

CITY OF CARTHAGE

PHASE II

STORM WATER PERMIT

OCTOBER 2007

Information on the Permittee:

Name of the Permittee: City of Carthage, Missouri
Type of Entity: City- Municipality
Total Area (acres): 10 sq. miles = 6400 acres
Mailing Address: 623 E. 7th Street, Carthage, MO 64836
Primary Contact: Director of Public Works, Chad Wampler
Phone Number: (417)237-7010
Secondary Contact: City Administrator, Tom Short
Phone Number: (417)237-7000

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WATER PROTECTION PROGRAM

Information on the Municipal Separate Storm Sewer System:

MS4 System Location: City of Carthage, Missouri
Name of Organization: City of Carthage, Missouri
County(ies) Permittee Resides: Jasper County
There is a major receiving water within the permitted area: Spring River
The receiving waters are on the latest CWA's list of impaired waters:
Received certification that their SWMP complies with the requirements of Part 3.1: N/A

Information on Adjacent Waterways:

The Permittee is within 100 feet of: Streams, lakes, or reservoirs
The Permittee is within 100 feet of waters classified as major reservoirs: None
None of the Permittee's area is defined as wetland.
The Permittee has received a CWA, Section 404 permit from the US Army Corps of Engineers: N/A
Stormwater from Carthage does discharge to a sinkhole.
Outfall No. GP-1 discharges into a gravel pit and is not normally accessible without permission from the owner .

Information on Critical Areas:

There are threatened or endangered species in the area: See Page 2
The Permittee has met eligibility criteria for protection of threatened or endangered species.
There are critical habitats in the area: See Page 2
The Permittee has met eligibility criteria for protection of critical habitats.
There are historic properties in the area: See Page 2
The Permittee has met eligibility criteria for protection of historic properties.

Endangered Species:

| County | Species | Status | Habitat |
|--------|---|------------|---|
| Jasper | Gray Bat (<i>Myotis grisescens</i>) | Endangered | Caves |
| Jasper | Arkansas Darter (<i>Etheostoma craigini</i>) | Candidate | Rivers |
| Jasper | Neosho Madtom (<i>Noturus placidus</i>) | Threatened | Rivers |
| Jasper | Ozark Cavefish | Threatened | Caves in the Boone and Burlington limestone formations of the Ozark Mountains |

Historic Properties:

| Name | Address | Owner | Year |
|--|--|-------------------------------|------|
| Adkins House | 1011 Prospect, Carthage | Unknown | 1982 |
| Biffer, Andrew House | 1847 S. Garrison House, | Unknown | 1982 |
| Blevins House | 71 5 Oak, Carthage | Unknown | 1982 |
| Boon House | 226 W. Fourth, Carthage | Unknown | 1982 |
| Borland House | 903 W. Chestnut, Carthage | Unknown | 1982 |
| Carmean House | 161 5 Grand, Carthage | Unknown | 1982 |
| Carter's Bluff | 1201 E. Chestnut, Carthage | Unknown | 1982 |
| Carthage Courthouse Square Historic District | Roughly bounded by E. Central Ave., S. Maple, Lincoln, and W. 5 th Sts., Carthage | Private, Local Gov't, Federal | 1980 |
| Carthage South Historic District | City limits of Carthage, Carthage | Private, Local Gov't | 1982 |
| Cassill Place Historic District | W. Central, Carthage | Private | 1986 |
| Davey, T.N., House | 631 McGregor, Carthage | Unknown | 1982 |
| De Baca House | 603 E. Macon, Carthage | Unknown | 1982 |
| Detweiler House | 1522 River, Carthage | Unknown | 1982 |
| Farmer House | 202 S. Fulton, Carthage | Unknown | 1982 |
| Gerkey House | 220 W. Fourth St., Carthage | Unknown | 1982 |
| Grimes House | 1701 Grand, Carthage | Unknown | 1982 |
| Hall House | 708 Poplar, Carthage | Unknown | 1982 |
| Harrington, Charles O., House | 803 Prospect, Carthage | Unknown | 1982 |
| Heilyer, Captain John, House | 300 N. Main St., Carthage | Unknown | 1982 |
| Howard House | 705 McGregor, Carthage | Unknown | 1982 |

