Albuquerque Bernalillo County
Water Utility Authority

IRRIGATION EFFICIENCY GUIDE
BEAUTIFUL LANDSCAPES WITH LESS WATER

WATER IS LIFE

"I come from the land and will someday go back to it. Being in right relationship with the land, water, plants and animals is important to me and critical to being a good ancestor."

- Erika Robers

"Landscapes are the unifying elements of a civilization. They are where we come together as a community. They are where we maintain an integral connection to the natural world."

- Gregory Miller

"Understanding water is key to understanding our challenges, resilience, and shared future. Precipitation, in particular, and other water in the landscape, is a huge part of how I enjoy, love, and relate to my *querencia* and my environment and community. Watching how storms and clouds and water shape the day is crucial to being a New Mexican."

– Elisabeth Stone

"Water has a special meaning in an arid region like the middle Rio Grande region. I especially celebrate water every time my Sandia Lateral Acequia starts to flow. It becomes a symbol of life and the coming of spring."

- Francisco Uviña–Contreras

"My most joyful, fulfilling, calming, energizing times are when I am with plants."

- Judith Phillips

"I'm 60% water."

– Paul Van Gulick

"Water is sacred and scarce."

- Katya Crawford

"I love water! I love being in water, and I love watching water."

– Tess Houle

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¡EL AGUA ES VIDA!

Water is integral to the vibrant life and history of Albuquerque and the Middle Rio Grande Valley—places we call home. Water has allowed the Native American and Indo-Hispano communities to thrive in this region, providing a sacred connection to the land. Water has always been the lifeblood of our pueblos, historic land grants and agricultural communities, acequia culture and querencia (a sense of place deeply tied to land and water).

The Bosque, our unique riparian urban forest, relies on the waters of the Rio Grande to flourish. Our neighborhood parks, which are scattered throughout the city like green jewels, providing us with places to gather with friends and family or just relax in the shade of majestic, mature trees, also need life-giving water. The lush multi-use field at Balloon Fiesta Park, home to our beloved Balloon Fiesta, is maintained by using non-potable water. Water is essential for our coffee, agua fresca and paletas. Without water to grow our chile crops, we wouldn't be able to savor the aroma of roasting green chile in the fall. So much of what makes this a unique and special place in which to live relies on water.

Our challenge is that the water we rely on for our community's quality of life is limited. Climate change is causing precipitation patterns to shift throughout the West, affecting snowfall and our monsoonal patterns. We are living through drought, year after year, to the point where it is becoming normalized, and we are facing a future of aridification. Less precipitation and warmer temperatures mean more irrigation is needed to maintain healthy landscapes, adding demand on an already stressed resource. We need to implement adaptation strategies, including efficient irrigation methods and proper plant selection, to have landscapes that are resilient to these changing conditions.

In the 1990s, our community started coming together to work toward water conservation. We have done an incredible job at reducing our daily household usage, nearly cutting it in half since 1995. Much of these savings have come from swapping out high-water use toilets and showerheads for low-flow ones and converting lawns to xeriscapes.

We have learned a lot through the years. We have learned that removing grass and replacing it with gravel without accommodating mature trees' water needs leads to a struggling tree canopy and contributes to an urban heat island effect. We've also learned that we need to increase the number of native plants we incorporate into our urban areas to maintain sufficient habitat for pollinators and migratory birds. Small adjustments, performed by many people, can have powerful effects on our water usage.

As a community, we need to work together to continue to responsibly conserve water and encourage the development of beautiful and diverse landscapes. Only by working together, often by making small improvements to our irrigation and watering systems, will we be able to have enough water to maintain our vibrant and unique community for years to come. This guide helps provide you with the information you will need to maintain a healthy, desert-friendly landscape—a landscape that reflects who you are and helps our community conserve water. El agua es vida para nuestras comunidades. Protect it and preserve it for future generations to enjoy; ensuring we have healthy landscapes, the Bosque, the Rio Grande and our communities, all of which contribute to the beautiful region in which we live.

COMMON QUESTIONS

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How much more water does a turf landscape need than a xeriscape?

JUMP DIRECTLY TO THE SECTION THAT ANSWERS YOUR QUESTION

SECTION 1:
MATCHING EFFICIENT WATERING WITH YOUR LANDSCAPE

WHY EFFICIENT WATERING

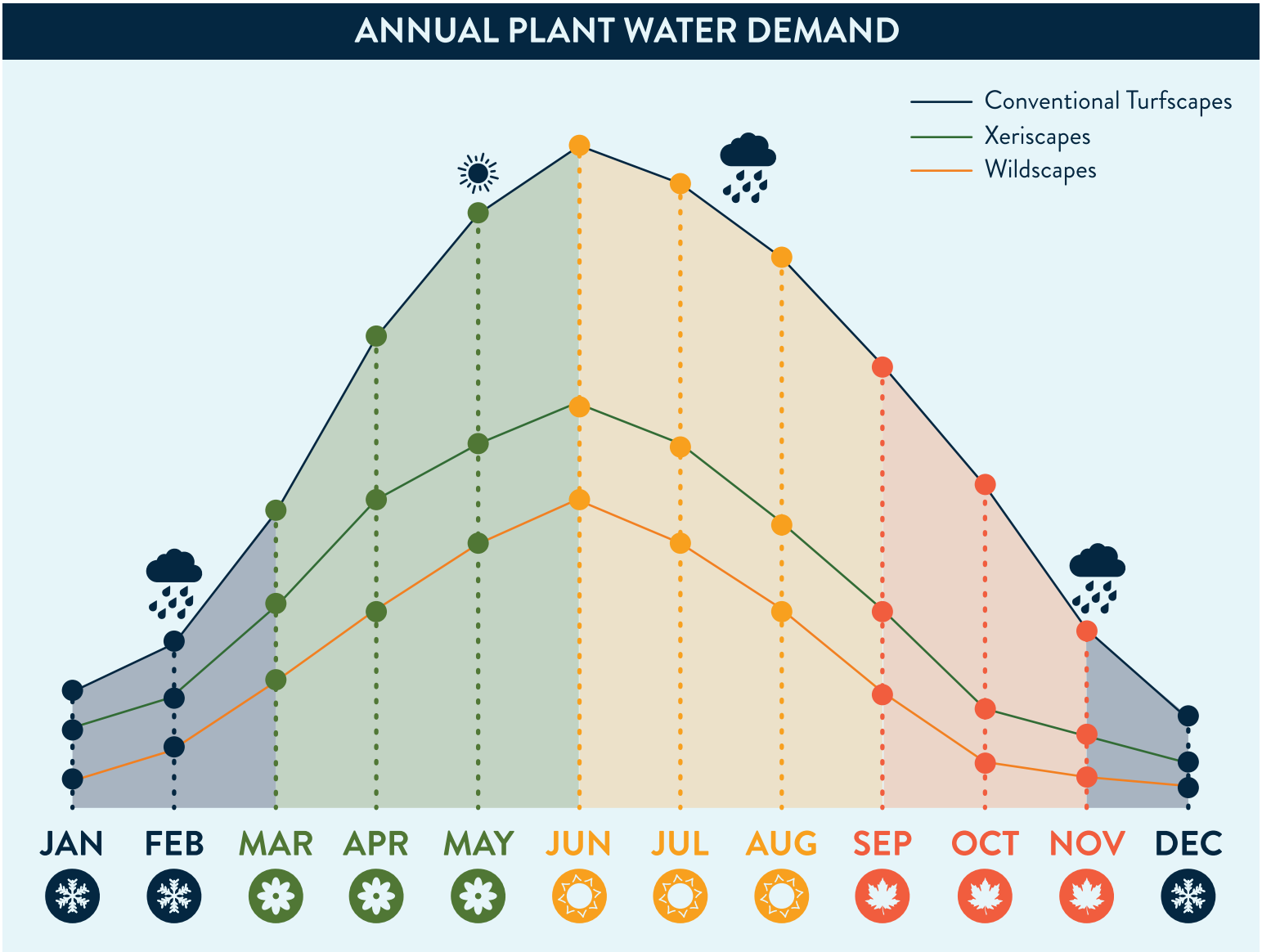
Beautiful and resilient landscapes in the high mountain desert start with efficient watering, which means watering your plants using the least amount of water to provide optimal health. To maximize irrigation, every drop of water needs to go where it can be used most effectively. An efficient landscape is one in which the plants, soil, microclimates, and various water requirements are all working symbiotically to produce luscious and inviting habitats. By implementing good maintenance practices, landscapes can be more resilient to drought, plant disease, pest problems and other factors that stress plants.

The healthiest landscapes are diverse. They feature open areas where plants needing strong sunlight are integrated into mixed groupings of trees and shrubs that buffer the wind and protect the less hardy. When plants are well-adapted, the landscape improves with age.

Water Wisdom:
When you give plants more water than they need,
they grow more than they should and require more pruning and mowing.

THE SEASONAL CURVE

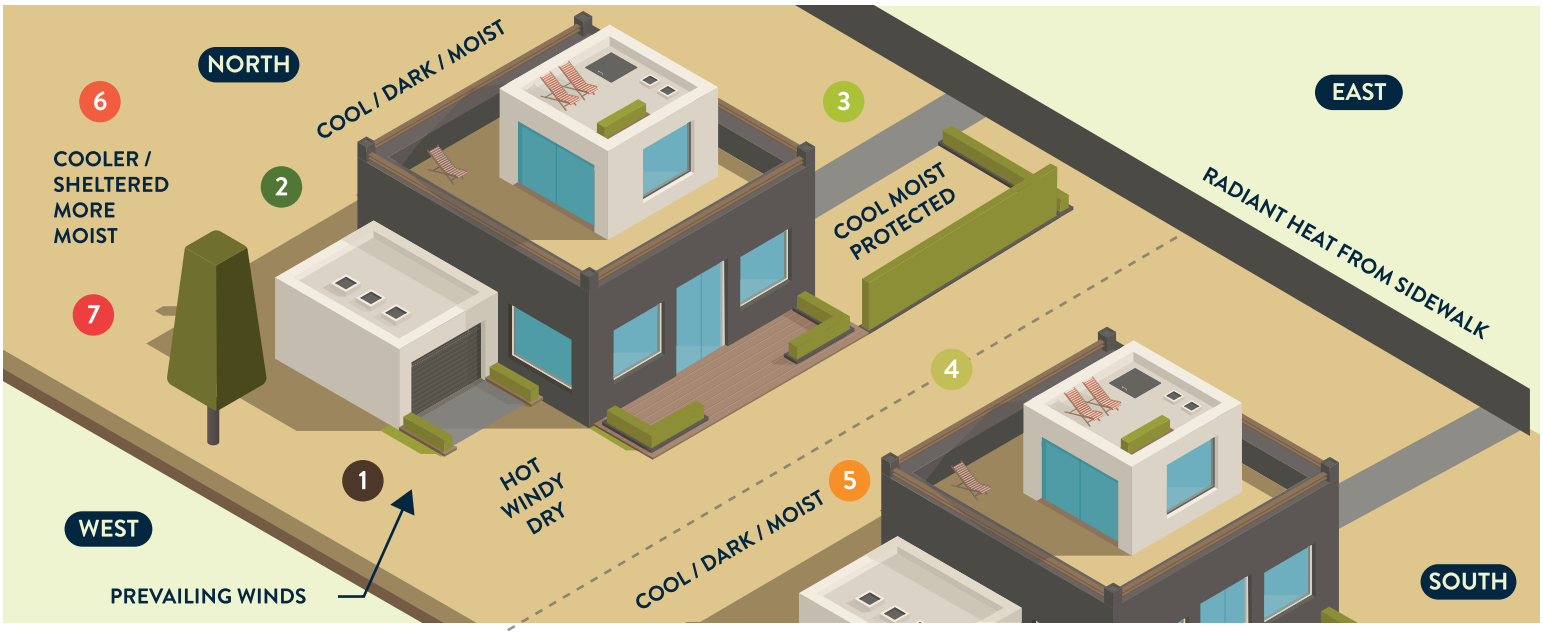
While plants within a landscape have various water needs, they all follow a similar irrigation curve throughout the seasons.



- In the spring and fall, landscapes use substantially less water than in the summer months. There is a more rapid rise in irrigation use in the spring to match the rapid growth occurring in your plants.
- Landscape water needs peak in late June or early July, even though the hottest parts of our summer are still ahead. This is because, for the most part, plants put their energy into new growth at that time. During the remainder of July and August, they are maintaining health and potentially setting fruit and seed.
- Landscape water needs begin to drop by mid-August, which is when the irrigation schedule needs to be ramped down. This may seem counter-intuitive because of how hot it is in Albuquerque during August, September and October, but when plants are preparing for the winter, they need less water.
- As indicated in the seasonal curve, ramping down in the fall is a slower process than ramping up in the spring. Nights begin to cool down at this time, so plants need less water during this time.
- Monsoon rains can reduce the need to water in late summer.
- During dry winters in Albuquerque, occasional watering is essential, particularly to keep trees healthy.

MICROCLIMATES

Most landscapes have microclimates, which are relatively small spaces that create distinctly different growing conditions. The amount of water a plant requires depends on its place in the landscape. The more wind, intense sunlight and reflected heat a plant must endure, the more moisture evaporates from the leaves. A plant in a microclimate exposed to the sun needs more water than the same one in a cooler, protected area in the shade.



PRO TIPS:

1. The simplest solution to planting in the harshest spaces (south and west facing spaces open to the wind) in the landscape is to put low-water, sun-loving plants in those places.

2. Northern exposures can be tricky. In deep shade, the soil (and drip lines) may stay frozen during much of the winter, but in summer the plants may be in full sun much of the day. Roses and fruit trees can benefit from being planted on the north side of your home.

3. East-facing spaces, which warm up early but are often in shade by midday, are the easiest places for plants that prefer cool and moist growing conditions to adapt and thrive.

4. The microclimate around sites protected by walls may be warmer in the winter because the walls retain heat and a bit more humidity in the summer due to protection from winds. Choose plants that love heat for planting on south or west facing walls.

5. Narrow spaces between buildings that don't have plantings tend to funnel the wind. Plant durable, native shrubs like Mountain Mahogany to help break up the wind.

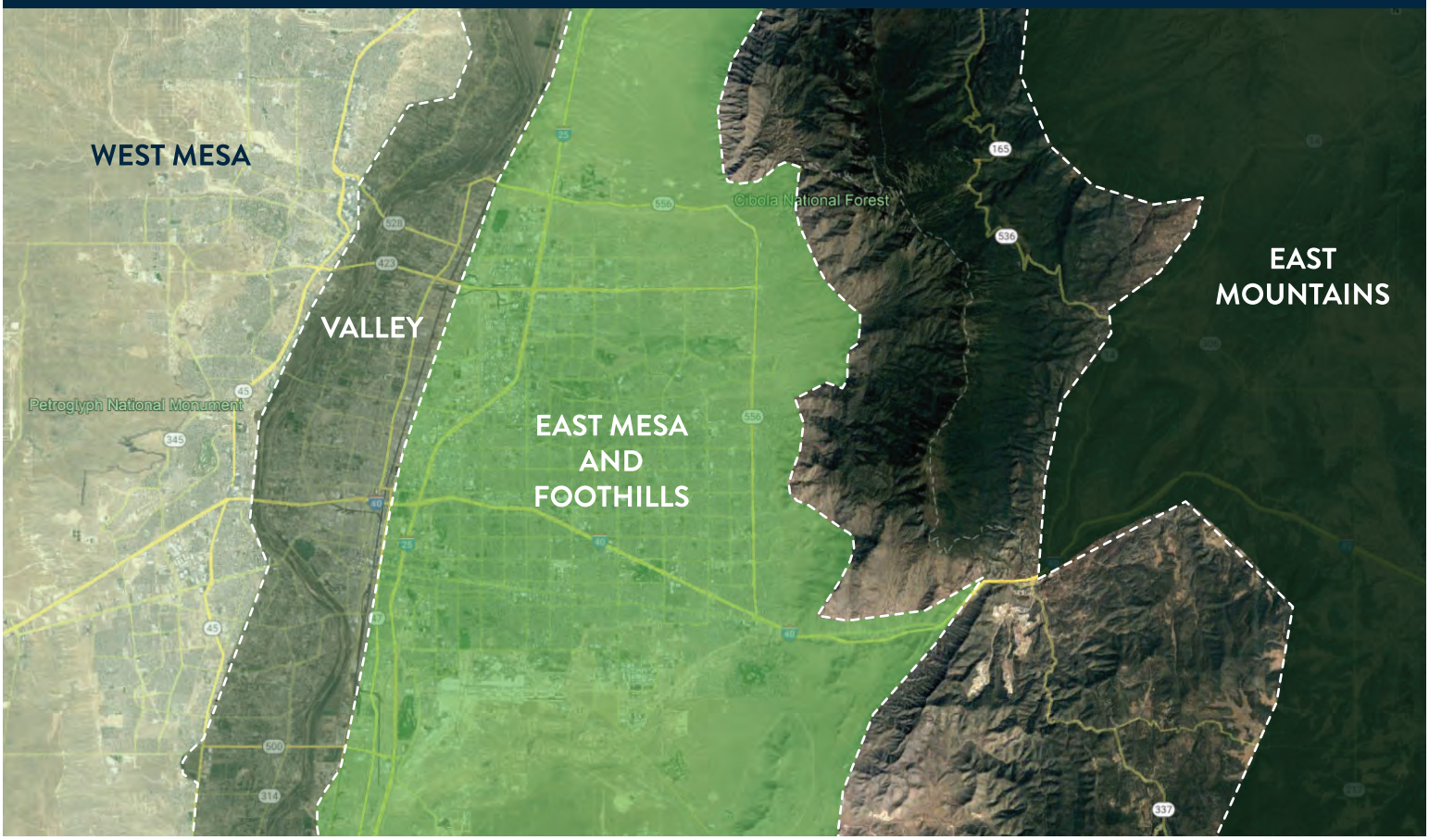
6. Soil contours also create microclimates. The bottom of a slope is usually cooler and the soil moister than at the top of a slope.

7. Plants change the dynamics of sun, shade and wind. The canopies of trees create cooler microclimates in summer.

CONSIDERATIONS RELATED TO MICROCLIMATES

If plants are struggling in an area receiving full sun, increase watering by a few minutes or add another emitter to those plants. Be sure plants in the shade aren't drowning from too much water.

ALBUQUERQUE RELIEF MAP SHOWING VARIOUS SOIL TYPES



VALLEY SOILS

Valley soils vary from dense clay to grainy sand. They are layered and braided through the area because of the historic flooding of the Rio Grande. Acequias that weave through the community provide many essential benefits. They provide water for creating food sheds and are culturally significant for our community. They also help create and maintain our tree canopy and provide much needed pollinator habitat. This remains particularly important in our changing climate.

