



Emerald Bay winning weed battle

Biologists working to keep Tahoe iconic feature free of invading plants, fish and mollusks

By Patrick Stone
TAHOE REGIONAL PLANNING AGENCY

Emerald Bay is one of the most photographed and recognized features of the Lake Tahoe Basin. Its emerald waters reflect the surrounding granitic walls as they fall away from Phipps Peak and the Eagle Lake area.

But these reflections also hide aquatic invaders who threaten the environment in Emerald Bay State Park. Aquatic invaders such as Eurasian watermilfoil, Asian clam and brown bullhead catfish have already established in Lake Tahoe, sneaking into Emerald Bay prior to mandatory watercraft inspections and decontaminations.

Visitors may not always recognize the invasive plants and animals while hiking or boating at Lake Tahoe, but the unwanted guests have not gone unnoticed. Since 2009, Emerald Bay State Park biologists and several partner agencies have attacked the invasive plants, which have appeared at the



A team of divers (left) prepares to tackle an infestation of Eurasian watermilfoil in 2009. By 2012, the site (right) was nearly free of the invasive weed.

swim beach at Vikingsholm, Parson's Rock and Avalanche Beach along the southwest shoreline of Emerald Bay.

The first year of invasive plant removal included testing several different methods and a lot of work



by park staff, partner agencies and volunteers. From 2010 to 2012, the California Department of Parks and Recreation led the charge against Eurasian watermilfoil in Emerald Bay

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TMDL program focuses on restoring Lake clarity

By Jason Kuchnicki
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
and Robert Larsen
LAHONTAN WATER BOARD

Since scientists first started measuring it in the late 1960s, Lake Tahoe's clarity has been steadily declining. At first, researchers lowering a white plate into the water could see the object more than 100 feet deep.

Last year, the clarity was 75 feet. It hasn't been better than 80 feet since the late 1980s. Anyone looking at a graph of the shrinking numbers may think 100 feet is a thing of the past, up there with vast herds of buffalo roaming the Great Plains, or gas selling for 25 cents a gallon.

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Seeing clearly into Tahoe issues

Thanks for your support in keeping our publication coming

Welcome to the second issue of Tahoe In Depth. We have received strong support in the last few months since we put out the first edition of our newspaper, and we hope that interest will continue to grow as we bring you the latest information about environmental improvements at Lake Tahoe.

In addition to receiving support from various public agencies around the Lake, we've also received terrific feedback from many homeowners, residents and visitors who read our inaugural publication in late 2012. Our mailbox and inbox (tahoeindepth@gmail.com) were flooded with messages of moral and financial support, and this convinced us to move ahead with our goal of making Tahoe In Depth a periodic publication. To our underwriters, thank you for making an investment in environmental education. We're hoping to inspire even more subscribers and underwriters. To find out how you can subscribe or otherwise support us, see page 4.

Tahoe In Depth is funded through a variety of sources, but none of these sources cover all our expenses and none of them are permanent. In short, the first order of business whenever we plan a new issue is finding the financial support we need to collect the stories, produce the publication, and then get it printed and mailed. That's why your financial contributions and subscriptions are so important to us.

We're committed to producing this publication, because we feel there is a demand for information that goes beyond the latest controversy and digs into the important environmental issues and efforts under way at the Lake. The goal of Tahoe In Depth is to keep you abreast of efforts to protect and improve Lake Tahoe and its surrounding environment. At the same time, we're eager to share ideas about how to better enjoy visiting and living here. Most of us consider living at Lake Tahoe to be a genuine privilege, but it's a privilege that comes with responsibility – to do everything we can to reduce our own impact on the Lake and to support the environmental improvements taking place here.

– Julie Regan, executive editor

Tahoe In Depth

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Outdoor classrooms

For many area students, Lake Tahoe is more than a place to go swimming or boating. Many local schools are taking advantage of the many learning opportunities available at the Lake to get students interested in environmental issues and to help them develop a greater appreciation for the remarkable ecosystems in their own backyards.

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Cycling on the East Shore

Those hard-to-reach East Shore areas may soon become more accessible as agencies work to build a bike path.

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Demonstration gardens

Landscaping can be a real challenge at Lake Tahoe — the growing season is short, the soils are thin and too much fertilizer hurts the Lake. But these demonstration gardens can give you some tips.

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Blackwood comeback

Blackwood Creek was a major contributor to sediment reaching Lake Tahoe, but a restoration project conducted by the Tahoe Conservancy and other agencies is helping reverse that.

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Camp Richardson

The three campgrounds at Camp Richardson are the focus of a renovation effort that would improve the quality of campsites while removing wetland impacts and improving water quality.

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Volunteer opportunities increasing

People who are looking for opportunities to do some volunteer conservation work at Lake Tahoe are finding an increasing number of choices, thanks to the League to Save Lake Tahoe and other groups.

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Third Creek restoration

Third and Incline creeks at Incline Village have been the target of an intensive restoration program that improved fish habitat and reduced the amount of sediment churning into Lake Tahoe.

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New Regional Plan

TRPA's newly updated Regional Plan encourages investment and environmental improvements on existing properties as a means of correcting past mistakes that continue to affect Lake clarity.



The TMDL program targets road-sanding (above) and other factors that contribute to the sediment pouring into the Lake (below).



What can homeowners do?

If you live in or own property in the Tahoe Basin, there are two important things you can do to help in the ambitious effort to reverse the decline in the Lake's clarity and help it achieve the clarity of 45 years ago.

- Install or maintain Best Management Practices (BMPs) on your individual lots. BMPs include vegetating and mulching bare ground, infiltrating runoff through the soil, paving dirt driveways and stabilizing eroding slopes and loose soils. BMPs help your property to behave like an undisturbed forest or meadow, so that water conveyed from it reaches the Lake in a cleaner, more purified form. Using native or adaptive plants according to Tahoe Regional Planning Agency guidelines reduces the need for fertilizer and irrigation that can contribute to nutrient loading in the Lake. Visit: www.tahoebmp.org
- Engage in public policy and support efforts to restore Lake Tahoe. Living at Lake Tahoe comes with certain responsibilities to protect the Tahoe Basin, so stay informed about government efforts like the TMDL plan and consider contacting lawmakers to support these efforts as well.

TMDL tackles clarity problem

Using science, agencies aim to restore historic level of transparency

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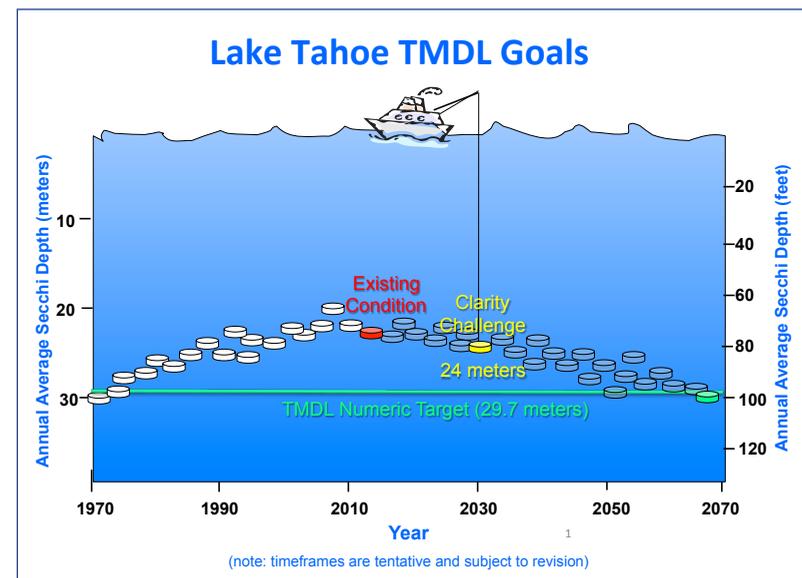
But Lake Tahoe scientists and water quality professionals would disagree. Restoration of Tahoe's famed clarity is not only doable, but there is a plan for making it happen.

It's called the Total Maximum Daily Load (TMDL) plan, a science-based effort to better understand how to reverse 40 years of steady decline in the clarity of Lake Tahoe. The plan, developed by the Lahontan Water Board and the Nevada Division of Environmental Protection (NDEP), aims to hit the Clarity Challenge of 80 feet of annual average clarity. Holding that number as a running average for five years will show that the trend has reversed and clarity is moving toward restoration. Once that milestone is achieved, the plan envisions marching on to achieve that 100-foot mark.

More than 200 scientists worked for over a decade to develop the plan and program to restore Tahoe's historic clarity. Restoring Tahoe's clarity makes sense from an economic as well as ecological point of view. Millions of visitors travel to Lake Tahoe each year, drawn by its natural beauty but also by its remarkable transparency. Allowing Lake Tahoe's famed clarity to degrade would harm its value as a recreational destination, drinking water source, and asset to the economy.

Since the EPA approved the TMDL plan for Tahoe in August 2011, the Water Board and NDEP have been working with local governments, TRPA, public works officials and state highway departments to prevent the pollutants impacting clarity from entering the Lake and to track the progress of these efforts.

Because urban runoff is the largest source of several pollutants responsible for clarity loss, the Water Board and NDEP have focused on regulatory and implementation efforts to control fine sediment and nutrient discharges from developed areas. Stormwater permits that regulate California municipalities and the California Department of Transportation have been updated to include pollutant load reduction requirements and tracking



and reporting elements. Within Nevada, agreements between NDEP, Washoe and Douglas counties and NDOT are on schedule to be established by this August. Placer County, El Dorado County, and the City of South Lake Tahoe have each submitted load-reduction plans describing the activities and pollutant controls each will implement to meet load-reduction milestones. The overall goal is to improve roadways so that the quantity of runoff reaching Lake Tahoe is reduced, and that the runoff has fewer flecks of fine particulates and less nitrogen and phosphorus.

Early planning indicates that there are many cost-effective opportunities to reduce pollutant loads by improving roadway operations and maintenance practices. Roadway managers in the Lake Tahoe Basin are exploring ways to better sand icy roads, using less sand but applying it more strategically and sweeping up road sand more often to reduce the amount washing into the Lake. They are also looking into using more durable roadways and traction material so that neither is easily pulverized and washed into the Lake.

California and Nevada urban jurisdictions have collaborated to develop an Implementers Monitoring Plan that includes monitoring stormwater quality at discharge pipes, coupled with Best Management Practice

(BMP) effectiveness assessments. Samples are collected from multiple runoff events over the course of years, and the runoff is analyzed to measure success in reducing the amount of pollution entering Lake Tahoe as well as which of the controls work best.

A larger, more comprehensive stormwater-monitoring effort known as the Regional Stormwater Quality Monitoring Program involves monitoring and data analysis to provide project implementers and regulatory agencies more information about stormwater management practices and TMDL policy.

The Water Board and NDEP are developing a formal adaptive management process that will help them evaluate and report implementation progress and provide a streamlined set of procedures to determine the need for adjusting TMDL-related policy based on the most up-to-date information. The forthcoming TMDL Management System will include a website where the public can learn more about pollutant load reduction activities.

For more information on the Lake Tahoe TMDL visit NDEP's or the Lahontan Water Board's website: ndep.nv.gov/bwqp/tahoe.htm www.waterboards.ca.gov/lahontan

Become a Tahoe In Depth subscriber or supporter

We hope you enjoy this second edition of Tahoe In Depth, Lake Tahoe's new environmental newspaper. Feedback on last winter's inaugural issue was so overwhelming that we are looking for sustainable funding for this important publication.

You can help! Consider becoming a subscriber to Tahoe In Depth so that you and others can continue to receive ideas on "Protecting, Enjoying & Exploring the Lake Tahoe Basin" in your mailbox during the year or at public locations around Lake Tahoe.

There are several different subscriber levels available. All subscribers will be entered in a drawing to win a native plant from a local nursery and be listed in the winter issue of Tahoe In Depth. Just cut out and mail in the subscriber form and a check made out to the Tahoe Regional Planning Agency. Please add the Tahoe In Depth account number 0000552 on the note line.

Thank you for being part of the inspiration to protect Lake Tahoe.

YES! I want to become a subscriber to Tahoe In Depth and continue "Protecting, Enjoying & Exploring" the Lake Tahoe Basin. Please find enclosed my check for

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Students using Basin as classroom

Studies have led many youngsters to 'green' extracurricular activities

By Heather Segale
and Kylee Wilkins
UC DAVIS

With Lake Tahoe as the backdrop, environmental education groups are bringing science and stewardship to students around the Basin. Students from kindergarten to high school are exposed to many different programs that help them learn environmental science and become connected to their local environment. These programs sometimes take place inside the schools, but the preferred classrooms are the forests, meadows and beaches of Lake Tahoe and Truckee.

The goal of environmental education is to teach students about natural environments and how humans can affect those environments. The students then develop the knowledge and skills needed to become informed citizens and environmental stewards. All topics taught are correlated to state and national standards and include environmental science, earth science, life science, physical science, natural history, geology, biology, ecology, native species, water quality and forest health.

As environmental education has grown throughout the Basin, environmental collaboration groups have formed. These include the South Tahoe Environmental Education Coalition (STEEC) and the North Tahoe Environmental Coalition (NTEEC). Both groups host partnered events for students and the public where all members are in line with one environmental education goal.

In addition, Tahoe and Truckee students are becoming more involved in "green" extracurricular programs. This is apparent in the growth of groups such as Generation Green, Envirolution and other green clubs in which students take ownership and leadership. As

environmental education continues to grow in Tahoe and Truckee, it is inevitable that more community and student-run initiatives will take place.

Environmental education at Tahoe gives students personal buy-in to their environment; they feel connected not only academically but personally. This connection leads to action: in the words of conservationist Baba Dioum, "In the end, we only conserve what we love. We only love what we understand. We only understand what we are taught."

