Sediment and Stormwater Program Webinar

Overview of DURMM v2.6 and RGM-6

May 18, 2026

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Housekeeping

Interactive online video conference (Recorded)

Questions/Comments should be provided in the chat

Accepting Feedback through COB
June 1, 2026
DNREC.Stormwater@delaware.gov

Sediment and Stormwater Management Program Staff

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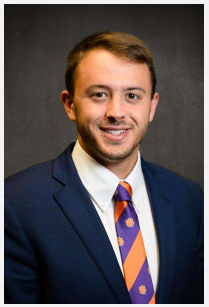
Engineer V



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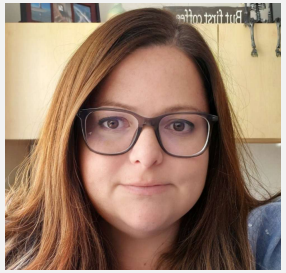

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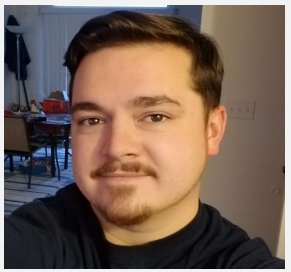

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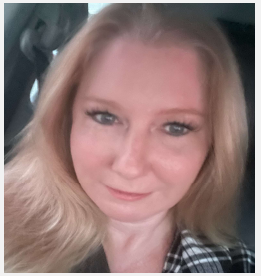


Joy Graves
Administrative Specialist

Sydney Hall
Environmental Scientist

Topics

- General DURMM updates
  - Single workbook statewide
  - Formatting Changes
  - Submerged Gravel Wetland
  - Background Calculations
- Extended Detention
  - Regulatory Guidance Memo 6
  - DURMMv2.6
  - Summary Table for RPv Compliance
- Examples
- Question and Comments
- Next Steps

General DURMM Updates

DURMMv2.51

- Two workbooks:
  - DURMMv2.51
  - DURMMv2.51 for redevelopment projects in New Castle County
- Five BMPs in series

DURMMv2.6

- Single workbook statewide
  - Location update:
    - New Castle (NCC Jurisdiction)
    - New Castle (Municipal, State or Federal Jurisdition)
  - Input Parcel Area (acres)
- Two BMPs in series

