

ELECTROMAGNETIC (EM) SURVEYS FOR FORMER SPILL SITES IN SOUTHWEST MANITOBA

Matrix conducted Phase II environmental site assessments at 25 sites located in southwest Manitoba to determine the nature and extent of potential contamination. Electromagnetic (EM) surveys were used to delineate suspected contamination boundaries associated with former facilities, flare pits, and historic spills.



The Challenge

The sites were located on both agricultural land and forested Crown land and had a number of sloughs close to the survey locations. The sites also varied in size and were as large as 1 km². Traditionally EM surveys are conducted on foot by carrying the survey equipment and walking in a pattern throughout the site. However, the large survey area and the varying, and sometimes difficult terrain, made traditional survey methods challenging and alternate methods were required to obtain enough data to adequately analyze the site.

The Matrix Solution

The EM equipment was pulled with a sled-mounted trailer behind an ATV. Readings were recorded at 1-second intervals and, where possible, survey lines were extended until readings returned to near background levels. Matrix collected positional information using a GPS receiver to create a preliminary EM map on site, which allowed the field crew to investigate any identified anomalies.



The Result

Pulling the EM equipment on a sled at this site allowed the team to efficiently cover a larger area. Figures were prepared using the EM data and interpretation was performed which identified areas affected by past releases, relative concentrations of the elevated apparent conductivities, relative depths of impact and potential buried metallic infrastructure. This information was included as part of the Phase II environmental site assessment and provided the necessary guidance to the client to develop a strategy to manage the site.