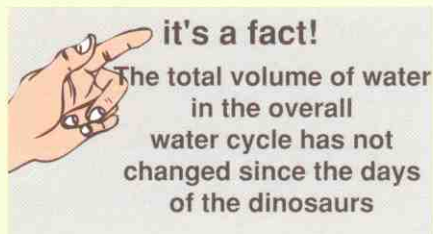
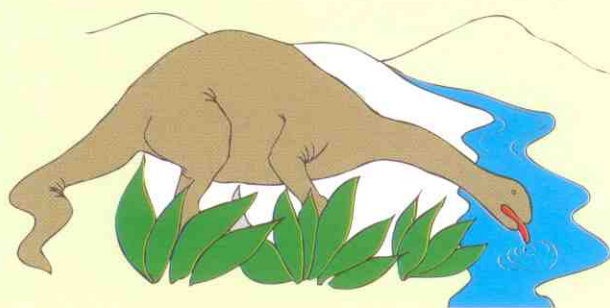


## YESTERDAY'S WATER IS TODAY'S WATER IS TOMORROW'S WATER

Nothing can live without water! But it cannot be made, it can only be borrowed from nature. Once the plug is pulled or the toilet flushed, all the used water will eventually find its way back into the rivers and oceans where it once again joins the natural water cycle.



Nature has a number of ways of cleaning water. However, the **sewage** from houses, schools, office buildings, farms and factories contains all types of chemicals and materials that are not naturally found in our rivers and oceans. Some of these chemicals are poisonous and can be very dangerous, even in very small amounts. Other wastes such as human



faeces are produced in such great amounts that natural systems simply cannot cope with breaking them down. If we, our great-grandchildren and the natural environment are to stay healthy, we need to work with nature by 'cleaning up' or treating our sewage before it is put back into the rivers and oceans.



In crowded parts of the world, the water which leaves one town or city will be used again by another, further down the river. This is one very good reason why we should use water carefully and not pollute it. **THE WATER WE POLLUTE TODAY MAY BE THE WATER WE HAVE TO DRINK TOMORROW!**



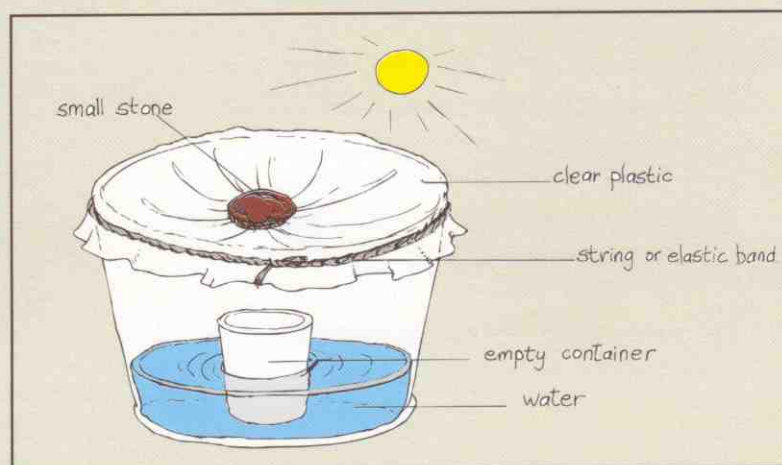
## WATER HAS NO BEGINNING AND NO END



- ★ Plan and present a participative lesson on the water cycle. Support your discussion by drawing a picture of the cycle on the board, or by using a poster. The sketch opposite may help you with your drawing. A poster on the cycle can be purchased from Umgeni Water (See useful addresses in the beige Support Sheets).

### ★ MAKE YOUR OWN WATER CYCLE:

- Set up the opposite demonstration and have the pupils draw it into their workbooks.
- Learners need to record the date, season, weather, time of day and length of time over which the demonstration is monitored.
- In point form, have the learners write a description of what they see happening to the water.
- Ask learners to provide reasons for what happens to the water during the demonstration.
- Repeat the demonstration under different weather conditions, and / or different times of the day. Learners should compare results and explain any differences.







## CYCLES WITHIN THE CYCLE

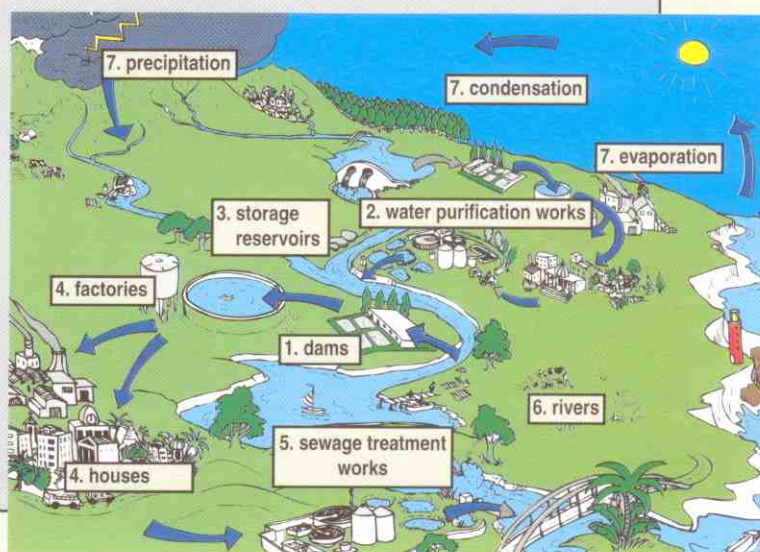
People need water for many purposes, including living, household use, recreation and industry. As water is a limited resource that has to be used over and over again, century after century, people have created their own water cycles within nature's great water cycle. By doing this we can ensure that everyone enjoys the benefits of water and a healthy, natural environment now and in the future.

- Photocopy and hand out to each learner a copy of the 'Man-Made Water Cycle'. Ask learners to fill in the wording.

- If necessary, the following information can be used to lead learners through the exercise:

1. Some rivers flow into dams (constructed by people) before eventually flowing out into the sea.
2. Water is drawn off a dam and piped to a waterworks (constructed by people) in a particular area. Here the raw water goes through a purification process which involves the uses of certain chemicals. This includes the use of chlorine which kills disease-causing germs in the cleaning process.
3. After purification, the water is stored in reservoirs (constructed by people).
4. From here, water is piped to our homes, factories and other places where water is used. The water becomes dirty after use.
5. All the water that flows down the drains, for example bath water, washing and cooking water and water flushed down the toilet, is piped to a **sewage** treatment works where it is 'cleaned up' to certain standards.

6. After treatment, the **sewage effluent** is once again released into the river course to eventually flow into the next dam from which the cycle is repeated.
7. Water from the rivers, dams and sea also evaporates and is present as water vapour in the atmosphere. The water vapour in the atmosphere condenses to form clouds. When the water vapour in the clouds becomes cold and gets heavy it falls back to earth as rain, hail or snow.





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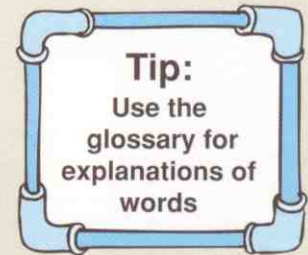




## WETLANDS - NATURE'S WATER TREATMENT WORKS

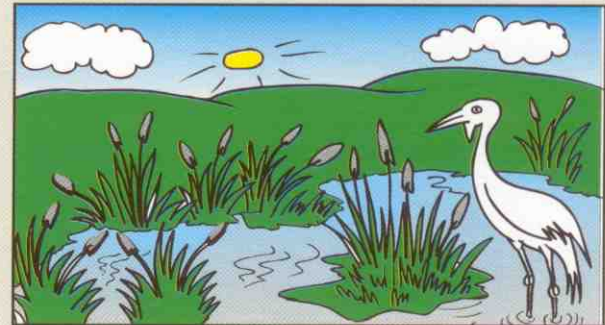
Wetlands, such as swamps, mangroves and vleis, are very important places. One of their most important roles is to clean water. They are very good natural filters that can trap:

- **sediments**
- **nutrients** (including nitrogen and phosphorus)
- **pathogenic bacteria** (disease-causing germs)
- some **heavy metals** (including mercury and lead)
- some **pesticides**



The water leaving the wetland is cleaner than the water entering it!

- Plan for the learners to do a project on how wetlands 'clean' the water. They would need to visit the local library. Should your library not be well equipped, you could use the Enviro-Fact Sheet called "Wetlands", which is included in the file pocket at the back of this file. You could also order the low cost booklets which are suggested in the 'Bright Idea' box.



- Plan an excursion to a wetland close to your school, or to a mangrove swamp. To visit the mangroves you will need to phone either the Natal Parks Board (ph: 251271) or Portnet (ph: 3618751).
- Explore the concepts of **renewable** and **non-renewable resources** with the class. Ask learners to categorise water as a renewable resource and to explain the role that wetlands play in making water renewable. Their explanations can be written up as posters.



The 'Hands-on' booklets, "Vlei and Wetlands" and "East Coast Estuaries and Mangroves" will be of use for your preparations. Both are obtainable from Umgeni Water or Share-Net.