

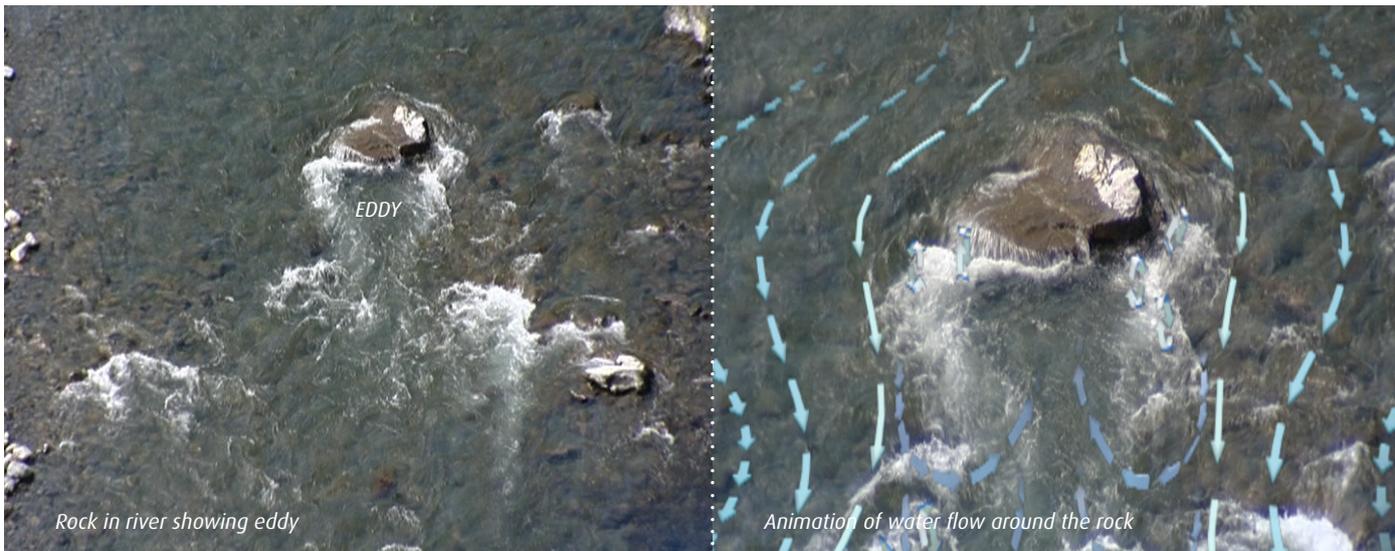
Be River Safe

River Features

Fact Sheet Eddies

Eddies

- An eddy is an area of swirling water that forms behind an obstacle like a boulder in a river.
- Often the water in the eddy will reverse the direction of flow and will flow upstream.
- Eddies are almost always formed on the inside of the corner when a river turns a corner.
- The area where the downstream current meets the eddy is called an eddy line. The eddy line mixes the water flow in an unpredictable way.
- To cross the eddy line requires some effort. Kayakers can cross an eddy line easily while swimmers must swim hard and use a lot of energy to cross the eddy line.



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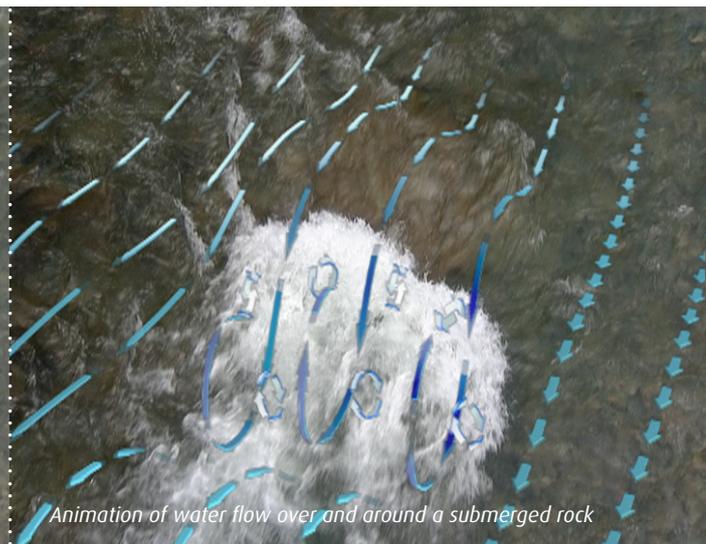
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River Features

Fact Sheet Recirculating waves

Recirculating waves

- Recirculating waves are formed immediately downstream of large objects like rocks.
- A recirculating wave is where the water continually flows back over itself. Objects including people can be held or trapped in recirculating waves.
- Recirculating waves are created when the downstream drop in water level is of a significant size.
- Recirculating waves are always breaking and contain white, aerated water.



