

JOE MIHELICIC, P.Eng., P.Geo., B.Sc. (Hon), M.B.A.

Category: Senior Scientist specialized in Geophysics

Year's Relevant Experience: 36 years (26 years at ClearView Geophysics Inc.)

Professional Accreditation:

Joe Mihelcic and ClearView Geophysics Inc. are licensed to practice engineering in Ontario, Quebec, Saskatchewan, Nunavut/NWT, New Brunswick and Newfoundland-Labrador. He and ClearView are also licensed to practice geoscience in Nova Scotia and Newfoundland-Labrador. Additional jurisdictional requirements are met when and where required.

Education:

Joe graduated in 1988 with a B.Sc.(Hon) Applied Science in Geological Engineering with the Geophysics Option from Queen's University at Kingston, Ontario. He also graduated in 1995 with an M.B.A. from Western Business School in London, Ontario. Other coursework includes C++ computer programming from Seneca College in 1991, for example.

Accomplishments/Achievements/Awards:

Mr. Mihelcic developed a GPS-guided system for rapid high quality and high resolution ground geophysical data – specifically cesium magnetics and time-domain EM. He also created Spectral IP methods and software commonly used for projects in the exploration industry. In-house software was developed by Mihelcic for data processing of EM, IP, seismic/MASW, gravity, magnetics, resistivity and GPR data. He wrote in-house front- and back-end software for in-house handling of UBC inversion modeling processing. Mihelcic carries out all aspects of the work, from data acquisition and processing/presentation, to interpretation and reporting of geophysical data.

Previous Employers:

Golder Associates Ltd. 1995, Hyd-Eng Geophysics Inc. 1991-94, JVX Ltd. 1988-91; MNM & Kasner Group summers 1986, '87

Relevant Project Experience:

Joe Mihelcic has experience working with a broad range of geophysical instruments and methods for detecting and mapping of natural and man-made features. Seismic refraction and MASW/shear wave investigations are carried out on surface and in boreholes. Seismic refraction and microgravity are used to map bedrock, water and soil interfaces whereas shear wave is used for bedrock studies - particularly for construction. Underground storage tanks (UST's) are routinely detected with a suite of instruments – primarily the Geonics EM61 metal detector, with GPR (ground penetrating radar) to follow-up or complement EM results. A Radiodetection 8100 PTLG+ pipe and cable receiver with TX10 transmitter is also used to "light-up" and trace buried lines. For contaminant and landfill delineation, the Geonics EM31, EM34 and/or GPR (25 MHz through 500 MHz) are commonly used. A 1 GHz Congquest 100 is used for concrete inspections. To locate small buried metal features (e.g., buried borehole or well casings), cesium magnetometers, Geonics EM38, and/or the EM61HH instruments can be used. Borehole surveys are also carried out for geophysical methods. The Geonics EM39 is used to log apparent conductivity and gamma radiation. For example, zones with relatively low gamma count but high apparent conductivity could represent contamination within a confined sand layer. Borehole methods such as gravity are also used.

Mineral and water exploration is carried out with ClearView's high power TDEM PROTEM equipment that can provide sounding information to great depths. Our IMAGEM instrument is used for near surface full-waveform TDEM surveys. Hydrophysical and multiparameter logging is also applied for fracture flow detection. Borehole tomographic, detection, orientation and directional Spectral IP (induced polarization) is carried out with single- and multi-conductor cables.

Mr. Mihelcic began his geophysics career in 1986 working in the mineral exploration industry. In 1991 he expanded into the application of geophysical methods for environmental and geotechnical applications. Most methods used in mineral exploration are also used for environmental and geotechnical applications. However, different instrumentation and configurations are used depending on the project specific requirements. For example, mineral exploration is typically carried out with motor-generator high-powered transmitters capable of powering large fixed and moving loops of copper wire for deep exploration. However, variations of this equipment can also be used for water exploration

Joe's experience spans a wide range of projects such as work at active airports, landfills, industrial / commercial / residential sites including in the far north and overseas (e.g., Nunavut, Angola, Cuba, Turkey...). His many years of diverse field and interpretation experience and expertise allows him to apply and configure the wide range of methods and equipment owned and available to ClearView Geophysics Inc. for client's site specific conditions and project goals.

