dates; July 15, 1991 to December 29, 2001

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 2 sampling dates:

pH	7.1	Total alkalinity (mg/L as CaCO ₃)	19.0
Conductance (µS/cm @ 25 °C)	166	Color (Pt-Co units)	13
Chloride (mg/L)	21.4	Silicon (mg/L)	0.2
Sulfate (mg/L)	26.7	Calcium (mg/L)	11.0
Magnesium (mg/L)	3.0	Sodium (mg/L)	10.7
Potassium (mg/L)	3.9	Iron (mg/L)	0.0

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	8	10	10

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 44 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	17	24	36
Long-term total nitrogen concentrations (µg/L)	383	636	1467
Long-term total chlorophyll concentrations (µg/L)	2.3	10.6	50.3
Long-term Secchi depth (ft)	2.0	5.8	9.7

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-29	23	647	7.3	5.3
Mar-03	27	493	8.3	4.5
Mar-26	25	557	7.3	5.1
Apr-30	32	597	7.7	4.0
May-31	29	650	7.0	4.3
Jun-29	30	490	6.0	5.0
Jul-29	26	510	9.0	6.5
Aug-29	21	507	6.7	7.3
Sep-27	22	467	9.3	5.6
Oct-29	25	470	19.7	4.6
Nov-28	21	383	9.0	6.7
Dec-29	20	480	9.3	7.2
2001 Average	25	521	8.9	5.5

Lindley (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°2'57", Longitude 81°16'59"

Period of record: 25 sampling dates; July 16, 1991 to December 23, 2001

Surface Area (Shafer et al. 1986): 27 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	6.4	Total alkalinity (mg/L as CaCO ₃)	2.8
Conductance (µS/cm @ 25 °C)	182	Color (Pt-Co units)	15
Chloride (mg/L)	18.5		

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 25 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	11	17	49
Long-term total nitrogen concentrations (µg/L)	473	589	730
Long-term total chlorophyll concentrations (µg/L)	2.0	5.5	11.7
Long-term Secchi depth (ft)	5.7	8.5	12.3

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Oct-04	49	617	7.0	.
Dec-23	17	523	7.7	.
2001 Average	33	570	7.3	.

Lower Louise (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°19'57", Longitude 81°30'12"

Period of record: 32 sampling dates; July 27, 1990 to December 30, 2001

Surface Area (Shafer et al. 1986): 257 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	6.8	Total alkalinity (mg/L as CaCO ₃)	8.9
Conductance (µS/cm @ 25 °C)	166	Color (Pt-Co units)	26
Chloride (mg/L)	25.5	Silicon (mg/L)	0.1
Sulfate (mg/L)	20.0	Calcium (mg/L)	6.3
Magnesium (mg/L)	5.4	Sodium (mg/L)	10.6
Potassium (mg/L)	6.2	Iron (mg/L)	0.0

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 3 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	15	18	20

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 32 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	13	24	37
Long-term total nitrogen concentrations (µg/L)	607	838	1070
Long-term total chlorophyll concentrations (µg/L)	3.3	12.2	37.3
Long-term Secchi depth (ft)	2.5	4.9	8.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-06	31	990	10.7	3.0
Feb-08	30	900	37.3	3.2
Mar-31	32	870	13.7	4.3
Apr-15	32	957	16.7	3.5
May-19	31	957	10.3	3.5
Jul-01	37	973	24.7	2.5
Sep-03	27	1017	9.0	3.0
Nov-11	27	847	11.3	4.3
Dec-30	21	673	11.3	6.5
2001 Average	30	909	16.1	3.7

Marie (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°53'7", Longitude 81°18'41"

Period of record: 22 sampling dates; June 16, 1995 to May 26, 1997

Surface Area (Shafer et al. 1986): 14 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 22 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	31	49	132
Long-term total nitrogen concentrations (µg/L)	843	1145	1787
Long-term total chlorophyll concentrations (µg/L)	5.0	25.5	76.0
Long-term Secchi depth (ft)	2.7	4.4	6.7

2001 Florida LAKEWATCH Data

No samples collected in 2001

Mc Kenzie (Volusia County)
Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°0'7", Longitude 81°1'14"

Period of record: 2 sampling dates; July 28, 1993 to September 26, 1993

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated clastic and shell deposits of the Fort Thompson Group Formation

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 2 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	25	25	25
Long-term total nitrogen concentrations (µg/L)	700	762	823
Long-term total chlorophyll concentrations (µg/L)	9.0	21.0	33.0
Long-term Secchi depth (ft)	5.0	7.3	9.5

2001 Florida LAKEWATCH Data

No samples collected in 2001

McGarity (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°53'47", Longitude 81°13'23"

Period of record: 1 sampling date; March 18, 2000

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	7.2	Total alkalinity (mg/L as CaCO ₃)	21.0
Conductance (µS/cm @ 25 °C)	204	Color (Pt-Co units)	39
Chloride (mg/L)	37.5		

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 1 month sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	28	28	28
Long-term total nitrogen concentrations (µg/L)	733	733	733
Long-term total chlorophyll concentrations (µg/L)	14.7	14.7	14.7
Long-term Secchi depth (ft)	5.5	5.5	5.5

2001 Florida LAKEWATCH Data

No samples collected in 2001

Molly (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°4'8", Longitude 81°18'4"

Period of record: 33 sampling dates; March 4, 1999 to December 5, 2001

Surface Area (Shafer et al. 1986): 15 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	7.5	Total alkalinity (mg/L as CaCO ₃)	23.0
Conductance (µS/cm @ 25 °C)	164	Color (Pt-Co units)	16
Chloride (mg/L)	30.8		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 3 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	18	25	31

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 33 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	22	45	76
Long-term total nitrogen concentrations (µg/L)	727	1300	3977
Long-term total chlorophyll concentrations (µg/L)	5.7	35.1	152.7
Long-term Secchi depth (ft)	0.8	3.8	6.7

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-09	75	2010	100.7	.
Mar-11	60	980	21.0	4.0
Apr-07	66	1337	30.7	2.5
May-14	40	1360	30.3	2.8
Jun-09	31	1197	12.7	4.8
Jul-05	27	950	11.3	6.7
Aug-09	44	927	10.3	4.7
Sep-10	36	897	23.7	4.1
Oct-10	46	1023	35.7	3.3
Nov-08	40	920	25.0	3.0
Dec-05	35	817	20.3	3.3
2001 Average	46	1129	29.2	3.9

North Talmadge (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°2'50", Longitude 81°15'57"

Period of record: 35 sampling dates; December 3, 1994 to November 26, 2001

Surface Area (Shafer et al. 1986): 121 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	7.1	Total alkalinity (mg/L as CaCO ₃)	13.0
Conductance (µS/cm @ 25 °C)	157	Color (Pt-Co units)	31
Chloride (mg/L)	28.0		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 3 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	28	40	60

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 35 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	10	20	42
Long-term total nitrogen concentrations (µg/L)	640	899	1310
Long-term total chlorophyll concentrations (µg/L)	3.0	12.7	30.7
Long-term Secchi depth (ft)	3.4	5.8	10.3

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-27	17	640	4.0	10.0
Mar-27	17	777	3.5	8.0
Apr-29	12	753	3.3	8.2
May-31	10	757	3.0	10.0
Jun-28	11	710	4.3	10.3
Jul-30	14	747	5.0	6.0
Sep-03	38	1310	19.0	3.8
Oct-27	42	1000	19.5	3.8
Nov-26	31	1020	18.3	3.8
2001 Average	21	857	8.9	7.1

North Talmadge (Volusia County)
Florida LAKEWATCH Bacteria Summary

The following table lists bacteria concentrations found in North Talmadge (Volusia County). These data are part of a statewide survey that Florida LAKEWATCH is conducting to determine patterns in the abundance of total coliforms and fecal coliforms among Florida water bodies. This is a one-time sample and can be used to describe the bacteria concentrations for that day and not throughout a year. It is important to remember that results could differ over the course of one year or several years based on varying environmental factors such as changes in water temperature, rainfall, aquatic plant abundance, algae blooms and others.

