

## **BMP: Ribbon Barriers<sup>1</sup>**

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### **Introduction**

Best Management Practices (BMPs) have been identified for different commodities, regions, and situations throughout Florida. This publication addresses a specific set of BMPs that can be described as ribbon barriers.

The **objective** of a ribbon barrier is to protect water quality by preventing aquatic plants and floating debris from passing through an outfall, culvert, or into a major water conveyance. (An outfall is generally considered the end of a piped water conveyance system where water has been directed from one location to another, often where a pipe end directs water into a ditch or other water storage structure.)

Ribbon barriers are often used due to an abundance of aquatic weeds in a system that clog or restrict drainage and water movement (Boman et al., 2002). In addition, decomposing aquatic weeds release nutrients that remain suspended in the water and are readily transported by drainage discharge. These organic particles contribute to turbidity that

blocks light penetration of the water, thus reducing oxygen and negatively affecting aquatic systems.

### **Description of Ribbon Barriers**

Ribbon barriers upstream of outfall structures reduce offsite discharges of floating aquatic vegetation into the drainage system. Ribbon barriers should be used in conjunction with chemical or biological aquatic weed control strategies.

Ribbon barriers (Figure 1) are installed upstream of outfall structures to prevent aquatic weeds from entering a canal system. In typical low flow conditions, a barrier with an 18-inch skirt is recommended. If high flow conditions are commonly experienced, a barrier with a 30-inch skirt is recommended. Ribbon barriers vary in length and depth and can therefore be custom fit to any canal or ditch. Ribbon barriers are most effective when attached to the bank and allowed to move vertically according to canal stage levels. Ribbon barriers should be utilized in conjunction with chemical or biological aquatic weed control programs.

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**Figure 1.** Example of Ribbon Barrier Credits: P. Whalen

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## **Benefits of Ribbon Barriers**

Ribbon barriers have additional benefits besides preventing the restriction of flow due to the build up of weed masses. Weeds that are mechanically collected and eliminated from the water remove a significant amount of nutrient loading associated with the plant material (Diaz et al., 2005). This method is especially effective for removing phosphorus from the system.

## **Ribbon Barrier Costs**

Cost for implementing this BMP varies depending on the accumulation rate (or maintenance) of aquatic plants and the type of equipment used to harvest the aquatic plants.

## **Ribbon Barrier Maintenance**

Accumulated debris needs to be periodically removed mechanically by use of screen rakes, mechanical harvesters, cranes, track-hoes, or backhoes. Removed debris must be placed so that drainage and decomposition will not re-enter the system. Accumulated sediments may also need to be removed periodically.

## **References**

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