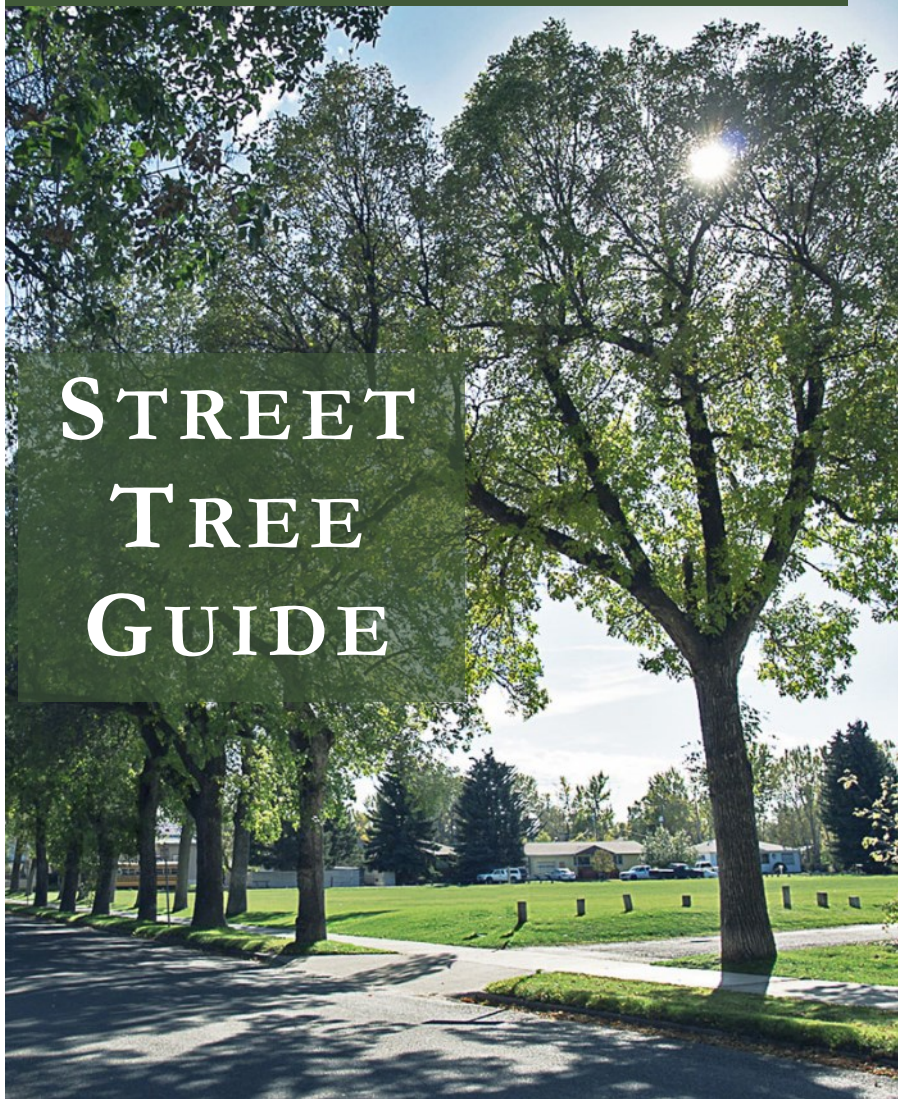


City of Bozeman

STREET TREE GUIDE



Selecting and Planting Bozeman's
Urban Forest



The urban forest provides a multitude of economic, environmental and social benefits, and is therefore an essential part of our city infrastructure. Trees improve air quality by capturing both gaseous and particulate pollutants, cool cities and save energy by shading buildings and pavement, sequester greenhouse gasses, and reduce erosion and stormwater runoff by absorbing an average of 1000 gallons of rainwater per tree each year. Recent studies have shown that the urban forest positively affects both the mental and physical health of a city's inhabitants. Urban trees also increase property values, reduce crime, provide wildlife habitat, and strengthen a community's sense-of-place. A recent analysis indicates that each year Bozeman receives an average of \$2.3 million of benefits from its ~20,000 publicly-owned trees.







