

4.7. NOISE

Hatch & Associates Ltd. (Hatch) was contracted by Bennett to complete a noise impact study in accordance with the requirements of MOE noise guidelines

The 'Acoustic Impact of Proposed Thermal Treatment Plant' report conducted by Hatch was completed in October 2001. This report can be found as separate Appendix 11. The facility design has changed slightly between the time the report was completed and present; for example, new pieces of equipment have been added to the design. A much more detailed noise assessment is required for the completion of the Certificate of Approval (CofA) under Section 9 of the *Environmental Protection Act*. The detailed noise assessment for the CofA will include comprehensive frequency and sound level information for all proposed equipment, from manufacturers or suppliers for the finalized facility design. This is confirmed in Section 15, Summary of Commitments.

Hatch conducted an examination of ambient sound levels at Chaput Hughes, near Queen Street and in Kirkland Lake. Zoning and area maps of Kirkland Lake were used to assist in the placement of monitors for taking ambient noise measurements. Hatch made two site visits to conduct the 2-day continuous monitoring noise surveys and spot measurements, as they were required

The purpose of gathering information about existing ambient noise levels in the area is to determine what current levels are like surrounding the proposed facility (i.e. establish a baseline). The noise emission measurements will also establish the Class designation of the Bennett property. The Class designation is the definition that states what noise level must be met at the closest residence.

The noise impact assessment was conducted and prepared in compliance with the Approved Terms of Reference for the Environmental Assessment. The current section describes:

- Ambient noise levels

4.7.1. Ambient noise levels

Existing ambient sound levels were sampled for and analysed at specific areas in Kirkland Lake, including sensitive receptors such as Chaput Hughes and Queen Street. The monitoring locations were chosen based on their proximity to the proposed facility location. For example, one monitor was placed near the closest residence in Chaput Hughes considered to be a sensitive receptor, another near the Queen Street/ Birch Street intersection based on public request stemming from past noise problems, considered to be a possible sensitive receptor.

4.7.1.1. Automatic Monitoring Site

An automatic monitoring site was positioned at the nearest residential house, which is located approximately 700 metres from the proposed facility. It is the third residence on the south side of Government Road, which runs diagonally away from the facility site on Archer Drive.

An automatic noise monitor was also placed near Queen Street (corner of Birch St. and Main St.) to compare the sound levels at that location with the nearest residential house. At one point, a number of residents from Kirkland Lake had indicated dissatisfaction with noise levels from other industrial facilities.

The automatic monitors were run between July 23, 2000 to July 25, 2000 in front of #157 Main Street and between July 25, 2000 and July 27, 2000, in front of #845 Government Road. Data was collected in five minute L_{eq} (Equivalent sound Level¹) and were summed together to calculate the one-hour L_{eq} data, which is summarized below in Figures 4-13 and 4-14.

¹ The equivalent sound level L_{eq} is an energy rms average over the measurement period. It is the most widely used metric of community noise.

Figure 4-13 Leq Data for #157 Main Street

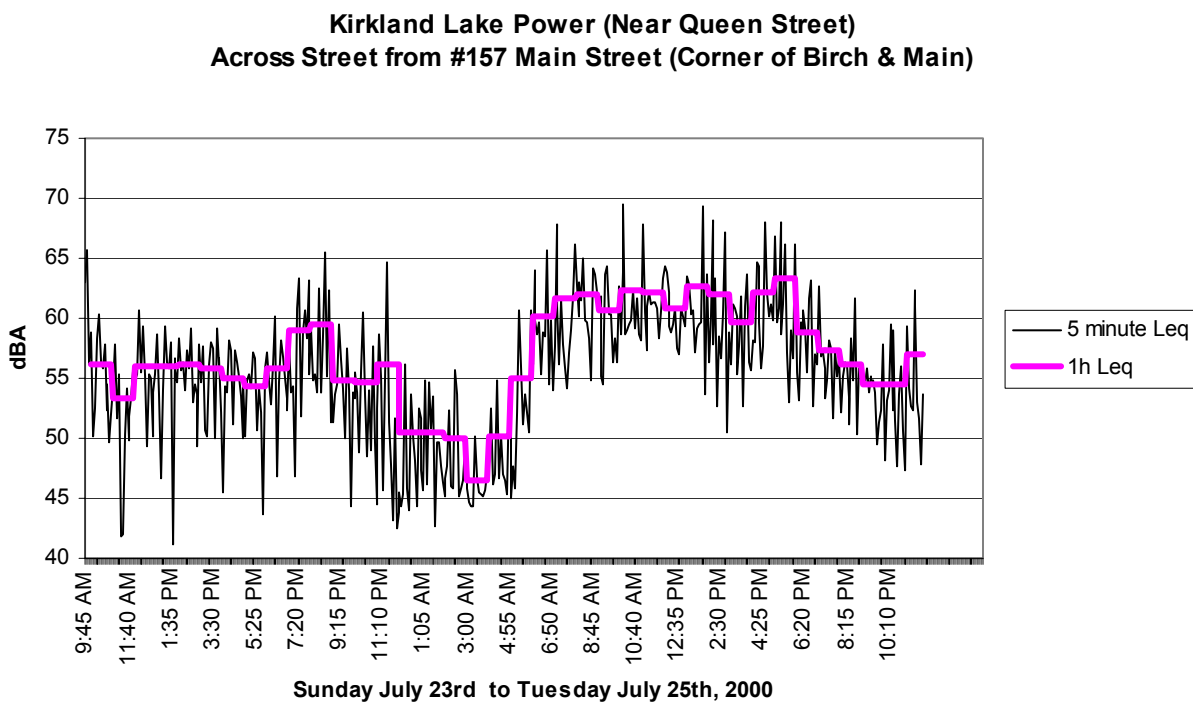
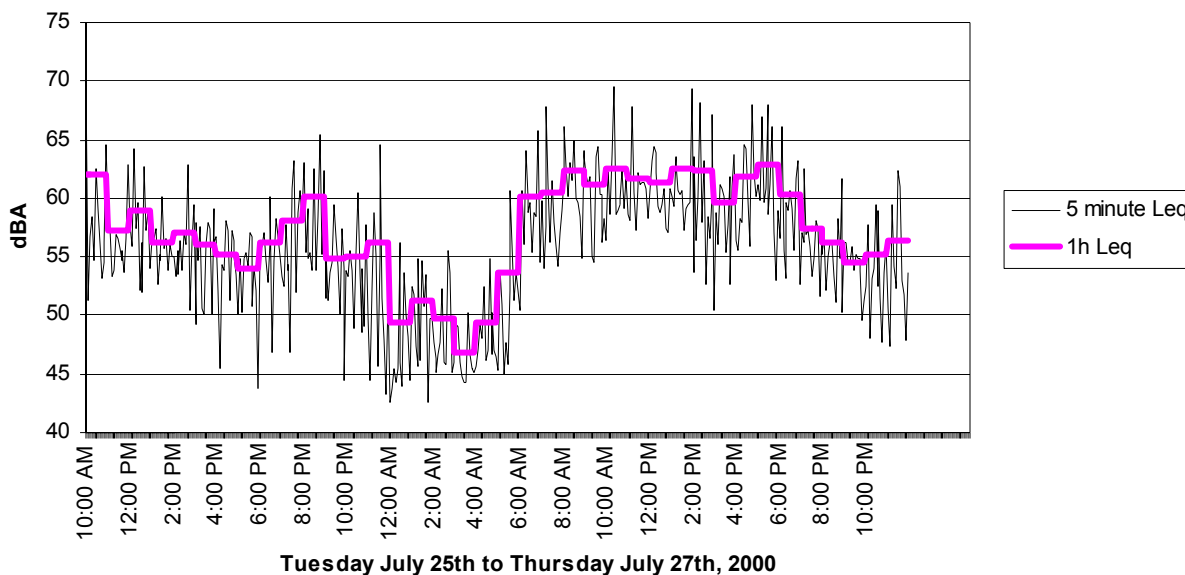


Figure 4-14 Leq Data for #845 Government Road

**In Front of Nearest Residence to Proposed Site
#845 Government Road**



The one-hour L_{eq} 's for the entire monitoring period are charted. Based on the sound levels measured, the minimum measured hourly L_{eq} was 47 dBA. This area appears to be a Class 2 area. The sound level limit for such an area is 45dBA between 19:00 and 07:00.

4.7.1.2. Short Term Sound Level Monitor

Short-term sound levels (spot measurements) were measured with a RION NA-29E precision sound level meter, within a weatherproof enclosure (along with its batteries). The meter logged the average A-weighted and octave band sound levels (definitions of these terms can be found in the Glossary section) in five-minute intervals. The hourly average sound levels were calculated based on the sound levels measured in five-minute intervals. The batteries were capable of powering the meter for two days at a time. Short-term sound level monitors usually sample for between 30 seconds to 1 minute.

Ambient sound levels were taken at various locations to represent the area surrounding the plant. These locations were chosen to represent the existing conditions and of areas most likely to be affected by noise coming from the plant. The Chaput Hughes location and the Birch St/Main St. location had short-term measurements taken twice. Measurements are shown below in Table 4-4-27.

Table 4-27 Short Term Sound Level Measurements

Location #	Sound level (dBA)	Description
527	47	Nearest residential house in Chaput Hughes (hydro pole)
528	49	Corner of Birch Street and Main Street (near Queen Street)

529	45	Nearest residential house in Chaput Hughes (hydro pole)
533	58	In front of proposed plant location (Archer Drive)
534	<45	Corner of Birch Street and Main Street (near Queen Street)

Wind Data

Wind data was desired for the acoustic monitoring period. Environment Canada data was obtained for wind speeds and directions. Wind speeds during the 2-day monitoring period were less than 10k/h and there was no precipitation.

The wind rose for the proposed facility shows that the dominant prevailing winds will favour the residences i.e. the wind will reduce noise propagation from the proposed facility to the houses. Winds from the southeast, which will blow directly to the nearest residence, will only occur <4% of the time.

4.7.2. Conclusion

A sample of ambient noise levels for the area have been collected and presented. The results of the automatic noise monitoring show that a design level of 45 dBA should be used for the proposed facility. The entire noise quality report entitled “Acoustic Impact Assessment” can be found as a separate document Appendix 11.

As demonstrated above the Noise Impact Assessment was completed pursuant to the approved Terms of Reference describing ambient noise levels in the area. For the further detail on noise impacts please see Appendix 11, Noise and Noise Traffic Impact Assessment. For discussion regarding the assessment of potential noise impacts, please refer to Section 7.7.