



**AWG
2014**



**Sampling in the
Athabasca region
since 2000**



CanNorth

Wollaston Lake/ Hatchet Lake

Athabasca Working Group Environmental Monitoring Program

ABOUT THE AWG PROGRAM

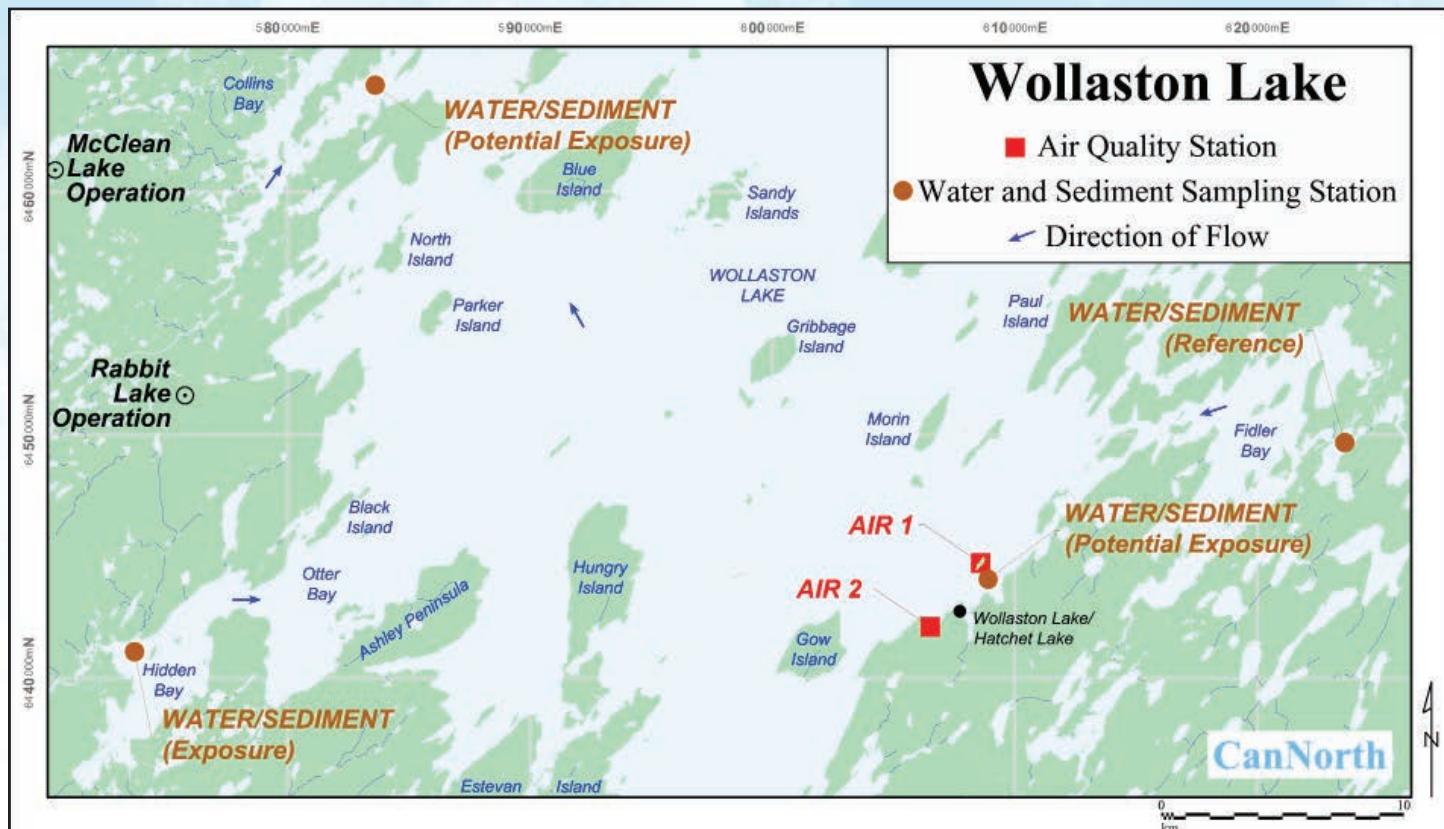


The Athabasca Working Group (AWG) environmental monitoring program marked its 15th year of sampling in the Athabasca region of northern Saskatchewan in 2014. The program provides residents with opportunities to test the environment around their communities for parameters that could come from uranium mining and milling operations. These parameters can potentially be spread by water flowing from lakes near the uranium operations, and small amounts may also be spread through the air. In order to address local residents' concerns, lakes, rivers, plants, wildlife, and air quality are tested near the northern communities of Wollaston Lake/Hatchet Lake, Black Lake, Camsell Portage, Fond-du-Lac, Stony Rapids, and Uranium City.

