

Storm Water Management Program

for

The City of Defiance, Ohio



Prepared by:



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~ By City of Defiance ~

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Chapter 1 – Existing Storm Water Management Overview

1.0 Introduction

On November 1, 2006 the City of Defiance (Defiance) received from the Ohio EPA “Director’s Final Findings and Orders” (Orders) designating Defiance as a regulated small MS4. The Orders required Defiance to prepare an approvable Notice of Intent (NOI) and a satisfactory Storm Water Management Program (SWMP) to obtain coverage under Ohio EPA’s National Pollution Discharge Elimination System (NPDES) General Permit for authorization for small MS4s to discharge storm water. Defiance was given 180 days to complete and submit the NOI and SWMP. A copy of the Director’s Final Findings and Orders are available in **Appendix A**.

The following describes Defiance’s storm water quality management efforts prior to the development and implementation of the proposed SWMP.

1.1 Current Storm Water Management

Prior to the development of the SWMP, Defiance did not have a Storm Water Quality Ordinance or a Storm Water Utility. Defiance’s subdivision regulations have minimal runoff and erosion control requirements. The Defiance Engineering Division developed a Storm Water Runoff Control guidance document requiring new developments to detain storm water on-site and accepted design standards for said detention.

1.2 Watersheds

Defiance is situated at the intersection of four major watersheds as identified by the United States Geological Survey (USGS) National Hydrogeological Database. The 8-digit hydrogeological unit codes (HUCs) and the names for the watersheds are:

1. No. 04100005: Upper Maumee River
2. No. 04100006: Tiffin River
3. No. 04100007: Auglaize River
4. No. 04100009: Lower Maumee River

1.3 Impaired Receiving Streams

The following water bodies within the Defiance area were identified in the Ohio EPA 2004 Integrated Report as having an “impaired” status. The Watershed Assessment Unit (WAU) Summaries, which detail the reason for the impaired status, are available in **Appendix B**. The main pollutants listed in these reports were sediment and nutrients.

1. HUC 11: 04100005020 - Maumee River (downstream of Hamm Ditch to upstream of the Tiffin River);
2. HUC 11: 04100006060 - Tiffin River (downstream of Lick Creek to mouth);

3. HUC 11: 04100007110 - Powell Creek;
4. HUC 11: 04100007120 - Auglaize River (Flatrock Creek to mouth); and
5. HUC 11: 04100009010 - Maumee River (downstream of Tiffin River to upstream of South Turkeyfoot Creek).

1.4 Description of Current Structural BMPs

The City of Defiance has three municipally owned detention ponds. The first is located at the south end of Integrity Drive, the second is just west of Precision Way, and the third is located north of Diehl Park.

The detention basins are effective in slowing down the discharge rate from its watershed area. Slowing down the discharge rate can prevent erosion from high water velocities downstream. The detention basins also settle out some solids and if well vegetated can filter pollutants. This BMP can improve water quality because it tends to remove pollutants before they leave the detention area and because they do not create additional pollutants by causing downstream erosion.

1.5 Description of Current Municipal Departments

The City of Defiance has several departments and divisions which have facilities within the MS4 area. These facilities will be required to comply with the Storm Water Management Program. As the combined sewer system is separated, additional municipal departments will be required to comply with the Storm Water Management Program (SWMP). Municipal operations that are or will be affected by the SWMP include the following:

- Parks and Cemetery System
- Street Department
- Water Department
- Fire Department
- Police Department
- Municipal Courts
- Water Pollution Control (Wastewater Treatment Plant)
- City Administration (City Hall)

Chapter 2 – Proposed Storm Water Management Program

2.0 Purpose

The purpose of a Storm Water Management Program (SWMP) in Phase II of the U.S. Environmental Protection Agency's (EPA) storm water program originates from the 1990 Clean Water Act (CWA), which aims to preserve, protect and improve the Nation's water

resources from polluted storm water runoff. A SWMP requires the institution of controls on the unregulated sources of storm water discharges, otherwise referred to as non-point source pollutants, which have proven to be the greatest cause of impairment to our Nation's water resources.

2.1 Minimum Control Measures

The following SWMP includes six minimum control measures (MCMs): (1) public education and outreach; (2) public participation and involvement; (3) illicit discharge detection and elimination; (4) construction site storm water runoff control (which is also referred to as erosion control); (5) post-construction runoff control; and (6) pollution prevention and good housekeeping. These minimum control measures aim to preserve, protect and improve Defiance's water resources with respect to polluted storm water runoff.

Providing outreach and educating the public helps to ensure greater support by the public and greater compliance with the SWMP itself. The public education and outreach program is detailed in Chapter 3.

An active and involved community is crucial to the success of a storm water management program because it allows for broader public support by giving citizens partial responsibility of the program; shorter implementation schedules; a broader base of expertise and economic benefits; and a lead into other programs. The public participation and involvement program is detailed in Chapter 4.

Recognizing the adverse effects illicit discharges can have on receiving waters, Chapter 5 allows the MS4 Operator to detect and eliminate illicit discharges by gaining a thorough awareness of the entire storm water sewer system.

Construction site storm water management in areas undergoing new development or redevelopment is necessary to keep polluted storm water runoff from entering the MS4 conveyances that discharge into the City of Defiance's receiving waters, untreated. Similarly, post-construction storm water management in areas undergoing new development or redevelopment is necessary to keep runoff from entering the MS4 conveyances that discharge into the City of Defiance's receiving waters untreated. The construction site runoff control program is detailed in Chapter 6, while the post-construction storm water runoff control program is in Chapter 7.

The pollution prevention and good housekeeping measure is meant to improve or protect receiving water quality by altering municipal facilities operations. The pollution prevention and good housekeeping program is detailed in Chapter 8.

2.2 Storm Water Utility Formation and Implementation

The City of Defiance does not currently have a storm water utility. They are however, considering the implementation of a utility to cover the expenses running their MS4. The City

may choose to create a storm water utility by ordinance. Creation of the storm water utility gives more direct control to a specific group of people over storm water issues.

Defiance may choose to consider funding operation and maintenance costs and annual repair and replacement costs. Operation and maintenance costs includes money for activities such as responding to customer complaints, inlet cleaning, storm sewer inspection and cleaning, and street sweeping. Having an annual budget set aside for these activities will make it more likely that operation and maintenance will be performed on a regularly scheduled basis. Repair and replacements costs are directed to the improvement of catch basins, culverts, side ditches, pump station components, floodwall components, vehicles, and construction equipment. Having an annual budget set aside for these activities will allow the Storm Water Utility to keep these items in good working order. These costs are a part of the total money required to fund the storm water utility.

The following are the steps required to implement a storm water utility:

- Step 1 – Complete a storm water system master plan (capital improvements plan)
- Step 2 – Decide if a separate storm water utility is right for Defiance
- Step 3 – Approve the stormwater utility formation ordinance at a City Council meeting
- Step 4 – Complete a user rate study
- Step 5 – Hold public meetings to involve public
- Step 6 – Establish user rates
- Step 7 – Implement rates and generate revenue
- Step 8 – Begin implementing storm water master plan items

2.2.1 Storm Water Master Plan

At the time that this SWMP was prepared, the City of Defiance considered the development of a Storm Water Master Plan. A Storm Water Master Plan will identify areas of concern throughout the city and suggest projects that would address those areas.

2.2.2 Storm Water Rate Study

A storm water rate study collects all parts of the cost to operate the storm water utility. These parts include construction projects, annual operation and maintenance, annual repair and replacement costs, and any debt service due to bonded projects. The intent of the rate study is to develop an equitable storm water user rate that will pay for all costs of the storm water utility. Typically, residential users all pay the same rate with commercial and industrial users paying more based on their physical size or on-site impervious areas. This rate would be added to users' monthly utility bill.

An alternative option to having a standard rate applied to the utility bill is to conduct a property assessment study. The property assessment would evaluate the amount of

impervious surface on each property. Land owners would then have an additional fee added to their property tax based on the amount of impervious surface found in the study.

2.3 Storm Water Budget

Over the course of the first permit year, the program costs will be developed and budgeted over the remainder of the permit term.

2.4 MS4 Coordinator

In January 2009, the City of Defiance is considering appointing an additional employee to coordinate all aspects of the MS4 Program. This person will handle the day to day responsibilities of implementing the Storm Water Management Program.

2.5 Timetable for Program Implementation

There are 5-year implementation schedules for each of the activities, programs and controls proposed to satisfy the requirements of each MCM. Each schedule is listed in the individual minimum control measures chapters, Chapters 3 - 8. These tasks, along with other proposed water quality activities, have been assembled on the Gantt chart available in **Appendix C**.

Chapter 3 – Public Education and Outreach MCM

3.0 Introduction

This chapter describes the public education and outreach minimum control measure, one of six measures an operator of a Phase II regulated municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) storm water permit.

According to the Environmental Protection Agency (EPA), an informed and knowledgeable community is crucial to the success of a storm water management program. Educating the public helps to ensure greater support by the public and greater compliance with the program itself.

Each education and outreach activity is accompanied by its own implementation schedule. The implementation schedule informs the MS4 Operator and his or her designated personnel of the tasks to complete for each year. The MS4 Operator will ask that the parties responsible for each education activity record and report annually on the items to be tracked so that the MS4 Operator may include them in the annual report to Ohio EPA.

3.1 Public Education Program

The following activities encompass the public education and outreach program for the constituents of the City of Defiance, who are otherwise referred to as the citizens of Defiance. This program, which Defiance has legal authority to implement, is designed to reach a minimum of 8,500 people, approximately 50% of the population of Defiance.

3.1.1 Storm Water Webpage

The City of Defiance already has an existing website. A webpage will be added to this site to cover storm water topics. Much of the information placed on the storm water website will be generated from existing sources pertaining to storm water and water quality in general, such as steps individuals and households can take to reduce storm water pollution and the hazards of improper waste disposal. Additional materials specific to local needs, will be generated as necessary.

3.1.1.1 Implementation Schedule

The implementation of a storm water website shall be the responsibility of the MS4 Operator who will pursue the following schedule:

Year 1 (2009): Approve the public education activity described above.

Year 2 (2010): Aided by the City's website designer, research the development of a storm water webpage to link to the City of Defiance's website.

Year 3 (2011): Research storm water material and work with the City for the design, creation, and maintenance of the storm water webpage. Update the contents of the webpage regularly throughout the year.

Year 4 (2012): Keep the webpage current.

Year 5 (2013): Keep the webpage current.

3.1.1.2 Rationale

The storm water webpage was chosen as a public outreach mechanism as a way to build on an existing community feature. As such, the target audience for the website will be those who already visit Defiance's webpage. Also, Defiance will list the web address of the storm water webpage in publications such as the brochures and newspaper articles explained in more detail in sections 3.1.2 and 3.1.3 respectively. In this way, the target audience for the webpage will expand to encompass the readers of those publications as their respective programs progress.

3.1.1.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix D**.

- Number of visitors;
- Number of agencies involved in the development and continued maintenance of the website link;
- Number of features; and
- Number of inquiries (if upgrades are able to provide this particular feature)

3.1.2 Brochures and Fact Sheets

Brochures and fact sheets will be created and distributed to targeted audiences.

3.1.2.1 Implementation Schedule

The implementation of brochures and fact sheets shall be the responsibility of the MS4 Operator who will pursue the following schedule:

Year 1 (2009): Approve the public education activity described above.

Year 2 (2010): Identify at least four events at which materials on storm water can be distributed to the general public.

Year 3 (2011): Produce at least one brochure or fact sheet and distribute them at the events identified in the previous year.

Year 4 (2012): Review the distribution (including events and target audiences) of the previous year's brochures and fact sheets and revise as necessary. Update the previous year's brochures and fact sheets and redistribute them based on the assessment of the previous year's distribution.

Year 5 (2013): Review the distribution (including events and target audiences) of the previous year's brochures and fact sheets and revise as necessary. Update the previous year's brochures and fact sheets and redistribute them based on the assessment of the previous years' distribution.

3.1.2.2 Rationale

Brochures and fact sheets were chosen as a public education mechanism because they can be easily tailored to meet the needs of specific audiences as required by the City. According to the Ohio EPA 2004 Integrated Report, the main pollutants found in Defiance watersheds are sediment and excess nutrients. For that reason, Defiance is focusing their efforts on these two main pollutants. In general, Defiance would like to address the sediment and construction site debris controls for developers and contractors, litter reduction for children, and organic matter controls for home owners.

3.1.2.3 Items to be Tracked

The following items will be recorded on their corresponding reporting forms located in **Appendix D**.

- Name and date of events;
- List of target audiences; and
- List of brochures and/or fact sheets (with approx. quantities) distributed at events and to target audiences.

3.1.3 Storm Water Articles and Public Notice Publication

The main newspaper in Defiance is the Defiance Crescent News. The number of paying customers within the city limits on weekdays is 5,006. On Sundays, the number of paying customers within the city limits is 5,501. In addition to the Crescent News, several newsletters are distributed throughout Defiance which may be willing to publish storm water related articles. Articles and public notice announcements will be prepared and published in order to inform the public on various storm water issues, including meetings and events, occurring within the City of Defiance.

3.1.3.1 Implementation Schedule

The implementation of storm water publications shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): Approve the public education activity described above.

Year 2 (2010): Compile a list of possible publications willing to feature storm water articles including the number of publications a year for each. Make note of how many issues per year each publication would be willing to feature storm water articles.

Year 3 (2011): Publish a minimum of one article, placing them in as many different publications as possible. Update all contact information for newsletters and articles.

Year 4 (2012): Update the list of possible publications established in year one. Publish a minimum of one article, placing them in as many different publications as possible. Update all contact information for newsletters and articles.

Year 5 (2013): Update the list of possible publications established in year one. Publish a minimum of one article, placing them in as many different publications as possible. Update all contact information for newsletters and articles.

3.1.3.2 Rationale

Printed media such as newspapers were chosen as a public education mechanism because of the large readership they offer.

3.1.3.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix D**.

- Number of publications featuring each article;
- Date of publications;
- Number of articles written/topics covered; and
- Estimated readership for each publication.

3.1.4 Radio and Television Announcements

The City of Defiance will use media outlets such as cable and public access television, and radio as a means of circulating storm water information. Focus will be given to public service announcements, which aim to inform the citizens of Defiance of why a particular activity is harmful to storm water quality; and advertisements, which aim to inform the citizens of Defiance of upcoming storm water quality improvement activities in which they can become involved.

3.1.4.1 Implementation Schedule

The implementation of media announcements shall be the responsibility of the MS4 Operator who will pursue the following schedule:

Year 1 (2009): Approve the public education activity described above.

Year 2 (2010): Air at least one public service announcement and one local advertisement throughout the year.

Year 3 (2011): Air at least one public service announcement and one local advertisement throughout the year.

Year 4 (2012): Air at least one public service announcement and one local advertisement throughout the year.

Year 5 (2013): Air at least one public service announcement and one local advertisement throughout the year.

3.1.4.2 Rationale

Defiance already uses radio and television as a way to educate the public and announce upcoming events. Adding storm water quality topics will compliment Defiance's public education efforts.

3.1.4.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix D**.

- Number of public service announcements;
- Number of advertisements; and
- Estimated number of viewers or listeners for all of the above.

Chapter 4 – Public Participation and Involvement MCM

4.0 Introduction

The public participation and involvement minimum control measure is the second of six measures the operator of a Phase II regulated municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit.

According to the Environmental Protection Agency (EPA), the public can provide valuable input and assistance to a regulated MS4's municipal storm water management program and, therefore, requires that the public be given opportunities to play an active role in both the development and implementation of the program. An active and involved community is crucial to the success of a storm water management program because it allows for broader public support by giving citizens partial responsibility of the program, shorter implementation

schedules, a broader base of expertise and economic benefits, and a lead into other programs.

Like the previous chapter, each participation and involvement activity is accompanied by its own implementation schedule. The implementation schedule informs the MS4 operator and his or her designated personnel, of the tasks to be completed each year. The MS4 Operator will require that the parties responsible for each activity record and report annually on the items to be tracked so that the MS4 Operator may include them in the annual report to Ohio EPA.

4.1 Public Participation Program

Defiance has developed a set of activities, which it has legal authority to carry out, designed to involve the public in the implementation of the storm water program. The following activities encompass the public participation and involvement program for the constituents of the City of Defiance.

4.1.1 Storm Drain Identification

Volunteers will be involved in marking storm drain inlets. Various methods may be used to provide identification for storm drains including stenciling or the placement of inlet stickers.

While educational in nature, storm drain identification directly and indirectly involves the public in the prevention of point source pollution. Both those citizens involved in the marking activities as well as those citizens who spot and are able to identify marked drains as storm water drains are able to benefit from this activity.

The MS4 Operator will provide each group of participants with the items necessary to mark the inlets along with pollutant-tracking forms to record potential instances of dumping, littering, and illicit discharges, etc. Participants will note storm drains that are clogged with debris or otherwise show obvious signs of dumping. This will enable city crews to target their cleanup efforts. Volunteers will be instructed in advance on what kinds of pollutants to look for and how to fill out data forms. The City will track all findings by the volunteers.

4.1.1.1 Implementation Schedule

The implementation of storm drain identification shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): Approve the public participation activity described above.

