MS4 Annual Report
Permit Number VAR040106

September 2019

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Subject: GEORGE MASON UNIVERSITY MS4 ANNUAL REPORT, PERMIT NUMBER VAR040106

Dated: September 26, 2019

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 gather and evaluate 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.

Sincerely,

Frank Strike, P.E.
Vice President of Facilities

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Table of Contents

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ABBREVIATIONS and ACRONYMS

Abbreviation/ Acronym	Term
BMP	Best Management Practice
CWP	Clean Water Partners
DEQ	Virginia Department of Environmental Quality
EHS	George Mason University's Environmental, Health, & Safety
ESC	Erosion and Sediment Control
FM	Facilities Maintenance
Mason LD	George Mason University Facilities Land Development Division
MS4	Municipal Separate Storm Sewer System
OoS	Office of Sustainability
SWM	Stormwater Management
TMDL	Total Maximum Daily Load
VESCL&R	Virginia Erosion and Sediment Control Law and Regulations
VESCP	Virginia Erosion and Sediment Control Plan
VSMP	Virginia Stormwater Management Program

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Introduction and Background Information

Stormwater discharges within George Mason University (Mason) are regulated under the terms of VPDES General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer System (MS4) (General Permit No. VAR040106). This MS4 permit is issued to Mason by Virginia DEQ, consistent with the provisions of Section 402 of the Clean Water Act and the Virginia Stormwater Management Act, which authorizes the Virginia Stormwater Management Program (VSMP) regulations.

The MS4 permit was initially issued to Mason on July 9, 2008 for permit year 2008-2013. The second permit was issued on July 2, 2013 for the permit year 2013-2018. On October 31, 2018, the MS4 permit was re-issued with an effective date of November 1, 2018 and with an expiration date of October 31, 2023. Since the commencement of the effective permit coverage, Mason has begun implementing permit requirements and continues to work on improving existing control measures developed to reduce the discharges of pollutants into Mason's storm sewer system.

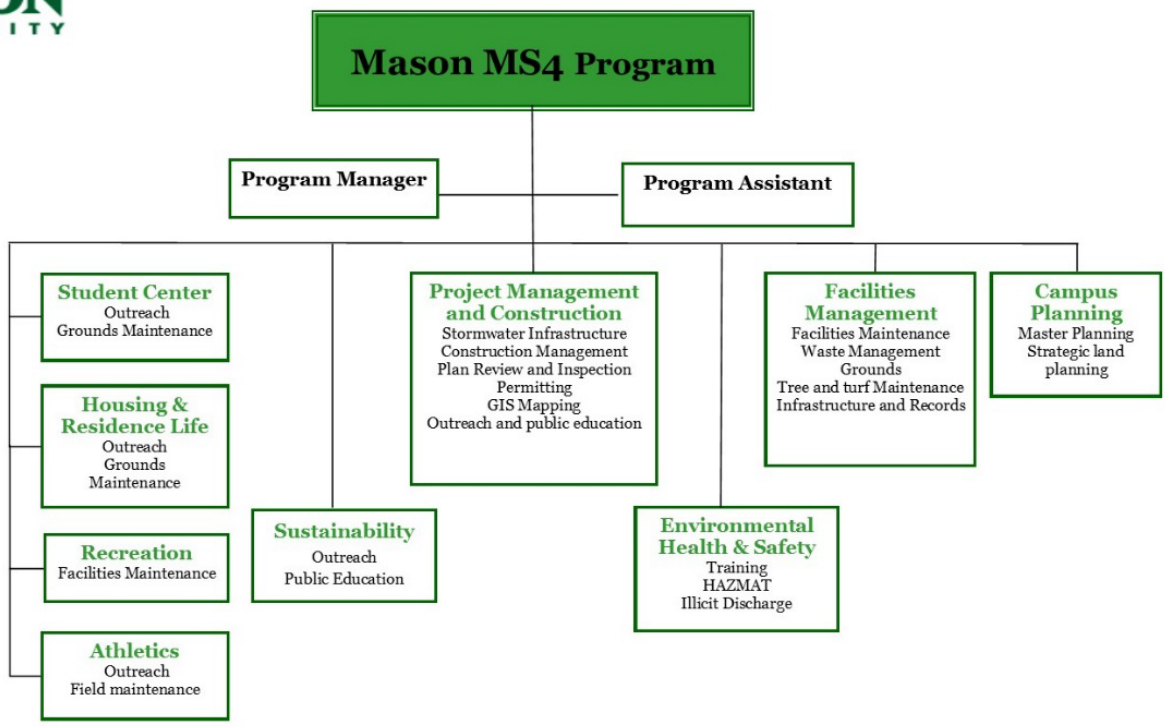
Mason's MS4 Permit covers two separate Northern Virginia campuses in Fairfax and Prince William County (Appendix A). Both are located in the Potomac watershed within the larger Chesapeake Bay watershed.

Fairfax Campus consists of approximately 585 acres of developed and undeveloped land comprised of academic buildings, research facilities, residential buildings, auxiliary buildings, and athletic facilities. Approximately 220 acres drains to Popes Head Creek. The remaining 365 acres drains to Pohick Creek. Fairfax Campus is physically interconnected to these MS4's: Fairfax County, City of Fairfax, and the Virginia Department of Transportation's (VDOT) (Appendix A). The stormwater system at Fairfax Campus encompasses roughly 680 storm inlets and 16 miles of storm sewer pipes.

Science and Technology Campus is located in Prince William County and consists of approximately 135 acres of developed and undeveloped land that includes academic buildings, research facilities, auxiliary buildings, and athletic facilities. All 135 acres are within the Broad Run drainage area. Science and Technology campus is physically interconnected to other MS4s including Prince William County and VDOT. The stormwater runoff from the Science and Technology Campus is captured by roughly 50 storm inlets and transported through 2 miles of storm sewer pipes into a tributary to Cannon Branch.

Currently, over 37,000 students attend Mason with approximately 6,000 living on the Fairfax campus. Mason anticipates continuous growth in enrollment in the future.

While stormwater activities and functions are divided among several different departments and divisions, the Land Development (Mason LD) has the primary responsibility for overall compliance with the permit requirements. MS4 permit compliance activities are coordinated with Environmental Health and Safety Office (EHS), Facility Management (FM) and other Mason units. While Mason LD is the responsible for overall program compliance, including annual report submittal, several other departments and divisions play important roles in implementing the MS4 permit requirements. These departments are shown in the following organization chart.


Mason MS4 Program
Program Manager
Program Assistant
Student Center
Outreach
Grounds Maintenance
Housing & Residence Life
Outreach
Grounds
Maintenance
Recreation
Facilities Maintenance
Athletics
Outreach
Field maintenance
Sustainability
Outreach
Public Education
Project Management and Construction
Stormwater Infrastructure
Construction Management
Plan Review and Inspection
Permitting
GIS Mapping
Outreach and public education
Environmental Health & Safety
Training
HAZMAT
Illicit Discharge
Facilities Management
Facilities Maintenance
Waste Management
Grounds
Tree and turf Maintenance
Infrastructure and Records
Campus Planning
Master Planning
Strategic land planning

Part I: Discharge Authorization and Special Conditions

SUMMARY (Part I D 2 a-2 e)

Mason LD prepared this annual report for General VPDES Permit for Discharges of Stormwater From Small Municipal Separate Storm Sewer Systems (MS4) (General Permit No. VAR040106). The Permit has the effective date of November 1, 2018 and the expiration date of October 31, 2023. This report covers the reporting period of November 1, 2018 through June 30, 2019.

Mason's MS4 Program applies to all activities undertaken by Mason, either by its internal workforce or contracted to external entities, where such activities are regulated by VSMP Permit Regulations. Compliance with the permitted MS4 Program (and all parts thereof) will be verified during inspections of Mason's land disturbing activities, whether internally or by DEQ, Environmental Protection Agency (EPA), or other applicable environmental agencies.

This MS4 permit covers the Fairfax campus and Science and Technology Campus (previously Prince William campus). Mason oversees Arlington Campus on an administrative basis. Other remote locations are included under the MS4 permits for each of their respective local jurisdictions.

Mason's MS4 Report is submitted to the DEQ for review and approval on an annual basis. Mason will ensure compliance with the General VPDES Permit for MS4s effective on November 1, 2018. This submittal constitutes Mason's commitment to execute all provisions contained herein on regulated land disturbing activities, land development projects, and operation and maintenance of installed stormwater management facilities. As such, this report will be made available to Mason and DEQ personnel and is available for download as a PDF file at: https://stormwater.gmu.edu.

Detailed status updates on compliance with each reporting items on Minimum Control Measures (MCMs) in Part I E are listed below. Mason remains compliant with the permit requirements.

MS4 Program Plan

Mason evaluated and updated the MS4 Program Plan in April 2019 to meet the current permit requirements. The plan establishes and defines Mason's MS4 program, and demonstrates Mason's plan to meet the permit requirements through October 31, 2023. The program plan is a living document and will be updated, through the permit cycle where necessary. The most up-to-date MS4 Program Plan is available on the website https://stormwater.gmu.edu

MCM#1: Public Education and Outreach

The Public Education and Outreach Program at Mason seeks to alert students, faculty and staff on the impacts of stormwater runoff on water quality through various communication channels. It provides guidance on how the community can help in minimizing adverse impacts of urban runoff in waterways.

Mason utilizes existing programs, organizations, boards, and committees within the community to implement public education activities. The Public Education and Outreach program at Mason uses existing forums and outreach materials established by EPA and Northern Virginia Clean Water Partners (CWP). In addition, Mason

staff develops educational brochures and materials to send specific messages to Mason students, faculty and staff. Samples of brochures and outreach materials developed by Mason LD can be found in Appendix B. These materials are widely distributed by Mason staff members at various events and meetings. As a member of CWP, Mason also participates in the CWP education campaign, which uses multi-media approach to educate the public on stormwater pollutions. Cable televisions, ads, promotional items, the Only Rain website (www.onlyrain.org), print materials, and internet banner ads are used to reach a large audience around the regions.

Part I E 1 g (1): A list of the high-priority stormwater issues the permittee addressed in the public education and outreach program

Mason and CWP have identified the high priority regional water quality issues that contribute the pollution of stormwater runoff at Mason: bacteria, nutrients, and motor oil/chemical contaminants. These high priority water quality issues are listed below along with the rationale for their selection.

High Priority Issues	Selection Rationale
Bacteria	Bacteria pollution in stormwater runoff come from leaking sanitary sewer pipes, wildlife (i.e. Canada geese), and improper disposal of pet waste. Due to the significant number of geese population and pet owners in the community, Mason chooses students, faculty, staff members and campus visitors as the target audience and the education and outreach messages focused on proper disposal of pet waste.
Nutrient	Nitrogen and phosphorus are two of the three pollutants listed in Mason's MS4 Permit requiring an action plan for the Chesapeake Bay TMDL. Over fertilization of lawns provides a direct runoff source of nitrogen and phosphorous to streams. With approximately 134 acres of turf areas in the Mason and over 5,000 residential students/faculty on campus, the public awareness of the effects on over-fertilization is important to reducing those pollutants in stormwater.
Motor Oil/Chemical Contaminants	Oils that leaks from cars onto roads and parking lots was washed into storm drains and then flow directly to a pond or stream. With 4 million square feet of parking lots and over 20,000 active parking permits, Mason chooses to target students, faculty and staff members with educational messages focused on prevention of fuel spills, illicit discharges, and improper handling of motor oils, anti-freeze and other hazardous waste.

Part I E 1 g (2): A list of strategies used to communicate each high-priority issues

In this reporting period, Mason LD implemented the following strategies on campuses to explain to Mason students, faculty and staff members the importance of the high-priority stormwater issues identified above. Through these strategies, Mason LD informed Mason students, faculty, and staff members the actions they can take to minimize the impact of the high-priority stormwater issues.

Strategies	Implementation at Mason
Traditional written materials	Mason LD developed and distributed informational brochures, posters, bookmarks, etc. on various outreach events to increase public's knowledge on stormwater pollution.
Alternative materials	Mason LD distributed dog waste bags, hand sanitizers, pens, etc. to increase public's knowledge on stormwater pollution.

Strategies	Implementation at Mason
Speaking Engagements	Mason LD presented at Civil Engineering classes to teach Mason students the importance on high-priority water quality issues and reducing waste on campus.

MCM#2: Public Involvement and Participation

Mason encourages residents and students to participate in volunteer programs hosted on campus for conservation and improvement of water resources. Projects such as Campus Stream Cleanups are conducted every year with the purpose of getting the community involved in the Mason's efforts on reducing the amount of pollutant loads in stormwater. Educational workshops and materials, offered by Mason, also provide information to the public about stormwater management practices implemented on campus and different sustainable practices that can help restore and protect surface waters.

Mason LD has developed a website dedicated to water quality and stormwater management https://stormwater.gmu.edu/. The site provides information on Mason's MS4 program, serves as a forum to distribute educational materials, and includes information on where to report potential illicit discharges. It provides water quality and pollution prevention information to the general public in an easily accessible format. It also provides public access to documents such as Mason's MS4 program plan, annual reports, and TMDL action plan.

Part I E 2 f (1): A summary of any public input on the MS4 program received (including stormwater complaints) and how the permittee responded

In this reporting period, Mason has received zero public comments in regards of Mason's MS4 program as well as TMDL action plan. Mason posted the draft TMDL action plan on the website https://stormwater.gmu.edu/ between December 12, 2018 to February 15, 2019. Mason requested public comments on the draft TMDL through advertising at Fourth Estate, a student newspaper, and at E-File, a weekly newsletter to Mason staff and faculty. Mason LD received zero comments during the public comments period.

Part I E 2 f (2): A website address to the permittee's MS4 program and stormwater website

Mason LD has developed a website dedicated to water quality and stormwater management https://stormwater.gmu.edu/. The site provides public access to documents such as Mason's MS4 Permit, the MS4 program plan, annual reports, and TMDL action plan. It provides a mechanism for the public to report potential illicit discharge, improper disposal, spills to MS4, complaints regarding the land disturbing activities and/or other potential stormwater pollution concerns. Contact information is available online for the public to provide inputs on the MS4 program.

Part I E 2 f (3): A description of the public involvement activities implemented by the permittee

In this reporting period, Mason led two cleanup events, hosted educational booth at several events, and led a storm drain marking activity on Mason campuses. These events provided hands-on opportunities for Mason students, staff, faculty members, and community visitors to learn about high priority stormwater issues and ways to protect the streams and the environment. Mason LD received positive feedbacks from the participants. The details about each activity with evaluation metrics are shown below and Appendix C.

Category	Activities	Activity details
Restoration	Stream Cleanup	A group of student volunteers cleaned up Braddock Pond on Feb 23, 2019 and collected 142 lbs of trash and 98 lbs of recyclables
Restoration	Campus Cleanup	More than 70 Mason staff/faculty members cleaned up the Fairfax Campus on April 10, 2019, and collected 255 lbs of trash and 51 lbs of recyclables.
Educational Events	GetConnected Fair	Mason LD hosted a booth on Mason GetConnected Fair on September 5, 2018 and handed out brochures to 40+ students to increase public's knowledge on stormwater pollution.
Educational Events	Wellness Fair	Mason LD hosted a booth on Mason Wellness Fair (Science and Tech campus) on April 4, 2019 and handed out brochures to 40+ students/staff members to increase public's knowledge on stormwater pollution.
Educational Events	EcoFest	Mason LD hosted a booth on Mason EcoFest on April 22, 2019 and completed "rain garden in a mason jar" activities with over 50+ students and community visitors.
Pollution Prevention	Storm Drain Marking Event	Mason LD completed marking 25 storm drain with a group of seven student volunteers on September 11, 2018.

Part I E 2 f (4): A report of metric as defined for each activity and an evaluating as to whether or not the activity is beneficial to improving water quality

For each public involvement activity, Mason keeps track of participant engagement through numbers of participants, numbers of brochures and/or promotional items handed out, numbers of contact information collected, and/or weights of trash/recyclable materials collected. The metrics for the public involvement events in this reporting period are shown in the table above. Mason LD continues to receive positive feedbacks from participants at these activities and will continue to investigate additional opportunities to increase public participation.

Part I E 2 f (5): The name of other MS4 permittees with whom the permittee collaborated win the public involvement opportunities

Mason LD did not collaborate with other MS4 permittees on the activities shown below. Mason received support from Alice Ferguson Foundation and CWP who provided trash bags and gloves for the stream cleanup events.

MCM#3: Illicit Discharge Detection and Elimination

In order to detect and eliminate both direct and indirect illicit discharges, Mason has established Illicit Discharge Detection and Elimination Program (IDDE), which relies on Mason's *Illicit Discharge Detection and Elimination Policy* to prohibit any non-stormwater discharges into the sewer system or any receiving waterway. The policy is enforced by both Mason LD and EHS, who rely strongly on regular inspections and public notification. Mason encourages the community's contribution in discovering and reporting possible polluted runoff and maintains appropriate staffing to address such reported concerns. Instructions on how to report concerns or potential illicit discharges are available online at the Mason LD website.

Mason LD maintains stormwater system maps and publishes interactive stormwater maps using online GIS. The maps can be found on Mason LD website. The complete MS4 maps with outfall information table are available upon request.

Mason LD performs dry weather screening (outfall reconnaissance) twice a year on the outfalls to identify possible illicit connections and discharges, as well as, to keep track of all existing stormwater management facilities and structures within the MS4 boundary. During the outfall reconnaissance, outfalls are evaluated for structural damages or uncommon conditions that might indicate the present of pollutants. In addition, outfalls are inspected for possible maintenance necessity to avoid detrimental conditions on stream banks and bed.

Mason has interconnections with the stormwater system operated by Fairfax County, Fairfax City, Prince William County and VODT.

Part I E 3 e (1): A confirmation statement that MS4 map and information table have been updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year.

Mason's stormwater system maps and information table have been updated to reflect the current site condition including any changes to the MS4 occurring on or before June 30 of this reporting year. The maps including the information tables were submitted to DEQ on July 1, 2019.

Part I E 3 e (2): The total number of outfalls screened during the reporting period as part of the dry weather screening program

A total of number of 50 outfalls were screened during this reporting year as part of the dry weather screening program (outfall reconnaissance) and no illicit discharges were identified during the outfall reconnaissance.

Part I E 3 e (3): A list of illicit discharges to the MS4 including spills reaching the MS4 with information as follows: (a) the source of illicit discharge; (b) the dates that the discharge was observed, reported or both; (c) whether the discharge was discovered by the permittee during dry weather screening, reported by the public or other methods (describe); (d) how the investigation was resolved; (e) a description of any follow-up activities; and (f) the date the investigation was closed.

Mason received seven reports for potential illicit discharge incidents from the public and Mason staff. After investigations conducted by EHS, it was determined that none of them were actually illicit discharges within or reaching Mason's MS4 boundary.

MCM#4: Construction Site Stormwater Runoff

Mason has developed Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management (AS&S) in accordance with Virginia Erosion and Sediment Control law and regulations, and Virginia Stormwater Management Act and program. It is an integral component of all design, construction, maintenance, and management of Mason's facilities and campuses. It is enforced during the planning, permitting, and construction phases by Mason LD staff. Mason personnel receive training by DEQ on ESC and SWM, in order to enforce such programs. Certified staff is responsible for reviewing plans during the permitting process and conducting regular inspections on project sites during construction. Plan review and inspection procedures

are implemented in accordance with state laws and regulations and Mason's AS&S. A copy of Mason's AS&S is available at Mason LD website and/or provided upon request.

Part I E 4 d (1): If the permittee implements a construction site stormwater runoff program in accordance with Part 1 E 4 a (3)

(a) A confirmation statement that land disturbing projects that occurred during the reporting period have been conducted in accordance with the current department approved standards and specifications for erosions and sediment control

(b) If one or more of the land disturbing projects were not conducted with the department approved standards and specifications, an explanation as to why the projects did not conform to the approved standards and specifications

All land disturbing projects that occurred during the reporting period have been conducted in accordance with DEQ approved Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management.

Mason strives to provide a bright and innovative environment for our growing campus community. As a result, the campuses continue to experience new construction and/or renovation projects. During the reporting period, Mason has five active construction projects in Fairfax Campus and Science and Technology Campus (Prince William County). Locations of current and future projects are also available on Mason Facilities website

For all active construction projects listed below, Mason LD staff perform regular inspections to ensure that erosion and sediment controls were properly implemented and maintained during the construction. Issues and violations observed during inspection were photographed and documented in the inspection reports. In addition, required corrective actions for each issue or violation were specified and with a date by which all corrective actions must be completed. Critical areas that require continuous inspections would be identified on the site plan, if necessary. The inspection reports were sent to the Contractor, Project Managers, Mason LD and other responsible parties with 24 hours of inspection and follow-up inspections will be performed when necessary.

Construction Project	Project Schedule	Number of Inspections in the reporting period	Enforcement actions
Hylton Performing Arts Addition	Aug 2018 to Dec 2019	47	0
Robinson Hall Replacement	Aug 2018 to Jan 2022	46	0
Utilities Distribution System	Aug 2018 to Aug 2021	49	0
Student Apartments Demolition	May 2018 to Sept 2018	29	0
Fairfax Water Tower	Dec 2018 to May 2020	30	0

Part I E 4 d (2): Total number of inspections conducted

Total number of inspections conducted by Mason LD staff in the reporting period are shown in the table above.

Part I E 4 d (3): Total number and type of enforcement actions implemented and the type of enforcement actions

In the reporting period, Mason didn't issue any enforcement actions, such as stop-to-work order. However numerical corrective actions were conveyed to contractors and project managers through inspection reports to ensure the compliance with the approved AS&S.

MCM#5: Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands

As a non-traditional small MS4, Mason has direct control over planning, design, construction and post-construction of stormwater management facilities, also called best management practices (BMPs.) The MS4 program at Mason consists of minimizing the impacts of runoff associated with land disturbance such as flooding, erosion, and water pollution. Current practices implemented by Mason in managing and controlling stormwater focus on promoting natural hydrologic processes as well as minimizing contact of pollutants with rainwater. As land disturbing activities take place, Mason incorporates measures that protect and/or improve natural areas during and after construction. In addition to the ongoing efforts to preserve the natural landscape, Mason strives to reduce impervious areas as much as possible and create more vegetated regions.