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River Features

Fact Sheet Buffer waves

Buffer waves

- Buffer waves are formed when the river flows into an obstacle. The buffer wave is upstream of the obstacle.
- The more water hitting the obstacle, the bigger the buffer wave.



Rock in river showing buffer wave



Animation of water flow over and around the rock



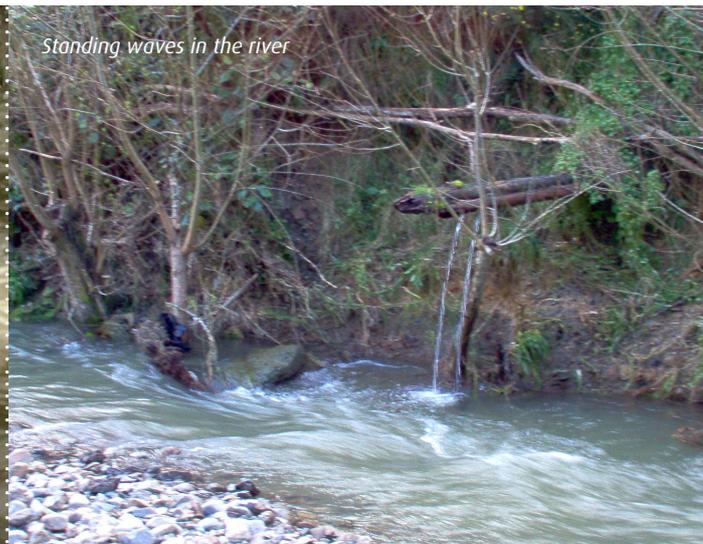
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River Features

Fact Sheet Standing waves

Standing waves

- A wave is formed downstream of a submerged obstacle like a rock, or downstream from where a river narrows abruptly. Depending on the size of the obstacle or rock there is usually more than one of these waves. They are called standing waves.
- Waves can break over swimmers, pushing them under the surface.
- Standing waves may be breaking or smooth.
- Standing waves stay at the same place in the river.



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River Features

Fact Sheet Rapids

Rapids

Rapids are stretches of water where the water flow has been disrupted and becomes turbulent. The size and turbulence of a rapid depends on:

- the steepness of the river
- the number and size of objects like rocks that block the flow of the water
- the volume of water flowing down the river.

Swimmers can be injured when they are pushed against rocks by the current or flow of the water. The white water in the rapids is aerated or full of air bubbles and is not very buoyant so it does not support a swimmer as well as normal water.



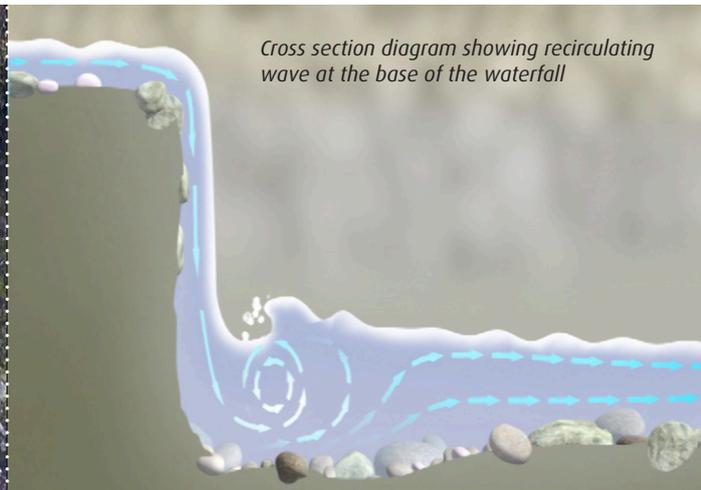
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River Features

Fact Sheet Waterfalls

Waterfalls

- Rivers can fall in height quite quickly when the water flows over waterfalls.
- Waterfalls can be difficult to see from upstream but they can be easier to hear than other hazards.
- Many waterfalls have a strong recirculating wave at their base and an area of aerated water. People can get trapped at the base of a waterfall and drown.