Environmental education at Lake Tahoe is beneficial for the students as a fun, engaging curriculum and is vital for the protection of Lake Tahoe. These students are the next generation of

leaders; they will be the ones who can restore Lake Tahoe.

Looking into the future, the environmentally literate students we teach now will be able to make decisions that are healthy for them and their environment.

Visit TahoeScienceCenter.com for current environmental education opportunities for children.



Local Lake Tahoe students (top) investigate benthic macroinvertebrates at Children's Environmental Science Day while other attendees (bottom) learn about sediment and how the particle size determines the effect on water clarity. The next Children's Environmental Science Day will be held on Saturday, August 10, 2013. Visit TahoeScienceCenter.com for details. Photos: Jim Markle



New exhibits at UC Davis center

Hands-on attractions, 3D movie brings Lake Tahoe research to life

By Heather Segale
UC DAVIS

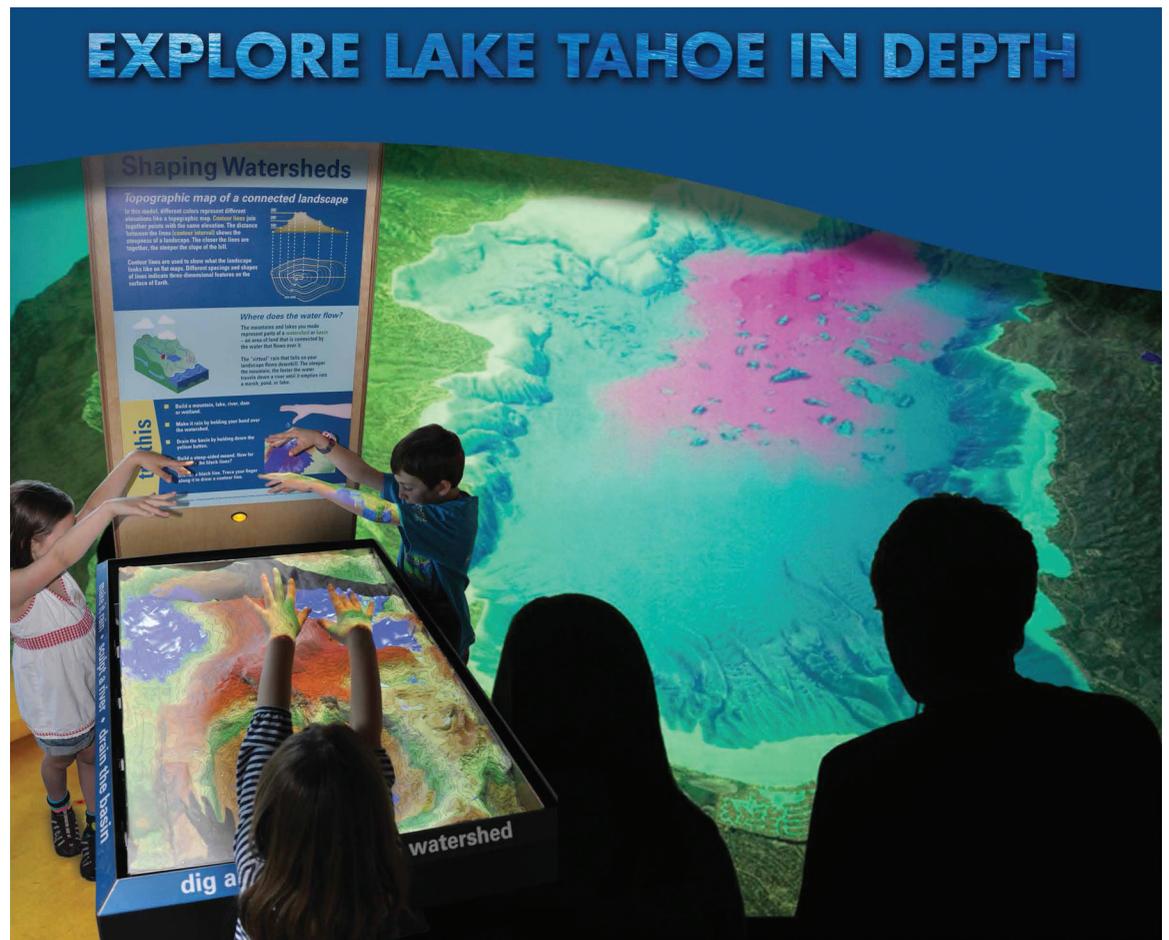
UC Davis Tahoe Environmental Research Center (TERC) has brought several new exhibits about Lake Tahoe, watershed science and stewardship to its Tahoe Science Center in Incline Village.

Hands-on science exhibits such as the new Interactive Sandbox and interactive iPad games join the research vessel, laboratory and award-winning 3D movie “Lake Tahoe in Depth” to provide the latest Lake Tahoe research.

The “Augmented Reality” Interactive Sandbox brings geographic and watershed concepts to life. It combines a real sandbox with virtual topography and water by using a 3D camera and a digital projector. Users create topography by shaping real sand and simultaneously the sand surface is scanned and an evolving topographic color map and contour lines are produced. You learn how to “make it rain” and watch the simulated flood flow through the watershed you have created.

Details

TERC’s Tahoe Science Center is open 1–5 p.m. Tuesday through Saturday at the Tahoe Center for Environmental Sciences at 291 Country Club Dr. in Incline Village, on the campus of Sierra Nevada College. The center, sponsored by UC Davis and the Thomas J. Long Foundation, will be receiving new exhibits including 3D visualizations over the next year as part of a National Science Foundation (NSF) grant-funded project in partnership with the UC Davis, KeckCAVES, UC Berkeley Lawrence Hall of Science and ECHO Lake Aquarium and Science Center at Lake Champlain. For NSF project info, visit: lakeviz.org.



Visitors of all ages can try the “Shaping Watersheds Interactive Sandbox” exhibit and experience the 3-D short film “Lake Tahoe in Depth” at the UC Davis Tahoe Science Center. Visit TahoScienceCenter.com for details. Photo: Julie Silverman/Jim Markle

Groups collaborating to design key stewardship messages

By Kristi Boosman
TAHOE REGIONAL PLANNING AGENCY

A collaboration of local agencies and organizations, including the Tahoe Regional Planning Agency, League to Save Lake Tahoe, Tahoe Resource Conservation District, Tahoe Environmental Research Center, Truckee River Watershed Council and Tahoe Fund, is working together to create a set of key messages that promote a culture of environmental stewardship in the Tahoe region for visitors and residents alike.

To launch this effort, the Lake Tahoe

Outreach Collaborative has designed a survey to find out what members of the public think are the most important actions people can take to protect Lake Tahoe. Participants say that if people and groups focus on doing a few things well, the Lake Tahoe Basin will benefit more than if the groups focus on different issues.

After surveying the public, the collaborative will then invite local agencies, business groups, and environmental, education and nonprofit organizations to attend a facilitated, large group meeting to see which messages these stakeholders consider

key. The goal is to determine which stewardship messages emerge as the most important to all groups, and then create a cohesive, consistent and effective stewardship messaging campaign to protect Lake Tahoe that everyone can support.

So what do you think are the most important actions people can take to protect our beautiful Lake and Basin?

Let us know by going to www.surveymonkey.com/s/TahoeTruckeeStewardship for a 5-minute survey.

Thinking through what you believe are the most important actions people

What matters to you?

You can help determine important stewardship messages for the Tahoe Basin by taking a short survey at www.surveymonkey.com/s/TahoeTruckeeStewardship. Help local organizations develop unified messages for visitors and residents by indicating what environmental issues are most important to you.

can take to protect Lake Tahoe is the first step toward seeing them happen.

For questions or more information, contact Kristi Boosman at kboosman@trpa.org or 775-589-5230.



Cyclists enjoy the Lakeside Trail in Tahoe City.

Tahoe Bike Challenge also benefits Lake

May is National Bike Month, but in the Tahoe Basin it was celebrated in June. Starting with Tahoe Bike Day on the first Saturday in June, the Tahoe Bike Challenge lasted two weeks.

During the Tahoe Bike Challenge, participants record their bike trips, miles and elevation ridden at www.tahoebikechallenge.org and earn virtual pins for achieving specific milestones. Cyclists also form or join teams and challenge others to attain the most trips or ride the most miles. Recognition and awards are given at the conclusion of the Bike Challenge.

Lake Tahoe, with its incredible scenery and plethora of bike paths and designated bike lanes, is a great place to ride during the warm months. But there are also plenty of other reasons to take to your bike for your daily travel – it's great exercise, for one thing, but there are a number of other ways cycling helps the Tahoe environment:

- It cuts down on traffic congestion.
- It reduces carbon output and airborne pollution, which can reduce Tahoe's clarity.
- It saves money and reduces personal dependence on fossil fuels.
- It makes parking a snap.

To help navigate around Tahoe by bicycle use this interactive map: gis.trpa.org/BIKEMAP/#

Check out the bike projects planned for the Tahoe region here: www.tahoetransportation.org/capital-projects/current-projects

East Shore bike path makes headway

Partnership working to open up hard-to-reach areas to cyclists

By Jim Sloan

The East Shore of Lake Tahoe contains some of the most scenic and primitive landscapes in the Lake Tahoe Basin. It also features many popular recreation destinations, as well as several small neighborhoods and communities.

A complete bikeway around Lake Tahoe has long been envisioned and progress is under way to make this a reality. In addition, bicycle and transit facilities are lacking along the East Shore, making cars the most common way to access the area. This, unfortunately, poses many environmental and safety issues along U.S. Highway 50 and State Route 28 – the main roads in that region. Anyone who has tried to find a place to park so they can walk down to one of those intimate, rocky East Shore beaches in the summer can attest to that.

To address these deficiencies, a multi-jurisdictional partnership consisting of Carson City, Douglas County, Washoe Tribe, Incline Village General Improvement District, Nevada Division of State Parks, Nevada Division of State Lands, Tahoe Metropolitan Planning Organization, Tahoe Transportation District (TTD), Tahoe Regional Planning Agency (TRPA), Truckee North Tahoe Transportation Management Association, South Shore Transportation Management Association, U.S. Forest Service and Washoe County is working to create a separated bikeway circling Lake Tahoe.

The partnership was formed in 2007 with an immediate focus on two demonstration projects – from Incline Village to Sand Harbor (called the North Demonstration Project) and from Stateline to Round Hill Pines Resort (the South Demonstration Project). The overall goal of the project is to design and construct the Nevada portion of a premier, separated bikeway circling Lake Tahoe to complement the existing facilities on the California side of the Lake. Design parameters were developed to provide access for bicyclists as well as pedestrians, including the elderly and disabled, while complimenting the natural environment through context-sensitive design and taking advantage of the surrounding scenic beauty that is the Lake Tahoe Basin.

A planning and design team – including AECOM, Ascent Environmental, Alta Planning + Design, Lumos & Associates, LSC Transportation Consultants, Inc., and Tom Packard & Associates – was retained by TRPA and the Tahoe Transportation District to prepare a feasibility study that covers the corridor between Sand Harbor on the north and Round Hill Pines Beach on the south as well as the two demonstration project areas. Due to the high concentration of tourist accommodation units, the availability of public land, the close proximity of popular recreation destinations such as Rabe Meadow, Nevada Beach and Round Hill Pines Beach and Resort, the immediate focus was placed on completion of the South Demonstration Project.

TTD took the lead on the project, which resulted in TRPA and U.S. Forest Service approval in 2011.

"I have completed several construction projects in the Tahoe Basin during my career but this was the most



challenging given the number of agencies participating in the planning, design and construction phases," said TTD Project Manager Alfred Knotts.

"This would not have been possible without the ongoing support and participation of all partners."

In 2012, crews broke ground on the first 1-mile segment from Kahle Drive to Elks Point Drive through the Rabe Meadow area connecting to the existing Elks Point Road Trail.

The \$1.5 million project included parking improvements at the existing Lam Watah Trailhead, a new bridge over Burke Creek, a new restroom facility, native-vegetation landscaping, interpretive signage to inform users of the surrounding natural resources and cultural history of the Washoe Tribe, and a small picnic area.

"This project provides visitors and locals safe and convenient access to the Lake and public lands, which is the main reason we're here – to see and experience America's favorite lake," Carl Hasty, TTD district manager said.

The trail was opened to the public in November 2012, although a few minor work items will be completed this summer. Project funding came from the Federal Highway



Tahoe plates drive restoration efforts

Revenues from plates go to hiking, biking, watershed restoration projects helping Lake

California and Nevada drivers can contribute to Lake Tahoe's environmental future by purchasing or renewing a Lake Tahoe specialty license plate.

More than 96 percent of the funds raised through the plate sales go directly to the California Tahoe Conservancy and the Nevada Division of State Lands to fund hiking trails, biking trails, watershed restoration projects and other efforts on behalf of Tahoe.

License plate fees have helped fund the purchase or redevelopment of sites such as Lakeview Commons in South Lake Tahoe and Patton/Waterman's Landing in Carnelian Bay, providing enhanced public beach access to recreationalists around the Basin. License plate fees support the bicycle and pedestrian trail network that provides access for all segments of the community to healthy outdoor

recreation destinations.

Revenue from the license plates also funds countless restoration and fuel-reduction projects in and around Lake Tahoe neighborhoods to protect environmentally sensitive lands.

"This is a wonderful way for people who are passionate about Tahoe to help protect it," said Patrick Wright, executive director of the California Tahoe Conservancy.

"Buying a plate will show your support for Tahoe and help fund projects that make it a special place."

Tahoe specialty plates can be purchased through the California and Nevada motor vehicle departments at the time of a new car purchase, annual registration renewal, or at anytime during the year. Information on how to purchase a plate is available at www.tahoepates.com.



Competitive paddleboarder Jay Wild is one of the prominent local athletes who help promote the Tahoe license plate program in California and Nevada. Funds raised by license plate sales are used for programs that benefit the Lake.

