

Impaired Waterbodies Water Quality Assessment Monitoring and Implementation Work Plan Rocky Creek Augusta, Georgia

EXECUTIVE SUMMARY

Section 303(d) of the Federal Clean Water Act (CWA) requires developing 305(b)/303(d) list of waters. The Georgia Environmental Protection Division (GA EPD) develops this list for the State of Georgia rivers and streams in accordance with 40 CFR Part 130.7(b)(4) and guidance provided by the United States Environmental Protection Agency (U.S. EPA). Draft 2016 Section 303(d) list identified Rocky Creek in Richmond County as not supporting their designated use due to violation of Surface Water Quality Biological Criteria. Listed criterion violated is Bio M, Bio F in 8 miles headwaters to below New Savannah Rd (Doug Bernard Pkwy) segment of Rocky Creek. The pollutant of concern identified is “sediment”. The lower two mile segment of Rocky Creek from SR56 to New Savannah Road (Doug Bernard Parkway) is also listed for Fecal Coliform (FC) bacteria impairment due to urban runoff.

The GA EPD finalized TMDLs in February 2016 for sediments in the Savannah River Basin due to a “biota/habitat-impaired designation on Georgia’s draft 2014 Section 303(d) list. The purpose of this work plan is to comply with the Augusta, GA Area wide National Pollutant Discharge Elimination System (NPDES), Municipal Separate Storm Sewer System (MS4) permit, and in general implement integrated management control measures to manage the identified pollutant of concern to Maximum Extent Practicable (MEP).

INTRODUCTION

Augusta is located adjacent to the Savannah River in east central Georgia. It is bounded by Columbia County to the north and northwest; McDuffie County and Jefferson County to the southwest; Burke County to the south; and the Savannah River and South Carolina to the east (FIGURE 1 (source: FIGURE 1.1 -Augusta Watershed Assessment, 2002)). Augusta is approximately 150 miles east of Atlanta, Georgia and approximately 68 miles southwest of Columbia, South Carolina. The County encompasses approximately 324 square miles, almost 75 percent of which is serviced by Augusta. The majority of Augusta is located within the Upper Coastal Plain Physiographic Province. However, a small northern portion, which includes the Rock Creek and Raes Creek, lies in the Piedmont Physiographic Province. The Coastal Plain is underlain by stratified and weakly unconsolidated marine sedimentary rock. Rocky Creek flows in an easterly direction from an elevation of 355 feet above MSL to an elevation of 155 feet above MSL. The creek flows through highly urbanized area.

WATERSHED DESCRIPTION

The majority of the creek is south of Gordon Highway (U.S. 78) and north of Bobby Jones Expressway (I-520). Rocky creek has numerous small tributary flowing into it, and eventually empties into Pinizy Swamp which is 1.2 miles downstream of Doug Bernard Pkwy. The creek drains approximately 11,024 acres (17.23 square miles) of Richmond County (Augusta, GA). The creek is 8.9 miles in length from its headwaters located north of Gordon Highway to its mouth at Pinizy Swamp. As stated earlier, the watershed is well developed, with a significant volume of existing residential and commercial facilities. This results in a relatively high impervious percentage for the overall watershed. The majority of the soil in the watershed is either type A, B or C. The following are characteristics of each of the hydrologic soil groups as defined by the Natural Resource Conservation Service (NRCS).

Type A – Sand, loamy sand or sandy loam type; Low runoff potential; Mostly sandy soils; high infiltration rate, deep, well to excessively drained sands or gravel and have a high rate of water transmission.

Type B – Silt loam or loam type; Moderately low runoff potential; Mostly sandy soils; less deep and less aggregated than Type A, but the group as a whole has above average infiltration after thorough wetting.

Type C – Sandy clay loam type; Moderately high runoff potential; Comprises shallow soils and soils containing considerable clay and colloids, though less than those of group D. The group has below average infiltration after saturation.

