

Hydrologic Conditions

for the month of

November 2016

Prepared by the
Hydrologic Data Section
Data Collection Bureau



December 13, 2016

<http://www.watermatters.org>

ACKNOWLEDGMENTS

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Data Collection: Terry Burrell, Dave Dunnett, Don Everson, George Prine, Steve Saxon, James Ferrell, Jeff Taylor, Greg Johnston, Everett Eldridge and Robert Noland.

SCADA System: Mike Katherina.

QA/QC and Reporting: Margit Crowell, Steve DeSmith, Asmita Shukla, and Danielle Koushel.

Administrative Support/
Document Preparation: Karen Diez, Dianna Brass and Lora Caruso.

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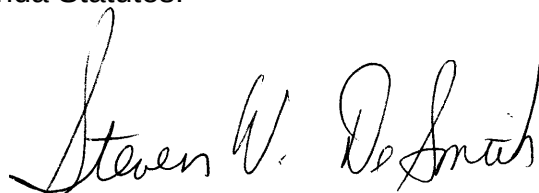
INTRODUCTION

The Hydrologic Conditions Report is generated monthly by the Hydrologic Data Section, Data Collection Bureau, of the Southwest Florida Water Management District. This report provides an end-of-month analytical summary of regional and temporal variations in the hydrologic conditions across the District's 16-county area for planning and regulatory purposes. In addition, it provides an excellent historical record for long-term local and regional hydrologic analysis.

The Hydrologic Data Section is responsible for the implementation and maintenance of a network of observation and monitoring stations used to track changes in various hydrologic parameters over time. Data collected are used by the regulatory, technical, and analytical sections of the District. Data recently collected and maintained by the section include: station and basin rainfall totals, stream and spring discharge measurements, and surface and ground water levels. Frequency of data collection ranges from hourly to monthly readings. All data collected are processed and analyzed, then uploaded into the Water Management Data Base for general access by the District. The Water Management Data Base is also periodically augmented from the United States Geological Survey's hydrologic data network.

The data presented in this report are monthly rainfall totals, streamflow, springflow, surface and ground water levels, reservoir levels and the Aquifer Resource Index. Associated maps of station locations are at the end of the report in the Appendices. Also reported herein are levels of public supply surface water reservoirs supplemented by various regional utilities. The data contained in this report was collected and analyzed in accordance with generally accepted procedures consistent with applicable scientific and technical standards of practice. The data presented are considered to be the best available at the time of publication and are subject to revision. Any questions about the significance, accuracy, or interpretation of these data should be referred to Granville Kinsman, Manager of the Hydrologic Data Section at (352) 796-7211 or (800) 423-1476, extension 4284.

The data evaluation, analyses and interpretation contained within this report have been prepared or approved by a certified Professional Geologist in accordance with Chapter 492, Florida Statutes.



12/08/2016

Registration #PG-1704



Americans with Disabilities Act (ADA)

The Southwest Florida Water Management District (District) does not discriminate on the basis of disability. This nondiscrimination policy involves every aspect of the District's functions, including access to and participation in the District's programs and activities. Anyone requiring reasonable accommodation as provided for in the Americans with Disabilities Act should contact the District's Human Resources Bureau Chief, 2379 Broad Street, Brooksville, Florida 34604-6899; telephone (352) 796-7211 or 1-800-423-1476 (FL only), ext. 4703; or email ADACoordinator@swfwmd.state.fl.us. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771(TDD) or 1(800)955-8770(Voice).

EXECUTIVE SUMMARY

Provisional Hydrologic Conditions as of December 07, 2016

Provisional rainfall totals are provided for the period of December 1, 2016 through December 6, 2016. The northern region has received an average of 0.41 inch, while the historic mean for the northern region for the month of December is 2.59 inches. The central region has received an average of 0.45 inch, while the historic mean for the central region for December is 2.33 inches. The southern region has received an average of 0.42 inch, while the historic mean for the southern region for December is 1.85 inches. District-wide, rainfall has averaged 0.43 inch, while the historic mean for the District for December is 2.25 inches.

Provisional lake level data indicate that during the first 7 days of December, regional water levels have decreased in the all regions of the District. Average lake levels in the Northern region decreased an average of 0.05 foot and were 0.55 foot below the base of the normal range. Average lake levels in the Tampa Bay region decreased 0.08 foot and were 0.87 foot above the base of the normal range. Lake levels in the Polk Uplands region decreased 0.04 foot and were 1.53 feet above the base of the normal range. The Lake Wales Ridge region posted an average decrease of 0.07 foot and were 0.56 foot above the base of the normal range.

As of December 7, 2016, provisional streamflow data indicates, based on regional index rivers, that average streamflow decreased in all three regions of the District, compared to last month's data. Normal streamflow is flow that falls on or between the 25th and 75th percentiles. The average streamflow for the Withlacoochee River near Holder in the northern region was below-normal at the 23rd percentile. The average streamflow for the Hillsborough River near Zephyrhills in the central region was within the normal range at the 45th percentile, while flow in the Peace River at Arcadia in the southern region was below-normal at the 21st percentile.

Provisional groundwater data, as of December 5, 2016, indicate that levels in the intermediate and Floridan aquifers decreased in all three regions of the District, compared to last month's data. Normal aquifer levels are levels that fall on or between the 25th and 75th percentiles. Aquifer levels for the northern region were within the normal range at the 43rd percentile. Aquifer levels in the central region were within the normal range at the 55th percentile, while levels in the southern region were within the normal range at the 29th percentile.

EXECUTIVE SUMMARY

Hydrologic Conditions for November 2016

In November, average rainfall totals were well below normal in all three regions of the District. November 2016 was the 2nd driest November on record for the northern and central regions, as well as District-wide, while it was the 3rd driest November on record for the southern region. The normal range for rainfall is defined by totals that fall on or between the 25th to 75th percentiles of the historical monthly accumulation for each region and where the 50th percentile represents the historical mean. The northern region received an average of 0.09 inch of rainfall, equivalent to the 1st percentile of the historical November record. The central region received an average of 0.05 inch of rainfall, equivalent to the 1st percentile, while the southern region received an average of 0.08 inch of rainfall, equivalent to the 2nd percentile of the historical November record. The District-wide rainfall average of 0.07 inch was equivalent to the 1st percentile of the historical November record.

During the 12-month period from December 1, 2015 through November 30, 2016, the average rainfall totals in the northern and central regions were classified as “normal,” while the southern region was classified as “wetter than normal.” The northern region received an average of 48.77 inches of rainfall, equivalent to the 29th percentile of the historical annual record. The central region received an average of 55.68 inches of rainfall, equivalent to the 69th percentile, while the southern region received an average of 58.27 inches of rainfall, equivalent to the 78th percentile. The District-wide rainfall average of 54.66 inches was equivalent to the 62nd percentile of the historical annual record.

Average lake levels in November were below the annual normal range in the northern region of the District, while levels were within the annual normal range in the Tampa Bay, Polk Uplands and Lake Wales Ridge regions. Normal lake levels are defined as levels that fall between the minimum low management level and the minimum flood level. Lake levels in the Northern region decreased by an average of 0.45 foot and were 0.50 foot below the base of the annual normal range. Lake levels in the Tampa Bay region decreased an average of 0.50 foot and were 0.95 foot above the base of the annual normal range. Lake levels in the Polk Uplands region decreased 0.40 foot and were 1.57 feet above the base of the annual normal range. Average lake levels in the Lake Wales Ridge region decreased by 0.47 foot and ended the month 0.63 foot above the base of the annual normal range.

Total streamflow in November, based on regional index streams, was within the normal range of historic monthly values in all three regions of the District. Normal streamflow is defined as the flow that falls on or between the 25th and 75th percentiles. Streamflow measured at the Withlacoochee River near Holder station in the northern region was in the 46th percentile. Streamflow in the Hillsborough River near Zephyrhills station in the central region was in the 52nd percentile, while total streamflow measured at the Peace River at Arcadia station in the southern region was in the 32nd percentile during November.

In November, groundwater data showed that levels in the intermediate and Floridan aquifers were within the normal range in all three regions of the District. The normal range is defined as the level that falls on or between the 25th and 75th percentiles. The groundwater level in the northern, central and southern regions were in the 43rd, 59th and 34th percentiles, respectively.

REGIONAL OVERVIEW OF HYDROLOGIC CONDITIONS

NOVEMBER 2016

Northern Region

In November, the northern region received an average of 0.09 inch of rainfall, equivalent to the 1st percentile of the historical November readings, which is considered "very dry." November 2016 was the 2nd driest November on record for the northern region of the District. Average lake levels decreased in the northern region and ended the month an average of 0.50 foot below the base of the annual normal range. Total streamflow measured in the Withlacoochee River near Holder station decreased and was in the 46th percentile. Regional groundwater levels indicated average surficial aquifer water levels decreased and were in the 44th percentile, while levels in the intermediate and Floridan aquifer decreased and were in the 43rd percentile.

Central Region

In November, the central region received an average of 0.05 inch of rainfall, equivalent to the 1st percentile of historical November readings, which is considered "very dry." November 2016 was the 2nd driest November on record for the central region of the District. Average lake levels decreased in the Tampa Bay and Polk Uplands regions, ending the month 0.95 foot and 1.57 feet, respectively, above the base of the annual normal range. Total streamflow measured at the Hillsborough River near Zephyrhills station decreased and was in the 52nd percentile. Regional groundwater levels indicated average surficial aquifer water levels decreased and were in the 51st percentile, while levels in the intermediate and Floridan aquifer decreased and were in the 59th percentile.

Southern Region

In November, the southern region received an average of 0.08 inch of rainfall, equivalent to the 2nd percentile of historical November readings, which is considered "very dry." November 2016 was the 3rd driest November on record for the southern region of the District. Average lake levels decreased in the Lake Wales Ridge region and ended the month 0.63 foot above the base of the annual normal range. Total streamflow measured at the Peace River at Arcadia station decreased and was in the 32nd percentile. Regional groundwater levels indicated average surficial aquifer water levels decreased and were in the 57th percentile, while levels in the intermediate and Floridan aquifer decreased and were in the 34th percentile.

RAINFALL

The rainfall data used for all tabulations in this report are provided to the District under contract with an external vendor. These data are created by enhancing contractor-developed NEXRAD radar rainfall imagery with hourly rainfall data collected from the District's network of real-time gauges. This process results in highly accurate cell-based rainfall data representative of conditions over the entire District, including those portions where rainfall data collection would otherwise be limited due to gaps in the gauging network.

As defined by the United States Geological Survey (USGS), a percentile is a value on a scale of one hundred that indicates the percent of a distribution that is equal to or below it. For example, a rainfall total equivalent to the 90th percentile is equal to or greater than 90 percent of the rainfall totals recorded for this month during all years that totals have been recorded.

Percentiles for rainfall were calculated from the historical record by region, and by specific interval. The "wet season" total is the sum of the rainfall from June through September. The "dry season" total is the sum of the rainfall from October through May. The annual total characterization was calculated from a dataset of moving 12-month rainfall sum for the same period (1915 through the most recent completed year). The moving 12-month rainfall sum was used for annual statistics because it provided a much larger dataset, and therefore a better estimate of the true percentiles. The historical 12-month cumulative average is updated monthly.

Characterization ranges were established for each region, and for the whole District, with breaks at the 10th (P10), the 25th (P25), the 75th (P75) and the 90th (P90) percentiles. The rainfall in inches for each percentile break, by rainfall interval and by region and the characterization ranges are summarized in the Appendix.

In November, rainfall totals were well below normal in all three regions of the District. November 2016 was the 2nd driest November on record for the northern and central regions, as well as District-wide, while it was the 3rd driest November on record for the southern region. The normal range for rainfall is defined by totals that fall on or between the 25th to 75th percentiles of the historical monthly average for each region and where the 50th percentile represents the historical mean. The northern region received an average of 0.09 inch of rainfall, equivalent to the 1st percentile of the historical November record. The central region received an average of 0.05 inch, equivalent to the 1st percentile, while the southern region received an average of 0.08 inch, equivalent to the 2nd percentile. District-wide, rainfall averaged 0.07 inch, which is equivalent to the 1st percentile of the historical November record.

During the 12-month period from December 1, 2015 through November 30, 2016, the average rainfall totals in the northern and central regions of the District were classified as "normal," while the southern region was classified as "wetter than normal." The northern region received an average of 48.77 inches of rainfall, equivalent to the 29th percentile of the historical record. The central region received an average of 55.68 inches of rainfall, equivalent to the 69th percentile. The southern region received an average of 58.27 inches of rainfall, equivalent to the 78th percentile. The District-wide rainfall average was 54.66 inches, which is equivalent to the 62nd percentile of the historical annual record.

Tampa Monthly Climate Summary for November 2016

According to the National Weather Service, the monthly average temperature (°F) for Tampa was 71.1 degrees, which was 2.0 degrees above normal. The highest temperature recorded during the month was 88.0 degrees, while the lowest temperature recorded during the month was 44.0 degrees. The November 2016 monthly average temperature of 71.1 degrees ranks as the 14th warmest November since records began in 1890. The warmest November had an average temperature of 76.3 degrees, which occurred in 1986.

Temperature and Precipitation Outlook

The Climate Prediction Center's (CPC) three-month weather forecast, as of November 17, 2016, indicates below-normal rainfall throughout the District during the composite 3-month period from December 2016 through February 2017. The temperature forecast for this same time-period indicates above-normal temperatures in all three regions of the District.

[Note: Due to the early publication date of December 13, 2016 for this report, the CPC's December 15, 2016 forecast report was unavailable].

For more information log on to the CPC's website at:

http://www.cpc.ncep.noaa.gov/products/OUTLOOKS_index.html

RELATIONSHIP OF NOVEMBER 2016 RAINFALL TO HISTORICAL RAINFALL AVERAGES

Regional Summary:

<i>Region</i>	<i>NOV 2016 Average Rainfall</i>	<i>Historical Average for NOV</i>	<i>Departure from Historical Average</i>	<i>Calendar Year 2016 Cumulative Rainfall JAN-NOV</i>	<i>Calendar Year Historical Cumulative Rainfall JAN-NOV</i>	<i>Departure from Historical Cumulative NOV 2016</i>	<i>Cumulative 12-month Rainfall DEC 2015- NOV 2016</i>	<i>Historical 12-month Cumulative Rainfall</i>	<i>Departure from Historical 12-month Cumulative</i>
Northern Counties	0.09	1.96	-1.87	47.80	50.94	-3.14	48.77	53.54	-4.77
Central Counties	0.05	1.84	-1.79	54.64	50.03	4.61	55.68	52.37	3.31
Southern Counties	0.08	1.77	-1.69	56.23	50.49	5.74	58.27	52.38	5.89
District All Counties	0.07	1.85	-1.78	53.29	50.44	2.85	54.66	52.69	1.97

Regional Counties Summary:

<i>NORTHERN COUNTIES</i>	<i>NOV 2016 Average Rainfall</i>	<i>Historical Average for NOV</i>	<i>Departure from Historical Average</i>	<i>Calendar Year 2016 Cumulative Rainfall JAN-NOV</i>	<i>Calendar Year Historical Cumulative Rainfall JAN-NOV</i>	<i>Departure from Historical Cumulative NOV 2016</i>	<i>Cumulative 12-month Rainfall DEC 2015- NOV 2016</i>	<i>Historical 12-month Cumulative Rainfall</i>	<i>Departure from Historical 12-month Cumulative</i>
Levy County	0.09	2.09	-2.00	50.14	50.89	-0.75	51.44	53.86	-2.42
Marion County	0.07	2.05	-1.98	45.72	51.45	-5.73	46.76	54.25	-7.49
Citrus County	0.11	1.92	-1.81	49.89	51.40	-1.51	50.89	54.03	-3.14
Sumter County	0.11	1.91	-1.80	43.29	49.43	-6.14	44.21	51.93	-7.72
Hernando County	0.06	1.96	-1.90	50.38	52.47	-2.09	51.04	55.01	-3.97
<i>CENTRAL COUNTIES</i>									
Pasco County	0.04	1.93	-1.89	52.67	51.63	1.04	53.26	54.05	-0.79
Pinellas County	0.02	1.86	-1.84	59.54	49.38	10.16	60.03	51.72	8.31
Hillsborough County	0.05	1.80	-1.75	55.61	50.38	5.23	56.36	52.60	3.76
Polk County	0.07	1.78	-1.71	54.06	49.94	4.12	55.61	51.99	3.62
<i>SOUTHERN COUNTIES</i>									
Manatee County	0.05	1.84	-1.79	55.71	51.48	4.23	57.50	53.45	4.05
Hardee County	0.12	1.70	-1.58	52.10	50.30	1.80	54.46	52.11	2.35
Highlands County	0.10	1.72	-1.62	57.65	50.40	7.25	59.63	52.02	7.61
Sarasota County	0.05	1.83	-1.78	57.46	50.71	6.75	59.72	52.63	7.09
DeSoto County	0.10	1.71	-1.61	54.78	50.07	4.71	56.44	51.83	4.61
Charlotte County	0.09	1.69	-1.60	62.37	50.71	11.66	64.72	52.46	12.26

NOVEMBER 2016 RAINFALL CHARACTERIZATION

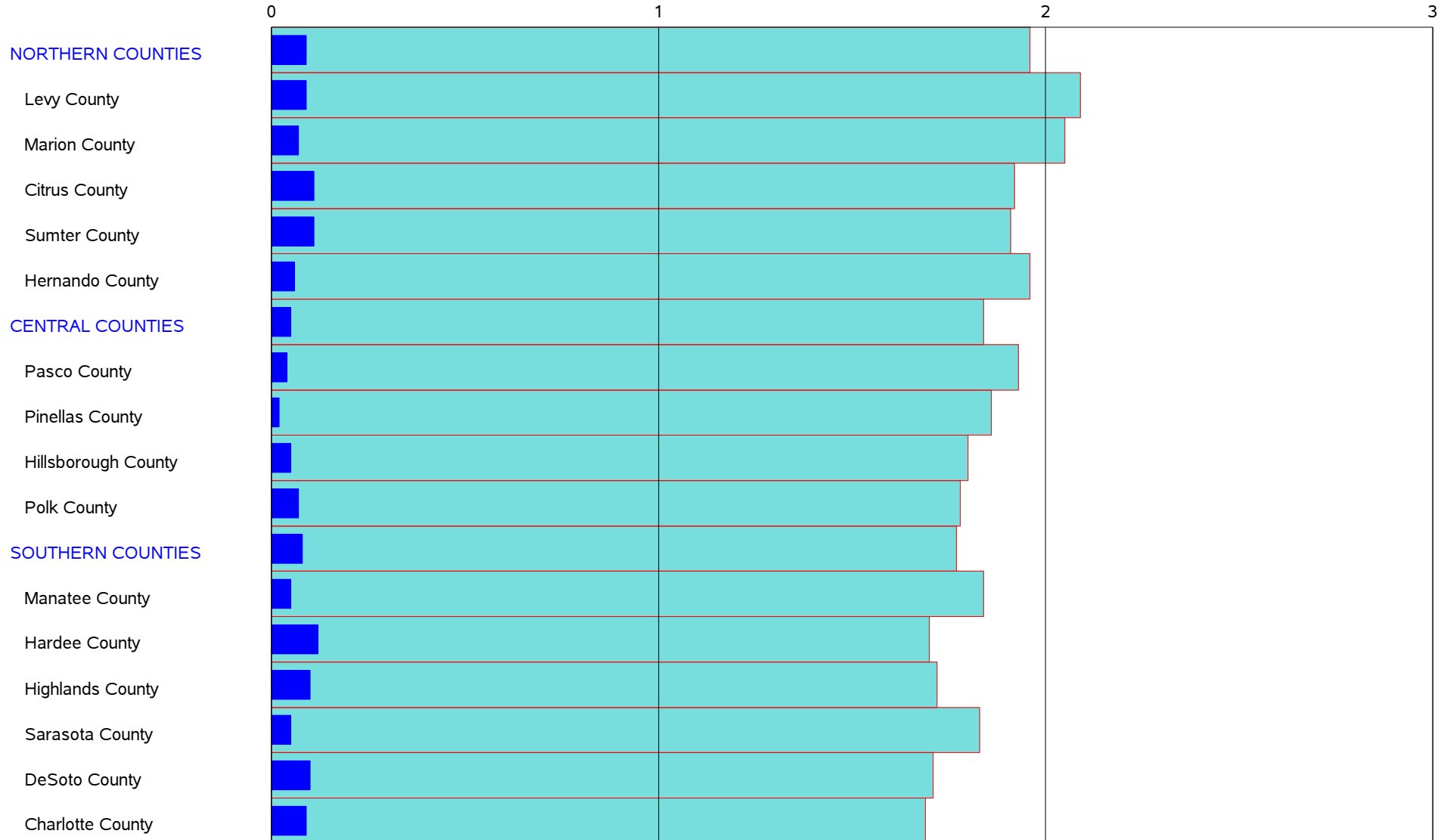
Regional Characterization:

<i>Region</i>	<i>NOV 2016 Average Rainfall</i>	<i>Historical NOV Percentile</i>	<i>NOV Rainfall Characterization</i>	<i>Cumulative 12-month Rainfall DEC 2015- NOV 2016</i>	<i>Historical 12-month Cumulative Percentile</i>	<i>12-month Cumulative Rainfall Characterization</i>
Northern Counties	0.09	1	Very dry	48.77	29	Normal
Central Counties	0.05	1	Very dry	55.68	69	Normal
Southern Counties	0.08	2	Very dry	58.27	78	Wetter than normal
District Counties	0.07	1	Very dry	54.66	62	Normal

Regional Counties Characterization:

<i>NORTHERN COUNTIES</i>	<i>NOV 2016 Average Rainfall</i>	<i>Historical NOV Percentile</i>	<i>NOV Rainfall Characterization</i>	<i>Cumulative 12-month Rainfall DEC 2015- NOV 2016</i>	<i>Historical 12-month Cumulative Percentile</i>	<i>12-month Cumulative Rainfall Characterization</i>
Levy County	0.09	1	Very dry	51.44	43	Normal
Marion County	0.07	1	Very dry	46.76	22	Drier than normal
Citrus County	0.11	4	Very dry	50.89	37	Normal
Sumter County	0.11	2	Very dry	44.21	19	Drier than normal
Hernando County	0.06	3	Very dry	51.04	35	Normal
<i>CENTRAL COUNTIES</i>						
Pasco County	0.04	2	Very dry	53.26	49	Normal
Pinellas County	0.02	1	Very dry	60.03	82	Wetter than normal
Hillsborough County	0.05	2	Very dry	56.36	71	Normal
Polk County	0.07	1	Very dry	55.61	68	Normal
<i>SOUTHERN COUNTIES</i>						
Manatee County	0.05	3	Very dry	57.50	70	Normal
Hardee County	0.12	2	Very dry	54.46	63	Normal
Highlands County	0.10	1	Very dry	59.63	83	Wetter than normal
Sarasota County	0.05	2	Very dry	59.72	79	Wetter than normal
DeSoto County	0.10	3	Very dry	56.44	69	Normal
Charlotte County	0.09	2	Very dry	64.72	90	Wetter than normal

NOVEMBER 2016 RAINFALL HISTORIC AVERAGE VS HISTORICAL NOVEMBER AVERAGE (INCHES)

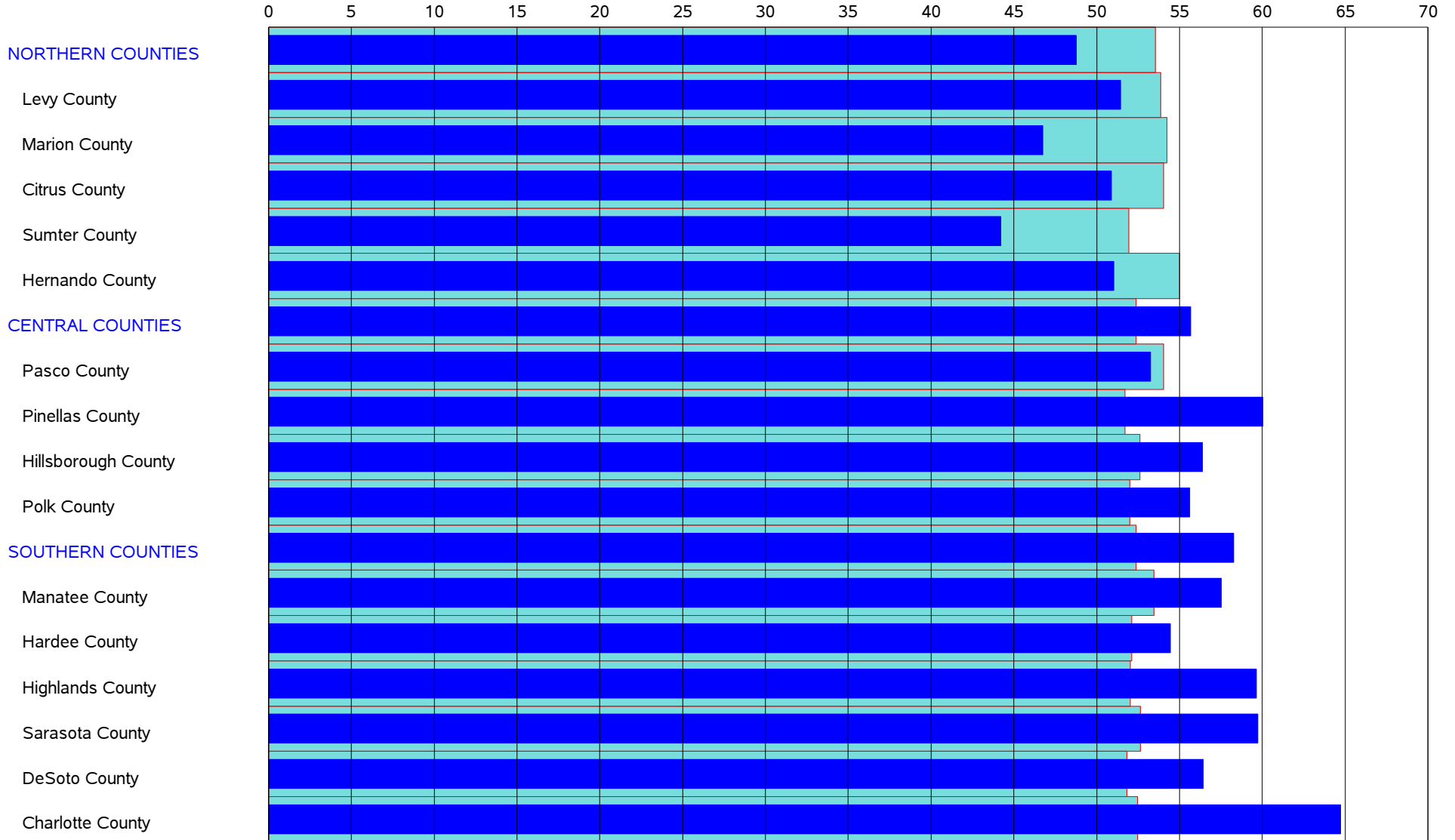


November 2016 Rainfall



Historical November Average Rainfall

NOVEMBER 2016 12-MONTH CUMULATIVE RAINFALL VS AVERAGE ANNUAL CUMULATIVE (INCHES)



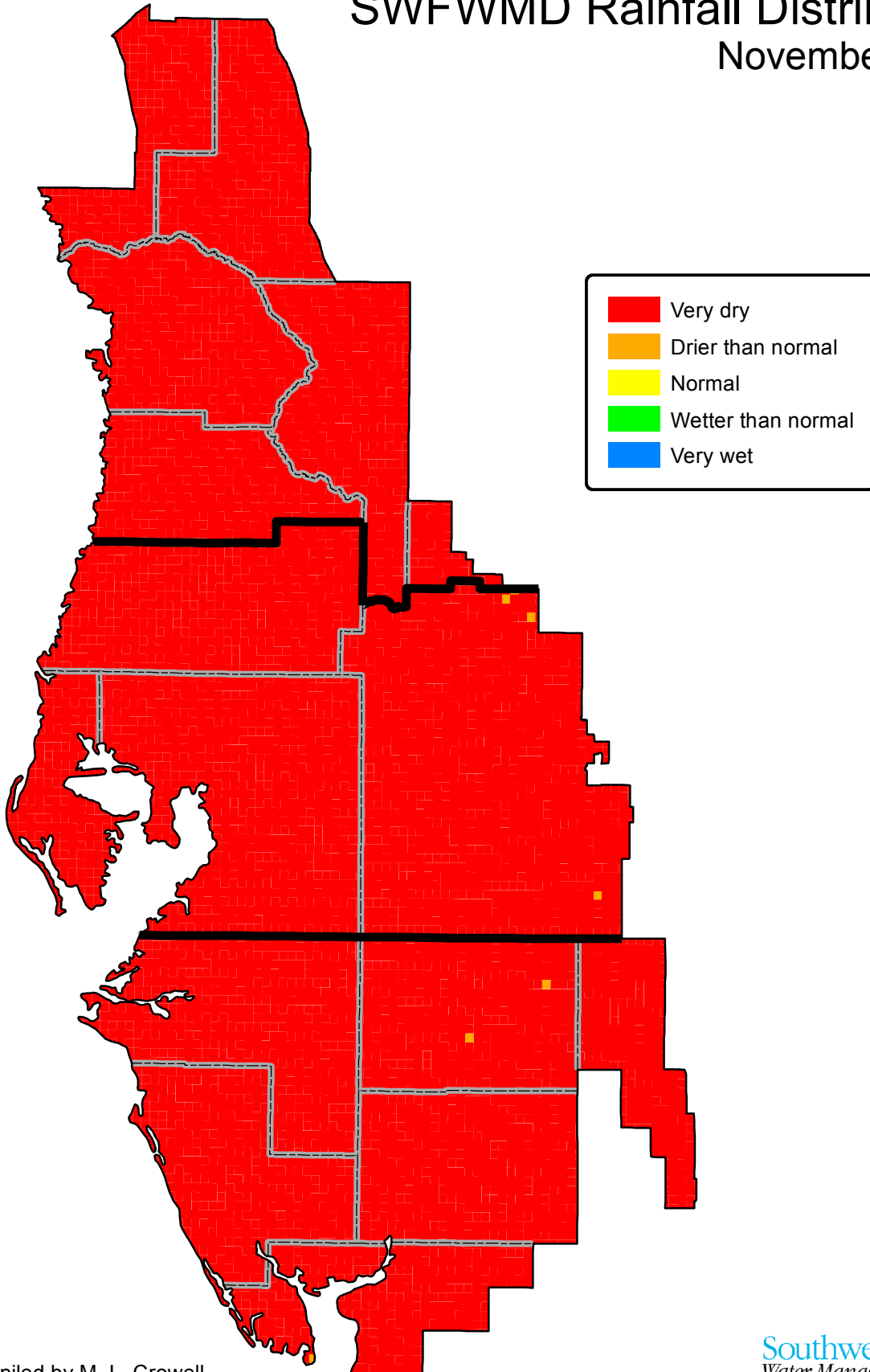
12-month Cumulative Rainfall



Average 12-month Cumulative

SWFWMD Rainfall Distribution

November 2016

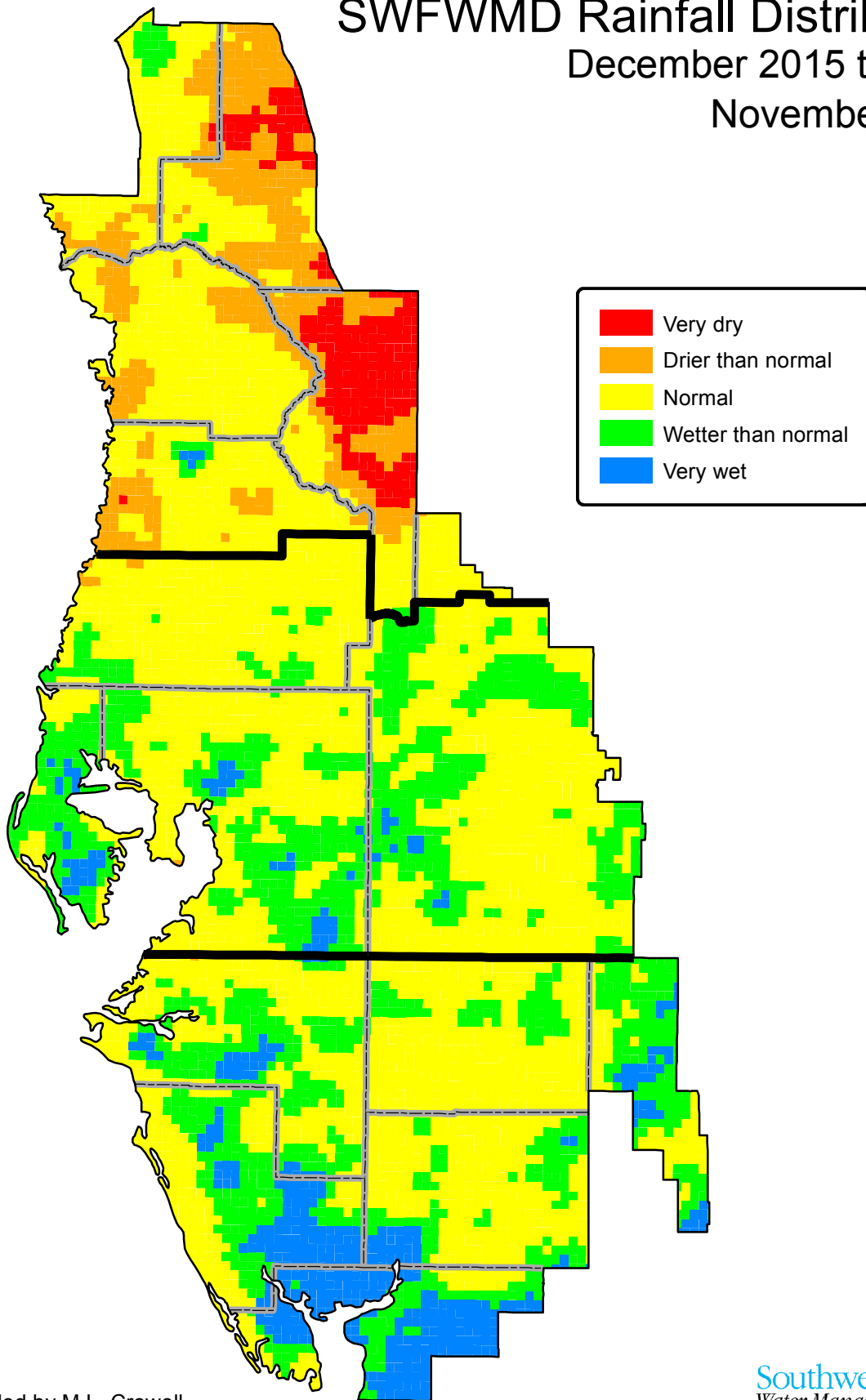


Compiled by M. L. Crowell
Data source: Vieux, Inc.

