# Northwest Florida Water Management District

## Hydrologic Conditions Update July 2020 – December 2020
## January 11, 2021

### Executive Summary

Overall cumulative average rainfall from July - December 2020 was well above normal for the District. Groundwater recharge was high due to a rainfall surplus in September (2020). Groundwater levels were slightly below normal for the eastern counties of the District, while western counties had groundwater levels that were higher than normal. Due to lower-than-normal rainfall from November - December 2020, discharge in rivers and streams saw a return to essentially normal streamflow levels. This occurred after seeing discharge levels reach flood stage for most of the rivers and streams in September. Despite a slight relief of drought conditions in the beginning of the period, drier conditions are expected to continue into 2021, affecting seasonal rainfall patterns. Streamflow and lake levels are expected to remain below normal.

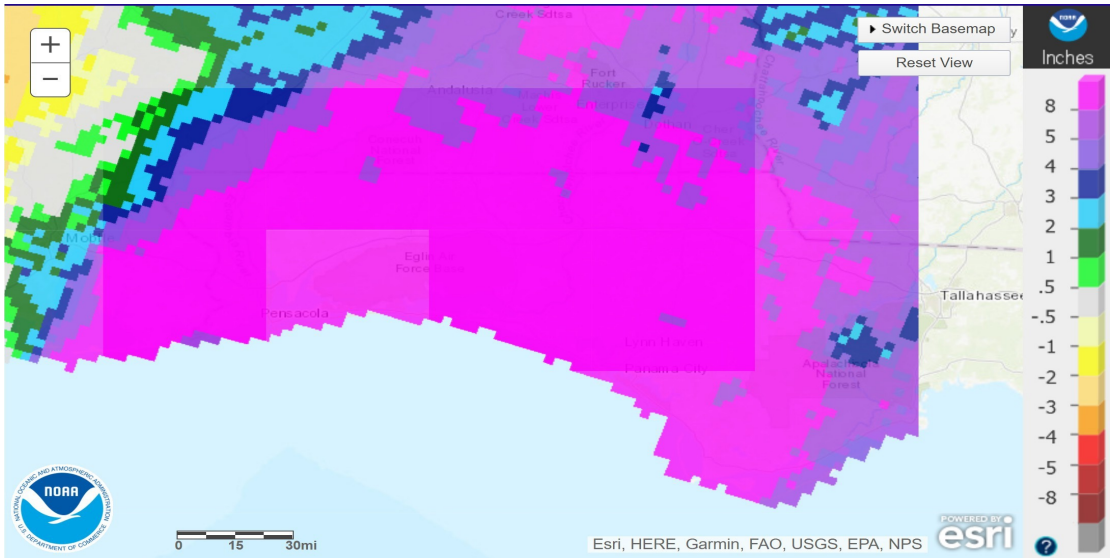
### Precipitation Summary

Rainfall totals, compared to current National Weather Service Climate Normals (1981-2010 reference period), from July to December were roughly 10 inches above normal across the District at 39.35 inches (normal cumulative rainfall for this period is 29.67 inches). Rainfall in July was six percent above normal at 7.53 inches. August rainfall totals were 25 percent above normal at 8.21 inches. September rainfall totals were 173 percent above normal at 14.74 inches. Rainfall in October was three percent above normal at 3.74 inches. Rainfall in November was 46 percent below normal at 2.26 inches. Rainfall totals in December were 30 percent below normal at 2.87 inches.

### Significant Events

**Heavy Rainfall – September 11-18, 2020**
Heavy rainfall from Hurricane Sally was observed over one week in mid-September. Areas of the western panhandle received 11-17 inches of rainfall with locally heavier totals, while areas further east received 6-13 inches with locally heavier totals. Flash flood warnings were issued for the entire district.

