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CASE SUMMARY: PETROLEUM HYDROCARBON VOC TREATMENT AT A FORMER GAS STATION

Overview: Petroleum hydrocarbons and many other dangerous VOCs were discovered in the soil and groundwater at a former gasoline service station in eastern North Carolina. Underground storage tanks had previously been removed, but groundwater VOC levels persisted. Impacted soil beneath the former dispenser island from leaking supply lines were identified as the source. The objectives of this pilot study were to remove the impacted soils and take a minimalistic, yet effective, approach to addressing residual groundwater contamination. The goal of the project was to deplete groundwater contaminants to below their respective NC 2L standards.

Approach: The RemRx™ technical consulting team utilized a proprietary remediation software to define CRP dosing requirements and worked directly with the site management consulting team to design a site-specific remedial plan. A 20' x 20' excavation perimeter was defined based on historical soil samples and groundwater monitoring data. Excavation depth of 8 feet allowed for placement of 902 lbs of persulfate-releasing RemRx™ CRP into the smear zone (Figure 1).

Contaminant types and concentrations, as well as natural oxidant demand testing, led to site-specific dosing of 440 lbs of slow release CRP, followed by 462 lbs of fast release CRP. The amendments were placed 1 foot into the smear zone prior to backfilling with clean fill. These CRP applications allow for the treatment of residual contaminants left in the "margins".

RemRx manufactures innovative solutions to solve widespread environmental issues.

RemRx™ CRP is the patented system of **Controlled Release Pellets** that provide a time-released, prescriptive oxidant dosage that **sustains** delivery into the subsurface with only a single deployment. This extended release provides a constant feed of oxidant to combat natural oxidant demand and back diffusion, in order to mitigate rebounding and tailing issues that are common to traditional ISCO treatment methods. Ultimately, this means increased efficiency and decreased total project costs.

RemRx™ CRP based treatments utilize a range of oxidants and can be used to remediate chlorinated solvents, petroleum products, and numerous other industrial contaminants.

RemRx™ is actively partnering with innovative remediation site managers in pilot and test site deployments. Contact us!

Evaluated data: Field data from the site (Figure 1) is shown in Table 1. Since deployment of CRP Persulfate in March 2019, BTEX concentrations have decreased in the majority of monitoring wells. Persulfate is still being detected a year after deployment. Additionally, the product of persulfate oxidation reactions, sulfate, is detected in high concentrations in some wells. Incoming site data continues to be monitored, and trends in hydrogeological parameters are evaluated to better understand the efficacy of remediation.

Figure 1. Site map of former gas station. Excavation and area of emplacement contains MW2R. Groundwater flow is NE.

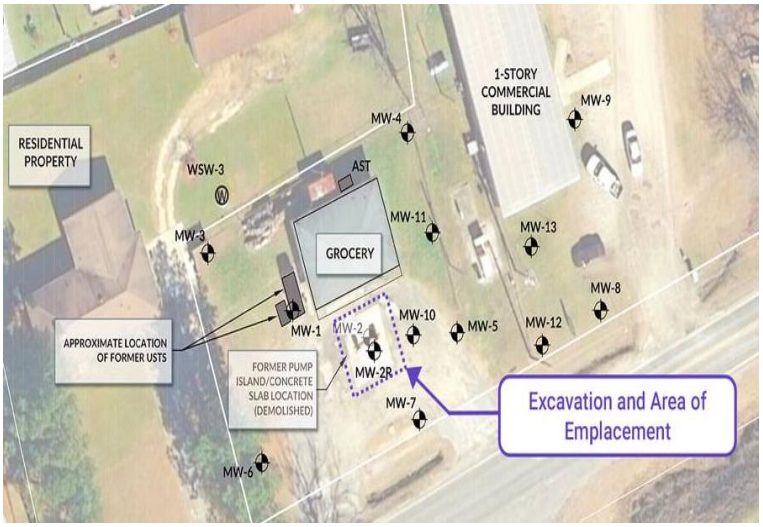

Table 1. BTEX levels pre- and post-deployment of CRP Persulfate

	MW2R	MW5	MW8	MW10	MW11	MW12	MW13
1/14/2019	*10706*	*414*	*0*	*24240*	*31.2*	*204.2*	*7070*
4/15/2019	944	286	17.2	11960	0	62.5	4650
6/4/2019	230	985	54.3	15170	33.9	91.3	3740
7/25/2019	1004	736	440	12450	45.9	136.2	4120
10/14/2019	2350	304	432	9640	133.5	81.4	4260
1/8/2020	2350	14.1	0	11730	52.8	0	3150
2/17/2020	17880	10.68	0	14720	0	0	2140
percent change	67.0	-97.4	0	-39.3	-100.0	-100.0	-69.7