

Know Your H2O: Understanding and Protecting Water in the Okanagan

This learning guide is provided to accompany the 2021 educational video created with the support of the Okanagan Basin Water Board and the City of Kelowna Water Smart program.

Sincere thanks also to the actors, creators and contributors.

We acknowledge that our video was filmed on the traditional, ancestral, unceded territory of the Syilx/Okanagan people.



Preface

This guide includes ideas and questions relating to concepts presented in the video, as well as information regarding existing resources that can be used to expand on the topics. The goal is to have students **Learn and Act**. To have them process the information, expand the discussion, explore ways to inspire others and possibly invent or enhance tools and actions to reduce water use at home and throughout the Okanagan Valley.

The guide and the video were created for use with, but not limited to, students in Grades 6 to 10.



“The Okanagan Basin, including Osoyoos Lake has the least water per capita of all Canadian basins (Statistics Canada) and consistently [Okanagan River] ranks at or near the top in lists of Canada’s most threatened rivers.”

International Joint Commission on Water (IJC) Osoyoos Lake Water Science Forum Draft Proposal

How to use the guide

Before watching the video with your class, review the Terminology, Topics and Learn to Act pages.

Select the area(s) that you would like to focus on as a class. For instance, you may choose to focus on how the choices we make with and around water are all connected. Action ideas such as creating a mini watershed to show how land pollution can find its way into lakes and streams, or creating a Great Canadian Shoreline Group, can help with understanding.

Go through the Terminology page with the class. The page can be printed off for the students to have for reference. Allow some time for the students to process the definitions before watching the video.

Let the students know the area(s) of focus so they can watch for related information in the Understanding and Protecting Water in the Okanagan video, as well as in any other related videos such as “A River” film that are offered for deeper understanding.

We recommend accessing the learning package “Okanagan Waterscape: Unravelling the Myth of Abundance” at <http://soks.ca/okanaganwaterscapeteachersguide/index.html> . The information ties in well with the video. It also expands the grade level possibilities with some project options presented for Grades 11 and 12. There is a great deal of valuable information included in the Okanagan Waterscape package. Recognizing that preparation and presentation time may be limited, there is a page in the Reference section that will help streamline the incorporation of the Okanagan Waterscape resource.

To make this process as impactful as possible, we ask that educators reach out with feedback from their class learning experience and/or projects if they are comfortable doing so. An information template is included in the Appendix. This information will then be available to other educators to help facilitate the learning process and create a database for discussion, presentation, submission and project ideas that can be referenced year after year. The more we share, the more impactful the message will be *that Understanding and Protecting Water in the Okanagan* is critical for the sustainability of our valley.

Terminology

Allocated – water resources distributed for particular purposes

Aquifer – a body of permeable rock that can contain groundwater

Basin - a natural depression on the earth's surface, typically containing water

Competing interests – many groups with demands on limited water resources

Daylighting - opening up buried watercourses like creeks and streams and restoring them to more natural conditions

Diversity – variety; a range of different things

Efficient - preventing the wasteful use of a particular resource

Irrigation - the supply of water to land or crops to supplement natural precipitation

Licensed water supplier – an organization who holds a water license and is authorized by the provincial government to use surface or groundwater. All water in B.C. is owned by the Crown on behalf of the residents of the province.

Mini watershed – a person-made project sized watershed for study

Marshes - a tract of soft wet land usually characterized by plants such as grasses or cattails

Pollution - the presence or introduction of a substance that has harmful or poisonous effects

Potable – suitable for drinking

Renewable resource - A renewable resource is one that can be used repeatedly and does not run out because it is naturally replaced.

Restoring - returning something to a former condition

Source control – preventing water pollution at the source – example: flush only the 3 P's

Water source - refers to sources of water (such as rivers, streams, lakes, reservoirs, springs, and groundwater) that provide water for wildlife and people

Water treatment - the process of making water more potable or useful, by purifying, clarifying, softening, or deodorizing it

Watershed - a region or area bounded by a divide and draining ultimately to a particular watercourse or body of water

Wetlands - land consisting of marshes or swamps; saturated land

Xeriscaping – landscaping style that needs little or no irrigation

Topics

Below is a list of topics for teaching, based on information presented in the video.

1

One Valley, One Water

We are all connected and the choices we make with, and around water, impact not only ourselves but people throughout the basin and beyond, as well as fish and wildlife.

How are the different water sources connected? Why is this message so important?

2

Getting to the source

Where does your water come from? Is it a lake, creek, reservoir, aquifer? Find out where your water comes from.

What's in your water? Is it hard or soft water? How is it treated to create potable water? What are the potable water standards?

