

ORAL PRESENTATION OF BRIEF

Madame la Presidente, Commissioner.

My name is Raye Thomas.

I am a Professional Engineer with a Ph.D. in Electrical Engineering. I've been actively involved in Environmental issues since 1973, particularly in the development of renewable energy sources.

My wife owns land which borders La chute, which is the most challenging rapid on the Picanoc River downstream from the proposed megadump. Together we have several properties in Kazabazua near Danford Village. So we are ratepayers in both Alleyn and Cawood and Kazabazua.

As an Engineer, I am appalled that, in this day and age, we are still considering burying garbage of all kinds in dry tombs that will be around to haunt our children and grandchildren, risking their health and safety for decades if not centuries.

I am particularly appalled since much of the so-called waste contains energy which can be captured and used in other approaches, which would remove the risk of potential pollution of our soil, our waters and our air.

There are many issues regarding the proposed megadump in Alleyn and Cawood which bother me, however since time is limited, my brief today will concentrate on bio-physical aspects of the actual site. I will only touch on a few points, however there are more in my written brief.

Part of my brief is a report prepared by the Environmental Engineering firm Envir-Eau of Gatineau, which I tabled during Phase 1 of these hearings. The document is labelled DC2 on the BAPE web site. I would like to thank the Coalition against the Danford Megadump for funding the review by Envir-Eau. Mr. Gilles Fortin, Vice-President of this firm is with me today to answer questions on his report after I finish my presentation.

In preparing for this day:

Together with Mr. Fortin and Mr. Andre Carriere, in April I visited the site where the actual landfill is proposed and explored the surrounding area.

In May, with my wife and 4 others I canoed the Picanoc River, entering the river upstream from the proposed site, and went down stream to well below the lodges of the Five-Mile Club, which club, I would point out, opposes the landfill.

I would also like to confirm from experience that, contrary to statements by the proponent's consultants, there are locations upriver where canoeists and kayakers can and do enter the river.

In our four-hour canoe trip, we passed by the entrance to Grove Creek, which flows past the dump site, and enters the Picanoc, past the cottage of Mr. Gilles Pelletier, which was referred to by Mr. Poulin as a shelter, largely because it didn't have hydro (solar electricity does work as I can attest, having been involved since 1973). Then we went on past the Five mile Club and eventually stopped at the cottage/hunting camp of Bob Wilson, who will also present later in the hearings.

Referring now to my power point presentation, the next slide shows a map of the land where the megadump is proposed. The site is in a bit of a depression, surrounded by some higher hills. LDC argues that these hills will prevent people from seeing the landfill.

Well this is not true. The site may not be visible from highway 301. However, consider the view from the Picanoc River at the entrance to Grove Creek. We are looking at the landfill site – this will be visible from the Picanoc from day 1. Consider what it will look like once the pile of garbage rises 60 meters from the land. Also consider the operating noise in an area where the only sounds river users will hear now are birds, breezes and rippling water. To hear the noise of an operating dump is not an attractive proposition and would have an effect on the enjoyment of the river.

Staying on visibility, I would comment that Mount O'Brien on the other side of the 301 rises to 386 meters, which is well above the 180-190 meters of the proposed landfill site. The site will be visible from Mount O'Brien during the operations and long after the operations cease. This would be an affront to the sensibilities of the many visitors to the top of Mount O'Brien. Note that the Mount O'Brien Association also opposes the landfill project.

Now to the site itself. The land proposed is relatively flat and covered mostly with conifers up to 20 meters high. Of course all these will have to be stripped off before bringing in the garbage. Deer signs are everywhere on the

site, and it is my experience that this is the type of sheltered territory that deer like to winter in. The deer population would be disrupted by the landfill.

