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1 Introduction

City of Sandy Springs (COSS) is located within the central and northern portion of Fulton County. The major watersheds within COSS include Crooked Creek, Ball Mill Creek, Marsh Creek, Long Island Creek and Nancy Creek. The Chattahoochee River forms the western boundary of COSS with Cobb County. Fulton County operates the sanitary sewer system that can contribute to the bacteria pollutant of concern. Fulton County currently monitors bacteria pollutants of concern and sediment pollutants of concern within COSS.

1.1 PROJECT BACKGROUND

The General NPDES Stormwater Permit No. GAG610000 dated December 6, 2012 (Permit) authorizes COSS to discharge stormwater to the waters of the State of Georgia. Pursuant to Section 4.4.2 of the Permit, a Monitoring & Implementation Plan (MIP) is required to be submitted to the State of Georgia Department of Natural Resources Environmental Protection Division (EPD) by February 15, 2015. The MIP must address each pollutant of concern (POC). If a TMDL containing a wasteload allocation specific to one or more of the permittee's outfalls is approved, then the wasteload allocation must be incorporated into the Stormwater Management Plan (SWMP). The 2012 issue of the General NPDES Stormwater permit includes additional requirements for impaired waters of the state. COSS has five impaired streams listed on the Federal Clean Water Act 303(d) list. This document provides the information required to document pollutants of concern, impaired streams, MS4 outfall locations, and proposed best management practices (BMPs) to address pollutants of concern for impaired streams.

1.2 PROJECT OBJECTIVES

The following objectives are covered by the MIP:

:

-) Identify impaired waters located within the area covered by COSS Permit using the latest approved 305(b)/303(d) List of Waters, which contain MS4 outfalls or are within one (1) linear mile downstream of MS4 outfalls.
-) Identify pollutants of concern (POC) for impaired waters.
-) For those impaired waters with or without an approved TMDL, propose a MIP addressing each POC.
-) Identify sample locations collected from in stream locations.
-) Identify sample type, frequency, and any seasonal considerations.
-) Identify implementation schedule to start monitoring for each POC.
-) Develop map showing the location of the impaired waters, the monitoring locations, and all identified MS4 outfalls located on the impaired waters or occurring within one linear mile upstream of these waters, or a schedule for confirming the location of these outfalls. and
-) Provide description of proposed BMPs to be used to control and reduce the POCs.

2 Regulatory Review

2.1 PERMIT REVIEW AND IMPAIRED STREAMS

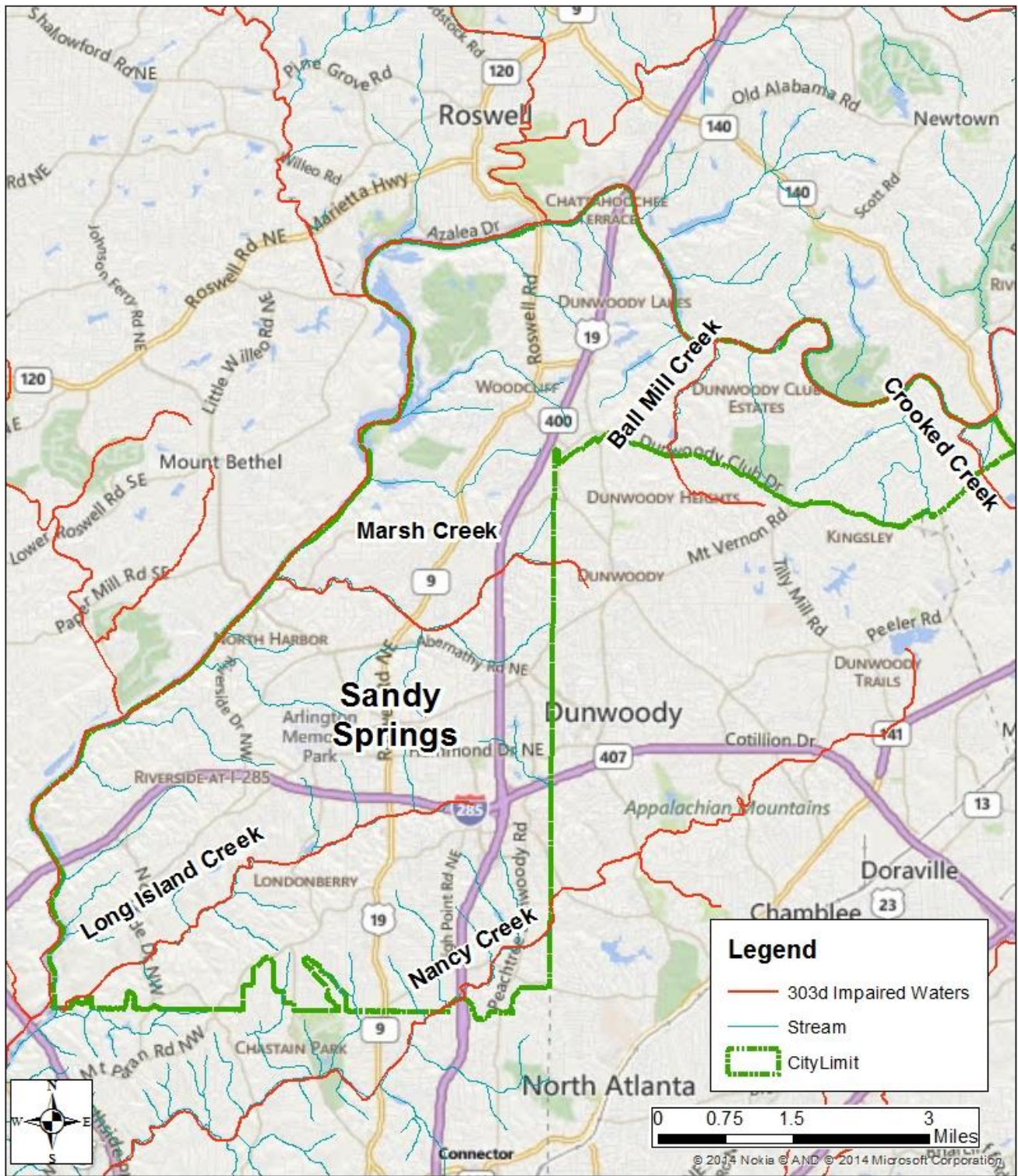
The Permit authorizes COSS to discharge stormwater to the waters of the State of Georgia. The TMDL for the Chattahoochee River Basin for fecal coliform does not include a wasteload allocation specific to one or more of COSS outfalls.

