

# Integrated Remediation of a Petrol Filling Station, Middlesex, UK

## Enhanced Pump and Treat, Excavation Application and Barrier Injection



### Introduction

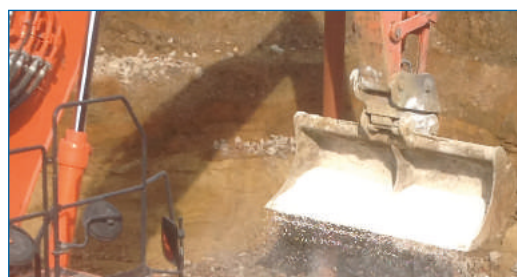
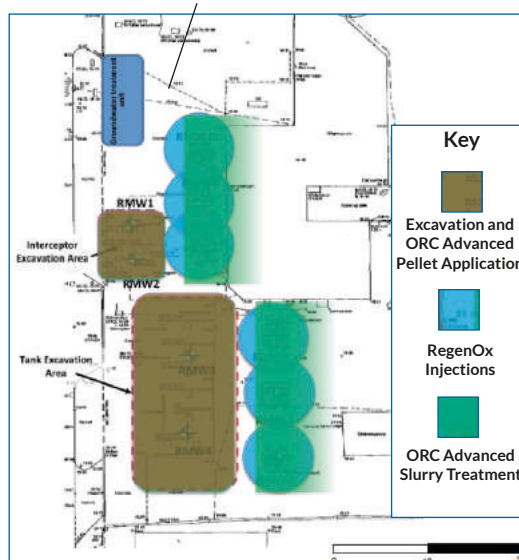
REGENESIS worked with RAKE Remediation and WDE Consulting to devise a fully integrated remediation strategy in order to provide accelerated remediation of a former petrol filling station. The remedial strategy comprised:

- Targeted hot-spot excavation and a Pump and Treat (P&T) system;
- Application of ORC Advanced Pellets at the base of the excavations;
- RegenOx injections and ORC Advanced slurry injection in barriers to provide enhanced natural attenuations (ENA).

### Design & Application

The treatment comprised targeted excavation of the most impacted soils, around the former UST location. This was followed by ORC Advanced Pellets application into the excavation to address the residual dissolved phase. LNAPL was removed from the groundwater in the surrounding plume using a P&T system. This was followed by multiple injections of RegenOx into the plume downgradient of the excavations in order to address the residual high levels of contamination in the groundwater.

ORC Advanced slurry was injected in two lines within the dissolved phase plume in order to degrade, through ENA, the migrating contamination and prevent any further egress from site.



### Remediation Details

#### Site Type:

Former petrol filling station

#### Project Driver:

Real estate transaction

#### Remediation Approach:

Excavation, Pump and Treat, In Situ Chemical Oxidation and Enhanced Aerobic Bioremediation

**Technologies:** RegenOx® and ORC-Advanced® (powder) and ORC-Advanced Pellets

### Geology

|   |         |
|---|---------|
|   | Bedrock |
| X | Gravel  |
| X | Sand    |
|   | Silt    |
| X | Clay    |

### Medium

|   |                |
|---|----------------|
| X | Groundwater    |
|   | Saturated Soil |
|   | Vadose Zone    |

### COC

|   |                        |
|---|------------------------|
| X | Petroleum Hydrocarbons |
| X | Chlorinated VOCs       |
|   | Free Phase             |
|   | Metals                 |

### COC Concentration Levels:

LNAPL

#### Treatment Level:

3 - 6m BGL

#### Area Treated:

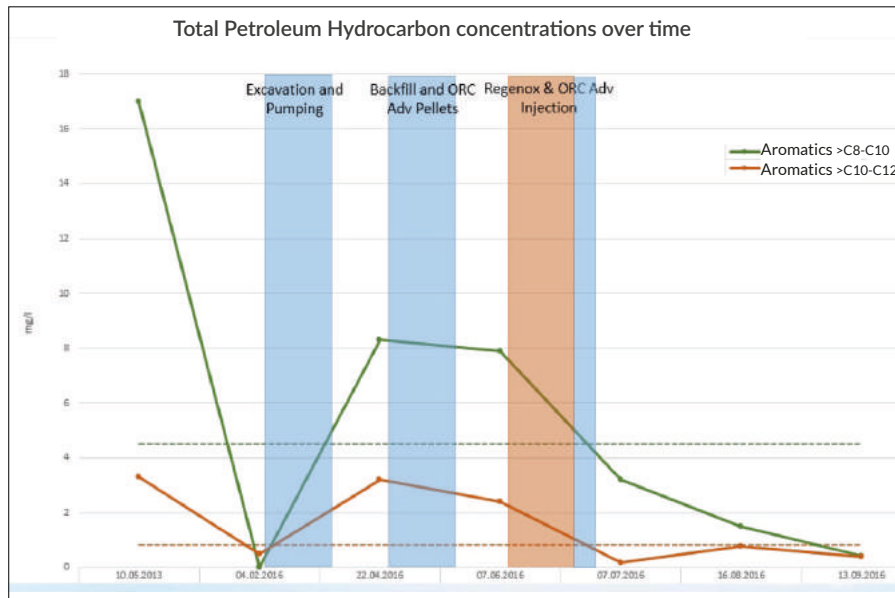
800m<sup>2</sup>

#### Remediation Cost:

£32k

## Results

Validation of groundwater contamination was completed throughout the remediation project, This allowed the timing and dosage to be adjusted across the site as the remediation progressed. TPH and BTEX concentrations were reduced by >90% to below target levels and regulatory closure has been achieved.



## Conclusion

- Within 6 months of the works commencing, the contamination onsite was reduced from measurable LNAPL down to stringent dissolved phase remedial targets for BTEX, TPH, PAH and VOCs.
- Regulatory closure of the site has now been achieved.
- During the validation period, construction works were commenced allowing the site to be developed without delay.
- The integration of REGENESIS' technologies with traditional methods of excavation and pump and treat, optimised the remediation process. This maximised treatment efficiency throughout, leading to savings in cost and time.
- Product type and format were tailored to take advantage of open excavations, enhance the physical abstraction system and provide barriers in situ.

For more information or to discuss your project, please contact:

Jack Shore  
 REGENESIS  
 District Manager UK & Scandinavia

jshore@regenesism.com  
 +44 (0) 1225 61 81 60

Contact Reference:

Simon Ware  
 WDE Consulting  
 Managing Director

sware@wdeconsulting.co.uk  
 +44 (0)1442 825570