A sample project completed by ClearView Geophysics Inc. in each year since inception:

Through ClearView since 1996, Mr. Mihelcic worked directly on over a thousand geophysical projects. Over 200 projects were carried out for mineral exploration. Some were small duration such as private locates while others were major projects that lasted a few months, such as Spectral IP/Resistivity, Snowmobile-mode cesium mag and EM surveys in the arctic. A yearly sample of work in chronological order are listed in the following table:

<u>Date</u>	<u>Location</u>	<u>Purpose</u>
1996	Winnipeg	Locate UST's around a commercial building with EM31.
1997	St. Catharines	EM31 surveys for buried objects and potential contaminant plumes.
1998	Various Southeast Ontario	Various MTO Patrol Yard groups to map salt plumes and potential UST's.
1999	GTA	EM31 & EM61 to search for leaking UST(s) at large industrial site.
2000	Brampton	Seismic Refraction at brick making facility to detect depth to bedrock.
2000	Arkansas	EM31 surveys at gun making facility.
2001&15	Downsview Park	Areas covered with EM61/EM31/GPR for buried debris/USTs/plumes.
2002	St. Catharines	Video & Borehole physical property logging for TCE.
2003	Thornhill	EM61/GPR/Metrotech to detect potential UST(s) and private locates.
2004	Sarnia	Resistivity Imaging for overburden stratigraphy.
2005	Toronto	EM61/GPR/Metrotech to detect potential UST(s) and private locates.
2006	Niagara Falls, NY	EM31 and GPR surveys for former landfill delineation.
2007	Toronto	Private Locates
2008	Haileybury	Seismic refraction & GPR for bedrock and overburden under wood chips.
2009	Markham	Borehole GPR at end of bridge where sink-holes forming.
2010	Amherstburg	4-pin Wenner Array for substation design.
2011	North Dumfries	GPR/EM61/EM31/EM38/mag to locate abandoned 19 th century cemetery.
2012	Windsor	Borehole dipole-dipole IP/resistivity to locate depth extent of footing.
2013	Sudbury	IP receiver comparison tests and reporting.
2014	Cartier	Snowmobile-mode GPR and EM31 surveys at landfill site.
2015	Dowling	25/50/100/250 MHz GPR search for sand deposits in remote wooded area.
2016	Trent-Severn Waterway	GPR 100 MHz/250MHz to locate limestone blocks for lock renovations.
2017	Niagara Falls	EM31/EM61/GPR/Radiodetection locate and map historic Hydrotunnels.
2018	Scarborough	Seismic MASW at proposed building location.
2019	Apohaqui, NB	Gravity Survey to better define outline of known potash deposit.
2020	Port Colborne	Welland Canal Cross-Hole Resistivity and Imaging for subsurface voids.
2021	Hopebrook, NL	CSAMT Surveys to image resistivity variations to ~2 km deep.
2022	Ring of Fire, NW Ontario	MaxMin, Gravity and Cesium Magnetics Surveys.

Prior to founding ClearView Geophysics Inc., Mr. Mihelcic worked on hundreds of additional projects. For example, in the early 90's he carried out EM/GPR surveys/reporting at several CFB's in Canada and in Germany, and at the Presidio in San Francisco, USA. Engineering clients includes DST, wood., Terraprobe, Stantec, Hatch, Golder, GHD, Rally, Malroz, XCG, Greer Galloway, BluMetric, MTE, Bo, Candec, exp, Oakridge, SLR, JFM, KGS, Ausenco, McIntosh Perry, FWS, 30 Forensic Engineering, TTP_CJV, RWDI, City of London/Markham/Sarnia/Peterborough, WSP...