CONCEPT

Potential Energy
Science (ACSSU155)

Water
Science (ACSSU222)

Gravity
Science (ACSSU118)

Motion
Science (ACSSU229)

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Who Gets the Water
Scientific Principles Involved

The scientific principle here is gravity feed and flow restriction. Students must be aware that the water will only flow down but if the pressure in the header is high enough then it may push through a slight "up" tube to ultimately form a siphon and end up at a lower potential. This can then be constructed as a potential energy problem with the water at the top having a higher potential than at a lower point.

Modern Applications

The obvious link here is gravity feed systems which relate to all manner of construction where water flow must be considered. This may be water for irrigation, housing or even sewage. The concept does however have further network considerations where a system needs to be put in place with certain requirements to different parts of the network. This may be a power grid, or a communications network through a series of hubs and switches.

In addition to this the potential energy problem can be seen as a simple energy problem where a header tank of fluid contains potential energy that can then be used to drive the fluid to other locations. This can be related to water pressure, desalination plants or even steam engines (and by extension to combustion engines). A discussion could also be undertaken about hydro electric power using the potential energy to drive turbines to generate electricity.

Resources

How does desalination work?
http://splash.abc.net.au/media/-/m/524895

Build a water rocket, some instructions here:
http://www.water-rockets.com/

Class experiment - What is the maximum intermediate height of a siphon?
http://www.sciencebuddies.org/science-fair-projects/project_ideas/Phys_p052.shtml