

Vortechs® System Performance: Oil Removal Efficiency

Petroleum based hydrocarbons are transported in stormwater at event mean concentrations typically ranging from two to five mg/L in residential areas to greater than 40 mg/L in concentrated traffic areas. Primary sources include leakage from improperly maintained vehicles; direct dumping of used oil and accidental spillage during maintenance and refueling of vehicles. The following Contech Engineered Solutions system performance curve was generated from tests performed in the Contech Engineered Solutions laboratory, with a full scale Vortechs® model 2000, using 10W40 motor oil. Oil was metered into the system using a variable speed peristaltic pump, producing influent concentrations between 15 mg/L and 90 mg/L. Influent concentrations decreased with operating rates, to simulate field conditions where the majority of oil is transported in the first flush and diluted at high flow rates. All samples were taken in one liter tinted glass bottles, fixed with H₂SO₄, and analyzed according to EPA Method 1664 by an independent laboratory.

Many localities recognize the potentially lethal effects of oil and grease in aquatic systems and require treatment of stormwater from high-risk areas. The Contech Engineered Solutions system can help protect sensitive watersheds by removing very high percentages of incoming free oil. All Models provide emergency spill containment and can be designed to detain specific volumes. The graph below shows the removal efficiencies of the System over the range of operating rates. Routine storm events (about 80 to 90 percent of annual runoff volume) typically produce operating rates of less than 25 gpm/ft². At these lower operating rates, removal efficiencies are very high. Peak design storm flow rates (e.g., 10-year storms) may cause Contech Engineered Solutions systems to operate at up to 100 gpm/ft².