Tahoe Fund raising money for environmental projects

It is hard to find a group of people more passionate about an area than those who live and play in the Lake Tahoe Basin. The Tahoe Fund, a bi-state environmental nonprofit, is working hard to capture some of this passion to provide support for environmental improvement projects that will restore the Lake's famed clarity, improve recreational opportunities and build a strong sense of environmental stewardship for this extraordinary natural landscape.

Founded in 2010 by a group of leaders representing Tahoe's diverse interest groups, the Tahoe Fund has a growing list of donors whose generosity has helped fund two high-priority watershed restoration projects – the Blackwood Creek/Eagle Rock Trail Restoration on the West Shore and the Incline/Third Creek Restoration on the North Shore – as well as segments of the Tahoe Bikeway in Tahoe City and South Lake Tahoe, the Van-Sickle Bi-state Park in South Lake Tahoe, UC Davis "State of the Lake" report, and Tahoe In Depth.

The Fund represents a growing trend of increased private contributions to the Environmental Improvement Program (EIP).

"We are giving those who are passionate about Tahoe an easy way to show their support," said Cindy Gustafson, chair of the Tahoe Fund board. "Together we can play a major role in supporting and improving this amazing place."

The Tahoe Fund is currently fundraising for these EIP projects:

■ **The Emerald Bay Asian Clam Control Project** will focus on the removal of aquatic invasive species in Emerald Bay that threaten to destroy the Lake's famed clarity. *Fundraising goal: \$30,000*

■ **The Angora Creek Bridge Replacement Project** will provide a walking bridge over a newly restored area of Angora Creek. *Fundraising goal: \$15,000*

■ **The West Shore Bike Trail Project** will construct the currently missing 1-mile link connecting the trail from



Tahoe Fund Executive Director Amy Berry, third from left, presents a check for restoration work done by the California Tahoe Conservancy on Blackwood Creek.

Sugar Pine State Park to Tahoe City. *Fundraising goal: \$25,000*

■ **The Sand Harbor Beach Improvements Project** will reconstruct the failing lookouts at Sand Harbor State Park to improve erosion control and Americans with Disabilities Act accessibility to the world famous beach. *Fundraising goal: \$35,000*

In addition to these projects, the Tahoe Fund is seeking donors to join

its Founders Circle to provide the operating support critical to sustaining the organization.

The Fund is hosting its third annual Founders Circle dinner August 18 at the Hyatt in Incline Village.

To learn more about the 2013 Signature Projects, joining the Founders Circle and how you can support the efforts of the Tahoe Fund, please visit tahoefund.org.



Native columbine at one of the gardens.

Locations and websites for demonstration gardens

- **Lake Tahoe Demonstration Garden**, Lake Tahoe Community College, South Lake Tahoe www.ltcc.edu/web/community/lake-tahoe-demonstration-garden
- **North Lake Tahoe Demonstration Garden**, Sierra Nevada College, Incline Village, www.demogarden.org
- **Evans Family Garden** (Angora Community Garden), Mount Olympia Circle, South Lake Tahoe www.evansfamilygarden.org
- **Eriksson Education Center**, UC Davis Field Station and Historic Fish Hatchery, Tahoe City terc.ucdavis.edu/education_outreach/tcfieldlab/tcfieldlab.html

2013 Community Volunteer Opportunities and Events

Ongoing events

Please refer to individual websites for updates, current events and to RSVP .

- Third Saturday of the month, 9 a.m.-noon, volunteer at Evans Family Garden
- “Green Thumb Gardening” presentations (all demonstration gardens) cecentralsierra.ucanr.edu/Master_Gardeners/LTMG/

One-time events

- Aug. 21 & 31 – “Sustainable Turf Care and Turf Conversion” workshops, Lake Tahoe Demonstration and Evans Family Gardens www.tahoercd.org
- Aug. 10 – Children’s Environmental Science Day, Eriksson Education Center terc.ucdavis.edu/calendar
- September, Date TBA – Autumn Fest, Lake Tahoe Demonstration Garden www.tahoercd.org

Where landscaping ideas sprout

Demonstration gardens show off the beauty of sustainable planting

Jennifer Cressy

TAHOE RESOURCE CONSERVATION DISTRICT

Anyone who’s ever tried to have a garden at Lake Tahoe knows the value of good advice and experience. The short growing season and thin, infertile soils are enough to make the best grower check the color of his or her thumb.

One of the best resources for learning good gardening strategies and techniques is at one of the various Lake Tahoe Demonstration Gardens located around the Tahoe Basin. These grounds are a great place to learn, gather gardening inspiration, volunteer your time, or just relax and enjoy wildlife and the change of seasons. The gardens offer a unique piece of Tahoe and integrate a variety of practices and programs that support the conservation of local ecosystems.

There are four well-established community demonstration gardens around the Lake, with more in development. The goal of each garden is to exhibit ecosystem-friendly landscaping and present methods of conservation planning that help preserve and protect the beautiful ecosystems of Tahoe. The four demonstration gardens include the Lake Tahoe Demonstration Garden, the Evans Family Garden, the North Lake Tahoe Demonstration Garden, and the Eriksson Education Center Demonstration Garden.

In the gardens you will see:

- Sustainable landscaping
- Interpretive signage and information cards
- Water-efficient irrigation
- Native and adapted plants
- Erosion control Best Management Practices (BMPs) for water-quality protection
- Functional landscape design examples
- Edible landscapes and composting
- Forest health and fuels-reduction techniques
- Public venue space to provide ongoing educational opportunities

The gardens host educational events and programs for all levels of gardener and age groups throughout the summer season. Depending on the weather, the

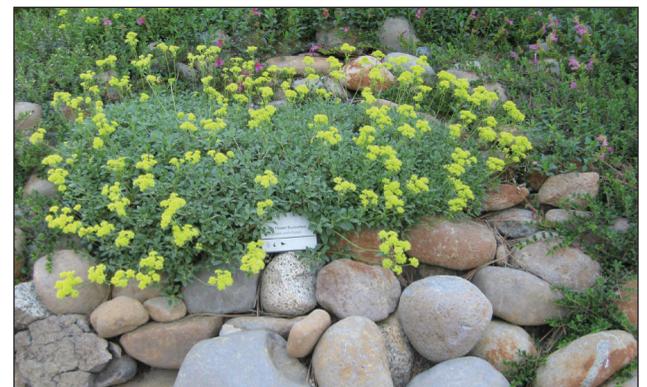


A group of volunteers (top) works on planting native plants at the Evans Family Garden in South Lake Tahoe. The garden is one of four demonstration gardens located around the Tahoe Basin that display the beauty of native plants (bottom).

gardens are free and open to the public Memorial Day through Labor Day. Visit the garden websites (at left) for a current list of events and volunteer opportunities. Docent-guided tours to accompany a group event or gathering can be arranged upon request as well.

The various gardens rely on community support to sustain their maintenance operations and development planning. Though the gardens are free and open to the public, donations and support are always welcome and encouraged. Without the dedication from volunteers and community members, these gardens simply would not exist. If you are interested in becoming involved and providing support to the Lake Tahoe Demonstration Gardens, please utilize the links provided at left.

Gardeners need to act fast in Tahoe to keep up with the short growing season; in a matter of weeks garden conditions can drastically change. Seasonally receding snow invites new growth (both



wanted and weedy), but also reveals plants damaged by rodents and snow and irrigation systems that may need repairs. Spring also provides signals to divide perennials, prune trees and shrubs, and amend the soil and get it ready for new seeds and vegetable plants. The demonstration gardens are an excellent way to gain new ideas and techniques for your own garden.

Service clubs and learning groups are invited to volunteer their time to care and maintain these demonstration gardens. Groups can make short work of sometimes large tasks at the gardens, and along the way they can learn key gardening skills and take home some practical experience (and sometimes some plants as well).

Blackwood restoration complete

Tahoe Conservancy project helps restore damaged watershed

CALIFORNIA TAHOE CONSERVANCY

Residents and visitors to Tahoe's West Shore will soon see more trout and healthy aspen thanks to the completion of the Tahoe Conservancy's Blackwood Creek restoration project. The Conservancy project is the final piece of a comprehensive interagency partnership to restore the watershed, complementing four major projects completed upstream by the U.S. Forest Service and the Conservancy's recent completion of the adjacent Eagle Rock trail.

"We are thrilled to finally complete this collaborative, multi-year effort," said Conservancy Executive Director Patrick Wright. "The watershed's fish and wildlife will thrive, Tahoe's Lake clarity will improve, and residents and visitors will now enjoy a spectacular new trail with vistas across the Lake."

Blackwood Creek's watershed, the fourth largest in the Tahoe Basin, was subjected to over a century of logging, gravel mining, grazing and urban encroachment. The creek transported more than 1,900 tons of sediment into the Lake per year, more fine sediment per unit of area than any other watershed in the Basin.

It also historically supported Lahontan cutthroat trout and other native species and was second only to the Upper Truckee River in its importance as a fishery to the Washoe Tribe. Today Blackwood Creek supports a higher proportion of rainbow trout than any other stream in the Basin.

The Conservancy project established a stable stream channel while creating small floodplain areas to improve trout spawning and riparian habitat. These improvements also help to maintain Lake Tahoe's famed clarity by reducing the watershed's contribution of fine sediment and nutrients. This fall, visitors will enjoy the changing colors of aspen leaves and a more diverse riparian habitat of alder, willow and dogwood.

Several organizations helped contribute funding and staff support for the \$2 million project, including the Conservancy, the U.S. Army Corps of Engineers, the Tahoe Fund, the Washoe Tribe and California State Parks.

Visitors will be able to access the newly restored area in summer of 2013. Final restoration activities, such as irrigation and final stabilization of all staging and access areas, will still be under way, however. Access is available from State Route 89 about 5 miles south of Tahoe City, adjacent to Eagle Rock.

Established in 1984, the mission of the Tahoe Conservancy is to lead California's efforts to restore and enhance the extraordinary natural and recreational resources of the Lake Tahoe Basin.

For more information, visit www.tahoe.ca.gov or call Victoria Ortiz at 530-543-6033.



Work crews (top) used heavy equipment to establish a stable stream channel, which will support healthy habitat for trout (below) and other species.



The new Rabe Meadow trail.

Project working on East Shore bike path

Continued from page 6

Administration, Nevada Division of State Lands, the Tahoe Fund and the Nevada Department of Transportation. Ongoing operations and maintenance will be provided by Douglas County.

TTD and its project partners continue to work on the final design and funding for the next phase of the South Demonstration Project, which will extend the recently completed segment from Elks Point Road to Round Hill Pines Resort and Beach.

This phase is being done in partnership with NDOT using a unique project delivery process known as Construction Manager At Risk (CMAR), which Knotts said should result in cost savings and expedited project delivery. So far so good: The project is coming in under budget and with additional scope.

"Utilizing the CMAR process allows the owner, designer and contractor to work hand in hand as opposed to a contractor bidding on and building a project that has been fully designed," Knotts said. "The early collaboration between Lumos, the firm under contract to design the project, and Q&D Construction, the CMAR construction contractor, has allowed the project to be designed in a manner that reduces impacts on the environment and streamlines construction by eliminating issues that can result in delays in the field."

The process has allowed TTD and NDOT to add 565 feet of trail to provide direct access to Round Hill Pines Beach. When the segment is finished, residents and visitors will be able to travel from Kahle Drive to Round Hill Pines Beach Resort on a 10-foot-wide paved path.



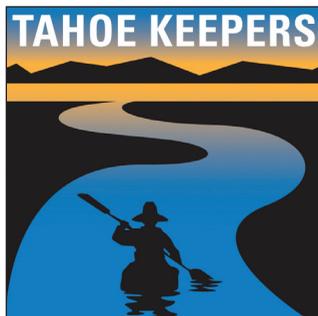
Kayakers heading out on Lake Tahoe.

Paddlers doing their part as well

Hundreds of paddlers who frequent Lake Tahoe have joined the Tahoe Keepers community of boaters committed to stopping the spread of aquatic invasive species. The Tahoe Keepers watch a short training video, take a quiz to demonstrate their understanding of the threats aquatic invasive species pose and learn what they can do to reduce the risk of aquatic invasive species.

From August 2011 to June 2013, over 900 Tahoe Keepers have signed up and taken the pledge to self-inspect and decontaminate their boats every time they haul out and move between any stream, lake or river in the Tahoe Basin. This is an important part of the effort to prevent the spread of existing invasive species or the introduction of new ones.

Also in 2012, the inspection program initiated free inspections and consultations for non-motorized watercraft users at popular launch locations around Lake Tahoe and Fallen Leaf Lake. For more information on the Tahoe Keepers community and to see the self-inspection training, go to tahokeepers.org.



Boaters arriving cleaned, drained, dry



Boaters who arrive clean, drained and dry to inspection stations get on the water faster. Photo: Corey Rich Productions

Inspection stations report fewer decontaminations being required

By Patrick Stone

TAHOE REGIONAL PLANNING AGENCY

If you own a boat and you live in or visit the Tahoe Basin regularly, then you are probably no stranger to the Lake Tahoe Watercraft Inspection Program.

All watercraft entering Lake Tahoe waters, including motorized boats, canoes, kayaks, paddleboards, sailboats and sea planes, must be free of invasive species prior to launch. Inspections are performed at a number of locations around the Tahoe Basin, and an inspection sticker is required when you launch a motorized boat at Lake Tahoe, Echo Lake or Fallen Leaf Lake.

Any watercraft suspected of being contaminated with invasive species must be decontaminated before it can be launched. The decontamination costs extra and delays a boat's launch. That's why officials always encourage boaters to arrive at the inspection stations "cleaned, drained and dry" in order to expedite the process.