The 2014 Federal Clean Water Act 303(d)/305(b) list of impaired streams within COSS all identify urban runoff as the potential pollutant source or cause. **Table 1** presents five Federal Clean Water Act 303(d) listed streams for bacteria impairment and four listed streams for fish biota impairment as a result of increased sediment. **Map 1** identifies the listed stream segments including one mile of upstream stream reach.

Table 1 – Listed Streams for MIP

Stream	Reach	Violation	Potential Cause	Stream Length
Nancy Creek	Headwaters to Peachtree Creek	FC, Bio F	UR	16 Miles
Long Island Creek	Headwaters to Chattahoochee River	FC, Bio F	UR	5 Miles
Ball Mill Creek	Headwaters to Chattahoochee River	FC	UR	3 Miles
Crooked Creek	Headwaters to Chattahoochee River	FC, Bio F	UR	2 Miles
Marsh Creek	Headwaters to Chattahoochee River	FC, Bio F	UR	4 Miles

FC- Fecal Coliform, Bio F – Fish Biota, UR – Urban Runoff



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Map 1 – Impaired Streams within Sandy Springs

3. Pollutants of Concern

The primary pollutants of concern within COSS watersheds are fecal coliform bacteria and sediment. Nonpoint source controls for pollutants of concern are primarily implemented through local nonpoint source management programs. The pollutants of concern identified for the impaired streams within COSS are typical of streams in the suburban and urban areas of Georgia. COSS has implemented and enforces a SWMP designed to reduce the discharge of pollutants from the MS4, in order to protect water quality and to satisfy the appropriate water quality requirements of the State Act and Rules.

3.1 FECAL COLIFORM

The Federal Clean Water Act 303(d) list identifies the waterbodies that are not supporting their designated use classifications due to exceedances of water quality standards for fecal coliform bacteria. Five of the listed stream segments have levels of fecal coliform bacteria higher than the Georgia Water Quality Criteria for fishing streams. **Table 2** identifies the bacteria criteria seasons, levels and water body classifications. Criteria for bacteria levels vary based on the season, the method for sampling and the water body type.

Table 2 – Georgia Water Quality Criteria for Bacteria

Season	Criteria ¹	Water Body
May – October	200 MPN / 100 mL	Stream/River
	300 ² MPN / 100 mL	Lakes and Reservoirs
	500 ² MPN / 100 mL	Flowing Freshwater Streams
Nov – April	1000 MPN / 100 mL, and > 4000 MPN / 100 mL for any one sample	Stream/River

- 1) 391-3-6-.03 Water Use Classifications and Water Quality Standards.
- 2) Should water quality and sanitary studies show fecal coliform levels from non-human sources exceed 200/100 mL (geometric mean) occasionally, then the allowable geometric mean fecal coliform shall not exceed 300 per 100 mL in lakes and reservoirs and 500 per 100 mL in free flowing freshwater streams.