EAST MESA AND FOOTHILLS SOILS

The soils in the foothills are usually coarse, whereas the decomposed granite soils on the mesa are usually finer and prone to compaction. These soils have a broad range of organic material along with the base of decomposed granite, making for a huge diversity, even within a building site. Groundwater is deep — only shallow enough to be occasionally accessible to plants in unpaved arroyos near the foothills and stormwater basins fed by urban pavement.

WEST MESA SOILS

West Mesa soils, which vary from silty clay loam to finer sands, are sometimes deposited in a shallow layer above volcanic basalt. Groundwater is too deep to be accessible to most plants except in large stormwater collecting basins.

EAST MOUNTAIN SOILS

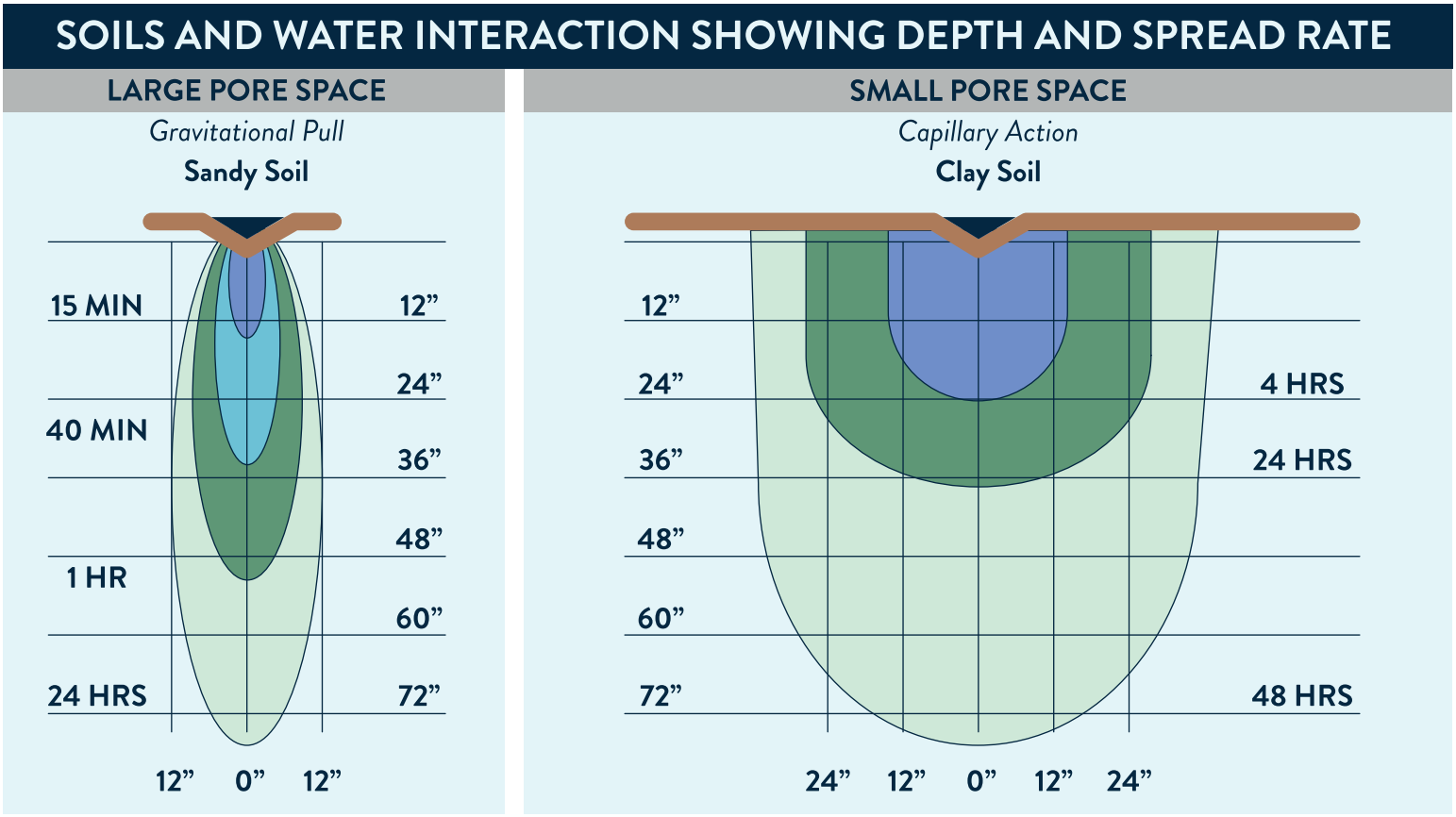
East Mountain soils tend to be a mix of moisture-retaining clay loams with some fast-draining gravelly deposits. The density and type of plant cover reflect the relative soil moisture. In upslope areas, where temperatures are consistently cooler and rain and snow more abundant, shrubland transitions to mixed conifer forest. Slopes tend to be drier than depressions, which accumulate moisture.

ALBUQUERQUE SOILS

Albuquerque has a variety of soil types. Learning what type of soil is in your yard is a critical step to understanding how water will infiltrate the soil and how long plants need to be watered to get the water to the correct depth for that plant type.

HOW WATER MOVES THROUGH DIFFERENT SOILS

Water soaks into sandy soils much more quickly than in clay soils, but it travels downward in a narrow pattern. In clay soils, the water travels much more slowly and spreads out in a much wider pattern.



Original Background Artwork Inspired By: Colorado State University Extension Master Gardeners

PRO TIPS:

- Plants in sandy soils generally need to have additional emitters so water is distributed more evenly in a root zone. They also may need to be watered more frequently but for shorter amounts of time.

- Plants in clay soils generally need fewer emitters because the water spreads out. They will probably need to be watered less frequently but for longer periods.

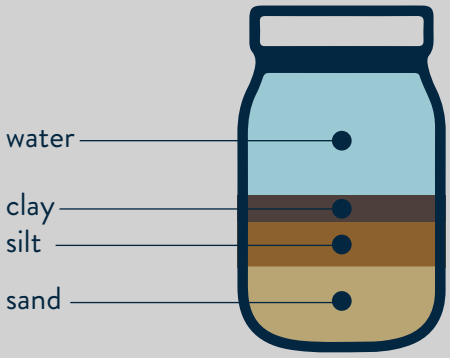
- All soils need to drain between waterings to allow oxygen back into the soil pores.

A struggling plant may be receiving too much water. If soil stays saturated, plants will drown. Since there is a lot of clay in our soils, it is very easy to drown plants. A drowning plant often has similar symptoms as one not receiving enough water: wilted leaves and poor color. Always check soil moisture with a moisture meter before adding more water.

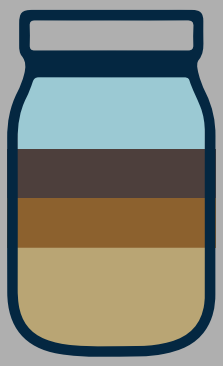
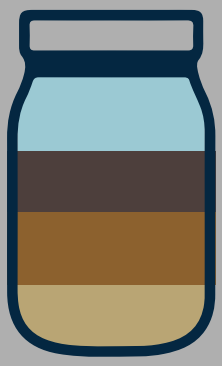
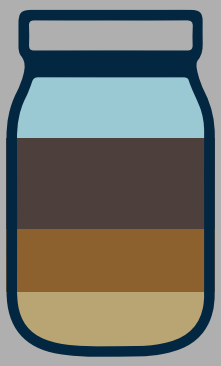
THE JAR TEST

IDENTIFY YOUR SOIL TYPE

1. Fill a clear glass jar halfway with your soil sample.
2. Fill the remaining half with water, leaving 1" of air.
3. Attach lid, then shake the jar vigorously until you have broken up any clumps of soil.
4. Set the jar aside to rest (undisturbed) overnight.



AFTER 24 HOURS YOUR JAR'S CONTENTS WILL HAVE SETTLED INTO DISTINCT LAYERS:

SANDY	SILTY	CLAYISH
		
25% CLAY 25% SILT **50% SAND**	30% CLAY **40% SILT** 30% SAND	**50% CLAY** 25% SILT 25% SAND

By examining the proportions of these layers, you can gain a sense of what type of soil you have, and what you need to add to improve your soil (compost, iron, gypsum, other materials). Here are some examples to use for comparison. The middle jar contains ideal soil.

PERFORMING A JAR TEST TO DETERMINE SOIL TYPE

An easy way to get a better idea of what type of soil you are working with is to conduct a jar test. A jar test will separate the three main components of soil: sand, silt and clay. These determine soil texture that contributes to drainage and overall plant health.

If you would like a more detailed analysis of the makeup of your soil, you can send samples to Colorado State University's Soil, Water and Plant Testing Laboratory - Soil Testing Lab (colostate.edu)

Please note that these entities may charge a fee for soil analysis.

HOW SOIL COMPACTION AFFECTS PLANTS

Most building sites, including home sites and the land directly surrounding them, have areas of heavy compaction. When soil is compacted, pore space that allows oxygen and water to get to the root zone is reduced, building an impermeable layer in the soil.

Soil compaction adversely affects percolation rates (the movement of water through the pores) and makes it much harder for roots to expand within the soil and thrive.

HOW TO TEST THE PERCOLATION RATE IN SOIL

If you do a jar test you will have a pretty good idea what percentage of sand, silt and clay make up your soil. Performing a percolation test will allow you to see how your soil interacts with water.

TOOLS NEEDED:
shovel, yard stick, timer/watch, pen, paper and hose

PERFORMING A PERCOLATION TEST

1	2	3	4
Dig a hole the size of a five-gallon bucket	Fill the hole with water and wait four (4) hours. This "presoaking" helps give a more accurate idea of how the soil will work when watered	Refill the hole with water and place the yardstick straight up and down in the hole. Write down where the water is on the yardstick	Record how long it takes for the water to drop two (2) inches

A soil percolation rate between 1 and 3 inches per hour is adequate for plants with average drainage needs. If the rate is less than 1 inch per hour, drainage is too slow and the soil will either need to be improved by adding compost or planted with plants that tolerate wet soils. Watering should be less frequent but longer.

If the drainage is more than 4 inches per hour, it is too fast. Soil will need to be amended with compost and other organic matter either by digging it in or using it as a top dressing. Watering should be more frequent and for shorter time periods.

WHY IS MY SOIL COMPACTED?

Many things, including construction, heavy equipment or vehicles or a lack of organic matter, can create compacted soil that won't allow water to drain through it. One way to prevent further compaction is to only park your vehicles or store heavy items in your driveway or on soil devoid of trees or landscaping.

MULCH AND COMPOST BEST PRACTICES

1

Add organic matter (compost) to clay to make it more permeable, and add compost to sand to improve its water-holding capacity.

2

Mulch (organic) deeply (3”-4") to help all soil types retain moisture better, suppress weeds and feed soil microorganisms.

3

Native and low-water, desert-friendly plants do not need compost. Although they will grow slowly in uncompacted native soil, they thrive best there.

LANDSCAPE TYPES

The Albuquerque metro area has a variety of landscapes. These include desert-friendly landscapes, such as lush, pollinator-friendly xeriscapes, and wildscapes or prairie plantings, where native grasses and wildflowers bring the feel of a prairie to a yard. Rain gardens are specifically designed to make the most of natural precipitation, while edible landscapes have garden beds or edible plants interspersed throughout them. Efficient turfscapes have smaller areas of turfgrass and diverse plantings. Conventional turfscapes with large areas of cool-season grass and high-water foundation shrub plantings are no longer considered desert-friendly landscapes.

Desert-friendly landscapes describe a variety of landscapes that include beautiful, diverse plantings with increased resiliency achieved through efficient watering.

DESERT-FRIENDLY LANDSCAPES

GUIDELINES FOR A DESERT-FRIENDLY LANDSCAPE:

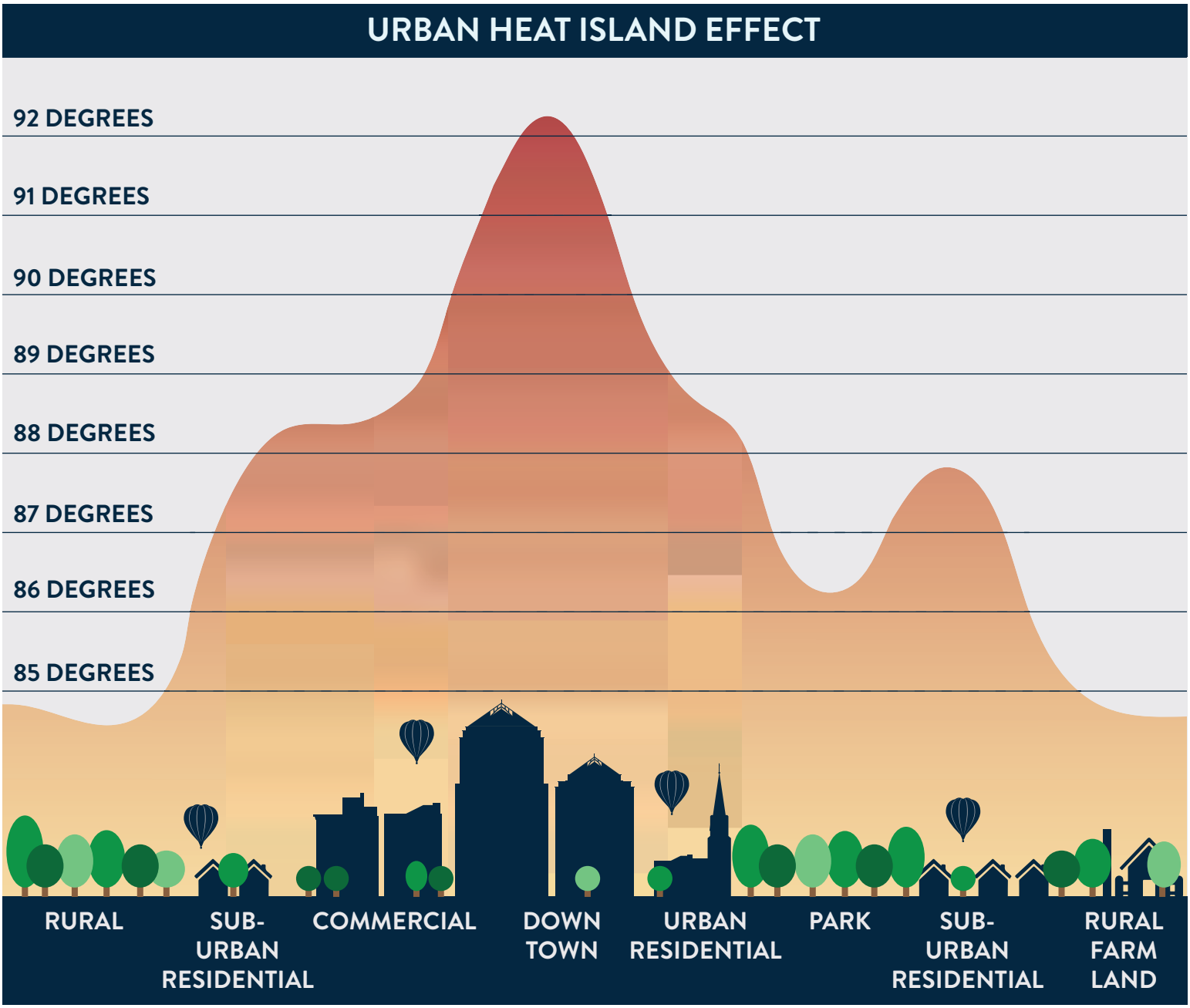
- At least 50% of the total landscape should include regionally appropriate plants watered either with a drip system, bubblers or by hand.
- Bare soils and areas under plants should be covered with at least three (3) inches of mulch, preferably an organic mulch.
- Plant no more than 10% of your yard with turfgrass.
- Don't plant turfgrass lawns on steep slopes or in areas considered to be difficult to water, such as those with irregular shapes and narrow strips that are ten (10) feet wide or less.

A sea of gravel may require little water, but it does not create a healthy environment. Weed fabric doesn't prevent weeds from growing on top of the fabric and has been proven to be detrimental to soil and tree health in the long term.

Trees struggle if they have been part of a yard that was once heavily irrigated and has been converted to a gravelscape.

We do not recommend gravelscapes for reducing water use. Instead, transform those landscapes into cooler, healthy environments by adding appropriate plants and irrigation.

Desert-friendly landscapes make a positive contribution to lowering the urban heat-island effect (unlike 'zeroscapes'). The urban heat island effect is caused by heat emitted off surfaces such as gravel, concrete and asphalt. This heat causes an updraft within an urban setting, which changes the weather patterns over a city and decreases the chances of precipitation and cooling. Plants, trees especially, help decrease or eliminate this heat island effect.



Desert-friendly landscapes help reduce noise pollution by absorbing sound. Desert-friendly plantings also increase biodiversity in your yard and in our community, generating much-needed pollinator habitat. Xeriscapes, particularly once they are established, use significantly less water than a conventional turfgrass lawn.

Did you know that Albuquerque is designated a Bee City USA? To find out more, go to: Burque Bee City USA (beecityusa.org). For more information on pollinator gardens, go to ABQ Backyard Refuge Program (https://www.505outside.com/2021/05/31/backyard-refug-es-for-people-and-wildlife/).

To find out about rebates that help homeowners transform their yards into desert-friendly xeriscapes, visit:

https://www.505outside.com/residential-desert-friendly-conversion-rebates-xeriscape-conversion/

XERISCAPES

Xeriscapes have been largely misrepresented and misunderstood over the past 30 years, often being mistaken for zeroscape (a.k.a. no plants). What xeriscape really means is a native, desert-adaptive or desert-friendly landscape that often feels lush and vibrant and has plants that are appropriate for the Albuquerque climate. It attracts all kinds of wildlife and changes with the seasons.

PRO TIPS FOR USING DRIP EMITTERS (XERISCAPES):

- Always have more than one emitter per plant in case one becomes clogged.
- Switch from adjustable micro sprayers and "shrubblers" to individual emitters or in-line emitted drip lines to know exactly how much water is being provided to your plants.
- When using drip or other low-flow irrigation, accommodate plant needs by adjusting the flow rate (larger or smaller gph) and number of emitters per plant.
- Drip irrigation is the best way to water plants that do not like getting their leaves wet. With drip emitters and ¼" spaghetti tubing, water can be placed exactly where it is needed.

Xeriscapes often include trees, shrubs, flowering "pollinator-friendly" perennials, desert accents, groundcovers, ornamental grass and vines. They also can contain small functional turf areas, vegetable beds and other edible plants. Xeriscape plants are medium or low-water usage plants. Some can survive with rainwater alone after an establishment period of at least three full irrigation seasons.

