

# ILLICIT DISCHARGE DETECTION & ELIMINATION MANUAL

PREPARED FOR

## DOYLESTOWN TOWNSHIP BUCKS COUNTY, PENNSYLVANIA

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## INTRODUCTION & PURPOSE

Polluted stormwater runoff has been identified by the US Environmental Protection Agency (EPA) as one of the main causes of the nation's water quality problems. To help alleviate this situation, the EPA requires communities with municipal separate storm sewer systems (MS4s) to obtain a permit under the National Pollutant Discharge Elimination System (NPDES) program authorizing their stormwater discharges.

As a requirement of the NPDES MS4 General Permit, Doylestown Township must develop a written Illicit Discharge Detection and Elimination Manual. This document will serve to establish procedures for reporting, screening, identifying, eliminating, and preventing illicit discharges to the Township's municipal separate storm sewer system.

This Manual was prepared by utilizing the *Illicit Discharge Detection & Elimination Manual: A Guidance for Program Development & Technical Assistance*, prepared by the Center for Watershed Protection, dated October 2004 ("Guidance Manual"). The full text of the Guidance Manual can be found by following the link below:

[https://www3.epa.gov/npdes/pubs/idde\\_manualwithappendices.pdf](https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf)

## DEFINITION & TYPES OF ILLICIT DISCHARGE

For the purpose of this Manual, "illicit discharge" is defined as a storm drain that has measurable flow during dry weather containing contaminants and/or pathogens. A storm drain that has flow during dry weather, but the flow does not contain contaminants and/or pathogens, is simply considered a discharge. Below is a list of common sources of dry weather flow:

- Sewage and septic flows.
- "Washwater" flows from residential laundry, commercial car washes, shop floor drains, etc.
- Liquid wastes such as oil, paint, and process water.
- Potable water entering the storm sewer.
- Landscape irrigation runoff from overwatering.
- Groundwater and spring flows.
- Firefighting activities.
- Air conditioning condensate.

All types of dry weather flow can be characterized into three types of flow:

- **Continuous** flows are present most or all of the time and are generally the easiest to detect.
- **Intermittent** flows occur over a short period of time, maybe a few hours a day or a few days out of the year. These flows are often harder to find due to their shortened flow time.
- **Transitory** flows are one-time flows caused by a spill or other event. Examples of transitory flows include: sewer breaks, storage tank leaks, traffic accidents, etc. These types of flows are rarely detected during routine monitoring, but have the potential to have severe impacts on the waterway.

Dry weather flows can either enter the storm sewer system directly or indirectly.

- **Direct** flows occur through a sewer pipe, shop drain, or other conveyance method and are many times the result of an improper plumbing connection. Older industrial and commercial areas often contain direct illicit connections to the storm sewer system.

- **Indirect** flow is generated outside of the storm sewer system and enters through drain inlets or groundwater infiltration. Examples of indirect flows include: groundwater seepage, spills, illegal dumping into storm drains, outdoor washing runoff, overuse of irrigation systems.

Note again that the presence of dry weather flow does not mean that an illicit discharge is present. Testing is required to determine whether a dry weather flow contains contaminants and/or pathogens.

Prohibited discharges and connections to the Township's MS4, and related enforcement and penalties, are to be defined in Township Ordinances.

## **IDENTIFIED PRIORITY AREAS**

The Township encompasses an area of approximately 16 square miles and drains to Cooks Run, Pine Run, Mill Creek and Neshaminy Creek watershed. Current land uses within the Township are primarily residential, forestry, agriculture, hay/pasture and open space. Founded in 1818, the main land use of Doylestown was agriculture, but it has been increasingly replaced with residential growth. There are three major remaining farmlands within the Township including Delaware Valley University, Mile View Horse Farm, and a cattle farm located on Pebble Hill Road.

The Township has 283 mapped outfalls and 157 mapped observation points. Through annual testing, there has been no evidence of illicit discharges being associated with the dry weather flows; however, they will continue to be monitored. The Township has inspected all outfalls and observation points in 2022. For the remaining reporting periods, outfalls with historical dry weather flow were inspected and analyzed for illicit discharges. As of August of 2024, four outfalls have dry weather flow but lab results indicate they are not an illicit discharge.

