

Development of Assessment and Remediation Approaches for of Salt Releases to Peatlands in Western Canada

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Currently there are more than 6,000 oil emulsion pipelines and around 1,900 produced water pipelines registered within the Northern Region of Alberta. There is a significant potential for ruptures and spills due to the sheer number, density, and susceptibility of the pipelines to corrosion. Alberta contains about 100,000 km² of peatland, representing 16.3% of Alberta's land base. Peatland environments coincide with several major oil and gas operational area. Salt releases to peatland ecosystems are very common in central to northern Alberta and north eastern BC. Contaminant assessment and remediation guidelines/objectives that are of direct relevance to the major portion of western Canadian wetlands/peatlands do not exist. Guidelines specific to peatlands would be invaluable in allowing for the standardization and streamlining of contaminated sites

work at salt-affected northern boreal peatland sites. The overall objective of this project is to develop a scientific rationale supporting remediation and reclamation guidance for produced water releases in northern boreal peatlands. The scientific rationale will be established using field exposure data from multiple sites in both Alberta and British Columbia. Specifically, salt threshold responses will be evaluated for species such as bryophytes, vascular plants, soil meiofauna, and potentially other biota associated with standing bodies of water.

The objective of the proposed research is to obtain sufficient scientific data relevant to salinity in peatlands in northern climates to allow for the derivation of risk based remediation guidelines. To achieve this goal, data will be collected from the existing literature, from the field, and from laboratory toxicity testing. Once assembled, this data set will be the most comprehensive available and will represent the state of the science in northern peatlands ecotoxicology and salinity research. The first phase of this multiyear project (Phase I, described herein) is a literature review and data gap analysis that is being partially funded through existing ERAC funds. The funding requested in this proposal, if granted, will support continuation of the existing ERAC funded research and the goal of guideline development in 2009.

2009 AECOM_Saline Releases to Peatland

2010 AECOM_Vegetative changes in boreal peatlands
along salinity gradients