Southwest Florida
Water Management District

SWFWMD Rainfall Distribution

December 2015 through
November 2016



Compiled by M.L. Crowell
Data source: Vieux, Inc.

Southwest Florida
Water Management District

SURFACE WATER

Lakes

Across the District, 76 lakes have been selected as excellent indicators of current surface water conditions (see index map in Appendix). Water levels of these lakes are read monthly. In general, these lakes are concentrated in four regions, the northern region of Citrus, Hernando, and Sumter Counties, the Tampa Bay region of Hillsborough and Pasco Counties, the Polk Uplands region of northern Polk County, and the Lake Wales Ridge region of Polk and Highlands Counties. In this report, current monthly lake levels are tabulated and compared with previous records as well as District-established management levels. In addition, lake-level data representative of the four regions are presented in hydrographs showing a 15-year history of water levels, as a general indicator of surface-water conditions in that region.

The District's Governing Board (the Board) has established lake management levels for approximately 410 lakes within District boundaries, which are specified in Chapter 40D-8, Florida Administrative Code (F.A.C.). Management levels help protect the water resources of the District and the ecology of the lake or water-body for which it was established. In this report, the following three management levels are used to indicate normal and low lake levels: the Minimum Flood (MF) level, the Minimum Low Management (MLM) level, and the Minimum Extreme Low Management (MELM) level. In general, the MF level corresponds to the normal high level, the MLM to the normal low level, and the MELM to a drought-year low. These levels were derived from various sources, including technical publications, topographic maps, Water Resource Data Reports of the USGS, and other studies. Field investigations are also used to determine past surface levels from water marks, wetland vegetation, dry land vegetation, and to establish the elevation of septic tanks, docks, sea walls, roads and floor slabs.

During a normal year, each of the indicator lakes should reach both the designated normal high (MF) and the normal low (MLM) levels. In addition, it is generally beneficial for lakes to reach the adopted drought year low (MELM) level every four to six years for a short period of time for the biological health of the lake. In this report, hydrographs of representative lakes compare current and recent water levels against “**normal ranges**” defined by the adopted MF and MLM levels.

Of the 76 lakes presented in this report, 17 have water-control structures. These structures are used for water conservation and do not generally influence the water levels with regard to meteorologically wet or dry conditions. During periods of extreme high water, the structures may be operated to minimize flooding.

During November, 74 of the 76 lakes monitored for this report recorded water level decreases, one recorded an increase, compared to last month. Data was unavailable for Lake Alice in the Tampa Bay region. Water levels decreased in the Northern, Tampa Bay, Polk Uplands, and Lake Wales Ridge regions by 0.45, 0.50, 0.40 and 0.47 foot, respectively. District-wide, average water levels decreased by 0.46 foot, compared to last month.

In November, 63 of the 76 lakes monitored for this report recorded water level decreases, 11 recorded increases, while one was unchanged, compared to last year's levels. Data was unavailable for Lake Alice in the Tampa Bay region. In the Northern, Tampa Bay and Polk Uplands regions, average lake levels were lower by 0.59, 0.37 and 0.06 foot, respectively, while levels were higher in the Lake Wales Ridge region by 0.34 foot. District-wide, average lake levels were lower by 0.25 foot, compared to last year's levels.

Water levels in 58 of the 76 lakes were above the base of the annual normal range. Data was unavailable for Lake Alice in the Tampa Bay region. Lake levels in the Northern region averaged 0.50 foot below the base of the annual normal range, while levels in the Tampa Bay, Polk Uplands and Lake Wales Ridge regions averaged 0.95 foot, 1.57 feet and 0.63 foot, respectively, above the base of the normal range. District-wide, lake levels averaged 0.78 foot above the base of the annual normal range. Water levels in 68 of the 76 lakes were above the drought-year levels.

SUMMARY OF LAKE ELEVATIONS OF REGIONAL LAKES (feet)

NORTHERN LAKES															
Lake Name	County	Beginning of Record	OCT 2016	NOV 2016	NOV 2015	Change from OCT 2016	Change from NOV 2015	Diff from MELM	(MELM) Drought Year Low	(MLM) Normal Year Low	(MF) Normal Year High	Period of Record Low	Record Low Date	Period of Record High	Record High Date
Big Fish Lake	Pasco	1980	74.34	73.73	74.96	-0.61	-1.23	1.98	71.75	73.05	76.05	65.45	JUN 1997	77.40	SEP 2004
Crews Lake	Pasco	1986	52.60	51.80	52.25	-0.80	-0.45	1.80	50.00	52.00	55.00	42.63	APR 2001	54.92	MAR 1998
Hancock Lake	Pasco	1978	101.68	101.09	101.38	-0.59	-0.29	-0.91	102.00	104.00	106.50	90.00	MAR 2009	108.90	MAR 1998
Hunters Lake	Hernando	1965	17.85	17.37	19.13	-0.48	-1.76	1.37	16.00	17.50	20.50	11.70	JUN 2001	20.50	MAR 1970
Lake Iola	Pasco	1965	140.57	140.11	139.73	-0.46	0.38	-2.39	142.50	145.00	147.50	128.96	MAY 2012	148.70	JAN 1989
Lake Lindsey	Hernando	1982	64.74	64.30	64.60	-0.44	-0.30	-0.20	64.50	66.00	69.00	59.27	MAY 2012	69.36	MAR 1998
Little Lake (Consu	Citrus	1985	40.06	39.88	40.78	-0.18	-0.90	2.63	37.25	39.00	41.50	31.10	MAY 2001	42.84	SEP 2004
Lake Miona	Sumter	1978	50.91	50.51	52.45	-0.40	-1.94	-0.49	51.00	53.00	55.00	47.88	AUG 1992	56.60	OCT 1982
Moon Lake	Pasco	1990	39.79	39.32	39.74	-0.47	-0.42	3.82	35.50	37.50	40.50	32.98	APR 2009	41.26	SEP 2004
Lake Panasoffkee	Sumter	1955	38.62	38.42	39.62	-0.20	-1.20	-0.08	38.50	39.50	42.50	36.92	JUN 2007	44.28	APR 1960
Lake Pasadena	Pasco	1984	92.45	92.03	91.25	-0.42	0.78	2.03	90.00	91.50	94.50	81.56	MAY 2001	94.86	OCT 2004
Spring Lake	Hernando	1965	181.15	180.67	180.95	-0.48	-0.28	2.42	178.25	181.25	184.25	174.85	JUN 1965	183.57	OCT 1984
Floral City Pool	Citrus	1957	40.88	40.38	41.02	-0.50	-0.64	2.13	38.25	40.25	42.50	30.35	JUN 2001	44.22	MAR 1960
Inverness Pool	Citrus	1958	39.75	39.32	39.68	-0.43	-0.36	3.07	36.25	38.25	40.50	31.46	MAY 2001	42.94	APR 1960
Hernando Pool	Citrus	1958	38.49	38.17	38.35	-0.32	-0.18	3.42	34.75	36.75	39.00	31.09	JUL 2001	41.74	APR 1960

TAMPA BAY LAKES															
Lake Name	County	Beginning of Record	OCT 2016	NOV 2016	NOV 2015	Change from OCT 2016	Change from NOV 2015	Diff from MELM	(MELM) Drought Year Low	(MLM) Normal Year Low	(MF) Normal Year High	Period of Record Low	Record Low Date	Period of Record High	Record High Date
Lake Alice	Hillsborough	1971	41.10	M	40.86	M	M	M	37.50	40.25	42.25	33.24	MAY 2002	42.42	SEP 2004
Lake Ann-Parker	Pasco	1969	47.37	46.97	47.28	-0.40	-0.31	1.97	45.00	45.75	48.75	43.28	JUN 2002	49.29	SEP 1979
Bay Lake	Hillsborough	1982	45.45	45.02	45.25	-0.43	-0.23	2.52	42.50	44.00	46.75	41.86	APR 1985	46.46	DEC 1997
Lake Brant	Hillsborough	1971	58.05	57.50	57.89	-0.55	-0.39	3.00	54.50	56.50	58.75	51.65	JUN 1994	60.04	AUG 1979
Brooker Lake	Hillsborough	1977	62.68	62.27	62.54	-0.41	-0.27	3.27	59.00	61.00	64.25	56.49	MAY 2002	64.08	DEC 1997
Calm Lake	Hillsborough	1965	50.30	49.84	50.01	-0.46	-0.17	4.84	45.00	47.50	50.50	41.88	JUN 2002	51.04	JUL 2015
Camp Lake	Pasco	1968	62.37	61.72	62.65	-0.65	-0.93	2.72	59.00	61.75	64.00	50.82	MAY 2002	64.05	JUL 2015
Carlton Lake	Hillsborough	1976	93.93	93.19	93.48	-0.74	-0.29	5.19	88.00	90.50	93.50	86.82	MAY 2001	94.60	FEB 1998
Lake Carroll	Hillsborough	1985	36.45	35.99	36.15	-0.46	-0.16	3.49	32.50	34.50	37.00	30.87	MAY 2002	38.06	DEC 1997
Church Lake	Hillsborough	1931	35.37	35.01	35.30	-0.36	-0.29	3.51	31.50	34.00	36.25	27.94	MAY 2002	38.60	FEB 1936
Lake Cooper	Hillsborough	1946	59.86	59.42	59.83	-0.44	-0.41	2.42	57.00	59.75	61.75	55.60	JUN 2001	62.54	SEP 1947
Crescent Lake	Hillsborough	1981	42.08	41.76	42.13	-0.32	-0.37	3.26	38.50	40.00	42.50	35.34	JUN 2001	42.63	JUL 2015
Deer Lake	Hillsborough	1977	66.41	65.80	66.30	-0.61	-0.50	3.30	62.50	64.50	67.25	60.72	MAY 2002	67.42	DEC 1997
Egypt Lake	Hillsborough	1978	36.42	35.97	36.18	-0.45	-0.21	3.47	32.50	35.00	37.50	33.06	MAY 2000	38.15	SEP 1985
Gornto Lake	Hillsborough	1979	37.57	36.82	37.80	-0.75	-0.98	2.82	34.00	36.00	38.50	29.86	MAR 1979	39.48	FEB 1998
Lake Harvey	Hillsborough	1970	61.17	60.57	60.99	-0.60	-0.42	2.57	58.00	60.25	62.50	53.94	MAY 2002	63.90	DEC 1997
Lake Hiawatha	Hillsborough	1981	49.99	49.55	49.63	-0.44	-0.08	4.55	45.00	48.00	50.50	46.14	JUN 2000	51.12	APR 2010
Horse Lake	Hillsborough	1930	46.79	46.24	46.60	-0.55	-0.36	4.24	42.00	44.00	46.50	36.33	JUN 2002	50.00	AUG 1959
Lake Keene	Hillsborough	1948	62.29	61.87	62.31	-0.42	-0.44	2.87	59.00	60.50	63.00	56.92	MAY 1994	63.30	SEP 1953
Keystone Lake	Hillsborough	1984	41.55	41.13	41.51	-0.42	-0.38	2.13	39.00	39.75	42.00	37.89	JUN 1994	43.64	AUG 2015
King Lake	Pasco	1983	102.62	102.14	102.66	-0.48	-0.52	2.14	100.00	102.50	105.25	94.20	APR 2009	104.80	MAR 1987
Lake Leclare	Hillsborough	1977	51.63	51.09	51.19	-0.54	-0.10	4.09	47.00	49.50	52.00	44.95	JUN 2001	52.99	JUL 2015
Lake Linda	Pasco	1969	65.63	65.00	65.47	-0.63	-0.47	3.00	62.00	64.00	66.75	60.07	MAY 2001	67.13	AUG 1979
Little Lake	Hillsborough	1931	45.37	45.04	45.19	-0.33	-0.15	3.04	42.00	43.50	46.50	38.06	JUN 1994	48.65	AUG 1960
Long Pond	Hillsborough	1978	45.78	45.29	45.93	-0.49	-0.64	3.29	42.00	44.00	46.50	36.33	MAY 1979	48.27	SEP 1998
Mud (Walden) Lake	Hillsborough	1978	112.84	112.75	112.86	-0.09	-0.11	2.25	110.50	112.50	115.00	111.68	MAY 2012	114.42	MAR 1978
Lake Padgett	Pasco	1965	69.40	68.84	69.10	-0.56	-0.26	1.34	67.50	69.00	71.25	66.27	JUN 2001	71.90	SEP 1988
Platt Lake	Hillsborough	1946	49.50	48.92	49.32	-0.58	-0.40	2.92	46.00	47.75	50.50	42.53	JUN 2001	51.88	SEP 1979
Rainbow Lake	Hillsborough	1971	39.57	39.08	39.36	-0.49	-0.28	4.08	35.00	37.50	40.50	29.82	JUN 2002	40.95	JUL 2015
Lake Stemper	Hillsborough	1946	60.72	60.37	60.63	-0.35	-0.26	2.37	58.00	59.50	62.00	53.36	JUN 2001	62.30	MAR 1960
Lake Thomas	Hillsborough	1971	62.85	62.19	62.77	-0.66	-0.58	2.94	59.25	61.25	63.50	56.48	JUN 2002	64.48	SEP 1979
Turkey Ford Lake	Hillsborough	1970	50.67	49.96	50.54	-0.71	-0.58	-0.04	50.00	51.50	54.00	48.07	JUN 1985	55.28	SEP 1988
Lake Wimauma	Hillsborough	1985	82.52	81.90	82.30	-0.62	-0.40	0.90	81.00	83.00	86.75	70.12	MAY 2001	84.38	MAR 1998

NOTE: M='no data' or 'not determined'

All elevations are referenced to NGVD 1929 datum. Report compiled by Patrick Casey

SUMMARY OF LAKE ELEVATIONS OF REGIONAL LAKES (feet)

POLK UPLANDS LAKES															
Lake Name	County	Beginning of Record	OCT 2016	NOV 2016	NOV 2015	Change from OCT 2016	Change from NOV 2015	Diff from MELM	(MELM) Drought Year Low	(MLM) Normal Year Low	(MF) Normal Year High	Period of Record Low	Record Low Date	Period of Record High	Record High Date
Lake Alfred	Polk	1961	130.63	130.22	129.95	-0.41	0.27	3.97	126.25	128.25	130.75	122.40	MAY 1977	132.76	MAR 1998
Lake Ariana	Polk	1945	136.70	136.38	136.70	-0.32	-0.32	3.88	132.50	134.50	137.00	131.28	MAY 1976	137.90	AUG 1946
Lake Arietta	Polk	1970	141.86	141.49	142.28	-0.37	-0.79	3.49	138.00	141.00	144.00	136.50	MAY 1977	144.12	SEP 2004
Blue Lake South	Polk	1986	116.18	115.60	115.30	-0.58	0.30	3.10	112.50	114.00	117.00	103.38	FEB 1991	119.19	DEC 2005
Lake Bonny	Polk	1954	130.95	130.35	130.35	-0.60	0.00	4.35	126.00	128.00	130.50	122.34	MAY 2009	133.08	SEP 2004
Lake Buffum	Polk	1972	131.72	131.20	131.30	-0.52	-0.10	4.45	126.75	129.25	132.25	123.90	JUN 1991	133.00	JUN 2005
Clearwater Lake	Polk	1979	144.10	143.78	143.96	-0.32	-0.18	4.78	139.00	141.00	143.50	137.93	MAY 2001	146.06	AUG 1984
Lake Conine	Polk	1989	128.55	128.28	128.51	-0.27	-0.23	3.78	124.50	126.50	128.75	123.83	NOV 2009	129.95	SEP 2004
Eagle Lake	Polk	1965	129.37	128.96	129.43	-0.41	-0.47	2.46	126.50	128.50	130.75	118.76	MAY 1976	131.50	SEP 1996
Lake Fannie	Polk	1967	125.37	124.94	125.46	-0.43	-0.52	4.94	120.00	123.50	125.75	118.67	MAY 1977	127.51	SEP 2004
Lake Garfield	Polk	1969	101.50	101.09	101.55	-0.41	-0.46	1.09	100.00	101.00	104.75	97.38	JUN 2001	105.91	SEP 1979
Lake Hamilton	Polk	1945	120.96	119.98	120.80	-0.98	-0.82	2.73	117.25	119.00	121.50	116.61	JUN 2001	124.34	OCT 1948
Lake Helene	Polk	1961	144.19	143.89	141.73	-0.30	2.16	4.89	139.00	141.00	144.00	134.06	JUN 2008	146.48	MAR 1998
Lake Howard	Polk	1987	131.62	131.20	131.60	-0.42	-0.40	4.20	127.00	129.50	132.00	127.69	MAY 2001	133.08	SEP 2004
Lake Juliana	Polk	1961	133.25	132.68	132.60	-0.57	0.08	5.18	127.50	130.00	132.50	126.20	MAY 1976	134.10	MAR 1998
Lake Mcleod	Polk	1965	130.19	129.66	128.26	-0.53	1.40	1.66	128.00	129.50	132.00	115.11	MAY 1976	131.98	SEP 1998
Lake Otis	Polk	1954	126.42	126.90	127.33	0.48	-0.43	3.90	123.00	125.00	128.00	119.58	MAY 1976	129.12	SEP 1960
Lake Ruby	Polk	1971	124.98	124.61	124.89	-0.37	-0.28	3.61	121.00	123.00	125.25	117.41	MAY 1976	125.98	SEP 2004
Lake Gibson	Polk	1969	142.88	142.62	143.01	-0.26	-0.39	1.12	141.50	141.50	143.50	140.21	MAY 2009	145.40	SEP 1988

LK WALES RIDGE LAKES															
Lake Name	County	Beginning of Record	OCT 2016	NOV 2016	NOV 2015	Change from OCT 2016	Change from NOV 2015	Diff from MELM	(MELM) Drought Year Low	(MLM) Normal Year Low	(MF) Normal Year High	Period of Record Low	Record Low Date	Period of Record High	Record High Date
Lake Annie	Polk	1970	115.80	115.52	113.82	-0.28	1.70	1.52	114.00	116.00	119.00	108.36	JUN 1990	117.56	OCT 2005
Lake Clay	Highlands	1983	77.93	77.68	77.84	-0.25	-0.16	2.68	75.00	76.00	78.75	74.34	MAY 2001	78.82	JUN 2013
Crooked Lake	Polk	1945	118.70	118.23	118.10	-0.47	0.13	1.23	117.00	118.50	122.00	106.10	MAY 1991	123.98	OCT 1948
Lake Jackson	Highlands	1945	102.65	102.27	102.48	-0.38	-0.21	4.27	98.00	100.00	103.00	96.47	JUN 2008	103.76	SEP 1947
Lake Letta	Highlands	1951	99.63	98.97	99.45	-0.66	-0.48	3.97	95.00	97.00	100.00	90.27	JUN 2008	101.38	OCT 1953
Lake Lotela	Highlands	1950	107.61	106.96	107.33	-0.65	-0.37	2.96	104.00	105.00	108.50	96.63	JUN 2008	109.38	JUL 1954
Lake Placid	Highlands	1984	93.40	92.90	93.33	-0.50	-0.43	2.90	90.00	91.50	94.50	88.08	JUN 2008	94.24	SEP 2003
Starr Lake	Polk	1983	106.80	106.46	105.38	-0.34	1.08	-1.54	108.00	110.00	113.00	96.23	JUL 2001	109.80	DEC 2005
Trout Lake	Highlands	1981	99.36	98.68	96.92	-0.68	1.76	3.68	95.00	98.00	101.00	87.15	MAY 2001	99.89	SEP 2016

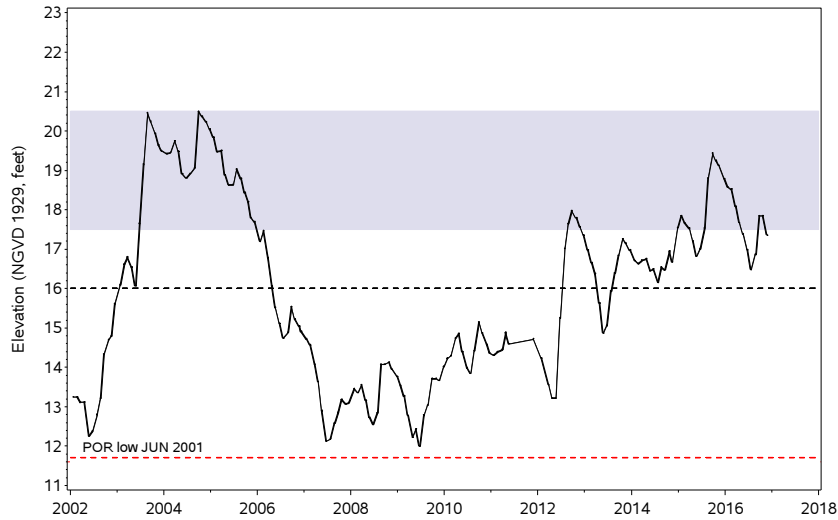
NOTE: M='no data' or 'not determined'

All elevations are referenced to NGVD 1929 datum. Report compiled by Patrick Casey

