

2014 Monitoring Summary



Indian Camp Creek at Dixie Drive, Coffee County (31.33150/-85.82980)

BACKGROUND

Since 2004, Indian Camp Creek, from Harrand Creek to its source (approximately four miles), has been on Alabama's Clean Water Act (CWA) §303(d) list of impaired waters for only partially meeting its *Fish and Wildlife (F&W)* water use classification. It was listed for siltation (habitat alteration) from land development and urban runoff/storm sewers. The segment was listed as impaired based on data collected in 1999. In 2008, the segment was also listed as impaired by pathogens from urban runoff/storm sewers. A TMDL to address the pathogen impairment was approved by EPA, September 21, 2010.

The Alabama Department of Environmental Management (ADEM) monitored Indian Camp Creek at UTHC-1 to collect data for the development of a Total Maximum Daily Load to address the siltation impairment.



Figure 1. Indian Camp Creek at UTHC-1, October 7, 2014.

WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Indian Camp Creek is a small *Fish & Wildlife (F&W)* stream located in Enterprise in the Choctawhatchee River basin. Based on the 2011 National Land Cover Dataset, land use within the three square mile watershed is primarily development with some forest (18%). As of April 1, 2016, fourteen outfalls are active within this watershed.

Table 1. Summary of watershed characteristics.

Watershed Characteristics			
Basin	Choctawhatchee River		
Drainage Area (mi²)	3		
Ecoregion^a	65G		
% Landuse			
Wetland	Woody	<1%	
Forest	Deciduous	4%	
	Evergreen	6%	
	Mixed	7%	
Shrub/scrub	2%		
Grassland/herbaceous	<1%		
Pasture/hay	<1%		
Development	Open space	34%	
	Low intensity	28%	
	Moderate intensity	13%	
	High intensity	5%	
Population/km^{2b}	567		
# NPDES Outfalls	TOTAL	14	
Construction	10		
Industrial General	4		

a. Dougherty Plain

b. 2011 National Land Cover Dataset

c. 2010 US Census

d. #NPDES outfalls downloaded from ADEM's NPDES Management System database, April 1, 2016.

Table 2. Physical characteristics of Indian Camp Creek at UTHC-1, May 13, 2014.

Physical Characteristics		
Width (ft)	15	
Canopy cover	Open	
Depth (ft)	Run	0.5
	Pool	1
% of Reach	Run	90
	Pool	10
% Substrate	Cobble	1
	Gravel	2
	Sand	93
	Silt	1
	Organic Matter	3

REACH CHARACTERISTICS

General observations (Table 2) and a habitat assessment (Table 3) were completed during the macroinvertebrate assessment. In comparison with reference reaches in the same ecoregion, they give an indication of the physical condition of the site and the quality and availability of habitat. Indian Camp Creek at UTHC-1 is wide for its size, and shallow (Figure 1). Overall habitat quality was categorized as *marginal* due to a lack of instream habitat, unstable banks and a limited riparian buffer.

Table 3. Results of the habitat assessment conducted on Indian Camp Creek at UTHC-1, May 13, 2014.

Habitat Assessment	% Maximum Score	Rating
Instream Habitat Quality	27	Poor (<31)
Sediment Deposition	58	Sub-Optimal (55-79)
Sinuosity	45	Marginal (31-<55)
Bank Vegetative Stability	53	Marginal (31-<58)
Riparian Buffer	33	Marginal (31-<60)
Habitat Assessment Score	71	
%f Maximum Score	41	Marginal (31-<57)

BIOASSESSMENT RESULTS

Benthic macroinvertebrate communities were sampled using ADEM's Intensive Multi-habitat Bioassessment methodology (WMB-I). The WMB-I uses measures of taxonomic richness, community composition, and community tolerance to assess the overall health of the macroinvertebrate community. Each metric is scored on a 100 point scale. The final score is the average of all individual metric scores. Metric results indicated the macroinvertebrate community to be in *poor* condition (Table 4).

Table 4. Results of the macroinvertebrate bioassessment conducted in Indian Camp Creek at UTHC-1, May 13, 2014.

Macroinvertebrate Assessment		Results
Taxa richness and diversity measures		
	# EPT taxa	3
Taxonomic composition measures		
	% Non-insect taxa	11
	% Plecoptera	0
	% Dominant taxon	33
Functional feeding group		
	% Predators	10
Community tolerance		
	Becks community tolerance index	4
	% Nutrient tolerant individuals	63
	WMB-I Assessment Score	27
	WMB-I Assessment Rating	Poor (19-37)

Table 5. Summary of water quality data collected March through October, 2014. 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
Physical						
Temperature (°C)	9	13.6	27.2	21.6	21.7	4.5
Turbidity (NTU)	9	4.6	84.6 ^T	8.9	16.8	25.6
Total Dissolved Solids (mg/L)	8	67.0	181.0	78.5	97.9	40.5
Total Suspended Solids (mg/L)	8	< 1.0	61.0	1.8	9.5	20.9
Specific Conductance (µmhos)	9	124.6	139.4	133.6 ^G	131.6	5.8
Alkalinity (mg/L)	8	44.5	50.2	48.0 ^M	47.8	1.9
Stream Flow (cfs)	9	1.6	5.7	4.4	3.7	1.5
Chemical						
Dissolved Oxygen (mg/L)	9	7.7	12.8	8.4	8.8	1.6
pH (au)	9	7.2	7.7	7.4	7.4	0.2
Ammonia Nitrogen (mg/L)	8	< 0.010	0.160	0.056 ^M	0.089	0.082
Nitrate+Nitrite Nitrogen (mg/L)	8	0.498	0.701	0.550 ^M	0.566	0.061
Total Kjeldahl Nitrogen (mg/L)	8	0.287	1.070	0.406	0.509	0.265
Total Nitrogen (mg/L)	8	0.835	1.816	1.019 ^M	1.075	0.250
Dissolved Reactive Phosphorus (mg/L)	8	0.003	0.006	0.004	0.004	0.001
Total Phosphorus (mg/L)	8	0.011	0.037	0.018	0.019	0.008
CBOD-5 (mg/L)	8	< 2.0	< 2.0	1.0	1.0	0.0
Chlorides (mg/L)	8	6.3	10.7	9.8 ^M	9.3	1.6

G=value higher than median concentration of all verified ecoregional reference reach data collected in ecoregion 65g; J=estimate; M=value > 90% of all data collected within ecoregion 65g; N= # samples; T=value exceeds 50 NTU above the 90th percentile of all verified ecoregional reference reach data collected in the ecoregion 65g.

WATER CHEMISTRY

Results of water chemistry analyses are presented in Table 5. In situ measurements and water samples were collected monthly during March through October of 2014 to help identify any stressors to the biological communities. Median values of specific conductance, alkalinity, ammonia nitrogen, nitrate+nitrite-nitrogen, total nitrogen, and chlorides were above expected concentrations in this ecoregion, based on data collected at reference reaches in ecoregion 65g.

SUMMARY

The habitat assessment indicated UTHC-1 to be in *marginal* condition due to poor instream habitat. Macroinvertebrate sampling indicated the macroinvertebrate community to be in *poor* condition. Median values of specific conductance, alkalinity, ammonia nitrogen, nitrate+nitrite-nitrogen, total nitrogen, and chlorides were above concentrations expected in this ecoregion. Based on this data, it appears the habitat condition and the water chemistry are negatively impacting the stream.

FOR MORE INFORMATION, CONTACT:

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