

## **LARGE LANDSCAPE IRRIGATION AUDIT PILOT PROGRAM**

### **FINAL REPORT**

#### *Introduction*

It is difficult to address water conservation in multi-family residential properties through traditional outreach methods. Residents of multi-family properties have very little or no control over irrigation practices and landscape choices. Owners and managers have limited ability to control indoor use but are responsible for landscape use. However, outdoor use can be very difficult to monitor, particularly in large complexes or where there is not a separate water meter for irrigation. Additionally, many water waste calls received in the cities of Woodland, West Sacramento and Davis are for improperly operated or damaged irrigation systems at multi-family residential properties.

For these reasons, the Water Agencies for Conservation in Yolo County (WACY), consisting of water conservation coordinators for the cities of Davis, West Sacramento, and Woodland, pursued funding through the Water Resources Association (WRA) Small Grants Program to initiate a pilot program to investigate how to improve multi-family irrigation practices. The “Large Landscape Irrigation Audit Pilot Program” was designed to encourage changes in behavior through increased knowledge. As a pilot program, the goal was not only to provide knowledge to multi-family managers but also to gauge interest in water conservation from this group of water users.

#### *Scope of Work*

Work performed by landscape audit contractor

1. Contact multi-family properties
2. Perform audits and collect data
3. Provide final audits to cities and property managers

Work performed by city water conservation staff

1. Create and send out RFP for contractor
2. Create online data-sharing platform for internal documentation
3. Select contractor
4. Create list of priority multi-family properties
5. Review and select multi-family properties from a list of priority locations
6. Maintain contact with contractor on progress, provide feedback
7. Provide edits on audit template and final reports
8. Analyze data and audits
9. Provide presentation of data to stakeholders

## *Timeline*

1. Plan Finalization
  1. September 2016
2. Research and Select Consultant and multi-family properties
  1. October – November 2016
3. Audits Performed and Data Collected
  1. December 2016 – April 2017
4. Audit Collection, Edits and Presentation Preparation
  1. May 2017
5. Compile Final Report and Make Recommendations
  1. June 2017

## *Results*

Callander Associates, the chosen landscape architecture firm, contacted a list of “Top 20” priority apartment properties in each of the three member cities with the goal of including three apartment complexes in each of the cities. Eight complexes participated, and each was provided with an irrigation audit report. The report included observations of the current irrigation system and landscape, as well as recommendations for maintenance and installation to improve water use efficiency. The report also provided the results of the irrigation audit with top three money saving ideas and a suggested irrigation schedule. In all cases, the audits found water-saving potential if the suggested updates and practices were implemented.

In order to illustrate the value of these reports, the following information lists potential water savings and financial savings per audited site. Full reports are attached. Using Woodland Oak Apartments as an example, estimated annual water savings would be 180,701 gallons per year with an estimated savings of \$1,100 per year at the current water rates by simply adjusting the irrigation schedule. This is a 40% reduction of water use compared to 2016. A summary of suggested modifications and potential savings for all sites are listed below.

Woodland Oak Apartments Woodland, CA: Approximately 3-acres, 80 units

- Adjust irrigation schedule (24,158 Cubic Feet / 180,701 Gallons saved per year)
- Implement suggested irrigation schedule (\$1,100 saved per year)
- Install efficient spray nozzles (\$300 saved per year)
- Replace turf with mulch (\$75 saved per year)

Westwood Apartments - Woodland, CA: Approximately 3.5-acres, 92 units

- Adjust irrigation schedule (49,597 Cubic Feet / 370,985 Gallons saved per year)
- Implement suggested irrigation schedule (\$2,300 saved per year)
- Upgrade irrigation controllers (\$100 saved per year)

Replace turf with mulch (\$75 saved per year)

Courtwood Apartments - Woodland, CA: Approximately 4-acres, 112 units

Adjust irrigation schedule (43,746 Cubic Feet / 327,354 Gallons saved per year)

Implement suggested irrigation schedule (\$2,100 saved per year)

Install efficient spray nozzles (\$400 saved per year)

Upgrade irrigation controllers (\$100 saved per year)

