

# Home Water Efficiency Tool Kit:

## 7 Steps To Control Your Water Use







provided by the:



**City of Tampa  
Water Department**


### Items Needed to Use the Efficiency Toolkit


Look for these icons throughout the book to determine which tools are necessary for each step.


-  **Copy of your most recent Tampa utility bill**  
If you have not kept a copy of your most recent utility statement, you may view and print a copy on-line at [tampagov.net/UtilityBill](http://tampagov.net/UtilityBill). If you do not have online access you may request a duplicate copy by calling the Utilities Call Center at (813) 274-8811.
-  **Paper and pencil or pen**
-  **Calculator**
-  **Flashlight**
-  **Screwdriver**
-  **Toilet Leak Detection Tablets or Food Coloring**  
Toilet leak detection tablets may be ordered online at [tampagov.net/SaveWater](http://tampagov.net/SaveWater).


**Average time to complete all steps = 2 hours**  
(after materials and tools assembled)


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 Denotes the average time this step should take

# Step 1

## Determine Current Use Levels and Water Use Efficiency Goals



15-20 minutes

Items needed:



- 1 Review your utility bill to locate and note the meter serial number or serial numbers from which your water charges are calculated.

**If you have only one serial number** followed by WTR, that indicates that you do not have a separate lawn irrigation meter (potable or reclaimed) on your property. Your water charges are calculated using the reading from your meter and your wastewater charges may be calculated using an average-use calculation, commonly called a “sewer max,” that is re-established annually based on your water consumption history. A brief description of the sewer max employed by the City of Tampa is printed on the back of your utility bill.

**If you have two serial numbers**, one followed by WTR and the other either by LWN (potable irrigation) or REC (reclaimed water), that indicates that your water consumption charges are calculated using reading from both meters and your wastewater charges are calculated using readings only from your domestic potable water meter.

- 2 Locate your recent water use history printed on the front of your bill. It will look like this:

Water Customer Class	
RESIDENTIAL	
Water Usage History	
Month	Gallons (1000's)
APR	5
MAR	4
FEB	5
JAN	5
DEC	5
NOV	6
OCT	5
SEP	4
AUG	5
JUL	6
JUN	5
MAY	5
APR	5

## Step 1: Determine Current Use Levels and Water Use Efficiency Goals (continued)

You will use the information contained in the history to calculate the average monthly usage at your location. Review the history to identify any numbers that are obviously high or low due to leakage, billing error, or temporary significant change in usage (such as temporary ban on automatic irrigation use) that may have occurred during the history period. Those numbers should be excluded from use in calculations in this section.

Total the numbers from your usage history and enter the total where indicated in the formula below to determine the monthly average water use at your residence:

$$\frac{\text{Water use history total}}{\text{Number of months in your water use history}} \times 1000 \div = \frac{\text{Average monthly use expressed in gallons}}$$

### Example:

Using the numbers shown in the example water usage history on the previous page, the average monthly water use, expressed in gallons, for the example location is calculated in this way:

$$5 + 4 + 5 + 5 + 5 + 5 + 6 + 5 + 4 + 5 + 6 + 5 + 5 + 5 = 65 \times 1000 \div 13 = 5000 \text{ gallons}$$

Water use history total → Average monthly use  
Number of months →

Note: The water use history total in the above equation is multiplied by 1000 because the gallons provided in the use history table are presented in 1000s. For example, 5 indicated 5,000 gallons. Gallons are rounded on the utility bill information for ease of use. Water is metered and billed in hundred cubic feet (ccf) units, which is equal to 748 gallons per ccf.

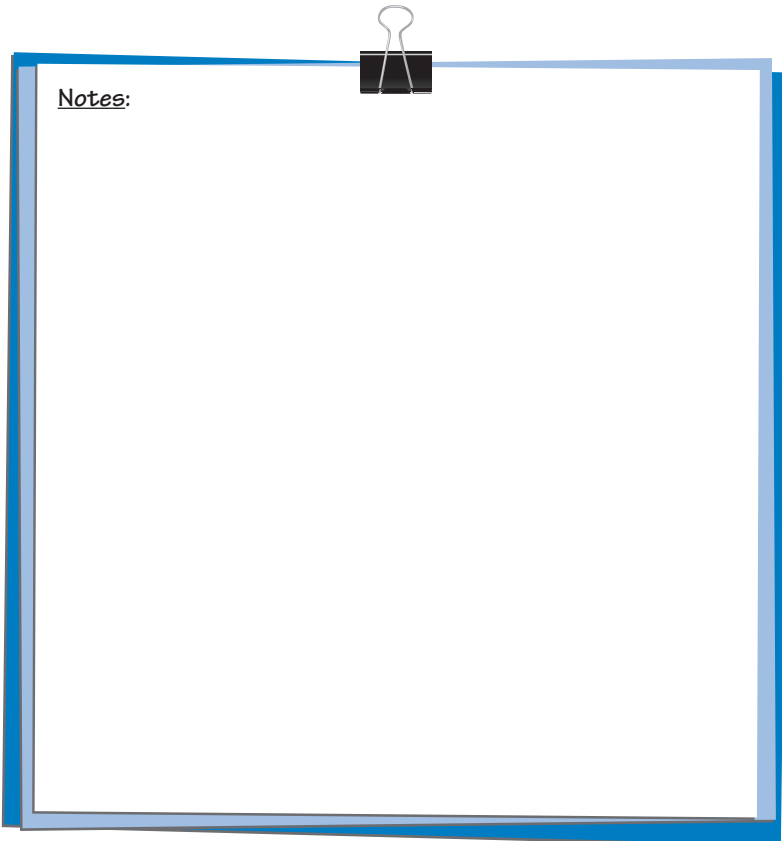
Now, use the following calculations to compare the per-person, per-day water use in your household to an allowance of 125 gallons per person per day (gpcd) to support all water uses in the household, including outdoor usage.

$$\frac{\text{Average monthly use in gallons}}{30} = \frac{\text{Average daily use at your residence, in gallons}}$$

$$\frac{\text{Average daily use at your residence, in gallons}}{\text{Number of people in your household}} = \text{gpcd}$$

## Compare the *gpcd* at your household to 125

- 125 +** If the number is higher, there may be considerable efficiencies possible at your location.
- 85 - 125** If the number is between 85 – 125, your household is moderately efficient and there still may be areas where technology, use, and practices can be improved.
- 0 - 85** If the number is less than 85, your household generally is efficient. There are almost always additional efficiencies that may be found. Regardless of your *gpcd* score, you are encouraged to complete the remaining efficiency steps as they provide a basic framework for water system maintenance and monitoring routine at your location.



