Baldwin County Commission

322 Courthouse Square
Bay Minette, Alabama 36507

Storm Water Management Program (SWMP) Plan

NPDES Permit No. ALR040042

June 2012

Prepared By:

HYDRO ENGINEERING SOLUTIONS, LLC

2124 Moore's Mill Road ♦ Suite 120 ♦ Auburn, Alabama 36830

Table of Contents

1. Program Administration 1-1

1.1. Introduction 1-1

1.2. Legal Authority 1-1

1.2.1. Zoning Ordinance 1-1

1.2.2. Subdivision Regulations 1-2

1.2.3. Flood Damage Prevention Ordinance 1-2

1.2.4. Legislative Act 2005-200 1-3

1.3. SWMP Revision 1-6

1.4. Program Administration 1-7

1.5. Signatory Requirements 1-8

2. MS4 Area 2-1

2.1. Baldwin County 2-1

2.2. MS4 Area 2-2

2.2.1. Incorporated Areas 2-2

2.2.2. Watersheds 2-4

2.2.3. Land Use 2-4

2.3. Known Problems 2-8

2.3.1. Lower Bay Minette Creek Watershed 2-8

2.3.2. Tensaw River Apalachee River Watershed 2-8

2.3.3. Lower Fish River Watershed 2-9

3. Regulatory Requirements 3-1

3.1. U.S. Environmental Protection Agency 3-1

3.1.1. Phase II MS4 Requirements 3-1

3.1.2. Effluent Limitation Guidelines 3-1

3.2. Alabama Department of Environmental Management 3-2

4. Public Education and Outreach 4-1

4.1. Introduction 4-1

4.2. Target Audiences 4-1

4.3. Target Pollutant Sources 4-1

4.4. Outreach Strategy....4-2
4.4.1. Local Partnerships....4-2
4.4.2. Brochures....4-3
4.4.3. Web Site....4-3
4.4.4. Workshops....4-4
4.4.5. Training....4-5
4.5. Program Goals....4-5
4.6. Program Evaluation....4-5

5. Public Involvement / Participation 5-1

5.1. Introduction....5-1
5.2. Outreach Strategy....5-1
5.2.1. Baldwin County Water Festival....5-2
5.2.2. Coastal Kids Quiz....5-2
5.2.3. Baldwin County Master Environmental Educator....5-2
5.2.4. Weeks Bay Reserve Watershed Wagon....5-3
5.2.5. Litter Abatement Programs....5-3
5.2.6. Recycling....5-4
5.2.7. Call Centers....5-4
5.2.8. Household Hazardous Waste Collection....5-5
5.2.9. Waste Cooking Oil Recycling....5-5
5.3. Program Goals....5-5
5.4. Program Evaluation....5-5

6. Illicit Discharge Detection and Elimination 6-1

6.1. Introduction....6-1
6.2. Allowable and Occasional Incidental Discharges....6-2
6.3. Preventing Illicit Discharges....6-2
6.4. Data Management....6-3
6.5. Searching for Illicit Discharges....6-4
6.5.1. Field Activities....6-5
6.5.2. Outfall Inventory Schedule....6-5
6.6. Outfall Reconnaissance Inventory....6-5
6.6.1. Field Sheets....6-5
6.6.2. Screening Data....6-6
6.7. Outfalls Screened....6-6

6.8. Suspect Illicit Discharges 6-7
6.8.1. Field Screening 6-7
6.8.2. Locating Illicit Discharges 6-8
6.8.3. Sample Collection 6-8
6.8.4. Evaluation of Results 6-8
6.9. Locating and Removing Illicit Discharges 6-9
6.9.1. Locating Illicit Discharges 6-9
6.9.2. Removing Illicit Discharges 6-10
6.10. Spill Response 6-10
6.11. Sanitary Sewer System 6-11
6.11.1. Sanitary Sewer Systems 6-11
6.11.2. Baldwin County Health Department 6-11
6.12. Enforcement 6-12
6.13. Staff Training 6-12
6.14. Standard Operating Procedures 6-12
6.15. Program Goals 6-13
6.16. Program Evaluation 6-13

7. Construction Site Runoff 7-1

7.1. Introduction 7-1
7.2. Requirements and Control Measures 7-2
7.2.1. Erosion and Sediment Controls 7-2
7.2.2. Soil Stabilization 7-3
7.2.3. Dewatering 7-3
7.2.4. Pollution Prevention Measures 7-3
7.2.5. Prohibited Discharges 7-4
7.2.6. Surface Outlets 7-4
7.3. Permitting 7-4
7.4. Plan Review 7-6
7.5. Construction Site Inventory 7-6
7.6. Inspections 7-6
7.6.1. Initial Inspection 7-7
7.6.2. Periodic Inspections 7-7
7.6.3. Re-Inspection 7-8
7.6.4. Final Inspection 7-8

7.7. Enforcement 7-9
7.7.1. Verbal Warning 7-9
7.7.2. Stop Work Notice 7-9
7.7.3. Notice of Violation 7-10
7.7.4. Judicial Proceedings 7-12
7.7.5. Fines and Penalties 7-12
7.8. Staff Training 7-12
7.9. Program Goals 7-12
7.10. Program Evaluation 7-13

8. Post Construction Storm Water Management 8-1

8.1. Introduction 8-1
8.2. Program Components 8-2
8.2.1. Low Impact Development 8-2
8.2.2. Development Regulations 8-2
8.2.3. Conservation Development 8-3
8.2.4. Post Construction BMPs 8-4
8.2.5. Operation and Maintenance 8-5
8.2.6. Tracking System 8-5
8.2.7. Training 8-5
8.3. Program Goals 8-5
8.4. Program Evaluation 8-5

9. Pollution Prevention / Good Housekeeping 9-1

9.1. Introduction 9-1
9.2. Program Components 9-1
9.2.1. County Facilities 9-1
9.2.1.1. Facility Inventory 9-2
9.2.1.2. Facility Assessment 9-2
9.2.2. Structural Controls 9-2
9.2.2.1. Drainage Swales 9-2
9.2.2.2. Storm Sewer Systems 9-3
9.2.2.3. Cross Drains 9-4
9.2.2.4. Data Management 9-5
9.2.2.5. Inspections 9-6
9.2.2.6. Maintenance and Repairs 9-7

9.2.3. Roadways 9-7
9.2.3.1. Data Management 9-8
9.2.3.2. Planning and Design 9-10
9.2.3.3. License Agreement 9-11
9.2.3.4. Road Inspections 9-11
9.2.3.5. Bridge Inspections 9-12
9.2.3.6. Mowing....9-12
9.2.3.7. Litter Control 9-12
9.2.3.8. Street Sweeping....9-13
9.2.3.9. Resurfacing....9-13
9.2.3.10. Unpaved Roads 9-13
9.2.3.11. Deicing Activities....9-13
9.2.4. Pesticides, Herbicides and Fertilizers 9-13
9.2.4.1. Facility Inventory....9-14
9.2.4.2. Certification and Licensing....9-14
9.2.4.3. Chemical Inventory 9-15
9.2.4.4. Application, Storage and Disposal 9-15
9.2.5. Training 9-16
9.2.6. Flood Management 9-16
9.3. Program Goals....9-17
9.4. Program Evaluation 9-17

10. Monitoring Plan 10-1

10.1. Introduction....10-1

List of Tables

Table 1-1 SWMP Revision Record 1-6
Table 2-1 Metropolitan Areas 2-1
Table 2-2 Baldwin County MS4 Area 2-2
Table 2-3 Baldwin County MS4 Area Watersheds 2-4
Table 2-4 Major Land Use Categories 2-6
Table 2-5 MS4 Area Land Use 2-6
Table 2-6 2010 303(d) Listed Streams 2-9
Table 4-1 Summary of Brochures 4-4
Table 4-2 Public Education – Program Goals 4-6
Table 5-1 Public Involvement – Program Goals 5-6
Table 6-1 Outfalls Screened by Basin 6-7
Table 6-2 Screening Parameters 6-8
Table 6-3 Illicit Discharge – Program Goals 6-14
Table 7-1 Construction Site Runoff – Program Goals 7-14
Table 8-1 Post Construction Storm Water Management – Program Goals 8-6
Table 9-1 Storm Sewer Inlet Inventory 9-3
Table 9-2 Storm Sewer Pipe Inventory 9-3
Table 9-3 Cross Drain Pipe Inventory 9-4
Table 9-4 Roadway Design Requirements 9-10
Table 9-5 PHF Chemicals 9-15
Table 9-6 Pollution Prevention / Good Housekeeping – Program Goals 9-18
Table 9-7 Structural Controls – Program Goals 9-19
Table 9-8 Roadways – Program Goals 9-20
Table 9-9 Pesticides, Herbicides and Fertilizers – Program Goals 9-21

List of Figures

Figure 1-1 Planning Districts 1-5
Figure 1-2 SWMP Organizational Chart 1-7
Figure 2-1 Historical Population 2-1
Figure 2-2 Baldwin County MS4 Area 2-3
Figure 2-3 Baldwin County MS4 Area Watersheds 2-5
Figure 2-4 Baldwin County MS4 Area Land Use 2-7
Figure 2-5 Baldwin County Impaired Streams 2-10
Figure 5-1 Watershed Wagon 5-3
Figure 6-1 Trimble Geo Explorer 6-3
Figure 6-2 Flow Chart to Identify Illicit Discharges in Residential Areas 6-9
Figure 7-1 Permitting and Plan Review Flow Chart 7-5
Figure 7-2 Enforcement Action Flow Chart 7-11
Figure 9-1 Road and Bridge Inventory 9-9

Appendices

Appendix A Legal Authority
Appendix B NPDES Permit ALR040042
Appendix C Public Education and Outreach
Appendix D Public Involvement
Appendix E Illicit Discharge Detection and Elimination
Appendix F Construction Site Runoff
Appendix G Post Construction Storm Water Management
Appendix H Pollution Prevention / Good Housekeeping

SECTION 1

Program Administration

1. Program Administration

1.1. Introduction

In 1990, the U.S. Environmental Protection Agency (EPA) promulgated regulations establishing Phase I of the National Pollutant Discharge Elimination Systems (NPDES) storm water program. The Phase I program for municipal separate storm sewer systems (MS4s) requires operators of "medium" and "large" MS4s that generally serve populations of 100,000 or greater to implement a storm water management program as a means to control polluted discharges from certain municipal, industrial and construction activities into the MS4.

In 1999, EPA promulgated regulations establishing Phase II of the NPDES storm water program. The Phase II program extends coverage of the NPDES storm water program to regulated "small" MS4s. A regulated "small" MS4 is located within an "urbanized area" as defined by the Census Bureau or as designated by the NPDES permitting authority.

The Alabama Department of Environmental Management (ADEM) presently has primary jurisdiction over permitting and enforcement of the storm water program for Alabama. In November 2011, Baldwin County submitted a request to ADEM to be re-designated from a Phase I MS4 to a Phase II MS4. On 22 December 2011, ADEM granted this request and issued coverage under the MS4 Phase II General Permit (NPDES Permit Number ALR040042) for storm water discharges associated with the Baldwin County MS4.

The Storm Water Management Program (SWMP) Plan has been developed to generally describe the County's efforts to maintain compliance with the requirements of NPDES Permit ALR040042. This document is intended to be a dynamic document and shall be revised as needed to accurately reflect the County's activities in implementing its SWMP.

1.2. Legal Authority

1.2.1. Zoning Ordinance

On 8 August 1991, the Baldwin County Planning and Zoning Act (Act No. 91-179), Code of Alabama §45-2-261 was passed by the Alabama State Legislature. This legislation, and its subsequent amendments, provide the basic framework for the County's growth management activities and required the development

and maintenance of a master plan for the use and development of unincorporated Baldwin County. The Baldwin County Planning and Zoning Act authorized the County Commission to:

- Create Baldwin County Planning and Zoning Commission;
- Create Board of Adjustment;
- Create planning districts within unincorporated areas of the County;
- Allowed zoning within planning districts that vote their desire to come under the County planning and zoning authority; and,
- Required the development and maintenance of a "master plan".

On 6 April 1999, the County Commission adopted the Baldwin County Zoning Ordinances. A copy of the Baldwin County Zoning Ordinances is provided in Appendix A.

The Zoning Ordinance is in force and effect in the planning districts established in Baldwin County in compliance with the requirements of Act 91-719, as amended, which elect to come within the planning and zoning authority of the Baldwin County Commission. Currently the County has zoning authority of approximately 4.062 mi^2 (61%) of the land located within the MS4 Area. The areas where the County has zoning authority within its MS4 Area are shown in Figure 1-1.

1.2.2. Subdivision Regulations

On 1 July 2008, the County Commission adopted the latest revisions to the Subdivision Regulations. These Subdivision Regulations establish procedures and standards for the development of subdivisions or proposed additions to existing subdivisions within the subdivision jurisdiction of Baldwin County in an effort to regulate the minimum lot size, the design, planning and construction of all public streets, public roads, drainage structures, and to require the proper placement of public utilities.

A copy of the Baldwin County Subdivision Regulations is provided in Appendix A.

1.2.3. Flood Damage Prevention Ordinance

On 5 April 2005, the County Commission adopted the latest revisions to the Flood Damage Prevention Ordinance. The purpose of this ordinance is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas of provisions designed to:

- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

- Restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which increase flood heights, velocities, or erosion;

- Control filling, grading, dredging and other development which may increase flood damage or erosion;

- Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands; and,

- Control the alteration of natural flood plains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters.

A copy of the Flood Damage Prevention Ordinance is provided in Appendix A.

1.2.4. Legislative Act 2005-200

On 26 May 2005 the Alabama Legislator passed Act Number 2005-200 known as "The Alabama Limited Self-Governance Act". This act expands the authority of counties to regulate activities that may create a nuisance to include:

- Weeds;
- Litter or rubbish;
- Animals and animal nuisances;
- Junkyards;
- Noise;
- Unsanitary sewage; and,
- Pollution creating a public nuisance.

The act also restricts the powers of a county commission and prohibits the following activities as they relate to a nuisance.

- Authority to levy or collect any tax;

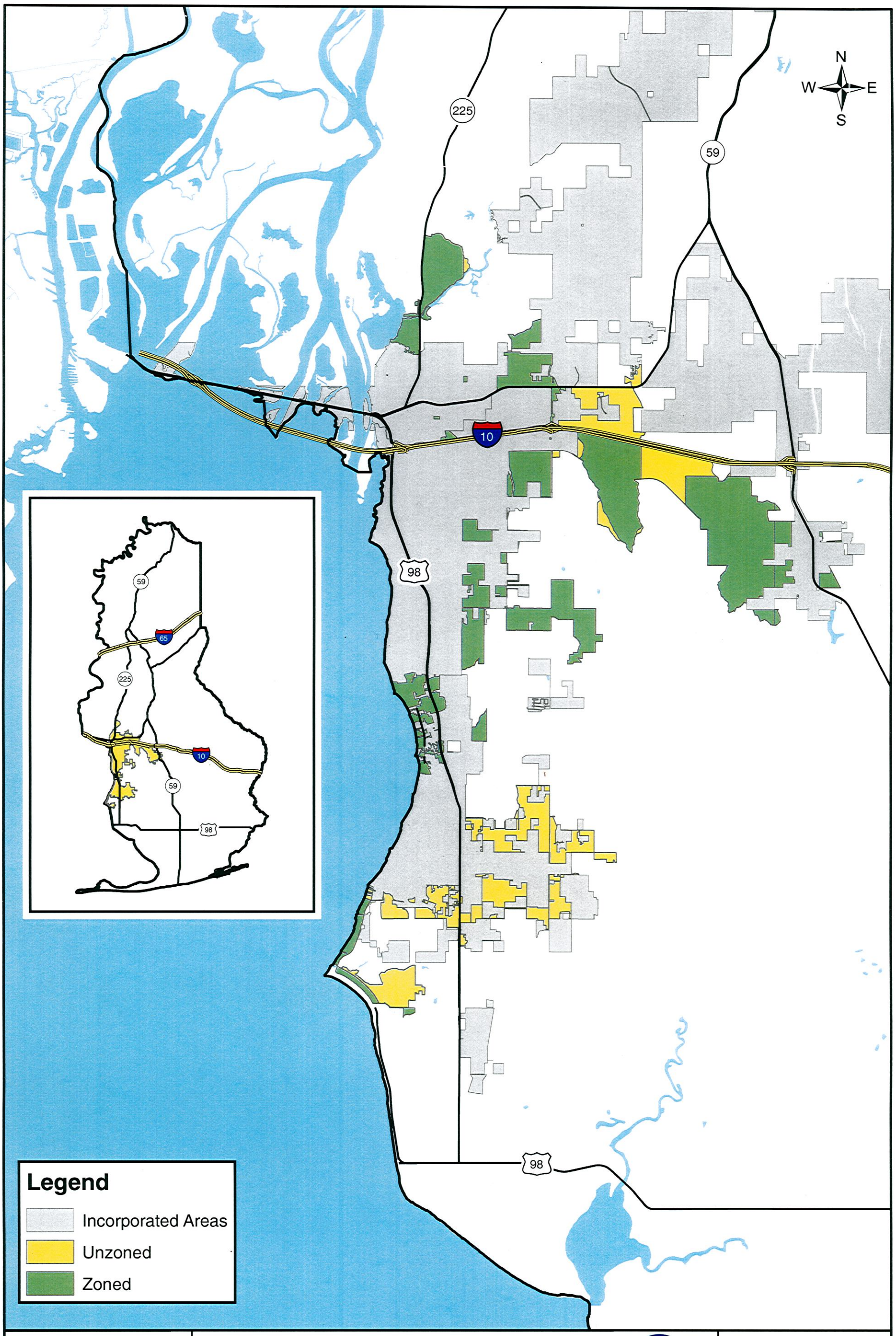
- Regulation over any business activities regulated by the Federal Surface Transportation board, the Public Service Commission, the Department of

Agriculture and Industries, or the Alabama Department of Environmental Management;

- Action affecting any court;
- Action affecting any public school system;
- Action affecting pari-mutuel betting facility;
- Action affecting the private or civil law governing private or civil relationships;
- Action extending the power of regulation over the construction maintenance, operation or removal of facilities used in the generation, transmission, or distribution of water, sewer, gas, telecommunications, or electric utility services;
- Action affecting the rights granted to an agricultural, manufacturing, or industrial plant or establishment, or farming operation;
- Action affecting or enforcing environmental easements; and,
- Action restricting or regulating surface mining or underground mining activities that have been granted federal or state permits.

