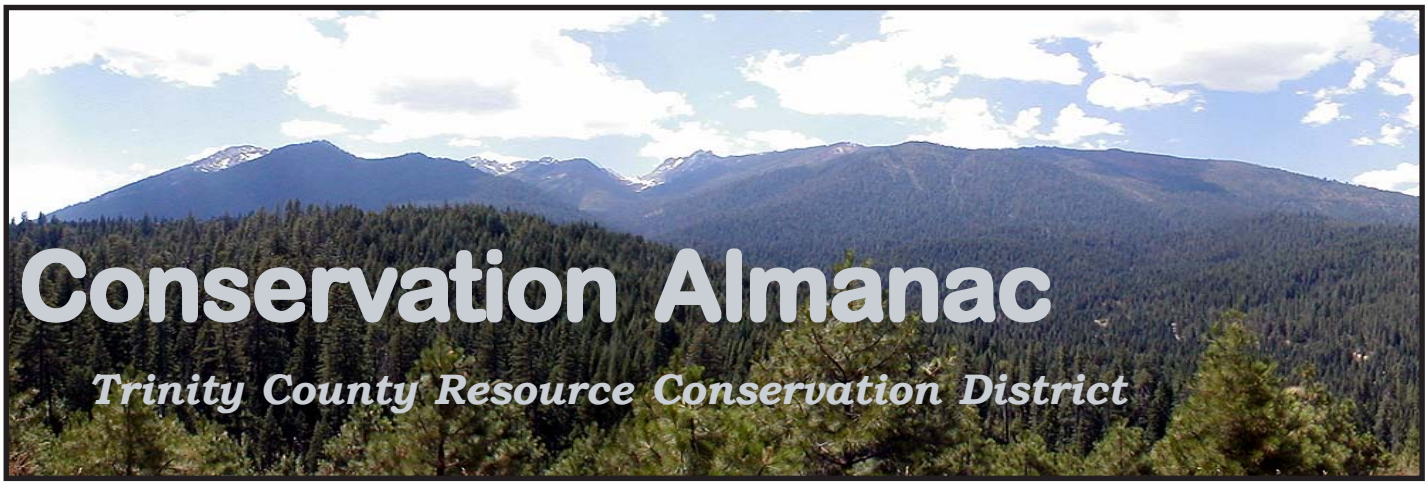


Fall 2003 Vol. XII No. 4

# Trinity River Gravel: for Now and the Future

**by Trinity River Restoration Program Staff**

The goal of the Trinity River Restoration Program (TRRP) is to restore a self-sustaining anadromous fishery downstream of Lewiston Dam. Anadromous fish, such as salmon and steelhead, are born in the Trinity River and its tributaries, live most of their lives in salt water, and then return to freshwater again to spawn as adults. The TRRP hopes to assist in the recovery in these species by restoring to the Trinity River the attributes of a healthy alluvial (gravel & cobble) river. Historically gravel moved down the river, much like on a conveyor belt, each year with high-flows. With construction of the Trinity River and Lewiston dams, river flows were drastically reduced and access to gravel upstream of the dams was cut off. River gravel for use by creatures of all life-stages was either washed downstream or locked in the river banks, held immobile by abundant vegetation. Now the river lacks the abundant and clean gravel needed to form complex spawning and rearing habitat for fish.

**Gravel was placed directly in the Trinity River by local contractor Clint Robison**

Gravel also scours riverside vegetation during high flows, maintaining diverse floodplain habitats. In September of this year, the TRRP took a first step towards correcting this problem. Approximately 3,000 tons of local Trinity River coarse sediment (1- 6 inch clean gravel) was placed directly

*continued on page 2...*

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into the river upstream of the old Lewiston Bridge in Lewiston.

**Gravel was spread to an approximate in-river depth of one or two feet**

Several past Trinity River gravel introduction efforts have relied on placement of gravel along the river's edge. These stock piles require high flows (which are unreliable in timing) to move the material into the active river channel and downstream This year's project used a front-end loader to spread material approximately 2 ft deep over a little more than ½ acre of river bed. Concrete Aggregate Products, Inc. performed the work over a two week period. Turbidity measurements were taken every two hours to determine project impacts to water quality, meet Water Quality Control Board permitting requirements, and to ensure that these were minimal. Surveys were made to ensure that gravel was installed to an elevation that would be usable for fish and passable by recreationists during decreased fall flows. For long-term monitoring, at least two pre and post implementation comparisons will be made. Fish use will be compared before and after the project and several surveyed river cross sections will allow quantification of changes in channel form over time.

In the future, the TRRP intends to re-establish a man-made equilibrium of gravel supply below Lewiston Dam. This will be carried out under the guidance of our Coarse Sediment Management Plan (CSMP) which will outline methods, locations, and amounts of coarse sediment (gravel) to be added to the Trinity River based on known annual flow regimes and reach specific gravel needs. Since large amounts of gravel, up to 100,000 tons, are presently prescribed by the Trinity River Flow Evaluation Study for very wet years, this first project provided important insights into regulatory and physical challenges which our program will encounter with larger proposed coarse sediment introductions. An adequate number of trucks will need to be available, larger areas of vegetation may need to be cleared to allow better river access, traffic routes will need to be identified and marked, and actual movement of the gravel into the river will have to be done more quickly. In addition, the same methods used to protect the environment in smaller jobs may not be adequate in larger and long-term operations. For example, concerns about short-term degradation of water clarity and potential for chemical contamination were addressed this year as gravels were thoroughly washed before addition. This may not be practical on a very large scale. What is more, monitoring of near-project water clarity (turbidity) indicated that, at a minimum, some short-term turbidity impacts were inevitable with gravel additions during clear summer periods. Perhaps the CSMP will need to recommend winter/spring introduction of gravels when flows and turbidity are both high. In any case, the TRRP will work with environmental protection agencies to outline long-term procedures which allow such beneficial actions to take place. In the area of gravel management, the only long-term assurance seems to be the need for more gravel. Answers will probably only be won through experience and continued coordination with interested landowners and regulators.

**Turbidity samples, to determine project impacts to water clarity, were required every two hours**

# RCD Completes South Fork Trinity River Monitoring Project

Trinity County RCD has just completed a monitoring project of the South Fork Trinity River. The amount of sediment getting into the river has been a concern of fisheries biologists and land mangers. The State of California included the river in its list of polluted waterbodies for sediment. In 1998 the U.S. Environmental Protection Agency set limits for the amount of sediment being discharged in the river in a document called a Total Maximum Daily Load.

The South Fork Coordinated Resource Management Planning Group (SFCRMP) has led the effort to understand the sediment problem and helped the RCD set up a plan with two goals: [1] get a general overview of the watershed – a snapshot, if you will, and [2] try out a method in a couple of tributaries as a way of looking at the effectiveness of restoration projects. The monitoring plan included looking at fine sediments being carried in the streams during storms (sediment loads), surveys of the shape of stream channels (channel geometry) and the sizes and distribution of rocks in streambeds (bulk sampling). The District hired Graham Matthews & Associates, a Weaverville company specializing in river monitoring, to help design and implement the project with the input of the SFCRMP. Monitoring the fine sediment in streams requires measuring the amount of water flowing in the stream during storms and collecting water samples to measure the amount of fine sediment that is in the water during those same storms. To do this a monitoring network was set up that included:

- 34 sites to measure flow and collect water samples
- 18 sites managed by the US Forest Service
- 6 sites for measuring channel shape (geometry)
- 3 bulk-sampling sites on the mainstem of the South Fork Trinity River to look at the sizes distribution of rocks in the riverbed

A team that included staff from Graham Matthews & Associates, the USFS, the RCD, and volunteers from the SFCRMP:

- Collected 253 discharge (flow) measurements.
- Collected hundreds of water samples that were tested for the amount of sediment in the water. This is called suspended sediment concentration.
- Calculated the flow rates at 28 stations. These calculations are called stage discharge relationships or discharge curves.
- Calculated the amount of sediment being delivered to streams based on the size of the streams' watershed areas.

**Measuring Channel Geometry: Cross Section and Longitudinal Profiles**

Using the District's Geographic Information System (GIS) data for steepness of slopes, geology, fire history, landslides, timber harvest history and road density were used to look at links to the sediment measured in the streams.

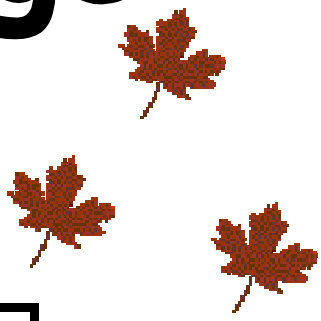
Some interesting findings from the report are:

- Different types of geology appear to have little relationship to the amount sediment measured at most of the studied sites.
- The "Hayfork Creek near Hayfork site" (15 on the map) had 211 tons of sediment per square mile and Grouse Creek had 1,200 tons per square mile.
- Barker Creek's series of monitoring sites helped locate the major sources of sediment, which are in the lower part of the stream. This type of monitoring will be useful in identifying restoration projects and their effectiveness in other watersheds.
- There does not appear to be a simple link between features like road density or percentage of watershed harvested to the amount of sediment being delivered to streams.
- This detailed program of stream flow and sediment transport measurement has quantified substantial differences in sediment yield between sites.

The RCD is grateful to its key partners in this project, including the South Fork Coordinated Resource Management Planning group, a voluntary, landowner-based collaborative; the US Forest Service; California Department of Fish and Game; Trinity County Planning Department and the Watershed Stewards Program of AmeriCorps. Funding for this project was provided by the State Water Resources Control Board's 205(j) Program, Trinity County Planning Department, and the California Department of Fish and Game.

# Children's Page

Fall is an exciting time of year with the leaves falling from the trees, salmon returning from the sea, and everyone preparing for Halloween!



Look for the fall words below hidden in among the letters to the right.

**SALMON**
**CHINOOK**
**PUMPKIN**
**JACK O LANTERN**
**DECOMPOSE**
**TRICK OR TREAT**
**SPAWNER**
**CANDY**
**COSTUMES**
**FALL**
**LEAVES**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | C | B | S | A | L | M | S | Y | D | N | A | C | V | C |
| D | R | A | D | Y | O | E | M | S | J | T | M | N | F | H |
| E | P | I | N | O | L | R | E | A | V | K | O | L | A | I |
| C | S | O | C | P | S | I | P | A | L | E | V | R | L | N |
| O | L | M | P | K | I | P | E | O | V | N | V | O | L | S |
| M | J | A | C | K | O | L | A | N | T | E | R | N | C | E |
| P | V | P | K | I | N | R | S | W | S | I | P | M | H | V |
| O | H | L | B | O | K | D | T | T | N | O | O | K | I | A |
| S | C | E | M | H | O | Y | C | R | I | E | O | J | N | E |
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| F | A | M | E | S | T | A | D | H | J | A | C | K | O | P |
| S | Y | P | U | M | P | K | I | N | O | B | T | Y | K | V |

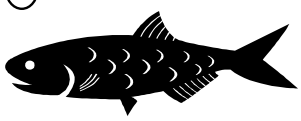
**Things to think about:**

- Why do trees lose their leaves in the fall?
- Why do some trees keep their leaves while others lose them?

## FUN FALL ART PROJECT!

1. Collect cool leaves from the ground that have fallen from the trees
2. Place leaves on a hard surface in a neat design. Make sure that the side of the leaf with the veins on it is facing up.
3. Place a piece of paper over leave design
4. Take a crayon or pencil and gently rub it back and forth over the leaves until they magically appear!

Where does a salmon keep his money?



**Answer: In a river bank!**

# Firewise Community Workshop Coming to Northern California

The Trinity County Fire Safe Council with the help of the Trinity County Resource Conservation District is participating in a unique opportunity to bring community leaders together to deal with the threat of wildfires in our region. The North Coast Firewise Community Workshop is being held at the Riverlodge Conference Center in Fortuna on November 18-19. The workshop is one in a series being held nationally to create community dialogues regarding what it takes to live wisely with wildfire.

More than 30,000 structures have been lost to wildfires in the United States since 1970. Fighting these fires has cost taxpayers $25 billion, and an additional $10 billion have been spent by the insurance industry to repay victims of wildfire. There are many reasons behind this trend of catastrophic wildland fire, including population growth in areas with higher risks of wildfire, our past practices of fire suppression, and climate change.

This workshop is aimed at addressing these issues by:

1. Improving safety in the wildand/urban interface through sharing responsibility for fire prevention
2. Creating and nurturing local partnerships in fire prevention and suppression efforts, and
3. Integrating Firewise concepts into local community and disaster planning.

This conference is intended for community leaders including planners, elected officials, tribal leaders, builders, homeowners, realtors, bankers, fire safe council members, resource advisory committee members, insurance representatives, emergency managers, local fire officers, and forest fire officials from Humboldt, Del Norte, Trinity, Mendocino, and Siskiyou Counties.

Some of the country's top experts will lead the two-day event, which will center on a state-of-the-art fire protection planning exercise. Participants will be a part of a team that determines how to design a hypothetical community that is Firewise. Participants will learn about current research on home ignitability and examples of communities that have successfully adopted fire protection programs, how to recognize fire hazards and how to incorporate Firewise planning into their communities.

Other organizations that are assisting with the coordination of this event include:
Six Rivers National Forest, Humboldt Fire Protection District, Humboldt County Fire Safe Council, Del Norte County Fire Safe Council, Lower Mattole Fire Safe Council, California Department of Forestry and Fire Protection, Humboldt County Planning Department, and the Trinity Resource Conservation & Development Council.

Visit the Firewise Communities website at http://www.firewise.org/communities for more information.

## *Featured Employee*

## Erik Flickwir

**Erik enjoys living in the mountains, off the grid, and, when he finds the time, playing music and kayaking.**

**Erik, GIS Technician, is the newest employee to join us at the RCD. No stranger to the area Erik has lived in the county for over 6 years, moving here from San Luis Obispo.**

**So, what does a GIS Technician at the RCD do? You will find your answer if you look around at the District website www.tcrcd.net specifically, at the updated Weaverville Basin Trail link. Erik is responsible for updating the Klamath Resource Information System database program (KRIS) using Klamath/Trinity watershed monitoring data from various resource agencies, which is available to the public. He also provides maps to District project coordinators and managers to help with the implementation of our projects.**

**But, that's not all, Erik, owner of Mountain Design, a graphics and sign business, has been indispensable creating displays and graphic layouts for our education and outreach projects. The District is fortunate to have someone like Erik, who weaves strong technical skills with an artist's eye for style.**

## District Manager's Corner--Pat Frost

I am often asked, "How does the Resource Conservation District come up with its projects?" Well, our projects come to us in a number of ways, but they always have two things in common. Firstly, all of the work that the District does rises out of our Long Range Plan. This Plan includes watersheds, forest health, agriculture, recreational trails and conservation education. Secondly, project ideas always have a champion – someone with a vision for the project and the enthusiasm to see it become a reality. This issue of the *Conservation Almanac* has some great examples of project champions. The photo-spread of children's events on page 4 highlights three such projects and their champions. Sixth graders from Weaverville Elementary School go to Bar 717 Ranch for their ***Environmental Education Camp***. This camp has a unique approach of using resource professionals, who work and live in our own communities, as the teachers. The incredible success of the camp year-after-year is due to the dedication and energy of Dave Newton and Darsi Green, the sixth grade teachers. Organizing four days of field classes for 60 school children is no simple task, and I know that everyone who has ever helped out as a counselor or an instructor goes away wondering how these amazing teachers do it.

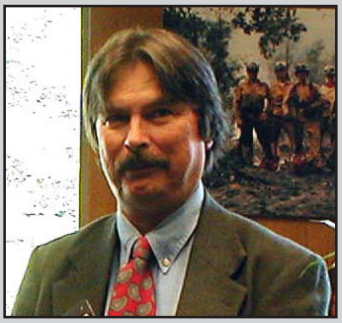
On October 7th we held ***River Day '03*** at Coffee Creek School. This celebration is the brainchild of Bill Loucks, teacher and principal, at Coffee Creek School. Mr. Loucks came to us last year with the idea of a day-long event that lets school children from around the county get their feet wet visiting learning stations along Coffee Creek. Mr. Loucks is dedicated to giving students real-world experiences and letting them work alongside the foresters and biologists, chemists and soils scientists, who are working in our watersheds and forests. This year children from as far away as Burnt Ranch and French Gulch did just that collecting information about Coffee Creek and learning about everything from local geology to fish anatomy.

Cassie Simons wouldn't let the Salmon Festival die this year. Cassie is our AmeriCorps Watershed Stewards member and she came up with the idea of a children's event to replace the salmon festival. The dark clouds of budget cuts loomed over the festival. Cassie's energy and dedication to children gave us a ray of hope and the next thing we knew the ***Children's Salmon Celebration*** was here. Over 100 children joined in the fun on Saturday, October 4th helping kick off the Weaverville Chamber of Commerce "Autumn in the Alps". The meadow at the Highland Art Center was drenched in autumn sunlight and filled with laughter as children worked on art projects, played games and took their turn at the Salmon piñata. I don't know who was having more fun the six-year-olds or the volunteers, who had a chance to put on a mushroom or eagle costume and be six years old for a couple of hours.

These project champions share another trait. They all inspire others to volunteer their time and expertise. Many very busy people dedicated their time to these projects following the lead of Dave, Darsi, Bill and Cassie to share their knowledge, their love of art or their interest in nature with the children of Trinity County, and I thank every one of them for their help.

**Colleen O'Sullivan, RCD Board Member, meets with Connie Stewart of Assemblymember Patty Berg's office, on District projects.**

### RCD Director Greg Lowden Elected Treasurer Canon National Envirothon



The Canon Envirothon is a hands-on outdoor competition for high school aged youth that tests students' understanding of soils, aquatic ecology, wildlife and a specially selected current issue. There are Envirothon programs in 44 states and 7 Canadian Provinces. Greg chaired the National Competition held in California in 1999 and has served as the California Envirothon President for 4 years. For more information about forming your own team, contact us at the RCD.

# *Trinity County*
# RESOURCE CONSERVATION DISTRICT

**Established 1956**

**District Board Meetings**
Third Wednesday
5:30 PM
Open to the Public

**TCRCD Office**
Number One
Horseshoe Lane
PO Box 1450
Weaverville, CA 96093

**Telephone**
(530) 623-6004
FAX 623-6006
E-mail: tcrcd@snowcrest.net
Internet: www.tcrcd.net

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*The Trinity County Resource Conservation District (TCRCD) is a special district set up under state law to carry out conservation work and education. It is a non-profit, self-governing district whose board of directors volunteer thier time.*

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## The TCRCD Vision

**TCRCD envisions a balance between utilization and conservation of our natural resources. Through economic diversity and ecosystem management our communities will achieve and sustain a quality environment and healthy economy.**

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***The TCRCD Mission***

*To assist people in protecting, managing, conserving and restoring the natural resources of Trinity County through information, education, technical assistance and project implementation programs.*

**Trinity County Resource Conservation District**
**P.O. Box 1450**
**Weaverville, CA 96093**

**TCRCD Board of Directors are**
**Mike Rourke, Rose Owens, Patrick Truman,**
**Colleen O'Sullivan, and Greg Lowden.**

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*The RCD is landowners assisting landowners with conservation work. The RCD can guide the private landowner in dealings with state and federal agencies. The RCD provides information on the following topics:*

- **Forest Land Productivity**
- **Erosion/Sediment Control**
- **Watershed Improvement**
- **Wildlife Habitat**
- **Water Supply and Storage**
- **Soil and Plant Types**
- **Educational Programs**

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**This issue of the *Conservation Almanac* is funded in part by grants from the Trinity River Restoration Program,Trinity County Title III, California Department of Fish and Game,and Sacramento Regional Foundation**