# Salmon River Restoration Council
# Watershed Education Program
# Project #2003-E-01
# Agreement #113333G004
# January 5, 2003

# FINAL REPORT

## A. ABSTRACT/EXECUTIVE SUMMARY

The Salmon River Restoration Council (SRRC) has performed the tasks identified in our cooperative agreement for the Watershed Education for fiscal year 2003 (FY 03). During FY 03 the SRRC continued to enlist students, community members and teachers in a variety of watershed education activities related to Salmonid Fisheries, Water Quality, and Watershed Health.

The SRRC's Watershed Education Program has been operating for more than 8 years. Over the past decade, watershed education has been a strong curricular component of the two Salmon River Elementary Schools and the Salmon River community. Various programs and funding sources have provided the schools and their teachers with training, equipment and supplies, field transportation costs, and the technical support necessary to carry out the program each year.

This year we performed all of the traditional activities including: the California Department of Fish and Game Fall Chinook Spawning Survey and Carcass Count, Stream Assessment for Macroinvertebrates, Hobo Temp Monitoring, the Aquarium Incubator Project, and the Watershed Fair. In addition, the program hosted several other events including Fire Awareness Week, Native Plant Studies, Watershed Geography and more.

There is an ongoing effort to imbed the watershed program within the school system. This year we approached this challenge by documenting in detail, the California State Educational Standards correlation with our activities. The coordinator planned all events by first asking the teachers which standards they were focusing on and which they needed help with. The coordinator facilitated the activities in line with classroom lessons. In this manner we aim to remain a key component of school and classroom programming. The coordinator presented several opportunities for teachers to do job-shadowing, but due to scheduling conflicts, the teachers were not able to attend. The coordinator is working with the teachers to provide job-shadowing opportunities that are flexible to the teachers schedules.

The coordinator provided ample community volunteers to assist and support the watershed education activities. There were over 12 volunteers who participated in the Salmon Survey training alone. Many more volunteers participated in other events including water quality monitoring and the Aquarium Incubator Project.

The Watershed Education Program 2003 was very successful and we plan on continuing this service to the Salmon River community. Teachers, students, and community members are all excited for many more years of Watershed Education.

## B. INTRODUCTION

Since its inception in 1992, the Salmon River Restoration Council (SRRC) through its Community Restoration Program (CRP) and Watershed Education Program has aggressively supported watershed education in the local schools by enlisting community members to participate in classroom and field activities; participating in curriculum development; providing needed technical assistance during the school year and by supervising student activities during summer vacation. The SRRC's Watershed Education Program uses the environment as an integrating context for learning in our two local public elementary schools. Specific activities of the education program have included:

- Water temperature and quality monitoring
- Aquarium Incubator Project
- Tree planting and plant propagation
- Surveying Fall Chinook population (Carcass and redd counts)
- Surveying Spring Chinook and Summer Steelhead
- Rescuing juvenile salmonids stranded in side pools
- Monitoring macro-invertebrates
- Identifying plant and animal species and their habitat needs
- Winter ecology/snow science
- Native plant studies and noxious weed eradication

The Salmon River Restoration Council, a 501 (c)(3) tax-exempt nonprofit corporation, believes that educating and empowering the riverine communities to become effective stewards of the ecosystem should be a centerpiece in the recovery of our watersheds, and in particular the declining fisheries resource.
The Watershed Education Program makes a huge difference educationally and personally to students and community members. Students learn current scientific techniques and protocols, while at the same time working to preserve the land that is their home. After taking part in the Watershed Education Program, students are well qualified for competitive jobs working in the fisheries field. This career field is a highly practical and rewarding possibility in local communities which are plagued with unemployment.

Working in concert with the SRRC, community members, and natural resource specialists, the schools have established themselves as key stakeholders in watershed restoration and protection. The successful watershed education training program has had strong support from school boards, parents and the community. Teachers have invested significant time and energy in developing watershed education teaching skills and curriculum. A goal of the watershed education program is to integrate students, through the schools' watershed studies activities, into the realm of scientifically valid restoration. The funding requested in this proposal will allow schools to continue to conduct field exercises, to acquire the technical support and provide expense monies necessary to maintain their existing programs.

There is always an on-going effort to move toward sustainability of the watershed program by imbedding it within the school system. This is accomplished by training the

teachers and by providing much of the field equipment that can be used from year to year. However, the transportation costs of getting students into the field, the supply costs, training new teachers and the on-going coordination will continue to be necessary to fund outside the normal school budget. By law, a credentialed teacher must always be with students during the school day. It is not feasible for the classroom teacher to take groups of students into the field at all times. This funding request provides for a credentialed teacher with the skills and background in watershed studies to take students into the field, beyond those days that the classroom teacher can. Partial funding will come from various sources such as: SRRC's community donation, the schools and the Karuk Tribe. Other private and public funding sources will continue to be sought out.