| | | | |
|-----------------------------------|--|-------------|------|
| Jasper County Courthouse | Courthouse Sq., Carthage | Local Gov't | 1973 |
| Jasper County Courthouse of 1841 | SR 2, Carthage | Unknown | 1982 |
| Johnston House | 209 N. Main St, Carthage | Unknown | 1982 |
| Kellog House | MO 66-71, Carthage | Unknown | 1982 |
| Kendrick House | MO 71 -66, Carthage | Unknown | 1982 |
| Lane House | 1627 S. Main St., Carthage | Unknown | 1982 |
| Logan House | 403 E. Fourth St., Carthage | Unknown | 1982 |
| Manalo House | 1607 S. Main St., Carthage | Unknown | 1982 |
| Missouri Pacific Railroad Station | 514 N. Orner, Carthage | Unknown | 1982 |
| Morris House | 519 E. Third St., Carthage | Unknown | 1982 |
| Newcomb House | 400 S. Fulton, Carthage | Unknown | 1982 |
| Oaks, The | Morgan Heights and County Club Rds, Carthage | Unknown | 1982 |
| Phelps Country Estates | SR 1, Carthage | Private | 1983 |
| Prichard House | 831, Carthage | Unknown | 1982 |
| Pugh Bonding Service | 407 E. Fourth St., Carthage | Unknown | 1982 |
| Pugh House | 321 Clinton, Carthage | Unknown | 1982 |
| Pyle House | 509 Cooper, Carthage | Unknown | 1982 |
| Raydon House | 404 S. Fulton, Carthage | Unknown | 1982 |
| Ring, O.P., House | 816 River, Carthage | Unknown | 1982 |
| Scrader House | 11 06 Cedar, Carthage | Unknown | 1982 |
| Shinn House | 231 No. Main St., Carthage | Unknown | 1982 |
| Slates House | 518 Walnut, Carthage | Unknown | 1982 |
| Smith House | 913 W. Chestnut, Carthage | Unknown | 1982 |
| Smith House | 727 W. Chestnut, Carthage | Unknown | 1982 |
| Smith House | 1734 S. Maple, Carthage | Unknown | 1982 |
| Thomas House | 425 Fall St., Carthage | Unknown | 1982 |
| Van Acres | Morgan Heights Rd. and Seventeenth St., Carthage | Unknown | 1982 |
| Wyatt House | 421 Thirteenth St., Carthage | Unknown | 1982 |

MCM #1: Public Education and Outreach on Stormwater Impacts

4.2.1.1 Permit Requirements

Carthage plans to implement a public education program by distributing educational materials to the community and conducting outreach activities. The focus of these efforts will be to educate the public with activities discussing the impact of stormwater discharges on water bodies and the steps the public can take to reduce pollutants in stormwater runoff.

4.2.1.2 Decision Process

Carthage developed their stormwater public education and outreach program in cooperation with other jurisdictions in the region. The target pollutants were identified and prioritized. The actions that impact the target pollutants were identified. The public education program was designed to impact the actions identified.

The following is a prioritized list of the leading pollutants, experienced in the permitted area, that are carried by stormwater runoff into water bodies. (1 = having most impact and 10 = having least impact)

- 2 Suspended Solids
- 8 Nutrients
- 9 Pesticides
- 10 Metals
- 8 Bacteria
- 6 Oxygen-Depleting Substances (BOD & other organics)
- 5 Oil & Grease
- 5 Salinity (Salt)
- 10 Priority Toxic Organic Chemicals (Household Hazardous Water
Pesticide/Herbicides)
- 10 Habitat Alterations
- 5 Floatables
- 10 Temperature

4.2.1.2.1 Inform Public on Steps

Carthage plans to inform individuals and households in the community about the steps they can take to reduce stormwater pollution with the following programs:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|--------|--------|--------|--------|--------|
| Educational Materials: | | | | | |
| Post Information on Website | X | X | X | X | X |
| Maintain a Library of Storm Water Educational Materials | X | X | X | X | X |

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|--------|--------|--------|--------|--------|
| Public Awareness: | | | | | |
| Issue Press Release Regarding Local Storm Water Issues | X | X | X | X | X |

4.2.1.2.2 How to Become Involved

Carthage plans to inform individuals and groups on how to become involved in the stormwater program by providing those instructions in all materials distributed to the public. This is described in more detail in 4.2.2 Public Involvement/Participation.

