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NPDES GUIDANCE for MS4s

Creating a Program Plan

for Illicit Discharge Detection and Elimination



***Prepared by the INAFSM
Stormwater Committee
IDDE Group***

INAFSM IDDE Group

The INAFSM IDDE Group is a forum for discussion about the illicit discharge detection and elimination component of NPDES Phase II regulations for municipal separate storm sewer systems (MS4s). Any INAFSM member is welcome to join the group.

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Table of Contents

Introduction.....	3
Stormwater Quality Management Plan.....	5
Mapping MS4 Conveyances and Outfalls	7
IDDE Ordinance	11
Illicit Discharge Detection.....	13
Industrial Facilities.....	15
Plan Certification	17
Education and Outreach.....	18
Recycling Program	20
Measurable Goals.....	21
CSO Communities	22
Evaluation and Assessment	23
Resources	26
Appendix A: IDDE Program Certification	27

Introduction

This document is guidance for developing or expanding an Illicit Discharge Detection and Elimination Program (IDDE) to comply with Indiana's Rule 13 for National Pollutant Discharge Elimination System (NPDES) permitting for Municipal Separate Storm Sewer Systems (MS4s). This document is a product of the Indiana Association for Floodplain and Stormwater Management (INAFSM) Stormwater Committee IDDE group. The IDDE group has 16 members representing 14 different NPDES Phase II MS4 communities throughout the state of Indiana.

Sections of this document correspond with the requirements of Indiana's Rule 13 (327 IAC 15-13) as of October 2013; however, implementing the procedures described in this document does not constitute compliance with the Rule. *Compliance can only be determined by the Indiana Department of Environmental Management (IDEM) Stormwater Program MS4 Coordinator.* Any questions about Rule 13 compliance should be addressed to the IDEM Stormwater Program MS4 Coordinator.

Background

Although the quality of our nation's waters has improved dramatically since passage of the federal Clean Water Act (CWA) in 1972, many water bodies are still impacted by pollution. According to the 2000 National Water Quality Inventory, which is a summary of state surveys on water quality, approximately 40 percent of surveyed U.S. water bodies are still impaired by pollution and do not meet water quality standards. The top causes of impairment include siltation, nutrients, bacteria, metals, and oxygen depleting substances. The leading source of this impairment is polluted runoff, including stormwater runoff from urban/suburban areas and construction sites.

Many changes in federal regulations affected stormwater runoff management between 1972 and 2000. In 1990, the US Environmental Protection Agency (USEPA) promulgated Phase I of its stormwater program under the CWA through the NPDES permit provisions. Phase I addressed stormwater runoff from medium and large MS4 communities generally serving populations of 100,000 or greater, construction activity that disturbed five or more acres of land, and ten categories of industrial activity.

In December of 1999, USEPA implemented the next step in efforts to preserve, protect, and improve the nation's water resources through the Stormwater Phase II Final Rule. Phase II expanded the Phase I program by regulating storm sewer discharges from small MS4s located in urbanized areas (as delineated by the U.S. Census Bureau in the most recent census) and operators of small construction sites where one acre or more of land disturbance occurs. The Stormwater Phase II program is a part of the USEPA's NPDES permit program. The Indiana Department of Environmental Management is the regulatory authority responsible for the Phase II stormwater program in Indiana. An MS4 community must apply to IDEM for a

NDPES permit to discharge stormwater. The permit is effective for a five-year period and must be renewed at the end of the period.

The Stormwater Phase II Final rule states that the permitted MS4 entity must implement a stormwater management program that includes the following six minimum control measures (MCM):

- ◆ Public education and outreach
- ◆ Public involvement and participation
- ◆ **Illicit discharge detection and elimination**
- ◆ Construction site stormwater runoff control
- ◆ Post-construction stormwater runoff control
- ◆ Pollution prevention and good housekeeping for municipal operations

Minimum Control Measure 3:

Illicit Discharge Detection and Elimination – Why is it necessary?

The overall goal of the MCM 3 is to find, fix, eliminate and prevent illicit discharges. An Illicit discharge is any discharge to an MS4 conveyance that is not composed entirely of stormwater, except naturally occurring floatables (e.g., leaf fall from trees along an open ditch). Illicit discharges can occur from many types of sources and enter the stormwater conveyance by various means. Untreated illicit discharges contribute high levels of pollutants, such as metals, oils and grease, solvents, nutrients, bacteria, and viruses, to the water body that receives the discharge. These discharges may significantly degrade water quality in the receiving water body and threaten aquatic, wildlife, and human health. Through awareness of the impact illicit discharges have on water quality, MS4 communities work to determine the sources of these discharges and eliminate them from the MS4 conveyance system. Addressing water quality problems caused by illicit discharges requires a broad program approach including the creation of regulatory mechanisms, active field screening of stormwater outfalls, providing alternative waste disposal locations, and public education.



Stormwater Quality Management Plan

327 IAC 15-13-14

Section 14 (a) An MS4 Operator shall develop an SWQMP that includes a commitment to develop and implement a strategy to detect and eliminate illicit discharges to the MS4 conveyance.

