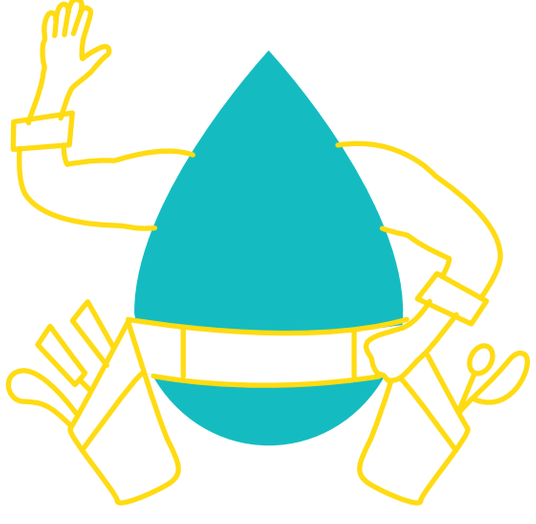
H2OVERHAUL

A Water-Wise Landscape Transformation Kit

WITHOUT WATER *life would be* PRETTY DRY | City of Thornton

Look for me throughout this guide for fun facts and extra tips. We're in this together.



Thornton Water's Residential

H_2OVERHAUL

Congrats on taking the first step in your H_2Overhaul process. This kit was designed to help you transform your thirsty lawn into a water-saving oasis. Tap in from start to finish for step-by-step instructions based on the 7 Principles of Water-Wise Landscaping:

Each year,

A 3,500 SQUARE FOOT LAWN
SOAKS UP ABOUT
84,000 GALLONS
of water.

The same yard with
40% TURF AND
60% LOW-WATER
PLANTS, SHRUBS AND TREES
ONLY USES
49,000 GALLONS
annually.

Why Do It?

Your hard work and dedication to conservation will result in seriously beautiful benefits, including:

- Decreased water waste
- Added visual interest and curb appeal
- Increased property value
- Big savings on future water bills
- Decreased lawn maintenance
- A gorgeous, water-efficient landscape that will make your neighbors green with envy.

How Long Will It Take?

Depending on the amount if time you have, your drive to complete your H_2Overhaul and how crazy your life is, below are some guidelines for timing.

H_2Overhaul Personality Chart

Daily Doers
You can accomplish your H_2Overhaul in one weekend if you're motivated, organized, prepared and armed with a few helpers.

Weekend Warriors
Give yourself a month to complete your turf transformation and prepare to dig in when the work week ends.

Occasional Overhaulers
Dive in whenever it's possible. It may take a little longer to complete your H_2Overhaul. Set realistic goals and timelines for each step of the process until your water-wise oasis is complete.

Budget Conscious?

Use these money-saving tips:

Check out garage and estate sales in your neighborhood for gently-used supplies, tools, wheelbarrows and hoses at a fraction of the price.

Hop on social networks like NextDoor.com and let your neighbors know you're on the hunt for things like bags of mulch, newspapers or cardboard, landscaping bricks, unused rocks and additional help.

Take advantage of Labor Day sales. Stock up on supplies and remove your sod in late August and early September to save big.

Expert Tip:

Complete your H_2Overhaul between the spring and fall. Keep in mind, sometimes the fall is a better choice if you use one of the slower processes of turf removal.

Did you know?
Planting in spring and fall requires less water.

The key to a successful turf transformation is preparation! Get ready for H_2Overhaul glory by learning how to use this kit:

No. 1 Dive into your kit! Read through all of the sections before you dig in. It will help you anticipate and prepare for your next steps.

No. 2 After reviewing each section, write down any questions that float to the surface and tap into our online resources to help you plan.

No. 3 Consider hiring a professional for the more complex steps of your H_2Overhaul. Research local service providers and make sure to ask friends and neighbors for referrals.

No. 4 Take time to plan. This is the most important component for a smooth, successful transformation.

No. 5 Set goals on the calendar based on the time of year and your availability.

No. 6 Get refreshed before each step. Review each section of the kit again, right before you begin tackling it.

No. 7 Use the online resources at the end of each step to help you dig into additional details.

No. 8 Keep your kit handy as you get to work.

Your H_2Overhaul Kit includes a planning notebook to keep you organized and on track.

H_2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton

step 1

H2OVERHAUL

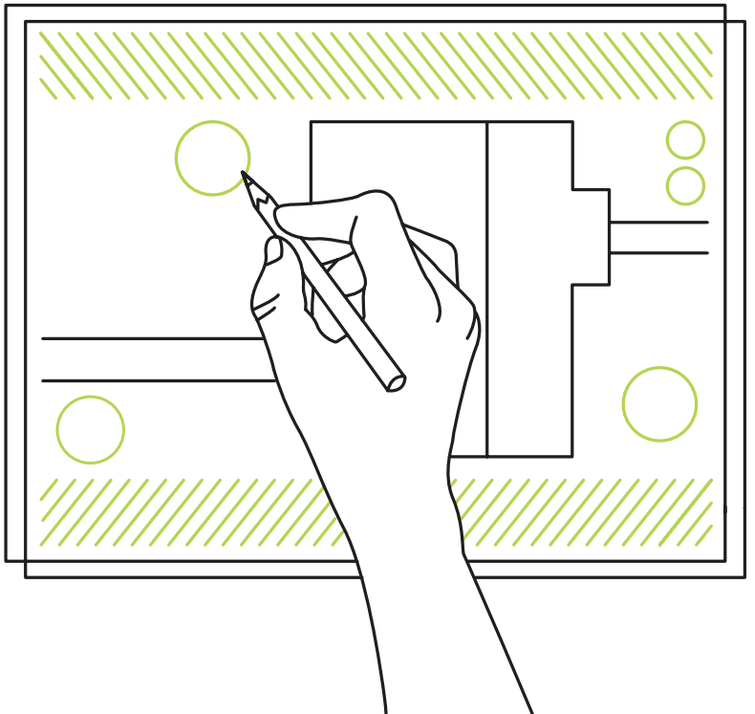
Planning & Design

Ready to start your H_2Overhaul? Learn how to plan and design your own water-wise landscape with these step-by-step instructions.

step 1:

Create A Map

1. Use Google Earth, or any online map app, to get a birds-eye view of your property.
2. Print it out and place tracing paper over the image.
3. With a pencil, trace a map of your property, including large structures, and any existing plants, trees, shrubs and features you'd like to keep.
4. Mark changes in grade (for example, where there is a hill or a slope) and draw contour lines on the land areas. You'll need this to plan proper drainage.
5. Be sure to also mark your irrigation layout, too. (Refer to "Step 5: Irrigation" in your kit.)



step 2:

Select An Area To Overhaul

Your new landscape or garden area will need to be on a different irrigation zone from the rest of the lawn due to lower water requirements. Choose a section of your lawn that:

Can easily be converted to a drip system using a drip conversion kit.

Is tough to keep green, or is rarely used by kids and/or pets.

Could be a nice spot to enjoy in a new way! (For example, a garden or entertainment space.)

Tap into your inner artist! (If you don't have one, hire a professional landscape designer instead. Your secret's safe with me.)

step 3:

Design Your Landscape

Get garden-spired.
Take a look at design plans on Pinterest or PlantSelect.org to spark ideas, or customize them to work with your landscape.

Make it yours.
Think about what's important to you and what you like to do in your yard and then design a landscape that's a perfect fit.

Some landscapes require lots of maintenance. If you don't have much time for that sort of thing, go easy on yourself! Look for lower-maintenance options, there are plenty to choose from.

Note the amount of sun your landscape will receive throughout the day (full, partial or shade) and select plants that will do well in the amount of sun they will be exposed to.

Group plants with similar water and sun requirements to save water and help plants reach their full potential.

Choose a space where plants won't be exposed to too much wind, moisture or sun, based on their needs.

Design with the future in mind. Remember, plants grow! Plan a landscape that allows room for mature-sized plants, trees and shrubs, as well as existing or added irrigation systems and mulch.

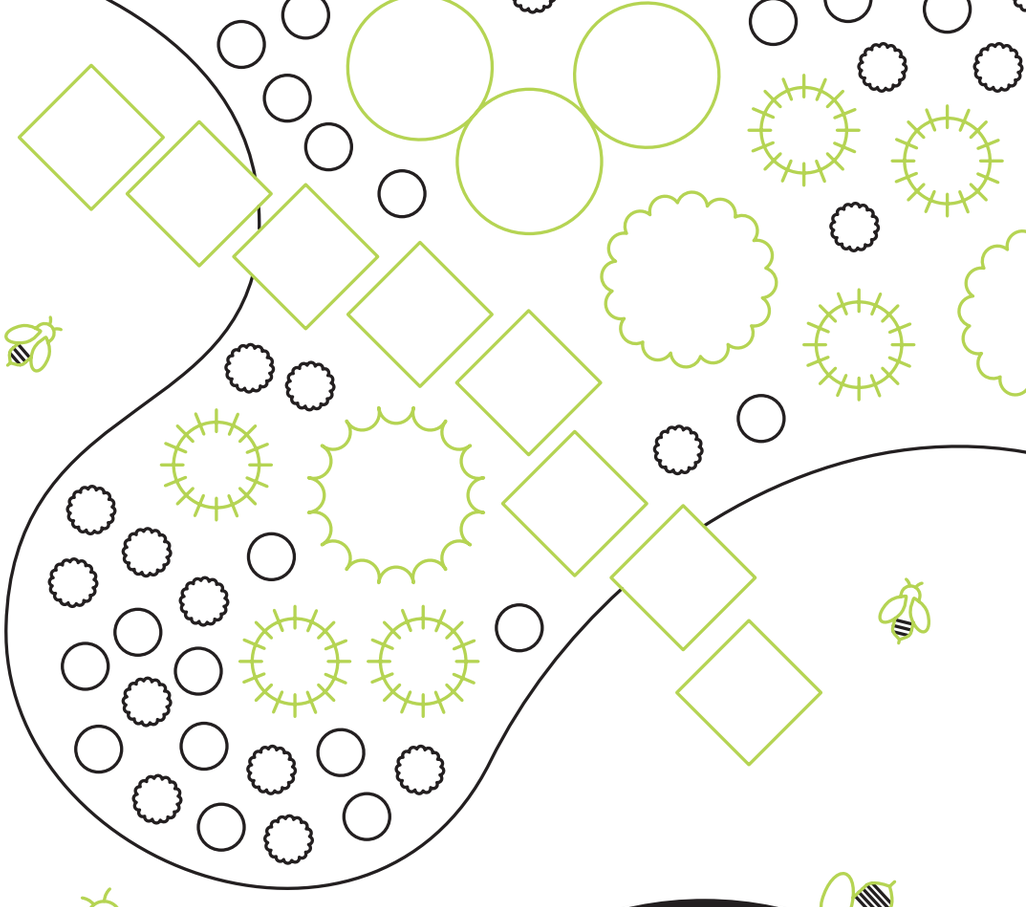
Work with what you already have.
Design your landscape around large trees or interesting features that already exist. No need to throw the baby out with the bathwater so to speak. (We could use that bathwater!)

