



J. Sargeant Reynolds Community College

Phase II Chesapeake Bay TMDL Action Plan

Prepared for:

J. Sargeant Reynolds Community College
Parham Road Campus
Facilities Management & Planning
1651 E. Parham Road
Richmond, VA 23228

October 28, 2019

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1.0 Introduction

The J. Sargeant Reynolds Community College (JSRCC) has prepared this Phase II Chesapeake Bay TMDL Action Plan (Plan) as required by JSRCC's Municipal Separate Storm Sewer System (MS-4) Permit effective November 1, 2018 through October 31, 2023. To assist with the development of the Plan, JSRCC has utilized Part II.A.11 (TMDL Special Conditions) of the Permit and the Department of Environmental Quality's (DEQ) Chesapeake Bay TMDL Special Condition Guidance Document (Guidance Memo No. 15-2005). Furthermore, JSRCC utilized the Virginia Geographic Information Network (VGIN), and Virginia Environmental Geographic Information Systems (VEGIS) coupled with campus GIS data to meet the technical requirements of the Plan.

The focus of this Plan is driven by the Chesapeake Bay Total Maximum Daily Load (TMDL), which was approved by the US Environmental Protection Agency (EPA) in December of 2010. Nitrogen, Phosphorous, and Sediment are the Pollutants of Concern (POC) driving the need for required pollutant reductions in the Chesapeake Bay watershed, which includes the entire JSRCC campus. Three five-year permit cycles (Phase I, Phase II, and Phase III) have been proposed to address the percent pollutant reduction required by a Municipal Separate Storm Sewer System (MS4) in Virginia. A 40% POC load reduction is required by the end of this permit cycle.

For the purposes of this Plan, the primary focus will be on Phase I and Phase II and the associated 5% and 35% reduction requirements, although the loadings and reductions have been provided for the 60% cycle for reference. Projects implemented as part of this Plan that exceed the required reductions will be tracked to meet future requirements. JSRCC may modify this Plan to include new opportunities for reductions or address projects that are deemed infeasible. JSRCC also understands that DEQ is preparing modifications to existing agency guidance and JSRCC may update this Plan accordingly once that guidance is published, especially if the modified guidance impacts this Plan or the BMPs to be implemented.

This Plan includes all of the components required by the Permit, as presented in **Table 1-1**:

Table 1-1: General Permit Components

Component	Permit Section	Plan Section	Plan Page No.
New or Modified Legal Authorities	II.A.11.a	2.0	2
Load and Cumulative Reduction Calculations	II.A.11.b	3.0	2
Total Reductions Achieved as of July 1, 2018	II.A.11.c	1.0	2
BMPs Implemented prior to July 1, 2018	II.A.11.d	4.0	2
BMPs to be Implemented prior to Permit Expiration	II.A.11.e	5.0	2
Summary of Comments Received as a Result of Public Participation	II.A.11.f	6.0	6

2.0 New or Modified Legal Authorities

JSRCC's relevant existing legal authorities and policies are listed below:

- MS4 Program Plan
- Illicit Discharge Detection and Elimination Policy
- Annual Standards and Specifications for Erosion and Sediment Control (through the Virginia Community College System, VCCS)
- JSRCC's Stormwater Master Plan
- Bacteria TMDL Action Plan
- Stormwater Pollution Prevention Plan for High Priority Facilities

Based on the review of items listed above, JSRCC has no new or modified legal authorities such as ordinances, state and other permits, orders, specific contract language and/or inter-jurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition.

3.0 Load and Cumulative Reduction Calculations

3.1. 2009 Baseline Land Cover

Land cover types were delineated using JSRCC's GIS data, construction plans, and 2009 VGIN aerial imagery. Areas that met the tree density requirements of Guidance Memo 15-2005, Appendix V.H (undeveloped and a minimum area of 900 square meters) were considered forested land cover .

Figure 3-1 shows JSRCC's property boundary and regulated MS4 area. Lands outside of the regulated area are operated by Henrico County and will be included as part of their MS4 regulated area. The Figure also shows the 2009 baseline land cover types within the regulated area of the JSRCC Parham campus and includes a table with the acreage and overall percentage of each land cover type (impervious, pervious, forested, and open water).