Fecal coliform bacteria are used as an indicator of the potential presence of pathogens in waters of the state. The 303(d) list identifies urban runoff as the potential source of fecal coliform pollution. Urban runoff and nonpoint sources can include the following bacteria contributing sources:

-) Wildlife - water fowl, beavers, raccoons, deer,
-) Domestic pets - dogs,
-) Leaking sanitary sewer lines, and
-) Leaking septic systems.

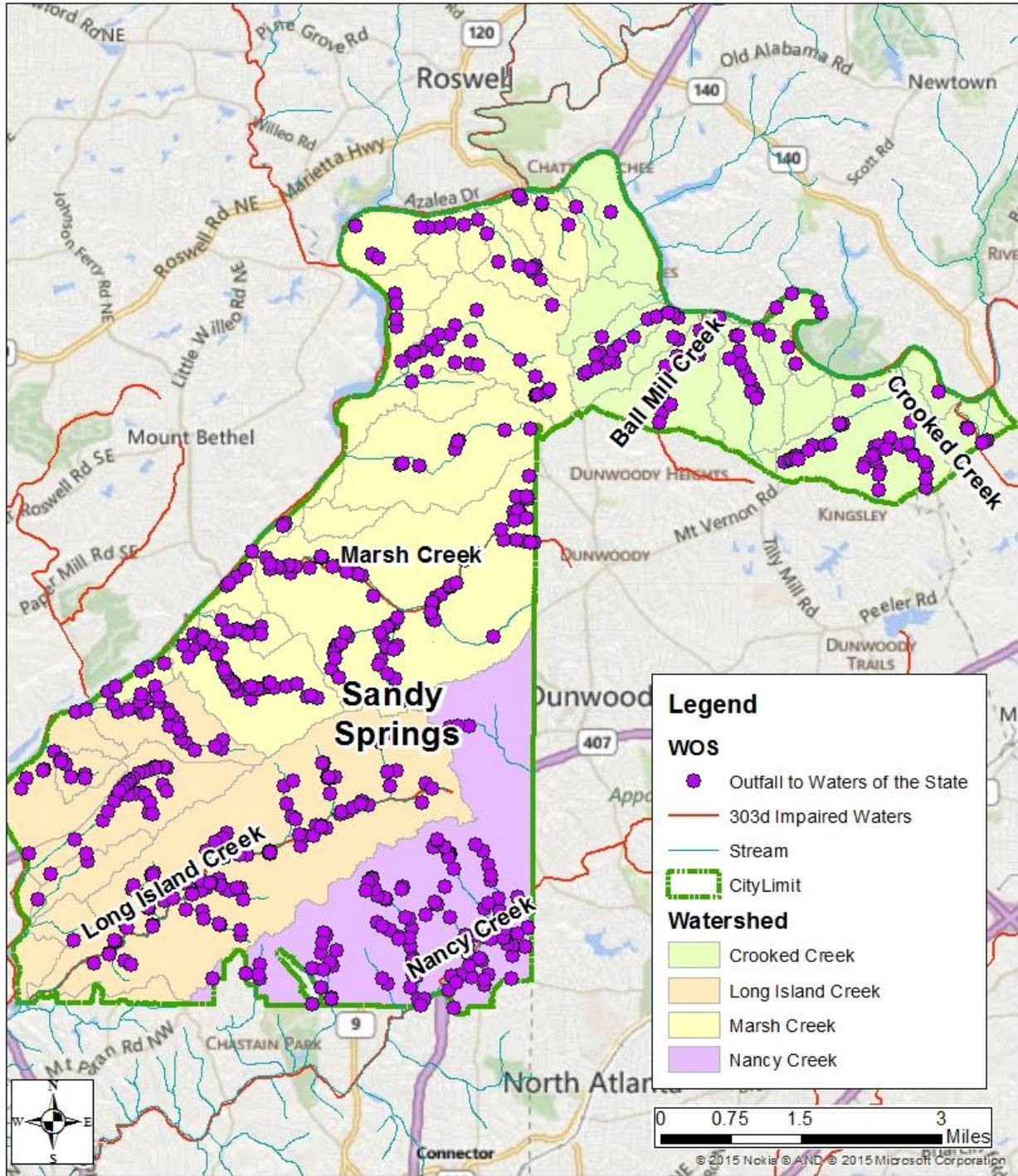
3.2 SEDIMENT

COSS has four stream segments listed for Fish Bioassessments as a result of increased sediment. These streams are assessed for total dissolved solids (TDS) and total suspended solids (TSS), and turbidity. The major impairment to stream ecosystems is erosion and sedimentation. Sediment carried into the stream from bank erosion and stormwater erosion can cause increased sediment in the stream bottom and smother sensitive organisms and infill sensitive stream habitats. Nonpoint sources of sediment cannot be directly identified as entering the stream at a single location. Nonpoint sources generally involve land use activities that contribute sediment to streams during a rainfall runoff event. Urban runoff and non-point sources can include the following sediment contributing sources:

-) Urban Development, and
-) Roads.

