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Challenging Sites: Supplemental Information

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This supplemental fact sheet is provided to give additional information that is referred to in at least two of the Challenging Sites family of fact sheets.

Runoff vs. Rainfall

The city government has made reducing runoff one of their top priorities, with a strong emphasis on infiltration (passing water through the soil); however, the West Hills of Portland, like so many other places in the world, has steep slopes, high groundwater tables, and clay soils, which make infiltration difficult if not, in some cases, dangerous.

To reduce landslides and flooding, we tackled runoff in a number of creative ways that take a two-pronged approach to runoff (i.e. high volume flows often concentrated in downspouts and pipes from a particular area and directed to a particular area) and rainfall (i.e. low volume rain that falls on the facility itself before becoming concentrated):

1. Limit the volume of **runoff** actively directed into the ground, instead using evaporation and uptake by plants.
2. In landscape areas, restore the historic hydrologic function by encouraging evaporation and/or infiltration of **rainfall**.

Landscape Alternatives

Two of our main tools, depaving and restoring disturbed soils will require a decision to be made about the ensuing landscape, which may include a combination of landscape aesthetics. The practices are pictured in the order of effectiveness at reducing runoff.



Figure 1 A meadowscape in Portland using native flowers

Lawn

If you love your lawn, after depaving and/or restoring the soil, go ahead and keep it. We don't mind.

Meadowscaping

Meadow habitat is rare in cities, but could be more abundant. West Multnomah Soil & Water Conservation has an initiative to create more urban meadows (<http://www.wmswcd.org/content.cfm/What-We-Do/Urban-Programs#Meadowscaping>) and Forest Heights HOA has a few meadowscapes growing right now in Tract R by Mill Pond.

Shrub Garden

Shrub gardens are common at FHHA. Would you be willing to convert some more of your lawn to one?

What about trees?

Trees can be blended into any of the above landscapes and are considered a stand-alone practice for the purposes of this effort.

Establishment Period Irrigation

Watering and weeding may be needed frequently within the first 1 to 3 years during Oregon's very dry summers, but this should taper off dramatically if you choose plants that require little to no watering after establishment.



Figure 2 *Since weeds need water in the summer but the right natives won't, substantial irrigation beyond the establishment period will only serve to increase maintenance.*

To establish perennial plants, you'll need to irrigate more in the first year and less to much less in subsequent years. In addition, plants benefit from varying irrigation seasonally. At the beginning of summer, after the rains stop, water a little. Increase irrigation volume as the summer/dry season continues. Taper off irrigation as the rains start to come back. Depending on your area and rainfall patterns, irrigation may be needed from May to October.

The volume of water and frequency of watering varies with the type of plant:

- Trees: 5-10 gallons, once/week
- Shrubs: 3-5 gallons once/week
- Groundcover: 1-2 gallons, once or twice/week
- Perennial herbs: ½ gallon, twice/week.

After the 2 – 3 year establishment period, irrigation would theoretically not be needed; however, rain gardens surrounded by impervious pavement or hot roofs will probably require occasional irrigation beyond the establishment period.

Consider reducing your water demand by hand watering, using water efficient irrigation systems (i.e. drip), and harvesting rainwater. To make hand watering faster and easier, find a gallon or two gallon container and poke a few small holes in the bottom and place it next to the stem of the plant. This allows you to deliver ideal water volumes to the plants quickly without causing erosion. Having a bunch of them already placed around the plants allows you to quickly move from one plant to another without having to wait for the water to soak in.

Reducing Water Demand

Water demand can be reduced by hand watering or using water efficient irrigation systems. To make hand watering faster and easier, find a gallon or two gallon container and poke a few small holes in the bottom and place it next to the stem of the plant. Fill the container as many times as needed to achieve the recommended volumes above. This allows you to deliver ideal water volumes to the plants quickly without causing erosion. Having a bunch of them already placed around the plants allows you to quickly move from one plant to another without having to wait for the water to soak in.

Mycorrhizae treatments are very effective at reducing irrigation demand and supporting the long-term health of your plants through our tough summer droughts.