

FINAL ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM PLAN

ARLINGTON PUBLIC SCHOOLS VIRGINIA



Prepared by

AECOM 4800 Westfields Boulevard, Suite 400 Chantilly, VA 20151

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1.0 Introduction

The Virginia Administrative Code (VAC) under 9VAC25-890 provides the General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) (MS4 Permit). MS4 permittees in urbanized areas as defined by the Decennial Census, such as Arlington Public Schools (APS), are subject to the requirements of the MS4 Permit. Due to APS's location within an urbanized area, APS is regulated by the MS4 Permit under Permit Number VAR040127.

According to Section I E 3 c of the MS4 Permit, "the permittee shall maintain, implement, and enforce illicit discharge detection and elimination (IDDE) written procedures designed to detect, identify, and address unauthorized nonstormwater discharges, including illegal dumping, to the small MS4 to effectively eliminate the unauthorized discharge."

An illicit discharge is defined as any discharge to an MS4 that is not composed entirely of stormwater, except discharges pursuant to a separate Virginia Pollution Discharge Elimination System (VPDES) or state permit. These discharges can be hazardous to public health, harmful to aquatic life in receiving waters, and detrimental to overall water quality.

This IDDE Program Plan meets the requirements of the abovementioned written procedures and has been revised to comply with requirements of the APS MS4 Permit. Specifically, the MS4 Permit requires the written procedures to include (a) a description of legal authorities to eliminate illicit discharges, (b) dry weather field screening protocols, (c) timeframe and methodologies to conduct illicit discharge source investigations, and (d) a mechanism to track all illicit discharge investigations.

Improper discharges to the MS4 may be the result of misconnection of a portion of the sanitary sewer system to the storm sewer system, failure of sewer infrastructure allowing infiltration of public drinking water or sanitary sewer effluent into the storm sewer system, inadvertent or deliberate discharges of prohibited effluent to the MS4, or other causes.

Center for Watershed Protection and USEPA have published guidance for the implementation of IDDE programs to detect and remediate improper discharges (Brown et al. 2004). Illicit discharges in storm drains consist of measureable flow and contain high concentrations of pollutants and/or pathogens. Dry weather discharges (as described by Brown et al. 2004) can include the following illicit types:

- sewage and septic flows;
- public drinking water supply breach;
- washwater flows, such as residential gray water (laundry) discharges, water from commercial car washes, fleet washing, equipment washdown activity, commercial laundries, and floor washing to shop drains; and
- liquid wastes such as oil, paint, and industrial process water that enter the storm drain system.



Dry weather flows can also be associated with cleaner discharges that would typically not be considered illicit (9VAC25-870-400 D 2 c (3)): water line flushing, landscape irrigation, diverted stream flows, rising groundwaters, uncontaminated groundwater infiltration (as defined in 40 CFR 35.2005(20)), 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.

Notwithstanding the generally non-illicit nature of the above, all flowing water discharges from the MS4 shall be tested for presence of excessive pollution that would indicate an illicit discharge.

1.1 Detection of Illicit Discharges

IDDE programs frequently include systematic or targeted screening of storm drain outfalls in priority areas. IDDE programs may include both dry weather screening of storm drain outfalls and investigations of upland sources of pollution as it enters the storm drain system.

This plan establishes the protocol for identifying and screening outfalls draining APS administered properties. These target facilities are screened on an annual basis for presence of illicit discharge as is required by the MS4 Permit. This Plan also contains the field operations, data management, and response protocols for the IDDE program.

1.2 Correction of Illicit Discharges

Outfalls that have been found to be discharging and that have one or more screening parameters that are outside of acceptable ranges will be investigated further to determine the source or cause of the illicit discharge. Any suspected illicit discharges are referred to Arlington County Government (ACG) for follow-up and possible enforcement.