The inspections are a vital step in keeping aquatic invasive species out of Lake Tahoe. Some invaders can damage a lake's ecosystem because they multiply and spread rapidly, leaving behind murky water and beaches fouled with sharp shells, weeds and the odor of decay. Aquatic weeds can choke off marinas and coves, and exotic or nonnative fish can disrupt the food chain.

"It's in everyone's interest to arrive clean, drained and dry," said Dennis Zabaglo, TRPA's aquatic invasive species coordinator.

"One boat that may have been inadvertently contaminated during an excursion on another lake or waterway could be carrying tiny larvae or pieces of vegetation that could quickly spread and have a devastating effect on Lake Tahoe."

For motorized boaters, inspections and decontaminations are available for an annual fee at five roadside inspection locations: Meyers, Spooner Summit, Northstar-at-Tahoe, Alpine Meadows and Homewood.

Annual fees for motorized watercraft, based on the length of the vessel, start at \$35 for boats up to 17 feet and increase based on the length of vessel, going up to \$121 for boats over 39 feet long. Fees are payable with Visa or Mastercard only.

There is also a \$25 fee for decontamination, with an additional \$10 charged for each raw water system, such as ballasts and live wells, so boaters are encouraged to heed the "Clean, Drain and Dry" mantra.

After a visiting boater has paid the annual fee, obtained a sticker, and received an inspection at a roadside station, the inspector will then attach a wire "seal" between the boat and trailer. Then the boaters may proceed to their favorite launch ramp or facility to have

their seal checked and their boat cleared for launch.

Boaters who only use their boat in Tahoe and have maintained an intact inspection seal, which demonstrates the boat is safe to launch, can proceed straight to the ramp and purchase a "Tahoe Only" sticker for a reduced fee. Inspections for non-motorized watercraft are also offered at the five roadside locations for no charge.

The mandatory inspections and decontaminations for motorized watercraft entering Tahoe waters have been in place since 2009, and increasingly boaters are arriving at inspection stations with boats that are clean, drained and dry. From 2009 to 2012, for example, the number of inspections has averaged about 7,500 per year. But the number of decontaminations has decreased from 5,000 in 2011 to 3,750 in 2012.

This suggests that an increasing number of boaters are pulling their bilge plugs, emptying their ballast tanks and live wells, washing debris off their boat, looking carefully for clinging invasives and drying their bilge and engine wells carefully before arriving at Lake Tahoe. These actions are what it takes to kill invasive plants or larvae hitchhiking from a contaminated lake.

In addition, boater's arriving cleaned, drained and dry results in reduced wait times at the inspection stations.

For more information, visit tahoeboatinspections.com.

Emerald Bay nearly weed-free

Research to identify ways to control mollusks, invading fish

Continued from page 1

with help from the state of California, the U.S. Bureau of Reclamation, the U.S. Fish & Wildlife Service, the Tahoe Resource Conservation District and the Tahoe Regional Planning Agency.

The team refined its methods, hired and trained professional divers, and ramped up plant removal efforts to clear more and more of the Lake bottom each year. Divers pulled plants by hand and placed light-blocking barriers on the Lake bottom to restrict growth and kill plants.

Biologists now survey the plant infestations each year before and after the plants are treated. In 2012, the team reported a 99 percent reduction of plants in two sites and 70 percent reduction in the most laborious work site -- the Avalanche Beach area.

Future aquatic weed removal efforts will continue to reduce the infestation at Avalanche Beach and will maintain the Vikingsholm and Parson's Rock areas to prevent regrowth or recolonization of plants.

Emerald Bay State Park and its partners are winning the battle but the war is far from over. According to Steve Chilton, U.S. Fish & Wildlife Service's aquatic nuisance species coordinator for the Tahoe Region, the war on invasive species needs the support of everyone who lives or visits Lake Tahoe or represents the Lake in our state legislatures.

Research efforts are under way to determine the best tools available for controlling invasive mollusks, such as Asian clam, and warm-water fish, like brown bullhead or small-mouth bass. The Lake Tahoe Regional Aquatic Invasive Species Program will use the results of these and other research projects to improve the Tahoe Basin's ability to detect, control and prevent aquatic invaders.

One of the most effective ways to prevent the introduction and spread of invasive species at Lake Tahoe is to clean, drain and dry any boats or kayaks before they are launched. This is particularly important if the boat has been launched in another lake or waterway because

it may have picked up an unwanted hitchhiker in the form of an exotic weed or mollusk.

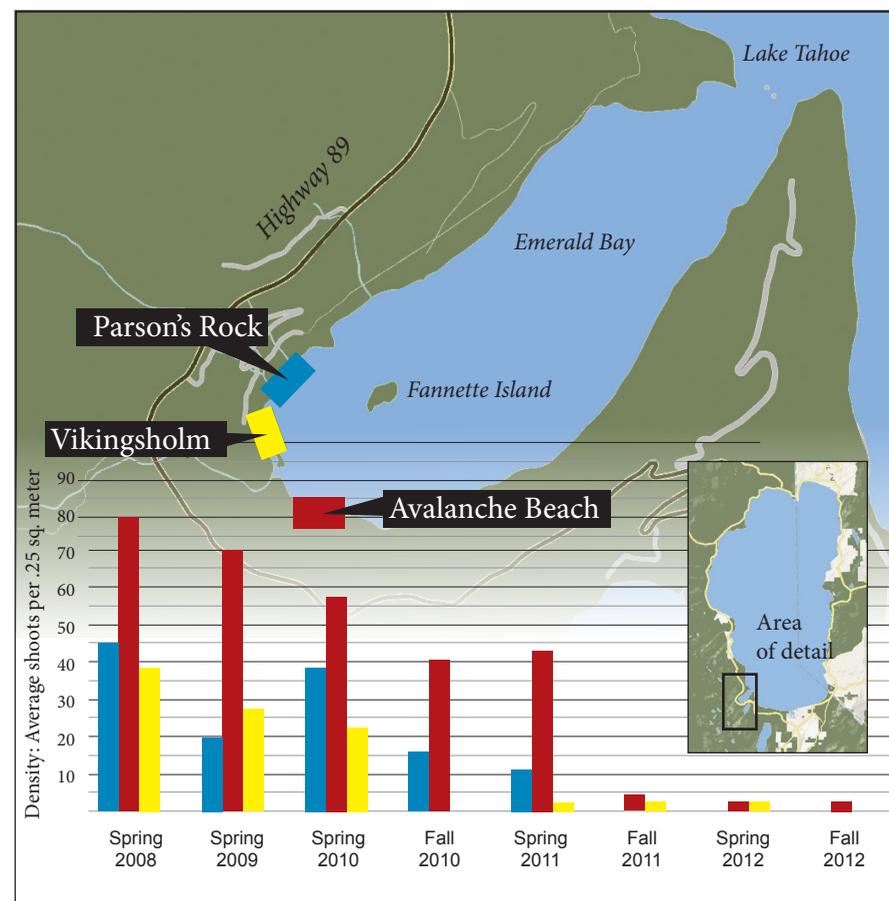
"We learned how to recycle, how to buckle up, and even how to buy the right outboard engines," said Dan Shaw, Emerald Bay State Park biologist. "We can learn how to clean, drain and dry

our boats and we can learn how to stop invasive plants or animals instead of helping them get around."

"If Lake Tahoe boaters, residents and visitors can continue to score wins on the front line by eliminating existing plant infestations, we can defeat Eurasian watermilfoil in Emerald Bay."



A diver deploys light-blocking barriers over aquatic weeds in Emerald Bay.



Carrie Benjamin

FIRST PERSON

Volunteer recounts helping fight weeds

Last fall, I was a first-time volunteer for a project jointly sponsored by the Tahoe Regional Planning Agency (TRPA) and the League to Save Lake Tahoe (Keep Tahoe Blue). I donated a few hours of my time and helped them remove heavy tarps from several local area ponds.

The tarps were installed the previous summer to prevent thick growths of aquatic weeds from spreading and dominating the ponds. And the tarps did the job! The ponds were clearer, had fewer weeds, and had fewer habitats for invasive animals like bullfrog.

There was also an informative talk by Sarah Muskopf from the Forest Service, who explained how the invasive aquatic weeds and bullfrogs can irreversibly harm the Lake Tahoe watershed, and how the tarps can mitigate the problem.

It was hard work but also a most memorable, wonderful and rewarding experience. I really enjoyed seeing these two different organizations working together to accomplish the single goal of preserving the Lake Tahoe Basin. The project also gave me the opportunity to meet volunteers from both agencies, all of whom were great folks.

As a volunteer, I was very impressed with the event's organization and leadership. They trained us well, were respectful of our time, and most appreciative of our efforts. I look forward to participating in future volunteer projects with TRPA and Keep Tahoe Blue.

Carrie Benjamin

Incline Village resident

EIP

Environmental Improvement Program has brought 15 years of restoration gains

The Environmental Improvement Program (EIP), a capital improvement program created to protect and restore the natural and recreational resources of the Lake Tahoe Basin, launched in 1997 after the Lake Tahoe Presidential Forum attended by President Bill Clinton and Vice President Al Gore. The EIP signaled a renewed commitment to the Lake Tahoe Region and elevated Tahoe's environmental issues to the national stage.

Since then, EIP projects have increased public access to the Lake, added hundreds of miles of bike trails, reduced urban and roadway pollution, restored creeks, reduced fire-threatening fuels on tens of thousands of acres of forests, and improved transportation around the Lake. Both the public and private sectors have played a role in the success of the EIP – more than \$1.6 billion has been invested by more than 50 partner organizations.

This year marks 15 years of on-the-ground environmental improvement at Lake Tahoe. However, a large amount of work lies ahead. With limited government funding for EIP projects, public-private partnerships are a crucial component of the EIP and Tahoe's path to prosperity.

At right is a snapshot of EIP projects, along with the environmental criteria (called thresholds) these projects addressed and improved. These regionally significant efforts also highlight the various agencies who contributed to the projects. For more information about the Environmental Improvement Program, go to conservationclearly.org.

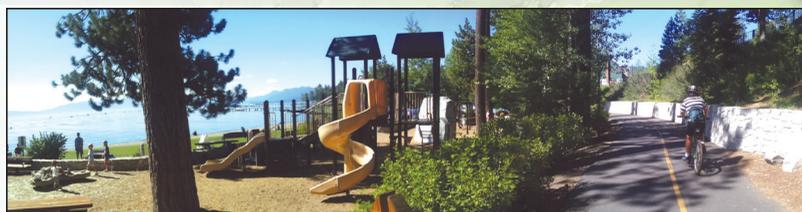
— Karin Edwards, TAHOE REGIONAL PLANNING AGENCY

Lakeside Bike Trail

Tahoe City Public Utility District, with California Tahoe Conservancy, North Lake Tahoe Resort Association, California State Parks, Placer County, U.S. Bureau of Reclamation, Caltrans, Tahoe Fund

Thresholds: Recreation, Water Quality, Soil Conservation, Air Quality, Scenic Resources

Overview: Conceived as a connection for three existing trails through Tahoe City, Lakeside Trail evolved into a promenade along the lakefront connecting private properties with public recreation facilities, focusing Tahoe City back to its waterfront and encouraging a more walkable, bikeable community. The Lakeside Trail connects the West Shore Trail, the North Shore Trail and the Truckee River Trail, providing a network of more than 20 miles of paved trail.

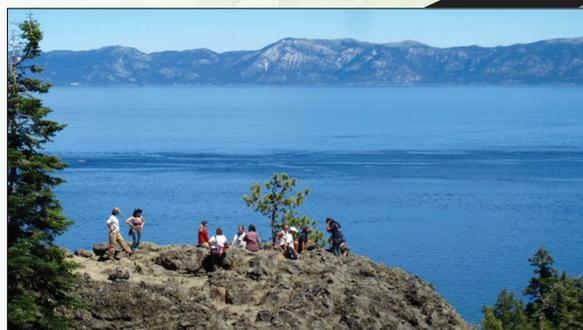


Commons Beach

Tahoe City Public Utility District, with California Tahoe Conservancy, North Lake Tahoe Resort Association, Placer County, Tahoe Truckee Community Foundation, Kiwanis Club, Tahoe City Beautification Committee

Thresholds: Water Quality, Recreation, Scenic Resources, Air Quality

Overview: The restored town commons provides Lake access, community gathering space, environmental education opportunities, and a lakefront bike trail in the center of Tahoe City. Not only did Commons Beach help to improve Lake access and recreation, it also improved Lake clarity by improving drainage and stabilizing the eroding shoreline and hillside.



Eagle Rock Trail

California Tahoe Conservancy, with California Conservation Corps, Tahoe Rim Trail Association, U.S. Forest Service

Thresholds: Recreation, Soil Conservation, Water Quality

Overview: The California Tahoe Conservancy purchased Eagle Rock and the surrounding 54.5-acre parcel in 1987 to provide public access, recreation and opportunities for restoration of environmentally sensitive lands. Severely eroded user-created trails routing sediment-laden runoff to Lake Tahoe were replaced with a new trail implementing advanced erosion-control techniques. In the summer of 2013 Conservancy crews will build a new trail on the north side of Eagle Rock, providing access to the top from both sides. **See story on page 9.**



Blackwood Creek Restoration

Project Leads: U.S. Forest Service and California Tahoe Conservancy

Thresholds: Water Quality, Soil Conservation, Vegetation

Overview: Blackwood Creek was one of the largest sediment contributors to reduced clarity because of its natural hydrology, including logging, grazing and gravel mining. Multiple agencies are implementing best management practices and rehabilitation techniques to improve stream features. The result has been a measured reduction in sediment amounts of sediment deposition on the newly reconstructed stream. **See story on page 9.**



Third and Incline Creeks Restoration

Incline Village General Improvement District (IVGID), with U.S. Army Corps of Engineers, Nevada Division of State Lands

Thresholds: Water Quality, Soil Conservation, Wildlife, Fisheries, Vegetation, Recreation

Overview: From 2009-2012, IVGID has implemented four different phases of restoration on Third and Incline creeks rehabilitating a 1,500-foot length of channel; retrofitting an existing box culvert with low-cost boulder baffles; replacing fish-barring culverts with a natural bed system with step-pools; and restoring 2,200 linear feet of Third Creek. See story, page 22.



Highway 28 Erosion Control Project

Nevada Division of Transportation, with Nevada Division of State Lands, Federal Highways Administration, TRPA, IVGID, Washoe County

Thresholds: Water Quality

Overview: Project included water quality improvements along 3 miles of roadway, stabilizing erosive slopes with revegetation and rock rip-rap and restoring compacted soil to natural conditions. New storm drains, trench drains and curbing direct stormwater to pretreatment devices, infiltration basins and media filters.



Elks Point Forest Fuels Reduction

Tahoe Douglas Fire Protection District, with Douglas County Parks, Douglas County School District, Nevada Fire Safe Council, U.S. Forest Service, homeowners

Thresholds: Vegetation

Overview: This forest-thinning project to modify wildland fire behavior in the Zephyr Cove community was funded by the Southern Nevada Public Land Management Act and the Tahoe Douglas Fire Safe Community Fund, a tax paid by the community for fuels reduction work. Project included 52.5 acres of hand thinning and pile burning; 49.5 acres of mechanical thinning; and removal of insect- and dwarf mistletoe-infested trees.



Heavenly Gondola

Heavenly Mountain Resort, with TRPA, U.S. Forest Service, City of South Lake Tahoe, El Dorado County, California Tahoe Conservancy and Lahontan Regional Water Quality Control Board

Thresholds: Air Quality, Water Quality, Recreation

Overview: The aerial gondola and ski lift transports skiers, snowboarders and sightseers from downtown South Lake Tahoe directly to mid-mountain at Heavenly, providing access to Heavenly Resort and National Forest lands in multiple seasons for public outdoor recreation without the need for the private automobile.

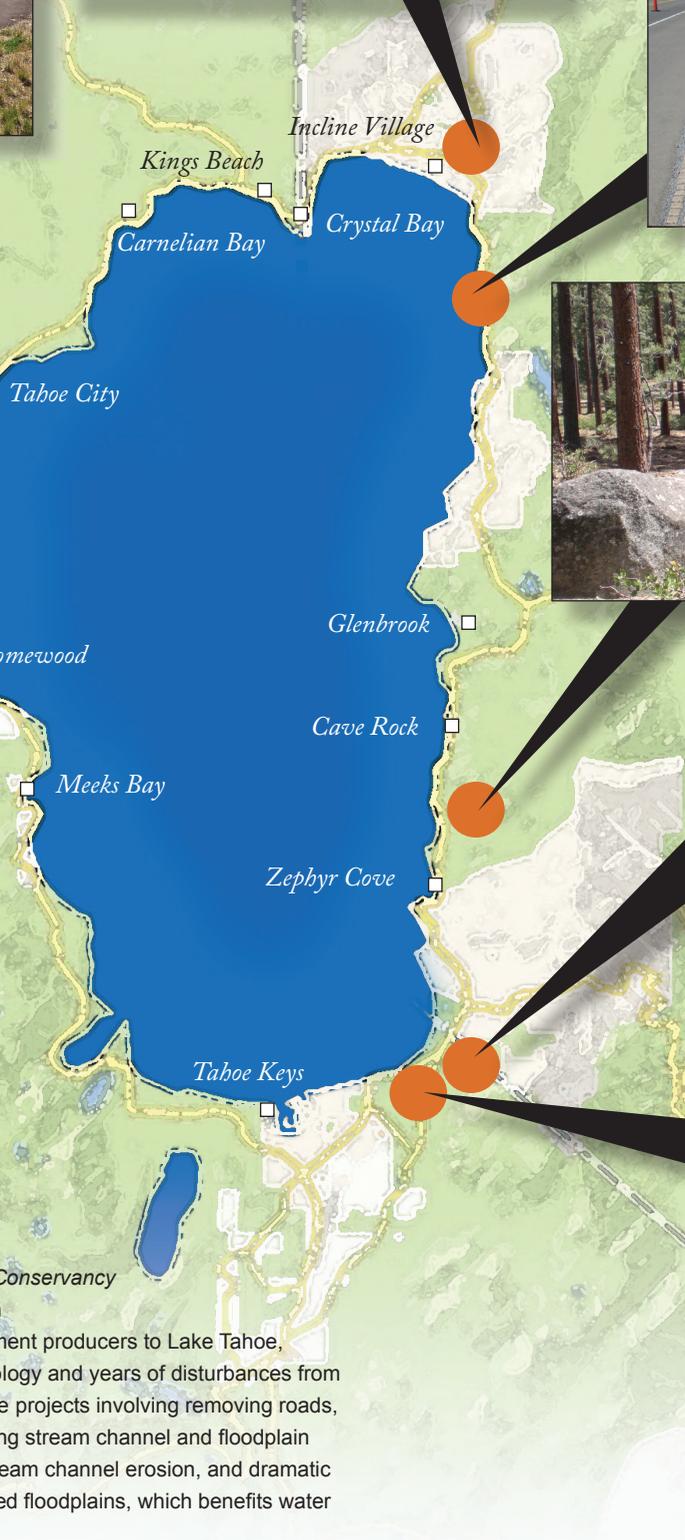


Lakeview Commons

City of South Lake Tahoe, with California Tahoe Conservancy, El Dorado County

Thresholds: Recreation, Water Quality, Scenic Resources

Overview: The Lakeview Commons at El Dorado Beach in South Lake Tahoe radically transformed an eroding beach adjacent to Highway 50 into an elegantly designed waterfront area that combines green building, energy and water conservation, and cutting-edge, water-quality improvements. The park gives residents and visitors a place to gather, attend summer concerts, swim, participate in paddleboard races and barbeque. It also dramatically reduces the sediment flowing into Lake Tahoe.



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eam channel erosion, and dramatic
ed floodplains, which benefits water



Celebrating 40 years of protecting bald eagles

Bald eagles are a prominent example of conservation success stemming from the passage of the Endangered Species Act of 1973. Here's a timeline:

- Decimated following the widespread application of the pesticide DDT
- 1963: Only 417 nesting pairs remaining in the lower 48 states
- 1967: Protected as an Endangered Species
- 1978: Listed as endangered under the Endangered Species Act
- 1995: Populations considered endangered recover enough to be considered threatened
- 2006: 9,789 nesting pairs occur in the lower 48 states
- June 28, 2007: The U.S. Fish & Wildlife Service announces removal from the list of threatened and endangered species.

Thanks to our sponsors

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Eagles make a comeback

National symbol is an increasingly common site at Lake Tahoe

By Jeannie Stafford
U.S. FISH & WILDLIFE SERVICE

Look up! That shadow passing over you may just be from a bald eagle. With protection from conservation laws such as the Endangered Species Act of 1973, bald eagles can once again be seen in the Lake Tahoe Basin.

The decline of bald eagles in the Lake Tahoe Basin mirrored the decline of the species across the lower 48 states. Today, approximately 15 individuals winter at Lake Tahoe and there is one successful nesting pair. The eagles that winter in the Lake Tahoe Basin generally migrate here from Alaska and Canada. Mid-winter bald eagle surveys at Lake Tahoe have been conducted since 1979.

Distinguished by a white head and tail feathers, bald eagles are magnificent and powerful birds. Females may weigh 14 pounds and have a wingspan of 8 feet. Male eagles are smaller, weighing as much as 10 pounds and have a wingspan of 6 feet. Sometimes confused with golden eagles, bald eagles are mostly dark brown until they are 4 to 5 years old and acquire their characteristic white head and tail feathers.

Bald eagles live near rivers, lakes and marshes, where they can find fish, their staple food. They also feed on waterfowl, turtles, rabbits, snakes and other small animals, as well as carrion. In winter, the birds congregate near open water in tall trees, which they use for spotting prey and for nighttime roosting.

At Lake Tahoe, the eagles forage all over the shoreline, but one spot where you might see one is at the observation deck at the U.S. Forest Service Taylor Creek Visitor Center. The deck was specifically built for viewing eagles frequenting the Taylor Creek drainage.

Eagles mate for life, building their nests in the tops of large trees and expanding those nests each year. Nests may reach 10 feet across and weigh a half ton. They may also have one or more alternate nests within their breeding territory. Bald eagles travel great distances but usually return to breeding grounds within 100 miles of



Bald eagles migrate to the Tahoe Basin in the winter from Alaska and Canada. They typically produce one to three eggs per year. The chicks, left, hatch after about 35 days. Photos: Dave Menke, USFWS

the place where they were raised.

Breeding bald eagles typically lay one to three eggs per year. The eggs hatch in approximately 35 days. The young eagles fly within three months and are on their own about a month later. Disease, lack of food, bad weather, or human interference kill many eaglets; recent studies found that 30 percent don't survive their first year of life.

The first major decline of the bald eagle probably began in the mid to late 1800s, coinciding with the decline of

waterfowl, shorebirds and other prey.

Although they primarily eat fish and carrion, bald eagles used to be considered marauders that preyed on chickens, lambs and domestic livestock. Consequently, the large raptors were shot in an effort to eliminate a perceived threat. Coupled with the loss of nesting habitat, bald eagle populations declined.

In 1940, noting that the species was "threatened with extinction," Congress

Continued on page 15

Lake Tahoe: Heart of the Washoe Tribe

Legends inspired by land & water

“The health of the land and the health of the people are tied together, and what happens to the land also happens to the people. When the land suffers so, too, do the people.”

— A. Brian Wallace

Former Chairman of the Washoe Tribe

The area in and around Lake Tahoe is the ancestral homeland of the Washoe people, Lake Tahoe’s original inhabitants. The name, “Tahoe” comes from the Washoe word, “Da ow,” which means lake. Their territory consisted of a central area with Lake Tahoe at its heart. It was bordered on the west by the Sierra Nevada, the east by the Pine Nut and Virginia ranges, and stretching north to Honey Lake and south to Sonora Pass.

Here the Washoe people lived for thousands of years as they raised families, hunted, fished, gathered acorns and pinenuts and traded with other tribes. In her publication, “WA SHE SHU: A Washoe Tribal History,” tribal member JoAnn Nevers writes, “As the



The Washoe Tribe has called the Lake Tahoe area home for centuries, and the geography and lakes of the region gave rise to a great many legends.

traditions explain, the Washoe did not travel to this area from another place. They were here in the beginning and have always lived here... Each cave, stream, lake or prominent geographical feature is named and has stories associated with it.”

Washoe legends tell of creatures with special powers that lived in the Washoe territory. “Water Babies” inhabited all bodies of water, and were believed to be very powerful, sometimes causing illness or death to a person, but could also be a good omen.

Washoe healers visited the sacred Cave Rock where Water Babies lived to consult with them, bring offerings of respect, and to renew powers. There is also the legend of a giant man-eating-bird named Ong that nested in the middle of Lake Tahoe. Ong was so large and so powerful that his wing beats could bend the trees when he flew near shore.

Another legend describes why there are so many lakes surrounding Lake Tahoe. That legend is called “Damolili

and Pewec’eli” (the squirrel and weasel brothers), several versions of which have been passed down by the Washoe from generation to generation for thousands of years. The legend is as follows:

Damolili and Pewec’eli were south of Lake Tahoe where the area of Meyers now stands. Pewec’eli had just killed a deer. He told his brother, the more mischievous and happy-go-lucky of the two, to go and get some water to drink from Lake Tahoe. While Damolili was away, Pewec’eli would build a fire. When Damolili got to the lake he saw a young water baby basking on a cone rock combing its long hair.

“Oh gee, my brother always wanted long, beautiful, hair,” Damolili said to himself. The water baby, knowing what he was thinking, said to him, “If you try to take my hair the lake will swallow you.” The water baby and Damolili began to wrestle. They rolled all around the lake from Cave Rock to the place on the South Shore where the Upper Truckee runs into the Lake. At this point Damolili killed the water baby. That is

why a nearby creek is always red.

With the death of the water baby the lake began to swell up and rise. Then Damolili started to run up the mountain to escape these rising waters. Each time he pulled a strand of hair from out of the water baby’s scalp, the lake would rise up and recede back. Then Damolili finally got as far as Jobs Peak where his brother was. His brother told him to throw the water baby’s hair back before the water swallowed them up! Then Damolili said, “Ah, but I thought you wanted this hair, because yours is so scarce.” By this time they were up to their necks in water. Pewec’eli insisted that the hair be thrown back. Damolili was finally convinced and did as he was told. The water then receded back to its original bed. However, its rising up is the reason there are many lakes in the mountains around Lake Tahoe.

The Washoe Tribe invites you to learn more about their history, traditions and culture at www.washoetribe.us.

Researched and compiled by the Washoe Cultural Resource Advisory Council (WCRAC) 2013

Continued from page 14

passed the Bald Eagle Protection Act, which prohibited killing, selling or possessing the species. A 1962 amendment added the golden eagle, and the law became the Bald and Golden Eagle Protection Act.

Shortly after World War II, DDT was hailed as a new pesticide to control mosquitoes and other insects. However, DDT and its residues washed into nearby waterways, where it was absorbed by aquatic plants and fish. Bald eagles, in turn, were poisoned with DDT when they ate the contaminated fish. The chemical interfered with the birds’ ability to produce strong eggshells. As a result, their eggs often

broke during incubation or otherwise failed to hatch. DDT also affected other species such as peregrine falcons and brown pelicans.

In addition to the adverse effects of DDT, some bald eagles began dying from lead poisoning after feeding on waterfowl containing lead shot, either as a result of hunting or from inadvertent ingestion.

By 1963, with only 417 nesting pairs of bald eagles remaining, the species was in danger of extinction. Loss of habitat, shooting, and DDT poisoning contributed to the near demise of the country’s national symbol.