Adding trees to a desert-friendly xeriscape increases shade and habitat, creates favorable microclimates and reduces the urban heat island effect in Albuquerque. When deciding which tree to use in the right place, refer to our Xeriscaping Guide or The Nature Conservancy's Climate Ready Tree List.

HOW MUCH WATER IS NEEDED TO KEEP UP A BEAUTIFUL XERISCAPE?

This budget is only for outdoor use. Please include your winter averages to complete your TOTAL usage on your billing.

For typical xeriscape landscapes with 500 square feet of NATIVE grass lawn (warm-season grasses) and two medium trees:

Winter	**Spring**	**Summer**	**Autumn**
(1,205 gallons/month)	*(2,330 gallons/month)*	*(3,970 gallons per month)*	*(1,650 gallons/month)*

BUILD YOUR ANNUAL WATER BUDGET (SEE APPENDIX)

RAIN GARDENS

Rain gardens, a subset of xeriscapes, maximize the benefits of active and passive rainwater harvesting. Plant choices become more critical, particularly if the intent is to use little supplemental irrigation.

PRO TIPS FOR RAIN GARDENS:

- Direct any overflow from a rain barrel or cistern into a passive water harvesting system.
- Prioritize trees for passive rainwater harvesting.
- Choose low-water and rainwater-only plants for the best results.
- Contour the soil to create gentle berms that drain better. Put water-loving plants in the low spots (swales) where rainwater and irrigation water collect.

1,000 SQUARE FOOT ROOF = 5,607 GALLONS ANNUALLY

To determine how much water flows off your roof we are providing you with a simple formula: Annual Rainfall Depth (inches) x square foot surface x .623 = total annual gallons.

To help you get started, we offer Rainwater Harvesting rebates

EDIBLE LANDSCAPES

Edible landscapes emphasize herb, vegetable and fruit-producing plants and can have a wide variety of water needs. If you choose to grow food in your yard with drip irrigation, in-line emitted tubing is the most efficient way to water. We recommend setting up separate irrigation zones due to the daily watering needs of edible plants in summer and/or hand watering.

PRO TIPS FOR EDIBLE LANDSCAPES:

DEDICATED VALVES

Vegetable plots and annual beds need to have dedicated valves to allow for more frequent watering. They should not run at the same time as the rest of the drip zones.

THE HEAT

Even though many food plants wilt in the hot (90+F) afternoon temperatures, it does not necessarily mean they need to be watered every afternoon.

If veggie plants are wilted early in the morning, they aren't getting enough water.

IN-LINE EMITTED TUBING

Vegetables and other annuals, perennial berries and row crops all work well with professional grade in-line drip tubing emitted tubing. Plants and seeds can be placed next to the emitters to guarantee they receive the right amount of water.

MOIST ACIDIC SOILS

Fruits that require acidic, moist soils will be hard to successfully grow in the Albuquerque area. We do not have naturally acidic soils and it is difficult to keep many of our soil types consistently moist.

CONSISTENT SCHEDULE

In order to grow the best quality produce, fruit-bearing trees, shrubs and some vegetables need to have a consistent watering schedule that is maintained until harvest.

RAISED BEDS

Food grown in raised beds often requires **more** water than the same food grown in-ground because raised bed soils generally dry out faster and experience wider temperature swings than in-ground soils. Pots, in most cases, are smaller versions of raised beds.

Certain edible plants have specific soil and water needs. Interested in growing fruit trees? We can help you water more efficiently: https://www.505outside.com/residential-treebates/

DIG DEEPER for a short list of specific fruit and vegetable water needs:
https://www.505outside.com/wp-content/uploads/2022/08/WateringNeedsforEdibles-veggies-sm.pdf

WILDSCAPES

Wildscapes or prairie plantings are also considered desert-friendly landscapes. These types of landscapes include native warm-season grasses and a mix of native and adaptive plants. They require less frequent yet deeper watering than a regular cool season turfgrass lawn.

Beds are typically mulched with shredded wood. A wildscape may be designed to rely more heavily on natural precipitation to sustain the plants after it is established than a xeriscape. Prior to establishment, both natural precipitation and temporary irrigation are often utilized. Establishment in the grass areas often takes three years and possibly longer for trees. Monitoring and removing weeds is critical during the establishment period.

PRO TIPS FOR IRRIGATION: (WILDSCAPES):

- The irrigation system may be a mixture of high-efficiency sprayers or rotors (for the native grass area) and drip irrigation or inline dripline (for shrubs and trees) on separate zones. Specific zones are often turned off after the plantings are firmly established.
- If you are using rotors or spray irrigation in native grass seeded areas, make sure they will clear the higher grass. Use rotors with a higher angle of throw or 12”-18” pop-up sprayers.
- Leave an irrigation system in place, even if the plan is to rely on natural precipitation, so supplemental watering is available during times of extreme heat or drought.

BUILD YOUR ANNUAL WATER BUDGET (SEE APPENDIX)

Because wildscapes require specialized irrigation components, we offer the following rebates:
https://www.505outside.com/residential-irrigation-efficiency-rebates/

MEADOWS

Plants are usually seeded into gravel or prepared soils to form “meadows.” Meadows are designed to mimick mountainous grass or western prairie lands. They require more water than other types of wildscapes and require rigorous weeding to get established.

EFFICIENT TURFSCAPES (LAWNS)

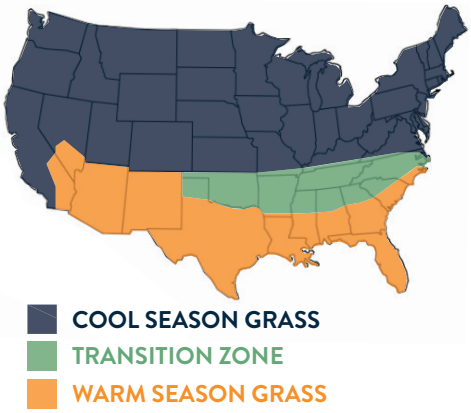
Typically, a conventional turfgrass yard includes a few large trees and some planting beds for flowers and shrubs around the foundation of the home. This type of yard often has a couple of existing irrigation valves for sprinkler irrigation. A conventional turfgrass landscape requires tremendous amounts of water to thrive in our region, a minimum of 40” (with an average of 50"-55”) of water per growing season, which is about three to five times more than what is provided by natural precipitation each year. This is why we do not consider a turfgrass yard a desert-friendly landscape.

Climate change is causing us to rethink our yards, and that includes yards with lawns. For a yard with a lawn to be truly desert-friendly, the amount and type of grass used must be considered. We recommend that no more than 10% of your total yard is devoted to a lawn. Research from various universities in the Southwest and lawn seed producers such as Pennington Seed is now suggesting that New Mexico’s climate is no longer suitable for cool-season grasses to thrive. Instead, we need to make a shift to various warm-season grasses, which will grow well with significantly less water.

A desert-friendly turfscape should also have efficient sprinkler nozzles and pressure compensating sprinkler bodies to maximize the water used to maintain the lawn. We know that most turfscapes in Albuquerque are not desert-friendly, so later in the guide we will help you understand how to create a more efficient yard.

There are two different categories of turfgrass lawns used in Albuquerque: cool season and warm season.

Cool-season grasses (Kentucky bluegrass, perennial ryegrass and tall fescue) thrive between 65F and 75F degrees in the summer. They create a softer, darker green and lush-looking lawn. In Albuquerque, most lawns are composed of cool-season grasses that are cold-tolerant and green most of the year. They can withstand considerable amounts of foot traffic. One disadvantage is that they use a substantial amount of water in the summer months. Parkblend (a blend of cool season grasses) is the most common lawn in the Albuquerque Metro area.



Warm-season grasses (Bermuda grass, blue grama, and buffalo grass) have been used in Albuquerque for many years. They thrive in 70F-90F degrees. There are parts of town where they are quite prevalent. Warm-season grasses have a shorter growing season. They green up later and go dormant earlier than cool-season lawns. They are low maintenance and require less water than cool-season grasses.

KENTUCKY BLUEGRASS

BERMUDA GRASS

BUFFALO GRASS

Knowing what type of lawn or turfgrass is being installed or already being watered can make a significant difference in how much water should be applied. The key to choosing a turfgrass for a new area is to determine the one most suited to the specific needs of the landscape.

Water Budget (this includes 1,000 square feet of cool-season grass and a number of mature trees, shrubs & vines):

Winter	**Spring**	**Summer**	**Autumn**
(8,250 gallons/month)	*(13,923 gallons/month)*	*(23,750 gallons/month)*	*(10,900 gallons/month)*

BUILD YOUR ANNUAL WATER BUDGET (SEE APPENDIX)

SECTION 2:
ALBUQUERQUE IRRIGATION METHODS

DRIP IRRIGATION FOR DESERT-FRIENDLY LANDSCAPES

While turfgrass and meadows are watered with sprinkler irrigation, drip irrigation is the recommended method for watering desert-friendly xeriscapes and edible landscapes and for irrigating your trees. When properly designed, installed and managed, drip irrigation efficiently maintains the optimal range of moisture in the soil because it applies water in precise quantities to the right depth on a set schedule.

Installation and modification are fairly easy and relatively inexpensive. A drip system is easy to install for the do-it-yourselfer because the mainline does not need to be trenched into the ground. The point of connection can be your hose bib, an in-ground valve or a sprinkler head using a retrofit kit.

PRO TIPS:

- Remember to use high-quality components that will last for many years.
- A Y-connector is convenient and recommended on a drip system connected to a hose bib because a garden hose can be connected to the other side.
- A zone with multiple connections should have runs no longer than 200 feet.
- To compensate for variations of soil, locate emitters 12" apart in the sand, 18" apart in mixed soils and 24" apart in clay. If one to two emitters are recommended for a plant in clay soil, two or three may be required in sandy soil to wet sufficiently.
- Design the drip system around the irrigation needs of the plant. Roots will grow where conditions are favorable, predominantly where there is the right balance of water and air in the soil.
- Make sure emitters are placed over the root ball or dripline of plants and trees. Initial placement on perennials is often permanent, while trees and shrubs often require emitters to be moved as plants grow. This is supported by a similar graphic on page 28.

DRIP IRRIGATION									
TREES & SHRUBS	80-100 MINS	1	PER MONTH	2	PER MONTH	8	PER MONTH	2	PER MONTH

DRIP IRRIGATION SYSTEMS INCLUDE THE FOLLOWING:

Water Meter: A measuring device installed and owned by the Water Authority that records the amount of water delivered to the property. Sign up in to see your daily, weekly and monthly usage by visiting www.abcwua.org

Hose Spigot or Valve An outdoor valve with a threaded nozzle used to connect to a hose. Also called a hose bib or outdoor faucet.

A Backflow Prevention Device is critical to preventing contamination of household potable water. Small anti-siphon devices that screw onto a hose bib for add-on systems are available.

Filter: This is a device used to screen dirt and debris from water. Located in-line with the valve, they are important in drip systems to prevent clogging.

Pressure Reducer: Maybe the most important part of your drip system, this component maintains the proper pressure within your distribution line. It also helps keep the emitters from "blowing" or "popping" off the drip line due to excessive pressure.

½ or ¾ Inch Distribution Tubing: A drip component (polypipe) and used to deliver water around the yard.

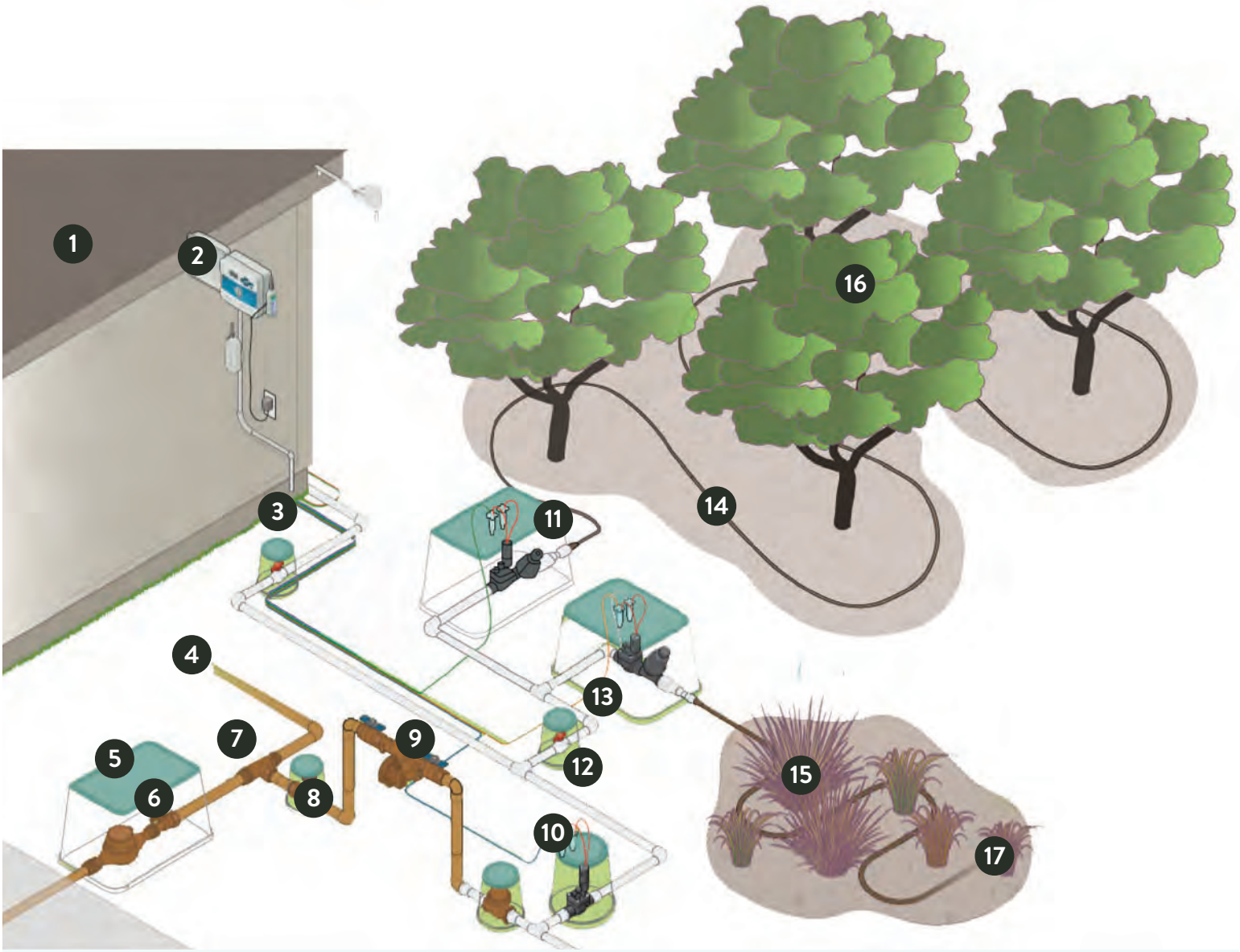
¼ Inch Distribution Tubing: A drip component that connects to the ½" and ¾" tubing and brings water directly to the plants in runs no longer than five feet.

Drip Emitters: There are two types of emitters: button and flag. Button emitters can be pressure compensating or non-pressure compensating. All flag emitters are non-pressure compensating. Pressure-sensitive emitters deliver a higher flow at higher water pressures. Pressure compensating emitters provide the same flow over a wide pressure range. They apply water directly to the individual plant root zone. Rates of 2gph to 4gph are recommended. Emitters should be installed at the end of the ¼" tubing, not directly into the polyline. This way it is easier to adjust their placement as plants grow, and they are easier to flush or replace if they become clogged.

Flush Cap/End Cap: These are located at the end of a Polypipe drip system and are used to flush and drain water from the system during winterization to prevent freezing. They should be in a round valve box or left visible on the surface.

DRIP SYSTEM OVERVIEW

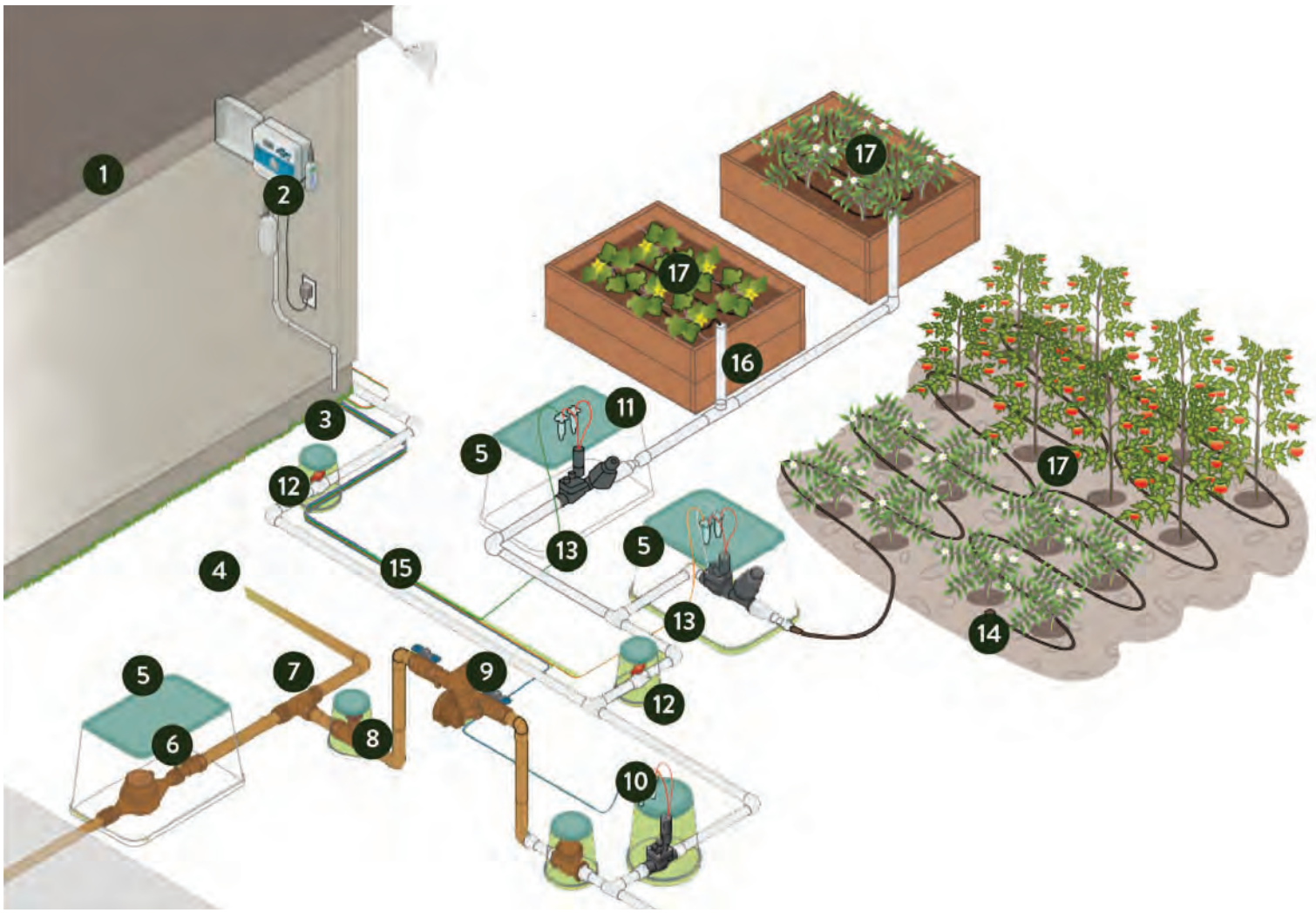
1. House
2. Automatic Controller
3. Controller Wire
4. Domestic (house) Water Line
5. Valve Box
6. Water Meter
7. Brass Tee
8. Brass Gate Valve
9. Backflow Preventer
10. Master Valve
11. Waterproof Wire Connectors
12. Isolation Ball Valve
13. Drip Zone Control Kit
14. Landscape Dripline
15. Shrub Zone
16. Tree Zone
17. Flush Cap



