



# TECHNICAL NOTE

## Introduction

The following note provides instructions for modeling StormTech chambers in the hydrology and hydraulics modeling software PCSWMM. This document does not address setting up a raingage, modeling a drainage system or inlet and outlet devices. This document has the sole purpose of detailing the process of modeling the chamber storage volume.

StormTech chambers are modeled in PCSWMM using the storage node method with a custom storage curve. This is the most recommended method as it is simple to use and represents the volume available at every elevation with more accuracy. It requires the use of the StormTech Cumulative Storages spreadsheet to calculate the stage storage data. Data points are then copied from the spreadsheet into the tabular storage curve in PCSWMM when creating a new storage node.

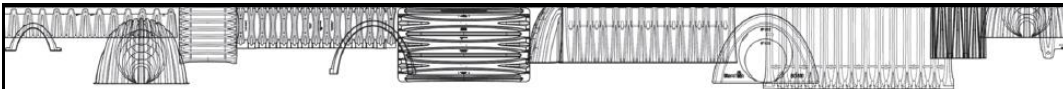
## Storage node method

The first step is computing the stage-storage curve using the StormTech Cumulative Storages spreadsheet. Once the project data (chamber model, number of chambers and end caps, stone above and below, stone void % and system area) is entered, the stage-storage curve will be computed.

After inserting the storage node and entering the invert in the PCSWMM model:

- i. In the attributes side bar, select TABULAR for the storage curve;
- ii. Select the three dots icon after clicking in the Curve Name cell;
- iii. Select add to create a new curve;
- iv. Copy the data from the two columns on the right in the StormTech Cumulative Storages spreadsheet (Elevation and area);
  - a. Note that PCSWMM only accepts a period as decimal separator.
- v. Paste the data into the PCSWMM table.

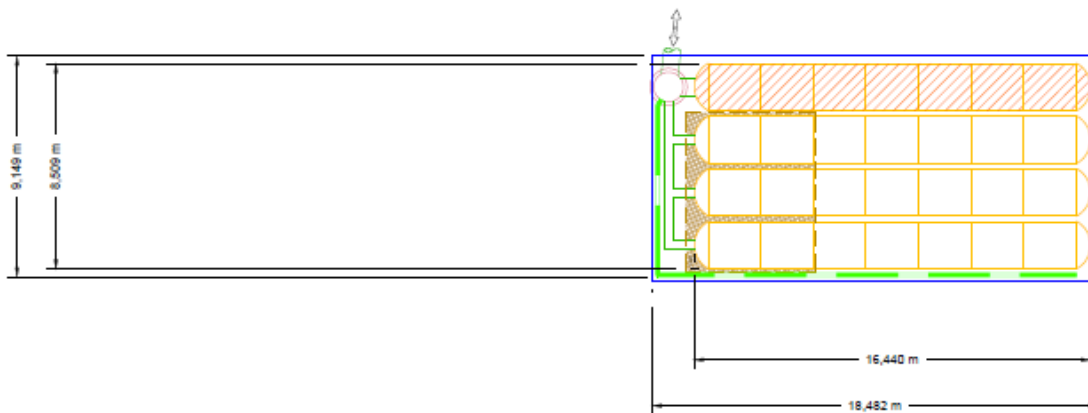
An example is provided in the following pages.



