Technical Note

TN 6.36_C Modeling StormTech® Chambers in PCSWMM

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 rain gage, 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 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.

General

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.

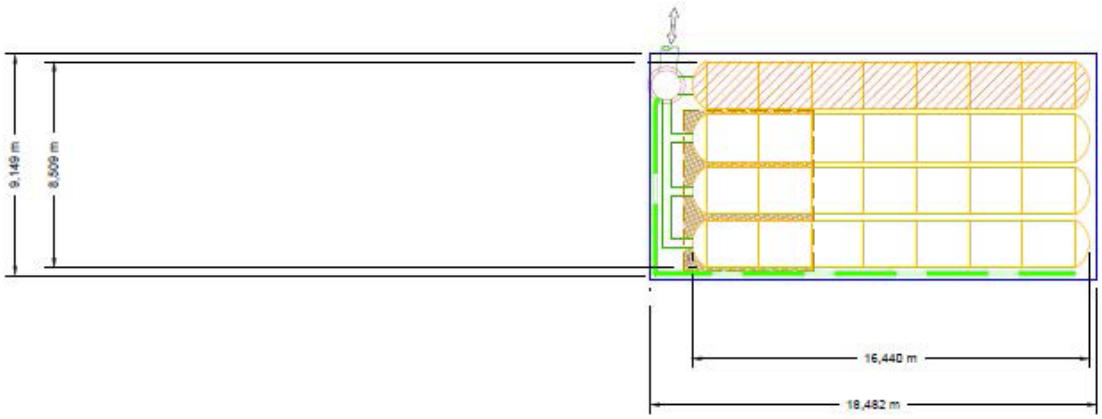
v. Paste the data into the PCSWMM table.

An example is provided in the following pages.

Example:

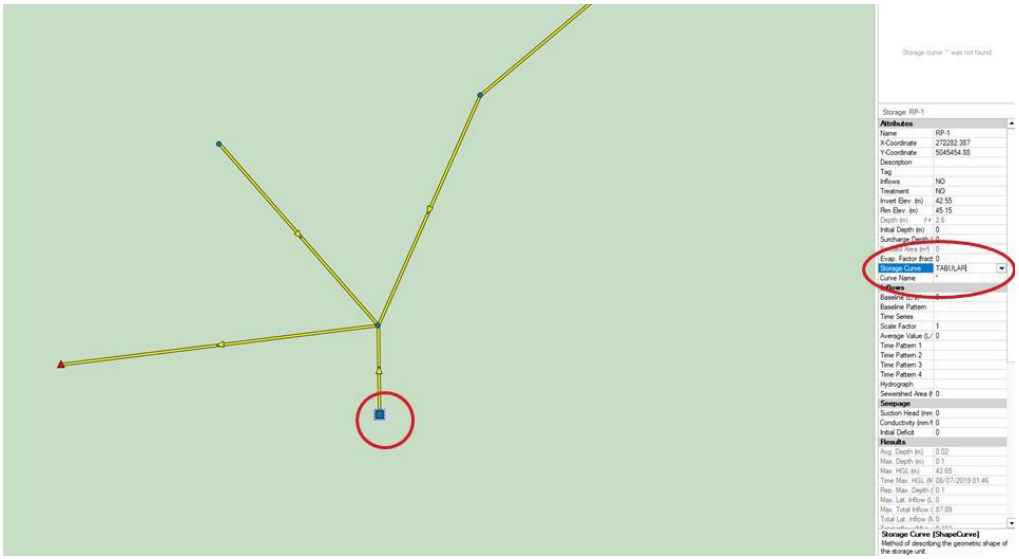
Proposed Layout

28	MC-3500 STORMTECH CHAMBERS
8	MC-3500 STORMTECH ENDCAPS
305	STONE ABOVE (mm)
229	STONE BELOW (mm)
20	STONE VOID (%)
130.0	**SYSTEM VOLUME (m^3)**
171.9	SYSTEM AREA (m^2) SYSTEM
55.6	PERIMETER (m)

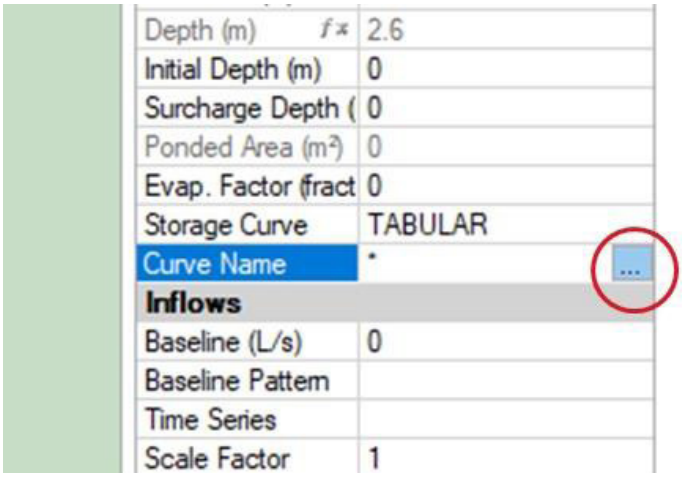


Storage Node Method:

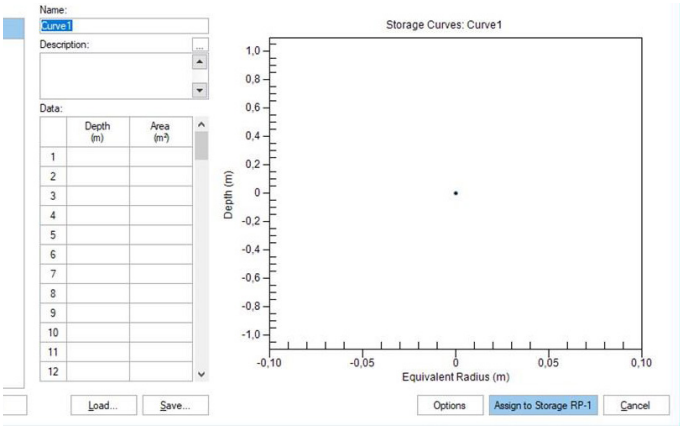
Step 1 – Select the storage node and choose the TABULAR option for the storage curve:



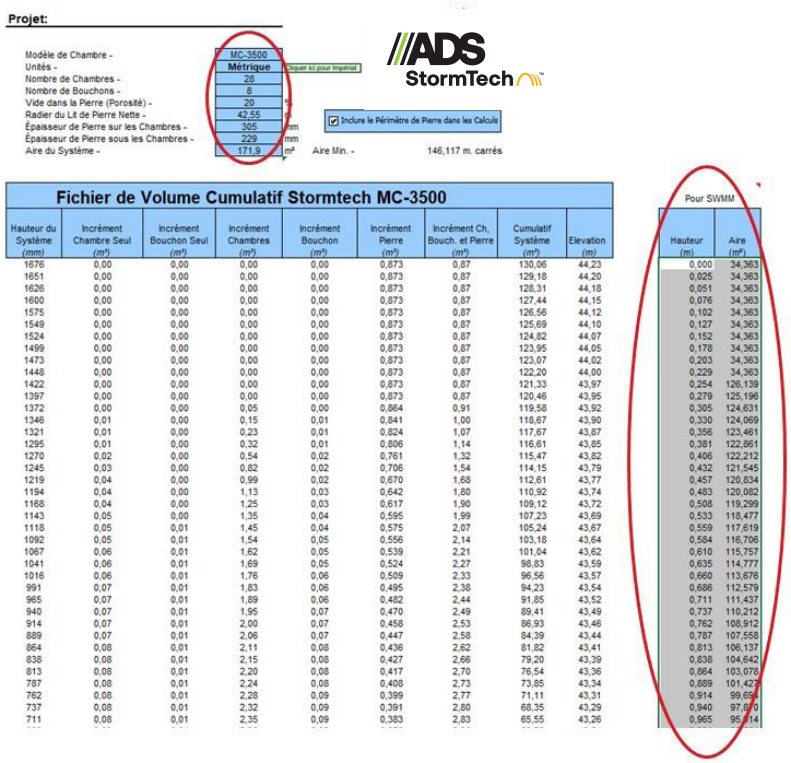
Step 2 – Select the three dots icon after clicking into the Curve Name cell:



Step 3 – Click to add a new Storage Curve:



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	Saisir ici pour Impérial
Nombre de Chambres -	28	
Nombre de Bouchons -	8	
Vide dans la Pierre (Porosité) -	20	%
Radier du Lit de Pierre Nette -	42,55	
Épaisseur de Pierre sur les Chambres -	305	mm
Épaisseur de Pierre sous les Chambres -	229	mm
Aire du Système -	171,9	m²

Inclure le Périmètre de Pierre dans les Calculs

Aire Min. - 146,117 m. carrés

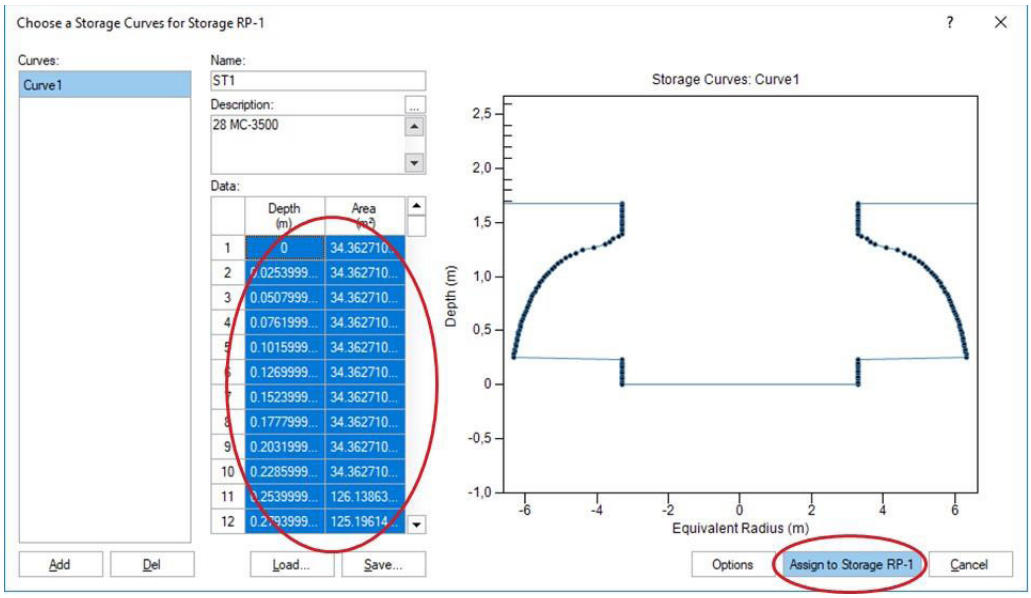
Fichier de Volume Cumulatif Stormtech MC-3500

