

**FELLSMERE WATER CONTROL DISTRICT
ANNUAL ENGINEER'S REPORT
MAY 2021**

We are pleased to submit this annual engineer's report as a yearly summary of the engineering related activities involved in the operations and functions of the Fellsmere Water Control District (F.W.C.D.), as required under Chapter 298 of the Florida Statutes.

CLIMATOLOGICAL REVIEW

For the sixth consecutive year, hurricane activity began prior to the official June 1st start of the season, with Tropical Storms Arthur and Bertha both forming in the month of May. Only two named storms made landfall in Florida (Sally and Eta). For the fourth consecutive year, no storms made landfall along the east coast of Florida. The 2020 hurricane season became the fifth consecutive season to feature at least one Category 5 hurricane (Iota) and tied with 2017 for the most major hurricanes formed (6) since the 2005 season (7).

Overall activity in the Atlantic basin in 2020 was extremely active, with a record thirty named storms, thirteen hurricanes, six major hurricanes and at least \$46.91 billion in damages (7th most all-time). One unnamed tropical depression also formed in 2020. This compares to the long-term averages of 12 named storms, six hurricanes, and three major hurricanes. The initial NOAA forecast outlook for the 2020 season called for 19-25 named storms, 7-11 hurricanes and 3-6 major hurricanes.

In terms of Accumulated Cyclone Energy (ACE), which measures the combined strength and duration of tropical storms and hurricanes, preliminary data indicate that the 2020 season was extremely active. As a comparison, the 2020 season's ACE was 36% more active than the 2019 season.

Storm Name	Dates	Storm Category at Peak Intensity	Max Wind [mph]	Min. Pressure [mbar]
Arthur	May 16 – 19	Tropical Storm	60	990
Bertha	May 27 – 28	Tropical Storm	50	1005
Cristobal	June 1 – 10	Tropical Storm	60	992
Dolly	June 22 – 24	Tropical Storm	45	1002
Edouard	July 4 – 7	Tropical Storm	45	1007
Fay	July 9 – 11	Tropical Storm	60	998
Gonzalo	July 21 – 25	Tropical Storm	65	997
Hanna	July 23 – 27	Category 1 Hurricane	90	973
Isaias	July 30 – August 5	Category 1 hurricane	85	987

Storm Name	Dates	Storm Category at Peak Intensity	Max Wind [mph]	Min. Pressure [mbar]
Ten	July 31 – August 2	Tropical Depression	35	1007
Josephine	August 11 – 16	Tropical Storm	45	1004
Kyle	August 14 – 16	Tropical Storm	50	1000
Laura	August 20 – 29	Category 4 Hurricane	150	937
Marco	August 20 – 25	Category 1 Hurricane	75	991
Omar	August 31 – Sept. 5	Tropical Storm	40	1003
Nana	Sept. 1 – 3	Category 1 Hurricane	75	994
Paulette	Sept. 7 – 23	Category 2 Hurricane	105	965
Rene	Sept. 7 – 14	Tropical Storm	50	1000
Sally	Sept. 11 – 17	Category 2 Hurricane	105	965
Teddy	Sept. 12 – 23	Category 4 Hurricane	140	945
Vicky	Sept. 14 – 17	Tropical Storm	50	1000
Beta	Sept. 17 – 23	Tropical Storm	60	994
Wilfred	Sept. 18 – 21	Tropical Storm	40	1007
Alpha	Sept. 18 – 19	Subtropical Storm	50	996
Gamma	October 2 – 6	Tropical Storm	70	980
Delta	October 5 – 10	Category 4 Hurricane	145	953
Epsilon	Oct. 19 – 26	Category 3 Hurricane	115	951
Zeta	Oct. 24 – 29	Category 2 Hurricane	110	970
Eta	Oct. 31 – Nov. 13	Category 4 Hurricane	150	923
Theta	Nov. 10 – 15	Tropical Storm	70	989
Iota	Nov. 13 – 18	Category 5 Hurricane	160	917

See attached U.S. National Weather Service 2020 North Atlantic Hurricane Tracking Chart.

Thankfully, the East Central Coast of Florida, including the F.W.C.D., made it through another year without enduring the devastation of a hurricane event.

Rainfall intensity and distribution varies significantly across the limits of the District in any given rainfall or storm event. The 2020 total yearly rainfall observed and recorded at the Vero Beach Municipal Airport was 64.1 inches, approximately 12 inches above the average 52"/year.

Measured monthly rainfall, at the FWCD office, during 2020 is as follows:

January	– 0.0”
February	– 2.79”
March	– 0.0”
April	– 2.25”
May	– 0.40”
June	– 5.70”
July	– 13.94”
August	– 4.49”
September	– 5.5”
October	– 1.62”
November	– 0.0”
December	– 1.43”

Total annual rainfall measured at the District office is estimated to be 38.12 inches for 2020. This amounts to approximately 14” +/- below the long term annual average rainfall (52”) for the area.

