City of Birmingham

710 North Twentieth Street • 500 City Hall • Birmingham, AL 35203

MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES PERMIT NUMBER: AL000001

FISCAL YEAR 2008 - 2009

Annual Report

PERMIT YEAR (Administrative Extension)
October 1, 2009 through September 30, 2009

December 2009

Report Prepared By:

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Certification Statement

I certify under penalty of law that this document and all attachments were prepared with 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 submitted 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.

Signature: _____

Name: **Mayor Roderick V. Royal**

Title: **Interim Mayor** Date: _____

Contents

Tables

Figures

Appendices

Acronyms Used in the Report

ADEM	Alabama Department of Environmental Management
ASIST	Advanced Stormwater Information Systems
BFD	Birmingham Fire Department
BMP	Best Management Practices
BWWB	Birmingham Water Works Board
CORD	Community Outreach Development Program
CRS	Community Rating System
DPW	Department of Public Works
EPA	Environmental Protection Agency
GIS	Geographic Information Systems
IDDE	Illicit Discharge Detection and Elimination
KBBC	Keep Birmingham Beautiful Commission
MOCA	Mayor's Office of Citizens Assistance
MS4	Municipal Separate Storm Sewer System
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination Program
PEP	Department of Planning, Engineering and Permitting
PHF	Pesticides, Herbicides and Fertilizers
SEC	Soil Erosion Control
SOP	Standard Operating Procedure
SWMA	Storm Water Management Authority, Inc.
SWMP	Stormwater Management Plan
TMDL	Total Maximum Daily Loads

Contact Information

Any questions and/or comments in reference to this report should be directed to contacts listed below.

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Executive Summary

This submission fulfills the requirement for an annual progress report regarding the City of Birmingham's Stormwater Management Program to the Alabama Department of Management (ADEM) as specified in Permit Number ALS000001 (the Permit). This report highlights the activities that have occurred from October 1, 2008 to September 30, 2009, and represents the first annual report on the City's program since its withdrawal from the Stormwater Management Authority (SWMA). In addition, it recounts the efforts made by the City to assess the status of the program just after its withdrawal from SWMA as well as to secure the resources needed to ensure a compliant program. To meet the permit requirements, an interim stormwater management plan was developed, and program protocols and procedures were refined as necessary.

In addition, the City hired Malcolm Pirnie, Incorporated to evaluate its program needs as well as to assist in the implementation of its program. Subsequently, a program assessment was performed to determine program strengths and shortcomings and efforts were undertaken to enhance City staff understanding of the program requirements and associated responsibilities.

The following will be addressed in further detail in this report:

- Program Evaluation
- Receiving waters and watersheds
- SWMP administration
- Structural controls and stormwater collection system operation
- Areas of new development and significant redevelopment
- Roadways
- Flood control projects
- Pesticides, herbicide and fertilizer applications
- Illicit discharge detection and elimination program
- Spill prevention and response
- Industrial, commercial, high risk, and municipal operations run-off
- Construction site runoff program
- Public education and outreach program
- Monitoring

1. Introduction and Background

The City of Birmingham adopted a Comprehensive Plan October 17, 1992, on the recommendation of the Mayor and the Birmingham Planning Commission. The comprehensive plan included a set of policy statements with regards to environmental management, development management, community renewal, transportation, public facilities, housing, economic development, and the City Center. Included in these statements were goals that are consistent with the goals of the Phase 1 NPDES MS4 program. More specifically, the Public Facilities policy contains a policy statement for stormwater management, which states, “The City will provide for proper stormwater management in all areas of the City for the protection of life and property; relieve flash flooding and ponding in susceptible areas, maximizing natural infiltration and detention measures where feasible and extending the storm sewerage pipelines where necessary; require on site storage, sedimentation ponds and similar techniques to assure that new development does not accelerate surface run-off to adjacent areas, and filter pollutants before entering rivers, creeks and stream courses as a part of larger environmental protection activities; assist in the relocation of people affected by uncontrollable flooding, such as parts of the Village and Valley Creek areas; and comply with federal regulations for stormwater management and flood control”.

Based upon the pertinent policy statements contained in the Comprehensive Plan, the City of Birmingham developed its first Phase 1 NPDES MS4 program application November 16, 1992. In 1994, the City made the decision to co-permit with other cities in Jefferson County. Subsequently, authorization was given to the Jefferson County Stormwater Management Office to administer a multi-jurisdictional stormwater program which included the City of Birmingham. To assist, the state legislature passed the enabling legislation that allowed the permittees to adopt local stormwater ordinances as well as to collect stormwater fees.

Several committees were formed to develop and organize the program as well as to assist in the development of a multi-jurisdictional stormwater management plan which was developed on December 8, 1994. In 1997, the state legislature authorized Jefferson County and twenty-three municipalities lying within its borders to establish the Storm Water Management Authority (SWMA) as a public corporation.

While SWMA, since its inception, was responsible for most, if not all, of the stormwater program requirements for many of its member cities, the program requirements SWMA addressed on behalf of the City of Birmingham only included the following: program administration, including the preparation of the annual report, water quality monitoring, illicit discharge detection and elimination, and public education. The remaining program requirements were addressed and continue to be addressed today by City of Birmingham staff.

On January 15 2008, the Birmingham City Council adopted a resolution to withdraw from SWMA by October 2008 to allow the City to administer its own stormwater management program. Although this decision was made for many reasons, the most important reasons included: enhanced risk and liability management; increased program management accountability; enhanced organizational coordination; and lower program management costs.

Subsequently, in October 2008, the City hired Malcolm Pirnie to assist with developing and maintaining a compliant, city-administered stormwater program. With Malcolm Pirnie's assistance, the City of Birmingham has completed and submitted its MS4 NPDES Permit Application; completed an evaluation of its stormwater management program activities; employed the use of ASIST (Advanced Stormwater Information System); and developed an interim stormwater management plan and monitoring program. Although the Interim Plan contains the activities to be completed for this reporting period and is the primary subject of this report, the outcome of the program evaluation identified several strengths and weaknesses that existed prior to the City's withdrawal from the Stormwater Management Authority. These matters are also addressed in this report.

2. Program Evaluation

2.1. Program Objectives

In addition to meeting its MS4 program requirements, the City of Birmingham has the following program objectives include:

- Compliance with total maximum daily loads (TMDL)
- Executing best management practices (BMPs) and monitoring water quality in order to ultimately get area streams removed from the 303d impaired water bodies list
- Optimizing the stormwater benefits that are gained through planning, project, policy and regulatory controls in the City of Birmingham
- Improving aesthetics and overall quality of life
- Having a well trained staff and a fully informed and engaged populace

2.2. Major Accomplishments

This is the first year in which the City has been fully engaged in the implementation of its stormwater management plan. Prior to this year, the City was not adequately involved in the development or management of previous stormwater management plans. The City has now assumed full program administration responsibility in an effort to reduce liability as well as to better understand and manage its MS4 program.

The City has conducted dry and wet weather monitoring in compliance with the requirements of the Permit. The City has complied with the Permit requirements for inspecting and maintaining the structural and non-structural best management practices (BMPs). The City has conducted public education activities to enhance pollution prevention and pollution management awareness throughout the watershed community. The City is also extensively involved in assessing the in-stream chemical quality of receiving waters and all other program components to assess the effectiveness of the program as well as to enact changes to enhance day-to-day program management.

The most important accomplishment for this report year involved the performance of a detailed program assessment which led to the development of an interim stormwater management plan with measurable goals. The paragraphs below describe this accomplishment in further detail.

In order to properly characterize and document the activities that were being performed by and for the City of Birmingham as well as to identify the missing pieces required to maintain compliance with the NPDES permit, the City completed the following four-step program assessment process for each of the eleven program elements:

Step 1 – Evaluated existing activities to identify programs, processes, policies, and requirements that support the program element.

Step 2 – Identified, if applicable, additional BMPs, programs, processes, policies and/or requirements needed to comply with the program element requirements.

Step 3 – Developed a compliance strategy and defined measurable goals to gauge compliance for the program element.

Step 4 – Compiled the information and data obtained in the previous steps into a document that:

- Described the programs, processes, policies, and BMPs being or to be implemented for the program element.
- Defined measurable goals to evaluate the compliance with the program element.

This approach for program assessment was based on EPA's MS4 Program Guidance document. Based on the City's assessment of the existing programs, an interim stormwater management plan with measurable goals was developed to provide guidance for how the City needs to implement its program until ADEM issues the new Phase I permit. This plan was shared with ADEM and later with the Environmental Protection Agency and is provided in Appendix A.

2.3. Major Findings

The major findings described below were developed from the results of the above-mentioned program assessment the City performed after deciding to administer its own MS4 program. First, it was discovered that the water quality monitoring program being used, provided no clear way to determine or assess any improvements in water quality associated with BMP implementation. As it is imperative that a monitoring program that will allow the City to realize its stormwater program objectives as outlined in the interim plan, City intends to address this issue when the new permit is issued.

Second, the City discovered that although practices, resources, and infrastructure were in place for the City to develop a first-class stormwater

management program, not all of the participating departments and personnel understood each other's or and their respective contributions to the over program. As an immediate short-term remedy, the City and Malcolm Pirnie worked to develop written protocols and practices and provided management level training. The City is presently considering other ways to address this issue, including convening a working committee composed of key personnel from the various departments that support and/or implement the City's MS4 program.

Lastly, it was discovered that none of the previous annual reports contained cost information associated with those program activities that were performed by municipal staff or provided a by-program activity cost breakdown. The City expects to have this matter addressed by its third program year.

2.4. Program Strengths and Weaknesses

The major program strengths and weaknesses which were discovered as a result of the previously mentioned program assessment are provided below.

2.4.1. Strengths

The City of Birmingham has a very diverse and large number of professional and technical staff in the Department of Public Works, the Planning, Engineering and Permitting Department and the Birmingham Fire Department, Department of Equipment Management and Mayor's Office of Citizens Assistance that contributes its MS4 program. Some of their valuable contributions are mentioned below.

311 Call Center

The 311 Call Center was developed to assist Birmingham citizens in addressing non-emergency related issues. The 311 Call Center serves as a the liaison with City departments by taking, processing, routing, tracking and reporting on citizens' non-emergency related requests and concerns. It issues service requests with departments and follows up to ensure timely resolutions.

The following are some examples of city service requests that are handled by the call center:

- Missed Trash Service
- Brush Pickup
- Abandoned Vehicles
- Malfunctioning Traffic Lights
- Overgrown Vacant Lots
- Pot Holes

- Stormwater Runoff Problems/Clogged Storm Drains

In addition, the 311 Call Center also handles citizen concerns or complaints in conjunction with the Mayor's Office of Citizen's Assistance (MOCA).

The 311 Call Center's role in the City's MS4 program is described below.

When citizens call the 311 Call Center regarding stormwater-related requests that are **not** considered emergency situations, the operator will route the request to the appropriate division within the Department of Public Works to fulfill the request.

The request types that are considered stormwater related are:

- Storm Sewer Cleaning Request
- Street Sweeping
- Clean and Cut Ditch
- Inlet/Catch Basin Clogged
- Erosion

These requests can be tracked to measure the volume of non-emergency requests that can potentially impact stormwater management.

Emergency – In order to promptly address items that **are** considered emergency situations in regards to stormwater management, the process outlined below has been established.

1. Stormwater Service Request Types – Additional request types have been created so critical stormwater issues are easily tracked and differentiated from non-emergency situations.

- These types are as follows:
- - Stormwater – Foul Odor
- - Stormwater – Chemical Spill
- - Stormwater – Construction Site Erosion

When the citizen describes any of the items listed above, the operator will issue the appropriate request and the system will begin the escalation process.

2. Escalation Process – When any of these request types are created, the system will automatically start an escalation process.

    a. All Emergency Stormwater request types will notify the Manager and Director of the 311 Call Center via Blackberry.

b. Emails will be sent to Edwin Revell and Randy Kemp.

c. 311 Call Center Manager and/or Director will begin calling the Stormwater Management phone escalation list until there is verification that the recipient(s) is (are) in receipt of the request.

3. After Hours Coverage – The 311 Call Center after hours message script includes verbiage that instructs citizens to report emergency stormwater issues to the Jefferson County Emergency Management Agency.

Keep Birmingham Beautiful Commission (accredited by Keep America Beautiful)

The mission of the Keep Birmingham Beautiful Commission is to serve the citizens of Birmingham by developing and implementing effective public education and community involvement programs which enhance the quality of life in beautification and environmental concerns. The objective is to effect positive change in attitude and behavior regarding natural conservation, littering, recycling and beautification.

Environmental Police

The Environmental Police enforces the portions of the City Code that are found in the City of Birmingham Environmental Guidelines. These guidelines, which are available at www.informationbirmingham.com, where published in a user friendly booklet and were distributed to citizens by mail in 2003. The ordinance provisions that are summarized in the guidelines cover issues such as garbage disposal, inoperable vehicles, washing of vehicles, plumbing guidelines, junk and scrap on public ways, and the stewardship of ditches and gutters.

2.4.2. Weaknesses

Currently, the stormwater program needs attention in the following areas:

- Only limited historical data on previous program has been provided (See **Appendix B**, Data Request)
- No historical data analysis on water quality monitoring has been provided
- Enhanced Illicit Discharge Detection and Elimination program enforcement is needed
- Enhanced Industrial and High Risk Monitoring Program implementation is needed
- More readily available Electronic System Mapping is needed

2.5. Future Directions of Program

As the City continues to assess, modify and expand the MS4 program, additional synergies will be explored that will add additional value to the overall MS4

program such as the One-Stop Permitting counter, requirements for performance bonds from development projects and permit activity tracking.

In addition to continuing to address the above-mentioned items is Section 2.4.2, the items mentioned below will be addressed.

- Monitoring Program Changes

  As mentioned previously, the current monitoring program does not effectively allow for the assessment of implemented BMPs. In addition, changes to the current monitoring program are deemed necessary for following reasons:

  - The current program lacks integration and is unable to provide adequate temporal and spatial coverage to facilitate timely management intervention, in the event of illicit discharge, or to plan long-term stormwater management strategies.
  - The program is unable to detect trends through space and time which is vital for assessing the success of management intervention.

