STATE OF GEORGIA

REVISED TMDL IMPLEMENTATION PLAN

FLINT RIVER BASIN

pH Exceedences

Prepared by
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TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies.

This Implementation Plan is applicable to the following segments in the Flint River Basin:

Impaired Waterbody	Location	County	Miles/Area Impacted
Avera Creek	Headwaters to Beaver Creek	Crawford	5
Sweetwater Creek	Headwaters to Flint River, Andersonville	Sumter/Macon	10
Whitewater Creek	Big Whitewater Creek to Cedar Creek	Taylor/Macon	17
Whitewater Creek	Cedar Creek to Flint River	Macon	13

INTRODUCTION

The Georgia Environmental Protection Division (GAEPD) has identified four segments in the Flint River Basin as impaired due to pH excursions. pH concentration (or hydrogen ion concentration) is a measure of acidity and alkalinity of a given solution. The measure of pH is on a number scale from 1 to 14 standard units (su), where a pH of 7su represent neutrality. pH concentrations lower than 7su represent increasing acidity, while pH concentrations of greater than 7su represent increasing alkalinity. Sweetwater Creek is listed as partially supporting; Avera Creek and the two segments of Whitewater Creek are listed as not supporting their designated use of fishing. The fishing classification, as stated in Georgia's Rules and Regulations for Water

Quality Control Chapter 391-3-3-.(6)(c), is established to protect the “propagation of Fish, Shellfish, Game and Other Aquatic Life; secondary contact recreation in and on the water; or for any other use requiring water of a lower quality.”

The Avera Creek watershed is located in the Middle Flint River Basin in Crawford County. The land use for the Avera Creek watershed is comprised mostly of row crops, pasture/hay, and wetlands. The Sweetwater Creek watershed is located in the Middle Flint River Basin in Sumter and Macon Counties. The Whitewater Creek watershed is also located in the Middle Flint River Basin in Taylor and Macon counties. Land use in both the Sweetwater Creek watershed and the Whitewater Creek watershed is comprised mostly of deciduous/mixed/evergreen forest and row crops. The three watersheds discussed are located in the Sand Hill sub-ecoregion of the Coastal Plains Province. Soils in this sub-ecoregion are comprised of sandy and silt loam soils, which are typically, low in nutrient content and are usually formed in thick beds of sand. The stream geochemistry in this province is characterized by low pH (4.1 to 6.7), low conductivities, and low alkalinities.

DISCUSSION OF POLLUTANT

One of the most significant environmental impacts of pH is the effect that it has on the solubility and thus the bioavailability of other substances. This process is important in surface waters. As the pH falls (solution becomes more acidic) many substances become more soluble and thus available for absorption.

POLLUTANT SOURCES

The potential sources of pH violation in this watershed are from both point sources and nonpoint sources. Title IV of the Clean Water Act (CWA) establishes the National Pollutant Discharges Elimination System (NPDES) permit program. The NPDES permit program requires permits for the discharge of “pollutants” from any “point source” into “waters of the United States” (40 CFR 122.1). There are two categories of NPDES permits: 1) municipal and industrial wastewater treatment facilities and 2) regulated storm water discharges. Industrial and municipal wastewater treatment facilities have NPDES permits with effluent limits. These permit limits are either based on federal and state effluent guidelines or on water quality standards. Municipal wastewater treatment facilities’ discharges may be contributing to the receiving waters of Sweetwater Creek and Whitewater Creek watershed. There are three NPDES permitted discharges identified in these watersheds or their tributaries. They are listed in the following Table.

Facility Name	Permit Number	PH Limit	Listed Watershed
E.E. Minerals (Plant #5)	GA0023728	6.0 – 9.0	Camp Creek / Sweetwater Creek
Andersonville WPCP	GA0033669	6.0 – 9.0	Unnamed Tributary / Sweetwater Creek / Flint River
City of Ideal	GA0048011	6.0 – 9.0	Cedar Creek / Whitewater Creek

The sources of low pH in the watersheds have not been determined. Because the predominate land use is agriculture and forest, agricultural erosion and runoff of the naturally low pH soils may be a potential source. Runoff of fertilizer, vegetative decay and rainwater are also potential sources of low pH. It is possible that the low pH is natural due to biological activity associated with woody wetlands.

PLAN FOR IMPLEMENTATION OF TMDL

A TMDL establishes the total pollutant load a waterbody can receive and still achieve water quality standards. Because pH is not a load, but rather a measure of acidity and/or alkalinity of a given solution, the TMDL uses an "other appropriate measure" (40 CFR Section 130.2(i)) rather than an actual mass-per-unit time measure. The State's numeric pH criterion (6.0 to 8.5) is used as the TMDL target (other appropriate measure). The final TMDL ensures both point and non-point source activities meet the pH criterion at the point of discharge.

EPD will also encourage local governments and stakeholders to continue implementing management practices and activities that are already in place, including watershed assessments of pollutant sources and controls as well as water quality sampling and monitoring.

MONITORING PLAN

The GAEPD has adopted a basin approach to water quality management that divides Georgia's fourteen major river basins into five groups. This approach provides for additional sampling work to be focused on one of the five basin groups each year and offers a five year planning and assessment cycle. The Chattahoochee and Flint River Basins were the subjects of focused monitoring in 2000 and will again receive focused monitoring in 2005.

EDUCATION/OUTREACH ACTIVITIES

The Environmental Protection Division will continue to provide guidance and education to the public on all water quality issues through outreach by the Water Protection Branch. Permitted discharges will be regulated through the NPDES permitting process. EPD is working with local governments, agricultural, and forestry agencies such as the Natural Resources Conservation Service, the Regional Development Centers, the Georgia Soil and Water Conservation Commission, and the Georgia Forestry Commission to foster the implementation of best management practices to address nonpoint sources. Public education efforts will be targeted to stakeholders to provide information regarding the use of best management practices to protect water quality.

REFERENCES

Georgia Rules and Regulations for Water Quality Control, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards, Revised February 2004.

GAEPD, 2003. Total Maximum Daily Load (TMDL) for pH Exceedences in Avera Creek, Flint River Basin. February 2003.

GAEPD, 2003. Total Maximum Daily Load (TMDL) for pH Exceedences in Sweetwater Creek, Flint River Basin. February 2003.

GAEPD, 2003. Total Maximum Daily Load (TMDL) for pH Exceedences in Two Segments of Whitewater Creek, Flint River Basin. February 2003.