

## Lake Wabamun Watch Environmental Society

### QUESTIONS AND ANSWERS

Questions were asked at the Lake Wabamun Watch Environmental Society's Public Meeting on November 20, 2002 and on the website through email. Those questions are addressed in the following:

Q: *Where are we in fish stocks? Are we looking at overpopulation ...?*

A: Currently, we have a very low commercial catch rate for Pike and Whitefish in the lake. These catch rates are at or near historical lows and these catch rates likely indicate a low abundance of commercial sized fish in the lake. This could be due either to a low overall population in the lake, or may also be representative of a shift in the population dynamics such that we have a large class of small sized juveniles that are out competing the larger fish. We do not have the data at this moment to address which of these scenarios is occurring. Regardless, there are few larger sized fish in the lake at this moment.

Greg Goss, Professor of Biological Sciences, University of Alberta

Q: *Why is the deterioration of the quality of fish in Wabamun so much worse than in Pigeon?*

A: We have to be careful about how we use the term "quality" of the fish in the Lake. We reported that the "condition factor" of the fish appeared to be low in the Whitefish caught in Lake Wabamun. This term refers to a value relating the length and weight of a fish, and has nothing to do with the quality of the meat from these fish. Essentially, the fish in recent years are skinnier than in past years. Regardless, the quality of the meat (taste, water content, etc.) with respect to consumption of fish does not appear to be significantly different from those found in other lakes in Alberta. Overall, fish from Lake Wabamun still have good quality to the meat protein.

Greg Goss, Professor of Biological Sciences, University of Alberta

Q: *Last spring we enjoyed the fish and were eating them. Is the fish good to eat? Can we eat those fish 3 times a week?*

A: The Whitefish in Lake Wabamun are considered good to eat and do not appear to have any levels of metals or other tested toxicants that fall above consumption guidelines. According to current guidelines, these fish are safe to eat on a regular basis. For Pike and other top predators, regular consumption of larger animals is not recommended due to the potential for high levels of ingested mercury. This is a common problem for Pike from any Alberta lake, and normal restrictions should be followed.

Greg Goss, Professor of Biological Sciences, University of Alberta

Q: *The quality of the fish is going down. Is the current quality of the fish going to continue or is this just cyclical?*

A: While the condition factor of the Whitefish does appear to be at a lower level than that seen in the past 12 years, we cannot predict at this time what will be happening in the future. Since we are unaware of the causes of the changes that have occurred in the Whitefish, we cannot predict where or when, or if at all, recovery will occur. More long-term data on this is required to find out the nature of the problem.

Greg Goss, Professor of Biological Sciences, University of Alberta

Q: *Regarding the contaminants, in Alberta Environment's sediment sample study, I understand she's taken core samples and then giving a historical presentation?*

A: During the summer of 2002, Alberta Environment took numerous samples of water and sediment from locations throughout the Lake, including areas in the vicinity of the ash lagoon discharge. The sediment samples were taken with an Ekman dredge from the surface of the bottom muds (to a depth of approximately 5 cm at each location). It is anticipated that the Alberta Environment results will be available in spring 2003.

Alberta Environment staff members have not collected deep sediment cores. Intact cores have, however, been collected by Dr. Bill Donahue, a research scientist from the University of Alberta. Dr. Donahue's report was released by the Lake Wabamun Enhancement and Protection Association (LWEPA) in 2002.

Dave Trew, Science and Standards Branch  
Environmental Assurance Division, Alberta Environment

Q: *A bunch of tests are being done and results will be available at a later date – when? Is there an emergency response plan if the results are negative? Let's say we prove that the lake is being ruined, the tests prove it, is there a contingency plan by Alberta Environment? We know there's a lake completely destroyed in Russia. Is that happening here?*

A: The main objectives of the Alberta Environment studies initiated in 2002 are outlined below. Results of these studies are anticipated in spring 2003.

## **1. Sediment Chemistry**

### **1.1 Sediment Survey Of Wabamun Lake**

To characterize the distribution of sediments across the lake with respect to particle size (% sand, clay, loam) and total organic content (TOC). This information is critical to interpreting the sediment chemistry samples (study 1.2 below) because these data will allow standardization of contaminant information.

### **1.2 Sediment Chemistry Wabamun Lake**

To characterize the distribution of contaminants (metals and trace organics) in Wabamun Lake sediments.

### ***1.3 Sediment Chemistry In Other Lakes***

This analysis will provide a general indication of contaminant levels in other Alberta lakes that have similar features to Wabamun Lake. The lakes sampled in 2002 were Pigeon, Gull, Sylvan, Isle, St Anne, Wizard, Bonnie, and Amisk.

### ***1.4 Sediment Chemistry In Other Lakes Using 1990's Samples***

Archived, freeze-dried sediments are available for about 25 Alberta lakes. An analysis of metals in these sediments will provide a broader perspective of variability of metal concentrations in surficial (top 5 cm) sediments of Alberta lakes.

