Welcome to Introduction to Water-wise Landscaping.

Water-wise landscaping, also known as xeriscape, isn’t just a landscape style, it is a set of principles that provide direction and best a management practices to save water and sustain an attractive lower-maintenance landscape that requires fewer environmental resources.

By the end of this class you will be able to define water-wise landscaping and its seven principles.
Do you know...

But first, are you able to answer these questions?

Where we get our water?
Where we store our water?
How much water our city uses per year?
What programs we offer?
How much water we have saved over the years?
Colorado is a headwaters state, with the majority of the state’s rivers beginning high in the Rocky Mountains as snowmelt. One of the benefits of living in a state that relies primarily on surface water is that unlike groundwater, surface water is a renewable water source.

One of the drawbacks is that precipitation levels vary greatly from year-to-year making the majority of the state’s water supply relatively unpredictable – and highly prone to drought.
Aurora’s water system starts nearly 180 miles away and includes the use of reservoirs, the natural river system, pipes, tunnels and pumps, all of which help us pull the water we own from our three river basins and deliver it to Aurora.

Aurora receives 25% of its water supply from the Colorado, 25% from the Arkansas and 50% from the South Platte river basins.

- Homestake
- Turquoise
- Twin
- Spinney Mountain
- Jefferson
- Strontia Springs

- Rampart
- Quincy
- Pueblo
- Aurora
- Meredith
- Henry
The average annual distribution for the past three years is 16.6 billion gallons annually. About half of that water is used outdoors. Aurora has a semi-arid climate, and our snow and rain levels are about half of the average annual precipitation for the United States, so it’s important that we all do our part to help conserve water.
...we offer programs to help you save water and money?

INDOOR PROGRAMS
• Free indoor water assessment
• Ultra-high-efficiency toilet rebate
• Low-income water efficiency program

OUTDOOR PROGRAMS
• Free landscape designs and rebates
• Free automatic sprinkler system assessments and rebates
• Customize your watering schedule
• Water conservation classes
• Gardening and volunteering
...how much water the conservation division has saved?

448 million gallons or 7.2 billion cups of water

Combined water savings for 2016, 2017, 2018
Here are two examples of water-wise landscapes.

The design on the left utilizes clusters of plant material with a relatively small palate of no more than 10 plants. It also demonstrates the effective use of blue grama for turf and wooly time as a turf alternative. Blue grama is a turf only in the aesthetic sense as it does not tolerate sustained foot traffic.

The design on the right provides a kaleidoscope of color and texture with a larger and more varied plant palate of shrubs and perennials interspersed with each other.

Both provide a lot of color and multi-season interest.
Because of similarities in how each are pronounced, xeriscape and zeroscape are often used synonymously. They are, however, very different types of landscapes. Zeroscape is a landscape of rock or mulch with little to no plant material. It is not permitted in the City of Aurora.
Benefits

• Aesthetics
• Habitat
• Maintenance
• Water use

Aesthetic – It’s a means of increasing seasonal interest through color and texture

Habitat – Many of the plants attract pollinators and other beneficial insects in addition to providing habitat for songbirds

Maintenance – It’s not maintenance free, but requires the bulk of it to be done in early spring. Weekly maintenance includes a walkthrough of the area to look for weeds, trash and to evaluate plant health. Once established and well maintained, it requires much less maintenance than cool season turf.

Water use – Depending on plant selection and watering practices, it can reduce water use for an area by almost 90%.
These are the seven principles of a water-wise landscape, also known as the “Seven Principles of Xeriscape”.

Principles of a Water-wise Landscape

1. Planning and design
2. Practical turf areas/
   Turf alternatives
3. Low water-use plants
4. Soil improvement
5. Mulch
6. Efficient irrigation
7. Maintenance
Planning is one of the most important principles. It’s the process that involves setting specific goals, identifying what you are doing and why, researching materials, methods and means of installation, costs, existing site conditions such as slope, exposure and soil type, and incorporation of the remaining principles to provide clear direction and lead to a successful project. A well planned project may also save money.
Practical Turf Areas / Turf Alternatives

It’s okay to have cool season turf. The challenge is finding a balance between how much you want versus how much you need if you need if any at all.

Is the need to have it aesthetic or functional? Aesthetically, high water-use turf provides an area of uniform color and texture that is pleasing to the eye. A similar uniform color and texture can be achieved with low water-use grasses or groundcovers. A functional benefit of a high water-use grass is that it holds up well to foot-traffic. This desirable characteristic comes at the cost of requiring a lot of water. If an area of your grass is rarely used but your keen on maintaining a similar look, consider removing it and replacing it with a low-water turf or turf alternative.
Water-wise landscaping is about the plants. One common misconception is that the palate of plant material we have to work with is limited to cactus, yucca and other succulents. Such is not the case. The nine plants you’ll see here are but a small demonstration of the options that exist. Plants native to Colorado and the Front Range are optimal, but there are also a lot of non-native plants that work well in a water-wise landscape. These adapted plants come from other places around the world with similar climatic conditions.

1 – Pasque Flower (Pulsatilla vulgaris)
2 – Mongolian Bells Clematis (Clematis integrifolia)
3 – Variegated Maidengrass (Miscanthus sinensis ‘variegatus’)
1 – Autumn Sapphire Sage
   *Salvia reptans* ‘Autumn Sapphire’

2 – Fire Spinner Ice Plant
   *Delosperma* ‘Fire Spinner’

3 – Double Bubblemint Hyssop
   *Agastache cana*
1 – Narbonne Blue Flax
   *Linum narbonense*

2 – Texas Red Yucca
   *Hesperaloe parviflora*

3 – Kintzley’s Ghost
   Honeysuckle
   *Lonicera reticulata* ‘Kintzley’s Ghost’

1 – Narbonne Blue Flax (Linum narbonense)
2 – Texas Red Yucca (Hesperaloe parviflora)
3 – Kintzley’s Ghost (Lonicera reticulata ‘Kintzley’
There are several local resources to help you get acquainted with the plants, including plantselect.org, waterwiseplants.org, Colorado Extension fact sheet 7.231, local nurseries and the Aurora Water-wise Garden.

* High Country Gardens is an online retailer of plant material suitable for water-wise landscapes. This plant material does not meet plant size requirements for city code or the water-wise landscape rebate program.
Why do we amend soil?

Soils along the Front Range are typically low in organic matter, ideal for our local native plants. But some of the plants we may use may not be native and may appreciate some richer soil. Amending your soil with a high quality organic matter such as compost improves the physical properties of the soil and helps provide necessary nutrients for plants. Compost increases a sandy soil’s ability to hold onto water and helps plant roots breathe in clay soils. Class I and class II composts are best. A list of these composts can be found on the Lawn and Irrigation Permit page of the Aurora Water website https://www.aurorawater.org. Not all low-water plants like organic matter though. For some, it’s best to use inorganic amendments such as pea gravel, expanded shale or angular sand (also known as Mason’s sand) when planting in clay soils. Playground sand is not an acceptable soil amendment.

There are a few ways you can determine soil type. One is by sending a soil sample to the Colorado State University soil lab. For a small fee they will analyze your soil type and provide fertilizer recommendations.

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Another is by grabbing some soil in one hand, adding some water and then trying to create a quarter-inch thick ribbon of soil using your thumb and pointer finger. If the ribbon continually breaks apart, the soil has a lot of sand and less of silt and/or clay. If you’re able to make a ribbon a couple inches in length, there’s a lot of clay in the soil.

Lastly, fill a quart sized canning jar half way with soil and then almost to the neck with water. Shake it vigorously until all of the soil is mixed with the water, then set it on the counter for 24 hours. Sand particles will settle to the bottom immediately, silt will settle after a few hours and clay may take up to 24 hours. Once the water is mostly clear, measure the overall amount of soil in the jar, and each of the three major layers. Let’s assume that there are 4 inches of soil, 2.5 of which are sand, 0.5 inch of silt and 1 inch of which is clay. You can calculate the percent of each particle type and then reference a soil triangle which is readily available on the internet. Be sure to remove any gravel or large rocks from the soil prior to putting it in the glass jar.

If you’re starting your landscape from scratch and there aren’t any established trees, it could be beneficial to amend the entire yard, this is more costly, but definitely beneficial. The alternative is to amend the soil around each plant as it’s planted. In this case, the amendment is thoroughly mixed with the existing soil.

Soil Improvements

- Increases water retention
- Increases permeability
- Improves drainage
- Increases biotic activity

Types
- Compost
- Angular sand
- Pea gravel
There are two types of mulch, organic and inorganic. Three inches is recommended regardless of which type is chosen. Three inches of mulch prevents sunlight from reaching soil, keeping the soil cool thus reducing evaporation and discouraging seed germination. It reduces the potential for erosion as it disperses the force of heavy precipitation, allowing it to more slowly work its way to the soil.

We’re frequently asked about putting fabric down before the mulch. We feel it’s unnecessary when the mulch is organic, for as the mulch is decomposed, it will have the opportunity to add beneficial nutrients and humus to the soil. Rock mulch benefits from an underlayment of fabric as it keeps the rock on the top of the soil. It really needs to be the plants that decide, regardless of mulch type, plant roots need to come in contact with the soil. Fabric can prevent them from doing just that.

Plastic sheeting should never be used as a weed barrier.
Irrigation efficiency depends on the person turning the water on and off.

For automatic irrigation systems:
- Seasonally adjust the clock
- Water in cycles
- Use a rain sensor
- Perform regular maintenance - checking for broken, leaky or tilted heads

Efficient irrigation depends on you.
For each of the three columns:

Green – The range of water that needs to be applied in order for plant material to perform its best.
Orange – The range where the plant material will be under stress, but is likely to survive. This could be likened to drought.
Red – The range where the plant is not receiving enough water to survive. Plant death is imminent.

We speak of landscape water-use in terms of inches per square foot. One inch of water amounts to 0.623 gallons. Cool season grass starts to perform poorly even when receiving 20 inches (12.5 gallons) of irrigation. Depending on the plants selected, a water-wise landscape will still perform well when receiving 5 inches (3 gallons) of supplemental irrigation. Not only does a water-wise landscape use less water, it is very tolerant of drought. So, should there be periods where we are unable to water outdoor, most of the plants in a water-wise landscape will still survive.
Spring cut-back – Removing the previous year’s growth from ornamental grasses and perennials. Looking for winter damage to shrubs and trees and pruning if necessary.

Deadheading – Removing blooms as they begin to fade so more flowers are produced. Flowers are intended to be pollinated, after which they will produce seed. Producing seed requires a lot of resources, if we clip the flower before the seed starts forming, those resources are used to create more flowers. Deadheading may extend the bloom season.

Weeding – Identifying weeds that are growing on site and then removing them. This may be by pulling them up or by utilizing an herbicide. The best practice is to never allow a weed to go to seed, ever!

New mulch – Organic mulch decomposes over time adding beneficial nutrients and humous to the soil. In order to maintain a layer of at least 3 inches, organic mulch will need to be replenished. A top dressing of 2 inches every few years will likely be necessary.
Aurora Water-wise Garden
Fall color in the Aurora Water-wise Garden
Aurora Water-wise Garden
Buffalograss is a great option for a low-water, warm-season grass. Compared to a Kentucky bluegrass lawn, which generally needs to be irrigated with 28 inches of water each season, buffalograss and other warm-season grasses will perform well with 5-10 inches of water.
A simple water-wise landscape using thyme as a turf alternative.
Thank You

Water Conservation Office
Hotline 303.739.7195 conservation@auroragov.org

Please visit our website for additional information
https://www.auroragov.org/Residents/Water/water_conservation