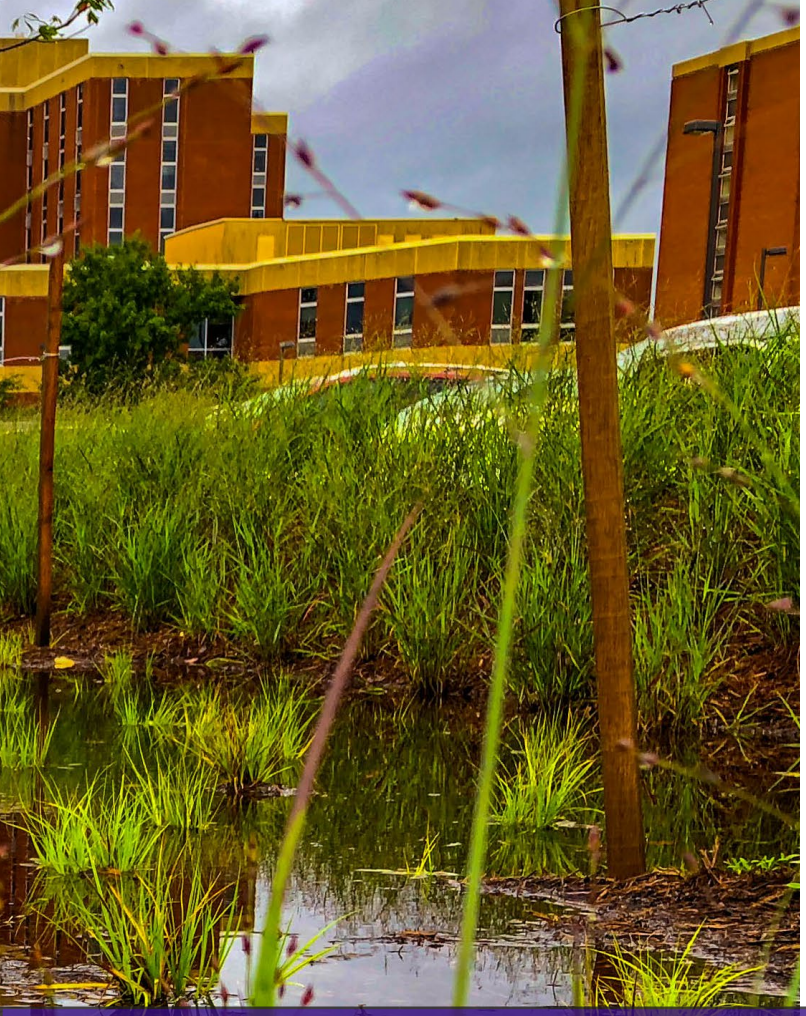
MS4 Program Plan Annual Report

FY18/19

Bio-retention at Godwin Field Parking Lot



JAMES MADISON UNIVERSITY®

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BEING THE CHANGE

James Madison University - Harrisonburg, VA

Permit Number: VAR040112

Reporting Period: July 1, 2018 thru June 30, 2019

CERTIFICATION STATEMENT

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 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.

I further certify that after an evaluation of the program plan, and associated MCM's, the plan has been determined to be effective and no plan changes are necessary.

Signature: _____

Printed Name: Dale Chestnut

Title: Stormwater Coordinator

Date: August 15, 2019

PUBLIC EDUCATION & OUTREACH

In order to best identify the most efficient use of resources to distribute information related to stormwater impacts to the public, three main issues have been identified as; public awareness of pollution prevention and reporting of water quality issues, litter prevention at outdoor athletic events, and pollution prevention related to facilities management operations. These three issues have been selected as they target audiences that are most likely to have significant impacts on stormwater quality within the University.

Possible strategies of increasing public knowledge include; printed materials (newspaper advertisements, brochures, flyers, etc.), signage, websites, social media, training (seminars, presentations, guidance booklets), and other activities deemed appropriate. As with most targeted audiences, there will be some overlap in promotion.

Several strategies listed above are ongoing and always available such as JMU's website, signage and storm drain marking. Typically, advertisements and posters are promoted during the first semester of each school year, and speaking arrangements and curriculum materials are provided as requested or scheduled throughout the year.

PUBLIC AWARENESS OF POLLUTION PREVENTION AND REPORTING OF WATER QUALITY ISSUES

Illicit discharges to the MS4 can be acutely harmful to aquatic life, and pose a risk to health and safety on campus. These factors make it a critical issue of which the entire university community should be aware. The focus of this high priority issue is recognizing and reporting illicit discharges (water quality issues). While minimum control measure 3 requires JMU to "promote, publicize, and facilitate public reporting of illicit discharges into or from" the MS4, the general public doesn't necessarily know how to identify or prevent such, or why. To maximize outreach effectiveness, this issue will combine education on general awareness with outreach on reporting water quality issues on campus.

Stormwater literacy and illicit discharges are general awareness issues, and thus affect everyone on campus. An illicit discharge could be noticed by anyone, at any time, necessitating broad outreach to the campus community. The target audiences for these issues include the faculty (1,400), staff (2,600), and students (21,800). Faculty and staff are considered long-term members of the university community, and as such, will receive outreach on this topic cumulatively over the years. Students are short-term members of the campus community, but will carry these lessons with them when they move on. Together these groups are the eyes and ears of the stormwater management staff, and play a critical role in addressing illicit discharges on campus. In general, bulletins or ads will be placed in the Breeze along with posting on bulletin boards such as at campus libraries during the first semester of each school year. Also speaking engagements will be provided as requested to classes. (See Activity/Strategies for Outreach & Speaking Engagements table on page 4.)

POLLUTION PREVENTION RELATED TO FACILITIES MANAGEMENT OPERATIONS

JMU manages a wide variety of land and infrastructure that allows each student to be well prepared in the educational process. These facilities require operation and maintenance using materials and methods that can pose a risk to water quality. Examples include housekeeping, fueling stations, solid waste facilities, energy generation, landscaping, and snow removal. These operations are likely the biggest threat to water quality on campus, qualifying them as a high priority issue on which to focus outreach activities. Risks to water quality will be minimized by performing outreach on basic watershed and stormwater literacy, laws and regulations, and appropriate management techniques to minimize stormwater pollution.

As a nontraditional MS4, one segment of JMU's public is its staff (2,600 total people). Facilities management (FM) staff (600 people) is the segment of the staff that is most likely to have an effect on water quality, as it is responsible for the operations described above. FM staff is the target audience for this high priority issue. Policies are kept up to date and employee refresher training will be provided bi-annually, typically in the fall, through disseminating training material through email and management. Also, an overview of programs and policies will be provided to new FM employees during orientation which takes place monthly, as needed. (See Training Plan on page 17.)

