



CITY OF OWATONNA RAIN GARDEN DESIGN



Rain Garden Design Process

1. Location Drawing: Sketch property, including buildings, streets, driveways, sidewalks, gutters/downspouts and the proposed location of the rain garden. Rain gardens should be at least 10 ft away from foundation of house. Locations on steep slopes and above buried utility lines are not recommended. Recommended locations are depressed areas, places where water collects, and areas near downspouts.

A large, empty grid of small squares, intended for sketching the property and the proposed location of the rain garden.

2. Location Conditions: Does the proposed location meet all of the following criteria? (Check box if yes.)

<input type="checkbox"/> Garden is at <u>least</u> 10' from house <input type="checkbox"/> Garden is not over buried utilities (electric, phone, cable, storm sewer, sanitary sewer, water) <input type="checkbox"/> Garden is not over septic system <input type="checkbox"/> Slope < 8% (8' rise over 100' distance)

3. Drainage Area: What impervious areas do you plan to capture water from? (Check all that apply) (see Chapter 3 of Blue Thumb Guide for details)

Drainage Area	Area in square feet
<input type="checkbox"/> House roof - describe which portion(s):	
<input type="checkbox"/> Garage roof - describe which portion(s):	
<input type="checkbox"/> Driveway (only the portion that slopes towards the rain garden)	
<input type="checkbox"/> Patio	
<input type="checkbox"/> Other – please describe:	
Total Drainage Area (A) =	

4. Depth and Area of Rain Garden: The depth and area of a rain garden is based on the drainage area you intend to capture water from and the infiltration rate of water into the soil. The depth of a rain garden should match the number of inches of water per day that will infiltrate, based on your percolation test (see Chapter 3 of Blue Thumb Guide to conduct a percolation test for site-specific infiltration rates)

The percolation test results on my proposed rain garden site show that water infiltrates into the ground at a rate of _____ inches per hour **(B)**. (Clay .15 – Loam .5 – Sand 1)

To find the depth of your rain garden, take the infiltration rate **(B)** and multiply it by 24 hours:

(B) X 24 = _____ inches of water per day that will infiltrate **(C)**

(C) is the **maximum depth** your rain garden should be in order to insure there is no standing water 48 hours after a rain event.

To find the area of your rain garden, take the drainage area **(A)** and divide it by the depth of your rain garden **(C)**:

(A) _____ ÷ (C) _____ = _____ area of proposed rain garden **(D)**

Write the dimensions of your proposed rain garden here:

Raingarden Area (D): _____ square feet

Depth (C): _____ inches

5. Excavation: Check how you plan to excavate the soil and what you will do with the excess soil.

Excavation Method	Soil Use
<input type="checkbox"/> Shovel	<input type="checkbox"/> Use for berm around rain garden
<input type="checkbox"/> Mini-backhoe	<input type="checkbox"/> Use or store elsewhere on site
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Haul off site

6. Plant Estimates: Estimate the number of plants you intend to purchase for your rain garden using the spacing guidelines below. Native plant species or their cultivars that originate within 200 miles of Owatonna are recommended. Feel free to attach additional pages for your plant estimates.

# of plants needed for 100 sq. ft.	Spacing Suggestions and Prices for Different Plant Sizes
12" spacing – 100 plants 16" spacing – 56 plants 18" spacing – 45 plants 24" spacing – 25 plants 48" spacing – 6.25 plants	<ul style="list-style-type: none"> • Plugs: 12"-15" spacing; \$1 • 2"-4" pots: 15"-18" spacing; \$4 • 6"+ pots: 18" – 24"; \$8 • Shrubs: spacing depends on species; \$23 • Sod: no spaces; \$1 per square yard

Plant Species	Pot Size	# of Plants	Price Each	Subtotal
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
Total # of plants:			Total Price:	\$

7. Materials Estimates: Estimate the materials cost using the tables below. **NOTE: Unit Costs are estimates.** The **actual costs** will differ based on the supplier and delivery options you choose.

Material	Unit Costs per sq. ft.	Area (sq. ft.)	Total Cost (Unit Cost X Area)
Leaf Compost, 3 inches *	\$0.15		\$
Shredded Hardwood Mulch, 3 inches **	\$0.35		\$
Edging: Plastic - Landscape block	\$0.50 - \$2.00		
Other:			
Other:			
Other:			
Subtotal:			\$

* In order to insure that residential rain gardens function properly in the predominantly clay soils of Owatonna, we are requiring rain gardens funded through the Cost Share to incorporate at least 3 inches of leaf compost into the bottom of the rain garden depression by tilling it in. This provides higher infiltration rates and better soils for plants to thrive in. A 100 sq ft rain garden will require approximately 1 cu. yd. of compost.

** Shredded hardwood mulch is strongly recommended in rain gardens rather than woodchip mulch. During rain events, shredded hardwood mulch binds together to form a mat which stays in place. Woodchip mulch tends to float on top of the water where it sticks on plants and congregates wherever the wind blows it, leaving bare spots throughout the rain garden. A 100 sq ft rain garden will require approx. 1 cu. yd. of shredded hardwood mulch.

Method for Water to Enter the Rain Garden (Check those that apply)	Materials and Amount (Give size and quantity)	Cost
<input type="checkbox"/> Extended downspout		\$
<input type="checkbox"/> Buried or overland pipe or drain tile		\$
<input type="checkbox"/> Across lawn	N/A	\$
<input type="checkbox"/> Vegetated swale		\$
<input type="checkbox"/> Dry creek (rock, no plastic liner)		\$
<input type="checkbox"/> Stone or concrete spillway		\$
<input type="checkbox"/> Rain Guardian / Trench Drain		\$
Subtotal:		\$

*It is important to take into consideration the maintenance required when choosing pretreatment methods

Materials Total: \$ _____

8. Equipment and Delivery Estimates: Estimate the equipment rental costs below. A tiller is required but a sod cutter is optional.

Equipment	Per hour or delivery	Units	Cost
<input type="checkbox"/> Tiller – rear tine, 8hp	\$16		\$
<input type="checkbox"/> Sod cutter – mechanical	\$9.50		
<input type="checkbox"/> Delivery (compost, mulch, plants)	\$65		\$
Equipment and Delivery Subtotal:			\$

9. Cost Totals: Please add all materials totals to determine the cost of your raingarden per square foot.

Cost Totals	Subtotal
Plants	\$
Materials	\$
Equipment and Delivery	
Total Cost	\$
Cost Per Sq. Ft.* (Total Cost ÷ Area of rain garden)	\$

* Cost per square foot will be one criteria used to select grant recipients.

*Please direct your questions and concerns **Brad Rademacher, Water Quality Specialist at 507-774-7300.** You may also reach the **Engineering Department at (507)-444-4350.***

10. Rain Garden Planting Design: Sketch the shape of the rain garden and show which plants you will be planting and where. Tall plants usually go in the middle or are used as a backdrop and medium and short plants get layered in the front. Group plants in single masses or drifts for the greatest visual impact and color. See examples below.