Keep your mind and your options open.
Use your tracing paper to draft a few alternate designs of the map you made in Step 1. Don't be afraid to edit or make mistakes, it's all part of the creative process! It's easier to erase on paper, than to correct mistakes after the fact.

Start big. Add your largest features first. Draw in trees, shrubs and hardscapes, then fill in open areas with smaller plants, native grasses and accents like boulders or benches. Check out "Step 2: Plants & Alternative Turf" in your H_2Overhaul Kit to find options that are just the right size.

Plant outside the lines.
Create visual interest by adding curves and nonlinear elements your design.

Keep a schedule. Create a timeline for each phase of your H_2Overhaul, from sod removal through final planting. (Some methods of sod removal take longer than others. Check out "Step 3: Removing Your Turf" in your H_2Overhaul Kit for options.)



Did you know?
Replacing even part of your grass creates a sustainable landscape, increases biodiversity and nourishes wildlife in the areas surrounding your home.

Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

You'll find links to resources such as downloadable designs, photos of landscapes and plants, Online apps to help you create your own design and more.

This is the fun stuff! Admiring your work from your new hammock will also be fun.

H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton

step 2

H2OVERHAUL

Plants & Alternative Turf

Selecting Water-Wise Plants

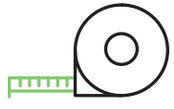
You don't have to sacrifice beauty to save water. There are plenty of gorgeous plant options that thrive in low-water conditions. Use these tips to select the perfect landscape-enhancing plants.

Don't let just any old plant slurp me up. I'm a precious resource you know.

Choose plants that work for you. Look for low water grasses, trees, shrubs, plants and groundcovers that fit your environment. (Consider microclimate, location, sun exposure, desired maintenance, intended use and your budget.)

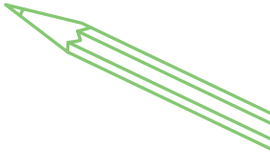
Mix it up. Select plants with varying colors, height and blooming seasons to create visual interest and pops of color throughout the year.

Give room for growth. Before you plant, find out how tall and wide each plant will grow to provide the space they need as they mature.



Create a color scheme. Select plants with complementary colors and use both warm and cool colors to create depth. Repeat the scheme throughout your landscape for a balanced color flow.

Soak up some inspiration. For ideas, check out our "Expert Design Pick" in this kit and take a look at the recommended plants on our Plant Suggestion list at **ThorntonWater.com/H2Overhaul.com.**



Visit PlantSelect.org, a local resource for plant selections, landscaping designs and helpful information. Here are some ways to explore:

1. Click **Garden Ideas** (under "Design" in the top navigation) for downloadable landscaping designs.
2. Click **Find a Plant** to find the best plants for your landscape.
3. Click **Where to Buy** to search for local retailers and garden centers. Call ahead to ask if they have the plants you want.

Water-Wise Meets Budget-Wise

Stick with Perennials

Low-water perennials are a cost-effective choice; adding beauty to your yard year after year. Once established, all they need is natural precipitation with a little supplemental water during hot and dry parts of the season.

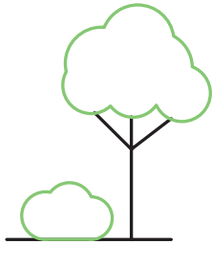
Investing In Expensive Trees & Shrubs?

Before taking the plunge:

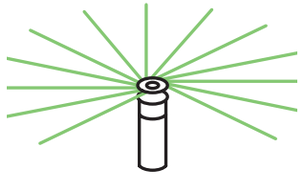
Set yourself up for success with high-quality soil.
(See "Step 4: Soil Prep & Planting" in your H_2Overhaul Kit.)

Plant in areas with suitable amounts of heat and limited wind exposure.

Consider how big each tree or shrub will grow to be (tall and wide), allowing ample room for them to mature.



I love me a nice, tight budget.



Hydrozone for Maximum Savings

Group plants together according to how much water and sun exposure they need. This saves water and helps plants flourish.

Put high-water plants in easily accessible areas or in low-lying drainage areas, near downspouts or in the shade of other plants to utilize runoff and natural shade.

In areas that are harder to reach or aren't easily accessible, plant low-water plants that require less frequent watering.

Gardens don't belong in a box. Free the plants!

Get A Water-Wise Garden In A Box

Resource Central offers professionally designed gardens with a curated selection of beautiful perennial Xeric (low-water) plants to replace turf, reduce watering and generally promote conservation practices for landscapes.

Order yours at ResourceCentral.org/gardens.

Expert Design Pick

Why We Love It

Filled with color and texture, this design features shrubs and easy-care perennials that look gorgeous year-round plus an array of flowers that bloom from spring to fall.

It attracts bees with fragrant flowers and foliage as well as sun-loving, drought-tolerant and deer resistant plants that grow in well-drained soil (which needs little to no amendment).

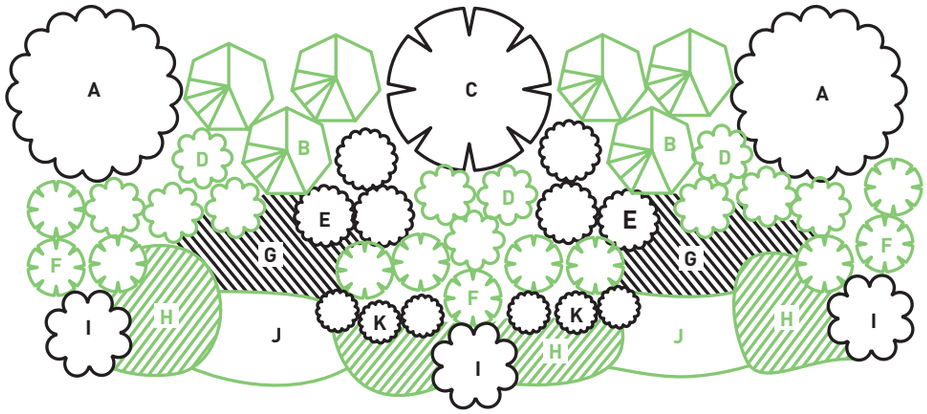
It's versatile enough to be used as a perimeter planting (planted down the sides of a yard) or it can be widened for use in a broader bed by placing the largest plants in the center and mirroring the design on the other side.

Find more sample designs at
PlantSelect.org/design/downloadable-designs/

Flurf your turf! Yes, that's totally a word. It means "to get rid of, to replace."

Water-Wise Cottage

Designer: Lauren Springer Ogden



Plant List

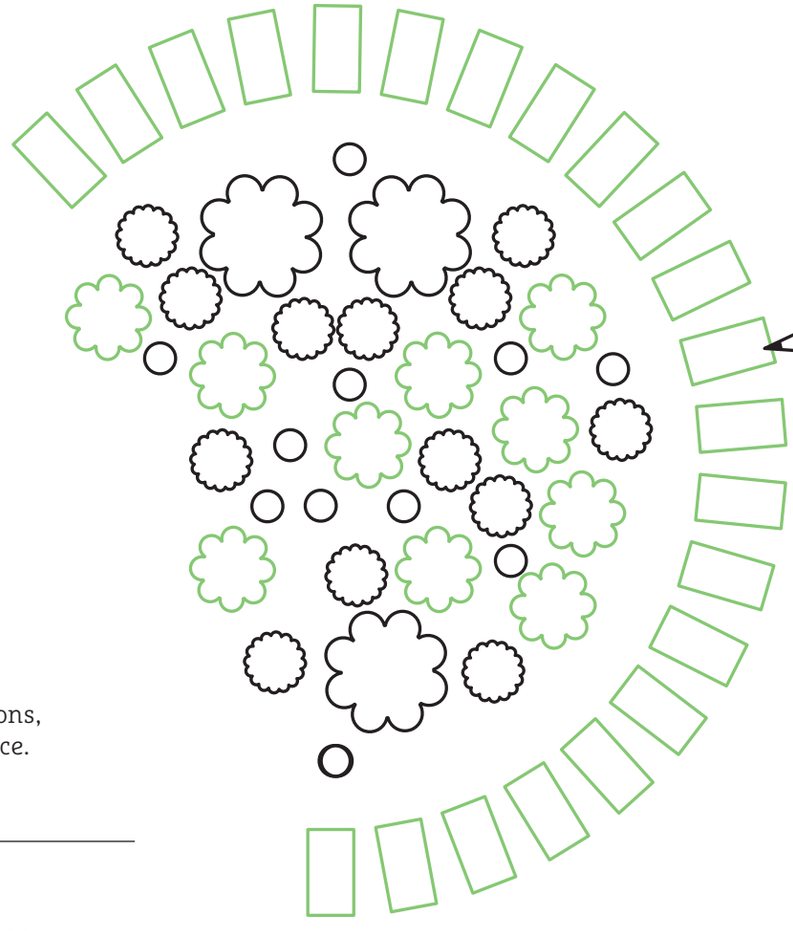
A Cheyenne® Mock Orange ***or*** Blue Velvet® Honeysuckle (2)
B Sonoran Sunset® Hyssop ***or*** Blue Blazes Hyssop (6)
C Redleaf Rose ***or*** Silver Fountain Butterfly Bush (1)
D Silver Sage ***or*** Giant Lamb's Ears (11)
E Dalmatian Daisy ***or*** Anthea Yarrow (6)
F Shadow Mountain® Penstemon ***or*** Red Rocks® Penstemon (11)
G Little Trudy® Catmint (14) ***or*** Select Blue Catmint (10)
H Platinum® Sage ***or*** ilverton® Bluemat Penstemon (20)
I Winecups (3) ***or*** Table Mountain® Ice Plant (15)
J 'Shimmer' evening primrose (10) ***or*** Silver Blade® Evening Primrose (6)
K Purple Mountain® Sun Daisy ***or*** Compact English Lavender (6)

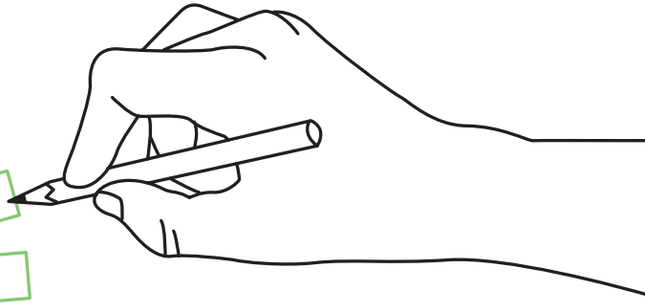
Selecting Turf Alternatives

It takes a lot of water (and work) to keep a lawn lush and green. Plot your practical turf plan for a smarter, low-maintenance yard.