**North Florida: September 16, 2020, 180-Day Departure from Normal Precipitation**



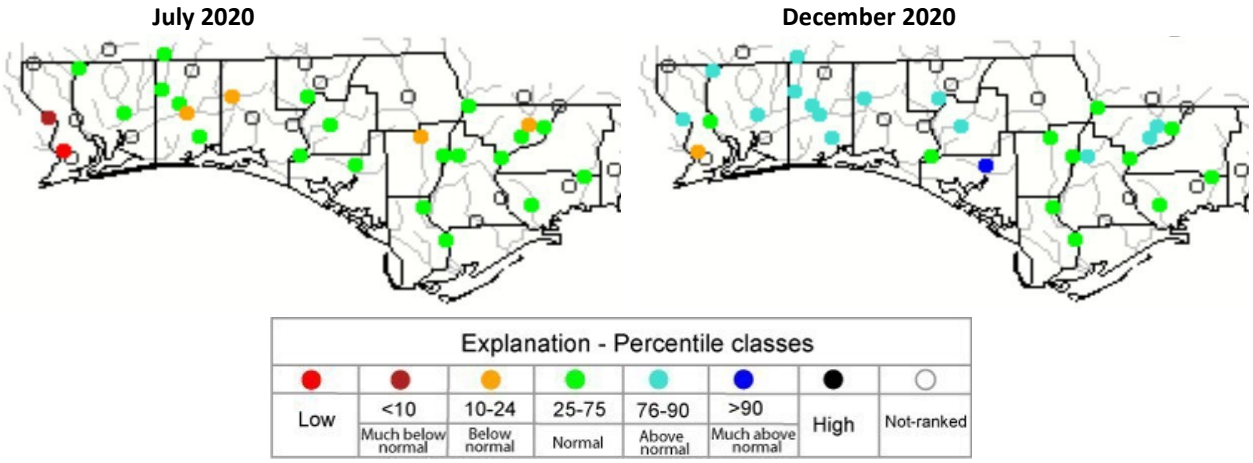

Source: http://water.weather.gov/precip/

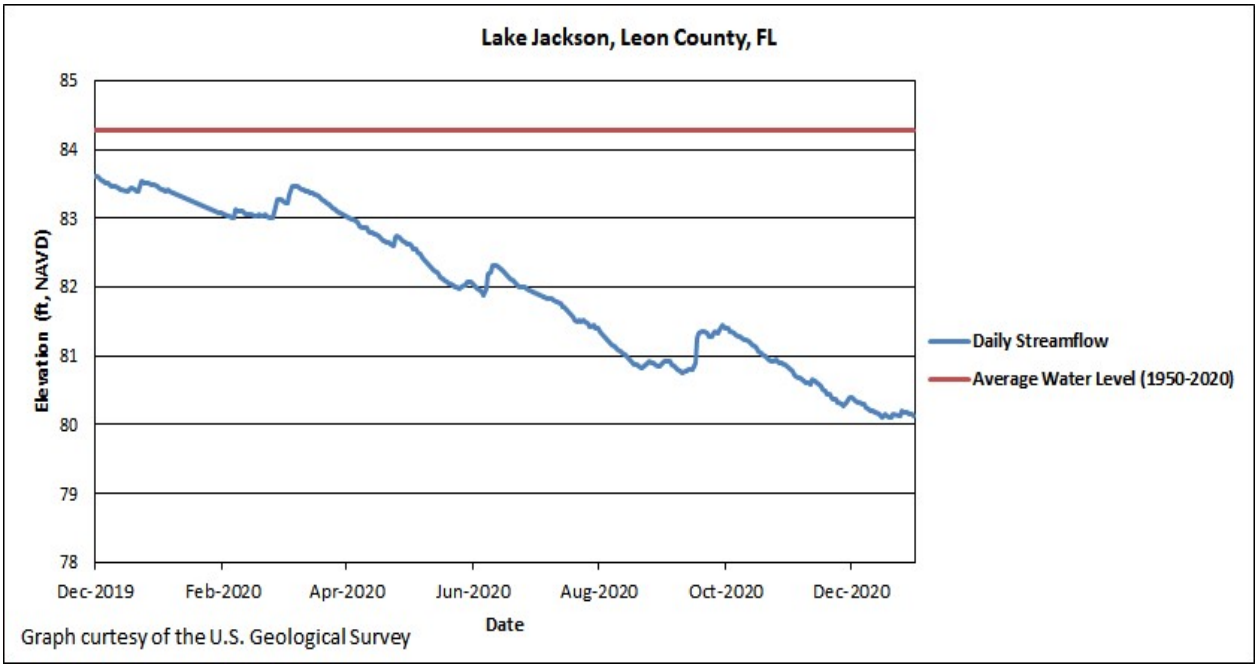
## Surface Water Levels and Streamflow

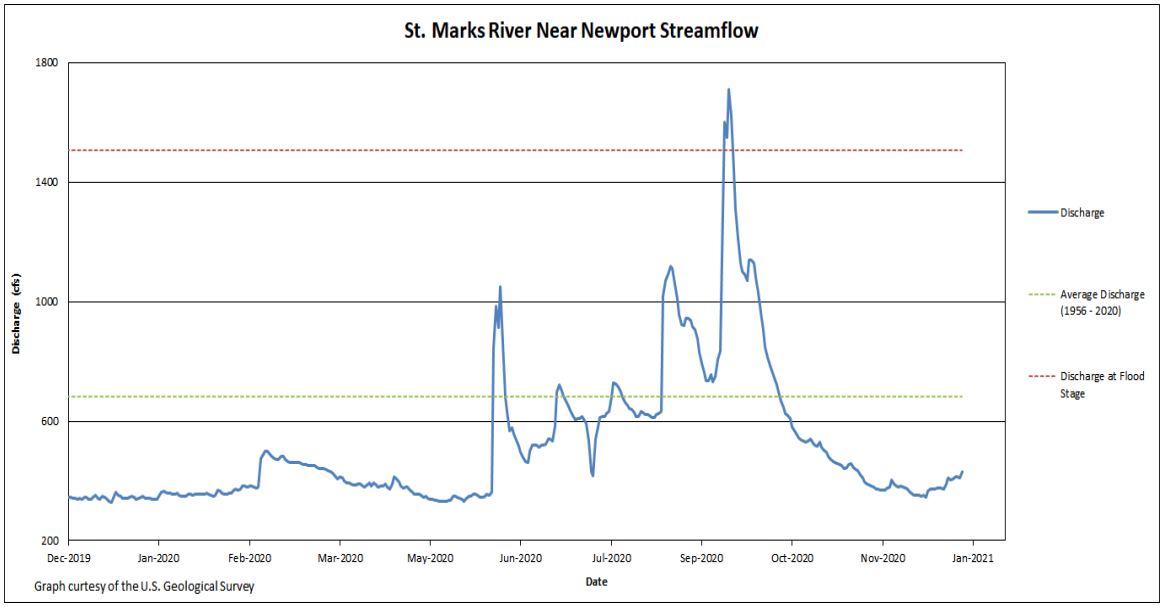
Most river and streamflow monitoring stations in the district were within the normal range (between the 25th and 75th percentiles) during July while most monitoring stations were above normal (between the 76th and 90th percentiles) during December. Streamflow was above normal to much above normal (over the 90th percentile) in all district monitoring stations for the months of September and October due to heavy rainfall from Hurricane Sally. Recorded discharge was higher than normal for the period due to higher than normal cumulative rainfall. Lake levels are generally declining and returning to normal pool levels throughout the District as drier conditions persist. Lake Jackson in Leon County remains at lower levels than what is typically seen during this time of the year. The average water level for Lake Jackson is about 84.3 feet.

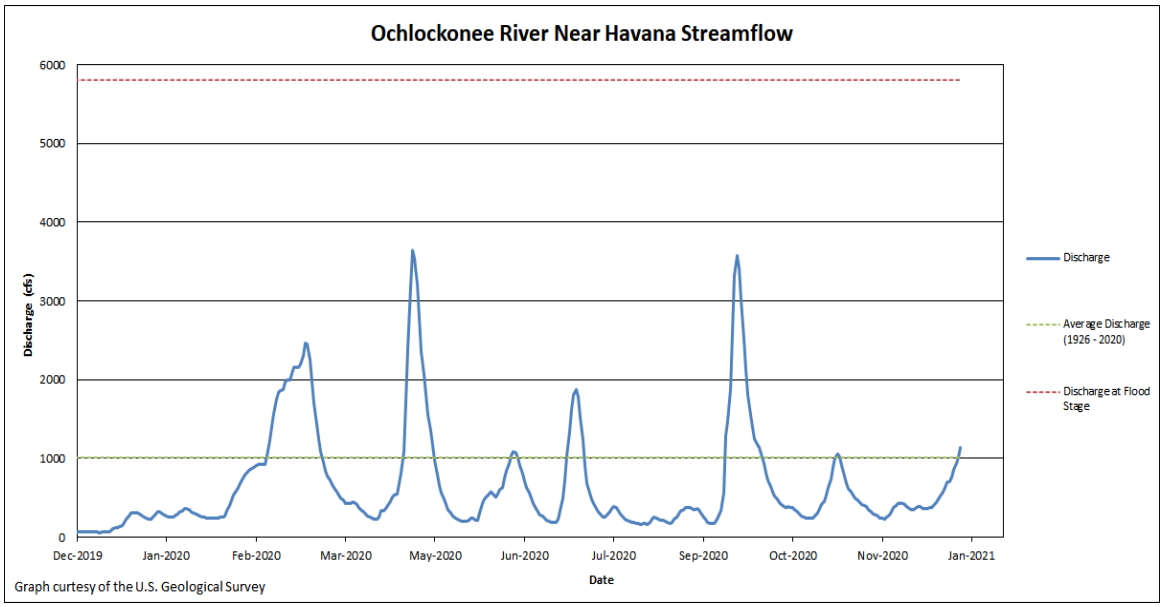
**Month of December streamflow compared to**

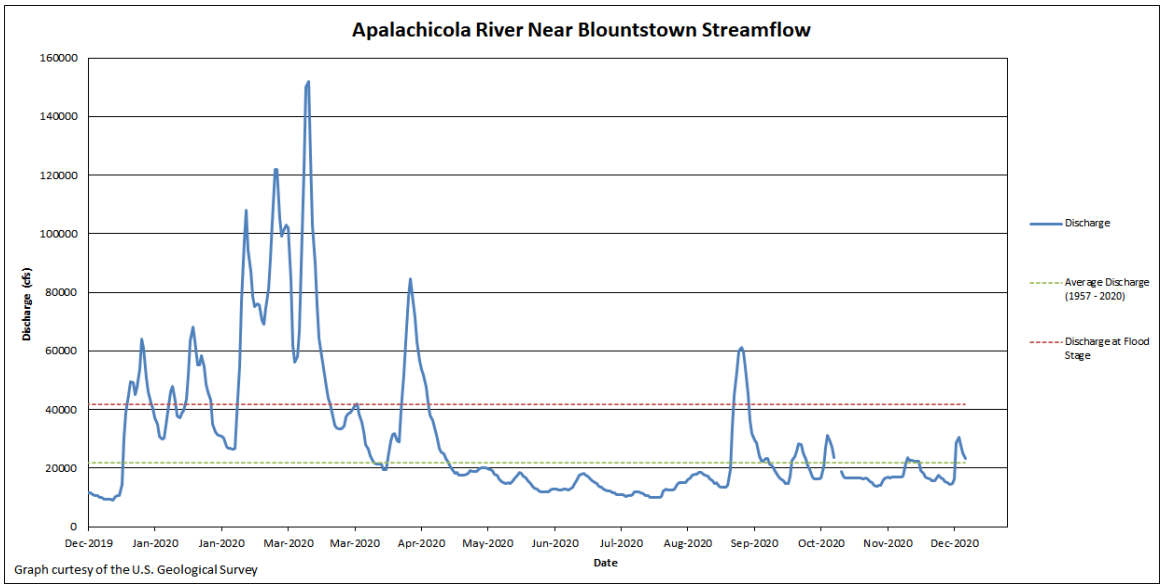
**streamflow for July in 2020 (NWFWMD)**

