



# UC DAVIS

## TAHOE ENVIRONMENTAL RESEARCH CENTER



THE TAHOE ENVIRONMENTAL RESEARCH CENTER (TERC) IS DEDICATED TO RESEARCH, EDUCATION AND PUBLIC OUTREACH ON LAKES AND THEIR SURROUNDING WATERSHEDS AND AIRSHEDS. LAKE ECOSYSTEMS INCLUDE THE PHYSICAL, BIOGEOCHEMICAL AND HUMAN ENVIRONMENTS, AND THE INTERACTIONS AMONG THEM. THE CENTER IS COMMITTED TO PROVIDING OBJECTIVE SCIENTIFIC INFORMATION FOR RESTORATION AND SUSTAINABLE USE OF THE LAKE TAHOE BASIN.

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## RESEARCH IN ACTION

### *TERC Staff Immediately Responds to Angora Fire*

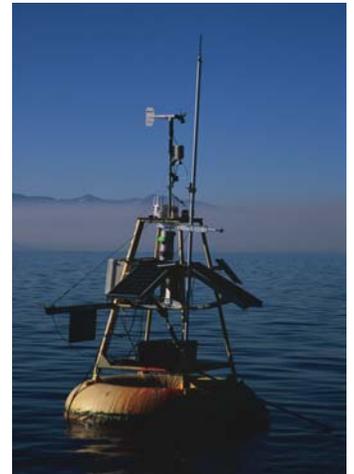
Last summer's Angora Fire burned 3,100 acres and destroyed over 250 homes. The news of this fire received national attention. Wildfire is a real risk to those living and working in a rural environment such as the Tahoe Basin. Almost immediately people were asking what this meant for Lake Tahoe and the surrounding environment.

UC Davis played a major role in the rapid response to monitor the effects of the fire and smoke on the lake and in the basin. TERC researchers and other UC Davis scientists were out sampling almost immediately, and TERC also took a lead role in helping to plan and put together a response plan for the Tahoe Science Consortium.

The TERC rapid response field team was composed of Brant Allen, Scott Hackley, Anne Liston, Raph Townsend and James Weingardt. A cooperative effort began to obtain the

most information possible in a short amount of time. Having the local field station allowed the team to respond right away.

Liston had been working on another project that required mini-vols, a type of self-contained, battery-operated air quality sampler, so she took the mini-vols and placed them around the lake. The majority of the smoke associated with the Angora Fire was blown out of the Basin. However, the air data showed major spikes in Phosphorus



A mini-vol on TERC buoy collects data from the Angora Fire. Smoke can be seen behind the buoy.

concentrations during the period.

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## IN MEMORY OF LEO POPPOFF

This edition of the TERC newsletter is dedicated to the memory of our friend and colleague, Leo Poppoff. For over twenty years, through his Basin Watch newspaper column, Leo distilled and interpreted the science that was being conducted in the Tahoe basin for a broad audience. His keen intellect, probing questions and gentle nature will be greatly missed. Leo was a mentor who introduced young scientists to the brave new world of public policy while at the same time explaining to resource managers that a science-based approach to environmental protection and restoration made success even more likely. Public outreach was a passion for Leo and we try to be true to this spirit in all of our outreach.

## LETTER FROM THE DIRECTOR

Spring has had our staff preparing for summer fieldwork on the lake and throughout the basin. This summer will be special, as much of our fieldwork will be based out of our newly restored Field Station in Tahoe City (the old Fish Hatchery). The architects and contractors have done a magnificent job in providing a great work space while at the same time preserving and even enhancing the historical

elements of this 1920s-era building. All this will be on show to the public on August 14, 2008. The budget was miraculously stretched to allow for the construction of a boat house for TERC's new research vessel. This new boat, expected to arrive in late June, is not intended to replace the R/V John LeConte. With a projected top speed of 45 knots, it allows us to reach parts of the lake that were previously beyond our range in

a timely manner.

This spring also had special significance to TERC and to UC Davis. Spring 2008 marked the 50th consecutive year that Charles Goldman taught his undergraduate limnology class. Although the field and the class have both changed considerably over the years, what has remained constant has been the enthusiasm and passion that Dr. Goldman has brought to each and every class. And in case



Geoffrey Schladow, Ph.D., Director  
Tahoe Environmental Research Center

you were wondering, the class will be offered for the 51st time in 2009.

A handwritten signature in black ink that reads "Geoff".

## RESEARCH IN ACTION, CONTINUED

TERC regularly monitors atmospheric deposition in 10-day intervals. During the Angora fire, Hackley and Townsend changed the sampling buckets every day to capture more detailed information.

As Liston, Hackley, Townsend and Weingardt spread out around the lake to obtain samples from shore, Brant Allen took to the lake. "Having the buoys on the lake provides excellent pre-existing sampling locations," said Allen. Allen also set transects up across the lake from east to west to measure water quality and nutrient concentrations.

