

Heather Pidcock-Reed  
Technical Report  
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Professor Rachael Post  
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# **An Introduction to Xeriscaping:**

## **The Green Alternative to Landscaping**



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## **Introduction**

The primary purpose of this report is to provide the reader an introduction to the landscaping technique known as xeriscaping, an alternative to more traditional forms of lawn care and landscaping.

In order to give the reader perspective on how the current state of lawn care in America came into being, the report begins with a brief overview of the history of landscaping in American culture. This background will enable the reader to move onto the problems inherent in modern landscaping and how it contributes to global warming and climate change. There will then be an overview explaining what xeriscaping is and its benefits for both the environment and the American consumer.

An overview of the seven basic principles of xeriscaping will give readers an understanding of how to apply xeriscaping techniques. This is followed by a brief explanation of the types of plants that are commonly seen in xeriscaped environments.

## **A Brief History of Lawns and Landscaping in America**

When thinking about lawns, many Americans picture landscapes dominated by lush, green grass preserved by frequent watering, mowing, and weeding. How did this conception of the lawn come to be?

The modern concept of the lawn has its roots in the Middle Ages, when members of the British and French nobility transplanted grassy turf to their estates, creating large areas of aesthetically pleasing lawns for recreation and

relaxation (Jabr). By the time English colonists arrived in America in the 17<sup>th</sup> century, lawns were associated with the rich and famous. To get those lawns, the wealthy imported European and Asian grasses from the Old World (Jabr).

After the Civil War, garden hoses and lawn mowers became easier to produce and more affordable. It was then that the cultivated lawn became more common in the United States (“Argosy Research Brief,” 3). The above technological innovations increased the expectation that most homes would have lush, green lawns. As Americans expanded into the Western parts of the country, they transplanted their ideals of the perfect lawn with them, despite the fact that these ideas were incompatible with the climates they were now living in. By the mid-20<sup>th</sup> century, the use of pesticides and mechanical lawnmowers made it possible for neatly clipped and heavily watered modern lawns to become the norm (Kolbert).

## **The Problem with Modern Lawns and Landscaping**

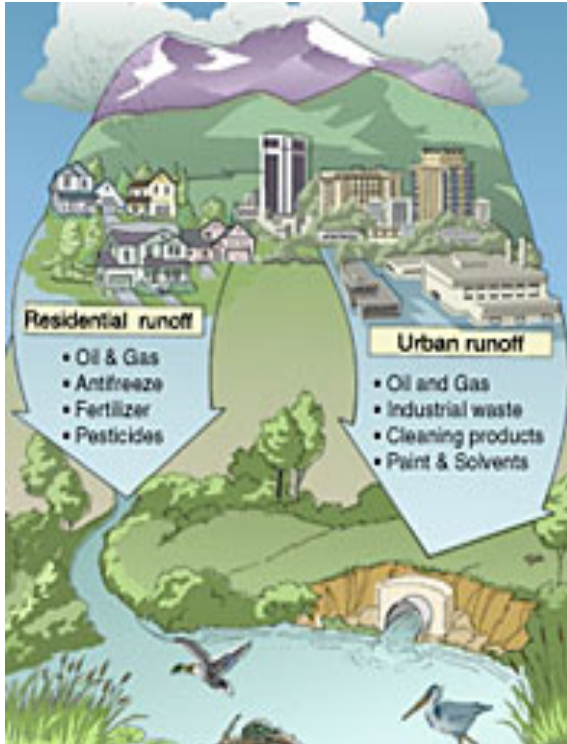
While a green lawn may be aesthetically pleasing, there are several problems with conventional lawns and landscaping in the modern era. Some of the biggest issues inherent within traditional landscaping include wasted water, pesticides, pollution, and maintenance. All of these things lead to an increase in greenhouse gases, contributing to global warming and climate change.

According to the Environmental Protection Agency (EPA), the average American uses 100 gallons of water every day. 30 percent of that water usage is for outdoor water use (“Water Smart Landscaping”). In the dry Western areas of the United States, outdoor water usage shoots up to around 60 percent (“Water Smart Landscaping”). This percentage of usage is unsustainable, especially in dry climates, where drought conditions are common and water restrictions are frequently put into place to conserve water.



Source: American Water Works Association Research Foundation

The most valuable resource on Earth is water. The Earth’s water provides us with water for drinking and bathing. It supports our agricultural endeavors and helps to supply electricity. Unfortunately, global warming and climate change are having an effect on the amount of clean, usable water available to us. Reducing the amount of water used by the average household is an important element of protecting the water supply so we can continue to have clean drinking water, water for irrigation purposes, and continue using hydroelectric power (“Impact of Global Warming”).



