

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)

ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM (IDD&E)

MANUAL 2 OF 4

NPDES PERMIT NO. PAG136194



**CITY OF DUQUESNE
ALLEGHENY COUNTY, PA
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P. PREFACE

Part C of the MS4 NDPES Permit requires the permittee (City) to develop, implement and enforce a Stormwater Management Program (SWMP). One of the requirements is to develop written plans that describe the goals that should be met and describe the procedures to be followed by the municipality to implement and measure the effectiveness of these procedures. In order to meet these requirements and to educate the necessary personnel, the municipality has developed the following manuals:

1. Public Education and Outreach and Public Involvement/Participation Joint Program
- 2. Illicit Discharge Detection and Elimination Program**
3. Construction Site Stormwater Runoff Control & Post Construction Stormwater Management
4. MS4 Operation and Maintenance & Training Manual

Manual 1 presents the objectives of the PEOP and PIPP requirements (MCM #1 & #2)

Manual 2 addresses the water quality issues involved with IDD&E. (MCM #3)

Manual 3 provides a discussion of the regulatory requirements regarding runoff (MCM #4, MCM #5)

Manual 4 explains operation and maintenance produces as well as employee training. (MCM #6)

I. INTRODUCTION

According to the Environmental Protection Agency (EPA) a Municipal Separate Storm Sewer (MS4) is a conveyance or system of conveyances that is:

- Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.;
- Designed or used to collect or convey Stormwater (including storm drains, pipes, ditches, etc.);
- Not a combined sewer; and
- Not part of a Publicly Owned Treatment Works (sewage treatment plant)

MS4 are collection systems designed to move stormwater, including rainwater and snow melt, through a conveyance system (drains, pipes, ditches, and open channels) to waterways. As stormwater collects in MS4, contamination is a possibility. For example, if stormwater were to flow through agricultural lands before discharging to an MS4, it may pick up pesticides, fertilizers, and/or sediments. Other sources of stormwater contamination include oil and grease from roadways, discarded trash, and household hazardous waste, like solvents and motor oil. Since Stormwater is not treated, any pollutants carried in stormwater will end up into the conveyance system and ultimately in waterways, potentially threatening public health (contaminated food, drinking water, and recreational waterways), harming freshwater ecosystems, and degrading the aesthetic value of waterways.

Municipalities in urbanized areas (UAs) must obtain NPDES permit coverage and develop a stormwater management program to discharge stormwater from their MS4. After permit coverage approval and as part of the stormwater management program, municipality(s) are required to develop and maintain an active MS4 Program that addresses requirements of the Pennsylvania Department of Environmental Protection (PA DEP), as well as the EPA. These requirements include elements that address the six Minimum Control Measures (MCMs) established by the EPA:

1. Public Education and Outreach on Stormwater Impacts
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management (PCSM) in New and Re-Development
6. Pollution Prevention/Good Housekeeping for Municipal Operations

The City of Duquesne is committed to continuing in the development, implementation, and enforcement of the MS4 Program that is designed to reduce the discharge of pollutants from the regulated MS4, protect water quality, and closely follow the requirements for PA DEP and the EPA.

II. BACKGROUND

City of Duquesne, located in Southwestern Pennsylvania, is a community located in Allegheny County approximately 11 miles from the City of Pittsburgh. The City is bordered by the Monongahela River and the Borough of West Mifflin.

The City itself is composed of approximately 1316 acres. For the sake of the MS4 Program, only the U.S. Census Bureau-designated urbanized areas are considered within the MS4 Program jurisdiction. In this case the designated urbanized area in Duquesne contains all 1316 acres of the municipality.

The following presents the Illicit Discharge Detection & Elimination (IDD&E) Program for Duquesne City. The primary goal of the IDD&E program is to identify illicit discharges, eliminate them, and prevent future illicit discharges through education, training, and enforcement. Unlike the Public Education and Outreach Program (PEOP) and Public Involvement/Participation Program (PIPP), the IDD&E is more focused on municipal employees as they are the ones responsible for the management of the MS4. The IDD&E involves the public through training and prevention of future illicit discharge, so therefore it does relate with practices established under the PEOP and PIPP.

The MS4 in the City collects runoff, conveys the water through a system of pipes and streams, and then discharges it to local surface waters, which include Thompson Run and the Monongahela River, both of which require management under the City's NPDES permit. As part of the Authorization to Discharge waters from the MS4 to surface waters, there are specific requirements that include illicit discharge management and involvement in water quality improvement issues. The IDD&E Program falls under the requirements of Minimum Control Measure #3 (MCM #3), which contains a series of Best Management Practices (BMPs) that must be met. The requirements of MCM #3 and the associated BMPs are as follows:

MCM #3: Illicit Discharge Detection & Elimination (IDD&E)

As stated in the Federal Regulations, the following are the requirements of MCM #3:

- Develop, implement, and enforce a program to detect and eliminate illicit discharges into the MS4 (40 CFP Part 122.34(b)(3)(i)).
- Develop, if not already completed, a stormwater system map, showing the location of all outfalls and the names and locations of all surface waters of the Commonwealth that receive discharges from those outfalls. (40 CFR Part 122.34(b)(3)(ii)(A)).
- To the extent allowable under State or Local Law, effectively prohibit, through ordinance, or other regulator mechanism, non-stormwater discharges into your storm sewer system and implement appropriate enforcement procedures and actions (40 CFR Part 122.34(b)(3)(ii)(B)).

- Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to your system (40 CFR Part 122.34(b)(3)(ii)(C)).
- Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste (40 CFR Part 122.34(b)(3)(ii)(D)).

Per MCM #3, Duquesne City must comply with the six (6) Best Management Practices, or BMPs, in order to obtain compliance. The following presents the requirements of the BMPs:

- **BMP #1:** You shall develop and implement a written program for the detection, elimination, and prevention of illicit discharges into you regulated MS4s. Your program shall include dry weather field screening of outfalls for non-stormwater flows, and sampling of dry weather discharges for selected chemical and biological parameters. Test results shall be used as indicators of possible discharge sources. The program shall include the following.
 - Procedures for identifying priority areas. These are areas with higher likelihood of illicit discharges, illicit connections or illegal dumping. Priority areas may include areas with older infrastructure, a connection of high-risk activities, or past history of water pollution problems.
 - Procedures for screening outfalls in priority areas during varying seasonal and meteorological conditions.
 - Procedures for identifying the source of an illicit discharge when a contaminated flow is detected at a regulated small MS4 outfall.
 - Procedures for eliminating an illicit discharge.
 - Procedures for assessing the potential for illicit discharges caused by the interaction of sewage disposal systems (e.g., on-lot septic systems, sanitary piping) with storm drain systems.
 - Mechanisms for gaining access to private property to inspect outfalls (e.g., land easements, consent agreements, search warrants).
 - Procedures for program documentation, evaluation, and assessment.
- **BMP #2** Develop and maintain a map of your regulated small MS4. The map must also show the location of the outfalls and the locations and names of all surface waters of the Commonwealth (e.g., creek, pond, lake, basin, swale, channel) that receive discharge from those outfalls.

- **BMP #3:** In conjunction with the map(s) created under BMP #2 (either on the same map or a different map), new permittees shall show, and renewal permittees shall update, the entire storm sewer collection system, including roads, inlets, piping, swales, catch basins, channels, basins, and any other features of the permittee’s storm sewer system including municipal boundaries and/or watershed boundaries.
- **BMP #4:** Following the IDD&E program created pursuant to BMP #1, the permittee shall conduct outfall field screening, identify the source of any illicit discharges, and remove or correct any illicit discharges using procedures developed under BMP #1.
- **BMP #5:** Enact a stormwater management ordinance to implement and enforce a stormwater management program that including prohibition of non-stormwater discharges to the regulated small MS4.
- **BMP #6:** Provide educational outreach to public employees, business owners and employees, property owners, the general public and elected officials (i.e., target audiences) about the program to detect and eliminate illicit discharges. Educational outreach should include:
 - Distribution of brochures and guidance for target audiences including schools;
 - Programs to encourage and facilitate public reporting of illicit discharges.
 - Organizing volunteers to locate and visually inspect outfalls and to stencil storm drains; and
 - Implement and encourage recycling programs for common wastes such as motor oil, antifreeze, and pesticides.

Additionally, the City is required to meet standards established in their stormwater management ordinance. Refer to **Appendix A** for a copy of the Ordinance.

The remaining part of this plan serves as a strategic guide for the City in order to identify illicit discharge, eliminate it, and ultimately prevent future illicit discharge through education, training, and enforcement. It details the different aspects of the City’s IDD&E plan and the measures to be taken in the case of an illicit discharge. The plan also details IDD&E educational plans (which relates back to plans discussed in the PEOP and PIPP) and how the City manages the IDD&E Program. There are likely additions and modifications that will occur to improve upon the overall MS4 Program. Updates will occur yearly with the Annual MS4 Status Report. All records of activities, outfall screening, and other documentation pertaining to the IDD&E will be kept for at least five (5) years from the date of the measurement of action.

III. ILLICIT DISCHARGE DETECTION & ELIMINATION PRINCIPLES

By definition, an illicit discharge is generally any discharge that is not entirely composed of stormwater except discharges resulting from firefighting activities and from NPDES permitted sources. In addition, regulations state that the following non-stormwater discharges are allowed if they are determined not to be a significant source of pollutants to the MS4: water line flushing, landscape irrigation, diverted stream flows, rising groundwater, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water.

Illicit discharges can be separated into three (3) categories, which are based on the frequency of discharge. The categories of illicit discharge are:

1. **Transitory Illicit Discharge:** Discharges that occur rarely and are usually in response to a singular event, such as industrial spill, sewer break, ruptured sewer tank, transport accident, or illegal dumping episode. These discharges are often difficult to detect since they occur so infrequently.
2. **Intermittent Illicit Discharge:** Discharges that occur over a shorter period of time (e.g., a few hours per day or a few days per year). These discharges are also difficult to detect as well because of their infrequency.
3. **Continuous Illicit Discharge:** Discharges that occur most or all of the time, are usually easier to detect, and typically produce the greatest pollutant load.

Sources of illicit discharges vary widely, but some of the most common include sanitary wastewater effluent from septic tanks, car wash wastewaters, improper oil disposal, and improper disposal of auto and household toxics. Refer to **Table 1** (found below) for additional likely illicit discharge sources. The City uses the following table as a guideline in identification of illicit discharges.

Table 1: Land Uses, Generating Sites and Activities That Produce Indirect Discharges		
Land Use	Generating Site	Activity that Produces Discharge
Residential	<ul style="list-style-type: none"> - Apartments - Multi-family - Single Family Detached 	<ul style="list-style-type: none"> - Car Washing - Driveway Cleaning - Dumping/Spills (e.g., leaf litter and RV/boat holding tank effluent) - Equipment Washdowns - Lawn/Landscape Watering - Septic System Maintenance - Swimming Pool Discharges
Commercial	<ul style="list-style-type: none"> - Campgrounds/RV parks - Car Dealers/Rental Car Companies - Car Washes - Commercial Laundry/Dry Cleaning - Gas Stations/Auto Repair Shops - Marinas - Nurseries and Garden Centers - Oil Change Shops - Restaurants - Swimming Pools 	<ul style="list-style-type: none"> • Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing • Washdown of greasy equipment and grease traps
Industrial	<ul style="list-style-type: none"> • Auto recyclers • Beverages and brewing • Construction vehicle washouts • Distribution centers • Food processing • Garbage truck washouts • Marinas, boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage and refining • Printing 	<ul style="list-style-type: none"> • All commercial activities • Industrial process water or rinse water • Loading and un-loading area washdowns • Outdoor material storage (fluids)
Institutional	<ul style="list-style-type: none"> • Cemeteries • Churches • Corporate Campuses • Hospitals • Schools and Universities 	<ul style="list-style-type: none"> • Building Maintenance (e.g., power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	<ul style="list-style-type: none"> • Airports • Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Ports • Public Works Yards • Streets and Highways 	<ul style="list-style-type: none"> • Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Road Maintenance • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

Source: Table Modified from *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection.

IV. ILLICIT DISCHARGE DETECTION & ELIMINATION PURPOSE AND GOALS

The IDD&E program essentially contains four parts: maintaining and updating the stormwater system map, measures to prohibit illicit discharges, a plan to detect and address illicit discharges, and a plan to inform the community about the hazards associated with illicit discharges and how they could be prevented. The culmination of these parts establishes the IDD&E program:

With these principals in mind, the primary goals of the City's programs are:

- Develop an effective IDD&E program for detection, elimination, and prevention of future illicit discharges.
- Develop an IDD&E program that includes dry weather field screenings and sampling of dry weather discharges for selected chemical and biological parameters.
- Develop an IDD&E program that is compliant with all other PA DEP plan requirements, such as identification of priority areas, screening procedures, etc.
- Develop a detailed map of the entire stormwater system in the City.
- Accurately identify the priority areas and update them sufficiently each year.
- Enforce the current stormwater management ordinance and continue to prevent non-stormwater discharges to the regulated MS4.
- Provide education opportunities to municipal employees and others within the water quality stakeholder groups about the IDD&E program and ways to prevent illicit discharges.
- Continue to revise the IDD&E program on a yearly basis to ensure that the elimination and prevention measures are suitable, screening/testing procedures are appropriate, and education measures are effectively training the community in management of illicit discharges.
- Increase water quality stakeholder knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications.
- Ensure future illicit discharges do not occur due to an effective IDD&E program and an educated community.

V. CURRENT ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM

The IDD&E Program within Duquesne City has been on-going and activities included in the Program were started prior to the original publications of the Program. The Program has included management of the storm sewer system as well as inspections on a regular basis. Additionally, the Program has included illicit discharge screenings and cleanouts of both inlets and outfalls. The City has taken necessary measures to maintain full compliance with PA DEP and EPA regulations in the management of its stormwater system.

Inspection Program

An IDD&E plan has been established to inspect and identify illicit discharges within the City's MS4. This section describes this program and the responsibility for carrying out specific elements of the IDD&E. The following presents specific elements of the Program, including the identification of priority areas, producers for field screening, and methods for program evaluation and assessment.

