

RAIN GARDEN

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Rain gardens work like a native forest by capturing and infiltrating stormwater from rooftops, driveways, and other hard surfaces.

Rain gardens — reduce flooding by absorbing water from impervious surfaces; filter oil, grease and toxic materials before they can pollute streams, lakes and bays; help to recharge the aquifer by increasing the quantity of water that seeps into the ground; provide beneficial wildlife habitat.

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Rain Gardens Making a Beautiful Difference!

Why build a rain garden?

- Water that soaks in replenishes groundwater and helps prevent flooding.
- A Rain Garden protects water quality by trapping sediment, fertilizers and other pollutants.
- It needs no additional fertilizer and little pesticides.
- Native plants provide food and shelter for butterflies, song birds and other animals.

A typical rain garden:

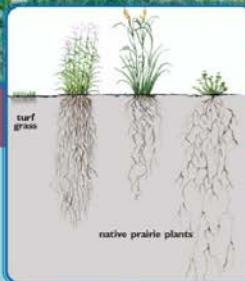
- Is a sunken garden 4 - 8 inches deep
- Has a flat bottom
- Is $\frac{1}{3}$ the size of the area draining to it – usually 75 - 500 square feet in size
- Can be formal or informal in design
- Drains within two days

Did you know . . .

Water running off of residential roofs, roads and driveways can increase water in a stream by 500%, leading to increased flooding and erosion. A 300-square-foot rain garden infiltrates 12,000 gallons of water every year, or enough to fill 2½ tanker trucks.



Extension



Why use native plants?

With roots growing down twice as deep as the plants are tall, native plants are very efficient at absorbing water.

Also, each year one-third of the roots die, providing deep tunnels for water to filter into the ground.



RAINGARDEN INSPECTION CHECKLIST

Building Permit #		
Property Address		

Existing Impervious Area	sq. ft.	
New Impervious Area	sq. ft.	
Required Raingarden Area	0.0	sq. ft.

THREE (3) REQUIRED RAINGARDEN INSPECTIONS:

- Full Digout Inspection *Date Inspection Completed* _____
- ✓ Size and depth meets minimum. Depth should allow for 18" fill of amended soil. Side slope cannot exceed 3:1.
 - ✓ Raingarden location
 - ✓ Inlet and outlet locations.
 - ✓ Piping must be separately inspected and approved by Plumbing Inspector as part of "Site work plumbing" inspection.
- Soil Inspection *Date Inspection Completed* _____
- ✓ Depth and type of soil amendment per specifications.
 - ✓ Contractor must provide documentation (i.e. receipt, bill of lading) to the identity of soil amendment to inspector. Leave receipt at raingarden site or email to cwl_rowpermits@westlinnoregon.gov
- Final Inspection *Date Inspection Completed* _____
- ✓ Plant types and spacing per specifications
 - ✓ Side slopes do not exceed 3:1. Native soil is covered with rock or mulch.
 - ✓ Contractor must provide documentation to identity and quantities of plants to inspector. Leave required information at raingarden site or email to cwl_rowpermits@westlinnoregon.gov
 - ✓ Overall appearance and function inspected at this time (180 bend or debris shield, 6-12" standing water)
 - ✓ Property owner must sign a Private Stormwater Maintenance Agreement. Form can be found online at <http://westlinnoregon.gov/forms> Leave original signed form at project site or drop off at City Hall front counter.