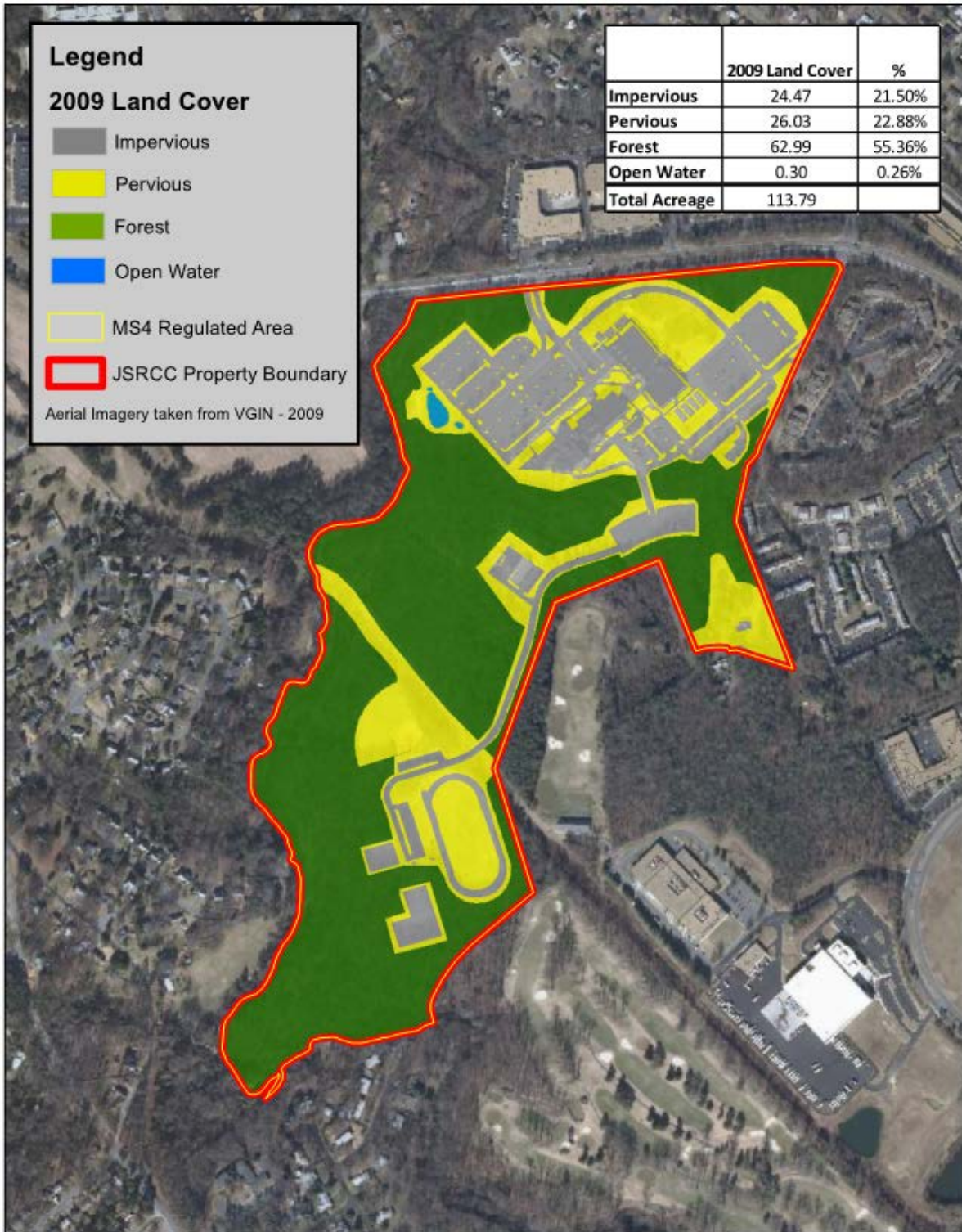


Figure 3-1: Regulated MS4 Area and 2009 Baseline Land Cover

3.2. Calculations

Table 3-1 presents the pollutant load based on JSRCC's 2009 baseline cover and the required reductions to meet 40% of the requirements.

Table 3-1: Calculation for Estimating Total Reduction Required at 40% (Table 3a from the Permit)

		A	B	C	D	E	F	G
Pollutant	Regulated Urban Subsource	Loading Rate (lbs/ac/yr) ¹	Existing Developed Lands as of 6/30/09 Served by the MS4 within the 2010 CUA (acres) ²	Load (lbs/yr) ³	Percentage of MS4 Required Chesapeake Bay Total L2 Loading	Percentage of L2 Required Reduction by 6/30/2023	40% Cumulative Reduction Required by 6/30/2023 (lbs/yr) ⁴	Sum of 40% Cumulative Reduction (lbs/yr) ⁵
Nitrogen	Impervious	9.39	24.47	230	9%	40%	7.3	12
	Pervious	6.99	26.03	182	6%	40%	4.4	
Phosphorus	Impervious	1.76	24.47	43	16%	40%	2.8	3.2
	Pervious	0.50	26.03	13	7.25%	40%	0.4	
Sediment	Impervious	676.94	24.47	16,533	20%	40%	1,323	1,415
	Pervious	101.08	26.03	2,631	8.75%	40%	92	

1 – Edge of stream loading rate based on the Chesapeake Bay Watershed Model Progress Run 5.3.2.
 2 – To determine the existing developed areas required in Column B, first determine the extent of the regulated service area based on the 2010 Census Urbanized Area (CUA). Next, delineate the lands within the 2010 CUA served by the MS4 as pervious or impervious as of the baseline data of June 30, 2009.
 3 – Column C = Column A x Column B.
 4 – Column F = Column C x Column D x Column E.
 5 – Column G = the sum of the subsource cumulative reduction required by 6/30/23 (lbs/yr) as calculated in Column F.
 6 – Per MS4 permit requirements, loading and reduction values greater than or equal to 10 pounds have been calculated and reported to the nearest pound. Loading and reduction values less than 10 pounds have been calculated and reported to two significant digits.

Table 3-2 presents the pollutant load based on JSRCC's 2009 baseline cover and the reductions anticipated to meet 100% of the stated goals under the current Watershed Implement Plan.

Table 3-2: Calculation for Estimating Total Reduction Anticipated to Meet 100% of the WIP goals for POC Reduction

		A	B	C	D	E	F	G
Pollutant	Regulated Urban Subsource	Loading Rate (lbs/ac/yr) ¹	Existing Developed Lands as of 6/30/09 Served by the MS4 within the 2010 CUA (acres) ²	Load (lbs/yr) ³	Percentage of MS4 Required Chesapeake Bay Total L2 Loading	Percentage of L2 Required Reduction by 6/30/2023	100% Cumulative Reduction Required by 6/30/2023 (lbs/yr) ⁴	Sum of 100% Cumulative Reduction (lbs/yr) ⁵
Nitrogen	Impervious	9.39	24.47	230	9%	100%	21	32
	Pervious	6.99	26.03	182	6%	100%	11	
Phosphorus	Impervious	1.76	24.47	43	16%	100%	6.9	7.8
	Pervious	0.50	26.03	13	7.25%	100%	0.9	
Sediment	Impervious	676.94	24.47	16,533	20%	100%	3,306	3,536
	Pervious	101.08	26.03	2,631	8.75%	100%	230	

1 – Edge of stream loading rate based on the Chesapeake Bay Watershed Model Progress Run 5.3.2.
 2 – To determine the existing developed areas required in Column B, first determine the extent of the regulated service area based on the 2010 Census Urbanized Area (CUA). Next, delineate the lands within the 2010 CUA served by the MS4 as pervious or impervious as of the baseline data of June 30, 2009.
 3 – Column C = Column A x Column B.
 4 – Column F = Column C x Column D x Column E.
 5 – Column G = the sum of the subsource cumulative reduction required by 6/30/23 (lbs/yr) as calculated in Column F.
 6 – Per MS4 permit requirements, loading and reduction values greater than or equal to 10 pounds have been calculated and reported to the nearest pound. Loading and reduction values less than 10 pounds have been calculated and reported to two significant digits.

4.0 BMPs Implemented Prior to July 1, 2018 and Associated Reductions

JSRCC has funded the design and construction of a filtering manufactured treatment device (MTD) to serve parking lots L and M. This project has been fully designed and JSRCC has secured funding for construction. Refer to **Appendix A** for the approved construction drawings.

Table 4-1: BMPs Implemented

Type	Project Name	% Removal Efficiency			Reduction Expected (lbs/yr)			Implementation Date
		N	P	TSS	N	P	TSS	
Filtering MTD	Parking Lot L and M Stormwater Retrofit	35%	50%	80%	5.72	1.14	571.9	Design Initiated: 11/8/2017 Construction: Complete by June 1, 2021

5.0

5.0 BMPs to be Implemented Prior to Permit Expiration

JSRCC is investigating options and identifying projects as funding becomes available. These options may change or be removed entirely as more preliminary analysis is completed. Additionally, other options may present themselves. JSRCC is currently evaluating which strategies would be the most cost-effective before constructing any projects.

JSRCC intends to meet the reduction requirements for this permit term through the implementation of either additional filtering MTDs or a stream restoration project. The MTDs would be installed to treat impervious parking areas that currently discharge directly to an unnamed tributary of North Run. The stream restoration project would be implemented to restore up to approximately 1,600 ft of an unnamed tributary of North Run on JSRCC's campus.

JSRCC is currently in the process of assessing the viability and cost effectiveness of stream restoration. The College has met with Henrico County to discuss potential partnership for implementation, and has commenced preliminary assessment and design, as of September 7, 2019.

Table 5-1 has been developed to show the preliminary pollutant removal calculation of the MTDs and stream restoration project.