## **2. Disinfection By-Products (DBPs) Survey**

Water treatment processes at the Wabamun Lake Water Treatment Plant includes chlorination and ozonation. These processes generate various disinfection by-products such as trihalomethanes (THM). THMs, including chloroform, have been detected in the outlet canal where treated water is discharged. Sampling of various DBPs in the discharge canal and at sites in the lake was initiated in 2002.

## **3. Spatial Variability In Lake Water Quality**

The current water quality monitoring program for Wabamun Lake (including monthly sampling during the open-water period and once in winter) is suitable to track whole lake changes in water quality, but it does not provide spatial differences within the lake including information on water quality in various bays and along the littoral zone. A spatial survey was carried out in 2002 in Wabamun Lake to fill that gap. Samples were analyzed for phosphorus, major ions, and metals.

## **4. Sediment Toxicity Testing**

Sediment "health" assessments are currently being carried out on 6 samples taken from Wabamun Lake to determine if toxicity in sediment is an issue. Formal toxicity testing, following Environment Canada protocols, will be required to confirm the presence of toxicity in the sediments. Toxicity Identification Evaluation (TIE) may be needed to identify the toxic compound(s) in the sediments.

## **5. Invertebrate Impact Assessment Study**

Aquatic invertebrate distribution (numbers and species composition) can serve as an indicator of the degree of impact on aquatic biota. Aquatic invertebrate samples have been collected near the ash lagoon, at water treatment plant outfall, and at control sites elsewhere in the lake.

The findings of these comprehensive studies, along with results of other studies conducted by TransAlta Utilities, will be used to develop next steps.

Dave Trew, Science and Standards Branch  
Environmental Assurance Division, Alberta Environment

Q: *Have any of the studies looked at potential impact from an oil spill? (TransCanada Pipeline leak/oil spill back in the 1950s.)*

A: The last spill for which there is a record for the Wabamun Lake vicinity occurred from the TransMountain Pipeline in 1977. I have been corresponding with the NEB on this since it is a transboundary line. I have been exchanging phone calls with the NEB (Calgary) in efforts to acquire any info on site remediation that would have been required in connection with the release. Most of the report data seems to centre on volume (1033 m<sup>3</sup> of crude oil) and cause (material failure of the line). The information I received indicates there was no crude oil spilled to surface water (Wabamun Lake) other than a low lying marshy area. Contaminated soils and vegetation were recovered and removed from the site, soils replaced, and the ground surface was recontoured. There is no indication in the NEB record for this spill of any outstanding environmental concerns.

To the best of my knowledge, records for spills dating back to the 50s are recorded in obscure places, and any record would have long since been archived if a record was kept at all. On a positive note, if there was any recent environmental evidence (i.e., since the inception of Alberta Environment) of an adverse effect, the Water Quality Control Branch or Industrial Waste Branch of Alberta Environment would have been instrumental in identifying risks and participating any strategy for remediation.

Jim Steele, District Compliance Manager  
Central Region, Alberta Environment

Q: *I am curious as to what is at the bottom of the ponds that are used to sift out the fly ash from the stacks at the Wabamun plant. I understand that once the ash drops to the bottom of the ponds, it is absorbed into the ground or ground water. Various studies about the burning of coal for power indicated higher than acceptable limits of air pollutants that drift and settle in the surrounding soils and water. Will this be looked at by Alberta Environment and tests done to evaluate the impact at Lake Wabamun?*

A: Without any specific details regarding exactly which studies are being referred to or which air pollutants were higher than acceptable limits, it is difficult to adequately address the concerns. However, we will attempt to provide some information that may address some of the concerns.

Continuous ambient air monitoring stations have been operation in the Wabamun Genesee area since the early 1980s. During this timeframe, there have not been any exceedences for Nitrogen Dioxide or Sulphur Dioxide at any of the monitoring stations.

During the recent Genesee and Keephills Environmental Impact Assessments, many different parameters were examined, resulting in many additional studies and activities required of both TransAlta and EPCOR to examine the effect of the emissions on the environment, including upgrading the ambient air monitoring, an acid deposition assessment program, a mercury assessment program, a North Saskatchewan River water quality program, a wildlife monitoring program, a wildlife bioaccumulation monitoring program, and a rare mosses and lichens study. Also, numerous studies have been completed on Wabamun Lake, and others continue.

As for the Wabamun Power Plant itself, current approval states:

*By December 31, 2005, the approval holder shall submit a plan, to the Director, that either:*

*(a) proposes modifications and amendments to this approval that will permit the plant to meet all applicable environmental standards and guidelines required for a new coal-fired electric generating plant by April 1, 2010; or,*

*(b) details the decommissioning of the plant to commence no later than April 1, 2010.*

These details have now been submitted in TransAlta Utilities' plans to implement a phased shut down of the plant.

In addition to this, the province is currently working with the Clean Air Strategic Alliance to establish a new air emissions management approach for the electricity sector. The approach is expected to include performance expectations and new standards for both new and existing power plants. The projected timeframe for this is June 2003, with implementation of recommendations commencing in 2005. The recommendations from this process will provide the basis for the standards that the Wabamun Power Plant would have had to meet as of April 1, 2010 if the plant remained in operation.

Andy Lamb, Regional Environmental Manager  
Central Region, Alberta Environment