You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives.
~Clay P Bedford~

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SPRINGFIELD OREGON

Metropolitan Wastewater Management Commission

EUGENE SPRINGFIELD OREGON LANE COUNTY OREGON

partners in wastewater management

Clean Water Workshops

offered by:
City of Springfield Environmental Services Division &
Metropolitan Wastewater Management Commission



2009-2010 Catalog

Springfield District 19 Teachers,

The City of Springfield Environmental Services Division offers a number of Clean Water Workshops that engage students from kindergarten through eighth grade in hands-on activities that promote awareness, appreciation, knowledge, and stewardship of water resources.

Most activities can be completed within 30-60 minutes and all instruction and materials are provided. For your convenience, I have correlated the workshops with the Oregon Department of Education Science Standards (2009). A brief description of each activity and the grades it is most appropriate for is provided. If you would like more information on a particular workshop please do not hesitate to contact me.

Please review this school year's catalog of workshops and schedule your classroom visit soon!

In addition to the workshops outlined, we also offer lab oriented sessions in water quality, aquatic macroinvertebrates, stream morphology and waterway restoration. Please contact me to set-up lab sessions for your class.

I look forward to hearing from you and spending time with your students.

Sincerely,

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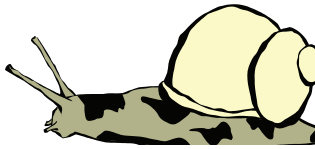


Activity	Grade			Standard				
	K-2	3-5	6-8	Physical	Life	Earth	Inquiry	Engineering
Choices Preferences & Water Index			X		X	X		
What's in the Water		X	X		X	X	X	X
Water Match	X				X			
Capture, Store, & Release		X				X		
Something's Fishy Here!		X	X			X		
Sparkling Water			X			X	X	X
A Drop in the Bucket			X			X		
Just Passing Through		X	X	X		X		
Fashion a Fish	X	X			X			
Are You Me?	X	X			X			
Super Bowl Surge			X			X		X
Virtual Tour		X						X
Dragonfly Pond		X	X		X	X		X
A-Maze-Ing Water	X	X			X	X	X	X
The Life Box	X	X			X			
Water Address		X	X		X			
Silt: A Dirty Word		X				X		
Hooks & Ladders		X	X		X			
A House of Seasons	X					X	X	
Common Water	X		X	X	X	X	X	
Sum of the Parts		X	X		X	X		
Macroinvertebrate Mayhem		X	X		X	X	X	
Imagine!		X	X	X		X		
The Incredible Journey		X	X	X		X		

Water Match

There's no ace in the hole in this game; just water under the bridge, and in the lake and in the sky...

Students match up pairs of water picture cards and in the process learn to distinguish the three states of water- solid, liquid, and gas.

Students will identify the three states of water and recognize that water can become polluted and that some water can be cleaned.

All materials provided.

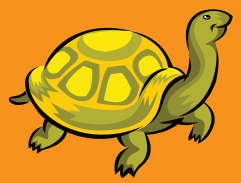
Grade Level:
Lower Elementary

Subject Areas:
Earth Science, Physical Science

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
2.1L.1, 5.2L.1



Grade Level:
Upper Elementary

Subject Areas:
Earth Science, Geography

Duration:
45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
4.1E.1

Capture, Store & Release

How much water will a watershed shed if a watershed sheds its wetlands?

Students use a household sponge to simulate how wetlands capture, store, and release water.

Students will recognize that ground water, surface water, and precipitation can contribute water to wetlands.

All materials are provided.

Sum of the Parts

You have just inherited valuable riverfront property with a new house and a resort on it. On the day you move in, you discover the beach polluted with oil and littered with construction materials and animal waste! Where did all of this stuff come from?

Students demonstrate how everyone contributes to the pollution of a river as it flows through a watershed and recognize that everyone's contribution can be reduced.

