From Pollution to Solution

Background Information on the Fraser River:

The Fraser River was named after Simon Fraser (1776-1862) who explored the river in 1808 on behalf of the North West Company in search of a navigable route for fur trading. Simon Fraser believed that he was traveling on the Columbia River to its ocean outlet. It was another explorer, David Thompson, who later named the river after Simon Fraser.

First Nations people had lived along the Fraser River for thousands of years before Simon Fraser's arrival. Some of the archaeologists estimate up to 9000 years before. (A site under the Alex Fraser Bridge has been dated back that far).

The Fraser River starts as a trickle at Mount Robson (Headwaters) and ends in the Strait of Georgia in the Pacific Ocean. There are many tributaries that add water to the Fraser, including the Thompson River (22% of the total water flow).

The Fraser River is 1 375 kilometers long. If it was stretched out across Canada, it would span the distance between Vancouver and Regina, Saskatchewan. The Fraser River is the fifth largest river in Canada. It is less than 15 000 years old.

The characteristics and landscapes of the Fraser River change from the beginning of its journey to its end. As you exit the Headwaters and enter the Upper Basin region, the river's sediment load increases creating more turbulent waters with the water appearing grey or brown in colour. The river then passes through the Drylands with low vegetation as a result of little rainfall and hot temperatures. In the Canyon, the river is squeezed between the Coast and the Cascade mountain ranges increasing the speed and creating many impressive rapids.

The point at which the fresh water of the Fraser River meets the salty water of the Pacific Ocean is called the estuary, (also sometimes called "between land" by the First Nations people because as the tides ebb and flow, the estuary changes from land that is covered with water to dry land). Other estuaries include the mouths of great rivers such as the Amazon, the Nile and the Mississippi.

The Fraser River Estuary is as rich in its biodiversity as it is an ideal habitat for many organisms. A habitat can be defined as a place where an organism can get food, water and shelter. The major habitat types along the Fraser River include: brackish and freshwater marshes, salt marshes, tidal flats, sloughs, and flood-plain forests among others.

The Fraser River watershed is also home to 60% of BC's population, approximately 2.7 million people. S watershed is an area of land that drains all the water into one main river. The Fraser River watershed is also called a drainage basin, since it collects so much water and drains such a large area (25% of BC's area).

Program Overview:

Students determine how personal choices have environmental consequences by "polluting" a giant model of the Lower Mainland and brainstorming alternatives to common pollutants. Students will be inspired to be part of the solution by Fin Donnelly's marathon swims of the Fraser River.

The 90-minute program begins outside along the river where students can observe their surroundings and everything that is happening along the river. They will then be given a brief introductory presentation before being split into two groups and rotating through the following stations:

- Pollution Model
- Water Conservation Memory Game
- *Journey of the Blob* (As a class)

Program Objectives

- To understand the importance of the actions of the individual
- To acknowledge the importance of the river as a habitat for animals as well as a home and workplace for humans
- To teach students to be responsible for their actions
- To understand how pollution happens along the Fraser River
- To find solutions to some of the pollution that takes place along the river

Helpful Vocabulary

Biodegradable: a substance capable of being decomposed by bacteria or other living organisms.
Ecosystem: a biological community of interacting organisms and their physical environment.
Effluent: liquid waste or sewage discharged into a river or the sea.
Greenhouse Gas Effect: a phenomenon in which the atmosphere of a planet traps radiation emitted by its sun, caused by gases such as carbon dioxide, water vapor, and methane that allow incoming sunlight to pass through but retain heat radiated back from the planet's surface.
Non-Point Source Pollution: pollution that comes from more than one source or place and you can't pinpoint it; such as homes in a neighbourhood.
Pesticides: a substance used for destroying insects or other organisms harmful to cultivated plants or to animals.
Point Source Pollution: pollution created by a single, identifiable source such as a factory.
River basin: the portion of land drained by a river and its tributaries.
Sustainable: using something in way that it will not be completely used up or destroyed
Tundra: a vast, flat, treeless region in which the subsoil is permanently frozen.

In- class activities:

Pre-visit:

1. Students should be able to recognize the Fraser River on a map. Have students identify the major cities and tributaries found along the Fraser River.
2. Brainstorm different types of pollution. Think about point source and non-point source pollution.
3. What are some things that industries along the river can do to make a difference in point source pollution? Share ideas as a class.
4. What can students do at home, in their school, or in their neighbourhood to make a difference in non-point source pollution? Share ideas as a class.

Post visit:

1. Search through local newspapers, magazines or the internet to find a recent story about some form of pollution on the river. How can this pollution be solved? Is there an easy solution? Is there a conflict of interest here? (i.e. a reason why some people feel that this pollution is necessary or unavoidable?)
2. Have a look around your school and your home. List three things that your school/ home is already doing to help reduce pollution (recycling, reusing items, conserving water, using biodegradable materials) From what you have learned think of one other thing that you could do in your home to reduce pollution.
3. Complete the word search activity on the following page

From Pollution to Solution Word Search Activity

T B T X T I Y S Q Z L K L I W I
W F U M J S T R E A M R P H V E
E H Z F F P C E K C C A X L X C
L X X O C I P O L L U T A N T L
B C B Z Q L N O V Y H N E R H Y
A E X I J B M D C C O A C E A N
N A A U Q S X A O I N R K S B O
I V T G L O K A T N O A F A I S
A F F O N U R A R U N B G R T B
T Y D F F A V Z N M E E I F A O
S G N I M R A W L A B O L G T R
U U D Y E K S A L M O N H L I V
S X X S Y R T S U D N I A R Y W
R Y N K Q X G C N C X U W W N P
L O S R E T T I L G W T J B A U
C O H I J X D C H E M I C A L C

chemical
conservation
findonnelly
fraser
globalwarming
habitat
industry
litter
pollutant
robson
runoff
salmon
stream
sustainable