Turning to the soil, the soil is totally wrong for a landfill site. All engineers agree that a thick layer of compacted clay soil is best for landfill sites. The very fine grains help prevent water movement - the permeability is approximately 1×10^{-7} cm/sec, so it would take 32 years for contaminated water to move through 1 meter of compressed clay. However there is no clay on the site. The soil consists of first vegetable matter in a top thin layer, covered in moss. Then comes a layer of coarse sand followed by a layer of fine silt-like sand. These layers are quite permeable, with coarse sand being the most permeable and orders of magnitude higher than for clay.

Despite the fact that the water table exists in coarse sand in many areas of the site, Teknika has used the permeability of fine sand to come to the conclusion that it would take 140 years for leachate leaked into the soil to reach the nearest well about 1 km away. From my viewpoint, pollution from a dump should never reach someone's well. Further Teknika should have used coarse sand data, rather than something very close to fine sand data (2.85 meters per year). With coarse sand data, contaminated water could reach the nearest well in 28 years - just before the active operation would cease. Not acceptable

Since clay is not present, the site relies on liners - high Density Polyethylene (HDPE) and geosynthetic clay liners (GCLs). Here is what these would look like. The HDPE liners are 1.5 mm thick and sheets would have to be welded together on site. The GCL is less than 1 cm thick - not much protection, and is supposed to have a hydraulic permeability of 3×10^{-9} cm/sec. This is stated to be equivalent to a 1 meter layer of clay. However, a 1 meter layer of clay could not be penetrated by a small sharp stone, yet under the weight of bulldozers and garbage, a small stone less than 2.5 cm in size can penetrate either type of liner. The result would be leachate leakage through both layers. In my written brief I have used information from a Design Guide prepared by Layfield Plastics a maker of such liners, to point out the risks from relying on liners.

Wetlands are very close and all around the site. Here is a view from the end of one of the lanes cut for Technika to study the soil. You can see wetlands only a few meters away. I saw no evidence in the environmental impact report of plans to protect the wetlands during the operation of the dump, and

from run-off when from the mountain of garbage when the landfill is closed and covered at cease of operations. Incomplete planning.

Next is a view of a well on the site. Note that the water table is high – you can see the top level of water here. We can conclude that the garbage will be sitting in water in many parts of the site. The next slide shows an excavation in the south east area done by a mechanical shovel. Clearly they didn't have to go very deep to hit water. In fact the water table is within half a meter of the surface. The proponent did not mention this in the report. This is not acceptable – the underground water on the site would be immediately at risk.

Now I'd like to show a figure that shows Teknika's soil sampling points on the site.

There are 29 excavations to shallow depths with a mechanical shovel (labeled with P in the figure).

There are 14 drilled holes (labeled with F) which stopped at depths between 13 and 21 meters.

In the middle of the site, two holes were drilled to 38 meters (F-113) and 49 meters (F-114) and these did not hit bedrock.

In these two sites, below the top layers of sand, coarse sand/gravel was again found which is further evidence to say they should not have used data for fine sand in determining the ability of contamination to move through the soil.

Rock was reached in the south-east part of the site at 1.2 meters for P-31 and 2.9 meters for P-26 and P-32.

In the South-west, rock was reached 12.9 m for F-110. In the north, rock was reached at 14.5 m for F-101, 12.9 m for F-102 and 15.7 m for F-107.

No drilling was done in the rock to determine its characteristics. This is significant. The only digging in the North Western and Western sectors was by mechanical shovel – to shallow depths, so the actual depth of rock in these areas is not known.

Mapping of the soil conditions was clearly incomplete. The shallow mechanical shovel excavations in the northwestern sector tell us absolutely nothing, and to my mind the implications of what they found have not been properly interpreted.

What are the implications of these results?

Rock was struck in several areas. If rock is fractured, water can move quickly along fissures and we could see contaminated water traveling 1 km or more each year. So the time to reach the river, wetlands, and nearest wells could well be less than one year. This makes the risk far too high. We need to know the quality of the rock before any decision could be made to put a landfill there.

The results show a deep depression or crevasse in the rock, which is filled with coarse sand. The results suggest to me that the crevasse could extend in the east west direction beyond the landfill site edge.

