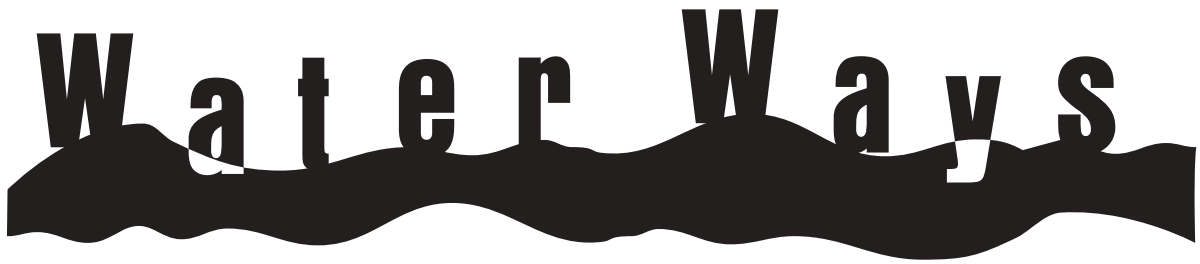


Water Ways

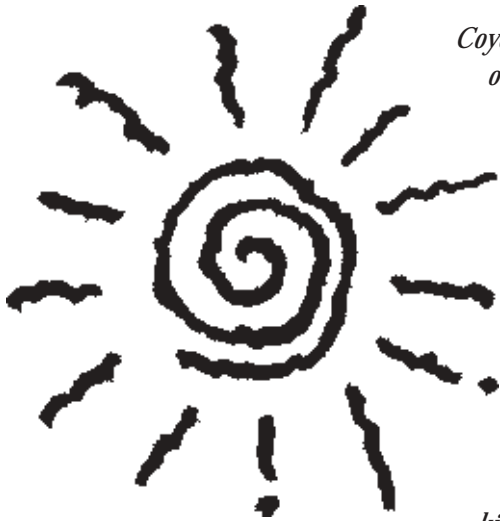


A Middle School Intra-Disciplinary Curriculum
focused on exploring the Ecology, Economy and Equity of
the Lake Roosevelt Watershed

The Origin of the Columbia River

.....

Long ago, when Coyote was the big man on the earth, this valley was covered by a big lake. At that time there was no Columbia River. West of us, between the lake and the ocean was a long ridge of mountains. But the Columbia River did not go through it. Indians today believe that.



Coyote was smart enough to see that salmon would come up from the ocean to be food for his people here if he would make a hole through the mountains. So he went down to a place near where Portland is now, and with his powers he dug a hole through the mountains there. The water went through the hole and on to the ocean.

The water in the big lake up here drained, and the water flowing out of it made the Columbia River. Coyote got the Columbia to flow through that hole, the way it does today. Then the salmon came up the river to this part of the country. His people after that had plenty to eat.

When he dug that hole through the mountains, Coyote made a kind of bridge. You have heard of it - a broad rock bridge that went across the river. People could walk from one side of the Columbia to the other. Along time afterward, an earthquake broke the bridge down. The rocks that fell into the water formed the Cascades of the Columbia. They made it hard for boats to go up and down the river there.

This version of the story was told by Peter Noyes, a Colville Indian, in 1951, who claimed he had first heard it nearly eighty years previously. In the last half-century, geologists have come to believe that vast parts of the Inland Northwest were covered by lakes. The last one was at the end of the last ice age, 12,000 years ago.

From *Indian Legends of the Pacific Northwest*, edited by Ella E. Clark, University of California Press, 1953

Welcome

.....

Welcome to the Water Ways Curriculum! Our goal is to provide students a way to explore the watersheds that make up the greater Lake Roosevelt Watershed. The purpose of the Water Ways Curriculum is to nurture understanding of the Lake Roosevelt watershed for a more sustainable environment for everyone . . . people and nature.

Our historical relationship to this watershed offers us a unique opportunity to learn from our past behaviors and chart a course for the future. This curriculum offers students an opportunity to explore and identify ways that residential, business and industrial uses, as well as agricultural/resource extraction practices directly affect the community's water quality. Students are encouraged to develop active listening and collaborative skills to create a future based upon sustainable community practices.

