

# WATER CONSERVATION NEWS

*“Building sustainability, reliability, and accountability through efficient water use”*

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## **Results of 2002 Water Use Efficiency Grant Competition**

*By Marsba Prillwitz*

The Consolidated Water Use Efficiency 2002 Proposal Solicitation Package (PSP) was released on January 4, 2002. There were three components in this PSP:

- Proposition 13 Agricultural Water Conservation feasibility study grants,
- Proposition 13 Urban Water Conservation capital outlay grants, and
- A California Department of Water Resources Water Use Efficiency grant.

No specific authorizing legislation and no State or federal funding became available during the year for the DWR-WUE component; therefore no projects were funded under that category.

A public workshop was held in Sacramento May 23, 2002 to announce the draft funding recommendations. Applicants were notified by e-mail about the workshop and were also given an opportunity to comment via e-mail, fax, or letter. Four workshops were also held in early January in Modesto, Concord, Los Angeles, and Chico. Application materials were made available at the workshops, on DWR's Web site, and by request.

A total of 210 proposals were received (24 for Proposition 13 Agricultural Water Conservation feasibility study grants, 116 for Proposition 13 Urban Water Conservation grants, and 70 for the unfunded DWR Water Use Efficiency grants). This represents more than \$117 million in funding requests.

The project review and selection process, stretching over a two-month period, was composed of three key stages: eligibility and technical review, panel review, and the WUE Agency Team review. Projects were evaluated based on five primary criteria:

- 1) relevance and importance;
- 2) technical/scientific merit;
- 3) qualifications of the applicants and cooperators;
- 4) costs and benefits; and
- 5) outreach, community involvement and acceptance.

CALFED reviewed and approved the WUE Agency Team's final funding package May 28, 2002, and DWR's Director approved the final funding package June 7, 2002.

Funding highlights include

- Overall, staff recommended awarding \$9,591,958 in grant funding to 29 projects. This represents \$8,873,956 in grants to 21 urban projects and \$718,002 in feasibility study grants to 8 agricultural projects.

*Continued on page 2*

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*DWR does not endorse any of the businesses or consulting firms mentioned in this newsletter, since there may be others that offer the same or similar services*

## Results of 2002 Water Use Efficiency Grant Competition

(continued from Page 1)

- Projects recommended for funding are located throughout the State. Of the eight Proposition 13 Agricultural Water Conservation Feasibility Study projects recommended for funding, three are in the Sacramento Valley, two in northern California, and three in the San Joaquin Valley. Six projects will study the feasibility of various infrastructure improvements. The other two are related to water measurement or management technology.
- Of the 21 Proposition 13 Urban Water Conservation Capital Outlay projects recommended for funding, 11 are in northern and 10 in southern California. Based on applicant's estimates, these projects will save a total of 152,109 acre-feet of water (for a summary of the projects, see the table below).
- Eighteen million dollars are budgeted for 2002-2003 for Proposition 13 Urban Water Conservation capital outlay projects. The next grant application package will be offered this fall.
- Another \$30 million of Proposition 13 funding is available for agricultural water conservation capital outlay loans. The Agricultural Water Conservation Program Loan Application Package will be available this fall also.

For the full report about the 2002 grant process, go to [www.dpla.water.ca.gov/grants-loans/G5.html](http://www.dpla.water.ca.gov/grants-loans/G5.html). For any other information contact Marsha Prillwitz at (916) 651-9674, e-mail [marshap@water.ca.gov](mailto:marshap@water.ca.gov).

Summary of Urban Projects Recommended for Funding by Project Type

Project type	# of projects	\$ amount
Infrastructure	5	4,665,249
Commercial, industrial, institutional	5	1,687,081
Meters	3	1,411,348
Landscape irrigation, including ET controllers	4	501,278
High efficiency washers	2	495,000
Toilets	2	114,000
<b>Total</b>	<b>21</b>	<b>8,873,956</b>

### Mission Statement of the Office of Water Use Efficiency

"To advance the efficient management and use of California's water resources in cooperation with other government agencies and the private sector through technical and financial assistance."

## ***Marsha Prillwitz Receives Lifetime Achievement Award***

Marsha Prillwitz, Senior Environmental Scientist with the Office of Water Use Efficiency, California Department of Water Resources, was recently honored with the Lifetime Achievement Award from the American Society of Irrigation Consultants (ASIC). She becomes the sixth recipient of the award since 1984. The award, presented during the organization's recent annual conference in Tucson, is given to an individual who has supported the principles and goals of the ASIC while making significant contributions to the irrigation industry. "Marsha is a pioneer in

the effort to conserve one of our most precious commodities — water," said Brian Vinchesi, president of ASIC. "Her record of success working with the irrigation industry makes her more than worthy of this honor."

During the past 15 years, Marsha Prillwitz has focused on promoting sustainable water use practices and water conservation and has conducted and led research related to landscape and agricultural water management. Her efforts have led to the adoption of several programs and

initiatives, including California's Model Water Efficient Landscape Ordinance and the California Landscape Water Management Program. And, her message of water conservation has been carried throughout the United States and internationally to South America, Canada, Italy, France and Spain.



*Marsha Prillwitz with her lifetime achievement award.*



## ***Greg Smith Moves On***

As this issue of Water Conservation News is going to print, I am getting ready to leave on a trip to Turkey. I am also leaving the Water Use Efficiency Office after six years with the Urban Water Management Planning Program. I am going to work in a new program with the Statewide Planning Branch organizing data for the Division of Planning and Local Assistance and the California Water Plan.

I have worked through one cycle of urban water management plans. I helped put together review guidelines for urban water management plans many years ago. I worked to review plans and coordinate with the California Urban Water Conservation Council. Each water utility that submitted an urban water management plan sometime in the last two years should have received a letter from the Department summarizing our review of its plan.

My decision to leave Water Use Efficiency was not an easy one. I believe water conservation is a way of life, not just a job. Those of you who have visited my home

know that I am proud of my lupins, native bunch grasses and blue oaks. I believe that most of us who have chosen to work in this area can be just as impassioned about the subject. Truly it has been a pleasure to work with you to further this goal.

In my new position, I will help the Division of Planning and Local Assistance develop a comprehensive data management system. This is an ambitious undertaking, with many exciting opportunities. The system shall one day include information on climate, water supply, water quality, land use and water use. In the best of all possible worlds, the system will make data available over the Web by water agency, county and watershed. I will also continue to work with urban water suppliers, and incorporate information from urban water management plans into this data system. Someday you may get a request from me for GIS coverage of your agency's service area. In the meantime, feel free to say "Hi," and ask me about my trip to Turkey. I can be contacted via e-mail at [gregs@water.ca.gov](mailto:gregs@water.ca.gov).

## ***Oroville Gets Country's First Solar Wastewater Treatment Plant***

In August 2002, the Sewerage Commission-Oroville Region (SCOR) broke ground on the first solar-powered wastewater treatment plant in the United States. The current plant serves 15,000 families and numerous industries daily in the greater Oroville area north of Sacramento (California). The SCOR treatment plant treats approximately 1.2 billion gallons of wastewater annually. The power generated from the 520 kW solar array will provide enough electricity to treat 80 percent of the wastewater. The system, which will go on line in November, is also the largest dual-tilt solar photovoltaic (PV) array in the world and the fifth largest solar energy system in the U.S. the SCOR plant will be the only wastewater treatment plant in the U.S. to be powered primarily by the sun, and will become a model for similar public utility projects across the country. The PV array will produce enough electricity to supply the equivalent of 200 average homes.



## The Need for CIMIS “Non-Ideal” Site Study

By Bekele Temesgen

The California Irrigation Management Information System (CIMIS) manages a network of over 120 automated weather stations that collect weather data from regions throughout California. The collected data are transferred to a central computer in Sacramento and used to estimate reference evapotranspiration (ET<sub>o</sub>). ET<sub>o</sub> is the amount of water that is lost to the atmosphere by the combined processes of evaporation and transpiration from standardized grass and/or alfalfa surfaces. The data are then made available to the public at [www.cimis.water.ca.gov](http://www.cimis.water.ca.gov).

The standardization of surfaces over which the weather stations stand was necessitated by the spatial and temporal variability of factors affecting evapotranspiration (ET) and the difficulty this variability creates in formulating equations for estimation of ET. Factors affecting ET include solar radiation, air temperature, relative humidity, and wind speed. These parameters are interdependent, spatially and temporally variable, and highly dependent on the nature and properties of surfaces over which their measurements are taken.

Researchers have agreed on using grass and alfalfa as standard surfaces because of their adaptability to various climates and their biophysical similarity to many agricultural crops. The standardized grass and/or alfalfa surfaces on which the weather stations rest are known as reference crops whereas the weather stations that are sited on such surfaces are referred to as reference stations. This standardization requires, among other things, that the reference crops have adequate fetch in all directions, completely shade the ground, and have ample supply of water. These requirements were

designed to simulate microclimates that are common over most irrigated surfaces.

