

Vermont Stormwater Discharge Permit Application

Schedule A

Fill out one Schedule A for each discharge point. For each Standard Treatment Practice (STP), Credit or Waiver specified, a STP, Credit, and/or Waiver worksheet must also be included.

Line	General Discharge Point Information	
1	Project name	Chroma Technology Corp. Expansion
2	Discharge point serial number (e.g. S/N 001)	S/N 001
3	Name of receiving water	Williams River
4	Latitude & Longitude of discharge point (Decimal Degree format with 6 digits to the right of the decimal):	43.172642 & 72.456294
5	Site area draining to discharge point (acres) = impervious + disturbed pervious	4.64
6	On-site impervious area included for permit coverage <i>(Round to nearest 0.01 acre)</i>	
7	New Impervious area contributing stormwater runoff to discharge point (acres)	1.04
8	Redeveloped impervious area* contributing stormwater runoff to discharge point (acres)	1.89
9	Existing Impervious area* contributing to stormwater runoff to discharge point (acres)	0.03
10	Total	2.96
*DO NOT include impervious area unless it has met the Vermont Stormwater Treatment Standards 2002. If using the site balancing procedure refer to General Guidance Document.		
Water Quality (0.9 inches) Treatment Standard (WQ)		
11	STP used (e.g. Grass Channel O-3)	Bioretention (F-5)
12	Voluntary Stormwater Management Credits applied (e.g. Grass Channel Credit 3.5)	Credit 3.3 - Disc. Non-Rooftop & Wet Pond (P-2)
Groundwater Recharge Treatment Standard (Re)		
13	Criterion applicable? (Yes or No) If No, indicate waiver applied	Yes
14	STP used (e.g. Grass Channel O-3)	Bioretention (F-5)
15	Voluntary Stormwater Management Credits applied (e.g. Grass Channel Credit 3.5)	Credit 3.3 - Disc. Non-Rooftop & Grass Channel (O-3)
Channel Protection (1-year) Treatment Standard (CP)		
16	Criterion applicable? (Yes or No) If No, indicate waiver applied	Yes
17	Warm or Cold Fish Habitat Designation (see Vermont Water Quality Standards)	Cold - 12 Hours/720 Minutes
18	STP used (e.g. Wet Pond P-2)	Wet Pond (P-2) & Bioretention (F-5)
Overbank (10-year) Flood Protection Treatment Standard (Qp10)		
19	Criterion applicable? (Yes or No) If No, indicate waiver applied	Yes
20	STP used (e.g. Dry Detention Pond LA-1)	Wet Pond (P-2)
21	Pre-development peak discharge rate (cfs)	2.76
22	Pre-routed, post-development peak discharge rate (cfs)	19.09
23	Routed, post-development peak discharge rate (cfs)	1.82
Extreme (100-year) Flood Protection Treatment Standard (Qp100)		
24	Criterion applicable? (Yes or No) If No, indicate waiver applied	No Impervious Area < 10 Acres
25	STP used (e.g. Dry Detention Pond LA-1)	
26	Pre-development peak discharge rate (cfs)	
27	Pre-routed, post-development peak discharge rate (cfs)	
28	Routed, post-development peak discharge rate (cfs)	

Bioretention (F-5)**Bioretention #1**

Line Indicate the treatment standards met for the site area draining to this practice:

- 1 WQv
- 2 Rev
- 3 Cpv Filtering systems should not be designed to provide Cpv, Qp10 or Qp100 except under extremely unusual conditions. Filters should be combined with separate facilities to provide quantity control.
- 4 Qp10
- 5 Qp100