4.2.1.2.3 Target Audiences

During the development of the education program, Carthage identified the sources of stormwater pollutants that needed to be reduced to improve overall water quality. The target audiences were selected because changing their behavior would have a significant stormwater quality impact on the target pollutants. The target audiences for the public education program are:

1. Citizens (Homeowners)
2. Lawn Service Companies
3. Developers and Home Builders
4. Business Owners

4.2.1.2.4 Target Pollutant Sources

The target pollutant sources having a major impact on stormwater quality were identified. The following is a list of these sources:

The following is a list of potential sources of pollutants that are experienced in the permitted area. (1 = Major impact, 2 = Minor impact, 3 = Not an impact)

- 1 Construction activities (sediment, construction chemicals and debris, solid and sanitary wastes)
- 2 Overapplication of fertilizer, herbicides, pesticides
- 3 Improper disposal of paint and household hazardous chemicals
- 3 Pet waste contamination
- 2 Improper disposal of waste oil, grease, and gasoline disposal
- 2 Trash, debris, and illegal dumping
- 3 Detergents washed into drains
- 2 Snow removal (salt, sand and snow disposal)
- 2 Sanitary sewer overflows
- 2 Infiltration from cracked sanitary sewers
- 3 Failing septic systems
- 3 Sewer service connections to storm drainage system
- 3 Foundation drains connected to storm drainage system
- 3 Downspouts connected to storm drainage system
- 3 Lake or water body used for motor boating
- 3 Spills from roadway accidents or fires
- 2 Connected impervious areas covering large acreages (such as malls, institutions with large parking areas)
- 2 Stream bank erosion
- 3 Waste transfer station

4.2.1.2.5 Outreach Strategy & Partnerships

Carthage's outreach strategy is to implement a variety of methods to reach a number of different target audiences multiple times. To change behavior, repetition is important. The mechanisms are described in 4.2.1.2.1 of this permit application.

The strategy is to partner with other governmental and non-governmental entities to execute the public outreach strategy. The idea is to share information and resources so duplication does not occur. The following entities will be assisting with the effort:

1. Other Communities in the Region

4.2.1.2.6 Person Responsible

The person responsible for overall management and implementation of the permittee's stormwater public education and outreach program is **DIRECTOR OF PUBLIC WORKS**. Others may be involved in the execution of each of the individual activities in the programs.

4.2.1.2.7 Measurable Goals Selection

Carthage selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact the target pollutants identified as a concern for Carthage. The public education and outreach BMPs were also selected because many have been effective methods of communicating with the public for our community. The implementation of BMPs selected will determine the success of the measure on water quality.

MCM #2: Public Involvement and Participation

4.2.2.1 Permit Requirements

Carthage will comply with State and Local public notice requirements when implementing the public involvement and participation program.

4.2.2.2 Decision Process

The following is the documentation for Carthage's decision process and rationale statement for the development of a stormwater public involvement and participation program. It documents the overall program and the individual BMPs, measurable goals, and responsible party for the program.

4.2.2.2.1 Involving the Public in Developing the Submittal

Carthage has involved the public in the development and submittal of the application and stormwater management program as follows:

1. Held a Public Meeting
2. Posted Public Meeting Announcements

4.2.2.2.2 Involving the Public in Program Implementation

Carthage plans to actively involve the public in the development and implementation of the stormwater program through a number of different methods selected because they are existing effective methods used by Carthage or because of EPA guidance documents that list these BMPs as effective public involvement methods.