Original Background Artwork Inspired By:
Hunter Industries Design Handbook

DRIP SYSTEM IN RAISED BEDS OR VEGGIE ROWS

1. House
2. Automatic Controller
3. Controller Wire
4. Domestic (house) Water Line
5. Valve Box
6. Water Meter
7. Brass Tee
8. Brass Gate Valve
9. Backflow Preventer
10. Master Valve
11. Waterproof Wire Connectors
12. Isolation Ball Valve
13. Drip Zone Control Kit
14. Flush Cap
15. PVC Pipe
16. PVC Riser
17. Landscape Dripline



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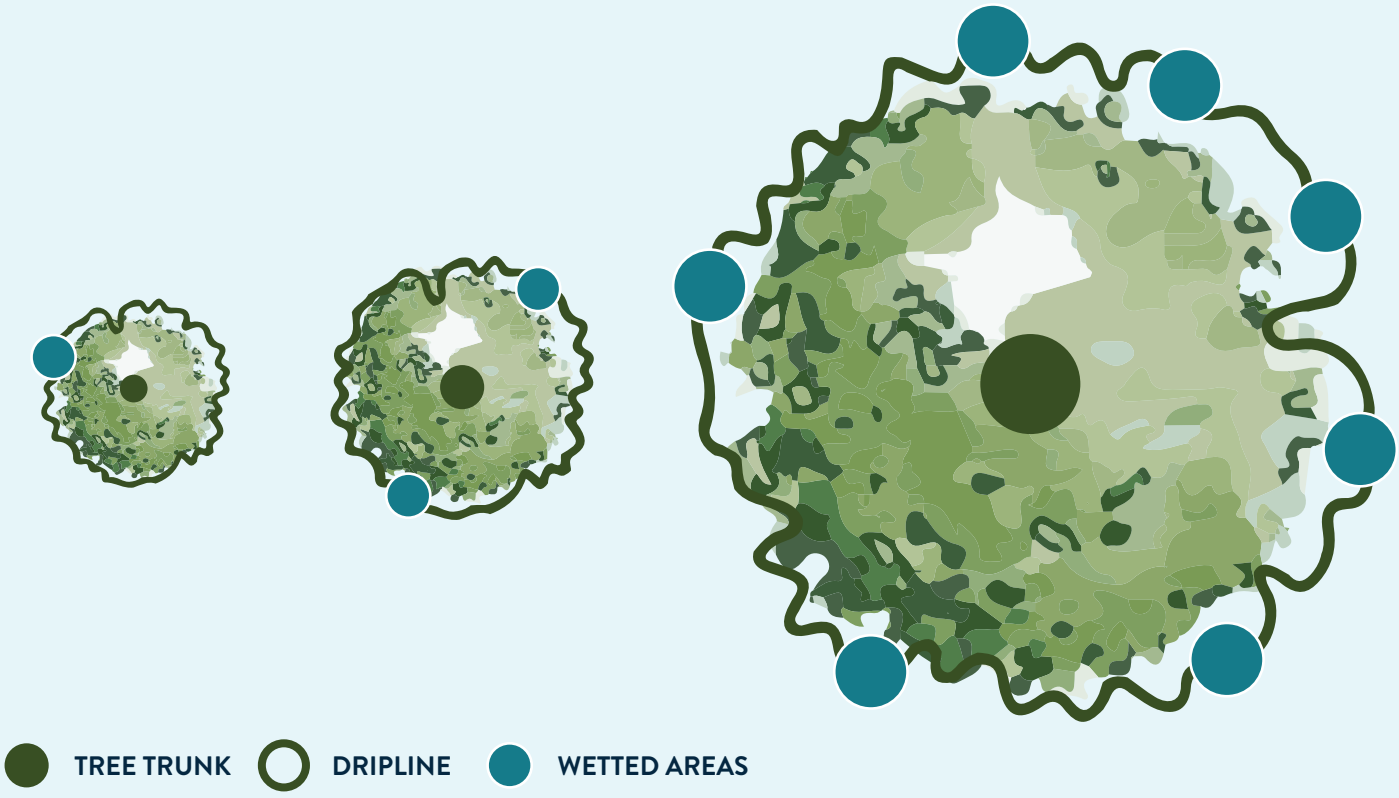
PLACE EMITTERS ALONG A PLANT'S DRIPLINE



Check out our rebates on some drip system components at https://www.505outside.com/residential-irrigation-efficiency-rebates/.

DRIP IRRIGATION: RECOMMENDED NUMBER OF EMITTERS

1	TREE (12' CANOPY)	4 GPH		48 GAL.
2	SHRUB (6' WIDE)	2 GPH		6 GAL.
3	FLOWERING PLANT (3' WIDE)	2 GPH		2 GAL.
4	DESERT ACCENT (3.5' WIDE)	2 GPH		2 GAL.
5	GROUND COVER (5' WIDE)	2 GPH		2 GAL.
6	ORNAMENTAL GRASS (3' WIDE)	2 GPH		2 GAL.
7	VINE (10' WIDE)	4 GPH		16 GAL.

SPRAY IRRIGATION FOR TURFSCAPES

In-ground sprinkler irrigation systems with either spray or rotors (including high-efficiency, micro-rotating spray nozzles) are typically used for watering these types of landscapes. Rotors are more regularly used for large-scale lawn areas and meadows but often appear in smaller yards as well. Sprinklers are not designed to water other yard plants.

Consider hiring a professional to assure watering efficiency. When an automated sprinkler system is professionally installed and maintained, homeowners are assured good watering coverage for their entire landscaping in an amount that is appropriate for their yard and location. Well-directed systems minimize water waste on driveways and sidewalks.

Professionally-installed, in-ground irrigation systems also offer some additional benefits. Yards with these systems tend to look greener and better maintained. This adds curb appeal and value to a home. Since a sprinkler system is often viewed as a desired home feature, it can increase property value.

If you hire a professional to design and/or install your system, take a look at our Bill of Rights in the appendix.

LAWN IRRIGATION PRO TIPS:

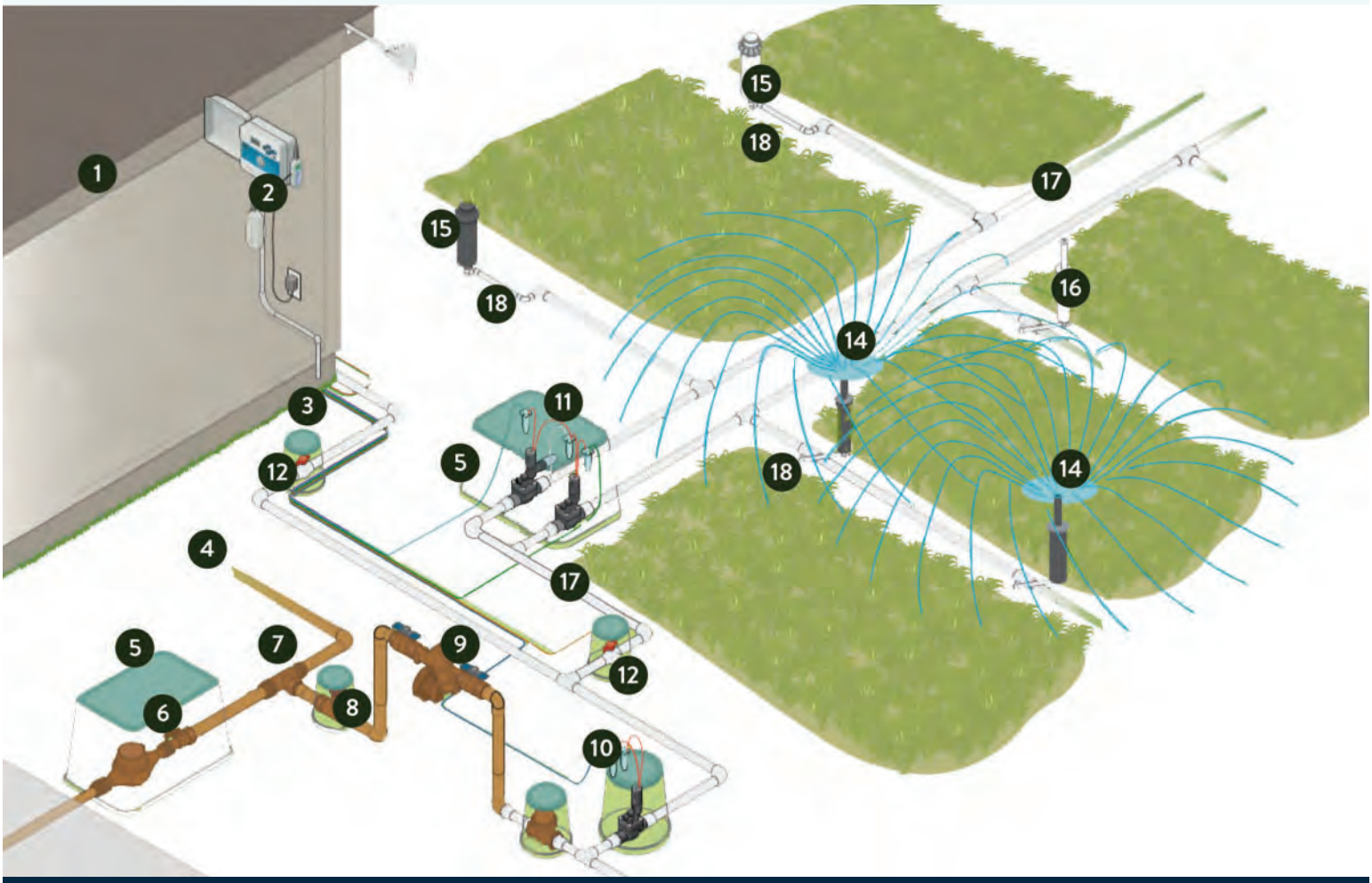
- Expect to adjust and make repairs during the season. Sprinklers often shift during the season.
- Always install matching products and brands. While components from different manufacturers may look the same, they may perform differently and apply water at different rates, resulting in accidentally under or overwatering an area.
- Always keep the same type of sprinklers in the same zone. Do not mix and match spray with spray/rotor. Never combine drip and sprinklers on the same zone.

CONVENTIONAL SPRAY IRRIGATION									
COOL SEASON LAWN	7 MINS	1	PER BI-WEEK	2-3	PER WEEK	3-5	PER WEEK	2-3	PER WEEK
WARM SEASON LAWN	9 MINS	1	PER MONTH	2	PER WEEK	2-3	PER WEEK	2	PER WEEK

HIGH EFFICIENCY ROTATING SPRINKLER NOZZLE IRRIGATION									
COOL SEASON LAWN	13 MINS	1	PER BI-WEEK	2-3	PER WEEK	3-5	PER WEEK	2-3	PER WEEK
WARM SEASON LAWN	17 MINS	1	PER MONTH	2	PER WEEK	2-3	PER WEEK	2	PER WEEK

SPRINKLER IRRIGATION SYSTEM

1. House
2. Automatic Controller
3. Controller Wire
4. Domestic (house) Water Line
5. Valve Box
6. Water Meter
7. Brass Tee
8. Brass Gate Valve
9. Backflow Preventer
10. Master Valve
11. Waterproof Wire Connectors
12. Isolation Ball Valve
13. Control Valve
14. Matched Precipitation Rate Nozzle
15. Rotor
16. Pop-Up Sprinkler
17. PVC Pipe
18. Swing Joint



Original Background Artwork Inspired By:
Hunter Industries Design Handbook

A sprinkler system typically has the following components:

Water Meter: A measuring device installed and owned by the Water Authority that records the amount of water delivered to the property. Sign in to see your daily, weekly, and monthly usage by visiting www.abcwua.org

Isolation Valve: A manually operated gate valve, usually brass, is used to isolate your system from the water used for your home. This is important to have when you need to repair your irrigation system, so you do not have to contact us to shut the water off to your home at the meter.

Valve Box: An underground enclosure that protects the electrical components from moisture and other damage and provides accessibility for adjustments and repairs.

Backflow Preventer: A device that stops water in the irrigation system from backing up into the water supply during a sudden loss of pressure to keep any surface contaminants from getting siphoned back into the community water supply.

Pressure Regulator: It is an integral part of keeping your system running in peak conditions because it keeps the water pressure to a level the system can handle, usually between 15 and 60 pounds per square inch (PSI).

PRESSURE REGULATOR PRO TIP:

• Pressure regulators reduce misting and excessive evaporation for lawn irrigation and help drip work more efficiently.

Programmable Controller: Program days of the week, times of day and the number of minutes to automatically irrigate your landscape according to seasonal weather and plant needs. EPA Water Sense Smart Irrigation Controllers adjust landscape irrigation schedules using WiFi to collect weather data in conjunction with the information you provide about your plant type, soil type and other important factors that affect the irrigation schedule.

PVC: The depth of the PVC system is determined through ordinances and helps ensure that your PVC has a minimum chance of freezing over winter. If you are installing the system yourself, your PVC piping needs to be installed as per the ordinance (City of Albuquerque 16" & Bernalillo County 18" west of the mountains, 21" east of the mountains

Sprinkler Body/Head: the generic terms, used interchangeably, to describe the metal or plastic body and mechanism that delivers the water to the nozzle.

Riser: the piping that connects the sprinkler body to the lateral pipes within the irrigation zone. There are solid risers, cut-off risers and swing joints, which can all be used for various site conditions.

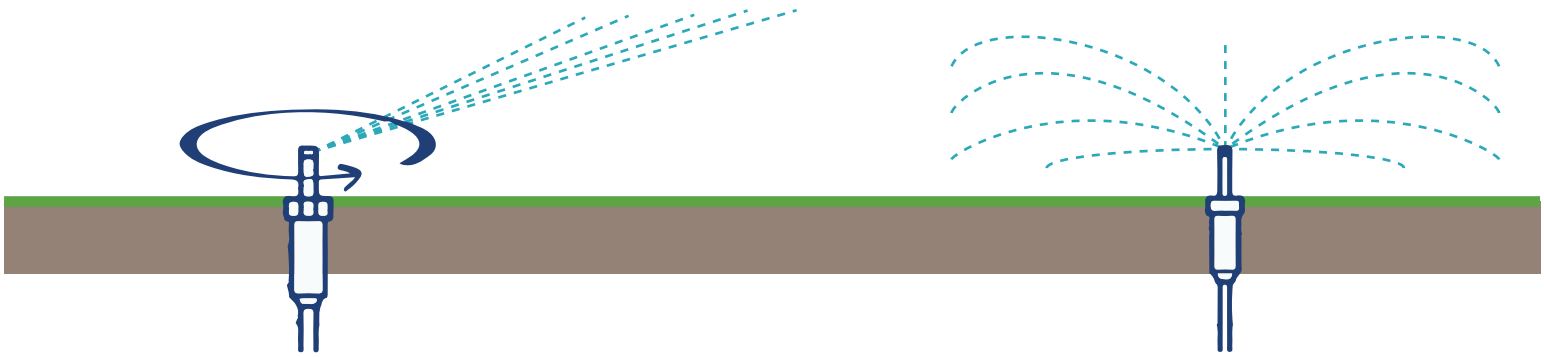
Nozzle: the portion of a sprinkler head that is screwed onto the tube that pops up out of the rest of the body. It's the part where the water comes out of the sprinkler.

PRO TIP:

Prairie and wildscapes may require taller spray bodies or rotors because the grasses and other plants can grow taller. Lawns usually have 4" to 6" pop-ups sprayers, whereas we recommend that you use 12" to 18" pop-up spray bodies for these types of desert-friendly landscapes.

