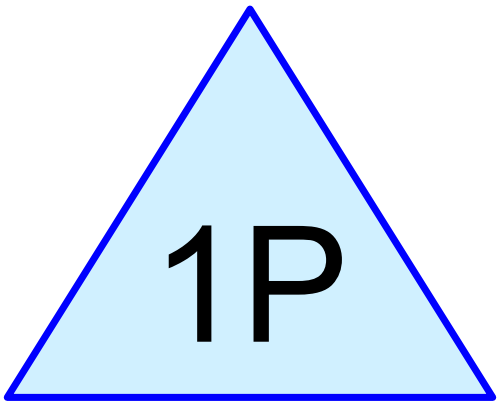


Bioretention Area 1

Subcat Reach Pond Link

Routing Diagram for Post Drainage_2017-0711
Prepared by {enter your company name here}, Printed 7/25/2017

Summary for Pond 1P: Bioretention Area 1

Inflow Area = 2.789 ac, 72.18% Impervious, Inflow Depth > 6.50" for 100 Year Storm event
Inflow = 20.79 cfs @ 12.09 hrs, Volume= 1.511 af
Outflow = 16.65 cfs @ 12.16 hrs, Volume= 1.243 af, Atten= 20%, Lag= 4.2 min
Primary = 16.65 cfs @ 12.16 hrs, Volume= 1.243 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 99.13' @ 12.16 hrs Surf.Area= 9,120 sf Storage= 21,481 cf

Plug-Flow detention time= 100.8 min calculated for 1.239 af (82% of inflow)
Center-of-Mass det. time= 51.8 min (805.0 - 753.3)

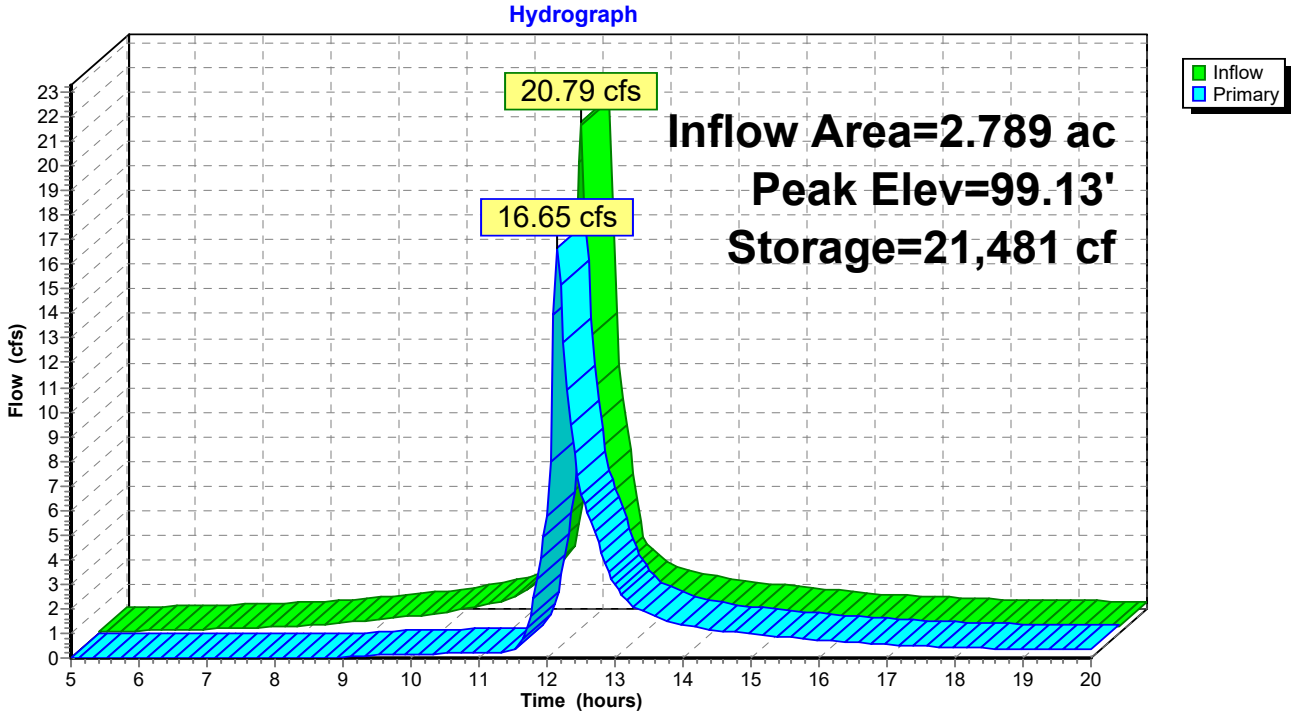
Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	30,007 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.00	4,790	0	0
98.00	7,376	12,166	12,166
100.00	10,465	17,841	30,007