  Hence, the current monitoring program must be modified to accomplish the following objectives:

  - To provide adequate temporal and spatial coverage understanding of the receiving waters quality and to facilitate timely management intervention in the event of illicit discharge as well as to plan long-term stormwater management strategies.
  - To detect trends through space and time in receiving water quality.
  - To obtain enough data points to properly characterize the data results in a statistically-meaningful way.
  - To develop a more cost-beneficial water quality monitoring program.
- Continued review of the regulatory, policy and planning controls of the City
- Review of the water quality benefits of the City owned and operated detention/retention basins
- Expansion of the industrial and high risk program
- Assess WQ data to better determine the effectiveness of the program
- Continue organizational enhancement activities to ensure open and effective communication between the key departments and personnel involved in the City's MS4 program
- Continue to make improvements to the tracking and recording keeping of City's stormwater activities

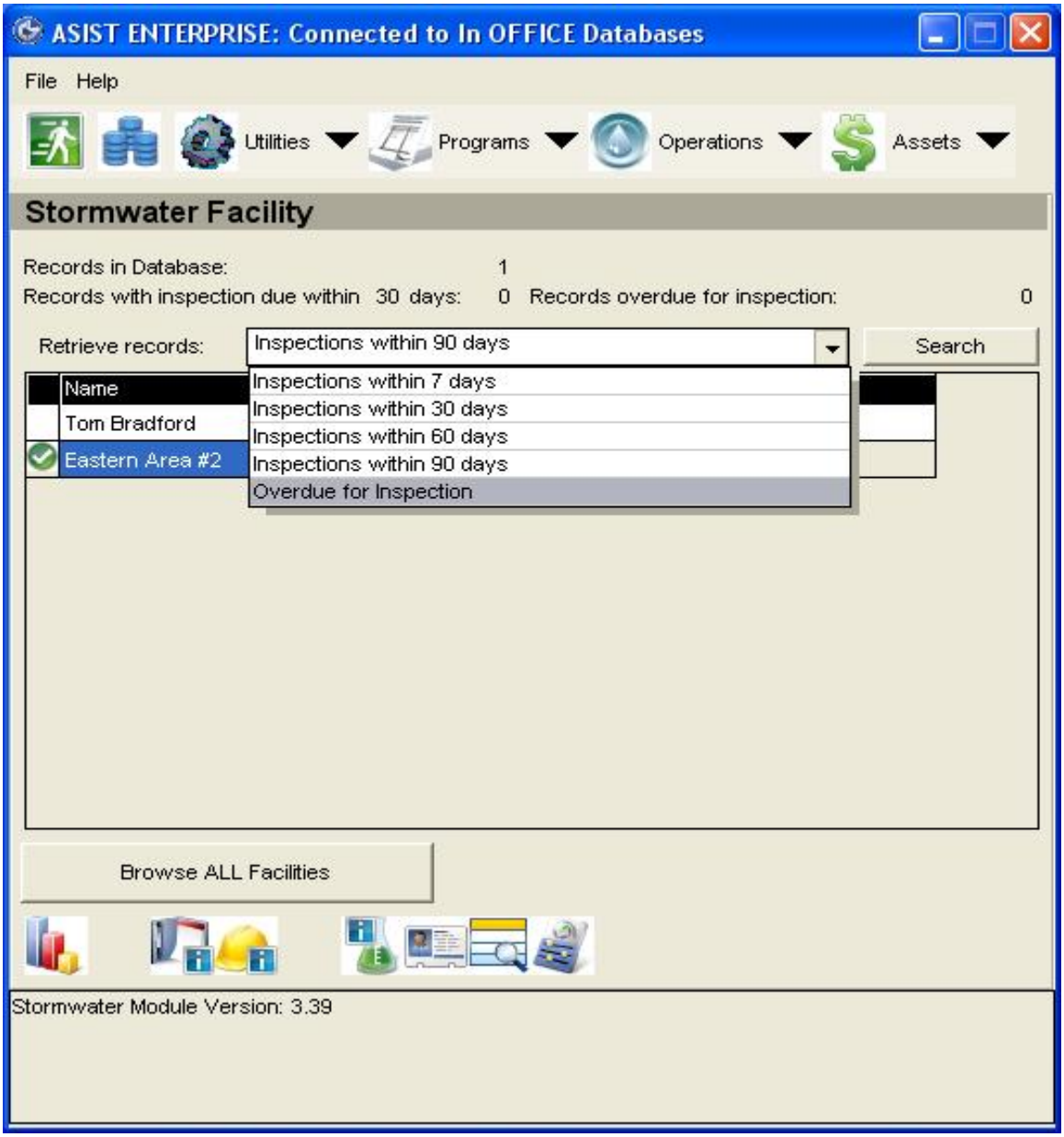
- Update Advanced Stormwater Information System database and develop an implementation strategy for the City staff to begin deploying the software
- Continue to develop protocols and plan for expansion of the industrial and high risk runoff inspections
- Continue to develop and implement a training and education program for City staff
- Continue to assess program human and non-human resource needs

Malcolm Pirnie is setting up the Advanced Stormwater Information System (ASIST) for tracking all BMP activities and scheduling the maintenance activities.

ASIST is a database that allows the City to track the progress of its interim SWMP, schedule activities such as collection system maintenance and inspections, construction site inspections, and water quality monitoring data can be entered.

For example, if an inspection identifies a problem, the inspector enters a description of it into the City's computer-based project tracking and management program. **Figure 2-1** below demonstrates how the ASIST program is used to track routine maintenance on stormwater facilities such as retention basins.

Figure 2-1: Stormwater Facility Maintenance in ASIST



3. Receiving Waters and Watersheds

3.1. Overview

ADEM's NPDES Phase I Permit (ALS000001) for the Birmingham Area Municipal Separate Sewer System, Jefferson County has identified the following creeks as the receiving waters, and parts of whose watershed area is in the City limits of Birmingham.

- Valley Creek
- Black Creek
- Shades Creek
- Cahaba River
- Village Creek
- Tarrant Spring Branch
- Five Mile Creek
- Little Shades Creek
- Little Cahaba River

Among all the creeks listed, Village Creek has the longest stream miles in the City of Birmingham limits, and also largest drainage area compared to drainage areas of the other receiving waters in the City limits. There are five major watersheds that cover most of the drainage area in the City limits. Some of the other receiving waters listed above are tributaries to the identified five major receiving waters. The five major watershed areas identified are:

- Valley Creek receiving water watershed area
- Village Creek receiving water watershed area
- Five Mile Creek receiving water watershed area
- Shades Creek receiving water watershed area
- Cahaba River receiving water watershed area

All of the major watersheds in the City limits have mixed landuses, residential being the major landuse for all watersheds other than Cahaba River watershed in which forest and open lands are the dominant landuses. **Figure 3-1** shows these five receiving waters and associated watershed areas. **Table 3-1** shows the major landuse acreage along with the lengths of streets in the watershed.

Figure 3-1: Major Receiving Waters and Their Watershed in the City of Birmingham

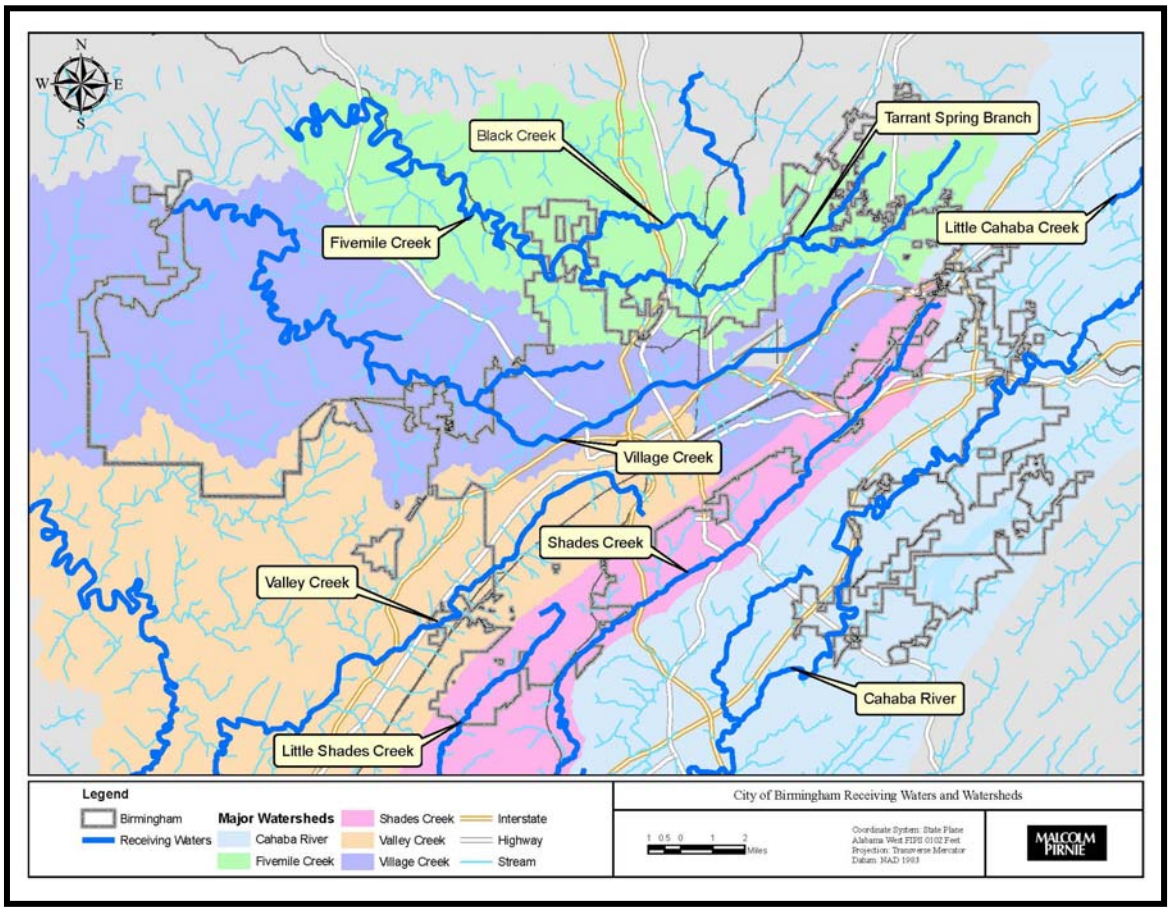


Table 3-1: Landuse Areas and Streets Lengths of the major Watersheds in the City

Landuse	Watershed				
	Valley Creek	Village Creek	Five Mile Creek	Shades Creek	Cahaba River
Residential (ac)	11935	16651	5821	3283	2074
Commercial (ac)	3051	4402	504	849	738
Industrial (ac)	1746	2782	326	322	105
Open Land (ac)	105	555	731	205	846
Total (ac)	18272	28477	14426	8369	16942
Streets (miles)	534	625	170	89	73

3.2. Valley Creek Watershed

Valley Creek is a tributary to the Black Warrior River. The Valley Creek originates in Birmingham at 5th Avenue North and 7th Street and is flows west to Bankhead Lake, an impoundment of the Black Warrior River. The initial portion of the Valley Creek is a concrete lined open channel. The Valley Creek watershed has mixed landuses with major being residential, commercial and industrial. Due to high density residential and commercial landuses in the upper portions of Valley Creek watershed, this part of the watershed is dominant with impervious paved areas. Nabors Branch is a tributary to the Valley Creek.

3.3. Village Creek Watershed

Village Creek starts in Roebuck area in the north-east side of the Birmingham. The Village Creek flows southwest before joining the Black Warrior River. Village Creek is tributary to the Black Warrior River, and has a mixed landuse in its watershed in Birmingham. The Upper portion of the watershed is predominantly of residential use, middle and lower portions of the watershed in the City limits are predominantly of industrial use. Village Creek is listed as impaired stream with pathogens and pesticides (Dieldrin) for agricultural supply. TMDL for metals (Zinc), pH and siltation in the Village Creek watershed was developed in July 2005.

3.4. Five Mile Creek Watershed

Five Mile Creek is a tributary to the Black Warrior River and it originates at the eastern base of Red Mountain and flows westward through City of Birmingham. Birmingham is in the upper parts of the Five Mile Creek watershed. Tarrant Spring Branch is the longest tributary for the Five Mile Creek within the City limits. Five Mile Creek has about 78 square miles of total watershed area and some of which is in the northern portion of Birmingham. Residential is the major landuse within the City limits of the watershed.

3.5. Shades Creek Watershed

Shades Creek is a sub-watershed within the upper portion of the Cahaba River Basin, and residential is the dominant land use of the Shades Creek watershed in Birmingham. Shades Creek flows through urban and residential areas on the south side of Birmingham. TMDL for siltation, turbidity, and habitat alteration in Shades Creek was developed in October 2004, and TMDL for fecal coliform in Shades Creek was developed in October 2003.

3.6. Cahaba River Watershed

The Cahaba River is the longest free-flowing river in the Alabama. It is a major tributary of the Alabama River and part of the larger Mobile River Basin. It is 191 miles long and drains an area of 1,870 square miles. Birmingham is in the upper portions of Cahaba River watershed. Its watershed has mixed landuse in the City limits; forest and open space are being the dominant of all landuses. The rapid residential growth in the watershed, which increases the possibility of introducing additional pollutant loads from the watershed to the river, is a major concern with respect to protecting the river water quality. The Birmingham Water Works Board draws water from the river for supply to the Birmingham metropolitan area. Little Cahaba River is a major tributary for the Cahaba River within the City limits. Shades Creek is also another tributary to the Cahaba River which intersects the river further downstream and outside of the City limits. Nutrient TMDL was developed for the watershed in September 2006. The Cahaba Creek is listed for its impairment with siltation (habitat alteration) with designated water use categories of fish & wildlife) for 17.46 miles and this stretch which is shared by Jefferson and Shelby Counties. It is listed for siltation (habitat alteration) with designated water use categories of Outstanding Alabama Water and public water supply for a 13.45 mile segment in Jefferson County. Cahaba River also listed as impaired with siltation (habitat alteration) with designated water use categories of fish & wildlife for 21.11 miles and this stretch is shared by Jefferson and St. Clair Counties.

4. Structural Controls and Collection System Operation

4.1. Detailed Program Overview

4.1.1. MS4 Maintenance

The City of Birmingham Department of Public Works (DPW) is engaged in a number of activities related to the operation and maintenance of the City's MS4. The MS4 operation and maintenance activities include:

- Cleaning storm drain inlets
- Cleaning storm sewer lines cleaned
- Clearing litter
- Replacing and repairing pipe
- Inlet construction
- Curb and gutter construction
- Fabricating and setting storm sewer inlet tops
- Clearing debris from inlets by hand
- Vacuuming pipes and inlets
- CCTV of pipes with un-clearable blockages
- Repairing pipes or inlets as needed
- Clearing debris from drainage ways

DPW inspects and maintains one stormwater pump station:

- Rosebud

The City of Birmingham's stormwater collection system BMP activities within the each major watershed area are approximated from the City's records in tracking the activities for the entire City together. The Table 4-1 shows the City's non-structural activities by major watersheds.

Table 4-1: MS4 Maintenance Activities

BMP Activity	Watershed		
	Valley Creek	Village Creek	Five Mile Creek
CLEANING SERVICES:			
Catch Basin (no.)	1366	2391	464
Storm Sewers (linear ft.)	54532	95431	16617
Storm Sewer backups (#)	318	557	111
REPAIR & CONSTRUCTION:			
Storm sewer tops set, reset (#)	1809	3166	620

The land uses in Shades Creek and Cahaba River that lie within the City limits of Birmingham are primarily forested and commercial. The commercial properties within these watersheds are managed and maintained by their respective management companies.

Corrective maintenance work orders for the Rosebud stormwater pump station are found in **Appendix D**.

4.1.1.1. Prioritizing Areas for Maintenance

Prior to storm events, DPW staff inspects “hot spot” areas that are flood prone.

In addition to evaluating the “hot spot” areas prior to storm events, DPW staff routinely receive complaint calls through the City’s 311 call center, faxes from other departments, citizen emails from the City’s website, etc. These complaints are entered into the daily work plans for the DPW crews.

The City has also implemented the “23 in 23” program which is a City-wide effort to keep communities in the City in a 23-day cycle of debris removal and litter control. The maintenance of the MS4 is included in this program.

4.1.2. Creek and Basin Maintenance

DPW staff also maintains rivers, creeks, ditches and basins that are owned and operated by the City. Creeks are routinely inspected for debris and wood that accumulated on bridge piers and inside culverts.

DPW inspects and maintains the following rivers, creeks, and ditches:

- Five Mile Creek and its tributaries within the city limits
- Village Creek and its tributaries within the city limits
- Shades Creek and its tributaries within the city limits

- Valley Creek and Cotton Mill Branch and their tributaries within the city limits
- Cahaba and Little Cahaba Rivers and their tributaries within the city limits
- Warrior River and its tributaries within the city limits
- Existing and future designated drainage easements on subdivision plats and other properties dedicating drainage maintenance rights and responsibilities to the City
- Smaller tributaries and drainage ways flowing into the major watercourses listed above

DPW inspects and maintains the following retention basins:

- Avondale Park
- The Birmingham Zoo
- Don Hawkins (Roebuck) Park
- Eastern Area Landfill retention basin
- Heritage Towne Place
- Tom Bradford Park
- All future basins built and dedicated to the City in accordance with the City's subdivision and land development regulations.

