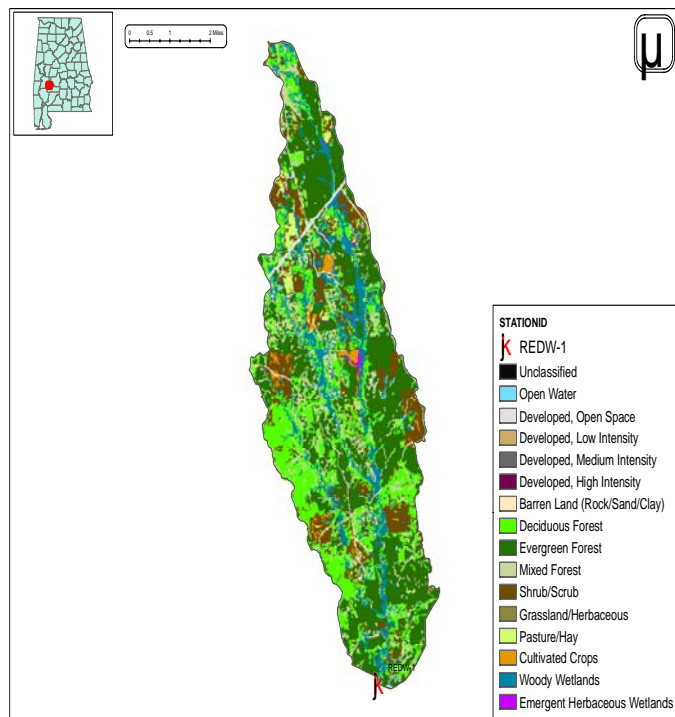


# 2005 monitoring Summary

## Red Creek at State Highway 162 in Wilcox County (32.03091/-87.27052)

### BACKGROUND

The Alabama Department of Environmental Management (ADEM) selected the Red Creek watershed for biological and water quality monitoring as part of the 2005 Assessment of the Alabama, Coosa, and Tallapoosa (ACT) River Basins. The objectives of the ACT Basin Assessments were to assess the biological integrity of each monitoring site and to estimate overall water quality within the ACT basin group. Habitat and macroinvertebrate assessments of Red Creek at REDW-1 could not be conducted due to unwadeable conditions.



**Figure 1.** Sampling location and land use within the Red Creek watershed at REDW-1.

### WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Land use within the watershed is primarily forest (70%), shrubs, and wetlands (12%). Red Creek is located within the Southeastern Floodplains and Low Terraces (65p) ecoregion.

### CONCLUSION

Conditions in Red Creek at REDW-1 were influenced by Claiborne Reservoir and monthly water quality sampling was terminated in May. Data that were collected suggested that the median concentration of total dissolved and suspended solids, hardness, alkalinity, nutrients and chlorophyll-a were higher than values expected based on the 25th percentile all data collected in wadeable, flowing streams in ecoregion 65p.

**Table 1.** Summary of watershed characteristics.

Watershed Characteristics		
Drainage Area (mi <sup>2</sup> )		28
Ecoregion <sup>a</sup>		65p
% Landuse		
Open water		<1
Wetland	Woody	12
	Emergent herbaceous	<1
Forest	Deciduous	22
	Evergreen	36
	Mixed	12
Shrub/scrub		12
Grassland/herbaceous		<1
Pasture/hay		2
Cultivated crops		1
Development	Open space	2
	Low intensity	<1
Population/km <sup>2b</sup>		6
# NPDES Permits <sup>c</sup>	<b>TOTAL</b>	6
Construction Stormwater		2
Mining General Permit (old)		4

a. Southeastern Flood Plains and Low Terraces

b. 2000 US Census

c. #NPDES permits downloaded from ADEM's NPDES Management System database, 9 Jun 2008

### WATER CHEMISTRY

Red Creek was sampled in March, April, and May of 2005. ADEM sampling personnel found the station to be mostly non-wadeable and stagnant. Algal growth and surface scum was prevalent, indicating little to no flow. After consulting with ADEM Water Division engineers, it was determined that the persistent non-flowing conditions at this station could be attributed to its proximity to Claiborne Reservoir. Sampling was subsequently terminated.