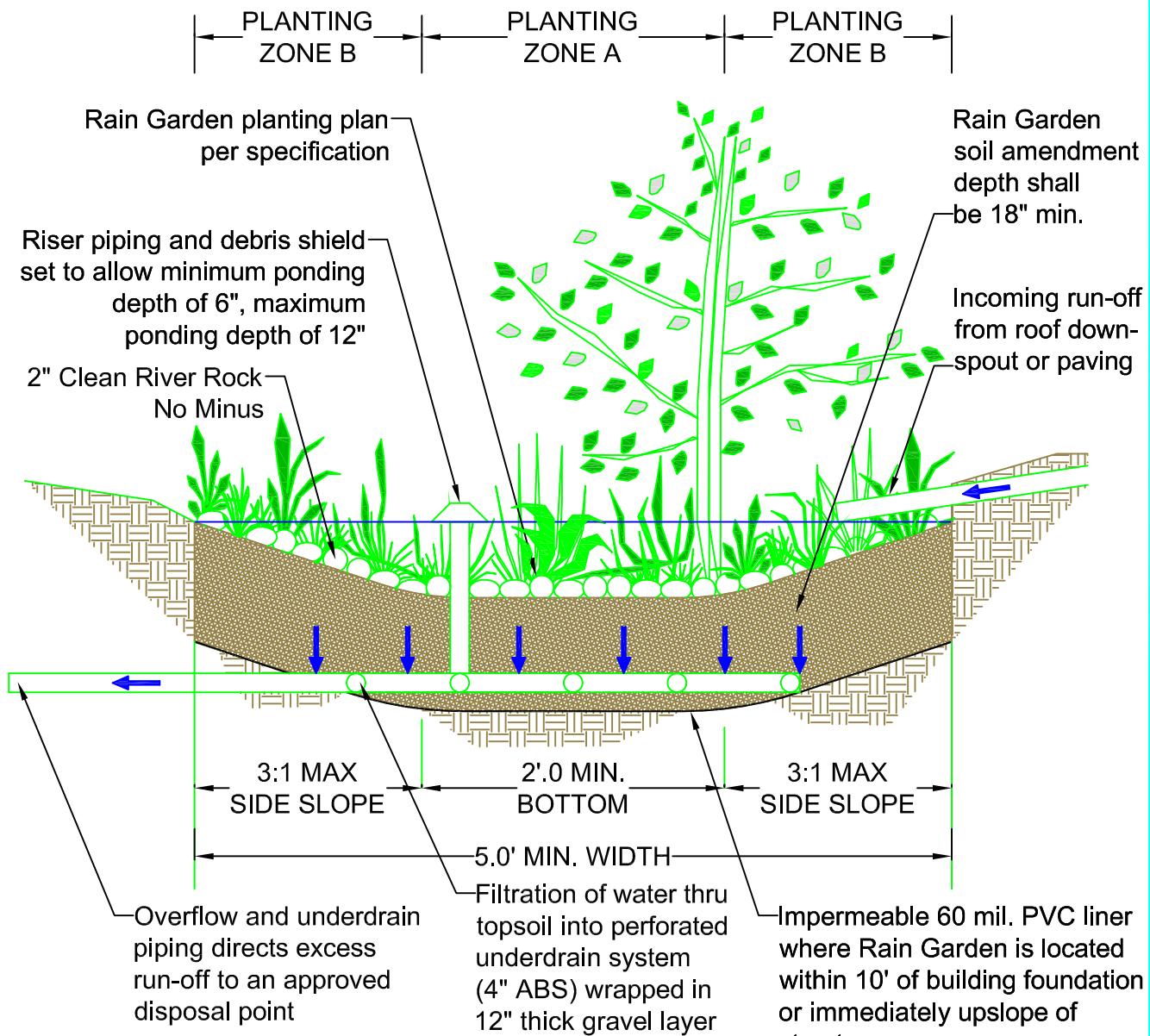
RECORD DATA:

Private Stormwater Maintenance Agreement: County Recording #

Plants Present

Zone A Plants	
Columbia Sedge	<input type="checkbox"/>
Dense Sedge	<input type="checkbox"/>
Sanddune Sedge	<input type="checkbox"/>
New Zealand Sedge	<input type="checkbox"/>
Foothill Sedge	<input type="checkbox"/>
Tufted Hair Grass	<input type="checkbox"/>
Creeping Spike Rush	<input type="checkbox"/>
Baltic Rush	<input type="checkbox"/>
Common Rush	<input type="checkbox"/>
Spreading Rush	<input type="checkbox"/>
Other	<input type="checkbox"/>

Zone B Plants	
Kinnikinnick	<input type="checkbox"/>
Deer Fern	<input type="checkbox"/>
Dwarf Redtwig Dogwood	<input type="checkbox"/>
Big Blue Lily Turf	<input type="checkbox"/>
Salal	<input type="checkbox"/>
Low Oregon Grape	<input type="checkbox"/>
Creeping Oregon Grape	<input type="checkbox"/>
Other	<input type="checkbox"/>



RAIN GARDEN PLANTS		
ZONE	BOTANICAL NAME	COMMON NAME
A	CAREX APERTA	COLUMBIA SEDGE
A	CAREX DENSA	DENSE SEDGE
A	CAREX PANSA	SANDDUNE SEDGE
A	CAREX TESTACAE	NEW ZEALAND ORANGE SEDGE
A	CAREX TUMILICOLA	FOOTHILL SEDGE
A	DESCHAMPSIA CAESPITOSA	TUFTED HAIR GRASS
A	ELEOCHARIS PALUSTRIS	CREEPING SPIKE RUSH
A	JUNCUS BALTIUS	BALTIC RUSH
A	JUNCUS EFFUSUS "CARMEN'S JAPANESE"	COMMON RUSH
A	JUNCUS EFFUSUS "GOLD STRIKE"	COMMON RUSH
A	JUNCUS EFFUSUS "CARMAN'S GRAY"	COMMON RUSH
A	JUNCUS PATENS	SPREADING RUSH
B	ARCTOSTAPHYLOS UVA-URSI	KINNICKINNICK
B	BLECHNUM SPICANT	DEER FERN
B	CORNUS SERICEA VAR. KELSEY II	DWARF REDTWIG DOGWOOD
B	LIRIOPE MUSCARI "BIG BLUE"	BIG BLUE LILY TURF
B	GAUTHIERIA SHALLON	SALAL
B	MAHONIA NERVOSA	LOW OREGON GRAPE
B	MAHONIA REPENS	CREEPING OREGON GRAPE

RAIN GARDEN SURFACE AREA =
TOTAL IMPERVIOUS AREA x 0.06

NOTE:

PLANT 1 GALLON POTS 18" O.C. IN EACH ZONE. A MINIMUM OF 3 SPECIES SHALL BE USED IN EACH ZONE.

INFILTRATION RAIN GARDEN TYPE 1



**City of
West
Linn**

DATE:
2010
DRAWING NO.
WL-617A
FILE NO.

THE NATIVE SOIL IN THE TOP 18 INCHES OF ALL STORM WATER PLANTERS SHALL BE AMENDED WITH A MIX OF ONE PART IMPORTED ORGANIC COMPOST AND ONE PART GRAVELLY SAND, SUCH THAT THERE ARE EQUAL PARTS COMPOST, SAND AND NATIVE SOIL. THIS WILL REQUIRE THE STORMWATER PLANTER AREA TO BE OVER EXCAVATED BY APPROXIMATELY 12 INCHES PRIOR TO ADDING SAND AND COMPOST. THE SPECIFICATIONS INCLUDED HEREIN SHALL BE USED FOR THIS PURPOSE AND INCLUDED ON THE PERMIT PLANS. THE MIX SHALL BE THOROUGHLY TILLED TOGETHER ON-SITE, AND SHALL BE CAPABLE OF INFILTRATING WATER WITHOUT PROLONGED PONDING ON THE SURFACE. IF SUCH PONDING OCCURS, ORGANIC COMPOST AND SAND MUST BE ADDED AND RE-TILLED UNTIL INFILTRATION PERFORMANCE IS ENHANCED. A 2-INCH LAYER OF SHREDDED BARK MULCH (NOT BARK DUST OR BARK CHIPS) SHALL BE USED OVER THE AMENDED SOIL AND BETWEEN THE PLANTINGS TO COMPLETELY COVER THE SOIL AND PREVENT EROSION OR WEED INTRUSION.

ORGANIC COMPOST

ORGANIC COMPOST SHALL HAVE THE FOLLOWING PROPERTIES:

100% SHALL PASS A $\frac{1}{2}$ INCH SCREEN.

pH BETWEEN 5.5 AND 7.0.

CARBON NITROGEN RATIO BETWEEN 20:1 AND 35:1 (35:1 CN RATIO RECOMMENDED FOR NATIVE PLANTS.)

ORGANIC MATTER CONTENT BETWEEN 40 AND 50 PERCENT.

ORGANIC COMPOST MAY CONSIST OF THE FOLLOWING:

MUSHROOM COMPOST - THE USED BEDDING MATERIAL FROM COMMERCIAL MUSHROOM PRODUCTION.

COMPOSTED YARD DEBRIS - COMMERCIALLY MANUFACTURED MATERIAL, MADE FROM DEAD PLANT MATERIAL SUCH AS GRASS CLIPPINGS, WEEDS, GREEN AND DEAD DRY LEAVES, GARDEN AND VEGETABLE MATERIAL, AND GROUND BRANCHES OF TREES AND SHRUBS. FURNISH A PRODUCT THAT IS COMPOSTED UNDER CONTROLLED AEROBIC DECOMPOSITION, WITH THE INTERNAL TEMPERATURE REACHING 57°C (135°F) FOR 15 DAYS, WITHOUT EXCEEDING 68°C (155°F). ENSURE THAT IT CONTAINS A MAXIMUM OF 10% BACTERIA AND 10% FUNGUS.

PEAT MOSS - HORTICULTURAL GRADE, NATURAL PEAT MOSS IN AIR-DRY CONDITION, FREE FROM WOODY SUBSTANCES, IN BALES OR BAGS LABELED FOR CONTENT AND VOLUME. ONLY PEAT MOSS USED IN COMBINATION WITH ONE OF THE ABOVE COMPOSTS IS ACCEPTABLE.

GRAVELLY SAND

GRAVELLY SAND SHALL BE FREE OF ORGANIC MATERIAL, CONTAMINANTS, AND HAZARDOUS MATERIALS, AND SHALL CONFORM TO THE FOLLOWING GRADATION:

U.S. SIEVE SIZE	PERCENT PASSING
2-INCH	100
$\frac{3}{4}$ -INCH	70-100
$\frac{1}{4}$ -INCH	50-80
NO. 40	15-40
NO. 200	0-3

MIXING

MIX COMPOST, SAND AND NATIVE SOIL TO A HOMOGENEOUS CONSISTENCY. DO NOT MIX COMPOST, SAND, AND NATIVE SOIL IN THE RAIN OR WET CONDITIONS.

STORAGE

STORE STOCK PILES OF ORGANIC SOIL MIX IN A MANNER THAT PREVENTS IT FROM BECOMING WET FROM RAIN, STORM WATER RUNOFF, OR OTHER SOURCES OF WATER, OR CONTAMINATED BY FINE SOIL OR OTHER UNDESIRABLE MATERIALS. ALL STOCKPILES OF MIXED SOIL MATERIAL SHALL BE PROTECTED AND COVERED.

PLACEMENT

PLACE AMENDED SOIL MIX IN RAIN GARDENS AND STORMWATER PLANTERS IN LIFTS NOT EXCEEDING 6 INCHES IN LOOSE THICKNESS. AFTER ALL LIFTS HAVE BEEN PLACED, GRADE SOIL TO FINISH GRADES AS SPECIFIED ON THE PLANS. DO NOT OVER COMPACT SOIL MIX WITH MECHANICAL EQUIPMENT AFTER PLACEMENT.

MULCH

SHREDDED BARK MULCH (NOT BARK DUST OR BARK CHIPS) SHALL BE USED IN A 2-INCH LAYER MINIMUM OVER THE AMENDED SOIL MIX AND BETWEEN THE PLANTINGS TO COMPLETELY COVER THE SOIL AND PREVENT EROSION OR WEED INTRUSION.

INFILTRATION TESTING

WET THE SURFACE OF THE RAIN GARDEN OR STORMWATER PLANTER WITH A SPRINKLER OR HOSE UNTIL SATURATED. SMALL RAIN GARDENS AND PLANTERS (<100 SQUARE IN SURFACE) AREA CAN BE TESTED FULL-SCALE, WHILE LARGE RAIN GARDENS AND PLANTERS CAN UTILIZE ISOLATED FALLING HEAD TEST (MINIMUM 2 PER 100 SQUARE FEET OF AREA). FILL THE TESTING AREA TO A DEPTH OF 4-INCHES AND TRACK THE TIME IT TAKES TO COMPLETELY DRAW DOWN. REPEAT TEST 3 TIMES. IF THE WATER IN ANY OF THE TEST FAILS TO DRAW DOWN IN LESS THAN AN HOUR, ADD COMPOST AND GRAVELY SAND TO THE MIX AND RE-TILL. REPEAT THIS PROCEDURE UNTIL FAVORABLE TEST RESULTS ARE ACHIEVED.

FILTER FABRIC

LINQ 125EX; TNS E040; TNS R035; TNS R040; AMOCO 4535; MARAFI 140NL

SOIL AMENDMENT AND MULCH SPECIFICATION



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What is a Rain Garden?

What is a rain garden?

A [rain garden](#) is a shallow depression that is planted with deep-rooted native plants and grasses. The garden should be positioned near a runoff source like a downspout, driveway or sump pump to capture rainwater runoff and stop the water from reaching the sewer system.

Why Plant a Rain Garden?

You know how precious freshwater is to life. You probably also know that freshwater is becoming increasingly scarce due to pollution, misuse, overuse and climate change.

So when someone asks "**why plant a rain garden?**" you can tell them that you are doing it to help keep clean, fresh rainwater out of the sewer system and you are doing your part to reduce pollution and preserve our water systems.

This sounds like a grand effort that only scientists, ecologists and politicians can do. But you can plant a rain garden and then spread the word and tell others that you plant native plants and rain gardens to improve the world you live in.

Explain to people who question you how rain and melting snow runs off roofs, driveways and even lawns and flows directly to the street, down the storm drain and right to our rivers and lakes. Tell them that this runoff is untreated and carries with it pollutants like oil, salt, fertilizer, pesticides, pet waste, transportation chemicals, sediment and all sorts of other things that shouldn't be in our freshwater.

Tell them that a rain garden can capture that runoff and hold not only thousands of gallons of rainwater that can be used in your own garden and yard but all of these pollutants that contaminate our waterways. Then explain after the capture of the water comes the soaking or infiltrating of the water deep into the ground so that it can be used by the nearby plants and trees. Tell them how the native plants planted in the rain garden also help to soak up the water and how the roots are deep and will break up hard soil and infiltrate water and nutrients deep into the soil.

Then finally, tell them how the plants, mulch and soil break up the pollutants and make them inert, not harmful. Explain how the moderate amounts of water and limited amounts of pollutants people shed from their personal property can easily be handled by the rain garden. And that these same pollutants will cause havoc if combined with pollution from your neighbors on your block and the next block and the neighborhood and the community. Imagine all the pollutants from a whole city moving, untreated into your rivers, lakes and streams that you might be drinking!!!!

Oh, ya, you can also explain that a rain garden is beautiful, creates habitat for birds and beneficial insects, reduces pest and harmful insects, makes a great statement in your yard and can be used seasonally to teach kids and adults about the nature of nature.

This is why we all should plant a rain garden ... or two ... or three ...

Rain Gardens Conserve Water



Rain gardens keep rainwater where it falls by capturing runoff from impervious surfaces – roofs and driveways – and allowing it to seep slowly into the ground. This recharges groundwater supplies. They protect nearby streams and lakes by reducing the amount of runoff and pollutants. Most feature native plants that provide bird and butterfly habitat and require less maintenance than lawns – and no chemicals.



Flint Creek Watershed Partnership

Dedicated to improving water quality, reducing flooding and protecting natural resources in the Flint Creek watershed of the Fox River.

Rain Garden Initiative demonstration rain gardens in Barrington and Lake Zurich were partially funded by a grant from Barrington Area Community Foundation. Contact FCWP when you're ready to build a garden. www.flintcreekwatershed.org



