University of Maryland, College Park National Pollutant Discharge Elimination System MS4 Phase II FY2021 Annual Report General Discharge Permit #13-SF-5501

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List of Acronyms

BLM	Facilities Management—Department of Building & Landscape Maintenance
BMP	Best Management Practice
CBT	Chesapeake Bay Trust
P&C	Facilities Management—Department of Planning & Construction
DESSR	Department of Environmental Safety, Sustainability & Risk
E&E	Facility Management—Department of Engineering & Energy
E&SC	Erosion & Sediment Control
ESD	Environmental Site Design
FM	Facilities Management
FP	Facilities Management—Department of Facilities Planning
GIS	Geographic Information Systems software
IBBR	Institute for Bioscience and Biotechnology Research
IDDE	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MDE	Maryland Department of the Environment
MES	Maryland Environmental Services
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OS	Office of Sustainability
UMD	University of Maryland, College Park
USG	Universities at Shady Grove

I. NPDES MS4 PERMIT UMD AUTHORIZATION

The University of Maryland, College Park (UMD) owns and operates a municipal separate storm sewer system (MS4) and, therefore, must comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems. Maryland Department of the Environment (MDE) has regulatory authority to implement this program under their General Discharge Permit No. 13-SF-5501, which became effective on October 31, 2018 and expires on October 30, 2023.

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

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

In addition, the permit requires restoration efforts for twenty percent of existing developed lands that have little or no stormwater management by 2025. These efforts may include:

- Developing planning strategies
- Identifying water quality improvement opportunities
- Securing appropriate funding
- Development of an implementation schedule for achieving the 20% restoration requirement
- Implementing water quality improvement projects

This is the third annual report for General Discharge Permit 13-SF-5501 and only activities related to the 20% restoration requirement are required to be reported. While the university continues to maintain the MCM programs, progress on each measure will be updated in the next annual report.

II. NOTICE OF INTENT

UMD submitted a Notice of Intent (NOI) in October of 2018, which identified all UMD properties in College Park that were eligible for MS4 coverage. An amendment was submitted in October 2019 to include the Institute for Bioscience and Biotechnology Research (IBBR) facility located on the campus of USG at Shady Grove, Maryland.

III. UMD MS4 PERMIT ADMINISTRATION

A. Reporting Period

This third annual report begins from the end of the previous period starting November 1, 2020 and reflects activities for the Impervious Restoration Program through June 30, 2021.

B. Contact Information

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

C. UMD NPDES MS4 Organizational Structure

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

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

D. Staffing Resources

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

- DESSR: Four employees share MS4/stormwater responsibilities and spend the amount of time equivalent to 2.5 full-time staff members.
- FM-BLM: One full-time staff inspects and maintains stormwater facilities, and several other staff dedicate time to public outreach and volunteer events, forest/tree management, and landscape maintenance.
- FM-FP: One full-time staff dedicates at least 50 percent of the time to MS4 permit and stormwater regulations. In addition, several other staff members are partially dedicated to supporting stormwater inventory and geographic information system (GIS) efforts.
- FM-E&E: Two full-time staff members dedicate at least 20 percent of the time to engineering and water-related issues

IV. CHESAPEAKE BAY RESTORATION AND MEETING TOTAL MAXIMUM DAILY LOADS

The University of Maryland is committed to contributing towards the nutrient and sediment load reductions as specified by Maryland's Watershed Implementation Plan to address the Chesapeake Bay TMDL by 2025.

The Baseline Impervious Area Treatment and Restoration Requirements were updated with this report.

A. Baseline Impervious Area Treatment

This section presents the updated Baseline Impervious Area Assessment. All of the UMD properties to be regulated as identified in the NOI were imported into a GIS mapping database. Mapping features delineated included all impervious and pervious areas within the properties, locations of existing Best Management Practices (BMPs), and drainage areas to the BMPs. Previously unidentified BMPs were added and impervious areas were updated to reflect development projects completed during the reporting period

The previous annual report provided identification and inspection of all existing surface BMPs known at the time. Additional progress was made since the last year by identifying additional previously unknown BMPs constructed with legacy projects. Inspection of all green roofs and underground structures were also completed.

A summary of the baseline information is follows:

	2019 (ac)	2020 (ac)	2021 (ac)
Total impervious covered by permit	458.4	459.33	464.16
Total impervious treated by BMPs	15.5	26.36	38.30
Total impervious treated by nonstructural practices	0.22	0.13	0.13
Total impervious acres untreated	442.9	432.97	425.86
20% restoration requirement	88.58	86.59	85.17

In the 2019 report, UMD identified and inspected 121 BMPs on the College Park Campus that were reported in the stormwater database. Of these facilities, 33 were identified as passing inspection; however, only 13 of these BMPs were assumed to be eligible for baseline or redevelopment credit as they did not have as-built plans or would be surveyed during the permit term.

In 2020, additional facilities were identified by cross checking legacy projects with the MDE permit database and searching UMD archives for records. BMPs constructed for leased projects on university owned properties were also added to the database. The IBBR BMPs were also incorporated in the UMD BMP database. Finally, inspection efforts and further research led to

reclassification or separation of a few facilities. Overall, 44 facilities were added to the BMP database for a total of 165 BMPs in the 2020 report.

For this year's update, the university is reporting a total number of 174 BMPs, of which 105 facilities are officially permitted with MDE for site development projects. The primary focus over the past year was to record inspection reports and verification plans for the remaining MDE permitted projects that were not completed in the previous report. We also added inspections for some facilities that were approaching the 3-year re-inspection requirement. In addition to internal UMD inspections, the university consultant MES inspected 26 facilities. See **Attachment A** for a summary report of the inspections completed by MES and copies of the full inspection reports. All of the permitted water quality treatment BMPs now have inspection records.

Table 1 below includes the Section I, Impervious area restoration reporting, as required by the MS4 permit. Overall, the initial baseline assessment finds that there is 464.16 acres of existing impervious area within the NOI boundaries. Of the 174 BMPs within the UMD database, 101 permitted BMPs were identified to be in passing condition. Although some these facilities are missing documentation, such as maintenance records or as-built plans, they were recorded to qualify for 38.30 ac of baseline credit and 117.75 acres of restoration credit. Verification plans were prepared for 14 facilities this year and as-built documentation for all permitted facilities will be completed before the end of the permit term.

Facilities that qualify for restoration credit, as they were constructed for redevelopment projects, were also identified in the updated database. The baseline assessment is updated annually to reflect the redevelopment restoration credit when the documentation verification for these facilities is complete.

See **Attachment B** for the full Baseline Impervious Area Assessment Report.

Based on 464.16 acres of existing impervious area and 38.30 ac of treatment, 20% of the remaining 425.86 acres of untreated impervious area requires 85.17 acres of restoration.

Table 1: Section I - Impervious Area Restoration Reporting

1. a. Was the impervious area baseline assessment submitted in year 1?
   ☑ Yes ☐ No

   b. If No, describe the status of completing the required information and provide a date at which all information required by MDE will be submitted:

   c. Has the baseline been adjusted since the previous reporting year?

   ☑ Yes ☐ No

2. Complete the information below based on the most recent data:

Total impervious acres of area covered under this permit: 464.16

UMD 459.64 acres + IBBR 4.52 acres

Total impervious acres treated by stormwater water quality best management practices (BMPs): 38.30 UMD 35.99 acres + IBBR 2.31 acres

Total impervious acres treated by BMPs providing partial water quality treatment (multiply acres treated by percent of water quality provided):
12.13 UMD 9.91 acres + IBBR 2.22 acres

Total impervious acres treated by nonstructural practices (i.e., rooftop disconnections, non-rooftop disconnections, or vegetated swales):
0.13 UMD 0.1 acres + IBBR 0.03 acres

Total impervious acres untreated: 425.86

Twenty percent of this total area (this is the restoration requirement):
85.17

Verify that all impervious area draining to BMPs with missing inspection records is not considered treated. Describe how this information was incorporated into the overall analysis:

All BMPs included in the treatment total have proper verification documentation and inspection records supporting that these facilities will provide water quality treatment in their current condition. Impervious area draining to BMPs without as-built plans or proper verification documentation were included in the untreated impervious acres total. Impervious area draining to BMPs reported as failing were also included in the untreated impervious acres total.

3. Has an Impervious Area Restoration Work Plan been developed and submitted to MDE in accordance with Part V.B, Table 1 of the permit or other format?
☑ Yes ☐ No

Has MDE approved the work plan?
☑ Yes ☐ No

If the answer to either question is No, describe the status of submitting (or resubmitting) the work plan to MDE and provide a date at which all outstanding information will be available:

Describe progress made toward restoration planning, design, and construction efforts and describe adaptive management strategies necessary to meet restoration requirements by the end of the permit term:

In year 3, 14 verification surveys were completed for facilities missing as-built plans and 11 as-builts were completed. See Attachment C for copies of the verification plans. Additionally, efforts were continued to establish maintenance and inspection records. This allowed UMD to claim and additional 1.98 acres of treatment toward the baseline and 1.14 acres of restoration credit.

Planning level restoration concepts and cost estimates were developed for six existing facilities. Maintenance items were identified to restore facilities to design conditions. Additional action items were identified for facilities that qualified for possible retrofit. These restoration concepts will be utilized for coordinating with engineers for design.

UMD was awarded grant funds from the Chesapeake Bay Trust Watershed Assistance Grant Program for the design of Phase II of the Campus Creek Restoration and retrofit of the Animal Science dry pond. The design phase for both projects began during Year 3.

4. Has a Restoration Schedule been completed and submitted to MDE in accordance with Part V.B, Table 2 of the permit?
☑ Yes ☐ No

In year 5, has a complete restoration schedule been submitted including a complete list of projects and implementation dates for all BMPs needed to meet the twenty percent restoration requirement?
☐ Yes ☐ No

Are the projected implementation years for completion of all BMPs no later than 2025?
☑ Yes ☐ No

Describe actions planned to provide a complete list of projects in order to achieve compliance by the end of the permit term:

UMD has provided a full list of completed projects that exceed their restoration goal. UMD continues to update this list annually as additional restoration projects expected to be completed by 2025 are planned.

Describe the progress of restoration efforts (attach examples and photos of proposed or completed projects when available):

The Campus Creek Stream Restoration was completed in November 2019. Required documentation for the stream restoration was submitted to MDE in year 1. The stream restoration provides a maximum credit of 105.8 acres. One acre of credit has been shared with SHA, reducing the maximum credit to 104.8 acres. This exceeds UMD restoration requirement of 85.17 acres.

Even though UMD has surpassed their restoration requirement, UMD has continued efforts to identify additional restoration opportunities across campus. This includes analysis of failing BMPs to develop restoration concepts to restore the BMP to design conditions or retrofit to update the facility to current MDE standards, when applicable. Additionally, UMD received funding for the design of Phase 2 of the Campus Creek restoration and the retrofit of Animal Science Pond from the Chesapeake Bay Trust Watershed Assistance Grant Program. These projects combined will provide an estimated additional restoration credit of 53 acres.

5. Has the BMP database been submitted to MDE in Microsoft Excel format in accordance with Appendix B, Tables B.1.a, b, and c?
☑ Yes ☐ No

   Is the database complete?
☐ Yes ☑ No

   If either answer is No, describe efforts underway to complete all data fields, and a date that MDE will receive the required information:

   UMD is continuing efforts to update the database by identifying maintenance and inspection dates and establish a workflow for future updates to these dates as needed.

6. Provide a summary of impervious area restoration activities planned for the next reporting cycle (attach additional information if necessary):

   Establish as-built records and determine impervious area treated for existing facilities that have no design records. Perform repairs on existing facilities that are not functional. Establish routine maintenance reporting and integrate with GIS database. Coordinate with engineering firms to begin design phase of restoration projects. See attached restoration activity schedule.

7. Describe coordination efforts with other agencies regarding the implementation of impervious area restoration activities:

   Currently in discussions with City of College Park for treatment of off-site City drainage that flows onto UMD campus. Also in discussions with MTA for credit sharing of SWM facilities being proposed for Purple Line construction.

8. List the total cost of developing and implementing impervious area restoration program during the permit term:

   Year 1: Consultant cost $168,232
   Year 2: Consultant cost $297,472
   Year 3: Consultant cost $141,278
   Sand Filter Retrofit Design: $73,468

B. Impervious Area Restoration Work Plan

The restoration work plan required to be submitted with the MS4 progress report describes the plans and future activities proposed, as well as progress completed, over the course of the permit term towards meeting the restoration requirement.

Table 2: Restoration Work Plan

Year 1 (FY19)	• Import entire UMD campus properties into GIS mapping. • Delineate all property lines, impervious areas, pervious area surfaces, BMP locations and drainage areas for baseline assessment. • Inspect the entire UMD inventory of SWM BMP facilities and assess for compliance with the MS4 permit requirements. • Research archives at UMD and MDE. Compile all available design plans, as-built plans, stormwater reports and maintenance records for each BMP. • Rate each facility based on the condition, availability of design plans, as-built plans, and maintenance records. • Establish a priority list of BMP repairs based on the lowest cost and greatest potential treatment areas. • Establish a BMP maintenance tracking program. • Program budgets for Year 2 surveys, designs, and repairs.
Year 2 (FY20)	• Complete MS4 BMP database. • Incorporate IBBR impervious and BMP inventory into UMD MS4 BMP database. • Update GIS impervious layer to incorporate completed construction projects. • Begin BMP verification survey for facilities without as-built documentation. • Begin developing a remediation plan or restoration concepts for failing BMPs. • Develop priority ranking for non-permitted facilities to determine if facility should be restored/retrofit and permitted. • Update baseline assessment and restoration goal. • Update restoration activity schedule for completed and proposed projects. • Develop program budgets for Year 3 surveys, designs, and repairs.

Year 3 (FY21)	• Inspect and evaluate treatment for additional BMPs added to the BMP database during the year 2 analysis. • Continue BMP verification survey for facilities without as-built documentation. • Complete inspection for high priority non permitted facilities to identify repair requirements or retrofit opportunities. • Develop priority ranking for permitted facilities to develop refined restoration schedule. • Begin repairs for BMPs requiring remediation. • Begin implementing projects identified on the restoration activity schedule. • Update GIS impervious layer to incorporate completed construction projects. • Update baseline assessment and restoration goal. • Update and submit Urban BMP database and documented maintenance and inspection status for all BMPs. • Update restoration activity schedule on completed and proposed projects. • Develop program budgets for Year 4 surveys, designs, and repairs.
Year 4 (FY22)	• Perform BMP verification survey for IBBR outfall stabilization. • Complete BMP verification survey for facilities without as-built documentation. • Begin restoration efforts for high priority non-permitted BMPs. • Continue repair efforts for facilities requiring remediation. • Continue implementing projects identified in the restoration activity schedule. • Update GIS impervious layer to incorporate completed construction projects. • Update baseline assessment and restoration goal. • Update and submit Urban BMP database and documented maintenance and inspection status for all BMPs. • Update restoration activity schedule on completed and proposed projects. • Develop program budgets for Year 5 designs and repairs.

Year 5 (FY23)	• Continue repair efforts for facilities requiring remediation.

	• Continue implementing projects identified in the restoration activity schedule. • Update GIS impervious layer to incorporate completed construction projects. • Update baseline assessment and restoration goal. • Update and submit Urban BMP database and documented maintenance and inspection status for all BMPs. • Develop program budgets for proposed restoration projects. • Update restoration activity schedule for completed and proposed projects. All proposed projects must be completed no later than 2025.

C. Restoration Activity Schedule

The Restoration Activity Schedule shows the status of projects that will be implemented to meet the MS4 permit restoration requirements. This table shows the proposed list of projects and identifies if they are in planning, construction or completed. The table is updated every year to show the balance towards achieving the restoration requirement.

For the FY2021 report, the Restoration Activity schedule was updated to identify 8 projects planned through 2025 for restoration work to bring these existing BMPs into compliance. Phase 1 on the Campus Creek restoration project (BMP 0249) was completed in October 2019. The restoration of the regional Surface Sand Filter (BMP 0005) is currently under construction.

In August of 2020, UMD applied for design grant with the Chesapeake Bay Trust for the phase 2 Stream Restoration of Campus Creek and restoration of the Animal Sciences Pond (BMP 0021).

Planned restoration activities for 2022 and beyond include maintenance and repair of various existing facilities. A ranking system was developed to help prioritize the facilities based on factors including impervious area treated, cost, accessibility, maintenance, and permitting.

Five (5) additional restoration concept plans were developed for budgeting and planning, so that the university can allocate funding for this work in subsequent years. See **Attachment D** for the plans and cost estimates for these restoration concepts.

Finally, as part of the baseline assessment, legacy projects that qualified for restoration credits were also added to the restoration schedule to account for impervious area credits received to date. The complete schedule is included in **Attachment E**.

Table 3: MS4 Restoration Activity Schedule

Total Acreage (1305); Impervious Acre Baseline (464.16); 20% Restoration Target (85.17 acres)									
Type of Restoration Project	BMP Code	BMP ID	Cost ($K)	Imperv Acres Treated	Imperv Acre Target and Balance	Project Status	Year Complete or Projected Implementation Year (by 2025)	MD Grid Coordinates (Northing/Easting)	
					85.17				
IBBR Outfall Stabilization	OUT	USG19BMP00004		0.5	84.67	C	2006	158456.27	382786.205
Cumberland Green Roof	AGRE	UMCP19BMP0050			84.67	C	2008	147147.68	404856.247
Symons Hall Rain Garden North	MRNG	UMCP19BMP0046			84.67	C	2009	146577.57	405168.754
Symons Hall Rain Garden South	MRNG	UMCP19BMP0047			84.67	C	2009	146570.96	405168.721
Stamp Green Roof West	AGRE	UMCP19BMP0073			84.67	C	2010	146673.19	404758.469
Stamp Green Roof East	AGRE	UMCP19BMP0074			84.67	C	2010	146671.05	404793.625
University House Southern Micro-Bioretention	MMBR	UMCP19BMP0040		0.03	84.64	C	2011	146679.14	404093.23
Denton Courtyard Micro-Bioretention	MMBR	UMCP19BMP0122		0.1	84.54	C	2012	147179.85	404313.093
Woods Hall Bioretention	FBIO	UMCP19BMP0014			84.54	C	2012	146350.84	405006.51
Shuttle Facility Green Roof	AGRE	UMCP19BMP0016		0.11	84.43	C	2012	147510.65	405436.504
Shuttle Facility Green Roof	AGRE	UMCP19BMP0017		0.11	84.32	C	2012	147512.86	405458.48
Shuttle Facility Dry Swale	ODSW	UMCP19BMP0026		1.71	82.61	C	2012	147485.93	405590.453
Heavy Equipment Building Micro-Bioretention	MMBR	UMCP19BMP0055		0.1	82.51	C	2012	147573.67	404943.773
Denton Dining Micro-Bioretention	MMBR	UMCP19BMP0059		0.24	82.27	C	2012	147173.55	404348.385
Denton Quad Micro-Bioretention 3	MMBR	UMCP19BMP0070		0.07	82.20	C	2012	147151.76	404275.044
Physical Science Complex Green Roof	AGRE	UMCP19BMP0078		0.21	81.99	C	2013	147002.04	405068.398
Computer and Space Sciences Green Roof	AGRE	UMCP19BMP0049		0.08	81.91	C	2013	147031.24	405023.817
Prince Frederick Hall Micro-Bioretention Cell 1	MMBR	UMCP19BMP0124		0.17	81.74	C	2014	146101.64	404687.094
Impervious Surface Removal to Pervious 4100 Metzerott Rd	IMPP	UMCP20BMP0288		0.17	81.58	C	2016	148038.42	405387.544
West Side of Edward St. John Green Roof	AGRE	UMCP19BMP0157		0.06	81.52	C	2017	146559.97	405023.747
West Side of Edward St. John Green Roof	AGRE	UMCP19BMP0158		0.06	81.46	C	2017	146560.89	405040.896
Wellness Way Bioretention	MSWB	UMCP19BMP0238			81.46	C	2017	147246.94	405092.956
Impervious Surface Removal to Pervious 4109 Metzerott Rd	IMPP	UMCP20BMP0289		0.03	81.43	C	2017	147899.26	405369.2
Clark Hall Bioretention 1	MMBR	UMCP19BMP0231	6.2	0.33	81.10	C	2017	147129.96	405375.411
Clark Hall Micro-Bioretention 2	MMBR	UMCP19BMP0232		0.29	80.81	C	2017	147109.93	405375.617
M Square SGW 1	MSGW	UMCP20BMP0258		1.86	78.95	C	2018	144408.7	405905.681
M Square SGW 2	MSGW	UMCP20BMP0259		0.72	78.23	C	2018	144567.14	405880.112
M Square MBR1	MMBR	UMCP20BMP0260		0.35	77.88	C	2018	144555.93	406065.15
A.V. Williams Micro-Bioretention	MMBR	UMCP19BMP0152		0.27	77.61	C	2018	146930.84	405581.691
A.V. Williams Micro-Bioretention	MMBR	UMCP19BMP0153		0.14	77.47	C	2018	147007.47	405562.485
A.V. Williams Micro-Bioretention	MMBR	UMCP19BMP0154		0.31	77.16	C	2018	146975.71	405568.772
Brendan Iribe Micro-Bioretention 1	MMBR	UMCP19BMP0241		0.27	76.89	C	2019	146906.29	405596.757
Brendan Iribe Micro-Bioretention 2	MMBR	UMCP19BMP0242		0.32	76.57	C	2019	146855.63	405574.135
Brendan Iribe 3	MSWB	UMCP19BMP0243		0.19	76.38	C	2019	146803.50	405608.07
Brendan Iribe 4	APRP	UMCP19BMP0244		0.15	76.23	C	2019	146849.94	405510.90
Brendan Iribe 5	AGRI	UMCP19BMP0245		0.14	76.09	C	2019	146819.29	405548.239
Campus Creek Stream Restoration Phase 1	STRE	UMCP19BMP0249	1200	104.8	-28.71	C	2019	147429.67	404606.193
Regenerative Step Pool Conveyance	SPSC	UMCP19BMP0250		0.58	-29.29	C	2019	147431.84	404451.931
Regenerative Step Pool Conveyance	SPSC	UMCP20BMP0290		0.31	-29.60	C	2019	147441.85	404475.016
Stormwater Bar	OUT	UMCP20BMP0291		0.13	-29.73	C	2019	147345.11	404978.061
Wooded Hillock Impervious Removal 3	IMPP	UMCP21BMP0296		0.02	-29.75	C	2020	147957.18	404955.17
Wooded Hillock Impervious Removal 2	IMPP	UMCP21BMP0297		0.017	-29.77	C	2020	147940.09	404868.385
Wooded Hillock Impervious Removal 1	IMPP	UMCP21BMP0298		0.05	-29.82	C	2020	147868.97	404758.737
Knight Hall	MRWH	UMCP19BMP0082		0.39	-30.21	C	2020	146527.74	404476.543
Cole Field House Impervious Removal	IMPP	UMCP21BMP0300		2.3	-32.51	C	2021	146705.18	404486.515
4103 Metzerott Rd Impervious Removal	IMPP	UMCP21BMP0299		0.067	-32.58	C	2021	147959.3	405348.539
Prince Frederick Hall Bioretention Cell 2	MMBR	UMCP19BMP0125	45.2	0.3	-32.88	P	2022	146116.11	404734.634
Animal Science pond	PWET	UMCP19BMP0021	330.7	7.23	-40.11	P	2023	147226.59	405331.706
North East corner of Golf Course parking Lot	MRNG	UMCP19BMP0144	6	0.2	-40.31	P	2023	146956.32	404032.549
Lot Three (Guilford Park Bioretention)	FBIO	UMCP19BMP0036	17	1.6	-41.91	P	2024	146322.54	404288.157
Campus Creek Stream Restoration Phase 2	STRE			46	-87.91	P	2025	147351.99	404982.821
Regents Drive Bioretention	FBIO	UMCP19BMP0091	14.6	0.79	-88.70	P	2025	147294.93	405324.85
Northwest corner of Golf Course Parking Lot Rain Garden	MRNG	UMCP19BMP0146	14.5	0.37	-89.07	P	2025	146970.08	403914.01
Southwest corner of Golf Course Parking Lot Rain Garden	MRNG	UMCP19BMP0147	12.5	0.2	-89.27	P	2025	146905.41	403932.995

D. BMP Database Tracking

The data tables specified in the MS4 permit have been completed for all identified BMPs within the permit area. A GIS system was established with these data tables so that the corresponding information can be recorded, updated, and tracked to be associated with an electronically mapped BMP feature.

For year 3, UMD developed and implemented a field inspection app which allows real time updates to the database as inspections are conducted. The database will also store the previous inspection records and maintain a historical account.

See **Attachment F** for the Urban Best Management Practice Database. An electronic version of this information will also be transmitted to MDE.

The university intends to further develop this database and incorporate additional fields as the field inspection tool is used by more contractors and field personnel. Additional information such as cost data, priority updates and maintenance tracking may be added to establish a more adaptive management approach to maintaining the BMPs. It will also provide better data for managing, planning, budgeting and tracking of the UMD BMP inventory.

V. CONCLUSION

The completion of the FY2021 General Discharge Permit #13-SF-5501 provides updates on the progress the University of Maryland, College Park has achieved with the Chesapeake Bay Restoration requirements.

Overall, the university continues to maintain programs related to education, involvement, IDDE, runoff control, stormwater management and pollution prevention related to the MS4 permit.

Although the university has met the Chesapeake Bay Restoration requirements for this permit term, the university continues to progress with documentation, restoration and maintenance of existing stormwater facilities on campus to further improve its stormwater program and to be prepared for the next permit term. The design of Phase 2 of the Campus Creek restoration and the retrofit of Animal Science Pond, funded in part by the Chesapeake Bay Trust Watershed Assistance Grant Program, will provide an additional estimated combined restoration credit of 53 acres.

ATTACHMENT A

BMP Inspection Reports

University of Maryland, College Park

Task 2: Findings and Recommendations Report

Prepared For

Prepared By

Maryland ENVIRONMENTAL SERVICE

September 2021

Table of Contents

Introduction

This report is written by Maryland Environmental Service (MES) for the University of Maryland College Park (UMCP). The purpose of this report is to document the findings and evaluations for the 26 BMPs, shown in Table 1, investigated by MES under Task 2 of Task Order 18. This report also provides maintenance recommendations along with general cost estimates for each BMP. Maps for drainage areas evaluated under this task and a full inspection report for each BMP inspected by MES is provided in the Appendix of this report.

Table 1. Task 2 BMP Summary

BMP ID	BMP Name	BMP Type	Construction Purpose	Drainage Area (ac.)	Impervious Area (ac.)	Status	Estimated Cost to Repair
UMCP20BMP0267	College Park Academy Micro-Bioretention 1	Micro-bioretention	New Development	0.32	0.14	Pass	$450 - $550
UMCP20BMP0268	College Park Academy Micro-Bioretention 2	Micro-bioretention	New Development	0.36	0.27	Pass	$300 - $400
UMCP20BMP0269	College Park Academy Micro-Bioretention 3	Micro-bioretention	New Development	0.44	0.35	Pass	$250 - $350
UMCP20BMP0270	College Park Academy Micro-Bioretention 4	Micro-bioretention	New Development	0.41	0.32	Pass	$300 - $400
UMCP20BMP0271	College Park Academy Micro-Bioretention 5	Micro-bioretention	New Development	0.55	0.42	Pass	$300 - $400
UMCP20BMP0272	College Park Academy Submerged Gravel Wetland 1	Submerged Gravel Wetland	New Development	5.50	1.97	Pass	$1,800 - $2,200
UMCP19BMP0082	Knight Hall	Rainwater Harvesting	Redevelopment	0.45	0.43	Pass	$1,000 - $1,200
UMCP19BMP0243	Brendan Iribe 3	Bio-swale	Redevelopment	0.76	0.19	Pass	No repair required
UMCP19BMP0244	Brendan Iribe 4	Permeable Pavements	Redevelopment	0.14	0.12	Pass	No repair required
UMCP19BMP0245	Brendan Iribe 5	Green Roof - Intensive	Redevelopment	0.12	0.12	Pass	No repair required
UMCP19BMP0042	Wye Oak Building	Micro-bioretention	New Development	0.38	.27	Pass	$500 - $650
UMCP20BMP0273	NOAA Green Roof 1	Green Roof - Extensive	New Development	0.63	0.63	Pass	$1,000 - $1,200
UMCP20BMP0274	NOAA Bioretention	Micro-bioretention	New Development	1.62	1.35	Fail	$17,000 - $20,000
UMCP20BMP0275	NOAA Green Roof 2	Green Roof - Extensive	New Development	0.33	0.33	Pass	$650-$800
UMCP20BMP0276	NOAA WQ Manhole 1	Oil Grit Separator	New Development	1.04	0.41	Pass	No repair required
UMCP20BMP0277	NOAA Underground Cistern	Rainwater Harvesting	New Development	1.04	0.41	Pass	No repair required
UMCP20BMP0278	NOAA WQ Manhole 2	Oil Grit Separator	New Development	0.98	.96	Pass	No repair required
UMCP20BMP0279	NOAA WQ Manhole 3	Oil Grit Separator	New Development	1.69	0.98	Pass	No repair required
UMCP20BMP0280	Severn Building Micro-Bioretention Area	Micro-bioretention	New Development	0.79	0.59	Fail	$13,000 - $16,000
UMCP19BMP0076	Public Health Garden Bioretention	Micro-bioretention	Restoration	1.10	0.62	Pass	$550 - $700
UMCP19BMP0108	Chesapeake Parking Lot East	Underground Filter	New Development	3.90	0.56	Pass	$200 - $250
UMCP19BMP0019	University House Parking Lot	Micro-bioretention	New Development	0.63	0.29	Pass	No repair required
UMCP19BMP0016	Shuttle Facility	Green Roof - Extensive	Redevelopment	0.11	0.11	Pass	No repair required
UMCP19BMP0017	Shuttle Facility	Green Roof - Extensive	Redevelopment	0.11	0.11	Pass	No repair required
UMCP19BMP0231	Clark Hall Bioretention 1	Micro-bioretention	Redevelopment	0.33	0.27	Pass	$1,500 - $1,900
UMCP19BMP0232	Clark Hall Bioretention 2	Micro-bioretention	Redevelopment	0.30	0.21	Pass	$1,000 - $1,250

Findings & Recommendations

UMCP20BMP0267 College Park Academy Micro-Bioretention 1

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but requires minor maintenance. The grading at the inflow is suspected to be causing accumulation prior to water entering the facility. Minor erosion and exposed matting were also observed at the inflow. Minor erosion was present on the north edge of the basin. Leafy debris was observed within the control structure.

MES recommends regrading the inflow to ensure proper flow into facility. Debris should be removed from within inflow riprap and minor erosion should be repaired. Leafy debris should be removed from within the control structure.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.32	0.14	1	0.14

Cost Estimate for Repairs[1]: $450 - $550

UMCP20BMP0268 College Park Academy Micro-Bioretention 2

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but requires minor maintenance. Minor erosion and exposed matting were observed at the inflow. Additionally, minor erosion was present on the northwest end of the basin. Minor debris was observed within the inflow riprap.

MES recommends removing debris from within the inflow riprap. Minor erosion at the inflow and along the basin edge should be repaired.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.36	0.27	1	0.27

Cost Estimate for Repairs[1]: $300 - $400

UMCP20BMP0269 College Park Academy Micro-Bioretention 3

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but requires minor maintenance. Minor erosion and exposed matting were observed at the inflow and at the control structure. Additionally, minor debris was observed within the inflow riprap.

MES recommends removing debris from within the inflow riprap. Minor erosion at the inflow and at the control structure should be repaired.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.44	0.35	1	0.35

Cost Estimate for Repairs[1]: $250 - $350

UMCP20BMP0270 College Park Academy Micro-Bioretention 4

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but requires minor maintenance. Minor erosion and exposed matting were observed at the inflow. Minor sediment accumulation was also observed at the inflow. Additionally, minor channeling was present within the conveyance.

MES recommends removing debris and sediment from within the inflow riprap. Minor erosion at the inflow should be repaired and channeling within the conveyance should be stabilized.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.41	0.32	1	0.32

Cost Estimate for Repairs[1]: $300- $400

UMCP20BMP0271 College Park Academy Micro-Bioretention 5

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but requires minor maintenance. Minor erosion and exposed matting were observed at the inflow. Minor debris was also present at the inflow. Additionally, minor erosion was observed on the northeast side of the basin.

MES recommends removing debris from within the inflow riprap. Minor erosion at the inflow and along the basin edge should be repaired.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.55	0.42	1	0.42

Cost Estimate for Repairs[1]: $300 - $400

UMCP20BMP0272 College Park Academy Submerged Gravel Wetland

The facility is a submerged gravel wetland (SGW) constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the SGW was in good condition but requires minor maintenance. Minor erosion and debris were observed at the north forebay inflow. Minor erosion was also observed on the upstream embankments. Additionally, minor ponding and muck were present within both forebays.

MES recommends repairing erosion at the north forebay inflow and on the embankment. Vegetation should be removed from the inflows. Additionally, the forebay bottoms should be seeded for stabilization and to prevent muck development.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
5.5	1.97	1	1.97

Cost Estimate for Repairs[1]: $1,800 - $2,200

UMCP19BMP0082 Knight Hall

The facility is a rainwater harvesting cistern constructed for redevelopment in 2010. The water stored within the facility is confirmed to be used for irrigation, therefore is eligible for water quality treatment credit. Since the project did not result in a net increase in impervious and the existing impervious was not being treated, treatment provided by the cistern qualifies for restoration credit. MES completed inspection of the facility in July 2021. The facility was not dewatered at the time of inspection but was determined to be in good condition from what could be observed. The water level within the facility was appropriate according to design plans. However, the access manhole does not have a ladder. Therefore, even if the facility was dewatered, entry into the facility could not be completed for inspection.

MES recommends continuing routine maintenance for the facility. Additionally, MES recommends installing manual drain controls for building maintenance and an access ladder for inspection entry.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.45	0.43	0.91	0.39

Cost Estimate for Repairs[1]: $1,000-$1,200 (for ladder rungs, not including installation of manual drain controls)

UMCP19BMP0243 Brendan Iribe 3

The facility is a bioswale constructed for redevelopment in 2019. Since the project did not result in a net increase in impervious and the existing impervious was not being treated, treatment provided by the bioswale qualifies for restoration credit. MES completed inspection of the facility in July 2021. The facility was determined to be in good condition but requires minor maintenance. Overgrown vegetation was observed at both the outfall and downstream.

MES recommends trimming vegetation to ensure the control structure does not become clogged. Vegetation downstream should also be trimmed. Additionally, routine maintenance for the facility should be continued.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.76	0.19	1	0.19

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP19BMP0244 Brendan Iribe 4

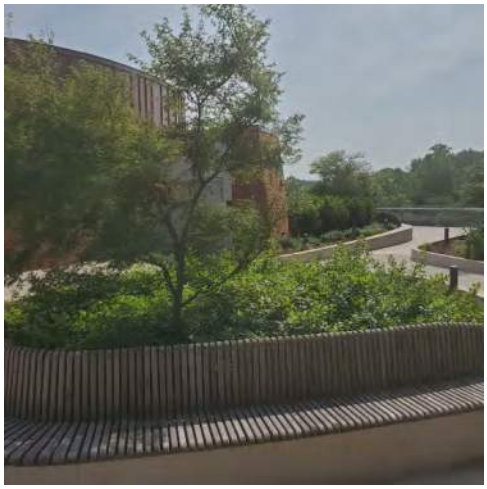
The facility is permeable pavement constructed for redevelopment in 2019. Since the project did not result in a net increase in impervious and the existing impervious was not being treated, treatment provided by the pavers qualifies for restoration credit. MES completed inspection of the facility in July 2021. The facility was determined to be in good condition and only requires continued routine maintenance. Additionally, the overflow inlet should be monitored for debris accumulation to prevent clogging.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.14	0.12	2	0.15

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP19BMP0245 Brendan Iribe 5

The facility is a green roof constructed for redevelopment in 2019. Since the project did not result in a net increase in impervious and the existing impervious was not being treated, treatment provided by the green roof qualifies for restoration credit. MES completed inspection of the facility in July 2021. The facility was determined to be in good condition and only requires continued routine maintenance. No maintenance action items were observed. However, it should be noted card access is required for inspection or maintenance access.



Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.12	0.12	1.7	0.14

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP19BMP0042 Wye Oak

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but requires minor maintenance. Minor erosion and sediment accumulation were observed at the southern inflow. Bare areas were present within the conveyance. Additionally, minor vegetation growth was observed within the outfall riprap.

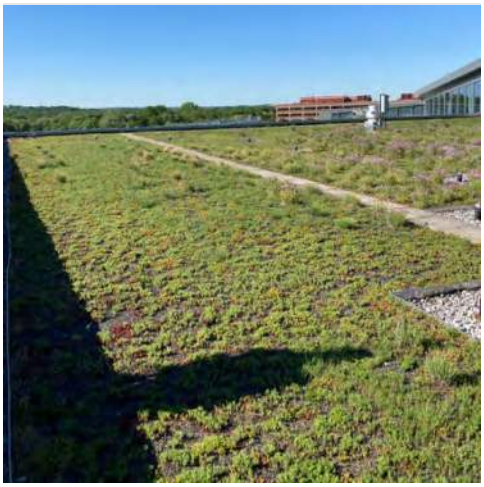
MES recommends mulching bare areas within the basin to stabilize the conveyance. Erosion at the southern inflow should be repaired. Additionally, the southern inflow opening should be cleared of sediment to ensure no blockage of the inflow. Vegetation should also be removed from the outfall riprap.

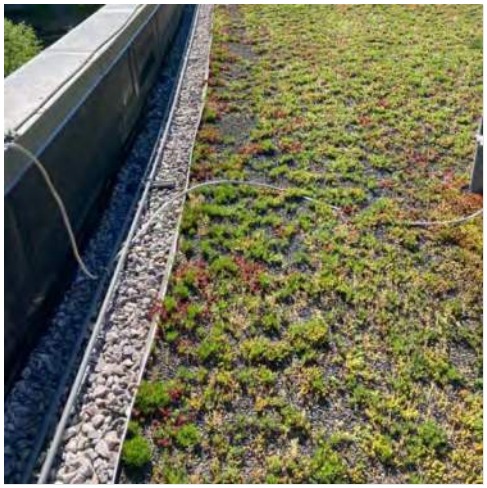
Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.38	0.27	1	0.27

Cost Estimate for Repairs[1]: $500 - $650

UMCP20BMP0273 NOAA Green Roof 1

The facility is a green roof constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in May 2021. Overall, the green roof was in good condition but requires minor maintenance. Minor bare areas were observed within the green roof. MES recommends establishing vegetation within these areas to ensure full water quality treatment is provided.





Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.63	0.63	1	0.63

Cost Estimate for Repairs[1]: $1,000 - $1,200

UMCP20BMP0274 NOAA Bioretention

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in April 2021. The micro-bioretention was determined to be failing and requires major maintenance. Invasive species were present within the rip-rap basin area. The presence of standing water indicates the facility is not draining properly, most likely due to clogged filter media. Additionally, sedimentation within the rip-rap basin area further supports the filter media may be clogged. A small area of erosion was also observed above the outfall endwall.

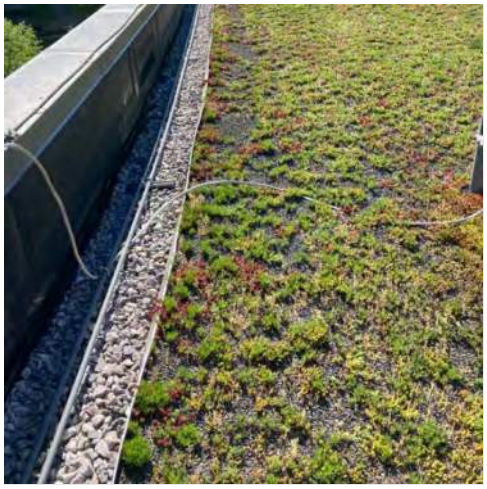
MES recommends conducting an infiltration test to confirm clogging of filter media. First, the facility cleanouts should be cleared. If infiltration is still poor, the first 6-12" of filter media should be removed and replaced with new media. Unplanned vegetation should be removed from within the basin area. Additionally, erosion at the outfall endwall should be repaired.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
1.62	1.35	0.92	1.24

Cost Estimate for Repairs[1]: $17,000 - $20,000

UMCP20BMP0275 NOAA Green Roof 2

The facility is a green roof constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in May 2021. Overall, the green roof was in good condition but requires minor maintenance. Several areas were observed to have minimal to no vegetation growth. MES recommends establishing vegetation within these bare areas to ensure full water quality treatment is provided.



Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.33	0.33	1	0.33

Cost Estimate for Repairs[1]: $650 - $800

UMCP20BMP0276 NOAA WQ Manhole 1

The facility is a water quality (WQ) manhole constructed for new development. WQ manholes act as a form of pretreatment but do not qualify for treatment credit, therefore does not provide treatment toward the baseline. MES completed inspection of the facility in April 2021. Overall, the facility was in good condition and does not require maintenance at this time. However, routine maintenance should be continued to ensure the facility stays within functioning condition.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
1.04	0.41	0	0

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP20BMP0277 NOAA Underground Cistern

The facility is an underground cistern constructed for new development. Cisterns only provide water quantity management, not water quality treatment, therefore the facility does not provide treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the facility was in good condition and only requires routine maintenance. However, approximately 1' of water was present at the bottom of the cistern at the time of inspection. The facility had been dewatered prior to inspection. This water was suspected to be from an observed flow entering the facility outside of a rain event. It was undetermined if this flow was intentionally directed to the facility or if it is a result of damage to the structure. MES recommends investigating the source of the flow to ensure it will not compromise the function of the facility.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
1.04	0.41	0	0

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP20BMP0278 NOAA WQ Manhole 2

The facility is a water quality (WQ) manhole constructed for new development. WQ manholes act as a form of pretreatment but do not qualify for treatment credit, therefore does not provide treatment toward the baseline. MES completed inspection of the facility in April 2021. Overall, the facility was in good condition and does not require maintenance at this time. However, routine maintenance should be continued to ensure the facility stays within functioning condition.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.98	0.96	0	0

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP20BMP0279 NOAA WQ Manhole 3

The facility is a water quality (WQ) manhole constructed for new development. WQ manholes act as a form of pretreatment but do not qualify for treatment credit, therefore does not provide treatment toward the baseline. MES completed inspection of the facility in April 2021. Overall, the facility was in good condition but requires minor maintenance. Minor debris was observed to be accumulated at the bottom of the manhole. This debris should be cleared, and routine maintenance continued to ensure the facility stays within functioning condition.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
1.69	0.98	0	0

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP20BMP0280 Severn Building Micro-Bioretention Area

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the micro-bioretention was in good condition but was determined to be failing due to the grading of the facility. From inspection, it appeared water may flow directly through the facility to the inlet rather than ponding within the micro-bioretention. Therefore, the facility is unable to treat runoff as designed. MES's survey, completed in April 2021, confirmed minimal ponding would occur and that runoff would bypass treatment within the facility. In addition to improper grading, minor sediment and debris was present at the curb cut inflows. There were also minor bare areas within the basin.

MES recommends clearing sediment and debris from the curb cut inflows and seeding bare areas within the basin. MES also recommends excavating and regrading the facility to restore proper ponding. Due to the existing trees within the basin, excavation should be limited to a depth that will not compromise the tree roots, approximately 4". To further increase ponding within the basin, MES proposes raising the invert elevation of the inlet approximately 3". This raised invert would allow for more ponding within the facility while still maintaining sufficient freeboard. Additionally, this modification would not compromise drainage from the parking lot and would still facilitate flow directly into the inlet without causing ponding within the parking lot.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.79	0.59	0.02	0

Cost Estimate for Repairs[1]: $13,000 - $16,000

**It should be noted that while these repairs and estimate have been provided for UMCP's reference, UMCP has expressed this facility will not be modified at this time.*

UMCP19BMP0076 Public Health Garden Bioretention

The facility is a bioretention constructed for restoration in 2013, therefore eligible for restoration credit. MES completed inspection of the facility in June 2021. Overall, the bioretention was in good condition but requires minor maintenance. Minor bare areas were present within the facility basins. Minor debris and vegetation were also observed within the inflow riprap after the second check dam.

MES recommends mulching bare areas within the basins. Debris should be removed from riprap protection and vegetation should be trimmed. Routine maintenance on the bioretention should also be continued to ensure the facility stays within functioning condition.

It should be noted in MES's evaluation that the drainage area within the database was reduced after further investigation. Two trench drains west of the bioretention capture runoff and connect into the storm drain network, bypassing the bioretention. Inlets to the south of the facility were also determined to bypass the facility. Additionally, construction of a new building resulted in modifications to the most southern edge of the drainage area. These updates reduced the drainage area from 4.82 to 1.10 acres, and total impervious from 2.03 to 0.62 acres. However, even with this reduction the facility was still determined to be very undersized, only treating 0.12" of runoff.

The bioretention connects to a rainwater harvesting cistern. Therefore, the bioretention may be sized to only meet pretreatment volumes which is 10% of the required WQv. MES was informed that the facility was previously modified to increase the storage capacity due to flooding occurring in the area. MES's 2021 survey confirmed these modifications increased the provided treatment by approximately 40%. Since this modification, UMCP reported that the flooding is no longer occurring. Therefore, MES does not recommend further modifications to the bioretention at this time to increase storage capacity unless flooding issues return within this area.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
1.10	0.62	0.12	0.07

Cost Estimate for Repairs[1]: $550 - $700

UMCP19BMP0108 Chesapeake Parking Lot East

The facility is an underground sand filter constructed for new development, therefore providing treatment toward the baseline. MES completed inspection of the facility in June 2021. Overall, the sand filter was in good condition but requires minor maintenance. The interior of the facility had no observable deficiencies. Minor erosion was present on the outside of the facility. One of the iron slabs above the sand filter was also displaced.

MES recommends seeding the erosion on the outside of the facility. The structural integrity of the iron slab should be monitored and repaired if determined to be structurally compromised. Routine maintenance on the sand filter should also be continued to ensure the facility stays within functioning condition.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
3.90	0.56	0.47	0.26

Cost Estimate for Repairs[1]: $200 - $250

UMCP19BMP0019 University House Parking Lot

The facility is a micro-bioretention constructed for new development, therefore providing treatment toward the baseline. WBCM completed an inspection of the facility in April 2019 which MES used as reference for evaluation of the facility. WBCM indicated the facility was in good, functioning condition and appears to receive routine maintenance. In their evaluation, WBCM previously indicated the facility does not meet MDE criteria. However, WBCM still included this facility in the baseline treatment. MES suspects this evaluation was due to the facility not having a pretreatment area. However, micro-bioretentions, unlike bioretentions, do not have a pretreatment requirement. Taking this into consideration, along with the facility having available as-builts and an inspection record, MES determined the facility does meet MDE criteria and should remain as providing treatment toward the baseline.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.63	0.29	1	0.29

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP19BMP0016 Shuttle Facility

The facility is a green roof constructed for redevelopment in 2012. The project did not result in a net increase in impervious. However, the existing impervious fell within the drainage area of a dry swale (SWF026) installed in 2010. The dry swale was also constructed for redevelopment and the project did not result in a net increase in impervious, therefore treatment qualified for restoration credit. Since treatment of the impervious is already classified as restoration credit, treatment provided by the green roof would maintain this restoration credit. However, this impervious is no longer counted as being treated by the dry swale to prevent double crediting.

WBCM completed an inspection of the facility in May 2019 which MES used as reference for evaluation of the facility. WBCM indicated the facility was in good, functioning condition. In their evaluation, WBCM indicated the facility meets MDE criteria, but this facility was not previously included in the baseline assessment. It is undetermined why the facility was not previously included within UMCP's restoration credit. Since the facility meets all necessary design criteria and required documentation, MES determined the facility should be counted in the restoration credit.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.11	0.11	1	0.11

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP19BMP0017 Shuttle Facility

The facility is a green roof constructed for redevelopment in 2012. The project did not result in a net increase in impervious. However, the existing impervious fell within the drainage area of a dry swale (SWF026) installed in 2010. The dry swale was also constructed for redevelopment and the project did not result in a net increase in impervious, therefore treatment qualified for restoration credit. Since treatment of the impervious already classified as restoration credit, treatment provided by the green roof would maintain this restoration credit. However, this impervious is no longer counted as being treated by the dry swale to prevent double crediting.

WBCM completed an inspection of the facility in May 2019 which MES used as reference for evaluation of the facility. WBCM indicated the facility was in good, functioning condition. In their evaluation, WBCM indicated the facility meets MDE criteria, but this facility was not previously included in the baseline assessment. It is undetermined why the facility was not previously included within UMCP's restoration credit. Since the facility meets all necessary design criteria and required documentation, MES determined the facility should be counted in the restoration credit.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.11	0.11	1	0.11

Cost Estimate for Repairs[1]: Repair not required at this time

UMCP19BMP0231 Clark Hall Bioretention 1

The facility is a micro-bioretention constructed for redevelopment in 2017. Since the project did not result in a net increase in impervious and the existing impervious was not being treated, treatment provided by the micro-bioretention qualifies for restoration credit. WBCM completed an inspection of the facility in June 2019 which MES used as reference for evaluation of the facility. WBCM indicated the facility was in fair condition. Noted deficiencies were the presence of trash and weeds within the basin. Additionally, water was present within the underdrain at the time of inspection. However, WBCM did not report any standing water within the facility, indicating a possible clog may be present within the underdrain, not the filter media. Therefore, the micro-bioretention qualifies as passing with minor maintenance needed.

In their evaluation, WBCM indicated the facility does not meet MDE criteria, therefore this facility was not previously included in the baseline assessment. MES suspects this evaluation was due to the facility not having a pretreatment area. However, micro-bioretentions, unlike bioretentions, do not have a pretreatment requirement. Taking this into consideration, along with the facility having available as-builts and an inspection record, MES determined treatment provided by the facility should be counted in toward UMCP's restoration credit. Trash and weeds should be removed from the facility and planned vegetation should be trimmed as routine maintenance. The underdrain should be cleared for potential clogging.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.33	0.27	1.96	0.33

Cost Estimate for Repairs[1]: $1,500 - $1,900

UMCP19BMP0232 Clark Hall Bioretention 2

The facility is a micro-bioretention constructed for redevelopment in 2017. Since the project did not result in a net increase in impervious and the existing impervious was not being treated, treatment provided by the micro-bioretention qualifies for restoration credit. WBCM completed an inspection of the facility in June 2019 which MES used as reference for evaluation of the facility. WBCM indicated the facility was in fair condition. Noted deficiencies were the presence of trash and weeds within the basin, but the facility appeared to be functioning. Additionally, WBCM observed 6" of water within the control structure. This is consistent with design as there is approximately a 6" difference from the bottom of the inlet to the 15" RCP invert out elevation. Therefore, the micro-bioretention qualifies as passing with minor maintenance.

In their evaluation, WBCM indicated the facility does not meet MDE criteria, therefore this facility was not previously included in the baseline assessment. MES suspects this evaluation was due to the facility not having a pretreatment area. However, micro-bioretentions, unlike bioretentions, do not have a pretreatment requirement. Taking this into consideration, along with the facility having available as-builts and an inspection record, MES determined treatment provided by the facility should be counted in toward UMCP's restoration credit. Trash and weeds should be removed from the facility and planned vegetation should be trimmed as routine maintenance.

Drainage Area (ac.)	Impervious (ac.)	Pe (in.)	Treatment credit (ac.)
0.30	0.21	2.6	0.29

Cost Estimate for Repairs[1]: $1,000 - $1,250

[1] Estimate derived using SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available

Appendix A. Drainage Area Maps

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0267

BMP Type: Micro-Bioretention

Drainage Area: 0.32 ac

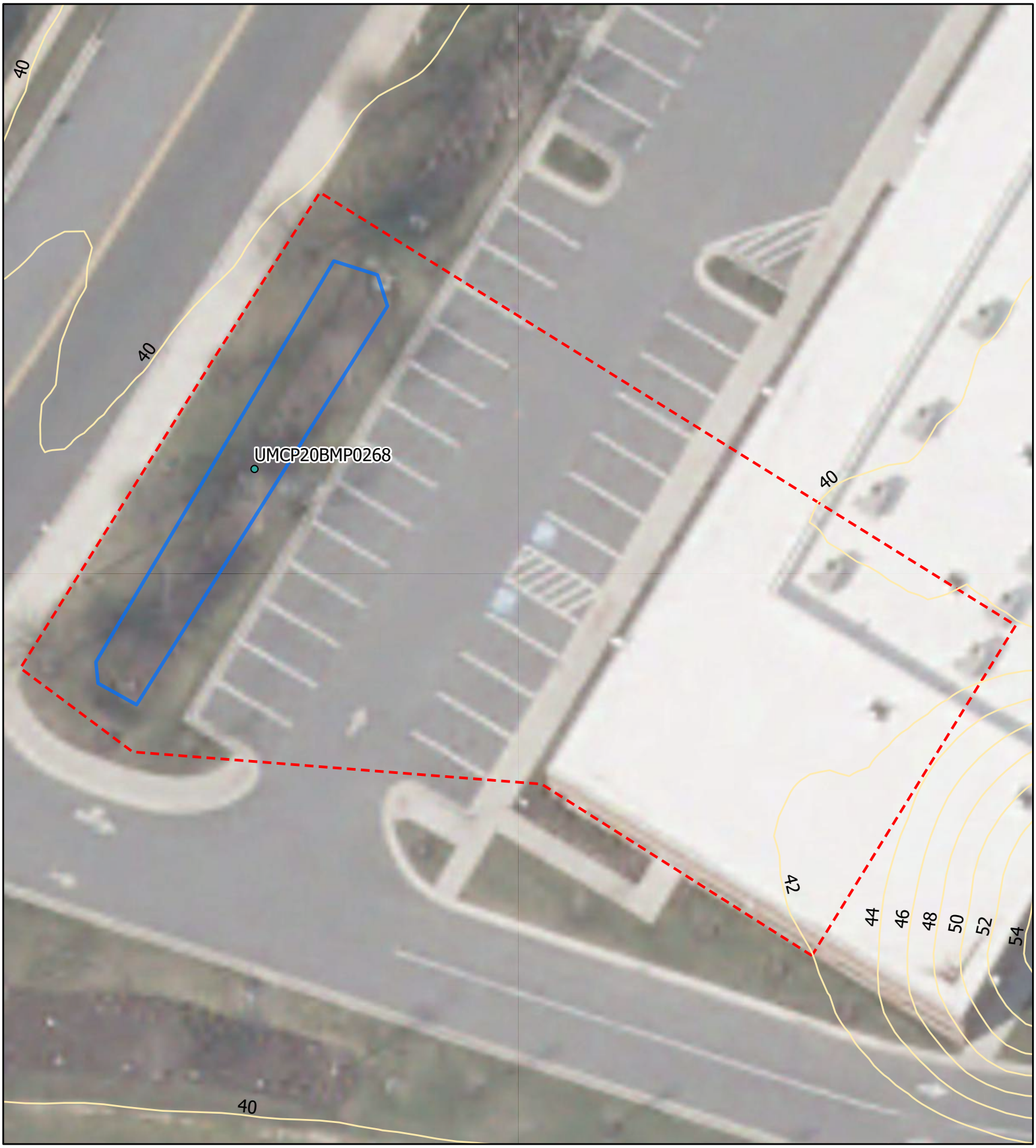
Impervious Area: 0.14 ac

0 15 30 60 Feet

N

Storm Manhole

Outfall



MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0268

BMP Type: Micro-Bioretention

Drainage Area: 0.36 ac

Impervious Area: 0.27 ac

0 15 30 60 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0269

BMP Type: Micro-Bioretention

Drainage Area: 0.44 ac

Impervious Area: 0.35 ac

0 15 30 60 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0270

BMP Type: Micro-Bioretention

Drainage Area: 0.41 ac

Impervious Area: 0.32 ac

0 15 30 60 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0271

BMP Type: Micro-Bioretention

Drainage Area: 0.55 ac

Impervious Area: 0.42 ac

0 15 30 60 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0272

BMP Type: Submerged Gravel Wetland

Drainage Area: 5.50 ac

Impervious Area: 1.97 ac

0 60 120 240 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0273

BMP Type: Green Roof - Extensive

Drainage Area: 0.63 ac

Impervious Area: 0.63 ac

0 30 60 120 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0274

BMP Type: Bioretention

Drainage Area: 1.62 ac

Impervious Area: 1.35 ac

0 40 80 160 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0275

BMP Type: Green Roof - Extensive

Drainage Area: 0.33 ac

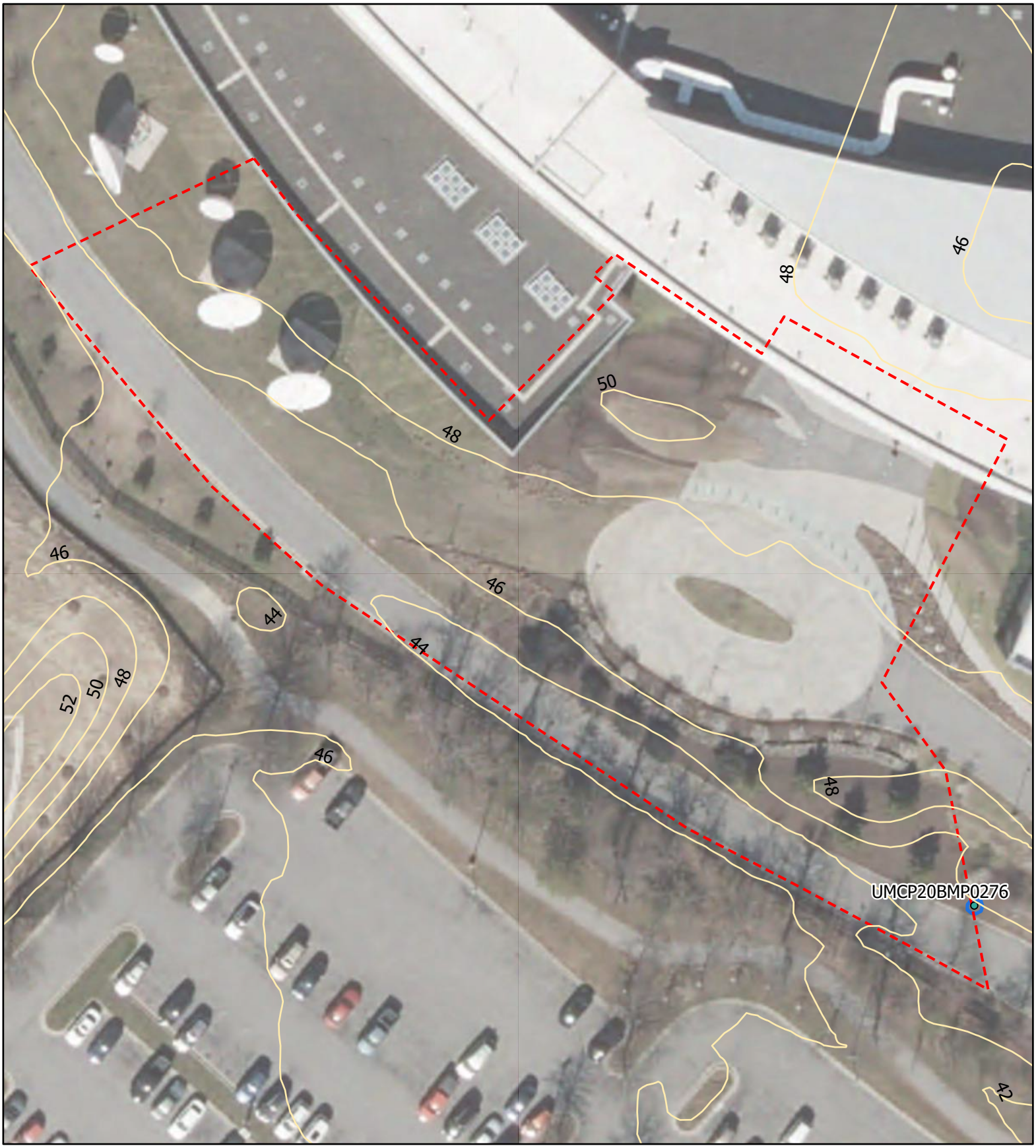
Impervious Area: 0.33 ac

0 20 40 80 Feet

N

Storm Manhole

Outfall



MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0276

BMP Type: Oil Grit Separator

Drainage Area: 1.04 ac

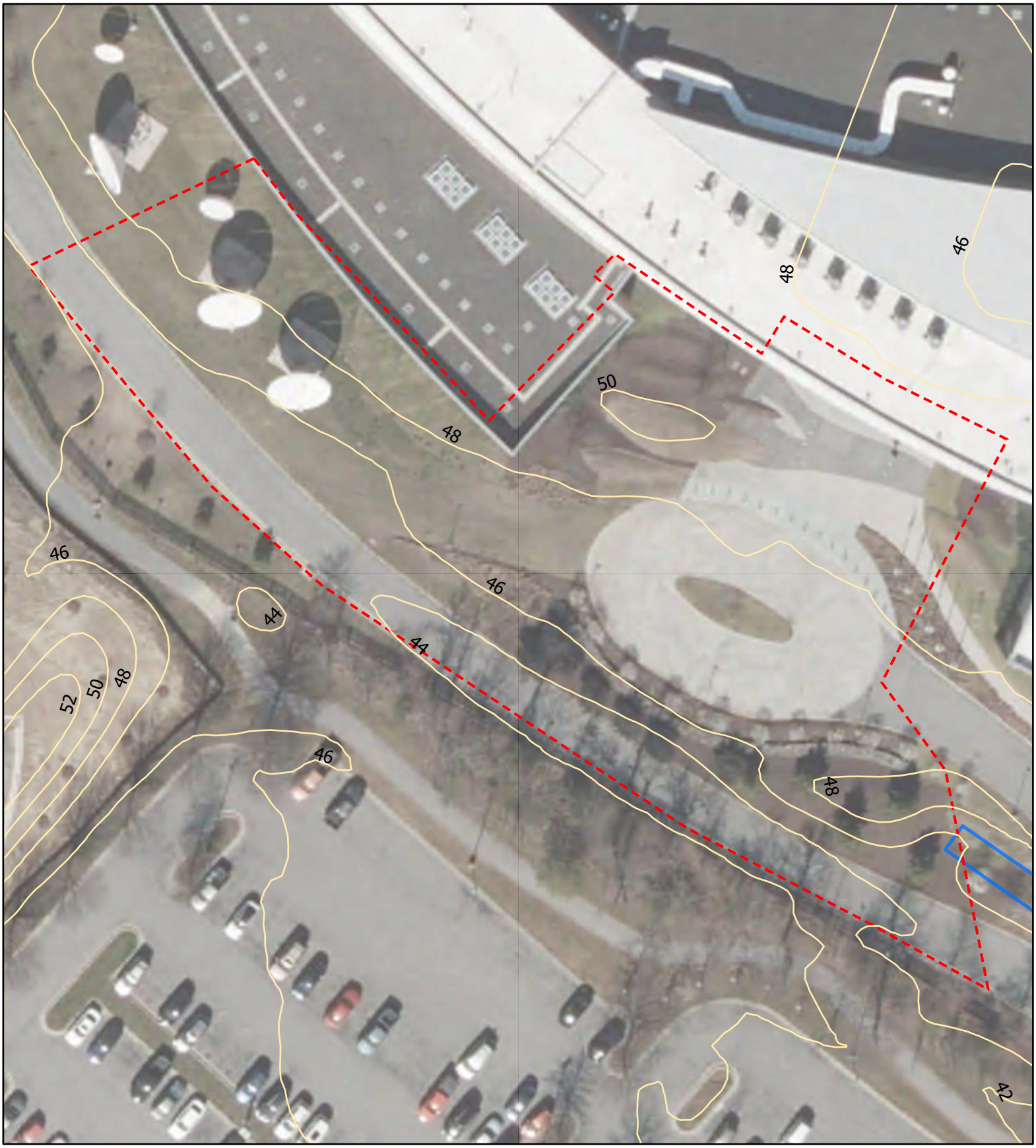
Impervious Area: 0.41 ac

0 30 60 120 Feet

N

Storm Manhole

Outfall



MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0277

BMP Type: Rainwater Harvesting

Drainage Area: 1.04 ac

Impervious Area: 0.41 ac

0 30 60 120 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0278

BMP Type: Oil Grit Separator

Drainage Area: 0.98 ac

Impervious Area: 0.96 ac

0 25 50 100 Feet

N

Storm Manhole

Outfall

MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0279

BMP Type: Oil Grit Separator

Drainage Area: 1.69 ac

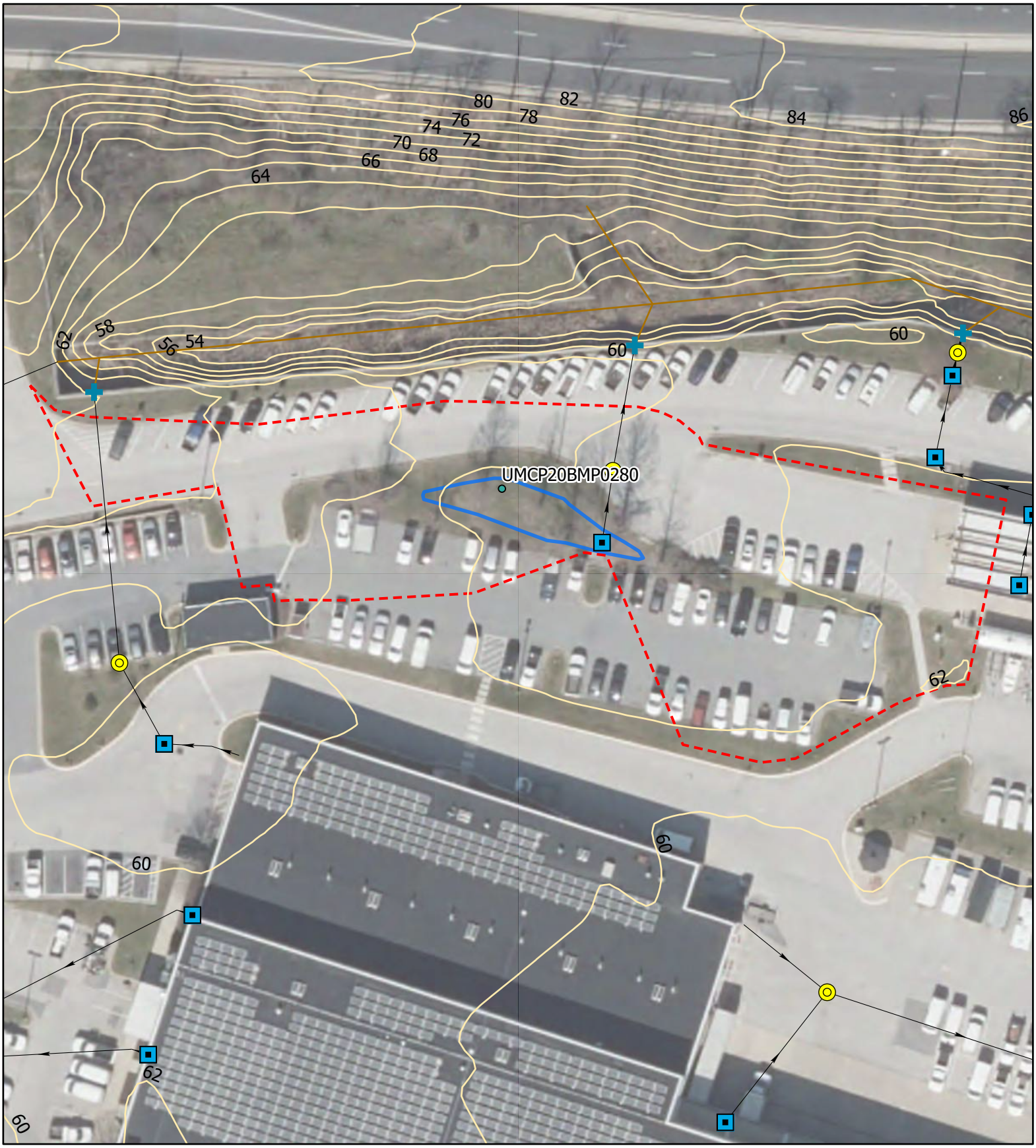
Impervious Area: 0.98 ac

0 30 60 120 Feet

N

Storm Manhole

Outfall



MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP20BMP0280

BMP Type: Micro-Bioretention

Drainage Area: 0.59 ac

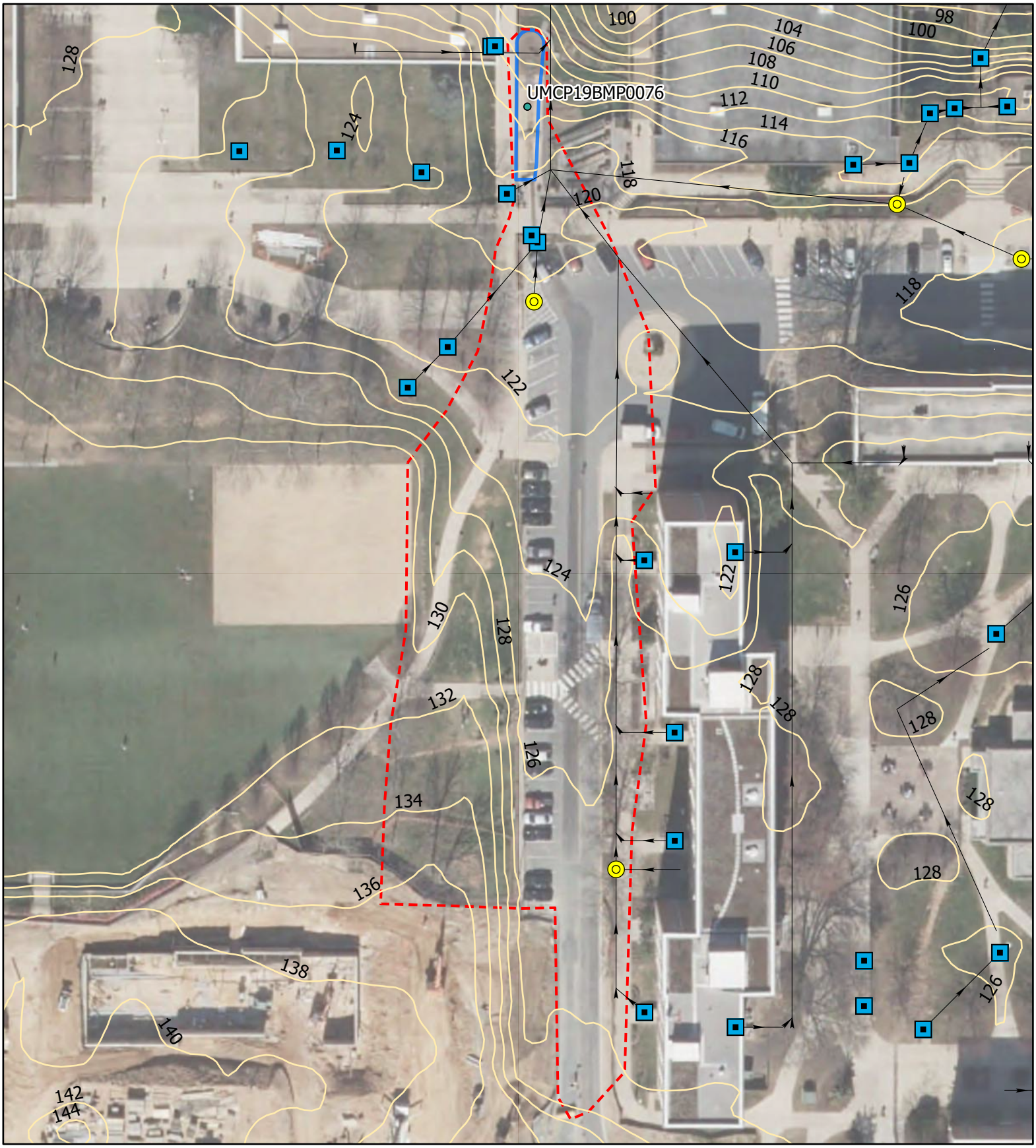
Impervious Area: 0.75 ac

0 35 70 140 Feet

N

Storm Manhole

Outfall



MARYLAND ENVIRONMENTAL SERVICE

BMP Drainage Area Map

BMP ID: UMCP19BMP0076

BMP Type: Bioretention

Drainage Area: 1.10 ac

Impervious Area: 0.62 ac

0 40 80 160 Feet

N

Storm Manhole

Outfall

Appendix B. BMP Inspections Reports

UMCP20BMP0267 / 16-SF-0261 / College Park Academy Micro-Bioretention 1

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 1:37 PM	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0267	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Grading at inflow causing accumulation prior to water entering facility. Minor erosion and exposed matting at inflow. Minor erosion north edge of basin. Leafy debris within control structure.
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Grading at inflow causing accumulation prior to water flowing into facility. Sediment accumulation, minor erosion and exposed matting.
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:** Leafy debris within control structure
- **Principal Spillway –** Good
- **Spillway Outfall –** Not rated

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Regrade inflow. Remove debris and repair erosion at inflow. Repair erosion north edge of basin. Clear debris control structure.

Additional Photos

Control Structure

Erosion

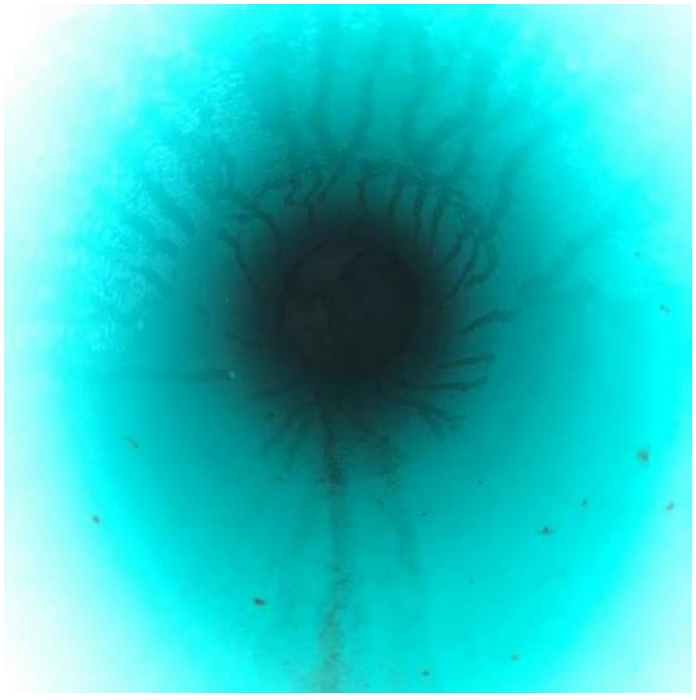
Principal Spillway

Inflow

Inflow Grading

Cleanouts

Embankment



Cleanout Interior

UMCP20BMP0268 / 16-SF-0261 / College Park Academy Micro-Bioretention 2

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 1:08 PM	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0268	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Minor erosion and debris at inflow. Exposed matting at inflow. Minor erosion north west end of basin.
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Minor debris inflow riprap. Minor erosion. Exposed matting.
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Not Rated

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Cover exposed matting. Repair erosion. Remove debris at inflow.

Additional Photos

Control Structure

Erosion Basin

Principal Spillway

Inflow

Erosion Inflow

Exposed Matting Debris Inflow

Embankment

UMCP20BMP0269 / 16-SF-0261 / College Park Academy Micro-Bioretention 3

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 1:17 PM	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0269	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Minor erosion, debris and exposed matting at inflow. Exposed matting at control structure.
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**: Minor debris, erosion and exposed matting at inflow.
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:** Exposed matting at structure
- **Principal Spillway –** Good
- **Spillway Outfall –** Not Rated

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Repair erosion and exposed matting at inflow and control structure.

Additional Photos

Control Structure

Exposed Matting Control Structure

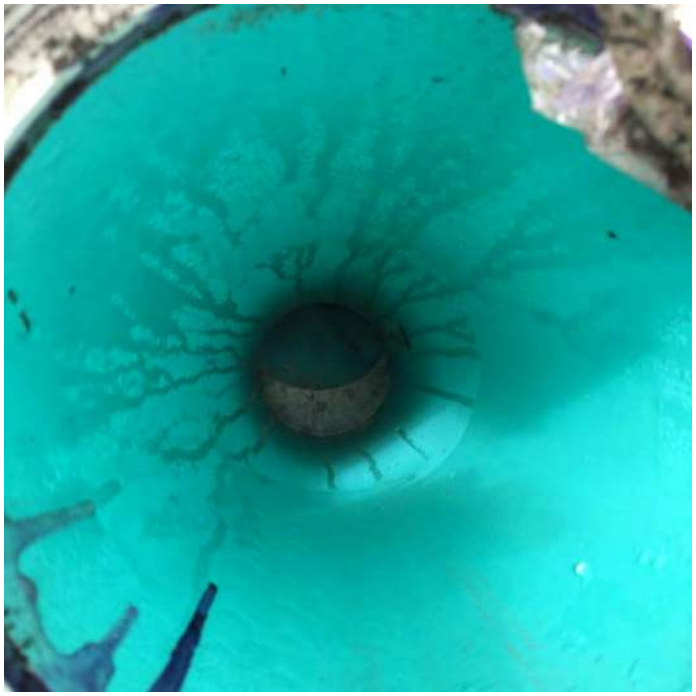
Principal Spillway

Erosion Inflow

Exposed Matting Debris Inflow

Cleanout

Embankment



Cleanout Interior

UMCP20BMP0270 / 16-SF-0261 / College Park Academy Micro-Bioretention 4

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 1:23 PM	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0270	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Minor erosion, sediment and exposed matting at inflow. Minor channeling within conveyance.
Maintenance Level:	Minor Maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Minor erosion, sediment and exposed matting at inflow.
- **Forebay –** N/A
- **Conveyance Stability -** Fair
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible
- **Other repair items:** Minor channeling within conveyance

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Principal Spillway –** Good
- **Spillway Outfall –** N/A

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Stabilize channeling within conveyance. Remove debris and sediment at inflow. Repair erosion and exposed matting at inflow.

Additional Photos

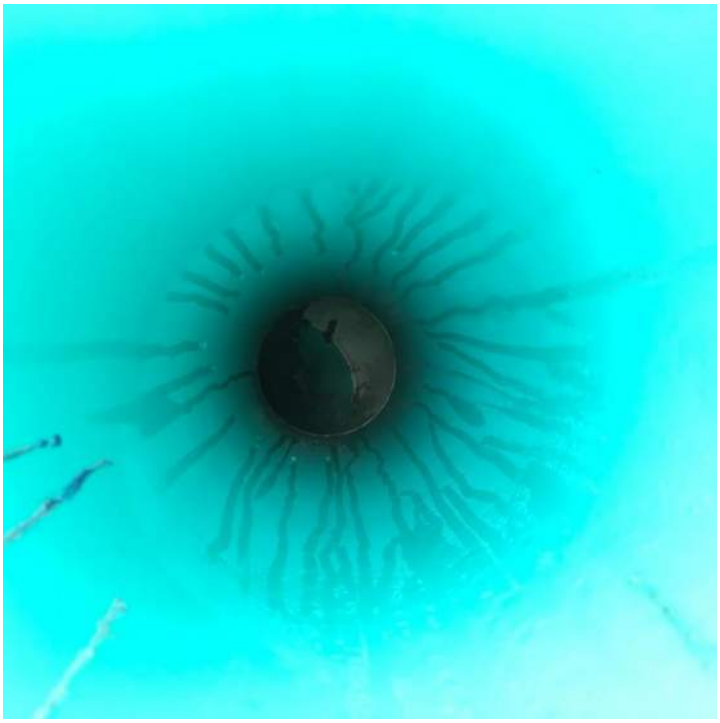
Cleanout

Channeling Conveyance

Principal Spillway

Embankment

Debris Inflow



Cleanout Interior

UMCP20BMP0271 / 16-SF-0261 / College Park Academy Micro-Bioretention 5

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 01:29 pm	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0271	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Minor debris, erosion and exposed matting at inflows. Minor erosion no north east side of basin.
Maintenance Level:	Minor Maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Minor debris, erosion and exposed matting at inflows.
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** N/A

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Remove debris at inflows. Repair erosion and exposed matting at inflows. Repair erosion northeast end of basin.