Mason has implemented a variety of non-proprietary stormwater BMPs on campuses, including rain gardens, dry swales, dry ponds and wet ponds. In addition, Mason installed a few proprietary stormwater BMPs in the recent years, including hydrodynamic units and filtering devices. Mason utilizes GIS to keep track the inventory of the BMPs. The information is available on the website: http://stormwater.gmu.edu

Mason LD implements an inspection procedure to inspect and maintain Mason's stormwater BMPs in accordance with state laws and regulations and Mason's AS&S. Inspections are performed annually to assess the quality and functionality of the stormwater BMPs.

Part I E 5 i (1): If the permittee implements a Virginia Stormwater Management Program in accordance with Part 1 E 5 a (1) and (2)

Mason is a public institution of higher education, therefore Part I E 5 a (1) and (2) does not apply to Mason.

Part I E 5 i (2): Total number of inspections conducted on stormwater management facilities owned or operated by the permittee

In this reporting period, Mason performed a total number of thirty-four (34) inspections on stormwater management facilities owned by Mason.

Part I E 5 i (3): A description of the significant maintenance, repair, or retrofit activities performed on the stormwater management facilities owned or operated by the permittee to ensure it continues to perform as designed. This does not include routing activities such as grass mowing or trash collection

During the recent inspection, the need to restore and maintain the storage capacity of Mason Pond was recognized. Mason Pond is an in-line wet pond with approximately 135 acres drainage area in the highly urbanized campus. The pond was designed and built in late 1980s with outdated design specifications. Mason plans to take the opportunity to retrofit Mason Pond to meet the current DEQ approved specifications as well as to meet the pollutants loading reduction goals required by TMDL Action Plan. Besides Mason Pond, there is no other significant maintenance and repair scheduled besides routing maintenance activities such as mowing, trash and sediment removal.

Part I E 5 i (4): A confirmation statement that the permittee submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing

activities for which the permittee was required to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities in accordance with Part 1 E 5 f or a statement that the permittee did not complete any projects requiring coverage under the General VPDES Permit for the Discharges of Stormwater from Construction Activities

During the reporting period, Mason has three land disturbing projects that obtained the Construction General Permit. They are Hylton Performing Arts Center (VAR10L469), Construction and Renovation Robinson Hall (VAR10L512) and Construction Utilities Distribution System (VAR10L452). This is to confirm that DEQ, as Mason's VSMP authority, will submit stormwater management facility information to the Virginia Construction Stormwater General Permit database on behalf of Mason.

Part I E 5 i (5): A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part 1 E 5 g and the date on which the information was submitted.

During the reporting period, Mason has no stormwater management facilities installed to control post-development stormwater runoff from land disturbing activities less than one acre.

MCM#6: Pollution Prevention /Good Housekeeping for Facilities Within the MS4 Area Owned and Operated by the Permittee

The operation and maintenance program for Mason includes maintaining and implementing best management practices to ensure proper performance of facilities owned or operated by Mason. Facilities Management (FM) develops a series of standard of operation (SOP) to document the written procedures, including vehicle/equipment maintenance, vehicle wash, material storage and disposal, and parking lot maintenance. SOPs and best management practices are communicated through formal and informal training to staff members on how to minimize the pollutants in stormwater runoff from bulk storage areas, on how to prevent fuel leaks from automobiles and equipment, how to properly apply fertilizers, etc. Maintenance activities are managed by FM on a schedule basis via Maintenance Direct, which is a subsection of *School Dude Computer Software* where work orders are placed by staff member and received by FM. FM staff will take proper action to complete the maintenance request and close the work order when completed.

Part I E 6 q (1): A summary of any operational procedures developed or modified in accordance with Part 1 E 6 a during the reporting period

In this reporting period, a new Standard of Operation (SOP) was developed to properly maintain and operate the newly built salt storage shed.

Part I E 6 q (2): A summary of any new SWPPPs developed in accordance Part 1 E 6 c during the reporting period

Mason identified three high priority facilities that have a high potential of discharging pollutants. They are maintenance storage yard at Fairfax Campus, west campus yard, and facilities management site at Science and Technology campus. Mason has developed site specific stormwater pollution prevention plan (SWPPP) for each facility and has been performing routine inspection of the high priority facilities for compliance. The SWPPP is included in Appendix D.

Part I E 6 q (3): A summary of any SWPPPs modification in accordance with Part 1 E 6 f or the rationale of any high priority facilities delisted in accordance with Part 1 E 6 h during the reporting period

In the reporting period, Mason did not observe any unauthorized discharge, release or spill. Therefore, no SWPPP modification was made to prevent future unauthorized discharges. Mason recently completed the construction of a salt storage shed to replace the temporary salt storage units. A new SOP was developed to reflect the operation change to properly maintain and operate the salt storage shed. The SWPPP was updated to document this operation change.

Part I E 6 q (4): A summary of any new turf and landscape nutrient management plans developed that includes (a) location and the total acreage of each land area; and (b) the date of the approved nutrient management plan

Mason developed the nutrient management plans for turf/landscape areas and athletic fields. The plans apply to 210.7 acres of turf areas and 22.7 acres of athletic fields on Fairfax Campus and 29.2 acres of turf areas on Science and Technology Campus. The approved nutrient management plans are valid through August 18, 2021 and are included on Appendix E.

Location	Acreage	Dates of approved NMPs
Fairfax Campus	210.7	8/14/2018-8/14/2021
Fairfax Campus Athletic Fields	22.7	8/14/2018-8/14/2021
Science and Tech Campus	29.2	8/14/2018-8/14/2021

Part I E 6 q (5): A list of the training events conducted in accordance with Part 1 E 6 m, including the following information: (a)the date of the training event, (b) the number of employees who attended the training event, and (c) the objective of the training event.

The operation and maintenance program incorporate a training component focusing on groups and/or departments that are likely to have significant stormwater impacts. The EHS office is responsible for training Mason personnel involved in hazardous materials and universal waste handling and storage, petroleum product handling activities, emergency responses, etc. The training activities in the reporting period are listed in Appendix F.

Part II: TMDL Special Conditions

Mason is required to reduce the discharges of total nitrogen, total phosphorus and total suspended solids (Pollutants of Concern or POC) in the Chesapeake Bay Watershed in accordance to the TMDL Special Condition. The phased approach requires Mason to establish a baseline and develop approaches to achieve a 5% reduction of the POCs in the first permit cycle (2013-2018), an additional 35% reduction in the second permit cycle (2018-2023), and an additional 60% reduction in the third permit cycle (2023-2028) for a total of 100% reduction from the baseline to be achieved by the end of the third permit cycle in 2028.

For compliance with the first permit cycle ending June 30, 2018, Mason utilized credit from existing oversized stormwater best management practices (BMPs) and implemented 320' of urban stream restoration on the Fairfax Campus. This provided reductions above and beyond the 5% requirement for the Phase 1 TMDL Action Plan. These additional reductions will be credited toward the Phase 2 TMDL Action Plan reduction requirements.

For compliance with the second permit cycle ending June 30, 2023, Mason developed the Phase 2 TMDL Action Plan, which is included in Appendix F.

Based on the reduction credits from the first permit cycle, the focus of the Phase 2 TMDL Action Plan was on practices that primarily efficiently remove nitrogen. This will be achieved through retrofit of an existing wet pond. This will also achieve the majority of the reduction requirements for the Phase 3 TMDL Action Plan and any reductions above and beyond the 35% requirement for the Phase 2 implementation will be credited toward Phase 3 reductions. The means and methods through which Mason plans to meet the reduction requirements will be designed and permitted between 2019 and 2021 and constructed between 2021 and 2023 to meet the Phase 2 reduction requirements.

	TMDL POC Reduction (lbs/yr)		
	Nitrogen	Phosphorus	Total Suspended Solids
Phase 2 POC Required Reductions	157.73	15.93	18,104.95
Additional POC Reductions from Phase 1	21.34	16.60	32,499.84
Total Remaining POC Reductions Required for Phase 2	136.39	-0.67	-14,394.89
Estimated Phase 2 Reduction Achieved by Pond Retrofit	389	89	53,240

Between December 12, 2018 to February 15, 2019. Mason requested public comments on the draft TMDL through advertising at Fourth Estate, as student newspaper, and at E-File, a weekly newsletter to Mason staff and faculty. Mason LD received zero comments during the comments period.

Part II A13 a: A List of BMPs implemented during the reporting period but not reported to the DEQ BMP Warehouse in accordance with Part 1 E 5 g and the estimated reduction of pollutants of concern achieved by each and reported in pounds per year

In this reporting period, Mason is still on planning stage for the design of Mason Pond Retrofit project and has not implemented any BMPs.

Part II A13 b: If the permittee acquired credits during the reporting period to meet all or a portion of the required reductions in Part II A 3 or A 5, a statement that credits were acquired

Mason didn't acquire credits during the reporting period to meet all or a portion of the required reductions.

Part II A13 c: The progress, using the final design efficiency of the BMPs, toward meeting the required cumulative reduction s for total nitrogen, total phosphorus and total suspended solids

Mason is in the planning stage for the design of Mason Pond Retrofit project.

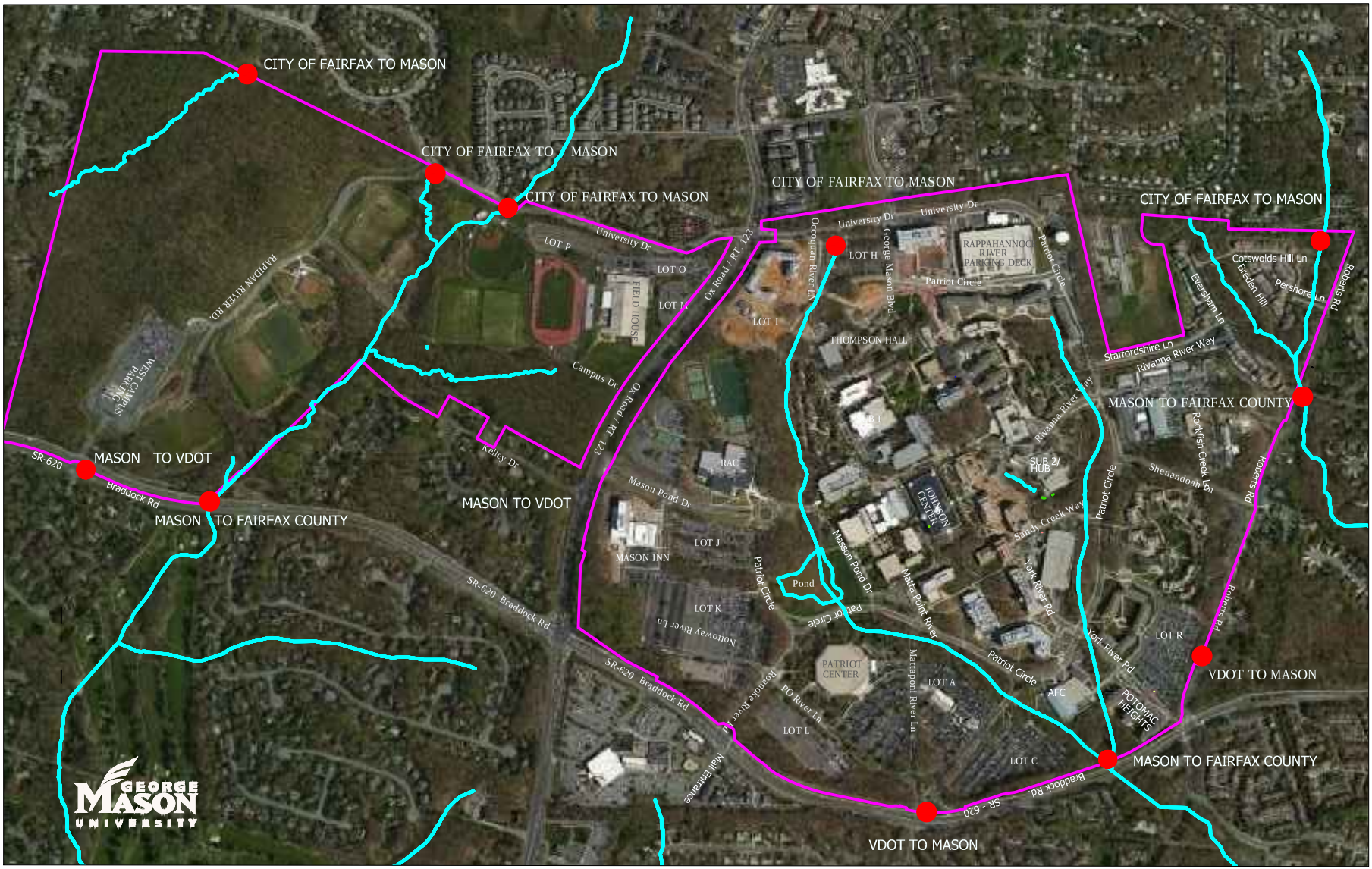
Part II A 13 d: A list of BMPs that are planned to be implemented during the next reporting period.

In the next reporting period, Mason will continue to manage the design of Mason Pond Retrofit project.

Appendix A

Mason MS4 Boundaries and Interconnectivity

Map of MS4 Interconnectivity
George Mason University-Fairfax Campus



LEGEND

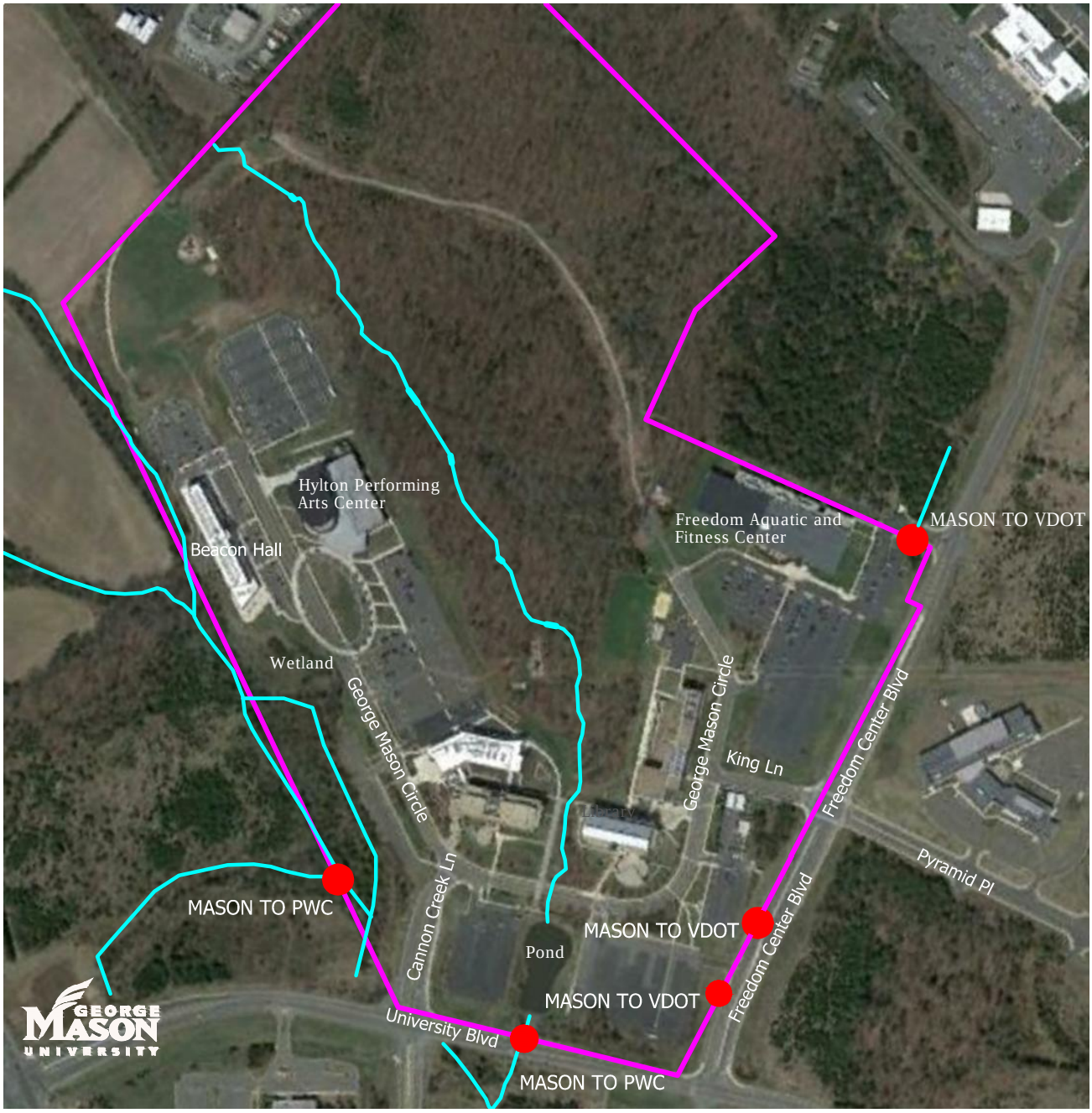
- STREAMS
- MASON BOUNDARY
- MASON GEORGE MASON UNIVERSITY
- VDOT VIRGINIA DEPARTMENT OF TRANSPORTATION

N

0 1000′ 2000′

SCALE: 1" = 1000'

Map of MS4 Interconnectivity
George Mason University - Science and Technology Campus



LEGEND

	STREAMS
	MASON BOUNDARY
MASON	GEORGE MASON UNIVERSITY
PWC	PRINCE WILLIAM COUNTY
VDOT	VIRGINIA DEPARTMENT OF TRANSPORTATION

N

0 500' 1000'

SCALE: 1" = 500'

Appendix B
Public Education and Outreach

The Land Development Team at George Mason University seeks to alert homeowners, students, and staff on the impacts of stormwater runoff on water quality through free training sessions, workshops and distributions of educational materials. The public outreach program at Mason also provides guidance on how the community can help in minimizing adverse impacts of urban runoff in waterways.

George Mason University marks all inlets around all three main campuses with this drainage marker.

George Mason University
4400 University Drive, MS 1E4
Fairfax, Virginia 22030

CONTACT
MasonLD@gmu.edu
http://facilities.gmu.edu

GEORGE MASON UNIVERSITY | Land Development

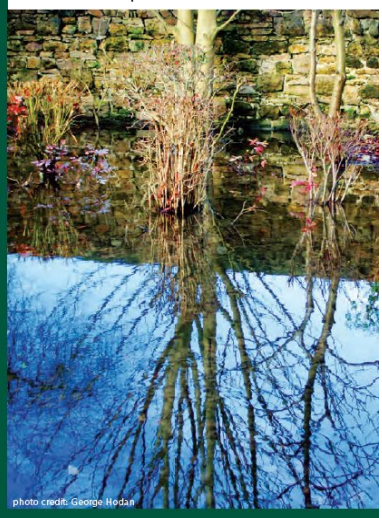


photo credit: George Hodan

STORMWATER MANAGEMENT

STORMWATER MANAGEMENT

Stormwater runoff is rainwater that doesn't soak into the ground. The rain that runs off is often washed pollutants from impervious surfaces like parking lots, streets, and gutters into the storm drain system, which then flows into our streams, ponds, and bays. Stormwater can flow into a storm sewer system or directly to a stream, wetland, river, or pond. Anything that enters a storm sewer system is discharged untreated into these bodies.

EROSION AND SEDIMENT CONTROL

Erosion and Sediment Control and Stormwater Management Programs are integral components of GMU's design, construction, maintenance, and management of the university's facilities and campuses.


Masonvale Rain Garden

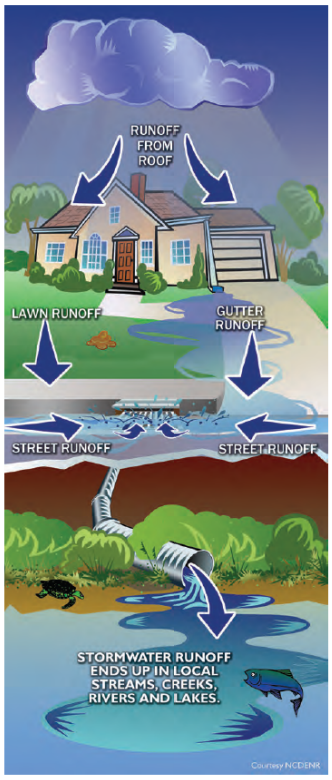
HOW DOES STORMWATER MANAGEMENT WORK?

Under natural conditions, rainwater is dissipated through the processes of transpiration, evaporations and percolation. Through transpiration, a large quantity of water is intercepted by plant foliage and evaporates back into the atmosphere. The remaining water that reaches the surface of ground infiltrates into the soils and through percolation, continues to travel under ground until it slowly makes its way into the streams and aquifers.

As water seeps into the ground the process of percolation also allows for the removal of pollutants present in stormwater. The ability of water to seep into the ground, as well as, the amount of water that can be retained depends on soil properties such as porosity and permeability. A high porosity soil can hold large amounts of water and usually allows for rapid infiltration. When precipitation reaches the soil surface faster than it can be infiltrated into the ground, water collects at the surface and travels downhill.

WHY IS STORMWATER MANAGEMENT NECESSARY?

As more land cover is replaced with impervious surfaces, less rain can be naturally absorbed and treated by the environment. After development, stormwater discharges can increase by more that twice the amount under natural conditions. If not controlled, large quantities of water can cause flooding in our communities and stream channel erosion. Stormwater Management's policies are necessary in order to address impacts of urbanization on water resources, minimize flood damage, and significant erosion of channel bed and banks.



stormwater graphic courtesy John David Hardee

ONLY RAIN DOWN THE DRAINS

BE PART OF THE SOLUTION

NOT PART OF THE POLLUTION

WHAT TO DO TO PREVENT RUNOFF POLLUTION?

- CARPOOL, WALK, BIKE OR TAKE A BUS WHEN POSSIBLE TO REDUCE YOUR CARBON FOOTPRINT.
- KEEP YOUR CAR TUNED-UP (TUNED-UP CARS RUN BETTER & POLLUTE LESS)
- WASH YOUR CAR REGULARLY WITH BIODEGRADABLE SOAP.
- DON'T LITTER.
- AVOID DRIVING ON GRASSY AREAS.

