Terraplus
empowering discovery

your source for geophysical instruments

GEM-2 Multi-Frequency EM Sensor

for Ground and UAV Surveys

The GEM-2 is a multi-frequency, digital, programmable, broadband electromagnetic sensor combining cutting-edge technology with simplicity of use. The light-weight GEM-2 (3.6kg) can be used as a handheld or UAV sensor.

Data is recorded onto an onboard USB stick with GPS input and timestamps automatically merged with the data. For UAV surveys, recommended flight altitudes are 1-2 meters above ground level and an option to power the system from the UAV's batteries is also available.

Features

- Frequency domain operation at up to 10 simultaneous frequencies
- Electrical conductivity / magnetic susceptibility data
- Configurable for ground or UAV surveys
- Real time positioning with GPS receiver

Technical Specifications

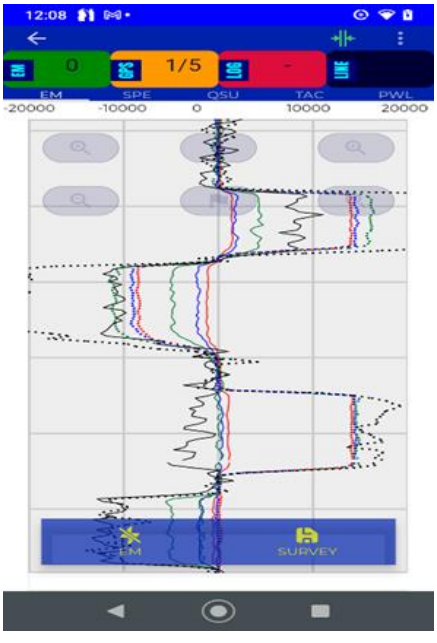
	Programmable Operation
Bandwidth	30 Hz to 93 KHz
Frequency Domain	Single or Multiple frequencies
Sampling Rate	30 Hz, 25 Hz
Ski Dimensions	L 183cm, W 12.5cm
Coil Configuration	Coplanar
Maximum TX Moment	3 Am^2 at 330 Hz
Output	In phase and Quadrature response in ppm at each frequency Apparent conductivity and susceptibility Power line noise amplitude

Terraplus Inc.
120 West Beaver Creek Rd, Unit #15
Richmond Hill, ON, Canada, L4B 1L2

terraplus.ca
1.905.764.5505
sales@terraplus.ca

The GEM-2 is suitable for investigations for:

- Shallow geology
- Groundwater
- Geotechnical engineering
- Soil science
- Archaeology
- Environmental contamination survey
- Underground facility



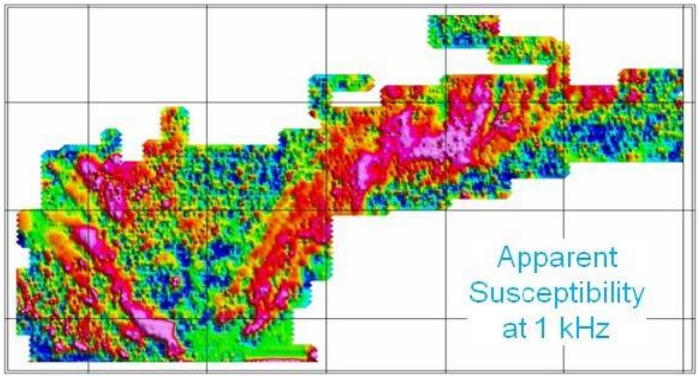
Data logging direct to USB stick and/or real-time Android smartphone display with GEMex software application, EMExport and Inversion utilities.

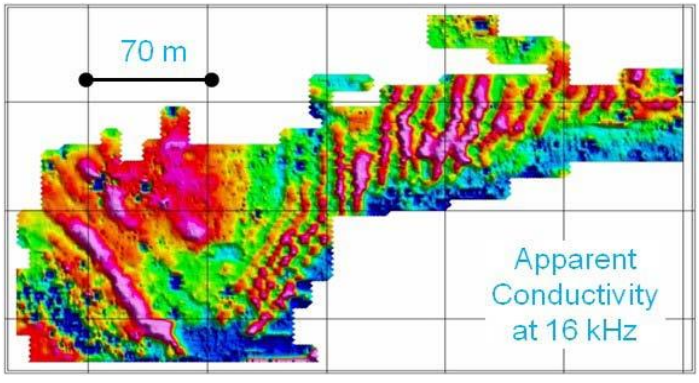
GEM-2 Package includes:

(1) Ski with electronics console and USB stick
(1) Smartphone with Android GEMex software
(1) EMExport and Inversion utilities
(1) GPS unit
(2) Rechargeable batteries
(1) Battery charger
(1) Shoulder strap
(1) Hard shell carrying tube and accessory bag

GEM-2 Survey Data Examples

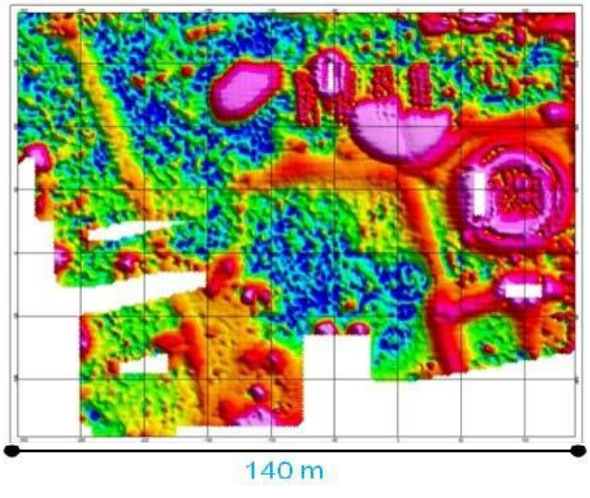
Forgotten Landfill:
While historical photographs showed burial activities at this site, there were no records showing the areal extent of the buried waste. The GEM-2 was used to map all burial trenches and to prioritize locations for remediation.



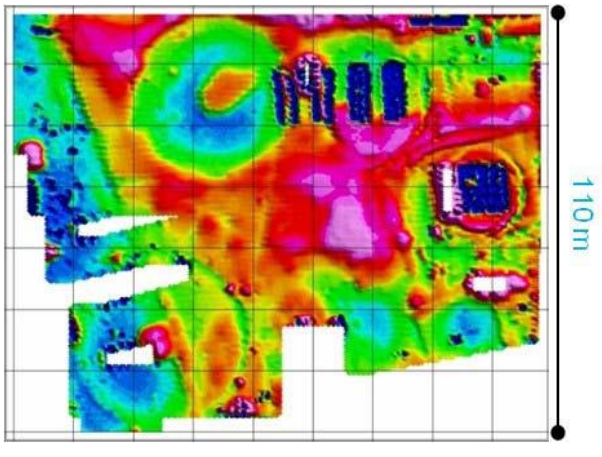


Environmental Site Characterization:
A GEM-2 survey was performed for the site characterization of a former industrial plant in Binghamton, NY. The objective was to identify and delineate subsurface features associated with past site operation. The data, shown above, located buried foundations, utility pipes, fill areas, concrete pads, contaminants, and other buried objects associated with the former plant.

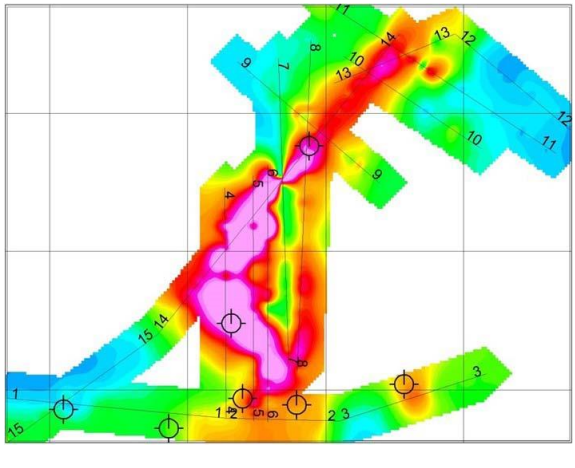
Apparent Susceptibility at 1 kHz

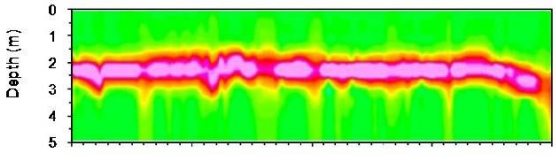


Apparent Conductivity at 7 kHz



Brine Contamination at an Oil Field:
The U. S. Geological Survey (USGS) conducted a GEM-2 survey to characterize shallow brine contamination at an oil field in Oklahoma. Data were collected at five frequencies from 330 Hz to 47,010 Hz. The figures below show the apparent conductivity map at 14 kHz, which define the brine concentration in 3D.





A conductivity-depth section defines the brine concentration at depths of 2–3 m, which was later confirmed by drilling.