Aerial maps of these basins can be found in **Appendix C**.

There are four types of maintenance problems that are typically found in the City's creeks, ditches and basins.

1. Trash or other man-made objects, such as garbage, shopping carts, tires, lumber, furniture, appliances, and animal carcasses.
1. Minor problems which are vegetation growth, tree limbs, and other naturally-occurring debris, including sedimentation in a retention basin or storm sewers.
2. Obstructions which may include fallen trees, culvert damage, log jams, large appliances or car bodies, etc., that by obstruct the flow of the ditch, stream, or river.
3. Structural projects such as bridge or culvert replacements, bank stabilization, dredging, or other major projects that require a permit from the Alabama Department of Environmental Management.

4.1.2.1. Identification of and Resolution of Maintenance Issues

Each watercourse is inspected and maintained continuously and the basins listed above are inspected at least every eight months. Ditch maintenance inspections

are conducted on a month-to-month basis. Following significant rainfall events DPW inspects “drift routes” where debris is known to accumulate.

DPW also responds to complaints submitted by residents via the 311 call center, the County Health Department, or other offices, and problems are normally corrected within 30 days of receipt of the complaint.

4.1.3. Village Creek Cleanups

The DPW has partnered with the Village Creek Society to sponsor and provide assistance with debris removal from Village Creek. This is a public participation event. During the past several years a considerable amount of debris has been removed from the creek. The removal amounts have been approximated at:

2006 – 20 tons

2007 – 8.94 tons

2008 – 6.69 tons

5. New Development and Significant Redevelopment

The NPDES MS4 Permit requires the development of a comprehensive master planning process to develop, implement, and enforce controls to minimize the discharge of pollutants from areas of new development and significant redevelopment after construction is completed.

A number of streams flowing through the City of Birmingham are impaired and have been included on the 2008 Alabama 303d list or TMDLs have been developed by the Alabama Department of Environmental Management (ADEM) or EPA Region 4.

Village Creek is on the 303d list for pathogens and pesticides (dieldrin) and the source is suspected to be urban runoff and wastewater collection system failure. The Cahaba River is listed for siltation and the source is suspected to be urban runoff. **Figure 5-1** shows the 303d streams in Birmingham.

TMDLs have been developed for:

- Bayview Lake for silt
- Camp Branch for silt, pH, and habitat alteration
- Village Creek for zinc, pH and siltation
- Cahaba River for nutrients
- Shades Creek for turbidity and habitat alteration
- Shades Creek for pathogens

Figure 5-2 shows the TMDL streams in Birmingham.

Figure 5-1: City of Birmingham 303d Streams

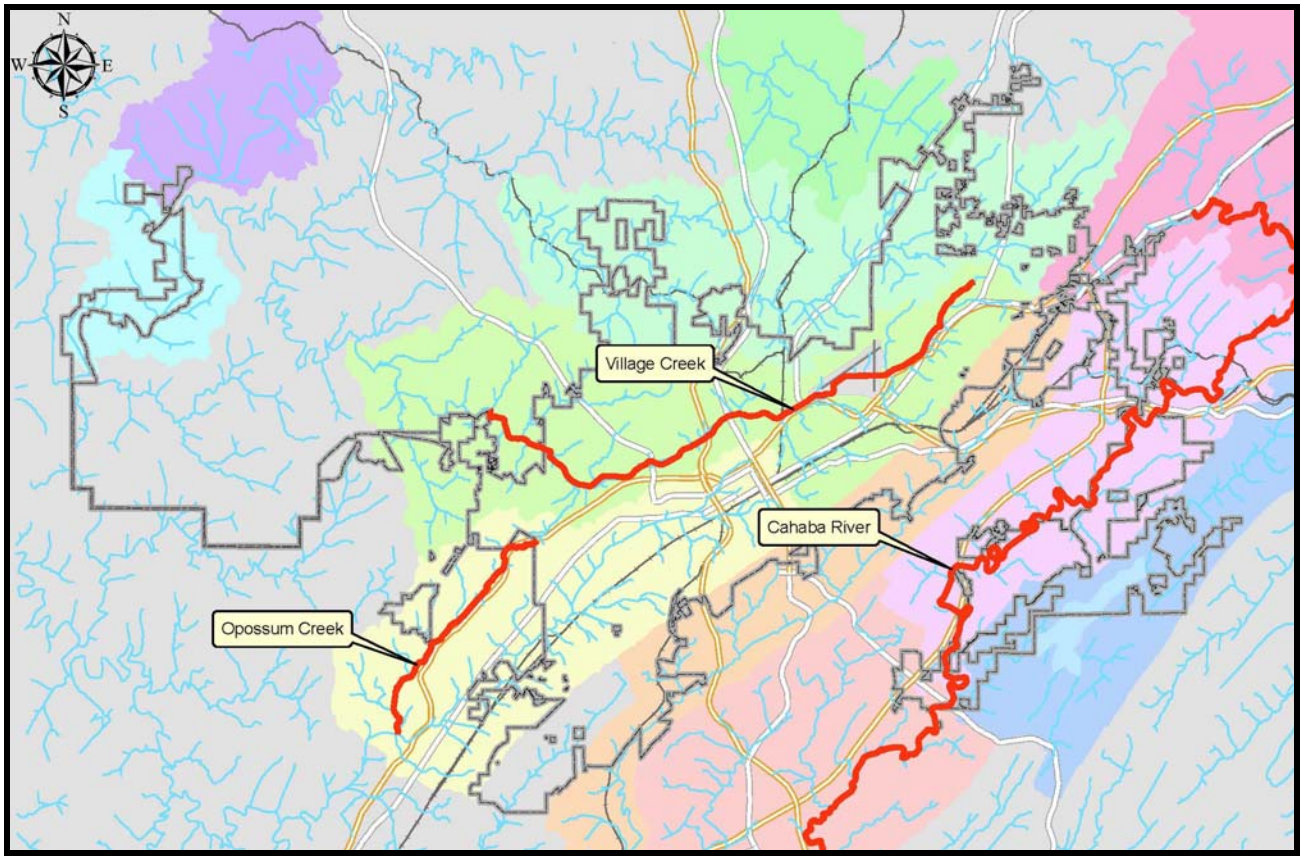
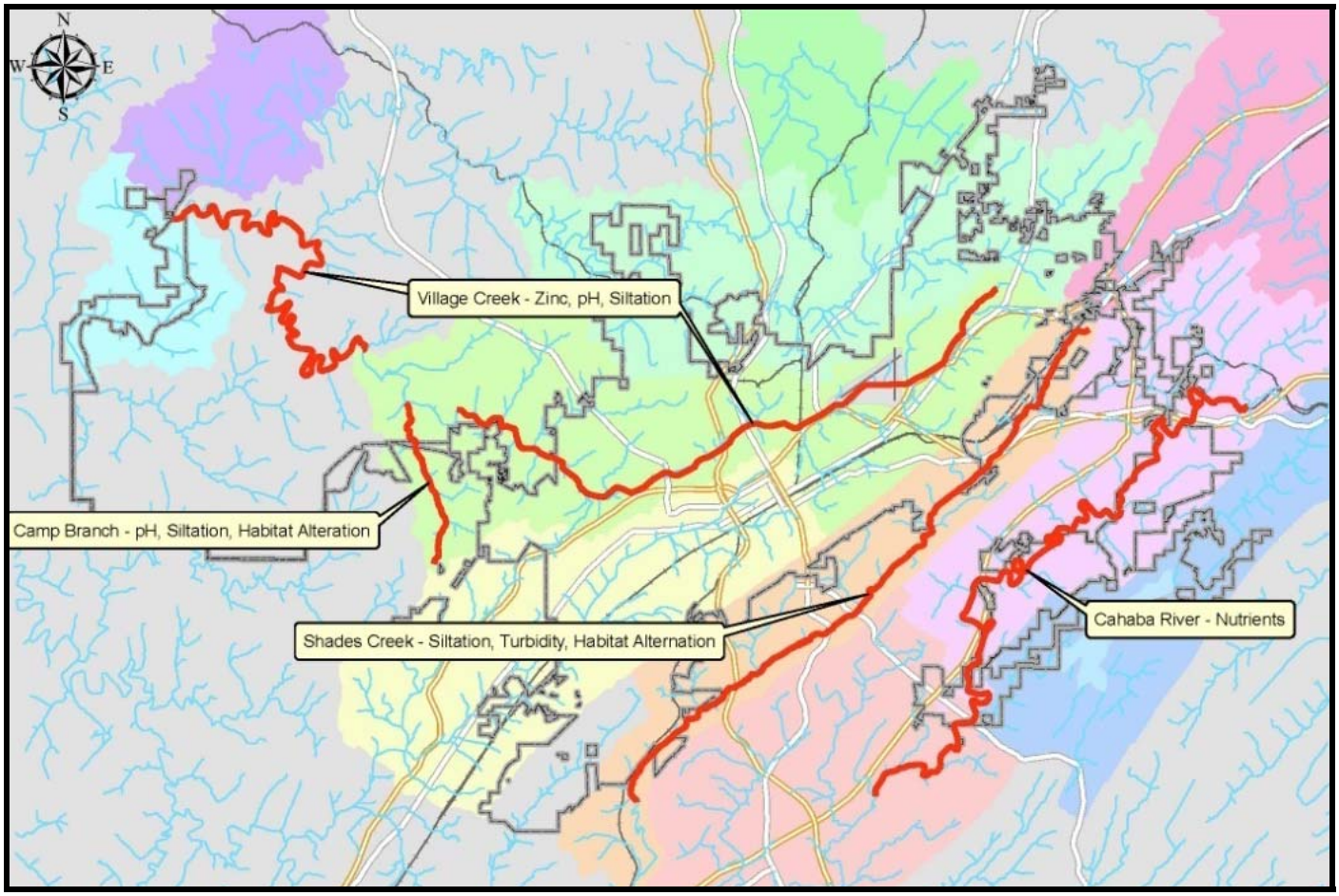


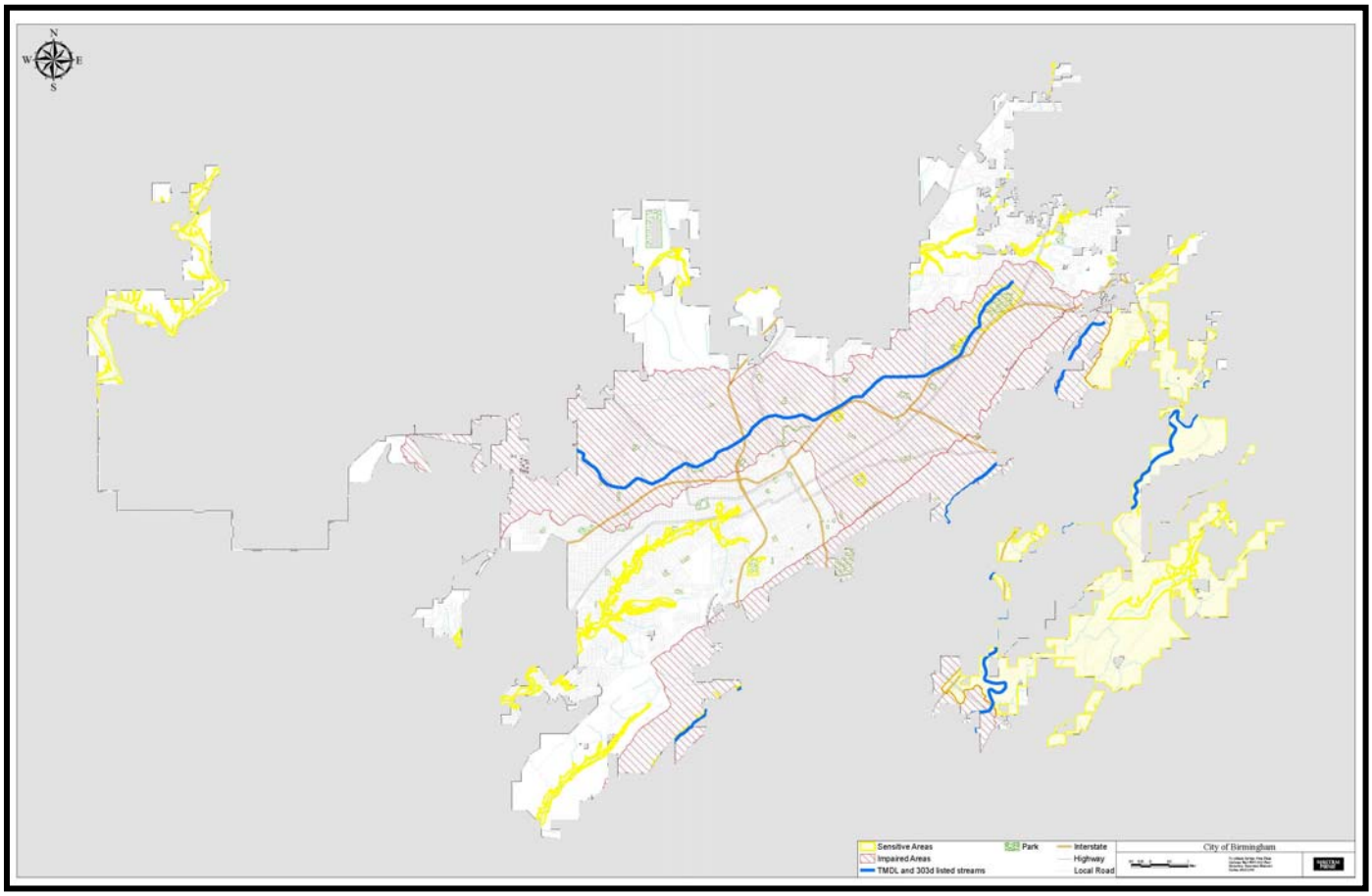
Figure 5-2: City of Birmingham TMDL Streams



Several policies and plans are in place in the City to assist in controlling the introduction of these and other pollutants into the watercourses in Birmingham. The details of these plans and how they fit into the mitigation of pollution in streams and their contribution to the new development and redevelopment provisions of the stormwater program are discussed below.

There are 3 areas of development within the City of Birmingham: environmentally impaired areas, environmentally sensitive areas, and all other areas. The environmentally impaired areas include those areas that drain to the 303d listed and TMDL streams that are explained above. Environmentally sensitive areas include the 100-year flood plains of non-impaired watersheds, waters of rare, threatened or endangered species and drinking water sources. All other areas are dealt with accordingly.

Figure 5-3: Environmentally Sensitive and Impaired Areas



Four mechanisms are used to control pollutants from new development or significant redevelopment: planning, project, policy and regulatory controls.

The primary planning employed by the City of Birmingham are the Birmingham Comprehensive Plan and the Flood Mitigation/Stormwater Management Plan. The Birmingham Comprehensive Plan, which includes policy statements which are concurrent with the goals of the Phase I NPDES MS4 program. The Flood Mitigation/Stormwater Management Plan which addresses items such as planning, open space preservation, zoning, subdivision regulations, building codes and flood plain development regulations. These plans address the three areas of development in the City of Birmingham.

The primary project controls include brownfield reclamation, parks, flood plain property acquisition, and restoration projects. These plans address the environmentally impaired and environmentally sensitive areas.

The primary policy controls are the land use policy (including the Lake Purdy/Cahaba River Interim Land Use Policy) and BWWB Lake Purdy/Cahaba River Watershed Protection Policy. These policies address environmentally sensitive and environmentally impaired areas.

The primary regulatory controls include the subdivision regulations, the erosion control ordinance and the zoning ordinance. These controls address all areas of development in the City of Birmingham.