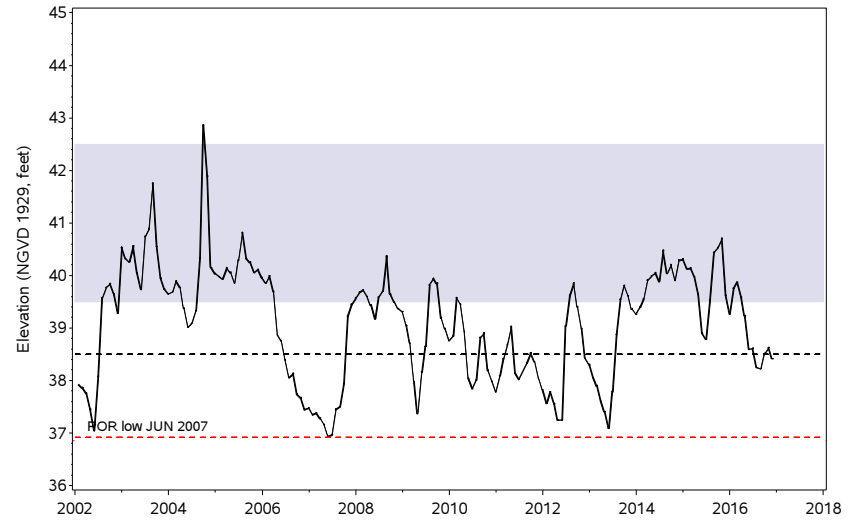
HYDROGRAPHS OF REGIONAL LAKES

15-yr Period of Record

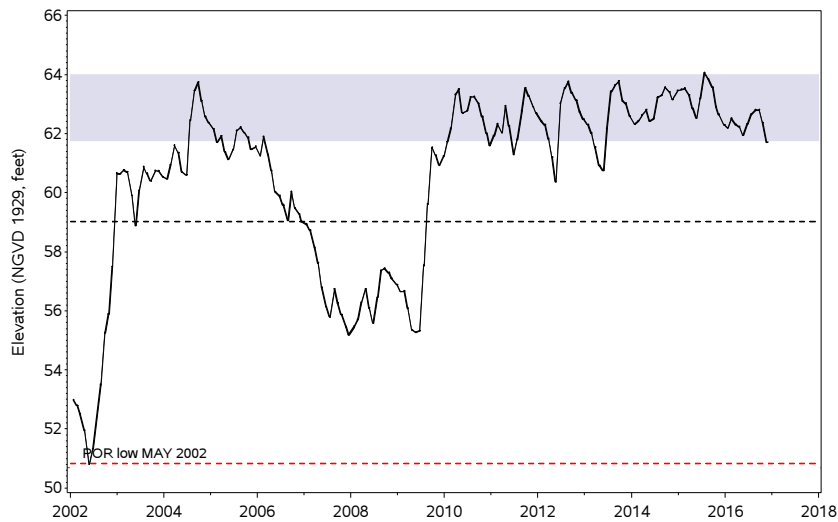
Hunters Lake
Northern Lakes



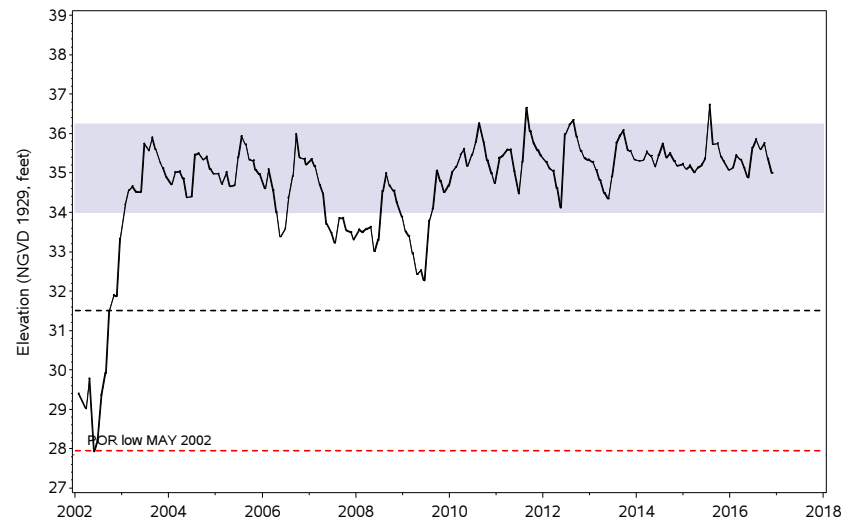
Lake Panasoffkee
Northern Lakes



Camp Lake
Tampa Bay Lakes



Church Lake
Tampa Bay Lakes

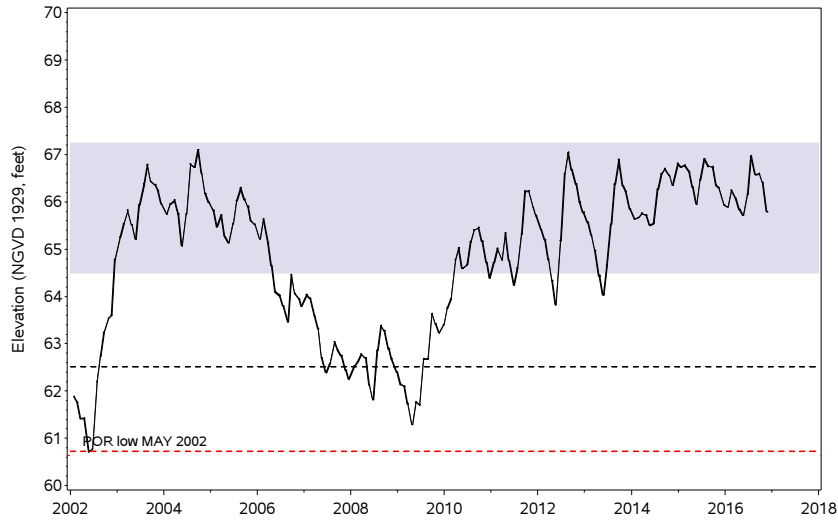


— Monthly Mean Elevation - - - Drought Year Low Normal Range

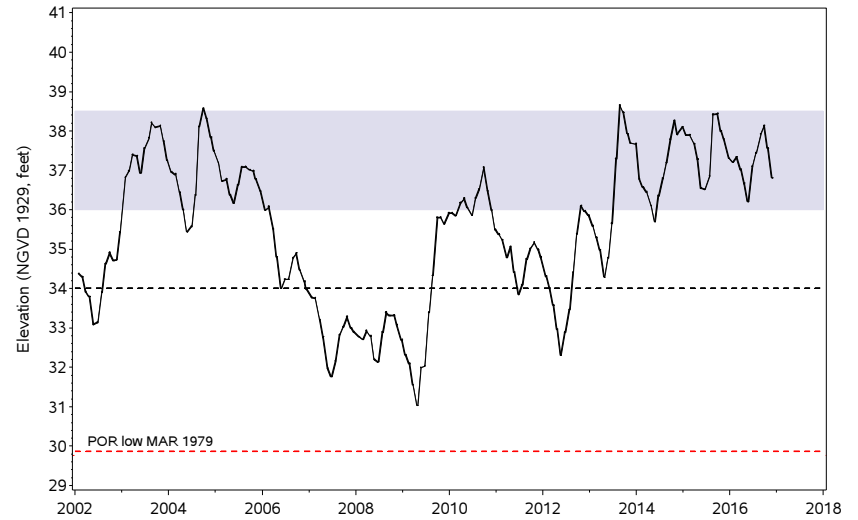
HYDROGRAPHS OF REGIONAL LAKES

15-yr Period of Record

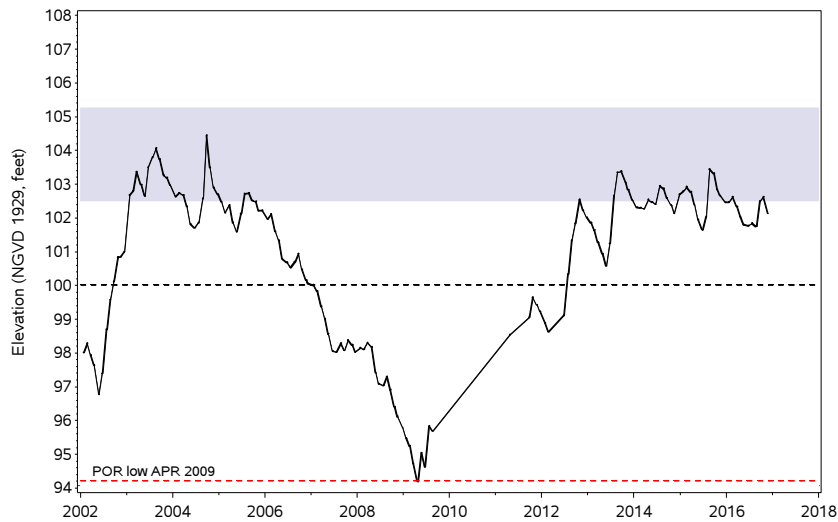
Deer Lake
Tampa Bay Lakes



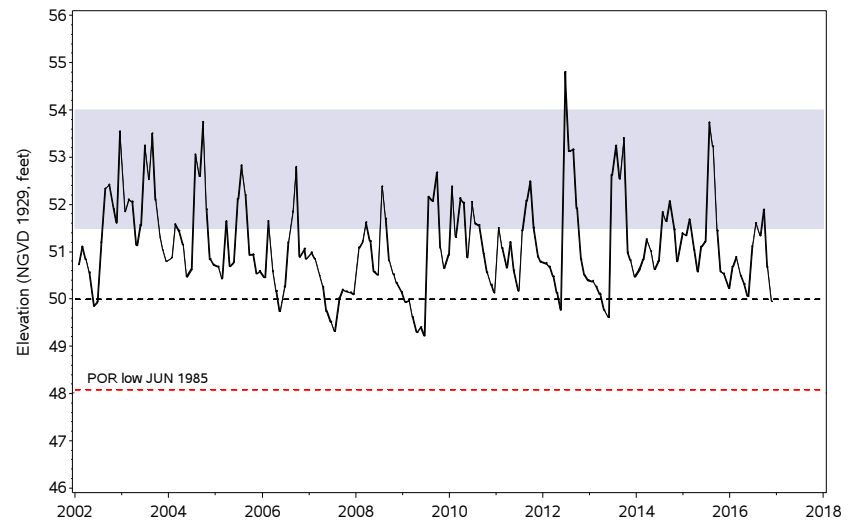
Gornto Lake
Tampa Bay Lakes



King Lake
Tampa Bay Lakes



Turkey Ford Lake
Tampa Bay Lakes

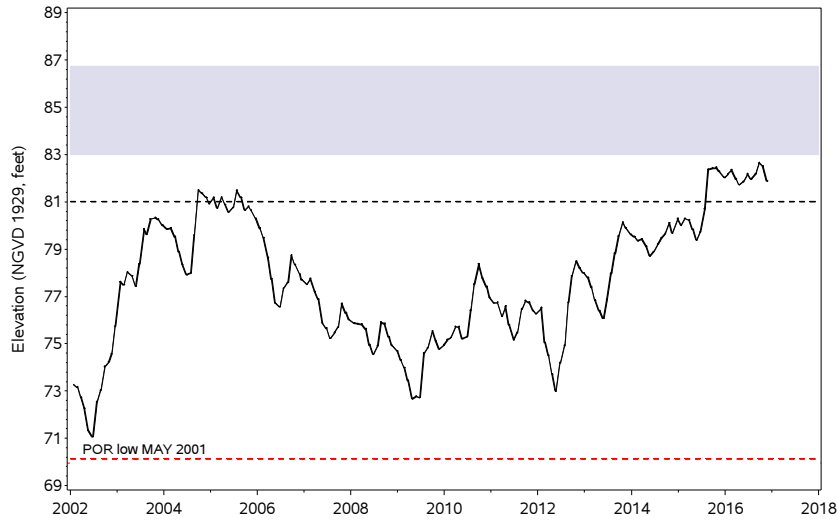


— Monthly Mean Elevation - - - Drought Year Low Normal Range

HYDROGRAPHS OF REGIONAL LAKES

15-yr Period of Record

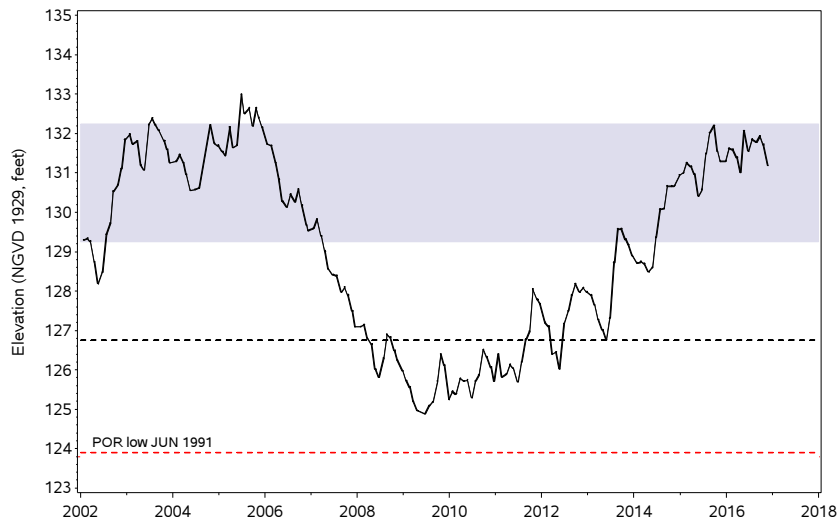
Lake Wimauma
Tampa Bay Lakes



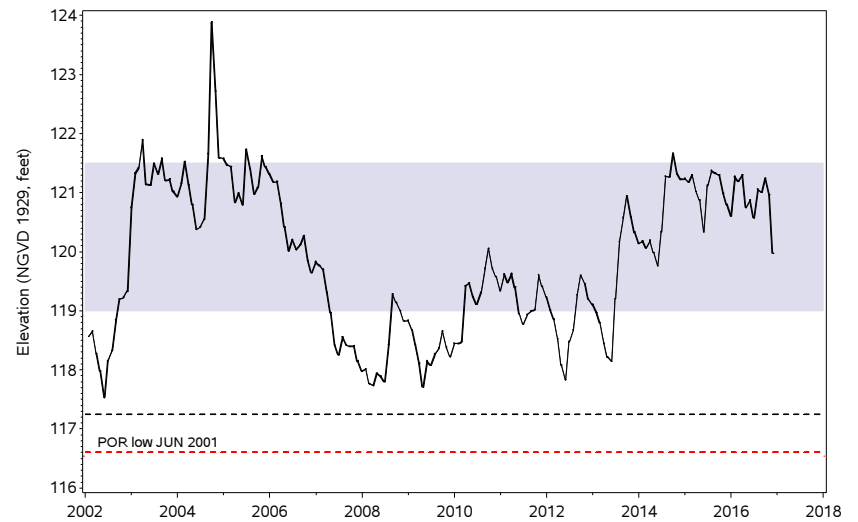
Lake Arietta
Polk Uplands Lakes



Lake Buffum
Polk Uplands Lakes



Lake Hamilton
Polk Uplands Lakes

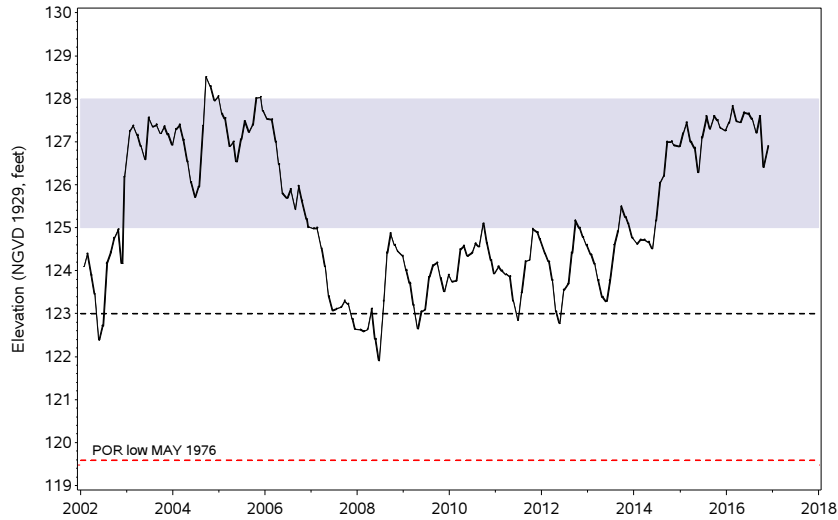


— Monthly Mean Elevation - - - Drought Year Low Normal Range

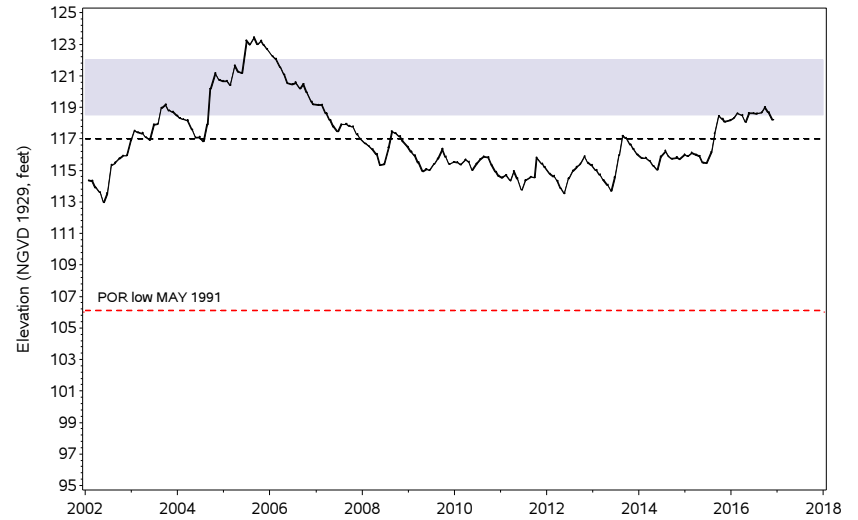
HYDROGRAPHS OF REGIONAL LAKES

15-yr Period of Record

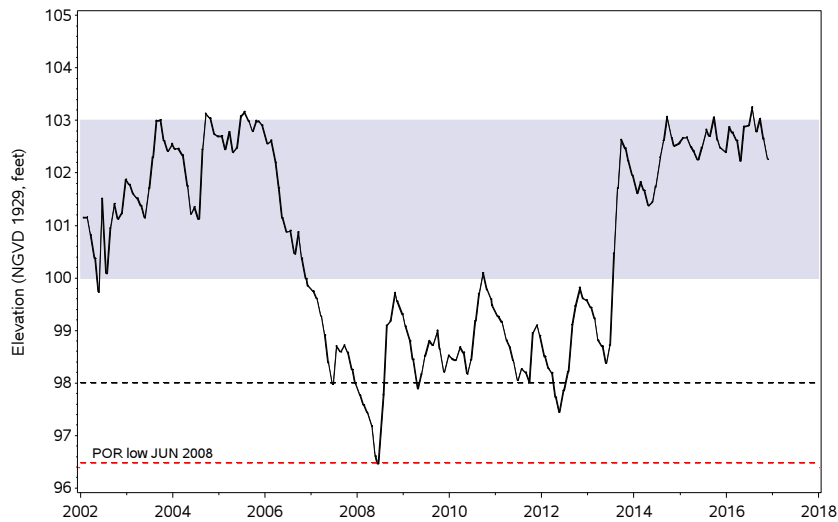
Lake Otis
Polk Uplands Lakes



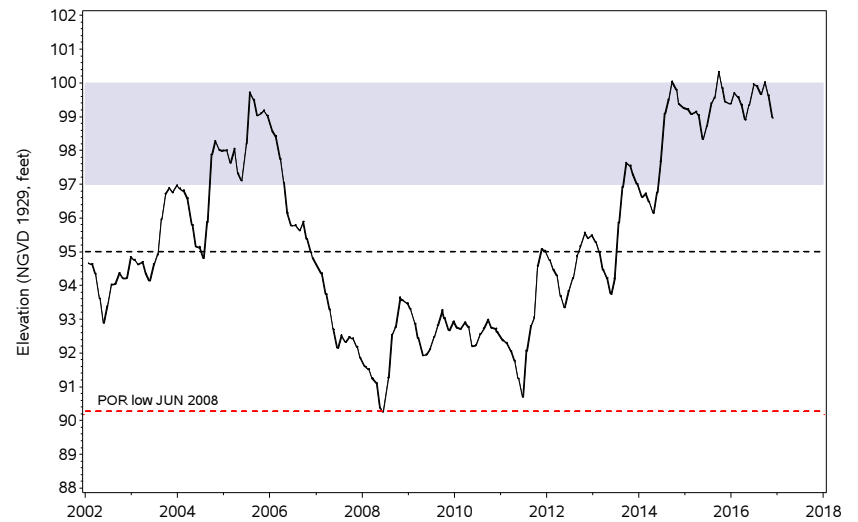
Crooked Lake
Lake Wales Ridge Lakes



Lake Jackson
Lake Wales Ridge Lakes



Lake Letta
Lake Wales Ridge Lakes



— Monthly Mean Elevation - - - Drought Year Low Normal Range

Streams

The District processes streamflow data collected by the U.S. Geological Survey (USGS) under a cooperatively funded program between the District and the USGS. Streamflow is recorded daily as water elevations at 12 gauging stations in three regions of the District (see index map in the Appendix). The USGS uses rating curves developed from water level elevations to calculate streamflow discharge in units of cubic feet per second (cfs). For this report, the reported streamflow values are the means of the daily discharge volumes for the current month. The period-of-record high and low values correspond to monthly means and not to peak events. Percentile values are calculated from the monthly means for the period of record, for each station. The percentile is the monthly mean statistically ranked on a scale of zero to 100 that indicates the percent of the period-of-record monthly means that are at or above the present monthly mean. The current year's data are provisional, and are subject to revision. Revised data are used for all calculations, as they become available.

Hydrographs are produced for each of the stream stations. Current monthly means for each station are compared to respective 25th and 75th percentiles of the period-of-record monthly means.

During November, all 12 stations monitored for this report had decreased streamflow, compared to last month. Total streamflow decreased in the northern, central and southern regions of the District by 278.2 cfs (179.7 mgd), 1551.3 cfs (1002.1 mgd) and 2108.2 cfs (1361.9 mgd), respectively. District-wide, total streamflow decreased by an average of 3937.7 cfs (2543.8 mgd).

In November, 11 of the 12 stations recorded lower streamflow than in November 2015. Streamflow was lower in the northern, central and southern regions by 102.2 cfs (66.0 mgd), 418.1 cfs (270.1 mgd) and 623.8 cfs (403.0 mgd), respectively. District-wide, total streamflow was lower, on average, by 1144.1 cfs (739.1 mgd), than the November 2015 average.

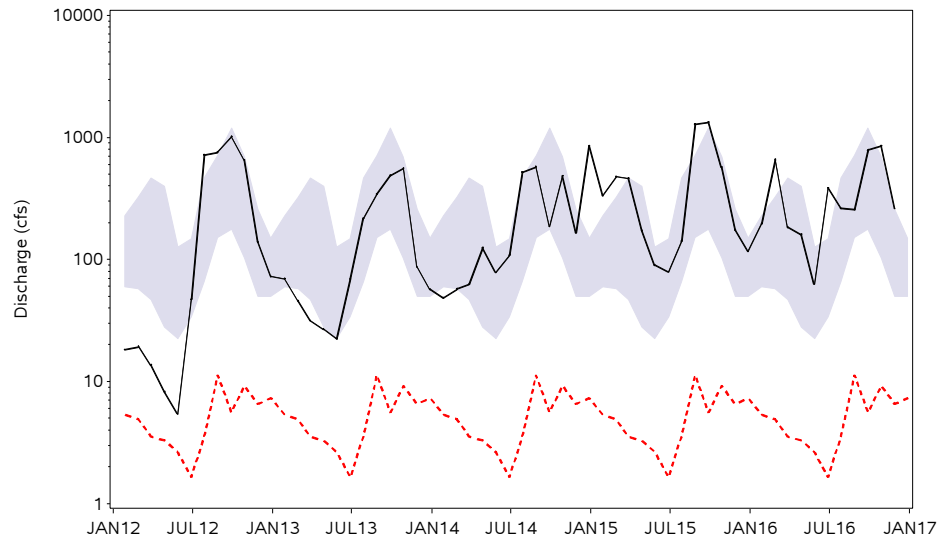
Compared to historical November discharge values, Withlacoochee River streamflow, measured at the Trilby station and the Holder station averaged in the 75th and 46th percentiles, respectively. Streamflow measured at the stations on the Anclote, Pithlachascotee and Hillsborough Rivers averaged in the 46th, 31st and 52nd percentiles of respective historical November readings. Streamflow measured at the Alafia River, Little Manatee River and Peace River at Bartow stations averaged in the 41st, 12th and 23rd percentiles of respective historical November readings. Additionally, streamflow measured at the Josephine Creek, Manatee River, Myakka River and Peace River at Arcadia stations averaged in the 49th, 51st, 33rd and 32nd percentiles of respective historical November readings.

SUMMARY OF STREAM DISCHARGE FROM MAJOR STREAMS (CFS), NOVEMBER 2016

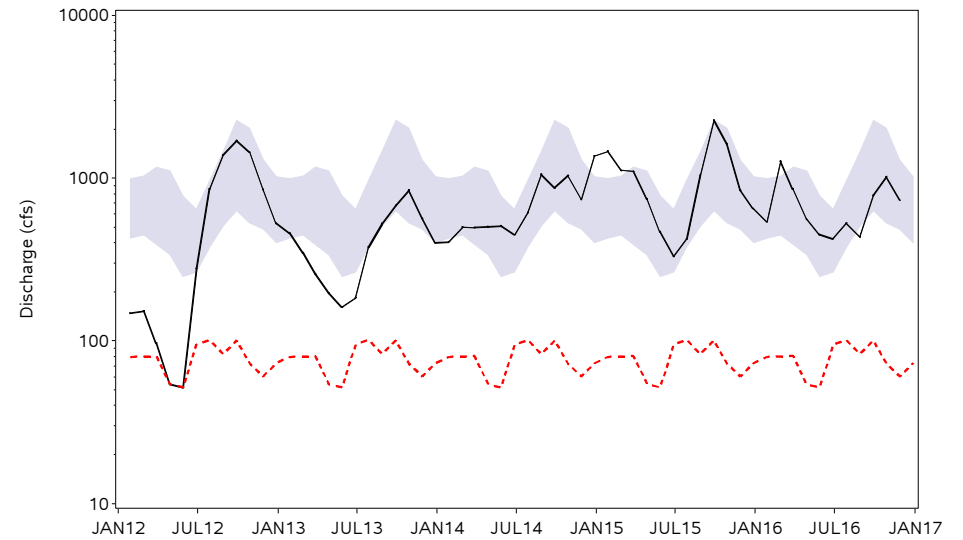
	<i>Beginning Year of Record</i>	<i>Mean Discharge NOV 2016</i>	<i>Mean Discharge OCT 2016</i>	<i>Mean Discharge NOV 2015</i>	<i>Change from OCT 2016</i>	<i>Change from NOV 2015</i>	<i>NOV 2016 Percentile Rank</i>	<i>Period of Record Low</i>	<i>Record Low Date</i>	<i>Period of Record High</i>	<i>Record High Date</i>
<i>NORTHERN COUNTIES</i>											
Withlacoochee R at Trilby	1930	263.7	851.9	174.3	-588.2	89.4	75%	0.1	JUN2000	8840	JUN1934
Withlacoochee R near Holder	1931	736.7	1014.9	838.9	-278.2	-102.2	46%	33.0	MAR2001	8660	APR1960
<i>CENTRAL COUNTIES</i>											
Anclote River near Elfers	1946	7.2	35.0	18.0	-27.8	-10.8	46%	0.8	MAY1962	3710	JUL1960
Pithlachascotte R near New Port Richey	1963	1.6	18.2	11.1	-16.6	-9.5	31%	0.0	MAY2013	2180	JUN2012
Hillsborough R near Zephyrhills	1939	106.6	418.5	134.5	-311.9	-27.9	52%	27.0	MAY2001	9700	MAR1960
Alafia River at Lithia	1932	115.0	733.2	253.1	-618.2	-138.1	41%	4.1	JUN2000	9820	SEP2004
Little Manatee R near Wimauma	1939	22.3	264.3	150.8	-242.0	-128.5	12%	0.9	DEC1976	9720	SEP1988
Peace River at Bartow	1939	31.4	366.2	134.7	-334.8	-103.3	23%	0.0	MAY2009	4100	SEP1947
<i>SOUTHERN COUNTIES</i>											
Josephine Cr near DeSoto City	1946	43.8	179.8	84.3	-136.0	-40.5	49%	0.5	MAY1956	1680	SEP1948
Manatee River near Myakka Head	1966	13.9	121.7	39.8	-107.8	-25.9	51%	0.1	MAY1975	6440	JUN2003
Myakka River near Sarasota	1936	36.6	511.2	161.2	-474.6	-124.6	33%	0.0	JUN2012	9540	JUN2003
Peace River at Arcadia	1931	237.9	1627.7	670.7	-1389.8	-432.8	32%	0.0	JUL1974	9990	OCT1953

HYDROGRAPHS OF MAJOR STREAMS JANUARY 2012 TO NOVEMBER 2016

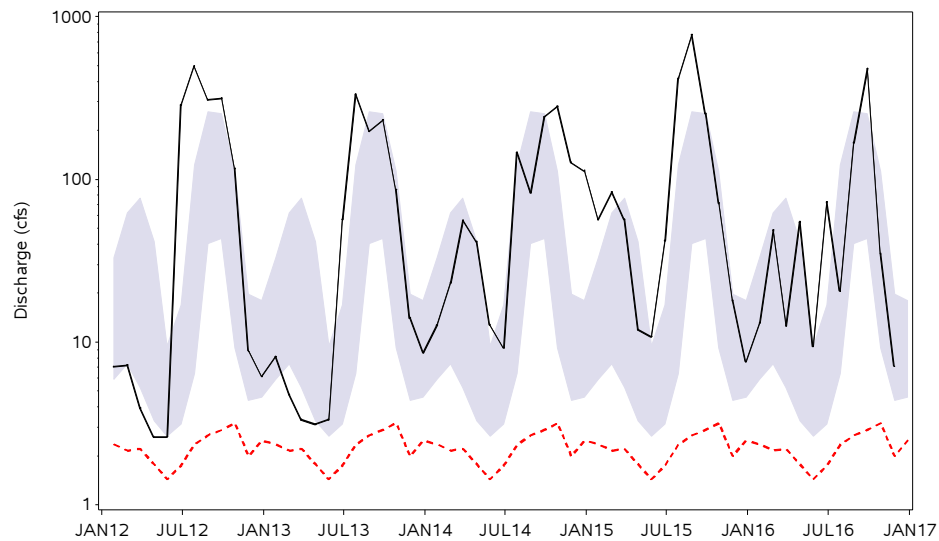
Withlacoochee R at Trilby
Northern Counties



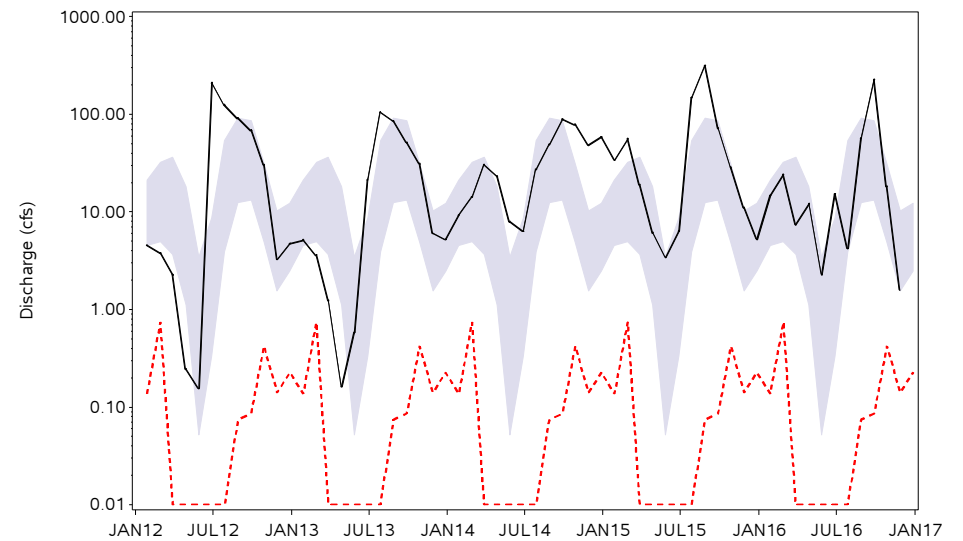
Withlacoochee R near Holder
Northern Counties



Anclole River near Elfers
Central Counties



Pithlachascotte R near New Port Richey
Central Counties



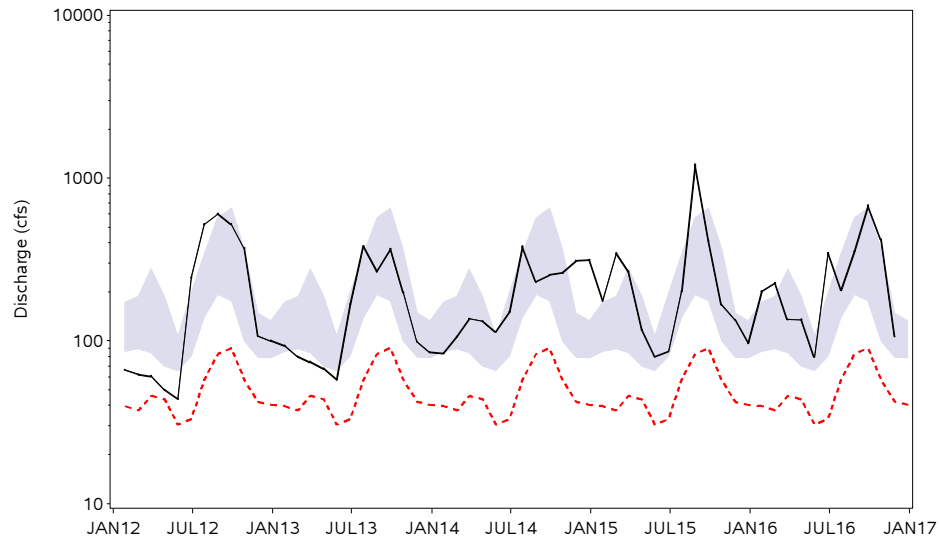
— Monthly Mean Discharge

- - - POR Monthly Low

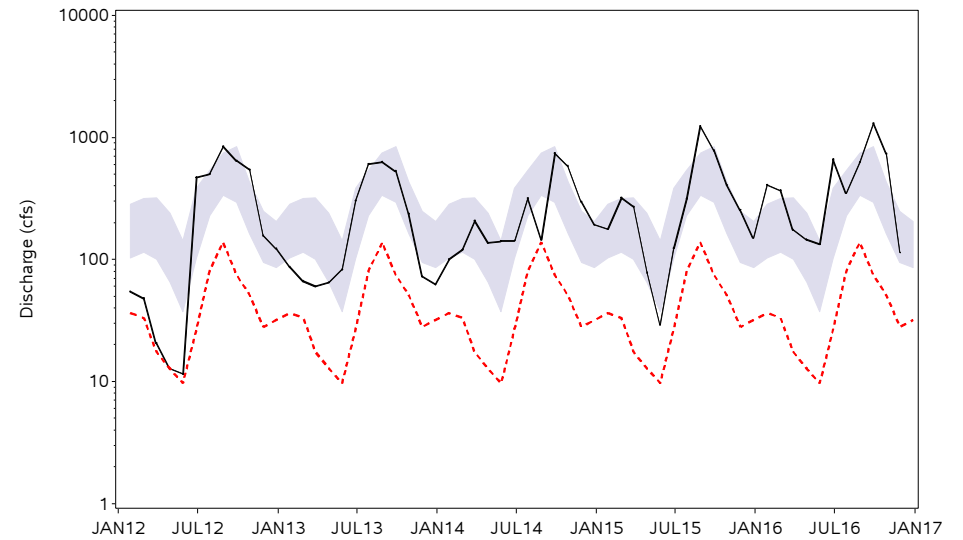
Normal Range

HYDROGRAPHS OF MAJOR STREAMS JANUARY 2012 TO NOVEMBER 2016

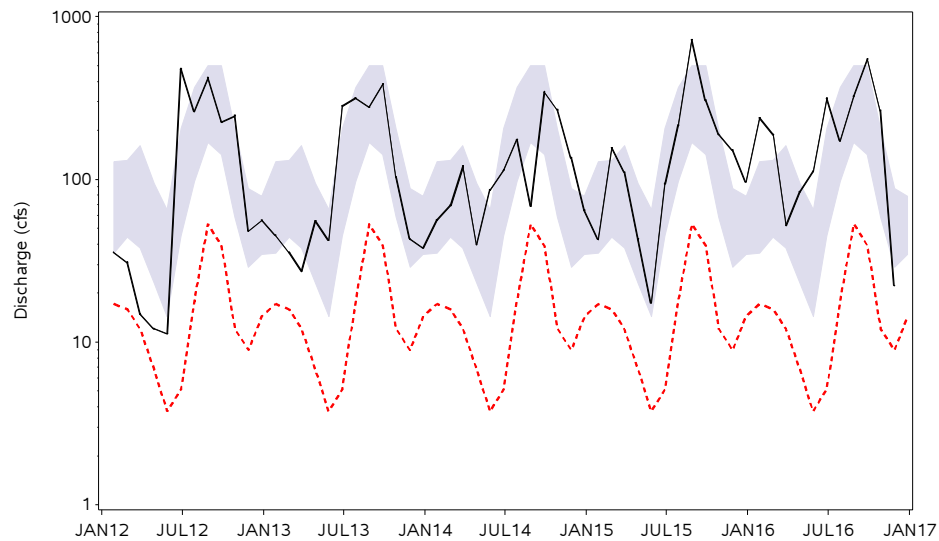
Hillsborough R near Zephyrhills
Central Counties



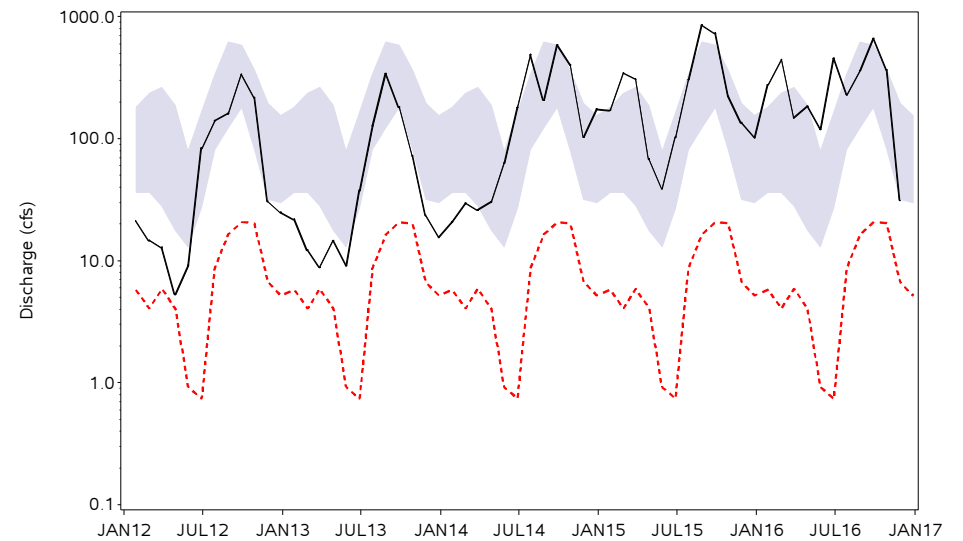
Alafia River at Lithia
Central Counties



Little Manatee R near Wimauma
Central Counties



Peace River at Bartow
Central Counties



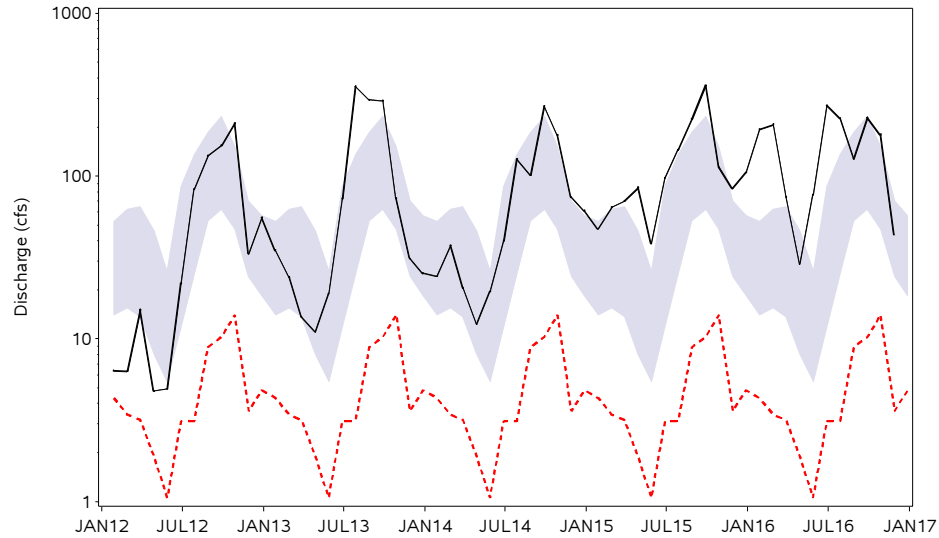
— Monthly Mean Discharge

- - - POR Monthly Low

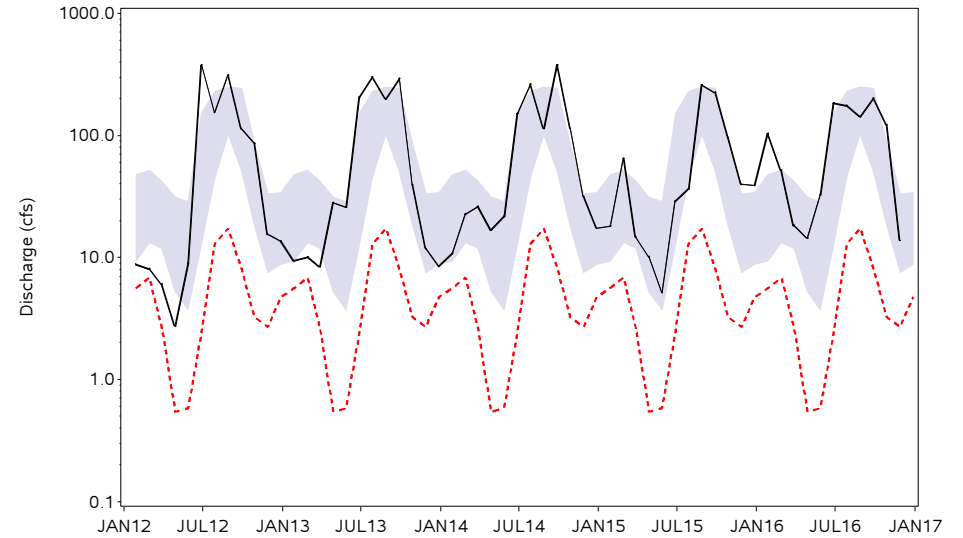
Normal Range

HYDROGRAPHS OF MAJOR STREAMS JANUARY 2012 TO NOVEMBER 2016

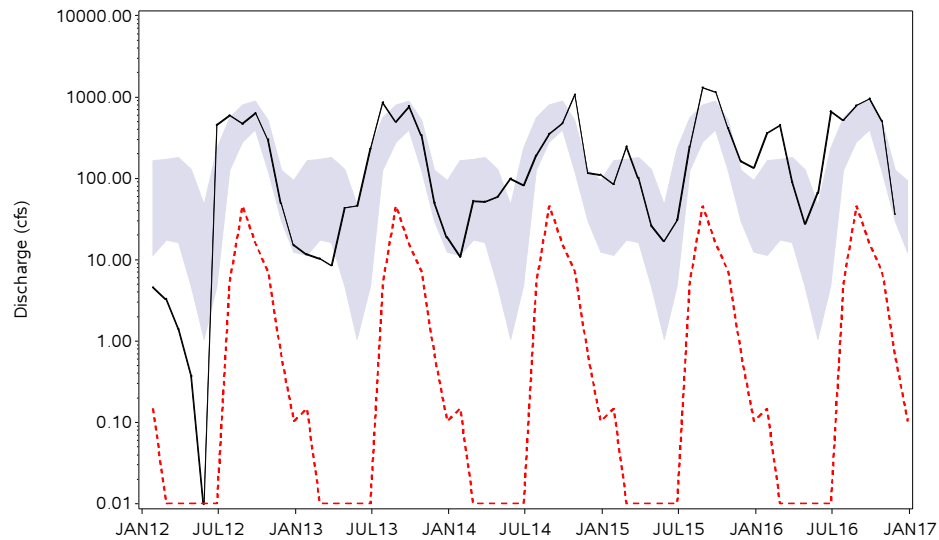
Josephine Cr near DeSoto City
Southern Counties



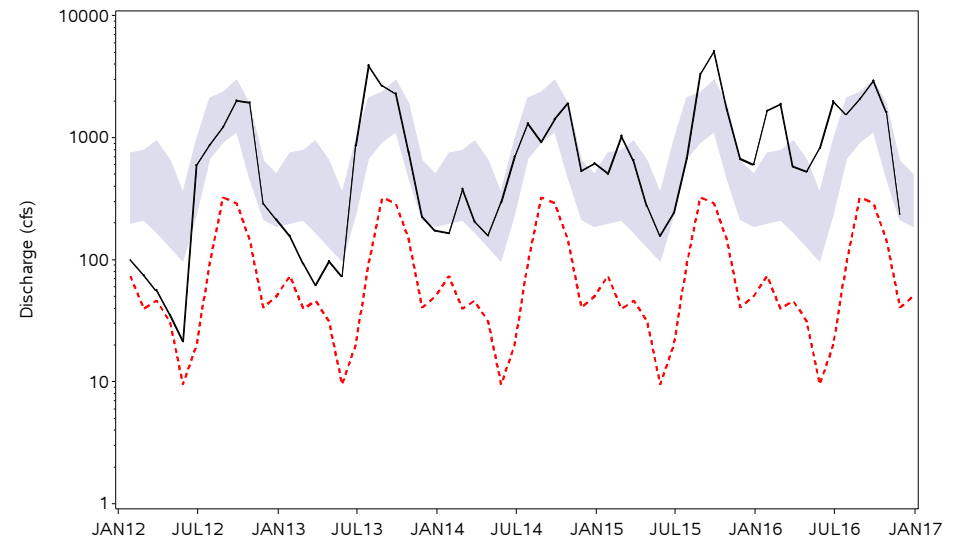
Manatee River near Myakka Head
Southern Counties



Myakka River near Sarasota
Southern Counties



Peace River at Arcadia
Southern Counties



— Monthly Mean Discharge

- - - POR Monthly Low

Normal Range

Springs

The District processes springflow data collected by Tampa Bay Water through a mutual agreement and by the U.S. Geological Survey (USGS) under a cooperatively funded program between the District and the USGS. Springflow is monitored at seven gauging stations in two regions of the District (see index map in the Appendix). Springflow data for Rainbow, Silver and Sulphur Springs are recorded as daily water levels. The USGS uses rating curves developed for these springs from historical water level elevations to calculate springflow discharge in units of cubic feet per second (cfs). Crystal and Weeki Wachee Springs discharge (cfs) is provided as an instantaneous reading calculated by the USGS. Buckhorn and Lithia Springs discharge is obtained from Tampa Bay Water biweekly and weekly, respectively. Period-of-record high and low values correspond to monthly theoretical means and not to peak events. Values are reported as percentiles calculated from an analysis of historical monthly means recorded during a given month. The percentile is the monthly mean ranked on a scale of zero to 100 that indicates the percent of period-of-record values that are above, equal to or below the median (50th percentile) for the current month. The values reported are provisional, and are subject to revision at the end of the water year. Revised USGS springflow data are loaded into the District's WMIS when they become available.

