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Improving Home Irrigation Efficiency With Automatic Irrigation Systems

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Harrison County

Summary:

Managing and protecting our water resources is one of the most critical issues facing Texas today. As our population increases, human demands for water will grow. But we still need to ensure that there is adequate water for agriculture, industry and the environment. Decisions made now will have far reaching consequences for the livelihood of our state.

An adequate supply of high quality water has become a major critical issue for the future prosperity of Texas. Booming populations have increased the demand on the state's already limited supply of high quality water. In addition, seasonal fluctuations in rainfall and periodic droughts have created a feast-to-famine cycle in Texas.

In urban areas of Texas about 25 percent of the water supply is used for landscape and garden watering. Much of this water is used to maintain traditionally high water-demanding landscapes, or it is simply applied inefficiently.

A typical household uses approximately 260 gallons of water every day. We can reduce this amount and save money by using water more efficiently -- detecting and fixing leaky faucets, installing high efficiency clothes washers and toilets, and watering the lawn and garden with the minimum amount of water needed.

Objective:

To implement and evaluate the use of an irrigation audit on home irrigation systems to help identify inefficiencies in the system, such as broken and/or misaligned sprinkler heads, gaps in the system, where a sprinkler head should have been installed and above all, the amount of water that a given zone or station is applying per hour.

Hopefully, some or most of the problems can be corrected and the irrigation schedule can be adjusted to apply the correct amount of water with shorter durations in run time, including the number of days that the system will operate.

Lastly, but just as important is the health of the landscape and the eye appeal. This is probably one of the most important aspects to the homeowner is "how good my lawn looks". The look and health of the lawn will be monitored on a weekly basis and if needed, adjustments to the schedule will be made.

Collecting irrigation water during irrigation audit process

Materials & Methods:

On May 22, 2012, an irrigation audit was performed on the Waldman home irrigation system. The system consist of five (5) zones or stations. In this demonstration, only three (3) stations were checked that watered lawn or turf areas of the landscape. After and during the irrigation audit, some sprinkler heads were re-aligned, shrubs trimmed and notations were also made as the which heads needed to be replaced or added.

Past water consumption data will be available from the Marshall Water Billing Department for comparison purposes. In this demonstration, water consumption data from 2010 will be used since the severe drought of 2011 would not give us good data to make comparisons too. The target water application rate for this time of the year was one and a half inches (1.5 inches) of water to be applied each week. If needed and as the season gets hotter and drier, re-adjustments may and probably will be made to the watering schedule.

Listed below is the old and new watering schedule;

OLD SCHEDULE (PRE-AUDIT)

Station #	Plant Type	Run Time	Days Per Week
1	Turf	15 Minutes	3 Days Per Week
2	Turf	20 Minutes	3 Days Per Week
3	Turf	15 Minutes	3 Days Per Week
4	Flowerbeds	15 Minutes	3 Days Per Week
5	Flowerbeds	15 Minutes	3 Days Per Week

NEW SCHEDULE (POST-AUDIT)

Station #	Plant Type	Run Time	Days Per Week
1	Turf	10 Minutes	2 Days Per Week
2	Turf	20 Minutes	2 Days Per Week
3	Turf	15 Minutes	2 Days Per Week
4	Flowerbeds	15 Minutes	2 Days Per Week
5	Flowerbeds	15 Minutes	2 Days Per Week

NEW SCHEDULE (POST-AUDIT - June 7, 2012)

Station #	Plant Type	Run Time	Days Per Week
1	Turf	10 Minutes	2 Days Per Week
2	Turf	20 Minutes	3 Days Per Week
3	Turf	15 Minutes	3 Days Per Week
4	Flowerbeds	15 Minutes	2 Days Per Week
5	Flowerbeds	15 Minutes	2 Days Per Week

The new schedule above was adopted on or about June 7, 2012, as dry conditions in the area dictated more water needed to be applied to some of the lawn areas.

Results & Discussion:

Listed below is the water consumption data for 2010, as well as the 2012. The 2012 season will be compared to the consumption data from the 2010 year.

Month	2010 Gallons	2012 Gallons	Difference
June	***14000***	**33,000**	**+19,000 Gallons**
July	***25000***	**32,000**	**+7,000 Gallons**
August	***39000***	**35,000**	**- 4,000 Gallons**
September	***33000***	**16,000**	**- 17,000 Gallons**
October	***32000***	**4,000**	**- 28,000 Gallons**
Totals	***143000***	**120000**	**- 23,000 Gallons Overall**

Conclusions:

The City of Marshall states that the water cost is $3.99 per one thousand gallons. In comparing the 2010 and 1012 season, the Waldman's saved 23,000 gallons of water compared to 2010 use. This saved the homeowner $91.77 on their water bill for this season (five months). This demonstration does show that conducting a landscape irrigation audit, even a minor one to correct problems that may be unforseen can save money in the long un and coupled with several years worth of savings can really add up.

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