May 30, 2000

Lake	County	Station	Station Location	Total Coliforms (MPN)	Fecal Coliforms (MPN)
North Talmadge	Volusia	1	Off vegetation	8300	500
North Talmadge	Volusia	2	Off vegetation	500	0
North Talmadge	Volusia	3	Off vegetation	2300	300
North Talmadge	Volusia	4	Off vegetation	2800	300
North Talmadge	Volusia	5	Off vegetation	4200	300
North Talmadge	Volusia	6	Off vegetation	500	0
North Talmadge	Volusia	7	Off vegetation	1300	0
North Talmadge	Volusia	8	Off vegetation	400	0
North Talmadge	Volusia	9	Off vegetation	1000	200
North Talmadge	Volusia	10	Open water	500	0
North Talmadge	Volusia	11	Open water	300	0
North Talmadge	Volusia	12	Open water	2200	300

The Florida Administrative Code (FAC), Section 62-302.530 defines criteria for both total and fecal coliform bacteria for Class III waters. The FAC states that total coliform bacteria shall not exceed a count or Most Probable Number (MPN) of 1,000 bacteria per 100 milliliters of water in 20% or more of the samples examined during any month, nor exceed a MPN of 2,400 at any individual station. The FAC also states that fecal coliform bacteria shall not exceed a MPN of 400 in 10% or more of the samples, nor exceed a MPN of 800 at any individual station.

Total coliform bacteria counts for North Talmadge on May 30, 2000 ranged from 300 to 8300 MPN. Total coliform bacteria exceeded 1,000 MPN in 50% of the samples. Total coliform bacteria did exceed 2,400 at three stations. Total coliform bacteria were not within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Fecal coliform bacteria counts for North Talmadge on May 30, 2000 ranged from 0 to 500 MPN. Fecal coliform bacteria exceeded 400 MPN in 8.3% of the samples. Fecal coliform bacteria did not exceed 800 at any station. Fecal coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

**North Talmadge (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary**

Aquatic plant data collected on May 30, 2000

Percent area covered with aquatic vegetation (PAC, %)	23.5
Percent of lake's volume filled with vegetation (PVI, %)	1.5
Average emergent plant biomass (kg wet wt/m ²)	7.1
Average floating-leaved plant biomass (kg wet wt/m ²)	3.0
Average submersed plant biomass (kg wet wt/m ²)	2.4
Average width of emergent and floating-leaved zone (ft)	42.0
Average lake depth (m)	3.3

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
cat-tail	<i>Typha spp.</i>	90
wax myrtle	<i>Myrica cerifera</i>	90
willow	<i>Salix spp.</i>	80
stonewort	<i>Nitella spp.</i>	80
slender spikerush	<i>Eleocharis baldwinii</i>	70
spatterdock	<i>Nuphar luteum</i>	70
pickerelweed	<i>Pontederia cordata</i>	70
southern naiad	<i>Najas guadalupensis</i>	60
cone-spur bladderwort	<i>Utricularia gibba</i>	50
buttonbush	<i>Cephalanthus occidentalis</i>	50
water-pennywort	<i>Hydrocotyle umbellata</i>	40
tapegrass	<i>Vallisneria americana</i>	40
sweetbay	<i>Magnolia virginiana</i>	40
duck-potato	<i>Sagittaria lancifolia</i>	30
fragrant water-lily	<i>Nymphaea odorata</i>	30
elephant-ear	<i>Colocasia esculenta</i>	30
water primrose	<i>Ludwigia octovalvis</i>	30
sawgrass	<i>Cladium jamaicense</i>	30
maidencane	<i>Panicum hemitomon</i>	20
.	<i>Scirpus cubensis</i>	20
red maple	<i>Acer rubrum</i>	20
common salvinia	<i>Salvinia rotundifolia</i>	10
coontail	<i>Ceratophyllum demersum</i>	10
elderberry	<i>Sambucus canadensis</i>	10

Odom (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°9'25", Longitude 81°21'7"

Period of record: 2 sampling dates; July 11, 1991 to August 23, 1991

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 2 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	10	11	11
Long-term total nitrogen concentrations (µg/L)	780	780	780
Long-term total chlorophyll concentrations (µg/L)	4.7	5.5	6.3
Long-term Secchi depth (ft)	7.2	7.3	7.3

2001 Florida LAKEWATCH Data

No samples collected in 2001

Offspring (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°47'41", Longitude 81°8'40"

Period of record: 2 sampling dates; September 14, 1997 to November 1, 1997

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation

Physiographic region (Brooks 1981b):

The lake lies in the St John's Wet Prairie division of the Eastern Flatwoods District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 2 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	41	66	92
Long-term total nitrogen concentrations (µg/L)	1133	1375	1617
Long-term total chlorophyll concentrations (µg/L)	17.0	20.0	23.0
Long-term Secchi depth (ft)	2.1	2.5	2.8

2001 Florida LAKEWATCH Data

No samples collected in 2001

Ponce Inlet-1 (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°5'43", Longitude 80°56'47"

Period of record: 11 sampling dates; February 24, 2001 to December 23, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 9 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	3	16	66
Long-term specific conductance (mmhos)	27	45	52

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 11 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	15	55	109
Long-term total nitrogen concentrations (µg/L)	180	441	660
Long-term total chlorophyll concentrations (µg/L)	2.0	9.3	21.0
Long-term Secchi depth (ft)	2.0	4.6	12.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-24	15	360	2.0	.
Mar-24	67	540	12.0	4.0
Apr-28	51	350	6.0	4.0
May-23	53	370	12.0	3.5
Jun-30	41	420	20.0	3.5
Jul-28	109	610	21.0	2.5
Aug-25	19	.	2.0	12.0
Sep-22	33	180	6.0	3.5
Oct-28	98	660	8.0	2.0
Nov-25	78	600	7.0	4.0
Dec-23	40	320	6.0	6.5
2001 Average	55	441	9.3	4.6

Ponce Inlet-2 (Volusia County)
Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°3'31", Longitude 80°55'2"

Period of record: 11 sampling dates; February 24, 2001 to December 23, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 9 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	2	10	36
Long-term specific conductance (mmhos)	37	48	52

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 11 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	10	38	56
Long-term total nitrogen concentrations (µg/L)	170	329	550
Long-term total chlorophyll concentrations (µg/L)	1.0	6.4	10.0
Long-term Secchi depth (ft)	2.0	4.6	6.3

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-24	18	200	3.0	6.3
Mar-24	44	270	8.0	4.5
Apr-28	29	170	3.0	6.0
May-23	35	430	7.0	5.3
Jun-30	45	340	9.0	5.0
Jul-28	56	550	8.0	4.5
Aug-25	10	.	1.0	.
Sep-22	42	210	7.0	2.0
Oct-28	51	370	10.0	3.5
Nov-25	54	500	7.0	4.0
Dec-23	32	250	7.0	5.0
2001 Average	38	329	6.4	4.6

Ponce Inlet-3 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°2'39", Longitude 80°54'37"

Period of record: 11 sampling dates; February 24, 2001 to December 23, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 8 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	3	14	34
Long-term specific conductance (mmhos)	39	48	54