4.2.2.2.3 Target Audiences to Involve in Program

The target audiences for the permittee's public involvement program are:

1. Citizens (Homeowners)
2. Mass Media
3. Local Elected Officials
4. Local Government Agencies
5. Business Leaders
6. Youth

4.2.2.2.4 Public Involvement Activities

Carthage plans will involve the public through the activities described below:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|-----------|-----------|-----------|-----------|-----------|
| Establish Community Hotline | X | X | X | X | X |
| Hold Public Meetings | X | X | X | X | X |
| Develop Storm Water Stenciling Program | X | X | X | X | X |

4.2.2.2.5 Person Responsible

The person responsible for the overall management and implementation of the permittee's stormwater public involvement/participation program is **DIRECTOR OF PUBLIC WORKS**. Others may be involved in the execution of each of the individual activities in the programs.

4.2.2.2.6 Goal Selected

Carthage selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact the target pollutants identified as a concern for Carthage. Some of the public involvement methods selected were also chosen because they have been used effectively by Carthage in the past. The implementation of BMPs selected will determine the success of the measure on water quality.

MCM #3: Illicit Discharge Detection and Elimination

4.2.3.1 Permit Requirement.

4.2.3.1.1 Overview

Carthage will develop, implement and enforce a program to detect and eliminate illicit discharges (as defined in 10 CSR 20-6.200) into their small MS4.

4.2.3.1.2 Map

Carthage has developed a storm sewer system map using the items listed below, showing the location of all outfalls and the names and location of all waters of the State that receive discharges from those outfalls. The map will be continually updated as storm sewer systems are constructed.

The map will be developed using:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---------------------------|-----------|-----------|-----------|-----------|-----------|
| Storm Sewer Map Updating | X | X | X | X | X |
| Piping Schematic Review | X | X | X | X | X |
| Aerial Photography | X | X | X | X | X |
| Sewer Maintenance Records | X | X | X | X | X |
| Public Complaints | X | X | X | X | X |

4.2.3.1.3 Enforcement

Carthage will effectively prohibit non-stormwater discharges into the stormwater system of Carthage's stormwater system via the existing ordinances and regulations. Each ordinance/regulation is enforceable by Carthage with appropriate procedures and consequential actions.

4.2.3.1.4 Methods to Detect

Carthage has implemented a plan using the following methods to detect and address non-stormwater discharges, including illegal dumping to the stormwater system:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------------|-----------|-----------|-----------|-----------|-----------|
| Visual Inspection | X | X | X | X | X |
| Public Complaints | X | X | X | X | X |

4.2.3.1.5 Informing the Public

Carthage will inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste using the following methods:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|-----------|-----------|-----------|-----------|-----------|
| Educational Programs: | | | | | |
| Procedural Training for City Staff | X | X | X | X | X |
| Distribute Literature | X | X | X | X | X |
| Recycling Program for Household Hazardous Waste | X | X | X | X | X |

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|
| Volunteer Programs: | | | | | |
| Visual Inspection | X | X | X | X | X |
| Storm Drain Stenciling | X | X | X | X | X |
| Household Hazardous Waste Collection | X | X | X | X | X |
| Illegal Dumping Hotline | X | X | X | X | X |

4.2.3.1.6 Not Significant Contributors

Carthage has not identified any of the following categories of non-stormwater discharges or flows (i.e. illicit discharges) as significant contributors of pollutants to their small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined in 10 CSR 20-6.200), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, springs, water from crawl space pumps, footing drains, lawn watering, flows from riparian habitats and wetlands, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-stormwater and will only be addressed where they are identified as significant sources of pollutants to waters of the State.)

4.2.3.1.7 Occasional Incidental Non-Stormwater Discharges

Carthage's illicit discharge ordinance does not include a list of other similar occasional incidental non-stormwater discharges (e.g. non-commercial or charity car washes, etc.) that will not be addressed as illicit discharges because they are not reasonably significant sources of pollutants to the MS4. Should these occasional or incidental non-stormwater discharges be identified in the future, those entities responsible for discharging will be prohibited or conditions placed on them so as to minimize their discharge of pollutants.

4.2.3.2 Decision Process

Carthage has documented their decision process for the development of a stormwater illicit discharge detection and elimination program. Carthage's rationale statement addresses both their overall illicit discharge detection and elimination program and the individual BMPs, measurable goals, and responsible persons for their program.

