BTEX Remediation in Low Permeability Formation

ART LowPerma Technology

Accelerated Remediation Technologies, LLC (*ART*) was retained by Barker Lemar Engineering Consultants, a contractor for the Iowa UST Insurance Fund to provide the **ART LowPerma Technology** at a BTEX site in Western Iowa. Nearby residential drinking water supply wells were being threatened, therefore, effective remedial measures were necessary. Screening of available remediation alternatives to remedy groundwater at the site concluded that cost-efficient alternatives were limited. Innovative remedial measures were evaluated and the ART LowPerma Technology was selected due to its solid concept and cost savings potential. *ART* worked closely with the consultant to demonstrate the **LowPerma Technology** at this site.

Site Description: Former gas station in a small town in Western Iowa. Soil types consist of low permeability clay with average depth to groundwater approximately 50 feet below grade with an estimated aquifer permeability of 10^{-8} cm/sec. The total depth of the **ART LowPerma** well was approximately 70 feet.

Site Remediation History: The consultant evaluated numerous remedial alternatives for the site including high vacuum extraction and injection based technologies to remediate soils and mitigate offsite plume migration. The **ART LowPerma Technology** was selected and installed in a single, 4-inch well. The **LowPerma** system operated for a total of approximately 30 days due to an undersized pneumatic cylinder. However, the LowPerma Technology has achieved the following results:

ART LowPerma Technology Remediation Results

Monitoring Well	Distance From ART LowPerma Well	Benzene (1) (ug/l)	Benzene (2) (ug/l)	Percent Reduction
MW-3R	10 ft	21,500	10,500	51%
MW-2E	30 ft	1,640	450	73%
MW-1R	40 ft	2,920	2,260	23%

(1) Initial concentrations
(2) Concentrations after approx. 30 days of operation

Dissolved oxygen analytical testing indicated concentrations increased significantly after the operation of the **LowPerma Technology**. Additionally, water level changes within hours of startup confirmed that recirculation was occurring in the subsurface.

Summary: Within a short period of operation and despite system disruptions, the *ART LowPerma Technology* achieved dramatic contaminant reduction. Analytical results indicate significant groundwater cleanup is occurring.

For more information about the *ART Technologies,* contact
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