

Mini SimulProbe®

Gregg Drilling & Testing, Inc. uses a Mini SimulProbe® to collect groundwater samples and correlative soil cores or soil-gas samples and correlative soil cores. Although the purpose of the sampler is to collect soil samples simultaneously with liquid or gas, the mini probe can also be used to collect gas or liquid only samples. The mini probe has an advantage over the maxi probe in that its small design eliminates the need to trip out the bit in certain drill rig setups thereby shortening sample time.

The MiniProbe® is shown below in its groundwater mode, *Figure MiniSP*. The core barrel varies between 14 and 20 inches depending on the drive shoe used and if the SimulProbe® Latch Activated Tip (SPLAT) is attached. SPLAT is a dummy tip that allows the probe to be advanced to a sampling depth before retracting to release the tip and then advancing to collect a soil sample. The SPLAT allows the MiniProbe® to advance through downhole sluff created from hollow stem auger drilling, or mud infiltrate from mud rotary drilling. When used with direct push, the probe can be pushed to the desired sample interval before collecting a sample.

To collect soil and groundwater samples, the probe is operated using nitrogen back pressurization and a groundwater canister, with or without vacuum assistance. This method can be applied to both mud rotary and cased hole operations. For safety, the MaxiProbe® is always pressurized and depressurized inside the casing. There are a number of options to obtain the sample once it is lowered to the bottom of a hole. The first method is if SPLAT is not being used. The SimulProbe® is driven the full distance of the mini core barrel then jerked back to expose the screen. Back pressure is released and the canister is allowed to fill. The second method involves the use of SPLAT to advance the sampler to desired depth. The SPLAT is then released, the sampler driven forward to collect the core sample, and then the water sample is taken. The third option closely resembles the second, the difference being that the water sample is taken before the core sample allowing the water sample to correlate to the top of the core sample rather than the bottom. The last two options are similar to sampling procedures with direct push rigs.

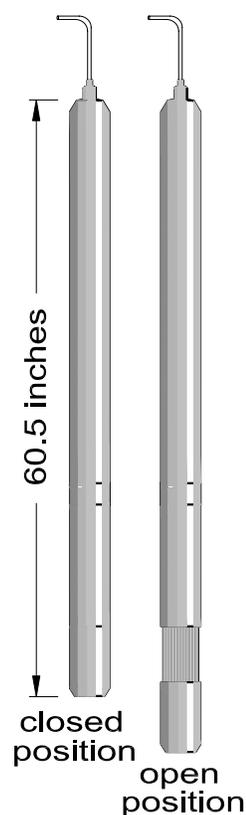


Figure MiniSP

When soil-gas samples are collected, the MiniProbe® can be utilized in two different fashions. The first method involves a wire-line down-hole (or up-hole) hammer and requires an up-hole vacuum pump. The SimulProbe® can be used with the SPLAT allowing advancement to a specified depth, removal of SPLAT, and sample retrieval. A gas sample can be taken before or after the soil sample allowing for retrieval of gas samples corresponding to either the top or bottom of the core. The “drive and sniff” technique can also be used where appropriate to “sniff” the vacuum pump exhaust with an OVM. The probe is then pulled back 1 or 2 inches to expose a screen. The vacuum pump is used to purge the line and then collect a soil gas sample.

The second method of obtaining soil-gas samples with the SimulProbe® uses the “drive and sniff” technique to gain continuous and discrete soil gas and pressure response profiling of a soil core. In this scenario the probe is driven 4 to 6 inches below the bottom of a borehole before the vacuum pump purges the line. The OVM is monitored until readings stabilize; vacuum gauge pressure and flow meter responses are then recorded. This is repeated as many times as necessary along the length of the core until the probe has been pushed to the full core barrel length. If using the SPLAT, the probe is combined with direct push technology to gain a continuous profile or to stop at any point and monitor for potential VOC presence.

