Appendix 1:

Water Licence Application: July 2010 Geophysical fieldwork on the Fosheim Peninsula, Ellesmere Island

As part of research licenced under Nunavut Research Licence #02 053 10R-M (NIRB file 070321-07YN019-NRI Licence2-IMAE.doc) concerned with the impact of climate change on High Arctic Permafrost I propose to conduct a brief period of fieldwork on the Fosheim Peninsula (Ellesmere Island) located within the area covered by NTS map 49G (attached). The primary aim of this research is to map areas of massive ground ice using ground penetrating radar (GPR). GPR is an environmentally safe, non-invasive geophysical tool that has been used with great success in the Mackenzie Delta to map ground ice but has had limited use in high Arctic polar desert like the Eureka area. The proposed field work will take place in 2 parts, first we will conduct preliminary surveys in the Eureka area based at the Eureka Weather Station followed by a 7-9 day fly camp (tentatively scheduled for July 7-14) at a nearby site (see map) identified following helicopter reconnaissance. I have previously mapped several sites where melting permafrost has exposed large bodies of ground ice. The camp will very small and will include only 4 persons, 5 small tents (4 sleeping tents and 1 cook tent) and a 1kW generator to charge batteries. We will take in our drinking water and use water from a local stream for washing. A grey water sump will be used and all garbage and human waste will be removed. We will have 5 gallons of gasoline for the generator and a 20lb cylinder of propane for the stove.