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The proportionate assessment of individual flood risk management measures.

THE PROPORTIONATE ASSESSMENT OF INDIVIDUAL FLOOD RISK MANAGEMENT MEASURES

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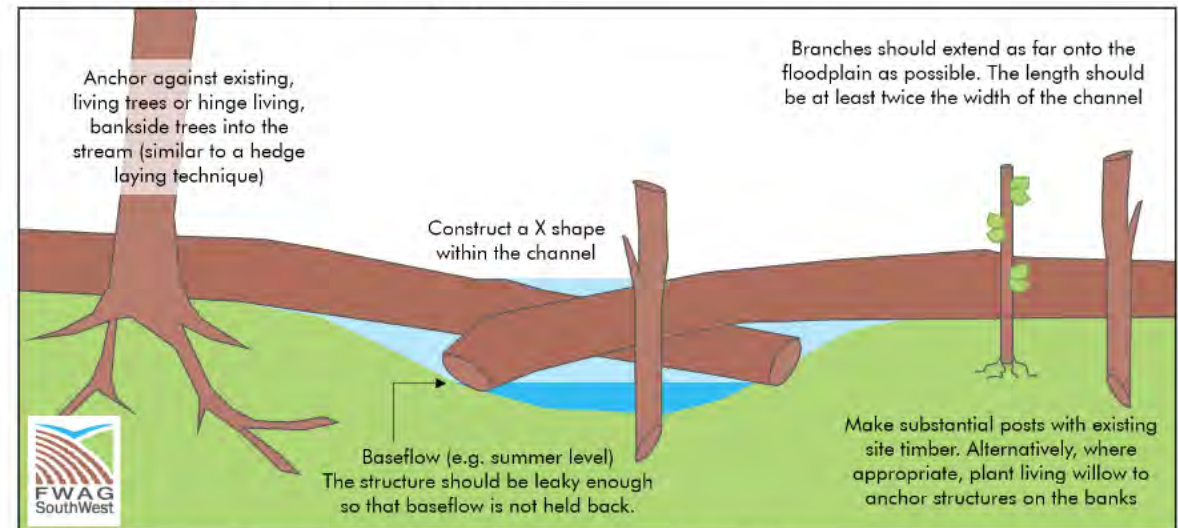


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In-channel barriers ('leaky dams')



Structure configuration and Securing options



This diagram can be used to understand the principles to apply to your site.

In-channel barriers ('leaky dams')



IMAGE © YORKSHIRE FARMING & WILDLIFE PARTNERSHIP

In-channel barriers

These can be constructed in streams and ditches. When whole trunks, secured into place with stakes and wires, are used they are often known as large woody dams. More engineered structures are also called leaky dams. The dams are set above normal stream level, so only flood flows are blocked. Water is stored within the channel behind constructed dams, reducing the downstream flood peak by slowing the flow.

? Natural flood management purpose

A network of in-channel barriers installed on a local scale can control channel flows. The dams are created to be slowly leaky, draining the trapped water once the flood period has passed. In-channel barriers could reduce the 1 in 100 year flood peak by 20%. Dams can be constructed so that floodwater spills onto the floodplain for additional temporary storage where conditions are suitable.