Observed rainfall during the current dry season through the first four months of 2020 are: January – 0.0”; February – 1.19”, March – 0.40”, April – 6.00.

MAY 14, 2020 – ANNUAL LANDOWNERS AND BOARD OF SUPERVISORS MEETING

At the May 14, 2020, Annual Landowners Meeting, Jerry R. Tillman, (Rodney) was nominated and elected to the Board of Supervisors for a three-year term.

At the following Board of Supervisors Organizational Meeting, the following officials were elected/appointed to serve for the following year:

President	Richard Carnell
Vice-President	Greg Nelson
Secretary	Joyce Hertel
Treasurer	Rodney Tillman
Deputy Secretary	Dawn Cosner
Deputy Treasurer	Dawn Cosner

FELLSMERE WATER CONTROL DISTRICT ANNUAL PERMIT SUMMARY

Seventeen (17) permit applications (Numbers 211-20 through 228-21) have been submitted since last year’s annual engineer’s report.

One (1) of the permit applications was for a AT&T utility crossing. The balance of the permit applications are for new culvert driveway crossings, or for outfall/discharge culverts into district canals.

The South Regional Lake, a City of Fellsmere Project was permitted on October 23, 2018 as a Two (2) Phase Project. Phase (1) was completed in the Fall of 2020. Phase (2) is currently under construction. This project will provide water quality improvements and additional flood storage for the FWCD system during large storm events. A structure located in Ditch 18 diverts water flow into the South Regional Lake where it is cleaned up. The lake is designed to overflow back into the FWCD Ditch 18 at the downstream end during normal flows. During large storm events the water can short circuit by overflowing the diversion structure in Ditch 18 and/or an emergency overflow weir designed into the lake system. The bypass conveyances ensure that the upstream flood elevations are not increased during large storm events after the lake system is placed into service.

The City of Fellsmere's 100th Lane Paving Project was permitted May 31, 2019. This project includes the cleaning and regrading of the FWCD Sub-lateral Ditch No PL-12 from the pipe at Willow to the east 680+/- feet. The City of Fellsmere has recently been awarded a contract for construction. This project is expected to be completed by the end of the year.

The permit process for the modification of the Florida Organic Aquaculture site plan has been on-going since 2013. The original permit was issued in 2013 and the site work was started. The F.O.A. applicant/developer submitted a permit modification request with plans and calculations prepared by a new Engineer, The Milcor Group, Inc. Multiple submittals and review comments from the F.W.C.D. occurred over several years. The control of the development has changed hands several times over the years and that has contributed to the delay in addressing the permit process issues. The FWCD adopted a policy of requiring a project approval letter from the land owner before the issuance of a FWCD permit. To date the FWCD has not received the approval letter. Some progress has been made in the last year with a resubmittal in February and review comments provided to the applicant's engineer on April 24, 2020.

Parabel obtained a permit to construct the site plan improvements on June 8, 2016. They completed the first phase of their duck weed production facility just south of Ditch 23 and west of Park Lateral in the spring of 2018 and started the permit closeout process. Based on the review of the as-built survey the site work was not completed as per the approved permit plans. Parabel indicated during 2018 and 2019 that the non-compliances would be addressed. Then they updated FWCD that the subject Fellsmere site would be shut down and operations will be consolidated into their facility located on 154th avenue south of SR 60. Recently observations at the site indicate that the facility is still in operation.

A permit application dated 2012 from the F.D.O.T., pertaining to replacement of the I-95 Bridge over the Main Canal continues to remain open pending resolution

of disputed design and construction issues. The F.W.C.D. requires additional fill and rock rip rap slope stabilization treatment for the transition sections of the realigned F.W.C.D. maintenance road. This requirement is to maintain a safe maintenance road under the bridge for F.W.C.D. The contractor has demobilized without constructing the required rip rap. Therefore, the as-built condition is not acceptable and through the Attorney's retained by FWCD, the matter continues through a legal process.

CITY OF FELLSMERE (C.O.F.)

The City of Fellsmere continues to develop strategies and implement improvements to its street and drainage infrastructure, including paving and drainage, flood mitigation grants, and developing a city-wide drainage swale plan for driveway culverts. The City has established a Stormwater Utility to aid in funding the projects.

The C.O.F. Stormwater Management Utility Program primarily addresses the secondary drainage system within the City, additional flood protection, and water quality issues mandated by other jurisdictional agencies. It does not overlap or duplicate the responsibilities of the F.W.C.D. regarding the maintenance and operations of the District's primary Lateral and Sub-lateral drainage ditches.

The City of Fellsmere continues to implement parts of the Fellsmere Master Stormwater Plan, which was adopted in 2012. The Master Plan North and South Regional Lakes (Phase 1) are completed and provide flood storage and water quality treatment.

The City has obtained grant funds for paving and drainage improvements to the 100th Lane and 100th Place Project as noted in the Annual Permit Summary above.

