

NANCY CREEK WATERSHED IMPROVEMENT PLAN

EXECUTIVE SUMMARY

Project Objectives

The goal of the Nancy Creek Watershed Improvement Plan (WIP) is to improve and where possible restore watershed function. This goal is achieved by implementing a watershed Capital Improvement Plan (CIP) to meet specific water quality and/or habitat improvement goals.

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. This report outlines the background, methodology, and results of the Nancy Creek WIP. The Nancy Creek WIP will satisfy municipal separate stormwater sewer system (MS4) Phase II, Metro District, and TMDL Plan requirements as well as identify projects that will improve watershed conditions.

The City of Sandy Springs has several stream segments that do not meet water quality standards. Nancy Creek in particular, does not meet water quality standards due to fecal coliform and biota (fish). This Watershed Improvement Plan evaluates the existing conditions in Nancy Creek and recommends a CIP that will address these impairments. Once the CIP project costs are combined with the other studies, the City of Sandy Springs will have a much better understanding of the total cost of implementing a stormwater management program.

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

- Chapter 1 – Provides background about the watershed and explains the development of watershed characteristics that are used to develop the baseline conditions model for Nancy Creek.
- Chapter 2 – Reviews the methodology and results from the stream inventory.
- Chapter 3 – Covers stormwater BMP and stream restoration evaluation and project development.
- Chapter 4 – Describes the CIP development and summarizes the results.

Methodology

Several steps were taken to develop the final WIP recommendations and the CIP. 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. Aerial photography was used to locate “new” stormwater BMP opportunities to include in the current study. A desktop review of potential BMP retro-fits was conducted using information available from modeling, historic reports, photographs, and the infrastructure study. See chapter 3, Watershed Project Development, for more details.

Second, field crews inventoried the main stem of Nancy Creek and most of the tributaries. This inventory was used to evaluate existing streambank erosion, potential stream projects, and identify possible sources of bacterial contamination. The field data along with many other watershed inputs were used to develop a unique watershed planning model for Nancy Creek. The Nancy Creek 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. Water quality and other conditions are calculated with and without CIP projects, see chapter 1, Watershed Characteristics, for more information.

Third, a Prioritization Matrix was developed in coordination with the floodplain study and stormwater infrastructure inventory projects. The Prioritization Matrix used asset management techniques to evaluate existing risk and reduced risk if projects are implemented. Social, economic, and environmental criteria were used to rank each BMP and stream restoration project. For the purposes of this study, a BMP can be defined as a stormwater pond or other detention facility. Details of the ranking criteria can be found in the Prioritization Matrix technical memorandum located in Appendix B. Model results were fed into the Prioritization Matrix along with costs. Projects were then ranked using a benefit/cost ratio. The final results make up the CIP for watershed improvement projects for Nancy Creek.

Capital Improvement Plan Summary

BMPs and stream restoration projects were evaluated by estimating existing risk at the project site and the reduced risk if the project is implemented. The greater the reduction in risk for a project; the greater the benefit of the project. Costs were estimated for each project and a benefit/cost ratio was developed. A total of 60 BMPs and 15 stream restoration projects were evaluated (Tables 4-2 and 4-3). Costs were normalized between infrastructure, flood, and watershed projects in order to have a comparable set of project rankings. More details of the evaluation process can be found in Chapter 4, Capital Improvement Plan and Appendix B, Prioritization Criteria Technical Memorandum.

High ranking BMP projects typically included small stormwater BMPs that can be modified to meet water quality and/or channel projection volumes relatively inexpensively. However, all of these projects were located on private property. Currently, the City of Sandy Springs is evaluating the level of service (LOS) for the stormwater management program, which sets the policy for where the City can spend funds on projects. The City's LOS policy presently is to work on City-owned property or within the right-of-way (ROW). If the City modifies its LOS in the future to include private or "attached" to ROW parcels, then the CIP list can be re-prioritized to include additional projects.

The estimated total cost to implement all 60 stormwater BMP projects evaluated is \$31,851,000. The projects with a benefit/cost score above five (8 projects) have an estimated cost of \$3,106,000 to implement. There are two projects in the "residential attached" category, with an estimated cost of \$503,000 to implement. The cost to implement the one project that is within the current level of service area is estimated to be \$763,000. The total cost for this program depends on which projects are selected. Options for implementation are presented in Chapter 4, Capital Improvement Plan.