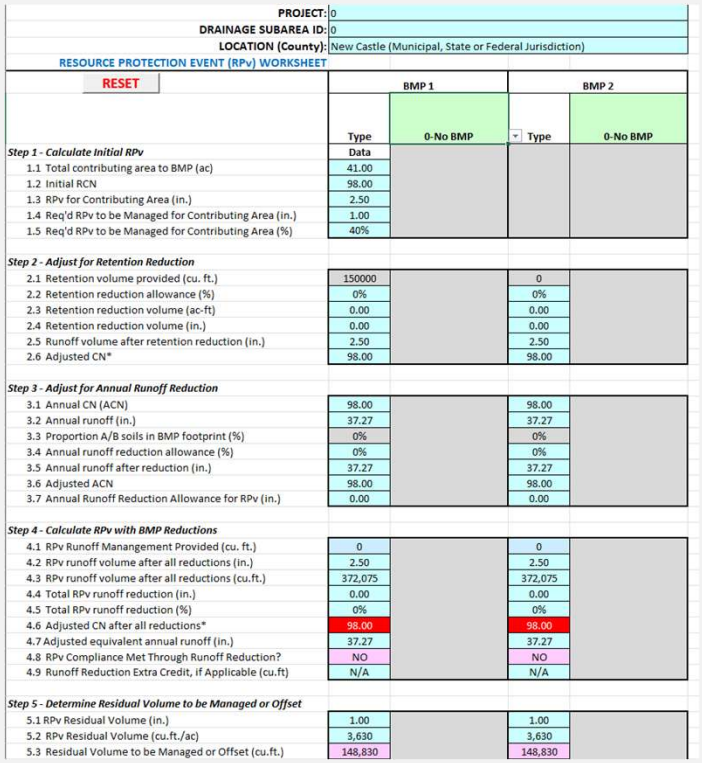
General Updates – Single Workbook

		PROJECT:							
		DRAINAGE SUBAREA ID:							
		LOCATION (County):	New Castle (NCC Jurisdiction)						
		UNIT HYDROGRAPH:	DMV						
		PARCEL AREA (ACRES):							
	CONTRIBUTING AREA RUNOFF CURVE NUMBER (C.A. RCN) WORKSHEET			Curve Numbers for Hydrologic Soil Type					
Cover Type	Treatment	Hydrologic Condition	A		B		C	D	
			Acres	RCN	Acres	RCN	Acres	RCN	Acres	RCN
	C + Crop residue	good		64		74		81		85
	Cont & terraced(C&T)	poor		66		74		80		82
	Cont & terraced(C&T)	good		62		71		78		81
	C&T + Crop residue	poor		65		73		79		81
	C&T + Crop residue	good		61		70		77		80

		PROJECT:							
		DRAINAGE SUBAREA ID:							
		LOCATION (County):	New Castle (Municipal, State or Federal Jurisdiction)						
		UNIT HYDROGRAPH:	DMV						
		PARCEL AREA (ACRES):							
	CONTRIBUTING AREA RUNOFF CURVE NUMBER (C.A. RCN) WORKSHEET			Curve Numbers for Hydrologic Soil Type					
Cover Type	Treatment	Hydrologic Condition	A		B		C	D	
			Acres	RCN	Acres	RCN	Acres	RCN	Acres	RCN
	C + Crop residue	good		64		74		81		85
	Cont & terraced(C&T)	poor		66		74		80		82
	Cont & terraced(C&T)	good		62		71		78		81
	C&T + Crop residue	poor		65		73		79		81

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

General Updates – Two BMPs in series

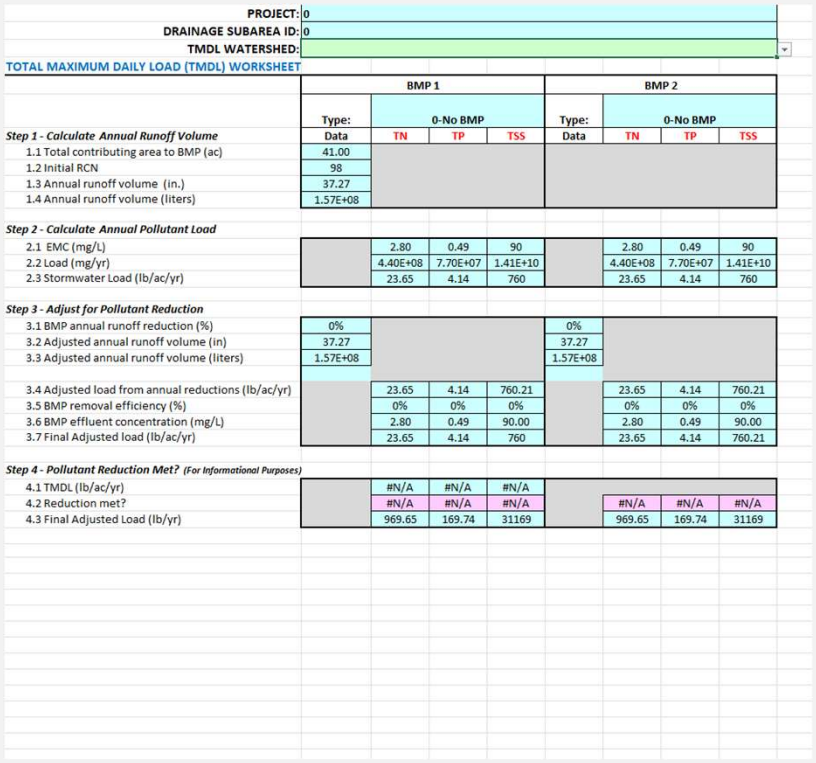


PROJECT:	0	
DRAINAGE SUBAREA ID:	0	
LOCATION (County):	New Castle (Municipal, State or Federal Jurisdiction)	