The priority areas for the Township would be lands utilizing on lot septic systems which have the potential for failure causing groundwater contamination and agriculture land uses. The Township will continue to utilize any reported potential illicit discharges and the results of the outfall screening and related dry weather flow testing to identify future illicit discharges.

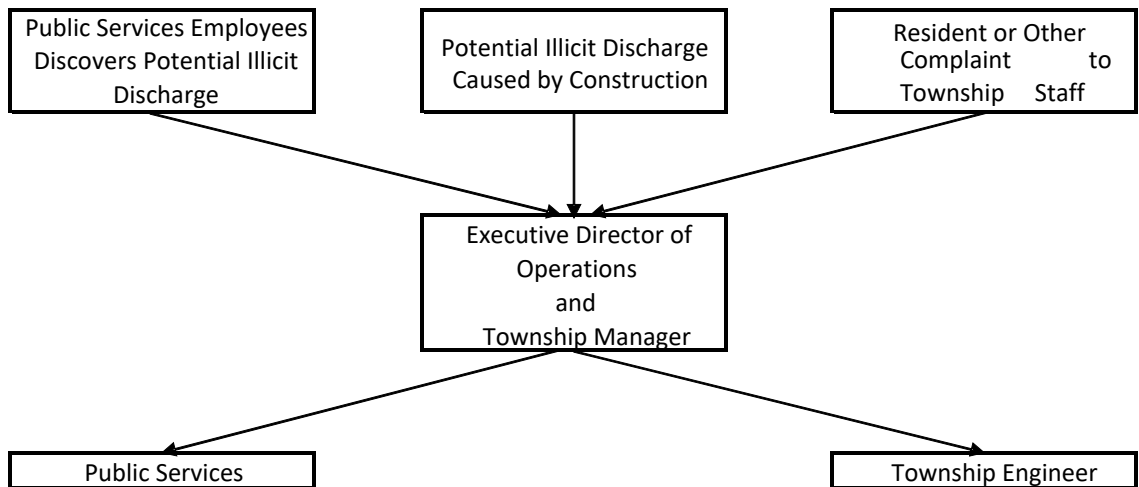
## **PROCEDURES FOR REPORTING OF ILLICIT DISCHARGES**

Potential illicit discharges and stormwater pollution may be discovered and reported to the Township through a variety of ways, including: routine outfall inspections, discovery by Township staff during regular activities, reporting by emergency personnel, resident complaints, etc. No matter where the report originates, the flow chart on the next page is to be followed in order to guarantee that the discharge is investigated thoroughly.

The Township Manager, Assistant Township Manager, and the Township's Director of Operations are aware of the Township's obligations related to the MS4 permit. All reports of illicit discharges made to the Township will go to the Township Manager, Assistant Township Manager and/or Director of Operations. They will be responsible for assessing the specific situation and involving either Township Public Services or the Township Engineer as necessary. This Manual will advise the Township on the proper mode of investigation and removal in the event that an illicit discharge is discovered.

An Illicit Discharge Reporting Form, attached as Appendix A, shall be filled out as completely as possible each time an illicit discharge is discovered by and/or reported to the Township. If the illicit discharge is reporting to the Township, the Township or its Township Engineer will complete a follow up investigation to complete the form. Screening, identification, and elimination of the source shall be completed using the following sections of this Manual.

In the event that no illicit discharges are discovered within any given permit year, the Township may choose to complete one Illicit Discharge Inspection Summary Report detailing no activity within that permit year.



## OUTFALL SCREENING PROCEDURES

Per direction from the Township, the Township Engineer or its’ designee performs the required outfall screening in accordance with the Guidance Manual. The Township Engineer screens each dry weather flow on an annual basis and all other outfalls a minimum of once per permit term. Dry weather flow sampling collection is completed when there has been 72 hours without rainfall, snow, or observable snow melt. It is not anticipated that sampling will need to be adjusted to account of groundwater influence. Obtaining an outfall screening in response to a report of stormwater pollution will be completed as soon as possible.

The Township Engineer or the Township’s designee purchases monitoring equipment for collection of samples, collects samples, and submits any collected samples to a private lab for analysis, following the procedures in Appendix G of the Guidance Manual.