Additional Photos

Embankment

Control Structure

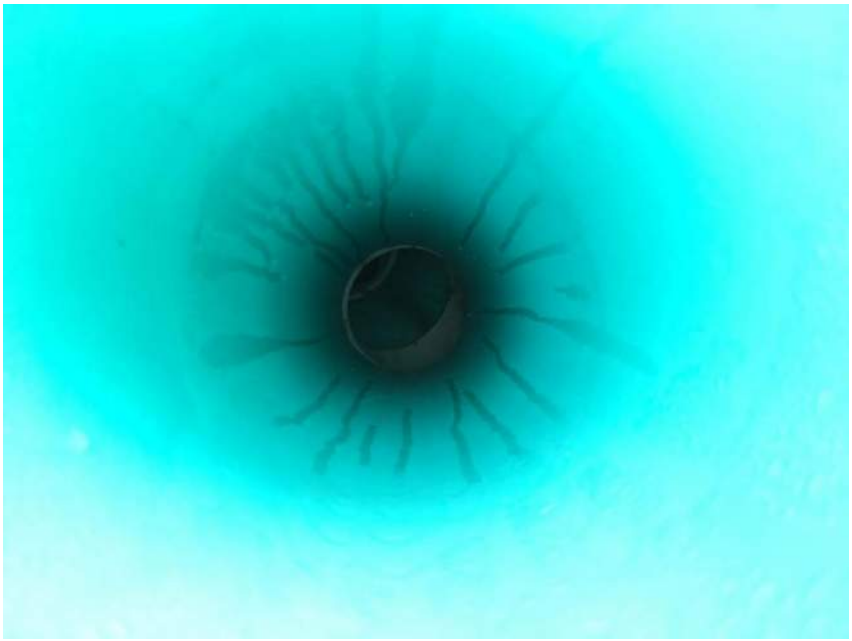
Principal Spillway

Inflow A

Erosion

Cleanouts

Inflow B



Cleanout Interior

UMCP20BMP0272 / 16-SF-0261 / College Park Academy Submerged Gravel Wetland 1

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 1:23 PM	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0272	**Inspection Firm**	MES
BMP Type:	Submerged Gravel Wetland	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Minor erosion and debris north forebay inflow. Minor erosion upstream embankments. Minor ponding and muck within both forebays.
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Minor erosion, debris, vegetation north forebay inflow
- **Forebay –** Fair
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Embankment

- **Embankment Cover –** Fair
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:** Minor erosion upstream embankment forebay and basin

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Not rated

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Repair erosion at inflows and in embankments. Remove vegetation from inflows. Seed forebay bottoms.

Additional Photos

South Forebay

North Forebay

Inflow A

Inflow B

Inflow C

Principal Spillway A

Principal Spillway B

Erosion South Forebay

Control Structure A

Control Structure B

Embankment Erosion A

Embankment Erosion B

North Forebay Weir

Ponding North Forebay

Erosion Vegetation Inflow

Inflow Sheetflow

UMCP19BMP0082 / 08-SF-0085 / Knight Hall

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	July 15, 2021, 2:45 PM	**Inspector Initials**	SAL, BC
BMP ID	UMCP19BMP0082	**Inspection Firm**	MES
BMP Type:	Rainwater Harvesting	**Underground BMP?**	Yes
BMP Status:	Pass	**Overall Inspection Comment**	4 feet of ponding within structure. Uncertain if this is designed depth or ponding.
Maintenance Level:	Routine maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Poor
- **Debris & Sediment -** Good
- **Vegetation –** N/A
- **BMP Contamination -** Good
- **General Site Conditions Comments:** Single entrance manhole without access ladder, 4 of standing water within facility
- **Inflow Condition –** Not rated
- **Inflow Comments**: Unable to access inflow due to standing water
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Good
- **Downstream Condition Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Fair / **Water Depth –** 4 ft
- **Treatment Area Comments**:
- **Low Flow Orifice –** Not rated
- **Outlet / Control Structure –** Not rated
- **Control Structure Comments:** Unable to confirm low flow, unable to confirm control structure
- **Principal Spillway –** Not rated
- **Spillway Outfall –** Not rated

BMP Status – Pass

Maintenance Level – Routine Maintenance (Only needs routine maintenance)

Maintenance & Remediation Recommendations

Install manual drain controls for building maintenance, install access ladder

Additional Photos

Entrance

Ponding Depth

UMCP20BMP0243 / 16-SF-0064 / Brendan Iribe 3

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	July 15, 2021 10:45 AM	**Inspector Initials**	SAL, BC, OKB, DCH
BMP ID	UMCP20BMP0243	**Inspection Firm**	MES
BMP Type:	Bioswale	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overgrown vegetation at overflow structure and downstream
Maintenance Level:	Minor maintenance		

Overall Photo

Site Conditions

- **BMP Access -** God
- **Debris & Sediment -** Good
- **Vegetation –** Fair
- **BMP Contamination -** Good
- **General Site Conditions Comments:** Overgrown vegetation at control structure
- **Inflow Condition –** Good
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** N/A

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft
- **Low Flow Orifice –** N/A
- **Outlet / Control Structure –** Good
- **Principal Spillway –** Good
- **Spillway Outfall –** Good

BMP Status – Pass

Maintenance Level – Minor maintenance (Use of hand equipment for repairs)

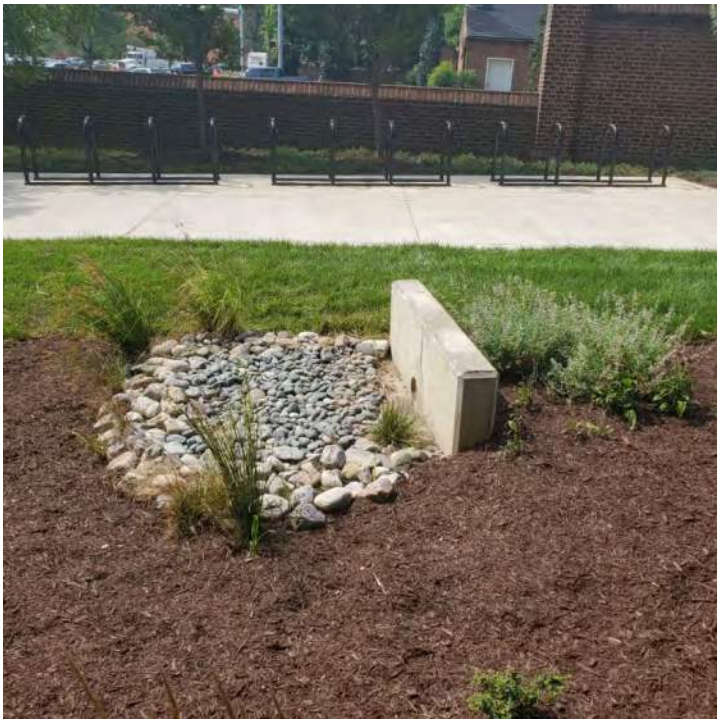
Maintenance & Remediation Recommendations – Control vegetation to ensure control structure does not become clogged

Additional Photos

Overall C

Cleanout

Conveyance

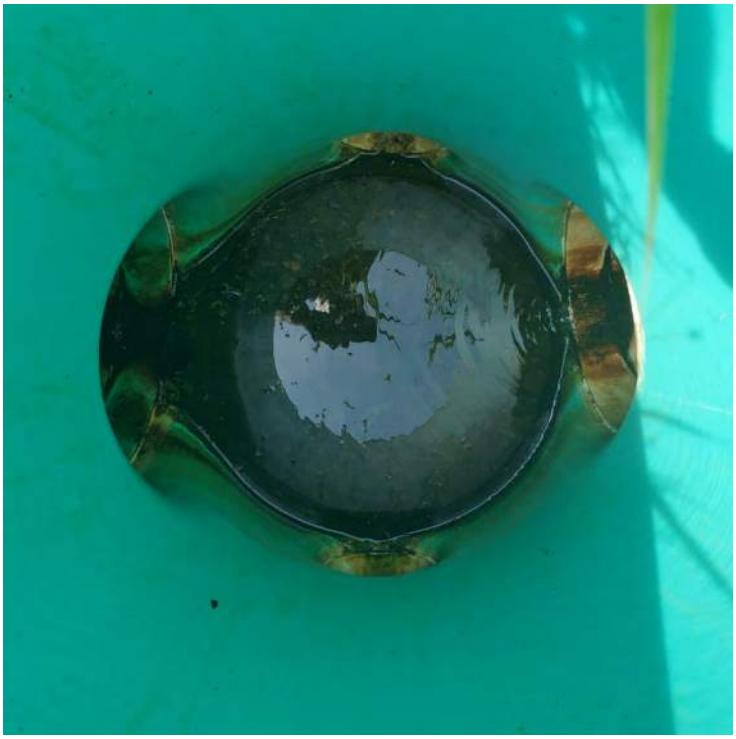


Inflow A

Inflow B

Overflow

Overgrown Vegetation



Principal Spillway

UMCP20BMP0244 / 16-SF-0064 / Brendan Iribe 4

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	July 15, 2021,	**Inspector Initials**	SAL, BC, OKB, DCH
BMP ID	UMCP20BMP0244	**Inspection Firm**	MES
BMP Type:	Permeable pavements	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	BMP in good condition, inflation test in field confirms acceptable rates
Maintenance Level:	Routine maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation –** N/A
- **BMP Contamination -** Good
- **Inflow Condition –** N/A
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** N/A

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft
- **Low Flow Orifice –** N/A
- **Outlet / Control Structure –** Good
- **Principal Spillway –** Good
- **Spillway Outfall –** Good

BMP Status – Pass

Maintenance Level – Routine maintenance (only needs routine maintenance)

Maintenance & Remediation Recommendations – Continue routine cleaning, monitor debris accumulation at overflow inlet

Additional Photos

Cleanout A

Cleanout B

Overflow

UMCP20BMP0245 / 16-SF-0064 / Brendan Iribe 4

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 15, 2021, 11:00 AM	**Inspector Initials**	SAL, BC, OKB, DCH
BMP ID	UMCP20BMP0245	**Inspection Firm**	MES
BMP Type:	Green Roof- Intensive	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	BMP in good condition
Maintenance Level:	Routine maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Fair
- **Debris & Sediment -** Good
- **Vegetation –** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:** Card access required for inspection or maintenance
- **Inflow Condition –** N/A
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** N/A

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft
- **Low Flow Orifice –** N/A
- **Outlet / Control Structure –** Good
- **Principal Spillway –** Good
- **Spillway Outfall –** N/A

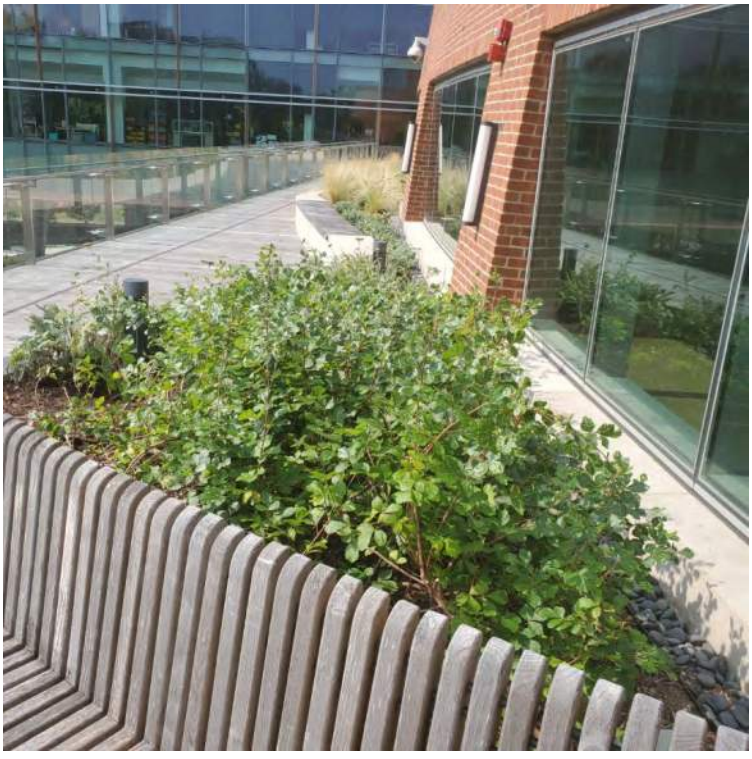
BMP Status – Pass

Maintenance Level – Routine maintenance (only needs routine maintenance)

Maintenance & Remediation Recommendations – Continue routine maintenance

Additional Photos

Overall C



Overall D

Overall E

Overflow A

Overflow B

Overflow C

UMCP19BMP0042 / 13-SF-5501/ Wye Oak Building

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 10:00 AM	**Inspector Initials**	KR, DH
BMP ID	UMCP19BMP0042	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Bare areas within conveyance. Minor erosion and sediment accumulation at south inflow. Minor vegetation growth outfall riprap.
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Fair
- **Vegetation -** Good
- **BMP Contamination -** Good
- **Other Repair Items -** Minor leafy debris accumulation within conveyance.
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Minor erosion and sediment accumulation south inflow.
- **Forebay –** N/A
- **Conveyance Stability -** Fair
- **Downstream Condition –** Good
- **Downstream Condition Comments:** Downstream not accessible
- **Other Repair Items:** Bare areas within conveyance.

Embankment

- **Embankment Cover –** N/A
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall -** Good

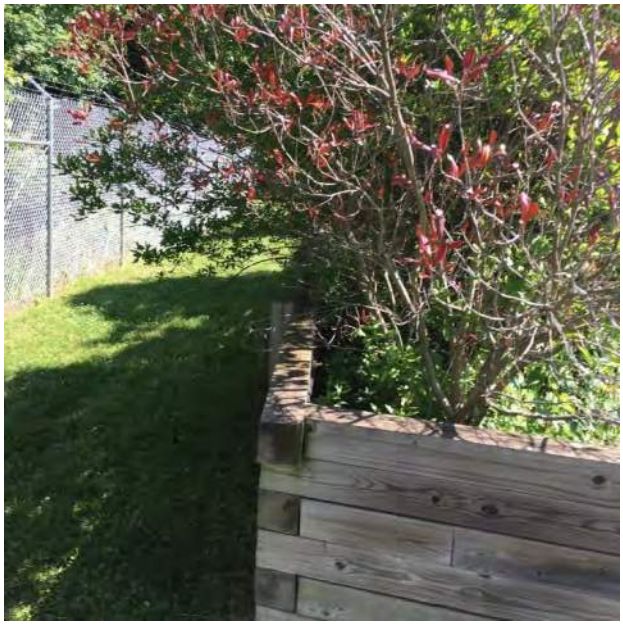
BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Remove vegetation outfall riprap. Remulch bare areas conveyance. Regrade south inflow. Trim vegetation and remove leafy debris from basin.

Additional Photos



Embankment

Principal Spillway

Outfall

Erosion Conveyance

Inflow A

Inflow B

Cleanouts

Control Structure

Overall C

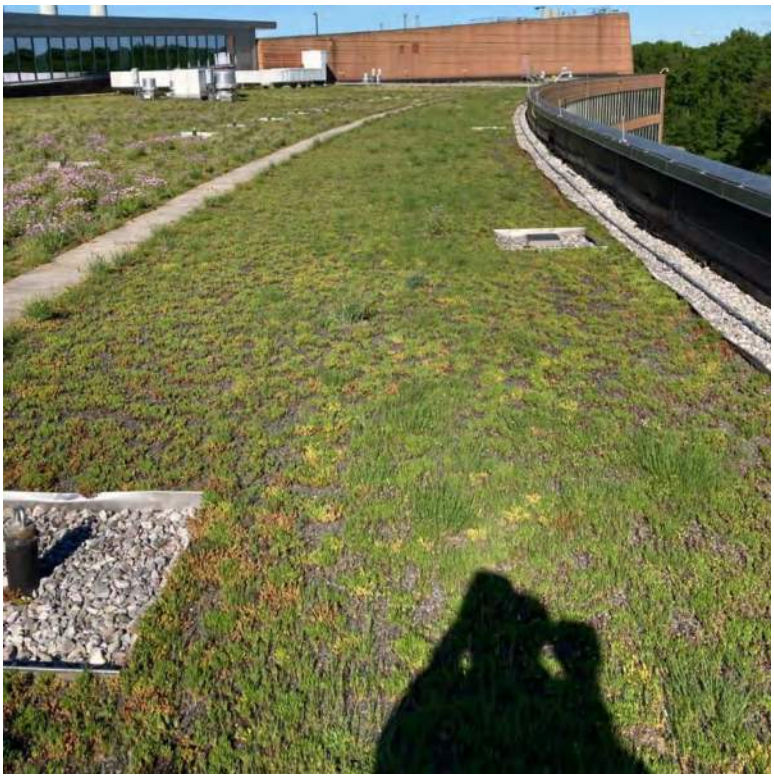
UMCP20BMP0273 / NOAA Green Roof 1

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	May 6, 2021	**Inspector Initials**	BC,KR
BMP ID	UMCP20BMP0273	**Inspection Firm**	MES
BMP Type:	Green Roof - Extensive	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Minor bare areas.
Maintenance Level:	Minor Maintenance		

Overall Photo



Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**:
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Not Rated

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Continue routine maintenance. Establish vegetation within bare areas.

Additional Photos

Overall C

Erosion A

Erosion B

Overflow

UMCP20BMP0274 / NOAA Bioretention
Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	Apr 30, 2021, 11:25 AM	**Inspector Initials**	TR, BC
BMP ID	UMCP20BMP0274	**Inspection Firm**	MES
BMP Type:	Bioretention	**Underground BMP?**	No
BMP Status:	Fail	Overall Inspection Comment	Invasive species in rip-rap basin area. Clogged media evidenced by standing water and visible sediment at riprap surface
Maintenance Level:	Major Maintenance (Use of Heavy Machinery for Repairs)		

Overall Photo

Site Conditions

- **BMP Access –** Poor
- **Access Comment –** Glass barrier surrounding BMP.
- **Debris & Sediment -** Fair
- **Vegetation –** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:** Excess sediment and debris in rip rap area of basin
- **Other Repair Comments:** Rip rap area holding water
- **Inflow Condition -** Good
- **Inflow Comments**:
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Good
- **Downstream Condition Comments:** Small area of erosion above outfall end wall

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Poor / **Water Depth –** 0.5 ft
- **Treatment Area Comments**: Rip rap of basin holding water
- **Other Repair Items:** Remove sediment and debris. Vacuum/flush cleanout
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Other Repair Items –** Remove woody vegetation around riser
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Good

BMP Status – Fail

Maintenance Level – Major Maintenance (Use of Heavy Machinery for Repairs)

Maintenance & Remediation Recommendations

Remove invasives, flush/vacuum cleanout, remove riprap and sediment, replace media/riprap if needed

Additional Photos

Inflow

Excessive Ponding

Control Structure

Outfall

Downstream Condition

Erosion Outfall Endwall

Principal Spillway

UMCP20BMP0275 / NOAA Green Roof 2

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	May 6, 2021	**Inspector Initials**	BC,KR
BMP ID	UMCP20BMP0275	**Inspection Firm**	MES
BMP Type:	Green Roof - Extensive	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Overall BMP in good condition. Several large areas with minimal vegetation growth.
Maintenance Level:	Minor Maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Fair
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**:
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Not Rated

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Continue routine maintenance. Establish vegetation within bare areas.

Additional Photos

Overall C

Erosion A

Erosion B

Overflow A

Overflow B

UMCP20BMP0276 / NOAA WQ Manhole 1

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	Apr 30, 2021, 12:52 PM	**Inspector Initials**	TR, BC
BMP ID	UMCP20BMP0276	**Inspection Firm**	MES
BMP Type:	Oil Grit Separator	**Underground BMP?**	Yes
BMP Status:	Pass	**Overall Inspection Comment**	BMP in good condition
Maintenance Level:	No Maintenance Needed		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation –** N/A
- **BMP Contamination -** Fair
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**:
- **Forebay –** N/A
- **Conveyance Stability –** N/A
- **Downstream Condition –** N/A
- **Downstream Condition Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 6.1 ft
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** N/A
- **Spillway Outfall –** N/A

BMP Status – Pass

Maintenance Level – No Maintenance Needed

Maintenance & Remediation Recommendations

Continue routine maintenance and inspection

UMCP20BMP0277 / NOAA Underground Cistern

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 17, 2021, 10:48 AM	**Inspector Initials**	DH, BC, GS
BMP ID	UMCP20BMP0277	**Inspection Firm**	MES
BMP Type:	Rainwater Harvesting	**Underground BMP?**	Yes
BMP Status:	Pass	**Overall Inspection Comment**	Unknown inflow during dry weather conditions
Maintenance Level:	Routine maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Fair
- **Debris & Sediment -** Good
- **Vegetation –** N/A
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition –** Good
- **Inflow Comments**:
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Unable to access downstream

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft
- **Treatment Area Comments**:
- **Low Flow Orifice –** N/A
- **Outlet / Control Structure –** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Not rated

BMP Status – Pass

Maintenance Level – Routine maintenance (only needs routine maintenance)

Maintenance & Remediation Recommendations

Investigate source of dry weather flow to determine if source is illicit discharge or is compromising facility

Additional Photos

Observed flow

Overall A Above Ground

Overall B Above Ground

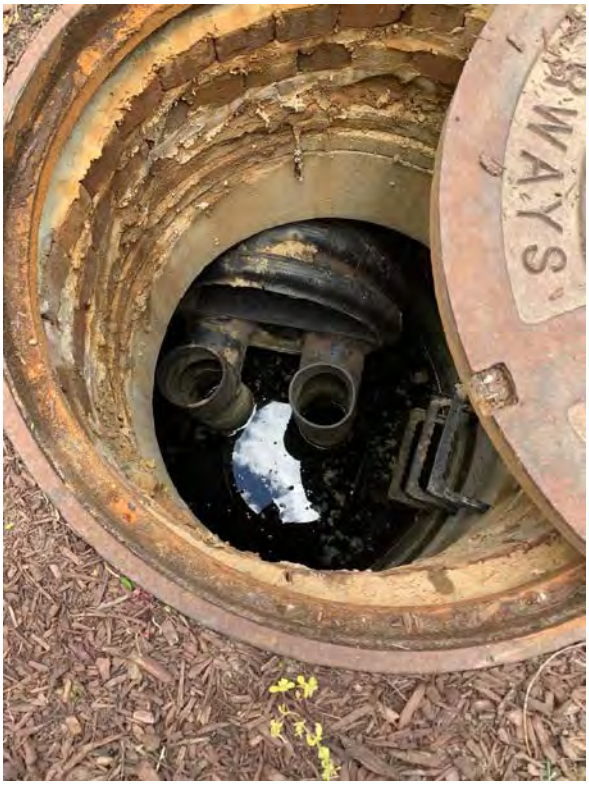
Storage Chamber

UMCP20BMP0278 / NOAA WQ Manhole 2
Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	Apr 30, 2021, 12:27 PM	**Inspector Initials**	TR, BC
BMP ID	UMCP20BMP0278	**Inspection Firm**	MES
BMP Type:	Oil Grit Separator	**Underground BMP?**	Yes
BMP Status:	Pass	**Overall Inspection Comment**	BMP in good condition
Maintenance Level:	No Maintenance Needed		

Overall Photo



Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Poor
- **Vegetation –** N/A
- **BMP Contamination -** Fair
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**:
- **Forebay –** N/A
- **Conveyance Stability –** N/A
- **Downstream Condition –** Good
- **Downstream Condition Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 5 ft
- **Treatment Area Comments**:
- **Low Flow Orifice -** Fair
- **Outlet / Control Structure -** Fair
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Good

BMP Status – Pass

Maintenance Level – No Maintenance Needed

Maintenance & Remediation Recommendations

Continue routine maintenance and inspection

UMCP20BMP0279 / NOAA WQ Manhole 3

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	Apr 30, 2021, 11:49 AM	**Inspector Initials**	TR, BC
BMP ID	UMCP20BMP0279	**Inspection Firm**	MES
BMP Type:	Oil Grit Separator	**Underground BMP?**	Yes
BMP Status:	Pass	**Overall Inspection Comment**	Minor debris accumulation in structure
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Fair
- **Vegetation –** N/A
- **BMP Contamination -** Fair
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**: Some water and debris settled in bottom of inlet
- **Forebay –** N/A
- **Conveyance Stability –** N/A
- **Downstream Condition –** N/A
- **Downstream Condition Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Fair / **Water Depth –** 8.5 ft
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** N/A
- **Spillway Outfall –** N/A

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Clear debris and continue routine maintenance and inspections

UMCP20BMP0280 / Severn Building Micro-Bioretention

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 12:43PM	**Inspector Initials**	KR, DH
BMP ID	UMCP20BMP0280	**Inspection Firm**	MES
BMP Type:	Micro-bioretention	**Underground BMP?**	No
BMP Status:	Fail	**Overall Inspection Comment**	Minor sediment and debris at inflows. Minor bare areas in basin. Grading within basin reducing storage capacity.
Maintenance Level:	Major Maintenance		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Fair
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Good
- **Inflow Comments**: Minor sediment and debris at inflows.
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:** Downstream not accessible

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** N/A
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Fair / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**: Grading within facility minimizing ponding capacity.
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** Not Rated

BMP Status – Fail

Maintenance Level – Major Maintenance (Use of Heavy Machinery for Repairs)

Maintenance & Remediation Recommendations

Remove sediment and debris from inflows. Seed bare areas in basin. Excavate/regrade basin to restore storage capacity.

Additional Photos

Inflow

Inflow Sheetflow

Embankment

Bare Areas in Basin

Principal Spillway

UMCP19BMP0076 / 12-SF-0301 / Public Health Garden

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 1, 2021, 10:31 AM	**Inspector Initials**	KR, DH
BMP ID	UMCP19BMP0076	**Inspection Firm**	MES
BMP Type:	Bioretention	**Underground BMP?**	No
BMP Status:	Pass	**Overall Inspection Comment**	Minor bare areas within basin. Minor debris and vegetation inflow riprap after second check dam.
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation -** Good
- **BMP Contamination -** Good
- **General Site Conditions Comments:**
- **Inflow Condition -** Fair
- **Inflow Comments**: Minor debris and vegetation inflow riprap.
- **Forebay –** N/A
- **Conveyance Stability -** Good
- **Downstream Condition –** N/A
- **Downstream Condition Comments:** Could not access downstream

Embankment

- **Embankment Cover –** Good
- **Upstream Embankment -** Good
- **Downstream Embankment -** Good
- **Emergency Spillway –** N/A
- **Embankment Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall –** N/A

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Remove debris from riprap. Trim vegetation. Mulch bare areas.

Additional Photos

Control Structure

Principal Spillway

Inflow

Inflow Interior

Embankment

Vegetation Riprap

Vegetation Bare Areas

UMCP19BMP0108 / 00-SF-0275/ Chesapeake Parking Lot East

Stormwater Management Facility BMP Inspection

Inspection Data

Date of Inspection:	June 17, 2021, 9:07AM	**Inspector Initials**	DH, BC, GS
BMP ID	UMCP19BMP0108	**Inspection Firm**	MES
BMP Type:	Underground Filter	**Underground BMP?**	Yes
BMP Status:	Pass	**Overall Inspection Comment**	BMP in good condition, Minor erosion on the outside of BMP, Displaced iron slab above sand filter
Maintenance Level:	Minor Maintenance (Use of Hand Equipment for Repairs)		

Overall Photo

Site Conditions

- **BMP Access -** Good
- **Debris & Sediment -** Good
- **Vegetation –** N/A
- **BMP Contamination -** Good
- **General Site Conditions Comments:** Access from parking lot
- **Inflow Condition -** Good
- **Inflow Comments**:
- **Forebay –** Good
- **Conveyance Stability -** Good
- **Downstream Condition –** Not rated
- **Downstream Condition Comments:**

Ponding, Outlet/Control Structure, Outfall

- **Ponding -** Good / **Water Depth –** 0.2 ft Above Design
- **Treatment Area Comments**:
- **Low Flow Orifice -** N/A
- **Outlet / Control Structure -** Good
- **Control Structure Comments:**
- **Principal Spillway –** Good
- **Spillway Outfall -** Good

BMP Status – Pass

Maintenance Level – Minor Maintenance (Use of Hand Equipment for Repairs)

Maintenance & Remediation Recommendations

Repair erosion at side on BMP.

Additional Photos

Forebay

Filter Chamber

Overflow Weir & Chamber

Principal Spillway

Displaced Iron Slab

Erosion

ATTACHMENT B

Baseline Impervious Area Assessment Report

Summary

Under Task 1, MES reported UMCP is responsible for 464.16 acres of impervious under their MS4 permit. Utilizing the findings provided by Whitney, Bailey, Cox & Magnani, LLP (WBCM) in Year 1, MES's findings over the course of Year 2 and Year 3, and data provided by the Universities at Shady Grove (USG), MES has determined that UMCP has 38 facilities providing 38.30 acres of treatment toward their baseline. This brings UMCP's baseline to 425.86 and the 20% restoration goal to 85.17. Additionally, MES determined UMCP has 28 facilities classified as post 2006 restoration or redevelopment providing 8.85 acres of restoration credit. UMCP also has seven alternative practices, including a large stream restoration project, providing another 108.97 acres of restoration credit. UMCP's restoration credit totals to 117.75 acres, surpassing their 20% restoration requirement.

Methodology

BMP status, type, construction purpose and built date were concurrently used to determine if a BMP is providing treatment and if that treatment should be applied to the baseline or restoration goal. Only facilities in passing condition received treatment credit. Dry facilities do not provide water quality treatment, only quantity control. Therefore, these facilities do not qualify for credit under MDE guidelines and the impervious draining to these facilities is included in the untreated impervious area total. Additionally, UMCP only considered permitted BMPs on their campus as being eligible for treatment credit. To qualify for treatment credit these facilities would require additional review, documentation and official approval from MDE's Plan Review Division.

When determining the credit for each eligible facility, if the BMP is classified as new development, the provided treatment was applied to the baseline. New development BMPs can be credited for treatment up to 1" and do not receive credit for additional treatment that may be provided. This same methodology was applied to redevelopment and restoration BMPs built prior to 2006. Redevelopment projects completed within or after 2006 were included in UMCP's restoration credit if additional treatment was provided beyond any new development requirements, which is discussed later in this report. Additionally, restoration projects completed within or after 2006 were included in UMCP's restoration goal.

Baseline Assessment

Utilizing the findings and methods described above, MES determined UMCP has 35 functioning facilities which should be counted in UMCP's baseline as treating 35.99 acres out of 456.57 acres of impervious. A summary of these 35 functioning BMPs is provided in Table 1.

Table 1. Summary of UMCP BMPs for Baseline Treatment

BMP ID	BMP Name	Purpose	Status	Impervious Area (ac.)	Pe	Baseline Credit (ac.)
UMCP20BMP0256	SCC Sand filter 1 (Student Housing A & B)	Redevelopment	Pass	0.59	0.63	0.37
UMCP20BMP0266	Health Center SF	Redevelopment	Pass	0.12	0.75	0.09

UMCP19BMP0010	Laboratory for Physical Science	New Development	Pass	2.7	0.22	0.59
UMCP19BMP0011	CSPAC retention pond	New Development	Pass	9.94	0.8	7.95
UMCP19BMP0012	Softball complex retention pond	Redevelopment	Pass	6.87	1	6.87
UMCP19BMP0018	BLS Heavy Equipment	New Development	Pass	0.05	1	0.05
UMCP19BMP0155	West of Edward St. John	New Development	Pass	0.05	1	0.05
UMCP19BMP0159	East Side of Edwards St. John	New Development	Pass	0.03	1	0.03
UMCP19BMP0161	Oakland Hall Sand filter	New Development	Pass	0.21	1	0.21
UMCP19BMP0240	Presidents House Disconnect 2-1	New Development	Pass	0.02	1	0.02
UMCP20BMP0282	Presidents House Disconnect 2-2	New Development	Pass	0.02	1	0.02
UMCP20BMP0285	Presidents House Disconnect 2-5	New Development	Pass	0.02	1	0.02
UMCP20BMP0286	Presidents House Grass Swale	New Development	Pass	0.04	1	0.04
UMCP19BMP0020	VetMed research pond	New Development	Pass	7.14	1	7.14
UMCP19BMP0056	Comcast north retention pond	Redevelopment	Pass	5.96	1	5.96
UMCP19BMP0107	Taylor stadium bioretention	New Development	Pass	0.42	0.53	0.22
UMCP19BMP0033	University House	New Development	Pass	0.14	1	0.14
UMCP19BMP0034	University House	New Development	Pass	0.10	1	0.10
UMCP19BMP0035	University House	New Development	Pass	0.20	1	0.20
UMCP19BMP0041	University House	New Development	Pass	0.09	1	0.09
UMCP19BMP0152	AV Williams (Lot GG)	Redevelopment	Pass	0.37	1.3	0.07
UMCP19BMP0153	AV Williams (Lot GG)	Redevelopment	Pass	0.22	0.8	0.04
UMCP19BMP0154	AV Williams (Lot GG)	Redevelopment	Pass	0.39	1	0.08
UMCP20BMP0267	College Park Academy Micro-Bioretention 1	New Development	Pass	0.14	1	0.14
UMCP20BMP0268	College Park Academy Micro-Bioretention 2	New Development	Pass	0.27	1	0.27
UMCP20BMP0269	College Park Academy Micro-Bioretention 3	New Development	Pass	0.35	1	0.35
UMCP20BMP0270	College Park Academy Micro-Bioretention 4	New Development	Pass	0.32	1	0.32
UMCP20BMP0271	College Park Academy Micro-Bioretention 5	New Development	Pass	0.42	1	0.42
UMCP20BMP0272	College Park Academy Submerged Gravel Wetland 1	New Development	Pass	1.97	1	1.97
UMCP19BMP0082	Knight Hall	New Development	Pass	0.43	0.91	0.39
UMCP19BMP0042	Wye Oak Building	New Development	Pass	0.27	1	0.27

UMCP20BMP0273	NOAA Green Roof 1	New Development	Pass	0.63	1	0.63
UMCP20BMP0275	NOAA Green Roof 2	New Development	Pass	0.33	1	0.33
UMCP19BMP0108	Chesapeake Parking Lot East	New Development	Pass	0.56	0.47	0.26
UMCP19BMP0019	University House Parking Lot	New Development	Pass	0.29	1	0.29
					Total =	35.99

Additionally, UMCP is responsible for treatment of the Institute for Bioscience and Biotechnology Research (IBBR) campus located at the Universities at Shady Grove campus. IBBR accounts for 4.52 acres of UMCP's total impervious covered under their MS4 permit. Table 2 provides a summary of the status, impervious area and treatment credit for each BMP located at IBBR determined by MES under a separate scope of work and included in UMCP's baseline assessment. A breakdown of the combined baseline calculations is provided in Table 3.

Table 2. Summary of IBBR BMPs for Baseline Treatment

BMP ID	BMP Name	Purpose	Status	Impervious Area (ac.)	Pe	Baseline Credit (ac.)
USG19BMP00005	Infiltration Trench 2 at IBBR	New Development	Pass	0.06	1	0.06
UMCP21BMP0301	Gudelsky Pond	New Development	Pass	4.52	0.5	2.22
USG19BMP00042	IBBR Non-Rooftop Disconnect	New Development	Pass	0.03	1	0.03
					Total =	2.31

With a baseline treatment credit of 35.99 acres for UMCP's main campus, and 2.31 acres of treatment credit for the IBBR campus, UMCP's total untreated impervious results to 425.86 acres. This brings UMCP's 20% restoration goal to 84.56 acres. A breakdown of the baseline calculations is provided in Table 3 below.

Table 3. UMCP Baseline Assessment

Area (ac)		Impervious (ac)		Treated Impervious (ac)		Untreated Impervious (ac)	20% Restoration Goal (ac)
UMCP	IBBR	UMCP	IBBR	UMCP	IBBR	Total	Total
1293.12	12.18	459.64	4.52	35.99	2.31	425.86	85.17

Restoration

Treatment provided by redevelopment and restoration BMPs built within or after 2006 are eligible to be claimed for restoration credit. Additionally, unlike new development BMPs, these facilities are eligible to be credited over 1" if additional storage is provided. However, for redevelopment projects an analysis of the existing conditions had to be completed to ensure the project was not subject to new development requirements. If the project was determined to include new development, treatment was credited to meeting this requirement prior to awarding restoration credit. For the redevelopment projects included within this report, only AV Williams was determined to have a net increase in

impervious area. As-built plans indicated the project had a net increase of 0.19 acres. Utilizing the ESD requirements and the ESD provided indicated in the as-built plans, MES determined this project provides 0.72 acres of restoration credit. This credit was split among the 3 facilities built for the project, resulting in 0.19 acres of credit toward the baseline and 0.72 acres toward their restoration goal. A summary of qualifying redevelopment and restoration BMPs is provided in Table 4.

Table 4. Summary UMCP Redevelopment & Restoration BMPs

BMP ID	BMP Name	Purpose	Status	Impervious Area (ac.)	Pe	Restoration Credit (ac.)
UMCP20BMP0258	M Research Park SGW 1	Redevelopment	Pass	2.33	0.8	1.86
UMCP20BMP0259	M Research Park SGW 2	Redevelopment	Pass	0.88	0.82	0.72
UMCP20BMP0260	M Research Park MBR 1	Redevelopment	Pass	0.48	0.73	0.35
UMCP19BMP0026	Shuttle Facility dry swale	Redevelopment	Pass	2.23	0.77	1.71
UMCP19BMP0049	Computer and Space Sciences	Redevelopment	Pass	0.08	1.2	0.08
UMCP19BMP0055	Heavy Equipment Building bioretention	Redevelopment	Pass	0.09	1.15	0.10
UMCP19BMP0059	Denton dining bioretention	Redevelopment	Pass	0.18	2.28	0.24
UMCP19BMP0070	Denton bioretention	Redevelopment	Pass	0.09	0.76	0.07
UMCP19BMP0078	Physical Sciences	Redevelopment	Pass	0.2	1.2	0.21
UMCP19BMP0122	Denton Courtyard bioretention	Redevelopment	Pass	0.1	1.03	0.10
UMCP19BMP0157	West Side of Edward St. John	Redevelopment	Pass	0.06	1	0.06
UMCP19BMP0158	West Side of Edward St. John	Redevelopment	Pass	0.06	1	0.06
UMCP19BMP0040	University House	Restoration	Pass	0.03	1	0.03
UMCP19BMP0124	Prince Frederick Hall Bioretention Cell 1	Redevelopment	Pass	0.17	1	0.17
UMCP19BMP0152	AV Williams (Lot GG)	Redevelopment	Pass	0.37	1.3	0.27
UMCP19BMP0153	AV Williams (Lot GG)	Redevelopment	Pass	0.22	0.8	0.14
UMCP19BMP0154	AV Williams (Lot GG)	Redevelopment	Pass	0.39	1	0.31
UMCP19BMP0243	Brendan Iribe 3	Redevelopment	Pass	0.19	1	0.19
UMCP19BMP0244	Brendan Iribe 4	Redevelopment	Pass	0.12	2	0.15
UMCP19BMP0245	Brendan Iribe 5	Redevelopment	Pass	0.12	1.7	0.14
UMCP19BMP0016	Shuttle Facility	Redevelopment	Pass	0.11	1	0.11
UMCP19BMP0017	Shuttle Facility	Redevelopment	Pass	0.11	1	0.11
UMCP19BMP0231	Clark Hall Bioretention 1	Redevelopment	Pass	0.27	1.96	0.33
UMCP19BMP0232	Clark Hall Bioretention 2	Redevelopment	Pass	0.21	2.6	0.29
UMCP19BMP0241	Brendan Iribe 1	Redevelopment	Pass	0.19	2.6	0.27
UMCP19BMP0242	Brendan Iribe 2	Redevelopment	Pass	0.23	2.5	0.32
UMCP19BMP0082	Knight Hall	Redevelopment	Pass	0.43	0.91	0.39
					Total =	8.78

In addition to the projects listed in Table 4, alternative practices also qualify for restoration credit. UMCP completed Phase 1 of the Campus Creek restoration in November 2019, which restored 3,039 linear feet of the stream. The project was determined by WBCM to provide 105.8 acres of restoration credit. However, as part of an agreement to allow UMCP to complete restoration in the right of way along MD Route 193, 1 acre of the restoration credit was given to SHA to apply toward their MS4 requirement. Additionally, as part of the Campus Creek restoration two regenerative step pool conveyances were installed along with a stormwater bar (outfall stabilization). These three practices were evaluated to provide an additional 1.02 acres of restoration credit. Under Task 1 of this scope, MES identified six small areas of impervious surface removal. For every acre of impervious surface converted to grass cover, UMCP received a 0.75-acre equivalent treatment credit. Additionally, a 2020 renovation to the Cole Field House also resulted in 3.07 acres of impervious removal. UMCP's total impervious surface elimination credit totaled to 2.65 acres. Lastly, on the IBBR campus an outfall stabilization was completed in 2006. The project was 50 feet long, and with an equivalent credit of 0.01 acres per linear foot, the project earned a credit of 0.5 acres. Table 5 below presents each alternative practice and their equivalent restoration credit.