Booth at Blacks Run Clean-Up Day

LITTER PREVENTION AT OUTDOOR ATHLETIC EVENTS

JMU welcomes a large number of visitors, in addition to faculty, staff, and students to events that take place on campus. While JMU hosts other outdoor events, there are none that are as numerous and regularly scheduled as athletic events. Athletic events are more prone to create litter than normal campus activities and events, as attendees often participate in tailgating and other activities, involving eating, drinking, and vending in outdoor areas for extended periods of time, and the use of disposable items is the norm. Various promotional debris related to these events can also be left behind at the facilities, in the parking lots, and on the roads. Thus, targeting outdoor athletic events maximizes the opportunity to reduce litter on campus.

By rain and wind, litter can end up in drainage ways, storm sewers, stormwater controls, and ultimately Sibert Creek and Blacks Run. While JMU's Landscaping Department is tasked with cleaning up the debris created by athletic events, there is the opportunity to reduce litter before it is created. Preventing litter from entering stormwater infrastructure is a priority.

JMU will focus on football game attendees. Football games account for approximately 94% of outdoor athletic event activity, accounting for the audience that is most likely to create the largest amount of litter, and providing the best potential for litter prevention outreach. The population size of the target audience is approximately 22,000 people per game. All other outdoor athletic events combined attract only approximately 300 people per event. This includes several other sports team schedules such as track, soccer, lacrosse, baseball, softball, field hockey and tennis. The Athletics Department makes at least two public service announcements at each outdoor sporting event to promote pollution prevention requesting spectators to be responsible and discard all wastes in the trash and recycling receptacles located throughout the sports facility. With approximately 130,000 spectators at about 90 events, these targeted announcements were estimated to have reached more than 90% of the target audience.

PUBLIC EDUCATION & OUTREACH and PUBLIC INVOLVEMENT & PARTICIPATION

Educational signage along with storm drain marking is conducted to assist in educating the public on the purpose of stormwater best management practices and to inform that what goes in a storm drain eventually makes its way to our local waterways.

Educational Signage	*Location(s)*
Aquatic Bench	Newman Lake
Bio-retention	Sibert Creek
Conservation Landscaping	Hillside
Green Roof	Madison Union
Natural Channel Design Stream Restoration	Arboretum
Riparian Buffer	Various locations along Sibert Creek and East Campus Creek.
Watersheds & Stormwater Management	Arboretum
Wetlands & Floodplain Connections	Arboretum

As part of construction on campus, a total of 21 new storm drain markers were installed at the Chesapeake Avenue Parking Deck, Covered Athletic Field, Godwin Field Parking Lot, Parking Lot at 1120 S. Main St., and the Parking Lot at 1170 S. Main St.

Fourteen sections of ISAT 112 (Issues in Environmental Science and Technology) was taught through the year for 293 students by Associate Professor Robert Brent. Students performed water quality sampling of on-campus waterbodies including the Arboretum Pond, ISAT Retention Ponds, Siebert Creek, and Newman Lake. Parameters measured include phosphorus, nitrate, pH, dissolved oxygen, hardness, conductivity, and turbidity.

Three sections of ISAT 321 (Fundamentals of Environmental Science and Technology II), a class that specifically covers stormwater impacts and best management practices designed to reduce those impacts, was taught in spring 2019 for 59 students by Associate Professor Robert Brent.

Thirteen students enrolled in the GEOG 427 Water Resources in Fall 2018 taught by Professor Mary Kimsey. Stormwater management was a major topic in the course, one that was introduced by Dale Chestnut in a lecture in the classroom early in the semester. In the week following that lecture, students mapped an area of Harrisonburg that drains into a storm pipe on South Dogwood Drive. As part of this field activity, they discussed the impacts that the runoff from the various surfaces in the area would have on Blacks Run and, eventually, the Chesapeake Bay. For their semester project, each student selected a site on a body of water in the local area. Using water quality test kits that they purchased, they monitored the water quality of the site over the last two months of the semester. The results of the testing were written up in a term paper.

A variety of other classes are offered at the University that cover issues related to the impact of urban stormwater runoff on the environment which will increase the overall awareness among students at the University.

Environment Related Courses/Programs
Biology
Chemistry
Earth Science
Engineering
Geographic Science
Geology
Integrated Science & Technology

Activity/Strategies for Outreach & Speaking Engagements	Partner(s)	Date
"Stormwater Pollution Prevention @ JMU" ad in *the Breeze*, JMU's newspaper.	FM	8/23/18
"Stormwater Pollution Prevention @ JMU" message posted on FM Facebook page.	FM	8/23/18
"Stormwater Pollution Prevention @ JMU" poster posted at Carrier and Rose Library's.	FM	8/23/18 – 8/30/18
Educational message on FM Facebook page about the Bio-retention Filter at the New Dining Hall.	FM	9/14/18
"Stormwater Management @ JMU" presentation for senior water resources class (12 students & 1 faculty)	ISAT	9/24/18
"Stormwater Management @ JMU" presentation for Environmental and Sustainability class (150 students & 1 faculty)	ISAT	9/28/18
"Stormwater Management @ JMU" presentation for Biology 101 class (65 students & 1 faculty)	ISAT	10/11/18
"Stormwater Management @ JMU" presentation for non-FM JMU departments. (12 faculty/staff)	FM	3/12/19
"Earth Day Tree Planting", with education for 75 students and field visit to JMU's Hillside to plant approximately 25 trees.	FM/ISAT	4/22/19

Signage in the Arboretum

PUBLIC INVOLVEMENT AND PARTICIPATION

STORMWATER MANAGEMENT WEBSITE

Through the FM Engineering and Constructions stormwater website, which can be found at www.jmu.edu/stormwater, documents are available for access such as this MS4 Plan, TMDL Action Plans, stormwater related policies and procedures, and other relevant information. An email and phone number is listed in order for the public to report potential illicit discharges, improper disposal or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns. The same contact information can also be used to provide input on the University's MS4 program plan. No public input was received in regards to the MS4 program.

www.jmu.edu/stormwater

Page Description	*Pageviews*
Stormwater Main Page	653
IDDE Information	94
MS4 Information	165
Site Plan Review	227
FAQ	39
Total	1178

The combination of all activities implemented to provide educational outreach through a website, educational signage, speaking engagements, clean-up events, and involvement on committees allows for many beneficial activities for improving water quality.

ENVIRONMENTAL GROUPS AND COMMITTEES

Faculty and staff participate with local organizations and environmental advisory committees such as Soil & Water Conservation Districts, stormwater advisory committees, environmental performance standards advisory committees, Friends of the Shenandoah River, and the Shenandoah Valley Pure Water Forum. JMU also maintains membership in environmental organizations such as the Virginia Municipal Stormwater Association (VAMSA) and the Central Shenandoah Stormwater Network in order to network with other municipalities, engineers and regulatory agencies.

