

DANIEL VANDEVORT

CURRICULUM VITAE

COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, FAIRBANKS, AK.

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Meticulous. Strong work ethic. Calm under pressure. Effective Communicator. Attentive Listener.

EXPERIENCE

2020 – PRESENT (FULL-TIME, 40HRS/WK. GS-0810-11)

RESEARCH CIVIL ENGINEER, E.I.T., US ARMY CORPS OF ENGINEERS: COLD REGIONS RESEARCH AND ENGINEERING LABORATORY-ALASKA (CRREL-AK)

- Assistant Project Engineer for the Permafrost Tunnel Expansion Project Phase V (2020-2021). FY21. \$1M
- Project Engineer: Arctic Infrastructure Research Center (AIRC), Fairbanks, AK. FY 22-23. \$1.2M
- Effective communication via presentation, written, or oral methods.
- Familiar with ground-based LiDAR equipment, Trimble surveying equipment, and GPR equipment.
- Skilled in data management, analysis, and dissemination
- Skilled with Campbell Scientific equipment and software

-Software Experience-

- ArcGIS Pro: Mapping and site layouts, spatial data analysis, raster analysis and manipulation. LiDAR (LAS) file processing.
- AutoDesk Civil 3D: Create professional engineering designs. Integration of Civil 3d with ArcPro. 3D modeling and LiDAR (LAS) file processing. Self-taught.
- HEC-RAS,
- MATLAB

2014 – 2020 (GUARD STATUS: 280 HRS/YR)

HEAVY EQUIPMENT OPERATOR (AFSC 3E251), UNITED STATES AIR FORCE: ALASKA AIR NATIONAL GUARD

- 168th Civil Engineering Squadron, Eielson AFB, AK. Civil heavy construction. One tour—Iraq, 2019.
- 5-skill level, Army Achievement Medal, Basic Training Honors

2015 – 2018 (PART TIME: 20 HRS/WK)

RESIDENT ADVISOR, UNIVERSITY OF ALASKA FAIRBANKS

- Policy enforcement, community building, event coordinating. Experienced in conflict de-escalation/conflict handling.
- Number of Employee of the month awards: 4

EDUCATION

MAY 2020

B.S. GEOLOGICAL ENGINEERING, UNIVERSITY OF ALASKA FAIRBANKS

- 3.52 Cumulative GPA.
- Relevant classes: Terrain Analysis, Fluid Mechanics, Surveying, Subsurface Hydrology, Slope Stability Analysis, Geological Materials Engineering, Remote Sensing and GIS Analysis.
- Gained skills: Basic core logging, geologic mapping, report writing, oral presentations, and field data collection including well logging.
- Highlight: 2018 field school exclusively dedicated to 6 weeks of geologic data collection and geologic mapping at 7 remote sites along the Dalton highway, Alaska. Collaborated effectively with two to three team members to collect data, create basic maps, and present results in a written format.
- Dean's List: Fall 2016, Spring 2018
- Chancellor's List: Fall 2019

JULY 2020

ASSOCIATES OF CONSTRUCTION TECHNOLOGY, THE COMMUNITY COLLEGE OF THE AIR FORCE (CCAF)

- CDL-A w/ N-endorsement
- Drilling experience (Geoprobe systems)

RESEARCH

LAKE ICE BEHAVIOR UNDER LOAD: INVESTIGATION ON A FROZEN SUBARCTIC LAKE USING UNIQUE LOADING TECHNIQUES.

*CRREL Technical Report
Scheduled for publishing FY 23. Co-Author.*

Abstract: Frozen freshwater lakes offer clear, level platforms for expedient operations in cold regions. It is necessary to characterize and understand the mechanical behavior of the ice sheet under various loading conditions to ensure safe and effective mission fulfillment. To that end, Ground Penetrating Radar and over 30 boreholes were used to characterize the ice and create a comprehensive thickness map of a freshwater ice sheet near Anchorage, Alaska. The mean thickness of the lake ice was 40.3 cm (15.87 in.). Also, heavy machinery and aircraft were used to introduce loads to the ice sheet, and the mechanical response was analyzed via the novel approach of measuring the change in water pressure with submerged pressure transducers. Under a 9979.03 kg (22,000 lb.) aircraft-induced load, the lake ice deflected 15.4 mm (0.61 in.). It deflected 33.62 mm (1.33 in.) under a 12,246.99 kg (27,000.01 lb.) heavy machinery-induced load. It is recommended to further study these techniques and technologies in order to construct a comprehensive procedural evaluation which can be used to develop on-ice operations doctrine and TTP's.