The TERC team was trying

to determine what short-term effect the smoke and deposition would have on the lake's water quality and the basin's air quality. Overall, there was little effect.

As for immediate effects on water quality, John Reuter, associate director of TERC, addressed some of these concerns at the 4th Biannual Tahoe Science Conference this spring. "There were some minor fluctuations in clarity readings, but overall they stayed the same," Reuter said.

"Wildfires are damaging and catastrophic, yet this unfortunate event did give the research community

unplanned opportunities to learn more about Lake Tahoe," said Geoff Schladow, TERC director.

The TERC team proved capable of putting together a rapid response team to monitor the immediate effects of different types of natural catastrophes.

TERC and other partnering research entities were able to develop cooperative plans that will provide additional information through the season. Also, TERC is now better equipped to handle this type of emergency scientific response to an unexpected disaster.



Scott Hackley, Anne Liston and Brant Allen pose with one of the mini-vols used to help monitor air quality during the Angora Fire.

## TAHOE CITY FIELD STATION UPDATE

### Save the Date: Tahoe City Historic Hatchery Dedication

The Tahoe City Field Station, also known as the Historic Fish Hatchery, is nearing completion of a \$2.1 million historical renovation thanks to the generosity of the many private donors that contributed to the Campaign for Tahoe. A grand “re-opening”

We have other plans for the site as well. Heather Segale, education and outreach coordinator, is coordinating restoration of the surrounding 3-acre degraded wetland and stream environment zone and planning interpretive features and outreach programs that utilize this

#### Wetland/SEZ Restoration

Three acres of degraded wetlands adjacent to the Fish Hatchery will be restored to provide habitat, treat urban storm water, and be utilized for research and public outreach.

#### BMP Demonstrations

Different types of surface flow treatment BMPs will be tested and demonstrated. Interpretive signage will be included.

#### Test Plot System for Field Testing

TERC staff will provide field testing for alternative erosion control and water quality treatment options to compare fine sediment and nutrient removal efficiencies. Field testing will compare vegetation types, infiltration, flow regimes, soil types, soil amendments, and more.

#### Interpretive Education Nature Center

A walkway around the restored building will provide access for the public to learn about wetlands. Signage, models, demonstrations, seasonal educational brochures, wetlands outreach training, and an annual wetlands celebration event will become programmatic components of the nature center.

#### Demonstration Garden

A demonstration garden area will provide interpretive signage regarding various native Lake Tahoe plants in both upland and wetland areas.

#### Interpretive Kiosk

A small, indoor room attached to the front of the Historic hatchery building will be open to

*(continued on page 4)*



The new prep lab will allow researchers to filter and process samples taken from the lake and West Shore streams within required time limits.

dedication is scheduled for August 13 & 14, 2008.

The renovation project was sensitive to the values and features of this historic building. The restored building will be used for preparation and staging of field experiments, equipment construction, and boat activities, and will contain offices, a conference area, wet lab, scuba locker, workshop, storage and a small education kiosk for the public.

historic site to educate the public about the hydrology and importance of wetlands, riparian areas and best management practices. To fund these future projects, Segale received funding from two California ballot initiatives approved by the voters – Proposition 40 and Proposition 50.

The future project will include the following components:



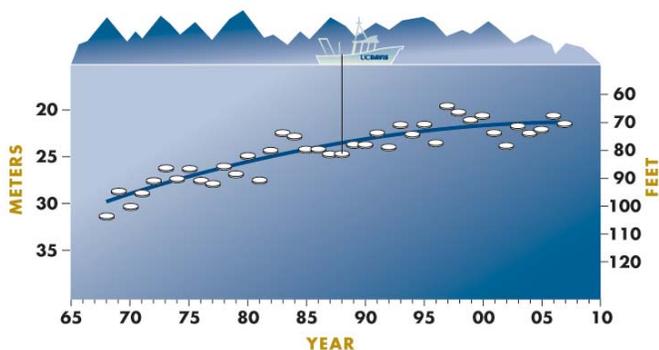
The UC Davis Tahoe City Field Station receives a historic renovation.

## LAKE TAHOE CLARITY UPDATE

### New Analysis Shows Important Slowdown in Lake Tahoe Clarity Loss

In mid-May, for the first time since researchers began continuously measuring Lake Tahoe's famed water clarity 40 years ago, UC Davis scientists reported that the historical rate of decline

detecting trends and by factoring out the effects of annual precipitation, they have concluded that the historic rate of decline in the lake's clarity has slowed since 2001.



in the lake's clarity has slowed considerably in recent years.

Scientists at the UC Davis Tahoe Environmental Research Center say that by using new, more sophisticated models for

"From 1968 to 2000 there was a near-continuous decline in lake clarity. There were several years at a time when things seemed to improve, but invariably we returned to the same trend," said Geoffrey Schladow, a

UC Davis professor of civil and environmental engineering who directs the Tahoe research center. "But since 2001, we have had seven years in which the clarity has consistently been better than the long-term trend would have predicted. This is unprecedented."