Table 5. Summary UMCP Alternative Practices

Year	BMP ID	BMP Name	BMP Type	Impervious Credit (ac.)
2019	UMCP19BMP0249	Campus Creek Restoration	Stream Restoration	104.8
2006	USG19BMP00004	IBBR Outfall Stabilization	Outfall Stabilization	0.5
2016	UMCP20BMP0288	Impervious Surface Removal to Pervious 4100 Metzerott Rd	Impervious Surface Removal to Pervious	0.17
2017	UMCP20BMP0289	Impervious Surface Removal to Pervious 4109 Metzerott Rd	Impervious Surface Removal to Pervious	0.03
2019	UMCP19BMP0250	Campus Creek RSPSC 1	Regenerative Step Pool Conveyance	0.58
2019	UMCP20BMP0290	Campus Creek RSPSC 2	Regenerative Step Pool Conveyance	0.31
2019	UMCP20BMP0291	Campus Creek Stormwater Bar	Outfall Stabilization	0.13
2020	UMCP21BMP0296	Wooded Hillock Impervious Removal 3	Impervious Surface Removal to Pervious	0.02
2020	UMCP21BMP0297	Wooded Hillock Impervious Removal 2	Impervious Surface Removal to Pervious	0.017
2020	UMCP21BMP0298	Wooded Hillock Impervious Removal 1	Impervious Surface Removal to Pervious	0.05
2021	UMCP21BMP0299	4103 Metzerott Rd Impervious Removal	Impervious Surface Removal to Pervious	0.067
2021	UMCP21BMP0300	Cole Field House Impervious Surface Removal	Impervious Surface Removal to Pervious	2.30
			Total =	108.97

The restoration credit earned from the projects described within this report totals to 117.75 acres. This surpasses UMCP's restoration requirement of 85.17 acres as demonstrated in Table 6.

Table 6. UMCP Restoration Credit Computation

20% Restoration Goal (ac)	Restoration Credit (ac)	Remaining Goal (ac)
85.17	117.75	-32.58

Future Projects

Even though UMCP has surpassed their 20% restoration requirement, the University continues to plan future restoration projects. In 2020, UMCP applied for the Chesapeake Bay Trust (CBT) Watershed Assistance Grant Program and was awarded funding for the design to retrofit the Animal Science Pond and restore the remaining section of Campus Creek. Animal Science is a dry pond that is no longer functioning and will be converted into a water quality facility. The stream restoration project will restore approximately 2,300 linear feet of Campus Creek. These projects are estimated to provide restoration credits of 7.23 acres and 46 acres, respectively, bringing UMCP's total restoration credit to 171.05 acres. Upon project completion, the awarded credit may increase or decrease.

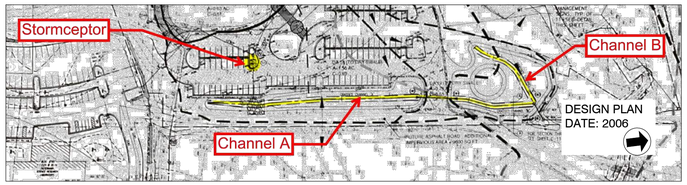
Additionally, MES has been developing restoration concepts for failing BMPs across UMCP's campus to restore to functioning condition and identify possible improvements to the facilities. As these facilities are repaired, baseline or restoration credit will be awarded as appropriate, further contributing to UMCP's stormwater treatment requirements.

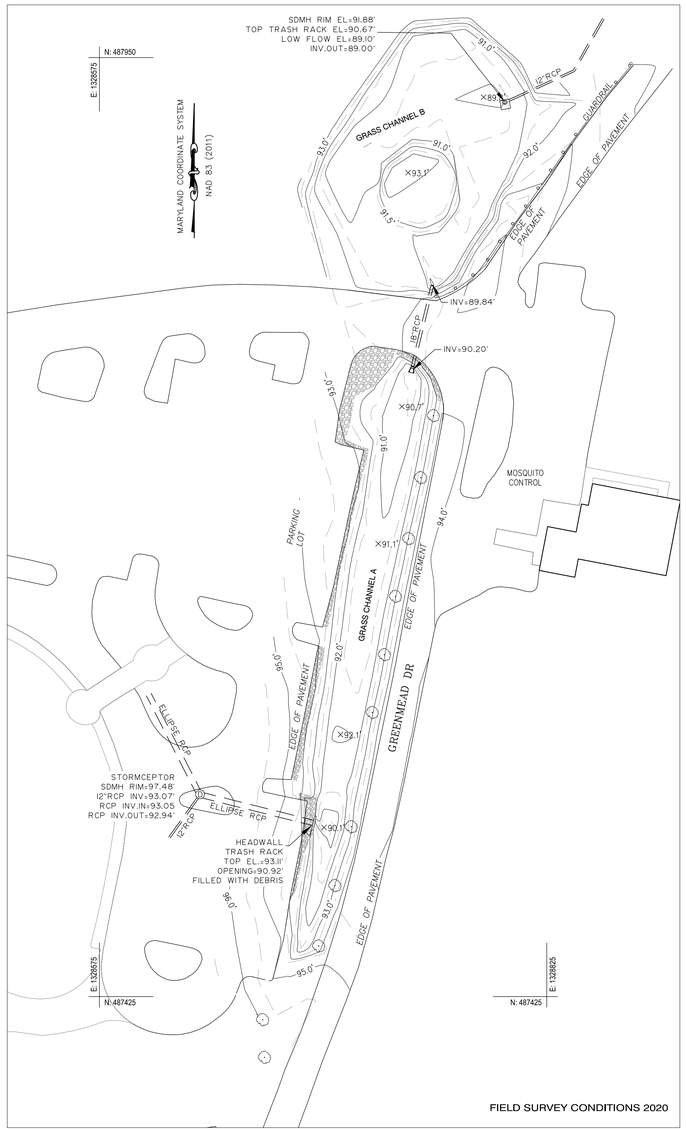
Conclusion

UCMP is responsible for a total of 464.16 acres of impervious under their MS4 permit. MES determined UMCP is treating 35.99 acres of their main campus's impervious area, and 2.31 acres of the IBBR campus's impervious area. This treatment resulted in a 20% restoration goal of 85.17 acres. Through a combination of redevelopment projects and alternative practices, UMCP has earned 117.75 acres of restoration credit, surpassing their 20% restoration requirement. Although UMCP has exceeded their restoration goal, UMCP continues to plan future restoration projects to ensure they continue to meet future requirements under the NPDES MS4 permit.

ATTACHMENT C

Verification Surveys





BMP Summary Table

BMP ID	WQ_v (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP19BMP0065	7,437	1	0.5	0.22	0*
UMCP19BMP0066	9,734	1	4.75	2.43	0*

*FACILITY MUST BE IN PASSING CONDITION TO RECEIVE CREDIT

PROJECT NAME: Laboratory for Telecommunication Sciences Swale B **MDE NO: UMCP19BMP0065**

BMP VERIFICATION DATA FOR OPEN CHANNELS (DRY/WET SWALES)

FEATURE	DESIGN	SURVEY
BOTTOM WIDTH (FEET)	8	11
TOTAL LENGTH (FEET)	129	435
PRETREATMENT VOLUME (CUBIC FEET)	0	0
STORAGE VOLUME (CUBIC FEET)	4,493	7,437
NUMBER OF CHECK DAMS / WEIRS	0	0
SIDE SLOPE RATIO(S)	2:1	5:1
MAXIMUM CHANNEL SLOPE	0.50%	2.00%
UNDERDRAIN PIPE DIAMETER (INCHES)	NPD	NPD
THICKNESS OF FILTER MEDIUM (INCHES)	NPD	NPD

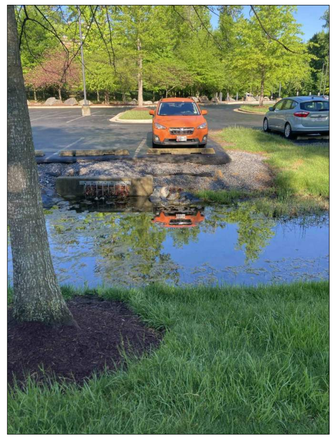
NPD = NOT PART OF DESIGN

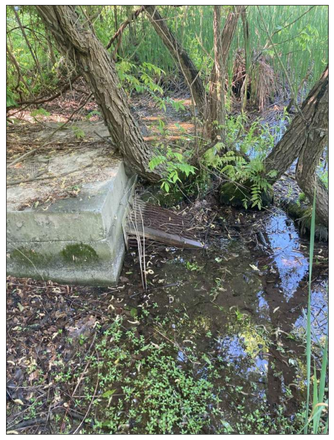
PROJECT NAME: Laboratory for Telecommunication Sciences Swale A **MDE NO: UMCP19BMP0066**

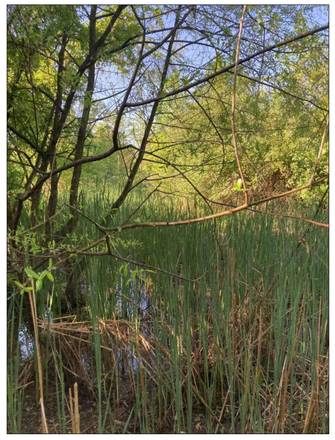
BMP VERIFICATION DATA FOR OPEN CHANNELS (DRY/WET SWALES)

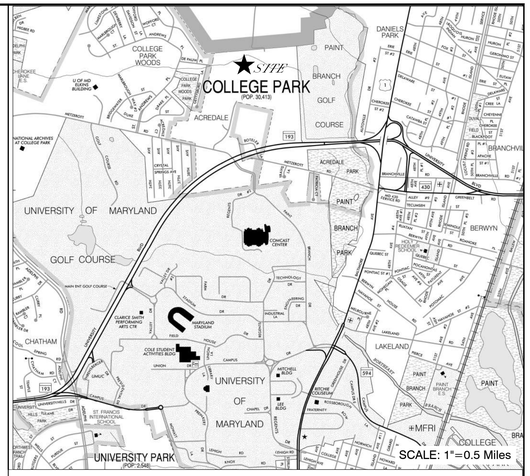
FEATURE	DESIGN	SURVEY
BOTTOM WIDTH (FEET)	8	10
TOTAL LENGTH (FEET)	424	435
PRETREATMENT VOLUME (CUBIC FEET)	1,592	1,158
STORAGE VOLUME (CUBIC FEET)	16,451	9,734
NUMBER OF CHECK DAMS / WEIRS	0	0
SIDE SLOPE RATIO(S)	2:1	4.7:1
MAXIMUM CHANNEL SLOPE	0.50%	0.70%
UNDERDRAIN PIPE DIAMETER (INCHES)	NPD	NPD
THICKNESS OF FILTER MEDIUM (INCHES)	NPD	NPD

NPD = NOT PART OF DESIGN

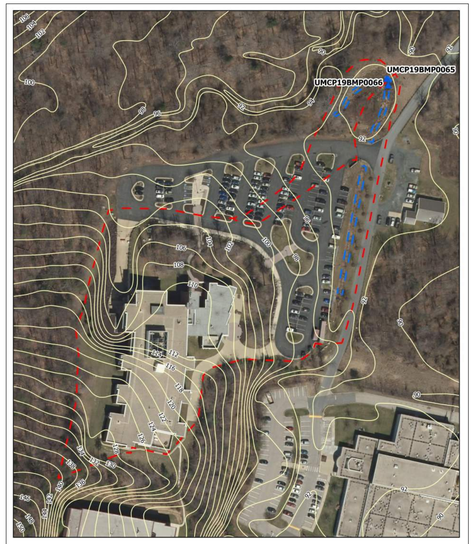








DRAINAGE AREA



SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON APRIL 28, 2021.
2) CONTOUR INTERVALS ARE AT 0.5'
3) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
4) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
5) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 2006- PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

80 0 40 80
(IN FEET)
1 INCH = 40 FT

REVISIONS

Maryland ENVIRONMENTAL SERVICE

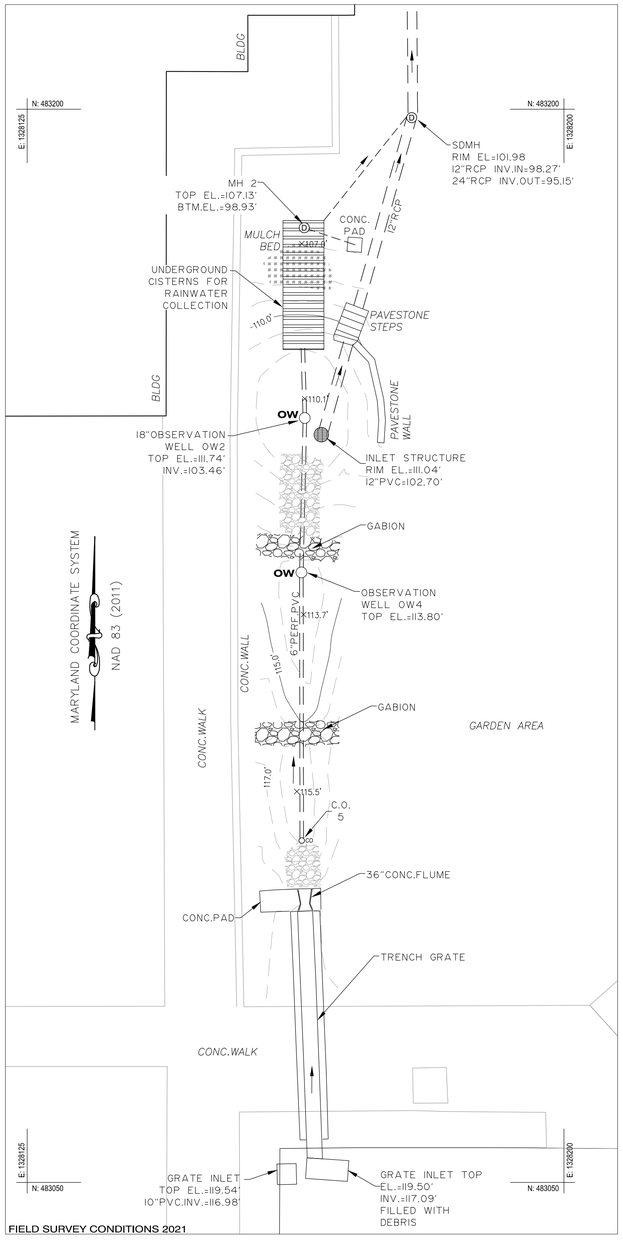
SURVEYED BY: JBC, SL
DRAWN BY: JBB
CHECKED BY: JW
DATE: JULY 23, 2020

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP0065 & UMCP19BMP0066 - GRASS SWALE - 04-SF-0066
LAB FOR TELECOM SCIENCES
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

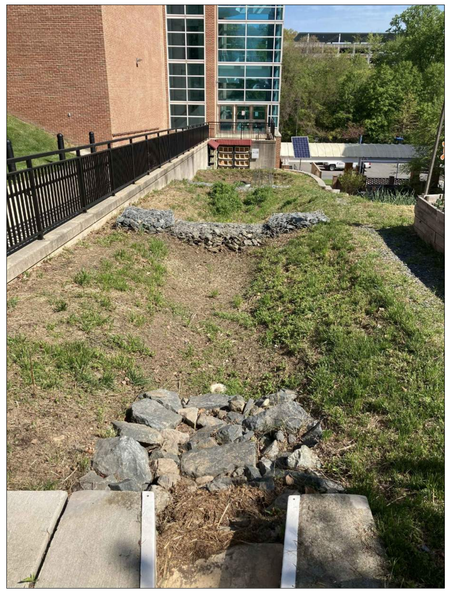
PROJECT NO.
SCALE: 1" = 40'
SHEET 1 OF 1
DRAWING NO.

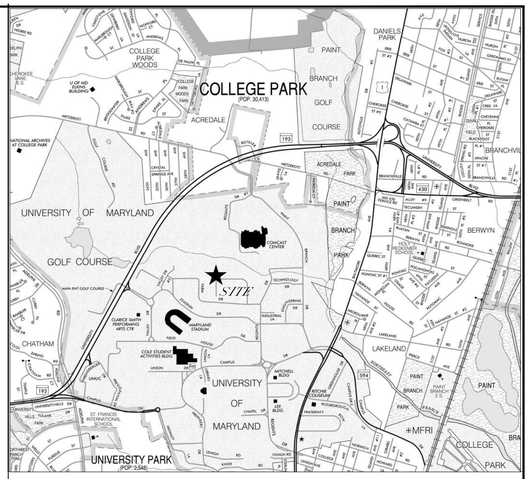
SAVED: 7/26/2021 PLOTTED: September 29, 2021
FILE PATH: C:\USERS\BBUPP\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - DOCUMENTS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\UMCP19BMP0066 & 65\V-TOPO-UMCP19BMP0065-66.DWG

BMP Summary Table					
BMP ID	WQ_v (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP19BMP0076	256	0.12	1.10	0.62	0.07

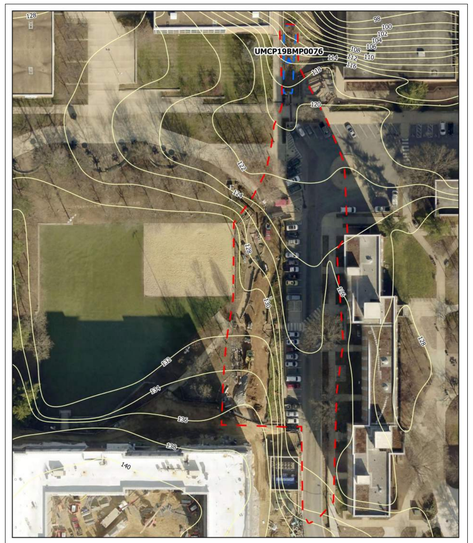


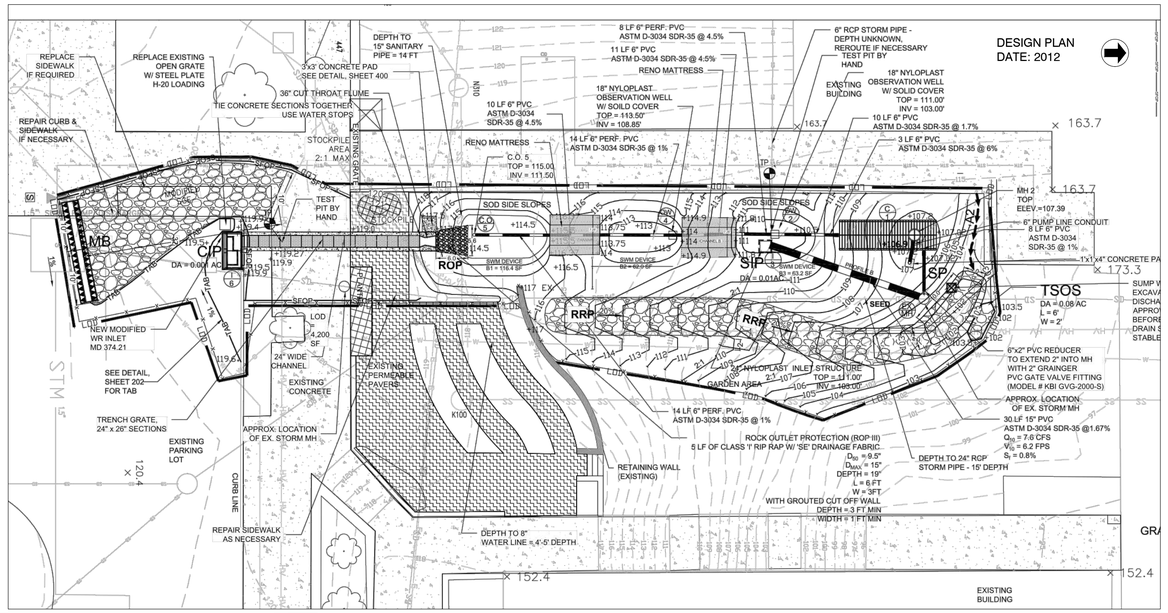
PROJECT NAME: Public Health Garden -Bioretention		MDE NO: UMCP19BMP0076	
BMP VERIFICATION DATA FOR FILTERS (Sand Filters and Bioretetion)			
	FEATURE	DESIGN	SURVEY
	FOREBAY AREA (SQUARE FEET)	N/A	N/A
	FOREBAY VOLUME (CUBIC FEET)	N/A	N/A
Cell 1	FILTER BED SURFACE AREA (SQUARE FEET)	116	56
	FILTER BED SURFACE ELEVATION (FEET)	114.5	116
	WEIR ELEVATION (FEET)	115	116.85
	OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	6"/111.5'	NFV
	THICKNESS OF FILTER MEDIA (FEET)	3	NFV
	PLACEMENT OF GEOTEXTILE	N/A	NFV
	PLANTINGS	N/A	✓
	COMPOSITION OF FILTER MEDIA	N/A	NFV
	WATER QUALITY DEPTH (FEET)	0.5	0.85
	WATER QUALITY SURFACE AREA (SQUARE FEET)	174.21	120
Cell 2	FILTER BED SURFACE AREA (SQUARE FEET)	62	79
	FILTER BED SURFACE ELEVATION (FEET)	113	114
	WEIR ELEVATION (FEET)	114	114.25
	OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	6"/110.85'	NFV
	THICKNESS OF FILTER MEDIA (FEET)	2	NFV
	PLACEMENT OF GEOTEXTILE	N/A	NFV
	PLANTINGS	N/A	✓
	COMPOSITION OF FILTER MEDIA	N/A	NFV
	WATER QUALITY DEPTH (FEET)	1	0.25
	WATER QUALITY SURFACE AREA (SQUARE FEET)	133.03	114
Cell 3	FILTER BED SURFACE AREA (SQUARE FEET)	63.20	127.19
	FILTER BED SURFACE ELEVATION (FEET)	110.50	110.50
	FILTER INLET PIPE SIZE/INVERT ELEVATION	111.00	111.04
	OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	6"/108.5'	NFV
	THICKNESS OF FILTER MEDIA (FEET)	2	NFV
	PLACEMENT OF GEOTEXTILE	N/A	NFV
	PLANTINGS	N/A	✓
	COMPOSITION OF FILTER MEDIA	N/A	NFV
	WATER QUALITY DEPTH (FEET)	0.50	0.54
	WATER QUALITY SURFACE AREA (SQUARE FEET)	130.67	178.01
NFV = NOT FIELD VERIFIED			





DRAINAGE AREA





SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON APRIL 28, 2021.
2) CONTOUR INTERVALS ARE AT 1.0'
3) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
4) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
5) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 2012- PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

20 0 10 20
(IN FEET)
1 INCH = 10 FT

REVISIONS

Maryland ENVIRONMENTAL SERVICE

SURVEYED BY: JBC, NM
DRAWN BY: JBB
CHECKED BY: JW, KR
DATE: SEPTEMBER 16, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP0076 - BIORETENTION - 12-SF-0301
PUBLIC HEALTH GARDEN
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

PROJECT NO.
SCALE: 1" = 10'
SHEET 1 OF 1
DRAWING NO.

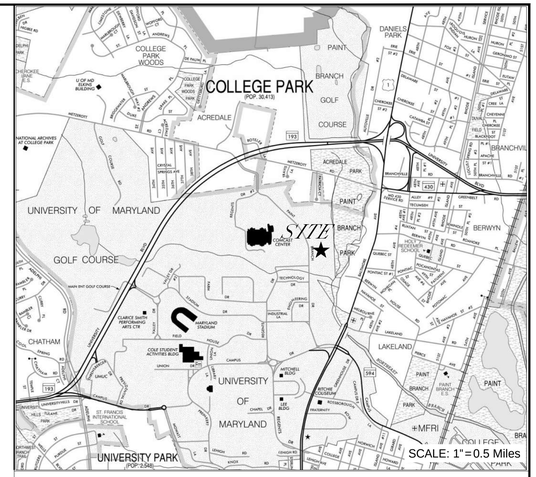
PLOTTED: September 20, 2021
SAVED: 9/20/2021
FILE PATH: C:\USERS\BBUPP\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - DOCUMENTS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\UMCP19BMP0076\V-TOPO-UMCP19BMP0076.DWG

BMP Summary Table					
BMP ID	WQ$_v$ (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP19BMP0106	403	0	1.32	1.17	0*
*FACILITY DESIGNED FOR RECHARGE. STORAGE CONTRIBUTES TO TOTAL SITE WQv.					

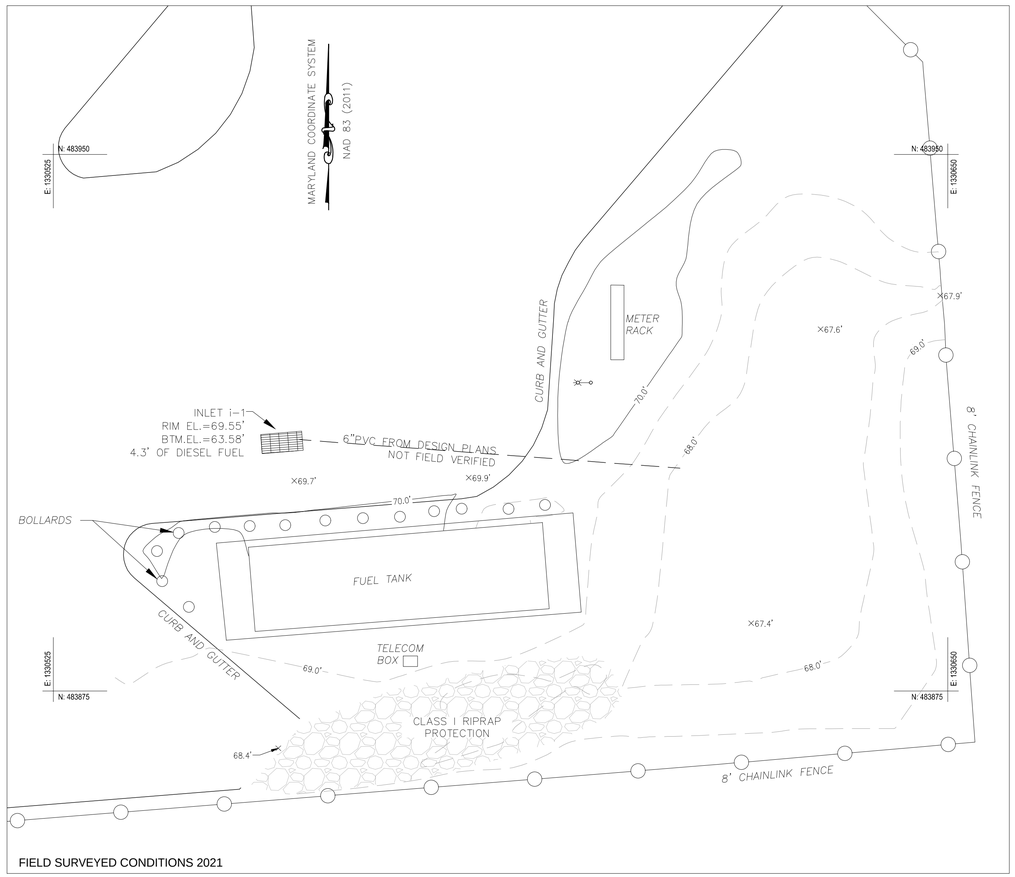
PROJECT NAME: Shuttle Bus Pond **MDE NO: UMCP19BMP0106**

BMP VERIFICATION DATA FOR PONDS

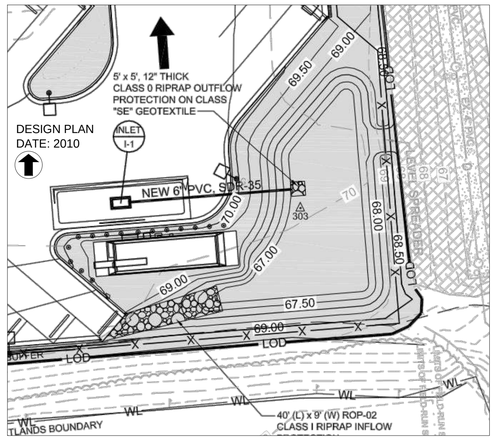
FEATURE	DESIGN	SURVEY
BOTTOM ELEVATION (FEET)	67	67.5
SURFACE ELEVATION (FEET)	68	67.9
SURFACE DIMENSIONS (SQUARE FEET)	3152.08	1,405
BOTTOM DIMENSIONS (SQUARE FEET)	1942.87	205
STORAGE VOLUME (CUBIC FEET)	2536	403
PRINCIPAL SPILLWAY: DIA./ EL. OUT/ GRADE/ LENGTH	N/A	N/A
EMERGENCY SPILLWAY: WIDTH / LENGTH / EL.	14.5'/8.75'/68'	5.79/8.5'/67.9'
OUTLET PROTECTION: LENGTH/ WIDTH/ STONE SIZE	N/A	N/A
FOREBAY DIMENSIONS/ VOLUME	N/A	N/A
FOREBAY WEIR LENGTH/ EL.	N/A	N/A
WATER QUALITY DEPTH (FEET)	1	0.4
MAXIMUM PONDING DEPTH (FEET)	1.5	2
NFV = NOT FIELD VERIFIED		

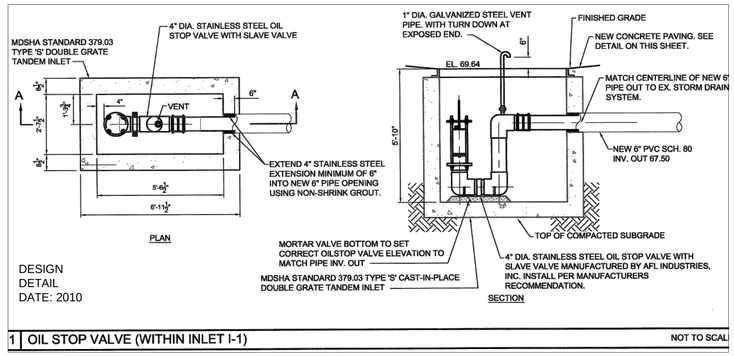


DRAINAGE AREA



FIELD SURVEYED CONDITIONS 2021





1 OIL STOP VALVE (WITHIN INLET I-1) NOT TO SCALE

SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON MAY 12, 2021.
2) CONTOUR INTERVALS ARE AT 1.0'.
3) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
4) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
5) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED SEPTEMBER, 2010 PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

20 0 10 20
(IN FEET)
1 INCH = 10 FT

REVISIONS

Maryland ENVIRONMENTAL SERVICE

SURVEYED BY: JBC, SL
DRAWN BY: JBB
CHECKED BY: JW, KR
DATE: August 24, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP00106 - RETENTION POND - 11-SF-0002
LOT 4 SHUTTLE FACILITY
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

PROJECT NO.
SCALE: 1" = 10'
SHEET 1 OF 1
DRAWING NO.

SAVED: 8/26/2021 PLOTTED: September 15, 2021
FILE Path: C:\USERS\WOPR\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III M24 SUPPORT\SURVEY\WORK FOLDER\UMCP19BMP0106\V-TOPO-106_WORKSHEET.DWG

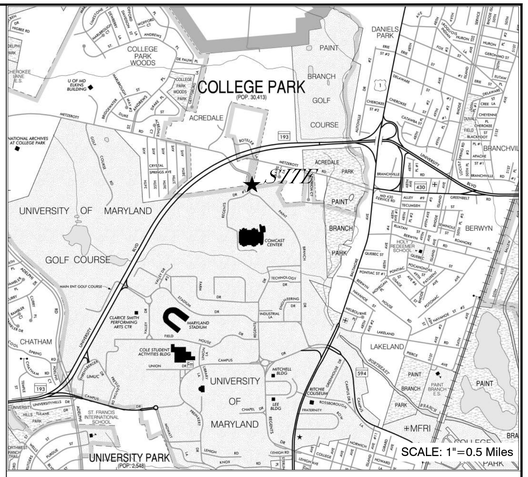
BMP Summary Table					
BMP ID	WQ, (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP19BMP0108	1,184	0.47	3.90	0.56	0.26

PROJECT NAME: Chesapeake Parking Lot East **MDE NO: UMCP19BMP0108**

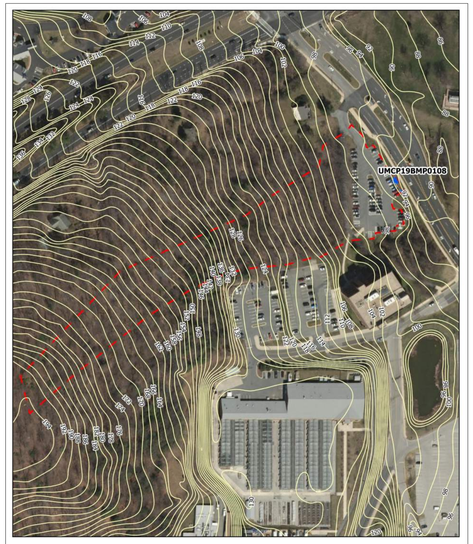
BMP VERIFICATION DATA FOR FILTERS (Sand Filters and Bioretetion)

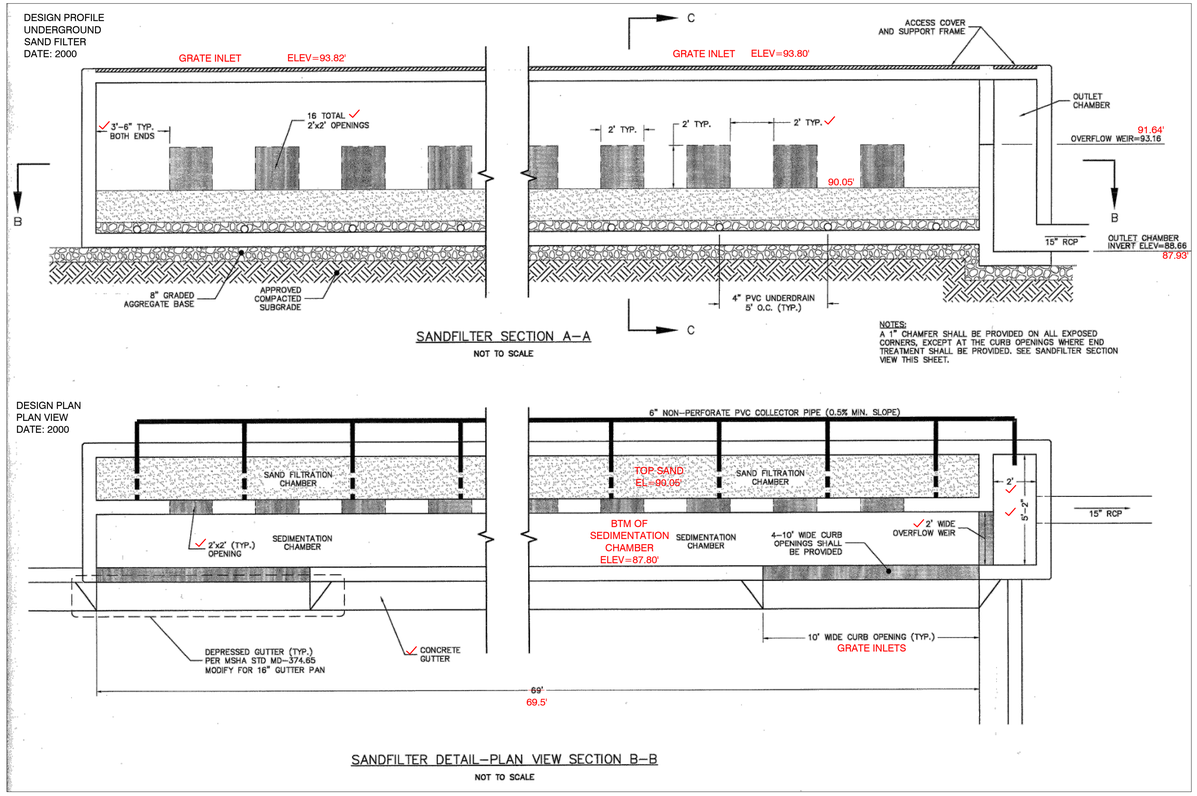
FEATURE	DESIGN	SURVEY
FOREBAY AREA (SQUARE FEET)	172.5	173.75
FOREBAY VOLUME (CUBIC FEET)	603.75	667.2
FILTER BED SURFACE AREA (SQUARE FEET)	138	139
FILTER BED SURFACE ELEVATION (FEET)	91.66	90.05
FILTER INLET PIPE SIZE/INVERT ELEVATION	93.16	91.64
OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	4"/89.66'	4"/ 87.93'
THICKNESS OF FILTER MEDIA (FEET)	1.5	NFV
PLACEMENT OF GEOTEXTILE	around aggregate layer	NFV
PLANTINGS	none	none
COMPOSITION OF FILTER MEDIA	washed sand	✓
WATER QUALITY DEPTH (FEET)	1.5	1.59

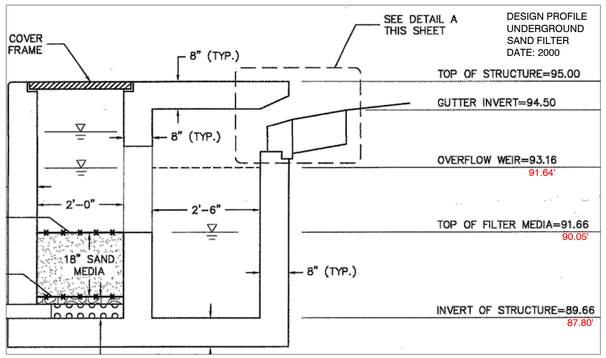
NFV = NOT FIELD VERIFIED



DRAINAGE AREA







SURVEY NOTES

1) FIELD ELEVATIONS SHOWN ARE BASED ON SURVEY DATA COLLECTED BY MES ON JUNE 17th, 2021.
2) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
3) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
4) ELEVATIONS WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS AND FIELD MEASUREMENTS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 2000- PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) NO HORIZONTAL AND VERTICAL DATUMS LISTED ON PROPOSED PLANS.

REVISIONS

Maryland ENVIRONMENTAL SERVICE

SURVEYED BY: JBC, SL, GS
DRAWN BY: JBB
CHECKED BY: JW
DATE: JULY 15, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP0108 - UNDERGROUND SAND FILTER - 00-SF-0275
CHESAPEAKE LOT (LOT P2)
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

PROJECT NO.
SCALE: NTS
SHEET 1 OF 1
DRAWING NO.