Private lots in Bozeman are bordered by a public right-of-way strip, typically 11.5 feet from the curb, which includes the sidewalk and boulevard planting strip. Selecting the proper tree is particularly important for the boulevard planting strip. Improper species/location choices, planting depth and inadequate watering are the most common causes of new tree failure.

This brochure, compiled by the Bozeman Tree Advisory Board and the City Forestry Division, is designed to help you select trees suitable for planting on Bozeman streets. You can also use it to tour Bozeman's beautiful collection of trees. We have attempted to include as many trees as possible that fit within parameters defined by cultural, ecological and storm water regulatory constraints. Small trees that are usable under utility lines are indicated (see Legend on pg. 4), however shade trees should be used wherever possible, as greater benefits are derived from larger, longer-lived trees.

Ash trees are no longer recommended due to introduction into the U.S. of an exotic wood-boring beetle, the emerald ash borer. With ash trees comprising over 75% of Bozeman's mature street trees, this issue has brought to the forefront the importance of species diversity in the urban landscape. For this reason, trees with significant cultural limitations have been included (see page 4), which if sited properly, can provide additional diversity and beauty to Bozeman's urban forest.



LEGEND

U	<p>Trees suitable for planting under UTILITY lines. —These trees have a mature height of less than 30 feet and are often slow growing.</p>
L	<p>Trees with significant cultural LIMITATIONS that restrict where they can be planted. —These trees can make suitable street trees if carefully located. See text for specific limitations.</p>
	<p>Flowering —These trees have showy blossoms which can attract bees, butterflies & hummingbirds.</p>
	<p>Fall Color —These trees have showy fall color.</p>

GLOSSARY

Boulevard Planting Strip: The area between the sidewalk and street that is usually planted with grass or other perennials, and trees. This area is within the public right-of-way that is typically 11.5 feet from the curb. Also referred to as a road verge, sidewalk buffer, tree belt, tree lawn, utility strip or parkway, among other names.

Cultivar: Acronym for Cultivated Variety. Refers to a plant selected for special characteristics that can be maintained through clonal propagation. Cultivars are indicated by single quotation marks, e.g. 'Redmond' Linden.

Fireblight: A bacterial disease that is common in Bozeman on apples, crabapples, pears, mountainash, hawthorn and other members of the rose (Rosaceae) family.

Soil pH: Describes the acidity or alkalinity of the soil. A pH value of 7 is neutral, while values less than 7 are increasingly acidic and values greater than 7 are increasingly alkaline.

Sunscald: Damage to bark tissues (usually on the southwest side) caused by rapid freezing at sunset on cold winter days. Prevent by locating susceptible trees where they are protected from afternoon sun in winter or by wrapping the trunk.



TREE SPECIES GUIDE

U ALDER (*Alnus* species)

Alders are often shrubby when young, but single-trunk forms can make suitable street trees. Alders are tolerant of wet soils and have interesting catkins.

Mature height: 20-30'

USDA Hardiness Zone: 3-4 depending on species

Growth rate: Moderate

See at: Tuckerman Park (east side along Bozeman Creek); 1716 S. Willson

ASH (*Fraxinus* species)

Ash trees are no longer permitted for planting due to their susceptibility to the emerald ash borer, a wood-boring beetle introduced from China. While this insect has not been found in Montana, it is expected to spread throughout most of the U.S. in the coming decades.

(for the latest information see <http://www.emeraldashborer.info/>)

BIRCH, PAPER (*Betula papyrifera*)

Paper Birch is known for its white bark and bright yellow fall color. Use of this species is limited due to its marginal tolerance of heat and drought. May be useful in wider boulevard planting strips with good soil and/or irrigation.

