Stabilization of DNAPL at a Former Creosote Wood Treating Site

Douglas Cervenak, P.E., Key Environmental Inc., Carnegie, Pennsylvania
Peter Sawchuck, P.E., Key Environmental Inc., Portland, Maine
Mitchell Brouerman, Beazer East, Inc., Pittsburgh, Pennsylvania
Robert Fisher, Beazer East Inc., Pittsburgh, Pennsylvania
Kerri Mullins, SK Services (East), Kearny, New Jersey
Steven Radel, Renewable Resources Company, Milford, Massachusetts

In-place stabilization of soils containing Dense Non Aqueous Phase Liquid (DNAPL) was performed at a former creosote wood treating site in New Jersey to immobilize the DNAPL, minimize future dissolution of constituents to groundwater, and expedite natural attenuation. The use of this innovative physical treatment technology was a more cost-effective remedial solution than conventional approaches to DNAPL contamination at former wood treating sites. In addition to being more cost effective, the resulting stabilized soil mass will have sufficient strength to support future redevelopment and will not require significant operation and maintenance. Following remediation, the site will be redeveloped as commercial or industrial property. The selection and implementation of the DNAPL stabilization technology was conducted in accordance with the New Jersey’s Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

A total of 15,000 cubic yards of soils containing DNAPL were stabilized in accordance with the NJDEP-approved Remedial Action Work Plan. The stabilized soils were stabilized to a depth of up to 7 feet and groundwater was encountered from 2 to 5 feet below the ground surface. The stabilization was conducted by adding a specific mass of Portland cement to the soils containing DNAPL in the proportion determined to be effective in the treatability study and was blended using specialized excavator-mounted mixing equipment to create a solid, homogeneous stabilized soil-cement mass. Following stabilization, confirmatory test pits were performed, which verified the effectiveness of the stabilization.
Potential Source Material Prior to Stabilization

Close Up of Mixing Head
Stabilization of Potential Source Material

Test Pit of Stabilized Material
Douglas Cervenak, P.E., Key Environmental Inc., Carnegie, Pennsylvania
412-279-3363, 412-279-4332, dcervenak@keyenvir.com

Peter Sawchuck, P.E., Key Environmental Inc., Portland, Maine
207-772-8100, 2017-772-8101, psawchuck@keyenvir.com

Mitchell Brourman, Beazer East, Inc., Pittsburgh, Pennsylvania
412-208-8805, 412-208-8869, BroumanM@hansonle.com

Robert Fisher, Beazer East Inc., Pittsburgh, Pennsylvania
412-208-8860, 412-208-8869, FisherBo@hansonle.com

Kerri Mullins, SK Services (East), Kearny, New Jersey
201-246-8354, 201-246-8512, kmullins@safety-kleen.com

Steven Radel, Renewable Resources Company, Milford, Massachusetts
508-482-0861, 508-482-0847, sradel@renewableresourcesco.com