RESOURCE PROTECTION EVENT (RPv) WORKSHEET

RESET

	BMP 1		BMP 2	
	Type	0-No BMP	Type	0-No BMP
Step 1 - Calculate Initial RPv	Data			
1.1 Total contributing area to BMP (ac)	41.00			
1.2 Initial RCN	98.00			
1.3 RPv for Contributing Area (in.)	2.50			
1.4 Req'd RPv to be Managed for Contributing Area (in.)	1.00			
1.5 Req'd RPv to be Managed for Contributing Area (%)	40%			
Step 2 - Adjust for Retention Reduction				
2.1 Retention volume provided (cu. ft.)	150000		0	
2.2 Retention reduction allowance (%)	0%		0%	
2.3 Retention reduction volume (ac-ft)	0.00		0.00	
2.4 Retention reduction volume (in.)	0.00		0.00	
2.5 Runoff volume after retention reduction (in.)	2.50		2.50	
2.6 Adjusted CN*	98.00		98.00	
Step 3 - Adjust for Annual Runoff Reduction				
3.1 Annual CN (ACN)	98.00		98.00	
3.2 Annual runoff (in.)	37.27		37.27	
3.3 Proportion A/B soils in BMP footprint (%)	0%		0%	
3.4 Annual runoff reduction allowance (%)	0%		0%	
3.5 Annual runoff after reduction (in.)	37.27		37.27	
3.6 Adjusted ACN	98.00		98.00	
3.7 Annual Runoff Reduction Allowance for RPv (in.)	0.00		0.00	
Step 4 - Calculate RPv with BMP Reductions				
4.1 RPv Runoff Manangement Provided (cu. ft.)	0		0	
4.2 RPv runoff volume after all reductions (in.)	2.50		2.50	
4.3 RPv runoff volume after all reductions (cu.ft.)	372,075		372,075	
4.4 Total RPv runoff reduction (in.)	0.00		0.00	
4.5 Total RPv runoff reduction (%)	0%		0%	
4.6 Adjusted CN after all reductions*	98.00		98.00	
4.7 Adjusted equivalent annual runoff (in.)	37.27		37.27	
4.8 RPv Compliance Met Through Runoff Reduction?	NO		NO	
4.9 Runoff Reduction Extra Credit, if Applicable (cu.ft)	N/A		N/A	
Step 5 - Determine Residual Volume to be Managed or Offset				
5.1 RPv Residual Volume (in.)	1.00		1.00	
5.2 RPv Residual Volume (cu.ft./ac)	3,630		3,630	
5.3 Residual Volume to be Managed or Offset (cu.ft.)	148,830		148,830	



PROJECT:	0	
DRAINAGE SUBAREA ID:	0	
TMDL WATERSHED:		

TOTAL MAXIMUM DAILY LOAD (TMDL) WORKSHEET

	BMP 1				BMP 2			
	Type:	0-No BMP			Type:	0-No BMP		
Step 1 - Calculate Annual Runoff Volume	Data	TN	TP	TSS	Data	TN	TP	TSS
1.1 Total contributing area to BMP (ac)	41.00							
1.2 Initial RCN	98							
1.3 Annual runoff volume (in.)	37.27							
1.4 Annual runoff volume (liters)	1.57E+08							
Step 2 - Calculate Annual Pollutant Load								
2.1 EMC (mg/L)		2.80	0.49	90		2.80	0.49	90
2.2 Load (mg/yr)		4.40E+08	7.70E+07	1.41E+10		4.40E+08	7.70E+07	1.41E+10
2.3 Stormwater Load (lb/ac/yr)		23.65	4.14	760		23.65	4.14	760
Step 3 - Adjust for Pollutant Reduction								
3.1 BMP annual runoff reduction (%)	0%				0%			
3.2 Adjusted annual runoff volume (in)	37.27				37.27			
3.3 Adjusted annual runoff volume (liters)	1.57E+08				1.57E+08			
3.4 Adjusted load from annual reductions (lb/ac/yr)		23.65	4.14	760.21		23.65	4.14	760.21
3.5 BMP removal efficiency (%)		0%	0%	0%		0%	0%	0%
3.6 BMP effluent concentration (mg/L)		2.80	0.49	90.00		2.80	0.49	90.00
3.7 Final Adjusted load (lb/ac/yr)		23.65	4.14	760		23.65	4.14	760.21
Step 4 - Pollutant Reduction Met? *(For Informational Purposes)*								
4.1 TMDL (lb/ac/yr)		#N/A	#N/A	#N/A				
4.2 Reduction met?		#N/A	#N/A	#N/A		#N/A	#N/A	#N/A
4.3 Final Adjusted Load (lb/yr)		969.65	169.74	31169		969.65	169.74	31169

