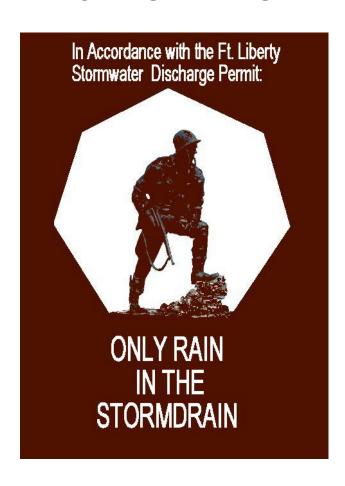
# Fort Liberty ILLICIT DISCHARGE DETECTION AND ELIMINATION PROCEDURE MANUAL



Prepared by
Directorate of Public Works
Environmental Division
Water Management Section
2023 Revision

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#### LIST OF ABBREVIATIONS AND ACRONYMS

ASUS American States Utility Services
CFR Code of Federal Regulations

CO Contraction Officer

COR Contracting Officer's Representative

CWA Clean Water Act

ECB Environmental Division Compliance Branch

EPA Environmental Protection Agency
ECA Environmental Compliance Assistant
ECO Environmental Compliance Officer
GIS Geographic Information System

IDDE Illicit Discharge Detection and Elimination MS4 Municipal Separate Storm Sewer System

NCDEQ North Carolina Department of Environmental Quality NPDES National Pollutant Discharge Elimination System

OWS Oil/Water Separator

POL Petroleum, Oils, and Lubricants
RCI Residential Community Initiatives
SDO Stormwater Discharge Outfall

U.S. United States

WMS Water Management Section

#### 1.0 INTRODUCTION

#### 1.1 Background and Purpose

Stormwater runoff from developed land can harm surface water resources by changing natural hydrologic patterns and elevating pollutant concentrations and loadings. Stormwater runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients, heavy metals, and pathogens. To address this problem, the U.S. Environmental Protection Agency (EPA) established stormwater regulations as part of the National Pollutant Discharge Elimination System (NPDES) permits program under the Clean Water Act (CWA), which are implemented through NPDES permits.

The EPA has delegated administration of the NPDES program to the North Carolina Department of Environmental Quality (NCDEQ). Fort Liberty is authorized to discharge stormwater and continue operation of oil water separators not associated with wastewater facilities under NPDES Phase II Permit Number NCS000331 (effective 1 October 2021). This manual has been prepared to support compliance with Part 2.D, Illicit Discharge Detection and Elimination, which requires Fort Liberty to "develop, implement, and enforce a program to detect and eliminate illicit discharges into to the small MS4". To ensure compliance with the Illicit Discharge Detection and Elimination (IDDE) requirements of the MS4 Permit, Fort Liberty will follow the procedures outlined in this manual.

The Fort Liberty MS4 program is managed by the Directorate of Public Works (DPW)/Environmental Division (ED)/Compliance Branch (ECB)/Water Management Section (WMS). For any questions regarding the MS4 program or illicit discharges please contact:

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#### 2.0 STORMWATER SYSTEM MAP

Fort Liberty maps its entire stormwater infrastructure using ArcGIS software. This includes MS4 outfalls, storm pipes, culverts, stormwater control measures, and other water features. The water Management Section continuously updates maps and attribute tables. Stormwater infrastructure data is verified through field inspections, surveys, information integrated from CAD files, grading plans, and as-built drawings. After thorough verification, the data is forwarded to the Installation GIS Office for inclusion in the installation's geodatabase. Maintaining an accurate map of the stormwater system allows for easy tracing and locating the source of suspected illicit discharges. Using GIS allows for easily accessed attribute information and layer isolation.

As of May 2023, Fort Liberty has identified 132 Major outfalls: 62 non-industrial and 70 industrial outfalls.

Since 2013 Fort Liberty has been contracting out comprehensive watershed studies to survey stormwater infrastructure locations and conditions. Data collected during these surveys is utilized to update the stormwater system GIS data. Updated storm sewer system maps, including the addition of new or reclassified (e.g., industrial to non-industrial) outfalls, will be included in this manual as they are developed. Surveys are programed/scheduled and subject to funding availability; completion might not take place until 2025/2026.

#### Watershed Surveys

Watersheds	Scheduled	Awarded	Complete
Old Post	FY13	FY14	FY15
SAAF	FY13	FY13	FY14
Tank Creek	FY17	FY17	FY19
Beaver Creek	FY18	FY18	FY19
Big Branch	FY18		
Cross Creek	FY19		
McPherson Creek	FY19	FY21	FY22
Young's Creek	FY20		
Patriot Point	FY20		

#### 3.0 ILLICIT DISCHARGE POLICY

## 3.1 Illicit Discharge Definition

Any discharge to a MS4 that is not composed entirely of stormwater except discharges pursuant to an NPDES permit (other than the NPDES MS4 permit), allowable non-stormwater discharges, and discharges resulting from fire-fighting activities.

Illicit discharges to the Fort Liberty MS4 are typically the result of aging infrastructure; industrial, commercial and/or residential practices spill events. Examples of illicit discharges are illustrated in Figure 3-1 and include (but are not limited to) the following:

- Runoff from improperly stored materials
- Improper disposal of POL's or household chemicals into a storm drain inlet
- Leaking dumpsters flowing into a storm drain inlet.
- Old or damaged sanitary sewer line leaking fluids into a cracked or damaged storm sewer line
- Allowing wash water with soaps or detergents to discharge to a storm drain inlet.
- Washing silt, sediment, concrete, cement or gravel into a storm drain inlet
- POLs from vehicle accidents
- Foam solutions from firefighting testing and training exercises

Examples of authorized non-stormwater discharges that are not significant contributors of pollutants and are not considered illicit discharges at Fort Liberty include the following:

- Water line flushing
- Uncontaminated groundwater infiltration
- Landscape and lawn irrigation
- Air conditioning condensate
- Street wash water
- Groundwater from footing drains and crawl spaces
- Flows from firefighting activities.
- Discharges from potable sources
- Flows from riparian habitats and wetlands.
- Dechlorinated swimming pool discharges



Source: Illicit Discharge Detection and Elimination - A Guidance Manual for Program Development and Technical Assessments (CWP, 2004)

Figure 3-1. Examples of Illicit Discharges

Illicit connections to the stormwater drainage system can also generate illicit discharges. Illicit connections are any manmade conveyance that is connected to the MS4 without a permit, excluding roof drains and other similar connections. Examples of illicit connections include, but are not limited to, the following:

- Sanitary sewer piping that is connected directly from a building to the stormwater drainage system.
- A cross connection between the sanitary sewer and the stormwater drainage system
- A shop floor drain that is connected to the stormwater drainage system.

The frequency of illicit discharges typically occurs within the following three classifications as defined by the EPA (CWP, 2004):

- *Continuous* discharges occur most or all the time, are usually easier to detect, and typically produce the greatest pollutant load.
- *Intermittent* discharges occur over a shorter period (e.g., a few hours per day or a few days per year). Because they are infrequent, intermittent discharges are hard to detect, but canstill represent a serious water quality problem, depending on their flow type.
- *Transitory* discharges occur rarely, usually in response to a singular event such as an industrial spill, ruptured tank, sewer break, transport accident or illegal dumping episode. These discharges are extremely hard to detect with routine monitoring, but under the right conditions, can exert severe water quality problems on downstream receiving waters.

Understanding the frequency classifications can help in detecting and eliminating illicit discharges by allowing inspectors to determine if dry weather flows may need additional examination to determine if they should be classified as illicit discharges.

#### 3.2 Fort Liberty Illicit Discharge Prohibition Policy

Fort Liberty is dedicated to detecting and eliminating illicit discharges to the stormwater drainage system. This section defines illicit discharges and outlines the Fort Liberty policy prohibiting illicit discharges.

Ongoing efforts on Fort Liberty have been in place since the inception of NPDES Phase I Permit Program in 1990's. IDDE includes prevention and prohibition, field screening, and investigation procedures.