The types of plants and animals selected, the locations chosen for sampling, and the sample collections were carried out by, or with the help of, northern community members. The purpose of this brochure is to inform the public of the results from the 2014 environmental monitoring program and look back on the results of the past 15 years of study in the Wollaston Lake/Hatchet Lake area.

STUDY AREA

Water, sediment, and fish were sampled from a reference site, an exposure site, and two potential exposure sites in the Wollaston Lake/Hatchet Lake area. Fidler Bay was chosen as the reference site because it is not influenced by uranium operations. Hidden Bay is the exposure site because it is located downstream of the Rabbit Lake operation. Welcome and Collins bays are potential exposure sites because they are located far downstream of uranium operations in northern Saskatchewan. Air quality is monitored at two locations near the communities of Wollaston Lake and Hatchet Lake and plant and wildlife samples are collected each year near the communities when available.



KEY PARAMETERS

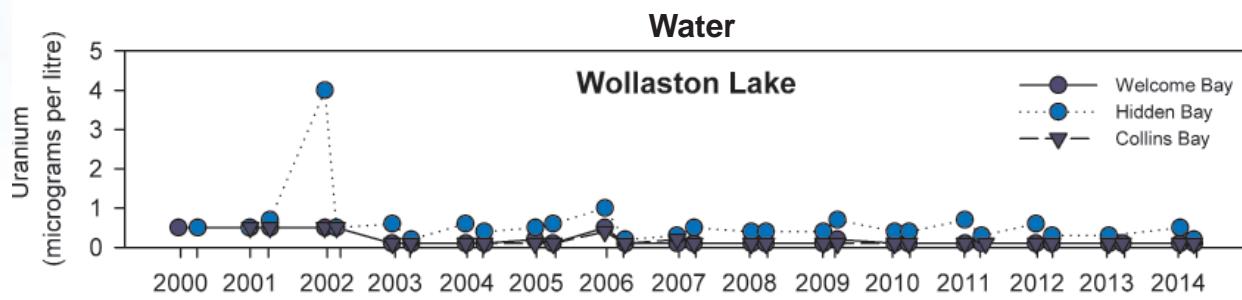
The focus of the AWG program is to monitor certain parameters related to uranium operations that are of concern to human and environmental health. These include: copper, lead, nickel, molybdenum, zinc, radium-226, uranium, selenium, and arsenic. All of these parameters occur naturally in the environment and in parts of northern Saskatchewan they can sometimes be found in high amounts.

In order to help establish whether the key parameter levels found in samples are naturally occurring, whether they may be from uranium operations, and whether they pose a risk to the environment, the amounts measured are compared: 1) between reference and potential exposure sites, 2) over time, and 3) to available guidelines.



Water

Water samples were collected in the spring and fall in Fidler, Welcome, Hidden, and Collins bays of Wollaston Lake in 2014. All results were below the guidelines for the protection of aquatic life and drinking water quality. During the 15 years of sampling for the AWG program, the levels of key parameters have generally stayed the same. When variations were seen, they were low again in the following years. The graph below displays similar uranium levels from Welcome, Hidden, and Collins bays over 15 years. The uranium drinking water guideline is 20 micrograms per litre, which is about five times higher than any level ever found in Wollaston Lake during AWG monitoring.



Sediment

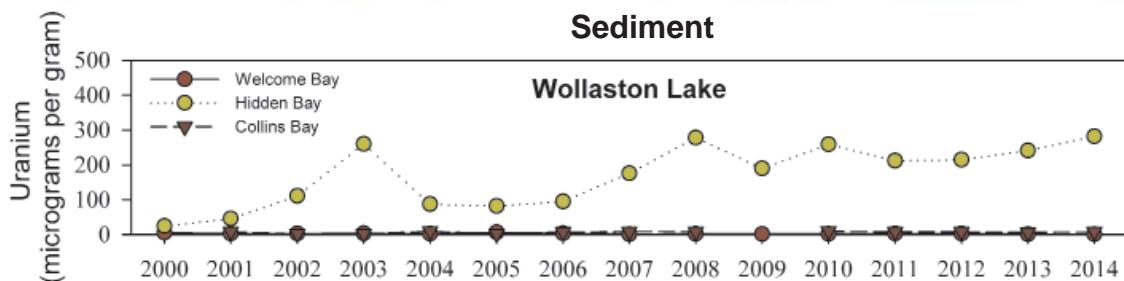
Sediment samples were collected from the same locations used for water sampling in the Wollaston Lake/Hatchet Lake area.

