

# Green Infrastructure Project

# Stormwater Trees

## Trees are Umbrellas

Trees are one of the most effective and least expensive means of reducing and filtering stormwater runoff. Trees intercept and store rain and snow on leaves, branches and trunk bark. Trees also remove pollutants from the air and add seasonal interest to your yard and neighborhood.

Planting trees is a beautiful way to help keep our rivers and streams clean and healthy.



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## Trees are Umbrellas

Have you ever stood under a large tree during a sudden downpour and noticed how dry it is? The leaves, branches, and trunk bark intercept and hold large amounts of water. The water then is evaporated directly into the air or it drips and flows slowly down to the ground.

## Forests are Sponges and Trees are Pumps

At the surface, fallen leaves and mulch form a spongy layer that helps retain soil moisture and allows rain to percolate into the soil rather than rushing off carrying with it oil, metal particles and other pollutants. Below ground, roots hold the soil in place and absorb water that will eventually be released into the atmosphere by transpiration, which is when a tree in full leaf may lift a ton of water in a day from the soil and carry it to the leaves and back into the air.

## Cold Climate Considerations:

See sources on the back page of this guide for recommended tree species for Fairbanks and your site.

### Materials:

- Wood chips for mulch
- Water
- Stakes and ties, only if needed to stabilize tree: 6-foot 2"x2" wooden stakes with one pointy end; tree tie webbing that is at least ¾" wide.

### Tools:

- Shovel and/or hoe
- Spade (flat) to remove turf grass

## Steps:

### 1. Select the right place for your tree

Consider soil conditions, exposure to sun and wind, drainage, hardiness zone, space constraints, and activities that take place in the area. Most roots grow in the top 4 to 18 inches of soil and far beyond the canopy. Allow enough space for your tree to reach its mature size both above and below ground without interfering with vehicles and pedestrians or structures.

Plant trees where there is adequate space as they will retain and filter more rain and snow. Select tree species with features that maximize interception, such as large leaf surfaces and rough bark. Evergreen trees intercept both rain and snow year round. Plant trees in small groves where possible and improve the care of existing trees so they will have long lives.

### 2. Avoid sites where your tree will cause problems or be damaged.

- Don't plant where snow is stored or slides from roofs.
- Don't block traffic signs and sightlines at intersections and driveways.
- Don't plant too close to buildings or chimneys; trees may drop debris on roofs or become fire hazards.
- Don't create shade where you want sunlight or block desirable views.
- Don't plant trees too close together; they won't achieve their mature size and shape,

### 3. Avoid Utility Lines

Plant trees and shrubs where, at maturity, they will not interfere with, or block access to, overhead or underground utility lines, poles or transformer boxes. Leave an 8-foot-wide corridor directly under lines free of trees or shrubs to allow access for utility equipment and workers.

**Alaska Dig Line**  
**811 or 479-3118**

Call for utility location before you dig.

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#### 4. Select a Good Quality Tree

A healthy high quality tree will be an asset that increases in value as it ages while a poor quality tree will require more maintenance and may become a liability.

##### A High Quality Tree:

- Is free of wounds and incorrect pruning cuts – no stubs or flush cuts.
- Branches are evenly spaced and form wide angles with the trunk (45-90 degrees).
- Trunk stands upright without the support of stakes.
- Roots fill container but are not circling the root ball. Roots are healthy and white with no sign of decay, such as brown or black roots.
- Has no weeds in root ball or container.



##### A Poor Quality Tree:

- Roots are pot-bound or circling trunk or inside of container.
- Angles between branches and trunk are narrow; as tree grows it may crack and split apart.
- Leaves are undersized and yellow.
- Weeds are growing in container; they may be invasive and/or difficult to remove.
- Trunk has wounds from mechanical damage or incorrect pruning.
- There are signs of insects or disease damage to leaves or branches.