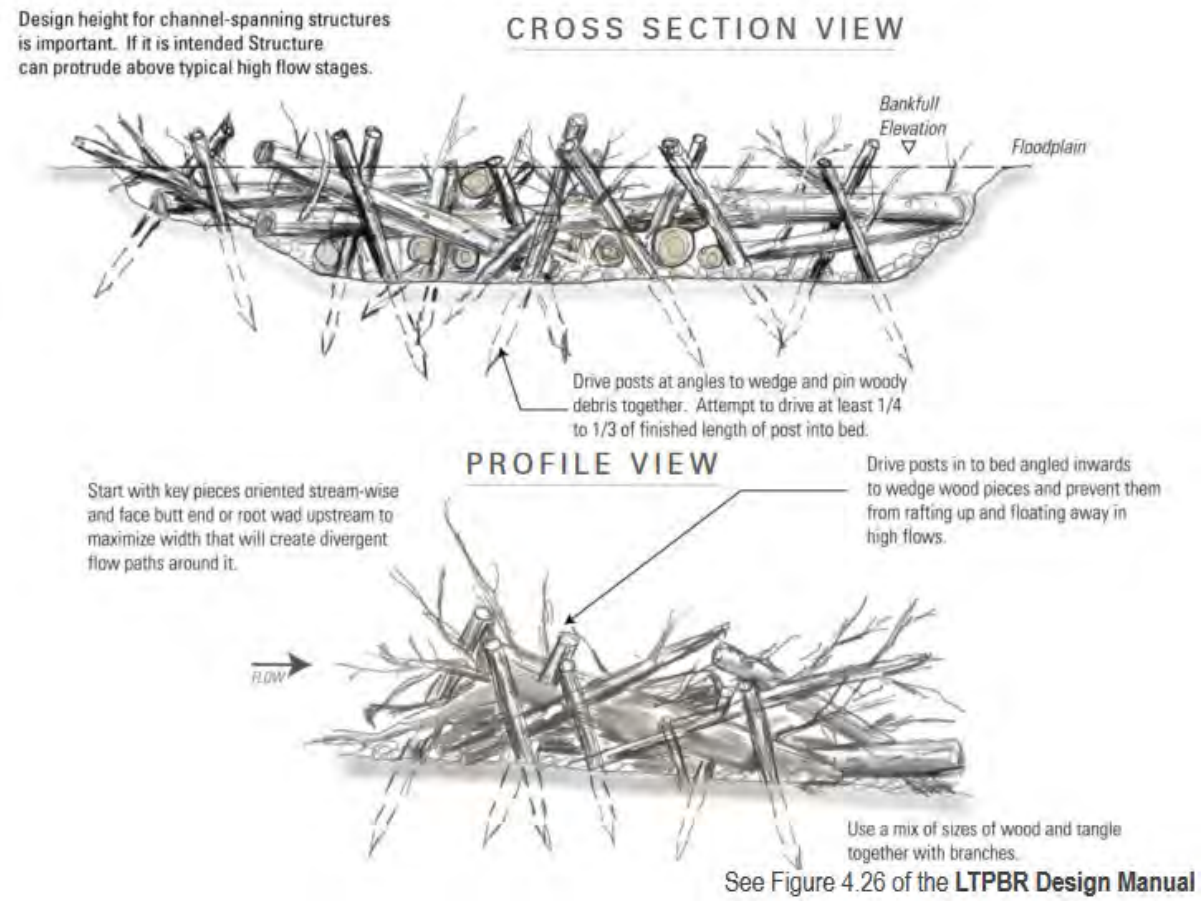
✓ Agricultural benefits

Dams can successfully reduce localised flooding within the farm holding.