4. MS4 Outfall Identification

COSS has approximately 855 total MS4 outfalls within COSS Limits. COSS is in the process of reviewing the current inventory of outfalls and identifying true MS4 outfalls, as defined by EPD. This review will be conducted through GIS analysis and field confirmation. All impaired streams originate outside the COSS limits. COSS is responsible for MS4 outfalls within the city limits. Monitoring locations are select based on in stream monitoring of a representative section of the impaired stream. No outfall specific monitoring is recommended as part of this MIP. **Map 2** identifies the outfall locations within COSS.



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Map 2 – MS4 Outfall Locations within Sandy Springs

5. Monitoring Plan

Fulton County currently monitors bacteria pollutants of concern within COSS for the following stream segments; Ball Mill Creek, Marsh Creek and Long Island Creek. Fulton County also monitors sediment pollutants of concern by evaluating turbidity, TDS, and TSS quarterly according to the Fulton County National Pollution Discharge Elimination System (NPDES) Permit for wastewater treatment facilities for Marsh Creek and Long Island Creek. This MIP will use the existing monitoring locations, methods, and frequencies to evaluate the POCs associated with impaired streams within COSS. In addition, COSS will monitor bacteria POC and sediment POC within COSS for the following stream segments; Crooked Creek and Nancy Creek.

5.1 BACTERIA MONITORING

COSS will coordinate with Fulton County to collect monitoring data of the impaired streams Long Island Creek, Marsh Creek, and Ball Mill Creek. COSS will collect monitoring data of the impaired streams Crooked Creek, and Nancy Creek. COSS has a memorandum of understanding (MOU) with Fulton County to collect and share water quality data (Exhibit 1). Although the agreement is six years old Fulton County is continuing to collect the data, and COSS will continue to coordinate with Fulton County to share the monitoring data to stay in compliance with the MS4 Permit. Fulton County collects bacteria water quality data and analytical data throughout the County Sewershed area as required by the National Pollution Discharge Elimination System (NPDES) Permit for wastewater treatment facilities. Fulton County collects data for three of the impaired stream segments within COSS. COSS will collect monitoring data for the remaining stream segments not monitored by Fulton County. **Table 3** identifies the locations of the sampling station and type of sampling collected and sample collection municipality. **Map 3** identifies the sampling locations.

Table 3 – Water Quality Data Monitoring Locations

Sampling Location	Station ID	Coordinates	Sampling Type	Sampling Method
Long Island Creek, Marsh Creek, and Ball Mill Creek monitored by Fulton County				
Long Island Creek at Northside Drive	LI-2	N 33°53'29" W 84°25'19"	Bacteria Analytical	Grab Grab
Marsh Creek at Brandon Mill Road	MA-1	N 33°57'55" W 84°22'22"	Bacteria Analytical	Grab Grab
Ball Mill Creek near Chattahoochee River	CK-1	N 33°58'58" W 84°18'59"	Bacteria	Grab
Nancy Creek and Crooked Creek monitored by COSS				
Nancy Creek at Peachtree Dunwoody Rd	NA- 1	N 33°53'17" W 84°21'17"	Bacteria Sediment	Grab Grab
Crooked Creek at Spalding Drive	CR-1	N 33°57'57" W 84°15'53"	Bacteria Sediment	Grab Grab

The Crooked Creek stream segment within COSS is approximately 0.64 miles long. The Nancy Creek stream segment within COSS is approximately 2.72 miles long. These two listed stream segments represent a small portion of the impaired stream segment. COSS will monitor Crooked Creek and Nancy Creek according to **Table 3**.

5.1.1 Bacteria Sampling

Bacteria sampling will be performed at five sites as indicated in **Table 3** and **Map 3**. Sampling is conducted using a geometric mean, which is evaluated by a set of four samples collected over a 30-day period. Samples that comprise the geometric mean will be taken in weekly intervals. One (1) geometric mean (4 sample set) will be collected per quarter. All samples will be collected in sterile bacteriological containers and handled to avoid introducing contamination. All samples will be delivered within its acceptable holding time for the applicable parameter. Each sample will be tested for the presence of fecal coliform and *Escherichia coli* (*E.coli*). **Table 4** lists each bacterial parameter, its analytical method, and its detection limit.

