Case Study

Pilot Study Confirms Walnut Shell Filter's Success in Raising Flux Rate Both Onshore and Offshore

Challenge

Stewart Environmental Consultants, LLC's produced water treatment facility in North Central Colorado, USA, conducted a pilot study on Monosep™ high-flow walnut shell filter to validate the robustness of the internalized backwash system while examining the effects of the flux increases on the performance of the filter.

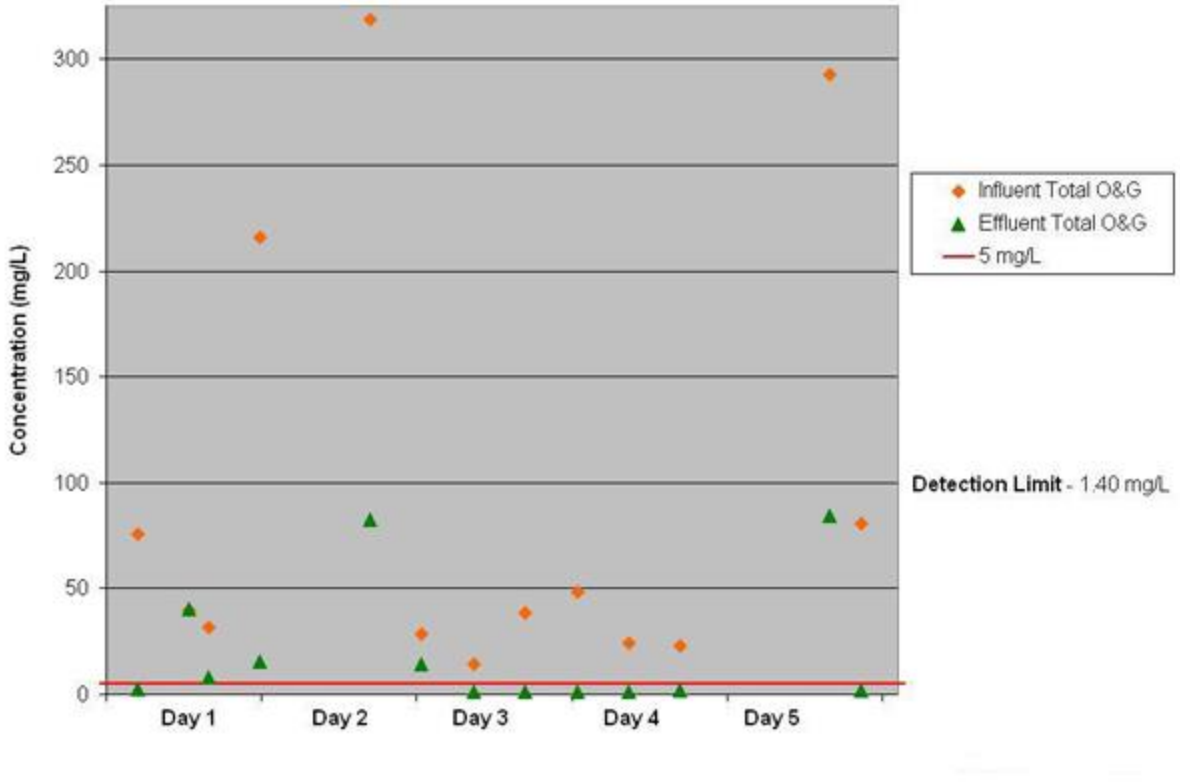
Solution

The pilot unit included an internalized backwash system that required no moving equipment. During the filtration cycle, dirty process water passed through the filter from top to bottom. Free oil and suspended solids were removed as the water passed through the walnut shell medium. The pilot was a two-vessel system, each vessel held approximately 700 pounds of black walnut shells. The system was capable of treating produced water at flux rates as high as 27 gal / m / sq ft and flows as high as 5760 bbl / day.

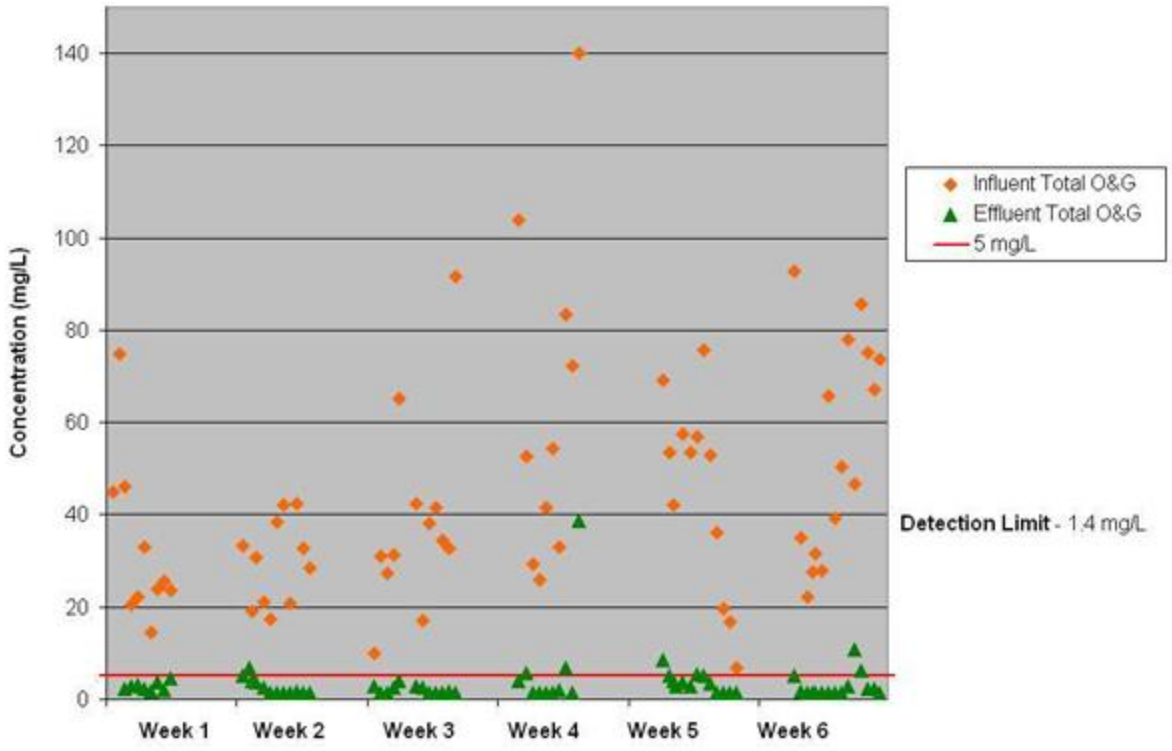
From April 27 to July 9, 2010 a pilot study was conducted at the test site to compare the oil and suspended solids loading when operating the system at two different flux rates of 13.5 gal / m / sq ft and 20.25 gal / m / sq ft.

Results

Study results showed the Monosep high-flow walnut shell filter pilot system from Siemens was able to consistently treat the produced water at the pilot site, with the filter pilot system effectively treating produced water of varying concentrations and flux rates while exhibiting successful backwash recovery and bed holding capacity.



This figure shows the influent and effluent total oil and grease results at 13/5 gal/m/sq ft flux rate.



This figure shows the influent and effluent total oil and grease results at 20.25 gal/m/sq ft flux rate.