Rocky Creek watershed is well developed, with approximately 66% of the watershed in either residential or commercial development. Land use distribution (% of watershed) within the watershed is presented below (Augusta Watershed Assessment 2003):

Commercial/Industrial	37.2
Residential	36.3
Forests /Natural area	25.1
Agriculture	1.4
Wetlands/water	0.4

PROJECT OBJECTIVE

The purpose of this work plan is to comply with Augusta, GA Area wide National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. Objective of this plan is to monitor and manage sediment load and reduce fecal coliform concentrations in designated section of the creek using integrated management control measures to Maximum Extent Practicable.

PROJECT MEASURE OF SUCCESS

2016 TMDL for sediments does not require sediment load reductions for Rocky Creek. The single most important measure of success of this program is managing sediment transport through periodic instream sediment monitoring and implementing integrated control measures, if warranted.

Data gathered so far by the Phinizy Center for Water Sciences and Augusta, GA indicate that sediments are highly likely the primary driver for FC contamination and that sediment-borne bacteria could have contributed to the noted occasionally increased concentrations that lead to the listing of the creek lower segment “not supporting” its designated use (fishing). The Measure of success for fecal coliform is managing FC bacteria in the listed impaired segment at concentrations that will not result in further degradation of its water quality.

PROJECT CONTACT

Augusta, GA primary contact for this Implementation Plan is Augusta Engineering Department, Assistant Director Engineering. Current contact information is provided below:

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SCOPE OF WORK

Scope of work consists of conducting periodic water quality monitoring within the impaired segment of Rocky Creek. Georgia Draft 2014 Section 303(d) list identified Rocky Creek in Richmond County as not supporting their designated use of "Fishing" due to violation of Surface Water Quality Biological Criteria. Listed criterion violated is Bio M, Bio F in 8 miles headwaters to below New Savannah Rd (Doug Bernard Pkwy) segment of Rocky Creek (Figure 2a). The pollutant of concern identified is "sediment". The lower two mile segment of Rocky Creek from SR56 to New Savannah Road (Doug Bernard Parkway) is also listed for Fecal Coliform (FC) bacteria impairment due to urban runoff.

a) Sampling Location

Sampling will be conducted at one location for sediments and two locations for FC within Rocky Creek as shown on Figure 3a and Figure 3b respectively. These locations are selected to coincide with ongoing other monitoring & restoration activities within this watershed. It is also based on the ability to assess the reach.

b) Sampling Methods

Manual grab surface water samples will be collected for total suspended solids (TSS) and fecal coliform analysis. Samples will be taken in vicinity of stream center area and at a point that is safely accessible. Where possible, the sample will be collected directly into the sample container. If direct access to the stream is not possible or wadeable, then supplemental sampling equipment (i.e., sampling rod with clean collection bucket) will be utilized.

Water quality sampling methods will conform to the guidance in the Water Protection Branch Quality Assurance Manual, June 1999 (Revised 2005).

c) Sampling Frequency

Sample for TSS analysis will be collected semiannually. One sample will be collected during the summer period from May – October and second sample during the winter period from November – April.

Four samples for FC analysis will be collected at each specified location within a 30 day period once each calendar quarter so that four geometric means per year can be calculated. These quarterly sampling will not be overlap the month of April/May or October/November, due to changes in the in-stream water quality standard for bacteria. FC sampling variance will be documented in case four representative samples collection within 30 day period is not feasible due to safety hazard conditions for the creek. Such variance will be reported in Annual Report.

d) Sampling Parameters

Sampling collected during each event will be analyzed for the following parameters and methods:

- i) Total Suspended Solids: per EPA analytical method EPA 160.2 with detection limit of 10mg/L or equivalent analytical method.
- ii) Fecal Coliform: Membrane filter analysis per PartIII, Section C, EPA-600/8-78-017 or Colilert 18 method

Samples analysis will be performed by Augusta Publically Owned Treatment Works (POTW) Laboratory or Phinizy Center for Water Science Laboratory or other external certified laboratory. After collection, Fecal coliform samples will be delivered immediately to the laboratory by the field staff to maintain 6 hour holding time.

e) Documentation

Each sample will be labeled and sealed immediately after collection. Sample identification documents will be prepared so that identification and chain-of-custody records can be maintained. The following sample identification will be utilized.