Purpose

A stormwater quality management plan (SWQMP) is a comprehensive written document that addresses stormwater runoff quality within the MS4 community. The plan has three parts that must be submitted to the IDEM Stormwater Program for approval.

- 1) Part A - Initial MS4 community permit application
- 2) Part B - Baseline characterization and report of the MS4 community
- 3) Part C - Program implementation plan

This document provides guidance for developing a sub-section of Part C: the plan for implementing the Illicit Discharge Detection and Elimination (IDDE) MCM requirements (327 IAC 15-13-14).

IDDE Plan for SWQMP Part C

The items below are the required information for an IDDE program and should be included in the SWQMP.

- 1) Develop and implement a strategy to detect, address, and eliminate illicit discharges to the MS4 conveyance.
- 2) Develop a storm sewer system map that shows the location of all outfalls and MS4 conveyances in your MS4 community under the MS4 operator's control. The map shall also show the names and locations of all waters that receive discharges from those outfalls.
- 3) Develop a regulatory mechanism (i.e., local ordinance) that prohibits illicit discharges into the MS4 conveyance and establish appropriate enforcement procedures and actions.
- 4) Screen via dry weather or other means all stormwater outfalls in the MS4 area under the MS4 control.
- 5) Identify all active industrial facilities within the MS4 area that discharge into an MS4 conveyance. This identification shall include the facility name, address, telephone number, and Standard Industrial Classification (SIC) code.

- 6) A certification form must be completed and submitted to IDEM once the plan has been developed and implemented or three hundred sixty-five (365) days from the date the initial Notice of Intent (NOI) letter submittal was received by the department, whichever is earlier. In subsequent permit terms, the certification form does not need to be completed and submitted. At a minimum, every five (5) years the program shall be reviewed for adequacy and accuracy and updated as necessary.
- 7) Educate public employees, businesses, and the general public about the hazards associated with illicit discharges and improper disposal of waste.
- 8) The MS4 shall either initiate or coordinate existing recycling programs in the regulated MS4 area for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.
- 9) Develop measurable goals for this MCM. Specific outreach and reduction percentages and timetables must be identified. At a minimum, goals must address relevant collection system mapping, regulatory mechanism implementation, employee training, household hazardous waste programs, illicit discharge detection, and illicit discharge elimination.
- 10) MS4 communities that also have a combined sewer system must review the current Combined Sewer Overflow Operational Plan (CSOOP) and Long Term Control Program (LTCP) and make any necessary language changes to ensure consistency with the SWQMP.

Each section of this document provides a framework for developing a basic IDDE plan to address the above requirements.



Mapping MS4 Conveyances and Outfalls

327 IAC 15-13-14

(b) An MS4 operator shall develop a storm sewer system map showing the location of all outfalls and MS4 conveyances in the particular MS4 area under the MS4 operator's control and the names and locations of all waters that receive discharges from those outfalls.

(see the Rule for additional language in this section)

Purpose

A critical component of the IDDE program is mapping receiving waters, MS4 conveyances and outfalls. The mapping requirement defines the drainage network for the IDDE program, which is an essential reference for organizing, prioritizing and tracking information. Furthermore, the process of preparing an initial map and making regular updates helps IDDE staff thoroughly understand their stormwater system – drainage patterns, trouble spots, persistent discharges, clean ups, and more. This is valuable information for the long-term effectiveness of an IDDE program.

There are three features for mapping.

