

Groundwater Remediation - Shale Oil Refinery

Contaminated Water Solutions Case Study



Oceans-ESU Ltd designed and constructed a reed bed treatment system to remediate the groundwater at a former shale oil refinery and detergents manufacturing facility at Pumpherston. The site was earmarked for redevelopment, and a programme initiated to rework the site into a golf course. The refinery and manufacturing facilities had left substantial soil contamination, and the groundwater passing through the site was becoming contaminated and threatening to pollute sensitive local water courses.



Overview			
Type of Effluent	Area	Load	Notes
Ground water remediation.	2,000m ²	Removal of surfactants, hydrocarbons and other complex organics.	Winner of BP Amoco's chairman's Award, 1999 and the Engineering council Environment Award for Engineers, 1999.

Oceans-ESU Ltd were commissioned to design and build a reed bed to treat groundwater from cut-off drains around the site prior to discharge into the local burn. The water was found to be contaminated with PAH and surfactants, and in addition to treatment of these contaminants, the reed bed serves to balance the rate of runoff into the local burn.



The reed bed consists of two primary treatment beds and a second stage treatment system (a lagoon and a planted wetland area). In full use from day one, the system has produced continuing improvement in local water quality. Tolerance to mixed and fluctuating loads allows the beds to treat effluent at input rates three-fold higher than design, achieving an acceptable residence time of 4 days. Running and maintenance costs are minimal as reed bed systems are naturally regenerative.