

## Fact sheet 4



Retaining wall broken down !

## Is there a problem ?

### Biomechanical Stabilization

The main problem with the Missisquoi Bay and the Pike River is erosion. This refers to a partial shoreline collapse that becomes bigger every year. Waves, ice thaws, wind and bad bank developments cause shoreline erosion. This brings about a loss of ground as well as the loss of wildlife habitat. Soil particles found

in the water can contain fertilizers and pesticides. They make the water look brown and cloudy. These particles settle, to then cause siltation of water bodies, favor the growth of aquatic plants and destroys spawning grounds.

#### *Unfavourable environmental practices*

It is not advisable to leave a bank naked because it causes premature bank erosion. Artificial stabilization techniques (eg. wall) are harmful because they require heavy machinery and bring about major earthy and aquatic environment changes. The high water mark is followed by a 10 meter buffer strip (or 15 m if the slope is superior than 30%). In the buffer strip, no modification is permitted: earthwork, construction, mowing and tree cutting are forbidden. However, it is permitted to cut out a visual window 5m wide, and to vegetate the land, of course. It is not advisable to place rocks directly on the bank. Stone pitching is a good technique but must be made following rules of art. Remind yourselves not to mow the lawn near the water too often.

#### *Why the stabilizing wall is not an appropriate solution?*

The concrete wall is forbidden in Québec since 1982. Its ban is based on the fact that this method harms the natural exchanges between aquatic and earthy environments. Wooden walls or gabions (fence cages filled with rocks) are less damageable to the water but do not last very long. If you possess an artificial it is highly recommended to vegetate it in order to restore the natural aspect to the shoreline. Planting Virginia creeper (five-leaved ivy) stabilizes the ground behind the wall, covers it and attracts birds and butterflies.

This research was conducted by Edith Potvin-Rosselet and Valérie Nadeau.

**A source of solutions,  
a network for actions.**

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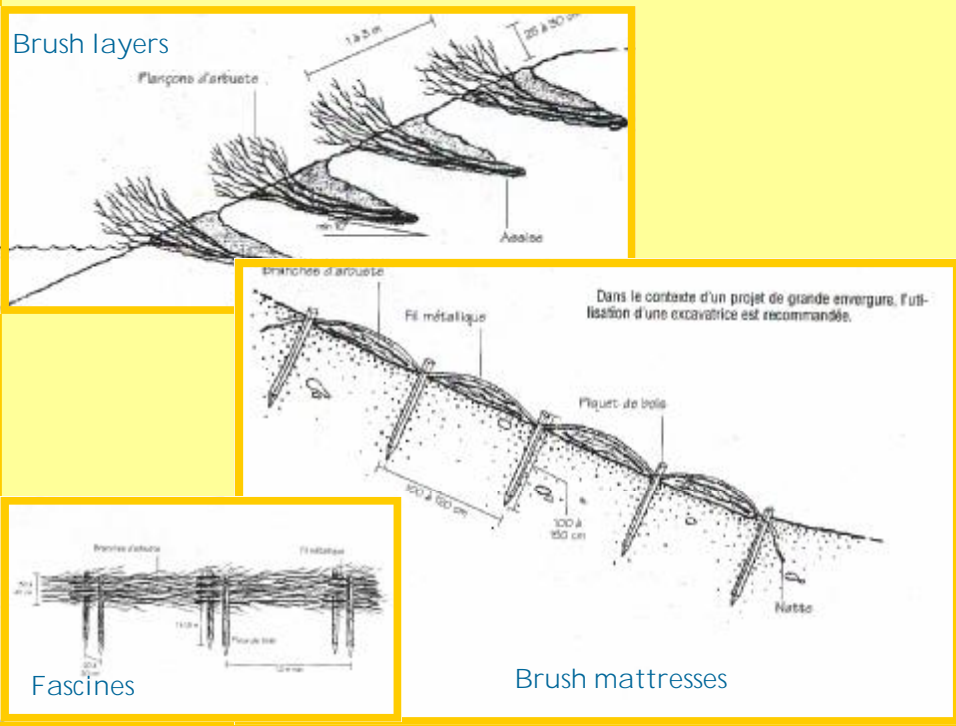
## Biomechanical Stabilization

### There are solutions !

The vegetative solution is the most recommended; not damaging for the environment, it contributes to the revegetation and improvement of the water quality. The rooting system of indigenous plant species located near on the shore acts like a filter. It hold back the ground (bank) and favours a good water flow. The plants absorb nitrogen, phosphorus and other water contaminants.

#### Three biomechanical techniques : brush layers, fascines and brush mattresses

The use of brush layers, fascines (bundle of long cuttings) or brush mattresses is lasting solution. These are vegetal engineering techniques, where we place attached branches on the bank and that we anchor\* on the ground with posts. For not severe erosion, we propose plançons and fascines technics. For severe erosion, with waves and ice problems, we suggest branch layer solution. Those techniques must be completed with planting on the bank.



#### Useful reference

##### Business and municipal sectors

Ministère du Développement durable, de l'Environnement et des Parcs  
(450) 928-7607  
Protection des rives, du littoral et des plaines inondables : Guide des bonnes pratiques (Publication du Québec)  
[www.menv.gouv.qc.ca/eau/rives](http://www.menv.gouv.qc.ca/eau/rives)

André Fleury, Stabilisation of the bank business  
(450) 244-5083

##### Agricultural and residential sectors

Nature-Action Québec  
(450) 441-3899  
[www.nature-action.qc.ca](http://www.nature-action.qc.ca)

Montréal wildlife and forest developments  
Stéphane Corneau  
(450) 460-2852

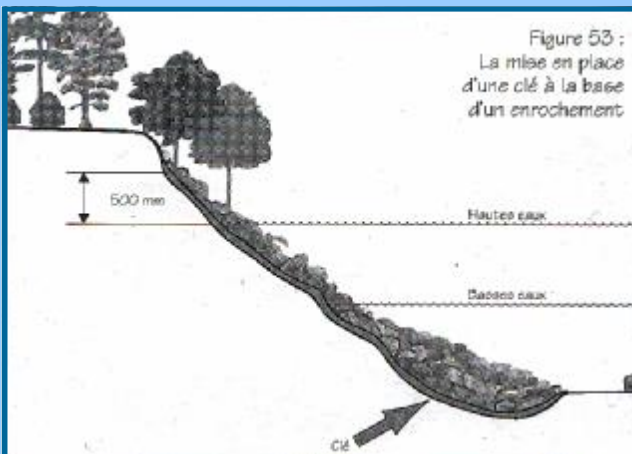
##### Agricultural sectors

Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec  
Bedford office  
(450) 248-3321

DURACLUB agro-environment club for Bedford region  
(450) 248-0454

#### In the case of severe erosion, stone pitching

The vegetated stone pitching is a mixed technique reserved in the case of severe erosion. The stone pitching must be extended beneath the watercourse bed by building a rock toe key, a channel bed at the bank toe filled with an appropriate aggregate that goes with the strength of the waves and watercourse. As soon as the establishment of shoreline vegetation is possible, it is strongly recommended to vegetate in order to support the ground in the superior portion of the bank.



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This fact sheet was designed in collaboration with the Ministère du Développement durable, de l'Environnement et des Parcs.