Since the beginning of the AWG program, Hidden Bay has shown higher levels of some of the key parameters compared to the other bays and compared to some of the available guidelines. Molybdenum in Hidden Bay was higher than the recommended guidelines and selenium and uranium were higher than some of the available guidelines in 2014. As noted earlier, Hidden Bay is an exposure site and Collins and Welcome bays are potential exposure sites.



Treated effluent from the Rabbit Lake operation is released upstream of Hidden Bay. A treatment process to reduce uranium levels in the final effluent from the Rabbit Lake operation began in 2007, and in 2010, a molybdenum-selenium reduction circuit was completed. As a result, the amount of metals in the final effluent was reduced and this should eventually result in lower levels in Hidden Bay sediment.

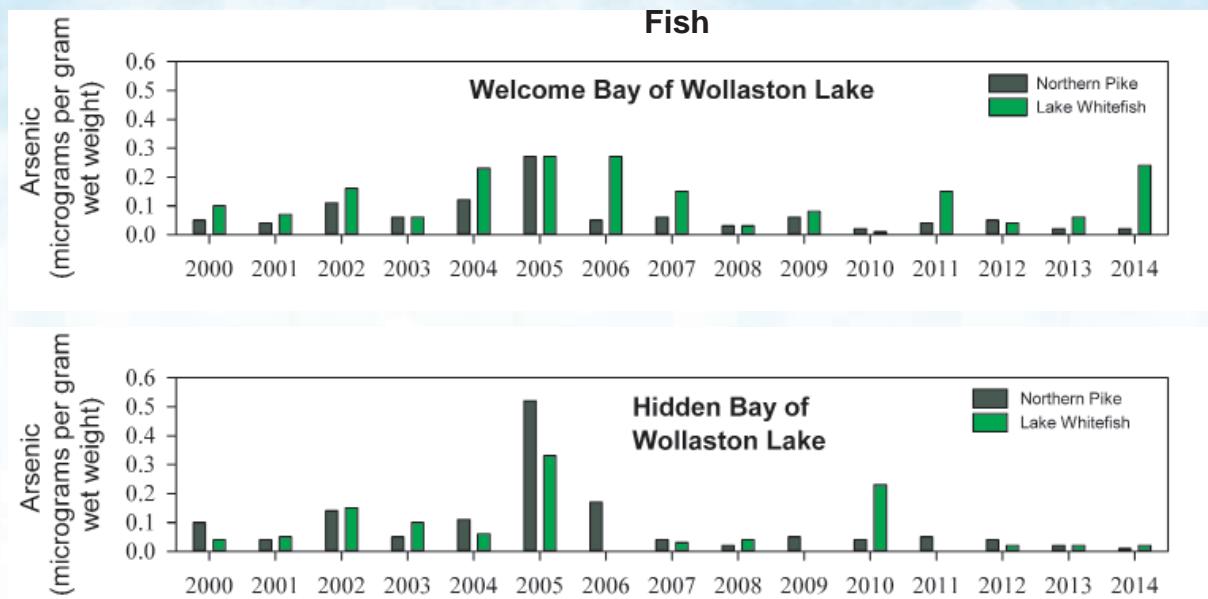
The graph displays the uranium levels measured in the exposure site of Hidden Bay and the potential exposure sites of Welcome and Collins bays over 15 years.



Fish

Fish are an excellent source of protein and high in vitamins and minerals including vitamin D. They are low in saturated fats and cholesterol and are a good source of omega-3 fatty acids¹.

In 2014, northern pike were captured in Fidler, Welcome, Hidden, and Collins bays and lake whitefish were captured in the same bays except Hidden Bay. The levels of key parameters in both fish species were not only similar to previous years in Wollaston Lake but many of them were lower than the laboratory could measure. As examples, the graphs display the arsenic levels in both fish species from Welcome and Hidden bays over the last 15 years. There is no arsenic guideline; however, the graphs show consistently low levels since AWG monitoring began.