APPLICATION OF LIMITED-FIELD-DATA METHODS IN RESERVOIR VOLUME ESTIMATION

*CRREL Technical Report
In Editing. First Author*

Abstract:

The conventional approach to estimating lake or reservoir water volumes hinges on field data collection; however, volume estimation methods are available that use little or no field data. Two such methods—the Simplified V-A-h and the Power Function—were applied to a set of six anthropogenic reservoirs on the Fort Jackson installation and checked against a validation data set. Additionally, seven interpolation methods were compared for differences in total volume estimation based on sonar data collected at each reservoir. The simplified V-A-h method overestimated reservoir volume more than each technique in the power function method, and the categorical technique underestimated the most reservoir volumes of all three techniques. Each method demonstrates high V_{err} variability among reservoirs, and V_{err} for the Power Function techniques applied here is consistent with that found in previous research in that it is near or less than 30%. Compared with V_{err} in other studies evaluating the simplified V-A-h method, V_{err} in this study was found to be 10-20% higher.

LEADERSHIP

- *Cold Regions Engineering Short Course:*
Planned and coordinated a multi-day virtual presentation event where multiple CRREL researchers presented their arctic-infrastructure research to groups representing multiple military branches and government offices. With the growing concern about DoD capabilities in cold regions, this course offered compact, relevant information over a shortened timeframe enabling military and government leaders to better understand their arctic operational needs.
- *Team Lead for undergraduate Senior Design:*
Led a group of 5 undergraduate engineering students in the research and presentation of a geotechnical assessment of planned mining district access road in northern Alaska. Desktop research included effects of permafrost, hydrology considerations, environmental considerations, terrain and construction resource options, and cost comparisons. The group efficiently adapted to the sudden onset of the COVID-19 pandemic by collaborating and presenting over a virtual workspace and suffered no setbacks.

PUBLICATIONS

- Bjella, Kevin, **Daniel Vandevort**, and Sarah Kopczynski. 2023. “Preliminary Testing of Expedient Ground Anchor Solutions for Guyed Towers in Remote Cold Regions: Considerations for Cold Remote Regions with Limited Tools.” Technical Report TR-23-6. Engineer Research and Development Center. <http://dx.doi.org/10.21079/11681/47328>.
- Giovando, Jeremy, Chandler Engel, **Daniel Vandevort**, and Christina Chow. 2023. “Summary of Ice Jams and Mitigation Techniques in Alaska.” Special Report ERDC/CRREL SR-23-1. Engineer Research and Development Center. <http://dx.doi.org/10.21079/11681/47069>
- Bjella, K., Affleck, R.T., Barna, L., Yu, J., **Vandevort, D.** and Margules, A., 2021. Arctic Expeditionary Infrastructure Research. In *Permafrost 2021: Merging Permafrost Science and Cold Regions Engineering* (pp. 245-252). Reston, VA: American Society of Civil Engineers.
- Greer, P., Ulinski, A., Khan, S.D., Bering, E., Vega, A., Chitturi, R., Panda, S. and **Vandevort, D.**, 2022, November. Understanding the change in permafrost by imaging the CRREL Permafrost Tunnel, Fairbanks, Alaska. In *SEG/AAPG International Meeting for Applied Geoscience & Energy*. OnePetro.

LIFESTYLE

- Volunteer: Bread Line/Stone Soup, Fairbanks, AK. Over 100 hours volunteered 2019/2020
- Canoeing, fishing, kayaking: anything to do with life on the water.
- Swimming, running, cycling.
- Belay/Lead-climb certified
- Backcountry hiking and trekking
- Rigging and rescue for rock and ice environments
- **References upon request**