Deliberate dumping into the stormwater system is illegal under the federal CWA and is therefore enforceable and punishable by Fort Liberty law enforcement officers and outside entities. Additionally, XVIIIABN Corps and Fort Liberty Regulation 200-1 Chapter 12 Wastewater Management calls for Conserving and safeguarding all stormwater collection systems and all bodies of water, whether natural or man-made, including lakes, streams, wells, wetlands, and underground aquifers. Control or eliminate all sources of pollution effecting surface or groundwater quality. Chapter 9 Solid Waste Management Section prohibits littering or illegal dumping of waste. Willful violation of the provisions of XVIII ABN Corps and Fort Liberty Regulation 200-1 will provide the basis for disciplinary action under Article 92, Uniform Code of Military Justice (UCMJ) (Violation of a lawful general regulation for personnel subject to UCMJ) for military personnel, and AR 690-700, Chapter 751, Personnel Regulations and Services (General) (Failure to observe written regulations, orders, rules, or procedures) for civilian employees of the government. All persons, military or civilian, are subject to criminal and civil penalties for violations of these Federal or State statutes.

#### 4.0 ILLICIT DISCHARGE DETECTION PROCEDURES

This section outlines procedures for IDDE incident reporting and dry-weather field screening at the Fort Liberty MS4 outfalls.

#### 4.1 Reporting

All Fort Liberty personnel and residents are encouraged to report illicit discharge and/or illegal dumping activities.

All Illicit discharges/spills, including sewage, are reported to the Fort Liberty Fire and Emergency Services whose personnel are the installation's First Responders, and their telephone number (911) is the primary hotline for reporting illicit discharges/spills. The hotline is manned 24 hours per day, 7 days per week. Fort Liberty personnel can also call Environmental staff (396-2295/396-2141/908-5286). The SPCCP guides the response actions. The Spill Response SOP is followed for investigating, clean up, eliminating these illicit discharges, and reported to NCDNER as necessary (See Appendix D). The Sanitary Sewer Overflow (SSO) SOP is followed for investigating, clean up, eliminating SSO illicit discharges, and reported to NCDNER as necessary (See Appendix E)

Copies of spill reports are stored in the ECB shared electronic Hazardous Waste Team folder.

#### 4.2 Employee Training and Public Education

Fort Liberty's employee training for appropriate personnel, who, as part of their normal job responsibilities, may encounter or otherwise observe an illicit discharge or illicit connection to the storm sewersystem is as follows.

- Overview Fort Liberty Stormwater Program and Stormwater Pollution Prevention
- Preventing Stormwater Pollution "What Can We Do" Recognizing and Reporting Illicit Discharges.
- Rain Check Stormwater Pollution Prevention Employee Training For MS4's
- IDDE A Grate Concern Illicit Discharge Detection & Elimination Employee Training For MS4"s

Fort Liberty established Environmental Public Education in 1995. Environmental Compliance Officer training for Environmental Compliance Officers (ECOs) and Environmental Compliance Assistants (ECAs) in both military and civilian activities. The ECO class last approximately 20 hours and includes: stormwater, pollution prevention, spill prevention, spill response, Hazardous waste, Solid waste, recycling programs, and the maintenance of oil/water separators.

DPW and the family housing management company (Corvias) have periodically distributed information about the IDDE program and how to report via newsletter articles.

#### 4.3 Dry-Weather Field Screening

The Water Management Section conducts dry weather inspections at all stormwater outfalls to identify any potential illicit discharges. These inspections are documented on an inspection form (see Appendix B) kept in the WMS office and stored in the Fort Liberty Stormwater Management Database. The results of these inspections are discussed and summarized in the annual report submitted to NCDEQ.

#### 4.3.1 Responsibility

Outfall dry weather inspections are the responsibility of DPW WMS. Contractors hired by the installation perform outfall dry weather inspections.

#### 4.3.2 Dry Weather Inspection Schedule

As required by Section 2.D.3c of the MS4 Permit, dry weather inspections are conducted at all major outfalls. The EPA suggests MS4 communities inspect at least 20% of their outfalls per year. Fort Liberty schedules around 10% of their total MS4 major outfalls each month. Weather permitting; the goal is to inspect all MS4 major outfalls at least once per year.

#### 4.3.3 Dry Weather Inspections

Outfall dry weather inspections field crews will visually inspect each major outfall and complete a Dry-Weather Outfall Inspection Form provided in Appendix B. Special attention is paid to outfalls that are flowing when no rain has occurred within the last 72 hours and/or outfalls where foul odors or discolored water is noted. When the screening of an outfall indicates a potential illicit discharge, the Fort Liberty Stormwater ProgramManager will be notified so an investigation, as described in Section 5.0, can be performed. Any identified spills or conditions that represent a serious threat to personnel safety or equipment damage will be immediately reported to Fort Liberty Fire and Emergency Services.

#### 4.3.4 Documentation

All field reports will be reviewed and maintained by DPW WMS staff in the Fort Liberty Stormwater Management Database.

A service order request will be submitted via e-mail or phone to the DPW Operation & Maintenance Division( OMD)/Customer Service Order Desk to address any maintenance issues identified during the outfall screenings. OMD will determine whether the issue can be addressed with a service order or whether an FB Form 4283, Engineering Facilities Work Request, will be required. A blank FB Form 4283 is provided in Appendix B.

#### 5.0 ILLICIT DISCHARGE INVESTIGATION

Potential illicit discharges can be detected through community reporting or outfall inspections as described in Section 4.0. Once a potential illicit discharge has been detected, it becomes necessary to investigate to identify and eliminate the source of the discharge. The investigation may result in the source being easily identified or it may require a more in-depth inspection as outlined in this section.

## 5.1 Responsibility

In 2012 the Water Management Section developed an Illicit Discharge Detection & Elimination Field Investigation Guide (see Appendix C). The guide lays out procedures for detecting, tracing, and removing sources of illicit discharges. Trained Qualified personnel physically inspect the drainages looking for illicit discharge pipes, seeps, or other suspect flows. Tools to help personnel identify potentially illicit discharges include field test kits to determine chemical characteristics, and the storm sewer map, which shows base infrastructure in addition to other items required by the permit. Field personnel utilize maps to help identify the source of the discharge.

#### 6.0 ILLICIT DISCHARGE ELIMINATION

Fort Liberty is committed to eliminating illicit discharges to the stormwater drainage system. This section outlines mechanisms for eliminating confirmed illicit discharges and enforcement actions that may be enacted to achieve compliance.

## 6.1 Responsibility

Initiating and verifying the elimination of an illicit discharge is the responsibility of DPW ECB. DPW ECB staff will provide educational materials and advocate for funding when needed to eliminate illicit discharges. Depending on the location and type of discharges, specific elimination actions may be conducted by other organizations including Unit Commanders, ECO's, Housing Management staff (Corvias), the installations Utility Service providers, Electrical - Sandhills Utility Services (SUS), Water/Wastewater - American States Utility Services (ASUS), and Natural Gas – Piedmont Natural Gas (PNG), or other outside contractors hired by the installation.

## **6.2** Eliminating Illicit Discharges

Illicit discharges are generally the result of either structural issues or operational deficiencies. The mechanism for eliminating a discharge will depend on the discharge type.

#### **6.2.1** Structural Issues

Examples of structural issues that may result in illicit discharges include:

- Illicit connections with the sanitary sewer
- Oil/water separators (OWS) pretreating industrial wastewater discharging to the stormwater drainage system.
- Leaking concrete containment berms and/or valves
- High level bypass pipes at sanitary sewer lift stations

Structural issues will generally require a construction action to eliminate the illicit discharge. Repair projects for structural issues will be initiated through completion of a service order request to the Operation & Maintenance Division (OMD) Service Order Desk. OMD will determine whether the issue can be addressed with a service order or whether an FB Form 4283, *Facilities Engineering Work Request*, will be required. A blank FB Form 4283 is provided in Appendix B. Funding for the repair will be determined once the work request has been submitted and reviewed by DPW Business Operations and Engineering Divisions.

#### **6.2.2** Operational Deficiencies

Examples of operational deficiencies that may result in illicit discharges include:

• Washing activities in areas that discharge to a storm drain inlet.

- Runoff from improperly stored material
- Illegal dumping
- Dumpster leachate
- Improperly managed secondary containment valves

Elimination of operational deficiencies can be achieved through BMP's such as education, modification of processes, and/or relocation of the discharge generating activities. DPW ECB staff will work with facility occupants as needed to promote compliance.