Since Baldwin County has limited legal authority to implement and/or enforce some requirements of the NPDES permit, the County may rely upon State programs to assist in the implementation and enforcement of its SWMP Plan.

A copy of The Alabama Limited Self Governance Act is provided in Appendix A.



HYDRO ENGINEERING SOLUTIONS, LLC

BALDWIN COUNTY MS4 Area

Planning Districts

Figure 1-1

April 2012

1.3. SWMP Revision

Revisions to the SWMP Plan shall be documented in Table 1-1.

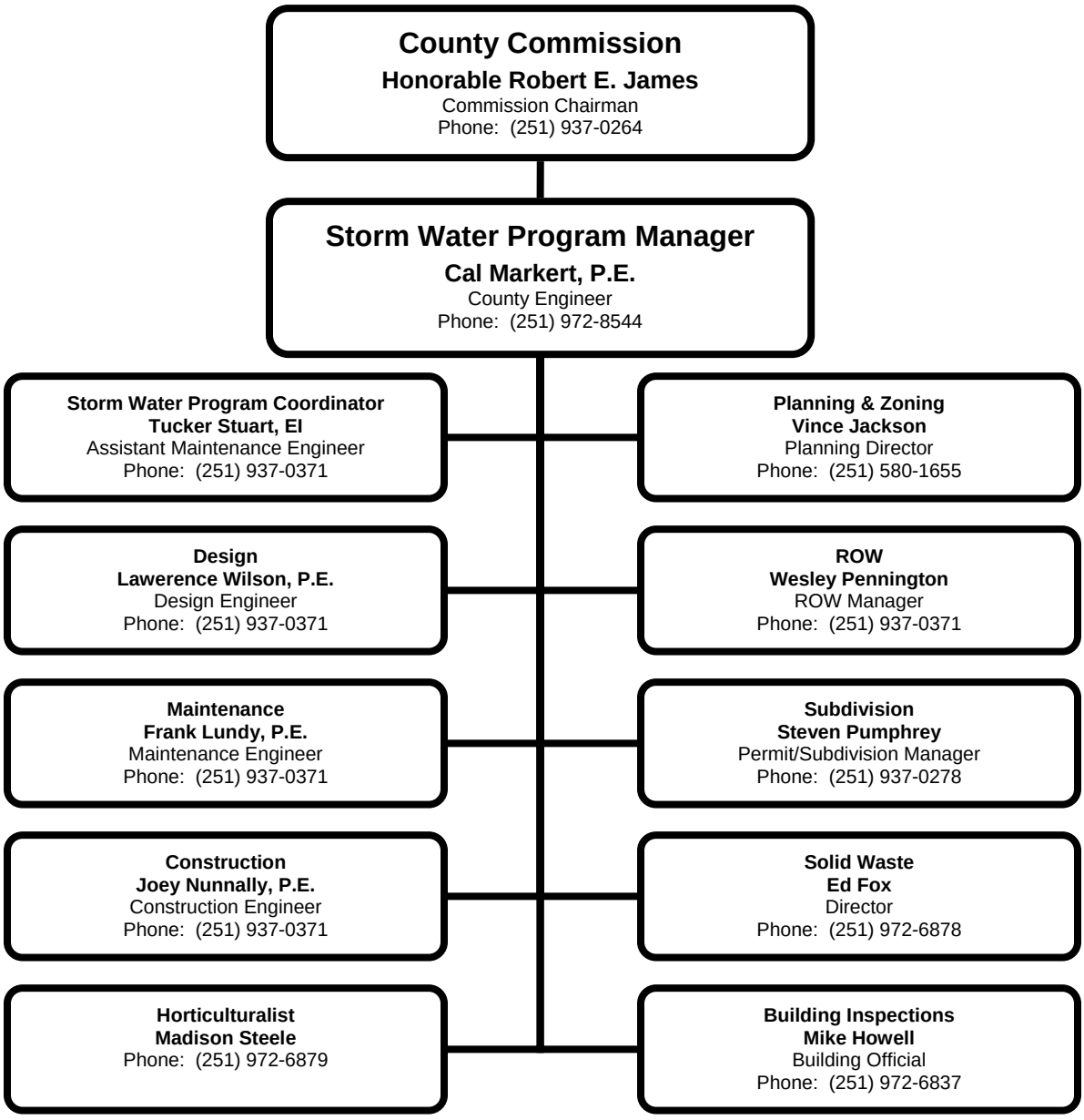
Table 1-1
SWMP Revision Record

Date:	Revised By:	Description of Revision:
21 June 2012	Hydro Engineering Solutions, LLC	Initial Storm Water Management Program (SWMP) Plan

1.4. Program Administration

The County's general organizational structure for administrating its SWMP Plan is provided in Figure 1-2. The specific organizational structure associated with implementation of each program element is described in the following sections.

Figure 1-2
SWMP Organizational Chart



1.5. Signatory Requirements

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert E. James	Commission Chairman
Name	Title
Signature	Date

Address: Baldwin County Commission
Baldwin County Administration Building
312 Courthouse Square, Suite 12
Bay Minette, Alabama 36507

Phone: (251) 937-0264

Fax: (251) 580-2500

SECTION 2

MS4 Area

2.1. Baldwin County

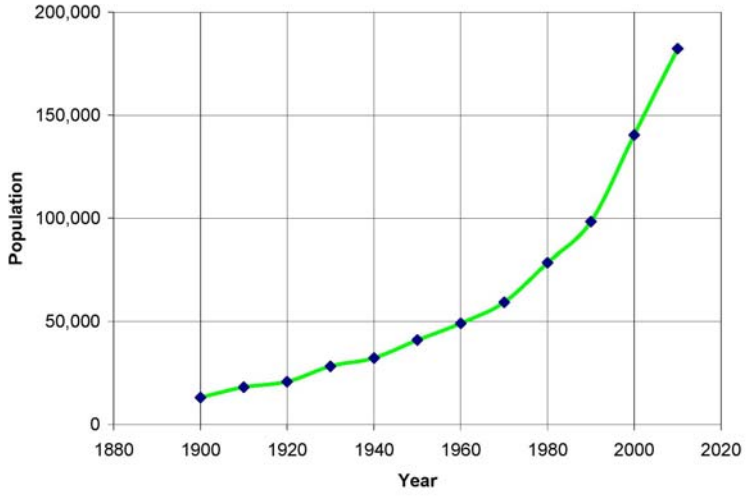
Baldwin County is located in southwest Alabama and borders Mobile Bay and the Gulf of Mexico. The County occupies approximately 2,026.93 square miles that consist of approximately 1,596.35 square miles of land and 430.58 square miles of water. Metropolitan areas located within Baldwin County are listed in Table 2-1.

Table 2-1
Metropolitan Areas

- Bay Minette
- Daphne
- Elberta
- Fairhope
- Foley
- Gulf Shores
- Loxley
- Magnolia Springs
- Orange Beach
- Perdido Beach
- Robertsdale
- Silverhill
- Spanish Fort
- Summerdale

Since the 1900's, Baldwin County has experienced a steady increase in population. Figure 2-1 provides a graph showing the historical population of Baldwin County since 1900.

Figure 2-1
Historical Population



The 2010 Census estimated the total population of Baldwin County to be 182,265. As compared to the population in 2000, Baldwin County has experienced a population increase of 41,850 (approximately 29.8%) over the past 10 years.

Baldwin County is located in a humid subtropical region that is typical of the Gulf Coast. Summers are characteristically warm and humid while the winters are relatively mild. Precipitation from a combination of winter storms, thunderstorms and tropical systems produce an average annual rainfall of approximately 64 inches.

2.2. MS4 Area

Baldwin County's NPDES Permit (ALR040042) became effective on 22 December 2011. In accordance with 40 CFR 122.32, only portions of the County that are located within an Urbanized Area are regulated as a small MS4 under the NPDES storm water program. The County has defined its MS4 Areas based on the Daphne-Fairhope Urbanized Area. Unincorporated areas of the County that are located within the Daphne-Fairhope Urbanized Area are shown in Figure 2-2.

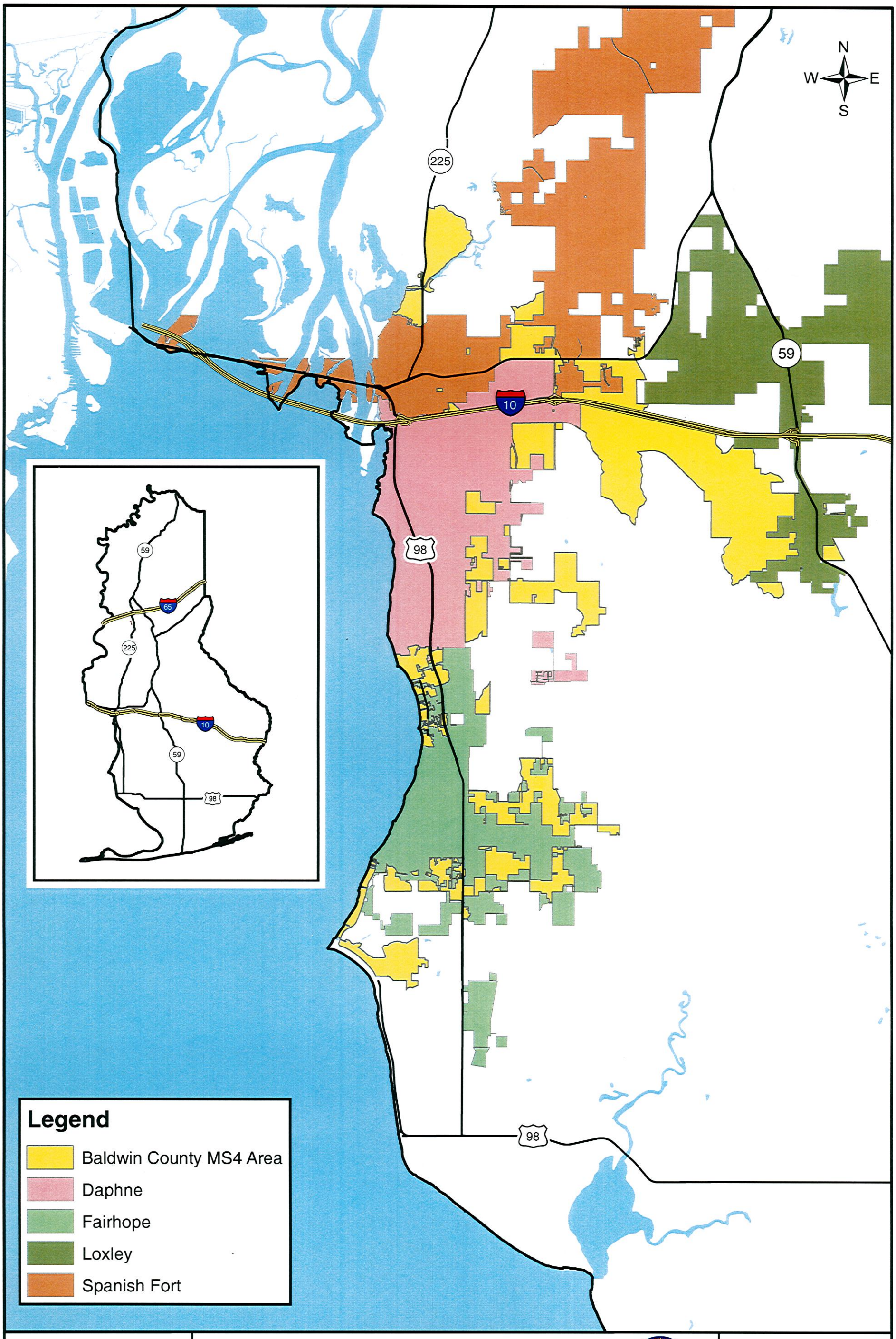
2.2.1. Incorporated Areas

Incorporated areas located within the MS4 Area include Daphne, Fairhope and Spanish Fort. Table 2-2 provides a breakdown of the MS4 Area by permittee.

Table 2-2
Baldwin County MS4 Area

Permittee	Population (2010)	MS4 Area	
		Area (mi^2)	Area (%)
Daphne	21,570	16.39	25.5
Fairhope	15,536	13.19	20.5
Spanish Fort	7,520	28.00	43.6
Baldwin County	--(1)	6.67	10.4
Total	44,626	64.25	100.0

(1) Due to the level of detail currently available in the Census data, the population of Baldwin County's MS4 Area cannot be estimated.



HYDRO ENGINEERING SOLUTIONS, LLC

BALDWIN COUNTY MS4 Area

Baldwin County MS4 Area

Figure 2-2

April 2012

Unincorporated areas of Baldwin County located within the Daphne-Fairhope Urbanized Area occupies approximately 22.644 square miles. The SWMP Plan has been developed to cover Baldwin County's MS4 Area.

2.2.2. Watersheds

Baldwin County's MS4 Area expands across eight (8) watersheds that have a 12 digit Hydrologic Unit Code (HUC 12). The areas of Baldwin County's MS4 Area located within each HUC 12 watersheds are summarized in Table 2-3 and shown in Figure 2-3.

Table 2-3
Baldwin County MS4 Area Watersheds

HUC-12 Watershed	MS4 Area	
	Area (mi^2)	Area (%)
Upper Fish River	11.286	49.9
Fly Creek	3.746	16.5
Lower Bay Minette Creek	2.600	11.5
Lower Fish River	2.361	10.4
Tensaw River – Apalachee River	1.654	7.3
Yancey Branch	0.467	2.1
Middle Fish River	0.407	1.8
Perone Branch	0.123	0.5
Total	22.644	100.0

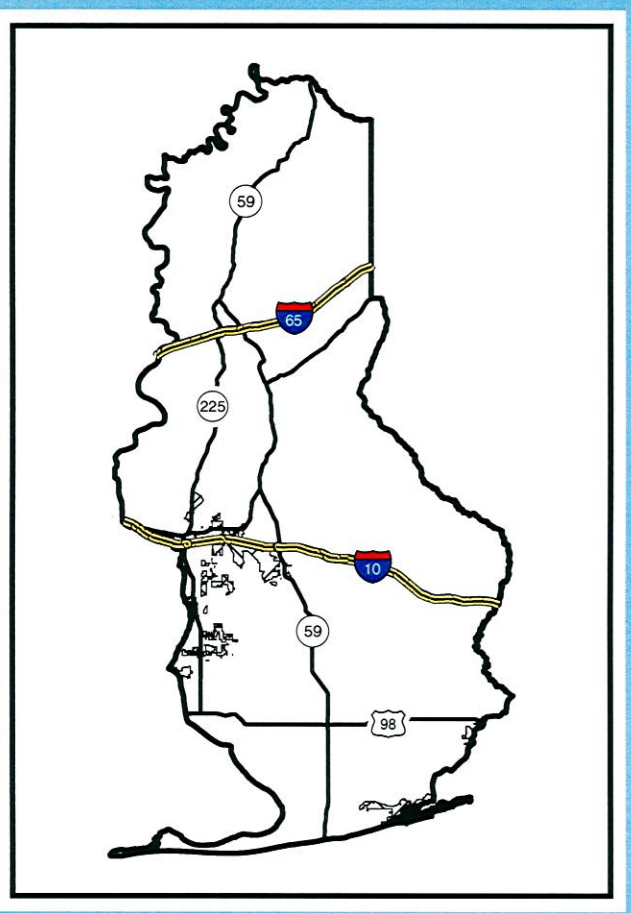
The majority (approximately 62.6%) of the Baldwin County's MS4 area is located within the Fish River watershed.

2.2.3. Land Use

Baldwin County maintains a GIS layer to track land use and land cover throughout the county. Major land use categories are summarized in Table 2-4.