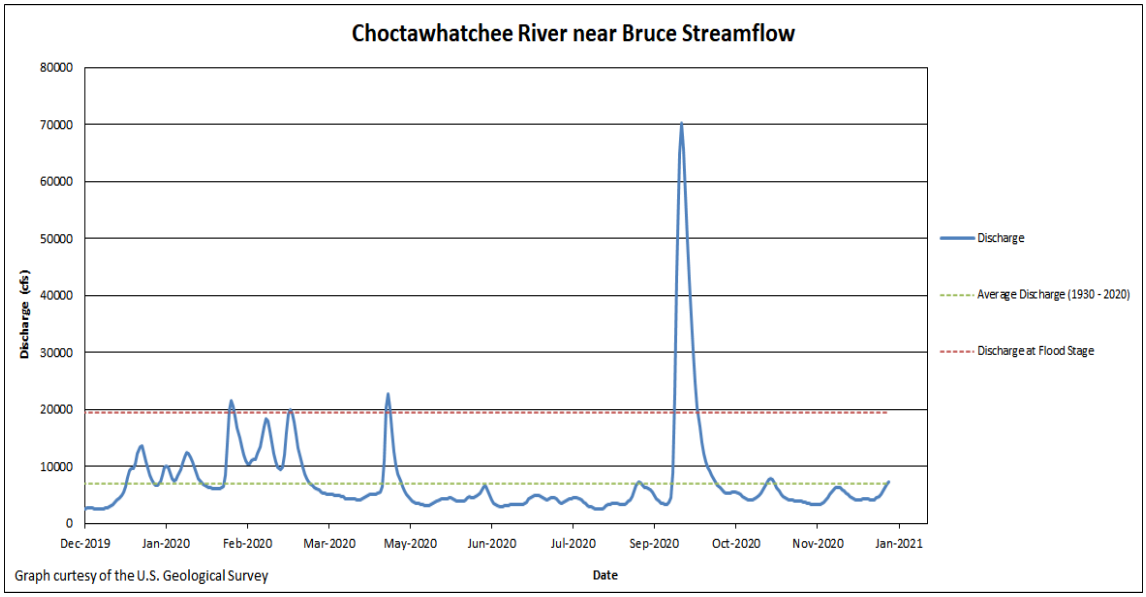


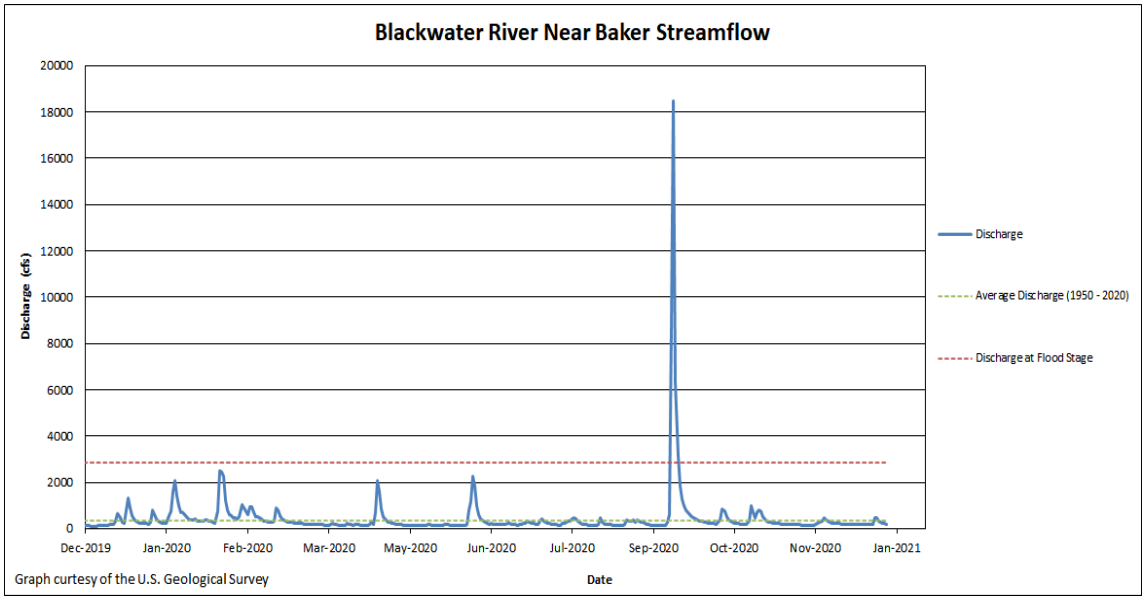



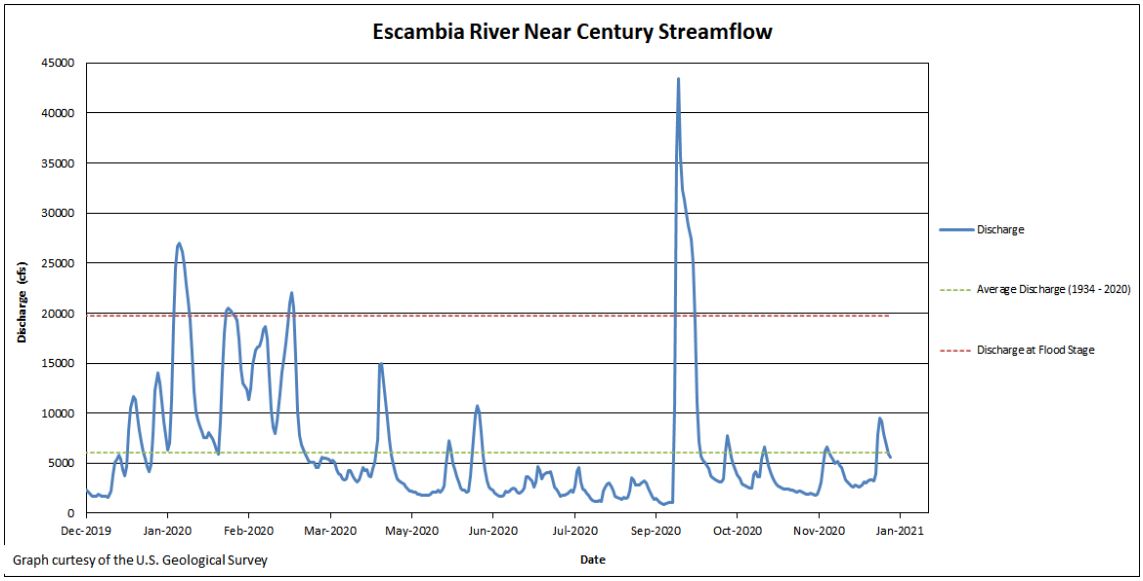

St. Marks River Near Newport Streamflow
1800
1400
1000
600
200
Discharge (cfs)
Dec-2019
Jan-2020
Feb-2020
Mar-2020
May-2020
Jun-2020
Jul-2020
Sep-2020
Oct-2020
Nov-2020
Jan-2021
Date
Discharge
Average Discharge (1956 - 2020)
Discharge at Flood Stage
Graph curtesy of the U.S. Geological Survey


Ochlockonee River Near Havana Streamflow
6000
5000
4000
3000
2000
1000
0
Discharge (cfs)
Dec-2019
Jan-2020
Feb-2020
Mar-2020
May-2020
Jun-2020
Jul-2020
Sep-2020
Oct-2020
Nov-2020
Jan-2021
Date
Discharge
Average Discharge (1926 - 2020)
Discharge at Flood Stage
Graph curtesy of the U.S. Geological Survey


Apalachicola River Near Blountstown Streamflow
160000
140000
120000
100000
80000
60000
40000
20000
0
Discharge (cfs)
Dec-2019
Jan-2020
Jan-2020
Mar-2020
Mar-2020
Apr-2020
May-2020
Jun-2020
Jul-2020
Aug-2020
Sep-2020
Oct-2020
Nov-2020
Dec-2020
Date
Discharge
Average Discharge (1957 - 2020)
Discharge at Flood Stage
Graph curtesy of the U.S. Geological Survey


Choctawhatchee River near Bruce Streamflow
80000
70000
60000
50000
40000
30000
20000
10000
0
Discharge (cfs)
Dec-2019
Jan-2020
Feb-2020
Mar-2020
May-2020
Jun-2020
Jul-2020
Sep-2020
Oct-2020
Nov-2020
Jan-2021
Date
Discharge
Average Discharge (1930 - 2020)
Discharge at Flood Stage
Graph curtesy of the U.S. Geological Survey