Mature height: 30-40'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 1101 Mountainash Ave.



BIRCH, RIVER (*Betula nigra*)

River birch has attractive, reddish-brown, exfoliating bark. Use of this tree is limited by its intolerance of alkaline (high pH) soils. Plant only in areas with a soil pH below 7.

Mature height: 30-40'

USDA Hardiness Zone: 4

Growth rate: Moderate

See at: 2710 W. Villard (along Greenway)

L

BUCKEYE, OHIO (*Aesculus glabra*)

Yellowish flowers in spring, "buckeye" fruit and orange fall color. This tree is best reserved for larger boulevard planting strips as the nuts can become a litter problem.

Mature height: 25-40'

USDA Hardiness Zone: 3

Growth rate: Slow

See at: 703 S. 10th; 1108 Mountain Ash





U

CHOKECHERRY, AMUR (*Prunus maackii*)

A small tree with unusual amber-colored, exfoliating bark.

Mature height: 15-30'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 3042 John Deere; Alder Creek Dr. (in median at entrance to subdivision)

L

U

CHOKECHERRY (*Prunus virginiana*)

A native tree with white flowers in spring and small fruit that attract birds. Use of this tree is limited due to a variety of cultural and disease problems including suckering and black knot fungus. May be useful in wider boulevard planting strips and under utility wires. Red-leaved cultivars 'Shubert' and 'Canada Red' are common.

Mature height: 15-30'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 3942 Broadwater

U

**CRABAPPLE, FLOWERING** (*Malus* hybrids)

Flowering crabapple is a very popular small ornamental tree. All have showy flowers in spring, and cultivars are available with a variety of flower colors and habits. Because of potential issues with differences among cultivars in branching habit, fruit size and resistance to fire-blight, contact the Bozeman Forestry Division for a current list of acceptable cultivars.

Mature height: 10'-25' depending on cultivar

USDA Hardiness Zone: 3-4 depending on cultivar

Growth rate: Moderate

See at: 160 Meagher - 'Spring Snow' cultivar; 115 S. Wallace - 'Brandywine' cultivar

ELM, AMERICAN (*Ulmus americana*)

A durable tree with vase-shaped habit. Only cultivars resistant to Dutch Elm Disease should be planted.

Mature height: 60-70'

USDA Hardiness Zone: 3

Growth rate: Moderate to fast

See at: 209 South 6th; 211 Meagher; Westfield Park (along trail); 820 Hunters Way - 'Brandon' cultivar

ELM, Hybrids (*Ulmus* hybrids)

A variety of cultivars are available, most are resistant to Dutch Elm Disease.

Mature height: 50-70'

USDA Hardiness Zone: 3-4 depending on cultivar

Growth rate: Moderate to fast



HACKBERRY, COMMON (*Celtis occidentalis*)

Common Hackberry is a durable species that has proven to be a reliable tree in Bozeman.

Mature height: 30-50'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 208 North 15th; 711 Hunters Way

U



HAWTHORN (*Crataegus* species and hybrids)

A variety of species and cultivars are available, most have showy spring flowers, small, colorful fruit and good fall color. Only varieties with few or no thorns should be planted. Contact the Bozeman Forestry Division for a current list of acceptable cultivars.

Mature height: 15-30' depending on species/cultivar

USDA Hardiness Zone: 3-4 depending on species/cultivar

Growth rate: Slow to moderate

See at: 429 E. Story; South Side Park (along College, 3rd tree from corner)



HONEYLOCUST (*Gleditsia triacanthos* var. *inermis*)

The thornless common honeylocust has fine-textured leaves that turn bright yellow in fall. Plant only male cultivars, as female plants bear long fruit pods that can become a litter problem.

Mature height: 40-60'

USDA Hardiness Zone: 4

Growth rate: Moderate to fast

See at: 311 North 17th; 1009 Mountain Ash -'Skyline' cultivar

U



LILAC, JAPANESE TREE (*Syringa reticulata*)

Showy, large clusters of white flowers in June and persistent copper-colored capsules in fall.

