

Bally's Bronx
Water and Sewer Infrastructure - Supporting Documentation

LANGAN

H-1

Bally's Bronx
NYCDEP Volume Calculation Matrix - Development Site

LANGAN

NYC DEP Volume Calculation Matrix

These instructions are to assist in the completion of the DEP Volume Calculation Matrix. Following this tab, there are two worksheets (WS1 and WS2) and a Summary Table. The worksheets must be completed first in order to provide the information necessary to complete the Summary Table. With-Action Scenario information entered in each worksheet and the Summary Table should include the project and No-Action Scenario for that site. Additional instructions for each tab in this spreadsheet are listed below.

SUMMARY TABLE: Comparison of Existing and With-Action Volume

Using the information from worksheets (WS1 and WS2), enter the information below in the summary table as follows:

Step 1: Enter in the CSO subcatchment area info for the proposed project above the table. If the proposed project crosses over several different CSO sub-catchment areas, a summary table should be completed for each CSO sub-catchment area.

Step 2: In the **Existing** table, enter in the area of the proposed project in square feet and in acres (1 acre = 43,560 sq. ft.).

Step 3: Enter the area of the proposed project at the top of the With-Action table in square feet and in acres and complete in the same way as the **Existing** table.

Step 4: The information for columns in this table should be taken from the completed Surfaces Calculations and Volume Calculations Worksheets.

Step 5: The **Existing** and **With-Action** summary tables should be directly inserted into CEQR Infrastructure chapters.

Note: The applicant should only input information in the fields highlighted in yellow.

WORKSHEET 1 (WS1): Surfaces Calculations

WS1 calculates the weighted runoff coefficients to be used in WS2 based on the types of surfaces associated with the existing site and those that will be associated with the proposed site. If the existing and/or planned site is comprised of two discrete or phased sites, use the additional cells provided (labeled Site B) in WS1. In addition, if there are more than two sites, copy and paste the cells to provide for the entire proposed project.

Step 1: In the **Existing** table, enter the total areas for each surface type in the corresponding column (i.e., roof, pavement & walks, other, and grass/softscape). The total surface area and percentages of the total site those areas represent should auto-caculate. If they do not automatically calculate, click on the cell and press the F9 key. This should activate the calculation. Runoff coefficients for each surface area are provided in the worksheet and the total or weighted runoff coefficient will be auto-calculated (or press the F9 key).

Step 2: Repeat for **With-Action** table using information for the entire area for the With-Action scenario (project + No-Action scenario).

Step 3: The "TOTAL" columns have the formulas in place to calculate total percent, surface area, and weighted runoff coefficient. If they do not automatically compute, click on the cell and ensure the correct cells are highlighted, then press enter. This should activate the computation.

Step 4: Use the Runoff Coefficient in "TOTAL" column (or the Weighted Runoff Coefficient) for the Rational Method calculations in WS2, Volume Calculations, tables.

Step 5: The **Existing** and **With-Action** surfaces calculations tables should be directly inserted into CEQR Infrastructure chapters.

Note: The applicant should only input information in the fields highlighted in yellow.

WORKSHEET 2 (WS2): Volume Calculations

Worksheet 2 calculates the discharge volume (in millions of gallons - MG) from the existing and proposed site to the CSS as well as stormwater volumes to separate storm sewers or direct discharges to surface waterbodies. Identify the CSO subcatchment area or recieving water body, and complete a

Step 1: Enter the CSO subcatchment area for the site at the top of the **Existing** table.

Step 2: In **Existing** table, reference WS1 and enter the total area of the site's runoff being directed to combined or separate storm sewers or direct discharge. Square feet will need to be converted to acres for this worksheet (1 Acre = 43,560 sq. ft.). WS1 will provide the areas for each discharge type. The area entered will be the same for each row of storm volume and duration.

Step 3: Enter the Weighted Runoff Coefficient for that area in the corresponding column. Use the weighted runoff coefficients for entire proposed project from WS1.

Step 4: in column H, enter the total sanitary flow (*i.e.* , sewage generation) calculated for the existing site per the guidance in the CEQR Technical Manual. The worksheet will calculate the volume associated with sanitary flows during specific storm events using the durations provided in the table (in column I).

Step 5: If necessary, repeat tables for areas of the site that discharge to separate storm sewers or direct discharge/overland flow. Also, repeat all tables if proposed project crosses over several different CSO subcatchment areas or if proposed project includes a phased implementation plan or discrete sites.

