



## Case Study (OP2)

### Problem – Refined Oil and Crude Oil Spill at a Refinery.



#### Site Location and Description – Refinery in South Texas

The refinery had a number of spills in several different areas within their facility. The hydrocarbon contaminated soil was a mix of refined and crude oils. The soil was excavated, collected and consolidated into one area, a bio-pad. The total amount of soil treated in the bio-pad was approximately 100 cubic yards.

**Contaminants Treated** - Refinery petroleum hydrocarbon waste and crude oils.

**Geology** - Caliche and Sandy Soil

**Starting Levels** - TPH levels from 8,000 to over 14,000 ppm. A sample composite was prepared in the treated area by collecting 10 samples from randomly selected points.

**Cleanup Standards** – per the State of Texas (TCEQ)

TPH (total petroleum hydrocarbons)	- less than 50 ppm.
BTEX (benzene, toluene, ethylbenzene, & xylenes)	- non detect
MTBE (methyl tertiary-butyl ether)	- non detect

**Treatment Method** - in situ

The soil was treated once with the Piranha mixture and tilled. Water was added at approximately 10%.

#### Project Results

At the end of the treatment period samples were collected and analyzed by a third party laboratory. Based on these analytical results the detected concentrations were below the TCEQ Class 1 Residential 30-acre soil limits.

The soil was successfully treated to meet the requirements set forth by the project manager and the State of Texas (TCEQ) in the Texas Risk Reduction Program (TRRP) Class 1 Residential standards for soil.

**The project was deemed to have been successfully completed, and no further treatment of the soil was recommended.**

**Actual Time Frame** – 60 days

*Third party testing standards used - TCEQ method TX1005 for TPH analysis. USEPA method 8260 or USEPA method 8021B for BTEX/MTBE (benzene, toluene, ethylbenzene, xylenes and methyl t-butyl ether)*

#### Goals

- ✓ To reduce the TPH and BTEX/MTBE levels in the soil.
- ✓ To clean the soil per State of Texas - TCEQ standards  
TPH - less than 50ppm  
BTEX/MTBE - non detect
- ✓ To complete project within 80 days

**Oppenheimer  
Products used**

❖ **Piranha**

#### Results Achieved

- ✓ **99.9% reduction** of refinery waste oils and crude oils.
- ✓ **Achieved** State of Texas requirements  
TPH - less than 50ppm  
BTEX/MTBE - non detect
- ✓ **Finished 25% ahead** of schedule.
- ✓ **Eliminated** cradle to grave liability.