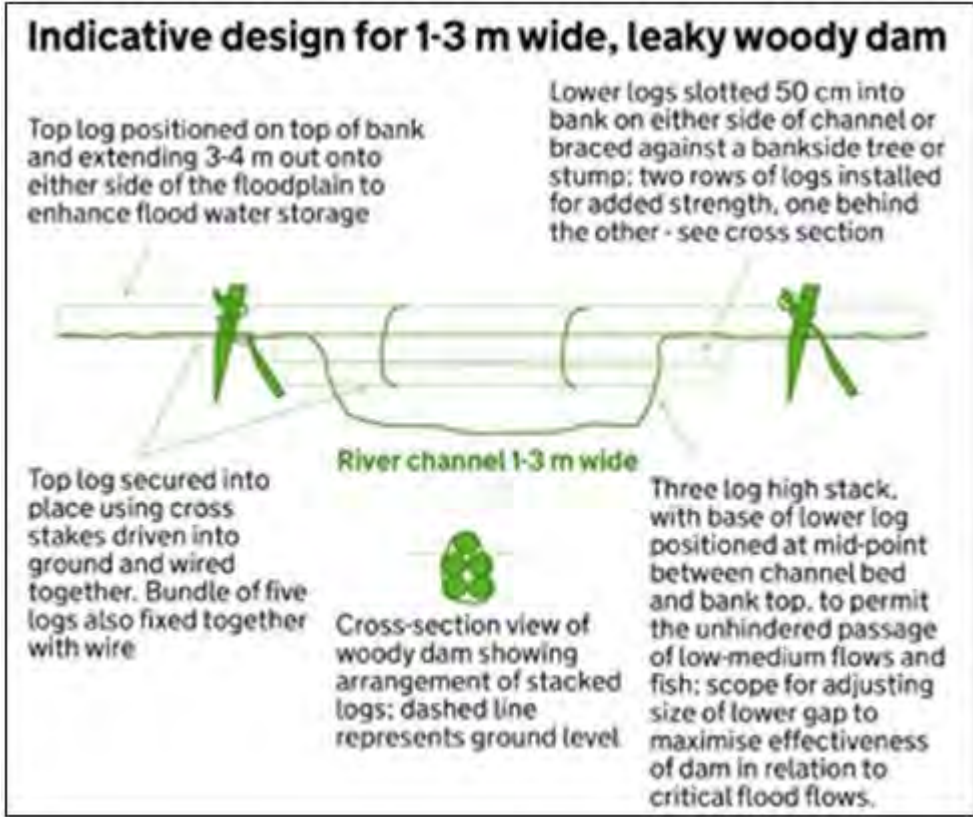
📏 Construction dimensions

Large woody dams are created by laying two large tree trunks in a cross formation across the channel to rest safely on both banks, wedged in position. Smaller timbers can be wedged in place between the larger ones. Leaky dams are constructed by securing a support across the channel and securing slats, either horizontally or vertically to form a discontinuous barrier. Varying the height of the timber above normal flow will determine the rate and volume of retained floodwater. This will also permit fish passage.

