

Rain Garden Sizing



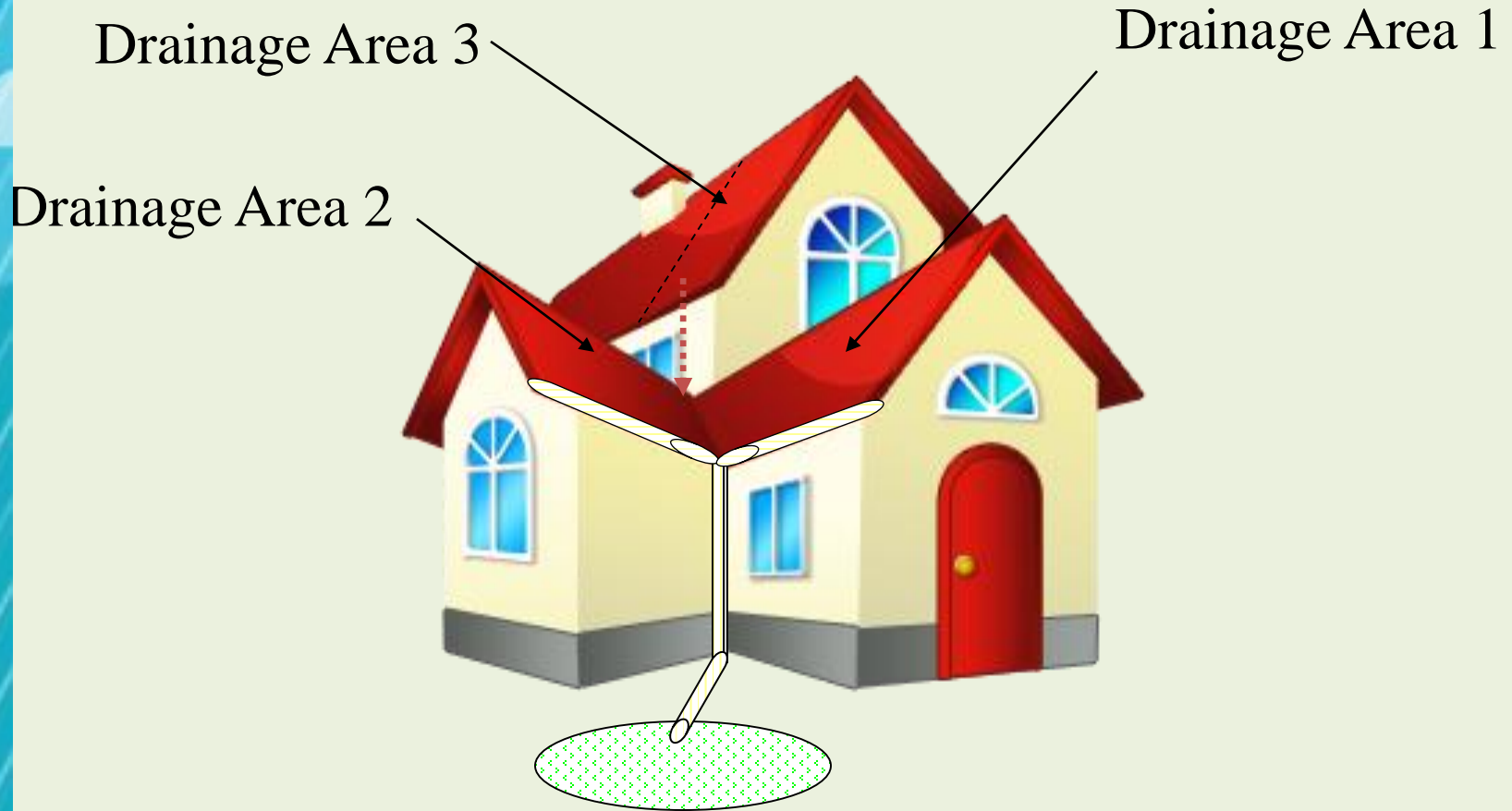
Rain Garden Sizing



Rain Garden Sizing Exercise



Sizing – Drainage Area



$$\text{Total Drainage Area} = \text{DA1} + \text{DA2} + \text{DA3}$$

Sizing

Table 2. Ponding Depth & Size Factor

Slope		≤ 4%	5 - 7%	8 - 12%
Ponding Depth		3-5 inches	6-7 inches	8 inches
Soil Type	Sand	0.19	0.15	0.08
	Silt	0.34	0.25	0.16
	Clay	0.43	0.32	0.20

Table 3. Rain Garden Sizing Information

START. Infiltration test (pass/fail)	
STEP 1. Total drainage area (ft ²)	
STEP 2. Soil test (type)	
STEP 3. Slope (%)	
STEP 4. Ponding depth (inches)	
STEP 5. Size factor	
STEP 6. Rain garden area (ft ²)	
STEP 7a. Planting bed depth (inches)	
STEP 7b. Total depth to dig (inches)	