4.2.3.2.1 Sources for Mapping

Carthage will develop a storm sewer map showing the location of all outfalls and the names and location of all receiving waters. Carthage used the following sources to compile the maps:

1. Storm Sewer Mapping
2. Piping Schematic Review
3. Aerial Photography
4. Sewer Maintenance Records
5. Public Complaints

Once the map is established, Carthage will use proposed construction plans to locate new outfalls and update the maps.

4.2.3.2.2 Regulatory Mechanism

Carthage will use the following mechanism to effectively prohibit illicit discharges to the MS4:

1. City Ordinance

2. Inspection

This mechanism was selected because ordinances are commonly used by Carthage to establish laws and set forth the enforcement mechanisms. The ordinance establishes legal authority: to regulate the contribution of pollutants to the municipal separate storm sewer system (MS4) of stormwater discharges by any use; to prohibit illicit connections and discharges to the MS4; and to establish legal authority to carry out all inspections, surveillance and monitoring procedures necessary to ensure compliance.

Carthage will develop and implement the following mechanisms to effectively prohibit illicit discharges to the MS4 on the respective schedule:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|------------|--------|--------|--------|--------|--------|
| Inspection | X | X | X | X | X |

4.2.3.2.3 Enforcement

Carthage will set forth in the ordinance enforcement procedures intended to remove the source of the illicit discharge detected.

Carthage will ensure implementation of the mechanisms described in 4.2.3.2.2 above with the following enforcement actions:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|----------------------------------|--------|--------|--------|--------|--------|
| Discontinue Water Service | X | X | X | X | X |
| Civil Penalties | X | X | X | X | X |
| Issue Stop Work Orders | X | X | X | X | X |
| Permit Denial for Non-Compliance | X | X | X | X | X |

4.2.3.2.4 Detection

Carthage will detect and address illicit discharges to the MS4, including discharges from illegal dumping and spills. Carthage's program will address on-site sewage disposal systems that flow into the MS4.

4.2.3.2.4.1 Identify Priority Areas

Carthage will use the system maps identified in 4.2.3.1.2 above and other data to identify priority areas with likelihood of illicit connections.

4.2.3.2.4.2 Trace the Source

N/A

4.2.3.2.4.3 Removal

Carthage will follow the ordinance adopted and the enforcement mechanisms detailed in the ordinance including those legal actions described in 4.2.3.2.3 above to enforce the removal of an identified illicit connection.

4.2.3.2.4.4 Program Evaluation

The success of the described program will be evaluated annually by analyzing the number of illicit connections discovered and eliminated.

4.2.3.2.5 Public Information

Carthage will inform public employees, business and the general public of hazards associated with illegal discharges and improper disposal of waste through the following methods:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|--------|--------|--------|--------|--------|
| Educational Programs: | | | | | |
| Procedural Training for City Staff | X | X | X | X | X |
| Distribute Literature | X | X | X | X | X |
| Recycling Program for Household Hazardous | X | X | X | X | X |
| Volunteer Programs: | | | | | |
| Visual Inspection | X | X | X | X | X |
| Storm Drain Stenciling | X | X | X | X | X |
| Household Hazardous Waste Collection | X | X | X | X | X |
| Illegal Dumping Hotline | X | X | X | X | X |

Where applicable the information distributed through these means will coordinate with the information distributed in the Public Education minimum control measure (e.g., consistent/coordinated messages in literature).

4.2.3.2.6 Responsible Party

DIRECTOR OF PUBLIC WORKS will be responsible for overall management and implementation of Carthage's stormwater illicit discharge detection and elimination program. Others may be involved in the execution of each of the individual activities in the programs.

4.2.3.2.7 Measurable Goals

Carthage will evaluate the success of the program based on:

The number of illicit connections found and eliminated.

Carthage selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact the target pollutants identified as a concern for Carthage. Some of the methods to detect and eliminate illicit discharges were also chosen because they have been used effectively by Carthage in the past. The implementation of BMPs selected will determine the success of the measure on water quality.

MCM #4: Construction Site Stormwater Runoff Control

4.2.4.1 Permit Requirements

Carthage plans to develop, implement, and enforce a program to reduce pollutants in any stormwater runoff from construction activities that result in disturbance of greater than or equal to one acre. Carthage also plans to reduce pollutants in stormwater runoff from construction activities that disturbs an area less than one acre if the site is part of a larger common plan of development or sale.

4.2.4.1.1 Regulatory Mechanism

Carthage has passed an ordinance or other regulatory mechanism with the required erosion and sediment controls, as well as sanctions to ensure compliance.

4.2.4.1.2 Best Management Practices (BMPs)

Carthage will require construction site operators to implement the appropriate erosion and sediment control Best Management Practices (BMPs). Carthage has adopted Model Best Management Practices (BMP's) for land disturbance in their ordinance which includes the construction specifications and design standards.

4.2.4.1.3 Wastes to Be Controlled

Carthage will require construction site operators to control wastes that may cause adverse impacts to water quality such as:

1. Discarded Building Materials
2. Concrete Truck Washout
3. Sediment
4. Litter or Trash

4.2.4.1.4 Site Plan Review

Carthage will implement procedures in their ordinance for site plan review, which will incorporate consideration of potential water quality impacts.

4.2.4.1.5 Receipt & Consideration of Public Comment

Carthage will not implement procedures in their ordinance for receipt and consideration of information submitted by the public.

4.2.4.1.6 Site Inspection

Carthage will implement procedures in their ordinance for site inspection and enforcement of erosion and sediment control measures.

4.2.4.2 Decision process

The following is the rationale statement for the development of Carthage's overall construction site stormwater runoff control program. It documents the individual BMPs, measurable goals, and responsible party for their program.

4.2.4.2.1 Regulatory Mechanism

Carthage has passed an ordinance that will require the use of erosion and sediment controls on construction sites. The ordinance outlines the requirements for designers and contractors before, during and after the construction activities. The ordinance will provide enforcement measures for those designers and contractors who do not follow the ordinance.

Other mechanisms that will be available to anyone involved in design and construction of erosion and sediment control activities. Those mechanisms include:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-----------------------------|--------|--------|--------|--------|--------|
| Design Methodologies | X | X | X | X | X |
| BMP Fact Sheets | X | X | X | X | X |
| Sample Plans | X | X | X | X | X |
| Construction Specifications | X | X | X | X | X |
| Standard Details | X | X | X | X | X |
| Ordinance | X | X | X | X | X |

4.2.4.2.2 Enforcement

Carthage will ensure compliance with the developed ordinance by including an enforcement section in the ordinance detailing the sanctions and enforcement mechanisms. Carthage will use the following sanctions:

1. Non-Monetary Penalties
2. Fines
3. Permit Denial for Non-Compliance
4. Ordinance

4.2.4.2.3 Implementation of Proper Controls

Carthage will require construction site operators to control wastes that may have adverse impacts on water quality including:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|--------|--------|--------|--------|--------|
| Implementation of Proper Erosion and Sediment Control | X | X | X | X | X |

4.2.4.2.4 Pre-Construction Site Plan Review

Carthage will implement and maintain procedures for site plan review, including the review of pre-construction plans, which will look at the potential water quality impacts. Carthage will implement procedures and rationale for those sites that do not require site plan review. The estimated percentage of sites that will have a pre-construction site plan review is 100%.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|------------------------------|--------|--------|--------|--------|--------|
| Review of Construction Plans | X | X | X | X | X |

4.2.4.2.5 Public Input on Submittals

Carthage will not implement procedures for receipt and consideration of information submitted by the public.

4.2.4.2.6 Site Inspection & Enforcement

Carthage will implement and maintain procedures for site inspection and enforcement of control measures. The sites will be inspected using a priority rating system. The site with the most potential risk to the community will be top on the priority list.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|
| Site Inspection and Enforcement | X | X | X | X | X |

4.2.4.2.7 Person Responsible

The person responsible for overall management and implementation of the permittee's construction site stormwater runoff control program is **DIRECTOR OF PUBLIC WORKS**. Others may be involved in the execution of each of the individual activities in the programs.