Weather stations that do not conform to the basic definition of reference stations are commonly known as “non-ideal” sites. Urban environments are likely to have “non-ideal” sites because of space limitations for adequate fetch and obstructions from buildings and other structures. Weather data from “non-ideal” sites are likely to be erroneous in representing the microclimates of irrigated surfaces. Air temperature on warm summer days, for example, can be higher in a city by as much as 8 °F compared to adjacent vegetated surfaces with no water stress. This difference is mainly because of what is known as an urban heat island, a phenomenon resulting from buildings and paved surfaces in the city absorbing more solar energy and converting it to heat.

Irrigated surfaces modify the local microclimates by converting most of the incoming solar energy into ET thereby resulting in cooler, humid, and more stable atmospheric boundary layers. Therefore, data from most “non-ideal” sites overestimate ET<sub>o</sub> and should not be used for irrigation planning, design, and/or management without necessary adjustments. These adjustments can be made by studying the effects of “non-ideal” weather station sites on measured weather parameters and developing correlations between the “non-ideal” site data and the corresponding data from a nearby reference station such as the standardized CIMIS stations.

Originally designed for agricultural purposes, CIMIS has adopted the weather station standardization and has developed the following major criteria in selecting sites for its weather stations:

- Site the station within the region it is meant to represent.

- Do not locate a station in a transition area between different climates.
- Avoid topographic depressions and high points.
- Avoid wind obstructions within 100 yards, abrupt crop/vegetation changes within 50 yards, roads within 50 yards, small rivers within 100 yards, larger rivers within 200 yards, and lakes within 1,000 yards of site.

Most CIMIS stations, with the exception of a few, now meet these criteria. Although the agricultural sector is still the predominant user of CIMIS data, the demand has expanded over the years to include other sectors. Currently, CIMIS data is being used by landscape managers, golf course and park managers, pest control advisors, fire fighters, air quality controllers, university researchers, and many more. Increased demands for the CIMIS data from non-agricultural sectors imply the need for more representative weather stations in those areas of interest. However, most of these areas do not have sites that meet the criteria for standardization. This is especially true for urban and mountainous areas. Therefore, it has become necessary to undertake “non-ideal” site studies using paired “non-ideal” and reference weather stations.

A recent study by the University of California, Davis extension program has outlined scenarios under which “non-ideal” weather stations can be utilized. Although this study was conducted on a smaller scale, it has clearly indicated the potential for using weather data from “non-ideal” sites for irrigation purposes. The study also suggested a scenario in which certain weather parameters can be measured at the “non-ideal” sites and the remaining parameters taken from a nearby CIMIS station, provided it has been determined that the latter do not change

*(Continued. See “CIMIS” on page 18.)*

## ET Controller Use Increasing

By Julie Saare-Edmonds

Evapotranspiration (ET) based irrigation controllers are intended to take guesswork out of irrigation scheduling for homeowners and property managers. If the controllers also minimize water use, they could be an ideal solution to the problem of over-watering landscapes sought by many water conservation professionals. ET controllers work by using either historical or real-time weather data (such as from the CIMIS network) for the region in which they will be used. Solar radiation levels, temperature, humidity and wind are the primary weather factors that drive much of the water use in landscapes and have been recorded throughout California for many years. This historical record of weather patterns can be used to create a chart which demonstrates the water needs (in inches, like inches of rain) of plants living in a certain area through the year. (See figure 1.) Controllers that use historical weather data will create a watering schedule based on these historical values. Most of the time a historically based schedule will provide the correct amount of water for a certain time period, but as everyone knows weather is not always predictable, so the schedule may need to be adjusted. Controllers that use real-time weather conditions will make adjustments to the schedule automatically when a change in the weather indicates.

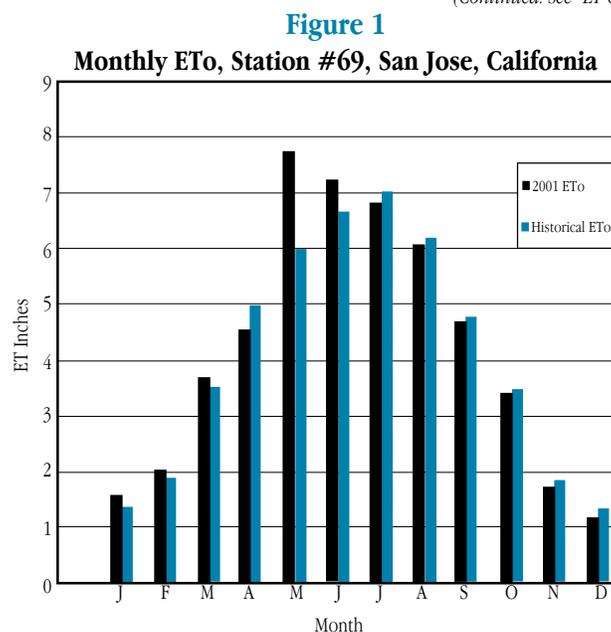
Earlier this year East Bay Municipal Utility District (EBMUD) began a pilot study of the use by homeowners of (ET) irrigation controllers at 100 locations within the EBMUD service area. According to Scott Sommerfield, all types of accounts are eligible in the EBMUD pilot program including residential, commercial and industrial. The selection process the District is employing involves sending out letters to randomly selected customers asking if they would be interested in participating in the study. Those that

reply will receive a site visit from an EBMUD technician to evaluate the landscape, but it is up to the customer to install the irrigation controller. Studies in other areas have shown the technology of ET based irrigation controllers as being reliable and well suited for maintaining landscapes and reducing runoff. The primary difference between this study and previous studies is that the property owner will install the controller using printed instructions and technical assistance from the controllers' manufacturer. In previous performance studies, such as at Irvine Ranch Water District, trained individuals installed the ET controllers. The results of this study should demonstrate whether or not ET irrigation controllers can be an effective tool for efficient landscape water use by the average customer.

Other communities in the San Francisco Bay area are also studying the effectiveness of using ET controllers. The City of

Santa Rosa's Water Conservation Program will begin testing ET controllers this year at 16 commercial sites with dedicated landscape water meters. The city will test them next year at 80 single-family residential sites. According to Colin Close, Water Conservation Representative for the City of Santa Rosa, the commercial sites will use one brand of controller and the residential will utilize three or four (if manufacturers have them available) and will be installed by a qualified consultant. Based on the results of these studies, Santa Rosa hopes to establish a cost-effective rebate program for ET controllers as early as 2004. In Marin county, Charlene Burgi of Marin Municipal Water District (MMWD) states that their contractor is in the process of installing ET controllers at mixed-use sites throughout the MMWD service area. This pilot study, which will last two years, will be evaluating ET controllers at residential sites, commercial sites with dedicated landscape meters, parks, schools and

(Continued. See "ET Controller" on page 18.)



**Figure 1** demonstrates how current ETo can vary from Historical ETo. During these times an ET controller that receives real-time data can adjust the irrigation schedule to match marked changes in the weather. For example, the ETo in May 2001 was higher than an average year. In contrast, from July to December 2001 the monthly ET was less than an average year. A self-adjusting ET controller would water less to match the decreased demand.



## The Right Plant for the Right Place

By Julie Saare-Edmonds

Recently Metropolitan Water District of Southern California (MWD) announced a new long-term program of water conservation that promotes the use of native plants in landscaping. This program is encouraging to those seeking reduced landscape water use in that it is an easy way for gardeners to modify their landscapes in such a way that the gardens can become more sustainable and improve the natural environment without sacrificing beauty.

Landscaping with native plants is a wise approach to dealing with water shortages throughout the State. Native plants have the advantage of being adapted to the climate and soils of the regions where they occur. Most of California's climate zones receive less rainfall than much of the world and it is also very seasonal, with the majority falling in a short time period. In spite of this, many of the non-native ornamental plants used in the landscape industry come from Europe, Asia and the eastern U.S. where summer rain is common. The result of using these plants is obvious; we must simulate summer

rainfall through irrigation. With all this said it's not enough to just plant native plants and expect water use to decrease.

The key to saving water through landscaping with native plants is through proper irrigation. This is very critical because some native plants are easily damaged or killed by too much water, *Ceanothus* and Blue Oaks are prime examples. In terms of water use efficiency, many native plants can save landscape water because they don't need as much water as many non-native plants used in landscaping and can survive droughts and the watering restrictions that sometimes follow. Most California natives, such as those from oak woodlands, grasslands and chaparral plant communities can survive and even flourish on very little water after establishment, but they will use more water if it is made available to them. Some plants, despite being California natives do require a significant amount of summer water and would be irrigated like any other ornamental plant. Examples of these would be Coast Redwoods, North Coast *Rhododen-*

*drons*, riparian and wetland plants. As with any landscape project, careful planning and the right plant selections will make the change to a more natural landscape easier.

In addition, native plants offer more benefits to local wildlife than non-native plants and will interact with the local plant community fostering greater genetic diversity. Esthetically, native plants fit better in their surroundings than many non-natives, for example, palm trees growing in the Sierra Nevada foothills may look as out of place as redwoods would in Palm Springs. But if Matilija Poppies were planted in the Sierra Nevada Foothills and Palo Verde or California Fan Palms were planted in Palm Springs, those landscapes would benefit from having the right plants for the right places. The "Right Plant for the Right Place" is a cornerstone idea in the practice of Integrated Pest Management and good landscape design. It makes sense, and in many cases the right plant is a native plant.