Schladow cautioned that the data do not pinpoint a specific cause for the recent improvements, but noted that new modeling results show that runoff of fine particles from both urbanized areas and roadways around the lake are the primary factors that influence clarity levels. Fine particles scatter light and limit how far into the lake we can see.

In addition, Schladow and

his UC Davis colleagues cautioned that it is difficult to use data from a small number of years (2001 to 2007) to draw conclusions about when the trend might change from a slowdown in clarity decline to an improvement in clarity. "Only with the commitment to long-term monitoring can we truly evaluate environmental changes over time," he said.

Federal, state and local agencies, as well as local homeowners and businesses, have invested more than \$500 million in a coordinated effort to reduce runoff through Tahoe's Environmental Improvement Program, which was launched in 1997 by President Clinton and other officials.

## HATCHERY UPDATE, CONTINUED

the public and will provide viewing into the main "great room." Tours of the building will be available. Interpretive elements are currently being planned and designed and may include historic uses of the building for fish rearing, life cycle of fish, ongoing research and more. Film footage from the hatchery facility in the 1930s was

recently donated and will be digitally re-mastered for viewing inside the interpretive "kiosk." Funding for this effort is coming from the California Tahoe Conservancy Public Recreation and Access funds with future support from the North Lake Tahoe Resort Association anticipated.

## UPCOMING EVENTS

### July 1, 2008: Living Green at Tahoe

The 4th annual environmental stewardship event will include information on sustainable living at Tahoe with hands-on activities for all ages. 10 a.m. - 3 p.m., Tahoe Center for Environmental Sciences, Incline Village.

### August 14, 2008: Children's Environmental Science Day

New location for this year's Children's Environmental Science Day in Tahoe City. Science activities for children ages 8 and up and their families. 10 a.m. - 12 noon, Tahoe City Field Station ("Historic Hatchery").

### August 14, 2008: Tahoe City Field Station Open House

Join us to celebrate the completion of the historic renovation of the Tahoe City Field Station and to look ahead to the exciting future of UC Davis research at Lake Tahoe. TERC staff will provide tours and host activities. 12 noon - 4 p.m., Tahoe City Field Station ("Historic Hatchery").

For more information, call (775) 881-7566 or visit <http://terc.ucdavis.edu>.

## FEATURED "STAFF"

### TERC Volunteer Docents

The TERC docents are some of the finest people around. These dedicated volunteers take time out of their busy schedules to come to TERC and provide information to the public about historical and ongoing research.

"We are very lucky to have such a strong volunteer

base here at TERC," said Jessie Hersher, TERC volunteer coordinator. "Without our docents, we would not have been able to educate nearly 6,000 people last year."

TERC is hoping to grow the docent program and recruit more people for the summer of 2008.



TERC Docents enjoy an educational trip on the TERC Research Vessel John LeConte.

If you are interested in becoming a TERC docent,

please contact us at (775) 881-7566.

## EDUCATION AND OUTREACH

### Youth Science Institute Created Through Collaboration

The Youth Science Institute (YSI) program developed by the UC Davis Tahoe Environmental Research Center and Space Science for Schools hosted a pilot program during the winter of 2008. Twelve high school students from four different high schools in or near the Tahoe Basin were selected to participate. Each week these aspiring scientists joined researchers, graduate students, and other scientists to study space science, earth science, environmental science and modern green technologies.

Classes were held at the Tahoe Center for Environmental Sciences utilizing the laboratories and other educational tools. Instructors, such as

Dr. Paul Guttman of Space Science for Schools, aimed to enlighten students on global and local environmental issues. In the spring, students gained field experience with water and air quality monitoring. Excursions included an outing on the UC Davis Research Vessel John LeConte to conduct research on Lake Tahoe, stream monitoring with USGS and UC Davis hydrologists, and a geology hike.

While gaining greater scientific and environmental perspectives, these young scientists also had the opportunity to be teachers themselves. The philosophy "see one, do one, teach one" was emphasized.

TERC provides exciting

opportunities for the students to utilize their knowledge and connect with their community. Outreach and community service opportunities are available through the docent program at the UC Davis Thomas J. Long Foundation Education Center or participation in the Science Expo and other related events.

Part of the North Lake Tahoe Snow Festival, the free Science Expo event held on March 5, 2008 had over 900 attendees over a two-day event. YSI participants assisted in demonstrations and experiments related to snow, water, ice and earth for local elementary school students. As peer-to-peer teachers, these students shared their

enthusiasm for science with younger students.

We commend each of the YSI participants for dedicating the time to enhance their education and become informed citizens and environmental stewards.



## GIVING TO FRIENDS OF TAHOE

The Friends of Tahoe group provides funding to supplement research, education and engagement activities of the Tahoe Environmental Research

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Center and promote understanding and conservation of the natural resources of the Lake Tahoe Basin and other lake systems.

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