- i) Sample Label
- ii) Field Form
- iii) Chain-of-custody forms

f) Sampling Schedule

Sampling will commence in summer period of 2017. Sampling schedule is established on a repeating annual basis. The MS4 reporting period ends in April of each year.

g) Sampling Duration and Data Reporting

Samples will be collected per schedule for five-year period (over duration of Augusta MS4 Permit reissued in 2017). Monitoring data will be included in MS4 yearly report starting 2017-2018 Annual Report Submittal. Augusta will initiate data trend evaluation during third year using first year data as baseline data for trend assessment. At a minimum data will be included in tabulated format.

STORMWATER QUALITY INTEGRATED CONTROL MEASURES

At present sediment loading in Rocky Creek is within allowable sediment total load limits. Available data review suggests that if sediment loads are maintained at acceptable levels, the creek will repair itself over time. Therefore, it is recommended that there be no new increase in sediment delivery to the creek, so creek is expected to recover overtime. Scope of work consists of management practices that may be used to manage and maintain average annual sediment loads at current load. Augusta, Georgia has in-progress sediment management integrated control measures and is proposing to continue these practices. These measures are listed below. Chosen control measures are based on assessment of current land use within the listed impaired drainage area. Gathered data suggest that creek natural degradation is primary source of noted sediments and similarly noted fecal coliform presence is associated to non-human source. Augusta, GA will review following listed control measures and make adjustments / improvement on as needed basis or location specific basis.

- I) Natural Resources Management – Natural Resources Conservation , Erosion & Sedimentation outreach Events (Workshop / Training)
In association with Brier Creek Soil and Water Conservation District and the Georgia Soil and Water Conservation Commission, an Erosion & Sediment (E&S) Control Workshop will be conducted to provide information on latest changes for E&S Control in Georgia and the checklists. Various best management practices including skimmers will also be discussed. Augusta, GA will continue such educational activities.
- II) Natural Resource Management – Protection of local natural resources by enforcement of land development ordinances such as Erosion, Sedimentation and Pollution Control Plan compliance, encourage incorporation of low impact development / green infrastructure measures in overall land development practices, and watershed protection through management of various intensity storms. Augusta, GA will continue all in-progress control measures.
- III) Pedestrian surveys of creeks in the county - Augusta, GA, in conjunction with Phinizy Center for Water Sciences, have been conducting pedestrian surveys of major creeks within the

county to assess geomorphic parameters which include observations of potential sediment or FC sources to each stream. Augusta, GA will continue this effort for completing Rocky creek survey.

- IV) Augusta has on going aging sanitary sewer replacement program. The program provides additional capacity and reduce I/I. Recently Augusta has also developed a Sanitary Sewer Connection Program, which the Augusta Utilities Department connects costumers to the sewer main and demolishes their septic tank. Augusta will continue these efforts. Augusta, GA will review these control measures and make adjustments / improvement on as needed basis or location specific basis.

PROJECT DATA EVALUTION AND REPORTING

Described under section "Scope of Work" (g).

STORMWATER INTEGRATED MANAMEGEMENT PLAN PERFORMANCE MEASURE

The single most important measure of success of this program is managing sediment transport through periodic instream sediment monitoring and implementing integrated control measures, if warranted. At the end of the specified sampling duration period, adopted control measures will be adjusted depending on data trend analysis, and accordingly IWP will be amended. Augusta will consider adopted control measures performance satisfactory if collected data trend suggests that there is no significant increase ($\leq 15\%$) in TSS reported values as compared to baseline data. In case of significant upward trend in TSS noted values, Augusta will re-evaluate adopted control measures or stream natural conditions and propose modifications accordingly.

Measure of success for fecal coliform is managing FC bacteria in listed impaired segment at concentrations that will not result in further degradation of its water quality. Targeted threshold is not to exceed geometric mean of 500 cfu/100ml for months of May through October and 1,000 cfu/100ml for months of November through April , and 4,000 cfu/100my for single sample (Natural WQ fc criteria for non-human sources).