Organization or Committee name	Web Link
Central Shenandoah Stormwater Network	cleanstream.org
City of Harrisonburg Environmental Performance Standards Advisory Committee	harrisonburgva.gov/epsac
City of Harrisonburg Stormwater Advisory Committee	harrisonburgva.gov/swac
Friends of the Shenandoah River	fosr.org
Shenandoah Valley Pure Water Forum	purewaterforum.org
Shenandoah Valley Soil & Water Conservation District Chesapeake Bay Committee Education & Awards Committee Urban Committee	svswcd.org
Virginia Municipal Stormwater Association (VAMSA)	vamsa.org

STUDENT WATER QUALITY TESTING

Students from the ISAT 320 class (Fundamentals of Environmental Science and Technology I) perform water quality sampling of tributaries within the North River watershed, including Blacks Run. Parameters measured include specific conductivity, pH, dissolved oxygen, nitrogen, phosphorus, and fecal coliform / e. coli counts. In addition, students performed biological and physical habitat assessments of macro-invertebrates and fish communities. This class increases the awareness of local water quality issues within the student body, and any concerns observed during testing can be reported to Facilities Management for follow-up.

The ISAT 320 course offered three sections in the fall with a total of 68 students. This course included a 6-week water project that incorporated surveys of water quality, fish and macroinvertebrate communities, and physical habitat within the North River watershed.

This water testing is not for monitoring of stormwater discharges or control measures, but for educational purposes of basic water quality and is to be considered as a “citizen monitoring group”.

STREAM CLEAN-UP EVENTS

Newman Lake has a watershed of approximately 4 square miles and is fed by Siberts Creek, a tributary of Blacks Run. As part of JMU’s efforts to keep the campus clean, JMU staff from the FM Environmental Services Department regularly pick up trash and debris within the heart of campus and also along the streams and lake.

There was approximately 5,200 total hours dedicated to ground litter cleanup during this reporting period, with four part-time employees working during the schools regular sessions at a combined 116 hours per week, and approximately 60 hours per week during the summer months. Over 100 pounds of floatable debris was removed from Newman Lake.

In addition to the constant efforts on campus, JMU staff and students participate in Earth Day and provide a large group of volunteers to assist the City of Harrisonburg with their annual Blacks Run Clean-Up Day which is typically held in April. This event increases the awareness among students and staff of the opportunity to help improve local water quality, and provides a large number of people along Blacks Run to pick up trash and to report possible illicit discharges for follow up with formal investigations.

On April 13th, about 700 volunteers participated in Blacks Run Clean-Up day hosted by the City of Harrisonburg. In just a few hours approximately 3.8 tons of refuse was collected along with 25 tires.

Volunteers line up to participate in Blacks Run Clean-Up Day.

ILLICIT DISCHARGE DETECTION & ELIMINATION (IDDE)

Drone flight of University Boulevard.

MS4 MAP

JMU maintains a GIS map with a corresponding database that contains the locations and attributes of the storm sewer system, structural best management practices, and MS4 outfalls that the university is responsible for within their municipal jurisdiction. The MS4 map and corresponding database have been updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year.

In compliance with 9VAC25-890-40 Part I E 3(3), GIS map layers were submitted to the DEQ on September 19, 2018.

One new MS4 outfall was installed this reporting year, with one previously existing outfall being abandoned in place.

A new outfall (ID# SC-3704) was installed with the College of Business expansion project with a drainage area of 3.54 acres.

An existing outfall (ID# SC-3668) was abandoned in place with the removal of upslope piping as part of the College of Business expansion project. The previous 0.66 acre drainage area has been directed towards new outfall SC-3704.

NOTIFICATION OF INTERCONNECTIONS WITH ADJACENT MS4'S

James Madison University's MS4 system interconnects with the City of Harrisonburg, Rockingham County, and the Virginia Department of Transportation (VDOT). Both Harrisonburg and VDOT are MS4's and have previously been notified and are aware that our systems interconnection. JMU will continue to notify adjacent MS4's of any new interconnections established or discovered.

A notification was made to the City of Harrisonburg on August 20, 2018 about interconnections made from the Hotel Madison project. A copy of the site plan was provided along with GIS data.

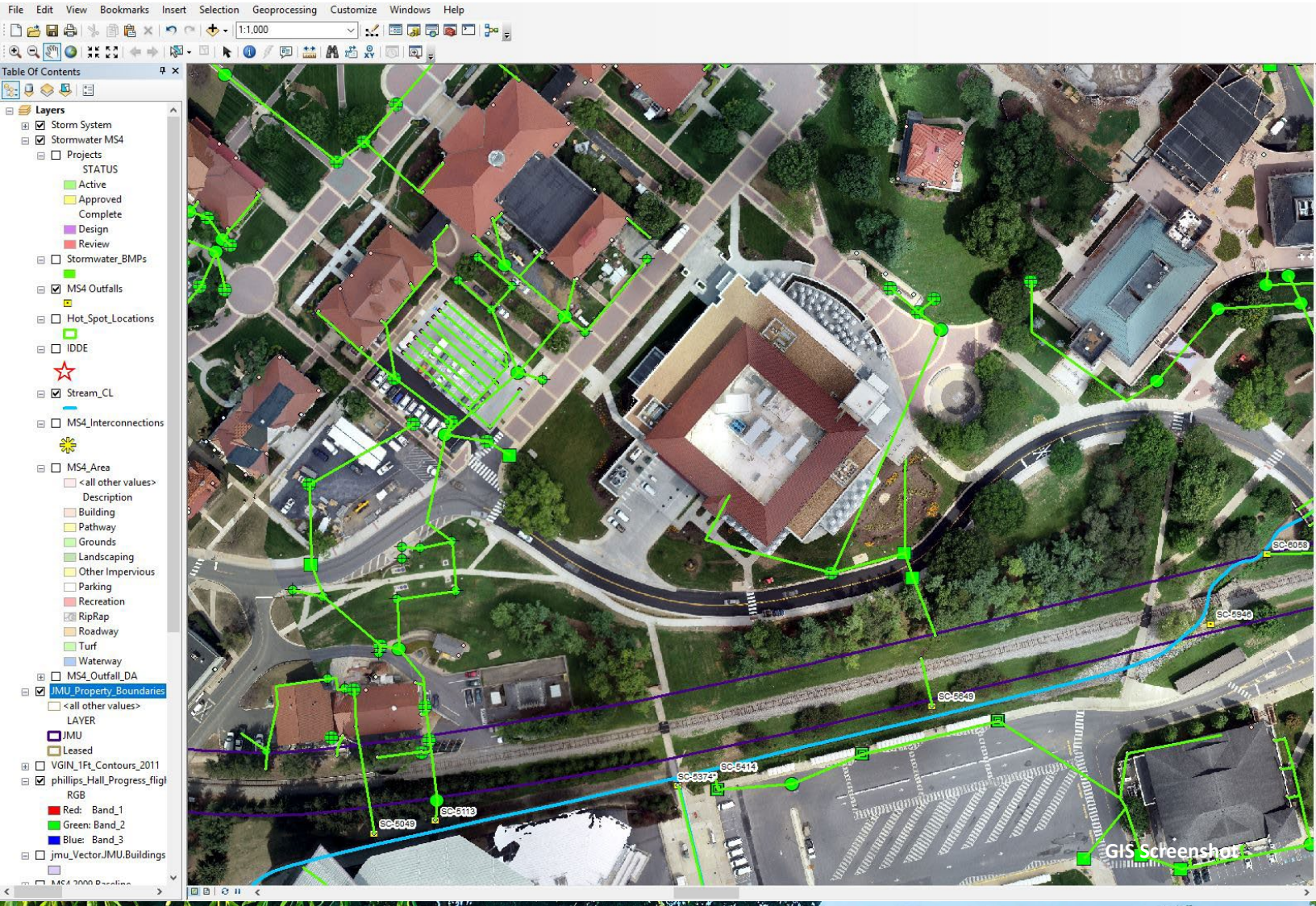
No notifications were received from adjacent MS4s.

