

**WATER QUALITY VOLUME (WQ_v)
CALCULATION SHEET**

WO. NO. 1081.10	DATE Nov. 2020	REVISED Nov 2021	SHEET 1	OF 3
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PROJECT TITLE The Q		LOCATION Village of Monroe
CALCULATED BY MP	APPROVED BY JS	Stormwater Management Design Point Designation DP-A

$$WQ_v = (P * R_v * A) / (12)$$

Drainage Area			90% Rainfall Event # (P)	Total Drainage Area (A)	Total Impervious Area (I)	R _v (0.05 + 0.009*I%)	WQ _v Required (Ac-ft)	WQ _v Required (ft ³)
DP-A			1.40	10.01	3.31	0.348	0.406	17,685.4
HSG	Area (Ac.)	%	S	Minimum RR _v = (P * 0.95 * S * I) / (12)				
A	0.00	0%	0.55	P = 1.40				
B	0.00	0%	0.40	S = 0.20				
C	0.00	0%	0.30	I = 3.31				
D	10.01	100%	0.20	RR _v MIN	0.073	Ac-ft		

Green Technology	Implemented ?		Drainage Area Reduction	Contributing Drainage Area Reduction	Total Drainage Area Reduction	Total Impervious Area Reduction
	Yes	No				

Area Reduction Practices						
Conservation of Natural Areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Sheet Flow to Riparian Buffers or Filter Strips	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.69	0.00	3.69	0.00
Tree Planting / Tree Box	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Subtotals			3.69		3.69	0.00

Revised WQ _v after Area Deductions	P	A	I	R _v	WQ _v	RR _v AREA
		1.40	6.32	3.31	0.521	0.384

Disconnection of Rooftop Runoff	Impervious Area Reduction:			0.00 Acres		
Revised WQ _v after Impervious Disconnect	P	A	I	R _v	WQ _v	RR _v IMP
	1.40	6.32	3.31	0.521	0.384	0.000

Source Control WQ _v Treatment Practices	Yes	No	WQ _v	RR _v SC*	(A) Reduction	(I) Reduction
Vegetated Open Swales	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Rain Garden	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Green Roof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Stormwater Planters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Rain Tanks / Cisterns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Porous Pavement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-

Standard SMP's with RR _v Capacity						
Infiltration	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Bio-Retention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.134	0.053	2.40	1.14
Dry Swale (Open Channel)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	-
Subtotals			0.134	0.053	2.40	1.14

Is The Total RR _v (RR _v AREA + RR _v IMP + RR _v SC)	0.075	≥ RR _v MIN ?	0.073	YES		
WQ _v Required by Standard Practices	P	A	I	R _v	WQ _v (Ac-ft)	WQ _v (ft ³)
	1.40	3.92	2.17	0.548	0.251	10,921.2

* For Source Control (if used) RR_v calculations see attached Green Technology RR_v Calculation Sheets

RUNOFF REDUCTION VOLUME (RRV) CALCULATION SHEET

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RIPARIAN BUFFER AND/OR FILTER STRIP

<u>Requirement Checks</u>	<u>Yes</u>	<u>No</u>	<u>Notes:</u>
Maximum length of overland flow is less than 150' for pervious and 75' for impervious surfaces	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Runoff enters as sheet flow or through use of level spreader	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Average slope of contributing overland flow < 3% (If NO, flow spreader must be utilized)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Average slope of buffer area			Provided minimum width of buffer
0% - 8%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	50 Feet* <input checked="" type="checkbox"/> <input type="checkbox"/>
8% - 12%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	75 Feet* <input checked="" type="checkbox"/> <input type="checkbox"/>
12% - 15%	<input type="checkbox"/>	<input checked="" type="checkbox"/>	100 Feet* <input type="checkbox"/> <input type="checkbox"/>
> 15%	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Runoff Reduction Cannot be Used
Buffer fully vegetated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	*Minimum Buffer increased by 20% for HSG D
Is Disconnection of Rooftop Runoff or other area based practice being applied to this area (i.e. Conservation)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

90% Rainfall Event # (P)	Total Drainage Area (A)	Area to be Protected as Riparian Buffer or Filter Strip	Area Contributory to Riparian Buffer or Filter Strip	Area of Impervious Contributory to Riparian Buffer or Filter Strip
1.40	10.01	3.69	0.00	0.00

* In Soil Groups C & D, buffer length must be increased by 15% - 20% respectively
 ** Impervious Area within overland flow may be subtracted from Total Impervious

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BIO-RETENTION

<u>Requirement Checks</u>	<u>Yes</u>	<u>No</u>	<u>Notes:</u>
Runoff enters as sheet flow or through a dissipator	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pretreatment provided	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Design Complies with Required Elements of Practice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Infiltration designed to exfiltrate through bottom of practice only?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Drainage Area (Ac.)	2.400	
Impervious Area (Ac.)	1.140	
Rainfall Event # (P)	1.40	
Rv	0.478	
WQV _{REQ'D}	0.134	
A _f (ft ²)	4,938.0	Surface area of filter bed
d _t (ft)	2.5	depth of filter bed
k (ft/day)	0.5	coefficient of permability of filter media
h _f (ft)	0.50	average height of water above filter bed
t _f (days)	2.00	design filter bed drain time
V _f (ft ³)	5,925.6	Design volume of filter (WQ _v , Provided)
V _f > WQV _{REQ'D}	YES	
HSG Soil Classification	D	

RRv Reduction Allowance

Soil Group A or B	100%
Soil Group C or D	40%

RRv 0.053