5.2 SEDIMENT MONITORING

COSS will collect sampling parameters including TDS, TSS, and turbidity to evaluate sediment impairment of Nancy Creek and Crooked Creek. The two sites monitored by COSS will be sampled once per quarter, for each of the four quarters. **Map 3** and **Table 3** displays the locations of the analytical stations.

The remaining two sediment impaired sites will be monitored by Fulton County. The two sites monitored by Fulton County will be sampled once per quarter, for each of the four quarters. Each sample will be tested for seventeen (17) chemical parameters and follow the laboratory date collection protocol. The sampling parameters include TDS, TSS, and turbidity to evaluate sediment impairment. **Map 3** and **Table 3** displays the locations of the analytical stations. These specific parameters are indicated in **Table 4** along with its analytical method and detection limit. In-Situ sampling indicates those parameters that are directly collected and recorded at sampling station including turbidity. Fulton County collects seven (7) in-situ parameters (**Table 4**). These values are recorded to effectively evaluate water quality of the sites. All sampling will be handled with the appropriate protocols.

5.2.1 Analytical Sampling Protocol

Analytical sampling techniques will be employed for the collection and evaluation of analytical sampling parameters including TDS, TSS, and turbidity. Analytical sampling procedures will be used to minimize inadvertent contamination of the samples and to analyze concentrations to low levels of detection (for comparison with state water quality criteria). Project staff with the appropriate training will perform clean sampling techniques.

5.2.2 In-Situ Data Collection Protocol

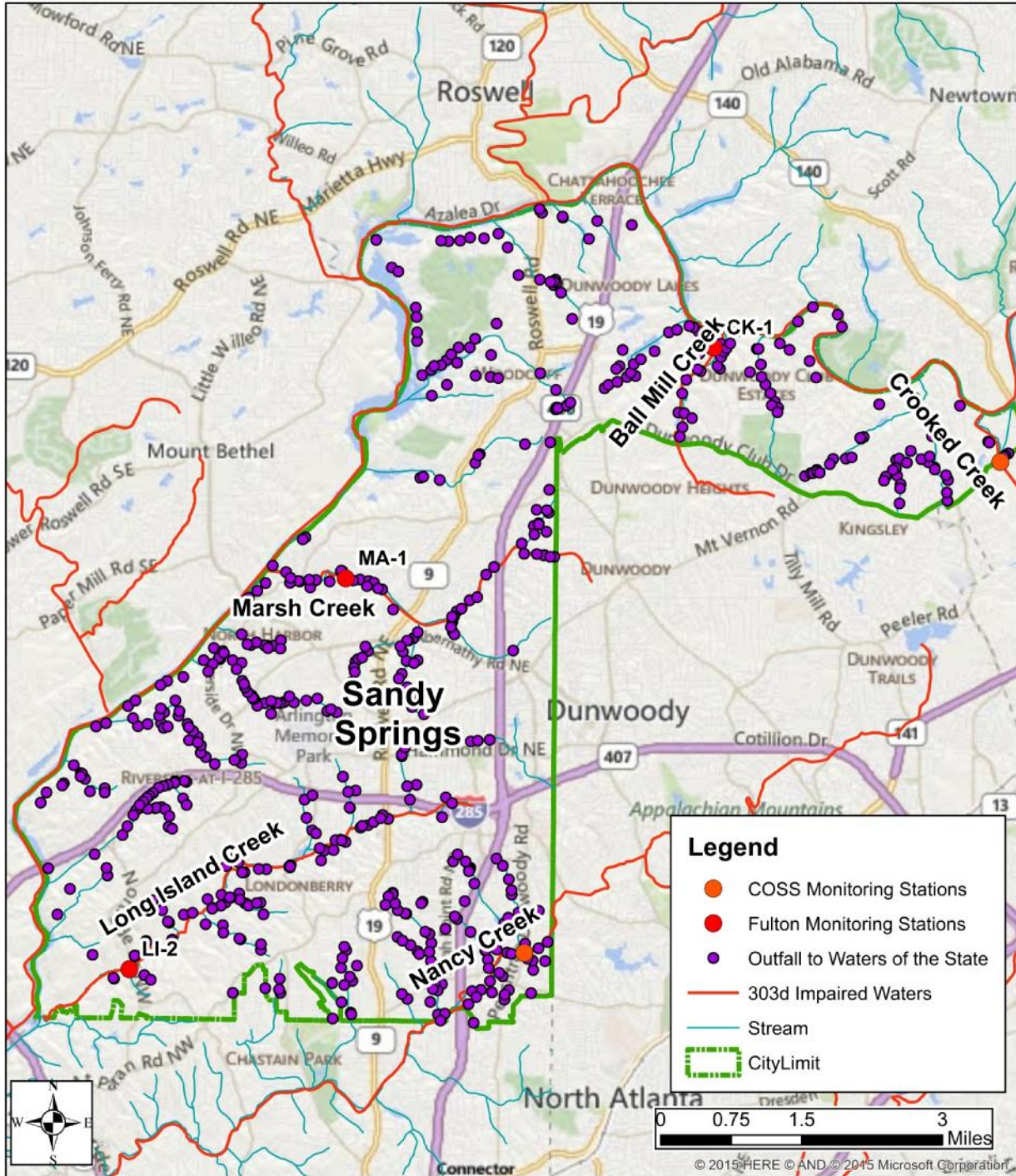
In-situ parameters will be measured and recorded during sample collection. Field measurements will be noted to the highest degree of precision attainable with the field instruments. Field instruments will be calibrated at the beginning of each field-sampling day and checked at the end