- 1) receiving waters
- 2) MS4 conveyances
- 3) outfalls

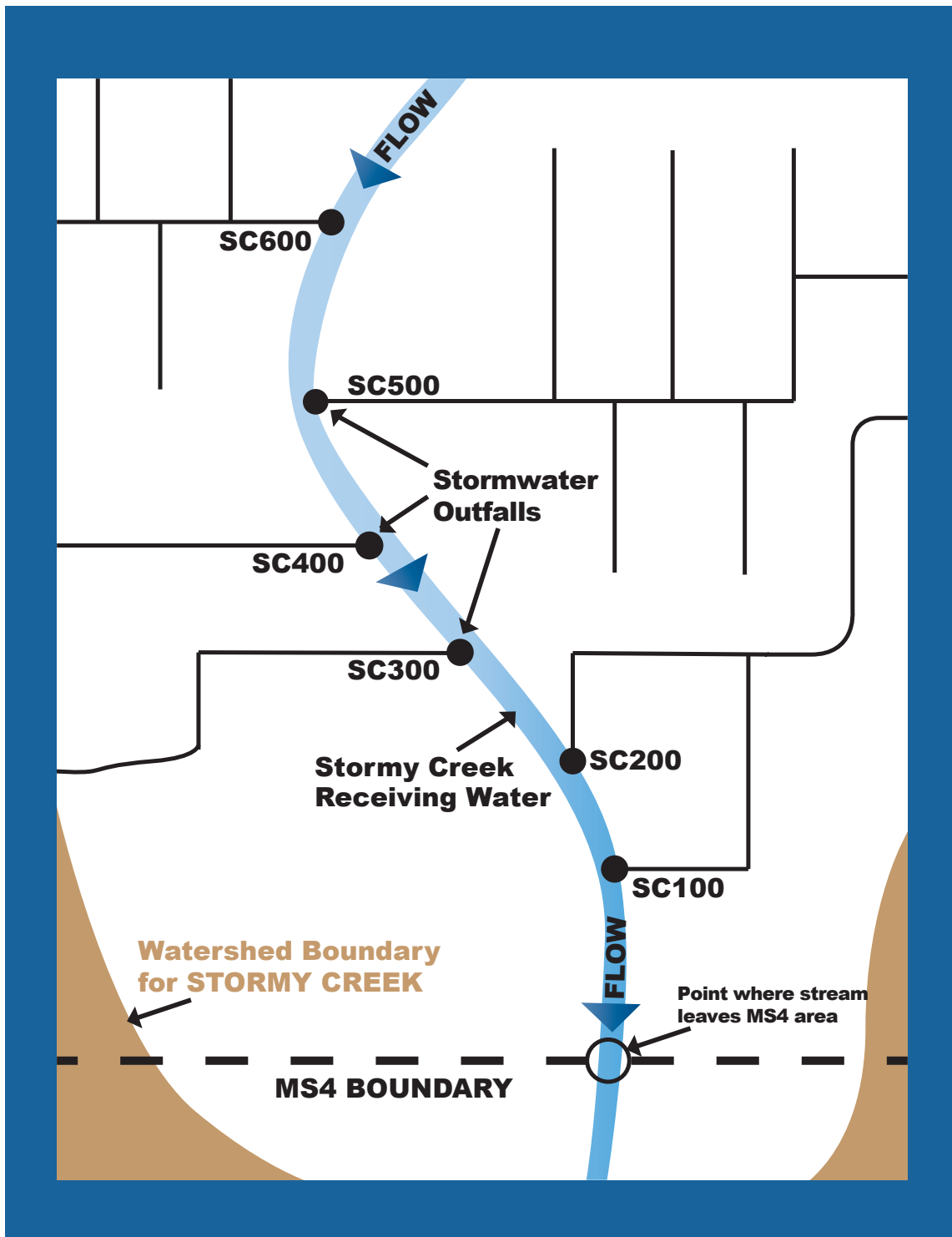
Receiving Waters

Indiana's Rule 13 requires a list of designated receiving waters for Part B of the SWQMP. Receiving waters are the surface water bodies (e.g., streams, rivers, lakes) that receive the stormwater discharge from the MS4 area. A commonly used method of identifying receiving waters is by locating perennial streams (streams that flow year round). These streams appear as blue lines on some topographic maps produced by the United States Geological Survey (USGS). The USGS topographic quadrangle maps with a scale of 1:24,000 are a standard map reference for local planning. It is likely that a local unit of government already has a set of these maps in print or digital format. They are also available online from the USGS website. Depending on local topography, there may be a single large river or several small streams that are receiving waters. Locations where stormwater conveyances empty into the receiving water are the stormwater outfalls where screening for illicit discharge begins.

Drawing a watershed or drainage area around each receiving water body is important for organizing and managing other parts of IDDE work, such as land use tracking, stormwater outfall screening and investigations. Locate the point where a perennial ("blue line") stream leaves the MS4 area. From this point, outline the USGS 14 digit watershed for the stream. The MS4 area may cover all or parts of several

USGS 14 digit watersheds, which generally range in size from 1,000 to 3,000 acres. Read more about watershed sizes and mapping at the IDEM website: <http://www.in.gov/idem/nps/2422.htm>.

An MS4 in a dense urban setting may have a problem with watershed boundaries because the natural drainage network has been heavily disturbed. In fact, natural drainage patterns may no longer exist due to the stormwater conveyance system (pipes or ditches); however, the storm sewer system is still conveying stormwater runoff to a surface water body somewhere. This water body is the receiving water and serves as the reference for making the watershed boundary.



MS4 Conveyances

MS4 conveyances are simply the pipes, tiles, and open ditches that carry stormwater runoff to a discharge point on a receiving water body. The water utility, municipality, or the county surveyor are probably already maintaining maps of these conveyances. In many locations the maps will be in digital format and managed with Geographic Information System (GIS) computer software. Rule 13 does not require digital maps or GIS, and a paper copy is acceptable. If you are working on a very small MS4 area a paper map may be adequate, but a large MS4 with many outfalls will benefit from using computer mapping software to manage the large amount of information and keep the IDDE maps up to date.

In an urban setting, the newer storm sewers and inlets are probably documented on maps for utilities; however, it can be difficult to find an exact location for older storm sewers installed before modern mapping techniques were used. Continuing to locate and document these older storm sewers will be an ongoing process. Many of them are the combined storm and sanitary sewers identified for the Combined Sewer Overflow Operational Plan (CSOOP) and Long Term Control Program (LTCP). Still you may discover storm sewer pipes with no information at all. Always document parts of the storm sewer system when found and investigate as time permits.