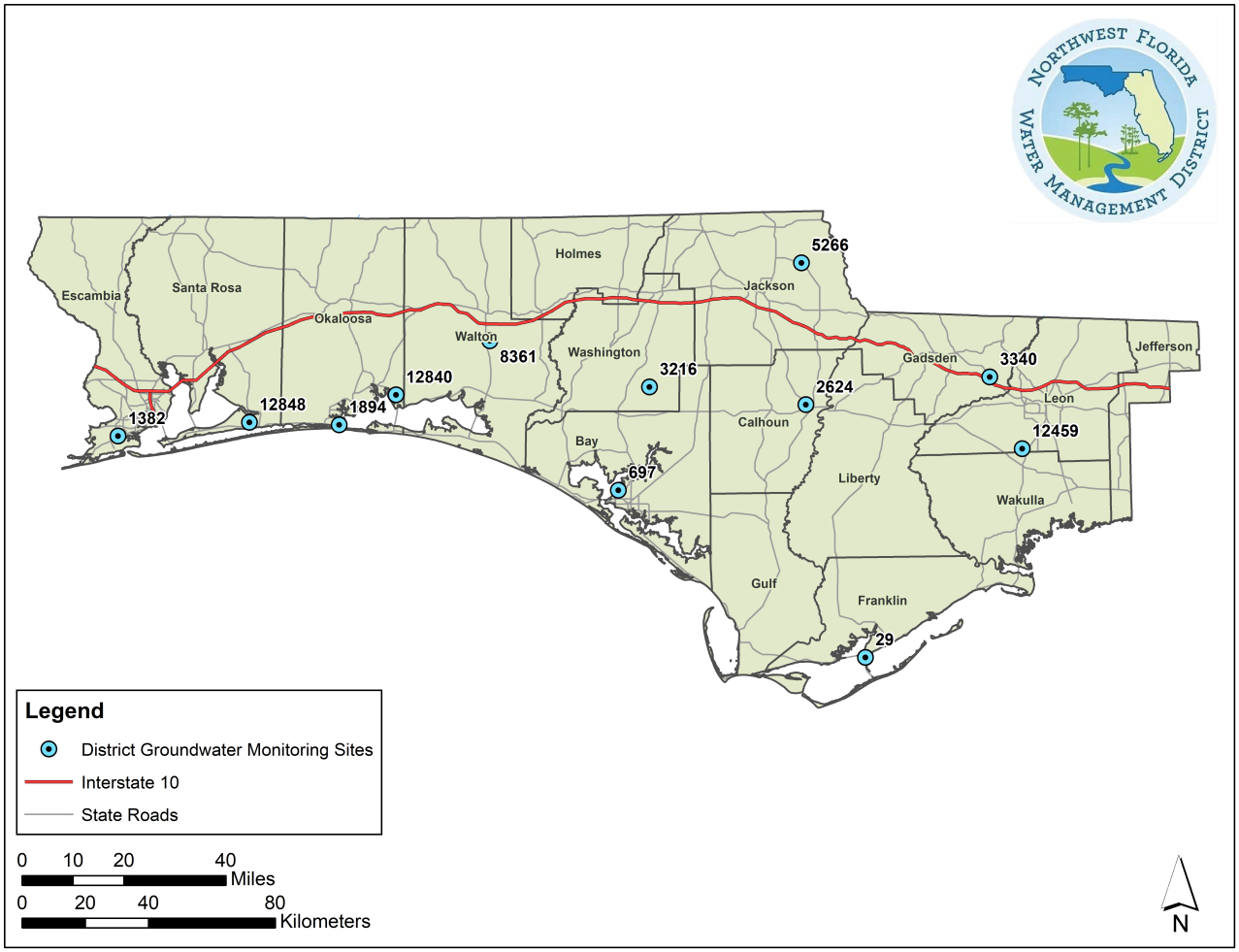

Blackwater River Near Baker Streamflow
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Discharge (cfs)
Dec-2019
Jan-2020
Feb-2020
Mar-2020
May-2020
Jun-2020
Jul-2020
Sep-2020
Oct-2020
Nov-2020
Jan-2021
Date
Discharge
Average Discharge (1950 - 2020)
Discharge at Flood Stage
Graph curtesy of the U.S. Geological Survey

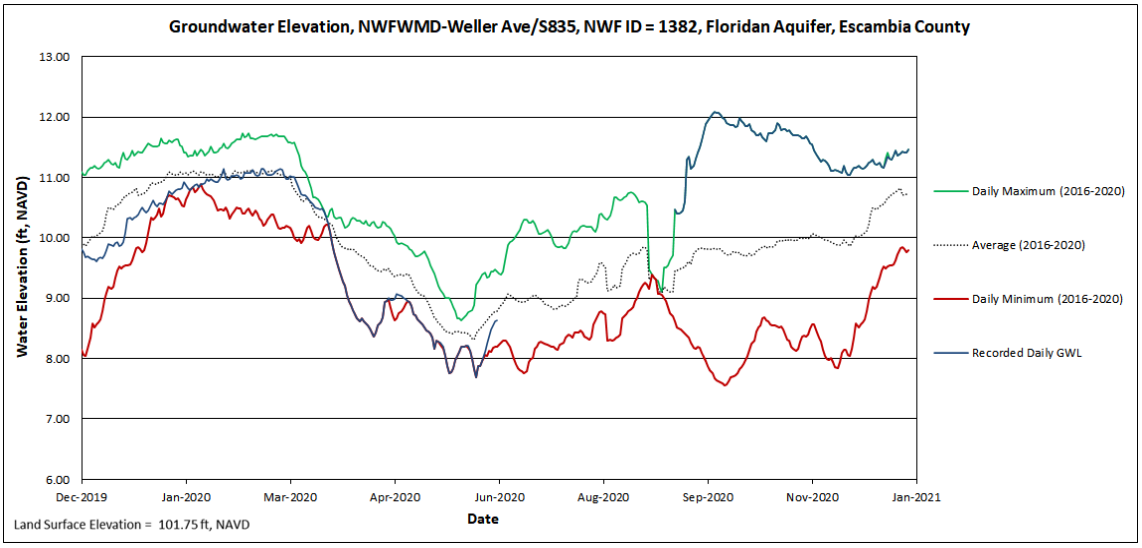

Escambia River Near Century Streamflow
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
Discharge (cfs)
Dec-2019
Jan-2020
Feb-2020
Mar-2020
May-2020
Jun-2020
Jul-2020
Sep-2020
Oct-2020
Nov-2020
Jan-2021
Date
Discharge
Average Discharge (1934 - 2020)
Discharge at Flood Stage
Graph curtesy of the U.S. Geological Survey