#### **6.3** Enforcement Actions

As discussed in Section 3.2 of this manual, illicit discharges to the stormwater system are prohibited by Federal Regulations. Prohibition is also addressed through contract language with contractors performing work on base. Corrective actions focus first on education to promote voluntary compliance and escalate to increasingly severe enforcement actions if voluntary compliance is not obtained. The Fort Liberty community is comprised of military and civilian personnel and residents and enforcement actions associated with illicit discharges will depend on the organization of the responsible party or parties. Fort Liberty will generally follow a three-step enforcement action policy for confirmed illicit discharges; however, more serious violations or continued, egregious non-compliance may warrant a more aggressive approach. Actions conducted under each enforcement step include the following:

• Step 1: Initial Actions – DPW ECB will provide documentation (e-mail, Spill Report, Photos) describing the location and nature of the illicit discharge and the required elimination action. If the source of the illicit discharge is due to a structural issue, the documentation will also include a reference to the Service Order Number, or a copy of the FB Form 4283 initiated to correct theissue. For military organizations and tenants, the documentation will be sent to the ECO or ECA. For contractor organizations, the documentation will be sent to the Contracting Officer's Representative (COR) overseeing the responsible party. Documentation for illicit discharges occurring in housing areas will be sent to the Residential Community Initiatives (RCI). Step 1 is not meant to be punitive. It is an opportunity to inform and educate the responsible parties and to encourage voluntary compliance.

• Step 2: Intermediate Actions – If the illicit discharge has not been eliminated or if the illicit discharge is detected a second time at the facility under the responsibility of the same organization, ECB will send a notification regarding the unresolved issues. For military organizations and tenants, the notification will be sent to the unit Commander or equivalent. For contractor organizations, the notification will be sent to the Contracting Officer (CO) overseeing the responsible party. Notification for illicit discharges occurring in housing areas will be sent to the RCI Housing Authority. To the extent possible, Step 2 is meant to bring about an immediate stop to activities generating the illicit discharge until such time that procedures are put in place to prevent future discharges. For contractor activities, Step 2 may result in a stop work order from the CO.

• Step 3: Final Actions — If the illicit discharge has not been eliminated or if the illicit discharge reoccurs at the facility a third time under the responsibility of the same organization, ECB will send a notification to the Garrison Commander regarding the unresolved issues. Step 3 may result in disciplinary action for military organizations and tenants; loss of contract and/or removal from base for contractors; and loss of housing lease for residents in base housing.

#### 6.4 Documentation

Digital copies of all correspondence between all parties regarding the resolution of the illicit discharge will be saved on the ECB shared server.

#### 6.5 Manual Review

Review of the IDDE Procedures Manual is important in order Fort Liberty to have an up-to-date standard to use for assessing the overall effectiveness of the IDDE Program for compliance with NPDES Phase II Permit Number NCS000331. The Fort Liberty MS4 Program Plan outlines the procedures for the IDDE program evaluation and assessment. Refer to the MS4 Program Plan for guidance for performing the annual evaluation.

#### 7.0 REFERENCES

Center for Watershed Protection (CWP). 2004. *Illicit Discharge Detection and Elimination - A Guidance Manual for Program Development and Technical Assessments*. Ellicott City, MD: CWP.

Fort Liberty. NPDES Phase II Permit Number NCS000331

North Carolina Department of Environmental Quality (NCDEQ). 2008. Stormwater Discharge Outfall (SDO) Qualitative Monitoring Report Supplement SWU-242A: Guidance for Rating Stormwater Discharge. Unknown.

U.S. EPA. 2013. 40 CFR 122, EPA Administered Permit Programs: The National Pollutant Discharge Elimination System. Washington, DC: U.S. Government Printing Office.

Fort Liberty Spill Prevention, Control, and Countermeasure (SPCC) Plan

# APPENDIX A STORMWATER DRAINAGE SYSTREM MAPS

The	Stormwater	Drainage Syst	em maps are	too large	to place in	this document.	The maps ca	n be viewed
in p	df or in GIS.							

# **APPENDIX B**

# ILLICIT DISCHARGE DETECTION AND ELIMINATION FORMS:

- Dry-Weather Outfall Inspection Form
- Fort Liberty Spill Report Form
- Facility Engineering Work Request FB Form 4283

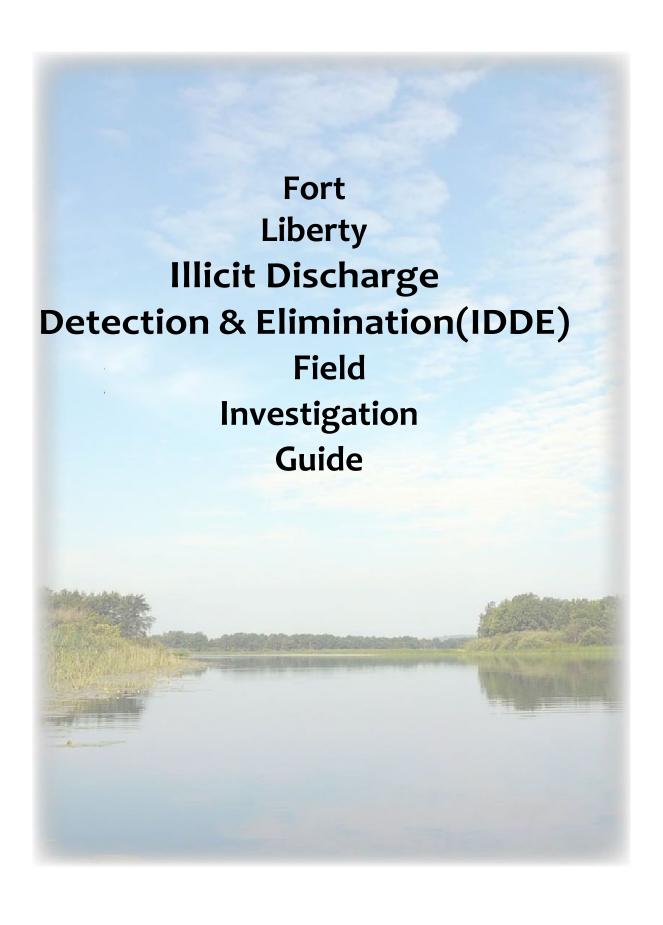
# Dry Weather Outfall Inspection

Inspector Name:		Inspection Date:
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Outfall Type:		
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■ Scouring ■ Sediment build-up ■ Garbage entrapment ■ Entrapment of decaying vegitation	Drainage Sour	ce: c. Odor:
Illicit discharges	b. Clarity:	d. Staining:
Identify maintanence needs:  Obstruction removal or cleaning Erosion stabilization Apron not intact Visible joints not intact Pitting/rusting/holes present Concrete spalling present Road distress above pipe present	Rate each outfal replacement or Comments:	ll's need for repair,

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4c. UNIT OR ACTIVITY			
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5b. SPILL RESPONSE EQUIPMENT			
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# APPENDIX C ILLICIT DISCHARGE DETECTION & ELIMINATION FIELD INVESTIGATION GUIDE



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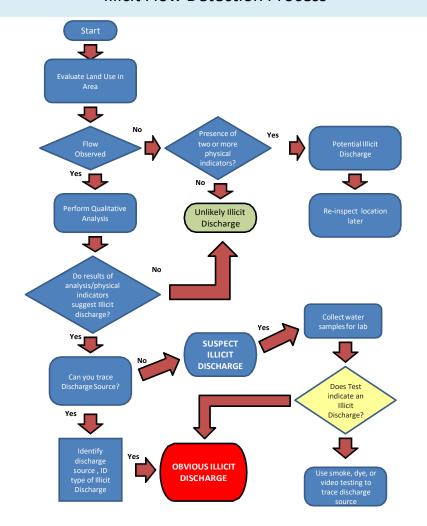
# Preparing for a Field Inspection