Students will distinguish between point and nonpoint source pollution; recognize that everyone contributes to and is responsible for a river's water quality and identify Best Management Practices to reduce pollution

All materials provided.

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Environmental Science, Government

Duration:
45-60 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
4.2L.1, 5.2L.1, 7.2E.2, 7.2E.3

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Ecology, Environmental Science, Mathematics

Duration:
45-60 minutes

Setting:
Large playing field or gymnasium

OR Dept. Education Science Standards:
4.2L.1

Macroinvertebrate Mayhem

How does the phrase "appearances can be deceiving" apply to the water quality of a sparkling, crystal-blue stream?

Students play a game of tag to simulate the effects of environmental stressors on macroinvertebrate populations.

Students will illustrate how tolerance to water quality conditions varies among macroinvertebrate organisms and explain how population diversity provides insight into the health of an ecosystem.

All materials are provided.

Imagine!

What would it be like to take a journey as a water molecule?

Students take an imaginary journey with water in its solid, liquid, and gaseous forms as it travels around the world.

Students will identify changes in states of water that enable water to move through the water cycle and describe the water cycle.

All materials provided

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Earth Science, Life Science, Language Arts

Duration:
20-30 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
6.2E.1

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Earth Science

Duration:
45-60 minutes

Setting:
Classroom or outdoors (larger area works best)

OR Dept. Education Science Standards:
3.1P.1, 3.2E.1, 4.2P.1, 5.2E.1, 6.2E.1

The Incredible Journey

Where will the water you drink this morning be tomorrow?

With a roll of the die, students simulate the movement of water within the water cycle.

Students will describe the movement of water within the water cycle and identify the states of water as it moves through the water cycle.

All materials are provided.

Choices & Preferences Water Index

Water is for all water users, isn't it?

Students rank and compare different uses of water. The class develops a *water index*, an indication of the group's feeling and values about water and its uses.

Students will analyze how people perceive the value of various water uses differently.

All materials provided

Grade Level:
Middle School

Subject Areas:
Earth Science, Environmental Science, Government

Duration:
45-60 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
6.2L.2, 7.2E.1, 7.2E.3

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Earth Science, Environmental Science, Mathematics

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
4.2L.1, 5.2L.1, 6.3S.2, 7.2E.1

What's in the Water

Just because water looks clean doesn't mean it is. Can you tell what's in the water just by looking at it?

Students analyze pollutants found in a hypothetical river. They graph the quantities of pollutants and make recommendations about actions that could be taken to improve habitat.

Students will identify major sources of pollution and make inferences about the potential effects of a variety of aquatic pollutants on wildlife and wildlife habitats.

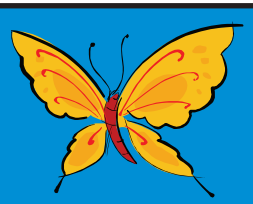
All materials are provided.

The Life Box

Plants and animals have four things in common; can you guess what they are?

Students will identify four essential factors necessary for life and explain how living things use these four factors.

All materials are provided.



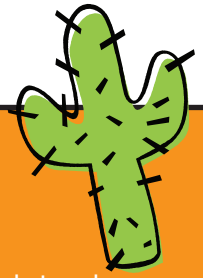
Grade Level:
Lower Elementary, Upper Elementary

Subject Areas:
Life Science

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
1.2L.1



Grade Level:
Upper Elementary, Middle School

Subject Areas:
Life Science, Ecology, Geography, Language Arts

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
5.2L.1

Water Address

Students identify plants and animals and their habitats by analyzing clues that describe water-related adaptations of aquatic and terrestrial organisms.

Students will recognize water-related adaptations of some plants and animals.

All materials are provided.

Fashion A Fish

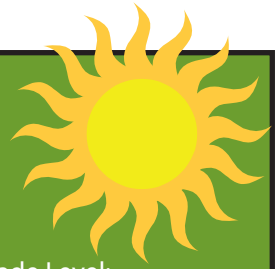
What can you tell about a fish by its color? Can you tell what it eats or where it lives?

