



Teacher's Notes - A CATCHMENT STORY

The exercise is designed to increase knowledge and awareness of catchment use and water quality issues. It has been used successfully with all age groups and in a variety of situations

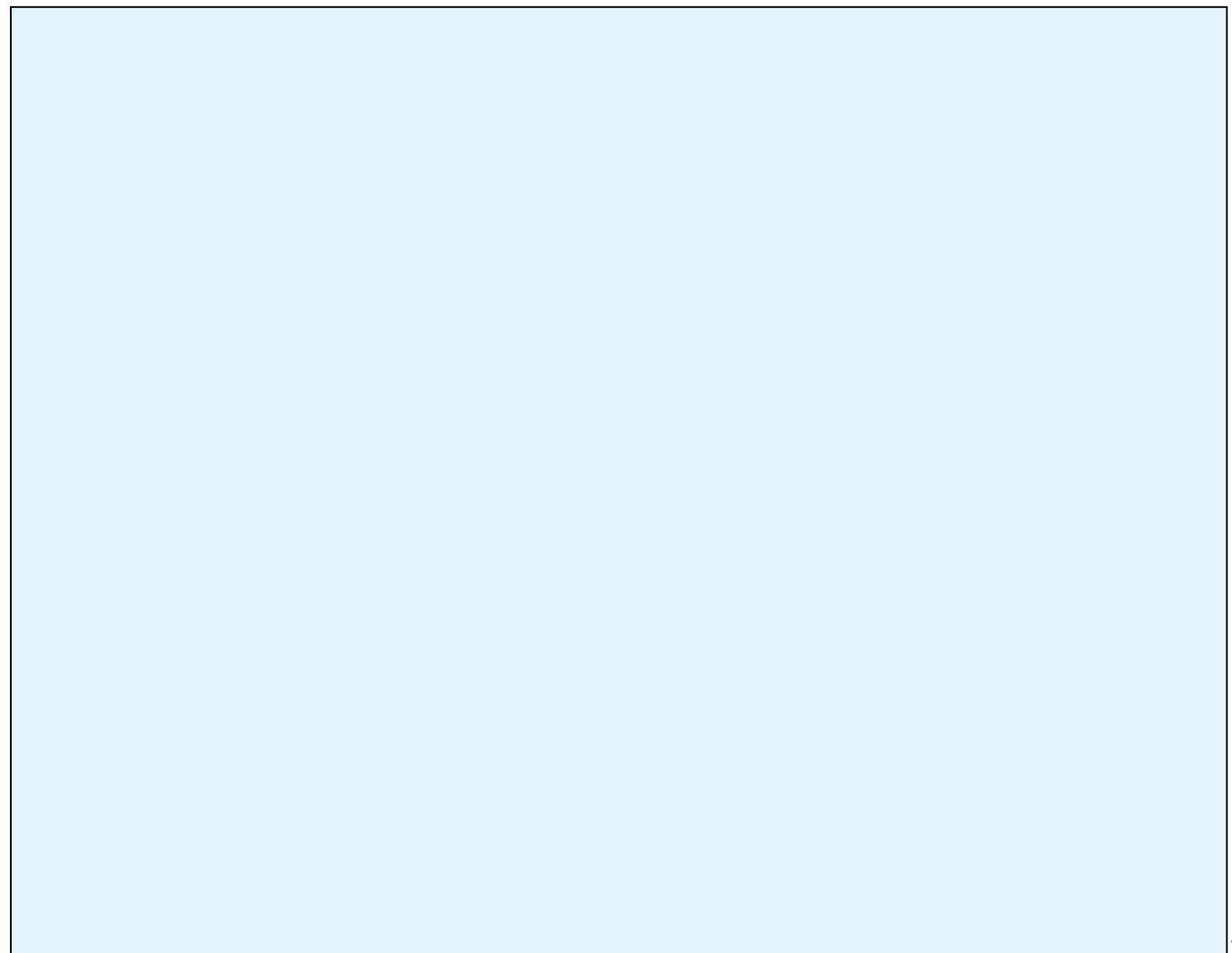
Materials.

An aquarium (about 2 or 3 foot) or similar container. 24 to 30 small plastic sauce Tubs say 70 mm diam 60 mm depth or similar. Various materials to represent pollution as outlined in the list below. Two large glasses. Paper towels, scoops, strainers, milk cartons with soil to dispose of polluted water and clean up.

Preparation.

1. Label each of the plastic tubs with a character's name from the story. Duplicate containers can be prepared to cater for all of the members in the group if necessary.
2. Place or pour the appropriate materials in each tub in accordance with the list.
3. Distribute the labelled tubs to people in the demonstration. Request that they be careful and keep the container closed until they are told to open it.
4. Fill the aquarium with clear, clean water and place in a prominent, visible and accessible position.
5. Introduce the Catchment Story.
6. Fill one large glass with water out of the aquarium, demonstrate its cleanliness and properties by pouring from one glass to another. Leave the glass aside for comparison at the end of the story.

Adaptated from a presentation by Jane Tinnion and Colin Mondy, Streamwatch Coordinators.



Exercise 24: A CATCHMENT STORY - Introduction

Today I am going to tell you a little story about a very important part of our environment – a river, our river. The story talks about how each of us and everyone else along the river affects the river's health.

I have given many of you a small container with a name on it. When I mention that name in the story I want you to come up and empty what is in the container into the river catchment (the aquarium).

Before I start the story about our river and its catchment, let us have a think about what a catchment is.

(Ask for suggestions and then demonstrate by getting everyone to cup hands and pretend that they are standing in the rain. What would happen? This is a small example of a catchment and the Earth's surface is divided into lots of bowls just like that, with a river in the bottom of each bowl.)

A catchment includes a river and all of the creeks, streams and other smaller rivers which run into it. But the catchment also includes the land around these waterways. This means that although you and I may live 20 minutes or even more from the river, we are still part of the catchment. Even from this distance we can have an effect on the quality of the water in the river.

Can anyone tell me some ways in which we are linked to the river from our houses and schools?

- **Stormwater Drains.** Do you agree that stormwater drains are linked directly to our waterways? There are usually no filters in the stormwater drains and they do not go through the sewerage plant. This means that whatever we drop into the stormwater drain, whether it is litter, paint or detergent, it goes straight to our local waterway.
- **Sewerage systems.** Everything we put down our toilet or sink goes to sewerage system, where most of it can be treated. Some, however, such as fat, detergents, chemicals, is difficult to remove from the water before it is sent into our waterways and ocean. This is bad news for our fish and water plants.
- **Streets.** If we leave litter or oil from the family car on the road or in gutters it can either be washed into the stormwater drain and then into the river, or it can be washed by rain down the street into the river.

So these are just three ways in which our houses and schools are linked to the river. Think about farms, parks and boats on the river.

The Catchment Story

Now let us begin our story. If you have a container with a name on it, remember that when you hear your name, come out the front here and empty your container into the river.

Our river begins way up in the mountains and flows down and around hills and through farms, small urban areas and the city. Everybody has an affect on the river all the way along. We will follow some clean droplets which just fell from the sky and entered our river at the very top in the mountains all the way along the river until it reaches the sea. As the water travels down the mountain it arrives at a valley where **1. Elly Trick** runs a power station. The power station produces the electricity for the region and burns large quantities of coal and can release pollutant gases into the air. These pollutants combine with moisture in the atmosphere to produce acids. Rainfall carries these acids back to the earth's surface and can pollute the very source of the river.

As the water goes down the slopes it gathers speed and enters into farming country. Within the farmer community live Luis Plonk, Percy Trotter, Fossy Fate, Lilly Latte, Lotta Grass, Linda Leghorn and Kerry Slacker. As the water passes **2. Luis Plonk's** vineyard insecticide spray washes into the water. Passing **3. Percy Trotter's** piggery some of the pigs' manure is washed into a drainage pipe and then into the river. By **4. Fossy Fate's** orchard some fertiliser washes in as she waters her orange trees after fertilising. As the water passes **5. Lilly Latte's** Dairy Farm, soil is pushed into the river by cows walking on the riverbank. Trees have been removed and they no longer hold the soil on the riverbank. From **6. Lotta Grass's** Turf farm comes salt. The constant irrigation has caused the water table to rise beneath the soil and as it has risen it has brought up salt. Salt harms the freshwater animals living in the river and creates a problem for people who want to use the water downstream. As the river passes **7. Slim Dusty's** Quarry it gets a load of fine mud that makes it go all cloudy. Water plants are unable to grow because the dirt has reduced the amount of light that gets through.

Just around the corner at **8. Linda Leghorn's** Poultry Farm a load of chicken manure arrives. This is a good fertilizer but in the river it can cause the growth of toxic blue green algae.

Slowly the river starts to wind its way through the outskirts of a major town. Out here there are a number of hobby farms. People like **9. Kerry Slacker** comes out to the country on the weekend to get away from the hustle and bustle of the city. Their small houses, on these farms, are not connected to the sewerage system like they are in the city, they have septic tanks. Sometimes when they stay for longer than expected, or bring friends along, the septic tank overflows and raw or untreated sewage enters the water.

Near the railway the river passes **10. Jim Pitt's** coal washing plant. Here the river takes on a black look and visibility is further reduced. Downstream all this coal dust will settle on the bottom, covering the rocks and logs that provide habitat for the animals of the river.

Look how our once clean water now looks and smells? But the journey isn't over yet. Coming up around the bend there are people using the river for recreation. **11. Tangle Bags** is fishing off the riverbank. Unfortunately he leaves his tangled line and plastic bait bags behind where it may get wrapped around a fish or platypus. Also on the river there are some people water-skiing. **12. Lorraine Leak** has not been maintaining her ski boat and, as a result, some oil is leaking from the boat directly into the river.

13. Barbie Que is having a picnic with her family in the park around the next bend. They are having a lovely time, playing cricket, relaxing and having a chat. Then suddenly, a big gust of wind comes along and blows their litter into the water. There are plastic bags which fish could swim into, plastic rings from the milk containers which birds can get stuck around their necks and bottles which fish and other small creatures like frogs may swim into and may not be able to get out of. Not only is it harmful to the animals, but also the water is starting to look quite disgusting.

Teacher's Notes: Conclusion of A Catchment Story



Can anyone tell me some ways by which we might be able to reduce our impact on our river?

Here are some suggestions .

- compost garden and kitchen waste.
- if you have to use chemicals, choose the less toxic ones and dispose of them in the right way.
- don't put rubbish, oils or poisons in the toilet or down the sink – they can clog up the sewage system.
- wash dishes in the sink rather than in the dishwasher, this will reduce the amount of water and detergent being sent to the sewer and then the river.
- clean up your dog's faeces when you take it for a walk.
- don't put waste down the stormwater drain - litter, grass clippings, paint, oil, cigarette butts etc
- plant grasses, reeds and trees along the river bank to reduce the amount of soil being washed into the river.
- pick up litter when we see it so that it doesn't go down the stormwater drain and into the river.
- Try alternatives to pesticides. Most insects are helpful to the plants.
- Let people know that cigarette butts are poisonous. Washed into stormwater drains they may harm life in the waterways.

There are so many things we can do to reduce the pollution in the river and most of them are so easy.

I'd like everybody to choose one thing they can do this week to reduce the pollution in the river.

This week my goal will be to use less toxic chemicals to clean the bathroom and to dispose of it in the garden, not down the sink. Would anyone else like to share their goal for the week?

The Finale.

Even if you don't mention it, someone is sure to ask "What are you going to do with the water now???" The answer is "behave like a sewerage treatment plant and do the best that I can to clean and dispose of the water safely." There will be no shortage of volunteers for this gruesome job. Strain and filter the solids. Remove the oils by decanting and then absorbing with paper towels or milk carton filled with sawdust. Dispose of the water to sewer or to a safe place in order to minimise harm to the environment.

Further down the river there is a boat taking tourists on a tour of the river. Beer is provided and people like **14. Gary Guzzler** aren't using the bins to dispose of their bottles, and are just throwing them overboard. They go for a swim unaware that **15. Bobo Bilgewater's** cruiser doesn't have a storage tank for toilet waste and so it gets pumped straight into the river.

The river now begins to wind through the suburban part of town where **16. Quick Harry** is building new homes. The concrete trucks wash out their alkaline loads into the stormwater and it runs down into the river. **17. Happy Couple** are paying off their homes in a new subdivision. Many of the trees have been removed and when it rains the top layer of soil is eroded and adds to silting up the river. This makes the water look dirty and cloudy and can harm plant and animal life in the river. They are also painting the inside of their new house and washing the brushes out in the outside tap. This also ends up in the stormwater.

Most houses like **18. Jo Bindy's** in the developed parts of the town have lawns that they spray to keep out weeds. When she has completed her spraying she turns on the sprinkler to water the plants and the pesticide washes off into the stormwater drains and then enters the river. Jo's neighbour, **19. Victor**, has just finished mowing his lawn for the third time this month and rather than putting the grass clippings on the garden for mulch, he puts them down the stormwater drain where they also washed into the river.

Also in the area lives **20. Leda Pooch** Leda, like a good dog owner should, takes her dog for a walk every day. The dog does his business during the walk. This untreated sewage is washed into the stormwater drain when it rains and into the river.

People like **21. Cam Shaft** are now driving home from work. The roads are choked with traffic. Oil drips out of Cam's poorly maintained car and into the stormwater drains. Sometimes he brakes suddenly and leaves pieces of rubber from the tyres on the road which are then washed by rain down the stormwater drain and into the river.

Our poor water is really staring to look very sick now!!
But it hasn't reached the mouth of the river yet; it is still in our catchment.

Further down the river there is some industry. **22. Max Profit** is one of the factory owners who uses many dangerous chemicals. Max has to pay to get the waste from the factory processes removed but to save money he sometimes releases it into the river. He knows this is illegal but he also knows that the risk of getting caught is low and the fines are fairly small. **23. Ruby Wax** washes Max's luxury cars out on the street. The water, dirt, oil and detergent wash into a gutter which flows to the river. In the detergent there are phosphates which can cause an algal bloom in the river. When the algae dies and begins to rot it uses up oxygen which animals in the water rely on and they may suffocate as a result.

Redevelopment is occurring on the opposite side of the river. **24. Dan the Demolisher** found a few drums of something that he wasn't sure of. He couldn't sell it and he would have to pay to take it to landfill or a hazardous waste dump so he emptied it into the river. The waste was chemicals from an old tannery. These chemicals are very poisonous to the animals and plants living in the river. **25. Dollar Constructions** are the developers of the site and they are building wharves. As they dig up the mud it reacts with the air and becomes very acidic. The acid washes into the river and kills the fish.

The mouth of the river is just ahead. There is just one more pollutant to enter our now very dirty and unhealthy water - sewage. The sewage from **25. Everyone's** homes enters the river just near the mouth. The sewage is treated but things like our detergents, paints, chemicals and cooking oils are not removed in the sewerage treatment process. This is all added to our water before it reaches the sea.

Entering the sea, our once clean water is full of oils, chemicals, litter and sewage - it looks extremely unhealthy.

What do think of the water now? (Take a glass full and pretend to drink. Compare it to the original water in the glass.) I think it is a disgrace. What do think? Look at what we have done to the water in our river. Look at how dirty it looks and it doesn't smell too good either. Could you imagine being a fish and living in that water or a plant trying to grow. (If possible give people a closer look.)

It is terrible but this is what happens to the water everyday in our river.