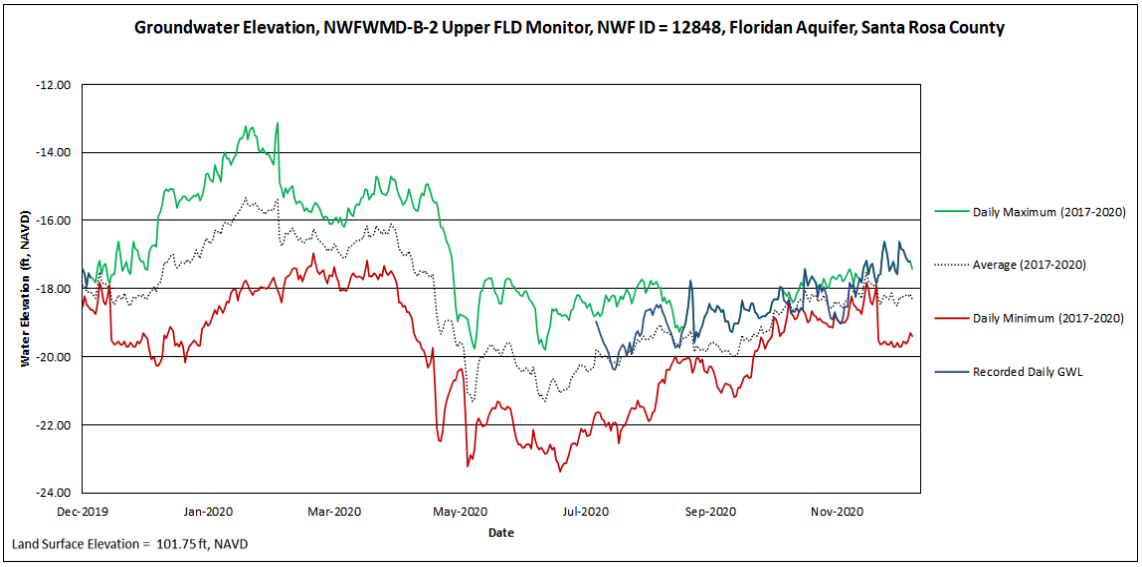
## Groundwater Levels

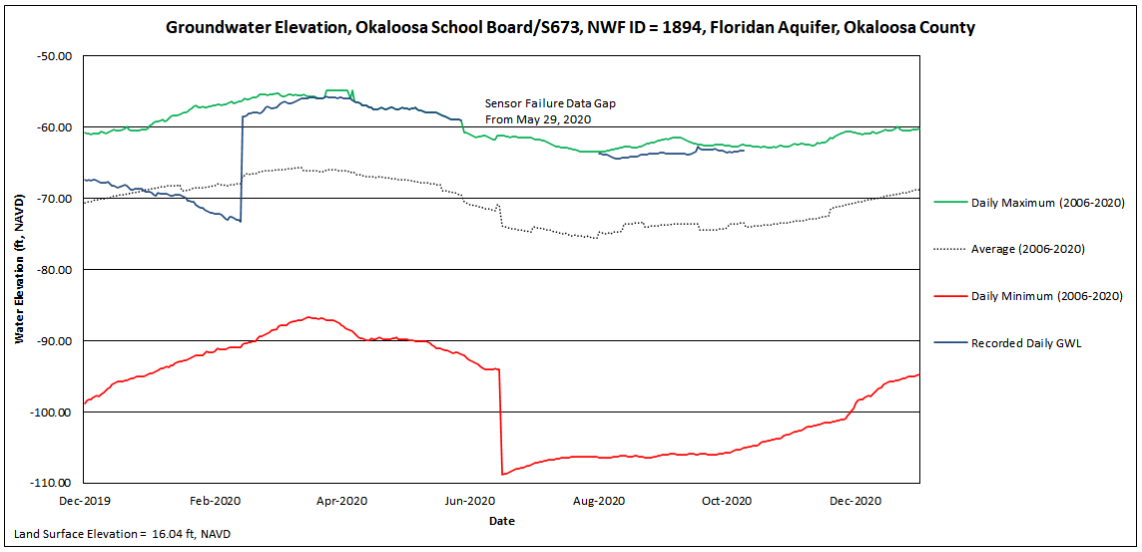
Groundwater levels across the District were generally higher than normal for roughly 50% of the stations. In particular, the eastern counties of the District where the aquifer is thinly confined, Gadsden, Franklin and Leon counties had slightly less than normal groundwater levels. Central counties in the district had generally lower than normal levels as the aquifer was superficial or thinly confined. Groundwater levels in the western counties of the district such as Okaloosa, Washington and Bay were higher than normal with a confined aquifer comprised of sand and gravel as well as being highly influenced by rainfall. This was due in part to heavy rainfall in September.

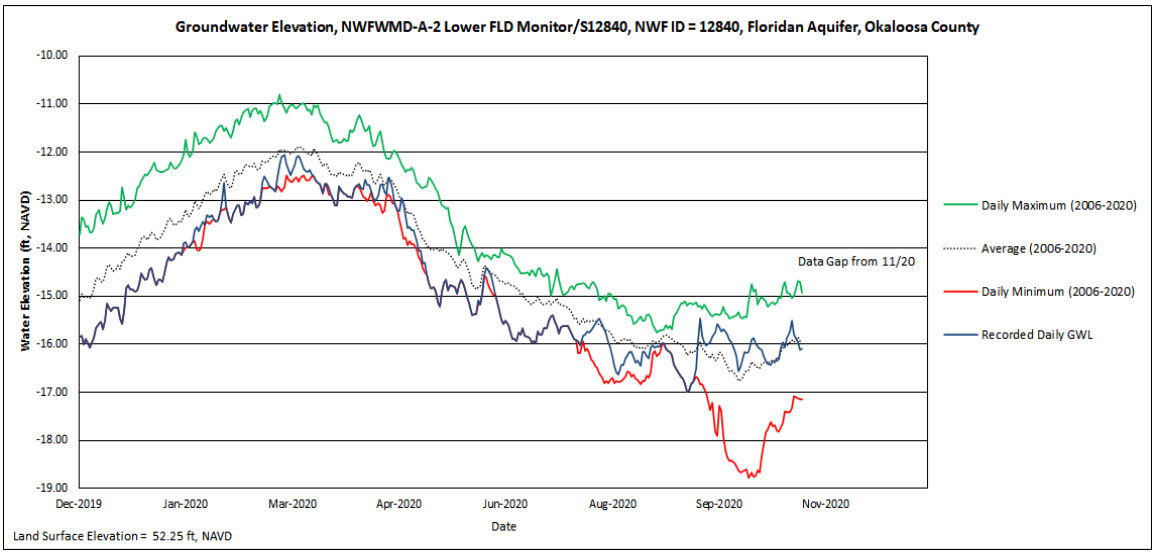
Due to regional demand, geology, and seasonal weather, coastal wells such as the McCullouch well, NWF 29 as well as the B-2 Upper well, NWF 12848 saw increased fluctuation in groundwater levels. Groundwater levels in the Weller Avenue well, NWF 1382, were higher than normal despite drier conditions in November and December. The Cedar Street/Regional Utilities (RU) Monitor well in Walton County, NWF 8361 while still below normal, saw an upward trend as rainfall deficits were minimized due to heavier rainfall during the period. Groundwater levels at the Blountstown Floridan well, NWF 2624 were also higher than normal toward the end of the period despite receiving less than average precipitation for the last two months of the period.

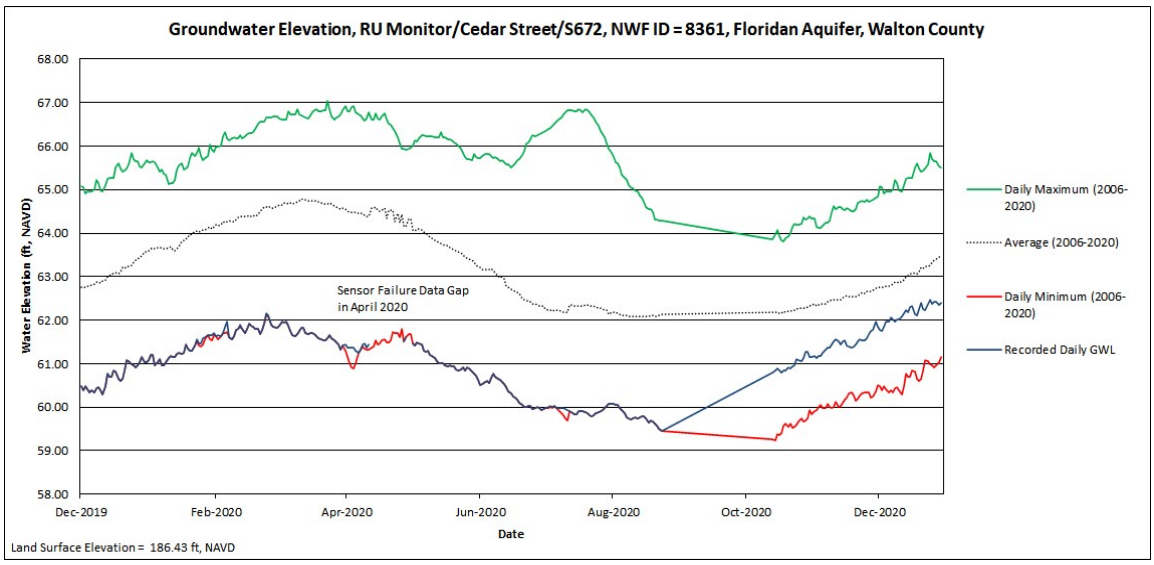


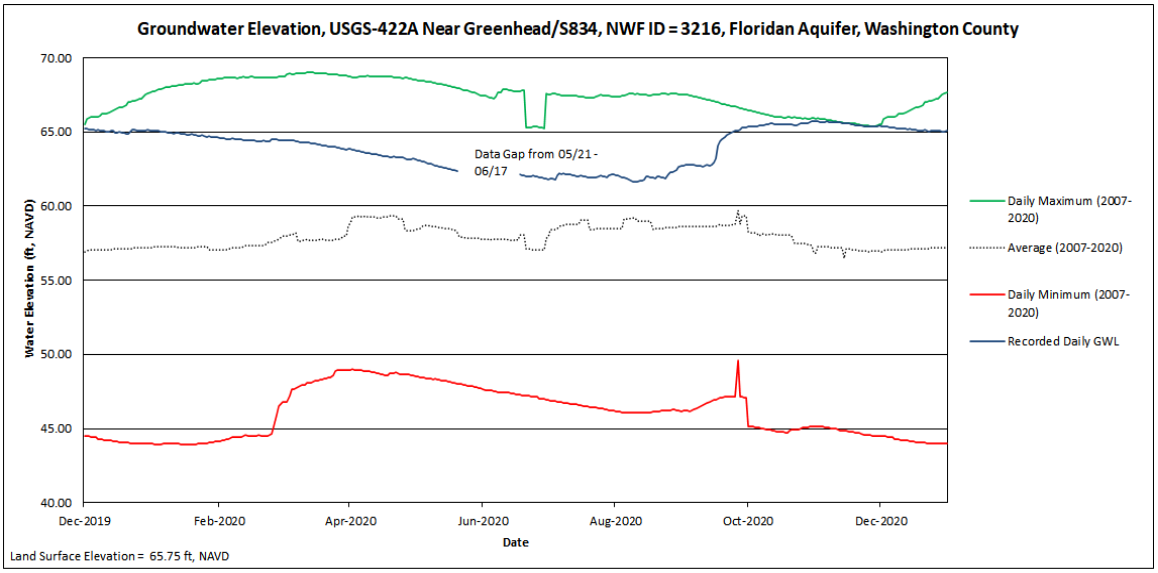

Groundwater Elevation, NWFWMD-Weller Ave/S835, NWF ID = 1382, Floridan Aquifer, Escambia County
Water Elevation (ft, NAVD)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
Dec-2019
Jan-2020
Mar-2020
Apr-2020
Jun-2020
Aug-2020
Sep-2020
Nov-2020
Jan-2021
Date
Daily Maximum (2016-2020)
Average (2016-2020)
Daily Minimum (2016-2020)
Recorded Daily GWL
Land Surface Elevation = 101.75 ft, NAVD

