

# Geophysical Techniques for Shallow Environmental Investigations



## Magnetic Method

Magnetic methods are very effective at locating buried metallic objects such as UST's, abandoned oil wells, and utilities. The magnetic method involves the measurement of earth's total magnetic field, a component of the earth's magnetic field, or the horizontal the intensity of the or vertical gradient of the earth's magnetic field.

Anomalies in the earth's magnetic field are caused by induced or remanent magnetism. Induced magnetic anomalies are the result of secondary magnetization induced in a ferrous body by the earth's magnetic field. The shape and amplitude of an induced magnetic anomaly is a function of the orientation, geometry, size, depth, and magnetic susceptibility of the body as well as the intensity and inclination of the earth's magnetic field in the survey area. The magnetic method is an effective way to search for small metallic objects, such as buried ordnance and drums, because magnetic anomalies have spatial dimensions much larger than those of the objects themselves.

GEOVision geophysicists use the magnetic method to:

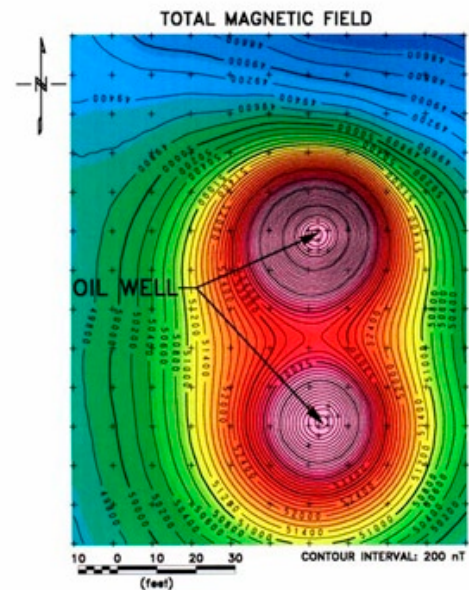
- Locate abandoned steel well casings
- Locate buried tanks and pipes
- Locate pits and trenches containing buried metallic debris
- Detect buried ordnance
- Map old waste sites and landfill boundaries
- Clear drilling locations
- Map basement faults and geology
- Investigate archaeological sites

GEOVision geophysicists are familiar with a variety of magnetometers including the EDA OmniPlus and Omni IV proton precession magnetometer, GEM GSM-19 Overhauser effect magnetometer, Geometrics G-822 and G-858 optically pumped cesium magnetometers, Scintrex MF-2 fluxgate magnetometer, and Schonstedt Model GA-72CV magnetometer/ordnance locator.

GEOVision geophysicists generally present magnetic data as color-enhanced contour maps. These maps are generated using the Geosoft Oasis montaj Mapping system. This, in turn, allows for rapid visual interpretation by expert and novice alike.



A geometrics g-858 Magnetometer in operation



Magnetic Survey to Locate Abandoned Oil Wells



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