Step 6: Repeat for the **With-Action** tables using information from the proposed project's site plan. See instructions above referring to completion of a separate table for each discharge point, catchment area or phase associated with the proposed project.

Step 7: The formulas are in place for summing the **"TOTAL"** tables on the right side of the worksheet. Use these totals in the Summary Table. Note: any direct discharge volumes to adjacent waterbodies will be needed for the Summary Table for the "RUNOFF TO RIVER" column.

Note: The applicant should only input information in the fields highlighted in yellow.

Reference:

MG	millions of gallons
GPD	gallons per day
in	inches
hr	hour
A	area
SF	square feet
I	intensity
C	runoff coefficient
CSS	combined sewer system
CSO	combined sewer overflow
CEQR	City Environmental Quality Review

COMPARISON OF EXISTING AND WITH-ACTION VOLUME

CSO SUBCATCHMENT AREA:[1]

EXISTING

		Area = XX,XXX SF (XX.XX ACRES)				Area = XX,XXX SF (XX.XX ACRES)				
		SITE A				SITE B[2]				SITE A & B
RAINFALL VOLUME (in)	RAINFALL DURATION (hr)[3]	RUNOFF VOLUME DIRECT DRAINAGE (MG)[4]	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.20	11.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.50	19.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

With-Action

		Area = XX,XXX SF (XX.XX ACRES)				Area = XX,XXX SF (XX.XX ACRES)				
		SITE A				SITE B[2]				SITE A & B
RAINFALL VOLUME (in)	RAINFALL DURATION (hr)[3]	RUNOFF VOLUME DIRECT DRAINAGE (MG)[4]	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.20	11.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.50	19.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[1] If the proposed project crosses over several different CSO subcatchment areas, the above summary table should be completed for each CSO sub-catchment area.

[2] If proposed project includes a phased implementation plan or discrete sites, assess volumes using additional cells above (e.g., Site B).

[3] Based on ***Intensity/duration/Frequency Rainfall Analysis, New York City and the Catskill Mountain Water Supply Reservoirs,*** Vieux & Associates, Inc., April 4, 2006. The 24-hour rainfall volume is based on average rainfall intensity over 24-hours (inch/per) times 24 hrs. (Duration information provided by T. Newman & P. Jadhav, HydroQual).

[4] The volume (calculated in WS2) of stormwater runoff from any portion of the proposed project site draining to a separate storm sewer or as overland flow directly to a waterbody should be entered here.

SURFACE CALCULATIONS

CSO SUBCATHMENT OR RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

	EXISTING					
	WEIGHTED RUNOFF COEFFICIENT, C					
	SURFACE TYPE[1]	ROOF[2]	PAVT & WALKS	OTHER[3]	GRASS & SOFT SCAPE	TOTAL
SITE A	AREA, %	4%	34%	0%	63%	100%
	SURFACE AREA, SF	30847	268222	0	501403	800472
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**0.45**
SITE B	AREA, %	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	SURFACE AREA, SF	XX,XXX	XX,XXX	XX,XXX	XX,XXX	0
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**#VALUE!**

NOTES:

1 Runoff coefficients for each surface type are as per DEP.
2 Total roof areas onsite.
3 Identify any other surfaces onsite and obtain runoff coefficients from DEP.

CSO SUBCATHMENT OR RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

	WITH-ACTION SCENARIO (PROJECT + NO-ACTION SCENARIO)					
	WEIGHTED RUNOFF COEFFICIENT, C					
	SURFACE TYPE[1]	ROOF[2]	PAVT & WALKS	OTHER[3]	GRASS & SOFT SCAPE	TOTAL
SITE A	AREA, %	46%	24%	0%	29%	100%
	SURFACE AREA, SF	370713	195825		233933	800471
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**0.73**
SITE B	AREA, %	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	SURFACE AREA, SF	XX,XXX	XX,XXX	XX,XXX	XX,XXX	0
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**#VALUE!**

NOTES:

1 Runoff coefficients for each surface type are as per NYCDEP.
2 Total roof areas onsite.
3 Identify any other surfaces onsite and obtain runoff coefficients from NYCDEP.