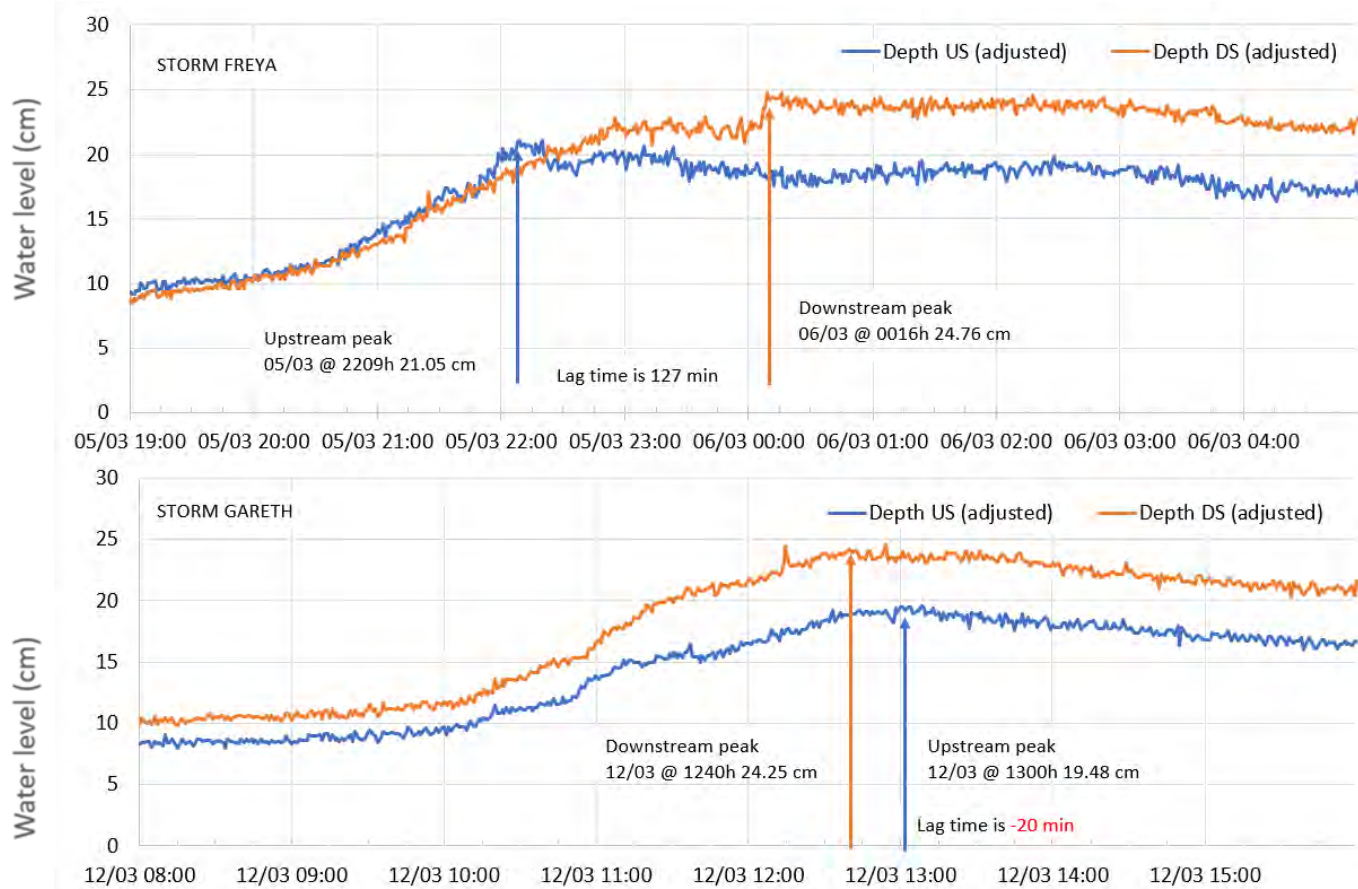
💡 Considerations



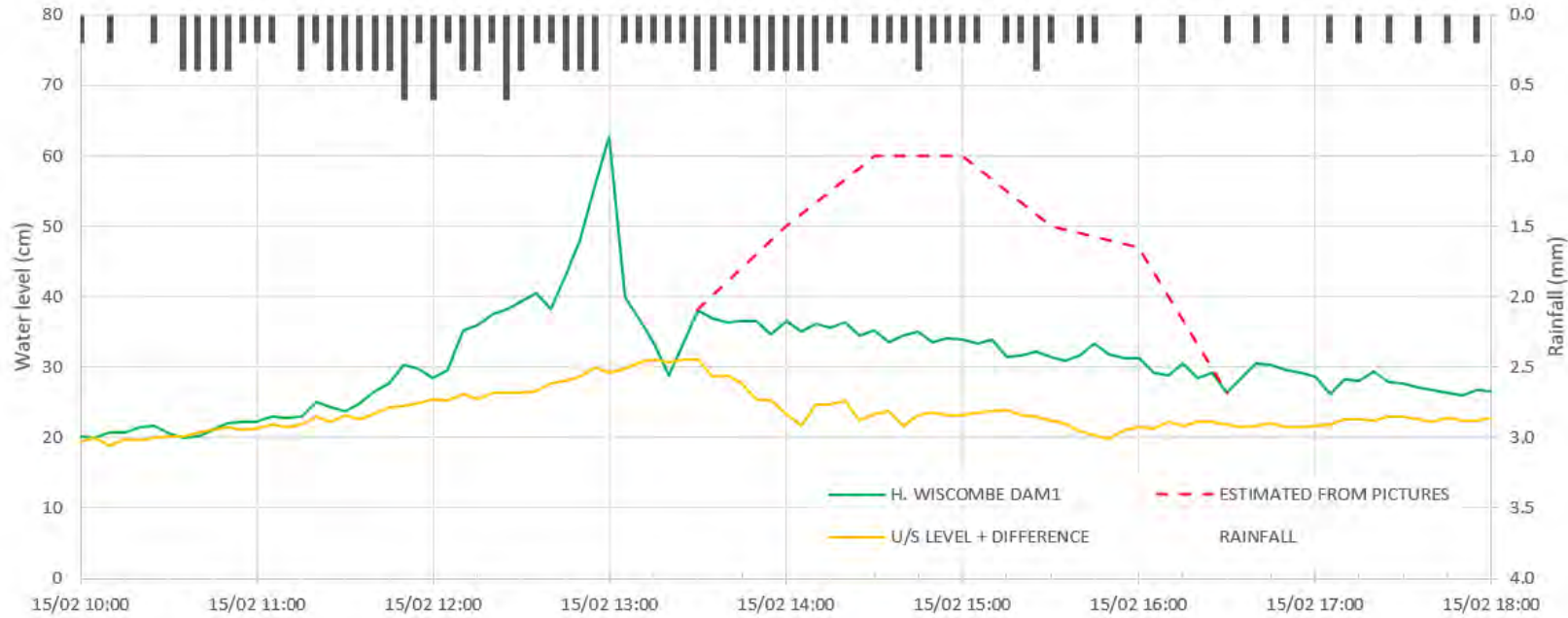
In-channel barriers ('leaky dams')