SAVED: 7/30/2021
PLOTTED: July 30, 2021
FILE PATH: C:\USERS\VPOPE\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\UMCP19BMP0108\V--TOPO-- LOT2 108 UNDERGROUND.DWG

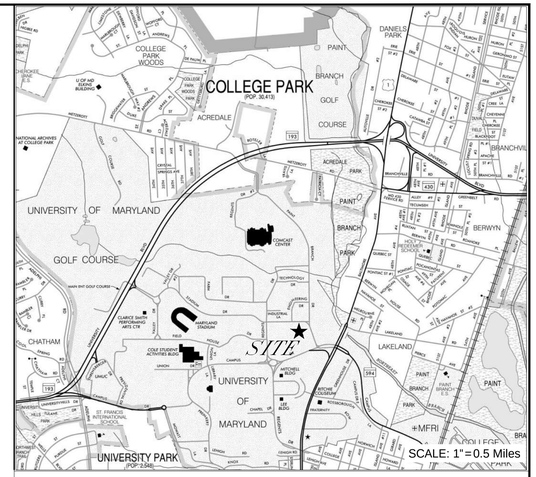
PROJECT NAME: Kim Plaza	MDE NO: UMCP19BMP0142

BMP VERIFICATION DATA FOR FILTERS (Sand Filters and Bioretetion)

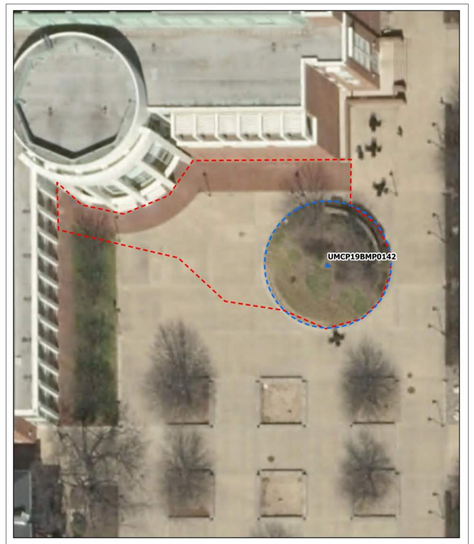
FEATURE	DESIGN	SURVEY
FOREBAY AREA (SQUARE FEET)	N/A	N/A
FOREBAY VOLUME (CUBIC FEET)	N/A	N/A
FILTER BED SURFACE AREA (SQUARE FEET)	673	483
FILTER BED SURFACE ELEVATION (FEET)	71	70
FILTER INLET PIPE SIZE/INVERT ELEVATION	NA/72'	NA/71.57'
OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	6"/65.5'	NFV
THICKNESS OF FILTER MEDIA (FEET)	4	NFV
PLACEMENT OF GEOTEXTILE	around underdrain	NFV
PLANTINGS	N/A	✓
COMPOSITION OF FILTER MEDIA	N/A	NFV
WATER QUALITY DEPTH (FEET)	1	1.57
WATER QUALITY SURFACE AREA (SQUARE FEET)	927	1032
NFV = NOT FIELD VERIFIED		

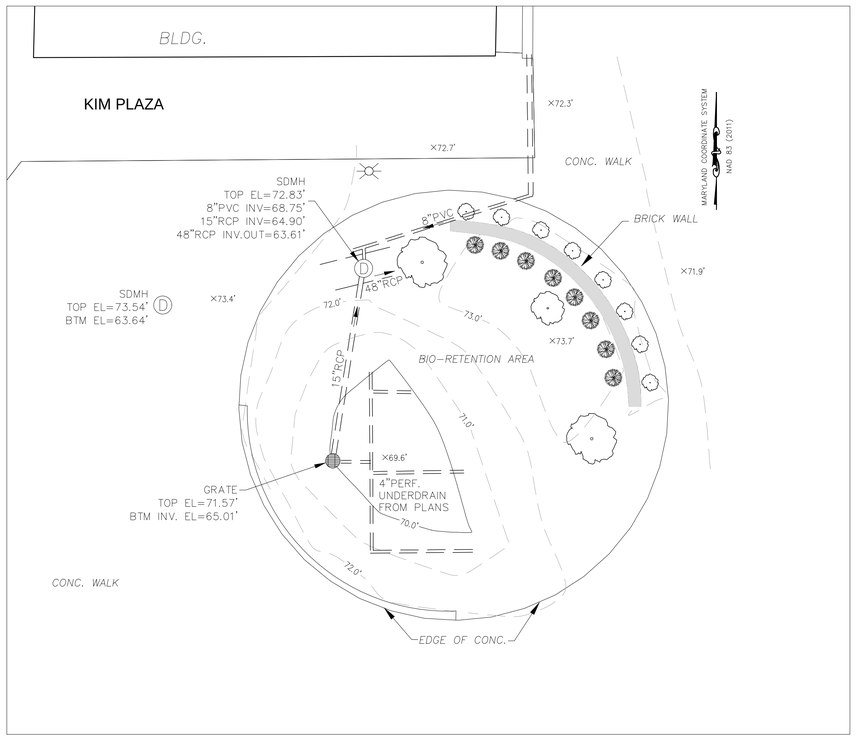
BMP Summary Table

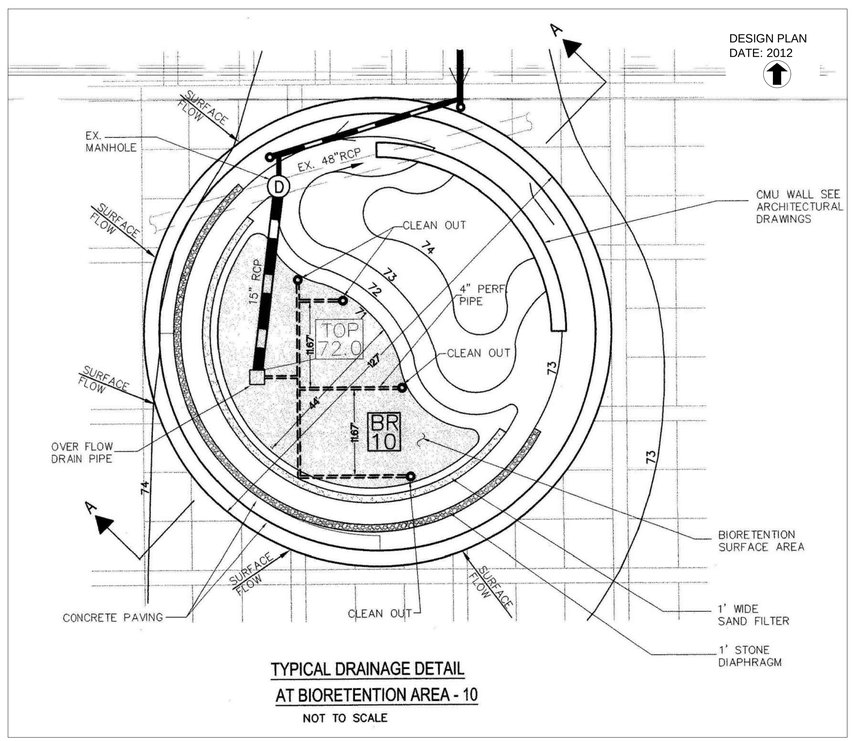
BMP ID	WQ, (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP19BMP0142	1,010	1	0.17	0.10	0.1



DRAINAGE AREA







TYPICAL DRAINAGE DETAIL
AT BIORETENTION AREA - 10
NOT TO SCALE

SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON MAY 21, 2021.
2) CONTOUR INTERVALS ARE AT 1.0'
3) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
4) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
5) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED AUGUST, 2002 PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

20 0 10 20
(IN FEET)
1 INCH = 10 FT

REVISIONS

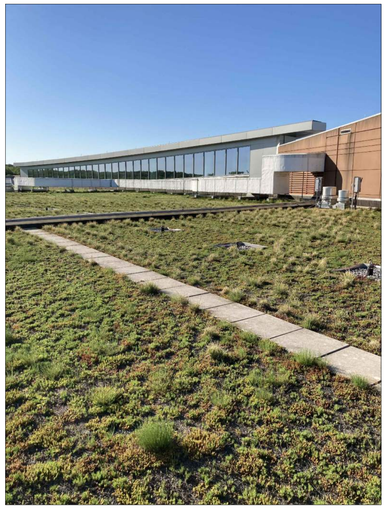
Maryland ENVIRONMENTAL SERVICE

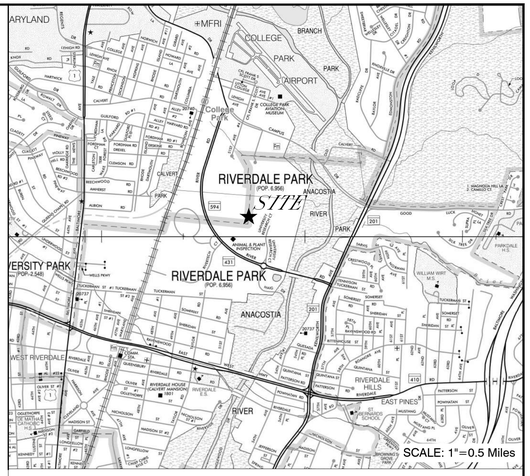
SURVEYED BY: JBC, GS
DRAWN BY: JBB
CHECKED BY: KR, JW
DATE: JUNE 6, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP00142 - BIORETENTION 10 - 02-SF-0279
KIM PLAZA
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

PROJECT NO.
SCALE: 1" = 10'
SHEET 1 OF 1
DRAWING NO.

SAVED: 6/10/2021 PLOTTED: June 10, 2021
FILE PATH: C:\USERS\VPIPE\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\KIM PLAZA\V-TOPO-KIMPLAZA-WORKSHEET.DWG



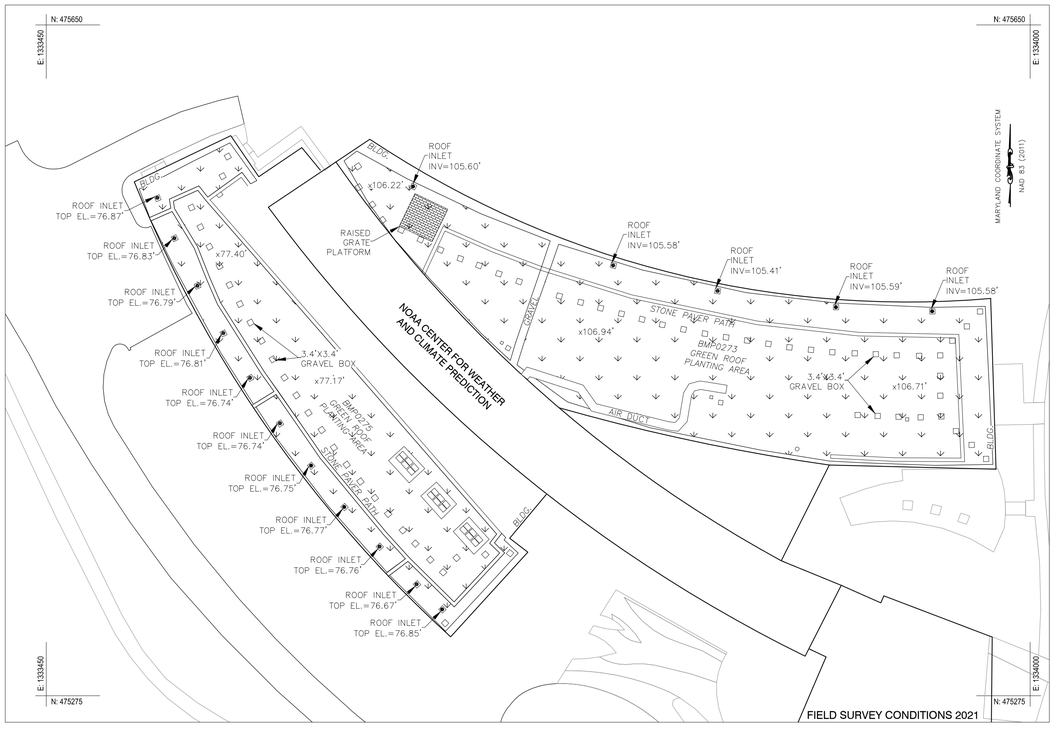


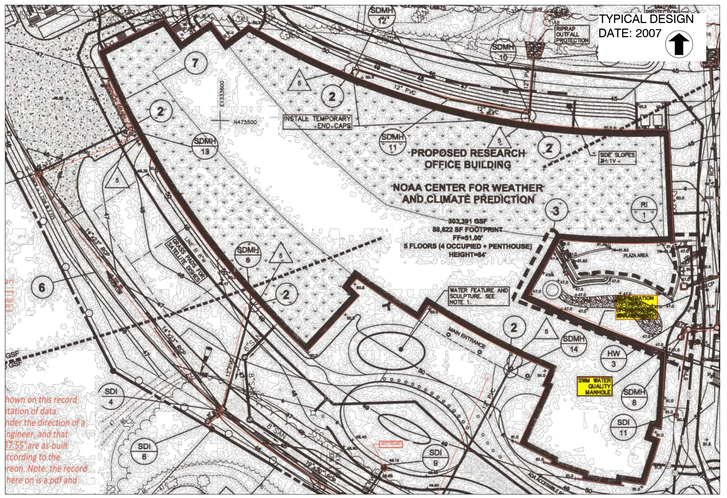
DRAINAGE AREA

BMP Summary Table					
BMP ID	WQ_v (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP20BMP0273	2,159	1	0.63	0.63	0.63
UMCP20BMP0275	1,139	1	0.33	0.33	0.33

BMP VERIFICATION DATA FOR GREEN ROOF

FEATURE	DESIGN	SURVEY
PROJECT NAME: NOAA Green Roof 1	**MDE NO: UMCP20BMP0273**	
AREA (SQUARE FEET)	27,687	27,271
THICKNESS (INCHES)	NA	4
PLANTINGS	grass (no specification)	✓
PROJECT NAME: NOAA Green Roof 2	**MDE NO: UMCP20BMP0275**	
AREA (SQUARE FEET)	14,692	14,384
THICKNESS (INCHES)	NA	4
PLANTINGS	grass (no specification)	✓





SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON MAY 10, 2021.
2) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
3) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
4) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 2007 - PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS - DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

80 0 40 80
(IN FEET)
1 INCH = 40 FT

REVISIONS

Maryland ENVIRONMENTAL SERVICE

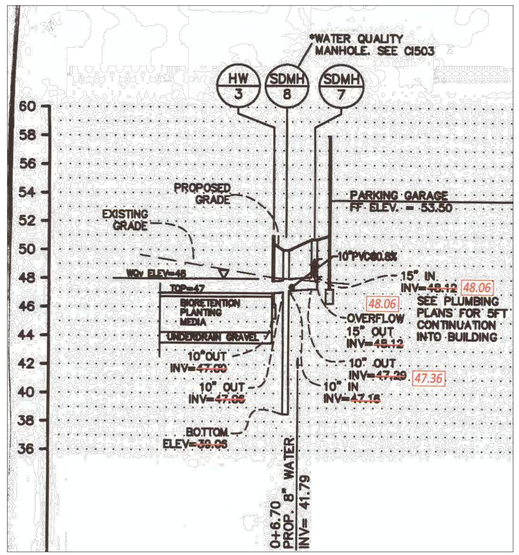
SURVEYED BY: JBC, GS
DRAWN BY: JBB
CHECKED BY: JW
DATE: JULY 14, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP20BMP0273 - UMCP20BMP0275 - GREEN ROOFS
NOAA - CENTER FOR WEATHER AND CLIMATE PREDICTION
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

PROJECT NO.
SCALE: 1" = 40'
SHEET 1 OF 1
DRAWING NO.

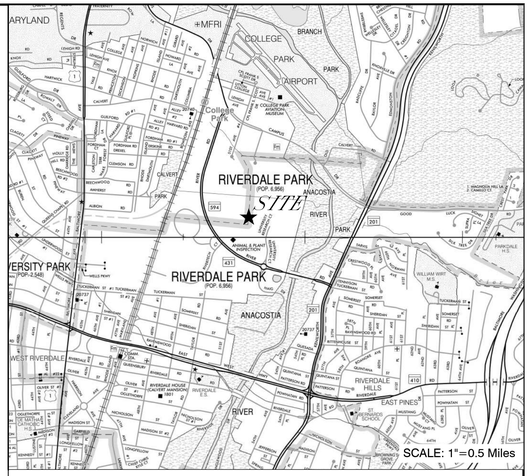
SAVED: 7/16/2021
PLOTTED: Jul 19, 2021
FILE PATH: C:\USERS\VPOPE\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\NOAA GREEN ROOF\V-TOPO-NOAA-GREENROOF.DWG

BMP Summary Table					
BMP ID	WQ_v (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP20BMP0274	4,347	0.92	1.62	1.35	0*
UMCP20BMP0278	73	0	0.98	0.96	0**
*BMP MUST BE IN PASSING CONDITION TO RECEIVE CREDIT					
**WATER QUALITY MANHOLES DO NOT RECEIVE WATER QUALITY TREATMENT CREDIT					

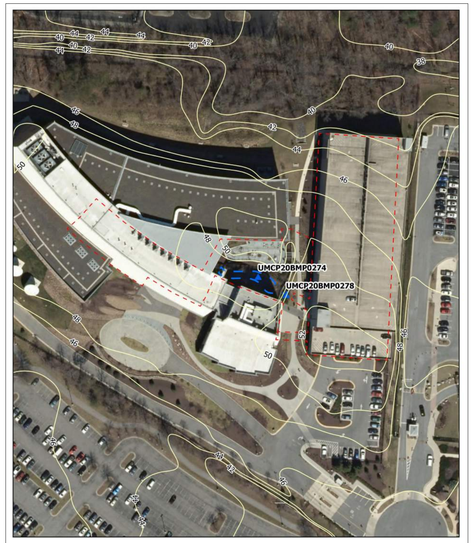


PROJECT NAME: NOAA WQ Manhole 2	MDE NO: UMCP20BMP0278	
BMP VERIFICATION DATA FOR FILTERS (Water Quality Manhole)		
FEATURE	**DESIGN**	**SURVEY**
BOTTOM ELEVATION (FEET)	39	40
BOTTOM AREA (FEET)	12.5	12.5
WATER SURFACE ELEVATION (FEET)	NA	45.13
WEIR ELEVATION (FEET)	47	45.43
STORAGE VOLUME (CUBIC FEET)	100	73
PONDING DEPTH (FEET)	7.94	5.8

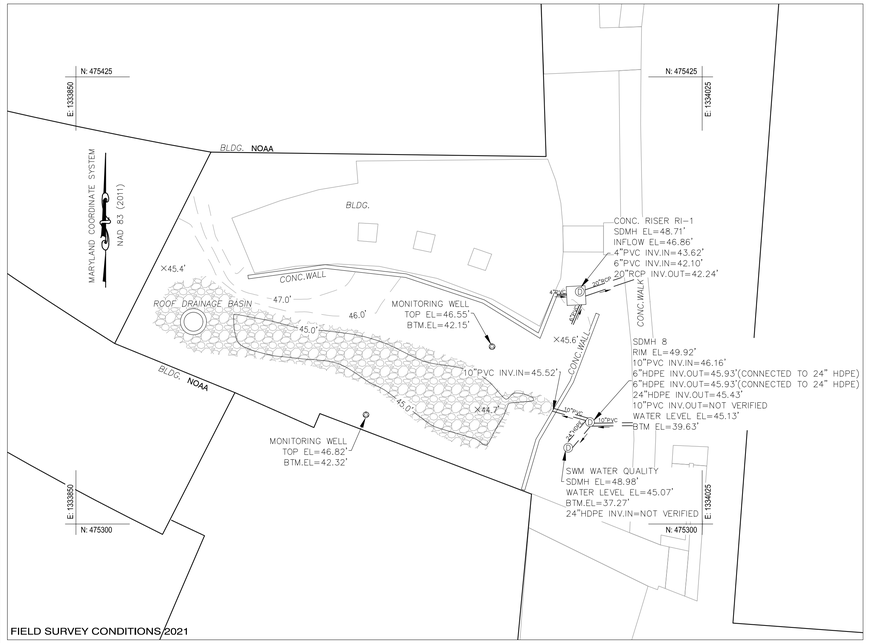
PROJECT NAME: NOAA Bioretention	MDE NO: UMCP20BMP0274	
BMP VERIFICATION DATA FOR FILTERS (Sand Filters and Bioretetion)		
FEATURE	**DESIGN**	**SURVEY**
FOREBAY AREA (SQUARE FEET)	N/A	N/A
FOREBAY VOLUME (CUBIC FEET)	N/A	N/A
FILTER BED SURFACE AREA (SQUARE FEET)	1,108	1,678
FILTER BED SURFACE ELEVATION (FEET)	47	45
FILTER INLET PIPE SIZE/INVERT ELEVATION	NA/48'	NA/46.86'
OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	NA/43.5'	6"/42.10'
THICKNESS OF FILTER MEDIA (FEET)	2.5	NFV
PLACEMENT OF GEOTEXTILE	N/A	NFV
PLANTINGS	N/A	✓
COMPOSITION OF FILTER MEDIA	N/A	NFV
WATER QUALITY DEPTH (FEET)	1	1.86
WATER QUALITY SURFACE AREA (SQUARE FEET)	4,487	4,842
NFV = NOT FIELD VERIFIED		

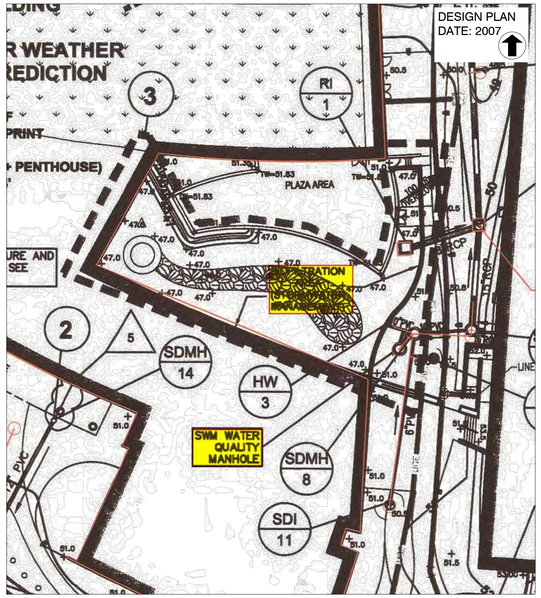


DRAINAGE AREA



GIS LAYERS DELINEATING DRAINAGE AREA AND IMPERVIOUS AREA APPEAR OFFSET DUE TO SKEWED ANGLE OF AERIAL IMAGERY.





SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON APRIL 30, 2021.
2) CONTOUR INTERVALS ARE AT 1.0'
3) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
4) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
5) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 2007- PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.
4) PIPE INVERTS MARKED AS NOT VERIFIED WERE NOT CAPTURED IN FIELD DUE TO WATER LEVELS IN MANHOLE. EXISTENCE OF FEATURES CONFIRMED BY NOAA FACILITIES STAFF.

40 0 20 40
(IN FEET)
1 INCH = 20 FT

REVISIONS

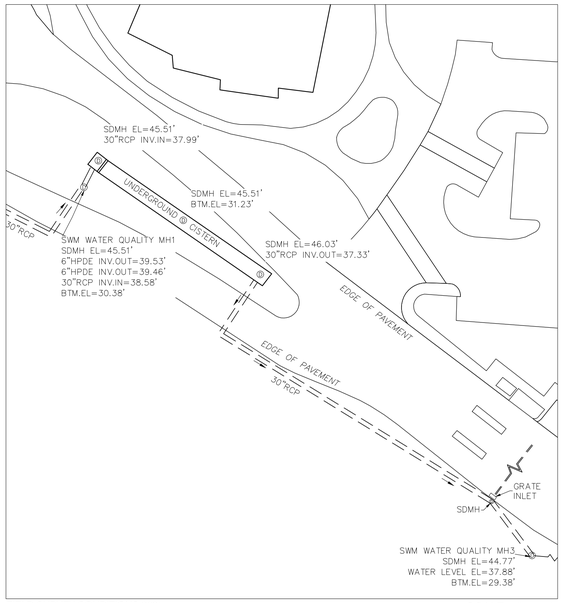
Maryland ENVIRONMENTAL SERVICE

SURVEYED BY: JBC, TR
DRAWN BY: JBB, KR
CHECKED BY: JW
DATE: July 15, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP0274 & UMCP19BMP0278 - BIORETENTION & WQ MANHOLE
NOAA - CENTER FOR WEATHER AND CLIMATE PREDICTION
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

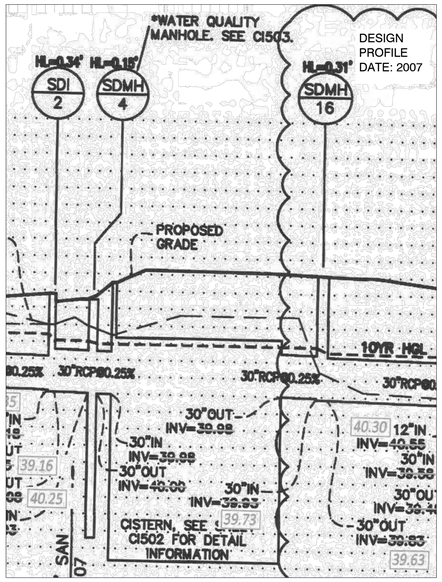
PROJECT NO.
SCALE: 1" = 20'
SHEET 1 OF 1
DRAWING NO.

SAVED: 8/3/2021 PLOTTED: August 13, 2021
FILE PATH: C:\USERS\PDPE\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III WS4 SUPPORT\SURVEY\WORK FOLDER\NOAA\FIELDV~TOPO~UMCP19BMP0274~279.DWG



FIELD SURVEY CONDITIONS 2021

SCALE: 1" = 40'



BMP Summary Table					
BMP ID	WQ_v (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP20BMP0276	114	0	1.04	0.41	0*
UMCP20BMP0277	5,919	0	1.04	0.41	0**
UMCP20BMP0279	106	0	1.69	0.98	0*
*WATER QUALITY MANHOLE DESIGN DOES NOT QUALIFY FOR CURRENT CREDIT					
**CISTERNS DO NOT PROVIDE WATER QUALITY TREATMENT					

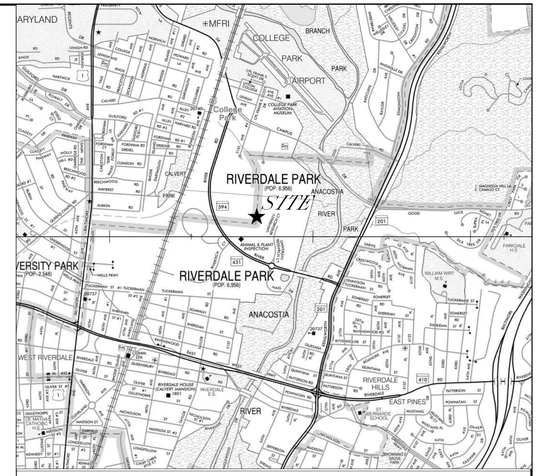
BMP VERIFICATION DATA FOR FILTERS (Water Quality Manhole)

FEATURE	DESIGN	SURVEY
PROJECT NAME: NOAA WQ Manhole 1	**MDE NO: UMCP20BMP0276**	
BOTTOM ELEVATION (FEET)	31.61	30.38
BOTTOM AREA (FEET)	12.5	12.5
WATER SURFACE ELEVATION (FEET)	N/A	N/A
WEIR ELEVATION (FEET)	40	39.5
STORAGE VOLUME (CUBIC FEET)	105	114
PONDING DEPTH (FEET)	8.39	9.12
PROJECT NAME: NOAA WQ Manhole 3	**MDE NO: UMCP20BMP0279**	
BOTTOM ELEVATION (FEET)	30.94	29.38
BOTTOM AREA (FEET)	12.5	12.5
WATER SURFACE ELEVATION (FEET)	N/A	37.88
WEIR ELEVATION (FEET)	38.78	NFV
STORAGE VOLUME (CUBIC FEET)	98	106
PONDING DEPTH (FEET)	7.84	8.50
NFV = NOT FIELD VERIFIED		

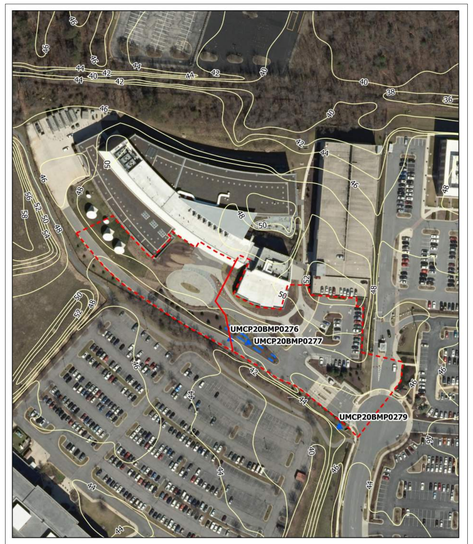
PROJECT NAME: NOAA Underground Cistern **MDE NO: UMCP20BMP0277**

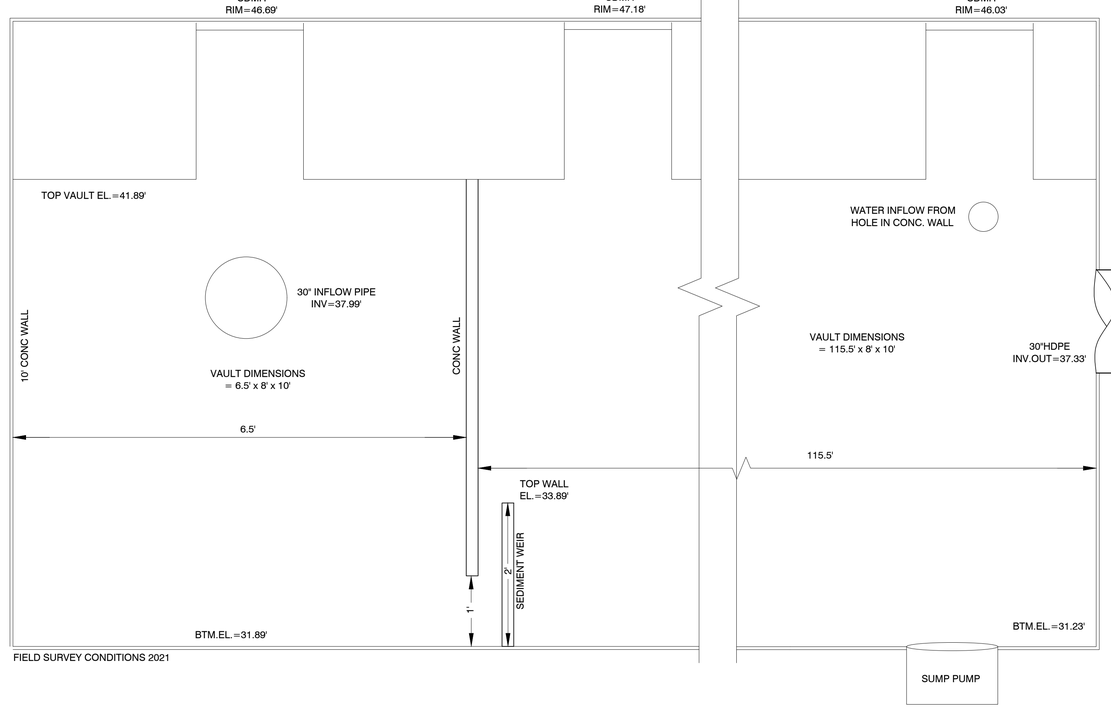
BMP VERIFICATION DATA FOR CISTERN

FEATURE	DESIGN	SURVEY
FOREBAY AREA (SQUARE FEET)	252	52
FOREBAY VOLUME (CUBIC FEET)	2,427	283
BOTTOM ELEVATION (FEET)	30.35	31.23
BOTTOM AREA (SQUARE FEET)	864	924
WATER SURFACE ELEVATION (FEET)	N/A	dewatered
WEIR ELEVATION (FEET)	39.98	37.33
STORAGE VOLUME (CUBIC FEET)	10,747	5,919
PONDING DEPTH (FEET)	9.63	6.1



DRAINAGE AREA





FIELD SURVEY CONDITIONS 2021

SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON MAY 10, 2021.
2) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
3) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
4) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 2007 - PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS - DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

SAVED: 8/27/2021 PLOTTED: September 13, 2021
FILE Path: C:\USERS\VPOPE\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\NOAA\UNDERGROUND\V-TOPO-NOAA UNDERGROUND.DWG

REVISIONS

Maryland ENVIRONMENTAL SERVICE

SURVEYED BY: JBC, SL
DRAWN BY: JBB
CHECKED BY: JW, KR
DATE: August 24, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP20BMP0276-0279 - Underground Cistern & WQ Manholes
NOAA - CENTER FOR WEATHER AND CLIMATE PREDICTION
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

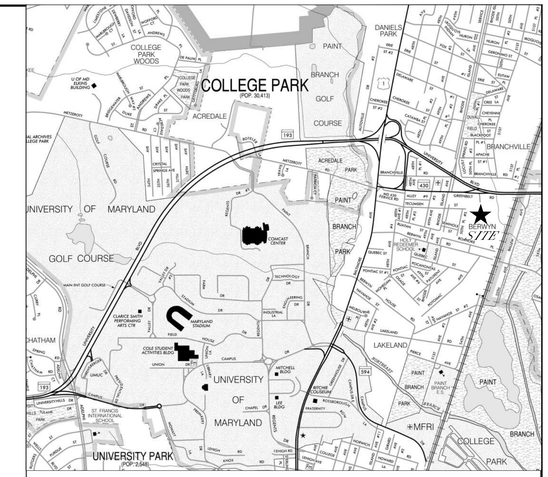
PROJECT NO.
SCALE: AS NOTED
SHEET 1 OF 1
DRAWING NO.

BMP Summary Table					
BMP ID	WQ_v (cubic feet)	PE (in)	Total Drainage Area (ac.)	Total Impervious Area (ac.)	Impervious Area Credit (ac.)
UMCP20BMP0280	41	0.02	0.79	0.59	0.00
*FACILITY MUST BE IN PASSING CONDITION TO RECEIVE CREDIT					

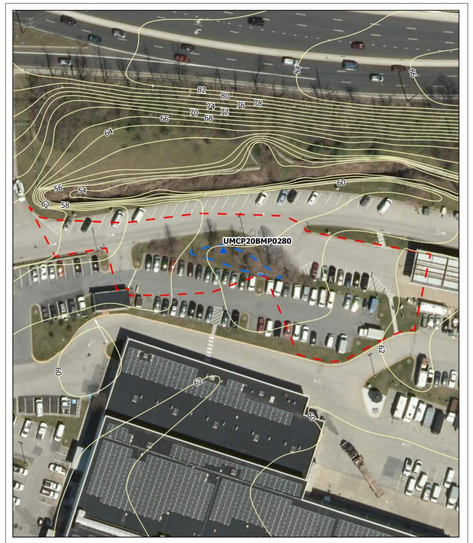
PROJECT NAME: Severn Building Micro-Bioretention **MDE NO: UMCP20BMP0280**

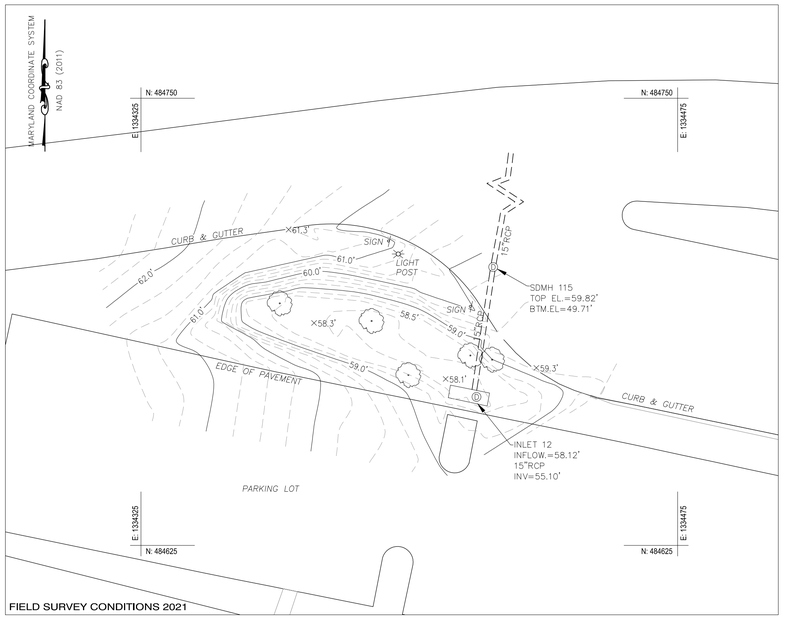
BMP VERIFICATION DATA FOR FILTERS (Sand Filters and Bioretetion)

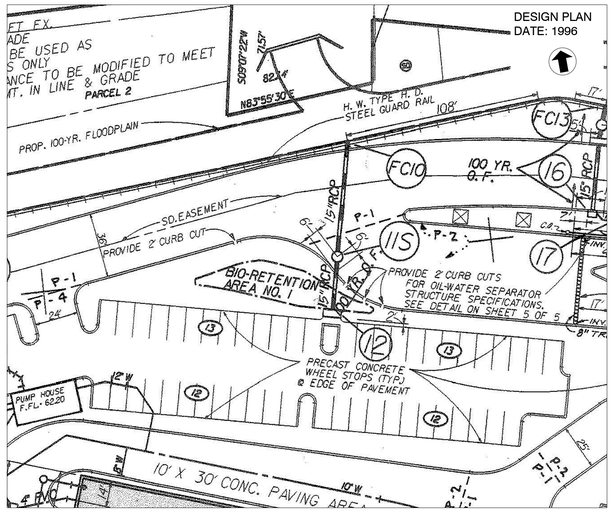
FEATURE	DESIGN	SURVEY
FOREBAY AREA (SQUARE FEET)	N/A	N/A
FOREBAY VOLUME (CUBIC FEET)	N/A	N/A
FILTER BED SURFACE AREA (SQUARE FEET)	1,398	309
FILTER BED SURFACE ELEVATION (FEET)	NA	58.2
FILTER INLET PIPE SIZE/INVERT ELEVATION	NA	NA/58.12'
OUTLET PIPE (UNDERDRAIN) SIZE/INVERT ELEVATION	NO UNDERDRAIN	NO UNDERDRAIN
THICKNESS OF FILTER MEDIA (FEET)	N/A	NFV
PLACEMENT OF GEOTEXTILE	N/A	NFV
PLANTINGS	N/A	✓
COMPOSITION OF FILTER MEDIA	N/A	NFV
WATER QUALITY DEPTH (FEET)	N/A	0.1
WATER QUALITY SURFACE AREA (SQUARE FEET)	N/A	431
NFV = NOT FIELD VERIFIED		



DRAINAGE AREA







SURVEY NOTES

1) FIELD ELEVATIONS SHOWN HERE ARE BASED ON SURVEY DATA COLLECTED BY MES ON APRIL 30, 2021.
2) CONTOUR INTERVALS ARE AT 0.5ft
3) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE (NAD83/2011).
4) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
5) COORDINATES WERE ESTABLISHED THROUGH EXTENDED GPS SESSIONS.

GENERAL NOTES

1) UNDERGROUND FEATURES BASED OFF PROPOSED PLANS DATED 1996-PROVIDED BY UNIVERSITY OF MARYLAND, COLLEGE PARK.
2) THE VERTICAL DATUM SHOWN ON THE PROPOSED PLANS COULD NOT BE DETERMINED. NO ELEVATION SOURCE WAS REFERENCED.
3) FEATURES SHOWN OUTSIDE OF BMP LIMITS ARE FROM UMCP GIS DATED 2016 AND ARE FOR GRAPHICAL PURPOSES ONLY.

40 0 20 40
(IN FEET)
1 INCH = 20 FT

REVISIONS

Maryland ENVIRONMENTAL SERVICE

SURVEYED BY: JBC, TR
DRAWN BY: JBB
CHECKED BY: JW
DATE: July 21, 2021

BMP FIELD VERIFICATION WORKSHEET
UMCP19BMP0280 - MICRO - BIORETENTION
SEVERN BUILDING
COLLEGE PARK, MD 20740 - UMCP
GEOSPATIAL & ENGINEERING DIVISION
259 Najoles Road - Millersville, Maryland 21108 - Office: 410-729-8200 - Fax: 410-729-8340

PROJECT NO.
SCALE: 1" = 20'
SHEET 1 OF 1
DRAWING NO.

SAVED: 7/21/2021 PLOTTED: August 3, 2021
FILE PATH: C:\USERS\WPOPE\MARYLAND ENVIRONMENTAL SERVICE\UNIVERSITY OF MARYLAND, COLLEGE PARK - ACTIVE TASKS\TASK 18 - YEAR III MS4 SUPPORT\SURVEY\WORK FOLDER\UMCP20BMP0280\V-TOPO-UMCP20BMP0280.DWG

ATTACHMENT D

Restoration Concepts

SWF065 & SWF066 Restoration Report

Existing Conditions

The two facilities, shown in Figure 1, are grass swales located north and east of the Laboratory for Telecommunication Sciences parking lot. Swale A (SWF066) receives runoff from 2.43 acres of impervious within a 4.75-acre drainage area, and Swale B (SWF065) receives runoff from 0.22 acres of impervious within a 0.50-acre drainage area. Stormwater enters both facilities through sheetflow. Swale A also receives concentrated flow from a stormceptor on the south end of the swale. The stormceptor acts as pretreatment for a portion of the runoff from the parking lot. Pretreatment is also achieved through a stone diaphragm that runs the northeastern perimeter of the lower section of Swale A. There is a control structure where the two swales meet. The control structure is a concrete structure with a perforated PVC low flow and trash rack. Upon inspection, both facilities were determined to be failing and require major maintenance.

Figure 1. Overall aerial view


Figure 2. Overgrown vegetation

Both facilities were excessively overgrown with vegetation, as shown in Figure 2, making accessibility to Swale B and the control structure difficult. Vegetation within the southern portion of Swale A was better maintained. There was a significant amount of cattail growth and ponding within both facilities. The excess ponding is being caused by a clogged low flow. There was a significant amount of accumulated muck around the control structure. Additionally, there is a large tree at the control structure which has compromised the trash rack and low flow, shown in Figure 3. The principal spillway and outfall were not accessed at the time of inspection.


Figure 3. Tree growth at control structure

The clogged low flow has caused water to pond throughout the entirety of both swales, forming a small pool at the south inflow to Swale A shown in Figure 4. The grading within the southern section of Swale A is also contributing to the observed ponding at the inflow. The trash rack for the southern inflow was partially clogged with leafy debris. Additionally, Figure 5 shows erosion was observed along the edge of the

Figure 4. Ponding at Swale A south inflow

parking lot and on the slope of the swale where sheetflow from the parking lot enters Swale A by the southern inflow. Swale B was observed to have channeling within the conveyance as well as accumulation of vegetative debris.

Figure 5. Erosion along parking lot

The original design indicates both swales should provide water quality treatment for the first 1" of runoff. On April 28, 2021, survey confirmed the facilities still provide full treatment for the first 1" of runoff. However, the accumulation of sediment has altered the grading from the original design. Grass swales should have a bottom width of no more than 8 feet, with side slopes at a recommended ratio of 3:1 and never to exceed a ratio of 2:1. Survey determined the swales meet the side slope criteria, but the bottom of the swale is no longer defined. The bottom width of Swale A is approximately 10 feet, and Swale B 11 feet, exceeding the allowable maximum design width. Additionally, as mentioned previously, grading within the southern section of Swale A is contributing to the ponding observed at the southern inflow.

Figure 6. Ponding at Swale A south inflow and parking lot

In addition to the bottom of Swale A exceeding the maximum design width, the geometric slope of the swale is relatively flat. The slope of the southern portion of Swale A is approximately 0.27%. There is no minimum slope needed according to the MDE Design manual, but due to the continuous ponding in Swale A, it is assumed that the swale does not have adequate positive drainage to convey water through the facility in order for it to not hold water past the maximum 48 hour retention period.

Due to the invert of the elliptical pipe from the stormceptor being only 0.72" above the 18" RCP invert under the parking lot, that carries flow from the southern to the northern portion of the swale, there is not enough fall between the two inverts to grade an adequate slope for positive drainage without burying the inflow pipe. The distance between the pipes along the swale is approximately 260', so a fall of 2.6' would be needed in order to have a 1% slope and promote positive flow. To address this, MES is proposing to reset the inflow pipe from the stormceptor to a higher downstream invert of 92.31 instead of it's designed invert of 90.92, which allows for a 1% slope within the pipe. This will allow for enough room to re-grade the swale to achieve a slope 0.85%, which is much more desirable for a swale of this length, and as close to a 1% slope as the site constraints allow. A potential obstacle to this proposal, shown in Figure 6, is that there does not appear to be much room for cover over the pipe in the parking lot. This is an aspect that would need to be further investigated if this option is chosen, especially since the pipe would be 1.39 feet higher than current conditions show. A planning level grading concept was drafted in the Concept Plan for resetting the pipe and re-grading the

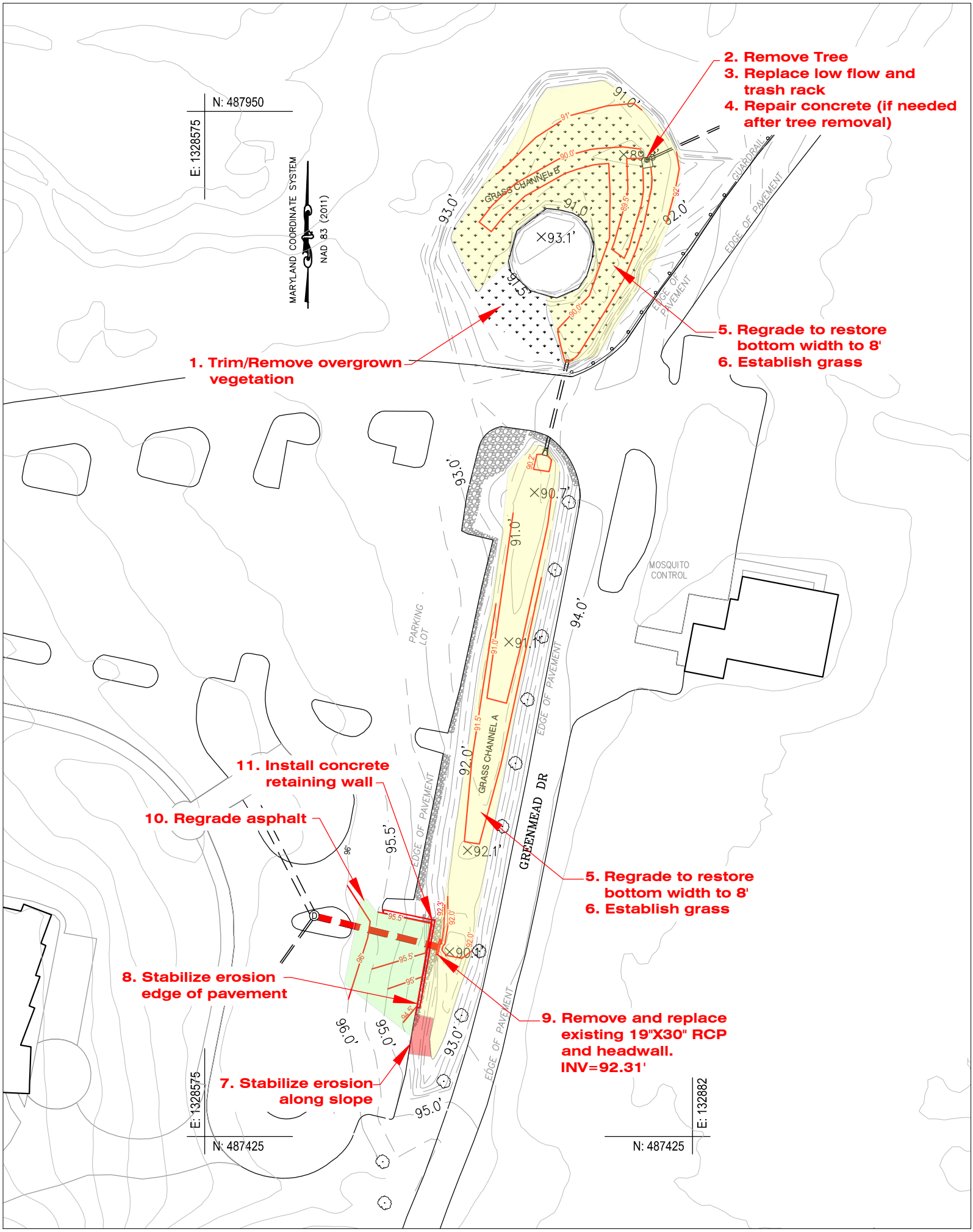
asphalt parking lot, but a more intensive study and plan should be completed to confirm the viability of this work. The plan also involves installing retaining walls on the corner of the parking lot due to the steep slope necessary to raise the invert of the pipe. Hydraulic computations for the new pipe invert should also be done to confirm the change to a 1% slope within the pipe still conforms to MDE Standards.

Restoration Plan

MES recommends the following modifications to restore the facility's functionality:

Maintenance:

1.) Trim/remove overgrown vegetation within each swale.
2.) Remove tree at control structure.
3.) Replace low flow & trash rack.
4.) Repair damage to control structure concrete (if needed after tree removal).
5.) Excavate and regrade swales to restore 8' swale bottom and proper slope along the channel length.
6.) Reestablish grass within swale bottoms and on slopes.
7.) Stabilize erosion along slope at southern Swale A inflow with soil and seed.
8.) Stabilize erosion along parking lot edge. Ensure smooth seam where slope and asphalt meet to prevent future erosion.
9.) Remove and replace existing inflow pipe at higher elevation from stormceptor at southern Swale A.
10.) Repair asphalt damaged by pipe replacement.
11.) Install concrete retaining wall.



SCALE: 1" = 60'
NOT FOR CONSTRUCTION

LABORATORY FOR TELECOMMUNICATION SCIENCES - SWF065 & SWF066

Cost Estimate

An engineer's cost estimate to repair the grass swales is provided below in Table 1.

Table 1. Cost Estimate to Repair

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$5,000.00	$5,000.00
Trim/Remove vegetation (slopes and swale bottom)	864	SY	$6.00	$5,184.00
Remove woody vegetation from embankment and surrounding	1	EA	$1,500.00	$1,500.00
Replace low flow pipe	10	LF	$50.00	$500.00
Replace trash rack	1	EA	$1,000.00	$1,000.00
Repair concrete outfall structure (if needed)	1	CY	$350.00	$350.00
Grade Swale bottom to 8' width	683	SY	$25.00	$17,075.00
Excavate built up sediment/soil in swale bottom to achieve grade	42	CY	$50.00	$2,100.00
Remove leafy debris from stormceptor inflow	2	SY	$15.00	$30.00
Stabilize erosion	47	SY	$15.00	$705.00
Remove existing inflow pipe (stormceptor inflow)	63	LF	$45.00	$2,835.00
Install new inflow pipe	63	LF	$130.00	$8,190.00
Repair asphalt from pipe replacement	211	SY	$90.00	$18,990.00
Install retaining wall	12	SY	$330.00	$3,960.00
10-18 CY Tandem Dump Truck	40	HR	$75.00	$3,000.00
Wet Meadow Establishment	408	SY	$5.00	$2,040.00
Turfgrass establishment	1341	SY	$2.00	$2,682.00
Temporary stabilization matting	1341	SY	$4.50	$6,034.50
UMD PM and Inspection fee	40	HR	$100.00	$4,000.00
Subtotal				$85,175.50
Contingency			25%	$21,293.88
Total				$106,469.38

**Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.*

Appendix A. Provided Treatment

Table 2. Design Stage Storage Swale A

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
90.5	0	-	0	0
91	1945	0.5	486	486
91.5	7831	0.5	2,444	2,930
92	8622	0.5	4,113	7,043
92.5	9409	0.5	4,508	11,551
93	10191	0.5	4,900	16,451

Table 3. Design Stage Storage Swale B

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
91.4	0	-	0	0
92	1063	0.6	319	319
92.5	4757	0.5	1,455	1,774
93	6119	0.5	2,719	4,493

Table 4. MES 2021 Stage Storage Swale A

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
Northern Cell				
90	83	-	0	0
90.5	1,195	0.50	319	319
91	3,159	0.50	1,088	1,408
91.5	4,332	0.50	1,873	3,281
92	5,000	0.50	2,333	5,614
Southern Cell				
90.5	108	-	0	0
91	1,181	0.50	322	322
91.5	3,738	0.50	1,230	1,552
92	6,534	0.50	2,568	4,120
			Total Volume	9,734

Table 5. MES 2021 Stage Storage Swale B

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
90	109	-	0	0
90.5	1,692	0.50	450	450
91	4,161	0.50	1,463	1,913
91.5	5,741	0.50	2,475	4,389
92	6,451	0.50	3,048	7,437

Table 6. Provided Treatment Swale A

	Drainage Area (ac.)	Impervious Area (ac.)	Required Volume to Treat 1" (cu ft)	Provided Volume (cu ft)	Pe (in)	Impervious Area Treatment Credit (ac.)
Design	4.75	2.43	8,821	16,451	1	2.43
2021 Survey	4.75	2.43	8,821	9,734	1	2.43
Repair	4.75	2.43	8,821	10,655	1	2.43

Table 7. Provided Treatment Swale B

	Drainage Area (ac.)	Impervious Area (ac.)	Required Volume to Treat 1" (cu ft)	Provided Volume (cu ft)	Pe (in)	Impervious Area Treatment Credit (ac.)
Design	0.5	0.22	799	4,493	1	0.22
2021 Survey	0.5	0.22	799	7,437	1	0.22
Repair	0.5	0.22	799	6,353	1	0.22

SWF106 Shuttle Bus Pond

Existing Conditions

The facility, shown in Figure 1, is a pond that receives runoff from 1.17 acres of impervious within a 1.32-acre drainage area. Stormwater enters the facility through sheetflow on the southwestern side of the facility. This inflow has riprap protection to ensure nonerosive flow into the facility. Additionally, according to design concentrated flow from an oil grit separator is introduced on the west side of the facility. However, this inflow pipe was not confirmed in the field due to likely being submerged. The pond does not have a control structure. An earth spillway on the east side of the pond controls the water elevation within the pond. Overflow from the pond enters a dry swale (SWF026) which will eventually outfall to a small tributary leading to Paint Branch Creek. Upon inspection, the facility was determined to be failing and requires major maintenance.

Figure 1. Overall view from west

Figure 2 shows excessive vegetation growth within the inflow riprap protection. Additionally, as demonstrated in Figure 1 the basin was overrun with cattail growth, reducing the storage capacity of the pond. Ponding within the facility was acceptable. The facility was designed to only provide recharge volume. Therefore, it is expected water within the facility will infiltrate into the ground. However, the design plans did not indicate if the full volume within the facility should infiltrate. Historic imagery supports the classification as a wet pond, indicating the observed ponding during inspection was acceptable. The embankment and spillway were in good condition.

Figure 2. Vegetation growth inflow riprap

Evaluating the original design, the pond should have a bottom elevation of 67’ and store 2,536 cf of water at the spillway elevation. A May 12, 2021 survey indicated the facility storage depth has been reduced with a bottom elevation at 67.5’. Additionally, the volume at the spillway elevation has been reduced to 403 cf. As stated previously within this report, the storage capacity within the facility has been reduced by the overabundance of cattail growth within the basin. The spillway elevation meets design at an elevation of 68’.

As previously mentioned, the pond was not designed to provide WQv but instead provides recharge volume. However, even though the facility does not earn treatment credit, according to the MDE stormwater manual, recharge volume still contributes to the total site WQv requirement. Since the pond overflows into a dry swale (SWF026), the impervious draining to the pond may also be considered as being treated by the swale. Taking into account the nested drainage area to the pond, the total

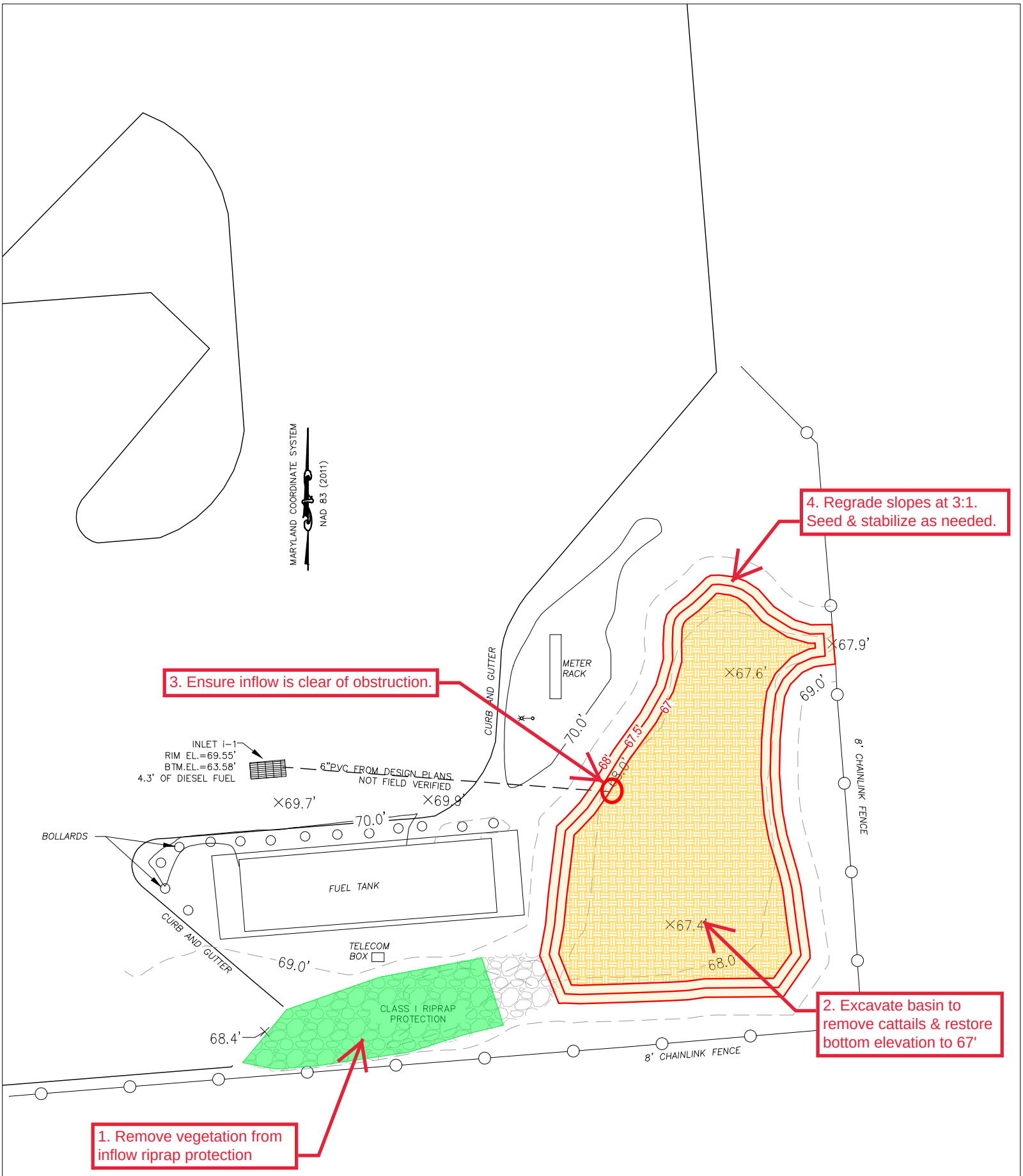
impervious being treated by the swale is 2.23 acres. If the pond were in functioning condition, the storage provided would be counted toward the total WQv provided for treating this 2.23 acres of impervious. Re-evaluating the drainage area to the dry swale, the Pe should be updated to 0.77" with a total treatment credit of 1.71 acres assuming the pond is still in failing condition. Upon repair to the pond, the credit for the swale would increase due to the reduced WQv requirement provided by the pond storage.

Restoration Plan

MES recommends the following modifications to restore the facility's functionality:

Maintenance:

1.) Remove vegetation from inflow riprap protection.
2.) Excavate basin to remove cattails and restore pond bottom to 67'.
3.) Ensure inflow pipe from parking inlet is located and opening is clear of obstruction.
4.) Regrade slopes at 3:1 grade. Seed and stabilize as needed.



SCALE: 1" = 20'

SWF106 SHUTTLE BUS POND

Cost Estimate

An engineer's cost estimate to repair the pond is provided below in Table 1.

Table 1. Cost Estimate to Repair

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$ 3,000.00	$ 3,000.00
Excavation	59	CY	$ 50.00	$ 2,950.00
10-18 CY Tandem Dump Truck	24	HR	$ 75.00	$ 1,800.00
Grading	72	SY	$ 20.00	$ 1,440.00
Herbicide Application Crew (spray cattails)	1	Day	$ 150.00	$ 150.00
Remove vegetation from riprap	47	SY	$ 4.00	$ 188.00
Turfgrass establishment	248	SY	$ 2.00	$ 496.00
Temporary stabilization matting	72	SY	$ 6.00	$ 432.00
UMD PM and Inspection Fee	10	HR	$ 100.00	$ 1,000.00
				$ -
Subtotal				$ 11,456.00
Contingency			25%	$ 2,864.00
Total				$ 14,320.00

*Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.

Appendix A. Provided Treatment

Table 2. Design Stage Storage

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
67	1,943	-	0	0
67.5	2,524	0.50	1,117	1,117
68	3,153	0.50	1,419	2,536

Table 3. MES 2021 Survey Stage Storage

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
67.5	205	-	0	0
68	1,405	0.50	403	403

Table 4. Provided Treatment

	Drainage Area (ac.)	Impervious Area (ac.)	Required Volume to Treat 1" (cu ft)	Provided Volume (cu ft)	Pe (in)	Impervious Area Treatment Credit (ac.)
2010	1.32	1.17	4,247	2,536	0	0.0
2021 Survey	1.32	1.17	4,247	403	0	0.0
Maintenance to Pond to restore 1' ponding	1.32	1.17	4,247	1,873	0	0.0

Note: Facility does not receive credit due to design as recharge facility

Table 5. SWF026 Dry Swale & SWF106 Pond Crediting

	Drainage Area (ac.)	Impervious Area (ac.)	Required Volume to Treat 1"	Provided Volume (cu ft)	Pe (in)	Impervious Area Treatment Credit (ac.)
2010	2.82	2.23	8,095	7,770	0.96	2.14
Maintenance to Pond to restore 1' ponding	2.82	2.23	8,095	8,084	1	2.23

Note: Both the dry swale and pond were constructed for redevelopment purposes. The existing impervious was untreated with no net increase in impervious. Therefore, credit can be claimed for over management at a discounted rate.

SWF142 Kim Plaza

Existing Conditions

The facility, shown in Figure 1, is a micro-bioretention that receives runoff from 0.10 acres of impervious within a 0.17-acre drainage area. Stormwater enters the facility through sheetflow at the north and west regions of the facility. There is a gravel curtain at the inflow that acts as a spreader to ensure nonerosive flow into the facility. The control structure is an inlet that outfalls into the storm drain network. Upon inspection, the facility was determined to be functioning and requires minor maintenance.

Figure 1. Overall view from west

Figure 2. Erosion at inflow

Figure 2 shows minor bare areas within the basin of the facility. Additionally, MES observed a bare area leading into the facility on the east slope, as shown in Figure 3. It appears this area is bare due to the placement of plantings but could be signs of possible erosion. The facility was dry at the time of inspection indicating the facility dewaters as designed. There were no cleanouts within the facility although called for in the design plans. The control structure, principal spillway and outfall were in good condition.

Figure 3. Damaged cleanout cover

Evaluating the original design following MDE guidance, the micro-bioretention provides over management for the impervious area but should receive credit for only 1" of treatment due to the redevelopment project being completed prior to 2006. A May 21, 2021 survey confirmed the facility still provides over management for the impervious area. However, survey revealed that ponding within the facility will exceed the allowable 1' depth per MD 378 small pond guidance by 0.57'. The facility currently does not require pretreatment and provides storage for 75% of the ESD above the filter, therefore meeting MDE standards for a micro-bioretention.

Restoration Plan

MES recommends the following modifications to improve the facility's functionality:

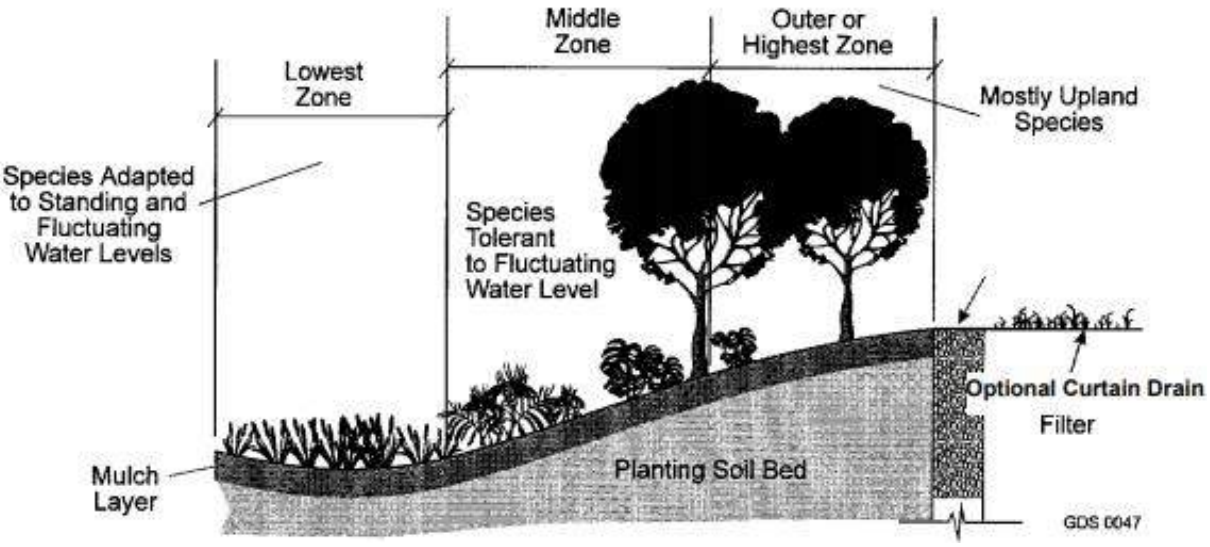
Maintenance:

1.) Add 3" of filter media and 2-3" of mulch to raise basin bottom to 70.5' to restore ponding to the designed 1' depth. Existing vegetation will need to be removed prior to media and mulch installation.
2.) Install new vegetation within bottom of basin. MES recommends incorporating shrub plantings.
3.) Seed/mulch bare area on slope.
4.) Trim vegetation as needed.

Retrofit:

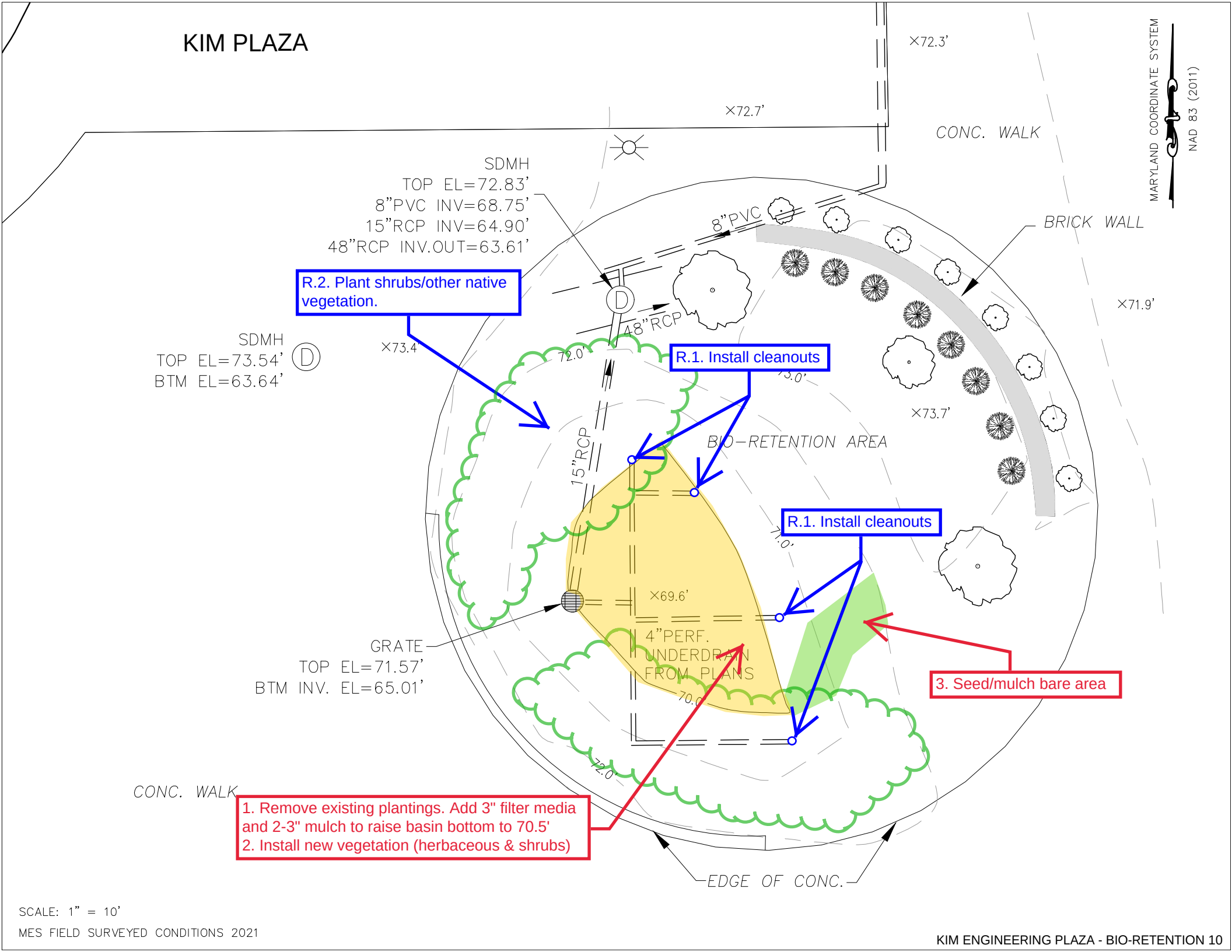
R1. Install cleanouts according to original design.
R2. Update landscape plan to include additional variety of native vegetation, such as shrubs within the middle zone. Landscaping guidance is available in Appendix A of MDE's Stormwater Manual (https://mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/www.mde.state.md.us/assets/document/sedimentstormwater/Appnd_A.pdf)

Figure 4. Planting Zones for Bioretention Facilities from Appendix A of MDE Stormwater Manual



Additionally, UMCP is proposing installing a light post within the facility. Installation of the light post should not pose any negative impacts on the facility. MES recommends ensuring the light post is not installed within the filter bed area. Additionally, most of the runoff draining to the facility enters on the northwest end of the micro-bioretention. If the light post is to be installed in this region, it should be installed in a manner not to promote erosive flow into the micro-bioretention.

KIM PLAZA



SCALE: 1" = 10'

MES FIELD SURVEYED CONDITIONS 2021

Cost Estimate

An engineer's cost estimate to repair and update the micro-bioretention is provided below in Table 1.

Table 1. Cost Estimate to Repair & Update

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$ 500.00	$ 500.00
Remove existing vegetation	30	SY	$ 4.00	$ 120.00
3" Mulch	30	SY	$ 12.00	$ 360.00
Bioretention Soil Mix	3	CY	$ 100.00	$ 300.00
Turfgrass establishment	6	SY	$ 2.00	$ 12.00
Bioretention Meadow Establishment	9	SY	$ 3.00	$ 27.00
Shrub Establishment	6	EA	$ 30.00	$ 180.00
PM and Inspection fee	4	HR	$ 100.00	$ 400.00
Retrofit				
Shrub Establishment	10	EA	$ 30.00	$ 300.00
Install Cleanouts	4	EA	$ 250.00	$ 1,000.00
PM and Inspection fee	4	HR	$ 100.00	$ 400.00
Subtotal				$ 3,599.00
Contingency			25%	$ 899.75
Total				$ 4,498.75

**Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.*

Appendix A. Provided Treatment

Table 2. Design ESDv

Elevation (ft)	Filter Area (sq ft)	Ponding (ft)	Surface Storage (cu ft)	Total ESDv (cu ft)
71	673	1.00	673	897

Table 3. MES 2021 Survey ESDv

Elevation (ft)	Filter Area (sq ft)	Ponding (ft)	Surface Storage (cu ft)	Total ESDv (cu ft)
70	483	1.57	758	1,010

Table 4. Provided Treatment

	Drainage Area (ac.)	Impervious Area (ac.)	Required Volume to Treat 1" (cu ft)	Provided Volume (cu ft)	Pe (in)	Impervious Area Treatment Credit (ac.)
2002	0.17	0.10	369	897	1	0.10
2021 Survey	0.17	0.10	369	1,010	1	0.10
Maintenance to restore 1' ponding	0.17	0.10	369	643	1	0.10

SWF261 Mosquito Control Micro-bioretention (MBR)

Existing Conditions

The BMP, shown in Figure 1, is a micro-bioretention facility that receives runoff from 0.27 acres of impervious within a 0.54-acre drainage area. The micro-bioretention is located to the east of the Laboratory for Telecommunication Sciences parking lot, and MES accessed the facility from this lot. Stormwater enters the facility through a 4" PVC drain flowing from the direction of the parking area to the southeast of the micro-bioretention. There is no control structure, but there is an earthen embankment and an underdrain that outfalls at the northeast section of the facility and daylights near the Waters of the US a couple hundred feet northeast of the facility. Upon inspection, the facility was determined to be failing and requires major maintenance.

Figure 1. Overall view of Micro-bioretention

Several feet of ponding was observed in the cleanout, shown in Figure 2, most likely due to a clog in the underdrain or clogged filter media. Due to construction in the area, MES was unable to access the downstream channel to inspect the underdrain and downstream condition, to verify if there is an issue there contributing to the ponding. The downstream channel and pipe outfall should be investigated further to determine their condition. Also potentially contributing to the ponding is the overgrown woody vegetation throughout the basin, shown in Figure 1 and 2. In addition to the overgrown woody vegetation in the basin, the embankments surrounding the facility also have excessive woody vegetation, shown in Figure 3, which should be removed.

Figure 2. Micro-bioretention Treatment Area and Cleanout

Figure 3. Tree Growth on Embankment

Finally, there is erosion around the 4” PVC inflow to the facility, shown in Figure 4, which should be repaired and stabilized with seed and matting.

Figure 4. Overgrown vegetation at outfall

Cost Estimate for Repairs to Micro-bioretention

An engineer’s cost estimate to repair the micro-bioretention facility is provided below in Table 1.

Table 1. Cost Estimate to Repair

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$3,000.00	$3,000.00
Excavation	145	CY	$50.00	$7,250.00
Install New 24" Bioretention Soil Mix	96	CY	$110.00	$10,560.00
10-18 CY Tandem Dump Truck	40	HR	$75.00	$3,000.00
Remove Woody Vegetation from Basin/Embankments	511	SY	$10.00	$5,110.00
Install 3" Mulch	36	SY	$12.50	$450.00
Bioretention Meadow Establishment	145	SY	$3.00	$435.00
Install crushed aggregate around underdrain	48	CY	$55.00	$2,640.00
Tree, Shrub and Perennial Installation and Establishment	1	LS	$2,000.00	$2,000.00
Turfgrass establishment	367	SY	$4.00	$1,468.00
Temporary stabilization matting	253	SY	$7.00	$1,771.00
Minor erosion Repair (soil & seed)	4	SY	$10.00	$40.00
Reinstall PVC underdrain and outfall	300	LF	$15.00	$4,500.00
UMD PM and Inspection Fee	30	HR	$100.00	$3,000.00
Subtotal				$45,224.00
Contingency			25%	$11,306.00
Total				$56,530.00

**Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.*

Alternative Solutions

If these activities are deemed to be excessive for the relatively small amount of treatment credit the facility provides, there are alternative options that can be explored. These options are disconnection of rooftop runoff, disconnection of non-rooftop runoff and sheet flow to conservation areas.

Rooftop disconnection could be utilized for the drainage coming from the roof of the building, shown in Figure 5, to the southwest of the facility. There is enough space in the wooded, grassy area downstream to create the needed 75-foot flow path, the pervious area appears to have a slope <5%, the DA for each connected downspout is less than 500 sq. ft., and there appears to be enough space (at least 10 ft) between the downspouts and the nearest impervious surface to prevent reconnection. These factors can be verified in the field during planning if this option is chosen.

Non-rooftop disconnection is a potentially suitable non-structural treatment method for small parking lots, like the one shown in Figure 5. Similar to the rooftop disconnection proposed above, initial screening of the site appears to indicate the site meets the criteria established in Chapter 5 of the MDE Design Manual: there is at least a 10 ft flow path in the disconnected area, the slope is <5%, the impervious flow path is less than the maximum allowable 75 ft, and there is adequate space between the parking lot and the disconnected area to prevent reconnection. The overall impervious DA is greater than the allowable 1,000 sq. ft., however the disconnected areas can be broken up into smaller cells to accommodate this. One potential issue with this method is the presence of the wood blocks at the parking lot edge that promote concentrated flow towards the disconnected area. This will need to be investigated and the blocks will potentially need to be removed if there is not enough sheet flow across the disconnected area to promote infiltration and reduce erosion potential.

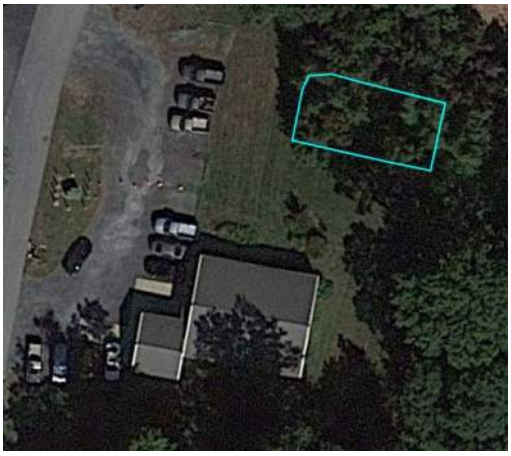


Figure 5. Building and parking lot in Micro-bioretention DA

There is a separate option for a non-structural practice that may be viable if remediating the micro-bioretention is not a feasible activity. Sheetflow to Conservation Areas is the practice of directing stormwater, via sheetflow, across a natural landscape where it can infiltrate or flow over the ground. Through initial desktop analysis, the site appears to meet the main design criteria needed, that is: a conservation area of at least 20,000 sq. ft., a minimum effective width of 100 feet, and a maximum Pe of 1.0 inch. Conservation areas may be existing natural areas, like the forested area downstream of the parking lot and existing Micro-bioretention, or a created or restored resource (wetland). The only constraint for this practice is that there do not appear to be any current Forest Conservation Easements or currently protected resources within the proposed conservation area. A conservation plan and application would need to be completed and the area designated as such for this solution to be practical.

Further desktop screening using the Watershed Resources Registry (WRR) of Maryland shows that this area lies within a Maryland Department of Natural Resources identified Biodiversity Conservation Network (BioNet) tier 5 zone, as shown in Figure 6, and also within a Forest Interior Dwelling Species (FIDS) zone. BioNet is a program through DNR that collects, compiles, stores data and then maps it, to assist with land conservation practices. More info on BioNet can be seen here: https://dnr.maryland.gov/wildlife/Documents/BIONET_FactSheet.pdf. Official measures would need to be taken to classify this area as a conservation easement but this should be achievable based on the BioNet and/or FIDS data.

No additional construction would be needed, but the area would need to be formally classified as a protected easement area, and the stormwater facility type would need to be updated with MDE and switched from being treated by a micro-bioretention to instead being treated through the Sheetflow to Conservation Area type.

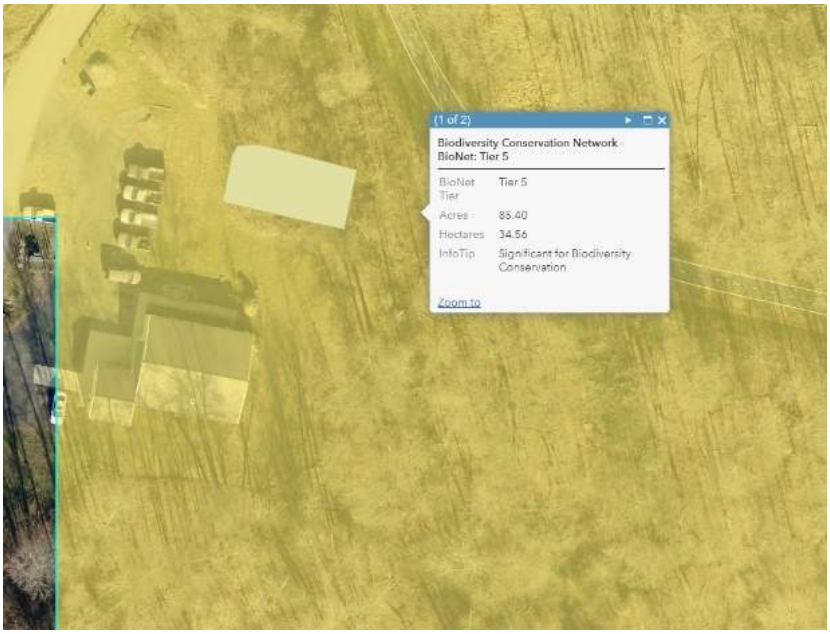


Figure 6. Screenshot from WRR showing BioNet Zone overlapping with project area

Conclusion

Based on initial desktop analysis, MES is proposing that the existing micro-bioretention facility could be abandoned and this area could instead be treated either through a combination of rooftop and nonrooftop disconnections, or through the Sheetflow to Conservation Area BMP type. Both of these alternatives would not require construction, other than the possibility of minor adjustments, such as removing the wooden traffic blocks. The Sheetflow to Conservation Area would require that a protected easement be created for at least a 20,000 sq ft area behind the building. Additionally, if either of these options are chosen, the BMP facility type would need to be updated with MDE Plan Review Division.

SWF264 MFRI Pond

Existing Conditions

The facility, shown in Figure 1, is a wet pond that receives runoff from 1.06 acres of impervious within a 1.99-acre drainage area. The pond is fenced off with an opening at the southern end which MES used for access to the facility. Stormwater enters the facility through curb cuts at the northwest and southeast regions of the parking lot. The control structure is a 15" concrete culvert pipe that outfalls to a channel leading to Paint Branch Creek. Upon inspection, the facility was determined to be failing and requires major maintenance.

Figure 1. Overall view from northwest inflow channel

Figure 2. Ponding southern inflow

Ponding was observed at both inflows within the parking lot due to accumulated sediment prohibiting proper flow into the facility, shown in Figure 2. Displaced riprap, accumulated debris and overgrown vegetation were also observed at both inflows, as demonstrated in Figure 3. The basin of the pond was dry although indicated by design to hold a permanent pool. It is suspected that this may be attributed to the minimized flow to the pond due to the blocked inflows. The drainage area to the facility is much smaller than the MDE recommendation of 10 acres but is assumed to qualify as a pocket pond which ponding is partially facilitated by a locally high ground water table. Figure 4 shows vegetation growth and sediment accumulation within the pond basin, with more heavily overgrown vegetation along the basin slopes and around the control structure. Tree growth was also present on the embankment crest. The principal spillway was in good condition. However, the outfall

Figure 3. Northwest inflow channel

Figure 4. Pond basin

and downstream condition were in poor condition due to overgrown vegetation as shown in Figure 5.

Figure 5. Overgrown vegetation at outfall

According to the original 2001 design, the pond should provide a water quality volume of 4,576 cf. This storage will treat the full 1" of the impervious runoff draining to the pond. MES 2019 survey determined the pond currently has a water quality storage capacity of 2,250 cf, which would treat 0.58" of impervious runoff. However, the facility is not providing adequate treatment since it is not holding water. Additionally, the storage volume has likely been decreased by the accumulated sediment, debris and vegetation within the basin. MES survey also revealed portions of the pond slopes fall below the recommended ratio of 3:1. The slopes do not exceed 2:1, however, at a slope steeper than 3:1 the facility is more susceptible to erosion.

Restoration Plan

MES recommends the following modifications to restore and update the facility:

Maintenance:

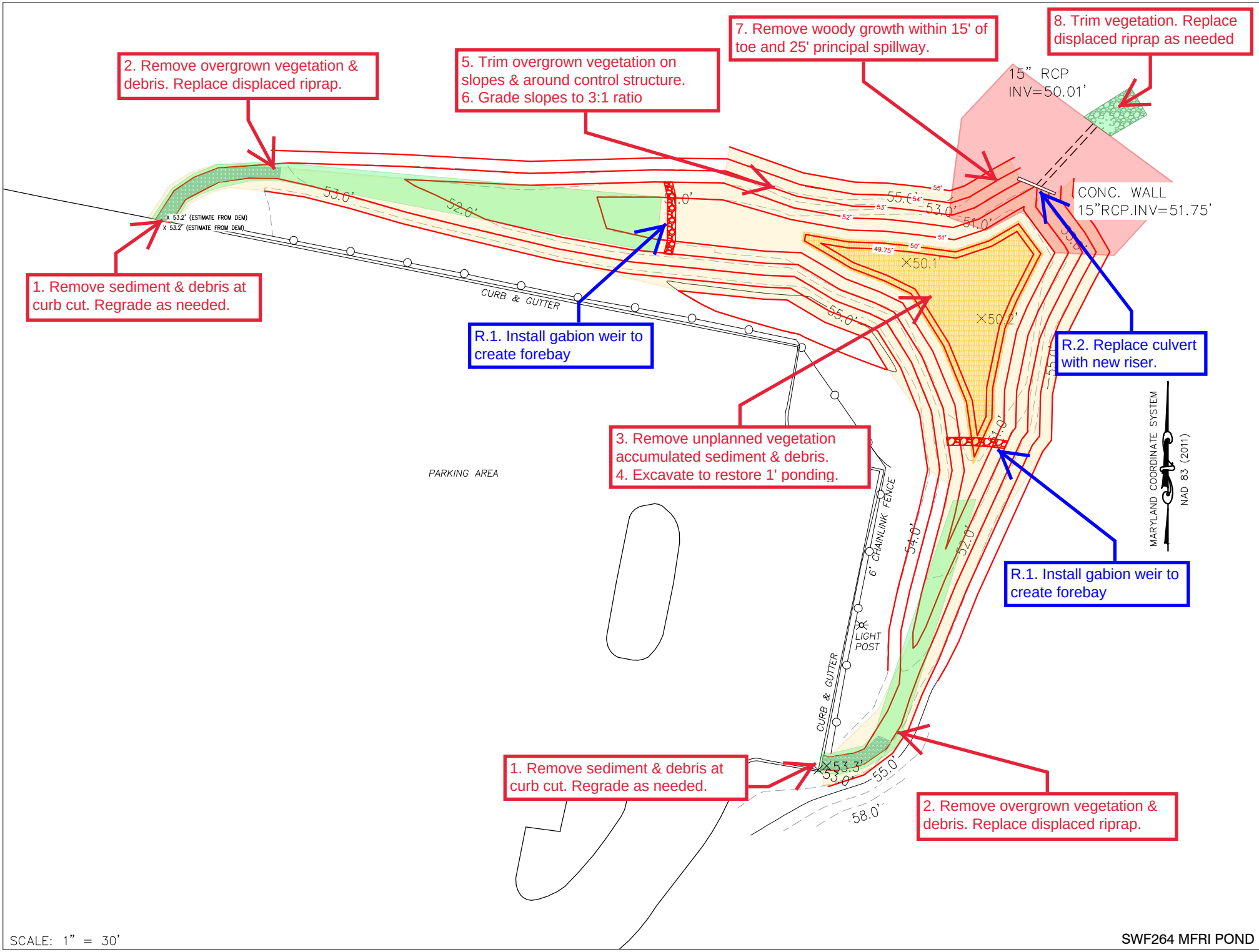
1.) Remove sediment & debris from curb cut inflow openings. Ensure grading facilitates flow into facility. Regrade as needed.
2.) Remove overgrown vegetation & debris from both inflow protection. Replace displaced riprap.
3.) Remove unplanned vegetation, accumulated sediment & debris from pond basin.
4.) Excavate basin to restore to 1' ponding. Regrade as needed.
5.) Trim overgrown vegetation on pond slopes and around control structure.
6.) Grade slopes to ensure maximum ratio of 3:1.
7.) Remove woody growth from embankment, within 15' of embankment toe, and within 25' of principal spillway structure.
8.) Trim vegetation at outfall. Replace displaced outfall protection as needed.

Retrofit:

R1. Install gabion weir to create forebay at each inflow to store 10% the WQv combined.
R2. Replace culvert with standard riser structure.

In order for the facility to remain as a wet pond, the local ground water table should be verified to ensure ponding will be maintained within the facility. If it is determined that existing conditions will not sustain water elevations within the pond during dry weather, MES recommends retrofitting to a new BMP type such as a submerged gravel wetland (SGW).

GIS data indicates the pond is located on D soils which would be suitable for a SGW. The retrofit would consist of installing a forebay, excavation to install gravel based wetland bed, establishing wetland plantings, and installing an underdrain and new control structure. The forebay must store at least 10% of the WQv, and storage for 100% of the WQv must be provided above the gravel bed surface. Retrofitting to a SGW would significantly increase design and construction costs. Therefore, MES recommends pursuing recommendation for maintaining the facility as a pond if feasible.


2. Remove overgrown vegetation & debris. Replace displaced riprap.
5. Trim overgrown vegetation on slopes & around control structure.
6. Grade slopes to 3:1 ratio
7. Remove woody growth within 15' of toe and 25' principal spillway.
8. Trim vegetation. Replace displaced riprap as needed
15" RCP
INV=50.01'
CONC. WALL
15"RCP.INV=51.75'
X 53.2' (ESTIMATE FROM DEM)
X 53.2' (ESTIMATE FROM DEM)
1. Remove sediment & debris at curb cut. Regrade as needed.
CURB & GUTTER
R.1. Install gabion weir to create forebay
R.2. Replace culvert with new riser.
3. Remove unplanned vegetation accumulated sediment & debris.
4. Excavate to restore 1' ponding.
PARKING AREA
6' CHAINLINK FENCE
LIGHT POST
CURB & GUTTER
R.1. Install gabion weir to create forebay
1. Remove sediment & debris at curb cut. Regrade as needed.
2. Remove overgrown vegetation & debris. Replace displaced riprap.
MARYLAND COORDINATE SYSTEM
NAD 83 (2011)
SCALE: 1" = 30'
SWF264 MFRI POND

Cost Estimate

An engineer's cost estimate to repair and update the pond is provided below in Table 1 and Table 2. Table 3 provides an estimate for retrofitting to a submerged gravel wetland.

Table 1. Cost Estimate to Repair & Update

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$ 4,000.00	$ 4,000.00
Remove sediment and debris from curb cut inflows	9	SY	$ 25.00	$ 225.00
Remove overgrown vegetation inflows	170	SY	$ 5.00	$ 850.00
Trim vegetation (slopes and control structure)	620	SY	$ 5.00	$ 3,100.00
Trim vegetation (outfall channel)	11	SY	$ 5.00	$ 55.00
Remove woody vegetation from embankment and surrounding	10	EA	$ 900.00	$ 9,000.00
Replace riprap at both inflows	21	SY	$ 75.00	$ 1,575.00
Replace outfall protection	11	SY	$ 75.00	$ 825.00
Remove vegetation from basin	125	SY	$ 5.00	$ 625.00
Remove sediment from basin	42	CY	$ 55.00	$ 2,310.00
Excavation (basin)	11	CY	$ 55.00	$ 605.00
Grade slopes to restore 3:1	620	SY	$ 12.00	$ 7,440.00
10-18 CY Tandem Dump Truck	40	HR	$ 75.00	$ 3,000.00
Wet Meadow Establishment	125	SY	$ 5.00	$ 625.00
Turfgrass establishment	722	SY	$ 2.00	$ 1,444.00
Temporary stabilization matting	722	SY	$ 4.50	$ 3,249.00
UMD PM and Inspection fee	30	HR	$ 100.00	$ 3,000.00
				$ -
Subtotal				$ 41,928.00
Contingency			25%	$ 10,482.00
Total				$ 52,410.00

**Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.*

Table 2. Cost Estimate to Repair & Update to Current MDE Standard

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$ 5,000.00	$ 5,000.00
Remove sediment and debris from curb cut inflows	9	SY	$ 25.00	$ 225.00
Remove overgrown vegetation inflows	170	SY	$ 5.00	$ 850.00
Trim vegetation (slopes and control structure)	620	SY	$ 5.00	$ 3,100.00
Trim vegetation (outfall channel)	11	SY	$ 5.00	$ 55.00
Remove woody vegetation from embankment and surrounding	10	EA	$ 900.00	$ 9,000.00
Replace riprap at both inflows	21	SY	$ 75.00	$ 1,575.00
Replace outfall protection	11	SY	$ 75.00	$ 825.00
Remove vegetation from basin	125	SY	$ 5.00	$ 625.00
Remove sediment from basin	42	CY	$ 55.00	$ 2,310.00
Excavation (basin)	11	CY	$ 55.00	$ 605.00
Grade slopes to restore 3:1	620	SY	$ 12.00	$ 7,440.00
10-18 CY Tandem Dump Truck	60	HR	$ 75.00	$ 4,500.00
Wet Meadow Establishment	125	SY	$ 5.00	$ 625.00
Turfgrass establishment	722	SY	$ 2.00	$ 1,444.00
Temporary stabilization matting	722	SY	$ 4.50	$ 3,249.00
UMD PM and Inspection fee (repair)	30	HR	$ 100.00	$ 3,000.00
R.1 Install gabion weirs	9	CY	$ 250.00	$ 2,250.00
R.2 Soil boring	1	LS	$ 4,000.00	$ 4,000.00
R.2 Remove existing culvert	20	LF	$ 50.00	$ 1,000.00
R.2 Install new culvert	20	LF	$ 180.00	$ 3,600.00
R.2 Install riser	7	CY	$ 1,000.00	$ 7,000.00
Design and permiting	1	EA	$ 20,000.00	$ 20,000.00
UMD PM and Inspection fee (Retrofit)	20	HR	$ 100.00	$ 2,000.00
Subtotal				$ 84,278.00
Contingency			25%	$ 21,069.50
Total				$ 105,347.50

**Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.*

Table 3. Cost Estimate to Retrofit to SGW

Engineers Cost Estimate				
Item	**Quantity**	**Units**	**Unit Price**	**Total Amount**
Mobilization	1	EA	$ 6,000.00	$ 6,000.00
Remove sediment and debris from curb cut inflows	9	SY	$ 25.00	$ 225.00
Remove overgrown vegetation inflows	170	SY	$ 5.00	$ 850.00
Trim vegetation (slopes and control structure)	620	SY	$ 5.00	$ 3,100.00
Trim vegetation (outfall channel)	11	SY	$ 5.00	$ 55.00
Remove woody vegetation from embankment and surrounding	10	EA	$ 900.00	$ 9,000.00
Replace riprap at both inflows	21	SY	$ 75.00	$ 1,575.00
Replace outfall protection	11	SY	$ 75.00	$ 825.00
Remove vegetation from basin	125	SY	$ 5.00	$ 625.00
Excavation (SGW basin)	245	CY	$ 45.00	$ 11,025.00
Grade slopes to restore 3:1	620	SY	$ 12.00	$ 7,440.00
10-18 CY Tandem Dump Truck	80	HR	$ 75.00	$ 6,000.00
Wet Meadow Establishment	245	SY	$ 5.00	$ 1,225.00
Turfgrass establishment	722	SY	$ 2.00	$ 1,444.00
Temporary stabilization matting	722	SY	$ 4.50	$ 3,249.00
UMD PM and Inspection fee	30	HR	$ 100.00	$ 3,000.00
R.3 Remove existing culvert	20	LF	$ 50.00	$ 1,000.00
R.3 Install new culvert	20	LF	$ 180.00	$ 3,600.00
R.3 Install Inlet	1	EA	$ 3,500.00	$ 3,500.00
R.3 Install underdrain	100	LF	$ 25.00	$ 2,500.00
R.3 Bio-soil installation	55	CY	$ 125.00	$ 6,875.00
R.3 Crushed stone installation	163	SY	$ 50.00	$ 8,150.00
Design and permiting	1	EA	$ 40,000.00	$ 40,000.00
UMD PM and Inspection fee (Retrofit)	30	HR	$ 100.00	$ 3,000.00
Subtotal				$ 124,263.00
Contingency			25%	$ 31,065.75
Total				$ 155,328.75

**Unit price derived from MDOT SHA Price Index (https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=34) and other sources when available.*

Appendix A. Provided Treatment

Table 4. Design Stage Storage

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
49	1,143	-	0	0
50	1,987	1.00	1,565	1,565
51	4,036	1.00	3,011	4,576

Table 5. MES 2021 Stage Storage

Elevation (ft)	Area (sq ft)	Difference (ft)	Incremental Volume (cu ft)	Cumulative Volume (cu ft)
51	2,594	-	0	0
51.75	3,407	0.75	2,250	2,250

Table 6. Provided Treatment

	Drainage Area (ac.)	Impervious Area (ac.)	Required Volume to Treat 1" (cu ft)	Provided Volume (cu ft)	Pe (in)	Impervious Area Treatment Credit (ac.)
2001	1.99	1.06	3,862	4,576	1	1.06
2021 Survey	1.99	1.06	3,862	2520	0.58	0.62
Maintenance to restore 1' ponding	1.99	1.06	3,862	3,884	1	1.06
Update to current MDE standard	1.99	1.06	3,862	3,884	1	1.06

ATTACHMENT E

Restoration Activity Schedule

Total Acreage (1305); Impervious Acre Baseline (464.16); 20% Restoration Target (85.17 acres)									
Type of Restoration Project	BMP Code	BMP ID	Cost ($K)	Imperv Acres Treated	Imperv Acre Target and Balance	Project Status	Year Complete or Projected Implementation Year (by 2025)	MD Grid Coordinates (Northing/Easting)	
					85.17				
IBBR Outfall Stabilization	OUT	USG19BMP00004		0.5	84.67	C	2006	158456.27	382786.205
Cumberland Green Roof	AGRE	UMCP19BMP0050			84.67	C	2008	147147.68	404856.247
Symons Hall Rain Garden North	MRNG	UMCP19BMP0046			84.67	C	2009	146577.57	405168.754
Symons Hall Rain Garden South	MRNG	UMCP19BMP0047			84.67	C	2009	146570.96	405168.721
Stamp Green Roof West	AGRE	UMCP19BMP0073			84.67	C	2010	146673.19	404758.469
Stamp Green Roof East	AGRE	UMCP19BMP0074			84.67	C	2010	146671.05	404793.625
University House Southern Micro-Bioretention	MMBR	UMCP19BMP0040		0.03	84.64	C	2011	146679.14	404093.23
Denton Courtyard Micro-Bioretention	MMBR	UMCP19BMP0122		0.1	84.54	C	2012	147179.85	404313.093
Woods Hall Bioretention	FBIO	UMCP19BMP0014			84.54	C	2012	146350.84	405006.51
Shuttle Facility Green Roof	AGRE	UMCP19BMP0016		0.11	84.43	C	2012	147510.65	405436.504
Shuttle Facility Green Roof	AGRE	UMCP19BMP0017		0.11	84.32	C	2012	147512.86	405458.48
Shuttle Facility Dry Swale	ODSW	UMCP19BMP0026		1.71	82.61	C	2012	147485.93	405590.453
Heavy Equipment Building Micro-Bioretention	MMBR	UMCP19BMP0055		0.1	82.51	C	2012	147573.67	404943.773
Denton Dining Micro-Bioretention	MMBR	UMCP19BMP0059		0.24	82.27	C	2012	147173.55	404348.385
Denton Quad Micro-Bioretention 3	MMBR	UMCP19BMP0070		0.07	82.20	C	2012	147151.76	404275.044
Physical Science Complex Green Roof	AGRE	UMCP19BMP0078		0.21	81.99	C	2013	147002.04	405068.398
Computer and Space Sciences Green Roof	AGRE	UMCP19BMP0049		0.08	81.91	C	2013	147031.24	405023.817
Prince Frederick Hall Micro-Bioretention Cell 1	MMBR	UMCP19BMP0124		0.17	81.74	C	2014	146101.64	404687.094
Impervious Surface Removal to Pervious 4100 Metzerott Rd	IMPP	UMCP20BMP0288		0.17	81.58	C	2016	148038.42	405387.544
West Side of Edward St. John Green Roof	AGRE	UMCP19BMP0157		0.06	81.52	C	2017	146559.97	405023.747
West Side of Edward St. John Green Roof	AGRE	UMCP19BMP0158		0.06	81.46	C	2017	146560.89	405040.896
Wellness Way Bioretention	MSWB	UMCP19BMP0238			81.46	C	2017	147246.94	405092.956
Impervious Surface Removal to Pervious 4109 Metzerott Rd	IMPP	UMCP20BMP0289		0.03	81.43	C	2017	147899.26	405369.2
Clark Hall Bioretention 1	MMBR	UMCP19BMP0231	6.2	0.33	81.10	C	2017	147129.96	405375.411
Clark Hall Micro-Bioretention 2	MMBR	UMCP19BMP0232		0.29	80.81	C	2017	147109.93	405375.617
M Square SGW 1	MSGW	UMCP20BMP0258		1.86	78.95	C	2018	144408.7	405905.681
M Square SGW 2	MSGW	UMCP20BMP0259		0.72	78.23	C	2018	144567.14	405880.112
M Square MBR1	MMBR	UMCP20BMP0260		0.35	77.88	C	2018	144555.93	406065.15
A.V. Williams Micro-Bioretention	MMBR	UMCP19BMP0152		0.27	77.61	C	2018	146930.84	405581.691
A.V. Williams Micro-Bioretention	MMBR	UMCP19BMP0153		0.14	77.47	C	2018	147007.47	405562.485
A.V. Williams Micro-Bioretention	MMBR	UMCP19BMP0154		0.31	77.16	C	2018	146975.71	405568.772
Brendan Iribe Micro-Bioretention 1	MMBR	UMCP19BMP0241		0.27	76.89	C	2019	146906.29	405596.757
Brendan Iribe Micro-Bioretention 2	MMBR	UMCP19BMP0242		0.32	76.57	C	2019	146855.63	405574.135
Brendan Iribe 3	MSWB	UMCP19BMP0243		0.19	76.38	C	2019	146803.50	405608.07
Brendan Iribe 4	APRP	UMCP19BMP0244		0.15	76.23	C	2019	146849.94	405510.90
Brendan Iribe 5	AGRI	UMCP19BMP0245		0.14	76.09	C	2019	146819.29	405548.239
Campus Creek Stream Restoration Phase 1	STRE	UMCP19BMP0249	1200	104.8	-28.71	C	2019	147429.67	404606.193
Regenerative Step Pool Conveyance	SPSC	UMCP19BMP0250		0.58	-29.29	C	2019	147431.84	404451.931
Regenerative Step Pool Conveyance	SPSC	UMCP20BMP0290		0.31	-29.60	C	2019	147441.85	404475.016
Stormwater Bar	OUT	UMCP20BMP0291		0.13	-29.73	C	2019	147345.11	404978.061
Wooded Hillock Impervious Removal 3	IMPP	UMCP21BMP0296		0.02	-29.75	C	2020	147957.18	404955.17
Wooded Hillock Impervious Removal 2	IMPP	UMCP21BMP0297		0.017	-29.77	C	2020	147940.09	404868.385
Wooded Hillock Impervious Removal 1	IMPP	UMCP21BMP0298		0.05	-29.82	C	2020	147868.97	404758.737
Knight Hall	MRWH	UMCP19BMP0082		0.39	-30.21	C	2020	146527.74	404476.543
Cole Field House Impervious Removal	IMPP	UMCP21BMP0300		2.3	-32.51	C	2021	146705.18	404486.515
4103 Metzerott Rd Impervious Removal	IMPP	UMCP21BMP0299		0.067	-32.58	C	2021	147959.3	405348.539
Prince Frederick Hall Bioretention Cell 2	MMBR	UMCP19BMP0125	45.2	0.3	-32.88	P	2022	146116.11	404734.634
Animal Science pond	PWET	UMCP19BMP0021	330.7	7.23	-40.11	P	2023	147226.59	405331.706
North East corner of Golf Course parking Lot	MRNG	UMCP19BMP0144	6	0.2	-40.31	P	2023	146956.32	404032.549
Lot Three (Guilford Park Bioretention)	FBIO	UMCP19BMP0036	17	1.6	-41.91	P	2024	146322.54	404288.157
Campus Creek Stream Restoration Phase 2	STRE			46	-87.91	P	2025	147351.99	404982.821
Regents Drive Bioretention	FBIO	UMCP19BMP0091	14.6	0.79	-88.70	P	2025	147294.93	405324.85
Northwest corner of Golf Course Parking Lot Rain Garden	MRNG	UMCP19BMP0146	14.5	0.37	-89.07	P	2025	146970.08	403914.01
Southwest corner of Golf Course Parking Lot Rain Garden	MRNG	UMCP19BMP0147	12.5	0.2	-89.27	P	2025	146905.41	403932.995

ATTACHMENT F

BMP Database

Table B.1.a. BMP Reporting Requirements

This table represents the basic data elements that are required of all structural, ESD and alternative Best Management Practices (BMPs)

BMP_ID[1]	REPORTING_YEAR	MD_NORTH [2]	MD_EAST	PERMIT_NUM	LOCAL_BMP_ID	BMP_NAME	BMP_CLASS	BMP_TYPE	CON_PURPOSE	LAST_INSP_DATE	BMP_STATUS	MAIN_DATE	REINSP_DATE	REINSP_STATUS	GEN_COMMENTS
UMCP19BMP0002	2021	147378.6651	404651.4071	13-SF_5501	94-SF-0311	Lot 2 retention pond	S	PWET	NEWD	7/2/2021	P	4/1/2021			Epply parking lot pond. With riprap overflow into vegetated swale.
UMCP19BMP0005	2021	146534.8005	404139.4679	13-SF_5501	02-SF-0247	Peace and Friendship Garden	S	FSND	REDE	4/10/2019	F	2/7/2020			Failed sand filter basis of UMD SWM Bank.
UMCP19BMP0010	2021	148438.3206	404925.4504	13-SF_5501	91-SF-0059	Laboratory for Physical Science	S	PWED	NEWD	3/23/2021	P	8/10/2021			heavy sedimentation. heavy cattail growth. nice wooded edge condition favorable wildlife habitat
UMCP19BMP0011	2021	147097.1037	404208.0459	13-SF_5501	03-SF-0282	CSPAC Shallow Marsh Wetland	S	WSHW	NEWD	3/26/2020	P				recomend annual perennial cut back. High habitat value. Many species of Birds observed.
UMCP19BMP0012	2021	147658.2789	405172.7159	13-SF_5501	00-SF-0275	Softball Complex retention pond	S	PWET	REDE	6/7/2021	P	9/27/2019			Heavy vegetation around edge of facility. Annual reduction of cattails recomended.
UMCP19BMP0013	2021	148196.9364	405115.8752	13-SF_5501		Courtyards retention pond	S	PWET	NEWD	6/4/2019	P				sediments and trash at swale/inlet into pond
UMCP19BMP0014	2021	146352.3423	405004.2573	13-SF_5501		Woods Hall	S	FBIO	REDE	4/3/2019	P				Garden Area funde by AWS and DNR
UMCP19BMP0016	2021	147510.648	405436.5035	13-SF_5501	11-SF-0002	Shuttle Facility	E	AGRE	REDE	9/30/2021	P	4/27/2020			sedum green roof. in bloom many observed pollinator bees. interviewed facility staff, no problems experienced so far. 75% plant cover, room to fill in
UMCP19BMP0017	2021	147512.8634	405458.4798	13-SF_5501	11-SF-0002	Shuttle Facility	E	AGRE	REDE	9/30/2021	P	4/27/2020			same as lower roof
UMCP19BMP0018	2021	147569.3765	404959.1915	13-SF_5501	11-SF-0139	BLS Heavy Equipment	E	AGRE	NEWD	9/30/2021	P	4/27/2020			Green roof appears to be functional. Sedums in bloom. Some volunteer "weeds" should be removed.
UMCP19BMP0019	2021	146672.7569	404025.06	13-SF_5501	13-SF-0237	University House Parking Lot	E	MMBR	NEWD	9/21/2021	P				Facility outfall presents an issue with eroding the hillside.
UMCP19BMP0020	2021	148418.2005	405181.865	13-SF_5501	98-SF-0319	VetMed research pond	S	PWET	NEWD	6/7/2021	P	8/4/2020			swale wraps lot. Heavy vegtation in swale, heavy sedimentation at inlets.
UMCP19BMP0021	2021	147226.5893	405331.7057	13-SF_5501	00-SF-0275	Animal Science pond	S	XDPD	NEWD	3/26/2020	F	12/15/2016			FF2 Pond O&M has proposal to maintain and enhance.
UMCP19BMP0022	2021	147243.0825	405581.9969	13-SF_5501		Lot 11b	S	FBIO	REST	4/11/2019	F	5/16/2017			Dr. Davis bioretention
UMCP19BMP0023	2021	147158.6133	405364.4296	13-SF_5501		Neutral Buoyancy Conveyance	E	MSWW	REDE	6/4/2019	F	2/7/2020			
UMCP19BMP0024	2021	147410.5808	404873.6099	13-SF_5501	01-SF-0005	Terrapin Trail Garage retention pond	S	PWET	NEWD	8/17/2021	F	10/30/2018			no observed safety bench at pond edge. algea bloom mid june. retrofit cantidat?
UMCP19BMP0026	2021	147529.7381	405584.5105	13-SF_5501	11-SF-0002	Shuttle Facility	S	ODSW	REDE	3/10/2020	P	5/16/2017			SHA built for CSX grade separation PG1825147
UMCP19BMP0027	2021	147267.4179	405147.0529	13-SF_5501		Lot PP2 Bioretention	S	FBIO	REST	4/16/2019	F	2/7/2020			Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)
UMCP19BMP0033	2021	146807.3697	404129.6208	13-SF_5501	11-SF-0184	University House	E	MMBR	NEWD	9/21/2021	F				Bioretention North
UMCP19BMP0034	2021	146818.8362	404118.763	13-SF_5501	11-SF-0184	University House	E	MMBR	NEWD	9/21/2021	F				Bioretention North
UMCP19BMP0035	2021	146832.8176	404103.7957	13-SF_5501	11-SF-0184	University House	E	MMBR	NEWD	9/21/2021	F				Bioretention North
UMCP19BMP0036	2021	146322.5397	404288.1569	13-SF_5501		Lot Three (Guilford Park Bioretention)	S	FBIO	REST	7/2/2021	P	3/1/2021			Middle Guilford Bioretention.
UMCP19BMP0039	2021	146978.3672	405216.5951	13-SF_5501		Chem-Nuc BLDG	S	FBIO	REST	6/5/2019	F				North Cell
UMCP19BMP0040	2021	146679.1373	404093.2299	13-SF_5501	11-SF-0184	University House	E	MMBR	REST	9/21/2021	P				Bioretention South
UMCP19BMP0041	2021	146731.8232	404095.0786	13-SF_5501	11-SF-0184	University House	E	MMBR	NEWD	9/21/2021	P				Bioretention South
UMCP19BMP0042	2021	147527.8406	404852.3776	13-SF_5501	13-SF-0233	Wye Oak Building	E	MMBR	NEWD	6/1/2021	P	4/1/2015			
UMCP19BMP0043	2021	147241.0698	405591.2155	13-SF_5501		Lot 11b bioretention	S	FBIO	REST	4/2/2019	F	5/16/2017			Dr. Davis bioretention
UMCP19BMP0046	2021	146577.5684	405168.7544	13-SF_5501		Symons Hall Rain Garden North	E	MRNG	REST	4/2/2019	P				
UMCP19BMP0047	2021	146570.9618	405168.7212	13-SF_5501		Symons Hall Rain Garden South	E	MRNG	REST	4/2/2019	P				
UMCP19BMP0048	2021	146574.8145	405168.5704	13-SF_5501		Symons Hall Pervious Pavement	E	APRP	REST	4/2/2019	F				
UMCP19BMP0049	2021	147031.2396	405023.8171	13-SF_5501	10-SF-0085	Computer and Space Sciences Green Roof	E	AGRE	REDE	9/29/2021	P	4/14/2020			
UMCP19BMP0050	2021	147147.675	404856.2472	13-SF_5501		Cumberland Green Roof	E	AGRE	REST	9/29/2021	P	4/27/2020			south cell. same condition as others.
UMCP19BMP0055	2021	147573.6042	404936.2672	13-SF_5501	11-SF-0139	Heavy Equipment Building	E	MMBR	REDE	3/10/2020	P				BLS Bioretention. no observed plants. room for enhanced planting.
UMCP19BMP0056	2021	147750.7753	405055.8842	13-SF_5501	01-SF-0167	Comcast north retention pond	S	PWET	REDE	8/4/2021	P	7/28/2021			Comcast/Chesapeake Pond. Reported problems with overflow during large rains events. Geese infestation.
UMCP19BMP0059	2021	147173.5515	404348.3851	13-SF_5501	12-SF-0215	Denton Dining	E	MMBR	REDE	3/26/2020	P				
UMCP19BMP0065	2021	148724.9724	405016.8637	13-SF_5501	04-SF-0066	Greenmeade North Grass Channel B	S	MSWG	NEWD	6/1/2021	F				Plans identify BMP as a Grass Swale, originally identified as dry pond
UMCP19BMP0066	2021	148721.1463	405017.6752	13-SF_5501	04-SF-0066	Greenmeade North Grass Channel A	S	MSWG	NEWD	6/1/2021	F				Area still needs to be investigated. Low point is at inflow. This could be a conveyance to the pond. Looks like it may flood
UMCP19BMP0068	2021	148324.9179	405076.1899	13-SF_5501		Courtyards Northeast Parking	S	FBIO	NEWD	6/4/2019	F				sheet flow to bioretention curb at north edge collapsed
UMCP19BMP0069	2021	148316.3933	405094.4596	13-SF_5501		Courtyards Northeast Parking	S	FBIO	NEWD	6/4/2019	F				sheet flow to bioretention
UMCP19BMP0070	2021	147151.7561	404275.0444	13-SF_5501	12-SF-0215	Denton Quad MB 3	E	MMBR	REDE	3/26/2020	P	12/2/2016			new bioretention, check to see if required and if yes triggered by what project. Rip rap at inlet should be lowered to allow greater volume to enter
UMCP19BMP0073	2021	146673.1872	404758.4691	13-SF_5501		Stamp Green Roof West	E	AGRE	REST	9/30/2021	P	4/14/2020			Good condition. Some volunteer weeds should be removed. verify LEED status
UMCP19BMP0074	2021	146671.0502	404793.6252	13-SF_5501		Stamp Green Roof East	E	AGRE	REST	9/30/2021	P	4/14/2020			same as other stamp green roof verify LEED status
UMCP19BMP0075	2021	147163.1927	404277.9243	13-SF_5501		Denton	E	APRP	NEWD	6/4/2019	F				Service parking permeable paving.
UMCP19BMP0076	2021	147256.7403	404824.9895	13-SF_5501		Public Health Garden	S	FBIO	REST	6/22/2021	P	2/7/2020			Water enters facility too rapidly, causing scouring and channeling of swale bays.
UMCP19BMP0077	2021	147272.4505	404825.2239	13-SF_5501		Public Health Garden	E	MRWH	REST	6/4/2019	P	4/27/2018			
UMCP19BMP0078	2021	147002.0418	405068.3981	13-SF_5501	10-SF-0085	Physical Science Complex Green Roof	E	AGRE	REDE	9/29/2021	P	4/14/2020			
UMCP19BMP0079	2021	146754.8632	405303.3784	13-SF_5501		Glenn L Martin Hall	E	APRP	NEWD	6/5/2019	P				Engineering permeable paving
UMCP19BMP0080	2021	147250.0645	405278.8876	13-SF_5501		Lot FF2	E	APRP	REST	5/15/2019	F				Dr. Davis permeable paving research with treatment vault for nitrogen reduction.
UMCP19BMP0081	2021	147230.3369	404409.416	13-SF_5501		Denton Hall	E	MRWH	NEWD	6/5/2019	F				
UMCP19BMP0082	2021	146527.7434	404476.5434	13-SF_5501	08-SF-0085	Knight Hall	E	MRWH	REDE	7/15/2021	P				
UMCP19BMP0083	2021	147257.8363	404359.8987	13-SF_5501		Denton Hall	E	MRWH	NEWD	6/5/2019	F				
UMCP19BMP0085	2021	146052.5734	405080.4917	13-SF_5501		Washington Quad	E	MRWH	REST		F				Washington Quad, Listed as failing until inspection/PE 1
UMCP19BMP0086	2021	146952.0449	404182.7108	13-SF_5501	03-SF-0275	CSPAC	E	APRP	NEWD	4/4/2019	F	8/24/2018			CSPAC landscape service building permeable paving. Some weeds/sediment buildup in joints.
UMCP19BMP0088	2021	146958.9879	405215.9386	13-SF_5501		Chem-Nuc BLDG	S	FBIO	REST	6/5/2019	F				South Cell