IDDE POLICY & PROCEDURES

The University has implemented a campus wide IDDE policy in order to establish methods for controlling the introduction of pollutants into the MS4. The policy includes procedures for field screening, notification of spills and illicit discharges, tracking, enforcement and training with the goal of eliminating unauthorized discharges.

A total of 113 inspections were conducted on the 111 outfalls within JMU's jurisdiction. No illicit discharges were noticed during the annual outfall inspections. Approximately $1,416 was spent for inspections, maintenance and repairs related to stormwater outfalls.

JMU operates a HAZWOPER team with 15 members certified in spill response. While they responded to 7 spills, no spills discharged to adjacent waterways or the MS4. No illicit discharges were reported through the Stormwater Hotline.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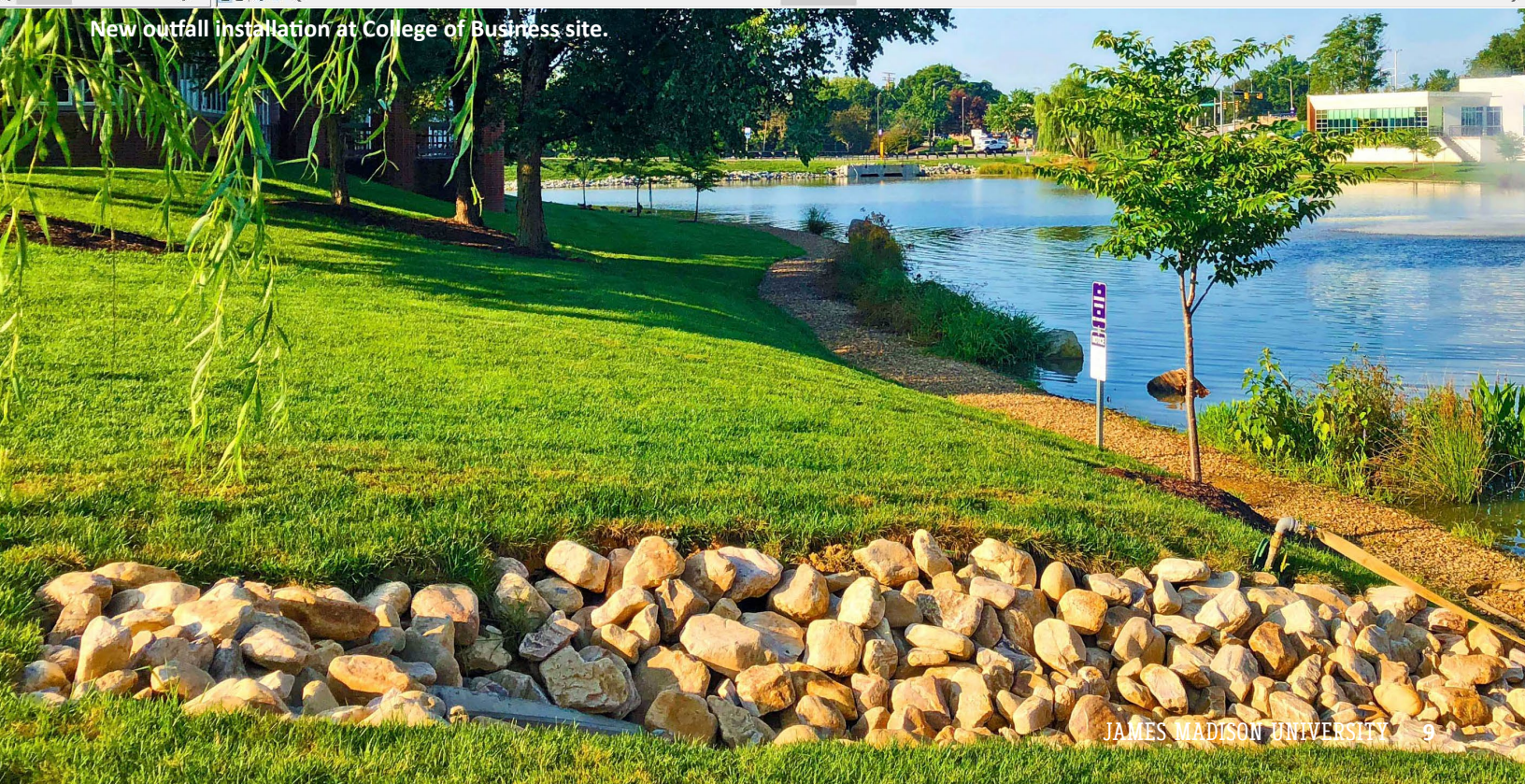
New outfall installation at College of Business site.

CONSTRUCTION & POST-CONSTRUCTION STORMWATER MANAGEMENT

STANDARDS & SPECIFICATIONS. JMU initially received approval from the Department of Conservation and Recreation (DCR) to operate its own erosion and sediment control (ESC) program under a set of annual standards and specifications on July 6, 2009. While the responsibility of the stormwater program has been transferred from the DCR to the Department of Environmental Quality (DEQ), JMU continues to maintain approved standards and specifications as requested by the Department. Responding to amendments to regulations, stormwater management (SWM) was introduced into the standards and JMU received combined approval from DEQ for Standards and Specifications for ESC and SWM on May 28, 2014. This document continues to be updated as needed and the most recent approval of combined ESC and SWM was received from DEQ on July 12, 2018.

These Standards layout the framework for the administration and implementation of projects within the university concerning erosion and sediment control, and stormwater management. Certification requirements are listed for appropriate personnel along with the structure for plan review and approvals, construction inspections, variances and exceptions and long-term maintenance.

LAND DISTURBING ACTIVITIES POLICY. JMU is responsible for ensuring all regulated land disturbing activities have adequate documentation before construction activity begins and that construction activities follow approved plans, JMU's Standards and Specifications for ESC and SWM, and regulatory requirements. The purpose of this policy is to layout the procedures for regulatory compliance concerning all regulated land-disturbing activities at the University.

The policy includes definitions of relevant terms, the individuals responsible for implementation of the policy, and procedures for both non-regulated and regulated activities. The land disturbing activities policy was originally approved in July 2009, and is re-evaluated on an annual basis.