2.0 Legal Authorities

ACG serves as the Virginia Stormwater Management Program (VSMP) authority for APS, as all APS properties are located within Arlington County. APS relies on ACG for assistance meeting a number of APS' MS4 requirements, including stormwater GIS database; stormwater plan review and approval; regulation, inspection, and enforcement related to land disturbing activities; maintenance of an electronic BMP database, maintenance of a SWPPP; providing required trainings to APS personnel, including the recognition and prevention of illicit discharges to the storm sewer. ACG also provides legal authorities that APS references for use administering its MS4 Program. The following legal authorities are relevant to this IDDE Program Plan:

1. Arlington County Code Chapter 26-5 – Utilities: prohibits unauthorized discharges into the storm sewer system; and

 Memorandum of Agreement – Roles and Responsibilities of Arlington County and Arlington Public Schools for MS4 Permit Compliance: provides a breakdown of the roles and responsibilities of ACG for APS MS4 Permit Compliance and is maintained in Appendix B of the most recent version of the APS MS4 Program Plan.

3.0 Dry Weather Screening Protocols

3.1 Background

For the purposes of this IDDE Program Plan, dry weather conditions are identified as less than a cumulative 0.10 inches of rainfall in 72 hours. Dry weather MS4 screening programs involve monitoring both physical and chemical characteristics of dry weather flows. If flowing water is present at an outfall during dry weather, the quality of the flowing water is assessed in the field. Water quality testing for indicator pollutants such as detergents and fluoride, and characteristics such as pH and temperature, provides on-the-spot information to help distinguish between improper discharges and other possible sources of dry weather flow, such as groundwater infiltration. Physical indicators in flowing water include odor, color, turbidity, and the presence of floating material such as oil, sewage, or suds (Brown et al. 2004). Physical indicators of a potentially improper discharge are often evident when flow is not present; such indicators include outfall damage, deposits or stains, unfavorable colors or odors in plunge pools, deposits of material in receiving channels, and algal growth in pipes.

Field procedures for dry weather screening are described in Sections 3.2 and 3.3.

3.2 Schedule of Field Screening Activities

9 VAC 25-870-10 defines "outfall" as "when used in reference to municipal separate storm sewers, a point source at the point where a municipal separate storm sewer discharges to surface waters and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other surface waters and are used to convey surface waters."

The MS4 Permit requires that, if the total number of MS4 outfalls is equal to or less than 50, the permittee screen all outfalls annually. Nine (9) points of discharge from APS property meet the abovementioned definition. Consequently, **Table 3-1** identifies the nine (9) MS4 outfalls that APS is required to screen annually. APS screens each of the outfalls no later than June 30 of each year.

APS Property (No. MS4 Outfalls)	2016 Structure ID ¹	Revised Structure ID²	Address
Campbell Elementary	16816	16816	737 South Carlin Springs Rd, Arlington, VA 22204
(2)	16825	16825	Armigion, VA 22204
Randolph Elementary	24977	24977	1306 South Quincy St,
(2)	New Outfall ³	35815	Arington, VA 22204
Claremont Elementary	25675	25675	4700 South Chesterfield Rd,
(3)	230730A	35320	Armigion, VA 22200
	230730B	30945	
	25671A	25671	
	25671B	35330	

Table 3-1. MS4 Outfalls Required for Annual Dry Weather Screening

Notes:

1. ACG revised structure IDs following the 2016 APS dry weather outfall screening event for organization and consistency following the expansion of the ACG/APS storm sewer system. This column reflects the original structure IDs prior to revision in the ACG database.

- 2. See Note 1. This column reflects the original structure IDs prior to revision in the ACG database.
- 3. Outfall 35815 was first identified by APS personnel after dry weather screening was conducted in 2016. This outfall was first screened during the 2017 APS dry weather outfall screening event.

3.3 Dry Weather Screening Procedure

Initial dry weather screening activities include assessing the physical characteristics of the outfall and any discharge, and performing screening chemistry tests on the discharge (if present). Field screening will not proceed unless less than 0.10 inches of rainfall has fallen in the preceding 72 hours. Field crews will verify that this dry-time criterion has been met before beginning field operations. The field staff will obtain and gather the materials listed in **Appendix A** prior to field work.

For the APS dry weather field effort, screening of outfalls consists of the following:

- Locate outfalls using GPS and infrastructure maps in the target areas.
- Inspect the selected outfalls for physical evidence of illicit discharge.
- If flowing water is present, perform water chemistry tests in the field.
- Record data on field data sheets.
- If the presence of suspected illicit discharge is detected, ACG responsible personnel will be notified within 24 hours.



