

Abstract

The authors present a manuscript covering the Southern Nevada Water Authority's (SNWA) multi-year Xeriscape Conversion Study, which was funded in part by the Bureau of Reclamation - Lower Colorado Regional Area¹.

Xeriscape (low-water-use landscaping) has held the promise of significant water savings for a number of years, but how much exactly it can save, especially as a practical residential landscape concept has been a point of debate and conjecture. Lacking to date has been a truly experimental quantitative study in which per-unit area application data has been gathered to quantify savings estimates (for a variety of reasons, most research has been limited to the total household level, with comparisons involving homes that are mostly xeriscape or traditional landscaping). Recognizing the need for more exacting (and locally applicable) savings estimates, SNWA conducted a study that could yield quantitative savings estimates of what a xeriscape conversion facilitation program could yield under real world conditions.

The experimental study involved recruiting hundreds of participants into treatment groups (a Xeric Study and a Turf Study Group and control groups), as well as the installation of submeters to collect per unit area application data. Data on both household consumption and consumption through the submeters was collected, as well as a wealth of other data. In most cases, people in the xeric study group converted from turf to xeriscape, though in some cases recruitment for this group was enhanced by permitting new landscapes with xeric areas suitable for study to be monitored. Portions of xeric areas were then submetered to determine per-unit area water application for xeric landscapes. The TS Group was composed of more traditional turfgrass-dominated landscapes, and submeters were installed to determine per-unit area application to these areas as well. Submeter installation, data collection, and analysis for a small side-study of multi-family/commercial properties also took place.

Results show a significant average savings of 30% (96,000 gallons) in total annual residential consumption for those who converted from turf to xeriscape. The per-unit area savings as revealed by the submeter data was found to be 55.8 gallons per square foot (89.6 inches precipitation equivalents) each year. Results showed that savings yielded by xeriscapes were most pronounced in summer. A host of other analyses covering everything from the stability of the savings to important factors influencing consumption, to cost effectiveness of a xeriscape conversion program are contained within the report.

An abbreviated summary of the report's findings appears as the *Executive Summary and Conclusions* section (pg. 60).

¹This report with written and electronic appendices satisfies a deliverables requirement pursuant the applicable funding agreement with the Bureau of Reclamation (Cooperative Agreement #5-FC-30-00440). SNWA gratefully acknowledges BOR for its funding assistance with this project.

Keywords: *water conservation, xeriscape, xeric, landscape conversion, desert landscape low-water-use, plants, landscape, irrigation, residential water consumption, outdoor water use, submeter, irrigation controller, resource conservation, incentive programs, utility, water resources.*

Acknowledgements

There have over the course of this study been so many contributors to this research that thanking each of them individually is an impossibility; however, the authors would like to express their gratitude to individuals in the following groups and organizations without whom this research would not have been possible.

- The study participants without whom no data could have been collected.
- The Southern Nevada Water Authority (SNWA) and the numerous personnel who have supported and promoted this research. The authors especially thank members of the Conservation Division, present and past, which have supported this research over the years.
- The member agencies of the SNWA listed on the cover. Special thanks go to Boulder City, the cities of Henderson and North Las Vegas, and the Las Vegas Valley Water District for the reading of meters and submeters related to the study.
- The SNWA Xeriscape Conversion Study Team and all those who have contributed to study recruitment, data collection, and data processing.
- Aquacraft, Inc. for preliminary analyses and collection of trace flow data.
- The Bureau of Reclamation Lower Colorado River Office and members of this office who helped facilitate funding for the research.
- Those whom have reviewed and commented on the Xeriscape Conversion Study and the results. The authors graciously acknowledge the contributions of reviewers of the final manuscript. Final manuscript reviewers included SNWA personnel in the Conservation and Resources Divisions, members of the Las Vegas Valley Water District's Resources Division, a contractor to the SNWA, and outside reviewers at the City of Austin, Texas. The Bureau of Reclamation also had the opportunity to comment on a draft prelude to final submission.
- Those organizations that have acted as a forum for exhibiting this research.
- Those who have worked for the study in the past and have gone on to other things.
- Those who have supported the research and the research personnel in other capacities.