DEQ ESC/SWM Certification	Person	Certificate Number	Expiration Date
Dual Combined Administrator	Dale Chestnut	DCA0106	10/15/2020
Dual Combined Administrator	Abe Kaufman	DCA0330	7/11/2020
Dual Combined Administrator	Joseph Colman	DCA0439	5/28/2022
Responsible Land Disturber	Frankie Lucas	41740	4/7/2020
Responsible Land Disturber	Scott Jones	41742	4/7/2020

Recently Approved Projects	Date Approved	Disturbed Acreage
Farm Hooke House Renovations	4/24/19	1.36
Grace Street Extension	12/5/18	4.41
JMAC6 Demolition	2/4/19	0.87
JMAC6 Office Building	5/1/19	1.45

Project: Land Bridge
Contractors: WM Jordan & Partners Excavating
Installation of silt fence and fabric for diversion channel.

The project table to the right shows the active construction projects throughout the reporting period along with the VSMP permit number, if applicable, and the disturbed acreage associated with the project. These projects were conducted in accordance with the current department approved standards and specifications for erosion and sediment control.

A total of 536 construction site inspections were conducted over the reporting period on 23 projects. Alleged deficiencies observed on-site were noted in inspection reports and were addressed in an acceptable manor and time frame, thus requiring no further methods of enforcement. A total of 36 corrective actions were issued, and an additional 7 notifications of violations were issued for projects not resolving non-compliance issues in the requested time frame. DEQ was brought in on two of those occasions to ensure corrective actions and time frames were adequate; and projects were brought into compliance without requiring further enforcement assistance from the DEQ. Copies of inspection reports are kept on file and are available upon request.

23 Projects

78.80 Acres

536 Inspections

Active Projects	VSMP Permit	Disturbed Acreage
Chesapeake Avenue Parking Deck	VAR10K360	2.42
College of Business	VAR10K975	3.70
Convocation Center & Parking Deck	VAR10K974	19.94
Covered Athletic Field	VAR10K973	2.60
East Campus Housing	VAR10K553	11.75
Farm Hooke House Renovations	VAR10M510	1.36
Gibbons Hall	VAR10I135	3.70
Godwin Field Parking Lot	VAR10K834	3.15
Grace Street Extension	VAR10M137	4.41
Gravel Parking Lot at 1170 S. Main St.	N/A	0.51
Gravel Parking Lot at 1210 S. Main St.	N/A	0.54
Gravel Parking Lot at Alumni Drive	N/A	0.94
Hotel Madison	VAR10H892	2.53
JMAC6 Demolition	N/A	0.87
JMAC6 Office Building	VAR10M625	1.45
Land Bridge	VAR10L222	6.47
Madison Hall	VAR10H499	1.90
Phillips Dining Hall	VAR10L444	1.33
Retail Dining Demolition	N/A	0.44
South Main Spoils Site	VAR108454	6.20
Tennis Enclosure	N/A	0.95
West Grace Street Widening & Slip Lane	N/A	0.82
Wilson Hall Renovation	N/A	0.82
Total Acreage		***78.80***

STORMWATER MANAGEMENT FACILITIES POLICY

JMU is required to operate a Virginia Stormwater Management Program (VSMP) as part of permit and legislative requirements. Structural stormwater best management practices (BMP's) are sometimes required to be installed for the mitigation of construction projects or for pollution reduction credits related to watershed clean-up efforts such as the Chesapeake Bay Total Maximum Daily Load (TMDL). These BMP's must remain in place as designed and be maintained in perpetuity to function as intended.

The purpose of the policy is to establish procedures for the design, installation, acceptance, inspections, and maintenance of stormwater facilities installed on campus. The stormwater management facilities policy was originally approved in 2009 and is re-evaluated on an annual basis.

JMU currently has 94 structural stormwater BMP facilities on campus. Of those 94, 4 were added with new construction on campus and were added to JMU's BMP database to ensure annual inspections and required maintenance. Three were installed as part of a project under a Construction General Permit and have been, or will be, provided to the DEQ as part of the projects permit Notice of Termination. The detention pond installed as part of the Gravel Parking Lot at Alumni Drive was approved into the DEQ database on September 19, 2018. There are currently 7 BMP's that have been removed as part of active construction sites. All these projects are under a Construction General Permit and will report any new stormwater BMP's with their permit Notice of Termination at project completion.

A total of 126 inspections were performed on the structural BMP's. All maintenance work completed on the structural BMP's was considered to be typical maintenance items. Approximately $61,762 was expended for inspections, maintenance and repairs of stormwater management facilities.

Lawn at Madison Hall

BMP INSTALLATIONS						
BMP Type	**HUC**	**Impaired Water**	**Acres Treated**	**Description**	**JMU BMP ID**	**VSMP Permit**
Bioretention 1	PS22	Blacks Run	1.07	Chesapeake Avenue Parking Deck Bioretention	BC035	VAR10K360
Bioretention 1	PS22	Blacks Run	0.52	Gibbons Dining Hall Bioretention	BC032	VAR10I135
Bioretention 1	PS22	Blacks Run	0.93	Godwin Field Bioretention	MC016	VAR10K834
Extended Detention Pond 1	PS22	Blacks Run	0.61	Gravel Parking Lot at Alumni Drive Basin	EC046	N/A
BMP REMOVALS						
Part C: Bioretention Filter	PS22	Blacks Run	1.29	Chesapeake Avenue Parking Deck	BC018	VAR10K360
Part C: Bioretention Filter	PS22	Blacks Run	0.20	College of Business	MC012	VAR10K975
Part C: Bioretention Filter	PS22	Blacks Run	0.22	College of Business	MC013	VAR10K975
Part C: Extended Detention	PS22	Blacks Run	1.37	Convocation Center and East Campus Parking Deck	EC022	VAR10K974
Part C: Infiltration	PS22	Blacks Run	0.46	Grace Street Extension	BC001	VAR10M137
Part C: Bioretention Filter	PS22	Blacks Run	4.84	Land Bridge	EC008	VAR10L222
Part C: Extended Detention	PS22	Blacks Run	7.25	Land Bridge	EC009	VAR10L222