Data gathered during the dry weather screening field effort will be recorded on pre-printed field data sheets (**Appendix B**). Datasheets developed by the Center for Watershed Protection (Brown et al. 2004) were used as the basis for these field data sheets. The following screening information will be entered onto field data sheets:

- 1. Background Data: Record current date, physical location, GPS location, investigators, and other background data.
- 2. Outfall Description: Enter information describing the outfall, including outfall ID (if provided by County), whether closed pipe or open channel, whether subsurface or open to daylight, physical dimensions, shape, orientation, material type, etc. Indicate if water is flowing from the outfall and describe (e.g., yes, no, intermittent, stagnant).
- 3. Quantitative Characterization: If flowing water is observed, perform water chemistry tests as described in the equipment-specific methodology records provided by the manufacturer.
- 4. Physical Indicators for Flowing Outfalls Only: Collect information on physical features of flowing outfalls (e.g., odor, color, turbidity, sheens, floating materials).
- 5. Physical Indicators for Flowing and Dry Outfalls: Collect information on physical features of both flowing and dry outfalls. Examine outfall for presence and type of algae, abnormal vegetation (if applicable), damage, stains, sheens, and condition of plunge pool (if applicable). Structural problems (e.g., cracking, holes in corrugated metal pipes, dissolved concrete) should also be noted.

Table 3-2 identifies the dry weather screening parameters and the equipment and materials used to screen for those paramters.

Recommended Analyte	Screening Equipment/Material
	Total Chlorine Visual Kit
total chlorine	OR
	Accuvac and Colorimeter
fluoride	SPADNS 2 Fluoride Reagent and Colorimeter
ammonia	Nitrogen/Ammonia Test Kit
	Detergents Visual Kit
surfactants (detergents)	OR
	Detergents Reagent and Colorimeter
pН	pH meter

 Table 3-2. Dry Weather Screening Parameters and Equipment

Following dry weather screening, a technical memorandum is prepared summarizing the screening methodologies, results, and next steps required by the APS MS4 Permit. The technical memorandum is maintained with APS' MS4 Program records and dry weather outfall screening results are submitted to the Virginia Department of Environmental Quality (DEQ) with the MS4

Annual Report. The dry weather screening technical memoranda include the following information required for tracking by the MS4 Permit:

- Unique outfall identifier;
- Time since the last precipitation event;
- The estimated quantity of the last precipitation event;
- Site descriptions (e.g., conveyance type and dominant watershed land uses);
- Whether or not a discharge was observed; and
- If a discharge was observed, the estimated discharge rate (e.g., width and depth of discharge flow rate) and visual characteristics of the discharge (e.g., odor, color, clarity, floatables, deposits or stains, vegetation condition, structural condition, and biology).

4.0 Illicit Discharge Source Investigations

The MS4 Permit requires that permittees conduct an investigation to identify and locate the source of any observed unauthorized nonstormwater discharge. Permittees must identify (1) a timeframe to conduct investigations; (2) methodologies to determine the source of all illicit discharges; (3) metholologies for conducting follow-up investigations for illicit discharges that are continuous or occur more frequently than a one-time discharge; and (4) a mechanism to track and document all illicit discharge investigations.

4.1 Timeframe to Conduct Source Investigations

Any suspected illicit discharge, including spills entering the MS4 and outfalls that fail physical or chemical parameter screening, will be reported to ACG Department of Environmental Services, Office of Sustainability and Environmental Management (DES OSEM) staff for follow up. ACG will be notified by APS immediately if, during field investigations, any active pollution discharge (elevated flow, discoloration, and abnormal odor) is evident. ACG designates responsible personnel to investigate and remediate illicit discharges within APS. If the source of the discharge is located on APS property, then ACG works with APS to investigate and resolve the discharge. APS will begin source investigations for suspected illicit discharges within two (2) weeks of the discharge being identified or reported.

