

**ANNUAL  
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)  
REPORT**

**NPDES STORMWATER PERMIT  
NUMBER ALR040044  
Chickasaw, Alabama  
Volkert Project Number 1100000.190**

*Prepared for:*

**The City of Chickasaw  
Mayor Barry Broadhead  
224 North Craft Highway  
Chickasaw, Alabama 36671**

**May 2021**

*Prepared by:*

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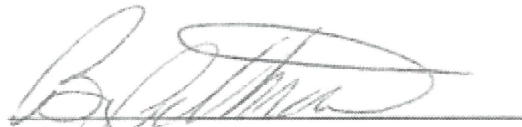
APPENDIX D – STANDARD OPERATING PROCEDURES

## 1.0 CERTIFICATION AND INTRODUCTION

### 1.1 Certification

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

The Honorable Byron Pittman  
Mayor, City of Chickasaw

  
Signature

6-11-19  
Date

## **1.2 List of Contacts**

The following individuals may be contacted to address questions or concerns regarding this report:

**The Honorable Barry Broadhead**

Mayor, City of Chickasaw  
224 North Craft Highway  
Chickasaw, Alabama 36671  
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### **1.3 General Introduction**

On November 16, 1990, the U.S. Environmental Protection Agency (EPA) promulgated regulations, under the Water Quality Act of 1987, setting forth application requirements for National Pollutant Discharge Elimination System (NPDES) storm water permits. The Alabama Department of Environmental Management (ADEM) administers the storm water program for the State of Alabama. The City of Chickasaw along with other smaller cities in Mobile and Baldwin Counties were originally included in a Phase I permit with the City of Mobile. In March 2012 the City of Chickasaw requested to be removed from the MS4 program or at a minimum be revised to a Phase II permittee. The request was based on the following factors: population, land use, receiving stream water quality, and documented history of water quality monitoring of the major outfall. On December 27, 2013, ADEM approved the City of Chickasaw's request to participate in the Phase II permit for smaller systems in lieu of the Phase I permit, as required for municipalities with a population of 100,000 or more. The City of Chickasaw is submitting this report as part of an annual requirement for the NPDES Permit Number ALR040044. This report includes activities from April 1, 2020 to March 31, 2021.

## 1.4 Overview

On November 16, 1990, the Environmental Protection Agency (EPA) ruled that municipalities and industries share the responsibility to improve the water quality of the “Waters of the United States”. In accordance with this rule, the EPA created regulations for NPDES Storm Water Permits for municipalities and permits associated with industrial activity. These regulations are aimed at reducing the amount of non-point source pollution that is currently the leading cause of water pollution.

The Water Quality Act involves a two-phased municipal permitting program that requires municipalities of certain populations to establish discharge controls to the Maximum Extent Practicable (MEP), to effectively prohibit non-storm water discharges to the municipal separate storm sewer systems, and where necessary, to contain applicable water quality-based controls. Compliance with the maximum extent practicable requirement can be attained by developing a storm water management plan that addresses the five minimum control measures described in the storm water regulations and detailed in fact sheets developed and provided by EPA.

The City of Chickasaw (City) utilizes current personnel to administer the storm water program elements. Additional assistance is provided by local engineering firms and Mobile County, as needed during crises or emergencies such as floods, spills, or hazardous waste incidents.

Storm water is managed by several City departments and assisted by community activities which involve volunteer work. The City does not have the financial resources to dedicate personnel solely to storm water quality, however these responsibilities are shared by employees and considered part of the effort to protect our streams and waterways from degradation.

## **2.0 PROGRAM EVALUATION**

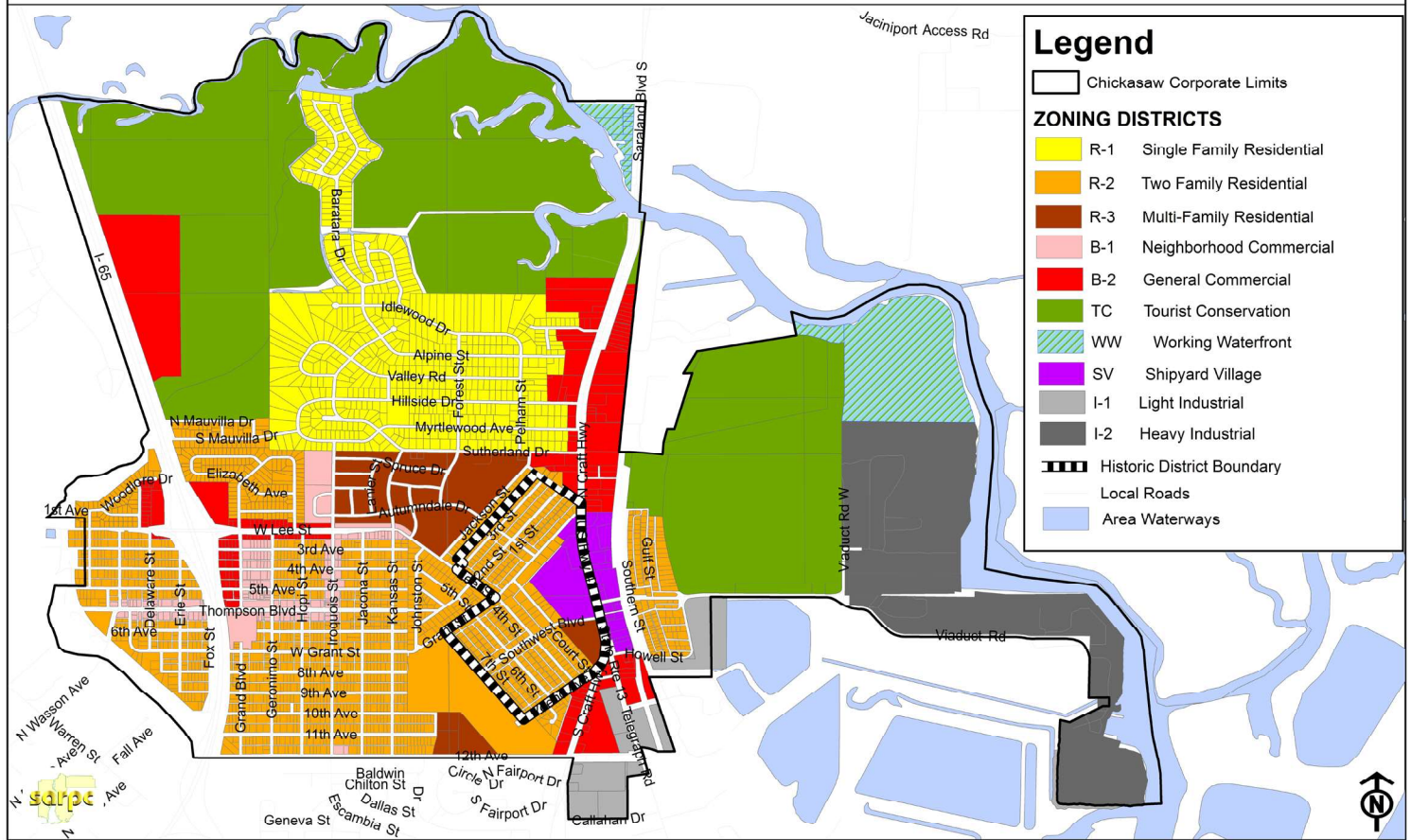
### **2.1 Objective of the Program**

On December 27, 2013, The City of Chickasaw was granted coverage under the MS4 Phase II General Permit ALR040044, replacing the Phase I General Permit ALS00002. The intent of the (National Pollutant Discharge Elimination System) NPDES permit is to reduce and eliminate pollutants in storm waters that are discharged from municipal separate storm sewer systems (MS4s).

