

## **Natural Filtration to Treat Runoff from Confined Cattle Sites**

**Agriculture and Agri-Food Canada – Agri-Environment Services Branch (AESB)**  
**(formerly PFRA)**

Cattle wintering sites and calving grounds frequently concentrate animals in confined areas, creating a high risk for contaminating water courses during spring runoff or intense rainfall events.

During spring melt the ground is still frozen which results in minimal percolation of melt water into the soil. During summer, intense rainfall can exceed the ability of the soil to retain moisture, resulting in runoff. As a result the runoff water can move accumulated nutrients from manure over the soil surface and into nearby surface water.

This project will test the feasibility of using filtration technology to manage the large amounts of nutrients associated with runoff water originating from these concentrated animal areas. In addition, the economics and maintenance aspects of these filters will be evaluated to determine the practicality of implementing this type of management practice.

This project starts with the collection and storage of runoff water into a retention pond where larger particles are allowed to settle. Water from the retention pond is then passed through a series of two treatment filters during the spring to fall months.

The first filter consists of a sand media. The water is pumped intermittently and evenly spread over the surface through a pressurized distribution system. The water percolates through the sand, where naturally occurring microorganisms clinging to the particles help to organically break down contaminants. The water is then collected through a network of drainage pipes and pumped onto the second filter.

The second filter media consists of wood chips and the water is intermittently applied to the media in a similar fashion to the first. The water is again allowed to percolate through the filter and is collected through a network of drainage pipes. In this trial, the collected water is then returned to the retention pond.

Water samples will be collected at the entry and exit of each cell to determine the overall nutrient reduction.