5.1. Planning Controls

5.1.1. The Birmingham Comprehensive Plan

The Birmingham Comprehensive plan contains policy statements and components that provide guidance and direction to the City on the strategy to control pollutants when engaged in development and significant redevelopment projects. With respect to community renewal, detailed recommendations on such services such as open space provision and protection are found in the Development Management and Environmental Management sections of the Plan. Recommendations on services such as storm and sanitary sewers, street improvements, public school facilities, park improvements, and water provision are found in the Public Facilities section of the Plan.

The Environmental Management section of the Plan contains an action strategy which reads, “Encourage adherence to the design principle that stormwater discharge after development not exceed the natural runoff prior to development. This strategy has been put into action and is a provision of the Subdivision Regulations of the City of Birmingham.

The Environmental Management section of the Plan contains a policy statement for parks and recreation which reads, “The City will develop open space, parks, and recreational opportunities responsive to citizens’ needs and the City’s unique ridge and valley settings, which promote physical health and well being, and further educational, economic, environmental, and aesthetic objectives.” The City of Birmingham Flood Plain/Stormwater Management Plan’s flood mitigation component is consistent with and supports this policy statement.

The Environmental Management section of the Plan contains an action strategy which reads, “Make recommendations for interim watershed protection for the Cahaba River-Lake Purdy area.” This area has a drinking water intake in it which is critical to the City of Birmingham. The Birmingham Water Works Board has worked to develop the Cahaba River/Lake Purdy Watershed Protection Policy which is discussed in further detail below.

5.1.2. The City of Birmingham Flood Plain / Stormwater Management Plan

On March 16, 1981 the City of Birmingham joined the National Flood Insurance Program (NFIP). Further, in December 1993 Birmingham joined the Community Rating System (CRS), a voluntary program that involves establishing floodplain management programs that exceed National Flood Insurance Program minimum requirements.

Currently the city is rated a Class 6, resulting in a 20% reduction in flood insurance premiums to citizens of Birmingham. As a CRS program participant, the City actively pursues a broad range of mitigation and management activities.

Flood Mitigation / Stormwater Management Plan is intended to be an umbrella type study, providing direction and identifying the actions necessary to advance the numerous aspects of the City of Birmingham's overall Flood Mitigation and Stormwater Management Program efforts.

The City of Birmingham has plans to meet their flood mitigation and stormwater management goals through:

- Preventive Measures
- Property Protection
- Emergency Services
- Structural Projects
- Natural Resource Protection
- Public Information

Of these strategies, the preventive measures, property protection, structural projects, and natural resource protection include recommended action items that have direct stormwater quality implications.

This plan addresses all three areas of development within the City of Birmingham.

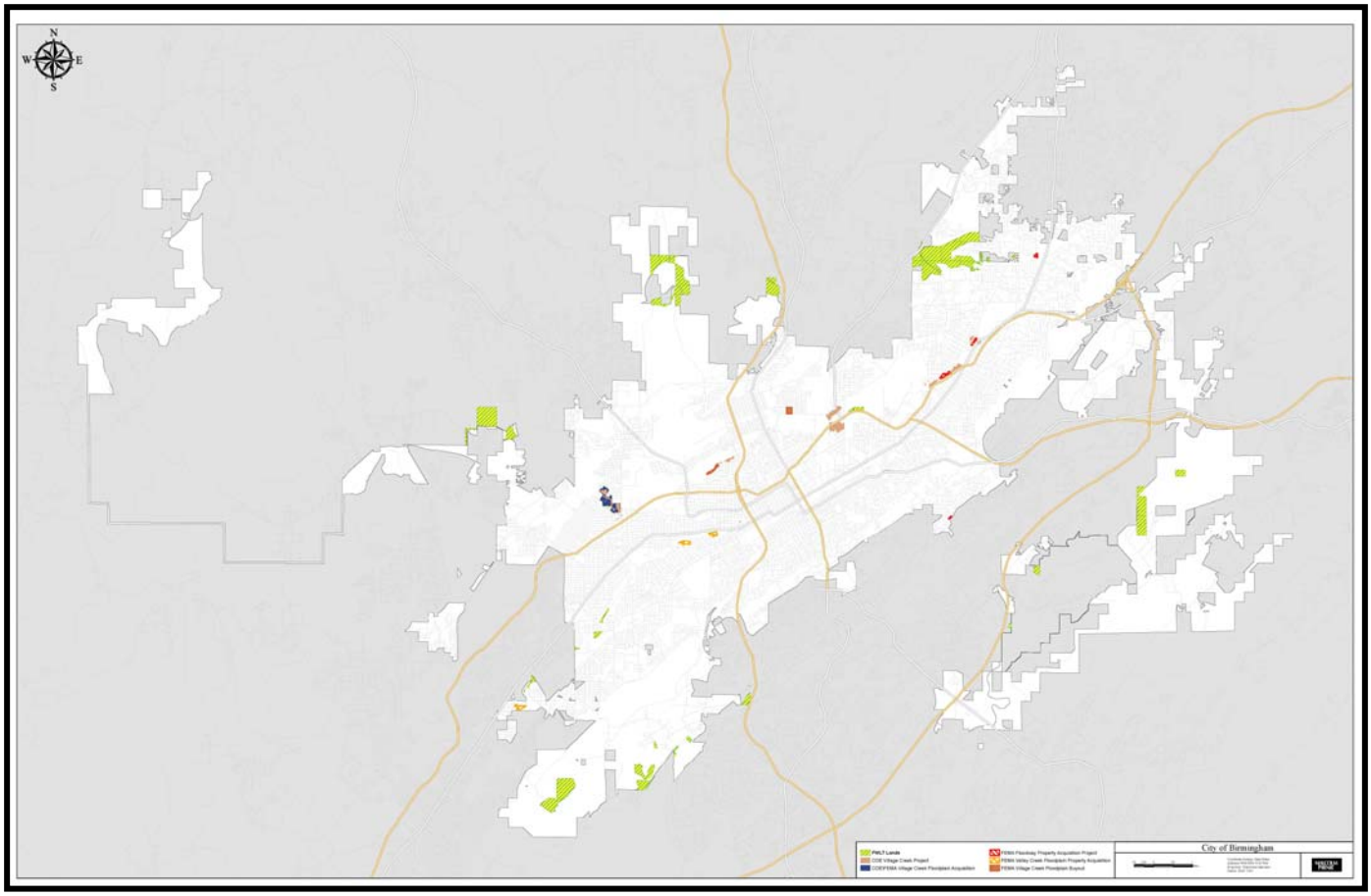
5.2. Project Controls

5.2.1. Flood Property Buyouts

Historically, prior to 1995, the floodplains within the City have routinely flooded. Due to historical and more recent flood events, the City has taken a comprehensive approach to flood mitigation / stormwater management. Much of the existing mitigation and management efforts have focused on regulatory efforts in addition to property acquisitions (i.e. buyouts).

Property acquisitions have allowed the City to reattach stream beds to the flood plain to help in the maintenance of the beneficial flood areas in the City. These acquisitions have also served to preserve open spaces and stream buffers, which addresses environmentally sensitive and environmentally impaired lands. In addition to properties acquired by the City of Birmingham, the Fresh Water Land Trust has also acquired a number of properties that are being maintained as conservation easements. A map of these properties is shown below in **Figure 5-4**.

Figure 5-4: Flood Buyout Properties and Conservation Easements



5.2.2. Parks

5.2.2.1. Railroad Reservation Park

The City of Birmingham has developed a plan for the construction of a park in the Central Business District that will transform the area between two original furnaces that were once reserved for rail. The current condition of this area is mainly parking lots, decks and warehousing. Converting this land use to open

space/recreation will reduce the pollutant loading in the area and restore this site. The park is being planned as a demonstration project for a variety of sustainable practices with stormwater, erosion control and energy benefits incorporated into its landscape and structural elements.

5.2.2.2. Red Mountain Park

The Red Mountain Park has been planned for the South West Birmingham area and it was once the site of an iron ore mine. The park master plan includes the restoration and preservation of natural resources continuing the process that has gradually reclaimed Red Mountain from its mining days. Once totally stripped of trees and heavily graded to allow access to the iron ore beneath its surface, the mountain is rebounding to a healthy ecosystem; the plan for Red Mountain Park calls for reforestation, creation of meadows, removal of invasive species and safeguarding of the headwaters of the Black Warrior and Cahaba rivers. This project is restoring an environmentally impaired area.

5.3. Policy Controls

5.3.1. Birmingham Water Works Lake Purdy/Cahaba River Watershed Protection Policy

April 9, 2008, the Birmingham Water Works Board adopted a policy requiring approval for development in the Cahaba River/Lake Purdy Watershed, which includes areas within the City limits of Birmingham, in order to manage/control pollution from erosion, wastewater disposal, stormwater runoff and use of toxic or hazardous substances in the watershed, and in order to protect the public water supply.

The health, welfare and economic well-being of the citizens and businesses in the Birmingham, Alabama Metropolitan Area is inextricably tied to the quality and quantity of the source waters in the Cahaba River/Lake Purdy Watershed located in Jefferson, Shelby and St. Clair Counties.

The Cahaba River/Lake Purdy Watershed supplies a substantial amount of raw water for drinking and other public uses in addition to industrial uses. High impact land uses and unmanaged development can contribute to the degradation of water quality of Cahaba River/Lake Purdy both directly and indirectly through the degradation of contributing waters. Conversely, low impact uses and responsibly planned and managed development can ensure the safety of this public water supply.

The Cahaba River/Lake Purdy Watershed Protection Policy is intended to provide protection of the Cahaba River/Lake Purdy Watershed for use as a public water supply reservoir. The establishment of the policy is intended to protect

public health, ensure the availability of safe drinking water, and minimize degradation of the water supply source through requiring implementation of structural and non-structural best management practices applicable to construction sites as well as existing and future land uses. The policy offers protection of the Cahaba River/Lake Purdy Watershed by:

- Prohibiting and regulating of potential key contaminating land uses and activities.
- Requiring performance standards for non-point source pollutants and privately owned wastewater treatment facilities.
- Requiring site development plans.
- Providing exemptions and review controls.
- Establishing enforcement measures for non-compliance.

The policy serves as a management tool to provide notification to the Board of ongoing or proposed land development activities, which either alone or combined with other activities in the watershed, may cause contamination to or degradation of the environmentally sensitive areas.

5.3.2. Lake Purdy Interim Land Use Policy

The City of Birmingham has developed a land use policy which details the areas in the Cahaba River/Lake Purdy watershed that are in the City of Birmingham and what their allowable land uses are to include: residential areas (very low, low, medium, high), conservation, institutional, commercial, industrial and planned mixed use. The conservation areas are defined as environmentally sensitive areas with unique natural resources, ecological characteristics or physical constraints requiring restriction to low intensity public, water supply, recreation or compatible uses, including single family homes on lots of 5 acres or more, and including a conservation corridor or buffer area of 200 feet (100 feet of natural vegetation) from the flood plain along the Cahaba River, Little Cahaba River and Lake Purdy and 50 feet (35 feet of natural vegetation) from the flood plain along their tributaries except first order streams not draining directly into the rivers.

The interim land use policy is also employed by the City in order to develop site specific controls for activities taking place in those environmentally sensitive areas to ensure the prevention of negative impacts to the water quality of the Cahaba River/Lake Purdy watershed.

5.4. Regulatory Controls

5.4.1. Subdivision Regulations

The general policy of the City of Birmingham's Subdivision Regulations is as follows:

The policy of the City of Birmingham relative to stormwater is that the post development runoff rate shall equal the pre-development runoff rate. Specific methods of achieving this goal are the responsibility of the owner's engineer.

The operation and maintenance of the stormwater detention/retention facility is the responsibility of the property owner. The owner's engineer shall be responsible for instructing the owner in the proper operation and maintenance off the facility.

Any liability associated with the design, performance and operation of the stormwater detention/retention facility remains with the owner and the owner's engineer.

Figure 5-5 demonstrates the detention/retention facilities that have been constructed to meet the provisions of these regulations.

Figure 5-5: Detention Basin in the Oxmoor Industrial Park

The City is currently evaluating plans that will provide authority for the inspection of privately held stormwater pollution controls constructed to meet the conditions of the City's drainage policy. The inspection program on stormwater structural controls will be implemented by the Engineering Division of the Department of Planning, Engineering and Permitting. This plan will also provide authority for the requirement of a performance bond for stormwater detention/retention facilities. The requirements of the Subdivision Regulations apply to all three areas of development in the City of Birmingham.

5.4.2. Zoning Ordinance

The zoning regulations and districts as established have been made in accordance with a comprehensive plan and designed to lessen congestion in the streets, to secure safety from fire, panic and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentrations of population; to facilitate

the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements.

The zoning ordinance contains the flood plain zone district provisions. This regulatory control applies to environmentally sensitive and environmentally impaired areas.

5.4.3. Soil Erosion and Sediment Control Ordinance

This ordinance is implemented during the permitting phase of a construction project and it requires that all sites regardless of size obtain a soil erosion control permit. There are requirements for BMP plan review and approval in order to ensure that City watersheds will be protected from sediments that have potential to enter the City's waterways. The City's Soil Erosion and Sediment Control Ordinance are currently under review by staff for revisions if deemed necessary. This regulatory control applies to all three areas of development.

6. Roadway Maintenance

6.1. Detailed Program Overview

The City of Birmingham has always maintained responsibility for this element of the stormwater program. It includes a number of preventive controls (public education) and corrective controls (street sweeping and roadway construction BMPs). The 23-in-23 Program has also assisted in enhancing this program.

There are 10 dedicated street sweeping crews with 3-4 persons per crew.

6.2. Corrective Controls

6.2.1. Street Sweeping

The Department of Public Works is responsible for sweeping and maintaining streets within the City of Birmingham. Roadway sweeping activities include:

- Sweeping roadways
- Sweeping curbs
- Sweeping gutters

There are 15 areas in the City where roadways are swept. These areas are on a 15 day cycle. The areas are divided into eight (8) routes of approximately 5 City blocks each. Residents are notified of street sweeping in their area by an annual schedule which is sent to all city residents.

The street sweeping crews also respond to complaints of glass in the roadways and debris from automobile accidents.

6.2.2. Sanding/De-Icing

When DPW responds to calls concerning unsafe streets due to ice and the decision is made to dispatch a sand spreader, a location log of the addresses that require sanding is kept. On the next regular business day the addresses are forwarded to the Street Sweeping Supervisor and a copy to the District Supervisor. The Street Sweeping Supervisor then schedules the sweepers as soon as possible to sweep the sand from these areas and disposes of the sand at one of the city landfills.

The **Table 6-1** is presented with the extent of work that the City conducted related to road maintenance activities.

Figure 6-1: Roadway Maintenance BMPs

BMP Activity	Watershed				
	Valley Creek	Village Creek	Five Mile Creek	Shades Creek	Cahaba River
MATERIAL HAULED:					
Refuse (Tonnage)	40303	134622	150402	11253	36550
Brush (Tonnage)	67453	102653	77958	13243	18513
Rubbish (Tonnage)	47262	39598	3046	6782	674
Recycling	42081	38238	1625	5678	76
Other (Tonnage)	158747	113099	2033	22533	121
CLEANING SERVICES:					
Streets by hand (blks)	228540	90680	8579	55437	127
Streets-mechanical (blks)	123888	163067	31797	9634	0
Streets Flushed (blks)	11885	20798	3535	0	0
MISC ACTIVITIES:					
Ice calls	0	10	3	4	3

The land uses in Shades Creek and Cahaba River that lie within the City limits of Birmingham are primarily forested and commercial. The commercial properties within these watersheds are managed and maintained by their respective management companies.

6.2.3. BMPs Associated with Roadway Construction Activities

On roadway construction contracts that are let by the City, there are requirements in the contract for the installation of BMPs in the inlets along the streets that are being repaved. The contract also requires that the BMPs be maintained appropriately. The Engineering Division of the Department Planning, Engineering and Permits is responsible for inspecting these BMPs before and during construction. If the contractor is found to be out of compliance they are given the opportunity to replace or repair defective BMPs. If they do not do so, it is a breach of their contract and the City Law Department takes appropriate action.

6.3. Preventive Controls

6.3.1. Keep Birmingham Beautiful Commission

The mission of the Keep Birmingham Beautiful Commission (KBBC) is to serve the citizens of Birmingham by developing and implementing effective public education and community involvement programs which enhance the quality of life in beautification and environmental concerns. The objective is to effect positive change in attitude and behavior regarding natural conservation, littering, recycling and beautification.

The Keep Birmingham Beautiful Commission has been involved in several projects that have served to educate the public about reducing and eliminating the amount of refuse that ends up on city streets and ultimately in waterways, and programs to get the public to participate in the prevention of gross pollutants. KBBC has sponsored approximately 95 litter prevention events in 2009.

Two of the benchmark programs of KBBC are the Adopt-a-Street Program and the Can Your Butt campaign. The Adopt-a-Street Program is a program in which groups partner with the City in sponsoring the removal of litter and unauthorized signage along streets and rights of way in the City of Birmingham.

In 2006, the City of Birmingham passed an ordinance to prohibit smoking in most restaurants and public buildings. This increased the amount of cigarette litter on City streets and became a growing source of pollution. The Keep Birmingham Beautiful Commission implemented a project that would encourage behavioral changes necessary to reduce litter and polluted runoff. Four City blocks were targeted due to the amount of cigarette butts found on these sidewalks and streets because there were no receptacles. The Can-Your-Butt campaign was a two part campaign: cigarette butt receptacles and outdoor advertising. Ten cigarette butt receptacles were put in place and five billboard ads were developed.

After the first week of the cigarette butt receptacle placement the Keep Birmingham Beautiful Commission reported a 40% reduction of cigarette litter within the project area. The receptacles will remain in place indefinitely.

As an accredited affiliate of the Keep America Beautiful Program, KBBC calculated a litter index for 2009. Especially designed for Keep America Beautiful affiliates, this is the most statistically reliable tool for litter assessment in a community.

The Litter Index evaluates through visual and written scoring the amount of litter in selected community areas. Conducting the Litter Index helps build consensus on priority problem areas. As a quantitative measure of progress over time, it is a useful tool for tracking improvement and assessing whether activities are effectively deterring litter.

The City of Birmingham's litter index for 2009 is 2.99. This index will be tracked each year and compared with the index of the previous years.

7. Pesticide, Herbicide and Fertilizer Application

7.1. Detailed Program Overview

As a part of the Department of Public Works (DPW), the Horticulture and Urban Forestry Division is responsible for landscaping, beautification, maintenance of ROW, public spaces and vacant lots, and application of herbicides and fertilizers. DPW is also responsible for mosquito abatement during the summer months.

7.2. Storage Areas

The City's pesticides, herbicides and fertilizers are primarily stored at 4901 Avenue I Ensley. See the accompanying map below.

Figure 7-1: Landscaping Chemical Storage Facility

The **Table 7-1** is presented with the amount of herbicides that City has applied as part of its vegetation management program.

Table 7-1: City of Birmingham's Non-Structural Activities in the Permit 2008 -2009

BMP Activity	Watershed				
	Valley Creek	Village Creek	Five Mile Creek	Shades Creek	Cahaba River
VEGETATION MANAGEMENT:					
Street R.O.W. mowing (blks.)	2228	3665	211	547	502
Alleys, cut and clean (blks.)	1247	712	798	257	34
Interstate ramps (# ramps)	150	130	68	21	0.2
City lots, cut & clean (# lots)	450	849	107	124	169
Private Lots	339	1146	184	152	390
Ditches & creek banks (# blks.)	314	303	114	145	149
Curbs cut (# blks.)	53	33	81	4	0
Herbicide spray-trk (# acres)	237	573	201	427	190
Heribicide spray-hand (# blks.)	324	751	107	548	87
MISC ACTIVITIES:					
Mosquito spraying (blks.)	99692	67034	2325	12032	0

7.3. Best Management Practices

The following best management practices are implemented by the City to minimize the impact of the use of pesticides, herbicides and fertilizers on the City's MS4 and waterways.

7.3.1. Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings and educating employees and the public.

7.3.2. Approach

7.3.2.1. Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools.
- Choose low water using flowers, trees, shrubs and groundcovers.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.
- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clipping on the lawn when mowing. Grass clipping decompose quickly and release valuable nutrient back in the lawn).

7.3.2.2. Protocols

Mowing, Trimming and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g. mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Mulching mowers may be recommended for certain areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clipping, pruning waste, tree trimmings and weeds. Chip if necessary, and compost or dispose of at a landfill.
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpile to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements and possible conflicts between preserving vegetation and the resulting maintenance needs.

- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Dispose compost leaves, sticks or other collected vegetation at a permitted landfill. Do not dispose collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.
- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkle heads if broken.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent or fencing installed to keep rodents out.
  - Visible insects can be removed by hand and place in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water.
  - Store-brought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.

- Beneficial organisms, such as bats, birds, ladybugs, praying mantis that prey on detrimental pest species can be promoted.

- Follow all federal, state and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators.
- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule.)
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low.
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques. Use additives to reduce spray drift and reduce being washed off foliage by rain.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep/blow pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigations water or before rainfall.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

7.3.2.3. Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.
- Inspect pesticide/fertilizer storage areas daily.

7.3.2.4. Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of an Alabama qualified pesticide applicator.

- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the departments IPM Policy, SOPs and BMPs and the latest IPM techniques.
- Use a training log or similar method to document training.

In the 2008 – 2009 permit year, the City of Birmingham had 102 employees that were certified chemical applicators with the State of Alabama.

7.3.2.5. Spill Response and Prevention

- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

On February 12, 2009 a memorandum was issued from the Office of the Mayor to the Park Board Director, the Director of Public Works and the Director of Planning, Engineering and Permits to detail the vegetation management plan for the watercress darters located at Roebuck Springs. This letter can be found in **Appendix E**. There has also been a map of No-Spray areas and sensitive spray areas developed. This map also includes the floodway, which is a no spray area and the 100 year flood plain which is a sensitive spray area. This map is in **Appendix F**.

8. Illicit Discharge Detection and Elimination

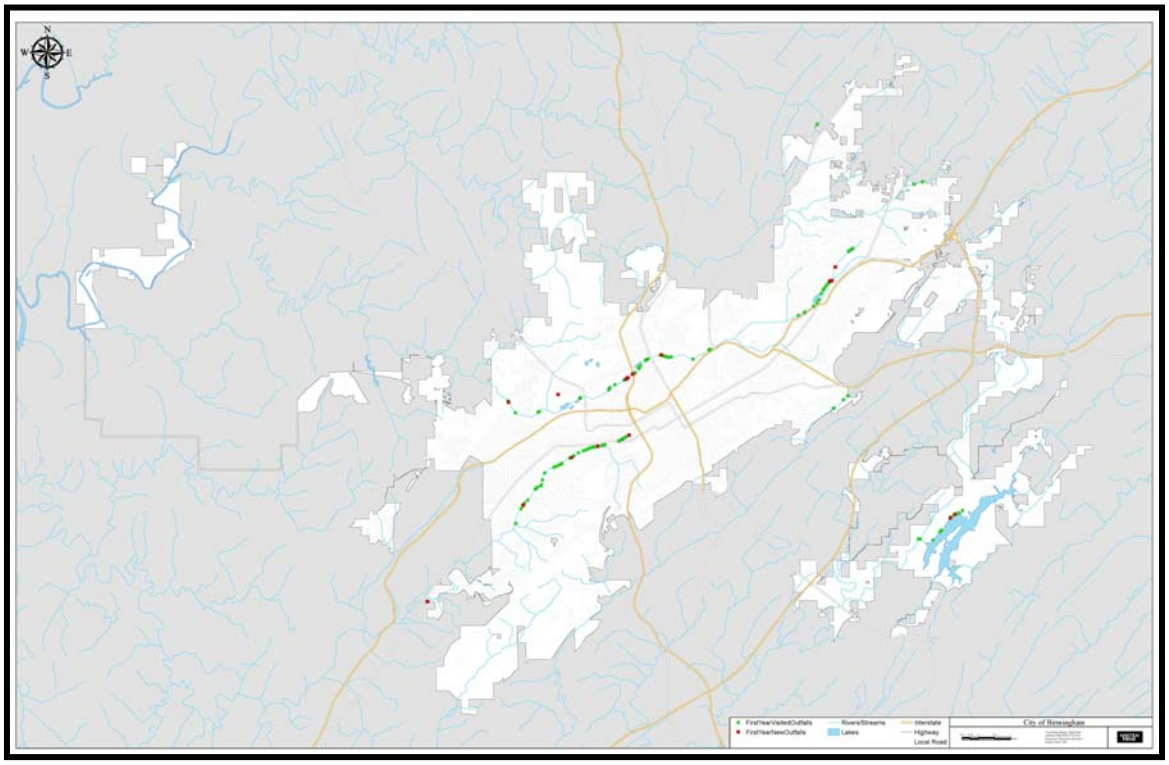
8.1. Detailed Program Overview

The main purpose of the illicit Discharge Detection and Elimination program is to detect and eliminate illicit discharges and improper disposal into the storm sewers. In accordance with the permit requirement the City has conducted a monitoring program for detection and elimination of illicit discharge and improper disposal into the storm sewer system. The City has conducted dry weather monitoring at 5 in-stream sampling sites and at 25 screening sites in order to identify and detect possible illicit discharges t.

The outfalls in the City of Birmingham are in a GIS database. They have been randomized over a five-year period with 20% to be inspected each year such that over a 5-year period each outfall is inspected at least once. However, should unusual concentrations of pollutants be discovered during dry weather screening, that information is used to re-prioritize the outfalls that will be inspected from that point forward for the year.

A detail discussion on the dry weather water quality is presented later in this report in the preceding sections of this report. The 145 outfalls that were monitored this reporting period are shown in **Figure 8-1. Appendix G** contains the field inspection sheets for each outfall.

Figure 8-1: Outfalls Inspected During Year 1



As part of outfall reconnaissance on 1/28/09, a possible illicit discharge was observed in an open channel to Valley Creek at an outfall located in the Five Point's West/West End area. The discharge was traced to two pipes that were believed to be connected to a residence along Fulton Avenue. The City notified the property owner who promptly removed the pipes as verified by a follow-up inspection conducted on April 23, 2009.

As a result of a citizen call-in regarding a possible illicit discharge to Village Creek, on June 11, 2009 the City along with Malcolm Pirnie investigated the discharge. It was determined that the discharge was food waste related and that the Jefferson County Health Department be informed for appropriate actions. No further discharges have been observed since this incident.

9. Spill Prevention and Response

9.1. Detailed Program Overview

The main purpose of this program is to prevent, contain, and respond to spills that may discharge into the storm sewer system. The City has implemented this program in compliance with the requirements, including developing a hotline for reporting spills, identifying response staff roles and responsibilities and providing spill reporting information on the City's website.

During the permit year the City has responded to a number of spill-related complaints. For example, residents along Shades Creek noticed an oily substance in the creek channel. ADEM was dispatched to the site and the determination was made that the substance was coming from an outfall which drains the areas around the Wal-Mart Shopping Center in Eastwood. The City sent Malcolm Pirnie to monitor and assess the required actions to mitigate the spill. It was determined that approximately 30 gallons of electrical transformer fluid was spilled on the parking lot of a retail business after being struck by a car.. Subsequently, Spectrum Environmental was dispatched by the owner of the transformer to contain and mitigate the spill.

In a separate but similar incident, the staff of ABC Coke near Alabama Highway 79 notified ADEM that a reddish-brown substance was being discharged to an unnamed tributary on Five Mile Creek on March 19, 2009. ADEM notified the staff at the Putnam Water Filter Plant, operated by the Birmingham Water Works Board (BWWB), that the discharge was traced back to the Putnam Station. After investigating, it was discovered that one of the dikes around the drying beds was breached and a release of ferric sulfate occurred. The non-toxic substance was released into the unnamed tributary but it did not reach Five Mile Creek. Ferric sulfate is used as coagulate in the water treatment process. The Putnam Station is regulated by a stormwater permit issued by ADEM. This nontoxic discharge did not result in any fish kills or habitat impairments. The approximate 1-1/2 mile segment of the affected unnamed tributary is mostly concrete lined or box culverts. BWWB employees built a temporary dam near the confluence of the tributary and the spill was contained. ADEM approved a mitigation plan for the removal of the substance which was performed by the BWWB. The City of Birmingham has followed up with all the activities regarding the issue. The City has requested all associated reports to assess the corrective actions taken to mitigate the receiving water pollution.

9.2. Spill Response

The Birmingham Fire and Rescue Department (BFD) has primary responsibility for responding to spills that occur in the City limits. The City is currently developing a map of inlets for the Fire Department which will be part of City's long term plan for spill prevention and response. The City also plans to implement long term reporting protocols for Fire Department as part of spill prevention and response program.

Table 9-1 contains information about spills that the Birmingham Fire Department responded to in 2008 – 2009.

Table 9-1:
Spill Responses in 2008 - 2009

Date	Location	Material Involved
1/9/2009	924 31st Street N, Birmingham, Al – 35234	Gasoline or other flammable liquid
1/10/2009	I459 S at Overton Exit S, Birmingham Al - 35243	Gasoline or other flammable liquid
1/31/2009	1685 Montclair Rd, Birmingham, A l	Gasoline or other flammable liquid
2/3/2009	1700 Tallapoosa St, Birmingham, Al - 35212	Gasoline or other flammable liquid
2/26/2009	I59 S at Messer-Airport Exit, Birmingham, Al – 35212	Gasoline or other flammable liquid
3/21/2009	1562 Tuscaloosa Ave SW, Birmingham, Al	Gasoline
3/30/2009	Richard Arrington Jr. at 4th Ave N, Birmingham, Al - 35203	Gasoline
4/1/2009	1275 Center Point Pky, Jefferson County, Al – 35235	Gasoline
4/3/2009	Allison Bonnett Memorial Dr./Rutledge Dr.,Jefferson County, Al - 35228	Ethylene Glycol
4/6/2009	Pinson Valley Pky at Carson Rd, Jefferson County, Al – 35215	Gasoline or other flammable liquid
4/8/2009	1200 Roberts Industrial Dr., Birmingham, Al – 35218	Diesel fuel
4/17/2009	I59 N at Messer-Airport Exit, Birmingham, Al – 35212	Gasoline or other flammable liquid
4/20/2009	Entrance ramp from I59 to Elton B. Stephens Expressway, Birmingham, Al	Gasoline or other flammable liquid
4/25/2009	I459 N at Highway 280 ACC N, Birmingham, Al – 35242	Gasoline or other flammable liquid
5/19/2009	I59 N at Messer-Airport Exit, Birmingham, Al – 35212	Gasoline or other flammable liquid
5/26/2009	1100 Roberts Industrial Dr., Birmingham, Al – 35204	Diesel fuel

Date	Location	Material Involved
6/11//2009	10th St. at Ave W, Birmingham, Al – 35214	Gasoline or other flammable liquid
6/17/2009	1700 Tallapoosa St, Birmingham, Al - 35212	Gasoline or other flammable liquid
7/6/2009	7210 2nd Ave S, Birmingham, Al – 35206	Gasoline
7/10/2009	400 Industrial Dr., Birmingham, Al – 35211	Gasoline or other flammable liquid
8/14/2009	2236 Highland Ave, Birmingham, Al - 35205	Gasoline or other flammable liquid
8/14/2009	701 19th St. S., Birmingham, Al – 35205	Sulfuric acid
9/11//2009	5900 Messer-Airport Hwy, Birmingham, Al – 35215	Gasoline or other flammable liquid

9.3. Spill Prevention

Birmingham Fire Department has conducted pre-incident plans practices throughout the Permit year. These pre-incident plans are conducted at facilities that are in the SARA Title III, Tier II program. The Fire Department walks through each site to identify where hazardous materials are stored and they develop a plan to prevent the release of hazardous materials during an emergency. **Appendix H** summarizes the BFD practice efforts during the Permit year.

