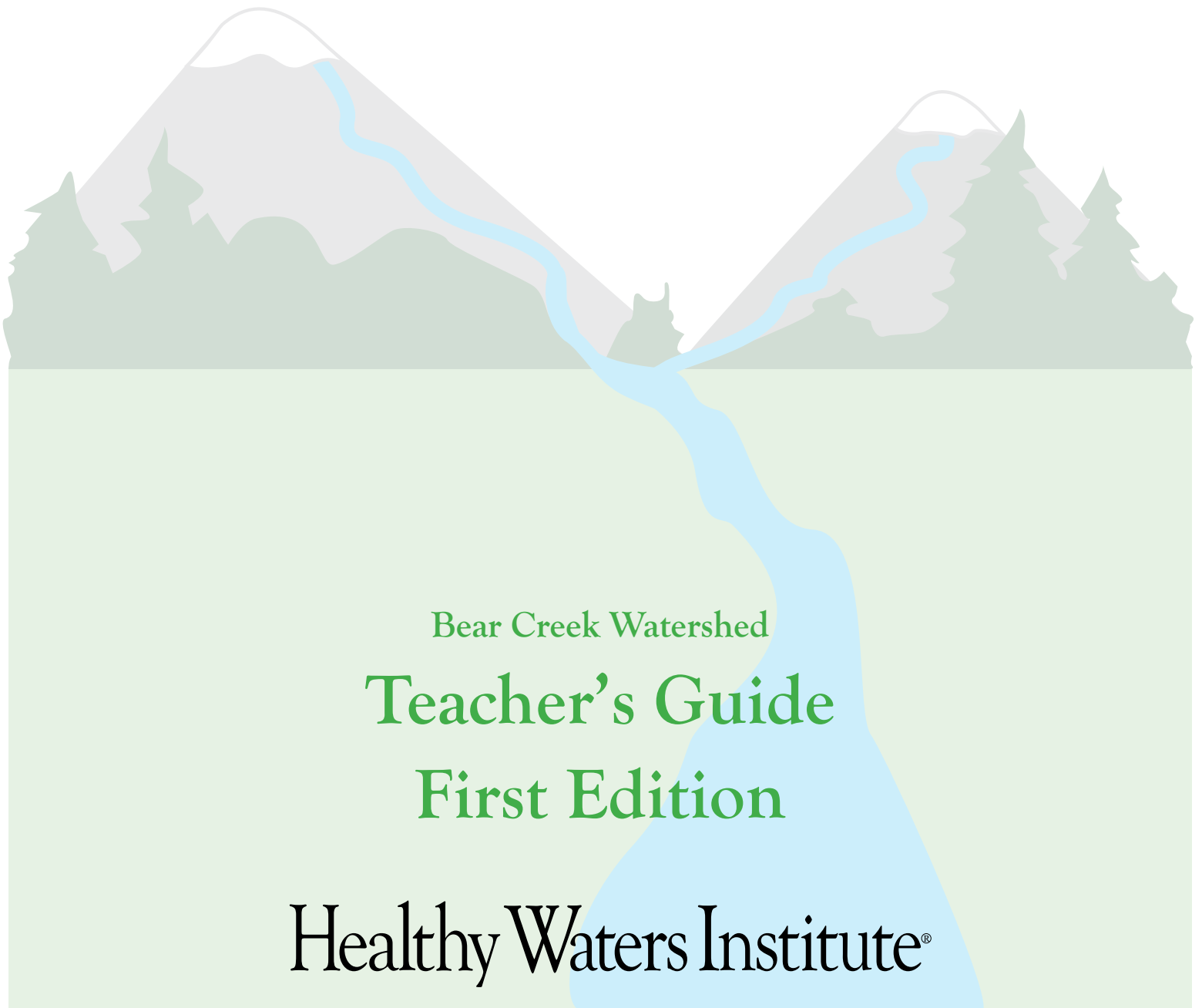


Hometown Waters



Bear Creek Watershed

Teacher's Guide

First Edition

Healthy Waters Institute®

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Introduction to Hometown Waters

Middle/High School Watershed Education Program of the *Healthy Waters Institute*® (HWI)

"A watershed is that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

— John Wesley Powell

RATIONALE

Despite Oregon's reputation as a progressive state with a history of strong environmental leadership, the long-term prognosis for our freshwater ecosystems is grave. A recent national sampling shows Oregon's freshwater systems to be less supportive of aquatic life, less able to provide fish safe for human consumption, and more chemically unsafe to swim as compared to the national average. Though there are many local, state, and federal agencies and organizations currently working on-the-ground to improve the health of our home waters, restoration without stewardship is futile. Current efforts can be undone in a single generation if our youth do not understand the value of healthy rivers and streams.

Streams and rivers work like veins and arteries. The health of the water they carry is dependent on the health of the ecosystems and regions through which they flow. Healthy water is an indicator of a healthy watershed. In order to permanently achieve healthy waters in Oregon, we must take meaningful steps today to engage students statewide in the long-term stewardship of our watersheds. By forging a connection between students and their local watersheds through authentic educational experiences, rooted in relevant, experiential and place-based learning, HWI seeks to improve watershed health statewide by engaging students in region-specific field experiences and stewardship projects that benefit their home waters.

We all live in a watershed and it is therefore vital that we work together to reach all students in all areas, regardless of their geographic, ecologic, economic and demographic differences. Through the strength of partnerships, HWI seeks to build community interest in and support for conservation by bringing together a diverse group of volunteers, teachers, school administrators, students and local partners to educate the next generation of watershed stewards.

GUIDING PRINCIPLES

HWI relies on a set of assumptions to guide our efforts in working to ensure the future health of Oregon's rivers and streams. These guiding principles are considered throughout HWI program development and in support and implementation of partner programs and activities.

1. Water is our most valuable resource.
2. Students are future stewards of watershed health.
3. Authentic educational experiences, rooted in relevant, experiential and place-based learning, holistically prepare and empower our students in becoming future stewards.
4. Supporting increased connections between schools and communities will result in a young citizenry better equipped to understand and address community issues in informed and innovative ways, contributing to Oregon's overall livability.

WATERSHED EDUCATION

HWI develops, delivers and brings together watershed education programs, activities and partners that will help move youth from students to stewards. HWI considers the following local watershed concepts essential in preparing students for watershed stewardship:

- | | | |
|--------------------------|------------------------|---------------------------|
| 1. Outdoor Ethics | 6. Fish | 10. Water |
| 2. Climate | 7. Wildlife | 11. Economy |
| 3. Geography | 8. History | 12. Ecology |
| 4. Geology | 9. Demographics | 13. Local partners |
| 5. Vegetation | | |

HWI works with schools, teachers and local partners to maximize student experience with the following concepts as they relate to local watershed education:

Outdoor Ethics – Interaction with the natural world:

- Responsibility for stewardship or care of the land
- Respect for the land and all its resources at all times and on all occasions
- Consideration of impact on the environment

Climate – Long-term weather pattern of the local watershed, including:

- Temperature
- Precipitation
- Wind

Geography – Study of the local watershed and its features, inhabitants and phenomena:

- Physical – processes and patterns in the natural environment
- Human – processes and patterns of human interactions shaping the local environment
- Environmental – spatial aspects of interactions between humans and the natural world
- Techniques – including mapping and GIS

Geology – Study and science of solid matter in the local watershed including:

- Rocks
- Soil
- Processes that shape the matter

Vegetation – Plant life of local watershed:

- Upland Forests
- Riparian
- Grasslands

Fish – With regard to the study of local:

- Native Species
- Non-Native Species
- Hatcheries, barriers to migration, other local issues

Wildlife – With regard to the study of local:

- Native Species
- Non-Native Species
- Habitat locations, endangered species, other local issues

History – With regard to the study of local:

- Native Inhabitants
- Settlement of watershed

Demographics – Population characteristics of local watershed

Water – With regard to the study of local:

- Watershed zoning
- Domestic water supplies
- Water treatment
- Regional hydrology
- Water use

Economy – The role of water in local economy with regard to:

- Products
- Services
- Agriculture

Ecology – The interaction among organisms and between organisms and their environment

Eco-Art – Study of the aesthetics of local watershed characteristics through:

- Streamside sketching
- Journal making
- Creative writing
- Photography
- Painting

Local Partners – It is essential for students to identify and get to know community partners in order to learn from them and get involved in local projects

PURPOSE

Hometown Waters (HW) was designed to help students move from home and school grounds out into the larger watershed unit. HW provides an interdisciplinary approach to watershed education, and opportunity to discover all aspects related to home watersheds through the inquiry process.

HW works to create a watershed-as-home concept by placing students in a web of awareness that will help them understand how water moves through their watershed, how the actions of the citizens of the watershed affect the water, and how each student's life is touched by the water as it moves through their watershed.

The success of HW in connecting students to their local watersheds is dependent on local resources including experts, community partners and existing educational materials. Each community holds the key to unlocking and connecting students with the local watershed. This program is not about *HWI* curriculum. It's about connecting the right people and the right opportunities to help our students develop a greater understanding of and connection to the watershed in which they live. In order for students to truly develop a sense of place, communities need to come together to collectively offer resources and to support teachers in integrating meaningful watershed activities into school curriculum.

HWI's role in HW is to share resources and successes between partners, teachers, schools and students. From its inception, *HWI* has been a collaborative effort, and is reliant on strong partnerships with schools, watershed councils, state and federal agencies, local governments, landowners, citizens, Soil and Water Conservation Districts, conservation groups, and others. *HWI* Regional Education Coordinators, Assistants and staff work to enhance delivery of water education and ensure that stewardship projects undertaken by classrooms are meaningful to the community.

Acting as a connector and catalyst, *HWI* seeks to strengthen existing partnerships and form new connections between entities seeking to engage students in hands-on watershed education. By uniting education, community, and stewardship, *HWI* takes an active role in cultivating the next generation of watershed stewards.

OBJECTIVES

The goal of HW is for students to develop a greater awareness and deeper understanding of their local watershed. The objectives are based on watershed features as integral components in fostering a watershed-as-home concept.

Students participating in HW should be able to:

1. Name the watershed (and sub-basin if appropriate) in which they reside.
2. Identify the headwaters and mouth of their home watershed.
3. List major factors influencing the nature of the water in their watershed.
4. Describe the eco-regions and/or primary plant associations in their watershed.
5. Describe personal water use and where that water ultimately comes from and goes within their watershed system.
6. Describe the historical condition of their watershed (pre-European influence) and name ways the watershed has changed over time.
7. Identify wild and domestic creatures that live in their watershed.
8. Name the most important crops, products, and/or services produced in their watershed and describe how water is essential for the economy.
9. Become familiar with organizations involved in restoration, conservation, and/or management of their watershed and know how they can personally get involved to make a difference.

HW TOOLKIT

The following tools are the building blocks of HW:

1. Virtual Watershed Tour
2. Regional Watershed Information

3. Watershed Inventory
4. Programs & Activities
5. WebQuest
6. Service Learning/Extended Application
7. Community Sharing

Stringing these tools together as a packaged program offers students repeat opportunities to learn about their watershed through a variety of disciplines and formats. The progression of these tools takes students from a basic level introduction to their local watershed through in-depth examinations of aspects that both pique their curiosity and satisfy classroom goals. Built-in to this package is flexibility in timing, topic and delivery, much of which will be determined by students, teachers and available local resources. We strongly encourage all teachers and partners to share their use of these tools and activities with *HWI*. *HWI* will continue to share materials through our website. We hope to see the collection of adapted and added ideas continue to grow and serve as inspiration for others in connecting students with their home waters.

SUPPORT FROM HWI

HWI will assist schools incorporating watershed education by offering:

- Educational materials
- Teacher grants – up to \$500
- Student grants – \$200 maximum for high school students
- Travel and substitute teacher reimbursement
- Networking opportunities with diverse community partners
- Student scholarships – four \$1500 awards for juniors and seniors
- Publications – healthy waters kids and journal
- Website – resources, opportunity for students to share projects
- Assistance in developing student summits
- Trainings, workshops and consultation

Healthy Waters Institute®

2008 TEACHER GRANT APPLICATION



The Healthy Waters Institute (HWI) seeks to connect every student with their home waters. Through meaningful outdoor educational experiences and commitment to local communities, we will cultivate citizens capable of maintaining the health of waters statewide. HWI is a provider of tools, programs and services that help teachers and students connect with their local waters through community-based projects.

HWI offers grants to help teachers engage students with their home waters. Grants up to \$500 may be used to pay for field trip transportation costs, substitutes, equipment, rentals, or other relevant science education tools and/or services. HWI encourages teachers to submit grant requests following the guidelines below. One role of the local HWI Regional Education Coordinator is to assist teachers in the grant application process; HWI encourages teachers to contact their local REC for more information and for assistance in creating a project that helps connect students with their home waters.



PILOT RESOURCE POOL GRANTS

Submissions:

- Individual grants up to \$500
- Teachers may submit more than one request
- Open ended submission period

To Be Used For:

- Transportation
- Substitutes
- Equipment
- Rentals
- Other science education tools and services

Who Can Apply:

- Teachers within the pilot watersheds
- Salmon Watch teachers
- Other teachers with projects that further the HWI mission.

How To Apply:

- Submit the completed Grant Application Form to your Regional Education Coordinator for consideration (see sidebar).

Additional Requirement:

- Successful applicants are required to submit a final report (with photos) for use on-line or in HWI journal

Traci Price
Director, Healthy Waters Institute
Oregon Trout
65 SW Yamhill St. Suite 300
Portland, OR 97204
503.222.9091 x 25
traci.price@ortrout.org
www.healthywatersinstitute.org

Information about HWI watersheds:

Kim Carson
Regional Education Coordinator
Oregon Trout
230 S 3rd St, Suite 202
Corvallis OR 97333
541.753.4280
kim.carson@ortrout.org

Kolleen Yake
Regional Education Coordinator
Oregon Trout/Upper Deschutes
Watershed Council
700 NW Hill Street
Bend OR 97709
541.382.6103 x 33
kyake@deschuteswatersheds.org

Healthy Waters Institute®

2008 TEACHER GRANT APPLICATION



Date _____

Phone _____

School _____

Fax _____

Address _____

Name _____

Email _____

Watershed:

Johnson Creek Marys River Upper Deschutes Other _____

List names of teachers/ leaders who will participate in project: _____

YOU MAY ATTACH A SECOND SHEET FOR MORE SPACE TO ANSWER THE FOLLOWING QUESTIONS.

Project Description (maximum 250 words):

Explain, by dollar amount and item, how grant funds will be spent?

Who/how many will benefit from the grant?

How does the project fit into the overall goals of HWI? (maximum 250 words)

If the project is on-going, how will it be funded in the future?

List other sources of funding for the project:

If you are mailing this form, please send it to your Regional Education Coordinator (contact information on previous page) or to our main office:

HEALTHY WATERS INSTITUTE
65 SW YAMHILL, SUITE 300
PORTLAND, OREGON 97204
(503) 222-9091 x20 Fax (503) 222-9187

Healthy Waters Institute®

2008 STUDENT GRANT APPLICATION



The Healthy Waters Institute (HWI) seeks to forge a lifelong, caretaking bond between students and their local watersheds ensuring the health of Oregon's rivers and streams for generations.

Students across Oregon are participating in valuable stewardship and research projects that benefit their home communities and the health of their local watersheds. HWI is committed to supporting and promoting the efforts of engaged students recognizing their role as citizens, equipped to understand and address community issues in informed and innovative ways.

HWI offers grants to help students participate in watershed projects. Grants up to \$200 may be used to pay for transportation, equipment, rentals or other relevant tools and/or services. All Oregon high school students are eligible. Grants will be awarded to students who propose projects benefiting the health of an Oregon watershed. Projects include but are not limited to research, monitoring, creative arts, and public awareness. Projects do not have to be directly affiliated with an HWI program or staff member.



STUDENT GRANTS

Submissions:

- Individual grants up to \$200
- Students may submit more than one request
- Submissions accepted on a rolling basis

To Be Used For:

- Transportation
- Equipment
- Rentals
- Other project tools and services

Who Can Apply:

- All Oregon high school students

How To Apply:

- Submit the completed Grant application form and signed letter of support from a teacher on-line (www.healthywatersinstitute.org), to a Regional Education Coordinator (if applicable) or by mail.

Additional Requirement:

- Successful applicants are required to submit a final report with documentation (photos, video, newspaper articles, original or images of products created) for use on-line or in HWI publications.

Traci Price
Director, Healthy Waters Institute
Oregon Trout
65 SW Yamhill St. Suite 300
Portland, OR 97204
503.222.9091 x 25
traci.price@ortrout.org
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Information about HWI watersheds:

Kim Carson
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Kolleen Yake
Regional Education Coordinator
Oregon Trout/Upper Deschutes
Watershed Council
700 NW Hill Street
Bend OR 97709
541.382.6103 x 33
kyake@deschuteswatersheds.org

Healthy Waters Institute®

2008 STUDENT GRANT APPLICATION



Date _____ Phone _____
School _____ Fax _____
Address _____ Name _____
_____ Email _____

Watershed:

Johnson Creek Marys River Upper Deschutes Other _____

List names of supporting teachers. You MUST include a signed letter of support from at least one teacher.

YOU MAY ATTACH A SECOND SHEET FOR MORE SPACE TO ANSWER THE FOLLOWING QUESTIONS.

Project Description (type of project, timeline, location). _____

Impact—how will the project be shared with the watershed or community? _____

Personal Statement—how does this project relate to personal/career goals? _____

Budget—how will the grant be used? _____

List other partners and organizations involved in your project.

REMEMBER: Successful applicants are required to submit a final report with documentation (photos, video, newspaper articles, original or images of products created) for use on-line or in HWI publications.

If you are mailing this form, please send it to your Regional Education Coordinator (contact information on previous page) or to our main office:

HEALTHY WATERS INSTITUTE
65 SW YAMHILL, SUITE 300
PORTLAND, OREGON 97204
(503) 222-9091 x20 Fax (503) 222-9187

Getting Started

1. LOCAL PARTNERS

The first step in connecting students to their home waters is finding out who in your community can provide and support watershed education in and out of the classroom. Contact a *HWI* Regional Education Coordinator or get in touch with your local Watershed Council, Soil & Water Conservation District or Natural Resource agency or organization. Talk with other teachers in your school – find out what local groups they are working with. See the chart on the next page for some ideas.

2. RECOMMENDED RESOURCES

In the event that local watershed educational programs and partners are scarce, we recommend keeping the following guides on hand:

- The Streamkeeper’s Field Guide: Watershed Inventory and Stream Monitoring Methods, Adopt-A-Stream Foundation (<http://www.streamkeeper.org/catalog/books.htm>)
- The Stream Scene: Watersheds, Wildlife and People, Oregon Department of Fish & Wildlife (<http://www.oregon.gov/OPSW/archives/streamscene/StreamScene.pdf>)
- Project WET Curriculum and Activity Guide, Project WET (<http://www.projectwet.org/wetguide.htm>)
- The Ecology Field Guide, Wolfree, Inc. (<http://www.beoutside.org/>)
- Create you own “Regional Reading” list – find non-fiction, fiction, essays, natural history, myths, legends, and poetry about your watershed region. Build a regional library for your classroom.

3. HW TOOLKIT

Collect and develop tools to teach your students about their local watershed. You can find some of these through *HWI*. If *HWI* does not have tools for your specific watershed, you will be able to find templates of each tool which you can adapt to incorporate regionally specific information for your watershed. Adapting tools can be a great student project! The local partners you’ve identified probably have the information you need. We encourage you to share new materials with *HWI* so they can be made available to a larger network of partners.

4. PLAN AHEAD

- Invite local experts and *HWI* staff to share information with your class
- Talk about a Service Learning or Independent Project with your students – what kind of watershed project are they interested in?
- Make nature journals with your students to be used for observing outside, drawing, homework assignments and writing down thoughts, ideas and inspirations! (The use of recycled and/or natural materials is strongly encouraged!)

WATERSHED INFORMATION

Adapted from The Streamkeeper's Field Guide

	SOURCE	OUTDOOR ETHICS	CLIMATE	GEOGRAPHY	GEOLOGY	VEGETATION	FISH	WILDLIFE	HISTORY	DEMOGRAPHICS	WATER	ECONOMY	ECOLOGY
COLLEGES & UNIVERSITIES	Departments of: Biology, Botany, Ecology, Entomology, Environmental Studies, Fisheries, Geology, Natural Resources, Wildlife, Zoology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LOCAL AGENCIES	Libraries/Internet: City, County	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Cities: Departments of Public Works, Public Health, Planning			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Counties: Departments of Public Works, Planning, Public Health, Government Councils, County Extensions, Conservation Districts, River Basin Teams		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Indian Tribes: Fish & Wildlife Departments, Tribal Councils	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
REGIONAL	Watershed Councils, Soil & Water Conservation Districts, River Conservation Groups, Water Districts			✓	✓	✓	✓	✓			✓	✓	✓
STATE AGENCIES	Department of Fish & Wildlife					✓	✓	✓	✓		✓		✓
	Department of Forestry					✓		✓	✓				✓
	Department of Environmental Quality		✓			✓	✓	✓			✓		✓
	Department of Natural Resources, Lands, etc.				✓	✓	✓	✓	✓	✓	✓		✓
	Department of Ecology			✓	✓	✓	✓	✓	✓		✓		✓
	Department of Social and Health Services						✓		✓	✓	✓	✓	
FEDERAL AGENCIES	Bureau of Land Management			✓		✓		✓					
	Forest Service					✓	✓	✓	✓				✓
	Environmental Protection Agency					✓		✓			✓		✓
	Fish & Wildlife Service						✓	✓	✓		✓		✓
	Army Corps of Engineers					✓	✓	✓	✓		✓		
	National Resource Conservation Service			✓	✓	✓	✓	✓		✓	✓		✓
	Soil Conservation Service				✓	✓	✓	✓		✓			✓
	National Marine Fisheries		✓				✓	✓	✓		✓		✓
	Geological Survey				✓	✓			✓				
	National Weather Service		✓										

Virtual Watershed Tour

VIRTUAL WATERSHED TOUR

A virtual tour is a general education tool used to introduce students and the general public to their home watershed. Students can research, compile and create their own virtual watershed tour for their area, the process for creating the tour gives students and opportunity to unearth a wealth of watershed information, history, photos and data with which to create a visual and informative tour of their home watershed. This tool offers a glimpse into watershed imagery and the opportunity to communicate information about the geography, hydrology, ecology, history, and community land and water use issues in your watershed. Powerpoint presentations are the ideal format rich with images as opposed to text. Tours should be approximately 35-45 minutes in length.

Options for content include:

1. Tracing the watershed path from headwaters to mouth.
2. Focusing on watershed features: geology, hydrology, historical land use, current land use, exceptional or interesting features—(i.e. petroglyphs, spouting horns, waterfalls)
3. Providing a comprehensive overview of the featured watershed. Names of watershed, major tributaries, counties, and other locators should be used.
4. Covering local land use as a major factor in watershed health in more depth than geology or basic hydrology. Land uses and impacts often reveal patterns - the upper reaches may be impacted by forestry, followed by agricultural impacts slightly lower in the system, with urban development and impacts from industry in the valley floors.
5. Imparting a strong “what you can do” or “what’s being done by people who care” theme to give viewers a sense of actions they can take to improve their watershed.

Virtual Watershed Tours can be created through a variety of means. Photos and information can be collected and compiled from local archives and partners; digital cameras can capture what you want to present. Putting together a tour is a great student project!

Regional Watershed Information

REGIONAL WATERSHED INFORMATION

Regional Watershed Information should be integrated into all activities. Creating a document to keep it all in one place is an effective tool to use as a reference for teaching to a variety of concepts.

Regional information should include:

1. Watershed boundaries
2. Headwaters: a written description of the headwaters should include basic hydrology, land use/management, and recharge.
3. Primary watershed issues of concern.
4. Eco-region and/or plant association group maps.
5. History: 1-2 pages describing settlement, European settlement, land use patterns (specifically natural resource extraction activities), historic vegetation, water management (including significant dam implementation and other channel modifications), and the history of regional native fish declines.
6. Wildlife (ODFW wildlife habitat maps might work well for this).
7. Economy: ½ page overview.

Regional information can be compiled through a variety of resources. Students are also a great resource for this project!

Check out *HWI's* website (www.healthywaters.org) to find regional information about your watershed. If we do not have information for your region use the following template to create your own regional watershed information. Feel free to add or delete sections as needed.

We encourage you to share your watershed information with *HWI* so we can make it available for others through our website.

Bear Creek Watershed

Where is Bear Creek Watershed located? How big is it?

Located completely in Jackson County in southern Oregon, the Bear Creek Watershed is narrow and long, about twice as long as it is wide. Bear Creek Watershed is a subbasin within the larger Rogue River Watershed. Bear Creek meanders approximately 30 miles down the middle of a narrow valley floor. Bear Creek drains a 400 square mile basin. Bear Creek's tributaries begin in the highlands of the Siskiyou-Klamath and Cascade Mountains and Bear Creek ends between the communities of Gold Hill and Central Point at its confluence with the Rogue River. A watershed with a rapidly growing population, Bear Creek Watershed flows through the largest urban areas in Jackson County including Medford, Ashland, Central Point, Talent, Phoenix, and Jacksonville.

What kind of climate patterns does the Bear Creek Watershed have?

Bear Creek Watershed is a special place because it's all mixed up. It's located in a place where four different climate zones meet and where different mountain ranges (the Cascades, coast range, and Siskiyous) and soil types also come together. This makes the region especially variable. Wet influences from the coast in the west (called maritime weather) bump up against dry high desert weather from the east. California Mediterranean climate from the south bumps up against the Northern Temperate climate influences from the north! The overlapping climates make Bear Creek Watershed weather over time very unpredictable.

The Bear Creek Watershed (BCWS) is the warmest and driest interior valley in western Oregon. The BCWS gets less rainfall than all our neighboring valleys. From 1928 through 2000, the average yearly rainfall for Medford was about 19 inches. Most of the precipitation that falls here is in the form of rain, with snow accumulating at higher elevations. Most of the watershed receives limited rainfall, averaging about 20 inches in the valley to 60 inches at the upper elevations of Mount Ashland. The greatest precipitation occurs in the BCWS during the months of November through June. Lowest rainfall period is from July through October. Our biggest floods have occurred in the months of December and January with what are called "rain-on-snow" events. "Rain-on-snow" events happen when warmer rains fall on snow pack in the higher elevations and the rain melts the snow quickly. The rainfall and rapid snow melt combine to create very high flows. Drought cycles in the BCWS are influenced by El nino and La nina cycles which effect the entire Pacific Northwest. Many of our droughts are year-long with some that extend for two years or longer. In drought years we may get only 11 to 13 inches of rain for the whole year.

What is the geology like in the Bear Creek Watershed?

The BCWS is located in the Klamath Physiographic Province in southwestern Oregon. This is an area of complicated geology as different mountain ranges come together. On the north and east sides of the watershed there is the influence of the Cascades with basalt formations from volcanic activity. On the south and west sides of the watershed are the Siskiyou-Klamath mountains. The watershed ranges in elevation from just over 7,500 feet atop Mount Ashland to approximately 1,075 feet at Bear Creek's confluence with the Rogue River. The whole watershed is contained within Jackson County in southwest corner of Oregon just north of the California border.

What streams, lakes, wetlands, and groundwater resources does Bear Creek Watershed have?

The headwaters of Bear Creek Watershed are located on Mount Ashland and are fed by snow melt but the BCWS is also quite dependent on water that is diverted from the Klamath Basin and stored in Emigrant Reservoir. There are not good records about pre-European settlement flow regimes but it is believed that Bear Creek had very low flows in the summer with under-gravel water movement, isolated pools, and hummocks and wetlands along a braided channel.

There are 21 larger tributaries to the main stem of Bear Creek. They are Anderson Creek, Ashland Creek, Coleman Creek, Emigrant Creek, Gearky Creek, Griffin Creek, Jackson Creek, Jeffery Creek, Kenutchen Creek, Larson Creek, Lazy Creek, Lone Pine Creek, Mingus Creek, Myer Creek, Neil Creek, Payne Creek, Upton Creek, Wagner Creek, Walker Creek, Whetstone Creek, and Willow Creek.

Emigrant Reservoir is the only large lake-like water body in the watershed. It was created with a dam in 1924 that was made larger in 1960.

Many of Bear Creeks early wetlands have been lost due to surface and tiled drainage on the valley floor. There are still large wetlands at Denman Wildlife Refuge, vernal pools in the Agate Desert area and on top of the Table Rocks, and many smaller wetlands all over the BCWS. There are not good records of wetlands available for the watershed.

The Bear Creek Watershed has a shallow aquifer that there is limited information about. More and more private wells have tapped into this water source over the years. These wells are used for irrigation, municipal, and household uses. The removal of ground water has both water quantity and quality issues. Drawdown of ground water can influence water levels in streams, springs, and other local water systems. Some estimates show that as many as 20% of BCWS wells may have potential health hazard problems. Records are now being kept for new wells and changes to existing wells. Ground water permits are being transferred from Jackson County to the Oregon Water Resources Dept., and data is being collected for future trend analysis.

What types of soils are present in the Bear Creek Watershed?

Bear Creek Watershed soils consist of multiple layers of gravels, sands, silts, and clays that formed during the erosion of granite and metamorphosed sedimentary rocks, located in the west and south of the watershed, along with Cascade Mountain basalts, located in the eastern part of the watershed. The soils were deposited in varying depths on the valley floor through alluvial processes (water moving muddy sands, gravels, and silts).

Even though soil depths vary from place to place, there is trend with soil depths increasing in a downstream direction. The deepest, most agriculturally productive soils are located in the Bear Creek delta below the town of Central Point.

Tributaries to the main stem of Bear Creek originate in the highlands of the Cascade and Siskiyou mountains and flow down to the narrow valley floor. The steep terrain creates significant erosion and transport of granitic sediments into the streams themselves and then into the main stem.

What kinds of vegetation patterns are present in the Bear Creek Watershed? What tree species dominate in the vegetation zones in the Bear Creek Watershed? Does BCWS have a problem with vegetation patterns and fire as a natural disturbance?

The vegetation of the BCWS is extremely diverse. Time and unique geology combine here to create a mixed bag of plant communities. Over the last 60 million years, plants have migrated to this area from several different directions: The Oregon and California coast ranges via the Siskiyou Mountains (red alder, Pacific madrone, bigleaf maple); the Sierra and Cascade Mountains (baneberry, Shasta red fir, sugar pine, manzanita, and California black oak); the Klamath River corridor and lowland chaparral area (juniper and mountain mahogany).

BCWS is divided into five classifications of vegetation types. They are: the interior valley zone; the ponderosa pine zone; the mixed conifer zone; the white fir and Douglas fir zone; and the white fir zone. All the zones have problems with forest vigor.

The species composition of BCWS forests is different from the forests of the 1700's and 1800's.

Historically the forests had higher composition of pine species, incense cedar, and oak species. With the reduction in fire frequency, natural plant succession has allowed more shade tolerant species, such as Douglas-fir and true fir to dominate the composition of the forests, including some dry sites. This isn't desirable because the pine and incense cedar species are more drought tolerant which makes them more vigorous in dry sites. Over stocking of trees due to less frequent fires also effects tree vigor leading to weak trees prone to beetle infestation, parasites such as dwarf mistletoe, and root pathogens. Over stocking can also increase the severity of fires when they do occur due to increased fuel loads. Thinning programs are suggested to manage the forests.

Interior Valley Zone (72% of the watershed) covers the northern two-thirds of the watershed-- the most common plant associations are Douglas-fir/poison oak; Oregongrape; Pondersosa Pine/ California Black Oak; oak woodlands are also common in these areas.

Ponderosa Pine Zone (1% of the watershed) located in the southeast portion of the watershed-- historically ponderosa pine and incense cedar—now being out-competed by Douglas fir due to fire suppression. Oak woodlands also common in this zone.

Mixed Conifer Zone (19% of the watershed) located in the southern part of the watershed—mixed tree species include ponderosa pine, sugar pine, incense cedar, Pacific madrone, and black oak. Many of these species are being out competed by Douglas-fir and white fir.

White Fir and Douglas Fir Zone (7% of the watershed) located in the northeastern corner of the watershed—white fir and Douglas-fir are present.

White Fir Zone (less than 1% of the watershed) located at the highest elevations on the south and east side of the watershed—white fir/Douglas-fir/Oregongrape associations.

Introduced and invasive species such as star thistle, Himalayan blackberry, poison hemlock, dwarf mistletoe, puncture vine also are an issue in our watershed in forests, meadows, and riparian areas.

What fish are present in Bear Creek Watershed? What kinds of problems do they face?

Resident fish in BCWS include both warm and cold water species. Sculpins are abundant in the system and rainbow trout appear to be well distributed throughout the main stem and tributaries. Redside shiners are found in the main stem but not the upper watershed.

Other species found in BCWS include largemouth bass, mosquito fish, Klamath small-scale suckers, and bluegill, green sunfish, and black crappie all in the family of centrarchids. Most of these species are non-native.

Anadromous fish (those that go from fresh water to ocean waters) in the BCWS include coho salmon and Spring Chinook in the main stem, lamprey in the lower system, and summer and winter steelhead moving through the whole system depending on conditions. Spring Chinook have been known to spawn in Bear Creek's main stem. All of these anadromous fish are native species.

Historically the BCWS supported a viable salmonid fishery. Many factors in recent decades have led to severe declines. These factors include habitat degradation, declining water quality and water flows, construction of man-made barriers to fish passage, over-harvest, unscreened water withdrawals, agricultural and forestry practices, and urban development.

113 fish passage barriers have been identified in the BCWS. All but 2 of these are located in the tributaries of Bear Creek. Fish passage barriers include dams, perched culverts, and irrigation diversions.

What other kinds of wildlife are found in the Bear Creek Watershed?

The Bear Creek Watershed is home to many kinds of wildlife. In the higher elevations where the landscape is wilder there are black bears, cougars, and bobcats. All of these animals sometimes find their way into the more populated areas of the watershed. All across the watershed there are coyotes, foxes, skunks, black-tailed deer, occasionally elk, raccoons, beaver, silver gray and ground squirrels, and several species of bats. We also have two types of lizards, many kinds of snakes, any array of salamanders, western toads, a few species of frogs, and western pond turtles. Some of our native species have trouble competing with non-native introduced species such as the bullfrog, largemouth bass, non-native crawdads, and the opossum. Many wildlife species depend on riparian corridors for connectivity, water, and habitat. Public lands, agricultural lands, and suburban lands all provide habitat for BCWS wildlife.

Oregon Dept of Fish and Wildlife is a good information source about our wildlife species.

There are also many bird species that use the habitats of the BCWS. Please refer to Rogue Valley Audubon or the Klamath Bird Observatory for great information about our birds!

Who were earliest humans to inhabit the Bear Creek Watershed?

In pre-history and into historical times the Bear Creek Watershed was home to a number of Native Americans. Back then the valley floor of Bear Creek Watershed was different. The creek wandered over a much wider area and made oxbows and braided channels each year. There were thickets and hummocks in the lowlands as well as more wetlands. The people who most likely lived in the Bear Creek area were the Takelma. Other groups that were in the region were Shasta, Karok, and Yurok. The following groups also interacted with Bear Creek-- the Klamath to the east and the coastal tribes of the Shasta Costa, Chetco, Coos, and Coquille.

The Native American peoples managed the landscapes in the Bear Creek area by burning in certain seasons to keep the forests a mix of oaks and pines, which they used for food. The burning also made the area more useful for wildlife such as deer and elk. These animals as well as salmon and other fish were a main food source for the people. The Indians preferred to settle along the rivers, which allowed for transportation as well as access to food resources. The Takelma foraged, hunted, and planted. They relied on acorns, camas bulbs, deer, elk, and fish as staple foods. In the winter months they lived in semi-permanent villages in the lower elevations near the rivers. In the summer they moved upslope to camps where they hunted and gathered seasonal crops. They were closely connected to the land and the round of the seasons. Their religion and ceremonies were closely linked to daily life tasks. Estimates of population were about 10,000 Native Americans in the area before 1850 when European diseases and the "Rogue Indian Wars" decimated their numbers.

The Historical Society of Southern Oregon and the BLM are great resources for information about Native American culture and history.

Who lives in Bear Creek Watershed now? What kinds of work do people do?

A period of settlement began around 1850 with people being attracted to the area for mining, logging, and farming that included orchards. This brought many changes to Bear Creek Watershed with impacts from building irrigation canals and water ditches used for mining as well as draining of wetland areas to use for farms and town sites. Mining slowed down over time but farming and logging grew in importance. More people came to live in the valley and streams were impacted by residential development too.

Many historical influences affected what happened in Bear Creek Watershed over time including WWI, the Great Depression, WWII, and changes in government regulation. These larger national

or international events created demand for lumber, and supported increased expansion of farming and ranching. Changes in government brought more regulation of building practices, zoning, and development of roads and water systems.

Today the most important economic sectors in the Bear Creek Watershed are 1) orchard and vegetable farming, 2) ranching, 3) small businesses, 4) medical, government, and social services, and 5) corporate manufacturing. Tourism and recreation are also a growing sector.

Why is fire an important process in the Bear creek Watershed?

Fire is a key natural disturbance process in all of southern Oregon including Bear Creek Watershed. Large fires have played an important part in determining what kinds of plants and trees live in Bear Creek Watershed. Lightning fires and fires set by Native Americans kept the landscape more open than it is now for thousands of years. Fires were suppressed by people beginning in the 1900's which has led to changes in vegetation. Densely spaced stands of trees exist now and trees have migrated into former grasslands. Frequent not-so-hot fires served to thin out the forests and keep the grasslands open. Scientists believe that fires burned here every five years or so in a natural cycle. Today there is more danger of much hotter fires when one starts since there is more fuel available.

How do we use land and water in Bear Creek Watershed?

Approximate percentages of zoned uses in the BCWS

Rural uses about 6 ½%
Urban/Suburban residential uses about 2 ½ %
Commerial uses less than 1%
Industrial uses slightly more than 1%
Agricultural uses about 35%
Forestry uses about 45 ½ %
Mining uses less than 1% (aggregate mining)
Public land ownership is 24%
Private land ownership is 76%

Water supply is an important issue for a dry area like the BCWS. Agricultural use has decreased slowly over the years, but residential and commercial consumption is increasing dramatically. The original water source for Medford at Butte Springs east of Eagle Point, has been expanded to include supplying Central Point, Jacksonville, Phoenix, Talent, and supplements Ashland's needs as well. The municipal supply from Butte Springs while abundant, now has to be supplemented by increased withdrawals from the Rogue River in the summer months. Residential and commercial needs are expected to continue to increase over the next 50 years.

What are populations of people predicted to do in the future in Bear Creek Watershed?

The BCWS contains the municipalities of Ashland, Central Point, Jacksonville, Medford, Phoenix, and Talent. Together the five urban centers along Bear Creek, along with the city of Jacksonville, make up over half of the total county population of 178,000. (US Census, 1992)

The population of Jackson County has been growing rapidly in recent years. Much of this growth is in-migration from neighboring states and cities. Much of the expansion has occurred around the Medford and Ashland urban areas, spreading into smaller nearby towns that used to be independent. Growth is expected to continue to increase rapidly in the future, with growth in-filling the agricultural and forest lands surrounding the communities of Central Point and Jacksonville.

POPULATION OF JACKSON COUNTY, OREGON.

