

## The Story of the Great Lakes Student Handout

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### The Story of the Great Lakes and St Lawrence River

This is the story of the travels of a very special water basin — our Great Lakes and St Lawrence River, the world’s largest freshwater ecosystem. It begins in a place far from here, in the hills surrounding Lake Nipigon where water runs off the slopes and begins its long journey to the ocean. We begin when Canada is covered with a heavy blanket of snow, when the evergreen trees wear hoods and coats of white and the animals put their extra warm fur on or sleep peacefully in the comfort of their den. As winter ends and spring returns, the animals and plants awaken and many animals return from far away. The air gets warmer as the sun bursts out bright and warm over the hills, and under its glare the snow blankets melt. The fresh water runs downhill into Lake Nipigon, adding to the deep cool water body.

With the warmth, more people arrive to test their skills to “catch the big one”. On the shore a person **fishing**, unsuccessful in their attempts to cast a line, ends up with a tangled bundle of nylon fishing line. In frustration, the bundle is thrown into the lake.

The lake drains into the Nipigon River and then into Lake Superior, the most superior of them all. On the shore of Lake Superior sit many **pulp and paper mills**. The effluent discharge from the pulp and paper mills contain many harmful chemicals used in the process of bleaching and washing. This has an effect on the health and wellbeing of the plants and animals that live in the lake.

Water continues its journey from Lake Superior, down the St. Mary’s River and into Lake Huron. In the valley, north of Lake Huron lies the Sudbury area, the home to many copper-nickel **smelters**. The smelters releases Sulphur, which is a toxic chemical for plants and animals. The chemical combines with atmospheric water to produce acid rain. When the rain falls, these acids fall back to the Earth’s surface and can pollute the lakes and rivers.

On the south-eastern shore of Lake Huron, there is a town by the name of Goderich, Canada, home of the largest salt **mine** in the world. The mine extends 5 kilometres under Lake Huron and pumps water out of the lake to help extract salt from the mine and to clean its equipment and flush out some of the waste. This includes various chemicals, which all drain back into the lake. During winter the salt from the mine has been used as

a **de-icing agent** on roads across the region. As the snow melts, the water picks up the salt and flows into the lake.

The water continues to flow south towards Sarnia at the mouth of the St Clair River, an area better known as “Chemical Valley”, home to one of Canada’s largest **hazardous-waste** dumps. During a widespread power outage, nearly 300 gallons of vinyl chloride is spilled into the river. Vinyl Chloride is a highly toxic, flammable and carcinogenic chemical.

Meanwhile, further downstream, in Marine City, USA, siblings **wash the family car**. The soapy water carries the grease and grime from the car, rubber particles from the tires, asbestos from the brakes and other toxic metals down the driveway into the storm water drain; eventually ending in the river. If the car had been taken to the local car wash, the water would have been treated before it entered the river.

Next door, a family does some spring cleaning. Whilst they are sorting out the garage, they find an old, unidentified rusty can with a label of a tattered skull, and crossbones. It looks dangerous and they want to get rid of it before it hurts someone. So, the **mysterious liquid** goes down the storm water drain. The poison is out of sight – but is headed for the river.

The river passes many other towns before reaching Lake St Clair and then continues its journey along the Detroit River. Here the water passes the first of many large cities, Detroit (USA). Detroit and the surrounding region has a major manufacturing centre, most notably as home to the major automobile companies. By accident, **oil spills** into the river, causing many problems for the birds that live there. On the other side of the river, in Windsor, Canada, there’s an overflow of **sewage** that escapes treatment so that billions of litres of untreated sewage and storm water finds its way to the Detroit River.

The river continues the journey to Lake Erie. On the western shore, there’s Monroe (USA), home to one of the highest carbon dioxide emitting **power plants** in the world. Water happily absorbs CO<sub>2</sub>. When CO<sub>2</sub> levels are high and oxygen levels are low, fish have trouble breathing and their problems become worse as water temperatures rise. On the opposite shore of the lake, around Leamington (Canada), the **farmers** are busy fertilizing their crops with nutrients such as phosphorus. Afterwards, the crops are watered and the water and fertilizer runs-off into the lake.

In Buffalo (USA), on the eastern shore of Lake Erie, traffic congestion is a big problem for the many **commuters** that drive to and from work. Car emissions, just like power plant and smelter fumes, contribute to acid rain. Also, if a car is not regularly serviced it might leak oil, which will be washed off the road and into the water with the next rain. Buffalo is also at the head of the Niagara River, the site of some of the most famous water falls in the world. At the Niagara Falls, many **tourists** meander along the shoreline, eating and drinking happily, but not everyone uses the bins that are provided.

Finally, the water reaches the last of the Great Lakes, Lake Ontario. In Canada’s largest city, Toronto, people walk their **dogs** along the Harbourfront, especially as summer gets

warmer. Not far along the path, an owner ignores their dog's poo, which will be washed away into the lake with the next rain. At a nearby park, a family sit enjoying their **picnic** overlooking the water but as they leave, litter is left behind. With a gust of wind, the litter ends up in the lake.

In the final stage of the journey the water goes Lake Ontario and into the St Lawrence River. Along the banks of the river there are many towns and cities, most notably, the large city of Montreal. On the outskirts of Montreal, on the bank of the river, redevelopment is occurring. The **demolishers** have discovered some mysterious liquids in metal drums. It's not possible to sell the drums for scrap metal so they throw them in the river. Further along the river, the crops are not growing well because they are being eaten by insects. The farmer decides to spray the crops with harmful **pesticides**, which eventually run-off into the river. The river continues bending through the landscape until it finally arrives at its mouth and flows into the Atlantic Ocean. But look at what flows out with it! Where will it end up?

(Adapted from "Who Polluted the Potomac?", Alice Ferguson Foundation, USA and "The Story of a River", Waterwatch, Queensland, Australia).