For more information contact Julie Saare-Edmonds at (916) 651-9676, e-mail [julieann@water.c.agov](mailto:julieann@water.c.agov).



## DWR's Agricultural Drainage Reuse Program

By Clinton Williams

In 2000 the California Department of Water Resources developed a six-year plan to distribute approximately \$1 million annually to projects that would help with on-farm drainage management. In addition to the annual funding allocations, DWR also developed three funding objectives. The first objective was to find feasible, acceptable and cost effective means to reuse agricultural drainage water. The second objective was to identify technologies and practices that will control drainage water and the third was to find beneficial uses of drainage water and the constituents found in it.

Over the first two years of the program \$2.4 million was allocated for projects. In June 2002, proposals for funding from the

current year's budget were accepted and, in July, 11 projects totaling \$1.4 million were chosen for funding. The projects can broadly be categorized as

- drainage reuse and reduction,
- monitoring the effects and sustainability of drainage reuse and reduction, and
- salt harvesting.

In addition the projects funded have the common goal of increasing California's water supply by finding ways to use agricultural drainage without impacting the environment. In March 2002, results from ongoing and previously funded activities were presented at a daylong conference in Sacramento that was attended by interested parties. Another such conference will

be held in March 2003 where new findings will be presented and the future direction of the program discussed and refined according to needs.

Funding for future agricultural drainage reuse and reduction is expected to be approximately \$2.4 million over the next three years. In March 2003, another round of proposals will be solicited with funding expected to be available after June 2003. Interested parties are encouraged to begin formulating proposals that will meet the objectives of the program. Contact Manucher Aleml at (916) 651-9662 or Jose Faria at (559) 230-3339 to be notified when the PSP is released and to be included on the mailing list.



## Spread the Word Not the Weeds

By Julie Saare-Edmonds

A weed is any plant growing where it's not wanted. In California there are many plants that are growing not only where they are not wanted, but also where they are not native. The most prevalent of such introduced weeds is the Yellow Starthistle. Yellow Starthistle is native to the Eastern Mediterranean and was most likely brought here accidentally in cattle feed. Unlike the Starthistle, however, some weeds have been introduced intentionally as garden plants, but if they escape the confines of the garden they become invasive plants (thus making them someone's weeds), sometimes with serious consequences.

Invasive plants are so successful because they can out-compete native vegetation in many areas. They are usually very tough, able to withstand drought, sun and shade, grow rapidly, and usually produce seeds and suckers profusely. Invasive plants degrade habitat for wildlife by displacing native plants. When food plants are displaced, it affects many species of wildlife including insects, reptiles, birds and mammals. Invasive plants are frequently problems in rangeland where they disrupt natural forage. An example of one such invasive plant is Ailanthus altissima or Tree of Heaven. This plant was first brought to the eastern United States as a garden plant from Europe, although it is a native of China. During the gold rush era immigrants from China brought Ailanthus directly to the western United States. This plant fits the description of a typical invasive weed: seeds and suckers profusely, can stand drought and can grow just about anywhere, including polluted waste sites and out of cracks in concrete. It is the weedy tree frequently seen in abandoned industrial areas and along freeways.

Poisonous plants such as Oleander can kill cattle, sheep, goats, deer and bighorn sheep and are a serious threat to animals living in marginal habitat where there is

little suitable food available. In riparian areas (along rivers and streams) invasive plants are especially problematic because of the sensitive nature of the habitat and the availability of water which allows invading plants to flourish. One such plant is Tamarix, a native of Spain, also known as salt cedar. Tamarix is a very serious threat to riparian areas in deserts and other dry areas. Tamarix employs a facultative water-use strategy in that when water is abundant it will transpire large amounts of water, which in turn depletes the soil of moisture making it difficult for other plants to survive. Tamarix also makes soils highly saline by absorbing salts from the soil and water and concentrating them. The concentrated salts are then excreted from the leaves, causing the surrounding soil surface to be toxic to many plants. In order to maintain the quality of riparian areas, invasive plants must be removed; this is done by spraying herbicides, manually removing plants and in some areas, releasing goats to forage. All of these treatments are expensive, time consuming and can be disruptive to the watershed. They usually have to be repeated for any long-term effect.

Several introduced aquatic plants have also become a serious nuisance in California. Among these are Hydrilla, Salvinia (water ferns) and Water Hyacinth. These plants grow very quickly, making eradication efforts very difficult and expensive. They create problems everywhere they occur by clogging waterways and canals. They also get into hydroelectric and pumping equipment, tangle in boat propellers, clog fish screens, obscure water hazards, and provide breeding grounds for mosquitoes. Like terrestrial species, they displace native food plants and degrade habitat for aquatic species.

To find out about invasive or quarantined plants look at the California Department of Food and Agriculture Web site at

[www.cdffa.ca.gov](http://www.cdffa.ca.gov). For CDFA's list of quarantined plants select "Plant Health and Pest Prevention Services," then select "Plant Quarantine Manual." Other sources of information include "Noxious Times," a newsletter dedicated to the problem of invasive weeds and is available online at: <http://pi.cdffa.ca.gov/noxioustimes>, the California Exotic Plant Pest Council Web site, [www.caleppc.org](http://www.caleppc.org) and Invasives at <http://tncweeds.ucdavis.edu>.

### Some Worst Weed Offenders

Acacia, several species ·  
 Brooms, Cytisus, Genista, Spartium·  
 Chinese Tallow Tree, Sapium sebiferum·  
Cotoneaster, some species·  
Eucalyptus, several species·  
 Giant Reed, Arundo donax·  
 Glossy Privet, Ligustrum lucidum·  
Hydrilla, Hydrilla verticillata·  
 Mint, Mentha sp.·  
 Pampas Grass, Cortaderia selloana,  
Cortaderia jubata·  
 Purple Loosestrife, Lythrum salicaria·  
 Russian Olive, Elaeagnus angustifolia·  
 Scarlet Wisteria, Sesbania tripetii·  
 Salt Cedar, Tamarix, several species·  
 Water Ferns, Salvinia sp.·  
 Water Hyacinth, Eichhornia crassipes

### To Reduce the Threat of Invasive Plants

- Don't buy plants that are known to be invasive.
- Don't release aquatic plants, these can be from aquariums as well as outdoor ponds. If you don't want it anymore put it in the compost pile.
- Don't bring quarantined plants into California.
- Be careful with your plant choices if you live near a river or stream; these areas are especially prone to invasion.
- If you live where wildlife might forage in your yard, avoid poisonous plants. *Sunset Western Garden Book* mentions toxicity in plant descriptions.



## 2002 Recycled Water Task Force: Progress and Milestones

By Water Recycling and Desalination Staff

The 2002 Recycled Water Task Force has steadily progressed toward the fulfillment of its mission. The task force is a cooperative effort of the California Department of Water Resources, the State Water Resources Control Board, and the Department of Health Services. Its goals consist of identifying opportunities for the beneficial use of recycled water and proposing recommendations for removing impediments and constraints to increasing the safe use of recycled water. The task force undertaking is of paramount importance and fits categorically in the statewide efforts toward a more comprehensive and sustainable water resources management strategy. Recycled water is considered as new water that supplements the state water budget. This new water has the special characteristic of being drought proof, making it a reliable source of water.

Three task force meetings were held in April, June, July and September 2002, in Sacramento, Los Angeles, San Jose and again in Sacramento, respectively. A public discussion session has also been organized to reach out to the public and solicit input from various interested parties. The session took place on May 8, 2002, in Monterey in conjunction with the Association of California Water Agencies' 2002 Spring Conference. A second public discussion session is scheduled to take place in Los Angeles on October 10, 2002. This latter public discussion session will

be in conjunction with the California Water Policy Conference (a.k.a. POWER).

During the course of the task force deliberations, and by soliciting input for various interested parties and the public, a number of issues have been identified and put before the task force for consideration. The broad array of issues identified covers all the aspects of recycled water including economical, regulatory, environmental, health, and social aspects. To help tackle these issues six workgroups have been formed, the membership of which includes task force members as well as outside experts, will analyze and study in-depth the issues assigned to them and present white papers to the task force on their respective subjects. The workgroups are:

1. **The Science and Health / Indirect Potable Reuse Workgroup.** The main charge of this group is to examine the scientific basis for current reuse standards, address the importance of emerging issues of scientific and public health concern, identify any areas of research needs, and substantiate the need to reconvene the California Indirect Reuse Committee and suggest its scope of work, and make any other recommendations to remove impediments to water reuse.
2. **The Public Education and Outreach Workgroup.** The main charge of this group is to address issues related to public perception and acceptance, public education programs, and social equity in the



Assemblywoman Jackie Goldberg (left), author of Assembly Bill No. 331 addressing the Recycled Water Task Force during its first meeting on April 3, 2002.

distribution of recycled water. In addition, the workgroup will identify the entities that need to be aware of the Recycled Water Task Force and recommend ways and venues to reach such entities and make them involved in the issues relevant to the task force mission.