How secure is your water source for the future? Is it protected and plentiful or in need of more support?

3

Water Managers: Sharing our water

We are all part of a Water Management System that must succeed. We need to **learn** about our water resources and **act** to protect them.

Managing water is about balancing needs and supporting ecological diversity

What are the competing interests in our valley for water? Which water use is most important? How do we decide?

How do the Sylix/Okanagan People approach water management and the value of water.

4

Protecting our Ecosystem

How diverse is the Okanagan for wildlife and plant life? What happens if we as humans use too much water?

How are wetlands and marshes our natural water filters? Are they protected? Do they need help to restore them? How can we help?

Why is there increasing pressures on our fish to survive?

Topics continued



The importance of water conservation

How much water is available? How much do we use?

Some water sources are already fully allocated.

How much water flows across the border into the United States annually?

What is “The Myth of Abundance”?

There are over 4000 licensed water users and over 100 licensed water suppliers

Using less water also uses less energy and reduces costs



WaterWise and Water Smart Actions Inside

What actions can reduce water waste in our homes, offices and schools?

How does what we eat and drink impact water use and water waste?

How much water can we save by making these choices?



WaterWise and Water Smart Actions Outside

What actions can we take outside to reduce water waste?

Is a car wash a good choice? Why or why not?

What plants make sense for our climate? How do plant them so they do well and need as little water as possible? What is xeriscaping?

For the turf in our yards and parks, how can keep it healthy and not waste water?

What are the benefits of healthy green spaces in our communities?



Climate Change

How is climate change impacting how we manage water? How is it impacting how much water we have? What are the forecasted changes for our valley? How are we preparing for the changes to come?

Learn and Act

Where our water comes from

Learn	Act
<p>How was the Okanagan Basin formed?</p> <p>What is a watershed?</p> <p>How are surface water and groundwater sources connected?</p>	<p>Build a mini watershed.</p> <p>Build a mini aquifer.</p>
<p>What lakes, creeks, streams and aquifers do we draw from in different regions?</p> <p>Why is it important to know where our water comes from?</p> <p>Are our water sources renewable?</p>	<p>Visit Okanagan WaterWise “Where Our Water Comes From” page and videos. See link below.</p> <p>Find a water bill and investigate your water provider.</p> <p>Assign different water purveyors to different students and have them report back.</p> <p>Share your knowledge using chosen social media platform; individual, partner or group project.</p>

Okanagan WaterWise Where our Water Comes From

https://okwaterwise.ca/prog_one-valley-one-water.html

Who uses our water

Learn	Act
<p>What are the competing interests?</p> <p>Homeowners, industries, tourism, animals, agriculture, firefighting, others....</p> <p>Which is most important?</p> <p>Which is least important?</p> <p>How the Sylix/Okanagan People view water? (see link below)</p>	<p>On your own or with a partner:</p> <p>Research water use for one or more groups. Consider ways to make the water use more efficient.</p> <p>Imagine you are one of the interest groups. Present your argument for being a top priority.</p> <p>Create a prioritization approach, e.g.: during a water shortage situation, whose needs are more important?</p> <p>Imagine Lemonade activity</p>

The sukna?qínx (Okanagan) is Beautiful

<https://www.bing.com/videos/search?q=sylix+water+video&docid=608015344594141244&mid=F66C4D79A0675747D45FF66C4D79A0675747D45F&view=detail&FORM=VIRE>

Why we need to act now to protect our water resources

Learn	Act
<p>How much water do we use in the Okanagan? Are there creeks and streams that are already over allocated? How is climate change impacting our water availability?</p>	<p>The great water race – carrying how much water we use daily in the summer.</p> <p>Track your water activity.</p> <p>See WaterWise Climate Change infographic. (see link below)</p> <p>Share your knowledge using chosen social media platform; individual, partner or group project.</p>
<p>How does the water treatment process work? What kinds of things cannot be flushed?</p>	<p>Visit a water treatment plant.</p> <p>Watch a source protection video like the one listed below.</p> <p>Better than bottled activity.</p>

Climate Change and Water in the Okanagan (WaterWise infographic)

https://okwaterwise.ca/resources/2018/obwb_climate_infographic.pdf

Waste Water Source Control

<https://www.bing.com/videos/search?q=city+of+kelowna+source+protection&&view=detail&mid=363E62B38480A2AD5D4D363E62B38480A2AD5D4D&&FORM=VRDGAR&ru=%2Fvideos%2Fsearch%3Fq%3Dcity%2Bof%2Bkelowna%2Bsource%2Bprotection%26FORM%3DHDRSC3>

How to protect our water sources

Learn	Act
<p>What can be done at home and at school?</p>	<p>Use the ideas and actions presented in the video and add to the list.</p> <p>Invent or improve a water-saving action or tool.</p>
<p>What is potable water? How does our water get treated to be safe? Who sets the safety standards and what are they?</p>	<p>Schedule class visit to local water treatment facility if possible.</p> <p>Seek out virtual tour videos like those for the Duteau Creek Water Treatment Plant and the City of Kelowna Wastewater Treatment Plant.</p>
<p>What kinds of plants make sense for the Okanagan? How do we get people to choose plants that use less water? Can watering less save money?</p>	<p>Connect with the Okanagan Xeriscape Association; visit the Un H2O Garden in front of the H2O Center.</p> <p>Create an “instead of” plant list and deliver the list to a local nursery(s).</p>
<p>How does daylighting of creeks help with water management?</p>	<p>See Fascieux Creek by KLO.</p>
<p>How do restoring creek banks and wetlands help with water management?</p>	<p>Select a local wetland or creek in need of cleanup / restoration. Visit www.ducks.ca/our-work/volunteers for inspiration.</p> <p>Visit https://www.obwb.ca/wetlands/ to see the Okanagan Basin Water Board strategy for restoring wetlands</p>
<p>What kinds of water pollution might result from agriculture?</p>	<p>Build a watershed activity.</p> <p>Suggest ways that we can reduce water pollution from agriculture.</p>
<p>Look at the hospitality industry (e.g. hotels and restaurants) and look for opportunities to use less water</p>	<p>Reach out to a company(s) in that industry and offer to share your findings</p>

Are plastics and other garbage an issue for our lakes and creeks?

Join a clean water volunteer program
<https://www.kelowna.ca/our-community/environment/clean-water-volunteer-programs>

Join the Canadian Shoreline cleanup
www.shorelinecleanup.org

Irrigation

Learn	Act
What is irrigation? Do we need irrigation in the Okanagan? What would our communities be like without irrigated green spaces?	Watch videos like the one linked below Green space experiment for a warm, sunny day: If green space is available, have students spend 5-10 minutes on an asphalt/concrete space. Then take students on a walk through the green space. Alternatively, have students stand on concrete or asphalt for 5 minutes. Then stand on grass for 5 minutes. Document how you feel different and which makes you feel better
What can we do to not waste water when we irrigate?	Mini irrigation audit activity

Green spaces in cities save lives and dollars

<https://www.bing.com/videos/search?q=importance+of+green+spaces+in+urban+areas&&view=detail&mid=81C0F694071CE2BA4F6581C0F694071CE2BA4F65&&FORM=VRD GAR&ru=%2Fvideos%2Fsearch%3Fq%3Dimportance%2Bof%2Bgreen%2Bspaces%2Bin%2Burban%2Bareas%26FORM%3DHDRSC3>

Appendix A: Reference Sites and Materials

A River Film

<https://www.youtube.com/watch?v=P6lzkUhDpC0>

Build a Mini Aquifer: Groundwater Foundation

<https://www.bing.com/videos/search?q=creating+a+mini+aquifer+project&docid=608008760404498514&mid=50E0DF0D33FF1D48249D50E0DF0D33FF1D48249D&view=detail&FORM=VIRE>

Build a mini watershed project

https://pbskids.org/plumlanding/educators/activities/pdf/build_a_watershed_fam.pdf

https://www.iwla.org/docs/default-source/how-to/how_to_build-a-model-watershed.pdf?sfvrsn=8

Daylighting Lost Rivers Helps Combat Climate Change

<https://www.kelownacapnews.com/news/daylighting-lost-rivers-helps-combat-climate-change-say-okanagan-experts/>

Fascieux Creek Restoration Project

<https://www.kelownacapnews.com/news/second-phase-of-kelowna-creek-restoration-project-nearing-completion/>

Okanagan WaterWise (educational/action resource)

<https://okwaterwise.ca/index.html>

Okanagan Waterscapes: Unravelling the Myth of Abundance

<http://soks.ca/okanaganwaterscapeteachersguide/index.html>

Prairie Creek Daylighting Project

<https://www.obwb.ca/projects/prairie-creek-daylighting/>

Wetlands Take Care of Canada's Fresh Water: Ducks Unlimited

<https://www.bing.com/videos/search?q=restoring+wetlands+in+canada&ru=%2fvideos%2fsearch%3fq%3drestoring%2520wetlands%2520in%2520canada%26qs%3dn%26form%3dQBVDMH%26sp%3d-1%26pq%3drestoring%2520wetlands%2520in%2520canada%26sc%3d0-28%26sk%3d%26cvid%3d17EAA69E2DCF4F16A35554E9B5691195&view=detail&mid=A1CFB4EEFBDF28671F83A1CFB4EEFBDF28671F83&&FORM=VDRVSR>

