

Grade 5

Water Inspectors

Environmental Education
Website: peelregion.ca/enviroed



Teacher Note:

In this lesson, students will learn about the importance of water conservation and how water and wastewater are treated in Peel

Handouts for this lesson

- All About Treatment
- Home Water Audit
- School Water Audit
 - Optional audits to complete with class, please note, the audits will need more than 1 period to complete



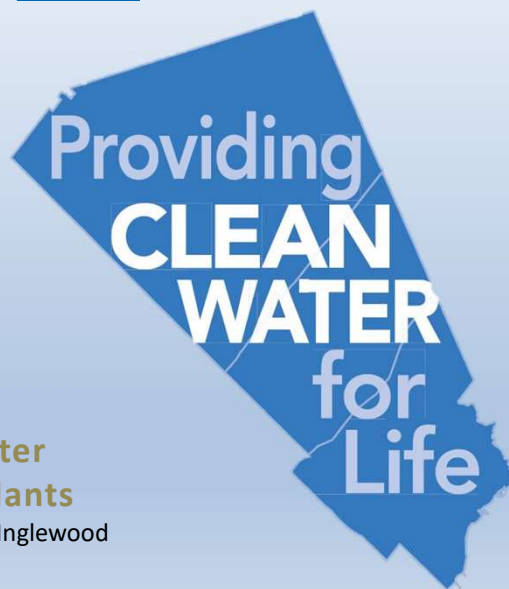
Town of Caledon
City of Brampton
City of Mississauga



1.51 million
residents



**3 wastewater
treatment plants**
GE Booth, Clarkson & Inglewood



**2 water treatment
plants**
Arthur P. Kennedy & Lorne Park



15 wells
Municipal

Teacher Note:

- **(Click-1)** Ask students – what city or town do they live in?
 - Let students know the city or town they mentioned is part of a larger area that is called the Region of Peel
 - **(Click-2)** The Region of Peel includes the Town of Caledon and 2 cities – City of Brampton and City of Mississauga
 - **(Click-3)** Peel has a population of 1.51 million people
- The Region of Peel provides services to residents. Can anyone share what services the Region of Peel may provide in our communities?
 - Recycling and Waste collection and disposal;
 - Maintenance of regional roads, including snowploughing in the winter and paving in the summer;
 - Operation of child care centres and homes for the aged
 - Ambulance services
 - Peel Regional Police services
 - **Peel Region also provides you with clean, safe drinking water and wastewater treatment**
- Region of Peel has
 - **(Click-4)** 2 water treatment plants in Mississauga,
 - **(Click-5)** 3 wastewater treatment plants, 2 for South Peel and 1 in Inglewood, and
 - **(Click-6)** 15 municipal wells that treat water that we use daily

- Most of these plants are located in Mississauga, close to Lake Ontario as it allows the Region to treat and clean water faster and more efficiently
- This short video coming up next, will look at how the Region of Peel invests in water. Listen for some interesting facts on water to share as a class after watching the video