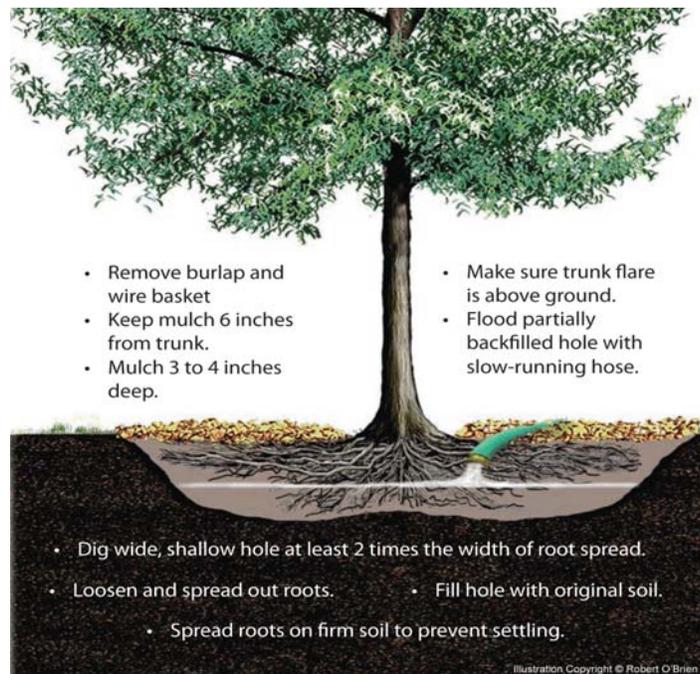


#### 5. Plant It Right

- Before digging the hole, remove all twine, tags and wrap from around the trunk and cut away and remove the container, wire basket and/or burlap.
  - Locate the trunk flare, which is where the first major root extends out from the trunk. Remove soil from top of root ball until main root system is exposed.
  - You may buy bare root trees or soak the root ball in a large tub of water to remove soil.
  - Separate and spread the roots so that they will grow out into the surrounding soil. Prune roots that are diseased, damaged or circling the container or root ball; make clean cuts back to white, healthy tissue.
  - Remove vegetation and loosen soil in a saucer-shaped hole at least two times the spread of the roots and no deeper than height from base of trunk flare to bottom of roots. Remove large rocks. The hole should be wide and shallow with sloping sides.
  - Set the tree in the hole on solid ground so that it does not settle. The trunk flare must be just above ground level. Roots of trees planted too deeply may not get enough water and oxygen as the tree grows.
  - If soil is very poor or compacted you may mix some topsoil with existing soil.
  - Use water to settle the soil as you backfill in 1/3 increments. Do not compact soil or damage roots by walking on wet soil.
  - Stake only if needed to stabilize the tree. Use smooth, wide, flexible material for ties that support the tree but allow it to sway; trees grow stronger root systems and trunks if allowed some wiggle room. Never place wire around the trunk to stabilize it, not even in a rubber hose.
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- Apply mulch 3 to 4 inches deep in a circle extending 2 to 3 feet from the trunk or to the drip line. Keep mulch 6 inches away from the trunk. Water well after mulching.
- Prune only dead and damaged branches at planting. Do not fertilize newly planted trees.

Mulch improves the soil, reduces compaction, holds moisture, moderates soil temperatures and discourages injury from lawn mowers and weed whips.



## 6. Maintenance

- Water trees during the first five years after planting if soil 4 inches down is dry. Water slowly until soil is moist to a depth of 12 inches.
- If tree is staked, check ties regularly to be sure the trunk is not damaged. Remove ties after one growing season or as soon as roots are well anchored.
- Most landscape trees do well with little or no fertilizer.
- If symptoms indicate a need, apply slow release fertilizer in spring, early summer or late fall and follow product directions.
- Keep lawn mowers and weed whips away from tree trunks to avoid damage.
- Improve the health of your trees by maintaining a layer of mulch 3 to 4 inches deep to the drip line and 6 inches away from the trunk. Fallen leaves may be left on the ground to serve as mulch.
- Contact a qualified professional tree service to prune large trees.

For more information about this and other Green Infrastructure Projects please visit:

**[www.fairbanksgig.com](http://www.fairbanksgig.com)**

## Sources:

- For the right tree or shrub species for your location, see the Landscape Plants of Alaska website, - <http://www.alaskaplants.org/>
- Plant a Tree: an Alaskan guide to tree selection, planting and care, and publications on tree pruning and maintenance. <http://forestry.alaska.gov/community/publications.htm>
- Trees and Shrubs for Interior Alaska Landscapes by Patricia S. Holloway, UAF Georgeson Botanical Garden.
- USDA Forest Service Pacific SW Research Station publications on Urban Ecosystems and Processes. Is all your Rain Going Down the Drain and How Trees Can Retain Stormwater Runoff. - <http://www.fs.fed.us/psw/programs/uesd/uep/research/water.shtml>