Water Quality Volume (WQv)		WQv (Cubic Feet)	
6	What is the WQv (cubic feet) for the site area draining to this practice (from WQv worksheets)?	1573	
Conveyance (2.7.4.B)		Response	Attachment location
7	Has an overflow been provided to pass a portion of the WQv to a stabilized water course?	no	WQv to be infiltrated
8	Has overflow for the 10-year storm been provided to a non-erosive outlet point?	yes	see Plans & HydroCAD
9	Is the filter designed with a minimum 4" perforated pipe underdrain in a gravel layer?	no	soils support infiltration
10	Has permeable filter fabric been placed between the gravel layer and the media layer?	no	gravel not used, no perf pipe
Pretreatment (2.7.4.C)		Response	Attachment location
11	Has pretreatment been provided for non-rooftop runoff?	no	inflow by sheet flow
Treatment (2.7.4.D)		Response	Attachment location
12	Is the entire system sized to temporarily hold at least 75% of the WQv prior to filtration?	yes	see HydroCAD
13	Does the filter have a 2½ to 4 feet deep planting soil bed, surface mulch layer and 6 inch deep surface ponding?	yes	see Plan Details
14	Does the soil media meet the design criteria outlined in VSMM-Vol. II, Appendix A and B3?	yes	see Plan Details
15	What is the surface area of the filter bed?	1,889 sq-ft	
Landscaping (2.7.4.E) and Maintenance (2.7.4.F)		Response	Attachment location
16	Has a note been added indicating that dense and vigorous vegetative cover must be established prior to use?	yes	see Plans
17	Has a landscaping plan been provided?	yes	see Narrative
18	Has the inlet of the bioretention facility been designed with a pea gravel diaphragm at least 6 inches deep?	yes	see Plans
Cold Climate Design Considerations (2.7.4.G)		Response	Attachment location
19	Have the potential impacts of Vermont's severe winter climate been addressed in your design?	yes	outflow pipe 12"
Channel Protection Treatment Standard (Cpv)*			
<small>*Infiltrating the entire volume of runoff from the 1-year, 24 hour storm (preferred method). Otherwise skip to line 23</small>			
20	What is the volume of runoff (Vr) from the 1-year, 24-hr storm?	3,746 cu-ft	
		Response	Attachment location
21	Does the filter have enough storage volume for the 1-year, 24 hour storm?	yes	see HydroCAD
22	Is the dewatering time for the 1-year, 24-hour storm less than 48 hours?	yes	see HydroCAD
Channel Protection Treatment Standard (Cpv)*			
<small>*Matching the release rate of a hypothetical pond designed to detain the entire 1-year, 24 hour storm</small>			
23	Check which detention time standard must be used, based on the fisheries designation of the receiving water:	<input checked="" type="checkbox"/> 12 hours for cold water <input type="checkbox"/> 24 hours for warm water	
		Response	Attachment location
24	Has the runoff draining to this filter been modeled as if it had been routed to a hypothetical detention pond sized to provide the above detention time? If yes, go to Line 25. If no, skip to Line 29.	no	
25	What storage volume (cubic feet) necessary to meet the Channel Protection Standard?		
26	What orifice size (inches) is necessary to provide the detention time required?		
27	What is the calculated average release rate (cfs)?		
28	What is the controlled peak release rate (cfs) during the 1-year storm as indicated by the model?		
Overbank Flood Protection Treatment Standard (Qp10)		Response	Attachment location
29	Have you demonstrated that Qp10 post is less than or equal to Qp10 pre at the discharge point?*	yes	see HydroCAD
<small>*Please include runoff and routing calculations of the 10-year storm event</small>			
Extreme Flood Protection Treatment Standard (Qp100)		Response	Attachment location
30	Have you demonstrated that Qp100 post is less than or equal to Qp100 pre at the discharge point?*	no	standard not applicable
<small>*Please include runoff and routing calculations of the 100-year storm event</small>			

Go to VSMM-Vol. I, Section 2.7.4.C for additional information about providing pretreatment for filtering practices

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application

Grass Treatment Channel (O-3)

Grass Treatment Channel #1

Line Treatment Standards

Indicate the treatment standards met for the site area draining to this practice:

- 1 WQv
- 2 Rev This practice automatically meets Rev if you have met the WQv treatment standards
- 3 Cpv
- 4 Qp10 { Grass channels are not typically appropriate to provide Cpv, Qp10 or Qp100 except under ideal conditions.
- 5 Qp100

Modified Curve Number		Modified CN*	
6	What is the modified curve number (CN) for both on and off-site areas draining to this facility?	99.6 for hypothetical recharge area	
Water Quality Volume (WQv)		WQv (Cubic Feet)	
7	Provide the WQv for both on and off-site area draining to this facility (from WQv worksheets)?	1459	
		WQ Peak (Cfs)	
8	What is the peak discharge rate associated with the WQ storm?	0.68	
Feasibility (2.7.5.A)		Response	Attachment location
9	Is the maximum longitudinal slope of the channel 4% or less?	yes	see Plans, HydroCAD
Conveyance (2.7.5.B)		Response	Attachment location
10	Is the peak velocity for the 1-year storm non-erosive?	yes	see Plans, HydroCAD
11	Are the channel slopes less than or equal to the 2:1 maximum?	yes	see Plans, HydroCAD
12	Does the channel safely convey the 10-year storm with a minimum of 6 inches of freeboard?	yes	see Plans, HydroCAD
13	Was the Manning's n value adjusted for the depth of water in the channel for larger storm events?	yes	see Plans, HydroCAD
Pretreatment (2.7.5.C)		Response	Attachment location
14	Has pre-treatment been provided for non-rooftop runoff?	N/A	grass channel is for pretreatment
Treatment (2.7.5.D)		Channel Width (Feet)	
15	What is the bottom width of the channel? (no greater than 8 feet, but no less than 2 feet)	5	
		Response	Attachment location
16	Is the average residence time of the WQv peak discharge at least 10 minutes?	yes	see HydroCAD
17	Is the velocity of the WQv peak discharge less than 1 foot/second?	yes	see HydroCAD
18	Is the depth of the WQv peak discharge 4 inches or less?	yes	see HydroCAD
19	Were check dams used to meet the requisite treatment design criteria?	no	
Cold Climate Design Considerations (2.7.5.G)		Response	Attachment location
20	Have the potential impacts of Vermont's severe winter climate been addressed in your design?	yes	runoff is by sheet flow not piped

Channel Protection Treatment Standard (Cpv)

		Response
21	Check which detention time standard must be used, based on the fisheries designation of the receiving water:	<input type="checkbox"/> 12 hours for cold water <input type="checkbox"/> 24 hours for warm water

		Response	Attachment location
22	Did you use the Storage Volume Estimation Method? If yes, skip to Line 25.*	yes / no	

*Please review the guidance sheet "Channel Protection Storage Volume Estimation" and attach the specified information. This method is not appropriate if more than a one subwatershed drains to the practice. Using the center of mass detention time calculated by a hydrologic model that accounts for pond routing is the preferred method.

23	What storage volume (cubic feet) necessary to meet the Channel Protection Standard?	
24	What is the calculated average release rate (cfs)?	
25	What is the controlled peak release rate (cfs) during the 1-year storm as indicated by the model?	

Overbank Flood Protection Treatment Standard (Qp10)

		Response	Attachment location
25	Have you demonstrated that Qp10 post is less than or equal to Qp10 pre at the discharge point?*	yes / no	

*Please include runoff and routing calculations of the 10-year storm event.

Extreme Flood Protection Treatment Standard (Qp100)

		Response	Attachment location
26	Have you demonstrated that Qp100 post is less than or equal to Qp100 pre at the discharge point?*	yes / no	

*Please include runoff and routing calculations of the 100-year storm event.

*Grass channels provide rate-based treatment and must be designed to provide 10 minutes of residence time for the peak WQ discharge (a 0.9 inch storm). Traditional methods underestimate the volume and rate of runoff for storms of less than 2 inches. Modified curve numbers must be used. Because this practice is rate-based, both on and off-site water reaching the grass channel must be included in the calculations. This additional water will affect the velocity and residence time of the water in the channel. The average residence time for the peak discharge corresponds to the residence time calculated at the peak/maximum velocity, which is reported as the minimum residence time.