4.2 Methodologies to Determine the Source of Illicit Discharge

ACG designates responsible personnel to investigate and remediate illicit discharges within APS. If the source of the discharge is located on APS property, then ACG will work with APS to investigate and resolve the discharge. Moreover, APS will compare the results of dry weather screening to the criteria presented in **Table 4-1** to assist in identifying the possible source of a suspected improper discharge or illicit connection. Results will be communicated to ACG to assist in the source investigation and reported in the MS4 Annual Report. **Table 4-1** identifies the dry weather screening parameters and their ability to aid in detecting the type of illicit

discharge. Selection was based primarily on information provided in Brown et al. (2004).

Recommended		Recommended Action	
Analyte	Effluent Type Indicated	Criterion	
	Industrial;		
total chlorine	drinking water;	\geq 0.4 mg/l	
	sewage		
fluoride	tap water	\geq 0.25 mg/l	
	Sewage;		
ammonia	washwater;	$\geq 1 \text{ mg/l}$	
	industrial		
aurfactanta (dotorganta)	Sewage;	> 0.125 mg/l	
surfactants (detergents)	washwater	≥ 0.123 mg/1	
лЦ	Industrial;	- 5	
pr	washwater	$ \geq 3$	

 Table 4-1. Parameters Action Criteria and Effluent Type

4.3 Follow-up Investigations for Continuous Illicit Discharges

If neither APS nor ACG is able to identify the source of an illicit discharge within six (6) months of beginning the investigation, then APS will document that the source remains unidentified. If the observed discharge is intermittent, APS will document that attempts to observe the discharge flowing were unsuccessful.

4.4 Documentation and Tracking Illicit Discharge Investigations

APS will maintain documentation to track the status of source investigations conducted by either APS or ACG for illicit discharges on APS property. **Appendix C** includes a log for this purpose and allows space to document the following:

- The dates that the illicit discharge was initially observed, reported, or both;
- The results of the investigation, including the source, if identified;
- Any follow-up to the investigation;
- Resolution of the investigation; and
- The date that the investigation was closed.

5.0 Annual Reporting

As required in Condition I E 3 c of the MS4 Permit, APS will submit the following information on the IDDE Program in its MS4 Annual Report:

- A list of any written notifications of physical interconnection given by APS to other MS4 jurisdictions;
- The total number of outfalls screened during the reporting period, the screening results, and number and nature of follow up actions; and
- A summary of each investigation conducted by APS of any suspected illicit discharge. Each summary must include: (i) the date that the suspected discharge was observed, reported, or both, (ii) the results of the investigation, including the source, if identified, (iii) how the investigation was resolved, including any follow-up, and (iv) resolution of the investigation and the date the investigation was closed.



APPENDIX A: Dry Weather Outfall Screening Field Equipment Checklist



Dry Weather Outfall Screening Field Equipment Checklist				
Item	Check?			
Field maps				
Field data sheets				
Clipboard				
Pencils/Permanent Marker				
Measuring tape				
Flashlight				
Insect repellent				
Steel-toed Boots				
Reflective Safety Vest				
First-aid kit				
Outfall water quality screening kit(s) and procedure manuals				
Colorimeter (calibrated)				
pH meter (calibrated) and display				
Pipet filler				
Pipet bulb				
Backpack				
Work gloves				
Nitrile gloves				
Safety glasses				
Goggles				
Digital camera or phone for photos				
Polypropylene bottles for sharps/waste				
250-mL plastic cup				
500-mL wash bottle containing distilled water				
Gallon cubitainer (or equivalent) containing distilled water				
Paper Towels				
Trash bag for non-sharps waste				





APPENDIX B: Data Sheets for Dry Weather Outfall Screening





Arlington Public Schools – Dry Weather Screening

SECTION 1: BACKGROUND DATA				
Watershed:	Outfall ID:			
Date (MM/DD/ YY):// 20	Time (Military)::			
Investigators:	Form completed by:			
Rainfall:Last 24 hours: $\Box < 0.1$ inches $\Box > 0.1$ inchesLast 72 hou	ars: $\square < 0.1$ inches $\square > 0.1$	inches		
Latitude (dd.dddd): ° N Longitude (dd.dddd):	° W	GPS Unit:		
Camera:	Photo #s:			
Notes/Comments (e.g, origin of outfall, if known):				

