Low-Impact Development Planting Guide

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Stormwater & Low-Impact Development in Arid Regions & Utah

Rapid population growth and development is placing pressure on the limited water resources in Western states. Urbanization increases impervious surfaces preventing precipitation from infiltrating into the ground effectively, which results in changes to hydrologic conditions with higher runoff volumes and higher peak flows. Stormwater flows across impervious surfaces transporting urban pollutants and discharging them into receiving waters. As cities grow, the amount of pollution entering waterways increases in turn. A rapid transition from undeveloped to developed environments is occurring across the state of Utah.

In Utah, natural landscapes and agricultural lands are being developed rapidly to accommodate population growth. Undeveloped areas have natural ground cover, including soil and plants to help infiltrate water and decrease the amount of runoff that leaves a site during precipitation events (Figure 1). Plants use a portion of the water, then transpire and evaporate the rest back into the surrounding environment in a process known as evapotranspiration. In arid and semi-arid climates, evapotranspiration accounts for the highest percentage of water leaving an undeveloped, natural system. A much smaller portion of water is stored in soil or infiltrates down to recharge ground aquifers. Only a small percentage of water leaves a site as runoff. In undeveloped watersheds, runoff gradually drains across the landscape to waterways.

In developed areas, much of the natural ground cover is replaced with impervious surfaces such as roads, rooftops, and parking lots. Precipitation cannot easily soak through

impervious surfaces causing more water to leave the system as runoff, while the decrease in vegetation results in a loss to total evapotranspiration (Figure 1).

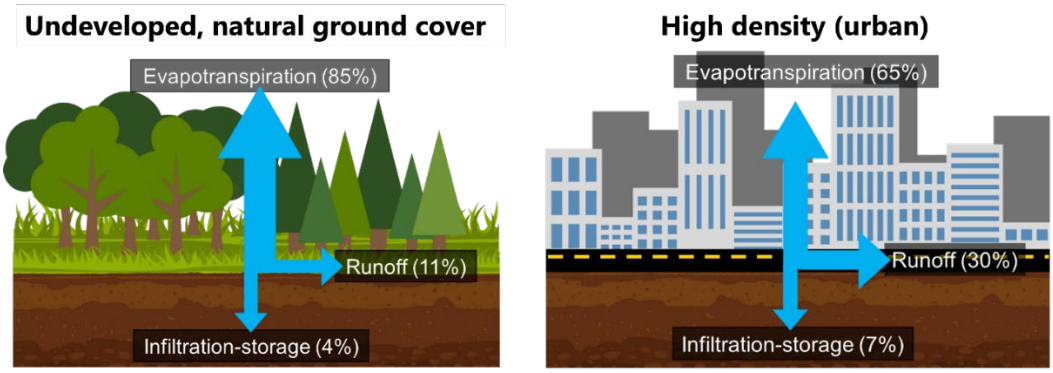


Figure 1. Magnitude of hydrologic pathways in undeveloped and urban land uses in arid regions.

Many urban watersheds use traditional "collect-and convey" pipe drainage systems, which carry large volumes of stormwater directly to surface waters, often without any form of water treatment. Precipitation falls on impervious surfaces, then flows to pipes or drains in designated collection areas. The water is either piped directly to outlets in waterbodies or injected into stormwater collection systems underground. Water that is not captured by these systems, infiltrated into the ground, or evaporated flows across impervious surfaces eventually entering waterways as urban runoff.

The hydrologic impacts of urbanization are well-documented, including higher runoff volumes and more frequent and higher peak flows (D.B. Booth, 1997; Konrad & Booth, 2002). Higher runoff volumes send pulses of energy through a system increasing stream channel erosion and pollutant loading. Stormwater runoff flows quickly over impervious surfaces picking up and discharging urban pollutants—such as oils, chemicals, sediment, microplastics, and organic materials that impair water quality—into surface waters.

Benefits of LID

A low-impact development (LID) approach to stormwater management aims to mimic predevelopment hydrologic conditions and utilizes stormwater as a resource to retain precipitation onsite longer. Low-impact development techniques are used to improve infiltration, evapotranspiration, and the harvesting and/or reuse of runoff. The focus of LID practices is to preserve, restore, and create green spaces using regional and site-specific soils and vegetation to help capture and collect stormwater.

Using LID practices reduces development impacts, while restoring natural hydrologic conditions and providing aesthetic benefits. The use of LID provides many benefits, including lower runoff volumes and peak flows, less impervious surfaces, more vegetation, fewer pipes and underground stormwater infrastructure, better water quality and habitat protection, decreases in the urban heat-island effect, and less erosion of stream channels.

Urban environments in the southwestern U.S. have a small but disproportionate impact on water quality. Urban runoff is considered one of the leading sources of anthropogenic water quality impairment behind agricultural runoff. The volume of runoff discharged into urban-interfacing waterbodies creates significant water quality issues. Properly managing stormwater in water-limited landscapes is crucial for long-term water quality and habitat protection. Many Utah counties are experiencing, or soon will be, the growing challenge of stormwater management as more landscapes transition from undeveloped to developed. Implementing sustainable stormwater management practices, such as low-impact development (LID) in areas expected to

see exponential growth in the next 25 years is critical to avoid the expensive and difficult task of restoring impaired waters.

Benefits of Vegetation in LID Design

Vegetation is an important part of the success of BMPs. Plants can be selected to provide specific benefits such as pollutant uptake, erosion protection, increased percolation, wildlife habitat, aesthetic appeal, and heat reduction.

Table 1. Adapted from DWQ's LID Manual ("A Guide to LID," 2020, pgs. 39-40)

Benefit	Purpose
Pollutant Reduction	• Uptake pollutants through their root systems and utilize the contaminants to promote vegetative growth above ground. • Break down otherwise harmful pollutants and either minimize pollutants to acceptable levels or reduce them altogether.
Protects Soil from Erosion	• Providing protective cover. • Slow down runoff and holding soil in place, so fewer soil particles carried downstream and surface water can soak into the soil. • Roots help to bind the soil, reducing wind and water displacement. • Roots help to stabilize embankments and slopes.
Increase Percolation Rates	• Voids created in the soil by plants allow water to move more freely for plant uptake or groundwater infiltration.
Wildlife Habitat	• Plants offer wildlife food, shelter, water, and space needed to exist. • When wildlife occupies the area, they contribute to vegetation distribution and help to control growth.
Aesthetics/Mental Health	• Add beauty and aesthetics to the landscape. • Makes BMPs more visually pleasing and increases acceptance of BMP practices within urbanized areas. • In increasingly urbanized and developed areas, they provide respite and a sense of connectivity to nature.
Heat Reduction	• Mitigate the effect of heat islands created by development through increased shading and green spaces.

	• Plants near buildings help provide shade and insulation, which creates a cooling effect and helps to mitigate cooling costs from urban living.

Vegetation Considerations

There are many factors that can influence the establishment and longevity of plants used with LID practices. Some of the most important factors to consider include site conditions and plants adaptability to various conditions, water needs, soil needs, ability to tolerate pollutants, heat, cold, wind, flooding, and drought.