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 11 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	16	46	74
Long-term total nitrogen concentrations (µg/L)	210	413	990
Long-term total chlorophyll concentrations (µg/L)	2.0	8.9	16.0
Long-term Secchi depth (ft)	2.8	3.8	5.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Feb-24	16	250	2.0	.
Mar-24	49	320	8.0	.
Apr-28	31	210	4.0	.
May-23	46	420	12.0	3.5
Jun-30	57	380	12.0	3.5
Jul-28	66	990	16.0	.
Aug-25	55	390	12.0	4.0
Sep-22	74	590	8.0	2.8
Oct-28	41	260	10.0	4.0
Nov-25	39	470	6.0	.
Dec-23	32	260	8.0	5.0
2001 Average	46	413	8.9	3.8

Rose Bay-1 (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°6'19", Longitude 80°58'40"

Period of record: 8 sampling dates; March 11, 2001 to December 3, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 6 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	7	36	131
Long-term specific conductance (mmhos)	5	36	51

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 8 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	52	125	170
Long-term total nitrogen concentrations (µg/L)	350	706	900
Long-term total chlorophyll concentrations (µg/L)	4.0	15.1	41.0
Long-term Secchi depth (ft)	1.5	2.6	3.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Mar-11	52	350	5.0	3.5
Apr-23	82	550	9.0	3.0
May-27	116	710	13.0	2.2
Jul-05	156	590	41.0	2.0
Aug-04	161	850	19.0	1.9
Sep-03	156	900	18.0	2.9
Sep-29	170	890	12.0	1.5
Dec-03	106	810	4.0	3.5
2001 Average	125	706	15.1	2.6

Rose Bay-2 (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°6'7", Longitude 81°57'52"

Period of record: 8 sampling dates; March 11, 2001 to December 3, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 6 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	8	36	132
Long-term specific conductance (mmhos)	16	39	52

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 8 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	49	111	160
Long-term total nitrogen concentrations (µg/L)	320	670	1040
Long-term total chlorophyll concentrations (µg/L)	5.0	13.5	32.0
Long-term Secchi depth (ft)	1.5	2.5	4.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Mar-11	49	320	5.0	4.0
Apr-23	78	550	8.0	3.0
May-27	105	570	14.0	2.2
Jul-05	110	650	25.0	1.8
Aug-04	155	830	32.0	1.9
Sep-03	129	580	8.0	2.4
Sep-29	160	1040	10.0	1.5
Dec-03	105	820	6.0	3.3
2001 Average	111	670	13.5	2.5

Rose Bay-3 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°5'58", Longitude 81°57'52"

Period of record: 8 sampling dates; March 11, 2001 to December 3, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 6 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	9	35	122
Long-term specific conductance (mmhos)	16	39	48

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 8 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	44	109	154
Long-term total nitrogen concentrations (µg/L)	310	641	960
Long-term total chlorophyll concentrations (µg/L)	4.0	11.1	18.0
Long-term Secchi depth (ft)	1.5	2.5	4.3

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Mar-11	44	310	4.0	4.3
Apr-23	88	560	9.0	2.5
May-27	107	950	15.0	2.3
Jul-05	110	480	18.0	1.8
Aug-04	135	680	17.0	2.0
Sep-03	131	480	12.0	2.8
Sep-29	154	960	8.0	1.5
Dec-03	105	710	6.0	3.0
2001 Average	109	641	11.1	2.5

Sawyer (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°51'44", Longitude 81°10'48"

Period of record: 1 sampling date; June 7, 1999

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	5.0	Total alkalinity (mg/L as CaCO ₃)	0.0
Conductance (µS/cm @ 25 °C)	78	Color (Pt-Co units)	14
Chloride (mg/L)	18.0		

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 1 month sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	5	5	5
Long-term total nitrogen concentrations (µg/L)	443	443	443
Long-term total chlorophyll concentrations (µg/L)	1.7	1.7	1.7
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

No samples collected in 2001

Shaw (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°13'54", Longitude 81°26'23"

Period of record: 8 sampling dates; June 27, 1990 to April 30, 1991

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 8 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	33	43	52
Long-term total nitrogen concentrations (µg/L)	1233	1536	2100
Long-term total chlorophyll concentrations (µg/L)	12.5	52.6	189.0
Long-term Secchi depth (ft)	0.5	1.2	1.5

2001 Florida LAKEWATCH Data

No samples collected in 2001

South Talmadge (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°2'20", Longitude 81°15'52"

Period of record: 53 sampling dates; July 16, 1991 to December 30, 2001

Surface Area (LAKEWATCH 2000): 54 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	6.8	Total alkalinity (mg/L as CaCO ₃)	15.0
Conductance (µS/cm @ 25 °C)	123	Color (Pt-Co units)	126
Chloride (mg/L)	18.5		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	34	95	259

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 53 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	13	23	56
Long-term total nitrogen concentrations (µg/L)	727	1163	1677
Long-term total chlorophyll concentrations (µg/L)	3.0	21.3	98.3
Long-term Secchi depth (ft)	2.0	4.8	10.8

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-16	22	737	11.0	7.0
Feb-16	23	817	4.3	7.5
Mar-25	15	927	4.0	10.8
Apr-21	19	973	5.3	7.5
May-20	13	960	3.0	7.2
Jun-20	13	727	4.0	10.0
Jul-22	16	930	7.0	6.0
Aug-14	26	1333	23.0	4.0
Oct-15	40	1677	29.7	.
Nov-30	38	1277	38.0	2.0
Dec-30	35	1400	41.3	2.5
2001 Average	24	1069	15.5	6.4

South Talmadge (Volusia County)
Florida LAKEWATCH Bacteria Summary

The following table lists bacteria concentrations found in South Talmadge (Volusia County). These data are part of a statewide survey that Florida LAKEWATCH is conducting to determine patterns in the abundance of total coliforms and fecal coliforms among Florida water bodies. This is a one-time sample and can be used to describe the bacteria concentrations for that day and not throughout a year. It is important to remember that results could differ over the course of one year or several years based on varying environmental factors such as changes in water temperature, rainfall, aquatic plant abundance, algae blooms and others.

May 30, 2000

Lake	County	Station	Station Location	Total Coliforms (MPN)	Fecal Coliforms (MPN)
South Talmadge	Volusia	1	Off vegetation	3200	100
South Talmadge	Volusia	2	Off vegetation	3600	100
South Talmadge	Volusia	3	Off vegetation	4900	100
South Talmadge	Volusia	4	Off vegetation	2900	100
South Talmadge	Volusia	5	Off vegetation	2100	100
South Talmadge	Volusia	6	Off vegetation	2600	100
South Talmadge	Volusia	7	Off vegetation	800	0
South Talmadge	Volusia	8	Off vegetation	1300	0
South Talmadge	Volusia	9	Off vegetation	1400	0
South Talmadge	Volusia	10	Open water	1100	100
South Talmadge	Volusia	11	Open water	1200	100
South Talmadge	Volusia	12	Open water	900	100

The Florida Administrative Code (FAC), Section 62-302.530 defines criteria for both total and fecal coliform bacteria for Class III waters. The FAC states that total coliform bacteria shall not exceed a count or Most Probable Number (MPN) of 1,000 bacteria per 100 milliliters of water in 20% or more of the samples examined during any month, nor exceed a MPN of 2,400 at any individual station. The FAC also states that fecal coliform bacteria shall not exceed a MPN of 400 in 10% or more of the samples, nor exceed a MPN of 800 at any individual station.