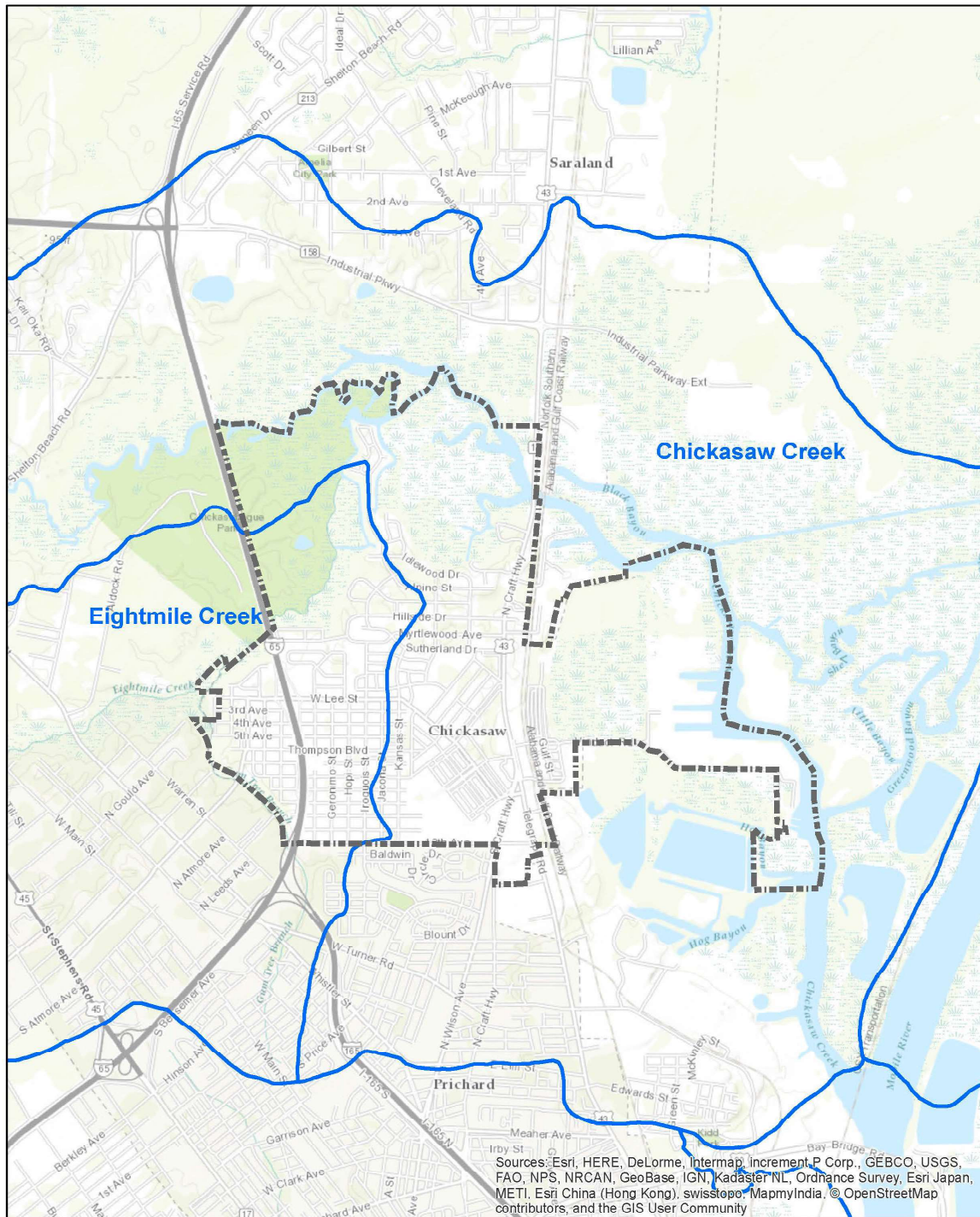
The City of Chickasaw is dedicated to achieving the conditions of this permit, which will ultimately improve water quality by reducing pollutants in receiving waters. The City's goals are to educate the municipal employees and the general public on the storm water management program and focus on a unified approach to the identification and correction of problem areas. Additionally, the City has established the legal authority to manage and enforce the requirements of the program.

The City of Chickasaw with a population of 5,702, according to the 2019 U.S. Census estimate, consists primarily of residential land use. See Map 2.1 for the City's Zoning designations.

The City of Chickasaw is located partially within the Chickasaw Creek watershed and partially within the Eight Mile Creek watershed as shown on Map 2.2 on Page 7.



MAP 2.1: CITY OF CHICKASAW ZONING MAP



**MAP 2.2: WATERSHEDS WITHIN OR SURROUNDING THE CITY OF CHICKASAW**

## **2.2 Program Execution**

The City of Chickasaw has developed and implemented many programs to help minimize storm water related pollutant loads. City Ordinance 1540, passed in 1998, establishes procedures to control discharges from commercial and industrial facilities and construction sites. A Drainage Master Plan was established in 1999 that identified problem areas and prioritized construction projects to address these areas. The Maintenance Supervisor's responsibilities include maintaining this prioritized list of projects. The projects are evaluated to ensure the areas with the highest needs are properly identified and prioritized. The City is progressively addressing these projects as funds become available.

The City's Maintenance Supervisor and Code Inspector are responsible for the majority of the various program elements. Employees in all City departments have received instruction on the program objectives and are provided with opportunities to attend educational programs. A detailed outline of each department's role is included in the City's Storm Water Management Plan (SWMP) as required for the Phase II MS4 permit.

Funding for expanding the storm water management program is currently unavailable. The City officials address the financial needs and make budget allocations on a year-to-year basis that are prioritized based on the needs of the entire City operations.

## **2.3 Current Review of the Program**

In June 2019, The City of Chickasaw updated their Storm Water Management Plan (SWMP) designed to reduce the discharge of pollutants to the maximum extent practicable (MEP). The SWMP includes Best Management Practices (BMP's) that address the five minimum control measures as outlined in Section III.B of the Phase II NPDES Permit. Each BMP includes measurable goals and the personnel responsible for its overall management and implementation. The City has conducted the annual review of the SWMP as required by for the Phase II MS4 Permit.

The five minimum control measures that are addressed in this report and the SWMP are:

1. Public Education and Public Involvement on Storm Water Impacts
2. Illicit Discharge Detection and Elimination (IDDE) Program
3. Construction Site Storm Water Runoff Control
4. Post-Construction Storm Water Management in New Development and Redevelopment
5. Pollution Prevention/Good Housekeeping for Municipal Operations

The current status of the BMP components of each of these measures are reported in Section 3.0. The detailed activities for each BMP are reported in Section 4.0.



### 3.0 SUMMARY TABLE

#### 3.1 Storm Water Management Plan Element Status

Minimum Control Measure	BMP ID	BMP TITLE	Status
Public Education & Public Involvement on Storm Water Impacts	1-1	Storm Water Webpage	Implemented and updated as needed
	1-2	Storm Water Outreach Materials	Implemented and Ongoing
	1-3	Big Fall Clean Sweep	Implemented, Annual Event
	1-4	Coastal Clean-Up	Implemented, Annual Event
Illicit Discharge Detection and Elimination	2-1	Map of Major Outfall and Structural BMP's	Implemented
	2-2	Ordinance 1540	Implemented and updated as needed
	2-3	IDDE Training for City Employees	Implemented and Ongoing
	2-4	Illicit Discharge Response	Implemented and Ongoing
	2-5	Dry Weather Screening	Implemented and Ongoing
	2-6	Handling of Spills	Implemented and Ongoing
Construction Site Storm Water Runoff Control	3-1	Zoning Ordinance 2016-3 & Ordinance 1540	Implemented and updated as needed
	3-2	Construction Site Plan Reviews and Inspections	Implemented and Ongoing
Post-Construction Storm Water Management in New Development and Redevelopment	4-1	Post-Construction Storm Water Management Ordinance	Implemented and updated as needed
	4-2	Post-Construction Plan	Implemented and Ongoing
	4-3	Post-Construction BMP Operation and Maintenance Agreement	Implemented and updated as needed
Pollution Prevention/Good Housekeeping	5-1	Inventory of Municipal Facilities	Implemented and Ongoing
	5-2	SOP's and Inspection Schedules	Implemented and Ongoing
	5-3	Structural Controls Maintenance	Implemented and Ongoing
	5-4	Roadway Maintenance	Implemented and Ongoing
	5-5	2009 International Property Maintenance Code	Implemented and Ongoing
	5-6	Cleaning of Parks	Implemented and Ongoing
	5-7	Sanitary Sewer Overflow (SSO) Prevention	Implemented and Ongoing



## 4.0 NARRATIVE REPORT

### 4.1 Public Education and Public Involvement on Storm Water Impacts

*Permit Requirement: The Permittee must develop and implement a public education and outreach program to inform the community about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff to the maximum extent practicable.*

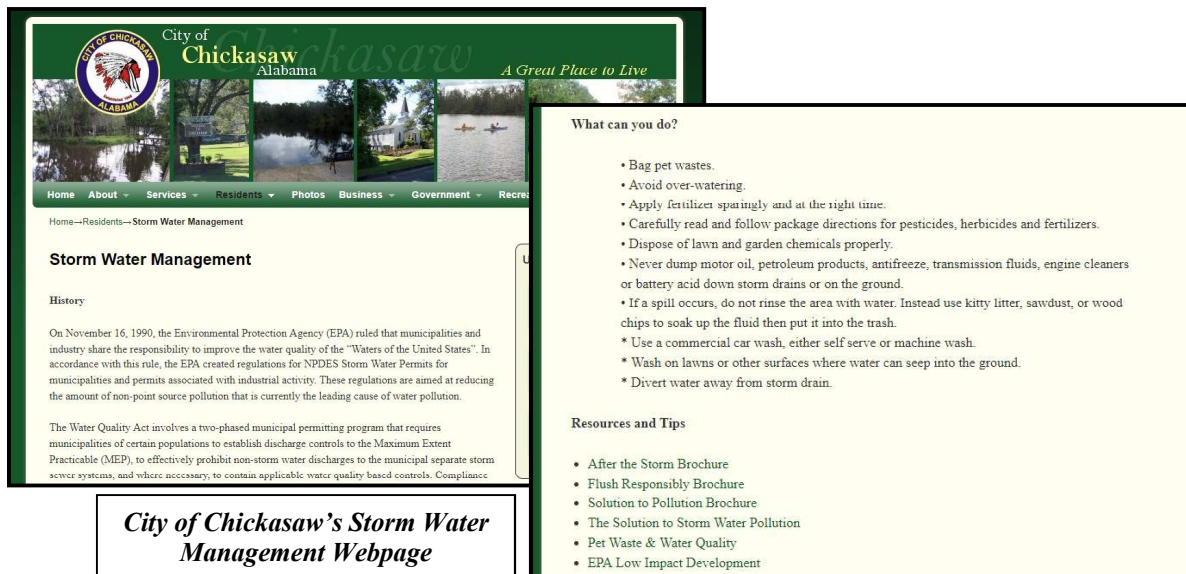
The City of Chickasaw has made a concerted effort to develop and implement Best Management Practices (BMP's) focused on educating the citizens of Chickasaw and city employees about activities that can reduce pollutants in storm water run-off to the maximum extent practicable. Public involvement and participation have been vital in controlling litter throughout Chickasaw. The City utilizes local organizations to involve their citizens in improving the water quality through several organized activities. The persons primarily responsible for storm water public education and outreach are city employees from multiple departments.

