Notice of the Final Oral Examination
for the Degree of Master of Arts

of

AMANDA WILD

BSc (University of Victoria, 2018)

“Morphodynamics of a Bedrock Confined Estuary and Delta: The Skeena Estuary”

Department of Geography

Friday, November 13, 2020
9:00 A.M.
Remote Defence

Supervisory Committee:
Dr. Eva Kwoll, Department of Geography, University of Victoria (Co-Supervisor)
Dr. David Gwyn Lintern, Department of Geography, UVic (Co-Supervisor)

External Examiner:
Dr. Irina Overeem, Department of Geological Sciences, University of Colorado

Chair of Oral Examination:
Dr. Raymond Siemens, Department of Geography, UVic

Dr. Stephen Evans, Acting Dean, Faculty of Graduate Studies
Abstract

Bedrock islands add variation to the estuarine system that result in deviations from typical unconfined estuarine sediment transport processes. Limited literature exists regarding the dynamics of seabed morphology, delta formation, sediment divergence patterns, and sedimentary facies classifications of non-fjordic bedrock confined systems. Such knowledge is critical to adequately address coastal management concerns. This research presents insights from the Skeena Estuary, a macrotidal estuary in northwestern Canada with a high fluvial sediment input (~25.5 Mtyr-1). HydroTrend model outputs of riverine sediment and discharge, Natural Resources Canada radiocarbon dated sediment cores and grainsize samples, and acoustic Doppler current profiler and conductivity-temperature-depth measurements from three field campaigns are utilized to describe sub-environments, stratification, and sediment accumulation within the Skeena Estuary. Research findings delineate a fragmented delta structure with elongated mudflats and select areas of slope instability. Variations from well mixed water circulation to lateral stratification, govern the slack tide flow transition and sediment transport pathways within seaward and landward passages of the estuary. Fostering a comprehensive understanding of bedrock confined estuary and delta systems has implications for the assessment of coastal management strategies, the productivity of ecological habitats, and the impacts of climate change within coastal areas.