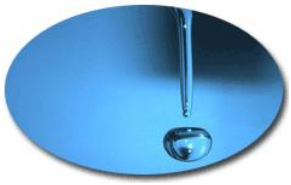

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# WHY CONSERVE WATER?

Texas' conventional fresh-water supplies are already 75 to 80 percent developed. The more efficient use of our precious water resources through water conservation and reuse holds a real potential to both preserve and extend limited water supplies and to save Texans real money. The largest saver is you, the customer. Consider that even a 10 to 15 percent reduction in personal water use can save Texas' water and sewer rate payers billions of dollars over the next 50 years. However, the effort to conserve water must begin now with each individual.

The information below provides the homeowner with water and money-saving tips on how to use more efficiently in and around the home.

1. Taking shorter showers
2. Not running the water while shaving, but stopping up a little water and rinsing the razor in that after each stroke.
3. Not running the water while brushing your teeth, but fill a glass to rinse your mouth at the end.
4. Checking for toilet leaks with dye tablets. If the water in the bowl turns blue after you put the dye tablets in the tank, you have a leak. Fix the leak.
5. Not using the toilet as a trash can.
6. Keeping a jug of cold water in a thermos on the counter instead of running the water until it gets cold each time.
7. Rinsing vegetable and fruit in a sink of water instead of leaving the faucet running.
8. Washing full loads preferably, and if not, adjusting the water level on the washing machine.
9. Finding and fixing leaky faucets.
10. Finding and fixing leaky pipes.
11. Turning the hose off while you wash your car and turning it on only to rinse.
12. Sweeping the driveway with a broom instead of a hose.
13. Using a sprinkler that puts out big drops instead of a fine mist that evaporates.
14. Watering in the cooler morning instead of the hottest part of the day so less water evaporates.

**POSSIBLE SAVINGS WITH WATER CONSERVATION**

For approximately $10 to $20, the average homeowner can install two low-flow shower-heads, place dams or bottles in the toilet tanks, install low-flow aerators on the faucets, and repair dripping faucets and leaking toilets. This could save 10,000 to more than 25,000 gallons per year for a family of four, and would pay for itself in less than a year! Even more could be saved if good outdoor water conservation is practiced for the lawn and garden.

SAVING WATER INSIDE THE HOME

## Why Conserve Water?

The cost of expanding water supplies and treating wastewater is rapidly increasing. Texans now spend more than one billion dollars each year on new or expanded water supply and wastewater treatment facilities just to keep up with growth and to replace worn-out systems. Despite increasing expenditures, water supplies will still be inadequate to meet future demands in some part of the state. To minimize future water problems and cost, all Texans must start now to make more efficient use of the state's water resources. This brochure contains water-saving tips for indoor water use that, if followed, will save money by reducing the water and wastewater bill and

will help conserve Texas' most precious natural resource.

## Start In The Bathroom...

About 75 percent of the water used inside the home is used in the bathroom. Be aware of the amount of water being used, and look for ways to use less whenever possible. These tips can be especially helpful in homes with septic systems.

Bathing: Taking a shower instead of a bath will usually save water, and a short shower will use less water than a long one. Additionally, installing a low-flow showerhead will save about one-half the amount of water currently being used in the shower, while still providing a refreshing, cleansing shower. Installing a low-flow showerhead is the single most effective conservation step that can be taken inside the home.

Toilet: Standard toilets manufactured prior to the 1980s usually require five to seven gallons per flush. Toilets sold during the 80's and early 90's use 3.5 gallons per flush. Water can be conserved in the larger-use toilets by installing displacement devices* such as a toilet dam, plastic bottle or bag. These devices can save up to 20 percent in most fixtures but may not work as well in the 3.5 gallon models.

However, the greatest savings can be realized by replacing the toilet with a 1.6 gallons or less per flush. Replacing older, larger-use toilets with the newer models can result in significant water and sewer savings. However, regardless of the type of toilet, make sure it is using the least amount of water possible, do not use it as a trash can for paper and facial tissues, and make sure the flush and fill components in the tank work property.

Do not use a brick-it can crumble and damage the fixtures.

Lavatory: By simply changing toothbrushing habits, a considerable amount of water can be saved. Instead of allowing the tap water to run while brushing, run the tap just to wet and rinse the toothbrush. The same method can be used to conserve additional water when shaving and washing hands. Additionally, installing a low-flow faucet aerator can save up to one-half the amount of water currently being used in the lavatory.

## Advance To the Kitchen...

About eight percent of in-home water use takes place in the kitchen. Keep water conservation in mind, and think of ways that water can be saved in the kitchen.