Over the past decade watershed education has been a strong curricular component of the two Salmon River Elementary Schools (Forks of Salmon, Junction). This current school year (2002-03), the schools have received funding through the Klamath River Task Force in order to continue their programs. These funds support staff development, curriculum development and utilization, technical assistance, substitute teachers and transportation. Through an EPA General Assistance Grant, the Karuk Tribe will be supporting watershed education in the schools on a limited basis with staff at several events. The schools also participate in the Aquarium Incubator Project, a program coordinated through the Siskiyou County Office of Education, where salmon and trout are raised in the classroom. Support from the AmeriCorps members from the AmeriCorps Watershed Project has been invaluable over the past six years. These AmeriCorps members served the schools in the implementation of their watershed education programs on a full-time basis. This AmeriCorps program has been cut for an undetermined ammount of time. The SRRC Project Coordinator was forced to make up for the hole left by the missing AmeriCorps worker. This extra demand was very taxing on the Watershed Education program. The school programs have also been supported by the KRIS Project (319(h)) and the US Forest Service Conservation Education Program, neither of which is currently available to us.

The Watershed Education Programs' goals are as follows:

- Provide students, teachers, parents, and other community members with needed coordination and technical assistance for meaningful watershed education, restoration and protection opportunities in the Salmon River Watershed.
- Activities will be incorporated as part of the students curriculum and will be accomplished in a manner that meets the state of California's new Standards and Guidelines.
- The restoration and protection activities will target understanding natural processes and improving the resource condition.
- Students will learn skills utilized in local resource management that will expose them to job training for potential future employment.
- The coordinator will oversee the following projects:
    - ✓ The Aquarium Incubator Project- Grow Salmonids from eggs in the classroom
    - ✓ The Adopt-a-stream project- Conduct water temperature monitoring activities

- ✓ The annual Watershed Fair- Annual fair involving local schools where students provide presentations and displays associated with their watershed education program
- ✓ The Fall Chinook Salmon Survey- Teachers, students and parents train in white water safety and fisheries surveys techniques. Students perform surveys and help collect salmon information with the state and federal agencies, local tribes, and community groups.
- ✓ Adopt-a-trail- Students from the schools will take a natural history field trip on a local trail and perform light trail maintenance activities
- ✓ Update Web Site- Students will help update their web pages

## C. DESCRIPTION OF STUDY AREA

The Salmon River is one of the most biologically intact watersheds in the west. It is the largest cold-water contributor to the Klamath River, and known as one of the cleanest rivers in the state of California. This 751 sq. mile watershed is entirely within the Klamath National Forest and is considered a key watershed by the Forest Service. Watershed analysis has been completed for the entire Subbasin, with the exception of Wooley Creek. The land base in the watershed includes: 98% Public Lands-USFS with 45% in wilderness, and 67% Karuk Ancestral Lands. Four communities lie widely dispersed within this watershed. There are approximately 250 year round and 100 part time residents in the subbasin. The Salmon River is documented as having an area in the Russian Wilderness that is one of the most diverse areas for conifer species on Earth. It has long been known for its exceptionally high quality waters, and the entire river corridor and some tributaries are designated under the Wild and Scenic Act for the outstanding fisheries resources. The Salmon River is the home to several species of fish that are thought to be at risk: Spring and Fall Chinook Salmon, Coho Salmon, Green Sturgeon and Summer and Winter runs of wild Klamath Mountains Province Steelhead. The Klamath National Forest's Land and Resource Management Plan identifies the Salmon River as being the system with the most amount of available anadromous fisheries habitat. The Salmon River is recognized as a key refuge for Wild Spring Chinook in the Klamath Basin and has the largest wild run in the Klamath Basin. Wooley Creek is world renowned for its exceptional water quality, which runs almost exclusively from the Marble Mountains Wilderness, in the heart of the Klamath Knot. The salmon migrating in the hotter and lower water flows in the Klamath River during summer months rely on the cooler and cleaner waters contributed by the Salmon River.

## D. METHODS AND MATERIALS

Standard teaching methods used in education are employed by the project coordinator. Students and teachers learn by hands-on experiences and by modeling. Assessment for both students and teachers is provided by the outcomes of the various activities in which they participate and especially at the culmination Watershed Fair event. A variety of curricular materials are utilized, including the Klamath River Education Program (D.Higgins). Standard field protocols and methods will be used for the various field activities, as determined by the natural resources professional partners. These include the

California Department of Fish & Game, Fall Chinook Spawning Survey and Carcass Count protocol, California Stream Bioassessment Protocol for Macroinvertebrates, and accepted stream discharge and water quality monitoring methods.

## E. RESULTS AND DISCUSSION OF ACCOMPLISHMENTS DURING THE PROJECT

All tasks for SRRC Watershed Education 2003 were met. The coordinator planned and integrated watershed education in the Salmon River elementary schools and community. The coordinator taught technical skills, maintained and upgraded the school web pages, and maintained the watershed studies equipment. In addition, the coordinator helped the students to provide managing agencies with meaningful data through the Fall Spawner Surveys and Carcass Counts and the Hobo Temperature Monitoring. The coordinator provided the teachers with job-shadowing opportunities, although the teachers were unable to attend.
The Watershed Education program met it's goals for the 2003 year. In coming years, the program aims to expand and improve watershed education opportunities. The SRRC is working to acquire more staffing and support staff for the program. This would enable the coordinator to research and create new curriculum more regularly. It would also enable the coordinator to attend more training and conferences.

The following activities took place during fiscal year 2003, October 1st, 2002- October 31st, 2003 and were facilitated by the project coordinator:

**Teacher ½ Day Planning Meetings**
*Forks of Salmon School Teacher, October 10, 2002*

The project coordinator Tera Palmer met with K-8th Grade teacher of Forks of Salmon School, Joel Kurtzman, on October 10th for a curriculum-planning meeting. The teacher and coordinator decided on three new projects for the school in addition to the regular activities such as the Salmon Surveys and the aquarium project. The first new assignment is to create a large Watershed Relief Model with the 6th-8th grade students. By creating a Watershed Relief Model, the students will learn map skills, watershed geography, and the ability to visualize three-dimensional objects from a two-dimensional map or pattern. The second project that was chosen at the meeting is a Classroom Worm Bin. The students will learn about the life cycle of worms, different species of worms, the role of decomposers in the watershed, and the importance of reducing garbage in our watersheds. In rural Siskiyou county many people dump their garbage into creeks and consequentially, aquatic creatures including salmon are harmed. Through the worm bin project, the teacher and coordinator aim to educate about waste reduction and proper waste disposal. The last project chosen at this meeting was an in-class lesson with the K-5th graders about maps and watershed geography. The coordinator agreed to work with the younger kids teaching the anatomy of a watershed. This consists of learning new vocabulary such as Headwaters, Ridge Top, Tributary, Main Stem, and Estuary. The lesson will also teach the students to identify these parts of the watershed. The

coordinator will work with the students and help them to become familiar with watershed maps.
The coordinator met with and held curriculum-planning sessions with both teachers from Junction elementary School in September of last quarter. The coordinator also planned and facilitated a summer teachers meeting with all of the teachers in August.
These planning sessions are an integral part of the program because they provide time for the coordinator, teacher, and other involved individuals to assess the progress of the program and to plan for the winter and spring school months. While there is frequent communication between the coordinator and the teachers on a daily and weekly basis, these sessions allow time to do the extra planning for high quality programming. Teachers have commented that these meetings are extremely beneficial to them in terms of brainstorming future watershed education activities and reviewing the calendar from the summer planning meeting to see what events are coming up.
**These activities satisfy Task #2: Provide planning coordination to the three school teachers and their natural resource partners.**

**Merrill Creek Hobo Temperature, Aquatic Insect and Solar Pathfinder Fieldtrip**
*Junction School, 4th-8th Grade Students, October 4, 2002*

Current coordinator Tera Palmer and Past coordinator Dara Pearson teamed up to plan a Merrill Creek field trip that would build on water quality monitoring techniques students had learned in past years. They also planned the trip to help students to learn new methods and aspects of water quality monitoring. The field trip took place at Merrill Creek on October 4th. The students downloaded temperature readings from Hobo Temperature loggers, took temperature readings manually, tested dissolved oxygen levels, and used dichotomous keys to identify stream insects. The new aspect of the trip this year was the Solar Pathfinder instrument.


**Junction students and teacher filling out Solar Pathfinder data forms.**

Students learned that the Solar Pathfinder tool is used by fisheries biologists to measure the percent coverage of riparian shade canopies. The older students learned how to use the Solar Path Finder and practiced taking readings. Students learned that shade is an important component of salmon habitat because the fish require cold water. In preparation for this trip, students performed experiments in the classroom with the Coordinator that proved the positive connection between cold temperatures and high amounts of dissolved oxygen. These experiments help the students realize the importance of shade coverage for stream creatures. They learned that creatures need oxygen, which the shade helps provide.
**This activity satisfies Task # 4: Teach students and teachers the technical skills and the use of equipment used in watershed restoration activities.**
**This activity satisfies Task # 7: Provide managing agencies with meaningful data developed and analyzed by student/teacher participants.**

**Decomposition Study- Worm Bin Project at Forks of Salmon Elementary**
*Forks of Salmon School, All Grades, October, 2002- June, 2003*

Students at Forks School have learned about a very important aspect of the watershed this quarter: Decomposition. Coordinator Tera Palmer brought a worm bin and worms to the school on October 10th. By maintaining a classroom worm bin, students learned first hand about how organic matter decays and is transformed into soil. Soil is an essential part of watershed ecology. This project compliments native plant studies from prior years and those that will take place in the spring. It is also a useful tool for teaching about watershed stewardship. As a class, the younger students imagined what would happen if nothing every decomposed.....Yuk! The students learned about landfills and how things in landfills do not decompose. A worm bin can be used to turn kitchen waste into soil so that it doesn't take up space in a landfill.
Worm bin activities included: worm anatomy, scientific nomenclature and classification, worm lifecycle, discussion of relationships with other creatures that live in a worm bin, creating worm puppets, writing an educational worm puppet show.
**This activity meets task #1: Coordinate and integrate watershed education in the two Salmon River elementary schools....**

**Fall Chinook Salmon Survey and Carcass Count**
*Forks of Salmon and Junction Schools, 6-8th Grade Students, September 27, 2002*

**Students learning about data forms from a USFS Fisheries Biologist at the Spawner Survey Training in Somes Bar.**

Pre-event planning consisted of coordination of participating students and necessary equipment with teachers, adult volunteers and parents.
Coordinator Tera Palmer planned the Whitewater Training and Spawning Ground Survey Training on September 27th in Somes Bar. All students who participated in the surveys underwent this training. Steve Robinson, the Fall Survey Coordinator from past years, past coordinator Dara Pearson, and AmeriCorps Watershed Stewards Project member Chris Hatton led students in weekly spawning g ground surveys on October 14th, 21st, 28th, and November 4th.

Numerous parents and adult volunteers from the community came out to show their support for the program by driving students, participating in the trainings, and walking the river during the survey days with students.The Whitewater and Spawning Ground SurveyTraining took place at the Oak Bottom RiverAccess in Somes Bar and was attended by resource professionals and community members from a multitude of different agencies and schools: California Department of Fish and Game, US Forest Service,

Karuk Tribe, AmeriCorps, the Salmon River Resto y School, and Forks of Salmon Elementary School. At this training students practiced safe methods of group stream crossing, self rescue techniques with waders and wading boots, and identifying dangerous in-river sieves and strainers. This year the training was tailored to the learning requirements of the 6th-8th grade students. All of the workshops were interactive.

**Students practicing safe river crossing techniques.**

They included topics such as Fish Identification, Using a Topographic Map, Equipment use and Safety, Carcass Recovery and Processing, and Filling out a Data Sheet. The afternoon in-river component allowed students to practice their skills while staying cool and having fun. The students left the training bursting with excitement to begin surveying.

**This activity satisfies Task # 4: Teach students and teachers the technical skills and the use of equipment used in watershed restoration activities.**

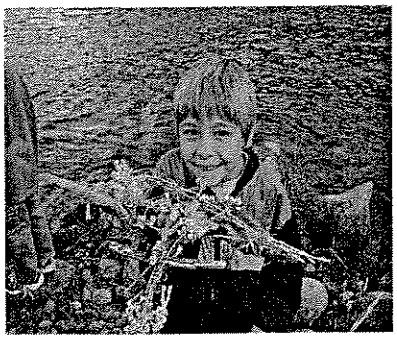
**This activity satisfies Task # 7: Provide managing agencies with meaningful data developed and analyzed by student/teacher participants.**

**This activity satisfies Task # 6: Provide the schools with adequate adult volunteers to enhance and facilitate the program…**

## Watershed Cultural Geography- Loy Katong Celebration

*Junction School Students, K-8th Grade*
*November 7, 2002*

One new development in the Watershed Studies program this year was the inclusion of social studies and geography. On November 7th, students at Junction School learned about a river celebration in the nation of Thailand called Loy Katong.



**A Junction Student displays his raft during the Loy Katong Celebration.**

Coordinator Tera Palmer explained that the Loy Katong celebration of Thailand is a huge festival in which Thai's give thanks to the river and all sources of water by building, decorating and launching miniature rafts. The class discussed other types of thanksgiving ceremonies. The students saw examples of traditional Thai dress, learned a few words in Thai, and saw pictures of the boat launching festival. Each older student teamed up with a younger student and together they brainstormed about all the reasons that they need and appreciate water. They then wrote about this subject in their journals. Some students shared their writing aloud with the class.

Next, the pairs of students had the opportunity to build their own rafts and decorate them with natural items. The whole class walked down to the confluence of the Salmon and Klamath rivers. We performed a circle dance in which we gave thanks to the river and

then the students launched their rafts. The students enjoyed watching the rafts and following them a little ways to see whose would make it the farthest. Although some rafts were more sea worthy than others, they all contributed in making a beautiful display of color on the water.

**This activity satisfies Task #1: Coordinate and integrate watershed education in the two Salmon River schools.....**

**Watershed Relief Map Construction**

*Forks of Salmon School, 6th-8th Grade Students, November 12, 2002- February 28, 2002*

On November 12th, the upper graders at Forks School took on an ambitious project that will last until early next spring. The students are building a to-scale relief map of the Salmon River Watershed. The students first learned how to use a topographic map by taking a simulated tour of different quadrangles. They learned the vocabulary surrounding maps, how to read the information in the margin, and how to orient themselves with a map. Then the students traced contour intervals on to a big piece of paper using an overhead projector. They used this paper to create a pattern for the Watershed Model. Using sheets of Styrofoam the students are creating the relief layers for the model. They will use a papier-mâché mixture to create landforms, such as specific peaks and drainages, over the relief layers. They will finally paint and label the model some time in February 2003. The completed project will stand about one foot tall and cover an area of three feet by four feet.

**Students of Forks of Salmon School show off their half completed watershed relief map.**

**This project meets Task #1, Coordinate and integrate watershed education in the two Salmon River schools.....**

**Watershed Model Construction by Junction School K-3rd Graders**

*Junction School, K-3rd Grade Students, November 12, 2002*

The younger students at Junction School began their own watershed models on November 12th. Each student is making their own papier-mâché model of the Mid and Lower Klamath River Watershed. The students are learning about relief maps about the shapes of local water drainages. The project is schedules to be finished in January of 2003.

**This project meets Task #1, Coordinate and integrate watershed education in the two Salmon River schools.....**

**Watershed Geography Classroom Lessons**

*Forks of Salmon and Junction Schools, Lower Grade Students, November 19, 2002*

Coordinator Tera Palmer facilitated a lesson on watershed geography for the K-3rd students at Junction School and the K-5th students at Forks School on November19th.

The children put together a giant map of the Klamath River watershed. They also learned to identify geographical features of the watershed including headwaters, estuary and tributaries. The students colored their own color-by-number watershed maps, complete with color coded keys illustrating the features of the watershed. Last but not least the students reinforced their knowledge of watershed geography by learning a song with all of their new vocabulary words.

**This project meets Task #1, Coordinate and integrate watershed education in the two Salmon River schools.....**

**Aquarium Incubator Project**

*Forks of Salmon and Junction Schools, Students K-5th Grades, November 19, 2002- December 18, 2002*

Students at both Forks and Junction Elementary Schools successfully raised Chinook salmon eggs to fry in November and December. On November 19th, Coordinator Tera Palmer brought Irongate Hatchery eggs to the schools. Students learned about the habitat that eggs need to survive and the lifecycle stages. Data sheets recording water temperature were kept by students who took turns monitoring the aquariums. Concepts taught over the last 3 months included the following: oxygen and water temperature relationships, fish biology, mechanisms salmon use to find their spawning creeks, predator/prey relationships.

**Forks students in front of the aquarium.**

**Junction students in front of the aquarium.**

The students kept detailed journals in which they recorded fish development through illustration and narrative. The students released the fry into a nearby pond and had the chance to see adult fish that they had released as fry in past years.

**This activity satisfies Task #1: Coordinate and integrate watershed education in the Salmon River elementary schools...**

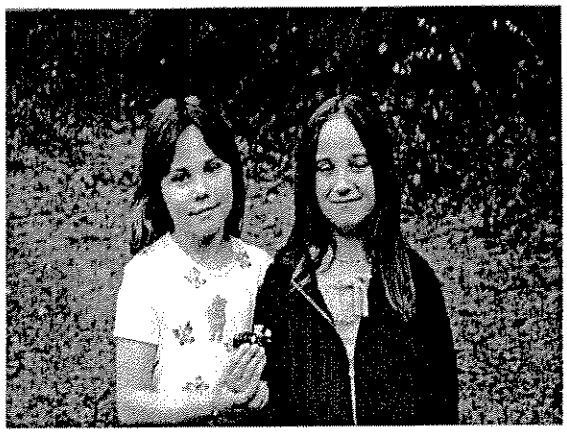
**Mushroom Presentation and Fieldtrip Hike**

*Forks of Salmon Students K-8th grade, December 12, 2002*

On December 12th, students at Forks of Salmon Elementary were treated to a slide show presentation detailing different mushroom species. A local mushroom expert gave the

presentation and discussed methods of identification with the students. Local biologist Will Harling, reviewed mushroom anatomy before students, teachers, and parents headed out the McNeal Creek trail to hunt for fungi. Students voraciously scoured the trail and located many mushrooms. After the hike the Coordinator showed students how to make a spore print. This technique is crucial in identifying several kinds of mushrooms. It is also a fun art project that can be used for making cards for your own mushroom identification catalogue.

**A biologist teaching students how to identify mushrooms.**



**Students with the "mico-fungi" that they found.**

## Community Volunteer Coordination

Community volunteers are a vital part of the Watershed Education Program. The Spawner Survey Training was attended by six community volunteers. The Spawner Survey itself was attended by two community volunteers. More volunteers will be included in future Watershed Education Events.

**These activities satisfy Task #6: Provide the schools with adequate adult volunteers to enhance and facilitate the watershed education programs...**

## Teacher and Coordinator Planning Meeting

*Junction School, Upper Grade Teacher, February 14, 2003*
*Junction School, Lower Grade Teacher, March 5, 2003*
*Forks School, Upper and Lower Grade Teacher, February 12, 2003*

The coordinator met with teachers separately to discuss plans for the second half of the school year. Many dates were entered on the calendar. This meeting was also a great opportunity to brain storm and gather new curriculum ideas. The coordinator and teacher reviewed California State Educational Standards and the coordinator identified several standards that she will teach through watershed education.

**These activities satisfy Task #2: Provide planning and coordination to the school teachers and their natural resource partners...**

## Spring Ecology Walk

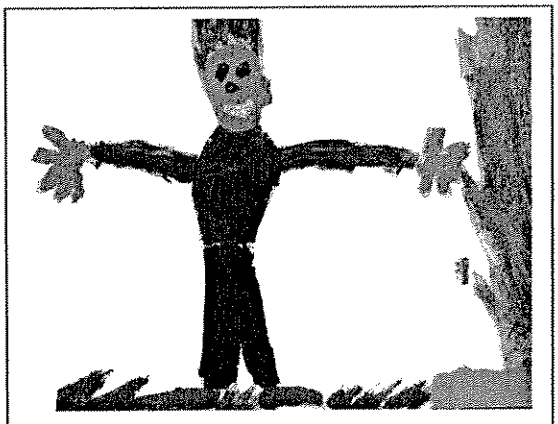
*Forks of Salmon School, Lower Grades, Near School Yard, March 19, 2003*

Forks of Salmon students grades K-5 donned their galoshes and set out into the misty march morning to search for signs of spring. Accompanied by their teacher and watershed education coordinator, students identified wildflowers, new growth on trees and shrubs and mushrooms. The focus of the trip was on vernal pools and the life within them. Students learned that many amphibians including frogs and salamanders are born in these ephemeral puddles. Students studied the life cycle of amphibians and learned to tell the difference between frog and toad eggs. Students learned that amphibians play an important role in our watershed.

**These activities satisfy Task #1: Coordinate and integrate watershed education in the Salmon River ...**

**Fire Ecology Lecture/Discussion and Poster Creation**

*Forks of Salmon School, All Grades, In-Class, April 3, 2003*



**Detail of a students fire poster**

Students learned about the positive and negative impacts that fire has on ecology and human society from a member of the local Fire Safe Council. Students discussed the role that fire plays in nature as well as the threats it creates for people. Students brainstormed important fire safety actions and turned them into slogans for giant fire safe posters. Each student painted his or her own poster and slogan. This project was done in partnership with the Salmon River Forest Service Fire Department who donated art supplies and organized a larger poster contest. The posters will be on display at kiosks and community centers along the Salmon River this coming fire season.

**Spring Ecology Walk**

*Junction School, Lower Grades, School Nature Trail, April 8, 2003*

Junction students hiked down their school nature trail on Conrad Creek to examine the signs of spring. Students identified wildflowers, new growth on trees and shrubs and mushrooms. Students participated in a "silent sit" during which each student sat in their own special spot along the stream and wrote silently about the signs of spring that were present around them. Students listed as many signs as they could. One student came up with 28 signs of spring! Students also drew pictures of the Conrad Creek habitat.

Several students wrote poems. Each student had the opportunity to share their writing aloud, and then we all headed back to the class.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Conrad Creek Water Quality Testing**
*Junction School, Upper Grades, School Nature Trail, April 10, 2003*

Junction students grades 4-8 took part in a water quality test of Conrad Creek which flows near the school. Students tested several different water quality indicators including turbidity, fecal coliform, dissolved oxygen, temperature, aquatic insects, and pH. These tests are to be part of a larger river comparison of water quality between Conrad Creek, Merrill Creek, Klamath River and Salmon River. Students were grouped in to research pairs who performed the tests and also prepared research reports and displays using the scientific method. These reports are to be displayed at the annual Watershed Fair.
**These activities satisfy Tasks #4&7: Teach students and teachers technical skills....Provide managing agencies with meaningful data...**

**Native Plant Walk**
*Forks of Salmon School, All Grades, McNeal- Butler Trail, April 22, 2003*

**Participants on the native plant walk**

Led by local botanist, Will Harling, and the watershed education coordinator, students tromped up the McNeal- Butler trail to get to know the native plants of our watershed a little better. Mr. Harling taught the specifics of flower anatomy to help students be better able to identify flowering plants. The students also learned the importance of respectful harvesting and gathering of flora. Students were instructed in techniques for sustainable plant collection. They practiced these techniques while gathering specimens for a new native plant catalogue project. The students collected and pressed ten native plant samples. Later in the classroom, the students labeled and laminated the specimens to create identification cards for the new school native plant catalogue. This will be an ongoing project that students will add to each year.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Scientific Method Lesson**
*Junction School, Upper Grades, In-Class, April 23, 2003*