Source: Clean Water Education  
Partnership

The use of non-native plants and the expectation that lawns stay green has led to an increase in pesticide use as people chemically treat their grass and plants. These pesticides are extremely harmful to the environment. Rainfall and frequent watering of grass and other plants leads to chemical runoff, as pesticides drain into the sewer system and into the water supply. These chemicals aren't just

harmful to the environment, but are dangerous for people too.

The EPA estimates that five percent of the air pollution in the United States is caused by harmful gas emissions from lawn mowers (“Environmental Impact”). Recent studies indicate that gas-powered lawnmowers create the same amount of pollution as driving a car for four hours (“Environmental Impact”). Heavily polluted air not only contributes to global warming, but also is responsible for a number of documented health issues including asthma, lung diseases and damage, and heart conditions (“Environmental Impact”).

In many areas of the United States, maintaining a traditional landscape takes a lot of time and resources. In dry climates, landscapes need to be watered more and require more fertilizer to stay healthy and green. This is expensive and time consuming, as well as wasteful and environmentally unsound.

Global warming and climate change will continue to impact the water supply. Therefore, it is imperative that we do everything in our power to protect our water supply by reducing the amount of water we use and protecting it from dangerous chemical runoff. An environmentally sound practice of landscaping is one way we can conserve water and help the environment.

## **The Solution: Xeriscaping**

The Oxford English dictionary defines xeriscaping as, “a style of landscape design requiring little or no irrigation or other maintenance, used in arid regions.” The heart of xeriscaping is in reducing the need for water in landscaping decisions. This is achieved through a combination of the use of efficient irrigation and the incorporation of a variety of plants that can grow and thrive in low-water environments (Detweiler, 2). This technique has become increasingly popular in the drier climates of the American West, as it conserves water, reduces the use of harmful pesticides and fertilizers, lessens carbon emissions from lawn mowers, and helps to reduce the risk of wildfire (“Argosy Research Brief,” 6).

One of the biggest benefits of xeriscaping is that it uses less water. Studies show that a xeriscaped landscape can reduce outdoor water use by 76 percent (“Argosy Research Brief,” 4). This not only lowers utility bills and benefits consumers, but it also allows people who live in dry climates to save water, benefiting the environment, agriculture, and society as a whole (“Xeriscape

Landscaping,” 2). Using less water also reduces the amount of pesticides, fertilizers, and other harmful chemicals making their way into the water supply.

Another benefit of xeriscaping is the reduction of harmful greenhouse gases. Since a xeriscaped landscape doesn't require as much fertilizer and reduces the need to for mowing the lawn and leaf blowing, there are fewer harmful emissions going into the air. This not only means healthier air, but it also means healthier people.

In addition to conserving water and reducing greenhouse gases, xeriscaping can also help reduce the risk of wildfires in residential areas. Many drought-prone areas also have a high risk of wildfires moving through the area. When water restrictions are in place, the risk is even higher due to dead and dying grass that swiftly catches fire and spreads at alarming rates. A properly xeriscaped landscape can reduce the risk of fire starting or spreading to a property due to the drought-resistant and non-flammable plants that are a part of the landscape (Randall).

Xeriscaping is not only an environmentally sound landscaping practice, but it is also an aesthetically pleasing one. Unlike zeroscaping, a method that uses mostly rocks, gravel, and few plants, xeriscaping allows for a variety of plants and materials (“Argosy Research Brief,” 3). Through careful planning and selection of plants, materials and types of turf used within the landscape, a xeriscaped landscape is functional, appropriate for the climate in which it exists, and visually appealing.



## **The Seven Principles of Xeriscaping**

There are seven basic principles of xeriscaping. These principles are essential in understanding what xeriscaping is and how to effectively achieve a healthy xeriscaped landscape (Detweiler, 3). The principles are:

- 1) Planning and design;
- 2) Appropriate zoning of plants;
- 3) Knowing the soil;
- 4) Efficient irrigation;
- 5) Turf and turf alternatives;
- 6) Mulching;
- 7) Maintenance.

While there are no “one size fits all” answers to these principles, knowing what they are before beginning to xeriscape will help the landscaper determine what the best options for xeriscaping are in his or her area.

### **Planning and Design**

Planning out and designing the landscape is essential in a successful xeriscaping project. Knowing how the landscape will be used is an important consideration to keep in mind during the planning stage. Another aspect to consider is how much maintenance will be required for a particular design. A plan keeps costs down and makes decisions about what kinds of plants and materials to use easier.

