



Soil & Groundwater Drilling

Integrated approach to soil and groundwater sampling using trained personnel and versatile equipment

GeoProbe Equipment

MSE uses a Geoprobe Model 66DT track-mounted, direct-push machine to collect soil and groundwater samples, set small diameter wells, and set gamma logging access ports into the subsurface. The track-mounted machine has proven to be very versatile, allowing it to be maneuvered over rough terrain and into locations with limited room and access, often going where a pick-up or trailer mounted rigs cannot venture. The 66DT rig can also probe slant holes, allowing soil samples to be collected under buildings and other surface improvements. The side table shows the Geoprobe specifications.

Our Geoprobe DT-21 soil sampling system allows continuous sampling of soil over the entire length of the borehole. The DT-21 dual tube system creates a cased hole, preventing slough from falling into the hole and cross-contaminating soil samples. The soil is collected in transparent plastic liners that are retrieved after the rod system has been driven through the sample interval. The plastic liner contains the sample, preventing the spread of contamination once it is brought to the surface. To sample the next interval, a new liner is lowered into the outer casing and the process is repeated until total depth is achieved. If soil sampling with the 2.125 inch DT-21 system becomes problematic due to large gravel plugging the opening of the sample system, we also offer the larger DT-32 dual rod sampling system, which has proven to be successful at collecting soil samples in difficult sampling conditions.

MSE also maintains a support trailer to haul the Geoprobe machine, which is stocked with hand tools, repair parts,

safety equipment, Geoprobe tooling, decontamination equipment, and other support equipment. The trailer also serves as an in-field shelter in which safety and pre-job meetings can be held.

We also provide a photo-ionization detector (PID) to screen the soil samples for fuel oil contamination (and a backup unit). The detector is calibrated in the field at the start of each day and after lunch to insure the instruments accuracy. We collect soil headspace readings by placing soil samples in plastic bags and measuring volatile organic compound concentration with the PID.

Geoprobe 66DT Specifications

Stroke	66 in	1676 mm
Weight	4,900 lbs	2,225 Kg
Width	48 in	1219 mm
Length (folded)	94 in	2388 mm
Height (folded)	85 in	2159 mm
Height (unfolded)	153 in	3886 mm
Lateral Movement (side to side)	39 in	991 mm
Foot Travel	39 in	991 mm
Extension	15 in	381 mm
Oscillation (both directions)	6 degrees from vertical	
Down Force	34,000 lbs	151 kN
Retraction Force	46,000 lbs	205 kN
Hydraulic Pressure (max)	3,000 psi	207 bar
Hydraulic Flow Rate (system)	30 gpm	114 Lpm
Hammer System	GH60	GH60
Percussion Rate	32 Hz	32 Hz
Torque (hammer rate)	560 ft. lb	759 Nm
Rotation Rate (bi-directional)	240 rpm	
Auger head torque (max)	3,000 ft. lb	4,067 Nm
Rotation rate	0 - 150 rpm	

MSE We effectively manage people and processes to exceed customer expectations. Our technical expertise is matched only by our commitment to work with you at all levels.

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MSE Technology Applications, Inc. (MSE) is a diversified engineering and technology solutions company providing a wide range of professional services to the government and private industry. We have three decades of professional service experience that includes thousands of successful project deliveries and technology innovations.

We have completed numerous Geoprobe projects ranging from soil sampling in Washington (Hanford site) and Idaho to grouting at Brookhaven National Laboratory (BLN) to soil samples for Atlantic Richfield Company (ARCO) at Superfund sites.

INTEC Vessel VES-UTI-681 Soil Sampling

Soil investigation around a large above-ground fuel oil storage tank that was leaking. Collected continuous soil samples from the surface to the alluvium/basalt interface found to be 40 to 45 feet below land surface; used slant probing to collect samples from beneath the storage tank to help characterize the fuel oil release.

INTEC Operable Unit 3-14 Tank Farm Soils Investigation

Investigate the nature and extent of radiological contamination due to releases in the underground piping and Tank Farm transfer systems: developed sampling techniques during field trials to minimize radiological exposure during sample collection activities; installing subsurface gamma probes, vertical sample collection holes, and slant sample collection holes. The gamma probes were driven to a depth of approximately 40 ft to the basalt/alluvium interface.

CPP-34A/B Trenches Soil Characterization

Conduct verification soil sampling at the CPP-34A/B contamination site, outside INTEC, to confirm that contaminants of concern and I-129 concentrations were not exceeded in CPP-34 A/B soils. Verification sampling involved collecting 120 soil samples using the Geoprobe DT-21 and DT-32 dual-tube sampling systems to a depth of 22 ft below ground level (bgl).

CPP37B and CPP-37C Soil Characterization

Conduct Geoprobe soil sampling at the CPP-37B and CPP-37C sites, inside INTEC, to determine if contaminant remediation goals were exceeded in the two areas and if site remediation was necessary. Used Geoprobe 66DT track rig and dual tube sampling systems to collect soil samples from 6 different locations down to 30 ft and 11 locations down to 20 ft. Soil samples were collected in plastic liners, brought to the surface and handed to customer for sample preparation and shipping.

CPP-603 Soil Characterization Around Drain Line

Conduct investigative soil sampling near drain line PLA-100115 near the southwest corner of building CPP-603 (INTEC). Collected soil samples to help in new CERCLA site identification. The data collected was used to determine if releases from PLA-100115 under CPP-603 migrated beyond the building footprint. MSE personnel operated a Geoprobe 66DT direct push machine using the DT-21 dual tube sampling system. To avoid hitting buried utilities, we used a hand auger to drill a pilot hole to clear the location of any utilities at depth, before using the GeoProbe. Samples were collected in clear plastic liners, removed from the outer casing, and given to customer for processing.

In-Situ Stabilization CERCLA Treatability Study, Radioactive Waste Management Complex, INL

Prepared specialized procedural plans to implement innovative field investigation techniques (field permeability testing, geophysical surveys, and sonic core drilling) to evaluate and verify the effectiveness of the treatment process to meet performance objectives.



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The Geoprobe soil sampling system allows continuous sampling of soil over the entire length of the borehole. The dual tube system creates a cased hole and soil is collected in transparent plastic liners retrieved after the rod system has been driven through the sample interval preventing contamination.

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