

December 20, 2024

Notice of Proceeding

Mackenzie Valley Highway Project, Government of the Northwest Territories

RE: Retention of expert advisor Naviq Consulting

Retention of expert advisor(s)

The Review Board plans to retain an expert advisor¹ for the Mackenzie Valley Highway environmental assessment (EA). The expert advisor is Jim Oswell with Naviq Consulting. His area of expertise is geotechnical and permafrost engineering.

Scope of participation in the proceeding

The expert advisor will help the Review Board evaluate and analyze evidence and carry out other specific activities as required throughout the Analysis phase of the environmental assessment, including the review of the Developer's Assessment Report. The expert advisor may also help with further phases of the EA at the Review Board's discretion. Please see the expert advisor curriculum vitae (attached) for more information about qualifications and expertise.

Addressing concerns about conflict of interest or apprehension of bias

Review Board staff have exercised due diligence to ensure that the expert advisor is free from potential bias and conflict(s) of interest for this project. This includes requiring that the expert advisor disclose any relationships (either personal, corporate or through a subsidiary) with the developer and other parties involved in this or any other Review Board proceeding.

If any party has questions or concerns about the qualifications of the expert, or the potential for conflict(s) of interest or apprehension of bias, please let Review Board staff know **by January 6, 2025**. The Review Board will consider any comments before making a final decision on retaining Naviq Consulting as an expert advisor.

Contact Information

If you have any comments, questions, or need more information, please contact Catherine Fairbairn, Senior Environmental Advisor at 867-766-7054 or cfairbairn@reviewboard.ca.

¹ "Expert advisor" is used in this Notice of Proceeding in place of a "specialist", as referred to in Rule 16 of the Review Board's 2005 *Rules of Procedure*.

Professional Resume: J. M. (Jim) Oswell, Ph.D., P.Eng.

Professional qualifications

Professional Engineer: Alberta, Northwest Territories, Nunavut, Yukon

Education

University of Manitoba	Ph.D., Geotechnical Engineering, 1991
University of Calgary	M.Sc., Civil Engineering, 1984
Lakehead University	B.Eng. (Hons.), Civil Engineering, 1982
B.C. Institute of Technology	Diploma Tech., Civil Engineering, 1980

Memberships

Engineering Institute to Canada: Elected Fellow.

Adjunct Professor, University of Calgary (2025 - 2026)

International Standards Association, Technical Committee (TC) 67/SC 2 - Pipeline transportation systems; Member of Working Group (WG) 22 - Geological hazards risk management of oil and gas pipelines: 2017 – present.

CSA Working Group on *Rehabilitation of foundations impacted by degrading permafrost*, 2013 – 2014. CSA Standard published in 2014.

CSA Working Group (Chair) on *Foundations for buildings in permafrost: Supplement to CSA 4011+ (2019)*, 2018 - 2019. CSA Standard to be published in 2019.

CSA Working Group on CSA S500: *Thermosyphon design and monitoring for permafrost conditions*, 2013-2014; 2019-2020. Updated CSA Standard published in 2021.

Canadian Geotechnical Society: Chair working group to develop new chapter on permafrost foundations in permafrost terrain for 5th edition of the Canadian Foundation Engineering Manual, 2019-2023.

Summary of core skills

Permafrost Engineering for Infrastructure

Dr. Oswell has been involved in numerous projects in permafrost terrain including linear infrastructure such as roads and pipelines, and for large structures. Project locations include northern Canada, Alaska, China, Russia and Antarctica. He has conducted geotechnical investigations for pipeline and road projects and industrial facilities in both northern permafrost and Antarctica. Dr. Oswell has provided senior permafrost engineering input to linear infrastructure (roads and pipeline rights-of-way) for design and construction, and input to reduce environmental impact. He is presently Chair of an Independent Technical Review Panel for the design and construction of an all-season haul road through a Canadian National Park in permafrost terrain. Dr. Oswell was an invited delegate and speaker to the International Forum on Freeway Construction Technologies in Permafrost Regions held in Xian, PRC, which included a field trip to the Tibetan Plateau (Xining to Yushu) to inspect a major motorway constructed over thaw sensitive permafrost. Since 2019 he provided office-based technical review and on-site inspection and knowledge transfer during a geotechnical investigation for the proposed redevelopment the New Zealand Scott Base Antarctic research facility on Ross Island (78°S). He acted as an independent expert reviewer to the prime contractor regarding erosion control measures for the Mackenzie Valley fibre optics installation.

Cold Regions/Permafrost Assessment and Design (Selected Projects)

Old Crow Health & Wellness Centre and 10-Plex: Senior permafrost engineer and geotechnical engineer-of-record for the design and construction of two large multi-story structures in Old Crow Yukon. Developed a novel pile design and construction strategy that allows for more economic construction and provides opportunities to modify the pile capacity in the future due to climate warming impacts on ground temperatures and a reduction in pile capacity. Provided onsite pile installation monitoring for initial phase of project.

Prairie Creek Zinc Mine – All season access road: Chair of the Independent Technical Review Panel authorized by the Mackenzie Environmental Review Board. Permafrost engineering expert responsible for review of haul road to mine that crosses a Canadian National Park. The mandate of the Independent Technical Review Panel is to ensure the road is designed and constructed to ensure protection of the environment and human health.

