CONDUCTING A HOUSEHOLD WATER AUDIT

WHAT IS A HOUSEHOLD WATER AUDIT?

A household water audit is an assessment of how much water is used and how much water can be saved in the home. Conducting a water audit involves calculating water use and identifying simple ways for saving water in the home.

WHAT ARE THE BENEFITS OF CONDUCTING A WATER AUDIT?

Conducting a water audit can help you save money by reducing your home water bill (and sewer bill if you are connected to a public sewer system). Conducting a water audit will make you aware of how you use your water and help to identify ways you can minimize water use by implementing certain conservation measures. It is possible to cut your water usage by as much as 30 percent by implementing simple conservation measures and without drastically modifying your lifestyle.

HOW DO I CALCULATE WATER USAGE IN MY HOME?

It is important to realize that water use throughout the year often varies with the season. Most people use more water in the warmer months for gardening, washing cars, and other outdoor uses. If you conduct your water audit in the winter or fall, you should still consider the additional water you use in the summer months. The American Water Works Association (AWWA) estimates that the average indoor water use per person is 94 gallons of water per day; this does not take into account outdoor water use (watering lawns, washing cars).

Calculating Water Use From Your Water Bill

The Village of Cayuga receives water from the Town of Aurelius who receives it from the City of Auburn and Owasco Lake.

Your water bill identifies the number of units consumed by taking the difference between the current reading and the previous reading quarterly. The meters are in cubic feet and read to a tenth of a cubic feet. These Ipearl meters are digital and once installed there is a wire connected to the head of the meter and attached to an MXU that allows the Town to read the meter remotely, i.e. radio read. You can lift the top portion of the meter and read it manually if necessary. Read left to right and note that the digits marked with a line above is what should be read to determine consumption.

The basic conversion: 1 cubic foot equals 7.48 gallons. There are several conversion tools available on the Internet that can be used to make your calculations easier. Connect to http://www.onlineconversion.com/volume.htm

Calculating Water Use With A Meter

Water meters measure the total amount of water used in your home and are usually located at the property line (meter pit) or in the basement or crawl space of your house. As stated above, meters read in tenths of a cubic feet. To obtain your water use over

the course of a 24-hour day, read your meter at the same time on two consecutive days. You may want to measure water use for several days and then calculate a daily average.

HOW DO I CALCULATE MY HOUSEHOLD WATER USAGE?

The average citizen uses about 100 gallons of water per day. This includes indoor as well as outdoor water usage. To calculate the per person daily water usage rate, divide your daily water usage by the number of people in your home.

HOW CAN I CONSERVE WATER?

Check for Leaks

An average of about 14 percent of residential water is lost through leaking fixtures or pipes. You still pay for this water! An easy way to check whether you have leaks in your house is to read your water meter. Turn off all water fixtures inside and outside your home, and check the reading on your water meter. Wait one hour, ensuring that no one uses any water, and then check the meter again. If the meter reading has changed, you have a leak somewhere in your home. The IPearl meter has a digit that is for leak detection. If that number is moving when all water fixtures are turned off you have a leak.

Pipes

A leaky pipe is usually pretty obvious. Visually inspect all pipes in your home and look for telltale watermarks on walls or ceilings. In the yard, the ground above the water line may stay wet continuously or water may actually flow on the surface. If a pipe is leaking, repair or replace it.

Toilets

Leaking toilets are common and can be large sources of water loss. A leaking toilet can waste anywhere from several gallons to more than 100 gallons per day (that's over a quarter million gallons per year!). Leaking toilets are not as easily identifiable as leaking faucets. The following are clues that you may have a leak:

 If you have to jiggle the handle to make a toilet stop running;

 If you regularly hear sounds from a toilet that is not being used; or

 If a toilet periodically turns the water on (runs) for 15 seconds or so without anyone touching the handle.

Even if your toilet does not display any of the above symptoms, it could still be leaking. These silent leaks can go undetected for long periods of time, potentially wasting thousands of gallons of water.

To check your toilet for silent leaks, do the following:

 Remove the cover on the toilet tank and set it aside;

 Remove any .in-tank. bowl cleaners and flush so that water in the bowl and tank are clear;

 Add dye to the tank (You can use dye capsules or tablets from the hardware store, but food coloring or powdered fruit drink mixes work well). Use enough dye so that the water has a deep hue;

 Wait for 30 minutes (Do not use toilet during this time period);

 If after 30 minutes the water in the bowl contains dye, then the toilet is leaking (A properly operating toilet will store water in the tank indefinitely without any water running into the bowl).

There are two possible culprits when a toilet leaks, the flush valve or the refill valve. To determine which valve is responsible for the leak, draw a pencil line on the inside of the tank at the water line. Turn the water supply for the toilet off (located behind the toilet) and wait for 20 to 30 minutes. If the water level remains the same, it means the leak is occurring at the refill valve (unit in the left side of the tank). If the water level falls below the pencil mark, the flush valve (unit located in the center of the tank) is leaking. Most homeowners are capable of making their own toilet repairs. Visit your local home improvement or hardware store, purchase the parts, turn off the water supply to the toilet, and follow the directions. With a little effort, you can conserve many gallons of water and reduce your water bill at the same time.

Faucets

A leaking faucet is easily identified, but do you know how much water can be wasted from what seems like an insignificant drip? To find out, count the number of drips per minute. You can use the following chart to estimate the amount of water wasted.

ESTMATED WATER LOSS		
Drips per minute	Wasted water per month	Wasted water per year
10	43 GALLONS	526 GALLONS
30	130 GALLONS	1577 GALLONS
60	259 GALLONS	3153 GALLONS
120	518 GALLONS	6307 GALLONS
300	1296 GALLONS	15768 GALLONS

Drips can usually be eliminated by replacing worn washers, or by tightening or repacking the faucet. Replacement washers or repair kits for washerless faucets are available at hardware or home improvement stores.

Retrofit/Replace Fixtures and Appliances

Once you have repaired any leaks in your home, the next step is to evaluate the efficiency of your current fixtures and appliances. Often simple retrofits can conserve a lot of water. The following table provides average water use for conventional and low-flow appliances.

Fixture/Fitting/Appliance	Water Use In Gallons
Vintage Toilet*	4-6 per flush
Conventional Toilet**	3.5 per flush
Low Consumption Toilet***	1.6 per flush
Conventional Showerhead*	3-10 per min
Low-Flow Showerhead	2-2.5 per min.
Faucet Aerator*	3-6 per min.
Flow Regulating Aerator	0.5-2.5 per min.
Top-Loading Washer	40-55 per load
Front-Loading Washer	22-25 per load
Dishwasher	8-12 per load
* Manufactured before 1978 ** Manufactured from 1978 to 1993 *** Manufactured since January 1, 1994	

Faucets

Retrofitting your faucet with an aerator will help save water in your home. A faucet aerator is a small circular screen that is screwed into the faucet. It reduces flow by adding air to the water, giving the sensation of more water with less volume. An aerator can reduce the flow to about 1to 2 gpm, reducing your water use by half. Aerators are inexpensive and easy to install. Check to see if aerators are installed on any faucets. Even if aerators have been installed, they may be older and less efficient. If the flow from your faucet exceeds 2.5 gpm, you should install a new aerator. Some older faucets may not be able to accommodate an aerator. If this is the case or if for any other reason you need to install a new faucet, you should purchase and install a faucet that uses less than 2.5 gpm.

Toilets

The best way to improve toilet efficiency is to replace an old inefficient toilet with a new toilet. Toilets made before 1993 use between 3.5 gallons per flush (gpf) and 8 gpf. New high efficiency toilets use 1.6 gpf or less. Depending on how inefficient your old toilet is, you could reduce your water use by up to 75 percent by installing a new efficient toilet. There are other alternative toilets available, including waterless toilets and composting toilets. Fixtures must comply with Code of New York Regulations (your certified plumber is aware of these regulations).

You can reduce water use in older toilets easily and inexpensively by simply installing a displacement device. You can save a half-gallon per flush, which equates to, on average, 12 gallons per day per household. These devices work by displacing water in the tank, thereby reducing the water used per flush. Hardware stores sell plastic or rubber bags that can be filled with water and hung from the side of the tank, or you can

place some pebbles in an empty half-gallon milk jug, or other durable container, and fill it with water. Toilet dams work in a similar fashion, by blocking off an area of the toilet tank to decrease the amount of water per flush. Another device that can be used is an early closure device that causes the flapper to close early, releasing a reduced amount of water per flush. Do not place bricks in your toilet tank as they can dissolve and cause future plumbing problems.

Showerheads

Low-volume showerheads use 2.5 gpm or less (older ones use as much as 5 gpm or more), resulting in a water savings as great as 50 percent (on average, about 38 gallons per day per household saved). Low-volume showerheads conserve water through mixing air and water and using different spray patterns to give the sensation of a higher-volume shower. Some showerheads also feature temporary shut-off valves that allow the user to turn off the water while shampooing or washing while maintaining the desired temperature the same. Conserving water in the shower will also lead to substantial energy savings, since showers use hot as well as cold water.

Appliances

On average about 22 percent of indoor residential water is used to wash clothes. The best way to improve clothes washer efficiency is to replace an old inefficient machine with a new high efficiency washer. Traditional clothes washers use approximately 41 gallons per load (gpl) and high efficiency models use a little more than half that, about 23 gpl. Dishwashers account for only about 1.5 percent of indoor residential water use; however, more efficient models will reduce water use by about 50 percent. It is usually more efficient to wash a full load of dishes in the dishwasher rather than hand washing the same dishes in the sink.

Examine and Modify Your Habits

Some of the simplest and least expensive ways to conserve water involve making small changes in how you use water. A complete water audit should involve a close look at your family.s water use habits.

For example:

- Do you let the water run while you brush your teeth or shave?
- Do you run your clothes washer or dishwasher before it is fully loaded?
- Do you take long showers or baths?
- Do you use a dishpan or plug the sink when washing and rinsing dishes by hand?
- Do you pre-rinse your dishes prior to loading them in the dishwasher?
- Do you have an automatic shut-off nozzle on your outdoor hose?
- Do you water your plants during the coolest part of the day?

References

Excerpts taken from the Maryland Department of Environment Water Supply Program.

California Urban Water Conservation Council. March 2003. H_2OUSE Water Saver Home. http://www.h2ouse.org/

Toiletology 101. March 2003. http://www.toiletology.com/index.shtml

Village of Cayuga
6205 Railroad Street
Cayuga, NY 13034
For questions, please call 315-252-1707.