Inspection reports for each screened outfall will be completed by the Township Engineer, using the most recent version of the DEP’s MS4 Outfall Screening Report, and will be submitted to the DEP with the required progress reports. A copy of this Report is attached as Appendix B.

## IDENTIFYING THE SOURCE OF AN ILLICIT DISCHARGE

Once a contaminated flow is detected, the next step is to trace it back to the source of the illicit discharge.

Using the information collected on the Illicit Discharge Reporting Form and/or MS4 Outfall Field Screening Report, via photographs, and laboratory testing results from any collected samples, the Township will look for identifying factors to help identify the potential source. For example, the table included on the next page was taken from the Guidance Manual and outlines potential types of illicit discharges based on land use.

The Township will then determine whether a drainage area investigation, trunk investigation, and/or on-site discharge investigation will be the next step in identifying the source. One, all or a combination of these methods may necessary to identify the source of a single illicit discharge.

A drainage area investigation would be used first where the drainage area to the outfall is large or complex and the flow type in the discharge appears to be specific to a certain type of land use or generating site. A trunk investigation would be appropriate to search the source of the illicit discharge from the storm sewer system. This could be completed by televising the storm sewer line, visual inspection at manholes or inlets to determine where the dry weather flow begins, or non-toxic dye testing in search of the illicit discharge source. On-site investigation could be completed by non-toxic dye testing the plumbing system from inside a building. Communication with other local agencies, such as when and where the testing is to take place, is to be considered prior to any non-toxic dye testing to avoid concern regarding a spill or pollution episode.

If the Township believes the source of the illicit discharge is caused by the interaction of the sanitary sewer system, the same investigation methods as identified above would be sufficient. However, if it is believed that on-lot sanitary systems are interacting with the storm sewer system, a surface condition analysis should be conducted. This analysis would including analyzing for obvious indicators such as foul odors; wet, spongy ground; particularly lush plant growth or burnt grass; algal blooms; cave-ins or exposes system components; and system bypasses.

The Township and Township Solicitor will evaluate on a case-by-case basis the best mechanism for gaining access to private property to inspect illicit discharge, such as verbal or signed consent from the property owner.

Once the source of an illicit discharge has been identified, steps should be taken to fix or eliminate the discharge.