## Appropriate Zoning of Plants

This principle is one of the most important elements of xeriscaping. It requires that plants that have similar needs for water, sunlight, and soil be placed within the same areas (Detweiler, 4). These areas are also known as hydrozones. Hydrozones are divided into four categories of water usage: very low, low, moderate, and very high (Detweiler, 4). Grouping plants by their needs conserves water and resources. The following table shows the types of hydrozones, along with supplemental requirements, as well as brief examples as to what type of plants could be used in that hydrozone.

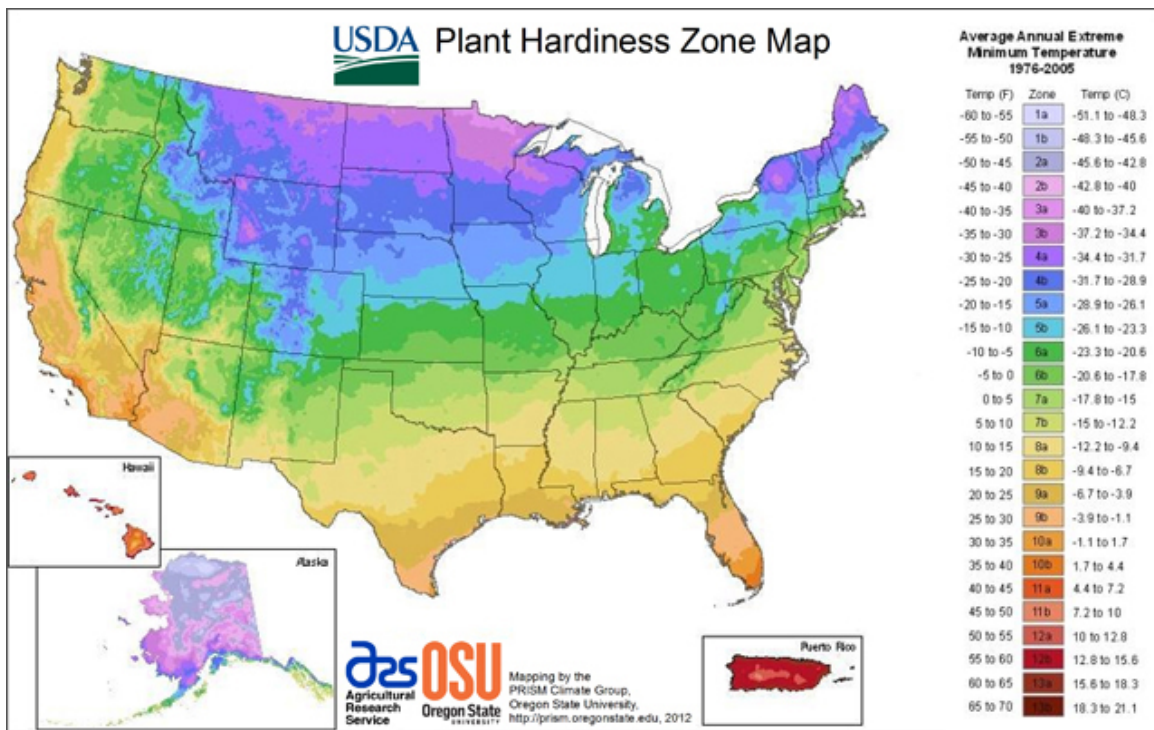
<b>Hydrozone</b>	<b>Supplemental Water Requirements</b>	<b>Plant type examples</b>
Very Low	Required for plant establishment	Most natives
Low	Some required during growing season	Most perennials, some trees & shrubs
Moderate	Regular amounts required during growing season	Fruit trees, ornamental trees & shrubs
High	Regular amounts required during growing season	Turf grass, vegetable gardens

Source: Xeriscaping in the High Desert

Another aspect of zoning plants is to consider choosing plants that won't require a lot of additional maintenance and resources. Plants that are ranked high on the hydrozone list may not be an appropriate choice in hot, dry climates as they could take up too many resources to survive in those areas (Detweiler, 4).

To make choosing plants easier, the United States Department of Agriculture (USDA) has published a map that shows the hardiness zones of

different regions of the United States. This map is helpful in determining the types of plants that can grow and thrive in each area of the country. Knowing the hardiness zone of the area is vital when xeriscaping a landscape. The map below shows the various hardiness zones of the United States.



Source: United States Department of Agriculture

## Knowing the Soil

Soil differs from place to place. There are basically three types of soil: clay, sand, and loam (Detweiler, 4). These soils hold water differently from one another and will require different kinds of strategies as to what kinds of plants can easily survive the soil. The soil will also contribute to the type of irrigation and drainage techniques used in the xeriscape. Effective xeriscaping requires that the landscaper know what kind of soil he or she is working with.

No matter what the soil type, it's important to prepare the soil for the new landscape. This can be done by laying down compost or manure and mixing it into the soil (Detweiler, 4). This will enrich the soil with extra nutrients and help plants grow and thrive in their new environment.

### **Efficient Irrigation**

Installing an efficient and water savvy irrigation system will save water, money, and time (Detweiler, 4). Dividing plants by hydrozones helps to determine where heavy water usage areas will be. Automatic sprinkler systems should be programmed to run according to each hydrozone. These settings should be adjusted according to local weather patterns and season. Choosing a sprinkler system that is low to the ground can help conserve water (Detweiler, 4).

### **Turf and Turf Alternatives**

Using a minimal amount of turf is acceptable within xeriscaping. The key to efficiently using turf is to ensure that it is restricted to areas where it is most needed. These areas should be in larger, flat areas (Detweiler, 5). Avoiding small patches of grassy turf in multiple places in the landscape is an essential element of xeriscape design. Choosing low water turf is also important.

There are several alternatives to using grassy turf. Hardscaping with rocks, gravel, and pavers is one option. Other options include mossy ground cover plants, low growing perennials, clover, or low water use flowerbeds. It's important to choose turf or turf alternatives that will work with the requirements of

other plants in the design's hydrozones, as well as within the hardiness zone where it will be planted.

### **Mulching**

Mulch plays an important role in both traditional and xeriscaped landscapes. There are several benefits to mulching including weed reduction, less water evaporation, and soil erosion prevention (Detweiler, 6). There are many different types of mulches available, from wood, rock, stone, and organic composting materials.

### **Maintenance**

Xeriscaped landscapes require less maintenance than traditional landscapes, but there are still some elements of upkeep required (Detweiler, 7). Some of the upkeep involved in xeriscaping includes weeding, mowing any turf areas, pruning, maintaining the irrigation system, watering, and fertilization. This includes year-round watering in desert areas, where plants may become desiccated during the winter.



### **Commonly Used Plants in Xeriscaping**

While the plants used in a particular xeriscaped landscape will depend upon hardiness zone and climate, there are a variety of plants that are frequently used for xeriscaping. Native plants are great choices for xeriscaping, because they have evolved to survive in particular climates and will not require as much

work to thrive. Carefully selected non-native plants can also thrive when given the kind of attention that they need.

Succulents and cacti are popular options for xeriscaping. These plants thrive in hot, dry climates and require very little water. They come in a full range of colors and are easy to care for. Groundcovers like ivy and juniper are good alternatives to turf. Ornamental grasses and shrubs provide variety in a xeriscape. Different varieties of sage and other perennials such as rosemary and pavonia can also thrive in dry environments. Any plant, tree, or shrub that can thrive in a low water environment will do well in a xeriscaped landscape. The following table is an example of the types of plants one could use and the way they could be arranged in a xeriscaped environment.

**The Heritage at Westmoor  
Plant Select® Demonstration Garden**

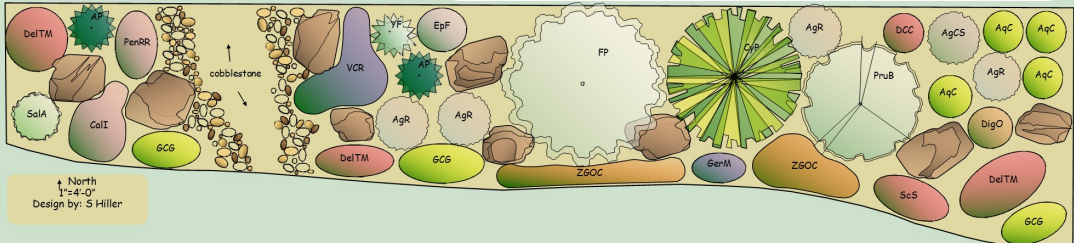
This south facing garden was originally installed in 2000. Large boulders were used for some winter interest and to create some microclimates. A dry creek bed was included to control foot traffic.

\*Featured in Denver Water Xeriscape Brochure in 2002.  
\*Awarded 'Showcase Garden' status by Plant Select® in 2009

**PLANT LIST**

SYMBOL	BOTANICAL NAME	COMMON NAME	HEIGHT	SPACE	COLOR
AgCS	Agastache cana 'Sinning' PPI13673	Hyssop, SONORAN SUNSET®	15"	15"	pink
AgR	Agastache rupestris	Hyssop, Sunset	24"	20"	pink/orange
AP	Agave parryi	Agave, Parry's	24"	24"	white
AgC	Aquilegia chrysantha	Columbine, DENVER GOLD®	30"	15"	yellow
CalI	Callirhoe involucrata	Winecups	5"	24"	magenta
CyP	Cytisus purgans	Broom, SPANISH GOLD®	4'	6'	yellow
DelTM	Delosperma 'John Proffitt'	Ice Plant, TABLE MOUNTAIN®	2"	18"	pink
DCC	Diascia integririma	Twinspur, CORAL CANYON®	15"	15"	pink
DigO	Digitalis obscura	Foxglove, SUNSET®	15"	20"	sienna
EpF	Epilobium fleischeri	Alpine Willowherb	18"	10"	pink
FP	Fallugia paradoxa	Apache Plume	6'	8'	white
GCG	Gazania linearis	Gazania, COLORADO GOLD®	8"	10"	yellow
GerM	Geranium magniflorum	Geranium, LA VETA LACE®	6"	24"	purple
PenRR	Penstemon x mexicali	Penstemon RED ROCKS®	15"	12"	pink
Prub	Prunus besseyi	Sand Cherry, PAWNEE BUTTES®	20"	6'	white
SalA	Salvia argentea	Sage, Silver	24"	24"	white
ScS	Scutellaria suffrutescens	Skullcap, Cherry	10"	24"	pink
VCR	Veronica 'Reavis'	Veronica, CRYSTAL RIVER®	4"	20"	blue
YF	Yucca faxoniana	Yucca, Tree	24"	24"	white
ZGOC	Zauschneria garrettii	Hummingbird Trumpet ORANGE CARPET®	6"	24"	orange

Agave parryi and Yucca faxoniana are not currently Plant Select® plants.



North  
1/4" = 4'-0"  
Design by: S Hiller

Source: Denver Water Xeriscape Brochure

## Conclusion

Xeriscaping is an effective solution to the waste and pollution that traditional landscaping creates. It is particularly useful in the western areas of the United States that have hot and dry climates, although the principles of xeriscaping can be applied in any climate through the use of carefully selected low water plants. Through the use of native plants, appropriately chosen non-native plants, and creative hardscaping with pavers and rocks, a xeriscaped landscape is both environmentally sound and aesthetically pleasing.

## References

- Argosy Research Brief: Xeriscaping*. Argosy Foundation. 9 Jan. 2008. Web. 11 Oct. 2015. <http://www.argosyfund.org/bookshelf/archive/xeriscaping-brief.html>
- Detweiler, Amy Jo. *An Introduction to Xeriscaping in the High Desert – And Pictorial Plant Guide for Central & Eastern Oregon*. Bend Oregon. Oregon State University. 2005. Print.
- “Environmental Impact – Lawnmowers.” *National Geographic*. National Geographic Society. n.d. Web. 10 Oct. 2015. <http://on.natgeo.com/1RNCAb9>
- “Impacts of Global Warming: Water Use.” *Climate Hot Map: Global Warming Effects Around the World*. Union of Concerned Scientists. n.d. Web. 15 Oct. 2015. <http://www.climatehotmap.org/global-warming-effects/water-supply.html>
- Jabr, Ferris. “Outgrowing the Traditional Grass Lawn.” *Scientific American Blog Network*. Scientific American, 29 July 2013. Web. 8 Oct. 2015. <http://bit.ly/1MzD7IT>
- Kolbert, Elizabeth. “Turf War.” *The New Yorker*. Conde Nast, 21, July 2008. Web. 8 Oct. 2015. <http://www.newyorker.com/magazine/2008/07/21/turf-war-2>
- Randall, Cotton K., Annie Hermansen-Baez, Glenn Acomb. “Fire in the Wildlife-Urban Interface: Reducing Wildfire Risk While Achieving Other Landscape Goals.” *University of Florida IFAS Extension*. Oct. 2006. Web. 6 Oct. 2015. <http://edis.ifas.ufl.edu/fr162>



United States. Environmental Protection Agency. *Water-Smart Landscapes Start With WaterSense*. July 2013. Print.

United States. Environmental Protection Agency. *Xeriscape Landscaping: Preventing Pollution and Using Resources Efficiently*. April 1993. Print.