Table 5-1: BMPs Considered for Implementation

Type of BMP	Location	% Removal Efficiency			Reduction Expected (lbs/yr)		
		N	P	TSS	N	P	TSS
Stream Restoration	Unnamed Tributary of North Run	50%	50%	50%	171.85	79.14	9195.52
Filtering MTD	Parking Lots I, J and K, Baseball Parking Lot, Football Parking Lot	35%	50%	80%	20.24	4.03	2023

5.1. Stream Restoration

Approximately 1,600 linear feet of an unnamed tributary of North Run flows east to west through the middle of JSRCC's campus. JSRCC has performed a preliminary assessment of the unnamed tributary of North Run to determine if there is potential for any stream restoration projects. **Figure 5-1** shows the location of this tributary.

At the completion of any stream restoration projects and after JSRCC has officially certified all credits required for TMDL compliance, JSRCC reserves the right to share the remaining credits and implementation costs of the project with adjacent MS4s.



Figure 5-1: Potential Location of Stream Restoration Project

5.2. Additional MTD Retrofits for Parking Lots

JSRCC recognizes that at this preliminary level of analysis, only some, if any, of the additional parking lots may be viable candidates for MTD retrofits. The drainage area to each project and the potential pollutant removal have been presented for conceptual planning purposes only. These calculations were completed using a similar approach as the proposed stormwater retrofit to Parking Lots L and M.

These additional MTD retrofits are based on the Parking Lot L and M Stormwater Retrofit project and their individual calculations are shown in **Table 5-2**. The locations and conceptual drainage areas for parking lots K, I, and J, and the Baseball and Football parking lots are shown in **Figure 5-2**. These areas were partially chosen because no constructed stormwater quality improvements are presently in place.

Table 5-2: Additional Parking Lot MTD Retrofit Calculations

Project	Drainage Area (acres)	Potential Pollutant Removal (lb/yr)		
		Nitrogen	Phosphorus	Total Suspend Solids
Parking Lot I and J	2.5	13.5	2.7	1,349
Parking Lot K	0.75	4	0.8	405
Baseball Parking Lot	0.30	1.6	0.3	162
Football Parking Lot	0.20	1.1	0.2	108
Total	3.75	20.24	4.03	2,023

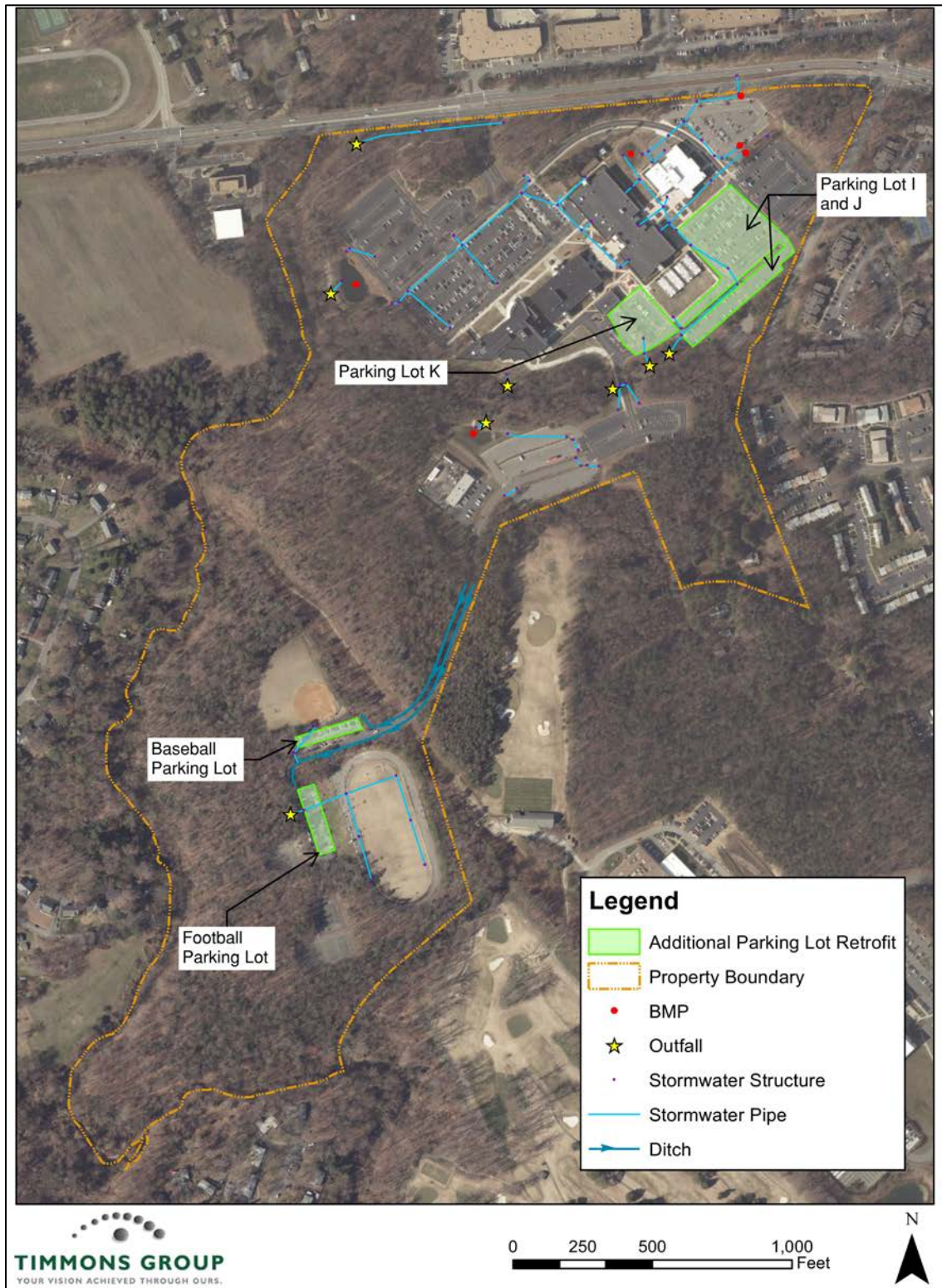
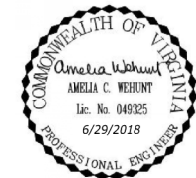


Figure 5-2: Conceptual Locations for Additional Parking Lot MTD Retrofits

6.0 Summary of Comments Received as a Result of Public Participation

JSRCC has not received any formal public comment.

