

## WATERMARK



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# WATERMARK

Directed by Jennifer Baichwal and Edward Burtynsky  
2013 | Canada | 90 min

## TEACHER'S GUIDE

This guide has been designed to help teachers and students enrich their experience of WATERMARK by providing support in the form of questions and activities. There are a range of questions that will help teachers frame discussions with their class, activities for before, during and after viewing the film, and some weblinks that provide starting points for further research or discussion.

### The Film

*Watermark* is a feature documentary film that brings together diverse stories from around the globe about our relationship with water: how we are drawn to it, what we learn from it, how we use it and the consequences of that use. We see massive floating abalone farms off China's Fujian coast and the construction site of the biggest arch dam in the world—the Xiluodu, six times the size of the Hoover. We visit the barren desert delta where the mighty Colorado River no longer reaches the ocean, and the water-intensive leather tanneries of Dhaka. We witness how humans are drawn to water, from the U.S. Open of Surfing in Huntington Beach to the Kumbh Mela in Allahabad, where 30 million people gather for a sacred bath in the Ganges *at the same time*. We speak with scientists who drill ice cores two kilometres deep into the Greenland ice sheet and roam the sublime pristine watersheds of Northern British Columbia.

Shot in stunning 5K ultra-high-definition video and full of soaring aerial perspectives, this film shows water as a terraforming element and the scale of its reach, as well as the magnitude of our need and use. This is balanced by forays into the particular: a haunting memory of a stolen river, a mysterious figure roaming ancient rice terraces, the crucial data hidden in a million-year-old piece of ice, a pilgrim's private ritual among thousands of others at the water's edge.

Source: [http://www/burtynsky-water.com/?page\\_id=7](http://www/burtynsky-water.com/?page_id=7)

### The Filmmakers

*Watermark* is directed by multiple award-winning filmmaker Jennifer Baichwal and renowned photographer Edward Burtynsky, and is the third part of Burtynsky's Water project, which includes a book *Burtynsky: Water* and a major photographic exhibition. Filmed and produced by Nicholas de Pencier and three years in the making, it is a logical extension of the trio's previous collaboration, *Manufactured Landscapes*.

Source: [http://www/burtynsky-water.com/?page\\_id=7](http://www/burtynsky-water.com/?page_id=7)

Educational package written and compiled by  
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## VIEWING THE FILM WITH STUDENTS

There are important themes in this film that have broad implications for students and their futures. Take time to activate your students' background understanding of these themes before viewing. This will help them as they come to their own understanding and develop their critical abilities.

The following three subsections are intended to provide you with a range of pre-viewing, viewing and post-viewing activities. They are followed by a page of weblinks for further investigation,

### Pre-Viewing Activities

Show students the trailer for the film found on the films website (<http://burtynsky-water.com>).

Have students work in small groups to try and identify themes or ideas conveyed by the trailer. As a larger group, discuss with students how effective/affective the trailer is as a media piece.

Print several of the questions or quotations from the Extension Activities section of this guide on individual sheets of paper. Have students work in small groups or with partners to discuss if they agree with the ideas.

Set a purpose for viewing by having a discussion about one or more of the questions or quotations from the Extension Activities section of this guide. Have them share the statement and what they think or believe about it with the class.

Discuss the issues around water use in farm irrigation and water usage in agriculture. Use the Ogallala aquifer as an example. The Kansas geological survey has a background guide with useful maps, charts and graphs discussing the aquifer ([http://www.kwo.org/Ogallala/Rpt\\_BackgroundInformation.pdf](http://www.kwo.org/Ogallala/Rpt_BackgroundInformation.pdf)).

Have students learn about the lifecycle of a product. Use a short clip titled "The Story of Stuff" to illustrate the impacts of each stage of production (<http://www.storyofstuff.org/movies-all/story-of-stuff/>). Use leather as an example after watching the clip.

Discuss the water cycle using an interactive diagram (<http://earthguide.ucsd.edu/earthguide/diagrams/watercycle/>). Have students indicate where humans can interfere within the cycle (through hydro dams, over irrigation and deforestation).

Review glaciation and discuss the term "interglaciation," which is the alternating periods of warming and cooling in the Earth's past (<http://education-portal.com/academy/lesson/interglaciation-definition-lesson-quiz-on-the-interglacial-period.html>). Discuss the use of ice cores in understanding global climate changes. The *Guardian* has an article discussing how they can be useful (<http://www.theguardian.com/science/punctuated-equilibrium/2011/may/12/1>).

Have students learn about Owens Lake in California. The Owens Lake Project includes photos and information about the area (<http://www.owenslakeproject.com>).

Review how hydroelectric dams work (<http://science.howstuffworks.com/environmental/energy/hydropower-plant.htm>) and discuss the pros and cons of the energy use. Use the Xiluodu Dam situated on the Jinsha River as an example (<http://www.watertechnology.net/projects/xiluodu-dam-jinsha-yangtze-china/>).

Briefly discuss the history of the Imperial Valley (<http://www.desertusa.com/cities/ca/imperial-valley-irrigation.html>).



Review the concept of the constructed waterfront community of Discovery Bay in California (<http://www.townofdiscoverybay.org/>). Discuss some of the positive and negative issues around planning this type of community.

Discuss the use and purpose of step wells in Rajasthan (<http://www.atlasobscura.com/places/ancient-stepwells-india>) and why they are no longer of use.

Show students a map of the Stikine watershed in Northern British Columbia (<http://riverswithoutborders.org/about-the-region/iskutstikine>). Discuss the importance of the watershed and the impacts from mining happening along the river.

Have students learn about abalone farming in Yuan Bay. Review some of the issues these fishermen face (<http://www.seafoodsource.com/newsarticledetail.aspx?id=21428>). Discuss the growth of aquaculture and some of the impacts to the environment ([http://wwf.panda.org/about\\_our\\_earth/blue\\_planet/problems/aquaculture/](http://wwf.panda.org/about_our_earth/blue_planet/problems/aquaculture/)).

Discuss the ornamental use of water for recreational and tourism use. An article debates water usage at the Bellagio fountains and water themed parks (<http://www.reviewjournal.com/news/water-environment/two-new-parks-may-add-criticism-las-vegas-waste-water>).

Discuss rice cultivation and rice paddies and some of the ecological advantages and some threats to the crop (<http://factsanddetails.com/china.php?itemid=344>).

## Viewing Activities

Have students jot down five ideas for discussion or questions that the film raised in their minds.

Have students use a graphic organizer to summarize the film as they watch it. The film includes many themes which consist of energy, farming/fishing, manufacturing, water/climatic balance, water availability and water values.

How does the filmmaker find beauty in each scene? Have students record five examples during the film.

Have students record the different film techniques during the film. Some of these include aerial shots, slow motion and time lapse photography. Discuss the usefulness of each technique.

## Post-Viewing Activities

Show the students their quotations from the Pre-Viewing Activity and see if their minds were changed or opinions altered or enhanced by the film.

Assign some of the questions and quotations from the Extension Activities section of this guide for homework to be taken up the next day in class. Check for completion.

Have students complete an exit note (a single small sheet of paper with one phrase or idea written on it) that demonstrates one thing they have learned, felt or decided as a result of watching the film.

Discuss with students their initial reactions to the various scenes and situations addressed in the film.

Have students create a Venn diagram comparing various viewpoints on hydroelectric dams. A short reading from the *National Geographic* can assist with the activity ([http://education.nationalgeographic.com/education/encyclopedia/hydroelectric-energy/?ar\\_a=1](http://education.nationalgeographic.com/education/encyclopedia/hydroelectric-energy/?ar_a=1)).

Ask students to hypothesize about why the world's climate is changing. Have them also make predictions about the effects such climate changes could have on humans and which communities will be most affected.

Explore different issues about water with the use of role-play. "The Water Project" has many examples in a teacher's guide that can help them understand these issues (<http://thewaterproject.org/resources/lesson-plans.php>).

In groups of four, have students create a PowerPoint presentation on a watershed within their community. The culminating assignment and rubric titled Watershed Study are found on the following pages.

## WEBSITES AND ONLINE RESOURCES

### About the Film

<http://burtynsky-water.com>

*The making of the film:*

<http://youtu.be/15cX8Hm-JHM>

*Watermark filmmaker Twitter:*

<http://twitter.com/nickdepcier>

*Watermark Facebook:*

<http://www.facebook.com/watermarkdocumentaryfilm>

### Additional Resources

*Edward Burtynsky:*

<http://www.edwardburtynsky.com/>

*CBC:* An in-depth look at Canada's water issues.

<http://www.cbc.ca/news/background/water/>

*David Suzuki Foundation:* Freshwater issues is one of the focuses of this not-for-profit organization. This page examines watersheds in Canada, as well as issues around preserving ecosystems and water availability.

<http://www.davidsuzuki.org/issues/freshwater/>

*Environment Canada:* This look at Canada's water management includes information on water quality, the Great Lakes, waste-water management and other approaches to ensure clean drinking water for all Canadians.

<http://www.ec.gc.ca/eau-water/>

*Los Angeles Times:* "Reframed" is a feature showcasing fine art photography. This series showcases 25 photos and a Q&A with Edward Burtynsky.

<http://framework.latimes.com/2013/09/05/reframed-in-conversation-with-edward-burtynsky/#/0>

*National Geographic:* A special issue from April 2010 has a number of articles and photos related to global freshwater issues.

<http://ngm.nationalgeographic.com/2010/04/table-of-contents/>

*Nature Canada:* The NGO has a focus on water and its website provides facts and information about water conservation.

[http://www.naturecanada.ca/water\\_facts.html](http://www.naturecanada.ca/water_facts.html)

*OSSTF—Tapped Out: The World Water Crisis:* This Common Threads curricular material and classroom support resource includes videos and lesson plans about water conservation and global water issues.

<http://www.osstf.on.ca/Default.aspx?DN=494a552d-685a-418a-913e-e3eab3a71a1e>

*Toronto Region and Conservation Authority:* The TRCA has created a lesson plan to conduct a school water audit to know where and how water is used at your school.

<http://trca.on.ca/dotAsset/110337.pdf>

*UN Water:* Established in September 2003, UN Water coordinates water-related issues.

<http://www.unwater.org/>

### Various Links for Lesson Plan Ideas, Media Awareness, Critical Literacy and Documentary Films

*Using Docs in the Classroom:* A teacher librarian's personal website where there are excellent resources for teaching with documentary films.

[http://www.frankwbaker.com/using\\_docs\\_in\\_the\\_classroom.htm](http://www.frankwbaker.com/using_docs_in_the_classroom.htm)

*Media Awareness:* A Canadian nonprofit media education and Internet literacy resource library.

<http://www.media-awareness.ca>

*Centre for Media Literacy:* A U.S. website which provides several resources for making, understanding and criticizing media.

<http://www.medialit.org>

*The National Film Board of Canada:* On this site is an area with teaching resources and short documentary films that can be used as teaching aides.

<http://www.nfb.ca>

*Hot Docs' Looking at Documentaries:* A teaching guide that sets out questions designed to help teachers include the study of documentary film in their curriculum. Free PDF download.

[http://www.hotdocs.ca/youth/docs\\_for\\_schools\\_monthly/resource\\_materials](http://www.hotdocs.ca/youth/docs_for_schools_monthly/resource_materials)

## EXTENSION ACTIVITIES

### Questions for Pre-Viewing or Post-Viewing Activities

What was your first impression of the opening scene? Why do you think the filmmaker decided to open with that sequence?

Discuss the domino effect, using the Colorado River as an example.

Make a T-chart illustrating the pros and cons of hydroelectric dams.

Edward Burtynsky poses the question “How does water shape us and how do we shape water?” Use two examples from the film to answer each part of his question. Do you think the film answers his question?

How have farms been influenced by water? Use two examples. Think of at least two other types of land use that have also been influenced by water.

What purpose does time-lapse photography provide?

The filmmakers often switch between scenes in developed countries and scenes in developing countries. Why do they choose to switch between the two?

Discuss the implications of water pollution at a local, regional and global level.

How does the health of a watershed affect communities in different ways? Compare the effects to the native community in northern BC to a community within a city like Vancouver or Toronto.

Discuss the film technique of slowing down the fountain show at the Bellagio Hotel.

What do aerial shots provide for the viewer?

Discuss the Lone Pine Case study as an example of human interference of the water cycle?

What influences our value of water? Discuss the difference in values using two opposing examples from the film.

Does a film enhance or take away from Edward Burtynsky’s photographs? Do you prefer a series of photographs or a film to tell a story? Is one more effective than the other in your opinion? Explain.

## QUOTATIONS FROM THE FILM TO EXPLORE

1. *"Seventy per cent of human use of water is agriculture, and if we think of a singular activity that has changed the surface of the planet, it's farming."* Edward Burtynsky, photographer and director
2. *"We're right in between where the sky meets the land like the water and clouds meet the land, and it trickles from there. It's a transition point."* Oscar Dennis, Native from Northern BC
3. *"We were taught to live with the land."* Oscar Dennis, Native from Northern BC
4. *"It's a cycle. It starts in the ocean, leaves this all behind. Travels up here and hits our mountains and when it hits our mountains, it touches our mountains.... It's like the interaction between the sky and the land and it creates this moisture that goes back down to the sea, as it keeps cleansing itself."* Oscar Dennis, Native from Northern BC
5. *"But eventually, whether it's our farms, our houses, the environment here, nothing lasts forever."* Lin Jianqing, abalone fisherman, East China Sea, Yuan Bay
6. *"The reason why we should take that discussion seriously is because for the first time, we are not just passive watchers of what nature does, we are responsible."* J.P. Steffensen, from Greenland
7. *"So what's happened is they've started to drill for water below the regular water table. And so now, these have dried up. So this is a water table disappearing in a very arid area and the monsoons aren't able to recharge it anymore. These were literally inverted pyramids, monuments of controlling water in the past."* Edward Burtynsky about the step wells in Rajasthan
8. *"In every human being's mind, there is some sin or another. Manushya, Karmasha, Vaishya —there are three types of sin. Some are due to our action, some due to our mind and some due to our feelings. To destroy all these sins, we bathe in the Ganga-ji, so all our sins are washed away."* Sri Madhavacharyaji Maharaj, about the Maha Kumbh Mela in Allahabad
9. *"If I look at 30 years of my work, I think the one constant throughout all of it is that because I understood what nature is, I've learned to understand what is there before we come, before we understand what is there before we come, before we change it. And for me not to have that profound relationship, I couldn't do this work, because this work is lament for that loss."* Edward Burtynsky
10. *"It's believed that all the water on this Earth, all the water we have, the oceans that cover most of our planet, the frozen ice, the ground water, everything is something we have received from space, through comets that have hit earth and they are more or less frozen ice balls or snowballs. But when they hit our atmosphere, they warm up and evaporate. The water they have is into our planetary system, it's trapped in the gravitational field of our Earth. So in that way, through millions and millions and billions of years, the comets have hit and oceans have slowly formed. So we know it's a very early stage of our Earth that the water was received and we started getting oceans and life as well."* Dorthe Dahl-Jensen, from Greenland
11. *"You can't live unless you're in water, because no two cells can divide without being in water. We spend the first nine months in our mom's womb, inside the ocean. It's a reconstruction of the ocean, where all life has to take place. Even inside plants, you cannot have cell division without it happening in water, so water is everywhere. If that water link would ever break, allowing a cell to rupture and dry out, life would end. So I think it's a fascinating thought to think that you and I can only sit and have this conversation because we both represent an unbroken link of divided cells in water at all times in the past three billion years."* J.P. Steffensen, from Greenland

## CULMINATING ACTIVITY: WATERSHED STUDY

A watershed, also known as a catchment basin or area, includes all of the land that is drained by a watercourse and its tributaries. Watershed boundaries are defined by heights of land. Boundaries are set where a height of land causes water to flow away from the watercourse.

A watershed includes all water, whether flowing or standing, the processes, factors and natural cycles which affect it and all the organisms which live in and rely on the water for survival. The movement of water in a watershed is described by the hydrologic cycle.

Source: [http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02\\_163599.htm](http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_163599.htm)

Now that you have learned about rivers and the importance of watersheds, your task is to use the Internet to conduct more extensive research about one of the watersheds in your community.

1. You will work in groups of four
2. Select a watershed for study.
3. Using the Internet, research your watershed. In doing your research, be sure to address the following questions and concerns:
  - Describe the characteristics of the watershed (slope, shape, gradient, types of sediment, etc.)
  - How do human activities such as land development, urbanization and pollution influence the hydrologic cycle and the natural environment of the watershed (consider both animals and plants)?
  - What actions have been taken and can be taken to maintain, improve and protect the environment in and around the watershed?
  - Are there any groups that protect the watershed and the plants and animals that inhabit the area? If so, what are the groups doing to accomplish this?
4. Prepare a 10-minute presentation

Sources to start with:

Ministry of Natural Resources:

[http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@letsfish/documents/document/stel02\\_198258.pdf](http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@letsfish/documents/document/stel02_198258.pdf)

Toronto Region Conservation Authority:

<http://trca.on.ca/the-living-city/watersheds/>



# ASSIGNMENT RUBRIC

## Knowledge and Understanding

Slide Research      5.0    5.5    5.9      6.0    6.5    6.9      7.0    7.5    7.9      8.0    9.0    10

Thorough slide research; included all relevant information

Very little research included in slide presentation

Effort was somewhat adequate, with some information researched

Most information was complete, with good effort in slide research

All information was thoroughly included, with excellent effort in slide research

/10

## Application

Group Work      5.0    5.5    5.9      6.0    6.5    6.9      7.0    7.5    7.9      8.0    9.0    10

Worked well with group members and shared individual responsibilities

Unequal division of responsibilities and effort need to be addressed

Effort was somewhat adequate, with some information on the individual responsibilities

Most information was complete, with good effort on the individual responsibilities

All responsibilities were met and equally distributed with excellent effort

/10

## Communication

Presentation      5.0    5.5    5.9      6.0    6.5    6.9      7.0    7.5    7.9      8.0    9.0    10

Spoke clearly, with excellent volume, eye contact, enthusiasm and well rehearsed

Unequal division of speaking with little enthusiasm, volume, poor pace, little rehearsal

Effort was somewhat adequate, with some information on the watershed and presentation style

Most information was complete; a good presentation style

Was very informative with excellent effort and excellent presentation style

/10

Comments:

Total

/30

## EXAMPLES OF CURRICULUM EXPECTATIONS

COURSE	OVERALL EXPECTATIONS
Grade 7 Geography	<ul style="list-style-type: none"> <li>analyze current environmental issues or events from the perspective of one or more of the themes of geographic inquiry.</li> <li>describe positive and negative ways in which human activity can affect resource sustainability and the health of the environment.</li> </ul>
Grade 7 Science	<ul style="list-style-type: none"> <li>assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts.</li> <li>investigate interactions within the environment, and identify factors that affect the balance between different components of an ecosystem.</li> <li>demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment.</li> </ul>
Grade 8 Science	<ul style="list-style-type: none"> <li>assess the impact of human activities and technologies on the sustainability of water resources.</li> <li>demonstrate an understanding of the characteristics of the Earth's water systems and the influence of water systems on a specific region.</li> </ul>
Grade 9 & 10 Art	<ul style="list-style-type: none"> <li>Art, Society and Values: demonstrate an understanding of how art works reflect the society in which they were created, and of how they can affect personal values.</li> </ul>
Grade 9–12 English	<ul style="list-style-type: none"> <li>A fixed amount of water recirculates around the Earth.</li> <li>Water moves in certain directions from place-to-place (reservoir-to-reservoir) by only certain processes and pathways.</li> </ul>
Grade 9 Geography	<ul style="list-style-type: none"> <li>analyze local and regional factors that affect Canada's natural and human systems.</li> <li>analyze the ways in which natural systems interact with human systems and make predictions about the outcomes of these interactions.</li> <li>evaluate various ways of ensuring resource sustainability in Canada.</li> <li>explain how natural and human systems change over time and from place to place.</li> </ul>
Grade 9 Science	<ul style="list-style-type: none"> <li>assess the impact of human activities on the sustainability of terrestrial and/or aquatic ecosystems, and evaluate the effectiveness of courses of action intended to remedy or mitigate negative impacts.</li> <li>investigate factors related to human activity that affect terrestrial and aquatic ecosystems, and explain how they affect the sustainability of these ecosystems.</li> <li>demonstrate an understanding of the dynamic nature of ecosystems, particularly in terms of ecological balance and the impact of human activity on the sustainability of terrestrial and aquatic ecosystems.</li> </ul>
Grade 10 Science	<ul style="list-style-type: none"> <li>investigate various natural and human factors that influence Earth's climate and climate change.</li> </ul>
Grade 10–12 Media Arts	<ul style="list-style-type: none"> <li>The Critical Analysis Process: demonstrate an understanding of the critical analysis process by examining, interpreting, assessing and reflecting on media art works.</li> <li>Identity and Values: demonstrate an understanding of how media art works reflect personal and cultural identity, and affect personal, cultural and community values and their awareness of those values.</li> </ul>
Grade 11 & 12 Art	<ul style="list-style-type: none"> <li>Art, Society and Values: demonstrate an understanding of how art works reflect the society in which they were created, and of how they can affect both social and personal values.</li> </ul>

The Overall Expectations listed above are from *The Ontario Curriculum*. Complete course descriptions, including all Overall and Specific Expectations, can be found at: <http://www.edu.gov.on.ca/eng/teachers/curriculum.html>.