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Field Inspection Checklist
```

- Monitoring test kits
- Test meters (pH, turbidity) Protective gloves Safety goggles, hard hat, closed-toed shoes and/or rubber boots and all required PPE.
- Bottle of deionized or distilled water for rinsing equipment after sampling
- Extendable pole with attached sampling
- cup Paper towels or rags
- Field sheets/forms
- Storm drain, stream, and street
- maps. Tape measure or ruler
- Camera, clipboard, flashlight
- √Cell phone
- "Handheld GPS unit
- Contact information of police and emergency response personnel in case of spills or active illicit discharges

v

#### **Illicit Flow Detection Process**



Land Use by Sector	Generating Sites	Discharge-Producing Activities
Residential (on post housing)	<ul><li>Apartments</li><li>Multi-family</li><li>Single family</li><li>Temporary Billeting</li></ul>	<ul> <li>Car washing</li> <li>Driveway cleaning</li> <li>Dumping/spills</li> <li>Equipment washdowns</li> <li>Lawn/landscape watering</li> <li>Sanitary sewer system</li> <li>Swimming pool discharges</li> </ul>
Commercial	Campgrounds/RV parks Car rentals Car washes Commercial laundry/dry cleaning Gas stations/auto repair Nurseries and garden centers Oil change shops Restaurants Swimming pools	Building/parking lot maintenance (power washing)     Dumping/spills     Landscaping/grounds care     Outdoor material storage     Vehicle fueling/washing     Vehicle maintenance/repair     Grease trap/equipment cleaning
Industrial	<ul> <li>Recyclers/scrap yards</li> <li>Construction vehicle washouts</li> <li>Distribution centers</li> <li>Dining facility</li> <li>Garbage truck washouts</li> <li>Metal plating operations</li> <li>Forestry operations</li> <li>Petroleum storage</li> <li>Printing</li> </ul>	Oil Water separator Maint.  Industrial process water or rinse water  Loading and unloading area washdowns  Outdoor material storage  Vehicle fueling/washing  Vehicle maintenance/repair  Grease trap/equipment cleaning
Institutional	<ul> <li>Cemeteries</li> <li>Churches</li> <li>Office buildings</li> <li>Training facilities</li> <li>Hospitals</li> <li>Schools</li> </ul>	Building/parking lot maintenance (power washing)     Dumping/spills     Landscaping/grounds care

Municipal	<ul> <li>Airfields</li> <li>Animal shelters</li> <li>Landfills</li> <li>Maintenance depots</li> <li>Municipal fleet storage areas</li> <li>Public works yards</li> <li>Streets and highways</li> <li>Borough Pit</li> </ul>	Building/parking lot maintenance (power washing) Dumping/spills Landscaping/grounds care Outdoor materials storage Road maintenance Spill prevention/response Vehicle fueling/washing Vehicle maintenance/repair
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#### **Physical Indicators**

Physical indicators are those that can be observed or sensed during dry weather field screenings and routine inspections. They can include the presence of unusual flow, color, odor, turbidity, and floatable liquids and solids.

#### **Flow**

Record whether there is a presence or absence of flow at the site.

Note: to measure flow, mark off a fixed flow length (about five feet) and drop a floatable object (i.e., stick, ping-pong ball, or cork) into the flow. Record the time it takes the object to travel the fixed length then calculate velocity (feet per second or ft/s).

#### Color

Collect a sample of the discharge in a clear sampling bottle.

Note: do not try to assess water color by looking directly into the waterway. Water depth, substrate composition, aquatic plants, and sky conditions can all influence your perception of the water color.

#### Field Investigation Example



Concrete wash Illicit discharge

	Color	Possible Sources
1	Tan to light brown	<ul> <li>Suspended sediments common after rainfall</li> <li>Runoff from construction, roads, agricultural/range land</li> <li>Soil erosion caused by vegetation removal</li> </ul>
2	Pea green, bright green, yellow, brown, brown- green, brown-yellow, blue-green	<ul> <li>Algae or plankton bloom - color depends on type of algae or plankton</li> <li>Sewage, fertilizer runoff, vehicle wash water</li> </ul>
3	Tea/coffee	Dissolved or decaying organic matter from soil or leaves. Commonly associated with tree overhangs, woodlands, or swampy areas
4	Milky white	<ul> <li>Paint, lime, milk, grease, concrete, swimming pool filter backwash</li> </ul>
5	Milky or dirty dishwater gray	Gray water or wastewater, musty odor present
6	Milky gray-black	Raw sewage discharge or other oxygen- demanding waste (rotten egg or hydrogen sulfide odor may be present)
7	Clear black	Caused from turnover of oxygen- depleted waters or sulfuric acid spill
8	Dark red, purple, blue, black	Fabric dyes, inks from paper and cardboard manufacturers
9	Orange-red	<ul> <li>Leachate from iron deposits</li> <li>Deposits on stream beds often associated with oil well operations (check for petroleum odor)</li> </ul>
10	White crusty deposits	Common in dry/arid areas or during periods of low rainfall where evaporation of water leaves behind salt deposits

11	Other (describe)	
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#### Odor

Fill sample bottle at least halfway with sample water and hold about six inches away from your nose. Use your free hand to fan the scent to your nose.

Note: never inhale the air directly off the top of a sample as many potential contaminants are harmful to nasal membranes and lung tissue. Make sure that the origin of the odor is at the outfall. Sometimes shrubs, trash, or even spray paint used to mark the outfalls can confuse the nose.

	Odor	General Causes
1	Rotten eggs/hydrogen sulfide (septic)	Raw sewage, decomposing organic matter, lack of oxygen
2	Chlorine	<ul> <li>Wastewater treatment plant discharges, swimming pool overflow, industrial discharges</li> </ul>
3	Sharp, pungent odor	Chemicals or pesticides
4	Musty <sup>odor</sup>	Presence of raw or partially treated sewage, livestock waste
5	Gasoline, petroleum	Industrial discharge, illegal dumping of wastes, waste water
6	Sweet, fruity	Commercial wash water,     wastewater
7	Other (describe)	

# Field Investigation Example

Suspicious colored water and yard waste flowing into storm drain



#### **Turbidity**

#### **Causes of High Turbidity**

- Soil erosion
- <sub>o</sub> Runoff from a rain event
- ·Algae blooms
- Bottom sediment disturbances by aquatic life
- 。Construction or dredging

If highly turbid (cloudy) water is observed, make sure to look upstream and downstream to see if anything around the site has changed since the last field inspection. An illicit discharge may be present if a highly turbid flow exists.

#### Field Investigation Example

Highly Turbid Construction Runoff



Surface Scum	General Causes
Tan <sup>foam</sup>	Usually associated with high flow or wave action; wind action plus flow churns water containing organic materials causing harmless foam; produces small patches to very large clumps.
White foam	Sometimes patchy or covering wide area around wastewater outfall, thin and billowy, mostly due to soap.
Yellow, brown, black film	Pine, cedar, and oak pollens form film on surface, especially in ponds, backwater areas, or slow moving water in streams.
Rainbow <sup>film</sup>	If a swirling pattern, then likely oil or other fuel type. Check for petroleum odor. If sheet-like and cracks if disturbed, then it is natural.

# Examples

# Sewage Discharge







Bacteria growth in outfall

# Natural Sheen vs. Synthetic Sheen



Natural sheen



Synthetic sheen

#### Foam and Suds





Low severity, naturally occurring suds

High severity suds

Sewage fungus photo courtesy of Wayne County Illicit Discharge Elimination Program, natural sheen image courtesy of NOAA's National Ocean Service, synthetic sheen photo courtesy of Jane Thomas, IAN Image Library (ian.umces.edu/imagelibrary/), all others courtesy of the Center for Watershed Protection.

#### **Outfall Condition**

The physical condition of an outfall can provide strong clues about the history of discharges passing through it.

Over time, intermittent discharges can cause outfall damage or leave behind remnants in the form of deposits or stains which can help an inspector determine what type of discharge traveled through the area.

Field inspectors should document that a deposit or stain is present even if there is no dry weather discharge observed.

Condition	Things to Consider
Structural Damage	Cracked, deteriorated concrete or peeling surface paint at an outfall usually indicates the presence of contaminated discharges
	Contaminants causing this type of damage are usually very acidic or basic (alkaline) and originate from industrial processes
Deposits and Stains (Residues)	Staining may be any color but is characteristically different from the outfall
