AKS GEOSCIENCE

NEAR-SURFACE GEOPHYSICS AND SATELLITE IMAGING

innovative
PROFESSIONAL
reliable

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Geophysical Services

Electromagnetic Surveys

Electrical Resistivity Tomography

Ground Penetrating Radar

Magnetics

Seismic Refraction

Multi-spectral Imagery Analysis

ELECTROMAGNETIC SURVEYS (EM)

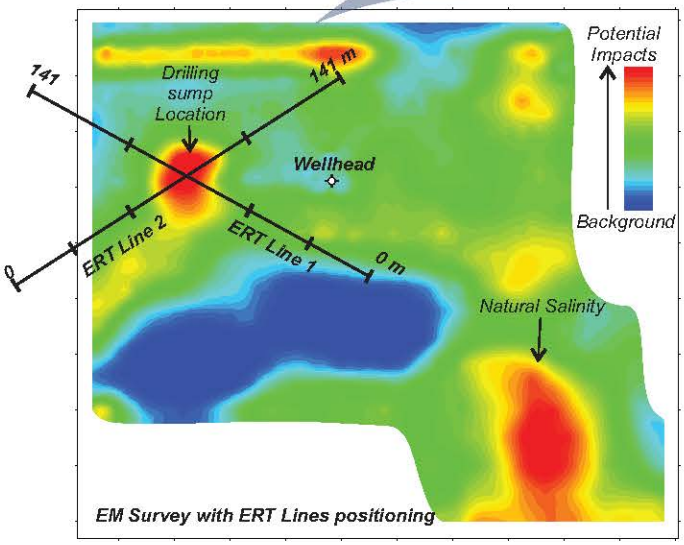
Helping you locate and monitor environmentally impacted regions

EM surveys are widely used at oil/gas facilities as a valuable component of an Environmental Site Assessment. The results of an EM survey defines the extent of environmental impacts in a non-intrusive manner and helps guide an intrusive sampling program, yielding a more cost effective Phase II Environmental Site Assessment.

A common application of EM surveys is to locate subsurface contamination related to drilling sumps and flare pits. Inorganic contaminants (eg. salts) generate an appreciable anomalous EM response. An EM survey is typically one of the first tools used to delineate the subsurface extent of fluid release related to a pipeline break. Final presentation of results is near real-time, allowing for a more cost-efficient clean-up.

The EM31 and EM38 are the most commonly used instruments and provide conductivity information to respective depths of 5.5 m and 1.5 m. The EM34 is designed to achieve a greater penetration depth so that readings down to 40 m are possible. The EM61 is an excellent tool for locating buried metal debris.

Here is a typical wellsite with an historical buried drilling sump. Where EM surveys map the lateral extent of impact, ERT surveys help in measuring the vertical extent.



EM Survey with ERT Lines positioning

Flexible solutions for your business needs - Rapid Response EM surveys

AKS prides itself on rapid response to pipeline breaks. We can be onsite in an emergency situation within a 24 hour time frame to most places within Western Canada. Our goal is to provide near real-time turn-around on EM survey results. AKS responds to more than 100 Rapid Response surveys annually in a time efficient manner. At AKS we pay close attention to the needs of our clients and continually strive to improve our services.