Site and Growing Conditions

It is important to match the needs of selected plants to site conditions. Urban environments can create microclimates when sunlight and heat absorb into roadways and reflect off pavement, concrete, and glass. Increasing temperatures due to the urban heat island effect can cause increases in evapotranspiration rates. Development disturbs soils causing changes in natural drainage patters and soil porosity and structure. Plants need to be tolerant of and adaptable to changing site conditions due to urban pollution (e.g., salts, poor air quality, grease, etc.), temperature fluctuations, and nutrient and water availability. Native species are a good choice because they are better adapted to changing site conditions, but plants that are highly tolerant of a variety of soils and frequent water and temperature changes may also be suitable.

Water Needs

In arid to semi-arid climates, such as Utah, a plant's water needs and ability to withstand periods of drought is particularly important. Fluctuation in soil moisture is common in desert environments. Additionally, water restrictions are common during periods of drought. Plants that

need less water or that are tolerant of drought will be less stressed as well as conserve water. On the other hand, plants that can withstand saturated soils, flooding, and ponding are well suited to LID practices designed to increase stormwater infiltration rates.

Soil Needs

Plants have soils preferences including consistency, drainage, and pH. It is important to consider these factors when selecting plants for a site. Natural and/or engineered soils may need to be enhanced to help plants establish and succeed. Some plants are nitrogen fixers and can work symbiotically with soil microbes to improve soil naturally. Soil porosity and structure will impact drainage and infiltration. Soil structure also impacts plants' root systems and ability to withstand various stormwater volumes and velocities.

Pollution Tolerance

Tolerance to salts is an important factor in plant selection for urban environments. Some plants prefer slightly saline environments and are good choices for LID practices in sites where salt concentrations are higher in stormwater runoff.

Air pollution tolerance should also be considered. Some plants prefer environments with higher carbon concentrations and would be ideal for urban areas. Plants can also play an role in CO2 sequestration.

Heat, Cold, and Wind Tolerance

A plant's ability to survive local climate is key to its survival. Selected plants should be adapted to or tolerant of seasonal temperature changes, including maximum and minimum temperatures, and exposure to direct sun, frost, snow, and wind. The DWQ has developed a map

of plant hardiness zones that labels areas in Utah according to their lowest annual minimum temperature. Plants should only be grown their identified hardiness zones.

Heat tolerance is also an important factor in plant survival. Consider the average number of days the site location experiences extreme heat when selecting plants. The urban heat island effect, as well as impervious and reflective surfaces, may exacerbate temperatures on site. Drought conditions and increased evapotranspiration will play a larger role in especially hot and dry desert regions.

The Utah DWQ recommends the following steps when selecting vegetation for specific LID BMP types ("A Guide to LID," 2020, pg. 44):

1. Consider consulting relevant professionals such as engineers, landscape architects, and/or horticulturalists to help select plants and design each BMP.
2. Identify the hardiness zone(s) at the site.
3. Identify which BMPs will be used.
4. Determine if there are any microclimates within the site that need to be considered.
5. Identify plants that will best work for the BMP based on the hardiness zone and site's microclimates.
6. Develop a landscape plan that considers site conditions, erosion protection, pollutant mitigation, human use of and interaction with the site, creation of wildlife habitat, aesthetics, and site and BMP maintenance.

LID Planting Guide Development

The purpose of this planting guide is to help stormwater professionals select the best plants for the LID-type they are designing as well as the plant's desired benefits and qualities.

This guide was designed to supplement the Utah Division of Water Quality's "Utah Plant Selection Matrix by Climate Zone and BMP" list included in their LID manual called "A Guide to Low Impact Development within Utah."

Plant List Keys

Use these keys to interpret the following plant lists for each LID type.

For the Zone, refer to the Plant Hardiness Zone map.

Each plants soil needs are classified by type followed by a comma and the specialties.

- Soil types: variety, sandy, clay, loam, gravel, rocky
- Soil specialties: rich, dry, wet, hummusy, peaty, acidic, alkaline

Each plants water needs are classified by the amount followed by a comma and the drainage type.

- Amounts: low, moderate, high
- Drainages: well-drained, consistently moist

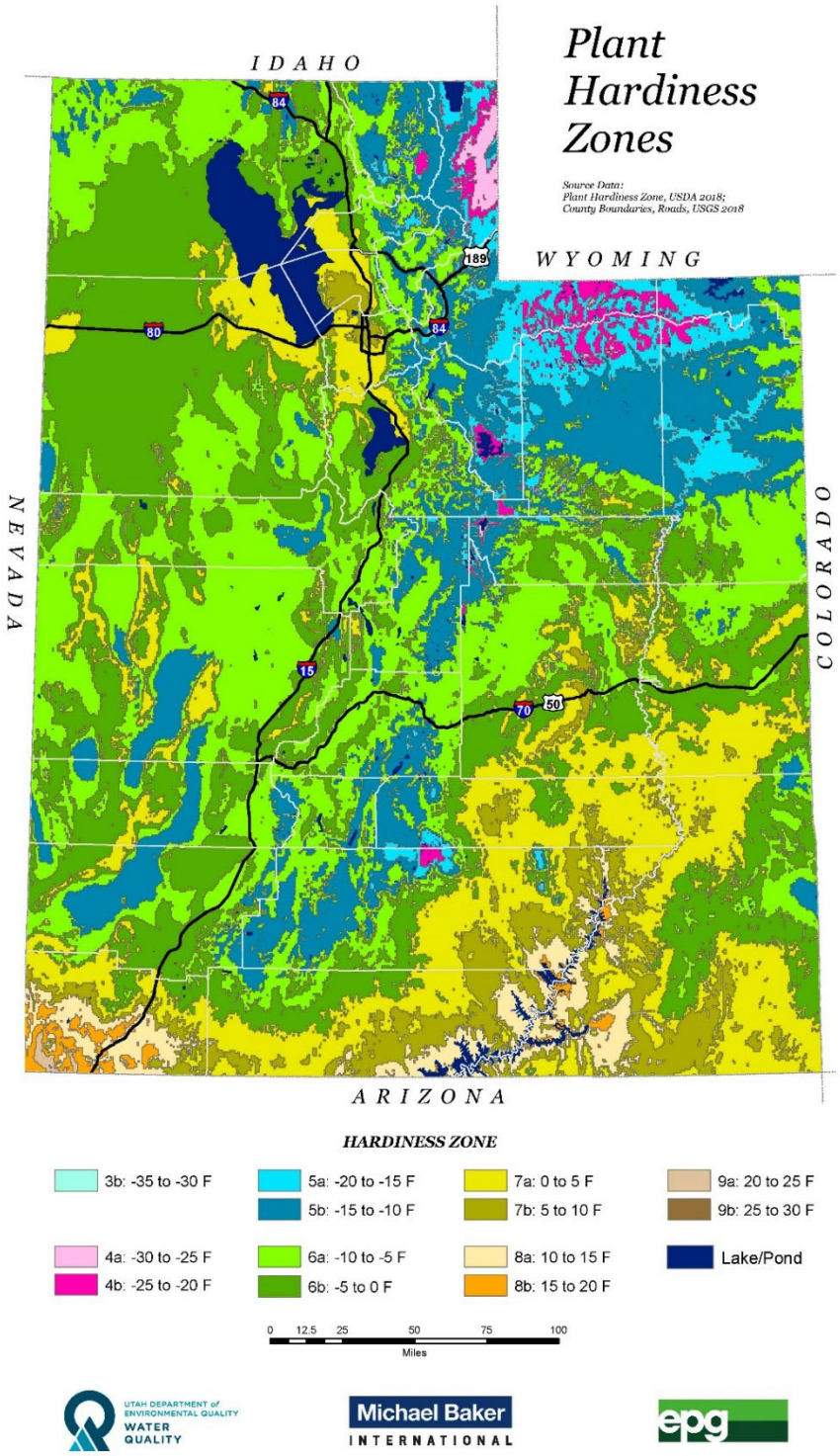
For the Drought Tolerant, Erosion Control,
and Flooding Tolerant columns:
Y = yes
N = no