Year 2 (2010): Begin the creation of a list of community groups, service organizations, home owners' associations and youth groups to conduct

identification projects. Begin to identify and record locations suitable for the safety of all volunteers. Create storm drain identification kits. Create pollutant-tracking forms.

Year 3 (2011): Begin a training program for group leaders. Identify a portion of the city's storm drains.

Year 4 (2012): Identify additional storm drains.

Year 5 (2013): Continue program. If necessary, re-stencil or mark the drains identified in year three.

4.1.1.2 Rationale

The storm drain stenciling project was chosen because Defiance's storm drains are not currently readily identifiable by the public. This project is developed to include a broad range of people including youth groups, service organizations, and private home owners.

4.1.1.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix E**.

- The number of drains identified;
- Name of community group, service organization, homeowner associations, or other group who conducted the storm drain identification project;
- Estimated number of participants in attendance; and
- Number and list of locations suspected of dumping or littering.

4.1.2 Litter Clean-up

The City of Defiance holds "Clean-up Your Parks Day" each spring. Notice is placed in the newspaper and youth groups are solicited to volunteer.

4.1.2.1 Implementation Schedule

The implementation of stream-side and litter clean-up shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): Participate and record public litter clean-up activities within the City of Defiance at least two times a year.

Year 2 (2010): Participate and record public litter clean-up activities within the City of Defiance at least two times a year.

Year 3 (2011): Participate and record public litter clean-up activities within the City of Defiance at least two times a year.

Year 4 (2012): Participate and record public litter clean-up activities within the City of Defiance at least two times a year.

Year 5 (2013): Participate and record public litter clean-up activities within the City of Defiance at least two times a year.

4.1.2.2 Rationale

The litter pick-up program was designed to build on Defiance's pre-existing public involvement project. The target participants for this activity, youth groups, ties in with the brochures and fact sheets developed for school age children and young adults as detailed in Chapter 3. Also, because of the wealth of recreational opportunities the rivers of Defiance offers, water recreational enthusiast will also be target participants for this activity.

4.1.2.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix E**.

- Estimated number of volunteers; and
- Number of garbage bags filled.

4.1.3 Leaf Pick-up

The City of Defiance sponsors a leaf pick-up program that runs from October through Thanksgiving. Residents are encouraged to rake fallen leaves to the curb and they are collected a minimum of three times. Collected leaves area taken outside the City limits to a compost site. Defiance will provide advanced notice of leaf pick up through newspaper articles, radio advertisements, and/or television spots as detailed in Chapter 3.

4.1.3.1 Implementation Schedule

The implementation of leaf pick-up program shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): Advertise for and record leaf pick-up activities within the City of Defiance.

Year 2 (2010): Advertise for and record leaf pick-up activities within the City of Defiance.

Year 3 (2011): Advertise for and record leaf pick-up activities within the City of Defiance.

Year 4 (2012): Advertise for and record leaf pick-up activities within the City of Defiance.

Year 5 (2013): Advertise for and record leaf pick-up activities within the City of Defiance.

4.1.3.2 Rationale

The leaf pick-up program was designed to build on Defiance’s pre-existing procedures and was chosen because excess nutrients are one of the main pollutants in Defiance waterways as published in the Ohio EPA’s 2004 Integrated Report. The target participants for this activity are home owners and renters.

4.1.3.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix E**.

- Estimated number of participants;
- Location of leaf pick-up; and
- Estimated amount of leaves collected.

4.1.4 Composting Facility

The City of Defiance sponsors a free composting and mulching area for its citizens. This facility is certified by the Ohio EPA as a Class IV composting facility. All runoff from the site is captured and directed back to the headworks of the waste water treatment plant. Residents of the city can bring yard waste such as lawn clippings and downed tree branches to the site and take out finished mulch and compost at no cost.

Defiance will increase public participation in this service through public notices and advertisements as detailed in Chapter 3.

4.1.4.1 Implementation Schedule

The implementation of community mulching program shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): Approve the mulching site project described above.

Year 2 (2010): Advertise for and begin record keeping of community participation in mulching service.

Year 3 (2011): Advertise for and record community participation in mulching service.

Year 4 (2012): Advertise for and record community participation in mulching service.

Year 5 (2013): Advertise for and record community participation in mulching service.

4.1.4.2 Rationale

The community mulching program was designed to build on Defiance's pre-existing services and was chosen because excess nutrients are one of the main pollutants in Defiance waterways as published in the Ohio EPA's 2004 Integrated Report. The target audience for this program is all residents within the city limits and will appeal to a broad range of economic groups since the service is free.

4.1.4.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix E**.

- Date and description of mulching site advertisement; and
- Number of vehicles entering facility.

4.1.5 Inquiry and Complaint Tracking

The MS4 Operator will establish procedures for receipt and consideration of written or verbal public inquiries, concerns, and requests for information regarding local construction activities that are suspected of negatively affecting storm water quality. These procedures will, at a minimum, implement a tracking process in which submitted public information would be documented and given to the appropriate

staff. The resolution of complaints would also be documented. These procedures will be incorporated into Defiance's existing system for handling complaints.

4.1.5.1 Implementation Schedule

The implementation of the Inquiry and Complaint Tracking system will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): Approve the Inquiry and Complaint Tracking system as described above.

Year 2 (2010): Develop procedures to handle inquiries and complaints.

Year 3 (2011): Follow Inquiry and Complaint Tracking Plan and document all required information.

Year 4 (2012): Follow Inquiry and Complaint Tracking Plan and document all required information.

Year 5 (2013): Follow Inquiry and Complaint Tracking Plan and document all required information.

4.1.5.2 Rationale

The City of Defiance currently has a method for tracking and handling complains. The proposed plan will be easy to integrate into the existing procedures and will provide a method of recording information received by the public regarding storm water.

4.1.5.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix E**.

- Nature of inquiry or complaint;
- Staff member who handled the inquiry or complaint; and
- The outcome of the situation.

4.2 Public Participation in the Development of the SWMP

The SWMP was presented and input requested at a public meeting held on April 17, 2007. Also, a draft version of the SWMP was made available for public review from April 3 through April 17, 2007 at the City Building. The public meeting and public review draft document were advertised on April 9th and April 12th, 2007 through the Public Notice section of the Defiance Crescent News newspaper. There were no public comments received at the public meeting or while the SWMP was available for public review. There were 21 people in attendance during the meeting.

Chapter 5 – Illicit Discharge Detection and Elimination MCM

5.0 Introduction

This chapter describes the Illicit Discharge Detection and Elimination minimum control measure, the third of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit.

Federal regulations define an illicit discharge as any discharge that is not composed entirely of storm water. Illicit discharges can enter the system through either direct connections or indirect connections. The result is untreated discharges that contribute high levels of pollutants to receiving water bodies. Recognizing the adverse effects illicit discharges can have on receiving waters, this chapter allows the MS4 operator to detect and eliminate illicit discharges by gaining a thorough awareness of the entire storm water sewer system.

Each section of this plan describes a Best Management Practice (BMP). Each BMP is accompanied by its own implementation schedule. The implementation schedule informs the MS4 operator and his or her designated personnel of the tasks to complete for each year. The MS4 Operator will require that the parties responsible for each detection and elimination activity record and report annually on the items listed in the Items to be Tracked sections so that the MS4 Operator may include them in the annual report to the Ohio EPA.

The following is the illicit discharge detection and elimination program.

5.1 Development of a MS4 Conveyance Map

The purpose of the MS4 conveyance map is to provide accurate location information for all components of the conveyance system. This includes identifying the location of all outfalls in the City and identifying the names and locations of water bodies that receive discharges from those outfalls. The City of Defiance currently has approximately 70% of the MS4 system

mapped. The remainder of the conveyance system will be mapped within the first five years of permit coverage.

The completed map will aid in the efforts of:

- Identifying the possible sources of dry weather flows
- Identifying the water bodies that pollution from dry weather flows may be affecting

5.1.1 Implementation Schedule

The implementation of the development of storm sewer mapping shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): Approve the completion of the MS4 Conveyance Map as it is described above.

Year 2 (2010): Compile all existing storm sewer mapping information for the MS4 area and incorporate the data into one map. Include information on new MS4 areas based on new projects.

Year 3 (2011): Collect field data for and map an additional ten percent (80% total) of the MS4 conveyances within the MS4 area. Include information on new MS4 areas based on new projects.

Year 4 (2012): Collect field data for and map an additional ten percent (90% total) of the MS4 conveyances within the MS4 area. Include information on new MS4 areas based on new projects.

Year 5 (2013): Collect field data for and map the remaining ten percent (100% total) of the MS4 conveyances within the MS4 area. Review compiled mapping to ensure completeness. Include information on new MS4 areas based on new projects.

5.1.2 Rationale

The measurable goal for the MS4 conveyance map was established by keeping in mind that the City already has the majority of the system mapped.