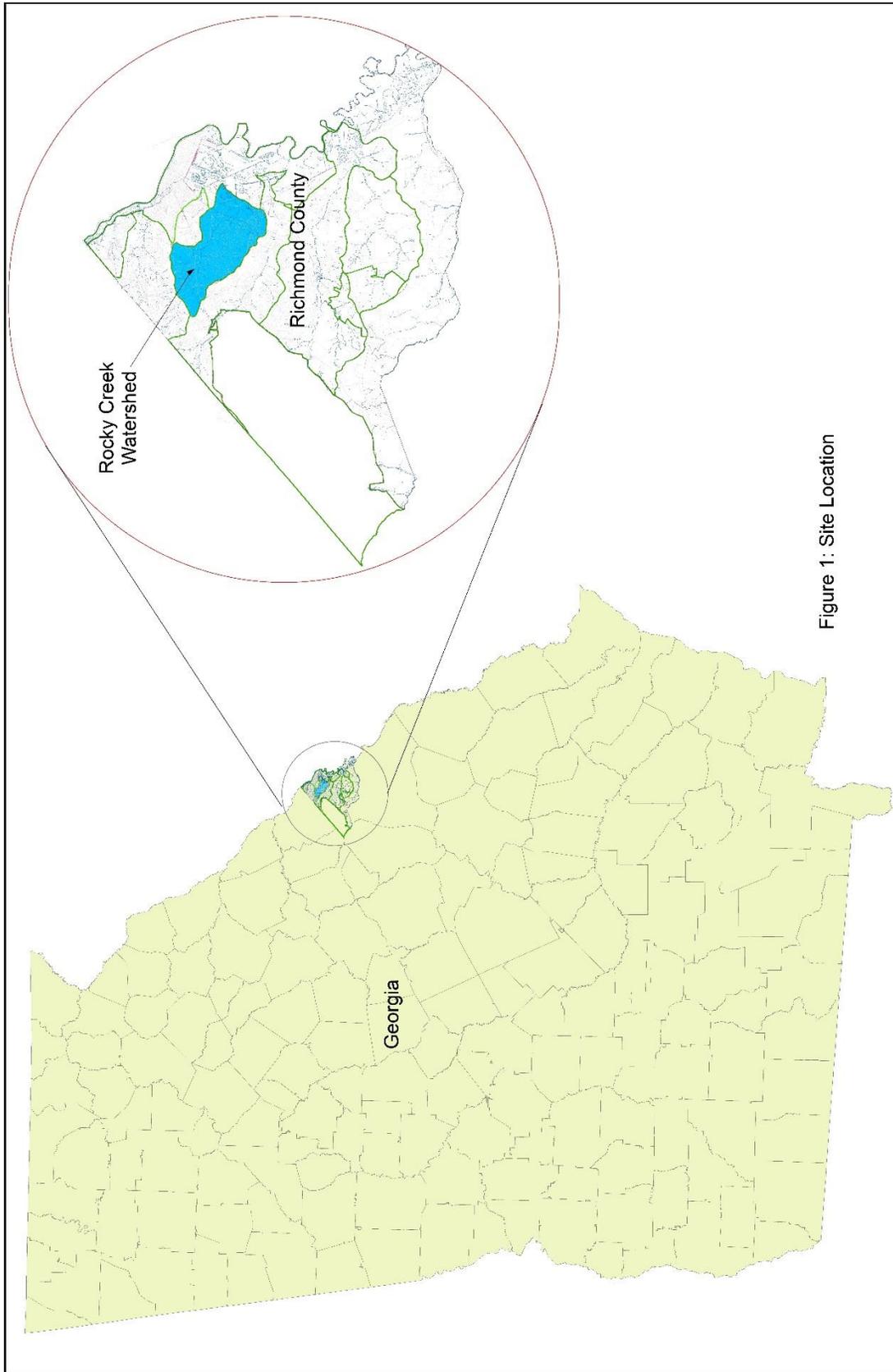


Figure 1: Site Location