In 1967, the Secretary of Interior listed bald eagles south of the 40th parallel under the Endangered Species

Preservation Act of 1966. As the dangers of DDT became known, the Environmental Protection Agency took the historic and, at the time, controversial step of banning the use of DDT in the United States in 1972.

Following enactment of the Endangered Species Act of 1973, the U.S. Fish & Wildlife Service listed bald eagles in 1978 as endangered throughout the lower 48 states, except in Michigan, Minnesota, Oregon, Washington and Wisconsin, where it was designated as threatened. “Endangered” means a species is considered in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is considered likely to become endangered within the

foreseeable future, but is not currently in danger of extinction.

In July 1995, the Service announced that bald eagles in the lower 48 states had recovered to the point where those populations previously considered endangered were now considered threatened. In 2006, the Service estimated that there were at least 9,789 nesting pairs of bald eagles in the contiguous United States.

Bald eagles have staged a remarkable population rebound and have recovered to the point that they no longer need the protection of the Endangered Species Act. On June 28, 2007, the Service announced the recovery of the eagle and removal from the list of threatened and endangered species.

Cutthroat surviving, spawning

Numbers of native trout at Fallen Leaf Lake on the rise

By Jason Smith and
Dr. Mary Peacock

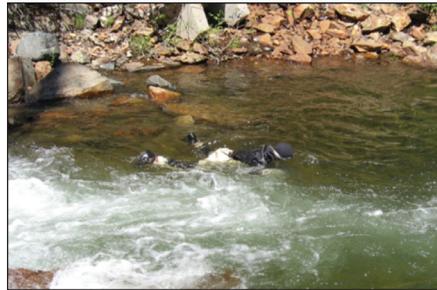
UNIVERSITY OF NEVADA, RENO

Cutthroat trout are named for the distinctive red slashes that are found under their chins and are one of the native trout species found in the intermontane western United States. Lahontan cutthroat trout, native to the Lahontan Basin in California and Nevada, were once the top predator in the streams and lakes of the Lake Tahoe watershed.

Indeed, this native strain of Lahontan cutthroat trout (LCT) was the largest of the lake forms among the cutthroat trout subspecies, growing to truly impressive sizes. Not only does the lake form of this subspecies get larger, they also are thought to live up to 20 years longer. The all-time LCT angling record was set in 1925 in Pyramid Lake, with a fish that weighed more than 41 pounds. The California state record for this subspecies is from Lake Tahoe in 1911, and it weighed more than 31 pounds.

It was common in the mid- to late-1800s to catch cutthroat trout in these lakes that were over 20 pounds. Not only was the size of these fish impressive, the sheer abundance of cutthroat trout in the Tahoe-Truckee watershed was staggering as well. There were so many fish that the supply was once thought to be “inexhaustible,” and in the mid-1800s commercial fishing operations were catching thousands of these fish and marketing them as far away as San Francisco. These commercial fishing operations helped feed the timber and mining booms that were occurring during that era.

Unfortunately, the negative ecological impacts of timber and mineral harvesting, combined with non-native species introductions, dams and overfishing, led to the collapse of this incredible fishery. Even though commercial fishing was outlawed in Lake Tahoe in 1917, LCT did not persist and were no longer found in the Lake by 1940, with the last recorded spawning



A snorkeler (top left) swims in Glen Alpine Creek to assess the number of spawning Lahontan cutthroat trout while a U.S. Fish & Wildlife crew (top right) releases hatchery raised fish into Fallen Leaf Lake. Spawning trout (bottom) make their way up Glen Alpine Creek.

occurring in 1938. These incredible fish had also disappeared from Pyramid Lake by 1944 due primarily to dams that prevented these fish from reaching spawning habitat in the upper river.

Prior to the 1900s there were a total of 11 lake-dwelling populations of LCT. Currently, only two self-reproducing, lake-dwelling populations exist in their native habitat – approximately 0.4 percent of their historical lake habitat – and neither is thought to be the original strain of LCT that produced such historically large fish.

A happenstance discovery of what was thought to be the original Pyramid Lake strain occurred in the late 1970s in a small creek in the Pilot Peak range along the Nevada-Utah border. In 1995 the Lahontan National Fish Hatchery (LNFH) Complex began raising a wild broodstock of this “Pilot Peak” strain of LCT for restoration, conservation and

recreational fishing activities. State-of-the-art genetic analysis in the mid-2000s showed that the Pilot Peak strain was indeed a remnant of the original strain native to the Truckee/Tahoe watershed.

Beginning in 2002 the U.S. Fish & Wildlife Service, its partners and the local community began stocking Pilot Peak LCT into Fallen Leaf Lake in an attempt to re-introduce a lake-dwelling population of this subspecies. Fallen Leaf Lake, connected to Lake Tahoe by Taylor Creek, is historic lake habitat for LCT and provided an opportunity to identify and evaluate successful conservation strategies on an ecosystem similar to Lake Tahoe.

Some success has been recorded for the Fallen Leaf Lake reintroduction, such as increasing angler catch rates of LCT and evidence for multi-year survival of small numbers of LCT in the lake itself. However, it was not

until 2012 that teams comprised of researchers and U.S. Fish & Wildlife Service biologists from the LNFH Complex were able to document a rise in the overwintering survival of these stocked fish and record cutthroat reproduction in Glen Alpine Creek.

In 2012, teams snorkeling Glen Alpine Creek recorded a 10-fold increase in the numbers of LCT observed during the spawning season.

These same biologists were able to show that LCT are also good at avoiding nets in Fallen Leaf Lake and that prior interpretations of their overwintering survival in the lake based on those nets may be flawed.

For the first time since the Fallen Leaf Lake reintroduction began, a large number of these overwintered fish were caught by researchers while angling in the spring.

This action was important because it occurred well before the annual LCT stocking of Fallen Leaf Lake. This new angling protocol is allowing researchers to gain valuable information about the surviving fish and their habits which was previously unknown.

This approach is providing important growth and diet data that will be instrumental to the success of the Pilot Peak LCT reintroduction into the Basin. Some of the overwintered LCT caught thus far are in excess of 14 inches, and it is expected they will get much larger.

In 2006 the LNFH Complex, in cooperation with the Pyramid Lake Paiute Tribe, began stocking the Pilot Peak strain LCT into Pyramid Lake and the results have been impressive. Beginning in 2012, Pilot Peak LCT caught by anglers in Pyramid Lake have been in excess of 20 pounds, the largest one caught so far was 24 pounds in November 2012. Time will tell just how big the original fish can get in Fallen Leaf Lake. Perhaps we will see another 31-plus pounder and with the continued efforts of the LNFH Complex we may someday again fish for these giants in Lake Tahoe as well.

Save water, save money, save the Lake

Water-efficient landscaping reduces the amount of nutrient-rich runoff, protects water quality

By **Madonna Dunbar**
INCLINE VILLAGE GENERAL
IMPROVEMENT DISTRICT

The central mission of the Tahoe Water Suppliers Association is to provide high-quality drinking water and protect the Tahoe watershed. During the summer season, municipal water use in the Tahoe Basin drastically increases, often doubling or tripling, primarily due to the demands of landscape irrigation. Increased water use requires more than just water.

Pumping water in the mountains requires significant amounts of expensive electrical power. The cost of electricity is the largest expense that water providers face in their operating expenses. Making landscape and irrigation systems efficient can result in significant cost and water savings to both the billpayer and community water systems.

Tahoe's arid summer environment, short growing season and nutrient-limited soils create unique challenges to residential and commercial landscaping. But dumping excessive water and fertilizer on the landscape isn't the



Landscaping that uses native plants and drip irrigation saves water and helps protect Tahoe's water quality.

answer; the practice is wasteful and inefficient, and nutrient runoff from poorly maintained landscaping directly impacts the water quality of the Lake.

The good news is there are simple ways to modify landscaping and irrigation methods to maintain a beautiful landscape and conserve this most precious natural resource – our water. Landscape water use can often be reduced by 20 to 30 percent with a few,

simple "Water Smart" modifications, such as removing turf, retrofitting with high-efficiency sprinkler heads, fixing system leaks, proper pressure regulation, staggered irrigation timing, converting to drip systems or amending poor soil with compost or mulch.

For the "do-it-yourselfer" – the "Home Landscaping Guide for Lake Tahoe and Vicinity," published by University of Nevada Cooperative

Extension – is a must read, covering all aspects of soil preparation, plant selection, irrigation efficiency, defensible space and BMPs. It is available online at www.unce.unr.edu/publications/files/nr/2006/eb0601.pdf.

There are also many free conservation landscape resources available through such area agencies as the Tahoe Resource Conservation District, Nevada Tahoe Conservation District, South Tahoe Public Utility District, Incline Village General Improvement District, area Cooperative Extensions, Master Gardener programs, area Demonstration Gardens and others. Check with those listed or contact your community water provider to see what resources and services may be available to you.

If you hire a landscaper to maintain your property, ask potential service providers about their training and practices in low-water landscaping and phosphorus-free fertilizer use. Lake Tahoe's environment, your property value and your pocketbook can all benefit.

For more information, Madonna Dunbar can be reached at mod@ivgid.org or 775-832-1212.

Energy efficiency can help your budget and environment

By **Sam Rohn**
LIBERTY UTILITIES

Whether you call the Tahoe Basin your home, business or vacation spot, you probably feel passionate about retaining the beauty of this special place. One place to help achieve that is your home or office building.

According to the International Energy Agency, buildings worldwide consume 42 percent of all electricity – more than any other asset. By 2025, buildings are expected to be the largest emitters of greenhouse gases on our planet. In the United States, the EPA recently reported, residential and commercial buildings produce 35 percent of greenhouse gas emissions.

Consumers are seeking more environmentally friendly building products, but what if you aren't

building a new home or planning a major remodel? What can you do now to reduce your energy consumption and at the same time reduce your costs?

Local energy companies such as Liberty Utilities offer a variety of programs to help residential and commercial customers save energy and money and help the environment. These include:

■ **Energy Audits for Homes and Businesses:** Schedule a free visit by a Liberty auditor, who will identify ways you can save energy and money. You'll receive free energy-efficient lightbulbs and other conservation items if needed. 800-782-2506.

■ **Refrigerator Recycling:** An old refrigerator uses up to four times the energy of a new one; you can save up to \$140 per year by updating and get a \$35 rebate for letting Liberty pick up and

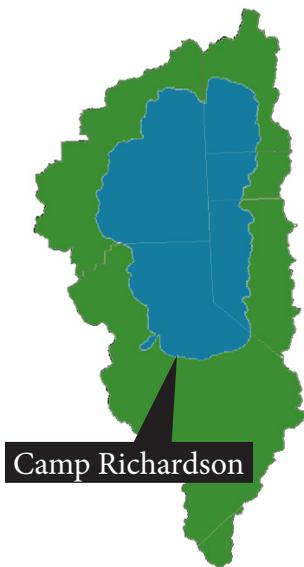


At the Kokanee Festival, Liberty Utilities representatives spread the word about how Tahoe residents and visitors can help the environment by reducing energy use.

recycle your old refrigerator. 877-289-8260 (April-October only)

■ **Commercial Customer Incentives:** Commercial customers who wish to retrofit with energy-efficient lighting or other upgrades can receive monetary incentives if they qualify. 775-336-1300 ext. 107.

Liberty Utilities also offers ideas on how Tahoe residents can reduce their energy consumption in their homes and businesses. Visit Liberty at www.libertyutilities.com/west/saving/energy_efficiency.html. By taking some energy-efficiency measures, your budget and the environment will benefit.



Camp Richardson project by the numbers:

- Project size: 79 acres located approximately 2 miles northwest of South Lake Tahoe
- Use levels: 118,770 recreation visitor days a year, with June through September being the heaviest used months.
- Capacity reduction: From 1,950 to 1,788 people per day.
- Number of campsites: From 325 to between 230 and 255, depending on final design limitations.
- Campsite types: Full utility hookup sites increasing from 114 to 170; non-utility sites decreasing from 211 to 85.
- Winter use: Year-round operation of all utility hookup sites is proposed. Snow removal would occur on paved surfaces only and use of traction material to assist vehicle circulation would be limited.

Camp Richardson facelift proposed



The project at Camp Richardson would cut down on the traffic through the resort area and improve the overall quality of individual sites located in the three camping areas.

Popular campgrounds may be improved, with some sites year-round

By Daniel Cressy
U.S. FOREST SERVICE

One of the most popular areas on the South Shore could be undergoing a facelift in the next few years as the U.S. Forest Service seeks to protect Lake Tahoe water quality and reduce traffic congestion around the Camp Richardson area.

The U.S. Forest Service Lake Tahoe Basin Management Unit (LTBMU) is proposing to retrofit the 79-acre Camp Richardson Resort campground with water-quality protection Best Management Practices (BMPs) while improving the overall experience for campers using the three area campgrounds.

Although the project would reduce the number of campsites at the three sites – known to locals and visitors as the Badger's Den (north campground), Eagle's Nest (southeast campground) and the RV Camp (southwest campground) – it would increase the number of full-utility hookup sites while adding accommodations for the estimated 50 percent of campers



who arrive with parties of six or more. The campgrounds would also offer year-round camping with some snow removal.

Background

Camp Richardson Resort is a popular Forest Service-managed, lakefront facility located on Highway 89, north of Fallen Leaf Lake. The resort dates to the 1930s and is eligible for listing on the National Register of Historic Places. The Forest Service acquired the property in 1965 and a concessionaire operates the resort under a special-use permit. The resort is an important economic contributor to the community, drawing as many as 250,000 visitors annually and

employing over 80 people year-round and another 220 seasonally.