3. **The Plumbing Code/Cross-connection Control Workgroup.** The main charge of this group is to examine Appendix J of the Plumbing Code, and related regulations, as it pertains to recycled water. Next, recommend amendments in order to advance the safe delivery and use of recycled water.
4. **The Funding / CALFED Coordination Workgroup.** The main charge of this group is to identify opportunities for financing recycled water projects and to propose means to coordinate the efforts of various state and federal agencies in terms of financing these projects.
5. **The Regulations and Permitting Workgroup.** The main charge of this group is to review the laws, regulations, and regulatory agency practice pertaining to recycled water, to suggest amendments to remove the impediments to the safe use of recycled water, and to propose uniform regulatory application of standards throughout the state.
6. **The Economics Workgroup.** The main charge of this group is to develop criteria for assessing the direct and indirect economic costs and benefits of

### ***The State Recycled Water Task Force***

In October 2001, California's Governor Gray Davis formed the State Recycled Water Task Force by signing AB 331 into law. The Task Force, a blue-ribbon panel of experts on the safe and beneficial uses of recycled water, started on April 3, 2002, is a cooperative effort of the California Department of Water Resources, State Water Resources Control Board, and the State Department of Health Services. Richard Katz, a State Water Resources Control Board member, chairs the Task Force. The purpose of the Task Force is to recommend ways to increase California's supply of recycled water.

(Continued. See "Progress and Milestones" on page 19.)



## *The Grass IS Greener in El Dorado Hills' Serrano Development*

*By Nancy King*

One of the strategies of the 2002 Recycled

Water Task Force is to look at previous endeavors that have made water recycling successful in California. Since the early 1900s, California has a history of many successful recycled water applications with agricultural and landscape irrigation. One recent endeavor is the acclaimed northern California's Serrano Recycled Water project located in El Dorado Hills, El Dorado County. Serrano is most notable for being a master-planned golf course community covering 3,500 acres in the rolling Sierra foothills. However, the development owes its ongoing growth to the identification of recycled water as the main water supply for irrigation. This identification made it possible for the Serrano development to continue as planned.

In 1989, the El Dorado Irrigation District (EID) declared a water emergency because limited water supplies of the district could cause future rationing and water shortages. In 1990, the developers, Serrano Associates LLC, approached the district with their plan to incorporate recycled water capability into the community's infrastructure. They proposed to fund and to construct tertiary treatment, filtration, disinfection, and pumping facilities at the Deer Creek Wastewater Treatment Plant. The developers also included a distribution system, which consists of the installation of purple pipes, distinguishing recycled water from drinking water pipes, to deliver recycled water from the El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant.

In 1991 when recycled water was identified as a water supply for irrigation, the Serrano development of a golf course and subdivisions moved forward. The original purpose of the project was to allow the developer to irrigate common area landscapes such as golf courses, greenbelts,

parcs and playing fields. These common areas were brought online with recycled water in 1996. Now since 1999, a total of 1,000 residential lots have been developed with the recycled water infrastructure in place. These homeowners can now reap the benefits of the less expensive digested, filtered, and disinfected recycled water to irrigate their private front and back yards. Serrano has a total of 3,500 residential lots slated for development with the recycled water infrastructure. Using recycled water for irrigation preserves drinking water and environmental water for their intended purpose.

Serrano's innovative project provides recycled water in a reliable, practical manner that provides the best use of water resources, while protecting public health and the environment. The project's master plan emphasizes the optimization of recycled water from EID's two wastewater treatment plants: El Dorado Hills (3.0 MGD), and Deer Creek (3.6 MGD). The Serrano project not only minimizes wastewater discharge to the environment, it maximizes reuse opportunities while increasing the availability of drinking water supplies.

Recycled water is processed from water discharged into the wastewater collection system. The water is treated to remove impurities and sediments, and disinfected. This level of treatment is called tertiary and is close to meeting the state and federal drinking water standards. To meet the regulatory requirements, the Regional Water Quality Control Board and the State Department of Health Services monitor this water. After treating the water to this standard, the majority of municipalities discharge the water into the river system. Then downstream another city picks up the water, treats it to the final level, and distributes it for drinking water purposes.

However, in the El Dorado Hills development, the water is recycled instead of

discharged into the stream. Homeowners use the recycled water by installing the recycled water irrigation system. To distinguish the recycled water from drinking water the Health and Safety Code mandates the use of purple pipes, which can be purchased in certain home improvement stores. Homeowners receive a manual to correctly and safely install the system. After completion, an inspector checks the construction and performs a cross connection test to assure the drinking and recycled water systems are not connected. With a correctly installed system, the recycled and drinking water lines are not connected. Furthermore, an extra safety factor is provided through a backflow prevention mechanism installed on the drinking water meter during the Serrano homes' construction. If a connection of the drinking and recycled water system were to occur, this device would prevent recycled water from flowing into the drinking water pipes.

The treatment facilities produce high quality recycled water meeting unrestricted use via Title 22 standards. Although close to drinking water standards, the recycled water in the Serrano development is not intended to drink and is not to be used in swimming pools. The homeowner sees the benefits in cost reductions, as the recycled water is less expensive than drinking water. Another benefit for these homeowners during drought years is that they, as recycled water users, may have fewer restrictions placed on their landscape water needs than their non-water recycling neighbors. Thus, recycled water helps the flowers to bloom and grass to grow greener in El Dorado Hills.

For further information about the project, contact Jill Shannon at (916) 939-3333, e-mail [jshannon@parkerdevco.com](mailto:jshannon@parkerdevco.com), or Nancy King at (916) 651-7200, e-mail [king@water.ca.gov](mailto:king@water.ca.gov).

## ***Groundbreaking for Encina Basin Water Reclamation Program, Phase II***

On July 10, 2002, the City of Carlsbad hosted a groundbreaking ceremony to celebrate the beginning of its Encina Basin Water Reclamation Program, Phase II Project. There are four major components that make up the Phase II Project. The first component is the construction of the Carlsbad Water Recycling Facility. The Recycling Facility will be owned and operated by the Carlsbad Municipal Water District and will process 4.0 million gallons per day (mgd) of recycled water through an advanced tertiary treatment process. The water quality will meet the Department of Health Service's highest requirements for recycled water suitable for body contact. Future phases of the Reclamation Program will allow the production of the facility to be increased up to 16.0 mgd. The second component of Phase II is the construction of over 20 miles of pipelines ranging in size from 4

inches to 24 inches in diameter. The third component is the construction of three new Recycled Water Pump Stations. These stations can pump a combined flow of over 17,000 gallons per minute and are used to deliver recycled water throughout the City for irrigation purposes. The final component of Phase II consists of improvements to the existing 54 million-gallon Mahr Reservoir, which is owned by Vallecitos Water District. These improvements will help maintain a high quality of water stored in the reservoir.

Carlsbad currently lacks a sufficient supply of recycled water to satisfy the demands of its recycled water customers during the summer months. The Phase II Project will allow Carlsbad to produce and distribute an additional 987 million gallons (3000 acre-feet) of recycled water per year and serve an additional 850 recycled water

customers. For more information about the Encina Basin Water Reclamation Program, contact the City of Carlsbad Engineering Department at (760) 602-2768.



***Funding agencies for the Encina Basin Water Reclamation Program, Phase II.***  
*(From left to right) Dennis Wolf (BUREC), Bill Eubanks (MWDSC), William Steele (BUREC), Fred Thompson (Boardmember SDCWA), Ken Weinberg (SDCWA), Maria Mariscal (SDCWA), Diana Robles (SWRCB), Bill Jacoby (SDCWA) and Hossein Juybari (SD WasteReuse Association).*

## ***Recycled Water—A Key to the Future***

*By Mary Brown, Public Affairs Representative, Elsinore Valley Municipal Water District*

Recycled water begins as wastewater from our homes and businesses. It is then treated, filtered and disinfected, often discharged into a water body such as a river, stream or ocean. The Elsinore Valley Municipal Water District (EVMWD), however, provides an additional level of treatment, called "tertiary" treatment which uses a state-of-the-art ultraviolet system to remove 99.9 percent of pathogens. "Tertiary" treated water is so highly cleaned that it is safe for human contact, and more than 27,000 acre-feet of recycled water are used throughout Riverside County each year. An acre-foot is approximately 326,000 gallons of water, enough water for two average families for one year. Recycled water uses include irrigating crops, golf courses, fishing lakes,

landscape irrigation and wetlands enhancement.

Recycled water is an affordable and reliable resource and will play a significant role in Lake Elsinore's future. Long plagued with severe seasonal evaporation losses, Lake Elsinore is a natural recreational lake that annually loses 14,000-acre feet of water to evaporation. In January 2002, the Regional Water Quality Control Board granted EVMWD a permit to discharge recycled water via its Regional Wastewater Treatment Plant into Lake Elsinore for two years under a pilot project to research the effects of recycled water on the lake—the treatment plant already discharges four million gallons of tertiary treated water a day into the Temescal



*Lake Elsinore Mayor Genie Kelley and EVMWD board president Phil Williams turn the purple valve to release recycled water into the channel that travels to Lake Elsinore.*

Creek. On June 28, 2002, members of the Recycled Water Task Force, the EVMWD Board of Directors and staff and Lake Elsinore City officials joined to celebrate the first release of recycled water into Lake Elsinore. This is the first time that recycled water has been released into a recreational lake in California. About 2,000-acre feet of recycled water is being released in the remaining six months of 2002.