Bio-retention at Gibbons Dining Hall

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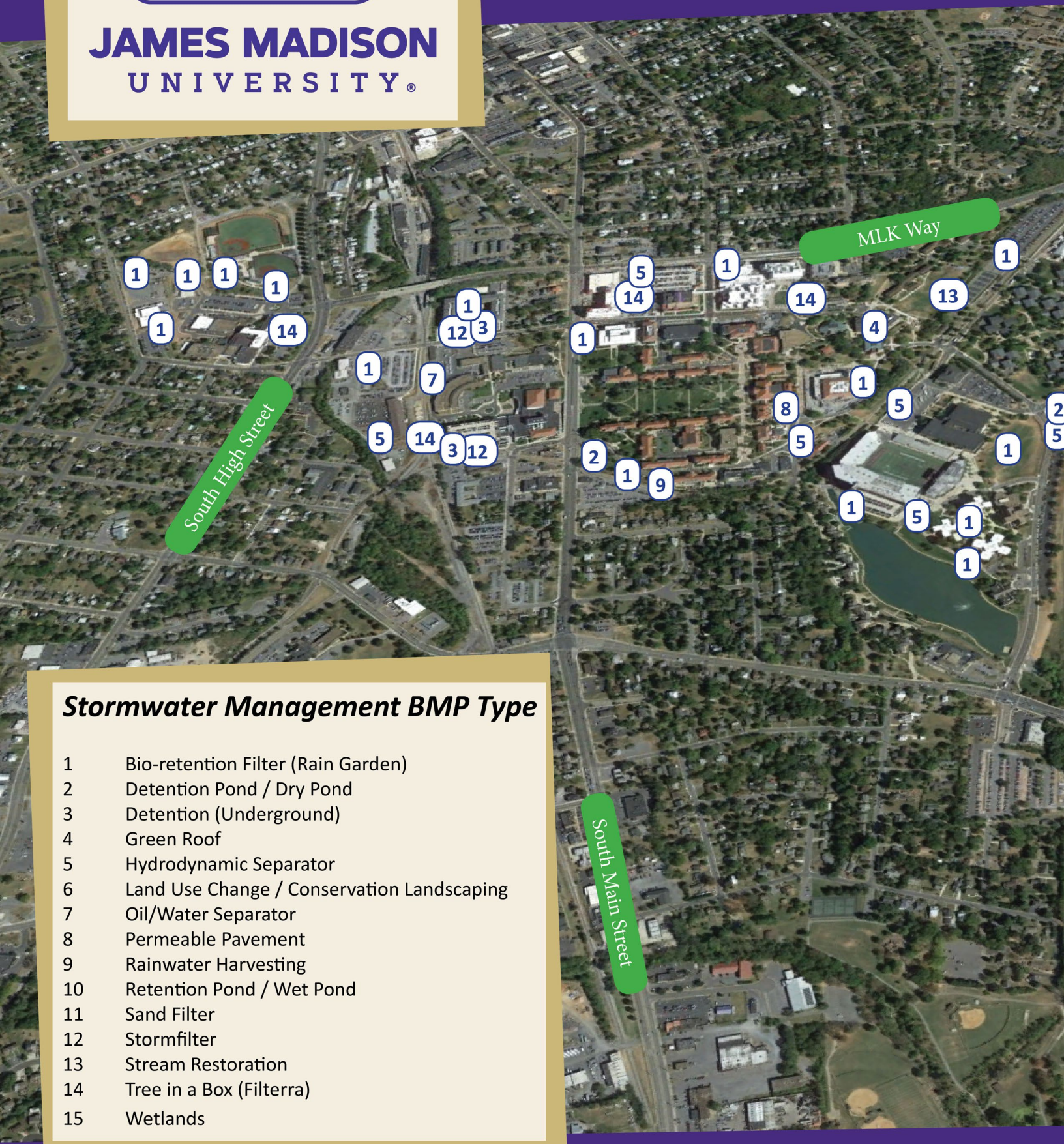
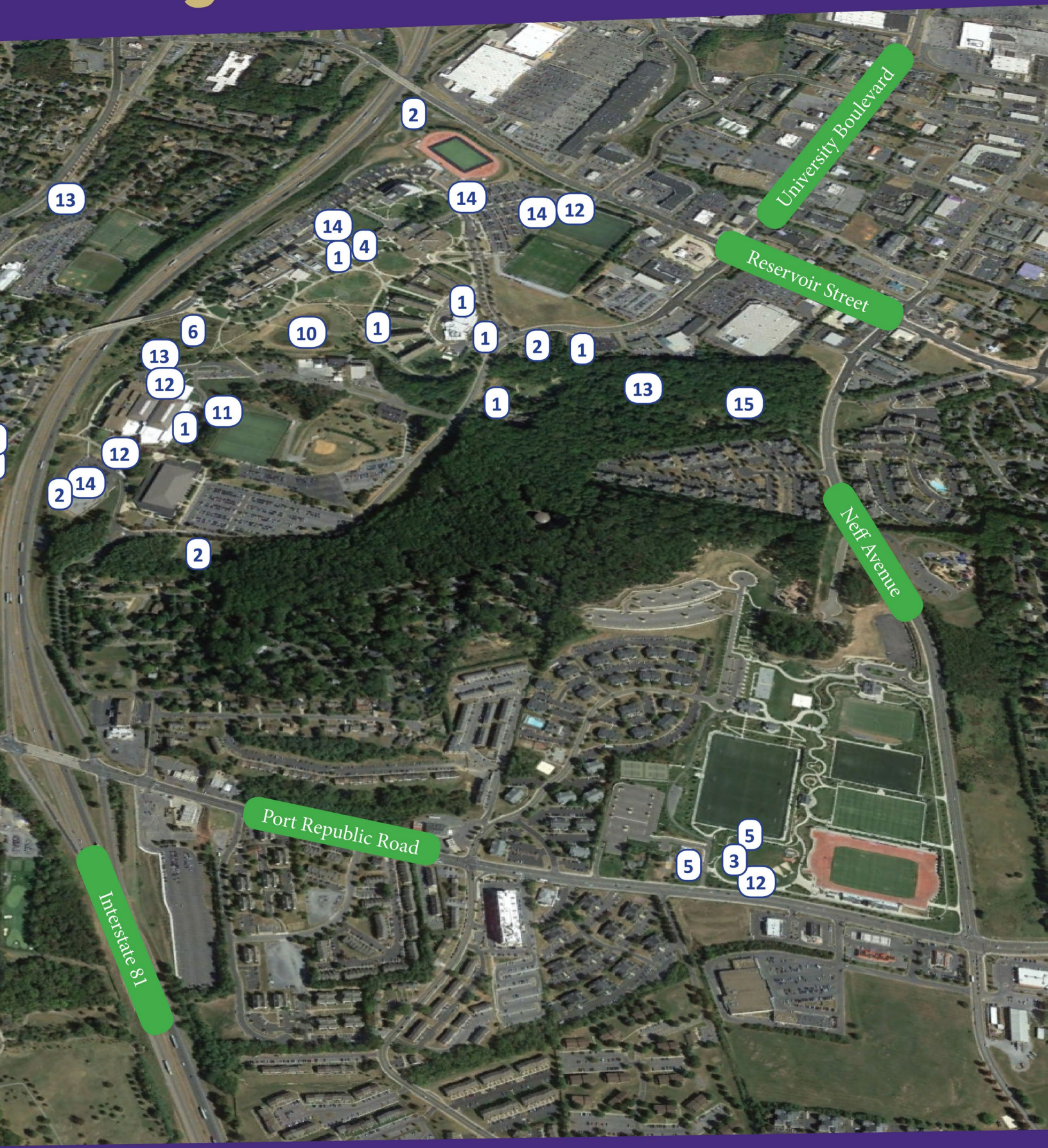
Stormwater



Stormwater Management BMP Type

1	Bio-retention Filter (Rain Garden)
2	Detention Pond / Dry Pond
3	Detention (Underground)
4	Green Roof
5	Hydrodynamic Separator
6	Land Use Change / Conservation Landscaping
7	Oil/Water Separator
8	Permeable Pavement
9	Rainwater Harvesting
10	Retention Pond / Wet Pond
11	Sand Filter
12	Stormfilter
13	Stream Restoration
14	Tree in a Box (Filterra)
15	Wetlands

Management BMP Map



DAILY OPERATIONAL PROCEDURES

As a MS4 permittee, JMU is responsible for preventing, or minimizing to the maximum extent practicable, any discharges to the storm sewer system, or waterways, that is not entirely composed of stormwater run-off. A "Daily Operational Procedures for Stormwater Control Best Management Practices" policy was created in 2015 to implement written procedures for activities such as road, street, and parking lot maintenance; equipment maintenance; and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers. The policy and procedures are re-evaluated on an annual basis, and no modifications were made for this reporting period.

