Do Irrigation Audits and Smart Controllers Really Save Water?

One Agency's Perspective

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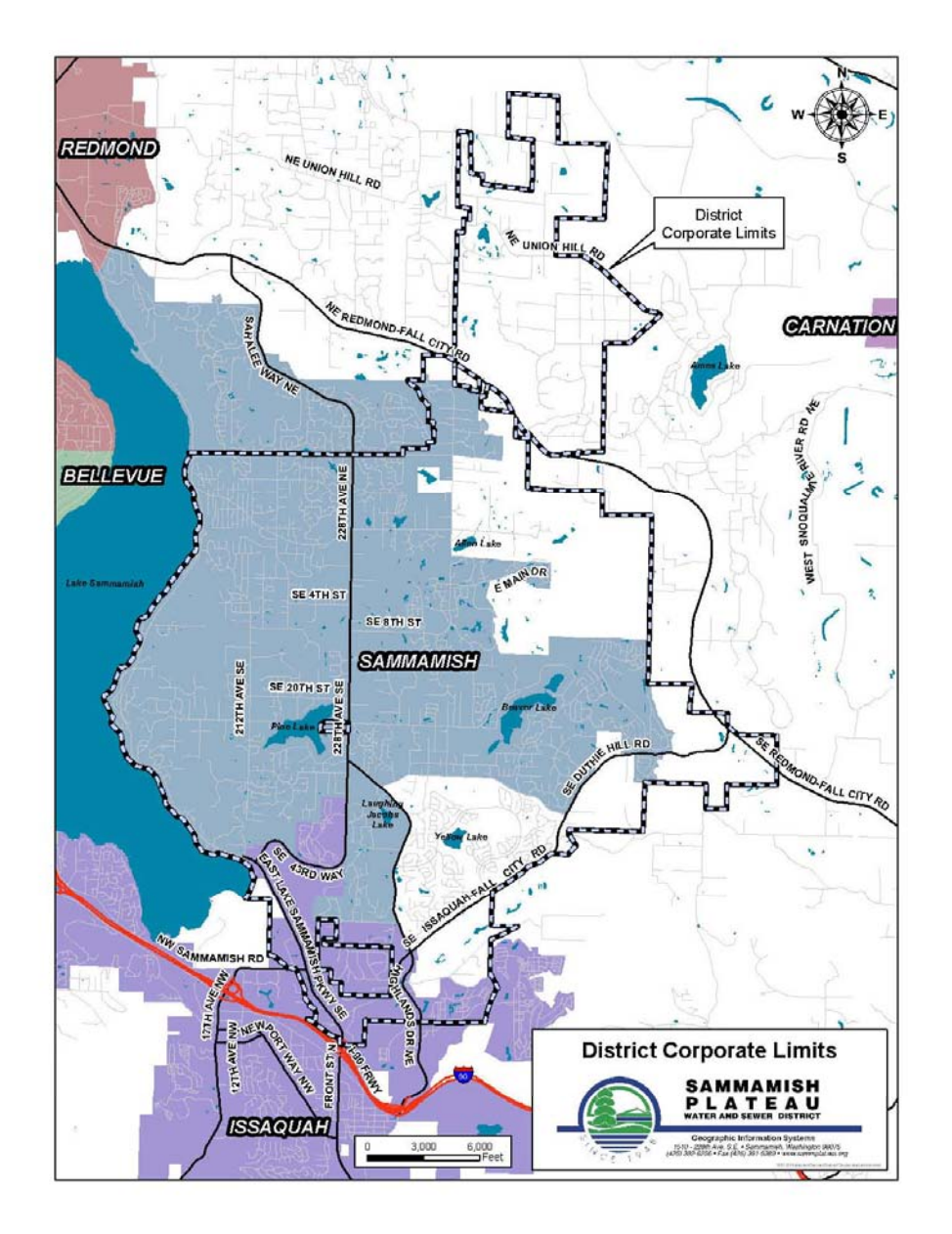
SAMMAMISH PLATEAU
WATER AND SEWER DISTRICT
SINCE 1948

About Us

- Founded in 1948
- 16,575 water customers
- 10,100 sewer customers
- Serve portions of Sammamish, Issaquah and King County
- Budget of $18.2 million



Primary Program Goal

- Help customers in Public/Institutional rate category reduce irrigation consumption in large landscapes such as parks and ballfields

Who Participated?