Though not related to uranium mining and milling, it is recommended that the "Mercury in Saskatchewan Fish: Guidelines for Consumption" document be consulted prior to fish consumption in all areas of Saskatchewan. It is available on the Saskatchewan Environment website: www.environment.gov.sk.ca.

¹PHU AHA 2014.

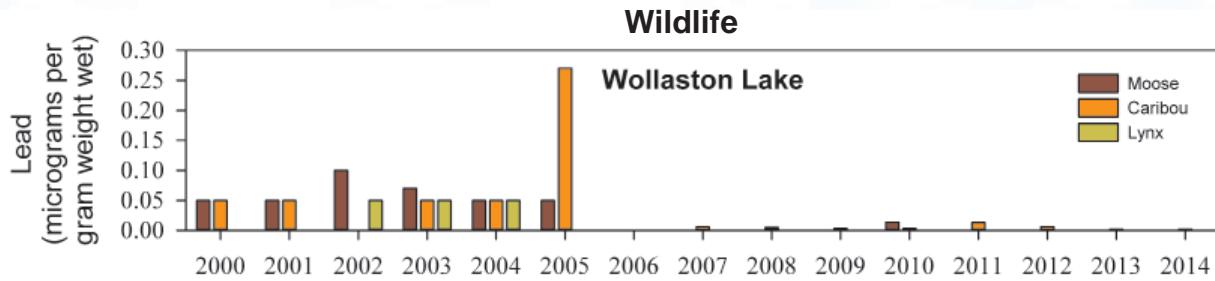
Wildlife

Wild game are an important source of vitamins, minerals, and protein and are low in saturated fats¹.

A barren-ground caribou flesh sample was obtained from the Wollaston Lake/Hatchet Lake area in 2014. The levels of key parameters were similar to the previous 14 years of AWG monitoring in the area. Moose and lynx samples were not collected from the Wollaston Lake/Hatchet Lake area in 2014.



As an example, the graph displays the amounts of lead in the wildlife samples collected from 2000 to 2014 in the Wollaston Lake/Hatchet Lake area (not all mammal types were collected each year). The reason the lead levels are lower from 2007 onwards is because the laboratory gained the ability to measure lower levels. It is believed the 2005 barren-ground caribou sample contained lead bullet fragments. It is recommended that hunters use lead-free ammunition to prevent potential lead exposure which may be very harmful to human health.

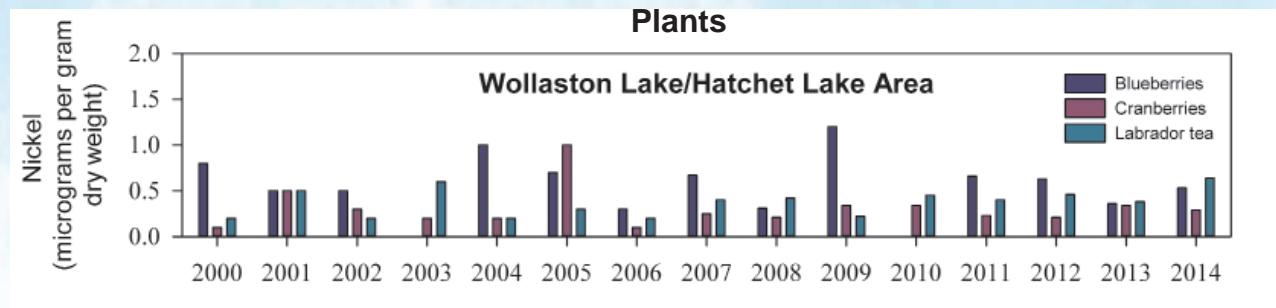


¹PHU AHA 2005.

Plants

Wild plants are very good sources of Vitamin C, fibre, and carbohydrates¹. Blueberry, bog cranberry, and Labrador tea have traditionally been used for both food and medicine,¹ and samples of these plants were tested from the Wollaston Lake/Hatchet Lake area in 2014.