The following is a list of goals and objectives from the Washington State Essential Academic Learning Requirements for the "Water Ways" curriculum.

- 1) The student will be able to recognize different types and purposes of maps.
- 2) The student will be able to locate places in the Lake Roosevelt watershed using the coordinates on a grid system.
- 3) The student will use and construct maps, charts, and other resources to gather and interpret geographical information.
- 4) The student will understand how physical processes and human activities can impact one another.
- 5) The student will be able to exercise decision-making skills at many levels.
- 6) The student will identify and compare historical accounts and artifacts from multiple perspectives.
- 7) The student will compare and contrast interpretations of major events selected from Pacific Northwest history.
- 8) The student will interpret how ideas and attitudes have shaped and been shaped by changing technology.
- 9) The student will identify and examine a variety of perspectives regarding the interaction between people and their environment.

This curriculum can be used sequentially or when time permits. Each unit can stand-alone or be coupled with other learning opportunities. Our recommendation, however, is to plan for a two week period to complete the three units in sequence.

Water Ways Development Team

Water Ways is a thematic intra-disciplinary curriculum focused on the environment of the Lake Roosevelt watershed. Water Ways explores aspects of ecology, economy and equity of the local watershed in an attempt to lay the inter-generational foundation for changes in the students' awareness, attitudes, and individual and collective behaviors.

Development of this project was made possible by grants from the State of Washington Department of Ecology's Public Participation Grant Program awarded to: The Lake Roosevelt Forum and The Lands Council.

The Lake Roosevelt Forum is a Washington non-profit corporation committed to the environmental and economic well-being of the communities that comprise the Lake Roosevelt region.

The Lands Council is a Washington non-profit corporation dedicated to preserving and protecting woods, waters and wildlife of the Inland Northwest.

For additional information about this program, contact: The Lake Roosevelt Forum 1404 N. Thor Ct., Suite 112 Spokane, WA 99202 509-535-7084 e-mail: info@lrf.org

© 2000

Timothy Cunningham
Peramis, Inc.
Developer/Author

Andy Dunau
The Lake Roosevelt Forum
Executive Director

Laurel Gay Edwards
Curriculum Development Specialist

Harriot Hagadorn
Shaw Middle School
Spokane Public School District #81

Merrilou Harrison
Spokane Public School District #81

Kevin Seland
Sacajawea Middle School
Spokane Public School District #81

Mark Solomon
The Lands Council

Alison Squier
The Lake Roosevelt Forum/Dunau Associates

Linda Takami
Equity & Diversity Counselor
Spokane Public School District #81

Coming soon -
Lake Roosevelt Forum website at:
www.lrf.org

See Water Ways website at:
www.lsw.org/scd

Please feel free to direct any questions or comments to Andy Dunau, Executive Director or Alison Squier, Program Coordinator of The Lake Roosevelt Forum: ph: 509-535-7084/e-mail: info@lrf.org/fax: 509-535-3986

Lake Roosevelt Water Ways Sponsors



Bonneville Power Administration

Bureau of Reclamation

Colville Tribal Enterprise Corporation

Confederated Tribes of the Colville Reservation

Grant County

Lincoln County

National Park Service

Spokane Tribe of Indians

Stevens County

Washington Dept. of Ecology

Social Studies Correlation to the Washington State Essential Academic Learning Requirements

.....

History - Benchmark 2

2. The student applies the methods of social science investigation to investigate, compare and contrast interpretations of historical events.