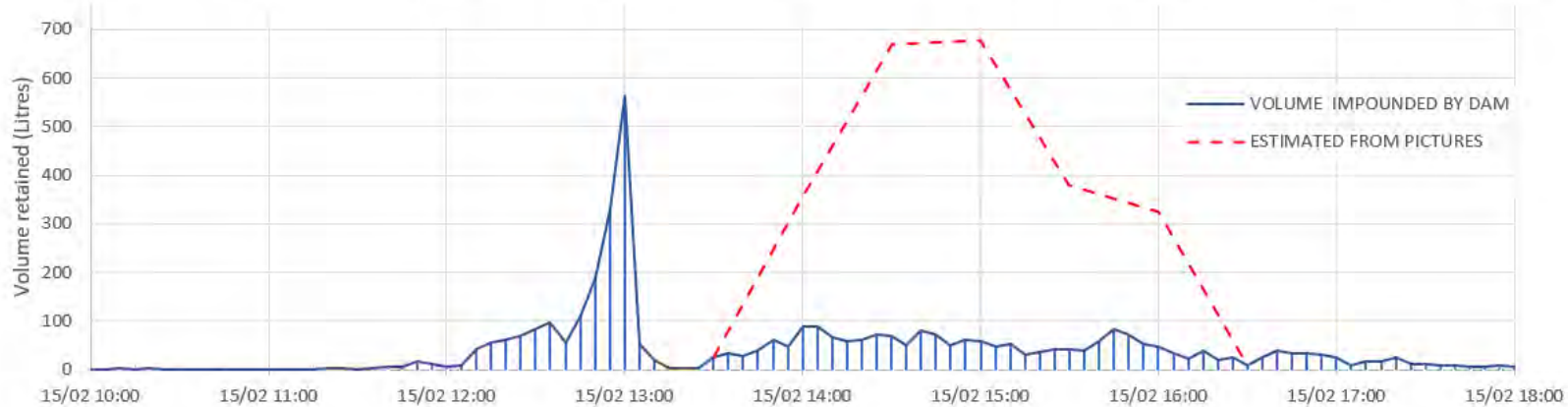
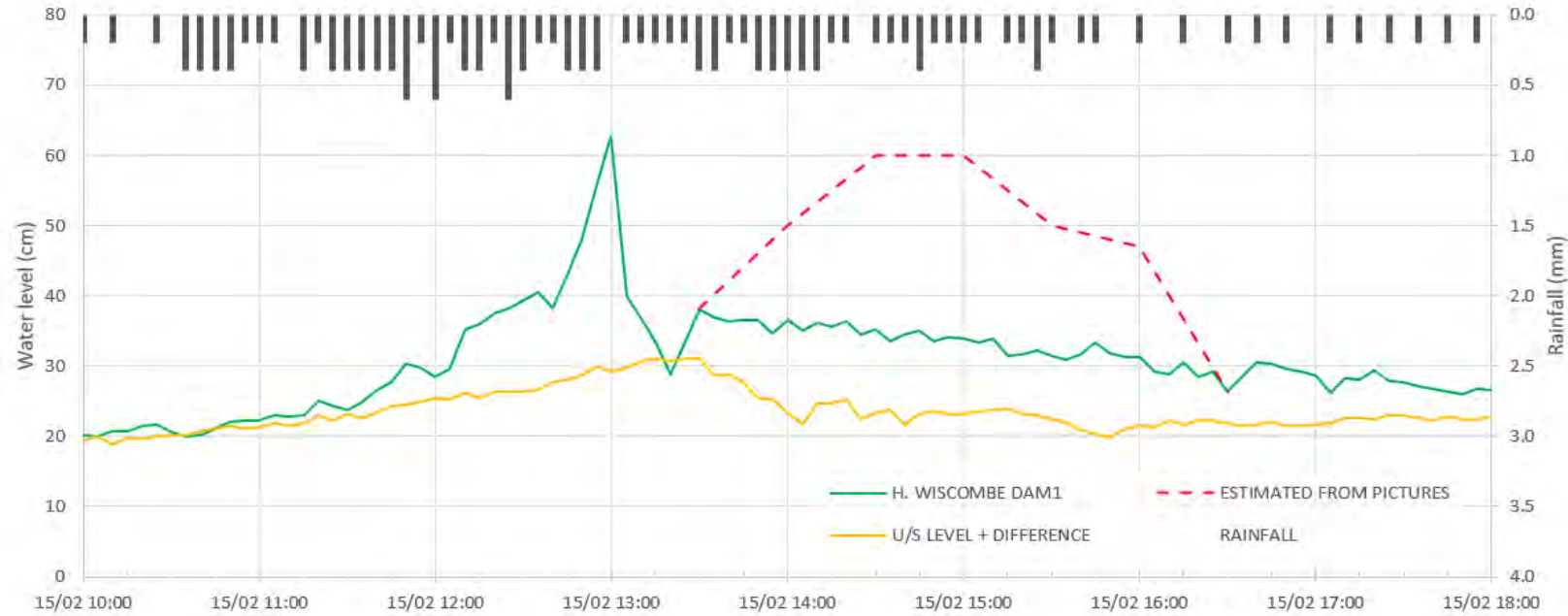
Monitoring leaky dams