Design your landscape and determine your best turf options based sun exposure, irrigation, intended use, soil or water challenges, maintenance and your budget.

Explore this guide to find a variety of low-water turf options, ground covers and hardscapes that can enhance your space.





Low traffic, hard to maintain areas: Groundcovers, drought-resistant flower gardens, ornamental shrubs and shade trees are perfect for areas that have been a real pain in the grass (near foundations, along medians or on steep slopes).

High traffic areas: Low-water turf is ideal for areas designed to accommodate children's play, sports activities, entertaining and pets.

Did you know?
You can clean your sidewalk, driveway, deck and other surfaces with a broom or blower to save water every time.

Comparison Of Grasses

Did you know? There are more than 12,000 grass species.

	Tall Fescue	Buffalograss	Kentucky Bluegrass	Dog Tuff Grass
Color	Light to dark green	Light green to blue green	Light to dark green	Bright green color
Length of Green Season	Long: *March - December*	Short: *May - September*	Long: *March - December*	Medium: *early June - October*
Mowing Requirement	More frequent/grows fast	Infrequent/none	Less frequent	Does not require mowing
Fertilizer Requirement	Lower	Very low	Higher	Very low
Iron Chlorosis	Infrequent	Infrequent	More frequent	Infrequent to none
Disease Problems	Infrequent	Almost none	Can be disease prone	Infrequent
Insect Problems	Almost none	Almost none	Occasional/more common	Almost none
Traffic Tolerance	Excellent	Fair	Good	Excellent
Traffic Recuperation	Poor to fair	Poor to fair	Good to excellent	Good to excellent
Heat/Cold Tolerance	Excellent	Excellent	Excellent	Excellent
Shade Tolerance	Good to excellent	Poor to fair	Fair	Poor
Irrigation	20-22" annually.	8-15" annually.	15-26" annually. Proper management can reduce water consumption.	Once established, water every 10-14 days. Apply ½-1" water.
Maintenance	Frequent spring mowing. Requires irrigation to survive – does not go dormant well.	Infrequent mowing, irrigation and fertilization.	Amend soil to 6" before planting. Mow between 2-3". Use mulching blade. Aerate once a year. Use organic fertilizer.	Avoid using weed killers if possible. If you mow, start in early July. Mow every 5-7 days. Use organic fertilizer.

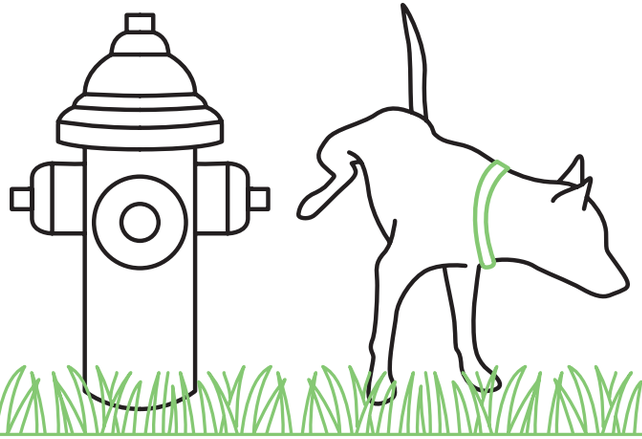
Source:
http://gardencentersofcolorado.org/pdfs/care_sheets/Selecting_the_Right_Grass.pdf

Did you know?
Replacing thirsty grass with turf alternatives can save on average more than 30,000 gallons of water while also adding functional beauty to your yard.

Dog Tuff Grass

This African grass holds up well to wear and tear. It is a sterile hybrid so it can't reseed and become an invasive weed (although it could get into your neighbor's yard via runners!)

Find out more at PlantSelect.org



Additional Turf Alternatives

In addition to low-water turf options, there are a variety of water-wise groundcovers and hardscapes that can enhance your space.

Give Ground Covers A Go

Low-growing ground covers can be used as an alternative to turf in areas with low foot traffic. Usually chosen for texture, density and how well they spread and choke out weeds, ground covers enhance the soil by acting as a mulch.

During the first year, any new ground cover will require weeding and mulching, but once established, little care is needed.

Check out a diverse list of gorgeous ground cover options at ***PlantSelect.org***

Control groundcovers or those rascals will take over your yard. Create a barrier with low bricks, wood or any lawn edging placed a few inches into the soil.

Say Yes To No-Water Hardscapes

Great for high-traffic areas, hardscapes are the nonliving elements within a landscape. Hardscapes include patios, decks, fences, boulders, pathways and lighting. They save a lot of water, have multi-uses and look fantastic.

Expert Tip:

Consider adding pervious pathways and surfaces to your space, which let water absorb into the ground.

Life is easy when scapes are hard.

Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

You'll find links to resources such as lists of water-wise plants, trees and low-water grasses as well as searchable sites to customize your plant or turf selection and images of mature water-wise plants.

H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton

step 3

H2OVERHAUL

Removing Your Turf

Before you kick your turf to the curb, prep for success with these expert tips.

Check the tips off the list as you go.

Know what's below.
Before you dig, call your utility company and find out if they need to flag utility lines.

Follow the rules.
Be sure to adhere to city code and any Homeowners Association (HOA) guidelines. There may be city code limitations and HOAs may require a landscape conversion plan and timeline for approval.

Plan for leftovers.
Getting rid of sod can be tricky. Whether you want to turn sod over and use it as compost, drive it to the dump or place a post on NextDoor.com, you'll want to devise what to do with leftover turf ahead of time.

Barrier-free is the way to be.
Don't put weed barriers over your turf-free, water-wise plant area. They tend to damage plant roots and plastic versions prevent rainwater absorption.

The circle of leaf.
Incorporate dead grass, compost and leaves back into your soil by tilling it in at a depth of 6 inches or more.

X marks the spot.
Contain turf removal areas before getting started. You can do this using wooden stakes and string or even a garden hose to outline an area.

Protect your plants.
Depending on the turf removal process you select, be sure to read the tips in advance on how to not harm existing plants, trees, shrubs and bushes.

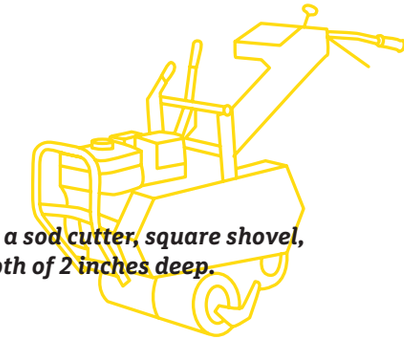
Select a method and say goodbye to your grass.

Find the turf-removal method that works for your personal skill level, timeline and neighborhood guidelines.

The Key... to your sod removal success

- Method
- Timeline
- Benefits
- Challenges
- How to do it

Sod Cutter



The physical removal of turf using a sod cutter, square shovel, or grubbing hoe at a minimum depth of 2 inches deep.

On average, two people can manually remove and haul away 100 square feet of turf per hour.

Fastest method, leaves majority of soil intact, works well for large areas (100 square feet or more).

Labor intensive, may not work for long-rooted grasses like Bermuda Grass, if you don't kill the grass first or deep rototill the soil after there is a high chance of turf regrowth.

1. Contact a local tool supplier or garden center to rent a sod cutter. Be sure you have adequate transportation like a low trailer bed, these machines are heavy!
2. Get detailed instructions on how to operate the sod cutter.
3. Cut the sod into narrow strips and roll them up.
4. If you can't reach an area with the sod cutter, use a shovel or hoe. Dig small, manageable squares at least two inches deep to remove the roots.
5. Dispose of the sod according to your plans.

Solarization

Cover turf with a plastic sheet. This will create a very high temperature environment that kills your grass.

Six weeks to six months

Efficient, inexpensive, not labor intensive, minimal impact, can compost dead grass

Only works in hot, sunny areas. Slow method, not very visually appealing. May require you to consult your HOA for approval.

1. Cut your grass as short as possible and water it well to prepare the turf.
2. Cover the turf area with heavy sheets of plastic. Hold in place with heavy rocks or metal stakes. Make sure that the entire area is covered, and that it is airtight with no leaks or holes.
3. The plastic will act as a trap for the sun's radiant heat, and it will kill the grass by heating the top six inches of soil to about 140ºF.
4. Manually remove turf located in close proximity to existing trees and shrubs, taking care not to damage roots when digging. Alternatively, use 3-4 inches of mulch to smother grass, once the grass has been killed, spread the mulch out.
5. Depending on the weather, leave plastic in place for four to eight weeks or until the grass is dead.
6. Remove the plastic and using a rototiller, incorporate dead grass back into the soil to at least 6 inches or more.