Mature height: 15-30'

USDA Hardiness Zone: 3

Growth rate: Slow to moderate

See at: 900 block of South 8th (east and west boulevards); City Shop Complex, 814 N. Bozeman (along Tamarack)

L

LINDEN, AMERICAN, or BASSWOOD (*Tilia americana*)

A large tree with heart-shaped leaves. All lindens have fragrant flowers in summer that are attractive to many pollinators, especially bees. Use of this tree is limited due to its susceptibility to damaged by road salt and intolerance of drought. May be useful in wider boulevard planting strips with good soil and/or irrigation.

Mature height: 30-50'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 312 South 6th



LINDEN, Hybrids (*Tilia hybrids*)

A broad group of hybrid cultivars that are good street trees. All lindens have fragrant flowers in summer that are attractive to many pollinators, especially bees. Many cultivars, including 'Dropmore', 'Glenleven' and 'Redmond', are commonly available.

Mature height: 30-60' depending on cultivar

USDA Hardiness Zone: 3-4 depending on cultivar

Growth rate: Slow to moderate

See at: 906 & 905 Brentwood - 'Redmond' cultivar

LINDEN, LITTLELEAF (*Tilia cordata*)

The littleleaf linden has a formal, pyramidal habit and fragrant flowers in summer that are attractive to many pollinators, especially bees. Smaller leaves than other lindens.

Mature height: 30-50'

USDA Hardiness Zone: 3

Growth rate: Slow to moderate

See at: 1024 South Grand

MAACKIA, AMUR (*Maackia amurensis*)

This durable small tree has white flowers in summer and short seed pods in fall.

Mature height: 15-25'

USDA Hardiness Zone: 3

Growth rate: Slow

See at: 2436 Snapdragon; south 8th median (first block south of Main Street)

U



MAPLE, AMUR (*Acer ginnala*; also *Acer tataricum* spp. *ginnala*)

The single-trunk form is suitable for use on boulevard planting strips. Has bright orange to red fall color (image on bottom of pg. 9).

Mature height: 15-20'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 1212 Brentwood; 702 Hunters Way

U



MAPLE, FREEMAN (*Acer x freemanii*)

This hybrid maples has excellent orange-red fall color. Cultivars vary in form and mature size, therefore careful selection is important. Contact the Bozeman Forestry Division for cultivar information.

Mature height: 40-60'

USDA Hardiness Zone: 3-4 depending on cultivar

Growth rate: Moderate to fast depending on cultivar

See at: Harvest Creek Park between Durston & Oak (on boulevard along Annie)



**MAPLE, NORWAY** (*Acer platanoides*)

A wide range of cultivars are available, including the red-leaved 'Royal Red' and 'Crimson King'.

Mature height: 40-50'

USDA Hardiness Zone: 4

Growth rate: Moderate to slow depending on cultivar

See at: 721 N. Bozeman - 'Schwedleri' cultivar
1014 S. 6th - 'Emerald Queen' cultivar

L

**MAPLE, RED** (*Acer rubrum*)

Red maple has small red flowers in spring and bright red-orange fall color. Use of this tree is limited by its intolerance of alkaline (high pH) soils. Plant only in areas with a soil pH below 7.

Mature height: 30-40'

USDA Hardiness Zone: 3

Growth Rate: Moderate to fast

See At: 920 Brentwood

L

**MAPLE, SUGAR** (*Acer saccharum*)

The Sugar Maple is widely regarded for its excellent orange-red fall color. Use of this species is limited due to its general intolerance of urban conditions and the susceptibility of young trees to sunscald. May be useful in wider boulevard planting strips with good soil and/or irrigation.