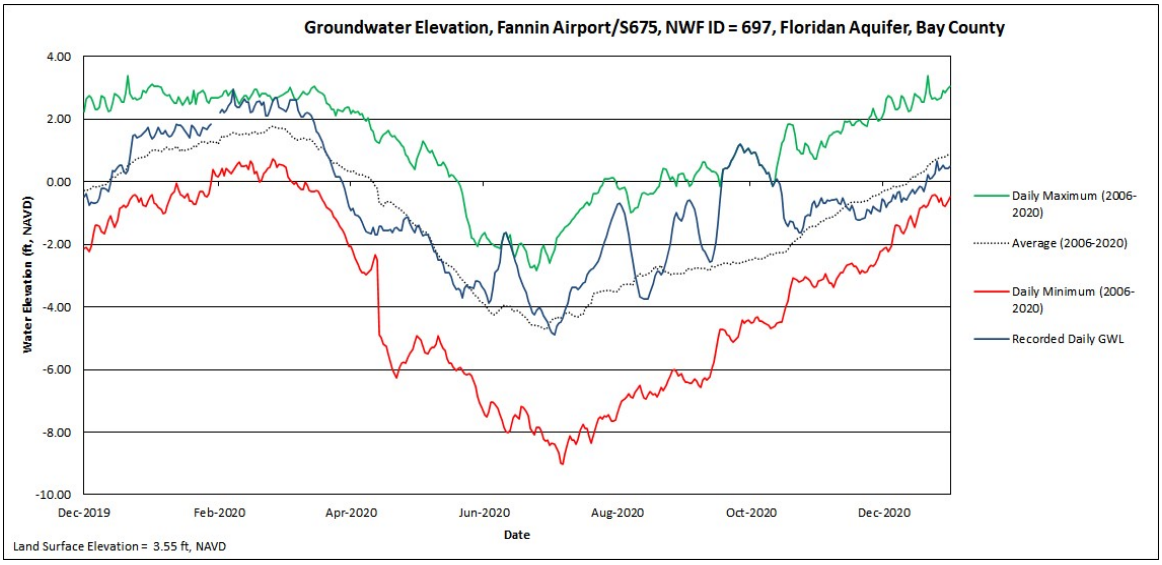

Groundwater Elevation, NWFWMD-B-2 Upper FLD Monitor, NWF ID = 12848, Floridan Aquifer, Santa Rosa County
Water Elevation (ft, NAVD)
-12.00
-14.00
-16.00
-18.00
-20.00
-22.00
-24.00
Dec-2019
Jan-2020
Mar-2020
May-2020
Jul-2020
Sep-2020
Nov-2020
Date
Daily Maximum (2017-2020)
Average (2017-2020)
Daily Minimum (2017-2020)
Recorded Daily GWL
Land Surface Elevation = 101.75 ft, NAVD

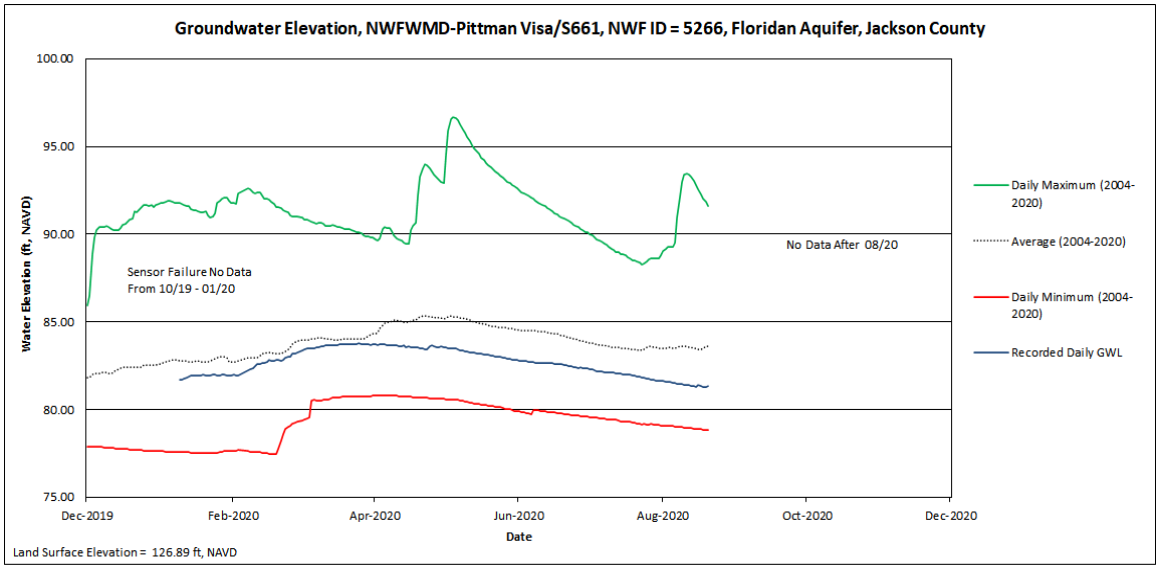

Groundwater Elevation, Okaloosa School Board/S673, NWF ID = 1894, Floridan Aquifer, Okaloosa County
Water Elevation (ft, NAVD)
-50.00
-60.00
-70.00
-80.00
-90.00
-100.00
-110.00
Sensor Failure Data Gap
From May 29, 2020
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2006-2020)
Average (2006-2020)
Daily Minimum (2006-2020)
Recorded Daily GWL
Land Surface Elevation = 16.04 ft, NAVD

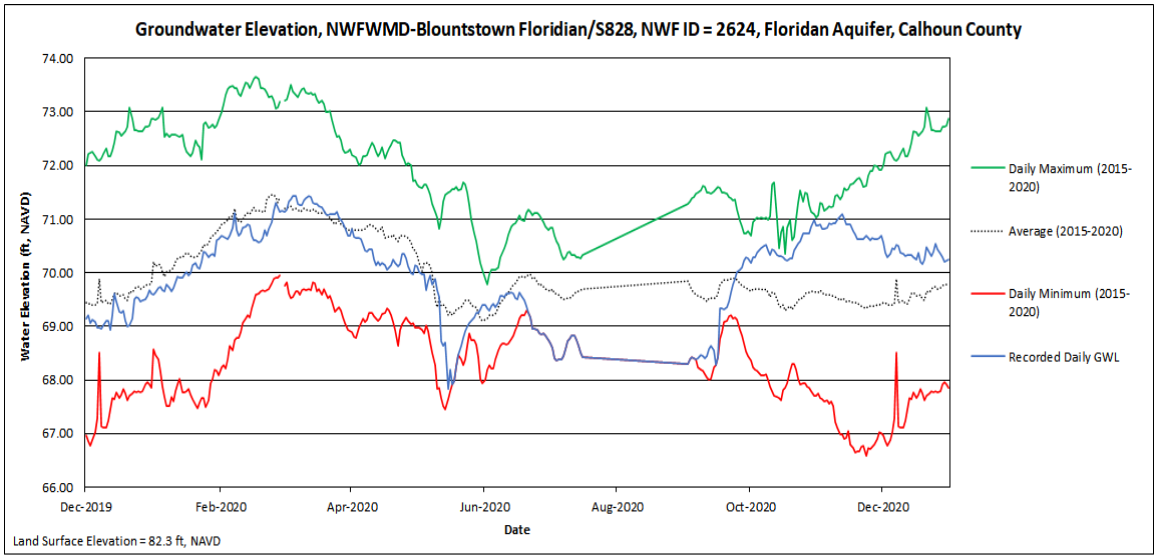

Groundwater Elevation, NWFWMD-A-2 Lower FLD Monitor/S12840, NWF ID = 12840, Floridan Aquifer, Okaloosa County
Water Elevation (ft, NAVD)
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
Dec-2019
Jan-2020
Mar-2020
Apr-2020
Jun-2020
Aug-2020
Sep-2020
Nov-2020
Date
Data Gap from 11/20
Daily Maximum (2006-2020)
Average (2006-2020)
Daily Minimum (2006-2020)
Recorded Daily GWL
Land Surface Elevation = 52.25 ft, NAVD