Total coliform bacteria counts for South Talmadge on May 30, 2000 ranged from 800 to 4900 MPN. Total coliform bacteria exceeded 1,000 MPN in 83% of the samples. Total coliform bacteria did exceed 2,400 at five stations. Total coliform bacteria were not within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Fecal coliform bacteria counts for South Talmadge on May 30, 2000 ranged from 0 to 100 MPN. Fecal coliform bacteria exceeded 400 MPN in 0% of the samples. Fecal coliform bacteria did not exceed 800 at any station. Fecal coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

**South Talmadge (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary**

Aquatic plant data collected on July 30, 1992

Percent area covered with aquatic vegetation (PAC, %)	6.0
Percent of lake's volume filled with vegetation (PVI, %)	5.1
Average emergent plant biomass (kg wet wt/m ²)	5.1
Average floating-leaved plant biomass (kg wet wt/m ²)	3.4
Average submersed plant biomass (kg wet wt/m ²)	0.9
Average width of emergent and floating-leaved zone (ft)	56.4
Average lake depth (m)	2.0

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
spatterdock	<i>Nuphar luteum</i>	90
pickerelweed	<i>Pontederia cordata</i>	70
cat-tail	<i>Typha spp.</i>	50
water primrose	<i>Ludwigia octovalvis</i>	50
floating water-hyacinth	<i>Eichhornia crassipes</i>	40
bladderwort	<i>Utricularia foliosa</i>	40
slender spikerush	<i>Eleocharis baldwinii</i>	30
sedge family	<i>Cyperaceae</i>	30
maidencane	<i>Panicum hemitomon</i>	30
red root	<i>Lachnanthes caroliniana</i>	30
purple bladderwort	<i>Utricularia purpurea</i>	20
elephant-ear	<i>Colocasia esculenta</i>	20
southern water-grass	<i>Hydrochloa caroliniensis</i>	20
common salvinia	<i>Salvinia rotundifolia</i>	10
alligator-weed	<i>Alternanthera philoxeroides</i>	10
water-pennywort	<i>Hydrocotyle umbellata</i>	10
sawgrass	<i>Cladium jamaicense</i>	10
annual spikerush	<i>Eleocharis geniculata</i>	10

**South Talmadge (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary**

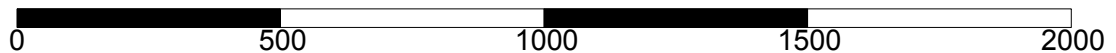
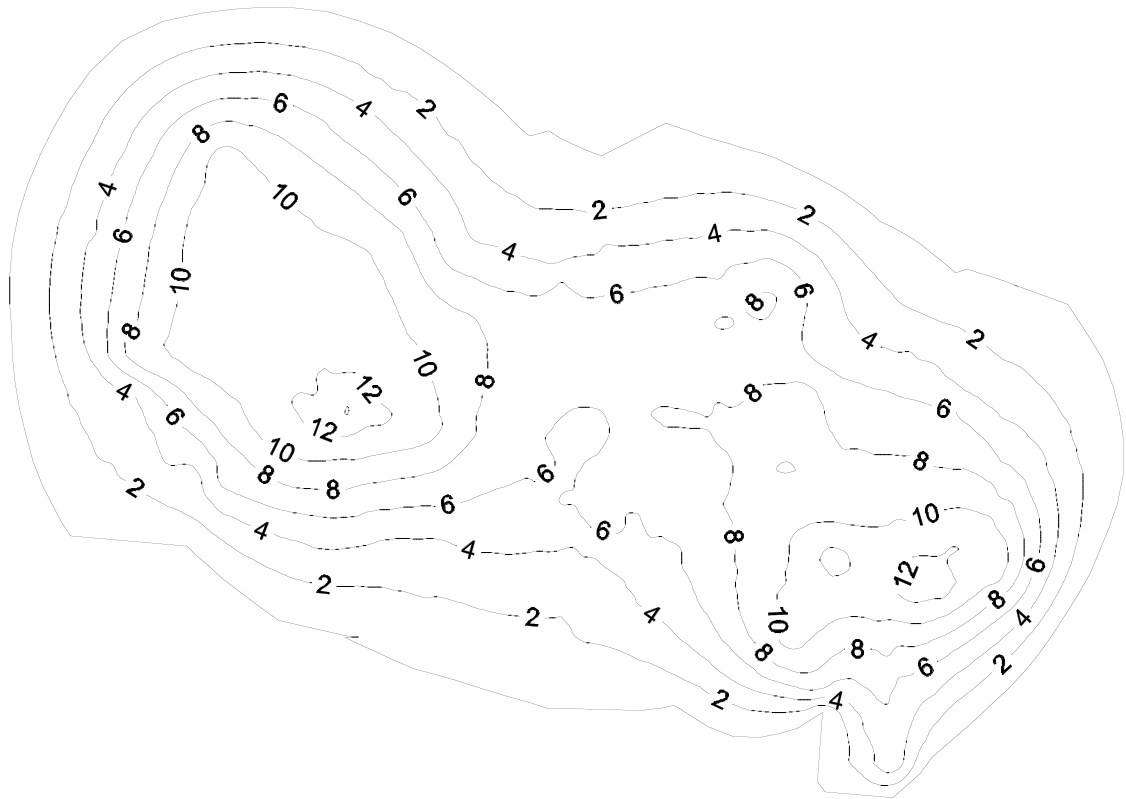
Aquatic plant data collected on May 30, 2000

Percent area covered with aquatic vegetation (PAC, %)	9.6
Percent of lake's volume filled with vegetation (PVI, %)	0.5
Average emergent plant biomass (kg wet wt/m ²)	6.1
Average floating-leaved plant biomass (kg wet wt/m ²)	5.3
Average submersed plant biomass (kg wet wt/m ²)	2.8
Average width of emergent and floating-leaved zone (ft)	64.0
Average lake depth (m)	2.3

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
spatterdock	<i>Nuphar luteum</i>	90
pickerelweed	<i>Pontederia cordata</i>	90
cat-tail	<i>Typha spp.</i>	80
water primrose	<i>Ludwigia octovalvis</i>	70
buttonbush	<i>Cephalanthus occidentalis</i>	60
willow	<i>Salix spp.</i>	60
stonewort	<i>Nitella spp.</i>	60
slender spikerush	<i>Eleocharis baldwinii</i>	50
fragrant water-lily	<i>Nymphaea odorata</i>	50
southern naiad	<i>Najas guadalupensis</i>	50
wax myrtle	<i>Myrica cerifera</i>	50
maidencane	<i>Panicum hemitomon</i>	50
.	<i>Scirpus cubensis</i>	40
elephant-ear	<i>Colocasia esculenta</i>	30
sawgrass	<i>Cladium jamaicense</i>	30
elderberry	<i>Sambucus canadensis</i>	30
smartweed	<i>Polygonum hydropiperoides</i>	20
water-pennywort	<i>Hydrocotyle umbellata</i>	20
torpedograss	<i>Panicum repens</i>	20
bald cypress	<i>Taxodium distichum</i>	20
tapegrass	<i>Vallisneria americana</i>	10
salt-bush	<i>Baccharis spp.</i>	10
club-rush	<i>Eleocharis cellulosa</i>	10
sweetbay	<i>Magnolia virginiana</i>	10
red maple	<i>Acer rubrum</i>	10

**South Talmadge (Volusia County)
Florida LAKEWATCH Bathymetric Map**



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected May 30, 2000. Map contours and map scale are in feet and were generated using kriging technique in Surfer® software package (Golden CO). The center of the lake is located at Latitude 29°2'20" and Longitude 81°15'52". On this date, the lake surface area was calculated at 54 acres (22 hectares). This is only an approximate bathymetric map and should not be used for navigation.