Hydrographs are produced for the seven-springflow stations, and current values are compared to respective 25th and 75th percentiles that are calculated from historical data. The 25th and 75th percentiles are calculated using the SASTM software system for data analysis using period-of-record monthly theoretical means for each springflow station analyzed.

During November, six of the seven stations reported decreased springflow, while one reported increased flow, compared to the previous month. Total springflow decreased in the northern and central regions by 81.7 cfs (52.8 mgd) and 22.4 cfs (14.5 mgd), respectively. District-wide, springflow decreased by 104.1 cfs (67.3 mgd).

In November, total springflow recorded at four of the seven stations was below last year's levels. Total springflow for the northern and central regions were lower by 190.1 cfs (122.9 mgd) and 16.3 cfs (10.5 mgd), respectively. District-wide, springflow was lower by 206.4 cfs (133.4 mgd), compared to November 2015 rates.

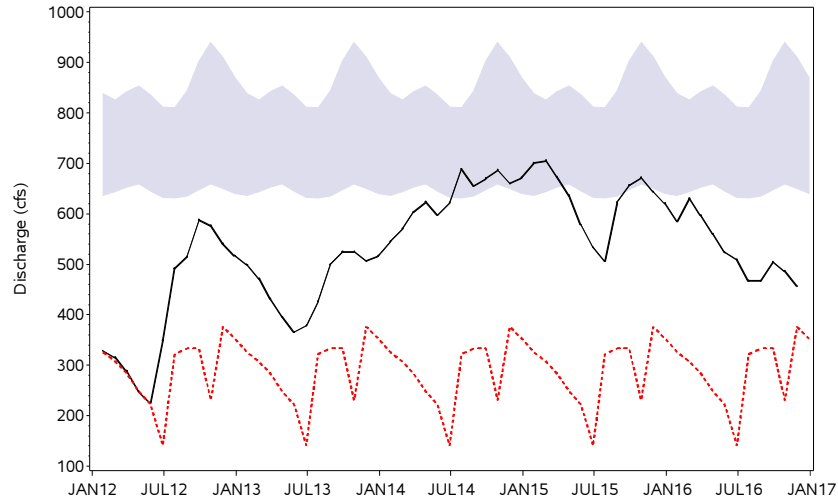
Compared to historical period-of-record values for November, total springflow measured in Rainbow, Silver and Weeki Wachee Springs, in the northern region, was in the 37th, 3rd and 79th percentiles of respective historical readings. Springflow measured in Crystal, Sulphur, Buckhorn and Lithia Springs in the central region was in the 27th, 13th, 71st and 72nd percentiles, respectively, of historical November readings.

SUMMARY OF SPRINGS DISCHARGE FROM MAJOR SPRINGS (CFS), NOVEMBER 2016

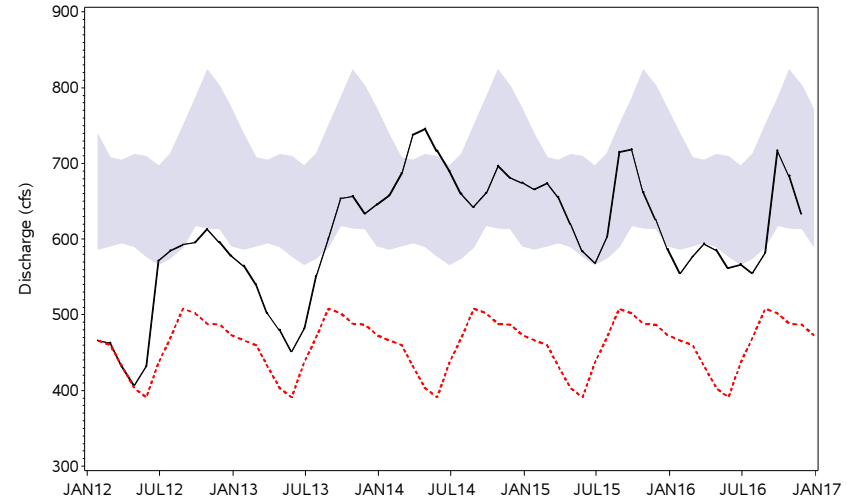
	<i>NOV 2016 Discharge</i>	<i>OCT 2016 Discharge</i>	<i>NOV 2015 Discharge</i>	<i>Change From OCT 2016</i>	<i>Change From NOV 2015</i>	<i>NOV 2016 Percentile Rank</i>	<i>Period of Record Low</i>	<i>Record Low Date</i>	<i>Period of Record High</i>	<i>Record High Date</i>
<i>NORTHERN COUNTIES</i>										
Rainbow Springs	658.5	702.4	642.0	-43.9	16.5	37%	391.0	MAY2012	1060.0	SEP1988
Silver Springs	468.6	500.4	652.3	-31.8	-183.7	3%	141.0	JUN2012	1290.0	OCT1960
Weeki Wachee Springs	184.6	190.6	207.5	-6.0	-22.9	79%	101.0	JUN1994	257.0	OCT2004
<i>CENTRAL COUNTIES</i>										
Crystal Springs	49.7	49.0	53.9	0.7	-4.2	27%	0.0	JUL1923	147.0	JUL1941
Sulphur Springs	15.8	32.9	29.1	-17.1	-13.3	13%	0.0	FEB1976	145.0	MAR1960
Buckhorn Springs	13.1	13.3	12.3	-0.2	0.8	71%	2.2	MAY2006	32.7	AUG2004
Lithia Springs	51.4	57.2	51.0	-5.8	0.4	72%	9.1	MAY2000	91.5	NOV2004

HYDROGRAPHS OF REGIONAL SPRINGS JANUARY 2012 TO NOVEMBER 2016

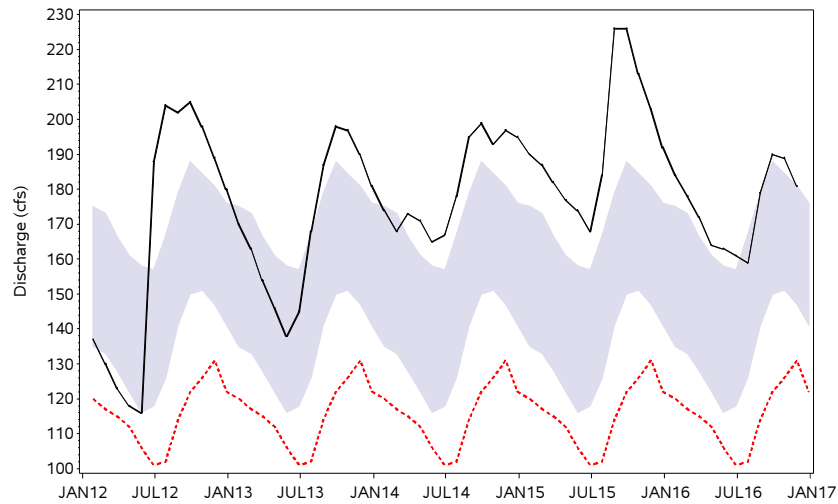
Silver Springs
Northern Counties



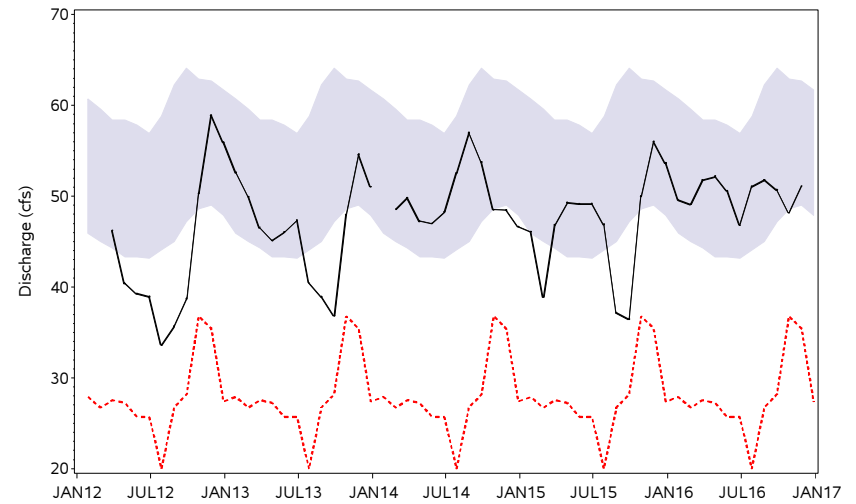
Rainbow Springs
Northern Counties



Weeki Wachee Springs
Northern Counties



Crystal Springs
Central Counties



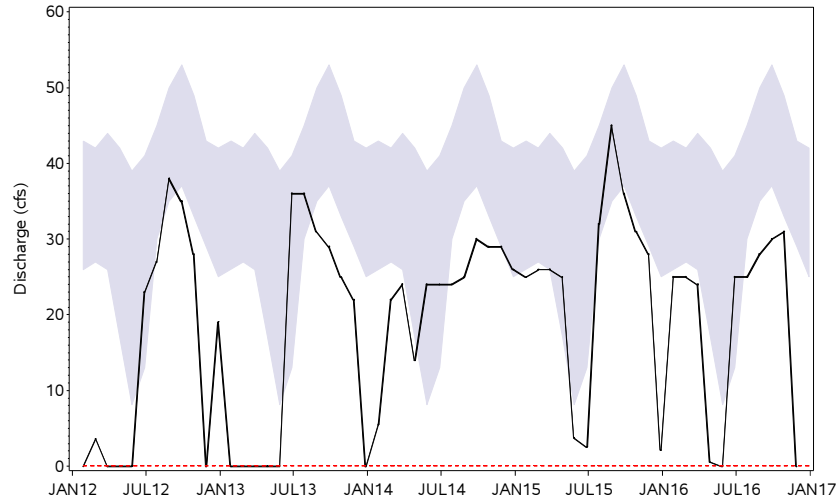
— Monthly Discharge

- - - POR Monthly Low

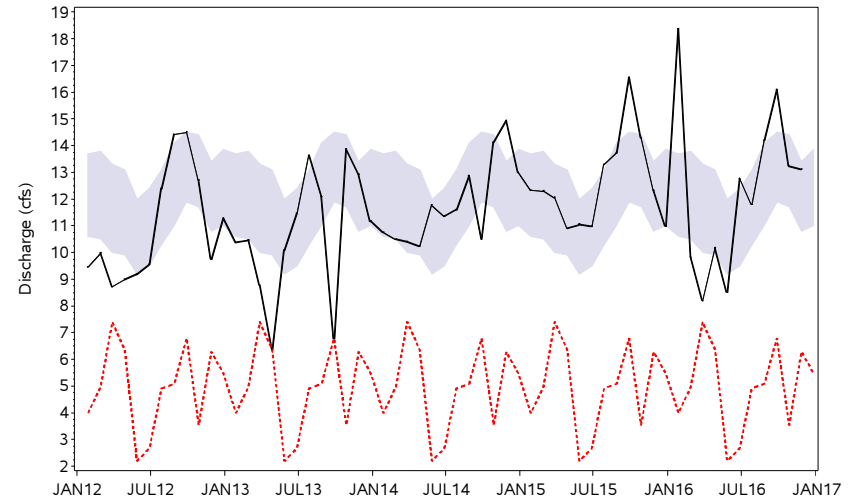
Normal Range

HYDROGRAPHS OF REGIONAL SPRINGS JANUARY 2012 TO NOVEMBER 2016

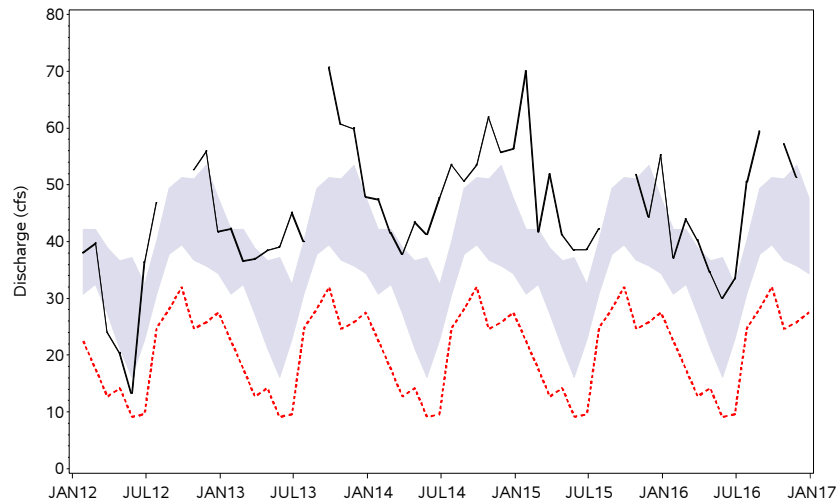
Sulphur Springs
Central Counties



Buckhorn Spring
Central Counties



Lithia Springs
Central Counties



— Monthly Discharge - - - - - POR Monthly Low Normal Range

GROUND WATER

The ground-water section of this report provides ground-water level information within the District based on geographically delineated areas (regions) within the District. For this report, the District has been divided into three geographical regions that are defined by county boundaries (see index maps in the Appendix). Each regional area includes all or part of each county that is located within that region and that is also within the District's jurisdictional boundaries. The northern region includes the counties of Citrus, Hernando, Lake, Levy, Marion and Sumter, where the Floridan aquifer is generally unconfined and at or near land surface, allowing rainfall to easily recharge (replenish) the aquifer system. The central region includes the counties of Hillsborough, Pasco, Pinellas and Polk, where the Floridan aquifer can be unconfined, semi-confined or confined (overlain by thick clays). Where the Floridan aquifer is confined, recharge to the aquifer from rainfall is low. The southern region includes the counties of Charlotte, DeSoto, Hardee, Highlands, Manatee and Sarasota, where the Floridan aquifer is confined.

Twelve surficial aquifer (shallow, non-artesian) and 77 intermediate and Floridan aquifer (deep) monitor wells are measured for this report to determine the relative health of ground-water levels District-wide. Only monitor wells with an adequate and reliable period-of-record water level measurements were selected for the network. For each well, the 25th and 75th percentiles ("low normal" and "high normal," respectively) were calculated for each week of the year using the period-of-record data. The 25th and 75th percentiles are used to represent the lower and upper limits of the normal range, as they are considered a reliable and robust measure of the normal range, and are less affected by extremes in the data record. The end-of month water-level readings measured for this report are compared to their corresponding normal ranges. Trend data from 16 intermediate and Floridan aquifer wells are shown in hydrographs to compare current water levels to the low normal and high normal levels.

Data from these wells are further compiled into regional statistics for the three regions of the District. Wells in the northern counties are unconfined and non-artesian, while those in the southern counties are confined and artesian. Wells included in the central counties vary between confined and unconfined conditions due to the transitional nature of geology in this area. The potentiometric levels of representative Floridan aquifer wells are used to produce the potentiometric surface maps presented in this report.

Surficial Aquifer

In November, monthly analysis indicates that 11 of the 12 surficial aquifer wells recorded water level decreases, compared to last month. Regionally, average surficial aquifer water levels decreased in the northern, central and southern regions of the District by 0.78, 0.94 and 0.70 foot, respectively. District-wide, average surficial aquifer water levels decreased by 0.85 foot.

During November, annual analysis indicates average water levels in nine of the 12 surficial aquifer wells were lower than November 2015 levels. Average surficial aquifer water levels were lower in the northern, central and southern regions by 0.99, 0.27 and 0.29 foot, respectively. District-wide, average water levels in surficial wells were 0.39 foot lower than November 2015 levels.

For November, water levels were above the low normal level in 11 of the 12 surficial wells. Average surficial aquifer water levels in the northern, central and southern regions were 0.95 foot, 0.96 foot and 1.02 feet, respectively, above the low normal level. District-wide, the average water level in surficial wells was 0.97 foot above the low normal level.

SUMMARY OF SURFICIAL AQUIFER LEVELS IN REPRESENTATIVE WELLS, NOVEMBER 2016

	NOV 2016 Elev	OCT 2016 Elev	NOV 2015 Elev	Change From OCT 2016	Change From NOV 2015	NOV Historical Low Normal	NOV Historical High Normal	Departure From Low Normal	Period of Record Low	Record Low Date	Period of Record High	Record High Date
<i>NORTHERN COUNTIES</i>												
Green Swamp	90.28	91.35	91.15	-1.07	-0.87	89.51	91.33	0.77	82.95	MAY2000	93.07	SEP1985
Lecanto 2	8.83	9.33	9.93	-0.50	-1.10	7.69	9.92	1.14	5.76	MAY2001	13.92	SEP1974
<i>CENTRAL COUNTIES</i>												
Loughman	92.03	92.71	91.88	-0.68	0.15	91.22	92.42	0.81	88.40	JUN2001	95.79	SEP2004
Lutz-Lake Fern	56.62	57.42	57.09	-0.80	-0.47	56.28	57.16	0.34	52.64	NOV2009	61.10	SEP1986
ROMP 50 Shallow	41.20	42.30	41.84	-1.10	-0.63	41.24	41.70	-0.04	38.01	OCT2010	44.05	SEP2001
SR 33 & Combee Road	133.11	134.30	133.70	-1.19	-0.59	132.69	134.06	0.42	129.16	FEB2001	136.97	OCT1995
SR 577 Shallow	121.63	122.25	122.10	-0.62	-0.47	120.95	123.88	0.68	109.99	JAN2000	129.26	SEP2013
Tarpon Road Shallow	12.15	13.45	12.85	-1.30	-0.70	11.01	12.61	1.14	9.31	JUN1978	17.25	AUG2015
USGS P-48	101.94	102.82	101.11	-0.88	0.83	98.61	101.04	3.33	96.07	JUN2001	104.79	SEP2004
<i>SOUTHERN COUNTIES</i>												
Edgeville 4 Shallow	67.40	66.60	66.85	0.80	0.55	65.74	67.09	1.66	62.78	MAY2012	69.87	SEP1994
ROMP 26 Shallow	69.60	71.23	70.38	-1.63	-0.78	68.74	70.50	0.86	64.32	JUN1999	75.11	JUN1982
SR 74	15.44	16.71	16.07	-1.27	-0.63	14.91	15.95	0.53	12.66	MAY2000	18.78	AUG2013

Intermediate and Floridan Aquifers

In November, monthly analysis indicates that 76 of the 77 intermediate and Floridan aquifer wells monitored for this report recorded water level decreases, compared to last month. Regionally, average water levels decreased in the northern, central and southern regions by 0.85 foot, 2.43 and 5.66 feet, respectively. District-wide, the average water level in the intermediate and Floridan aquifer decreased by 3.13 feet.

During November, annual analysis indicates that 74 of the 77 intermediate and Floridan aquifer wells monitored for this report recorded water level decreases, compared to levels measured in November 2015. Regionally, the mean water level in the northern, central and southern regions were lower by 1.57, 2.25 and 4.37 feet, respectively, compared to last year's levels. District-wide, average water levels in intermediate and Floridan aquifer wells were 2.80 feet lower than November 2015 levels.

For November, 57 of the 77 intermediate and Floridan aquifer wells had levels above the low normal level, compared to historical monthly levels. Average water levels in the northern, central and southern regions were 1.10 feet, 4.22 feet and 0.36 foot, respectively, above the low normal level. District-wide, the average water level in intermediate and Floridan aquifer wells was 2.15 feet above the low normal level.

SUMMARY OF INTERMEDIATE AND FLORIDAN AQUIFER LEVELS IN REPRESENTATIVE WELLS, NOVEMBER 2016

Regional Summary:

<i>Region</i>	<i>NOV 2016 Mean Elevation</i>	<i>NOV 2016 Relation to POR Median</i>	<i>NOV 2016 Relation to 25th Percentile</i>	<i>NOV 2016 Mean Percentile Rank</i>	<i>OCT 2016 Mean Percentile Rank</i>	<i>NOV 2015 Mean Percentile Rank</i>
Northern Counties	36.62	-0.24	1.10	43%	53%	73%
Central Counties	59.04	1.55	4.22	59%	77%	80%
Southern Counties	30.23	-2.23	0.36	34%	68%	70%

Regional Wells Summary:

<i>NORTHERN COUNTIES</i>	<i>NOV 2016 Elev</i>	<i>OCT 2016 Elev</i>	<i>NOV 2015 Elev</i>	<i>Change From OCT 2016</i>	<i>Change From NOV 2015</i>	<i>NOV Historical Low Normal</i>	<i>NOV Historical High Normal</i>	<i>Departure From Low Normal</i>	<i>NOV 2016 Percentile Rank</i>	<i>Period of Record Low</i>	<i>Record Low Date</i>	<i>Period of Record High</i>	<i>Record High Date</i>
CE 14 Dunnellon Deep	37.63	38.58	42.51	-0.95	-4.88	37.86	43.34	-0.23	20%	31.94	MAY2012	60.24	MAR1966
Chassahowitzka 1 Deep	6.66	7.26	7.38	-0.60	-0.72	6.25	7.32	0.41	46%	4.80	JUN2001	9.75	SEP2004
Inverness Dot Fldn	30.24	30.76	30.26	-0.52	-0.02	27.71	32.26	2.53	55%	21.70	JUN2001	37.80	OCT1982
Mascotte Deep	98.93	99.94	99.92	-1.01	-0.99	98.86	100.50	0.07	27%	93.94	JUN2000	102.66	SEP1988
North Locanto Deep	4.95	5.08	5.37	-0.13	-0.42	4.35	5.64	0.60	48%	2.94	MAY2001	8.10	OCT1982
ROMP 103 Suwannee/Ocala	42.16	43.07	43.83	-0.91	-1.67	38.17	43.87	3.99	63%	33.75	MAY2009	51.03	OCT2004
ROMP 107 Ocala/Avon Park	13.84	14.76	14.45	-0.92	-0.61	11.23	14.63	2.61	63%	8.08	AUG2007	19.78	NOV1982
ROMP 111 Ocala/Avon Park	47.72	48.11	49.72	-0.39	-2.00	48.15	49.56	-0.43	10%	44.23	JUL1992	53.36	SEP2004
ROMP 116 Avon Park	32.84	34.01	33.79	-1.17	-0.95	31.69	33.70	1.15	48%	29.24	MAY2012	39.28	OCT2004
ROMP 119 Avon Park	42.99	43.81	44.59	-0.82	-1.60	43.27	45.86	-0.28	24%	39.86	MAY2012	52.20	MAR1998
ROMP 120 Avon Park	42.74	43.43	44.43	-0.69	-1.69	42.14	45.63	0.60	40%	38.71	MAY2012	52.24	MAR1998
ROMP 134 Ocala/Avon Park	47.61	48.64	49.33	-1.03	-1.72	42.99	47.89	4.62	73%	37.80	JUN2012	57.35	APR1998
ROMP 89 Ocala	91.00	92.53	92.21	-1.53	-1.21	88.96	91.60	2.04	54%	82.44	JUN2000	94.93	DEC1997
ROMP 97 Avon Park	18.76	19.79	21.39	-1.03	-2.63	16.09	21.09	2.67	55%	11.84	MAY2009	26.24	SEP2004
ROMP TR 124 Avon Park	2.63	3.31	3.56	-0.68	-0.93	2.38	3.19	0.25	40%	0.77	SEP2004	8.10	SEP2016
ROMP TR 21-2 Ocala/Avpk	1.94	2.25	2.38	-0.31	-0.44	1.57	2.14	0.37	65%	-0.06	DEC1990	4.56	NOV1987
Sumter 13 JC 59 Up Fldn	39.33	40.75	42.80	-1.42	-3.47	39.99	42.77	-0.66	13%	36.52	MAY2012	47.01	JUN2003
Webster City Fldn	79.39	80.65	81.35	-1.26	-1.96	80.18	83.62	-0.79	23%	74.16	MAY2012	88.77	SEP2005
Weeki Wachee Deep Repl	16.56	17.33	18.47	-0.77	-1.91	15.25	19.62	1.31	46%	10.37	MAY2009	23.61	AUG1984

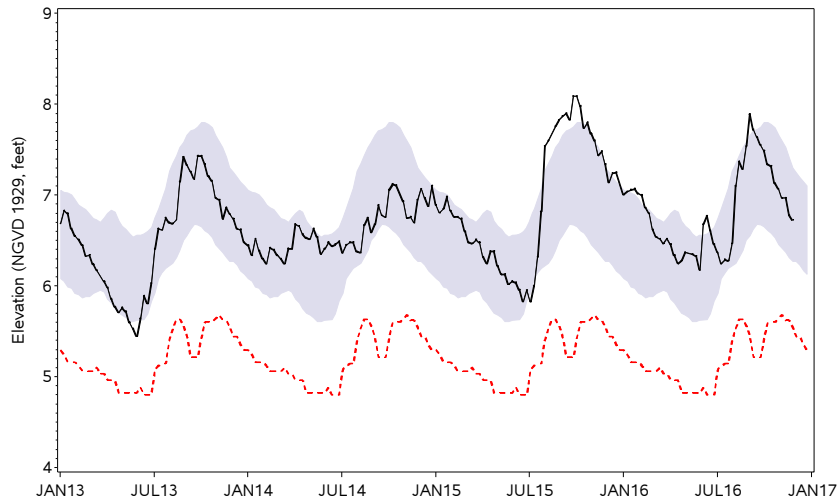
Regional Wells Summary (continued):

	NOV 2016 Elev	OCT 2016 Elev	NOV 2015 Elev	Change From OCT 2016	Change From NOV 2015	NOV Historical Low Normal	NOV Historical High Normal	Departure From Low Normal	NOV 2016 Percentile Rank	Period of Record Low	Record Low Date	Period of Record High	Record High Date
CENTRAL COUNTIES													
Bexley 2 Fldn	60.78	62.16	62.30	-1.38	-1.52	60.17	61.80	0.61	42%	56.08	JUN2000	64.30	AUG2015
Coley Deep	83.84	86.39	85.96	-2.55	-2.12	80.75	89.44	3.09	53%	60.77	JAN2010	94.17	SEP1949
Debuel Road Deep	55.33	56.87	56.71	-1.54	-1.38	53.24	56.05	2.09	62%	46.48	JUN2002	60.13	SEP1979
Hills State Pk Parking Deep	38.77	41.39	39.27	-2.62	-0.50	37.34	39.35	1.43	60%	35.35	JUN2000	47.42	DEC1997
Lk Alftred Deep nr Lake Alfr	128.66	129.72	129.23	-1.06	-0.57	126.21	128.52	2.45	78%	119.85	MAY1974	131.62	OCT1960
Loughman Deep	89.47	90.45	89.52	-0.98	-0.05	89.75	91.45	-0.28	20%	85.90	MAY2001	93.23	OCT1979
Lykes Pasco Fldn	67.96	69.64	68.97	-1.68	-1.01	63.63	67.94	4.33	76%	56.94	JUN2000	75.78	OCT2004
Masaryktown Deep	36.16	36.58	40.11	-0.42	-3.95	29.26	41.04	6.90	57%	21.89	AUG1994	50.32	SEP1984
Moon Lake Deep	31.22	32.28	31.82	-1.06	-0.60	29.59	31.06	1.63	81%	26.10	JUN2000	38.78	DEC1997
Pasco 13 nr Drexel Fldn	71.41	72.51	72.15	-1.10	-0.74	71.80	73.31	-0.39	15%	68.00	JUN2001	77.14	JUL1960
Pinellas 665 Fldn	9.24	10.44	9.08	-1.20	0.16	9.06	11.04	0.18	36%	6.70	MAY2006	14.79	SEP1959
ROMP 123 Hawthorn/Ocala	4.13	15.08	17.09	-10.95	-12.96	4.79	14.36	-0.66	23%	-29.47	MAY2000	33.56	FEB1998
ROMP 40 Swnn/AvPk	37.83	46.80	47.12	-8.97	-9.29	32.93	42.63	4.90	49%	-4.15	JUN2000	57.37	FEB1998
ROMP 45 Avon Park	73.87	79.80	78.32	-5.93	-4.45	60.99	71.30	12.88	89%	31.75	MAY1981	84.44	OCT2004
ROMP 48 Tampa/Suwannee	31.86	41.55	41.04	-9.69	-9.18	27.87	36.33	3.99	41%	-9.39	JUN2000	52.64	AUG1982
ROMP 50 Avon Park	6.72	10.91	8.85	-4.19	-2.13	2.79	6.67	3.93	77%	-32.77	FEB2004	14.95	AUG1982
ROMP 58 Ocala	105.25	105.86	102.56	-0.61	2.69	94.80	99.23	10.45	97%	84.03	JUN2000	111.01	DEC2005
ROMP 59 Swnn/AvPk	75.42	81.01	79.25	-5.59	-3.83	59.65	71.87	15.77	89%	33.33	MAY1981	85.92	OCT2004
ROMP 60 Ocala/Avon Park	74.61	79.98	78.71	-5.37	-4.10	57.06	71.12	17.55	85%	51.29	MAY2012	82.61	SEP2015
ROMP 66 Tampa	18.40	19.99	19.43	-1.59	-1.03	16.75	18.59	1.65	67%	12.04	JUN1977	25.47	AUG2015
ROMP 76 U Fldn	129.66	131.31	130.58	-1.65	-0.92	126.49	129.40	3.17	77%	119.37	MAY1981	132.92	SEP2004
ROMP 87 Avon Park	102.17	104.17	102.90	-2.00	-0.73	101.06	102.98	1.11	59%	94.88	JUN2000	106.30	FEB1998
ROMP 88 Avon Park	103.61	105.44	104.12	-1.83	-0.51	102.42	104.15	1.19	58%	97.42	JUN2000	107.10	DEC1997
ROMP 93 Swnn/AvPk	72.70	73.93	74.43	-1.23	-1.73	66.33	72.91	6.37	71%	59.03	JUN2001	76.60	SEP1982
ROMP DV-1 Suwannee	53.45	43.42	57.82	10.03	-4.37	50.18	55.50	3.27	48%	12.06	JAN2010	65.72	FEB1998
ROMP TR 10-2 Tampa	9.64	11.21	10.49	-1.57	-0.85	8.23	10.17	1.41	57%	0.22	MAY1981	14.90	SEP2004
ROMP TR 13-3 Avon Park	15.70	16.85	16.76	-1.15	-1.06	15.10	16.31	0.60	43%	10.95	JUL1987	18.79	AUG2015
SR 52 And CR581 Deep	73.55	75.34	75.19	-1.79	-1.64	67.75	74.69	5.80	64%	56.96	JUN2001	79.44	AUG1965
SR 52 Deep W nr Fivay Jct	52.49	53.50	52.95	-1.01	-0.46	51.65	52.86	0.84	57%	48.08	JUN2000	59.53	AUG2010
SR 577 Deep	91.67	94.42	92.40	-2.75	-0.73	84.85	92.42	6.82	68%	72.76	JUN2000	98.51	MAR1998
Sanlon Ranch Fldn	98.63	102.07	100.11	-3.44	-1.48	86.00	95.16	12.63	91%	66.38	MAY1975	105.27	OCT2004
Tarpon Rd Deep	9.10	10.00	10.04	-0.90	-0.94	9.83	10.78	-0.73	2%	7.50	JUN2006	13.48	AUG2015

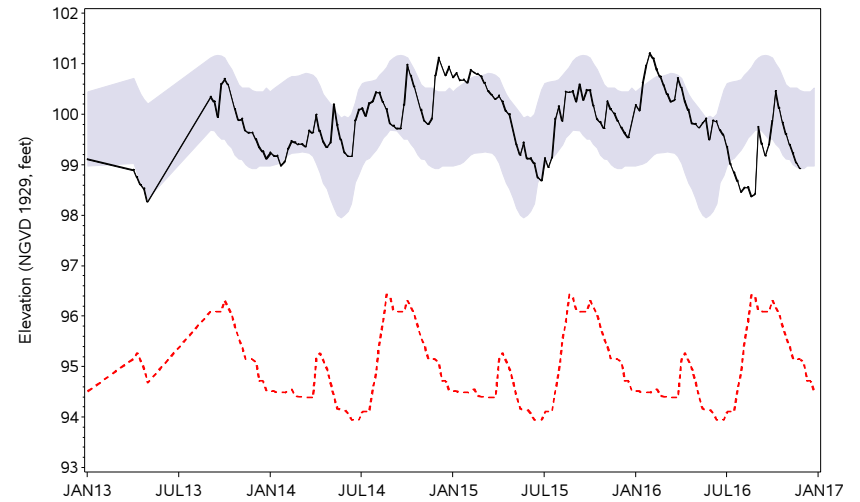
Regional Wells Summary (continued):