Notes:

- 3 Determine if Conservation Ethic or Management of Household Expenses is your primary reason for wishing to increase water use efficiency at your location.

### Conservation Ethic

If your primary interest is increasing the conservation ethic in your household, you can use the following suggestions to establish some preliminary water use consumption goals for your household.

- If your calculated household gpcd exceeds 125 gallons per person per day, you may want to establish a preliminary goal of reducing consumption to the 125 gpcd level.
- If your calculated household gpcd ranges between 85 and 125 gallons per person per day, you may want to establish preliminary goals of reducing your current gpcd by 5%, 10%, 15%, or even 20%, based on the level of effort you wish to apply.
- If your calculated household gpcd is less than 85 gallons per person per day, you may want to establish a goal to not exceed that level of consumption in the next 12-month period or you may wish to continue to seek out additional efficiencies, again depending on the level of effort you wish to apply.

### Management of Household Expenses

If your primary interest is to better manage your household expenses, you will need to do some additional calculations to determine if your reduction goal is realistic and then to determine the amount of use reduction you will need to achieve to meet your cost reduction goal. And, since water rates change periodically, for on-going management of expenses you will want to keep informed when changes occur to adjust your budget or your targeted water use. Start by answering the questions below.

How much do you believe your water use should cost monthly, on average? Please bear in mind that a household inside City limits using an average of 9 units of water monthly, which was the average residential use in FY 2011, will have a monthly water charge just over \$20. If you have a household of two or more people and an outdoor irrigation system, achieving this level of water use may be difficult.



## Step 1: Determine Current Use Levels and Water Use Efficiency Goals (continued)

1. Comparing your water costs to other utility costs in your household, what do you think you should pay monthly for water costs to meet your family's sanitation, personal hygiene, cooking, cleaning, aesthetic, and home water recreation needs?

\$15 or less \_\_\_\_\_ \$25 or less \_\_\_\_\_ \$50 or less \_\_\_\_\_ \$75 or less \_\_\_\_\_

\$100 or less \_\_\_\_\_ \$125 or less \_\_\_\_\_ \$150 or less \_\_\_\_\_ \$200 or less \_\_\_\_\_

2. Match the spending level you selected above with the same spending level in the column that accurately describes your location – either inside the city limits or outside the city limits. If you are unsure of your location, you will find that information on the Hillsborough County Property Appraiser's web site, available at [www.hcpaf.org](http://www.hcpaf.org), or you may refer to your most recent property tax statement.

Inside City Limits	Outside City Limits
\$15 or less requires a monthly consumption of 6 units or less	\$15 or less requires a monthly consumption of 5 units or less
\$25 or less requires a monthly consumption of 10 units or less	\$25 or less requires a monthly consumption of 8 units or less
\$50 or less requires a monthly consumption of 17 units or less	\$50 or less requires a monthly consumption of 15 units or less
\$75 or less requires a monthly consumption of 24 units or less	\$75 or less requires a monthly consumption of 20 units or less
\$100 or less requires a monthly consumption of 29 units or less	\$100 or less requires a monthly consumption of 25 units or less
\$125 or less requires a monthly consumption of 33 units or less	\$125 or less requires a monthly consumption of 29 units or less
\$150 or less requires a monthly consumption of 38 units or less	\$150 or less requires a monthly consumption of 32 units or less
\$200 or less requires a monthly consumption of 52 units or less	\$200 or less requires a monthly consumption of 40 units or less

**Consumption targets are figured using the FY 2013 rate structure and do not include utility tax or other utility charges such as wastewater and solid waste, which are separate line items on your Tampa utility bill.**

After reviewing the chart above and selecting the spending limit you would like to meet for your monthly water expenditures, compare the maximum consumption data with the average monthly use you calculated in Step 1 for your household. This will give you some idea of the level of water use you currently experience and the amount of water use reduction you need to achieve to reach your budget goal.

