

INTRODUCTION-

In-Situ Soil blending was recently performed by Exo Tech in July-August 2011 at a former fitness equipment manufacturing facility in Opelika, Alabama. The treatment area (SWMU) consisted of vadose zone soils containing predominantly volatile organic compounds (VOCs) namely toluene, xylenes, trimethylbenzene, isopropyl-benzene (cumene) and naphthalene which resulted from solvent releases via distribution piping at a bulk-storage tank farm. Preliminary characterization indicated total contaminant concentrations were in excess of 2000 mg/kg soil. Soils consist of sandy-clay and sandy-silt saprolites typical of Piedmont environments. Risk-based threshold levels were calculated resulting in target concentrations in excess of reported levels based on the low risk and distance to receptors. Due to the presence of abandoned product piping (potential source material) and elevated soil concentrations, limited soil removal (287 y³) and off-site Subtitle D landfill disposal was proposed in a Corrective Action Plan (CAP). ADEM approved the CAP but classified the impacted soils as hazardous waste requiring disposal at a Subtitle C landfill at costs in excess of \$250 per ton. In-Situ soil blending was proposed at a cost of approximately \$150 per ton as a more cost more effective alternative.

OXIDANT BLEND-

Prior treatability studies (performed by Exo Tech) determined that an aggressive catalyzed hydrogen peroxide (CHP) application would be the most effective remedy, with treatability results indicating significant contaminant reduction in one to two weeks. CHP oxidation involves the release of hydroxyl radicals and operates similarly to Fenton's Reaction without the need for acidic conditions. Treatability testing also indicated the addition of citrus-based stabilizers provided pH buffering and offered greater control over the reaction kinetics, allowing hydroxyl radical formation over a longer timeframe.



BLENDING APPARATUS-

To allow soil to be blended in place more efficiently, Exo Tech used a specially designed blending head mounted on an excavator, which provides over 10,000 foot-pounds of torque to crush and blend soils to depths approaching 20 feet. The blending head allows maximum contact between the contaminated soil and oxidant blend, providing the most ideal situation for In-Situ Chemical Oxidation (ISCO).

APPLICATION AND RESULTS-

Hydrogen peroxide was applied approximately 5 grams per kilogram of soil (0.5% bulk mass) and sodium persulfate was applied at approximately 5.8 grams per kilogram of soil, while bringing the soil to a water content to approximately 34% w/w. Confirmatory sample screening and/or lab analysis indicated that total VOCs were reduced on average to 100 mg/kg or lower, sufficient to meet treatment goals.



To find out how soil blending can bring closure to your site, or for more information on other services provided by ExoTech, Inc., please visit:

www.ExoTechInc.com

or, call us at:

770-207-0222



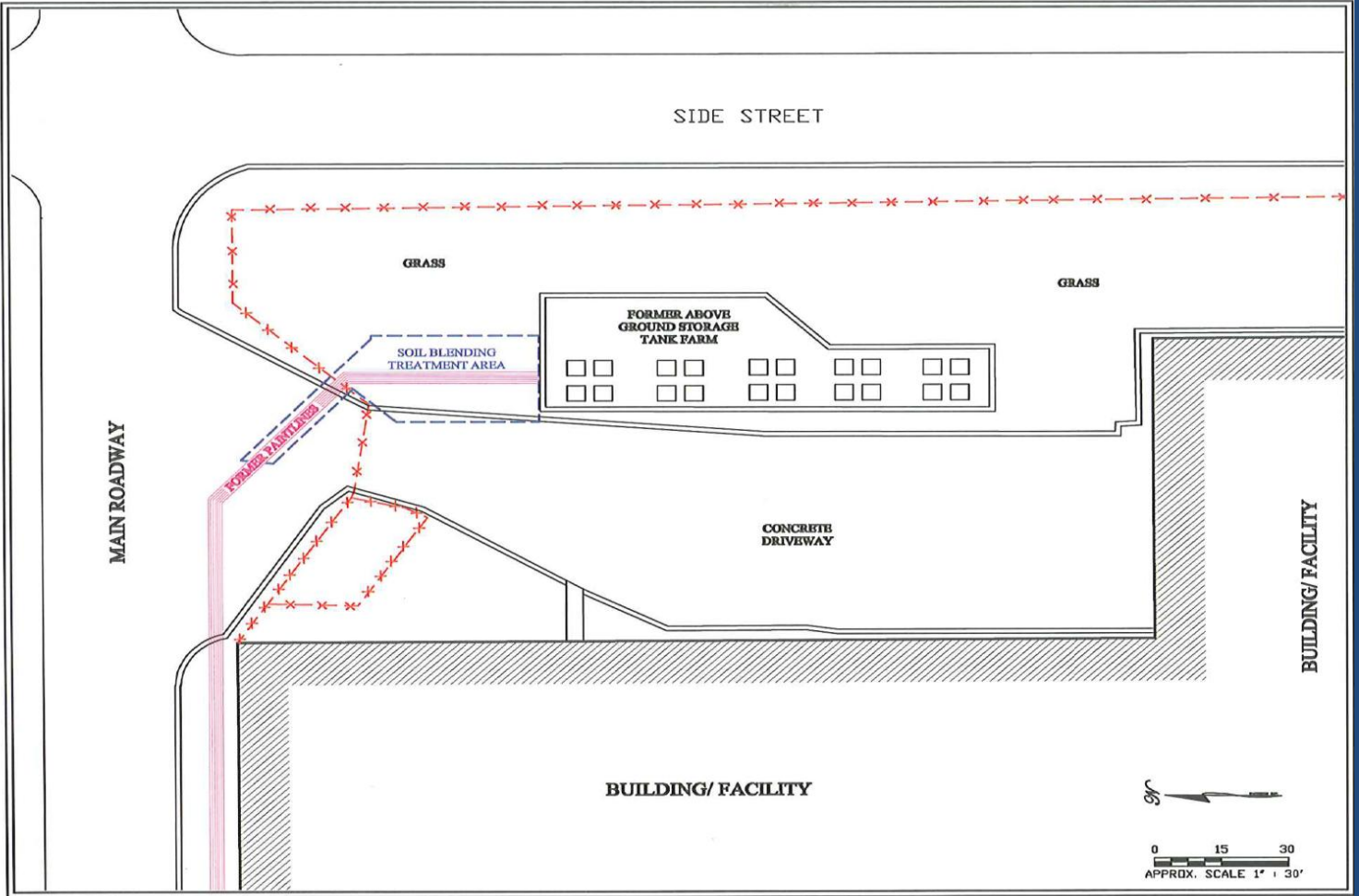


Fig. 1- Highlight of Soil Blending Area (Approx. 225 cuyd).