SPRAY IRRIGATION SYSTEMS should include the following components:

SPRINKLER HEADS

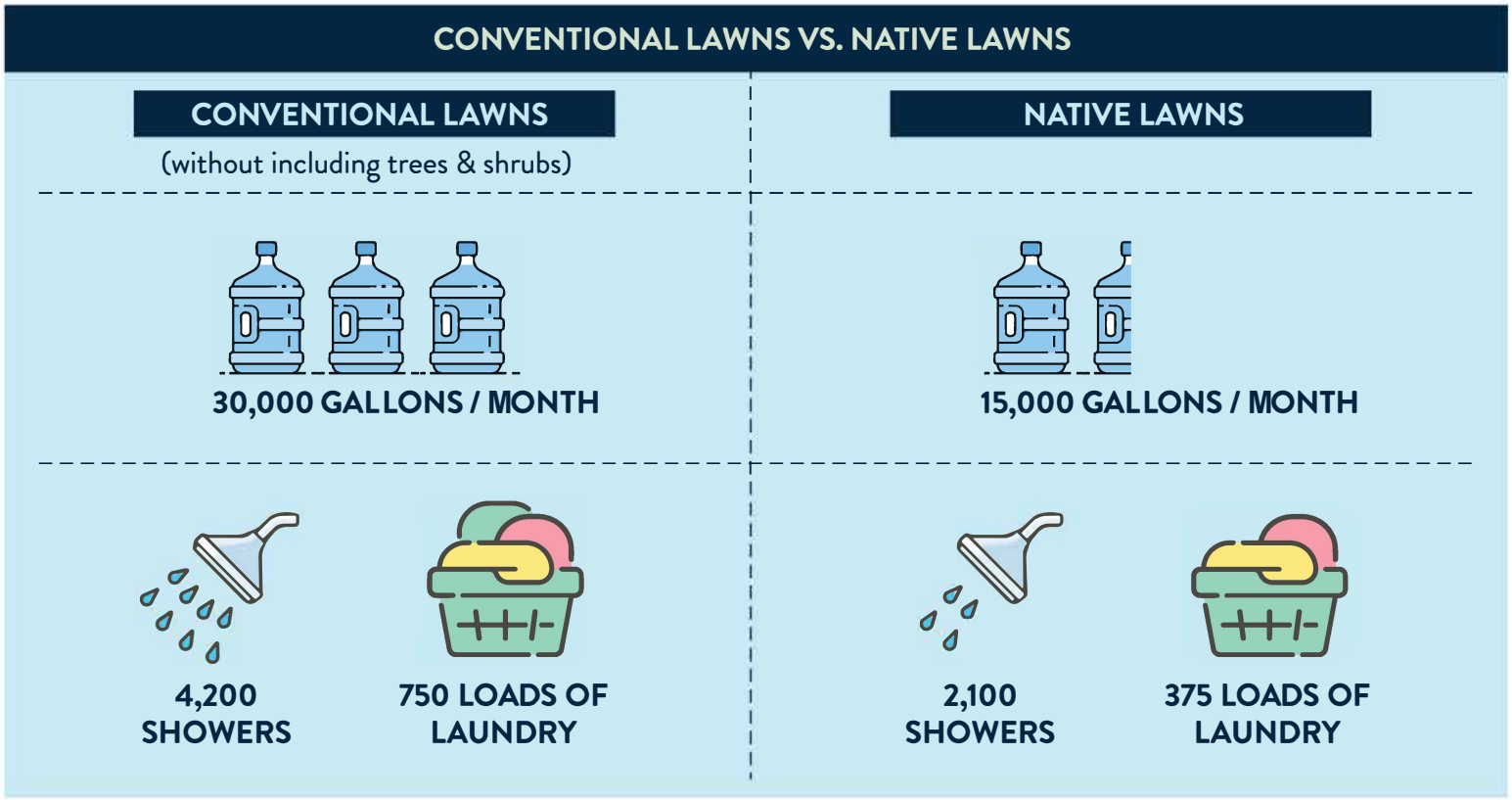


ROTOR
Rotating streams of water in multi-directions

SPRAY / FIXED
Focused streams of water in one particular area

BEWARE!

Conventional lawns can easily use over 30,000 gallons of water in a month (equivalent to about 4,200 showers or about 750 loads of laundry). The same size native lawns can use half that amount or survive on rain alone during the same month. Holy guacamole!



It is important to remember that if you remove your lawn/replace it with a desert-friendly landscape your trees will still need additional water.

WATERING WITH A HOSE

Multiple customer surveys have let us know that more than fifty percent (50%) of Burquenos water with a hose. Hose watering can be an efficient way to water, ensuring that just the right amount of water gets used and it's applied where it will be most effective. Although convenient, traditional soaker hoses have two drawbacks. First, they are not pressure compensating (maintaining the same water output), so there can be uneven distribution across the length of the hose. More water usually comes out closer to the hose connection than at the end of the hose. Secondly, they damage easily and only seem to last a year or two before they begin to break. Instead, we recommend using professional in-line emitted irrigation tubing, whether it is the ¼", ½" or ¾" type. It works very similar to the soaker hose but lasts longer and is much more efficient.

PRO TIPS:

- Don't stand and hold the hose, wetting plant leaves or the trunk of a tree. It is not an efficient way to water and may damage the health of some plants.

- Make sure you are watering in the root zone, away from the trunk and toward the canopy edges

HAND WATERING CHART

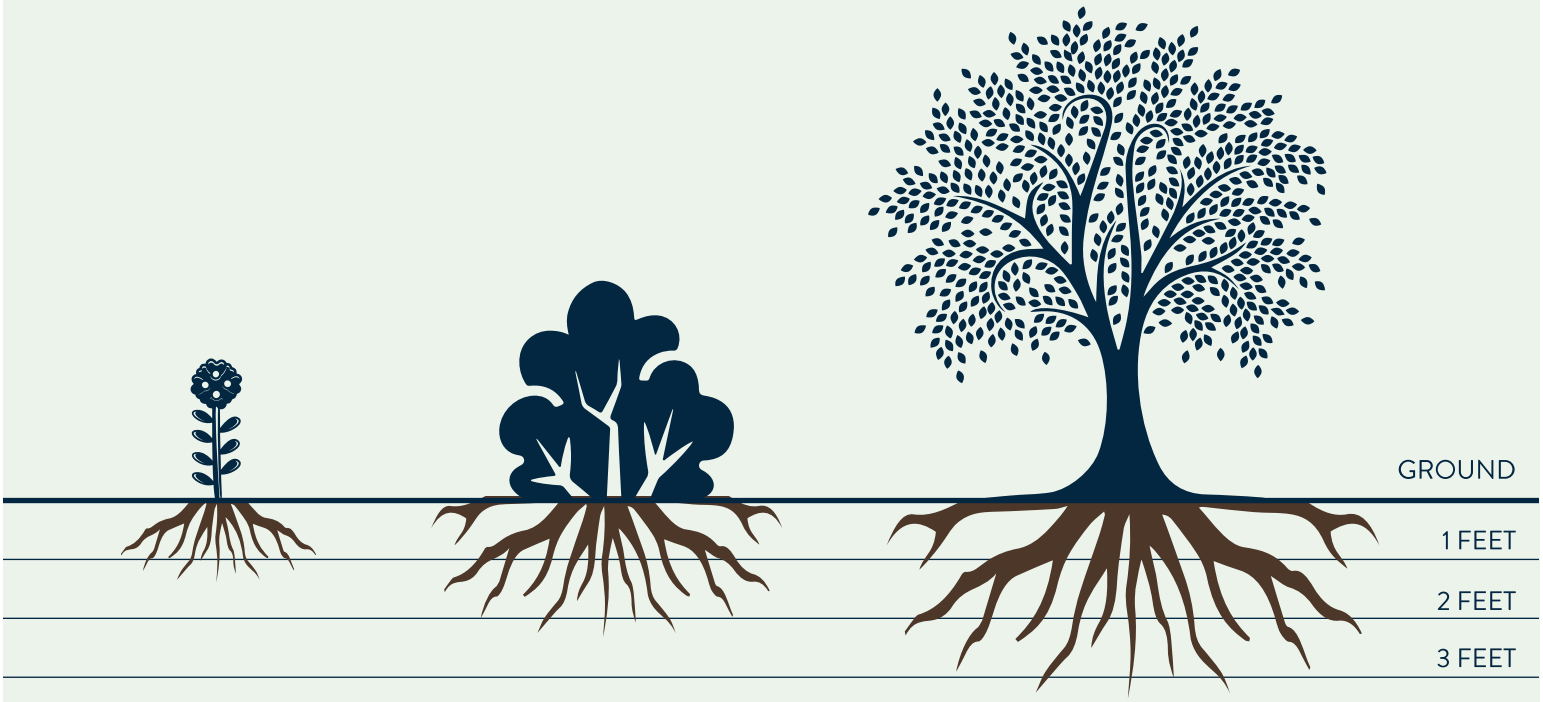
Seasonal Hose Watering @ 4 gpm

TYPE	WINTER	SPRING	SUMMER	AUTUMN
TREES	1 TIME PER MONTH	1-2 TIMES PER MONTH	1 TIME PER WEEK	2-4 TIMES PER MONTH
SHRUBS	1 TIME PER MONTH	2-3 TIMES PER MONTH	1 TIME PER WEEK	1 TIME PER WEEK
PERENNIALS	1 TIME PER MONTH	1 TIME PER WEEK	2 TIMES PER WEEK	1 TIME PER WEEK
DESERT ACCENTS	NONE	1 TIME PER MONTH	2 TIMES PER MONTH	1 TIME PER MONTH
GROUND COVER	1 TIME PER MONTH	3 TIMES PER MONTH	1 TIME PER WEEK	2 TIMES PER MONTH
GRASS TURF (WARM SEASON)	1 TIME PER MONTH	1-2 TIMES PER WEEK	2-3 TIMES PER WEEK	1 TIME PER WEEK
ORNAMENTAL GRASS	1 TIME PER MONTH	1 TIME PER WEEK	1-2 TIMES PER WEEK	2 TIMES PER MONTH
VINES	1 TIME PER MONTH	1-2 TIMES PER MONTH	1 TIME PER WEEK	2 TIMES PER MONTH

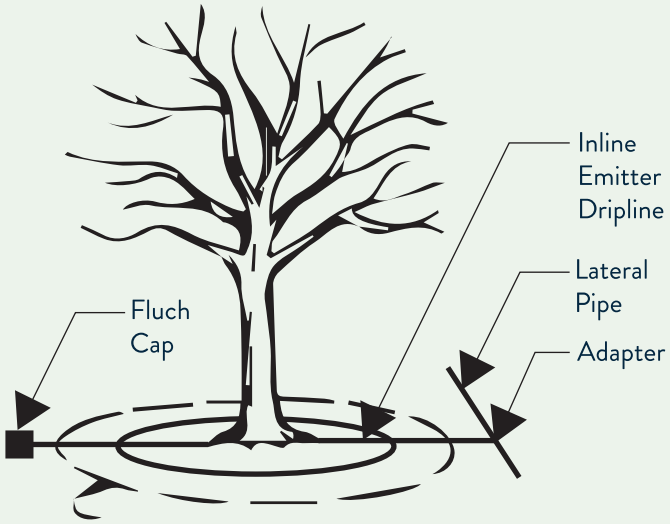
PRO TIPS:

- If watering with a hose, you must use a garden hose nozzle per ordinance to avoid water waste.
- You want to be sure you are watering to the right depth to assure plant health. Your lawn, ground-cover plants, shrubs and trees all have different watering depths.
- Also, you want to make sure that you are watering along the entire dripline (root zone) of your plants by moving your hose around.

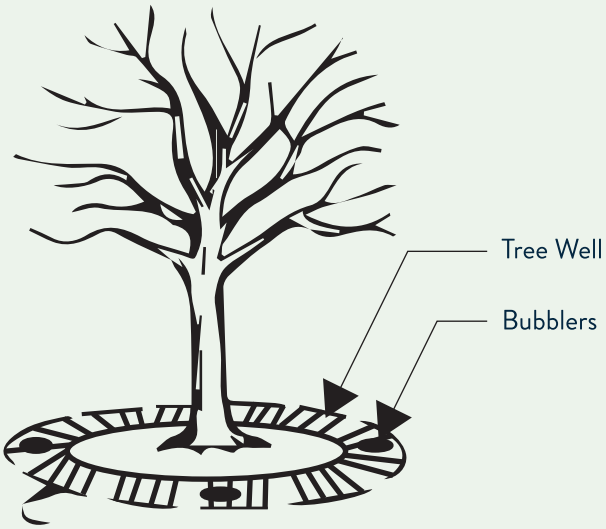
SUGGESTED WATERING DEPTH FOR DIFFERENT TYPES OF PLANTS



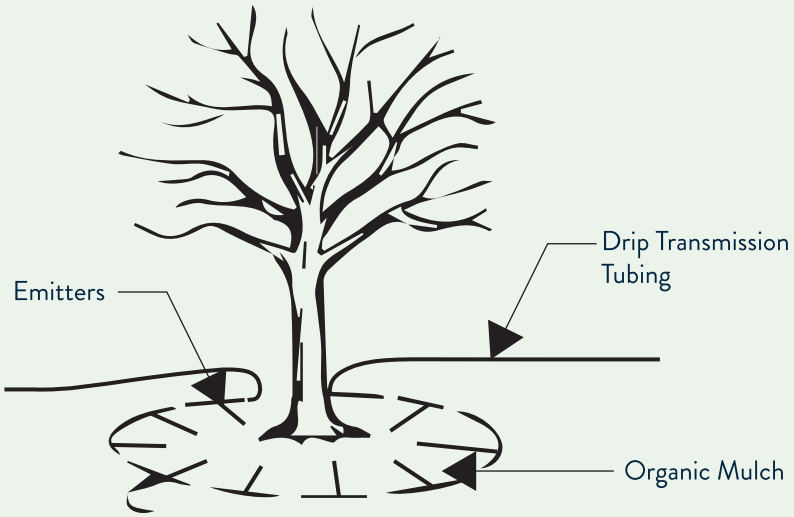
1 TREE WITH INLINE DRIP IRRIGATION



2 TREE WELL WITH BUBBLERS OR HOSE



3 TREE WITH EMITTERS & DRIP TRANSMISSION



Trees may be the best investment you can make in your property. Water normally. Approximately 24 hours later check your soil moisture. Using a soil probe, check how easily it goes into dry soil. Check the depth at the edge of the canopy or drip zone. Trees have feeder roots between 12" and 30" deep, so your soil should be moist in that area. If the probe comes out with wet, muddy soil, you are watering too much.

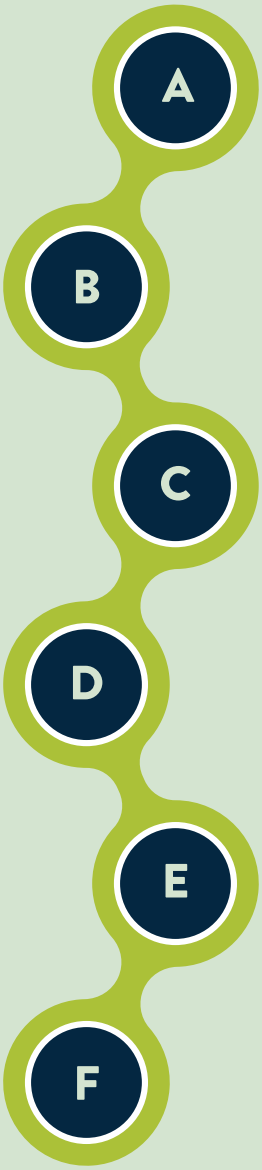
SECTION 3:
IMPROVING IRRIGATION EFFICIENCY

WHY IMPROVE IRRIGATION EFFICIENCY

Does the idea of making changes to your yard seem costly? Can you still get reasonable benefits from just changing a few things instead of your whole yard? Does it feel overwhelming because you don't know where to start? Do you feel like you don't know enough about irrigation systems?

Having an efficient automatic irrigation system can be financially possible for homeowners, especially with help from our rebates. Homeowners can choose to install or update a spray or drip irrigation system. To properly budget using our rebates, consider the following questions: How much can I spend on irrigation updates this year? Often it's important to be realistic about what you think you can spend and stick to your budget. You don't necessarily need to spend thousands of dollars to begin saving water. We offer rebates to help you cover some of the costs. Upgrades can be done in phases.

ADDING AN AUTOMATIC IRRIGATION SYSTEM PROVIDES THE FOLLOWING BENEFITS:



A. Aesthetic Benefits: An automated irrigation system is one of the best ways to keep your landscape beautiful and healthy because it can provide the right amount of water at the right time.

B. Saving Water = Saving Money: Even though there is an upfront cost, water will be used efficiently, which means more money will stay in your pocket with lower water bills.

C. Flexibility: An automated irrigation system with an EPA Water Sense Smart Irrigation Controller takes the guesswork out of scheduling.

D. Reduce Weeds: Automated drip irrigation systems can be extremely efficient at providing water to targeted areas. When weeds are deprived of water, the number of them is reduced. Water is directed towards desirable plants, trees and shrubs.

E. More Time To Sleep In: Automated systems can be set up to water your yard at 6 am. Early morning is the best time to begin watering since water does not evaporate as quickly as it does during other parts of the day. If watered early, your plants will have the maximum amount of time to absorb the moisture.

F. Peace Of Mind When Away From Home: Once programmed, the system will turn on and off automatically so you do not need to be home when your yard is watered.

https://www.505outside.com/residential-irrigation-efficiency-rebates/

HOW TO IMPROVE YOUR IRRIGATION EFFICIENCY

Most irrigation work can be done yourself except for one component. Tapping into your home's main water line needs to be completed by a licensed contractor to ensure it is completed safely. To help homeowners know how to select and work with a contractor, we have provided the Irrigation Association's Irrigation Consumer Bill of Rights in the Appendix.

We highly recommend hiring a professional irrigation designer to create a custom plan for an efficient system. Having a custom plan minimizes water waste and the chance of problems in the future and also helps ensure an efficient distribution of water, which will reduce water usage.

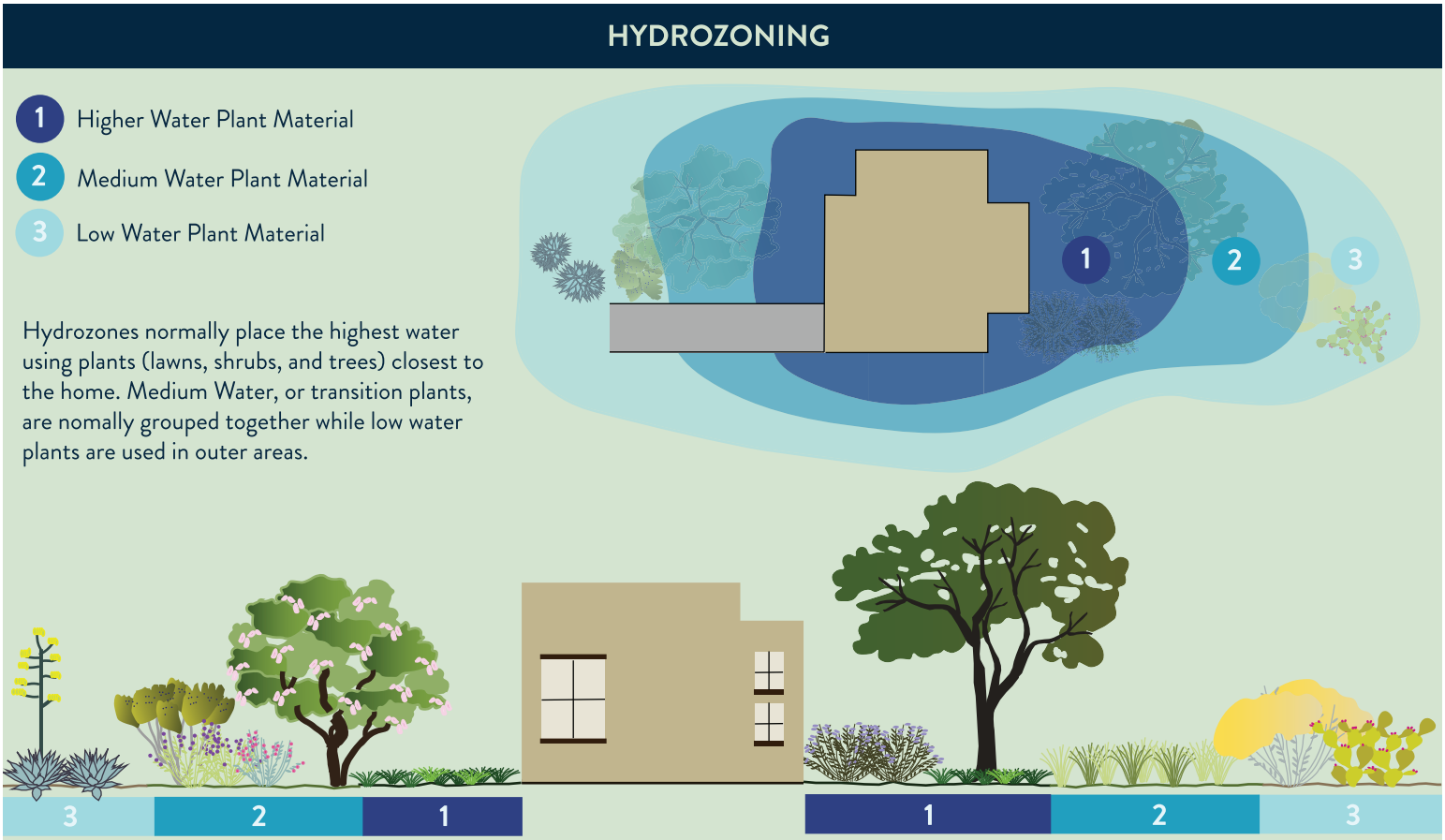
We also recommend asking a designer to produce a "call-out" list of all the parts required for the installation or renovation. This helps homeowners decide whether to DIY or hire a contractor.