Spring Garden (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°7'24", Longitude 81°22'21"

Period of record: 102 sampling dates; April 15, 1992 to December 21, 2001

Surface Area (Shafer et al. 1986): 521 acres

Lake Region (Griffith et al. 1997): Eastern Flatlands (75-10)

Geologic formation (Brooks 1981a):

The geology is a mixture of two major types dominated by dune sand and shell with silty sand, silt, and clay of the Princess Ann Formation and coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	8.3	Total alkalinity (mg/L as CaCO ₃)	120.0
Conductance (µS/cm @ 25 °C)	763	Color (Pt-Co units)	5
Chloride (mg/L)	161.3		
Sulfate (mg/L)	25.7		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	2	6	10

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 102 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	25	52	139
Long-term total nitrogen concentrations (µg/L)	433	791	1430
Long-term total chlorophyll concentrations (µg/L)	1.3	22.3	66.3
Long-term Secchi depth (ft)	2.7	3.9	5.9

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-29	50	897	13.7	.
Feb-28	44	817	14.3	.
Mar-27	61	767	38.7	.
Apr-25	42	1017	14.7	.
May-24	40	953	21.7	.
Jun-27	64	803	52.3	.
Jul-31	53	733	36.0	.
Aug-28	64	890	21.7	.
Oct-27	60	1430	15.3	.
Dec-21	54	680	2.7	.
2001 Average	53	899	23.1	.

**Spring Garden (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary**

Aquatic plant data collected on July 15, 1993

Percent area covered with aquatic vegetation (PAC, %)	88.0
Percent of lake's volume filled with vegetation (PVI, %)	54.2
Average emergent plant biomass (kg wet wt/m ²)	3.9
Average floating-leaved plant biomass (kg wet wt/m ²)	6.7
Average submersed plant biomass (kg wet wt/m ²)	1.6
Average width of emergent and floating-leaved zone (ft)	57.7
Average lake depth (m)	0.4

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
water-lettuce	<i>Pistia stratiotes</i>	100
floating water-hyacinth	<i>Eichhornia crassipes</i>	100
pickerelweed	<i>Pontederia cordata</i>	100
frog's-bit	<i>Limnobium spongia</i>	90
cat-tail	<i>Typha spp.</i>	90
hydrilla	<i>Hydrilla verticillata</i>	90
common duckweed	<i>Lemna minor</i>	80
water-pennywort	<i>Hydrocotyle umbellata</i>	80
green algae	<i>Chlorophyta</i>	70
fragrant water-lily	<i>Nymphaea odorata</i>	60
para grass	<i>Brachiaria mutica</i>	60
coontail	<i>Ceratophyllum demersum</i>	50
wax myrtle	<i>Myrica cerifera</i>	50
willow	<i>Salix spp.</i>	50
common salvinia	<i>Salvinia rotundifolia</i>	40
spatterdock	<i>Nuphar luteum</i>	40
alligator-weed	<i>Alternanthera philoxeroides</i>	30
red ludwigia	<i>Ludwigia repens</i>	30
tapegrass	<i>Vallisneria americana</i>	30
bald cypress	<i>Taxodium distichum</i>	30
water hemlock	<i>Cicuta mexicana</i>	30
duck-potato	<i>Sagittaria lancifolia</i>	20
sawgrass	<i>Cladium jamaicense</i>	20
salt-bush	<i>Baccharis spp.</i>	10
buttonbush	<i>Cephalanthus occidentalis</i>	10
giant bulrush	<i>Scirpus californicus</i>	10
wild rice	<i>Zizania aquatica</i>	10

Spruce Creek-1 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°4'21", Longitude 81°4'6"

Period of record: 84 sampling dates; January 19, 1995 to December 11, 2001

Geologic formation (Brooks 1981a):

The geology is dominated clastic and shell deposits of the Fort Thompson Group Formation

Physiographic region (Brooks 1981b):

The station lies in the Volusia Ridge Sets division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 1 sampling date:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	42	42	42

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 84 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	13	87	496
Long-term total nitrogen concentrations (µg/L)	340	1165	4420
Long-term total chlorophyll concentrations (µg/L)	0.0	7.0	65.0
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-17	85	670	12.0	.
Feb-09	29	340	5.0	.
Mar-09	52	410	7.0	.
Apr-12	68	950	3.0	.
May-11	37	630	11.0	.
Jun-12	78	660	18.0	.
Jul-13	42	630	9.0	.
Aug-03	78	1460	1.0	.
Sep-05	36	930	3.0	.
Oct-04	112	1480	1.0	.
Nov-07	39	1100	7.0	.
Dec-11	81	1350	2.0	.
2001 Average	61	884	6.6	.

Spruce Creek-2 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°3'25", Longitude 81°3'3"

Period of record: 84 sampling dates; January 19, 1995 to December 11, 2001

Geologic formation (Brooks 1981a):

The geology is dominated clastic and shell deposits of the Fort Thompson Group Formation

Physiographic region (Brooks 1981b):

The station lies in the Volusia Ridge Sets division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 1 sampling date:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	23	23	23

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 84 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	41	151	824
Long-term total nitrogen concentrations (µg/L)	300	936	3530
Long-term total chlorophyll concentrations (µg/L)	0.0	2.2	41.0
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-17	123	460	1.0	.
Feb-09	92	500	1.0	.
Mar-09	99	380	1.0	.
Apr-12	50	1280	1.0	.
May-11	83	530	1.0	.
Jun-12	312	880	1.0	.
Jul-13	90	720	1.0	.
Aug-03	172	1400	2.0	.
Sep-05	682	3530	3.0	.
Oct-04	97	1210	1.0	.
Nov-07	119	1130	1.0	.
Dec-11	78	1010	2.0	.
2001 Average	166	1086	1.3	.

Spruce Creek-3 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°4'9", Longitude 81°1'36"

Period of record: 84 sampling dates; January 19, 1995 to December 11, 2001

Geologic formation (Brooks 1981a):

The geology is dominated clastic and shell deposits of the Fort Thompson Group Formation

Physiographic region (Brooks 1981b):

The station lies in the Volusia Ridge Sets division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 1 sampling date:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	19	19	19

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 84 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	13	169	3667
Long-term total nitrogen concentrations (µg/L)	340	935	4460
Long-term total chlorophyll concentrations (µg/L)	1.0	26.7	406.0
Long-term Secchi depth (ft)	.	.	.

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-17	36	900	9.0	.
Feb-09	38	920	9.0	.
Mar-09	28	680	6.0	.
Apr-12	62	850	9.0	.
May-11	45	540	5.0	.
Jun-12	37	800	13.0	.
Jul-13	66	820	21.0	.
Aug-03	110	1110	20.0	.
Sep-05	51	2040	27.0	.
Oct-04	109	980	20.0	.
Nov-07	230	2130	17.0	.
Dec-11	99	780	29.0	.
2001 Average	76	1046	15.4	.

Tedder (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°8'52", Longitude 81°21'7"

Period of record: 8 sampling dates; December 4, 1990 to February 16, 1992

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 8 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	12	19	28
Long-term total nitrogen concentrations (µg/L)	713	787	867
Long-term total chlorophyll concentrations (µg/L)	2.0	7.4	16.0
Long-term Secchi depth (ft)	1.9	2.2	2.6

2001 Florida LAKEWATCH Data

No samples collected in 2001

Tedder (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

Aquatic plant data collected on May 28, 1992

Percent area covered with aquatic vegetation (PAC, %)	24.0
Percent of lake's volume filled with vegetation (PVI, %)	7.0
Average emergent plant biomass (kg wet wt/m ²)	1.0
Average floating-leaved plant biomass (kg wet wt/m ²)	2.0
Average submersed plant biomass (kg wet wt/m ²)	0.0
Average width of emergent and floating-leaved zone (ft)	196.2
Average lake depth (m)	1.5