These procedures are utilized as part of FM employee training and is an effective way to ensure that employees are aware of proper procedures associated with typical operations and the possible impacts on local waterways.


Leaf collection at Madison Union

NMP & IPM

The University currently implements several Nutrient Management Plans that cover the lawn and landscaped areas of the University that receives nutrient applications. The plans outline the rates and frequencies that nutrients may be applied, and covers best management practices to follow regarding the application of these nutrients. By following this Plan, it can be ensured that nutrients are applied in a manner that will minimize their impact on stormwater quality. JMU has 20 Certified Fertilizer Applicators, 6 Certified Pesticide Applicators, and 43 Registered Technicians.

A piece of property at 2868 S. Main St. was sold and removed from JMU's NMP list. On November 16th, 2018, the Forest Hills Off Campus Properties NMP was approved with a start date of December 5th, 2018 and expiration date of December 5th, 2021. Following is a list of NMP's active at the University:

Plan Name	Acreage	Start Date	Expiration Date
Main Campus	224.48	May 20, 2018	May 20, 2021
Forest Hills Off Campus Properties	6.95	December 5, 2018	December 5, 2021
Total	231.43		

The University also has an Integrated Pest Management (IPM) program which seeks to control pests with a minimal use of pesticide while maximizing effectiveness and cost efficiency. The application of all fertilizers and pesticides will be conducted in accordance with the Virginia Department of Agriculture and Consumer Services (VDACS) rules and regulations for agricultural chemical operations and only properly trained and/or certified employees or contractors will apply fertilizer or pesticides on campus.


Mowing patterns at ISAT campus.

SWPPP'S for HIGH-PRIORITY FACILITIES

Several facilities at JMU meet the criteria listed in the general permit as high-priority facilities and are considered to have a high potential for discharging pollutants. These facilities are required to maintain and implement a stormwater pollution prevention plan (SWPPP) to provide a summary description of the facility and activities, description of potential pollutants and sources, procedures for reducing and preventing pollutant discharges and procedures for inspections and maintenance. Following is a list of facilities that have been identified as high-priority facilities with a high potential for discharging pollutants:

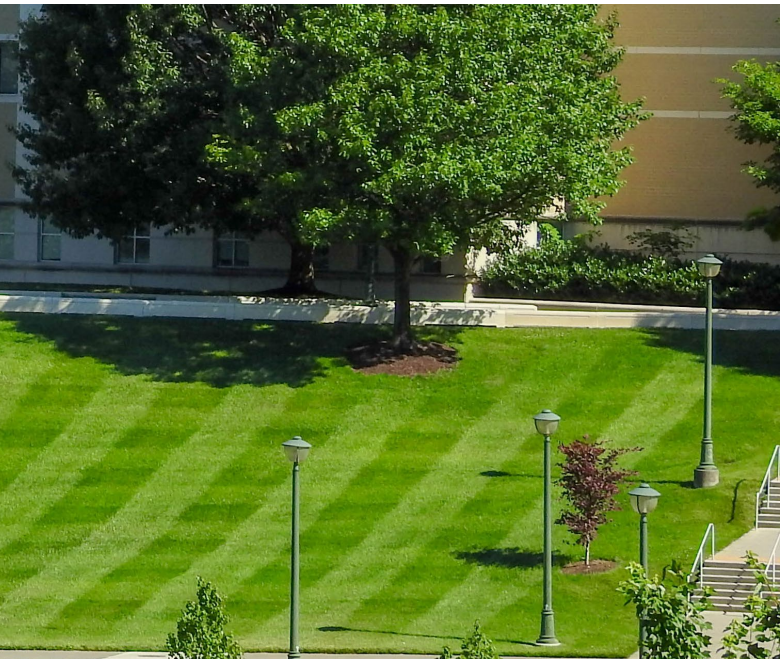
Site changes were made at the South Main Street Maintenance Facility by K Lot and University Services Building & Annex. The maintenance shop by K lot was remodeled and converted for use as a copy center. Activities within the maintenance shop along with the fueling station were moved to the University Services Building & Annex. SWPPPs at those facilities were updated to reflect those changes.

Facility	Type of Facility
Arboretum Storage Yard	Materials storage.
Memorial Hall Maintenance Shop	Maintenance shop.
R2 Lot Storage Yard	Materials and salt storage.
South Main Street Facilities: HVAC	Maintenance shop.
South Main Street Facilities: Recycling	Recycling.
South Main Street Facilities: Salt & Other Material Storage	Materials and salt storage.
South Main Street Facilities: Transportation	Vehicle storage and maintenance.
South Main Street Maintenance Facility by K Lot	Materials and mulch storage.
University Park Maintenance Shop	Maintenance shop.
University Services Building & Annex	Equipment, vehicle and materials storage, and maintenance facilities.

TRAINING PLAN

A "Stormwater Pollution Prevention/IDDE" presentation and guidebook has been developed for use with Facilities Management employee training. During new employee orientation for FM personnel, a presentation is given introducing them to basic stormwater information, pollution prevention, good housekeeping measures, related policies and procedures, and how to recognize and report illicit discharges. Refresher training will be provided no less than once per 24 months through the use of a presentation, guidebook, or other similar format. New FM employee training is provided with FM orientation which typically occurs on a monthly basis.

Through new employee orientations, 85 employees received initial training about stormwater management at JMU. Bi-annual training is also provided to FM employees and was last provided in March of 2018 to 489 employees.



Date	Event	Participants
March 2018	FM Refresher Training	489
July 16, 2018	FM New Employee Orientation	8
August 20, 2018	FM New Employee Orientation	10
September 17, 2018	FM New Employee Orientation	9
October 15, 2018	FM New Employee Orientation	15
November 26, 2018	FM New Employee Orientation	4
January 22, 2019	FM New Employee Orientation	7
March 11, 2019	FM New Employee Orientation	14
April 15, 2019	FM New Employee Orientation	12
May 17, 2019	FM New Employee Orientation	1
June 17, 2019	FM New Employee Orientation	5

TMDL ACTION PLANS

CHESAPEAKE BAY TMDL

The Chesapeake Bay Total Maximum Daily Load (TMDL) was established to create implementation plans to reduce pollutants entering the Bay. The pollutants of concern were listed as phosphorus, nitrogen, and sediment, of more specifically, total suspended solids (TSS). For JMU, those pollutant reductions per year were calculated to be 78.90 lbs/yr of phosphorus, 626.82 lbs/yr of nitrogen, and approximately 33.5 tons/yr of TSS.

