Erosion Control Structures - The WASCoB (II)

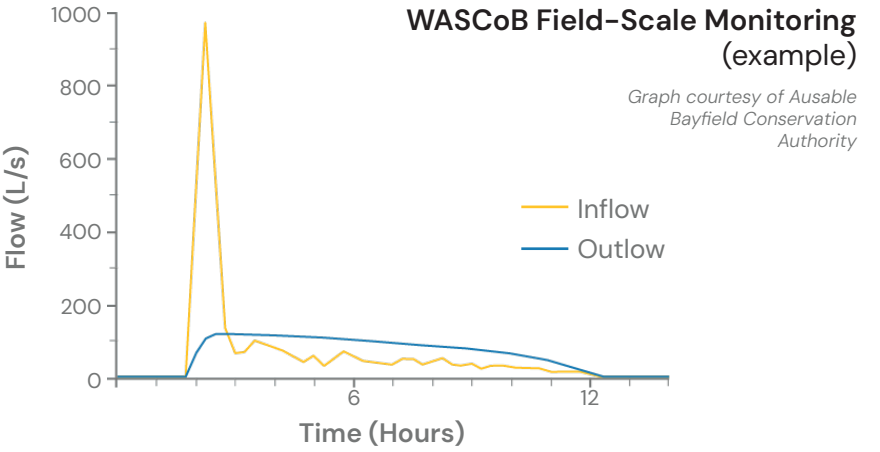
What is a WASCoB?

WASCoB stands for **Water and Sediment Control Basin**, an embankment or berm installed across a natural drainage pathway to reduce erosion and control sediment. These structures are often built in a series across areas prone to gullying or flooding. The main purpose of the berms are to temporarily store runoff and slowly releases it through an underground outlet, typically using a hickenbottom connected to a tile drain.

Benefits

By storing water and releasing it slowly, suspended sediment has time to settle. The berms also slow the speed and power of the surface water runoff, reducing gully erosion.

Permanently vegetated narrow-based berm with cropland on either side.

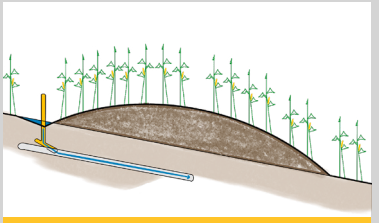


In the above example, WASCoBs reduced peak flow by about 85% and extended outflow from under 1.5 hours to 9 hours, long enough to prevent crop damage.

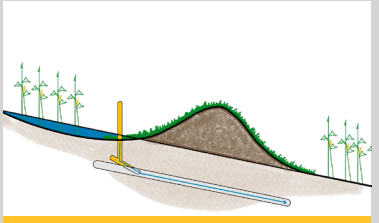
Types of WASCoBs

Local rainfall patterns, field size, shape, and slope will determine the design and placement of the WASCoB. Conservation Authority staff can help with this.

WASCoBs reduce the potential for large volumes of water to be deposited quickly onto a field, thereby reducing the potential for field ponding or flood damage to crops.



Broad-based berms can be used for crop production.



Narrow-based berms are permanently vegetated, crops can be grown on either side.

In Partnership with: U of G Soils At Guelph; St. Clair Conservation

With Support from: Ontario

For more information, contact
Jessica Van Zwol, Healthy Watershed Coordinator
519-245-3710 x241, jvanzwol@scrca.on.ca

This broad-based berm was designed to also serve as a continuation of the laneway. The hickenbottom connects to existing tile and the rock chute (at left of photo) slowly allows ponded water to enter the municipal drain.

Case Study:

THE GILROY PROJECT

CONCERN:

Don Gilroy was noticing rills and gullies forming in his crop fields that were washing away soil and nutrients.

FIRST STEPS:

Gilroy reached out to SCRCA for funding. Together SCRCA, Gilroy, and an OMAFA Certified Erosion Control Contractor developed a plan including WASCoBs and rock chutes that would slow water velocity as it moved over the field.

In-field gully erosion arising from spring melt and heavy rain events.

This photo from another project serves as a comparison to the above photo showing the difference between a broad-based and narrow-based berm.

SOLUTION:

- The **first rock chute**, located at the edge of the field, was built to control overflow from a 10-year storm event.
- The **first broad-based berm**, installed as an extension of the existing field access lane, will help to store and pond upland water. This berm controls overland water velocity, and retains sediment. The ponded water will also enter the drain more slowly via the hickenbottom, reducing peak flows downstream.
- A **second broad-based berm**, built about 300ft upstream from the first, helps slow surface water coming from the neighbouring farm.
- A **second rock chute** was constructed in the field where surface runoff enters the municipal drain to eliminate bank erosion.
- A **third broad-based berm**, constructed with a hickenbottom connected to the tile, captures surface runoff during large rain events and snow melt.
- And finally, a **grassed waterway/diversion terrace**, roughly 850ft long and 24ft wide, was built to direct surface runoff into the second rock chute and drain.

(Note: the spoil from the grassed waterway excavation was used to build the berms. This helped save the farmer money on trucking in dirt to build the berms.)

The Gilroy erosion control project received funding support from SCRCA.

DIG DEEPER

More Soil Resources can be found at the U of G Website

BENEFITS:

1. Reduced soil and nutrient loss by storing water on the land, giving the sediment time to settle out before entering a municipal drain. Added sediments can lead to increases in costly drain cleanouts.
2. Prevented gully erosion by reducing the speed of overland flow.