University of Maryland, College Park National Pollutant Discharge Elimination System MS4 Phase II FY2018 Annual Report General Discharge Permit #05-SF-5501

Table of Contents

List of Tables

List of Attachments

Attachment 1: UMD Outfall Map

Attachment 2: Illicit Discharge Detection and Elimination (IDDE) Plan

Attachment 3: Example Training Materials

List of Acronyms

AWRP	Anacostia Watershed Restoration Partnership
AWS	Anacostia Watershed Society
BLM	Facilities Management—Department of Building & Landscape Maintenance
BMP	Best Management Practice
BWPFS	Baltimore-Washington Partners for Forest Stewardship
CAD	Computer-Aided Design
CBT	Chesapeake Bay Trust
COG	Metropolitan Washington Council of Governments
P&C	Facilities Management—Department of Planning & Construction
DESSR	Department of Environmental Safety, Sustainability & Risk
E&E	Facility Management—Department of Engineering & Energy
E&SC	Erosion & Sediment Control
ESD	Environmental Site Design
FM	Facilities Management
FP	Facilities Management—Department of Facilities Planning
GIS	Geographic Information Systems software
HVAC	Heating, Ventilation, and Air Conditioning
IDDE	Illicit Discharge Detection and Elimination
IPM	Integrated Pest Management
MCM	Minimum Control Measure
MDE	Maryland Department of the Environment
MEP	Maximum Extent Practicable
MES	Maryland Environmental Services
MS4	Municipal Separate Storm Sewer System
NNI	Non-Native Invasive
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OS	Office of Sustainability
SOP	Standard Operating Procedure
SPCC Plan	Spill Prevention Control and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
UMD	University of Maryland-College Park

I. NPDES MS4 PERMIT UMD AUTHORIZATION

The University of Maryland-College Park (UMD) owns and operates a municipal separate storm sewer system (MS4) and, therefore, must comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems. Maryland Department of the Environment (MDE) has regulatory authority to implement this program under their General Discharge Permit No. 05-SF-5501. UMD submitted a Notice of Intent (NOI) in January of 2005, and MDE authorized coverage on October 20, 2005. Permit 05-SF-5501 expired on November 12, 2009; however, MDE has administratively extended the permit coverage and instructed MS4 permit holders to continue to implement the existing requirements until a new permit becomes effective on October 31, 2018.

The NPDES MS4 permit requires that permit holders implement Best Management Practices (BMPs) for the following Minimum Control Measures (MCMs):

- Personnel Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post Construction Management
- Pollution Prevention and Good Housekeeping

This annual report presents progress made on each of these MCMs, as well as challenges faced and steps taken to improve future performance.

II. UMD MS4 PERMIT ADMINISTRATION

A. Reporting Period

This report covers the period from July 1, 2017 through October 31, 2018 and extends beyond FY2018. General Discharge Permit No. 13-SF-5501 became effective on October 31, 2018 and this report will be the final report for General Discharge Permit No. 05-SF-5501.

B. Contact Information

Agency Name: University of Maryland – College Park Campus
Contact Person and Title: Christopher Ho, Civil Engineer
Mailing Address: 7757 Baltimore Avenue, 0600 Service Building, College Park, MD 20742
Phone Number: (301) 405-9969
Email: hocyho@umd.edu

C. UMD NPDES MS4 Organizational Structure

UMD Facilities Management-Facilities Planning (FM-FP) managed and administered the NPDES MS4 permit during the reporting period. Several units/departments helped implement MS4 permit requirements; however, the following units/departments were instrumental in implementing the BMPs within the six MCMs:

- Department of Environmental Safety, Sustainability & Risk (DESSR)—Environmental Affairs
- Facilities Management—Department of Building & Landscape Management (FM-BLM)
- Facilities Management—Department of Planning & Construction (FM-P&C)
- Facilities Management—Department of Engineering & Energy (FM-E&E)
- DESSR—Office of Sustainability (OS)

D. Staffing Resources

Compliance with the NPDES MS4 program requires significant funding, which is provided through both operational and capital budgets. The MS4 requirements are largely implemented by UMD staff that are either fully or partially dedicated to this effort. The following departments dedicate staff to this program as follows:

- DESSR: Four employees share MS4/stormwater responsibilities and spend the amount of time equivalent to 1.2 full-time staff members.
- FM-BLM: One full-time staff inspects and maintains stormwater facilities, and several other staff dedicate time to public outreach and volunteer events, forest/tree management, and landscape maintenance.
- FM-FP: One full-time staff dedicates at least 50 percent of the time to MS4 permit and stormwater regulations. In addition, several other staff members are partially dedicated to supporting stormwater inventory and geographic information system (GIS) efforts.
- FM-P&C: One full-time staff dedicates 25 percent of the time reviewing stormwater management designs and stormwater compliance.
- FM-E&E: Two full-time staff members dedicate at least 20 percent of the time to engineering and water-related issues.

III. IMPLEMENTATION OF THE SIX MINIMUM CONTROL MEASURES

This section presents progress made on each of the six MCMs during the reporting period (July 1, 2017 thru October 31, 2018). BMPs selected for each MCM are included, and measurable progress towards implementing each BMP is documented. In addition, future steps to better implement each MCM are discussed.

A. Personnel Education and Outreach

UMD is first and foremost an academic and research institution. As such, the over 50,000 students, faculty, and staff that come to campus every day have the opportunity to get involved in dozens of departments, classes, groups, and activities related to water resources. It would be impossible to accurately track all these activities and, therefore, progress for this MCM is likely to be significantly underreported. The general discussion provided below summarizes how UMD is implementing this BMP. Refer to Table 1 for specific BMPs and measurable progress.

The overarching BMP for this MCM is to educate as many students, faculty, and staff as possible about the impacts of stormwater. In addition, it is important for everyone to know what they can do to reduce the impacts of stormwater as well as what UMD is doing to address these concerns.

UMD Staff Giving a Tour of Recently Constructed Rain Gardens

UMD students can select from over 30 major, minor, and graduate degree programs that focus on environmental issues, including water resources. In addition, there are approximately 50 courses that over three thousand students take every year that introduce these topics to the student population. FM personnel regularly work with several professors to provide materials and even in-classroom presentations. In fact, FM and DESSR staff have personally reached well over 2,000 students. Faculty and staff also collaborate on student research projects to promote stormwater awareness. For example, staff worked with a landscape architecture class on the national 2018 USEPA Campus RainWorks Challenge, which challenges students to address real-world problems on the campus.

In 2014, UMD created the Sustainable Water Use and Watershed Workgroup to address water-related issues, including stormwater runoff and the MS4 permit. The workgroup consists of technical staff and senior managers, and meetings were held throughout the reporting period to address important issues related to water resources and how each unit can make improvements. These recommendations have been summarized in annual reports, presented to UMD administration, and the reports are made available to the public via the Office of Sustainability website.

DESSR-Environmental Affairs works with the campus community on proper material handling and disposal. In addition, they are responsible for emergency spill response and provide information on helping campus departments order and maintain spill kits. They have developed an "Emergency Response Guide" that is available on their website (https://essr.umd.edu/emergency-response-guide) and provide training to UMD staff in classroom settings as well as online.

Table 1 below provides specific BMPs that UMD continually works toward implementing, as well as progress made in 2017-2018.

Table 1: MCM #1 - Personnel Education and Outreach

1. Does the permittee maintain a process and phone number for the public and/or staff to report water quality complaints? ☑ Yes ☐ No Number of complaints received: 3 Describe the actions taken to address the complaints: *Department of Environmental Affairs investigated all complaints and filled out an IDDE investigation report.*
2. Describe training to employees to reduce pollutants to the MS4: *Training included PowerPoint presentations, walking tours of stormwater management facilities, spill prevention and stormwater pollution prevention training, and educational brochures.*
3. Describe the target audience(s): *The target audience includes the campus community including students, staff, faculty, visitors, and administrators. Programs and presentations were tailored for the intended audience. The training materials discuss how to reduce the amount and number of spills as well as preventative maintenance, which reduce pollutants reaching the waterways.*
4. Are examples of educational/training materials attached with this report?

Table 1: MCM #1 - Personnel Education and Outreach

☑ Yes ☐ No

Provide the number and type of educational materials distributed:

Not counted, but several hundred were distributed at various events.

Describe how the personnel education program is appropriate for the target audience(s):

The stormwater educational program is tailored for the target audience. For example, presentations given to students focus on the impacts of stormwater runoff, the MS4 permit, and how they can be involved to help the watershed. Presentations given to field staff and maintenance works include information on spill and pollution prevention, and presentations given to senior administrators focus on operational impacts of the stormwater permit.

5. Describe how stormwater education materials were distributed to the public and/or staff (e.g., newsletters, website):
UMD has several websites with information on stormwater and the MS4 permit. The permit and past annual reports are available on the Department of Environmental Safety, Sustainability & Risk's website (https://essr.umd.edu/environmental-affairs/stormwater-management) while information on stormwater can be found on the Office of Sustainability's website (https://sustainability.umd.edu/campus/water).

6. Describe how educational programs facilitated efforts to reduce pollutants in stormwater runoff:
UMD continues to implement practices that reduce pollutants in stormwater runoff. Efforts include maintaining stormwater management facilities, building new stormwater management facilities, using integrated pest management plans to reduce pesticide applications, and conducting outreach and education to the campus community. The training materials provided establishes awareness of the harm from pollutants in stormwater runoff and has led to a proactive community awareness that leads to reduction in pollutant runoff.

7. Provide a summary of activities planned for the next reporting cycle:
UMD plans to continue our educational and outreach efforts, including making improvements information available on the web as well as advertising our Stormwater Hotline phone number.

8. List the total cost of implementing this MCM over the permit term:
$11,000

B. Public Involvement and Participation

UMD offers many opportunities for public involvement and participation related to stormwater activities. While public involvement is often in the form of UMD student and faculty volunteerism, staff also work with our local and regional neighbors on a variety of environmental and stormwater issues. Due to the number of student groups and public events held on campus it is likely that progress for this MCM is significantly underreported. Table 2 presents specific BMPs and progress made during the reporting period.

Table 2: MCM #2 - Public or Personnel Involvement and Participation

1. Describe how the public or personnel involvement and participation program is appropriate for the target audience(s):
   The public or personnel involvement and participation program is tailored for the target audience of UMD students, faculty and staff. A variety of events throughout the year are intended to encourage participation and education. Events include Earth Day programs, stream cleanups, Pollution Prevention training, and Good Neighbor Day. These events allow participants to engage as little or as much as desired, while still achieving the desired outcome of participation.

2. Quantify and report public and/or staff involvement and participation efforts as shown below where applicable.

Number of participants at public and/or staff events:	152
Quantity of trash and debris removed at clean up events:	59 bags
Number of employee volunteers participating in sponsored events:	0
Number of trees planted:	44

Table 2: MCM #2 - Public or Personnel Involvement and Participation

Length of stream cleaned (feet): 5400

Number of storm drains stenciled: 0

Number of public notices published to facilitate public and/or staff participation:
Web

Number of public and/or staff meetings organized:
11

Total number of attendees at all public and/or staff meetings:
over 500

Describe the agenda, items discussed, and collaboration efforts with interested parties for public and/or staff meetings:

Public and/or staff meetings include meetings and presentations with students, faculty, and staff. The agenda items discussed include: stormwater runoff and the background on why it impacts water quality; streams and watershed including the Chesapeake Bay; the MS4 permit including the 6 minimum control measures; and what UMD is doing to address the MS4 permit.

Describe how public and/or staff comments have been incorporated into the permittee's MS4 program, including water quality improvement projects to address impervious area restoration requirements:

UMD staff meet work with students and faculty to evaluate potential stormwater management bmps. This includes studying the watershed, evaluating locations for potential bmps, and even constructing new bmps.

Table 2: MCM #2 - Public or Personnel Involvement and Participation

Describe any additional events and activities if applicable: Arbor Day Earth Day celebration Good Neighbor Day community volunteer outreach event
3. Provide a summary of activities planned for the next reporting cycle: UMD does a Campus Creek trash cleanup each fall and spring There are plans to plant 150 trees on campus within the next year Arbor Day Earth Day celebration Maryland Day College Park Day Good Neighbor Day community volunteer outreach event
4. List the total cost of implementing this MCM for the permit term: Arbor Day costs about $2000

Future Progress: There continues to be a very high rate of public participation and involvement at UMD. UMD will evaluate this program and determine any additional efforts required to comply with the forthcoming MS4 permit.

C. Illicit Discharge Detection and Elimination (IDDE)

The goal of a comprehensive IDDE program is to identify unregulated discharges going through the storm drain system. The main components of an IDDE program are an accurate storm drain map/inventory and regular inspections, and procedures to eliminate illicit discharges. Proper disposal of hazardous waste and stringent spill cleanup procedures is also important parts of the IDDE program. Table 3 presents specific BMPs and measurable progress during the reporting period.

Table 3: MCM #3 - Illicit Discharge Detection and Elimination (IDDE)

1. Does the permittee maintain a map of the MS4 owned or operated by the permittee, including stormwater conveyances, outfalls, stormwater best management practices (BMPs), and waters of the U.S. receiving stormwater discharges? ☑ Yes ☐ No If Yes, attach the map to this report and provide a progress update on any features that are still being mapped. (If submitting a map would compromise the operational security of an agency, indicate that the map is available for MDE review on site.) If No, detail the current status of map development and provide an estimated date of submission to MDE: *We have made significant progress on developing a georeferenced storm drain map. A copy of the map is attached to this report as Attachment 1.*
2. Does the permittee have a policy, or other agency directive, that prohibits illicit discharges? ☑ Yes ☐ No If Yes, describe the policy utilized for enforcement by the permittee (alternatively, a link may be provided to the permittee's webpage where this information is available). If No, describe the permittee's plan, including approximate time frame, to establish a policy that prohibits illicit discharges into the storm sewer system: *University of Maryland's Policies and Procedures Section VI-21.00(A) states that all operations shall be conducted in "compliance with all applicable laws, regulations and appropriate recommendations." Per this policy, UMD's Department of Environmental Safety, Sustainability & Risk (DESSR) is responsible for administration of this policy and is accountable for UMD's compliance with all environmental regulations. DESSR's website (https://essr.umd.edu/environmental-affairs/stormwater-management) has information on environmental regulations, including UMD's IDDE plan. It is noted that illicit discharges are also prohibited by other NPDES permits as well.*

Table 3: MCM #3 - Illicit Discharge Detection and Elimination (IDDE)

3. Did the permittee submit to MDE standard operating procedures (SOPs) in accordance with Part IV.C of the permit?
☑ Yes ☐ No

If No, provide a proposed date that SOPs will be submitted to MDE. MDE may require more frequent reports for delays in program development:

Did MDE approve the submitted SOPs?
☐ Yes ☑ No

If No, describe the status of requested SOP revisions and approximate date of resubmission for MDE approval:
UMD submitted an SOP for our IDDE program as part of the 2016/2017 annual report. The full SOP is reattached to this progress report as Attachment 2 for review and approval.

4. Describe how the permittee prioritized screening locations in areas of high pollutant potential and identify the areas within which screenings were conducted during this reporting period:
Any outfall within the drainage area that had construction were potential sources of illicit discharges. 13 outfalls are routinely inspected each month, and additionally SWPPP quarterly inspections are conducted in 6 industrial activity areas. The remaining outfalls are randomly screened on an annual basis to fulfil the requirement that 50% of the outfalls be monitored.

5. Answers to the following questions must reflect this two-year reporting period.

How many outfalls were identified on the map? 74

How many outfalls were required to be screened for dry weather flows to meet the minimum numeric requirement based on property size? 37

How many outfalls were screened for dry weather flows? 50

Per the permittee's SOP, how frequently were outfalls required to be screened?
Annually

At what frequency were outfalls screened during the reporting period?
Annually

How many dry weather flows were observed? 8

Table 3: MCM #3 - Illicit Discharge Detection and Elimination (IDDE)

If dry weather flows were observed, how many were determined to be illicit discharges? 3

Describe the investigation process to track and eliminate each suspected illicit discharge and report the status of resolution:
Receive the call/email, go to site, take photos/video of the illicit discharge. Identify where the illicit discharge is coming from and, if necessary, use dye testing to back track the source. Once the source is identified, contact the appropriate department (FM, PNC, etc) on what the illicit discharge is, why it is wrong, and that it needs to cease. Provide them with ways to prevent this from happening again. Complete an illicit discharge tracking form and email a copy to all parties involved.

6. Describe maintenance or corrective actions undertaken during this reporting period to address erosion, debris buildup, sediment accumulation, or blockage problems:
When erosion, sediment or debris is found during routine inspection, the appropriate corrective action is scheduled. Erosion is addressed by replacing soil as needed and then planting to stabilize the site. Trash is collected and disposed of. Fallen logs, leaves and other debris are removed to free water flow, unclog inlets/outfalls, or to otherwise free the facility from obstruction. Sediment is either removed by hand with shovels and wheel barrows, or for larger jobs that require heavy equipment, the contractor is scheduled to properly remove the buildup. Spoils are generally moved to an appropriate off-campus disposal site.

7. Is the permittee maintaining all IDDE inspection records and are they available to MDE during site inspections?
☑ Yes ☐ No

8. If spills, illicit discharges, and illegal dumping occurred during this reporting period, describe the corrective actions taken, including enforcement activities, and indicate the status of resolution:
For those discharges that violated our individual NPDES permit, we contacted MDE and made them aware. For sewage illicit discharges, the line was jetted to be cleared, hay bales were placed around the inlets, and lime was applied to saturated soil. For construction related illicit discharges, FM and PNC were made aware of the illicit discharge and we would provide them with suggestions on how to improve their BMPs. FM/PNC were then charged with the responsibility to enforce these changes on the BMPs to prevent future illicit discharges. All illicit discharges during this monitoring period have been resolved.

Table 3: MCM #3 - Illicit Discharge Detection and Elimination (IDDE)

9. Attach to this report specific examples of educational materials distributed to the public and/or staff related to illicit discharge reporting, illegal dumping, and spill prevention. If these are not available, describe plans to develop public and/or staff education materials and submit examples with the next Progress Report:
   Slides are attached.

10. Specify the number of employees trained in illicit discharge detection and spill prevention: 181

11. Provide examples of training materials. If not available, describe plans to develop employee training and submit examples with the next Progress Report:
    IDDE training materials are included as Attachment 3. Also included in this attachment are *SPCC and SWPPP training materials. UMD is also developing audience-specific training materials for several target groups including dining services, students, farms, and facilities management.*

12. List the cost of implementing this MCM during this permit term:
    $315,000 (mostly related to one-time expense to create GIS storm drain map)

Future Progress: UMD will continue to implement the IDDE Plan, focusing efforts on potential hotspots including dining halls, fueling areas, maintenance areas, and other industrial use sites.