SEPARATING IRRIGATION ZONES & HYDROZONING

When you begin to plan a drip system, whether it will be a new system or retrofitting an existing system, it is imperative to design it so the drip valves are separate from your lawn valves. If you plan to grow a vegetable garden or water annual beds with a drip system, those areas also need to be on separate valves.

The next thing to do is organize your drip zones by plant watering needs. This means that higher water plants and lower water plants should be on separate valves (hydrozoning) whenever possible, so watering is much more efficient.

Hydrozoning is not always possible when retrofitting an established landscape. In that case, you can adjust your water delivery with various sized drip emitters so plants with higher water needs receive more water per hour.



Original Background Artwork Inspired By: Bernalillo County's Conservation Standards

There is not a national standardized depth for polylines and drip lines, although locally the expected standard is instal+ lation at a minimum depth of six inches. There are exceptions to this:
• In areas where trenching polylines will disturb and damage existing root zones on trees and shrubs, polylines could be installed more shallowly, particularly where they will be covered with mulch.
• Urban farming and orchards normally leave polylines exposed so there is easier access if you need to make modifica+ tions throughout the growing season.

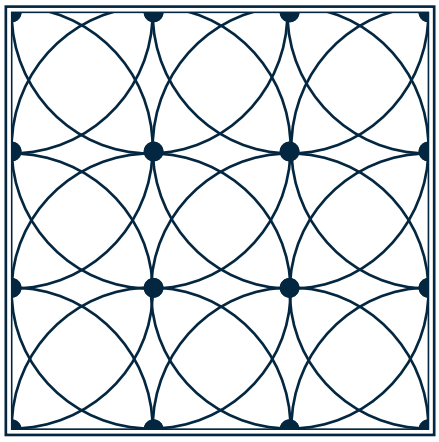
IMPROVING SPRINKLER IRRIGATION SYSTEMS

Although sprinkler irrigation systems are widely used in Albuquerque, this type of irrigation system can be quite inefficient. A lot of water, up to 45 percent, can be lost because of evaporation and blowing winds. In order to increase the efficiency of your spray irrigation system, make sure your sprinkler heads are pointed in the right direction. Irrigating sidewalks and streets is considered water waste.

To assure your sprinkler system is running efficiently address the following:

Make sure your heads are level, properly installed and performing in the way they were designed. Head-to-Head coverage is important because it provides uniform distribution, reducing the risk of dry spots on your lawn or overwa+ tering in other areas. If they are not, your throw will be off and you may not have actual head-to-head coverage. To properly irrigate, it is important to calculate the amount of water delivered by the sprinkler system in each area to assure it is a uniform, matched precipitation rate (MPR). To be "matched" all sprinkler heads in each zone must have the same rate of precipitation. For this reason, all sprinkler nozzles should always be the same brand and the same model.

20' SQUARE SPACING



MP2000 360
45 psi
20' radius
1.56 gpm
20' head x 20' row, rectangular spacing

PRO TIPS (CYCLE & SOAK):

Part 1: Lawns on slopes and areas less than ten feet wide are nearly impossible to irrigate efficiently. These areas provide an ideal situation for water waste. To minimize water waste, set your controller for soaking cycles.

Part 2: Time how long it takes to water the zone before irrigation water runs off the slope. This gives you the maximum run time allowed per cycle.

Part 3: If your lawn needs 12 minutes of water to stay healthy but water starts running off after four minutes, you need to have three separate cycles. Each cycle should run for four minutes, with a 20-minute or longer soak time between each cycle.

PRO TIPS FOR INSTALLING A NEW SYSTEM INTO AN EXISTING, MATURE LANDSCAPE OR RENOVATING AN OLDER SYSTEM:

- Be careful with the installation as it can be very disruptive to the established plants.
- If heavy machinery is used, keep hot exhaust pipes away from plants so they don't get scorched.
- Do not store heavy equipment where it will compact landscape soil.

IF YOU ALREADY HAVE AN IN-GROUND IRRIGATION SYSTEM IN PLACE:

- Determine if the system is in good shape and will take care of current landscaping needs.
- If the system needs improvement, determine if it can be upgraded while leaving most of it in place.
- If the system is quite old and in bad condition, consider installing a new system with advanced technology that will offer the highest rate of efficiency. It often helps to hire an irrigation contractor to help determine these items.

Do you want to transform your landscape to a **desert-friendly** landscape? It is possible to do that without spending too much money and making too many changes to your yard.

PRO TIPS:

You can also add a flow sensor to your irrigation system. Flow sensors are inexpensive components that can alert you if there is a broken line or a broken head on your lawn. Visit your local irrigation supply store to find the model and brand that is compatible with your system.

UPDATING SPRINKLER SYSTEMS WITH SMART IRRIGATION TECHNOLOGY

For homeowners on a limited budget, updating system components to include EPA Water Sense Smart Controllers, Water Sense Spray Bodies and high-efficiency nozzles for lawn sprinklers or adding pressure regulators on drip lines and sprinkler zones as well as making any necessary repairs will go a long way to saving water. Nationally, making these smaller changes has saved homeowners an average of 30% on outdoor water use. These upgrades leave old piping in the ground. To see more about the rebates we offer on these items see appendix.

WATER SENSE SMART IRRIGATION CONTROLLER communicate with databases and satellites to provide local, accurate weather data which is then used, in conjunction with plant and soil data you enter during setup, to create a specific schedule for your home. They adjust on their own depending on the season and the weather.

- They help landscapes flourish and remain healthy by providing the right amount of water for each plant zone.
- They reduce water runoff from the landscape, helping to keep local water bodies clean and healthy while avoiding water waste.
- They save both water and money by helping to eliminate overwatering.
- They save time that is required to continuously monitor and adjust irrigation schedules in response to changing weather.

Many of these controllers are compatible with mobile devices to allow the user to interact with their irrigation system remotely. The Irrigation Association has assembled a list of smartphone-friendly irrigation controllers. You can find many of these controllers at your local irrigation supply store. Look for the WaterSense logo when purchasing your new controller.

WATER SENSE SPRAY SPRINKLER BODIES

Landscape irrigation systems are often installed so the pressure is higher than what is recommended for the nozzles. This can lead to excessive flow rates, misting, fogging and uneven coverage. Uneven coverage could mean one section of the lawn is flooded while another area is dry. WaterSense-labeled sprinkler bodies certified by the EPA are designed to help regulate the water pressure that reaches the nozzle, ensuring efficient watering and reducing water waste by:

- providing a constant flow at the sprinkler nozzle
- generating the right amount of water spray
- creating optimal coverage and uniform distribution
- reducing misting and fogging

The Water Authority offers a rebate for listed WaterSense pressure regulating spray sprinkler bodies. To be able to take advantage of the rebate, check with a local irrigation supplier to make sure the spray nozzle is matched with the appropriate WaterSense pressure regulating sprinkler body.

HIGH-EFFICIENCY ROTATING SPRINKLER NOZZLES have the convenience of pop-up spray nozzles with the efficiency benefits of rotor technology. These nozzles minimize water waste because they feature unique, multi-trajectory rotating streams that deliver water at a steady rate. This slower application rate allows water to gently soak in at rates that soils can absorb. The larger droplet size generated by the streams is also less susceptible to wind and misting.

PRO TIPS:

A Can I replace my existing spray nozzles with these high-efficiency rotary nozzles?
Yes. In most cases, it is as simple as unscrewing the existing nozzle and dropping it in the rotary nozzle and filter basket.

B Why do rotary nozzles require longer run times?
Rotary nozzles deliver water at a slower rate than typical spray nozzles. Because they apply water slower, more time is required to apply the right number of gallons that your grass needs.

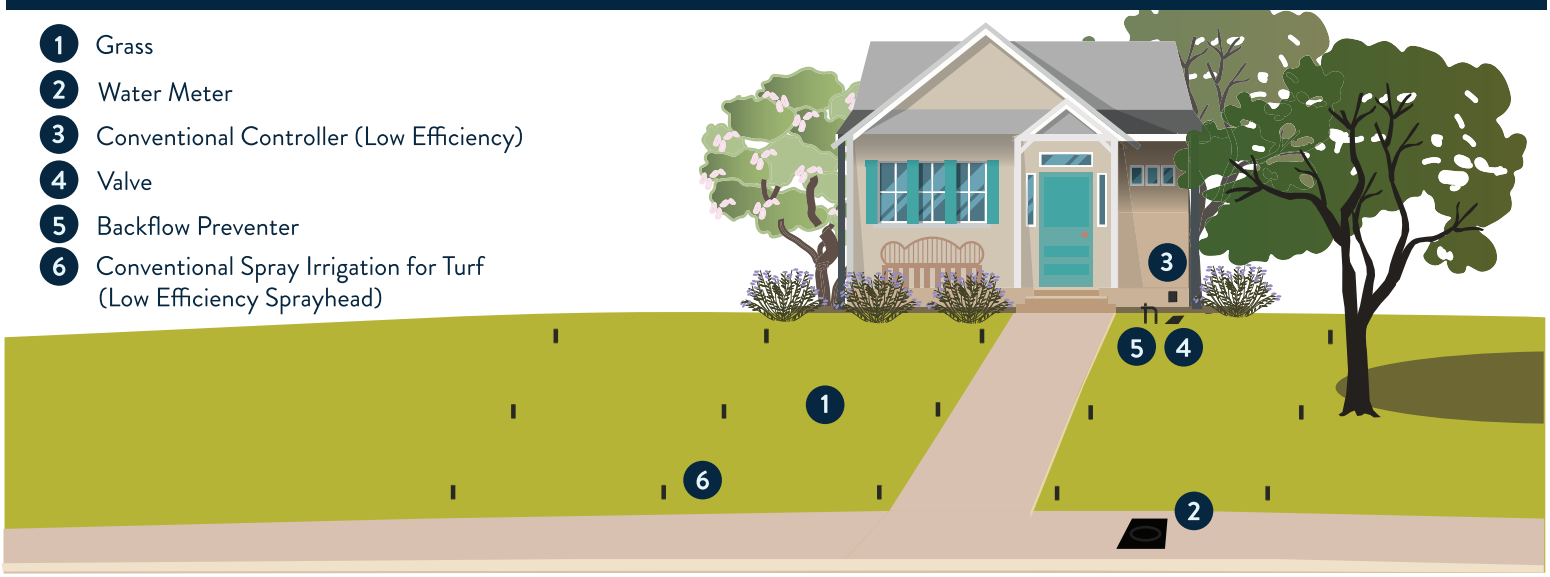
C Does my system need to have a pressure regulator?
Yes. It works best at 30psi to 40 psi. If the pressure running through your irrigation system is too high, the rotary nozzle will spin out of control and break.

D Are nozzles easily adjustable?
Nozzles can be easily adjusted by tool or hand while the heads are running. This helps avoid wasting water through overspraying.

Or maybe you want and can afford to transform your yard to a Desert-Friendly Xeriscape to save even more water.

CONVENTIONAL TURFSCAPE

1. Grass
2. Water Meter
3. Conventional Controller (Low Efficiency)
4. Valve
5. Backflow Preventer
6. Conventional Spray Irrigation for Turf (Low Efficiency Sprayhead)



EFFICIENT TURFSCAPE

1. Tree and Shrub Drip Irrigation
2. Water Meter
3. WaterSense Smart Controller
4. Valve 1" Turf Grass Valve 2: Trees and Shrubs
5. Backflow Preventer
6. Water Sense Spray Bodies and Nozzles On Irrigation for Turf
7. Grass

DESERT-FRIENDLY XERISCAPE

1. Organic Mulch
2. Water Meter
3. WaterSense Smart Controller
4. Valve 1" Turf Grass Valve 2: Trees and Shrubs
5. Backflow Preventer
6. Water Sense Spray Bodies and Nozzles On Irrigation for Turf
7. Grass
8. Addition of Desert-Friendly Plants/ Xeriscape

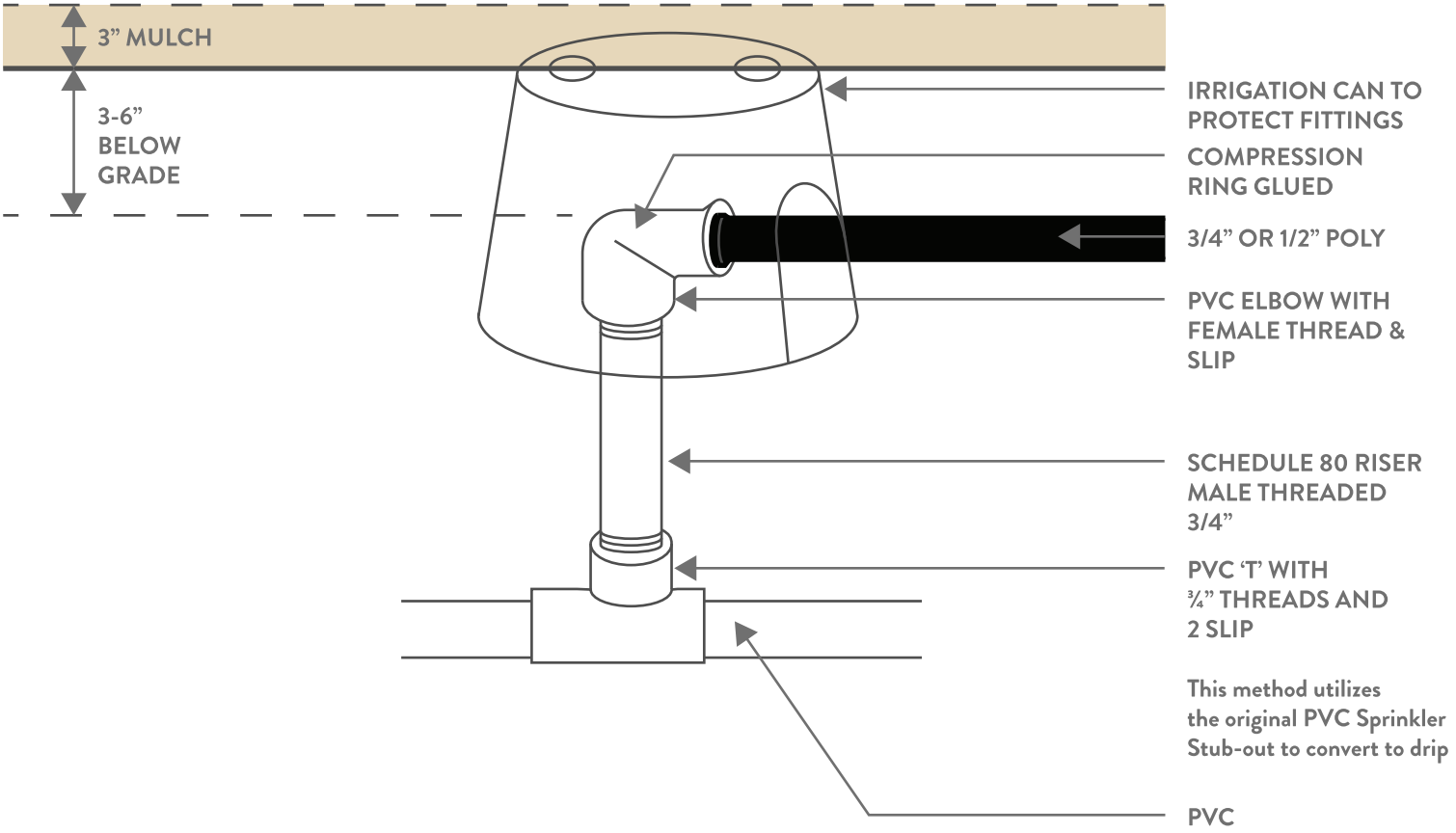
We offer rebates for xeriscape conversions. When converting your turfscape to a xeriscape you will need to replace your sprinkler system with a drip system. The good news is that if you have an existing spray irrigation system you do not have to dig it all up and start from scratch. When converting your lawn area to a xeriscape, you can convert your existing sprinkler system to a drip system.

RETROFITTING A SPRINKLER SYSTEM TO A DRIP SYSTEM

Retrofitting your sprinkler heads is not difficult and starts with picking out the right components. Once you have all the components to retrofit your system, you can start the switch. These are the basic steps to follow:

1. Cap off each spray head with a plug
2. Pick one sprinkler head to retrofit and convert to a drip line as shown below.
3. Add emitters where needed.

TECHNICAL DRAWING



IMPROVING THE EFFICIENCY OF DRIP IRRIGATION SYSTEMS

It is important to consider drip system placement and uniformity to improve plant quality by keeping plants from being over or underwatered. To maximize the efficiency of drip irrigation systems you may need to add new emitters, replace worn emitters, or change the spacing of the emitters. Drip irrigation systems can start showing problems after three to five years.

Checking your system regularly allows for identifying missing and broken emitters that need to be replaced to keep your system running efficiently. The system's performance can be affected by mineral deposits over time so cleaning out your filter at the start of the season can help extend the life and improve the efficiency of your drip system.

