Santa Barbara County ET Controller Distribution and Installation Program
Final Report - June 30, 2003

Project Procedure:

General Overview:

In Santa Barbara County, the average amount of landscaping at residential properties is approximately 1 acre and it is estimated that approximately 50 percent of the water used at a residence goes to the landscape. To increase residential landscape water efficiency, the Santa Barbara County Water Agency, the City of Santa Barbara, the Goleta Water District, the City of Lompoc, the City of Santa Maria and Vandenberg Village Community Services District jointly developed the Santa Barbara County ET Controller Distribution and Installation Program (ET Controller Program).

The WeatherTRAK ET Controller technology was chosen for the ET Controller Program because a study conducted by Irvine Ranch Water District it provided conclusive evidence that the WeatherTRAK controller supplies accurate irrigation scheduling by automatically creating a weekly irrigation schedule based on "real time" evapotranspiration (ET) data from local weather stations.

Santa Barbara County's ET Controller Program was selected to receive funding from a Water Use Efficiency Grant through the CALFED Bay Delta Program in May of 2001. According to the original program plan, the program partners would distribute 300 ET controllers with rain sensors and soil probes at no cost to participating customers. The program partners would be responsible for selecting customers, marketing the program, conducting pre-screening surveys to ensure customers met program criteria. If the customer met the program criteria, the program partner would arrange a meeting with the customer to complete all paperwork associated with the program, review the customer's water use history, and conduct a cursory survey of the irrigation system to make sure it met program criteria (12 stations or less or stations that could be combined to equal 12). Customers would be responsible for paying the signal fee to Hydropoint Data Services to ensure customer buy-in to the program. The cost for the signal fee was $4 per month, which would be paid in a lump sum of $144 (to cover three years) at the beginning of their participation in the program. (Customers whose controllers were in an outdoor location were also required to purchase an outdoor box to protect the controller.) Local landscape contractors would be trained to evaluate the customer's irrigation system, prepare a written report on recommend improvements to irrigation system, distribute soil probes and demonstrate of its use, and wire and program the controller. Payment for the installation services, which were estimated to take 2 to 3 hours would be $100 per controller and would be paid with grant funding.

Many changes to the original program plan occurred during implementation of the program. Those changes and the reasons for them are outlined below.

Administrative Set-up:

The ET Controller Program began with the development of a local Work Team. The original Work Team consisted of representatives from the Santa Barbara County Water Agency, City of

Santa Barbara, Goleta Water District, ConserVision Consulting and Network Services, Inc. (which later became Hydropoint Data Systems).

The Santa Barbara County Water Agency acted as the fiscal agent for the ET Controller Program and entered into a contract with ConserVision Consulting for the purchase of the WeatherTRAK ET Controllers, customer service, and the training workshops for local landscape contractors.

Soon after the program began, the program partners realized that customer service should be provided by Hydropoint Data Systems rather than the consultant (who was based in Los Angeles), since the staff at Hydropoint Data Systems were available every day from 8:00 to 5:00 and had the expertise to walk customers through any problems. Hydropoint Data Systems also hired a customer service representative in the Santa Barbara area to do any site visits required.

Training Workshops and Demonstration Site Installations:
Two Installer Training Workshops and one training lab were held to create a list of trained installers for the ET Controller Program. Only licensed landscape contractors were invited to the Installers Training Workshop. The program partners worked with the local chapter of the California Licensed Contractors Association to develop a local address list for distribution of workshop invitations (See Attachment 1: Workshop Brochure).

The Workshop consisted of a classroom style presentation, hands-on programming and field installation of the WeatherTRAK ET Controller. The program partners developed a number of materials describing the specifics of Santa Barbara County's Program for distribution during the workshop including the Program Overview, the Site Visit Forms F1-F4, an example payment ticket, a WeatherTRAK Operator's Guide and CD, an Installer's Duties List, the installation Materials List, and the WeatherTRAK Adjustment Guide. (See enclosed Installation Training Notebook). After the initial training conducted by ConserVision, the staff at Hydropoint Data Systems took over the training duties for the ET Controller Program.

The Goleta Water District's Demonstration Garden at 4699 Hollister Avenue and the Santa Barbara Public Library at 40 East Anapamu Street were chosen as demonstration sites for the ET Controller Program. Potential customers are encouraged to visit these locations so they can see examples of landscapes maintained with the ET Controller technology. The controller at the Demonstration Garden was installed prior to the first training workshop to provide an example of a landscape that was using the technology. The controller at the Public Library was installed as part of the first training workshop to give installers a "hands-on" lesson for programming and wiring of the controller. During the second Installation Training Workshop in Lompoc, the hands-on installation took place at a residence.

During the training workshops, the landscape contractors provided feedback to the program partners indicating that the current list of installation duties would take much longer than the estimated 2 to 3 hours. Therefore, the program partners decided it would be appropriate for the partners to conduct the evaluation of the customer's irrigation system, prepare a written report on recommend improvements to irrigation system, and distribute soil probes and demonstrate their use to the customer during their planned site visit instead of leaving it to the installers. The

installers' duties were reduced to focus on the actual installation of the controllers and programming them using the information collected by the program partners.

In order to ensure that all program partners were conducting these new site visit tasks in the same way, the program partners set up a training workshop for their staff to learn how to conduct the site visits and to complete the information sheets required for programming of the WeatherTRAK ET Controller.

Target Selection and Program Marketing:
Each agency developed a list of high-water using customers who served as the target audience for the ET Controller Program. Average water use for January and February and average use for July, August and September for the prior three years was determined for each customer. Then these averages were used to create a ratio of the difference between summer and winter use to determine highest irrigation use. ET Controller Program brochures (See Attachment 2: Program Brochure) and letters from the water purveyor were mailed to the top 100 high water users from these lists for Goleta Water District and City of Santa Barbara and the top 25 for the other three agencies.

The marketing campaign for the ET Controller Program was launched in April 2002. The partner purveyors used a direct marketing campaign and ET Controller demonstration sites to attract residential customers with the highest irrigation water demand to participate in the program. Additional marketing was conducted by telephone by several of the program partners. Marketing of the campaign will continue through mass mailings and follow-up phone calls until all of the controllers are installed.

Pre-Screening, Data Gathering and Installation of ET Controllers for Residential Customers:
Pre-Screening: The information in the ET Controller Program's marketing brochures directed customers to call their water purveyor if they were interested in participating in the ET Controller Program. When a program partner received a call from an interested customer, they provided an overview of the ET Controller Program and answered any questions the customer had about the WeatherTRAK technology. In addition, the customer was made aware of the fact that although they would receive a free controller and free installation ($300 to $400 value), they would be responsible for paying for the signal fee for a period of three years ($144 upfront cost). If the customer was still interested in participating, the water purveyor's program representative would ask the customer a series of questions from the Pre-Screening Survey (See Attachment 3: Pre-Screening Survey) to determine if the customer met the criteria of the ET Controller Program. Eligibility criteria included the following:

1. Customer must be property owner.
2. Customer must already have an automatic irrigation controller and irrigation system installed.
3. Customer must not have made any major landscape changes in the last three years, nor have any planned for the next three years.

Site Visit: Once a customer was approved for participation in the ET Controller Program, purveyor staff scheduled a site visit to collect the data required for the installation and programming of the WeatherTRAK controllers.

Program partners developed a Customer Packet (See enclosed Customer Packet) that included all of the necessary materials for successfully completing a site visit. Items in the customer packet included:

1. Hold Harmless Agreement
2. ET Controller Owner's Manual
3. Installer's payment ticket
4. Soil Probe and WeatherTRAK Adjustment Brochure
5. Site visit Forms F1-F4
6. Site visit checklist for agency staff
7. *How To Water Your Garden* by Sunset Publications
8. Customer "To Do" List
9. Customer Service Reminder Card (To direct customers to Hydropoint Data Systems for future customer service requests).

Site visits included the following activities: customer briefing and paperwork completion, an irrigation system check, precipitation rate determination (after July 2002 – see Monitoring section for more information), and wrap-up as described in detail below.

At the beginning of each site visit, purveyor staff would meet with the customer to answer any questions about the program, review the customer's water use history and the program description and begin the process of completing the necessary paperwork for program participation. A number of contractual documents were required to ensure the customer understood who was responsible for each portion of the ET Controller Program and what the limitations of the service were. Paperwork included the contract with Hydropoint Data Services for the ET signal, customer service, & support; the Hold Harmless Agreement between the water purveyor and the customer, and the payment and invoice for the signal fee. Once the paperwork was complete, the customer was asked to not use water during the site visit.

Purveyor staff then proceeded to conduct an irrigation check by collecting information for Weather TRAK Programming (Forms F1 and F2), evaluating the irrigation system and trouble shooting problems (Form F3), and measuring of lawn areas and running each station for determination of precipitation rates (Form F4). If the system included more than 12 active stations, staff would also determine which stations would be merged at this time.

Following the irrigation system check, purveyors staff would then conclude the site visit by giving the customer their controller, a soil probe (with a demonstration of its use), and a Customer To Do list, along with two copies of the site visit information forms. The Customer To Do list provided information on the required repairs and installer contact information. The customer was directed to complete the repairs prior to setting an appointment with installer. The customer was directed to call Hydropoint Data Systems customer service line for any customer service issues following the installation of the controller.