CONCTACT US:
MASONLD@GMU.EDU
STORMWATER.GMU.EDU

GEORGE MASON UNIVERSITY | Facilities
Land Development


STORMWATER RUNOFF ENDS UP IN LOCAL STREAMS
SAVE OUR STREAMS
BE THE SOLUTION TO RUNOFF POLLUTION
• Carpool, walk, bike or take a bus when possible to reduce your carbon footprint.
• Keep your car tuned-up (tuned-up cars run better and pollute less)
• Wash your car regularly with biodegradable soap.
• Don't litter.
• Avoid driving on grassy areas.
GEORGE MASON UNIVERSITY
Facilities
Land Development
NO DUMPING
DRAINS TO CHESAPEAKE
CONTACT US:
MASONLD@GMU.EDU
STORMWATER.GMU.EDU

Appendix C

Public Involvement and Participation

MCM #2: Public Involvement and Participation

- **Promote MS4 Program Plan & Reports**
- **Outreach Activities:**
  - ✓ Stream/Campus Cleanup
  - ✓ Showcase/Educational Events
  - ✓ Storm Drain Marking

MCM #2: Public Involvement and Participation

- **Keep track of activities and results**

Tim Murphy
Cleanup Coordinator
Phone: 301-292-5665
Fax: 301-292-1070
potomaccleanup@fergusonfoundation.org
www.PotomacCleanup.org

TRASH FREE POTOMAC WATERSHED
ALICE FERGUSON FOUNDATION

CLEAN LAND. SAFE WATER. HEALTHY LIVES.

Name B. Claudio
Username
Phone# 703 993-5043
Site Name Mason
Participating Groups or Organizations:
- George Mason Land Development
- Mason Students
- Facilities Management Staff
- OT Fraternity (Theta Tau)
- Leadership, LLC

RESULTS TALLY SHEET

Report results to AFF following your Cleanup

1. **Trash Conditions at Site (Low, Medium, High):** Medium

Category		Number
Volunteers		15
Yellow (non-recyclable) Bags	73.63 lbs	11
Blue (recyclable) Bags	97.07 lbs	7
Blue (recyclable) Bags actually recycled		7
TIRES		ϕ
Estimated pounds of BULK trash (Not including tires)	about	625 lbs
Estimated Plastic Bags (grocery and ziplock)	about	30
Estimated Cigarette Butts	about	100
How many sharps/syringes did you find?		ϕ

Bulk Weight Estimates:

Kitchen sink: Porcelain 30 lbs,
Stainless steel 10 pounds
PVC piping: 2 inches diameter, 1 foot long, 5 oz
Metal piping: 2 inches diameter, 1 foot long, 1 lb
Refrigerator: 287 lbs
Washer: 125 lbs
Dryer: 125 lbs
Tires: 25 lbs or heavier
Shopping carts: 50 lbs
Other: car lifter

Appendix D
SWPPP

Stormwater Pollution Prevention Plan

For

Facilities Operations

George Mason University

Prepared for:

George Mason University

Civil and Environmental Engineering Division

4400 University Drive MSN 2C1

Fairfax, Virginia 22030

THIS DOCUMENT SHALL BE UPDATED AS NEEDED AND KEPT ON SITE

Updated on 9/12/2019

TABLE OF CONTENTS

Page

Appendices

Tables

1 INTRODUCTION

1.1 BACKGROUND

In 1972, Congress passed the Federal Water Pollution Control Act (FWPCA), also known as the Clean Water Act (CWA), to restore and maintain the quality of the nation's waterways. The ultimate goal was to ensure that rivers and streams were fishable, swimmable, and drinkable. In 1987, the Water Quality Act (WQA) added provisions to the CWA that allowed the EPA to govern stormwater discharges from industrial activities.

George Mason University (Mason) operates their Municipal Separate Storm Sewer System (MS4) under the Virginia Stormwater Management Program (VSMP) General Permit number VAR040106 issued November 1, 2018.

Part I E 6. c of the Commonwealth of Virginia's MS4 General Permit, states "the [George Mason University] shall maintain and implement a site specific stormwater pollution prevention plans (SWPPPs) for each facilities identified.

High priority municipal facilities are facilities owned and operated by Mason and include one or more of the following activities:

- Composting facilities
- Equipment storage and maintenance facilities;
- Material storage yards;
- Pesticide storage facilities;
- Public works yards;
- Recycling facilities;
- Salt storage facilities;
- Solid waste handling and transfer facilities; and,
- Vehicle storage and maintenance yards.

A high priority facility is considered to have a high potential of discharging pollutants if and of the following activities occur and are expected to have exposure to stormwater resulting from rain, snow, snowmelt or runoff:

- Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;

- Materials or residuals on the ground or in stormwater inlets from spills or leaks;
- Material handling equipment;
- Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);
- Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
- Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
- Waste material except waste in covered, non-leaking containers (e.g., dumpsters);
- Application or disposal of process wastewater (unless otherwise permitted); or
- Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.

The Maintenance Storage Yard at George Mason University conducts multiple activities that categorize it as a high priority facility requiring a SWPPP. These activities include; storage of salt and building aggregates; storage of recyclables; vehicle maintenance services; and several others. The facility has a high potential for discharges into the stormwater system due to several of these activities occurring in areas that are not under cover and protected from rainfall events.

In addition to the Maintenance Storage Yard mentioned above Mason also has two satellite facilities that are covered by this SWPPP, the West Campus Yard and the Facilities Management site at the Prince William Science and Technology Campus in Manassas. The West Campus site has bulk material storage that is not covered and parking of Mason vehicles and snow plows. The Science and Technology has activities involving the parking of vehicles and snow plows.

This SWPPP identifies stormwater discharges at the facility, actual and potential sources of stormwater contamination, and describes the implementation of both structural and non-structural best management practices (BMPs) to reduce the pollutants contained in stormwater runoff discharging into receiving waters to the maximum extent practicable, and to meet water quality standards.

Development, implementation, and maintenance of the SWPPP provides Mason with the tools to reduce pollutants contained in stormwater discharges. The primary goals of the SWPPP are to:

- Identify potential sources of pollutants that affect stormwater discharges from the site;
- Describe the practices to prevent or control the release of pollutants in stormwater discharges; and,
- Create an implementation schedule to ensure that the practices described in this SWPPP are in fact implemented and to evaluate the plan's effectiveness in reducing the pollutant levels in stormwater discharges.

1.2 SWPPP CONTENT

This SWPPP includes all of the following:

- An existing site description that includes a site map identifying all outfalls, direction of flows, existing source controls and receiving water bodies;
- A discussion and checklist of potential pollutants and pollutant sources;
- A discussion of potential non-stormwater discharges;
- A maintenance schedule for existing source controls;
- Policies and procedures implemented at the facility to ensure source reduction;
- An inspection schedule and checklist;
- Appropriate training requirements;
- Procedures to conduct required stormwater discharge monitoring and reporting as applicable;
- Procedures to conduct an annual comprehensive site compliance evaluation;
- Procedures to conduct dry weather screening; and
- SWPPP modifications made as the result of any reportable release or spill.

2 SWPPP IMPLEMENATATION

2.1 SWPPP COORDINATOR

Zhongyan (Jane) Xu is the SWPPP Coordinator for the facility The Coordinator's duties include the following:

- Create a SWPPP team to aid in the implementation of the SWPPP plan;
- Implement the SWPPP;
- Oversee maintenance practices on BMPs identified in the SWPPP;

- Implement and oversee employee training;
- Conduct or provide inspection and monitoring activities;
- Identify other potential pollutant sources and make sure they are added to the plan;
- Identify any deficiencies in the SWPPP and make sure they are corrected;
- Prepare and submit reports as required by the MS4 reporting procedures; and
- Ensure that any changes in facility operation are addressed in the SWPPP.

The SWPPP Coordinator will maintain the SWPPP document and update the SWPPP based on site conditions. The SWPPP Coordinator will maintain records of spills or discharges of petroleum, fuels or lubricants. As the George Mason University Facilities Civil and Environmental Engineering Division (the VPDES Administrator) is responsible for compliance with the MS4 permit, they will be informed of any spills or unauthorized discharges to surface waters or the stormwater system within 2 hours of discovery. The VPDES Administrator will report these to the appropriate agency pursuant to 62.1-44.34:19 if they exceed the reportable quantities of 25 gallons to soil, or any amount to state waters or the storm sewer system that cause a sheen on the surface of the water.

2.2 SWPPP TEAM

To aid in the implementation of the SWPPP, the SWPPP Coordinator will be supported by a SWPPP Team. The members of the SWPPP team will be identified by the SWPPP Coordinator and membership logs are maintained in **Appendix D** of this document.

The SWPPP team shall, as requested by the coordinator, undertake the following:

- Attend trainings;
- Report problems to SWPPP coordinator,
- Assign responsibilities with departments,
- Review modifications to this document and corresponding procedural operations; and,
- Provide assistance on other activities as requested by the SWPPP Coordinator.

3 EXISTING SITE CONDITIONS

3.1 FACILITY LOCATION

The Mason main campus contains the Maintenance Storage Yard in Fairfax, VA. **Figure 1.1** depicts the regional vicinity and location of the facility (**Appendix A**) and its location within the larger Mason campus area. **Figures 1.2 and 1.3** show the locations of the satellite facilities on the West Campus and the Prince William Science and Technology campus respectively.

3.2 SITE DESCRIPTION

3.2.1 George Mason Maintenance Storage Yard

The George Mason Maintenance Storage Yard site is approximately 8.24 acres on the main campus of Mason. It is bordered by Patriot Circle to the west, Staffordshire Lane to the north, Shenandoah Lane to the south, and a stormwater detention and Roberts Road to the east. The site is approximately 80% impervious and 20% pervious (dirt, grass, or gravel). It contains the operations of several different departments including: Environmental Health and Safety, Grounds Maintenance, Facilities Management, and the Heating and Cooling Plant.

Stormwater exiting the Mason Maintenance Storage Yard drains to an existing extended detention pond and then northeast to Pohick Creek.

3.2.2 West Campus Yard

The West Campus Yard is a satellite maintenance yard to the main Mason facilities area. The site is approximately 0.39 acres and consists of two small buildings and a parking area. The site is bordered to the north by Rapidan River Road, to the East by Campus Drive, and to the west by the Softball Stadium (Field #2). The majority of the facility is impervious and discharges through a ditch system and grassy areas before ultimately draining to tributaries of Popes Head Creek.

3.2.3 Prince William Facilities Management Site

The Prince William Science and Technology campus contains a small Facilities Management site located in Manassas, VA. The site consists of 0.43 acres of mostly impervious areas consisting of a parking lot and three buildings. It is bordered by Edwin King Lane to the north, Freedom Center Boulevard to the east, the King Parking Lot to the south, and George Mason Circle to the west. The site drains to a tributary to Broad Run via sheet flow through an adjacent parking lot.

3.3 SITE ACTIVITIES

3.3.1 George Mason Maintenance Storage Yard

The Mason Maintenance Storage Yard site houses a wide variety of services and activities including: storage of soil and sand; concrete aggregate; storage of grounds maintenance equipment including lawn mowers and grounds maintenance vehicles; storage of salvage parts in freight containers; storage of appliances while awaiting transport to offsite recycling or other facilities; recyclables; storage of snow plow accessories; storage of ice melt/salt; storage of hazardous waste; automotive repair; and the Mason heating and cooling plant.

Specific activities on the site include Environmental Health and Safety's (EHS) Central Accumulation and Storage Area which houses recyclable storage and hazardous waste accumulation, a salvage equipment parts storage, and bulk material storage including soil and sand, a salt storage building with mixing pad, and Mason's central heating and cooling plant. Parking of Mason vehicles including maintenance, facilities, and grounds maintenance vehicles is common at the site. Adjacent to the maintenance garage there is an aboveground storage tank for waste oil and drums for the storage of waste antifreeze and waste oil filters.

Adjacent to the EHS Central Accumulation and Storage Area there is an above ground gasoline tank, an above ground diesel fuel tank, and there are two, 30,000 gallon above ground fuel oil #2 tanks that are used to fuel the heating and cooling plant on the opposite end of the site. The maintenance garage bays have floor drains that are connected to the sanitary sewer and an exterior wash bay also has drainage going to sanitary sewer through an oil/water separator. The central heating and cooling plant have floor drains that are connected to the sanitary sewer system. All other inlets and drains discharge to Mason's stormwater conveyance system.

Areas of activity are located on **Figure 2.1**.

3.3.2 West Campus Yard

The West Campus Yard is consists of two small buildings, a parking area for maintenance vehicles, snow plows, and lawn mowers and other grounds equipment, and bulk landscaping and athletic field maintenance material storage bins on the northern side of the facility. The majority of the facility is impervious and drains to a tributary of Popes Head Creek.

Areas of activity are located on **Figure 2.2**.

3.3.3 Prince William Facilities Management Site

The Prince William Science and Technology campus also has a small satellite maintenance yard with activities including snow plow, ground maintenance, and general vehicle parking and storage. The site consists of 0.43 acres of mostly impervious areas including the parking lot and three buildings. The site drains via sheet flow through a parking lot to the south of the yard to a tributary of Broad Run.

Areas of activity are located on **Figure 2.3**.

3.4 STORM WATER DRAINAGE SYSTEM

Figures 3.1, 3.2, and 3.3 identify onsite outfall locations, directions of flow, and receiving water bodies. A summary of drainage area sizes, runoff coefficients, and discharge locations is shown in **Table 1**. The individual drainage areas are further described in **Section 4.2**.

3.4.1 George Mason Maintenance Storage Yard

The Maintenance Storage Yard is divided into four (4) drainage areas as shown on **Figure 3.1**. Drainage Area 1 (DA-1) is the northwest corner of the site bordered by Patriot Circle and Staffordshire Lane including the administration building and a portion of the eastern heating and cooling plant building. Drainage Area 2 (DA-2) is the northern area including the automotive services and grounds maintenance area. DA-2 does not include the vehicle wash bay as this drains to the sanitary sewer system. Drainage Area 3 (DA-3) includes the rest of the heating and cooling plant including the above ground oil tanks for the generators, and also includes the central warehouse building. Drainage Area 4 (DA-4) is the eastern part of the site and includes the recyclables area, some storage of landscape materials, the salt storage building, and the spare parts area.

3.4.2 West Campus Yard

The West Campus Yard has a single drainage area and is identified as DA-WC (**Figure 3.2)**.

3.4.3 Prince William Facilities Management Site

Prince William Facilities Management site has a single drainage area is identified as DA-PW (**Figure 3.2**).

Table 1: Stormwater Drainage Areas

Drainage Area Number	Drainage Area Size (ac)	Runoff Coefficient (C)	Drainage Area Discharge Location	Outfall Number
DA-1	1.73	89	Pohick Creek	001
DA-2	2.29	93	Pohick Creek	002 / 002a
DA-3	2.65	95	Pohick Creek	003
DA-4	1.57	92	Pohick Creek	N/A (Sheet flow)
DA-WC	0.39	98	Popes Head Creek	WC-001
DA-PW	0.43	98	Broad Run	N/A (Sheet flow)

3.4.4 Allowable Discharges to Stormwater Drainage System

The Virginia Stormwater Regulations under section 9VAC25-870-400 D.2.c(3) allow for certain non-stormwater discharges. Allowable non-stormwater discharges to the stormwater system at Mason may include but are not limited to:

- Discharges from firefighting activities;
- Fire hydrant flushing;
- Potable water including water line flushing;
- Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids;
- Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with the approved labeling;
- Routine external building wash down that does not use detergents; and,
- Pavement wash waters where no detergents are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed).

Discharges from these activities if comingled with stormwater would ultimately drain to Pohick Creek, Popes Head Creek, and Broad Run. These discharges, should they occur are not anticipated to contribute significant pollutants to the stormwater system at Mason.

3.5 NON STORMWATER DISCHARGES

All maintenance bay runoff drains to floor inlets that are connected to the sanitary sewer. The drains are positioned at the front of each of the maintenance garage compartment to ensure that all maintenance waste is collected.

Inlets and floor drains connected to the sanitary sewer system are located throughout the central heating and cooling plant as well. This runoff does not discharge to the stormwater system.

The wash bay adjacent to the maintenance garage contains an inlet that is connected to an oil-water separator and then discharges to the sanitary sewer system. The wash bay is graded such that all wash water is directed to this inlet and does not leave the bay.

There are no floor drains or drains connected to sanitary at either the West Campus or Prince William yards and no other non-stormwater discharges.

4 POTENTIAL STORM WATER CONTAMINANTS

This section identifies and describes drainage areas at Mason and significant activities or material storage in those drainage areas that may potentially contaminate stormwater. All drainage areas and patterns are shown on **Figures 3.1, 3.2, and 3.3**.

4.1 POTENTIAL STORMWATER POLLUTANTS

The activities that may cause pollution to the stormwater system include:

- Leaks from parked vehicles;
- Leaks from fluids stored outside in barrels including used oil and antifreeze;
- Leaks or spills from the aboveground petroleum storage tanks during filling, fueling or other activities;
- Leaks or spills from aboveground waste oil storage tank during emptying or other activities;
- Runoff from aggregate storage including soil, sand, mulch, and ice melt/salt.
- Contamination from vehicle cleaning and maintenance not contained within the wash and/or maintenance bays;
- Leaks from cans stored outside including paints, ice melt, recyclables, oils, landscaping items, and other chemicals and/or substances.
- Contamination from recycled or salvaged appliances stored onsite waiting to be removed or serviced;
- Contamination from salvaged parts stored outside the salvaged parts containers.

Pollutants discharged from these conditions or activities if not contained and cleaned up could discharge to the stormwater system.

4.2 DRAINAGE AREA DESCRIPTION

This section describes the site drainage and flow regimes as well as the materials stored on-site and the potential stormwater pollutants at this facility. **Table 2** further describes potential pollutant sources, quantities and outfalls to which the pollutants would discharge.

4.2.1 Drainage Area 1

DA-1 is located on the northwest corner of the site and includes the administration building as well as the northwest portion of the heating and cooling plant. The drainage area is predominately impervious with a small grass hill behind the maintenance building. This drainage area discharges

offsite behind the vehicle wash bay (Outfall 001).The activities that may cause pollution in this area include runoff or leaks from chemicals being delivered to the heating and cooling plant or fluids leaking from vehicles parked at the site.

4.2.2 Drainage Area 2

DA-2 is the central portion of the site and contains the automotive services facility, the EHS collection and accumulation area for recyclables, paints, and other wastes, a carpenter shop, an aboveground diesel fuel tank, an aboveground gasoline tank, ground maintenance services, and parking for both personal and university vehicles, and landscaping equipment. Drainage from this portion of the site flows through drainage structures from the parking area and exits the site through a ditch and pipe structure located on the northern side of the facility (Outfall 002). Additional drainage is collected as sheet runoff from buildings and runs through a concrete swale, into the ditch, then offsite (Outfall 002A). Automotive services also maintains an aboveground waste oil tank that is located adjacent to the building as well as covered steel drums for waste oil filters and waste antifreeze that are stored outside.

The activities that may cause pollution in this area include fluids leaking from vehicles parked at the site; fluids or other debris on lawnmowers and other equipment stored on the pavement; spills of chemicals, paints, or other wastes being delivered to, removed from, or stored temporarily at the EHS holding facility; incidents during the replenishment of the aboveground diesel tank; incidents during replenishment of the aboveground gasoline tank; spills while fueling vehicles; spills of automotive materials not contained within the automotive maintenance bays; overflow of the wash bay drainage structure causing was water to leave the wash bay; incidents during emptying of the oil waste tank; and, spills or leaks from drums of waste oil filters or antifreeze being stored outside while awaiting pickup.

4.2.3 Drainage Area 3

DA-3 consists of the majority of the heating and cooling plant on the southwest side of the site, including two 30,000-gallon aboveground #2 fuel oil tanks for fueling the plant. This area also includes the loading docks for the central warehouse where material shipping and receiving occurs. Drainage in this area runs through a combination of inlets, trench drain, and sheet flow to a ditch and riprap channel south of the property. Potential pollutants in this area could include releases during refueling of the diesel tanks and spills or leaks during loading or offloading of chemicals or other materials for the plant at the loading dock. Stormwater in this drainage area discharges through Outfall 003 on the southwest end of the site.

4.2.4 Drainage Area 4

DA-4 is the eastern portion of the site and includes uncovered aggregate storage, the salt storage building, salvaged parts storage, storage of snow plow accessories; miscellaneous storage of landscaping materials in containers, and the salt loading area. Stormwater in this area drains via sheet flow to the east and south of the site where it is eventually captured in a large extended detention basin. Potential pollutants in this area include spills during loading of aggregates and salt into spreaders and trucks; leaks of fluids from vehicles, spreaders, and now plow equipment stored onsite; and runoff from aggregate sand, gravel, and other materials stored in the uncovered concrete bays.

4.2.5 Drainage Area – West Campus

DA-WC covers the entire West Campus satellite facility. It includes uncovered aggregate storage, storage of snow plow accessories; and the parking of grounds maintenance vehicles including lawn mowers. Stormwater in this area drains to an inlet on the northeast corner of the site where it is travels through a pipe then is collected discharged into a ditch system through a forested area. Potential pollutants in this area include: spills during loading of aggregates into spreaders and trucks; leaks of fluids from vehicles, spreaders, and snow plow equipment stored onsite; and runoff from athletic field clay, sand, gravel, and other materials stored in the uncovered concrete bays.

4.2.6 Drainage Area – Prince William Science and Technology Campus

DA-PW covers the entire Prince William Science and Technology Campus satellite maintenance facility. It includes the storage of snow plow accessories and the parking of grounds maintenance vehicles including lawn mowers and small golf cart vehicles. Stormwater in this area drains via sheet flow to the east offsite where it enters a roadside storm drainage conveyance system. Potential pollutants in this area include: drips and leaks during the installation of spreaders and plows onto tractors and equipment, and leaks of fluids from vehicles, spreaders, and snow plow equipment stored onsite.

5 SOURCE CONTROLS

This section describes the source controls implemented at the facility. Procedural and behavioral BMPs are emphasized as a means of effective stormwater control over structural or physical stormwater controls to promote better employee awareness of the risks and responsibilities associated with the handling, storage, use, and disposal of potential sources of pollutants on site.

5.1 PHYSICAL STORMWATER CONTROLS

5.1.1 Automotive Maintenance

All vehicle maintenance is completed indoors on a concrete floor that is sloped to drain to floor drains connected to the sanitary sewer system. Any spilled liquid drains into the floor drains, through an oil-water separator located in a sump and then is discharged to the sanitary sewer system. Storage drums in the maintenance garage are stored on oil containment pallets.

