

The 2006 Mesa County Irrigation Audit Program Final Report



Catch Cans in place for the Advanced Level Audit

Report Submitted by:

Dr. Curtis E. Swift,
Colorado State University Cooperative Extension Agent & Certified Landscape Irrigation Auditor and Ardith Blessinger, Mesa County Irrigation Audit Specialist, Certified Landscape Irrigation Auditor

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Introduction:

It is estimated that 7.6 square miles or 4,864 acres of the Grand Valley consists of high water-using landscapes. If the water application on all 4,864 acres was reduced by 40%, a savings of **11,187 acre feet** or over **3.6 billion gallons** of water would result. With an average of 1600 new home permits approved each year, water use in the Grand Valley and its over application will continue to rise.

Over irrigation flushes 580,000 tons of salt into the Colorado River from the Grand Valley soils each year. These salts negatively impact plant and animal health throughout the Colorado River basin. Proper watering of lawns will significantly reduce this problem. Additional benefits from improving irrigation management of turf would result in:

- Reduced water use and fewer dollars spent on irrigation water
- Reduction of runoff
- Reduction of water lost below the root zone (deep percolation)
- Reduced fertilizer and chemical requirements to maintain the lawn
- Fewer insect and disease problems
- Proper timing of water applications based on local weather patterns.
- Improved irrigation system performance
- Improved landscape appearance; fewer saturated and dry spots

The 2006 Program:

Ardith Blessinger, Mesa County Certified Irrigation Auditor, finished conducting audits of sprinkler irrigation systems in early October. Audits were conducted on 28.3 acres as compared with 18.7 acres in 2005. This is a strong indication of the importance of this program.

Table 1 - Results of the Mesa County Irrigation Audit program in 2005 & 2006

Audits conducted	Acres	Estimated Water Savings ¹	
		Gallons	Acre Feet
2006	28.8	21,584,370	66.24
2005	18.7	14,014,851	43.00
Total	47.5	35,599,221	109.24

Irrigation audits were conducted for Alpine Bank facilities throughout western Colorado by Dr. Swift and Ardith Blessinger. The purpose was to reduce water use and assist Alpine Bank in qualifying as an eco-efficient company IAW the Global Green ISO 14001 Standards developed by the International Institute for Sustainable Development. ISO 14001 defines a voluntary environmental management system, an internationally recognized standard for environmental management.

¹ Based on a reduction of 40% due to the correction of problems noted. This equates to a savings of 27 inches or 2.3 acre feet of water.

Common problems noted in the 2006 audit program:

- **Excessive pressure.** Spray heads are designed to operate properly at 25 - 30 psi. One system had zones operating at 58 – 64 psi resulting in misting of the spray. Misting occurs when droplets of water are broken into a fine mist; the resulting mist drifts away or evaporates. The use of pressure regulating modules, heads and valves will correct this problem.
- **Too low a pressure.** One system had insufficient pressure to rotate the heads. This caused heads to remain stationary which resulted in water puddling around the heads; the surrounding turf showed signs of stress from lack of water.
- **Tilted sprinkler heads.** When heads are tilted just a few degrees it can seriously affect the radius of the spray. The top of the sprinkler head should be nearly at and parallel to grade.
- **Breaks in irrigation lines.** A break was found at a housing area that uses Grand Junction City water for irrigation. Water poured from the break, down the sidewalk and into the gutter. The HOA representative thought the break had been a problem for a year.
- **Heads too low.** Heads should be high enough so the spray does not hit the lawn directly in front of them. An easy way to tell if the sprinkler head is too low is by the presence of a “frog eye” pattern around the head. The blades of the grass will be pushed flat from the force of the water hitting them. When the spray cannot clear the plant material, it results in a broken spray pattern.
- **Heads that drain** laterals after valves are turned off was a major problem. Heads located at the bottom of a slope should have the proper check valve. One system using city water continued to run for almost 10 minutes after the valve was shut off. Water ran down the sidewalk into the gutter.
- **Disease and insect pest** are identified at each site and the property manager notified of control options. Summer patch (*Magnaporthe poae*), previously unconfirmed in Colorado, was identified as a result of this irrigation audit program.

Tilted head



Broken head watering patio





Too low



Watering landscape rock

Program Evaluation:

Sixty surveys were mailed at the end of the season. Thirty participants (50%) responded. Following is a summary of the results of the 2006 survey.

- 76% saw an improvement in their lawn.
- 10% said it was too soon to tell.
- 6% did not see an improvement.

- 56% completed the suggested repairs.^{2, 3}
- 26% had the repairs started but not completed.
- 3% were not able to start or complete repairs because it was too late in the season.
- 6% did not do the repairs.

- 70% were interested in irrigation workshops in the spring and summer of 2007.

Summation:

The Mesa County irrigation audit program combined with an extensive educational effort will result in reduced water use in landscaped areas. The continuation of this program will help reduce deep percolation, the flushing of salts into the Colorado River, and the excessive use of fertilizer and pesticides. This project positively impacts the riparian habitat for flora and fauna.

² Participants were provided a list of firms interested in conducting repairs.

³ Based on the results of the survey. Not all returns answered questions on repairs.

Table 2 - Water Providers and water use in turf areas audited in 2006.

Water Provider	Based on surveys returned		Based on total area audited	
	Sq. feet	EPWR ⁴ acre ft	Sq. feet	EPWR acre ft.
City of Grand Junction	21,807	1.15	31,579	1.67
Clifton	7,201	0.38	7,201	0.38
Fruita (UTE Water)			6,741	0.36
Gateway ⁵			170,564	9.01
Grand Valley Irrigation Company	18,487	0.98	326,994	17.27
Grand Valley Water Users' Assoc.	80,252	4.24	251,604	13.28
Mesa County Irrigation			5,040	0.27
Orchard Mesa Irrigation District	31,893	1.68	46,365	2.44
Palisade (Ute Water)	1,011	0.05	39,370	2.08
Redlands Water & Power	220,813	11.7	230,953	12.19
Ute Water	138,270	7.30	138,270	7.30
Totals	519,737	27.48	1,254,681	66.25

⁴ EPWR = Estimated Potential Water Reduction - Based on a reduction of 40% due to the correction of problems noted. This equates to a savings of 27 inches or 2.3 acre feet of water.

⁵ Water from West Creek.