Plant Type:
T = tree
SH = shrub
G = grass
P = perennial
GC = groundcover
V = vine
C = cactus
SU = succulent

Growth Rate:
S = slow
M = moderate
F = fast

Light Needs:
◌ = full sun
○ = full sun to part shade
● = full shade

Plant Hardiness Zone Map



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Bioretention Cells & Rain Gardens

Bioretention Cells

Bioretention cells are shallow bioretention areas with a distinct boundary, such as a curb or wall, designed to retain a predetermined volume of runoff. Retaining stormwater allows it to slowly infiltrate into the soil and gives plants an opportunity to naturally treat the water through nutrient and pollutant uptake. The most effective bioretention cells are aesthetically pleasing, while properly retaining their design volume of runoff.

Designs can include drainage systems or use native or engineered layers of soil, sand, and aggregate to achieve the desired infiltration rate. Soil layers may also provide water storage. It is important for the design to support vegetation and landscape features. Carefully selecting plants for their desired benefits will provide the best opportunity for nutrient and pollutant uptake as well as aesthetic appeal.

Primary Functions:

- Bioretention
- Volume retention
- Biofiltration

Benefits:

- Reduces and treats runoff from the surrounding area.
- Can be integrated into densely developed urban settings.
- Increases biodiversity & habitat in urban areas.
- Increases green space in developed areas.
- Can be designed to provide traffic calming in residential areas.

Pollutant Removal:

Bioretention cells are particularly effective at removing pollutants from stormwater.

Pollutant	Effectiveness
Sediment	High
Nutrients	High
Metals	High
Bacteria	High
Oil/Grease	High

Maintenance Requirements:

Table 2. The following table has been remade from the DWQ's bioretention maintenance activity table in their LID manual ("A Guide to LID," 2020, pg. C-14).

Inspection	Frequency	Maintenance Activity	Effort
Inspect for adequate vegetative coverage, and impaired or failing vegetation.	Semiannual (Spring, Fall)	Reseed/replant barren spots. Notify the engineer if failing vegetation persists.	Low
Inspect for trash and debris within basin and at inlet and outlet structures.	Semiannual (Spring, Fall), as needed	Remove and dispose of trash and debris.	Low
Inspect for large deposits of sediment on bottom indicating soil clogging.	Semiannual (Spring, Fall), as needed	Remove and dispose of built-up sediment when buildup causes reduction in size of basin or if buildup results in standing water. Notify the engineer in the case of standing water as it may indicate clogging within the basin's soil layers.	Low
Inspect for standing water within bioretention cell or within observation well.	Semiannual (Spring, Fall)	Notify the engineer for further inspection.	Moderate
Inspect for failure of additional features such as underdrains or irrigation systems.	Semiannual (Spring, Fall)	Repair as needed.	Moderate

Rain Gardens

Rain gardens are shallow bioretention areas designed to retain a predetermined volume of runoff, allowing it to slowly infiltrate into the soil and giving plants an opportunity to naturally treat the water through nutrient and pollutant uptake. These BMPs differ from bioretention cells because they are not constrained by a definitive boundary. The most effective rain gardens are aesthetically pleasing, while properly retaining their design volume of runoff.

Designs can include drainage systems or use native or engineered layers of soil, sand, and aggregate to achieve the desired infiltration rate. Soil layers may also provide water storage. It is important for the design to support vegetation and landscape features. Carefully selecting plants for their desired benefits will provide the best opportunity for nutrient and pollutant uptake as well as aesthetic appeal.

Primary Functions:

- Bioretention
- Volume retention
- Biofiltration

Benefits:

- Reduces and treats runoff from the surrounding area.
- Native, drought tolerant plants in rain gardens typically require little to no maintenance once established.
- Provides shade and local cooling effects.
- Neighborhood greening and aesthetic benefits.

Pollutant Removal:

Rain gardens are particularly effective at removing pollutants from stormwater.

Pollutant	Effectiveness
Sediment	High
Nutrients	High

Metals	High
Bacteria	High
Oil/Grease	High

Maintenance Requirements:

Table 2. The following table has been remade from the DWQ's rain gardens maintenance activity table in their LID manual ("A Guide to LID," 2020, pg. C-7-8).

Inspection	Frequency	Maintenance Activity	Effort
Inspect for adequate vegetative coverage, and impaired or failing vegetation.	Semiannual (Spring, Fall)	Reseed/replant barren spots. Notify the engineer if failing vegetation persists.	Low
Inspect side slopes for erosion, rilling, and sloughing.	Semiannual (Spring, Fall)	Regrade side slope if sloughing does not impact slope stability. Notify the engineer if side slope stability has been compromised and is affecting the functionality of the basin.	Low
Inspect for trash and debris within basin and at inlet and outlet structures.	Semiannual (Spring, Fall), as needed	Remove and dispose of trash and debris.	Low
Inspect for large deposits of sediment on bottom indicating soil clogging.	Semiannual (Spring, Fall), as needed	Remove and dispose of built-up sediment when buildup causes reduction in size of basin or if buildup results in standing water. Notify the engineer in the case of standing water as it may indicate clogging within the basin's soil layers.	Low
Inspect for standing water within bioretention cell or within observation well.	Semiannual (Spring, Fall)	Notify the engineer for further inspection.	Moderate
Inspect for failure of additional features such as underdrains or irrigation systems.	Semiannual (Spring, Fall)	Repair as needed.	Moderate

Plant Selection

Both bioretention cells and rain gardens are used to increase infiltration and nutrient uptake. A variety of plants can provide these benefits including trees, shrubs, grasses, and other plants suitable for the local climate. Both BMPs usually receive more stormwater runoff pollution due to being located near roadways. They also receive water from every storm event. Therefore, the best plants for bioretention cells and rain gardens:

- Can tolerate moist to boggy soils.
- Can tolerate salts and urban pollutants.
- Can uptake nutrients well.
- Can neutralize pollutants well.

