

EX-SITU CHEMICAL OXIDATION FORMER INDUSTRIAL FACILITY CALIFORNIA



MEC^x, LLC (MEC^x) designed and implemented an ex-situ chemical oxidation (ESCO) remediation program immediately adjacent to a protected waterway in Northern California. The project site was formerly operated as an industrial facility and subsurface contaminants from the historical industrial operations were hindering beneficial redevelopment plans for the site.

The soils targeted for remediation were affected by a wide range of organic compounds, with diesel-range total petroleum hydrocarbons (TPH DRO) and oil-range TPH (TPH ORO) being the primary organic targets.

Prior to executing the field remediation program, MEC^x designed and performed a laboratory-scale design parameter evaluation (DPE; bench test) to determine the optimum dose of chemical oxidation agents. After MEC^x determined the optimum dosage, the full-scale remediation program was submitted to the environmental agency and subsequently approved for field application. The selected technology consists of MEC^x's patent-pending chemical oxidation process comprised of sodium persulfate activated by sodium percarbonate and other activators.

MEC^x achieved unparalleled oxidant/contaminant destruction efficiency using our patent-pending process during this project. Despite the high total organic carbon (TOC) loading introduced by unexpected wood and other organic debris in the soil to be treated, contaminant reductions ranging between 65% and 97% were observed. Initial TPH concentrations in pre-treatment soil ranged from ~5,000 mg/kg up to 100,000 mg/kg.

Soils from the target remediation area were excavated and placed into MEC^x-engineered aboveground treatment cells, which were constructed of earthen berms or concrete barriers and then lined with synthetic liner. After placement, large pieces of debris (including wood pilings and apparent fuel lines) were removed from the soils. MEC^x then sequentially applied chemical oxidant reagents to the soils in treatment cells. Once all of the reagents were distributed topically to the soils, MEC^x hydrated the soils/reagents while aggressively mixing the soil/reagent/water mixture to ensure full contact between the oxidants and target contaminants.

A total of 8,900 cubic yards of soil were treated over a period of approximately 25 days. After chemical reagents were dispersed into the soils, MEC^x performed field test to determine residual oxidant and activator concentrations. Once it was determined that the oxidant had been consumed, a thorough post-treatment soil sampling protocol was implemented by others to determine treatment efficiency and residual contaminant concentrations.

After reviewing post-treatment analytical data, the California regulatory agency issued closure for the site in the second quarter of 2007, only a few months after the field remediation program was commenced, thereby allowing beneficial redevelopment of the site to commence.

MEC^x, LLC Headquarters

3203 Audley Street
Houston, TX 77098
Phone (713) 585-7000
Fax (713) 585-7049

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