Storage under high flow conditions



Storage under high flow conditions



Structures evolve over time



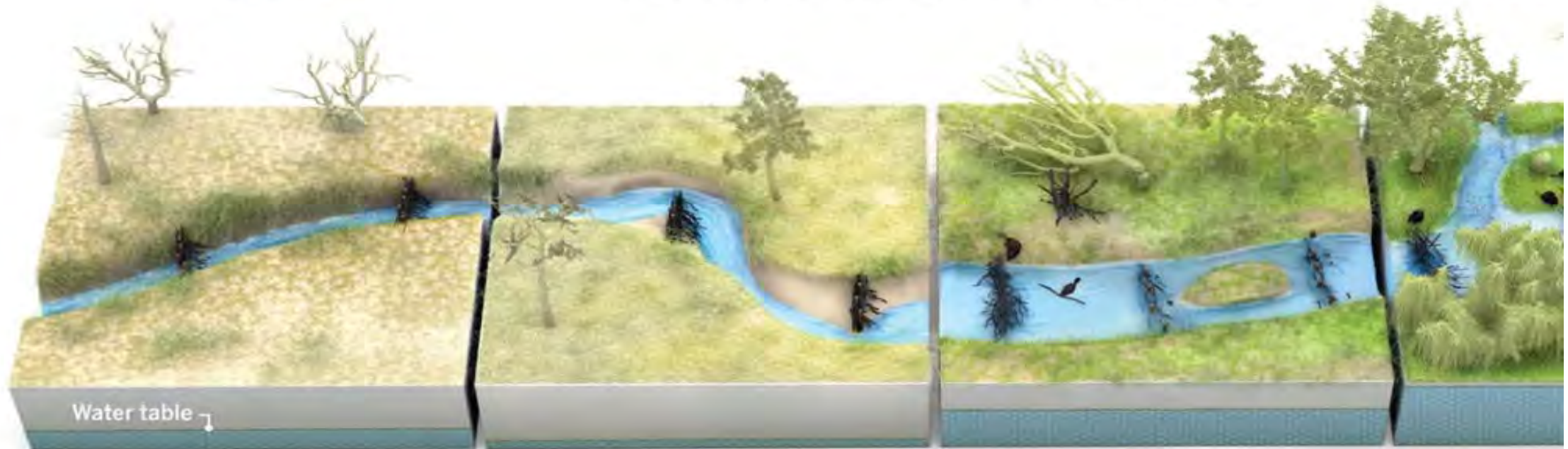
‘Widening the trench?’



Incised stream

A stream comes back to life
Across the U.S. West, scientists and land managers are using beaver dam analogs (BDAs) to heal damaged streams, re-establish beaver populations, and aid wildlife. In some cases, researchers have seen positive changes in just 1 to 3 years.