# Step 2

## Ensure Your Property is Leak Free

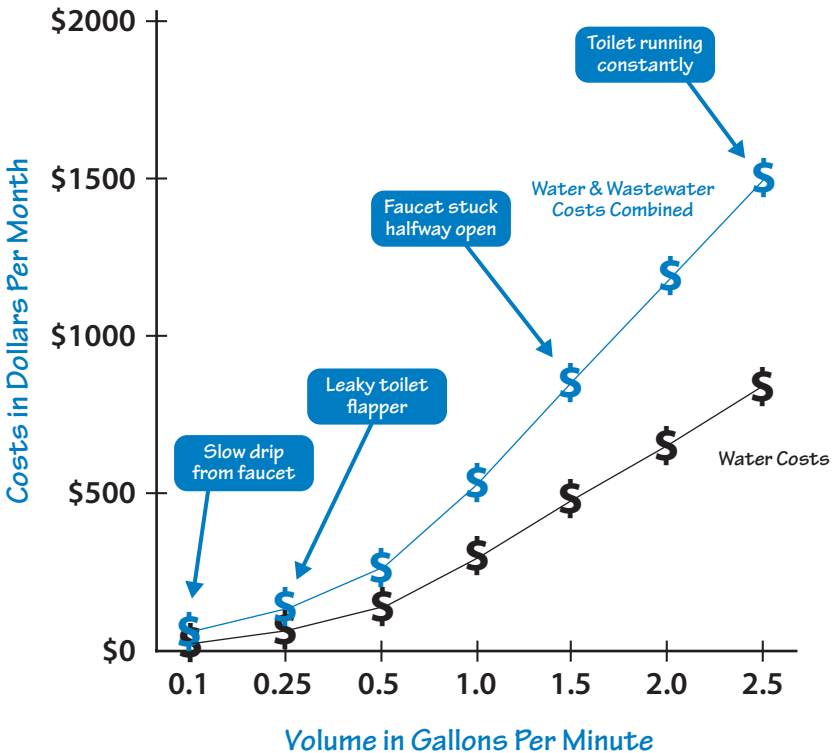
 15 minutes

Items needed:



In Tampa, leaks are the primary water inefficiencies inside the home, followed by the continued use of inefficient water consuming appliances and fixtures or inefficient use practices. Leaks, left unrepaired, can “silently” waste large amounts of water on your property. The graph below illustrates how a “small” leak can lead to a big expense.

### How Much is Your Leak Costing You?



Volume in gallons calculated from California Urban Water Conservation Council information at [www.h2ouse.org](http://www.h2ouse.org). Costs calculated starting with Tier 1 rate of \$2.43 per unit for water, an inside city rate of \$4.71 per unit for wastewater, and an assumed 8 ccf normal monthly use.

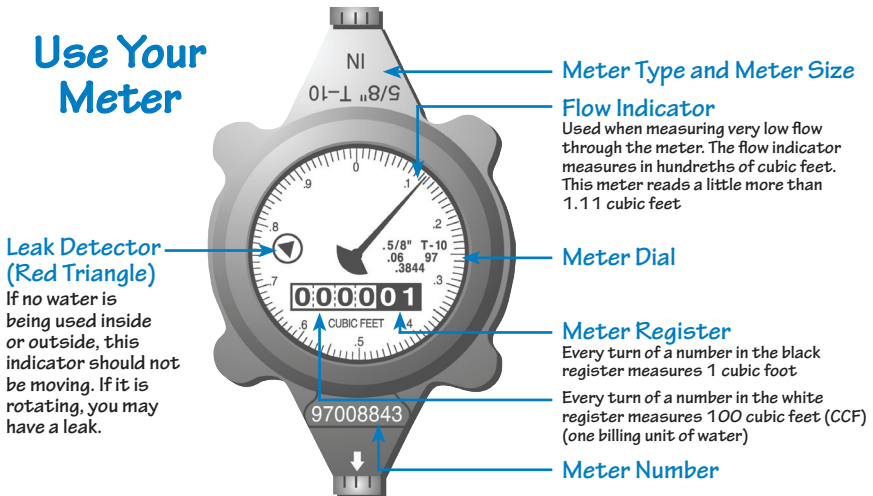


## Step 2: Ensure Your Property is Leak Free (continued)

Start by going outside to locate the water meter box on your property. If you are unsure where it is located, you should find it near the street along the front line of your property. If you have two water meters at your location, you may have two separate water meter boxes or both meters may be installed in one box. Be sure to check all the water meters on your property during this part of the evaluation.

Use the screwdriver to lift the hinged lid on the meter box. Once the box is open, locate the meter inside the box. Please note that you may have to shift sand or dirt accumulated from a recent rain from atop the meter. Visually inspect the interior of the box before reaching in to ensure that the box area is clear. The meter should have a hinged lid with a serial number affixed. Compare the serial number with the number on your most recent utility bill. If there are any discrepancies in the numbers, note them, and after you complete this portion of the evaluation, contact the Water Department to verify your records.

Lift the hinged lid on your water meter or meters to expose the dial on the recording device. It will look like this:



Locate the small red triangle on the face of the dial and observe it for 15 seconds. The triangle should not move. If the triangle is moving, a leak in your water system is indicated. Leaks in irrigation systems may only be active when the system is in use.

If a leak is indicated, completing the remaining steps in this evaluation may assist you in locating the leak for repair. If you are unable to locate the leak, you may want to take additional steps before implementing other possible efficiencies at your home.

If no leak is indicated here, you may still have leaks in your irrigation system or elsewhere in your water-use system. Completing the remaining steps in this evaluation may assist you in identifying areas where efficiencies may be accomplished immediately.

# Step 3

## Survey Your Irrigation System



30-35 minutes

Items needed:

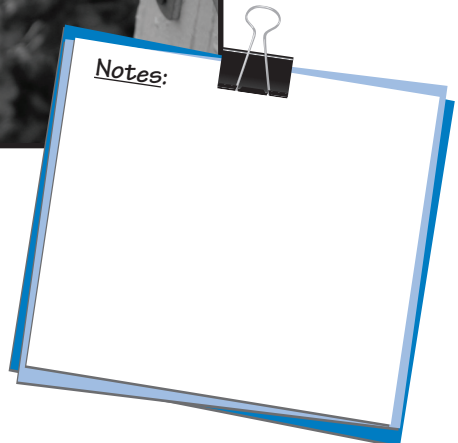


Locate the rain sensor. Typically, it will be located on the roofline or atop a fence. If you have an automatic irrigation system and do not have a working rain sensor connected to the system, you are in violation of current state law. A working rain sensor must be affixed to your system. If you are capable of installing this device yourself, you may request that the Tampa Water Department provide one for you or you may engage the services of a landscape or irrigation professional to make the installation.