East Yolo Apartments - West Sacramento, CA: Approximately 3.5-acres

Install efficient spray nozzles (\$400 saved per year)

Upgrade irrigation controllers (\$100 saved per year)

Replace turf with mulch (\$100 saved per year)

Meadowbrook Apartments - West Sacramento, CA: Approximately 5-acres

Install efficient spray nozzles (\$300 saved per year)

Upgrade irrigation controllers (\$100 saved per year)

Replace turf with mulch (\$100 saved per year)

Timber Apartments - West Sacramento, CA: Approximately 4-acres

Adjust irrigation schedule (41,000 Cubic Feet / 30,668 Gallons saved per year)

Install efficient spray nozzles (\$300 saved per year)

Upgrade irrigation controllers (\$100 saved per year)

Replace turf with mulch (\$100 saved per year)

Tanglewood Apartments - Davis, CA: Approximately 8-acres, 216 units

Repair broken sprinklers/missing nozzles (potential of \$1000/year or more in savings)

Upgrading irrigation controllers (potential of \$100/year or more in savings)

Replace turf with mulch or mulch shrub areas (potential of \$100/year or more in savings)

The Arbors Apartments - Davis, CA: Approximately 5 acres, 120 units

Repair controller #3 (potential of \$1000/year or more in savings)

Upgrading irrigation controllers (potential of \$100/year or more in savings)

Replace turf with mulch or mulch shrub areas (potential of \$100/year or more in savings)

## *Conclusions*

### *Potential for Savings*

From these irrigation audits we can conclude that immediate and significant water savings are available to many of the participating properties through simple irrigation schedule adjustments, at no cost to the complexes. In some circumstances, adjusting the schedule would save nearly half of water used for

irrigation. This would prevent water waste, increase efficiency and save money. This adjustment would also increase the life of plant material since overwatering deters plant growth.

The audits also show that direct financial savings are available to multi-family properties through device replacement. This includes upgrading to smart controllers and high efficiency sprinkler nozzles. However, the savings for the audited properties ranges from \$500 to \$2,600 per year. While all savings are good, these numbers are not significant returns on investment.

Based on this pilot program, it seems that adjusting water schedules requires minimal work but yields significant water and financial savings. Contrastingly, replacing devices with updated models does not yield significant savings and requires more work. This insight, if true, provides important guidance for future multi-family outreach. For example, a city may choose to offer free irrigation audits with an emphasis on irrigation schedules, instead of offering a rebate program.

#### *Interest from multi-family properties*

#### ***Interest in the program varied from city to city, but was in general lower than expected.***

Funding for the “Large Landscape Irrigation Audit Pilot Program” was pursued during the multi-year drought. This past winter saw substantial rain, which potentially decreased interest in the program. In addition, outreach was conducted by the contractor and may have been perceived as a sales call. Initial contacts may have been more successful if they had come directly from the cities.

West Sacramento multi-family sites showed the most interest. The high interest for an irrigation audit program in West Sacramento suggests that this may be a program to pursue for future funding. West Sacramento will be offering a residential irrigation audit program for residents. Due to the level of interest from West Sacramento multi-family properties, the city may consider offering free irrigation scheduling to multi-family properties.

Woodland received interest, but not to the level of West Sacramento. The full three audits were conducted in Woodland, but only after city staff contacted the property managers directly and explained the program. In discussions, more than one property manager was concerned with the costs they would be required to make or penalties they may incur if they did not carry forth with the audit’s recommendations. When considering the continuation of a Large Landscape Irrigation Program, clear messaging will be vital to generate and secure interest.

Davis sites showed less interest, with only two large landscape audits conducted although the Tanglewood site was almost twice the acreage of the other locations. In addition to the reasons listed above, another reason that Davis may have experienced less interest is that water efficient improvements had already been implemented for some of the targeted properties. With the hesitancy on the part of Davis multi-family residential properties to participate, this program may need to be

modified (or more information gathered) to determine if a larger scale program would be worthwhile.

*Follow-Up*

City staff will be following up with the property managers who participated in the irrigation audit program within the next six months to see what suggestions from the audit have been implemented, as well as any barriers to implementing suggested modifications. This feedback will further inform the cities on the potential success of larger scale programs.