**Sinks:** Run water only when necessary.

- Fill the basin or a dish pan to rinse dishes instead of using running water.
- Soak pots and pans before washing.
- Fill the basin or a pan or bowl with water to wash fruits and vegetables.
- Instead of letting hot water run over frozen foods, place them in a pan of hot water to thaw.
- Keep a pitcher of water in the refrigerator or a picnic jug of cool water on the counter rather than running tap water until it is cool enough to drink.
- Operate the garbage disposal only when necessary.

**Dishwater:** Wash only full loads in the dishwasher. When buying a new machine, consider purchasing a water-saving model. Newer models can cut water use by 25 percent and are no more expensive than non-conserving models.

## ..Continue Around The House...

Several other ways to conserve water are listed below. Always look for different places in the home where water can be used more efficiently.

**Washing Machine:** The laundry requires about 14 percent of the water used inside the home. When using an automatic washing machine (32 to 59 gallons are required per full load), adjust the water level to match the size of the load. If the machine does not have a

water level adjustment, wash only full loads. When purchasing a new machine, consider a water saving model, which should be no more expensive than a conventional model and can reduce water use by as much as 30 percent.

**Pipes:** Insulate hot water pipes where possible to avoid long delays (and wasted water) while waiting for the water to "run hot". Pipe insulation is inexpensive, easy to install, and available at plumbing supply and hardware stores.

**Water Heater:** Be sure the water heater thermostat is not wt too high. Very hot settings (higher than 125° F) waste energy since the water has to be mixed with cold water before use. However, if the home has an automatic dishwasher, a water temperature of at least 140° F is required so the dishwasher will clean effectively.

**...And Fix All Leaks.**

Leaks can account for 10 percent or more of the water bill and waste both water and energy if the source is a hot water faucet. For example, a toilet with a silent leak of one cup of water a minute (a mere dribble) wastes about 2,700 gallons of water a month.

**Toilet Leaks:** When a toilet leaks, water escapes from the tank into the bowl. To determine if the toilet is leaking, look first at the toilet bowl after the tank has stopped filling. If water is still running into the bowl or if water can be heard running, the toilet is leaking.

Although water may not be seen or heard running, the toilet may have a "silent leak". To test for a silent leak, mix a few drops of food coloring or place a dye capsule or table (available from many utilities and hardware stores) into the water in the toilet tank. DO NOT flush the toilet. Wait for about ten minutes, and if the dye or food coloring appears in the toilet bowl,k the toilet has a silent leak.

The most common causes of toilet leaks are worn flappers, improperly adjusted water levels, worn valve seats, and leaking fill valves.

Check each item, replace worn parts as necessary, and retest to make sure the leak has been fixed.

**Faucet Leaks:** Faucet leaks are usually obvious. However, seldom-used taps in the basement or storage room should be checked periodically. Faucet leaks are usually caused by worn washers or "O" rings (for a washerless faucet), which can be replaced with two or three hand tools. Replacement washers and "O" rings are inexpensive and can be purchased from most hardware and variety stores.

**Other Leaks:** The water meter can be used to check for invisible or unnoticed leaks. Turn off all water outlets and water-using appliances. Read the dial on the water meter and record the reading. After 15 to 20 minutes, recheck the meter. If no water has been used and the reading has changed, a leak is occurring somewhere in the plumbing system. The services of a plumber or trained water utility employee are often required to locate and fix these invisible leaks. The water meter is often located along the property line near the street.

## SAVING WATER OUTSIDE THE HOME

**Why Conserve Water?**

Growing populations, coupled with rising development costs for water and wastewater

facilities, are straining the ability of some communities and utilities to meet demand, especially during the summer.

During the winter, 90 percent or more of household water use occurs inside the home. However, in the summer, lawn watering and other outdoor uses can account for 50 to 80 percent of home water use. Yet, studies have shown that as much as half of this outdoor use is wasted through poor watering practices.

This brochure contains water-saving tips for outdoor water use. If followed, these water-wise tips can save money by reducing water bills and can help conserve the state's precious water resources.

**Water-Wise Steps To Follow**

By following these watering tips, outdoor water use can be reduced significantly and the resulting savings in your water bill can be substantial, particularly if you live in an area that charges more to use water during the summer. (*Check your monthly bill to see if the water supplier has a summer surcharge or excess use fee.)*

The first step in watering efficiently is to recognize that different areas require different amount Of water. For example, grass areas should be watered separately from shrubs, flowerbeds, and other plants, and landscape plants should be zoned according to similar water needs. For the best results, the type of watering system should be selected based on the landscape arrangement and types of plants.

The second step is to use proper watering equipment. Grass areas are best watered with sprinklers. Trees, shrubs, flowers, and groundcovers can be watered efficiently with low-volume drip, stray, soaker, or bubbler emitters and devices.

The third step in efficient watering is to keep equipment well-maintained. Regular adjustment of the irrigation system can save water and money.

**Lawn Watering Practices**

Studies have shown that the typical lawn often receives twice as much water as required to maintain healthy grass.

- Know when to water by closely observing the grass. Either use a moisture probe or wait for signs of stress, such as a dull green color, footprints that remain visible after walking on the lawn, or curled blades of grass, before watering.
- To water efficiently, first determine how much water your sprinkler applies:

    1. Set three to five empty cans at different distances from the sprinkler, with the last can near the edge of sprinkler coverage.
    2. Run the sprinkler for 30 minutes.
    3. Add the number of inches of water in all the cans and divide the total by the number of cans to obtain an average.
    4. Multiply the average by two to determine how many inches of water are applied in one hour.

- To determine how many inches of water to apply to a Bermuda grass lawn in the summer, locate your area on the Texas map. Subtract the rainfall you received since the last watering from the amount shown on the map for your area. Run the sprinkler for the correct amount of time (based on the number of inches the sprinkler applied in an hour). St. Augustine need about 15 percent more water

than Bermuda grass.
- To find out how often to water in the summer, locate your grass type in the table of Watering Frequency for Turf Grass.

**Watering Frequency for Turf Grass**

| Grass Species (Adapted Region)* | How Often to Water |
|---|---|
| Buffalo grass (2,3,4,5) | Every 2-5 weeks** |
| Bermuda grass (6) | Every 7-10 days |
| Centipede (1) | Every 7-10 days |
| Zoysia (2,3,4,5) | Every 7-10 days |
| Carpetgrass (1,2) | Every 5 days |
| St. Augustine (1,2,5) | Every 5 days |
| Tall Fescue (4) | Every 4 days |
| Bluegrass (1,4) | Every 4 days |

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*1-East Texas: 2-South Texas: 3-West Texas; 4-North Texas; 5-Central Texas; 6-Statewide

**May not need watering at all in many areas of Texas.

- Water during the early morning or evening hours since evaporation losses will be up to 60 percent higher during the day. Do not water on windy days. Set sprinklers so the lawn is watered, not sidewalks and driveways.
- Use an overlapping sprinkler pattern to cover the lawn evenly.
- Lawns on sandy soil require more frequent watering than lawns on loam or clay soils. Water can be applied less often to clay and loam soils, but it should be applied more slowly to prevent runoff.
- To avoid runoff on sloping areas, place sprinklers near the top of the slope. Apply water slowly for 5-15 minutes, turn off the water for 15 minutes, then turn it back on for 5-15 minutes, etc., until the correct amount of water has been applied.

**Lawn Maintenance Practices**

- Do not cut the grass too short. Longer blades of grass will reduce evaporation and root stress since shaded soil will not dry out as quickly.
- Mow regularly with a sharp blade so that only 1/2 of 3/4 of an inch of grass is cut off each time. This practice will prevent the grass from turning yellow.
- A reasonable amount of fertilizing is necessary to develop the root system and keep the lawn healthy. But, too much fertilizing will lead to excessive growth, which will then require more irrigation. If the grass clippings are left on the lawn, little, if any, additional fertilizer will be needed.

Fertilizers contain different amounts of three major ingredients-nitrogen, phosphorus, and potassium. The proportion of each element is indicated on every fertilizer container. For example, 15-5-10 indicates 15 percent nitrogen, 5 percent phosphorus, and 10 percent potassium. Fertilizer with a 3-1-2 ratio of nitrogen, phosphorus, and potassium is recommended to help grass withstand stress, and a slow-release nitrogen fertilizer helps plants use less water. To determine the rate of application and the type of fertilizer best suited for the soil in you area, call your County Extension Agent.

## Select a Suitable Irrigation System

### Sprinkler Irrigation

Automatic sprinkler systems can provide an efficient method of irrigating lawns because timers and flow controls turn the system off after a predetermined amount of water has been applied. Be sure to adjust the run time and frequency of the system according to weather and seasonal conditions, as well as the needs of your plants. Use low-angle sprinkler heads that produce droplets of water instead of a mist or fine spray.

If a sprinkler system is installed for shrubs, an upright pipe extension may be necessary to avoid obstructions and allow even watering for all the plants. The most common type of irrigation system is the sprinkler attached to the end of a garden hose. Use low-angle sprinklers that produce droplets of water.