Outfalls

An outfall is the point of discharge from a stormwater conveyance (pipe, tile, ditch) to a receiving water listed in Part B of the SWQMP. Using this description, only the outfalls to listed receiving waters need to be mapped. This is an important distinction with the following rationale:

- a) The goal of the IDDE program and NPDES in general is to protect and improve the quality of receiving waters.
- b) Outfalls to receiving waters may be a point of illicit stormwater discharge.
- c) This location, the outfall at the receiving water, is the place to determine if a discharge is illicit and to begin the process of “backtracking” upstream in the stormwater conveyance to identify the source of illicit discharge and eliminate the source if possible.

The initial MS4 map should show the designated receiving waters, all outfalls located on these receiving waters, and the stormwater conveyances under the control of the MS4 operator. Other outfalls will be mapped as these are discovered during field work for outfall screening and illicit discharge detection. Previous NPDES permits for Phase II MS4 communities had size requirements for mapping pipes and ditches. This requirement is no longer valid: all outfalls, regardless of size, must be mapped.

The accuracy of an outfall location should be within 5 meters (16.4 feet) of the true location. This may require a handheld global positioning system (GPS) unit; however, if your IDDE program is not using digital maps, then you may prefer to simply mark stormwater outfalls on an existing utility map. In any case,

mapping outfalls requires going to the field and walking the receiving water looking for both known and unknown outfalls. Refer to a utility map before field work to mark known outfalls. In the field you will confirm known outfalls and locate unknown outfalls. If you cannot walk in the receiving water, you may need to use a boat or walk the bank. The time of year to do this field work is early spring or late fall when vegetation is bare. Refer to the INAFSM publication *Dry Weather Screening for Illicit Discharge Detection and Elimination* for more information on field work to identify stormwater outfalls.

Maintenance and Updates

Once all categories have been mapped, a systematic approach to maintaining known outfalls and updating newly located and/or installed outfalls should be created. This approach could be in conjunction with revisiting flowing and/or potentially illicit outfalls. Newly located outfalls, changes to conveyances, and newly installed conveyances and outfalls should follow the procedure described above. Any changes to existing data should be recorded along with dates when the revisits and revisions were made.

MS4 communities with the resources available should begin correlating monitoring data with industrial stormwater dischargers, land use data, and mapped outfalls. Along with showing good record keeping, this will aid in showing measurable goals of the IDDE program.

Accurate and up to date maps are essential for sharing IDDE information with the general public and the public officials who govern your MS4 program. IDDE work involves concepts that are often unknown to people who are unfamiliar with stormwater management. Maps can bridge this communication gap by orienting people with their community on paper (i.e., here is the river, here are the drainages that empty into the river, these are the land areas that send stormwater to the drainages). A map condenses a lot of technical information into a visual format that people understand easily and is a powerful tool for public education in addition to data management.

IDDE Ordinance

327 IAC 15-13-14

(c) Through an ordinance or other regulatory mechanism, an MS4 operator shall prohibit illicit discharges into MS4 conveyances and establish appropriate enforcement procedures and actions.

Purpose

Phase II MS4 Stormwater communities in Indiana are required to develop a regulatory mechanism that prohibits illicit discharges into the MS4 conveyance and establish appropriate enforcement procedures and actions. The regulatory mechanism provides the legal framework for actions to eliminate illicit discharges.

A Local Ordinance

The requirement for a local ordinance may be met by inserting IDDE language into existing ordinances or regulatory mechanisms that your community already has, such as an ordinance prohibiting trash, dumping, or unsightly property. Also, existing regulatory mechanisms from IDEM Emergency Management, a county Emergency Management Agency, Department of Health, or Fire Department, may serve as a model for developing a local illicit discharge ordinance.

Here are some basic components of a regulatory mechanism developed for identifying and eliminating illicit discharges from the MS4.

- 1) List all relevant definitions about stormwater conveyances and illicit discharges. Define the term illicit discharge and list general types if possible (e.g., soil tracked from a construction site onto a city street). Also list any discharges specifically considered exempt from the regulatory mechanism (e.g., fire department emergency actions).
- 2) Specify enforcement authority by naming the MS4 department or office and authorizing access to public and private property to locate stormwater outfalls and investigate potential illicit discharges.
- 3) Specify the enforcement procedures including a wide range of tools and actions necessary to conduct illicit discharge detection and elimination. At a minimum include the following items.
 - a) notification of the suspected discharger (e.g., certified letter)
 - b) determining financial responsibility for eliminating the discharge
 - c) schedule of fines (or other penalties) for illicit discharge violations
 - d) procedures for appealing an illicit discharge violation

The regulatory mechanism should include language to address common modes of illicit discharge entry into the MS4 conveyances, such as cross connections with sanitary and storm, dumping, and spills.

Legal review of the draft regulatory mechanism is essential before presenting the document to a governing council or board for adoption.



Illicit Discharge Detection

327 IAC 15-13-14

(d) An MS4 operator shall develop a plan to detect, address, and eliminate illicit discharges, including illegal dumping, into the MS4 conveyance.

(e) The plan developed under subsection (d) must, at a minimum, locate problem areas via dry weather screening or other means, determine the source, remove or otherwise correct illicit connections, and document the actions taken.