Mature height: 50-60'

USDA Hardiness Zone: 4

Growth rate: Slow to moderate

See at: South 10th & College (along 10th); 419 S. Grand

U

**MAPLE, TATARIAN** (*Acer tataricum*)

Similar to the Amur Maple. The single-trunk form is suitable for use on boulevard planting strips.

Mature height: 20-25'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: Bozeman City Shops, 814 N. Bozeman (south side along aspen); and 1014 Woodland





L **MOUNTAINASH** (*Sorbus aucuparia* and hybrids)



Mountainash have white flowers in spring and showy clusters of orange fruit in fall. Use of this tree is limited in urban areas due to its high susceptibility to fireblight and sunscald. May be useful in areas that are protected from afternoon sun in winter. The oakleaf mountainash is less susceptible to fireblight.

Mature height: 20-25'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 609 S. 12th; 619 S. Willson; 1316 S. Black (oakleaf type)

OAK, BUR (*Quercus macrocarpa*)

An adaptable, slow-growing native oak that develops character with age.

Mature height: 50-70'

USDA Hardiness Zone: 3

Growth rate: Slow

See at: 403 West Alderson; 601 S. 6th

OAK, NORTHERN RED (*Quercus rubra*)

The northern red oak has good branching structure and rich red fall color. This tree has proven hardy in Bozeman.

Mature height: 40-60'

USDA Hardiness Zone: 4

Growth rate: Moderate

See at: 941 New Holland; 35 Meriwether



U **PEAR, USSURIAN** (*Pyrus ussuriensis*)

The hardiest of all pears and the least susceptible to fire blight. The fruit is not palatable. Has white flowers in spring, glossy foliage and bright orange-red fall color. Plant only ornamental cultivars such as 'Baillfrost' and 'MorDak' to minimize fruit development.

Mature height: 15-25'

USDA Hardiness Zone: 3

Growth rate: Moderate

See at: 548 E. Babcock (on Wallace)



U **SERVICEBERRY, APPLE** (*Amelanchier x grandiflora*)

Small trees with attractive spring flowers, edible fruit and red fall color. Single-trunk forms are being trialed as street trees in Bozeman.

Mature height: 15-18'

USDA Hardiness Zone: 4

Growth rate: Slow

U





There are 2 Ways to Obtain a Tree for Your Boulevard Planting Strip

1. COST SHARE PROGRAM

The Cost Share Program provides new boulevard trees at a shared cost between residents and the City of Bozeman's Forestry Division. These trees are planted by Forestry Division staff.

To qualify for this program:

- Planting site must be on the boulevard planting strip, inside city limits.
- Site must be to final landscape grade and residence must be occupied.
- If site is not irrigated, the homeowner must agree to provide supplemental watering during the first two growing seasons.

The Cost Share Program opens in mid-March with applications available at City Hall and on the Forestry website (www.bozeman.net/forestry). A limited number of trees are ordered each year for this program, and participation is on a first-received basis.

All trees will have a minimum trunk diameter of 1.5", either balled & burlapped or container-grown, and will be planted by Forestry crews May-June. Staking, mulching, and watering bags are included.



2. PURCHASE AND PLANT A TREE YOURSELF

Step 1. Contact 811 to locate Underground Utilities

Call 1-800-424-5555 or visit Montana811.org to have your underground utilities located (free service) .

Step 2: Obtain a Planting Permit

After underground utilities are marked, fill out a Planting Permit available on the Forestry Division website (www.bozeman.net/departments/parks-and-recreation/forestry/resources).

Forestry staff will provide feedback on your site conditions and recommend appropriate tree varieties and spacing.