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

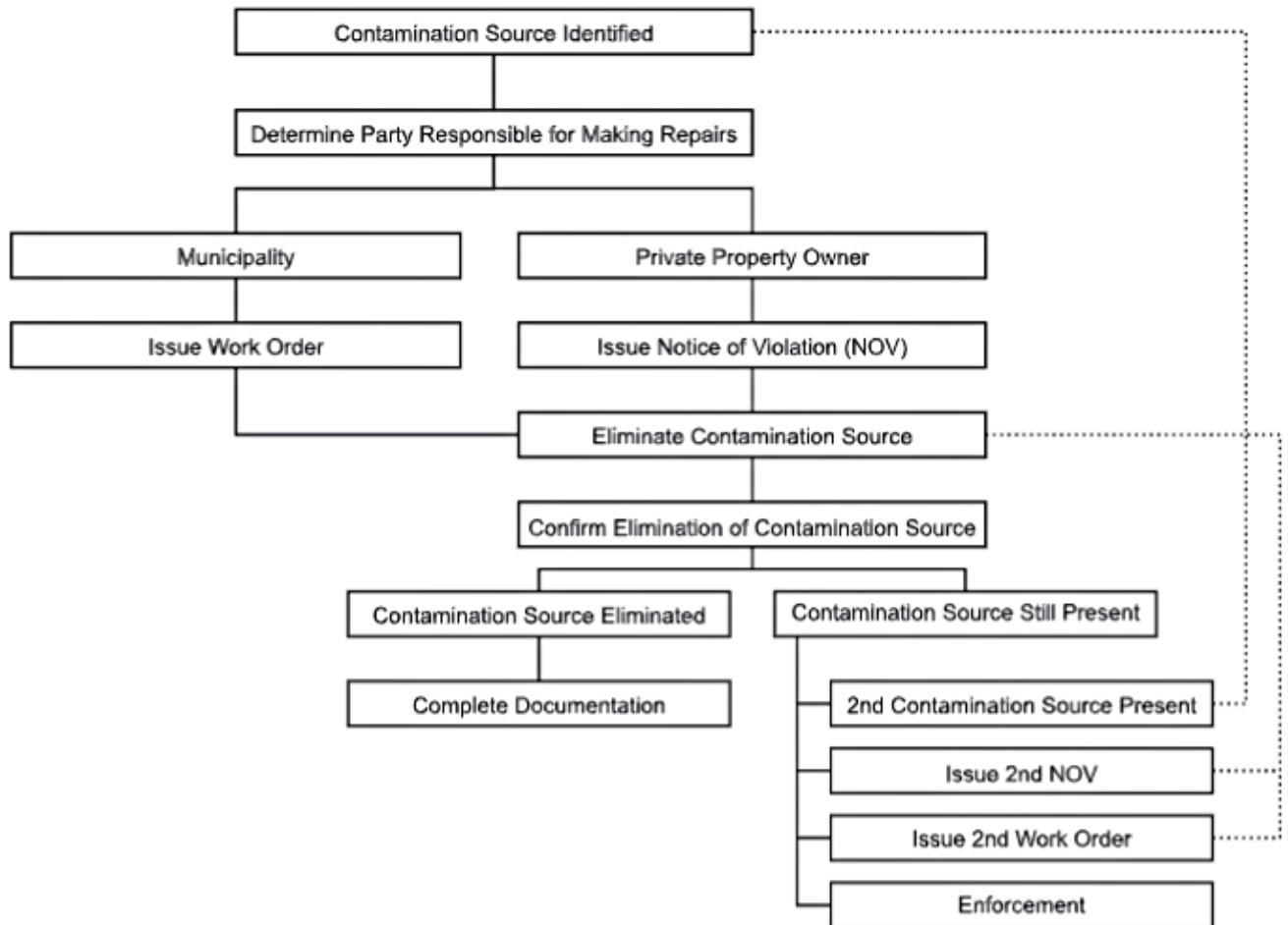
## ELIMINATING AN ILLICIT DISCHARGE

In order to eliminate an illicit discharge, the Township will need to determine who is responsible for the elimination, the method of removal, and how the removal will be confirmed. In the event the Township determines that an unpermitted discharge significantly contributes pollutants to the MS4, the Township will notify the responsible person to cease the discharge.

The Township can utilize the following flow chart to move through these steps. A Notice of Violation would be issued by Township staff. If desired, the Township may elect to utilize the Township

Solicitor's office to notify a land owner of the illicit discharge coming from their property and request access to the subject property to further investigate the situation prior to taking further action.

### Flow Chart for Corrective Action



The Township and Township Solicitor will evaluate on a case-by-case basis the best mechanism for gaining access to private property to eliminate illicit discharges where the owner refuses compliance. Prohibited discharges and connections to the Township's MS4, and related enforcement and penalties, are to be defined in Township Ordinances.

The Township will also provide educational outreach to its employees and the general public about what is considered an illicit discharge and steps that can be taken to eliminate them in hopes of preventing future illicit discharges before they occur.

## PROGRAM EVALUATION & ASSESSMENT

This Manual is intended to be a dynamic document that will be reviewed each year by the Township MS4 Coordinator and other pertinent Township staff to determine whether a revision to the document is needed. Any comments received, including those from Township staff, Township Engineer, DEP, residents, etc., will be evaluated and incorporated in a revised Manual as the Township deems necessary.



# Appendix A

## Illicit Discharge Reporting Form

# CITIZEN COMPLAINT ILLICIT DISCHARGE REPORTING FORM

Name: \_\_\_\_\_ Contact Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_ Time Discharge Discovered: \_\_\_\_\_

Date of Last Rain Event: \_\_\_\_\_ Estimated Quantity of Rain: \_\_\_\_\_ in.