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Table 3. Rain Garden Sizing Information

START. Infiltration test (pass/fail)	pass
STEP 1. Total drainage area (ft ²)	816
STEP 2. Soil test (type)	
STEP 3. Slope (%)	
STEP 4. Ponding depth (inches)	
STEP 5. Size factor	
STEP 6. Rain garden area (ft ²)	
STEP 7a. Planting bed depth (inches)	
STEP 7b. Total depth to dig (inches)	

$$\begin{aligned}
 \text{Total drainage area (ft}^2\text{)} &= \text{length (ft) X width (ft)} \\
 &= 24 \text{ ft X } 34 \text{ ft} \\
 &= 816 \text{ ft}^2
 \end{aligned}$$

Soil Ribbon Test



Soil Type	Ribbon Length (inches)
sand	soil does not form a ribbon at all
silt	a weak ribbon <1.5" is formed before breaking
clay	a ribbon >1.5" is formed

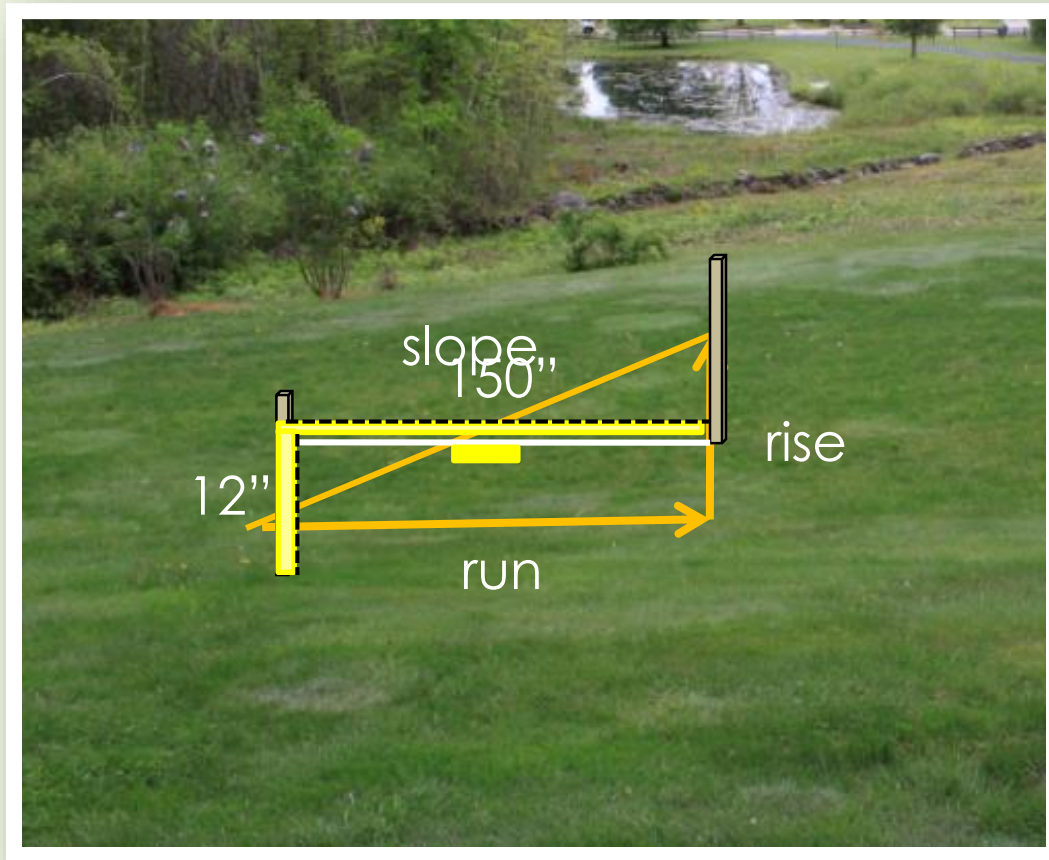
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STEP 7a. Planting bed depth (inches)	
STEP 7b. Total depth to dig (inches)	

Slope



rise / run x 100 = % slope

12" / 150" x 100 = 8%

Note: Slope should be <12%

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STEP 7b. Total depth to dig (inches)	

Next Steps

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STEP 6. Rain garden area (ft ²)	
STEP 7a. Planting bed depth (inches)	
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Ponding Step