## Example

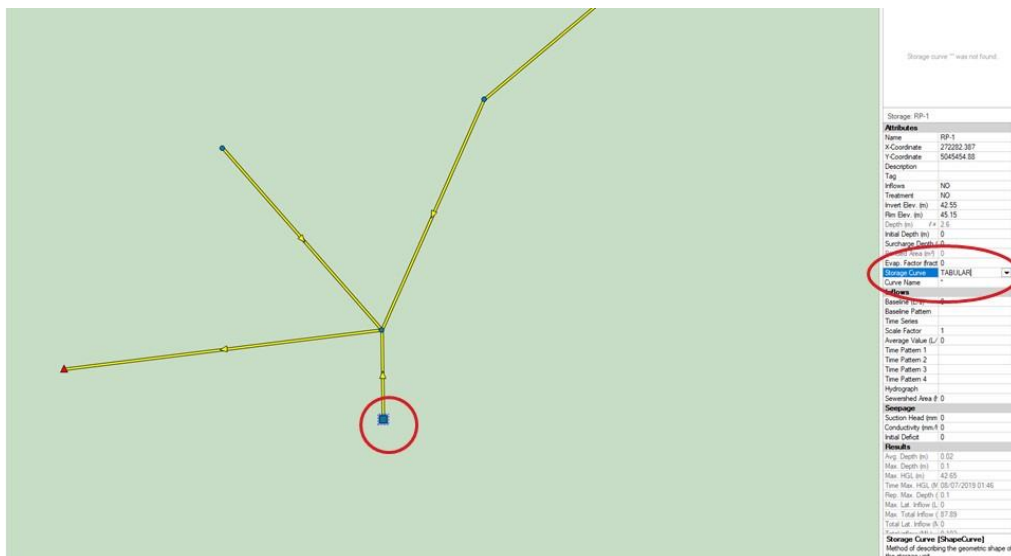
### PROPOSED LAYOUT

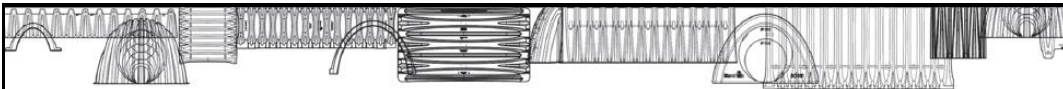
28	MC-3500 STORMTECH CHAMBERS
8	MC-3500 STORMTECH ENDCAPS
305	STONE ABOVE (mm)
229	STONE BELOW (mm)
20	STONE VOID (%)
<b>130.0</b>	<b>SYSTEM VOLUME (m³)</b>
171.9	SYSTEM AREA (m²) SYSTEM
55.6	PERIMETER (m)



### Storage node method:

Step 1 – Select the storage node and choose the TABULAR option for the storage curve:





Step 2 – Select the three dots icon after clicking into the Curve Name cell:

Depth (m)	<i>f<sub>x</sub></i>	2.6
Initial Depth (m)		0
Surcharge Depth (m)		0
Ponded Area (m <sup>2</sup> )		0
Evap. Factor (fract)		0
Storage Curve		TABULAR
Curve Name		*
<b>Inflows</b>		
Baseline (L/s)		0
Baseline Pattern		
Time Series		
Scale Factor		1

Step 3 – Click to add a new Storage Curve:

Choose a Storage Curves for Storage RP-1

Curves: Curve1

Name: Curve1

Description:

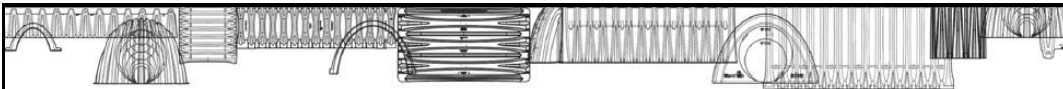
Data:

	Depth (m)	Area (m <sup>2</sup> )
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Depth (m)

Equivalent Radius (m)

Options Assign to Storage RP-1 Cancel



Step 4 – Enter the project data into the StormTech Cumulative Storages spreadsheet and copy the two SWMM columns on the right:

**Projet:**

Modèle de Chambre - MC-3500  
 Unités - Métrique  
 Nombre de Chambres - 28  
 Nombre de Bouchons - 8  
 Vide dans la Pierre (Porosité) - 20  
 Radier du Lit de Pierre Nette - 42.55 m  
 Épaisseur de Pierre sur les Chambres - 305 mm  
 Épaisseur de Pierre sous les Chambres - 229 mm  
 Aire du Système - 171.9 m<sup>2</sup>

