



Impaired Waters Monitoring and Implementation Plan

Pond Fork and Walnut Creek

2019 Annual Report



Introduction

As part of the General NPDES Stormwater Permit No. GAG61000, Jackson County developed an Impaired Waters Monitoring and Implementation Plan. Using the Georgia Environmental Protection Division's (EPD) Draft 2016 305(b)/303(d) List of Waters, the County identified two stream segments within its MS4 that met the criteria for regular water quality monitoring. Those stream segments and their pollutants of concern are as follows:

Impaired Stream Segments

Reach Name	Reach Location	Use	Criterion Violated (POC) ¹	Potential Causes ²	Extent
Pond Fork	Headwaters to East Pond Fork	Fishing	FC	NP	5 miles
Walnut Creek	Caney Fork to Middle Oconee River	Fishing	FC, Bio(M)	NP	14 miles

The purpose of this annual report is to provide water quality data and trend analysis to determine if the trend is showing improvement or degradation relative to implementing BMPs. If the trend analysis indicates that water quality is worsening or not improving, then the necessity of additional sampling and/or BMPs will be evaluated.

Sample Sites

Jackson County identified four sampling sites for the collection of water quality samples. Where sites are not accessible via the public right-of-way, the property owner has given permission for the County to access the stream for sampling purposes. Sites were sampled mid-stream, mid-depth and in the case of Walnut Creek, on the up-stream side of the road crossing.

Sample Station	Stream	Location	Latitude	Longitude	Sample Parameter
PF 1	Pond Fork	Pond Fork	34.231178	-83.682061	FC
PF 2	Pont Fork	Mangum Mill Rd.	34.2327	-83.7111	FC
WC 1	Walnut Creek	Pocket Road	34.149817	-83.750833	FC, Bio (M)
WC 2	Walnut Creek	Cooper Bridge Rd.	34.1642	-83.7729	FC, Bio (M)

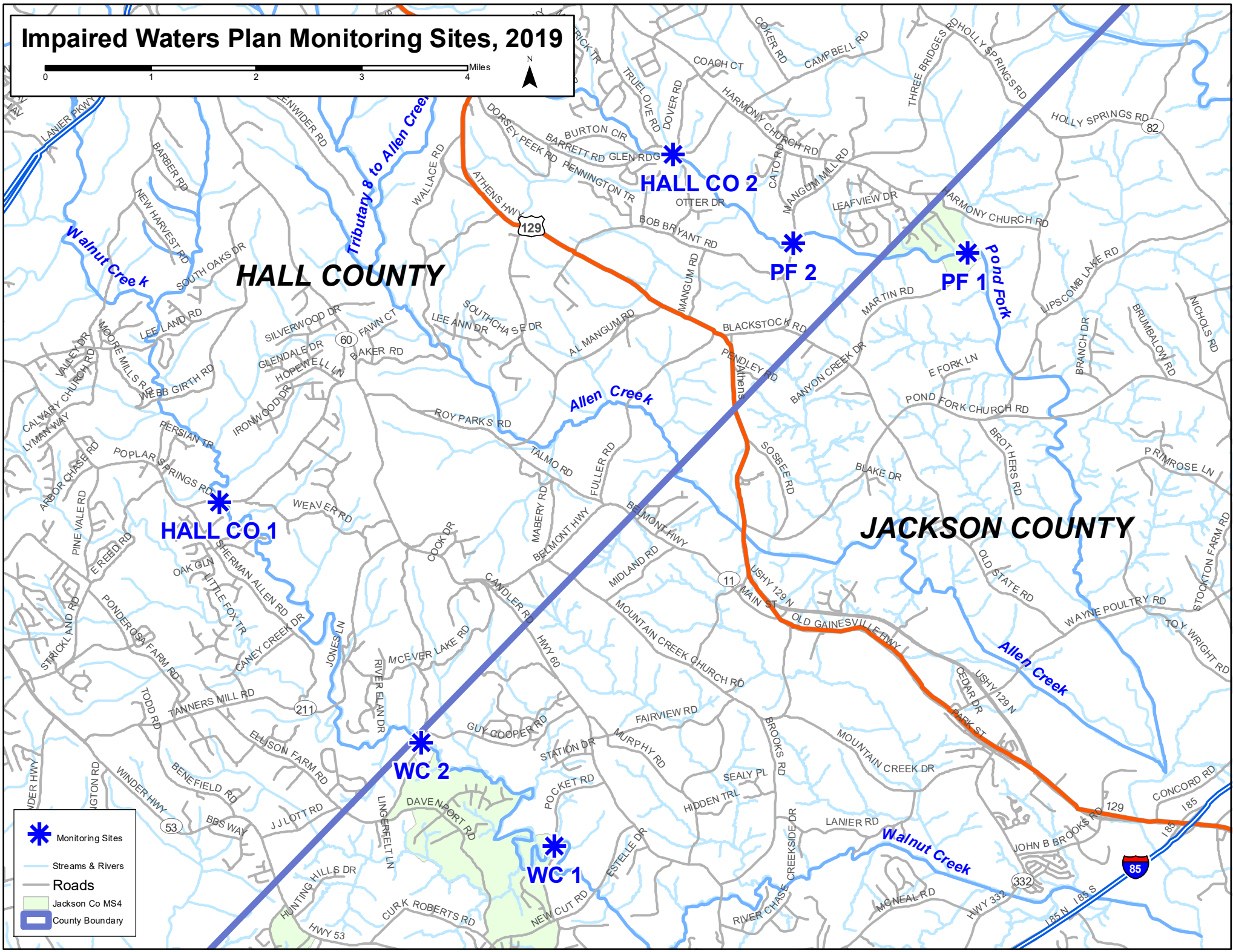
Initially, PF 1 and WC 1 were the only sites sampled as they were the most downstream sites from outfalls that discharged to the respective impaired streams. After analysis of the February and May 2019 sampling data, Hall County was contacted for the purpose of obtaining their data on the segment of Pond Fork and Walnut Creek that was within their jurisdiction. Hall County staff indicated that fecal coliform counts at their monitoring points spiked after rain events.

