

# 2015 Monitoring Summary

## Bruners Gin Creek at Houston County Road 75 (31.06738/-85.18370)

### BACKGROUND

The Alabama Department of Environmental Management (ADEM) selected Bruners Gin Creek watershed for water quality monitoring as part of the 2015 statewide monitoring plan. The objectives of the project were to estimate overall water quality within the basin. Biological assessments were not conducted at Bruners Gin Creek.



Figure 1. Bruners Gin Creek at BRGH-1, March 19, 2015.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		
Basin	Chipola River	
Drainage Area (mi <sup>2</sup> )	4	
Ecoregion <sup>a</sup>	65G	
% Landuse <sup>b</sup>		
Open water		<1%
Wetland	Woody	5%
	Emergent herbaceous	<1%
Forest	Deciduous	7%
	Evergreen	19%
	Mixed	2%
Shrub/scrub		12%
Grassland/herbaceous		<1%
Pasture/hay		15%
Cultivated crops		34%
Development	Open space	5%
	Low intensity	<1%
Population/km <sup>2c</sup>	11	

a. Dougherty Plain

b. 2011 National Land Cover Dataset

c. 2010 US Census

### WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Bruners Gin Creek is a *Fish and Wildlife (F&W)* stream located in the Dougherty Plains ecoregion (65g) (Figure 1). Based on the 2011 National Land Cover Dataset, landuse within the watershed is primarily cultivated crops and forest (28%). As of April 1, 2016 no outfalls were active within the watershed.

### WATER CHEMISTRY

Results of water chemistry analyses are presented in Table 2. In situ measurements and water samples were collected March through October of 2015 to help determine the water quality. Organics were not collected at Bruners Gin Creek. Median values for several physical parameters and nutrients were higher than background levels for ecoregion 65g. Total aluminum was also higher than background levels for ecoregion 65g. E.coli exceeded *Fish and Wildlife (F&W)* use classification for samples collected in August and September.

### SUMMARY

The water quality samples collected in 2015 at BRGH-1 show that Bruners Gin Creek is not meeting *F&W* use classification due to E.coli exceedances. Monitoring should continue at BRGH-1 to ensure that water quality conditions remain stable, and to further investigate the cause of the higher than expected water quality results.

**Table 2.** Summary of water quality data collected March-October, 2015. Minimum (Min) and maximum (Max) values calculated using minimum detection limits (MDL) when results were less than this value. Median, average (Avg), and standard deviations (SD) values were calculated by multiplying the MDL by 0.5 when results were less than this value.

Parameter	N	Min	Max	Med	Avg	SD	Q	E
<b>Physical</b>								
Temperature (°C)	8	19.1	22.8	20.8	20.8	1.3		
Turbidity (NTU)	8	6.2	22.1	11.4	12.4	5.3		
Total Dissolved Solids (mg/L)	8	134.0	161.0	146.5 <sup>M</sup>	146.8	10.4		
Total Suspended Solids (mg/L)	8 <	1.0	15.0	9.5	8.8	4.2		
Specific Conductance (µmhos/cm@25C)	8	227.4	275.6	245.3 <sup>G</sup>	249.7	16.2		
Hardness (mg/L)	4	119.0	151.0	132.0 <sup>G</sup>	133.5	15.9		
Alkalinity (mg/L)	8	28.7	131.0	110.8 <sup>M</sup>	103.8	31.3		
Monthly Stream Flow (cfs)	7	0.1	6.8	4.7	4.6	2.4		
Stream Flow during Sample Collection (cfs)	6	3.1	6.8	5.5	5.4	1.5		
<b>Chemical</b>								
Dissolved Oxygen (mg/L)	8	6.6	7.2	7.0	7.0	0.2		
pH (SU)	8	7.3	7.6	7.4	7.4	0.1		
<sup>J</sup> Ammonia Nitrogen (mg/L)	8 <	0.007	0.1	0.0	0.0	0.017		
<sup>J</sup> Nitrate+Nitrite Nitrogen (mg/L)	8	1.496	2.0	1.7 <sup>M</sup>	1.7	0.161		
Total Kjeldahl Nitrogen (mg/L)	8 <	0.064	0.5	0.3	0.3	0.158		
<sup>J</sup> Total Nitrogen (mg/L)	8	1.805	2.3	2.0 <sup>M</sup>	2.0	0.165		
<sup>J</sup> Dissolved Reactive Phosphorus (mg/L)	8	0.004	0.0	0.0	0.0	0.001		
Total Phosphorus (mg/L)	8	0.017	0.0	0.0	0.0	0.003		
CBOD-5 (mg/L)	8 <	2.0 <	2.0	1.0	1.0	0.0		
Chlorides (mg/L)	8	4.6	5.3	5.0	5.0	0.2		
<b>Total Metals</b>								
<sup>J</sup> Aluminum (mg/L)	4 <	0.106	1.2	0.3 <sup>M</sup>	0.5	0.535		
Iron (mg/L)	4	0.386	1.2	0.6	0.7	0.386		
<sup>J</sup> Manganese (mg/L)	4	0.081	0.1	0.1	0.1	0.028		
<b>Dissolved Met-</b>								
<sup>J</sup> Aluminum (mg/L)	4 <	0.106	0.1	0.1	0.1	0.032		
Antimony (µg/L)	4 <	0.3 <	0.3	0.2	0.2	0.0		
<sup>J</sup> Arsenic (µg/L)	4 <	0.3	0.4 <sup>H</sup>	0.3	0.3	0.1	3	
Cadmium (µg/L)	4 <	0.311 <	0.3	0.2	0.2	0.000		
<sup>J</sup> Chromium (mg/L)	4	0.0005	0.0	0.0	0.0	0.000		
Copper (mg/L)	4 <	0.0002 <	0.0	0.0	0.0	0.000		
<sup>J</sup> Iron (mg/L)	4	0.147	0.3	0.2	0.2	0.049		
Lead (µg/L)	4 <	0.4 <	0.4	0.2	0.2	0.0		
<sup>J</sup> Manganese (mg/L)	4	0.044	0.1	0.1	0.1	0.032		
Nickel (mg/L)	4 <	0.0005 <	0.0	0.0	0.0	0.000		
Selenium (µg/L)	4 <	0.4 <	0.4	0.2	0.2	0.0		
Silver (µg/L)	4 <	0.365 <	0.4	0.2	0.2	0.000		
Thallium (µg/L)	4 <	0.5 <	0.5	0.2	0.2	0.0		
<sup>J</sup> Zinc (mg/L)	4 <	0.0005	0.0	0.0	0.0	0.000		
<b>Biological</b>								
<sup>J</sup> Chlorophyll a (mg/m <sup>3</sup> )	7 <	0.10	5.8	0.5	1.55	2.11		
E. coli (MPN/DL)	8	90.9	1046.2 <sup>C</sup>	320.4	383.0	310.4	2	

C=F&W use class criteria exceeded; E=# samples with exceedances; G=value higher than median concentration of all verified ecoregional reference reach data collected in the ecoregion 65g; H=F&W human health criteria exceeded; J=estimate; M=value >90% of all verified ecoregional reference reach data collected in the ecoregion 65g; N=# samples Q=# samples with uncertain exceedances.

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