## Water Consumption in “Office” Buildings

*By Dale Lessick, Irvine Ranch Water District*

Irvine Ranch Water District has several sites at which the water for the building and landscape irrigation surrounding the building are separately metered. Of those sites, almost 300 accounts have been classified as “office-like”—needing water for only restrooms, kitchens and ordinary cleaning. Although these accounts are not all technically offices, their water needs definitely warrant office classification. IRWD also has five buildings in which the toilets are served by reclaimed water so, in effect, the toilets for those building are on their own meter. With all this rather convenient real-world data, an analysis was done to determine how much water employees use, given high or low volume toilets (pre-1991, 3.5+ gallons per flush versus post-1996, 1.6 gpf toilets).

Since IRWD did not inspect each of the 283 accounts in this analysis, it cannot be known, with certainty, which sites actually have low-flow fixtures. IRWD also cannot determine, with certainty, which sites have leaking toilets, though the data suggests that approximately 15 percent of the sites have some type of a leak (these were kept in the analysis). Additionally, IRWD cannot say, with certainty, that the number of employees reported accurately reflects the number on site, though spot-checking suggests they are reasonably close, especially for the more recent years. Nevertheless, the post-1996 usage per employee was about half of the pre-1991 usage. This result is close to what one might predict, given that 1.6 gpf is about half of 3.5 gpf. The table *Water Consumption in “Office” Buildings (Gallons per day)* illustrates this result.

The analysis for the five toilet-only reclaimed water meters yielded less reliable results overall. Determining the number of people in IRWD’s operations plant was not dependable because so many of those employees were out in the field so much of their day. The property managers of the older, larger high-rises were also uncertain of the number of people as they track only “suites occupied” not population. The two most reliable buildings, IRWD’s headquarters and High-rise 3, however, yielded results similar to those in the first analysis and consistent with what we would expect: 1.6 gpf toilets used about half the water of the 3.5 gpf toilets. These results are show in the table *Toilet-only water use (Gallons per person per day)*.

**Water Consumption in “Office” Buildings (Gallons per person per day)**

Account Type	Average	2001	2000	1999	Comments
Account established and moved in before 1991 (85 accts)	11.00	10.62	11.21	11.17	Customer may have upgraded fixtures, but most likely has 3.5 gpf toilets
Account established prior to, but customer moved in after 1991 (92 accts)	10.08	9.19	10.19	10.87	New occupant may or may not have upgraded to 1.6 gpf toilets
Account established & customer moved in after 1996 (97 accts)	5.45	6.82	5.90	3.64	Probably have 1.6 gpf toilets.

**Toilet-only water use (Gallons per person per day)**

Location	Avg.	2001	2000	1999	1998	Date Constructed, Comments
IRWD HQ	9.37	8.68	8.48	9.87	10.45	1991, Most reliable people count
IRWD Plant	4.09	3.59	4.49	4.49	3.80	1994, People are mostly in the field
High-rise 1	7.81	6.94	7.14	6.95	10.20	Both Pre-1991, People counts were rough estimates. Both had leaks at some point and temporarily switched to the potable water meter.
High-rise 2	6.95	7.31	7.86	4.27	8.37	
High-rise 3	3.92	4.44	3.40	N/A	N/A	1999, People count reasonably accurate

## Wastewater Needs Drive South Bay Water Conservation

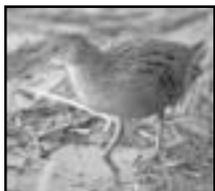
By Linden Skjeie and Russ Ficklin

While water conservation is usually implemented for supply benefits, maintaining the habitat of two endangered species is the primary driver behind significant water conservation (or flow reduction) efforts conducted by the San Jose/Santa Clara Water Pollution Control Plant (the Plant).

As part of its National Pollution Discharge Elimination System (NPDES) Permit, the Plant must maintain discharges of treated freshwater below 120 million gallons per day (mgd) to protect the salt marsh habitat of the South San Francisco Bay — home to the California Clapper Rail and the Salt Marsh Harvest Mouse. These two species cannot survive in the fresh water habitat that may be created when too much treated freshwater is discharged to the San Francisco Bay. To reduce flows and prevent the marsh conversion, the Plant implemented the South Bay Action Plans of 1991 and 1997. These plans identified several flow reduction strategies for decreasing discharge. The strategies, which include indoor water conservation activities and the use of recycled water, have been quite successful. Indoor water conservation efforts have achieved almost 6 mgd in water conservation since 1997 and 20 mgd since their inception in 1986. San Jose has just completed the most recent action plan with flows to the South San Francisco Bay averaging 107 mgd during the first half of 2002, significantly less than the flows of 1996 that prompted the 1997 revised South Bay Action Plan.

### Indoor Water Conservation

San Jose's indoor water conservation programs have focused on the residential sector where approximately 70 percent of the Plant's flows originate. Well known to



The California Clapper

the water conservation community, toilet use represents the largest indoor use

of water. So, ultra-low flush toilet (ULFT) programs have been the major focus. Because of the dual benefits of flow reduction and supply conservation, San Jose has maintained a cost sharing agreement with the Santa Clara Valley Water District since 1996. ULFT programs in the residential sector have included rebates, full service installation, fee-for-service installation, and ULFT distribution events (with and without installation incentives). In the business sector, San Jose implemented or supported ULFT programs utilizing rebates, vouchers, and full service installation.

San Jose also targeted non-ULFT conservation in businesses, through the Water Efficient Technologies program. This program provides incentives for the implementation of water-saving equipment and process changes in commercial and industrial applications. Wastewater flow audits were conducted with the largest of the Plant industrial dischargers to determine what process changes might reduce their flows.

San Jose has learned a lot about water conservation program design over the last few years. For example, of the people who replace their toilets with ULFTs using a rebate incentive, many would have replaced their toilet without an incentive—called “free-riders”—thus unnecessarily increasing program costs. To solve this problem, rebates were replaced with a ULFT distribution program, whereby participants stopped by occasional public events to pick up free ULFTs. Recent California Urban Water Conservation Council research has shown that ULFT distribution programs have a much lower rate of “free-ridership” than rebate programs. The fee-for-service program for single family homes proved less cost-effective than distribution and has been discontinued for the time being.

### Additional Contributors to Flow Reduction

In addition to indoor water conservation, which reduces influent (water coming into the Plant), San Jose also reduces the volume of treated wastewater that is discharged via the South Bay Water Recycling (SBWR) System. In the first half of 2002 an average of 7.4 mgd of recycled water was returned to the community for use in golf courses and large landscaped areas through the purple piping system developed by San Jose. Currently, funded SBWR programs will provide an additional 10 mgd in flow reduction and will include new pipelines, reliability improvements, and the construction of a reservoir. To reduce extraneous flows into the sanitary sewer system and ultimately into the South Bay, San Jose continues to locate and quantify sources of groundwater infiltration (GWI) into area sewers and develop a system for rehabilitating the sewer system to reduce GWI. It is anticipated that current projects will reduce groundwater infiltration by an additional 4 mgd.

### Next Steps

A cost benefit analysis of the flow reduction programs was recently completed to focus San Jose's efforts on the programs that provided maximum flow reduction, protected endangered species habitat and emphasized cost efficiency. The information from the analysis is being used to help San Jose plan for the period 2003-2008 that coincides with the Plant's next NPDES Permit. The success of these programs, coupled with the valley's economic slowdown means, for now, that San Jose can scale back its flow reduction efforts. With their multiple benefits, including pollution prevention and enhanced water



The Salt Marsh habitat of South San Francisco Bay

(Continued. See “Wastewater Needs” on page 13.)

## Lost Hills Reduces Lost Water



By Phil Anderson

The Lost Hills Water District, located in northwest Kern County, completed two CALFED Agricultural Water Use Efficiency projects in the spring of 2002. The purpose of these two projects was to prevent seepage losses to a saline shallow groundwater table. The project in Lost Hills Service Area 5 consisted of concrete lining of approximately 1.9 miles of existing unlined canals. CALFED contributed \$754,500 to this project and the District invested \$140,000. In Service Area 3 the project provided for concrete lining of approximately 1.4 miles of existing unlined canals with a CALFED funding of \$572,100 and District funding of \$78,000. These two projects provide three major benefits.

**Water conservation.** It is estimated that both projects were losing a total of 280 acre-feet per year at an estimated value of approximately \$80 per acre-foot during a normal water year.

**Drainage reduction.** The majority of the land in both Service Areas is not tile drained. Landowners who discharge to the existing evaporation pond system are charged a drainage fee of \$35 per acre-foot by the District. The resulting drainage reduction benefit for both projects is estimated to be approximately \$4,890 per year.