4.2.4.2.8 Measurable Goals

Carthage selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact on the target pollutants identified for Carthage. The implementation of BMPs selected will determine the success of the measure on water quality.

MCM #5: Post-Construction Stormwater Management in New Development and Redevelopment

4.2.5.1 Permit Requirement

4.2.5.1.1 Overview

Carthage will develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale.

4.2.5.1.2 Strategies

Carthage will develop and implement strategies, which will include a combination of structural and/or non-structural Best Management Practices (BMPs), appropriate for the community.

4.2.5.1.3 Ordinance

Carthage will use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or Local law.

4.2.5.1.4 Long-Term Operation & Maintenance

Carthage will ensure adequate long-term operation and maintenance of BMPs.

4.2.5.2 Decision Process

The following is the rationale statement for the development of a post-construction stormwater management program. It documents the BMPs, measurable goals, and responsible party for the program.

4.2.5.2.1 Priority Areas

Carthage will implement regulatory procedures to address stormwater runoff from new development and redevelopment projects. There are no areas identified as a priority for regulatory procedures.

4.2.5.2.2 Regulatory Procedures

Carthage will implement regulatory procedures that will be specifically tailored for the community, minimize water quality impacts, and attempt to maintain pre-development runoff conditions.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|--------|--------|--------|--------|--------|
| Ordinance | X | X | X | X | X |
| Inspection and Maintenance of Long-Term | X | X | X | X | X |
| Publication of BMPs | X | X | X | X | X |

4.2.5.2.3 Non-Structural Best Management Practices (BMPs)

4.2.5.2.3.1 Policies & Ordinances

Carthage will implement policies and ordinances that will help minimize water quality impacts.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|--------|--------|--------|--------|--------|
| Minimize Impervious Surfaces | X | X | X | X | X |
| Minimize Disturbance of Soils and Vegetation | X | X | X | X | X |
| Site Based Local Controls | X | X | X | X | X |

4.2.5.2.3.2 Infill Development

N/A

4.2.5.2.3.3 Education

Carthage will implement education programs for developers and the public about project designs that minimize water quality impacts.

4.2.5.2.3.4 Other Non-Structural Measures

N/A

4.2.5.2.4 Structural BMPs

4.2.5.2.4.1 Structural BMPs

Carthage will implement the following structural BMPs:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|----------------------|-----------|-----------|-----------|-----------|-----------|
| Detention/Retention | X | X | X | X | X |
| Filtration Practices | X | X | X | X | X |

4.2.5.2.5 Regulatory Mechanism

Carthage will implement an ordinance or other regulatory mechanism to address post-construction runoff from new developments and redevelopments. These mechanisms will help to not only recommend proper practices, but will help enforce the proper use of the practices under certain circumstances. They include:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|-----------|-----------|-----------|-----------|-----------|
| Ordinance | X | X | X | X | X |
| Inspection and Maintenance of Long-Term | X | X | X | X | X |
| Publication of BMPs | X | X | X | X | X |

Carthage will ensure compliance with the developed ordinance by way of sanctions and enforcement mechanisms. Carthage will implement the following sanctions in their ordinance:

1. Non-Monetary Penalties
2. Fines
3. Permit Denial for Non-Compliance
4. Ordinance

4.2.5.2.6 Long-Term Operation & Maintenance

Carthage will implement options to help ensure the long-term operation and maintenance of their selected BMPs. These options will help ensure that future O&M responsibilities are clearly identified.

4.2.5.2.7 Responsible Party

The person responsible for overall management and implementation of the permittee's stormwater post-construction stormwater management program is **DIRECTOR OF PUBLIC WORKS**. Others may be involved in the execution of each of the individual activities in the programs.

4.2.5.2.8 Measurable Goals

Carthage selected the measurable goals for each of the BMPs after reviewing EPA & ASCE research on the effectiveness of certain BMPs. The BMPs selected were chosen because of the evidence that they will have a positive impact on the target pollutants identified as a concern for Carthage. The implementation of BMPs selected will determine the success of the measure on water quality.