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of the day. All calibrations will be performed in accordance with the manufacturer's recommendations and documented in a calibration logbook.

5.2.3 Laboratory Data Collection Protocol

Analytical methods and testing procedures will be performed in accordance with the United States Environmental Protection Agency (EPA) and EPD-approved protocol and guidelines (procedures set forth in "40 CFR Part 136"). Analytical samples will be collected in containers appropriate to the parameter being analyzed. Analytical sample containers will be labeled with the project name, station location identifier, date of sample, and the name of the sampler. Immediately following sample collection, the samples will be preserved in accordance with the requirements of the specific analytical methodology (e.g. preservatives, stored in coolers), and delivered to the accredited laboratory for analysis. Each sample package will include a chain-of-custody form. All samples will be delivered within permissible holding times.



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Map 3 – Monitoring Station Locations

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Table 4 – Monitoring Parameters for Bacteria and Sediment Monitoring

PARAMETER		METHODOLOGY	
		Analytical Method	Minimum Detection Limit
Bacteria	Fecal Coliform	SM 9222D	20 colonies/100ml
	<i>Escherichia coli (E. Coli)</i>	SM 9223	
Sediment	Total Dissolved Solids	EPA 160.1	
	Total Suspended Solids	EPA 160.2	5
	Total Kjeldahl Nitrogen	EPA 351.3	
In-Situ	Air Temperature	ambient	----
	Water Temperature	YSI Model 556	----
	pH	YSI Model 556	----
	Instantaneous Flow	JDC Flowwatch	----
	Dissolved Oxygen (DO)	YSI Model 556	----
	Conductivity	YSI Model 556	----
	Turbidity	LaMotte 100	----
	Color	qualitative	----
	Oil Sheen	qualitative	----
Odor	qualitative	----	

5.3 MONITORING FREQUENCY

For the term of the MS4 permit COSS and Fulton County will share responsibilities for monitoring the pollutants of concern within COSS according to the MOU. COSS is responsible for sample collection in four (4) consecutive quarters for bacteria monitoring and sediment monitoring of Nancy Creek and Crooked Creek. Fulton County will be responsible for sample collection in four (4) consecutive quarters for bacteria monitoring and chemical analysis. The monitoring frequency schedule is included in **Figure 1**. The quarters are as follows:

-) Spring Quarter: February - April
-) Summer Quarter: May - July
-) Fall Quarter: August - October
-) Winter Quarter: November - January