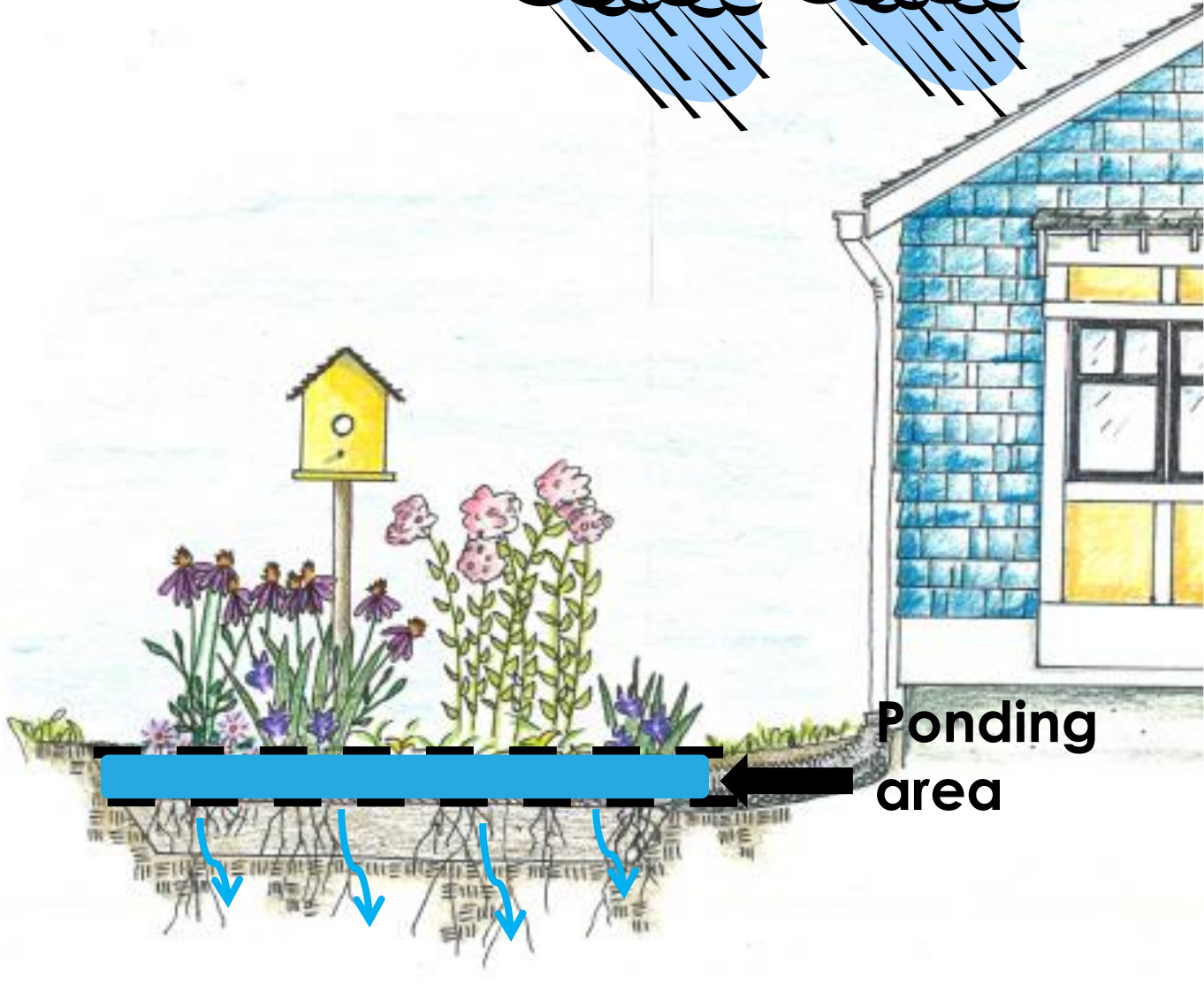


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STEP 3. Slope (%)	8
STEP 4. Ponding depth (inches)	8
STEP 5. Size factor	0.16
STEP 6. Rain garden area (ft ²)	130
STEP 7a. Planting bed depth (inches)	
STEP 7b. Total depth to dig (inches)	

$$\begin{aligned}
 \text{Rain garden area} &= \text{total drainage area} \times \text{size factor} \\
 &= 816 \text{ ft}^2 \times 0.16 \\
 &= 130 \text{ ft}^2
 \end{aligned}$$

Last Steps

Table 2. Ponding Depth & Size Factor

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STEP 6. Rain garden area (ft ²)	130
STEP 7a. Planting bed depth (inches)	12
STEP 7b. Total depth to dig (inches)	

*send a sample of the native soil to UNHCE for testing

Planting bed:
- "native" soil
- compost
- other amendments

Total Depth to Dig

Total Depth to dig = ponding depth + mulch layer depth + planting bed depth



$$\text{Total Depth to dig} = 8'' + 2'' + 12'' = 22''$$

Ready to Go!