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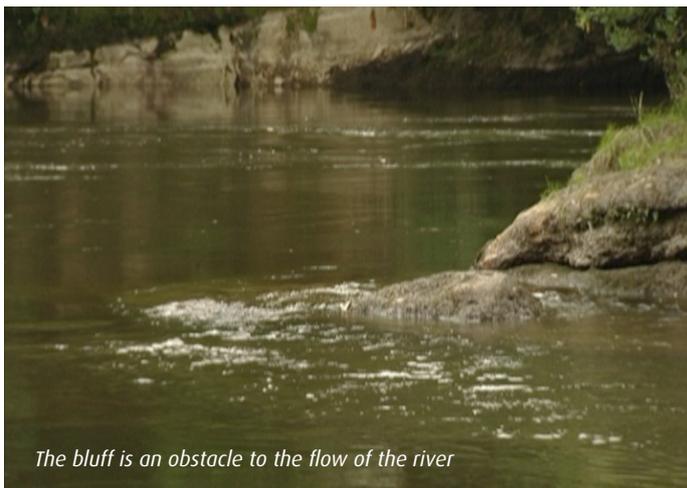
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River Features

Fact Sheet Obstacles

Obstacles

- An obstacle is an object that stands in the flow of the river, forcing the water to flow around it.
- Obstacles can be man-made constructions like bridge supports, or things like boulders, tree trunks and projecting land masses like bluffs.
- Swimmers can be pushed or carried into obstacles by the flow of the water. They can be injured by the force of the collision with the obstacle.



The bluff is an obstacle to the flow of the river



Tree roots forming an obstacle



Construction debris forming an obstacle in the river



Rock and debris forming an obstacle in the river

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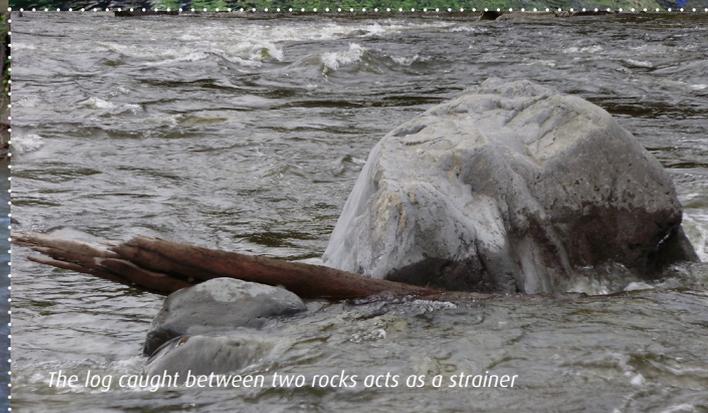
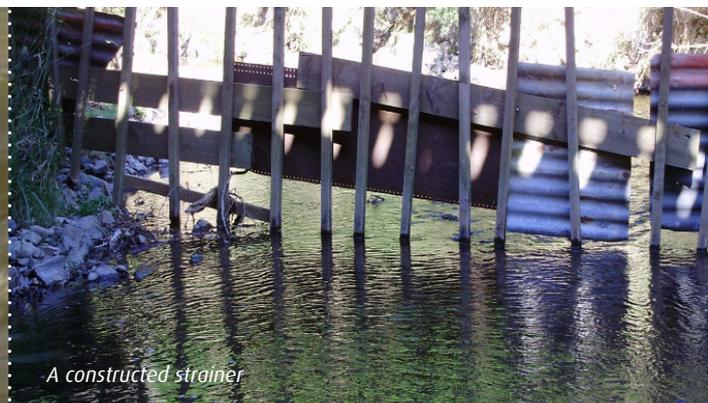
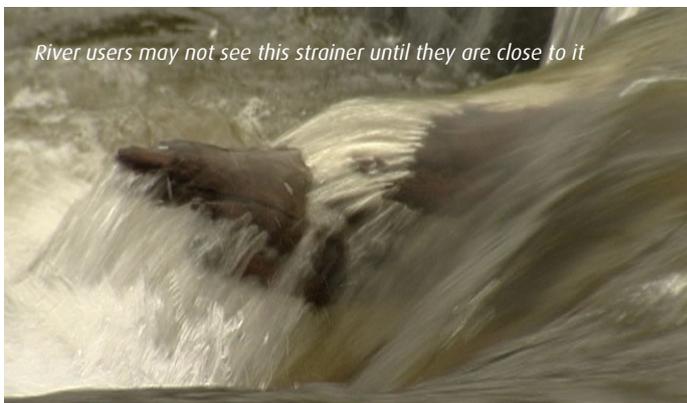
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River Features

Fact Sheet Strainers

Strainers

- A strainer is an obstacle in the river that allows water to flow through it but stops larger solid obstacles.
- Strainers are typically:
 - tree branches or roots held in the river across the current
 - fences
 - construction debris like reinforced steel mesh
 - collections of boulders.
- Strainers may be visible or fully submerged.
- Swimmers can be trapped against strainers by the force of the river flow. They cannot get free and drown.



