



# CanNorth

Canada North Environmental Services  
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## **EASTERN ATHABASCA REGIONAL MONITORING PROGRAM 2011 ANNUAL REPORT**

*Executive Summary*

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Prepared for:

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## EXECUTIVE SUMMARY

*The Eastern Athabasca Regional Monitoring Program (EARMP) was established in 2011 under the Province of Saskatchewan's Boreal Watershed Initiative. One of the primary goals of the Boreal Watershed Initiative is to assess the ecological integrity of Saskatchewan's northern watersheds in order to address potential environmental concerns and to identify sustainable management practices in the region. The EARMP was designed to address a foreseen gap in available long-range environment information and potential cumulative impacts downstream of uranium mining and milling operations in northern Saskatchewan.*

*The EARMP study framework includes two sub-programs: a community program and a technical program. The objective of the community program is to monitor the safety of traditionally harvested country foods by collecting and testing water, fish, berry, and mammal chemistry from seven communities in northern Saskatchewan. The objective of the technical program is to determine whether cumulative effects are occurring in aquatic environments in northern Saskatchewan by analyzing both the physical and biological components of waterbodies located downstream of converging watersheds that are exposed to mining and milling operations in the Athabasca Region. In addition to the above objective, a fundamental objective of this program is to provide public access to all information collected. To that end, all raw data are provided herein in appendices and the data are available electronically for download at: [www.earmp.ca](http://www.earmp.ca).*

*The community program included the collection of foods identified by community members as being important traditionally harvested food. This included water, blueberry (*Vaccinium myrtilloides*) or bog cranberry (*Vaccinium vitis-idaea*), lake trout (*Salvelinus namaycush*), lake whitefish (*Coregonus clupeaformis*), and moose (*Alces alces*) or barren-ground caribou (*Rangifer tarandus groenlandicus*). Communities assessed included: Black Lake, Uranium City, Camsell Portage, Fond du Lac, Stony Rapids, and Wollaston Lake/Hatchet Lake. Based on the assessment completed on the 2011 data, the community program established that parameters of potential concern in country foods were generally low, within available regional reference values, and/or comparable to supermarket foods. The only difference of note were selenium and uranium concentrations in lake whitefish samples from Uranium City (Crackingstone Inlet of Lake Athabasca), which contained slightly higher concentrations as compared to supermarket fish and maximum regional reference data.*

*The technical sampling program included the collection of benthic invertebrate community data along with water, sediment, lake trout, northern pike (Esox lucius), lake whitefish, white sucker (Catostomus commersoni), and longnose sucker (Catostomus catostomus) chemistry data. Sampling locations included four exposure (Cochrane River outlet from Wollaston Lake, Fond du Lac River outlet from Wollaston Lake, the Crackingstone Inlet of Lake Athabasca, and Waterbury Lake) and three reference (Cree Lake, Ellis Bay of Lake Athabasca, and Pasfield Lake) areas. Similar to the community program, the technical sampling program established that most parameters of potential concern within the water, sediment, and fish tissue assessed were low, comparable to reference, and/or below available guidelines for the protection of freshwater aquatic life. Molybdenum concentrations were higher in the water, sediment, and sucker bone chemistry from the Fond du Lac River as compared to pooled reference data. The benthic invertebrate community data was collected to provide some context on how the chemical environment may be influencing the biological environment. In the case of the Fond du Lac River, which showed higher molybdenum concentrations across all media assessed, the benthic invertebrate community was the most distinct from the other sampling areas. Additional sampling during future monitoring years will allow for the verification of this pattern, and will allow comparisons to the 2011 data to assess whether cumulative effects occur in the study areas.*

*One important consideration with respect to observed chemical and benthic invertebrate community differences relates to particle size. The Cree Lake reference area contained relatively high sand content as compared to the other sampling locations, which may have influenced the results. Relocating the Cree Lake sampling area to a less sandy area in the lake would likely to produce more representative results for reference sediment chemistry concentrations as well as provide more similar habitat comparisons for the benthic invertebrate community comparisons.*

*One other improvement to the monitoring program that should be considered for future monitoring years relates to laboratory method detection limits. If method detection limits could be improved for cadmium in water and parameters such as selenium and uranium in berry samples, and molybdenum and uranium in fish samples, confirmation of the actual concentrations in these media can be assessed near each community and an appropriate comparison can be made to available guidelines and/or supermarket data.*