Purpose

MS4s adhering to this rule would have a plan to rid their MS4 area of dry weather and errant flows to their receiving waters, exceptions being flows exempted in the rule or MS4 local ordinance. The **2012 INAFSM Dry Weather Screening Document** along with the following paragraphs represent the implementation of such a plan.

Implementation

Once outfalls have been sampled and classified based on the chemical parameters found in the discharge (refer to **2012 INAFSM Dry Weather Screening Document**), discharges deemed illicit should be tracked to the source. Exemptions for dry weather flow are listed under 327 IAC 15-13-14 however an MS4 community's ordinance may be more stringent. The MS4 should reference its ordinance before continuing.

After the source is determined to be a valid illicit discharge it should be tracked to its origin and eliminated using the MS4's ordinance to force compliance. Tracking involves checking for flow during dry weather periods at various points in the storm conveyance system, identifying flowing tie-ins, and further investigation.

Checking for Flow

Starting at the illicit outfall, follow the flow of the discharge up the conveyance system branch by branch, manhole to manhole. This will give an idea of the area of origin of the discharge. Once the area is identified Land-Use Maps can be used to narrow the scope of the investigation for the origin of the illicit flow. If Land-Use Maps are unavailable, an observation of surroundings can be just as helpful. Observe surroundings to determine possible introduction of the discharge into the conveyance (i.e. storm drain or side drop dumping).

Identify Flowing Tie-ins

During the investigation up the conveyance streams, it is possible to observe flowing tie-ins. It is important to note these tie-ins. Though the flow in the conveyance may originate upstream from the tie-in, the tie-in may be the source of the observed parameters causing the dry weather discharge to be illicit. Flowing tie-ins should be sampled and tested to determine whether they are illicit or exempt.

Further Investigation

Depending on the resources available to an MS4, further investigation can include, but is not limited to, dye testing, smoke testing, televising of lines, and Optical Brightener Monitoring (OBM).

Good:

- Identify and classify all discharges
- Identify discharges which are exempt
- Tracking discharges upstream in a conveyance

Better:

- Identify sources of discharges
- Notifying source property owners of Illicit Discharge

Best:

- Monitoring of problem outfalls
- Use of "Further Investigation" tools to track discharges
- Enforcement of Illicit Discharge Elimination

Industrial Facilities

327 IAC 15-13-14

(f) The plan developed under subsection (d) must identify all active industrial facilities within the MS4 area that discharge into an MS4 conveyance. This identification shall include the facility name, address, telephone number, and Standard Industrial Classification (SIC) code. Updated information regarding active industrial facilities must be submitted in each annual report.

327 IAC 15-13-5 Definitions

Section (71) "Significant contributor of pollutants" means an MS4 entity or industrial facility that contributes pollutants into an MS4 conveyance in such a quantity or quality and to such a degree that it impacts the receiving MS4 operator's ability to comply with applicable state or federal law.

327 IAC 15-13-12

(a) An MS4 operator shall develop an SWQMP that includes methods and measurable goals that will be used to inform residents, visitors, public service employees, commercial and industrial facilities, and construction site personnel within the MS4 area about the impacts polluted stormwater run-off can have on water quality and ways they can minimize their impact on stormwater quality. The MS4 operator shall ensure, via documentation that a reasonable attempt was made to reach all constituents within the MS4 area to meet this measure.

Purpose

The purpose of this section of Rule 13 is for the MS4 operator to be aware of industrial facilities operating within the MS4 boundary. These facilities are "hot spots" for stormwater pollution. Industries have a higher potential risk level for stormwater pollution due to their operations, materials stored on-site and processes. The more information and awareness the MS4 operator has of the industries that are within their jurisdiction the better equipped they will be when investigating illicit discharges. Having good working relationships with local industries can also assist in developing best management practices to help eliminate stormwater pollution sources.

Good, Better and Best Criteria:

Good:

As the rule states the MS4 operator must have a list of facilities that includes facility name, address, telephone number, and Standard Industrial Classification (SIC) code. Also, the MS4 operator must have a plan to educate staff of these facilities about the impacts polluted stormwater run-off can have on water quality. This would classify as a “good” rating.

Better:

In addition to the “good” criteria, the MS4 operator would have all the facilities mapped on their GIS. This would classify as a “better” rating.

Best:

In addition to the two above, for an MS4 to achieve a “best” rating they will have formed a good working relationship with the industrial facilities within their MS4 boundaries. The MS4 operator will have a point of contact along with information about the industries’ processes and chemicals stored on-site. The MS4 operator may include additional information on their maps or have a site map which may include the building types, stormwater infrastructure, bulk fueling areas, outdoor material storage, and other information relevant to preventing stormwater pollution.



Plan Certification

327 IAC 15-13-14

(g) A certification form must be completed and submitted to the department once the plan has been developed and implemented or three hundred sixty-five (365) days from the date the initial NOI letter submittal was received by the department, whichever is earlier. In subsequent permit terms, the certification form does not need to be completed and submitted. At a minimum, every five (5) years the program shall be reviewed for adequacy and accuracy and updated as necessary.

See appendix Appendix A for IDEM State Form 51271. This is the required certification form for the IDDE plan.