The completion of each of these tasks generally required two staff members and took approximately 2-4 hours to complete for a total site visit time of approximately 6 hours per controller, according to estimates provided by the program partners.

Monitoring:
A database tracking water savings by customer was developed in December 2002 and new customer information is added each quarter. Due to variations in the time of installation of the WeatherTRAK controller, the term used to determine the water savings percentage varies by customer. The term for the water savings data monitoring begins either the month following the installation of the WeatherTRAK Controller or the month following the programming of custom precipitation rates for those customers whose controllers were installed before custom precipitation rates were included in the site visits. The total water use over this time frame was then compared to the average water use for the same time frame of the two years prior to the installation year.

After monitoring the first few installations for a month or two, the partner purveyors and the customers were rather surprised at the increases in water bills of some of the customers. The program partners soon learned that in order to achieve the highest level of efficiency possible, it was necessary to determine the precipitation rates of the irrigation systems and program that information into the controller, rather than relying on the factory settings. Therefore, the program partners arranged for our local customer service representative to conduct a number of follow up evaluations to review the controller set up and input precipitation rates for spray heads in turf areas and precipitation rate determinations were included as part of the initial site visit for all installations after July 2002.

Project Results:
Six agencies participated in the program and collectively nine staff members have been trained to complete the tasks associated with the ET Controller Program. Twenty licensed landscape contractors completed the installation training for the Program. Although, some installers opted out of the Program after completing the training, several remained active and were very excited about being involved with this new technology.

Approximately 430 brochures and letters have been sent to high water using customers throughout Santa Barbara County.

As of June 30, 2003 sixty-two WeatherTRAK ET Controllers have been installed in Santa Barbara County and there are ten people on the waiting list for installations. The remaining 238 controllers will be installed during fiscal year 2003/2004. The discrepancy between the ending of the funding period and ending of the installation program is due to changes that occurred after the original proposal and contract were complete. In January 2003, staff from DWR contacted the Water Agency indicating that the contract deadline for the Santa Barbara County ET Controller Distribution and Installation Program had been changed to June 1, 2003. The original contract date, as listed in the signed CALFED WUE grant contract held by the Santa Barbara County Water Agency was June 14, 2004. For a number of reasons, the new date posed significant problems for program partners. Therefore, in April 2003, the program partners and DWR staff agreed that agencies participating in the Santa Barbara County ET Controller Distribution and Installation Program agreed to proceed with as many installations as possible to use the installation fees as stated in the contract budget, and would bill DWR for Water Agency staff time (up to $15,000) to make up for any installations that were planned for Fiscal Year

2003/2004. A final quarterly report, final invoice, and preliminary project report would be submitted to DWR no later than June 1, 2003. Program partners will continue to conduct installations until June 2004 so that all controllers purchased through this grant funding would be installed as stated in the original proposal.

Water Savings:

Our initial data indicates that customers are reducing their monthly water use by approximately 26%, with a high of 59% savings and a low of 8% savings. These estimates are still preliminary, as only a small number of customers have used the WeatherTRAK controller for one complete year. The partner purveyors will continue to monitor all program participants for a period of three years after the installation of their controller to ensure that the data is complete. If the current level of savings continues, this program will increase water supply reliability within the Bay-Delta by reducing local water purveyors' need to supplement local water supplies with State Water.

Other Environmental Benefits:

A study conducted by Irvine Ranch Water District indicated that the use of the WeatherTRAK ET Controller reduced runoff by 63 to 71%. Runoff from landscaped areas can carry pesticides and fertilizers into streams and eventually to the ocean. Although the Irvine Ranch study did not find a significant change in the water quality of the runoff at the storm drain outside of each study area, it is likely that the compounded results of reduced runoff from a larger portion of the watershed could reduce beach closures. As a result of this study, Santa Barbara County's Project Clean Water is mapping the sites with ET Controllers as a layer in their GIS system and will use the information as they monitor the water quality in our local streams and the ocean.

Project Costs:

The main costs associated with the ET Controller Program were the cost of the WeatherTRAK controllers ($200 per controller); installation fees ($100 to $150 per controller); soil probes ($12 probe); and consultant fees for marketing assistance, training workshops, and customer service. These costs were funded through the grant. Additional costs for the program included staff time for customer selection, site visits, and administrative duties; brochure production and printing; and postage. These costs were provided through in-kind contributions from each of the partner agencies.

Most of the costs associated with the project were known at the time the proposal was developed due to information provided by other similar programs. However, there were two areas where additional costs were incurred due to some of the unique features of the Santa Barbara County Program. These additional costs were centered on the fact that the original estimates for the site visit and installation times were extremely optimistic and based on a program where installations were conducted in an area where irrigation systems were relatively new and the size of the yard was fairly small. Based on these criteria, the program partners were given information that indicated that the installers could easily conduct the site visits and the whole process, including installation, would take about 2 to 3 hours.