D. Construction Site Stormwater Runoff Control

UMD complies with all applicable MDE construction site stormwater runoff requirements. This includes obtaining Erosion & Sediment Control (E&SC) permits for all projects with limits of disturbance greater than 5,000 square feet and NPDES Permits for Construction Activities on projects greater than one acre. All E&SC devices are designed and installed in accordance with the latest MDE E&SC standards and specifications.

MDE inspects and enforces the E&SC plan throughout the construction process; however, UMD also has several construction inspectors that regularly visit construction sites. These inspectors have the authority to make the contractor implement corrective actions if any E&SC are deemed to be insufficient or failing. In addition, UMD implemented a more robust IDDE tracking system to better respond to any identified illicit discharges, especially associated with construction projects (see Section III(C) above).

Table 4 below shows specific projects that received required E&SC permits, projects that began or continued to be under construction in 2016, as well as the number of staff that received specialized E&SC training.

Table 4: MCM #4 - Construction Site Stormwater Runoff Control

1. Does the permittee have a process for receiving, investigating, and resolving complaints from interested parties related to construction activities and erosion and sediment control?
   ☑ Yes ☐ No

   Describe the process:

   UMD has developed a Stormwater Hotline for concerned individuals to call in complaints related to construction activities.

   Provide a list of all complaints and a summary of actions taken to resolve them:

   DESSR notified Planning and Construction of any observed violations. The issues were immediately addressed by the associated university project manager and construction contractor.

   7/25/2017 – DESSR notified P&C of sediment discharge from monitored outfall 003 and 005. PMs on active construction projects were notified and contractors investigated the discharges and took corrective action.

   7/27/2017 - DESSR notified P&C of sediment discharge in parking lots "E" and "GG3". PMs on active construction projects were notified and contractors investigated the discharges and took corrective action.

   8/02/2017 - DESSR notified P&C of sediment discharge at Regents drive near Wellness Way and the Xfinity center parking lots. PMs on active construction projects were notified and contractors investigated the discharges and took corrective action.

   8/16/2017 - DESSR notified P&C of sediment discharge from the Cole Fieldhouse construction site. PM was notified and contractor took corrective action.

   9/15/2017 - DESSR notified P&C of sediment discharge from the construction entrance of the Iribe Construction site. PM was notified and contractor took corrective action.

   10/13/2017 - DESSR notified P&C of cloudy runoff from the Cole Tennis court construction site. PM was notified and contractor took corrective action. MDE inspected and was satisfied with controls in place.

Table 4: MCM #4 - Construction Site Stormwater Runoff Control

1/18/2017 - DESSR notified P&C of sediment discharge from the Cole Fieldhouse construction site. PM was notified and contractor took corrective action to install additional sediment control measures.

2/28/2018 - DESSR notified P&C of sediment discharge from monitored outfall 003. PM from Cole Fieldhouse was notified and contractor took corrective action.

4/20/2018 - DESSR notified P&C of sediment discharge from monitored outfall 003 and 004. PM from Cole Fieldhouse was notified and contractor took corrective action.

6/13/2018 - DESSR notified P&C of sediment discharge from monitored outfall 003. PM from Cole Fieldhouse was notified but the source of the discharge could not be located.

6/19/2018 – DESSR notified P&C of sediment discharge onto adjacent parking lots from the Cole Fieldhouse construction site. PM from Cole Fieldhouse was notified and contractor took corrective action.

8/16/2018 – Complaint from faculty of run off from Cole Fieldhouse site on the adjacent campus roads and parking lots. PM from Cole Fieldhouse was notified and contractor took corrective action.

9/18/2018 - DESSR notified P&C of sediment discharge from monitored outfall 003. PM from Cole Fieldhouse was notified and contractor took corrective action.

9/28/2018 – DESSR notified P&C of sediment discharge from monitored outfall 002. PM from Iribe project was notified and contractor took corrective action.

2. Total number of active construction projects within the reporting period: 6

Provide a list of all construction projects and tabulate the total disturbed area:

1. Iribe Center for Computer Science – 6.7ac
2. McKeldin Mall – 0.5 ac
3. Cole Fieldhouse – 11.2 ac
4. Cole Tennis Courts – 2.7 ac
5. Main Administration Dumpster – 0.1 ac
6. Purple Line – 0.5 ac

Table 4: MCM #4 - Construction Site Stormwater Runoff Control

3. Total number of violation notices issued by MDE related to this MCM on the agency's property: several

   Describe the status of enforcement activities:
   After repeated notices of E&S violations from MDE on the Cole Fieldhouse project, MDE issued a letter of enforcement assessment to the contractor of the Cole Fieldhouse project on October 30, 2018. The letter provided an opportunity for the contractor to discuss the repeated violations related to the project construction before MDE assessed violation penalties. On March 19, 2019, MDE offered a penalty payment to settle the matter, which was accepted by the responsible contractor.

   Describe how the permittee communicates and collaborates with MDE to maintain compliance with this MCM for all active construction projects on the agency's property:
   Attend preconstruction meetings with MDE and contractors. Routine inspections from MDE compliance inspectors. Notify MDE of any repeated violations.

   Are erosion and sediment control inspection records retained and available to MDE during field review of the agency MS4 program?
   ☑ Yes ☐ No

   If No, explain:

4. Number of staff trained in MDE's Responsible Personnel Certification: 17

5. Describe the coordination with other entities regarding implementation of this MCM:

   Coordinated with Department of Environmental Safety, Sustainability & Risk to address compliance issues. Coordinated with Purple Line and MTA for compliance.

6. List the total cost of implementing this MCM over the permit term:
   Costs exceeded $500,000 to implement ESC on construction projects

Future Progress: UMD will continue to comply with all MDE erosion and sediment control requirements for construction sites.

E. Post Construction Stormwater Management

Post construction stormwater management includes providing stormwater management for new construction projects as well as redevelopment projects, and ensuring that all stormwater BMPs are properly maintained in order to achieve maximum stormwater treatment. In addition, UMD personnel look for opportunities to retrofit existing impervious areas with stormwater management wherever possible. Table 5 presents specific BMPs and measurable progress.

During the design of new construction projects and redevelopment projects, UMD complies with all MDE stormwater management regulations. This includes providing Environmental Site Design (ESD) stormwater management facilities to the maximum extent practicable (MEP) for all projects, and incorporating other stormwater BMPs as needed. During the reporting period the Iribe Center for Computer Science bioretention facilities were completed. These projects incorporated required stormwater management facilities and the design plans were reviewed and approved by MDE.

A robust stormwater management maintenance program is necessary to ensure these facilities are operating at peak performance. UMD continued to make progress in this area during the reporting period. FM-BLM is responsible for inspection and maintenance of all stormwater BMPs. One full-time staff member is dedicated to managing this program; however, several staff members from other departments (e.g., DESSR, Facilities Planning) assist. Staff and student volunteers are able to perform a significant amount of maintenance; however, it was necessary to supplement this work with contractors. UMD dedicated funds to hire a maintenance contractor to assist with needed repairs.

UMD follows MDE procedural guidance for performing inspections, including inspection intervals and checklists. All BMPs were visually inspected per the inspection program, and many of them were maintained as part of routine UMD landscape management or were part of volunteer maintenance projects.

Table 5: MCM #5 - Post Construction Stormwater Management

1. Has an Urban BMP database been submitted in accordance with the database structure in Appendix B, Tables B.1.a, b, and c as a Microsoft Excel file?
   ☐ Yes ☑ No

   Describe the status of the database, efforts to complete all data fields, and provide a date as to when the required information will be submitted to MDE:

   This will be submitted as part of the 2019 annual progress report.

Table 5: MCM #5 - Post Construction Stormwater Management

Total number of plans submitted to MDE for review and approval: 7

Total number of as-built plans submitted to MDE: 0

Number of submitted as-built plans approved by MDE: 0

2. Total number of BMPs located on each property covered under the general permit (list individual property, and total BMPs for that property – provide separate attachment if necessary):
UMCP Main Campus: 93 BMPs

Does the permittee perform inspections for all structural BMPs in accordance with the Dam Inspection Checklist in Maryland Pond Code 378 at least once every three years?
☑ Yes ☐ No

If No, describe efforts to train staff and develop a program to perform these required inspections on a triennial basis:

Are BMP inspection records retained and available to MDE during field review of local programs?
☑ Yes ☐ No

3. Provide a summary of routine maintenance activities for all BMPs:
Stormwater management maintenance is performed per the MDE Design Manual Maintenance Schedule for each facility type.

Are BMP maintenance procedures consistent with maintenance requirements on MDE approved plans?
☑ Yes ☐ No

Are completed BMP maintenance checklists available to MDE during field review of local programs?
☐ Yes ☑ No

If either answer is No, describe planned actions to implement maintenance checklists and procedures and provide formal documentation of these activities:
We are in the process of creating a maintenance and accounting log of all maintenance and repair activities. Currently there are records of all maintenance and repairs

Table 5: MCM #5 - Post Construction Stormwater Management

	performed by contractors. A more comprehensive log that documents all activities by the Stormwater Maintenance Inspector, volunteers, and landscape staff is underway. Describe all problems discovered during routine maintenance operations and repair work performed to restore the function of the BMP(s) (attach photos and additional documentation as needed): *Deferred maintenance is a primary issue. Many of the problems that routine maintenance would address have become repair items. Sediment buildup, invasive plant removal, and clogged inlets and outfalls are the main factors. Additionally, a lack of construction documents for older facilities (prior to 2002) is another issue that brings into question what "proper function" should be.*
4.	Number of staff trained in proper BMP design, performance, inspection, and routine maintenance: 4
5.	Provide a summary of activities planned for the next reporting cycle: *Develop and implement a GIS-based inspection and maintenance reporting log. Continue routine maintenance and prioritize repair items to accommodate budgetary constraints.*
6.	List the total cost of implementing this MCM over the permit term: $276,000

Future Progress: UMD will continue to comply with all MDE stormwater management regulations for construction projects. The inspection and maintenance program continues to evolve and improve. UMD is in the process of evaluating all stormwater management facilities to determine forthcoming MS4 permit retrofit requirements.

F. Pollution Prevention and Good Housekeeping

UMD is required to implement and maintain pollution prevention and good housekeeping practices to reduce pollution from all operations. During the reporting period, progress was made towards reducing pollution and ensuring UMD has appropriate coverage under various State and Federal water pollution control programs. Table 6 presents specific BMPs and measurable progress.

During the reporting period, several other measures were taken to reduce the potential for pollution from entering the storm drain system, including street sweeping, maintaining healthy tree canopies, and reducing pesticide applications.

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

1. Provide a list of topics covered during the last training session related to pollution prevention and good housekeeping, and attach to this report specific examples of training materials:

Annual SPCC training

- *Spill Prevention*
- *Good Housekeep*
- *Preventative Maintenance*
- *Proper storage and handling of materials*
- *Proper Spill Response*

Annual SWPPP training

- *Good housekeeping of outdoor storage*
- *Preventative maintenance procedures*
- *Structural and non-structural BMPs*

SPCC and SWPPP training materials are included in Attachment 3.

List all training dates within this two-year reporting period:
UMD now offers online training in addition to in-person training. Online training is available on-demand.

Number of staff attended: 3500

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

2. Are the good housekeeping plan and inspection records at each property retained and available to MDE during field review of the local program? ☑ Yes ☐ No

If No, explain:
All SWPPP quarterly and annual inspections along with the monthly SPCC inspections are housed within the Seneca Building and on the K: drive (share).

Provide details of all discharges, releases, leaks, or spills that occurred in the past reporting period using the following format (attach additional sheets if necessary).

Property Name: *University of Maryland* ***Date:*** *July 25, 2017*

Describe observations:

During the monthly NPDES sampling, Environmental Affairs observed a large amount of sediment and some persistent foam being discharged from Outfall 003.

Describe permittee's response:

Environmental Affairs later investigated the Outfall 003 watershed to determine the source, and it was concluded that the source was construction runoff from the Cole Field House project. Environmental Affairs notified UMD Facilities Management of the situation via email on 7/25/17. Facilities Management notified the contractor who then swept up all debris, covered up soil piles, and installed inlet protection.

Property Name: *University of Maryland* ***Date:*** *July 25, 2017*

Describe observations:

During monthly NPDES sampling at Outfall 016, Environmental Affairs noticed an oil sheen immediately downgradient of Outfall 016.

Describe permittee's response:

It is suspected that the oil-water separators upgradient of Outfall 016 need to be cleaned out. Inspections of the oil-water separator was conducted and was cleaned out.

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

Property Name: *University of Maryland* ***Date:*** *July 25, 2017*

Describe observations:

During the monthly NPDES sampling, Environmental Affairs observed a large amount of sediment being discharged from Outfall 005.

Describe permittee's response:

Environmental Affairs later investigated the Outfall 005 watershed to determine the source, and it was concluded that the most likely source was construction runoff from the area between Francis Scott Key Hall and Woods Hall. Environmental Affairs notified UMD Facilities Management of the situation via email on 7/25/17. Facilities Management notified the contractor who later installed a berm to divert the water and secured filter fabric over the inlet to prevent sediment from entering the storm drain. The contractor also cleaned up the loose soil spills on the pavement.

Property Name: *University of Maryland* ***Date:*** *August 2, 2017*

Describe observations:

Environmental Affairs observed a small construction project at the corner of Regents Drive, near Wellness Way and the Xfinity Center parking lots. Although the area of disturbance was relatively small, there was a significant amount of sediment and sediment-laden water entering Campus Creek by way of curb cuts located 20-30 feet from the construction area. The contractor did not have any BMPs in use to protect the nearby waterway.

Describe permittee's response:

Jason Baer notified Facilities Management via email on 8/2/2017. Facilities Management implemented BMPs to prevent construction activities from contaminating stormwater runoff.

Property Name: *University of Maryland* ***Date:*** *August 15, 2017*

Describe observations:

Environmental Affairs (EA) observed highly turbid, sediment laden water was being discharged from Outfall 003 due to the dewatering at the Cole Field House construction site.

Describe permittee's response:

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

EA notified UMD Facilities Management, who then notified the contractor, Gilbane Building Co., to perform corrective action. Gilbane installed approximately 150 linear feet of super silt fence and hydro-seed 21,000 sq. feet

Property Name: *University of Maryland* ***Date:*** *September 15, 2017*

Describe observations:

Environmental Affairs (EA) received a phone call about muddy water discharging from the Brendan Iribe Center construction site. EA immediately investigated and found that the contractor was spraying water on the street and washing a considerable amount of sediment directly into the storm drain.

Describe permittee's response:

EA notified UMD Facilities Management, who then notified the contractor to cease the illicit discharges and use an alternate method to clean up sediment. A new stabilized construction entrance was installed, Paint Branch Dr. was dry swept, the construction crew was instructed not to wet clean the roadway, and the inlet protection was cleaned.

Property Name: *University of Maryland* ***Date:*** *September 25, 2017*

Describe observations:

During monthly NPDES sampling at Outfall 019, Environmental Affairs (EA) staff observed oil or grease (which was believed to be food-related) discharging from Outfall #019. The material was very viscous and did not move far beyond the immediate area of the outfall. After making the required notification to the Maryland Department of the Environment, EA staff began investigating the watershed serviced by Outfall 019 and discovered evidence of oil/grease residue in the parking area behind the Ellicott Dining Hall (Bldg. #257).

Describe permittee's response:

When EA staff consulted with Greg Thompson of Dining Services regarding the issue, he noted that oily liquid was found leaking from a compost compactor unit near the loading dock on Friday, September 22nd. Greg indicated that a UMD trash truck removed the leaking compactor last Friday and that dining hall staff had flushed the spilled material into a trench drain located along the northern edge of parking lot #S8. Dining Services believed that the trench drain discharged to a grease trap located in the parking lot in front of the dining hall offices. However, EA staff conducted dye testing of the trench drain and determined that it did not discharge to the grease trap, but rather the trench drain discharges directly to a nearby storm drain inlet that ultimately discharges to Outfall #019.

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

EA staff deployed oil sorbent booms at Outfall 019 in an attempt to capture the oil/grease that was released, but oily material continued to discharge from the stormwater conveyance system. A contractor was brought in on 9/25 to jet and vacuum the stormwater lines between the Ellicott Dining Hall and Outfall 019 in order to remove residual oil/grease that could be discharged during the next rain event. Additional measures taken to prevent further illicit discharges from the Ellicott Dining Hall include: 1) Dining Services has hired a contractor to seal the compactors to reduce spillage; 2) Facilities Management will hall compost compactors more frequently to ensure compactors are not overfilled and to minimize breakdown time in the compactor of food waste; 3) Dining Services will add cardboard to the compost compactor prior to filling them with food waste in order to absorb oil/grease; and 4) Oil sorbent booms will be installed in the trench drain to prevent oil/grease from reaching the stormwater conveyance system. EA and Dining Services will consult with the UMD utilities group in order to determine a long-term solution to prevent drainage to the trench drain from reaching the storm drains.

Property Name: *University of Maryland* ***Date:*** *October 19, 2017*

Describe observations:

Environmental Affairs (EA) staff observed a spill from a compost compactor at the Stamp Student Union loading dock that had discharged to the storm drain on Fieldhouse Drive. The liquid appeared to contain cooking oil and food grease. EA then investigated the Outfall that the spill location drains to, Outfall 003, and found cloudy water with an oil sheen discharging to Paint Branch Creek. The sheen was very minor and did not appear to significantly affect the creek.

Describe permittee's response:

EA staff made the required phone notification to Maryland Department of the Environment and deployed oil sorbent booms and pads at Outfall 003 in an attempt to capture the oil/grease that was released. Oil continued to discharge from the stormwater conveyance system so a contractor was brought in on 10/19 to jet and vacuum the stormwater lines between the Stamp Student Union and Outfall 003 in order to remove residual oil/grease that could be discharged during the next rain event.

Property Name: *University of Maryland* ***Date:*** *October 30, 2017*

Describe observations:

During monthly NPDES sampling, Environmental Affairs (EA) observed highly turbid, sediment laden water discharging from Outfall 019. EA investigated the Outfall 019 watershed and determined that the source of the sediment was the construction site at the parking lots (lot # 2g) just west of Eppley Recreation Center. The site had a large area of disturbed, uncovered soil that eroded during the heavy

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

rains on 10/29, and the existing stormwater BMPs (silt fence and stormwater retention pond) were not adequately containing the sediment.

Describe permittee's response:

EA notified UMD Facilities Management, who then notified the contractor to improve the existing BMPs and/or implement new BMPs that prevent sediment from contaminating stormwater runoff.

Property Name: *University of Maryland* ***Date:*** *January 18, 2018*

Describe observations:

Environmental Affairs (EA) observed highly turbid, sediment laden water was running off from the Cole Field House construction site to Outfall 003.