N
W E
S

225
10
98
98



Legend

- Baldwin County MS4 Area
- Upper Fish River
- Fly Creek
- Lower Bay Minette Creek
- Lower Fish River
- Tensaw River-Apalachee River
- Yancey Branch
- Middle Fish River
- Perone Branch

HYDRO ENGINEERING SOLUTIONS, LLC

BALDWIN COUNTY MS4 Area

Watersheds

Figure 2-3

April 2012

Table 2-4
Major Land Use Categories

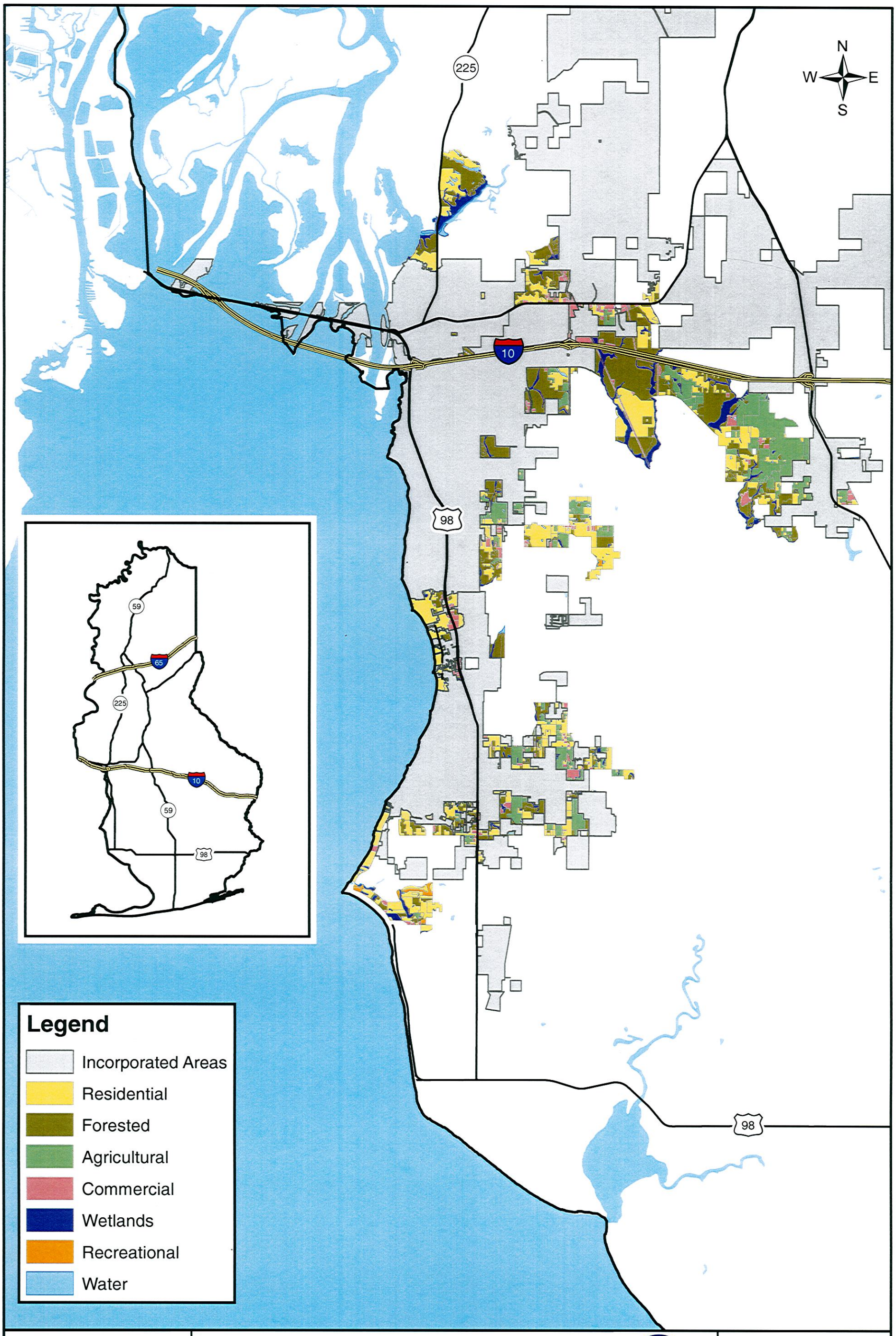
- Agricultural
- Commercial
- Forested
- Industrial
- Institutional
- Recreational
- Residential
- Water
- Wetlands

Each major category is further subdivided into more detailed subcategories that characterize specific land use or land cover. A summary of the land use within the County's MS4 Area is summarized in Table 2-5 and shown in Figure 2-4.

Table 2-5
MS4 Area Land Use

Land Use	MS4 Area	
	Area (mi^2)	Area (%)
Residential	8.805	38.9
Forested	7.750	34.2
Agricultural	3.167	14.0
Commercial	1.554	6.9
Water	0.386	1.7
Recreational	0.364	1.6
Institutional	0.345	1.5
Wetlands	0.273	1.2
Total	22.644	100.0

Residential, commercial and institutional occupy approximately 47.3% of Baldwin County's MS4 Area. Agricultural, forested, water and wetlands occupy approximately 51.1% of Baldwin County's MS4 Area. Overlapping the land use with watershed boundaries within the MS4 Area will provide Baldwin County with the information needed to identify and implement Best Management Practices (BMPs) that are targeted to help improve water quality.



HYDRO ENGINEERING SOLUTIONS, LLC

BALDWIN COUNTY MS4 Area

Land Use

Figure 2-4

April 2012

2.3. Known Problems

Section 303(d) of the Clean Water Act (CWA) establishes that states are to identify and list waters (rivers, streams, etc) for which technology based limits alone do not ensure attainment of applicable water quality standards. The 303(d) list of impaired waters will include a priority ranking for establishment of Total Maximum Daily Loads (TMDLs) for these waters. The state will establish a TMDL that will meet water quality standards for impaired streams, considering seasonal variations and a margin of safety that accounts for uncertainty. TMDLs establish the maximum amount of a pollutant that a water body can assimilate without exceeding water quality standards. Once a TMDL is developed for a water, that water will be removed from the 303(d) list.

According to ADEM's 303(d) list dated April 2010, there are eight (8) streams that are located within the drainage basins of the MS4 Area that have been designated as impaired. ADEM's 303(d) listed streams are summarized in Table 2-6 and shown in Figure 2-5. Currently there are no EPA approved TMDLs for streams located within the MS4 Area.

2.3.1. Lower Bay Minette Creek Watershed

ADEM has included Bay Minette Creek on the 303(d) list as impaired for metals (mercury). The source of this pollutant is identified as unknown. Due to the small area of Baldwin County's MS4 Area located within this watershed and the type of land uses, Baldwin County's MS4 should not be a contributor to the impairment on Bay Minette Creek.

2.3.2. Tensaw River Apalachee River Watershed

ADEM has included Joes Branch, Tiawasee Creek, Unnamed Tributary to Tiawasee Creek, D'Olive Creek and Unnamed Tributary to D'Olive Creek on the 303(d) list as impaired for siltation and habitat alteration. The source of this impairment is attributed to land development.

The entire drainage basin for Joes Branch is located within the corporate limits of Daphne and Spanish Fort and should be addressed in their MS4 Programs.

The majority of the drainage basin of Tiawasee Creek and its tributary are located within the corporate limits of Daphne. There are small pockets of the drainage basin located within the County's MS4 Area. The land use within these

pockets primarily consists of forested or agricultural and limited amount of residential or commercial.

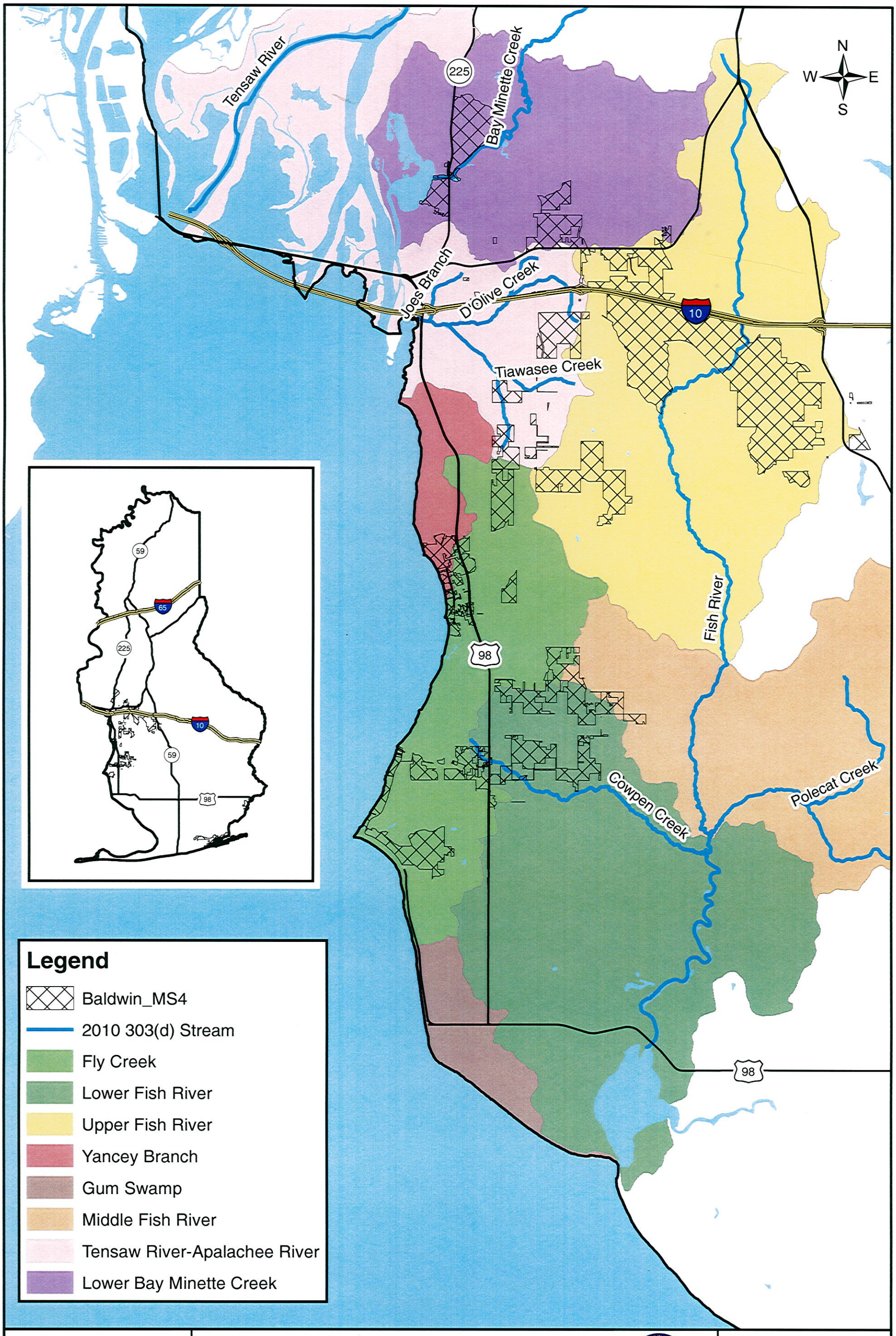
The majority of the drainage basin of D'Olive Creek and its tributary are located within the corporate limits of Daphne and Spanish Fort. There is a small area located in the headwaters of the drainage basin that is located within the County's MS4 Area. The land use of this area is either forested or agricultural and should not be a significant contributor to the impairment of D'Olive Creek. Figure 2-5 shows the drainage basin, 303(d) listed streams and the areas of the County's MS4 Area.

Table 2-6
2010 303(d) Listed Streams

Stream		Designated Use	Pollutant of Concern	Sources
Name	River Basin			
Bay Minette Creek	Upper and Lower Bay Minette Creek	Fish & Wildlife	Metals (Mercury)	Atmospheric Deposition
Joes Branch	Tensaw River Apalachee River	Fish & Wildlife	Siltation Habitat Alteration	Land Development
UT to D'Olive Creek	Tensaw River Apalachee River	Fish & Wildlife	Siltation Habitat Alteration	Land Development
D'Olive Creek	Tensaw River Apalachee River	Fish & Wildlife	Siltation Habitat Alteration	Land Development
UT to Tiawasee Creek	Tensaw River Apalachee River	Fish & Wildlife	Siltation Habitat Alteration	Land Development
Tiawasee Creek	Tensaw River Apalachee River	Fish & Wildlife	Siltation Habitat Alteration	Land Development
Cowpen Creek	Lower Fish River	Swimming, Fish & Wildlife	Metals (Mercury)	Atmospheric Deposition
Fish River	Fish River	Swimming, Fish & Wildlife	Metals (Mercury)	Atmospheric Deposition
			Pathogens	Pasture Grazing

2.3.3. Lower Fish River Watershed

ADEM has included Cowpen Creek on the 303(d) list as impaired for metals (mercury). The source of this pollutant is identified as atmospheric. Due to the type of land uses located within this watershed, Baldwin County's MS4 should not be a contributor to the impairment on Cowpen Creek.



HYDRO ENGINEERING SOLUTIONS, LLC

BALDWIN COUNTY MS4 Area

Impaired Streams

Figure 2-5

April 2012

SECTION 3

Regulatory Requirements

3. Regulatory Requirements

3.1. U.S. Environmental Protection Agency

3.1.1. Phase II MS4 Requirements

U.S. EPA defines the requirements for a SWMP Plan designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act in Title 40, Part 122, Sections 30 through 37 of the Code of Federal Regulations (40 CFR Parts 122.30 through 122.37). These regulations are incorporated into the SWMP Plan by reference.

3.1.2. Effluent Limitation Guidelines

40 CFR 450 Construction and Development Point Source Categories establishes effluent limitation requirements for constructions sites and is incorporated into the SWMP Plan by reference. An outline of 40 CFR 450 is provided below.

Part 450 – Construction and Development Point Source Category

Subpart A – General Provisions

450.10 Applicability

450.11 General Definitions

Subpart B – Construction and Development Effluent Guidelines

450.21 Effluent limitations reflecting best practicable technology currently available (BPT).

450.22 Effluent limitations reflecting the best available technology economically achievable (BAT).

450.23 Effluent limitations reflecting the best conventional pollutant control technology (BCT).

450.24 New source performance standards reflecting the best available demonstrated control technology (NSPS).

3.2. Alabama Department of Environmental Management

The County's MS4 Program is currently operating under the requirements of the National Pollutant Discharge Elimination Systems (NPDES) Permit No. ALR040042 that became effective on 1 February 2011. Part III of the NPDES permit defines the requirements of the SWMP Plan and the requirements of the six (6) minimum control measures.

A copy of NPDES Permit ALR040042 is provided in Appendix B.

SECTION 4

Public Education

4. Public Education and Outreach

4.1. Introduction

The MS4 NPDES permit requires the County to develop, implement and evaluate a public education and outreach program. Goals of the program are to:

- Educate the community about the impacts of storm water discharges into streams, rivers, lakes and ponds; and,
- Identify steps that the community can take to help reduce pollutants in storm water runoff.

4.2. Target Audiences

Development within the County's MS4 Area primarily consists of residential and commercial uses. Audiences typically associated with this type of development and land use include:

- Home owners;
- Renters;
- Schools;
- Business owners and employees;
- Professionals;
- Developers;
- Contractors; and,
- Elected officials.

Educational materials will be specifically tailored to communicate a specific topic to a targeted audience.

4.3. Target Pollutant Sources

There are several sources of pollution that need to be targeted in the public education program. Target pollutant sources include:

- Illegal dumping;
- Improper disposal;
- Failing septic systems;
- Impacts of development;

- Construction site erosion; and,
- Improper application of fertilizers, herbicides and pesticides.

Educational materials will also be developed to describe BMPs that are effective in reducing the impacts of development on storm water runoff. Topics may include but are not limited to the following:

- General impacts of storm water runoff;
- Rain water reuse;
- Low impact development practices; and,
- Impacts of development.

Educational materials will be specifically tailored for the targeted pollutant source of concern and/or pollution prevention practices.

4.4. Outreach Strategy

The County will utilize a variety of techniques to implement its public education and outreach program. Mechanisms and activities that have proven to be effective in educating the public include:

- Local Partnerships;
- Brochures;
- Website;
- Workshops; and,
- Training;

A description of how the County is using these activities is described in more detail in the following sections.

4.4.1. Local Partnerships

Baldwin County's leadership and staff have been actively involved with environmental and citizen organizations located throughout the County. Previous and current activities include:

- Mobile Bay National Estuary Program;
- Weeks Bay Watershed Project; and,
    - Citizens Advisory Committee
    - Technical Advisory Committee
- Wolf Bay Watershed Watch.

To capitalize on education materials and programs that have been developed, Baldwin County has formed partnerships with several state and local organizations including:

- Alabama Department of Environmental Management;
- Alabama Clean Water Partnership;
- Alabama Cooperative Extension System;
- City of Daphne;
- City of Fairhope;
- City of Spanish Fort;
- Weeks Bay Preserve;
- Weeks Bay Watershed Project;
- Mobile Bay National Estuary Program;
- Wolf Bay Watershed Watch;
- Alabama Coastal Foundation; and,
- People Against a Littered State.

As the County's MS4 program continues to evolve, the County will seek partnerships with other agencies and organizations to facilitate the public education program.

4.4.2. Brochures

Baldwin County has developed a number of brochures for a variety of audiences and a variety of topics. Currently, most of their brochures are directed towards developers, contractors, and other professionals pertaining to planning, zoning, and construction. All brochures are available at the Baldwin County Courthouse in Bay Minette and Satellite Courthouses in Foley and Fairhope.

Brochures currently available through Baldwin County are summarized in Table 4-1 and provided in Appendix C.

4.4.3. Web Site

The internet provides a very accessible mechanism for making information and data available to residents. The County's web site shall be expanded to incorporate storm water related topics as well as provide information regarding the County's storm water related activities.

Table 4-1
Summary of Brochures

Description	Target Pollution Source	Target Audience
Stormwater Management Best Practices	Construction Site Erosion	Professionals Developers Contractors Elected Officials
Wetlands	Informational	Home Owners Renters Schools Business Owners Professionals Developers Contractors Elected Officials

4.4.4. Workshops

Workshops are useful in educating a specific target audience about a specific topic or issue. Capitalizing on existing training programs, the County will work with its partners to sponsor workshops in a variety of topics. Workshops that have been identified for this permit cycle may include the following:

- Nonpoint Education for Municipal Officials (NEMO) – The County may coordinate with ADEM to evaluate and identify workshops that will be beneficial to the County's leadership.
- Erosion and Sediment Control – The County may evaluate and identify workshops that will be beneficial to city staff, professionals and development community.
- Low Impact Development – The County may evaluate and identify workshops that will be beneficial to County staff, professionals and development community.