The waste oil tank adjacent to the maintenance garage is located within a steel, secondary containment tank designed to contain any leaks or spills from the tank should they occur. The secondary containment is shielded from rainfall by a steel cover with an inspection port for visual monitoring of the area between the tank and containment tub. A ball valve is located at the bottom of the tank to drain and properly dispose of any oily water that collects in the secondary containment basin.

The waste antifreeze and waste oil filter drums are stored in steel drums with tightly closed lids when not having materials placed in them. Full drums are removed from the site by a commercial recycler.

5.1.2 Vehicle Fuel Tanks

The two fuel tanks for servicing university vehicles are contained within a secondary containment berm that is designed to contain any spills from the tanks. Stormwater that collects in the basin drains through a locking valve after any petroleum products are skimmed from the water surface by oil absorbent materials. The fuel filing ports are kept locked except when product deliveries occur. Fuel filling nozzles are locked at the end of each work day and unlocked the following morning..

5.1.3 Salt Storage and Use

Salt and ice melt are stored in a newly built permanent salt storage building, which has a nine foot night exterior wall made of reinforced concrete. The interior space is divided into two separate bays. The floor is reinforced concrete slab on grade which slopes towards the open front end. The concrete apron located at the building front is sloped to the center and then sloped to each end to the existing grade. Salt is removed from the salt storage building by small loaders and placed in the spreader hoppers immediately in the concrete apron in front of the building. If materials are spilled during loading of the spreaders, it is scooped up and placed back into the building either by hand or by bobcat loader.

The salt storage building is inspected weekly. Any spilled/leaked salt is immediately cleaned up and the source of the leak repaired.

5.1.4 Steam Plant Fuel Tanks

The two 30,000 gallon fuel oil tanks are located within sealed, steel secondary containment basins designed to hold the contents of the tanks should they fail. During fuel deliveries the storm drain located in the containment area has a valve that is closed to prevent the discharge of any spilled product to the storm drain system.

An oil/water filter for the inlet next to the tank has been purchased, but is not yet installed as of the writing of this document. This document will be updated to reflect the changes when available.

5.1.5 Maintenance Schedule

Descriptions of maintenance procedures and logs of work performed are found in the maintenance log (**Appendix E**). As new BMPs are adopted or BMPs are modified, the maintenance schedules specific to those BMPs will be added and/or modified.

5.2 SITE POLICIES AND PROCEDURES

Mason has several written policies that apply directly to this site, as it hosts a variety of departments and services. Spill kits are kept throughout the site for spills and leaks that need to be contained. If a spill were to occur the procedure is to notify the Department of Police and Public Safety by dialing (703) 993-2810 from any phone or 911 from any university landline. EHS should also be contacted in case of a chemical spill.

Mason has written procedures for dealing with spills and activity involving different chemicals and fluids. The following draft procedural guides can be found in **Appendix F**.

1. Chemical, Hazardous, and Universal Waste Guide
2. Flammable and Combustible Universal Liquid Safety Guide
3. Hazardous Materials Shipping and Receiving Guide
4. Oil and Chemical Spill Guide

These plans detail additional inspection and spill response activities for the diesel and gasoline tanks at the site and is to be followed to address spills that occur at the facility. Additional procedures for delivering chemicals and the collection of hazardous waste also exist within these documents.

Mason also maintains an integrated contingency Plan (ICP) for managing incidents involving significant quantities of spilled materials or materials of high potential environmental and health hazards.

Mason has adopted standard operating procedures (SOPs) for vehicle washing, paint storage, vehicle fueling and salt storage. These SOPs are reviewed by staff responsible for these activities and updated as site activities or site conditions warrant. Copies of these SOPs are available from the SWPPP Coordinator.

5.3 INSPECTION PLAN

5.3.1 Routine Inspection

A routine visual inspection is performed by site personnel identified by the SWPPP Coordinator at least quarterly. The inspections are designed to minimize the potential occurrence of conditions that pose a risk to stormwater quality. These inspections address general housekeeping at the facility and identify any small conditions that pose a risk to stormwater quality. Deficiencies and necessary corrective actions are noted on the routine inspection log (**Appendix B**) and maintained in this SWPPP binder.

5.3.2 Annual Comprehensive Facility Compliance Evaluation

A comprehensive facility compliance evaluation is conducted annually by the SWPPP Coordinator. The evaluation assesses the effectiveness of the implementation of this SWPPP in minimizing the discharge of pollutants in stormwater. The annual comprehensive facility compliance evaluation includes a review of the following:

- Storage of industrial materials, residue, or trash that could come into contact with stormwater;
- Documentation and clean-up of leaks or spills that have occurred in the past three years;
- Off-site tracking of materials, sediment or waste from the site;
- Tracking or blowing of waste or materials from covered areas to open areas;
- Evidence of, or the potential for, pollutants to enter the drainage system;
- Evidence of, or the potential for, pollutants to discharge from facility outfalls;
- Outfall condition and evidence of erosion or scour; and
- Review of employee training, and BMP installation, operation and maintenance.

The evaluation also determines whether site operations have changed since the development of this SWPPP. If operational changes that are not documented in the SWPPP have been made, the SWPPP Coordinator determines whether these changes impact stormwater quality and develops new BMPs to address the change. All operational changes and new BMPs are recorded in this SWPPP. Additionally, the evaluation date, the evaluation personnel, the scope of the evaluation, major observations, and any needed revisions to the SWPPP are recorded on the evaluation form in **Appendix C.** Revisions to the SWPPP shall occur within thirty days after the annual compliance evaluation as stated in Section B.5. of Virginia Code 9VAC25-151-80 (Stormwater Pollution Prevent Plans).

5.3.3 Dry Weather Screening

Dry weather screening of the points of discharge from the facility to offsite areas or to other components of the stormwater system shall occur during at least one of the routine facility visual inspections. The purpose of the dry weather screening is to identify possible non-stormwater discharges leaving the site. If flow is observed during dry conditions at a site outfall, the upstream system shall be inspected to determine the source(s) of the flow. If the source of the flow cannot be verified to one of the allowed non-stormwater discharges listed in Section 3.4.1, by facility personnel, its presence shall be reported to the VPDES Administrator in the George Mason University Facilities Civil and Environmental Engineering Division for sampling and analysis in accordance with the ongoing Mason dry weather screening program.

5.4 DRAINAGE AREA BEST MANAGEMENT PRACTICES

This section describes specific BMPs for each drainage area. Specific pollutant sources and management practices, by Drainage Area, are presented in **Table 2**.

5.4.1 Drainage Area 1

DA-1 is impervious drainage area where the administration building and heating and cooling plant are located. Spills on pavement, or other impervious surface, within this area are contained with oil absorbing material, such as Oil-Dri, and collected immediately after it is used by a broom and dust pan and disposed in a dry storage drum. Oil drip pans or oil absorbent pads are placed under leaking vehicles when they are parked to collect the dripping fluids. Spills on pervious ground, soil or other, are cleaned up by digging out the affected area until no remnants appear. The waste material resulting from the cleanup are disposed of in a dry storage drum and sent to a petroleum recycler for disposal. Material handling when receiving or shipping materials from the Heating and Cooling Plant follows the guidelines set forth in the Hazardous Materials Shipping and Receiving

Guide referenced in this document.

5.4.2 Drainage Area 2

DA-2 consists of mostly impervious area and has diverse activities. The following practices are undertaken in this area. Drip pans are placed under any leaking vehicles, but in particular the lawn care equipment parked in this area. Storage drums containing waste oil filters and antifreeze are checked often and stored on containment pallets to decrease the risk of stormwater contamination. These storage drums are kept tightly closed to minimize potential spillage. The EHS collection and accumulation area for recyclables and other waste maintains storage indoors and any outdoor storage is contained in sealed drums or containers. The paint shop maintains all paint and chemical storage indoors where it has minimal risk of spills. Regardless of department, all additional materials including paints, fertilizers, and chemicals is always kept indoors away from weather elements.

The secondary containment areas surrounding the above ground storage tanks is checked frequently for leaks that occur during operation or filling, and spills are cleaned promptly. Drainage plugs on secondary containment systems are always kept closed except when in operation. Oil adsorbent materials are replaced when they become stained with product or excessively worn or damaged.

Spills on pavement, or other impervious surfaces, within this area are contained with oil absorbing material, such as Oil-Dri, and collected immediately after it is used by a broom and dust pan and disposed in a dry storage drum. Spills on pervious areas, are cleaned up by digging out the affected area until no remnants appear. The waste material resulting from the cleanup is disposed of in a dry storage drum and sent to a petroleum recycler for disposal.

5.4.3 Drainage Area 3

DA-3 consists of the heating and cooling plant and its corresponding aboveground fuel oil tanks. Chemicals used for plant operations if stored outdoors have the potential to leak or spill into the stormwater system. All chemicals used are stored indoors and contained properly. The containment areas surrounding the fuel oil tanks for the heating and cooling plant are checked frequently and spills that occur during fueling or operation are cleaned promptly. Spills on pavement, or other impervious surface, within this area are contained with oil absorbing material, such as Oil-Dri, and collected immediately after it is used by a broom and dust pan and disposed in a dry storage drum. Spills on pervious ground, soil or other, are cleaned up by digging out the

affected area until no remnants appear. The waste material resulting from the cleanup is disposed of in a dry storage drum and sent to a petroleum recycler for disposal.

Material handling when receiving or shipping materials from the Heating and Cooling Plant or Central Warehouse follows the guidelines set forth in the Hazardous Materials Shipping and Receiving Guide referenced in this document.

5.4.4 Drainage Area 4

DA-4 sheet flows off the site to the southwest into a wooded area then into a drainage basin connected to the stormwater system. The bulk storage items including soil, sand, and aggregate are contained properly to lower the risk of it being discharged into the stormwater system. Any material that is spilled during the loading of materials for offsite use is pushed back within the storage bins. Materials that overtop the storage bins during deliveries are scooped up and placed back within the storage bins.

Drip pans are placed under other equipment, such as the stored snow plows that are observed to be leaking fluids. Salt and ice melt substances are contained to prevent runoff. Spilled ice melt materials is swept and shoveled back into the bins after each use of the substance regardless of the activity. Materials, including paints and bags of mulch and fertilizers stored in the miscellaneous and recyclables storage shipping containers are stored indoors instead of outdoors on pallets to prevent leaks and discharge with stormwater. Regardless of department, all additional materials including paints, fertilizers, and chemicals are always kept indoors away from weather elements.

Spills on pavement, or other impervious surface, within this area are contained with oil absorbing material, such as Oil-Dri, and collected immediately after it is used by a broom and dust pan and disposed in a dry storage drum. Spills on pervious ground, soil or other, are cleaned up by digging out the affected area until no remnants appear. The waste material resulting from the cleanup is disposed of in a dry storage drum and sent to a petroleum recycler for disposal.

5.4.5 Drainage Area – West Campus

DA-WC flows into a drop inlet on the northeast corner of the site where it is piped to a ditch system in the forested area to the south of the site. The bulk storage items including athletic field clay, sand, and aggregate are contained properly to lower the risk of it being discharged into the stormwater system. Any material that is spilled during the loading of materials for offsite use is

pushed back within the storage bins. Materials that overtop the storage bins during deliveries are scooped up and placed back within the storage bins.

Drip pans are placed under other equipment, such as the stored snow plows that are observed to be leaking fluids. Spills on pavement, or other impervious surface, within this area are contained with oil absorbing material, such as Oil-Dri, and collected immediately after it is used by a broom and dust pan and disposed in a dry storage drum. Spills on pervious ground, soil or other, are cleaned up by digging out the affected area until no remnants appear. The waste material resulting from the cleanup is disposed of in a dry storage drum and sent to a petroleum recycler for disposal. All materials including paints, fertilizers, and chemicals are always be kept indoors away from weather elements.

5.4.6 Drainage Area – Prince William

DA-PW drains via sheet flow to the east offsite where it enters a ditch and travels south and west in a roadside drainage conveyance system. Drip pans are be placed under equipment, such as the stored snow plows that are observed to be leaking fluids. Spills on pavement, or other impervious surface, within this area are contained with oil absorbing material, such as Oil-Dri, and collected immediately after it is used by a broom and dust pan and disposed in a dry storage drum. Spills on pervious ground, soil or other, are cleaned up by digging out the affected area until no remnants appear. The waste material resulting from the cleanup is disposed of in a dry storage drum and sent to a petroleum recycler for disposal. All materials including paints, fertilizers, and chemicals are kept indoors away from weather elements.

Table 2: Pollutant Sources and Minimization Strategies					
Drainage Area	**Potential Pollutant Source**	**Pollutant Pathway to State Waters**	**Risk of Discharge**	**Potential Discharge Volume**	**Discharge Minimization Strategy**
DA-1	Leaked vehicle liquids	Pohick Creek	Low	0.1-1 gallon / vehicle	Clean up leaks and drips immediately upon discharge. Use drip pans or oil absorbent pads for persistent leaks.
DA-1	Materials shipping and receiving	Pohick Creek	Low	1-5 gallons / event	Clean up immediately upon discovery. Follow all procedures in the Hazardous Materials Shipping and Receiving Guide
DA-2	Leaks from waste oil tank	Pohick Creek	Low	1-5 gallons / event	Clean up leaks and drips immediately upon discovery. Follow inspection procedures from Mason Oil and Chemical Spill Guide.
DA-2	Leaks from diesel and/or gasoline storage tank	Pohick Creek	Low	1-5 gallons / event	Clean up leaks and drips immediately upon discovery. Follow inspection procedures from Mason Oil and Chemical Spill Guide.
DA-2	Leaks from automotive service storage bins (waste oil filters / antifreeze)	Pohick Creek	Low	<1 gallon / event	Clean up leaks and drips immediately upon discovery. Follow inspection procedures from Mason Oil and Chemical Spill Guide.
DA-2	Leaked vehicle liquids	Pohick Creek	Low	0.1-5 gallons / vehicle	Clean up leaks and drips immediately upon discharge. Use drip pans or oil absorbent pads for persistent leaks.
DA-2	Leaks from EHS Central Accumulation area	Pohick Creek	Low	0.1-5 gallons / event	Clean up leaks immediately. Follow procedures for appropriate material in Mason Oil and Chemical Spill Guide or Mason Chemical, Hazardous, and Universal Waste Guide
DA-3	Leaks from fuel oil storage tanks	Pohick Creek	Moderate	1 – 100 gallons / event	Clean up leaks and drips immediately upon discovery. Follow procedures from Mason Oil and Chemical Spill Guide.

DA-3	Leaks or spills during chemical delivery	Pohick Creek	Low	0.1-5 gallons / event	Clean up leaks or spills immediately. Follow procedures in Mason Hazardous Materials Shipping and Receiving Guide
DA-3	Materials shipping and receiving	Pohick Creek	Low	1-5 gallons / event	Clean up immediately upon discovery. Follow all procedures in the Hazardous Materials Shipping and Receiving Guide
DA-4	Sediment runoff from bulk material storage	Pohick Creek	Low	0.5-1 cubic yard / event	Contain bulk material to prevent it from being mobilized by stormwater.
DA-4	Leaks from old equipment parts	Pohick Creek	Low	0.1-1 gallon / event	Clean up leaks and drips immediately upon discharge. Use drip pans or oil absorbent pads for persistent leaks
DA-4	Leaked vehicle liquids	Pohick Creek	Low	0.1-1 gallon / vehicle	Clean up leaks and drips immediately upon discharge. Use drip pans or oil absorbent pads for persistent leaks.
DA-4	Leaked / spilled salt	Pohick Creek	Mod	0.5 – 1.0 pounds / event	Sweep up salt residue upon discovery and place in container. Identify and eliminate source of leak.
DA-WC	Leaked vehicle liquids	Popes Head Creek	Low	0.1-1 gallon / vehicle	Clean up leaks and drips immediately upon discharge. Use drip pans or oil absorbent pads for persistent leaks.
DA-WC	Sediment runoff from bulk material storage	Popes Head Creek	Low	0.5-1cubic yard / event	Contain bulk material to prevent it from being mobilized by stormwater.
DA-PW	Leaked vehicle liquids	Broad Run	Low	0.1-1 gallon / vehicle	Clean up leaks and drips immediately upon discharge. Use drip pans or oil absorbent pads for persistent leaks.

6 COMPLIANCE AND REPORTING REQUIREMENTS

This section describes the required employee training, record keeping, signatory and updating requirements of the SWPPP as contained in the MS4 permit.

6.1 EMPLOYEE TRAINING

An employee training program is conducted by the SWPPP Team to educate employees about the requirements of the SWPPP. This education program includes background on the components and goals of the SWPPP and hands-on training with spill prevention and response; recognition and reporting of illicit discharges; good housekeeping; proper material handling; disposal and control of waste; container filling and transfer; and proper storage, washing, and inspection procedures. Training is conducted on a biennial basis as required. New employees that have not yet had training on these procedures as enrolled in the first available training after their start date. Employee sign-in sheets for training courses can be found in **Appendix G** of this document. The training program is reviewed periodically by the SWPPP Coordinator to determine its effectiveness and to make any necessary changes to the program.

6.2 RECORD RETENTION REQUIREMENTS

Records described in the SWPPP are retained on site for three years beyond the calendar year they are created, and are made available to the state or federal compliance inspection officer upon request. Additionally, employee training records and amendment logs are maintained for a period of three years from the date of their creation.

6.3 PROVISIONS FOR AMENDMENT OF THE PLAN

If the facility expands, experiences significant process modifications, or changes significant material handling or storage practices which could impact stormwater, the SWPPP will be amended appropriately. The amended SWPPP will have a description of the new activities that contribute to the increased pollutant loading and planned source control activities. A log of SWPPP amendments can be found in **Appendix H**.

The SWPPP will also be amended if the findings of the annual facility compliance evaluation indicate changes to the SWPPP are necessary to minimize the discharge of pollutants, or if a state or federal compliance inspection officer determines that the SWPPP is ineffective in controlling stormwater pollutants discharged to state waters.

6.4 REPORTING REQUIREMENTS

The SWPPP Coordinator shall be responsible for all MS4 reporting requirements pertaining to this facility. By July 30 of each calendar year the SWPPP coordinator will provide the following items to the Mason MS4 administrator.

- Training logs for the period of July 1 – June 30 of the current year;
- Inspection logs for the period of July 1 – June 30 of the current year;
- Summary of any spills that occurred at the facility for the period of July 1 – June 30; and,
- Maintenance logs for the period of July 1 – June 30.