Camp Richardson Resort is part of the South Shore Corridor – the area of concentrated public lands and facilities along Highway 89 between South Lake Tahoe and Emerald Bay. The resort campground retrofit is part of the Forest Service's effort to implement its "Framework for Sustainable Recreation," integrating socioeconomic values with conservation and restoration of the natural setting. Other South Shore Corridor projects would include improvements to the trail system, improved parking and traffic circulation at the historic sites,

Continued on page 19

Camp Rich renovation would improve water quality

Continued from page 18

improved forest health and fuels reduction.

The 325-site campground's current configuration does not comply with Forest Service standards for water-quality protection, accessibility and resource stewardship. Portions of the campground impact the sensitive soils and vegetation of Pope Marsh.

"While Camp Richardson remains a popular recreation destination, its facilities require renovation," says Gina Thompson, Forest Service recreation staff officer.

The retrofit would focus on the campground and resort village core areas. Funded by the Southern Nevada Public Land Management Act, the project's goal is to protect and improve Lake Tahoe's water quality. The project would delineate campground roads and campsites, and install BMPs to infiltrate stormwater runoff, preventing erosion. It would reduce impervious coverage within the resort and restore affected portions of Pope Marsh.

Thompson noted that the project would reduce the number of campsites by approximately 30 percent but would improve the overall quality of the camping experience. Individual sites would offer more space and accessibility, and groups would find it easier to secure suitable accommodations.

The project would provide various camping amenities, including sites with and without utility hook-ups, as well as campsites for groups of up to six, 12, and 24 people. Each campsite would provide access for people with disabilities. Improved facilities, such as restroom-shower buildings and utility infrastructure, would bring the campground into compliance with today's standards.

Reduced traffic expected

The project would also reduce traffic congestion along the Highway 89 corridor, specifically near the busy intersection with Jameson Beach Road. The Forest Service would develop a new campground check-in, reduce the number of driveways entering the highway and develop managed parking areas. Bus or trolley pull-outs would improve transit service. A re-route of the bike path would reduce congestion at the busy intersection while maintaining access to the resort's store, ice cream shop and other services. The project would not eliminate congestion in this area, Thompson says, but would reduce the number of vehicle trips by approximately 10 percent.

Although the current project does not include changes to Jameson Beach Road, which leads from the highway to the lakefront, the Forest Service has worked with the resort and private property owners to make improvements. Implemented in 2012, these include improved circulation at the traffic control kiosk and road striping, which separates vehicles from pedestrians and bicyclists and reduces overall speeds.



The renovation project at Camp Richardson would improve the overall quality of campsites like this one.

Collaboration helped planning

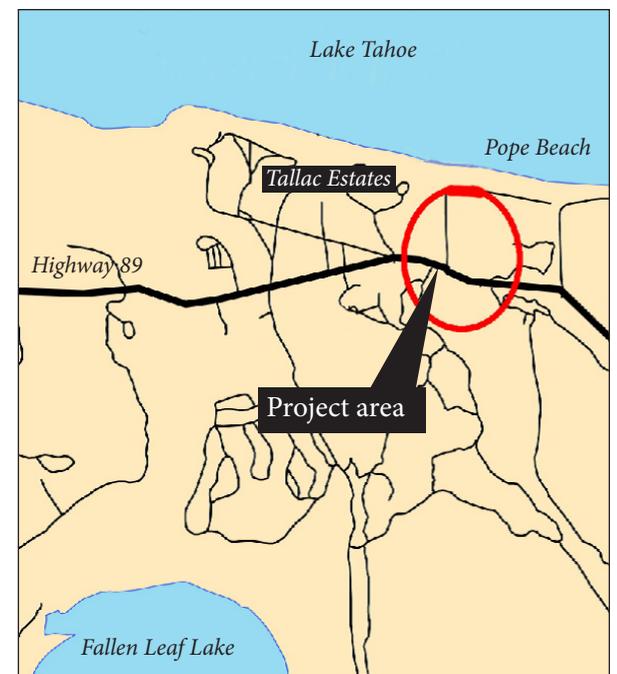
The Forest Service worked with stakeholders, the resort operator and other public agencies throughout National Environmental Policy Act (NEPA) analysis, and will continue to collaborate as the project moves toward implementation.

"Like many projects, the campground retrofit balances stewardship choices, and public input has identified concerns regarding changes to the number of campsites (some favor less reduction, some favor more); increases in the number of campsites with utility hook-ups; and removal of trees," says Thompson. "Some stakeholders would like the project to encompass other areas of the resort."

Retrofit work to begin in 2014

After final approval, initial construction and implementation of the BMP retrofit would occur over the summers of 2014 and 2015. During implementation, portions of the campground would be closed, but the remainder would be open for public use and enjoyment. Caltrans is also proposing improvements to this stretch of Highway 89 for 2015. The Forest Service will continue to coordinate to minimize public access disruptions.

The work completed in 2014-15 will cost \$4 million and has already been funded, but the total project would cost \$19 million. The first two phases would be completed by 2016, with the entire project scheduled to be finished by 2020.



"This project would take an important step toward addressing facility and environmental stewardship needs at Camp Richardson Resort, while maintaining its historic character," Thompson says.

To learn more, visit www.fs.usda.gov/goto/lbmu/CampRichRetrofit

League-sponsored 2013 volunteer programs

What: Summer Kickoff Party

When: 1-5 p.m. June 22

Where: 2608 Lake Tahoe Boulevard

Cost: Free

Details: The League to Save Lake Tahoe is hosting a Summer Kickoff Party to invite all community members to celebrate the start of summer at our Education and Information Center. This event is free to attend and will feature live music, games and activities, and a complimentary ice cream bar. Blue Moon beer will be served to those 21 and older. For more information about this event visit keptahoebblue.org or email events@keptahoebblue.org

What: Cycle the Sierra

When: June 22-26

Where: 300-mile loop through the Sierra Nevada's

Details: Dozens of cyclists will be coming through South Lake Tahoe in a race that supports Keep Tahoe Blue. This fully supported, five-day journey takes riders on a 300-mile loop through breathtaking country, beneath granite peaks, through evergreen forests and to alpine hot springs. Register today to show your support for Keep Tahoe Blue. For more information on the race or to register go to cyclothesierra.com or email events@keptahoebblue.org

What: Keep Tahoe Red, White, & Blue Beach Cleanups

When: 9 a.m. – noon July 5

Where: Tahoe City Commons Beach and Timbercove Beach in South Lake Tahoe

Cost: Free – we'll even provide snacks to our volunteers!

What: Join the League to Save Lake Tahoe to keep our beaches clean after the busy Fourth of July holiday celebrations. Please bring gloves and a reusable water bottle. Wear clothes that can get dirty and sturdy shoes. For more information about this event visit keptahoebblue.org or email events@keptahoebblue.org

What: Red, White, and Tahoe Blue Festival

When: 11 a.m. to 2 p.m. July 6

Where: Incline Village

Cost: Free

Details: The League will be hosting a booth at this community fair with games and activities to spread the word of Keeping Tahoe Blue. For more information about this event visit keptahoebblue.org or email events@keptahoebblue.org



Tahoe In Depth is printed on 30 percent post-consumer recycled paper.

Volunteer opportunities growing

League to Save Lake Tahoe has expanded events to help people protect Lake

By Jim Sloan

The League to Save Lake Tahoe, the conservation group that coined the slogan "Keep Tahoe Blue," is reaching out to the public and encouraging members and citizens to join a number of volunteer efforts designed to protect the Lake and raise awareness.

Amanda Royal of the League said that in the past year the group has tripled its volunteer opportunities, staging beach cleanups, weed pulls and its traditional Tahoe Forest Stewardship Day to help protect the Lake.

"One of the most common questions we get from the public at the League to Save Lake Tahoe is: 'How can I help?'" Royal said. "Well, there are lots of ways."

"We foster volunteerism because we know that when people have the chance to do hands-on work, they connect to Lake Tahoe in a new way," she added. "Their love for the Lake grows and their appreciation for the environmental challenges facing the Lake increases. They learn just how much work it takes to 'Keep Tahoe Blue.'"

Royal said the League's newest program, Pipe Keepers, trains volunteers from around the Lake to monitor large drainage pipes that empty into Tahoe. The pipes, Royal said, are remnants of Tahoe's 1950s building boom, and they usually lead from roadways and other infrastructure with little to no opportunity for runoff to infiltrate into the soil. As jurisdictions install Best Management Practices, some of this runoff is being diverted to retention basins that can help keep pollutants from entering the watershed.

"Pipe Keepers trains volunteers to help answer the question 'Are these pipes a problem?'" Royal said. "They take water samples and record visual observations."

As the program enters its second year, the number of volunteers and pipes being monitored is growing.

"Once we get enough data, we hope it will help policymakers decide how to use valuable restoration funding, or



Volunteers (top) help control invasive weeds in ponds near Baldwin Beach by laying tarps over infected areas during a summer 2012 Keep Tahoe Blue volunteer project. Other volunteers, (below) plant willow wattles to control erosion along the Upper Truckee River.

which areas should be prioritized for redevelopment so that aging infrastructure can be replaced," she said.

The League has also launched a new volunteer effort called "Eyes on the Lake" that trains volunteers on how to identify aquatic invasive plants and report what they see while out on Tahoe's waters. This information will be used by partners in the Lake Tahoe Aquatic Invasive Species Program to control any new invasive plant infestations before they cause irreversible damage to the Lake. Sign up to protect while you play at protect@keptahoebblue.org.

The League also hosts beach cleanups throughout the summer as well as every September in honor of the national Coastal Cleanup Day.

"Tahoe's beaches receive a lot of wear and tear during the summer months," Royal said. "They need attention throughout the busy visitor season to stay clean and healthy for everyone to



enjoy. Litter can be harmful to wildlife, damage the local economy, pose a human health hazard and contribute to clarity loss."

The League also uses volunteers for storm drain marking, environmental education events like Earth Day, and its new social event series, which provides casual venues like happy hours and silent discos for the local community to connect and learn about reducing its footprint. For more information about volunteering, contact the League at info@keptahoebblue.org or visit its events page keptahoebblue.org/news/events/ for the next volunteer opportunity.

Scientists focusing on nearshore

Shoreline environment poses special challenges

By Dan Sussman

LAHONTAN WATER BOARD

Most visitors associate Lake Tahoe's shoreline with crystal clear waters and warm sandy beaches. In recent years, however, some regions of Lake Tahoe's shallow waters are occasionally murky or the submerged rocks are covered with unsightly algae.

Lake Tahoe's nearshore is the ribbon of Lake nearest to and most influenced by the shoreline. Most pollutants that enter the Lake do so at the nearshore. (To learn about efforts to reduce these pollutants, see TMDL article on page 1.)

Although most people visiting Lake Tahoe only come in contact with this nearshore area – such as when they are swimming or kayaking or simply strolling out on a pier – this part of the Lake has actually been studied less than Tahoe's deep-water regions. Typically, when scientists are discussing the clarity of Lake Tahoe and other scientific measurements that gauge the Lake's ecological health, they are referring to the deep parts of the Lake. Consequently, what the scientists tell us about Lake clarity may not match up with what we see when kayaking.

Increasingly, scientists studying Lake Tahoe are turning their attention to forces that affect the nearshore area. The Lahontan Regional Water Board, Tahoe Regional Planning Agency (TRPA) and Nevada Division of Environmental Protection (NDEP) have long been aware of increased algae growth and aquatic invasive species issues affecting the nearshore zone, and are responding.

To help address nearshore issues, a research project was initiated by the Desert Research Institute (DRI), UC Davis and University of Nevada, Reno (the Science Team) in coordination with TRPA, Lahontan, NDEP and the U.S. Environmental Protection Agency. The Science Team will soon deliver a synthesis of its understanding of nearshore health and factors that affect nearshore ecology and aesthetics, including an assessment and recommendations related to nearshore water quality standards and indicators,



Developing a unified approach to management of the nearshore is a challenge for TRPA and the states of California and Nevada.

and a framework to guide future nearshore monitoring.

Developing a unified approach to management of the nearshore is a challenge for TRPA and the states of California and Nevada. The complexity of the nearshore complicates management and policy efforts. Physically, some areas of the Lake drop to great depths directly offshore, whereas other areas have a large, shallow shelf.

The underwater substrate, or rock type, also varies around the Lake, as does the amount of snowfall, the intensity of the built environment, and runoff to the Lake. All of these factors vary and have an influence on nearshore conditions around Tahoe.

A challenge, according to the Science Team, is developing a way to measure clarity in the nearshore. The typical method of lowering a Secchi disk into deep water and measuring the depth when the white disc disappears from view doesn't work in the shallower nearshore area. Thus, scientists are developing monitoring guidelines for measuring nearshore clarity.

In a past study of nearshore turbidity, DRI found that nearshore areas adjacent to undeveloped areas had the clearest water while slightly less clear waters were found off the Tahoe Keys, South Lake Tahoe and Tahoe City. Occasionally, slightly reduced clarity

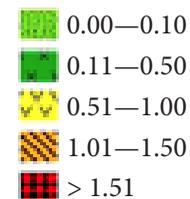
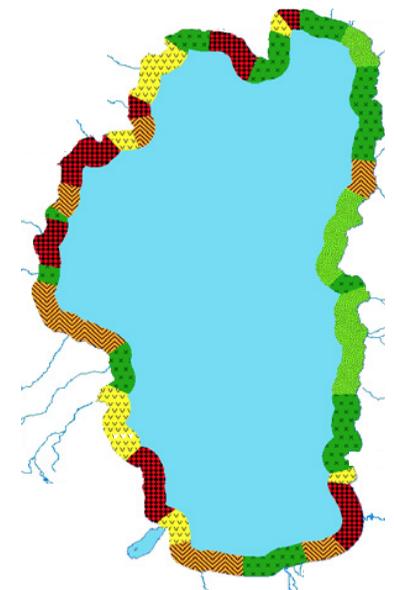
was found off Incline Village and Kings Beach. Emerald Bay doesn't have a lot of development but its steep hillsides, relatively shallow, isolated waters, and heavy boat traffic can contribute to slightly reduced water clarity. Still, the differences in the water clarity levels at these areas are difficult to notice with the naked eye.