5.1.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix F**.

- Linear footage of MS4 mapped; and
- Number and location of MS4 area outfalls mapped.

5.2 Development of a Regulatory Mechanism

Defiance will use an ordinance as its regulatory mechanism. The purpose of the ordinance will be to provide for the health, safety, and general welfare of all citizens within the MS4 area by regulating non-storm water discharges to the storm drainage system. After the approval of the ordinance, Defiance will have legal authority to administer the Illicit Discharge Detection and Elimination Plan as outlined in Section 5.3. A sample ordinance is available in **Appendix J**.

The objectives of an illicit discharge detection and elimination ordinance are:

- To regulate contribution of pollutants to the MS4 by storm water discharges by any user;
- To prohibit illicit connections and discharges to the MS4;
- To establish legal authority to carry out all inspection, surveillance, and monitoring activities, and to implement corrective actions necessary to ensure compliance with the ordinance.

5.2.1 Implementation Schedule

The implementation of the development of an Illicit Discharge Detection and Elimination ordinance shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks.

Year 2 (2010): Develop a draft ordinance for illicit discharge detection and elimination. Defiance will use the Ohio EPA recommended example ordinance provided by the Stormwater Manager's Resource Center as a guide.

Year 3 (2011): City will adopt the ordinance.

Year 4 (2012): No scheduled tasks.

Year 5 (2013): Review illicit discharge ordinance and note any suggested improvements. Update ordinance if necessary.

5.2.2 Rationale

The development of a regulatory mechanism is necessary for Defiance to have legal authority to enforce the elimination of illicit discharges. Year two was chosen for the development of the Illicit Discharge Detection and Elimination ordinance so that the ordinance would be approved before visual outfall inspections begin in year four.

5.2.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix F**.

- Number and type of suggested improvements in ordinance; and
- Number and description of changes made to ordinance.

5.3 Development of a Detection and Elimination of Illicit Discharges Plan

The plan to detect and address illicit discharges, including illegal dumping, is the central component of this minimum control measure. It allows the MS4 Operator to systematically find and remove illicit discharges from the entire MS4 area. All illicit discharge detection and elimination activities shall be documented on the reporting forms located at the end of this chapter.

This plan is divided into a three step process:

- Locate Problems within Priority Areas;
- Find the Source; and
- Remove or Correct Illicit Connections.

All actions taken as required by this plan will be documented. The documentations will be retained to be incorporated into the annual report. This plan will also be reviewed and assessed at a minimum of every five years.

5.3.1 Locate Problems within Priority Areas

High priority areas are areas that are considered to be likely sources of illicit discharges, based on available information. These areas can include older sections of the City, commercial and industrial areas, high density areas, and unsewered areas.

Once the high priority areas have been located, a screening of these outfalls will be conducted via dry weather screening. Dry weather screening consists of visual

investigation of storm water outfalls at least seventy-two hours after a rainfall event. The presence of flow during dry weather can indicate an illicit discharge.

Problem areas and discharges identified through the dry weather outfall screenings (dry weather inspections) will be analyzed for pollutants of concern and other parameters. Parameters to be investigated during visual inspections include but are not limited to odor, color, temperature, deposits or stains, and damage to the outfall structure. Depending on visual inspection results, physical analysis of dry weather discharges may follow.

After all high priority areas have been screened for illicit discharges, the remaining lower priority area screening will begin.

5.3.2 Find the Source

Once outfalls with evidence of illicit discharges have been located, various methods will be used to detect the source of the discharge.

The procedure for source detection is as follows:

- Visual inspection of storm sewer system beginning at discharge location
- Trace discharge upstream by checking upstream manholes for evidence of discharge
- Area will likely be isolated between two manholes
- Once the problem area is isolated, the source will be determined through a means such as dye-testing or smoke-testing, excavation, or televising.

5.3.3 Remove or Correct Illicit Connections

Once an illegal discharge is located through field screening and confirmed through sampling, enforcement action may be required to have the source removed. There will be a graduated response to the discovery of an illegal connection beginning with voluntary compliance and escalating to enforcement actions if compliance is not obtained. At least one Notice of Violation will be issued. This notice will provide a timeframe for the elimination of the illicit discharge.

The procedure for enforcement will be outlined in the City of Defiance's Illicit Discharge Detection and Elimination ordinance. After the City adopts the ordinance, Defiance will have legal authority to enforce compliance measures.

5.3.4 Active Home Sewage Treatment Systems (HSTS) Discharging into the Conveyance System

Defiance policy is for all homeowners to tie-in to the existing sanitary sewer system. There are no known HSTSs within Defiance city limits. Therefore, there are none discharging to the MS4 conveyance system. Updated information regarding the closing of previously unknown HSTSs within the MS4 service area will be submitted in each annual report.

5.3.5 Implementation Schedule

The implementation of the Detection and Elimination of Illicit Discharges Plan shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks.

Year 2 (2010): Approve the development of a detection and elimination of illicit discharges plan.

Year 3 (2011): Identify high priority areas based on available mapping and public complaints. These areas will be screened first. Develop a plan for removing or correcting illicit discharges and connections.

Year 4 (2012): Inspect fifty percent (50% total) of the outfalls and locate problems within the MS4 area. Develop a plan for removing or correcting illicit discharges and connections.

Year 5 (2013): Inspect the remaining fifty percent (100% total) of the outfalls located in the MS4 area. Develop a plan removing or correcting illicit discharges and corrections.

5.3.6 Rationale

The development of the Illicit Discharge Detection and Elimination Plan is a critical step in improving the water quality of storm water runoff. Since the majority of the MS4 system is already mapped, dry weather screening can begin as soon as approval for the activity is obtained however, legal authority will not be granted to Defiance to enforce the removal of illegal connections until the ordinance is approved in year three.

5.3.7 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix F**.

- Number and location of MS4 area outfalls screened for illicit discharges;
- Illicit discharge sources detected; and
- Illicit discharge sources eliminated.

5.4 Public Education and Participation

It is acknowledged that outreach to public employees, businesses, property owners, and the general public will help gain support for and increase compliance with the storm water program. Information and education regarding ways to detect and eliminate illicit discharges is an integral part of this minimum control measure. An education program identifying the hazards of illicit discharges and improper waste disposal will be combined with the Public Outreach and Education minimum control measure (Chapter 3). Public participation programs pertaining to illicit discharge detection and elimination will be combined with the Public Participation and Involvement minimum control measure (Chapter 4).

5.5 Annual Training of MS4 Personnel

Current Employees: Current employees involved in illicit discharge detection and elimination will be required to complete training. This training will involve education on testing equipment as well as policies and procedures to be used.

During subsequent years, employees whose work involves illicit discharge detection and elimination will be required to complete periodic refresher training.

New Employees: New employees whose work involves illicit discharge detection and elimination will be required to complete training. This training will take place within the first year of employment.

All training will be documented and the documentation will be retained by the City.

5.5.1 Implementation Schedule

The implementation of the training for MS4 personnel shall be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks.

Year 2 (2010): No scheduled tasks.

Year 3 (2011): Approve and develop training policy and procedures for public employee training on illicit discharge detection and elimination.

Year 4 (2012): Begin training employees.

Year 5 (2013): Continue training employees. Evaluate the policies, procedures, and training methods; and begin implementing any recommended changes.

5.5.2 Rationale

Training was scheduled to match the beginning of illicit discharge dry weather field inspections. In this way, employees will have the necessary knowledge needed to carry out the Illicit Discharge Detection and Elimination plan.

5.5.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix F**.

- Number of employees trained

5.6 Consistency with the Long-Term Control Plan (LTCP)

The City of Defiance's Combined Sewer Overflow Long-Term Control Plan were reviewed for the illicit discharge detection and elimination component to ensure that the efforts of this Storm Water Management Program (SWMP) were neither in conflict with nor duplicating the efforts of the LTCP.

Currently the City of Defiance monitors only the combined sewer overflows. There is no program in place to monitor storm water outfalls. Therefore, the efforts of this SWMP, which aim to detect and eliminate illicit discharges from storm water outfalls, are not in conflict with or a duplication of the efforts of the LTCP.

Chapter 6 – Construction Site Storm water Runoff Control MCM

6.0 Introduction

This chapter describes the construction site storm water runoff control minimum control measure, the fourth of six measures the Operator of a Phase II regulated small Municipal Separate Storm Sewer System (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System

(NPDES) permit. The construction site storm water runoff control MCM regulates areas undergoing new development or redevelopment of one acre or more.

Construction site storm water management in areas undergoing new development or redevelopment is necessary because polluted storm water runoff from construction sites often flows to MS4 conveyances and ultimately discharges into receiving waters untreated.