6.5 SIGNATORY

Responsible Party: _____

Title (print): _____

Date: _____

Appendix A: Figures

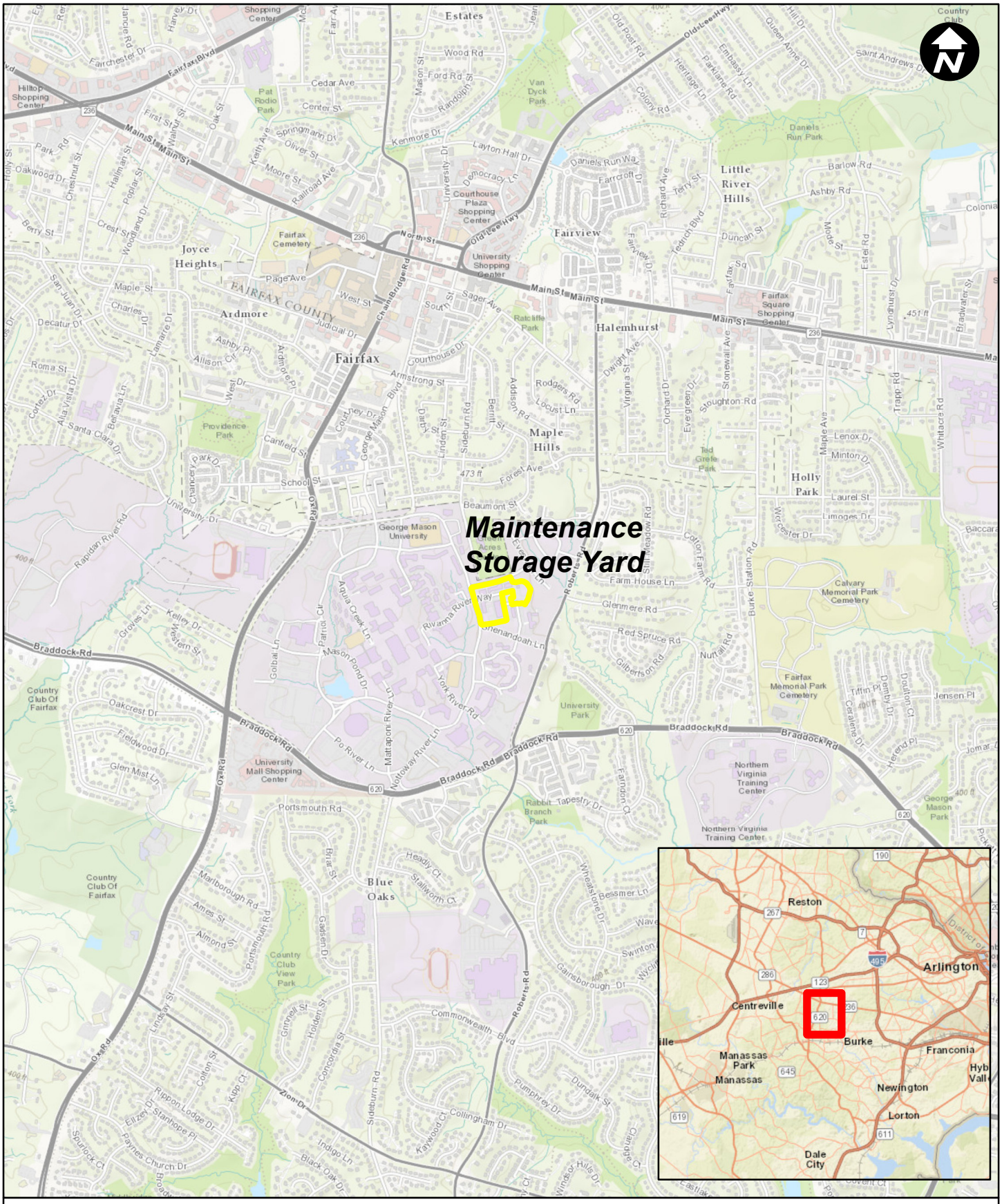


Figure 1.1: Vicinity Map

Maintenance Storage Yard

Limit of SWPPP Study

Feet

0 1,000 2,000

Date: 6/30/2016

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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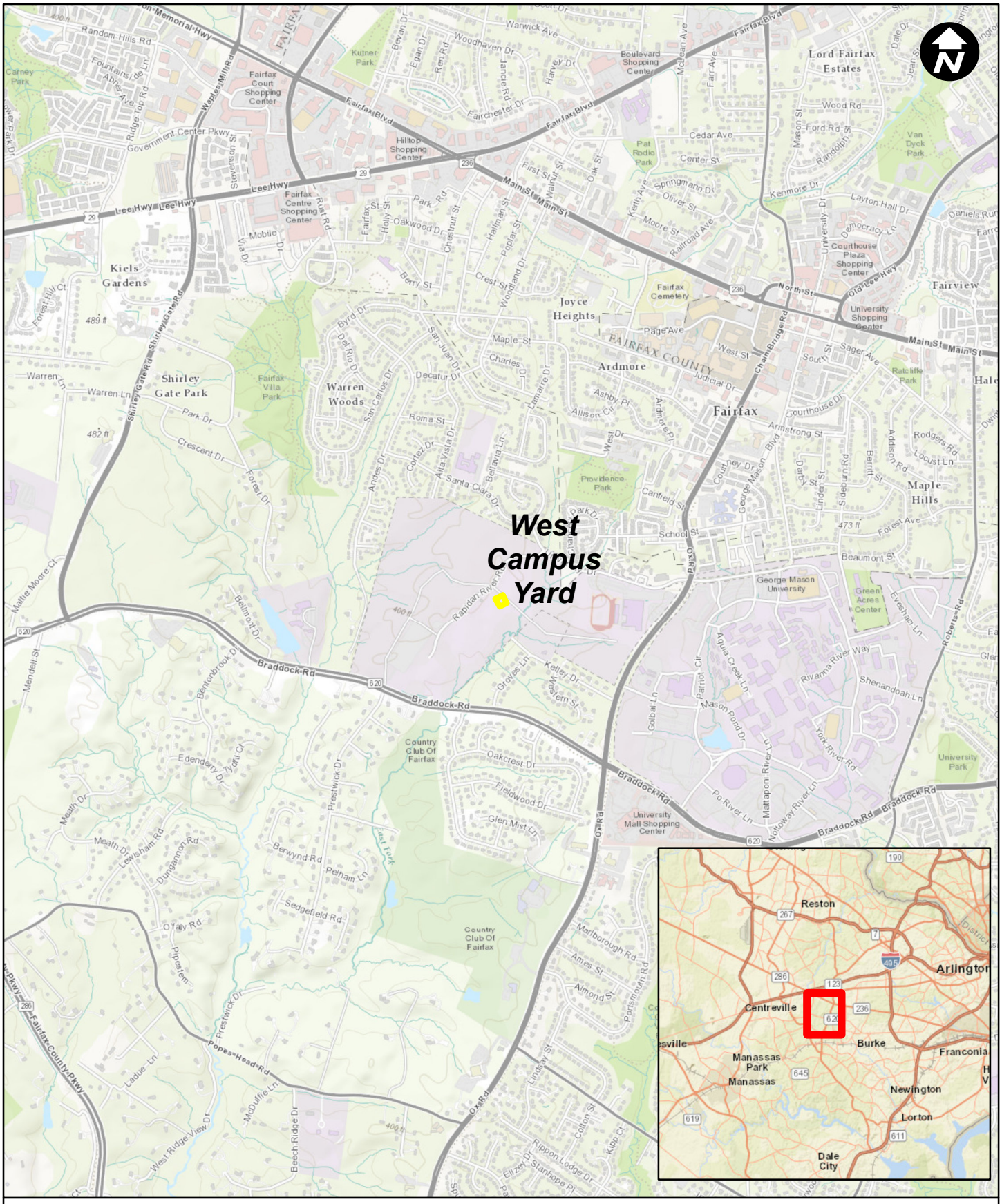

Figure 1.2: Vicinity Map

West Campus Yard

Limit of SWPPP Study

Feet

0 1,000 2,000

Date: 6/30/2016

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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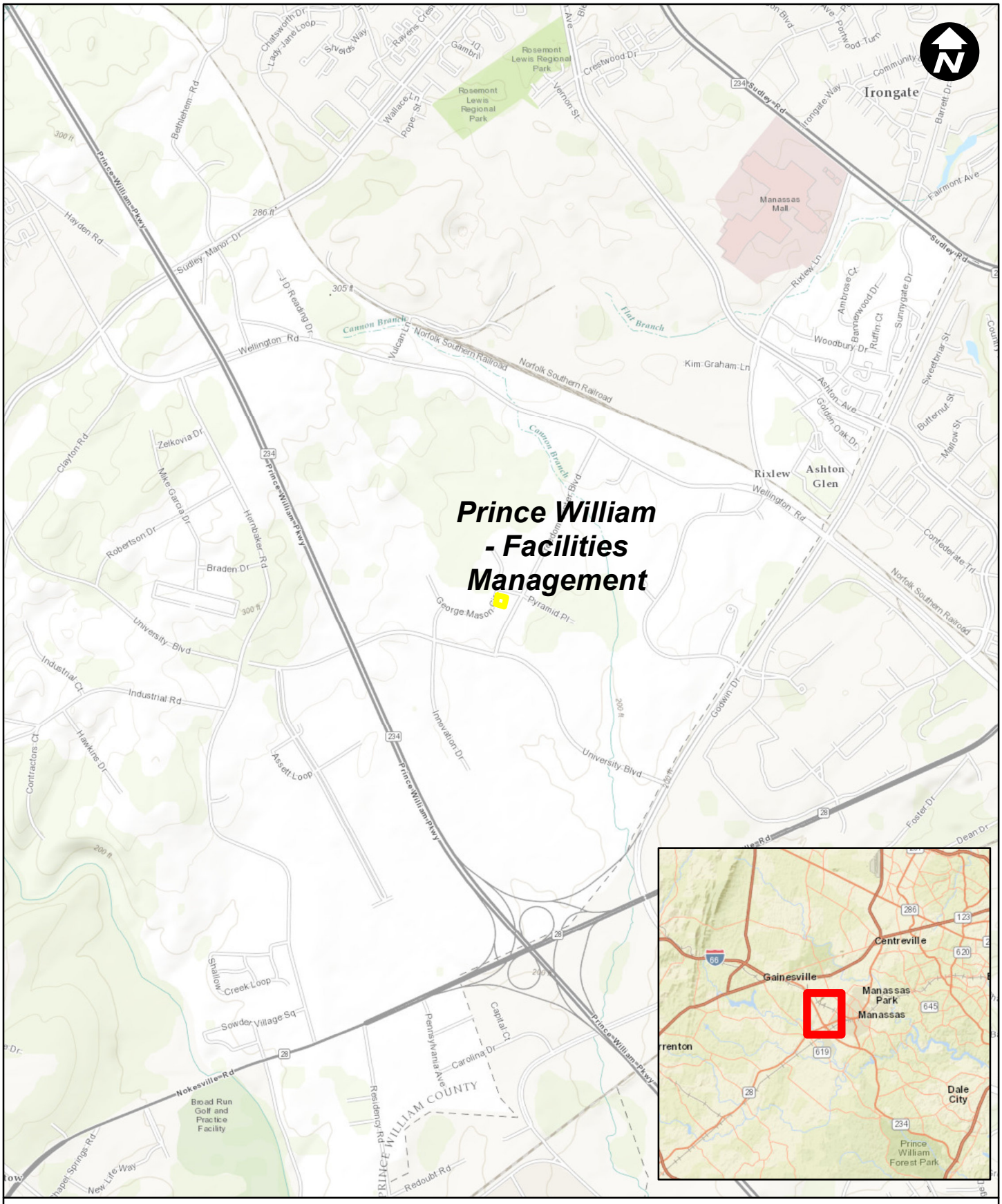

Figure 1.3: Vicinity Map

Prince William - Facilities Management

Limit of SWPPP Study

Feet

0 1,000 2,000

Date: 6/30/2016

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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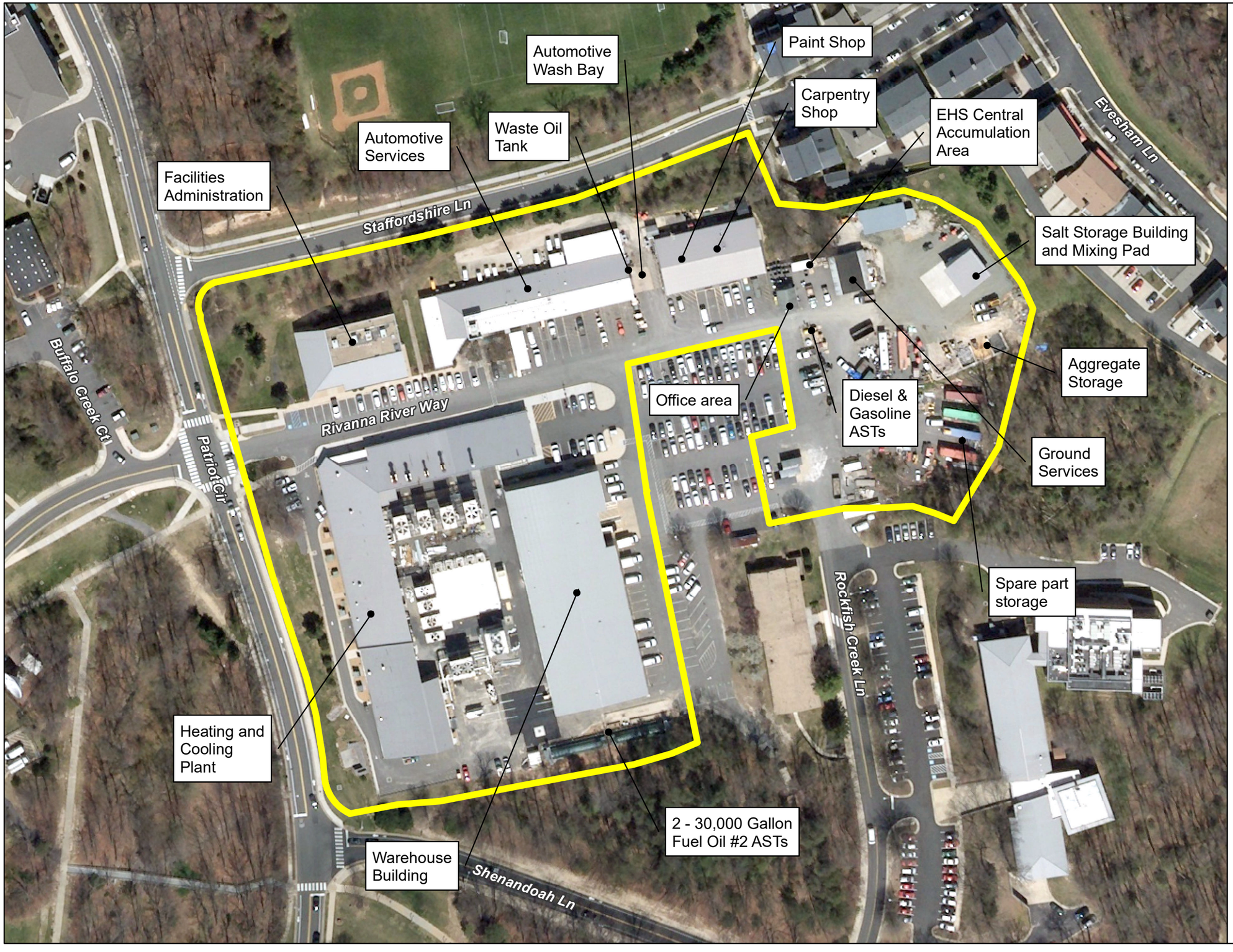
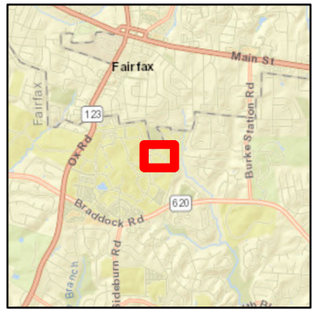


Figure 2.1:
Site Layout

Maintenance Storage Yard

Limit of SWPPP Study



0 100 200 Feet

GEORGE MASON UNIVERSITY

Kimley»Horn

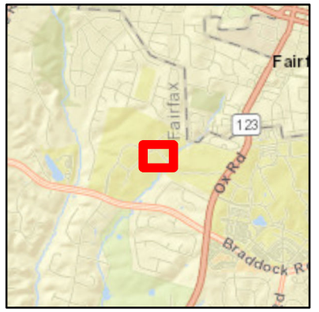
Date: 9/10/2019

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community
Fairfax County, Virginia

Figure 2.2: Site Layout

West Campus Yard

Limit of SWPPP Study



0 75 150 Feet

GEORGE MASON UNIVERSITY

Kimley»Horn

Date: 9/10/2019

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community
Fairfax County, Virginia

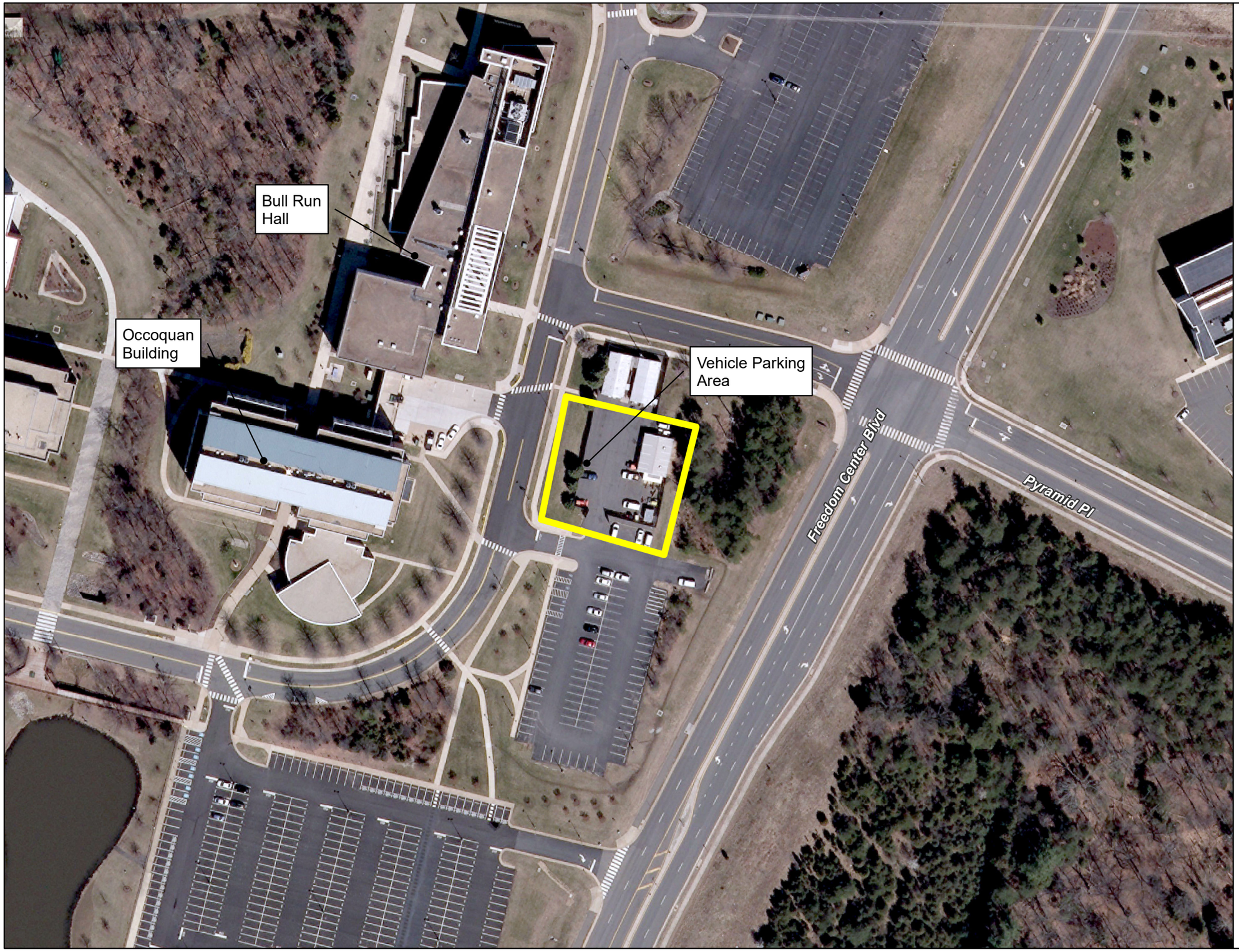


Figure 2.3: Site Layout

Prince William - Facilities Management

Limit of SWPPP Study

N

0 100 200 Feet

GEORGE MASON UNIVERSITY

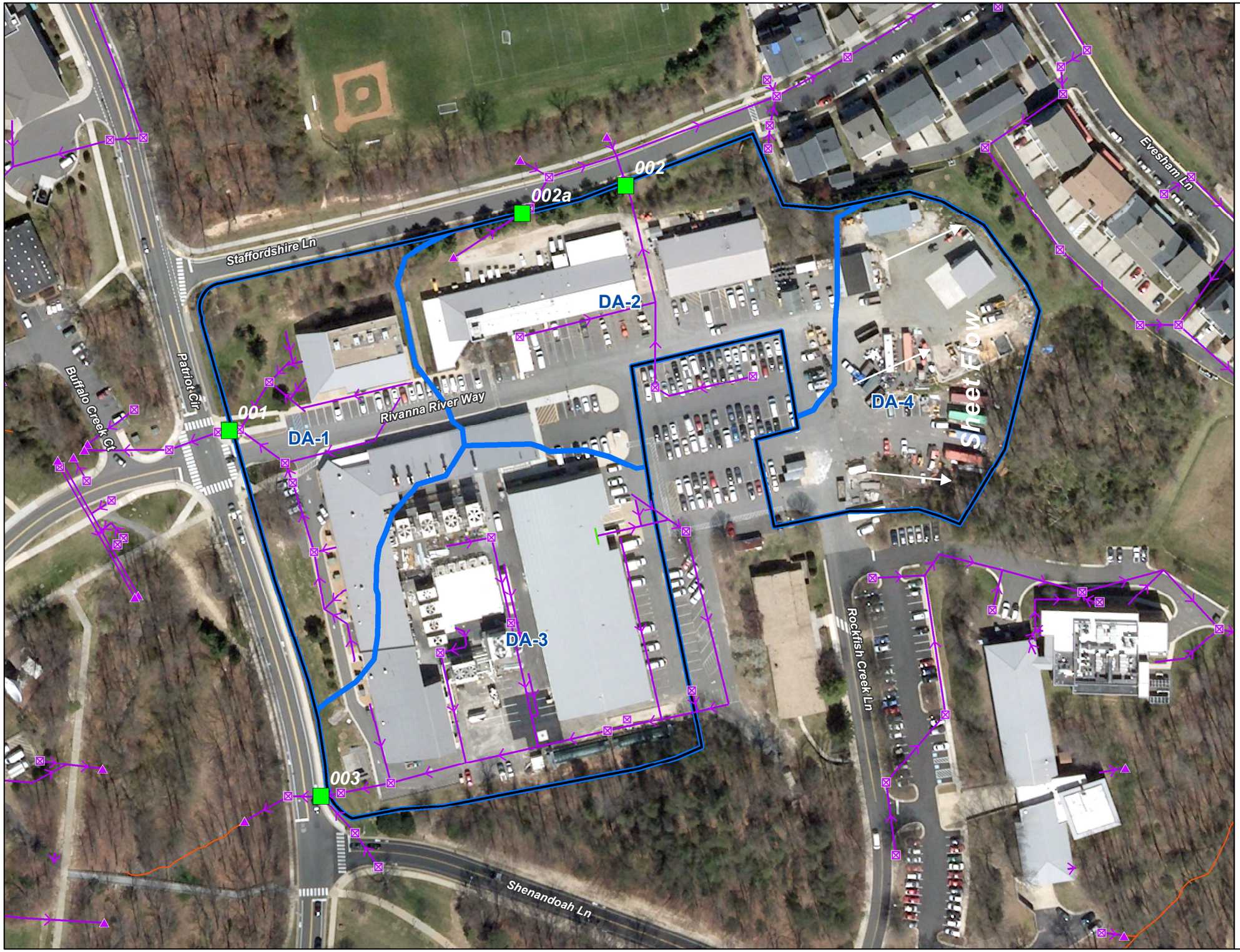
Kimley»Horn

Date: 9/10/2019

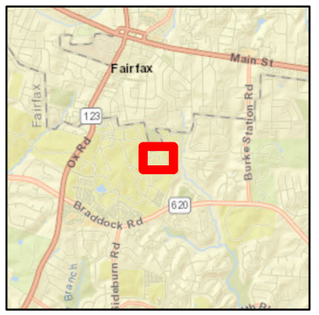
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community
Fairfax County, Virginia

Figure 3.1: Drainage

Maintenance Storage Yard



- Facility Outfall
- Outfall
- Storm Inlets
- Trench Drain
- Storm Pipe
- Ditch / Swale
- Limit of SWPPP Study
- Drainage Area



Feet
0 100 200

GEORGE MASON UNIVERSITY

Kimley»Horn

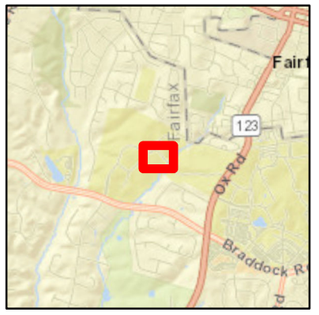
Date: 9/10/2019

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Figure 3.2: Drainage

West Campus Yard

- Facility Outfall
- Outfall
- Storm Inlets
- Trench Drain
- Storm Pipe
- Ditch / Swale
- Limit of SWPPP Study
- Drainage Area



Feet

0 75 150

GEORGE MASON UNIVERSITY

Kimley»Horn

Date: 9/10/2019

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Figure 3.3: Drainage

Prince William - Facilities Management

- Facility Outfall
- Outfall
- Storm Inlets
- Trench Drain
- Storm Pipe
- Ditch / Swale
- Limit of SWPPP Study
- Drainage Area

Feet
0 100 200

GEORGE MASON UNIVERSITY

Kimley»Horn

Date: 9/10/2019

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Appendix B: Routine Facility Compliance Inspection Form

HIGH PRIORITY MUNICIPAL FACILITY
ROUTINE FACILITY COMPLIANCE INSPECTION REPORT

Inspector Name: _____ **Inspector Title:** _____

Inspection Date/Time: _____ **Weather:** _____

Reason for Inspection: _____ **Regular** _____ **Storm Event** _____ **Re-inspection**

Has a pollutant discharge occurred since the last inspection? YES / NO / NAIs the site in compliance? YES / NO / NA

ITEM #	INSPECTION ITEM	RESULT	IN COMPLIANCE	ACTION TO BE TAKEN/NOTES
1	Have facility operations changes since previous inspection?	YES / NO / NA	YES / NO / NA	
2	Inlet filters installed and functioning?	YES / NO / NA	YES / NO / NA	
3	Spill containment materials available, accessible, and in good working order?	YES / NO / NA	YES / NO / NA	
4	Spill clean-up materials available, accessible and in good working order?	YES / NO / NA	YES / NO / NA	
5	AST volume gauges functioning properly? On all ASTs?	YES / NO / NA	YES / NO / NA	
6	Evidence of leaks, overfilling or spillage at AST?	YES / NO / NA	YES / NO / NA	
7	Oil waste tank drain plug closed when not operational?	YES / NO / NA	YES / NO / NA	
8	Are paved roadways free of debris / off-site tracking?	YES / NO / NA	YES / NO / NA	
9	Discharge points free of sediment deposits and trash?	YES / NO / NA	YES / NO / NA	
10	Salt storage properly contained?	YES / NO / NA	YES / NO / NA	
11	Discharge points experiencing erosion or scour?	YES / NO / NA	YES / NO / NA	
12	Trash/litter collected & receptacles covered?	YES / NO / NA	YES / NO / NA	
13	Evidence of major spills / leaks in vehicle parking area?	YES / NO / NA	YES / NO / NA	

ITEM #	INSPECTION ITEM	RESULT	IN COMPLIANCE	ACTION TO BE TAKEN/NOTES
14	EHS Accumulation area properly maintained?	YES / NO / NA	YES / NO / NA	
15	Aggregate storage piles well-contained?	YES / NO / NA	YES / NO / NA	
16	Grounds maintenance storage area in compliance? Paint and other items stored appropriately?	YES / NO / NA	YES / NO / NA	
17	Debris in wash rack? Evidence of spills in or around wash rack?	YES / NO / NA	YES / NO / NA	
18	Heating and cooling plant chemicals stored indoors and maintained?	YES / NO / NA	YES / NO / NA	

CORRECTIVE ACTIONS TO BE TAKEN: (Explain each "NO" circled above)

ADDITIONAL COMMENTS:

This report shall be kept on file as part of the Storm Water Pollution Prevention Plan for at least **3 years** from the date of the evaluation.