The most efficient types of hose-end sprinklers are impact and traveling sprinklers. Avoid sprinklers that spray the water high into the air or produce a mist or fine spray since much of the water is lost through evaporation.

### Drip Irrigation

The preferable irrigation system for shrub beds, gardens, and trees is a drip system. There are several types of drip irrigation systems. The most common are (a) double-walled tubing, which is usually installed above ground; (b) single-walled tubing, which can be installed above or below ground; (c) membrane soaker pipe, which is usually installed underground; and (d) bubblers, which can be attached to the end of a hose. Even the common soaker or sprinkler hose can be used as a drip system if the hose is turned with the holes facing down and the water flow rate is kept very low.

For more information and advice on using drip irrigation, contact a licensed landscape irrigator, a reputable dealer, your County Extention Agent, or the Texas Water Development Board.

### Use Mulches

Use mulches in flower and shrub beds. Mulches cover and shade soil, minimize evaporation, reduce weed growth, and slow erosion. Mulches can also add a decorative appearance to the landscape.

Organic mulches are typically bark chips, wood chips or pole peelings. Inorganic mulches include rock and various gravel products. Man-made mulches include plastic film, old newspapers, and fiberglass net. Place mulch directly on the soil or on fabric that can "breathe." Avoid using sheet plastic in planting areas.

### Improve the Soil

Shape the soil to protect against erosion and use conditioners to promote water penetration and retention.

- Shape the soil into earthen basins around all shrubs.
- If the original soil is rocky, sandy, shallow, or a heavy clay, the soil can be

improved by adding two to four inches of organic material such as peat, compost or rotted manure.

## Use Water-Wise Plants

Nearly every plant has a place in a water-wise landscape. It is not which plant you use, but where you put it that counts. Three different plant zones have been suggested for water-wise landscapes on the basis of watering needs and frequency.

- Regular Watering Zone
- Occasional Watering Zone
- Natural Rainfall Zone

By zoning the plants in the landscape according to their water requirements, you prevent having to overwater one plant type to meet the need of another. Native and adapted plants will use less water and be resistant to local plant diseases and pests.

Forty-Nine Water Saving Tips

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## POSSIBLE SAVINGS WITH WATER CONSERVATION

For approximately $10 to $20, the average homeowner can install two low-flow shower-heads, place dams or bottles in the toilet tanks, install low-flow aerators on the faucets, and repair dripping faucets and leaking toilets. This could save 10,000 to more than 25,000 gallons per year for a family of four, and would pay for itself in less than a year! Even more could be saved if good outdoor water conservation is practiced for the lawn and garden.

## CONSERVATION TIPS

### In the Bathroom...

Install a low-flow shower head that limits the flow from the shower to less than three gallons per minute.

Take short showers and install a cutoff valve, or turn the water off while washing and back on again only to rinse.

Take a shower instead of taking a bath. Showers with low-flow showerheads often use less water than taking a bath.

Reduce the level of the water being used in a bathtub by one or two inches if a

shower is not available.

Shampoo hair in the shower. Shampooing in the shower takes only a little more water than is used to shampoo hair during a bath and much less than shampooing and bathing separately.

When remodeling a bathroom, install a new low-volume flush toilet that uses only 1.6 gallons per flush.

Test toilets for leaks. Add a few drops of food coloring or a dye tablet to the water in the tank, but do not flush the toilet. Watch to see if the coloring appears in the bowl within a few minutes. If it does, the toilet has a silent leak that needs to be repaired.

Use a toilet tank displacement device such as a toilet dam or bag. Also, a plastic bottle can be filled with stones or water, recapped, and placed in the toilet tank. These devices will reduce the volume of water in the tank but will still provide enough for flushing. (Bricks are not recommended since they eventually crumble and could damage the working mechanism.) Displacement devices are not recommended with new low-volume flush toilets.

Never use the toilet to dispose of cleansing tissues, cigarette butts, or other trash. This wastes a great deal of water and also places and unnecessary load on the sewage treatment plant or septic tank.

Do not use hot water when cold will do. Water and energy can be saved by washing hands with soap and cold water. Hot water should be added only when hands are especially dirty.

When brushing teeth, turn the water off until it is time to rinse.

Do not let the water run when washing hands. Water should be turned off while washing and scrubbing and be turned on again to rinse. A cutoff valve may be installed on the faucet.

When shaving, full the lavatory basin with hot water instead of letting the water run continuously

Install faucet aerators to reduce water consumption.

**In the Laundry…**

Scrape the dishes clean instead of rinsing them before washing. There is no need to rinse unless they are heavily soiled.