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (S.J.R.W.M.D.)

The construction of the new levee along the eastern boundary of S.J.R.W.M.D. property acquired from Fellsmere Joint Venture (FJV) was completed in 2017. The levee is part of the "Fellsmere Water Management Area" which also is now completed. This levee will be the east levee of the newly created stormwater management area and will serve as the new western levee of the F.W.C.D. The S.J.R.W.M.D. agreed to provide a levee certification for the completed section of the levee. To date, the levee certification has not been provided.

The S.J.R.W.M.D. Governing Board has budgeted monies for a dispersed water storage pilot project within the F.W.C.D. The land owner, FJV, is currently in the permitting phase. When constructed a pump will redirect water from flowing east in the FWCD Main Canal to the Indian River Lagoon and discharge it into an above ground impoundment located west of Lateral U. The goal is to provide significant reductions in the volume of water being discharged to the Indian River Lagoon. This results in two

benefits, improvement to the water quality of the Lagoon, and secondly additional fresh water is introduced into the St Johns River.

WATER QUALITY IN MAIN CANAL

Representative Water Quality sampling for the F.W.C.D. are taken from the Main Canal quarterly (approximately every three months) at the County Road 507 (Babcock Road) bridge.

Currently, and for some time now, the sampling, field analyses, and laboratory analyses are conducted by Pace Analytical Services, Inc. out of Pompano Beach, Florida. The discussion of water quality for this report is based on samples taken during: the 2nd quarter of 2020 through the 1st quarter of 2021.

The acceptable Florida Nutrient Numeric Threshold Limits for Phosphorus is (0.12 mg/L). The F.W.C.D. water quality results for phosphorus are as follows, May 2020 (0.069 mg/l), August 2020 (0.20 mg/l), November 2020 (0.19 mg/l), and the February 2021 (0.041 mg/l). The August and November samples have concentration levels that are greater than the 0.12 limit, however, the May and February levels are lower and the overall average of the results is close to the limit.

The Nutrient Numeric Threshold Limit for Total Nitrogen in the Florida Peninsula region is a maximum concentration of 1.54 mg/l. The F.W.C.D. water quality results for Nitrogen are as follows, May 2020 (0.69 mg/l), August 2020 (1.60 mg/l), November 2020 (1.25 mg/l), and the February 2021 (TBD mg/l). This past year, the August 2020 (1.60 mg/l) sample was the only sample above the Threshold Limit.

ANNUAL ENGINEERING RELATED ACTIVITIES

Engineering and Survey time during this past year continues to be expended on the non-compliance design and construction issues of the F.D.O.T. Interstate 95 Bridge across the F.W.C.D. Main Canal. This matter currently remains unresolved and Carter Associates, Inc. continues to assist F.W.C.D. and legal counsel in on-going litigation.

Attendance at the public/stakeholders forums, conference calls conducted by the F.D.E.P, or by watching the webinar recordings to represent and assist the F.W.C.D. in addressing Basin Management Action Plan (BMAP) mandates to reduce the pollution currently being discharged into the Indian River Lagoon. The FDEP has determined that pollution reduction allocations to the F.W.C.D. will not be assigned. Instead, the FWCD will be required to report maintenance efforts and support the implementation of water quality improvement projects as may be proposed by other BMAP stakeholders.

On-going annual engineering activities include the following:

- 1) Attend all regularly scheduled meetings of the Board of Supervisors and maintain a District Engineering file.

- 2) Remain on daily call to provide technical assistance and information to District personnel, supervisors, landowners and other governmental and public agencies concerning the operations, functions and regulations of the District.
- 3) Continue to provide technical permit review assistance to the District, and project consultants, in the submission and issuance of all permit applications to assure compliance with F.W.C.D. policies and requirements.
- 4) Attendance at pre-construction meetings for significant site plan or subdivision type projects in the F.W.C.D. Also, provide limited construction inspection to check compliance with F.W.C.D. permit conditions and to minimize the discharge of turbidity from construction sites.
- 5) Review the quarterly stormwater quality analysis from the District.
- 6) Monitor and review the actions and activities of other jurisdictional agencies and related organizations that may affect the operations and functions of the District.
- 7) Review records and files in preparation of the Annual Engineer's Report as required under Florida Statutes – Chapter 298.

The FWCD Board of Supervisors entered into a contract with Special District Services in 2019 to provide some of the District's administrative duties along with Joyce Hertel, a long-term District employee who continues to manage the daily office duties.

Once again, we are pleased to report that the District staff, under the direction, guidance and support of the District's Board of Supervisors, continues to maintain and protect the works of improvement of the District, and to provide the landowners within the District a cost-effective level of service for flood protection.

Respectfully submitted,

CARTER ASSOCIATES, INC.

By: _____
George Simons, P.E. District Engineer
Fellsmere Water Control District
May 13, 2020
Florida Registration #40437
C.O.A. / L.B. #205