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
fragrant water-lily	<i>Nymphaea odorata</i>	100
spatterdock	<i>Nuphar luteum</i>	70
pickerelweed	<i>Pontederia cordata</i>	70
water primrose	<i>Ludwigia octovalvis</i>	50
common salvinia	<i>Salvinia rotundifolia</i>	40
duck-potato	<i>Sagittaria lancifolia</i>	40
maidencane	<i>Panicum hemitomon</i>	40
buttonbush	<i>Cephalanthus occidentalis</i>	30
torpedograss	<i>Panicum repens</i>	30
smartweed	<i>Polygonum hydropiperoides</i>	10
bacopa	<i>Bacopa monnieri</i>	10
cat-tail	<i>Typha spp.</i>	10
water-pennywort	<i>Hydrocotyle umbellata</i>	10
cone-spur bladderwort	<i>Utricularia gibba</i>	10
water spikerush	<i>Eleocharis elongata</i>	10
rush spp.	<i>Juncus acuminatus</i>	10

Theresa (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°53'55", Longitude 81°11'40"

Period of record: 31 sampling dates; March 23, 1999 to December 9, 2001

Surface Area (unpublished LAKEWATCH 2001): 230 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The Lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	5.1	Total alkalinity (mg/L as CaCO ₃)	0.0
Conductance (µS/cm @ 25 °C)	109	Color (Pt-Co units)	12
Chloride (mg/L)	25.5		

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 2 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	3	4	4

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 31 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	7	12	18
Long-term total nitrogen concentrations (µg/L)	220	479	667
Long-term total chlorophyll concentrations (µg/L)	2.7	7.1	18.3
Long-term Secchi depth (ft)	1.3	3.3	7.1

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-14	17	530	8.7	1.7
Feb-11	16	497	7.3	1.3
May-16	12	463	9.0	1.8
Jun-10	15	510	18.3	1.3
Jul-24	15	463	13.0	1.5
Aug-19	13	333	9.0	2.2
Sep-09	12	347	8.3	2.5
Oct-14	10	303	5.0	3.0
Nov-09	8	220	4.0	3.8
Dec-09	9	310	5.0	.
2001 Average	13	398	8.8	2.1

Theresa (Volusia County)
Florida LAKEWATCH Bacteria Summary

The following table lists bacteria concentrations found in Theresa (Volusia County). These data are part of a statewide survey that Florida LAKEWATCH is conducting to determine patterns in the abundance of total coliforms and fecal coliforms among Florida water bodies. This is a one-time sample and can be used to describe the bacteria concentrations for that day and not throughout a year. It is important to remember that results could differ over the course of one year or several years based on varying environmental factors such as changes in water temperature, rainfall, aquatic plant abundance, algae blooms and others.

February 23, 2000

Lake	County	Station	Station Location	Total Coliforms (MPN)	Fecal Coliforms (MPN)
Theresa	Volusia	1	Off vegetation	170	10
Theresa	Volusia	2	Off vegetation	150	20
Theresa	Volusia	3	Off vegetation	470	20
Theresa	Volusia	4	Off vegetation	330	10
Theresa	Volusia	5	Off vegetation	370	20
Theresa	Volusia	6	Off vegetation	300	20
Theresa	Volusia	7	Off vegetation	380	0
Theresa	Volusia	8	Off vegetation	560	10
Theresa	Volusia	9	Off vegetation	880	10
Theresa	Volusia	10	Open water	350	30
Theresa	Volusia	11	Open water	720	20
Theresa	Volusia	12	Open water	560	30

The Florida Administrative Code (FAC), Section 62-302.530 defines criteria for both total and fecal coliform bacteria for Class III waters. The FAC states that total coliform bacteria shall not exceed a count or Most Probable Number (MPN) of 1,000 bacteria per 100 milliliters of water in 20% or more of the samples examined during any month, nor exceed a MPN of 2,400 at any individual station. The FAC also states that fecal coliform bacteria shall not exceed a MPN of 400 in 10% or more of the samples, nor exceed a MPN of 800 at any individual station.

Total coliform bacteria counts for Theresa on February 23, 2000 ranged from 150 to 880 MPN. Total coliform bacteria exceeded 1,000 MPN in 0% of the samples. Total coliform bacteria did not exceed 2,400 at any station. Total coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Fecal coliform bacteria counts for Theresa on February 23, 2000 ranged from 0 to 30 MPN. Fecal coliform bacteria exceeded 400 MPN in 0% of the samples. Fecal coliform bacteria did not exceed 800 at any station. Fecal coliform bacteria were within the acceptable range as defined by the Florida Administrative Code (FAC), Section 62-302.530.

Theresa (Volusia County)
Florida LAKEWATCH Aquatic Bird Summary

Period of record: 3 sampling dates: October 1, 2001 to December 9, 2001

Surface area (LAKEWATCH): 230 acres / 93 hectares

Numbers reported below are the average numbers of each species seen using the sampling method of **Boat** for 3 sampling events in 2001.

<u>Common Name</u>	<u>Mean Count</u>
American Coot	0.3
Anhinga	1.0
Bald Eagle	0.3
Belted Kingfisher	0.7
Black Vulture	0.3
Boat-Tailed Grackle	2.3
Crows	33.3
Ducks	6.0
Great Blue Heron	1.7
Mallard	5.3
Muscovy Duck	0.7
Red-Shouldered Hawk	0.3
Sandhill Crane	1.0

Three Island (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°56'20", Longitude 81°12'37"

Period of record: 4 sampling dates; July 13, 1996 to January 26, 1997

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 1 sampling date:

pH	5.7	Total alkalinity (mg/L as CaCO ₃)	1.3
Conductance (µS/cm @ 25 °C)	64	Color (Pt-Co units)	82
Chloride (mg/L)	14.8	Silicon (mg/L)	0.6
Sulfate (mg/L)	6.0	Calcium (mg/L)	2.8
Magnesium (mg/L)	1.0	Sodium (mg/L)	6.7
Potassium (mg/L)	0.9	Iron (mg/L)	0.1

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 4 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	9	10	12
Long-term total nitrogen concentrations (µg/L)	543	651	713
Long-term total chlorophyll concentrations (µg/L)	3.3	4.7	5.3
Long-term Secchi depth (ft)	4.0	5.3	6.3

2001 Florida LAKEWATCH Data

No samples collected in 2001

Tivoli (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 28°54'10", Longitude 81°13'50"

Period of record: 5 sampling dates; September 29, 1998 to March 15, 2000

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the Crescent City-Deland Ridge division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 5 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	8	10	15
Long-term total nitrogen concentrations (µg/L)	320	525	917
Long-term total chlorophyll concentrations (µg/L)	1.7	4.2	11.3
Long-term Secchi depth (ft)	6.0	6.6	7.0

2001 Florida LAKEWATCH Data

No samples collected in 2001

Tomoka-1 (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°21'5", Longitude 81°5'31"

Period of record: 8 sampling dates; October 10, 2000 to May 12, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	14	32	62
Long-term specific conductance (mmhos)	22	38	44

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 8 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	42	82	142
Long-term total nitrogen concentrations (µg/L)	390	668	990
Long-term total chlorophyll concentrations (µg/L)	3.0	9.3	14.0
Long-term Secchi depth (ft)	1.0	1.6	2.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-15	42	410	7.0	.
Feb-06	56	390	3.0	.
Mar-31	93	990	11.0	1.5
May-12	96	720	14.0	2.0
2001 Average	72	628	8.8	1.8

Tomoka (Volusia County)
Florida LAKEWATCH Aquatic Bird Summary

Period of record: 1 sampling date: February 6, 2001 to February 6, 2001

Surface area: Stretch of the river between the LAKEWATCH water stations sampled

Numbers reported below are the average numbers of each species seen using the sampling method of **Boat** for 1 sampling event in 2001.