Device	Routing	Invert	Outlet Devices
#1	Primary	94.00'	**18.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.00' / 88.70' S= 0.0265 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	96.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	97.90'	**33.0" W x 7.2" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	98.80'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	99.50'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=16.38 cfs @ 12.16 hrs HW=99.12' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 16.38 cfs of 17.79 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.61 fps)
  - **3=Orifice/Grate** (Orifice Controls 7.60 cfs @ 4.61 fps)
  - **4=Orifice/Grate** (Weir Controls 8.41 cfs @ 1.86 fps)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Bioretention Area 1



Post-Development Watershed Conditions					
Subcatchment	**Area (ac)**	**Cover**	**Average Curve #**	**Hydrologic Soil Group(s)**	**Time of Concentration**
1	2.79	Mostly impervious with some grassed areas and small amount of gravel path	88	B	6.0 minutes
2	3.68	Mostly impervious with some grassed areas and small amount of gravel path	82	B	6.0 minutes
3	2.04	Mostly grass with impervious area	83	B	6.0 minutes
4	2.08	Grass and wooded area	69	B/D	6.0 minutes
5	1.49	Mostly woods and grassed areas with some impervious area	62	B	6.0 minutes

6.4 Hydrologic Review

The stormwater runoff volumes at each discharge point under pre-development and post-development conditions are summarized below.

SDP	**1 - Year**		**10 - Year**		**100 - Year**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
1	1.28	1.00	10.61	7.49	33.75	31.43
2	0.69	0.18	4.61	4.45	14.11	14.08

As shown above, post-development peak flow rates are less than pre-development rates for the storm events modeled for SDP 1 and SDP 2; therefore, the post-developed storm water management controls provide the required storage to attenuate the 1, 10 and 100-year storm events. It should be noted that Bioretention Area 1 and Infiltration Basin 3 have been sized to handle the future land banked parking area.

Supporting hydrologic analyses for pre-development and post-development conditions are included in Appendices D and E.

6.5 Stormwater Management System

The final stormwater management system will consist of minimal conveyance systems which will include culverts, and grass-lined swales/dikes where required. It is anticipated that most, if not all perimeter diversion swales/dikes will be unnecessary and removed after installation; however, there may be a need for some as site conditions warrant.

The remainder of the drainage area will remain undisturbed with natural vegetation remaining. Minimum 20 feet wide undisturbed vegetated buffers will remain intact between developed areas and water bodies, streams, and wetlands.

Project:	Edgewater			
Description:	Stormwater Quality Design			
By/Date:	AG 7/24/2017	Reviewed/Date:	DGK 7/24/20	

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Bioretention Area 1

1) Determine Water Quality Volume

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

$WQ_V = 43,560 \times [P \times Rv \times A] / 12$

Where:
WQ_V = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area
A = Watershed (ac)
* A minimum Rv of of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Bioretention Area 1	1.40	1.08	39	0.40	2.79	5,649	Swale, Forebay	Bioretention

Note: 0.998 ac. disconnected roof removed due to use of cisterns

2) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Watershed	Required WQv (cf)	Required Pre-Treatment Volume in Forebay (cf)	Pre-Treatment Practice	Treatment Practice
Bioretention Area 1	5,649	1,412	Swale, Forebay	Bioretention

1) Size Pre-Treatment Practice #1: Hydrodynamic Device
A hydrodynamic device is provided for the required pre-treatment volume.

Project:	Edgewater			
Description:	Stormwater Quality Design			
By/Date:	AG 7/24/2017	Reviewed/Date:	DGK 7/24/20	

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Bioretention Area 1

3) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

$RR_V = 43{,}560 \times [P \times Rv \times A] / 12$

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.40
A = Watershed (ac)
100% RR_V: 5,649 cf

* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	2.790 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	2.790 acres	
Total Area Matches		Calculated S: 0.4

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12
Calculated Ai: 0.4320
Calculated Rv*: 0.95
Where: Calculated Minimum RR_V: 2086 cf
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

4) Stormwater Management Practice Design

1) Design Bioretention Area Filter Bed

$A_{FR} = WQ_V \times D_F / [K \times (H_F + D_F) \times (T_F)]$

Where:

WQ_V = Remaining Water Quality Volume (cf) =	4,236 cf	(equals 75% WQ_V, which only accounts for the min. WQ_V required in the plunge pool and does not take into account the other pre-treatment)	
D_F = Filter Bed Depth (ft) =	2.5	ft	
K = Coefficient Permeability (0.5 ft/day per § 6.4.4 of NYSSDM) =		0.5	ft/day
H_F = Average Height Water Above Filter Bed (ft) =	0.25	ft (maximum ponding depth of 6")	
T_F = Filter Bed Drain Time (2 days per § 6.4.4 of NYSSDM) =		2	days
A_{FR} = Required Surface Area of Filter Bed (sf) =	3,851	sf	
A_F = Surface Area of Filter Bed Provided (sf) =	4,823	sf	acceptable

Project: Edgewater
Description: Stormwater Quality Design
By/Date: AG 7/24/2017 Reviewed/Date: DGK 7/24/20

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Bioretention Area 1

2) Confirm Storage Capability of Practice

- Confirm system can hold 75% of water quality volume

75% Water Quality Volume (cf) = 4,236 cf (excludes pre-treatment volume)

- Volume Within Filter Bed:

$V_F = A_F \times D_F \times N$

N = Porosity (0.20 per Table 10.5.5 of the NYSSDM)= 0.2

V_F = Storage volume within filter bed (cf) = 2,412 cf

- Volume Above Filter Bed:

$V_{F\text{-}TEMP} = 2 \times A_F \times H_F$

$V_{F\text{-}TEMP}$ = Storage volume above filter bed (cf) = 2,412 cf

- Volume Within Drainage Layer:

$V_{DL} = A_{DL} \times D_{DL} \times N$

N = Porosity (0.40 standard porosity for stone reservoirs, see also NYSSDM § 6.3.4)= 0.4

A_{DL} = Underdrain Length * Underdain Stone Jacket Width Underdrain Stone Jacket Width: 3 ft Underdrain Length: (see Required Underdrain Length section)

D_{DL} = Drainage Layer Depth (stone jacket depth): 10 inches

V_{DL} = Storage volume within drainage layer (cf) = 485 cf

- Total storage within practice only, not inlcuding pre-treatment (cf) = 5,308 cf > 4,236 cf (75% WQv Storage Volume)
acceptable

- Total storage within practice and pre-treatment (cf) = 5,308 cf < 5,649 cf (100% WQv Storage Volume)
insufficient

3) Required Underdrain Length

- Length of underdrain should be based on 10% of the provided filter bed area per § 8.5 of NYSSDM.

Length of underdrain required = 482.3 lf
Length of underdrain provided = 485 lf

4) Verify Ponding Depth Over Filter Bed

- No more than 6" of ponding is required per section 6.4.4 of NYSSDM.

Top of filter bed elevation = 62 ft
Outlet control structure orifice elevation = 62.5 ft
Ponding depth.= 6 in acceptable

5) Tabulate Provided Runoff Reduction Volume (RR_V)

2) Bioretention Area A

Storage provided within practice: 5,308 cf (excluding pre-treatment)
For Bioretention in Hydrologic Soil Group A & B: 100% reduction (without underdrains, although underdrains with closed valve may be provided for future maintenance purposes)
For Bioretention in Hydrologic Soil Group C & D: 40% reduction (with underdrains)
HSG at the Bioretention Area: D RR_V Reduction Factor: 40%
RR_V Provided by implementing bioretention: 2,123 cf

Note: The 100% RR_V may be used in HSG C or D where infiltration testing meeting the requirements of the NYSSDM prove that the underlying soils are capable of infiltrating 0.5 inches per hour.

TOTAL RR_V PROVIDED: 2,123 cf
Calculated 100% RR_V: 5,649 cf
Minimum RR_V: 2,086 cf
Is 100% RR_V met: No Provide justification in SWPPP
If 100% RR_V is not met, is Minimum RR_V met: Yes

Project:	Edgewater			
Description:	Stormwater Quality Design			
By/Date:	DGK 5/15/2017	Reviewed/Date:	MAB 5/27/20	

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Building 1 though 4 Rooftops

1) Determine Water Quality Volume

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

$WQ_V = 43,560 \times [P \times Rv \times A] / 12$

Where:
WQ_V = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area
A = Watershed (ac)
* A minimum Rv of of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Building 1 through 4 Rooftops	1.40	0.98	100	0.95	0.98	4,741	Cistern	Cistern

2) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Watershed	Required WQv (cf)	Required Pre-Treatment Volume in Forebay (cf)	Pre-Treatment Practice	Treatment Practice
Building 1 through 4 Rooftops	4,741	1,185	Cistern	Cistern