Attachment location: Please indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application

Wet Pond (P-2)**Wet Pond #1**

Line Indicate the treatment standards met for the site area draining to this practice:

- 1 WQv
 2 Cpv
 3 Qp10
 4 Qp100

Water Quality Volume (WQv)

5	What is the WQv (cubic feet) for the site area draining to this practice (from WQv worksheets)?	6531
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Feasibility (2.7.1.A)

	Response	Attachment location
6	Have you performed a site evaluation to establish the Hazard Classification of the pond?	yes Pond is Class "a"
7	Have you determined depth to bedrock and soil properties using geotechnical investigations?	yes already exists, geotech in Att 3

Conveyance (2.7.1.B)

	Response	Attachment location
8	Have forebays been provided at every inlet with 10% or more of the total inflow to the pond?	no grass channel pretreatment provided
9	Have the outfalls been designed/protected to avoid erosive velocities?	yes see HydroCAD

Pretreatment (2.7.1.C)

	Response	Attachment location
10	Has pretreatment been provided for non-rooftop runoff?	yes see Plans, HydroCAD
11	Is the forebay 4 to 6 feet deep?	N/A grass channel for pretreatment
12	Has the forebay been designed with non-erosive outlets?	N/A grass channel for pretreatment
13	Has direct access to the forebay been provided for maintenance?	N/A grass channel for pretreatment

14	What volume (cubic feet) of water is the forebay (or equivalent upstream pretreatment) sized to contain?	3,574 (WQv of area through GC)
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Treatment (2.7.1.D)

	Response	Attachment location
15	Is the length to width ratio for the main cell of the pond equal to or greater than 1.5:1?	yes see Plans

16	What volume (cubic feet) of the WQv is contained within the permanent pool?	6,923
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Landscaping (2.7.1.E)

	Response	Attachment location
17	Is the main cell of the pond four feet or greater (do not include pretreatment forebay)? If no, skip to Line 23.	no
18	Are the side slopes of the pond 4:1 (h:v) or flatter?	yes / no
20	Is the pond fenced?	
20a	yes → Does the pond have a safety bench of at least 6% grade extending at least 6 feet from the normal water edge?	yes / no / not applicable
20b	no → Does the pond have a safety bench of at least 6% grade extending generally 15 feet from the normal water edge?	yes / no / not applicable
21	Does the pond have an aquatic bench with an irregular configuration at a maximum depth of 18 inches, extending up to 15 feet from the normal water level edge?	yes / no
22	Have all the required elements of the landscaping plan been addressed?	yes / no

Maintenance (2.7.1.F)

	Response	Attachment location
23	Is the principal spillway accessible from land and equipped with a removable trash rack?	yes see Plans

Cold Climate Design Considerations (2.7.1.G)

	Response	Attachment location
24	Have the potential impacts of Vermont's severe winter climate been addressed in your design?	yes overland flow if possible, 30" culvert

Pond Stage Storage and Outlet Information

25	At what elevation (feet) does the storage begin during the larger (> 0.9") storm events?	394.95
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	Response	Attachment location
26	Does the application include outlet elevation and size information for the pond?.	yes see Plans, HydroCAD
27	Has peak storage volume and elevation information for the 1, 10 and 100-year storms been included?	yes see HydroCAD

Channel Protection Treatment Standard (Cpv)

	Response
28	Check which detention time standard must be used, based on the fisheries designation of the receiving water: <input checked="" type="checkbox"/> 12 hours for cold water <input type="checkbox"/> 24 hours for warm water

	Response	Attachment location
29	Did you use the Storage Volume Estimation Method? If yes, skip to Line 37.*	no

*Please review the guidance sheet "Channel Protection Storage Volume Estimation" and attach the specified information. This method is not appropriate if more than a one subwatershed drains to the practice. Using the center of mass detention time calculated by a hydrologic model that accounts for pond routing is the preferred method.