Hauteur du Système (mm)	Incrément Chambre Seul (m³)	Incrément Bouchon Seul (m³)	Incrément Chambres (m³)	Incrément Bouchon (m³)	Incrément Pierre (m³)	Incrément Ch, Bouch. et Pierre (m³)	Cumulatif Système (m³)	Elevation (m)
1676	0,00	0,00	0,00	0,00	0,873	0,87	130,06	44,23
1651	0,00	0,00	0,00	0,00	0,873	0,87	129,18	44,20
1626	0,00	0,00	0,00	0,00	0,873	0,87	128,31	44,18
1600	0,00	0,00	0,00	0,00	0,873	0,87	127,44	44,15
1575	0,00	0,00	0,00	0,00	0,873	0,87	126,56	44,12
1549	0,00	0,00	0,00	0,00	0,873	0,87	125,69	44,10
1524	0,00	0,00	0,00	0,00	0,873	0,87	124,82	44,07
1499	0,00	0,00	0,00	0,00	0,873	0,87	123,95	44,05
1473	0,00	0,00	0,00	0,00	0,873	0,87	123,07	44,02
1448	0,00	0,00	0,00	0,00	0,873	0,87	122,20	44,00
1422	0,00	0,00	0,00	0,00	0,873	0,87	121,33	43,97
1397	0,00	0,00	0,00	0,00	0,873	0,87	120,46	43,95
1372	0,00	0,00	0,05	0,00	0,864	0,91	119,58	43,92
1346	0,01	0,00	0,15	0,01	0,841	1,00	118,67	43,90
1321	0,01	0,00	0,23	0,01	0,824	1,07	117,67	43,87
1295	0,01	0,00	0,32	0,01	0,806	1,14	116,61	43,85
1270	0,02	0,00	0,54	0,02	0,761	1,32	115,47	43,82
1245	0,03	0,00	0,82	0,02	0,706	1,54	114,15	43,79
1219	0,04	0,00	0,99	0,02	0,670	1,68	112,61	43,77
1194	0,04	0,00	1,13	0,03	0,642	1,80	110,92	43,74
1168	0,04	0,00	1,25	0,03	0,617	1,90	109,12	43,72
1143	0,05	0,00	1,35	0,04	0,595	1,99	107,23	43,69
1118	0,05	0,01	1,45	0,04	0,575	2,07	105,24	43,67
1092	0,05	0,01	1,54	0,05	0,556	2,14	103,18	43,64
1067	0,06	0,01	1,62	0,05	0,539	2,21	101,04	43,62
1041	0,06	0,01	1,69	0,05	0,524	2,27	98,83	43,59
1016	0,06	0,01	1,76	0,06	0,509	2,33	96,56	43,57
991	0,07	0,01	1,83	0,06	0,495	2,38	94,23	43,54
965	0,07	0,01	1,89	0,06	0,482	2,44	91,85	43,52
940	0,07	0,01	1,95	0,07	0,470	2,49	89,41	43,49
914	0,07	0,01	2,00	0,07	0,458	2,53	86,93	43,46
889	0,07	0,01	2,06	0,07	0,447	2,58	84,39	43,44
864	0,08	0,01	2,11	0,08	0,436	2,62	81,82	43,41
838	0,08	0,01	2,15	0,08	0,427	2,66	79,20	43,39
813	0,08	0,01	2,20	0,08	0,417	2,70	76,54	43,36
787	0,08	0,01	2,24	0,08	0,408	2,73	73,85	43,34
762	0,08	0,01	2,28	0,09	0,399	2,77	71,11	43,31
737	0,08	0,01	2,32	0,09	0,391	2,80	68,35	43,29
711	0,08	0,01	2,35	0,09	0,383	2,83	65,55	43,26

Pour SWMM

Hauteur (m)	Aire (m²)
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	124,069
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	99,694
0,940	97,870
0,965	95,914

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



ADS "Terms and Conditions of Sale" are available on the ADS website, www.adspipe.com. The ADS logo and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc. StormTech® is a registered trademark of StormTech, Inc.
© 2024 Advanced Drainage Systems, Inc. TN 6.36_C 8/24 AB