EXISTING:

CSO SUBCATCHMENT AREA:

Rainfall, in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater to CSS, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS , MG
0.00	3.80	0	0.00	0.00	0.00	0.000
0.40	3.80	0	0.00	0.00	0.00	0.000
1.20	11.30	0	0.00	0.00	0.00	0.000
2.50	19.50	0	0.00	0.00	0.00	0.000

RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

Rainfall, in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater Runoff, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS, MG	TOTAL Sanitary to CSS, MG	TOTAL TO CSS, MG
0.00	3.80	18.38	0.45	0.00	0.01	0.001	0.001	0.00
0.40	3.80	18.38	0.45	0.09	0.01	0.001	0.001	0.00
1.20	11.30	18.38	0.45	0.27	0.01	0.003	0.003	0.00
2.50	19.50	18.38	0.45	0.56	0.01	0.005	0.005	0.00

WITH-ACTION SCENARIO (PROPOSED PROJECT + WITHOUT ACTION SCENARIO):

CSO SUBCATCHMENT AREA:

Rainfall (I), in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater to CSS, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS , MG
0.00	3.80	0	0.00	0.00	0.00	0.000
0.40	3.80	0	0.00	0.00	0.00	0.000
1.20	11.30	0	0.00	0.00	0.00	0.000
2.50	19.50	0	0.00	0.00	0.00	0.000

RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

Rainfall (I), in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater Runoff, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS, MG	TOTAL Sanitary to CSS , MG	TOTAL TO CSS, MG
0.00	3.80	18.38	0.73	0.00	0.38	0.060	0.060	0.06
0.40	3.80	18.38	0.73	0.15	0.38	0.060	0.060	0.06
1.20	11.30	18.38	0.73	0.44	0.38	0.179	0.179	0.18
2.50	19.50	18.38	0.73	0.91	0.38	0.309	0.309	0.31

H-2

Bally's Bronx
NYCDEP Volume Calculation Matrix - Ring Road

LANGAN

NYC DEP Volume Calculation Matrix

These instructions are to assist in the completion of the DEP Volume Calculation Matrix. Following this tab, there are two worksheets (WS1 and WS2) and a Summary Table. The worksheets must be completed first in order to provide the information necessary to complete the Summary Table. With-Action Scenario information entered in each worksheet and the Summary Table should include the project and No-Action Scenario for that site. Additional instructions for each tab in this spreadsheet are listed below.

SUMMARY TABLE: Comparison of Existing and With-Action Volume

Using the information from worksheets (WS1 and WS2), enter the information below in the summary table as follows:

Step 1: Enter in the CSO subcatchment area info for the proposed project above the table. If the proposed project crosses over several different CSO sub-catchment areas, a summary table should be completed for each CSO sub-catchment area.

Step 2: In the **Existing** table, enter in the area of the proposed project in square feet and in acres (1 acre = 43,560 sq. ft.).

Step 3: Enter the area of the proposed project at the top of the With-Action table in square feet and in acres and complete in the same way as the **Existing** table.

Step 4: The information for columns in this table should be taken from the completed Surfaces Calculations and Volume Calculations Worksheets.

Step 5: The **Existing** and **With-Action** summary tables should be directly inserted into CEQR Infrastructure chapters.

Note: The applicant should only input information in the fields highlighted in yellow.

WORKSHEET 1 (WS1): Surfaces Calculations

WS1 calculates the weighted runoff coefficients to be used in WS2 based on the types of surfaces associated with the existing site and those that will be associated with the proposed site. If the existing and/or planned site is comprised of two discrete or phased sites, use the additional cells provided (labeled Site B) in WS1. In addition, if there are more than two sites, copy and paste the cells to provide for the entire proposed project.

Step 1: In the **Existing** table, enter the total areas for each surface type in the corresponding column (i.e., roof, pavement & walks, other, and grass/softscape). The total surface area and percentages of the total site those areas represent should auto-caculate. If they do not automatically calculate, click on the cell and press the F9 key. This should activate the calculation. Runoff coefficients for each surface area are provided in the worksheet and the total or weighted runoff coefficient will be auto-calculated (or press the F9 key).

Step 2: Repeat for **With-Action** table using information for the entire area for the With-Action scenario (project + No-Action scenario).

Step 3: The "TOTAL" columns have the formulas in place to calculate total percent, surface area, and weighted runoff coefficient. If they do not automatically compute, click on the cell and ensure the correct cells are highlighted, then press enter. This should activate the computation.

Step 4: Use the Runoff Coefficient in "TOTAL" column (or the Weighted Runoff Coefficient) for the Rational Method calculations in WS2, Volume Calculations, tables.

Step 5: The **Existing** and **With-Action** surfaces calculations tables should be directly inserted into CEQR Infrastructure chapters.

Note: The applicant should only input information in the fields highlighted in yellow.