BMP_ID[1]	REPORTING_YEAR	MD_NORTH [2]	MD_EAST	PERMIT_NUM	LOCAL_BMP_ID	BMP_NAME	BMP_CLASS	BMP_TYPE	CON_PURPOSE	LAST_INSP_DATE	BMP_STATUS	MAIN_DATE	REINSP_DATE	REINSP_STATUS	GEN_COMMENTS
UMCP19BMP0089	2021	147350.628	404155.053	13-SF_5501		Golf Course Pond (lower)	S	PWET	NEWD	11/7/2020	F				Dam failed years ago. No funding identifed for fix. Undermined condition presents safety hazard. Confirm status w/ course manager - In-Stream Pond Campus Creek
UMCP19BMP0090	2021	147315.4412	405100.6736	13-SF_5501	00-SF-0275	Lot PP2 rain garden	S	FBIO	REDE	4/16/2019	F	8/27/2021			Not a Dr. Davis facility. Need to find out more info on this. ID'd as a retrofit opportunity in AWRP.
UMCP19BMP0091	2021	147294.9269	405324.8497	13-SF_5501		Regents Drive Bioretention	S	FBIO	REST	5/8/2019	F	5/16/2018			Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)
UMCP19BMP0092	2021	147374.4478	405327.1545	13-SF_5501		Lot 9 Bioretention	S	FBIO	REST	5/8/2019	F				Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)
UMCP19BMP0093	2021	147291.9417	405246.2504	13-SF_5501		Regents Drive Bioretention	S	FBIO	REST	5/8/2019	F	5/16/2018			Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)
UMCP19BMP0094	2021	147238.5476	405446.4158	13-SF_5501		Paint Branch Drive Bioretention	S	FBIO	REDE	4/11/2019	F	5/16/2017			Dr. Davis bioretention. Built w/ EPA/PG $ ($250K for 4 facilities)
UMCP19BMP0098	2021	147513.9711	405342.4748	13-SF_5501	95-SF-0032	Artificial Turf Field	S	PWET	NEWD	5/8/2019	F	8/28/2021			Not Designed for SWM, Drainage only
UMCP19BMP0106	2021	147494.2037	405574.9354	13-SF_5501	11-SF-0002	Shuttle Bus	S	PWET	REDE	6/1/2021	F				
UMCP19BMP0107	2021	147573.071	405296.4364	13-SF_5501	01-SF-0255	Taylor Stadium	S	FBIO	NEWD	11/3/2020	P	8/16/2021			
UMCP19BMP0108	2021	147903.368	405030.7557	13-SF_5501	00-SF-0275	Chesapeake Parking Lot East	S	FUND	NEWD	6/17/2021	P	6/19/2018			storm vault unknown type. imited sedimentation and tras present
UMCP19BMP0109	2021	148134.9687	404878.5335	13-SF_5501		Metzerott Rd. and Greenmead Dr.	S	PWET	NEWD	9/8/2021	F	9/8/2021			
UMCP19BMP0112	2021	146967.8235	404041.1113	13-SF_5501	98-SF-0218	Golf Course Parking Lot	E	MMBR	REDE	4/8/2020	F	10/30/2018			Bioretention discovered during inspection of Golf Course Rd. drainage swale-December 2014
UMCP19BMP0122	2021	147179.8537	404313.0925	13-SF_5501	12-SF-0215	Denton Courtyard Bioretention	E	MMBR	REDE	3/26/2020	P				
UMCP19BMP0124	2021	146101.6445	404687.094	13-SF_5501	12-SF-0232	Prince Frederick Hall Bioretention Cell 1	E	MMBR	REDE	9/21/2021	P				
UMCP19BMP0125	2021	146116.1114	404734.6344	13-SF_5501	12-SF-0232	Prince Frederick Hall Bioretention Cell 2	E	MMBR	REDE	3/26/2020	F	3/3/2017			Sewer or potable pipe tied in to East inflow, flushing noise observed in field
UMCP19BMP0127	2021	146180.6003	405944.1231	13-SF_5501		Paint Branch Dr & Rossborough Ln	S	FBIO	REST	5/1/2019	F	4/1/2017			This was identified by Seth C and no info is avail. But it is on UMD and appears to drain UMD property.
UMCP19BMP0128	2021	146168.8884	405972.9509	13-SF_5501		Paint Branch Dr & Rossborough Ln	S	FBIO	REST	5/1/2019	F	4/1/2017			This was identified by Seth C and no info is avail. But it is on UMD and appears to drain UMD property.
UMCP19BMP0129	2021	146479.8769	405249.723	13-SF_5501		North side of Reckord Armory	E	MRNG	REST	6/4/2019	F				Built as part of sustainability fund student project
UMCP19BMP0130	2021	146691.7967	405287.5364	13-SF_5501		By fountain infront of Kirwan Hall	E	APRP	NEWD	6/5/2019	P				Observed to be pervious in field. No drawings found to date.
UMCP19BMP0133	2021	146961.3979	405387.38	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0134	2021	146947.9812	405387.4515	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0135	2021	146934.2632	405387.4582	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0136	2021	146948.0546	405400.8441	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0137	2021	146934.3286	405400.851	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0138	2021	146961.4451	405400.8065	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0139	2021	146961.506	405414.1538	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0140	2021	146948.0968	405414.192	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0141	2021	146934.4495	405414.2429	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	4/2/2019	F				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0142	2021	146981.5623	405407.4157	13-SF_5501	12-SF-0279	Kim Plaza	E	MMBR	REDE	6/1/2021	P				Final design drawings available. Searching for Record Drawings.
UMCP19BMP0143	2021	147092.5326	405326.5382	13-SF_5501		Central Animal Resources Facility & ENST	E	APRP	NEWD	5/15/2019	F				
UMCP19BMP0144	2021	146956.3158	404032.5486	13-SF_5501		North East corner of Golf Course parking Lot	E	MRNG	REST	9/25/2021	P	9/25/2021			Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined.
UMCP19BMP0146	2021	146970.0753	403914.01	13-SF_5501		Northwest corner of Golf Course parking lot	E	MRNG	REST	9/25/2021	F	9/25/2021			Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined.
UMCP19BMP0147	2021	146905.4133	403932.9953	13-SF_5501		Southwest corner of Golf Course parking lot	E	MRNG	REST	5/1/2019	F	10/30/2018			RG2. Built as part of CBT grant; built in-house by BLM; drawings consist of profile and plan view- no detail drawings were created; construction cost include all 3 facilities combined. 6" Inflow pipe from swale is below grade.
UMCP19BMP0149	2021	146859.3551	404863.0916	13-SF_5501	11-SF-0366	Bob Turtle Smith Stadium at Shipley Field Unde	S	XDPD	REDE		F				Listed as failing until inspection
UMCP19BMP0150	2021	146581.0488	405108.9095	13-SF_5501	14-SF-0181	Edward St. John Learning and Teaching Center (	S	XDPD	REDE		F				Listed as failing until inspection
UMCP19BMP0151	2021	146926.7655	404572.9912	13-SF_5501	11-SF-0366	Maryland Stadium Underground Detention Faci	S	XDPD	REDE		F				Listed as failing until inspection
UMCP19BMP0152	2021	146930.8357	405581.6914	13-SF_5501	16-SF-0064	Behind A.V. Williams	E	MMBR	REDE	6/4/2019	P				
UMCP19BMP0153	2021	147007.4734	405562.4846	13-SF_5501	16-SF-0064	Behind A.V. Williams	E	MMBR	REDE	6/4/2019	P				
UMCP19BMP0154	2021	146975.706	405568.772	13-SF_5501	16-SF-0064	Behind A.V. Williams	E	MMBR	REDE	4/3/2019	P				
UMCP19BMP0155	2021	146600.5776	404987.8599	13-SF_5501	14-SF-0182	West of Edward St. John	E	AGRE	NEWD	3/26/2020	P	4/27/2020			
UMCP19BMP0157	2021	146559.9664	405023.7471	13-SF_5501	14-SF-0182	West Side of Edward St. John	E	AGRE	REDE	9/29/2021	P	4/27/2020			
UMCP19BMP0158	2021	146560.8897	405040.8958	13-SF_5501	14-SF-0182	West Side of Edward St. John	E	AGRE	REDE	9/29/2021	P	4/27/2020			
UMCP19BMP0159	2021	146543.5186	405082.7	13-SF_5501	14-SF-0182	East Side of Edwards St. John	E	AGRE	NEWD	9/29/2021	P	4/27/2020			
UMCP19BMP0161	2021	147279.1895	404391.6168	13-SF_5501	09-SF-0390	Oakland Hall Sandfilter	S	FUND	NEWD	7/8/2020	P	7/8/2020			
UMCP19BMP0162	2021	147481.2323	404827.5617	13-SF_5501	01-SF-0005	Terrapin Trail Garage Baysaver unit	S	COGS	NEWD	6/18/2018	F				Pretreatment for UMCP19BMP0024
UMCP19BMP0163	2021	147735.7117	406600.6784	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0164	2021	147712.0255	406666.1543	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0165	2021	147737.5378	406731.8812	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0166	2021	147754.3584	406779.1208	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0167	2021	147706.1023	406826.4188	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0168	2021	147645.3803	406810.8096	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0169	2021	147592.3973	406616.9409	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			

BMP_ID[1]	REPORTING_YEAR	MD_NORTH [2]	MD_EAST	PERMIT_NUM	LOCAL_BMP_ID	BMP_NAME	BMP_CLASS	BMP_TYPE	CON_PURPOSE	LAST_INSP_DATE	BMP_STATUS	MAIN_DATE	REINSP_DATE	REINSP_STATUS	GEN_COMMENTS
UMCP19BMP0170	2021	147521.092	406637.0491	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0171	2021	147461.7855	406760.1116	13-SF_5501		Severn Stormceptor	S	COGS	REDE	6/19/2018	P	6/19/2018			
UMCP19BMP0172	2021	148164.1529	405013.404	13-SF_5501		Courtyards South Parking	S	FBIO	REDE	6/4/2019	F				Structure identified from imagery. Field confirmation required. Check with the Courtyards for existing plan set.
UMCP19BMP0231	2021	147129.9554	405375.4106	13-SF_5501	14-SF-0265	Clark Hall Bioretention 1	E	MMBR	REDE	6/4/2019	F				West side of Clark Hall
UMCP19BMP0232	2021	147109.9283	405375.6174	13-SF_5501	14-SF-0265	Clark Hall Bioretention 2	E	MMBR	REDE	6/4/2019	P				
UMCP19BMP0235	2021	147510.8177	403943.2973	13-SF_5501		Upper Golf Course	S	PWET	NEWD	5/1/2019	F				Dam observed failed during field inspection. In-Stream Pond Campus Creek
UMCP19BMP0236	2021	148330.5344	405108.5896	13-SF_5501		Courtyards Sheeflow to Conservation 1	E	NSCA	NEWD	6/4/2019	F				
UMCP19BMP0237	2021	148240.5303	405124.253	13-SF_5501		Courtyards Sheeflow to Conservation 2	E	NSCA	NEWD	6/4/2019	F				
UMCP19BMP0238	2021	147246.5914	405086.2581	13-SF_5501		Wellness Way Bioretention	E	MSWB	REST	8/4/2021	P	8/4/2021			BMP field identified by MES, listed as bioswale constructed by MDSE. DA still needs to be confirmed, no plans - Retrofit conducted 11/13/2019 to expand storage capacity
UMCP19BMP0239	2021	146721.8148	404139.614	13-SF_5501	11-SF-0184	Presidents House Disconnect 1	E	NDRR	REDE	9/21/2021	P	9/10/2021			
UMCP19BMP0240	2021	146803.8463	404051.7894	13-SF_5501	11-SF-0184	Presidents House Disconnect 2-1	E	NDRR	NEWD	4/8/2020	P				
UMCP19BMP0241	2021	146906.2939	405596.7572	13-SF_5501	16-SF-0064	Brendan Iribe 1	E	MMBR	REDE	6/6/2019	P				
UMCP19BMP0242	2021	146855.6261	405574.1352	13-SF_5501	16-SF-0064	Brendan Iribe 2	E	MMBR	REDE	6/6/2019	P				
UMCP19BMP0243	2021	146803.503	405608.0681	13-SF_5501	16-SF-0064	Brendan Iribe 3	E	MSWB	REDE	7/15/2021	P				
UMCP19BMP0244	2021	146849.9375	405510.8997	13-SF_5501	16-SF-0064	Brendan Iribe 4	E	APRP	REDE	7/15/2021	P				
UMCP19BMP0245	2021	146819.2935	405548.2385	13-SF_5501	16-SF-0064	Brendan Iribe 5	E	AGRI	REDE	7/15/2021	P				
UMCP19BMP0248	2021	146488.558	405597.7098	13-SF_5501		Service Building Bioretention	S	FBIO	REDE		F				Listed as failing until inspection
UMCP19BMP0249	2021	147429.6716	404606.1927	13-SF_5501	18-SF-0204	Campus Creek Restoration	A	STRE	REST	6/8/2020	P				
UMCP19BMP0250	2021	147431.8352	404451.9305	13-SF_5501	18-SF-0204	Campus Creek Regenerative Step Pool Conveya	A	SPSC	REST	6/8/2020	P				
UMCP20BMP0251	2021	146831.1127	405741.8643	13-SF_5501	92-SF-0055	Fire Station Infiltration Trench	S	ITRN	NEWD		F				Very overgrown, only observation well located
UMCP20BMP0252	2021	146873.7504	405748.0345	13-SF_5501	92-SF-0055	Fire Station WQ Inlet 1	S	XOTH	NEWD	7/8/2020	P	7/9/2020			Pretreatment
UMCP20BMP0253	2021	146874.8677	405733.025	13-SF_5501	92-SF-0055	Fire Station WQ Inlet 2	S	XOTH	NEWD	7/8/2020	P	7/9/2020			Pretreatment
UMCP20BMP0255	2021	146730.1283	405123.9728	13-SF_5501	92-SF-0217	Plant Sciences WQ Inlet	S	XOTH	REDE	7/8/2020	F	7/9/2020			Pretreatment
UMCP20BMP0256	2021	145923.3431	405209.3476	13-SF_5501	01-SF-0245	UMCP Student Housing Building A	S	FUND	REDE	7/9/2020	P	7/8/2020			
UMCP20BMP0257	2021	145927.5951	405022.5401	13-SF_5501	01-SF-0245	UMCP Student Housing Building B	S	FUND	REDE	7/9/2020	F	7/8/2020			
UMCP20BMP0258	2021	144408.7038	405905.6811	13-SF_5501	17-SF-0092	M Square SGW 1	E	MSGW	REDE	4/8/2020	P				
UMCP20BMP0259	2021	144567.1408	405880.1118	13-SF_5501	17-SF-0092	M Square SGW 2	E	MSGW	REDE	4/8/2020	P				
UMCP20BMP0260	2021	144555.925	406065.1504	13-SF_5501	17-SF-0092	M Square MBR1	E	MMBR	REDE	4/8/2020	P				
UMCP20BMP0261	2021	148671.7767	405055.6941	13-SF_5501	07-SF-0155	Mosquito Control MBR	E	MMBR	NEWD	4/2/2020	F				
UMCP20BMP0264	2021	146139.7634	406328.2895	13-SF_5501	01-SF-0340	New Training Facility for MFRI	S	PWET	REDE	4/8/2020	F				
UMCP20BMP0266	2021	146598.6347	404829.3656	13-SF_5501	01-SF-0378	University of Maryland Health Center	S	FUND	REDE	7/9/2020	P	7/8/2020			
UMCP20BMP0267	2021	144393.8245	406220.2667	13-SF_5501	16-SF-0261	College Park Academy Micro-Bioretention 1	E	MMBR	NEWD	6/1/2021	P				
UMCP20BMP0268	2021	144428.2022	406225.0636	13-SF_5501	16-SF-0261	College Park Academy Micro-Bioretention 2	E	MMBR	NEWD	6/1/2021	P				
UMCP20BMP0269	2021	144459.2488	406243.1852	13-SF_5501	16-SF-0261	College Park Academy Micro-Bioretention 3	E	MMBR	NEWD	6/1/2021	P				
UMCP20BMP0270	2021	144487.7637	406259.7078	13-SF_5501	16-SF-0261	College Park Academy Micro-Bioretention 4	E	MMBR	NEWD	6/1/2021	P				
UMCP20BMP0271	2021	144514.5463	406272.8993	13-SF_5501	16-SF-0261	College Park Academy Micro-Bioretention 5	E	MMBR	NEWD	6/1/2021	P				
UMCP20BMP0272	2021	144421.9396	406353.647	13-SF_5501	16-SF-0261	College Park Academy Submerged Gravel Wetla	E	MSGW	NEWD	6/1/2021	P				
UMCP20BMP0273	2021	144926.1124	406544.6861	13-SF_5501		NOAA Green Roof 1	E	AGRE	NEWD	6/30/2021	P				
UMCP20BMP0274	2021	144886.1859	406587.2353	13-SF_5501		NOAA Bioretention	S	FBIO	NEWD	5/30/2021	F				
UMCP20BMP0275	2021	144912.2785	406484.3913	13-SF_5501		NOAA Green Roof 2	E	AGRE	NEWD	6/30/2021	P				
UMCP20BMP0276	2021	144820.7432	406556.5808	13-SF_5501		NOAA WQ Manhole 1	S	COGS	NEWD	4/30/2021	P				Pretreatment for BMP UMCP20BMP0277
UMCP20BMP0277	2021	144818.3125	406568.6997	13-SF_5501		NOAA Underground Cistern	E	MRWH	NEWD	6/16/2021	P				
UMCP20BMP0278	2021	144877.8006	406600.3132	13-SF_5501		NOAA WQ Manhole 2	S	COGS	NEWD	5/30/2021	P				Pretreatment
UMCP20BMP0279	2021	144761.2742	406630.263	13-SF_5501		NOAA WQ Manhole 3	S	COGS	NEWD	4/30/2021	P				Pretreatment
UMCP20BMP0280	2021	147734.9368	406718.2102	13-SF_5501		Severn Building Micro-Bioretention Area	E	MMBR	REDE	6/1/2021	F				
UMCP20BMP0281	2021	148600.4597	404970.954	13-SF_5501	04-SF-0066	Greenmeade North Stormceptor	S	COGS	NEWD		F				Pretreatment for UMCP19BMP0066, Listed as failing until inspection
UMCP20BMP0282	2021	146792.9322	404034.0434	13-SF_5501	11-SF-0184	Presidents House Disconnect 2-2	E	NDRR	NEWD	4/8/2020	P				
UMCP20BMP0285	2021	146737.2272	404001.9968	13-SF_5501	11-SF-0184	Presidents House Disconnect 2-5	E	NDRR	NEWD	4/8/2020	P				
UMCP20BMP0286	2021	146780.6728	404043.6143	13-SF_5501	11-SF-0184	Presidents House Grass Swale	E	MSWG	NEWD	4/8/2020	P				
UMCP20BMP0288	2021	148038.4216	405387.5442	13-SF_5501		4100 Metzerott Rd Impervious Removal	A	IMPP	REST		P				
UMCP20BMP0289	2021	147899.2604	405369.1997	13-SF_5501		4109 Metzerott Rd Impervious Removal	A	IMPP	REST		P				
UMCP20BMP0290	2021	147441.851	404475.0155	13-SF_5501	18-SF-0204	Campus Creek Regenerative Step Pool Conveya	A	SPSC	REST	6/8/2020	P				
UMCP20BMP0291	2021	147345.1138	404978.0608	13-SF_5501	18-SF-0204	Campus Creek Stormwater Bar	A	OUT	REST	6/8/2020	P				
UMCP21BMP0292	2021	146766.1481	404615.6038	13-SF_5501	16-SF-0061	Cole Field House Green Roof 1	E	AGRI	REDE	10/1/2021	F				Listed as failing until inspection. Update for 2022
UMCP21BMP0293	2021	146766.7366	404556.0656	13-SF_5501	16-SF-0061	Cole Field House Green Roof 2	E	AGRI	REDE	10/1/2021	F				Listed as failing until inspection. Update for 2022
UMCP21BMP0294	2021	146672.4051	404557.3929	13-SF_5501	16-SF-0061	Cole Field House Green Roof 3	E	AGRI	REDE	10/1/2021	F				Listed as failing until inspection. Update for 2022
UMCP21BMP0295	2021	146626.2578	404516.8252	13-SF_5501	16-SF-0061	Cole Field House Green Roof 4	E	AGRI	REDE	10/1/2021	F				Listed as failing until inspection. Update for 2022
UMCP21BMP0296	2021	147957.1764	404955.1695	13-SF_5501		Wooded Hillock Impervious Removal 3	A	IMPP	REST		P				
UMCP21BMP0297	2021	147940.0948	404868.3847	13-SF_5501		Wooded Hillock Impervious Removal 2	A	IMPP	REST		P				
UMCP21BMP0298	2021	147868.9695	404758.7366	13-SF_5501		Wooded Hillock Impervious Removal 1	A	IMPP	REST		P				
UMCP21BMP0299	2021	147959.3012	405348.5387	13-SF_5501		4103 Metzerott Rd Impervious Removal	A	IMPP	REST		P				
UMCP21BMP0300	2021	146705.1823	404486.5146	13-SF_5502	16-SF-0061	Cole Field House Impervious Surface Removal	A	IMPP	REST		P				
USG19BMP00003	2021	158508.0187	382721.7422	13-SF_5501	02-SF-0033	Infiltration Trench 1 at IBBR	S	ITRN	NEWD	1/11/2019	F	11/1/2020			
USG19BMP00004	2021	158453.821	382793.5518	13-SF_5501	02-SF-0033	IBBR Outfall Stabilization	A	OUT	NEWD	6/27/2019	P				
USG19BMP00005	2021	158419.496	382716.0187	13-SF_5501	02-SF-0033	Infiltration Trench 2 at IBBR	S	ITRN	NEWD	1/11/2019	P	11/1/2020			
USG19BMP00006	2021	158380.248	382711.8047	13-SF_5501	02-SF-0033	Infiltration Trench 3 at IBBR	S	ITRN	NEWD	1/11/2019	F	11/1/2020			
USG19BMP00007	2021	158338.6007	382749.6673	13-SF_5501		IBBR Pond	S	PWET	NEWD	1/11/2019	P	9/1/2021			
USG19BMP00042	2021	158281.3352	382830.7356	13-SF_5501	16-SF-0044	IBBR Non-Rooftop Disconnect	E	NDRR	NEWD	6/27/2019	P				

Table B.1.b. Reporting Requirements for ESD and Structural Practices

More specific data related to ESD and structural BMPs is populated in this table.

BMP_ID[1]	NUM_BMPS[2]	ON_OFF_SITE	CONVERTED_FROM	BMP_STATUS	BMP_DRAIN_AREA	IMP_ACRES[3]	PE_ADR	APPR_DATE	BUILT_DATE	GEN_COMMENTS
UMCP19BMP0130	1	ON		ACT	0.04	0.04	1	12/30/1899	12/30/1899	Kirwan Hall fountain permeable pavements
UMCP19BMP0129	1	ON		ACT	0.06	0.04	0	12/30/1899	12/30/1899	Reckord Armory/PE 1
UMCP19BMP0128	1	ON		ACT	3.14	0.84	0	12/30/1899	12/1/2013	Paint Branch Dr & Rossborough Ln bioretention/PE 0
UMCP19BMP0127	1	ON		ACT	0.41	0.14	0	12/30/1899	3/14/2000	Paint Branch Dr & Rossborough Ln/PE 1
UMCP19BMP0125	1	ON		ACT	0.46	0.3	0	10/5/2012	7/28/2014	Prince Frederick Hall Bioretention Cell 2/PE 0.59
UMCP19BMP0124	1	ON		ACT	0.23	0.17	1	10/5/2012	7/28/2014	Prince Frederick Hall Bioretention Cell 1
UMCP19BMP0122	1	ON		ACT	0.25	0.1	1.03	3/20/2012	11/20/2012	Denton Courtyard bioretention
UMCP19BMP0069	1	ON		ACT	0.54	0.5	0	12/30/1899	9/11/2001	Courtyards Northeast parking/PE 1
UMCP19BMP0068	1	ON		ACT	0.5	0.46	0	12/30/1899	9/11/2001	Courtyards Northeast parking/PE 1
UMCP19BMP0109	1	ON		ACT	7.49	1.32	0	12/30/1899	4/4/1988	Metzerott Rd and Greenmead Dr wet pond/PE 0.5
UMCP19BMP0011	1	ON		ACT	28.16	9.94	0.8	5/30/2003	12/24/2005	CSPAC Shallow Marsh Wetland. Retrofit conducted in 2003.
UMCP19BMP0146	1	ON		ACT	0.47	0.37	0	12/30/1899	12/19/2016	North west corner of golf course parking lot rain garden/PE 1
UMCP19BMP0144	1	ON		ACT	1.25	1.14	0	12/30/1899	12/19/2016	North East corner of golf course parking lot rain gardens
UMCP19BMP0143	1	ON		ACT	0.04	0.04	0	12/30/1899	5/29/2009	Central Animal Resources Facility & ENST/PE 1
UMCP19BMP0141	1	ON		ACT	0.04	0.02	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0140	1	ON		ACT	0.05	0.04	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0139	1	ON		ACT	0.14	0.13	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0138	1	ON		ACT	0.04	0.03	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0137	1	ON		ACT	0.04	0.03	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0136	1	ON		ACT	0.05	0.04	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0135	1	ON		ACT	0.06	0.02	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0134	1	ON		ACT	0.07	0.05	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0133	1	ON		ACT	0.06	0.02	0	3/3/2004	5/9/2005	Kim Plaza/PE 0
UMCP19BMP0142	1	ON		ACT	0.17	0.1	1	3/3/2004	5/9/2005	Kim Plaza
UMCP19BMP0107	1	ON		ACT	0.69	0.42	0.53	3/21/2001	3/31/2002	Taylor stadium bioretention
UMCP19BMP0094	1	ON		ACT	0.27	0.17	0	7/1/2003	5/9/2005	Paint Branch Drive bioretention/PE 1
UMCP19BMP0093	1	ON		ACT	0.45	0.34	0	7/1/2003	5/9/2005	Regents Drive bioretention/PE 1
UMCP19BMP0092	1	ON		ACT	2.99	2.67	0	7/1/2003	5/9/2005	Lot 9 bioretention/PE 1
UMCP19BMP0091	1	ON		ACT	0.86	0.79	0	7/1/2003	5/9/2005	Regents Drive bioretention/PE 1
UMCP19BMP0085	1	ON		ACT	0.37	0.36	0	8/27/2007	9/30/2009	Washington Quad/PE 1
UMCP19BMP0040	1	ON		ACT	0.28	0.03	1	9/2/2011	8/16/2012	University House
UMCP19BMP0041	1	ON		ACT	0.38	0.09	1	9/2/2011	8/16/2012	University House
UMCP19BMP0075	1	ON		ACT	0.02	0.01	0	3/20/2012	11/30/2012	Denton permeable pavements/PE 1
UMCP19BMP0112	1	ON		ACT	1.48	1.2	0	4/13/1998	3/14/2000	Golf Course Parking Lot rain garden/PE 0
UMCP19BMP0080	1	ON		ACT	0.04	0.04	0	1/18/2011	12/13/2012	Lot FF2 permeable pavements/PE 1
UMCP19BMP0027	1	ON		ACT	0.32	0.32	0	7/1/2003	5/9/2005	Lot PP2 bioretention/PE 1
UMCP19BMP0108	1	ON		ACT	3.9	0.56	0.47	1/1/2001	4/1/2002	Chesapeake Parking Lot East
UMCP19BMP0082	1	ON		ACT	0.45	0.43	0.91	1/22/2008	3/27/2010	Knight Hall
UMCP19BMP0048	1	ON		ACT	0.04	0.04	0	12/30/1899	2/26/2009	Symons Hall/PE 1
UMCP19BMP0046	1	ON		ACT	0.01	0.003	1	12/30/1899	2/26/2009	Symons Hall
UMCP19BMP0047	1	ON		ACT	0.01	0.003	1	12/30/1899	2/26/2009	Symons Hall
UMCP19BMP0019	1	ON		ACT	0.63	0.29	1	5/29/2013	8/28/2014	University House Parking Lot
UMCP19BMP0005	1	ON		ACT	23.88	10.91	0	6/16/2003	5/9/2005	Peace Garden Sand Filter/PE 0
UMCP19BMP0086	1	ON		ACT	0.1	0.1	0	12/30/1899	5/29/2009	CSPAC permeable pavements/PE 1
UMCP19BMP0050	1	ON		ACT	0.15	0.15	1	7/11/2008	9/30/2008	Cumberland
UMCP19BMP0077	1	ON		ACT	4.82	2.03	0	10/24/2012	5/8/2013	Public Health Garden rainwater harvesting
UMCP19BMP0076	1	ON		ACT	1.1	0.62	0	10/24/2012	5/8/2013	Public Health Garden bioretention
UMCP19BMP0078	1	ON		ACT	0.2	0.2	1.2	4/3/2009	12/1/2013	Physical Science
UMCP19BMP0049	1	ON		ACT	0.08	0.08	1.2	4/3/2009	12/1/2013	Computer and Space Sciences
UMCP19BMP0106	1	ON		ACT	1.32	1.17	0	10/29/2010	10/15/2012	Shuttle Bus wet pond/PE 0.6
UMCP19BMP0098	1	ON		ACT	3.91	3.59	0	7/20/1994	12/1/2013	Artificial Turf Field bioretention/PE 0 Not Permitted
UMCP19BMP0018	1	ON		ACT	0.05	0.05	1	2/18/2011	10/12/2012	BLS Heavy Equipment
UMCP19BMP0055	1	ON		ACT	0.17	0.09	1.15	2/18/2011	10/12/2012	Heavy Equipment Building bioretention
UMCP19BMP0010	1	ON		ACT	8.7	2.7	0.22	2/15/1991	4/1/1994	Laboratory for Physical Science wet pond
UMCP19BMP0089	1	ON		ACT	32.84	1.07	0	10/10/1972	1/1/1979	Golf course lower wet pond/PE 0
UMCP19BMP0083	1	ON		ACT	0.05	0.05	0	12/30/1899	11/30/2012	Denton Hall rainwater harvesting/PE 0
UMCP19BMP0056	1	ON		ACT	14.16	5.96	1	12/14/2000	10/1/2002	Comcast north retention pond
UMCP19BMP0042	1	ON		ACT	0.35	0.27	1	3/18/2013	2/24/2014	Wye Oak Building bioretention
UMCP19BMP0020	1	ON		ACT	18.64	7.14	1	1/23/1987	4/4/1988	VetMed research pond
UMCP19BMP0017	1	ON		ACT	0.11	0.11	0.29	10/28/2010	10/14/2012	Shuttle Facility
UMCP19BMP0014	1	ON		ACT	0.23	0.07	1	11/17/2011	10/12/2012	Woods Hall Bioretention
UMCP19BMP0013	1	ON		ACT	8.6	4.87	0.5	12/30/1899	9/11/2001	Courtyards retention pond
UMCP19BMP0012	1	ON		ACT	9.2	6.87	1	12/14/2000	12/11/2002	Softball complex retention pond
UMCP19BMP0036	1	ON		ACT	2.11	1.59	0	12/30/1899	3/29/2011	Lot Three - Guilford Park Bioretention/PE 1
UMCP19BMP0090	1	ON		ACT	7.58	3.37	0	12/30/1899	12/2/2002	Lot PP2 rain garden/PE 1
UMCP19BMP0081	1	ON		ACT	0.02	0.02	0	12/30/1899	11/30/2012	Denton Hall rainwater harvesting/PE 0
UMCP19BMP0074	1	ON		ACT	0.02	0.02	1	12/30/1899	4/1/2010	Stamp Green Roof East
UMCP19BMP0073	1	ON		ACT	0.04	0.04	1	12/30/1899	4/1/2010	Stamp Green Roof West
UMCP19BMP0070	1	ON		ACT	0.13	0.09	0.76	3/20/2012	11/30/2012	Denton bioretention
UMCP19BMP0065	1	ON		ACT	0.5	0.22	0	10/17/2004	6/7/2005	Greenmeade North/PE 1
UMCP19BMP0079	1	ON		ACT	0.01	0.01	1	12/30/1899	3/9/2009	Glenn L Martin Hall permeable pavements
UMCP19BMP0059	1	ON		ACT	0.28	0.18	2.28	3/20/2012	10/12/2012	Denton dining bioretention
UMCP19BMP0039	1	ON		ACT	0.24	0.19	0	12/30/1899	12/6/2012	Chem-Nuc Bldg bioretention/PE 1
UMCP19BMP0002	1	ON		ACT	6.95	3.52	0	8/10/1995	3/26/1998	Lot 2 retention pond
UMCP19BMP0024	1	ON		ACT	9.58	3.85	0	10/4/2000	9/11/2001	Terrapin Trail Garage retention pond/PE 1
UMCP19BMP0088	1	ON		ACT	0.09	0.07	0	12/30/1899	12/6/2012	Chem-Nuc Bldg bioretention/PE 1
UMCP19BMP0033	1	ON		ACT	0.47	0.14	0	9/2/2011	8/16/2012	University House/PE 1

BMP_ID[1]	NUM_BMPS[2]	ON_OFF_SITE	CONVERTED_FROM	BMP_STATUS	BMP_DRAIN_AREA	IMP_ACRES[3]	PE_ADR	APPR_DATE	BUILT_DATE	GEN_COMMENTS
UMCP19BMP0034	1	ON		ACT	0.21	0.1	0	9/1/2011	8/15/2012	University House/PE 1
UMCP19BMP0035	1	ON		ACT	0.41	0.2	0	9/1/2011	8/15/2012	University House/PE 1
UMCP19BMP0016	1	ON		ACT	0.11	0.11	1	10/28/2010	10/14/2012	Shuttle Facility
UMCP19BMP0022	1	ON		ACT	0.86	0.82	0	12/30/1899	12/11/2002	Lot 11b bioretention/PE 1
UMCP19BMP0021	1	ON		ACT	11.8	7.23	0	4/1/1988	4/1/1994	Animal science retention pond/PE 0
UMCP19BMP0172	1	ON		ACT	0.98	0.72	0	12/30/1899	9/11/2001	Courtyards South Parking/PE 1
UMCP19BMP0235	1	ON		ACT	208.28	7.25	0	10/10/1972	1/1/1979	Upper golf course wet pond/PE 0
UMCP19BMP0153	1	ON		ACT	0.62	0.22	0.8	5/22/2017	1/10/2018	A.V. Williams
UMCP19BMP0152	1	ON		ACT	0.68	0.37	1.3	5/22/2017	1/10/2018	A.V. Williams
UMCP19BMP0154	1	ON		ACT	0.35	0.39	1	5/22/2017	1/10/2018	A.V. Williams
UMCP19BMP0147	1	ON		ACT	0.37	0.22	0	12/30/1899	12/19/2016	South west corner of golf course parking lot rain garden/PE 1
UMCP19BMP0159	1	ON		ACT	0.03	0.03	1	9/26/2014	10/26/2017	East Side of Edwards St. John
UMCP19BMP0158	1	ON		ACT	0.06	0.06	1	9/26/2014	10/26/2017	West Side of Edwards St. John
UMCP19BMP0157	1	ON		ACT	0.06	0.06	1	9/26/2014	10/26/2017	West Side of Edwards St. John
UMCP19BMP0155	1	ON		ACT	0.05	0.05	1	9/26/2014	10/26/2017	West of Edward St. John
UMCP19BMP0231	1	ON		ACT	0.33	0.27	0	9/18/2015	10/26/2017	A. James Clark Hall/PE 1.96
UMCP19BMP0238	1	ON		ACT	1.28	0.87	1	12/30/1899	1/1/2017	Wellness Way bio-swale
UMCP19BMP0026	1	ON		ACT	2.82	2.23	0.77	9/29/2010	10/12/2012	Shuttle Facility dry swale
UMCP19BMP0236	1	ON		ACT	0.28	0.27	0	12/30/1899	9/11/2001	SWFSCA1/PE 0
UMCP19BMP0237	1	ON		ACT	0.06	0.06	0	12/30/1899	9/11/2001	SWFSCA2/PE 0
UMCP19BMP0239	1	ON		ACT	0.56	0.01	0	10/19/2011	10/19/2011	SWFNR1
UMCP19BMP0240	1	ON		ACT	0.02	0.02	1	10/19/2011	8/16/2012	SWFNR2
UMCP19BMP0066	1	ON		ACT	4.75	2.43	0	10/17/2004	6/7/2005	conveyance to SWF65/PE 1
UMCP19BMP0161	1	ON		ACT	0.4	0.21	1	6/18/2009	6/3/2011	Oakland Hall Sandfilter
UMCP19BMP0162	1	ON		ACT	0	0	0	10/4/2000	9/11/2001	Terrapin Trail Garage BaySaver/PE 0
UMCP19BMP0163	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0164	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0165	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0166	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0167	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0168	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0169	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0170	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0171	1	ON		ACT	0	0	0	4/29/1996	1/1/1998	Severn Stormceptor
UMCP19BMP0244	1	ON		ACT	0.14	0.12	2	5/10/2016	6/7/2019	Brendan Iribe 4
UMCP19BMP0242	1	ON		ACT	0.44	0.23	2.5	5/10/2016	6/7/2019	Brendan Iribe 2
UMCP19BMP0241	1	ON		ACT	0.45	0.19	2.6	5/10/2016	6/7/2019	Brendan Iribe 1
UMCP19BMP0243	1	ON		ACT	0.76	0.19	1	5/10/2016	6/7/2019	Brendan Iribe 3
UMCP19BMP0248	1	ON		ACT	0.15	0.15	0	6/3/2015	1/10/2018	Service Building Bioretention/PE 1
UMCP19BMP0245	1	ON		ACT	0.12	0.12	1.7	5/10/2016	6/7/2019	Brendan Iribe 5
UMCP19BMP0232	1	ON		ACT	0.3	0.21	2.6	9/18/2015	10/26/2017	A. James Clark Hall
UMCP20BMP0264	1	ON		ACT	1.99	1.06	0	3/5/2001	3/31/2002	PE 0.58
UMCP20BMP0256	1	ON		ACT	0.76	0.59	0.63	4/9/2003	1/1/2005	UMCP Student Housing Building A
UMCP20BMP0257	1	ON		ACT	0.96	0.72	0	4/9/2003	1/1/2005	UMCP Student Housing Building B/PE 0.51
UMCP20BMP0266	1	ON		ACT	0.12	0.12	0.75	8/29/2002	12/31/2004	
UMCP20BMP0260	1	ON		ACT	0.64	0.48	0.73	3/10/2017	12/26/2018	M Square MBR1
UMCP20BMP0259	1	ON		ACT	1.45	0.88	0.82	3/10/2017	12/26/2018	M Square SGW 2
UMCP20BMP0258	1	ON		ACT	3.32	2.33	0.8	3/10/2017	12/26/2018	M Square SGW 1
UMCP20BMP0255	1	ON		ACT	0.24	0.15	0	3/5/1993	1/1/1996	PE 0
UMCP20BMP0261	1	ON		ACT	0.54	0.27	0	11/10/2006	3/10/2008	PE 1
UMCP20BMP0251	1	ON		ACT	0	0	0	3/12/1992	12/30/1899	PE 0
UMCP20BMP0253	1	ON		ACT	0.26	0.25	0	3/12/1992	4/1/1994	
UMCP20BMP0252	1	ON		ACT	0.22	0.21	0	3/12/1992	4/1/1994	
USG19BMP00005	1	ON		ACT	0.08	0.06	1	12/4/2002	8/1/2006	
USG19BMP00006	1	ON		ACT	0.59	0.48	0	12/4/2002	8/1/2006	PE 0.78
USG19BMP00007	1	ON		ACT	2.84	1.11	0	1/1/1980	1/1/1980	
USG19BMP00042	1	ON		ACT	0.03	0.03	1	4/1/2017	4/13/2018	
UMCP20BMP0272	1	ON		ACT	5.5	1.97	2.04	8/15/2016	2/1/2018	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0267	1	ON		ACT	0.32	0.14	1.95	8/15/2016	2/1/2018	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0268	1	ON		ACT	0.36	0.27	1.54	8/15/2016	2/1/2018	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0269	1	ON		ACT	0.44	0.35	1.16	8/15/2016	2/1/2018	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0270	1	ON		ACT	0.41	0.32	1.58	8/15/2016	2/1/2018	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0271	1	ON		ACT	0.55	0.42	1.48	8/15/2016	2/1/2018	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0280	1	ON		ACT	0.79	0.59	0	4/29/1996	1/1/1998	BMP identified from plan/PE 0.02
UMCP20BMP0276	1	ON		ACT	1.04	0.41	0	10/18/2006	1/1/2012	
UMCP20BMP0274	1	ON		ACT	1.62	1.35	0	10/18/2006	1/1/2012	PE 0.92
UMCP20BMP0273	1	ON		ACT	0.63	0.63	1	10/18/2006	1/1/2012	
UMCP20BMP0275	1	ON		ACT	0.33	0.33	1	10/18/2006	1/1/2012	
UMCP20BMP0277	1	ON		ACT	1.04	0.41	0	10/18/2006	1/1/2012	
UMCP20BMP0278	1	ON		ACT	0.98	0.96	0	10/18/2006	1/1/2012	BMP added to database year 2. To be evaluated year 3
UMCP20BMP0279	1	ON		ACT	1.69	0.98	0	10/18/2006	1/1/2012	BMP added to database year 2. To be evaluated year 3
UMCP19BMP0023	1	ON		ACT	1.42	0.72	0	12/30/1899	10/26/2017	SWF 23/PE 0
UMCP19BMP0043	1	ON		ACT	0.57	0.54	0	12/30/1899	12/11/2002	Lot 11b bioretention/PE 1
UMCP20BMP0281	1	ON		ACT	3.4	1.7	0	10/17/2004	6/7/2005	Pretreatment for UMCP20BMP0065/PE 0
UMCP20BMP0282	1	ON		ACT	0.02	0.02	1	10/19/2011	8/16/2012	
UMCP20BMP0285	1	ON		ACT	0.02	0.02	1	10/19/2011	8/16/2012	
UMCP20BMP0286	1	ON		ACT	0.17	0.04	1	10/19/2011	8/16/2012	
USG19BMP00003	1	ON		ACT	0.28	0.14	0	12/4/2002	8/1/2006	PE 0.5
UMCP19BMP0150	1	ON		ACT	0.16	0.16	0	9/26/2014	10/26/2017	PE 0
UMCP19BMP0149	1	ON		ACT	8.11	5.56	0	7/20/2015	1/11/2016	PE 0
UMCP19BMP0151	1	ON		ACT	2.17	2.11	0	8/22/2011	12/6/2012	PE 0
UMCP21BMP0292	1	ON		ACT	0.32	0.32	0	7/21/2017	5/1/2021	
UMCP21BMP0293	1	ON		ACT	0.07	0.07	0	7/21/2017	5/1/2021	
UMCP21BMP0294	1	ON		ACT	0.37	0.37	0	7/21/2017	5/1/2021	
UMCP21BMP0295	1	ON		ACT	0.86	0.86	0	7/21/2017	5/1/2021	

Table B.1.c Reporting Requirements for Alternative BMPs

More specific data related to alternative BMPs is populated in this table.

BMP_ID[1]	PROJECT_DESC	PROJECT_LENGTH	ACRES_SWEPT	TIMES_SWEPT	ACRES_PLANTED	IMP_ACR_ELIM	EQU_IMP_ACR	INSTALL_DATE	IMPL_COMP_YR	GEN_COMMENTS
UMCP19BMP0249	Campus Creek Restoration	3039					105.8	10/10/2019		
UMCP20BMP0288	Impervious Surface Removal to Pervious 4100 Metzerott Rd					0.222	0.167		2016	
UMCP20BMP0289	Impervious Surface Removal to Pervious 4109 Metzerott Rd					0.0375	0.028		2017	
UMCP20BMP0291	Campus Creek Stormwater Bar						0.13	10/10/2019		
UMCP20BMP0290	Campus Creek Regenerative Step Pool Conveyance 2						0.31	10/10/2019		
UMCP19BMP0250	Campus Creek Regenerative Step Pool Conveyance 1						0.58	10/10/2019		
UMCP21BMP0296	Impervious Surface Removal to Pervious at Wooded Hillock					0.027	0.02		2020	
UMCP21BMP0297	Impervious Surface Removal to Pervious at Wooded Hillock					0.022	0.017		2020	
UMCP21BMP0298	Impervious Surface Removal to Pervious at Wooded Hillock					0.066	0.05		2020	
UMCP21BMP0299	Impervious Surface Removal to Pervious at 4103 Metzerott Rd					0.089	0.067		2021	
UMCP21BMP0300	Impervious Surface Removal at Cole Field House					3.07	2.3		2021	

[1] Every BMP Identified in this table should correspond to "BMP" sheet.