Project:	Edgewater			
Description:	Stormwater Quality Design			
By/Date:	DGK 5/15/2017	Reviewed/Date:	MAB 5/27/20	

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Building 1 though 4 Rooftops

3) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

$RR_V = 43,560 \times [P \times Rv \times A] / 12$

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.95
A = Watershed (ac)
100% RR_V: 4,741 cf

* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	0.982 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	0.982 acres	
	Total Area Matches	Calculated S: 0.4

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 — Calculated Ai: 0.3928
Calculated Rv*: 0.95
Where: Calculated Minimum RR_V: 1896 cf
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

4) Provide Cistern With Capacity to Temporarily Store the WQv

A 63' long by 20' wide by 4' deep cistern will be provided in Building 4, for a capacity of 5,040 cubic feet.

5) Tabulate Provided Runoff Reduction Volume (RR_V)

RR_V Provided by implementing cistern:	5,040 cf	
TOTAL RR_V PROVIDED:	5,040 cf	
Calculated 100% RR_V:	4,741 cf	
Minimum RR_V:	1,896 cf	
Is 100% RR_V met:	Yes	acceptable
If 100% RR_V is not met, is Minimum RR_V met:	N/A	

Project:	Edgewater			
Description:	Stormwater Quality Design			
By/Date:	AG	7/24/2017	Reviewed/Date: 7/24/17	MAB

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Bioretention Area 2

1) Determine Water Quality Volume

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

$WQ_V = 43,560 \times [P \times Rv \times A] / 12$

Where:
WQ_V = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area
A = Watershed (ac)
* A minimum Rv of of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
2	1.40	2.15	58	0.58	3.68	10,769	Hydrodynamic	Bioretention

2) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
2	10,769	2,692	Hydrodynamic	Bioretention

1) Size Pre-Treatment Practice #2: Hydrodynamic Device
A hydrodynamic device will be provided for pre-treatment

Project:	Edgewater			
Description:	Stormwater Quality Design			
By/Date:	AG	7/24/2017	Reviewed/Date: 7/24/17	MAB

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Bioretention Area 2

3) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

$RR_V = 43,560 \times [P \times Rv \times A] / 12$

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.58
A = Watershed (ac)
100% RR_V: 10,769 cf

* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	3.680 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	3.680 acres	
Total Area Matches		Calculated S: 0.4

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 — Calculated Ai: 0.8600
Calculated Rv*: 0.95
Where: Calculated Minimum RR_V: 4152 cf
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

4) Stormwater Management Practice Design

1) Design Bioretention Area Filter Bed

$A_{FR} = WQ_V \times D_F / [K \times (H_F + D_F) \times (T_F)]$

Where:

WQ_V = Remaining Water Quality Volume (cf) =	8,077 cf	(equals 75% WQ_V, which only	accounts for the min. WQ_V required in the plunge pool and does not take into account the other pre-treatment)
D_F = Filter Bed Depth (ft) =	2.5	ft	
K = Coefficient Permeability (0.5 ft/day per § 6.4.4 of NYSSDM) =		0.5	ft/day
H_F = Average Height Water Above Filter Bed (ft) =	0.25	ft (maximum ponding depth of 6")	
T_F = Filter Bed Drain Time (2 days per § 6.4.4 of NYSSDM) =		2	days
A_{FR} = Required Surface Area of Filter Bed (sf) =	7,342	sf	
A_F = Surface Area of Filter Bed Provided (sf) =	7,449	sf	acceptable

Project: Edgewater
Description: Stormwater Quality Design
By/Date: AG 7/24/2017 Reviewed/Date: 7/24/17 MAB

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Bioretention Area 2

2) Confirm Storage Capability of Practice

- Confirm system can hold 75% of water quality volume

75% Water Quality Volume (cf) = 8,077 cf (excludes pre-treatment volume)

- Volume Within Filter Bed:

$V_F = A_F \times D_F \times N$

N = Porosity (0.20 per Table 10.5.5 of the NYSSDM)= 0.2

V_F = Storage volume within filter bed (cf) = 3,725 cf

- Volume Above Filter Bed:

$V_{F\text{-}TEMP} = 2 \times A_F \times H_F$

$V_{F\text{-}TEMP}$ = Storage volume above filter bed (cf) = 3,725 cf

- Volume Within Drainage Layer:

$V_{DL} = A_{DL} \times D_{DL} \times N$

N = Porosity (0.40 standard porosity for stone reservoirs, see also NYSSDM § 6.3.4)= 0.4