	NOV 2016 Elev	OCT 2016 Elev	NOV 2015 Elev	Change From OCT 2016	Change From NOV 2015	NOV Historical Low Normal	NOV Historical High Normal	Departure From Low Normal	NOV 2016 Percentile Rank	Period of Record Low	Record Low Date	Period of Record High	Record High Date
SOUTHERN COUNTIES													
Big Slough Deep	32.89	35.45	33.63	-2.56	-0.74	32.33	33.67	0.56	44%	26.85	MAY2006	36.59	JAN1983
Cargill FA-1 Fldn	69.95	76.18	74.42	-6.23	-4.47	59.67	68.05	10.28	84%	30.77	MAY1981	83.22	OCT2004
Edgeville 3 Deep	22.28	32.78	29.89	-10.50	-7.61	25.13	35.66	-2.85	14%	1.13	MAY2000	46.40	OCT1965
Englewood 14 Deep	5.61	7.89	5.50	-2.28	0.11	3.49	6.26	2.12	61%	-0.97	FEB2001	11.37	SEP1974
Florida Cities Test 1	-2.67	6.37	3.60	-9.04	-6.27	4.64	17.43	-7.31	2%	-18.63	MAY1976	26.07	MAR1978
Florida Pwr @ Piney Point	13.40	18.26	16.90	-4.86	-3.50	11.01	14.95	2.39	59%	-4.84	MAY1989	21.45	SEP2016
Kibler Deep	3.15	11.44	15.04	-8.29	-11.89	4.21	14.55	-1.06	19%	-29.95	MAY2000	29.30	AUG1978
Manasota 14 Deep	17.27	18.94	18.42	-1.67	-1.15	18.83	21.24	-1.56	2%	15.55	MAY2009	22.70	NOV1971
Marshall Deep	39.53	48.22	45.88	-8.69	-6.35	39.72	47.87	-0.19	23%	8.96	JUN2000	55.24	MAR1964
ROMP 16 Ocala	45.61	48.20	48.37	-2.59	-2.76	45.85	48.44	-0.24	22%	28.94	JAN2001	51.21	SEP1995
ROMP 17 Up Fldn	44.26	47.97	46.30	-3.71	-2.04	43.65	46.59	0.61	43%	31.89	JUN2000	51.64	OCT1994
ROMP 19 West UFA Swnn	24.91	30.02	27.57	-5.11	-2.66	23.06	28.53	1.85	38%	10.99	JUN2000	33.70	OCT2013
ROMP 26 Suwannee/Tampa	42.14	47.58	46.53	-5.44	-4.39	42.08	46.55	0.06	28%	19.48	JAN2010	53.18	OCT1979
ROMP 28X Swnn/AvPk	70.23	70.37	71.98	-0.14	-1.75	67.61	70.14	2.62	77%	57.24	JAN2010	74.68	OCT1995
ROMP 30 Swnn/AvPk	43.22	54.47	52.40	-11.25	-9.18	41.35	50.04	1.87	40%	-0.20	JUN2000	60.52	MAR1998
ROMP 31 Swnn/AvPk	39.43	50.83	48.35	-11.40	-8.92	36.14	45.62	3.29	41%	-8.20	JUN2000	57.92	MAR1998
ROMP 32 Low Ocala/Avpk	20.76	33.70	32.56	-12.94	-11.80	20.19	31.19	0.57	28%	-17.74	JUN2000	51.65	OCT1987
ROMP 43XX Avon Park	89.84	90.66	91.22	-0.82	-1.38	85.28	89.23	4.56	79%	70.93	JAN2010	94.60	MAR1998
ROMP TR 1-2 Up Fldn	44.83	46.14	45.89	-1.31	-1.06	44.66	45.36	0.17	35%	40.72	JUN2000	47.22	SEP2015
ROMP TR 3-1 Up Fldn	33.65	35.21	34.32	-1.56	-0.67	33.32	34.06	0.33	45%	29.04	JUN2000	35.72	SEP2003
ROMP TR 5-1 Suwannee	18.58	21.23	19.90	-2.65	-1.32	18.62	20.20	-0.04	24%	13.26	JUN2000	23.00	SEP1983
ROMP TR 7-1 Tampa	17.23	20.81	19.47	-3.58	-2.24	17.48	19.37	-0.25	20%	10.01	JUN2000	23.82	SEP1995
ROMP TR 7-4 Swnn/Ocala	11.66	18.75	16.96	-7.09	-5.30	10.79	14.18	0.87	37%	-3.55	MAY2000	23.78	OCT1994
Sarasota 11TH St Deep	1.80	7.78	3.56	-5.98	-1.76	7.16	10.87	-5.36	1%	-1.13	JUL2015	19.31	SEP1979
Sarasota Office Up Floridan	12.26	20.12	17.67	-7.86	-5.41	14.75	25.90	-2.49	10%	-3.24	JUN2000	35.21	MAR1931
Verna T 0-1	10.67	20.38	19.89	-9.71	-9.22	12.07	20.24	-1.40	19%	-15.73	MAY2000	33.32	JAN1984

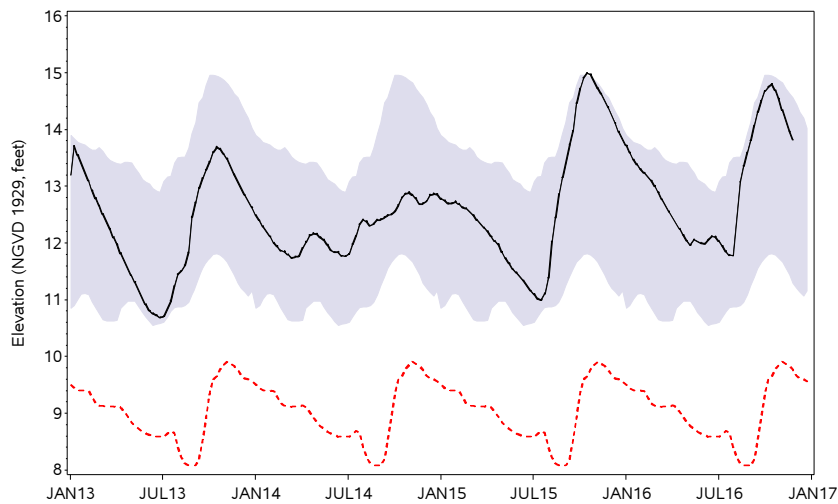
Chassahowitzka #1
Northern Region



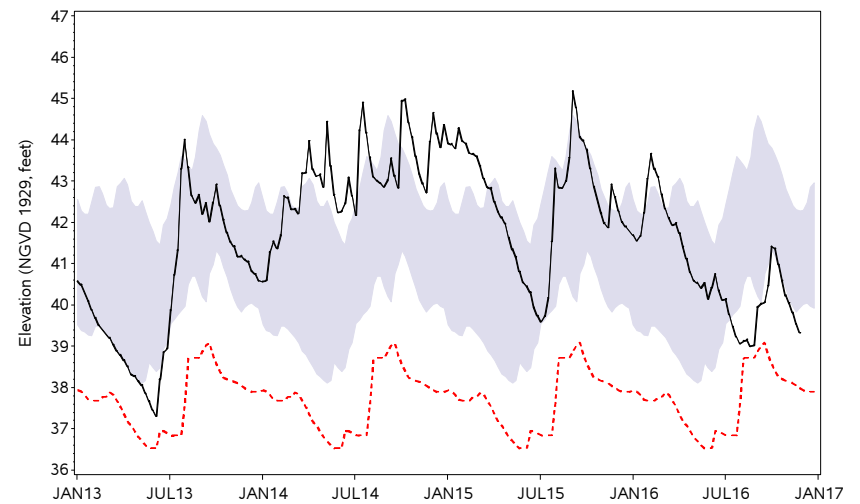
Mascotte Deep
Northern Region



ROMP 107 Ocala/Avon Park
Northern Region

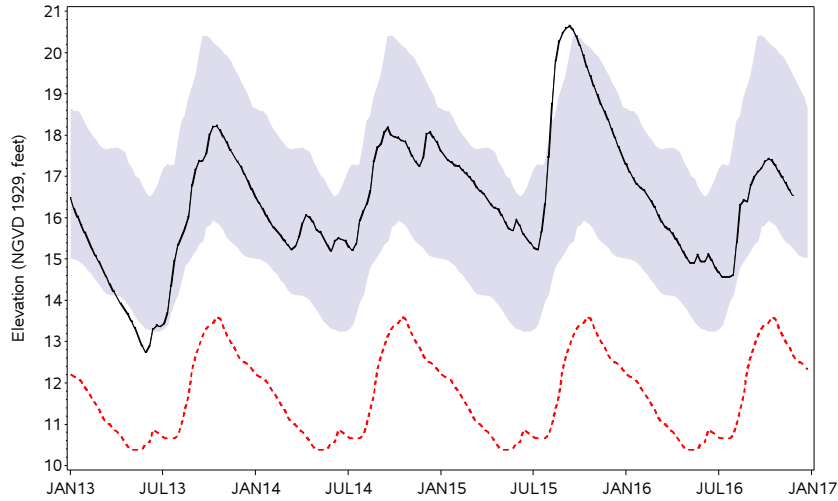


Sumter 13 Upper Fldn
Northern Region

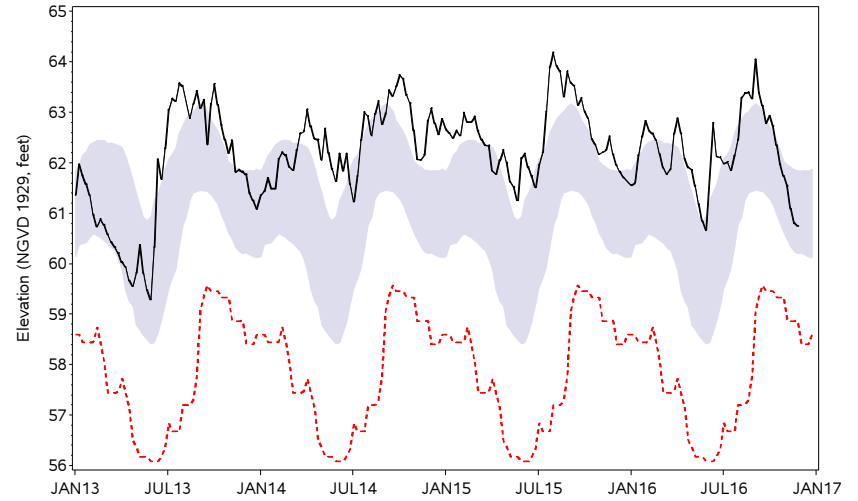


— Average Weekly Elevation - - - - - POR Weekly Low Normal Range

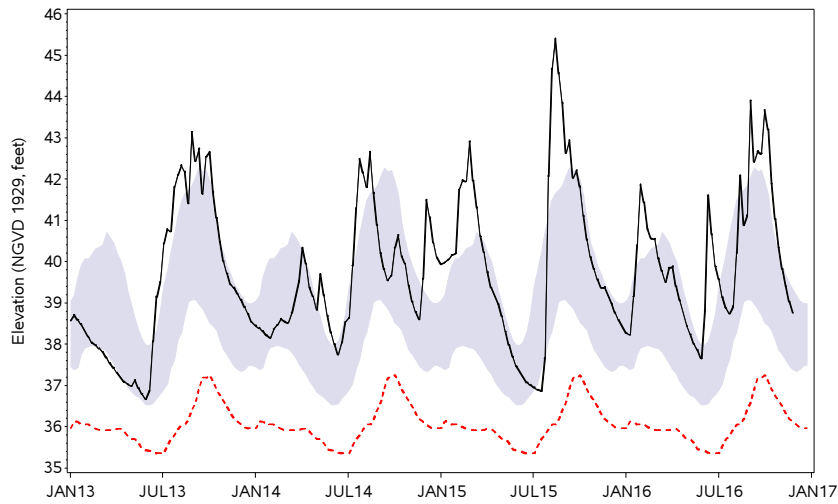
Weeki Wachee Deep
Northern Region



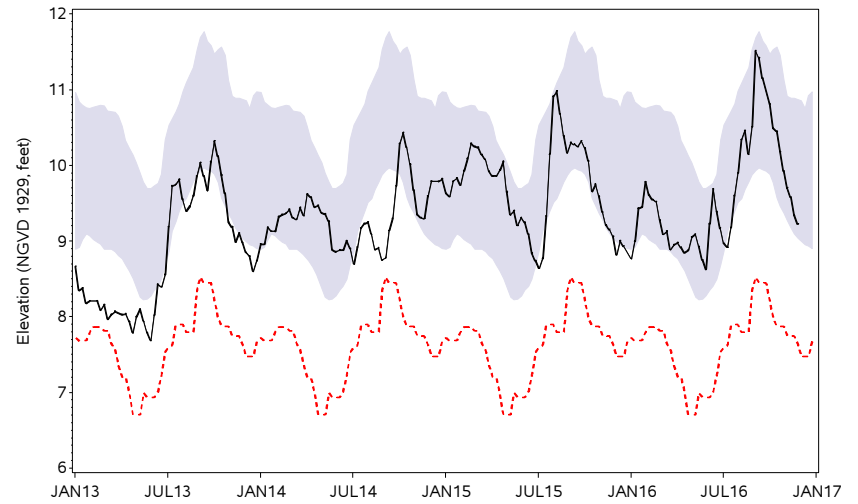
Bexley Well 2
Central Region



Hillsborough St Park Deep
Central Region

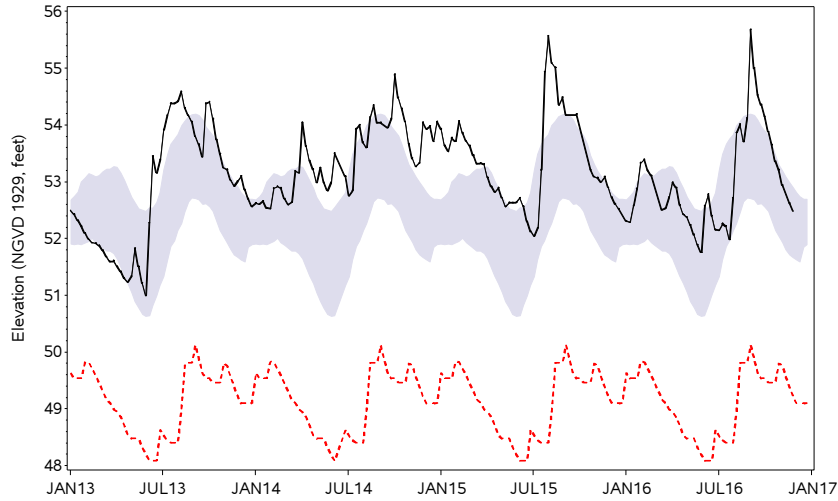


Pinellas 665
Central Region

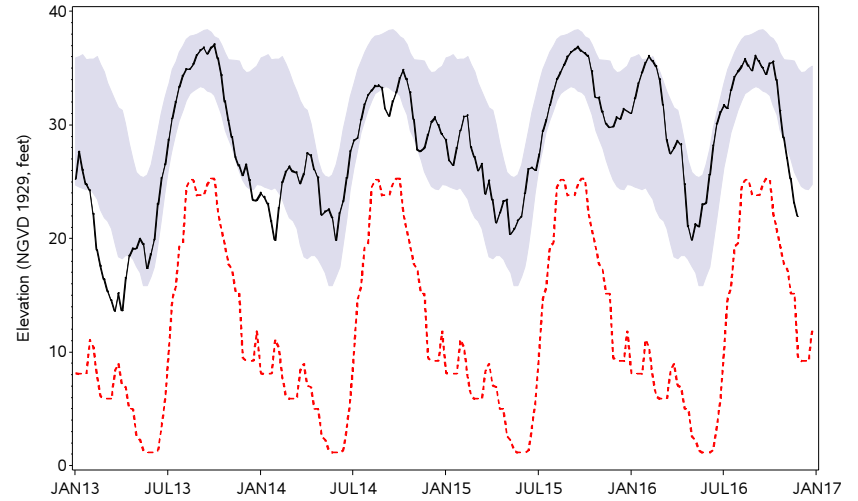


— Average Weekly Elevation - - - - - POR Weekly Low Normal Range

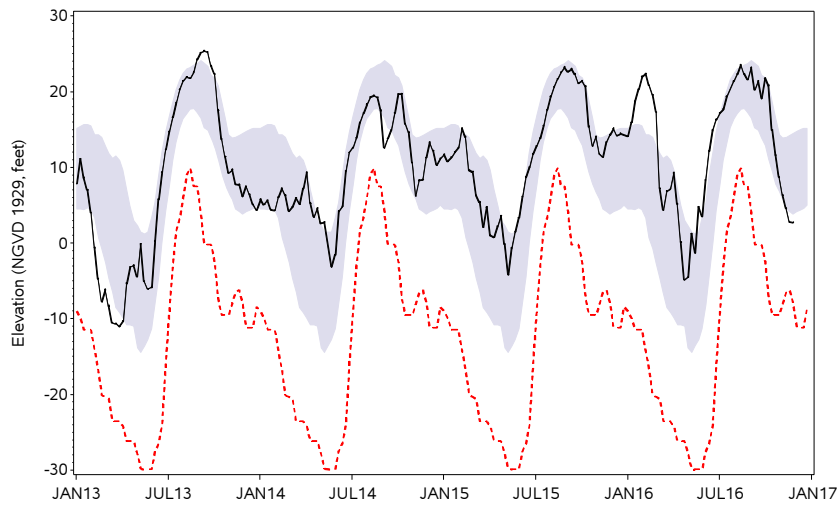
SR 52 Deep (West) near Fivay
Central Region



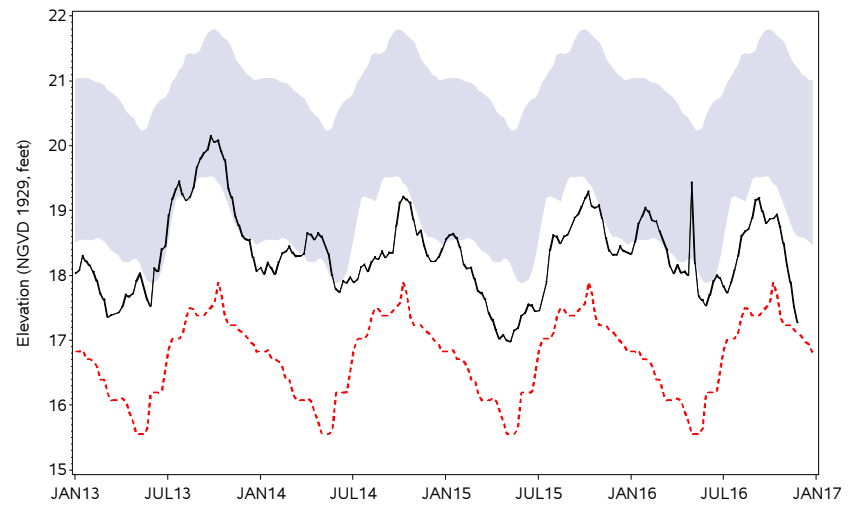
Edgeville 3 Deep
Southern Region



Kibler Deep
Southern Region



Manasota 14 Deep
Southern Region

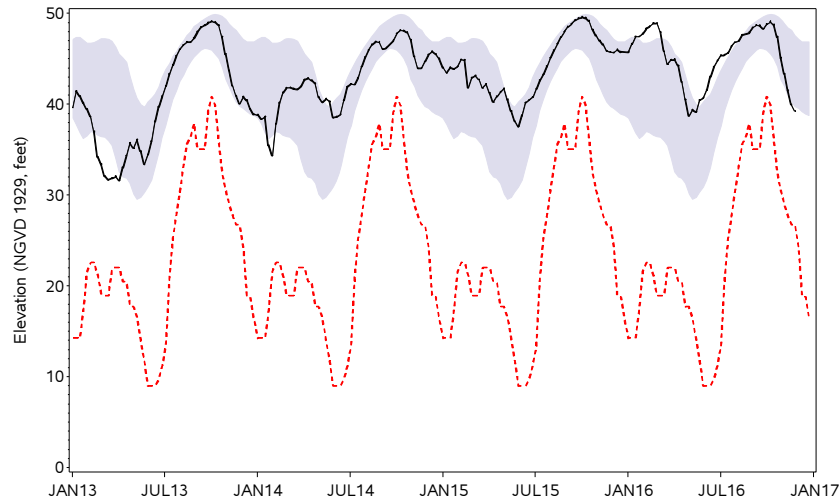


— Average Weekly Elevation

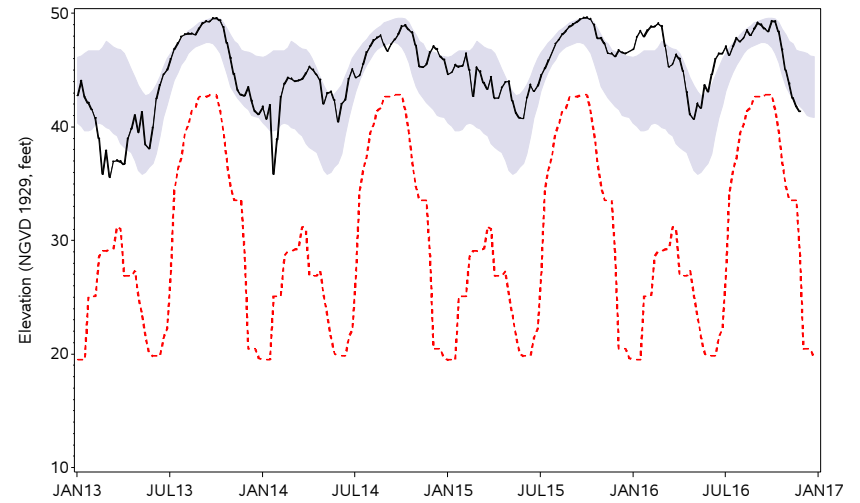
- - - POR Weekly Low

Normal Range

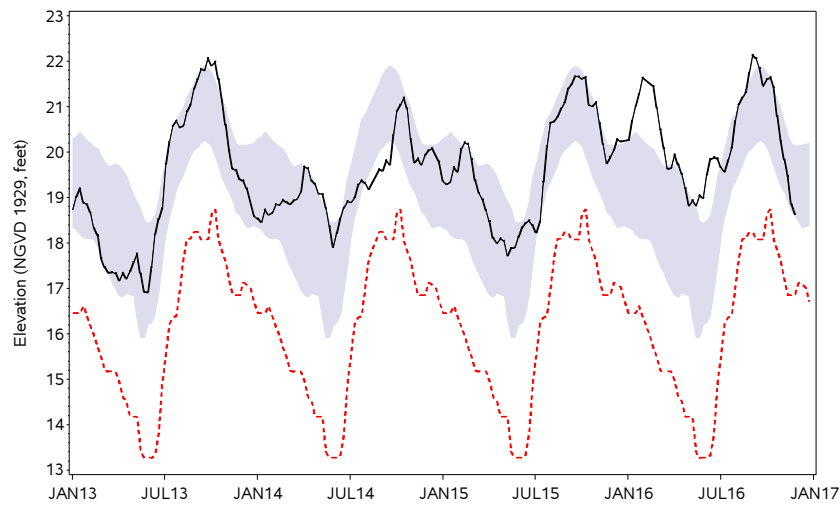
Marshall Deep
Southern Region



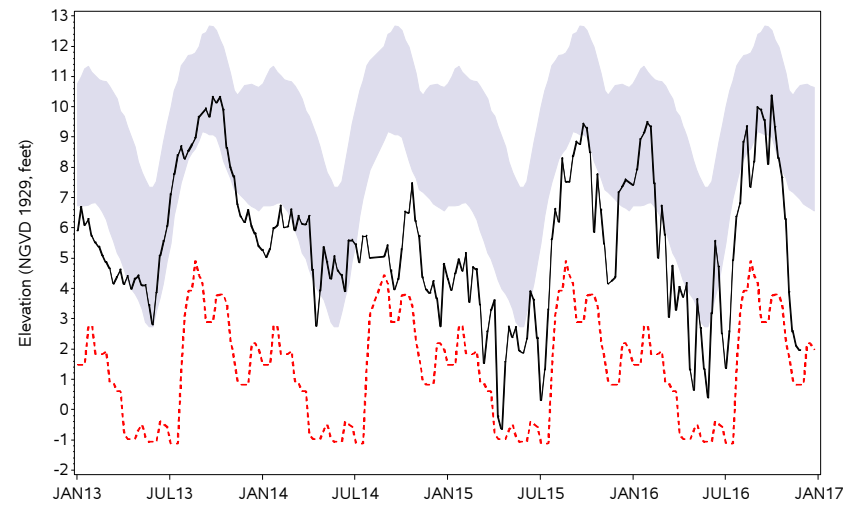
ROMP 26 Suwannee/Avon Park
Southern Region



ROMP TR 5-1 Suwannee
Southern Region



Sarasota 11th Street Deep
Southern Region

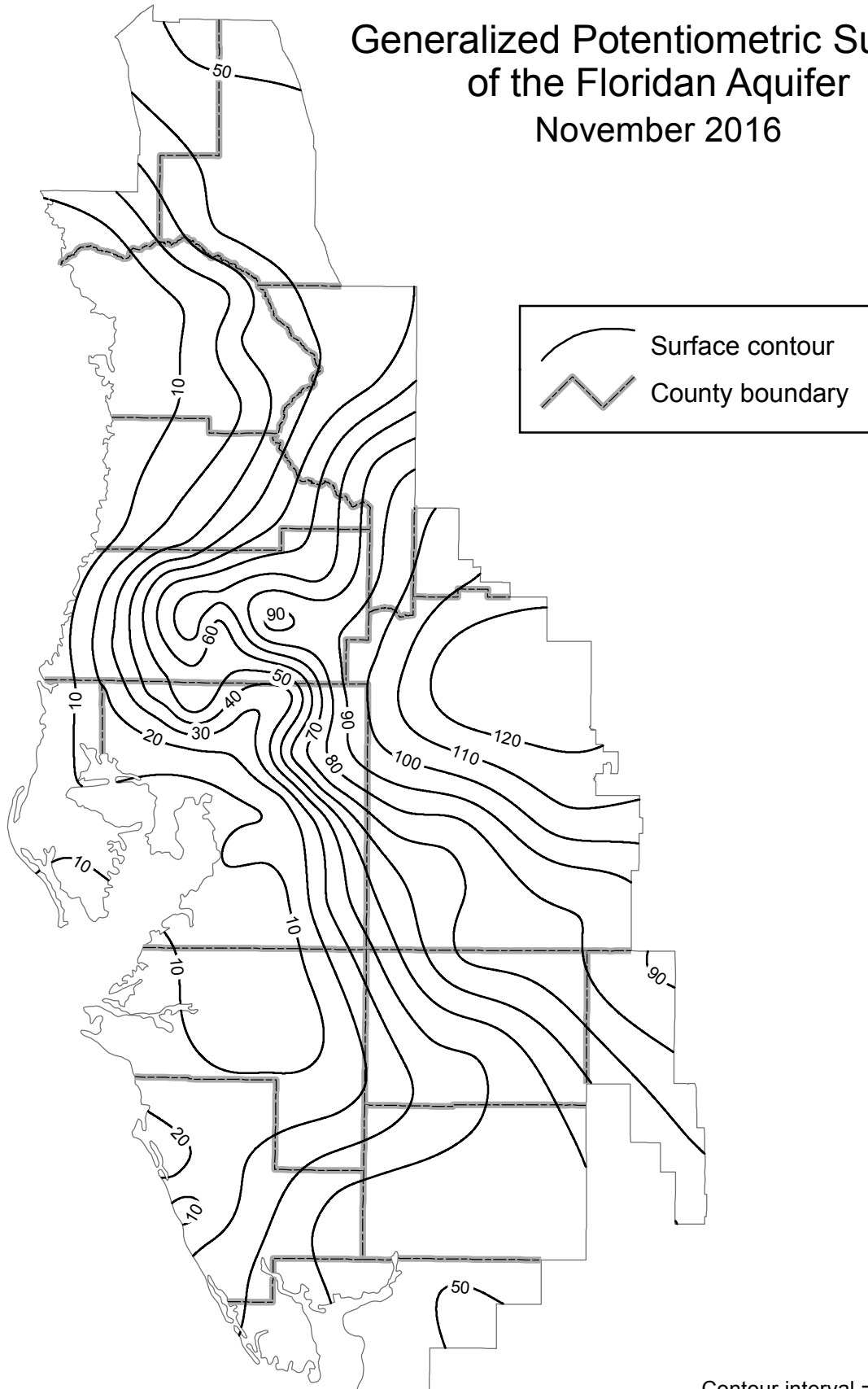


— Average Weekly Elevation

- - - POR Weekly Low

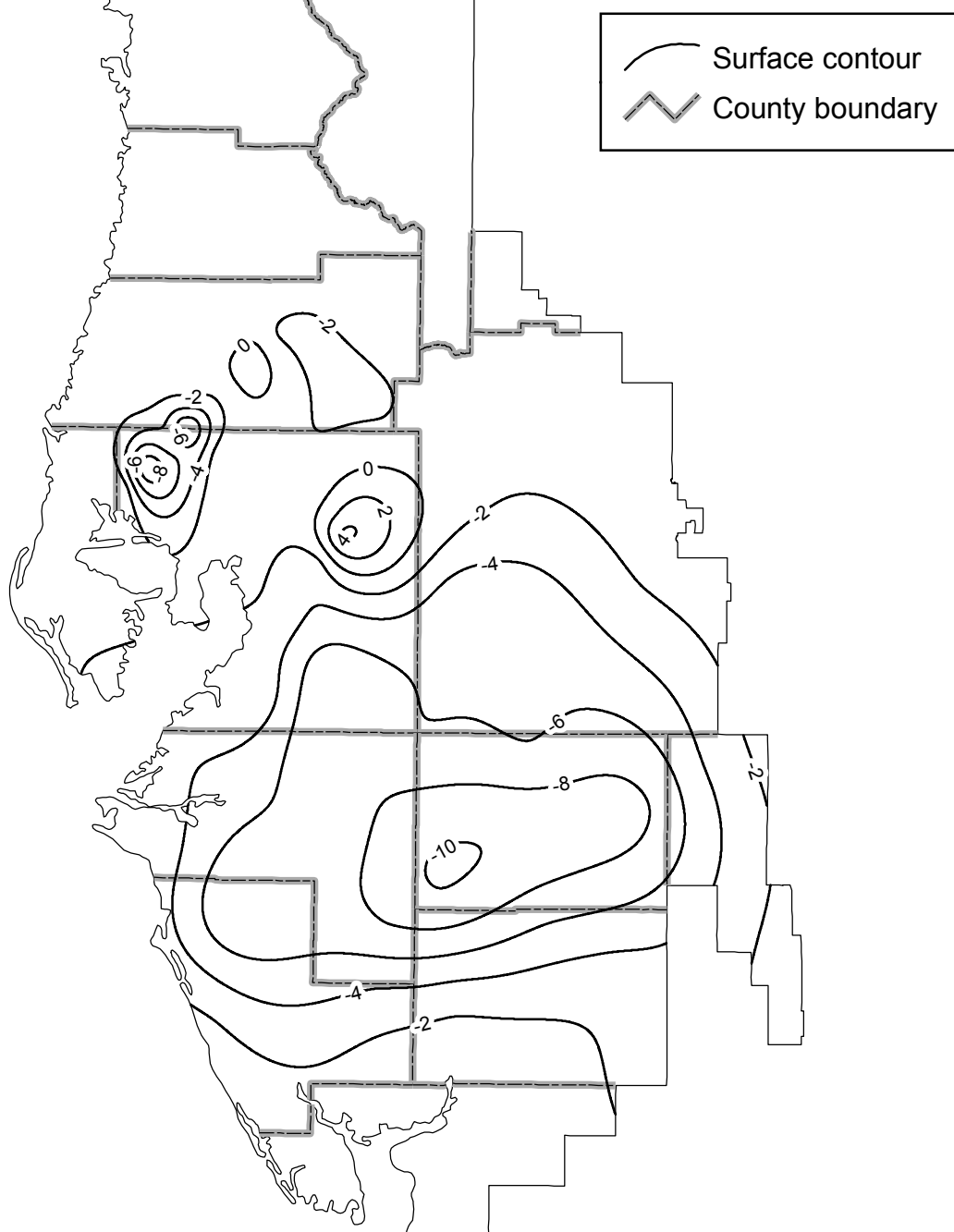
Normal Range

Generalized Potentiometric Surface of the Floridan Aquifer November 2016



Compiled by M.L. Crowell

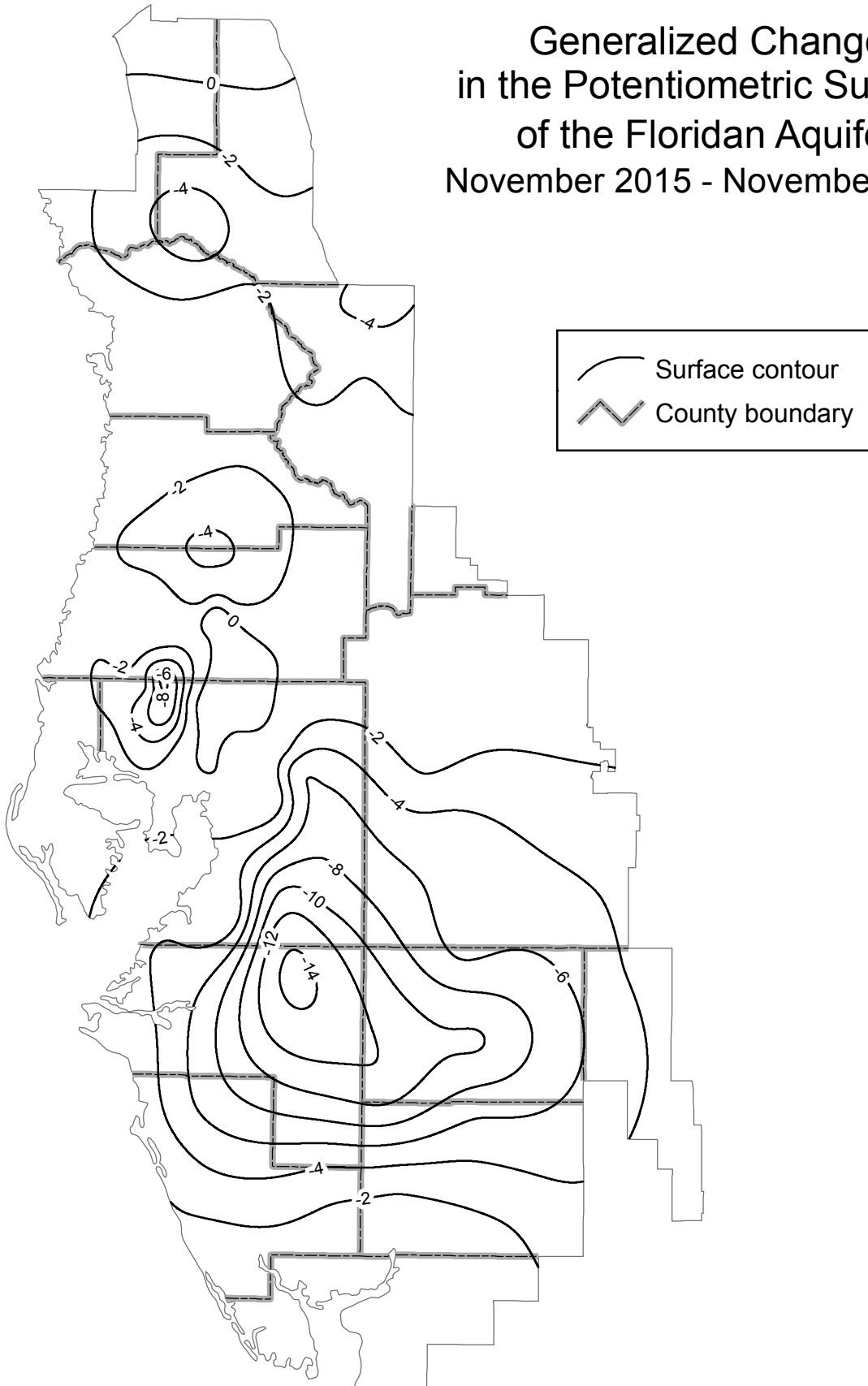
Generalized Change in the Potentiometric Surface of the Floridan Aquifer October 2016 - November 2016



Compiled by M.L. Crowell

Contour interval = 2 feet

Generalized Change in the Potentiometric Surface of the Floridan Aquifer November 2015 - November 2016



Compiled by M.L. Crowell

Contour interval = 2 feet

Public Supply Wellfields

Water levels are measured in 21 monitor wells (9 surficial, 12 intermediate and Floridan aquifer wells) located at nine public supply wellfields in the District. Thirteen of the 21 monitor wells have water levels measured monthly, two biweekly, and six weekly. Monthly data are tabulated to compare recent water levels to historical means.