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

General Updates – Submerged Gravel Wetland

PROJECT:	0			
DRAINAGE SUBAREA ID:	0			
LOCATION (County):	New Castle (Municipal, State or Federal Jurisdiction)			
RESOURCE PROTECTION EVENT (RPv) WORKSHEET				
RESET	BMP 1		BMP 2	
	Type	12-D Submerged Gravel Wetlands	Type	0-No BMP
Step 1 - Calculate Initial RPv	Data			
1.1 Total contributing area to BMP (ac)	41.00			
1.2 Initial RCN	60.44			
1.3 RPv for Contributing Area (in.)	0.63			
1.4 Req'd RPv to be Managed for Contributing Area (in.)	0.02			
1.5 Req'd RPv to be Managed for Contributing Area (%)	4%			
Step 2 - Adjust for Retention Reduction				
2.1 Retention volume provided (cu. ft.)	1000	Stone Void Only	0	
2.2 Retention reduction allowance (%)	400%		0%	
2.3 Retention reduction volume (ac-ft)	0.09		0.00	
2.4 Retention reduction volume (in.)	0.03		0.00	
2.5 Runoff volume after retention reduction (in.)	0.60		0.60	
2.6 Adjusted CN*	59.37		59.37	
Step 3 - Adjust for Annual Runoff Reduction				
3.1 Annual CN (ACN)	60.44		60.44	
3.2 Annual runoff (in.)	6.87		6.87	
3.3 Proportion A/B soils in BMP footprint (%)	0%		0%	
3.4 Annual runoff reduction allowance (%)	0%		0%	
3.5 Annual runoff after reduction (in.)	6.87		6.87	
3.6 Adjusted ACN	60.44		60.44	
3.7 Annual Runoff Reduction Allowance for RPv (in.)	0.00		0.00	
Step 4 - Calculate RPv with BMP Reductions				
4.1 RPv Runoff Manangement Provided (cu. ft.)	4000		4000	
4.2 RPv runoff volume after all reductions (in.)	0.60		0.60	
4.3 RPv runoff volume after all reductions (cu.ft.)	89,912		85,912	
4.4 Total RPv runoff reduction (in.)	0.03		0.03	
4.5 Total RPv runoff reduction (%)	4%		4%	
4.6 Adjusted CN after all reductions*	59.37		59.37	
4.7 Adjusted equivalent annual runoff (in.)	6.45		6.45	
4.8 RPv Compliance Met Through Runoff Reduction?	YES		YES	
4.9 Runoff Reduction Extra Credit, if Applicable (cu.ft)	-428		-428	
Step 5 - Determine Residual Volume to be Managed or Offset				
5.1 RPv Residual Volume (in.)	N/A		N/A	
5.2 RPv Residual Volume (cu.ft./ac)	N/A		N/A	
5.3 Residual Volume to be Managed or Offset (cu.ft.)	N/A		N/A	
5.4 Max. Compliance Rate for ED (cfs)	N/A		N/A	
5.5 Max. Extra Credit Rate for ED (cfs)	N/A		N/A	
5.6 Max. Design Discharge Rate for ED (cfs)	0.400		0.000	

- SGW Retention Allowance = 400%
  - Allows calcuation of RPv compliance and extra credit
- Enter void space volume in RPv Step 2.1

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

General Updates – Background Calcs.