**Maintenance cost reduction.** A review of the District's maintenance cost determined that the annual maintenance cost for concrete lined canals is approximately \$600 per mile less than for unlined canals. This results in a savings of approximately \$2,010 in maintenance cost savings, primarily a reduction in weed control chemicals, labor and equipment to apply the chemicals.

The Lost Hills Water District covers approximately 72,183 acres of which 70,314 acres are dedicated to agriculture. Historically the major crop has been cotton, followed by barley, pistachios, almonds, grapes, olives, and alfalfa.

## Agricultural Management Council



It has been a busy summer for the Agricultural Water Management Council as it continues to bring together water interests in its aim to achieve more efficient water management. On June 24, the Council hired Assistant Executive Director Kathryn Charlton. Kathryn is a recent UC Davis graduate with a degree in agricultural economics. She will work on the Council's outreach program as well as on documents and materials essential to developing efficient water management plans at the district level.

The Council has been working hard to move forward the Cooperative Agreement between the AWMC, the Department of Water Resources, and the U.S. Bureau of Reclamation to fulfill the agreement's first objective to broaden participation in the AWMC program. It is expected that new membership will increase preparation of Water Management Plans as well as bring more farmland into the program. A Recruitment Marketing Plan has been devised including strategies on how to reach new members.

All agricultural water suppliers and organizations with an interest in agricultural water management are invited to participate in the Council. The AWMC

recruitment effort will begin with an analysis and identification of potential members. The Council will be contacting prospective water organizations. Letters will be mailed enclosed with the AWMC's newly developed brochure supplying quick facts about the Council, its program, and purpose. Brochures will also be available and distributed on a variety of occasions, such as the AWMC-sponsored workshops and Council-attended conferences.

At present, the Council is drafting a model Water Management Plan to assist future members with the development of their plans. The Council hopes providing a model will expedite preparation time by agricultural water suppliers. The model will serve as a guide providing suggestions of charts and tables for categorizing information as the water suppliers collect and assemble their data. Signatories are encouraged to expand as well as alter the model's format to best represent their service area's operations.

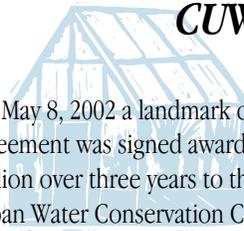
In the months ahead the Council is looking toward finalizing these projects and welcoming new members into the Council. If you have further questions regarding the Council or would like to participate in the program visit [www.agwatercouncil.org](http://www.agwatercouncil.org) or call (916) 441-7868.

### Wastewater Needs

(Continued from page 12)

supply, however, flow reduction activities are not being abandoned altogether. Additional flow reduction is still possible from toilet retrofits. Additionally, San Jose will implement water conservation programs around other technologies such as pre-rinse sprayers and residential water softeners as well as work to achieve water conservation in targeted settings such as dental or medical offices. For more information and to check San Jose's water conservation progress, visit [www.slowtheflow.com](http://www.slowtheflow.com).

*The San Jose-Santa Clara Water Pollution Control Plant service area covers approximately 300 square miles, serves a population of 1.2 million and includes San Jose, Santa Clara, Saratoga, Milpitas, Cupertino, Monte Sereno, Los Gatos, Campbell and unincorporated areas within these cities. Linden Skjeie and Russ Ficklin work on indoor water conservation issues in the City of San Jose's Environmental Services Department.*



## CUWCC Receives Major Funding Support from DWR

By Mary Ann Dickinson, Executive Director

On May 8, 2002 a landmark cooperative agreement was signed awarding \$1.5 million over three years to the California Urban Water Conservation Council. The funding comes from three entities: The Department of Water Resources, the U.S. Bureau of Reclamation, and the CALFED Bay-Delta Program, agencies which by this agreement are now making a major commitment to assist urban water agencies across California to reach water efficiency goals.

The agreement will provide staffing for technical assistance to water agencies, funding for needed water efficiency research programs, and training and tools for water agencies to help them put in place conservation programs for their customers. Negotiated over the course of twelve months, the agreement mirrors one signed last year for the Agricultural Water Management Council. "Conservation will be a critical part of California's water future," said DWR Director Tom Hannigan, in announcing the cooperative agreement. "The water that will be saved as a result of these programs will help avoid water shortages in our urban areas. We've had a success story with energy conservation—now it's time to do it in water!"

Water conservation has already been proven effective. In the past ten years, it has been estimated that as much as 750,000 acre-feet of water has been saved each year as a result of conservation programs statewide. That's equivalent to the amount of water in Metropolitan's new Diamond Valley Lake — but saved on an annual basis. The City of Los Angeles, thanks to conservation, is using the same amount of water today that it used in 1984 — but with an additional million people in its borders. But the CALFED Bay-Delta Program is seeking to save even more. In its Record of Decision, CALFED will be relying on the programs of this agreement to help achieve a goal of an additional

688,000 acre-feet of urban water conservation annually, or about twice that already saved to date. "This is an ambitious goal," said Patrick Wright, Director of the CALFED Program. "We will need the assistance of the California Urban Water Conservation Council to meet this target."

The recipient of the agreement, CUWCC, has been overseeing water conservation in California for the past ten years with its list of Best Management Practices. Projects funded under this agreement will:

- Provide certification support for CALFED staff in finalizing a BMP certification program, including designing a BMP exemption process.
- Provide technical assistance to water agencies before launching the BMP certification program.
- Provide technical assistance for the Council's BMP Reporting Database and seek to achieve 100 percent reporting by water agencies by Year 3. Provide Reporting Database access to DWR and USBR.
- Develop a software program to estimate water savings of BMP activity reported to the Council database. Provide water savings and cost analysis of BMP activity conducted to date. Update annually.
- Maintain the BMP Reporting Database website and build successive reporting year forms for BMP reporting.
- Provide technical assistance to water agencies to determine BMP cost-effectiveness, using Council spreadsheet tools.
- Evaluate and research potential BMPs.
- Prepare publication updates to *BMP Costs and Savings Study* adding new research on BMPs and Potential BMPs.
- Continue development of the Council's Web site with additional technical content on BMP implementation. Provide technical assistance and training on landscape BMP 5 implementation, including providing expert assistance in the field for water agencies

developing programs. Provide on-site consultants to water agencies to review water district landscape customer data, train on-landscape conservation for water districts and agencies, assist customers and the public with on-site landscape, provide linkages between water pricing, billing and landscape water use to water districts and agencies; and demonstrate landscape efficiency technologies in water agency service areas to reduce drainage and erosion.

- Develop study to assist water agencies in analyzing the environmental benefit of implementing BMPs.
- Conduct detailed analysis of avoided cost calculation options and refine practical definitions of avoided cost for use in cost-effectiveness calculations.
- Conduct outreach to assist agencies in overcoming the potential for revenue loss due to conservation programs and provide guidance to water agencies on how to manage these impacts through rate restructuring and other options.
- Provide support to water agencies in preparing urban water management plans to assist them in integrating water efficiency into overall water supply planning.
- Provide technical assistance to water agencies for the implemented BMP exemption process.
- Provide conservation training for DWR staff, USBR staff, and water agency staff based on the Handbook of Water Use and Conservation, to include a minimum of 5 days of instruction with the author.

To date, 292 organizations are part of CUWCC's consensus process, which includes 151 water supply agencies that deliver nearly 70 percent of California's urban water; 29 environmental groups; and 92 other organizations interested in water efficiency issues. For assistance visit [www.cuwcc.org](http://www.cuwcc.org) or [www.h2ouse.org](http://www.h2ouse.org).

## Agricultural Peak Load Reduction Program for California Water Agencies

During winter 2000-2001 winter, California experienced a severe imbalance in electrical supply and demand that resulted in blackouts and brownouts. As a result, the state legislature initiated SB 5x with the goal of reducing peak period electric demand throughout California. The California Energy Commission (CEC) then developed the "Agricultural Peak Load Reduction Program" and contacted the Irrigation Training and Research Center (ITRC), California Polytechnic State University, San Luis Obispo, to administer the agricultural water agency portion of the program.

The Agricultural Peak Load Reduction Program (APLRP) has four main categories:

**Category 1** - High Efficiency Electrical Equipment/Other Overall Electricity Conservation Efforts

**Category 2** - Pump Efficiency Testing and Retrofit/Repair

**Category 3** - Advanced Metering and Telemetry

**Category 4** - Retrofit of Natural Gas-powered Equipment to Alternative Fuels

Approximately 50 agricultural water agencies throughout California have utilized the APLRP. As of August 1, 2002, 9.7 Megawatts (MW) of load are no longer on the power grid during the program's peak period (Monday through Friday from 12:00 pm to 6:00 pm, June through September), with an additional 8 MW of peak load scheduled to be off-line before the peak period of 2003. Other participants, with a total demand of 23 MW, have received grant funding to install advanced metering and telemetry to participate in a demand responsiveness program. The pump repair section of the program is estimated to save approximately 16 million kilowatt-hours (kWh) per year by the end of the program.

