

FECAL COLIFORM WATERSHED IMPROVEMENT PLAN

EXECUTIVE SUMMARY

Project Objectives

The goal of the Sandy Springs Fecal Coliform Watershed Improvement Plan (WIP) is to identify projects and activities that will reduce or eliminate fecal coliform contamination into streams within the city limits. The three study areas addressed in this WIP contain streams that are listed by the Georgia Environmental Protection Division (GA EPD) as not meeting water quality standards due to fecal coliform bacteria. The study areas include Crooked Creek (which includes Ball Mill Creek), Marsh Creek, and a portion of Long Island Creek. Separate Watershed Improvement Plans were developed for the Nancy Creek and Long Island Creek watershed (Brown and Caldwell 2010a and 2010b), which also have streams that do not meet water quality standards.

The City of Sandy Springs initiated three separate studies in order to comply with various state and federal permit requirements and to understand the full scope and cost of developing a stormwater program. The three studies include future floodplain mapping, stormwater infrastructure inventory, and watershed improvement planning. The Fecal Coliform WIP is intended to satisfy permit requirements for water quality and stormwater improvement including the Municipal Separate Stormwater Sewer System (MS4) Phase II, Metro North Georgia Water Planning District (MNGWPD) Watershed Management Plan, and applicable Total Maximum Daily Load (TMDL) Plans.

The report provides the methods, data collection, model development and results, and overall recommendations. The report is organized into the following chapters:

- Chapter 1 – Provides an introduction to the primary sources of fecal coliform in urban watersheds and an overview of the TMDL plans previously developed for the streams listed as not meeting water quality standards in Sandy Springs
- Chapter 2 – Provides background about the watershed and explains the development of watershed characteristics that are used to develop the baseline conditions model
- Chapter 3 – Summarizes the methodology and results from the stream inventory
- Chapter 4 – Describes historic stormwater best management practice (BMP) and stream restoration project evaluation and recommendations
- Chapter 5 – Discusses management activities and an implementation plan and schedule to improve water quality conditions and reduce fecal coliform in local streams.

Methodology

Several steps were taken to develop the Fecal Coliform WIP recommendations. First, historical data from previous studies were reviewed and summarized. A technical memorandum summary of previous studies was completed titled *Technical Memorandum No. 1, Analysis of Historical Data* (February 18, 2009). This technical memorandum is included as Appendix A of this report. Historical stormwater BMP and stream projects were reviewed and, where feasible, brought forward for evaluation. A desktop review of the historic CIP projects was conducted using information available from modeling, historic reports, photographs, and the infrastructure study.

Second, a stream inventory of 30.5 miles was completed to identify sources of fecal contamination. This inventory was used to evaluate existing streambank erosion, and identify possible sources of bacterial contamination. The field data along with many other watershed inputs were used as input data for the modeling. The model was developed using Brown and Caldwell's watershed planning, water quality model – WIP Tools. The WIP Tools model is based in a geographic information system (GIS) and was developed specifically for watershed planning and project evaluation. The model is a raster-based flow accumulation model, meaning that parameters of interest (water flow, total suspended solids, fecal coliform) can be estimated at each point along the stream and within the upland watershed.

Third, the WIP Tools model was used to determine watershed-wide water quality conditions as well as evaluate and rank watershed improvement projects identified in earlier studies. Informative project summary sheets and estimated project costs were generated as part of this effort. Final project scores were assigned based on the Sandy Springs Prioritization Matrix (see Chapters 2 and 4 for more details). The Prioritization Matrix scores projects based on a reduction in risk for a project. Costs were estimated for each project and a benefit/cost ratio was developed. Costs were normalized between infrastructure, flood, and watershed projects in order to have a comparable set of project rankings.

Finally, current management measures and activities were reviewed for their contribution toward reducing or eliminating sources of fecal coliform bacteria (see Chapter 5).

Results

Based on direct observation from the stream inventory; urban runoff and animal sources (wildlife, pets, and livestock) in combination with sewer leaks/breaks and illicit discharges are the likely sources of fecal coliform contamination in Sandy Springs. This finding agrees with the TMDL Plans prepared by GA EPD and the Atlanta Regional Commission (ARC) visual survey for Marsh Creek (ARC 2004). Therefore, a variety of structural, non-structural, maintenance, monitoring, and public education activities must be used to address this water quality issue.

Structural BMPs identified in earlier studies and stream restoration projects were evaluated. A total of 48 BMPs and 7 stream restoration projects were reviewed (see Tables 4-2 and 4-3). However, only two projects were recommended for implementation with an estimate total cost of \$1,173,000. These two projects were selected because of they are within the City's current level of service. The City only has authority to implement projects within its current level of service, but if the level of service changes in the future, this study provides a variety of options for future implementation. In addition, the City is currently installing stormwater treatment BMPs at Morgan Falls Park and two linear parks as part of road improvement projects that will include stormwater treatment.

The stream inventory identified seven active discharge incidents which were reported to the City of Sandy Springs. The City took immediate steps to correct these sources of fecal coliform. Other potential sources of bacteria identified during the stream inventory are reported in Chapter 3 and Appendix G.

Continued public education and outreach and select improvements to ordinances can also contribute towards reducing fecal coliform. These ongoing programs target identification and reduction of fecal coliform.

Annual costs for these recommendations are \$330,000 for year 1, \$882,000 for year 2, and \$435,000 each year thereafter within the study area. Based on these current efforts and continuing activities, the City of Sandy Springs is actively controlling, reducing, and eliminating sources of fecal coliform bacteria and improving water quality within the city limits. The City has a laid a strong foundation of ordinances, public education, maintenance, stormwater infrastructure inventory, as well as park and road projects that all will contribute toward improving water quality within the City limits (see Chapter 5 for further details).