Appendix A

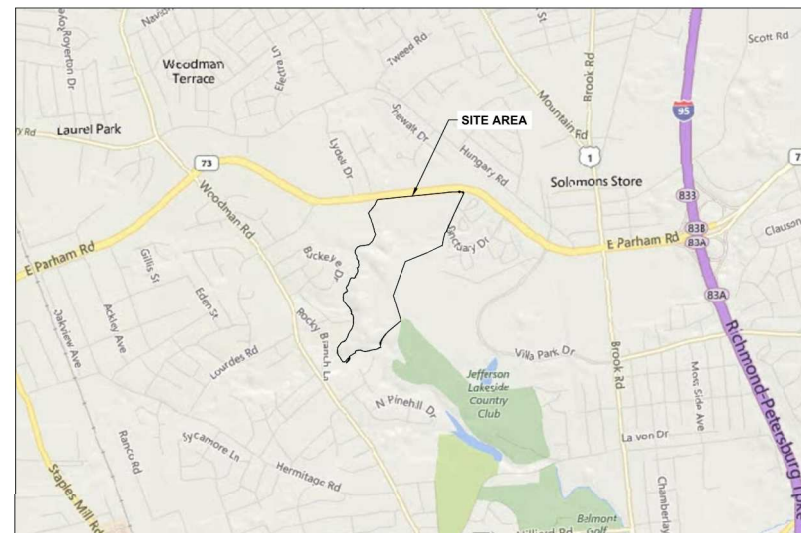


J. SARGEANT REYNOLDS COMMUNITY COLLEGE LOT L & M STORMWATER RETROFIT

1651 EAST PARHAM ROAD
HENRICO COUNTY, VIRGINIA

06/29/2018

SHEET LIST TABLE	
Sheet Number	Sheet Title
C0.0	COVER
C1.0	EXISTING CONDITIONS
C2.0	EROSION AND SEDIMENT CONTROL PLAN
C2.1	EROSION & SEDIMENT CONTROL NOTES & DETAILS
C2.2	EROSION & SEDIMENT CONTROL NOTES & DETAILS
C3.0	LAYOUT PLAN
C4.0	CONSTRUCTION NOTES & DETAILS



VICINITY MAP
SCALE: 1" = 2,000'

PROJECT SUMMARY

ADDRESS: 1651 EAST PARHAM ROAD
 PARCEL ID: 779-756-2504
 ZONING: A-1
 EXISTING USE: COMMUNITY COLLEGE
 PARCEL AREA: 106.486 ACRES
 AREA OF DISTURBANCE: 0.07-ACRE
 DATUM: NAVD88, NAD83

NUTRIENT REMOVALS PROVIDED BY THIS PROJECT

- TP REMOVAL (50%): 1.15 LBS/YEAR
- TN REMOVAL (35%): 5.72 LBS/YEAR
- TSS REMOVAL (80%): 571.9 LBS/YEAR

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YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
06/29/2018 <td></td>	

DRAWN BY
B. MEYER

DESIGNED BY
B. MEYER

CHECKED BY
A. CREEL

SCALE
1"=2,000'

TIMMONS GROUP

JSRCC - LOT L & M STORMWATER RETROFIT
1651 EAST PARHAM ROAD, HENRICO COUNTY, VIRGINIA

JOB NO.
40785

SHEET NO.
C0.0

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EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION

THIS PROJECT IS LOCATED AT THE J. SARGEANT REYNOLDS COMMUNITY COLLEGE, EAST PARHAM ROAD CAMPUS, IN THE CITY OF RICHMOND, THIS PROJECT IS THE INSTALLATION OF STORMWATER RETROFIT MEASURES IN THE FORM OF A CONTECH JELLYFISH (OR APPROVED EQUAL) STORMWATER FILTER UNIT AT AN EXISTING PARKING AREA AND THE REPLACEMENT OF DAMAGED CURB AND GUTTER SECTIONS. THE TOTAL LIMITS OF DISTURBANCE FOR THIS PROJECT IS 0.07-ACRE.

EXISTING SITE CONDITIONS

THE SITE CONSISTS OF TWO ADJOINED PARKING LOTS ("L" AND "M") LOCATED AT THE SOUTHERN END OF THE CAMPUS, ACCESS TO THE LOTS IS VIA SUCCESS DRIVE, A BITUMINOUS PAVED ROAD THAT CROSSES AN UNNAMED WATERCOURSE THAT TRANSECTS THE CAMPUS, BOTH LOTS ARE PAVED, WITH CONCRETE CURB AND GUTTER ALONG THE NORTHERN PERIMETER. TWO DRAINAGE INLETS COLLECT STORMWATER RUNOFF AND DISCHARGE VIA A 24" RCP TO THE WATERCOURSE. TO THE NORTH OF THE PARKING LOT, THE SITE IS CHARACTERIZED BY LAWN TRANSITIONING TO RIPARIAN BUFFER ALONG THE WATERCOURSE.

ADJACENT SITE

THE SITE IS BOUND TO THE NORTH BY EAST PARHAM ROAD, TO THE WEST BY THE NORTH RUN WATERCOURSE; TO THE SOUTH BY THE JEFFERSON LAKESIDE COUNTRY CLUB; AND TO THE EAST BY THE RIVER VISTA RESIDENTIAL DEVELOPMENT.

OFF-SITE AREAS

OFF-SITE BORROW IS NOT ANTICIPATED FOR THE CONSTRUCTION OF THIS PROJECT.

SOILS

ACCORDING TO THE NRCS WEB SOIL SURVEY MAPPING, THE SITE IS UNDERLAIN BY THREE SOIL TYPES, SOILS MAPPING HAS BEEN INCLUDED ON THE EXISTING CONDITIONS SHEET C1.0, THE PREDOMINANT SOILS ON THE PROJECT SITE ARE:

MAP UNIT: aB6 - ABELL FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES (HYDROLOGIC SOIL GROUP B)

COMPONENT: ABELL (85%)

THE ABELL COMPONENT MAKES UP 85 PERCENT OF THE MAP UNIT. SLOPES ARE 2 TO 6 PERCENT. THIS COMPONENT IS ON DRAINAGEWAYS AND PIEDMONTS. THE PARENT MATERIAL CONSISTS OF LOCAL ALLUVIUM, DEPTH TO A ROOT RESTRICTIVE LAYER IS GREATER THAN 60 INCHES. THE NATURAL DRAINAGE CLASS IS MODERATELY WELL DRAINED, WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH, AVAILABLE WATER TO A DEPTH OF 60 INCHES IS MODERATE. SHRINK-SWELL POTENTIAL IS MODERATE, THIS SOIL IS OCCASIONALLY FLOODED, IT IS NOT PONDED, A SEASONAL ZONE OF WATER SATURATION IS AT 49 INCHES DURING JANUARY, FEBRUARY, MARCH, DECEMBER. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 2 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 2w. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

MAP UNIT: aM2 - APPLING FINE SANDY LOAM, 6 TO 15 PERCENT SLOPES, ERODED (HYDROLOGIC SOIL GROUP B)

COMPONENTS: APPLING (85%)

THE APPLING COMPONENT MAKES UP 85 PERCENT OF THE MAP UNIT. SLOPES ARE 2 TO 6 PERCENT. THIS COMPONENT IS ON DRAINAGEWAYS AND PIEDMONTS. THE PARENT MATERIAL CONSISTS OF LOCAL ALLUVIUM, DEPTH TO A ROOT RESTRICTIVE LAYER IS GREATER THAN 60 INCHES. THE DRAINAGE CLASS IS MODERATELY WELL DRAINED, WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH, AVAILABLE WATER TO A DEPTH OF 60 INCHES IS MODERATE. SHRINK-SWELL POTENTIAL IS MODERATE, THIS SOIL IS OCCASIONALLY FLOODED, IT IS NOT PONDED, THERE IS NO ZONE OF WATER SATURATION WITHIN A DEPTH OF 72 INCHES. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 1 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 3e. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

