



WaterSense® Irrigation Efficiency

Stephanie Tanner, EPA WaterSense Products Lead
Joanna Kind, Eastern Research Group, Inc.



What Is WaterSense?

**A partnership program
sponsored by the U.S. EPA**

Promotes the value of water and helps Americans make smart decisions regarding water use and water-using products.

Aims to increase the adoption of water-efficient products and services by consumers and organizations.





Efficient Irrigation

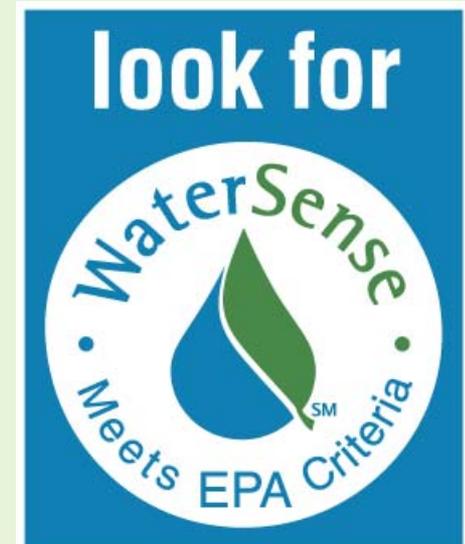
- Efficient irrigation requires a systems approach including:
 - Advanced technologies
 - Sound designs
 - Proper installation
 - Good operations and maintenance

- WaterSense is responding by:
 - Labeling certification programs for irrigation professionals that have a water efficiency component
 - Partnering with irrigation professionals that have labeled certifications to promote water efficient practices
 - Labeling water-efficient irrigation products



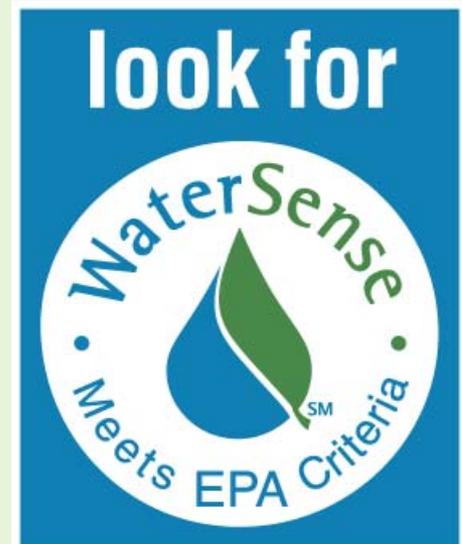
WaterSense Evaluation Factors

- **WaterSense uses the following factors in determining which products to label. Products must:**
 - Offer equivalent or superior performance
 - Realize significant water savings on a national level
 - Achieve water efficiency through several technology options
 - Provide measurable results
 - Be cost-effective
 - Be effectively differentiated by the WaterSense label
 - Be independently certified



WaterSense Specification Development

- **EPA relies on industry and other interested parties with experience in:**
 - Design
 - Manufacture
 - Installation
 - Maintenance
- **EPA and its stakeholders:**
 - Define important performance attributes
 - Develop test methods to evaluate the attributes
 - Establish performance and efficiency levels





WaterSense Specification Development Process

- Technical analysis and market research
- Notification of Intent (NOI) to develop a specification
- Draft specification
- Final Specification



WaterSense Pipeline

Product/ Program	Completed: 2006-2008	Planned: 2009-2010	Planned: 2010 and Beyond
Irrigation	Certification for Irrigation Professionals	Irrigation Controllers	Moisture Sensors Drip Micro Technology
Residential Plumbing	Tank-Type Toilets Lavatory Faucets	Showerheads	Water Treatment Systems Water Softening Systems
Commercial Plumbing		Urinals Pre-rinse Spray Valves	Flushometer Valve Toilets
Other			Autoclaves Glassware Washers Additional Professional Certifications



