

Soil Sampling

Non-ground disturbing technique

Soils are layered mixtures of mineral and organic particles on the land surface, formed over very long time periods from the weathering and erosion of rocks, the transport and deposition of sediments, and interactions with living organisms.

Soils vary in type, age and characteristics but all contain traces of minerals of the rocks, sediments and organisms from which they were derived.

Soil sampling involves collecting samples of soil from the surface of the Earth and analysing them to determine which chemical elements are present.

Geochemical soil sampling is a low impact sampling technique that has the potential to 'see' through overlying soil to the rocks below and help target areas of interest and / or prospectivity.

Soil samples are generally collected on a gridded pattern.

A fine soil sample (<3mm) or a coarse lag sample (3-15mm) may be collected depending on the soil type and characteristics.

Soil samples are collected from near surface i.e. generally <50cm (Figures 3 and 4), while lag samples are collected at surface (Figures 1 and 2).

Equipment required to collect and prepare geochemical soil samples in the field includes:

- Global Positioning System (GPS) to record the location of the sample site
- Shovel or pick (shallow) or hand / motorised spiral auger (deeper) to collect fine soil sample
- Dustpan and brush or plunger magnets to collect coarse lag sample (see Figure 1 and 2)
- Metal or plastic scoop to remove soil from excavated sample site
- Metal sieves and receiving pan to sieve and collect sample; and
- Chemical-free paper or calico sample bag to contain and store sample.

The process of collecting and preparing geochemical soil samples is relatively quick (minutes) and has little to no impact on the surrounding environment or land use. Any holes dug will be infilled, returning the site to the condition it was in before sampling.

Once collected and prepared, geochemical soil samples are sent to a laboratory for analysis.



Figure 1: Plunger magnet being used to collect magnetic lag sample from surface



Figure 2: Close-up of magnetic lag sample attracted to plunger magnets. When the ring is at the top of the plunger, the magnet is pulled and sample is released



Figure 3: Pick being used to excavate soil sample with scoop, sieve and receiving pan in foreground



Figure 4: Example of hand auger sample site with sieve and shovel in background and sample packet in foreground