MCM #6: Pollution Prevention/Good Housekeeping for Municipal Operations

4.2.6.1 Permit Requirement.

4.2.6.1.1 Overview

Carthage will develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

4.2.6.1.2 Training

Using training materials that are available from EPA, State and other organizations, Carthage's program will include employee training to prevent and reduce stormwater pollution from activities.

4.2.6.2 Decision Process

Carthage has documented their decision process for the development of a pollution prevention/good housekeeping program for municipal operations. Carthage's rational statement addresses both their overall pollution prevention/good housekeeping program and the individual BMP's, measurable goals, and responsible persons for the program. The rational statement is as follows:

4.2.6.2.1 Pollution Prevention & Good Housekeeping Measures

Carthage will implement and maintain pollution prevention and good housekeeping measures in the following City activities:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|-----------|-----------|-----------|-----------|-----------|
| Catch Basin Cleaning | X | X | X | X | X |
| Street Sweeping | X | X | X | X | X |
| Recycling Program | X | X | X | X | X |
| Maintenance Schedule | X | X | X | X | X |
| Maintenance Activities | X | X | X | X | X |
| Long-Term Inspection Procedures | X | X | X | X | X |
| Minimize Pesticides Used | X | X | X | X | X |
| Proper Disposal of Waste from Storm Sewer | X | X | X | X | X |
| Employee Training | X | X | X | X | X |

4.2.6.2.2 Employee Training

Carthage will formalize and implement an employee-training program in the following areas so as to prevent and reduce stormwater pollution from the following activities:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|--------|--------|--------|--------|--------|
| Park and Open Space Maintenance | X | X | X | X | X |
| Fleet and Building Maintenance | X | X | X | X | X |
| New Construction and Land Disturbances | X | X | X | X | X |
| Storm Water System Maintenance | X | X | X | X | X |
| Street Maintenance | X | X | X | X | X |
| Snow Removal Operations | X | X | X | X | X |

These activities will be coordinated with the outreach programs developed for the public information and illicit discharge minimum control measures so that a consistent message is presented throughout Carthage's program.

4.2.6.2.3 Activities

Carthage's program will address the following areas:

4.2.6.2.3.1 Clean Up Activities

The following activities will be formalized and implemented to reduce the floatables and other pollutants in the MS4:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---------------------------------|--------|--------|--------|--------|--------|
| Maintenance Schedule | X | X | X | X | X |
| Maintenance Activities | X | X | X | X | X |
| Long-Term Inspection Procedures | X | X | X | X | X |

4.2.6.2.3.2 Pollutant Locations

Carthage would like to reduce or eliminate the discharged pollutants from the following locations:

1. Streets

2. Roads
3. Highways
4. Municipal Parking Lots
5. Maintenance and Storage Yards
6. Salt/Sand Storage Locations
7. Snow Disposal Areas

The following controls and/or programs will be implemented to reduce or eliminate the discharge of pollutants from facilities owned by Carthage:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--|-----------|-----------|-----------|-----------|-----------|
| Catch Basin Cleaning | X | X | X | X | X |
| Street Sweeping | X | X | X | X | X |
| Recycling Program | X | X | X | X | X |
| Minimize Pesticides Used | X | X | X | X | X |
| Proper Disposal of Waste from Storm Sewer System | X | X | X | X | X |
| Employee Training | X | X | X | X | X |

4.2.6.2.3.3 Pollutant Removal

Carthage will implement training procedures for the removal of dredge spoil, accumulated sediments, floatables, and other debris.

4.2.6.2.3.4 Flood Management

Carthage will review their current regulations concerning flood management to ensure they allow for:

1. Assessment and implementation of solutions that address impacts to water quality for new projects and;
2. Review of existing projects for inclusion of water quality aspects.

4.2.6.2.4 Responsible Party

DIRECTOR OF PUBLIC WORKS will be responsible for overall management and implementation of the pollution prevention and good housekeeping program for Carthage. Others may be involved in the execution of each of the individual activities in the programs.

4.2.3.2.5 Program Evaluation

Carthage will evaluate the success of the pollution prevention/good housekeeping minimum control measure by tracking the progress of each measure against the implementation schedule. Each one of the measures described in this permit was chosen based on its implementability by Carthage staff and impact on water quality.