The following BMP's regarding Public Education and Public Involvement were continued and/or implemented during the reporting period of April 1, 2020 to March 31, 2021:

#### 1-1. Storm Water Webpage

The City of Chickasaw has continued to maintain a webpage exclusively dedicated to storm water management. The webpage includes details about the history of the City's storm water management program, including the requirements of the Water Quality Act and the MS4 Phase II General Permit, in addition to the objective and components of the SWMP. The webpage provides explanations to the importance of protecting storm water and provides ways residents can help reduce storm water pollution.

Additionally, the webpage contains links to the downloadable brochures developed by the EPA that provide additional storm water information and tips for residents and businesses. These brochures are included in Appendix A. Links to the annual MS4 Reports and the Storm Water Management Plan are also located on the webpage.



## 1-2. Storm Water Outreach Materials

The Chickasaw Recreation Department typically publishes a newsletter every two months. Due to Covid-19 this reporting period, a total of two newsletters were published. To promote storm water management awareness, the newsletter periodically contains a tip on how to prevent storm water pollution. Announcements of upcoming clean-up and beautification events are also included throughout the year. The Recreation Department currently prints 2700 copies for each distribution. The most recent newsletter, included in Appendix B, had an announcement about the 33<sup>rd</sup> Annual Coastal Clean Up event. The announcement was also included on the Recreation Activities webpage.

The Environmental Officer ordinarily attends Senior Citizen Breakfast meetings as his schedule permits. During this reporting period, due to COVID-19, the Environmental Officer was not able to attend any Senior Citizen Breakfast meetings.

## 1-3. Big Fall Clean Sweep

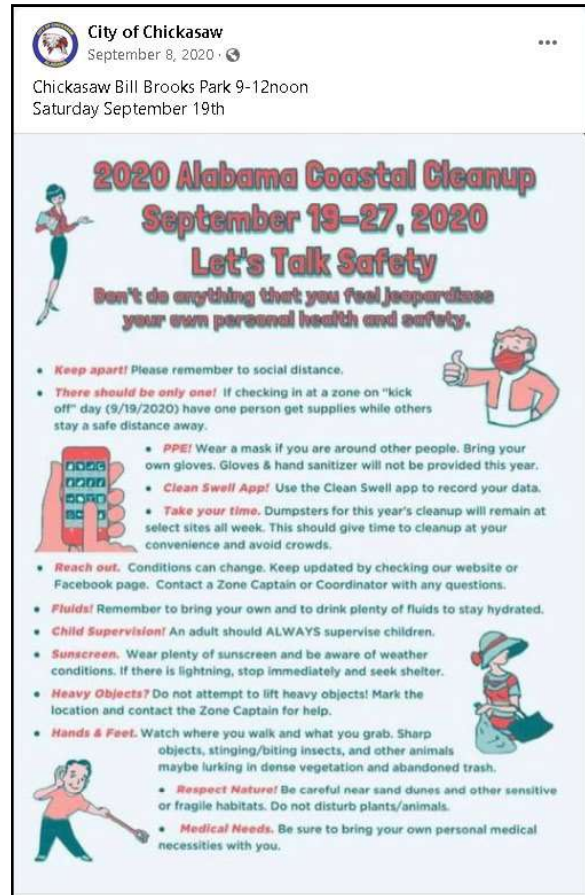
The Big Fall Clean Sweep is an event that the City organizes to provide an opportunity for the public to participate in controlling litter. Typically, the City provides five (5) drop-off locations (J.C. Davis Auditorium, Mauvella Ball Park, Legg Park, Brooks Park, and 500 Thompson Blvd.) for residents to bring their old household items, scrap metal, tree limbs, and yard debris. Tires and electronics are directed to be brought to the City

Maintenance Department. Following the event, the City properly disposes of these items at a permitted landfill.

During this reporting period, due to COVID-19, the Big Fall Clean Sweep was not held.

#### 1-4. Coastal Clean-Up

The City of Chickasaw participated in the statewide annual Coastal Clean-Up, which was held on September 19, 2020. The event was publicized in the Recreation Department newsletter, billboards, signs, the City's website and Facebook page, and Council Meetings. The City promotes the event by encouraging residents to bring their boats, canoes, and kayaks to help clean up the local waterways. Volunteers are provided necessary supplies at registration, including bags, gloves, and a free t-shirt. There were 20 to 30 participants and the amount collected was enough to fill six (6) roll off dumpsters.



*Coastal Cleanup Facebook Post*

## 4.2 Illicit Discharge Detection and Elimination (IDDE)

*Permit Requirement: The Permittee must develop an SWMP that includes an ongoing program to detect and eliminate illicit discharges into the Permittee's small MS4, and improper disposal, including spills not under the purview of another responding authority, into the MS4 owned or operated by the Permittee, to the maximum extent possible.*

The City of Chickasaw responds to illicit discharges and continues to inspect, investigate, and enforce violations. In July 2013, the City of Chickasaw hired an Environmental Officer for the purpose of assisting with investigations and responses to complaints of potential illegal discharges. The role of the Environmental Officer has expanded to include educating city employees on detecting and reporting illicit discharges, enforcing Ordinances 1540 in regards to illicit discharges and unsightly growth on residential and commercial properties, taking complaints from citizens, and issuing tickets for violations.

The City is in the process of developing a stormwater management ordinance which will include a section specifically for illicit discharges. The ordinance will include a listing of prohibited discharges and exceptions, inspection and monitoring requirements, BMP requirements, and enforcement and penalty procedures. The ordinance will be added to the City's Storm Water Management Plan when completed and a more detailed description will be included in next year's report.

The City of Chickasaw continues to implement the following BMP's to detect and eliminate illicit discharges:

### 2-1. Map of Major Outfall and Structural BMP's

The City of Chickasaw has developed a map of the major outfall and the ten field screening locations that are discussed in Section 2-5. The map also shows the detention ponds that are inspected and maintained by the City. A list of the detention ponds is shown below. The map will be updated periodically as new structural controls are added to the system. A copy of the map is included in the Appendix C.

DETENTION POND ID	LOCATION
DP-1	City Housing Authority
DP-2	Chickasaw Plaza

<b>DP-3</b>	DanHart Inc.
<b>DP-4</b>	Shipyard Cafe
<b>DP-5</b>	City's 300-acre detention pond

## 2-2. Ordinance 1540

The City of Chickasaw's Ordinance 1540 makes it unlawful to do the following:

1. Allow any liquid to run continuously into the streets and the storm drain system or to discharge a pollutant to the City's storm sewer system, with the exception of discharges covered by an NPDES permit.
2. Release or threaten release of hazardous materials into the environment or to transport, store, or offer to transport any hazardous materials unless each material is properly packaged, marked, and accompanied by proper documentation.

The Ordinance also authorizes City officials to enter the grounds of any facility suspected of an illegal discharge, in addition to being reimbursed for all efforts necessary to contain a discharge that is suspected of being harmful to human health or the environment. Ordinance 1540 is reviewed and updated periodically as needed.

## 2-3. IDDE Training for City Employees

The City of Chickasaw makes a concerted effort to ensure that all City employees are provided opportunities for education and training such as code official meetings, wastewater and hazardous material training. The City continues to encourage and fund the needed training for their employees.

Typically, the Maintenance Supervisor, Environmental Officer, and Building Inspector normally attends various stormwater-related trainings. However, due to COVID-19, no trainings were attended during this reporting period.

In order to further assist with educating City employees about storm water pollution, the Environmental Officer attends the monthly Safety Meetings with the Maintenance Department. At these meetings the Environmental Officer discusses various issues related to storm water

pollution, such as keeping drains and ditches clear of debris. During this reporting period, due to COVID-19, the Environmental Officer did not attend any safety meetings.

#### 2-4. Illicit Discharge Response

The City of Chickasaw is committed to investigating all illicit discharge complaints. Currently, illicit discharges are either reported directly to the City's Environmental Officer or received by the City Police Department and recorded in their docket. On the City's website, the contact person for reporting illicit discharges is the Maintenance Supervisor. Illicit discharge response is primarily the responsibility of the Environmental Officer. All reported illicit discharge complaints and the results of any investigations, including the issuance of citations, is documented.

During this reporting period, there was one (1) case of an illegal discharge. The complaint was investigated, and the resident was issued a citation.

#### 2-5. Dry Weather Screening

Routine dry weather screening is conducted by the City's Drainage Department to identify illicit discharges throughout the system. The ten (10) field screening locations were selected based on their proximity to major streams, drainage basins, and urban development. The screening stations are examined during dry conditions to verify that flow exists only during rainfall events and to manually inspect for contaminants. The City's Standard Operating Procedure for Dry Weather Screening is followed when conducting the screening.

The major outfall and the ten (10) field screening locations were reviewed for evidence of illicit discharges during the reporting period. No illicit discharges were noted at the time of inspection.

The City's one major outfall discharges into Chickasaw Creek which is listed on the Final 2020 Alabama §303(d) List for impaired waterways. The listed cause for the impairment is an elevated concentration of the metal Mercury from atmospheric deposition. Therefore, the City's Phase II permit does not require monitoring and no water sampling data was collected.