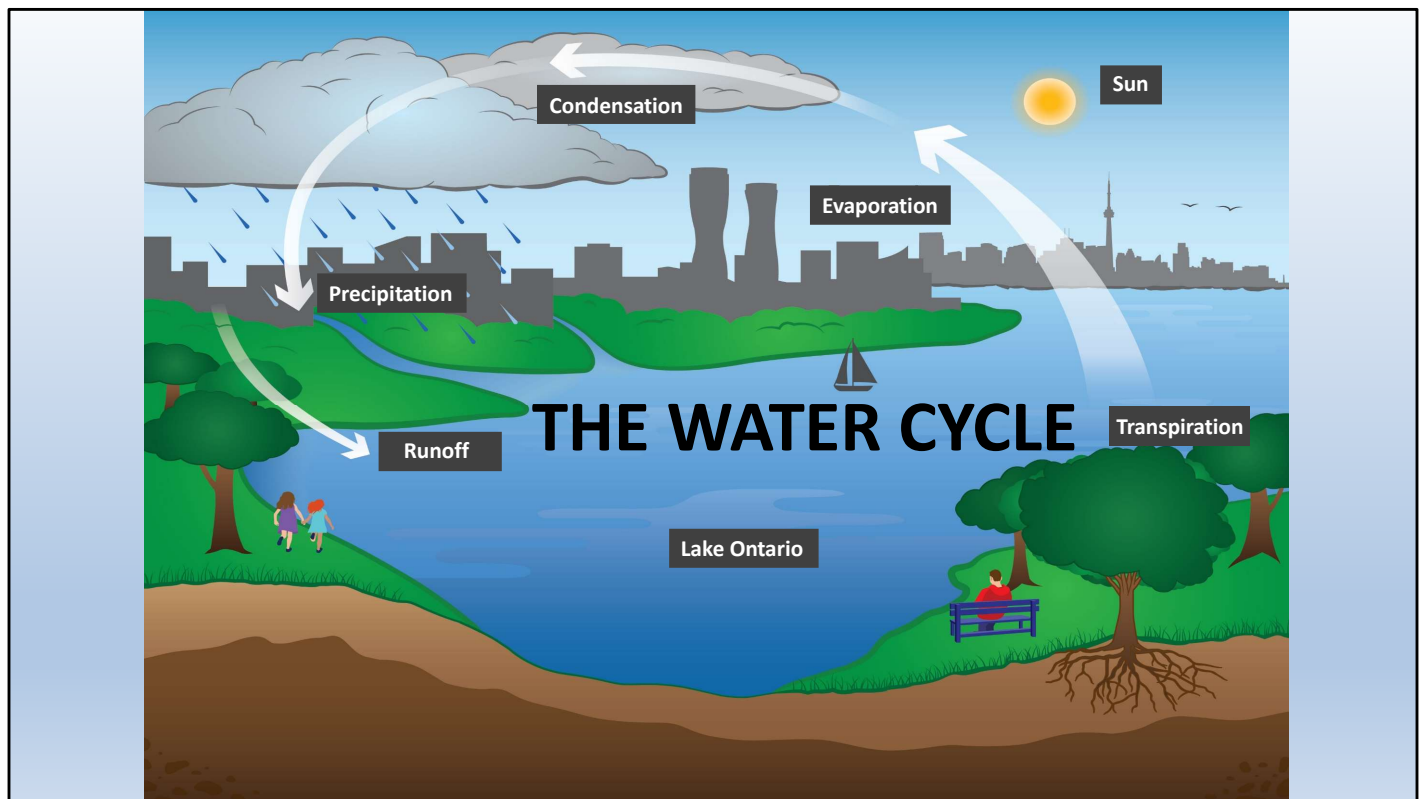
Investing in our Water

Teacher Note:

- Watch video: 'Investing in our Water'
- <https://www.youtube.com/watch?v=XMr0JqGOX0A>
- To play video
 - Press the Play button

Did you know?

- Did you know that the Region of Peel has over 200 staff who treat and maintain our water to make sure every time you turn on the tap, the water is fresh and healthy to drink?
- And every time you flush your toilets, or take a bath, staff also work to make sure that dirty water gets cleaned before putting it back to the lake
 - They work to make sure all our water gets treated for everyone, 1.51 million people living and working in Peel
 - Every day the Region of Peel treats 570 million litres of water
 - That's enough to fill 228 Olympic sized swimming pools