10. Industrial and High Risk Runoff

10.1. Detail Program Overview

The main purpose of this program is to identify and control pollutants in stormwater discharges to the separate sewer systems from municipal landfills; other treatment, storage or disposal facilities for municipal wastes (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal, and recovery facilities and facilities that are subjected EPCRA Title III, Section 313; and any other industrial or commercial discharge the City determines is contributing a substantial pollutant loading to the MS4.

Currently, the City is developing a long term industrial and high risk runoff program and as part of which the City is making plans to train the City Staff on municipal good housekeeping practices and illicit discharge detection and elimination. The City is also making plans to coordinate with other entities and agencies to enhance its long term industrial and high risk runoff program objectives.

10.2. Landfill Monitoring Summary

City of Birmingham has two permitted landfills: New Georgia Landfill and Eastern Area Landfill. The City's Department of Public Works regularly monitors the discharges from the landfill sites to comply with their NPDES permits. There were no reported non-compliance items for any of the monitored parameters during this reporting period.

10.2.1. New Georgia Landfill

Below are the items that were inspected at the detention pond at the New Georgia Landfill. These inspections are conducted on a monthly basis.

- Level of water in the detention pond
- Flow
- Flow obstructions
- Sediment build-up in the pond
- Structural condition of the outfall
- Color of accumulated water
- Turbidity of accumulated water

- Odor of accumulated water
- Floatables
- Visible deposits or stains
- Biological activity
- Aquatic vegetation growth

The discharge monitoring report for periods June 1, 2008 – December 31, 2008, and January 1, 2009 – May 31, 2009, are in **Appendix I**. The monitoring laboratory reports for June 1, 2009 – September 30, 2009, are in **Appendix I.**

10.2.2. Eastern Area Landfill

Below are items that are inspected twice per week at the Eastern Area Landfill as a part of the BMP/Spill Prevention, Countermeasure and Control program.

- Public drop-off area
  - Clean and free of debris – all trash containerized in roll-offs
  - Concrete pads clean
- Cover on active disposal area
- Erosion and sediment controls functioning, in good repair, and free of debris
  - Silt fencing
  - Rip rap barriers
  - Drainage ditches and pipes clean and unclogged
  - Outfall structures intact
- Vegetative cover intact and stable
- Litter control being adequately performed
- Equipment maintenance area
  - Landfill equipment checked for leaks
  - Any visible spills or leaks on concrete pad
  - Area clean and free of debris
- Materials storage area
  - Clean and free debris
  - All drums stored inside
  - All drums clearly labeled and kept closed
- Spill kits stocked and in good order
  - Public drop off area

- Equipment maintenance and material storage area
- 4000-gallon diesel tank checked for spills and leaks
  - No visible leaks or damage to tank
  - Tank gauging and leak detection system functioning properly
  - No evidence of spills or leaks from fueling operations
- Leachate storage tanks
  - No visible leaks or damage to tanks
- Earthen berm structurally sound

The quarterly discharge monitoring reports summarizing the monitoring results from the period October 1, 2008 through September 30, 2009, are in **Appendix I**.

10.3. Industrial Inspection Summary

The Birmingham Fire Department has conducted inspections at industrial sites as a part of its fire prevention and hazardous materials containment activities. A total of 526 industrial inspections were conducted during this reporting period. **Table 10-1** shows the summary of the industrial inspections by month for this reporting period.

Table 10-1: Summary of Industrial Inspections Conducted by the Birmingham Fire Department

Inspection Month	Number of Inspections
October 2008	48
November 2008	35
December 2008	36
January 2009	32
February 2009	46
March 2009	51
April 2009	39
May 2009	49

Inspection Month	Number of Inspections
June 2009	55
July 2009	53
August 2009	52
September 2009	30

11. Construction Site Runoff

11.1. Detailed Program Overview

This program requirement has been met by the City of Birmingham since the adoption of its Soil Erosion and Sediment Control Ordinance in 1988. With a few exceptions as prescribed in the ordinance, this ordinance requires that all sites, regardless of size, be permitted by the City of Birmingham for land disturbance related activities. In addition to submitting a permit application, best management practices plans for controlling site sediment runoff as well as for protecting drainage entry points and waterways from sediment runoff are required to be submitted for review and approval by city staff. Upon staff review approval, including meeting the project bonding requirements in certain instances, a permit is issued and field inspections are coordinated with the permittee per the ordinance requirements.

Field inspections are an integral part of the City's construction site runoff control program. As such, the City conducts on-site permit compliance inspections on routine basis for the duration of the project activity. During this reporting period, the Department of Planning, Engineering and Permits reported the following with respect to soil erosion control permit activity:

- Number of Permits Issued - 334
  - Number of Commercial Permits Issued – 99 (Permit applications 131)
  - Number of Commercial Permits Closed - 29
- Number of Inspections – 760 (includes inspections for ongoing projects from previous years)
- Number of Enforcements – Written Enforcement – 0
Verbal Enforcement – approx. 30%
- Number of Bonds or Letters of Credit received for issued permits this period - 64

Appendix J contains a spreadsheet of all the erosion sediment control permits issued during this reporting period.

The City also responds to calls and investigates complaints from the public on regular basis regarding land disturbance related activities. For example, on February 23, 2009, Malcolm Pirnie inspected a spoil pile that was observed on-

site by a concerned citizen. During the investigation it was observed that no BMPs were in place to prevent sedimentation into a nearby tributary of Valley Creek. Consequently, the City immediately instructed the stormwater property owner to either remove the spoil pile or install and maintain adequate BMPs to prevent sedimentation runoff into the nearby tributary. The property owner complied and completed the site disturbance activities shortly thereafter.

12. Flood Control Facilities

During the 2008 – 2009 permit year the detention basins owned and operated by the City of Birmingham were identified. Aerials maps of these basins are found in **Appendix C**. During the upcoming permit year, these basins will be evaluated by reviewing national data on the pollutant removal efficiencies for structures of their type.

13. Public Education Program

13.1. City of Birmingham 23-in-23 Program

The Department of Public Works initiated and implemented a campaign to clean up the 23 Birmingham neighborhoods in 23 days on Monday, November 27, 2007. DPW crews are responsible for towing abandoned vehicles, cutting overgrown lots, removing litter from the streets, parks and public right-of-way, and removing limbs, leaves and other yard debris. This program had a major public education push associated with it. There were television and radio promotions, direct mail brochures and a "rap" song promotion. This program has been continuously run on a 23-day cycle since the day that it was initiated.

13.2. Village Creek Society Creek Cleanup

Details on previous cleanups sponsored by the DPW and the Village Creek Society can be found in Section 4.

13.3. City Website

The contents of the City's Stormwater webpage are found in **Appendix K**.

13.4. Community Outreach Development Program

Malcolm Pirnie and City staff made presentations on stormwater pollution prevention to middle school students during the summer months at the science camp at the University of Alabama at Birmingham

13.5. Boy Scouts Project

Malcolm Pirnie and City staff made a presentation to the Boy Scout troop at Sixth Avenue Baptist Church and there are plans to target neighborhood commercial districts and apply no dumping placards to storm drains.

13.6. Newspaper Insert

A newspaper insert was developed by the Black Warrior Clean Water Partnership and sponsored by the City of Birmingham. This insert was distributed in the Birmingham News to all customers in the Black Warrior River basin. This insert is found in **Appendix K**.

14. Water Quality Monitoring

One of the main aims of water quality monitoring programs is to identify the trends over time. Trend analysis will be used to determine whether the concentration of any particular water quality constituent is increasing, decreasing or remaining constant through time. The water quality assessment results will be used to better target restoration activities, as well as to determine the progress in meeting the pollutant load reduction required by Total Maximum Daily Load (TMDL) plans.

For this reporting, the City decided to follow the chemical conditions based monitoring scheme that has been conducted prior to this reporting year. In order to determine the chemical conditions of the receiving waters, the City of Birmingham has implemented instream water quality monitoring and dry weather screening. The City has followed the same monitoring plan that SWMA has conducted in the previous years of the Permit. All sampling work described below was conducted by Malcolm Pirnie Incorporated during the Permit year.

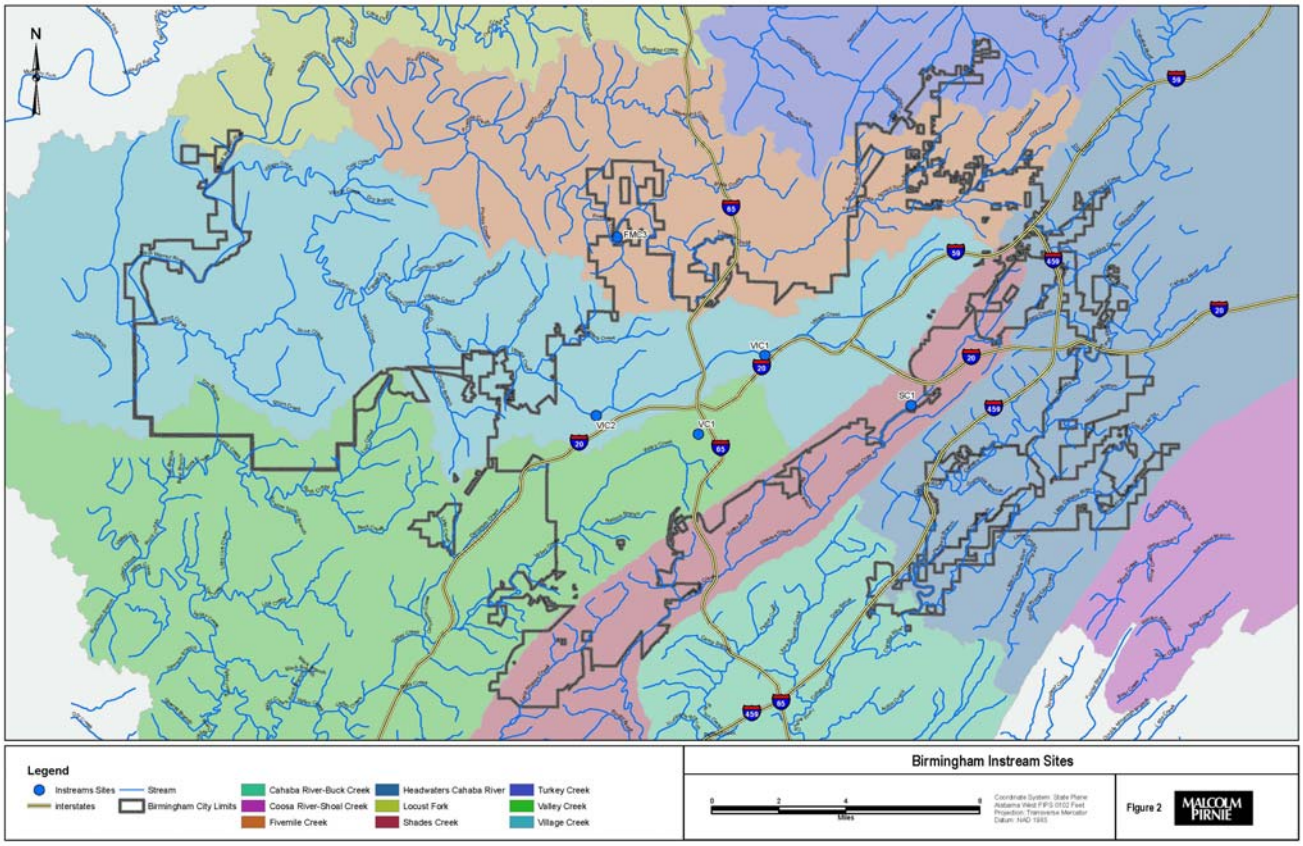
14.1. In-stream Sampling

To maintain program continuity, the in-stream sampling for this reporting period was conducted at the same five locations that were sampled last reporting year. All five in-stream sampling sites were tested under dry weather and wet weather conditions. The dry weather monitoring of the stream chemical conditions were tested to understand the ambient conditions of as well as to detect illegal discharges to the receiving waters. The wet weather sampling was conducted at the in-stream sampling site in order to determine the pollutant loads associated with stormwater runoff to the receiving waters. All dry and wet weather sampling were conducted quarterly, and all dry and wet weather conditions for sampling were determined as described in the ADEM Permit (ALS000001). The in-stream sampling location names and sampling dates along with the weather conditions are shown in the **Table 14-1. Figure 14-1** shows the sampling locations. No physical samples (wet and dry) were collected at instream site SC1 during the second quarter of the permit year due to emergency response at the sampling site that was caused by electrical transformer fluid spill when a truck hit the transformer. It was also discussed in the section 9.1 of the report, Spill Prevention and Response. During this period visual inspection was conducted at the site to check for any other discharge violations. All the analytical results for the in-stream wet and dry sampling efforts are presented in **Appendix L.**

Table 14-1: Instream Samples Log

Receiving Water	Sample Location	Date Sampled	Weather Condition
Five Mile Creek	FMC-3	2/25/2009	Dry
		2/27/2009	Wet
		5/21/2009	Dry
		8/12/2009	Wet
		8/26/2009	Dry
Shades Creek	SC1	5/20/2009	Dry
		8/12/2009	Wet
		8/26/2009	Dry
Valley Creek	VC1	2/25/2009	Dry
		2/27/2009	Wet
		6/2/2009	Dry
		8/12/2009	Wet
		8/26/2009	Dry
Village Creek	VIC1	2/27/2009	Wet
		3/6/2009	Dry
		6/2/2009	Dry
		8/12/2009	Wet
		8/26/2009	Dry
	VIC2	2/25/2009	Dry
		2/27/2009	Wet
		6/2/2009	Dry
		8/12/2009	Wet
		8/12/2009	Dry

Figure 14-1: In-stream Sampling Locations



14.1.1. Water Quality Trends

Given the limited number of data points and the high variations in parameter values, it is not possible at this time to make any hard or statistically significant conclusions regarding water quality trends. **Figures 14-2 through 14-11** below show a examples of water quality comparison of selected parameter conditions at the instream sampling locations, comparing over the permit years.

For the total suspended solids (TSS) and fecal coliform parameters, as expected, the concentration of parameters during wet weather were higher than the concentrations during the dry weather. This difference in the concentrations during the wet and dry weather indicates additional pollution in the receiving waters due to stormwater runoff. Also, the observed variations in the concentrations was always higher in the wet weather samples as compared to dry weather samples. This is due to the fact that the stormwater pollutants are generally expected to have high variations of pollutant concentrations, which may depend on the rain intensity, season and other factors.

It appears that the concentrations of TSS and fecal coliform were in the same range for each permit year presented in figures for the dry weather conditions. For wet weather conditions, based on available data, water quality with respect to fecal coliform appears to be improved in this permit year as compared to previous permit years. But because there is a limited number of data points, the analysis does not have the confidence needed to draw any statistical conclusions on the water quality trends. For TSS there is no special trend observed, and likewise it will not be possible to make any conclusions on the water quality trends based on limited number of data points.