- City of Sammamish Parks Department: three park sites
- King County Parks Department: one park site
- Issaquah School District: two school sites
- Lake Washington School District: one school site

Program Objectives

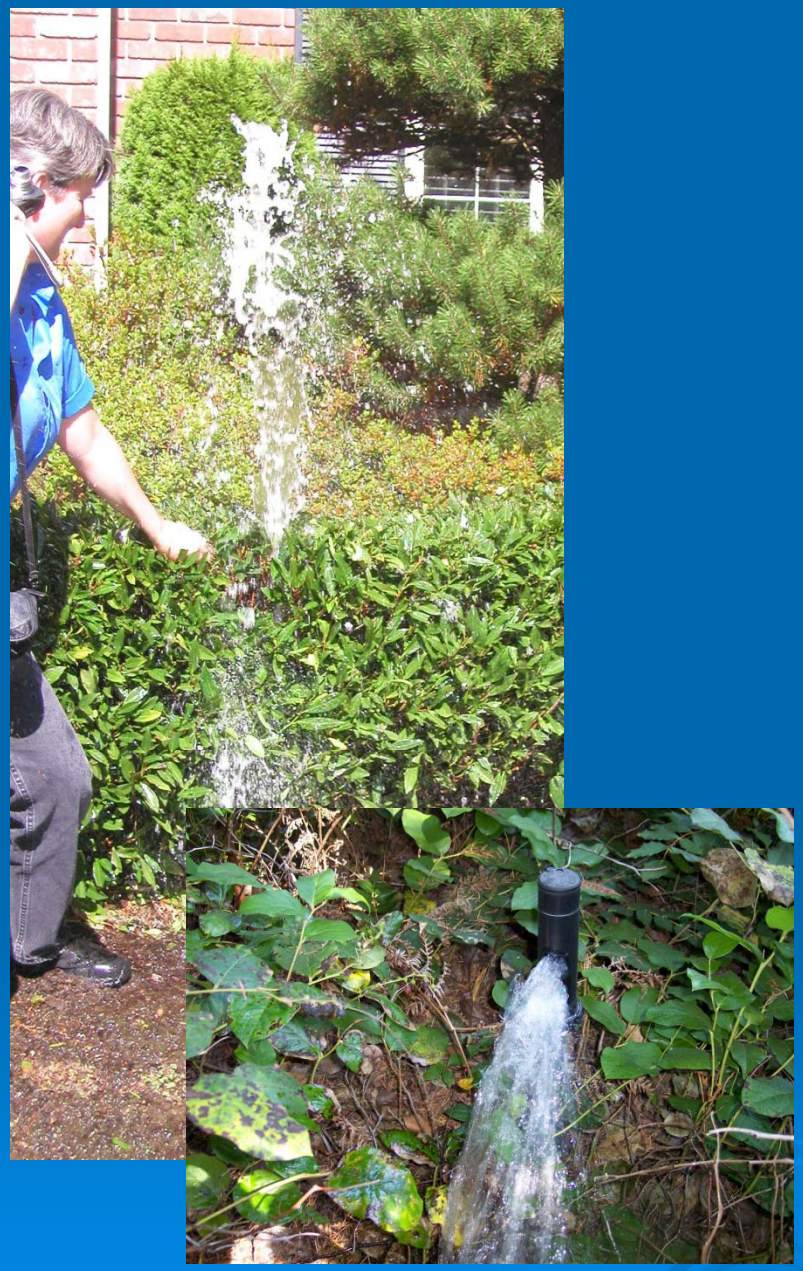
- Examined two programs and how they reduced peak summer consumption
  - District's in-house Irrigation Audit Program
  - Cascade Water Alliance irrigation efficiency rebates

Irrigation Audit Program

- District in-house program
- First implemented in 1992
- Enhanced monitoring started in 2000
- In 2011, 44 accounts participating in program out of 480 total irrigation accounts (9%)

Program Details

- Audits conducted at customer's expense by an IA certified landscape irrigation auditor (CLIA)
- Customer must remain within an annual water allowance
- Customer receives a discounted irrigation rate
  - Audited: $4.47 CCF
  - Standard: $7.54 CCF



Site Inspection

- Customer must have current backflow assembly test
- Auditor conducts site inspection
  - Find and fix leaks
  - Adjust heads
- Retrofits for efficient hardware recommended

Design Recommendations

- Make design recommendations during audit
- Here, we recommend converting to waterwise shrub area instead

Checklist

- “Application and Agreement” form
- Proof of the auditor’s Irrigation Association certification (CLIA)
- Narrative description of site conditions and irrigation hardware
- Distribution uniformity of each zone from catch cans
- Site system distribution uniformity requirement of 60% or higher
- Irrigation schedule for May through September

Checklist (continued)

- Size of irrigated area in square feet
- Annual water allowance for each irrigation meter for the entire growing season, calculated in cubic feet, using IA formula
- Location of rain sensors or soil moisture sensors (prefer photos)
- Recommended repairs by the irrigation auditor
- Proof repairs were made, such as invoices

Caveats

- Program can be labor intensive, especially in summer!
- Successful program can create challenges due to loss of revenue:
  - Reduced consumption
  - Discounted rate
- Easier to justify program to managers and elected officials due to WUE Rule

Cascade Irrigation Efficiency Rebates

- District is a Cascade member
- Pays dues to Cascade to implement some water conservation programs
- Irrigation efficiency rebates available to SPWSD customers from Cascade

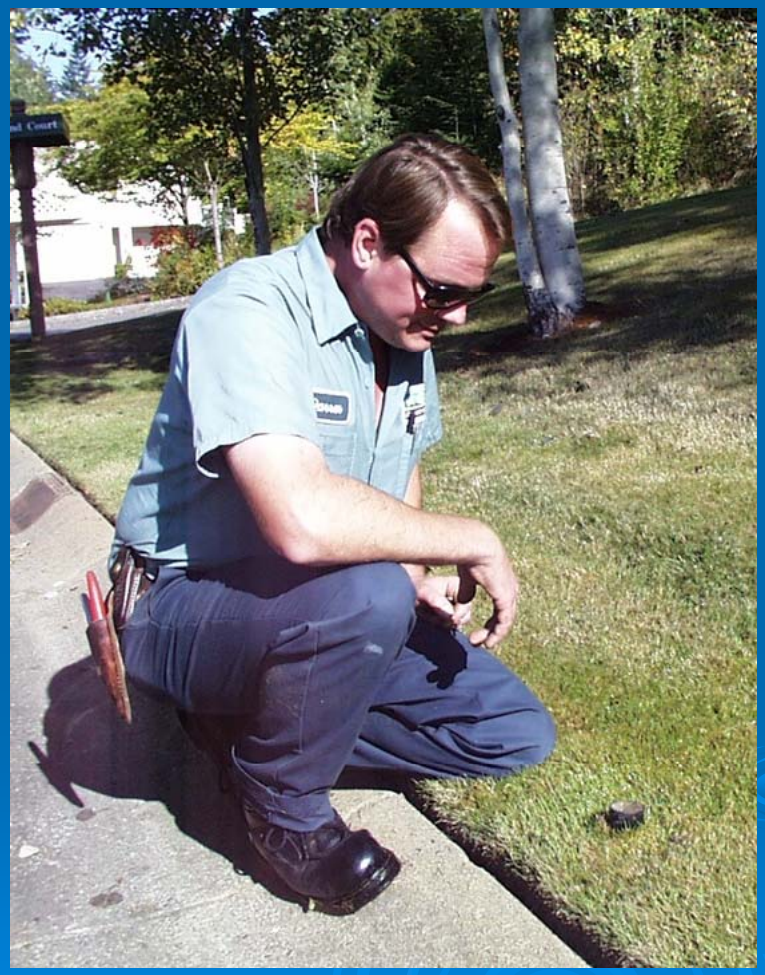
CASCADE
WATER ALLIANCE

Cascade Rebates

- Weather based “Smart” controllers
- Rain sensors
- High DU nozzles
- Flow sensors
- Soil sensors
- Drip irrigation
- Pressure reducing valves
- Check valves in heads and lines
- Capped heads