As the County's MS4 program continues to evolve, the types and frequency of workshops may be modified to address the changing needs of the County.

4.4.5. Training

County departments that provide assistance in implementing the County's SWMP include the Highway Department, Planning and Zoning Department, Building Inspection Department, Emergency Management Agency, and Solid Waste Department. The County will evaluate potential training programs, activities and/or materials that can be used to educate the County's staff in storm water related issues.

4.5. Program Goals

The County has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Public Education and Outreach Program. Program goals are summarized in Table 4-2.

4.6. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the County will evaluate the program goals and overall effectiveness in educating the public on storm water related issues. Results of the program evaluation will be summarized in the Annual Report.

Table 4-2
Public Education and Outreach – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Local Partnerships	Participation in Mobile Bay National Estuary Program	1 Meetings	31 March 2013	Highway Dept.
	Participation in Weeks Bay Watershed Project	1 Meetings	31 March 2013	
	Meet w/ Fairhope, Daphne & Spanish Fort	Quarterly	31 March 2013	
	Identify additional partnerships	Continuous	31 March 2013	
Brochures	Maintain Display at County Facilities	Continuous	31 March 2013	Highway Dept.
	Evaluate Target Audiences	Annually	31 March 2013	
	Evaluate Pollution Sources	Annually	31 March 2013	
	Develop New Brochures	1 per year	31 March 2013	
	Identify Public Events for Distribution	Continuous	31 March 2013	
News Articles	Maintain Inventory of Articles	Continuous	31 March 2013	Highway Dept.
Website	Incorporate Storm Water Page	Initial	31 March 2013	Highway Dept.
Workshops	Evaluate Workshop Topics	Annually	31 March 2013	Highway Dept.
	NEMO Workshop	Every 3 years	31 March 2015	
	Erosion Control Workshop	Annually	31 March 2013	
	LID Workshop	Every 3 years	31 March 2015	
Training	Evaluate Training Needs	Continuous	31 March 2013	Highway Dept.
	Identify Training Programs / Materials	Annually	31 March 2013	
	Conduct Training	As Needed	31 March 2014	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Highway Dept.

SECTION 5

Public Involvement

5. Public Involvement / Participation

5.1. Introduction

The MS4 NPDES permit requires the County to develop, implement and evaluate a public involvement and participation program. Goals of the program are to:

- Provide opportunities for public input and feedback;
- Engage the public to actively participate; and,
- Facilitate opportunities to provide public education.

As the public gains a greater understanding of the benefits of a storm water program, the County is likely to gain more support for the SWMP and increased compliance with the NPDES permit requirements. Public education and involvement provides a mechanism to help the public understand how their actions can potentially impact storm water quality. Public participation can also help reduce the amount of pollution generated and identify potential pollution causing activities and/or sources.

5.2. Outreach Strategy

The County will utilize a variety of techniques to implement its public involvement and participation program. Mechanisms and activities that have proven to be effective in educating the public include:

- Baldwin County Water Festival;
- Coastal Kids Quiz;
- Master Environmental Educator Program;
- Watershed Wagon;
- Litter Abatement Programs; and,
- Public Involvement Opportunities.

A description of how the County is using these activities is described in more detail in the following sections.

5.2.1. Baldwin County Water Festival

The mission of the Baldwin County Water Festival is to educate students about all aspects of surface water and groundwater and other related natural resources (such as wetlands, forestry, wildlife and much more) and to instill in them a general environmental awareness and stewardship ethic. Students and their teachers will go home with increased knowledge and awareness of the importance of precious water resources and on becoming good environmental stewards of these resources. All 4th Grade students in Baldwin County including, public, private, and home schooled students are invited to participate. Over recent years, the festival has had total participation level of over 7,000 participants since 2003.

The County provides staff that actively participates in the festival. This is an excellent opportunity to help shape the environmental behaviors of 4th grade students. It is well documented that educating school age children help in improving the environmental behaviors of their parents.

5.2.2. Coastal Kids Quiz

The Coastal Kids Quiz is an environmental quiz competition for teams of 5th graders in Baldwin and Mobile Counties. Questions are taken from standard science texts and materials provided by the Alabama Coastal Foundation, including brochures and activity books covering coastal environmental issues. The competition has taken place since 2001.

The County provides staff that actively participates in the competition. This is an excellent opportunity to help educate 5th grade students on environmental matters.

5.2.3. Baldwin County Master Environmental Educator

Many County employees have also participated in the Alabama Cooperative Extension Service's Master Environmental Educator (MEE) program. The Baldwin County MEE Program was created in 1995 and is an outreach program of the Baldwin County Extension Office. Volunteers are trained to teach eight environmental lessons pertaining to the most critical environmental issues facing Baldwin County:

- Aquatic Nuisance Species;
- Backyard Wildlife Habitat;
- Energy;

- Groundwater Pollution;
- Invasive Plant Species;
- Nonpoint Source Pollution;
- Recycling; and,
- The Water Cycle.

Volunteers throughout Baldwin County participate in an intensive two-day MEE training each year. Each volunteer gives back at least 20 hours a year to the community. Classroom teachers can request and schedule a lesson, which also correlates to the Alabama Course of Study for Science.

5.2.4. Weeks Bay Reserve Watershed Wagon

The Baldwin County Planning and Zoning Department has worked to help Weeks Bay Reserve implement the Watershed Wagon (Figure 6-2). The Watershed Wagon is a mobile interactive classroom which uses hands-on activities involving the connection between land uses, potential pollution sources, and water quality.

The Wagon also includes a coastal watershed model illustrating the effect of storm water runoff and nonpoint source pollution.

Figure 5-1

Watershed Wagon

5.2.5. Litter Abatement Programs

The County partners with People Against a Littered State (PALS) to help implement litter abatement programs. Current litter abatement programs include:

- Adopt-a-Mile;
- Adopt-a-Stream; and,
- Alabama Coastal Cleanup.

The County currently has a link to apply for Adopt-a-Mile on their website. Citizens can “adopt” a stretch of county roads or federal or state highways.

In the fall of each year, PALS will plan, organize and host The Alabama Coastal Cleanup. The County is not only a sponsor but provides staff to help with the event.

5.2.6. Recycling

The County’s Solid Waste Department has established 28 recycling locations throughout the County for residents to drop off items. Accepted recyclables include:

- Unwaxed Cardboard;
- Newspapers;
- Magazines;
- Phonebooks;
- Aluminum Cans;
- Aluminum Scrap Metal; and,
- Category 1 through 4 Plastics.

The County also has a used cooking oil recycling program which converts the oil into useable energy and a seasonal Christmas Tree recycling program which contributes material to the County compost program.

5.2.7. Call Centers

The County has a call center to receive complaints from its residents. Depending upon the type of complaint, the call center will route information to the appropriate department for evaluation and response. Due to the size of the County, three call centers have been established.

- North Baldwin (251) 937-0371
- Central Baldwin (251) 972-6897
- South Baldwin (251) 990-4635

The call centers are provided on the County’s website.

5.2.8. Household Hazardous Waste Collection

The County operates a household hazardous waste collection facility at the Magnolia Landfill on a year-around basis. For a fee, residents can dispose of household hazardous waste such as paints, motor oil, pesticides, herbicides, cleaners, solvents, etc.

5.2.9. Waste Cooking Oil Recycling

The County has implemented a cooking oil recycling program and currently collects waste cooking oil at the Magnolia Landfill, MacBride Landfill and Bay Minette Transfer Station. Waste cooking oil has the ability to clog drain pipes and cause extensive damage to the local sanitary sewer system, including pipe breaks and sewage overflows. Residents can drop off waste cooking oil at any location free of charge. The oil is then recycled into biodiesel.

5.3. Program Goals

The County has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Public Involvement Program. Program goals are summarized in Table 5-1.

5.4. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the County will evaluate the program goals and overall effectiveness of the Public Involvement Program on storm water related issues. Results of the program evaluation will be summarized in the Annual Report.

Table 5-1
Public Involvement / Participation – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
General Activities	Maintain Call Centers	Continuous	31 March 2013	Highway Dept.
	Adopt-a-Mile Program	Continuous	31 March 2013	
	Coastal Clean-up	Annually	31 March 2013	
	Adopt-a-Stream Program	Develop	31 March 2015	
	Stream Signage	Develop	31 March 2013	
	Storm Drain Marking Program	Develop	31 March 2013	
	Recycling Program	Continuous	31 March 2013	Solid Waste Dept.
	Household Hazardous Waste Collection	Continuous	31 March 2013	
	Waste Cooking Oil Recycling	Continuous	31 March 2013	
Education Events	Baldwin County Groundwater Festival	Annually	31 March 2013	Highway Dept.
	Coastal Kids Quiz	Annually	31 March 2013	
	Environmental Educator Program	Annually	31 March 2013	
	Watershed Wagon	Annually	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Highway Dept.

SECTION 6

Illicit Discharge Detection and Elimination

6. Illicit Discharge Detection and Elimination

6.1. Introduction

Illicit discharges are defined as a storm drain that has measurable flow during dry weather containing pollutants and/or pathogens. A storm drain with measurable flow but containing no pollutants is simply considered a discharge. Dry weather discharges are composed of one or more possible flow types:

- Sewage and septage flows from sewer pipes and septic systems;
- Wash water flows generated from commercial laundry wastewater, commercial carwash wastewater, gray water from homes, fleet washing, and floor washing from shop drains;
- Liquid wastes such as oil, paint, process water, etc. that enter the storm drain system;
- Tap water leaks and losses;
- Landscape irrigation from residential and commercial sources; and,
- Groundwater and spring water flows occurring when the groundwater table rises above the storm pipe invert and infiltrating cracks and joints.

This illicit discharge program has been developed using the following guidance materials.

- NPDES Permit ALR040042;
- 40 CFR 122.26; and,
- Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments, October 2004.

These documents are incorporated into the SWMP Plan by reference and are available in the office of the Storm Water Program Coordinator.

6.2. Allowable and Occasional Incidental Discharges

In accordance with Part I, Section B2 of the NPDES permit, the following non-storm water sources are allowed. The County has determined that these non-storm water discharges are not substantial contributors of pollutants to the MS4:

1. Water line flushing;
2. Landscape irrigation water;
3. Diverted stream flows;
4. Uncontaminated ground water infiltration to storm drains;
5. Uncontaminated pumped ground water;
6. Discharges from potable water sources;
7. Foundation and/or footing drain water (not including active groundwater dewatering systems);
8. Air conditioning condensation;
9. Irrigation water;
10. Rising ground waters;
11. Springs;
12. Water from crawl space pumps;
13. Footing drains;
14. Lawn watering runoff;
15. Individual residential car washing;
16. Discharge or flows from fire fighting activities (including fire hydrant flushing);
17. Flows from riparian habitats and wetlands;
18. Dechlorinated swimming pool discharges; and,
19. Discharges authorized by and in compliance with a separate NPDES permit.

6.3. Preventing Illicit Discharges

The Illicit Discharge Detection and Elimination Program identifies key behaviors of the public, facilities and municipal operations that produce intermittent and/or transitory discharges. These key behaviors are targeted to improve pollution prevention practices and prevent or reduce the risk of discharge. The County shall develop a wide variety of education and enforcement tools to promote pollution prevention practices.

6.4. Data Management

The County has a GIS manager responsible for obtaining, developing, and maintaining the County's Graphic Information System (GIS) data and system. The County uses a state of the art GIS system to manage all types of information and data. Mapping layers used to support the County's illicit discharge program include, but are not limited to, the following:

- Aerial photography;
- City and County boundaries;
- MS4 Permit area boundaries;
- Roads and Bridges;
- Parcels;
- Zoning information;
- Hydrologic data (streams, wetlands, drainage basins, etc.)
- TMDL and 303d listed stream segments; and,
- Cross drains, side drains, and storm sewers.

The County has acquired Trimble GeoExplorer field computers to assist with data collection during the illicit discharge inspections. The Trimble field computer integrates a rich array of functionality, including a high-yield GPS receiver with 1 to 3 meter positioning accuracy. This allows field crews to augment their GPS information and photographs while performing GIS data collection and inspection activities. A picture of the Trimble field computer is provided in Figure 6-1.

Figure 6-1
Trimble Geo Explorer

The County has developed a data form that can be used by the Trimble field computers to collect specific data for each structural control. This not only provides the field crews with an efficient method for performing data collection, but also provides a very efficient way to integrate field data into the County's GIS system.

6.5. Searching for Illicit Discharges

The County shall implement a comprehensive program to detect and eliminate illicit discharges. There are two categories of pollutants that will be addressed in different ways.

1. The first category is pollutants introduced into the MS4 from individuals in a one-time distinct episode at a discrete point of entry. Examples of these are dumping of yard waste, motor oil, antifreeze or trash into a creek or storm drain. These types of pollutants, when discovered in the MS4 or local streams, cannot be effectively investigated as to the source (i.e. the individual causing the pollution). Also they are not normally discovered using a County-wide MS4 inspection program of monitoring fixed stations with scheduled work-day inspections. One of the best means of discovery will be through input from citizens, County crews, Police and Fire departments, businesses, and area agency field crews. Prevention of future isolated pollution episodes will rely upon implementation of the public education and public involvement programs.

2. The second category is pollutants from sources that have a chronic or frequently repeating discharge that can be traced through stream channels and the MS4 system using visual inspections and chemical field test kits, and laboratory monitoring. Pollutants from these sources will be dispersed downstream as a detectable odor, visual color, increased turbidity, excessive algae growth, or changes in water chemistry (e.g. pH or conductivity) when compared to uncontaminated water in the stream or MS4. These chronic pollutants are amenable to "source tracking" inspections, and the sources are more likely to be found and mitigated.

Searching for illicit discharge problems consists of detective work, and involves field screening of subwatersheds to locate outfalls and identify suspect illicit discharges. The primary field screening tool that will be used is the Outfall Reconnaissance Inventory (ORI). This recommended method is very effective for finding illicit discharge problems and developing an outfall inventory of the MS4. If suspect discharges are encountered during the field screening, the ORI

will be supplemented with indicator monitoring methods to test suspect discharges.

6.5.1. Field Activities

Field activities associated with the outfall reconnaissance inventory shall be performed when there has been a prolonged dry period with a minimum of 72 hours from the previous measurable (greater than 0.10 inch rainfall) storm event.

6.5.2. Outfall Inventory Schedule

The County shall develop a schedule to identify and screen all major outfalls located within the MS4 boundary by April 2017. After all major outfalls have been located and screened; the County will evaluate the screening data and identify priority areas for future evaluation. Beginning April 2017, the County shall screen all major outfalls within a 5 year period.

6.6. Outfall Reconnaissance Inventory

The outfall reconnaissance inventory is designed to locate and record basic characteristics of each outfall. During the inventory process, each outfall shall be screened for the presence of illicit discharge(s). The County's outfall reconnaissance inventory methodology and procedures shall be developed in accordance with Chapter 11 of the Illicit Discharge Detection and Elimination guidance manual.

6.6.1. Field Sheets

The County will utilize the Outfall Reconnaissance Inventory / Sample Collection Field Sheet provided with the Illicit Discharge Detection and Elimination guidance manual to collect and document each outfall located and screened. A copy of the Outfall Reconnaissance Inventory / Sample Collection Field Sheet is provided in Appendix E.

The County may convert the Outfall Reconnaissance Inventory / Sample Collection Field Sheet provided with the Illicit Discharge Detection and Elimination guidance manual into an electronic form that can be used by the Trimble GeoExplorer field computers. This not only provides the field crews with an efficient method for performing data collection; but also, provides a very efficient way to integrate field data into the County's GIS system.

6.6.2. Screening Data

Information and data that will be collected for each major outfall includes the following:

Section 1 – Background Data
- Coordinates
- Photograph

Section 2 – Outfall Description
- Location
- Material
- Shape
- Dimensions
- Submerged

Section 3 – Quantitative Characterization
- Parameter
- Result
- Unit
- Equipment

Section 4 – Physical Indicators for flowing outfalls only
- Indicator
- Description
- Relative Severity Index

Section 5 – Physical Indicators for both flow and non-flowing outfalls.
- Indicator
- Description

Chapter 11 of the Outfall Reconnaissance Inventory of the Illicit Discharge Detection and Elimination Guidance Manual provides direction in completing the Outfall Reconnaissance Inventory / Sample Collection Field Sheet information.

6.7. Outfalls Screened

As the County updates the outfall inventory, the breakdown of major and minor outfalls by sub-basin will be updated and a map shall be developed.

Table 6-1
Outfalls Screened by Basin

Basin	Total Outfalls	Major Outfalls	Minor Outfalls
Upper Fish River			
Fly Creek			
Lower Bay Minette Creek			
Lower Fish River			
Tensaw River – Apalachee River			
Yancey Branch			
Middle Fish River			
Perone Branch			
Totals			

An overview of how the outfall reconnaissance inventory is performed and documented in the County's GIS system is provided in Appendix E.

6.8. Suspect Illicit Discharges

If a suspect illicit discharge is encountered during the outfall reconnaissance inventory at a major outfall, field personnel shall take the following steps to identify and locate a suspect illicit discharge.

- Conduct field screening of the suspect illicit discharge;
- Try to identify the source of the suspect illicit discharge; and/or,
- Collect a sample of the suspect illicit discharge.

6.8.1. Field Screening

If a suspect illicit discharge is encountered, field personnel shall evaluate the physical indicators of the suspect illicit discharge and document the findings on an ORI Field Sheet. Field personnel shall also estimate the flow and/or volume of the suspect illicit discharge. If the initial screening observations and/or data indicate a suspect illicit discharge, field personnel will proceed in locating the source of the suspect illicit discharge.