2.1 investigate and research

identify social issues and define problems to pose historical questions

Costs & Benefits of Resources - page 20-22

Where are we going from here? - page 36

locate sources of information and obtain information from a variety of sources including graphs, charts, tables, maps, diagrams, texts, photographs, documents, and interviews

Water Taste Test - page 10

2.2 analyze historical information

organize and record information

Cost & Benefits of Resources - page 20-22

distinguish fact from judgement and opinion; recognize stereotype; compare and contrast historical information

Cost & Benefits of Resources - page 20-22

2.3 synthesize information and reflect on findings

interpret and synthesize information; express findings

Exploring Interrelationships - page 8

propose alternative ways of analyzing and interpreting findings

Exploring Interrelationships - page 8

3. The student understands the origin and impact of ideas and technological developments on history and social change.

3.2 analyze how historical conditions shape ideas and how ideas change over time

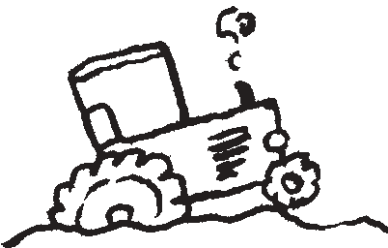
describe how the meaning of ideas can change over time, for example, ideas about equality, welfare, and democracy

Elkanah Walker's quote - page 40

Male Sockeye Make Return, Spawns Hope - page 41

Geography

1. The student uses maps, charts, and other geographic tools to understand the spatial arrangement of people, places, resources, and environments on Earth's surface.



1.1 use and construct maps, charts, and other resources

use maps, globes, and other geographic tools including various map projections, satellite imagery, and GIS data to interpret information from a spatial perspective

Landform, Waterflow, Population, Resources-Gifts and Political Boundaries teams - page 8

use data and a variety of symbols and colors to create thematic maps and graphs, for example, patterns of population, economic features, rainfall, or vegetation

Landform, Waterflow, Population, Resources-Gifts and Political Boundaries teams - page 8

1.2 recognize spatial patterns on earth's surface and understand the processes that create these patterns

locate physical and human features and events on maps and globes, for example, the location of cultural centers, large urban areas in the U.S. now and in the past, and major land forms and climate regions

Identifying land forms on a map - page 7

2. The student understands the complex physical and human characteristics of places and regions.

2.1 describe the natural characteristics of places and regions

use observation, maps, and other tools to identify and compare the physical characteristics of places and regions such as wildlife, climate, natural hazards, and waterways

Watershed resources gifts team - pages 8, 20-22

2.2 describe the patterns humans make on places and regions

use observation, maps, and other tools to identify and compare the patterns humans make on places and regions, for example, cultural characteristics, population characteristics, and level of economic development

Man & Nature...the connection – page 34

3. The student observes and analyzes the interaction between people, the environment, and culture.

3.1 identify and examine people's interaction with and impact on the environment

analyze the different ways people use the environment, the consequences of use, and possible alternatives

Costs & Benefits of Resources – pages 20-22

explain how the actions and interactions of human societies affect and are affected by the environment

Political Boundaries – page 8

Kit Inventory



For additional information,
please contact:
The Lake Roosevelt Forum
1404 N. Thor Ct., Suite 112
Spokane, WA 99202
509-535-7084

ITEMS QUANTITY

Teacher Guide 1
Lake Roosevelt Area Handbook 1

Special Thanks:

John Covert, Hydrologist
Water Resources Program,
DOE

Foundation for Water &
Energy Education

The Lands Council

National Park Service

Northwest Power Planning
Council

US Bureau of Reclamation

Washington Dept. of
Ecology

Maps:

Satellite Map of Lake Roosevelt Region 30"x40" 1
Lake Roosevelt Area Resources-Gifts Map 11"x17" (in T. Guide)* 1
Lake Roosevelt Area Watershed Maps (1 each of 10 maps)* 10
Rand McNally Washington State Map 1
Lake Roosevelt National Recreation Area Map (National Park Service) 3
Current Wildlife Habitat Types in Columbia River Basin 1
Historic Wildlife Habitat Types in Columbia River Basin 1
Watersheds of the Columbia Basin 1
Columbia River - Troubled Waters 1

Game Cards (Included in Teacher Guide):

Watershed Weaving Game Card Set 1
Human Environmental Interaction Card Set 1

Videos:

Coyote Legends 1
Columbia River - Fountain of Life 1

Additional Resources:

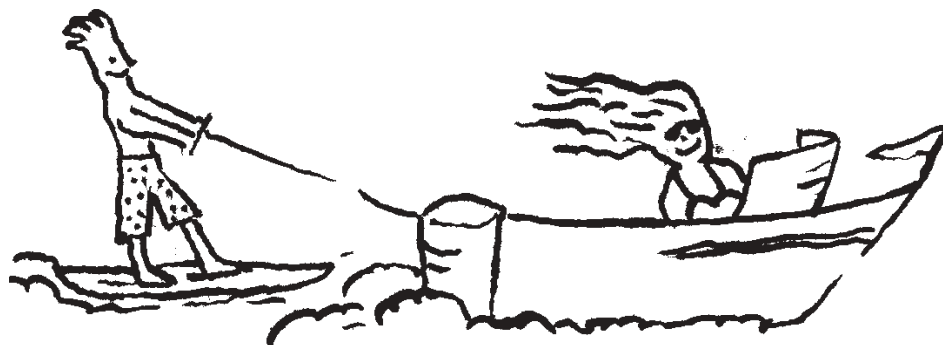
Communities by Choice Booklet 1
Following Nature's Current 1
Columbia Basin Fish & Water News 1

*Map lamination recommended

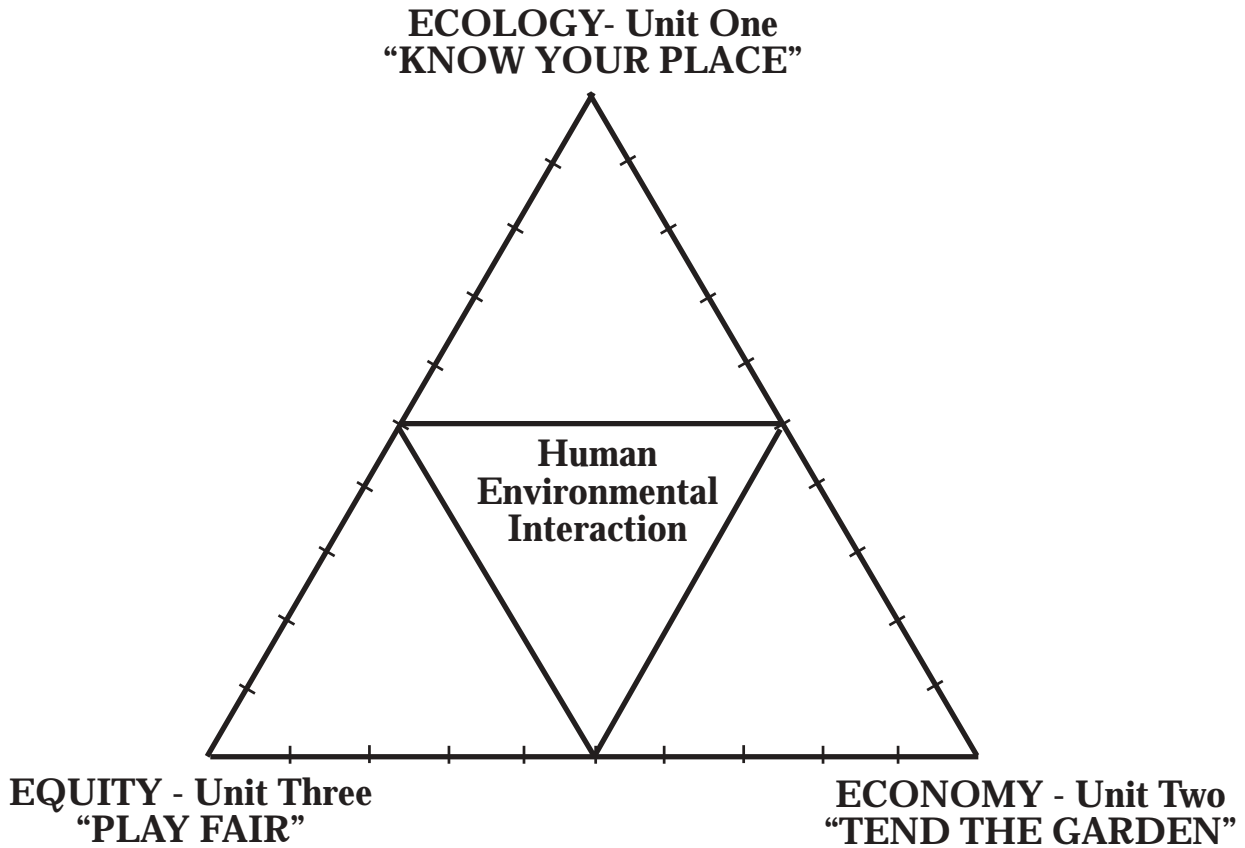
Table of Contents



Balancing the Three E's	10
Introduction	11
UNIT ONE - ECOLOGY	
What is the shape of our watershed?	12-26
<i>Overhead Transparencies/Hand-outs</i>	
Five Theme Match-Up	20
Word Web Sample	21
Definition: What is an ecological footprint?	22
Definition: What is a watershed?	23
Definition: What is the function of a watershed?	24
Definition: What is ecology	25
The Lake Roosevelt Watershed	26
UNIT TWO - ECONOMY	
How do we value our watershed?	27-41
<i>Overhead Transparencies/Hand-outs</i>	
Definition: Renewable/Non-renewable/Recyclable	32
Definition: Economy	33
Definition: Cost/Benefit Analysis	34
Human Environmental Interaction (HEI) Cards	35-36
Human Environmental Interaction (HEI) Poster	37
<i>Teacher Example:</i> Human Environmental Interaction Poster	38
Human Environmental Interaction (HEI) Score Sheet	39
Group Evaluation Scoring Guide	40-41
UNIT THREE - EQUITY	
What are our relationships to this watershed?	42-62
<i>Overhead Transparencies/Hand-outs</i>	
Definition: Equity	47
Quotes and the Word Web	48
Quote from Elkanah Walker	49
Male Sockeye Make Return, Spawns Hope	50
Quotes of many people, many nations	51-53
Watershed Weaving Game Cards	54-62



Balancing the Three E's of the Lake Roosevelt Watershed



Presented above are the three E's of the sustainability triangle. This model will be explored repeatedly throughout the Water Ways curriculum. Notice that when equal emphasis is placed on each ... ECOLOGY, ECONOMY and EQUITY ... the result is an inverted equilateral triangle, with each of its points touching the median location on three sides and creating an equilateral triangle for each category.

If we focus entirely on preserving the "economical" health of the watershed, without considering "ecological" costs . . . what does this do to the "equity" in our watershed? Human environmental interactions which respect the three E's produce a sustainable environment for future generations.