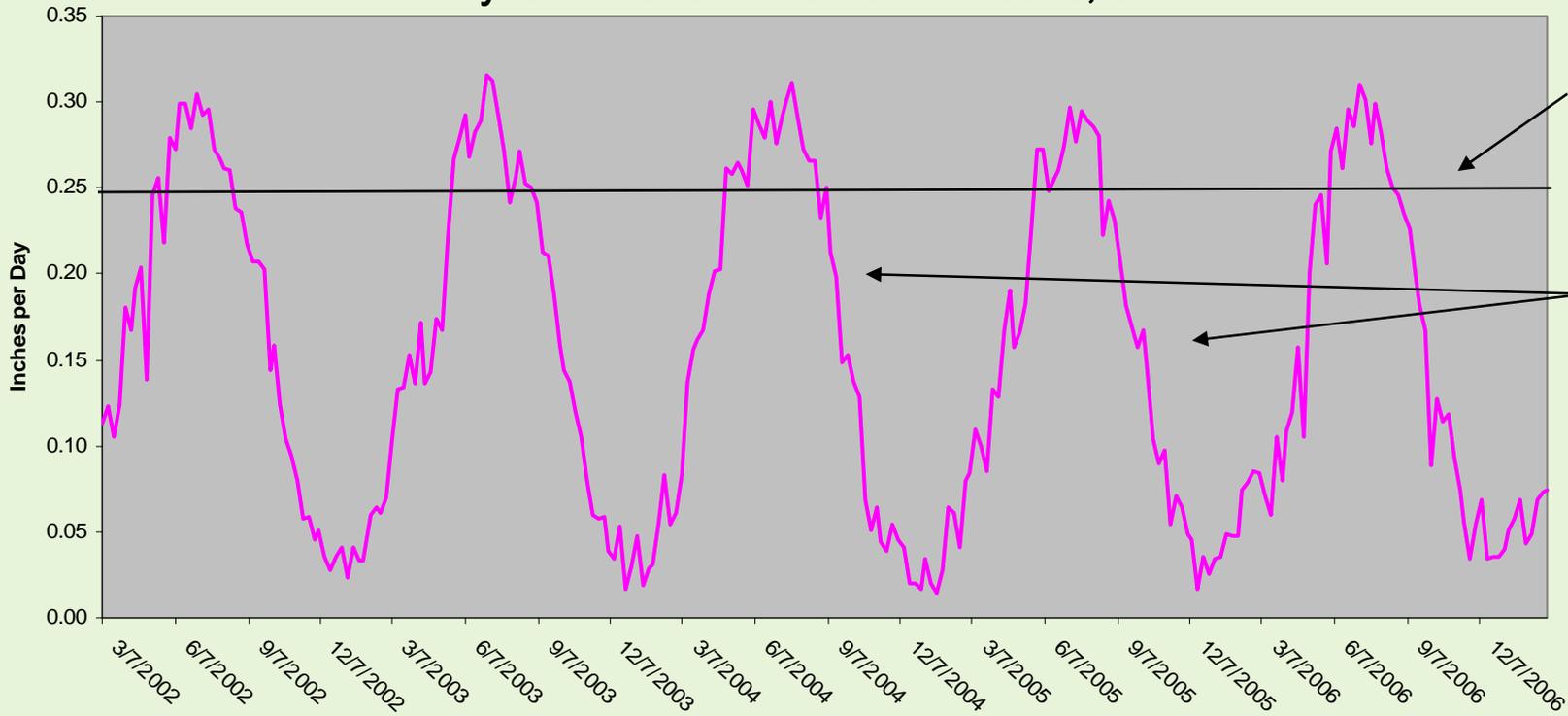
Weather- or sensor-based irrigation control technology

- Weather-based or sensor-based irrigation control technologies:
 - Establish an irrigation schedule, or modify a predetermined irrigation schedule, based on landscape conditions and input from offsite weather stations or onsite weather stations or sensors.
- These products have the potential for ~20% water savings compared to conventional clock-driven irrigation controllers.

Irrigation Schedule: Status Quo vs. ET Controller



Five year historic ET curve for Fresno, CA



Many homeowners irrigate at this level

Potential Water Savings



Specification Development Status

- Conducted product research from March 2006 to March 2007
- Published a Notification of Intent (NOI) April 2007 and held meeting with stakeholders to discuss outstanding issues and a path forward
- Established four working groups (Summer 2007) during the NOI meeting to resolve outstanding issues:
 - Performance Measures (on hold)
 - Simulated Weather (complete)
 - Multiple Zone Testing (on hold)
 - User Interface (complete)
- During these meetings, additional questions regarding the SWAT protocol were identified.