30	What storage volume (cubic feet) is necessary to meet the Channel Protection Standard?	13,539
31	What orifice size (inches) is necessary to meet the required detention time?	2
32	What is the calculated average release rate (cfs)?	0.31
33	What is the controlled peak release rate (cfs) during the 1-year storm as indicated by the model?	0.15

Overbank Flood Protection Treatment Standard (Qp10)

	Response	Attachment location
34	Have you demonstrated that Qp10 post is less than or equal to Qp10 pre at the discharge point?*	yes see HydroCAD

*Please include runoff and routing calculations of the 10-year storm event.

Extreme Flood Protection Treatment Standard (Qp100)

	Response	Attachment location
35	Have you demonstrated that Qp100 post is less than or equal to Qp100 pre at the discharge point?*	yes / no

*Please include runoff and routing calculations of the 100-year storm event.

See VSMM-Vol. II, Appendix D7 for guidance about maintaining non-erosive conditions. Forebays should be a minimum of 10% of the WQv. They can be more, but the main cell of the pond should still contain a minimum of 90% of the WQv. Larger storm volumes should begin at the level of the permanent pool. They does not need to be at the elevation of the total WQv, since a portion of the WQv is being addressed through extended detention. While the Channel Protection Treatment Standard only applies to the site, ensure that appropriate overflow outlets are designed to safely release off-site water that may also be entering the pond.

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application

Project Name: Chroma Technology Expansion

Discharge Point: S/N001

3.3 – Disconnection of Non-Rooftop Runoff Credit

Fill out this worksheet for each discharge point drainage area in which you have disconnected all or a portion of your non-rooftop runoff.

Line	Disconnection of Non-Rooftop Runoff Credit Criteria:	Response	
1	Has a typical disconnection detail been included on the site plans?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No*
2	Is the disconnection on a slope less than or equal to 5%?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No*
3	Is the maximum contributing length of non-rooftop 75 feet or less?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No*
4	Is the maximum contributing area less than 1000 square feet? Note: This criterion applies to collected, routed non-rooftop runoff.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A
5	Is the length of the disconnection at least equal to the contributing length?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No*
6	Does the disconnected runoff drain either as sheet flow or into a subsurface drain that is not directly connected to the drainage network?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No*
7	Have disconnections located on HSG C or D soils been evaluated to determine if disconnection is appropriate?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A
8	Does the disconnected non-rooftop runoff drain from a "hotspot" land use area?	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> No
9	<p>*If No, please explain why below?</p> <p>Disconnection is by sheet flow; no detail needed.</p> <p>Note: To be eligible for the credit all minimum criteria must be met.</p>		

Version: 9/06

For the area draining to*: 9P Bioretention

Located in drainage area for S/N: 001

WQ Volume Calculation for Volume-Based Practice

Use this worksheet to calculate the water quality volume draining to your volume based STP if you are not using any of the site design credits in section 3 of the 2002 VSWMM. **Do not use** this worksheet to calculate your WQv if you need to determine the Peak Q for the WQ storm (i.e. designing a grass channel, flow-splitter or other flow based practice). See the worksheet "Water Quality Volume and Modified Curve Number Calculation for Water Quality Treatment in a Flow-Based Practice"

Water Quality Volume Calculations			
Line		value/calculation	units
1	Site Area (impervious + disturbed pervious) A =	0.63	acres
2	Impervious area	0.50	acres
3	Percent Impervious Area = [(line 2/line 1) * 100] = I =	79.37	% (whole #)
4	Precipitation P =	0.9	inches
5	Runoff coefficient calculation = (0.05 + (0.009*I)) Rv =	0.764	
6	WQ Volume (in watershed inches) Calculation = (P * Rv) =	0.688	Qa (watershed inches, a.k.a. inches of runoff)
7	Minimum WQ Volume ¹	0.2	watershed inches
8	Enter the greater of line 6 or line 7 WQv =	0.688	watershed inches
9	WQ Volume Calculation = (line 8 * A)/12 = WQv =	0.036	ac. ft.
10	WQ Volume Calculation = (line 9 * 43560) = WQv =	1573	cu. ft.