Plant Lists for Bioretention & Rain Gardens

Bioretention & Rain Garden Plants List

Scientific Name - Common Name	Plant Type	Zone	Drought Tolerance	Flooding Tolerance	Erosion Control	Growth Rate	Mature Size (HxW)	Light Needs	Soil Needs	Water Needs	Native	Benefits
Acer ginnala - Amur Maple	T	3b-8a	Y				H = 15-20' W = 15-20'	○	Clay, rich	Consistently moist	NE Asia, NW United States	
Acer glabrum - Rocky Mountain Maple	T	5a-9b	Y				H = 10-30' W = 10-30'	○		Low	Utah	Adaptable to salt
Acer macrophyllum - Big Leaf Maple	T	6a-7b					H = 40-75' W = 40-75'	○	Variety, acidic	Moderate, well-drained	British Columbia, S Alaska to CA	
Acer rubrum - Red Maple	T	3b-9b	Y	Y		M	H = 40-70' W = 30-50'	○	Variety, acidic	Moderate, well-drained	E & central North America	Adaptable growing conditions Cold tolerant Air pollution tolerant Attracts birds
Acer saccharinum - Silver Maple	T	4a-9b	Y	Y		F	H = 50-80' W = 35-70'	○	Variety	Moderate	E North America	Adaptable to salt Urban, air pollution tolerant
Acer tataricum - Tatarian Maple	T	3b-8b	Y			M	H = 25-30' W = 25'	○	Variety	Moderate, well-drained	SE Europe, W Asia	Adaptable growing conditions Adaptable to salt Urban pollution tolerant
Acer tataricum 'GarAnn' PP 15,023 - HOT WINGS® Tatarian maple	T	4a-9b	Y			M	H = 15-25' W = 15-20'	○	Variety	Moderate	SE Europe, W Asia	Adaptable growing conditions Adaptable to salt Urban pollution tolerant Attracts pollinators Wildlife resistant
Acer x freemanii 'Jeffersred' - Autumn Blaze Maple	T	3b-8b	Y	Y		F	H = 40-55' W = 30-40'	◌	Acidic	High, well-drained	Cultivated	Urban pollution tolerant Deer resistant
Aesculus hippocastanum - Horsechestnut	T	3b-8b				M	H = 50-75' W = 40-65'	○	Rich	Moderate, well-drained	SE Europe, Asia	Rabbit resistant Attracts pollinators
Aesculus x arnoldiana 'Autumn Splendor' - Autumn Splendor Horse Chestnut	T	4a-7b	N			M	H = 35' x 30'	○	Variety	Moderate, consistently moist		Urban pollution tolerant Ornamental Deer resistant Attracts pollinators, wildlife
Alnus sinuata - Sitka Alder	T	4a-5b			Y	F	H = 3-20' W = 6-10'	○	Variety, clay	Consistently moist	W North America	Bioremediation Pioneer species

Betula nigra - River Birch	T	4a-9b	Y	Y	Y	F	H = 40-70' W = 40-60'	○	Variety, rich, acidic	High, consistently moist	E United States	Adaptable to salt Heat tolerant Urban, air pollution tolerant Deer resistant Attracts birds, pollinators
Betula occidentalis - Water Birch	T	3a-5b	Y	Y		F	H = 10-40' W = 10-30'	○	Variety	Moderate, consistently moist	Utah, W North America, S Canada	Adaptable to salt Wind tolerant Ornamental
Betula papyrifera - Paper Birch	T	3b-6b			Y	F	H = 50-70' W = 25-50'	○	Variety	Moderate, well-drained	North America	Adaptable to salt Pioneer species Deer resistant
Betula pendula - Silver Birch	T	3b-6b				F	H = 30-40' W = 15-30'	○	Variety, rich	Moderate, well-drained	Europe, Asia, W Siberia	Wind tolerant Ornamental Pioneer species Deer resistant
Betula pubescens - White Birch	T	3b-3b		Y		F	H = 30-65' W = 32'	○	Variety, acidic	High, consistently moist	N & central Europe, Russia, Siberia	Wind tolerant Wetland plant Nitrogen fixer Pioneer species Attracts wildlife
Carpinus betulus 'Fastigiata' - Pyramidal European Hornbeam	T	4a-8b	Y			M	H = 30-45' W = 20-35'	○	Variety	Low, well-drained	E, S, & central Europe; W Asia	Urban pollution tolerant
Carya illinoinensis - Pecan	T	5a-9b				M	H = 40-100' W = 30-50'	◌	Variety, humusy, rich	Moderate, well-drained	S North America	Heat, cold tolerant Urban pollution tolerant Ornamental Pest resistant
Celtis occidentalis - Common Hackberry	T	4a-9b	Y	Y		F	H = 40-60' W = 40-60'	○	Variety, rich	Low, well-drained	E & central North America	Adaptable growing conditions Adaptable to salt Heat, cold, wind tolerant Urban pollution tolerant Attracts pollinators, wildlife
Celtis occidentalis 'Prairie Pride' - Prairie Pride Hackberry	T	3b-9b	Y	Y		M	H = 50-60' W = 40-50'	○	Variety	Low, well-drained	E & central North America	Adaptable growing conditions Heat, cold, wind tolerant Urban pollution tolerant Attracts birds
Cercis canadensis - Eastern Redbud	T	5a-9b	Y			M	H = 20-30' W = 25-35'	○	Variety, acidic, alkaline	Moderate, well-drained	E & central North America	Urban pollution tolerant Ornamental Deer resistant Attracts pollinators, wildlife
Cercis canadensis 'Forest Pansy' - Forest Pansy Redbud	T	5a-9b				M	H = 20-30' W = 25-35'	○	Variety	Moderate, well-drained	E & central North America	Urban pollution tolerant Ornamental Deer resistant Attracts pollinators, wildlife

Cercis canadensis 'Ruby Falls' - Ruby Falls Redbud	T	6a-9b				M	H = 6-8' W = 4-6'	○	Variety, alkaline	Moderate, well-drained	E & central North America	Ornamental Deer resistant Attracts pollinators
Cercis canadensis 'The Rising Sun' - Rising Sun Redbud	T	6a-9b	Y			M	H = 8-12' W = 8-15'	○	Variety	Moderate		Adaptable growing conditions Heat, cold tolerant Urban pollution tolerant Ornamental Deer resistant Attracts pollinators
Cotinus coggygria 'Grace' - American Smoke Tree, Grace	T	5a-8b	Y			M	H = 12-15' W = 12-20'	○	Variety	Low, well-drained	Europe to central China	Urban pollution tolerant Ornamental Deer resistant Attracts pollinators
Cotinus coggygria 'Royal Purple' - Royal Purple Smoketree	T	5a-8b	Y			M	H = 10-15' W = 10-20'	◌	Variety	Low, well-drained	Europe to central China	Urban pollution tolerant Ornamental Disease resistant Deer, pest resistant Attracts pollinators
Crataegus douglasii - Black/ Douglas Hawthorn	T	4a-6b	Y		Y		H = 10-25' W = 10-25'	○	Variety	Moderate, well-drained	United States	Wind tolerant Urban, air pollution tolerant Ornamental Wetland plant Attracts birds, pollinators
Fraxinus pennsylvanica - Green Ash	T	3b-9b	Y			F	H = 50-70' W = 35-50'	◌	Variety, humusy	Moderate, consistently moist	United States, S Canada	Adaptable growing conditions Adaptable to salt Heat, cold, wind tolerant Urban, air pollution tolerant Deer, rabbit resistant Attracts birds, pollinators
Ginkgo biloba - Maidenhair Tree	T	3b-8b	Y			S	H = 50-100' W = 30-60'	◌	Variety, rich, acidic, alkaline	Moderate, well-drained	S China	Adaptable to salt Heat tolerant Urban, air pollution tolerant Ornamental Disease resistant Deer, pest resistant
Ginkgo biloba 'Fairmount' - Fairmount Ginkgo	T	5a-8b	Y			M	H = 30-50' W = 8-30'	○	Variety	Low		Adaptable to salt Heat tolerant Urban, air pollution tolerant Ornamental Deer resistant