Figure 14-2: Observed Total Suspended Solids trend at VC1 location

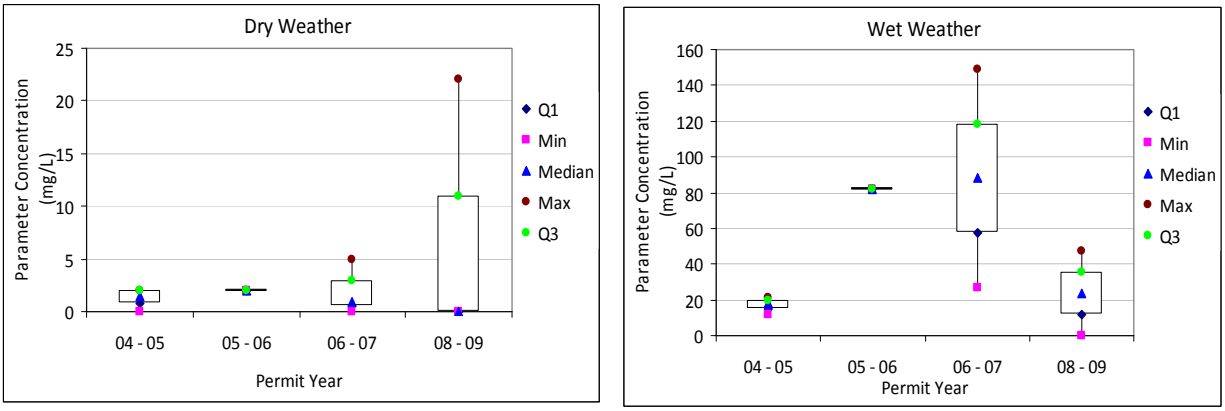


Figure 14-3: Observed Fecal Coliform trend at VC1 location

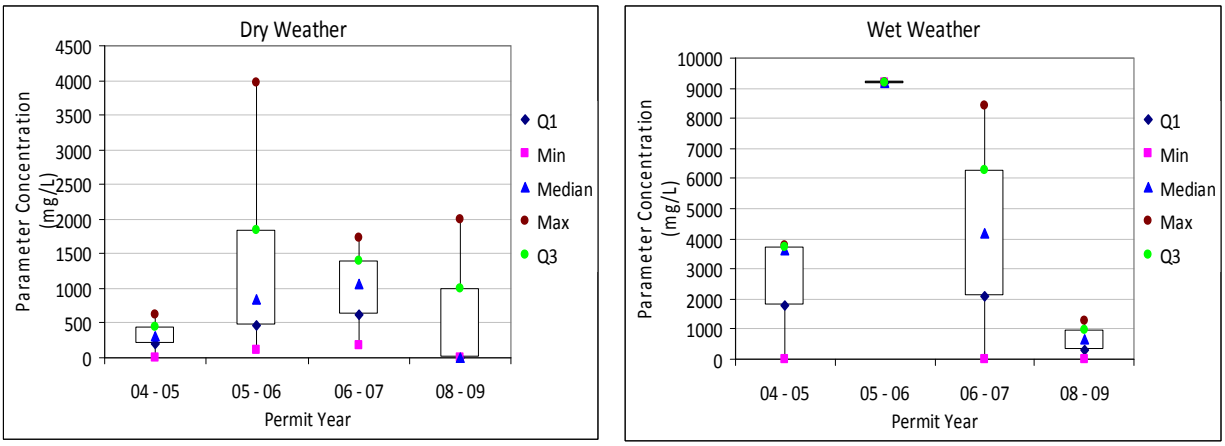


Figure 14-4: Observed Total Suspended Solids trend at VIC1 location

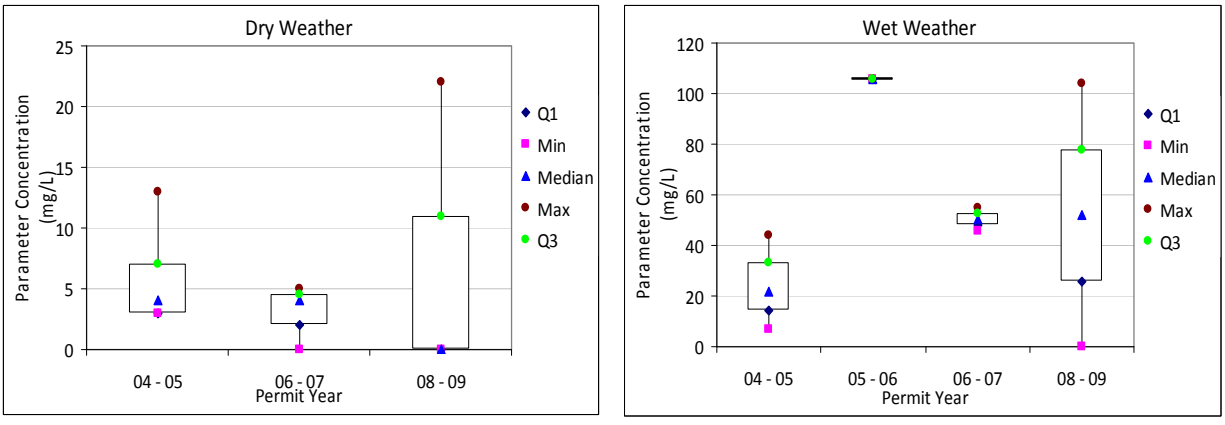


Figure 14-5: Observed Fecal Coliform trend at VIC1 location

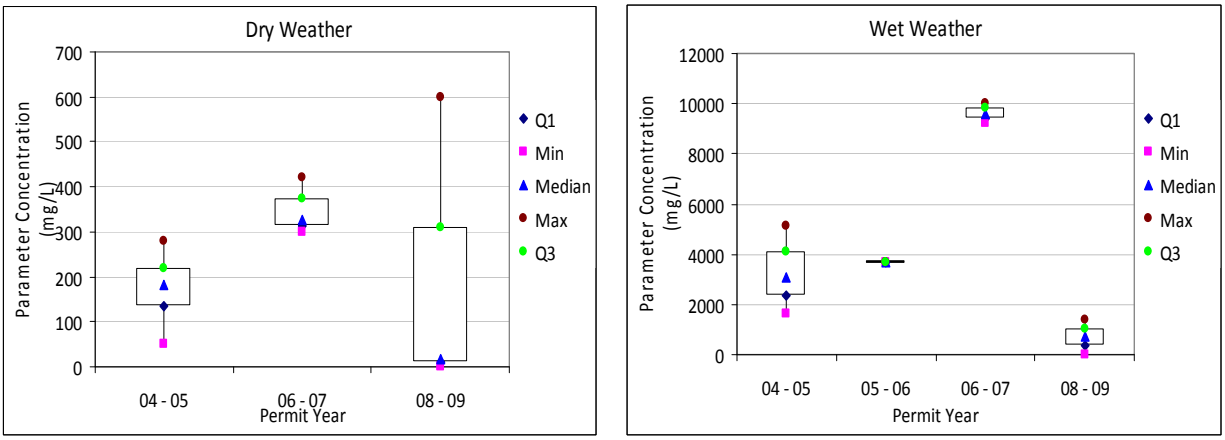


Figure 14-6: Observed Total Suspended Solids trend at VIC2 location

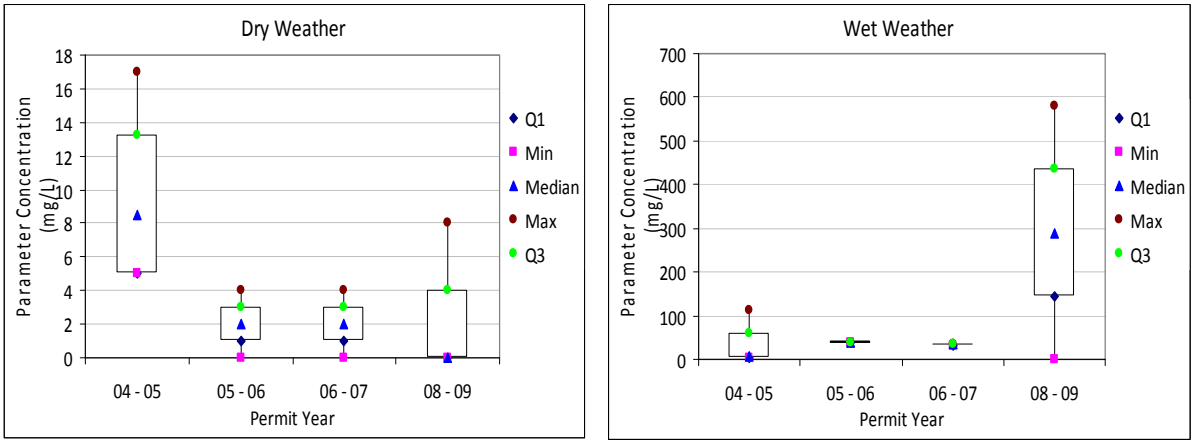


Figure 14-7: Observed Fecal Coliform trend at VIC2 location

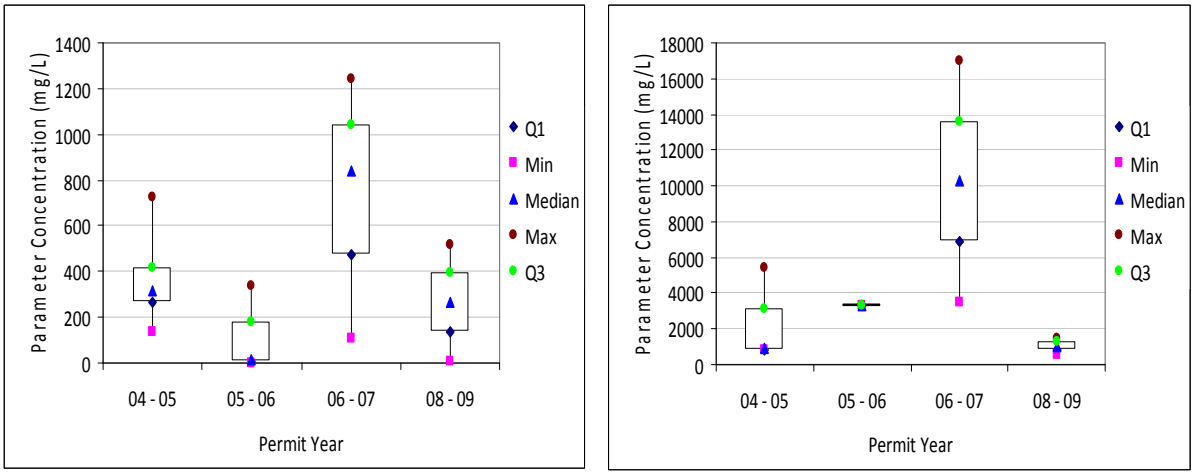


Figure 14-8: Observed Total Suspended Solids trend at SC1 location

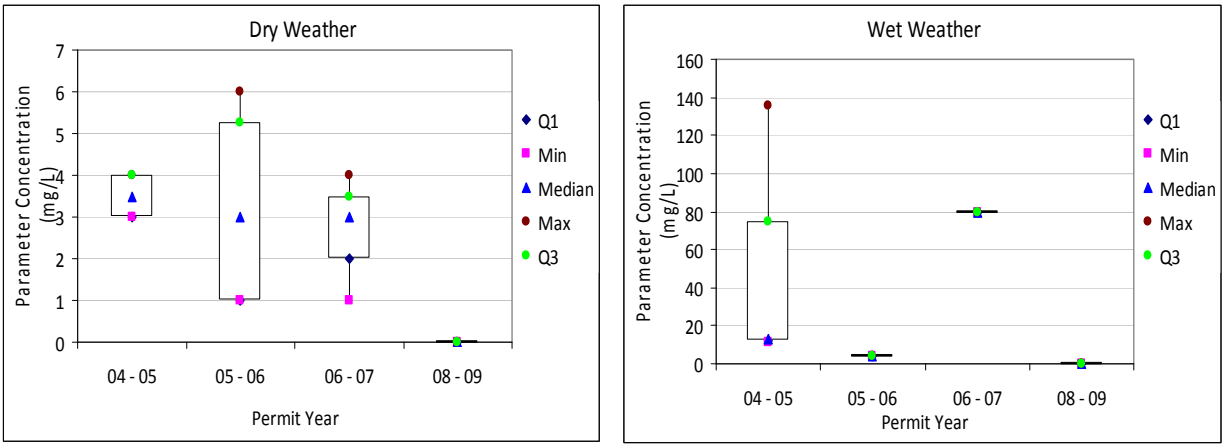


Figure 14-9: Observed Fecal Coliform trend at SC1 location

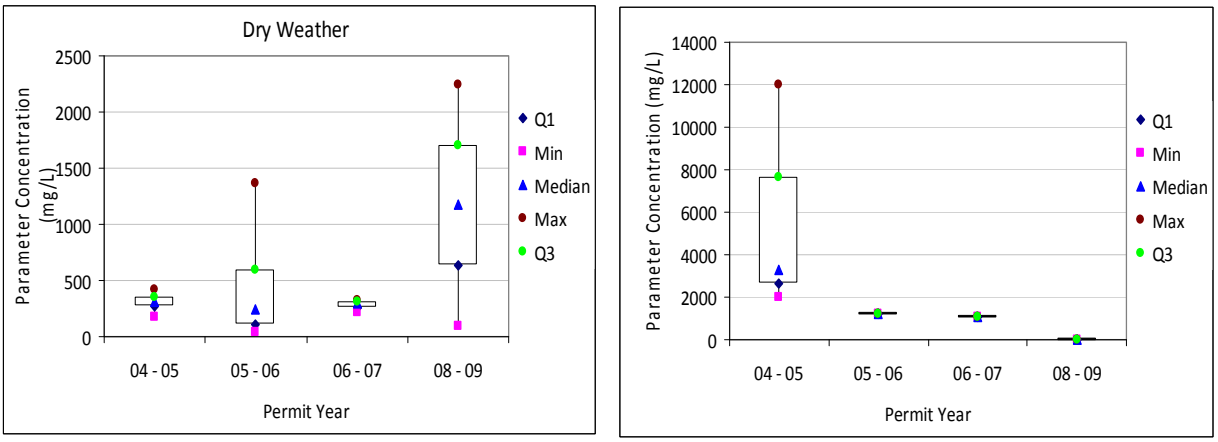


Figure 14-10: Observed Total Suspended Solids trend at FIC3 location

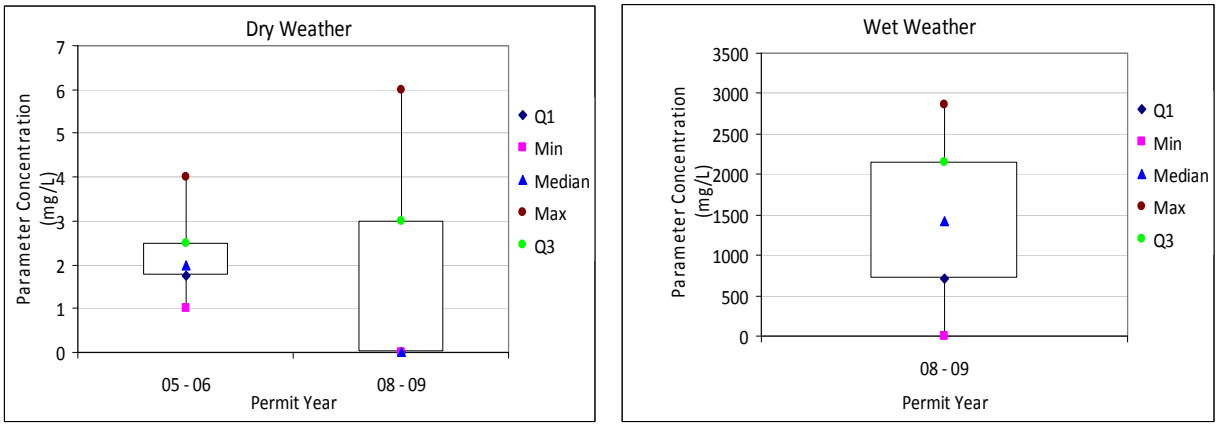
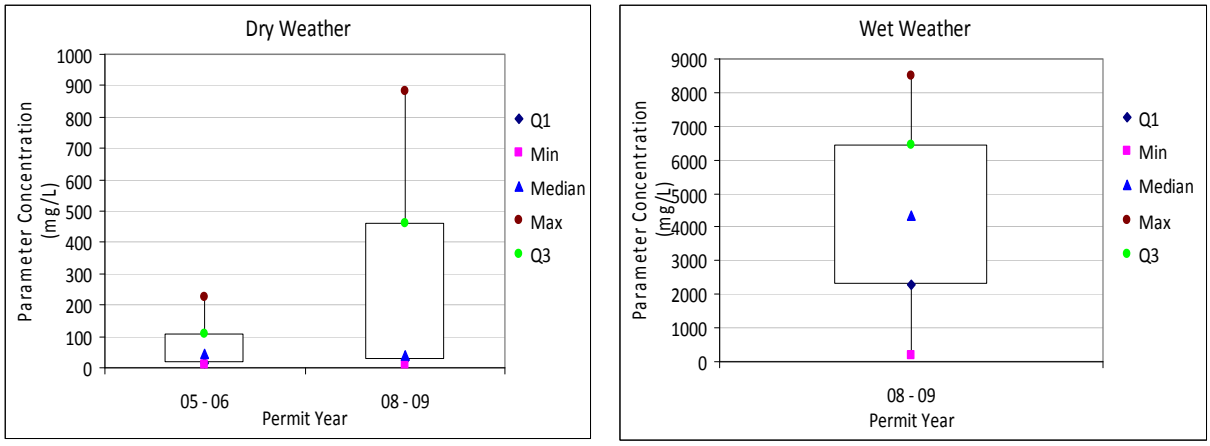