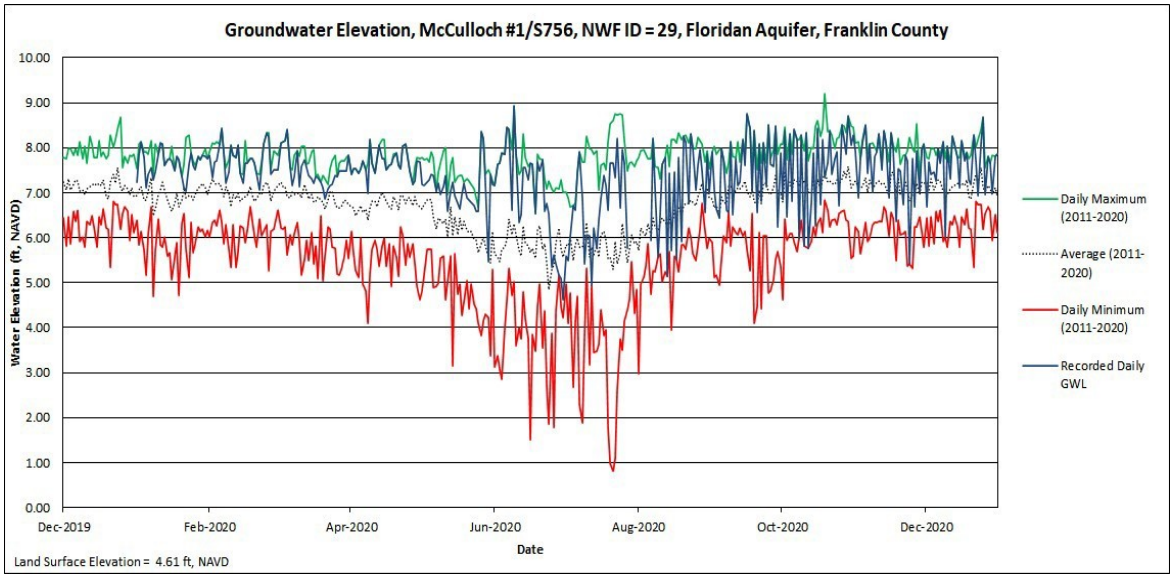

Groundwater Elevation, RU Monitor/Cedar Street/S672, NWF ID = 8361, Floridan Aquifer, Walton County
Water Elevation (ft, NAVD)
68.00
67.00
66.00
65.00
64.00
63.00
62.00
61.00
60.00
59.00
58.00
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Sensor Failure Data Gap in April 2020
Daily Maximum (2006-2020)
Average (2006-2020)
Daily Minimum (2006-2020)
Recorded Daily GWL
Land Surface Elevation = 186.43 ft, NAVD

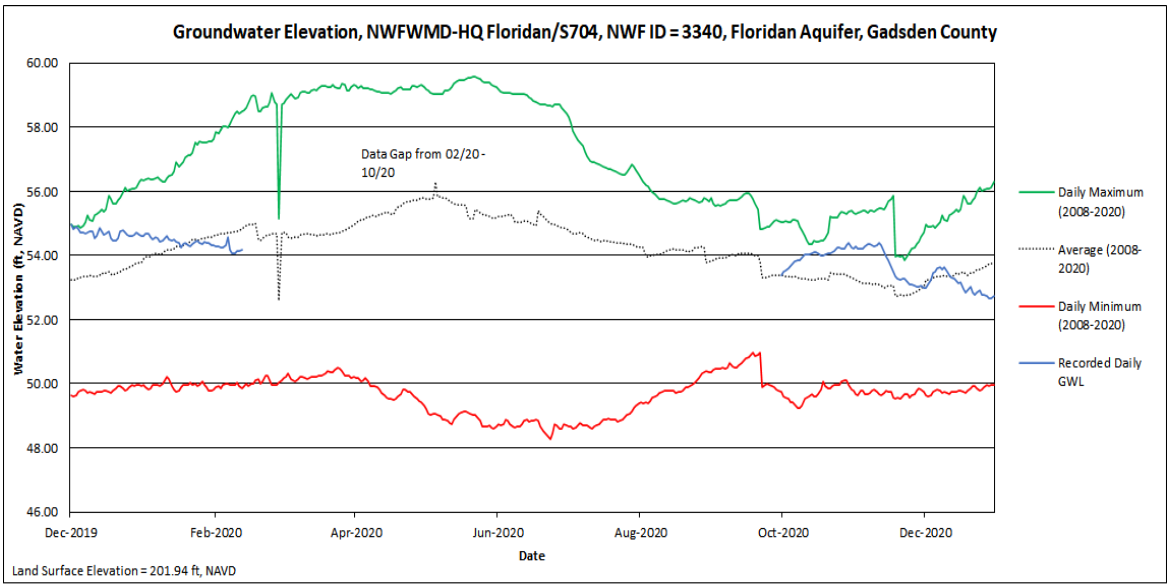

Groundwater Elevation, USGS-422A Near Greenhead/S834, NWF ID = 3216, Floridan Aquifer, Washington County
Water Elevation (ft, NAVD)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Data Gap from 05/21 - 06/17
Daily Maximum (2007-2020)
Average (2007-2020)
Daily Minimum (2007-2020)
Recorded Daily GWL
Land Surface Elevation = 65.75 ft, NAVD

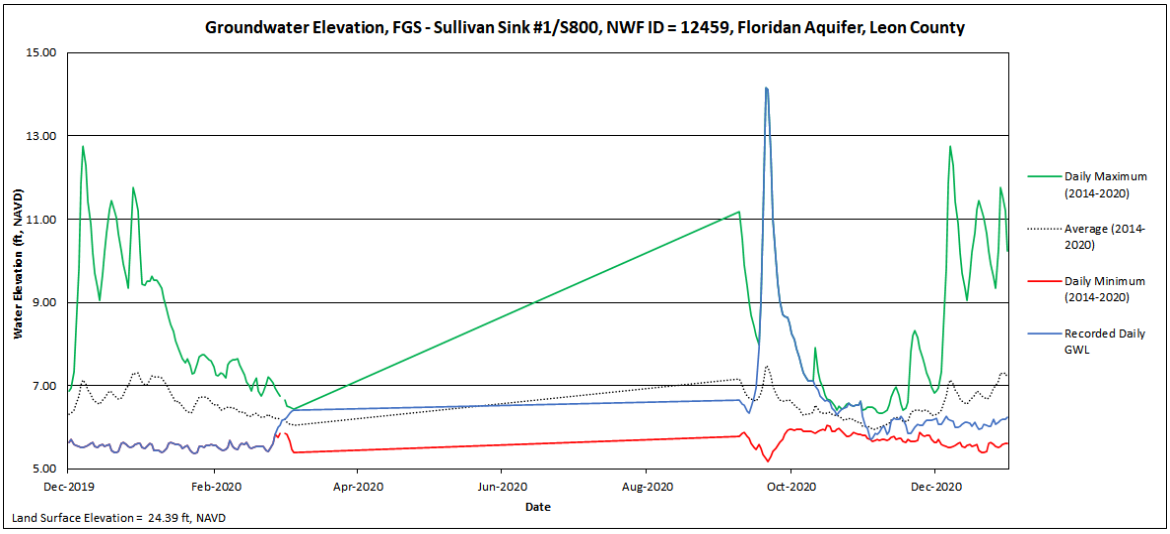

Groundwater Elevation, Fannin Airport/S675, NWF ID = 697, Floridan Aquifer, Bay County
Water Elevation (ft, NAVD)
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2006-2020)
Average (2006-2020)
Daily Minimum (2006-2020)
Recorded Daily GWL
Land Surface Elevation = 3.55 ft, NAVD


Groundwater Elevation, NWFWMD-Pittman Visa/S661, NWF ID = 5266, Floridan Aquifer, Jackson County
Water Elevation (ft, NAVD)
100.00
95.00
90.00
85.00
80.00
75.00
Sensor Failure No Data
From 10/19 - 01/20
No Data After 08/20
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2004-2020)
Average (2004-2020)
Daily Minimum (2004-2020)
Recorded Daily GWL
Land Surface Elevation = 126.89 ft, NAVD