The watershed education coordinator taught an experiential lesson on the Scientific Method to 5-8$^{th}$ graders. The Method is a key part of the California state educational standards for this age group. The students were guided through an explanation and example of the use of the Scientific Method. Then the students set about employing the

scientific method on a simple experiment, which aimed to determine the stickiest type of tape. Students had fun sticking tape around the classroom and also got a feel for the Scientific Method, which they will use in the upcoming River Comparison Study.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Natural Resource Origin Lesson**
*Junction School, Lower Grades, In-Class, April 24, 2003*

The watershed education coordinator taught a lesson to students about the origins of natural resources. Natural Resource understanding is a key component of the curriculum laid out by the state educational standards. Students learned that all things come from the earth, including the "man-made" tools and objects that we commonly use. Students discussed the interconnectedness of all things. Then each student created an "earth-pocket" which chronicled the origin and making of objects they commonly use such as pencils, bicycles and tennis shoes. Of course, all of these objects are traced back to natural resources. Students then hung the Earth Pockets around the classroom for visitors to see.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**River Comparison Study Field Trip**
*Junction School, Upper Graders, Local Rivers and Streams, April 25, 2003*

Students and teachers from Junction School rode the bus around the watershed to test the water quality of the Salmon River, the Klamath River, and Merrill Creek. Students completed data sheets with such information as time, date, temperature, weather, canopy cover, riparian species, stream-bed composition, bank-full width, and water quality conditions of different indicators. Students wrote personal narratives of the experience in their journals. Later they used the data to create displays and reports about the River Comparison Study for the annual watershed fair.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Watershed Fair Planning Meeting**
*Forks of Salmon School, Teachers and Staff members, May 1, 2003*
The watershed coordinator met with teachers and school staff to work out logistics and plans for the annual River Schools Watershed Fair. The group agreed upon an agenda and time frame for the event. Duties for the fair were also divvied out. Everyone was very excited about the celebration.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Measuring and Graphing**
*Junction School, Lower Grades, May 6, 2003*

Lower graders at Junction school participated in a lesson on measuring and graphing led by the watershed education coordinator. Students learned how to measure using cardboard cut-outs of Salmon at different life stages. Students then used a bar graph to display the results of their measurements. The graph depicted the growth of Salmon in

centimeters by years of age. Measuring and graphing is an important part of the state standards for this age group.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Habitat Lesson**
*Forks of Salmon School, Lower Grades, May 7, 2003*

Students listened as the watershed education coordinator read an important book aloud, Salmon Creek, by Annette LeBox and Karen Reczuch. This book illustrates and describes the habitat requirements and lifecycle of Coho Salmon. Students then created story-book salmon. These books are actually a 2-foot long paper salmon, which opens up accordion style to reveal a page on each of the habitats of the salmon's life cycle. Understanding what a habitat is and that every being requires one, is an component of the state standards for this age bracket.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**River Schools Annual Watershed Education Fair**
*Forks of Salmon and Junction Schools, All Grades, May 9, 2003*


**Students using the erosion model**

This years' Watershed Education Fair was action packed! Community members and kids from Bluff Creek to Cecileville turned out in mass to celebrate the diversity and vitality of the Salmon River Watershed. The sun shined for the first time this spring, and everyone soaked up the rays while participating in the festivities. We had an information scavenger hunt, during which people scoured the student watershed projects for trivia and facts.

There was a big erosion model set up and students and adults had the opportunity to form a model riverbed and test it's ability to stand up in flood conditions. We got up close and messy with fauna from the oceanic portion of our watershed during a squid dissection. Did you know that squid have black ink inside of them, which they squirt out to ward off predators? This ink can be used to write with and there is even a rigid "pen" inside every squid that can be dipped in the ink and used like an old fashioned fountain pen! Everyone got the opportunity to feel what its like to be a salmon running up stream and dodging obstacles and predators in a lively game of Hooks and Ladders (hope you brought your running shoes!). And for the artistically oriented, local artist Amanita helped students and community members create life sized multicolored salmon puppets. The culminating event of the fair was a visit from Wildlife Images, a wildlife rehabilitation organization who came all the way from Grants Pass, Oregon. Wildlife Images volunteers brought several owls and hawks, a large Boa Constrictor (which was

found under a hotel bed- watch your toes), and an adult Bald Eagle! The event was sponsored in part by the Six Rivers office of the U.S. Forest Service, The Karuk Tribe of California, The AmeriCorps Watershed Stewards Project, and Forks of Salmon Elementary School along with the Salmon River Restoration Council.