¹FC – Fecal coliform; Bio(M) Biota Impacted (Macroinvertebrate Community)

²NP – Nonpoint Sources/Unknown Sources

An analysis of sampling data in February, May, and August 2019 in Jackson County at sites PF 1 and WC 1 indicated that fecal coliform counts spiked not only following rain events but also randomly during dry weather sampling. Since Hall County samples less frequently at its most downstream sites, in September 2019, Jackson County added a sampling site on both Pond Fork (PF 2) and Walnut Creek (WC 2) at or near the Jackson/Hall counties boundary in an effort to determine whether Hall County water quality was a substantial contributor to Jackson County water quality or whether some or all of the contamination contributor was in Jackson County.

Impaired Waters Plan Monitoring Sites, 2019



- Monitoring Sites
- Streams & Rivers
- Roads
- Jackson Co MS4
- County Boundary

Sampling Schedule

The Georgia Department of Natural Resources *Watershed Assessment and Protection Plan Guidance: Watershed Monitoring Plans* requires four sampling events for each sampling station per year; three dry-weather and one wet-weather. Scheduled sampling months for each sampling station will be February, May, August, and November. However, with the addition of the two sites, PF2 and WC 2, an additional month was added for 2019 so that a geometric mean was obtained for the sites as a baseline for future monitoring.

Water quality samples were collected by Resource Management Strategies and county staff and analysis was conducted by the University of Georgia Agricultural and Environmental Services Laboratory in Athens, GA.

Monitoring Results

Fecal coliform

Fecal Coliform (mpn/100 ml)					
Date	Pond Fork 1	Geometric Mean	Pond Fork 2	Geometric Mean	Rain (Prev 24 hrs)
02.18	1100				0.7
05.13	300				0.31
05.14	230				0
05.22	130				0
05.29	300				0
08.05	16000				2.91
08.06	16000				0.1
08.20	2200				0.76
08.21	800				0.02
09.10	5000		270		0
09.23	800		1300		0
09.30	300		500		0
10.07	2400		5000		0
11.06	170		130		0
		227.76			
		4607.21			
		1302.71		967.86	

Note: Values in red indicate violation of State bacteria water quality standard.

Fecal Coliform (mpn/100 ml)					
Date	Walnut Creek 1	Geometric Mean	Pond Fork 2	Geometric Mean	Rain (Prev 24 hrs)
02.18	16000				0.7
05.13	300				0.31*
05.14	170				0
05.22	500	366.03			0
05.29	500				0
08.05	9000				2.91
08.06	16000				0.1
08.20	2200	8437.74			0.78
08.21	16000				0.02
09.10	5000		16000		0
09.23	300	1584.29	210	1924.20	0
09.30	1400		1700		0
10.07	3000		2400		0
11.06	40		110		0

*0.97" rain in previous 48 hours.

Note: Values in red indicate violation of State bacteria water quality standard.

Georgia's water quality standard for fecal coliform are geometric mean not to exceed 200 mpn/100mL from May through October based on at least four samples collected over a 30-day period at intervals no less than 24 hours. If fecal coliform levels from non-human sources (natural coliform levels) exceed 200 mpn/100mL (geometric mean) occasionally, the allowable geometric mean shall not exceed 500 mpn/100 mL in free flowing freshwater streams. From November through April, geometric mean not to exceed 1,000 mpn/100mL based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours and not to exceed a maximum of 4,000 mpn/100 mL for any individual sample. Values in excess are in violation of the State bacteria water quality standard. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. The State does not encourage swimming in surface waters with elevated fecal coliform counts since a number of factors beyond the control of any State regulatory agency contribute to elevated levels of fecal coliform.