Certification Statement

I certify under penalty of law that I have read and understand this document and the this document and all attachments were prepared 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.

Print name and Title: _____
(Facility Operator)

Signature: _____ Date/Time: _____
(Facility Operator)

Print name and Title: _____
(Inspector)

Signature: _____ Date/Time: _____
(Inspector)

Appendix C: Annual Comprehensive Facility Compliance Evaluation Form

MUNICIPAL HIGH PRIORITY FACILITY
COMPREHENSIVE FACILITY COMPLIANCE INSPECTION REPORT

Inspector Name: _____ **Inspector Title:** _____

Inspection Date/Time: _____ **Weather:** _____

Reason for Inspection: _____ **Regular** _____ **Storm Event** _____ **Re-inspection**

Has a pollutant discharge occurred since the last inspection? YES / NO **Is the site in compliance? YES / NO**

ITEM #	INSPECTION ITEM	RESULT	IN COMPLIANCE	ACTION TO BE TAKEN/NOTES
1	Have facility operations changes since previous inspection?	YES / NO / NA	YES / NO / NA	
2	Inlet filters installed and functioning?	YES / NO / NA	YES / NO / NA	
3	Spill containment materials available, accessible, and in good working order?	YES / NO / NA	YES / NO / NA	
4	Spill clean-up materials available, accessible and in good working order?	YES / NO / NA	YES / NO / NA	
5	AST volume gauges functioning properly? On all ASTs?	YES / NO / NA	YES / NO / NA	
6	Evidence of leaks, overfilling or spillage at AST?	YES / NO / NA	YES / NO / NA	
7	Oil waste tank drain plug closed when not operational?	YES / NO / NA	YES / NO / NA	
8	Are paved roadways free of debris / off-site tracking?	YES / NO / NA	YES / NO / NA	
9	Discharge points free of sediment deposits and trash?	YES / NO / NA	YES / NO / NA	
10	Salt storage properly contained?	YES / NO / NA	YES / NO / NA	
11	Discharge points experiencing erosion or scour?	YES / NO / NA	YES / NO / NA	
12	Trash/litter collected & receptacles covered?	YES / NO / NA	YES / NO / NA	
13	Evidence of major spills / leaks in vehicle parking area?	YES / NO / NA	YES / NO / NA	
14	EHS Accumulation area properly maintained?	YES / NO / NA	YES / NO / NA	
15	Aggregate storage piles well-contained?	YES / NO / NA	YES / NO / NA	

ITEM #	INSPECTION ITEM	RESULT	IN COMPLIANCE	ACTION TO BE TAKEN/NOTES
16	Grounds maintenance storage area in compliance? Paint and other items stored appropriately?	YES / NO / NA	YES / NO / NA	
17	Debris in wash rack? Evidence of spills in or around wash rack?	YES / NO / NA	YES / NO / NA	
18	Heating and cooling plant chemicals stored indoors and maintained?	YES / NO / NA	YES / NO / NA	
19	Records of spills properly documented?	YES / NO /NA	YES / NO /NA	
20	SWPPP located on-site with all facility changes documented?	YES / NO /NA	YES / NO /NA	
21	Previous inspection reports and documentation of corrective actions undertaken in SWPPP?	YES / NO /NA	YES / NO /NA	
22	Are employee training records complete and up to date?	YES / NO /NA	YES / NO /NA	
23	Quarterly visual monitoring reports complete and contained in SWPPP?	YES / NO /NA	YES / NO /NA	
24	Have benchmark values for TPH and TSS been exceeded in previous 12 months?	YES / NO /NA	YES / NO /NA	
23	Annual outfall evaluation for unauthorized discharges contained in SWPPP?	YES / NO /NA	YES / NO /NA	
24	Discharge Monitoring Reports complete and contained in SWPPP?	YES / NO /NA	YES / NO /NA	
25	Proof of submittal of previous year's DMR to DEQ by Jan 10 in SWPPP?	YES / NO /NA	YES / NO /NA	

CORRECTIVE ACTIONS TO BE TAKEN: (Explain each "NO" circled above)

ADDITIONAL COMMENTS:

This report shall be kept on file as part of the Storm Water Pollution Prevention Plan for at least **3 years** from the date of the evaluation.

Certification Statement

I certify under penalty of law that I have read and understand this document and the this document and all attachments were prepared 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.

Print name and Title: _____
(Facility Operator)

Signature: _____ Date/Time: _____
(Facility Operator)

Print name and Title: _____
(Inspector)

Signature: _____ Date/Time: _____
(Inspector)

Appendix D: SWPPP Team

SWPPP Team

Name	Departments	Title	Email	Phone
Alisha Sutton	Environmental Health and Safety	Environmental Specialist	asutton1@gmu.edu	(703)-993-4356
Tad Drerenberger	Facilities Management	Associate Director of Operations	tdrerenb@gmu.edu	(703) 993-6208
Frank Strike	Project Management & Construction	Director	fstrike@gmu.edu	(703) 993-2513
Dennis Good	Mason Recreation	Assistant Director, Maintenance, Safety & Security	dgood@gmu.edu	(703) 993-5129
James Rannels	Mason Recreation	Operations Manager	jrannels@gmu.edu	(703) 993-3858
Jay Marsh	Athletics	Sr. Associate Athletic Director	jmars1@gmu.edu	(703) 993-3191
Mike Nunnally	Athletics	Indoor/Outdoor Technician	mnunnall@gmu.edu	(703) 993-4469
William Garney	Housing & Residence Life	Assistant Director	wgarney@gmu.edu	(703) 993-2742
Steve Morehouse	Student Centers	Director of AE Renovations and Student Centers	smoreho2@gmu.edu	(703) 993-3610
Chafin Franks	Student Centers	Maintenance Supervisor	cfranks2@GMU.EDU	(703) 499-4562
Danielle Castellano	Sustainability	Supervisor of Community Engagement	dwyman@gmu.edu	(703) 993-7725

Appendix E: SWPPP Maintenance Logs

SWPPP Maintenance Log

Date	Describe Maintenance Performed	Personnel	Comments

Appendix F: GMU Policies and Procedures

CHEMICAL, HAZARDOUS, AND UNIVERSAL WASTE MANAGEMENT GUIDE

Version	Date	Comments
3	April, 2014	Waste Management Guide

A. INTRODUCTION

This Guide applies to all employees and contractors who use, store, or generate chemical, hazardous, or universal waste on George Mason University property. Employees are responsible for ensuring that waste is properly labeled and stored prior to collection by Environmental Health and Safety Office (EHS) staff.

B. SCOPE

Hazardous waste is defined by the US Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality (DEQ) as any material that "may pose a substantial or potential hazard to human health and safety and to the environment when improperly managed." The purpose of this Guide is to provide guidance to all George Mason University personnel for the safely handling, labeling, and storing all chemicals, hazardous and universal waste. This Guide is based upon EPA Standards 40 CFR Subchapter I, *Solid Wastes*, and DEQ regulations 9VAC 20-60 and 20-60-273.

C. EMPLOYEE RESPONSIBILITIES

- Receive appropriate training commensurate with assigned work or position.
- Properly manage chemicals and hazardous waste in accordance with EPA and DEQ regulations, and George Mason University policies.
- Attempt to reduce the volume of hazardous waste generated whenever possible.
- Report any waste spills immediately to your supervisor, EHS, or University Police.

D. TRAINING

- Hazard Communication Training, or Laboratory Safety Orientation Training for employees working in laboratories, is required upon initial assignment to a position that requires the management of hazardous chemicals.
- George Mason University requires Safety Refresher training be taken annually. Contact EHS for training information.
- Chemical-specific training should be provided by supervisors whenever a new hazardous chemical(s) is used in the work area.
- Annual hazardous waste management refresher training is required for all individuals generating or handling hazardous waste. Training is available through EHS via the Laboratory Safety Refresher training or Safety Refresher training.

E. WASTE COLLECTION

- Waste shall be accumulated in designated Satellite Accumulation (SAA) areas throughout facilities areas at or near the point of waste generation.
- Any areas that need a new SAA location must be coordinated with EHS to ensure an accurate inventory of the location is maintained and collections are being routinely performed.
- EHS will collect hazardous waste, and universal waste; to include batteries, mercury contained in manufactured articles, and small light bulbs on a routine basis from SAA's and transfer them to a Central Accumulation and Storage Area managed by EHS.
- Fluorescent light tubes shall be transported to and accumulated in the warehouse for pickup by a state approved universal waste vendor.

F. WASTE STORAGE

- Containers used to collect waste must be in good condition (i.e., free of cracks, punctures, dents, or other defects), have screw-top caps or lids, and be compatible with its contents.
- Waste containers shall be vapor tight and spill proof to prevent a release to the environment, and stored in secondary containment.
- Waste containers may not be larger than 55 gallons. EHS provides waste containers upon request.
- All waste containers must be free of conflicting markings or labels.
- Food and drug containers may not be used for collection of chemical or hazardous waste.
- Chemical wastes that are mixed together must be compatible with one another.
- Containers should never be filled beyond 90% capacity.
- Never dispose of hazardous waste in a sink, drain, sewer, municipal trash, or outdoors into the environment.

G. LABELING WASTE

Hazardous and universal waste labels are provided by EHS upon request. All waste must be labeled with an appropriate label that displays the complete chemical name and the date that the chemical is determined to be waste.

- Waste placed in an SAA must bear an appropriate hazardous waste or universal waste label and include the type of waste, and date the waste was placed in the SAA.
- Labels must be affixed to a container when waste is first placed in a container.
- All labels should be filled out using permanent ink.
- The complete chemical name (no abbreviations, chemical structures, or formulas) must be used to indicate the contents of a container. If more than one ingredient, percentages of constituents must be listed.
- The building and room number must be indicated on the label.

H. SATELLITE ACCUMULATION AREAS

A SAA is a space within the work area designated for the temporary accumulation and storage of hazardous waste. EHS will collect hazardous waste from the SAA on a routine basis. The following rules apply to satellite accumulation areas:

- Each work area that generates hazardous, universal, or chemical waste must have access to a SAA.
- Supervisors, Principal Investigators, or Laboratory Supervisors are responsible for establishing and managing the SAA and training staff on its use. Contact EHS for assistance with set-up and training.
- The SAA must be located in an area that is accessible to staff and EHS.
- Waste should be stored in secondary containment and segregated according to chemical compatibility. A chemical compatibility chart is provided in Appendix A.

I. SUPPLIES AND ASSISTANCE

EHS will provide the following supplies and assistance to support the proper management of chemical, hazardous, and universal wastes:

- Waste containers appropriate for a variety of chemical and hazardous waste.
- Supplies for creating a SAA such as secondary containment and signage.
- Labels (e.g., "Hazardous Waste" and "Universal Waste").
- Routine inspections of the SAA and transport of waste from the SAA to a central accumulation area.
- Assistance in identifying, accumulating, storing, and reducing hazardous wastes.
- Additional training as needed or as requested by supervisors or employees.

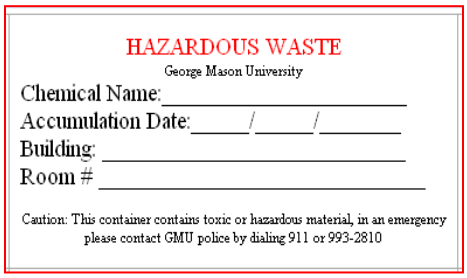
J. "NON HAZARDOUS" CHEMICAL WASTE

George Mason University recycles non-hazardous chemical waste whenever possible. The following chemical wastes do not require a hazardous waste label; however they must be labeled as waste with the words "Used Oil, Used Antifreeze" etc., collected and stored in the SAA for collection by EHS or authorized recycling vendor.

- **Antifreeze/Glycol**
  - All heat transfer fluids and glycol based products must be collected.
- **Latex Paint**
  - Excess latex paint cans and pails should be collected in a SAA.
- **Oil**
  - All oil (e.g., motor, refrigeration, vacuum, pump, and lubricating oil)
- **Oil Filters**
  - Oil should first be drained from the filter into a waste container or tank
  - Filters must be placed in a drum labeled "Waste Oil Filters".

K. HAZARDOUS WASTE

The following wastes must be collected, labeled, and placed in the SAA for collection by EHS. Hazardous waste labels are provided in the *Safety Manual* in facilities or non-laboratory work areas and in the *Safety Records and Resources Binder* in all laboratories.


HAZARDOUS WASTE
George Mason University
Chemical Name:_____
Accumulation Date:_____/_____/_____
Building: _____
Room # _____
Caution: This container contains toxic or hazardous material, in an emergency please contact GMU police by dialing 911 or 993-2810

- **Laboratory Chemicals**
  - Flammable
  - Corrosive
  - Oxidizer
  - Reactive
  - Toxic
- **Aerosol Cans**
  - All aerosol cans; empty, new, or partially full must be collected.
- **Cylinders**
  - An attempt to return cylinders to the distributor or manufacture must be made.
  - If the cylinder is unable to be returned, it must be managed as hazardous waste.
- **Corrosive Cleaning Compounds**
  - All corrosive cleaning compounds, such as those used to treat boilers, coils, or pipes.
  - Corrosive and caustic compounds must be collected in plastic containers.
- **Flammable Adhesives**
  - Epoxy, resins, glues, and sealants which contain solvents, organics, or petroleum distillates.
- **Oil-based Paint and Stains**
  - Containers must be collected in SAA.
- **Solvents, Paint Thinner, Mineral Spirits, and Parts Cleaner**
  - Flammable liquids that are poured off must be collected in grounded metal containers or safety cans.
- **PCB Containing Light Ballasts**
  - Ballasts that are clearly marked as not containing PCBs can be disposed in the municipal trash.
- **Broken or Damaged Fluorescent Lamps or Batteries**
  - Broken lamps or batteries must be collected in a sealed screw top container and labeled as hazardous waste.
- **Shop Rags**
  - Shop rags used with solvents or oil-based products must be placed in flame-arresting collection cans.

L. UNIVERSAL WASTE

A subset of very common hazardous waste is collected, managed, and labeled as universal waste and is therefore not subject to the same regulations as other hazardous waste; typically this means they may be collected and stored in greater quantity and for longer periods of time.

- **Fluorescent bulbs**
  - Tubes- all lengths
  - Compact fluorescents
- **High Intensity (HID) Lamps**
  - Mercury Vapor
  - Metal-Halides
- **Intact Mercury-containing Equipment**
  - Thermostats, switches, and intact mercury thermometers.
  - Broken or breached mercury-containing equipment should be reported immediately to EHS. Do not attempt to clean up a mercury spill.
- **Pesticides, Fertilizers, Insecticides and Herbicides**
  - All containers that contain or previously contained pesticides, insecticides, or herbicides.
- **Lead Acid Batteries**
  - All caps on the battery must be present.
  - Battery terminals without caps should be taped with duct tape, or electrical tape.
  - Leaking batteries should be placed in secondary containment to prevent a release to the environment, labeled as hazardous waste, and reported to EHS immediately.
- **Rechargeable Batteries**
  - Nickel cadmium, Lithium ion, Nickel metal Hydride (e.g., NiCad, Li-ION, NiMH)
  - Must be collected in sealed containers and labeled with their contents.

M. EMERGENCY SPILLS AND RESPONSE

In the event of a spill involving hazardous material or waste employees must follow the appropriate reporting and response procedures.

- **Facilities Personnel**
  - Contact University Police immediately at (703) 993-2810 for any spill that is not contained, uncontrollable, or greater than 25 gallons.
    - Leave the area and report the location to the police
    - Identify the hazardous material(s), if safe to do so, using available labels or SDS.
    - Follow Police instructions
  - Contact EHS at (703) 993-8448 for assistance with spills less than 25 gallons involving materials that do not pose a threat to human health, safety, or the environment.
- **Laboratory Personnel**
  - Follow procedures outlined in *Laboratory Safety Orientation* or *Biological Safety for BSL-2 Laboratories* training, or contact University Police at (703) 993-2810.
    - Leave the area and report the location to the police
    - Identify the hazardous material(s), if safe to do so, using available labels or SDS
    - Follow Police instructions

Appendix A. Chemical Segregation Chart

Chemical Hazard Class	Incompatible Materials	Hazard Symbols
Flammable Materials Materials with a flashpoint less than 60˚C (140˚F). Examples: gasoline, xylene, turpentine, paint thinner, acetone, solvents, alcohols, and ketones	Oxidizing materials, Acids, Toxic materials, Reactive materials	
Oxidizing Materials Readily release oxygen or oxidize surrounding compounds. Examples: nitrates, nitrites, peroxides, and strong acids	Flammable materials, Bases, Acids, Reactive materials	
Acidic Materials pH less than 5. Examples: hydrochloric acid, nitric acid, butyric acid, formic acid, acetic acid, and phosphoric acid	Cyanides, Bases, Oxidizing materials, Toxic materials, Reactive materials	
Basic Materials pH higher than 10. Examples: sodium hydroxide, potassium hydroxide, amines, and ammonium hydroxide solutions	Acids, Oxidizing materials	
Toxic Materials Materials that are carcinogenic, teratogenic or pose and inhalation hazard. Examples: pesticides, solvents, cyanides, and heavy metals.	Acids, Bases, Flammable materials	

Reactive Materials Materials that react with water/air or spontaneously combust on contact with other chemicals. Examples: metal hydrides, and metal powders.	Acids, Bases, Flammable materials, Oxidizing materials	  

The information contained in this Guide is not inclusive of all OSHA or EPA regulations. Please contact Environmental Health and Safety Office at (703) 993-8448 or visit www.OSHA.gov or www.EPA.gov for more information regarding workplace hazards, safety precautions, and regulations.

FLAMMABLE AND COMBUSTIBLE LIQUID SAFETY GUIDE

Version	Date	Comments
1	August, 2008	Initial *Flammable and Combustible Liquid Safety Guide*
2	March, 2010	Routine review
3	August, 2011	Routine review
4	May, 2015	Routine review

A. INTRODUCTION

The purpose of this Guide is to explain the safe storage and use of flammable and combustible liquids. This Guide is based upon Occupational Health and Safety Administration (OSHA) Standard 29 CFR 1910.106: *Flammable and Combustible Liquids.*

B. SCOPE

This Guide applies to all George Mason University employees and persons that work with flammable and combustible liquids.

C. FLAMMABLE AND COMBUSTIBLE LIQUIDS

A flashpoint is the minimum temperature at which a liquid gives off enough vapor to form an ignitable mixture in air.

- A flammable liquid (Class I liquid) is any liquid that has a flashpoint less than 100° F.
- A combustible liquid (Class II and III liquids) is any liquid that has a flashpoint equal to or greater than 100° F but less than 200° F.

D. GENERAL REQUIREMENTS

- All containers must be properly labeled and marked with the complete chemical name and associated hazards (e.g., flammable, flammable liquid, combustible, etc.).
- All containers must be metal, sealed with a cap or lid, and not be damaged or leaking.
- Sources of ignition (e.g., smoking and open flames) are prohibited in flammable or combustible liquid storage areas or within 25 feet where these materials are used. Other sources of ignition include: cutting and welding, hot surfaces, frictional heat, radiant heat, and static, electrical, and mechanical sparks.
- Containers, tanks, cabinets, and inside storage areas must be designed in conformity with OSHA standards. Contact EHS for evaluation and assistance.
- Flammable and combustible liquids must not limit or obstruct exits, stairways, or areas normally used for safe egress.
- Leaking containers must be placed in secondary containment and taken to a storage room or a safe location outdoors and the contents must be transferred to an undamaged container as soon as possible. Contact EHS for assistance.

