ISTD/ I-16-01
FERRARIS ENERGIS

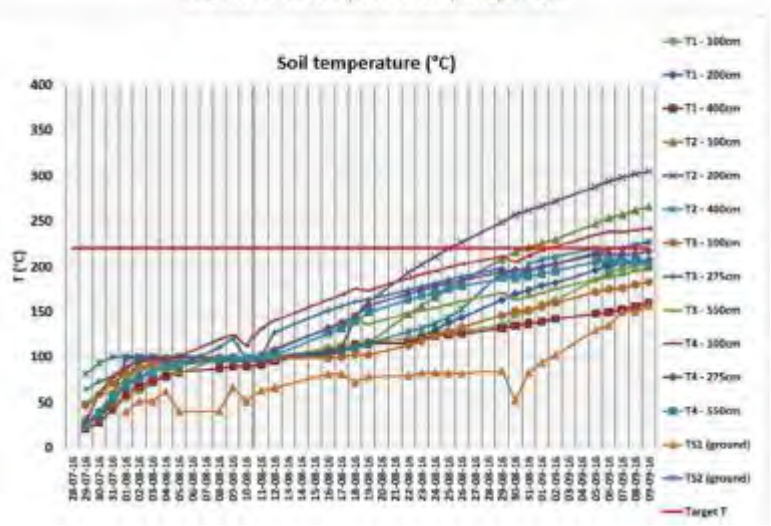
Context

The project took place in Italy, in Milan, in front of and behind the existing building on the site. The site is destined to become a parking lot.

To access the contaminated area (under the building), a pit (9.7 x 6.6m) was dug, at 3m depth. The treatment began on July 28, 2016 and ended on September 09, 2016, for a period of 43 days. The soil was impacted to a depth of 4.5m by Diesel (C10-C40). Peaks of concentration reached up to 3000mg / kg. The site was located on the edge of the building as well as under its infrastructures. The treatment plant consisted of 12 steam tubes and 6 Smart Burners fueled by the collected gases (reburn).

Monitoring

Evolution of temperatures (coldpoint):



Analysis Results

After treatment, several samples were collected on September 23 and 26, 2016:

- 5 inside the pit (5 to 7.5m underground)
- 3 inside the building (3 to 7m underground)

An analysis was carried out for all the hydrocarbons by gas chromatography. In the pit, outside the building, the treatment objective was reached up to 7m deep.

The capillary layer of the ground situated at the edge of the water table (from 7m up to 7.5m deep) is still contaminated. HAEMERS Technologies recommended the use of ISCO (oxidation decontamination) technology, facilitated by the ISTD treatment already carried out, to treat the remaining saturated zone, which would take only a few days.

Key words

Contaminants
TPH

Max. concentration
3.000

Volume
247

Tonnage
445

Nb of heating tubes
6

Temperature Target
220°C

Heating duration
43

Treatment targets
<100

Location
Milano - Italy

Future Use
Parking

Client
Ferraris Energis

Partner
Sirai

Consultant
TEI

Date
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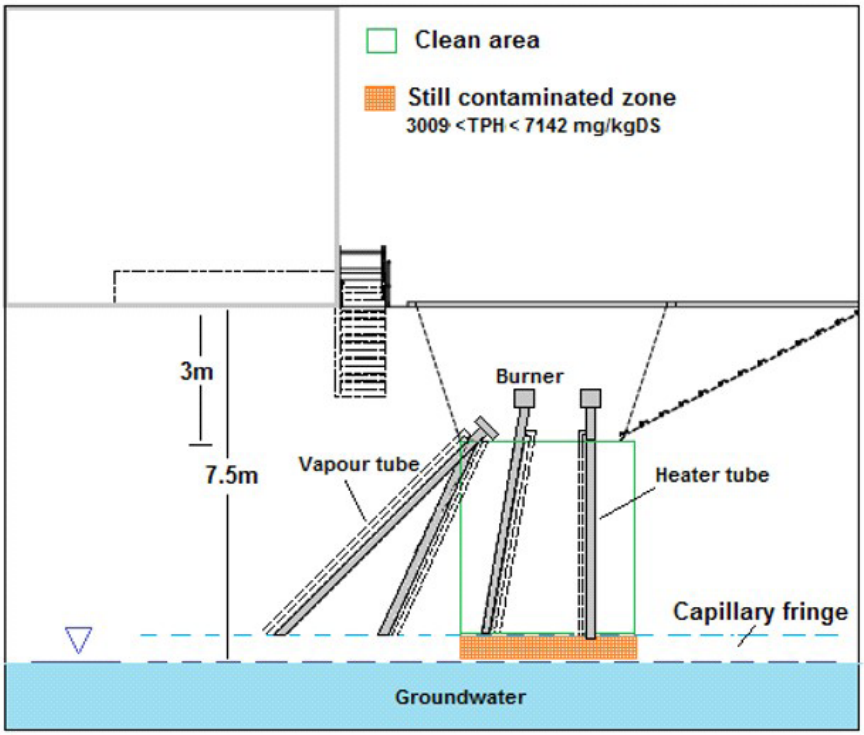
Monitoring

In the excavated area (area outside the building), the objective of the treatment was reached up to 7 m depth (bgl). From 7 to 7.5 m (bgl)- in the capillary fringe; See figure below- soil still contaminated with TPH. The minimum and maximum concentrations of TPH detected in this area are: 3009 and 7142 mg / kg-DS.



To achieve the sanitation goal in this area (capillary fringe), HAEMERS Technologies proposes to use ISCO technology with injection of persulfate at high temperature in a saturated zone. Due to the thermal mass of the soil (energy accumulated during ISTD treatment) persulfate activity may be better than activity at ambient temperature.