Sheet Covering / Lasagna Gardening

This method allows you to kill your turf by covering it with newspaper or cardboard and layering it with organic matter and mulch.

About six months

Efficient, inexpensive and easy to execute with minimal impact,* this method doesn't require the removal of turf. It also creates rich soil and provides a place to compost kitchen scraps, leaves, yard clippings, etc.

Slow method, not good for steep or large areas of grass.

1. Cut your grass as short as possible. This will ensure that the newspapers or cardboard lay flat in place.
2. Spread a two inch layer of compost that is high in nitrogen over the area to be replaced. Moisten well.
3. Cover the area of turf that you wish to kill with overlapping cardboard (used boxes) or newspaper (10-12 sheets thick). Be sure to fully overlap in different directions and that no sunlight can get through, otherwise, the grass will find a way to survive.
4. Water the newspaper/cardboard but not too heavily, or the paper may start to tear.
5. Weigh the newspaper/cardboard down with 4 inches of wood chips or mulch to keep it from blowing.
6. Plant the following season.

Concerned about the toxicity of using newspaper in your soil? Don't worry. Modern ink is usually soy-based and safe to use on your lawn.

No actual pasta required.

Vinegar

A simple, D.I.Y. method using horticultural vinegar.

About one week

Quick and environmentally friendly

Not ideal for large areas. Works best in hot conditions.
The effectiveness of this method has been debated.

1. Purchase horticultural vinegar of a 20 percent concentration from a garden center or online.
2. Do not apply near plants that you want to keep. Manually remove turf located in close proximity to existing trees and shrubs, taking care not to damage roots when digging.
3. Saturate the grassy area that you would like to kill with vinegar.
4. Wait two to four days for your grass to die. If it hasn't, reapply.
5. Dig it up and prepare your garden for planting.
6. Rototill dead grass into the soil as deeply as possible, at least six inches.

Glyphosate

This method applies a chemical (Glyphosate-sold as Roundup, Kleenup, Kill Zall, ComPleet) to kill actively-growing grass.

7 to 10 days

Quick

Careful application to not damage adjoining grass or other nontarget plants, not great for large areas, controversial regarding environment but approved by Colorado State University Extension.

1. Use a spade to cut a slit between turf you want to save and that to be killed. (Severing underground roots avoids movement of herbicide spray via the roots to turf designated for retention.)
2. Do not apply near plants that you want to keep. Manually remove turf located in close proximity to existing trees and shrubs, taking care not to damage roots when digging.
3. Use a low-pressure, coarse-droplet spray with a handheld, cardboard or metal spray shield. Better yet, consider a wick-type applicator available at many garden centers.
4. Apply only when you are certain it will not rain for at least seven hours.
5. Wait seven to ten days, then follow the steps for amending your soil prior to planting alternative ground covers, shrubs or flowers.

Did you know?
A well-designed water-wise landscape can increase your property value by as much as 15 percent.

Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

You'll find links to resources such as step-by-step videos for various sod removal techniques and descriptions of how to select the technique that fits for your project.

step 4

H2OVERHAUL

Soil Prep & Planting

The Dirt On Colorado Soil

Good soil is the basis of any successful water-wise landscape but here in Colorado, most of it is sandy or full of clay. Luckily you can whip your subpar soil into shape with the help of organic amendments.

Adding Organic Amendments

Mixing organic amendments into your soil can help build better soil structure, increase water holding capacity and promote deep roots for water-wise landscaping success.

Combine forces. Amendment materials like grass clippings, leaves and manure decompose rapidly and yield quick results. Wood chips decompose slowly and provide longer lasting outcomes. Use a combination of both to help your landscape thrive.

Easy does it. Over-composting can lead to high concentrations of nitrogen, too much water retention and over-salinization. Use a mixture of 50 percent compost and 50 percent topsoil for plant gardens.

Healthy soil = happy plants. Make sure to use weed-free, disease-free organic matter. Look for well-aged compost with non-feedlot manure.

Rototill once (or twice) in a lifetime. Only use a rototiller one to two times throughout the entire lifetime of your garden to avoid damaging your soil's natural structure.

Locals vs. Transplants

Native plants usually only need the soil to be loosened up before planting.

Non-native plants will most likely require soil amendments.

Perennials vs. Annuals

Perennial gardens and soil surrounding perennial plants should only be amended one time, prior to planting.

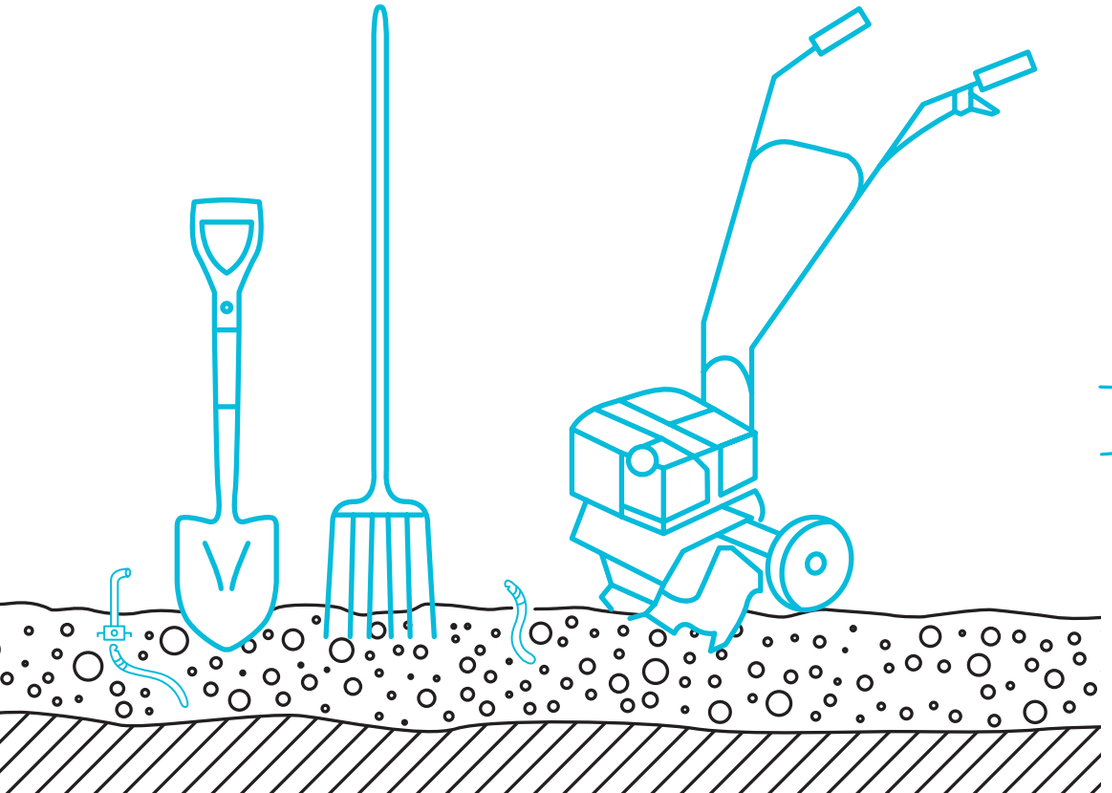
Annual vegetable and flower gardens should be amended every year with organic materials to improve the water and nutrient holding capacity.

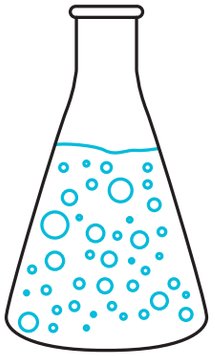
Ready To Dig In?

Grab your tools, roll up your sleeves and get to work. Here's how:

1. Add a 2 inch layer of organic material to the surface of your soil (about 4 cubic yards of organic material per 1,000 square foot).

2. Use a spade, pitch fork or rototiller and thoroughly mix in the material until it is at least 6 inches deep.





Test It Out

Testing your soil isn't necessary, but it can provide a detailed profile of its structure, organic content and pH levels. You can do it yourself with a testing kit or have it done by professionals at CSU. Learn more at ***soiltestinglab.colostate.edu***.

Oh, dirt is sooooo interesting.

You Worked Hard To Amend That Yard!

Follow these do's and don'ts to avoid harmful soil compaction:

Do

- Aerate turf and tree areas
- Add organic matter annually with a shovel or pitchfork
- Create pathways to limit foot traffic in gardens
- Add mulch
- Plant in raised beds

Don't

- Over-till your soil
- Till, plant or mow while soil is excessively wet

Soil & Amendment Material Guide

Get the dirty details on soil and how to successfully amend it.

Soil Types

Clay Soil

The dirt
Clay soil holds water and is naturally fertile but tends to compact, which can hinder plant growth.

How to amend it
Add organic materials to loosen tightly packed clay particles and make space for air, which is critical to plant root growth. This will also allow roots to grow deeper into the soil, giving plants access to a larger supply of water and nutrients. Plus, organic materials will react chemically with clay partials and release extra nutrients to plant roots.

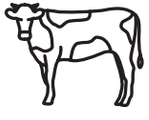
Sandy Soil

The dirt
Sandy soil drains freely, eliminating plant growth problems caused by too much water, but it can actually prevent plants from getting enough water.

How to amend it
Add organic amendments to sandy or rocky soil and till it in to help it retain water enough water for plants to grow. Bonus: organic materials will also add fertilizer nutrients, another item often lacking in sandy soils.

Soil Amendments

Manure & Manure-Based Compost



The dirt
The bagged manure at your local garden stores is usually mixed in with other composted matter and “aged” for at least six months to lower ammonia nitrogen levels.

Readily available due to Colorado’s large livestock industry. Often high in salts, which can cause over-salinization.

How to use it
Use manure with caution.

Watch out for “hot compost” or unaged/immature animal-based compost that has not had time to mature. This can be dangerous for plants.

Plant-Based Composts

The dirt
Compost is made of decomposed organic material like leaves, shredded twigs and kitchen scraps.

The composting process involves four main components: organic matter, moisture, oxygen and bacteria.

How to use it
Apply at higher application rates to improve the soil.

A wide variety of compost products are available in bagged and bulk products. These also may be a combination of plant-based compost, manure-based composts and other agricultural by-products.

Note: Colorado Mountain Peat is not recommended.

Worm Castings

The dirt
The bagged manure at your local garden stores is usually mixed in with an extremely beneficial source of material for your soil amendments.

Worm castings can be costly but can be extremely effective when added to a garden in small amounts.

How to use it
Castings can be used as as a top dressing or tilled into a garden at 1 gallon per 13 square feet or 7.5 gallons (1 cubic foot) per 100 square feet.

To increase earthworm activity in your garden, transplant dirt from an area that's already full of worms.

Expanded Shale

The dirt
Inorganic fertilizer mined in Golden, CO, this material can be used to improve your alkaline clay-based soil. Baked to dry out water, expanded shale is lighter than sand, adds aeration and space for roots and microorganisms, acts as a rodent deterrent and attracts beneficial organisms like earthworms.

How to use it
Start by adding 3 inches of expanded shale (⅜ inches diameter particle size) into the top 6 inches of your soil.

Then, add 3 inches of compost and work it in with your soil and expanded shale mix.

Bio-Comp*

The dirt
A wood-based compost that's already broken down, Bio-Comp has more plant-based organic material than mulch, so it adds more nutrients to soil.

How to use it
This amendment can be used as a top dressing or soil amendment any time of the year, in any type of soil—especially clay soils.

Bio-Comp is one of the few composts that can be safely used as mulch to protect flower beds.

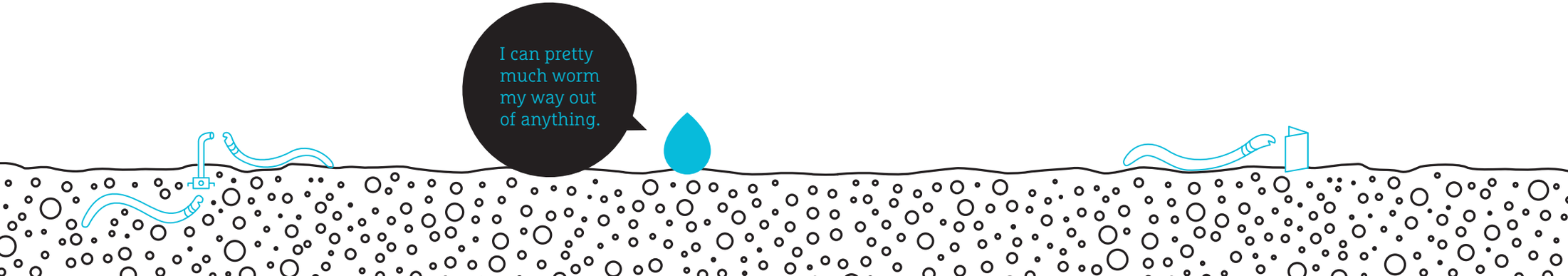
**From A1 Organics.*

Compost Tea

The dirt
Biologically active compost tea can be bought at a garden store or created by steeping your compost in water for several weeks.

Use compost tea to increase the nutritional quality and improve the flavor of vegetables.

How to use it
Spray it on plant leaves to suppress diseases, increase the amount of nutrients available to plants and speeds up the breakdown of toxins in the soil.



Putting Your Plants In The Ground

Planting can be tricky. Follow these steps to help your new water-wise additions thrive.

1. Grab your landscape design and use it as your planting guide.

2. Make a list of tools and materials needed. Collect them and put them in an easily accessible place.

3. Plan to plant in the morning or late afternoon to reduce stress caused by the sun. Keep in mind that most perennials need to be planted when the soil temperature is at least 35 degrees.

4. Put your potted plants on top of the soil according to your landscape design to determine proper spacing and adjust if needed.

5. Dig your holes to match the depth and diameter of the plant. Careful not to dig too deep though, it can suffocate plant roots.

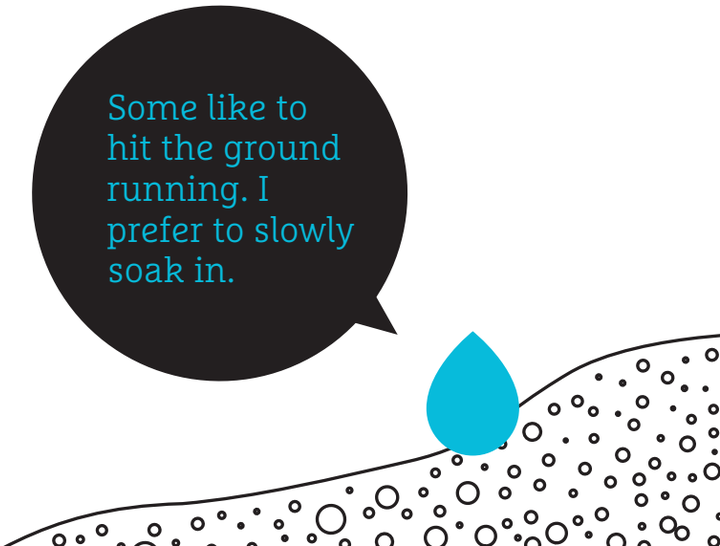
6. Don't pull your plants by the stem when you remove them from the container. Instead, loosen the roots and release the plant by squeezing the base of the container.

7. Gently loosen root balls and free most of the roots, keeping them intact. If entangled with masses of roots around the outer edge, carefully make several shallow cuts (½ inch or less) along the outside of the root ball. This will encourage root growth in the surrounding soil.

Expert Tip:

Many gardeners suggest "Bare Rooting" your plants, which is done by removing all soil from the roots before planting to help acclimate to the new soil.

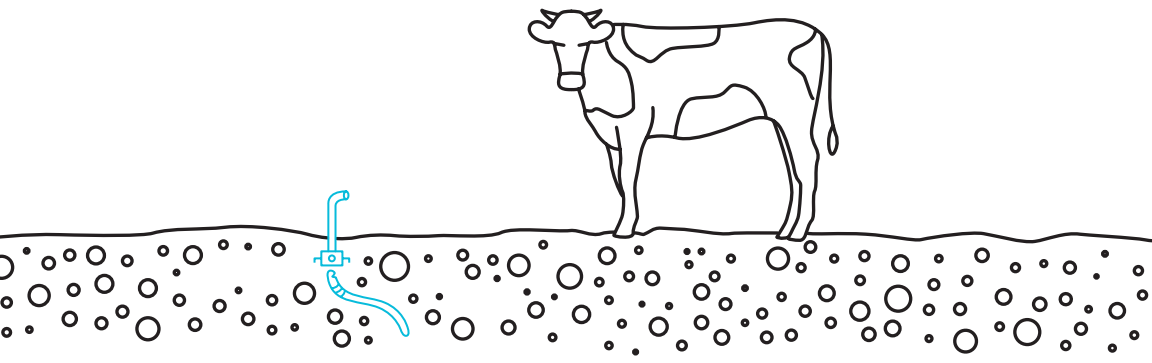
8. Place plants in holes and fill them in about one third of the way up with planting mix. Top with water and repeat until the soil is up to base of the plant. It may seem like you've added too much water, but a lot of extra water is needed to help relieve the stress of being introduced to a new environment.



Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

You'll find links to resources such as local recommendations for addressing clay soil, demonstrations on how to dig in and creative ideas for composting.



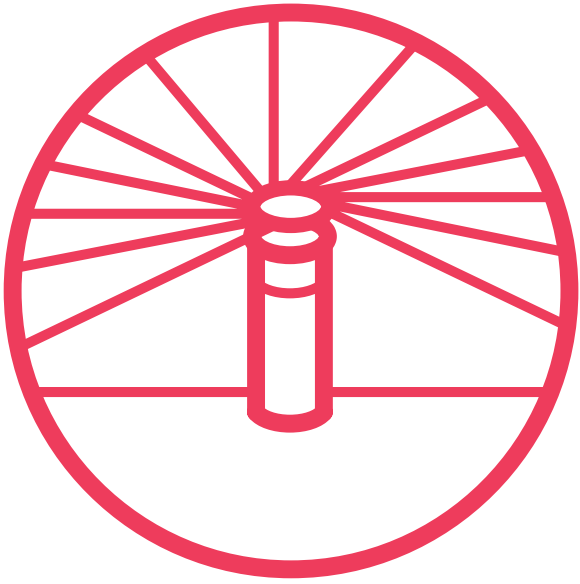
H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton

step 5

H2OVERHAUL

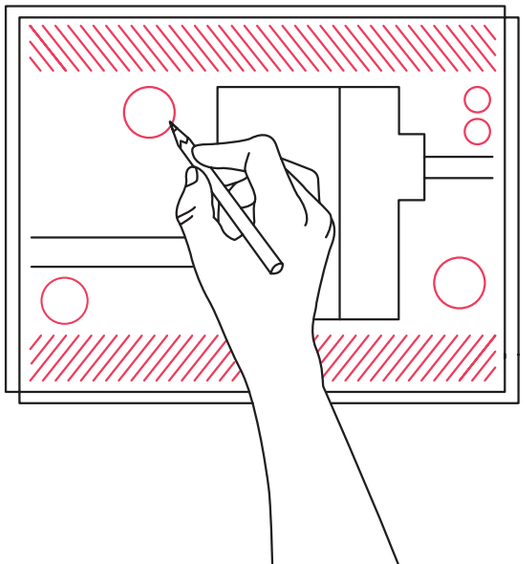


Water-Wise Irrigation

Water-Wise Irrigation

Watering your landscape efficiently is one of the biggest ways to save. That's why it's so important to use the right kind of irrigation in different areas of your water-wise landscape. Maximize watering efficiency and wave goodbye to waste by customizing your irrigation system to your soil, microclimates, slope and available water pressure.

Whether you're converting your existing irrigation system or installing a new one, use your landscaping plan to outline the best approach for your space before you begin.

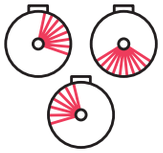


Turf Areas

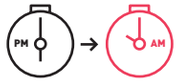
Create a zone of its own. Turf areas should be separate from plant beds, with only one type of sprinkler head for matched precipitation. Never mix different types of sprinkler heads in the same zone.

