
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Yakima Basin Environmental Education

BPA project number: 9405900

Contract renewal date (mm/yyyy): 8/1999 **Multiple actions?**

Business name of agency, institution or organization requesting funding
Educational Service District 105

Business acronym (if appropriate) ESD 105

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
7.6B.6

FWS/NMFS Biological Opinion Number(s) which this project addresses
na

Other planning document references

Short description

Provides training for area teachers and students allowing them the opportunity to participate in the maintainance and restroation of their local watershed, through Integrated, hands-on curriculum that meets the essential learnings mandated the state of Wa

Target species

citizens of the watershed

Section 2. Sorting and evaluation

Subbasin

Yakima

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input checked="" type="checkbox"/> Anadromous fish <input checked="" type="checkbox"/> Resident fish <input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Multi-year (milestone-based evaluation) <input type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input checked="" type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input type="checkbox"/> Research & monitoring <input type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	To provide relevant, hands-on curriculum to all participating teachers and their students	a	continue to develop communication links with local research projects that have potential for student involvement
		b	involve students in community problem solving related to local environmental issues, and arrange for area scientists to participate in teacher training sessions and student presentations
2	Provide teachers and students with necessary equipment and materials to participate in local environmental education activities	a	identify, purchase, and maintain equipment related to teacher training field trip topics
		b	organize a check-out system for the equipment
3	Continue to support teachers and students who have participated in the program over the years	a	provide updated information and access to newly acquired resources
		b	provide resources for ongoing student projects
4	Foster community partnerships to improve both education and the environment	a	involve various community agencies and organizations in active participation in classroom activities
		b	involve students in presenting possible solutions to environmental problems they have identified to appropriate agencies or organizations
5	stimulate student interest in science and the environment as possible career choices	a	arrange for local biologists and other scientists to participate in field trip trainings and classroom presentations
		b	offer opportunities for student involvement in various area projects
6		a	arrange partnerships with local agencies and organizations to involve

			students in relevant projects
		b	provide a curriculum with appropriate information aimed at creating positive attitudes about the environment among future decision makers

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	8/2000	7/2001	na	na	69.00%
2	8/2000	7/2001	na	na	6.00%
3	8/2000	7/1998	na	na	5.00%
4	8/2000	7/2001	na	na	5.00%
5	8/2000	7/2001	na	na	5.00%
6	8/2000	7/2001	na	na	10.00%
				Total	100.00%

Schedule constraints

Completion date

on-going

Section 5. Budget

FY99 project budget (BPA obligated): \$119,406

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	180 days @ \$240.00/day	%35	45,000
Fringe benefits		%11	14,850
Supplies, materials, non- expendable property	supplies, equipment and instructional materials	%2	3,000
Operations & maintenance	ESD 105 office costs	%6	8,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)			
NEPA costs			
Construction-related support			

PIT tags	# of tags:		
Travel	Teacher field trip transportation @ \$500/trip X 4 trips; incidental coordinator travel	%2	3,000
Indirect costs	9.00%	%8	10,336
Subcontractor	EcoNorthwest	%13	17,000
Other	50 substitutes @ \$120/sub X 4 trips	%19	24,000
TOTAL BPA FY2000 BUDGET REQUEST			\$125,186

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
Total project cost (including BPA portion)			\$125,186

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$125,000	\$127,000	\$130,000	\$132,000

Section 6. References

Watershed?	Reference
<input type="checkbox"/>	Lieberman G.A. and Hoody L.L. 1998, Closing the Achievement Gap, State Education and Environment Roundtable
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

PART II - NARRATIVE

Section 7. Abstract

The Environmental Education Training Program offers teachers throughout the Yakima Basin the opportunity to become involved with their students in projects to protect, enhance, analyze and provide solutions to water resource problems in their community. These projects address the needs of anadromous and resident fish as it relates to the

agricultural and other water users in the Basin. This ongoing program is in its seventh year of operation. In excess of 250 teachers throughout the region have been involved and annually over 2000 students are actively involved in hands-on activities related to understanding the on-going stewardship of our watershed. Activities range from math and science investigations to language arts, journal writing, historical investigations of the watershed, civics, economics. It addresses responsible citizenship through knowledge of water issues like water quality monitoring, salmon life cycle needs, stream hydrology, riparian habitat functions, wetlands and their role in a healthy ecosystem, as it relates to the needs of all the water users involved in these issues.

Students have developed community partnerships to monitor water quality, restore riparian corridors, raise salmon in their classrooms for release in various tributaries, monitor storm run-off and collect data annually on salmon redds in the upper Yakima River. Each year additional teachers will be trained adding additional schools and students to the ever-growing number of involved participants. An independent evaluation of the program was conducted in 1998 and will be an on-going part of the program documenting program outcomes, teacher reactions, and community involvement as well as the long term impact of the program on teaching essential learnings as delineated by the Washington State Office of Education.

Section 8. Project description

a. Technical and/or scientific background

The increasing concern for potential salmon recovery is of high interest to many in the Yakima Basin. Water conservation and the maintenance of high water quality are priority issues in the watershed. Approximately 80% of the mainstream Yakima River flows are diverted and re-diverted for agricultural irrigation. Return flows are seriously polluted and, as a result, the lower Yakima River exceeds permissible state standards for DDT, ammonia and other nutrients, temperature and turbidity. Because of these conditions, the Yakima River has been listed as “impaired” under the Federal Clean Water Act. Once abundant salmon and steelhead populations have dwindled to precariously low levels and other beneficial uses of Yakima River waters are in jeopardy. In addition to agriculture, grazing, logging, mining, and urban development have contributed to water problem in the Yakima River Basin.

This created a local social and political climate with a high potential for controversy. This also created a great need for education about the importance of water conservation, water quality, and caring for our watershed ecosystem.

Evidence gathered from research on the benefits of environmental indicate that students learn more effectively within an environment-based context than within a traditional educational framework. Environmental education appears to significantly improve student performance in reading, writing, math, science, and social studies, and enriches the overall school experience. Research also indicates that students exposed to programs using the

environment as a theme become enthusiastic, self-motivated learners. They gain a wealth of added educational benefits including: a comprehensive understanding of the world; advanced thinking skills leading to discovery and real world problem solving; and, awareness and appreciation of the diversity of viewpoints within a democratic society. The hands-on, minds-on approaches typical of environmental education enable student of all ability levels to improve their performance, and gain a better understanding and appreciation for science.

The research also points out that teachers report that working closely together with their students in real-world situations, are deeply rewarded as they see students, some for the first time ever, respond enthusiastically to what they are learning.

In the area of education reform the Washington Office of the Superintendent of Public Instruction has issued a mandate requiring that all Washington schools teach environmental education K-12 in an integrated curriculum. A great deal of research points to the success of an interactive curriculum whereby students are actively engaged in problem identification, investigation, data collection and analysis, and synthesis. Environmental understanding, not just environmental awareness, is an important component of an educated and literate individual and therefore, environmental education has a very important role to play. It provides great opportunities for inter disciplinary work that allows students to link together hands-on science investigations with real world solutions to local issues and problems.

This program plays a significant role in teacher training. Science education reform requires that teachers need to teach students in different ways that address their different learning techniques. This program allows teachers to create innovative curriculum that leads students toward and understanding of important local themes and concepts related to our watershed. With genuine understanding of the natural world comes an appreciation and concern that will lead to sustainable actions, attitudes, and values.

The program provides the opportunity for over 2000 students each year to observe spawning salmon on the Upper Yakima River. Several long term school projects have developed with the help of partnerships with the North Yakima Conservation District, Washington State Department of Fish & Wildlife, and the city of Yakima Parks Department resulting in the construction of two nature trails along local streams.

Several schools raise salmon in their classrooms for release in local streams. This activity over the past six years resulted in confirmed returns of adult coho into Wide Hollow Creek. The governor commended the students involved in this effort during his 1998 state of the state address. Other successful program activities include water quality monitoring by several schools along the Yakima River, monitoring of suspended solids in local drains, and K-12 curriculum activities related to salmon life cycle needs.

b. Rationale and significance to Regional Programs

The Environmental Education Program specifically addresses Section 76B.6 of the Fish & Wildlife Program by:

providing educational training, materials , and support for teachers

providing relevant, hand-on field oriented environmental education opportunities for students, focusing of water, salmon, and watershed management

forming partnerships with teachers and students with scientific and technical professionals across a broad spectrum of resource activities and interests involved in watershed and resource management

providing opportunities for real world project involvement by students, including water quality, riparian restoration, salmon life cycle, and related item

providing the opportunity for students to share the results of their field work and observations with other students both in and outside the Yakima Basin through such mean as science fairs, e-mail and the world wide web

The Environmental Education Program supports the entire concept of salmon recovery through watershed restoration embodied in Section 7 of the Fish & Wildlife Program. This program provides teacher and students a grounding in integrated resource management, the importance of water to all phases of human existence, the need to consider various human communities when addressing water and related resources, the manner in which all resources are connected, and the need for an open and inclusive process when making resource management decisions.

Through this program, students obtain a broad understanding of the complexities with respect to natural resource management and are better equipped to make informed decisions when addressing resource issues as an adult. By involving professional scientists and resource managers from a broad spectrum of agencies and user groups, teachers and students not only gain knowledge and insights into resource management and access to resource professionals, but students are exposed to potential career opportunities in natural resource management.

There are number of education programs offered by various resource agencies in the Columbia Basin, but this is the only program that provides hands-on training for participating teachers, continuing support for the teachers after they have completed the program and provides substitutes for the teachers on the training days. Materials from other resource training and education efforts are utilized when appropriate.

The scope and extent of student projects and work products produced as a result of this program are only limited by the imagination of the teachers and students. Teachers have integrated natural resources and related issues in math and science lessons, English papers, history term papers, and art projects.

c. Relationships to other projects

It is the goal of the Environmental Education Program to involve the teachers and students in active research projects sponsored by local, state, federal and tribal programs, as well as cultivate community service project relationships with a number of local businesses and environmental organizations. Twelve organizations actually took part in conducting training activities for teachers and making field trip and classroom presentations. They were: Boise Cascade, Bureau of Reclamation, City of Yakima, Nature Conservancy, North Yakima Conservation District, Pacific Power & Light, Washington Department of Transportation, Department of Ecology, Washington State Parks, U.S. Forest Service, Washington State Department of Fish & Wildlife, Yakama Indian Nation Fish & Wildlife.

These organizations made substantial contributions, in both time and resource, to the program. Each saw the program as valuable to the students, to the community, and to their agency. Some of the reasons they gave for taking part in the program were that it promotes understanding of environmental issues and allowed them to network with the schools giving the organization a way of reaching future decision makers in an ongoing and positive way. Carrying on educational activities in cooperation with the schools results in positive public exposure for the organization and provides educational opportunities for students enabling the agency and its employees to fulfill an important civic responsibility.

d. Project history (for ongoing projects)

The Yakima Basin Environmental Education Program (#9405900) has received \$101,000 in 1998, \$99,992 in 1997, \$97,681 in 1996, \$94,701 in 1995, and \$94,701 in 1994.

The success of the program is indicated in the training of over 200 teachers that continue to sustain curriculum and activities with their students, Over 2000 students each year are actively involved in related projects, field trips, and classroom activities related to our local watershed restoration.

e. Proposal objectives

1. To continue to provide relevant curriculum to all participating teachers and their students by
 - a) developing communication links with more local research projects that have the potential for student involvement,
 - b) involving students in community problem solving related to local environmental issues, and arranging for area scientists to participate in teacher training sessions and student presentations

2. To provide teachers and students with necessary equipment by

- a) identifying, purchasing and maintaining equipment related to field trip topics
 - b) organizing and maintaining a check-out system for the equipment
3. To continue to support teachers and students who have participated in the program during the last seven years by
- a) provide updated information and access to newly acquired resources
 - b) provide resources for on-going student projects
4. To foster community partnerships to improve both education and the environment by,
- a) involve various community agencies and organizations in active participation in classroom activities
 - b) involve students in presenting possible solutions to problems they have identified to appropriate agencies or organizations
5. To stimulate student interest in science and the environment as possible career choices
- a) arrange for local biologists and other scientists to participate in field trip trainings and classroom presentations
 - b) off opportunities for student involvement in various area research projects
6. Protect and rehabilitate local habitat
- a) arrange partnerships with local agencies and organizations to involve students in relevant projects
 - b) provide curriculum with appropriate information aimed at creating positive attitudes about the environment among future decision makers

f. Methods

Objective 1: To provide relevant, hands-on curriculum to all participating teachers and their students

In each two year program cycle, teachers take part in eight field trip training experiences covering such topics as understanding water needs and uses, stream hydrology, the value of wetlands, riparian habitat functions, monitoring and maintaining water quality, forest practices, and salmon life cycle and spawning requirements. The training allows teachers to become confident in and competent about these issues.

Teachers, after each training session, are given relevant materials and equipment. They are then able to replicate their experiences with their student. Students are involved in hands-on activities about crucial environmental issues in an interdisciplinary context.

Objective 2: Provide teachers and students with necessary equipment and materials to participate in local environmental education activities

This program provides teachers with necessary equipment required to do project work in the field with their students including water quality testing kits, waders, kick nets,

measuring tapes, emhoff cones, etc. These items are maintained and available on a check-out basis through the Educational Service District 105 (ESD 105)

Additional items for classroom demonstrations and instruction are also provided. These include groundwater models, watershed demonstration models, curriculum guides, maps and posters, field study guides etc. These are acquired through the program budget and provided to the teachers.

Objective 3: To continue to support teachers and students who have participated in the program during the previous training cycles

Each fall all present participating teachers and students as well as all past participating teachers and students are encouraged to visit the spawning salmon in the upper Yakima River by arranging a scheduled guided field trip with expert biologists on hand at the site to provide information and instruction. In this way over 2000 students observe spawning salmon each year

Additionally, every teacher who has participated in the training program can arrange for classroom speakers of specific classroom presentations provided by this program with the cooperation of the several partnerships involved throughout the program training. With the addition of outdoor classroom areas in several school districts, teachers are supported in developing long term and on-going projects to enhance, protect, and maintain these areas.

Objective 4: To foster community partnerships to improve both education and the environment

Through the school year teachers and their students are advised of various opportunities to become actively involved with specific projects funded by various local, state, federal and tribal programs. These community agencies and environmental organizations allow impute and participation of classrooms on riparian restoration, water quality monitoring, nature mapping and other habitat enhancing activities.

Through suggested classroom activities in the training program, teachers are encouraged to involve their students projects related to the local watershed. Students identify a problem or a need, test their hypothesis, and then present their findings. In so doing teachers can easily incorporate the newly defined essential learning requirements as identified by the Superintendent of Public Instruction.

Objective 5: To stimulate student interest in science and the environment as possible career choices

This program provides many opportunities for students to observe local scientists, biologists, and technicians in the field. Partnerships with local agencies have allowed

students to participate in field work in water quality monitoring, soil sampling, wetland management, fisheries, forestry, and wildlife management.

Objective 6: To protect and rehabilitate local habitat

The program actively provides teachers with classroom activities and curriculum with appropriate information aimed at creation positive attitudes about the local environment and the needs of a healthy watershed.

We enthusiastically arrange partnerships with local agencies and organizations to involve students in relevant projects that improve and protect habitat. Some of these have included the development of a nature trail along Wide Hollow Creek, monitoring water quality and clean up the creek in Randall Park, monitoring salmon redds in the upper Cle Elum River, wetland restoration and monitoring in Sportsman Park.

g. Facilities and equipment

Facilities for the operation of the Environmental Education Training Program include office space at the Educational Service District office including the following:

- space
- support staff
- computer services and networking
- copying
- phone
- equipment storage

Equipment for the operation of the Environmental Education Training Program include:

- charter bus for each of the teacher training field trips
- replacement chemical and equipment for water quality test kits
- replacement and repair of waders, kick nets, buckets, measuring tapes, etc.
- field study guides, curriculum packets, posters, etc.

h. Budget

The budget reflects the cost of providing substitutes for 50 participating teachers to attend four field trip training workshops during the school year. These training field trips also require a bus for transportation for 50 teachers. The program also provides curriculum materials, field study guides, posters, and other equipment such as waders, dip nets, water quality testing kits, etc. for teachers and their students.

The program also provides for the coordinator to do classroom presentations throughout the school year in various school classrooms in the ESD and incidental travel would include mileage to the various school districts as well as out of state travel to comply with requests to do presentations at conferences and workshops.

ESD 105 requires office costs that include telephone, computer services, copying, space at a rate determined by them.

Section 9. Key personnel

Julie Bradley - Project Coordinator

Education

Masters of Education - Central Washington University, Ellensburg, Wa. with University of Washington Institute For Gifted Education credits

Bachelor of Arts, Psychology - Concordia Teachers College, River Forest Ill.

Associate of Arts, - Concordia College, Milwaukee, Wis.

Previous Employment

Teacher - Hong Kong International School - 1970-1973

Yakima School District Gifted Education Program Director - 1973-1986

Teacher - Yakima School District - 1987-1991

Director of Environmental Education Program for ESD 105 - 1991- present

Current Responsibilities

- *Coordinate and implement teacher training field trips throughout the school year
- *Organize curriculum, classroom activities, and project ideas with participating teachers
- *Develop community partnerships with local, state, federal, and tribal projects to involve teachers and students
- *Provide materials and equipment to teachers for classroom use
- *Coordinate classroom presentations and field trips with students
- *Provide classrooms with mentors related to specific project needs

Section 10. Information/technology transfer

(Replace this text with your response in paragraph form)

Congratulations!