

RAIDER ENVIRONMENTAL SERVICES, INC.
OPA LOCKA, FLORIDA

ATTACHMENT 2

DETAILED PROCESS DESCRIPTION

August, 2013

Detailed Used Oil Treatment Processing Description

Raider collects used oil from a variety of sources, including automotive repair shops, service stations, and utility companies. The oil is typically mixed with water, in concentrations ranging from 6% to 15%. In order to make the used oil viable as a replacement fuel, it is necessary to reduce the water content. A process flow diagram showing the steps required to collect and treat used oil is shown in Figure 1.

Raider utilizes a variety of treatment options, the most frequently used of which are thermal treatment and chemical treatment.

In the case of thermal treatment, the oil is delivered to the Raider facility by bulk trucks and placed into storage tanks. Since the density of the used oil is less than that of water, limited separation occurs in the storage tank. Water is periodically drained from the bottom of the tanks and treated in the Raider permitted water treatment facility. The used oil is then transferred to a thermal treatment process tank. This vessel contains coils which are heated using a thermal treatment fluid from a gas-fired burner. The used oil and water mixture is heated to a temperature of 110-180 degrees Fahrenheit. At the elevated temperature, the difference in density between the used oil and the water is increased, making removal of the water phase more efficient. Water is removed from the bottom of the tank, leaving clean used oil to be transferred to a Clean Used Oil Tank. The clean used oil is tested per Raider's permit requirements and sold to customers. A typical piping diagram of the flow of the oil is shown in Figure 2. This diagram is applicable for all storage tanks at the Opa Locka facility. All piping is 4 inch diameter carbon steel.

Chemical treatment of used oil accomplishes the same goal of reducing the water content by a different method. After the used oil is placed in a storage tank, proprietary chemicals are introduced into the tank and the tank circulated. The proprietary chemicals are hydrophilic and extract water from the mixture. After the tank has circulated for a period of time, the circulating pumps are stopped and the mixture allowed to stand. The water collects at the bottom of the tank and is removed. The used oil is tested per Raider's permit requirements and sold to customers.

Figure 1 - Raider Environmental Services
Flow Diagram



Figure 2 - Raider Environmental Services
Used Oil Piping Diagram