Two of the many water agencies that have utilized incentives from the CEC APLRP are North Kern Water Storage District and

Orange Cove Irrigation District. Each of these districts has used innovative solutions to utilize lower energy costs associated with the reduction of peak energy usage.

### North Kern Water Storage District

North Kern Water Storage District (NKWSD) is located in the San Joaquin portion of Kern County and encompasses nearly 60,000 acres. The district receives water from Kern River and groundwater.

**Figure 1.** Gravity-in, gravity-out reservoir constructed to supply water during the peak period to one of the district laterals.



The district has proposed and designed two projects, which currently curtail 8 MW of peak load. These projects included the construction and modification of existing storage reservoirs to supply water to users during the peak period. Older well casings have been lined to prevent casing failure. Timers were installed on well control panels to automatically turn the wells on and off. NKWSD is also installing a telemetry system that will allow remote monitoring of canal and reservoir water levels. Each of these enhancements was necessary for the district to suspend its peak period operations.

**Figure 2.** Gravity-in and pump-out reservoir that supplies one of the district's main laterals during the peak period. The low-lift pumping station uses much less energy to supply water during the peak period compared to the deep wells that have been turned off.



### Orange Cove Irrigation District

Orange Cove Irrigation District (OCID) is located on the east side of the Central San Joaquin Valley, southeast of Fresno. The district receives water from the Friant-Kern Canal. The district proposed and designed

two projects that curtailed 780 kilowatts (kW) of peak load. Remote monitoring, measurement, and control components were installed for sections of the water distribution system not already equipped. The equipment enables OCID to monitor electric load, water flow, and pumping efficiency in real time. One of the projects also included construction of a regulating reservoir.

**Figure 3.** A pump station where flow meters and a SCADA system have been installed. The flow meters and SCADA allow the pump station to



automatically react to changes in water demand as farmers' turnouts go on and off for non-peak operation. A reservoir upstream of the pump station is used to supply a majority of water users during the peak period.

OCID also instituted a landowner load reduction program, whereby individual growers committed to a kW reduction during the peak period. In return, OCID reduced the price of water for the growers. As part of this project, the district equipped farmer-owned booster pumps with clock timers, flow control valves, and time-of-use meters to turn the pumps off during the peak period.

**Figure 4.** Automatic valve installed on a participating farmer's turnout to shut the water off at the beginning of the peak period and back on after the peak period has ended.



This program has significantly benefited the state and the participating water agencies. As of August 2002, there was still approximately \$600,000 in funding available. If you are interested in obtaining the latest program applications and information contact Dan Howes at ITRC at (805) 756-2347, e-mail [djhowes@calpoly.edu](mailto:djhowes@calpoly.edu), or visit [www.itrc.org](http://www.itrc.org).



# Water Conservation Events

## Western Expo

October 23 to 24, 2002

### Las Vegas Convention Center

The California Association of Nurserymen, welcomes the key players of both the nursery and landscape industries to the Western Expo, held October 23 to 24, 2002 at the Las Vegas Convention Center. In addition to featuring a fantastic assortment of international exhibitors displaying products and business services, the show is supported by continuous events, including the newest addition, Business Education Day. This all-day program on Tuesday, October 22 will offer business owners and managers a day of insightful knowledge on how to build a well-rounded, competitive business. For information visit [www.westernexpo.com](http://www.westernexpo.com).



## 2002 Grower Irrigation Seminar Series

### Agricultural Irrigation System Monitoring and Control

November 14, 2002

8:00 a.m. – 9:30 a.m.

Topics covered include climatological based control, CIMIS soil moisture based control, time-based controls and application efficiency studies. The seminar is free and takes place at Southern California Edison AgTAC, Tulare. The seminar is sponsored by the California Department of Water Resources and conducted by The Center for Irrigation Technology (CIT), California State University, Fresno. Pre-registration is required: (800) 772-4822. For information visit [www.cati.csufresno.edu/cit](http://www.cati.csufresno.edu/cit), call (559) 278-5752 or e-mail [tjacobse@csufresno.edu](mailto:tjacobse@csufresno.edu).

## 2002 ACWA Fall Conference - "California Water in Changing Times"

November 20 to 22, 2002

### Disneyland Resort, Anaheim

The Association of California Water Agencies' 2002 Fall Conference will address many topics vital to California's water future including emerging new contaminants and climate changes, new security mandates and water transfers, including who is making deals and what legislation might be advanced in the next session. Issue panels, keynoters and five tracks will provide innovative ideas for handling complex problems. The conference will feature presentations by federal and state officials and public policy experts. ACWA will also be presenting its annual Theodore Roosevelt Environmental Award recognition of resources management programs that benefit the environment while meeting various public needs. For information or registration materials visit [www.acwanet.com](http://www.acwanet.com) or call (888) 666-2292.



## 2003 Irrigation District School of Irrigation

The Cal Poly Irrigation Training and Research Center, on behalf of the Mid-Pacific Region of the USBR and the Office of Water Use Efficiency, is providing the seventh annual series of training and educational opportunities for staff, engineers, and board members of agricultural irrigation districts, as well as field operators. The classes utilize the excellent facilities at Cal Poly. Classes are \$30 per person per day for all U.S. irrigation districts and \$150 per person per

day for participants from outside the U.S. For more information visit [www.itrc.org/index.html](http://www.itrc.org/index.html).

## Class Series #1 — For Engineers, Managers and Technicians

### Flow Measurement - General and Pipelines

January 27, 2003

- Principles for open and closed systems
- Propeller, velocity head, magnetic, cone, acoustical, venturi, current measurement

### Flow Measurement — Canals

January 28 to 29, 2003

- Weirs and flumes
- Computer-aided design for Replogle flumes
- Acoustic velocity devices

### Canal Modernization

January 30 to 31, 2003

- Details of how to automate gates
- Determining reservoir capacity and siting
- Control structure design, sizing
- Flow control
- Capacity requirements
- Upstream, downstream, combination controls; centralized control options

### SCADA (Supervisory Control and Data Acquisition) — Introduction

February 3, 2003

- Monitoring
- Sensors
- Communications
- Control
- PLC/RTU units
- MMI software
- RFQ and RFP procedures

### SCADA - Advanced

February 4 to 7, 2003

- Communications planning and testing
- Solar Power: limitations, calculations
- Programming: Human Machine Interface, Ladder Logic
- Variable frequency Drive
- SCADA system commissioning

(continued on page 17)



**Water  
Conservation**

# Newsbriefs

## ***Long Beach at Forefront of Water Technology***

A revolutionary new process developed by the Long Beach Water Department that turns water from the salty Pacific Ocean into fresh, drinkable water is now protected by a pending United States patent. "While it will likely take about two years before the patent is granted, the most crucial part of the process - protecting the water department's intellectual property - has been accomplished," said Kevin Wattier, LBWD general manager. Although Wattier does not expect to see the new technology providing potable water for the general public until the end of the decade, the prospect of benefiting from royalties awarded to the patent's holders looks very good.

Credit for the technology—called the most advanced in the state—was given to Diem X. Vuong, the LBWD's deputy general manager for operations. Vuong's reverse osmosis process, which forces seawater through filters at high pressure, uses considerably less electricity than other desalination methods, of which there are many. In the past, traditional desalination methods have very costly, but with Vuong's system, the cost of reducing salt in seawater has dropped by 20 percent to 30 percent.

Last year, through the efforts of Rep. Stephen Horn, R-Long Beach, the water department received \$1 million in research funds for its desalination effort. Earlier this year, LBWD officials lobbied across the capital seeking an additional \$1 million in federal funding. That money is needed to fund half of a \$4 million prototype desalination plant that the Water Department wants to build. LBWD officials are now working on a deal with the Los Angeles Department of Water and Power that would see the two agencies

sharing their resources and technology to build the prototype plant at the DWP's water station. Several Long Beach water commissioners have said the commission is committed to desalination as a possible solution for a looming cut in supplies from the Colorado River. Long Beach gets 50 percent of its water from its wells and 50 percent from the Metropolitan Water District's Colorado River Aqueduct. The LBWD hopes to eventually tap the ocean for 15 percent of its total water supply.



## ***Water District Receives Grant to Improve Groundwater Monitoring***

In July 2002 the Santa Clara Valley Water District received a \$250,000 grant from the California Department of Water Resources to improve groundwater monitoring in Palo Alto and Cupertino. The grant will allow the district to add monitoring wells and improve the groundwater monitoring network, especially in areas where valuable monitoring sites have been lost or where additional quality data for local aquifers are needed. Ensuring a safe and adequate supply of groundwater is critical in Santa Clara County because underground aquifers account for nearly half of the county's annual drinking water supply. The grant will specifically allow the water district to construct two 1,000-foot-deep monitoring sites containing four wells each in the cities of Cupertino and Palo Alto.

The wells in Cupertino will help the district better understand the ground water system recharge capacity, especially the areas in the basin that seem slower to replenish. Data obtained during the construction, operation and monitoring of the proposed wells will give the district increased knowledge of the aquifer system in this area, resulting in more focused

recharge efforts and improved basin management. Similarly, the north county project will provide valuable data crucial to the long-term water supply reliability of the region. In addition, zones of high chloride concentrations have been measured in Palo Alto, and the proposed wells will help the district better understand local groundwater quality and effectively address the problem. For more information visit [www.valleywater.org](http://www.valleywater.org).