If you have a rain sensor installed with your irrigation system, use the following procedures to verify that it is in working order. (If you have a sensor that differs from the example instructions, please consult the handbook or other operation instructions provided by the manufacturer of your device.)



Cork-Disc Sensor



### Rain Sensor Test Instructions (Cork-Disc Sensor)

- 1 Check to make sure that the top of the sensor is not obstructed by roof lines, treetops, or other obstructions that keep rain from reaching the sensor.
- 2 Turn on the time clock for the zone nearest the sensor.
- 3 Press and hold down the button on top of the sensor. The zone should shut off. (If your rain sensor does not have a button on top, it is not a cork-disc sensor.)
- 4 Release the button and the zone should come back on. If it does, the sensor is operating properly.
- 5 If the system does not shut off or come back on, check for wiring problems. The device may have to be repaired or replaced. Check the instruction manual or manufacturer's web site for additional information about your specific brand and model rain sensor.

Manually operate the irrigation system to operate each zone for up to 10 minutes for observation. Be sure to have someone with you during this portion of the evaluation. Water use restrictions allow a maximum 10-minute-per-cycle operation of each zone in your system for maintenance but when using this exemption an attendant must be visible on the site should a water patrol officer go by your location.

While each zone is in operation, look for the following inefficiencies:

- 1 Broken heads.
- 2 Misaligned heads (not watering intended area).
- 3 Inappropriate heads (water being applied to sidewalks, driveways, buildings, etc. rather than having a spray pattern confined to landscape materials).
- 4 Sprays and rotors in use to apply water to non-turf landscape materials. Non-turf materials can be more efficiently irrigated using misters or other low-volume applicators.
- 5 Mixed zones where water is being applied to both turf and non-turf materials simultaneously while the zone is in operation. When a mixed zone is in use, all materials must be watered to meet the high water demand even though the non-turf material may need significantly less water to thrive.
- 6 Areas where plant materials are partially grown or fully grown over sprinkler heads, reducing the heads ability to deliver water to the areas intended.

Refer to the following Do-It-Yourself Sprinkler System Checkup Guide for ideas to help you address any of the above inefficiencies you have identified in your irrigation system.

# Do It Yourself Sprinkler System Checkup Guide

## Sprinkler System Evaluation

Normal wear and tear of your sprinkler system can lead to malfunctions and water waste. Efficient water use requires simple but ongoing maintenance.

The first step is to perform a routine visual inspection of your sprinkler system. Frequency should depend on property usage. For instance, inspections should be performed more frequently on property heavily used by children or pets. Additionally, sprinkler heads along walks and driveways can be easily damaged.

During the visual inspection, you should ensure that the system functions properly. Look for broken, missing, or worn parts. Also check for any leaks and obstructed sprinkler heads. Be sure to properly fix any problems.

Once it is verified that the system is functioning properly, a simple catch-can test (see page 17) should be performed to check the evenness of water application. The catch-can uniformity test should be repeated any time the sprinkler system experiences changes, such as the addition of sprinklers, valve replacement, or water source change.

### Did You Know?

Watering lawns and landscape plants can account for up to 50% of an average homeowner's total water use. Watering a typical 5,000 square-foot yard with an in-ground sprinkler system could cost from \$10 - \$60 per application. By properly creating and maintaining a water-efficient sprinkler system, you can reduce water usage while maintaining an attractive landscape.



*Disclaimer: This information is not intended to provide step-by-step instruction on sprinkler system repairs and design issues. It is a checklist for homeowners desiring to know more about efficient sprinkler system management. Equipment operation manuals should be consulted for proper use and repair instructions. Many manufacturers provide the manuals electronically on their web site. It is suggested that the assistance of a professionally licensed irrigation contractor be sought for those tasks beyond the knowledge and abilities of the homeowner. Persons involved in the creation, production, or delivery of this information shall not be liable for any direct, indirect, consequential, or incidental damages (including property damages, damages for loss of business profits, business interruption, etc.) arising out of the use of this information, or any omission or inaccuracy of any information.*

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### Overwatering and Underwatering

Periodically inspect plants for the signs of overwatering or underwatering. Applying the right amount of water to your landscape can yield substantial water savings and better plant growth.

#### Signs of Overwatering

Prolonged periods of standing water can harm and possibly kill plants.

- Leaves may yellow, brown or drop prematurely.
- Individual branches may die back.
- Leaves turn yellow or light green.
- Leaves may droop, even when water is applied.
- Roots are wet, mushy, and dark brown to black.
- Soil around roots is moist to the touch, yet plant still droops.

#### Signs of Underwatering

Dry plants suffer stresses that cause damage to roots, leaves, and stems.

- Leaves turn pale or light green.
- Leaves droop or wilt.
- Leaves may turn brown, starting on the edges.
- Stems have a wrinkled look and turn yellow or brown.
- Soil around roots feels dry.

## Sprinkler System Terms to Know

### Application rate

Also known as precipitation rate. The rate at which a sprinkler applies water, usually given in inches per hour (iph).

### Check valve

A device installed to prevent drainage from sprinklers at lower elevations. Usually installed under the sprinkler, but some sprinklers have this device installed already.

### Flow rate

The manufacture-designed water discharge rate from a sprinkler, measured in gallons per minute (gpm). A micro-irrigation emitter's flow rate is measured in gallons per hour (gph).

### Flushing

A method of clearing dirt and debris from piping and sprinklers. To perform, remove the last sprinkler head in the zone, turn on the zone for a few minutes to flush, and reinstall the sprinkler.

### Head-to-head coverage

Efficient sprinkler coverage that throws water over 80% or more of the distance to adjacent sprinkler heads.