Use a pan of water (or place a stopper in the sink) for washing and rinsing pots, pans, dishes, and cooking implements, rather than turning on the water faucet each time a rinse is needed.

Never run the dishwasher without a full load. This practice will save water, energy, detergent, and money.

Use the garbage disposal sparingly or start a compost pile.

Keep a container of drinking water in the refrigerator. Running water from the tap until it is cool is wasteful. Better still, bath water and energy can be saved by keeping cold water in a picnic jug on a kitchen counter to avoid opening the refrigerator door frequently.

Use a small pan of cold water when cleaning vegetable, rather than letting the water run over them.

Use only a little water in the pot and put a lid on it for cooking most food. Not only does this method save water, but food is more nutritious since vitamins and minerals are not poured down the drain with the extra cooking water.

Always keep water conservation in mind, and think of other ways to save in the kitchen. Small kitchen savings from not making too much coffee or letting ice cubes melt in a sink can add up in a year's time.

**In the Laundry...**

Wash only a full load when using an automatic washing machine (32 to 59 gallons are required per load).

Whenever possible, use the lowest water level setting on the washing machine for light or partial loads.

Use cold water as often as possible to save energy and to conserve the hot water for uses that cold water cannot serve. (This is also better for clothing made of today's synthetic fabrics.)

**For Appliances and Plumbing...**

Check water requirements of various models and brands when considering purchasing any new appliances. Some use less water than others.

Check all water-line connections and faucets for leaks. A slow drip can waste as much as 170 gallons of water EACH DAY, or 5,000 gallons per month, and will add to the water bill.

Learn to repair faucets so that drips can be corrected promptly. It is easy to do, costs very little, and can mean a substantial savings in plumbing and water bills.

Check for hidden water leakage such as a leak between the water meter and the house. To check, turn off all indoor and outdoor faucets and water-using appliances. The water meter should be read at 10 to 20 minute intervals. If it continues to run or turn, a leak probably exists and needs to be located.

Insulate all hot water pipes to reduce the delays (and wasted water) experienced while waiting for the water to "run hot."

Be sure the water heater thermostat is not set too high. Extremely hot settings waste water and energy because the water often has to be cooled with cold water before it can be used.

Use a moisture meter to determine when house plants need water. More plants die

from over-watering than from being on the dry side.

**For Outdoor Use...**

Water only when needed. Look at the grass, feel the soil, or use a soil moisture meter to determine when to water.

Do not over-water. Soil can hold only so much moisture, and the rest simply runs off. A timer will help, and either a kitchen timer or an alarm clock will do. Apply only enough water to fill the plant's root zone. Excess water beyond that is wasted. One and a half inches of water applied once a week in the summer will keep most Texas grasses alive and healthy.

Water lawns early in the morning during the hotter summer months. Otherwise, much of the water used on the lawn can simply evaporate between the sprinkler and the grass.

To avoid excessive evaporation, use a sprinkler that produces large drops of water, rather than a fine mist. Sprinklers that send droplets out on a low angle also help control evaporation. Adjust sprinkler heads as necessary, to avoid waste, runoff and ensure proper coverage.

Set automatic sprinkler systems to provide thorough, but infrequent watering. Pressure regulating devices should be set to design specifications. Rain shutoff devices can prevent watering in the rain.

Use drip irrigation systems for bedded plants, trees, or shrubs, or turn soaker hoses upside down so the holes are on the bottom. This will help avoid evaporation.

Water slowly for better absorption, and never water on windy days.

Forget about watering the streets or walks or driveways. They will never grow a thing.

Condition the soil with mulch or compost before planting grass or flowerbeds so that water will soak in rather than run off.

Fertilize lawns at least twice a year for root stimulation, but do not over-fertilize. Grass with a good root system makes better use of less water and is more drought-tolerant.

Do not scalp lawns when mowing during hot weather. Taller grass holds moisture better. Grass should be cut fairly often, so that only 1/2 to 3/4 inch is trimmed off. A better looking lawn will result.

Use water-wise plants. Learn what types of grass, shrubbery, and plants do best in the area and in which parts of the lawn, and then plant accordingly. Choose plants that have low water requirements, are drought-tolerant, and are adapted to the area of the state where they are to be planted.

Consider decorating some areas of the lawn with wood chips, rocks, gravel, or other materials now available that require no water at all.

Do not "sweep" walks and driveways with the hose. Use a broom or rake instead.

When washing the car, use a bucket of soapy water and turn on the hose only for rinsing.

Learn and use waterwise concepts in your landscape.

***Developed by the Texas Water Development Board***
***in cooperation with the***
***Texas Agricultural Extension Service***

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