Groundwater Elevation, NWFWMD-Blountstown Floridian/S828, NWF ID = 2624, Floridan Aquifer, Calhoun County
Water Elevation (ft, NAVD)
74.00
73.00
72.00
71.00
70.00
69.00
68.00
67.00
66.00
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2015-2020)
Average (2015-2020)
Daily Minimum (2015-2020)
Recorded Daily GWL
Land Surface Elevation = 82.3 ft, NAVD

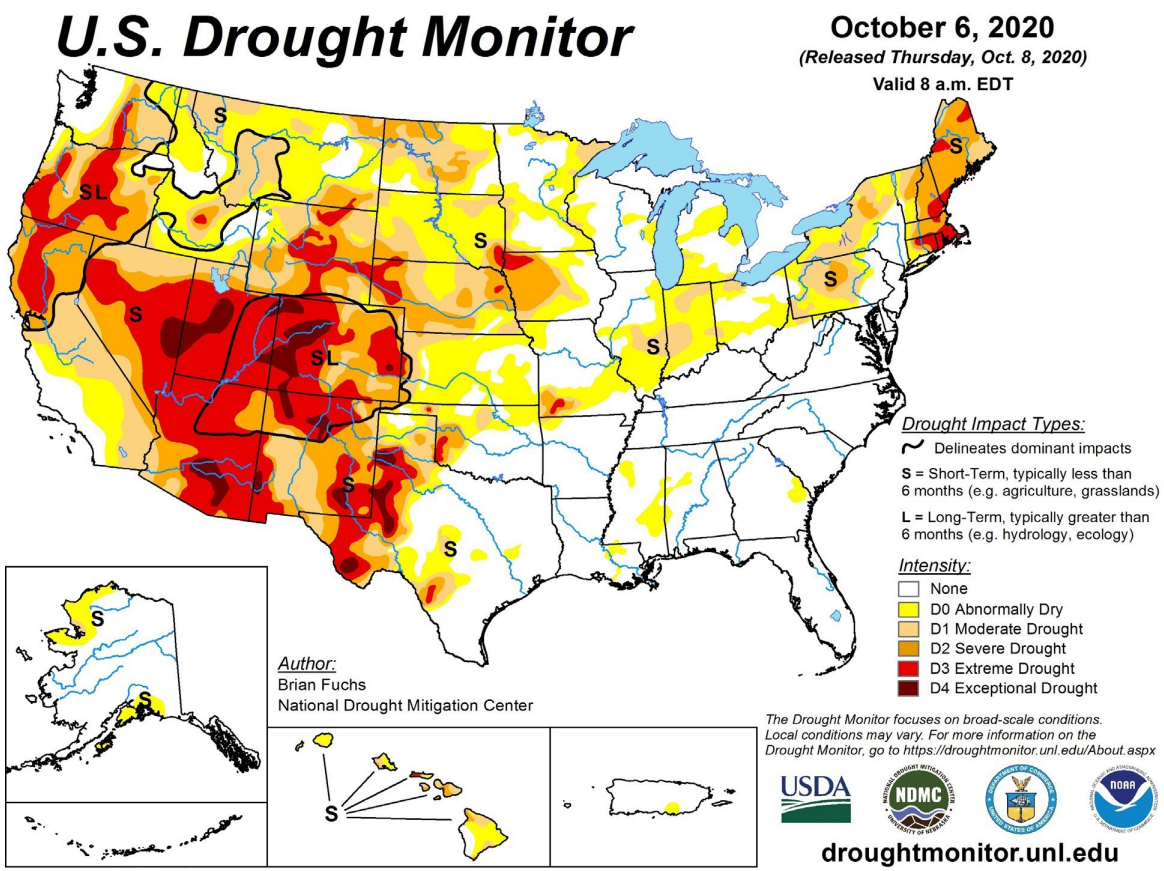

Groundwater Elevation, McCulloch #1/S756, NWF ID = 29, Floridan Aquifer, Franklin County
Water Elevation (ft, NAVD)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2011-2020)
Average (2011-2020)
Daily Minimum (2011-2020)
Recorded Daily GWL
Land Surface Elevation = 4.61 ft, NAVD


Groundwater Elevation, NWFWMD-HQ Floridan/S704, NWF ID = 3340, Floridan Aquifer, Gadsden County
Water Elevation (ft, NAVD)
60.00
58.00
56.00
54.00
52.00
50.00
48.00
46.00
Data Gap from 02/20-10/20
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2008-2020)
Average (2008-2020)
Daily Minimum (2008-2020)
Recorded Daily GWL
Land Surface Elevation = 201.94 ft, NAVD


Groundwater Elevation, FGS - Sullivan Sink #1/S800, NWF ID = 12459, Floridan Aquifer, Leon County
Water Elevation (ft, NAVD)
15.00
13.00
11.00
9.00
7.00
5.00
Dec-2019
Feb-2020
Apr-2020
Jun-2020
Aug-2020
Oct-2020
Dec-2020
Date
Daily Maximum (2014-2020)
Average (2014-2020)
Daily Minimum (2014-2020)
Recorded Daily GWL
Land Surface Elevation = 24.39 ft, NAVD

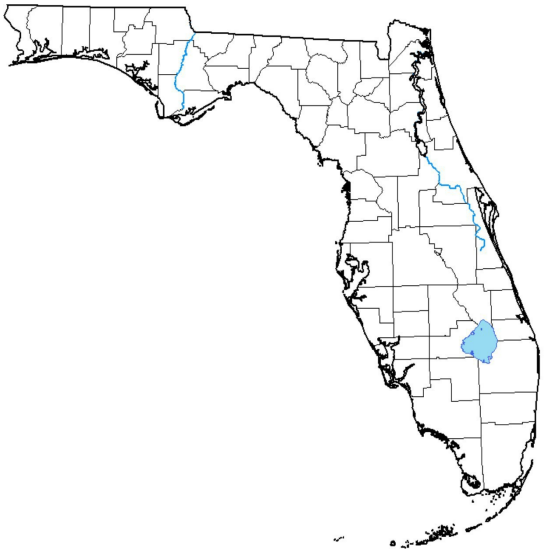
**Drought Report**

The U.S. Drought Monitor classifies several counties within the District as under normal conditions for most of the period with Escambia and Santa Rosa counties under abnormally dry conditions toward the end of the year. Parts of Franklin, Wakulla, and Jefferson counties also were classified as abnormally dry toward the end of the year. The NOAA seasonal forecast for September to November predicts an above normal rainfall pattern for all 16 counties within the District. Normal rainfall is defined as average monthly rainfall for the 1981-2010 period of reference.

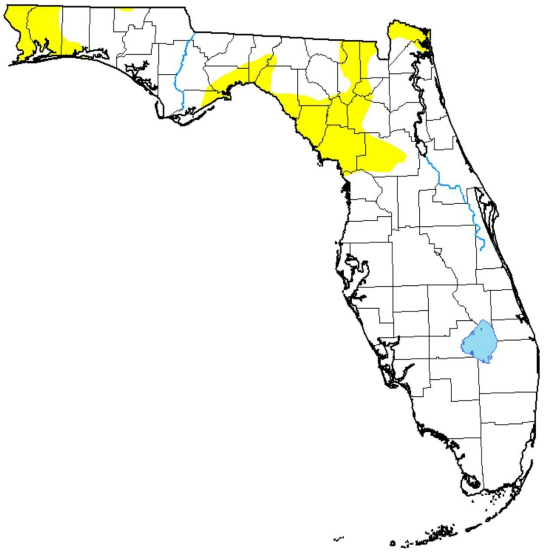


# U.S. Drought Monitor

Florida



**July 14, 2020**



**December 15, 2020**

Drought Classification

None | D0 (Abnormally Dry) | D1 (Moderate Drought) | D2 (Severe Drought) | D3 (Extreme Drought) | D4 (Exceptional Drought)

## Statistics Comparison

| Week | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 | DSCI |
|---|---|---|---|---|---|---|---|
| 2020-07-14 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 |
| 2020-12-15 | 84.40 | 15.60 | 0.00 | 0.00 | 0.00 | 0.00 | 16 |
| Change | -15.60 | 15.60 | 0.00 | 0.00 | 0.00 | 0.00 | 16 |

http://droughtmonitor.unl.edu/Maps/CompareTwoWeeks.aspx