SECTION 2: OUTFALL DESCRIPTION

Location	Material	Shape		Dimensions (In.)	
Closed Daylight Pipe Closed Subsurface Pipe	RCP CMP PVC HDPE Steel Terra-cotta Other:	Circular Box Elliptical Arch	□ Single □ Triple □ Double □ Other:	Dimensions: Height: Width:	
🗌 Open Drainage	Concrete Rip-Rap Earthen Other:	Trapezoid Parabolic Other:		Depth: Top Width: Bottom Width:	
Outfall Elevation:	Suspended Height (ft):	/ Submerged Depth: In Wa	ter (ft): In Sedim	ent (ft):	
Outfall Cover:		e 🔲 Other:			
Outfall Protection: 🛛 Rip-Rap 🗋 Gabion Basket 🗧		Concrete None Oth	er:		
Outlet Erosion:	None Minimal Erosion Moderate Erosion Heavy Erosion Silted				
Erosion Source:					
Headwall Condition:	🗌 No Headwall 🔲 Good 🔲 Fa	ir 🔲 Poor			
Flow Present? Yes No		Intermittent	Stagnant If N	o, Skip to Section 5	
Flow Depth (In.):					

SECTION 3: QUANTITATIVE CHARACTERIZATION

FIELD DATA FOR FLOWING OUTFALLS					
PARAMETER	RESULT	UNITS	PARAMETER	RESULT	UNITS
Chlorine		mg/L	Detergents	_?	mg/L
Fluoride	· · · · · ·	mg/L	рН		pH Units
Ammonia		mg/L			

(Form adapted from Brown, et al. 2004)

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Arlington Public Schools – Dry Weather Screening

	Outfall ID:	Today's date: ECTION 4: PHYSICAL INDICATORS FOR FLOWING OUTFALLS ONLY		
INDICATOR	CHECK if Present	DESCRIPTION		
Odor		Sewage Rancid/sour Petroleum/gas Sulfide Chemical Other:		
	Relative Severity	1 - Faint 2 - Easily detected 3 - Noticeable from a distance		
Color		Clear Brown Gray Yellow Green Orange Red Other:		
	Relative Severity	□ 1 – Faint colors in sample bottle □ 2 – Clearly visible in sample bottle □ 3 – Clearly visible in outfall flow		
Techidies		See severity		
Turbidity	Relative Severity	\Box 1 – Slight cloudiness \Box 2 – Cloudy \Box 3 – Opaque		
Floatables		Sewage (Toilet Paper, etc.) Suds Petroleum (oil sheen) Other:		
	Relative Severity	\Box 1 – Few/slight \Box 2 – Some \Box 3 – Widespread		

SECTION 5: PHYSICAL INDICATORS FOR BOTH FLOWING AND NON-FLOWING OUTFALLS

INDICATOR	CHECK if Present	DESCRIPTION COMMENTS		
Or (61) Damas		Spalling, Cracking or Chipping Peeling Paint Corrosion		
Outrall Damage	Comments			
Doposito/Stains		Oily Flow Line Paint Other:		
Deposits/Stams	Comments			
Abnormal Vacatation		Excessive Partially Inhibited Totally Inhibited		
Abnormal vegetation	Comments			
Door pool quality		☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:		
Foor poor quanty	Comments			
Dina algaa grawth		Brown Orange Green Other:		
Pipe algae growth	Comments			
Trach		Aluminum Glass bottles Plastic bottles Paper Styrofoam Other:		
rrasn	Comments			

SECTION 6: OVERALL OUTFALL CHARACTERIZATION OF ILLICIT DISCHARGE POTENTIAL

Unlikely	Suspect (≥ 1 Section 4 indicator with a severity of 3)
□ Potential (presence of ≥ 2 Section 5 indicators)	□ Obvious (≥1 WQ indicator)

SECTION 7: NON-ILLICIT DISCHARGE CONCERNS



APPENDIX C: Log of Illicit Discharge Source Investigations



#	Site	Structure ID	Date Illicit Discharge Initially Observed by APS	Date Illicit Discharge Reported to ACG	Results of Source Investigation	Follow-up to the Investigation	Resolution of the Investigation	Date Investigation Closed

Illicit Discharge Source Investigation Log