A_{DL} = Underdrain Length * Underdain Stone Jacket Width Underdrain Stone Jacket Width: 3 ft Underdrain Length: (see Required Underdrain Length section)

D_{DL} = Drainage Layer Depth (stone jacket depth): 10 inches

V_{DL} = Storage volume within drainage layer (cf) = 750 cf

- Total storage within practice only, not inlcuding pre-treatment (cf) = 8,199 cf > 8,077 cf (75% WQv Storage Volume)
  acceptable

- Total storage within practice and pre-treatment (cf) = 8,199 cf < 10,769 cf (100% WQv Storage Volume)
  insufficient

3) Required Underdrain Length

- Length of underdrain should be based on 10% of the provided filter bed area per § 8.5 of NYSSDM.

Length of underdrain required = 744.9 lf
Length of underdrain provided = 750 lf

4) Verify Ponding Depth Over Filter Bed

- No more than 6" of ponding is required per section 6.4.4 of NYSSDM.

Top of filter bed elevation = 64 ft
Outlet control structure orifice elevation = 64.5 ft
Ponding depth.= 6 in acceptable

Project:	Edgewater				
Description:	Stormwater Quality Design				
By/Date:	AG	7/24/2017	Reviewed/Date: 7/24/17	MAB	

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Bioretention Area 2

5) Tabulate Provided Runoff Reduction Volume (RR_V)

1) Vegetated Swale (denoted as Swale C on Plan Set)

Refer to the attached Swale 1 design information

RR_V Provided by implementing vegetated swale: 2154 cf

2) Bioretention Area A

Storage provided within practice:	8,199 cf	(excluding pre-treatment)
For Bioretention in Hydrologic Soil Group A & B:	100% reduction	(without underdrains, although underdrains with closed valve may be provided for future maintenance purposes)
For Bioretention in Hydrologic Soil Group C & D:	40% reduction	(with underdrains)
HSG at the Bioretention Area:	D	RR_V Reduction Factor: 40%
RR_V Provided by implementing bioretention:	3,280 cf	Note: The 100% RR_V may be used in HSG C or D where infiltration testing meeting the requirements of the NYSSDM prove that the underlying soils are capable of infiltrating 0.5 inches per hour.
TOTAL RR_V PROVIDED:	5,433 cf	
Calculated 100% RR_V:	10,769 cf	
Minimum RR_V:	4,152 cf	
Is 100% RR_V met:	No	Provide justification in SWPPP
If 100% RR_V is not met, is Minimum RR_V met:	Yes	

Project: Edgewater
Description: Stormwater Management Design
By/Date: AG 7/17/2017 Reviewed/Date: MAB 7/24/2017

STORMWATER MANAGEMENT PRACTICE:
Subcatchment 3

1) Determine Required Water Quality Volume & Stormwater Management Practice

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

WQv = 43,560 x [P x Rv x A] / 12

Where:
WQv = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area*
A = Watershed (ac)
* A minimum Rv of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 3	1.40	1.190	58.0	0.57	2.050	5,964	Hydrodynamic	Infiltration

Note: Pretreatment will be handeled via a overland flow, and use of stone check dams within diversion dikes.

2) Subsurface soil conditions To be field verified with soil tests

Design Infiltration Rate (f_c): 5.00 inches per hour

3) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Design Infiltration Rate: 5.00 inches per hour
Required Minimum Pretreatment Volume: 100%

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 3	5,964	5,964	Hydrodynamic	Infiltration

Notes:
1) Pretreatment volumes per § 6.3.3 of the NYSSDM (January 2015).

4) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

RR_V = 43,560 x [P x Rv x A] / 12

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.57
A = Watershed (ac)
100% RR_V: 5,964 cf
* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	2.050 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	2.050 acres	
Total Area Matches		Calculated S: 0.40

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 — Calculated Ai: 0.476
Calculated Rv*: 0.95
Where: Calculated Minimum RR_V: 2298 cf
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

5) Stormwater Management Practice Design

Consider infiltrating RRv

100% RRv = 5,964 cf
RRv Infiltrated in Basin = 5,964 cf From HydroCAD Model
Is RRV 100% infiltrated? yes - acceptable

Consider infiltrating CPv:
Determine Stream Channel Protection Volume (Cpv)

- 1-Year Storm Runoff Volume 0.180 acre-feet From HydroCAD model

Cpv Infiltrated in Basin = 0.180 acre-feet From HydroCAD Model
Is Cpv 100% infiltrated? yes - acceptable

3) See HydroCAD model for Overbank Flood Control (Qp) and Extreme Flood Control (Qf) computations