Ginkgo biloba ‘PNI 2720’ - Princeton Sentry Ginkgo	T	3b-8b	Y			S	H = 40-50' W = 20-30'	◌	Variety, acidic, alkaline	Low		Adaptable to salt Heat tolerant Urban, air pollution tolerant Ornamental Deer, rabbit resistant
Gleditsia triacanthos 'Impcole' - Imperial Honeylocust	T	4a-8b	Y			F	H = 30-40' W = 25-35'	○	Variety, rich	Low, well-drained	US cultivar	Adaptable growing conditions Adaptable to salt Heat, cold, wind tolerant Urban, air pollution tolerant Deer resistant
Gleditsia triacanthos ‘Shademaster’ - Shademaster Honeylocust	T	5a-8b	Y			F	H = 45-70' W = 30-50'	○	Variety	Low, well-drained		Adaptable growing conditions Heat, cold, wind tolerant Air pollution tolerant Deer resistant
Amelanchier alnifolia - Saskatoon Serviceberry	SH	3b-9b	Y		Y	M	H = 10-30' W = 5-10'	○	Variety	Low, well-drained	Utah, central & W United States	Adaptable growing conditions Adaptable to salt Heat, cold tolerant Ornamental Attracts pollinators
Amelanchier alnifolia 'Obelisk' - Standing Ovation Serviceberry	SH	3b-8b				M	H = 12-15' W = 3-6'	◌	Variety	Moderate, well-drained		Adaptable growing conditions Heat, cold tolerant Ornamental Attracts pollinators
Aronia arbutifolia 'Brilliantissima' - Brilliant Red Chokeberry	SH	4a-9b	Y	Y	Y	S	H = 5-8' W = 3-5'	○	Variety, peaty	Moderate, well-drained	E North America	Adaptable to salt Urban, air pollution tolerant Ornamental Wetland plant Deer resistant Attracts birds, pollinators
Aronia melanocarpa var. elata - Black Chokeberry	SH	4a-9b	Y	Y	Y	M	H = 5-8' W = 5-10'	○	Variety, peaty	Low, well-drained	E North America	Ornamental Wetland plant Deer resistant Attracts birds, pollinators
Artemisia filifolia - Sand Sagebrush	SH	4a-8b	Y		Y		H = 3-6' W = 3-5'	◌	Sandy, loam	Low, well-drained	Utah, W United States	Adaptable growing conditions Adaptable to salt Heat, cold tolerant Deer resistant Attracts birds
Artemisia nova - Black Sagebrush	SH	3b-6b	Y				H = 10-24" W = 12-24"	◌	Variety, alkaline	Low, well-drained	Utah, W United States	Deer resistant Attracts pollinators
Atriplex canescens - Four-Wing Saltbrush	SH	6a-9b	Y				H = 1-7' W = 3-7"	◌	Variety, alkaline	Low, well-drained	Utah, W United States	Adaptable to salt Ornamental Bioremediation Attracts pollinators

Berberis aquifolium - Barberry	SH	5a-8b	Y			S	H = 3-6' W = 2-5'	●	Variety, rich, acidic	Well-drained	N North America	Ornamental Deer resistant Attracts birds, pollinators
Berberis aquifolium repens - Creeping Oregon Grape	SH	5a-8b	Y		Y	M	H = 12-18" W = 12-18"	◌ ●	Variety, rich, acidic	Well-drained		Ornamental Deer resistant Attracts pollinators, wildlife
Cotoneaster adpressus 'Little Gem' - Little Gem Cotoneaster	SH	5a-8b	Y					○		Low		
Cotoneaster divaricatus - Spreading Cotoneaster	SH	4a-7b					H = 5-6' W = 6-8'	○		Moderate		Attracts pollinators
Cotoneaster integerrimus - European Cotoneaster	SH	3b-5b	Y				H = 8-12' W = 12-15'	○	Loam	Moderate		Adaptable growing conditions
Cotoneaster racemiflorus var. soongoricus - Sungari redbead cotoneaster	SH	3b-8b	Y				H = 6-8' W = 6-8'	○	Variety	Low		Disease resistant Deer, pest resistant Attracts pollinators
Acorus calamus - Sweet Flag	G	4a-9b		Y			H = 2-2.5' W = 1.5-2'	○	Variety	High, consistently moist	Europe, Asia, North America	Wetland plant
Acorus gramineus - Grassy-Leaved Sweet Flag	G	6a-9b		Y	Y		H = 6-12" W = 6-12"	○	Variety	High, consistently moist	China, Japan, Korea, India, Thail&, Myanmar, Philippines	Wetland plant
Agrostis sp. - Redtop Bentgrass	G	3b-6b		Y	Y		H = 3-4'	○	Variety		Eurasia	Adaptable to salt Wetland plant
Andropogon gerardii - Big Blue Stem	G	4a-9b	Y		Y		H = 4-6' W = 2-3'	◌	Variety	Low	E North America	Air pollution tolerant Deer resistant
Andropogon gerardii 'PWIN01S' - WINDWALKER® big bluestem	G	5a-8b					H = 60-72" W = 18-24"	◌	Variety	Moderate		Ornamental Deer resistant
Bouteloua gracilis - Blue Grama	G	3b-9b	Y				H = 9-24" W = 18-24"	◌	Variety	Low	W United States	Adaptable to salt Air pollution tolerant Deer resistant Attracts birds
Bouteloua gracilis 'Blonde Ambition' - Blonde Ambition grama grass	G	4a-9b	Y				H = 30-36" W = 30-36"	○	Variety	Low	North America	Deer resistant
Buchloë dactyloides - Buffalo Grass	G	3b-9b	Y		Y		H = 2-5" W = 72"	◌	Variety	Low	North America, Great Plains	Heat tolerant
Buchloë dactyloides 'Cody' - Cody Buffalo Grass	G	3b-9b	Y		Y		H = 4-6" W = 72"	◌	Variety	Low	North America, Great Plains	Heat tolerant

Buchloë dactyloides 'Legacy' - Legacy Buffalo Grass	G	3b-9b	Y			F	H = 4-6" W = 72"	◌	Clay, alkaline	Low		Attracts birds
Calamagrostis x acutiflora 'Eldorado' - Eldorado Feather Reed Grass	G	4a-9b	Y			M	H = 4-6' W = 2-2.5'	◌	Variety	Low		Attracts birds
Calamagrostis x acutiflora 'Karl Foerster' - Karl Foerster Feather Reed Grass	G	4a-9b	Y		Y	M	H = 3-5' W = 1.5-2.5'	◌	Variety, rich	Low	Europe, Asia	Air pollution tolerant Deer resistant
Calamagrostis x acutiflora 'Overdam' - Overdam Feather Reed Grass	G	5a-9b	Y		Y	M	H = 3-5' W = 2'	◌	Variety, rich	Low	Europe, Asia	Air pollution tolerant Deer resistant
Calamagrostis brachytricha - Korean feather reed grass	G	4a-9b	Y				H = 24-40" W = 20-24"	○	Variety	Low		Deer resistant
Carex 'Silver Sceptre' - Silver Scepter Sedge	G	5a-9b					H = 9-12" W = 9-18"	●	Variety	High	Japan	Deer resistant
Carex buchananii - Fox Red Curly Sedge	G	4b-9b	Y			S	H = 2-3' W = 2-3'	○	Variety, rich	Consistently moist	New Zeal&	Deer, rabbit resistant
Carex lacustris - Common Lake Sedge	G	5a-7b		Y		M	H = 20-50"	○	Clay	High, consistently moist	North America	Wetland plant Attracts birds, pollinators
Cephalanthus occidentalis - Buttonbush	G	5a-9b		Y	Y		H = 5-12'	○	Humusy	High	North America	Attracts pollinators
Cynodon dactylon - Bermuda Grass	G	7a-9b	Y		Y	F	H = 24" W = 20"	◌	Variety	Low, moderate	Europe, Africa, Australia, Asia	Heat tolerant
Decodon verticillatus - Swamp Loosestrife	G	3b-9b		Y			H = 6-8' W = 6-8'	○	Clay	High, consistently moist	E & central North America	Wetland plant
Deschampsia cespitosa 'Northern Lights' - Northern Lights Tufted Hair Grass	G	4a-9b			Y	M	H = 1-3' W = 1-3'	○	Variety, acidic	Moderate, consistently moist		Air pollution tolerant Deer resistant Attracts birds
Deschampsia cespitosa var. vivipara - Tufted Hair Grass	G	4a-9b					H = 2-3' W = 1-2'	○	Variety, rich	High, consistently moist		Air pollution tolerant Attracts birds
Elocharis palustris - Creeping Spike Rush	G	3b-8b		Y			H = 2-4' W = 1-2'	○	Wet	High, consistently moist	United States, Canada, Europe, Asia	Wetland plant
Elodea canadensis - Canadian Waterweed	G	4a-9b		Y			H = 3" W = 12-36"	◌	Wet	High, consistently moist	North America, S Canada	Wetland plant
Eriogonum caespitosum - Mat Buckwheat	G	4a-9b					H = 4" W = 3'	○	Rocky		W United States	Cold tolerant Attracts pollinators
Festuca spp. - BioMeadow Fine Fescue Mix	G	4a-9b					H = 8-12" W = 6-8"	○		Moderate		Adaptable to salt

Festuca arundinacea - Dwarf Tall Fescue	G	5a-8b					H = 24-36" W = 12-18"	○	Clay	Moderate		Adaptable to salt
Festuca arundinacea 'Bolero' - BioTurf Dwarf Fescue Mix	G	5a-8b	Y			S	H = 2-3' W = 12-18"	○	Clay	Moderate		Heat tolerant Deer resistant
Festuca arundinacea 'Bonsai' - Bonsai Dwarf Tall Fescue	G	5a-8b					H = 24-36" W = 12-18"	○	Clay	Moderate		Deer resistant
Festuca glauca - Blue Fescue	G	4a-9b	Y				H = 9-12" W = 12-18"	◌	Variety	Low, moderate		Air pollution tolerant Ornamental
Festuca glauca 'Boulder Blue' - Border Blue Fescue	G	4a-9b	Y				H = 6-15" W = 6-12"	◌	Variety	Low		Air pollution tolerant Ornamental Deer resistant
Festuca glauca 'Elijah Blue' - Elijah Blue Fescue	G	4a-8b	Y			F	H = 9-12" W = 9-12"	◌	Variety	Low		Air pollution tolerant Ornamental Deer, rabbit resistant
Glyceria striata - Fowl Manna Grass	G	3b-9b		Y			H = 2-4'	◌	Variety, rich	Moderate, consistently moist	North America	Wetland plant Deer resistant Attracts birds, pollinators
Helictotrichon sempervirens - Blue Oat Grass	G	4a-9b	Y			M	H = 2-3' W = 2-3'	◌	Variety	Moderate		Adaptable to salt Air pollution tolerant Deer, rabbit resistant
Hibiscus laevis - Halberd-Leaved Rose Mallow	G	4a-9b		Y		F	H = 4-6' W = 3-4'	○	Variety, acidic	High, consistently moist	SE Canada, central & E United State	Heat tolerant Wetland plant Attracts pollinators
Imperata cylindrica 'Rubra' - Japanese Blood Grass	G	5a-9b	Y				H = 2-4' W = 2-4'	○	Variety	Low	Korea, Japan, China, India, E Africa	Air pollution tolerant Ornamental
Juncus effusus - Common Rush	G	4a-9b		Y	Y		H = 2-4' W = 2-4'	○	Wet	High, consistently moist	Britain, E & S Africa, Australia	Wetland plant
Koeleria macrantha 'BarKoel' - Turtleturf Prairie Junegrass	G	4a-9b					H = 4-18" W = 4-8"	○	Variety	Moderate		
Miscanthus x giganteus - Giant Chinese Silver Grass	G	4a-9b	Y			F	H = 10-13' W = 5'	◌	Variety	Moderate	Hybrid of Asian species	Heat, wind tolerant Ornamental Deer, rabbit resistant Attracts birds
Miscanthus 'Purpurascens' - Flame Grass	G	4a-9b	Y				H = 4-5' W = 2.5-3'	○	Variety	Moderate, consistently moist	Africa, E Asia	Heat tolerant Air pollution tolerant Ornamental
Miscanthus sacchariflorus - Silver Banner Grass	G	5a-9b		Y	Y		H = 5-8' W = 3-4.5'	○	Wet	High, consistently moist	Japan, Manchuria, Korea, N China	Heat tolerant Air pollution tolerant Ornamental

Miscanthus sinensis 'Adagio' - Adagio Maiden Grass	G	5a-9b	Y		Y	F	H = 3-5' W = 3-4'	○	Loam	Moderate	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Deer resistant
Miscanthus sinensis 'Cabaret' - Cabaret Japanese Silver Grass	G	5a-9b	Y		Y	F	H = 6-7' W = 3-5'	○	Loam	Moderate, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Deer resistant
Miscanthus sinensis 'Gold Bar' - Gold Bar Maiden Grass	G	5a-9b	Y				H = 4-5' W = 3-4'	○	Variety	Low, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental
Miscanthus sinensis 'Gracillimus' - Gracillimus Maiden Grass	G	5a-9b	Y		Y	M	H = 4-8' W = 3-6'	○	Variety	Moderate, consistently moist	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts birds
Miscanthus sinensis 'Graziella' - Graziella Maiden Grass	G	5a-9b	Y				H = 5-7' W = 3-4'	○	Variety	Low, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental
Miscanthus sinensis 'Silberfeder' - Silver Feather Maiden Grass	G	4a-9b	Y				H = 6-8' W = 4'	◌	Variety, rich	Low, well-drained	Asia	Adaptable to salt Deer, rabbit resistant Attracts birds
Miscanthus sinensis 'Strictus' - Porcupine Grass	G	5a-9b	Y			M	H = 4-9' W = 2-6'	○	Variety	Moderate, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts birds
Miscanthus sinensis 'varigatus' - Variegated Maiden Grass	G	5a-9b	Y		Y	M	H = 5-9' W = 4-5'	○	Loam	Low, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts birds
Miscanthus sinensis 'Pünktchen' LITTLE DOT - Little Dot Maiden Grass	G	5a-9b	Y				H = 4-7' W = 4-6'	○	Variety	Low, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Attracts birds
Miscanthus sinensis 'Morning Light' - Morning Light Maiden Grass	G	5a-9b	Y		Y	M	H = 4-6' W = 2.5-4'	○	Loam	Low, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts birds
Miscanthus sinensis 'Yaku Jima' - Yaku Jima Maiden Grass	G	5a-9b	Y				H = 3-5' W = 3-5'	○	Variety	Low, well-drained	Japan, China, Korea	Heat tolerant Air pollution tolerant Ornamental

Miscanthus sinensis 'Zebrinus' - Zebra Grass	G	5a-9b	Y				H = 5-8' W = 4-6'	○	Variety, rich	Moderate, well-drained	Asia	Deer, rabbit resistant Attracts birds
Panicum virgatum 'Dallas Blues' - Dallas Blues Switch Grass	G	5a-9b	Y	Y	Y	M	H = 4-6' W = 2-3'	○	Sandy, clay	Low	Utah, North America	Air pollution tolerant Deer resistant Attracts birds
Panicum virgatum 'Cloud Nine' - Cloud Nine Switch Grass	G	5a-9b					H = 5-7' W = 2-3'	○	Variety	Moderate	Utah, North America	Adaptable to salt Attracts pollinators
Panicum virgatum 'Heavy Metal' - Heavy Metal Switch Grass	G	5a-9b	Y	Y	Y	F	H = 4-5' W = 1-3'	○	Sandy, clay	Low	North America	Air pollution tolerant Deer resistant Attracts birds
Panicum virgatum 'Prairie Sky' - Prairie Sky Switch Grass	G	4a-9b	Y		Y		H = 4-6' W = 2-3'	○	Sandy, clay	Low	E North America	Air pollution tolerant Attracts birds
Panicum virgatum 'Rotstrahlbusch' - Red Switch Grass	G	5a-9b	Y	Y	Y		H = 4-5' W = 2-3'	○	Variety	Low	E North America	Air pollution tolerant Attracts birds
Panicum virgatum 'Shenandoah' - Shenandoah Switch Grass	G	5a-9b	Y		Y	F	H = 3-4' W = 3-4'	○	Sandy, clay	Low	Utah, North America	Air pollution tolerant Deer resistant Attracts pollinators
Panicum virgatum 'Strictum' - Upright Switch Grass	G	4a-9b	Y			M	H = 4-6' W = 2-3'	◌	Variety, dry	Low	Utah, North America	Attracts pollinators
Pennisetum alopecuroides 'Little Bunny' - Little Bunny Dwarf Fountain Grass	G	6a-9b	Y				H = 12-18" W = 18-24"	○	Variety	Moderate, consistently moist	E Asia	Adaptable to salt Air pollution tolerant Ornamental Deer resistant Attract birds
Pennisetum alopecuroides 'Moudry' - Black Flowering Fountain Grass	G	5a-9b	Y				H = 24-30" W = 18-24"	○	Sandy, clay	Low		Deer resistant
Pennisetum orientale 'Karley Rose' - Karley Rose Oriental Fountain Grass	G	5a-8b	Y		Y	M	H = 2-4' W = 2-4'	◌	Variety	Low, well-drained	Asia	Air pollution tolerant Deer resistant
Poa pratensis - BioBlue Kentucky Bluegrass Mix	G	5a-8b					H = 6" W = 4"	◌	Wet	High, consistently moist		
Schizachyrium scoparium - Little Bluestem	G	5a-9b	Y		Y		H = 2-4' W = 1.5-2'	◌	Variety	Low, well-drained	North America	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts pollinators
Schizachyrium scoparium 'Blaze' - Blaze Little Bluestem	G	4a-9b	Y		Y		H = 2-3' W = 1.5-2'	◌	Variety	Low, well-drained	North America	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts pollinators

Schizachyrium scoparium 'Prairie Blues' - Prairie Blues Little Bluestem	G	4a-9b	Y		Y		H = 32-36" W = 12-15"	○	Variety	Low, well-drained	North America	Heat tolerant Air pollution tolerant Ornamental Deer resistant Attracts pollinators
Schizachyrium scoparium 'Standing Ovation' - Standing Ovation little bluestem	G	3b-8b	Y		Y	F	H = 3-4' W = 1-2'	◌	Variety	Low, moderate	North America	Air pollution tolerant Ornamental Deer resistant Attracts birds
Spartina pectinata - Prairie Cordgrass	G	4a-8b		Y			H = 20-30" W = 20-30"	◌	Clay, loam, wet	High, consistently moist	North America	Wetland plant Deer resistant
Sporobolus airoides - Alkali Sacaton	G	4a-9b	Y				H = 4' W = 3'	○	Variety	Low, well-drained	North America	Adaptable to salt Deer resistant
Sporobolus wrightii - Giant sacaton	G	5a-8b	Y		Y	M	H = 5-7' W = 3-5'	○	Variety	Low	SW United States	Deer resistant
Sporobolus wrightii 'Windbreaker' - Windbreaker Giant Sacaton	G	5a-9b	Y				H = 8-10' W = 6'	◌	Alkaline	Low, well-drained	New Mexico	Adaptable to salt Wind tolerant Deer resistant
Aguilegia caerulea - Rocky Mountain Columbine	P	3b-9b					H = 1-2' W = 1-2'	○	Variety	Moderate, well-drained	Utah, W North America	Deer, rabbit resistant Attracts birds
Aquilegia formosa - Western Columbine	P	3b-9b					H = 24-36" W = 18"	○	Sandy, loam	Moderate, well-drained	Utah, W North America	Rabbit resistant Attracts pollinators
Aquilegia McKana Group - McKana Hybrid Columbine	P	3b-9b					H = 2-2.5' W = 1-1.5'	○	Variety	Moderate, well-drained	N Hemisphere	Deer, rabbit resistant Attracts birds
Armeria maritima 'Bloodstone' - Bloodstone Thrift	P	3b-9b	Y		Y	M	H = 6-8" W = 12"	○	Sandy, loam	Low	North America	Deer, rabbit resistant
Armeria maritima 'Cotton Tail' - Cotton Tail Thrift	P	3b-9b	Y		Y	M	H = 4-6" W = 4-6"	◌	Sandy, loam	Low	North America	Deer, rabbit resistant
Armeria maritima 'Düsseldorfer Stolz' - Dusseldorf Pride Thrift	P	3b-9b	Y				H = 6-12" W = 6-12"	◌	Variety, dry	Low, well-drained		
Armeria maritima 'Rubifolia' - Red Leaf Thrift	P	3b-9b	Y		Y	M	H = 8-10" W = 12"	◌	Sandy, loam, dry	Low, well-drained		Deer, rabbit resistant
Armeria maritima 'Splendens' - Splendens Common Thrift	P	3b-9b	Y		Y	M	H = 6-12" W = 6-12"	◌	Variety, dry	Low, well-drained		Deer, rabbit resistant
Asarum caudatum - Wild Ginger	P	7a-9b	Y				H = 3-6" W = 6-18"	●	Variety, humusy, acidic	Moderate, consistently moist	W North America	Deer resistant
Iris virginica shrevei - Blue Flag Iris	P	5a-9b		Y			H = 1.5-2' W = 1.5-2'	◌	Sandy, acidic, wet	High, consistently moist	E United States	Wetland plant Deer resistant Attracts pollinators

Typha latifolia - Broadleaf Cattail	P	3b-9b		Y			H = 4-6' W = 4-6'	○	Wet	High, consistently moist	Utah	Wetland plant Bioremediation Deer resistant
Verbena hastata - Blue Verain	P	3b-8b	N				H = 2-6' W = 1-2.5'	◌	Variety, wet	High	W North America	Deer resistant Attracts pollinators
Asclepias speciosa Torr. - Showy Milkweed	P	5a-9b	Y			F	H = 1-3' W = 1-2'	○	Variety	Low, well-drained	Utah, W North America	Attracts wildlife, pollinators
Diachondra repens - Diochondra	GC	7a-9b	Y				H = 2"	○	Variety	Low, well-drained	Australia	
Juniperus horizontalis 'Bar Harbor' - Bar Harbor Juniper	GC	3b-8b	Y		Y		H = 18-24" W = 5-6'	◌	Sandy, dry	Low	Alaska, Canada, N United States	Adaptable to salt Air pollution tolerant Deer resistant
Juniperus horizontalis 'Hughes' - Hughes Juniper	GC	3b-9b	Y				H = 1-9'	◌	Variety	Low, well-drained	North America	Urban pollution tolerant Deer resistant
Nepeta racemosa 'Walker's Low' - Walker's Low Catmint	GC	4a-9b	Y				H = 2-2.5' W = 2..5-3'	○	Variety	Low, well-drained	Caucusus, N Iran	Adaptable to salt Air pollution tolerant Deer/rabbit resistant
Nepeta sibirica 'Souvenir d' André Chaudron' - Souvenir d Andre Chaudron Catmint	GC	3b-9b	Y				H = 1-3' W = 1-2'	○	Variety	Low, well-drained	Europe	Cold tolerant Deer resistant
Nepeta x faassenii 'Select Blue' - Select Blue Catmint	GC	4a-9b	Y				H = 1-1.5' W = 1-2'	○	Variety	Low, well-drained	Europe	Air pollution tolerant Disease resistant Deer, pest resistant
Nepeta 'Psfike' - Little Trudy Catmint	GC	4a-9b	Y			M	H = 8-14" W = 12-16"	○	Variety	Low, well-drained	Europe	Air pollution tolerant Deer, rabbit resistant Attracts pollinators
Teucrium chamaedrys 'Prostratum' - Compact Creeping Germander	GC	5a-9b	Y				H = 6-12" W = 1-3'	○	Variety	Low, well-drained	S Europe, Mediterranean, Britain	Deer, rabbit resistant Attracts wildlife
Veronica oltensis - Thyme-leaf Speedwell	GC	4a-9b	Y			S	H = 12" W = 24"	◌	Variety	Low, well-drained		Adaptable growing conditions
Veronica liwanensis - Turkish veronica	GC	3b-9b	Y			S	H = 2" W = 18"	○	Variety	Low		Adaptable to salt Deer resistant
Veronica 'Reavis' - CRYSTAL RIVER® veronica	GC	3b-7b	Y			F	H = 1-3" W = 18-30"	○	Variety	Low		Deer resistant
Veronica x 'P018S' - SNOWMASS® blue-eyed veronica	GC	3b-9b	Y				H = 1-2" W = 18"	○	Variety	Low, moderate		Deer resistant Attracts pollinators
Campsis radicans f. flava - Yellow Trumpetvine	V	5a-9b	Y			F	H = 15-40' W = 5-12'	◌	Variety	Low, well-drained	SE United States	Heat tolerant Urban pollution tolerant Deer, rabbit resistant Attracts pollinators

Clematis ligusticifolia - Western White Clematis	V	5a-9b	Y			F	H = 20' W = 18'	○	Variety	Low, well-drained	W North America, Alberta, British Columbia	Rabbit resistant Attracts pollinator
Vitis labrusca 'Concord' - Concord Grape	V	5a-8b					H = 15-20' W = 15-20'	◌	Loam, rich, humusy	Moderate, well-drained	North America	Ornamental Deer, rabbit resistant
Vitis labrusca 'Niagara' - Niagara Grape	V	5a-8b				F	H = 15-20' W = 15-25"	◌	Loam, rich, humusy	Moderate, well-drained	North America	Ornamental
Vitis 'Himrod' - Himrod Grape	V	5a-8b				F	H = 15-20' W = 15-25"	◌	Loam, rich, humusy	Moderate, well-drained	Asia Minor; Turkey	Ornamental Deer, rabbit resistant
Vistis 'St. Theresa' - St. Theresa Grape	V	5a-8b					H = 15-20' W = 3-8'	○	Alkaline	Moderate		Cold tolerant Ornamental
Vitis x 'St. Theresa Seedless' - St. Theresa seedless grape	V	4a-8b					H = 15'-20' W = 3-8'	○	Loam, clay, alkaline	Moderate	Rocky Mountain Regions	Adaptable growing conditions
Yucca filamentosa - Adam's Needle	SU	5a-9b	Y		Y		H = 4-8' W = 2-3'	○	Sandy	Low, well-drained	SE United States	Adaptable to salt Air pollution tolerant Deer, rabbit resistant
Yucca filamentosa 'Bright Edge' - Bright Edge Yucca	SU	4a-9b	Y				H = 2-3' W = 3-4'	◌	Rocky	Low	SE United States	Adaptable to salt Deer resistant

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