The Science Team concluded that processes occurring along a small percentage of Tahoe's entire, 72-mile lakeshore caused most clarity losses in the nearshore.

Scientists are also working to better understand what factors affect turbidity and algae.

Relatively higher summertime turbidity readings were not affected by heavy streamflows, but waves from boats and wind likely played a big role in stirring up sediments at that time of year. Algae growth on rocks peaks in early spring each year in some areas of the nearshore and then dies and detaches contributing to reduced nearshore water clarity. The exact causes of attached algae growth are still unknown, but the science team has a working hypothesis that it may be stimulated by nutrient upwelling events from Tahoe's deep-water or potentially associated with nutrients leeching from old septic systems or urban sewer infrastructure – more research is needed to know with certainty however.

Shoreline algae distribution



In 2011, UC Davis researchers surveyed 45 locations around Lake Tahoe by snorkel in 1.5 feet of water. They created a "Periphyton Biomass Index" as an indicator of the algae a casual observer would see from the shoreline. The PBI is a percentage of the Lake bottom covered by periphyton multiplied by the average length of the algal filaments. The lowest readings were found on the East Shore along undeveloped shorelines. Compared with 2008, there were higher concentrations of periphyton particularly in the northwest section of the Lake.



In an effort to protect the nearshore, many agencies have partnered on an outreach program to educate the public about the impacts of fertilizers containing phosphorus.



Third Creek is running clearer these days.

Restoring vegetation a big part of project

Revegetation of the riparian and upland areas was a key element of the Third Creek restoration project.

The project included harvesting and replanting onsite willow, alder and cottonwood. Onsite harvesting included storage of materials, propagation and replanting of poles and root mastication.

More than 1,300 wetland plugs were propagated and installed, as well as 380 trees and 530 shrubs.

This effort will lead to an improved floristic community, bank stability and better riparian cover habitat. Two pedestrian bridges, one on Third Creek and one on Incline Creek, were also installed to concentrate recreational use in the area and reduce bank erosion from manmade crossings.

Cardno ENTRIX completed full design, construction documents, fish relocation and construction oversight. The project won the 2012 “Best in the Basin” award by the Tahoe Regional Planning Agency for habitat restoration.

The rebirth of Third Creek

Incline stream, a source of sediment, has been restored to natural state

By Charley Miller

NEVADA DIVISION OF STATE LANDS

For years, Third and Incline creeks dumped fine sediment into Lake Tahoe, and development around Incline Village placed structures in and around the creeks that interfered with aquatic life and the natural spawning runs of native fish.

Restoring the decades of problems has been the focus of a series of efforts on the two creeks on Tahoe’s North Shore.

From 2009-2012, the Incline Village General Improvement District (IVGID) implemented four different phases of restoration on Third and Incline creeks, utilizing funding granted by the U.S. Army Corps of Engineers and the Nevada Division of State Lands and design services provided by Cardno ENTRIX.

The first phase of the stream restoration project restored a 1,500-foot length of channel and retrofitted an existing box culvert with low-cost boulder baffles. The project built inset floodplains to connect the channel to the floodplain at higher recurrence intervals to reduce fine sediment entering the Lake.

A high flow connection was made to a remnant channel to improve wetland areas. Large wood habitat features were incorporated at several locations to improve pool depth and complexity, provide aquatic refuge and protect eroding banks. The project won the 2009 “Best in the Basin” award by the Tahoe Regional Planning Agency for habitat restoration.

In 2010, Phase II was completed when two problem culverts were replaced. The existing culverts were fish barriers for depth, velocity and height, and were replaced with open-bottom culverts to provide fish passage in a natural bed system with step-pools.

This required relocation of several utilities within the right-of-way and challenging traffic closures. Close coordination with the public, local businesses, and IVGID was a key component in completing the project.

In 2011, Phase III focused on the



One of the culverts on Third Creek was replaced with an open-bottom culvert and a natural bed system with step pools to allow fish passage that was previously blocked (top). Below, the project area has been revegetated to control eroding streambanks.



Lakeshore Boulevard crossing of Incline Creek, a nearby parallel creek. This location was a pedestrian hazard in the winter as the right-of-way was only wide enough for automobile traffic to pass and the pedestrian bridge was not clear of snow. The answer was a wider roadway prism, including a designated Class I bike trail and a vegetated, rock-lined swale connected to a sedimentation can to treat roadway runoff prior to entering the stream.

On the upstream end of the culvert, a series of step pools were constructed to tie into previous wetland work completed by the Hyatt Regency Lake Tahoe Resort. These improvements

provided fish passage to several miles of upstream habitat to large lake-dwelling, stream-spawning rainbow trout and Lahontan cutthroat trout.

In 2012, Cardno ENTRIX completed the final phase of the work by restoring 2,200 linear feet of Third Creek.

The site had 12 treatment areas focused on creating pool habitat for adult fish while stabilizing eroding banks. This strategy has increased the floristic community, improved the limiting lifestage of aquatic species and reduced the overall cost of the project by limiting the excavation work to the problem sites.

Plan seeks restoration, reinvestment

Upgrading outdated structures key to helping restore Lake clarity

By Jeff Cowen

TAHOE REGIONAL PLANNING AGENCY

Lake Tahoe regulations that use an incentive-based approach to encourage environmental upgrades to homes and businesses became effective in June.

The Tahoe Regional Planning Agency (TRPA), the bi-state organization charged with restoring Lake Tahoe's environment while providing for orderly growth, has updated the Lake Tahoe Regional Plan.

The Regional Plan seeks to accelerate water quality restoration; help create walkable, bikeable communities; streamline the permitting process; and integrate local government Area Plans.

The new plan will help stimulate reinvestment in properties while incorporating multiple environmental benefits into every project. Updated policies also encourage home improvements and environmental redevelopment of outdated properties, which are needed to help restore Lake Tahoe.

Restoring Lake Tahoe means improving the way stormwater and other pollutants are managed. All properties are required to have stormwater Best Management Practices (BMPs) installed, but most property owners install them only when they carry out a major renovation or expansion project. Thus, remodeling and reinvestment is good for the Lake because more of the existing development in the watershed becomes protected by BMPs.

Major remodels and redevelopment in Tahoe's town centers, in addition to delivering water-quality protection, can include updated architecture and scenic benefits, transportation infrastructure, development transfers from sensitive areas, and more compact, pedestrian-friendly commercial and tourist areas.

Since more than 90 percent of existing homes and businesses pre-date newer environmental guidelines, remodeling and reinvestment could be a major factor in Lake Tahoe's restoration.

Many of the rule changes focus on



TRPA's Regional Plan seeks to help create walkable, bikeable communities in the Tahoe Basin.

the way TRPA regulates land coverage, which is the amount of structures and pavement allowed on each parcel. Modified regulations treat pervious improvements like decks and patios differently than impervious surfaces like buildings and parking lots. This is because pervious surfaces allow stormwater infiltration, which benefits water quality.

Another water quality policy change includes the phase out of fertilizers containing phosphorus. TRPA and partner agencies have launched an education campaign to alert property owners of the impacts of phosphorus-heavy fertilizers on the Lake's shoreline.

Area Plans

In addition, a simplified permit process at the local building department may be in store for many property owners, depending on progress made by each local government to adopt Area Plans that can be integrated into the TRPA Regional Plan. New provisions allow most environmental review to be taken on by local governments if there is an Area Plan in place that meets or exceeds TRPA's regional standards.

Area Plans can simplify the permitting process by combining TRPA and local government requirements into a single permitting system, which is expected to encourage more property upgrades as well. Area Plans must be just as protective as the Regional Plan, but each

jurisdiction will have the flexibility to determine how environmental targets are met within their unique area and how issues of community character are addressed.

Jurisdictions are drafting their Area Plans over the next two years and TRPA permits are required in the interim. But many local building departments can already issue TRPA permits on the TRPA's behalf.

Plan Details

The Regional Plan encourages revitalization rather than growth. The plan cuts the number of residential growth allocations in half, is projected to eliminate 10,000 vehicle miles traveled each year, and anticipates that an additional 1,200 parcels will be protected or restored.

The plan maintains the strict growth control system but makes reinvestment in Lake Tahoe communities more feasible. The Basin's year-round population is projected to only increase by about 5,900 over the next 20 years, which would make it lower than the Basin population in 2000.

Despite an unprecedented public participation process, the Sierra Club filed a lawsuit against the plan. While the litigation makes its way through the legal process, the updated ordinances are currently in effect and TRPA is moving ahead with implementing the plan.



Major remodels and redevelopment in Tahoe's town centers can include updated architecture and scenic benefits, water quality and transportation infrastructure, development transfers from sensitive areas, and more compact, pedestrian-friendly commercial and tourist areas.

Homeowner incentives

Here is a short list of the incentives that will be available to homeowners this summer (permit process and land capability or existing coverage verifications may apply):

- Exemption for 500 square feet of new deck area, or a percentage of a larger deck, from the total land coverage on a property as long as BMPs are certified for the property and other criteria are met.
- Land coverage exemptions for small temporary structures like sheds (up to 120 square feet) as long as BMPs are certified for the property and other criteria are met.
- A 25 percent land coverage credit for the use of pervious paving surfaces.
- Development transfer incentives so homes that are located on sensitive lands can be torn down and the development rights transferred to less sensitive land. Additional "bonus" development rights would be provided by TRPA as a matching incentive.

To find out what policies are in effect and how to use the new plan, stay tuned to www.trpa.org or talk to a TRPA planner by calling 775-588-4547.

Best in the Basin

Projects making a difference at Lake Tahoe

The Tahoe Regional Planning Agency annually recognizes projects that demonstrate exceptional planning, design and compatibility with the Lake Tahoe environment. Here are a few of the projects that received a Best in the Basin award for 2012 and why they are setting new standards.

— By Jeff Cowen

1. Commercial Project

Cedar Glen Lodge Remodel, Tahoe Vista, California

The original rustic charm of this 50-year-old lodging property was retained while it was updated to modern codes and luxuries. A new centerpiece for the property is the replacement lodge building, which now includes a lobby, bar, small restaurant, kitchen, fire lounge and a new manager's unit upstairs – all tucked together with only a modest increase in the size of the building. The remodel included site-design and environmental improvements, including installation of stormwater BMPs, new lighting and a sidewalk that improves the walkability of the community.



6. Erosion Control Project

Public Rain Garden Project, Incline Village, Nevada

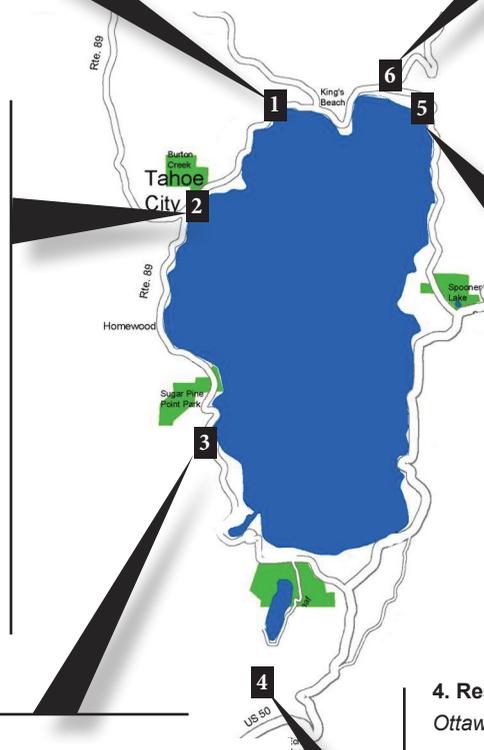
Washoe County and the Nevada Tahoe Conservation District integrated beautiful rain gardens into an existing stormwater improvement project on the sweeping turns of Village Road in Incline Village. The gardens are vegetated basins alongside the roadway that are interconnected and designed to protect Lake Tahoe from the fine sediment contained in unfiltered stormwater.



2. Recreation Project

Lakeside Trail, Tahoe City, California

This final 1-mile segment of trail completes the largest paved trail system at Lake Tahoe – a 19-mile network connecting the North Shore, West Shore, and the Truckee River and Squaw Valley. The trail provides a vital link, an alternative mode of transportation, a recreational amenity, access to Lake Tahoe and the Truckee River, and exposes numerous points of interest.



5. Restoration Project

Third Creek, Incline Village, Nevada

The restoration of Third and Incline creeks benefitted wildlife habitat, water quality and the local community. The area experiences heavy human use, and the creeks suffered from multiple fish barriers and eroding banks. Culverts under roadways were replaced with rustic, arched bridges with a near-natural streambed underneath, which helped bring fish back to several miles of streambed following more than half a century of barricading. **See story, page 22.**

3. Forest Fuel Reduction Project

Come Again Meadow Fuel Reduction and Meadow Restoration, Rubicon Bay, California

Following years of neighborhood activities and an extensive forest fuel-reduction project that used Come Again Meadow as a staging area, the soil in this beautiful part of the West Shore was compacted and nearly devoid of plant growth. The area was expertly restored by the Meeks Bay Fire District and cooperative property owners using an adaptive process to rebuild function in the meadow. Surrounding property owners contributed financially to the fuel reduction work that is now protecting several neighborhoods in the area.



4. Residential Remodel and Green Building Project

Ottawa Drive Garage and Guest House, Meyers, California



With sensitive, responsible design, this project provided a generous two-car garage, a stunning guesthouse with innovative interior space and an expansive sheltered entry for a local family. The new structure integrates contemporary mountain design with cutting-edge green building practices, such as Structural Insulated Panels, soy-based foam insulation, use of salvaged redwood from old decks for the trim and deck railing, and a tankless, on-demand hot water heater.

For a complete list of winners, visit trpa.org