Each section of this plan describes a Best Management Practice (BMP). Each BMP is accompanied by its own implementation schedule. The implementation schedule informs the MS4 Operator and his or her designated personnel of the tasks to complete for each year.

The MS4 Operator will require that the parties responsible for the storm water runoff control of each construction site keep a record of the items listed below the Items to be Tracked sections. The MS4 Operator will include these records in the required annual report to the Ohio EPA. They will assist in evaluating Defiance's storm water quality program and will serve as documentation of progress made toward achieving each measurable goal. All records will be kept for a minimum of the permit term.

The following is the construction site runoff control program.

6.1 Development of a Regulatory Mechanism

The purpose of the regulatory mechanism for construction site storm water runoff control is to establish minimum storm water management requirements and controls to protect and safeguard the general health, safety, and welfare of the public residing in watersheds within the MS4 area during construction activities. This regulatory mechanism applies to the following sites with land-disturbing activities: Those involving construction activities with a land disturbance greater than or equal to one (1) acre, or disturbances of less than one (1) acre of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) or more acres of land.

The City of Defiance will use an ordinance as its regulatory mechanism. The ordinance will be written to be in accordance with Ohio Administrative Code (OAC) 3745:39 and Ohio Revised Code (ORC) Chapter 6111 and will include construction site plan submittal requirements, a general description of the City's review and inspection process, and a description of enforcement procedures. Defiance will use the model construction site storm water runoff control ordinance created by the Northeast Ohio Areawide Coordinating Agency (NOACA) and recommended by the Ohio EPA as a guide. The NOACA ordinance is available in **Appendix J**.

Legal Authority to Administer BMP: The Defiance City Council has legal authority to create and enforce new ordinances.

6.1.1 Implementation Schedule

The implementation of the City's construction site runoff control regulatory mechanism will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Work with NOACA model ordinance to develop a draft ordinance for construction site storm water runoff.

Year 3 (2011): After making any necessary revisions to the draft, the City will adopt the ordinance by the end of year two of the implementation schedule.

Year 4 (2012): Review construction storm water runoff ordinance and note any suggested improvements. Update ordinance if necessary.

Year 5 (2013): Review construction storm water runoff ordinance and note any suggested improvements. Update ordinance if necessary.

6.1.2 Rationale

The City of Defiance's current ordinances contain requirements for new subdivisions, but not for other construction activities that disturb one or more acres. Furthermore, the requirements for subdivisions do not meet the minimum storm water quality requirements for the NPDES permit. For these reasons, the BMP seen as most important for the construction site storm water runoff control MCM is the establishment of an official policy and enforcement method. Because subsequent BMPs will be reliant on the ordinance to provide direction and a means of legal enforcement, the measurable goal for the creation of the ordinance was chosen in such a way so as to provide adequate time for the remaining BMPs to be implemented within the permit life. However, because Defiance does not plan on hiring an MS4 Operator until January 2009, the ordinance writing was pushed back to year two of the permit period.

6.1.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix G**.

- Number and type of suggested improvements for the ordinance; and
 - Number and description of changes made to the ordinance.

6.2 Site Plan Review and Inspection Process

The site plan review and inspection process will be generally described in the ordinance and will be written in accordance with Ohio State Law and Ohio EPA policies. The City of Defiance will develop standardized timetables for all site plan reviews and application submittals. The City will also add storm water quality to their existing review procedures. As the City already has several review checklists, they will either add a new section to the existing lists, or create a separate list for storm water quality issues.

Currently, the City of Defiance plans to review all projects within the MS4 area.

After the City gives approval, the construction site operator is responsible to submit a Notice of Intent (NOI) Letter to Ohio EPA.

Before construction begins, the City will perform a site inspection to verify that BMPs that were proposed in the permit application have been installed. Periodic site inspections will be performed for the duration of the construction period. Inspection of construction sites will be prioritized based on size of development, proximity of the development to sensitive areas, and sites with a history of noncompliance.

For sites found to be in noncompliance with their approved permit, enforcement actions will be taken, such as stop work orders and administrative fines.

Legal Authority to Administer BMP: After the adoption of the ordinance discussed in Section 6.1, Defiance will have legal authority to administer the review and inspection procedures and to implement legal enforcement should requirements not be met.

6.2.1 Implementation Schedule

The implementation of the development of Site Plan Review and Inspection Process Procedures will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Approve the establishment of a local plan review and comment procedures, including a standardized checklist, for all construction site plans and construction site inspections.

Year 3 (2011): Review plan review and comment procedures for all construction site plans and construction site inspections and update as necessary.

Year 4 (2012): Review plan review and comment procedures for all construction site plans and construction site inspections and update as necessary.

Year 5 (2013): Review plan review and comment procedures for all construction site plans and construction site inspections and update as necessary.

6.2.2 Rationale

The City of Defiance currently uses standardized review procedures for new subdivisions and for improvement projects. The development of a construction site review and inspection plan will complement the existing procedure.

6.2.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix G**.

- Number of construction sites permitted for storm water quality;
- Number of construction sites inspected; and
- Number and type of enforcement actions taken against construction site operators.

6.3 Public Participation

The MS4 Operator will establish procedures for receipt and consideration of written or verbal public inquiries, concerns, and requests for information regarding local construction activities that are suspected of negatively affecting storm water quality. These procedures will, at a minimum, implement a tracking process in which submitted public information, would be documented and given to the appropriate staff.

These procedures, as well as their implementation timeline and measurable goal, are addressed in Chapter 4, Public Participation and Involvement.

6.4 Annual Training of MS4 Personnel

Current Employees: Current employees whose work could affect storm water quality, including but not limited to personnel involved in site plan review, inspection, and enforcement, will be required to complete training on storm water-related policies, programs, and procedures.

During subsequent years, employees will be required to complete an annual refresher training program.

New Employees: New employees whose work involves construction storm water runoff control will be required to complete training. This training will take place within the first year of employment. This training will involve instruction on plan review, inspection protocol, enforcement procedures, and appropriate control measures.

All training will be documented. The documentation will be retained by the City.

6.4.1 Implementation Schedule

The implementation of training for MS4 personnel will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Approve the development of annual training for MS4 personnel on construction storm water runoff controls, as described above.

Year 3 (2011): Develop and implement training policy and procedures for personnel training on construction storm water runoff controls.

Year 4 (2012): Begin training employees.

Year 5 (2013): Continue training employees. Evaluate the policies, procedures, and training methods; and begin implementing recommended changes.

6.4.2 Rationale

Due to the number of changes to Defiance policy, employee training will play a vital role in the administration of the new ordinance, site plan review procedure, and inspection policy.

6.4.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix G**.

- Number and names of new employees trained in storm water quality related policies and procedures; and
- Number and names of current employees trained in storm water quality related policies and procedures.

Chapter 7 – Post-Construction Storm Water Runoff Control MCM

7.0 Introduction

This chapter describes the post-construction runoff control minimum control measure (MCM), the fifth of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit.

Post-construction storm water management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving waterbodies. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction storm water discharges is the most cost-effective approach to storm water quality management.

Each section of this plan describes a Best Management Practice (BMP). Each BMP is accompanied by its own implementation schedule. The implementation schedule informs the MS4 Operator and his or her designated personnel of the tasks to complete for each year. The MS4 Operator will require that the parties responsible for the storm water runoff control of each site with post-construction storm water quality measures keep a record of the items listed below in the Items to be Tracked sections. The MS4 Operator will include these records in the required annual report to the Ohio EPA.

The following is the post-construction storm water runoff control program.

7.1 Development of a Regulatory Mechanism

The purpose of the regulatory mechanism for post-construction storm water runoff control is to establish minimum storm water management requirements and controls to protect and safeguard the general health, safety, and welfare of the public residing in watersheds within the MS4 area once construction activities have ceased.

The City of Defiance will use an ordinance for its regulatory mechanism. Through the ordinance, the MS4 Operator will implement planning procedures to promote improved water quality. The ordinance will apply to all construction activities where the land disturbance will be greater than or equal to one (1) acre, and for areas where the disturbance of less than one (1) acre of land is a part of a larger common plan of development or sale where the larger common plan will ultimately disturb one (1) or more acres of land.

Defiance will use the model post-construction storm water quality ordinance created by the Northeast Ohio Area wide Coordinating Agency (NOACA) and recommended by the Ohio EPA as a guide. The NOACA ordinance is available in Appendix J.

Planning procedures will include, at a minimum, the post-construction requirements of OAC 3745-39. The ordinance may also include the implementation of the following planning procedures recommended by the Ohio EPA:

- Direct development to high density urban areas and areas with existing storm sewers;
- Encourage source control measures;
- Provide educational programs to highlight project design methods that minimize negative water quality impacts;
- Minimize land disturbances;
- Minimize impervious surfaces;
- Direct growth to targeted areas;
- Avoid sensitive areas; and
- Encourage structural BMPs such as storm water storage, filtration, and infiltration.

