

Free Phase Recovery at a former Military Air Base in Brandenburg, Germany



BAUERUmweltgruppe

Client: BBG Brandenburgische Boden
Gesellschaft für Grundstücksverwaltung
und -verwertung mbH, Wünsdorf-Waldstadt, Germany

**Engineering Design
and Supervision:** FUGRO Berlin, IMAGO Berlin

Scope of works: Separation of a floating Kerosene Phase from Groundwater

Contract Period: 2002 until 2007



Project

In a first step the remediation process removes the free kerosene phase leaving no more than a maximum of 2 cm kerosene phase behind. Due to the simultaneous air contribution in the contaminant phase autochthonous bacteria and biological degradation processes will be stimulated. The remaining contamination in the capillary zone and as free phase will then be reduced by bioremediation.

the power supply for the pumps and although the necessary partial vacuum. Each unit is equipped with a vacuum producing system, a kerosene storage tank and a catalytic oxidation to treat soil vapour. Additionally the condensate which is build in the tubes during the pumping process is treated by a small stripper.

Electric power is supplied for both sites by independent generators. The generators are powered by modified diesel engines which use the separated kerosene from the contaminated site as an energy source.



ATEX-conform water ring vacuum pumps for soil vapour extraction. Partial vacuum is produced directly at the wells.



The Groundwater treatment plant is equipped with a kerosene storage tank, a power generator, a catalytic oxidation unit for off gas and a stripper for condensate treatment.



A 40m³ kerosene tank was used for collection of the recovered free phase. The kerosene was then reutilised as energy source for the on site power sets.

Remediation Site

The area in the south of Berlin where the remediation site is located was used as a military air base for more than 40 years. A 40 – 170 cm thick kerosene contamination floating on the groundwater level was found, caused by leakages in two storage tanks. The amount of kerosene contamination was estimated to be several thousand tons. Remediation became necessary because of the recent public use of the area.

Result

Pneumatic membrane pumps are used to separated the kerosene phase. By means of vertical-moveable filters the pumps are able capture the kerosene close to the groundwater surface. Then the contaminant is pumped from 15 to 20 m deep 6"-wells to the surface into storage tanks. The wells are located at the contamination hot spots. Additionally partial vacuum is produced directly at the well by water ring vacuum pumps to support the transfer of the kerosene to the wells in the aquifer.

Mobile treatment plant units are installed by FWS Filter- und Wassertechnik at each remediation spot. The units maintain