

A Novel, Sustainable Technology to Prevent Hydrocarbon Sheens: the Oleophilic Bio Barrier

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Abstract.

Hydrocarbon sheens, a regulatory indicator of petroleum contamination, form when small amounts of petroleum reach the surface of a water body. In order to meet the demand for a low-cost, sustainable way to prevent sheens from forming, the concept of an Oleophilic Bio Barrier (**OBB**) was explored. An OBB consists of a layered composite of hydraulically transmissive materials installed at the ground surface, designed to collect and biologically degrade hydrocarbon contaminants. An inexpensive, readily available polymer geocomposite material has been studied for its potential use in an OBB. Lab-scale sand tank studies utilizing UV fluorescence have demonstrated its sheen-preventing capabilities. A field study employing this material in the first full-scale module of an OBB began November 2013. Sediment porewater quality data as well as soil and geocomposite hydrocarbon saturation data is currently being collected. These data will shed light on the OBB's capacity to degrade and store contaminants as they move from groundwater to surface water. If successful, this technology could greatly reduce the capital and human resources required to remediate a wide variety of sites.