	Residues can contain fragments of floatable substances
	Gray-white deposits can be from illegal dumping of concrete truck washouts
	Crystalline powder can indicate the discharge of fertilizer wastes



Potential outfall issue with presence of at least one physical indicator – paint stains

## **Outfall Classifications**

Water Management Branch has adopted four outfall classifications categorizing outfalls based on their characteristics and likelihood to pose a problem. Use these classifications to record the state of the outfall at the time of inspection.

	Classification	Description
1	Obvious/Duh?	Flowing outfall where there is an illicit discharge that does not require sample collection for confirmation; exhibits physical indicators and field-measured chemical indicators
2	iPotentiai	Flowing outfall with high severity on one or more physical indicators
3		Flowing or non-flowing outfall with presence of two or more physical indicators
4	Unlikely	Non-flowing outfall with no physical indicators of an illicit discharge

## Field Investigation Example

## Oil discharge found at outfall traced back to leaking Oil Drums



## **Biological Indicators**

Biological indicators include things that live and grow. The biological indicators that should be investigated during a field inspection are: the condition of the surrounding vegetation, algae growth, amount and types of bacteria, fish kills, and the presence or absence of certain aquatic organisms.

Biological Indicators	Things to Consider
Vegetation	Seasonal and recent weather conditions should be considered to accurately determine if the vegetation near an outfall is normal or abnormal. Increased or inhibited plant growth, as well as dead and decaying plants, near stormwater outfalls is often a sign of pollution.
Algae	An overabundance of nutrients can cause elevated plant growth or algae blooms. During an algae bloom, the water body typically becomes a peagreen color; however, the color depends on the dominant species of algae present.
Bacteria	The amount and types of bacteria present can be extremely significant. Bacteria can be associated with inadequately treated sewage, sanitary sewer overflows, improperly managed waste from livestock, failing septic systems, and pets and wildlife (e.g., birds nesting under a bridge). Although some types of bacteria are visible to the naked eye – such as sewage fungus or natural sheen, counts for indicators like <i>E. coli</i> are done in the laboratory.
Fish Kills	Fish kills can be caused by a wide variety of factors including a decrease in dissolved oxygen, infectious disease, a rise in water temperature, toxic algae blooms, parasites, and bacterial or viral infections. The loss of a single fish is typically a natural occurrence and is not usually a cause for concern.
Presence or Absence of Aquatic Life	The presence or absence of aquatic life in and around a water body can be an indicator of the health of the water body. Field inspectors should document whether or not they observe aquatic life at the time of inspection.

## Tracing the Source of an Illicit Discharge

Once an illicit discharge has been found, the next step is to trace and remove the source of the discharge.

#### Storm Drain Network Investigations

This technique involves:

- Inspecting manholes in a storm drain system by using chemical and physical indicators to isolate discharges to specific segments of the network.
- Identifying where to inspect the network and what indicators to use to determine if a manhole is clean or contaminated.
- Developing a strategic plan for inspecting the pipe network.

Option 1: Move up the trunk	Option 2: Split the storm drain network
Work progressively up the trunk from the outfall and test manholes along the way.	Split trunk into equal segments and test manholes at strategic junction in the storm drain system
<ul> <li>Start with the manhole closest to the outfall</li> <li>Goal is to isolate discharge between two storm drain manholes</li> </ul>	Particularly suited to larger, more complex drainage areas since it can limit total number of manholes to inspect
Goal is to isolate discharge between two storm drain manholes	inspect



Photo demonstrating manhole safety

Note: manholes and confined spaces should only be entered by properly trained and equipped personnel. Check with your supervisor for the proper safety procedures.

## **On-Site Investigations**

There are three basic approaches to on-site investigations that will help determine the actual source of an illicit discharge: dye, video, and smoke testing. Note: these techniques should be used when conducting a follow-up investigation once an illicit discharge has been found. Refer to the DPW/WMB IDDE SOP for more detailed information on how to use these techniques.

Techniques	Best Applications	Limitations
Dye testing	<ul> <li>Discharge limited to very small drainage area</li> <li>Commercial or industrial land uses</li> </ul>	<ul> <li>May be difficult to gain access to some facilities</li> <li>May require prior notice</li> </ul>
Video testing	<ul> <li>Continuous discharge</li> <li>Discharge limited to a single pipe segment</li> <li>Entities with their own equipment for other investigations (water supply or sewer pipes)</li> </ul>	<ul> <li>Relatively expensive equipment</li> <li>Cannot capture non- flowing discharges</li> <li>Often cannot capture discharges from submerged pipes</li> </ul>
Smoke testing	Cross-connection with the sanitary sewer     Identifying other underground sources caused by damage to the storm drain	Poor notification to public can cause alarm     Cannot detect all illicit discharges





 $\label{thm:prop} \mbox{ Dye testing example on the left, video on the right. Both photos courtesy of the Center for Watershed Protection}$ 

#### **PLANTS TO AVOID**

## **Poison Ivy**

- -Common in North Carolina and Ft Liberty region
- Leaves can be smooth, toothed, or deeply notched
- New leaves are red in spring and green in summer
- Fall leaves are yellow, orange, and red
- ·Produces small, greenish-white clusters of flowers in spring and white, waxy berry-like fruits in fall
- $\cdot \text{Can}$  be a climbing vine, a shrub, or even a small tree Poison Ivy Fall



Poison Ivy - Spring





Poison Ivy - Summer

Photos courtesy of www.poison-ivy.org



#### **Poison Sumac**

- . Common in North Carolina, found in wet, wooded areas
- . Leaves are smooth and arranged in pairs of three to six with a single leaf at the terminal end of the stem
- Hanging fruits are whitish-green; non-poisonous varieties have red, upright fruits and jagged leaves

#### **Poison Oak**

- Oak-like leaves usually in clusters of three
- Can have yellow berries
- Grows as a low shrub in sandy soils or as a climbing vine
- Sprouting poison oak leaves can look very much like poison ivy



## **Venomous Snakes**

#### EASTERN CORAL SNAKE

A moderately slender, medium-sized, brightly colored snake with a body pattern of red, yellow, and black rings.

Red rings include conspicuous black patches and the tail

displays wide black rings separated by narrow yellow rings. Total length 18–36 inches. The rhyme "red on yellow, kill a fellow; red on black,

venom lack" is a useful reminder that red and yellow bands touch each other on the Eastern Coral Snake. Red

and black bands are in contact on the Scarlet



#### COPPERHEAD

#### DESCRIPTION

A large, moderately stout-bodied snake with brown or chestnut hourglass-shaped markings on a brown, tan, or pinkish background. The belly is light brown, yellowish, or pinkish and may be stippled or mottled with gray or black. The top of the head has large symmetrical plates.

Juveniles differ from adults by having a greenish-yellow tail tip, and from young Cottonmouths by not having a conspicuous dark bar extending from eye to angle of the jaw.

Total length 24-46 inches.



#### **PIGMY RATTLESNAKE**

A small, moderately slender-bodied, grayish, brownish, or reddish rattlesnake with narrow, light-margined, dark brown blotches. Often a narrow, reddish middorsal stripe is present. A pair of wavy brown bands run from the top of the head to the neck. On the side of the head, a dark brown or red-brown stripe bordered below by a narrow light line extends from the eye to the angle of the jaw. There are large symmetrical plates on top of the head. The belly is whitish or reddish with dark spots. There is a tiny rattle on the tip of the tail. Unlike the adult, the juvenile is lighter, has a yellow tail tip, and possesses a small inconspicuous "button" instead of a tiny rattle.



## Venomous snakes

#### TIMBER RATTLESNAKE

A large, heavy-bodied, pinkish to blackish rattlesnake with dark, light-centered blotches and crossbands. The tail of the adult is black. The belly is yellowish, pinkish, or cream with gray or black stippling. There is a prominent rattle or enlarged "button" on the tip of the tail. Total length 36–68 inches. Timber Rattlesnakes in the Coastal Plain and most of