Notes:

1: Sites with low impervious cover (~19%) but that do not employ a **significant** use of the stormwater design credits in Section 3 of the VSWMM are required to treat the minimum water quality volume of 0.2 watershed inches. Sites that have a **significant** portion of their impervious cover addressed via the stormwater credits (section 3 of the VSWMM) will be able to reduce this WQv and will only be required to treat the volume calculated on the "WQ Volume (with credit reduction)" worksheet which will be less than the 0.2 watershed inches.

* Enter the name of the STP (both type and label) which has been designed to treat this particular WQv (e.g. Wet Pond #2)

Version: 9/06 (calcs embedded)

For the area draining to*:

Wet Pond

 Located in drainage area for S/N:

001

WQ Volume calculation (with credit reduction) for Volume Based Practice

Use this worksheet to calculate the water quality volume draining to your **volume based** (i.e. not a grass channel) STP if you are not using any of the site design credits in section 3 of the 2002 VSWMM. **Do not use** this worksheet to calculate your WQv if you need to determine the Peak Q for the WQ storm (i.e. designing a grass channel, flow-splitter or other flow based practice). See the worksheet "Water Quality Volume and Modified Curve Number Calculation (with credit reduction) for Water Quality Treatment in Flow-Based Practice."

Line	Base values	value/calculation	units	note
1	Site Area (impervious + disturbed pervious)	3.44	acres	note 1
2	Impervious area	2.07	acres	
3	Precipitation P =	0.9	inches	

Impervious Area Reductions

<i>Rooftop disconnection</i>				
	Completed credit sheet	no		
4	Enter roof-top area disconnected		acres	
<i>Non-rooftop disconnection</i>				
	Completed credit sheet	yes		
5	Enter non-rooftop area disconnected	0.04	acres	
6	Total impervious area disconnected (line 4 + line 5)	0.04	acres	
7	New impervious area total (line 2 - line 6)	2.03	acres	
8	Percent Impervious = [(line 7 ÷ line 1) * 100] I =	59.01	%	

Site Area Reductions

<i>Stream Buffer Credit</i>				
	Completed credit sheet	no		
9	Enter area draining to a stream buffer		acres	note 2
<i>Grass Channel Credit</i>				
	Completed credit sheet	no		
10	Enter site area draining to grass channels		acres	
<i>Natural Area Conservation Credit</i>				
	Completed credit sheet	no		
11	Natural Area to be conserved (in the drainage to this S/N)		acres	
12	Total Site Area Reductions (line 9 + line 10 + line 11)	0.0	acres	
13	New site area total (line 1 - line 12) A =	3.4	acres	

14	Runoff coefficient calculation = (0.05 + (0.009*I))	Rv =	0.581	
14	Water Quality Volume Calculation = (P*Rv)	WQv =	0.523	Qa (watershed inches or inches of runoff)
15	Water Quality Volume Calculation [(line 14* line 13)/12]	WQv =	0.1499	ac. ft
16	Water Quality Volume Calculation = line 15 *43560	WQv =	6531	cu. ft.

Note 1: In most situations, site area = disturbed area (i.e. impervious + disturbed pervious for the project). If using the Natural Area Conservation Credit, the Site Area = (disturbed area + area to be conserved).

Note 2: If using rooftop/ non-rooftop disconnection, credit can only be taken for the pervious area draining to the stream buffer
 Add'l notes: If all impervious has been disconnected and the percent impervious is thus zero (0 %) then WQv and Recharge are assumed to have been met and WQv = 0. If significant use of site design credits has been employed, the designer may treat the reduced WQv and is not required to treat the minimum water quality volume of 0.2 watershed inches.