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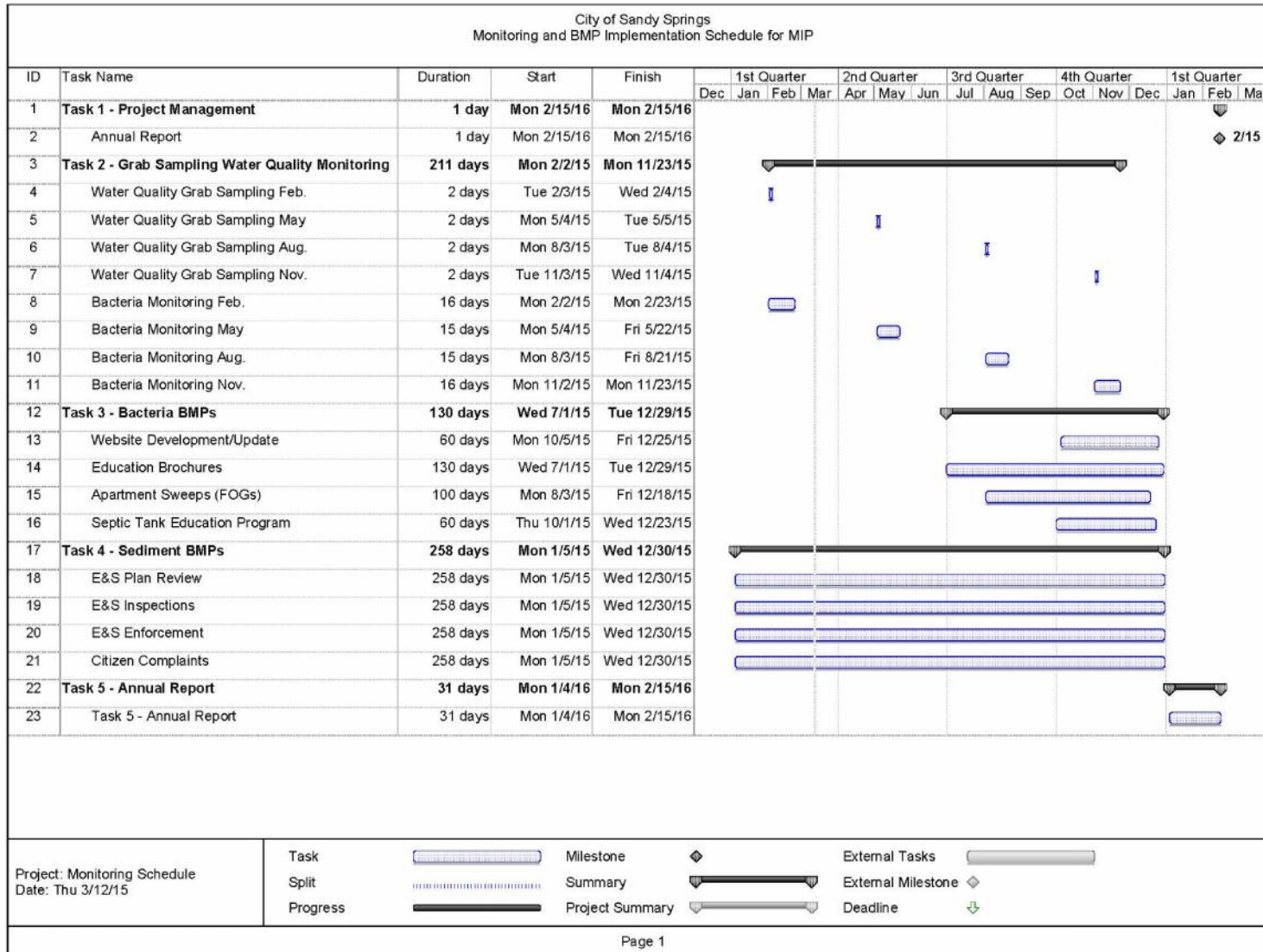


Figure 1- Monitoring and BMP Implementation Schedule

6. Implementation Plan

COSS plans to implement Best Management Practices (BMPs) as part of this MIP. BMPs can be implemented in an effort to reduce the elevated levels of bacteria and increased sediment levels in local sub-watersheds. These BMPs range from public awareness and public involvement to potential structural measures implemented by COSS. BMP selection is based on the location of the BMP, public property, proximity to MS4 outfalls, and the anticipated cooperation of local stakeholders.

The implementation effectiveness of each BMP is evaluated by the outlined measurable goal and the assessment of the monitoring data. If no improvements can be identified, COSS will develop the specific actions of change at the time it is determined that BMPs are not being effective. Potential actions of change based on water quality results and BMP effectiveness will be reported in the MS4 annual report, if necessary.

6.1 FECAL COLIFORM BMPS

6.1.1 Watershed Protection Web Resources

Description: COSS will develop a public education website to inform the public on ways to improve water quality and watershed health. The website may include the following; a home page detailing upcoming environmental protection events, contact information of programs, reporting of illicit discharge events, public education brochures, and links to additional resources. The website will provide links to pdf brochures on topics including, fats, oils and grease, septic tank maintenance, pet waste pick up and other items citizens can do to improve watershed health and reduce bacteria pollution.

Measureable Goal: COSS will record the number of visitors to the webpage as a measure of BMP effectiveness.

6.1.2 Public Awareness to Reduce FOGs (Fats, Oils, and Grease)

Description: COSS Fulton County Sewer Use Ordinance limits Fats, Oils and Grease (FOGs) disposal from commercial facilities (Chapter 82 Article IV). However, spill reports indicate FOGs to be a leading cause of sewer overflows. COSS should develop a web campaign and distribute brochures in areas of reported SSOs to reduce fats, oils, and grease from residents potentially contributing to FOG causing sanitary sewer overflows (SSOs). The brochures should be designed to inform homeowners of the consequences of grease build up in the sanitary sewer lines.

Measurable Goal: COSS will record the number of visitors to the webpage as a measure of BMP effectiveness.