Education and Outreach

327 IAC 15-13-14

(h) An MS4 operator shall educate public employees, businesses, and the general public about the hazards associated with illicit discharges and improper disposal of waste. This educational effort shall include the following:

- (1) Informational brochures and guidances for specific audiences and school curricula.*
- (2) Publicizing and facilitating public reporting of illicit discharges and spills.*

Purpose

The purpose of the rule is to inform the community about illicit discharges in the MS4 conveyances and to promote detection and elimination of such discharges. Educating both the general public and the MS4's employees in best practices and awareness can assist in better detection of problems and prevention of potential discharges. The type of information should be specific to the kinds of illicit discharges discovered in your MS4 conveyances and targeted to the audiences that exhibit the behavior you wish to change. The education component of your IDDE program should address both the problems discovered during MS4 outfall screening as well as historical concerns about dumping and storm drain discharges.

Program Components

A successful program should include:

- 1) A means by which the public can report suspected illicit discharges or concerns (e.g. emergency hotline, computer/phone app, website, general email/phone number to proper staff)
- 2) Educational materials about illicit discharges for distribution to a range of audiences: brochures, website, powerpoint presentations, etc.
- 3) An annual training program for employees engaged in field work or other related activities. Maintain training agendas and sign in sheets.
- 4) Ensure citizens have access to proper disposal methods and recycling of hazardous materials (partner with a group such as the local Solid Waste Management District if your group cannot provide these services)
- 5) Develop measureable goals related to education (e.g. programs presented, materials distributed, number of citizen complaints/reports) to better understand how your outreach is developing and how public perception may be enhanced regarding illicit discharges

Good, Better and Best Criteria

The Rule specifies three audiences (*public employees, businesses and the general public*) for IDDE education.

Good

- Provide education about the fact that stormwater flows do not receive treatment, or cleanup, before discharging into local surface waters. Contrast stormwater with sanitary sewer flows to the wastewater treatment plant.
- Know the types of illicit discharges present in your community and develop specific educational messages to address them. Is motor oil found in your storm drains? What about solid waste dumping, like tires? Match your educational campaign to the potential source of these discharges – stores that sell supplies to do-it-yourself mechanics and auto supplies.
- Use educational materials already developed by other MS4 programs across the country. Customize these materials with your brand or logo. There are many resources already available for informing your community about illicit discharges, including print and other media (television, radio). See the US Environmental Protection Agency nonpoint source outreach toolbox (<http://cfpub.epa.gov/npstbx/index.html>) for ideas and templates you can customize for local use.
- Provide a way for the public to report pollution occurring in the MS4 conveyances. The simplest method is to accept phone calls or walk-in reports to your stormwater office. The office phone and location must be advertised as the place to report stormwater pollution.

Better/Best

- Expand “good” practices to different types of media: Radio PSAs, movie theater trailers, special events

Recycling Program

327 IAC 15-13-14

(i) An MS4 operator shall initiate, or coordinate existing, recycling programs in the regulated MS4 area for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.

Purpose

The purpose of this requirement is to ensure citizens have access to proper methods for disposal or recycling of hazardous materials. These materials include the commonly dumped waste items that pollute stormwater runoff.

Implementation

The most effective and direct way to promote waste recycling for stormwater objectives is to coordinate with existing groups such as the local Solid Waste Management District. If waste recycling services are not available locally as an ongoing service, determine the types of wastes that need attention and plan special drop off days a few times a year for residents to dispose of these wastes. Promote the drop off days through local media. Work with a third-party group or vendor to arrange for disposal of these materials.



Measurable Goals

327 IAC 15-13-14

(j) An MS4 operator shall develop measurable goals for this MCM. To comply with this measure, specific outreach and reduction percentages and timetables must be identified. At a minimum, goals must address relevant collection system mapping, regulatory mechanism implementation, employee training, household hazardous waste programs, illicit discharge detection, and illicit discharge elimination.

Purpose

Measurable goals provide quantifiable data about your IDDE program. These data can be used to evaluate progress and improvements as well as risk levels and areas of concern. To get even greater impact from your measurable goal reporting, you can combine collected numerical data with corresponding geographic information. For example, knowing how many failed septic systems have been identified combined with the location may indicate that certain soil types or neighborhoods have a higher incidence of failure, allowing you to better evaluate risk in those areas. Knowing the number and locations of “Report Illegal Dumping” information signs, cross referenced with the number and locations of illegal dump sites reported may provide insight into the effectiveness of the sign program.

Defining Measurable Goals

Below are some examples of measurable goals for an IDDE program:

Good

- Numbers of illicit discharges identified
- Number/type of complaints reported
- Number of industrial facilities
- Number of illegal dumping reports/fines/clean-ups
- Number of employees trained in IDDE
- Number of public outreach events/attendees
- Number of citizens using recycling program/HHW facility
- Number of impaired waters/streams on 303d list
- Timetables listing completion dates of required actions

Better/Best

- Number of failed septic systems located and replaced
- Number of sanitary sewer overflows
- Water quality results of receiving waters/recreational waters
- Number of closures of recreational waters/beaches due to pollution
- Number of educational flyers distributed about illegal dumping
- Number of informational signs posted

CSO Communities

327 IAC 15-13-14

(k) In combined sewer system municipalities designated under this rule, the current CSOOP and LTCP must be reviewed, and any necessary language changes to ensure consistency with the SWQMP must be included in the plans to ensure that this MCM requirement is met.