- At least one Class ABC fire extinguisher must be located within 10 feet of any flammable and/or combustible liquid storage area and within 50 feet of a flammable liquid use area.
- Other combustible materials (e.g., wood, cloth, paper) must not be stored in the same area or on top of flammable or combustible liquids storage areas.
- When transferring flammable liquids from one container to another, the two containers must be bonded (connected by a bonding wire) and grounded (one container connected to a grounded point), see Figure 1.
- The volume of flammable and combustible liquids in one area may not exceed OSHA, International Fire Code, or NFPA limitations. Contact EHS for additional information.

E. CONTAINERS AND TANKS

- A container is any can, barrel, or drum that has a capacity not exceeding 60 gallons.
- All portable gasoline and flammable liquid cans and containers must be made of metal and have a flame arresting cap or lid. Plastic gasoline/flammable liquid cans and containers are not appropriate for the work place.
- A portable tank is a closed container, not intended for fixed installation, which has a liquid capacity between 60 and 660 gallons.
- All tanks must have at least one venting device installed in the top of the tank that would sufficiently limit the internal pressure under fire exposure conditions. All tanks must be equipped with secondary containment.
- The distance between any two flammable or combustible liquid storage tanks shall not be less than three feet.

F. STORAGE CABINETS

- No more than 10 gallons of flammable and/or combustible liquids may be stored outside of a storage cabinet.
- No more than 60 gallons of Class I or Class II liquids, or more than 120 gallons of Class III liquids may be stored in a flammable storage cabinet.
- All storage cabinets must be clearly labeled **"Flammable – Keep Fire Away."**

G. STORAGE AREAS

Flammable and combustible liquid storage areas must meet the following conditions:

- There must be at least one clear aisle, no less than three feet wide, within the storage area.
- There must be at least six complete air changes per hour.
- Containers larger than 30 gallon may not be stacked upon one another.
- Areas where flammable or combustible liquids are transferred from one tank or container to another must be separated from other operations in the building.
- A pump or self-closing faucet must be used to transfer liquids. A method for controlling spills and spill supplies must be located near the transfer area. Adequate natural or mechanical ventilation must be provided.
- Storage of flammable and combustible liquids is prohibited in office spaces.

H. OUTSIDE STORAGE

- Outside storage areas that contain flammable and combustible liquids may not be located within 10 feet of buildings, streets, alleys, and public areas, and less than 20 feet from adjacent property lines.
- Outside storage must be provided with secondary containment.
- Outside storage areas must be secured and protected against tampering or trespassers and kept free of debris and other unnecessary combustible material.
- An unobstructed access way within 200 feet of the outside storage area and at least 12 feet wide is required to permit access for fire control and emergency response equipment.

I. BONDING AND GROUNDING

- Any time a flammable material is transferred from one container to another, each container must be bonded to the other and one container grounded using the following procedure (see Figure 1 below).
    - Before opening each container, attach the containers to one another using a conductive material such as a bonding wire with alligator clips.
    - Attach the container that is resting closest to the ground to a conductive metal object that is firmly in contact or implanted into the ground soil.
    - Once the transfer is complete, reseal the containers and remove the bonding and grounding devices.

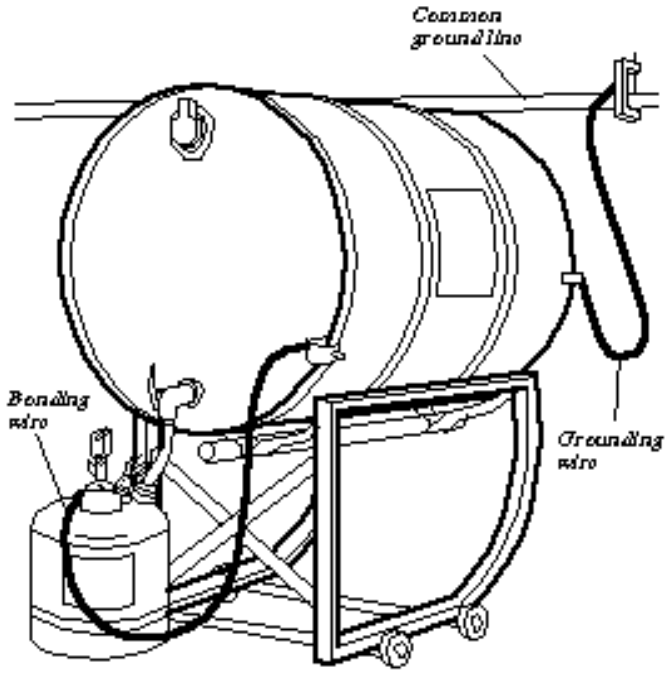


Figure 1

The information contained in this Guide is not inclusive of all OSHA regulations. Please contact Environmental Health and Safety Office at (703) 993-8448 or visit www.OSHA.gov for more information regarding workplace hazards, safety precautions, and regulations.

HAZARDOUS MATERIALS SHIPPING & RECEIVING GUIDE

Version	Date	Comments
1	September, 2013	Initial *Hazardous Materials Shipping and Receiving Guide*

A. INTRODUCTION

This *Hazardous Materials Shipping and Receiving Guide* outlines the requirements necessary for the proper acceptance procedures for receipt of all shipments of hazardous materials and for shipment of hazardous materials by university employees. Following this Guide will facilitate safe and secure receipt of packages as well as proper, safe, an expedient shipment of hazardous materials in accordance with US Department of Transportation (DOT) regulations outlined in 49CFR172.

B. SCOPE

This Guide applies to all university employees who receive or sign for packages containing hazardous materials and any personnel who may be required to ship hazardous materials on an infrequent basis.

C. HAZARDOUS MATERIALS

A hazardous material is defined as a substance or material that is capable of posing an unreasonable risk to health, safety, and property when transported in commerce. The term includes hazardous substances, hazardous wastes, marine pollutants, and elevated temperature materials. The Environmental Health and Safety Office (EHS) will assist in identifying what materials are and are not hazardous materials upon request. There are nine hazard classes:

Hazard class	Name of class or division	Examples of Materials
Class 1	Explosives	Picric acid, nitroglycerin, ammunition
Class 2.1	Flammable gas	Hydrogen, acetylene, butane
Class 2.2	Non-flammable gas	Nitrogen, helium, argon
Class 3	Flammable liquid	Alcohols, Ethers, acetone, acrylonitrile
Class 4.1	Flammable solid	Paraformaldehyde, aluminum powder
Class 4.2	Spontaneously combustible	Sodium hydrosulfite, potassium sulfide
Class 4.3	Dangerous when wet	Sodium borohydride, sodium metal
Class 5.1	Oxidizer	Potassium permanganate, sodium nitrate
Class 5.2	Organic peroxide	Benzoyl peroxide
Class 6.1	Toxic substance	Azides, cyanides, mercury compounds
Class 6.2	Infectious substance	HIV cultures, human materials
Class 7	Radioactive material	^{35}S, ^{14}C , ^{3}H , ^{32}P
Class 8	Corrosive	Hydrochloric acid, sulfuric acid
Class 9	Miscellaneous dangerous goods	Dry ice, lithium batteries, PCB's

D. IDENTIFYING A HAZARDOUS MATERIALS PACKAGE

DOT-approved packaging is the primary indication that a shipment contains hazardous materials (See *Attachment A: Indications of a Hazardous Materials Package* for examples):

- Packages marked or labeled with a "UN" or "NA" notation followed by a 4 digit number and the proper name and quantity of the hazardous material being shipped.
- The present of a square on point or diamond shaped label(s) or markings containing an associated hazard class number also indicate that the package contains hazardous materials.
- Packages of exempt or limited quantities may be marked "Limited Quantity", or DOT-E followed by a four digit number.
- Or the package may have a square on point label or marking with the top and bottom portions in black with a white center or a suitable contrasting color to the background. A black letter "Y" may be present in the white center indicating a "limited quantity" shipped by air.

Hazardous material is commonly shipped with a hazardous material shipping paper, dangerous goods declaration, or bill of lading, which will directly identify the proper name, class, and amount of hazardous material being shipped. See Attachment A for example. Some hazardous materials are sent in exempt or limited quantities and will not be accompanied by, or identified on, a shipping paper.

E. RECEIVING HAZARDOUS MATERIALS

When receiving hazardous materials always follow these steps before signing for them:

- Verify that you are approved to accept the package.
    - If you did not place the order, or were not given prior authorization to accept it by a supervisor, do not accept or sign for the package.
- Examine the exterior of all packages.
    - If any physical damage is noted; rips, tears, leaking, staining or discoloration do not accept the package.
    - If the package is producing a strong odor contact EHS at (703) 993-8448 for further guidance.
    - If the contents sound loose or broken while handling do not accept the package.
- Review the shipping papers to ensure the items described are present.
    - If the items do not match the description do not accept the package.

If any discrepancies or damages are observed and the shipper refuses to return the package, has left the premises, or is otherwise unavailable, contact EHS immediately and EHS personnel will handle the package in accordance with transportation and safety regulations.

Once the package has been examined and accepted, immediately secure the package in proper storage to prevent theft, loss, or damage. Do not leave the package unsecured.

Do not handle any contents of a hazardous materials package unless you have been properly trained in the hazards that may be present and how to protect your health and safety. If you discover a damaged, leaking or open container of hazardous material after receiving a package immediately contact campus police and inform them of your location and situation. Secure the package in a safe location, if you have access to a fume hood place the package inside and close the sash, and do not attempt any other actions until EHS has made an evaluation of the situation.

F. SHIPPING HAZARDOUS MATERIALS

Both the International Air Transport Association (IATA) and DOT regulate the shipping of hazardous materials and/or dangerous goods transported via road or air, respectively. This includes the transport of all chemicals with the exception of sample amounts (49CFR173.4) between university campuses. Specific training is required and necessary to prepare and package a shipment of hazardous material.

Employees who may be required to ship such items infrequently must contact EHS who will then provide this service. In order for a shipment to be prepared and expedited properly the individual seeking shipment must notify EHS at least five business days
for chemical shipments and at least two days for biological materials (including dry ice) in advance of the desired shipping date and provide:

- Itemized list of contents of the package to include volume, weight, and size of the container(s).
- An appropriate shipping container that meets UN packaging requirements (can be purchased through EHS if the department does not have the appropriate containers and the shipment is urgent)
- Dry ice and quantity to be included in the package (if required).
- Package (length, width, height, and weight).
- Insurance for the package (if any).
- Payment information; org and account number or third party FedEx account number to charge the shipment.
- Shipper's name and a 24-hour phone number
- Consignee's (receiver's) name, address, and phone number.

Individuals who ship hazardous materials on a frequent or routine basis must contact EHS to coordinate training for them to perform this task. Under no conditions are students permitted to offer hazardous materials for shipment on behalf of the university.

Attachment A: Indications of a Hazardous Materials Package

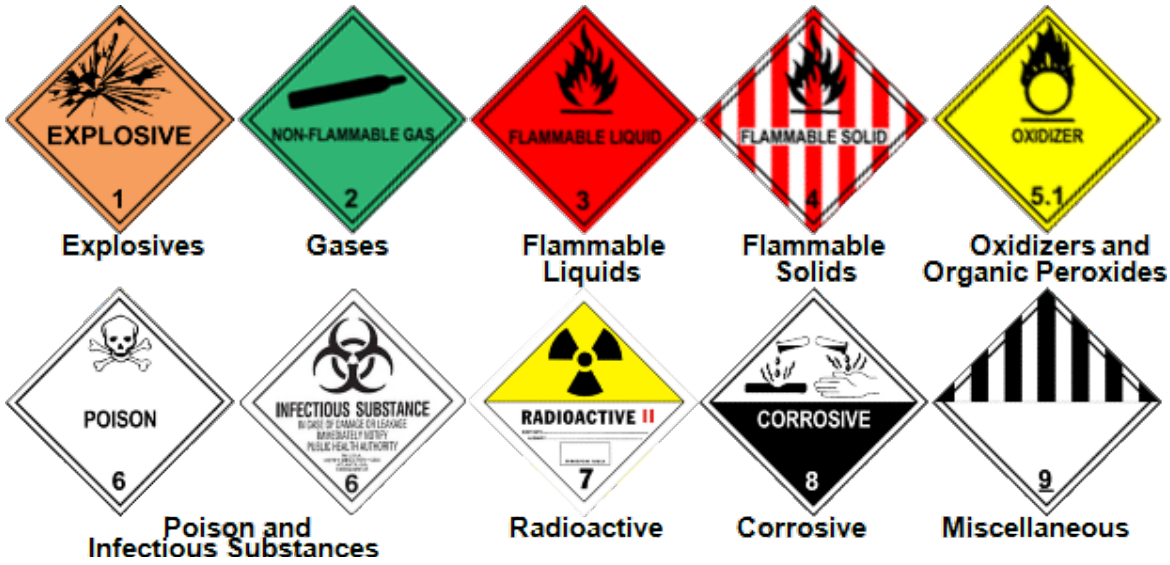
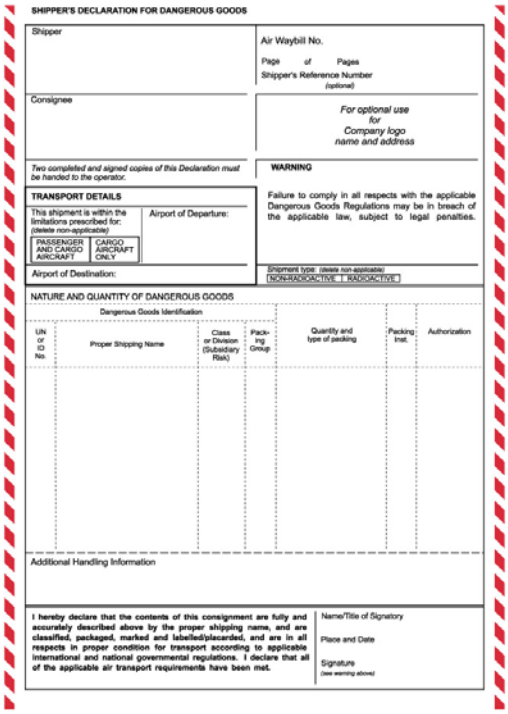


Figure 1. "Square on point" DOT Hazard classification labels

Figure 2. DOT specification packaging with square on point label



SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper

Air Waybill No.

Page of Pages

Shipper's Reference Number (optional)

Consignee

For optional use for Company logo name and address

Two completed and signed copies of this Declaration must be handed to the operator.

WARNING

Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.

TRANSPORT DETAILS

This shipment is within the limitations prescribed for: (delete non-applicable)

PASSENGER AND CARGO AIRCRAFT | CARGO AIRCRAFT ONLY

Airport of Departure:

Airport of Destination:

Shipment type: (delete non-applicable)

NON-RADIOACTIVE | RADIOACTIVE

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization

Additional Handling Information

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. I declare that all of the applicable air transport requirements have been met.

Name/Title of Signatory

Place and Date

Signature (see warning above)

Figure 3. Hazardous Materials/Dangerous Goods declaration note red and white border

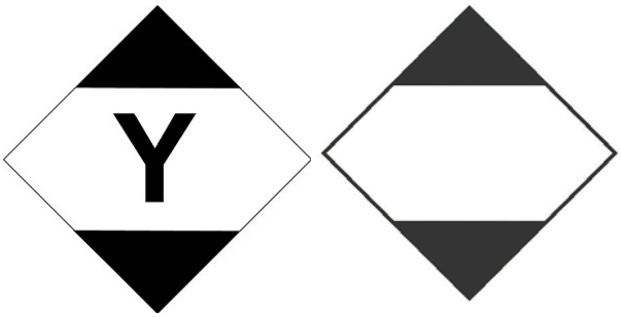


Figure 4. Limited quantity labels "Y" designation is for air shipments

Figure 5. DOT –E, exempt quantity label, will also contain 4 digit number and material name

OIL AND CHEMICAL SPILL GUIDE

Version	Date	Comments
1	October, 2008	Initial *Oil and Chemical Spill Guide*
2	July, 2009	Inclusion of exposure and shelter in place information
3	June, 2013	Routine review
4	February, 2015	Routine review

A. SUMMARY

The purpose of this Guide is to explain the stepwise procedures that must be followed in the event of an oil or chemical spill.

B. SCOPE

This Guide applies to all George Mason University employees and contractors who use and store oil and chemicals on George Mason University property. This Guide also applies to George Mason employees and contractors that service equipment that contains oil or chemical products.

C. RESPONSIBILITES

- Contact the Department of Police and Public Safety by dialing (703) 993-2810 from any phone or 911 from any university landline in the event of a chemical or oil spill that is uncontained and/or poses a threat to human health and/or the environment.
- Report oil and chemical spills, releases, or leaks to the Environmental Health and Safety Office (EHS). Federal, state, and local environmental regulations may require reporting and/or specific response procedures.
- Contractors must report oil and chemical spills to the Department of Police and Public Safety or to the appropriate contract administrator or project manager.
- Comply with this Guide and if necessary seek the assistance from EHS in the event of a chemical or oil spill.
- Employees may only respond to small incidental oil or chemical spills. Large oil spills/leaks (greater than 5 gallons) or chemical spills/leaks (greater than 1 gallon) must be managed by EHS or emergency response personnel.
- When responding to a small incidental spill, follow all relevant health and safety guidance provided by safety data sheets (SDS), training, and EHS.

D. TRAINING

- *Hazard Communication Training* is required upon assigned to a position that requires the use of hazardous materials and when significant changes in job tasks involving chemicals occur. For more information on training visit the EHS website at http://ehs.gmu.edu.

E. CHEMICAL SPILL

Employees and students may respond to small incidental chemical spills that occur during the course of a routine work task or project so long as the spill is not greater than one gallon and does not pose a threat to human health, safety, or the environment. See Section H. of this guide for spill cleanup instructions. If a chemical spill occurs and the product is unknown, uncontrollable, immediately hazardous to human health or the environment, evacuate and secure the area then contact Department of Police and Public Safety immediately and report the spill (see Section G). Hazardous chemical spills may only be managed by trained personnel.

Exposure: In the event that you are exposed to a chemical, immediately wash/flush the exposed area for 15 minutes with water. Emergency shower and eyewash stations are located in laboratories and areas where hazardous materials are used or stored. If an emergency shower or eyewash is unavailable use a restroom sink or shower.

Locate the chemical *Safety Data Sheet* (SDS) and review Section 4 "First Aid Measures" to determine the appropriate treatment and response actions; seek medical attention if necessary. SDS must be located and available in areas where hazardous chemicals are used or stored.

Shelter-In-Place: In the event of a large hazardous chemical spill that occurs outdoors, it may be necessary to take refuge within a building to help protect against exposure to hazardous gases, vapors, or fumes. If you are instructed to shelter-in-place do the following:

- Do not leave the building.
- Locate a designated shelter area within the building or move to an appropriate shelter area that meets the following conditions:
    - A room located in an interior space of a hardened structure on the second floor or above (many chemicals are denser than air and will collect in low areas).
    - Not possess any windows or skylights
    - Be equipped with a door
    - Have ample seating space for everyone who is expected to occupy the shelter
- Attempt to block all vents and openings into the room with whatever materials are present in the room such as tape, plastic trash bags, or clothing.
- Remain sheltered in place until instructed to leave by emergency response personnel.
- Notify the Department of Police and Public Safety at (703) 993-2810 or emergency response personnel at 911 of your location and status.

F. OIL SPILL

Determine the quantity and source of oil spilled. Oil spills less than 5 gallons that are contained and do not have the potential to impact the environment may be managed by trained employees and students. If the oil spill is greater than 5 gallons, or has or may impact the environment, contact the Department of Police and Public Safety immediately and report the spill (see Section G)

G. REPORTING A SPILL

Notify the Department of Police and Public Safety by dialing (703) 993-2810 from any phone or 911 from any university landline and provide the following details to the Police Dispatcher.

- Your name
- Contact information
- Location of the spill
- Chemical(s) or product(s) involved
- Approximate quantity
- Injuries and/or property damage
- Status of the spill (e.g. contained, continued, abating, increasing, etc.)
- Any other information that can assist in identifying, containing, or responding to the spill.

University Police will contact EHS to respond to the spill and will contact additional emergency services if necessary.

H. SPILL CLEAN UP

1. Contact EHS prior to responding to a chemical spill for assistance if needed.
2. Review the SDS to determine the appropriate PPE and clean up procedures. If the SDS is unavailable contact EHS for assistance. Do not respond to a spill unless you have reviewed the SDS. Refer to the following sections of the SDS for cleanup information:
    - Section 3 – Hazard Identification
    - Section 6 – Accidental Release Measures
    - Section 8 – Exposure Control and Personal Protection
3. Retrieve spill cleanup supplies and PPE. EHS has placed spill response equipment throughout the university; contact EHS for spill supplies and assistance.
4. Wear appropriate PPE as recommended by the SDS.
5. Check equipment and containers for leaks, damage, or holes. Place damaged or leaking containers in impervious secondary containment.
6. Surround the spill with absorbent materials to contain it and prevent further contamination.
7. If the spill is increasing is size, use absorbent or impervious material to block the most likely path the spilled material(s) will take.
8. Ensure that spill cleanup equipment is compatible with the spilled chemical(s).
9. Start from the outside perimeter of the spill and begin absorbing the product using absorbent pads, booms, rags, or other media.
10. Collect all contaminated absorbent materials, PPE, and tools and place them in an appropriate rigid sealable container or sturdy plastic bag.
11. Label the container holding the spill debris with a label that has both the date and the name of the spilled material(s) and include the words “Hazardous Waste”.
12. Contact EHS to remove and dispose of the spill debris. Do not dispose contaminated clean up materials in the municipal waste bins.

Appendix G: Employee Training Log

SWPPP Training Log

Date of Training_______________________ **Trainer(s)**________________________________ **Title**___________________________________

Full Name	Training Title	Section	Signature	Date

Appendix H: SWPPP Amendments Log

SWPPP Amendment Log

Date	Change(s) Made	Reason(s) for Change	Person(s) Responsible

Appendix E
Nutrient Management Plan

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

Zhongyan Xu
4400 University Blvd.
Fairfax, VA 22030

9/21/2018

Subject: GMU Fairfax Campus and Point of View

The following nutrient management plan has been reviewed by Nick Yakish and approved by the Virginia Department of Conservation & Recreation as compliant with the provisions of the Code of Virginia 10.1-104.4. Please note that this plan has not been reviewed for compliance with more restrictive requirements from other specific legislative, regulatory or incentive programs.