The area between the Pond Fork and Walnut Creek sampling sites is low-density residential development served by individual septic systems, forest, and scattered agriculture fields and one poultry facility operation (6 houses). Outfalls serving the areas did not evidence any illicit discharge. A review of aerial photographs did not evidence and problems with septic systems. However, according to Jackson County Public Health there were two reported septic system failures upstream of both WC 1 and PF 1 in 2019. Both required repair and no additional drainlines were required. There is no active development in the subwatershed. However, a majority of the watershed above each sampling site is located in Hall County and therefore is likely affected to some degree by activities in Hall County. A windshield survey did not yield any likely contributing contamination sites in the upstream portion of watershed.

Total Suspended Solids (TSS)

Date	Total Suspended Solids (mg/L)		Rain (inches)	
	Walnut Creek		24 hrs	48 hrs
2.18.09	27.4		0.7	0
5.13.19	8.4		0.31	0.66
8.05.19	76.0		2.91	0
9.23.19	7.7		0	0
11.06.19	>3.75		0	0

Total suspended solids (TSS) are a total quantity measurement of solid material per volume of water. This means that TSS is a specific measurement of all suspended solids, organic and inorganic, by mass. TSS includes settleable solids, and is the direct measurement of the total solids present in a water body.

Georgia has no numerical standard for total suspended solids but instead requires "All watersheds shall be free from material related to municipal, industrial or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses. However, in most situations, a total suspended solids concentration below 20 mg/L appears clear, while levels over 40 mg/L may begin to appear cloudy.

Walnut Creek is a shallow stream of 6" - 8" at normal flow and evidences substantial erosion. Banks are steep and eroded. There is substantial sediment in the stream channel and areas of extensive sand bars. Based on 2019 monitoring data, heavy rain events significantly increase stream TSS.

Trend Analysis

Fecal Coliform

Fecal coliform contamination is generally above state standard throughout the year at the found sampling sites. Additionally, Hall County sampling data from June 2019 (the only month sampled) indicated fecal coliform counts exceeded state standard with a geometric mean of 2,362 and 4,234 on Walnut Creek and Pond Fork, respectively.

Due to the limited development in the subwatershed below the Hall County sampling sites, an additional sampling site was added on both Pond Fork and Walnut Creek near the Hall/Jackson County line in order to better determine whether the contamination was primarily from Hall County or primarily originating from Jackson County. Sampling at the additional sites was begun in August 2019.

To date, data is limited and inconclusive.

TSS

According to US EPA, natural erosion produces nearly 30 percent of the total sediment in the United States, accelerated erosion from human use of land accounts for the remaining 70 percent. The most concentrated sediment releases come from construction activities, including relatively minor home-building projects such as room additions and swimming pools. However, this subwatershed is not presently undergoing development and is heavily wooded. No individual source of sediment has been identified.

Recommendations

Fecal Coliform

- Continue to sample at both sites on Walnut Creek and Pond Fork in order to obtain more data.
- Coordinate with Hall County to sample on the same dates in June in order to obtain a more direct correlation on water quality data.
- Continue analyzing data, adjust or add monitoring sites as needed, and implement appropriate activities to address identified concerns.
- Participate in SFY2020 Regional Water Plan Seed Grant "An ArcGIS Toolbox for Digitalization of septic systems to support activities outlined in the Upper Oconee Regional Water Plan" awarded to the University of Georgia. The purpose of the project is to develop an ArcGIS toolbox to support activities pertaining to effective wastewater management listed in the Upper Oconee Regional Water Plan (RWP). Jackson County

is located in the Upper Oconee river basin. The grant project will create a septic system map as part of its development of a septic system planning and management policies and guidance. The project will automate the digitization process of the location and age of septic systems in the area using easily available GIS layers and remote sensing data with minimal human input. Data will allow Jackson County to better assess potential septic failures based on water quality data and septic tank location and age.

- Continue to implement the Jackson County Stormwater Management Plan (SWMP) under the current NPDES Phase II MS4 permit. A copy of the county's 2018 SWMP is available at <https://www.jacksoncountygov.com/355/Storm-Water-Management>.

TSS

- Continue to sample at both sites on Walnut Creek.
- Continue analyzing data, adjust or add monitoring sites as needed, and implement appropriate activities to address identified concerns.
- Continue to monitor development in the subwatershed and potential to contribute to sediment contamination.
- Continue to implement the Jackson County Stormwater Management Plan (SWMP) under the current NPDES Phase II MS4 permit. A copy of the county's 2018 SWMP is available at <https://www.jacksoncountygov.com/355/Storm-Water-Management>.