Describe permittee's response:

EA notified UMD Facilities Management, who then notified the contractor, to perform corrective action.

Property Name: *University of Maryland* ***Date:*** *February 20, 2018*

Describe observations:

During monthly NPDES sampling, Environmental Affairs (EA) observed highly turbid, sediment laden water was being discharged from Outfall 003.

Describe permittee's response:

An investigation found that the source of the discharge was the Cole Field House construction site. EA notified UMD Facilities Management, who then notified the contractor, to perform corrective action.

Property Name: *University of Maryland, McKeldin Mall* ***Date:*** *February 28, 2018*

Describe observations:

Environmental Affairs (EA) received a call that there was highly turbid, sediment laden water being discharged from Outfall 003. An investigation determined that the source of the discharge was de-watering at the Cole Field House construction site.

Describe permittee's response:

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

EA notified UMD Facilities Management, who then notified the contractor, to perform corrective action. Contractor will replace all AGIP/GIP/CIP onsite per plan and bring in an additional PST for the NE side on Friday; this will be the de-watering point for the tunnel pit/basement moving forward. Additionally, asphalt berms will be installed to help with water flowing from Fieldhouse Drive into the LOD.

Property Name: *University of Maryland* ***Date:*** *March 30, 2018*

Describe observations:

During the monthly NPDES sampling on 3/30/2018, Environmental Affairs (EA) observed highly turbid, sediment laden water being discharged from Outfall 003, Outfall 004, and Outfall 005. Additionally, the discharge from Outfall 003 and Outfall 004 had a pH of 9.46 and 9.43, respectively, which is above the NPDES permit limit of 8.5. An investigation determined that the Cole Student Activities Building construction site was the source of the sediment and high pH. The construction site showed a large amount of uncovered, disturbed soil, sediment drag-out and runoff on the surrounding pavement. There was also freshly poured concrete onsite, which would cause stormwater runoff to have an elevated pH if proper stormwater controls are not in place.

Describe permittee's response:

The University notified the contractor to implement BMPs to prevent their runoff from further impacting the University's discharge.

In order to monitor the performance of the contractor's BMPs, the University will began weekly monitoring of Outfall 003 and Outfall 004. Neither of these outfalls have shown elevated pH in recent history before this incident.

Property Name: *University of Maryland, McKeldin Mall* ***Date:*** *April 2, 2018*

Describe observations:

Sewage overflow came from a sanitary sewer system manhole and a portion of the overflow appears to have been discharged from Outfall 005 to the unnamed tributary of Paint Branch Creek.

Describe permittee's response:

A portable pump was used to bypass the sewage from an upgradient manhole around the blocked sanitary sewer line to a downgradient sanitary sewer manhole; silt fence was installed around the nearest storm drain to prevent biosolids from entering the storm drain system; the affected area was blocked off to pedestrian traffic; lime was be used to disinfect the contaminated ground surface and the

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

soil that contacted biosolids was removed for disposal. The "UMD Alerts" system was used to notify campus students, faculty and staff.

Property Name: *University of Maryland* ***Date:*** *April 17, 2018*

Describe observations:

Environmental Affairs (EA) observed highly turbid, sediment laden water being discharged from Outfall 003 and Outfall 004. Additionally, the discharge from Outfall 003 had a pH of 8.58, which is above the the NPDES permit limit of 8.50. An investigation determined that the Cole Student Activities Building construction site was the source of the sediment and high pH. The construction site showed a large amount of uncovered, disturbed soil, sediment drag-out and runoff on the surrounding pavement. There was also freshly poured concrete onsite, which would cause stormwater runoff to have an elevated pH if proper stormwater controls are not in place.

Describe permittee's response:

The University notified the contractor to implement BMPs to prevent their runoff from further impacting the University's discharge.

In order to monitor the performance of the contractor's BMPs, the University continued weekly monitoring of Outfall 003 and Outfall 004. Neither of these outfalls have shown elevated pH in recent history before the illicit discharge from Cole on 3/30/2018.

3. Quantify and report property management efforts as shown below, where applicable (attach additional sheets if necessary).

Number of miles swept: 800

Amount of debris collected from sweeping (indicate units): 67 tons

If roads and streets are swept, describe the strategy the permittee has implemented to maximize efficiency and target high priority areas:

Number of inlets cleaned: 20

Amount of debris collected from inlet cleaning (indicate units): 16 cu. yd

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

Describe how trash and hazardous waste materials are disposed of at permittee owned and operated property(ies), including debris collected from street sweeping and inlet cleaning:
Based on waste qualities-Subtitle C regulates all waste (chemical waste) and Subtitle D (solid waste) dictates how waste is picked up, transported, stored, and disposed of. Since UMD is a treatment, storage, and disposal facility (TSDF), we handle regulated waste regularly and accordingly.

Does the permittee have a current State of Maryland public agency permit to apply pesticides?
☑ Yes ☐ No

If No, explain (e.g., contractor applies pesticides):

Does the permittee employ at least one individual certified in pesticide application?
☑ Yes ☐ No

If Yes, list name(s):
Penny Abbey; Thomas Adams; Luis Alfonzo; Sam Bahr; Yasmine Baker; Vincent Brown; Joseph Cook Jr.; Darrick Davis; Oscar Ferrer; Raymond Hargadon; Amanda Helin; Christopher Humphrey; Richard Jones; Jean Nana; Karen Petroff; Richard Scott Rupert; Megan Smolinski; Jeffrey Weiser; Edward Williams Jr.; Michael Carmichael

If the permittee applied pesticides during the reporting year, describe good housekeeping methods (e.g., integrated pest management, alternative materials/techniques):
Integrated pest management is the standard operating procedure; currently approximately 17 acres are managed in a primarily organic manner. Mixing of chemicals occurs in a centralized location with spill prevention and control measures implemented.

If the permittee applied fertilizer during the reporting year, describe good housekeeping methods (e.g., application methods, chemical storage, native or low maintenance species, training):
Maryland Professional Fertilizer Applicators supervise all applications and follow the strict application regulations of the state of Maryland. Recent applications have employed EEF technology ensuring a release rate of no more than 0.7 lb N per month.

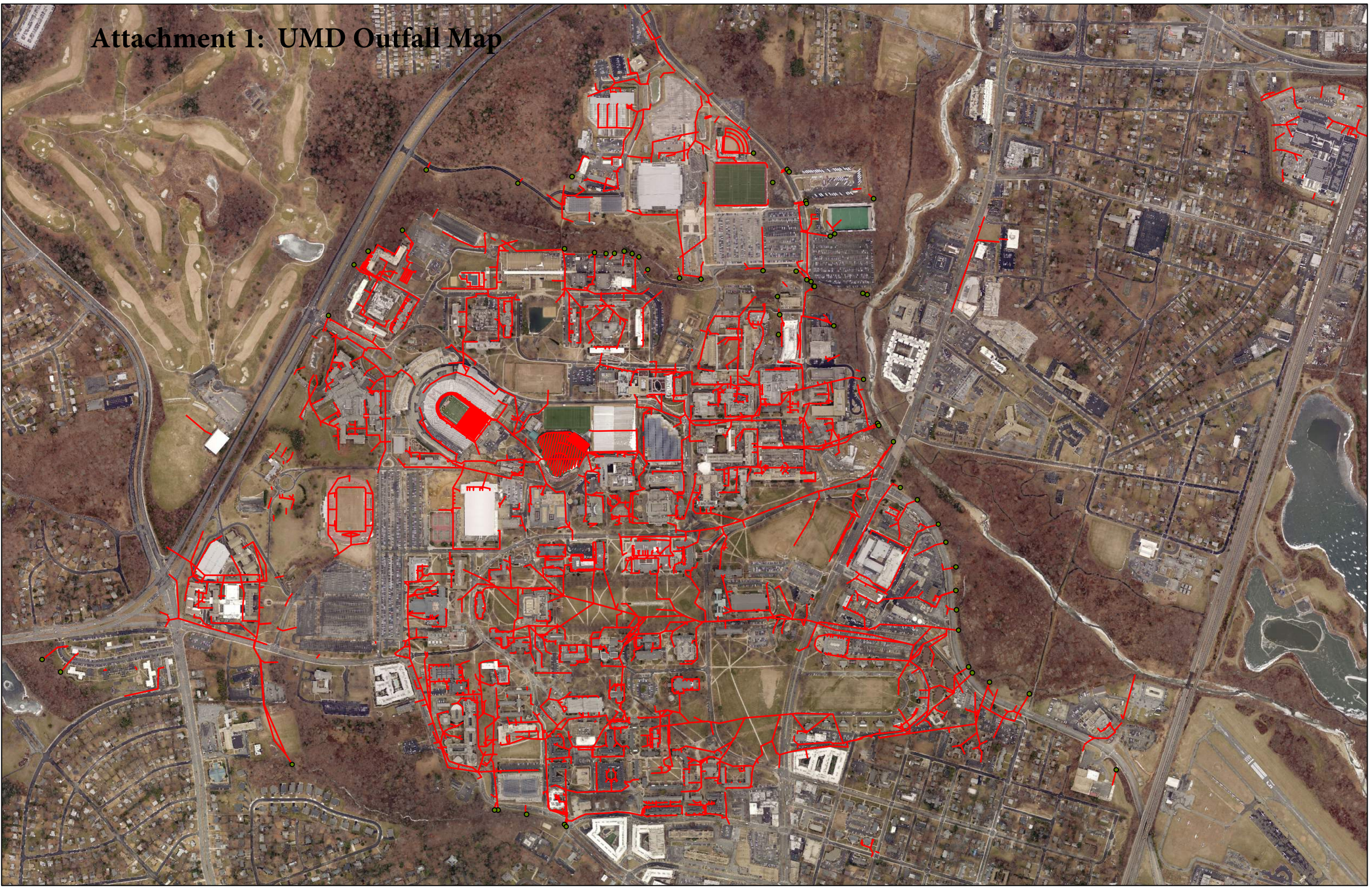
If the permittee applied materials for snow and ice control during the reporting year, describe good housekeeping methods (e.g., pre-treatment, truck calibration and storage, salt domes):

Table 6: MCM #6 - Pollution Prevention and Good Housekeeping

	Road salt is stored and dispatched from a salt dome and spreaders are calibrated as needed. Clearing occurs prior to material application to minimize amount of material required to maintain safe conditions. Describe good housekeeping BMP alternatives not listed above:
4.	If applicable, provide a status update for permittee owned or operated properties regarding coverage under the Maryland General Permit for Stormwater Discharges Associated with Industrial Activity or an individual industrial surface water discharge permit: *UMD currently has a Maryland General Permit for Stormwater Discharges Associated with Industrial Activity for 6 industrial sites around campus (MDR003281). Additionally, UMD has an Individual State Discharge Permit (MD0063801) which expired in October31, 2017 but has been currently administratively extended while MDE reviews the permit application for the 2017 permit renewal. Currently, UMD staff is working with EA and MDE to adjust their permit limits under the Individual State Discharge Permit for total copper.*
5.	List the total cost of implementing this MCM over the permit term: $83,000

Future Progress: UMD will continue to implement the 12-SW permit to reduce discharges from industrial facilities. UMD has received a tentative determination for renewing the NPDES Discharge permit (Permit Number 08-DP-2618), and anticipates a final determination in the coming months. Progress will continue to be made on tree plantings, street sweeping, and other pollution prevention measures.

Attachment 1: UMD Outfall Map



Attachment 2: IDDE SOP

UNIVERSITY OF MARYLAND

Department of Environmental Safety,

Sustainability, and Risk

ILLICIT DISCHARGE DETECTION AND ELMINATION (IDDE) PLAN

July 2017

Table of Contents

TABLES:

Appendices:

Appendix A General Location Map

Appendix B Site Map and Outfall Photo Log

Appendix C UMD Illicit Discharge and Connection Stormwater Ordinance

Appendix D UMD Illicit Discharge Incident Tracking Sheet

Appendix E IDDE Outfall Inspection Form

Appendix F IDDE Training Materials

SECTION 1: PURPOSE AND FACILITY DESCRIPTION

1.1 Purpose of Illicit Discharge Detection & Elimination Plan

The purpose of this program is to provide for the health, safety, and general welfare of the students, staff, and faculty of the University of Maryland (UMD) through the regulation and elimination of non-stormwater discharges to the storm sewer system to the Maximum Extent Practicable (MEP) as required by federal and state law. This program establishes methods for controlling the introduction of pollutants into the storm sewer system in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges associated with the Municipal Separate Storm Sewer System (MS4) general permit (Permit No. 05-SF-5501).

This Illicit Discharge Detection and Elimination (IDDE) plan is designed to identify and effectively eliminate illicit discharges and connections to UMD's MS4. The University's IDDE program also includes municipal storm sewer mapping, policies, public education, reporting, recordkeeping, and staff training elements.

Illicit discharges are defined as a measurable flow containing pollutants and/or pathogens to a MS4 during dry weather. A storm drain with measurable flow but containing no pollutants or pathogens is simply considered a discharge. NPDES regulates the discharge of stormwater under the authority of the Federal Clean Water Act. The United States Environmental Protection Agency (USEPA) designates authority to administer NPDES permits within the State of Maryland.

1.2 Background Information and Site Description

Discharges from MS4s often include waste and wastewater from non-stormwater sources. A significant portion of dry weather flows are likely from illicit and/or inappropriate discharges and connections to a MS4.

Illicit discharges can enter a system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or chemicals dumped directly into a drain). This results in untreated discharges which could contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, and pathogens to receiving water bodies. Pollutant levels from these illicit discharges have been shown in USEPA studies to be high enough at times to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health. Examples of illicit discharges include: sanitary wastewater, effluent from septic tanks, car wash wastewater, improper oil disposal, radiator flushing disposal, laundry wastewaters, spills from roadway accidents, and improper disposal of auto and house hold toxics. The UMD's IDDE program, along with public outreach and reporting, helps combat these potential illicit discharges. UMD treats some of its

stormwater discharges using various BMPs, including oil-water separators, retention ponds, swales, and stormceptors.

UMD was chartered in 1856 as an agricultural college and has gradually evolved into the distinct higher education system that it is today. The campus is located in a suburban area, bounded by a mixture of commercial and residential areas on all sides. UMD is bordered by University Boulevard to the north and west, Paint Branch Parkway to the east, and Knox Road to the south. Baltimore Avenue (Route 1) bisects the southeastern portion of the campus. The campus currently consists of numerous buildings on 1,335 acres of land. A site vicinity map is included in Appendix A.

The stormwater drainage system at UMD consists of intermittent surface flow and catch basins located throughout the campus. Approximately 40% of the campus is considered impervious. The campus maintains a MS4 that consists of approximately ninety (90) outfalls. The outfalls discharge to Campus Creek, Guilford Run, Paint Branch stream, as well as several unnamed tributaries. Water from these discharge points ultimately flows to the Anacostia River, which later empties into the Potomac River, a tributary of the Chesapeake Bay. The campus receives all of its potable water from the Washington Suburban Sanitary Commission (WSSC). The distribution system includes periodic flushing of fire hydrants for maintenance purposes.

The University discharges contact and non-contact cooling water, boiler blowdown and condensate from various buildings onsite to the MS4 in accordance with State Discharge Permit No. 08-DP-2618 (NPDES Permit No. MD0063801).

Additionally, UMD is authorized to discharge water from swimming pools in accordance with Maryland General Permit 12-SI-7192: General Permit for Discharges from Swimming Pools & Spas, including Baptismal Fonts (NPDES Permit No. MDG767192).

1.3 Definitions

For the purposes of this program, the following shall mean:

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The U.S. Water Pollution Control Act (33 US.C. §1251et seq.), and any subsequent amendments thereto.

Construction Activity: Activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include, but are not limited to, clearing and grubbing, grading, excavating, and demolition. Additionally, projects resulting in 5,000 square feet or more and 100 cubic yards or more require an approved sediment and erosion control plan.

Conveyance: Any structural process for transferring stormwater between at least two (2) points, including piping, ditches, swales, curbs, gutters, catch basins, channels, storm drains, and roadways.

Hazardous Materials : Any material, including any substance, waste, or combination threat which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge: Any direct or indirect non-stormwater discharge to the storm sewer system, except as exempted in section 4.1 Table l.

Illicit Connections: An illicit connection is defined as either of the following:

- *Any drain or conveyance, whether on the surface or subsurface that allows an illegal discharge to enter the storm drain system including, but not limited to, any conveyances that allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or:*

- *Any drain or conveyance connected from a commercial or industrial land use to the storm drain system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.*

Municipal Separate Storm Sewer System (MS4): The system of conveyances (including sidewalks, roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and/or operated by UMD and designed or used for collecting or conveying stormwater, and that is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Permit: a permit issued by USEPA (or by a State under authority delegated pursuant to 33 USC§ 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Stormwater Discharge: Any discharge to the storm drain system that is not

composed entirely of stormwater.

Outfall: A point source where the MS4 discharges from a pipe, ditch or other discreet conveyance directly or indirectly to waters of the State of Maryland, or to another MS4.

Person: Any city utility, individual, contractor, student, staff, or faculty.

Pollutant: Anything that causes or contributes to pollution. Pollutants may include, but are not limited to, paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid, solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Spill Prevention Control & Countermeasure (SPCC) Plan: A document that describes procedures put in place to prevent and respond to oil and oil product spills.

Storm Sewer System: System of conveyances by which stormwater is collected and/or directed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Stormwater: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Stormwater Pollution Prevention Plan (SWPPP): A document that describes the BMPs and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater conveyance systems, and/or receiving waters to the Maximum Extent Practicable.

Wastewater: Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

SECTION 2: STORMWATER MAPPING

The development of a storm sewer system map is used to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharge of dry weather flows, the possible sources of dry weather flows, and the particular water bodies these flows may be affecting. The availability of this map clearly demonstrates such awareness.

UMD will utilize AutoCAD, GPS, and GIS technologies to map all conveyance systems and outfalls. All outfall locations will then be incorporated into UMD's mapping system and database. All outfalls will be photographed and numbered for reference purposes. Maps will be available to print for public review. A current site map and photo log is included in Appendix B. UMD is in the process of updating and enhancing its existing maps; site maps will be updated as needed. The photo log in Appendix B will be completed as each outfall is inspected as described section 4.1.1. of this plan.