Stream restoration had become a popular choice for meeting the Bay goals, and that practice was chosen to be implemented throughout campus streams to meet those goals and to be an educational tool for students and the public. Nearly 3700 linear feet of stream has been restored on campus along with allowing a vegetated buffer to grow on most stream banks. In addition to stream restoration work, nearly 53,000 square feet of land has been converted from pervious (turf areas) to grass (unmanaged grass).

Pollutant Reduction Requirements		
Phosphorus (lbs/yr)	**Nitrogen** (lbs/yr)	**TSS** (tons/yr)
78.90	*626.82*	*35.5*

With the completion of the stream restoration and constructed wetland cells in JMU's Arboretum in March of 2016, reduction goals for the Chesapeake Bay TMDL was surpassed by the University. No new BMP's were installed this reporting period, and none are currently planned to be implemented in the near future. For the most recent action plan for the Chesapeake Bay TMDL, public comment was providing by sending a mass email alert to the JMU community allowing a month long comment period. No comments were received for the action plan. JMU's complete Chesapeake Bay TMDL Action Plan can be viewed online at jmu.edu/stormwater.

BLACKS RUN TMDL

Blacks Run is located in the City of Harrisonburg and receives run-off from the City, JMU, VDOT and Rockingham County, then eventually flows to Cooks Creek. A TMDL was developed in 2002 for Blacks Run and Cooks Creek but did not issue waste load allocations (WLA) to the jurisdictions in the watershed. A revision for the local TMDL has been completed with the public comment period ending on December 28, 2018. Approval of the TMDL revision is expected in the coming months.

Currently, the existing BMP's implemented on campus such as construction site inspections, IDDE, stormwater facility maintenance, and all the projects constructed as part of the Chesapeake Bay TMDL are assisting in efforts to improve water quality in Blacks Run.

Step pool drainage ditch next to Arboretum parking lot.

Description	Total Removal (lbs/yr)		
	Phosphorus	Nitrogen	TSS
East Campus Stream Restoration	69.74	71.03	45,895.20
East Campus Land Use Change		2.75	
Siberts Creek Stream Restoration – Segment A	27.63	29.47	18,231.23
Siberts Creek Stream Restoration – Segment B	33.80	36.09	22,283.14
Siberts Creek Stream Restoration – Segment C	47.91	47.45	31,446.04
Siberts Creek Area Land Use Change		4.31	
Siberts Creek Bio-retention	1.87	13.02	1,551.38
Arboretum Stream Restoration w/ Constructed Wetlands	161.84	630.91	54,160.00
Total Reductions	***342.79***	***835.03***	***173,566.99***
Required Reductions	***78.90***	***626.82***	***66,904.99***
Goals exceeded by:	***263.89***	***208.21***	***106,662.00***

Ducks enjoying the floating wetland cell at the Arboretum pond

BEE & TREE CAMPUS STATUS

On February 14th, 2019 JMU became the 66th college/university in the nation to become a Bee Campus USA affiliate. JMU is the second campus affiliate in Virginia following Randolph College. Bee Campus USA fosters ongoing dialogue to raise awareness of the role pollinators play in our communities and what individuals can do to provide them with healthy habitat. The Bee Campus USA program endorses a set of commitments, defined in an application, for creating sustainable habitats for pollinators, which are vital to feeding the planet. In June 2018, Bee City USA and Bee Campus USA became initiatives of the Xerces Society for Invertebrate Conservation.
JMU received Tree Campus USA recognition in 2017. Tree Campus USA is a national program launched in 2008 by the Arbor Day Foundation honoring colleges and universities for promoting healthy trees and engaging students and staff in the spirit of conservation. The Tree Campus USA program recognizes college and university campuses that:

- Effectively manage their campus trees.
- Develop connectivity with the community beyond campus borders to foster healthy, urban forests.
- Strive to engage their student population utilizing service learning opportunities centered on campus, and community, forestry efforts.

APPA 2018 SUSTAINABILITY INNOVATION AWARD

JMU also received one of APPA's 2018 Sustainability Innovation Awards. The Sustainability Innovation Award criteria measure the current level and effort of a facilities management department to integrate sustainable policies and environmental practices throughout all facets of the organization, ultimately embedding them within the educational institution. JMU has become a model program in the Chesapeake Bay region by forging partnerships with a wide range of local and state agencies; engaging students, faculty, and staff to build awareness and contribute solutions; utilizing innovative techniques and methods to maximize improvements in stormwater management and water quality; and leveraging grant funding to minimize the budgetary impact to JMU of new regulations. APPA, previously known as the Association of Physical Plant Administrators, promotes leadership in educational facilities for professionals seeking to build their careers, transform their institutions, and elevate the value and recognition of facilities in education.

SUSTAINABILITY, TRACKING, ASSESSMENT & RATING SYSTEM (STARS) GOLD LEVEL RATING

For the first time, James Madison University has earned a gold rating for its comprehensive sustainability achievements from the Association for the Advancement of Sustainability in Higher Education.

The rating is based on a framework — the Sustainability Tracking, Assessment & Rating System — for colleges and universities to measure their sustainability performance. The framework addresses the environmental, social and economic dimensions of sustainability. JMU submitted its latest report in December. The university also submitted reports in 2013 and 2017, and received silver ratings.

Grounds (biodiversity and landscape management) was among the categories JMU received high scores. An example of this is the Edith J. Carrier Arboretum pictured above.

More than 100 people at JMU participated in the STARS process, including representatives from areas such as facilities management, academic affairs, human resources/talent development, community service-learning, the health center, financial aid, risk management, access and inclusion, institutional research, and engagement.

Christie-Joy Hartman, executive director of the JMU Office of Environmental Stewardship and Sustainability and an associate professor of integrated science and technology, said participating in STARS "allows us to consider best practices, compare our sustainability performance to that of other institutions, gain recognition for our sustainability efforts and engage our community in building a culture of sustainability."

Abram Kaufman, facilities management energy conservation and sustainability manager, who facilitates and tracks many FM sustainability activities, said, "STARS has been an excellent tool for us to benchmark our facilities sustainability performance and we are excited to document our progress in expanding these efforts in the latest report."

JMU is one of 303 institutions around the world to have a valid STARS rating. The ratings are valid for three years, but institutions can update their reports annually.

STARS incorporates data accuracy processes that protect the credibility of the program and provide a fair and transparent means for resolving questions about the accuracy of reported data. In 2017, AASHE commented, "James Madison had the most accurate report during the latest calendar year, with a single minor issue identified by AASHE staff that was promptly addressed."

JMU's latest report can be found here: https://reports.aashe.org/institutions/james-madison-university-va/report/2018-12-21/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