However, the Santa Barbara County Program was open to any customer that was designated as a high water user and on average, the high water users had large yards (approximately 1 acre of landscaped area) with irrigations systems of up to 25 stations that were fairly old and in poor

condition. Therefore, the site visit alone took two staff members approximately 2 to 4 hours to complete and installations took an average of 4 hours to complete.

In the grant proposal, agency staff estimated that two hours per controller would be required of agency staff for all administrative duties and customer selection and site visit duties were assigned to the installers. Soon after the program began, it became apparent that the agency staff would be required to conduct the site visits, thereby increasing the staff time in-kind contribution substantially.

Additionally, after receiving input from several of the installers, agency staff discovered that installation times had also been greatly underestimated and the payment offered was inadequate. This was especially apparent when installations required the hard-wiring of the WeatherTRAK controller. In an effort to address this discrepancy, the program partners increased the installation payment for hardwiring to $150 per installation. Part of the funding for this increased payment was provided through a grant from the U.S. Bureau of Reclamation.

Photos, Presentations, Comments:

Project partners presented preliminary findings from the Santa Barbara County ET Controller and Distribution Program at the California Urban Water Conservation Council's ET and Weather Based Controllers Workshop on March 20, 2003 in Claremont, CA. (See Attachment 4: CUWCC Presentation Slides). In addition, a number of articles updating the ET Controller Program's progress have appeared in the Santa Barbara County Water Agency's *Water Connection* Newsletter (See Attached). Santa Barbara's ET Controller Program is also highlighted on the Hydropoint website at www.hydropoint.com. Program partners also submitted a number of items for discussion at the Irrigation Association Roundtable for ET Controllers that took place in October of 2002.

Summary

The Santa Barbara County ET Controller Distribution and Installation Program has been an enlightening and rewarding experience for the program partners. The WeatherTRAK Controller is an exceptional water savings device and we hope to see extensive use of this technology in the future. The lessons learned by the program partners during the first year and a half of the program in order of importance were: **a custom precipitation rate for turf areas is a must; manufacturer customer service and installation training is essential; an increased number of stations would be valuable; and information gathering for programming of controller and post-installation adjustments cannot be left to customer.**

The program partners have found that using the factory settings for precipitation rates in the WeatherTRAK controllers does not result in reliable savings. In fact, on average the WeatherTRAK schedules were over watering turf areas and under watered areas with drip systems. Although the Santa Barbara County program distributed soil probes and brochures describing how customers could adjust the controller to correct these issues, only 2 customers actually made the adjustments. The staff at Hydropoint Data Systems is currently working to perfect the assumptions for precipitation rates and to incorporate more weather data to allow for variations within ET zones to address this problem.

The Santa Barbara County Program has been using the Hydropoint Data Systems Customer Service line since July of 2002 and also worked with Hydropoint staff to run the installation training workshops. Using Hydropoint's experienced staff and the existing customer service line provided essential support to our program and allowed immediate reconciliation of any problems that arose. Despite extensive training workshops for local installers, the program partners have found that even the experienced landscape contractors still have a difficult time with installations. In addition to providing support to the customers, Hydropoint's staff was also able to provide further assistance to the installers during difficult installations.

The Weather TRAK Residential ET Controller only allows for twelve irrigation stations. This does not allow for easy conversion from a standard controller. Most residential landscapes in Santa Barbara County need anywhere from 18 to 24 stations available. The problems that arise from the lack of stations on the controller include: inability to provide a new controller to customer because physical restraints on merging stations; difficulties in finding appropriate stations to merge to reduce the station number to 12; and confusion on the part of the homeowner/installer regarding the installation and programming of the controller.

The program partners worked closely with their customers, the gardeners and the local installers to ensure the proper installation and programming of the WeatherTRAK controller. At the beginning of the program, the partners had hoped that the customers and/or their gardeners would be able to provide information about their landscapes that was needed to program the controllers properly. However, when the programming sheets were left with the customers, they were not completed so agency staff included this task in their site visit. In addition, customers did not use their soil probes or the Adjustment Brochure to fine-tune the controller after installation. Rather, they would call their installer and/or Hydropoint Customer Service for assistance. The installers were instructed to have the customers call Hydropoint and Hydropoint would lead them through the adjustment process.

While the Santa Barbara County ET Controller Distribution and Installation program partners have experienced some challenges, there are significant benefits to the WeatherTRAK ET Controller technology that are major improvements in saving water over the conventional irrigation controllers currently on the retail market for residential use. With fine turning and hand holding, the program partners are achieving significant savings in many of the sites using the Weather TRAK irrigation controller.