## **Events**

*(continued)*

### ***Class Series #2 — For Irrigation District Field Operators***

*(Each one-day class is offered on two dates)*

#### **Flow Measurement - General and Pipelines**

**January 14, 2003 or March 25, 2003**

- Principles of flow measurement for open and closed systems
- Common measurement devices - Propeller, velocity head, venturi, metergate
- How to take accurate readings: what to watch out for

#### **Flow Measurement - Canals**

**January 15, 2003 or March 26, 2003**

- Weirs and flumes
- Corrections for common problems
- Current metering

#### **Canal Operation**

**January 16, 2003 or March 27, 2003**

- The service concept, including farmer constraints and needs
- Purposes of different check structures
- Water level vs. flow rate control
- Minimizing tailender problem while still achieving good service
- How to get more water through various structures
- Introduction to SCADA
- Interaction between canals and turnouts

# New Publications

## **Water Efficient Landscape Design Brochure**

**Department of Water Resources**  
A new eight-page brochure called "Water Efficient Landscapes" is now available from the Office of Water Use Efficiency. Produced with the homeowner in mind, this brochure gives tips on how to design, install and maintain a water saving landscape. Ideas are given for creating a new landscape from bare ground, but the ideas are equally of use to someone renovating an existing landscape or trying to make an existing landscape healthier and more water efficient. For a free copy call (916) 651-9676 or e-mail: [landscape@water.ca.gov](mailto:landscape@water.ca.gov)



## **A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California and WUCOLS III CD**

**Department of Water Resources**  
"A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California and WUCOLS III" is now available on CD. This publication is a great resource for creating hydrozones of plant types during the design stage and for determining the

water needs of new and existing landscapes. This publication is especially valuable to Landscape Designers, Irrigation System Designers and Landscape Maintenance Contractors. For a free copy call (916) 651-9676 or e-mail: [landscape@water.ca.gov](mailto:landscape@water.ca.gov). It is also available on the web at: [www.dpla.water.ca.gov/urban/conservation/landscape/wucols/wucols\\_2000.pdf](http://www.dpla.water.ca.gov/urban/conservation/landscape/wucols/wucols_2000.pdf)



## **Water Recycling Videos**

**Water Education Foundation**  
Two new videos just released by the Water Education Foundation are designed to help educate people about water recycling. The 25-minute *California Water Recycling* video was funded by a grant from the Hans and Margaret Doe Charitable Trust. The 18-minute *Nevada Water Recycling* video was funded by a grant from the U.S. Bureau of Reclamation. Both videos include computer graphics that illustrate water recycling. And their short running times make them ideal for presentations and community group meetings. Copies of the videos can be purchased online for \$20 each at [www.water-ed.org](http://www.water-ed.org).

## **CIMIS**

*(continued from page 4)*

significantly on a regional scale. The study concluded by recommending an extensive feasibility study by DWR and other agencies in different regions of California.

Accordingly, CIMIS, in cooperation with many local agencies, is conducting a statewide "non-ideal" site study. A preliminary technical advisory committee representing different regions of the State has been formed. The committee has met several times since March 2002 and will continue meeting regularly during the study period. The advisory committee will be dynamic in that its membership will change as investigation proceeds to different regions. Current participants who are actively collecting data for the study include the Santa Clara Valley Water District, East Bay Municipal Utility District, Irvine Ranch Water District and Coachella Valley Water District. DWR is also developing a database on which this data can be stored for analysis. Eventually this data will be displayed on the CIMIS web site. CIMIS welcomes anyone interested in participating in this study and encourages those interested to contact Kent Frame at (916) 651-7030 or Bekele Temesgen at (916) 651-9679.

## **ET Controller**

*(continued from page 5)*

malls. MMWD's study is testing the performance of two brands of ET controllers. Like Santa Rosa and EBMUD, ET controllers may be added to Marin's regular conservation program in the future.

The trial and use of ET controllers is becoming more and more common, especially in areas of the State with high demand and limited water supplies. Metropolitan Water District of Orange County and Irvine Ranch Water District conducted some of the earliest trials of ET controllers in California with good results in that they reduced the amount of runoff, improved landscape health and reduced water use.



### **New Web Site for Office of Water Use Efficiency**



The Department of Water Resources Office of Water Use Efficiency now has a Web site of its own. The new site was designed to inform the public about new information relating to OWUE as well as and provide useful information on efficient use of water. The address is [www.owue.water.ca.gov](http://www.owue.water.ca.gov).

## Water Conservation



# Laws and Legislation

**AB 2717 (Hertzberg) Water: Desalination as amended 8/26/2002** This bill would require the Department of Water Resources to report to the Legislature, by July 1, 2004, on potential opportunities and existing impediments for promoting the development of seawater desalination. This bill would require the department to convene a Desalination Task Force to assist the department. The bill would appropriate \$600,000 from the Bosco-Keene Renewable Resources Investment Fund. STATUS: Enrolled.

**SB 621 (Costa) Water Transfers as amended 8/31/2002.** SB 621 would appropriate funding from the bond funds made available from the Costa-Machado Water Act to the Department of Water Resources for infrastructure rehabilitation projects for allocation to the Tulare County Water Works District No. 1 and the Alpaugh Irrigation District for repair and replacement of domestic water supply and treatment systems owned and maintained by the districts. This bill would require a feasibility study by the districts. STATUS: Enrolled

**SB 1348 (Brulte) Water Conservation as enacted 9/3/02.** The bill requires the Department of Water Resources to take into consideration whether an urban water supplier is implementing or planning the implementation of water demand management activities in evaluating applications for grants and loans made available from the Water

Conservation Account for the purpose of funding urban water conservation projects. STATUS: Chapter 321, Statutes of 2002.

### Definitions

**Chapter(ed):** “chaptered” means that the Legislature has passed the bill and the Governor has signed the bill into law. Chapter (plus a number) refers to the number given to the bill at the time it was signed. When a bill has been passed by the Legislature and enacted into law, the Secretary of State assigns the bill a “chapter number” such as “Chapter 123, Statutes of 1992,” which is subsequently used to refer to the measure in place of the bill number.

**Enacted:** Whenever a bill passes both houses of the Legislature, it is ordered enrolled. In enrollment, the bill is again proofread for accuracy and then delivered to the Governor. The enrolled bill contains the complete text of the bill with the dates of passage certified by the Secretary of State and the Chief Clerk of the Assembly.

**Status:** “Status” explains where the bill is located in the legislative process. This bill could be in the Senate or in a particular committee to be reviewed or it could be chaptered.

**Statutes of 2002:** “Statutes” refers to the legislative session in which the bill was passed.

### Progress and Milestones

(continued from page 8)

water recycling in comparison to other sources of supply, to attempt to quantify the costs and benefits in some examples for illustration and to address issues related to local costs versus regional and statewide benefits of water recycling projects.

To help familiarize the task force members with the specific issues assigned to the different workgroups, expert presentations by the workgroups are given to the full body of the task force during its meetings. So far and during previous task force meetings, detailed and in-depth presentations were given about science and health issues, plumbing code and cross-connection control issues, and public perception issues. Currently, and through a series of deliberations, all the workgroups are in the process of elaborating white papers to be presented to the task force. These white papers will make the basis of the task force report which will present DWR its findings with specific recommendations for increasing the safe use of recycled water in California. DWR will present a report to the legislature no later than July 2003.

For more information visit [www.owue.water.ca.gov/recycle/taskforce/taskforce.cfm](http://www.owue.water.ca.gov/recycle/taskforce/taskforce.cfm) or contact one of the following staff members:

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## WATER CONSERVATION NEWS

P. O. Box 942836  
Sacramento, CA 94236-0001



*Address Correction Requested*

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### ***2002 Farm Bill Funding for Surface Water and Groundwater Conservation***



The 2002 farm bill signed into law on May 13, 2002 has a new surface water and groundwater conservation initiative. The program funded through the Environmental Quality Incentives Program (EQIP) includes cost-sharing payments and incentive payments for producers to carry out water conservation activities, including irrigation improvements and conversion to

less water intensive crops. Conservation programs must result in a net savings of water or other conservation benefits to be eligible. In California and Oregon (more specifically in the Klamath Basin) the Farm Bill allocates \$50 million through 2007 under EQIP to assist producers to conserve water and implement habitat restoration projects. USDA/NRCS has initially allocated \$7.3 million in fiscal year 2002 in California to implement EQIP conservation prac-

tices—many of them are related to water conservation at the farm level. An additional \$7.7 million will be allocated before the end of the federal fiscal year (ending September 30, 2002). Information about EQIP is available at USDA/NRCS service centers in most of the 58 California counties or on the Web at [www.ca.nrcs.usda.gov](http://www.ca.nrcs.usda.gov). The complete text of the 2002 Farm Bill text can be read in English and Spanish at [www.nrcs.usda.gov](http://www.nrcs.usda.gov).