In November, monthly analysis indicates that average water levels decreased in 11 of the 12 intermediate and Floridan wells and all nine surficial wells. Average water levels measured in the intermediate and Floridan wells decreased 2.91 feet, while levels measured in surficial wells decreased 1.12 feet.

During November, annual analysis indicates average water levels in 10 of the 12 intermediate and Floridan wells and all nine surficial wells were below last year's levels. Water levels measured in the intermediate and Floridan wells averaged 2.24 feet below last year's levels, while surficial water levels averaged 0.93 foot below November 2015 levels.

For November, average water levels in all 12 intermediate and Floridan wells and all nine surficial wells were above the low normal level, compared to historical monthly levels. Water levels measured in the intermediate and Floridan wells averaged 6.31 feet above the low normal level, while levels in the surficial wells averaged 4.86 feet above the low normal level.

SUMMARY OF GROUNDWATER LEVELS IN REPRESENTATIVE WELLFIELD WELLS, NOVEMBER 2016

	NOV 2016 Elev	OCT 2016 Elev	NOV 2015 Elev	Change From OCT 2016	Change From NOV 2015	NOV Historical Low Normal	NOV Historical High Normal	Departure From Low Normal	Period of Record Low	Record Low Date	Period of Record High	Record High Date
<i>INT/FLORIDAN WELLS</i>												
Cosme-Odessa Cosme No. 3	26.21	32.01	26.33	-5.80	-0.12	22.99	26.80	3.22	11.58	JUN2000	33.84	AUG2012
Cross Bar WRW	51.11	51.89	54.45	-0.78	-3.34	41.05	53.89	10.06	33.94	JAN1994	61.65	AUG1984
Cypress Crk TMR-1 Deep	61.08	61.28	62.47	-0.20	-1.39	53.34	61.30	7.74	36.93	FEB2001	70.87	JUN1976
Cypress Crk TMR-3 Deep	60.16	58.82	59.22	1.34	0.94	51.42	59.17	8.74	34.22	FEB2001	68.74	JUL1976
Eldridge-Wilde 11 Deep	18.89	20.96	21.79	-2.07	-2.90	11.70	18.32	7.19	0.31	SEP1990	64.70	NOV2009
Eldridge-Wilde 2S	19.37	20.80	20.85	-1.43	-1.48	11.06	18.54	8.31	-1.05	JUN2000	25.44	SEP2013
Morris Bridge 3A Deep	31.29	31.97	29.70	-0.68	1.59	27.27	31.78	4.02	17.02	MAY2009	42.53	AUG2013
Section 21 Hills 13 Deep	39.91	47.18	46.23	-7.27	-6.32	35.53	44.95	4.38	21.54	JUN2002	54.61	OCT2016
South Pasco 42	50.77	56.21	55.53	-5.44	-4.76	42.33	49.29	8.44	27.98	MAY2002	58.40	AUG2012
South Pasco SR 54 Deep	52.91	57.15	56.57	-4.23	-3.66	46.17	54.14	6.74	33.49	MAY2002	59.26	AUG2012
Starkey Regional	34.71	36.21	35.59	-1.50	-0.88	31.65	34.39	3.06	25.03	JUN2000	38.37	AUG2015
Verna 08	9.82	16.64	14.42	-6.82	-4.60	6.02	13.80	3.80	-24.32	MAY1989	26.68	FEB1998
<i>SURFICIAL WELLS</i>												
Cosme-Odessa IC-6	37.19	38.01	37.47	-0.82	-0.28	36.06	37.61	1.13	31.91	JUL1973	42.95	AUG2015
Cross Bar SERW	68.47	69.18	69.62	-0.71	-1.15	59.39	68.33	9.08	53.08	JUL1994	72.53	JUL1984
Cypress Crk TMR-1 Shallow	61.36	62.52	62.47	-1.15	-1.10	56.62	63.78	4.74	39.89	DEC2000	69.22	SEP2004
Cypress Crk TMR-3 Shallow	58.58	61.20	59.96	-2.62	-1.38	53.76	59.23	4.82	53.55	MAY1997	64.80	JUN2003
Eldridge-Wilde 11 Shallow	26.59	27.39	27.34	-0.80	-0.75	18.03	22.77	8.56	10.28	MAY1991	31.72	JUL2015
Morris Bridge 3A Shallow	33.40	34.65	34.70	-1.25	-1.29	32.25	34.65	1.15	24.86	MAY2009	39.20	DEC1997
Section 21 Hills 13 Shallow	51.22	52.32	51.97	-1.10	-0.75	40.96	50.41	10.26	33.81	MAY2001	53.82	AUG2012
South Pasco SR 54 Shallow	58.28	58.86	58.90	-0.58	-0.62	56.91	58.70	1.37	54.43	OCT1980	60.49	SEP1998
Starkey 707	30.19	31.20	31.26	-1.01	-1.07	27.54	30.07	2.65	22.70	JUN2000	34.18	AUG2015

Aquifer Resource Index

The Aquifer Resource Index (ARI) was created to provide information to the media, residents, local governments and other interested parties about current ground-water conditions and how they compare to historical records. The underlying purpose of this index is to provide the public with a gauge of ground-water levels in their area, so they can develop an understanding of the severity and cycles of drought and recovery.

The ARI is derived by comparing current ground-water levels with historical levels for 77 intermediate and Floridan aquifer (deep) monitor wells located throughout the three geographic areas of the District. Monitor wells with an adequate and reliable period-of-record to calculate weekly percentiles were selected for the network.

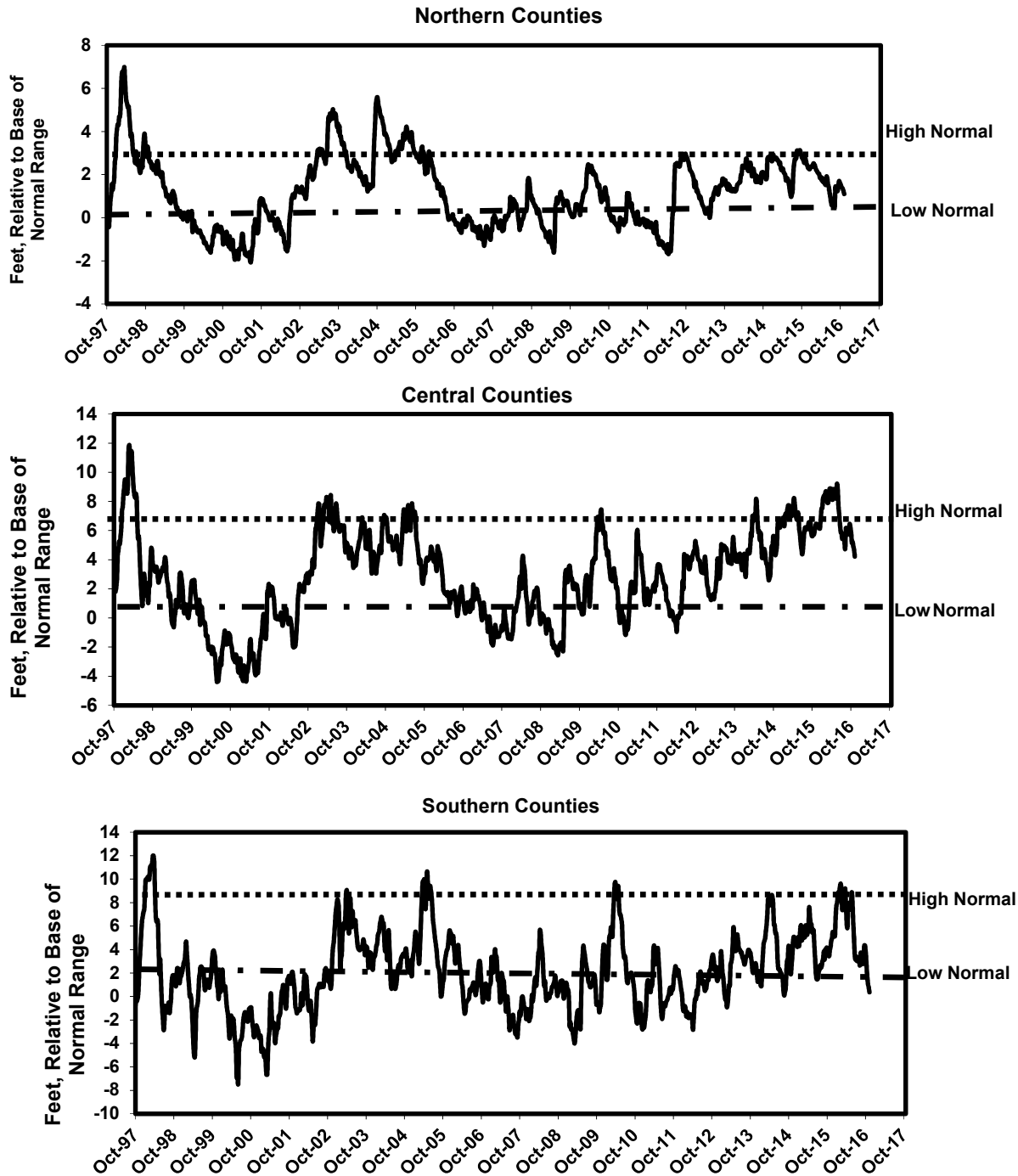
To determine the ARI value for a geographic area, each well is compared to its respective low-normal value weekly, and the difference is calculated. The weekly differences are used to determine the regional ARI value and the resulting ARI value represents how far water levels in the aquifer have to rise or fall to reach their respective low-normal value. The normal range for the northern region is approximately zero to three feet, zero to five-and-one-half feet for the central region and zero to eight feet for the southern region.

**Weekly Aquifer Resource Index Level, In Feet
(Relative to Bottom of the Normal Range or 25th Percentile)**

Report Date	Northern Counties	Central Counties	Southern Counties
11/07/2016	1.39	5.22	1.66
11/14/2016	1.34	4.92	1.09
11/22/2016	1.23	4.66	0.76
11/28/2016	1.11	4.22	0.23
11/30/2016	1.10	4.22	0.36

Note: A negative value indicates the regional average is below the “Low-Normal” level

AQUIFER RESOURCE INDEX*
November 2016



*Average Groundwater Level Relative to Low Normal, NGVD 29

Compiled By Steven DeSmith, P.G.

PUBLIC SUPPLY SURFACE WATER RESERVOIRS

CITY OF TAMPA RESERVOIR (Hillsborough River Basin): Constructed in 1924, it is located on the Hillsborough River in Hillsborough County. It is the fourth largest public supply surface water facility in the District. It is the main water supply for the City of Tampa and has a total storage capacity of 1.7 billion gallons (bg). The total usable volume is 1.4 bg, when the reservoir elevation is 22.5 feet NGVD. It is an in-stream reservoir with a depth that ranges between nine and 22 feet. Given this amount of water, it is estimated that a 15-day supply of water is available from this facility over an extended dry period. During periods of low water due to drought conditions, the facility is permitted to pump water from two alternate sources. The first of these two sources is the Tampa Bypass Canal. Water is pumped over the water control structure at S-161 into the Hillsborough River above the dam. The second source is Sulphur Springs, just downstream from the dam, where water is captured at the spring and pumped back behind the dam. Withdrawals from both sources are in strict accordance with pumpage schedules as outlined in the facility's water use permit. When water levels fall below 12 feet NGVD, water cannot be withdrawn because the reservoir level is below the intake pipes. The permitted average daily withdrawal for this facility is 82 mgd, with a permitted maximum daily withdrawal of 104 mgd. Currently, ground water wells are not used to augment this facility. The minimum producible level is 9.00 feet.

PEACE RIVER RESERVOIRS - PEACE RIVER/MANASOTA REGIONAL WATER

SUPPLY AUTHORITY (Peace River Basin): The Peace River reservoirs are located in southwestern DeSoto County. They are an off-stream reservoir system consisting of two reservoirs that store surface water captured from the Peace River during wet periods. The first reservoir, Reservoir 1, was built in 1980 and encompasses approximately 85 acres, has a water depth of approximately 31 feet, and has a total storage capacity of approximately 625 million gallons. The second reservoir, Reservoir 2, was built in 2009, covers about 616 acres, has a water depth of approximately 35 feet, and has a total storage capacity of about 6.0 billion gallons. The PRMRWSA facility ranks as the third largest in the District for total volume storage and supplies water to Charlotte, DeSoto, Manatee and Sarasota counties and to the City of North Port. The facility also uses an aquifer storage recovery (ASR) system for storing treated water pumped from the river. The minimum producible level at Reservoir 1 is Elevation 8.0 feet, while Reservoir 2 is Elevation 27.0 feet.

MANATEE RESERVOIR (Manasota Basin): Completed in 1967 by the damming of the Manatee River, the Manatee Reservoir is the second largest of the six surface-water public supply facilities within the District. Located in Manatee County, this in-stream facility has a storage capacity of 7.5 bg. The service area of the Manatee reservoir is the unincorporated portions of Manatee County, the City of Palmetto and Anna Maria Island, and also the Sarasota SUD#1. This reservoir provides essentially all public supply for Manatee County, with the exception of the City of Bradenton. The total size of this reservoir is 1800 acres with an average depth of 15 feet. With the reservoir full, the facility has approximately 220 days of available water supply. When the surface-water elevation drops below 21.0 feet, water cannot be withdrawn because levels are below the facility's intakes. The permitted average daily withdrawal for this facility is 34.9 mgd, with a permitted peak monthly quantity of 41.9 mgd. The minimum producible level is 21.00 feet.

EVERS RESERVOIR (Manasota Basin): Constructed in 1935 and expanded in 1985, it is located on the Braden River in Manatee County. This is the fifth largest public supply reservoir in the District. Its main service area is the City of Bradenton and approximately 500 customers outside the city. It has a total storage capacity of 1.5 bg. The total size of the facility is 300 acres with an average depth of 12 feet. Water ceases to flow over the dam when the level falls below 3.84 feet NGVD. During the 1985 drought, while expansion of the facility was taking place, the water level dropped to one foot below sea level and demand was still met. Given a completely full reservoir, with no water going over the spillway, it is estimated the facility could supply water for approximately 260 days, with no input from rainfall. The permitted average daily withdrawal for this facility is 6.95 mgd, with a permitted peak monthly quantity of 8.13 mgd. Currently, ground-water wells are not used to augment this facility.

SHELL CREEK RESERVOIR (Peace River Basin): Shell Creek Reservoir, located in Charlotte County, is the sixth largest surface water system within the District. This system was built in 1964 and services the City of Punta Gorda as well as unincorporated areas surrounding the city limits. The Shell Creek Reservoir is fed by two primary tributaries, Shell Creek from the east and Prairie Creek from the northwest. The total drainage area at Hendrickson Dam is 373 square miles. It has a surface area of 800 acres and depths of 10 to 12 feet. Total storage capacity is 765 mg. Even with this low volume of water, personnel at this facility estimate they have approximately 125 days of available supply with no input from rainfall. Water ceases to flow across the weir when surface elevations drop below 5.0 feet NGVD, and at 3.7 feet NGVD water quality becomes a major concern. When surface elevations drop below 1.75 feet NGVD, the water is below the intakes and withdrawal of water is not possible. The permitted average daily withdrawal by this facility is 5.358 mgd, with a permitted peak monthly quantity of 6.901 mgd. The minimum producible level is 1.70 feet.

C.W. BILL YOUNG REGIONAL RESERVOIR - TAMPA BAY WATER (Alafia River Basin): Constructed in early 2005, it is the largest public supply surface water facility in the District. Located in southern Hillsborough County, it is an off-stream reservoir that stores surface water skimmed from the Tampa Bypass Canal and Alafia and Hillsborough Rivers. It services the Tampa Bay region through the Tampa Bay Water regional public supply water distribution system. The reservoir has an estimated storage capacity of 15.0 bg when the water level elevation is 136.5 feet NGVD. The reservoir is approximately 45 feet deep, two miles long and one mile wide, and encompasses a land area of approximately 1,100 acres. It reportedly has the capacity to provide 25 percent of the Tampa Bay region's public supply needs for six months and can supply the Tampa Bay regional surface water treatment plant at full capacity for 227 days.

Reservoirs

Water-level data for the seven reservoirs are obtained weekly from the USGS, Manatee County Utilities Department, Peace River/Manasota Regional Water Supply Authority, or Tampa Bay Water. The last weekly water-level value of the month is indicated in this report. The values reported are provisional and subject to revision.

In November, six of the seven reservoirs monitored for this report recorded water-level decreases, compared to last month. The Evers, Hillsborough River, Lake Manatee, Bill Young, Peace River No. 1 and the Shell Creek reservoirs posted water level decreases of 0.56 foot, 0.63 foot, 0.40 foot, 1.51 feet, 1.70 feet and 0.05 foot, respectively. The Peace River No. 2 reservoir posted a water level increase of 0.40 foot, compared to last month.

SUMMARY OF WATER LEVELS IN WATER SUPPLY RESERVOIRS (ELEVATION IN FEET, NGVD 29)

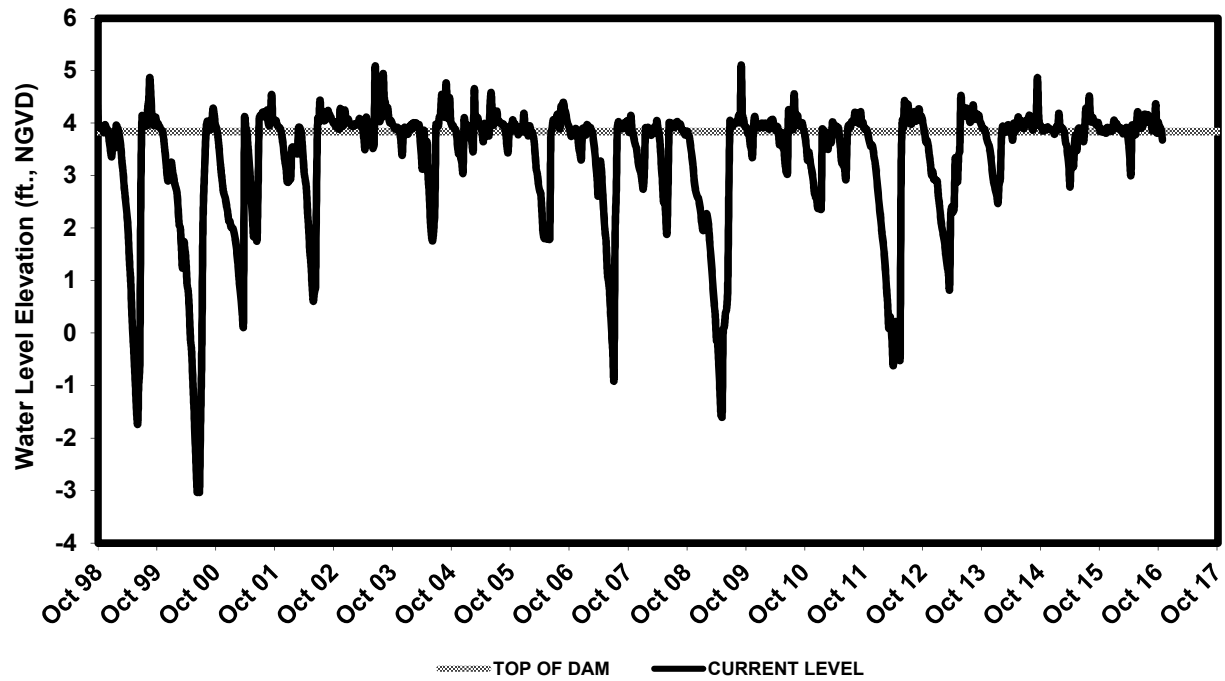
RESERVOIR	2016 October	2016 November	2015 November	Change from Prior Month	Change from Prior Year
Evers					
City of Bradenton	3.92	3.36	3.81	-0.56	-0.45
Hillsborough					
City of Tampa	22.75	22.12	22.73	-0.63	-0.61
Lake Manatee					
Manatee County	40.01	39.61	40.00	-0.40	-0.39
C.W. Bill Young Regional					
Tampa Bay Water	135.47	133.96	135.47	-1.51	-1.51
Peace River					
PRMRWSA Reservoir #1	25.40	23.70	25.20	-1.70	-1.50
PRMRWSA Reservoir #2	61.70	62.10	62.90	0.40	-0.80
Shell Creek					
City of Punta Gorda	5.14	5.09	5.16	-0.05	-0.07

NGVD - National Geodetic Vertical Datum

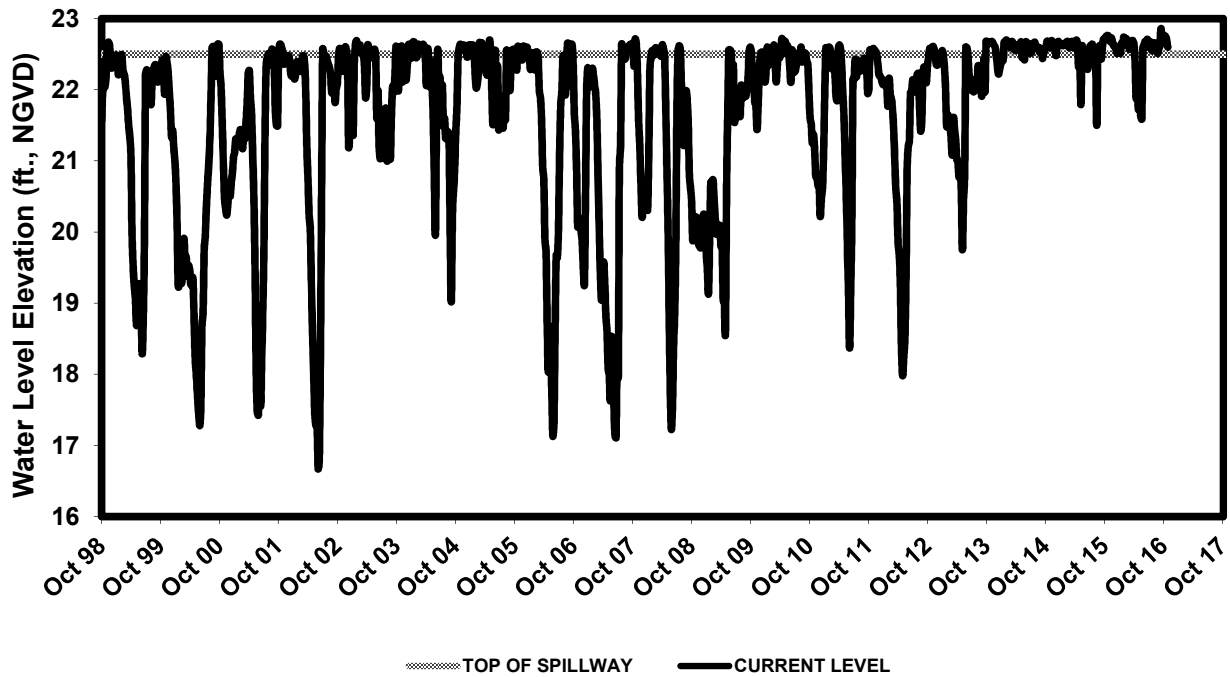
Reported data are provisional and subject to revision.

Compiled by Steven W. DeSmith, P.G.

EVERS RESERVOIR City of Bradenton

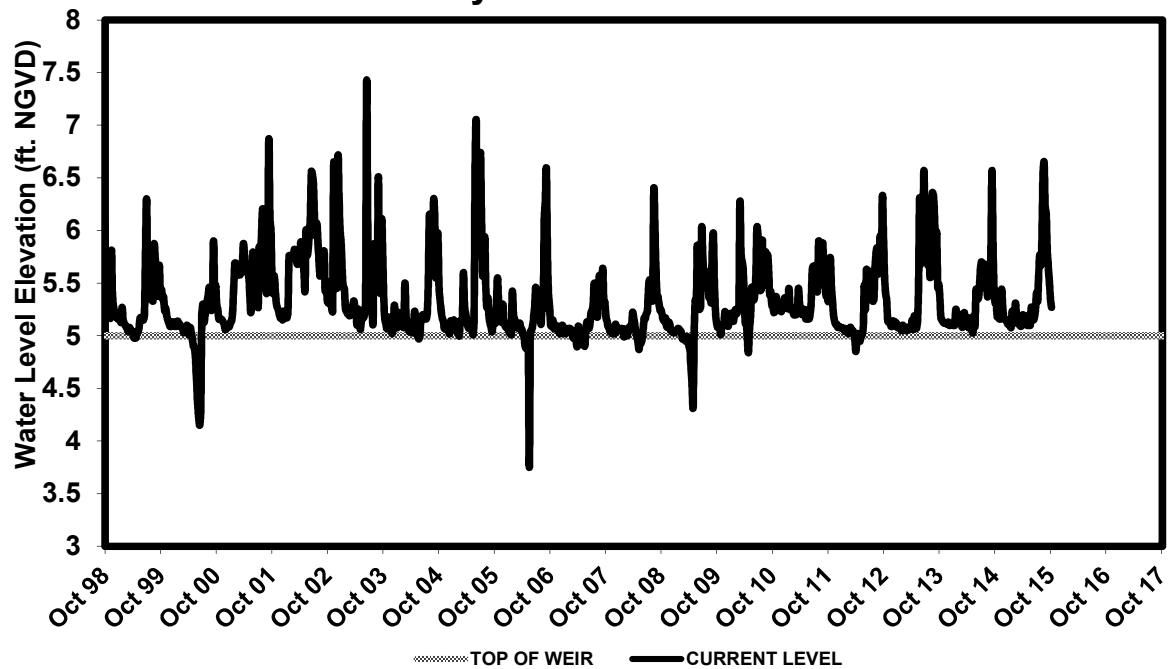


HILLSBOROUGH RESERVOIR City of Tampa

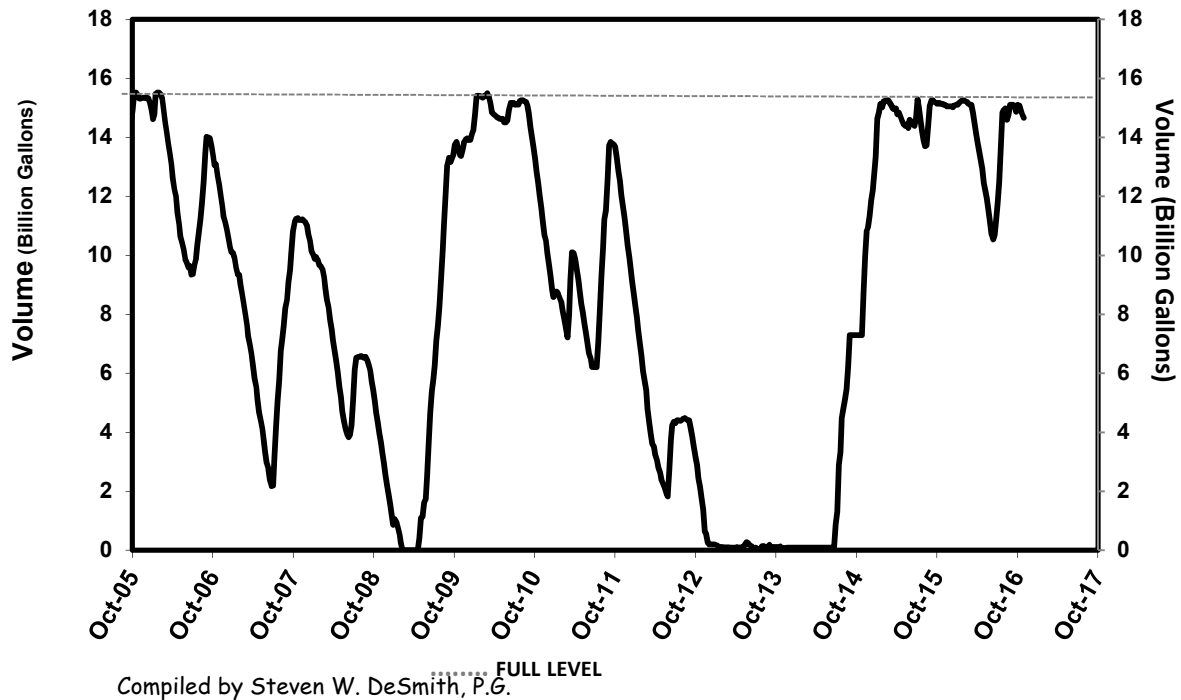


Compiled by Steven W. DeSmith, P.G.

SHELL CREEK RESERVOIR City of Punta Gorda

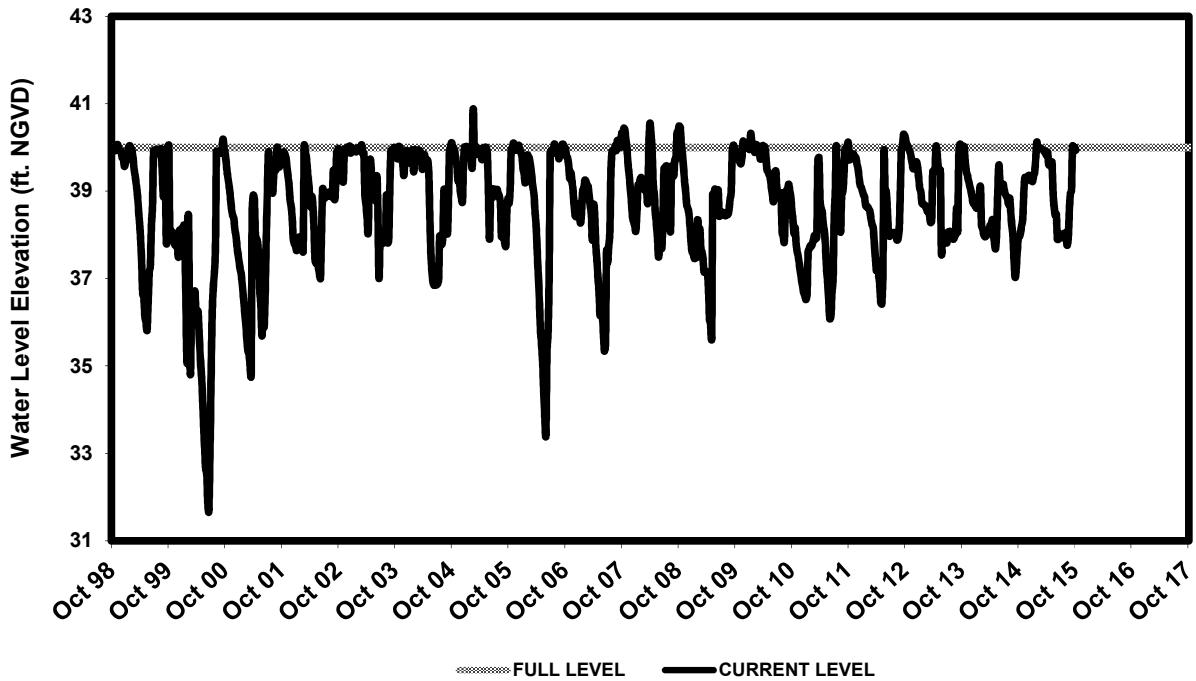


C.W. BILL YOUNG REGIONAL RESERVOIR Tampa Bay Water

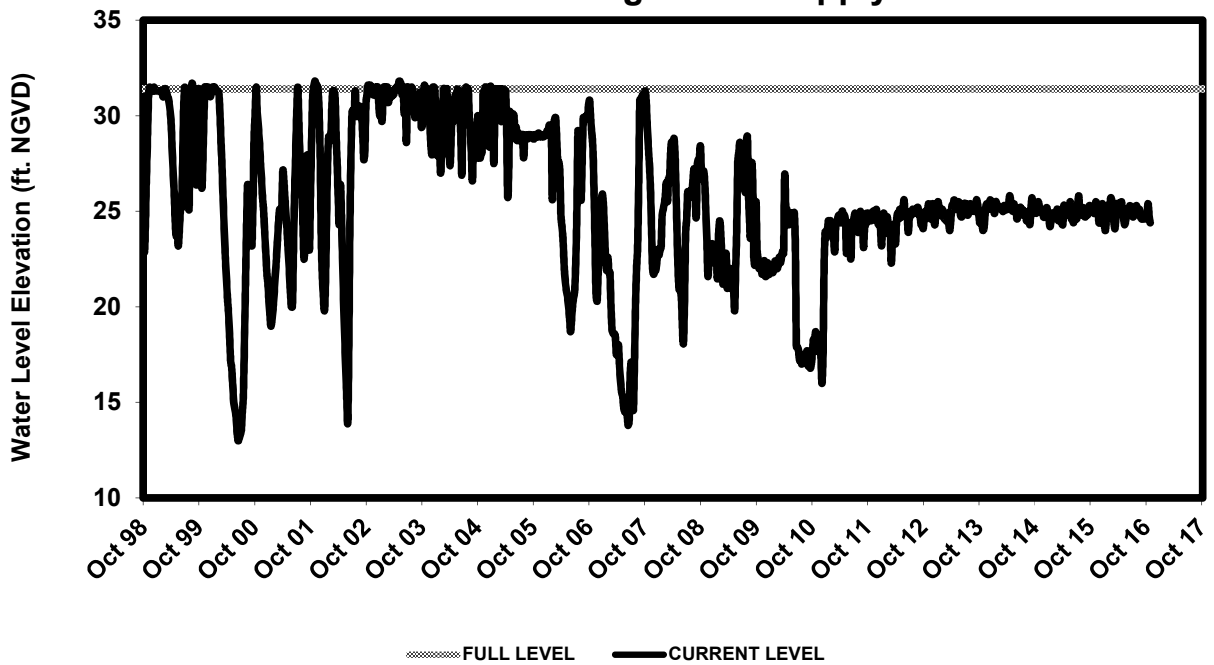


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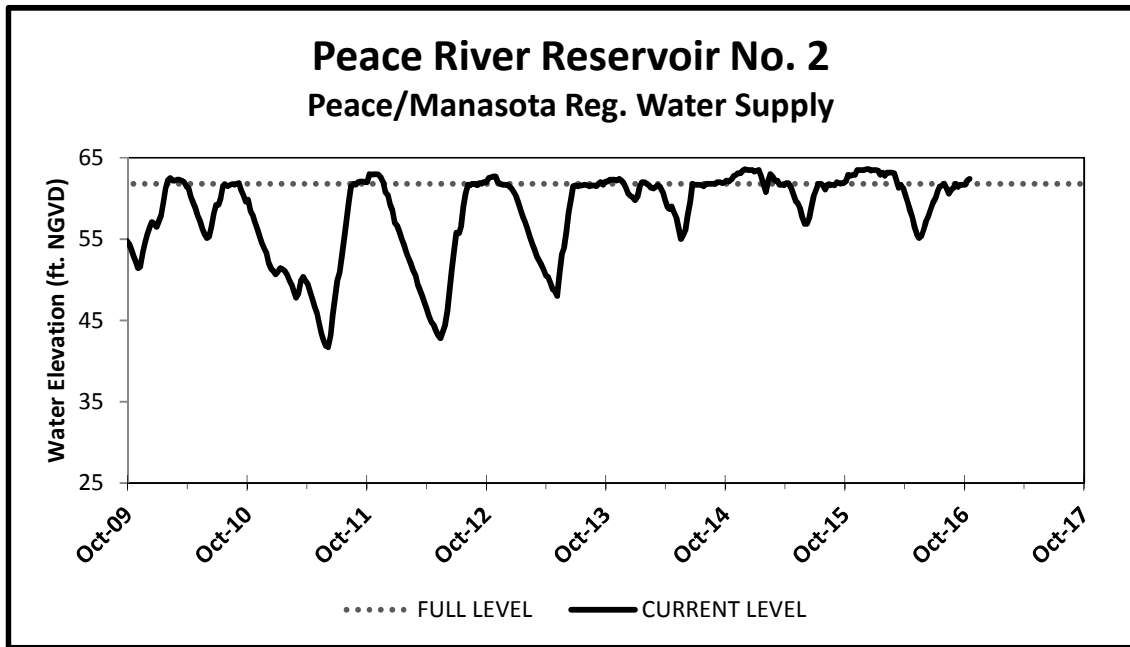
LAKE MANATEE RESERVOIR Manatee County



PEACE RIVER RESERVOIR No. 1 Peace/Manasota Reg. Water Supply



Compiled by Steven W. DeSmith, P.G.