**Students with aquatic insects**

**Aquatic Insect Field Trip**
*Junction School, Mouth of the Salmon River, May 20, 2003*

Grades 1-3 ventured down to the mouth of the Salmon River this spring to learn more about their six legged friends in the stream. Before leaving the classroom students engaged in a lesson about anatomical adaptations of aquatic insects. They wrote in their journals and drew pictures of insects with specific adaptations. Once at the field site, students, teacher, watershed education coordinator and parent volunteers sampled the Klamath and Salmon Rivers for aquatic insect life. Nearly all of the insects found were in the Salmon River. After discussion, students attributed the near absence of insects in the Klamath River to high temperatures and scarcity of desirable habitat. Students used kick nets and hand nets to catch the insects. Students identified the different insects and viewed them under magnification. After returning to the class room students made a giant mural depicting an underwater stream scene with larger than life aquatic insects averaging 4-12 inches each!
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Worm Bin Harvest**
*Forks of Salmon School, All Grades, May 21, 2003*

After a school-year long investigation into decomposition, students finally had the Chance to harvest the nutrient rich castings from the composting worm bin. Every week during the year students fed the worms kitchen scraps from their school cafeteria. They kept an eye on the bin as the worms turned the food waste into soil. Then they separated the paper "bedding" from the castings. In order to remove the worms from the valuable castings, students scooped out handfuls of the castings and made them into cone shaped piles in the sun. Because worms don't like light, the worms headed for the bottom and the students were able to scoop the castings off the top. After removing all the worms in this fashion, students returned the worms to their bin for more composting and used the castings to fertilize the school flowerbed. This was a prime example of experiential learning. Students saw before their very eyes that "waste" is just a misplaced resource and that decomposers play a very important role in rejuvenating the soil.
**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Native Plant Illustration Field Trip**
*Forks of Salmon School, Lower Grades, May 22, 2003*


Student with botanical illustration

For their second native plant field study, Forks students grades 1-5 hiked up the Little North Fork Trail in search of good still life subjects. Local botanical artists, Geba and Karuna Greenburg, led the trip. Students furthered their knowledge of local native plants, plant anatomy, and plant identification through illustration. While sketching and water coloring plants, students listened to stories about historical use of plants by Native Americans, Pioneers, and modern peoples. Did you know that the settlers used Vanilla Leaf as a vanilla substitute in baking?

**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Spring Water Quality Monitoring Field Trips**
*Forks of Salmon School, Upper Grades, May 28, 2003*
**Junction School, Upper Grades, May 29, 2003**


**Students and community volunteer launching Hobo temperature monitors during Water Quality monitoring trip.**

For upper graders at both River Schools, May means time to launch the Hobo temperature-monitoring loggers. Students donned their stream boots and waders once again and waded into the chilly spring waters of Merrill Creek, Nordheimer Creek and the Salmon River. By the time students reach the eighth grade, they are practically experts in deploying the loggers and they are excited to teach the younger students where to mount the monitoring devices, how to use the lap-top computers to enter the primary data and view the data graph, and how to measure bank-full width. This year Forks students also wrote some streamside poetry. Junction students had a lesson in local geology. Both schools made entries in their watershed journals and identified aquatic insects.

**These activities satisfy Task #4: Teach students and teachers technical skills...**

**Annual Summer Teachers Planning Workshop/Meeting**

*Teachers from Forks of Salmon and Junction Schools, August 21, 2003*

Teachers from Forks of Salmon and Junction Schools met with Watershed Education Coordinator and other school staff for the annual summer workshop. This meeting is the primary planning session for the watershed program each year. The coordinator briefs teachers on funding sources, requirements, goals, and tasks. Teachers and coordinator review educational standards and target which ones the watershed program will focus on. There is a brainstorming session where new curriculum and ideas are discussed. In addition, the calendar for the entire school year is laid out. The meeting is always well attended and this year was no exception. A lot of new ideas were explored and there was much excitement for the coming season of watershed education activities.

**These activities satisfy Task #1: Coordinate and integrate watershed education...**

**Half Day Curriculum Planning Meetings with Teachers Individually**

*Teacher Andrea Crosby in the morning and with Teacher Chris Magarian in the afternoon on September 18, 2003*
*Teacher Joel Kurtzman on October 9, 2003*

The half-day planning meetings are a chance for the coordinator to work one-on-one with each teacher. The coordinator and teacher discuss the specific educational focuses for each class and decide how the watershed education program can best compliment the classroom activities. The coordinator schedules weekly classroom presentations and fieldtrips, which are specific to each class.

**These activities satisfy Task #1: Coordinate and integrate watershed education...**

## F. SUMMARY AND CONCLUSIONS

In short, the Watershed Education program positively impacts the lives of many people in the Salmon River watershed. Through hands-on, experiential methods, students and community members restore watershed health and gain knowledge of current scientific methods and processes. Students are empowered by the responsibility they are given and the contributions they make. They receive career development and learn to be caretakers

of their watersheds. This is the kind of programming that invests in the future and paves the road for stewardship in natural resource management.