Scott Base Research Facility, Ross Island, Antarctica: Subject matter expert provided on-site quality assurance and technical knowledge transfer for the geotechnical investigation for a new research station, input to foundation design and foundation design option review. Providing ongoing permafrost engineering support during detailed design and field trials, including technical input and support for a novel adfreeze pile installation concept.

Mackenzie Valley Fibre Optic Line, Northwest Territories: Senior permafrost engineer and Subject Matter Expert providing senior review, technical support and expert witness services related to post-installation erosion and thermal degradation issues along a trenched fibre optics cable installation from Inuvik to south of Fort Simpson, NT. Reviewed erosion control and reclamation measures prepared by consultants to Prime Contractor, conducted site inspections, provided on-the-ground reclamation recommendations, and prepared an expert opinion report for litigation.

Frozen Muskeg Loading Study: Principal investigator for a study to determine the permissible loading of frozen muskeg by drill rigs in northern Alberta. Organized field sampling of muskeg, ground temperature collection, laboratory testing and numerical modelling to provide estimates of required frozen muskeg thickness and development of a prototype field tool.

Arctic Island LNG Scoping Review: Lead permafrost engineer reviewing legacy data and providing recommendations for new baseline studies and data gathering for a proposed natural gas pipeline and LNG export facility on a high Arctic Island.

Northern Gas-to-liquids Scoping Study: Permafrost engineering consultant for a confidential study to examine permafrost issues related to the development and operation of an exothermic gas-to-liquids processing facility to be located in ice-rich permafrost terrain.

Mackenzie Gas Project, NT: Responsible for the slope design of the pipeline through continuous and discontinuous permafrost. Work involves coordination of multi-disciplinary team (geothermal modelling, geotechnical engineering, GIS) to identify, catalogue slopes and develop design strategies to ensure long-term stability. Other project work included senior permafrost engineer and project manager for planning of geotechnical drilling program for pipeline section south of Norman Wells, and Senior Reviewer for permafrost aspects of EIA. Expert witness in National Energy Board and Joint Review Panel hearings.

ExxonMobil/Worley Parsons – Alaska LNG Pipeline, Alaska: Senior geotechnical and permafrost engineering advisor to Project Management Team on issues related to the design of a large diameter, high pressure pipeline to transport natural gas from Prudhoe Bay to Cook Inlet in Alaska for LNG export. Provide input relative strain-based design issues, review of field investigation program, preparation of documents regarding incorporating climate change into the

pipeline design, assessment of conservatism in the pipeline design, and erosion control plans for construction and operations. Made presentations to the U.S. Federal Energy Regulatory Commission in Washington, D.C.

Norman Wells Pipeline Project, Northwest Territories: Senior permafrost engineer, responsible for review and assessment of slopes along an 868-kilometre pipeline over a 15-year period. Provided geotechnical input during investigation of wrinkles on pipeline. Planned and organized installation of instrumentation. Conducted annual slope reconnaissance for over ten years. Key member of Enbridge team for annual review meetings with regulatory agencies and stakeholders.

Husky Energy Inc. Slater River, Northwest Territories: Senior permafrost engineer support Husky's Slater River shale oil development near Norman Wells. Providing geotechnical and permafrost engineering input to infrastructure including road design, evaluation of borrow materials, foundation design, and erosion control and sediment containment.

ConocoPhillips Canada Limited Chinook Project, Northwest Territories: Senior permafrost engineer support ConocoPhillips Canada shale oil development near Norman Wells. Providing geotechnical and permafrost engineering input to infrastructure including road design, evaluation of borrow materials and input to pipeline design and construction.

NASP Hangar, Iqaluit Airport, Iqaluit, NU: Senior permafrost engineer working in collaboration with geothermal modelling expert to assess the design requirements for a large on-grade structure to be constructed at the Iqaluit airport. Geothermal modelling included the effects of long-term climate warming and the operation of a suite of horizontal thermosyphons within the engineered foundation pad.

Qikitani Healing Centre, Baffin Correctional Facility, Iqaluit, NU: Senior permafrost engineer working with the geotechnical team and third-party structural engineering team to assess feasibility of an on-grade foundation system for a new structure at the Baffin Correctional Facility. Tasks include assessment of the efficacy of horizontal thermosyphons to maintain long-term thermal stability. Geothermal considered long-term climate warming effects.

Cold Regions Environmental Impact Assessments (Selected Projects)

Back River Gold Mine Project, NU – senior permafrost engineer providing expert technical review of annual reports and related documents on behalf of Federal agencies.

Beartooth Pit, Ekati Diamond Mine, NT – review of design documents and assessment of engineering design process conducted on behalf of the Mackenzie Land and Water Board. Participation at public hearing as a technical expert to the Board.

Bathurst Inlet Port and Road Environmental Review: Provided permafrost engineering input to a stakeholder review of environmental studies and preliminary engineering plans for a proposed northern all-weather road and port facility.

High Arctic Gas Pipeline and LNG Export Terminal: Provided permafrost science input to a preliminary assessment of legacy environmental studies and planning for future field studies to update the bio-physical baseline information.

Niglintgak Gas Development Project, Mackenzie Delta: Provided permafrost science peer review and technical input to an environmental baseline assessment of bio-physical data.

Mackenzie Gas Project: Subject matter expert and witness to the Joint Review Panel examining the environmental impact of the proposed Mackenzie Valley gas pipeline project to transport natural gas from the Mackenzie Delta to northern Alberta.