the Piedmont generally are larger and more vividly pat terned than those from the Mountains. Some authorities consider these eastern populations to represent a subspecies known as the "canebrake" rattlesnake.



#### COTTONMOUTH

A large, heavy-bodied, olive, brown, or blackish semiaquatic snake with wide, dark-margined, light-centered crossbands. The pattern can be faint in adults and is virtually absent from some large specimens. The head has a dark bar extending from the eye to the angle of the jaw. The belly is light and mottled with gray or black. The adult tail is black. Large symmetrical plates cover the top of the head. More colorful than the adult, the juvenile is tan with a conspicuous banded pattern. The tail tip of a juvenile is greenish-yellow.



## **Venomous Spiders**

## **Black Widow Spider**

The black widow spider, Lactrodectus mactans, is probably the most widely recognized of the dangerously poisonous spiders found in North Carolina. Most people are familiar with the large, shiny black body and red "hourglass" markings on the underside of the abdomen (see picture), but it is important to note that the coloration and markings are only found on adult females. Young black widow spiders are tan-to-gray in color and have orange and white stripes on their abdomens. These marks may remain visible on adults. The female has a body length of about 1/2", with a total length (including legs) of about 11/2". The male spider is smaller than the female and, like young spiders, has red and white markings on the back of its abdomen. Black widow spiders are found in protected places, such as under rocks, wooden boards and in dense plant growth. They frequently nest in electrical, water and telephone equipment boxes outdoors.



## **Brown Recluse Spider**

Brown Recluse adults are about \(^1/4-^1/2\) inch in length. The familiar dark violin or fiddle-shaped mark on the top of the cephalothorax (see picture). The "neck" of the fiddle points toward the rear of the body. Outdoors, they are most common under rocks, debris, wood piles, etc. Indoors, common hiding places are bathrooms, attics, cellars and storage areas.



FORT LIBERTY ORGANIZATIONS	PHONE NUMBER
Fire Department	911 or 396-3015
Environmental Compliance Branch	907-8441 x 7146/7441
Hazardous Waste Office	396-2141
Water Management Section	908-5286/907-5320
PAO Representative	396-5600
Emergency Operations Center	396-3300/5713
Wildlife Branch (Fish Kills)	396-7506

This guidance manual was developed by DPW Water

Management Branch. It was adapted from a compilation of several local, state, and national resources and is intended to serve as guidance for Ft. Liberty personnel seeking to identify and eliminate illicit discharges and connections to the municipal separate storm sewer systems (MS4).

For more information on Illicit Discharge Detection and Elimination, contact the Directorate of Public works Water Management Section 907-5320 or (910) 908-5286.

# APPENDIX D SPILL RESPONSE AND REPORTING PROCEDURES

## SPILL RESPONSE PROCEDURES

In the event of a spill, individuals must take the following actions:

- 1. Determine what type of material has been spilled.
- 2. Weigh all safety factors; check SDS to determine health and physical hazards.
- 3. If it is not safe to begin spill response or if the spill too large for you to contain:
  - Call the Fort Bragg Fire Department at 911(or from a cell phone, 432-0911).
  - Notify supervisor.
  - Wait for assistance.
- 4. If safe for you to begin spill response:
  - Ensure your personnel have the proper personal protective equipment.
  - Contain the spill (plug leaks or set container upright).
  - Use spill absorbent or appropriate spill pads/booms to contain a spill.
  - Sweep up absorbent and properly dispose of contaminated pads/booms.
  - > Turn in contaminated absorbent/materials to the DPW Hazardous Waste Office.
- 5. In the event of a fire:
  - Call 911 immediately (or from a cell phone, 432-0911).
  - Evacuate the area.
  - Notify supervisor.
  - Provide a copy of hazardous material inventory to fire fighters upon arrival.
  - ➤ Do not attempt to put out chemical fires conventional fire extinguishers may make the situation worse.
    - ➤ Any size spill of fuel, solvents, oxidizers, acids, highly flammable materials, or any other hazardous material spill over FIVE gallons requires immediate notification of the Fire Department (911or from cell phone, 432-0911) and DPW (396-2823/396-2141).
    - ➤ Contact the Fire Department IMMEDIATELY if anything enters storm drains, the sewer system or any other waterway (creek, lake, pond, ditch, etc.) during a spill.
    - ➤ Never attempt to clean a spill without using the proper protective gear (gloves, goggles, etc.).
    - > DPW must verify all spills over five gallons, even if cleaned up by unit.
    - ➤ NEVER conceal spills from DPW Failing to report spills may result in fines from NCDEQ and EPA as well as civil/criminal penalties for willful neglect.

# What is the correct spill pad for the job?

The rule of thumb is to always have plenty of spill supplies on hand. The trick is to make sure the spill supplies on hand are specific to the spill material. Spill pads are color coded to make them easy to identify in an emergency. For spills of fuel or oils, use white pads. For spills involving water based hazardous materials such as anti-freeze, use grey pads. For spills involving corrosives, use pink pads. All used absorbent pads must be stored properly until turned in to the HWRO at 396-2141.

# APPENDIX E SANITARY SEWER OVERFLOW (SSO) SOP



## Sanitary Sewer Overflow (SSO) Standard Operating Procedure

#### **PURPOSE**

To effectively respond to and remediate sanitary sewer overflows to protect public health and the environment and to comply with all regulatory requirements

Sanitary sewer overflows can be caused by numerous events and/or obstructions including substantial rain events, root intrusion, grease buildup, etc. The best practice to eliminate or minimize SSOs is through preventive maintenance. If an SSO does occur, it is the responsibility of the utility to respond as quickly as possible to mitigate the SSO and reduce and remove the hazard.

#### **Definitions**

**Sanitary Sewer Overflow** – Discharges of raw sewage from municipal sanitary sewer systems or from privately owned sewer collection systems. SSOs can release untreated sewage into basements or out of manholes and onto city streets, playgrounds, and into streams before it can reach a treatment facility. SSOs are often caused by blockages in sewer lines and breaks in the sewer lines.

#### Waters of the United States – As defined by the Clean Water Act, 40 CFR 230.3(s)

All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

- 1. All interstate waters including interstate wetlands;
- 2. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
  - (I) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
  - (ii)(From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - (iii) Which are used or could be used for industrial purposes by industries in interstate commerce;
- 3. All impoundments of waters otherwise defined as waters of the United States under this definition;
- 4. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
- 5. The territorial sea;
- 6. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

#### **REFERENCES**

- A. 40 Code of Federal Regulations (CFR) Part 122-124. The Clean Water Act, 1969.
- B. North Carolina General Statute 143.215.1
- C. Title 15A, North Carolina Administrative Code, Subchapter 2H .0100-.0200
- D. NC DENR Wastewater Collection System Permit # WQCS00029.

#### SCOPE

This procedure applies to all Old North Utility Services, Inc. (ONUS) employees that may deal with SSOs. At a minimum, these procedures will be reviewed on an annual basis or whenever revised guidance from state or federal authorities dictates a revision is necessary.

#### **RESPONSE TIME REQUIREMENTS**

Utility Outage or Spill Response Time: Upon notification of a spill or utility outage in the cantonment area, ONUS shall respond and take action to safeguard life and the property within the following time limits:

Spill Occurs:	Response Time
Normal Duty Hours (0700 – 1700)	0.5 Hours
Off-Duty Hours (1700 – 0700)	1 Hour
Remote Areas, On-Duty (> miles outside cantonment)	1.5 Hours
Remote Areas, Off Duty	2 Hours

## **Procedure**

#### 1. Initial Service Call

- a) Calls received during normal business hours (07:30-16:30) shall be documented by office personnel and be forwarded to the supervising utility worker.