Be in control. Install a weather-based smart irrigation controller to save water and dollars—you can get a rebate!

Water with the weather. Install a rain sensor that automatically shuts off your sprinkler system when it rains. Once installed, apply for a rebate at ***ThorntonWater.com/rebates***.

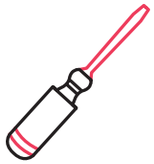


Cycle and Soak. Divide watering time into shorter cycles, with an hour between each cycle, to prevent runoff, promote deeper root growth and maintain a lush, healthy lawn.



Never water midday. Program your controller to run between 6 p.m. and 10 a.m. to reduce water evaporation and enhance water absorption.

Twice a week is enough. Add a third day of watering when temperatures rise.

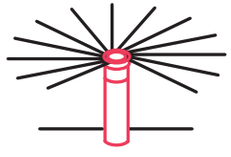


Give your system a tune up. Fix broken heads and leaks, correct head spacing, make sure heads have matched precipitation rates and minimize overspray.

Adjust monthly. Consult the Thornton Watering Guide to find out how much water your landscape really needs.

Sprinkler Head Options

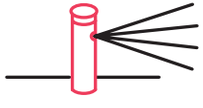
Pop-Up Spray Heads



Best suited for small- to moderate-sized lawn areas (7-10 feet wide up to 30-45 feet wide) and irregular or curvilinear areas.

Pop-up spray heads have a high water delivery rate of 1-2 ½ inches per hour. At the typical rate of 1 ½ inches per hour, the zone would receive a half inch of water in just 20 minutes.

Rotor Heads

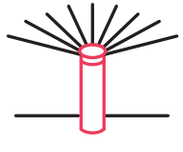


Mechanically rotate to distribute a spray of water. Impact and gear driven heads are most common.

Best suited for large lawn areas, generally 18-24 feet or larger.

Rotors are more uniform in water distribution than pop-up spray heads and take much longer to water, delivering water at a rate of one-fourth to three-fourths of an inch per hour. (At the typical rate of a half inch per hour, it would take 60 minutes to apply a half inch of water.)

Rotary Nozzles



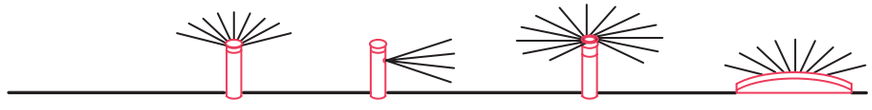
Multi-trajectory rotating streams provide unmatched water distribution uniformity for significant water savings.

They have a lower application rate, which reduces runoff from compacted clay soils and slopes.

Almost any type of sprinkler head can be retrofitted with a rotary nozzle, including spray heads and traditional rotors. Rotary nozzles can apply water to distances ranging from 4-30 feet.

Thornton Watering Guide

For Watering Twice A Week



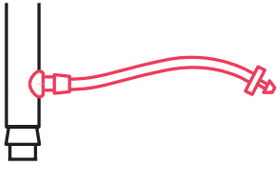
Sprinkler Type	Fixed Spray Nozzles	Rotors	Rotary Nozzles	Manual Sprinklers
May	*15 mins *3 cycles*	33 mins *3 cycles*	42 mins *3 cycles*	23 mins *3 cycles*
June	22 mins *3 cycles*	48 mins *3 cycles*	61 mins *3 cycles*	34 mins *3 cycles*
July	24 mins *3 cycles*	52 mins *3 cycles*	65 mins *3 cycles*	36 mins *3 cycles*
Aug	20 mins *3 cycles*	44 mins *3 cycles*	55 mins *3 cycles*	31 mins *3 cycles*
Sept	14 mins *3 cycles*	31 mins *3 cycles*	39 mins *3 cycles*	22 mins *3 cycles*

**Total minutes per zone, per watering day. Reduce the minutes if adding a third watering day.*

Text **SAVEWATER** to **97000** to receive monthly watering reminders.

Plant Beds

Group plants according to water and sunlight requirements.



Drip Irrigation

Drip emitters slowly release water directly to the base of plants, allowing it to soak in slowly while cutting back on runoff, evaporation or wind exposure.

How To Install It

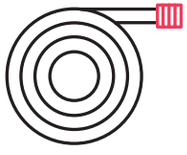
Use a drip manifold or convert high volume spray heads using a Rainbird 1800-RETRO Spray Kit or Drip Retrofit Kit that will decrease water pressure to the zone. Lay down a half inch poly tubing around the plant bed area. Punch the emitters directly into the lateral dripline next to plant. If your plants aren't close to the mainline, attach a quarter inch micro tubing to the emitter and extend tubing to the base of the plant.

Micro-Spray Irrigation

Micro-spray systems slowly emit large droplets or fine streams of water just above the ground, allowing it to cover several plants and soak in with less runoff, evaporation or wind exposure than traditional sprinklers.

How To Install It

Use a drip manifold or convert high volume spray heads using a Rainbird 1800-RETRO Spray Kit or Drip Retrofit Kit that will decrease water pressure to the zone. Lay down a half inch poly tubing around the plant bed area. Punch a barbed connector directly into the lateral dripline every 5 to 6 feet. Attach a quarter inch micro tubing to the connector and extend tubing to the micro sprinkler. Insert a drip steak into the ground with micro sprinkler 7 to 9 inches above ground.

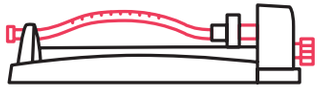


Soaker Hose Irrigation

Soaker hoses have perforations or holes that slowly deliver a higher water-to-soil flow rate, allowing it to soak deep, establishing root systems with minimal waste.

How To Install It

Place your soaker hose on top of the soil. Put mulch over the soil and hose to deter evaporation.



Manual Watering

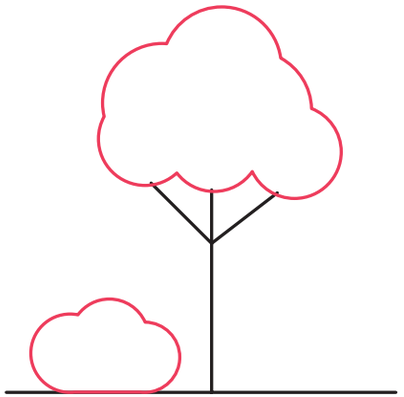
Use a hose-end sprinkler that sprays close to the ground and emits larger droplets to minimize loss due to wind and evaporation.

How To Install It

Install a timer between the spigot and your hose to make manual watering more efficient.

Don't forget!
Newly-planted flowers may need water more often for the first two weeks following the planting date.

Trees And Shrubs



Trees and shrubs located in turf areas do well with normal lawn irrigation, but they will need one to three additional deep watering sessions when the weather heats up in July and August.

You'll want to water newly-planted trees and shrubs frequently, until root systems are established.

Drip irrigation is an efficient way to water isolated shrubs and smaller trees (less than 4 inches trunk diameter), but it's not appropriate for larger trees. Adjust the number of drip emitters used for each plant and the flow rate for each emitter based on the size of the plant. The goal is to adequately water the root zone (not the trunk) without wasting water.

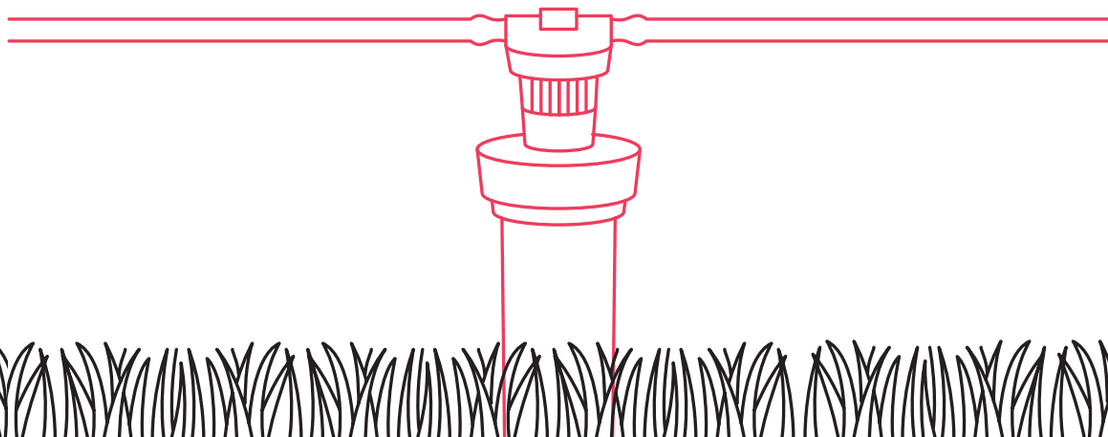
Did you know?
In our drier climate residential outdoor water use can be 50 percent of your water bill.

Money-Wise Tip:

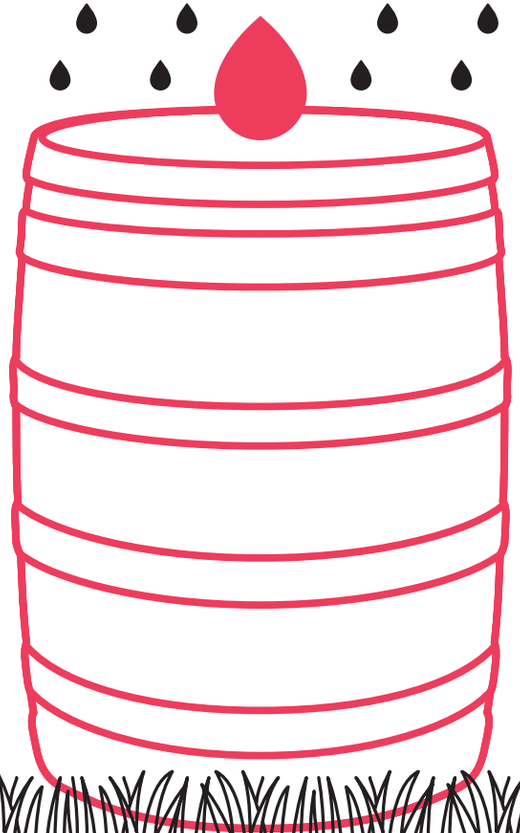
Changing watering systems can be spendy. Save water and dough by converting an already existing zone using a low-pressure drip conversion kit. Pick one up at your local garden center, or ask an irrigation specialist about water-efficient options that work swimmingly with your existing system.