Jurisdiction	Population 1997	Forecast 2000	Forecast 2006	Forecast 2015
<i>Ashland</i>	18,560	19,340	20,938	23,349
<i>Central Point</i>	10,750	12,685	15,912	20,607
<i>Jacksonville</i>	2,050	2,165	2,549	3,260
<i>Medford</i>	57,610	59,858	67,142	79,764
<i>Phoenix</i>	3,770	3,985	4,419	5,159
<i>Talent</i>	5,010	5,151	5,788	6,510
<i>Rural</i>		62,780	65,229	68,200
<i>Jackson County</i>	169,300	177,876	197,775	229,477

People are attracted to the BCWS due to its pleasant climate, nearby natural areas, cultural amenities, university, and medical services. In a study conducted to see why people moved to southern Oregon the top three reasons were; 1) to be with family and friends, 2) to retire, and 3) quality of life.

Why is irrigation so important in the Bear Creek Watershed?

Bear Creek irrigation districts have imported water for over 100 years. This imported water, from the Klamath Basin, is a significant portion of the irrigation water used in BCWS. Some of the irrigation return flows supply a large part of Bear Creek flows in the summer months. Crop production in the BCWS is economically possible only because of the availability of irrigation water. The irrigation season begins April 1 and extends through October 31.

The water distribution system in the BCWS is so complex that at times, especially during the irrigation season, it completely alters the natural flow regimes of most creeks within the BCWS. The irrigation districts are careful to insure that their customers comply with water use policies and are seeking to improve water delivery efficiency.

What is water quality like in the Bear Creek Watershed? What are the major sources of water pollution in BCWS? Are they point sources or non-point sources?

Water quality in the Bear Creek Watershed has been of concern for many years. It has been a "water quality limited" stream since the designation was created by the DEQ in the late 1980's. Many sources of pollution from point and non-point sources combine with low flows and heavy water use to make waters in Bear Creek compromised. Bear Creek has water quality problems related to bacteria, warm stream temperatures, low dissolved oxygen, high pH, high nutrients, and algae growth.

The main source of point pollution in the BCWS is the wastewater treatment plant in Ashland. Plans are in place to bring the plant into compliance.

Non-agricultural sources of non-point pollutants to Bear Creek: Ineffective septic systems contribute nutrients and bacteria; roads and ditches throughout the BCWS contribute oils, hydrocarbons, heavy metals, sediment, and trash; municipal areas, because of parking lots, roofs, sidewalks, and streets, contribute oils, heavy metals, and organic and inorganic pollutants through storm drains; forested areas contribute sediments; golf courses contribute nutrients and other materials; sanitary authority and municipal sewer systems sometimes experience operating

problems such as leaks; individual homes contribute nutrients, sediment, and other materials from lawn care and pet wastes.

Agricultural sources of non-point pollutants to Bear Creek: Flood irrigated pasture systems, especially if combined with poor livestock management, have been identified as primary sources of agricultural phosphate pollutants; excessive fertilizer applications in combination with flood irrigation can result in soluble nutrients moving into streams. Improper timing of fertilizer application can produce pastures in poor condition which can lead to increased silt and nutrient laden run-off.

The list below is how water is used in beneficial ways in the BCWS.

- Industrial water supply
- Resident fish and aquatic life
- Fishing
- Anadromous fish passage
- Irrigation
- Aesthetic quality
- Boating
- Livestock watering
- Wildlife and hunting
- Water contact recreation
- Salmonid fish rearing
- Salmonid fish spawning
- Municipal sources

To learn even more about the Bear Creek Watershed read the Bear Creek Watershed Assessment. The document was prepared by the Rogue Valley Council of Governments for the Bear Creek Watershed Council. It can be viewed on the RVCOG website at www.rvcog.org. Information in this document was condensed from the BCWS Assessment as well as gleaned from other local sources.

Watershed Inventory

Watershed Inventories are worksheets that can be used to track student knowledge. They can be used before, during and after program participation to see how well students learned about their watershed. They are useful for in-class assignments and for generating ideas for student independent research.

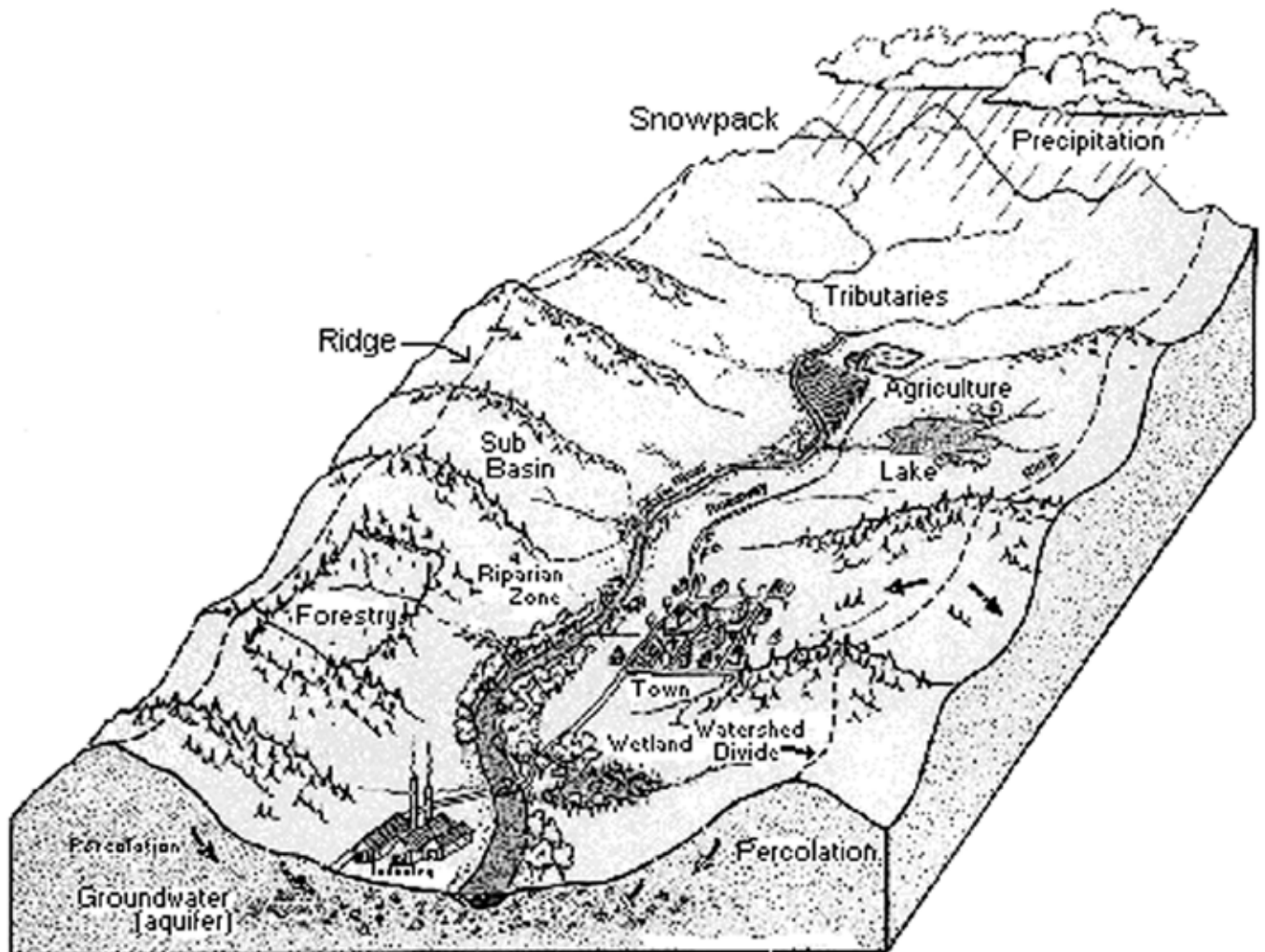
Inventories can include:

1. Basic watershed information (name, length, width)
2. Climate
3. Geology/Topography
4. Water Resources
5. Soils
6. Vegetation
7. Fish
8. Wildlife
9. History
10. Demographics
11. Land & Water Uses
12. Water Quality/Quantity Concerns
13. Areas Prone to Flooding or Drying Up

Check out *HWI's* website (www.healthywaters.org) to find a Watershed Inventory for your region. If an inventory does not yet exist for your watershed, use the template on the following pages or *The Streamkeeper's Field Guide* "Field Procedure: Watershed Inventory" on pg.32 (student data pages 38-41). Inventories should be created with an answer key!

Please share new inventories with *HWI* so that we can make them available to others through our website.

Bear Creek Watershed Inventory



A watershed is the entire area, from ridgetop to ridgetop, which drains into a river or stream.

Do you know that YOU live in a watershed??

BEAR CREEK WATERSHED



LEGEND

- Bear Creek Watershed Boundary
- Sub-Basins
- Bodies of Water
- Streams
- Canals
- Rogue River & Bear Creek
- Highways
- Streets
- City Limits

Zoning	
	Urban
	Agricultural
	Forestry



August 5, 2002

By exploring and researching to find the answers to the following questions, you will discover many exciting secrets about YOUR watershed!

BEAR CREEK WATERSHED INVENTORY

Name _____ Date _____

Larger Basin that Bear Creek is contained within _____

Watershed name _____

Begins in _____ Flows through _____

Ends in _____ (towns, counties, states, regions, etc.)

Drains into _____ (body of water)

Square miles _____ Approx. Length _____ Width _____

CLIMATE

Average yearly precipitation _____

Most of the precipitation is in the form of _____

Most precipitation occurs in the month(s) _____

Droughts most commonly occur in month(s) _____ Floods? _____

GEOLOGY / TOPOGRAPHY

Describe briefly the geology that has shaped your watershed: _____

Specific rock types that are present _____

Name the five highest peaks in the subbasin _____

Highest elevation point _____ Lowest point _____

(include elev and location)

Geologic activity: check the ones that happen in BCWS

earthquakes _____ volcanic eruptions _____ landslides _____

WATER RESOURCES

Where do the headwaters originate for Bear Creek? (glaciers, snowmelt, etc.) _____

Length of the stream closest to your home or school _____

Names of tributaries _____

Names of lakes _____

Important wetlands _____

Groundwater information _____

SOILS

Predominate soil types _____

Areas with soil suitable for farming _____

Areas with potential soil erosion problems _____

VEGETATION

What are the 5 dominant vegetation zones in the Bear Creek Watershed? Name 2 trees that are associated with each one.

Vegetation zone _____ Common tree species found _____

Vegetation zone _____ Common tree species found _____

Vegetation zone _____ Common tree species found _____

Vegetation zone _____ Common tree species found _____

Vegetation zone _____ Common tree species found _____

Describe how historic vegetation patterns differed from current vegetation throughout the subbasin.

Reasons for loss of historic plant vegetation _____

FISH

Native Species _____

Non-nativespecies _____

Types and locations of barriers to fish migration _____

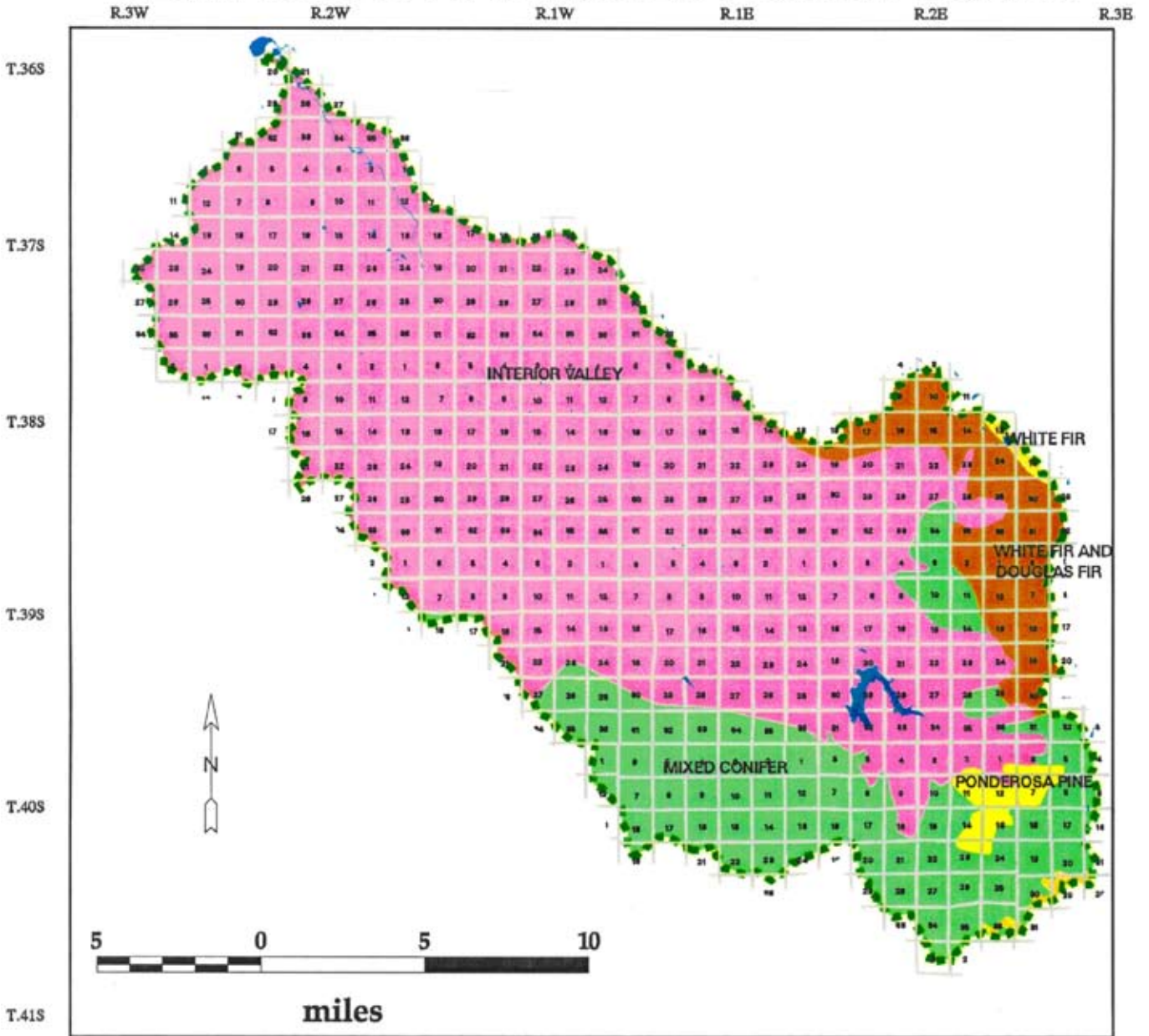
WILDLIFE

Nativespecies _____

Non-nativespecies _____

Key wildlife habitat areas _____

BEAR CREEK WATERSHED FOREST ZONES



- MIXED CONIFER - 44,902 ACRES
- PONDEROSA PINE - 3006 ACRES
- WHITE FIR - 1369 ACRES
- WHITE FIR AND DOUGLAS FIR - 15,448 ACRES
- INTERIOR VALLEY - 166,378 ACRES
- LAKES
- BEAR CREEK WATERSHED BOUNDARY

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Medford District
2002

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

HISTORICAL

The earliest human inhabitants were _____

Describe briefly the settlement of your watershed: _____

FIRE PROCESSES

Why is fire an important process in the Bear Creek Watershed? List 3 ways fire is important.

1) _____ 2) _____ 3) _____

DEMOGRAPHICS

Current watershed population _____ Projected pop in 10 years _____ 20? _____

Areas where most of the people live _____

List towns, cities, and county _____

What makes people want to live (or not) in your watershed? _____

LAND & WATER USES

Find the % of your watershed zoned for each land use

Rural _____%

Urban/suburban _____%

Commercial _____%

Industrial _____%

Agricultural _____%

Forestry _____%

Mining _____% Type of mining _____

Public land _____% Private land _____%

Sources of domestic water supply for watershed residents _____

Are there areas that rely on septic tanks? _____

Location of sewage treatment plants (if any) servicing watershed residents:

WATER QUALITY CONCERNS

List 5 water quality concerns present in Bear Creek Watershed.

Concern	Point or non-point source?	Are there actions being taken?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

How important is irrigation in the Bear Creek Watershed?

List 3 impacts of irrigation in BCWS.

- 1) _____
- 2) _____
- 3) _____

Programs & Activities

The purpose of HW is to connect students with their local watershed and create a watershed-as-home concept. Utilizing local resources including experts, community partners and existing educational materials, provides the most effective and efficient way of connecting students with their home waters.

It can be overwhelming and especially time consuming to make and maintain connections with local partners who are willing and able to assist in the delivery of watershed education in the classroom. If you have a Regional Education Coordinator, Natural Resource Coordinator or Community Outreach Coordinator in your school or watershed, work with them to help plan your HW schedule. *HWI* has developed some tools to help get you started working with your coordinator or on your own. We strongly request the sharing of program and activity information once you discover what works for you. This information will assist *HWI* in compiling a catalog of information that can be shared between teachers, schools and districts.

We encourage connecting with community partners as often as possible. If local watershed education program providers are scarce, there are a plethora of exceptional curriculum guides you can use. All programs and activities should support authentic educational experiences, rooted in relevant, experiential and place-based learning.

The Foxfire Approach to Teaching and Learning (<http://www.foxfire.org/teachi.html>) can be used to guide whether a program or activity should be included in HW.

The Core Practices of the Foxfire Approach include:

- The work teachers and learners do together is infused from the beginning with learner choice, design, and revision.
- The academic integrity of the work teachers and learners do together is clear.
- The role of the teacher is that of facilitator and collaborator.
- The work is characterized by active learning.
- Peer teaching, small group work, and teamwork are all consistent features of classroom activities.
- There is an audience beyond the teacher for learner work.
- New activities spiral gracefully out of the old, incorporating lessons learned from past experiences, building on skills and understandings that can now be amplified.
- Reflection is an essential activity that takes place at key points throughout the work.
- Connections between the classroom work, the surrounding communities, and the world beyond the community are clear.
- Imagination and creativity are encouraged in the completion of learning activities.
- The work teachers and learners do together includes rigorous, ongoing assessment and evaluation.

PLANNING & TRACKING

The *HWI* Watershed Education Matrix was developed to help in planning and tracking HW programs and activities. The matrix is broken by watershed education category which is further broken down by discipline. The overarching watershed theme inherently provides a multidisciplinary approach to education. Teachers across disciplines can relate student learning to real events, features and functions found in the local watershed. When planning programs and activities, consider working in partnership with teachers from other disciplines (or other grade levels) to offer students repeat opportunities to connect with their watershed from a variety of perspectives.

Each program or activity used to connect students to their home waters should be entered into the matrix. It can be used for individual classrooms or the entire school. Entries are based on the number of hours students spend annually (school year) on a particular program or activity. The number in each box should be equal to:

$$(\# \text{ of students}) \times (\# \text{ of hours})$$

For example:

If all 6th grade students from Sunnyside Environmental School participate in a watershed mapping activity with their science teacher:

$$\begin{aligned} & (3\text{-}6\text{th grade classes}) \times (32 \text{ students in each class}) \times (2 \text{ hours on the activity}) \\ & \qquad \qquad \qquad 3 \times 32 \times 2 \\ & \qquad \qquad \qquad 192 \text{ hours} \end{aligned}$$

For this example, you would enter "192" into the box for "Watershed Mapping" – "Science". If the students were participating in a 1000 Drops mapping activity, you would list "Healthy Waters Institute" as the provider.

Detailed descriptions for each entry should be used to track actual program information. Data pages have been included for your use.

A few notes:

- Keep it simple
- Use the matrix to bring partners and teachers together
- Share it with school administration as exhibition of students learning and the valuable contributions of community partners
- Include examples of how programs also satisfy standards and benchmarks
- Keep track of as much information you can about the programs – it will be invaluable to share with others
- Provide feedback to the *HWI* always and often – share completed documents, comments and questions

If you need more support for teaching students about their home watershed, or just want to keep your school informed – consider using the "Watershed Education Partnership Agreement".

USING THIS BINDER

Use this binder to keep track of your regional HW toolkit. We've included sections for each component of the toolkit along with tabs to segregate each program area. There's a worksheet at the front of every program section to keep track of local partners who can help. Add new program and activity pages as you discover them. We've included some examples to help get you started.

Let us know how you're connecting students with their home waters so we can share your ideas and accomplishments! Check in with *HWI* to find new ideas from others in the field.

PROGRAM & ACTIVITY DESCRIPTION

Teacher Name				
Email				
Discipline				
Grade Level				
Name of Activity				
Description				
Where (circle)	In-Class	Schoolyard	Outdoor Field Trip	Indoor Field Trip
Length				
Benchmarks/Standards				
Partners				
Partner Contact Info				
Where to find activity				

PROGRAM & ACTIVITY DESCRIPTION

Teacher Name				
Email				
Discipline				
Grade Level				
Name of Activity				
Description				
Where (circle)	In-Class	Schoolyard	Outdoor Field Trip	Indoor Field Trip
Length				
Benchmarks/Standards				
Partners				
Partner Contact Info				
Where to find activity				

Healthy Waters Institute®

CATALOG FOR INVITATION

Year:

Contact:

School:

Phone #:

Address:

Email:

Provider	Outdoor Ethics					Climate					Geography					Geology					Vegetation					Fish					
	Arts	English	Language Arts	Mathematics	Science	Social Sciences	Arts	English	Language Arts	Mathematics	Science	Social Sciences	Arts	English	Language Arts	Mathematics	Science	Social Sciences	Arts	English	Language Arts	Mathematics	Science	Social Sciences	Arts	English	Language Arts	Mathematics	Science	Social Sciences	
TOTAL HOURS																															

Watershed Education Partnership

The Healthy Waters Institute (*HWI*) seeks to forge a lifelong, caretaking bond between students and their local watershed, ensuring the health of Oregon's rivers and streams for generations. By uniting education, community, and local stewardship, *HWI* takes an active role in cultivating the next generation of watershed stewards.

Teachers, schools and community organizations throughout Oregon are actively connecting students to their local watersheds and supporting youth as they move from student to steward. Although these efforts are intricately interwoven, they are often disconnected.

HWI requests your help in tracking participation in watershed education programs and activities. Successful tracking will result in:

- Increased communication and collaboration within schools
- Increased connections between schools and community partners
- Dynamic catalog of programs and activities accessible to teachers statewide

HWI will assist schools incorporating watershed education by offering:

- Educational materials
- Teacher grants – up to \$500
- Student grants – \$200 maximum for high school students
- Travel and substitute teacher reimbursement
- Networking opportunities with diverse community partners
- Student scholarships – four \$1500 awards for juniors and seniors
- Publications – healthy waters kids and journal
- Website – resources, opportunity for students to share projects
- Assistance in developing student summits
- Trainings, workshops and consultation

Signing this document demonstrates agreement with the following:

"I support the work of *HWI* and local community partners in working with teachers and schools to satisfy curriculum and graduation requirements through watershed education while equipping our students with essential lifelong learning skills. I recognize the value of incorporating watershed education into my classroom. I will provide *HWI* with necessary information to support their statewide watershed education efforts."

Participating teachers, please sign below:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Name of School: _____

Total # of students participating in watershed education: _____

Total # of student hours on watershed education: _____

Signature of School Administration, Title:

Date:

_____	_____
_____	_____

Geography

PRACTICE READING A TOPOGRAPHICAL MAP

- Use The Stream Scene “Tour of a topo” (pg.71) with a State of Oregon Map
- Trace the watershed boundaries

CREATE YOUR OWN WATERSHED MAP

- Use The Stream Keeper’s Field Guide “Creating your own Watershed Map” (pg.24)
- Compare to a real map of your watershed

ADDITIONAL ACTIVITIES

- Use regional maps of your watershed to identify the headwaters, mouth, bodies of water, ridgelines, communities, industry, highest elevation, lowest elevation, mountains, buttes, rivers, lakes and streams
- Create vocabulary lists for topographical maps
- Create writing prompts for your students
- Make 3-D Models (The Stream Scene #19 pg.41 & “What a relief” pg.91)
- Have your students create crossword puzzles and word searches
- Find your Ecological Address (The Stream Scene “A sense of place: your ecological address” pg.53)

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

History

- Read "The Bath" in "Easy Street" (Project WET pg.382). Brainstorm with students how they think their watershed has changed throughout history.
- Create writing prompts for your students - first person account of what it would have been like around the time of "The Bath".
- Recruit members from your local Historical Society to give a presentation to your class with pictures and stories
- WebQuest - use as a research tool for answering critical questions (Hometown Waters pg.WQ1)
- Create a mural of your watershed's historical timeline with drawings for major dates or events
- "Nature Rules" - (Project WET pg.263)
- "Old Water" - (Project WET p.171)

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

Water

WATER CYCLE

- Review the water cycle with your students
- Use "The Incredible Journey" (Project WET pg.161)
- Review graphs and graphing techniques

WATERSHED MODEL

- Create a simple watershed model (The Stream Scene #19 pg.41 or <http://www.portlandonline.com/shared/cfm/image.cfm?id=31560>)
- Find out how water moves through a watershed

STREAMFLOW

- Use "Snow way!" (The Stream Scene pg.97)
- Share your regional data (precipitation vs. streamflow) with *HWI*
- Have your students create a graph of data and compare with regions throughout Oregon

ADDITIONAL ACTIVITIES

- "Hold that raindrop" (The Stream Scene pg.117)
- Get your students to track water use at home with a "Water Tally Sheet" (http://www.nationalgeographic.com/geographyaction/rivers/ax/PDF1_WaterTally.pdf) or "Home Water Audit" (<http://www.portlandonline.com/shared/cfm/image.cfm?id=31562>)
- "Get the Ground Water Picture" (Project WET pg.136)
- "Water Meter" (Project WET pg.271)
- "Just Passing Through" (Project WET pg.166)

PERSONAL WATER USE

- "Water Tally Sheet" or "Home Water Audit" – what did your students discover about their water use at home? Discuss. Have students graph their results.
- Neighborhood inventory – what do your students see in their neighborhood: Wildlife, pollution, water, drains, vegetation, cars? Have them record their observations and discuss in class.
- "Common Water" (Project WET pg. 232)
- Have students write in journals about how what they can do to conserve water.
- "Every Drop Counts" (Project WET pg.307)
- "A Grave Mistake" (Project WET pg.311)

LOCAL CONTACT

Name
Organization/Affiliation
Address
Phone
Email
Type of Activity/Program
Description
Where (circle) In-class Schoolyard Outdoor Field Trip Indoor Field Trip

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Name
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Ecology

- Brainstorm with your students: what types of plants, animals and bugs live in your watershed?
- Are they different from other regions?
- Make some guesses and have your students research to find out

ONE DAY OUTSIDE

- Spend a day outside with your students
- Touch, smell and have your students use journals for recording observations and drawing pictures.
- Practice sensory observation (Project WET, "Stream Sense" p.195)

ADDITIONAL ACTIVITIES

- WebQuests – find and create on-line activities for identifying trees, plants, and animals. Have students discover answers for themselves and discuss in class.
- Powerpoint Presentation – create or have students create presentations about regional wildlife and plant life.
- Invertebrate Collection - Dig holes in spots around your watershed (schoolyard, home yard, forest, near creek). Plant cups in the holes to collect bugs. Identify your specimens! (Check out: <http://caplter.asu.edu/explorers/protocol/arthropods/arthro.htm>)

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Local Partners

IDENTIFYING AND BECOMING FAMILIAR WITH LOCAL PARTNERS

- "What's Happening?" (Project WET pg.425)
- "Humpty Dumpty" (Project WET pg.316)
- Invite community members to your class to give presentations about local restoration projects
- Have your students find out about community organizations and events they can get involved with
- Have your class develop a plan of action for getting involved in the community
- Writing – have students write in journals or for *HWI* publications and local newspapers about how they are contributing to the health of their watershed
- Finish Watershed Inventory
- "Dilemma Derby" (Project WET pg.377)
- Watershed Wheel – kids can create their own watershed - ART
http://natsci.edgewood.edu/wingra/watershed/watershed_wheel.htm

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WebQuest

A WebQuest is an inquiry-oriented lesson format in which most or all of the information that learners work with comes from the web. WebQuests provide specific websites for students to explore in order to find the information they need to answer a question.

WebQuests are one more resource for teachers to use in getting their students involved in answering realistic questions about the health and local issues of their watershed. A WebQuest is also an opportunity for teachers to include technology as they are integrating regional watershed education into their curriculum.

AN EXAMPLE WEBQUEST

Students might explore the impacts of dams on rivers, specifically dams on the river in their basin.

The quest may ask students to address the following questions:

1. Do the benefits of dams outweigh the ecological costs?
2. Or do the ecological costs outweigh the benefits?

Students would be split into groups to examine the issue. Topics for investigation might include fish passage, upstream effects, downstream effects, cultural effects, benefits and reasons for the dam.

Each student is responsible for exploring their assigned topic from a given vantage point. A student might assume the role of a "Fish Biologist" and be responsible for researching their topic from that perspective. WebQuests provide specific websites to explore in order to find information.

Visit *HWI's* website for more examples of WebQuests. If you create your own WebQuest please let us know!

Service Learning / Extended Application

Since its launch in 2005, *HWI* has witnessed engaged students assuming responsibility for the health of their watersheds through valuable stewardship projects. Projects large and small have a remarkable impact on students, giving them a profound sense of place. Though many of these efforts have revolved around inquiry-based science, it is important to note that the opportunities *HWI* seeks to encourage are by no means bound by explorations in science.

The natural world provides one of the most dynamic contexts for learning and allows students to discover the complex interactions and relationships found in every ecosystem. Recognizing the interconnectedness of these systems opens the door for limitless interpretation and expression of ideas. It is a living, breathing system full of opportunities to be awed, humbled and inspired by. The scope of projects in which students participate should, and currently do, reflect a multi-disciplinary approach in communicating our relationship to the natural world. Some students are inspired to capture the colors and textures of nature through photography and art while others are inspired to conduct research and expand their understanding of what they see.

Service Learning and Extended Applications provide students with the opportunity to become truly engaged in the maintenance and preservation of their local watershed. Students should be supported and encouraged in developing their own ideas for projects based on the information they learn through HW. Project ideas should address local issues related to watershed health.

In Service Learning and Extended Applications, students apply and extend their knowledge in new and complex situations related to their personal and career interests and post high school goals. Students extend prior knowledge through critical thinking, problem solving or inquiry in real world context.

Participation in projects offers students opportunities for:

- Enhanced awareness of their local watershed
- Connections to community organizations and partners
- Public speaking occasions
- Career related learning experience
- Recognition for the merit of their work

Qualifying experiences generally:

- Support the educational goals of the school district
- Contextualize learning
- Connect students to the community
- Promote citizenship
- Prepare students for transitions beyond high school
- Benefit all partners involved, help to meet a community need

Corvallis School District has developed tools to help teachers and students track Service Learning and Extended Learning Projects.

There resources are available on the Corvallis SD Web site:

http://www.csd509j.net/district_information/departments_and_services/extended_learning/service%20learning.html

Projects may satisfy graduation requirements for "Essential Skills" including:

- Speak and present publicly
- Applying mathematics in a variety of settings
- Using technology
- Think critically and analytically (including scientific inquiry, problem solving)

- Demonstrate civic and community engagement
- Demonstrate global literacy
- Demonstrate career related learning, personal management, teamwork, employment foundations, career development

Collections of evidence should document a student's participation in Service Learning and Extended Applications. Collections may include, but are not limited to:

- Documentation of learning through a career related learning experience
- Projects related to school, student organization, or workplace activities
- Community-based projects related to a community problem or need
- Certificate of Initial Mastery (CIM) work samples
- Research or technical reports
- Storyboards
- Artwork
- Video or audio presentations
- PowerPoint displays
- Photo collections
- CD-ROMs with multimedia presentations
- Reflection pieces
- Journals
- Internship logs
- Job shadow notebooks

Projects can range from scientific investigations to creative arts explorations. The following are examples of student projects:

1. A Day in the Life of the Columbia Pacific: several partners in 1999 pulled this project together. It included about 75 high school students from 6 different high schools being taught by local photojournalists. Students all went out on one day and took photos in these categories: 1) arts and communications; 2) business; 3) infrastructure; 4) health, safety and recreation; 5) human resources; and 6) natural resource systems. Best photos were published with help from a grant and the local newspaper in an insert.

2. Marking Our Place: Susan Cross, Bear Creek Regional Education Coordinator for *HWI* in 2005, coordinated this project. It was mostly adults with a few youth participants. It was designed to build community between naturalists and artists and to also grow a body of art and literature about the Klamath-Siskiyou. Susan matched up teams of 3 artists or writers with a naturalist and sent them out to either urban, rural, or wilderness places for a long day. The participants then were required to create some art or writing that came out of the experience.

3. State of the Watershed Reports: These were done by a number of different school groups in the late 1990's. Peter Hayes, former *HWI* director conducted one with his students in the Thornton Creek Watershed in Washington. Students went out to different locations in their watershed to collect the same data sets on the same day. The product is a snapshot of watershed health on one day in several locations. Kids might collect WQ data, EPA Streamwalk style data, and state of litter or vandalism or macroinvertebrate populations. It would be best to collect the same sets of data so kids can compare apples and apples.

TRACKING & EVALUATION

We've included a set of tools to be used for tracking and evaluating student projects. The information obtained from your students can be used to document graduation requirements or held for personal records. We encourage the use of the *HWI* tools in order to provide *HWI* with the opportunity to share the work of your students with their peers. Students throughout the state are engaging in meaningful projects and deserve recognition for the merit of their work.

Healthy Waters Institute®

INDEPENDENT/SERVICE LEARNING PROJECT



Please use this document to report independent project activity. This information will be used for tracking and evaluation purposes and may be shared as part of on-going assessment of HWI.

Date _____ Name of person reporting _____

Project Information

School _____

Address _____

Teacher _____

Grade _____

of Students _____

Total # of Hours with Students _____

Student Names

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Partners _____

Project Dates _____

Description _____

List supporting curriculum programs or activities (ie. Salmon Watch, 1000 Drops, etc.)

How useful was the curriculum in planning, implementing and evaluating the project?

- Excellent
 Very Good
 Good
 Fair
 Poor

Please report on the following if applicable to project:

- _____ # stream miles worked on by students (in linear feet)
 _____ # native plants planted
 _____ # invasive plants removed
 _____ # bags of trash collected

List any indicator, threatened or endangered species involved: _____

Please check all of the following skills that apply to this project:

- Reading
 Writing
 Speaking and presenting publicly
 Applying mathematics
 Using technology
 Thinking critically and analytically (scientific inquiry, problem solving)
 Demonstrating civic and community engagement
 Demonstrating career related learning
 Service learning

Did students have an opportunity to earn proficiency credit? (Please circle one) YES NO

Was an education grant awarded for this project? YES NO

If YES,

Was a summary submitted with photos or products? YES NO

Project Outcome _____

Additional Comments _____

Please return completed forms to:

OREGON TROUT
 HEALTHY WATERS INSTITUTE
 65 SW YAMHILL, SUITE 300
 PORTLAND, OREGON 97204
 Fax (503) 222-9187

Healthy Waters Institute®

STUDENT SURVEY (PRE-PARTICIPATION)



Name _____ Grade _____
School _____ Date _____
Email _____ Program or Project _____

Please circle the number that best describes what you think:

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. I enjoy learning about the natural environment.	1	2	3	4	5
2. I am more interested in other things than nature.	1	2	3	4	5
3. I like talking with other people about environmental issues.	1	2	3	4	5
4. I am concerned about environmental problems and issues.	1	2	3	4	5
5. I am not interested in learning more about nature.	1	2	3	4	5
6. I value/appreciate the natural environment.	1	2	3	4	5
7. I would rather spend my time inside than in nature.	1	2	3	4	5
8. I don't care about issues affecting my local environment.	1	2	3	4	5
9. I think humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5
10. I believe humans must live in harmony with nature in order to survive.	1	2	3	4	5
11. I think conserving natural resources is unnecessary.	1	2	3	4	5
12. I believe humans have a responsibility to solve environmental problems.	1	2	3	4	5
13. I believe that I have a personal responsibility to help the environment.	1	2	3	4	5
14. One person can't really do anything to help the environment.	1	2	3	4	5

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
15. I am not interested in volunteering to care for the environment by planting trees, trash clean-ups, etc.	1	2	3	4	5
16. I would like to spend more time learning outside during school.	1	2	3	4	5
17. I conserve water at home.	1	2	3	4	5
18. I write letters to politicians about environmental issues.	1	2	3	4	5
19. I have had an internship/job with a watershed council, as a field scientist (hydrologist, botanist, etc), in stream and river restoration or with another natural resource organization.	1	2	3	4	5

Please use the following space to draw a picture of a healthy watershed or natural environment:

Healthy Waters Institute®

STUDENT SURVEY (POST-PARTICIPATION)



Name _____ Grade _____

School _____ Date _____

Email _____ Program or Project _____

Please circle the number that best describes what you think:	Strongly				Strongly
	Disagree	Disagree	Not Sure	Agree	Agree
1. I enjoy learning about the natural environment.	1	2	3	4	5
2. I am more interested in other things than nature.	1	2	3	4	5
3. I like talking with other people about environmental issues.	1	2	3	4	5
4. I am concerned about environmental problems and issues.	1	2	3	4	5
5. I am not interested in learning more about nature.	1	2	3	4	5
6. I value/appreciate the natural environment.	1	2	3	4	5
7. I would rather spend my time inside than in nature.	1	2	3	4	5
8. I don't care about issues affecting my local environment.	1	2	3	4	5
9. I think humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5
10. I believe humans must live in harmony with nature in order to survive.	1	2	3	4	5
11. I think conserving natural resources is unnecessary.	1	2	3	4	5
12. I believe humans have a responsibility to solve environmental problems.	1	2	3	4	5
13. I believe that I have a personal responsibility to help the environment.	1	2	3	4	5
14. One person can't really do anything to help the environment.	1	2	3	4	5
15. I am not interested in volunteering to care for the environment by planting trees, trash clean-ups, etc.	1	2	3	4	5
16. I would like to spend more time learning outside during school.	1	2	3	4	5

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
17. I will conserve water at home.	1	2	3	4	5
18. I will write letters to politicians about environmental issues.	1	2	3	4	5
19. I would like to find an internship/job with a watershed council, as a field scientist (hydrologist, botanist, etc), in stream and river restoration or with another natural resource organization.	1	2	3	4	5

Is there anything you will do differently because of this program? _____

Do you think this experience will impact your choices for college or career? How? _____

Why are healthy watersheds or natural environments important? _____

What is the one thing from this experience you will remember? _____

Please use the following space to draw a picture of a healthy watershed or natural environment:

PRE-PROJECT TEACHER WORKSHEET: SERVICE-LEARNING

Project Title: _____

Teacher: _____ Ph. # _____ Planned Start Date: _____

School: _____ Planned End Date: _____

Course Area/Title: _____

This worksheet is designed to help you develop a project for your class that links community service to the course curriculum, fulfilling the Extended Student Learning Through Service-Learning component of the graduation requirements. Please review the Developing Ideas for Service-Learning and Post-Project Report sheets for additional ideas and guidelines.

Community Benefit/Benefactors (What will the service be? Who will be served?):

Curriculum Connection (How will the project be linked to in-class curriculum?):

*The process of Service-Learning includes four essential stages. Please check the **PARC/D** elements that will be included in your project:*

Preparation

- Student-generated project ideas
- Student planning (time schedules, budgeting, materials, tools, etc)
- Research
- Brainstorming possible partners/resources

Action

- Contacting partners
- Surveys
- Interviews
- Off-campus service
- Conducting experiments
- Collecting data

Reflection

- Journaling/Reflection
- Assessing outcome of project

Celebration/ **D**emonstration

- Presenting the project (oral report, visual display, etc.)
- Final class discussion or wrap-up session

Your Service-Learning project can and should qualify as meeting the Career-Related Learning Standards (CRLS) and Civic Standards. Reviewing these requirements can also help with brainstorming ideas. Please mark the components that you plan to incorporate into your project.

CRLS

Personal Management (PM)

- CS.PM.01: Identified tasks to be completed and initiated necessary action
- CS.PM.02: Planned, organized and completed projects on time and met quality standards
- CS.PM.03: Took responsibility for decisions and actions and anticipated the consequences
- CS.PM.04: Maintained regular and punctual attendance
- CS.PM.05: Maintained appropriate interactions with colleagues

Problem Solving (PS)

- CS.PS.01: Identified problems and located information that would lead to solutions
- CS.PS.02: Identified alternatives to assist in problem solving
- CS.PS.03: Assessed the consequences of the alternatives
- CS.PS.04: Selected and explained a proposed solution and course of action
- CS.PS.05: Developed a plan to implement the selected course of action
- CS.PS.06: Assessed results and took corrective action

Communication (CM)

- CS.CM.01: Located, processed and conveyed information using traditional and technological tools
- CS.CM.02: Listened to and summarized key elements of verbal and non-verbal communication
- CS.CM.03: Gave and received feedback in a positive manner
- CS.CM.04: Read technical/instructional materials for information and applied to tasks
- CS.CM.05: Wrote instructions, technical reports, and business communications clearly and accurately
- CS.CM.06: Spoke clearly, accurately, and appropriately when giving oral instructions, technical reports and business communications

Teamwork (TW)

- CS.TW.01: Identified teams and roles within teams; described importance of roles
- CS.TW.02: Demonstrated skills that improve team effectiveness (e.g., negotiation, compromise, conflict management, shared decision-making)

Employment Foundations (EF)

- CS.EF.01: Applied academic knowledge and technical skills in a career context
- CS.EF.02: Selected, applied and maintained tools and technologies appropriate for the workplace
- CS.EF.03: Identified parts of organizations and systems and how they fit together
- CS.EF.04: Described how work moves through a system
- CS.EF.05: Described the changing nature of work, workplaces and work processes on individuals, organizations and systems
- CS.EF.06: Demonstrated appropriate dress, appearance and personal hygiene
- CS.EF.07: Explained and followed health and safety practices
- CS.EF.08: Explained and followed regulatory requirements, security procedures and ethical practices

Career Development (CD)

- CS.CD.01: Assessed personal characteristics related to educational and career goals
- CS.CD.02: Researched and analyzed career and educational information related to project
- CS.CD.03: Developed and discussed a plan designed to achieve personal, educational and career goals
- CS.CD.04: Monitored and evaluated educational and career goals
- CS.CD.05: Demonstrated job-seeking skills (e.g., writing resumes, completing applications and participating in interviews)

CIVIC STANDARDS

- Understand rights and responsibilities of citizens
- Understand that limited resources make economic choices necessary
- Design and implement strategies to analyze issues, explain perspectives and resolve issues
- Other, please explain _____

There are four methods of conducting Service-Learning. Once your project design is decided, you should be able to categorize it as one or more of the following:

- 1. Direct:** Students' service directly affects and involves the recipients (e.g., tutoring, animal care, working w/ elderly).
- 2. Indirect:** Activities do not directly impact individuals, but benefit the community as a whole (e.g., restoring wetlands, painting park benches, stocking food pantries, collecting books for kids).
- 3. Advocacy:** The intent is to create awareness of or promote action on an issue of public interest (e.g., writing to government leaders, holding a town meeting, performing a play).
- 4. Research:** Students find, gather and report information in the public interest (e.g., developing surveys, conduct formal studies, evaluations, experiments or interviews)

Please describe your project and action plan:

POST-PROJECT TEACHER REPORT: SERVICE-LEARNING

Project Title: _____

Teacher: _____ Ph. # _____ Start Date: _____

School: _____ End Date: _____

Course Area/Title: _____

Service Site: School Site Other _____

Please provide a brief description of your project:

A) # of students participating _____ students

B) # of student classroom hours per student _____ avg. hrs/student
(Include project selection, planning, reflection and celebration time)

C) # of student non-classroom hours _____ avg. hrs/student
(Include only hours spent as a class)

D) Total # of Project Hours _____ **total hours**
(Line A) x (Line B + Line C) = Line D

E) # of Adult Volunteers _____ adults
(Include Partners, Parents, AmeriCorps Members, etc)

F) # of Adult Volunteer hours _____ avg. hours/adult

COMMUNITY PROJECT PARTNER(S)

PHONE #

PLEASE LIST COMMUNITY RESOURCES (ESTIMATED \$)

Materials _____

Grants _____ Total \$ _____

Donors _____

Please mark the Career-Related Learning Standards and Civic Standards met by your project.

CRLS

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- Understand that limited resources make economic choices necessary
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- Other, please explain _____

PRE-PROJECT STUDENT WORKSHEET: SERVICE-LEARNING

Name: _____

Project Title: _____

Teacher: _____ Ph. # _____ Planned Start Date: _____

School: _____ Planned End Date: _____

Course Area/Title: _____

This worksheet is designed to help you develop a project with your classmates and instructor that links community service to the course curriculum, fulfilling the Extended Student Learning Through Service-Learning component of the graduation requirements. Please review the Post-Project Report for additional ideas and guidelines.

Community Benefit/Benefactors (What will the service be? Who will be served?):

Curriculum Connection (How will the project be linked to in-class curriculum?):

*The process of Service-Learning includes four essential stages. Please check the **PARC/D** elements that will be included in your project:*

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- Assessing outcome of project

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- Presenting the project (oral report, visual display, etc.)
- Final class discussion or wrap-up session

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- CS.EF.04: Described how work moves through a system
- CS.EF.05: Described the changing nature of work, workplaces and work processes on individuals, organizations and systems
- CS.EF.06: Demonstrated appropriate dress, appearance and personal hygiene
- CS.EF.07: Explained and followed health and safety practices
- CS.EF.08: Explained and followed regulatory requirements, security procedures and ethical practices

Career Development (CD)

- CS.CD.01: Assessed personal characteristics related to educational and career goals
- CS.CD.02: Researched and analyzed career and educational information related to project
- CS.CD.03: Developed and discussed a plan designed to achieve personal, educational and career goals
- CS.CD.04: Monitored and evaluated educational and career goals
- CS.CD.05: Demonstrated job-seeking skills (e.g., writing resumes, completing applications and participating in interviews)

CIVIC STANDARDS

- Understand rights and responsibilities of citizens
- Understand that limited resources make economic choices necessary
- Design and implement strategies to analyze issues, explain perspectives and resolve issues
- Other, please explain _____

There are four methods of conducting Service-Learning. Once your project design is decided, you should be able to categorize it as one or more of the following:

- 1. Direct:** Students' service directly affects and involves the recipients (e.g., tutoring, animal care, working w/ elderly).
- 2. Indirect:** Activities do not directly impact individuals, but benefit the community as a whole (e.g., restoring wetlands, painting park benches, stocking food pantries, collecting books for kids).
- 3. Advocacy:** The intent is to create awareness of or promote action on an issue of public interest (e.g., writing to government leaders, holding a town meeting, performing a play).
- 4. Research:** Students find, gather and report information in the public interest (e.g., developing surveys, conduct formal studies, evaluations, experiments or interviews)

Please describe your project and action plan:

POST-PROJECT STUDENT REPORT: SERVICE-LEARNING

Name: _____

Project Title: _____

Teacher: _____ Ph. # _____ Start Date: _____

School: _____ End Date: _____

Course Area/Title: _____

Service Site: School Site Other _____

Please provide a brief description of your project:

A) # of students participating _____ students

B) # of student classroom hours per student _____ avg. hrs/student
(Include project selection, planning, reflection and celebration time)

C) # of student non-classroom hours _____ avg. hrs/student
(Include only hours spent as a class)

D) My Total Project Hours _____ **total hours**
(Line B + Line C) = Line D

E) # of Adult Volunteers _____ adults
(Include Partners, Parents, AmeriCorps Members, etc)

F) # of Adult Volunteer hours _____ avg. hours/adult

Community Project Partner(s)

Phone #

Please list community resources (estimated \$)

Materials _____

Grants _____ Total \$ _____

Donors _____

Please mark the Career-Related Learning Standards and Civic Standards met by your project.

CRLS

Personal Management (PM)

- CS.PM.01: Identified tasks to be completed and initiated necessary action
- CS.PM.02: Planned, organized and completed projects on time and met quality standards
- CS.PM.03: Took responsibility for decisions and actions and anticipated the consequences
- CS.PM.04: Maintained regular and punctual attendance
- CS.PM.05: Maintained appropriate interactions with colleagues

Problem Solving (PS)

- CS.PS.01: Identified problems and located information that would lead to solutions
- CS.PS.02: Identified alternatives to assist in problem solving
- CS.PS.03: Assessed the consequences of the alternatives
- CS.PS.04: Selected and explained a proposed solution and course of action
- CS.PS.05: Developed a plan to implement the selected course of action
- CS.PS.06: Assessed results and took corrective action

Communication (CM)

- CS.CM.01: Located, processed and conveyed information using traditional and technological tools
- CS.CM.02: Listened to and summarized key elements of verbal and non-verbal communication
- CS.CM.03: Gave and received feedback in a positive manner
- CS.CM.04: Read technical/instructional materials for information and applied to tasks
- CS.CM.05: Wrote instructions, technical reports, and business communications clearly and accurately
- CS.CM.06: Spoke clearly, accurately, and appropriately when giving oral instructions, technical reports and business communications

Teamwork (TW)

- CS.TW.01: Identified teams and roles within teams; described importance of roles
- CS.TW.02: Demonstrated skills that improve team effectiveness (e.g., negotiation, compromise, conflict management, shared decision-making)

Employment Foundations (EF)

- CS.EF.01: Applied academic knowledge and technical skills in a career context
- CS.EF.02: Selected, applied and maintained tools and technologies appropriate for the workplace
- CS.EF.03: Identified parts of organizations and systems and how they fit together
- CS.EF.04: Described how work moves through a system
- CS.EF.05: Described the changing nature of work, workplaces and work processes on individuals, organizations and systems
- CS.EF.06: Demonstrated appropriate dress, appearance and personal hygiene
- CS.EF.07: Explained and followed health and safety practices
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CIVIC STANDARDS

- Understand rights and responsibilities of citizens
- Understand that limited resources make economic choices necessary
- Design and implement strategies to analyze issues, explain perspectives and resolve issues
- Other, please explain _____

CAREER-RELATED LEARNING EXPERIENCE STUDENT REFLECTION

Name: _____

Project Title: _____

Class: _____ Grade: _____

SERVICE-LEARNING

Teacher: _____

OTHER _____

RELEVANCE: How did this experience relate to your personal interests?

RIGOR: What skills and knowledge have you acquired from this experience that will help you achieve your post-high school goals?

REFLECTION: What is something new or surprising that you learned or experienced while participating in this project?

STUDENT SERVICE HOURS LOG

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total		
<i>Jun</i>																																		
<i>July</i>																																		
<i>Aug</i>																																		
<i>Sept</i>																																		
<i>Oct</i>																																		
<i>Nov</i>																																		
<i>Dec</i>																																		
<i>Jan</i>																																		
<i>Feb</i>																																		
<i>Mar</i>																																		
<i>Apr</i>																																		
<i>May</i>																																		

Community Sharing

When a student shares a project, they convey their inspiration of the natural world and hearten others to seek similar ventures. Opportunities for sharing student projects should be identified from the onset of participation in HW. By recognizing and rewarding youth engaged in civic activities that benefit their home waters, we seek to encourage their continued involvement and spark the interest of new audiences by showcasing student work.

Suggested products of student work include:

- Photos, drawings, wildlife art
- Maps, charts, graphs
- Power Point Presentations
- Essays, poetry, journal entries
- Oral histories
- WQ data, riparian assessments, bird counts
- Public art, murals
- Ephemeral art, music, skits, plays
- Anything a creative group can imagine!

Created products can be shared through:

1. *healthy waters* Journal, *healthy waters kids* and *HWI* website
2. Local newspaper
3. Watershed council events
4. Watershed symposiums or celebrations
5. Public libraries or other public buildings

Projects can also be shared through student summits or symposiums. These events provide opportunities for students to see what other students have created in their community.

Summits can tie into existing events and take place in an auditorium, theatre, or environmental center. Members from the general public including watershed council boards, community members and parents can be invited to attend and share in the work of their students.

Student summits provide opportunities for students to:

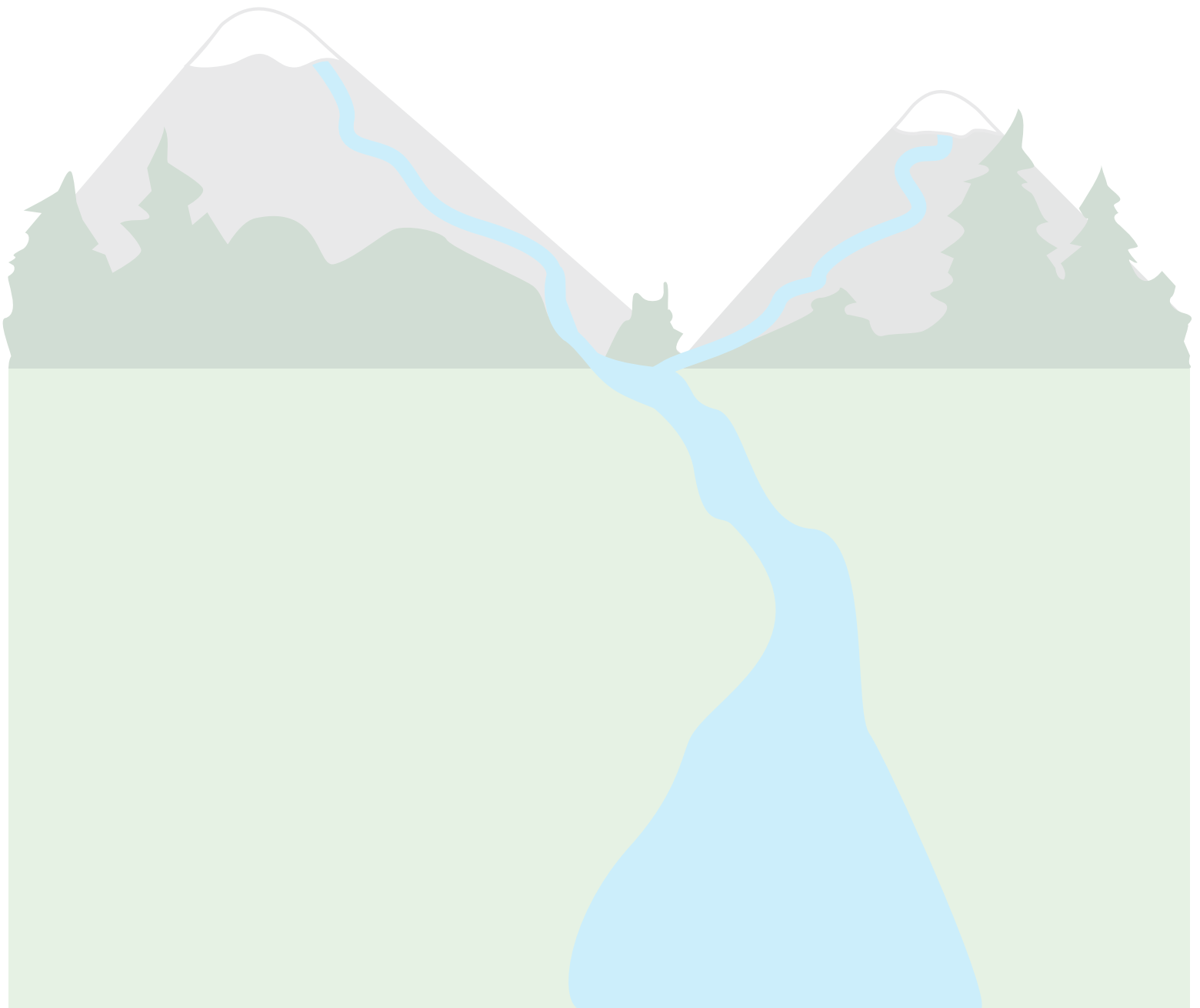
1. Interpret their watershed
2. Celebrate their watershed
3. Present projects to the public and their peers
4. Learn from other students
5. Teach the greater community
6. Develop public speaking skills
7. Integrate their learning into the larger community.

We encourage the sharing of student work through *HWI*! Please submit the Service Learning/ Independent Project Tracking Sheet to *HWI* for publication in our journal or through our website.

Appendix

List of Local Partners and Project Opportunities page A3-A6

List of Grants page A7-A8



List of Local Partners and Project Opportunities

The following service-learning project resource lists were compiled to assist teachers and students in designing projects. Schools are encouraged to partner with one or more of these organizations for projects in the local watershed to help with technical and material support. A partner may also be able to enhance the learning component of their projects to meet your needs. It's a good idea to alert your local watershed council coordinator of the project you and your students are planning. To find out which watershed your school belongs or if you have any questions, please contact the *Healthy Waters Institute* and assistance will be provided.

MEDFORD AREA

Local Watershed Council

Bear Creek Watershed Council

Contact: Beth Franklin (Coordinator)
541-899-7361
P.O. Box 1548 Medford, OR 97501
coordinator@bearcreek-watershed.org

Other Local Watershed Councils

Applegate River Watershed Council

Contact: Zach Stevenson (Coordinator)
541-899-9982; FAX 541-899-1256
6941 Upper Applegate Road, Jacksonville, OR 97530
staff@arwc.org

Upper Rogue Watershed Association

Contact: Don Nelson (Coordinator)
541-878-3710; FAX 541-878-3710
P.O. Box 1128, Shady Cove, OR 97539
urwatershed@hotmail.com

Illinois Valley Watershed Council

Contact: Kevin O'Brien (Coordinator)
541-592-3731
102 S. Redwood Highway, P.O. Box 352, Cave Junction, OR 97523
ivwc@cavenet.com

Middle Rogue Watershed Council

Contact: Brad Carlson (Coordinator)
541-474-6799; FAX 541-955-9574
576 NE 'E' St., Grants Pass, OR 97526
mrwc@charterinternet.com

Seven Basins Watershed Council

Contact: P.O. Box 909, Gold Hill, OR 97525
541-261-7796; FAX 541-830-0261
contact@sevenbasins.org

Little Butte Creek Watershed Council

Contact: Lu Anthony (Coordinator)
541-826-2908; FAX 541-826-2908
1094 Stevens Road, Eagle Point, OR 97524
luanthony@earthlink.net

Other Resources

Rogue Valley Audubon Society

Contact: Stacey Faught (Education Committee Co-Chair)
541-535-5138 or 541-772-3575
P.O. Box 8597, Medford, OR 97504
montfaught@msn.com
www.roguevalleyaudubon.org

Priorities include habitat protection, preservation of environmental laws, and public education. Through school programs, field trips, monthly chapter programs, publications, and community events, RVAS motivates people to get to know the bird life in their area and become advocates for wildlife.

Bear Creek Watershed Education Partners

Contact: Heidi Buettner (Coordinator)
541-773-1039
112 East 6th Street, Suite A, Medford, OR 97501
bcwep1@yahoo.com
www.bcwep.org

Bear Creek Watershed Education Partners (BCWEP) provides watershed oriented service learning opportunities, a watershed education symposium, monitoring projects, restoration projects and educational experiences to youth in the Bear Creek watershed. BCWEP also provides teachers with classroom and field equipment, training and workshops, project funding and ideas, and a network and support system.

Bureau of Land Management

Butte Falls Resource Area Environmental Education Program

Contact: Leah Schrodtt (Program Lead/Environmental Education Specialist)
541-618 2468
3040 Biddle Rd, Medford, OR 97504
lschrodtt@or.blm.gov

The Butte Falls Resource Area Environmental Education Program provides the community with exposure to and a deepened understanding of the complicated tasks involved with managing our natural and cultural resources. We strive to increase public awareness, appreciation, and respect for the health, diversity, and productivity of our public lands for generations to come.

Caterpillar (Pacifica¹s)

A MOBILE SCIENCE & NATURE CENTER

Contact: Linda Mullens
541-479-3243
lindamullens@starband.net
or Peg Prag
541-846-9230

The Caterpillar is a unique mobile science and nature center on a 24 foot trailer (with antennae and eyes added to the front!). It has been taking environmental science to local elementary schools for 4 years now, involving up to 7,000 kids a year. It provides schools with changing displays, equipment that might not otherwise be available, and hands-on activity-curriculums fostering knowledge and joy of science, nature, and horticulture.

Jefferson Nature Center

Contact: Susan Cross (Director)
541-773-1039
112 East 6th Street, Suite A, Medford, OR 97501
scross@mind.net

Jefferson Nature Center is a non-profit located in Medford. JNC provides science inquiry and natural history education for youth in the Medford and Phoenix/Talent area with a focus on regional natural history.

Klamath Bird Observatory

Contact: Ashley Dayer (Outreach Coordinator)

Located at Willow Wind Community Learning Center, Ashland, OR

aad@klamathbird.org

www.klamathbird.org

The Klamath Bird Observatory works on educating the public about birds, their responses to restoration and conservation. Our specialty is field-based programs that teach about science and the scientific process.

Lomakatsi Restoration Project

Contact: Oshana Catranides (Executive Director)

541-488-0208

P.O. Box 3084, Ashland, OR 97520

Ecological restoration projects, riparian restoration projects, native plant nursery care, tree planting, fire ecology based on local indigenous ecological knowledge and modern restoration science, including discussions about aboriginal fire as it related to indigenous hunting, gathering, basketry, and survival; ecological fuels reduction for restoration of fire adapted ecosystems; current ecological needs in our area.

North Mountain Park Nature Center

Contact: Kari Gies

541-488-6606

620 North Mountain Ave., Ashland, OR 97520

giesk@ashland.or.us

www.ashland.or.us

We provide service-learning opportunities at North Mountain and Lithia Parks for students in grades 2-12. Topics for the learning component vary with the season. We also work with students in high school and college on a variety of special projects and internships.

OSU Extension Services, Jackson County

Contact: Megan Kleibacker

541.776.7371 x 209; FAX 541.776.7373; CELL 541.301.2935

Youth Natural Science Program

569 Hanley Road, Central Point, OR 97502

megan.kleibaker@oregonstate.edu

extension.oregonstate.edu/sorec/natsci/

or Erin Taylor

4-H Technology Extension

Erin.taylor@oregonstate.edu

extension.oregonstate.edu/sorec

Youth Natural Science Programs at OSU Extension Services are open to groups of youth outside of the normal classroom environment. For example, afterschool programs, field trips, summer camps, weekend trips, Boy or Girl Scout groups, teacher workshops, etc.

Rogue Valley Council of Governments (RVCOG)

Contact: Greg Stabach

541-664-6676 x 219

P.O. Box 3275, Central Point, OR 97502

gstabach@rvcog.org

ScienceWorks Hands-On Museum

Contact: Chris Wallace Hostetler (Executive Director)

541-482-6767 x 31

1500 East Main, Ashland, OR 97520

On site museum experience for students that involves science lab, demonstration and team investigation on exhibits. Outreach programs include Science Inquiry workshops for teachers and students, and assembly-style "ScienceLive!" programs.

SOU Youth Programs

Contact: Danya Hector
541-552-6916
hctord@sou.edu
www.sou.edu/youth

SOU Youth Programs delivers creative, dynamic, educational hands-on programs to curious minds in Southern Oregon.

List of Grants

The grant opportunities listed below typically have 2-4 page applications and are not especially competitive. Please use this preliminary list as a reference for future planning if deadlines have passed for this year. All of these opportunities should be renewed for another cycle.

NATIONAL

NEA Foundation for the Improvement of Education Award

Contact: 203-822-7840

Goal: Grants seek to fund participation in high-quality professional development such as summer institutes or action research. Grants also fund lesson study or mentoring experiences to improve teaching, curriculum, or student achievement.

Award: \$2000-\$5000

National Science Teachers Association NSTA Sylvia Shugrue for Elementary School Teachers

Contact: awards@nsta.org
www.nsta.org/dcat

Goal: For an elementary school teacher who implements an interdisciplinary, inquiry-based lesson plan.

Award: \$1000

Office of Education (OED) NOAA Environmental Literacy Grants for Free-Choice Learning

Contact: Sarah Schoedinger
704-370-3528
Sarah.Schoedinger@noaa.gov
www.oesd.noaa.gov/funding_opps.html

Goal: The priority is to create a more environmentally literate citizenry.

Deadline: see website for current deadline

Ecology and Environmental Science Teaching Award NABT and Vernier Software and Technology Foundation Award

Contact: www.nabt.org/sup/education/awards.asp

Goal: Award will be given to a teacher who has demonstrated an innovative approach in the teaching of ecology and environmental science.

Award: \$1500

STATEWIDE

Diack Family Oregon Ecology Education Fund

Contact: 503-287-7974
www.diack-ecology.org

Goal: Assists in funding activities in Oregon which take children K-12 into the study of ecology in their fields, forests and waters to see personally what lives there and how it thrives. Funding primarily for long term field ecology studies program development, rather than one-day events. Does not cover substitute teachers or transportation.

Award: up to \$1500

Learn & Serve America Youth In Action, Oregon Department of Education

Contact: 503-378-3584 x 369

Goal: This grant is designed specifically to remove barriers for service learning projects directly connected to the school curriculum. Barriers include transportation and plant materials. Projects must be student initiated, planned, and implemented and must provide opportunities to develop leadership and citizenship skills. Grants must be written by students and are reviewed by students. All applications that meet the grant criteria will be funded.

Award: up to \$500

Deadline: usually mid-February and mid-March

Meyer Memorial Trust Teacher Initiatives Program

Contact: 503-228-5512

www.mmt.org/~mmt

Goal: Stimulating or facilitating more effective learning.

Award: up to \$1500 for individual teachers, \$5000 for teams

Deadline: February 1 each year

National Wildlife Federation Wild Seed Fund for Schoolyard Wildlife Habitats

Contact: Beth Stout

503-230-0421

stout@nwf.org

Goal: Creating or enhancing an existing schoolyard habitat

Award: one-time \$150 plus \$25 Fred Meyer gift certificate

The Oregon Parks Foundation

Contact: 503-297-6043

Goal: Land protection, community outdoor recreation and education programs, administrative expenses, publications, conferences and seminars, emergency funding, recognition and student internship in the context of providing for natural park settings and outdoor recreation and educational opportunities.

Award: \$1500–5000

SOLV (Stop Oregon Litter & Vandalism) SOLV CUP projects

Contact: 1-800-322-3326

503-844-9571

Goal: Cleanups, prevention (recycling, signage), restoration (for those in need of social services), plantings, development (trail repair, brush removal)

Award: up to \$250 plus free SOLV materials, does not cover transportation