Compiled by Steven W. DeSmith, P.G.

APPENDICES

Rainfall percentiles by interval and region, inches.

Rainfall Interval	Region	10TH Percentile (P10)	25th Percentile (P25)	50th Percentile (P50)	75th Percentile (P75)	90th Percentile (P90)
Annual total	<i>Northern</i>	43.19	48.35	54.01	58.86	63.46
Annual total	<i>Central</i>	41.45	46.10	52.16	57.28	63.82
Annual total	<i>Southern</i>	42.05	46.25	52.19	57.82	63.43
Annual total	<i>District</i>	43.12	47.22	52.99	57.46	62.83
Dry season total	<i>Northern</i>	15.27	18.42	23.79	28.72	32.10
Dry season total	<i>Central</i>	13.32	16.48	21.59	26.86	30.83
Dry season total	<i>Southern</i>	12.35	15.68	21.24	26.23	30.01
Dry season total	<i>District</i>	13.71	16.79	22.02	27.22	29.70
Wet season total	<i>Northern</i>	22.79	25.44	29.45	33.43	38.16
Wet season total	<i>Central</i>	23.22	25.79	29.71	34.86	39.22
Wet season total	<i>Southern</i>	24.37	27.37	30.58	35.88	41.68
Wet season total	<i>District</i>	23.92	27.16	29.97	34.71	38.93
January total	<i>Northern</i>	0.73	1.50	2.45	4.00	5.30
January total	<i>Central</i>	0.72	1.21	2.23	3.72	4.60
January total	<i>Southern</i>	0.39	0.93	1.88	3.31	4.93
January total	<i>District</i>	0.65	1.17	2.10	3.55	4.90
February total	<i>Northern</i>	0.82	1.42	2.82	4.08	5.76
February total	<i>Central</i>	0.60	1.12	2.38	4.17	5.50
February total	<i>Southern</i>	0.36	1.26	2.21	3.63	4.93
February total	<i>District</i>	0.73	1.32	2.38	3.94	5.12
March total	<i>Northern</i>	1.00	2.06	3.15	5.43	7.21
March total	<i>Central</i>	0.97	1.66	2.96	4.95	6.44
March total	<i>Southern</i>	0.81	1.28	2.56	4.29	6.68
March total	<i>District</i>	1.09	1.64	3.04	4.86	6.92
April total	<i>Northern</i>	0.65	1.33	2.38	3.95	5.52
April total	<i>Central</i>	0.51	0.96	1.87	3.44	5.59
April total	<i>Southern</i>	0.48	1.19	2.04	3.75	4.66
April total	<i>District</i>	0.65	1.20	2.24	3.72	5.12
May total	<i>Northern</i>	1.18	1.95	3.21	4.67	6.92
May total	<i>Central</i>	0.87	1.64	2.73	4.58	5.75
May total	<i>Southern</i>	1.17	1.91	3.36	5.22	6.75
May total	<i>District</i>	1.23	2.04	3.24	4.87	6.29
June total	<i>Northern</i>	4.60	5.47	7.27	8.63	10.16
June total	<i>Central</i>	3.65	4.79	6.46	8.27	9.48
June total	<i>Southern</i>	4.22	5.63	7.44	9.06	12.06
June total	<i>District</i>	4.55	5.46	7.24	8.60	10.99
July total	<i>Northern</i>	5.36	6.75	8.29	9.16	11.52
July total	<i>Central</i>	4.89	5.98	8.35	10.05	11.44
July total	<i>Southern</i>	5.68	6.94	8.11	9.50	10.99
July total	<i>District</i>	5.60	6.83	8.19	9.57	10.58
August total	<i>Northern</i>	5.44	6.30	7.31	9.72	11.33
August total	<i>Central</i>	5.52	6.55	7.90	9.62	12.03
August total	<i>Southern</i>	5.55	6.22	7.70	8.97	10.49
August total	<i>District</i>	5.65	6.52	7.70	9.37	10.67
September total	<i>Northern</i>	2.79	4.18	5.84	8.04	11.35
September total	<i>Central</i>	3.19	5.11	6.46	8.50	11.69
September total	<i>Southern</i>	4.30	5.46	6.94	9.33	11.85
September total	<i>District</i>	3.85	5.21	6.53	8.62	11.65
October total	<i>Northern</i>	0.63	1.27	2.46	4.40	6.15
October total	<i>Central</i>	0.69	1.39	2.61	4.03	6.13
October total	<i>Southern</i>	0.92	1.78	2.73	4.27	6.04
October total	<i>District</i>	1.06	1.57	2.80	4.15	5.79

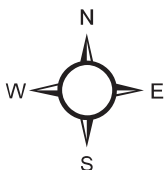
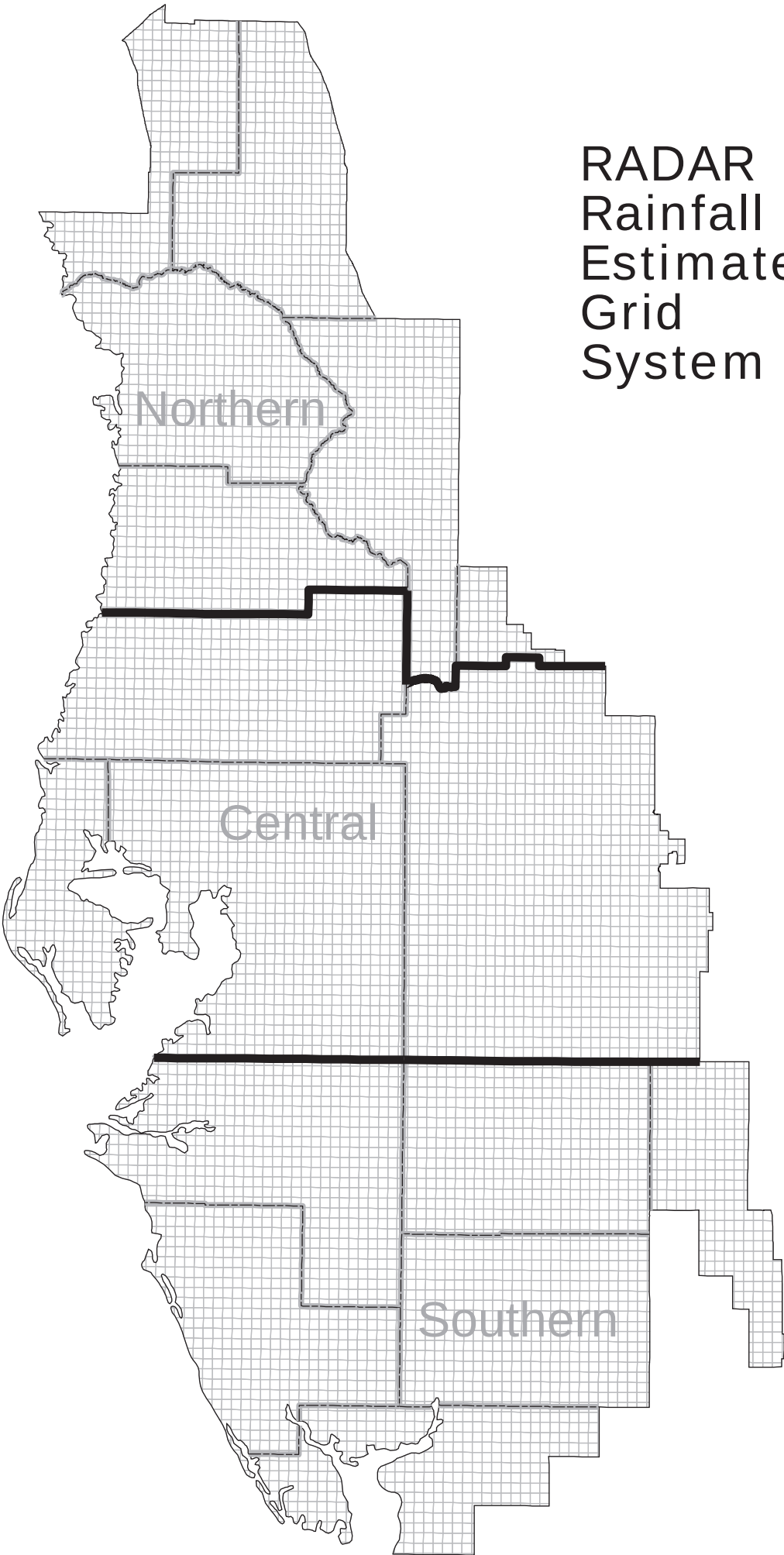
Rainfall percentiles by interval and region, inches (continued).

Rainfall Interval	Region	10TH Percentile (P10)	25th Percentile (P25)	50th Percentile (P50)	75th Percentile (P75)	90th Percentile (P90)
November total	<i>Northern</i>	0.38	0.71	1.63	2.88	4.56
November total	<i>Central</i>	0.25	0.47	1.42	2.82	4.33
November total	<i>Southern</i>	0.40	0.64	1.46	2.56	3.82
November total	<i>District</i>	0.37	0.63	1.53	2.73	4.39
December total	<i>Northern</i>	0.54	1.06	2.06	3.71	5.19
December total	<i>Central</i>	0.48	0.84	1.89	3.03	4.87
December total	<i>Southern</i>	0.45	0.77	1.56	2.63	4.18
December total	<i>District</i>	0.54	0.89	1.86	2.92	4.34

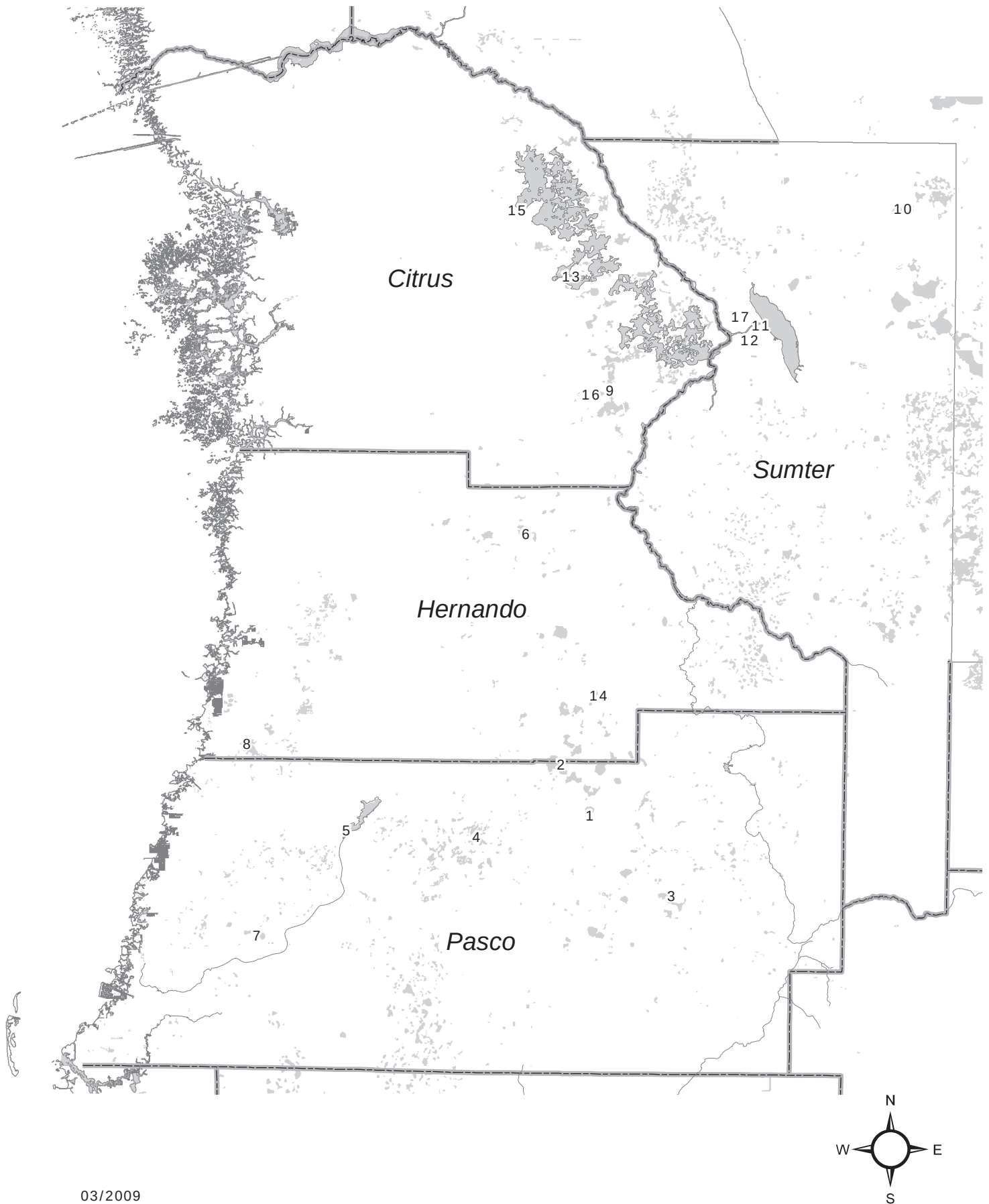
Rainfall characterization ranges

Characterization	Range	Corresponding Rainfall Percent of Normal (approximate)
Very dry	Less than the P10 rainfall	Less than 80 percent of normal
Drier than normal	P10 to P24 rainfall	80 to 90 percent of normal
Normal	P25 to P75 rainfall	90 to 110 percent of normal
Wetter than normal	P76 to P90 rainfall	110 to 120 percent of normal
Very Wet	Greater than the P90 rainfall	Greater than 120 percent of normal

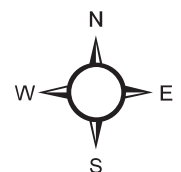
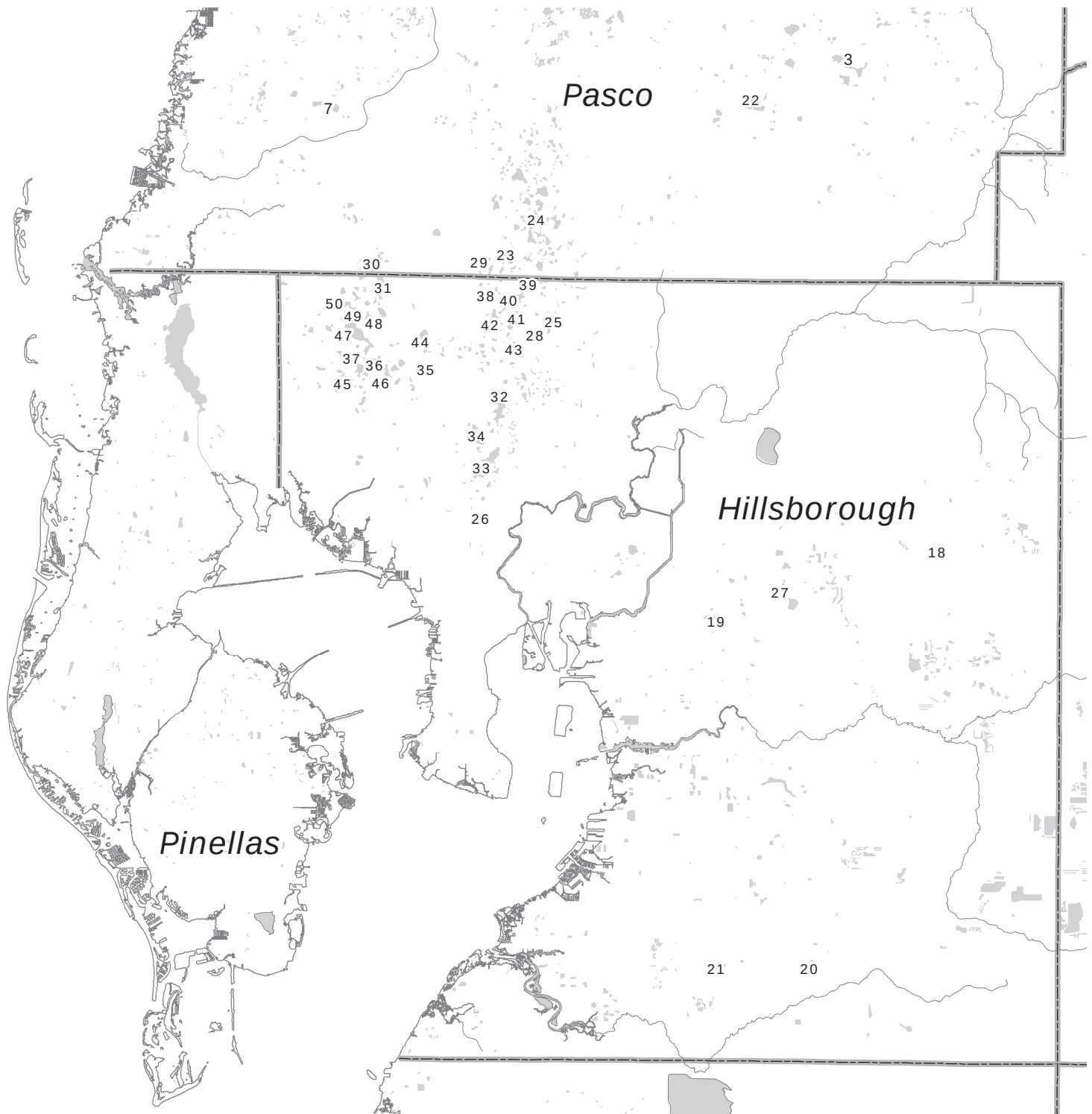
RADAR
Rainfall
Estimate
Grid
System



Selected Lake Monitoring Stations Northern Region

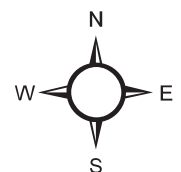
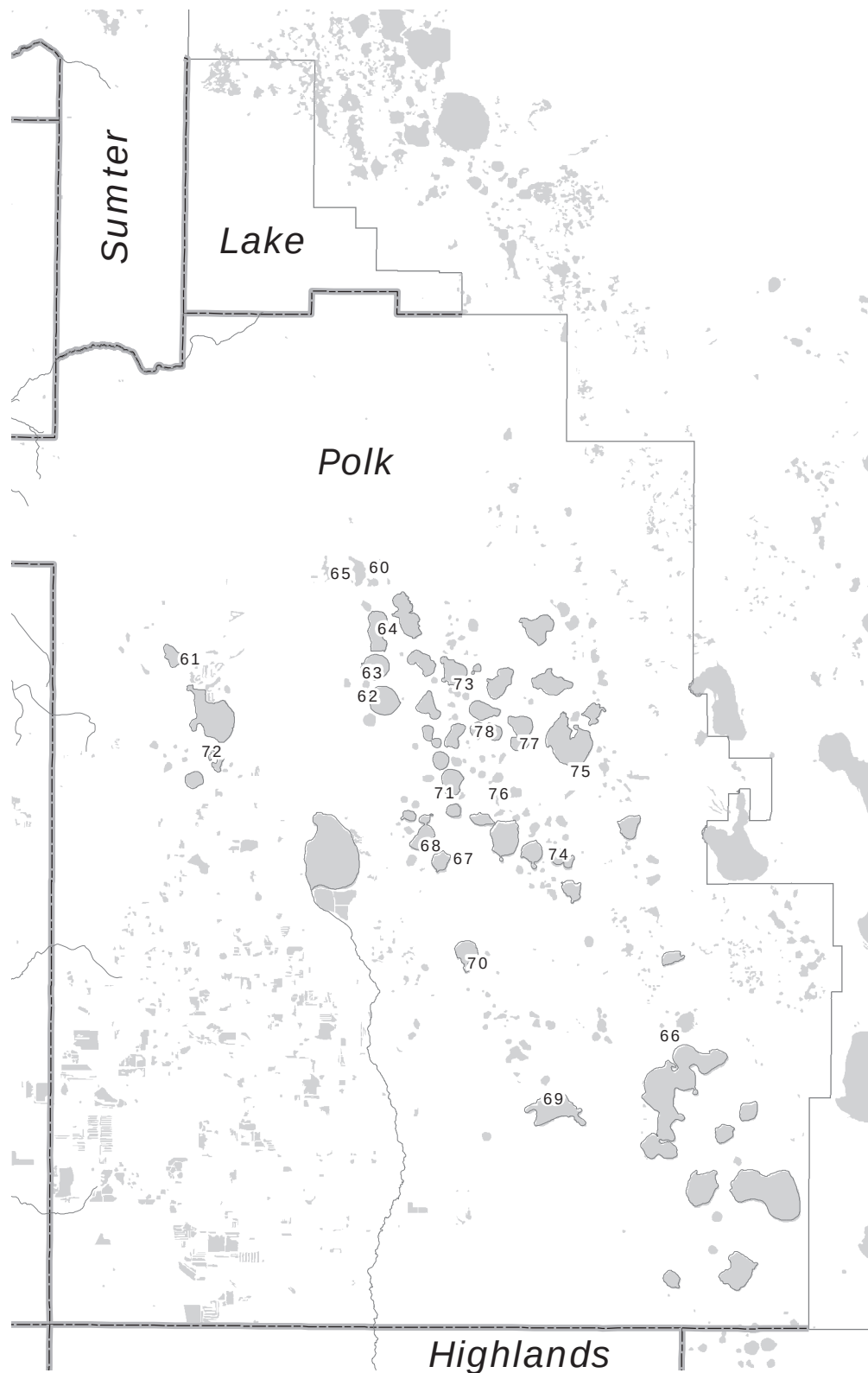


Selected Lake Monitoring Stations Tampa Bay Region



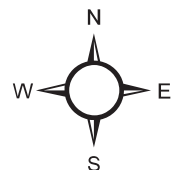
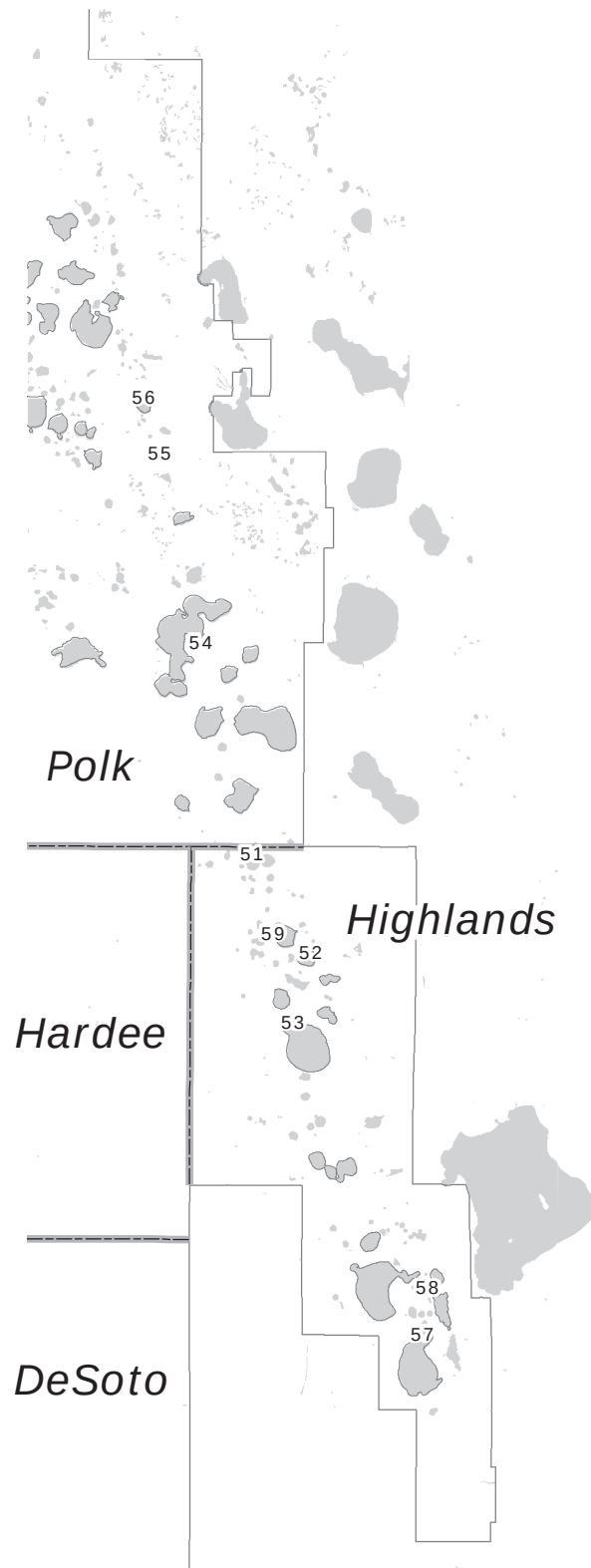
Selected Lake Monitoring Stations

Polk Uplands Region



Selected Lake Monitoring Stations

Lake Wales Ridge Region



Selected Lake Monitoring Stations

Northern Region

<u>Map ID</u>	<u>Site Name</u>
1	Lake Iola
2	Hancock Lake
3	Lake Pasadena
4	Big Fish Lake
5	Crews Lake
6	Lake Lindsey
7	Moon Lake
8	Hunters Lake
9	Tsala Apopka at Floral City
10	Lake Miona
11	Pana Vista Outlet River
12	Outlet River at Panacoochee
13	Tsala Apopka at Inverness
14	Spring Lake
15	Tsala Apopka at Hernando
16	Little Lake (Consuella)
17	Lake Panasoffkee

Tampa Bay Region

<u>Map ID</u>	<u>Site Name</u>	<u>Map ID</u>	<u>Site Name</u>
18	Mud (Walden) Lake	40	Lake Brooker
19	Gornto Lake	41	Cooper Lake
20	Carlton Lake	42	Lake Thomas
21	Lake Wimauma	43	Brant Lake
22	King Lake near San Antonio	44	Turkey Ford Lake
23	Lake Linda	45	Church Lake
24	Lake Padgett	46	Horse Lake
25	Keene Lake	47	Lake Alice
26	Egypt Lake	48	Lake Calm
27	Long Pond	49	Keystone Lake
28	Lake Stemper	50	Crescent Lake
29	Camp Lake		
30	Lake Ann (Parker)		
31	Lake Hiawatha		
32	Platt Lake		
33	Lake Carroll		
34	Bay Lake		
35	Lake LeClare		
36	Little Lake		
37	Rainbow Lake		
38	Lake Harvey		
39	Deer Lake		

Selected Lake Monitoring Stations

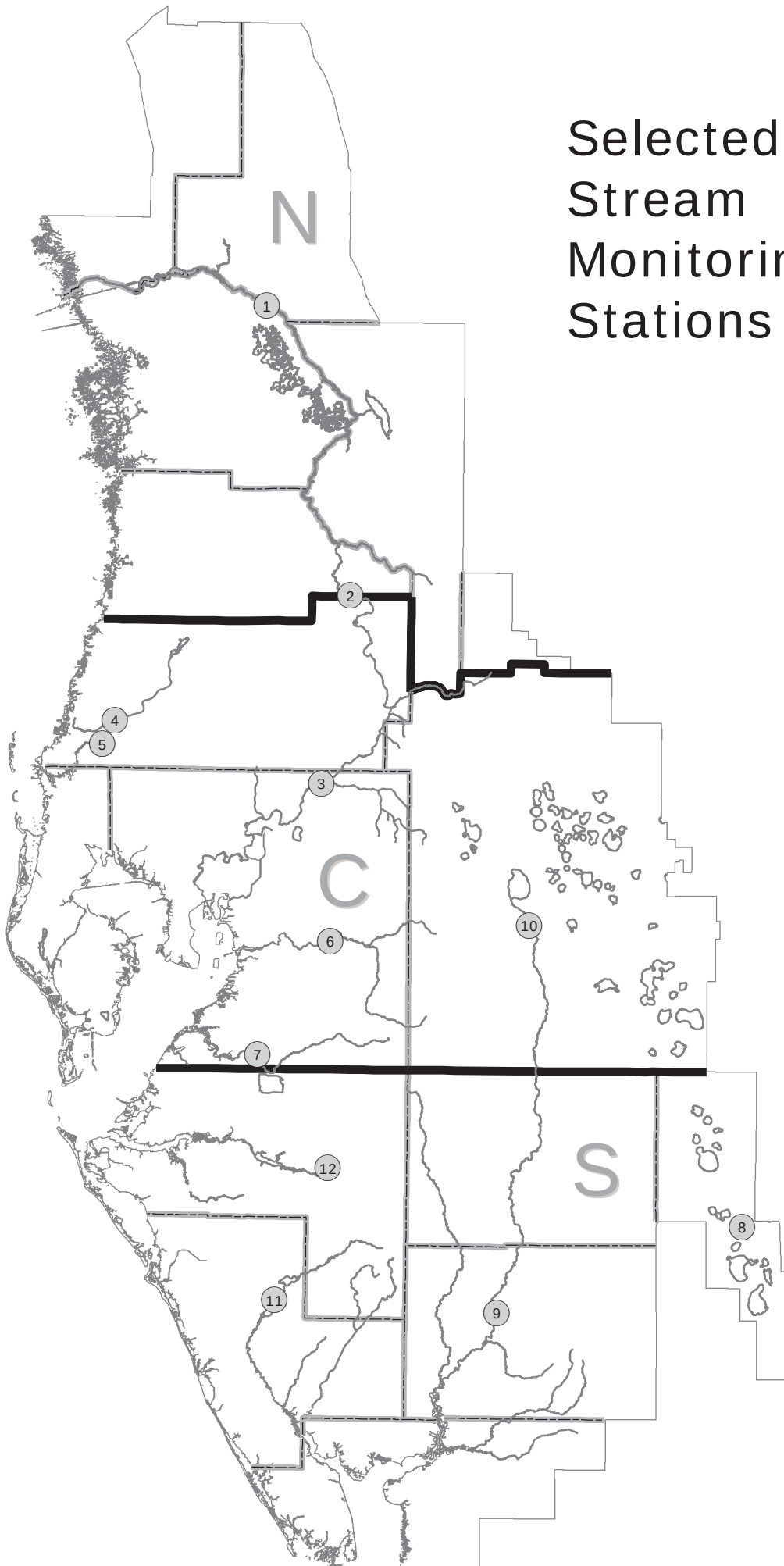
Lake Wales Ridge Region

<u>Map ID</u>	<u>Site Name</u>
51	Trout Lake
52	Lake Letta
53	Lake Jackson at Sebring
54	Crooked Lake near Babson Park
55	Lake Starr
56	Lake Annie
57	Lake Placid
58	Lake Clay
59	Lake Lotela

Polk Uplands Region

<u>Map ID</u>	<u>Site Name</u>
60	Lake Helene
61	Lake Gibson
62	Lake Ariana
63	Lake Arietta
64	Lake Juliana
65	Clearwater Lake
66	Blue Lake South
67	Lake McLeod
68	Eagle Lake
69	Lake Buffum
70	Lake Garfield
71	Lake Howard
72	Lake Bonny
73	Lake Alfred
74	Lake Ruby
75	Lake Hamilton
76	Lake Otis
77	Lake Fannie
78	Lake Conine

Selected Stream Monitoring Stations



Selected Stream Monitoring Stations

<u>Map ID</u>	<u>Site Name</u>
1	Withlacoochee River near Holder
2	Withlacoochee River at Trilby
3	Hillsborough River near Zephyrhills
4	Pithlachascotee River near New Port Richey
5	Anclote River near Elfers
6	Alafia River at Lithia
7	Little Manatee River near Wimauma
8	Josephine Creek near DeSoto City
9	Peace River at Arcadia
10	Peace River at Bartow
11	Myakka River near Sarasota
12	Manatee River near Myakka Head

STREAM MONITORING STATIONS

WITHLACOOCHEE RIVER (Northern Region)

Total length: 157 miles
Headwaters: NW Polk and southern Sumter Counties
Elevation: 135 feet
Tributaries: Little Withlacoochee, Big Gant Canal, Jumper Creek, Shady Brook, Outlet River of Lake Panasoffkee, Leslie Heifner Canal, Orange State Canal, Tsala Apopka Outfall Canal and Rainbow Springs.
Mouth: Gulf of Mexico, Citrus County
Average fall: 0.9 feet/mile
Drainage area: 2000 square miles

Holder Station

County: Marion
Period-of-record: 1928
Location: 38 miles upstream from mouth
Avg daily discharge: 1036.3 cfs
Runoff per year: 10.36 inches
Max of monthly avg discharge: 7096.3 cfs in 04/1960
Min of monthly avg discharge: 111.8 cfs in 07/1992
Drainage area: 1825 square miles

Trilby Station

County: Hernando
Period-of-record: 1928
Location: 93 miles upstream from mouth
Avg daily discharge: 336.3 cfs
Runoff per year: 6.73 inches
Max of monthly avg discharge: 4254.7 cfs in 09/1933
Min of monthly avg discharge: 6.1 cfs in 07/1992
Drainage area: 570 square miles

ANCLOTE RIVER (Central Region)