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STEP 7a. Planting bed depth (inches)	12
STEP 7b. Total depth to dig (inches)	22

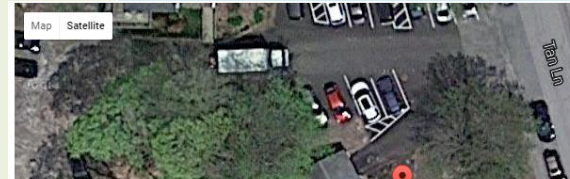
Sizing, etc.

- Rain Garden Alliance
 - Online tool
 - Same method = same result
 - Can adjust rain depth captured
- UCONN
 - Online tool
 - Sandy loamy soil
 - 6" deep
 - Divide drainage area by 6
 - Mobile Rain Garden App too!
- VT Rain garden manual
 - For designs



What size garden do I need?

Before using our garden calculator below, read these guidelines to get you started. The size of your garden is determined by a number of variables. Some of these are established by the conditions of your yard (such as soil type and yard slope), while others are determined by you (such as amount of roof top to be addressed or rainfall to prepare for). Enter information for the four items across the top (surface area, downspouts, soil type, and slope) then slide the rain

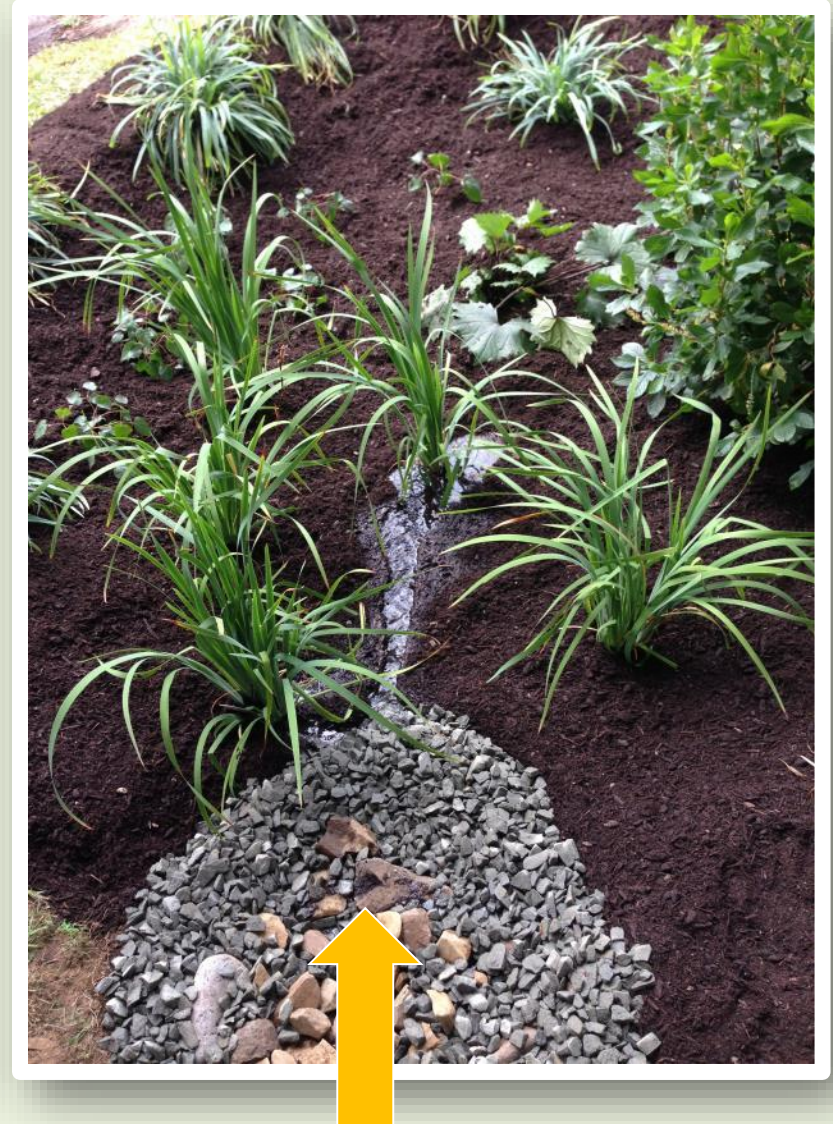


den Size:
sq. ft.

Shape



Inlet & Outlet Planning



Berms!



Berm
height
okay

Berms!



Too high!

2 Fixes:

- Limit
- Sink

Table 4. Suggested Rain Garden length for a 12" berm height.

Slope	12%	11%	10%	9%	8%	7%	6%	5%	4%	3%	2%	1%	0%
Rain Garden no longer than	8.5'	9'	10'	11'	12.5'	14.5'	16.5'	20'	25'	33.5'	50'	100'	NA

Berms!



Sink it

Berm
height
okay

Lots more info in the
Rain Garden DIY Sheet!

Questions / Comments?

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603-419-0322