First let us consider the effect of the non-uniformity of the soil on leachate collection. The stated intent of LDC is to make the liners have an east-west slope of 2% to cause leachate to flow in that direction, and then be collected. This is a drop of 2 meters in 100 meters. Layfield states that you must allow slack in the liners to allow for expansion and contraction and that folds or waves can be 200 mm in height. If these run across the slope, they will block the free flow of leachate to the collection points. The leachate will always sit on the liner and chemicals in the leachate can attack the liner causing it to fail faster than if the leachate always flows away.

Document DB21 filed with the BAPE confirms that the folds or waves remain. So this will cause the problem I mentioned.

However there can be a further effect here caused by the actual terrain. Where there is rock a small depth under the surface, the garbage can not cause much compaction of the soil. However in the area where the sand depth is large, there will be much more compaction under the weight of the garbage. I can envision an effect much like a saggy mattress. The liner sags down in the center and a large pool of leachate stays there attacking the liners and eventually causing them to fail. This is not acceptable.

I conclude that the site is bad from the viewpoint of non-uniform soil conditions. We should not risk this.

The other major implication is as follows:

No landfill site is allowed where there is a good aquifer. Teknika argues that their tests show that there is not a good aquifer on the site. The measure of a good aquifer is based on the ability to pump 25 m³ of water per hour from a well on the site. They have not proven their case.

Initially they did not do a pumping test, and had to be asked to do so. When asked to do so by MDDEP, Teknika selected location F-102 where the drill hit bedrock after 12.9 meters. A pipe with a screen at the bottom was then sunk into the well to less than 3 meters below the water table. In the selected well, there was not a large height of water above the underlying rock. The site was totally wrong for the test. No one would ever use this site as a well. In fact they would choose a deep site like F113 or F114 where the drilling showed that rock was not reached at 38 and 49 meters, respectively. Using one of these sites would have enabled a true test for the aquifer, not one designed to show that there was not a good one present.

A strong possibility exists that there is a good aquifer on the site. For example, what if the deep crevasse runs towards and even reaches Grove Creek or the Picanoc, and that there is a direct link with the Picanoc's water. Then pumping water could bring water from the Picanoc to replace the water pumped out. In that case the aquifer would have to be judged as a good one. If there are fissures in the rock, they could allow the water to flow in to replace that pumped out. The aquifer would then also have to be judged a good one.

This direct link would work in the opposite direction as well. Leaked leachate could rapidly reach the Picanoc through the same mechanisms.

- *Since the proponent has not proven that there is not a good aquifer present, the project should be refused on this basis alone.*

Just in passing, I would draw your attention to the fact that the Museum of Nature in the nation's capital has on record sighting of the wood turtle along the Picanoc. Of course none were sighted in May of 2005 by the proponent's studies. This is their nesting period and they would be difficult to see. Dr. Raymond Samure from this area and now working in the USA is a world expert on this protected species, and would attest to the sighting.

There are far too many potential problems with the site - it is unsuitable and a landfill should not be approved.

Finally, in closing I'll like to clarify a point regarding options. During Phase 1 of the hearings, the representative of the MRC of Pontiac stated that there were no options available except landfill. He is totally wrong. I was at the planning committee meeting this morning of the MRC of Pontiac. There is an offer on the table for the landfill in Lachute to take the garbage from Pontiac - a transfer site would be set up, and the merged garbage would travel to Lachute in 2 trucks per day. The cost would be approximately \$70.00 per tonne including trucking, transfer fee and tipping fees. This is competitive and a logical 3 to 5 year solution to the Pontiac's garbage. This would allow time to view the plasma gasification plant in Ottawa and be satisfied of its performance. Note also that Plasco has offered to install plasma gasification plants in the Outaouais at no cost to the municipalities. Tipping fees of \$53.00 per tonne have been offered - the cost to get garbage to a nearby plant would be less than the cost to transport to Lachute. So there are options short - term and long -term.

There is absolutely no need for a new landfill site in Alleyne and Cawood.

Thank you for your attention.