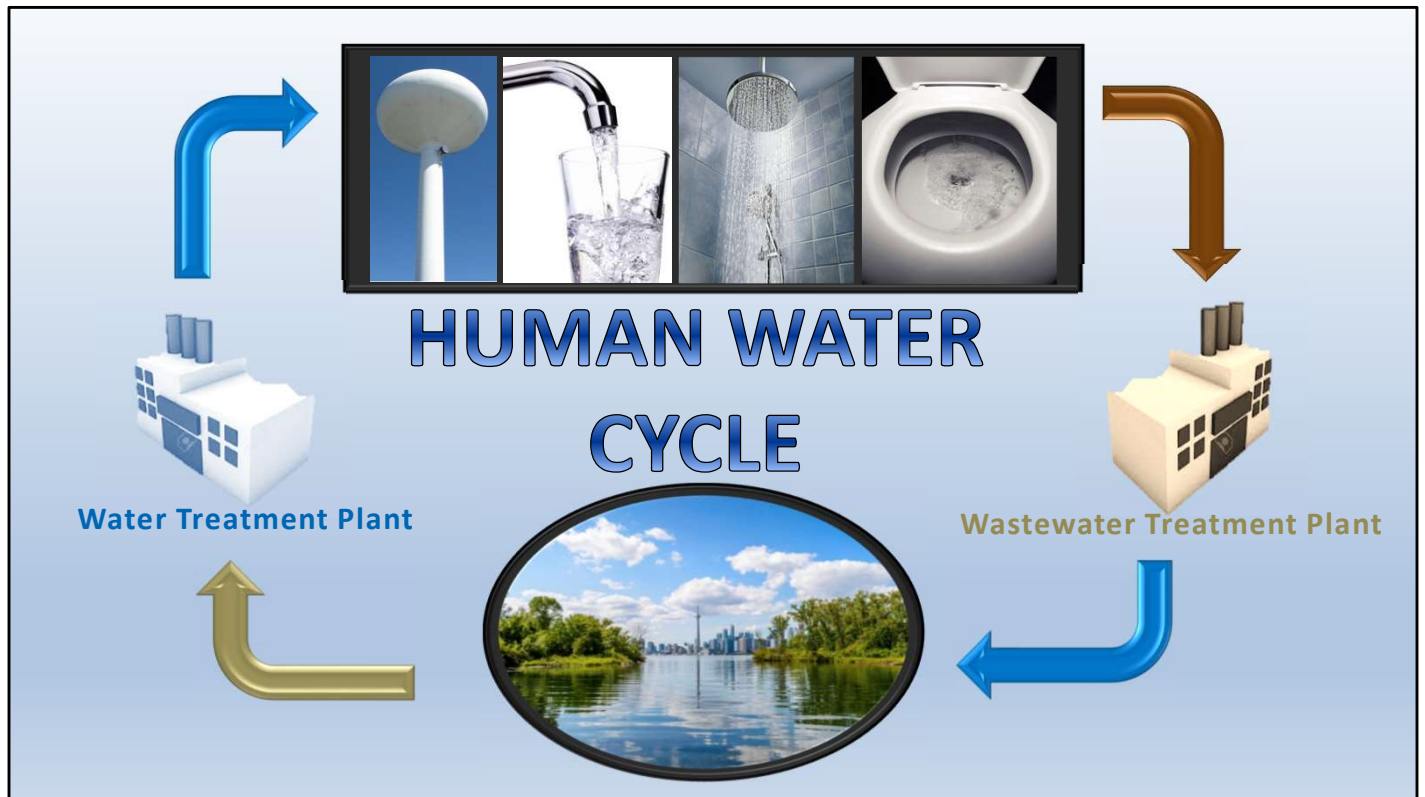


Teacher Note:

Review the water cycle with students

- Where do we in the Region of Peel get our water from?
 - Brampton, Mississauga and Bolton get water from the Lake. Other people who live in Caledon get water from wells, either on their own property, or municipal wells that are owned by the Region
 - Water from Lake Ontario is fresh, which means that the water is not salty like the water in oceans and seas
- The water cycle is a continuous circulation of water from rivers, lakes and oceans into the atmosphere onto the land and back
 - **(Click-1) Sun:** the source of energy that drives the whole cycle
 - **(Click-2) Lake Ontario:** this is our water source
 - **(Click-3) Transpiration** is the evaporation of water through pores from the leaves of plants
 - **(Click-4) Evaporation:** the sun heats up the water in lakes, rivers and oceans and turns it onto vapour
 - **(Click-5) Condensation:** water vapour in the air gets cold and changes back into liquid form
 - **(Click-6) Precipitation:** the clouds get heavy and water falls back to the earth in the form of rain, hail, sleet or snow
 - **(Click-7) Runoff:** moves water across land and makes its way to the nearest body of water such as a lake

- This process is called the natural water cycle. But humans also change the path of water



Teacher Note:

- **(Click-1)** Has anyone ever heard about the human water cycle? What could this be all about?
 - Have students share their thoughts
- What happens when we use water to brush our teeth, shower, go the bathroom – where does it go?
- **(Click-2)** Do we send it directly to the Lake?
 - NO
- **Ask:** What happens to the water we use at schools and at homes? Do you think it goes directly back to the Lake? **Click-4+5)**
 - **Answer:** NO! Why not?
 - **(Click-6)** Have students share their responses (i.e. water is dirty, not treated, has pet waste, trash in the water, bacteria and germs, toilet paper in it, wouldn't be good for the fish, etc.

The water in Lake Ontario might have bacteria, viruses, and germs in it. All those things could make us very sick if not treated.

(Click-8-9) That is why we have to send the water to get treated so it can be cleaned and made safe for us to drink.
- The next few slides will cover how we treat all that dirty water at our wastewater plant

Dew's Water Adventure

<https://peelregion.vids.io/videos/ac9cd9b41d19e1c225/dews-water-adventure>



Teacher Note:

Animated slides that will cover and explain water treatment

- ease click on the link on the slide to get to the video
 - <https://peelregion.vids.io/videos/ac9cd9b41d19e1c225/dews-water-adventure>

Discussion Questions:

- What is the purpose of a water treatment plant?
 - Before learning about water treatment, think about how we get water to our homes and schools
 - Have students share their thoughts on what they know, or heard about water treatment

Worksheet: All About Treatment

- Have students complete the worksheet while listening to the animated slides about water treatment



Peel's tap water from the Arthur P. Kennedy water treatment plant

Teacher Note:

- Discussion Questions:
 - Before learning about water treatment, think about how we get our water to our homes and schools
 - Write down or discuss your ideas before watching the video
- Watch video: 'Peel's tap water from the Arthur P. Kennedy water treatment plant'
 - <https://www.youtube.com/watch?v=J9wY-qMrqZg>
 - To play video, click the Play button

Did you know?