SECTION 3: ORDINANCES

3.1 State Ordinances

The Code of Maryland Regulations (COMAR) Title 26, Subtitle 4 identifies all of the State's ordinances for water management, specifically water pollution control and abatement. The ordinances can be online found at:

http://www.dsd.state.md.us/COMAR/subtitle_chapters/26_Chapters.aspx#Subtitle04

3.2 County Ordinances

There are currently no county ordinances that apply to UMD's IDDE. However, Prince George's County Code of Ordinances Subtitle 32, Division 3 encompasses its stormwater management ordinances. These ordinances can be found at:

https://www.municode.com/library/md/prince_george's_county/codes/code_of_ordinances

3.3 City Ordinances

{RESERVED}

3.4 University Policies

While the University of Maryland does not have a specific ordinance relating to illicit discharge detection and elimination, Section VI of the UMD Policies grants authority to the Department of Environmental Safety, Sustainability and Risk (ESSR), which was formerly known as the Department of Environmental Safety, to ensure compliance with all environmental regulations. Therefore, ESSR will implement this IDDE Plan since it is required by its NPDES General Permit for Discharges from Small MS4s (State Permit No. 05-SF-5501; NPDES Permit No. MDR05501). More details regarding this University Policy are included in Appendix C of this plan. The complete directory of the University of Maryland's Policies can be found at:

https://www.president.umd.edu/administration/policies

SECTION 4: DETECTION PROCEDURES

4.1 Prohibition of Illicit Discharges

Illicit discharges, as defined by the USEPA, are defined as a storm drain that has measurable flow during dry weather containing pollutants and/or pathogens. This means any non-permitted discharge to a regulated MS4 or to waters of the State, that does not consist entirely of stormwater, except for naturally occurring floatables, such as leaves, tree limbs, or authorized non-stormwater discharges covered under a NPDES permit.

Illicit discharges can be categorized as either direct or indirect. Examples of direct illicit discharges include sanitary wastewater; piping directly connected from a home to the storm sewer; materials (e.g., used motor oil) that have been dumped illegally into a storm drain catch basin; or a cross-connection between the sanitary sewer and storm sewer systems. Examples of indirect illicit discharges include: a damaged sanitary sewer line leaking into a storm sewer line, or a failing septic system leaking into a storm sewer line, or causing surface discharge into the storm sewer.

The MS4 general permit authorizes the following non-stormwater discharges provided the discharges have been determined unsubstantial contributors of pollutants, as stated in Part VI.C. UMD will not consider items listed in Table 1 as illicit discharges. If UMD determines any of these activities to be illicit discharges in the future, UMD will update its IDDE Plan accordingly.

Table 1.
Exempt Non-Stormwater Discharges

Irrigation water	Springs
Uncontaminated pumped groundwater	Water from crawl space pumps
Diverted stream flows	Footing / foundation drains
Rising ground waters	Lawn watering runoff
Uncontaminated groundwater infiltration	Flows from riparian habitats and wetlands
Discharges from firefighting activities	Residual street wash water

Table 2.
Non-Stormwater Discharges Authorized by Other Permits

Source	Permit Number
Dechlorinated discharges from potable water sources	08-DP-2618 (MD0063801)
Air conditioning condensate	08-DP-2618 (MD0063801)
Steam Condensate	08-DP-2618 (MD0063801)
Contact / Non-contact cooling water	08-DP-2618 (MD0063801)
Swimming pool discharge	12-SI-7192 (MDG767192)

4.2 Prohibition of Illicit Connections

The construction, use, maintenance, or continued existence of illicit connections to the storm drain system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under laws or practices applicable or prevailing at the time of connection. A person is considered to be in violation of this program if the person connects a line conveying sewage to the MS4, or allows such a connection to continue. Improper connections in violation of this program must be disconnected and redirected, if necessary, to the sanitary sewer system.

4.3 Procedure to Report an Incident

4.3.1 Notification of Spills

Notwithstanding other requirements or laws, as soon as any person responsible for any known or suspected release of materials which are resulting or may result in an illicit discharge of pollutants into stormwater runoff, the storm sewer system, or water of the State, said person shall immediately take all necessary actions and measures to: stop, contain, and cleanup such release. In the event of such a release of an illicit discharge, said person shall immediately notify the illicit discharge hotline (Environmental Affairs Unit) at 301-405-3990. Reported spills will be tracked by Environmental Affairs in the Illicit Discharge Incident Tracking Sheet in Appendix D of this Plan.

Spill procedures regarding emergency actions, such as radiation, chemical, or biological, can be found at this link: https://www.essr.umd.edu/documents

4.3.2 Reporting

If an illicit discharge is identified during a routine inspection or while responding to a notification, ESSR will write a report for each illicit discharge and its location. ESSR will maintain a database that documents all activities associated with the UMD's IDDE Plan ranging from mapping, outfall screening, source identification, and photographs. Records of all illicit discharges and activities associated with this plan will be documented and submitted to Maryland Department of the Environment (MDE) with UMD's annual report.

Any illicit discharges in violation of UMD's SPCC and/or SWPPP will be reported as outlined within their respective plan(s).

4.4 Inspection Procedures

4.4.1 Outfall Inspections

The Outfall Inspection Form will be completed for at least 50% of the outfalls each year, as required by MDE. The purpose of the inspections is to screen for any source of an illicit discharge

and to eliminate any improper connection or illicit discharge to the storm drain system. The inspection sheets are used during dry weather to record descriptive and quantitative information about each outfall inspected in the field.

Field staff conducts an outfall inspection by photographing each outfall and characterizing its dimensions, shape and component material, and recording observations on basic sensory and physical indicators. Each outfall with a flow will have field measurements taken for temperature, pH, ammonia, and chlorine. Basic field equipment needed for the inspections include: waders, a measuring tape, watch, camera, pH probe, ammonia test strips, chlorine meter, and sterile gloves. The Outfall Inspection Form is located in Appendix E. Based on field screening results, additional sampling and/or investigation may be conducted, as warranted.

Additionally, in accordance with UMD's State Discharge Permit No. 08-DP-2618 (NPDES Permit No. MD0063801), each month the twelve (12) regulated outfalls (Outfalls 001-005, 007, 010, 012, 014, 016, 018, 019) will be tested for the required in-field parameters and laboratory analyses. These parameters can be found in Table 3. Additional inspections may be required depending upon the results of initial inspection. UMD will also conduct outfall inspections in response to community, student, and employee complaints, as deemed appropriate.

Table 3.
Water Quality Test Parameters and Uses

Water Quality Test	Permit Limitations	Method
Temperature	<90°F (32°C)*	In-field thermometer
pH	6.5-8.5	pH meter in field
Total Residual Chlorine	0.011 mg/l**	TRC meter in field
Discharge Flow	REPORT VALUE	Calculated in field
Total Copper	9.0 mg/l	Laboratory analysis
Total Nitrogen	REPORT VALUE	Laboratory analysis
Oil & Grease	15 mg/L***	Laboratory analysis
Total Phosphorus	REPORT VALUE	Laboratory analysis
Total Kjeldahl Nitrogen	REPORT VALUE	Laboratory analysis
Nitrate/Nitrite as N	REPORT VALUE	Laboratory analysis

*Temperature is only monitored in June, July and August.
**Total Residual Chlorine reporting limit of 0.01 is unattainable in field settings, so a value of 0.1 mg/l is used as the reporting limit.
***Oil and Grease is only tested on three (3) of the twelve (12) outfalls.

4.4.2 Source Identification

When identifying any illicit discharges or the source of any violations for their NPDES permit, ESSR will locate the original discharge point by using a map of the storm sewer system and physically following a drainage ditch, or identifying the most up-pipe manhole with a junction. ESSR may opt to collect additional field and laboratory samples as he or she makes their way

upstream or up-pipe in order to compare the outfall sample results with the in-line results in hope of identifying similarities between the sites. If, from following the drainage ditch or inspecting the manhole, ESSR can determine the direction from which the discharge originates, ESSR will then continue upstream or to the next up-pipe manhole until he or she can pinpoint the source or the general vicinity from where the discharge is originating. If ESSR cannot identify the specific source through visual observation, a dye test, smoke test, or video inspection will be necessary to determine the source of the discharge.

4.5 Immediate Response Procedures

All illicit discharges should be reported to the University's Environmental Affairs Unit at (301)-405-3990 as soon as possible. The report should include: the location of the problem, time the problem was found, odor/color/turbidity/floatables, photo(s), and any other relevant information.

Any illicit discharges in violation of UMD's SPCC and/or SWPPP will follow the reporting procedures as outlined within their respective documents.

Spill procedures regarding emergency actions for various materials, such as chemical, radiological, or biological, can be found at this link:

https://www.essr.umd.edu/documents

4.6 Investigation and Response Procedures

In the case of the identification of an illicit discharge, it is necessary to conduct an investigation to identify and eliminate the source of the discharge. An investigation may result from:

- A report to UMD ESSR staff from the general public;
- A report from a UMD staff member or student; or
- Results of outfall screening.

The determination of if an illicit discharge has occurred will be made by UMD ESSR staff. In all cases of an illicit discharge, the UMD Illicit Discharge Incident Tracking Form, found in Appendix D, must be completed for MS4 permit annual reporting documentation purposes. An investigation of an illicit discharge may result in the source being easily identified or may be complex and should utilize the methods outline in Section 4.4.2 of this plan.

4.6.1 Investigation Protocol

Based on the familiarity of the campus and its drainage areas, an initial field evaluation may easily identify the source of an illicit discharge. Once found, the source should be documented on the UMD Illicit Discharge Tracking Form. The remainder of the form shall be completed as appropriate to indicate the source has been eliminated, if applicable, and provide an ending date

for the investigation. It is critical that the UMD Illicit Discharge Tracking Form is completed in order to demonstrate that illicit discharges have been addressed.

If the source of an illicit discharge is not easily identified, further investigation may be necessary and should be guided by the following procedures:

1. Track the illicit discharge to its point of entry into the storm sewer. Tracking can be supplemented with review of the UMD outfall mapping to identify the drainage area of the illicit discharge. Cross reference the mapping with the UMD SWPPP mapping that indicates areas most likely to be the source of pollutants.

2. Conduct field inspection of the drainage area near the point of entry to identify the potential pollutant source. Document potential sources with photos, ensuring the photos give the appropriate context to the location of the source.

UMD staff will primarily rely upon visual inspections of the areas in the storm sewer system above the outfall at which an illicit discharge is detected. Sampling and analysis can be performed as necessary to determine the characteristics of the illicit discharge and to help identify the most likely source. Improper connections and unpermitted cross-connections to the storm sewer system can be detected by utilizing a combination of methods to investigate non-stormwater discharges, such as visual/video inspections, and dye or smoke tracer testing. Dry-weather testing at a discharge point assists in identification of abnormal conditions such as sporadic or continuous discharge, which can facilitate tracking of the source. Tracking techniques also include visual inspections of drainage structures and lines, dye testing, video inspection, indicator monitoring, smoke testing, and optical brightener monitoring traps. Other more elaborate approaches include using remote sensing tools to identify soil moisture, water temperature, and vegetation anomalies associated with illegal dumping activities.

4.7 Recordkeeping

The NPDES Phase II Permit requires UMD to keep records of all stormwater program activities and IDDE records for a minimum of five (5) years. UMD will maintain a database of illicit discharges and investigation reports, citizen complaints, outfall inspections, and corrective actions. All paper copies will be stored in a file designated for illicit discharges and located in the UMD ESSR office. Electronic copies will be available on demand.

SECTION 5: CORRECTIVE ACTIONS & ENFORCEMENT

In order to maintain compliance with the permit, ESSR has the authority to notify entities within the UMD MS4 of deficiencies and/or illicit discharges and to require corrective action to be performed. In the case of faculty, staff, or students under the control of UMD, ESSR will work directly with the party/parties to address and correct any deficiencies and/or illicit discharges. In the event that tenants or other non-UMD entities are involved in the deficiencies and/or illicit discharges, ESSR will notify the party/parties of the required corrective actions and establish a timeframe for compliance. In the event that the party/parties do not comply, the incident will be referred to MDE for enforcement action. UMD's ESSR department will enforce compliance with the IDDE Plan and work with the party/parties to obtain compliance. ESSR, however, is not an "enforcement" entity in the traditional sense and, as such, will not impose fines, penalties, etc. If situations arise where an illicit discharge is determined to be willful and criminal in nature, the matter may be referred to the University of Maryland Police Department for further action, in conjunction with referral to MDE.

Deficiencies and/or illicit discharges at UMD construction sites will be handled differently; those will be reported to the Facilities Management Department by ESSR. The Facilities Management Department will then work with their construction contractors to undertake the necessary corrective action(s). If warranted, the Facilities Management Department and/or ESSR will refer the issue to the MDE for enforcement action.

SECTION 6: PUBLIC EDUCATION

6.1 Public Education and Outreach

UMD shall implement and maintain a public education and outreach program to help reduce illicit discharges of pollutants. Public education and outreach can be coordinated with other portions of UMD's stormwater management program, developed independent of other pollution control efforts, or implemented by an entity other than the permittee. At a minimum, the public education program shall contain information about the impacts of illicit discharges on receiving waters, why controlling these discharges is important, and what the public can do to reduce illicit discharge pollutants in stormwater runoff.

Examples of the information that should be considered by the permittee when developing a public education and outreach program include:

1. The types and causes of pollutants found in urban runoff;
2. The importance of reducing, reusing, and recycling;
3. The consequences of stormwater pollutants;
4. Proper disposal of vehicle and equipment fluids;
5. Outfall signage and storm drain stenciling;
6. Residential car washing;
7. Proper pet waste management;
8. Increasing proper disposal of hazardous waste and household hazardous waste (HHW); and
9. How citizens and staff can contribute to UMD's stormwater management and IDDE program through the following:
    a. Proper disposal of vehicle fluids;
    b. Lawn care and landscaping;
    c. Hazardous material storage, use, and disposal (e.g., herbicides, pesticides, and fertilizers);
    d. Spill and illegal dumping hotline; and
    e. Any other components deemed necessary to ensure adequate public outreach and education.

6.2 Public Involvement and Participation

UMD shall implement and maintain a public involvement and participation program. UMD shall, at a minimum, comply with all State public notice requirements in actions or decisions made having to do with stormwater management and the IDDE program. Additionally, UMD will implement different programs to assist with prevention or and the identification of illicit discharges. This can include: stream cleanups, illicit discharge hotline, promoting educational programs in for faculty, staff, and students, and providing information sessions/material on request. UMD requires stormwater training for staff involved in activities that are considered a high risk for potential stormwater pollution, such as those facilities that are covered by the 12-SW

General Permit for Stormwater Associated with Industrial Activity. UMD also participates in a storm drain inlet marking program.

SECTION 7: STAFF TRAINING

The MS4 Permit requires UMD to provide annual training to applicable field personnel in recognition and reporting of illicit discharges. UMD requires stormwater training for staff involved in activities that are considered a high risk for potential stormwater pollution, such as those facilities that are covered by the 12-SW General Permit for Stormwater Associated with Industrial Activity. UMD ESSR will provide training for field staff and other employees on ways to identify and report non-stormwater discharges, spills, illicit connections, and illegal dumping. The field staff members will receive additional training in appropriate methods to identify, trace, and remove the source of an illicit discharge as well as effective methods to identify emergencies and contain spills. Additionally, UMD ESSR will provide training to other staff members in other departments who may come into contact with illicit discharge through their field work on illicit discharge identification and reporting procedures. Any and all staff operating the IDDE hotline will be trained on how to respond to calls. Training will be provided annually to keep all staff members up-to-date. Training materials are available in Appendix F.

SECTION 8: IDDE CERTIFICATION

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

Name: JASON L. BAER Title: ASSISTANT DIRECTOR OF ENVIRONMENTAL AFFAIRS

Signature: _____ Date: 8/3/17

SECTION 9: IDDE EVALUATION AND MODIFICATIONS

Revision	Date	Details / Comments
Revision 00	July 2017	Original IDDE Plan

SECTION 10: REFERENCES

The following references were used to prepare this plan and contain supplemental information that may be helpful to City staff.

IDDE Program Manuals:

Center for Watershed Protection and Robert Pitt. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments.* October 2004. U.S Environmental Protection Agency. Washington, D.C. https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

New England Interstate Water Pollution Control Commission. *Illicit Discharge and Elimination Manual: A Handbook for Municipalities.* January 2003. Lowell, MA. http://www.neiwpcc.org/neiwpcc_docs/iddmanual.pdf

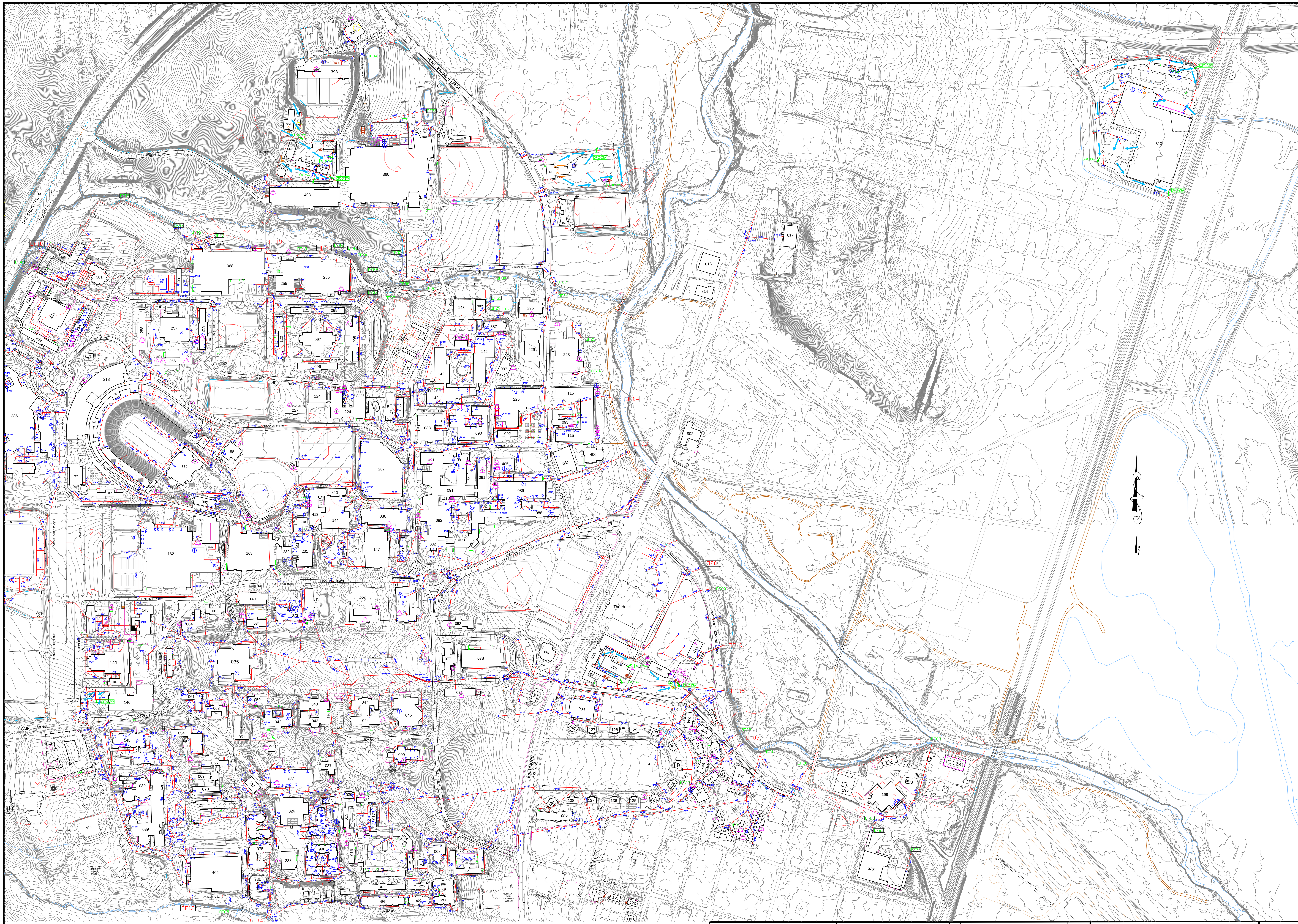
APPENDIX A

SITE VICINITY MAP


University of Maryland
Site Vicinity Map
Legend
University of Maryland
Terrapin Trail
Wellness Way
Technology Dr
Farm Dr
Anacostia Tributary Trail System
Berwyn Rd
48th Ave
49th Ave
College Park Trolley Trail
Osage St
Curry Dr
193
Stadium Dr
College Park
Navahoe St
Fieldhouse Dr
Campus Dr
Lakeland
Adelphi Ct
Temple St
University of Maryland
Greenhouse Rd
Tulane Dr
Chapel Drive
Stanford St
Preinkert Dr
Regents Dr
Yale Ave
Paint Branch Pkwy
Rutgers St
Purdue St
Mowatt Ln
Lehigh Rd
Windsor Ln
Knox Rd
Pennsylvania St
Cornell Ave
Princeton Ave
Dickinson Ave
Hopkins Ave
Old Town
Commander Dr
Gumwood Dr
Hunter Ln
Guilford Dr
Hartwick Rd
Calvert Rd
Adelphi Rd
Calverton Dr
Eversfield Dr
Rowalt Dr
Baltimore Ave
Heights Dr
Google earth
© 2016 Google
3000 ft
N

APPENDIX B

SITE MAP



LEGEND

DRUM STORAGE	OUTFALLS	SPILL KIT
ABOVE GROUND TANK	12-SW STORMWATER OUTFALLS	ZIPPER DRAINS
TRANSFORMER	OIL AND WATER SEPERATOR	DRAINAGE FLOW

SITE PLAN

SCALE 1"=200 ft

DESIGNED	KP
DETAILED	AJG
CHECKED	
APPROVED	
DATE	6/30/2017

MARYLAND ENVIRONMENTAL SERVICE

MARYLAND ENVIRONMENTAL SERVICE
ENVIRONMENTAL OPERATIONS GROUP

ROY C. MCGRATH — DIRECTOR
STEVE TOMCZEWSKI — GROUP DIRECTOR
TIM FORD — CHIEF OF ENGINEERING
JOHN AGNOLI — ENGINEER

NO.	DATE	DESCRIPTION	BY	CK

SITE MAP

ILLICIT DISCHARGE DETECTION & ELIMINATION

UNIVERSITY OF MARYLAND

PROJECT NO.
SCALE: 1"=200'
SHEET 1 OF 1
DRAWING NO.

APPENDIX C

UMD IDDE POLICIES

The University of Maryland Policies, Section VI: General Admiration, Chapter 21.00(A): Policies and Procedures for Environmental, Safety and Health Management states:

A. Department of Environmental Safety

The Department of Environmental Safety (DES) is responsible for the administration of the campus policies and is accountable for the University's compliance with all environmental, safety and health regulations. It carries out this mission by providing technical, regulatory and related management services to the colleges/schools and departments who have a shared responsibility for operational accountability for regulatory compliance. DES assists the colleges/schools and departments in the development and implementation of programs, including training, emergency response, and analysis of specific problems so that compliance is practical at the unit level. DES is the unit responsible for all official University contact with external governmental regulatory agencies concerned with workplace health, safety and environmental compliance. In consultation with University legal counsel and, as required, representation by the Office of the Attorney General, DES shall coordinate all University responses to regulatory agencies' inquiries, complaints, lawsuits and other formal proceedings. By working with a Policy Committee, DES is instrumental in the design and implementation of an effective environmental safety program. DES reports to the Vice President for Administrative Affairs.

This policy grants the Department of Environmental Safety (DES) {recently changed to the Department of Environmental Safety, Sustainability, and Risk (ESSR)} the authority to maintain the University's compliance with environmental regulations. Therefore, ESSR will implement the IDDE requirements of the General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems. With regards to illicit discharge detection and elimination, ESSR will implement the following requirements of their MS4 permit:

C. Illicit Discharge Detection and Elimination. Permittees shall develop, implement, and maintain a program to identify and eliminate illicit storm drain system connections and non-stormwater discharges to the maximum extent practicable. The program developed to satisfy this minimum control measure shall contain elements to field screen storm drain system outfalls, inspect the storm drain system for the purpose of identifying the source of any illicit discharges, eliminate any illegal connection or illicit discharge to the storm drain system, and enforce penalties where appropriate. The illicit discharge program shall also contain components to address illegal dumping and spills. This minimum control measure may be implemented and maintained by the permittee or by another responsible entity. Additionally, a permittee may coordinate its efforts to identify and eliminate non-stormwater discharges with those of the surrounding County performing similar activities under an individual NPDES municipal separate storm sewer system permit. If the responsibilities for complying with this minimum control measure are to be shared between the permittee and another responsible entity, the relationship and specific duties of all participating entities shall be outlined in the NOI submitted to MDE according to PART IL of this

general permit. At a minimum, a program developed to implement illicit discharge detection and elimination to satisfy this control measure shall contain the following:

1. A map showing the extent of the storm drain system;

2. The legal means to provide for entering onto private property to investigate and eliminate illicit storm drain system discharges;

3. Procedures to field screen storm drain outfalls on a consistent basis;

4. Inspection procedures for identifying the source of any suspected illicit discharges to the storm drain system;

5. Enforcement and penalty procedures;

6. Procedures to address spills and illegal dumping;

7. Means to inform public employees, businesses, and the general public of illegal discharges and improper waste disposal; and

8. Any other components deemed necessary to ensure that non-stormwater discharges to the municipal separate storm sewer system are either permitted by MDE under NPDES or eliminated.

Regardless of whether a permittee develops its own program or relies on another responsible entity to satisfy this minimum control measure, the permittee shall cooperate regarding discharges entering or leaving its jurisdictional boundaries or Waters of the State. The intent of this program is to control non-stormwater discharges to and from municipal separate storm sewer systems. Therefore, it is essential that a permittee covered by this general permit cooperate actively in instances where storm drain systems are interconnected with entities covered under this or any other NPDES stormwater permit.

Additionally, in order to maintain compliance with the permit, ESSR has the authority to notify entities within the UMD MS4 of deficiencies and/or illicit discharges and to require corrective action to be performed. In the event that tenants or other non-UMD entities are involved in the deficiencies and/or illicit discharges, ESSR will notify the party/parties of the required corrective actions and establish a timeframe for compliance. In the event that the party/parties do not comply, the incident will be referred to MDE for enforcement action.

Deficiencies and/or illicit discharges at UMD construction sites will be handled differently; those will be reported to the Facilities Management Department by ESSR. The Facilities Management Department will then work with their construction contractors to undertake the necessary corrective action(s). If warranted, the Facilities Management Department will refer the issue to the Maryland Department of the Environment for enforcement action.

APPENDIX D

ILLICIT DISCHARGE INCIDENT TRACKING SHEET

Illicit Discharge Incident Tracking Sheet

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:

Caller contact information (*optional*):

Incident Location *(complete one or more below)*

Latitude and longitude:

Stream address or outfall #:

Closest street address:

Nearby landmark:

Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	

Narrative description of location:

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			

Narrative description of problem indicators:

Suspected Violator (name, personal or vehicle description, license plate #, etc.):

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

APPENDIX E

OUTFALL INPECTION FORM

IDDE OUTFALL INSPECTION FORM

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours: Last 48 hours:		
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

☐ Industrial ☐ Open Space

☐ Ultra-Urban Residential ☐ Institutional

☐ Suburban Residential Other: _____

☐ Commercial Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☐ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	_____' _____"	Ft, In	Tape measure
	Measured length	_____' _____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip
Chlorine			mg/L	Probe

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

APPENDIX F

IDDE TRAINING MATERIALS

Illicit Discharge Detection and Elimination (IDDE) Training

2017

Overview

- What is an IDDE?
- Key terms
- Applications
- Key components
- Reporting processes

What is an IDDE?

- A plan to identify and locate sources of non-storm water discharge into storm drains.

IDDE Applications

- … to effectively eliminate illicit discharges and connections to UMD's Municipal Separate Storm Sewer System (MS4) permit.

- Establish methods to control pollutants entering the storm sewer system to comply with National Pollutant Discharge Elimination System (NPDES).

Key Terms: Illicit Discharge

- Any direct or indirect non-storm water discharge to the MS4.

1. A storm drain with measurable flow during dry weather **containing pollutants and/or pathogens**.
2. Has a unique **discharge frequency**, **composition**, and **mode of entry** into an MS4 system.
3. Originates from **"generating sites"**, or specific sources areas.

Key Terms: Illicit Discharge (continued)

- **IMPORTANT**: Not all dry-weather storm drain flows are classified “Illicit discharges”…
  - because they do not all contain pollutants/ pathogens.
- Field testing/ water quality sampling is needed to identify or confirm an illicit discharge.

Key Terms: Discharge Frequency

- How often the illicit discharge occurs:
  - Continuous
    - Occurs most to all the time, easy to detect
  - Intermittent
    - Occurs short time (few hours/day or days/year), harder to detect
  - Transitory
    - Occurs rarely (single event, spill), hardest to detect

Key Terms: Discharge flow type

- Dry discharges can contain one or more type of flow.
- Each flow type has a distinct chemical fingerprint:

Table 1: Comparative "Fingerprint" (Mean Values) of Flow Types

Flow Type	Hardness (mg/L as CaCO3)	NH_3 (mg/L)	Potassium (mg/L)	Conductivity (µS/cm)	Fluoride (mg/L)	Detergents (mg/L)
Sewage	50 (0.26)*	25 (0.53)*	12 (0.21)*	1215 (0.45)*	0.7 (0.1)*	9.7 (0.17)*
Septage**	57(0.36)	87 (0.4)	19 (0.42)	502 (0.42)	0.93 (0.39)	3.3 (1.33)
Laundry Washwater	45 (0.33)	3.2 (0.89)	6.5 (0.78)	463.5 (0.88)	0.85 (0.4)	758 (0.27)
Car Washwater	71 (0.27)	0.9 (1.4)	3.6 (0.67)	274 (0.45)	1.2 (1.56)	140 (0.2)
Plating Bath (Liquid Industrial Waste**)	1430 (0.32)	66 (0.66)	1009 (1.24)	10352 (0.45)	5.1 (0.47)	6.8 (0.68)
Radiator Flushing (Liquid Industrial Waste**)	5.6 (1.88)	26 (0.89)	2801 (0.13)	3280 (0.21)	149 (0.16)	15 (0.11)
Tap Water	52 (0.27)	<0.06 (0.55)	1.3 (0.37)	140 (0.07)	0.94 (0.07)	0 (NA)
Groundwater	38 (0.19)	0.06 (1.35)	3.1 (0.55)	149 (0.24)	0.13 (0.93)	0 (NA)
Landscape Irrigation	53 (0.13)	1.3 (1.12)	5.6 (0.5)	180 (0.1)	0.61 (0.35)	0 (NA)

** The number in parentheses after each concentration is the Coefficient of Variation; NA = Not Applicable*
*** All values are from Tuscaloosa, AL monitoring except liquid wastes and septage, which are from Birmingham, AL.*
Sources: Pitt (project support material) and Pitt et al. (1993)

Key Terms: Mode of entry

Direct

- Discharge directly connected to storm drain by a pipe.
  - Sewage cross-connections
  - Industrial/ commercial cross-connections
  - Straight pipe

Indirect

- Discharge enters via storm drain inlets or infiltrating into a pipe.
  - Groundwater seepage
  - Spills entering inlet
  - Direct dumping inlet
  - Outdoor washing
  - Non-target irrigation (landscaping)

Key components of an IDDE

1. Stormwater mapping
2. Ordinances
3. Detection procedures
4. Corrective action
5. Public education
6. Recordkeeping
7. Staff training

1. Stormwater mapping

Many communities lacked up-to-date mapping resources. It was found that mapping layers such as storm sewers, open drainage channels, waters of the U.S., outfalls, and land use were particularly useful to conduct and prioritize effective field investigations.

UMD utilizes GIS and CAD programs to keep up-to-date maps of the campus, along with multiple layers.

2. Ordinances

Table 8: Codes and Ordinances with Potential Links to IDDE

- Fire codes
- Hazardous wastes/spill controls
- Health codes
- Industrial storm water compliance
- Litter control regulations
- Nuisance ordinances
- Plumbing codes
- Pollution prevention permitting requirements
- Restaurant grease regulations
- Septic system regulations
- Sewer/drain ordinances
- Storm water ordinance
- Street/highway codes

To establish legal authority, communities will need to either develop a new IDDE ordinance or modify an existing ordinance that addresses illicit discharges. Language from existing ordinances that addresses illicit discharges should be incorporated or cross-referenced into any new IDDE ordinance to minimize conflicts and confusion. Furthermore, existing code ordinances may need to be amended or superseded to be consistent with the new IDDE ordinance.

3. Detection Procedures

- Notification of Spills
- Reporting during routine inspections
  - Outfall Reconnaissance Inventory (ORI) will be conducted, at a minimum, once per permit term
  - Monthly inspections for NPDES permit
  - Quarterly inspections for Stormwater permit
- Source Identification
  - Tracking, field investigation, smoke test, dye test, etc.

4. Corrective Action

- University Ordinance should provide for escalating enforcement measures to notify operators of violations and to require corrective action.
- Most illicit discharge corrective actions involve some form of infrastructure modification or repair.
  - Direct discharges are those such as cross-connections, and piping.
  - Indirect discharges are those such as pump station failure or sewer break.

4. Corrective Actions Continued

- Once the source of an illicit discharge has been identified, steps should be taken to fix or eliminate the discharge. The following four questions should be answered for each individual illicit discharge to determine how to proceed:

1. Who is responsible?
2. What methods will be used to fix it?
3. How long will it take?
4. How will removal be confirmed?

5. Public Education

- NPDES Phase II permits require public education and outreach and public involvement.
- Public education to advertise the hotline and training to educate employees across departments and agencies
- Dispersal of information brochures on UMD's IDDE
- Labeling storm drains and outfalls to make the public aware.

6. Recordkeeping

- The NPDES Phase II Permit requires UMD to keep records of all stormwater program activities and IDDE records for a minimum of five (5) years.
- UMD will maintain a database of illicit discharges and investigation reports, citizen complaints, outfall inspections, and corrective actions.
- All paper copies will be stored in a file designated for illicit discharges and located in the UMD ESSR office. Electronic copies will be available on demand.

7. Staff Training

- The MS4 Permit requires UMD to provide annual training (once a year) to applicable field personnel in recognition and reporting of illicit discharges.
- Sign in sheet for records

Reporting Processes

- Reporting an incident
- Outfall inspections
- Investigation and Response Procedures

Reporting an incident-

Illicit Discharge Hotline Incident Tracking Sheet				
Incident ID:				
Responder Information				
Call taken by:			Call date:	
Call time:			Precipitation (inches) in past 24-48 hrs:	
Reporter Information				
Incident time:			Incident date:	
Caller contact information (*optional*):				
Incident Location *(complete one or more below)*				
Latitude and longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description	**Secondary Location Description:**			
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks	
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):		
Narrative description of location:				
Upland Problem Indicator Description				
☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage		
☐ Wash water, suds, etc.	☐ Other: _____			
Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

1. Immediately notify the discharge hotline
2. Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
   - (located in Appendix D of the UMD IDDE plan).

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

Reporting an incident- (continued)

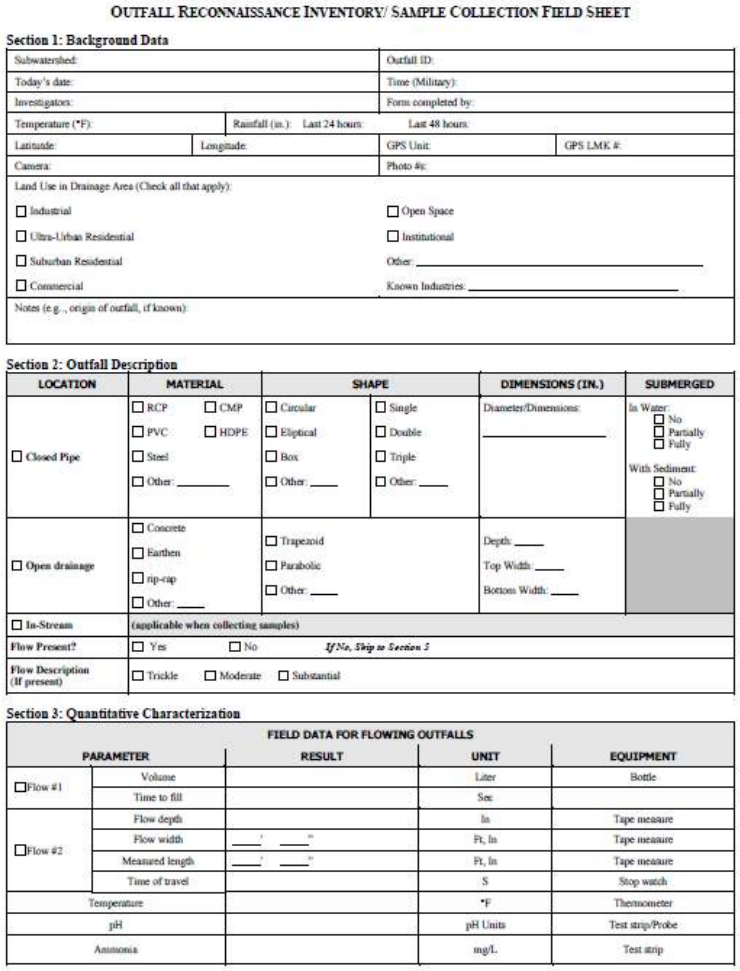
Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

1. Immediately notify the discharge hotline
2. Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
   - **(located in Appendix D of the UMD IDDE plan).**

Outfall Inspections

- Who?: Staff
- What?:
- Where?:
- When?:

Outfall Inspections- Outfall Form



OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

☐ Industrial ☐ Open Space
☐ Ultra-Urban Residential ☐ Institutional
☐ Suburban Residential Other: _____
☐ Commercial Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

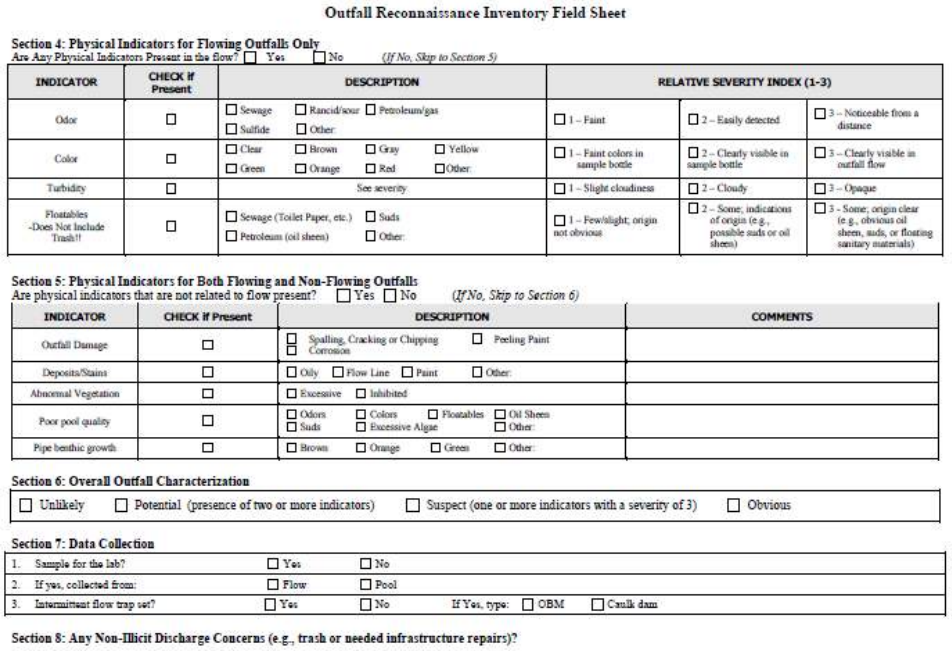
LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 3*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

- Section 1: Background Data of the site/ outfall location
- Section 2: Description of outfall
  - (e.g. material, size, shape, etc.)
- Section 3: Quantitative characterization-
  - (e.g. measuring flow, temperature, pH, and ammonia)
  - Make sure to note the type of equipment!

Outfall Inspections- Outfall Form (continued…)



Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

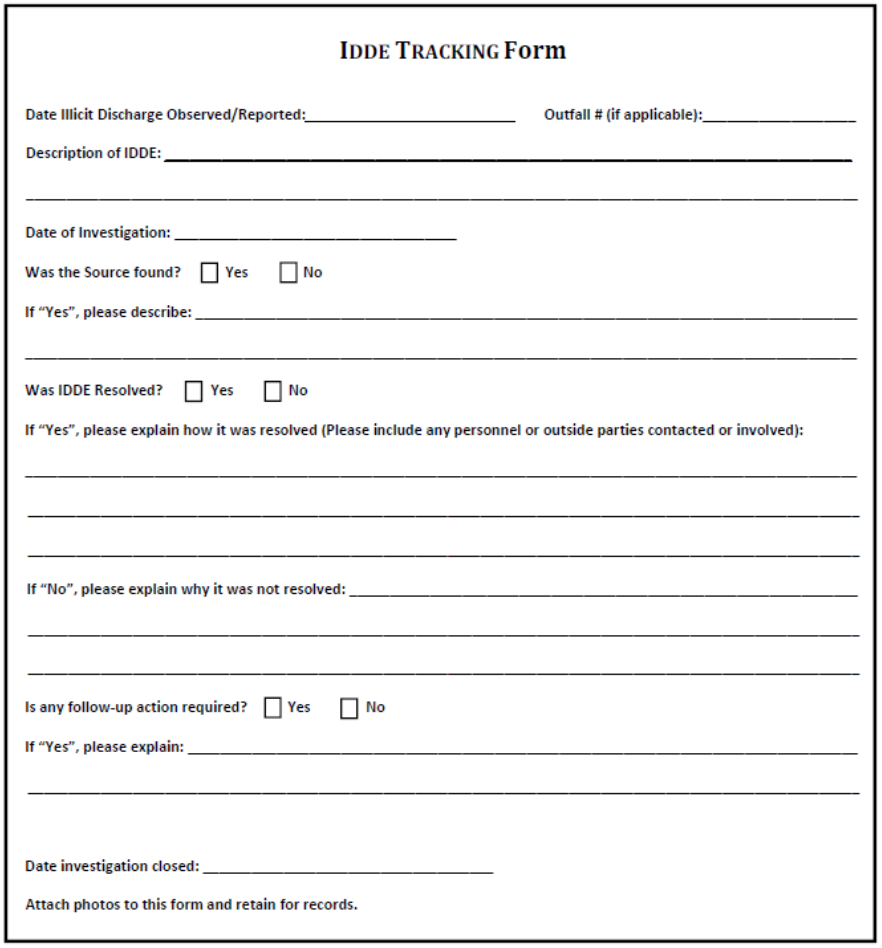
1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

(Located in Appendix E of the UMD IDDE plan)

- Section 4: Physical indicators for flowing outfalls
  - (i.e. Odor, color, turbidity, floatables)
- Section 5: Physical indicators for BOTH flowing and non-flowing
  - anything unrelated to the outfall flow
- Section 6: Overall outfall characterization
  - pollution indicators present
- Section 7: Data Collection
  - describes sample collection
- Section 8: non- illicit discharge concerns
  - (e.g. issues surrounding outfall not pertaining to the actual flow/water)

Investigation and Response Procedures- IDDE Tracking form



IDDE TRACKING Form

Date Illicit Discharge Observed/Reported:_____ Outfall # (if applicable):_____

Description of IDDE: _____

_____

Date of Investigation: _____

Was the Source found? ☐ Yes ☐ No

If "Yes", please describe: _____

_____

Was IDDE Resolved? ☐ Yes ☐ No

If "Yes", please explain how it was resolved (Please include any personnel or outside parties contacted or involved):

_____

_____

_____

If "No", please explain why it was not resolved: _____

_____

_____

Is any follow-up action required? ☐ Yes ☐ No

If "Yes", please explain: _____

_____

Date investigation closed: _____

Attach photos to this form and retain for records.

- After an illicit discharge is suspected, UMD ESSR staff will confirm the discharge.
- Staff **must** fill out the IDDE tracking form
  - **(located in Appendix G of the UMD IDDE plan).**

Key References

- For further information, refer to:
  - University of Maryland's IDDE plan
  - "Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments" by Center for Watershed Protection and Robert Pitt

Attachment 3: Example Training Materials

Illicit Discharge Detection and Elimination (IDDE) Training

2017

Overview

- What is an IDDE?
- Key terms
- Applications
- Key components
- Reporting processes

What is an IDDE?

- A plan to identify and locate sources of non-storm water discharge into storm drains.

IDDE Applications

- … to effectively eliminate illicit discharges and connections to UMD's Municipal Separate Storm Sewer System (MS4) permit.

- Establish methods to control pollutants entering the storm sewer system to comply with National Pollutant Discharge Elimination System (NPDES).

Key Terms: Illicit Discharge

- Any direct or indirect non-storm water discharge to the MS4.

1. A storm drain with measurable flow during dry weather **containing pollutants and/or pathogens**.
2. Has a unique **discharge frequency**, **composition**, and **mode of entry** into an MS4 system.
3. Originates from **"generating sites"**, or specific sources areas.

Key Terms: Illicit Discharge (continued)

- **IMPORTANT**: Not all dry-weather storm drain flows are classified “Illicit discharges”…
  - because they do not all contain pollutants/ pathogens.
- Field testing/ water quality sampling is needed to identify or confirm an illicit discharge.

Key Terms: Discharge Frequency

- How often the illicit discharge occurs:
  - Continuous
    - Occurs most to all the time, easy to detect
  - Intermittent
    - Occurs short time (few hours/day or days/year), harder to detect
  - Transitory
    - Occurs rarely (single event, spill), hardest to detect

Key Terms: Discharge flow type

- Dry discharges can contain one or more type of flow.
- Each flow type has a distinct chemical fingerprint:

Table 1: Comparative "Fingerprint" (Mean Values) of Flow Types

Flow Type	Hardness (mg/L as CaCO3)	NH_3 (mg/L)	Potassium (mg/L)	Conductivity (µS/cm)	Fluoride (mg/L)	Detergents (mg/L)
Sewage	50 (0.26)*	25 (0.53)*	12 (0.21)*	1215 (0.45)*	0.7 (0.1)*	9.7 (0.17)*
Septage**	57(0.36)	87 (0.4)	19 (0.42)	502 (0.42)	0.93 (0.39)	3.3 (1.33)
Laundry Washwater	45 (0.33)	3.2 (0.89)	6.5 (0.78)	463.5 (0.88)	0.85 (0.4)	758 (0.27)
Car Washwater	71 (0.27)	0.9 (1.4)	3.6 (0.67)	274 (0.45)	1.2 (1.56)	140 (0.2)
Plating Bath (Liquid Industrial Waste**)	1430 (0.32)	66 (0.66)	1009 (1.24)	10352 (0.45)	5.1 (0.47)	6.8 (0.68)
Radiator Flushing (Liquid Industrial Waste**)	5.6 (1.88)	26 (0.89)	2801 (0.13)	3280 (0.21)	149 (0.16)	15 (0.11)
Tap Water	52 (0.27)	<0.06 (0.55)	1.3 (0.37)	140 (0.07)	0.94 (0.07)	0 (NA)
Groundwater	38 (0.19)	0.06 (1.35)	3.1 (0.55)	149 (0.24)	0.13 (0.93)	0 (NA)
Landscape Irrigation	53 (0.13)	1.3 (1.12)	5.6 (0.5)	180 (0.1)	0.61 (0.35)	0 (NA)

** The number in parentheses after each concentration is the Coefficient of Variation; NA = Not Applicable*
*** All values are from Tuscaloosa, AL monitoring except liquid wastes and septage, which are from Birmingham, AL.*
Sources: Pitt (project support material) and Pitt et al. (1993)

Key Terms: Mode of entry

Direct

- Discharge directly connected to storm drain by a pipe.
  - Sewage cross-connections
  - Industrial/ commercial cross-connections
  - Straight pipe

Indirect

- Discharge enters via storm drain inlets or infiltrating into a pipe.
  - Groundwater seepage
  - Spills entering inlet
  - Direct dumping inlet
  - Outdoor washing
  - Non-target irrigation (landscaping)

Key components of an IDDE

1. Stormwater mapping
2. Ordinances
3. Detection procedures
4. Corrective action
5. Public education
6. Recordkeeping
7. Staff training

1. Stormwater mapping

Many communities lacked up-to-date mapping resources. It was found that mapping layers such as storm sewers, open drainage channels, waters of the U.S., outfalls, and land use were particularly useful to conduct and prioritize effective field investigations.

UMD utilizes GIS and CAD programs to keep up-to-date maps of the campus, along with multiple layers.

2. Ordinances

Table 8: Codes and Ordinances with Potential Links to IDDE

- Fire codes
- Hazardous wastes/spill controls
- Health codes
- Industrial storm water compliance
- Litter control regulations
- Nuisance ordinances
- Plumbing codes
- Pollution prevention permitting requirements
- Restaurant grease regulations
- Septic system regulations
- Sewer/drain ordinances
- Storm water ordinance
- Street/highway codes

To establish legal authority, communities will need to either develop a new IDDE ordinance or modify an existing ordinance that addresses illicit discharges. Language from existing ordinances that addresses illicit discharges should be incorporated or cross-referenced into any new IDDE ordinance to minimize conflicts and confusion. Furthermore, existing code ordinances may need to be amended or superseded to be consistent with the new IDDE ordinance.

3. Detection Procedures

- Notification of Spills
- Reporting during routine inspections
  - Outfall Reconnaissance Inventory (ORI) will be conducted, at a minimum, once per permit term
  - Monthly inspections for NPDES permit
  - Quarterly inspections for Stormwater permit
- Source Identification
  - Tracking, field investigation, smoke test, dye test, etc.

4. Corrective Action

- University Ordinance should provide for escalating enforcement measures to notify operators of violations and to require corrective action.
- Most illicit discharge corrective actions involve some form of infrastructure modification or repair.
  - Direct discharges are those such as cross-connections, and piping.
  - Indirect discharges are those such as pump station failure or sewer break.

4. Corrective Actions Continued

- Once the source of an illicit discharge has been identified, steps should be taken to fix or eliminate the discharge. The following four questions should be answered for each individual illicit discharge to determine how to proceed:

1. Who is responsible?
2. What methods will be used to fix it?
3. How long will it take?
4. How will removal be confirmed?

5. Public Education

- NPDES Phase II permits require public education and outreach and public involvement.
- Public education to advertise the hotline and training to educate employees across departments and agencies
- Dispersal of information brochures on UMD's IDDE
- Labeling storm drains and outfalls to make the public aware.

6. Recordkeeping

- The NPDES Phase II Permit requires UMD to keep records of all stormwater program activities and IDDE records for a minimum of five (5) years.
- UMD will maintain a database of illicit discharges and investigation reports, citizen complaints, outfall inspections, and corrective actions.
- All paper copies will be stored in a file designated for illicit discharges and located in the UMD ESSR office. Electronic copies will be available on demand.

7. Staff Training

- The MS4 Permit requires UMD to provide annual training (once a year) to applicable field personnel in recognition and reporting of illicit discharges.
- Sign in sheet for records

Reporting Processes

- Reporting an incident
- Outfall inspections
- Investigation and Response Procedures

Reporting an incident-

Illicit Discharge Hotline Incident Tracking Sheet				
Incident ID:				
Responder Information				
Call taken by:			Call date:	
Call time:			Precipitation (inches) in past 24-48 hrs:	
Reporter Information				
Incident time:			Incident date:	
Caller contact information (*optional*):				
Incident Location *(complete one or more below)*				
Latitude and longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description	**Secondary Location Description:**			
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks	
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):		
Narrative description of location:				
Upland Problem Indicator Description				
☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage		
☐ Wash water, suds, etc.	☐ Other: _____			
Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

1. Immediately notify the discharge hotline
2. Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
   - (located in Appendix D of the UMD IDDE plan).

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

Reporting an incident- (continued)

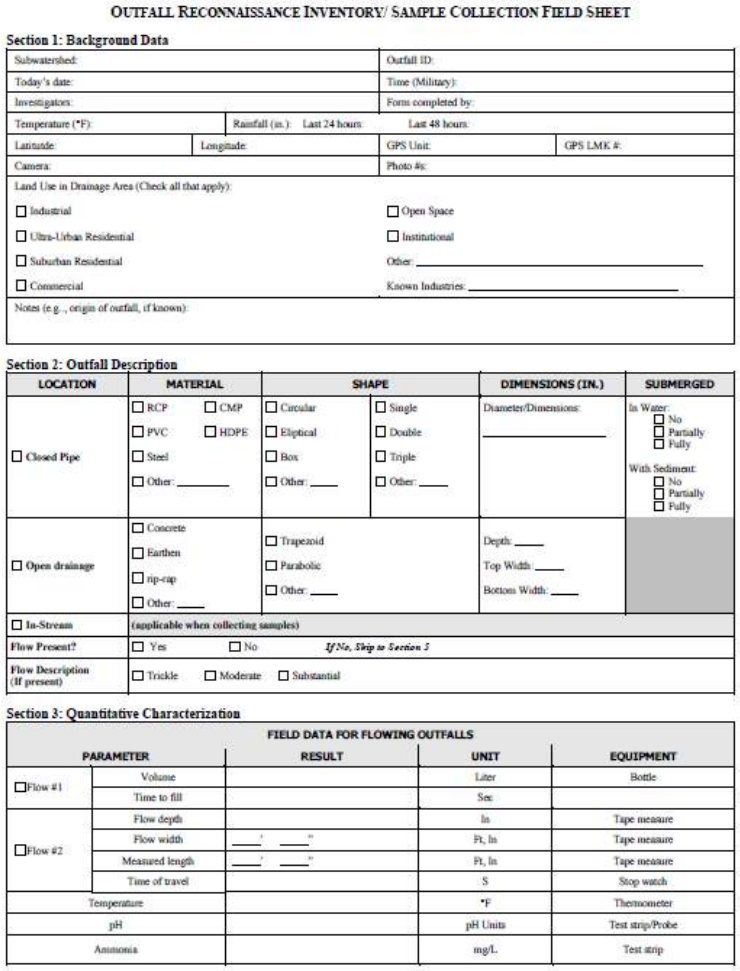
Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

1. Immediately notify the discharge hotline
2. Complete the Illicit Discharge Hotline Incident Tracking Sheet (left)
   - **(located in Appendix D of the UMD IDDE plan).**

Outfall Inspections

- Who?: Staff
- What?:
- Where?:
- When?:

Outfall Inspections- Outfall Form



OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

☐ Industrial ☐ Open Space
☐ Ultra-Urban Residential ☐ Institutional
☐ Suburban Residential Other: _____
☐ Commercial Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

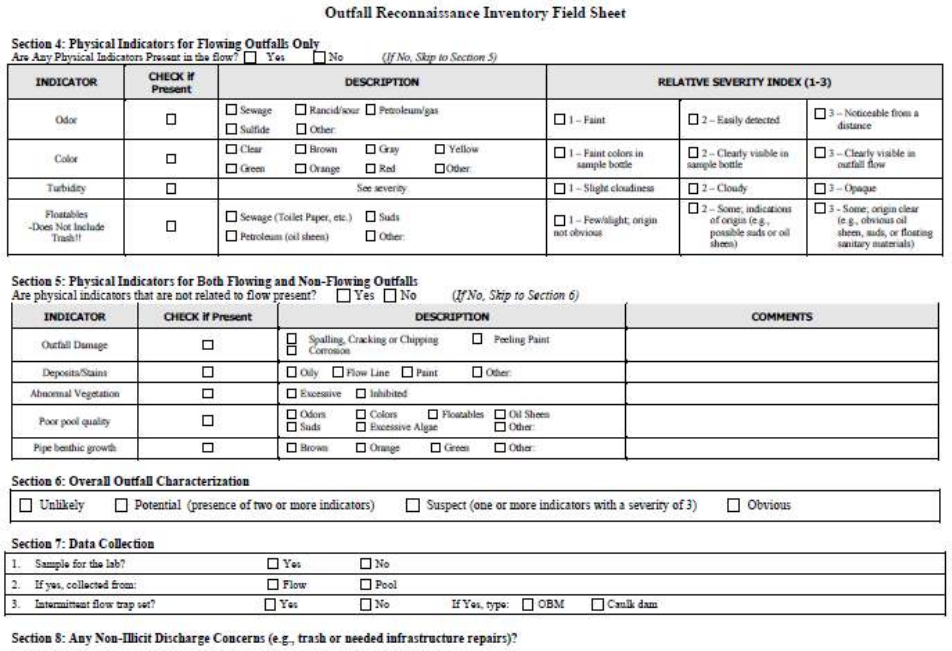
LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 3*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

- Section 1: Background Data of the site/ outfall location
- Section 2: Description of outfall
  - (e.g. material, size, shape, etc.)
- Section 3: Quantitative characterization-
  - (e.g. measuring flow, temperature, pH, and ammonia)
  - Make sure to note the type of equipment!