DURMMv2.51

PROJECT:	DURMM V2.51			
DRAINAGE SUBAREA ID:	0			
LOCATION (County):	0			
UNIT HYDROGRAPH:	0			
LIMIT OF DISTURBANCE (LOD) WORKSHEET				
Step 1 - Subarea LOD Data	**HSG A**	**HSG B**	**HSG C**	**HSG D**
1.1 HSG Area Within LOD (ac)	20.5			20.5
1.2 Pre-Developed Woods/Meadow Within LOD (ac)	0			0
1.3 Pre-Developed Impervious Within LOD (ac)	0			0
1.4.a Post-Developed Imperviousness Within LOD, Option #1 (ac); ***OR***	0.5			0.5
1.4.b Post-Developed Imperviousness Within LOD, Option #2 (%)	2%	0%	0%	2%
Step 2 - Subarea LOD Runoff Calculations				
2.1 RCN per HSG	40.44	0.00	0.00	80.44
2.2 RPv per HSG (in.)	0.23	0.00	0.00	1.33
2.3 Target RCN per HSG	39.00	0.00	0.00	80.00
2.4 Target Runoff per HSG (in.)	0.21	0.00	0.00	1.31
2.5 Subarea LOD (ac)	41.00			
2.6 Subarea Weighted RCN	60.44			
2.7 Subarea Weighted RPv (in.)	0.63			
2.8 Subarea Weighted Target Runoff (in.)	0.76			

DURMM v2.6

PROJECT:	DURMM v2.6			
DRAINAGE SUBAREA ID:	0			
LOCATION (County):	0			
UNIT HYDROGRAPH:	0			
PARCEL AREA (ACRES)	0.00			
LIMIT OF DISTURBANCE (LOD) WORKSHEET				
Step 1 - Subarea LOD Data	**HSG A**	**HSG B**	**HSG C**	**HSG D**
1.1 HSG Area Within LOD (ac)	20.5			20.5
1.2 Pre-Developed Woods/Meadow Within LOD (ac)	0			0
1.3 Pre-Developed Impervious Within LOD (ac)	0			0
1.4.a Post-Developed Imperviousness Within LOD, Option #1 (ac); ***OR***	0.5			0.5
1.4.b Post-Developed Imperviousness Within LOD, Option #2 (%)	2%	0%	0%	2%
Step 2 - Subarea LOD Runoff Calculations				
2.1 RCN per HSG	40.44	0.00	0.00	80.44
2.2 RPv per HSG (in.)	0.23	0.00	0.00	1.33
2.3 Target RCN per HSG	39.00	0.00	0.00	80.00
2.4 Target Runoff per HSG (in.)	0.21	0.00	0.00	1.31
2.5 Subarea LOD (ac)	41.00			
2.6 Subarea Weighted RCN	60.44			
2.7 Subarea Weighted RPv (in.)	0.63			
2.8 Subarea Weighted Target Runoff (in.)	0.61			

LOD Sheet Steps 2.7 and 2.8 calculated using different methods resulting in RPv credit even with impervious increase

LOD Sheet Steps 2.7 and 2.8 calculations use same method resulting in expected RPv shortfall with impervious increase

Extended Detention

- DURMMv2.6
- Summary Table for RPv compliance
- Regulatory Guidance Memo 6 (RGM-6)
- Impacts
- Examples

DURMM v2.6

Non-Compliant

Step 5 - Determine Residual Volume to be Managed or Offset	
5.1 RPv Residual Volume (in.)	0.02
5.2 RPv Residual Volume (cu.ft./ac)	87
5.3 Residual Volume to be Managed or Offset (cu.ft.)	3,572
5.4 Max. Compliance Rate for ED (cfs)	2.717
5.5 Max. Extra Credit Rate for ED (cfs)	2.614
5.6 Max. Design Discharge Rate for ED (cfs)	2.800
5.7 RPv Compliance Met Through Extended Detention?	NO
5.8 Extended Detention Extra Credit, If Applicable (cu.ft)	N/A

Compliant, No Extra Credit

Step 5 - Determine Residual Volume to be Managed or Offset	
5.1 RPv Residual Volume (in.)	0.02
5.2 RPv Residual Volume (cu.ft./ac)	87
5.3 Residual Volume to be Managed or Offset (cu.ft.)	3,572
5.4 Max. Compliance Rate for ED (cfs)	2.717
5.5 Max. Extra Credit Rate for ED (cfs)	2.614
5.6 Max. Design Discharge Rate for ED (cfs)	2.700
5.7 RPv Compliance Met Through Extended Detention?	YES
5.8 Extended Detention Extra Credit, If Applicable (cu.ft)	0