The Crux of Climate Change: Fabulous Fixes and Magical Mixes

<http://soks.ca/Fabulous%20Fixes%20and%20Magical%20Mixes.pdf>

Water Supply and Demand project

<https://www.obwb.ca/wsd/>

What is source control

<https://www.bing.com/videos/search?q=source+control+for+water&docid=608007721036026793&mid=AD8FC6A33FB0197F114FAD8FC6A33FB0197F114F&view=detail&FORM=VIRE>

Science Opportunities for Kids: Okanagan Waterscapes educational package highlights

Note: The pages for Unraveling the Myth of Abundance are now hosted by Okanagan WaterWise and can be found at the links below:

Introduction: <http://okwaterwise.ca/wp-content/uploads/introduction.pdf>

Key Concept 1: http://okwaterwise.ca/wp-content/uploads/key_concept1.pdf

Key Concept 2: http://okwaterwise.ca/wp-content/uploads/key_concept2.pdf

Key Concept 3: http://okwaterwise.ca/wp-content/uploads/key_concept3.pdf

Key Concept 4: http://okwaterwise.ca/wp-content/uploads/key_concept4.pdf

Appendices: <http://okwaterwise.ca/wp-content/uploads/appendices.pdf>

What it is	Where to find it
Waterscape Poster	The poster is an excellent teaching tool and includes key topics of its own. Found in Unravelling the Myth of Abundance; Introduction module, page 5 Posters available through Okanagan WaterWise. Email okwaterwise@obwb.ca
Okanagan Basin Watershed Groups	Easy to follow map of the many watersheds within the greater Okanagan Basin watershed Unravelling the Myth of Abundance; Introduction module, page 8
Okanagan Basin drawing: Dry to really dry	Found in Unravelling the Myth of Abundance; Key Concept Two-the Okanagan Water Cycle, page 21 Illustration of the valley sitting in the shadow of the Coastal Mountains
Visual aid to explain the Illusion of Abundance	Found in Unravelling the Myth of Abundance; Key Concept Two-the Okanagan Water Cycle, page 45
Climate Change illustration and the lemonade activity	Found in Unravelling the Myth of Abundance; Key Concept Two-the Okanagan Water Cycle, pages 61-62
Doing it right / Doing it wrong illustration	Visual of how correct planning and implementation can protect aquatic ecosystems Found in Unravelling the Myth of Abundance; Key Concept Three-Protecting our Aquatic Resources, page 66

Yellow Fish Road information	Introduction to the Yellow Fish Road project. Found in Unravelling the Myth of Abundance; Key Concept Three-Protecting Nature's Water Needs, pages 68-69 Check out https://tucanada.org/yellow-fish-road/ for more information and to order kits
Investigating what's in our local streams	Overview of two projects to learn about what's in our local streams Found in Unravelling the Myth of Abundance; Key Concept Three-Protecting Nature's Water Needs, pages 71-85
Sharing our Waters	Illustration and information about the many water users in the Okanagan Found in Unravelling the Myth of Abundance; Key Concept Four-Wise Water Use, page 87
The Great Water Race	Activity to demonstrate how much water each person uses each day. Found in Unravelling the Myth of Abundance; Key Concept Four-Wise Water Use, pages 90-91
Track Your Water Consumption	Activity to demonstrate how much water each person uses each day. Found in Unravelling the Myth of Abundance; Key Concept Four-Wise Water Use, pages 93-94
Better than Bottled	Activity to show that bottled water is not the best choice. Found in Unravelling the Myth of Abundance; Key Concept Four-Wise Water Use, pages 95-97
Greening the Lawn	Mini irrigation audit to get students thinking about irrigation efficiency Found in Unravelling the Myth of Abundance; Key Concept Four-Wise Water Use, page 99
Additional terminology	Appendices pages 1 – 5
Valley history and soils	Appendices pages 6 – 9
Climate change and population growth forecasted impacts	Appendices 10 – 16

Appendix B: Submission Template

Use additional pages as necessary and create a pdf when complete. Reach out with any questions. Email questions and submissions to okwaterwise@obwb.ca

Date	
Project Lead Name	
Organization Name	
Contact information (phone/email)	
Grade(s)	
Focus topic(s)	
Project/ Learning Process Description	
What worked best	
Suggestions for improvement	
Other comments	