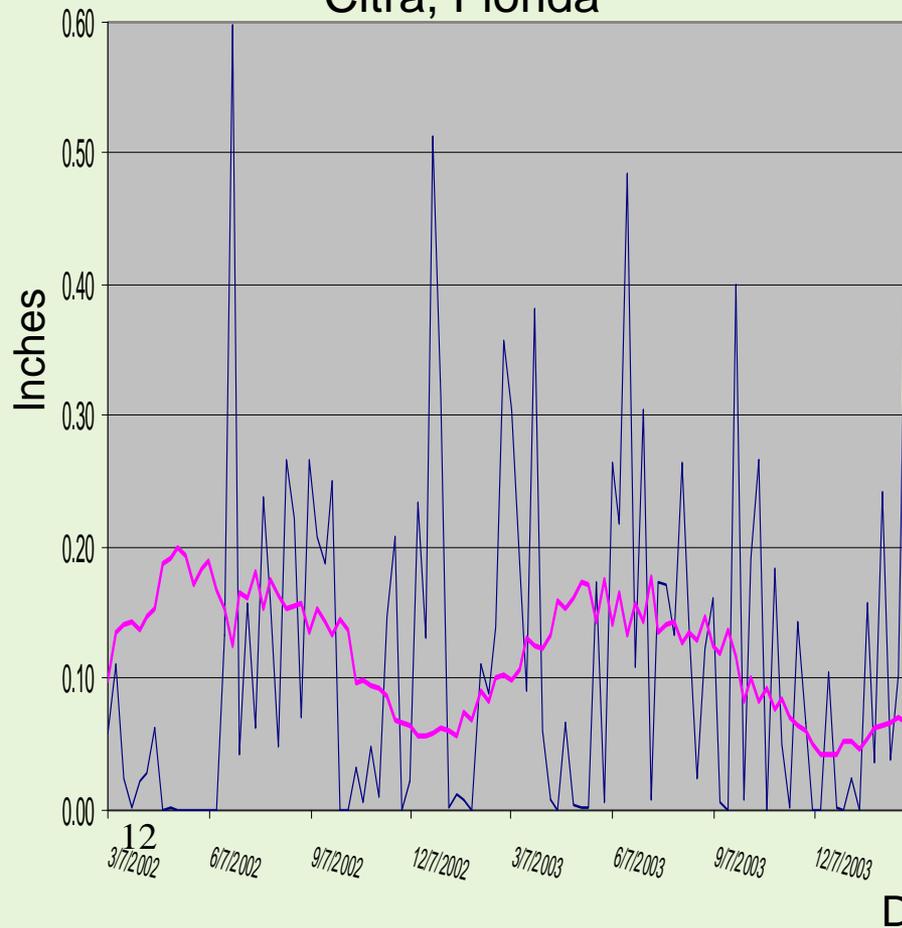
Outstanding Questions: Transferability

- **Question 1: Are SWAT test results transferable from California to other regions of the country with varying climates?**
 - Background: Stakeholders in wet climates expressed concern that these products have not been tested in a climate that represents their region.
 - Status to date:
 - SWAT has conducted testing using a signal based controller in both New Jersey and Florida – results were similar to original test performed in California.
 - The University of Florida is conducting additional research for to examine these questions.