Large shrubs and trees are almost always planted with one or two drip emitters placed near the base of the plant. We recommend that emitters be moved outward as these plants grow. Your trees may need more emitters at this time to meet their water need. You also want to access and identify which plants are established and may thrive without supplemental irrigation. If you have one of the plants listed as Rainwater Only in our Xeriscape Guide, such as succulents and cacti, you can remove the emitters and install a goof plug.

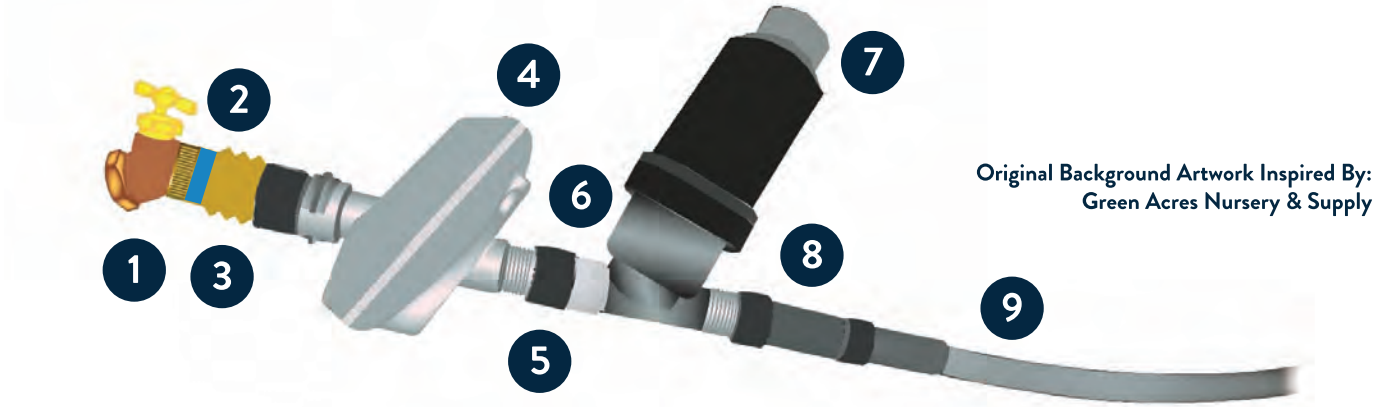
A good choice for watering trees is a professional landscape dripline. We suggest using 0.66-inch drip distribution tubing that has drip emitters spaced 12" or 18" along with the tubing. These are typically installed in rings around trees and other groundcover plants. Additional rings are added as plants grow larger.

IMPROVING HOSE WATERING

When using a hose, water at the base of a plant to avoid wetting the vegetation, which invites fungus. By watering the ground beneath your plants, you lose less water to evaporation and apply water directly to the plant roots. It is important to apply the water gradually, so we recommend using a multifunction hose nozzle and setting it in the soaker mode when leaving the hose on the ground. You also want to make sure that you water plants less often and deeply to improve plant health. Desert-friendly plants and trees do not like to sit on saturated soil for too long. By watering deeply, you are ensuring that water reaches the roots.

COMPONENTS OF A HOSE BIB TIMER DRIP SYSTEM

1. FAUCET/ VALVE
2. RV SHORT HOSE (OPTIONAL)
3. BRASS Y-SPLITTER (OPTIONAL)
4. IRRIGATION TIMER (SMART CONTROLLER SHOWN)
5. BACKFLOW PREVENTER
6. PRESSURE REGULATOR
7. IN-LINE Y-FLITER
8. SWIVEL ADAPTOR TO POLY LINE
9. POLY DRIP LINE



Original Background Artwork Inspired By:
Green Acres Nursery & Supply

If you are tired of dragging your hose around or want more freedom, consider installing an automated hose drip irrigation system. You can connect this system to a Water Sense Smart Irrigation Controller and a professional landscape dripline to water your plants and trees more effectively. Smart watering can make a big difference in the health of your plants.

SECTION 4:
TAKING CARE OF YOUR LANDSCAPE AND IRRIGATION SYSTEM

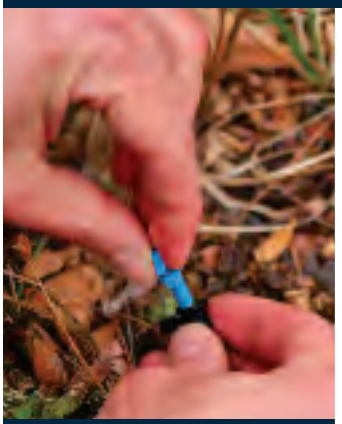
Most irrigation systems have a lifespan of 20 years before they begin to break down. If your house is older than that, most likely you are dealing with issues of pressure, uniformity of watering, overspraying and possible leaks that affect the quality of your landscape. If you are going to go through the time, effort and cost of a total yard transformation, seriously consider replacing your whole irrigation system.

PRO TIPS FOR SPOTTING POSSIBLE PROBLEMS WITH THE IRRIGATION SYSTEM:

- Grass is often taller and darker green around a sprinkler that is leaking or in the middle of a lawn where a pipe is leaking.
- Wet spots in a pathway could indicate either a broken emitter is shooting water or a leak is occurring in piping under-neath the path.
- Odd sounds, like hissing or splashing, or squishy areas in the lawn or gravel often indicate a leak.
- Calcium deposits on gravel without plants can indicate a leak.
- A wilting plant can indicate a clogged emitter.
- Small areas of dry turf, often near a sprinkler, usually mean there's a clogged nozzle.

To achieve higher efficiency over time you need to maintain your system. Extending the lifespan of your system requires some upkeep. Most often this maintenance is very easy and won't take much time at all. Included in the Appendix is an annual maintenance checklist.

EASY DRIP REPAIRS



FLUSHING FLAG EMITTER

GOOF PLUG ON DRIP LINE

GOOF PLUG REPAIR ON POLY LINE

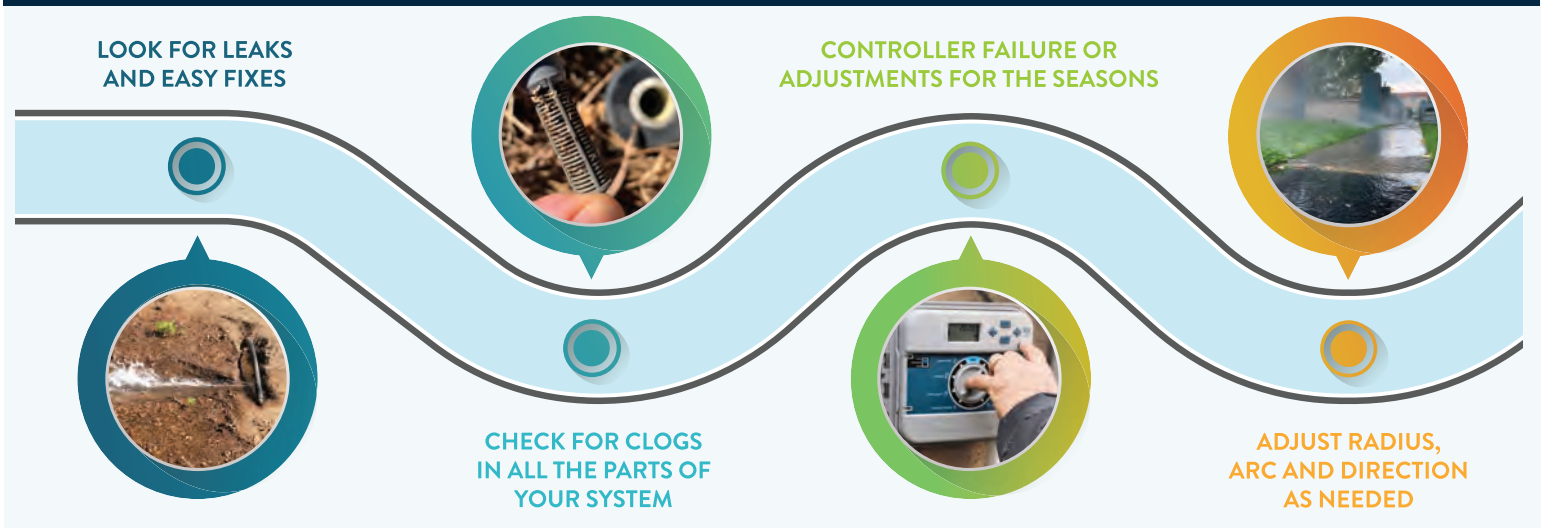
COUPLER & POLYLINE REPAIR

Water loss from a single broken or missing emitter in a drip zone may not seem like much, but let's do some math: At 25 psi, a ¼" poly pipe will deliver roughly .5 gpm. If the zone runs for 45 minutes, that is 22.5 gallons per cycle. If you run your drip twice a week in the summer months, that's 180 gallons per month. With the 2 gph emitter in place, that same line will only deliver 12 gallons per month using the same schedule. If you have three broken emitters on a line, that's 540 gallons per month instead of the 36 gallons you intended to apply to your yard.

IRRIGATION MALFUNCTIONS

1. Cracked nozzle sprays water where it isn't intended
2. Broken sprinkler & resulting geyser
3. High pressure misting & over spray flooding the sidewalk
4. Broken 3/4" poly drip line
5. Run off caused by running the sprinklers too long on a slope
6. Sediment flow on the sidewalk indicates that there is a broken sprinkler in the grass
7. Break in the sprinkler body or underground
8. Broken emitters on a drip system

WATER WASTE SCENARIOS



MALFUNCTIONS AND WATER WASTE

Malfunctions are issues that arise periodically in your irrigation system and can often waste a significant amount of water. In one summer month, a broken emitter can easily waste 200 gallons of water. A broken sprinkler may waste 1,000 gallons of water in one month, so it is very important to catch and repair irrigation issues right away. This is especially true in the autumn, when you discover something as you shut your system down for the season. It is easy to assume you will make the repair in the spring when you restart the system, but it is much better to make the repair right away in case you forget the issue exists. The easiest way to minimize the negative impacts of malfunctions is to follow a regular irrigation maintenance schedule where you "walk the line," checking each zone for issues. For most homes this takes between five and fifteen minutes once a month. For more irrigation maintenance guidance see our maintenance checklist on page 49.

PREVENT WATER WASTE!

- From April 1 through October 31 spray irrigation is not permitted between 11:00 a.m. and 7:00 p.m. due to water waste caused by heat evaporation.
- Direct irrigation overspray or overflow to landscape areas or permeable surfaces to make use of the extra water.
- Inspect your irrigation system regularly to identify and address malfunctions.
- Address fugitive water issues to prevent water waste.
- Avoid ice hazards in winter by watering only if needed during the warmest part of the day.

CARE FOR A MORE WATER EFFICIENT LUSH LAWN

Here are some maintenance tips to help you if you water with a hose.

SPRING

Replace the gaskets in the end of your hose and any sprayers or hand-held nozzles you use.

Replace the batteries in any hose timer before re-installing it.

SUMMER

Tighten any connections between two hoses and any hardware attached to your hoses.

AUTUMN

Look for any splits or holes in your hoses.

Make the repairs or replace your hoses if needed.

WINTER

Disconnect any hose timers and remove the batteries.

Install the insulated faucet cover to minimize the risk of freeze damage to your faucet.

PRO TIPS FOR NEW PLANTINGS:

- Research the best season to install or transplant specific plants in the yard.
- When first transplanted, plants will require more frequent watering cycles but of shorter duration. Water should penetrate at least six inches deeper and wider than the roots of the new plants.
- The length of time it takes for plants to become well established varies greatly among plant types and site conditions.
- The best adapted, fastest rooting plants may be well established in one or two growing seasons. Some plants — such as those in extremely hot or exposed windy locations — may take three to five years of weekly watering in the summer before watering can be reduced. Trees will often take longer.
- While desert accents need surprisingly little water to develop extensive root systems, they should be watered deeply (12" to 18") every two weeks in the first few summers after they have been planted. During establishment, extra water is beneficial. After a few years in the landscape, give them a deep soaking a few times in summer or let them grow on rainfall alone. If desert accents are on drip, make sure to plug the emitters after they are established.

PRO TIPS FOR MAINTAINING A THRIVING LANDSCAPE:

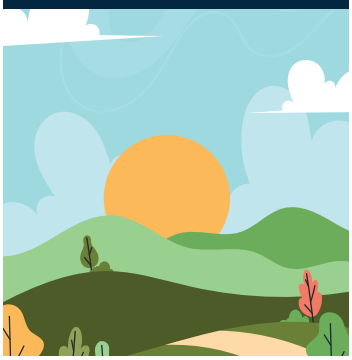
- Supplemental irrigation is essential for maintaining plant and tree health.
- Group plants of similar water needs on the same dripline (hydro-zoning).
- Water in the early morning to check the irrigation system for leaks or misaligned spray heads. Watering overnight can promote mildew and other lawn diseases.
- Do not water in the middle of the day during the spring, summer and fall.
- It is better to water in the mid-morning during December, January and February.
- Getting water to the right soil depth is critical, regardless of the method used.
- Water at the place where plants will be able to access the water most effectively. As plants grow larger, their roots will not only grow deeper but outward from the trunk area.
- Plants need more water to remain healthy as they increase in size.

MAINTENANCE CHECKLIST

MONTHLY:

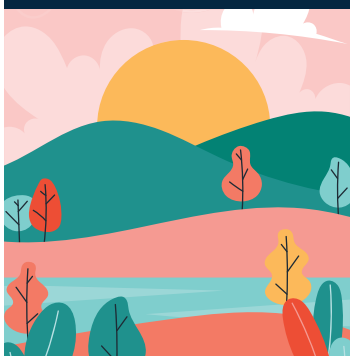
- O Check for leaks by inspecting water lines, sprinklers, emitters and other components and by looking at water meters and historical data.
- O Adjust sprinklers and emitters to make sure they're delivering water to the landscape and not onto rocks, bare earth or pavement.
- O Replace damaged parts immediately with identical or equivalent parts to ensure uniform coverage and optimal system efficiency.
- O Clean any clogged equipment.
- O Make sure the irrigation controller is set appropriately for the season.

SPRING



- O Check your irrigation system for leaks and clogged, broken or missing sprinkler heads and emitters.
- O Consider installing a new WaterSense-labeled "smart" irrigation controller to take the guesswork out of scheduling (rebates available).
- O Set the controller for watering frequency, start times and duration per zone per program.
- O Replace the backup battery in the controller.
- O Test the manual shut-off or isolation valve.
- O Check the water pressure in each irrigation zone.
- O Check and clean filters wherever they are in the system.
- O Check and clean the filter screen in each sprinkler body. Adjust the rotor arc or spray pattern to eliminate water waste.
- O Test heads to make sure they are delivering consistently and efficiently.
- O Inspect all drip emitters (look for wet zones after running a complete cycle). Unclog or replace any that are malfunctioning.

EARLY SUMMER

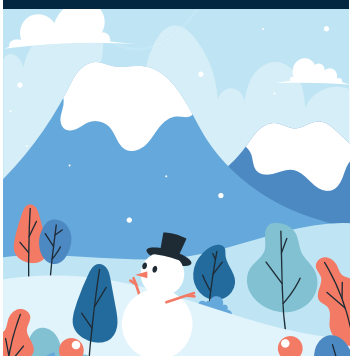


- O Adjust the controller for the appropriate seasonal setting.
- O Adjust sprinklers and emitters to make sure they're delivering water to the landscape and not onto rocks, bare earth or pavement.
- O Check and clean filters, wherever they are in the system.
- O Inspect all drip emitters (look for wet zones after running a complete cycle). Unclog or replace any that are malfunctioning.
- O As plants grow bigger, move the emitters to the edge of each plant's root ball or drip line to encourage further root development.

AUTUMN

- O Adjust the controller for the appropriate seasonal setting.
- O Test the manual shut-off or isolation valve.
- O Check and clean filters wherever they are in the system.
- O Inspect all drip emitters (look for wet zones after running a complete cycle). Unclog or replace any that are malfunctioning.

WINTER



- O Protect the irrigation system from freezing temperatures by draining hoses, pipes and tubing and properly insulating outdoor faucets.
- O Discontinue automatic watering and turn on systems manually or hand water as needed when temperatures are below 40 degrees Fahrenheit.

APPENDIX:

GLOSSARY

AUTOMATIC VALVE: A valve which is activated by an automatic controller using electric or hydraulic means. Synonymous with Remote Control Valve. Master valves and zone/control valves are typically automatic valves.

BACKFLOW PREVENTION DEVICE: Devices installed onto a pipe that only allow water to flow in one direction, allowing water from the municipal water supply to flow into your irrigation system but stopping any potentially contaminated water from flowing back into the public system.

BERM: A ridge, mound or raised embankment a narrow shelf, path, or ledge typically at the top or bottom of a slope used to convey or retain runoff also : a mound or wall of earth or sand

BUBBLERS: Small irrigation heads designed to bubble over and flood the ground surface around the plant at a particular, typically low-flow rate.

CLAY SOIL: Soil that is made up of very fine particles and very little organic material.

COMPOST: Decayed organic material (vegetable matter or manure) used as a plant fertilizer.

COMPOSTING: The act of making vegetable matter or manure into compost.

CONIFER: A tree that bears cones and needle-like or scale-like leaves that are typically evergreen.

CRUSHER FINES: Crusher fines is a finely-crushed stone mix that is often the byproduct of gravel operations. See also Decomposed Granite.

DECIDUOUS TREE: Trees that lose their leaves in autumn and grow new leaves in the spring.

DECOMPOSED GRANITE: A byproduct of the weathering and erosion of solid granite made up of small and fine granite pieces which can resemble sand. It is finer and more stable than gravel.

DRIP IRRIGATION SYSTEM: A type of micro-irrigation system that has the potential to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface. Water use efficiency is increased by placing water directly into the plant's root zone, minimizing evaporation and water waste.

DRIP EMITTER: Drip emitters are small plastic nozzles that distribute water from tubing or piping to plants at a particular rate.

HOSE BIB: A plumbing fitting that has a threaded male connection to accommodate the female end of a hose connection, allowing a hose to connect to a water source.

HYDROZONING: Organizing irrigation zones by plant watering needs – For example, put higher water-use plants on one zone, and lower water-use plants on a different zone.

IMPERMEABLE: Not allowing liquids to pass through.

INLINE DRIP LINE: Flexible tubing with pre-installed drip emitters at regular spacing, preferable for landscapes with equally spaced plants or for even water application around tree root zones.

IRRIGATION: "Irrigation" includes all forms of watering that are part of an automatic system, including drip, underground, and hose bib timer systems. "Watering" refers to the application of water to plants, regardless of the method.