Figure 14-11: Observed Fecal Coliform trend at FIC 3 location



14.1.2. Screening Site Sampling

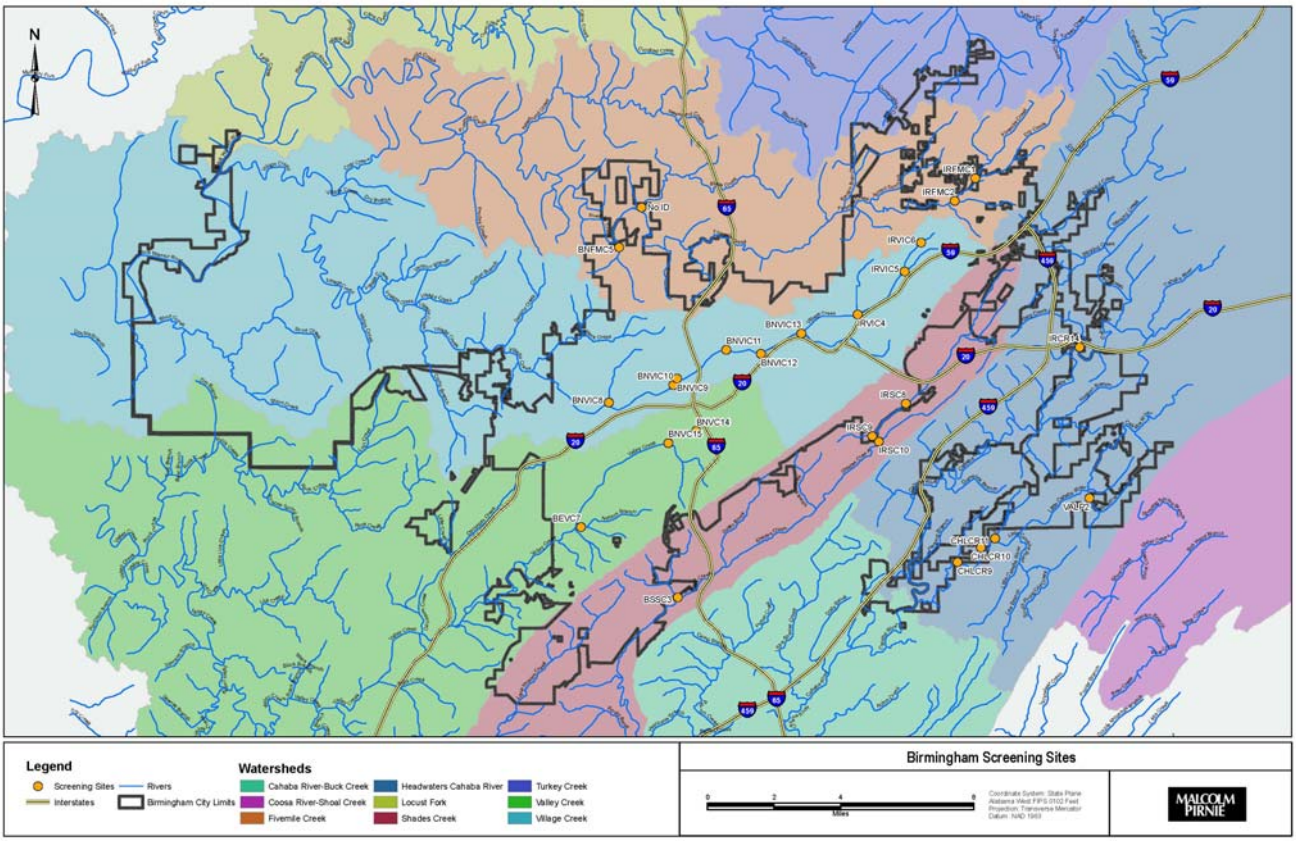
Screening sampling was conducted at 25 sites during reporting period. These screening sites were strategically selected based on their proximity to industries or other high risk runoff facilities, proximity to densely populated areas or where tributaries empty into creeks. These selections were made to determine the presence of pollutants along these targeted stream segments. Testing the water in this manner helps to pinpoint areas where various pollutants may be entering the MS4, as well as to identify illicit discharges.

Sampling at the screening sites is conducted during the dry weather conditions on an annual basis. **Table 14-2** shows for each screening site the location name and sample collected date. Screening samples from the sites IRVIC6 and BNFMC5 were not collected as the creeks were dry when attempts were made to collect these samples. However, these sites were visually inspected for signs of illegal discharge activity. Also the sample from the screening site IRCR14 was not collected as access to this sampling point was not possible. **Figure 14-12** shows the screening site sampling locations in the Birmingham City Limits. The laboratory analytical results of the parameters from screening sites sampling are presented in **Appendix M**.

Table 14-2: Screening Sites Sampling Log

Waterbody Name	Sample Location	Date Sampled
Cahaba River	IRCR14	No sample due to accessibility limitations
Five Mile Creek	IRFMC-1	2/6/2009
	IRFMC-2	2/6/2009
	BNFMC5	Dry ditch
	No ID (ABC) –TU	5/21/2009
Lake Purdy	VALP-2	6/3/2009
Little Cahaba River	CHLCR-10	8/24/2009
	CHLCR-11	8/24/2009
	CHLCR-9	8/24/2009
Shades Creek	BSSC-3	6/2/2009
	IRSC-10	5/20/2009
	IRSC-8	5/20/2009
	IRSC-9	5/20/2009
Valley Creek	BEVC-7	6/2/2009
Village Creek	BNVC-14	8/6/2009
	BNVC-15	3/6/2009
	BNVIC-10	8/6/2009
	BNVIC-11	5/20/2009
	BNVIC-12	3/6/2009
	BNVIC-13	5/21/2009
	BNVIC-8	8/6/2009
	BNVIC-9	8/11/2009
	IRVIC-4	6/3/2009
	IRVIC-5	2/23/2009
	IRVIC-6	Dry ditch

Figure 14-12: Screening Sampling Sites



15. Program Activities Summary

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
(1) Monitoring	IDDE Outfall Screening	25 Annually	YES	Sampling conducted 24 sites	One of the planed location had the access problem
	Dry Weather Monitoring	5 Sites Quarterly	YES	Conducted at 5 sites	
	Wet Weather Monitoring	5 Sites Quarterly	YES	Conducted at 5 sites	
	Develop a performance based monitoring program	Draft due date	YES	Started drafting the new monitoring program	City is developing new monitoring program and will be implemented in compliance with the expected new Permit
(2) Structural Controls	Strom Drain Inlets Cleaned (#)	3,500	YES	Cleaned 4,222	
	Strom Sewer Lines Cleaned (Lin Ft)	90,000	YES	Cleaned 166,579 Lin Ft	
	Litter Cleared (Blks)	30, 000	YES	Cleared for 49,784 Blks	
	Pipe Repaired / Replaced (Lin Ft)	1,000	YES	0 Lin Ft of pipe repaired or replaced	Was not required during the Permit year
	Inlet Const (#)	150	YES	There were no Inlet	Inlet construction was not

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
				constructed	required during the Permit year
	Curb & Gutter Const (Lin Ft)	1,000	YES	0 Lin Ft of Curb & Gutters constructed	Curb & Gutter construction was not required during the Permit year
	Storm Sewer Top Made (#)	350	YES	There were no Storm Sewer Tops made	There was no requirement for new Storm Sewer Tops during the Permit Year
	Storm Sewer Top Set (#)	4, 000	YES	5,596 Storm Sewer Tops were set	
	Inventory of structural controls and development of maintenance procedures	Complete by due date	YES	On-going	The structures have been inventoried and the City is in the process of developing maintenance procedures for these structures.
(3) Areas of New Development / Redevelopment	Review Existing regulatory, policy and planning controls	Complete by due date	YES	On-going	The initial review of this ordinance has been accomplished but City staff is in the process of developing recommendations for modifications.
	Continued Implementation of City of Birmingham Flood Mitigation / Stormwater Management Plan,	Complete by due date	YES	On-going	

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
	adopted October 2004				
(4) Roadway Maintenance	Streets Swept (Blks)	500,000	YES	383,363 Blks of streets were hand cleaned 328,387 Blks of streets were cleaned by mechanical instruments 36,216 Blks of streets were flushed	
	Review of Standard Operating Procedures for Street Sweeping	Complete by due date	YES	Reviewed	
	Develop Map of Street Sweeping Schedule	Complete by due date	YES	A map of the watersheds and sweeping districts has been developed.	
(5) Flood Control Projects	Inventory City-owned Structures	Complete by due date	YES	City developed inventory	
	Research Water Quality Impacts of Retrofits	Complete by due date	YES	Reviewed the receiving water quality results – ongoing.	Extensive review of the existing water quality will be conducted

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
(6) Pesticide, Herbicide, and Fertilizer Application	Review SOP Guidance Document	Complete by due date	YES	The SOP was developed.	
	Review Inventory of Pesticide, Herbicide, and Fertilizer Storage	Complete by due date	YES	The City keeps ongoing records of the amount of landscaping chemicals used each month.	
	Document Training for Staff	Maintain Records	YES	City maintains the records	
	Map of Pesticide, Herbicide, and Fertilizer Storage Areas	Complete by due date	YES	Developed the map	
	Develop Map of Environmentally Sensitive Areas	Complete by due date	YES	Developed the map	
(7) Illicit Discharge Detection and Elimination	Review Existing Ordinances and develop an IDDE Ordinance if Necessary	Complete by due date	YES	Reviewed the ordinance and determined that City will need to develop new ordinance	New ordinance development is on-going
	Inspect 20% of Outfalls	144	YES	A total of 145 Outfalls inspected during the permit year.	GIS mapping was developed for all the Outfalls and Systems.
(8) Spill Prevention and	Review Reponses Procedures by City	Complete by due date	YES	Procedures have been reviewed	

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
Response	Fire Department				
	Continue Enhancement of tracking System for Spills	Complete by due date	YES	Is on-going	
	Develop a Stormwater Hotline for Spill Notifications	Complete by due date	YES	City has developed 311 hotline to report the spills	
	Develop a Stormwater Webpage for Existing City Website	Complete by due date	YES	City has developed new stormwater webpage	
(9) Industrial and High Risk Runoff	Map Sara Title III Sites	Complete by due date	YES	Map of Sara Title III has developed	
	Review SWPPP for Landfills	Complete by due date	YES	The SWPPP have been developed in accordance with the respective permits	
	Train Municipal Staff on Good House Keeping	Complete by due date	YES	Training for this permit year was completed with a group of City staff	A portion of the City staff will be trained each year on the municipal good housekeeping practices
	Stormwater Monitoring at City Landfills	Complete by due date	YES	Monitoring completed this permit year, according to permit requirements	Monitoring is on-going per Permit requirements
	Create Inventory of	Complete by	YES	Several municipal have	A continuance of the

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
	Municipal Facilities	due date		been	identification of City-owned facilities is on-going
(10) Construction	Review ESC Ordinance	Complete by due date	YES	An initial review of the ordinance has been completed	Comments and recommendations are being developed
	Continue Implementation of Construction Site Inspection Tracking System	Complete by due date	YES	Is on-going	
	Review Permitting Review Process	Complete by due date	YES	Is on-going	
(11) Education	Develop and Distribute Public Education Brochures	Complete by due date	YES	Educational brochures have been developed and distributed to the public this permit year	This is an activity that will take place each

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
	Develop News Paper Insert for Black Warrior Watershed	Target Black Warrior Watershed	YES	The newspaper insert for the Black Warrior watershed was completed and distributed	
	Develop Stencil Program for Children	Complete by due date	YES	The Boy Scout Troop at 6th Avenue Baptist Church was engaged and given a presentation on stormwater protection	The engagement of the Boy Scout troop is on-going and the details of placing placards on storm drains is being worked out at the City level.
	Present SW Information to Community Outreach Development Program (CORD) – Middle School Level Summer Science Camp at The University of Alabama at Birmingham	5 Classes	YES	The CORD program was visited each week this past year and the City is planning to continue this effort.	

PROGRAM ELEMENT	Description of BMP	ACTIVITY SCHEDULE			COMMENTS
		Prescribed SWMP Activities	Complied With	Activities Accomplished	
	Develop Stormwater Webpage for Existing City Website	Complete by due date	YES	The web page has been populated and it is being updated periodically during the year.	

16. Fiscal Analysis

Approximately $750,000.00 was collected in stormwater fees from October 2008 – September 2009. Malcolm Pirnie was paid $554,000.00 to primarily perform various program development and management, outfall inspection, staff training, public education, and water quality monitoring activities. Table 16-1 shows a detail breakdown of the program related expenditures associated with the activities performed by Malcolm Pirnie during this reporting period.

Table 16-1: Malcolm Pirnie Expenditures per Program Element

Program Element	Expenditures
Program Management	$125,713.00
Public Education &Training City Staff	$ 20,458.00
SWMP Development	$ 94,177.00
Permit Application and Audit Support	$ 34,046.00
SW Monitoring	$107,630.00
IDDE Inspections	$171,976.00

The remaining program activities, including program administration and coordination, structural controls and collection system operations, flood control, new development and significant redevelopment, roadway maintenance, pesticide, herbicide and fertilizer application, spill prevention and response, industrial and high risk runoff and construction site runoff were primarily performed by the City of Birmingham. These activities have always been performed by the City, even during the period when the City was a SWMA member. However, none of the past annual reports contain detail fiscal information associated with the program activities that were handled by the SWMA members including those that were handled then by the City of Birmingham. Without this past detail fiscal information and with this being the first program year under City management, no reliable fiscal information

associated with these activities can be provided at this time. However, it is projected that by the third program year enough base fiscal data will have been collected to adequately characterize and detail the fiscal information associated with the activities that are being performed by the City now. While no detailed fiscal information can be provided at this time, the City remains committed to applying the necessary resources to address all requisite program activities.