WORKSHEET 2 (WS2): Volume Calculations

Worksheet 2 calculates the discharge volume (in millions of gallons - MG) from the existing and proposed site to the CSS as well as stormwater volumes to separate storm sewers or direct discharges to surface waterbodies. Identify the CSO subcatchment area or recieving water body, and complete a

Step 1: Enter the CSO subcatchment area for the site at the top of the **Existing** table.

Step 2: In **Existing** table, reference WS1 and enter the total area of the site's runoff being directed to combined or separate storm sewers or direct discharge. Square feet will need to be converted to acres for this worksheet (1 Acre = 43,560 sq. ft.). WS1 will provide the areas for each discharge type. The area entered will be the same for each row of storm volume and duration.

Step 3: Enter the Weighted Runoff Coefficient for that area in the corresponding column. Use the weighted runoff coefficients for entire proposed project from WS1.

Step 4: in column H, enter the total sanitary flow (*i.e.* , sewage generation) calculated for the existing site per the guidance in the CEQR Technical Manual. The worksheet will calculate the volume associated with sanitary flows during specific storm events using the durations provided in the table (in column I).

Step 5: If necessary, repeat tables for areas of the site that discharge to separate storm sewers or direct discharge/overland flow. Also, repeat all tables if proposed project crosses over several different CSO subcatchment areas or if proposed project includes a phased implementation plan or discrete sites.

Step 6: Repeat for the **With-Action** tables using information from the proposed project's site plan. See instructions above referring to completion of a separate table for each discharge point, catchment area or phase associated with the proposed project.

Step 7: The formulas are in place for summing the **"TOTAL"** tables on the right side of the worksheet. Use these totals in the Summary Table. Note: any direct discharge volumes to adjacent waterbodies will be needed for the Summary Table for the "RUNOFF TO RIVER" column.

Note: The applicant should only input information in the fields highlighted in yellow.

Reference:

MG	millions of gallons
GPD	gallons per day
in	inches
hr	hour
A	area
SF	square feet
I	intensity
C	runoff coefficient
CSS	combined sewer system
CSO	combined sewer overflow
CEQR	City Environmental Quality Review

COMPARISON OF EXISTING AND WITH-ACTION VOLUME

CSO SUBCATCHMENT AREA:[1]

EXISTING

		Area = XX,XXX SF (XX.XX ACRES)				Area = XX,XXX SF (XX.XX ACRES)				
		SITE A				SITE B[2]				SITE A & B
RAINFALL VOLUME (in)	RAINFALL DURATION (hr)[3]	RUNOFF VOLUME DIRECT DRAINAGE (MG)[4]	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.20	11.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.50	19.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

With-Action

		Area = XX,XXX SF (XX.XX ACRES)				Area = XX,XXX SF (XX.XX ACRES)				
		SITE A				SITE B[2]				SITE A & B
RAINFALL VOLUME (in)	RAINFALL DURATION (hr)[3]	RUNOFF VOLUME DIRECT DRAINAGE (MG)[4]	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	RUNOFF VOLUME TO RIVER (MG)	RUNOFF VOLUME TO CSS (MG)	SANITARY VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)	TOTAL VOLUME TO CSS (MG)
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.40	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.20	11.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.50	19.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[1] If the proposed project crosses over several different CSO subcatchment areas, the above summary table should be completed for each CSO sub-catchment area.

[2] If proposed project includes a phased implementation plan or discrete sites, assess volumes using additional cells above (e.g., Site B).

[3] Based on ***Intensity/duration/Frequency Rainfall Analysis, New York City and the Catskill Mountain Water Supply Reservoirs,*** Vieux & Associates, Inc., April 4, 2006. The 24-hour rainfall volume is based on average rainfall intensity over 24-hours (inch/per) times 24 hrs. (Duration information provided by T. Newman & P. Jadhav, HydroQual).

[4] The volume (calculated in WS2) of stormwater runoff from any portion of the proposed project site draining to a separate storm sewer or as overland flow directly to a waterbody should be entered here.