Restore



Adding dams

Beaver trapping and overgrazing have caused countless creeks to cut deep trenches and water tables to drop, drying floodplains. Installing BDAs can help.

Widening the trench

BDAs divert flows, causing streams to cut into banks, widening the incised channel, and creating a supply of sediment that helps raise the stream bed.

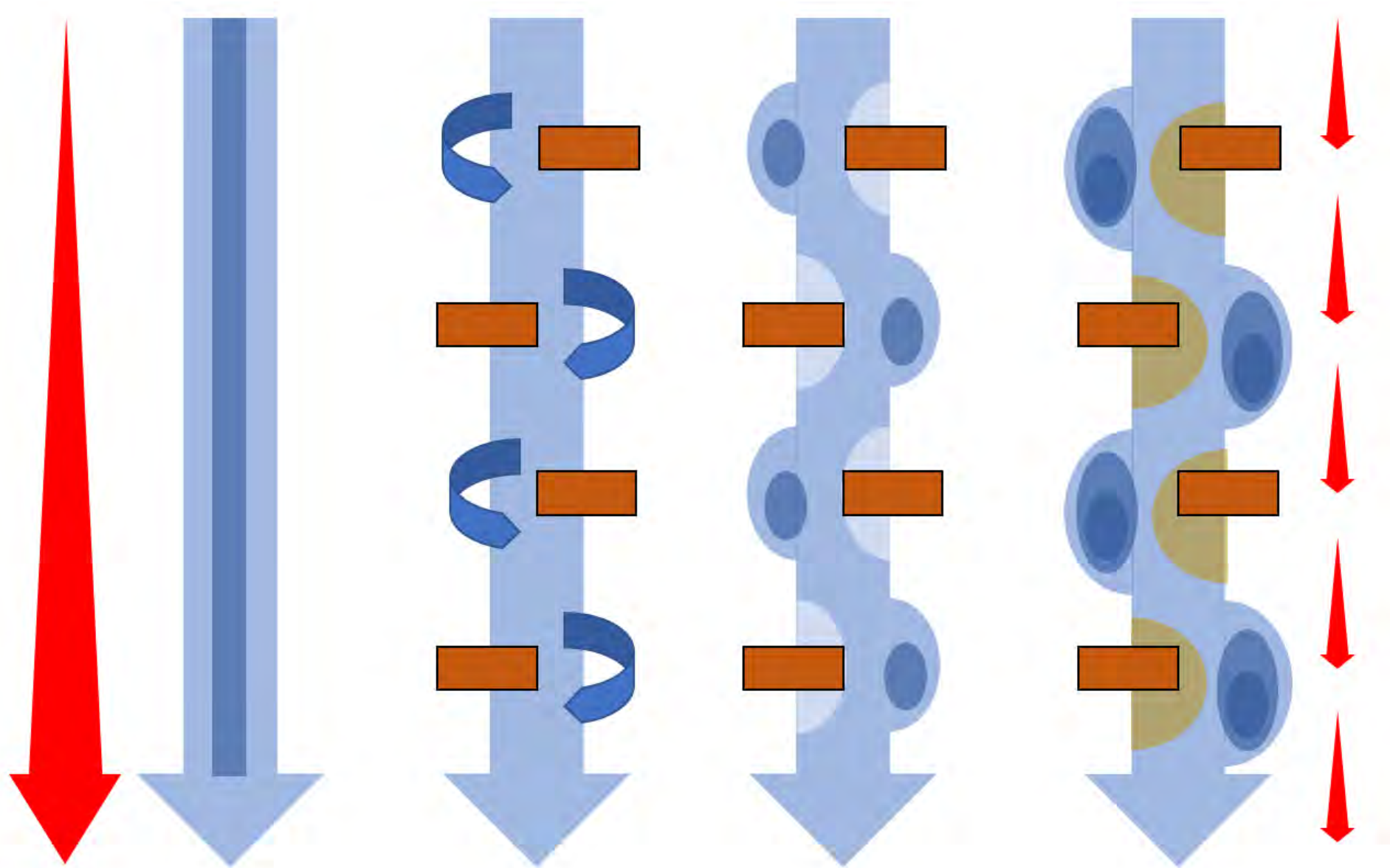
Beavers return

As BDAs trap sediment, the stream bed rebuilds and forces water onto the floodplain, recharging groundwater. Slower flows allow beavers to recolonize.