The specific BMPs appropriate for Defiance will be determined through a locally based watershed planning effort which will involve a broad range of people, including interested citizens.

After the acceptance of the ordinance, the City of Defiance will have legal authority to implement and enforce the Post-Construction Storm water Runoff Control MCM.

7.1.1 Implementation Schedule

The implementation of the City's post-construction runoff control regulatory mechanism will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Working with the NOACA ordinance model, the City will develop a draft ordinance for post-construction runoff.

Year 3 (2011): After making any necessary revisions to the draft, the City will adopt the ordinance by the end of year two of the implementation schedule.

Year 4 (2012): Review the ordinance and note any suggested improvements. Update ordinance if necessary.

Year 5 (2013): Review the ordinance and note any suggested improvements. Update ordinance if necessary.

7.1.2 Rationale

While the City of Defiance does have a policy requiring the controlled release of increased runoff for improvement projects, current ordinances do not contain post-construction requirements for activities disturbing one or more acres of land. For this reason, the BMP seen as most important is the establishment of an official policy and enforcement method. Because subsequent BMPs will be reliant on the ordinance to provide direction and a means of legal enforcement, the measurable goal for the creation of the ordinance was chosen in such a way so as to provide adequate time for the remaining BMPs to be implemented within the permit life.

7.1.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix H**.

- Number and type of suggested improvements for the ordinance; and
- Number and description of changes made to the ordinance.

7.2 BMP Plan Review and Inspection Process

The post-construction storm water quality BMP plan review and inspection process will be generally described in the ordinance and will be written to be in accordance with OAC 3745-39 and Chapter 6111 of the Ohio Revised Code. The City of Defiance will develop standardized timetables for all plan reviews and application submittals as well as create a standardized checklist to aid in the review and inspection of structural and non-structural BMPs. Inspections will be performed both during construction to ensure BMPs are built as designed and after construction is complete to ensure proper operation and maintenance.

The City of Defiance will retain the responsibility of reviewing and inspecting BMPs. After the City gives approval, the construction site operator is responsible to submit a Notice of Intent (NOI) Letter to Ohio EPA.

7.2.1 Implementation Schedule

The implementation of the development of BMP plan review and inspection process will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Develop a post-construction storm water quality BMP plan review and inspection checklist and incorporate these procedures with current plan review procedures for all site plans and site inspections, as described above.

Year 3 (2011): Review the plan review and inspection process and update as necessary.

Year 4 (2012): Review the plan review and inspection process and update as necessary.

Year 5 (2013): Review the plan review and inspection process and update as necessary.

7.2.2 Rationale

The City of Defiance currently uses standardized review procedures for new subdivisions and for improvement projects. The development of a post-construction storm water quality site review and inspection plan and checklist will complement the existing procedure.

7.2.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix H**.

- Number of reviews by the reviewing authority;
- Number of sites permitted for storm water quality;
- Number of sites inspected;
- Number, type, and location of structural BMPs installed;
- Type and location of nonstructural BMPs utilized;

7.3 Development of an Operational and Maintenance Plan for all Structural BMPs

The MS4 Operator will develop and implement a written operational and maintenance plan for all major structural storm water BMPs, including, but not limited to, detention basins and retention basins.

In situations where the structural BMP is privately owned, the operation and maintenance of the BMP is the responsibility of the private owner. In accordance with a maintenance

agreement that will be established per the post-construction runoff control ordinance, the private owner will be required to properly operate and maintain the BMP in accordance with the Operational and Maintenance Plan.

The plan for all MS4 operational areas will also include the following:

Inspection Frequency: Major structural storm water BMPs such as detention and retention basins will be inspected, at the minimum, on an annual basis to document maintenance and repair needs. Catch basins will be inspected in accordance with Section 1.1 of Chapter 8 – Pollution Prevention and Good Housekeeping MCM.

Maintenance Procedures: Maintenance and repair needs identified during inspections will be addressed in a timely manner. These needs may include preventative maintenance activities such as the removal of sediment, litter and other debris, and grass cutting or vegetation removal.

Recordkeeping: All actions taken as required by this plan will be documented. These actions include, but are not limited to, records of installation or maintenance activities and inspection reports. The documentation will be retained by the City. This plan will be reviewed for adequacy and accuracy at a minimum of once every permit term. Any changes to the plan will be documented and incorporated into the annual report.

7.3.1 Implementation Schedule

The implementation of the Operation and Maintenance Plan will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Begin the development of an operational and maintenance plan for all structural BMPs, as described above.

Year 3 (2011): Complete and adopt the plan and incorporate its contents into the employee training discussed in Section 7.4.

Year 4 (2012): Follow current operation and maintenance plan.

Year 5 (2013): Review the operation and maintenance plan and note any suggested improvements. Update plan if necessary.

7.3.2 Rationale

The development of an Operational and Maintenance Plan has been included in the post-construction storm water runoff control program in order to provide proper guidance to private owners of structural BMPs and Defiance personnel. This will help ensure that structural BMPs function properly over the entire structure life.

7.3.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix H**.

- Number, type, and location of structural BMPs maintained, or improved to function properly;
- Number and type of suggested improvements for the plan; and
- Number and description of changes made to the plan.

7.4 Annual Training of MS4 Personnel

Current Employees: Current employees responsible for plan review, inspection, and enforcement of post-construction BMP's shall receive, at a minimum, annual training addressing such topics as appropriate control measures, inspection protocol, and enforcement. This training will involve instruction on inspection frequency, maintenance procedures, operational testing or observations to ensure proper functioning, preventative maintenance, and record keeping. This training will be documented. The documentation will be retained by the City for a minimum of the permit term.

During subsequent years, employees will be required to complete an annual refresher training program. This training will be documented. The documentation will be retained by the City.

New Employees: New employees responsible for plan review, inspection, and enforcement of post-construction BMP's shall receive, at a minimum, annual training addressing such topics as appropriate control measures, inspection protocol, and enforcement. This training will take place within the first year of employment. This training will involve instruction on inspection frequency, maintenance procedures, operational testing or observations to ensure proper functioning, preventative maintenance and record keeping. This training will be documented. The documentation will be retained by the City.

7.4.3 Implementation Schedule

The implementation of training for MS4 personnel will be the responsibility of the MS4 Operator whose measurable goal will be to pursue the following schedule:

Year 1 (2009): No scheduled tasks

Year 2 (2010): Approve the development of annual training for MS4 personnel on post-construction storm water runoff controls, as described above.

Year 3 (2011): Develop and implement training policy and procedures for personnel training on post-construction storm water runoff controls. Begin training employees.

Year 4 (2012): Continue training employees.

Year 5 (2013): Continue training employees. Evaluate the policies, procedures, and training methods; and begin implementing recommended changes.

7.4.2 Rationale

Employee training has been included in the post-construction storm water runoff control program due to the changes in Defiance policy as a result of the new ordinance. Without timely and proper employee training, new policies and procedures would go unenforced.

7.4.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix H**.

- Number and names of new employees trained in storm water quality related policies and procedures; and
- Number and names of current employees trained in storm water quality related policies and procedures.

Chapter 8: Pollution Prevention and Good Housekeeping MCM

8.0 Introduction

The pollution prevention and good housekeeping minimum control measure is the last of six measures the operator of a Phase II regulated small municipal separate storm sewer system

(MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit.

According to the EPA, the pollution prevention and good housekeeping minimum control measure is a key element of the MS4 storm water management program. This measure requires the MS4 Operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution generated from the City's operational areas. Areas of concern include streets, parking lots, open spaces, storage areas, and vehicle maintenance areas discharging to the storm water conveyance system. The pollution prevention and good housekeeping measure is meant to improve or protect receiving water quality by altering municipal facilities operations.

Each section of this plan describes a Best Management Practice (BMP). Each BMP is accompanied by its own implementation schedule. The implementation schedule informs the MS4 Operator and his or her designated personnel of the tasks to complete for each year. The MS4 Operator will require that the parties responsible for each pollution prevention and good housekeeping measure record and report annually on the items to be tracked so that the MS4 Operator may include them in the annual report to Ohio EPA.

The following is the pollution prevention and good housekeeping program which the City of Defiance has legal authority to implement.

8.1 Maintenance Activities, Schedules, and Inspection of the MS4

The following pollution prevention and good housekeeping measures include procedures for inspection, waste material removal, and record keeping for the City of Defiance. The intent of this section is to reduce floatables and other pollutants discharged from the storm sewer system.

8.1.1 Storm Water Structure and Conveyance Cleaning, Inspection, and Maintenance

Currently, the City of Defiance cleans catch basins on an as needed basis. Materials are gathered and taken to the Defiance County Landfill for disposal.