### Nozzle

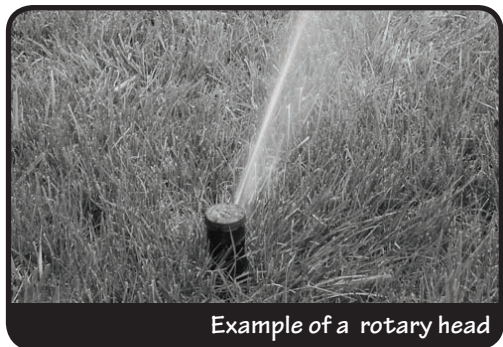
The part of the sprinkler where water comes out. Most nozzles can be interchanged to provide different flow rates or spray patterns.

### Rain Sensor

Also known as a rain shut-off device or rain switch. A device that prevents the sprinkler system from turning on when there has been adequate rainfall. However, it does not interrupt the timekeeping function of a clock.

### Rotary head

Also known as a rotor. This sprinkler type throws one stream or many streams of water while rotating, with many moving parts. Typically used to water large lawn areas, applying water at a slower rate than a spray head, from 0.1 to 0.3 inches per hour. Spacing in most residential systems is generally 25 to 35 feet.



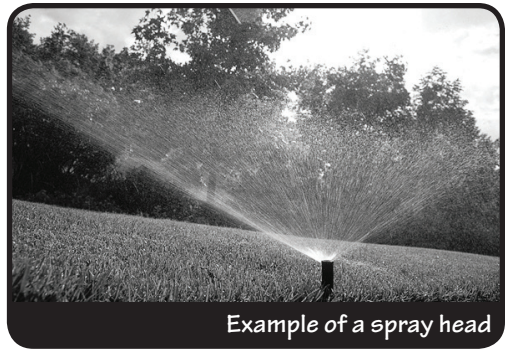
Example of a rotary head

### Spacing

The distance between adjacent sprinkler heads.

### Spray head

A stationary sprinkler head with no moving parts that pops up when water is supplied and down when it stops. Water is applied in a designated spray pattern at a rate from 1.0 to 1.5 inches per hour. Various nozzle types produce different spray patterns. Spacing is generally 3 to 15 feet.



### Time clock

Also known as a controller or timer. An automatic timing device, connected to a series of electric valves, that turns sprinkler zones on and off according to a schedule set by a contractor or homeowner.

### Valve

A device that controls the flow of water into a zone. Manual valves, such as a gate or ball valves, need to be opened and closed by hand. Electric valves are wired to a time clock.

### Zone

A group of sprinklers that operate at the same time and are controlled by a single valve.

## Solutions To Common Sprinkler Problems

### Sprinkler being blocked by a plant or other object

1. Keep the plant pruned back to prevent blockage. Check regularly.
2. Add an extension or riser on the PVC piping under the sprinkler so it is above the obstruction. Although popular, this option is many times inefficient as it throws water higher into the air where it will be affected by evaporation and wind.
3. Relocate the sprinkler out in front of the obstruction. If necessary, adjust or replace the nozzle so that all plants are watered.
4. If in a plant bed, replace sprinklers with micro-irrigation devices that can be moved as plants grow. Micro-irrigation is not permitted on lawn grass.
5. Determine whether the plants can survive without the sprinkler.



### *Sprinkler being blocked by lawn grass*

1. Replace sprinkler with a model that pops up higher.
2. Add an extension between the PVC pipe and the sprinkler, ensuring that the top of the sprinkler remains just above soil level to avoid breakage when mowing.
3. Clean out grass around the sprinkler and install a concrete “donut” around the sprinkler.

### *Water is squirting out around the sprinkler head*

1. Check sprinkler head, piping, and fittings under the sprinkler for leaks.
2. Check rubber or plastic seal inside the top of the sprinkler for debris and wear; replace with recommended seal if it is damaged or worn.
3. Spray nozzles and rotor heads may need cleaning.
4. Replacement of sprinkler may be needed.

### *Time clock is not operating*

1. Make sure it is plugged into a working outlet and switched to “on” or “automatic.”
2. Make sure that the backup battery is not corroded or low on charge.
3. Has it rained recently? Perhaps the rain sensor is interrupting clock operation. This is normal until the cork disc dries out.

### *Rotor sprinkler does not rotate correctly*

1. Check to ensure the sprinkler or the piping below it is not clogged. Clean sprinkler by soaking.
2. Check if there is adequate pressure in the zone to operate this type of sprinkler. Another nozzle with a lower flow rate may need to be installed.
3. The sprinkler may be broken. Replace it with the same type as others on the same zone.
4. If the head is at the end of the main water supply line for your system, there may not be enough pressure to operate the sprinkler properly. The head should be capped or a new zone should be installed. This may be a point where a licensed irrigation contractor should be contacted.

### *Spray head sprinkler is not putting out any water*

1. Check to ensure the sprinkler, nozzle, filters, or piping are not clogged. Clean parts by soaking.



## Sprinkler System Checklist

Observation	Solution
<b>Sprinkler Selection &amp; Layout</b>	
Are lawn areas and landscape plants on separate zones?	If not, place grass and plant areas on separate zones.
Are rotors and spray heads on separate zones?	If not, place rotor and spray heads in separate zones.
Are lawn and plant areas that require watering receiving it?	If not, adjust spray pattern or replace with nozzle that has correct spray pattern.
Are pavement areas or plants that do <b>not</b> require water receiving it?	If so, replace or adjust nozzles to receive the appropriate arc pattern or relocate sprinklers.
Are spray patterns free from obstructions?	If not, trim plants or relocate sprinklers.
Are sprinklers covering at least 80 percent of the distance to adjacent sprinklers?	If not, relocate sprinklers to provide head-to-head coverage.
Are sprinklers of similar make and model used in each zone?	If not, match manufacturer and model within each zone.
Do all rotors or spray heads within a zone have the same flow rate?	If not, replace sprinklers or nozzles as needed to match.
Do sprinklers rise up enough to provide adequate coverage?	If not, replace short heads with taller ones of the same model or add fittings to raise height.
<b>Time Clock Settings</b>	
Are rotor zones set to run 45-60 minutes?	If not, adjust as needed.
Are spray zones set to run 15-20 minutes?	If not, adjust as needed.
Is the clock set to operate during allowable day(s) and times?	Know and follow local watering restrictions. Adjust as needed.
<b>Rain Sensor Device</b>	
Is the sensor blocked by plants or other objects?	If so, move sensor or prune plants.
Is the sensor wired into the clock properly?	If not, follow manufacturer's wiring instructions.
Is the sensor checked annually for proper operation?	Check annually. See <i>Do It Yourself Rain Sensor Checkup</i> .