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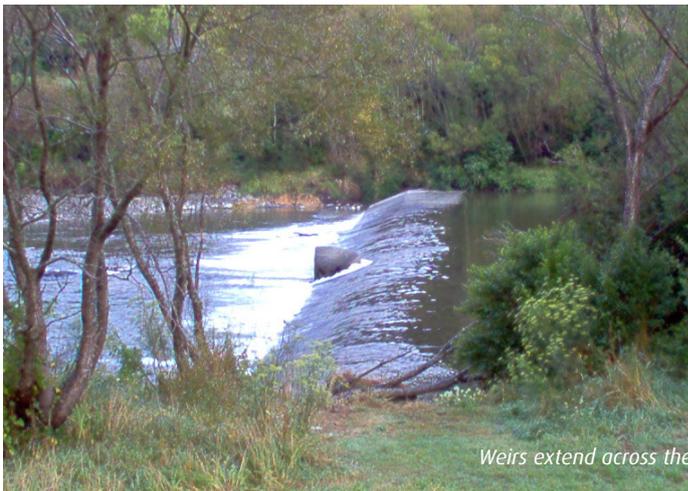
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River Features

Fact Sheet Weirs

Weirs

- Man-made features like dams and weirs are particularly dangerous as they span the full width of the river or waterway. There is no opportunity to move away from them.
- This weir shows a strong recirculating wave.
- Do not swim, kayak or cross a river near a weir or a dam.



Weirs extend across the full width of the river



A weir with animation showing the flow of water over the river

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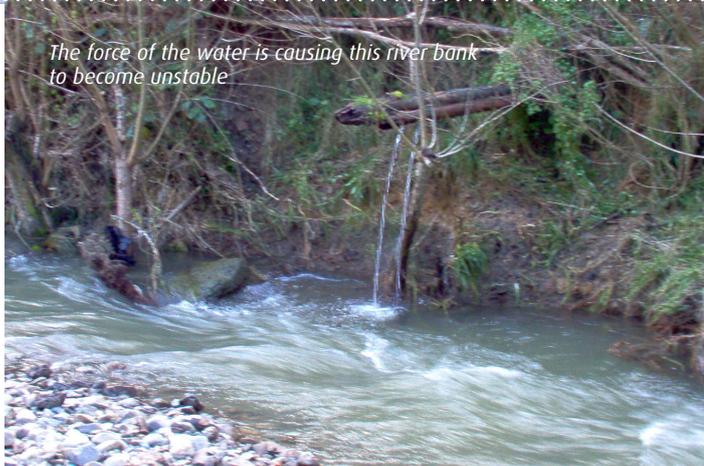
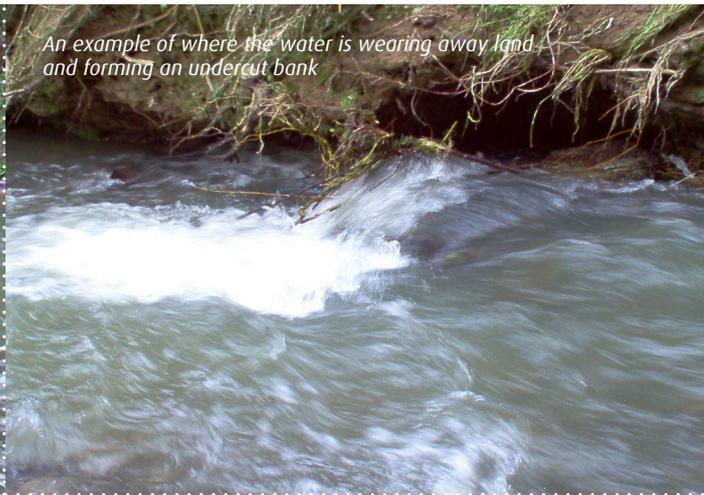
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River Features

Fact Sheet *Unstable or undercut banks*

Unstable or undercut banks

- The force of the water flowing down a river constantly erodes or wears away its banks.
- Banks, where the force of the water is wearing away land at water level, become undercut or unstable. These banks look stable to people walking on top of them but they may be ready to collapse.
- People standing on a river bank or walking beside a river can fall in when an undercut bank collapses into the river.
- An unstable or undercut bank can also collapse if a swimmer tries to climb out of the river on to it.



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River Features

Fact Sheet The nature of the river bottom

The nature of the river bottom

The speed of the current provides an indication of the nature of the bottom.

River beds can have a shingle bed or be muddy, sandy or silty.

The river bottom may be even or may contain deep holes and shallow areas.

In some rivers it is easy to see the nature of the river bed; in others cloudy or dirty water can make it hard to see the river bottom.

The river banks may give good clues about the nature of the river bottom.