MAP UNIT: Bo8 - BOURNE FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES (HYDROLOGIC SOIL GROUP D)

COMPONENTS: BOURNE (85%)

THE BOURNE COMPONENT MAKES UP 85 PERCENT OF THE MAP UNIT. SLOPES ARE 2 TO 6 PERCENT. THIS COMPONENT IS ON MARINE TERRACES ON COASTAL PLAINS. THE PARENT MATERIAL CONSISTS OF LOAMY MARINE DEPOSITS, DEPTH TO A ROOT RESTRICTIVE LAYER, FRAGIPAN, IS 12 TO 24 INCHES. THE NATURAL DRAINAGE CLASS IS MODERATELY WELL DRAINED, WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH, AVAILABLE WATER TO A DEPTH OF 60 INCHES IS VERY LOW. SHRINK-SWELL POTENTIAL IS LOW, THIS SOIL IS NOT FLOODED, IT IS NOT PONDED, A SEASONAL ZONE OF WATER SATURATION IS AT 24 INCHES DURING JANUARY, FEBRUARY, MARCH, APRIL, MAY, DECEMBER. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 2 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 2e. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

CRITICAL AREAS

THE PROPOSED STORMWATER FILTER UNIT INSTALLATION MUST BE PROTECTED FROM SEDIMENT LADEN RUNOFF DURING CONSTRUCTION, REFER TO SHEET C2.0 FOR PROPOSED CONSTRUCTION PHASE PROTECTION MEASURES.

STORMWATER RUN-OFF CONSIDERATIONS

STORMWATER WILL BE CONVEYED TO THE SITES'S EXISTING DRAINAGE INLETS, THE 1-YEAR DESIGN STORM WILL BE TREATED VIA THE IN-LINE FILTER UNIT, WHILE HIGHER FLOWS WILL BYPASS THE TREATMENT FILTERS.

RSMP/VSPM CONSIDERATIONS

THE SITE DISTURBANCE FOR THIS PROJECT IS 0.04-AC, A RSMP PERMIT OR VSPM PERMIT WILL NOT BE REQUIRED, ALL WORK WILL TAKE PLACE OUTSIDE OF THE 100-YEAR FLOODPLAIN AND THE 50-FOOT STREAM BUFFER, PROPOSED LIMITS OF CONSTRUCTION/DISTURBANCE ARE BELOW THE 2,500 SQ.FT. THRESHOLD FOR THE CHESAPEAKE BAY LAND DISTURBANCE PERMIT.

PERMANENT STABILIZATION

REFER TO THE SITE LAYOUT PLAN, SHEET C3.0.

EROSION AND SEDIMENT CONTROL MEASURES & MAINTENANCE

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THE MINIMUM STANDARDS OF THE VESCP SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE BY LOCAL AUTHORITIES HAVING JURISDICTION.

STRUCTURAL PRACTICES

1. CONSTRUCTION ENTRANCE - 3.02

A STONE PAD, LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE, TO REDUCE THE SOIL TRANSPORTED ONTO PUBLIC ROADS AND OTHER PAVED AREAS. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY, THIS MAY REQUIRE PERIODIC REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY. THE USE OF WATER TRUCKS TO REMOVE MATERIALS DROPPED, WASHED, OR TRACKED ONTO ROADWAYS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.

2. SILT FENCE BARRIER - 3.05

A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR AT THE TOE OF A SLOPE OR IN A MINOR DRAINAGE WAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE, APPLICABLE WHERE SHEET AND RILL EROSION OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. MAXIMUM EFFECTIVE LIFE OF 6 MONTHS.

SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING. SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT, THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER, ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

3. STORM DRAIN INLET PROTECTION - 3.07

THE INSTALLATION OF VARIOUS KINDS OF SEDIMENT TRAPPING MEASURES AROUND DROP INLETS OR CURB INLET STRUCTURES PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED AREA, LIMITED TO DRAINAGE AREAS NOT EXCEEDING ONE ACRE, AND NOT INTENDED TO CONTROL LARGE, CONCENTRATED STORMWATER FLOWS, THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, CONSTRUCT AND MAINTAIN ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 9 VAC 25-840-40

ES-2: NOTIFY THE DEPARTMENT OF PUBLIC UTILITIES ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: PLACE ALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO OR AS THE FIRST STEP IN CLEARING, GRADING, OR LAND DISTURBANCE.

ES-4: MAINTAIN A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND-DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFFSITE BORROW OR WASTE AREA), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: PROVIDE ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE DPU INSPECTOR.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND-DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, PUMP WATER INTO AN APPROVED FILTERING DEVICE.

ES-9: INSPECT ALL EROSION CONTROL MEASURES DAILY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT, MAKE ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES IMMEDIATELY.

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS

A VESCP MUST BE CONSISTENT WITH THE FOLLOWING CRITERIA, TECHNIQUES AND METHODS:

MS-1: PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDEED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDEED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

MS-2: DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

MS-3: A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDEED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.

MS-4: SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.

MS-5: STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

MS-6: SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.

A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES. B. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION, RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.

MS-7: CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.

MS-8: CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.

MS-9: WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

MS-10: ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

MS-11: BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.

MS-12: WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS (CONTINUED)

MS-13: WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.

MS-14: ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

MS-15: THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

MS-16: UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

- A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME. B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY. D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION. E. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER. F. APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.

MS-17: WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE, WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER, THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.

MS-18: ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP AUTHORITY, TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

MS-19: PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS:

A. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.

B. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER: (1) THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS 100 TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; (2) (A) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS. (B) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND (C) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.

C. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL: (1) IMPROVE THE CHANNELS TO A CONDITION WHERE A 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS. (2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE 10-YEAR STORM IS CONTAINED WITHIN THE APERTURES. (3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A 10-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR (4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION.

D. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.

E. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.

F. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.

G. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.

H. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.

I. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.

J. IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.

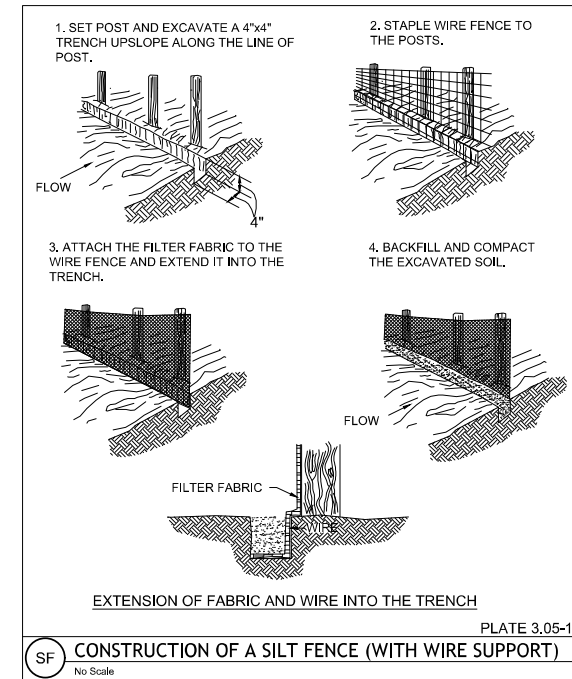
K. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.

L. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (I) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (II) DETAIN AND RELEASE OVER A 24-HOUR PERIOD OF THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (III) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5, 2, AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62.1-44.15.54 OR 62.1-44.15.65 OF THE ACT.

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS (CONTINUED)

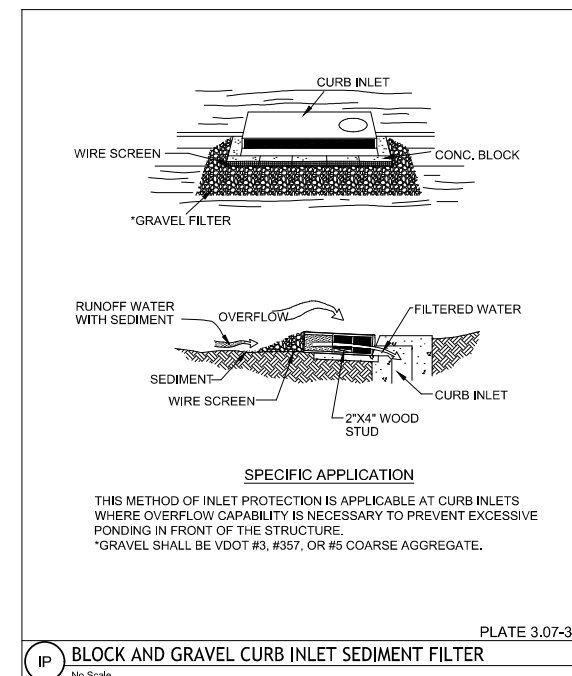
M. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15.52 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 62.1-44.15.24 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES (I) ARE IN ACCORDANCE WITH PROVISIONS FOR TIME LIMITS ON APPLICABILITY OF APPROVED DESIGN CRITERIA IN 9VAC25-870-47 OR GRANDFATHERING IN 9VAC25-870-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSPM) REGULATION, IN WHICH CASE THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15.52 A OF THE ACT SHALL APPLY, OR (II) ARE EXEMPT PURSUANT TO § 62.1-44.15.34 C 7 OF THE ACT.

N. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSPM) REGULATION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.



SILT FENCE NOTES

- 1. SILT FENCE AND FILTER FABRIC MUST BE ENTRENCHED. 2. POST FOR SILT FENCES SHALL BE EITHER 2.5 X 2 INCH DIAMETER WOOD OR 1.25 POUNDS PER LINEAR FOOT STEEL WITH A MINIMUM LENGTH OF 5 FEET. 3. POST SHALL BE SPACED A MAXIMUM OF 6 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MIN. OF 12 INCHES) WHEN EXTRA STRENGTH FABRIC IS USED. 4. STAPLE OR WIRE THE FILTER FABRIC DIRECTLY TO THE POST. 5. SEDIMENT MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER. 6. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED. 7. SILT FENCE SHALL BE REMOVED UPON COMPLETION OF THE PROJECT.



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Table with columns for REVISION DESCRIPTION, DATE, and DRAWN BY. Includes revision 06/29/2018 drawn by B. MEYER.

TIMMONS GROUP logo and contact information for JSRCC - LOT L & M STORMWATER RETROFIT, 1651 EAST PARHAM ROAD, HENRICO COUNTY, VIRGINIA. Includes EROSION & SEDIMENT CONTROL NOTES & DETAILS, JOB NO. 40785, and SHEET NO. C2.1.

TABLE 3.31-B
(REVISED JUNE 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

SEED		
APPLICATION DATES	SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME		
<ul style="list-style-type: none"> Apply 10-10-10 fertilizer at a rate of 450 lbs / acre (or 10 lbs. / 1,000 sq. ft.) Apply Pulverized Agricultural Limestone at a rate of 2 tons / acre (or 90 lbs. / 1,000 sq. ft.) 		

NOTE:
1. A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2. Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
3. When applying Slowly Available Nitrogen, use rates available in *Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites* at <http://www.dcr.state.va.us/sw/eas.htm#pubs>

TABLE 3.32-E
(REVISED JUNE 2003)
PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

SEED		
LAND USE	SPECIES	APPLICATION PER ACRE
MINIMUM CARE LAWN (COMMERCIAL OR RESIDENTIAL)	TALL FESCUE ¹ OR BERMUDAGRASS ¹	175 - 200 LBS.
	TALL FESCUE ¹ OR BERMUDAGRASS ¹ (SEED)	75 LBS.
HIGH-MAINTENANCE LAWN	TALL FESCUE ¹ OR BERMUDAGRASS ¹ (SEED)	200-250 LBS.
	BERMUDAGRASS ¹ (BY OTHER VEGETATIVE ESTABLISHMENT METHOD, SEE STD. & SPEC. 3.34)	40 LBS. (UNHULLED) 30 LBS. (HULLED)
GENERAL SLOPE (3:1 OR LESS)	TALL FESCUE ¹ RED TOP GRASS OR CREEPING RED FESCUE SEASONAL NURSE CROP ²	128 LBS. 2 LBS. 20 LBS. TOTAL: 150 LBS.
	TALL FESCUE ¹ BERMUDAGRASS ¹ RED TOP GRASS OR CREEPING RED FESCUE SEASONAL NURSE CROP ² SERICEA LESPEDEZA ³	93 - 108 LBS. 0 - 15 LBS. 2 LBS. 20 LBS. 20 LBS. TOTAL: 150 LBS.