<u>Common Name</u>	<u>Mean Count</u>
Brown Pelican	7.0
Double-Crested Cormorant	20.0
Great White Heron	1.0
Gulls	10.0
Hérons	1.0
Little Blue Heron	1.0
Mallard	5.0
Reddish Egret	1.0
Ring-billed Gull	35.0
Royal Tern	15.0
Snowy Egret	1.0
White Ibis	2.0

Tomoka-2 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°21'50", Longitude 81°5'35"

Period of record: 7 sampling dates; October 13, 2000 to May 12, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	12	22	38
Long-term specific conductance (mmhos)	25	42	49

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 7 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	31	67	99
Long-term total nitrogen concentrations (µg/L)	260	563	890
Long-term total chlorophyll concentrations (µg/L)	1.0	7.4	12.0
Long-term Secchi depth (ft)	1.0	2.0	2.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-15	31	340	2.0	.
Feb-06	41	260	1.0	.
Mar-31	78	890	7.0	.
May-12	99	810	11.0	2.0
2001 Average	62	575	5.3	2.0

Tomoka (Volusia County)
Florida LAKEWATCH Aquatic Bird Summary

Period of record: 1 sampling date: February 6, 2001 to February 6, 2001

Surface area: Stretch of the river between the LAKEWATCH water stations sampled

Numbers reported below are the average numbers of each species seen using the sampling method of **Boat** for 1 sampling event in 2001.

<u>Common Name</u>	<u>Mean Count</u>
Brown Pelican	7.0
Double-Crested Cormorant	20.0
Great White Heron	1.0
Gulls	10.0
Hérons	1.0
Little Blue Heron	1.0
Mallard	5.0
Reddish Egret	1.0
Ring-billed Gull	35.0
Royal Tern	15.0
Snowy Egret	1.0
White Ibis	2.0

Tomoka-3 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°22'26", Longitude 81°5'26"

Period of record: 7 sampling dates; October 13, 2000 to May 12, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	8	21	41
Long-term specific conductance (mmhos)	31	43	50

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 7 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	22	54	82
Long-term total nitrogen concentrations (µg/L)	210	437	600
Long-term total chlorophyll concentrations (µg/L)	2.0	5.6	10.0
Long-term Secchi depth (ft)	1.0	2.6	3.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-15	22	270	2.0	.
Feb-06	46	330	3.0	3.5
Mar-31	67	600	6.0	3.0
May-12	67	570	6.0	2.5
2001 Average	51	443	4.3	3.0

Tomoka (Volusia County)
Florida LAKEWATCH Aquatic Bird Summary

Period of record: 1 sampling date: February 6, 2001 to February 6, 2001

Surface area: Stretch of the river between the LAKEWATCH water stations sampled

Numbers reported below are the average numbers of each species seen using the sampling method of **Boat** for 1 sampling event in 2001.

<u>Common Name</u>	<u>Mean Count</u>
Brown Pelican	7.0
Double-Crested Cormorant	20.0
Great White Heron	1.0
Gulls	10.0
Hérons	1.0
Little Blue Heron	1.0
Mallard	5.0
Reddish Egret	1.0
Ring-billed Gull	35.0
Royal Tern	15.0
Snowy Egret	1.0
White Ibis	2.0

Tomoka-4 (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°22'27", Longitude 81°5'13"

Period of record: 7 sampling dates; October 13, 2000 to May 12, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	7	16	28
Long-term specific conductance (mmhos)	37	46	53

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 7 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	30	60	89
Long-term total nitrogen concentrations (µg/L)	210	471	700
Long-term total chlorophyll concentrations (µg/L)	3.0	8.0	15.0
Long-term Secchi depth (ft)	1.0	2.5	5.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-15	30	390	4.0	.
Feb-06	43	310	3.0	.
Mar-31	78	700	10.0	2.5
May-12	89	530	15.0	1.5
2001 Average	60	483	8.0	2.0

Tomoka (Volusia County)
Florida LAKEWATCH Aquatic Bird Summary

Period of record: 1 sampling date: February 6, 2001 to February 6, 2001

Surface area: Stretch of the river between the LAKEWATCH water stations sampled

Numbers reported below are the average numbers of each species seen using the sampling method of **Boat** for 1 sampling event in 2001.

<u>Common Name</u>	<u>Mean Count</u>
Brown Pelican	7.0
Double-Crested Cormorant	20.0
Great White Heron	1.0
Gulls	10.0
Hérons	1.0
Little Blue Heron	1.0
Mallard	5.0
Reddish Egret	1.0
Ring-billed Gull	35.0
Royal Tern	15.0
Snowy Egret	1.0
White Ibis	2.0

Tomoka-5 (Volusia County)

Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°22'2", Longitude 81°4'57"

Period of record: 7 sampling dates; October 13, 2000 to May 12, 2001

Geologic formation (Brooks 1981a):

The geology is dominated by undifferentiated sand, shell, clay, marl, and peat of the Holocene

Physiographic region (Brooks 1981b):

The station lies in the St Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip division of the Eastern Flatwoods District

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 4 sampling dates:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	7	16	26
Long-term specific conductance (mmhos)	37	46	52

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 7 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	27	63	99
Long-term total nitrogen concentrations (µg/L)	220	467	660
Long-term total chlorophyll concentrations (µg/L)	4.0	8.7	15.0
Long-term Secchi depth (ft)	1.5	2.8	5.0

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 1 station for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Jan-15	27	290	5.0	5.0
Feb-06	51	330	4.0	3.0
Mar-31	67	630	9.0	3.0
May-12	99	660	15.0	1.5
2001 Average	61	478	8.3	3.1

Tomoka (Volusia County)
Florida LAKEWATCH Aquatic Bird Summary

Period of record: 1 sampling date: February 6, 2001 to February 6, 2001

Surface area: Stretch of the river between the LAKEWATCH water stations sampled

Numbers reported below are the average numbers of each species seen using the sampling method of **Boat** for 1 sampling event in 2001.

<u>Common Name</u>	<u>Mean Count</u>
Brown Pelican	7.0
Double-Crested Cormorant	20.0
Great White Heron	1.0
Gulls	10.0
Hérons	1.0
Little Blue Heron	1.0
Mallard	5.0
Reddish Egret	1.0
Ring-billed Gull	35.0
Royal Tern	15.0
Snowy Egret	1.0
White Ibis	2.0

Upper Louise (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°20'52", Longitude 81°30'34"

Period of record: 3 sampling dates; October 18, 1990 to December 4, 1990

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 3 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	13	15	17
Long-term total nitrogen concentrations (µg/L)	653	676	703
Long-term total chlorophyll concentrations (µg/L)	3.0	5.2	8.3
Long-term Secchi depth (ft)	7.0	7.9	8.7

2001 Florida LAKEWATCH Data

No samples collected in 2001

Winnemissett (Volusia County) Florida LAKEWATCH Water Chemistry Summary

Location: Latitude 29°1'27", Longitude 81°15'0"

Period of record: 127 sampling dates; March 8, 1989 to October 22, 2001

Surface Area (LAKEWATCH 1997): 184 acres

Lake Region (Griffith et al. 1997): Crescent City/DeLand Ridges (75-11)

Geologic formation (Brooks 1981a):

The geology is dominated by coastal sand and shelly silty sand of the preglacial Pleistocene

Physiographic region (Brooks 1981b):

The lake lies in the St John's Offset division of the Central Lake District

Supplemental water chemistry data

Data reported are means from 6 sampling dates:

pH	6.1	Total alkalinity (mg/L as CaCO ₃)	3.9
Conductance (µS/cm @ 25 °C)	174	Color (Pt-Co units)	4
Chloride (mg/L)	17.5	Silicon (mg/L)	0.2
Sulfate (mg/L)	44.8	Calcium (mg/L)	11.6
Magnesium (mg/L)	11.7	Sodium (mg/L)	9.2
Potassium (mg/L)	6.1	Iron (mg/L)	0.0