The following is the proposed Storm water Structure and Conveyance Inspection, Cleaning and Maintenance program for all operational areas within the City of Defiance:

MS4 Structure and Conveyance Cleaning and Inspection: Cleaning of the storm water structures, including inlets and outfalls, and conveyances will begin in the spring and continue through the fall. Once a structure or conveyance has been cleaned, the structure will then be inspected for needed repairs. The type, location, and condition of the structure or conveyance will be recorded. All material will be

disposed of in accordance with Section 8.3 of this chapter. At the end of the year, the number of inspected and cleaned structures will be included in the annual report to the Ohio EPA.

MS4 Structure and Conveyance Maintenance, Repairs, and Improvements: Repairs or improvements to MS4 storm water structures and conveyances will be performed on an as-needed basis. All maintenance, repairs and improvements will be recorded, including the location and type of work performed. At the end of the year, the number of MS4 structures and conveyances maintained, repaired, or otherwise improved will be included in the annual report to the Ohio EPA.

8.1.1.1 Implementation Schedule

The implementation of the City of Defiance's Storm water Structure and Conveyance Inspection, Cleaning and Maintenance program will be the responsibility of the MS4 Operator whose measurable goal to pursue the following schedule.

Year 1 (2009): Approve the proposed Storm Water Structure and Conveyance Inspection, Cleaning and Maintenance program identified above.

Year 2 (2010): Review mapped MS4 Structures and Conveyances. Create an annual timeline for cleanings and inspections, giving priority to areas of known concern. Inspect those structures and conveyances listed in current year's timeline. Clean structures and make repairs and improvements as necessary.

Year 3 (2011): Update the number and location of all known MS4 Structures and Conveyances, as necessary. Create a new timeline for Year 3 and inspect those structures and conveyances listed in the Year 3 timeline. Clean structures and make repairs and improvements as necessary.

Year 4 (2012): Update the number and location of all known MS4 Structures and Conveyances, as necessary. Create a new timeline for Year 4 and inspect those structures and conveyances listed in the Year 4 timeline. Clean structures and make repairs and improvements as necessary.

Year 5 (2013): Update the number and location of all known MS4 Structures and Conveyances, as necessary. Create a new timeline for Year 5 and inspect those structures and conveyances listed in the Year 5 timeline. Clean structures and make repairs and improvements as necessary.

8.1.1.2 Rationale

Because the current maintenance and repair work is done on an as needed basis, this BMP was chosen as a way to provide a pro-active approach to MS4 upkeep.

8.1.1.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix I**.

- Number, type, and location of all MS4 structures and conveyances cleaned and inspected; and
- Number, type, and location of all MS4 structures and conveyances repaired or otherwise improved.

8.1.2 Pavement Sweeping

The City of Defiance currently operates a pavement sweeping program. Sweeping begins in April and continues through October. Main streets are swept approximately twice per month and residential streets are swept approximately once per month. City parking lots are also swept on an as needed basis. The debris is disposed of at the Defiance County Landfill. There is currently no recording process for the amount of waste collected.

From October to Thanksgiving, Defiance also runs a leaf pick-up program. A minimum of three collections are made during this time. Residents rake their leaves to the curb and the City uses a vacuum truck to collect them. The street sweeper is run behind the vacuum truck. The collected leaves are taken to a compost site outside the city limits. More details for on the leaf pick-up program are available in Chapter 4.

The following is the proposed Pavement Sweeping program for all operational areas within the City of Defiance:

The City of Defiance will continue their pavement sweeping programs and procedures currently in place. When applicable, all collected waste will be disposed of in accordance with Section 8.3 of this chapter. The amount of disposed debris will be recorded. The MS4 Operator will include this data in the annual report to the Ohio EPA.

8.1.2.1 Implementation Schedule

The implementation of the City of Defiance's Street Sweeping program will be the responsibility of the Service Director in cooperation with the MS4 Operator. The Service Director will provide yearly reports of this activity to the MS4 Operator.

It will be the City's measurable goal to pursue the following schedule.

Year 1 (2009): Approve the proposed Pavement Sweeping Program identified above.

Year 2 (2010): Establish procedures for recording and reporting the amount of materials collected to the MS4 Operator. Continue with current pavement sweeping program and record and report the amount of materials collected to the MS4 Operator.

Year 3 (2011): Continue with current pavement sweeping program and record and report the amount of materials collected to the MS4 Operator.

Year 4 (2012): Continue with current pavement sweeping program and record and report the amount of materials collected to the MS4 Operator.

Year 5 (2013): Review previous years' data. Update and improve upon the current pavement sweeping program as necessary, continuing the current or revised program throughout the year. Record and report the amount of materials collected to the MS4 Operator.

8.1.2.2 Rationale

Because the City already has an established procedure and schedule for street sweeping, this BMP was chosen as a way to analyze the effectiveness of the current plan. After data has been gathered on the amount of waste materials collected, the City will be able to determine how best to improve upon their existing procedure.

8.1.2.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix I**.

- Amount of material collected
- Location or route of sweeping.

8.2 Controls for Minimizing Pollutants

The following pollution prevention and good housekeeping measures include procedures for reducing or eliminating the discharge of pollutants for the City of Defiance.

8.2.1 Salt Storage and Application

Currently, the City of Defiance stores its salt in a street department facility. The storage structure had an asphalt floor and is open to the south. The amount of salt used is not formally recorded. Sand is not currently used.

The following is the proposed Salt Storage and Application controls for all operational areas within the City of Defiance:

All salt will continue to be stored in a covered structure. Salt that is spilled outside of the covered facility but within the operational area will be swept up following the snow or ice event. The amount of salt used will be documented and included in the annual report to Ohio EPA. If sand is used in the future, the same procedures will be followed as are used for the storage and application of salt.

8.2.1.1 Implementation Schedule

The implementation of the City of Defiance's Salt Storage and Application controls will be the responsibility of the Street Department Service Director in cooperation with the MS4 Operator. The Service Director will provide yearly reports of this activity to the MS4 Operator.

It will be the City's measurable goal to pursue the following schedule.

Year 1 (2009): Approve the Salt Storage and Application controls identified above.

Year 2 (2010): Develop procedures for the delivery, storage, disbursement, and cleanup of salt applications.

Year 3 (2011): Implement procedures for the delivery, storage, disbursement, and cleanup of salt applications.

Year 4 (2012): Review the previous year's procedures for the delivery, storage, disbursement, and cleanup of salt applications. Implement the existing or revised procedures.

Year 5 (2013): Review the previous year's procedures for the delivery, storage, disbursement, and cleanup of salt applications. Implement the existing or revised procedures.

8.2.1.2 Rationale

This BMP was chosen as a way to officially record Defiance's existing efforts. Doing so will provide a better picture of where improvements can be made.

8.2.1.3 Items to be Tracked

The following will be recorded on the reporting form located in **Appendix I**.

- Number and locations of salt storage; and
- Estimated amount of salt applied throughout the year.

8.2.2 Designated Snow Disposal Areas

Currently, the City of Defiance uses two areas for storing snow. The main area is at the Kingsbury Park along the Maumee River and the secondary area is in the parking lot at Riverside Park.

The following is the proposed Snow Disposal controls for all operational areas within the City of Defiance:

The City of Defiance will establish designated snow disposal areas that have minimum potential for pollutants to runoff and impact the storm water system. Following the snowmelt, remaining debris will be collected and disposed of in accordance with Section 8.3 of this chapter.

8.2.2.1 Implementation Schedule

The implementation of the City of Defiance's Snow Disposal controls will be the responsibility of the MS4 Operator.

It will be the City's measurable goal to pursue the following schedule.

Year 1 (2009): Approve the Snow Disposal controls identified above.

Year 2 (2010): Investigate, at a minimum, four new potential locations for storing excess amounts of snow.

Year 3 (2011): Establish a designated snow disposal area, and if necessary, store excess snow at this location.

Year 4 (2012): Review the decision for the existing designated disposal area, making changes as necessary, storing excess snow at the current designated or newly designated area if necessary.

Year 5 (2013): Review the decision for the existing designated disposal area, making changes as necessary, storing excess snow at the current designated or newly designated area if necessary.

8.2.2.2 Rationale

Because the existing primary location for snow disposal is near the Maumee River, debris remaining after the snow melts is likely to enter the river. Choosing an alternate location for the primary disposal of snow will reduce the amount of debris in the Maumee River.

8.2.2.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix I**.

- Number and location of areas used for disposal; and
- Amount of material collected and disposed of following the snowmelt.

8.2.3 BMPs for Vehicular Maintenance Areas

The City of Defiance Departments performs all vehicular maintenance within enclosed maintenance buildings. The floor drains to these facilities currently drain to the combined sewer system.