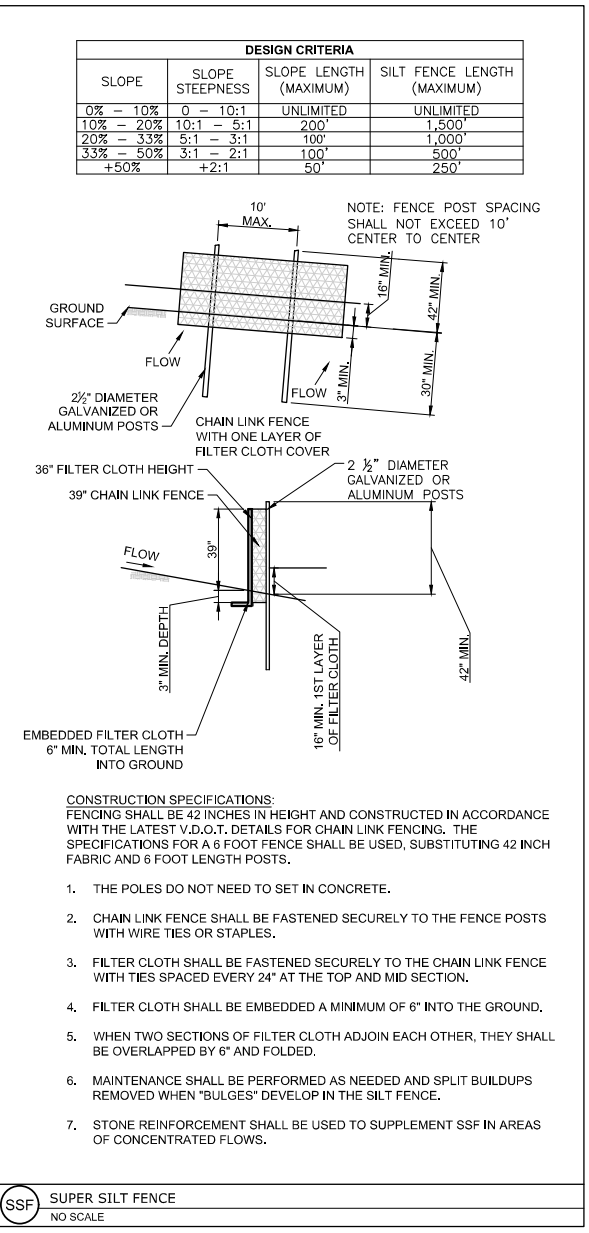
1 - WHEN SELECTING VARIETIES OF TURFGRASS, USE THE VIRGINIA CROP IMPROVEMENT ASSOCIATION (VCIA) RECOMMENDED TURFGRASS VARIETY LIST. QUALITY SEED WILL BEAR A LABEL INDICATING THAT THEY ARE APPROVED BY VCIA. A CURRENT TURFGRASS VARIETY LIST IS AVAILABLE AT THE LOCAL COUNTY EXTENSION OFFICE OR THROUGH VCIA AT 804-746-4884 OR AT [HTTP://SUDAN.CSES.VT.EDU/HTML/TURF/TURF/PUBLICATIONS/PUBLICATIONS2.HTML](http://sudan.cses.vt.edu/html/turf/turf/publications/publications2.html)

2 - USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
FEBRUARY, MARCH - APRIL ANNUAL RYE
MAY 1ST - AUGUST FOXTAIL MILLET
SEPTEMBER, OCTOBER - NOVEMBER 15TH ANNUAL RYE
NOVEMBER 16TH - JANUARY WINTER RYE

3 - MAY THROUGH OCTOBER, USE HULLED SEED. ALL OTHER PERIODS, USE UNHULLED SEED. IF WEEPING LOVEGRASS IS USED, INCLUDE IN ANY SLOPE OR LOW MAINTENANCE MIXTURE DURING WARMER SEEDING PERIODS, INCREASE TO 30 - 40 LBS/ACRE.

FERTILIZER & LIME		
<ul style="list-style-type: none"> APPLY 10-20-10 FERTILIZER AT A RATE OF 500 LBS. / ACRE (OR 12 LBS. / 1,000 SQ. FT.) APPLY PULVERIZED AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE (90 LBS. / 1,000 SQ. FT.) 		

NOTE:
- A SOIL TEST IS NECESSARY TO DETERMINE THE ACTUAL AMOUNT OF LIME REQUIRED TO ADJUST THE SOIL pH OF SITE.
- INCORPORATE THE LIME AND FERTILIZER INTO THE TOP 4 - 6 INCHES OF THE SOIL BY DISKING OR BY OTHER MEANS.
- WHEN APPLYING SLOWLY AVAILABLE NITROGEN, USE RATES AVAILABLE IN *EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN #4, 2003 NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES* AT [HTTP://WWW.DCR.STATE.VA.US/SW/EAS.HTM#PUBS](http://www.dcr.state.va.us/sw/eas.htm#pubs)



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YOUR VISION ACHIEVED THROUGH OURS.

DATE
06/29/2018

DRAWN BY
B. MEYER

DESIGNED BY
B. MEYER

CHECKED BY
A. CREEL

SCALE
AS NOTED

TIMMONS GROUP

JSRCC - LOT L & M STORMWATER RETROFIT
1651 EAST PARHAM ROAD, HENRICO COUNTY, VIRGINIA

EROSION & SEDIMENT CONTROL NOTES & DETAILS

JOB NO.
40785

SHEET NO.
C2.2

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DESIGNED BY
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CHECKED BY
 A. CREEL

SCALE
 AS NOTED

TIMMONS GROUP

JSRCC - LOT L & M STORMWATER RETROFIT
 1651 EAST PARHAM ROAD, HENRICO COUNTY, VIRGINIA

JOB NO.
40785
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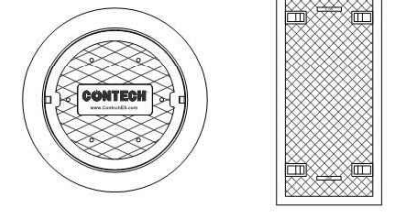
JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION	54"	40"	27"	15"
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	1.96	1.47	0.98	0.54
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

SITE SPECIFIC DATA REQUIREMENTS

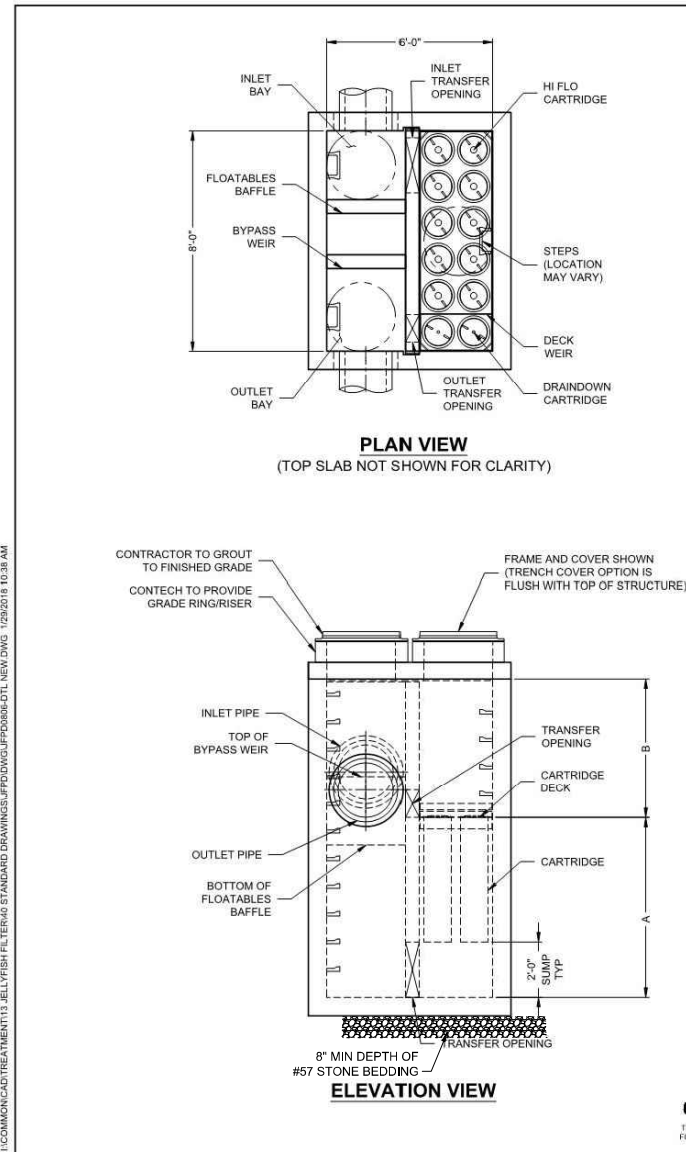
STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED (HF / DD)	*
CARTRIDGE LENGTH	*
PIPE DATA:	I.E. MAT'L DIA SLOPE % HGL
INLET #1	* * * * *
INLET #2	* * * * *
OUTLET	* * * * *
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.	
RIM ELEVATION	*
ANTI-FLOTATION BALLAST	WIDTH HEIGHT
NOTES/SPECIAL REQUIREMENTS:	*
* PER ENGINEER OF RECORD	