6.1.3 Septic Tank Education Program:

Description: Septic Tank Education Program (STEP) provides education to home owners on septic systems on maintaining their septic system. Elevated levels of fecal coliform in dry weather could be a result of failing septic systems or leaking sewers. The STEP Program may include the following program elements:

-) Provide maintenance information to septic system owners.

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-) Work with Fulton County to determine capacity analysis for homeowners association that inquire about connecting to public sewer.
-) Educate homeowners on process for connecting to existing sewers.

Measurable Goal: COSS will record the number of residents that received information on septic maintenance via website and or the number of residence that received distribution materials regarding septic tank education to evaluate the BMP effectiveness.

6.2. SEDIMENT BMPS

6.2.1. Site Plan Review

Description: COSS will conduct Erosion and Sedimentation Pollution Control (ESPC) plan reviews for all development projects requiring a Land Disturbance Permit (LDP) and disturbing more than one (1) acre of land. The ESPC plans are reviewed by certified COSS staff (Level II Plan Reviewer). ESPC plans are reviewed for compliance with the Manual for Erosion and Sedimentation Control in Georgia “Green Book” and the E&S Ordinance. Reviews of ESPC plans will ensure the appropriate BMPs for construction activities are recommended and implemented to reduce sediment travel to streams during rain events.

Measurable Goal(s): Ensure 100% of site plans for projects disturbing over one (1) acre of land will be reviewed by COSS certified personnel to evaluate the reduction of sediment in impaired streams.

6.2.2 Erosion & Sedimentation (E&S) Inspections

Description: COSS certified personnel will conduct inspections of construction sites and enforce requirements of the E&S Ordinance. All projects with an active Land Disturbance Permit (LDP) are to be inspected to ensure that proper E&S measures have been installed and maintained according to the approved ESPC plan. Inspectors visit the sites at the start of construction, soon after storm events, and after the site has been stabilized. Inspections are conducted by the Community Development Department by personnel certified in the fundamentals of E&S control. The lead inspector is required to have a Level II certification as a plan reviewer. Inspections are conducted following the *Field Manual for Erosion and Sediment Control in Georgia* (“Green Book”). If violations are discovered during an inspection, enforcement actions are taken in accordance with the E&S Ordinance. E&S inspections will ensure the appropriate BMPs for construction activities are properly installed and maintained to reduce sediment travel to streams during rain events.

Measurable Goal: Active development sites with an LDP are inspected at the start and completion of land disturbance activities, and after major rain events to evaluate the reduction of sediment in impaired streams. Inspection activities are documented to determine the effectiveness of the BMP.

6.2.3 Enforcement Procedures for Erosion & Sedimentation Violations

Description: COSS will implement enforcement procedures for E&S violations documented at construction sites in accordance with the E&S Ordinance and the enforcement response plan (ERP). The ERP will be developed and implemented and will include the ordinances providing legal authority to implement the E&S Ordinance, types of enforcement mechanisms available, escalation of enforcement, time frames for investigation, and the method to be used to track instances of non-compliance.

Measurable Goal: Ensure 100% of identified violations at construction sites will be addressed within 3 days. COSS staff will record violations to evaluate the effectiveness of this BMP.

6.2.4 Citizen Complaint Response

Description: COSS has implemented a program for receiving, investigating, and tracking the status of erosion and sedimentation complaints. Identifying sediment travel from the construction source will allow COSS to reduce sediment in the impaired streams. Residents have the option to report issues via:

-) Website, either by knowing the address or finding and clicking on an interactive map: <http://www.sandyspringsga.gov>.

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-) Calling the 'call center': Complaints can be made by calling the City's Citizen Response Center at 770-730-5600, which receives calls 24 hours a day, seven days a week, or
-) Using Sandy Springs Works free smart phone app for Android, Blackberry or iPhone.
-) Outside of business hours, one of the 24 hour agents enters the complaint into the City's work order database so it is available for action at the start of the following business day. Once the complaint is entered into the database system, the following occurs:
 - o The database is checked by the appropriate administrative personnel per department. These personnel check the database several times throughout the day.
 - o Every department's administrative personnel will immediately forward the complaint to the appropriate department if a mistake has been made in routing the initial call.
 - o Each department has a technician assigned to field complaints and will contact the complainant typically within 72 hours.
 - o The technician responds by:
 - Setting up an inspection appointment with the complainant
 - Automatically initiating a work order
 - Conducting an immediate inspection
 - o Resolution of the complaint varies for each issue, but typically the complaint is resolved that same day, during that first week, or within two weeks, depending on the severity of the issue. Significant issues can take two months or longer to completely resolve.

Measurable Goal: Investigate E&S complaints within three (3) business days and record E&S complaints in the electronic database to evaluate the effectiveness of this BMP.

Exhibit 1 – Memorandum of Understanding