Need some help?
Call in the experts. Visit the Associated Landscape Contractors of Colorado at ***alcc.com*** or The Irrigation Association at ***Irrigation.org***

Sometimes, being water-wise is criticized. I just shrub it off.



Use a rain barrel to collect rainfall and runoff from downspouts. Use it to water container plants and gardens. Fit it tightly with a screen or cover to keep mosquito larvae at bay.



Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

You'll find links to resources such as instructions for converting existing sprinkler systems, videos about how rotator nozzles work and setting up your own drip line.

H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thor ton

step 6

H2OVERHAUL

Mulching

Why Mulch?

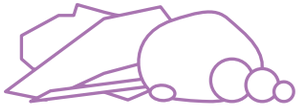
It's magical. Mulch insulates the soil, protects from erosion and conserves moisture. It can slow weed growth, reduce soil compaction from rain, add beauty to your garden and may even improve soil quality when used correctly.

Meet The Mulches

Organic mulch

The most water-wise option, organic mulches like garden bark chips or coarse compost retain moisture and add nutrients to the soil as they decompose.

Expert Tip:
Avoid using organic mulch on steep slopes or drainage paths. They can wash away in heavy rain.



Inorganic mulch

Gravel, rocks, shale and ground rubber can add visual interest and texture to your landscape. It rarely needs to be replaced.

Expert Tip:
Inorganic mulch can soak up a lot of heat. Avoid using it near grass, plants and areas where dogs and children play.

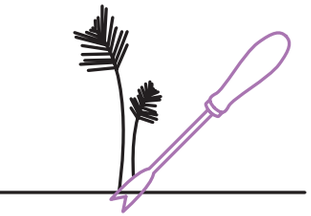
Plant alternatives

Drought-tolerant ground cover, such as Turkish Veronica or Creeping Thyme help retain moisture while adding a nice green backdrop to surrounding plants.

Expert Tip:
Drought-tolerant ground covers are great for suppressing pesky weeds. Not the best option for foot traffic.

Did you know?
You can have your mulch delivered from a local garden store. Because that's how you roll.

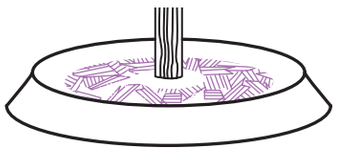
How To Do It:



1 Remove weeds and water your soil before you add mulch.

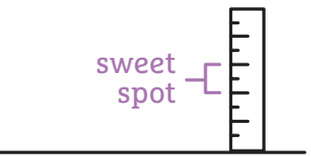
2 Lay down your mulch about 3 inches deep and cover the entire area from the plant's root zone to the drip line.

3 If you're using inorganic mulch in areas that are prone to weeds, apply a fabric barrier first.



4 Create an earth basin around shrubs and small trees by creating a higher rim of dirt around the tree, but leave a few inches of space between mulch and plant stems or trunks.

5 Be careful not to cover the crowns of your perennials (the area where the roots and tops come together).



6 Replace or add mulch periodically. In order to remain effective, mulch needs to stay 2-3 inches thick.

Common Myths About Mulch

Myth **It's a fail-proof weed barrier.**

Fact It reduces the number of weeds but won't completely prevent them.

Myth **It attracts termites if placed close to your home.**

Fact Moisture attracts termites, not mulch. Several things can lure them in (if placed close to your house) including shrubs, irrigation systems, gravel and rocks.

Myth **Compost and mulch are the same.**

Fact Compost is a soil amendment that gets mixed into soil. Mulch is placed on top of the soil after plants and irrigation have been installed.

Find Out How To Get More from Your Mulch

Bag please! Only buy mulch in bags if you are going to use it right away. This prevents it from getting moldy.

Get fluffy with it. Agitate or "fluff" organic mulch at least once each year to slow weed growth and prolong mulch life.

Protect your perennials. Lighter organic mulches like bark mulch are better for perennials, which are more likely to thrive when they don't have to compete for micronutrients in the soil.

No fungus among us. Mulch creates a warm and humid environment that is perfect for the establishment of various fungi that can injure or kill the plants. Avoid this by keeping bark or rock 1-2 inches away from plant stems.

Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

You'll find links to resources such as photos of different mulch types, recommendations for selecting mulch and step-by-step instructions on how to mulch a new landscape.

H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton

step 7

H2OVERHAUL

Maintenance

Maintaining Your Masterpiece

Congrats on completing your H_2Overhaul! Before you kick back in your new water-wise landscape, you'll need to maintain it, so all that hard work doesn't go to waste. Hang on to this guide and follow these expert tips to keep your yard lookin' good, year after year.

Don't be wishy-washy about taking care of your new yard!

Seasonal Landscaping Checklist

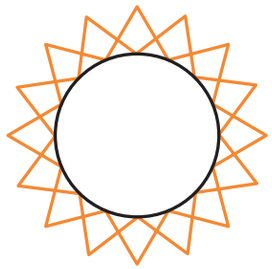
Be Winter-Wise

- Sharpen shovels and pruning tools. Use steel wool to remove any rust.
- Prune deciduous trees and late-blooming deciduous shrubs while they're dormant.
- Water the root zones of plants and trees if it's warm and there hasn't been much precipitation.

Do Some Spring Cleaning

- Cut down ornamental grasses close to the base.
- Apply lawn fertilizer.
- Aerate lawns and mow to a height of 3 inches.
- Check sprinkler systems and irrigation lines for hidden leaks and make necessary repairs.
- Prune evergreen shrubs and cut back dead growth on perennials.
- Work compost into the soil and plant trees, shrubs, spring-blooming perennials and summer-blooming bulbs.
- Divide ornamental grasses as they start to grow versus in the fall when they are going dormant.
- Get rid of any weeds while they are still small and easy to manage.
- Refresh mulch.

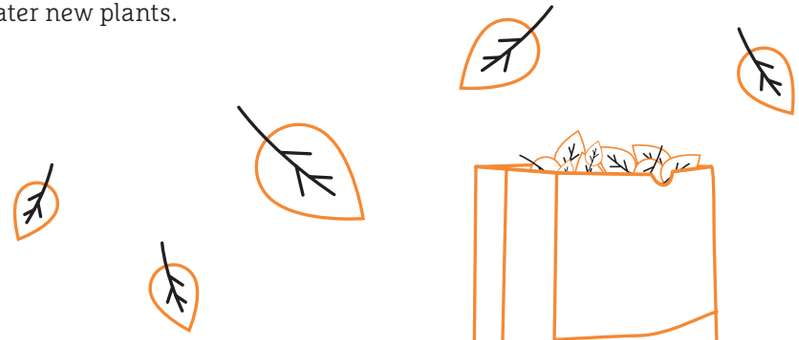
Stay In Touch Over The Summer



- For your lawn, set your irrigation controller and adjust your monthly watering time according to the Thornton Watering Guide.
- Mow grass when it has grown about a third taller than the recommended height of 3 inches.
- Check for spider mites and other pests and treat if necessary.
- Deadhead perennials through the summer months to keep them blooming.
- Continue to weed your landscape as they pop up.

Fall Into A Routine

- Apply lawn fertilizer.
- Plant perennials and spring-blooming bulbs.
- Replenish mulch around trees and shrubs.
- Clean up garden debris including compost leaves and green plant matter.
- Place them in your compost bin.
- Water new plants.



Tactical Maintenance for Practical People

Pruning and Deadheading

- Remove woody stems and branches using a pruner.
- Prune flowering shrubs immediately after they bloom.
- Prune other shrubs in the late winter or early spring before new leaves appear.
- Deadhead (remove dead flowers) as flowers begin to fade. Most plants will regrow after.

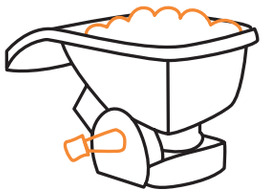
Mowing the Lawn

- Cut down on water and fertilizer to reduce your need to mow.
- Mow grass when it is about 4 inches tall.
- If turf grass is cut too short it will stress the turf and dry out. Keep it at the proper height to use less water. Leave the clippings and let their nutrients recycle into the soil.

Did you know? Leaving lawn clippings on your grass cools the ground and helps retain moisture.

Controlling Garden Pests

Many insects are essential for pollination and could be destroyed by chemical controls. Natural methods of pest control, like insecticidal soaps or neem oil, ladybugs and praying mantis are preferred over chemical pesticides. Even the installation of bird houses or bat houses can encourage natural insect control. Ask your local garden center for recommendations on where to purchase.

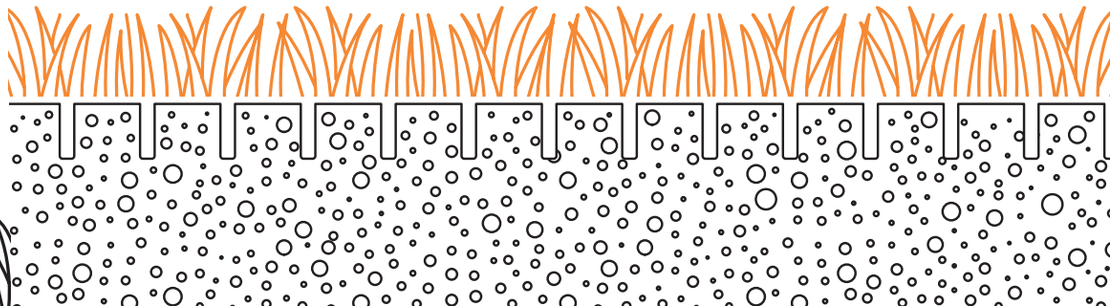


Fertilizing the Lawn

Applying more fertilizer than is needed can deplete other nutrients and cause deficiencies. Ideally, a soil test from a reputable laboratory (CSU Extension) will determine the nutrient needs of your turf. A general rule of thumb is to fertilize twice a year, once around Memorial Day and once around Labor Day.