SURFACE CALCULATIONS

CSO SUBCATHMENT OR RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

	EXISTING WEIGHTED RUNOFF COEFFICIENT, C					
	SURFACE TYPE[1]	**ROOF[2]**	**PAVT & WALKS**	**OTHER[3]**	**GRASS & SOFT SCAPE**	**TOTAL**
SITE A	**AREA, %**	0%	61%	0%	39%	100%
	SURFACE AREA, SF	0	109232	0	69338	178570
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**0.60**
SITE B	**AREA, %**	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	SURFACE AREA, SF	XX,XXX	XX,XXX	XX,XXX	XX,XXX	0
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**#VALUE!**

NOTES:

1 Runoff coefficients for each surface type are as per DEP.

2 Total roof areas onsite.

3 Identify any other surfaces onsite and obtain runoff coefficients from DEP.

CSO SUBCATHMENT OR RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

	WITH-ACTION SCENARIO (PROJECT + NO-ACTION SCENARIO) WEIGHTED RUNOFF COEFFICIENT, C					
	SURFACE TYPE[1]	**ROOF[2]**	**PAVT & WALKS**	**OTHER[3]**	**GRASS & SOFT SCAPE**	**TOTAL**
SITE A	**AREA, %**	0%	100%	0%	0%	100%
	SURFACE AREA, SF	0	178505	0	65	178570
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**0.85**
SITE B	**AREA, %**	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	SURFACE AREA, SF	XX,XXX	XX,XXX	XX,XXX	XX,XXX	0
	RUNOFF COEFFICIENT	1.00	0.85	0.85	0.20	**#VALUE!**

NOTES:

1 Runoff coefficients for each surface type are as per NYCDEP.

2 Total roof areas onsite.

3 Identify any other surfaces onsite and obtain runoff coefficients from NYCDEP.

EXISTING:

CSO SUBCATCHMENT AREA:

Rainfall, in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater to CSS, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS , MG
0.00	3.80	0	0.00	0.00	0.00	0.000
0.40	3.80	0	0.00	0.00	0.00	0.000
1.20	11.30	0	0.00	0.00	0.00	0.000
2.50	19.50	0	0.00	0.00	0.00	0.000

RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

Rainfall, in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater Runoff, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS, MG	TOTAL Sanitary to CSS, MG	TOTAL TO CSS, MG
0.00	3.80	4.1	0.60	0.00	0.00	0.000	0.000	0.00
0.40	3.80	4.1	0.60	0.03	0.00	0.000	0.000	0.00
1.20	11.30	4.1	0.60	0.08	0.00	0.000	0.000	0.00
2.50	19.50	4.1	0.60	0.17	0.00	0.000	0.000	0.00

WITH-ACTION SCENARIO (PROPOSED PROJECT + WITHOUT ACTION SCENARIO):

CSO SUBCATCHMENT AREA:

Rainfall (I), in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater to CSS, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS , MG
0.00	3.80	0	0.00	0.00	0.00	0.000
0.40	3.80	0	0.00	0.00	0.00	0.000
1.20	11.30	0	0.00	0.00	0.00	0.000
2.50	19.50	0	0.00	0.00	0.00	0.000

RECEIVING WATERBODY FOR STORM SEWER OR DIRECT DISCHARGE:

Rainfall (I), in	Duration, hr	Total Area (A), acre	Weighted Runoff Coefficient (C)	Stormwater Runoff, MG	Daily Sanitary Sewage Generation per CEQR TM, MGD	Sanitary to CSS, MG	TOTAL Sanitary to CSS , MG	TOTAL TO CSS, MG
0.00	3.80	4.1	0.85	0.00	0.00	0.000	0.000	0.00
0.40	3.80	4.1	0.85	0.04	0.00	0.000	0.000	0.00
1.20	11.30	4.1	0.85	0.11	0.00	0.000	0.000	0.00
2.50	19.50	4.1	0.85	0.24	0.00	0.000	0.000	0.00

NOTES:

1 RUNOFF VOLUMES for EXISTING and WITH-ACTION condition have been calculated as follows:

Q_{VOL} = [R_{VOL} x A x RC x 7.48GAL/1,000,000 MGD per GAL] - S_{VOL} ; where

Q_{VOL} = Total Volume of Rainfall for 24-hour storm event discharged offsite (either to River or into CSS), in MG

R_{VOL} = RAINFALL VOLUME, in Inches, for the corresponding RAINFALL RETURN PERIOD listed in WS2 in the EXISTING and PLAN Tables.

A = SITE AREA, in SQ. FT., as indicated in WS1 EXISTING and WITH-ACTION Tables for the various site areas.

RC = RAINFALL RUNOFF COEFFICIENT for each of the applicable Site Areas as per EXISTING and WITH-ACTION tables (refer to WS1).

2 RAINFALL RUNOFF COEFFICIENTS used are composite rates as shown in WS1 in the EXISTING and WITH-ACTION tables (Refer to RUNOFF COEFFICIENTS WORKSHEET).