INFILTRATION BASIN CALCULATOR

This calculator sizes an infiltration basin to treat the Water Quality Volume (WQv).

Input cell =		User enters value
Default value =		User should only change value if able to provide explanation for adjustment
Calculation cell =		User should not change cell

CALCULATOR

Infiltration Basin Calculator - by Water Quality Volume

1	Water Quality Volume - WQv	1,500	cubic feet
2	Infiltration rate - f	1	inches/hour (generally require f>0.5"/hr)
3	Safety Factor	2	recommend 2
4	Max drawdown time - t	48	hours (recommend between 24 and 48 hours)
5	**Base Area Calculator**	**750**	square feet

6	Side Slope	3	feet/feet (ratio of horizontal to vertical, for example, 3 for 3H:1V)
7	Width of Basin Bottom	20	feet
8	Length of Basin Bottom	38	feet
9	Depth at WQv - d	1.5	feet (generally between 1 and 3 feet, recommend 2 feet)
10	Width of Basin at WQv Depth	29	feet
	Length of Basin at WQv Depth	46.5	feet
11	Storage Volume	1,552	cubic feet (adjust depth in Step 9 until storage volume is greater than W
12	**Check of Volume**	**Okay**	

INSTRUCTIONS

Follow the steps below to determine the required size of your basin.

Step	
1	Enter the Water Quality Volume (WQv) for the DMA. The WQv is calculated in Step 14 of the Water Quality Volume and W Calculator.
2	Enter the infiltration rate of the underlying soils. This should be determined by geotechnical testing or, for conceptual studi
3	A recommended safety factor of 2 will be applied to the infiltration rate to account for the inherent uncertainties in rate mea decrease in infiltration rate over time.
4	The recommended maximum drawdown time for the infiltration basin is 48 hours.
5	The minimum base area of the infiltration basin is calculated here based on infiltrating the entire WQv within the maximum
6	Enter the side slope of the basin. The slope of earthen side walls should be no steeper than 3:1 (i.e., at least 3 feet horizor vertical). Enter 0 for vertical sidewalls.
7	Enter the width of the basin bottom.
8	The length of the basin bottom is calculated based on the base area and width.
9	Enter the design water depth of the infiltration basin (i.e., the water depth when the basin has completely captured the WQ typically between 1 and 3 feet. This depth DOES NOT include freeboard, which is typically 1 foot above the design depth (added in actual design).
10	The width and length of the basin at the design water depth (i.e., WQv depth) are calculated here.
11	The storage volume in the basin is calculated here. If the volume is less than the WQv entered in Step 1, increase the basi
12	This step checks that the storage volume is greater than the WQv entered in Step 1.

DEFINITIONS

Water Quality Volume (WQv)	The runoff volume to be managed by the stormwater BMP such that treatment requirem calculated by the Water Quality Volume and Water Quality Flow Rate Calculator.
Infiltration Rate (f)	The rate of water entry into the soil, generally expressed as inches/hour, and determine estimated from soil maps. It equals the hydraulic conductivity of the soil times the hydrau
Drain Time (t)	The time for the storage area to drain the water quality volume.
Depth at WQv (d)	The depth of the basin from the design water level to the invert of the basin. Does not in
Freeboard	The vertical distance between the maximum design water depth and the top of the basin