**StormTech**  
**ADS Canada**

Inclure le Périmètre de Pierre dans les Calculs

Aire Min. - 146,117 m. carrés

**Fichier de Volume Cumulatif Stormtech MC-3500**

Hauteur du Système (mm)	Incément Chambre Seul (m <sup>3</sup> )	Incément Bouchon Seul (m <sup>3</sup> )	Incément Chambres (m <sup>3</sup> )	Incément Bouchon (m <sup>3</sup> )	Incément Pierre (m <sup>3</sup> )	Incément Ch. Bouch. et Pierre (m <sup>3</sup> )	Cumulatif Système (m <sup>3</sup> )	Elevation (m)	Hauteur (m)	Aire (m <sup>2</sup> )
1676	0.00	0.00	0.00	0.00	0.873	0.87	130.06	44.23	0.000	34.363
1651	0.00	0.00	0.00	0.00	0.873	0.87	129.18	44.20	0.025	34.363
1626	0.00	0.00	0.00	0.00	0.873	0.87	128.31	44.18	0.051	34.363
1600	0.00	0.00	0.00	0.00	0.873	0.87	127.44	44.15	0.076	34.363
1575	0.00	0.00	0.00	0.00	0.873	0.87	126.56	44.12	0.102	34.363
1549	0.00	0.00	0.00	0.00	0.873	0.87	125.69	44.10	0.127	34.363
1524	0.00	0.00	0.00	0.00	0.873	0.87	124.82	44.07	0.152	34.363
1499	0.00	0.00	0.00	0.00	0.873	0.87	123.95	44.05	0.178	34.363
1473	0.00	0.00	0.00	0.00	0.873	0.87	123.07	44.02	0.203	34.363
1448	0.00	0.00	0.00	0.00	0.873	0.87	122.20	44.00	0.229	34.363
1422	0.00	0.00	0.00	0.00	0.873	0.87	121.33	43.97	0.254	126.139
1397	0.00	0.00	0.00	0.00	0.873	0.87	120.46	43.95	0.279	125.196
1372	0.00	0.00	0.05	0.00	0.864	0.91	119.58	43.92	0.305	124.631
1346	0.01	0.00	0.15	0.01	0.841	1.00	118.67	43.90	0.330	124.059
1321	0.01	0.00	0.23	0.01	0.824	1.07	117.67	43.87	0.356	123.461
1295	0.01	0.00	0.32	0.01	0.806	1.14	116.61	43.85	0.381	122.861
1270	0.02	0.00	0.54	0.02	0.781	1.32	115.47	43.82	0.406	122.212
1245	0.03	0.00	0.82	0.02	0.766	1.54	114.15	43.79	0.432	121.545
1219	0.04	0.00	0.99	0.02	0.670	1.68	112.61	43.77	0.457	120.834
1194	0.04	0.00	1.13	0.03	0.642	1.80	110.92	43.74	0.483	120.082
1168	0.04	0.00	1.25	0.03	0.617	1.90	109.12	43.72	0.508	119.299
1143	0.05	0.00	1.35	0.04	0.595	1.99	107.23	43.69	0.533	118.477
1118	0.05	0.01	1.45	0.04	0.575	2.07	105.24	43.67	0.559	117.619
1092	0.05	0.01	1.54	0.05	0.556	2.14	103.18	43.64	0.584	116.706
1067	0.06	0.01	1.62	0.05	0.539	2.21	101.04	43.62	0.610	115.757
1041	0.06	0.01	1.69	0.05	0.524	2.27	98.83	43.59	0.635	114.777
1016	0.06	0.01	1.76	0.06	0.509	2.33	96.56	43.57	0.660	113.676
991	0.07	0.01	1.83	0.06	0.495	2.38	94.23	43.54	0.686	112.579
965	0.07	0.01	1.89	0.06	0.482	2.44	91.85	43.52	0.711	111.437
940	0.07	0.01	1.95	0.07	0.470	2.49	89.41	43.49	0.737	110.212
914	0.07	0.01	2.00	0.07	0.458	2.53	86.93	43.46	0.762	108.912
889	0.07	0.01	2.06	0.07	0.447	2.58	84.39	43.44	0.787	107.558
864	0.08	0.01	2.11	0.08	0.436	2.62	81.82	43.41	0.813	106.137
838	0.08	0.01	2.15	0.08	0.427	2.66	79.20	43.39	0.838	104.642
813	0.08	0.01	2.20	0.08	0.417	2.70	76.54	43.36	0.864	103.078
787	0.08	0.01	2.24	0.08	0.408	2.73	73.85	43.34	0.889	101.427
762	0.08	0.01	2.28	0.09	0.399	2.77	71.11	43.31	0.914	99.695
737	0.08	0.01	2.32	0.09	0.391	2.80	68.35	43.29	0.940	97.910
711	0.08	0.01	2.35	0.09	0.383	2.83	65.55	43.26	0.965	95.114

**Pour SWMM**

Hauteur (m)	Aire (m <sup>2</sup> )
0.000	34.363
0.025	34.363
0.051	34.363
0.076	34.363
0.102	34.363
0.127	34.363
0.152	34.363
0.178	34.363
0.203	34.363
0.229	34.363
0.254	126.139
0.279	125.196
0.305	124.631
0.330	124.059
0.356	123.461
0.381	122.861
0.406	122.212
0.432	121.545
0.457	120.834
0.483	120.082
0.508	119.299
0.533	118.477
0.559	117.619
0.584	116.706
0.610	115.757
0.635	114.777
0.660	113.676
0.686	112.579
0.711	111.437
0.737	110.212
0.762	108.912
0.787	107.558
0.813	106.137
0.838	104.642
0.864	103.078
0.889	101.427
0.914	99.695
0.940	97.910
0.965	95.114

Step 5 – Paste the data into the PCSWMM table and assign the curve to the storage node:

Choose a Storage Curves for Storage RP-1

Curves: Curve1

Name: ST1

Description: 28 MC-3500

Data:

	Depth (m)	Area (m <sup>2</sup> )
1	0	34.362710
2	0.0253999	34.362710
3	0.0507999	34.362710
4	0.0761999	34.362710
5	0.1015999	34.362710
6	0.1269999	34.362710
7	0.1523999	34.362710
8	0.1777999	34.362710
9	0.2031999	34.362710
10	0.2285999	34.362710
11	0.2539999	126.13863
12	0.2793999	125.19614

Storage Curves: Curve1

Assign to Storage RP-1