* Enter the name of the STP (both type and label) which has been designed to treat this particular WQv (e.g. Wet Pond #2)

Version: 2/12

For the area draining to*:
 Located in drainage area for S/N:

Groundwater Recharge Treatment Standard - Calculation & Waiver Worksheet

The average annual groundwater recharge rate for the receiving hydrologic soil group (HSG) must be maintained in order to preserve existing water table elevations. Recharge is determined as a function of annual predevelopment recharge for a given HSG, the average annual rainfall and the amount of impervious surface at the site. The Groundwater Recharge Treatment Standard can be met by using one or both of the following methods: volume method and/or percent area method. See Table 2.2 in the VSMM - Volume I for a list of acceptable STPs or credits that satisfy this requirement. Use NRCS's Web Soil Survey to obtain specific soil data at your site, available at:

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

Site Information		value/calculation	units
Site Area (impervious + disturbed pervious)	A=	4.64	acres
Impervious area		2.58	acres
Percent Impervious Area = [(line 2/line 1)] =	I =	0.56	% (decimal percent)

Composite Recharge Factor Calculation

Enter site acreage of each HSG draining to POI or S/N		value/calculation	
HSG A		4.64	acres
HSG B			acres
HSG C			acres
HSG D			acres
Total Site Area		yes	
Composite Recharge Factor		0.400	

ReV (Percent Volume Method)	0.086	acre feet
	3746	cubic feet

The percent volume method is commonly used to meet recharge. Designers must demonstrate that a proposed STP allows at least the Rev to enter the ground. The Rev is contained within the WQv. So, if a practice is infiltrating the entire WQv, then Rev is automatically met. Please use the applicable STP worksheets to verify the Groundwater Recharge Treatment Standard has been met. Note that not all STPs can be used to meet this standard.

ReA (Percent Area Method)	1.032	acres
	44954	square feet

The percent area method is used when meeting recharge via nonstructural design credits (disconnection of rooftop/non-rooftop surfaces, stream buffer, grass channel credit, or ESRD). In this case, the designer must demonstrate that stormwater runoff from a portion of the new **impervious area, equivalent to the area calculated under the percent area method**, drains into a nonstructural design credit practice.

Additional notes:

*Recharge is one of the unified sizing criteria that can be achieved site wide, rather than at each point of interest (POI) or discharge point (S/N), assuming the receiving water is the same for each discharge point.

* Enter the name of the STP (both type and label) which has been designed to treat this particular Rev or Rea.

Project Name: Chroma Technology Expansion

Discharge Point: S/N001

Extreme Flood Protection Standard Treatment Standard Waiver Worksheet

Fill out this worksheet for each discharge point in which use of this waiver is sought.

Extreme Flood Protection Standard Treatment Standard (Qp100) Waiver (*check only one*):

1. The site directly discharges to a large reservoir, lake or stream with a drainage area greater than or than ten (10) square miles.

Name of Receiving Water at Discharge Point:

Drainage Area of Receiving Water at Discharge Point (square miles):

Guidance: "Directly discharges" means that the runoff from the project does not reach any water of the State before discharging to the waterbody with a equal or greater than 10 square mile watershed. If the discharge point definition is unclear, refer to the Schedule A document and/or contact the Stormwater Program.

2. The impervious area is less than or equal to ten (10) acres.

Enter the new/expanded impervious area (acres):

2.96

Guidance: The ten (10) acre treatment requirement applies to only new impervious – created since July 4, 2005.

3. A downstream analysis is conducted that indicates extreme flood control is not necessary for the site.

Has adequate conveyance from the site to the discharge point been verified?

Yes

No

Has supporting information (e.g. narrative description, calculations, modeling) been included?

Yes

No

Note: These waivers are applied per receiving water.