## Sprinkler System Checklist (continued)

<i>Observation</i>	<i>Solution</i>
<b>Maintenance Issues</b>	
Are sprinklers or pipes damaged?	If so, repair or replace with similar model.
Are sprinklers clogged?	If so, clean nozzles, screens and filters by soaking and scrubbing with a toothbrush. If many are clogged, zone flushing may be necessary. Install filters or screens to minimize clogging.
Any leaks?	If so, check rubber seals for tears and debris. Clean or replace with similar model.
Are sprinklers leaning?	If so, place upright. Stake to protect if this occurs often or consider moving the sprinkler. On slopes, heads should be aligned perpendicular to the slope.
Is water leaking from the lowest head when the zone is off?	If so, install a check valve or replace sprinkler with one containing a built-in check valve.
<b>Landscape Appearance</b>	
Do lawn and plants appear healthy?	Check for other causes of problems first (damage, fertilizer deficiency, etc.). If not, check plant's water needs against amount of water applied.
Are there excessively dry or wet spots?	If so, check sprinkler spacing and application rates.
Are there visible holes in the ground?	If so, check for leaks; fix, then fill holes.
Are there any areas that are visibly eroded?	If so, check for leaks, make repairs, fill area, and cover with mulch, sod or groundcover plants.

## Does Your System Measure Up? Record Sheet for Catch-Can Test

Use this record sheet to conduct a simple catch-can test and find out how much water your sprinkler system applies. This will help you determine if you need to alter the system or make time clock adjustments to prevent over-watering or under-watering your landscape.

### Supplies:

- Twenty (20) straight-sided containers of the same size such as tuna cans
- Ruler
- Stopwatch, water, or kitchen timer
- This record sheet
- A pen or pencil

- 1 Place the containers randomly underneath the spray pattern of one zone. You will need to repeat these steps in each zone.
- 2 Turn on the sprinklers in that zone for 10 minutes.
- 3 Turn off the sprinklers and measure the depth of the water you collected in each container.
- 4 Record the amount of water (in inches) that you collected for each container.

1 _____	2 _____	3 _____	4 _____	5 _____
6 _____	7 _____	8 _____	9 _____	10 _____
11 _____	12 _____	13 _____	14 _____	15 _____
16 _____	17 _____	18 _____	19 _____	20 _____

Total of all containers in inches \_\_\_\_\_

- 5 Compare each container's water content to determine if the amount is the same between them. If any discrepancies exist, changes will need to be made to sprinklers or piping so that the water is applied uniformly in the zone. Alterations need to be finished prior to continuing.

**Some questions to ask yourself:**

- a. Are there areas receiving much more water than others? Much less water?
- b. Do any sprinklers need to be added or changed so that water is applied evenly?
- c. Are sprinklers throwing water over 80% or more of the distance to adjacent sprinkler heads?

- 6 Add all container measurements together and divide by the number of containers to obtain the average depth of the water applied in that zone.

$$\frac{\text{Total of water in all containers}}{\text{Number of containers used}} = \text{Zone's average water depth in inches}$$

- 7 Multiply the zone's average water depth by six to obtain the zone's hourly rate of application.

$$\text{Zone's average water depth} \times 6 = \text{Zone's hourly application rate in inches per hour}$$

- 8 Determine if you are over-watering or under-watering within the zone. Most plants and lawns require only 1/2" to 3/4" of water when plants show signs of stress. Using the zone's hourly application rate, consult the guide below to determine how long it will take to apply 3/4" of water.

Zone's hourly application rate	0.5"/hr.	1.0"/hr.	1.5"/hr.	2.0"/hr.
Amount of time to run each zone to deliver 3/4"	90 min. run time	45 min. run time	30 min. run time	23 min. run time

- 9 Adjust your sprinkler system timer to deliver the appropriate amount of water for the zone.

- 10 Repeat for each zone. The catch-can test should be repeated any time the sprinkler system experiences changes, such as the addition of sprinklers, valve replacement, or water source change.

# Step 4

## Review Other Miscellaneous Outdoor Water Uses



10 minutes

Items needed:



- 1 Inspect hose bibbs and other outdoor connections and water use areas, such as pools and spas, for evidence of leaks.



# Step 5

## Survey Your Indoor Water Uses



15-20 minutes

Items needed:



- 1 Look at your toilets to be sure they are low-flow models. The flow rating is generally stamped on the bowl behind the seat or on the back or inside of the tank. If the flow is greater than 1.6 gallons per minute (1.6 gpm), consider replacing it with a more efficient model.
- 2 Test your toilet for leaks using either toilet leak detection tablets or food coloring. If leak detection tablets are used, follow the instructions on the package. If food coloring is used, place 10 drops of food coloring in the tank of each toilet being tested. Do not flush. Wait 10 minutes. If color from the tank migrates to the bowl, you have a leak. If evidence of a leak is shown, the leak is most likely at the flapper (the seal over the opening in the bottom of the tank) and should be replaced immediately. Also check the area around the bottom of the toilet for evidence of leaks. If a leak is detected here, the toilet may need to be replaced or it may need to be re-sealed with a new seal.
- 3 Visually inspect shower heads and faucets to be sure they are leak free. Gallons of water may be lost as a result of one small drip.
- 4 Visually inspect for evidence of leaks in the area under and around the bathroom sink, the kitchen sink, garbage disposal, dish washer, clothes washer, water heater, and any other appliance, including the refrigerator, that may be hooked to your indoor plumbing.



# Step 6

## Complete a Water Use Survey



10 minutes

Items needed:



Now that you have completed a visual inspection of your water-using devices and appliances, you are ready to complete the “Daily Water Use at Home” Worksheet. This will help you understand how your family uses water. The results shown in the survey provide you with an idea of the daily water use in your house, shown as indoor and outdoor use. For comparison, the average Tampa household uses 109 gallons of water indoors daily and 90 gallons outside. To achieve the maximum water efficiencies possible, you must be sure that your water-using devices and appliances are water-efficient and that the ways in which they are used also are efficient.

## “Daily Water Use at Home” Worksheet

Understanding where and how much water we use is the first step in beginning to conserve one of our most precious resources. This simple home water check up will allow you to understand household consumption, both indoors and outdoors. After calculating your water patterns, you can begin to conserve in ways that work best for your life style.

### Indoor Water Use

#### 1 Showers

Total number of showers taken each day by members of your household, times the average number of minutes spent in the shower, times two and one-half gallons per minute equals water used for household showers each day.

**Gallons used in the shower:**

\_\_\_\_\_ showers/day x \_\_\_\_\_ minutes x 2.5 gallons/minute = \_\_\_\_\_

#### 2 Baths

Total number of baths taken each day by members of the household, times 36 gallons equals daily water used for baths.

**Gallons used in baths:**

\_\_\_\_\_ baths/day x 36 gallons = \_\_\_\_\_

3 Toilets

Total number of people in household, times four flushes, times gallons per flush equals daily water used in household toilet.

**Gallons used for flushing:**

\_\_\_\_\_ people x 4 flushes/day x 1.6 gallons/flush = \_\_\_\_\_

4 Faucets

Total number of household members that use faucets to shave, brush teeth, and wash hands, times average minutes used, times three gallons per minute equals total gallons used daily through faucets.

**Gallons used daily from faucets:**

\_\_\_\_\_ people x \_\_\_\_\_ minutes x 3 gallons/minute = \_\_\_\_\_

5 Laundry

Number of loads of laundry done each week, times 43 gallons of water per load equals gallons used per week. Divide the total by seven to determine daily consumption.

**Gallons used daily for laundry:**

\_\_\_\_\_ loads/week x 43 gallons/load ÷ 7 days/week = \_\_\_\_\_

6 Dishwasher

Number of times dishwasher is used each week, times 15 gallons per load equals water used each week by the dishwasher. Divide amount by seven to determine daily consumption.

**Gallons used daily by dishwasher:**

\_\_\_\_\_ loads/week x 15 gallons/load ÷ 7 days/week = \_\_\_\_\_

7 Hand Washing Dishes

Number of times dishes are washed by hand each day, times three gallons per minute, times average number of minutes water runs equals water used in daily dish washing.

**Gallons used in daily dish washing:**

\_\_\_\_\_ times/day x \_\_\_\_\_ minutes x 3 gallons/minute = \_\_\_\_\_



Notes:

## Outdoor Water Use

### 1 Lawn and Landscape Watering

Number of times each week lawn and landscape is watered, times the number of minutes of watering, times nine gallons per minute. Divide by seven to calculate daily water use.

**Gallons used watering daily:**

$$\underline{\hspace{2cm}} \text{ times/week} \times \underline{\hspace{2cm}} \text{ total minutes} \times 9 \text{ gallons/minute} = \underline{\hspace{2cm}}$$
$$\div 7 \text{ days/week} = \underline{\hspace{2cm}}$$

### 2 Other Outdoor Water Uses

A lot of water is used outdoors for washing cars and to fill the pool, rinse outdoor furniture or clean equipment, and other household uses. Calculate all water use outdoors at a rate of 10 gallons per minute.

**Gallons used outdoors:**

$$\underline{\hspace{2cm}} \text{ uses} \times \underline{\hspace{2cm}} \text{ minutes} \times 10 \text{ gallons/minute} \div 7 \text{ days/week} = \underline{\hspace{2cm}}$$

### Estimated Gallons of Indoor Water Use:

Gallons used in showers daily..... \_\_\_\_\_

Gallons used in baths daily ..... \_\_\_\_\_

Gallons used in toilet flushing daily ..... \_\_\_\_\_

Gallons used in faucets daily..... \_\_\_\_\_

Gallons used in laundry daily ..... \_\_\_\_\_

Gallons used in dishwasher daily..... \_\_\_\_\_

Gallons used in hand washing daily ..... \_\_\_\_\_

**Estimated total gallons of water used indoors daily.....**

### Estimated Gallons of Outdoor Water Use:

Gallons used to water lawn and landscape daily ..... \_\_\_\_\_

Gallons used outdoors for other activities daily ..... \_\_\_\_\_

**Estimated total gallons of water used outdoors daily ....**

### Total Daily Water Use for Your Home:

Estimated total gallons of water used indoors daily ..... \_\_\_\_\_

Estimated total gallons of water used outdoors daily..... \_\_\_\_\_

**Total Daily Water Use for Your Home (in gallons) .....**

### Top Three Water Users In and Around Your Home:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

*This worksheet was developed by Dr. Joan Bradshaw, Citrus County Extension Services, Lecanto, Florida.*

*To complete an alternate water use survey online, go to [tampagov.net/SaveWater](http://tampagov.net/SaveWater) and follow the HomeWaterWorks link.*

# Step 7

## Establish a Plan



20-30 minutes

Items needed:



Use the Water Efficiency Checklist for Households to help you identify possible efficiencies that may be appropriate for your household based on the information you recorded in Steps 1 – 6.

