Reservoir Rendezvous

This activity is part of the Water Conservation theme

Purpose of this activity:

The purpose of this activity is to emphasize the importance of water management and how it affects our watersheds emphasizing transportation needs.

Key Messages:

- Water management is the regulation of water in terms of flow and levels (quantity) in order to decrease flooding, protect fish and wildlife habitat, generate hydro-electric power and to provide for recreational activities such as safe boating.
- The watershed divide is the point of highest elevation where water from either side flows in different directions. In the Haliburton Highlands area, the watershed divide passes between Kirkfield and the Balsam Lake area.
- The two different watersheds found on either side of the watershed divide are: the Trent River Watershed which flows into Lake Ontario and the Severn River Watershed which flows into Georgian Bay of Lake Huron.
- The Haliburton Highlands is found in The Trent-Severn drainage area which is comprised of the Trent River Watershed, flowing to Lake Ontario, and the Severn River Watershed, flowing to Georgian Bay of Lake Huron
- During the summer, water management focuses on maintaining water levels suitable for transportation (recreational as well as commercial) while minimizing the need to draw water from reservoir lakes.
- Reservoir lakes are lakes, which are found higher in the watershed, which feed water into the lakes found in the lower portions of the waterway.

Materials

- Laminated Trent-Severn Waterway, Water Management poster
- Reservoir Rendezvous model
- Wooden dams
- 2 boats
- 3 houses
- Water capture container
- Duct Tape (seal any leaks, which may occur)

What will I be doing?

Follow the bolded questions to help engage the students in thinking and discussing watersheds.

You will first initiate ideas from the students about the importance of water management ***Why is it important to manage our water systems?*** And explain watersheds and watershed divides. Inform the students that for this activity the focus will be on the recreational aspect, to provide safe transportation and boating.

Using the laminated Watershed poster, explain what watersheds and watershed divides are and where they are located in the Haliburton area. A watershed is connected lakes, rivers and other waterways, which flow into one common area. For example: Trent River Watershed → all smaller lakes, rivers, streams etc. flow into Lake Ontario. Explain what the watershed divide is and where it is located in the Haliburton area. You can also use the profile of the Trent-Severn Waterway at the bottom of the map to show height of land in meters

Can you point out for me where the watershed divide is on this model?
Where is the watershed in this model?

After demonstrating the model you will fill the top reservoir lake and supervise the students as they attempt to accomplish their goal. This is to allow enough water through the system enabling the boats free movement over the watershed divide while avoiding

too much draw down of the reservoir lakes or flooding of the houses. If time allows, you will set up verbal scenarios for the students to work with.

1- Top two basins are the reservoir lakes, they have dams which allow manipulation of the water flow, you work the dams by raising or lowering the wooden slats
2- The bottom level has two lakes which are divided by a high point, the point between the two basins on this level is higher than the two basins - this represents the watershed divide
3- The boats are to be placed in the lakes on the third level. It is the student's challenge to ensure that the boats can safely move over the high portion, the watershed divide, to the other lake. The challenge for the students is to manage the flow of water from the reservoir lakes by working the dams, by raising or lowering the wooden slats (dams) allowing enough water to flow onto the lowest level enabling the boats to pass freely between the two lakes
4- Fill the two reservoir lakes completely
5- Put only a small amount of water in the bottom two lakes
6- Show students how to lift the dams to allow more water to flow out, increasing the water levels in the lower lakes
7- Allow students to try to accomplish the goal as you maintain a slow constant flow (with hose or watering can) of water into top reservoir lake
8- Students manipulate the dams while trying to get the boats on the lower level to move freely across the watershed divide - Emphasize that this must be done without the houses being flooded away or the top lake being drained too much.
9- If time, have students react to different scenarios and varying water levels
    - Example: In spring there is a lot of melting snow and this particular spring has had a lot of rainfall.
        - Therefore the volunteer increases the flow of water from the hose into the top reservoir lake.
        - The students must manage the flow and lake levels to ensure that the boats are not carried away or left high and dry. The boat must be able to move freely between lakes.
    - Example: It has been a very hot (water evaporates from the lakes) and dry (no rainfall) July.
        - Volunteer fills the top reservoir basin with water but takes away the constant water flow from the hose.
        - The students must manage the flow and lake levels to ensure that the boats are not left high and dry and can still move freely from one lake to the other lake.
    - Example: A wet August, finally some rain!
        - The volunteer will add the constant water flow from the hose into the top reservoir lake.

The students must manage the flow and lake levels to ensure that the boat is not swept away and can still move freely and safely from one lake to the other lake.

Follow up by asking the students.

Why do we need dams?

If the water levels are low, what people might not be happy if the water levels are managed fairly?

If the water levels are high, what problems can that create for people?

How can flooding or a lack of water cause problems for the environment?

Aside from boating, why are rivers and water systems important for human use?

Do a quick review of the key messages and ask if there are any questions. If not, let the group move on to the next activity station.

Background Information

A watershed is an area of land including wetlands, streams, rivers and lakes, that drains to a common point on the landscape The largest watershed in the world is the Amazon Basin = 6,150,000 km^2.

There are 5 major watersheds in Canada: Arctic Ocean, Pacific Ocean, Atlantic Ocean, Hudson Bay, Gulf of Mexico. Within Canada there are internal watersheds or drainage areas. The Haliburton Highlands is mostly comprised of the Trent-Severn drainage area. The Trent River Watershed flows to Lake Ontario. The Trent River basin has approximately 218 Lakes in the Haliburton Highlands region, and Waterway dams directly control 37 of these lakes. The Trent River basin drains more than 12,000 km^2 of Central Ontario. The Severn River Watershed flows to Georgian Bay of Lake Huron. The Severn River basin drains an area of about 6,000 km^2.

A watershed divide is the point of highest elevation where water from either side flows in different directions. In the Haliburton Highlands area, this line passes between Kirkfield and the Balsam Lake area (see profile of the Trent-Severn Waterway and map). The Trent-Severn Waterway stretches out for 386 km through central Ontario. This waterway is used by thousands of

boaters, waterside residents and vacationers every year. By providing a constant supply of water from reservoir lakes, boats can continue to move back and forth across the Trent-Severn Waterway, which crosses the watershed divide between Kirkfield and Balsam Lake. The waterway also provides habitat for a large variety of fish and wildlife, water for power generation and general water supplies (I.e. Municipal water and agriculture). The Parks Service of Environment Canada manages the water levels and flow.

During the fall and winter: Increasing their outflows lowers the Haliburton and Kawartha Lake levels. This prepares them for spring snowmelt and decreases the threat of high water and ice damage.

In the spring: The combination of melting snow and rain causes high levels of water in rivers and lakes. Therefore the focus of management during this time is on controlling flooding and ensuring that water flows and levels are sufficient to protect fish spawning beds.

In the summer: Water management focuses on maintaining minimum water flow and proper levels in order to conserve water and its quality while ensuring safe passage of boats.

Clean Up procedures

- If using water barrel and not a hose, pour water from capture container back into barrel for re-use
- Place dams, houses and boats in proper container
- Remove excess water from model and pat dry
- Place all the containers, barrels and models together for the next group