6.8.2. Locating Illicit Discharges

If a suspect illicit discharge is identified during the outfall reconnaissance inventory, field personnel will try to locate the source of the illicit discharge before proceeding to the next outfall. Field personnel shall attempt to follow the suspect illicit discharge up the storm sewer system to identify its source.

If the source of a suspect illicit discharge can not be easily located by field personnel, the location of the suspect illicit discharge will be reported to the Storm Water Program Coordinator for further evaluation.

6.8.3. Sample Collection

If a discharge from a major outfall exhibits a physical characteristic of an illicit discharge and/or the source of the suspect illicit discharge cannot be easily identified, field personnel may collect a grab sample of the discharge. The sample shall be shipped to an independent laboratory and analyzed for the following parameters.

Table 6-2
Screening Parameters

- Ammonia
- Turbidity
- E. Coli
- Hardness
- Chlorine
- Conductivity
- Total Coliform
- Potassium
- Surfactants
- Detergents
- Fluoride

The County shall use the sample collection protocol provided in Appendix G of the Illicit Discharge Detection and Elimination Guidance Manual. Analytical methods for samples submitted to an independent laboratory shall be in accordance with 40 CFR 136.

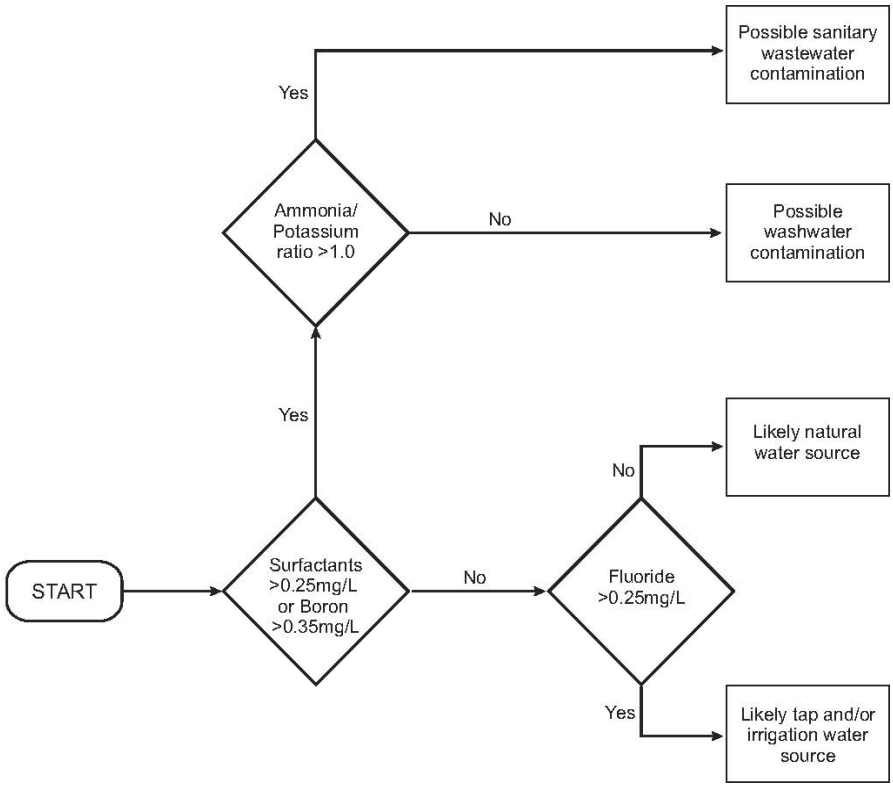
6.8.4. Evaluation of Results

The Illicit Discharge Detection and Elimination Guidance Manual recommends the use of the Flow Chart Method for identifying the type of illicit discharge. The Flow Chart Method is recommended because it is a relatively simple technique that analyzes four or five indicator parameters that are safe, reliable and inexpensive to measure. The basic decision points involved in the Flow Chart Method for a residential area are shown in Figure 6-2.

6.9. Locating and Removing Illicit Discharges

When episodic incidental pollution is reported to the County (e.g. motor oil dumped into a storm drain), the County shall record the date, location, information source, and description of the event. If necessary, field personnel shall be sent to investigate and to determine if the site should be cleaned (e.g. removal of yard waste, containment of oil, etc.). After inspection and/or cleanup, the County shall keep a record of all actions taken regarding the incident.

Figure 6-2
Flow Chart to Identify Illicit Discharges in Residential Areas



6.9.1. Locating Illicit Discharges

If a suspect illicit discharge is identified during the outfall reconnaissance inventory, field personnel shall try to locate the source of the illicit discharge before proceeding to the next outfall. Field personnel shall employ the following techniques to locate the suspect illicit discharge.

- Storm Sewer System Evaluation – Field personnel shall attempt to follow the suspect illicit discharge up the storm sewer system to identify its source.

- Drainage Area Evaluation – Field personnel shall conduct a "windshield" survey of the drainage area to identify its source.

- If the source of an illicit discharge is located, field personnel shall report the location and source of the illicit discharge to the Storm Water Program Coordinator.

Upon receipt of the analytical results from samples collected of the suspect illicit discharge, the Storm Water Program Coordinator shall coordinate and/or perform a more detailed investigation to identify the source of a suspect illicit discharge.

- Analytical Results Evaluation – Evaluate the analytical results to characterize the type of illicit discharge.

- Detailed Storm Sewer System Evaluation – Using best available maps and data, attempt to follow the suspect illicit discharge up the storm sewer system to identify its source. Investigation methods may include dye tracing, video inspection of storm sewer system, specialized contractors and other methods as appropriate.

- Drainage Area Evaluation – Review the land used and types of facilities located within the drainage area. Conduct a survey of potential generating sites to identify the source of the illicit discharge.

6.9.2. Removing Illicit Discharges

After the source of an illicit discharge has been identified, the Storm Water Program Coordinator shall take appropriate actions to abate the illicit discharge.

6.10. Spill Response

The County's Emergency Management Agency (EMA) is responsible for responding to any type of spill that may occur within the MS4 Area. If a spill enters the MS4, the EMA shall notify the Storm Water Program Coordinator. The Storm Water Program Coordinator shall evaluate the impacts of the spill on the MS4 and ensure appropriate corrective measures are taken to abate the spill. Follow up inspections of the effected area shall be performed as needed.

6.11. Sanitary Sewer System

Residents within the County's portion of the MS4 boundary are provided sanitary sewer service by one of the following sources;

1) Sanitary Sewer System; or
2) On-Site Sewage Disposal.

6.11.1. Sanitary Sewer Systems

Portions of the County's MS4 Area may be serviced by a sanitary sewer system operated by the adjacent municipalities. If the County observes any problems with the sewer system, the County shall report the problem to the following.

City of Daphne
Ashley Campbell
(251) 621-3080

City of Fairhope
Ken Eslava, Jr.
(251) 990-2887

City of Spanish Fort
Bruce Renkert
(251) 626-4993

6.11.2. Baldwin County Health Department

Some residents located within the County's MS4 area may utilize on-site sewage disposal systems. The Alabama Department of Public Health has the regulatory authority for the design, permitting, construction and maintenance of individual on-site sewage disposal systems. If the County observes any problems with an on-site sewage disposal system, the County shall report the problem to the following.

Baldwin County Health Department
Environmental
(251) 937-6935 Bay Minette
(251) 947-3618 Robertsdale

As the County acquires data regarding the location of on-site sewage disposal systems, the County will update GIS data and maps to incorporate best available data.

6.12. Enforcement

An effective illicit discharge and detection program uses an escalating scale of enforcement action to abate illicit discharges. Upon adoption of an Illicit Discharge Ordinance, the SWMP Plan shall be updated to incorporate the enforcement action provided in the ordinance.

6.13. Staff Training

Staff selected to perform the outfall reconnaissance inventory shall receive the following initial training.

Class Room Training

- Outfall reconnaissance inventory

Field Training

- Water quality monitoring procedures;
- Outfall reconnaissance inventory field procedures; and,
- Illicit discharge tracking procedures.

Staff shall receive annual refresher training. Any new staff incorporated into the outfall reconnaissance inventory shall receive the initial training described above and annual refresher training.

6.14. Standard Operating Procedures

The County shall develop Standard Operating Procedures (SOPs) for the various activities required for implementing the Illicit Discharge Detection and Elimination Program. SOPs shall include but are not limited to the following:

- Sampling equipment use, maintenance and storage;
- Outfall Reconnaissance Inventory;
  - Field procedures
  - Data collection
  - Data management
  - Sample Collection
- Illicit discharge evaluation;

- On-site sewage disposal system evaluation; and,
- Sanitary sewer overflow evaluation.

As SOPs are developed, they shall be included in the Appendix E.

6.15. Program Goals

The County has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing the Illicit Discharge Detection and Elimination Program. Program goals are summarized in Table 6-3.

6.16. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the County will evaluate the program goals and overall effectiveness of Illicit Discharge Detection and Elimination Program. Results of the program evaluation will be summarized in the Annual Report.

Table 6-3
Illicit Discharge Detection and Elimination – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Legal Authority	Develop Illicit Discharge Ordinance	Develop and update as needed	22 June 2015	Highway Dept.
	Adopt Illicit Discharge Ordinance	Develop and update as needed	22 December 2016	
Data Acquisition	County GIS Data	Annually	31 March 2013	Highway Dept.
Outfall Inventory	Outfall Inventory Schedule	Initial	31 March 2013	Highway Dept.
	Outfall Inventory Inspection Form	Initial	31 March 2013	
	Outfall Map	Update Annually	31 March 2017	
	Outfall Inventory	Continuous	31 March 2017	
Illicit Discharges	Complaint Tracking System	Develop and update as needed	31 March 2013	Highway Dept.
	Illicit Discharge Inspection Form	Develop and update as needed	31 March 2013	
Standard Operating Procedures	Sample equipment use, maintenance	Develop and update as needed	31 March 2013	Highway Dept.
	Outfall Reconnaissance Inventory	Develop and update as needed	31 March 2013	
	On-site sewer disposal system evaluation	Develop and update as needed	31 March 2013	
	Sanitary sewer overflow evaluation	Develop and update as needed	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Highway Dept.

SECTION 7

Construction Site Runoff

7. Construction Site Runoff

7.1. Introduction

The variety of pollutants present at a construction site and the severity of their potential effects to receiving waters are dependent upon several factors.

- Nature of construction activity – During clearing and grading activities, the primary pollutant of concern is sediment. As the construction activity progress in the building phase other potential pollutants of concern include concrete wash, paints, stucco, pesticides, herbicides, fertilizers, cleaning solvents, asphalt products, scrap wood, metal, glass, trash debris, etc.

- Physical characteristics of the construction site – Potential pollutants at a construction site are carried of in stormwater runoff. Construction sites can potentially increase the intensity and volume of stormwater runoff resulting in an increase of pollutant loadings.

- Proximity of surface waters – The closer the construction activity is to a surface water increase the potential impacts to surface waters.

Baldwin County has developed and continuously implemented a Construction Site Runoff Program to monitor and control pollutants in stormwater discharges to the MS4 from the following land disturbing activities.

- Minor Project – Land disturbance activities less than one (1) acre limited to single family homes and accessory structures;

- Major Project – Land disturbance activity equal to or greater than one (1) acre or land disturbance involving less than one (1) acre that is part of a larger common plan of development; and,

- All other land disturbance activities that is not exempted from obtaining a permit. Land disturbing activities that are exempted from obtaining a permit are defined in Section 13.13.10 of the Baldwin County Zoning Ordinance.

This Construction Site Runoff Program has been developed using the following guidance materials.

- NPDES Permit No. ALR040042;
- Developing Your Storm Water Pollution Prevention Plan, A Guide for Construction Sites, Environmental Protection Agency, EPA 833-R-06-004, May 2007;
- Alabama Handbook for Erosion Control, Sediment Control, and Storm Water Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee, March 2009;
- Baldwin County Zoning Ordinance; and,
- Baldwin County Subdivision Regulations.

These documents are incorporated into the Construction Site Runoff Program by reference and are available in the office of the Storm Water Program Coordinator.

7.2. Requirements and Control Measures

The County's Construction Site Runoff Program will require owners and/or operators of construction sites to select, design, install, implement, inspect and maintain effective Best Management Practices (BMPs) to minimize the discharge of pollutants into the MS4 to the maximum extent practicable (MEP).

7.2.1. Erosion and Sediment Controls

The owner and/or operator shall select, design, install, implement, inspect and maintain BMPs appropriate to specific site conditions to, at a minimum;

1. Control storm water volume and velocity within the site to minimize soil erosion;
2. Control storm water discharges, including both peak flow rates and total storm water volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
3. Minimize the disturbance of steep slopes;
4. Minimize sediment discharges from the site;
5. Minimize the generation of dust and off-site tracking of sediment from vehicles;

6. Stabilize all construction entrances and exits;

7. Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible; and,

8. Implement measures or requirements to achieve the pollutant reductions consistent with a Total Maximum Daily Load (TMDL) finalized or approved by EPA.

7.2.2. Soil Stabilization

Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 13 calendar days.

7.2.3. Dewatering

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations are prohibited unless managed by appropriate BMPs.

7.2.4. Pollution Prevention Measures

The owner and/or operator shall select, design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:

1. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

2. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to storm water; and,

3. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

7.2.5. Prohibited Discharges

The following discharges are prohibited:

1. Wastewater from washout of concrete, unless managed by an appropriate BMP;
2. Wastewater from washout and cleanout of stucco, paint, from release oils, curing compounds and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and,
4. Soaps or solvents used in vehicle and equipment washing.

7.2.6. Surface Outlets

When discharging from basins and impoundments the owner and/or operator shall utilize outlet structures that withdraw water from the surface, unless infeasible.

7.3. Permitting

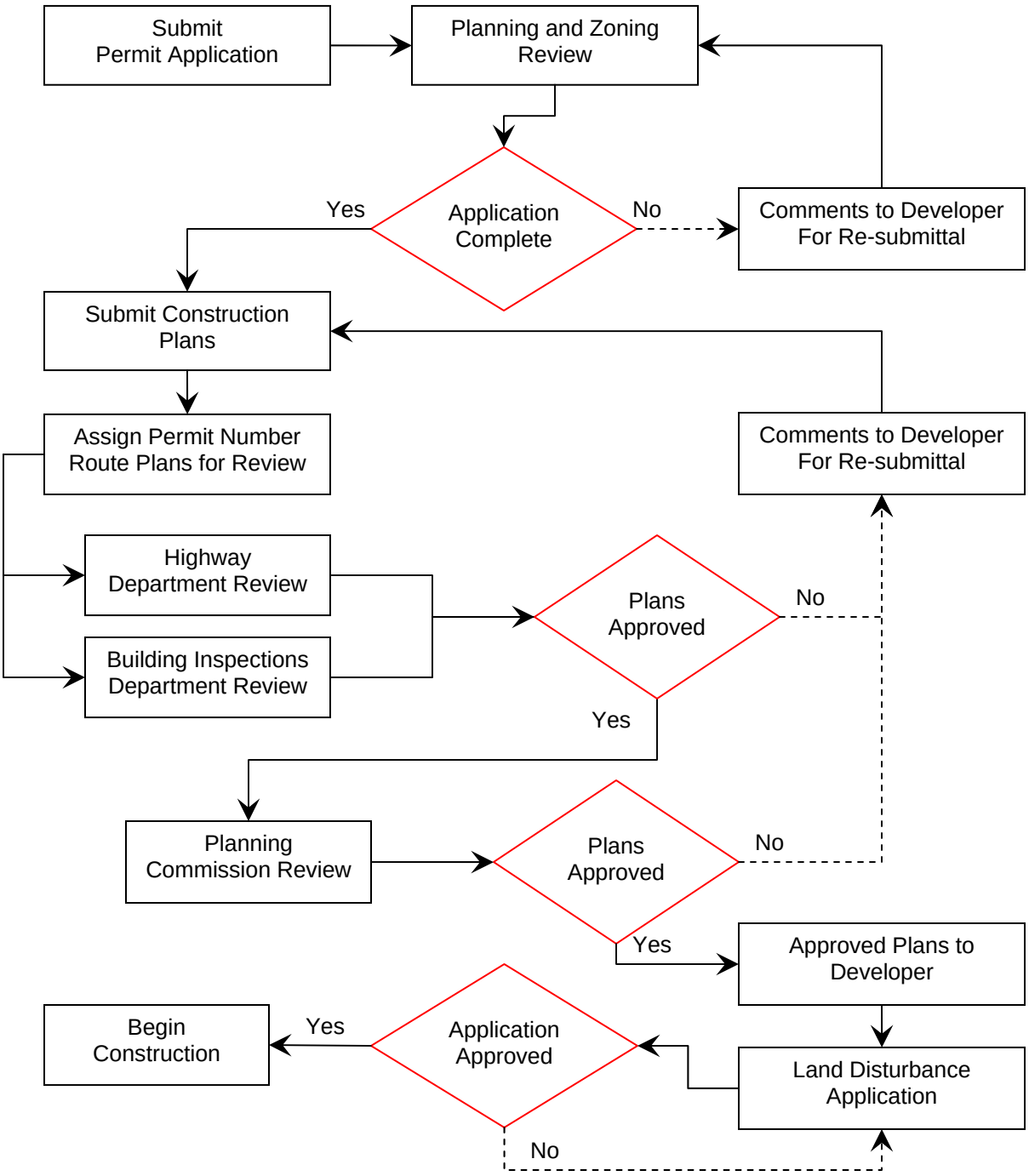
Before the commencement of any land disturbing activity that is not exempted from obtaining a permit under Section 13.13.10 of the Zoning Ordinance, the owner and/or operator of the construction site is required to submit a Land Disturbance Application for approval of the Erosion Control Plan. The Land Disturbance Application requires the following information.