Total length: 27.5 miles
Headwaters: South-central Pasco County, west of Land O Lakes
Elevation: 65 feet
Tributaries: South Branch and Hollin Creek
Mouth: Gulf of Mexico, Pasco County
Average fall: 2.4 feet/mile
Drainage area: 113 square miles

Elfers Station

County: Pasco
Period-of-record: 1946
Location: 16 miles upstream from mouth
Avg daily discharge: 65.1 cfs
Runoff per year: 12.20 inches
Max of monthly avg discharge: 633.8 cfs in 09/1988
Min of monthly avg discharge: 1.4 cfs in 05/1981
Drainage area: 72.5 square miles

HILLSBOROUGH RIVER (Central Region)

Total length: 55 miles
Headwaters: Southeast Pasco County
Elevation: 77 feet
Tributaries: Crystal Springs, Blackwater Creek, Flint Creek, Trout Creek,
Cypress Creek, Curiosity Creek and Sulphur Springs
Mouth: Hillsborough Bay
Average fall: 1.4 feet/mile
Drainage area: 690 square miles

Zephyrhills Station

County: Hillsborough
Period-of-record: 1939
Location: 40 miles upstream from mouth
Avg daily discharge: 244.2 cfs
Runoff per year: 15.05 inches
Max of monthly avg discharge: 2284.5 cfs in 12/1997
Min of monthly avg discharge: 47.1 cfs in 05/1994
Drainage area: 200 square miles

PITHLACHASCOTEE RIVER (Central Region)

Total length: 41 miles
Headwaters: Crews Lake and Masaryktown area in central Pasco and
southern Hernando Counties
Elevation: 120 feet
Mouth: Gulf of Mexico
Average fall: 2.9 feet/mile
Drainage area: 191 square miles

New Port Richey Station:

County: Pasco
Period-of-record: 1963
Location: 10.5 miles upstream from mouth
Avg daily discharge: 27.9 cfs
Runoff per year: 2.11 inches
Max of monthly avg discharge: 329.4 cfs in 09/1988
Min of monthly avg discharge: 0.0 cfs
Drainage area: 180 square miles

ALAFIA RIVER (Central Region)

Total length: 24 miles
Headwaters: Western Polk and eastern Hillsborough Counties
Tributaries: North and South Prongs, Lithia Springs, and Buckhorn Creek.
Elevation: 30 feet
Mouth: Tampa Bay
Average fall: 1.5 feet/mile
Drainage area: 420 square miles

Lithia Station:

County: Hillsborough
Period-of-record: 1932
Location: 16 miles upstream from mouth
Avg daily discharge: 339.7 cfs
Runoff per year: 13.59 inches
Max of monthly avg discharge: 4185.4 cfs in 09/1933
Min of monthly avg discharge: 13.0 cfs in 05/1945
Drainage area: 335 square miles

LITTLE MANATEE RIVER (Central Region)

Total length: 39 miles
Headwaters: Southeast Hillsborough County
Tributaries: Carlton Branch, the South Fork, Dug Creek and Cypress Creek.
Elevation: 130 feet
Mouth: Tampa Bay
Average fall: 3.4 feet/mile
Drainage area: 225 square miles

Wimauma Station:

County: Hillsborough
Period-of-record: 1939
Location: 15 miles upstream from mouth
Avg daily discharge: 171.4 cfs
Runoff per year: 15.68 inches
Max of monthly avg discharge: 1443.7 cfs in 07/1945
Min of monthly avg discharge: 3.8 cfs in 05/45
Drainage area: 149 square miles

JOSEPHINE CREEK (Southern Region)

Total length: 12 miles
Headwaters: Lake Josephine in central Highlands County
Elevation: 80 feet
Mouth: Lake Istokpoga in Highlands County
Average fall: 3.5 feet/mile
Drainage area: 143 square miles

DeSoto City Station:

County: Highlands
Period-of-record: 1946
Location: 4.9 miles upstream of mouth
Avg daily discharge: 74.2 cfs
Runoff per year: 8.90 inches
Max of monthly avg discharge: 769.9 cfs in 09/1960
Min of monthly avg discharge: 1.1 cfs in 05/56
Drainage area: 109 square miles

MANATEE RIVER (Southern Region)

Total length: 45 miles
Headwaters: Four corners area Hillsborough, Polk, Hardee and manatee Counties.
Elevation: 130 feet
Mouth: Tampa Bay
Average fall: 2.9 feet/mile
Drainage area: 330 square miles

Myakka Head Station:

County: Manatee
Period-of-record: 1966
Location: 36 miles upstream from mouth
Avg daily discharge: 69.6 cfs
Runoff per year: 14.62 inches
Max of monthly avg discharge: 529.7 cfs in 09/1994
Min of monthly avg discharge: 0.5 cfs in 04/75
Drainage area: 65.3 square miles

MYAKKA RIVER (Southern Region)

Total length: 54.1 miles
Headwaters: Western Hardee and Eastern Manatee Counties
Tributaries: Howard Creek, Deer Prairie, and Big Slough Canal
Elevation: 105 feet
Mouth: Charlotte Harbor
Average fall: 1.9 feet/mile
Drainage area: 540 square miles

Sarasota Station:

County: Sarasota
Period-of-record: 1936
Location: 36 miles upstream from mouth
Avg daily discharge: 250.5 cfs
Runoff per year: 15.03 inches
Max of monthly avg discharge: 2467.2 cfs in 09/1947
Min of monthly avg discharge: 0.0 cfs numerous times
Drainage area: 229 square miles

PEACE RIVER (Central and Southern Region)

Total length: 120 miles
Headwaters: Green Swamp in northern Polk County through Lake Hancock, Winter Haven chain of lakes, and Lake Hamilton.
Tributaries: Peace Creek Canal, Saddle Creek, Charlie Creek, Prairie Creek, Horse Creek, Joshua Creek and Shell Creek. Elevation: 110 feet
Mouth: Charlotte Harbor
Average fall: 1 feet/mile
Drainage area: 2300 square miles

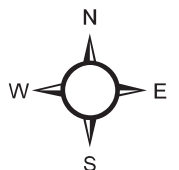
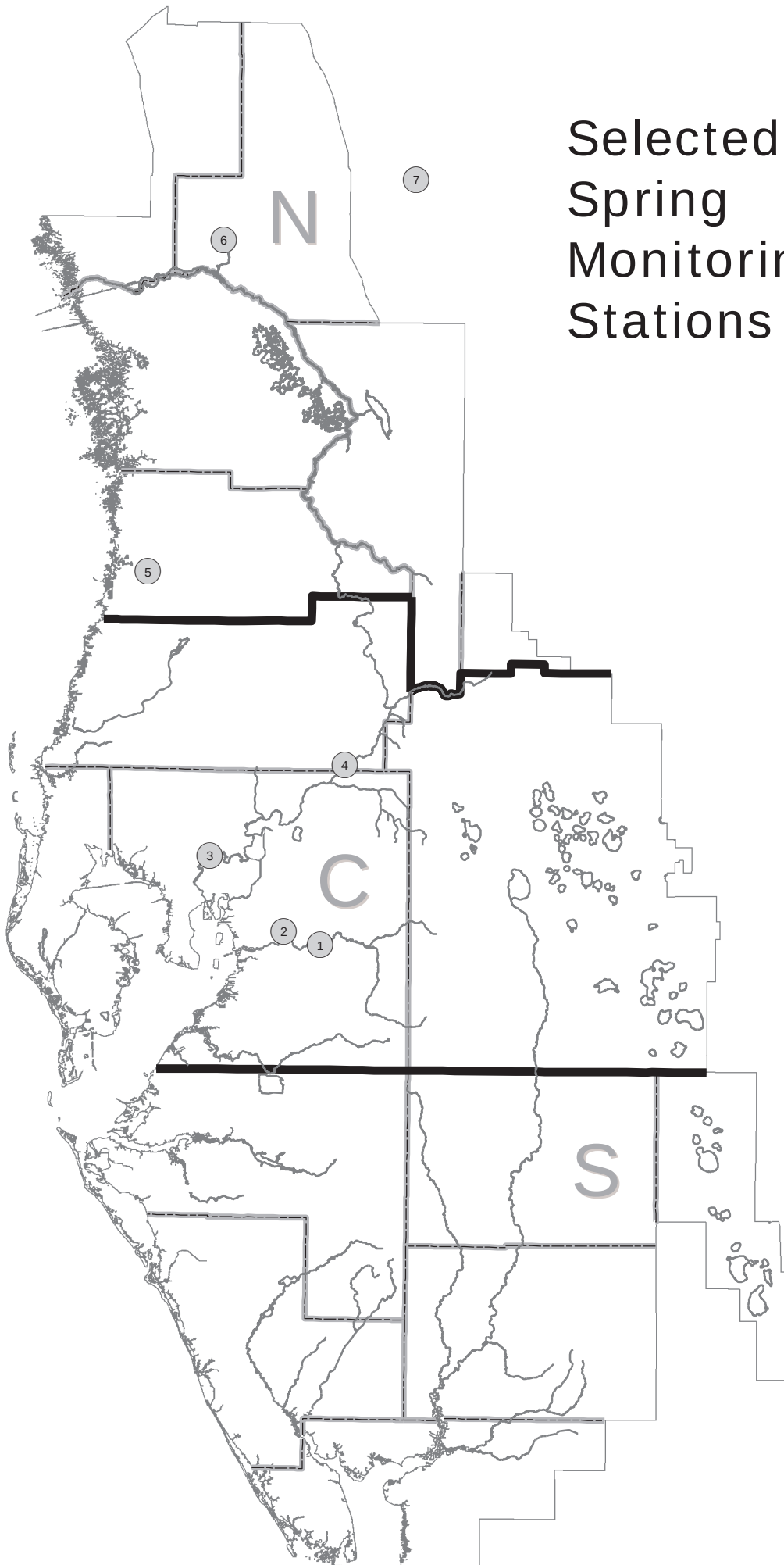
Arcadia Station (Southern Region):

County: Desoto
Period-of-record: 1931
Location: 36 miles upstream from mouth
Avg daily discharge: 1078.9 cfs
Runoff per year: 10.79 inches
Max of monthly avg discharge: 9876.0 cfs in 09/1933
Min of monthly avg discharge: 51.6 cfs 05/85
Drainage area: 1367 square miles

Bartow Station (Central Region):

County: Polk
Period-of-record: 1939
Location: 105 miles upstream from mouth
Avg daily discharge: 224.1 cfs
Runoff per year: 6.72 inches
Max of monthly avg discharge: 2261.5 cfs in 09/1960
Min of monthly avg discharge: 6.4 cfs 05/90
Drainage area: 390 square miles

Selected Spring Monitoring Stations



Selected Spring Monitoring Stations

<u>Map ID</u>	<u>Site Name</u>
1	Lithia Main Spring
2	Buckhorn Main Spring
3	Sulphur Springs at Sulphur Springs
4	Crystal Springs near Zephyrhills
5	Weeki Wachee River near Brooksville
6	Rainbow Springs near Dunnellon
7	Silver Springs near Ocala

SPRINGS MONITORING STATIONS

RAINBOW SPRINGS (Northern Region)

County:	Marion
Basin:	Withlacoochee River
Magnitude:	1 st
Discharge measurement location:	5 mi downstream from head of springs
Discharge contributes to:	Rainbow River, Withlacoochee River
Public Access:	Yes
Period-of-record:	1965
Gage:	Non-recording gage
Maximum daily mean:	1061 cfs in 09/1988
Minimum daily mean:	489 cfs in 06/2000

SILVER SPRINGS (Northern Region)

County:	Marion
Basin:	Ocklawaha River
Magnitude:	1 st
Discharge measurement location:	4 to 5 mi downstream from head of springs
Discharge contributes to:	Silver Springs River, Ocklawaha River, St. Johns River
Public Access:	Yes
Period-of-record:	1932
Gage:	Water-stage recorder
Maximum daily mean:	1290 cfs in 10/1960
Minimum daily mean:	432 cfs in 07/2000

WEEKI WACHEE SPRINGS (Northern Region)

County:	Hernando
Basin:	Coastal Rivers
Magnitude:	1 st
Discharge measurement location:	1 mi downstream from head of springs
Discharge contributes to:	Weeki Wachee River
Public Access:	Yes
Period-of-record:	1993
Gage:	Water-stage
Maximum daily mean:	229 cfs in 03/1998
Minimum daily mean:	101 cfs in 06/1994

CRYSTAL SPRINGS (Central Region)

County:	Pasco
Basin:	Hillsborough River
Magnitude:	2 nd
Discharge measurement location:	Difference between discharge measurements of Hillsborough River made upstream from and downstream from Crystal Springs
Discharge contributes to:	Hillsborough River
Public Access:	No
Period-of-record:	1923
Gage:	Non-recording gage
Maximum daily mean:	147 cfs in 07/1941
Minimum daily mean:	22 cfs in 08/1986

SULPHUR SPRINGS (Central Region)

County:	Hillsborough
Basin:	Hillsborough River
Magnitude:	2 nd
Discharge measurement location:	300 ft downstream from gage
Discharge contributes to:	Hillsborough River
Public Access:	Yes
Period-of-record:	1956
Gage:	Water-stage recorder
Maximum daily mean:	145 cfs in 03/1960
Minimum daily mean:	0 cfs for various days throughout the period-of-record

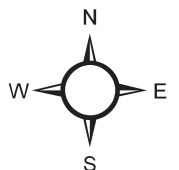
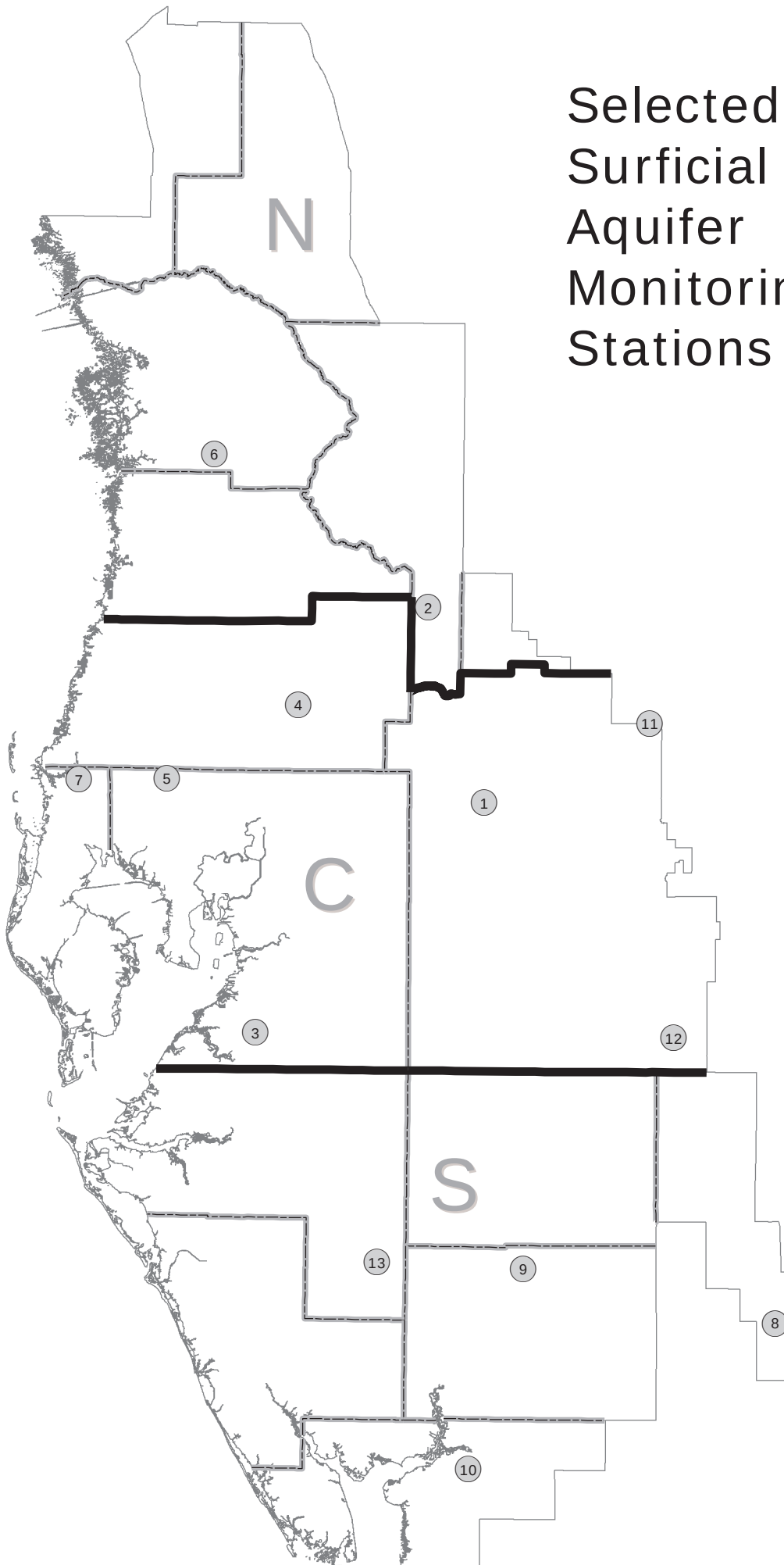
BUCKHORN SPRINGS (Central Region)

County:	Hillsborough
Basin:	Alafia River
Magnitude:	2 nd
Discharge measurement location:	Difference between discharge measurements of Buckhorn Creek made 25 ft upstream from and 100 ft downstream from Buckhorn Springs
Discharge contributes to:	Buckhorn Creek, Alafia River
Public Access:	No
Period-of-record:	1987
Gage:	Water-stage recorder
Maximum daily mean:	21.9 cfs in 02/1989
Minimum daily mean:	2.7 cfs in 06/1987

LITHIA SPRINGS: (Central Region)

County:	Hillsborough
Basin:	Alafia River
Magnitude:	2 nd
Discharge measurement location:	50 feet downstream from main pool
Discharge contributes to:	Alafia River
Public Access:	Yes
Period-of-record:	1934
Gage:	Water-stage recorder
Maximum daily mean:	83.4 cfs in 10/1967
Minimum daily mean:	6.3 cfs in 02/1989

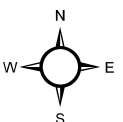
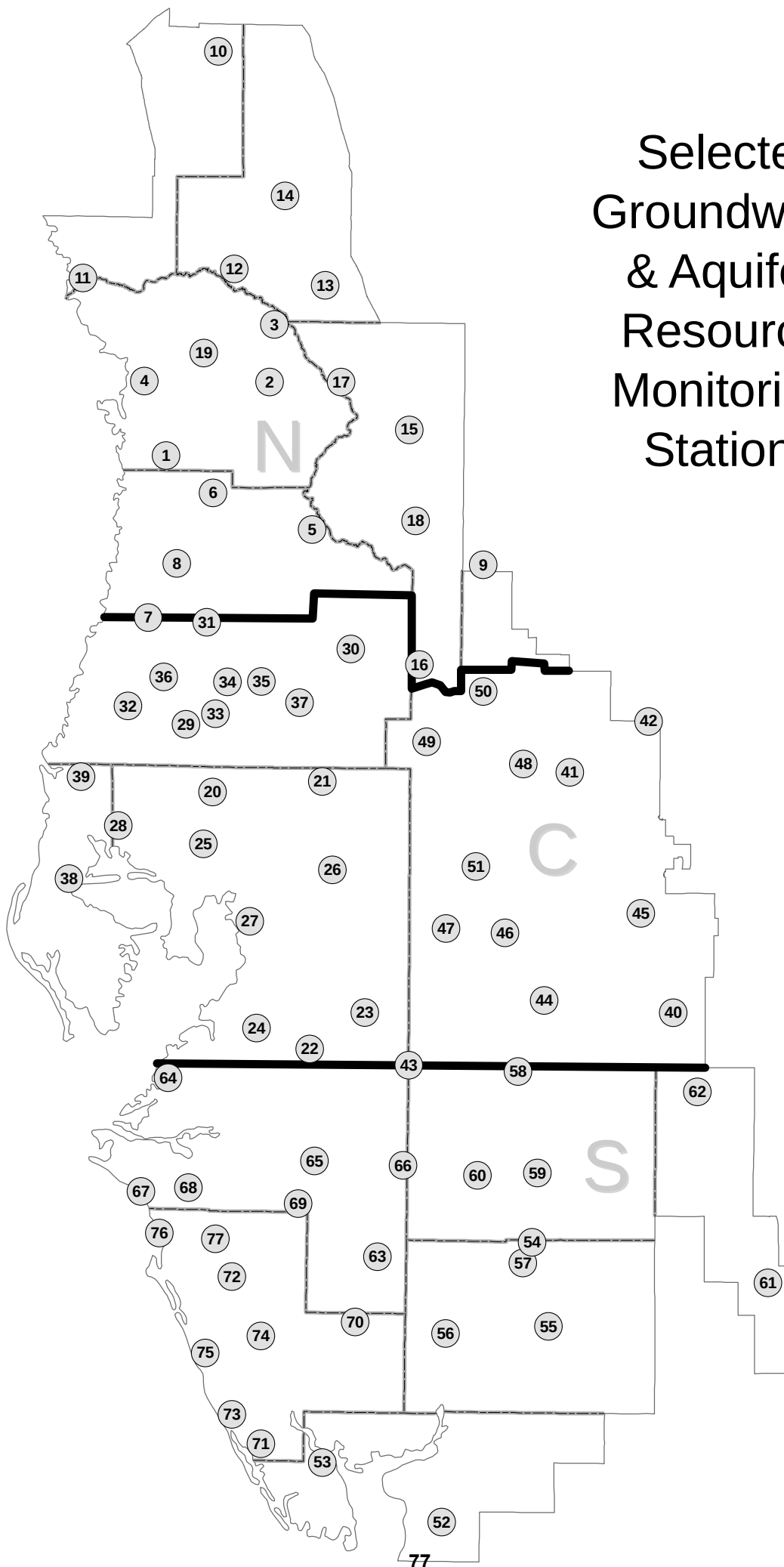
Selected Surficial Aquifer Monitoring Stations



Selected Surficial Aquifer Monitoring Stations

<u>Map ID</u>	<u>Site Name</u>
1	State Road 33/Combee Road Shallow
2	Green Swamp L12B Shallow
3	ROMP 50 Surficial
4	State Road 577 Shallow
5	Lutz-Lake Fern Shallow
6	Lecanto 2 Shallow
7	Tarpon Road Shallow
~~8~~	~~Bairs Den Surficial~~
9	ROMP 26 Surficial
10	State Road 74 (77-Foot) Shallow
11	Loughman Shallow
12	USGS P-48 Shallow
13	Edgeville 4 Shallow

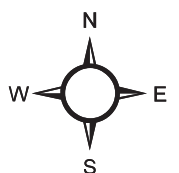
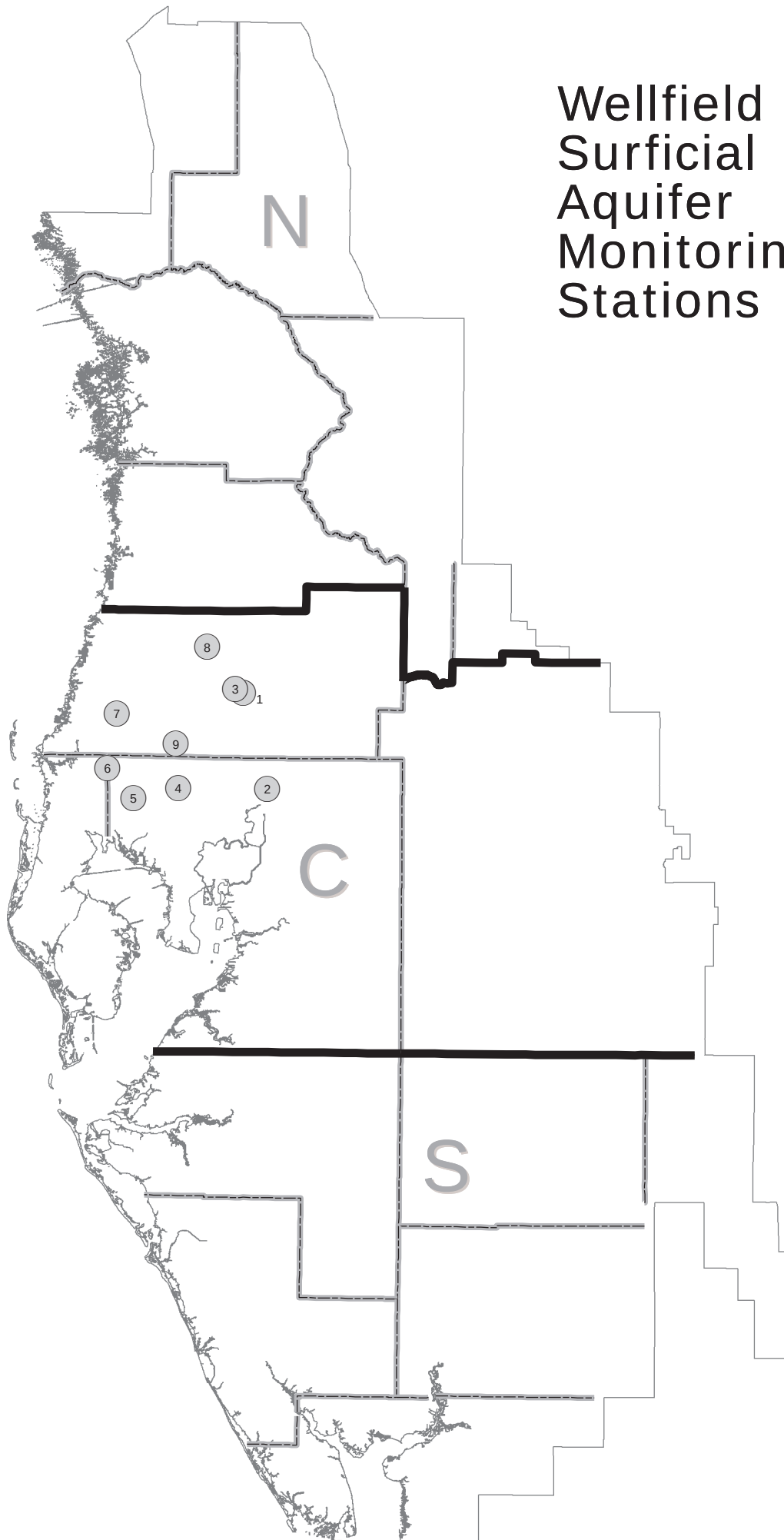
Selected Groundwater & Aquifer Resource Monitoring Stations



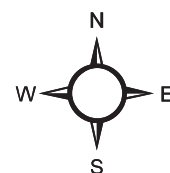
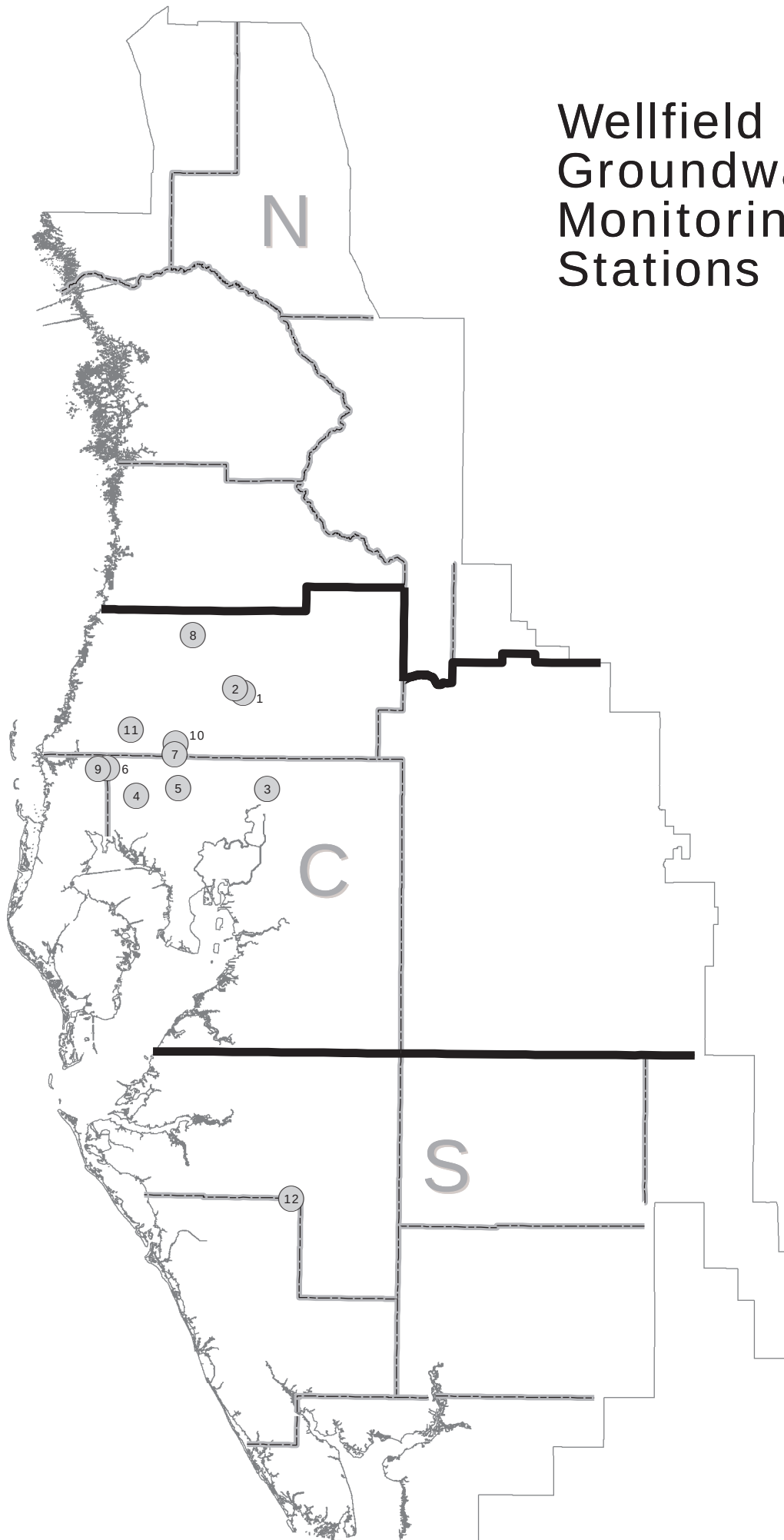
Select Groundwater & Aquifer Resource Monitoring Stations

<u>Map ID</u>	<u>Site Name</u>	<u>Map ID</u>	<u>Site Name</u>
1	Chassahowitzka 1 Deep	42	Loughman Deep
2	Inverness Dot Fldn	43	ROMP 40 Suwannee/Avon Park
3	ROMP 116 Avon Park	44	ROMP 45 Avon Park
4	ROMP TR 21-2 Ocala/Avpk	45	ROMP 58 Ocala
5	ROMP 103 Suwannee/Ocala	46	ROMP 59 Suwannee/Avon Park
6	ROMP 107 Ocala/Avon Park	47	ROMP 60 Ocala/Avon Park
7	ROMP 97 Avon Park	48	ROMP 76 U Fldn
8	Weeki Wachee Deep Repl	49	ROMP 87 Avon Park
9	Mascotte Deep	50	ROMP 88 Avon Park
10	ROMP 134 Ocala/Avon Park	51	Sanlon Ranch Fldn
11	ROMP TR 124 Avon Park	52	ROMP TR 1-2 Up Fldn
12	CE 14 Dunnellon Deep	53	ROMP TR 3-1 Up Fldn
13	ROMP 119 Avon Park	54	Marshall Deep
14	ROMP 120 Avon Park	55	ROMP 16 Ocala
15	ROMP 111 Ocala/Avon Park	56	ROMP 17 Up Fldn
16	ROMP 89 Ocala	57	ROMP 26 Suwannee/Tampa
17	Sumter 13 JC 59 Up Fldn	58	Cargill FA-1 Fldn
18	Webster City Fldn	59	ROMP 30 Suwannee/Avon Park
19	North Locanto Deep	60	ROMP 31 Suwannee/Avon Park
20	Debuel Road Deep	61	ROMP 28X Suwannee/Avon Park
21	Hills State Pk Parking Deep	62	ROMP 43XX Avon Park
22	ROMP 123 Hawthorn/Ocala	63	Edgeville 3 Deep
23	ROMP 48 Tampa/Suwannee	64	Florida Pwr @ Piney Point
24	ROMP 50 Avon Park	65	Kibler Deep
25	ROMP 66 Tampa	66	ROMP 32 Low Ocala/Avpk
26	ROMP DV-1 Suwannee	67	ROMP TR 7-1 Tampa
27	ROMP TR 10-2 Tampa	68	ROMP TR 7-4 Swnn/Ocala
28	ROMP TR 13-3 Avon Park	69	Verna T 0-1
29	Bexley 2 Fldn	70	Big Slough Deep
30	Lykes Pasco Fldn	71	Englewood 14 Deep
31	Masaryktown Deep	72	Florida Cities Test 1
32	Moon Lake Deep	73	Manasota 14 Deep
33	Pasco 13 nr Drexel Fldn	74	ROMP 19 West UFA Swnn
34	ROMP 93 Suwannee/Avon Park	75	ROMP TR 5-1 Suwannee
35	SR 52 And CR581 Deep	76	Sarasota 11TH St Deep
36	SR 52 Deep W nr Fivay Jct	77	Sarasota Office Up Floridan
37	SR 577 Deep		
38	Pinellas 665 Fldn		
39	Tarpon Rd Deep		
40	Coley Deep		
41	Lk Alfred Deep nr Lake Alfred		

Wellfield Surficial Aquifer Monitoring Stations



Wellfield Groundwater Monitoring Stations



Wellfield Groundwater Monitoring Stations

<u>Map ID</u>	<u>Site Name</u>
1	Cypress Creek TMR-1 Deep
2	Cypress Creek TMR-3 Deep
3	Morris Bridge 3A Floridan
4	Cosme 3 Floridan
5	St. Pete Hillsboro 13 Deep
6	Eldridge-Wilde 11 Floridan
7	St. Pete 42 Deep
8	Cross Bar WRW Floridan
9	Eldridge-Wilde 2S Deep
10	State Road 54 Deep
11	Starkey Regional Floridan
12	Verna 08 Deep

Wellfield Surficial Aquifer Monitoring Stations

<u>Map ID</u>	<u>Site Name</u>
1	Cypress Creek TMR-1 Shallow
2	Morris Bridge 3A Surficial
3	Cypress Creek TMR-3 Shallow
4	St. Pete Hillsboro 13 Shallow
5	St. Pete IC-6 Shallow
6	Eldridge-Wilde 11 Surficial
7	Starkey 707 Shallow
8	Cross Bar SERW Shallow
9	State Road 54 Shallow

Reservoir Locations

