# Miss Foley

ESci20: AS2 Healthy Water **White Water Black Gold**

**White Water Black Gold Comprehension Notes**

[www.whitewaterblackgold.com](http://www.whitewaterblackgold.com) (57:00)

1. Number of barrels of water is used to produce 1 barrel of oil:
2. Percent of water making up the human body:
3. Signs of climate change & their impact on the water cycle:
4. Using a flowchart, illustrate the journey of a drop of water from the Jasper Ice Cap to the Upgrader (Oil Refineries) Alley.
5. Process of Oiling:
6. Challenges for mines to address in order to prevent a water shortage in the next 5-10 years:
7. Four concerns with tailing ponds:

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1. Impact on Fort Chipewyan:
2. How has the “Duck Incident” changed things?
3. Government Support or Action?
4. Impact of contaminant loading on the water cycle, particularly the Athabaska River:
5. An example of how trees tell the story of the water cycle is:
6. Nuclear power was being considered in 2009 because…concerns?
7. Acceptable risk is being defined as:
8. Other options/solutions for bridging the gap of potential energy between white water and black gold:

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**White Water Black Gold**

**Comprehension Notes - KEY**

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1. Number of barrels of water is used to produce 1 barrel of oil:

**3.3 barrels of water/1 barrel of oil**

1. Percent of water making up the human body:

**67.77 – 75% on average**

1. Signs of climate change & their impact on the water cycle:

**Ice caps being decapitated (melting)**

**Ice crevices starting**

1. Using a flowchart, illustrate the journey of a drop of water from the Jasper Ice Cap to the Upgrader (Oil Refineries) Alley.

**Jasper Snow Caps – Athabasca River – Tar Island Fort McMurray – Athabasca Watershed – Mackenzie River Watershed – Ocean or Upgrader (Oil Refineries) Alley**

**\*Jasper Snow Cap is also Sask Glacier water source, also Edmonton’s water source and the North Sask River source.**

1. Process of Oiling:

**Trees removed – Muskeg peeled back – topsoil lifted – subsoil moved to create burms and pools - bitumen exposed in soil (last choice to process for oil) – bitumen excavated/mined – oil is rinsed from bitumen using freshwater – oil is sent for processing at refinery - resulting tar sand (water & sand) is exported to collecting pools.**

1. Challenges for mines to address in order to prevent a water shortage in the next 5-10 years:

**Regular droughts**

**Decrease of glaciers and snowpack**

**Increased climate change**

**Increased population & industry**

1. Four concerns with tailing ponds:

**Toxic stews**

**Leaking into Athabasca River**

**Burms breaking or not being built**

**Noise makers for wildlife**

1. Impact on Fort Chipewyan:

**Living off land - is our food supply okay?**

**Increased rise of diseases in both humans and wildlife (cancer, respiratory and skin illnesses)**

**Is water safe to drink? Not unless it is additionally treated**

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1. How has the “Duck Incident” changed things?

**First public media exposure = public outrage**

**Ammonia leak in schools**

**What do they need to do to get the same response for human impact?**

1. Government Support or Action?

**Provincial government supplies the licenses/permits to operate**

**Provincial government makes and enforces the operating regulations**

1. Impact of contaminant loading on the water cycle, particularly the Athabaska River:

**Bioaccumulation (intro of contaminant) and biomagnification (increase in concentration of contaminant as it moves up food chains/webs)**

**Smoke stack contaminants – snow catches them – enters water cycle**

**\*Land is ALWAYS connected to water.**

1. An example of how trees tell the story of the water cycle is:

**Tree rings indicate water availability and contamination.**

1. Nuclear power was being considered in 2009 because…concerns?

**Option once natural gas is depleted.**

**Concern of nuclear meltdown if cooling water is not available.**

1. Acceptable risk is being defined as:

**Needs to be a happy medium between world ending and everything is okay.**

1. Other options/solutions for bridging the gap of potential energy between white water and black gold:

**Pincher Creek: Wind Energy**

**CTrains in Calgary: In 2001, became the first public transit system in Canada to claim all of its electricity from emissions-free wind power generation**

**Germany: 20% renewable energy Maybe its time that its NOT in everyone’s best interest to keep the status quo. Maybe its time that certain people don’t continue profiting.**

**Drake Landing:** **The Drake Landing Solar Community (DLSC) is a master planned neighbourhood in the Town of Okotoks, Alberta, that has successfully integrated Canadian energy efficient technologies with a renewable, unlimited energy source - the sun. The first of its kind in North America, DLSC is heated by a district system designed to store abundant solar energy underground during the summer months and distribute the energy to each home for space heating needs during winter months. The system is unprecedented in the World, fulfilling ninety percent of each home’s space heating requirements from solar energy and resulting in less dependency on limited fossil fuels.**