- Applicant Information;
- Site Information;
- Project Description;
- Type of Construction;
- If the proposed construction activity is required to obtain a General NPDES Permit for construction activity from ADEM, a copy of the Notice of Intent (NOI) submitted to ADEM and a copy of ADEM's authorization under the General NPDES Permit;
- Erosion Control Plan; and,
- Application Fee.

A Copy of the Land Disturbance Application and Application Submittal Checklist are provided in Appendix F.

Land Disturbance Applications are submitted to the Planning and Zoning Department. The permitting and plan review process is provided in Figure 7-1.

Figure 7-1
Permitting and Plan Review Flow Chart



7.4. Plan Review

Before the commencement of any land disturbing activity that is not exempted from obtaining a permit under Section 13.13.10 of the Zoning Ordinance, the owner and/or operator of the construction site is required to submit a Land Disturbance Application for approval of the Erosion Control Plan for both Minor and Major projects. Section 13.13.7 of the Zoning Ordinance defines the requirements for the content of the Erosion Control Plan. BMPs selected for the site shall be designed, sized, and/or maintained in accordance with the following references.

- Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee, March 2009.
- Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Sites, Environmental Protection Agency, EPA 833-R-06-004, May 2007; and,

Review of the Erosion Control Plan is performed in the Highway Department by personnel that are registered professional engineers knowledgeable in the many facets of design, stormwater management, erosion and sediment control, and construction. The County shall develop a Standard Operating Procedure (SOP) and checklist for Erosion Control Plan review to ensure consistency with the Erosion Control section of the Zoning Ordinance. Once the SOP and Erosion Control Plan Review Checklist are developed, they shall be included in Appendix F.

7.5. Construction Site Inventory

The County shall continuously maintain an updated inventory of all active construction sites within the County's MS4 area. The County may develop a map of active construction sites as of the end of the previous permit year.

7.6. Inspections

After the Erosion Control Plan has been approved, a copy of the approved Erosion Control Plan shall be provided to the Developer and the project shall be assigned to the Code Enforcement Officer or subdivision inspector. The Planning Department and/or Highway Department Permit Division shall review the Erosion Control Plan, design plans and all applicable project documents. All

inspections and activities associated with the project will be tracked by the permit number.

The Code Enforcement Officer and subdivision inspectors shall maintain the Qualified Credentialed Inspector (QCI) certification.

7.6.1. Initial Inspection

After the Developer has installed the initial BMPs, the Developer shall contact the Planning and Zoning Department to schedule an initial inspection. The Developer and/or their representatives shall accompany the Code Enforcement Officer during the initial inspection. The initial inspection shall address the following:

- Inspect all discharge points from the site;
- Inspect perimeter controls; and,
- Compare installed BMPs with the Erosion Control Plan.

If all BMPs have been installed in accordance with the Erosion Control Plan and to the satisfaction of the Code Enforcement Officer, the Code Enforcement Officer shall approve the initial inspection and allow the Developer to proceed with construction of the project. The Code Enforcement Officer shall document the results of the initial inspection.

If deficiencies are noted during the initial inspection, the Code Enforcement Officer shall discuss the nature of the deficiencies with the Developer during the initial inspection. After all deficiencies have been corrected, the Developer shall contact the Code Enforcement Officer to reschedule the initial inspection. If all deficiencies have been corrected, the Code Enforcement Officer shall approve the initial inspection and allow the Developer to proceed with construction of the project. The Code Enforcement Officer shall document the results of the initial inspection.

7.6.2. Periodic Inspections

The County's Code Enforcement Officer shall be QCI certified and shall evaluate BMPs at the site. The inspection shall address the following:

- Inspect all discharge points from the site;
- Inspect perimeter controls;
- Compare installed BMPs with the Erosion Control Plan;
- Inspect disturbed areas not currently being worked;

- Inspect areas with final stabilization;
- Inspect perimeter areas; and,
- Request copies of the Developer's inspection reports.

If deficiencies are noted during the inspection, the Code Enforcement Officer shall discuss the nature of the deficiencies with the Developer. The Developer shall be given 48 hours to correct all deficiencies noted by the Code Enforcement Officer. The Code Enforcement Officer shall document the results of the inspection and schedule the site for re-inspection.

At a minimum, routine inspections shall occur on a monthly basis. The inspection frequency may be increased depending upon the following:

- Status of construction;
- Site conditions;
- Site size;
- Site location;
- Site proximity to sensitive waters and/or areas;
- Type of construction;
- Historical performance and/or issues with the Developer; and,
- Significant storm events.

7.6.3. Re-Inspection

If a site fails the routine inspection, the site shall be scheduled for a re-inspection within 48 hours. The re-inspection shall focus on areas that were determined deficient during the routine inspection. If all deficiencies have been corrected to the satisfaction of the Code Enforcement Officer, the Code Enforcement Officer shall continue with periodic inspections. The Code Enforcement Officer shall document the results of the inspection.

7.6.4. Final Inspection

Upon completion of all construction activity, the Developer shall request a final inspection. The inspection shall address the following:

- Inspect all discharge points from the site;
- Inspect areas with final stabilization;
- Inspect perimeter areas;
- Request copies of the Developer's inspection reports; and,
- Request copy of the Termination of Registration letter from ADEM.

If deficiencies are noted during the inspection, the Code Enforcement Officer shall discuss the nature of the deficiencies with the Developer and the Developer shall be asked to reschedule the final inspection. The Code Enforcement Officer shall document the results of the inspection and schedule the site for re-inspection.

7.7. Enforcement

The Erosion Control section of the Zoning Ordinance provides the Code Enforcement Officer with an escalating scale of enforcement action for violation of any provision in the ordinance. A flow chart showing the escalating scale of enforcement action is provided in Figure 7-2 and further described in the sections below.

7.7.1. Verbal Warning

If deficiencies are noted during an inspection, the Code Enforcement Officer shall discuss the nature of the deficiencies with the Developer. The following actions shall be taken to abate any violations.

- The Developer shall be given a verbal warning and 48 hours to correct all deficiencies noted by the Code Enforcement Officer;
- The Code Enforcement Officer shall perform a re-inspection within 48 hours; and,
- If the deficiencies are not corrected within 48 hours of the verbal warning, the Code Enforcement Officer shall determine if the enforcement action should be escalated to a Stop Work Notice.

7.7.2. Stop Work Notice

If a Developer has been issued a verbal warning and continues to violate any provision of the Erosion Control Ordinance, the Code Enforcement Officer may issue a Stop Work Notice to the Developer. The Stop Work Notice shall require the Developer to stop all work immediately and to take all appropriate remedial or preventive actions as may be required to abate all violations.

If the violation is not corrected immediately, the Code Enforcement Officer shall notify the Planning and Zoning Director to determine if the enforcement action should be escalated to a written notice of violation.

7.7.3. Notice of Violation

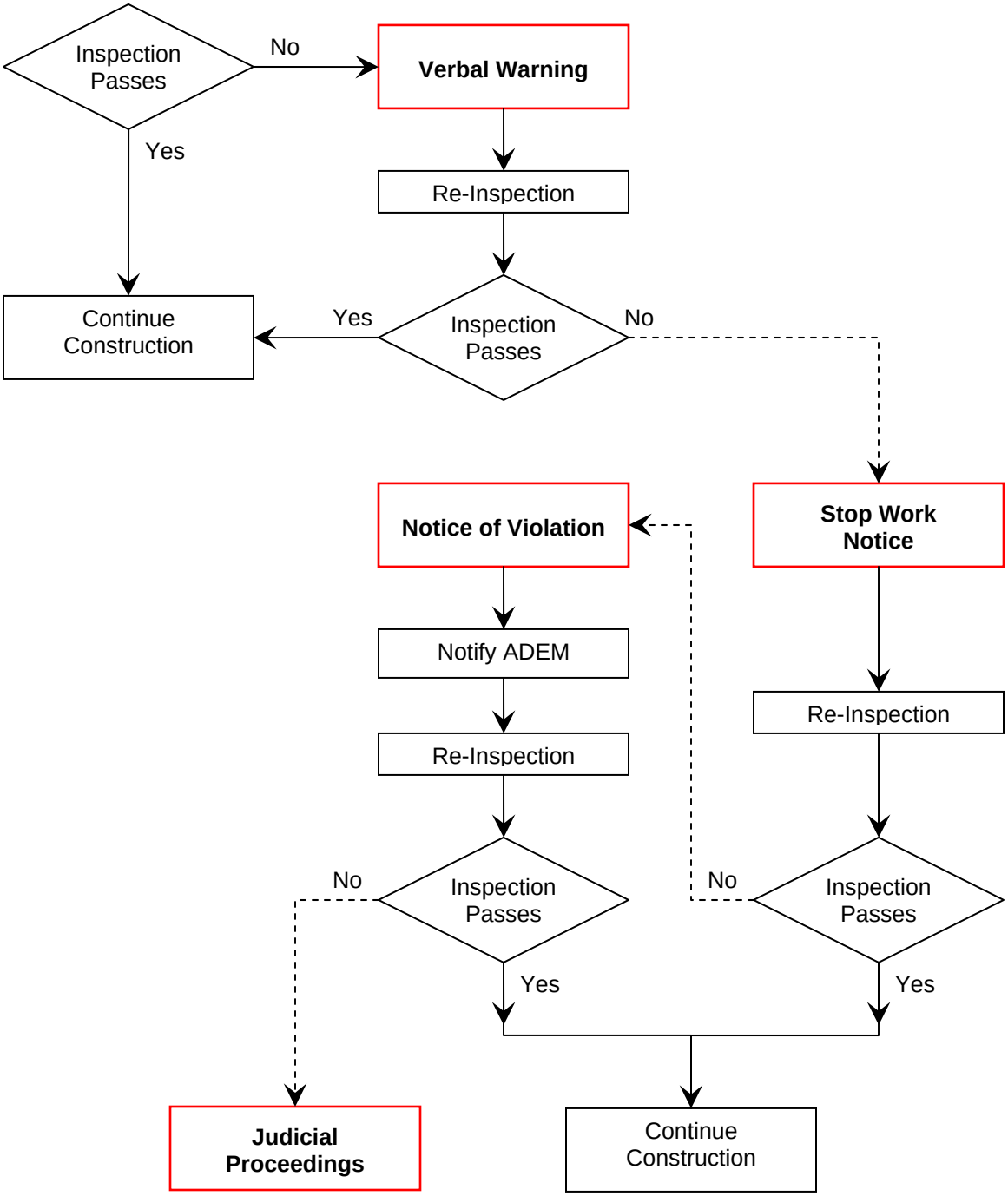
If the Planning and Zoning Director determines that a Developer has violated and/or continues to violate any provision of the Erosion Control Ordinance, the Planning and Zoning Director may issue the Developer a written Notice of Violation. At a minimum, the Notice of Violation shall contain the following:

- Name and address of alleged violator;
- Location or address of the site where the violation occurred;
- Nature of the violation;
- Description of the remedial actions required to abate the violation;
- Description of the penalties that may be assessed;
- Description of the appeal procedures;
- Time frame for abating the violation; and,
- If the violation is not abated within the specified time frame, the County may utilize its resources to abate the violation.

Upon issuance of a written Notice of Violation, the Planning and Zoning Director shall notify ADEM regarding status of the site.

If the violation is not corrected within the time frame specified in the Notice of Violation, the Planning and Zoning Director shall determine if the enforcement action should be escalated to a Judicial Proceedings.

Figure 7-2
Enforcement Action Flow Chart



7.7.4. Judicial Proceedings

If a Developer has been issued a written Notice of Violation and continues to violate any provision of the Erosion Control Ordinance, the Planning and Zoning Director may recommend to the County Commission to initiate legal proceedings against the Developer.

The Planning and Zoning Director, with the consent of the County Commission, may also initiate civil proceedings seeking monetary damages for any damages caused to public stormwater facilities by the Developer, and may seek injunctive or other equitable relief to enforce compliance with the Erosion Control Ordinance.

7.7.5. Fines and Penalties

Any person guilty of a violation; and each day of such violation, failure or refusal to comply with all provisions of the Erosion Control Ordinance shall be deemed a separate offense and punishable accordingly. Any person found to be in violation of any provision of the Erosion Control Ordinance shall be punished by a fine of not more than one hundred and fifty dollars ($150) per day for each offense.

7.8. Staff Training

The Planning and Zoning Department and Highway Department Permit Divsioin have been tasked with the responsibility of implementing the Construction Site Runoff Program. All inspectors shall maintain current certification as a Qualified Credentialed Inspector (QCI). To further support this program element, the Stormwater Program Manager may select additional staff to obtain and maintain either a QCP or QCI certification.

Staff shall receive annual refresher training. Copies of the current QCI training certificates shall be maintained in Appendix F.

7.9. Program Goals

The County has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing the Construction Site Runoff Program. Program goals are summarized in Table 7-1.

7.10. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the County will evaluate the program goals and overall effectiveness of Construction Site Runoff Program. Results of the program evaluation will be summarized in the Annual Report.

Table 7-1
Construction Site Runoff – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Legal Authority	Erosion and Sediment Control Ordinance	Review and update as needed	22 June 2013	Planning and Zoning Highway Department
	Subdivision Regulations	Review and update as needed	22 December 2013	
Permitting	Develop SOP	Develop and update as needed	31 March 2013	Planning and Zoning Highway Department
	Develop Land Disturbing Activity Application Form	Develop and update as needed	31 March 2013	
	Track Number and Type of Permits	Annually	31 March 2013	
Plan Review	Develop SOP	Develop and update as needed	31 March 2013	Planning and Zoning Highway Department
	Develop Review Checklist	Develop and update as needed	31 March 2013	
	Develop Erosion Control Plan Requirements	Develop and update as needed	31 March 2013	
	Track Number of Plans Reviewed	Annually	31 March 2013	
Inspections	Develop SOP	Develop and update as needed	31 March 2013	Planning and Zoning Highway Department
	Develop Inspection Form	Develop and update as needed	31 March 2013	
	Track Number and Type of Inspections	Annually	31 March 2013	
Enforcement Actions	Track Number and Type	Annually	31 March 2013	Planning and Zoning Highway Department
Training	QCI Training	Annually	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	

SECTION 8

Post Construction Storm Water Management

8. Post Construction Storm Water Management

8.1. Introduction

Post construction runoff generally has two types of impacts. First, developed areas will increase the type and quantity of pollutants in storm water runoff. When storm water flows over areas altered by development it has a potential to pick up a variety of pollutants including but not limited to trash, debris, sediment, oil, grease, pesticides, heavy metals and/or nutrients, and carry these pollutants to the streams and lakes. Second, development increases the impervious surfaces of an area resulting in a quantity increase of storm water runoff. Increased impervious surfaces like buildings and parking lots interrupt the natural cycle of gradual percolation of storm water through the vegetation and soil. Instead, storm water is collected on the impervious surface and conveyed to drainage systems where increase volumes of storm water runoff enter the stream quickly. As a result, stream banks are more susceptible to scouring and the down stream areas have a higher potential of flooding.

The NPDES permit requires the County to develop, implement and enforce a program to address storm water discharges from new development and redevelopment projects that disturb greater than one acre, and projects less than one acre that are part of a larger common plan of development. Goals of this program are to:

- Retain the pre-disturbance hydrological conditions of both surface and groundwater;
- Remove suspended solids and associated pollutants entrained in stormwater runoff that result from activities occurring during and after development;
- Decrease the erosive potential of increased runoff volumes and velocities associated with development;
- Preserve natural systems including in-stream habitat, riparian areas and wetlands; and,

- Reduce the thermal impacts that result from impervious surfaces and treatment devices with large amounts of surface exposed to sunlight such as wet ponds.

8.2. Program Components

Post construction storm water management involves the implementation of structural and/or non-structural BMPs to provide permanent storm water management over the life of a property's use. It is important to recognize that many BMPs are climate dependent and not all BMPs are suitable for every site. The County shall evaluate and identify BMPs that are suitable for this area and are within the County's regulatory control. The following sections will generally describe BMPs that have been or shall be considered.

8.2.1. Low Impact Development

Where feasible, the County shall consider and encourage developers to utilize Low Impact Development (LID) and/or green infrastructure BMPs to minimize the post construction impacts of storm water runoff. The County shall evaluate and identify the most appropriate LID BMPs.

8.2.2. Development Regulations

The County has developed a comprehensive process to implement and enforce controls that help reduce pollutants in storm water runoff. Documents used to define this process as well as the requirements for development within the County include.

- Zoning Ordinance; and,
- Subdivision Regulations.

A detailed description of these documents is provided in Section 1 of the SWMP Plan. The County has incorporated various Overlay Districts within the Zoning Ordinance to provide additional protection of the County's natural resources. Overlay Districts include

- Flood Hazard Overlay District;
- Wetland Protection Overlay District; and,
- Gulf Beach Overlay District.

The Wetland Protection Overlay District requires a minimum buffer of 30 feet from a wetland. Regulations governing the Overlay Districts are contained in Article 10 of the Zoning Ordinance.

The County has developed a master plan that evaluates the existing land uses, development patterns and natural resources within the County. The County's zoning ordinance and subdivision regulations provide a mechanism to implement a post-construction storm water management program. Non-structural BMPs include but not limited to the following.

- Develop design standards;
- Develop plan review and approval procedures;
- Develop post construction BMP evaluation and inspection procedures; and,
- Develop BMP maintenance requirements.

The subdivision regulations already contain a provision to address the quantity of post developed storm water runoff.