### Water Efficiency Checklist for Households

This checklist suggests some initial actions you may take in your household to improve water-use efficiency. Each “No” response suggests an action that you may incorporate into your initial plan to increase water use efficiency at your home.

General Practices	Yes	No
1. Do you have water use goals for your residence?		
2. Do you regularly observe your water using fixtures and appliances for indication of leaks?		
3. Does your family discuss the importance of using water efficiently and avoiding waste?		
4. Do you have all your water hoses fitted with automatic shut-off devices?		
5. Do you use a broom rather than a water hose when cleaning your driveway and other outdoor surfaces?		
6. Does your family wash automobiles and other vehicles only when necessary?		
7. Do you shut-off the water supply to fixtures and appliances not in use?		
8. Do you have a private shut-off valve on your property to temporarily interrupt your water supply if you have to make water system repairs?		
9. Do you periodically use the leak detection device on the face of your water meter to determine if you have active leaks in your water system?		

Step 7: Establish a Plan (continued)

Bathrooms	Yes	No
10. Do you inspect your toilet about every 6 months to ensure that there is no leak present between the tank and bowl?		
11. Do you repair dripping faucets and other bathroom leaks as soon as they are noticed?		
12. Do you periodically replace showerheads, faucets and toilets to reduce water loss that may occur due to routine wear and tear on the fixtures?		
13. Do the toilets in your home flush using the current standard of 1.6 gallons or less per flush?		

Laundry	Yes	No
14. Do you operate your clothes washer only when you have a full load or adjust the volume of water if it is necessary to wash a smaller load?		
15. If your family is still using a top load machine, have you considered replacing it with a more water efficient front load model?		

Kitchen	Yes	No
16. Do you keep chilled water in your refrigerator to reduce the need to run the water for a period of time before filling a glass for drinking?		
17. Does your family thaw food in the refrigerator or in tubs of water in lieu of thawing under running water?		
18. Do you operate your dishwasher only when a full load is available?		
19. Are the faucet aerators in your kitchen rated at 2 gallons per minute?		
20. If you pre-soak utensils and dishes prior to placing them in the dishwasher, do you use a basin of water rather than running water?		

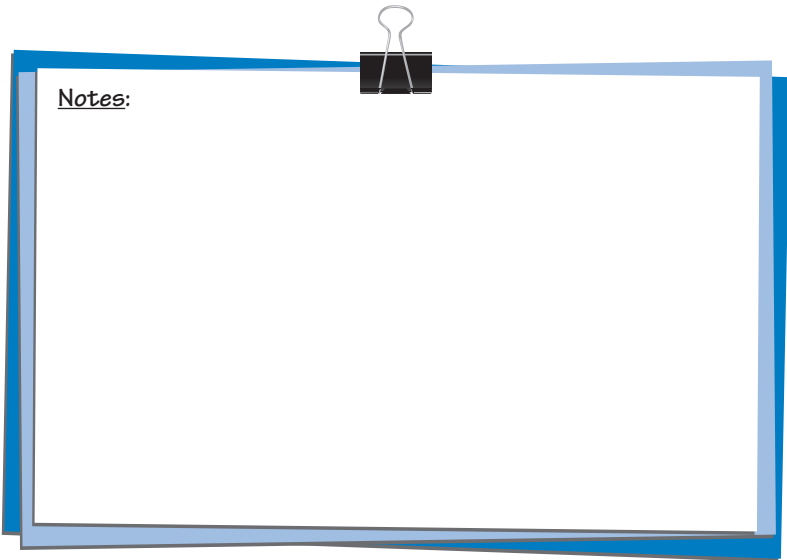
Step 7: Establish a Plan (continued)

Landscaping	Yes	No
21. If your home is located in an area where reclaimed water is available, is reclaimed water used for landscape irrigation?		
22. Is your automatic irrigation system fitted with a working rain-sensing device?		
23. Is your automatic irrigation system set to operate in accordance with any local and/or regional water use restrictions that may be in effect?		
24. Is your automatic irrigation system zoned so that turf-grass is only irrigated with rotors and/or sprays and all non-turf material is irrigated with low-volume heads and turf and non-turf irrigation components are not on the same zone anywhere throughout the landscape?		
25. Is your landscape planned and maintained so that irrigation for established plants is necessary only when extreme dry conditions are present?		
26. Do you have established water consumption goals for landscape irrigation?		
27. Are the activities of your landscape maintenance crews established and monitored to include routine maintenance, such as removing overgrowth from around spray heads and adjusting and/or replacing spray heads to ensure that all water applied to the landscape goes where intended?		
28. Do you or your landscape maintenance team routinely check and replace and/or adjust spray heads, as necessary, to ensure that water applied to the landscape is reaching landscape and not sidewalks, walls, and pavement area?		
29. Does your landscape include a minimum 3-inch layer of mulch in bedded areas?		

Step 7: Establish a Plan (continued)

Pools, Spas and Fountains	Yes	No
31. Do you use a pool cover to reduce evaporation loss when outdoor pools are not in use?		
32. Do you or your pool maintenance company backwash and drain the pool only when necessary rather than on a pre-set schedule?		
33. Do you or your pool maintenance company regularly inspect the pool and connected equipment for leaks?		
34. If you operate an outdoor fountain, is it operated in accordance with any local or regional water use restrictions that may be in effect?		
35. Do you regularly discontinue fountain operation on windy days to reduce water loss to drift?		
36. If your home is located in an area where reclaimed water is available, is reclaimed water used in your fountain(s)?		

Additional water-efficiency ideas and information may be found at [tampagov.net/SaveWater](http://tampagov.net/SaveWater)



Notes: