Activity 3.1 - A Day in the Life of Urban Creek

Introduction
This activity graphically introduces students to various human behaviours that can contribute to stormwater pollution in an urban setting, as a creek makes its journey from the headwaters of the catchment to the sea. You may like to substitute the name of your local creek for ‘Urban Creek’.

Time needed: 20 minutes

Stage 5A3 Geography Outcomes
5.1 Identifies, gathers and evaluates geographical information
5.2 Analyses, synthesises and organises geographical information
5.4 Demonstrates a sense of place about Australian environments
5.5 Explains the geographical processes that form/transform Australian environments

Additional Curriculum Links
Stage 5A2 Changing Australian Environments (5.1, 5.2, 5.4, 5.5)

Keywords
• catchment
• gradient
• vegetation
• erosion
• residential
• industrial
• commercial
• sewer
• sewerage
• stormwater

Materials
• large transparent container (aquarium or clear plastic box)
• 30 small containers
• various materials to represent pollution as outlined in the list below
• two large glasses
• paper towels, filters, scoops, strainers, and milk cartons with soil to ensure correct disposal of polluted water and clean up.

Process
1. Label each of the small containers 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 into each container in accordance with the list in Table 3.1.
3. Distribute the labelled containers to students. Draw their attention to the character they represent and ask them to listen carefully for their part in the story.
4. Fill the aquarium with clear, clean water and place it 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.

Table 3.1 – The People in the Catchment

<table>
<thead>
<tr>
<th>Tub</th>
<th>Name</th>
<th>Position</th>
<th>Substance</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Veeny Spark</td>
<td>Electrician</td>
<td>Vinegar (acid rain)</td>
<td>½ Tub</td>
</tr>
<tr>
<td>2</td>
<td>Connie Crumble</td>
<td>Concreter</td>
<td>Thick muddy water</td>
<td>½ Tub</td>
</tr>
<tr>
<td>3</td>
<td>Scot Level</td>
<td>Bricklayer</td>
<td>Thick muddy water with red paint</td>
<td>½ Tub</td>
</tr>
<tr>
<td>4</td>
<td>Gerry Grow</td>
<td>Landscaper</td>
<td>Baking powder</td>
<td>½ teaspoon</td>
</tr>
<tr>
<td>5</td>
<td>Dan Trestle</td>
<td>Painter</td>
<td>Water coloured with blue paint</td>
<td>½ Tub</td>
</tr>
<tr>
<td>6</td>
<td>Bob Builditup</td>
<td>Homeowner</td>
<td>Soil and leaves</td>
<td>1 cup</td>
</tr>
<tr>
<td>7</td>
<td>Col Construct</td>
<td>Homeowner</td>
<td>Soil</td>
<td>2 cups</td>
</tr>
<tr>
<td>8</td>
<td>Gill Gardener</td>
<td>Landscaper</td>
<td>Baking soda (pesticide)</td>
<td>½ cup</td>
</tr>
<tr>
<td>9</td>
<td>Bill Couch</td>
<td>Turfer</td>
<td>Grass clippings</td>
<td>½ Tub</td>
</tr>
<tr>
<td>10</td>
<td>Nev Newly Wed</td>
<td>Farm Owner</td>
<td>Soil</td>
<td>½ Tub</td>
</tr>
<tr>
<td>11</td>
<td>Gerald Greedy</td>
<td>Industry</td>
<td>Detergent</td>
<td>1 drop in full Tub</td>
</tr>
<tr>
<td>12</td>
<td>Reg Repair</td>
<td>Car repairs</td>
<td>Used oil</td>
<td>½ Tub</td>
</tr>
</tbody>
</table>
### Catchment Story

I am going to tell you a story about a very important part of our environment – it is about Urban Creek, but it could just as easily be your local creek. The story talks about how each of us affects the creek’s health.

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

Stormwater drains link to the local creeks. There are usually no filters in the stormwater drains and they do not go through the sewerage treatment plant. This means that whatever ends up on the ground can get washed into the stormwater drain, whether it be leaves, dirt, litter, paint or detergent, it goes straight to our local waterway. This pollution can have a serious impact on the plants and animals that live in the water and result in the creek having a degraded appearance.

Many of you have been given a cup with a name on it. When I mention that name in the story I would like you to come up and empty what is in the container into the creek catchment (the aquarium).

Our creek begins way up in the hills and flows down and around through farms, nurseries, industrial and residential areas. Everyone has an effect on the creek all the way along.

We will follow some rain as it washes over the catchment and into the creek. As the water travels down the mountain it arrives at a valley where **Veeny Spark** (1) is connecting electricity to a new house. The power station that produces the electricity for the region, burns large amounts 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 river.

As the water travels down the catchment, it gathers speed and enters into a new urban development. As the water passes through, **Connie Crumble** (2) is doing some concreting and some of her unmixed concrete washes into the water.