Desktop Assessment of Illicit Discharge Potential (IDP)

An essential measure in the implementation of the City's IDD&E Program is the completion and continual use of a Desktop Assessment of Illicit Discharge Potential (IDP). The IDP allows an in-office analysis of the stormwater system and attempts to pinpoint the areas that could cause the most issues throughout the City. An IDP desktop assessment also helps to identify pollutant sources or areas that may need field monitoring on a more frequent basis, which are referred to as IDP Priority Areas (also to be called Priority Areas).

There are ten key factors that include IDP and these are utilized in the assessment of priority areas within the City. These factors are:

1. Past Discharge Complaints and Reports
2. Poor Dry Weather and Water Quality
3. Density of Generating Sites or Industrial NPDES Storm Water Permits
4. Stormwater Outfall Density
5. Age of sub-watershed Development
6. Sewer Conversion
7. Historic Combined Sewer Systems
8. Presence of Older Industrial Operations
9. Aging or Failing Sewer Infrastructure
10. Density of Aging Septic Systems

As a group, these factors are referred to as the IDP Desktop Analysis Screening Factors. An additional measure that the City can utilize in the completion of the assessment for consideration of land uses. Certain land uses, such as automobile repair, gas stations, maintenance depots, and public works yards, are potential areas for illicit discharge and are analyzed more closely.

Identification and Establishment of Priority Areas:

The following describes the identification and establishment of priority areas within the City. The priority areas are those areas which are more likely to have illicit discharges, illicit connections, or illegal dumping. Identification and the establishment of priority areas is a proactive step in the IDD&E process and is a preemptive approach to identify illicit discharge. It allows the City to be aware of the locations that could potentially produce illicit discharges.

The following are possible priority areas within the City:

- Areas with older infrastructure that are more likely to have illicit connections and/or deteriorating sewer lines.
- Industrial, commercial, or mixed-use areas with possible illicit connections and/or deteriorating sewer lines.
- Areas with a history of past illicit discharges
- Areas with a history of illegal dumping
- Areas with onsite sewage disposal systems
- Areas with older sewer lines or with a history of sewer overflows or cross-connections
- Areas upstream of sensitive waterbodies.

Other information the City uses in the identification of priority areas includes information available in the community (records of past discharges, historical water quality data, historical locations of past discharge events, complaints received from community members of past illicit discharge events, etc.). Another consideration that has to be taken into account when identifying priority areas is the closeness of these areas to receiving MS4 as well as receiving waters. The areas that are closer have a shorter flow path and as a result have a greater chance of impacting an aquatic system.

Mechanisms for Gaining Access to Private Properties to Inspect Outfalls

If access to inspect or sample the discharge of a municipal-owned outfall (MS4) is required and the outfall is located on property for which the City does not have granted access either through ownership of property, easement, or right-of-way, the City shall notify the affected property owner of its request to access the property through certified mail within a 72-hour period. If the property owner refused such access, the City shall forward the issue to the municipal solicitor to determine the City's recourse for accessing the facility.

Dry Weather Field Screening and Analytical Monitoring to Detect Illicit Discharges

The following describes the dry weather field screening procedures for the City. According to the regulations, dry weather screening must be performed on outfall locations at different times during the year. Additionally, priority areas and areas with identified illicit discharges are to be given precedence. The following measures have been adapted from PA DEP's "PAG-13 Appendix A – Stormwater Management Program," which contains specific requirements, BMPs and Measurable Goals for the MS4 Program.

Dry weather field screening and analytical monitoring consists of these major parts:

1. Field Observations
2. Field Screen Monitoring
3. Analytical Monitoring

*All **renewal permittees** are required to screen all identified regulated small MS4 outfalls at least once during dry weather during the permit coverage term. Additionally, areas where past problems have been reported or known sources of dry weather flows occur on a continual basis, the outfalls should be screened annually.*

Since Duquesne City is a "renewal permittee," the City is required to screen all outfalls at least once during a reporting period. Due to the need for constant maintenance, the City periodically inspects outfalls and therefore screens the outfalls more than required. The City utilizes all reporting forms and performs corrective actions in the case of illicit discharge. Additionally, the City ensures that the outfalls are being screened during dry weather and any priority areas are identified are screened for illicit discharge no less frequently than once per year.

If multiple storm outfall screenings are to be performed during a calendar year, they are scheduled during varying seasonal and meteorological conditions. Since illicit discharges can occur at any time and during variable conditions, it is important to determine which conditions are most likely to cause illicit discharge. By varying the time of the monitoring, determining these conditions is possible. This is especially important when considering periods of low and high groundwater conditions since these conditions could potentially reveal timing of illicit discharges.