Purpose

MS4 communities that have combined sewer overflows (CSOs) must review the Combined Sewer Overflow Operation Plan and Long Term Control Plan to be sure the Stormwater Quality Management Plan is in agreement with these plans. Make certain all requirements are being met and the programs are not working against each other.



Evaluation and Assessment

327 IAC 15-13-8

C: Program Implementation must contain the following:

Section (10) A summary of measureable goals for, at a minimum, each MCM referenced in Sections 12 through 17 of this rule. These measureable goals shall demonstrate results that relate to an environmental benefit.

327 IAC 15-13-14

(d) An MS4 operator shall develop a plan to detect, address, and eliminate illicit discharges, including illegal dumping, into the MS4 conveyance.

327 IAC 15-13-17

(b) At a minimum, every five (5) years the program shall be reviewed for adequacy and accuracy and updated as necessary.

Purpose

The purpose of the rule is to ensure that programs are carrying out activities and using resources in a way that produce quantifiable “results” and demonstrate a relationship with an “environmental benefit”. Furthermore an MS4 community is required to review its program for adequacy and modify its Stormwater Quality Management Plan activities, goals, or both to meet these objectives.

Developing an Evaluation Plan

Evaluation design really comes before writing the IDDE plan. Design the program for desired outcomes and select the evaluation criteria that reflect these outcomes. Progress toward these outcomes is the basis for assessment and evaluation.

Non-Reported Goals

It is important to note that Part C of your Stormwater Quality Management Plan is a legal document of what your program is committing to accomplish for the permit term. A program may have goals that are used to determine effectiveness or success to the residents served that are not included in your SWQMP. Those goals may require extensive resources that may not always be available; or maybe the goal is oriented toward a trial program and not necessarily a long-term commitment. Finding a way to collect quantifiable data is important to fulfill IDEM reporting requirements and to determine effectiveness of your IDDE program for your residents.

Data Collection

Developing the evaluation criteria at the beginning of the permit term is important, or the necessary data may never be collected to prove the desired result. The goals drive what type of data a program needs to collect so it is important to start with what the program wants to achieve. It is a requirement of the

SWQMP to collect end point data that will determine if a goal has been met. That is necessary and required for a “good or acceptable rating” in IDDE evaluation. Less obvious, maybe, are the data that can be collected from the entire illicit discharge process, from start to finish. By collecting data throughout the entire process, you can choose to evaluate your program not just on outcomes but on the effectiveness of each point along the process.

This could be identifying illicit discharges by types of sources, categories of both, violators and reporters, use and type of educational outreach items, tracking elements, and any follow-up that is done. When the data are broken into specific elements, the MS4 is more likely to gather information that will help determine success of each element of the illicit discharge response and be able to make modifications to increase the effectiveness of the program and draw conclusions about the final result.

An example of collectable data may look like this:

Contaminant	Violator or Target Group	Discovery	Action	Tracking	Follow-up	Final Result
Grass	Person	Street Department	Personal visit	Quantity	Re-check the Site	Increase in types of Sources
Good Housekeeping Issue	Business	Wastewater Department	Door Hanger	Location	Follow-up Interview with Offenders	Increase in Number of Reports
Paint	Neighborhood	Building Inspector	Neighborhood Meeting	Price \$	Unsolicited Feedback	Public Feedback (positive)
Household Hazardous	Industrial	Stormwater Department	Fairs and Events	Time Spent	Additional Education	Re-assessment of City Zones
Concrete Washout	Restaurant	Parks Department	Info Left in Public Places	Public Reaction	Follow-up with Reporters	Long Term Overall Decrease in Reports
Automobile leaks	Government	Hotline	Bookmarks to Kids	Testing		Increase in the number of Speaking Invitations
Spills	Rule 6 Facility	Lake Associations	Fines (specify)			

Considerations in Selecting Data

Discovery personnel can be broken down into categories so that departments who will have the most impact for your goal are singled out for additional attention and training to help the overall goal.

Final results should correlate to the discovery, action, tracking process. Each goal’s measurement criteria should be data driven and easily documented. Some goals will produce clear and effective outcomes, like

reducing the number of concrete washout violations or increasing the number of persons who have received educational material on grass clippings. Some may be more abstract, like feedback from neighborhoods or residents.

Tracking, follow-up, and final results are where an MS4 can determine the effectiveness of the IDDE program and prove that effectiveness to others. Effectiveness can justify stormwater money by providing real results. Caution should be raised when modifying a program too soon, before it has had a chance to develop. Certainly there could be some negative feedback while a community is growing new awareness to a problem that asks them to modify behavior. Some things, like sweeping up grass clippings that get into the street, may take years to build positive community feedback. In those cases, if the financial cost is limited, or the potential positive outcome is great, it may still be a good long-term investment.

Measuring Effectiveness

If a community's program is accomplishing tasks that are in the better and best categories, that program is working to identify and reduce illicit discharges. A large part of an effective IDDE plan is committing to working on the components. Is the program checking outfalls? Is the program actively looking for illicit discharges? Is the program getting targeted educational materials to targeted audiences? If a program is committing to these activities, then that program will be finding and eliminating illicit discharges.

The IDDE component is one of the more resource heavy parts of the SWQMP. Some programs will want to take a deeper look at effectiveness that is measured by determining the resources spent versus the outcome achieved following the data indicators, especially when it comes to educational materials and events, training, and perhaps narrowing some of the extras that are in the better and best category, for example determining "specific areas" a program will do additional outfall inspections instead of "all outfalls". If, based on the data, the final result is deemed ineffective, the goal might not change, but the action taken and the follow-up could be changed to help bring about an improved outcome. Identifying and modifying which area was weak (discovery, action, follow-up) can certainly affect outcomes. New modified actions may even reduce the effectiveness of the program. This is why taking a look at effectiveness on a regular basis can help reduce wasted resources.

Good

- The MS4 collects the required data to be able to confirm that it has met its goals.
- The MS4 evaluates goals at the end of each five (5) year permit term.
- The MS4 adjusts the plan based on the five year evaluations.

Better/Best

- The MS4 formulates its collection of data to not only reach the goals stated but to draw conclusions about reporters, violators, neighborhoods, zoning areas, etc...to enable a program to look at other factors affecting results.
- The MS4 evaluates the program as a dynamic entity adjusting resources and responses according to the data it is collecting to improve the program's ability to reach its goal.

Resources

Brown, E., Caraco, D., and Pitt, R. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection and University of Alabama. EPA X-82907801-0. U.S. EPA Officer of Wastewater Management, Washington, D.C.

Cuyahoga County Board of Health Watershed Protection. July 2006. Illicit Discharge Detection and Elimination Manual: A Guidance Manual for Municipalities in the State of Ohio. Electronic access (May 2012): <http://www.ccbh.net/stormwater>.

Indiana Department of Environmental Management. May 2003. Indiana's Municipal Separate Storm Sewer System (MS4) Rule 13 Guidance: A guide to accompany the MS4 general permit requirements under 327 IAC 15-13. Electronic access (October 2013): <http://www.in.gov/idem/files/rule13guidance.pdf>.

U.S. Environmental Protection Agency. IDDE web page lists several links to IDDE materials and webcasts including fact sheets. Electronic access (October 2013) <http://cfpub.epa.gov/npdes/stormwater/idde.cfm>

Appendix A

**Indiana Department of Environmental Management
State Form 51271
IDDE Program Certification**

**Rule 13: Certification of the Plan to Detect, Address and Eliminate
Illicit Discharges for the Illicit Detection and Elimination MCM - 51271**

This form is available at:

http://www.in.gov/idem/5157.htm#owq_stormwater

Definitions

CSO: Combined Sewer Overflow – Combined sewers carry stormwater runoff, domestic sewage, and industrial wastewater in the same pipe. During periods of wet weather combined sewers may overflow and discharge, not only stormwater but also untreated human and industrial waste, toxic materials, and debris directly to receiving waters.

CWA: Clean Water Act – federal regulations that address water pollution.

IDDE: Illicit Discharge Detection and Elimination – the process of finding and eliminating illicit discharges from the stormwater conveyance system as required under US EPA NPDES Phase II regulations.

IDEM: Indiana Department of Environmental Management – the state agency with authority for NPDES permitting and regulatory programs for environmental quality.

Illicit Discharge: - any discharge to an MS4 conveyance that is not composed entirely of stormwater, except naturally occurring floatables (e.g., leaf fall from trees along an open ditch).

INAFSM: Indiana Association for Floodplain and Stormwater Management – a professional membership organization organized to educate both its members and the public on proper management of floodplain and stormwater resources of Indiana.

NPDES: National Pollutant Discharge Elimination System - the federal permitting program administered by the US EPA that addresses water pollution by regulating point source discharges into waters of the United States. US EPA has given authority to the Indiana Department of Environmental Management to implement the NPDES permitting program in the state of Indiana.

NPDES Phase II: National Pollutant Discharge Elimination System Phase II – stormwater permitting for smaller (less than 100,000 population) urbanized areas.

MS4: Municipal Separate Storm Sewer System – an NPDES permitted stormwater conveyance system managed by a municipality, unit of local government, or other entity such as a university or college.

Outfall: The point of discharge from a stormwater conveyance (pipe, tile, ditch) to a receiving water listed in Part B of the Stormwater Quality Management Plan.

Receiving Waters: - the surface water bodies (e.g., streams, rivers, lakes) that receive stormwater discharge from the MS4 area.

SWQMP: Stormwater Quality Management – the plan of action required for a NPDES stormwater permit, including procedures to conduct six minimum control measures to reduce polluted stormwater runoff.

US EPA: United States Environmental Protection Agency – the federal agency charged with protecting human health and the environment.