The water, still flowing travels by **Scot Level** (3) while he is cutting bricks, and he leaves a trail of red brick dust which is washed into a drainage pipe and then into the creek. **Gerry Grow** (4) is also working in the area laying some turf. He waters the turf after applying fertiliser to it. After finishing painting the exterior of a house **Dan Trestle** (5) washes his paint brushes at a nearby tap letting the paint wash into the drain and then into the creek.

The creek now begins to wind through the suburban part of town where **Bob Builditup** (6) and **Col the Constructor** (7) are each finishing off their owner builder homes in a new subdivision. Many of the trees and shrubs have been removed and when it rains the top layer of soil is eroded and adds to the silting up of the creek. This makes the water dirty and cloudy and can harm plant and animal life in the creek. Most houses like **Gill Gardener’s** (8) in the developed parts of the town have a garden. To keep the insects away, Gill uses a range of pesticides. When she has completed her spraying she turns on the sprinkler to water the plants and the pesticides wash off into the stormwater drains and into the creek. Gill’s neighbour, **Bill Couch** (9) 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 are washed into
the creek.
As the water passes the property of Nev Newly
Wed (10), soil is washed from his front yard
and the water becomes even more muddy. The
trees and other plants have been removed by
the builders and there is nothing to trap the soil
before it goes into the creek.

Further down the creek there is an industrial
area. Gerald Green (11) is one of the factory
owners. He likes to use detergents to keep his
equipment clean. Gerald sometimes hoes out
his factory, allowing the water and detergent to
wash into a gutter, which flows to the creek. In
the detergent there are phosphates which can
cause algal blooms. Some algae are poisonous
to humans and other animals. 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.

Just down the road from Gerald is Reg Car
Repairs (12). Reg is doing a grease and oil
change when he knocks over the drum of waste
oil, which then flows down to the nearby drain.

Look how our once clean water now looks and
smells.

But the journey isn’t over yet. Coming up
around the bend the creek empties into Urban
Lagoon. Cameron Caught-a-Few (13) is fishing for Flathead off the lagoon bank.
Unfortunately he leaves some fishing line
behind, where it may get wrapped around a
possum or pelican. Also on the lagoon
Lorraine Leak-a-Little (14) is out water
skiing. Lorraine has not been maintaining her
ski boat and, as a result, some oil is leaking
from the boat directly into the lagoon.

Barbie Que (15) is having a picnic with her
family in the reserve at one end of the lagoon.
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, a
plastic ring from the milk container 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 this harmful to the animals, but
what do you think about the appearance of the
water?

Redevelopment is occurring on the opposite
side of the creek. Dave the Demolisher (16)
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 to a hazardous
waste dump so he emptied it into the creek.
The waste was chemicals from an old tannery.

Further down the catchment there is a boat out
for the day on the lagoon. They have a few
bottles of beer on board. Gary Guzzler (17)
throws his bottle into the water when he is
finished. He does the same with the cigarettes
he is smoking.

Also in the area lives Danielle Scruff (18).
Danielle takes her dog for a walk every day.
The dog however often does his poo during the
walk. This poo is washed into the stormwater
drain when it rains and into the lagoon.

At the far edge of the lagoon, children from
Urban Primary School (19) are returning
home after their sports carnival. The
playground is covered with litter and as they
walk down the street Sam Slob (20) and his
friends drop their lolly and chip wrappers in
the gutter.

Ed Tread (21) is driving home from work.
The roads are choked with traffic. Oil drips out
of Ed’s car and into the stormwater drains and
sometimes he has to brake suddenly and leave
rubber from his tyres on the road, which is then
washed by rain down the stormwater drain and
into the creek. As he stops at the traffic lights,
Ed (22) flicks his cigarette butt out the car
window. He does this every afternoon.

Our poor water is really starting to look very
sick and the mouth of the lagoon is just ahead.
There is one more pollutant that has been
entering our now very dirty and unhealthy
water - sewage. At Betsy Busy’s (23) house,
the roots of her rubber tree plants have found
there way into her sewerage pipes, which have
become badly cracked and are leaking. It is
raining very heavily now and there is water
leaking into the sewerage pipes. The pipes get
overfull and start to back up causing raw
sewage to flow out the sewer overflow point
and into the lagoon.

The local sewage treatment plant has had to go
to bypass because of the heavy rain and
sewage from Warren Wood’s (24) home
enters the sea from the cliff outfall. The
sewage is primarily treated but things like our
detergents, paints, cooking oils and toilet waste
are not removed in the process. This is all added to our water as it reaches the ocean.

Entering the sea, our once clean water is full of oils, chemicals, litter and sewage, it looks extremely unhealthy and it doesn't smell too good either. Can you imagine what it would be like to swim in that water? Can you imagine being a fish or a plant and living in that water all the time?

This is what happens to the water in our creek. There are many things we can do to reduce the pollution in the catchment and most of them are pretty easy. If we take a look at our day to day activities I’m sure we can all make a small difference and a lot of small differences make up a big difference for the health of the catchment and the plants and animals living there – and for those of us who want to swim, fish or go boating.

Adapted from ‘Catchment Story’, Colin Mundy, Hunter Catchment Management Trust