FRAME AND COVER
 (DIAMETER VARIES)
 N.T.S.

24" TRENCH COVER
 (LENGTH VARIES)
 N.T.S.

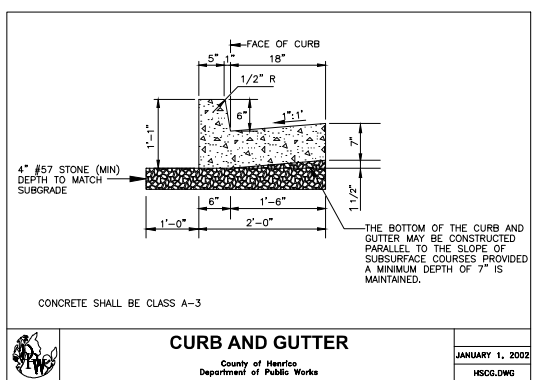
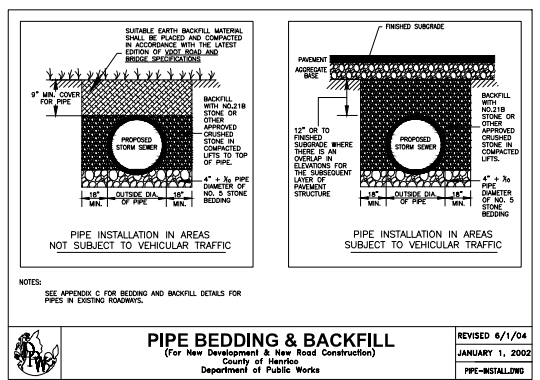
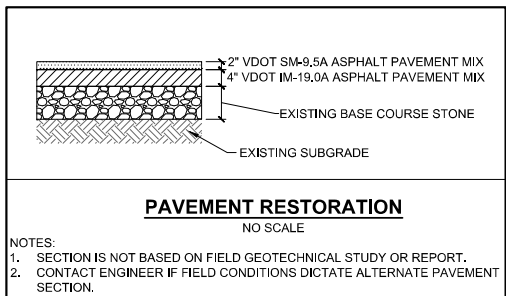
- GENERAL NOTES:**
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
 - FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.contechES.com
 - JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
 - STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10' AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M308 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
 - STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
 - OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
 - NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.
- INSTALLATION NOTES**
- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
 - CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
 - CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
 - CARTRIDGE INSTALLATION BY CONTECH. SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.



Jellyfish Filter
 THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 4,267,726; 4,221,618; US 6,123,935; OTHER INTERNATIONAL PATENTS PENDING.

CONTECH
 ENGINEERED SOLUTIONS LLC
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 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399
 800-338-1122 513-645-7000 513-645-7993 FAX

JELLYFISH JFPD0806
 STANDARD DETAIL
 PEAK DIVERSION CONFIGURATION



- CONSTRUCTION NOTES**
- CONSTRUCT THIS PROJECT IN ACCORDANCE WITH THE MOST RECENT VDOT ROAD AND BRIDGE SPECIFICATIONS AND DESIGN STANDARDS INCLUDING ALL SUBSEQUENT REVISIONS. RESTORE ANY INFRASTRUCTURE (SIDEWALKS, CURBS, ETC.) DAMAGED DURING CONSTRUCTION AT THE EXPENSE OF THE CONTRACTOR.
 - ACQUIRE AND PAY FOR ANY AND ALL NECESSARY CONSTRUCTION PERMITS, AND FURNISH COPIES TO THE OWNER UNLESS OTHERWISE DIRECTED.
- CONSTRUCTION SEQUENCE GUIDELINES**
- PROVIDE A DETAILED SCHEDULE AND SEQUENCE OF CONSTRUCTION TO THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION. CONSTRUCTION SEQUENCE GUIDELINES HAVE BEEN PROVIDED BELOW TO PROVIDE REQUIRED OPERATIONAL PARAMETERS DURING CONSTRUCTION.
 - ACQUIRE ALL PERMITS PRIOR TO CONSTRUCTION. ALL FEES ASSOCIATED WITH PERMITS SHALL BE PAID BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.
 - SCHEDULE A PRE-CONSTRUCTION MEETING WITH JSRCC STAFF AND TIMMONS GROUP AT LEAST 72 HOURS PRIOR TO THE START OF WORK.
 - CALL "MISS UTILITY" AT 1-800-552-7001 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. CONTACT THE ENGINEER IMMEDIATELY IF:
 - LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLAN;
 - IF THERE APPEARS TO BE A CONFLICT;
 - OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THE PLANS.
 - PERFORM CONSTRUCTION SURVEY STAKEOUT FOR PROPOSED IMPROVEMENTS AND CONSTRUCTION LIMITS. ALL SURVEYING OPERATIONS MUST BE PERFORMED BY A VIRGINIA LICENSED SURVEYOR.
 - MAINTAIN UNINTERRUPTED UTILITY SERVICE TO ALL CAMPUS FACILITIES AT ALL TIMES DURING CONSTRUCTION.
 - INSTALL EROSION & SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE VA EROSION AND SEDIMENT CONTROL HANDBOOK BEFORE COMMENCING ANY LAND DISTURBING ACTIVITIES.
 - DEMOLISH ITEMS, CLEAR AND GRUB EXISTING VEGETATION AS REQUIRED TO CONSTRUCT IMPROVEMENTS SHOWN ON SHEET C3.0.
 - INSTALL PROPOSED CONTECH JELLYFISH (OR APPROVED EQUAL) STORMWATER FILTER UNIT IN ACCORDANCE WITH MANUFACTURER INSTALLATION GUIDELINES.
 - SAW CUT, REMOVE AND REPLACE EXISTING SECTIONS OF CURB AND GUTTER IDENTIFIED ON SHEET C3.0. RESTORE PAVEMENT PER DETAIL.
 - MAINTAIN ALL EROSION CONTROL DEVICES DURING CONSTRUCTION AND REMOVE ONCE THE DISTURBED AREAS HAVE BEEN STABILIZED AND RELEASED BY THE COUNTY INSPECTOR.

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