- That Arthur P. Kennedy Plant can treat up to 1.2 billion litres per day
- Every day the Region of Peel treats 570 million litres per day
- In the year, 2041 another 21 years from now, it is estimated that almost 2 million people will live in Peel. That means we will have to continue treating water for even more people in Peel, a task that the Region takes great pride in doing.

Discussion Questions:

- Do you think the Region of Peel can treat water for 2 million people? Explain your reasoning?
 - **Answer:** Yes, the Region of Peel can treat up to 1.2 billion litres per day. There's always room for more capacity to treat water per day in the Region.

Forecasting for future population growth is something that the Region of Peel plans for

- Region of Peel is committed to providing safe and reliable drinking water to everyone

Dew's Wastewater Adventure

[https://peelregion.vids.io/
videos/069cd6b81717e3c5
8f/dews-wastewater-
adventure](https://peelregion.vids.io/videos/069cd6b81717e3c58f/dews-wastewater-adventure)



Teacher Note:

Animated slides that will cover and explain wastewater treatment

- Please click on the link on the slide to get to the video
 - <https://peelregion.vids.io/videos/069cd6b81717e3c58f/dews-wastewater-adventure>

Discussion Questions:

- Why is it important that we treat the water we use?
 - Think of all the animal life and plants that live or are near the Lake.
 - If wastewater that is used never got treated, would you go for a swim, enjoy a boat ride, go fishing in water that is full of stuff we poured or flushed down from our home?

Worksheet: All About Treatment

- Have students complete the worksheet while listening to the animated slides about wastewater treatment
- Take a few minutes to go over and cover the worksheet as a class



How the Region of Peel cleans your wastewater

Teacher Note:

- Watch the video: 'How the Region of Peel cleans your wastewater'
 - <https://www.youtube.com/watch?v=4uxYZdnxuz8&feature=youtu.be>
 - To play video, click the Play button

Did you know?

- The Region of Peel treats 518 million litres of wastewater per day
 - That's enough water to fill 200 Olympic sized swimming pools



Teacher Note:

- **Ask:** does anyone know what these are? Where can they be found?
 - **Answer:** on the streets, school property, parking lot
- **Ask:** what is the difference between these 2 sewers?
 - **(CLICK-1) Answer: Sanitary Sewers:** access point for trained professionals to go down to access the pipes. These trained professionals can open these and if you were there when they opened it, all you would see would be pipes. If there is a blockage or a break in the pipes, they might open this up to fix it
 - **(CLICK-2) Storm Sewers:** used for rain/snow collection so the streets don't flood
- **Ask:** where do you think the water goes from the storm sewer? Does the water get treated?
 - **Answer:** No, the water goes untreated directly to a stream, creek and eventually to Lake Ontario
- **Ask:** what do you think can be put down the storm sewer?
 - Discuss the effects of the biodiversity of the Lake. (pollution, garbage, chemicals, soaps all going to the Lake without getting treated), what would the water quality be like?

- It is against the law to put anything down a storm sewer other than rainwater or snow, because it can be harmful to the aquatic life in the Lake. Therefore, it is important to not pour any motor oil, paint, or any other fluids that could potentially harm the aquatic life and pollute the water we depend on for so many things
- We need to protect the water we have, as you will notice in the last exercise of this lesson how much water we actually use



Water Audit

Reading your meter

Teacher Note:

- Watch this quick video on Reading your meter
- Optional for students to complete a home water audit or a school water audit
 - Refer to 'Home Water Audit' worksheet or
 - Refer to 'School Water Audit' worksheet
- Students will track how much water their entire family uses for 1 week or
- Students will track how much water their entire school uses
 - If students complete the 'Home Water Audit' have them share their results with the class
 - Have them calculate the averages of similar family sizes
 - If students complete the 'School Water Audit' have them share the results with the entire school community (school announcements, or school newsletter)



**What have you learned
today about water?**

Remember:

**Everyone plays a part in
protecting and conserving our
water!**

Teacher Note:

- For more information on water education, please visit our new website: