Capitalize on your natural assets

This fact sheet is one of a series on nature-friendly development practices created by Metro through its Nature in Neighborhoods initiative.

Nature-friendly development practices minimize the impact of development on natural resources, and can help developers save money and add value to their properties.

Metro's Nature in Neighborhoods initiative is a long-term effort to conserve and restore nature throughout the urban area and ensure that every citizen in the region has access to nature.

Riparian buffers – the plants and trees next to a stream

What are riparian buffers?

Riparian buffers are the plants found along the banks of rivers and streams that provide wildlife habitat and protect watershed health. They help cool and clean the water by absorbing runoff before it enters our streams and rivers. When located in urban areas, riparian buffers are often damaged or built on. The natural landscape is replaced with hard surfaces such as driveways, roofs and parking lots. When stormwater runoff sweeps across these surfaces, it picks up pollutants and debris, washing them directly into our waterways. Riparian buffers act like a sponge, absorbing contaminants and sediment carried by stormwater runoff. A riparian buffer dense with trees and shrubs is most effective. Contaminants – like chemicals, fertilizers, oil and eroded soil – directly entering our waterways negatively impact water quality, human health and fish and wildlife habitat.

Planting a riparian buffer with trees and shrubs is an easy way to help prevent the negative effects of polluted stormwater runoff. A healthy riparian buffer benefits you, your employees, your customers and the environment.

Riparian vegetation on Clear Creek in the Clackamas watershed helps protect the stream system from the effect of stormwater runoff.

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Economic Benefits

- Increases property values by enhancing the aesthetic appeal of your landscape
- Shades buildings and homes with tree cover, reducing cooling costs
- Attracts shoppers and visitors to business districts
- Saves money spent on pesticides and fertilizers
- Saves time spent on property maintenance
- Minimizes costs associated with repairing problems caused by stream bank erosion

Environmental Benefits

- Lowers stream temperatures by creating shade cover
- Stabilizes stream banks by reducing erosion
- Slows runoff and filters out pollutants and sediment before they enter local waterways
- Offsets carbon dioxide emissions
- Reduces the likelihood of flooding and flood damage
- Reduces noise pollution by creating a noise barrier

Step one: Choosing the right plant for the right location

Native plants are the best choice for effective riparian buffers. They are adapted to local weather patterns and soil types and are pest resistant, thereby reducing watering and maintenance costs. Before purchasing native plants, assess the habitat conditions of your site. Each native plant has particular requirements. For example, Oregon white oak is ideally suited to sunny, dry conditions. Once you have performed your assessment, consult your local nursery or internet resources to help you identify the native plants that grow best at your site. Typically, a balanced mix of trees, shrubs and ground cover plants work in any area.

When assessing the habitat conditions here are a few questions to ask:

- What is the sun exposure of the site? *(Is it sunny, partially sunny or shaded?)*
- What are the soil conditions? *(Is it clay-like, rocky, sandy or rich black humus?)*
- How wet is your soil? *(Does the area flood annually or is it seasonally dry?)*
- How much room is there for your plant to grow? *(Both height and width.)*
- What kind of native vegetation already exists at the site? *(Take a cue from plants already growing well in the area.)*
- How steep is the location? *(Is it flat with poor drainage or steeply sloped?)*
- How close is the planting area to the waterway? *(Next to the stream or upslope?)*
- Has the soil on-site been disturbed or altered from its original state? *(If so, compensate by choosing disturbance-tolerant plants. Depending on your moisture levels, tall Oregon grape, Oregon ash, Oregon white oak, thimbleberry and nootka rose are good choices.)*

Step two: How to prepare the site – protect your investment

Good site preparation is essential to help your new native plants survive and grow. Invasive species are weeds that grow aggressively, out-compete native plants and eventually take over. Examples of common invasive species include: Himalayan blackberry, English ivy, Scotch broom, false brome, butterfly bush, Japanese knotweed and reed canarygrass. Remove invasives before planting your native plants to protect your investment. They can be controlled manually with persistence, motivation and continued monitoring. Herbicides should not be used near waterways. Landscape fabric, hand pulling, digging, applying

An invasive weed, Scotch broom taking over a stretch along the Clackamas River.

mulch, mowing and planting native vegetation are some of the ways you can control invasives. It is important to research which methods work best for the invasives on your property. For example, the methods you use to control Japanese knotweed would not be the same for English Ivy.

Step Three: How to plant correctly

In the Pacific Northwest, the best time to plant is fall or winter during the rainy season. However, in zone 1, it is best to plant stream banks in the spring and irrigate for the first year. Fall plantings in zone 1 may be inundated for too long to become established or may be carried away by high water if not well-rooted. To determine appropriate elevation, reference where plants are already growing directly upstream and downstream of your site. Follow these steps when planting.

- Prepare the site by scraping away invasive weeds in a 2-foot wide circle around the planting area.
- Dig a hole two to three times bigger than the root ball. (For plants in 1-gallon containers, the hole should be 10-12 inches wide.)
- Remove the plant from the container and gently loosen the root ball.

The table below describes how to identify the three riparian zones and gives examples of native vegetation appropriate for planting by zone.

Zone	Description	Examples of native vegetation
1	Zone 1 includes the stream channel and stream banks and floods at least part of every winter. The soil is often rocky and clay-like. Plants in this zone should be drought tolerant.	• red-osier dogwood • Sitka willow • Pacific willow or other upland willows • salmonberry and deer fern for forested areas with no soil disturbance • fruited bulrush and slough sedge for small streams
2	Zone 2 includes the upper banks and flood-plain. The soil is less moist than Zone 1. Plants in this zone should be medium flood tolerant.	• Pacific ninebark • salmonberry • snowberry • swamp rose • spiraea • Western red cedar • Oregon ash • red alder - typically along streams • black cottonwood - typically along rivers
3	Zone 3 includes the upper terrace and uplands located next to the streambank. Plants that thrive in this area are those that are drought tolerant but do not tolerate flooding.	• Douglas fir • Western hemlock • Oregon oak • sword fern • thimbleberry • common snowberry

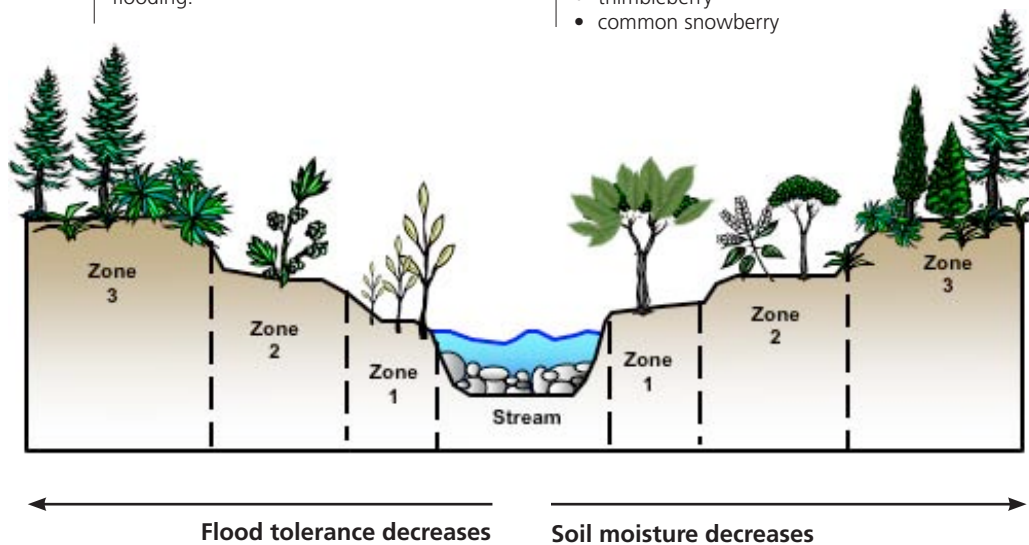**Flood tolerance decreases**   **Soil moisture decreases**

Figure 1: The three riparian zones. In general, as you move from zone 1 to zone 3 the soil moisture and flood tolerance decrease.

- Place the plant in the hole in a straight position. Make sure the hole is deep enough. Shallow holes often expose the roots to air and reduce survival. Digging a hole too deep can smother plants.
- When burying the root ball, pack the soil around the plant firmly, taking care not to compact the soil too much or crush the roots. Fill in the hole by slowly adding soil around the roots and lightly tamping down the soil to remove air pockets.
- After the new plant is buried in the ground, mulch with grass clippings, shredded bark, compost or manure 2-3 inches deep. Take care that the mulch stays 2 inches away from the plant stem. Mulch will help minimize weeding and watering and help your plant survive.
- In general, the ideal spacing between smaller trees and shrubs is 5-10 feet. For larger trees, the ideal spacing between plants is 10-5 feet.

Step four: Maintenance

Once your native plant is in the ground, be sure to keep it well watered, especially in the first few weeks after planting. Water slowly, allowing the water to soak into the soil. For small seedlings, approximately 1-2 gallons of water is needed per plant each time you water. Let the soil almost dry out between soakings, watering once every two weeks during the summer. If you notice that the leaves are wilting or that the soil is caked and cracking, then you need to water. After one or two growing seasons, many native plants require little or no watering. Make sure you continually remove invasive weeds until the natives fully establish.

REI volunteer plants a big-leaf maple in the riparian area of Clear Creek in the Clackamas River watershed.

Example project: **Bosky Dell Natives**
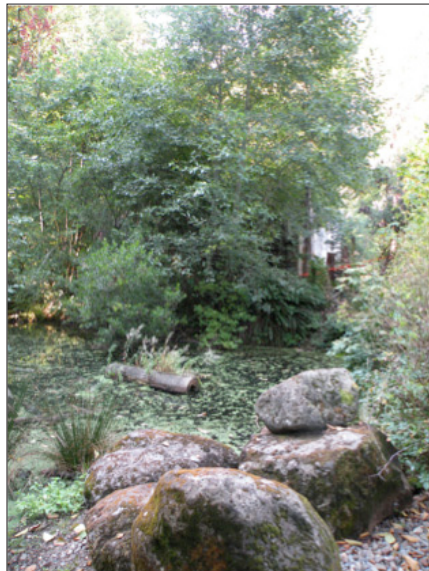
Bosky Dell Natives is a local nursery with more than 300 different types of native plants available for sale. Located in West Linn, the nursery neighbors Fields Creek, a tributary of the lower Tualatin River. Fields Creek is home to steelhead, cutthroat trout and red-legged frogs. The portion of Fields Creek that runs through Bosky Dell Natives was once choked with morning glory, Himalayan blackberry, English laurel, English ivy and Japanese knotweed.

Bosky Dell, along with numerous local volunteers, has worked hard to manually remove these invasive species and restore a healthy riparian buffer by planting more than 5,000 native shrubs and trees. Vine maple, red flowering currant, sedge, red-osier dogwood, trillium, sword fern, and common camas now blanket the edges of Fields Creek, providing wildlife habitat, shade, and erosion control.

According to the owner, the most difficult part of this project is managing the invasive weeds and removing them when they resurface.

To learn about volunteer opportunities at Bosky Dell Natives, visit **www.boskydellnatives.com**.

For more information

Learn more about nature-friendly development practices or Metro's Nature in Neighborhoods initiative. Visit **www.oregonmetro.gov/nature**, send e-mail to **nature@oregonmetro.gov** or call **503-797-1588**.

Local nurseries that sell native plants

Find locations in your area that carry native plants. Visit **www.plantnative.org** or **www.cleanwaterservices.org**.