Outfall Inspections- Outfall Form (continued…)



Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

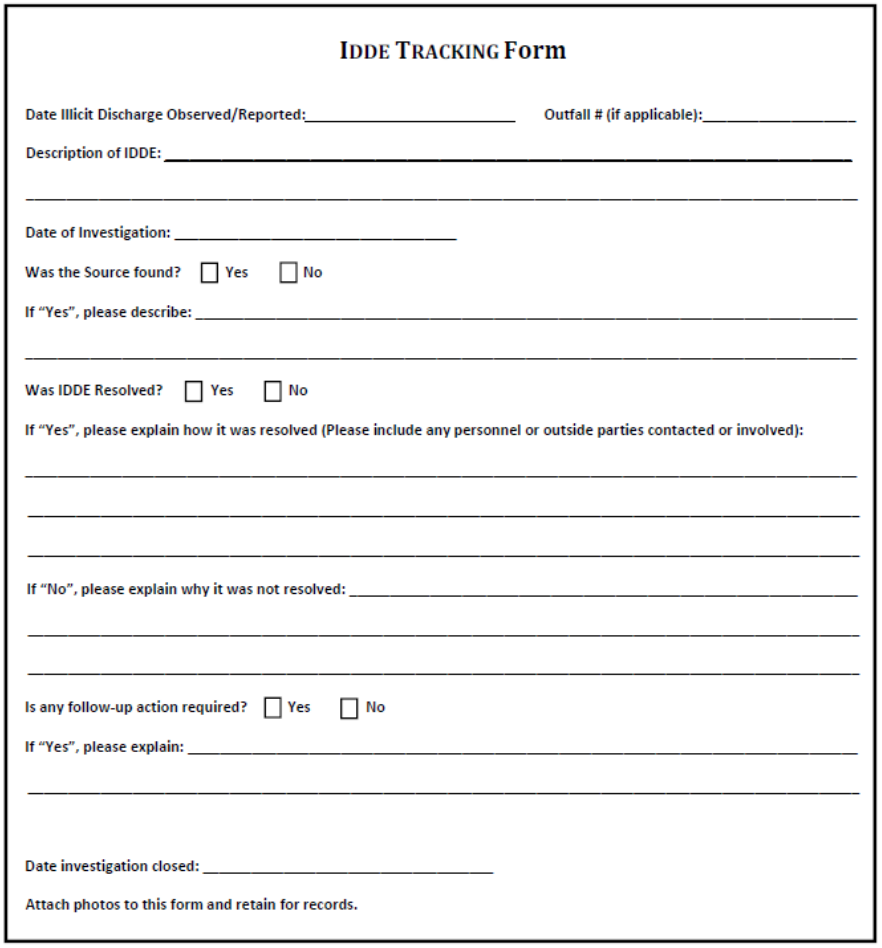
1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

(Located in Appendix E of the UMD IDDE plan)

- Section 4: Physical indicators for flowing outfalls
  - (i.e. Odor, color, turbidity, floatables)
- Section 5: Physical indicators for BOTH flowing and non-flowing
  - anything unrelated to the outfall flow
- Section 6: Overall outfall characterization
  - pollution indicators present
- Section 7: Data Collection
  - describes sample collection
- Section 8: non- illicit discharge concerns
  - (e.g. issues surrounding outfall not pertaining to the actual flow/water)

Investigation and Response Procedures- IDDE Tracking form



IDDE TRACKING Form

Date Illicit Discharge Observed/Reported:_____ Outfall # (if applicable):_____

Description of IDDE: _____

_____

Date of Investigation: _____

Was the Source found? ☐ Yes ☐ No

If "Yes", please describe: _____

_____

Was IDDE Resolved? ☐ Yes ☐ No

If "Yes", please explain how it was resolved (Please include any personnel or outside parties contacted or involved):

_____

_____

_____

If "No", please explain why it was not resolved: _____

_____

_____

Is any follow-up action required? ☐ Yes ☐ No

If "Yes", please explain: _____

_____

Date investigation closed: _____

Attach photos to this form and retain for records.

- After an illicit discharge is suspected, UMD ESSR staff will confirm the discharge.
- Staff **must** fill out the IDDE tracking form
  - **(located in Appendix G of the UMD IDDE plan).**

Key References

- For further information, refer to:
  - University of Maryland's IDDE plan
  - "Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments" by Center for Watershed Protection and Robert Pitt

Storm Water
Pollution Prevention Plan
Annual Training

Regulatory Background
(Part I)

In 1972, Congress amended the Federal Water Pollution Control Act (i.e., the Clean Water Act) to prohibit the discharge of any pollutant to waters of the U.S from point sources.

The exception to this discharge prohibition is if the pollutant is authorized by a NPDES (National Pollutant Discharge Elimination System) permit.

Important Definitions

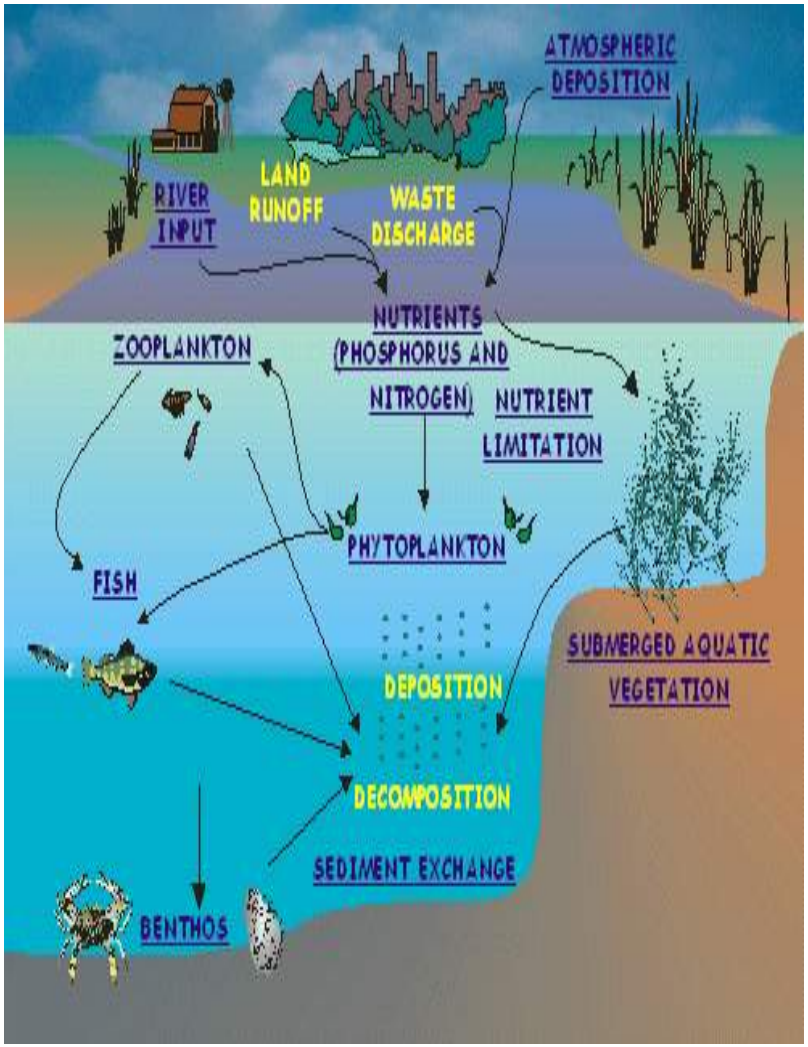
Pollutant: "Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, (certain) radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water…"

Taken from 40 CFR 122.2,"Definitions"

Important Definitions

Discharge of a Pollutant – *(A) "Any addition of a pollutant to navigable waters from a point source". 33 USC Section 1362 (12).*

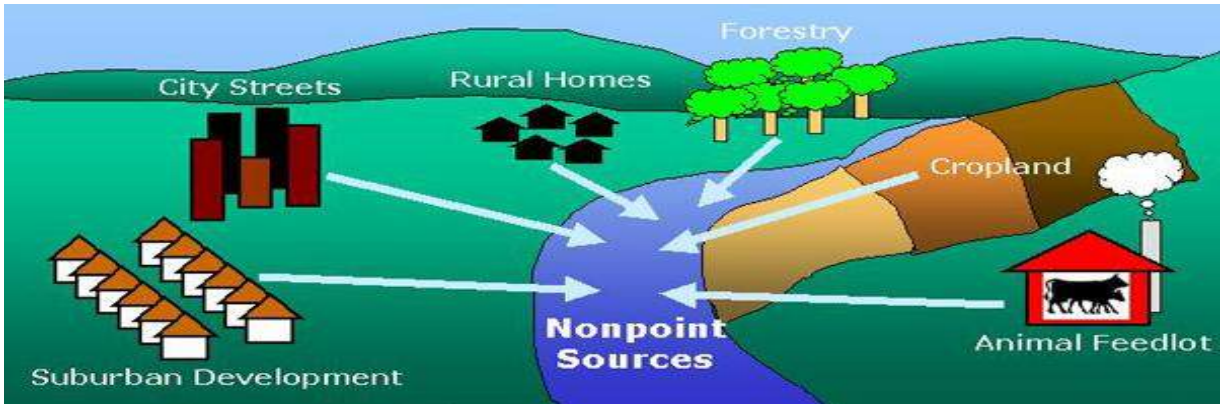
Navigable Waters – Defined very broadly by the Courts (U.S. v. Holland); "Waters of the U.S." includes wetlands, intrastate lakes, rivers, and streams (including intermittent streams); definition does not include treatment ponds/lagoons designed to meet requirements of the Clean Water Act.



Important Definitions

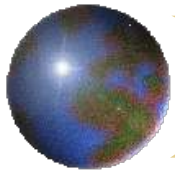
Point Source – *any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure,Concentrated Animal Feeding Operation (CAFO), or vessel from which pollutants are or may be discharged.* 33 USC Section 1362(14).

Regulatory Background (Part II)



The intent of the NPDES program, prior to storm water requirements, was to target reductions in pollutants from industrial process waste water and municipal sewage.

However, as control measures for these operations improved, the focus became disperse, non-point sources. Of prime importance with such widespread and scattered sources was storm water runoff.



Why Do We Need Stormwater Pollution Prevention Plans?

- Stormwater Pollution Prevention Plans (SWPPPs) are mandated by the Water Quality Act of 1987 for classes of industries and operations.
- These industries and operations have a significant potential to pollute national water resources, due to runoff from facility processes and impervious surfaces (e.g. asphalt).
- As a result, classes of industries and operations covered by general and individual NPDES permits are now required to develop pollution prevention plans.
- MD has received stormwater permitting authority from the EPA

12-SW

- As of January of 2014 new permit is in affect
- Many Changes and Updates

- Introduction of Chesapeake Bay Restoration Requirements!

12-SW VS. 02-SW
New Requirements

- Benchmark monitoring
  - Quarterly samples must be taken for four consecutive quarters by a member of the Pollution Prevention team (See Pollution Prevention Team list in section 1.3 of your SWPPP)
  - Can stop monitoring if ALL four quarters are below benchmark
  - Each industry has different sector specific benchmarks
  - Sector specific benchmarks can be found in your new permit's appendix

12-SW VS. 02-SW

Visual Stormwater Assessment

- Done Quarterly by a member of the Pollution Prevention team
- Sample must be taken from each outfall
- Must be taken 30 min after the beginning of a "Measurable Storm Event"
- No storm event 72 hours prior!!

12-SW VS. 02-SW

- Weekly Inspections of active and inactive areas
  - Focus on non stabilized areas of landfill
  - Areas used for storage of waste exposed to rain
  - Stabilization and structural control measures
  - Leachate collection system
  - Ensure erosion and sediment controls are working

  - Complete log with additional comments

Chesapeake Bay Restoration Requirements!

- Must Meet ALL Criteria to Comply

UMD Does NOT

- ✓ Facility is within Chesapeake Bay watershed
- ✓ Facility is 5 acres or greater
- ✓ Any portion of your facility is located within a Phase I or Phase II municipal separate storm sewer system (MS4) jurisdiction; AND
- ✓ Your facility is not owned by or leased from an entity that is permitted as an MS4

Chesapeake Bay Restoration Requirements

What does it entail???

- A 20% reduction of the untreated impervious surface area at your facility
  - (Not a 20% reduction of surface, but of treatment! I.E. stormwater ponds etc.)

Chesapeake Bay Restoration Requirements

HOW, WHEN ?!

- Select, design, install and implement plan from the 2000 Stormwater Design Manual
- The 20% reduction must be implemented within 5 years if an 02-SW is already held
- Must be complete within 4 year for any other site
- Use the surface area of your site from January 1st 2006 or best estimate for the 20% reduction

Federal Register Promulgations NPDES Stormwater Permit Programs

Phase I Coverage (November 16, 1990):

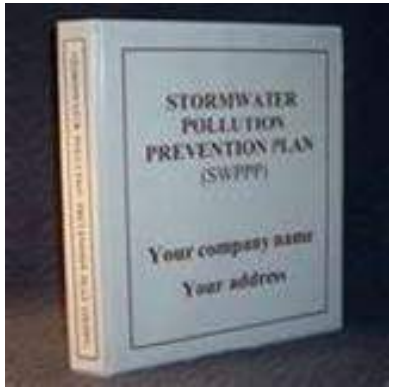
- Permits required for Municipal Separate Storm Sewer Systems (MS4s) located in areas with >100,000 people.
- Also covers 11 categories of Industrial Activity- including recycling facilities, treatment works, electric plants, and manufacturing facilities.
- Construction activities disturbing 5 or more acres are also subject.

Federal Register Promulgations NPDES Stormwater Permit Programs

Phase II Coverage (December 8, 1999):

- Permits required for certain regulated Municipal Separate Storm Sewer Systems (MS4s) located in areas with < 100,000 people.
- Construction activities disturbing between 1 and 5 acres are also subject.
- Also allows for a NO EXPOSURE EXCLUSION, provided a demonstrable lack of water quality impact can be made.

What Is Required by the NPDES Storm Water Permit Program?

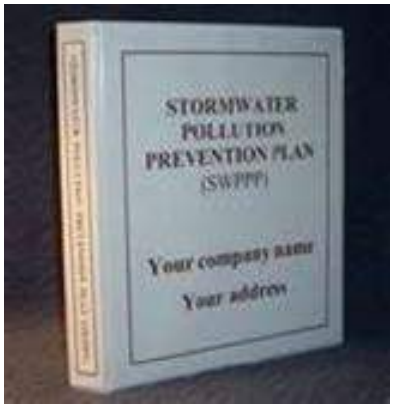


For Phase I and II facilities, the components are:

- Develop a (SWPPP) Storm Water Pollution Prevention Plan:
  - Conduct a site evaluation;
  - Describe the appropriate storm water Best Management Practices;
  - Develop a system of self-evaluation, monitoring, and reporting;

The SWPPP

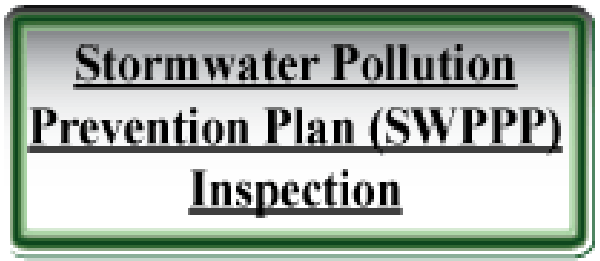
General and Individual Permits for industrial dischargers require the development of a Storm Water Pollution Prevention Plan.



The SWPPP

GOAL – Development of a SITE SPECIFIC plan tailored to site specific conditions. Sound engineering practices are required; the need for a professional engineer's license is at the discretion of the state or local agency.

GOAL – A SELF IMPLEMENTING PLAN. Individual facility is responsible for development, implementation, and long-term maintenance of the Plan as well as weekly, quarterly and annual inspections/ monitoring.



SWPPP Key Components

1) Creation of a Pollution Prevention Team

- Must identify staff that comprises the facility's storm water pollution team (names and titles).
- The staff is responsible for developing, implementing, maintaining, and revising the facility SWPPP.

SWPPP Key Components

2) Submittal of an accurate Site Description

- Description of the industrial activities performed
- Identify both activities and materials which may potentially be a "significant" pollution source into storm water discharges.

SWPPP Key Components

3) Site Map

- The new 2014 12-SW Permit requires precise and detailed site map
- Changes include property size, potential pollutant sources, liquid storage tanks, impervious surfaces, historical spills (past 3 years) and Stormwater monitoring points
- Most sites will have to use multiple maps to show adequate detail.

SWPPP Key Components

4) Description of "exposed" industrial activities/previous spills/leaks over last three years. (reportable quantity – see Section 311 of CWA and section 102 of CERCLA). Significant spills may include toxic or hazardous pollutants or oil that is not in excess of reporting requirements.

5) Identification of non-storm water discharges, illicit connections. Create procedures for eliminating non-authorized discharges.

SWPPP Key Components

6) List of Possible pollutants for the past three years must be in the SWPPP.

Record keeping is an emphasized addition to the 12-SW requirements! All Spills and potential spill locations must be monitored!

SWPPP Key Components

7) Description of Storm Water Management Controls

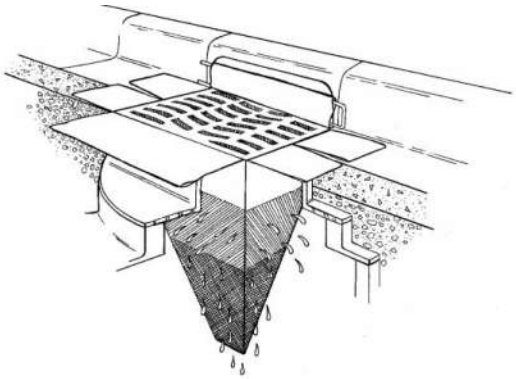
- Include both *STRUCTURAL* and *Non-STRUCTURAL* BMPs.

Stormwater Pollution Prevention Plan (SWPPP) Inspection

Structural BMPs

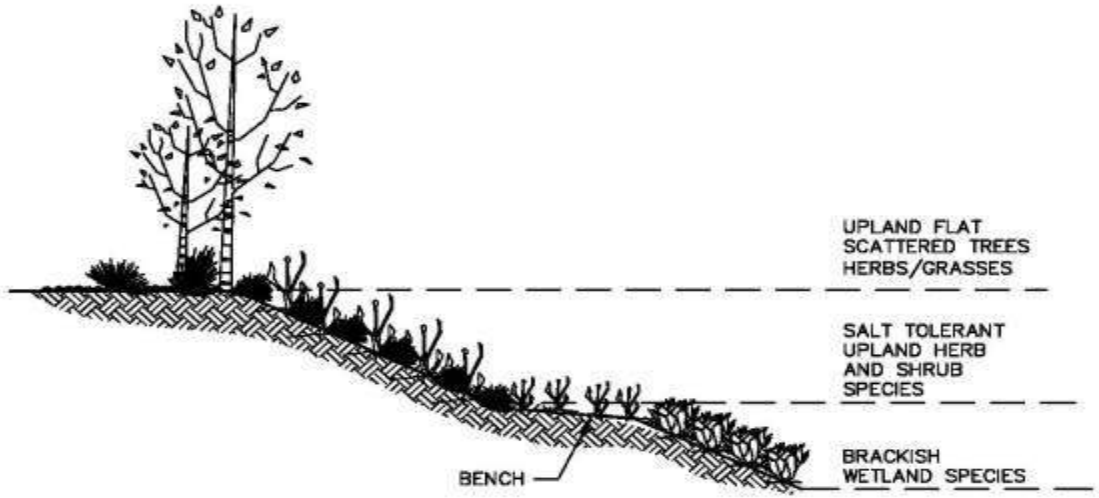
- ✓Protective covers over curb inlets, trench drains.
- ✓Vegetative swales/Slope diversions.
- ✓Secondary containment devices.
- ✓Protective booms.

Structural BMP: Storm Drain Inlet Protection



The use of filter fabric material and a grate cover that traps the sediment from directly entering the storm sewer, while allowing water to flow through. BMPs ensuring the fabric filters are cleaned out periodically must be in place.

Structural BMP: Slope Diversions



- Clean water diversions are land modifications that move water down slopes in a way that reduces erosion.
- Channels can be vegetated or treated, but should be designed to reduce the velocity and volume of moving water

Non-Structural BMPs

- Good Housekeeping
- Proper Material Storage
- Proper Spill Response—refer to SPCC plan
- Proper Equipment Fueling and Repair
- Proper Disposal of Waste
- Preventive Maintenance
- Regular Schedule of Inspections

Non-Structural BMP: Proper Material Storage

- Keeping pollutant sources covered from precipitation will reduce the potential of storm water runoff from spills.
- Employee training should emphasize proper disposal methods for oils, coolants, and other chemical compounds.

Non-Structural BMP: Preventive Maintenance

- The servicing of this vehicle is best performed under shelter to prevent runoff of vehicle fluids and brake dust.
- Solvent usage should be kept to a minimum, or less hazardous alternatives used.
- Use drip pans and draining boards to collect liquids. Clean spills promptly and dispose of all waste properly.

SWPPP Implementation

- Determine the roster of the Pollution Prevention Team.
- Assign appropriate roles and responsibilities.
- Familiarize self with requirements of the Permit.
- Familiarize self with components of the facility SWPPP.
- Maintain and update SWPPP as facility and/or personnel changes occur.
- Conduct and record inspections as detailed in facility SWPPP.
- Conduct and record all annual storm water training events.
- Maintain all records with the SWPPP.

Corrective Action Report

- If any of the following conditions occur, you must review and revise the selection, design, installation, and implementation of your control measures to ENSURE that the condition is ELIMINATED and will not be repeated in the future:

Corrective Action Report

- an unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by this or another NPDES permit) occurs at your facility;
- a discharge violates a numeric effluent limit (Benchmark);
- you become aware, or MDE determines, that your control measures are not stringent enough for the discharge to meet applicable water quality standards;
- an inspection or evaluation of your facility by an MDE official, determines that modifications to the control measures are necessary to meet the non-numeric effluent limits in this permit; or
- you find in your routine facility inspection (Part V.A.1), quarterly visual assessment (Part V.A.3),or comprehensive site inspection (Part V.A.2) that your control measures are not being properly operated and maintained.

Corrective Action Report

- If any of the following conditions occur, you must review the selection, design, installation, and implementation of your control measures to determine if modifications are necessary to meet the effluent limits (Benchmarks) in this permit:

Corrective Action Report

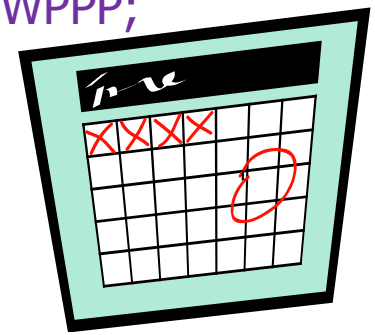
- construction or a change in design, operation, or maintenance at your facility significantly changes the nature of pollutants discharged in stormwater from your facility, or significantly increases the quantity of pollutants discharged; or

- the average of four (4) quarterly sampling results exceeds an applicable benchmark. If less than four (4) benchmark samples have been taken, but the results are such that an exceedence of the four quarter average is mathematically certain (i.e., if the sum of quarterly sample results to date is more than four (4) times the benchmark level) this is considered a benchmark exceedence, triggering this review.

Corrective Action Report

Time Line

- Within 24 hrs
  a) Identification of the condition triggering the need for a corrective action review on the form located in Appendix E of the SWPPP;
  b) Description of the problem identified; and
  c) Date the problem was identified



- Within 14 days
  a) Summary of the corrective action taken or to be taken
  b) Notice of whether SWPPP modifications are required as a result
  c) Date of corrective action initiated
  d) Date of corrective action completed

Corrective Action Report

Effect of Corrective Action

- ✓ Correcting a permit violating action does NOT remove the original violation
- ✓ Failing to report or take corrective action is an ADDITIONAL violation
- ✓ The Department will determine the enforcement response to a permit violation
- ✓ THIS RESPONSE MAY REVOKE PERMIT!!! So take corrective actions!

Environmental Safety, Sustainability & Risk

Spill Prevention, Control, and Countermeasures (SPCC)

UNIVERSITY OF MARYLAND

Overview

The Purpose of an SPCC is to <u>prevent</u> the discharge of oil into navigable waters of the United States or adjoining shorelines as opposed to response and cleanup after a spill occurs.

The Law

Oil Pollution Prevention Rule

- **Became effective January, 1974 (revised 2002).**
- **Authority – Section 311 (j) (1) (c) of the Clean Water Act**
- **Promulgated under Title 40, CFR, Part 112**

Oil Definitions

Oil means oil of any kind or in any form, including, but not limited to:

- fats, oils, or greases of animal, fish, or marine mammal origin
- vegetable oils, including oils from seeds, nuts, fruits, or kernels;
- other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

Applicability: How Much Oil?

SPCC rule applies to facilities with:

- >42,000 gallons buried
- >1,320 gallons aboveground

Containers to include:

- Bulk storage
- Oil-filled equipment
- Mobile/Portable Containers
- 55 gallons or greater

Containers not included in capacity:

- Permanently Closed containers
- UST Subject to 40 CFR 280 & 281

Spill Reporting

Facilities that discharge oil to navigable waters are subject to certain federal reporting requirements.

- 40 CFR 110, Discharge of Oil Regulation
- 40 CFR 112, Oil Pollution Prevention regulation
- State laws/regulations may differ or be more restrictive

National Response Center (NRC)

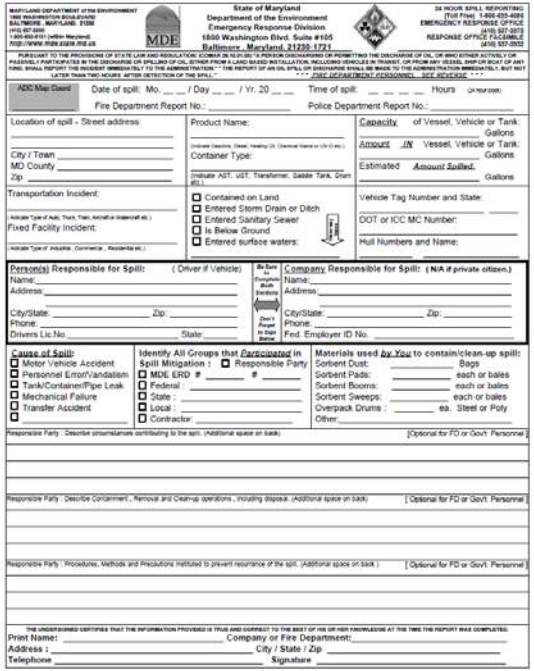
- The Discharge of Oil regulation provides the framework for determining whether an oil discharge to inland and coastal waters or adjoining shorelines should be reported to the National Response Center at 1-800-424-8802
- Any person in charge of a vessel, onshore or offshore facility must notify NRC once there is knowledge of a discharge
- NRC will relay discharge information to EPA or USCG

SPCC Reporting Requirements

- Report to the EPA Regional Administrator (RA) when there is a discharge to navigable waters or adjoining shores of:
  - >1,000 Gal of oil in a single discharge
  - >42 Gal of oil in each of two discharges occurring within a 12 month period
- An owner / operator must report the discharge(s) to the EPA RA within 60 days
- All requirements found in CFR 40 112.4

MDE Reporting Requirements

- Report to MDE Emergency Response Division (1-866-633-4686) if an oil spill or discharge of ***ANY*** quantity occurs
  - *Within **two** hours after the detection of a spill*
- Verbal report must include:
  - Time and location of discharge
  - Type of facility involved
  - Type and quantity of oil spilled
  - Assistance required
  - Name, address, telephone number of person making report
  - Other pertinent info as requested by MDE
- Within ten working days after completion of spill cleanup, a written report of the discharge must be submitted to MDE



State of Maryland
Department of the Environment
Emergency Response Division
1800 Washington Blvd. Suite #105
Baltimore, Maryland 21230-1721

24 HOUR SPILL REPORTING
(Toll Free) 1-866-633-4686
EMERGENCY RESPONSE OFFICE
(410) 537-3315
RESPONSE OFFICE FACSIMILE
(410) 537-3322

ADC Map Coord.
Date of spill: Mo. ___ / Day ___ / Yr. 20 ___
Time of spill: ___ ___ ___ Hours
Fire Department Report No.:
Police Department Report No.:

Location of spill - Street address:
City / Town
MD County
Zip
Product Name:
Container Type:
Capacity of Vessel, Vehicle or Tank: Gallons
Amount IN Vessel, Vehicle or Tank: Gallons
Estimated Amount Spilled: Gallons
Transportation Incident:
Fixed Facility Incident:
Contained on Land
Entered Storm Drain or Ditch
Entered Sanitary Sewer
Is Below Ground
Entered surface waters:
Vehicle Tag Number and State:
DOT or ICC MC Number:
Hull Numbers and Name:

Person(s) Responsible for Spill: (Driver if Vehicle)
Name:
Address:
City/State: Zip:
Phone:
Drivers Lic.No. State:

Company Responsible for Spill: (N/A if private citizen.)
Name:
Address:
City/State: Zip:
Phone:
Fed. Employer ID No.

Cause of Spill:
Motor Vehicle Accident
Personnel Error/Vandalism
Tank/Container/Pipe Leak
Mechanical Failure
Transfer Accident

Identify All Groups that Participated in Spill Mitigation : Responsible Party
MDE ERD # #
Federal :
State :
Local :
Contractor:

Materials used by You to contain/clean-up spill:
Sorbent Dust: Bags
Sorbent Pads: each or bales
Sorbent Booms: each or bales
Sorbent Sweeps: each or bales
Overpack Drums : ea. Steel or Poly
Other:

Responsible Party : Describe circumstances contributing to the spill. (Additional space on back) [Optional for FD or Gov't Personnel]

Responsible Party : Describe Containment , Removal and Clean-up operations , including disposal. (Additional space on back) [Optional for FD or Gov't Personnel]

Responsible Party : Procedures, Methods and Precautions instituted to prevent recurrance of the spill. (Additional space on back) [Optional for FD or Gov't Personnel]

THE UNDERSIGNED CERTIFIES THAT THE INFORMATION PROVIDED IS TRUE AND CORRECT TO THE BEST OF HIS OR HER KNOWLEDGE AT THE TIME THE REPORT WAS COMPLETED.

Print Name: Company or Fire Department:
Address : City / State / Zip
Telephone Signature

Secondary Containment

- All areas and equipment with the potential for a discharge are subject to general secondary containment provision, 112.7(c).
  - Oil-filled operational equipment
  - Loading/unloading areas
  - Piping
  - Mobile refuelers/ non-transportation related tank trucks
- Purpose is to contain or divert to prevent discharge: dikes, berms, retaining walls, curbing, drip pans, sumps, culverting, gutters, weirs, booms, spill diversion ponds, retention ponds, sorbent

Secondary Containment

Active secondary containment is when an employee personally contains a spill,

- Deploying drain covers before a spill happens.
- Deploying drain covers after a spill has occurred, but before the spill reaches a drain
- Using a spill kit in the event of an oil discharge
- Closing a gate valve prior to a discharge

Passive secondary containment does not require deployment or the action of an employee or employees to contain a spill.

- Placing containment pallets or decks under drums and other containers
- Surrounding machines and containers with berms
- Erecting retaining walls around machines and containers
- Placing drip trays under leaky machines and containers

Specific (Sized) Provision

- To address the potential of oil discharges from areas of a facility where oil is stored or handled, containment specified by SPCC rule
- CFR 40 112.8, requirements are intended to address a major container failure
  - Bulk storage containers, loading/unloading rack, mobile/portable containers, production tank batteries, treatment, separation installations
- Minimum containment capacity
  - Largest single compartment
  - Sufficient freeboard

Portable Containers

- Drums placed on spill pallets
- Emergency generators; utilize drip pans
- Fuel trucks parked within bermed area

Loading/Unloading Area Containment

- Dikes, berms, or retaining walls sufficiently impervious to contain oil;
- Curbing or drip pans;
- Sumps and collection systems;
- Culverting, gutters, or other drainage systems;
- Weirs, booms, or other barriers;
- Spill diversion ponds;
- Retention ponds; or
- Sorbent materials.

Oil – Filled Operational Equipment

- Equipment that includes an oil storage container (or multiple containers) in which the oil is present solely to support the function of the apparatus or the device.
  - Does not include oil-filled manufacturing equipment (flow-through process)
- Piping is considered a component if it is solely used to facilitate operation of the equipment device.

Inspection & Testing 112.8(c)(6)

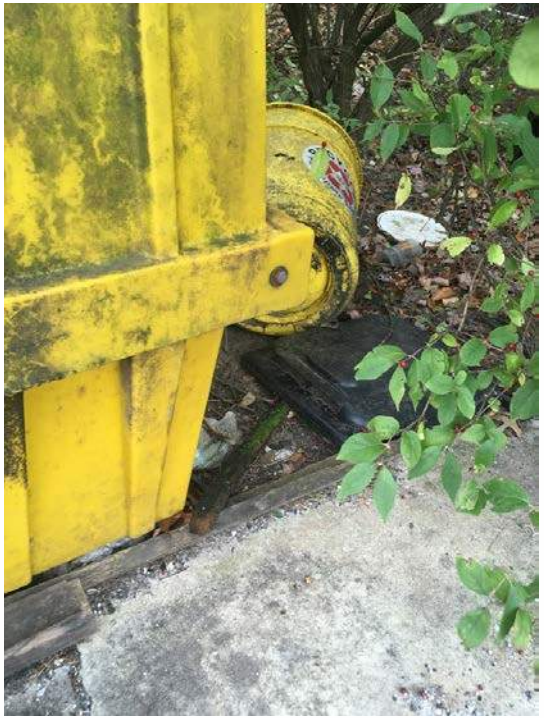
- Prevent discharge of oil caused by leaks, corrosion, brittle fracture, overfill, other forms of container/equipment failure
- AST are tested or inspected in accordance with industry standards
  - Integrity tests include: visual inspection, hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or other systems of non-destructive testing.

Visual inspection:

Spillage

Poor housekeeping: Spillage, unlabeled contained with grease in it

Visual Inspection:



Remember!

- **All actions (visual inspection or testing) must be documented & maintained**
  - Some standards require records to be maintained for over 3 years for comparison reasons

- **Know objective: the tank IS or IS NOT suitable for continued use**

Oil Containment: Examples

- A lightweight non-biodegradable absorbent made from 100% Canadian Sphagnum Peat Moss
- Absorbed oil passes the Toxicity Characteristic Leaching Procedure (TCLP)
- Affinity for hydrocarbons of all types
- Suppresses 90% of gasoline vapors which eliminates the danger of explosion

SPCC Plan Requirements

Each Plan Must Include:

1. **Description of physical layout and a facility diagram.**
2. **Key personnel contact list and phone numbers for the facility response coordinator, cleanup contractors, all appropriate federal, state, local agencies to contact.**
3. **Prediction of direction, rate of flow, and total quantity of oil that COULD be discharged if the potential for equipment discharge exists.**
4. **Description of containment and/or diversionary structures to prevent discharge from reaching navigable waters.**
5. **Description of site specific spill prevention and control measures in place.**

Additional Requirements

- **Plan must have MANAGEMENT APPROVAL (signature)**
- **Plan must be prepared under the direct supervision of a P.E. (stamped)**
- **Plan must be maintained on-site AVAILABLE AT ALL TIMES for review by EPA/MDE.**
- **Key Facility Personnel must be trained annually. *FOLLOW SOPs for any response actions!!!***
- **Plan must include periodic INSPECTIONS.**
- **Plan must be revised/updated to reflect facility changes.**
- **Plan required to be reviewed/revised at least every 5 YEARS.**

UMD SPCC Details

- Over 80 tanks*
  - Generators, ASTs, Day Tanks
- Over 30 >55-gallon Drums*
  - Cooking oil, food grease, used oil, hydraulic fluid
- Over 100 Hydraulic Elevators
- Over 140 Transformers

*Current inventory is still growing due to finding new tanks/drums

How to Reach Us

- www.essr.umd.edu
- Call 301-405-3960 during business hours
- Call UMPD Communications at 301-405-3555 to reach on-call ESSR staff after business hours.
- Email safety@umd.edu