Results of the 2005 *in situ* measurements and water samples are presented in Table 5. Total dissolved and suspended solids, hardness, alkalinity, nutrients and chlorophyll a were higher than expected based on the 25th percentile of verified reference samples.

**Table 5.** Summary of water quality data collected March-May 2005. 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	Median	Avg	SD
<b>Physical</b>						
Temperature (°C)	3	16.0	19.0	18.0	17.7	1.5
Turbidity (NTU)	3	23.1	115.0	23.4	53.8	53.0
Total dissolved solids (mg/L)	3	20.0	135.0	102.0 <sup>M</sup>	85.7	59.2
Total suspended solids (mg/L)	3	19.0	78.0	20.0 <sup>M</sup>	39.0	33.8
Specific conductance (µmhos)	3	84.7	139.5	120.6	114.9	27.8
Hardness (mg/L)	2	26.2	39.9	33.1 <sup>M</sup>	33.1	9.7
Alkalinity (mg/L)	3	12.9	28.2	26.4 <sup>M</sup>	22.5	8.4
Stream Flow (cfs)	1	2.1	2.1	2.1	2.1	0.0
<b>Chemical</b>						
Dissolved oxygen (mg/L)	3	5.0	8.4	6.3	6.6	1.7
pH (su)	3	6.5	7.48	6.6	6.9	0.5
Ammonia Nitrogen (mg/L)	3	< 0.015	< 0.015	0.008	0.008	0.000
Nitrate+Nitrite Nitrogen (mg/L)	3	< 0.003	0.029	0.025	0.019	0.015
Total Kjeldahl Nitrogen (mg/L)	3	0.337	0.951	0.597 <sup>M</sup>	0.628	0.308
Total nitrogen (mg/L)	3	< 0.366	0.976	0.598 <sup>M</sup>	0.647	0.308
Dissolved reactive phosphorus (mg/L)	3	0.007	0.020	0.011 <sup>M</sup>	0.013	0.007
Total phosphorus (mg/L)	3	0.059	0.094	0.059 <sup>M</sup>	0.071	0.020
CBOD-5 (mg/L)	3	1.0	2.1	1.1	1.2	0.8
Chlorides (mg/L)	3	4.2	6.4	5.8	5.5	1.1
Atrazine (µg/L)	1	0.05	0.05	0.03	0.03	0.0
<b>Total Metals</b>						
Aluminum (mg/L)	2	0.414	0.954	0.684	0.684	0.4
Iron (mg/L)	2	1.29	2.34	1.815	1.815	0.7
Manganese (mg/L)	2	0.041	0.145	0.093	0.093	0.1
<b>Dissolved Metals</b>						
Aluminum (mg/L)	2	0.063	0.356	0.2095	0.210	0.2
Antimony (µg/L)	2	< 2	< 2	1	1	0.0
Cadmium (mg/L)	2	< 0.005	< 0.005	0.0025	0.0025	0.0
Chromium (mg/L)	2	0.004	0.004	0.002	0.002	0.0
Copper (mg/L)	2	< 0.005	< 0.005	0.0025	0.003	0.0
Iron (mg/L)	2	0.247	0.381	0.314	0.314	0.1
Lead (µg/L)	2	< 2	< 0	1	1	0.0
Manganese (mg/L)	2	0.005	0.172	0.0873	0.087	0.1
Mercury (µg/L)	2	< 0.3	< 0.3	0.15	0.15	0.0
Nickel (mg/L)	2	0.006	0.006	0.003	0.003	0.0
Selenium (µg/L)	2	< 10	< 10	5	5	0.0
Silver (mg/L)	2	< 0.003	0.003	0.0015	0.0015	0.0
Thallium (µg/L)	2	< 1	1	0.5	0.500	0.0
Zinc (mg/L)	2	< 0.006	< 0.006	0.003	0.003	0.0
<b>Biological</b>						
<sup>J</sup> Chlorophyll <i>a</i> (µg/L)	3	2.14	4.27	2.14 <sup>M</sup>	2.85	1.2
<sup>J</sup> Fecal Coliform (col/100 mL)	2	32	930	481	481	635

<sup>J</sup> = estimate; N=# samples; M=value > 25th percentile of all data collected within eco-region 65p

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