Students design a fish adapted for various aquatic habitats.

Lower elementary students will classify fish according to body shape and coloration.

Upper elementary students will describe adaptations of fish to their environments, describe how adaptations can help fish survive in their habitats and interpret the importance of adaptation in animals.

All materials provided.



Grade Level:
Lower Elementary, Upper Elementary

Subject Areas:
Life Science, Environmental Science, Fine Arts

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
2.1L.1, 5.2L.1

Grade Level:
Lower Elementary, Upper Elementary

Subject Areas:
Life Science

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
2.2L.1, 3.1L.1

Are You Me?

Many animals look significantly different in their earliest stages of development when compared to adulthood. Can you tell who is who?

Students will recognize various young stages of aquatic animals and match them with corresponding adult stages.

All materials are provided.

Super Bowl Surge

What do most people do during a football game's halftime?

Students do in-depth research and present action plans to solve the problem of increased demands on a community's wastewater treatment plant.

Students will illustrate how demands on some treatment plants cause overflow, explain problems with sewage overflow, propose solutions to a water management problem, and recognize how presentation strategies influence public policy.

All materials provided

Grade Level:
Middle School

Subject Areas:
Environmental Science, Health, Government

Duration:
45-60 minutes (3 sessions)

Setting:
Classroom

OR Dept. Education Science Standards:
Engineering Design

Grade Level:
Upper Elementary

Subject Areas:
Environmental Science, Health

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
Engineering Design

Virtual Tour

Have you ever thought about what happens after you flush the toilet? Where does that water go? How does it get clean again?

Students watch a virtual tour of the wastewater treatment process and follow-up with a bingo game to review what they have learned.

Students will describe the processes for treating wastewater.

All materials are provided.

Dragonfly Pond

What kind of thought goes into planning a town? How does the planning affect the local environment?

Students evaluate the effects of different kinds of land use on wetland habitats, and discuss and evaluate lifestyle changes to minimize damaging effects on wetlands.

Students create a collage of human land-use activities around an image of a pond.

All materials provided

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Earth Science, Environmental Science, Social Studies

Duration:
45-60 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
4.2L.1, 5.2L.1, 6.2L.2, 7.2E.1

Grade Level:
Lower Elementary, Upper Elementary, Middle School

Subject Areas:
Earth Science, Environmental Science

Duration:
45-60 minutes

Setting:
Classroom or outdoors (activity can be a little messy)

OR Dept. Education Science Standards:
1.3S.1, 7.2E.1

A-Maze-Ing Water

Imagine turning on your water tap and having everything that you dumped into the gutter last week flow into your glass.

Students guide a drop of water though a maze of "drainage pipes" to learn how actions in the home and yard affect water quality.

Students will describe urban forms of pollution, provide reasons why people should monitor what they put on their lawns or in streets, and identify ways to treat urban runoff.

All materials are provided.

A House of Seasons

"April showers bring May flowers," Sunshine and showers make up summer hours," "Frost on the pumpkin," and "A winder wonderland"...What do all of these descriptions have in common?

By constructing a "House of Seasons" collage, students observe the role of water in each of the seasons.

All materials provided

Grade Level:
Lower Elementary

Subject Areas:
Earth Science, Fine Arts, Geography

Duration:
30-45 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
K.1E.1

Grade Level:
Middle School, Lower Elementary Option

Subject Areas:
Environmental Science, History

Duration:
30-45 minutes

Setting:
Outdoors or setting with non-slippery floors (involves water that may be spilled)

OR Dept. Education Science Standards:
K3S.1, 6.2L.2

Common Water

What do you, your parents, your neighbors, a plant in your home, a squirrel in the park and your classmates have in common?

Students analyze the results of a simulation to understand that water is a shared resource and is managed.

Students will illustrate how multiple users of water resources can affect water quality and quantity and examine the complexities of providing water for all water users.