Table 3-4 on Page 18 is a list of the field screening locations and the major outfall site. These locations are also shown on the map in Appendix C.

## 2-6. Handling of Spills

The Chickasaw Police Department has developed and implemented a Procedural General Order (PGO) for the reporting and handling of hazardous and/or toxic materials spills and incidents. Public Service Officers are first responders trained in hazardous materials and their containment. The City has mutual aid agreements with the City of Mobile and the City of Saraland Fire Departments which includes their Haz-Mat units. Also, the City of Saraland is home to HazMat 6, a statewide Haz-Mat team that is able to respond to both large and small incidents within the City of Chickasaw. Currently, reports of emergency hazardous spills are received through the 911 emergency system. A report of each call is generated in an online reporting system.

No hazardous or toxic spills occurred during this reporting period.

A copy of the PGO was included in the Appendix of the most recent Storm Water Management Plan submitted to ADEM on June 14, 2019. The PGO was reviewed during this reporting period, but no changes were made.

The Public Safety Department (PSD) of the City has made a concerted effort to ensure that the PSD is ready to respond to manmade or natural disasters. The PSD strives to maintain a strong working relationship with Federal and State agency, local EMA, and surrounding municipalities.

**Table 3-4: Field Screening Locations**

<b>Screening Sites</b>	<b>Location</b>	<b>GPS Coordinates</b>
MO-1	Sam Rawls Gazebo @ Chickasaw Creek loading dock near US 43 Bridge Crossing	30° 46' 54.839 N 88° 04' 24.787 W
FS-1	500 Viaduct Rd @ Arc Terminals @ Railroad Track	30° 45' 48.680 N 88° 03' 43.322 W
FS-2	South end of Howell Street near UOP Gate 3 sign located just pass the railroad and Southern St. next to 15 mph signage.	30° 45' 39.92 N 88° 04' 16.851 W
FS-3	Intersection of Thompson Dr. & Hopi Dr. (2nd drain, east side) A.O. Smith Water & Heater-Eddins Plumbing Inc.	30° 45' 48.374 N 88° 05' 18.634 W
FS-4	1002 Thompson Blvd at bridge crossing across from Central Electrical Substation	30° 45' 39.786 N 88° 05' 53.673 W
FS-5	Intersection of Fox Ave and 9th Avenue	30° 45' 33.709 N 88° 05' 34.805 W
FS-6	North end of Mauvilla Drive South, adjacent to I-65 bridge	30° 46' 20.398 N 88° 05' 41.933 W
FS-7	Hillside Drive across from 507 Hillside Drive	30° 46' 23.728 N 88° 05' 17.909 W
FS-8	Drop inlets at 220/222 Casche Circle	30° 46' 49.897 N 88° 05' 07.803 W
FS-9	Drop inlets at 312 Idlewood	30° 46' 40.039 N 88° 05' 13.657 W
FS-10	Across from 321 Grant Avenue just west of Craft Hwy	30° 46' 03.057 N 88° 04' 33.510 W



### 4.3 Construction Site Storm Water Runoff Control

*Permit Requirement: Within 730 days from the effective date of coverage under this permit, all Permittees must develop, implement, and enforce a program to reduce, to the maximum extent practicable, pollutants in any storm water runoff to the regulated MS4 from qualifying construction sites.*

The City of Chickasaw requires submission of all potential construction project plans to the City Building Inspector for review to ensure compliance with the City's SWMP. The City requires Best Management Practices (BMP's) for all construction projects per ADEM regulations. Inspectors generally visit each site several times during the construction process. These multiple inspections allow a city inspector to ensure compliance with the city codes which includes storm water management.

The City is in the process of developing a stormwater management ordinance which will include a section specifically for newly developed and redeveloped construction sites. The ordinance will be added to the City's Storm Water Management Plan when completed and a more detailed description will be included in next year's report.

The City of Chickasaw performs the following BMP's to help reduce pollutants in storm water runoff from construction sites:

#### 3-1. Zoning Ordinance 2016-03 & Ordinance 1540

Zoning Ordinance 2016-03, Section 15 requires the submission of a storm water management plan for land-disturbing activities of one (1) acre or more. The SWMP must be reviewed and approved during the plan review process. Section 13.6 of the Zoning Ordinance encourages the use of low impact design for parking lots and landscaping and provides examples of LID that would be considered appropriate by the City. All LID's are required to be certified by a Professional Engineer and approved by the Building Inspector. A copy of the City's Site Plan Review Checklist is included in the Zoning Ordinance and specifically states that storm water management and environmental protection requirements have been met.

Ordinance 1540 outlines the required components of the storm water management plan, in addition to examples of structural and nonstructural storm water management facilities. Storm water management plans must be prepared, certified, and stamped/sealed by a qualified registered Professional Engineer, Land Surveyor, or Landscape Architect. The procedures for inspections are discussed in BMP 3-2 – Construction Site

Plan Reviews and Inspections. Ordinance 1540 also provides procedures regarding violations of the Ordinance. The City will provide a written notice to the violator and time to correct the deficiencies. If deficiencies aren't corrected and the violator is convicted, the City will impose a fine of not more than \$500 or imprisoned not more than 30 days for each offense. A copy of Ordinance 1540 was included in the Appendix of the most recent Storm Water Management Plan submitted to ADEM on June 14, 2019.

### 3-2. Construction Site Plan Reviews and Inspections

The City of Chickasaw requires submission of all potential construction project plans, including a construction site storm water management plan, to the City Building Inspector for review to ensure compliance with the City's SWMP. The plan is required to be prepared, certified, and stamped/sealed by a Professional Engineer, Land Surveyor, or Landscape Architect. The City requires Best Management Practices (BMP's) for all construction projects per ADEM regulations. SWMP's can be rejected by the City Building Inspector if they incorporate structures and facilities that will demand considerable maintenance and/or utilize numerous small structures if other alternatives are physically possible.

Once a permit is obtained, the builder must request inspections during different stages of construction. Residential construction requires approximately five (5) inspections, while commercial construction requires seven (7) inspections. Both the City Building Inspector and the Maintenance Supervisor have been trained in recognizing appropriate BMP's.

The City has a procedure in place for receiving public complaints regarding construction site runoff. Complaints are primarily received by the Building Inspector, and occasionally, by City Hall, the Environmental Officer, or Maintenance Supervisor. The complaints are then investigated and the results of the investigation, including the enforcement response, are documented and kept on file.

During this reporting period, there were no residential or commercial construction site permits issued and no construction site inspections.

#### **4.4 Post-Construction Storm Water Management in New Development and Redevelopment**

*Permit Requirement: Post-Construction Storm Water Management refers to activities that take place after construction occurs and includes structural and non-structural controls to obtain permanent storm water management over the life of the property's use. All Permittees must implement the requirements of Part III.B.5 within 730 days from the effective date of coverage.*

The City of Chickasaw recognizes the importance of requiring post-construction storm water management plans for new development and redevelopment projects. Accordingly, the City has implemented the following BMP's regarding post-construction storm water management:

##### **4-1. Post-Construction Storm Water Management Ordinance**

The City of Chickasaw adopted a Post-Construction Storm Water Management Ordinance, Ordinance 2015-21, on October 13, 2015. The purpose of the ordinance is to provide for the health, safety, and general welfare of the citizens of the City of Chickasaw through the review and approval of Post-Construction Storm Water Management Plans and the monitoring and enforcement of compliance with such plans as required by federal and state law. The Ordinance establishes methods for post-construction storm water management in order to comply with the federal Clean Water Act and the City of Chickasaw's MS4 permit.

Ordinance 2015-21 includes the requirement that all Post-Construction Storm Water Management Plans should be designed by a Professional Engineer. The Ordinance also includes provisions for compliance and annual inspections. A copy of Ordinance 2015-21 was included in the Appendix of the most recent Storm Water Management Plan submitted to ADEM on June 14, 2019.

##### **4-2. Post-Construction Plan**

In conjunction with the new Ordinance 2015-21, the City requires any applicant for new development or redevelopment of one (1) acre or more in size to submit a post-construction storm water management plan with project construction plans. The post-construction plan must be designed by a Professional Engineer and comply with the practices contained in the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (2009), published by the Alabama Soil and Water Conservation Committee and the Low Impact Development Handbook for the State of Alabama

(2014), published by the Alabama Department of Environmental Management.

#### 4-3. Post-Construction BMP Operation and Maintenance Agreement

In conjunction with the Post-Construction ordinance, the City of Chickasaw has developed a post-construction operation and maintenance agreement that allows the City to conduct inspections of the post-construction BMP's and also account for the legal transfer of responsibility for maintenance from the developer to the property owner or Homeowner's Association. The maintenance agreement includes the following components: a description of the routine maintenance, inspection requirements, provisions for the City to access structural BMP's, penalties for failure to maintain BMP's, and a provision to legally record the maintenance agreement.

The City did not conduct any post-construction BMP inspections during this reporting period.

A copy of the Operation and Maintenance Agreement was included in the Appendix of the most recent Storm Water Management Plan submitted to ADEM on June 14, 2019.

#### **4.5 Pollution Prevention/Good Housekeeping for Municipal Operations**

*Permit Requirement: The Permittee must develop and implement a program for pollution prevention/good housekeeping for municipal operations.*

The City of Chickasaw's Public Works Department is primarily responsible for the City's operation and maintenance program. As required by the Phase II MS4 Permit issued on September 6, 2016, the City has documented their established Standard Operating Procedures (SOP's) in the most recent Storm Water Management Plan.

