

2008 Monitoring Summary

Ambient Monitoring Site

Sepulga River at US Hwy 31 near McKenzie in Conecuh County (31.45362/-86.78680)

BACKGROUND

Sepulga River at SPLC-3 is one of a network of 94 ambient sites monitored annually by the Alabama Department of Environmental Management (ADEM) to identify long-term trends in water quality and to provide data for the development of Total Maximum Daily Loads (TMDL) and water quality criteria.

Habitat and macroinvertebrate assessments, which are used as indicators of overall biological conditions, could not be conducted due to nonwadeable conditions at the site.

WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Sepulga River is a *Fish & Wildlife (F&W)* river that drains a large part of Conecuh County before merging with the Conecuh River (Figure 1). Based on the 2000 National Land Cover Dataset, landuse within the watershed is primarily forest (65%), with some wetland, shrub, and pasture areas. Population density in the area is low. One hundred and twenty NPDES permits have been issued within the watershed as of February 23, 2011.

WATER CHEMISTRY

Results of water chemistry are presented in Table 2. In situ measurements and water samples were collected in June, August and October to help identify any stressors to the biological communities. In situ parameters, which were measured during each site visit, indicated that the Sepulga River at SPLC-3 was meeting its *F&W* water use classification. A metals sample that was collected in June showed results that were typical for this stream type. Median alkalinity, Kjeldahl nitrogen, and chlorophyll a concentrations were slightly elevated in comparison to least-impaired ecoregional reference reaches within the Southern Pine Plains and Hills (65f). Median conductivity and hardness were also slightly higher than expected.

SUMMARY

Sepulga River at SPLC-3 was selected for biological and water quality monitoring as part of ADEM's ambient monitoring program. As the reach was non-wadeable, habitat and macroinvertebrate assessments could not be conducted. However, the water quality results indicated that Sepulga River at SPLC-3 is meeting its *F&W* water use classification.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		Perdido-Escambia River
Basin		Perdido-Escambia River
Drainage Area (mi²)		469
Ecoregion^a		65f
% Landuse		
Open water		<1
Wetland	Woody	7
	Emergent herbaceous	<1
Forest	Deciduous	20
	Evergreen	36
	Mixed	9
Shrub/scrub		12
Grassland/herbaceous		<1
Pasture/hay		9
Cultivated crops		2
Development	Open space	4
	Low intensity	1
	Moderate intensity	<1
	High intensity	<1
Barren		<1
Population/km²^b		13
# NPDES Permits^c	TOTAL	120
	401 Water Quality Certification	6
	Construction Stormwater	99
	Industrial General	9
	Municipal Individual	5
	Underground Injection Control	1

a. Southern Pine Plains & Hills

b. 2000 US Census

c. #NPDES permits downloaded from ADEM's NPDES Management System database, February 23 2011.



Figure 1. Sepulga River at SPLC-3, February 19, 2011.

Table 2. Summary of water quality data collected June, August, and October, 2008. Minimum (Min) and maximum (Max) values calculated using minimum detection limits (MDL) when results were less than this values. Median, average (Avg), and standard deviations (SD) values were calculated by multiplying the MDL by 0.5 when results were less than this values.

Parameter	N	Min	Max	Med	Avg	SD
Physical						
Temperature (°C)	3	22.6	29.0	26.2	25.9	3.2
Turbidity (NTU)	3	8.4	16.1	8.8	11.1	4.3
Total Dissolved Solids (mg/L)	3	40.0	62.0	50.0	50.7	11.0
Total Suspended Solids (mg/L)	3	2.0	4.0	3.0	3.0	1.0
Specific Conductance (µmhos)	3	73.5	102.0	96.0 ^G	90.5	15.0
Hardness (mg/L)	3	14.6	27.2	24.1 ^G	22.0	6.6
Alkalinity (mg/L)	3	24.2	34.9	33.4 ^M	30.8	5.8
Stream Flow (cfs)	3	12.0	16.5	16.0	14.8	2.5
Chemical						
Dissolved Oxygen (mg/L)	3	6.1	8.3	6.9	7.1	1.1
pH (su)	3	6.7	7.1	7.0	6.9	0.2
Ammonia Nitrogen (mg/L)	3	< 0.015	< 0.015	0.008	0.008	0.000
Nitrate+Nitrite Nitrogen (mg/L)	3	0.025	0.055	0.032	0.037	0.016
Total Kjeldahl Nitrogen (mg/L)	3	0.386	0.613	0.431 ^M	0.477	0.120
Total Nitrogen (mg/L)	3	0.411	0.668	0.463	0.514	0.136
Dissolved Reactive Phosphorus (mg/L)	3	0.008	0.014	0.011	0.011	0.003
Total Phosphorus (mg/L)	3	0.027	0.037	0.034	0.033	0.005
CBOD-5 (mg/L)	3	< 1.0	< 1.0	0.5	0.5	0.0
Chlorides (mg/L)	3	4.3	6.3	4.8	5.1	1.0
Total Metals						
Aluminum (mg/L)	1				0.058	
Iron (mg/L)	1				1.540	
Manganese (mg/L)	1				0.083	
Dissolved Metals						
Aluminum (mg/L)	1			<	0.015	
Antimony (µg/L)	1			<	2.0	
Arsenic (µg/L)	1			<	2.2	
Cadmium (µg/L)	1			<	5.000	
Chromium (µg/L)	1			<	4.000	
Copper (mg/L)	1			<	0.005	
Iron (mg/L)	1				1.140	
Lead (µg/L)	1			<	1.5	
Manganese (mg/L)	1				0.077	
Mercury (µg/L)	1			<	0.030	
Nickel (mg/L)	1			<	0.006	
Selenium (µg/L)	1			<	1.6	
Silver (µg/L)	1			<	3.000	
Thallium (µg/L)	1			<	0.6	
Zinc (mg/L)	1			<	0.006	
Biological						
Chlorophyll a (ug/L)	3	0.53	3.20	3.20 ^M	2.31	1.54
^J Fecal Coliform (col/100 mL)	3	4	46	41	30	23

^J=estimate; N=# samples; G=value higher than median concentration of all verified ecoregional reference reach data collected in the ecoregion 65f; M=value > 90% of all verified ecoregional reference within ecoregion 65f.

FOR MORE INFORMATION, CONTACT:
 Sreeletha P. Kumar ADEM Environmental Indicators Section
 1350 Coliseum Boulevard Montgomery, AL 36110
 (334) 260-2782 skumar@adem.state.al.us