Step 3. Purchase and Plant the Tree

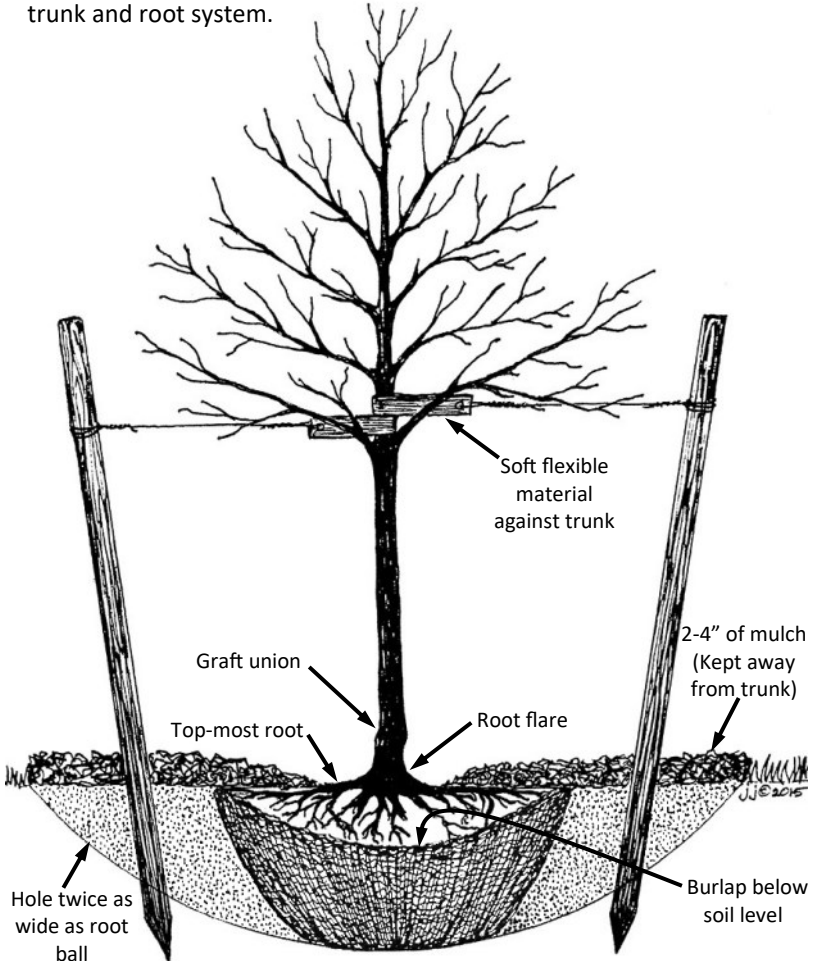
Once the Forestry Division approves your permit, you can proceed with purchase and planting! It is very important to plant trees at the correct depth; expose the root flare or top-most root at the surface level. All new trees require 2 support stakes, a 3' diameter ring of wood chip mulch, and regular watering for 2 years. Don't skimp on these key elements of care to get your new tree started properly!



BALLED AND BURLAPPED: These trees are field-grown, and dug with a ball of soil around the roots that is wrapped with burlap material. Dig the hole twice as wide as the root ball, and no deeper than is required for the tree to sit at the correct depth. Cut and pull the burlap below soil level. Backfill the hole with topsoil and settle the backfill by watering the hole thoroughly.

Mulching: Mulch the planting area with a 2-4" layer of mulch such as bark or wood chips, keeping the mulch several inches away from the trunk.

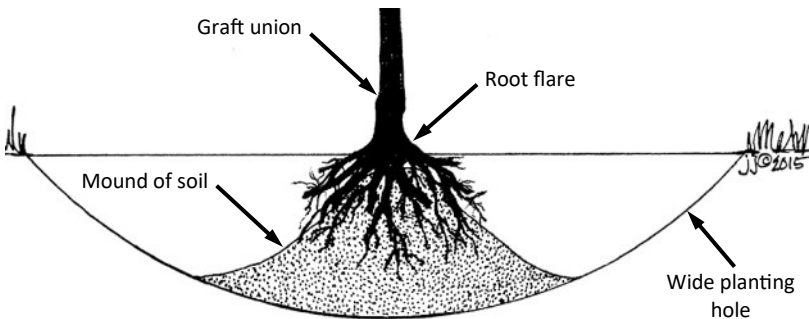
Staking: Drive in two metal or 2 x 2" wood stakes outside the root ball and deeper than the backfill. Secure the tree using only soft flexible material, allowing for some sway, which will help develop a stronger trunk and root system.