The following is the proposed plan for Vehicular Maintenance Areas for all operational areas within the City of Defiance:

The City of Defiance will continue their current vehicular maintenance procedures. When applicable, all collected waste will be disposed of in accordance with Section 8.3 of this chapter. Each will be required to record the amount of fluids that they disposed of or recycle, and report to the MS4 Operator so that it may be included in the annual report to the Ohio EPA. In the future, when the combined sewer system is separated, the floor drains will lead to the sanitary sewer system.

8.2.3.1 Implementation Schedule

The implementation of the proposed plan for Vehicular Maintenance Areas will be the responsibility of the MS4 Operator whose measurable goal it will be to pursue the following schedule.

Year 1 (2009): Approve the proposed plan for Vehicular Maintenance Areas identified above.

Year 2 (2010): Establish procedures for recording and reporting the amount of fluids disposed of, or recycled, to the MS4 Operator. Each entity will continue their current vehicular maintenance procedures.

Year 3 (2011): Update and improve upon the current vehicular maintenance procedures as necessary, continuing the current or revised procedures throughout the year.

Year 4 (2012): Update and improve upon the current vehicular maintenance procedures as necessary, continuing the current or revised procedures throughout the year.

Year 5 (2013): Update and improve upon the current vehicular maintenance procedures as necessary, continuing the current or revised procedures throughout the year.

8.2.3.2 Rationale

Though the current vehicular maintenance area for the Street Department is not a part of the existing MS4 area, this BMP was chosen as a way to plan for the eventual separation of the combined sewer system.

8.2.3.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix I**.

- Number and location of facilities that perform on-site vehicular maintenance properly; and
- Amount of material recycled.

8.2.4 Accidental Pollution Controls

The Defiance Street Department has two above ground storage tanks, one for gasoline and the other for diesel fuel. For secondary containment, both are double walled.

The waste water treatment plant has two buried tanks, one for gasoline and the other for diesel fuel. These tanks are gauged weekly in accordance with the Ohio

Department of Commerce, Division of the Fire Marshall, Bureau of Underground Storage Regulations.

Used oil, hydraulic fluid, and antifreeze are stored in 55 gallon drums and taken for disposal when full.

The following is the proposed Accidental Pollution controls for all operational areas within the City of Defiance:

Provide facilities for containment of any accidental losses of concentrated solutions, acids, alkalis, salts, oils or other polluting materials. In addition, all future storage areas will be required to have containment structure enclosures designed to meet current OSHA, State, and local codes.

8.2.4.1 Implementation Schedule

The implementation of the City of Defiance's Accidental Pollution controls will be the responsibility of the MS4 Operator.

The following schedule will be pursued by the City:

Year 1 (2009): Approve the proposed Accidental Pollution controls identified above.

Year 2 (2010): Identify storage areas of concentrated solutions, acids, alkalis, salts, oils, or other polluting materials. Ensure that all new storage areas have containment structure enclosures designed to meet current OSHA, State, and local codes.

Year 3 (2011): Evaluate alternatives for providing containment for the identified storage areas in Year 2. Ensure that all new storage areas have containment structure enclosures designed to meet current OSHA, State, and local codes.

Year 4 (2012): Prioritize the implementation of retrofitting existing facilities with containment measures, based on areas of most concern. Ensure that all new storage areas have containment structure enclosures designed to meet current OSHA, State, and local codes.

Year 5 (2013): Continue the implementation of retrofitting existing facilities with containment measures, based on areas of most concern. Ensure that all new storage areas have containment structure enclosures designed to meet current OSHA, State, and local codes.

8.2.4.2 Rationale

Although the City's fueling site at the waste water treatment plant utilizes Ohio gauging techniques to detect potential pollution, other sites do not follow the same procedures. The proposed plan will ensure that all containment facilities provide the proper protection. The schedule was developed so that the cost of the project implementation would not be incurred all at once.

8.2.4.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix I**.

- Number and location of existing storage facilities;
- Number and location of storage facilities that have containment for accidental releases; and
- Number and location of storage facilities retrofitted for containment for accidental releases this year.

8.3 Waste Disposal from MS4 Systems and Operational Areas

The following pollution prevention and good housekeeping measures include procedures for implementing proper waste disposal from MS4 systems and operation areas for the City of Defiance.

The City of Defiance does not operate under a formal waste disposal program for their MS4 system and operational areas.

The following is the proposed BMPs for the implementation of the proper disposal of wastes generated from MS4 systems and operational areas within the City of Defiance:

All materials removed from separate storm sewer systems and operational areas, including dredge spoil, accumulated sediments, floatables, and debris must be recycled or reused or disposed of in accordance with applicable solid waste disposal regulations adhered to by the Defiance County Landfill.

Hazardous waste will be disposed of in accordance with Federal, State and Local regulations.

8.4 Flood Management and Storm Water Quality Standards

Chapter 1333 of the City's ordinance already provides for the prevention of the discharge of waste into floodwaters but does not specifically address the assessment of new flood management projects.

The following is the proposed BMPs for the implementation of Flood Management and Storm water Quality Standards within the City of Defiance:

The City will institute a program whereby new flood control projects are reviewed for water quality impacts and existing storm water flood management facilities are reviewed to determine if storm water quality control measures can be incorporated into the design. These review procedures will be incorporated into existing Defiance project review policies.

8.4.1 Implementation Schedule

The implementation of the proposed plan for the implementation of Flood Management and Storm Water Quality Standards will be the responsibility of the MS4 Operator.

It will be the City's measurable goal to pursue the following schedule:

Year 1 (2009): Approve a plan for the water quality review of new flood control projects and the evaluation of existing flood management facilities for possible implementation of storm water quality BMPs.

Year 2 (2010): Develop plan review criteria for existing flood management projects to determine if storm water quality control can be incorporated into the design. Review new flood control construction plans for possible BMP implementation.

Year 3 (2011): Review existing facilities for compliance and flood control construction plans for possible BMP implementation.

Year 4 (2012): Review existing facilities for compliance and flood control construction plans for possible BMP implementation.

Year 5 (2013): Review criteria and update as necessary. Continue to review existing facilities for compliance and flood control construction plans for possible BMP implementation.

8.4.2 Rationale

As Defiance currently has no policy for reviewing the water quality aspects of flood management projects, this BMP was seen as the most efficient way to improve the quality of the water from the MS4 during times of flooding.

8.4.3 Items to be Tracked

The following items will be recorded on the corresponding reporting form located in **Appendix I**.

- Number and location of existing facilities evaluated for storm water quality control measures; including the type of control measures used; and
- Number and location of existing flood and storm water management infrastructure retrofitted with storm water quality control measures; including the type of control measure used.

8.5 Annual Training of MS4 Personnel

The following pollution prevention and good housekeeping measures include procedures for training existing and new employees for the City of Defiance.

Current Employee Training: Current employees whose work could affect storm water quality, including but not limited to: city maintenance staff, janitorial personnel, and police and fire personnel, will be required to complete training on storm water-related policies, programs, and procedures.

During subsequent years, current employees whose work could affect storm water quality will be required to complete annual refresher training in various areas affecting storm water quality and how it relates to their job.

Employees will be trained on topics, including but not limited to: proper disposal of hazardous waste, vegetative waste handling, fertilizer and pesticide application, storm water system maintenance, and the function of implemented BMPs.

New Employee Training: New employees whose work could affect storm water quality will be required to complete training on storm water-related policies, programs, and procedures. The training will take place within the first year of employment with the City or related governmental entity with authority within the Defiance City Limits.

Employees will be trained on topics, including but not limited to: proper disposal of hazardous waste, vegetative waste handling, fertilizer and pesticide application, storm water system maintenance, and the function of implemented BMPs.

All training will be documented and the documentation will be retained.

8.5.1 Implementation Schedule

The implementation of the Annual Training of MS4 Personnel program will be the responsibility of the MS4 Operator.

It will be the City's measurable goal to pursue the following schedule.

Year 1 (2009): Approve the development of annual training for MS4 personnel on pollution prevention and good housekeeping measures, as described above.

Year 2 (2010): The City will begin to develop training policy and procedures for all of the programs developed within this chapter.

Year 3 (2011): The City will implement training policy and procedures, and develop training methods for employees.

Year 4 (2012): The City will continue training employees.

Year 5 (2013): The City will evaluate the policies, procedures, and training methods; and begin implementing any recommended changes.

8.5.2 Rationale

With the large number of new policies and procedures, employee training will play a large role in the success of the Pollution Prevention and Good Housekeeping MCM.

8.5.3 Items to be Tracked

The following items will be recorded on the reporting form located in **Appendix I**.

- Number and names of new employees trained about storm water quality-related policies and procedures; and
- Number and names of current employees trained about storm water quality-related policies and procedures.