Compliant, w/ Extra Credit

Step 5 - Determine Residual Volume to be Managed or Offset	
5.1 RPv Residual Volume (in.)	0.02
5.2 RPv Residual Volume (cu.ft./ac)	87
5.3 Residual Volume to be Managed or Offset (cu.ft.)	3,572
5.4 Max. Compliance Rate for ED (cfs)	2.717
5.5 Max. Extra Credit Rate for ED (cfs)	2.614
5.6 Max. Design Discharge Rate for ED (cfs)	2.500
5.7 RPv Compliance Met Through Extended Detention?	YES
5.8 Extended Detention Extra Credit, If Applicable (cu.ft)	-90340

Summary Table for RPv compliance

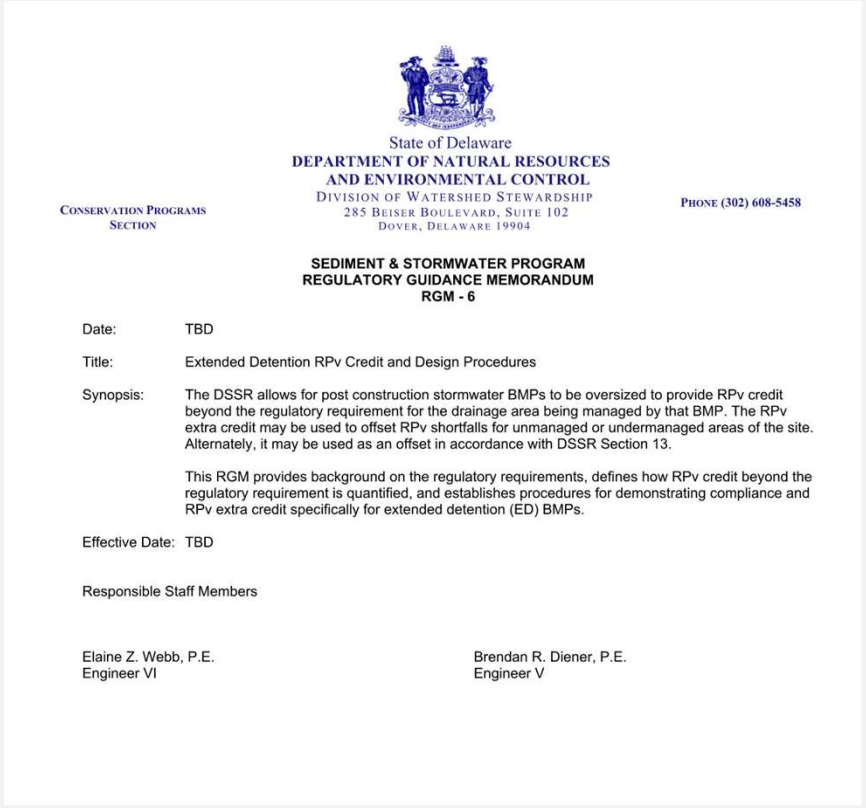
DURMM

Resource Protection Event (RPV)		
RPv for Contributing Area (in.)	0.63	
Annual Runoff for Contributing Area (in.)	6.87	
Req'd RPv to be Managed for Contributing Area (in.)	0.02	
Req'd RPv to be Managed for Contributing Area (%)	4%	
RPv Runoff Management Required (cu. Ft.)	3572	
RPv Runoff Management Provided (cu. Ft.)	93912	
RPv Residual Volume (cu.ft.)	-90340	EXTRA CREDIT
Design RPv avg. discharge rate (cfs)	0.50	
Design RPv max. discharge rate (cfs)	2.50	
TN Pollutant Load (lb/yr)	124.85	
TP Pollutant Load (lb/yr)	13.94	
TSS Pollutant Load (lb/yr)	2295	