Plan Name	Planner	Acres	Start Date	Expiration Date
GMU Fairfax and POV	Marjorie Siwy	210.7	8/14/2018	8/14/2021

A copy of this letter should be kept with your nutrient management plan. Initiation of plan revision is recommended by the Department to occur at least six months prior to the expiration date. If you have any questions concerning this letter or approvals, please contact me via phone or email.

Sincerely,

Nick Yakish
Urban Nutrient Management Coordinator
Department of Conservation and Recreation
600 East Main St., 24th Floor
Richmond, Virginia 23219
(804) 389-5439
nicholas.yakish@dcr.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

Zhongyan Xu
4400 University Blvd.
Fairfax, VA 22030

9/21/2018

Subject: GMU Athletic Fields

The following nutrient management plan has been reviewed by Nick Yakish and approved by the Virginia Department of Conservation & Recreation as compliant with the provisions of the Code of Virginia 10.1-104.4. Please note that this plan has not been reviewed for compliance with more restrictive requirements from other specific legislative, regulatory or incentive programs.

Plan Name	Planner	Acres	Start Date	Expiration Date
GMU Athletic Fields	Marjorie Siwy	22.7	8/14/2018	8/14/2021

A copy of this letter should be kept with your nutrient management plan. Initiation of plan revision is recommended by the Department to occur at least six months prior to the expiration date. If you have any questions concerning this letter or approvals, please contact me via phone or email.

Sincerely,

Nick Yakish
Urban Nutrient Management Coordinator
Department of Conservation and Recreation
600 East Main St., 24th Floor
Richmond, Virginia 23219
(804) 389-5439
nicholas.yakish@dcr.virginia.gov

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Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Thomas L. Smith
Deputy Director of Operations

Zhongyan Xu
4400 University Blvd.
Fairfax, VA 22030

9/21/2018

Subject: GMU Science and Tech Campus Nutrient Management Plan Approval

The following nutrient management plan has been reviewed by Nick Yakish and approved by the Virginia Department of Conservation & Recreation as compliant with the provisions of the Code of Virginia 10.1-104.4. Please note that this plan has not been reviewed for compliance with more restrictive requirements from other specific legislative, regulatory or incentive programs.

Plan Name	Planner	Acres	Start Date	Expiration Date
GMU Science and Tech	Marjorie Siwy	29.17	8/14/2018	8/14/2021

A copy of this letter should be kept with your nutrient management plan. Initiation of plan revision is recommended by the Department to occur at least six months prior to the expiration date. If you have any questions concerning this letter or approvals, please contact me via phone or email.

Sincerely,

Nick Yakish
Urban Nutrient Management Coordinator
Department of Conservation and Recreation
600 East Main St., 24th Floor
Richmond, Virginia 23219
(804) 389-5439
nicholas.yakish@dcr.virginia.gov

Appendix F
Training Activities

Training Event	Provider	Training Date	Number of Employees	Objective
Stormwater Facility Maintenance Training	Fairfax County	Feb 4, 2019	2	This training provides contractors with information on the operation and maintenance of stormwater management facilities within Fairfax County, including common facility maintenance issues and common remedies.
Environmental Field Safety	Mason EHS	Various	53	Environmental Field Safety training is supplemental training for instructional or research personnel who work outside of the traditional laboratory environment. This training will instruct participants on topics such as field hazard identification, precautions to take to avoid hazards, appropriate attire and personal protective equipment for field work, chemical safety in the field, and specimen collection and transport.
Biological Safety For BSL-2 Laboratories	Mason EHS	Various	213	This training reviews the principles of biosafety including risk assessment and management strategies, disinfection and decontamination procedures, regulated medical waste handling and disposal, autoclave use procedures, spill and exposure response. This training must be renewed annually.
BSL-2 Biosafety refresher Training	Mason EHS	Various	95	This training satisfies the annual training requirement for Biological Safety for BSL-2 Laboratories training by introducing new topics each year that expand upon basic biosafety and infectious material handling fundamentals. Topics include new policies and procedures and additional information regarding recent or emergent safety issues identified.
General Safety Training	Mason EHS	Various	51	The purpose of this training is to provide an overview of workplace hazards, the EHS safety program, safety resources, safety plans, safety manuals, safety guides, and required training. This training is intended to aid employees and supervisors in identifying hazards and recognizing when additional training is required
Hazard Communication Training	Mason EHS	Various	179	*Hazard Communication* training provides information on how to label and store hazardous materials, how to protect against exposure to hazardous materials, emergency procedures, safety equipment, hazardous waste disposal, and safety policies
Hazwoper for First Responder	Mason EHS	Various	9	This course is designed for first responders who remove hazardous waste or who are exposed or potentially exposed to hazardous substances or health hazards. Topics include HAZWOPER regulations, site characterization, toxicology, hazard recognition, personal protective equipment, decontamination, medical surveillance, confined space entry and emergency procedures
Hazwoper Refresher	Mason EHS	Various	39	This course is designed for general site workers who remove hazardous waste or who are exposed or potentially exposed to hazardous substances or health hazards. Topics include HAZWOPER regulations, site characterization, toxicology, hazard recognition, personal protective equipment, decontamination, medical surveillance, confined space entry and emergency procedures

Training Event	Provider	Training Date	Number of Employees	Objective
Hazard Communication and Laboratory Safety Awareness	Mason EHS	Various	83	Tour groups and visitors, as well as employees of Mason who need to access laboratories but who do not work in a laboratory must receive Laboratory Safety Awareness training before entering or touring university laboratories. This training provides a brief overview of laboratory hazard recognition, appropriate laboratory attire, and what actions should be taken by visitors in the event of an emergency.
Laboratory Safety Refresher Training	Mason EHS	Various	109	The topics of this training include new policies and procedures, personal protection, hazard identification, and additional information about safety issues in laboratories such as waste management, inventory management, spill and exposure response, proper use of engineering controls, and decontamination procedures
Hazardous and Universal Waste Handling and Storage	Mason EHS	Various	60	This training is necessary to assist with facilities personnel so that they may develop an awareness of how to manage different kinds of waste involved on the job, including regulated non-hazardous, hazardous, and universal wastes. This training satisfies the training requirements of 40 CFR 262.16(b)(9)(iii) and 40 CFR 273.16 for small-quantity generators of hazardous and universal wastes, and of 29 CFR 1910.120 for HAZWOPER First Responder, Awareness Level.

Appendix G

Chesapeake Bay TMDL Action Plan


Image source: GMU Website

George Mason University
DRAFT Chesapeake Bay TMDL Action Plan

Phase 2 Permit Term 2018-2023
Permit Number VAR040106

December 4, 2018

christopher consultants

GEORGE MASON UNIVERSITY

fairfax • loudoun • prince william • prince george's
(703) 273-6820
www.christopherconsultants.com

Table of Contents

List of Tables

Appendices

Executive Summary

George Mason University (Mason) is required to develop a Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan by the 2018-2023 General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 Permit second permit cycle) and in accordance with the Virginia Department of Environmental Quality (DEQ) Chesapeake Bay TMDL Action Plan Guidance Document (Guidance Document) dated May 18, 2015. This Action Plan details how Mason intends to provide the additional 35% reduction in loading of the pollutants of concern (POCs) nitrogen, phosphorus and total suspended solids (TSS).

Mason's Phase 1 TMDL Action Plan, "George Mason University Chesapeake Bay TMDL Action Plan Permit Number VAR040106" by Timmons Group, dated October 2015, describes in detail the methodology used to determine the extent of the MS4 service area, including the estimated regulated impervious and pervious acres served by its MS4. No changes to Mason's MS4 service area or regulated impervious and pervious acres have been implemented since that time, therefore the information has been incorporated into the base information for the Phase 2 TMDL Action Plan.

For compliance with the first permit cycle ending June 30, 2018, Mason utilized credit from existing oversized stormwater best management practices (BMPs) and implemented 320' of urban stream restoration on the Fairfax Campus. This provided reductions above and beyond the 5% requirement for the Phase 1 TMDL Action Plan. These additional reductions will be credited toward the Phase 2 TMDL Action Plan reduction requirements.

Based on the reduction credits from the first permit cycle, the focus of the Phase 2 TMDL Action Plan is on practices that primarily efficiently remove nitrogen. This will be achieved through retrofit of an existing wet pond. This will also achieve the majority of the reduction requirements for the Phase 3 TMDL Action Plan and any reductions above and beyond the 35% requirement for the Phase 2 implementation will be credited toward Phase 3 reductions. The means and methods through which Mason plans to meet the reduction requirements will be designed and permitted between 2019 and 2021 and constructed between 2021 and 2023 to meet the Phase 2 reduction requirements.

Current MS4 Program and Existing Legal Authority

Stormwater discharges within George Mason University (Mason) are regulated under the terms of a Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Discharges from Small Municipal Separate Storm Sewer System (General Permit No. VAR040106). This MS4 permit is issued to Mason by Virginia Department of Environmental Quality (DEQ), consistent with the provisions of Section 402 of the Clean Water Act and the Virginia Stormwater Management Act, which authorizes the Virginia Stormwater Management Program (VSMP) Regulations. A review of Mason's current MS4 Program Plan and existing legal authorities confirms that Mason has several relevant existing legal authorities and policies to comply with the Part II – TMDL Special Conditions. The relevant existing legal authorities and policies include the following:

- Mason's MS4 Program Plan
- Mason's Illicit Discharge Detection and Elimination Policy
- Mason's Nutrient Management Program
- Mason's Environmental Management and Sustainability System Policy
- Mason's Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management
- Mason's Stormwater Master Plan
- Mason's Design Manual

Mason is currently working to update their Stormwater Master Plan in conjunction with development of the TMDL Action Plan. No other significant changes have occurred to Mason's MS4 Program or existing legal authority since the Phase 1 TMDL Action Plan. Therefore, Mason is still in compliance with the special condition.

Mason's Fairfax and Science and Technology campuses are bordered by several different jurisdictions, each with their own MS4 Programs. These potentially interconnected MS4s include the City of Fairfax, Fairfax County, VDOT and Prince William County. There are currently no memorandums of understanding (MOUs) between Mason and these entities. Mason reserves the right to coordinate and clarify MS4 service boundaries and interjurisdictional responsibilities for pollutant of concern (POC) loads and reductions through such means in the future.

Estimated Source Loads and POC Reduction Requirements

The Commonwealth of Virginia committed to a phased approach to address specific nutrient and sediment reductions being discharged from MS4s that drain to the Chesapeake Bay. The identified pollutants of concern include phosphorus, nitrogen and total suspended solids (TSS). This phased approach requires MS4s to establish a baseline and develop approaches to achieve a 5% reduction of the POCs in the first permit cycle (2013-2018), an additional 35% reduction in the second permit cycle (2018-2023), and an additional 60% reduction in the third permit cycle (2023-2028) for a total of 100% reduction from the baseline to be achieved by the end of the third permit cycle in 2028. The plan should be in accordance with the DEQ Chesapeake Bay TMDL Action Plan Guidance Document (Guidance Document) dated May 18, 2015.

Phase 1 (2013-2018)

The 2013-2018 MS4 General Permit required an evaluation of the 2009 regulated land cover, calculation of POC loading, and identification of means and methods to achieve a 5% reduction to the POC loading. Mason's Phase 1 TMDL Action Plan, "George Mason University Chesapeake Bay TMDL Action Plan Permit Number VAR040106" by Timmons Group, dated October 2015, describes in detail the methodology used to determine the extent of the MS4 service area (including the estimated regulated impervious and pervious acres served by its MS4), as well as the calculations of the POCs and reduction requirements. The existing source loads and required reductions for the POCs as determined in the Phase 1 TMDL Action Plan for the 5% reduction as well as the 35% reduction are included for reference in Appendix A, and are summarized in *Table 1* for the Fairfax and Science and Technology Campuses.

The Phase 1 TMDL Action Plan required a reduction of 22.53 lbs/yr of nitrogen, 2.27 lbs/yr of phosphorus, and 2,586.43 lbs/yr of TSS. Mason met the reduction requirements through credit from oversized BMPs and urban stream restoration. Additional credit from Phase 1 is credited toward the Phase 2 reduction requirements.

Phase 2 (2018-2023)

No changes to Mason's MS4 service area or regulated impervious and pervious acres have occurred since the Phase 1 TMDL Action Plan. Therefore, the same areas and reduction requirements have been incorporated into the base information for this Phase 2 TMDL Action Plan. Existing source loads and pollutant reduction requirements were determined from *Table 3b* in Part II of the General Permit based on these areas. The existing source loads and required reductions for the pollutants of concern as determined in the Phase 1 TMDL Action Plan dated October 2015 are summarized in *Table 1*. The 5% Phase 1 reduction requirements (which have already been met through the stream restoration discussed in the Phase 1 plan) and 35% Phase 2 reductions are included as required to be addressed by this Action Plan.

As presented in *Table 1*, the load reduction requirements for the Phase 2 TMDL Action Plan 35% reduction, inclusive of the credits from Phase 1, are 136.39 lb of nitrogen, -0.67 lb of phosphorus, and -14,394.89 lb of total suspended solids (TSS). This means that no reductions of phosphorus or TSS are required to meet the Phase 2 TMDL requirements. Source loads and reduction requirements have been combined for both the Fairfax and Science and Technology Campuses in *Table 1*. These load reductions must be achieved by the end of the second permit cycle, June 30, 2023.

Mason requires all new projects to meet the current state stormwater requirements under Technical Criteria IIB. Therefore, there are no increased loads from new construction sources. Mason does not have any active or planned grandfathered projects on their campuses.

Table 1: MS4 POC Loading and Reduction Calculations

Subsource	Campus	POC	Total Existing Acres Served by MS4 as of 6/30/2009 (acres)	Loading Rate (lbs/acre)	Estimated POC Load (lbs)	5% Total Reduction Required First Permit Cycle (lbs)	5% Total Reduction Required First Permit Cycle (lbs)	Reduction Achieved First Permit Cycle (lbs)	Credit Toward Second Permit Cycle (lbs)*	35% Total Reduction Required Second Permit Cycle (lbs)	35% Total Reduction Required Second Permit Cycle (lbs)	Remaining Reduction Required Second Permit Cycle (lbs)
Regulated Urban Impervious	Fairfax	N	185.01	16.86	3,119.27	14.80	22.53	43.87	21.34	103.61	157.73	136.39
	PW		22.94		386.77	1.84				12.85		
Regulated Urban Pervious	Fairfax		161.80	10.07	1,629.33	4.85				33.98		
	PW		34.73		349.73	1.04				7.29		
Regulated Urban Impervious	Fairfax	P	185.01	1.62	299.72	1.85	2.28	18.88	16.60	12.95	15.93	-0.67
	PW		22.94		37.16	0.23				1.61		
Regulated Urban Pervious	Fairfax		161.80	0.41	66.34	0.16				1.13		
	PW		34.73		14.24	0.03				0.24		
Regulated Urban Impervious	Fairfax	TSS	185.01	1,171.32	216,705.91	2,166.47	2,586.42	35,086.26	32,499.84	15,165.27	18,104.95	-14,394.89
	PW		22.94		26,870.08	268.63				1,880.39		
Regulated Urban Pervious	Fairfax		161.80	175.80	28,444.44	124.59				872.10		
	PW		34.73		6,105.53	26.74				187.19		

*Reduction achieved first permit cycle and credit toward second permit cycle are based on the credit for the over designed BMPs and the BANCs assessment of the 320' stream restoration project performed by Mason

Compliance with Reduction Requirements

According to the Phase 1 Action Plan, Mason utilized credit from existing oversized stormwater best management practices (BMPs) and implemented 320' of urban stream restoration on the Fairfax Campus in 2017 for compliance with the first permit cycle ending June 30, 2018. Through these practices, Mason was able to achieve reduction of the POCs above and beyond the 5% requirement for the Phase 1 implementation of the TMDL Action Plan. This additional reduction can be credited toward meeting the reduction requirements for the second permit cycle. The remaining reduction requirements for the second permit cycle are summarized in *Table 2*.

Table 2: Phase 2 TMDL Reduction Requirements

	35% POC Required Reduction (lbs)		
	N	**P**	**TSS**
Total Phase 2 POC Required Reductions	157.73	15.93	18,104.95
Additional POC Reductions from Phase 1	21.34	16.60	32,499.84
Total Remaining POC Reductions Required for Phase 2	136.39	-0.67	-14,394.89

Based on the reduction requirements shown in *Table 2*, phase 2 of the TMDL action plan will focus on removal of nitrogen as the main POC, since the phosphorus and TSS reduction requirements have already been met. Mason intends to provide compliance for the remaining POC load requirements through a wet pond retrofit.

Means and Methods Strategy

Mason intends to provide compliance for the Phase 2 reduction requirements through the retrofit of Mason Pond to a Level 1 Wet Pond to meet the current BMP Clearinghouse specifications. Based on the 2012 and 2013 Stormwater Quantity and Quality inventory reports prepared by christopher consultants for Mason, Mason Pond treats a drainage area of approximately 135 acres (131 acres onsite, including Eleven Oaks, 4 acres offsite, 66 acres of onsite impervious area), and would provide a total removal of approximately 386 lbs. of nitrogen, 89 lbs. of phosphorus and 53,000 lbs. of TSS. This meets more than double the nitrogen removal requirement, as shown in *Table 3* and provides credit toward the third phase of the TMDL Action Plan, meeting nearly all the third permit cycle reduction requirements.

Table 3: Mason Pond Retrofit POC Reductions

Mason Pond		
Impervious Area (AC)	**Pervious Area (AC)**	
66	65	
	Phase 2 Reduction Required (lb)	**Estimated Phase 2 Reduction Achieved (lb)**
Nitrogen	136.39	386
Phosphorus	-0.67	89
TSS	-14,394.89	53,240

*Note: Reductions achieved for N and P are taken from DEQ VRRM Redevelopment Spreadsheet using land cover provided.

Estimated Costs and Schedule

To meet the requirements, the retrofit of Mason Pond will be required to conform to the DEQ BMP Clearinghouse wet pond specification. This will require the addition of sediment forebays at each major inlet and aquatic benches. Mason Pond is not currently operating at design capacity due to sedimentation and will therefore need to be dredged as part of the retrofit project. Mason will perform an analysis to produce a detailed design based on the current campus land cover. This is required to determine the necessary final features and sizing.

Mason has also taken into consideration future maintenance requirements and costs. Wet ponds require minimal maintenance once they are established. *Table 4* summarizing the costs for the wet pond retrofit to meet the TMDL reduction requirements. Assumptions include a disturbed area of approximately three (3) acres, and a reduction of 63% in Mason Pond's capacity due to sedimentation. Mason Pond is assumed to have a design capacity of 6.4 acre-feet based on the original design.

Table 4: Estimated Costs for Pond Retrofit

	Total Estimated Cost	**POC Cost/LB**		
		N	P	TSS
Mason Pond Retrofit	**$ 1,200,000**	$ 3,108.77	$ 13,343.79	$ 22.54

Mason's approach to addressing the TMDL reduction requirements will span across several years. Mason Pond is not currently providing its design treatment capacity due to sediment build up in the pond, therefore maintenance to dredge the pond will be required as part of the retrofit efforts. The schedule for design, permitting and construction is estimated as follows to

meet the second permit cycle requirements: design and permitting between 2019 and 2021 and construction between 2021 and 2023.

Table 5: Estimated Schedule for Phase 2 TMDL Action Plan Implementation

Phase 2 TMDL Action Plan Task	Estimated Time Frame
Design and Permitting	2019-2021
Pond Retrofit Construction	2021-2023

Public Comment Process

Mason encourages the public's involvement and participation in the development and implementation of its MS4 Program. In keeping with this objective, Mason posts a copy of this draft Phase 2 TMDL Action Plan on its website to solicit public comments on the draft plan. The website where the public can find this plan and Mason's MS4 Program Annual Reports is https://stormwater.gmu.edu.

Conclusion

Mason developed this second permit term Action Plan as required in the 2018-2023 second permit cycle of its MS4 Permit Number VAR040106 and in accordance with the DEQ Guidance Document dated May 18, 2015. This TMDL Action Plan concludes that the phase 2 pollutant reduction requirements calculated will be met by retrofitting existing Mason Pond as discussed in the Compliance Options for Reduction Requirements and Schedule section of this TMDL Action Plan. Mason reserves the right to modify this TMDL Action Plan as needed to maintain compliance with the second permit cycle of its MS4 Permit and to implement and take credit for additional creditable facilities or practices as provided for in the Chesapeake Bay TMDL Special Condition Guidance.

Appendix A

Mason MS4 Regulated Areas by Land Cover Type Fairfax Campus		
Land Cover Type	**Total Area (acres)**	**Regulated Area (acres)**
Impervious	185.01	185.01
Pervious	161.80	161.80
Forested*	298.82	298.82
Open Water*	5.28	0.00
Total	**650.91**	**645.63**

*Excluded from load calculations

Mason MS4 Regulated Areas by Land Cover Type Science and Technology Campus		
Land Cover Type	**Total Area (acres)**	**Regulated Area (acres)**
Impervious	22.94	22.94
Pervious	34.73	34.73
Forested*	75.53	75.53
Open Water*	1.32	0.00
Total	**134.52**	**133.20**

*Excluded from load calculations

Figures 1 and 2 provide maps of the Fairfax and Science and Technology campuses respectively that depict the MS4 service area boundaries, regulated lands, and lands that have been excluded in accordance with DEQ's Guidance Document.

Figure 1

Fairfax Campus

2009 Regulated Area Map

MS4 Service Area

Regulated Area

Regulated

Forest (Excluded)

Open Waters (Excluded)

N

0 500 1,000 1,500

Feet

GEORGE MASON UNIVERSITY

Figure 2

Science and Technology Campus

2009 MS4 Regulated Area Map

MS4 Service Area

Regulated Area

Regulated

Forest (Excluded)

Open Water (Excluded)

N

0 500 1,000

Feet

GEORGE MASON UNIVERSITY

Appendix B

References

Virginia Administrative Code 9VAC25-890-40 “General Permit for the Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems”.

“George Mason University MS4 Program Plan Permit Number VAR040106” dated October 2015.

“George Mason University Chesapeake Bay TMDL Action Plan Permit Number VAR040106” by Timmons Group, dated October 2015.

“Guidance Memo No. 15-2005” by DEQ, dated May 18, 2015.

Virginia Runoff Reduction Method Worksheets