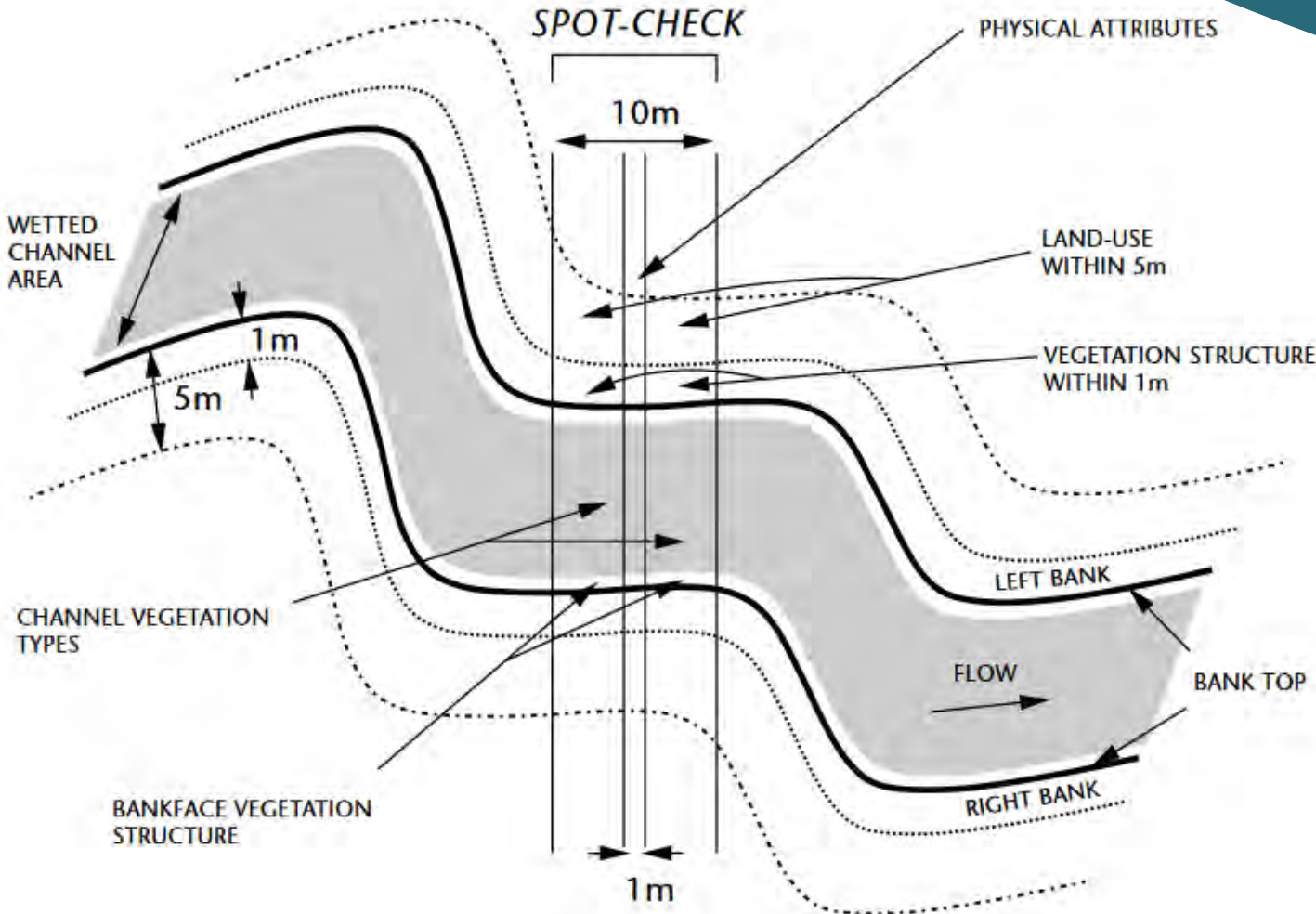
A complex have

Re-established beaver create a maze of pools and wetlands, providing habitat for fish and wildlife.

Using structures to add sinuosity



Monitoring a return to 'natural' form



Thank You



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