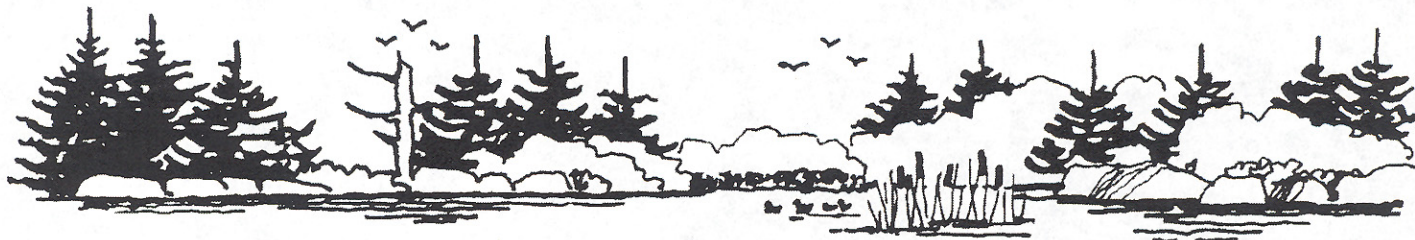


# PCBs and Five Island Lake



Five Island Lake Community Liaison Committee • Newsletter #12 • September, 2003

## Dear Fellow Residents ...

Our Community Liaison Committee (CLC) began its work in 1994. Eight years later, many of you have been faithfully following this story and sometimes providing us with feedback. But we also know that some of you, new to the area, must be wondering who we are and why "PCBs and Five Island Lake" is an issue.

Last year we were pleased to announce that the clean-up of the North Bay of Five Island Lake was complete. Was this a big mile stone? Yes, definitely. Does it mean that the PCBs problem in our community is now solved and our work done? Unfortunately, no. There are still large quantities of PCBs and other chemicals in the soil and bedrock below the abandoned Associated Metals salvage yard, located above North Bay.

On page 4 you will find a quick recap of the events leading up to today. This newsletter lays out what we know about the remaining contamination in our community and begins the discussion about future options. We will be sending out another newsletter shortly with more details.

As always, it is really important that we hear your views. Please e-mail us at [fiveislandlake@hotmail.com](mailto:fiveislandlake@hotmail.com) or call your nearest committee member.

Previous issues of this newsletter can be found at [www.gov.ns.ca/tran/Projects/FiveIsland.stm](http://www.gov.ns.ca/tran/Projects/FiveIsland.stm). Your Community Representatives on the Five Island Lake Community Liaison Committee:

John Hoyt (chair), Three Brooks, 876-2722  
Richmond Campbell, Cambrians Cove, 876-7847  
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## The Salvage Yard Site

What do we know about the state of the contaminated salvage yard site and how is it currently being managed? Jacques Whitford Environment Limited, consultants to Transportation and Public Works, provided the following information to the CLC.

### What is the legal status of the salvage yard site?

The site has been placed under a series of Ministerial Orders, made under the Environmental Protection Act. These Orders allow the Province to take any clean-up action it deems appropriate, even though the Province does not own the land.

### What is under all the gravel we can see from the highway?

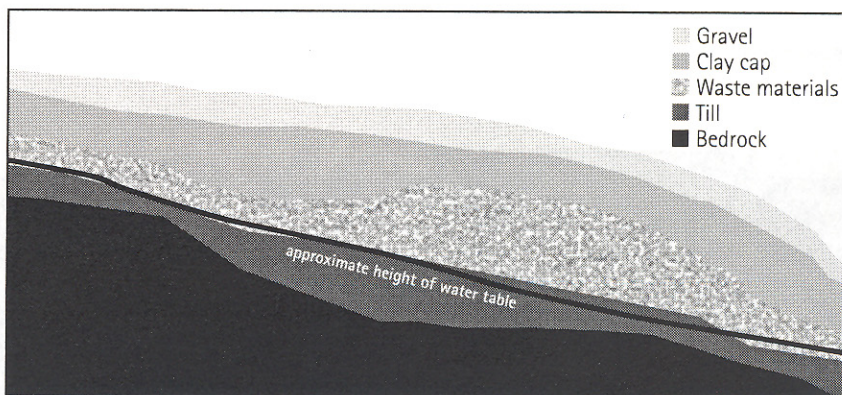
Soon after taking control of the site, the Province covered it with a thick clay layer to prevent further soil erosion and limit rain from soaking into the contaminated material buried underneath. The

clay layer, about two feet thick, was covered with gravel to stop erosion. In the mid-1990's, additional gravel was used to level the upper surface in order to provide a base for the steel containers used to store PCB contaminated soil excavated during the clean-up.

### What contaminants are present under the salvage yard site – just PCBs or other things?

When the salvage yard was in operation, several types of waste were buried. These included plastic, ash from a small smelter on site, metallic debris, wood, wire, rubber, drums and buckets.

The contamination included heavy metals (in the waste ash), PCB's, chlorinated solvents, and several other chemicals. Some of these have dissolved in groundwater and continue to be monitored. There are also indications that PCBs, along with other organic contaminants, are present in the bedrock underlying the site.



Cross-section of site showing different layers. Not to scale.





### **Are the PCBs likely to move with the groundwater?**

Because PCBs do not dissolve in water, and are relatively heavy, their mobility is limited. While groundwater gradually moves horizontally through fractures in the bedrock, PCBs tend to move downward. Regular samples taken from monitoring wells around the edge of the salvage yard site have shown that the PCBs are not moving off-site.

### **Can the PCBs be removed from the bedrock?**

Recovery is very difficult, if not impossible, because the PCBs work their way down into very small cracks. Attempts to get the PCBs would require mechanically breaking up the rock, which could in turn cause them to go further down. To protect local residents the Province is sampling the groundwater monitoring wells every six months and has also put homes down slope from the site on a central water supply (the well used for this is a kilometer away from the site).

### **How bad is the contaminated site? How big is the problem?**

After a decade of remediation,

the original site is capped and the adjacent land and lake cleaned up. The capped site is the remaining issue. This site is being monitored for both physical deterioration (such as slope erosion) and changes to groundwater immediately adjacent to it. The biggest issue at this time is ensuring that the site remains stable and there is no sudden or gradual loss of the cap, resulting in re-contamination of adjacent lands and the lake.

### **How secure is the site?**

The Province has installed and maintained a six-foot fence around the site to keep unwanted people or wildlife from entering the site and damaging the clay/gravel cap. There are two locked gates into the fenced compound. Anyone who enters the site must be escorted by a provincial representative, and recorded in a logbook. An independent consultant inspects the site every month and files a report with the Province, as required by regulations.

The clay and gravel cap is inspected throughout the year to identify potential failures or erosion, and has shown no signs of deterioration since it was completed in 1994.

### **What is in the containers we can see and what is happening to them?**

The containers were used to store PCB contaminated soil. This soil has now all been either shipped to Quebec for destruction (concentrations of PCBs greater than 45 parts per million) or sent to the landfill near Truro (under 45 ppm). The last of the empty containers (about 20) will all be removed from the site this year. Certain materials, such as plywood, scrap metal and plastic tarps, could not be sent for disposal to Quebec or Truro. The Province is now making arrangements to have them cleaned and disposed of.

### **Could the pollution be moving off the site? How would we know?**

For this site, there are two main "pathways" that could affect people and the environment – the erosion of contaminated soil and contaminants moving through the groundwater. The clay cap has now effectively halted erosion from the site.

Groundwater testing of the monitoring wells around the site for the past seven years has shown no







Former salvage yard site in 1990

trends to suggest the groundwater is getting worse over time, and although some contaminants are present, their concentrations do not exceed drinking water and freshwater aquatic life guidelines. The Province has installed a few more wells adjacent to the site to ensure there is good long-term monitoring of the groundwater. As a result, there are now 25 environmental monitoring wells that are tested every six months for various chemicals.

### **People using wells near the site — should they be worried? What about the Sir John A. MacDonald High School?**

The houses nearest the site have been put on a central water supply as a precaution. Extensive sampling has shown that groundwater from the salvage yard site does not flow towards the high school. The school currently has water brought in, but for precautionary reasons unrelated to the salvage yard site.

### **How much does it cost to maintain the site as it is?**

Now that the soil has been removed, there are two on-going expenses — groundwater testing every six-months

and the monthly inspection of the salvage yard. Each year these cost approximately \$70,000.

### **Wouldn't it be better to clean up the site as soon as possible?**

The use of a cap to stabilize a contaminated site is a standard practice for sites across North America and Europe. When selecting a final, long-term solution, it is necessary to consider all options and determine how much each option would reduce the overall risk. Unfortunately, some clean-up methods may actually increase risks.

For this site, there are two main approaches:

- In-situ methods - treating the buried material in place, and
- Ex-situ methods - removing and treating the material somewhere else.

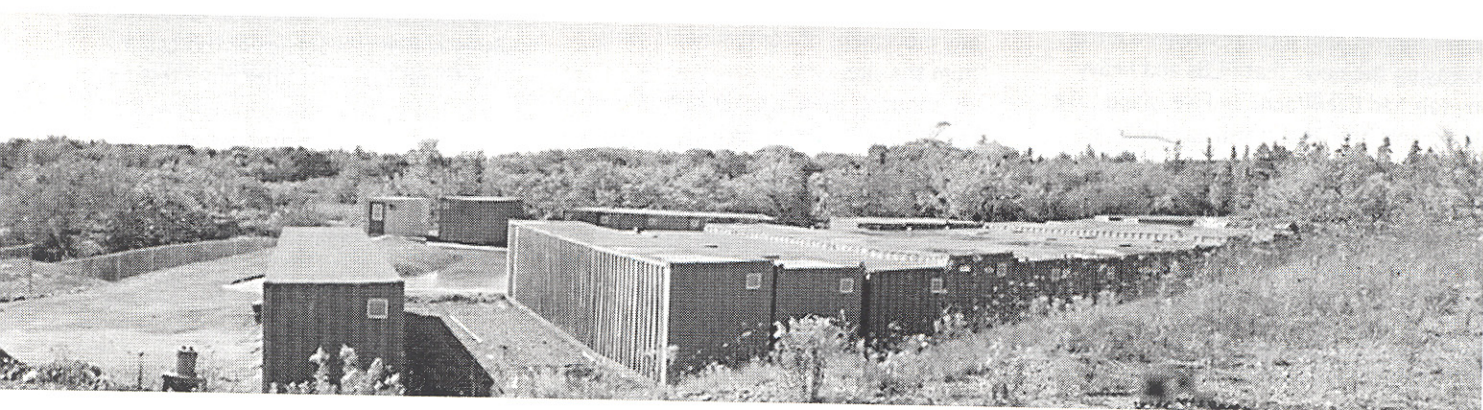
Each approach (in-situ or ex-situ) will have risks. For example, we know there are considerable quantities of debris mixed with the contaminated soil, and that the soil has both heavy metals and other organic contaminants (PCB's, solvents, etc). Since no one in-situ treatment technology could deal with all of these problems, several would have to be used. The long-term risk reduction may be marginal.

Excavating the site would need to be done with extreme care to ensure that nothing is lost due to rain or groundwater flow that could recontaminate all the clean areas downslope. The recovered materials would need to be moved to a sorting area and separated, cleaned or treated. This process introduces considerable risk to the local environment and workers due to volume and types of contaminants present. In this situation, even though the long-term risk would be greatly diminished, the short-term risk would be high.

Finally, there are no methods available, in-situ or ex-situ, to deal with the PCBs in the bedrock, so these would continue to be a risk to be managed for many years to come

### **Next Steps**

The CLC is asking Transportation and Public Works and their consultants to brief members on possible options, including management and clean-up approaches, the risks and benefits and the costs. While everyone would like to be able to remove and destroy all contaminants on the salvage yard site, the CLC recognizes that the relative risks may make this impossible until



Site in 2007



new technology is developed. But it is essential that the community (a) be fully informed about both the implications of managing the site as it is for an extended period of time, and about alternatives, and (b) have opportunities to give feedback to the CLC and to the government.

## A Quick History of the PCBs Situation in Five Island Lake

### How it began

A quick recap – for over 20 years, Associated Metals and Electronics Salvage operated a scrapyards up on the hill above the North Bay of Five Island Lake. In 1989, while carrying out a province-wide study of scrap operations, the NS Department of Environment discovered significant soil and water contamination at this salvage yard and took control over the site.

The site itself was badly contaminated, with PCBs and other chemicals present in the piles of mixed debris, the soil and in bedrock fractures. Over the years, run-off from the site had also eroded contaminated soil and moved it on to neighbouring properties.

### First steps

To stop further loss of contaminated material into the environment. The Department of Environment and later Transportation and Public Works, (1) capped the site with clay and gravel to prevent any more run-off, (2) removed contaminated soil from adjacent properties, (3) installed groundwater monitoring wells, and (4) as a precaution, provided first bottled water and then a central water supply to homes in the immediate vicinity.

### The Start of the Community Liaison Committee

In 1994, the Department of Environment sent local residents a letter breaking the news that PCBs and heavy metals had been found in Five Island Lake sediments and also in fish caught in a number of local lakes. A community liaison committee was formed with representation from the different areas near the contaminated salvage yard and Five Island Lake with a mandate to work with the community and the government

In our next newsletter, we will provide more information about possible management and remediation approaches for the contaminated salvage yard site. In the meantime, if you have questions or concerns, please get in touch with us, either by returning the feedback form or by contacting a committee member.

## We Need To Hear From You

Please take a few minutes to send us your feedback by mail, e-mail, or fax. The Five Island Lake Community Liaison Committee, 5539-B Young Street, Halifax, NS, B3K 1Z7 Fax (902) 421-1990 [fiveislandlake@hotmail.com](mailto:fiveislandlake@hotmail.com)



to develop a remediation plan that is environmentally sound, technically viable and acceptable to the community.

In 1996 we published our first newsletter. You can read the previous eleven newsletters on the Transportation and Public Works website at [www.gov.ns.ca/tran/projects/five\\_island.stm](http://www.gov.ns.ca/tran/projects/five_island.stm). They track the progress of the PCB issue and the government and community response to it.

### Clean Up North Bay First

Early on the committee realized that even though the salvage yard site was heavily contaminated, priority should be given to cleaning up North Bay for three main reasons:

- (1) With the cap in place, the contamination at the salvage yard site was now under control and not spreading out into the surrounding environment.
- (2) Monitoring wells were in place to track any movement of contaminants away from the site.
- (3) By contrast, there was no control over the contamination in the lake sediments – not only could it move downstream, especially if the sediments were disturbed by a storm, but there was evidence that the PCBs were already moving up through the food chain.

The CLC gathered information on different management and clean-up options and presented it to the community through the newsletters and a community meeting. This process culminated in a 13-Point Lake Clean-Up Strategy. Getting funding in place to implement this strategy took time but eventually dredging was completed over three seasons at a total cost of \$5.1 million. Almost 7,000 tonnes of sediments contaminated with PCBs have been removed and sent for disposal. This summer the Department of Health lifted the ban on boating and swimming in North Bay.

### Improvements Already

When fish in Five Island Lake were tested in 2001 for the presence of PCBs, the results were most encouraging. Levels of PCBs in fish tissues and livers had dropped quite dramatically since 1994. The Department of Health lifted the health advisory notice that recommended not eating fish caught in nine local lakes. The advisory notice still applies to fish caught in Five Island Lake, but after more testing in 2003 it may be possible to remove it as well. (However, the Department of Agriculture and Fisheries has now applied a catch and release policy to these lakes for purposes of managing stocks. For more information, go to the Department's website and look up Special Management Areas under Angling regulations).