- b) When a report of an SSO is received, the supervising utility worker should be notified immediately and advised of the location of the spill.
- c) All required service call information should be documented.

## 2. Initial Response

- a) The first responder should respond immediately and confirm the SSO.
- b) Once SSO is confirmed, implement all necessary safety measures including road closures, barricading area, etc.
- c) Contain spill as much as possible. (See Containment Procedures)
- d) The first responder should observe and document the estimated volume of the SSO.
- e) If any wastewater reaches the surface waters of the state, poses a threat to human health or the environment, or exceeds 1,000 gallons, it must be reported to North Carolina Department of Environment and Natural Resources (NCDENR) within 24 hours. (See SSO Affecting Waters of the State and SSO Reporting Procedures)
- f) Take photographs of area for documentation.
- g) Determine corrective actions to be taken and execute.

#### 3. Implementation of Corrective Actions

- a) Determine cause of SSO and restore the flow as soon as possible.
- b) Check downstream manhole for flow and accessibility.
- c) Mobilize vacuum/combo truck or jetter trailer.
- d) Try to break loose obstruction from downstream manhole.
- e) Should conditions warrant and responders are unable to restore the flow, the supervisor shall contact qualified, emergency subcontractors (list attached).
- f) If flow cannot be restored, bypass pumping may need to be installed and further planning will be needed to correct the problem.

#### 4. Clean-up

- a) If flow cannot be restored, bypass pumping may need to be installed and further planning will be needed to correct the problem.
- b) Apply lime to all affected areas.
- c) Take photographs of area for documentation.
- d) Provide notification to regulatory agency and local environmental office of completed corrective actions and clean-up.
- e) If the SSO was determined to be greater than 15,000 gallons or have the potential to affect public health, a public notification must be executed.

### 5. Follow-up Once Flow is Restored

- a) Schedule wastewater line to be cleaned and visually inspected with CCTV equipment.
- b) Document inspection and determine if further action is necessary. If so, schedule as needed.

#### **CONTAINMENT**

Immediately upon SSO discovery, ONUS employees shall be to assess the situation and mobilize resources necessary to remove any blockage, contain the SSO, and stabilize the overflow condition. **Notification should be made to the ORC at this time.** As soon as the extent of the SSO has been determined, a containment berm or a dam should be established at the lower edge of the SSO or at an area that meets the needs of containment and clean up operations. The containment dam should be large enough to prevent breaching in dry weather conditions.

#### SPILLS INVOLVING ASPHALT OR CONCRETE

- 1. Set up containment at or near any threatened storm drainage system; every attempt should be made to prevent the spill from entering the drainage structures.
- 2. Spread dry sand or absorbent material to a depth of 1 inch. Let stand for one hour and sweep up. If moisture or grease is still present, repeat.
- 3. After removing the contaminated material, wash down the area with high water pressure and a mild bleach solution and then pump residue back into the sewer system. Transport wet sand to the Sampson County Landfill for disposal.

If the spill enters a storm drainage structure, a Reportable Spill has occurred and therefore a Spill Report should be filed with NC DWQ and treated as a SSO affecting Waters of the State. Reported volumes would include the initial estimated spill + plus flush water - minus the calculated amount removed prior to storm drain entrance.

#### FORCE MAIN OR INACCESSIBLE GRAVITY SEWER SPILL

In the event a spill occurs at a pump station with no bypass capability or at a force main or gravity sewer where no access to a dump point exists, pump and haul or bypass operations shall be considered. Where pump and haul operations are deemed the best solution, wastewater will be collected from the closest tanker access point for continuous loading operations. Consideration should be made for traffic control, noise, access, etc. A Pump & Haul Record Form must be completed for each load. If ONUS does not have the internal capabilities of containing the SSO, an outside contractor shall be used. See below for a list of pump providers and pump and haul tanker services.

#### 24 hour Pump Service Providers

Godwin Pumps Phone # 919-795-9020
 MSP Rental Phone # 919-788-8181

## 24 hour Pump and Haul Tanker Services

Total Environmental
 Hydrostructures
 Phone# 919-708-7373
 Phone# 919-542-5002

3. Porter Scientific Phone # 910-785-5723 (Josh Locklear)

910-827-1767 (Freda)

#### SPILLS INVOLVING ASPHALT OR CONCRETE

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### SSOs AFFECTING WATERS OF THE STATE

- Take conductivity and dissolved oxygen readings of the receiving stream to determine the proper placement of a
  dam within the intervals on the Conductivity Readings Form. While taking the conductivity readings, be sure to
  notate them on the Spill & Conductivity Reporting Form. The following items shall be considered when
  determining dam location:
  - a. Proximity to manhole
  - b. Accessible to jet/vacuum truck
  - c. Lowest measured conductivity reading
- 2. Build the dam using dirt that is capable of handling creek and hydrant flow without breaching during dry weather conditions. Position two pumps at the dam capable of handling creek and hydrant flow with one pump in use and the second as backup. Have a backhoe at the site with additional material at all times so that the earthen dam can be rebuilt if a breach does occur. Pump SSO release from the dam into the manhole.
- 3. Put up warning tape, "Danger Do Not Enter" from the SSO site to the pump site on both sides of the creek in populated areas. In unpopulated areas restrict access where there is any chance of human contact with the SSO.
- 4. Flush the stream with de-chlorinated hydrant water to remove wastewater from creek. Continue to pump and flush the stream until the conductivity readings are equivalent to the higher of either upstream or hydrant water

<sup>\*\*</sup>See attached Pump and Haul Record Form

readings. Make sure that all readings taken during cleanup are recorded on the Spill & Conductivity Reporting Form and taken within the intervals listed on the form.

- 5. If there is rip-rap in the creek, wash down with high water pressure until there is no noticeable waste residue remaining on or within the rip-rap structure.
- 6. If the creek flows into a body of water used for recreation and/or drinking water supply, notify the affected officials as soon as possible.
- 7. Continue periodic monitoring of conductivity and Dissolved Oxygen readings. All additional readings should be notated on the Spill and Conductivity Reporting Form. Take an upstream and downstream fecal coliform every 24 hours as needed until the waterway is restored to pre-event condition.

#### SSO NOT REACHING WATERS OF THE STATE

- 1. In open areas spread powdered lime heavily over the spill site, till into the ground and then repeat the procedure again but not within 24 hours of predicted rain fall event.
- 2. Seed the disturbed area and place straw over the tilled area. Soil may need to be removed and replaced with clean fill material for a large spill where the ground has become saturated.

#### **SSO REPORTING PROCEDURES**

- 1. Before any SSO is reported to the state, the ORC or the Backup ORC must visit and evaluate the spill site within 24 hours. Once evaluated, a panel consisting of O&M and EH&S shall discuss the spill, determine estimated volumes and determine causes before calling the Division within the 24 hour time frame.
- 2. Upon discovery of a possible SSO, ONUS employees shall notify the Collection ORC, Back up ORC, Superintendent, Assistant Superintendent, or the Environmental Health and Safety Supervisor.

Name	Title	Number
Corey Locklear	ORC	910-237-8729
Tim Smith	Back-Up ORC	910-973-1918
Adam Loughman	Superintendent	910-237-8695
Walter Willoughby	Assistant Superintendent	910-709-7565
Amanda Owens	EHS Supervisor	910-237-8740

- 3. The individuals listed above will be the Point of Contact between ONUS and the NC DWQ, Ft. Bragg or the Division of Emergency Management on SSO matters. These individuals will report overflows from any sewer line or pump station, or the bypass of any wastewater treatment system or any component thereof. If Media communications become necessary, Brannon Richards will be the POC for all Media questions.
- 4. Reportable spills must be called into NC DWQ (910-433-3300) within 24 hours of first knowledge of discharge. Hughie White or Paul Rawls with the Fayetteville Regional Office should be contacted during normal business hours. The date, time, incident number and person contacted must be documented on the Spill Report Form.
- 5. During weekends and holidays when DWQ cannot be reached, The Division of Emergency Management must be called at 1-800-858-0368. Spill Report is documented the same way as during normal business hours. Upon arriving to work on the first business day after the spill, DWQ must be contacted and given the reported spill incident number.
- 6. All spills must be reported to Russell Castillo, ONUS COR, at 910-303-0602. Camp MacKall spills also need to be reported to RB Gardner 910-432-3156.

- 7. For every spill that occurs, the responsible employee cleaning up the spill will be responsible for filling out the ONUS Spill Incident Report Form and turning it in to the ORC.
- 8. The ORC/Backup ORC should be notified immediately so they have an opportunity to visually see the spill. This will allow the ORC to provide better estimated volumes. They are also required by the Collection System Permit to visit the site.
- 9. The Environmental Health and Safety Supervisor must fill out the State approved Sanitary Sewer Overflow Form. A legible copy will be faxed within five (5) days to NCDENR, Fayetteville Regional Office (910-486-0700) and the Fort Bragg COR (910-396-9666). If the Environmental Health and Safety Supervisor is unavailable, the ORC will ensure that the necessary paperwork is completed. A copy of the report shall be filed in the Spill Report Binder for ONUS's records. Records of spills, including those that are not required to be reported will be maintained for at least three (3) years and will be made available to NCDENR staff upon request.

## **Summary of Reporting Requirements**

SSO Event	Reporting Requirements
All Discharges	Immediately report to ORC
Discharge >1,000 gallons	Report to state within 24 hours, Spill Report faxed within 5 days
Discharge to Waters of the State,	Report to state within 24 hours, Spill Report faxed within 5 days
including storm drains	Report to DPW-WMB within 24 hours.
Discharge >1,000 gal to Surface Water	1. Report to state within 24 hours, Spill Report faxed within 5 days
	2. Press release within 48 hours of first knowledge to the Paraglide
	Newspaper
Discharge >15,000 gal to Surface Water	1. Report to state within 24 hours, Spill Report faxed within 5 days
	2. Press release within 48 hours of first knowledge to the Paraglide
	Newspaper
	3. Certified public notice within 10 days and proof shall be
	provided to the Division within 30 days

## **AVAILABLE MATERIALS FOR SSO**

Portable Generators

Drop Cords

Portable Electric Lights

Electric Submersible Pumps

Sewer Jet

Vacuum Truck

Tractor Backhoe

Dump Trucks

Gas Mud Pumps Flex Suction/Discharge Hose

Powdered Limestone Tiller

Fire Hose Sections Dechlorination tablets

## **Water Quality Stream Monitoring Devices**

Dissolved Oxygen/pH/Conductivity Meter

Make: HACH Model: HQ40d

Dissolved Oxygen-LCD readout, battery operated

Make: Yellow Springs Instrument (YSI)

Model: 85

At the present, ONUS does not have a certification for field analysis of pH, DO, or conductivity.

## **SSO TELEPHONE CONTACT NUMBERS**

NC DENR DWQ (/Paul Rawls)	910-433-3300
NC Division of Emergency Management	800-858-0368
ONUS	910-495-1311
ONUS Primary	910-237-8687
ONUS Secondary	910-237-8689
Corey Locklear (ORC)	910-237-8729
Tim Smith (Back-up ORC)	910-973-1918
Adam Loughman (Superintendent)	910-237-8695
Walter Willoughby (Assistant Superintendent)	910-910-709-7565
Amanda Owens (EHS Supervisor)	910-237-8740
Brannon Richards (Utility Manager)	910-723-5749
Russell Castillo (FB COR)	910-303-0602
Randy Fredericks (FB QA/WC)	910-309-7869
Jim Duncan (FB WMB)	910-908-5881
Shannon Weston (FB Environmental)	910-315-4238
Audrey Oxendine (FB Environmental)	910-432-8464
FB Preventive Medicine	910-396-5882
Fort Bragg Wastewater Treatment Plant	910-436-2836
Moore County Public Utilities	910-947-6315
Moore County Wastewater Plant	910-281-3146
Southern Pines Water Treatment Plant	910-692-1983 910-281-4719
Paraglide (Fort Bragg News Paper) <a href="mailto:braggparaglide@conus.army.mil">braggparaglide@conus.army.mil</a>	910-396-6991 or 6817 910-396-2178 Fax
Camp Mackall Staff Duty NCO	910-432-5121 910-396-8633

910-303-4703	3
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Security 910-390	6-1745
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RB Gardner 910-432-3156 RB (Home) 910-281-0772

COE 910-432-5124

## **Picerne Military Housing**

Colleen Franceschini, Assistant Director of Maintenance Operations 910-764-4532

Normady/Bastogne Gables	436-3125	27 Hunt St.
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Jerome ReedMaintenance Supervisor824-0980Heather MullinsManager824-4304

Hammond Hills 436-4066 70 Bastogne

Claude Jordon Maintenance Supervisor 824-0985 Josephine Aurenius Manager 824-0094

Nijmegen 436-4743 2 Douve Place

Desi Blanks Maintenance Supervisor 824-0982 Brenda Anderson Manager 824-1326

Ste Mere Eglise 497-0510 7905 Sicily Drive

Vickie JoynerMaintenance Supervisor824-0987Dolly FenstermacherManager824-4612

Corregidor/Bougainville 497-6255 301 N. Dougherty

Germel Hoffler Maintenance Supervisor 824-4602 Tonia Barnes Manager 824-4634

Casablanca/AnzioAcres 495-0120 625 South Lucas

Billy Dixon Maintenance Supervisor 824-0986 Sandy Martin Manager 824-4631

Ardennes/Bataan 436-6054 101 Varsity Drive

Darrin NunneryMaintenance Supervisor824-0988Kim HannaAssistant Manager824-1606

Biazza Ridge 487-0244 101 Graham Place

Donnie Smith Maintenance Supervisor 824-0983 Barbara Ording Manager 824-4635

Pope 764-5010 4 Packet Circle

Danny Debresen Maintenance Supervisor 824-1550 Craig Kennedy Manager 824-4606

Linden Oaks 764-5000 1 Hilltopper Drive

Mike West Maintenance Supervisor 309-4007

William Booth Manager 824-4615



## WASTEWATER SPILL REPORTED AT FORT BRAGG

FORT BRAGG, NC, DATE – Fort Bragg's wastewater collection system experienced a wastewater overflow on **DATE**, at approximately **TIME**.

According to Old North Utility Services, Inc. (ONUS), the spill of an estimated **XXXX** gallons occurred when a contractor working on **LOCATION** struck a force main carrying the wastewater, which flowed into a storm drain. The incident lasted for approximately \_\_ hours.

The company found no evidence that the spill impacted surface water in the Cape Fear River Basin. However, as required, ONUS notified the state Division of Water Quality on October 3. The agency is reviewing the matter.

ONUS owns and operates the wastewater system, providing service to Fort Bragg, Pope Air Force Base, and Camp MacKall. This notice is required by North Carolina General Statutes Article 21 Chapter 143.215.C

**Example-Notice of Sewer Spill** 



Location of Spill:

## **Spill and Conductivity Reporting Form**

Time of Spill:		AM or PM	Date of S	pill:		
			2 4 4 5 . 5			
Time of Cleari	ng Spill:	AM or PM	Date of C	Clearing Spill: _		
Cause of Spill:						_
Did spill reach	surface water	?:	Time ORC v	vas notified:		
			Conductiv	ity/DO Reading	:S	
	Initial DO	Initial	2 <sup>nd</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	3 <sup>rd</sup>
		Conductivity	DO	Conductivity		Conductivity
Entry Point		,		,		,
Time Recd.						
50'						
Downstream						
Time Recd.						
100'						
Downstream						
Time Recd.						
150'						
Downstream						
Time Recd.						
200'						
Downstream						
Time Recd.						

250'

Downstream Time Recd.

<sup>\*\*</sup>Note: 2<sup>nd</sup> and 3<sup>rd</sup> readings are to be taken during cleanup.

<sup>\*\*</sup>More readings may be necessary depending upon the size of the spill and the time period in which the stream is being flushed to maintain water quality.



# Pump and Haul Record

Date:	Pageof
Date.	i uge oi

Tanker	Tanker	Drivers	License	Destination	Time
Company	Capacity	Name	Plate#		Loaded



# Spill Incident Report Form

Facility:	Incident#	
Owner: Old North Utility Services, Inc.	Region: Fayetteville Regional Office	
City:	County:	
Source of SSOSanitary	SewerPump Station	
Specific Location of SSO (example: Li	ft Station # 1, manhole at Westall & Bragg, etc)	
Incident Start Date:	Time:AM or PM	
Incident End Date:	Time:AM or PM	
Estimated Duration rounded to the n	earest hourhour(s)	
Estimated volume of the SSO	gallons	
Did SSO reach surface waters? Volume reaching surface water Surface Water Name If so, what is the estimated number of	gallons Did the SSO result in a fish kill?	
Specific Cause of the SSO:Natural DisasterGrease	Roots	
Inflow & InfiltrationPump Sta	ation Equip FailurePower Outage	
VandilismDebris in LineOther		
Explaination:		
Immediate 24-hour verbal notificatio (Name)	·	
DWQEmergency Ma	nagement	
Date: Time:_	AM or PM	