Summary Table

Ref. #	Sub-Area ID[2]	Contributing Area[3] (ac)	Runoff[4] (in)	Runoff (cf)	RPv Runoff Management (cf)	
					Required[5]	Provided[6]
Section I - Complete this section for total site LOD management requirement						
0	Total Site LOD			0.0		
Section II - Complete this section for BMPs provided for partial LOD management OR sub-area by sub-area management						
1	ED BMP	41.00	0.63	93762.9	3572	93912
2				0.0		
3				0.0		
4				0.0		
5				0.0		

Regulatory Guidance Memo 6



State of Delaware
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF WATERSHED STEWARDSHIP
285 BEISER BOULEVARD, SUITE 102
DOVER, DELAWARE 19904

CONSERVATION PROGRAMS SECTION

PHONE (302) 608-5458

SEDIMENT & STORMWATER PROGRAM
REGULATORY GUIDANCE MEMORANDUM
RGM - 6

Date: TBD

Title: Extended Detention RPv Credit and Design Procedures

Synopsis: The DSSR allows for post construction stormwater BMPs to be oversized to provide RPv credit beyond the regulatory requirement for the drainage area being managed by that BMP. The RPv extra credit may be used to offset RPv shortfalls for unmanaged or undermanaged areas of the site. Alternately, it may be used as an offset in accordance with DSSR Section 13.

This RGM provides background on the regulatory requirements, defines how RPv credit beyond the regulatory requirement is quantified, and establishes procedures for demonstrating compliance and RPv extra credit specifically for extended detention (ED) BMPs.

Effective Date: TBD

Responsible Staff Members

Elaine Z. Webb, P.E.
Engineer VI

Brendan R. Diener, P.E.
Engineer V

Regulatory Guidance Memo 6

- Provides a framework for ED Extra Credit
  - Defines Extra Credit
  - OLOD excluded from extra credit discharge rate computation
- Extended Detention Design Procedures
  - DURMM required for ED Extra Credit
  - Manual calculations acceptable to show compliance, not extra credit

Extra Credit Definition

A volume in units of cubic feet, generated by a BMP or by impervious reduction, that exceeds the volume required for compliance and may offset unmanaged or partially managed areas of the LOD.

RGM-6 Extra Credit Discharge Rates for ED

DURMMv2.51

$$5 * \left[\frac{Residual\ Volume\ to\ be\ Managed\ (cu.ft.)}{172{,}800\ (sec.)}\right]$$

DURMMv2.6

$$5 * \left[\frac{(Weighted\ Target\ Runoff\ (ft)) * (Combined\ LOD\ (sf))}{172{,}800\ (sec.)}\right]$$

Step 4 - RPv Calculations for Combined LOD	
4.1 Combined LOD (ac)	41.00
4.2 Weighted RCN	60.44
4.3 Weighted RPv (in.)	0.63
4.4 Weighted Target Runoff (in.)	0.61
4.5 Estimated Annual Runoff (in.)	6.87
4.6 Req'd Runoff to be Managed within LOD (in.)	0.02
4.7 Req'd Runoff to be Managed within LOD (%)	4%

RGM-6 Impacts to ED Extra Credit Rates

DURMMv2.51

Shortfall/48 hr

- Impervious Increase → Rate increases
- Impervious Decrease → Rate Decreases
- Redev. Increase→ Rate Decreases
- Clearing Increase → Rate Increases
- Rates unaffected by changes due to being capped at 1”, No incentive to limit imperviousness.
- Highest rates in HSG A

DURMMv2.6

Target/48 hr

- Impervious Increase → No Change, Harder
- Impervious Decrease → No Change, Easier
- Redevelopment → Rates Higher, Possible
- Woods Clearing → Rate Decreases
- Extra Credit Rates no longer tied to a 1" capped value
- Highest rates in HSG D

Examples

Medium Density Residential ED with and without OLOD

Large Commercial Redevelopment ED

Questions and Comments

Next Steps

- Feedback accepted through June 1, 2026
  - Submit to DNREC.Stormwater@delaware.gov
- Subject to the feedback received, anticipated publication July 1, 2026:
  - RGM-6
  - DURMMv2.6
  - Summary Table for RPv compliance

Thank You

DNREC Sediment and Stormwater Program

DNREC.Stormwater@delaware.gov

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