The City employs the following BMP's to prevent or reduce pollutant runoff from municipal operations:

##### **5-1. Inventory of Municipal Facilities**

Below is the inventory of the municipal facilities:

- City's Pumphouse – 51 Viaduct Road
- Civic Center and Library – 224 Grant Street
- Chickasaw Community Shelter – 799 Iroquois Street
- Chickasaw Civic Theater – 801 Iroquois Street
- J.C. Davis Municipal Auditorium – 400 Grand Blvd.
- Chickasaw City Hall – 224 North Craft Highway
- Chickasaw Police Department – 8 Lange Drive
- City Garage – 10 Lange Drive
- City Maintenance Department – 16 Lange Drive
- City Fire Department – 70 Dumont Street

This list of municipal facilities will be updated as needed and added to the City's Storm Water Management Plan (SWMP).

##### **5-2. SOP's and Inspection Schedules**

Below is a list of the current Good Housekeeping Standard Operating Procedures (SOP's) and their corresponding inspection schedule for the City's infrastructure and equipment:

STANDARD OPERATING PROCEDURE	INSPECTION SCHEDULE
1. CITY VEHICLE MAINTENANCE	As needed
2. DETENTION POND CLEANING	Twice a month
3. DITCH MAINTENANCE	Monthly
4. DRAINAGE STRUCTURE CLEANING	Monthly
5. STORAGE AND DISPOSAL OF CHEMICALS	As needed
6. VEGETATION CONTROL	As needed
7. STREET SWEEPING	As needed/Before & after events and storms
8. PARK CLEANING	As needed/After events/Weekly during active season

The City's continues to review and update these SOP's as needed and implement them at appropriate municipal facilities in accordance with the inspection schedule. Copies of the SOP's are included in Appendix D.

### 5-3. Structural Controls Maintenance

The City of Chickasaw's structural controls include storm drains, five (5) detention ponds, and storm water pumps. The detention ponds are shown on the map in Appendix C. DP-5, as shown on the map, is a 300-acre site used for storm water runoff; the storm water then travels along a 1.5-mile canal to a drainage pump house that contains two (2) pumps that are capable of pumping 20,000 GPM into the Tensaw River.



*Storm water pumps in drainage pump house*

The City cleans and removes debris from all drains as necessary in order to maintain proper drainage. The Public Works Department maintains a regular inspection and maintenance schedule. Storm inlets and detention ponds are inspected monthly and necessary maintenance is performed. Also, elements of the drainage system are inspected before and after heavy rains and repairs are performed as needed. Several ditches were cleaned and fallen trees were removed after Hurricanes Sally and Zeta.

During this reporting period, both storm water pumps were inspected, at a cost of approximately \$11,020. The north and south pumps were repaired for approximately \$24,240 and \$29,800, respectively. Approximately \$5,000 was spent on ditch cleaning.

#### 5-4. Roadway Maintenance

To the fullest extent possible, the construction of public streets, roads and highways under the jurisdiction and control of the City are designed to follow natural ridgelines. By using this design, disruption of existing grades and natural drainage areas are minimized. Natural drainage ways are maintained, preserved, and utilized in road design. In order to minimize the possibility of potential pollutant releases, road repairs are performed to the extent practicable during the dry season.

The Chickasaw Public Works Department performs smaller roadway maintenance projects, while larger projects are designed by local engineering firms or accomplished through Mobile County “Pay As You Go” program. During this reporting period, the City did not complete any projects under the “Pay As You Go” program.

The City has a street sweeper/vacuum truck which is utilized on an as-needed basis. Typically, this correlates to quarterly use for the traveled roadways in the City of Chickasaw. The City also cleans the major roadways before and after City events such as the Christmas parade and the Clean Sweep. Additionally, the street sweeper is used when large construction trucks inadvertently lose materials such as dirt or following a large storm event. During this reporting period, the street sweeper was used to clean up debris after Hurricane Zeta in October 2020. The vacuum trailer was used for clean-up after Hurricane Sally in September 2020.



#### 5-5. 2009 International Property Maintenance Code

The City of Chickasaw references the 2009 International Property Maintenance Code for regulation of unsightly growth or the accumulation of garbage or debris on residential and commercial properties. The following sections of the Code include storm water pollution prevention:

- 301.3 Vacant Structures and Land
- 302.1 Sanitation
- 302.4 Excess Weeds
- 302.8 Motor Vehicles
- 308.1 Accumulation of Rubbish Garbage

Copies of these sections of the Code was included in the Appendix of the most recent Storm Water Management Plan submitted to ADEM on June 14, 2019.

Public Works Department personnel are on alert for unsightly debris. Improperly disposed tires on residential property are particularly common; these tires are collected and stockpiled by personnel throughout the year and hauled to a permitted landfill approximately twice a year.

During this reporting period, no warnings or tickets were issued for violations to the property code.

#### 5-6. Cleaning of Parks

The City of Chickasaw has continued to be diligent in cleaning their parks after every sporting event, cookouts, and concerts. Litter is removed, and drainage facilities are inspected weekly to ensure they are in working condition. The Park Attendant also does a daily cleaning of each of the parks during its active season.

#### 5-7. Sanitary Sewer Overflow Prevention

Through an ongoing review of the sanitary sewer system infrastructure, various pipe replacements and pump station repairs are completed as needed. Activities in these areas are to reduce sewer overflows and inflow/infiltration. During this reporting period, the City cleaned and videoed approximately 1,500 to 2,000 linear feet of sanitary sewer mains at a cost of approximately \$10,000. No sanitary sewer projects were completed and no SSO's occurred during this reporting period.

The Utilities Board of the City of Chickasaw (Board) owns and operates a 1.5 million gallon per day (MGD) facultative lagoon system used for wastewater treatment. In order to consistently meet the total suspended solids (TSS) and carbonaceous biological oxygen demand (cBOD) permit limits, the Board implemented a treatment improvement project that included the installation of a dissolved air floatation (DAF) system for the purpose of algae removal from the lagoon effluent. Implementation of this project has resulted in a reduction in the effluent TSS and cBOD concentrations.



## **5.0 SUMMARY**

This Annual Report includes a history and overview of the City's MS4 program, as well as a review of the Best Management Practices (BMP's) outlined in the Storm Water Management Plan (SWMP) submitted in June 2019, as required by the Phase II MS4 Permit. The City has continued to implement and update their BMP's as necessary.

The City is in the process of developing a stormwater management ordinance. Once complete, this new ordinance will become a BMP in the City's Stormwater Management Plan.

The intent of the program is to reduce pollutants in storm water that is discharged from the storm water system and to prevent the degradation of receiving streams. The City's BMP's have a direct impact on the receiving stream, Chickasaw Creek.

The City of Chickasaw will continue to focus on storm water management and look for ways to enhance their current program.

# Appendix A



# A Citizen's Guide to Understanding Stormwater



EPA 833-B-03-002  
January 2003  
United States Environmental Protection Agency

Printed Address: (202) 260-1177 www.epa.gov  
To find out more about this publication  
Please contact your nearest EPA office

## After the Storm

For more information contact:  
[www.epa.gov/nps](http://www.epa.gov/nps)  
or visit  
[www.epa.gov/nps/stormwater](http://www.epa.gov/nps/stormwater)



### What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

### Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

### The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- ◆ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ◆ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ◆ Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- ◆ Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ◆ Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.



- ◆ Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

# Stormwater Pollution Solutions

## Residential



*Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.*

### Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.



- ◆ Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- ◆ Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- ◆ Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- ◆ Cover piles of dirt or mulch being used in landscaping projects.

### Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.



- ◆ Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- ◆ Don't dispose of household hazardous waste in sinks or toilets.

### Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.



- ◆ Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- ◆ Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.



*Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.*

## Residential landscaping

**Permeable Pavement**—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

**Rain Barrels**—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.



**Rain Gardens and Grassy Swales**—Specially designed areas planted with native plants can provide natural places for



rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

**Vegetated Filter Strips**—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

## Commercial

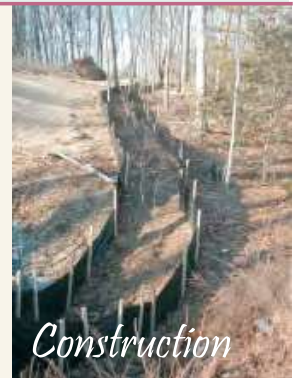


Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- ◆ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- ◆ Cover grease storage and dumpsters and keep them clean to avoid leaks.
- ◆ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- ◆ Divert stormwater away from disturbed or exposed areas of the construction site.
- ◆ Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- ◆ Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



## Construction

## Agriculture

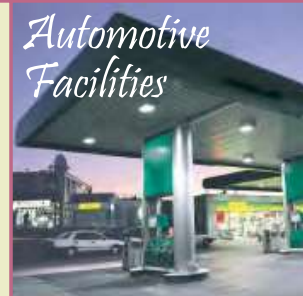


Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



- ◆ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ◆ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ◆ Vegetate riparian areas along waterways.
- ◆ Rotate animal grazing to prevent soil erosion in fields.
- ◆ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

## Automotive Facilities



Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- ◆ Clean up spills immediately and properly dispose of cleanup materials.
- ◆ Provide cover over fueling stations and design or retrofit facilities for spill containment.
- ◆ Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- ◆ Install and maintain oil/water separators.

## Forestry



Improperly managed logging operations can result in erosion and sedimentation.