Aerating

- Increase water penetration and drought tolerance by aerating in the spring and fall. This will also loosen compacted soil and enhance root growth.
- Aerate 2-3 inches deep for best results. Leave the pellets on the lawn. They contain microbes that can help decompose thatch.



Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

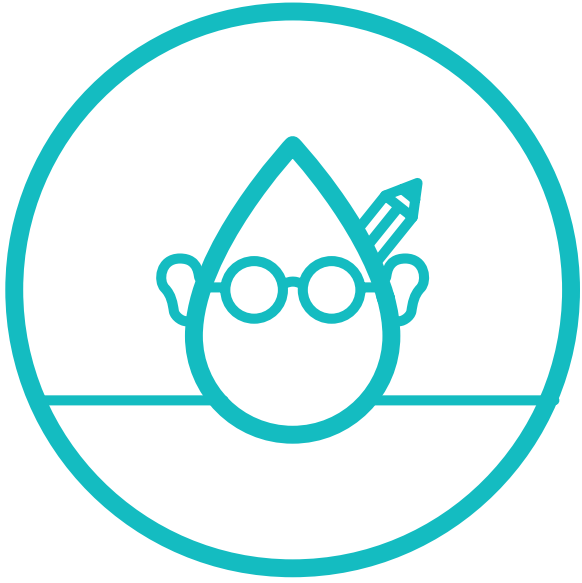
You'll find links to resources such as seasonal maintenance recommendations, how-to instructions for different maintenance techniques and suggestions for long term garden care.

H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton

H2OVERHAUL



Notes

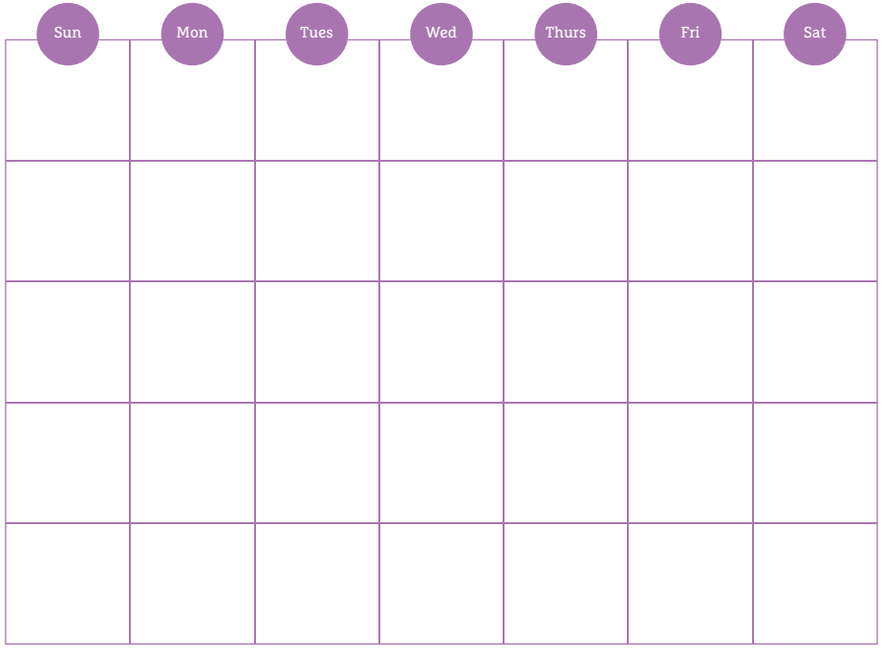
Use this notebook to set goals, sketch ideas, stay on task, write down questions and track resources.

H_2Overhaul Timeline

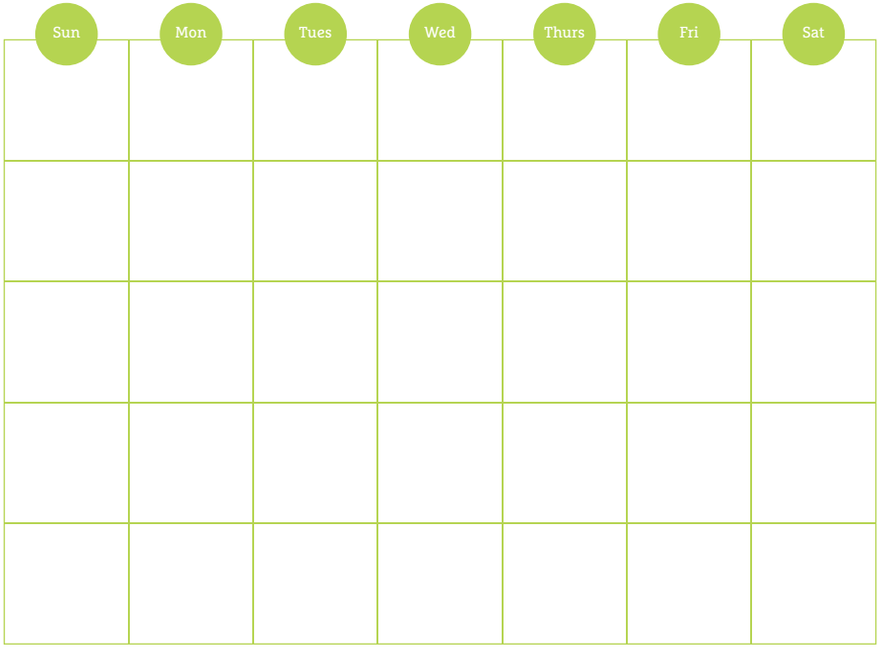
Add these H_2Overhaul tasks to the calendars found in this book. Make sure you don't miss any steps and keep your project moving.

- ***No. 1*** Create a map of area to overhaul
- ***No. 2*** Select plants, trees and shrubs
- ***No. 3*** Sketch new landscape design options
- ***No. 4*** Call the utility department *(before digging)*
- ***No. 5*** Remove sod
- ***No. 6*** Prepare soil
- ***No. 7*** Position where the plants go, then plant them
- ***No. 8*** Layout irrigation and add microtubing for plants
- ***No. 9*** Add mulch

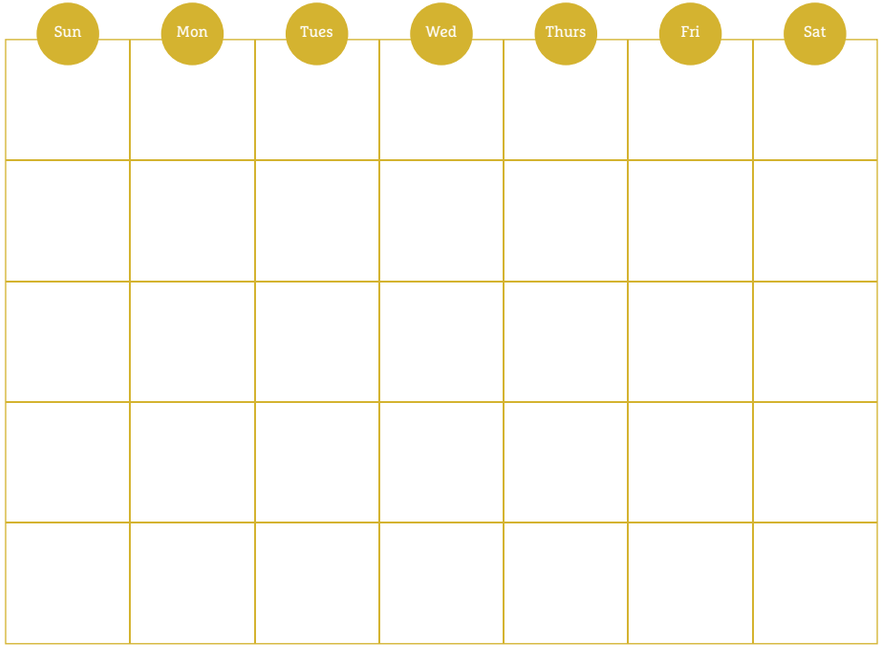
month: _____



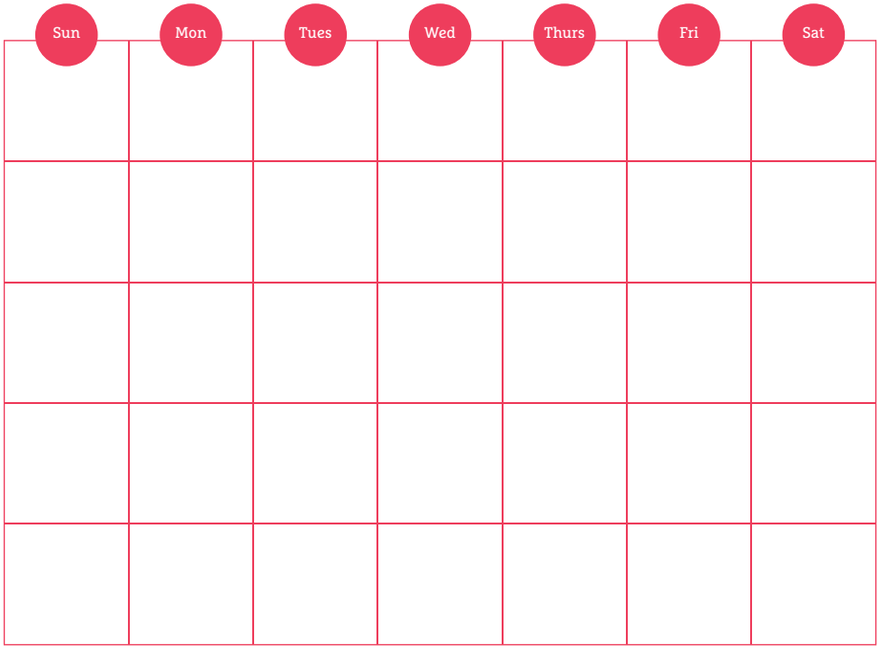
month: _____



month: _____



month: _____



You'll be water-wise in no time!

Water wonderful idea!

Additional Resources

Visit **ThorntonWater.com/H2Overhaul** for additional ideas to help you plan.

H2OVERHAUL

ThorntonWater.com/H2Overhaul

City of Thornton