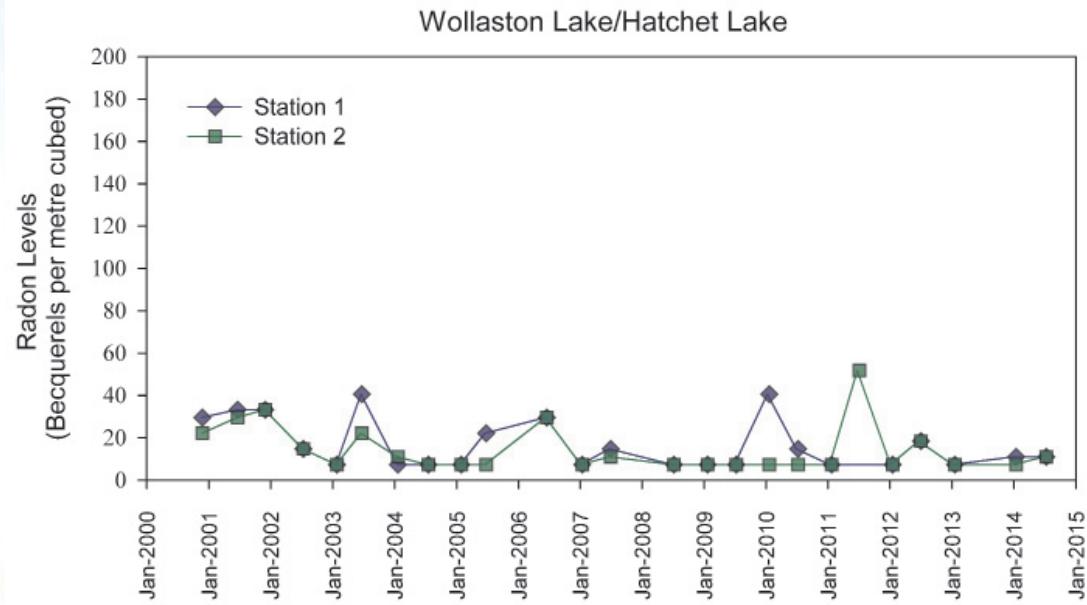
The levels of the key parameters measured in blueberries, bog cranberries, and Labrador tea near Wollaston Lake/Hatchet Lake in 2014 were similar to the previous 14 years. As an example, the graph displays the similar amounts of nickel in each plant type in the Wollaston Lake/Hatchet Lake area since the beginning of AWG monitoring.



¹Johnson et al. 1995; NWT 2002.

Air

Air quality was monitored at two locations near Wollaston Lake/Hatchet Lake in 2014 by measuring radon levels. Radon is an odourless and tasteless gas produced by the natural breakdown of uranium and radium-226 in the soil and water. As a result, radon levels are naturally higher in areas where uranium is found in the ground. Seasonal differences may occur when the ground thaws and releases radon gas into the air during the summer months. The graph shows that Wollaston Lake/Hatchet Lake radon levels have remained low since AWG monitoring began in 2000. Note that radon detectors are sometimes lost to fire or destroyed by animals, therefore, there are no data for some years.



Thank you for 15 years of
dedication to the AWG



**Delbert
Augier**



**James
Augier**



**Jack
Cochrane**



**Dennis
Larocque**



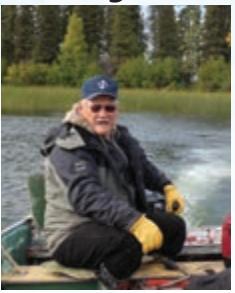
**Joe
Marten**



**Felix
McDonald**



**John
McDonald**



**Billy Joe
Mercredi**



**Russell
Powder**



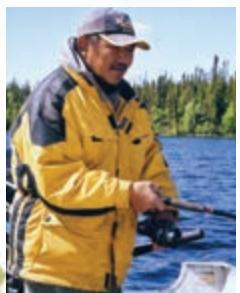
**Sandy
Powder**



**Wayne
Powder**



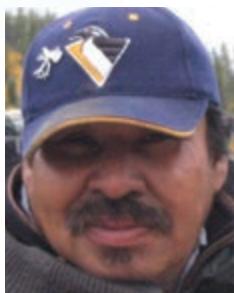
**Boniface
Robillard**



**Georges
St. Pierre**



**Phillipe
Stenne**



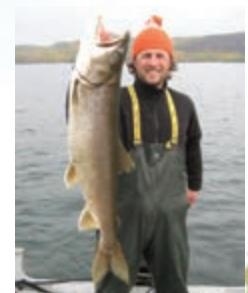
**Pierre
Toussaint**



**Bill
Layman**



**Ryan
Washenfelder**



**Ryan
Froess**

The AWG program is made possible thanks to the continued involvement of northern residents. Special thanks to Georges St. Pierre who continues to do a great job collecting AWG samples near Wollaston Lake/Hatchet Lake.

This project was managed by CanNorth,
a First Nation environmental services company



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