8.2.3. Conservation Development

The County has developed regulations and requirements for a Conservation Development. The purpose of a Conservation Development is to provide a development option that permits flexibility of design in order to promote environmentally sensitive and efficient uses of the land. This development option was created to:

- Preserve in perpetuity unique or sensitive natural resources such as groundwater, floodplains, wetlands, streams, steep slopes, woodlands, and wildlife habitat;

- Preserve important historic and archaeological sites;

- Permit clustering of houses and structures on less environmentally sensitive soils which will reduce the amount of infrastructure, including paved surfaces and utility easements necessary for residential development;

- Reduce erosion and sedimentation by minimizing land disturbance and removal of vegetation in residential development through a reduced building footprint;

- Promote contiguous greenways and corridors throughout the community;

- Promote contiguous green space with adjacent jurisdictions;
- Encourage interaction in the community by clustering houses and orienting them closer to the street, providing public gathering places and encouraging use of parks and community facilities as focal points in the neighborhood;
- Encourage street designs which reduce traffic speeds and reliance on major arteries;
- Promote construction of convenient landscaped walking trails and bike paths both within the subdivision and connected to neighboring communities, businesses, and facilities to reduce reliance on automobiles;
- Conserve scenic views and reduce perceived density by maximizing the number of houses with direct access to and views of open space;
- Preserve prime agricultural and forest lands and reduce the economic pressures of converting such land to urbanized uses.

Regulation governing Conservation Developments are contained in Article 11 of the Zoning Ordinance.

8.2.4. Post Construction BMPs

There are a variety of structural BMPs capable of not only managing the volume and velocity of storm water runoff, but also provides very effective treatment of storm water runoff. Structural BMPs may include the following.

- Storm water retention / detention basins;
- Infiltration basins / trenches;
- Pervious pavement;
- Grass swales;
- Filter strips;
- Constructed wetlands; and,
- Rain gardens.

As the County's post construction storm water management program develops, the County will evaluate and identify the most appropriate BMPs. A design rainfall event with an intensity up to a 2-year, 24-hour storm event shall be the basis for the design and implementation of post-construction water quality BMPs.

8.2.5. Operation and Maintenance

In order for post developed BMPs to be effective, routine maintenance of the BMP will be required. The County shall evaluate mechanisms that can be utilized to ensure proper maintenance of the BMPs.

8.2.6. Tracking System

As post development BMPs are implemented, the County shall develop a tracking and inspection system to ensure that BMPs continue to function properly.

8.2.7. Training

County departments that provide assistance in implementing the County's Post Construction Storm Water Management program include the Highway Department, Building Inspections Department and Planning and Zoning Department. The County shall evaluate potential training programs, activities and/or materials that can be used to educate the County's staff in storm water related issues. The type and frequency of training shall be determined by the Storm Water Program Manager.

8.3. Program Goals

The County has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Post Construction Storm Water Management Program. Program goals are summarized in Table 8-1.

8.4. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the County will evaluate the program goals and overall effectiveness of post construction storm water controls to improve storm water quality. Results of the program evaluation will be summarized in the Annual Report.

Table 8-1
Post Construction Storm Water Management – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Legal Authority	Develop Post Construction Storm Water Management Ordinance	Initial	31 March 2015	Planning and Zoning Highway Dept.
	Adopt Post Construction Storm Water Management Ordinance	Initial	31 March 2016	
	Subdivision Regulations	Review and update as needed	31 March 2015	
	Zoning Regulations	Review and update as needed	31 March 2015	
Low Impact Development	Evaluate LID Practices	Annually	31 March 2015	Highway Dept.
	LID Policy	Develop and update as needed	31 March 2015	
Non-Structural BMPs	Develop Plan Review Procedures	Develop and update as needed	31 March 2015	Highway Dept.
	Develop Inspection Procedures	Develop and update as needed	31 March 2015	
	Develop Maintenance Requirements	Develop and update as needed	31 March 2015	
Structural BMPs	Evaluate and Identify BMPs	Develop and update as needed	31 March 2015	Highway Dept.
	Develop Design Standards	Develop and update as needed	31 March 2015	
	Develop Review Checklist	Develop and update as needed	31 March 2015	
Inspections	Develop SOP	Develop and update as needed	31 March 2015	Highway Dept.
	Develop Tracking System	Develop and update as needed	31 March 2015	
	Track Number and Type of Inspections	Annually	31 March 2015	
Training	Evaluate Training Needs	Annually	31 March 2015	Highway Dept.
	Identify Training Sources	Annually	31 March 2015	
	Conduct Training	Annually	31 March 2015	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2015	Highway Dept.

SECTION 9

Pollution Prevention
Good Housekeeping

9. Pollution Prevention / Good Housekeeping

9.1. Introduction

Pollution prevention / good housekeeping for municipal operations is a control measure designed to emphasize the operation and maintenance of the MS4 and proper training of County employees. Performing activities in a careful and proper manner prevents and/or reduces the potential of polluting storm water runoff. Operations specifically identified in the NPDES permit include the following:

- Park and open space;
- Fleet and building maintenance;
- New construction and land disturbances;
- Storm sewer system maintenance;
- Roads and highways;
- Municipal parking lots;
- Maintenance and storage yards;
- Waste transfer stations; and,
- Recycling centers.

9.2. Program Components

The pollution Prevention / Good Housekeeping Program is a key element to help the MS4 to reduce potential pollutants from entering storm water runoff. This control measure requires the County to evaluate existing facilities and operations to identify areas of improvement that will help ensure a reduction in the amount and type of potential pollutants.

9.2.1. County Facilities

The first step is to evaluate and assess the areas and facilities to determine which activities may currently have a negative impact on water quality and to find solutions for these activities. The simplest solution is to limit the number of activities that are performed outside and exposed to storm water.

9.2.1.1. Facility Inventory

The County shall complete an inventory of County facilities and areas that have a potential to interact with storm water runoff. Once the facility inventory is completed, the County shall develop a map identifying the facilities location with respect to water bodies. A comprehensive list and map of County facilities will help county employees build a better awareness of their locations within the MS4 and their potential to contribute pollutants in storm water runoff.

9.2.1.2. Facility Assessment

A comprehensive facility assessment is necessary to identify the facilities most likely to contribute storm water pollutants and the facilities in need of storm water controls. The facility assessments shall involve a detailed site inspection to identify improperly stored materials, activities that should not be performed outside, and poor housekeeping practices.

9.2.2. Structural Controls

The County maintains approximately 95.69 miles of paved roads, approximately 0.53 miles of unpaved roads and two (2) bridges within the County's MS4 Area. The storm sewer system associated with these roads consist of box culverts, side drains, cross drains and storm sewer systems. Box culverts, cross drains and side drains are typically located along the roads to convey stormwater either underneath the road or along the road. Storm sewer systems are typically located within residential developments.

9.2.2.1. Drainage Swales

The portion of the County within the MS4 boundary consists of flat to very mild sloping terrain with generally well-draining soils. These two features are important to determine the most applicable method of storm water collection. Flatter terrain can increase the time for storm water conveyance, reduce the amount of peak discharge at a given point, and reduce the probability of channel erosion. Well-draining subsurface soils allow infiltration of storm water, particularly if the drainage swales allow for increased time of storm water conveyance.

The majority of roads located within the County's MS4 Area have open grassed drainage swales that parallel both sides of the road. Based upon typical soils, size of swales, and relatively flat slopes, grass drainage swales allow for low flow velocities, storm water storage, and some infiltration. The vegetation also

prevents channel and side slope erosion, filters sediment, and provides some nutrient uptake.

9.2.2.2. Storm Sewer Systems

Storm sewer systems are typically located within residential developments and subdivisions. A summary of the storm sewer system components located within the County's MS4 area is presented in Table 9-1 and Table 9-2.

Table 9-1
Storm Sewer Inlet Inventory

Inlet Type	Number (ea)	Inlet Type	Number (ea)
Grate Inlet	9	Double Wing	354
Junction Box	95	Yard	63
Singe Wing	258	Slotted Drain	15

Table 9-2
Storm Sewer Pipe Inventory

Pipe Shape	Pipe Size (in)	Number (ea)	Length (ft)	Pipe Size (in)	Number (ea)	Length (ft)
Arch	18 X 11	1	64	58 X 36	2	276
	29 X 18	5	155	73 X 45	1	26
	36 X 23	2	143	88 X 54	1	238
	51 X 31	2	324			
Circular	12	2	926	30	71	9,347
	15	8	1,486	36	85	10,108
	18	290	28,287	42	17	2,254
	21	132	13,653	48	8	1,257
	24	159	22,337	54	2	361
	27	39	5,726	60	3	416
Elliptical	14 X 23	13	752	32 X 49	4	621
	19 X 30	7	687	34 X 53	3	341

Pipe Shape	Pipe Size (in)	Number (ea)	Length (ft)	Pipe Size (in)	Number (ea)	Length (ft)
Elliptical	22 X 34	5	494	38 X 60	1	84
	24 X 38	6	692	43 X 68	2	216
	29 X 45	2	138			

9.2.2.3. Cross Drains

Cross drains for County roads are typically reinforced concrete pipe, corrugated metal, or in rare cases, vitrified clay. Cross drains within the County's MS4 area are marked at the inlet and outlet with a metal stake and reflective marker to alert motorists, grass mowers, and any other personnel performing work in the area. The majority of cross drains convey storm water from a grassed drainage swale to a grassed drainage swale. A summary of the cross drain pipes located within the County's MS4 area is presented in Table 9-3.

Table 9-3
Cross Drain Pipe Inventory

Pipe Shape	Pipe Size (in)	Number (ea)	Length (ft)	Pipe Size (in)	Number (ea)	Length (ft)
Arched	18 X 11	5	157	51 X 31	6	263
	22 X 13	1	16	58 X 36	3	72
	29 X 18	31	1,110	65 X 40	2	30
	36 X 23	23	898	73 X 45	2	78
	44 X 27	11	289			
Circular	12	3	115	36	3	60
	15	7	242	42	4	200
	18	67	2,966	48	5	267
	21	11	356	54	1	27
	24	49	1,635	60	3	75
	27	13	335	84	1	23
	30	15	383	96	1	43

Pipe Shape	Pipe Size (in)	Number (ea)	Length (ft)	Pipe Size (in)	Number (ea)	Length (ft)
Elliptical	14 X 23	18	681	27 X 42	1	82
	19 X 30	1	19	38 X 60	1	27
	24 X 38	2	95	43 X 68	1	12

9.2.2.4. Data Management

The County has a dedicated GIS/CIMS manager responsible for obtaining, developing, and maintaining the County's Graphic Information System (GIS) data and system. The County's GIS data includes mapping layers for box culverts, storm sewer pipes, storm sewer inlets and cross drain pipes. Select attribute data for mapping layers used by the County include, but are not limited to, the following:

- Pipe shape;
- Material type;
- Number of barrels;
- Pipe size;
- Rip rap at inlet and/or outlet;
- Condition;
- Markers;
- Pipe length; and,
- Photographs.

The County has an on-going effort to update and maintain the information and data contained in the GIS system. To complement the GIS system, the County uses a Computer Information Management System (CIMS) to track time and activities associated with inspection and maintenance. County staff involved with maintenance will complete a Maintenance Activity Sheet on a daily basis that identifies where and what work was completed as well as who and the equipment used to complete the work. This information is entered into the CIMS database. The CIMS Program provides the County with the ability to create activity reports that summarize the work performed on each structure for a time period of interest. A list of Activity Codes and an example of the Maintenance Activity Sheet are provided in Appendix H.

The County has acquired Trimble GeoExplorer field computers to assist with data collection during the inventory and inspection of structural controls. The Trimble field computer integrates a rich array of functionality, including a high-yield GPS

receiver with 1 to 3 meter positioning accuracy. This allows field crews to augment their GPS information and photographs while performing GIS data collection and inspection activities. A picture of the Trimble field computer is provided in Figure 6-1.

The County has developed a data form that can be used by the Trimble field computers to collect specific data for each structural control. This not only provides the field crews with an efficient method for performing data collection; but also, provides a very efficient way to integrate field data into the County's GIS system.

9.2.2.5. Inspections

The County performs an inspection of all structural storm water conveyance structures on a biennial (two-year) basis. These inspections include, but are not limited to:

- Drainage elements such as ditches, erosion, pipe or drain condition, and any settlement occurring which may affect drainage watercourse;
- Shoulder roadside elements such as clearing, mowing, or encroachments maintenance;
- Percentage of overhead limbs on the roadway.

A scoring system is used to evaluate each of the components described above. Storm sewer system maintenance and repairs are prioritized based on the score of each structure. The higher the score, the higher priority the road will rank for maintenance or improvements. Results of the inspection are used in establishing budgets and schedule of proposed projects for the next year. An example of the scoring system is provided in Appendix H.

If problems are identified that require immediate attention, the inspector will complete a Problem Request and schedule the necessary repairs. The need for repairs will be identified as Urgent, Priority, or Routine and addressed as follows:

- Urgent – Schedule the repairs within the same day.
- Priority – Schedule the repairs within the next 3 days.
- Routine – Schedule the repairs within the next 5 days

A copy of the Problem Request is provided in the Appendix H.

9.2.2.6. Maintenance and Repairs

Based on the priority level assigned by the inspectors, required maintenance is performed in a timely manner. Maintenance can include:

- Structure clean out of leaves, sediment, floatables, and other debris;
- Mowing, clearing, or overhead limb removal in order to prevent drain blockage or reduced storm water flow;
- Regrading of swales and ditches to allow for proper storm water flow;
- Grass seeding/planting to prevent erosion;
- Replacing or repairing any reflective markers at cross drains; and,
- Replacing storm water structures.

The County currently assigns work order codes for various maintenance activities and tracks time and money required for each activity. A copy of the activity codes is included in the Appendix H.

9.2.3. Roadways

Motor vehicles can generate runoff pollutants through emissions, deposition of exhaust, discharges of fluids and solid particles while traveling and breaking. Although the runoff constituents and concentration levels vary with highway type and location, the sources of roadway runoff pollutants typically fall into one of three basic categories.

1. Vehicle traffic;
2. Deicing activities; and,
3. Vegetation management.

Potential pollutant sources from roadways that can affect water quality include.

- Solids generated from pavement wear, tire wear, engine and brake wear can increase turbidity and transport other pollutants that adhere to the particle surfaces;

- Heavy metals from lubricating oil and grease, bearing wear, tire, wear, vehicle wear, break lining wear and moving engine parts;

- Nutrients from roadside fertilizer application can expedite algae growth and lower dissolved oxygen levels in streams, rivers and lakes; and,

- Polycyclic aromatic hydrocarbons (PAHs) such as petroleum and ethylene glycol, resulting from spills and leaks of oil, gas, antifreeze, and hydraulic fluids.

The County has implemented and maintained BMPs to provide a means of mitigating the negative impacts of various pollutants that can be carried off by rainfall and receiving waters.

The County maintains approximately 95.69 miles of paved roads, approximately 0.53 miles of unpaved roads and 2 bridges within the County's MS4 Area. The location of roads and bridges located within the County's MS4 Area is presented in Figure 9-1. The majority of roads located within the County's MS4 Area have open grassed drainage swales that parallel both sides of the road.

The County uses a variety of structural and nonstructural BMPs during the planning, design, operation and maintenance of its roadways and bridges. These BMPs help to mitigate the adverse effects to stormwater runoff by reducing the volume and concentration of pollutants generated by motor vehicle traffic.

9.2.3.1. Data Management

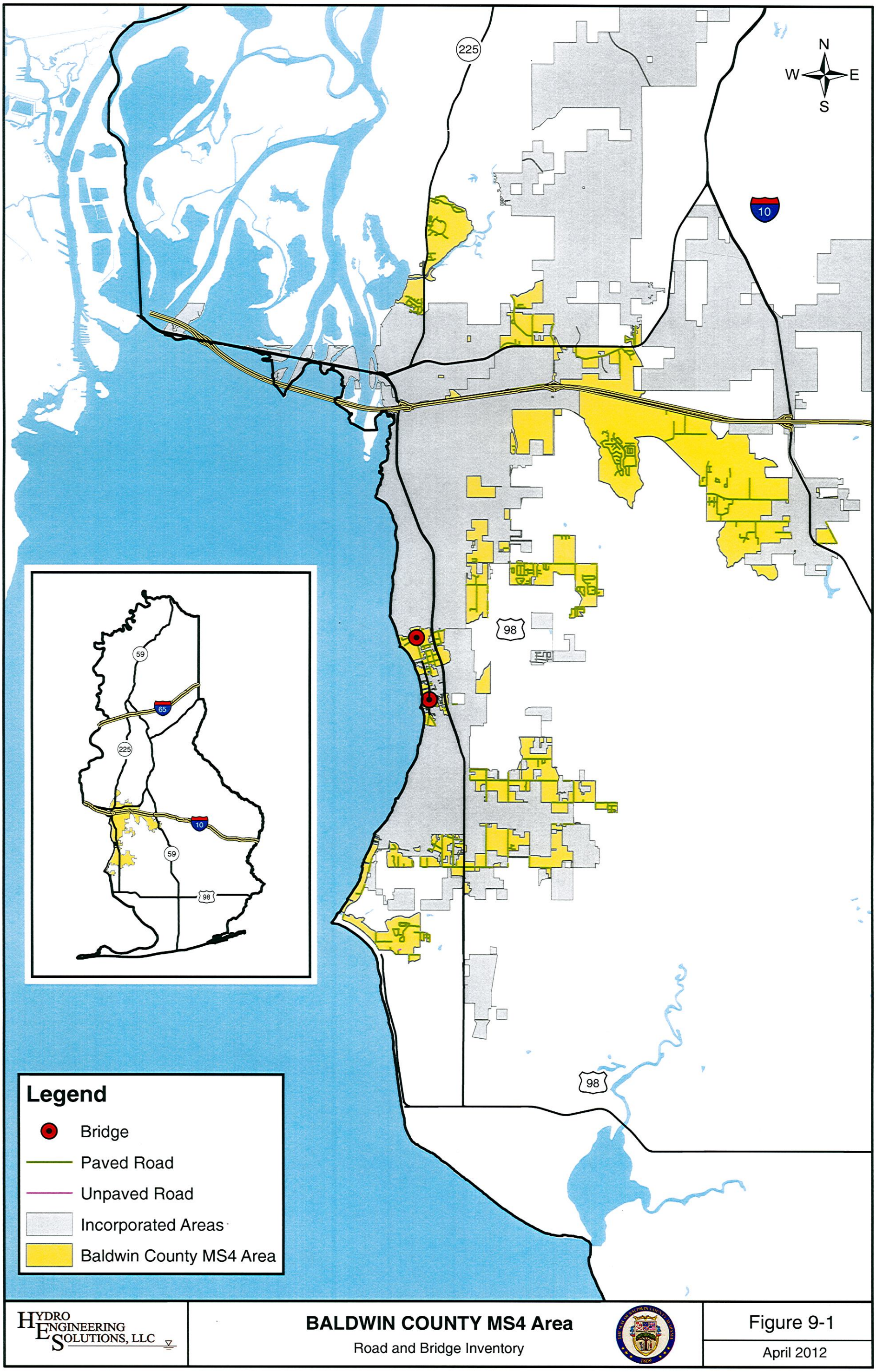
The County has a dedicated GIS/CIMS manager responsible for obtaining, developing, and maintaining the County's GIS data and system. Select attribute data for mapping layers used to support the County's Roadways Program include, but are not limited to, the following:

Roadways

- Road Name
- Road District
- Length
- Surface Type
- MS4 Area

Bridges

- Bridge Name
- Road Name
- Sufficiency Rating
- Creek Name



HYDRO ENGINEERING SOLUTIONS, LLC

BALDWIN COUNTY MS4 Area

Road and Bridge Inventory

Figure 9-1

April 2012

The County has an on-going effort to update and maintain the information and data contained in the GIS system. To complement the GIS system, the County uses CIMS to track time and activities associated with roadway and bridge maintenance. County staff involved with roadway and/or bridge maintenance will complete a Maintenance Activity Sheet on a daily basis that identifies where and what work was completed as well as who and the equipment used to complete the work. This information is entered into the CIMS database. The CIMS Program provides the County with the ability to create activity reports that summarize the work performed on each road for a time period of interest. A list of activity codes and an example of the Maintenance Activity Sheet are provided in Appendix H.