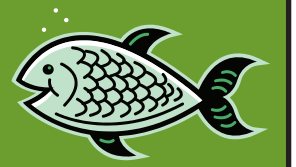
All materials are provided.

Something's Fishy Here!

Can one person make a difference? What if an entire community bands together to fight pollution?

Students will identify potential cause-and-effect relationships involving aquatic related pollution, generate and evaluate alternative solutions to problems of aquatic pollution, and outline a plan to reduce the consequences of possible aquatic pollution in their community.

All materials provided



Grade Level:
Upper Elementary, Middle School

Subject Areas:
Earth Science, Environmental Science

Duration:
45-60 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
7.2E.3

Grade Level:
Middle School

Subject Areas:
Environmental Science, Health

Duration:
45-60 minutes (two sessions)

Setting:
Classroom
OR Dept. Education Science Standards:
Engineering Design

Sparkling Water

What happens to water after it swirls down the drain?

Students develop strategies to remove contaminants from "wastewater."

Students will describe the processes for treating wastewater, compare how water is cleaned in the water cycle to how it is cleaned in water treatment systems, and list nontoxic household cleaning methods.

All materials are provided.

A Drop in the Bucket

What is abundant and rare at the same time?

By estimating and calculating the percent of available fresh water on Earth, students understand that this resource is limited and must be conserved.

Students will calculate the percentage of fresh water available for human use and explain why water is a limited resource.

All materials provided

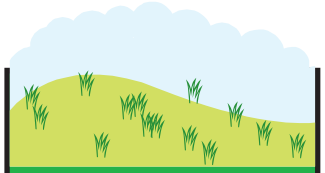
Grade Level:
Middle School

Subject Areas:
Earth Science, Mathematics, Geography

Duration:
30 minutes

Setting:
Classroom

OR Dept. Education Science Standards:
6.2E.1, 7.2E.1



Grade Level:
Upper Elementary, Middle School

Subject Areas:
Earth Science, Environmental Science, Ecology

Duration:
30-45 minutes

Setting:
Large space (indoors or outdoors)

OR Dept. Education Science Standards:
6.2E.1, 7.2E.3

Just Passing Through

Who am I? Plants and soil slow me down, but I pass on through. I may be stored in a lake, but I will be released; I'm just passing through! Who am I?

In a whole body activity, students investigate how vegetation affects the movement of water over land surfaces.

Students will compare the rates at which water flows down slopes with and without plant cover and identify Best Management Practices that can be used to reduce erosion.

All materials are provided.

Silt: A Dirty Word

Sediment is a natural part of a waterway, but can it also be pollution?

Students describe how sand, silt, or both affect water flow; and identify human activities that add sand, silt or both to surface water.

Students create a model to simulate changes to a stream and its water flow when silt, sand, or both are added to the system.

All materials provided. Need access to sink or hose for water.

Grade Level:
Upper Elementary

Subject Areas:
Environmental Science, Earth Science, Physical Science

Duration:
45-60 minutes

Setting:
Classroom or outdoors

OR Dept. Education Science Standards:
4.2E.1

Grade Level:
Upper Elementary, Middle School

Subject Areas:
Life Science, Environmental Science, Social Studies

Duration:
30-60 minutes

Setting:
Large playing field or gymnasium

OR Dept. Education Science Standards:
5.2L.1, 6.2L.2

Hooks & Ladders

You are a juvenile salmon traveling from the stream where you hatched to the giant ocean. What kind of obstacles will you face? Will you make it to your destination?

Students simulate the Pacific salmon and the hazards faced by salmon in an activity portraying the life cycle of these aquatic creature.

Students will describe how some fish migrate as part of their life cycles; identify the stages of the life cycle of one kind of fish; describe limiting factors affecting Pacific salmon as they complete their life cycles, and; generalize that limiting factors affect all populations of animals.

All materials are provided.