# Pipeline Release
LaGrange, GA

Exo Tech performed ISCO injections at two locations along a pipeline which experienced a petroleum release in the 1950s. The pipeline was buried 5 feet deep in Piedmont saprolite soils consisting of silty-clays and clayey silts with depth to groundwater ranging from 11-21 feet below ground surface (bgs). Maximum dissolved benzene concentrations were approximately 7,500 μg/L. Target goals were to reduce benzene to 3,750 μg/L or below. An aerobic bio-stimulant treatment was performed in 2007 which appeared effective initially; however, concentrations increased later due to mass desorption.

In the first location, Exo Tech injected approximately 10,000 pounds of iron activated sodium persulfate in 2010. Iron activation was chosen due to low natural pH conditions at the site. The injection was performed through the direct push rod train into -60- points. Confirmatory sampling over a 6-month period indicated a 90-95% reduction in total BTEX, with a reduction in dissolved benzene from approximately 10,000 μg/L to 1,000 μg/L, *exceeding treatment goals*.
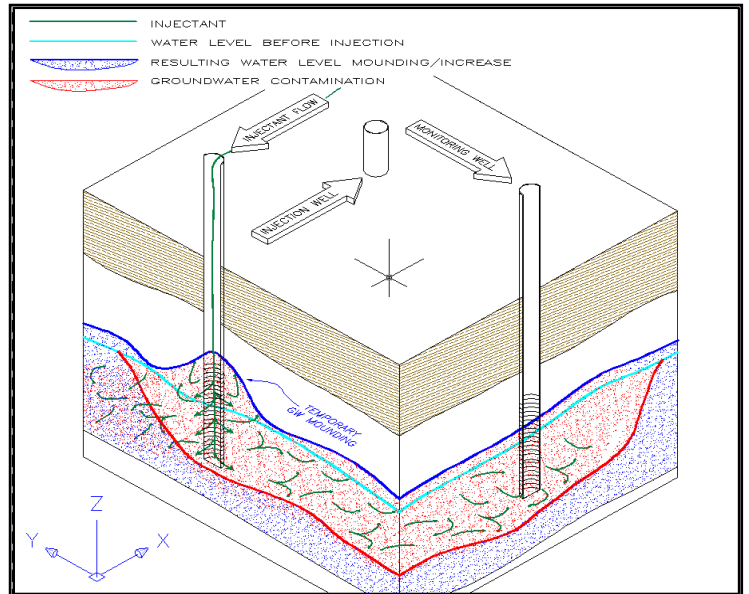
In the second pipeline location, Exo Tech performed a more comprehensive injection in October 2011 that consisted of approximately 20,500 pounds of iron activated persulfate delivered into 135 points. Treatment goals in this location were to reduce dissolved BTEX to below ACLs or levels supportive of monitored natural attenuation. Dissolved benzene was detected at concentrations up to 10,000 μg/L, with free product historically observed. To safeguard against corrosion (resulting from low pH caused by FeEDTA activation), *Exo Tech developed a citrus based iron chelate for persulfate activation.* Laboratory testing indicated that the citrus chelate worked as effectively as FeEDTA and produced an oxidant solution with an average pH of 5, as compared to 2-3 for FeEDTA activation. Confirmatory sampling results are pending.