LOCATION OF DISCHARGE (indicate nearby street intersections, addresses, and/or landmarks for reference): \_\_\_\_\_

WHERE WAS DISCHARGE FOUND? OPEN DITCH    STREAM    PIPE OUTFALL    OTHER: \_\_\_\_\_

WAS WATER FLOW OBSERVED?                      NO                      YES

WAS FLOW SOLID OR PULSING?                      SOLID                      PULSING

WAS A PHOTO TAKEN?    NO                      YES    (Please attach a copy to form)

ODOR:    NONE    MUSTY    SEWAGE    ROTTEN EGGS    SOUR MILK    OTHER: \_\_\_\_\_

COLOR:    CLEAR    RED    YELLOW    BROWN    GREEN    GREY    OTHER: \_\_\_\_\_

CLARITY:    CLEAR    CLOUDY    OPAQUE

WAS THERE AN:                      OILY SHEEN                      YES                      NO  
    GARBAGE/SEWAGE                      YES                      NO  
    OTHER: \_\_\_\_\_

ADDITIONAL INFORMATION TO ASSIST IN THE INVESTIGATION: \_\_\_\_\_

*Follow up Investigation (to be completed by CCD staff)*

OUTFALL NO: \_\_\_\_\_ INSPECTOR NAME \_\_\_\_\_ PHONE \_\_\_\_\_

**FIELD ANALYSIS:**

WATER TEMP: \_\_\_\_\_ °F / °C                      CHLORINE (Total): \_\_\_\_\_ mg/l  
pH: \_\_\_\_\_    COPPER: \_\_\_\_\_ mg/l  
PHENOL: \_\_\_\_\_ mg/l                                      DETERGENTS: \_\_\_\_\_ mg/l

WAS A LABORATORY SAMPLE COLLECTED?    NO                      YES

(if yes attach copy of chain-of-custody record)

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATA SHEET FILLED OUT BY: (signature): \_\_\_\_\_ DATE: \_\_\_\_\_

Additional notes to file: \_\_\_\_\_

Follow-up with Complainant: \_\_\_\_\_

## Appendix B

# MS4 Outfall Field Screening Report



## MS4 OUTFALL FIELD SCREENING REPORT

### BACKGROUND INFORMATION

Permittee Name:	NPDES Permit No.: PA
Date of Inspection:	Outfall ID No.:
Land Uses in Outfall Drainage Area (Select All):  <input type="checkbox"/> Industrial <input type="checkbox"/> Urban Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Suburban Residential <input type="checkbox"/> Open Space <input type="checkbox"/> Other:	Latitude: _____° _____' _____"
	Longitude: _____° _____' _____"
	Dry Weather Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No
	Date of Previous Precipitation:
	Amount of Previous Precipitation: _____ in
Inspector Name(s):	Were Photographs Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No
	Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No

### OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: _____ in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
	<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: _____ in Top Width: _____ in Bottom Width: _____

Dry Weather Flow Present at Outfall During Inspection?     Yes     No    *(If No, skip to Certification Section)*

Description of Flow Rate:     Trickle     Moderate     Significant     N/A

### DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color?     Yes     No    If Yes, provide a description below.

Does the dry weather flow contain an odor?     Yes     No    If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge?     Yes     No  
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits?     Yes     No  
If Yes, provide a description below.

Were sample(s) collected of the dry weather flow?  Yes  No (If Yes, No. Samples: \_\_\_\_\_)

**FIELD / LABORATORY ANALYSIS**

PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate		GPM	Fecal Coliform		No./100 mL
pH		S.U.	COD		mg/L
Total Residual Chlorine (TRC)		mg/L	BOD5		mg/L
Conductivity		µmhos/cm	TSS		mg/L
Ammonia-Nitrogen		mg/L	TDS		mg/L
Other: _____			Oil and Grease		mg/L
Other: _____			Other: _____		

Indicate the parameters above that were analyzed by a DEP-certified laboratory:

**ILLICIT DISCHARGES**

Is the dry weather flow an illicit discharge?  Yes  No  
 If Yes, describe efforts made to determine the source(s) of the illicit discharge.

Describe corrective actions taken by the permittee in response to the finding of an illicit discharge.

Inspector Comments:

**RESPONSIBLE OFFICIAL CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Responsible Official Name \_\_\_\_\_ Signature \_\_\_\_\_

Telephone No. \_\_\_\_\_ Date \_\_\_\_\_