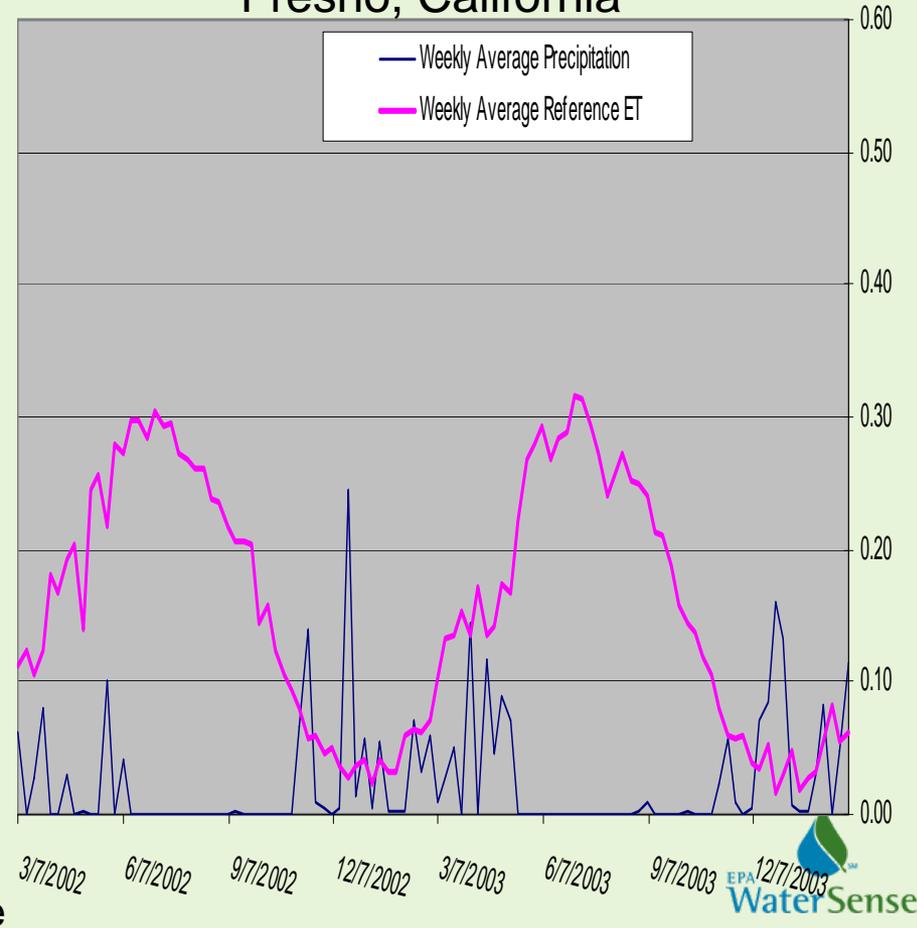
Outstanding Questions: Transferability (cont.)



Two Year Precipitation & Reference ET Weekly Average 3/1/02-2/28/04
Citra, Florida



Fresno, California





Outstanding Questions: Reproducibility

- Question 2: Are test results reproducible from laboratory to laboratory?
 - Background: The current SWAT protocol has only been implemented in one laboratory in the country. Need assurance that the protocol, as documented, will generate reproducible test results at other laboratories.
 - Status to date: While the University of Florida is conducting additional SWAT testing they are documenting the additional information needed to implement the protocol at other laboratories.



Outstanding Questions: Test Requirements

- Question 3: Are minimum ETo, minimum rainfall, and test duration requirements sufficient to adequately test controllers nationwide?
 - Background: There was a general feeling among stakeholders that the existing SWAT protocol minimum ETo, minimum rainfall, and testing duration requirements should be examined to determine if they are appropriate to adequately test the controllers.
 - Status to date: The University of Florida study is examining these requirements in a rainy climate.



Specification Development Status

- Currently conducting research to answer remaining questions
 - University of Florida is testing 5 controllers using the SWAT protocol to examine the transferability and reproducibility, as well as the minimum testing requirements.
 - Results are expected in late Spring 2009

- Publish a draft specification (Fall 2009)
 - Analyze University of Florida results
 - Set performance measures
 - Set user interface features
 - Address how add-on devices will be tested
 - Provide protocol documentation package to EPA licensed certifying bodies

- Publish final specification (Early 1010)
 - 15 ● Timing depends on comments received



Additional Irrigation Technologies

- **Soil Moisture Sensors**
 - Scope: Intent is for moisture sensors to fall under the weather-based irrigation control technology specification
 - Status: Need performance test protocol

- **Preliminary research conducted on**
 - Sprinkler Heads
 - Micro-irrigation
 - Rain Sensors



Summary

- WaterSense is addressing efficient irrigation through the promotion of efficient practice and labeling efficient products.
- Aim to publish a draft specification for weather- or sensor-based irrigation control technology this fall, followed by a final specification in early 1010.
- WaterSense has conducted some preliminary research on additional irrigation products, but needs defined performance measures and protocols in order to move forward.



More Information



Web site: www.epa.gov/watersense

E-mail: watersense@epa.gov

Helpline: (866) WTR-SENS (987-7367)