For dry weather field screenings, the goal is to observe outfalls during dry conditions (48 consecutive hours of less than 0.1" of rainfall). In the case where flow is observed during dry conditions, those flows are identified as illicit discharges. According to PAG-13 Appendix A, if dry weather flow is observed, the following must occur:

For each outfall, if the screening reveals dry weather flow, the discharge from the outfall and the area around the outfall shall be inspected visually for color, turbidity, sheen, floating or submerged solids; for adverse effects on plants or animals in proximity to the outfall; and for odor. If the outfall produces odor, or if the visual inspection shows any indication that the discharge may contain pollutants, then samples of the discharges shall be collected for field

and/or lab testing of selected chemical and biological parameters as part of a process to determine if the dry weather flow is illicit. Common parameters include pH, conductivity, E. coli bacteria, fecal coliform bacteria, metals, suspended solids, dissolved solids, oils, ammonia, surfactants, chlorine, and fluoride.

Whether or not illicit discharges are detected for field screenings, the “Outfall Reconnaissance Inventory/Sample Collection Field Sheet” is used to record field observations and conditions. The conditions that are recorded have been listed below.

- Outfall number
- Date and time of screening
- Individual(s) performing the screening
- Approximate date and time of last rainfall
- Pipe flow (none, <1/4 pipe, <1/2 pipe, etc.)
- Land use in drainage area
- Outfall description (pipe material, pipe shape, dimensions, etc.)
- Temperature, pH, and ammonia content.
- Water quality parameters (odor, color, turbidity, floatables, etc.)

Please refer to **Appendix C** for the Outfall Reconnaissance Inventory/Sample Collection Field Sheet (ORI), which lists all the information and parameter to be collected during the field screenings. If an outfall produces any dry weather flow, an odor, or if the visual inspection shows any indication that the discharge may contain pollutants, the field inspector will collect samples from the discharge for field and/or lab testing of select chemical and biological parameters. The parameters that are tested for include pH, Conductivity, E. coli Bacteria, Fecal Coliform Bacteria, Heavy Metals, Chemical Oxygen Demand (COD), 5-day Biochemical Oxygen Demand (BOD5), Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Oil and Grease, Total Residual Chlorine (TRC), and Ammonia-Nitrogen. Samples to be test should be collected and analyzed consists with procedures required by 40 CFR Part 136. Also included in Appendix C is PA DEPs “Field Screening Guidance,” which includes the “Guide to Indicators and Monitoring Methods.” These documents are important references used by the City for guidance during sampling and testing of illicit discharges. Please refer to Appendix D for additional IDD&E reporting forms that the City utilizes, including the “Illicit Discharge Field Screening Program Data Collection Form,” the “Citizens Complain Illicit Discharge Reporting Form,” and the “Illicit Discharge Inspection Quarterly Summary Report.” All results from the dry weather outfall screenings are recorded and reported with the MS4 Annual Reports each year.

The following in Table 2 (Field Screening for an IDD&E Program) gives further information and procedures that the City follows during field screenings.

Table 2: Field Screening for an IDDE Program	
Step	Strategies
Step 1. Acquire necessary mapping, equipment and staff	<ul style="list-style-type: none"> - Use basic street maps or detailed maps from initial assessment - Minimal field equipment required; use a portable spectrophotometer if desired - Two staff per crew with basic field training required; more specialized staff or training is optional
Step 2. Determine when to conduct field screening	<ul style="list-style-type: none"> - During dry season and leaf off conditions - After a dry period of at least 48 hours - Low groundwater levels
Step 3. Identify where to conduct field screening (based on desktop assessment)	<ul style="list-style-type: none"> - Minimal: integrate field screening with broader watershed or stream assessments - Clustered: screen drainage areas ranking High and Medium first for illicit discharge potential - Severe: screen all outfalls systematically
Step 4. Conduct field screening	<ul style="list-style-type: none"> • Mark and photograph all outfalls • Record outfall characteristics • Simple monitoring at flowing outfalls • Take flow sample at outfalls with likely problems • Deal with major problems immediately

Source: Table Modified from Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection.

The City also has measures in place in case an outfall cannot be accessed due to safety or other reasons. In this case, the City will establish an “observation point” at an appropriate location near the outfall in question. The City identifies observation points in its Storm Sewers Map, which could be found in Appendix B. As of December 2017, the City does not have any observation points identified.

If an illicit discharge is identified during a dry weather outfall screening, the City must also take immediate action to report the issue to PA DEP. According to 25 Pa. Code §§ 91.33 and 92a.31(b), the permittee shall immediately report any incident causing or threatening pollution. The steps that need to be taken to be in compliance with this requirement can be seen below:

1. If, because of an accident, other activity or incident a toxic substance or another substance which would endanger users downstream from the discharge, or would otherwise result in pollution or create a danger of pollution or would damage property, the permittee shall immediately notify DEP by telephone of the location and nature of the danger. Oral notification to the Department is required as soon as possible, but no later than four (4) days after the permittee becomes aware of the incident causing or threatening pollution.

2. If reasonably possible to do so, the permittee shall immediately notify downstream users of the water of the Commonwealth to which the substance was discharged. Such notice shall include the location and nature of the danger.
3. The permittee shall immediately take or cause to be taken steps necessary to prevent injury to property and downstream users of the waters from pollution or a danger or pollution and, in addition, within 15 days from the incident, shall remove the residual substances contained therein or thereon from the ground and from the affected waters of this Commonwealth to the extent required by applicable law.

Additionally, in the case of any unanticipated non-compliance, which may endanger health of the environment, the City shall follow requirements according to 40 CFR § 122.41(l)(6). These requirements include:

1. 24 Hour Reporting – The permittee shall orally report any non-compliance with this permit which may endanger health or the environment within 24 hours from the time the permittee becomes aware of the circumstances.
2. Written Report – A written submission shall also be provided within 5 days of the time the permittee becomes aware of any non-compliance which may endanger health or the environment. The written submission shall contain a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the non-compliance.
3. Waiver of Written Report – DEP may waive the written report on a case-by-case basis if the associated oral report has been received within 24 hours from the time the permittee becomes aware of the circumstances which may endanger health or the environment. Unless such a waiver is expressly granted by DEP, the permittee shall submit a written report in accordance with this paragraph. (25 Pa. Code § 92a.3© and 40 CFR § 122.41 (l)(6)(iii)).

Procedures for Source Investigation

The following describes the procedures for source investigation of illicit discharges. First and foremost, photo-documentation of the outfall will support the ORI and the field inspector will attempt to trace the discharge back to a probable source, when possible. In this case, follow-up action will occur (which will be discussed later in the document). The inspector will ensure the following information is included on the ORI:

- Location of the illicit discharge
- Date and time when the discharge was observed
- Identification of type of illicit discharge (if possible)
- Physical characteristics of discharge (i.e. color, odor, presence of smoke or fumes, etc.).

- Estimated volume of illicit discharge
- Source of illicit discharge (if possible).

There are several methods that are utilized by the City to locate the discharge source. The most common methods used to locate the source of illicit discharge are visual inspections/manhole observations, dye testing, video inspection, smoke testing, and tracking of illegal dumping.

Visual Inspections/Manhole Observations

The following section describes the methods for visual inspections/manhole observations that the City utilizes for locating illicit discharges. At identification of an illicit discharge, the field inspector will attempt to locate the probable source using the stormwater map. The field inspector will follow the system upstream with the intention to determine the boundaries of the illicit discharge. The inspector will pay close attention to manholes and the presence of dry weather flow while inspecting the storm system. It is by this process of following the system upstream, checking manholes, and paying close attention to conditions the inspector will attempt to locate the source of illicit discharge. If the source is not located in this way, the inspector will follow the same process, but instead upstream to downstream. While visually inspecting the stormwater system, the inspector will take notes of the presence of flow, potential odors, the color and clarity of the discharge, any stains/deposits at the bottom of the structure, and the existence of an oil/sheen/scum/foam.

Dye/Smoke Testing

After a possible source location has been identified through visual inspections/manhole observations, dye and/or smoke testing will be utilized to verify that the discharge is passing through the City's MS4 system. The following passages from the "Illicit Discharge Detection and Elimination Manual: A Handbook for Municipalities" explains the dye and smoke testing processes.

Dye Testing: This technique involves flushing non-toxic dye into toilets and sinks and observing the storm and sanitary manholes and storm sewer outfalls for the presence of the dye. Prior to performing this test, it is necessary to inform building owners and occupants in advance and gain permission for entry. Local public health and state water quality staff should also be notified so that they will be prepared to respond to citizens calling about any dye observed in surface waters. To perform the test, you need a crew of two or more people (ideally, all with two-way radios). One person is inside the building; the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The inside person drops the dye through the plumbing fixture and runs a sufficient amount of water to move the dye through the plumbing system. The inside person then radios the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye. The test is relatively quick (about 30 minutes per test), effective (results are usually definitive), and cheap. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

Smoke Testing: *This technique involves injecting non-toxic smoke into storm sewer lines and then noting the emergence of smoke from sanitary sewer vents in illegally connected building or from cracks and leaks in the storm sewer lines. The injection is accomplished by placing a smoke bomb in the storm sewer manhole below ground and forcing air in after it. Smoke-generating machines can also be used. Test personnel should be stationed at points of suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm sewer infrastructure). Prior to performing this test, it is necessary to inform building owners and occupants in the area in advance. It is also advisable to inform the police and fire departments.*

Video Inspection

The following passage from the “Illicit Discharge Detection and Elimination Manual: A Handbook for Municipalities” explains the video inspection process:

Mobile video cameras can be guided remotely through storm sewer lines to observe possible illegal connections into storm sewer systems and record observations on a videocassette or DVD. Public works staff can observe the videos and not any visible illegal connections. This technique is time-consuming and expensive but thorough and usually definitive, and it does not require the intrusion of members of the public that some of the other methods do.

Other Methods

There are other methods that can be utilized in locating the source of an illicit discharge. They include water sampling and tracking illegal dumping.

Septic System Investigations

The following describes the procedure for septic system investigations for the City. According to PAG-13 Appendix A – Stormwater Management Program, procedures for assessing the potential for illicit discharges caused by the interaction of sewer disposal systems (e.g., on-lot septic system, sanitary piping) with storm drain systems needs to be addressed in the IDD&E program. The two most common techniques used to find individual septic systems are the on-site investigations and infrared imagery.

On-Site Investigations

The City utilizes one of the following three methods in determining whether or not a septic system is failing on individual properties:

1. Homeowner Surveys
2. Surface Condition Analysis
3. Detailed System Inspection

Homeowner Surveys

The homeowner survey consists of a brief interview with the property owner to determine the potential for current or future failure of the septic system and is often done in conjunction with a surface condition analysis. Common questions of the homeowner survey include:

- How many people live in the home?
- What is the septic tank capacity?
- Do drains in the house empty slowly or not at all?
- When was the last time the system was inspected or maintained?
- Does sewage back up into the house through drain lines?
- Are there any wet, sewage smelling spots in the yard?
- Is the septic tank effluent piped so it drains to a road ditch, a storm sewer, a stream, or is it connected to a farm drain tile?

These questions look to analyze the resident behavior, the performance of the septic system, and the maintenance activities. Used in conjunction with surface condition analysis (which is described below), it is possible to incorporate the narrative information and observation of the homeowner to analyze if the septic system has been releasing illicit discharge.

Surface Condition Analysis

The surface condition analysis is a site-specific analysis which looks for indicators and conditions that indicate either current or potential release of illicit discharges by the septic system. Some of key surface conditions that are to be looked at in the analysis are:

- Presence of foul odors on the property
- Wet, spongy ground; lush plant growth; or burnt grass near the drain field
- Algal blooms or excessive weed growth in adjacent ditches, ponds, and streams
- Shrubs or trees with root damage within 10 feet of the system
- Cars, boats or other heavy objects located over the field that could crush lateral pipes
- Storm water flowing over the drain field
- Cave-ins or exposed system components
- Visible liquid on the surface of the drain field (e.g., surface breakouts)
- Obvious system bypasses (e.g., straight pipe discharges)

The combination of the homeowner's survey and the surface condition analysis is the easiest way for the City to determine if illicit discharges have been created from a specific septic system. If this method is not successful, a more detailed method will be utilized.

Detailed System Inspection

If the combination of the homeowner survey and the surface condition analysis is not a sufficient enough method to analyze a septic system for illicit discharge, then a Detailed System Inspection will be completed, which includes additional methods not performed in the Surface Condition Analysis and will be performed by a certified professional. Some of the activities to be performed in the Detailed System Inspection include:

- Certification of the structural integrity of all components of the septic system
- Verification of the depths of the solids in the septic tank to determine if the system needs to be pumped out.
- A sketch of the septic system
- Estimation of the distance to groundwater, surface water, and drinking water sources.
- Use of dye testing to find leaks from broken pipes, or discharges through straight pipes.

Procedures for Source Elimination

The following describes the procedure for source elimination of illicit discharges for the City. After identification of the illicit discharge source, it must be eliminated and prevented from causing further issues. The first step in follow-up action is to notify the responsible party causing the illicit discharge and to conduct all necessary corrective actions to eliminate the non-stormwater discharge. These actions include physical fixes, including stormwater disconnection through addition of bioswales and/or raingardens, and education to help prevent future discharge. Upon notification that the discharge has been remediated, a follow-up investigation and field screening will be conducted to verify that the illicit discharge has been eliminated. The investigation and follow-up screening will be documented.

There are different kinds of actions the City could take to remove and ultimately prevent future illicit discharges. The actions could be separated into three categories:

- Compliance assistance and enforcement for illegal connection to homes and businesses
- Proper construction and maintenance of MS4s components.
- Responding and preventing of illegal dumping

In the case of illegal connections at homes and businesses, the ordinance will be followed for guidance on corrective actions. When dealing with homes and businesses, it is commonplace that these people would likely be unaware that they had an illicit discharge. Therefore, the City always takes a stand looking to assist the home or business owner with correction the illicit discharge, rather than fining or putting unnecessary pressure on the individuals.

In the care of proper construction and maintenance of MS4s components (i.e., inlets, outfalls, swales, etc.), they will be periodically inspected and maintained, making repairs when necessary.