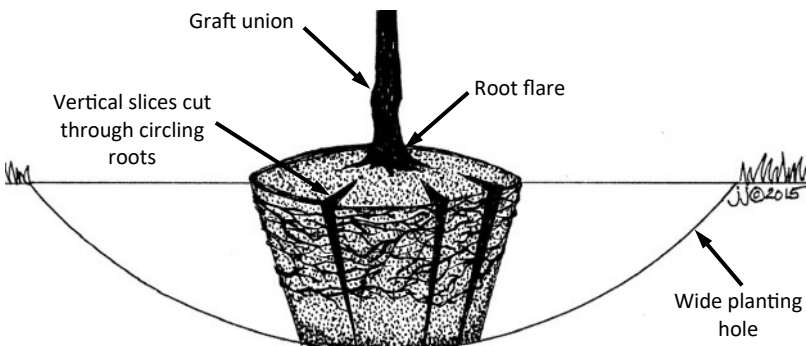


BARE-ROOT: These trees are field-grown, dug without soil on the roots, and shipped/stored in a cool, moist environment. It is important not to let the roots become dry before planting. Bare-root trees will be the least-expensive, will be slower during the first season, but following establishment may perform better than other forms.

Create a mound of soil at the bottom of the hole, then spread the roots evenly over the mound. Set the tree at the correct depth by adjusting the size of the mound. Backfill the hole with topsoil and settle the backfill by watering the hole thoroughly. Mulch and stake the tree as described under Balled and Burlapped.



CONTAINER-GROWN: These trees are grown and sold in a container. Trees grown in standard plastic containers will have roots that circle the inside perimeter of the container. It is important to cut these roots to encourage their growth outwards into the soil by making four deep, vertical slices using a spade or knife. Backfill the hole with topsoil and settle the backfill by watering the hole thoroughly. Mulch and stake the tree as described under Balled and Burlapped.



POST-PLANTING

WATERING: New trees need to be watered during the first two growing seasons after planting. We recommend a minimum of 20 gallons per tree per week, from May-September. Watering is the homeowner's responsibility. Watering bags simplify the process and are available through the Cost Share Program.

MULCHING/TRUNK GUARDS: Wood chip mulch is critical to efficient watering and protecting the base of trees. Trunk guards should also be placed on all new trees, and mulch should be a permanent fixture separating trees from lawns and other landscape plants. Mulching is the homeowner's responsibility.

STAKE REMOVAL: Stakes should be removed after one year. The Forestry Division will remove stakes from cost-share trees. Homeowners are responsible for removing stakes from trees that they planted.

WRAPPING: Thin-barked trees, especially mountainash and maples, will benefit from having the trunk wrapped during the winter with a protective paper or plastic wrap that can be purchased at most garden centers. Be sure to remove the wrap in spring.

PRUNING: Trees in the boulevard and other public rights-of-way are pruned by the Forestry Division.

TREE REMOVAL: Trees in need of removal due to disease, insect damage or risk potential will be removed at the discretion of Forestry personnel, and replacement options may be available. Permission to remove a healthy tree from the boulevard may be granted by the Forestry Division, and if denied, may be contested before the Urban Parks & Forestry Board.

THE CITY OF BOZEMAN FORESTRY DIVISION

Forestry Division personnel are ISA Certified Arborists who prune city trees, diagnose insect and disease problems, remove dead and dying trees, and replace trees according to the Arbor Specifications Manual and the Tree Ordinance. Forestry personnel work to maintain the Bozeman urban forest with fund assessment mandated by the City Commission.

City of Bozeman –Forestry Division

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www.bozeman.net/forestry