9.2.3.2. Planning and Design

The County utilizes a variety of environmental planning and design management practices to reduce the environmental impacts of roadways and bridges. Article 5 Development Standards of the County's Subdivision Regulations establishes planning and design requirements for roadways and bridges. Section 5.4.1 of this Article specifies the minimum roadway design standards that are based on roadway type (i.e. collector, residential, other) and minimum lot size. A summary of the roadway design requirements is provided in Table 9-4.

Table 9-4
Roadway Design Requirements

Roadway Type	Minimum Lot Size (ft^2)	Curb & Gutter	Asphalt Width (ft)
Collector	80,000	No	24
Residential (Type 1)	7,500	Yes	24
Residential (Type 2)	10,000	No	22
Residential (Type 3)	20,000	No	20
Country Lane	40,000	No	18
Non Residential (Type A)	20,000	Yes	24

The County's roadway design requirements minimize the pavement width based on roadway type and land use. Curb and gutter are only required for Residential (Type 1) and Non Residential (Type A) roadways. For all other roadway types, the typical roadway cross section utilizes open drainage swales to convey stormwater runoff. Open drainage swales remove roadway pollutants by filtration and allowing stormwater runoff to infiltrate into the ground.

9.2.3.3. License Agreement

If a landowner(s) want to perform some type of modification or work on a County Right-of-Way (ROW), the County has established a process where the landowner(s) will execute a License Agreement with the County. The License Agreement defines the work or modifications that will be performed and who is responsible for maintenance of the work or modifications. This mechanism prevents a landowner(s) from performing any work within a ROW without the prior written approval from the County's Highway Department. Types of work allowed under the License Agreement include the following:

- Drainage improvements;
- Road improvements; and,
- ROW clearing.

The License Agreement does allow for beautification projects within the landowner's portion of the ROW. A copy of the License Agreement is included in the Appendix H.

9.2.3.4. Road Inspections

The County performs an inspection of all paved and unpaved County roads on a biennial (two-year) basis. These inspections include, but are not limited to:

- Surface treatment elements such as surface treatment type, patching, edge repairs, and leveling;
- Shoulder conditions;
- Drainage elements such as ditches, erosion, pipe or drain condition, and any settlement occurring which may affect drainage watercourse;
- Shoulder roadside elements such as clearing, mowing, or encroachments maintenance;
- Traffic control elements including signage and striping; and,
- Percentage of overhead limbs on the roadway.

A scoring system is used to evaluate each of the components described above. Road maintenance and repairs are prioritized based on the score of each road. The higher the score, the higher priority the road will rank for maintenance or improvements. Results of the inspection are used in establishing budgets and schedule of proposed projects for the next year. An example of the scoring system is provided in Appendix H.

If problems are identified that require immediate attention, the inspector will complete a Problem Request and schedule the necessary repairs. The need for repairs will be identified as Urgent, Priority, or Routine and addressed as follows:

- Urgent – Schedule the repairs within the same day.
- Priority – Schedule the repairs within the next 3 days.
- Routine – Schedule the repairs within the next 5 days

A copy of the Problem Request is provided in the Appendix H.

9.2.3.5. Bridge Inspections

Bridges for County roads are typically inspected on an bi-annual basis in accordance with NBIS standards.

9.2.3.6. Mowing

The County has crews dedicated to roadway maintenance. Typically County ROWs are mowed a minimum of three times per season (April 1st through September 30th). Roads with higher traffic volumes or major corridors may be mowed more frequently.

9.2.3.7. Litter Control

Roadside litter control BMPs implemented by the County to address health and aesthetic concerns also improve the quality of stormwater runoff by limiting trash in runoff conveyance systems. BMPs implemented by the County include:

- Regular litter, trash and debris removal and disposal;
- Sponsoring Adopt-a-Road program; and,
- Public education.

The County's Solid Waste Department has four (4) to five (5) dedicated litter crews with one County employee serving as supervisor and two to three inmates serving as laborers. The litter crew produces a daily and weekly report summarizing the areas which were cleared of litter and tracks the amount of waste on a spreadsheet. A copy of the daily and weekly litter reports are provided in Appendix H.

The County supports the Adopt-a-Mile program in conjunction with the Alabama Department of Transportation (ALDOT) and People Against a Littered State (PALS). The County's website contains a link to redirect the user to the PALS

website and Adopt-a-Mile registration. Currently, 2 miles of County roads within the MS4 Area are a part of the Adopt-a-Mile program.

9.2.3.8. Street Sweeping

Street sweeping is performed on a periodic basis in high volume or urbanized sections of the MS4 Area. Street sweeping is performed on rural County roads on an as-needed basis.

9.2.3.9. Resurfacing

County roads with deteriorated paved surfaces are typically overlaid with new asphalt or milled, reclaimed, and replaced with new asphalt paving, depending on the deterioration cause. When roads are overlaid, there is usually no erosion protection required since no soil is disturbed. If roads require milling and replacing, however, an erosion control plan is implemented to prevent sediment transport from the exposed road base or any other disturbed areas.

9.2.3.10. Unpaved Roads

Unpaved roads are inspected with the same regularity as paved roads. Unpaved road inspections are documented on a spreadsheet which is updated annually. Inspections include documenting ditching, surface gravel condition, environmental concerns, and maintenance issues and difficulty.

There are currently 0.53 miles of unpaved (dirt) roads within the MS4 area. Paving of unpaved roads is based on priority.

9.2.3.11. Deicing Activities

Based upon the County's location, winter weather is infrequent. The County spreads sand on roads with snow or ice cover. After winter weather has subsided, the County removes the sand using a small front end loader and a street sweeper.

9.2.4. Pesticides, Herbicides and Fertilizers

Pesticides, herbicides and fertilizers, when used properly, are helpful tools in maintaining grassed and landscaped areas. However, excess use can threaten natural ecosystems, particularly through runoff to streams and rivers or by infiltration to groundwater. Because of this concern for environmental health, the NPDES Permit requires the County to evaluate the use of pesticides, herbicides and fertilizers (PHF) to seek opportunities to reduce the use of these materials.

When all the land occupied by parks, right-of-ways, easements, open space and County facilities is added together, the County may own or control a significant portion of the land within a watershed. Maintenance of these areas frequently includes mowing, fertilization, pesticide application, herbicide application and supplemental irrigation. Effective management and landscaping practices can significantly reduce the pollutants discharged in stormwater runoff.

9.2.4.1. Facility Inventory

The County shall evaluate land under the control of the County to determine where pesticides, herbicides and/or fertilizers are being used. Areas of interest within the MS4 Area may include but are not limited the following.

- Public parks;
- Sports complexes;
- Green space around County facilities; and,
- County right-of-ways.

After County areas have been identified, develop a map showing the location of County Areas with respect to local rivers, streams and water bodies.

9.2.4.2. Certification and Licensing

Commercial and non-commercial application of pesticides is regulated in the State of Alabama by the Department of Agriculture and Industries (DAI). In order to maintain a pest control license, applicators are required to obtain routine training that covers the following topics.

- Pests;
- Pests control and pesticides;
- Labels and labeling;
- The environment;
- Applicator safety;
- Laws and regulations;
- Pesticide storage and disposal;
- Record keeping;
- Application equipment and calibration; and,
- Weed control.

County staff and contractors involved with the application, storage and/or disposal of pesticides, herbicides, and fertilizers on County Areas shall maintain current certification and training as required by DAI. The County currently has

two (2) staff that maintains an applicators certification. Their applicators certification documentation is provided in Appendix H.

9.2.4.3. Chemical Inventory

The County may use a variety of pesticides, herbicide and fertilizer chemicals on road right-of-ways and County Areas. An inventory of pesticides, herbicides and fertilizers being stored at each County facility shall be maintained by Maintenance.

Material Safety Data Sheets (MSDS) for pesticides, herbicides and fertilizers used by County staff shall be maintained at each individual storage location. The MSDS will provide information about the chemical to include but not limited to the following.

- Chemical constituents;
- Product use;
- Dilution requirements;
- Mixing requirements;
- Storage instructions; and,
- Health and safety precautions.

Chemicals typically used by the County are summarized in Table 9-5.

Table 9-5
PHF Chemicals

Chemical Name	Type
Plateau	Herbicide
Milestone VM	Herbicide
Milestone VM Plus	Herbicide
Glyphosate	Herbicide
Ground Zero	Herbicide
Induce	Herbicide
Garlon 3A	Herbicide

9.2.4.4. Application, Storage and Disposal

Application, storage and disposal of pesticides, herbicides and fertilizers shall be performed in accordance with Federal and State regulations and in accordance

with the manufacturer's recommendations. As SOPs are developed for application, storage and disposal, they shall be included in Appendix H.

The County has one application truck equipped with a Legacy 6000 control system. The Legacy 6000 control systems provides the County with the capability to properly apply herbicides and fertilizers. Capabilities of this control system include:

- Fixed-rate or variable-rate application;
- Complete field mapping with hazard marking;
- Manual lightbar guidance with on-screen map display;
- Interface with automatic steering systems; and,
- Software to create detailed job reports.

An example of a job report is provided in Appendix H.

9.2.5. Training

The County shall evaluate and develop a training program to educate County employees on how to incorporate pollution prevention / good housekeeping practices into County operations and facilities. Training topics may include the following.

- Federal and State storm water regulations;
- Storm water pollution prevention plan requirements;
- Significant materials and storage practices;
- Best Management Practices (BMPs);
- Non storm water discharges and evaluations;
- Site inspection and documentation protocols;
- Application of pesticides, herbicides and fertilizers;
- Road maintenance BMPs; and,
- Facility specific standard operating procedures.

To minimize the cost and resources associated with training, the County anticipates utilizing training programs and materials that have already been developed by EPA, ADEM and/or other readily available sources.

9.2.6. Flood Management

The NPDES permit requires the County to evaluate flood management projects for incorporation of additional water quality protection devices and practices to help improve water quality. If flood management projects are proposed within

the County's MS4 area, the County will evaluate the projects for the potential incorporation of water quality features.

9.3. Program Goals

The County has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Pollution Prevention / Good Housekeeping Program. Program goals are summarized in Table 8-1.

9.4. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the County will evaluate the program goals and overall effectiveness of the Pollution Prevention / Good Housekeeping Program to help reduce pollutants in storm water runoff. Results of the program evaluation will be summarized in the Annual Report.

Table 9-6
Pollution Prevention / Good Housekeeping – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Facility Inventory	Identify County Facilities and Operations	Annually	31 March 2013	Highway Dept.
	Inventory Industrial and Commercial Facilities	Annually	31 March 2013	
Facility Assessment	Develop Facility Evaluation Form	Develop and update as needed	31 March 2014	Highway Dept.
	Conduct Facility Evaluation	Initial	31 March 2014	
	Prioritize Facilities	Initial	31 March 2014	
	Develop Facility Recommendations	Initial	31 March 2014	
	Develop Schedule for Implementation	Initial	31 March 2014	
Standard Operating Procedures	Bridge Inspection / Maintenance	Develop and update as needed	31 March 2015	Highway Dept.
	Dirt Road Inspection / Maintenance	Develop and update as needed	31 March 2015	
	Paved Road Inspection / Maintenance	Develop and update as needed	31 March 2015	
	Right-of-Way Maintenance	Develop and update as needed	31 March 2015	
	Facility Inspections	Develop and update as needed	31 March 2015	
Training	Evaluate Training Needs	Develop and update as needed	31 March 2013	Highway Dept.
	Identify Training Resources	Develop and update as needed	31 March 2013	
	Implement Training	Annually	31 March 2013	
Flood Management	Review Flood Projects	As Needed	31 March 2013	Highway Dept.
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Highway Dept.

Table 9-7
Structural Controls – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Data Management	Storm Sewer Pipe Inventory	Update As Needed	31 March 2013	Highway Dept.
	Storm Sewer Inlet Inventory	Update As Needed	31 March 2013	
	Cross Drain Pipe Inventory	Update As Needed	31 March 2013	
Inspections	Drainage Swales	Once / 5 years	31 March 2013	Highway Dept.
	Storm Sewer Pipe & Inlets	Once / 5 years	31 March 2013	
	Cross Drain Pipe	Once / 5 years	31 March 2013	
Cleaning and Maintenance	Drainage Swales	Track ft / year	31 March 2013	Highway Dept.
	Storm Sewer Pipe	Track ft / year	31 March 2013	
	Cross Drain Pipe	Track ft / year	31 March 2013	
Repairs	Storm Sewer Pipe	Track ft / year	31 March 2013	Highway Dept.
	Cross Drain Pipe	Track ft / year	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Highway Dept.

Table 9-8
Roadways – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
GIS Data	Road and Bridge Inventory Update	As needed	31 March 2013	Highway Dept.
Roadway Design	Plan Reviews	Track Reviews / Year	31 March 2013	Highway Dept.
License Agreements	License Agreements Executed	Track Agreements / Year	31 March 2013	Highway Dept.
Inspections	Paved Roads	Once / 5years	31 March 2013	Highway Dept.
	Unpaved Roads	Once / 5 years	31 March 2013	
	Bridges	Once / 2 years	31 March 2013	
Roadway Maintenance	Mowing ROW	Track miles / season	31 March 2013	Highway Dept.
	Adopt-A-Road	Track miles / year	31 March 2013	
	Street Sweeping	Track miles / year	31 March 2013	
	Litter Control	Track miles / year	31 March 2013	Solid Waste Dept.
Roadway Repair	Resurfacing - Overlay	Track miles / year	31 March 2013	Highway Dept.
	Resurfacing – Milled with new asphalt	Track miles / year	31 March 2013	
Deicing Activities	Deicing Events	Track events / year	31 March 2013	Highway Dept.
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Highway Dept.

Table 9-9
Pesticides, Herbicides and Fertilizers – Program Goals

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Facility Inventory	Complete inventory of areas where PHF is applied	Annually	31 March 2013	Highway Dept.
	Develop Map	Annually	31 March 2013	
Certification and Licensing	Employee Training	Annually	31 March 2013	Highway Dept.
	Employee Certification	Annually	31 March 2013	
	Contractor Certification	Annually	31 March 2013	
Chemical Inventory	Update Inventory at each location	Annually	31 March 2013	Highway Dept.
	Update MSDS at each location	Annually	31 March 2013	
SOPs	Application	Develop and update as needed	31 March 2013	Highway Dept.
	Storage	Develop and update as needed	31 March 2013	
	Disposal	Develop and update as needed	31 March 2013	
	Equipment maintenance	Develop and update as needed	31 March 2013	
Chemical Use	Summary by Chemical	Annually	31 March 2013	Highway Dept.

SECTION 10

Monitoring

10. Monitoring Plan

10.1. Introduction

In December 2011, the County was re-designated from a Phase I MS4 to a Phase II MS4. In April 2012, the Census Bureau released updated Urbanized Areas based on the 2010 Census. As a result of the 2010 Census the Daphne-Fairhope Urban Cluster was changed to the Daphne-Fairhope Urbanized Area and it boundaries expanded along the I-10 corridor.

Since the MS4 Area for the County has changed significantly, the County will evaluate its MS4 Area with respect to the existing known problems as described in Section 2 of the SWMP Plan to determine if any type of monitoring should be performed within the County's MS4 Area. Results of this evaluation will be summarized in the 2013 MS4 Annual Report.