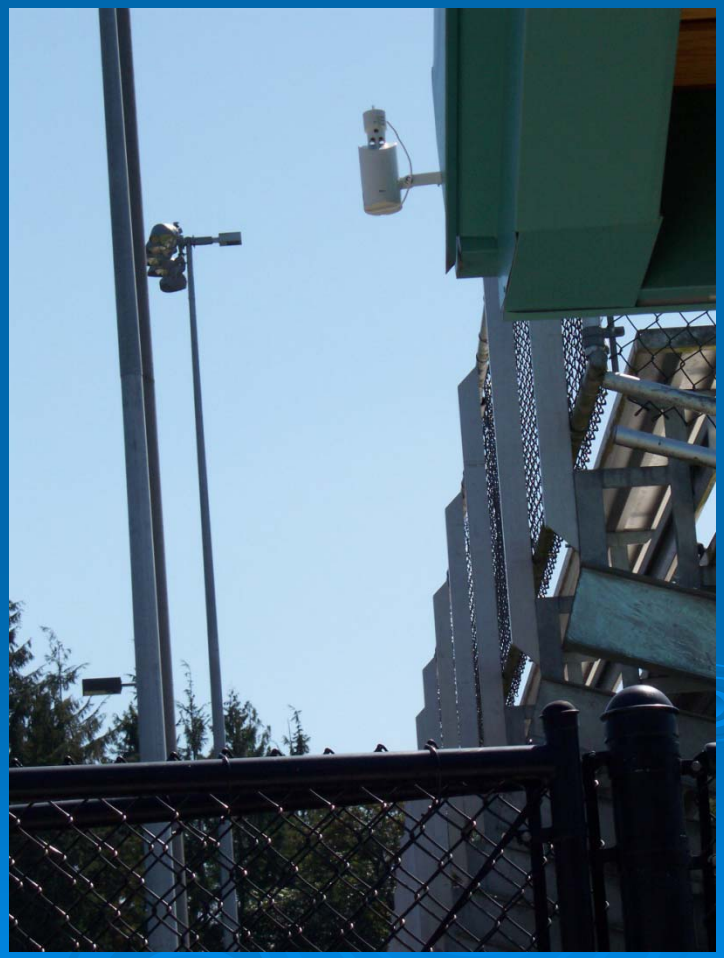
Contact with Site Managers

- Site managers contacted and invited to participate in both programs
- Participation in either program is voluntary
- Site managers encouraged to incorporate smart controllers and central control systems



One or Both Programs?

- Seven accounts examined
- Two accounts did not participate in the District's audit program but made system upgrades
- All accounts had site managers who were participants in the District's audit program with other accounts



One or Both Programs?

- Customer can choose one or both to maximize irrigation efficiency
- Audits can be expensive!
- Some elected to just perform system upgrades
- Site manager education helped with consumption reduction even at unaudited sites

Tracking Data

- Consumption totals pulled from the District's billing database
- Used data three years prior to installation of smart controllers, and the three years following installation
- Data from the installation year was not included
- Used data from 1999-2009

SAMMAMISH PLATEAU WATER AND SEWER DISTRICT
PERCENTAGE REDUCTION IN CONSUMPTION FROM COMBINED SMART CONTROLLER INSTALLATION AND IRRIGATION AUDIT PROGRAM

Account Name	Controller manufacturer	Month and year smart controller installed	Average annual consumption three years prior to installation (gallons)	Average annual consumption three years after installation (gallons)	Percentage reduction
City of Sammamish - Beaver Lake Ballfields	Calsense	August 2005	2,812,031	1,366,970	51%
City of Sammamish - East Sammamish Park	Calsense	June 2003	2,079,689	1,821,380	12%
Issaquah School District - Beaver Lake Middle School	Calsense	August 2001	2,299,576	1,525,446	34%
Lake Washington School District - Eastlake High School Ballfields jointly operated by City of Sammamish	Calsense	December 2005	4,252,879	2,314,561	46%
King County Parks - Klahanie Park	Weathermatic	May 2003	2,942,632	2,026,581	31%
City of Sammamish - Beaver Lake Park and Lodge	Calsense	August 2005	152,143	86,269	43%
Issaquah School District - Skyline High School	Calsense	December 2006	3,787,847	1,577,283	58%
TOTAL CONSUMPTION			18,326,798	10,718,491	
Total average percentage reduction for all accounts with smart controllers					**39%**

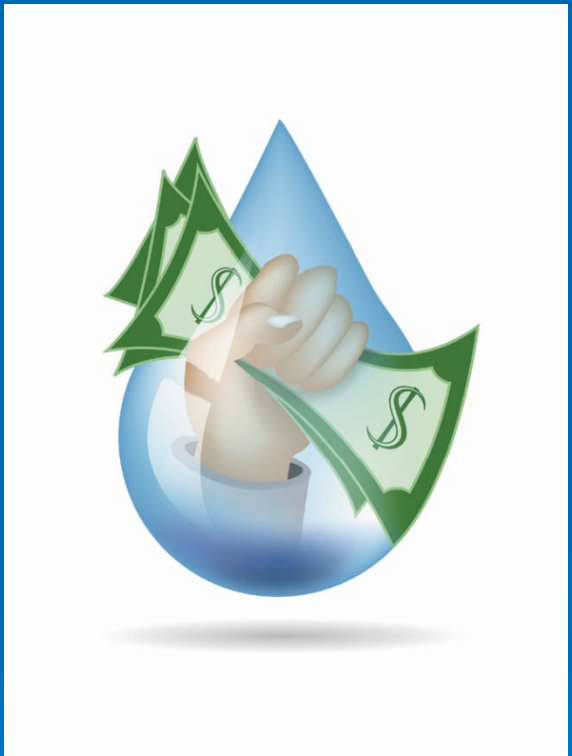
All consumption is indicated in gallons.
Did not use data from controller installation year.
Assume annual consumption variations exist due to yearly weather conditions of wet years versus dry years.
Did not use data from 2001, as it was a drought year and mandatory restrictions were in effect system-wide.
Accounts in yellow are current Irrigation Audit Program participants. Accounts in orange are not currently in the program

Results

- The District achieved a total average consumption reduction of 39% in the accounts studied!

Happy Customers!

- Customers saw increased irrigation efficiency from hardware upgrades
- Customers received their irrigation water at the discounted rate.
- Customers' Return on Investment averaged three years or less



SAVE WATER,
SAVE MONEY!

Thank you!

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