ISOLATION VALVE: A type of manual valve that completely obstructs the flow of water, thereby isolating a portion of the system from water flow. Under normal operating conditions, isolation valves remain open. Isolation valves are typically closed to allow for maintenance or repair.

LATERAL LINES: The pipe installed downstream from the control valve on which the sprinklers are located.

LOAM: A soil made up of mostly sand, silt, and a smaller amount of clay (about a 40-40-20% distribution of sand-silt-clay).

MAIN LINE: A pipe under constant pressure which supplies water from the point of connection to the control valves.

MASTER VALVE: A master valve is an automatic valve, typically an electric solenoid type valve, that is installed at the point where the irrigation system connects to the water supply, upstream from individual irrigation zone valves. The master valve is wired to a special "master valve circuit" on the irrigation controller, giving it the ability to allow or block water to zone valves. A master valve is used to keep the main line from being under constant pressure.

MICRO SPRAYERS: Drip emitters that apply water with a spray pattern, typically covering larger area than a direct emitter, and typically used in seeded areas.

MICROCLIMATES: Microclimates are relatively small spaces that create distinctly different growing conditions. It is possible to have multiple different microclimates within your yard. Factors affecting microclimates include solar and wind exposure, shade, temperature, and moisture.

MULCH: Material (such as decaying leaves, bark, or compost) spread around or over a plant's root zone to enrich or insulate the soil and retain moisture.

MULCHING: The application of mulch around a plant on over a landscape area.

PERCOLATION RATE: The speed at which water moves through different soil layers.

PERMEABLE: Allowing liquids to pass through it.

PRAIRIE PLANTINGS: Landscapes that include native warm-season grasses and a mix of native and adaptive plants, requiring less frequent yet deeper watering than a regular cool season turfgrass lawn. See also Wildscapes.

RAIN GARDEN: A type of xeriscape that relies heavily on natural rainfall. Rain gardens are designed to maximize active (such as a rain barrel or storage tank) and passive (such as a swale or basin) rainwater harvesting.

ROTORS: Sprinklers that use a rotating stream (or multiple streams) of water to apply water to the ground, typically used for turf or other very densely planted landscapes.

SANDY SOIL: Soil that is made up of at least 35% sand and less than 15% silt and clay. Sand is generally small pieces of eroded rocks with a gritty texture.

SHRUBBLER: Drip emitters with a flow rate of up to 13 gallons per hour that can be adjusted by twisting the cap. Because their flow rate is variable, they are less precise and potentially less efficient than direct emitters with a specified flow rate.

SILTY SOIL: Soil is "silty" if it is more than 80% silt and no more than 12% sand.. Silt is a solid, dust-like sediment transported and deposited by water, ice, and wind.

SPRINKLER: A hydraulically operated mechanical device which discharges water through a nozzle or nozzles.

SWALE: A shallow depression used to hold or convey water. Typically the soil excavated from the creation of a swale is used to create a berm.

TURF: A maintained grassy area or lawn, typically with higher watering needs.Also referred to as "turfgrass."

VOLCANIC BASALT: Igneous rock formed from the rapid cooling of low-viscosity lava rich in magnesium and iron.

WATER HARVESTING: Usually the collection of rainwater, which is then either directed towards a landscape area via a swale or basin, or stored for later use with the intention of concentrating rainwater in planted areas.

WILDSCAPE: Landscapes that include native warm-season grasses and a mix of native and adaptive plants, requiring less frequent yet deeper watering than a regular cool season turfgrass lawn. See also Prairie Plantings.

XERISCAPE: A native, desert-adaptive or desert-friendly landscape that often feels lush and vibrant, has plants that are appropriate for arid environments, and requires less irrigation than turf or other high water-use landscapes.

ZONE VALVE: An automatic valve (typically electric solenoid) used to create various watering zones in an irrigation system. Separating an irrigation system via different zone valves allows for different watering devices to be used in a single system – for example, sprinklers on one valve and drip emitters on another. Also known as control valves.

Discuss these items with your irrigation designer and/or contractor before purchasing your irrigation system. This discussion will help you make wiser choices about your design options and the equipment you need and help you understand both you and your contractor/designer's commitment to developing your irrigation system.

(Bill of Rights adapted from the Irrigation Association as developed by Cal Poly, San Luis Obispo)

CONTRACTOR/DESIGNER QUALIFICATIONS

Do the contractor/designer and employees have the necessary license and insurance?
To check for contractor licensing in New Mexico use www.newmaxlicense.org or call the State Regulation and Licensing Department at (505) 827-7000.

- Is the contractor able to secure bonding and are they insured?
- What are the contractor/designer's credentials (formal training, references, professional certification)?
- Does the contractor/designer belong to a local or national trade association and abide by their standards?
- Does the contractor have a Water Smart Academy Listing?

DESIGN / INSTALLATION FEATURES

- What is the life expectancy of the system components?
- What safety features have been included?
    - backflow prevention
    - master valve/isolation valve
- What are the options for future upgrades?
    - adding new zones
    - extra wiring
- Does the system meet all local electrical and plumbing codes?

SPECIFIC DESIGN/OPERATING PARAMETERS

- What will be the distribution uniformity on the irrigated areas? Is water distributed evenly?
    - matched precipitation sprinkler heads
    - head-to-head coverage
    - sprinkler operating pressure
    - slopes
    - wind considerations
- Does the system provide rain override capability or moisture sensors?
- What is the precipitation rate for each zone on the system (quantity of water applied per hour)?
- What is the projected quantity and cost of water used per year?
- What is the recommended programming for the sprinkler system timer/controller?
- Does the contractor provide a seasonal, recommended watering schedule?
- Does the contractor provide troubleshooting support the first year of installation?

ESTIMATE

- The detailed, line-item estimate should include:
    - price of the system including labor, material, all local taxes and permits.
    - sprinkler system design, specifications, parts list, cut sheets, guarantees; cost of design, if any.

If you get additional estimates, you will want to accurately compare pricing and services.

WARRANTY INFORMATION

- Who provides the equipment installation, start-up and adjustment and winterization?
- What are the warranties on individual components and system "design" performance?
- Who is providing warranties and what do the warranties cover and exclude?
- Are the providers financially capable of standing behind their warranties?
- What is the availability of replacement parts?
- Does the contractor provide operating instructions to the consumer?

WATER BY THE SEASONS: WINTER

DECEMBER - FEBRUARY

DRIP IRRIGATION
TREES & SHRUBS

minutes per cycle **80-100**

times a month **1**

HOSE WATERING
TREES & SHRUBS

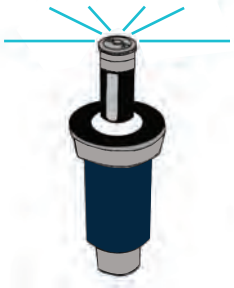
minutes per cycle **55**

times a month **1**

SPRAY
LAWN

minutes per cycle **7-10**

times a month **2**



HIGH EFFICIENCY MICRO ROTORS
LAWN

minutes per cycle **40-50**

times a month **2**

Make sure daytime temperatures are in the 40's and night time temperatures are not expected to be below 37F

WATER BY THE SEASONS: SPRING

MARCH - MAY

DRIP IRRIGATION
TREES & SHRUBS

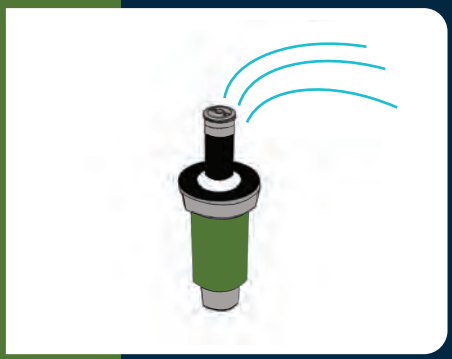
minutes per cycle **80-100**

times a month **2**

HOSE WATERING
TREES & SHRUBS

minutes per cycle **55**

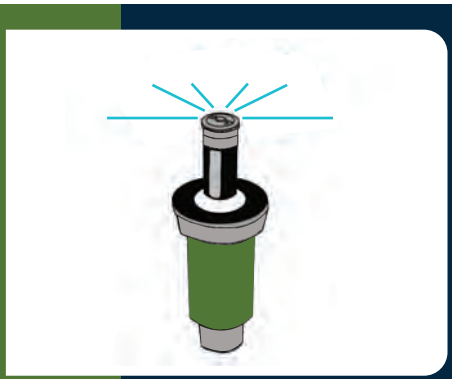
times a month **2**



SPRAY
LAWN

minutes per cycle **7-10**

times a month **8**



HIGH EFFICIENCY MICRO ROTORS
LAWN

minutes per cycle **40-50**

times a month **8**

WATER BY THE SEASONS: SUMMER

JUNE - AUGUST

DRIP IRRIGATION
TREES & SHRUBS

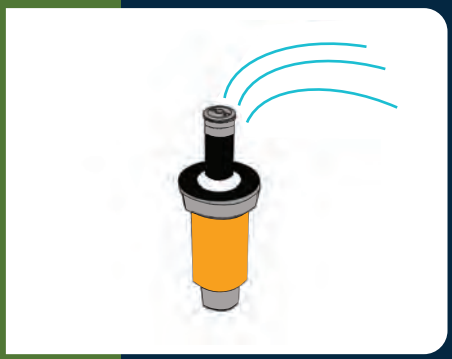
minutes per cycle **80-100**

times a month **8**

HOSE WATERING
TREES & SHRUBS

minutes per cycle **55**

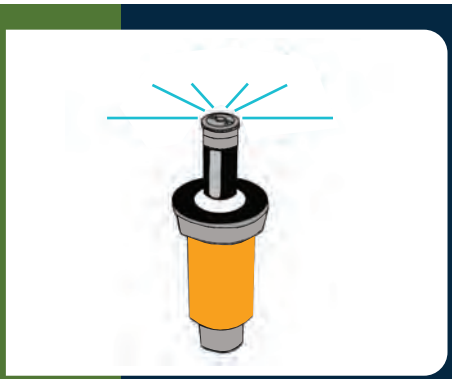
times a month **4**



SPRAY
LAWN

minutes per cycle **7-10**

times a month **12**



HIGH EFFICIENCY MICRO ROTORS
LAWN

minutes per cycle **40-50**

times a month **12**

WATER BY THE SEASONS: AUTUMN

SEPTEMBER - NOVEMBER

DRIP IRRIGATION
TREES & SHRUBS

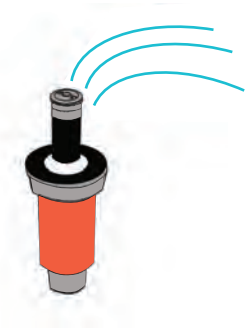
minutes per cycle **80-100**

times a month **2**

HOSE WATERING
TREES & SHRUBS

minutes per cycle **55**

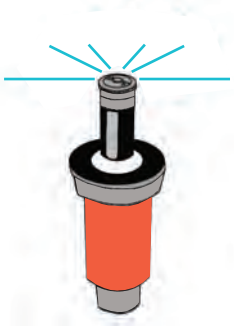
times a month **2**



SPRAY
LAWN

minutes per cycle **7-10**

times a month **8**



HIGH EFFICIENCY MICRO ROTORS
LAWN

minutes per cycle **40-50**

times a month **8**

Make sure daytime temperatures are in the 40's and night time temperatures are not expected to be below 37F

CREATE A WATERING BUDGET

- A watering budget helps track the amount of water plants need.

- Watering budgets are another way of thinking about the amount of water you should be providing the plants in your yard. They are also a way of tracking your plants' watering needs. Lastly, they are also a useful tool to see if you are overwatering or have a leak.

- To create a water budget, you only need to count the number of each type of plant you have in your yard. Use those numbers to fill out the form we have in the back of the guide and do some basic math to come up with an estimated need for your yard.

- To determine if you are overwatering or have a potential leak, compare the total gallons you used based on your bill against your budget. You may be asking, “but what about showers, washing dishes and clothes, and the toilet?”

To figure out average monthly indoor usage, average out the billed gallons for November, December, January and February. Subtract that amount from your monthly usage.

Once you’ve created your monthly water budget, compare the total gallons in the water bill with the number in the watering budget to determine if there is overwatering or any leaks.

HOW TO USE THIS “PLANT NEEDS IRRIGATION” BUDGET

Follow these steps to create an average “plant needs irrigation” budget for your yard.

This budget will help you figure out if you are watering too much or not enough, based on the plants you have in your yard. It uses soil and microclimate averages and historic data to mathematically determine your plants' needs.

This is an interactive sheet that will do the math for
you. If you print it out, print the Full Budget version, which allows you to fill in the spots to complete the arithmetic.

1. Count the number of trees in your yard, guessing their size. A good rule of thumb is to imagine how many times you could lay under the canopy. If a tree is roughly fifteen feet (15') wide, you'll need to round up to the nearest number —in this case to eighteen feet (18').

2. Put the number in the corresponding box next to your tree size. If you have three trees roughly 15' wide, you would put a number three (3) in the box next to the 18' Deciduous Tree. Multiply that number by each of the reference numbers for each season and fill in the seasonal budget (see example).

3. Repeat for all the plant material in your yard. You will need to measure your lawn if you don't already know the size. Google Earth can also help you measure it, if necessary.

4. Add up each seasonal column to get the total expected water needs for your plant material for each season.

"PLANT NEEDS IRRIGATION" BUDGET CHART										
TYPE	WIDTH	NO.	WINT. NEEDS	SPR. NEEDS	SUM. NEEDS	AUT. NEEDS	WINT. BUDGET	SPR. BUDGET	SUM. BUDGET	AUT. BUDGET
TREE	24		259	496	858	382				
TREE	18		146	279	483	215				
TREE	12		65	124	215	96				
TREE	8		29	55	95	43				
FRUIT TREE	24		326	651	1184	533				
FRUIT TREE	18		184	366	666	300				
FRUIT TREE	12		82	163	296	134				
FRUIT TREE	8		36	73	132	59				
CONIFER TREE	24		440	879	1597	719				
CONIFER TREE	18		248	494	899	405				
CONIFER TREE	12		110	220	394	180				
CONIFER TREE	8		49	98	178	80				
SHRUB	8		29	57	104	47				
SHRUB	6		16	32	58	26				
SHRUB	4		7	14	26	12				
SHRUB	3		4	8	15	7				
FLOWERING PLANTS	3		3	5	9	4				
FLOWERING PLANTS	2		1	2	5	2				
DESERT ACCENT	5		2	5	8	4				
DESERT ACCENT	4		1	2	5	2				
GROUNDCOVER	8		18	35	64	29				
GROUNDCOVER	5		7	14	25	11				
GROUNDCOVER	3		3	5	9	4				
ORNAMENTAL GRASS	4		2	5	8	4				
ORNAMENTAL GRASS	3		1	3	4.3	2				
VINES	20		178	355	646	291				
VINES	15		100	200	364	164				
VINES	10		45	89	162	73				
VINES	6		16	32	58	26				
COOL SEASON GRASS	1		2	2	3	2				
WARM SEASON GRASS	1		1	2	2	1				
							TOTAL WINT.	TOTAL SPR.	TOTAL SUM.	TOTAL AUT.

"PLANT NEEDS IRRIGATION" BUDGET CHART (EXAMPLE)										
TYPE	WIDTH	NO.	WINT. NEEDS	SPR. NEEDS	SUM. NEEDS	AUT. NEEDS	WINT. BUDGET	SPR. BUDGET	SUM. BUDGET	AUT. BUDGET
TREE	24		259	496	858	382				
TREE	18	2	146	279	483	215	292	558	966	430
TREE	12		65	124	215	96				
TREE	8	1	29	55	95	43	29	55	95	43
FRUIT TREE	24		326	651	1184	533				
FRUIT TREE	18	1	184	366	666	300	183	366	665	300
FRUIT TREE	12		82	163	296	134				
FRUIT TREE	8		36	73	132	59				
CONIFER TREE	24		440	879	1597	719				
CONIFER TREE	18		248	494	899	405				
CONIFER TREE	12	2	110	220	394	180	219	439	787	359
CONIFER TREE	8		49	98	178	80				
SHRUB	8		29	57	104	47				
SHRUB	6	6	16	32	58	26	94	192	348	156
SHRUB	4		7	14	26	12				
SHRUB	3	4	4	8	15	7	16	32	57	25
FLOWERING PLANTS	3		3	5	9	4				
FLOWERING PLANTS	2	12	1	2	5	2	12	24	52	20
DESERT ACCENT	5		2	5	8	4				
DESERT ACCENT	4	3	1	2	5	2	3	6	13	6
GROUNDCOVER	8	2	18	35	64	29	35	70	127	57
GROUNDCOVER	5		7	14	25	11				
GROUNDCOVER	3		3	5	9	4				
ORNAMENTAL GRASS	4		2	5	8	4				
ORNAMENTAL GRASS	3	5	1	3	4.3	2	5	13	22	10
VINES	20		178	355	646	291				
VINES	15		100	200	364	164				
VINES	10	1	45	89	162	73	44	89	161	72
VINES	6		16	32	58	26				
COOL SEASON GRASS	1	450	2	2	3	2	540	855	1260	630
WARM SEASON GRASS	1		1	2	2	1				
							TOTAL WINT.	TOTAL SPR.	TOTAL SUM.	TOTAL AUT.
							1473	2699	4553	2109

QUESTIONS

Still have questions? Send us an email at:

AskAnExpert@abcwua.org

ADDITIONAL RESOURCES

505Outside - https://www.505outside.com/

Middle Rio Grande Community Soil Health Lab – https://www.mrgcd.com/869-2/

NOTES

ACKNOWLEDGEMENTS

Water Authority Governing Board Members 2022
Klarissa J. Peña, City Councilor, Chair
Debbie O'Malley, County Commissioner, Vice Chair
Tammy Fiebelkorn, City Councilor
Trudy E. Jones, City Councilor
Timothy M. Keller, Mayor of Albuquerque
Charlene E. Pyskoty, County Commissioner
Steven Michael Quezada, County Commissioner
Gilbert Benavides, Village of Los Ranchos (non-voting).

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Stan Allred, Chief Finance Officer
Elizabeth Anderson, Chief Planning Officer
Mark Kelly, Water Resources Division Manager
David Morris, Communications and Public Affairs

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Megan Marsee
Greg Miller
Richard Perce
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Lisa Alvarez
James Aranda
Shay Armijo
Uriel Arroyo
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Adam Bangerter
Monique Bell
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Andrew Lisignoli
Bridget Llanes
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Colleen McRoberts
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Aaron Zahm
Rigo Zavala

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UKUU Creative

WATER IS LIFE!

The relationship with the landscape comes through our querencia. The love of the place, the memories it holds, and the historical continuity that we have had through the travels of our ancestors.

-Jorge Garcia