Periodic water chemistry data

Numbers reported below are the minimum, average, and maximum value for the 1 sampling date:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term color concentrations (Pt-Co units)	4	4	4

Long-term Florida LAKEWATCH Data

Numbers reported below are the minimum, average and maximum value for the 127 months sampled:

	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
Long-term total phosphorus concentrations (µg/L)	1	5	10
Long-term total nitrogen concentrations (µg/L)	133	286	603
Long-term total chlorophyll concentrations (µg/L)	0.0	1.2	3.3
Long-term Secchi depth (ft)	5.8	15.0	23.5

2001 Florida LAKEWATCH Data

Numbers reported below are monthly averages calculated from 3 stations for total phosphorus (TP, µg/L), total nitrogen (TN, µg/L), chlorophyll (CHL, µg/L) and Secchi depth (SECCHI, ft) during 2001:

<u>Date</u>	<u>TP (µg/L)</u>	<u>TN (µg/L)</u>	<u>CHL (µg/L)</u>	<u>SECCHI (ft)</u>
Mar-27	6	340	0.3	21.0
Aug-19	6	327	2.0	.
Oct-22	7	260	1.0	22.5
2001 Average	6	309	1.1	21.8

Winnemissett (Volusia County)
Florida LAKEWATCH Aquatic Plant Summary

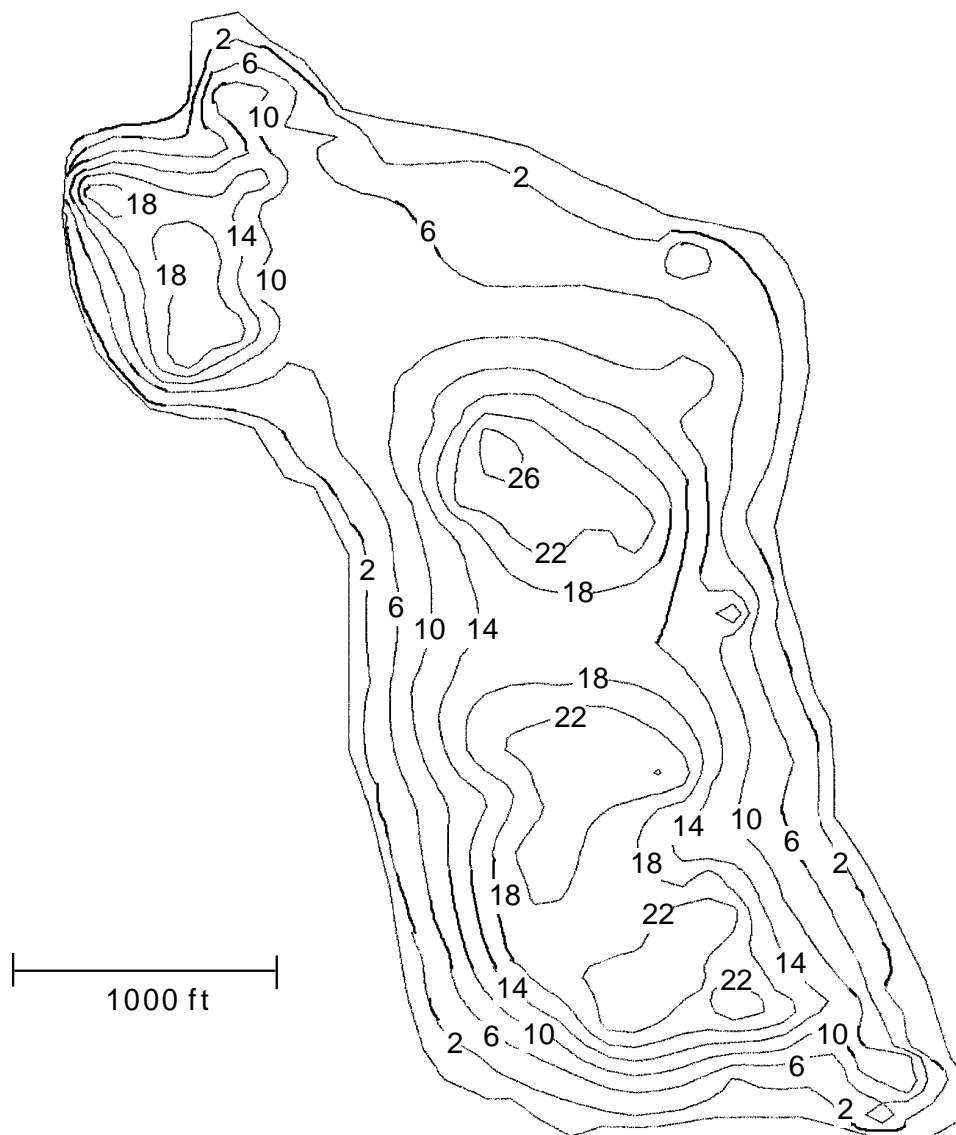
Aquatic plant data collected on July 31, 1997

Percent area covered with aquatic vegetation (PAC, %)	52.0
Percent of lake's volume filled with vegetation (PVI, %)	3.8
Average emergent plant biomass (kg wet wt/m ²)	0.5
Average floating-leaved plant biomass (kg wet wt/m ²)	1.1
Average submersed plant biomass (kg wet wt/m ²)	1.2
Average width of emergent and floating-leaved zone (ft)	25.5
Average lake depth (m)	4.0

Frequency that plant species occur in 10 evenly spaced transects around the lake.

<u>Common Name</u>	<u>Plant Species</u>	<u>Frequency (%)</u>
fragrant water-lily	<i>Nymphaea odorata</i>	100
lemon bacopa	<i>Bacopa caroliniana</i>	100
stonewort	<i>Nitella spp.</i>	80
St. John's wort	<i>Hypericum spp.</i>	80
banana-lily	<i>Nymphoides aquatica</i>	70
red ludwigia	<i>Ludwigia repens</i>	70
wax myrtle	<i>Myrica cerifera</i>	70
pipewort	<i>Eriocaulon spp.</i>	60
bog-moss	<i>Mayaca fluviatilis</i>	50
water primrose	<i>Ludwigia octovalvis</i>	50
maidencane	<i>Panicum hemitomon</i>	50
rush fuirena	<i>Fuirena scirpoidea</i>	40
red root	<i>Lachnanthes caroliniana</i>	40
pickerelweed	<i>Pontederia cordata</i>	30
baby-tears	<i>Micranthemum umbrosum</i>	30
cat-tail	<i>Typha spp.</i>	30
buttonbush	<i>Cephalanthus occidentalis</i>	30
willow	<i>Salix spp.</i>	30
torpedograss	<i>Panicum repens</i>	30
slender spikerush	<i>Eleocharis baldwinii</i>	20
water-pennywort	<i>Hydrocotyle umbellata</i>	20
yellow-eyed grass	<i>Xyris spp.</i>	20
spatterdock	<i>Nuphar luteum</i>	10
southern cutgrass	<i>Leersia hexandra</i>	10
bladderwort	<i>Utricularia foliosa</i>	10

**Winnemissett (Volusia County)
Florida LAKEWATCH Bathymetric Map**



Florida LAKEWATCH personnel created this map using differentially corrected global positioning equipment (GPS). Data were collected July 31, 1997. Map contours are in feet and were generated using kriging technique in Surfer® software package (Golden Software, Golden CO). The center of the lake is located at Latitude 29°1'27" and Longitude 81°15'0". On this date, the lake surface area was calculated at 184 acres (74 hectares). This is only an approximate bathymetric map and should not be used for navigation.