The City recognizes it is difficult to identify and track illegal dumping, but has the following strategies in place to prevent illegal dumping:

- Site maintenance and controls – cleaning areas where illegal dumping has occurred and utilization of specific controls to prevent future dumping.
- Target enforcement – utilization of the City ordinance to prevent illegal dumping
- Public education and outreach –
 - Education involving the general public, municipal employees, and local businesses about water quality issues and the impacts illegal dumping can have on water quality.
 - Use of educational materials and methods from Public Education and Outreach Plan
 - Education of proper ways to dispose of waste
 - Development of a yearly education course for presentation at a municipal meeting which will teach community members about illegal dumping and ways in which they can assist the City in preventing illicit discharge.
 - Ways for the community to get involved in reporting and preventing illegal dumping, including storm drain marking and inlet stenciling.
 - Help develop materials and pamphlets for target audiences. Businesses that will be focused on include those that handle hazardous materials as well as restaurants, auto repair shops, and others that could impact MS4 through illicit discharges.
 - Maintaining a “stormwater hotline” in which community members could use to report illicit discharges
 - Development and implementation of recycling programs for common wastes such as motor oil, antifreeze, and pesticides.
 - Refer to PEOP and PIPP for additional public education/involvement activities.

VI. PROCEDURES FOR PROGRAM ASSESSMENT AND EVALUATION

The following section describes the procedures for program assessment and evaluation for the IDD&E program for the City. This section of the IDD&E is important because it gives the City a medium to evaluate and assess what has not only been sufficient with the IDD&E program but also what could be improved.

The City will evaluate its IDD&E program once per year and make changes as necessary. To effectively evaluate the program and ultimately make changes, the City will answer the following questions:

- Priority area evaluation:
 - Where priority areas properly identified?
 - Are the existing priority areas still a priority?
 - Have illicit discharges been located in the priority areas within the past year?
 - Are there any new areas to be considered as a priority area?
- Screening and detection program:
 - Is the screening and detection program effective at locating illicit discharges?
 - Is the current program cost effective?
 - Number of illicit discharges detected within the past year and if they were managed correctly?
 - What techniques were used and were they successful in identifying the sources of illicit discharges?
 - What techniques were not useful and could be changed to better improved source identification of illicit discharges?
- Source Elimination:
 - What techniques were used in eliminating illicit discharges?
 - Were the techniques useful in eliminating illicit discharges?
 - Which techniques used were not beneficial and should not be used in future years?
 - How many illicit sources were identified and eliminated?

The City evaluation procedure will also include a review of documentation from the prior year:

- Documentation of actions taken to locate and eliminate the illicit discharges, including but not limited to:
 - Number of outfalls screened
 - Complaints taken and investigated
 - Total footage of storm sewers investigated
 - Number of illicit discharges eliminated
 - Number of dye or smoke tests conducted

Overall, the answering of these questions and proper documentation through the year will allow Duquesne City to correctly analyze their IDD&E program. Necessary changes will be made at year's end and documentation in the Annual Report. The following items will be included, among others, each year in the Annual Report in order to recap activity involving the IDD&E:

1. Outfall Reconnaissance Inventory/Sample Collection Field Sheets
2. Citizen Complaints/Reports and the Follow-up Activity
3. Outfall Mapping & Priority Area Updates from prior year

This yearly process will improve Duquesne City's overall program gradually, but effectively.

VII. Duquesne CITY STORM SEWER MAPPING

According to MCM #3, BMP #2 and BMP #3, the City must develop and maintain a map of the regulated MS4 system, which includes the mapping of the outfalls, surface waters of the Commonwealth that receive discharge, roads, inlets, piping, swales, catch basins, channels, stormwater basins, and any other features included in the stormwater system, including and watershed boundaries.

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Appendix A

STORMWATER MANAGEMENT ORDINANCE

Appendix B

DUQUESNE MUNICIPAL STORM SEWERS MAP

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OUTFALL RECONNAISSANCE INVENTORY/SAMPLE COLLECTION FIELD SHEET

Appendix D

ADDITIONAL IDD&E REPORTING FORMS

Appendix E

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

Environmental Protection Agency	EPA
Pennsylvania Department of Environmental Protection	PA DEP
Municipal Separate Storm Sewer System	MS4
National Pollutant Discharge Elimination System	NPDES
Minimum Control Measures	MCM
Public Education and Outreach Program	PEOP
Public Involvement/Participation Program	PIPP
Illicit Discharge Detection & Elimination	IDD&E
Post-Construction Stormwater Management	PCSM
Pollution Prevention/Good Housekeeping	PPGH
Best Management Practices	BMP
Illicit Discharge Potential	IDP
Chemical Oxygen Demand	COD
5-day Biochemical Oxygen Demand	BOD5
Total Suspended Solids	TSS
Total Dissolved Solids	TDS
Total Residual Chlorine	TRC
Outfall Reconnaissance Inventory	ORI