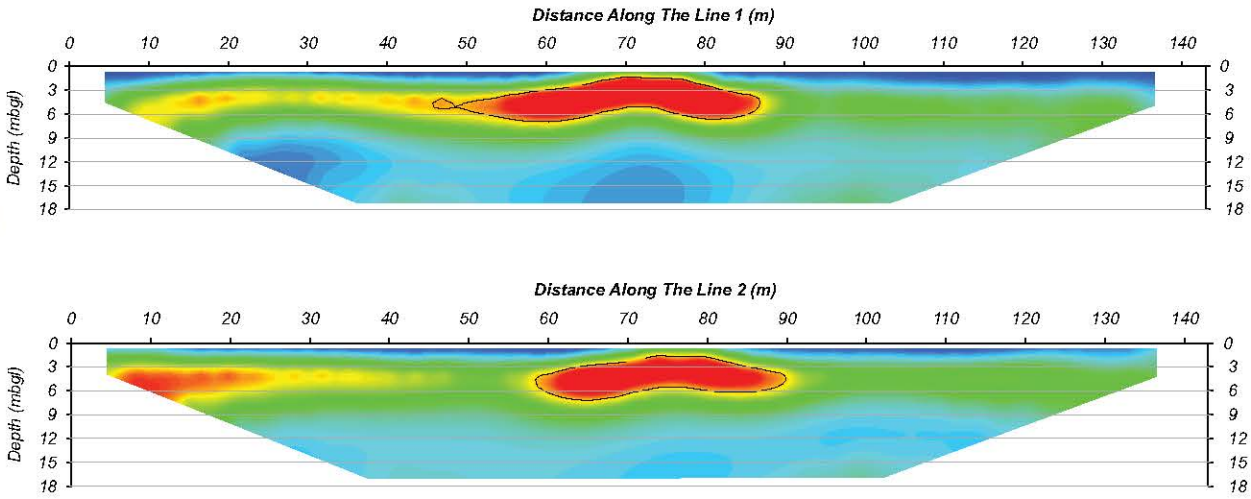
Applications for EM Surveys

- delineating soil/groundwater contamination
- detecting buried landfill cells
- location of buried uitilities and tanks
- soils mapping
- mineral exploration
- archaeological investigations

ELECTRICAL RESISTIVITY TOMOGRAPHY

Characterization that matters

Electrical resistivity tomography (ERT) is a widely used geophysical tool used to obtain a cross-section of the subsurface using electrical measurements made at the surface. ERT data are collected using a linear array of electrodes connected to a resistivity transmitter/receiver and an electrode control box. The diagram below represents a cross-section of the drilling sump which was detected by the EM survey on the previous page. The thickness of contamination is represented by the red-coloured zone.

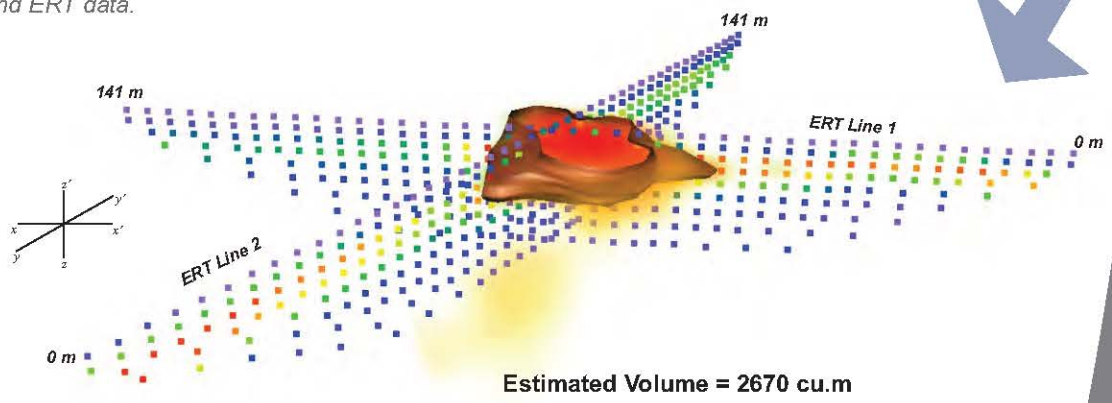


Cross sections for ERT Line 1 and ERT Line 2 from following page

Applications For ERT Surveys

- Delineating soil/groundwater contamination
- Mapping soil/bedrock interfaces
- Vertical fractures zones sand channels, sink holes and void zones.
- Defining groundwater resources to depths of up to 50m.

An example of contaminated soil volume estimation by integrating EM and ERT data.



Estimated Volume = 2670 cu.m

Data obtained from an ERT line allows us to focus on a vertical cross-section of the subsurface. Specialized interpretation of the data then defines the vertical extent of inorganic contamination. Combining EM and ERT data provides an estimate for the **volume of contaminated soil** at a site.

Pipeline Break Response

0.0 Hrs — First Contact: Email/Call

1.0 Hrs — Crew Assignment Logistics

3-10 Hrs — Mob to Site

12 Hrs — Conduct Survey

14-18 Hrs — Issue Final Results

AKS Geoscience is a progressive, independent firm comprised of professional geophysicists and engineers. We provide geophysical expertise on complex environmental and engineering problems

Drawing on 30 years of domestic and international project experience we bring a unique perspective to many of the issues facing the environmental and engineering communities.

We offer a full suite of near-surface geophysical methods that are highly useful in delineating soil/groundwater contamination, locating buried objects and utilities, and mapping the shallow subsurface geology. Geophysical methods we specialize in are electromagnetics, resistivity, GPR, seismic refraction, and magnetics.

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