- ◆ Conduct preharvest planning to prevent erosion and lower costs.
- ◆ Use logging methods and equipment that minimize soil disturbance.
- ◆ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ◆ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ◆ Expedite revegetation of cleared areas.



# What Can You Do to Protect Local Waterways?

## Flush Responsibly!

Don't pour household products such as cleansers, beauty products, medicine, auto fluids, paint, and lawn care products down the drain. Properly dispose of them at your local household hazardous waste facility.

Wastewater treatment facilities are designed to treat organic materials, not hazardous chemicals. If you pour hazardous chemicals down the drain, they might end up in your local rivers, lakes, and coastal waters.

Dispose of excess household grease (meat fats, lard, cooking oil, shortening, butter and margarine, etc.) diapers, condoms, and personal hygiene products in the garbage can.

These materials can clog pipes, and could cause raw sewage to overflow in your home or yard, or in public areas. Overflows often occur during periods of high rainfall or snowmelt and can result in basement backups, overflows at manholes, or discharges directly to rivers, lakes, and coastal waters.

Don't pour used motor oil down the drain.

Used motor oil can diminish the effectiveness of the treatment process, and might allow contaminants to be discharged. The contaminants could pollute local waterways or harm aquatic life.

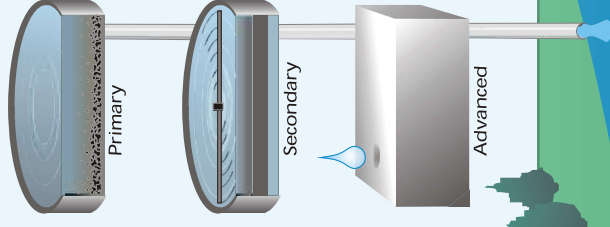
If you're a dark room hobbyist, dispose of spent fixer, developer, and other photographic chemicals in separate containers and transport them to a hazardous waste facility.

Like household hazardous wastes and used motor oil, photographic chemicals can interfere with the wastewater treatment process and could result in pollutants being discharged into local waterways.



### Wastewater Treatment 101

- Many communities have a wastewater treatment plant that incorporates a series of processes to remove pollutants from water used in homes, small businesses, industries, and other facilities. All wastewater first goes through the primary treatment process, which involves screening and settling out large particles.
- The wastewater then moves on to the secondary treatment process, during which organic matter is removed by allowing bacteria to break down the pollutants. The treated wastewater is then usually disinfected with chlorine to remove the remaining bacteria.
- Some communities go one step further and put the wastewater through an advanced treatment process to reduce the level of pollutants of special concern to the local waterbody, such as nitrogen or phosphorus. After this step, the treated water finally flows through pipes back to a local water body.



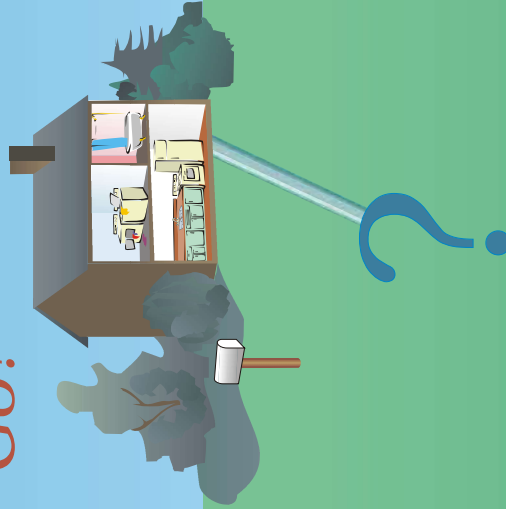


- |                      |                             |
|----------------------|-----------------------------|
| X cleaners           | X grease                    |
| X beauty products    | X diapers                   |
| X medicine           | X condoms                   |
| X auto fluids        | X feminine hygiene products |
| X paint              | X motor oil                 |
| X lawn care products | X photographic chemicals    |

For more information on the wastewater treatment process, please contact your local health or public works department. Please visit [www.epa.gov/owm](http://www.epa.gov/owm) for more information on wastewater treatment.



## Where Does All the Dirty Water Go?



## Protect the Environment in Our Community



## What You Flush or Pour Down Your Drain Affects the Rivers, Lakes, and Coastal Waters in Our Community

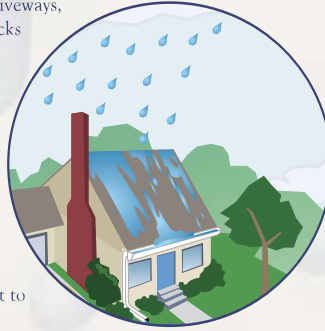


Where does the water go after you flush the toilet or drain the sinks in your home?

When the wastewater flushed from your toilet or drained from your household sinks, washing machine, or dishwasher leaves your home, it flows through your community's sanitary sewer system to a wastewater treatment facility. The wastewater from homes, along with wastewater from businesses, industries, and other facilities, is treated by a variety of processes (see inside for more information) to reduce or remove pollutants.

What happens to the treated water when it leaves the wastewater treatment plant? The treated wastewater is released into local waterways where it's used again for any number of purposes, such as supplying drinking water, irrigating crops, and sustaining aquatic life.

As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Stormwater can flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water. Polluted runoff is the nation's greatest threat to clean water.

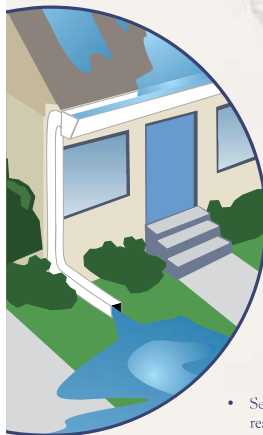


By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, rivers, wetlands, and coastal waters. Remember to share the habits with your neighbors!

## Healthy Household Habits for Clean Water

### Vehicle and Garage

- Use a commercial car wash or wash your car on a lawn or other unpaved surface to **minimize** the amount of dirty, soapy water flowing into the storm drain and eventually into your local waterbody.



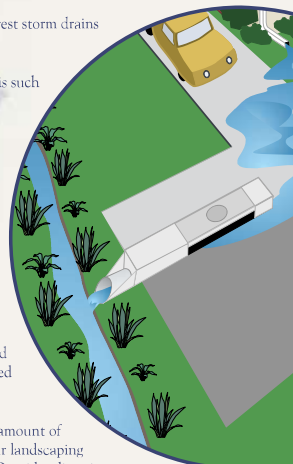
- Check your car, boat, motorcycle, and other machinery and equipment for leaks and spills. Make repairs as soon as possible. Clean up **spilled fluids** with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.
- **Recycle** used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.

### Lawn and Garden

- Use pesticides and fertilizers **sparingly**. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast calls for rain; otherwise, chemicals will be washed into your local stream.
- Select **native** plants and grasses that are drought- and pest-resistant. Native plants require less water, fertilizer, and pesticides.
- **Sweep up** yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater your lawn. Water during the **cool** times of the day, and don't let water run off into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local waterbodies. **Vegetate** bare spots in your yard to prevent soil erosion.

### Home Repair and Improvement

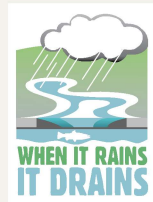
- Before beginning an outdoor project, locate the nearest storm drains and **protect** them from debris and other materials.
- **Sweep up** and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the **smallest amounts possible**, and follow the directions on the label. Clean up spills **immediately**, and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use **nontoxic, biodegradable, recycled, and recyclable** products whenever possible.
- **Clean** paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.
- **Reduce** the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.





# The SOLUTION TO STORMWATER POLLUTION!

Make your home  
A homeowner's guide to healthy  
habits for clean water



**Remember: Only rain down the drain!**

For more information, visit  
[www.epa.gov/npdes/stormwater](http://www.epa.gov/npdes/stormwater)  
or  
[www.epa.gov/nps](http://www.epa.gov/nps)



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## Storm drains connect to waterbodies!

- Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can destroy the biological treatment-taking place in the system. Other items, such as diapers, paper towels, and cat litter, can clog the septic system and potentially damage components.
- Care for the septic system drainfield by **not** driving or parking vehicles on it. Plant only grass over and near the drainfield to avoid damage from roots.
- Have your septic system **inspected** by a professional at least every 3 years, and have the septic tank **pumped** as necessary (usually every 3 to 5 years).

### Septic System Use and Maintenance

- Properly store pool and spa chemicals to **prevent** leaks and spills, preferably in a covered area to avoid exposure to stormwater.
- Whenever possible, drain your pool or spa into the **sanitary** sewer system.
- **Drain** your swimming pool only when a test kit does not detect chlorine levels.

### Swimming Pool and Spa

- When walking your pet, remember to **pick up** the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

### Pet Care



Make your home

# The SOLUTION TO STORMWATER POLLUTION!

*A homeowner's guide to healthy habits for clean water*

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***Storm drains connect to waterbodies!***

For more information, visit  
[www.epa.gov/npdes/stormwater](http://www.epa.gov/npdes/stormwater)  
or  
[www.epa.gov/nps](http://www.epa.gov/nps)

# Pet Waste and Water Quality:

## It's Not Just on the Lawn, It's in Your Water

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### What is the problem?

Scooping your pooch's poop isn't just a courtesy for those walking behind you; it is also the healthy and environmentally sound thing to do. Pet waste can be a significant source of water pollution. When pet waste is not properly disposed, it can be carried by rain or snow runoff directly into nearby waterbodies or into storm drains. Storm drains in streets and neighborhoods usually flow directly to a stream, river, or estuary without any treatment. Untreated animal fecal matter and wastes can become a source of harmful bacteria and nutrients in water. Just as we don't want human sewage in our water, it is important to prevent pet waste from being carried into our waterways because of negligence.

### What you can do:

You can follow these easy steps to be part of the solution to pet waste contamination.

1. The first step is to **always carry a plastic bag** with you when you walk your dog. Re-using an old newspaper delivery bag or plastic grocery bag works well.
2. Using the bag like a glove, you can then pick up the pet waste, turn the bag inside out around the waste, seal the bag, and **dispose of it in a trash can**. You can also flush un-bagged pet waste down the toilet.
3. **Don't place the bagged or un-bagged pet waste in a storm drain** or hose the pet waste towards storm drains as they drain directly to a stream, river, lake or other waterbody.
4. If you have a large yard, you may **bury un-bagged pet waste** in the yard at least 5 inches in the ground and away from vegetable gardens and waterways.

### Are you risking your health?

People are at risk of getting sick from drinking or swimming in water contaminated by pet waste. Dogs can be significant hosts of disease causing organisms, including Giardia and Salmonella, which are protozoan and bacterial infections transmitted to humans by animals. Some swimming beaches and shellfish beds in New Hampshire are commonly shut down due to bacteria contamination.

### The latest research

The environmental impact of dog waste has gone unrecognized for decades. Scientists recently developed a new lab technique of fingerprinting DNA to match bacteria found in the water to the bacteria from specific animals, including humans and domestic animals. Using this type of forensic science, New Hampshire scientists have found that dogs are a significant contributor of bacteria in several New Hampshire surface waters.

### Other neighborhood water pollutants

Dog waste is only one of many pollutants from our neighborhoods that add to water pollution. Lawn fertilizers, motor oil, driveway sand and salt, and soapy water from washing cars in driveways commonly end up in streams and lakes.

Tell friends and neighbors about the affect of animal waste on the environment and our health. Encourage them to clean up after their pets and to dispose of the pet waste properly.

# Benefits of Low Impact Development

## How LID Can Protect Your Community's Resources

### What Is Low Impact Development (LID)?

LID includes a variety of practices that mimic or preserve natural drainage processes to manage stormwater. LID practices typically retain rain water and encourage it to soak into the ground rather than allowing it to run off into ditches and storm drains where it would otherwise contribute to flooding and pollution problems (see [www.epa.gov/nps/lid](http://www.epa.gov/nps/lid)).

### Why Should My Community Adopt LID?

#### LID Reduces Stormwater Runoff by Emphasizing Infiltration

As a community grows, so does the amount of surface area covered by parking lots, roads and rooftops (Figure 1). Rainfall cannot soak through these hard surfaces; instead, the rain water flows quickly across them—picking up pollutants along the way—and enters ditches or storm drains, which usually empty directly and without treatment into local waterways. Local streams in urban areas are overwhelmed by frequent urban flash flooding and stream habitats are smothered by sediments carried by the excessive flows.

Contrast this to an undeveloped watershed, where vegetation-covered soil soaks up rainfall rather than allowing it to run off the land (Figure 2). Water filters through the soil before reaching the groundwater table or being released slowly into streams. An undeveloped watershed provides clean, safe water.

Fortunately, by adding LID solutions, communities can help their watersheds act more like undeveloped watersheds—despite the ever-expanding numbers of roads and rooftops. LID practices such as natural or man-made swales, depressions and vegetated areas capture and retain water onsite, allowing time for water to soak into the soil where it is naturally filtered.



A green roof absorbs rainwater, reduces energy costs and offers wildlife habitat in urban Portland, Oregon.

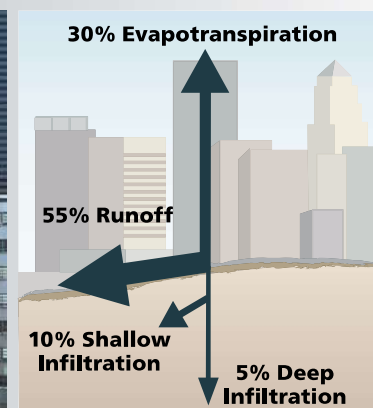
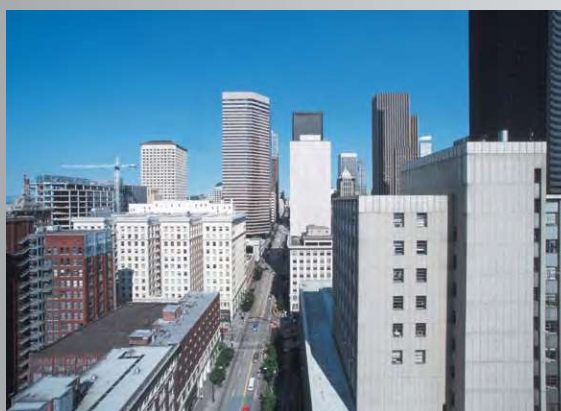


Figure 1. When roads, rooftops and parking lots cover much of the land, more than half of the rainfall runs off and flows directly into surface waters. In highly developed areas, such as in Seattle, Washington (above left), only 15 percent of rain water has the opportunity to soak into the ground.

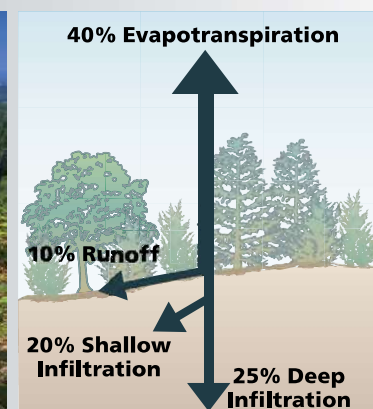


Figure 2. When vegetation and natural areas cover most of the land, such as in Oregon's Upper Tillamook Bay watershed (above left), very little water (only 10 percent) runs off into surface waters. Nearly half of the rainfall soaks into the soil. The remaining water evaporates or is released into the air by vegetation.



## LID Provides Many Environmental and Economic Benefits

- **Improved Water Quality.** Stormwater runoff can pick up pollutants such as oil, bacteria, sediments, metals, hydrocarbons and some nutrients from impervious surfaces and discharge these to surface waters. Using LID practices will reduce pollutant-laden stormwater reaching local waters. Better water quality increases property values and lowers government clean-up costs.
- **Reduced Number of Costly Flooding Events.** In communities that rely on ditches and drains to divert runoff to local waterways, flooding can occur when large volumes of stormwater enter surface waters very quickly. Holistically incorporating LID practices reduces the volume and speed of stormwater runoff and decreases costly flooding and property damage.
- **Restored Aquatic Habitat.** Rapidly moving stormwater erodes stream banks and scours stream channels, obliterating habitat for fish and other aquatic life. Using LID practices reduces the amount of stormwater reaching a surface water system and helps to maintain natural stream channel functions and habitat.
- **Improved Groundwater Recharge.** Runoff that is quickly shunted through ditches and drains into surface waters cannot soak into the ground. LID practices retain more rainfall on-site, allowing it to enter the ground and be filtered by soil as it seeps down to the water table.
- **Enhanced Neighborhood Beauty.** Traditional stormwater management infrastructure includes unsightly pipes, outfalls, concrete channels and fenced basins. Using LID broadly can increase property values and enhance communities by making them more beautiful, sustainable and wildlife friendly.

When implemented broadly, LID can also **mitigate the urban heat island effect** (by infiltrating water running off hot pavements and shading and minimizing impervious surfaces), **mitigate climate change** (by sequestering carbon in plants), **save energy** (from green roofs, tree shading, and reduced/avoided water treatment costs), **reduce air pollution** (by avoiding power plant emissions and reducing ground-level ozone), **increase property values** (by improving neighborhood aesthetics and connecting the built and natural environments), and **increase groundwater recharge**, potentially slowing or reversing land and well field subsidence.

## LID Techniques Can Be Applied at Any Development Stage

- **In undeveloped areas, a holistic LID design can be incorporated in the early planning stages.** Typical new construction LID techniques include protecting open spaces and natural areas such as wetlands, installing bioretention areas (vegetated depressions) and reducing the amount of pavement.
- **In developed areas, communities can add LID practices to provide benefits and solve problems.** Typical post-development LID practices range from directing roof drainage to an attractive rain garden to completely retrofitting streets with features that capture and infiltrate rainwater.



A landscaped curb extension calms traffic and captures and infiltrates street runoff in Portland, Oregon.



Rainfall soaks through permeable pavement and into the ground below in this parking area in west Des Moines, Iowa.



Street runoff collects in stormwater planters in Portland, Oregon.

# Appendix B

# **Chickasaw Recreation Department**

## **Looking Forward 2020**

**Call for details 452-6467**

### **Brooks Park 33<sup>rd</sup> Coastal Cleanup**

**Saturday, September 19 from 8-12pm**

### **Children's Halloween Costume Parade**

#### **Trunk n Treat**

**Saturday, Oct. 31 (details to follow)**

### **Youth Scavenger Hunt (ages 13-18)**

**Bill Brooks Park Thursday, Oct. 29**

**Great Contest Prizes**

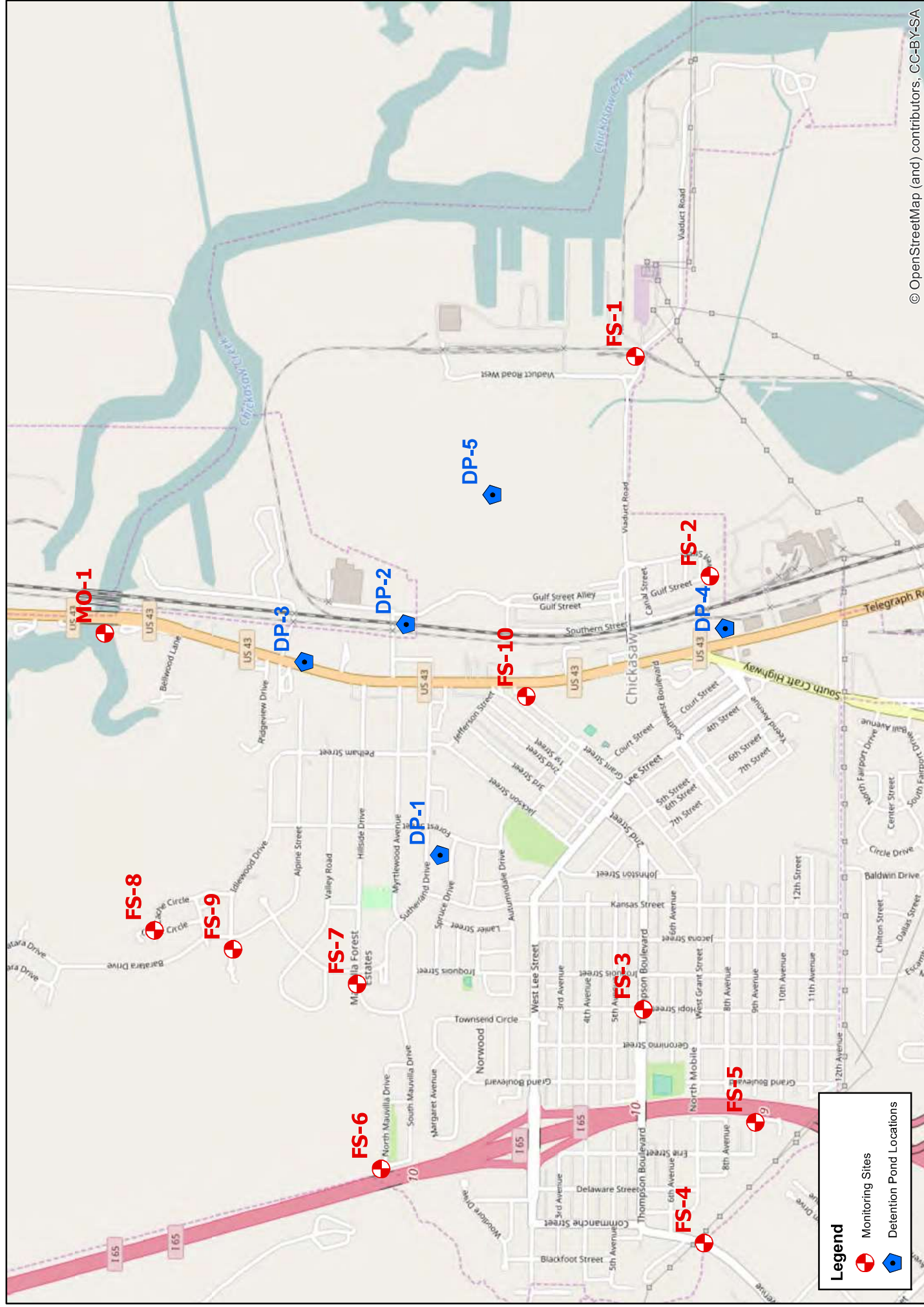
### **Chickasha Bogue**

**7<sup>th</sup> Annual Paddle 6pm Saturday Oct. 31**

**5pm Registration Bill Brooks Park**

# Appendix C





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# Chickasaw



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# Appendix D

# **Standard Operating Procedure**

## **City Vehicle Maintenance**

This SOP covers the process for washing and maintaining City vehicles without discharging pollutants to the City's MS4.

### **Fire Truck Washing**

1. Transport the fire truck to the City's environmentally safe wash station where the drain connects to the sanitary sewer system.
2. Wash the fire truck in the approved wash station.
3. Minimize water usage by using automatic shut off nozzles.
4. Ensure that all wash waters are discharged to the sanitary sewer system.
5. Wipe excess dirt or dust with a disposable towel.
6. Dispose of towels in a proper trash container.
7. Clean wash area to collect any accumulated solids.
8. Never wash the fire truck where the wash waters can flow into a storm drain or waterway.

### **Vehicle Maintenance**

1. Transport the vehicle to the City's garage to perform any maintenance activities.
2. Use a collection tank or drip pan to collect oil, diesel fuel, antifreeze, transmission fluids, and all other vehicle fluids when working on City's vehicles.
3. Repair leaking vehicles as soon as possible to avoid discharging into the storm drain system.

# **Standard Operating Procedure**

## **Detention Pond Cleaning**

This SOP covers the process for cleaning the City's detention ponds.

1. Schedule detention pond cleaning during a time when dry weather is expected.
2. Visually inspect grates and other structures to determine whether they're in good working order.
3. Install erosion controls, as necessary, prior to cleaning the detention pond.
4. Provide outlet protection, if feasible, to reduce the amount of debris that may leave during the cleaning process.
5. Remove debris and settlement from the detention pond. Use appropriate equipment, such as a backhoe or vacuum truck, as necessary.
6. Transport the debris to an approved disposal site.
7. Re-grade the pond bottom and slopes, as needed, after cleaning is complete.
8. Keep a record of the cleaning, including date, location, crew members, amount of debris collected, and comments.

# **Standard Operating Procedure**

## **Ditch Maintenance**

This SOP covers the process for maintaining City ditches.

1. Monitor ditches at least once a month to determine if maintenance is needed.
2. Contact affected property owners and utilities, if necessary, prior to performing maintenance.
3. Determine what equipment will be needed.
4. Install erosion controls as necessary prior to performing maintenance.
5. When performing maintenance, take all necessary precautions to avoid damaging the ditch channel and adjacent properties or utilities.
6. Remove all collected material and transport to an approved dumping site.
7. Clean up any tracked sediment material from paved surfaces.
8. Keep a record of all maintenance activities, including date, location, crew members, amount of material collected, and comments.

# **Standard Operating Procedure**

## **Drainage Structure Cleaning**

This SOP covers the process for cleaning the City's drainage structures.

1. Visually inspect the structure and determine what needs to be cleaned or replaced.
2. Record any deficiencies such as cracks and broken or missing pieces.
3. Remove any trash, debris, and sediment. Use appropriate hand tools, as necessary.
4. Use a vacuum truck if a more extensive cleaning is needed.
5. Transport all collected material to an approved disposal site.
6. Keep a record of the cleaning, including date, location, crew members, amount of debris collected, and comments.

# **Standard Operating Procedure**

## **Storage and Disposal of Chemicals**

This SOP covers the process for storing, handling, and transporting chemicals and how to handle spills.

1. Understand the MSDS sheets for the storage and handling of each chemical.
2. Determine the proper location for storing and handling the chemicals, primarily in a location that will not be affected by rainfall or storm water.
3. Always keep containment and spill kits onsite in an easily accessible location.
4. When transporting chemicals; discontinue operations if spills occur.
5. Remove and store handling equipment.
6. Contain and clean up spills with proper will appropriate spill kits.
7. Dispose of contaminated material at appropriate facility.

# **Standard Operating Procedure**

## **Vegetation Control**

This SOP covers the process for mowing and trimming around drainage structures.

1. Check the oil and fuel levels of the equipment; refill if needed.
2. Wear appropriate clothing and safety equipment, including eye and hearing protection.
3. Locate all drainage structures in the mowing/trimming area.
4. Mow and trim the area while minimizing the amount of clippings blown to pavement and drainage structures.
5. Bag and dispose of clippings or sweep clippings onto grass areas.



# **Standard Operating Procedure**

## **Street Sweeping**

This SOP covers the process for street sweeping while preventing pollutants and debris from entering the storm drain system.

1. Street sweeping should be performed as needed, before and after City events, and following a large storm event.
2. Perform regular maintenance on the sweeper to maintain its efficiency.
3. Safely drive the sweeper and pick up the debris, while carefully avoiding pushing debris into the storm drain system.
4. When sweeping is completed, dispose of the debris at a designated location.
5. Keep records of street sweepings, including dates, locations, and events, if applicable.

# **Standard Operating Procedure**

## **Cleaning of Parks**

This SOP covers the process for park cleaning, in accordance with the attached Park Cleaning Checklist.

1. Park cleaning should be performed as needed, after every event (i.e. sporting events, cookouts, or concerts), and weekly during the active season.
2. Clean parks by sweeping instead of washing, if possible. If washing is necessary, ensure that wash water will drain onto a landscaped area instead of a storm drain inlet. Do not use soap or detergents.
3. Ensure that all trash is picked up.
4. Inspect all storm drain inlets and ensure that all debris is removed and that they're in good working condition.
5. Check for leaking water lines, pipes, or hoses.
6. Take note of any strange or potentially harmful odors.
7. Check for potential spills that could flow into the storm drain system.
8. Ensure that restroom facilities are clean and free of leaks and trash.
9. Use the attached checklist for every park cleaning and document all results.