Introduction

.....

Water Ways is a dynamic intra-disciplinary curriculum designed to give middle school students an opportunity to explore the Lake Roosevelt Watershed. Students develop an understanding of how many of their day-to-day choices can interact with and affect their local watershed. A matrix of Ecology, Economy, and Equity - the three E's of the sustainability triangle - (see model of Three E's triangle on facing page) provides a framework for students to explore and anticipate how the choices they make today can help make a better future for everyone - people and nature. Students can use this framework to discuss how 'ecological footprints' affect local economy and quality of life. A fourth dimension is added when students begin to acknowledge the impact of their choices on current and future generations.

UNIT ONE - ECOLOGY

Discovering our sense of place in our watershed.

Students explore the "ecological footprints" of their community. Using mapping skills, students identify forms and functions, as well as, human interactions in the Lake Roosevelt Watershed.

GEOGRAPHIC THEMES: Region, Location, Place, Human Environmental Interaction, Movement

UNIT TWO - ECONOMY

Building value in our watershed community.

In this unit students explore the concepts of renewable and non-renewable resources-gifts. Students develop a definition of cost/benefit and determine how their "communities" prioritize and value the gifts of the watershed.

GEOGRAPHIC THEMES: Region, Human Environmental Interaction, Movement

UNIT THREE - EQUITY

Honoring our relationships to life-giving water.

Students explore how our relationships to water and the living gifts of a watershed have been respected and cherished throughout human history. Students compare and contrast poems, proverbs and quotes about our relationships to nature; create an intergenerational chart; and experience how water weaves its way through our lives.

GEOGRAPHIC THEMES: Region, Human Environmental Interaction, Movement