Recycling Water Naturally

BioFlo Substrate Solutions

for

Wetlands

The run-off from urban areas, industrial facilities and farms is increasingly becoming the focus of environmental regulators because of its potential to pollute natural waterways and groundwater, due to the high levels of nutrients and potentially harmful chemicals the run-off frequently contains.

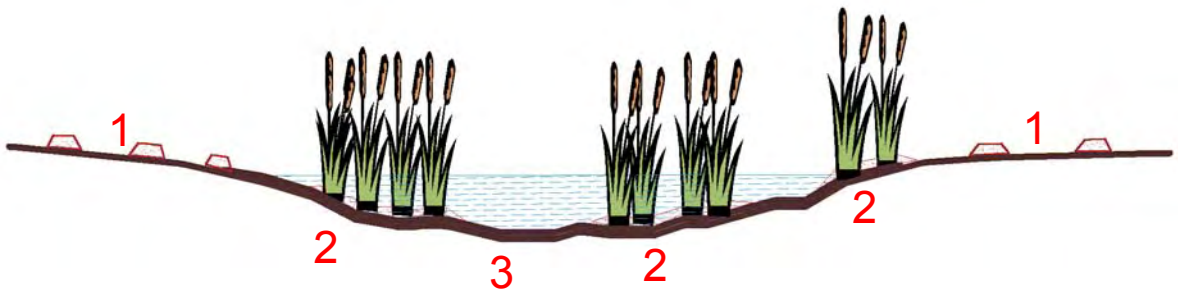
(See www.epa.nsw.gov.au/stormwater/ and www.epa.vic.gov.au/programs/stormwater/, for example.)

Wetlands, both constructed and natural, are frequently used as a means of treating polluted run-off, stormwater and wastewater, because the plants involved (typically reeds such as *Phragmites australis* or *Canex* species) can remove most of the pollution from water. They do this through the combined effects of physical filtration and the action of the various micro-organisms that live in association with the plant roots and stems.

However, experience is showing that these wetland systems can fail, largely because there is insufficient plant matter to effect filtration, and insufficient vigour in the growth of both the plants and their associated microflora. These problems arise because of the stresses caused by both the pollutants in the water and repeated cycling between flooding and dry conditions.

BioFlo substrates are based on ***Biogreen***™ reed sedge peat, formulated to meet the requirements of specific wastewater applications. Because of its ability to promote extensive root growth, to hold water in a form readily available to plants and to remove nutrients and pollutants from water, ***Biogreen***™ peat provides a number of important tools for improving the performance of wetlands and the management of water run-off. Ways in which various *BioFlo* substrates can be used for this purpose are discussed over the page.

Application *BioFlo* substrates in wetland management:



1. ***BioFlo* Peat-based stormwater baffles:**

   These are simple durable mesh bags or tubes that are placed across the stormwater flow path upstream of the wetland. Being porous, they provide not only some degree of filtration, removing silt and other matter, but also absorb a portion of the pollutants from the stormwater flowing over them.

2. ***Planting wetland species in BioFlo Peat-based substrates:***

   When constructing a wetland, planting the wetland species in a *BioFlo* peat-based substrate has considerable advantages, including

   - Higher survival rate, leading to greater density of plants
   - Better root formation, leading to healthier, more vigorous and robust plants
   - Greater resistance to drying, because the peat holds more than its own weight in water, at a matric potential that substantially prolongs availability of water to the plants during dry periods
   - Greater resistance to pollutants, because the peat absorbs pollutants in a manner that prevents them affecting the plant roots.

3. ***"Top dressing" with BioFlo Peat-based substrates:***

   BioFlo peat-based substrates can be applied directly to the area of the wetland, as a layer on the wetland bed. (The peat blend can be applied regardless of whether the wetland is dry or inundated, although it is best to avoid high flow situations.) The applied substrate not only stimulates root formation in the existing plants, leading to greater plant densities, but helps to remove pollutants from the water, by absorption and biodegradation.

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