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Memorandum

To: Keno City residents, Yukon Government Energy Mines and Resources, and Yukon Government Tourism and Culture Branch

From: Holly Goulding, Access Consulting Group

CC: Kai Woloshyn, Alexco Resource Corp.

Date: August 23, 2013

Re: Keno Hill Silver District Mining Operations – Noise Monitoring Reporting Q2

INTRODUCTION

As part of the Keno Hill Silver District Mining Operations Noise Management Plan (the Plan) Alexco Keno Hill Mining Corp. (AKHM) has been monitoring noise levels in Keno City. The Plan was developed to address any potential noise affects that might occur with the addition of the two new mines, Lucky Queen and Onek. In addition to noise mitigation measures and the creation of a Noise Disturbance Notification Form and Noise Disturbance Register to track noise disturbance claims, AKHM committed to monitor noise levels within the community at various locations to assess the actual versus predicted noise levels and to determine if the noise abatement measures are effective.

The predicted noise levels were presented in the Noise Impact Assessment (NIA) completed by Patching Associates Acoustical Engineering Ltd (PAAE) conducted during the *Yukon Environmental and Socio-Economic Assessment Act* (YESAA) process (Project 2011-0315). The NIA identifies the noise sources from the current mining-related activities, noise receptors, and predicts the anticipated noise level from all existing sources and those associated with the addition of Lucky Queen and Onek mining operations.

This memo presents noise monitoring results for Q2 April to June, 2013 (also includes July 2013) and a summary of any noise complaints received over this time period in the Noise Complaint Registry.

NOISE RECEPTORS

AKHM has monitored noise at the five locations selected in the NIA as being potential noise receptors within the 2 km radius study area around Keno City. These are listed in Table 1 and shown in Figure 1.

Table 1 Representative Locations Assessed in Keno City

Residence	GPS Location	Description
R01	N63.90827 W135.29599	East end Residence, north side of Lightning Creek Road
R02	N63.91019 W135.29968	Residence, east side of Sign Post Road
R03	N63.91023 W135.30205	Town Center, north from the Snack Bar
R04	N63.91239 W135.30376	Residence, west side of Wernecke Road
R05	N63.90851 W135.30993	Residence, about 850m east from the Mill

The background noise levels experienced by these locations vary considerably, depending on location and local activities. Past and proposed Lucky Queen and Onek mining operations are in addition to normal fluctuations in background levels. Climate parameters, such as relative humidity, temperature, and temperature inversions impact the sound level and propagation experienced by each of these receptors.

MONITORING TIMING

For the period from April to July, 2013 two monitoring events took place during the months of April and May, while one event took place during the months of June and July for a total of 6 monitoring events. Mining took place at Bellekeno, and milling at the Keno District Mill for the entire measurement period, while operations at Onek stopped at the end of May.

RESULTS

The results from the 6 monitoring events from April to July, 2013 are presented in Appendix A. All readings were taken using an Extech integrating sound level datalogger model 407780 to measure average dBA over 10 minutes. The wind speed, wind direction, temperature and precipitation data from the Keno District Mill weather station associated with each noise monitoring event have been reported as these can have a significant effect on measured noise levels. Any notable noise sources associated with the monitoring event was also documented.

Noise levels measured at all testing locations were well within or below the 50-90 dBA range deemed “what is socially acceptable for daytime noise limits” as defined in the past YESAB assessment for the Bellekeno Mine development (Project 2009-0030). Of the six measurements above 50 dBA, four occurred on April 8th (R01, R02, R03, and R04) and two on May 19th (R01 and R03), with all measurements below 70 dBA. While this corresponds to the period of operations at Onek, only one observation associated with the measurements appearing to be linked with mining operations (May 19th measurement at R03: ‘water truck went by’). In addition, observations for the May 19th event refer to creeks flowing, likely at their highest during spring freshet, and birds chirping, while wind conditions for the April 8th measurements were recorded as ‘Windy SSE’.

Figure 2 shows the noise levels measured compared to the predicted current and proposed mining operations noise levels plus ambient sound levels from the NIA. Most of the measurements exceed the predicted levels, which range from 32 to 39 dBA, both in the period of Onek operations and after operations had ceased.

For R01, which is closest to Onek, all measurements except the May 6th record exceed the predicted noise levels. The April events appear associated with wind, while all events after May 6th appear to have noises associated with Lightning Creek and/or other environmental sources (i.e. leaves, animals) and anthropogenic noise

sources (i.e. tarps). Strangely, it is the May 6th measurement of 35.1 dBA - below the predicted noise level – that was taken while the backup alarm at Onek could be heard.

R02 also exhibits this same pattern, with May 6th as the only measurement that does not exceed the predicted noise levels. At R03 and R05 all measurements exceed the predictions, with noises associated with the town and the Mill potentially the cause of the exceedances. Finally, R04 had several measurements below the predictions, both during and after Onek operations ceased, with the remaining measurements exceeding the predictions. These observations indicate that many of the notable noise sources are likely not linked to operations at Onek, although several sources are associated with Keno mining operations, including backup alarms at the Mill, the Mill crusher, and the movement of trucks.

NOISE COMPLAINTS

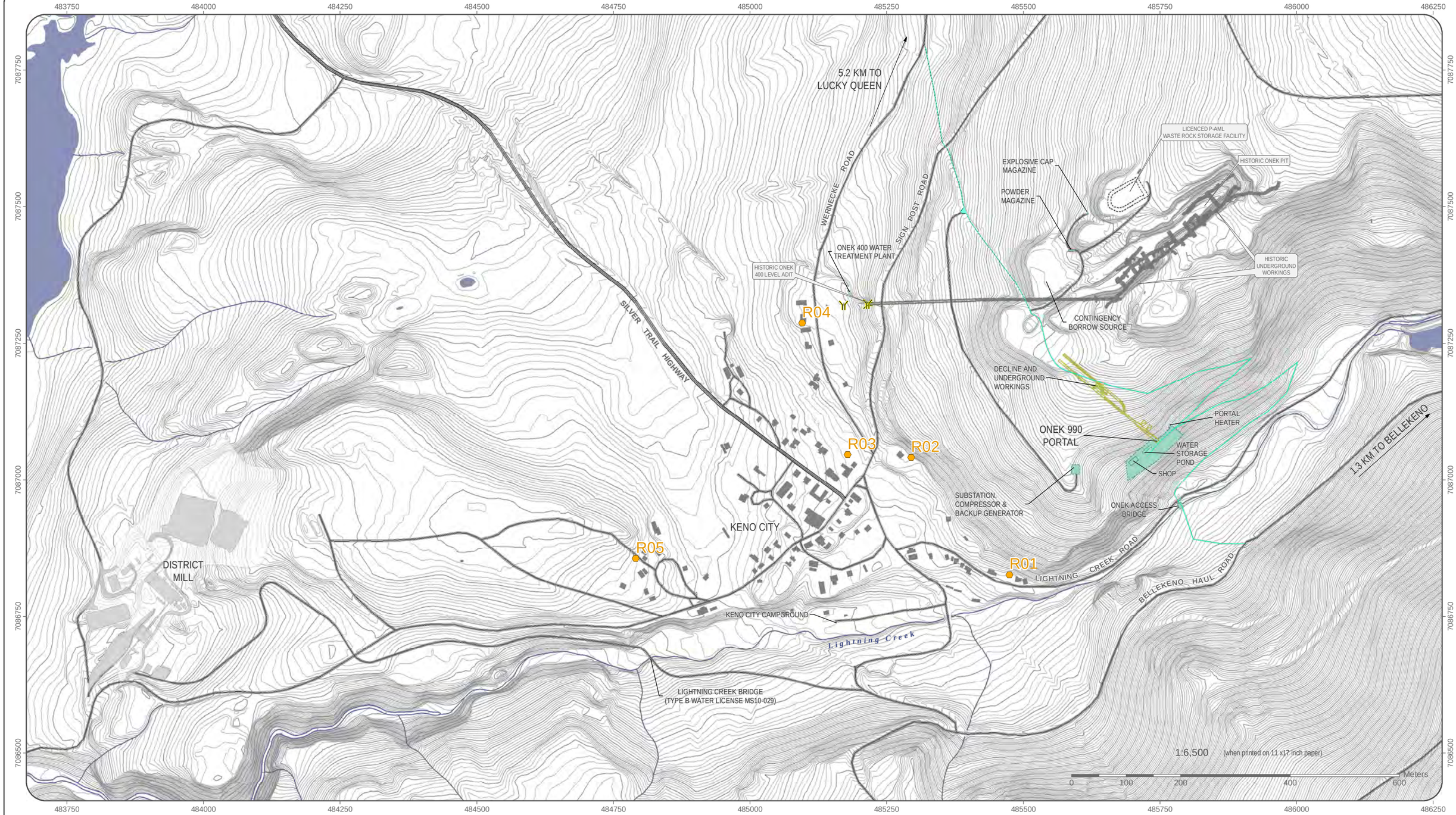
No noise complaints received by Keno residents were provided by Alexco to Access Consulting.

CONCLUSION

Noise levels measured at all noise receptors were well within or below the 50-90 dBA range deemed to be socially acceptable for daytime noise limits. Compared to the predicted current and proposed mining operations noise levels plus ambient sound levels from the NIA, most of the measurements exceed the predicted levels, which range from 32 to 39 dBA, both in the period of Onek operations and after operations had ceased.

These measurements and observations from each of the noise receptors indicate that much of the noise measured is not likely linked to operations at Onek, although some is associated with Keno mining operations.

Given the short measurement interval of 10 minutes, measurements could have been influenced by fluctuations in background levels and climate parameters impacting noise levels and propagation. Thus, over a longer interval of measurement it is possible that lower noise levels might have been measured.



Datum: NAD 83; Map Projection: UTM Zone 8N

- Noise Monitoring Station
- Existing Features
- Proposed Feature
- Proposed Underground Footprint
- Building/Structure
- Proposed Bypass Road
- Proposed Road
- Highway
- Secondary
- Contour (5 m interval)
- Contour (1 m interval)

AKHM
ACCESS

ALEXCO KENO HILL MINING CORP.- PROPOSED DEVELOPMENT PLAN

FIGURE 1

KENO CITY
NOISE MONITORING STATIONS

DECEMBER 2012

I:\Keno_Area_Mines\ONEK\Maps\1_Overview_Maps\Specific_Topics\Noise Monitoring\ONEK_990_NoiseMon_20121206.mxd

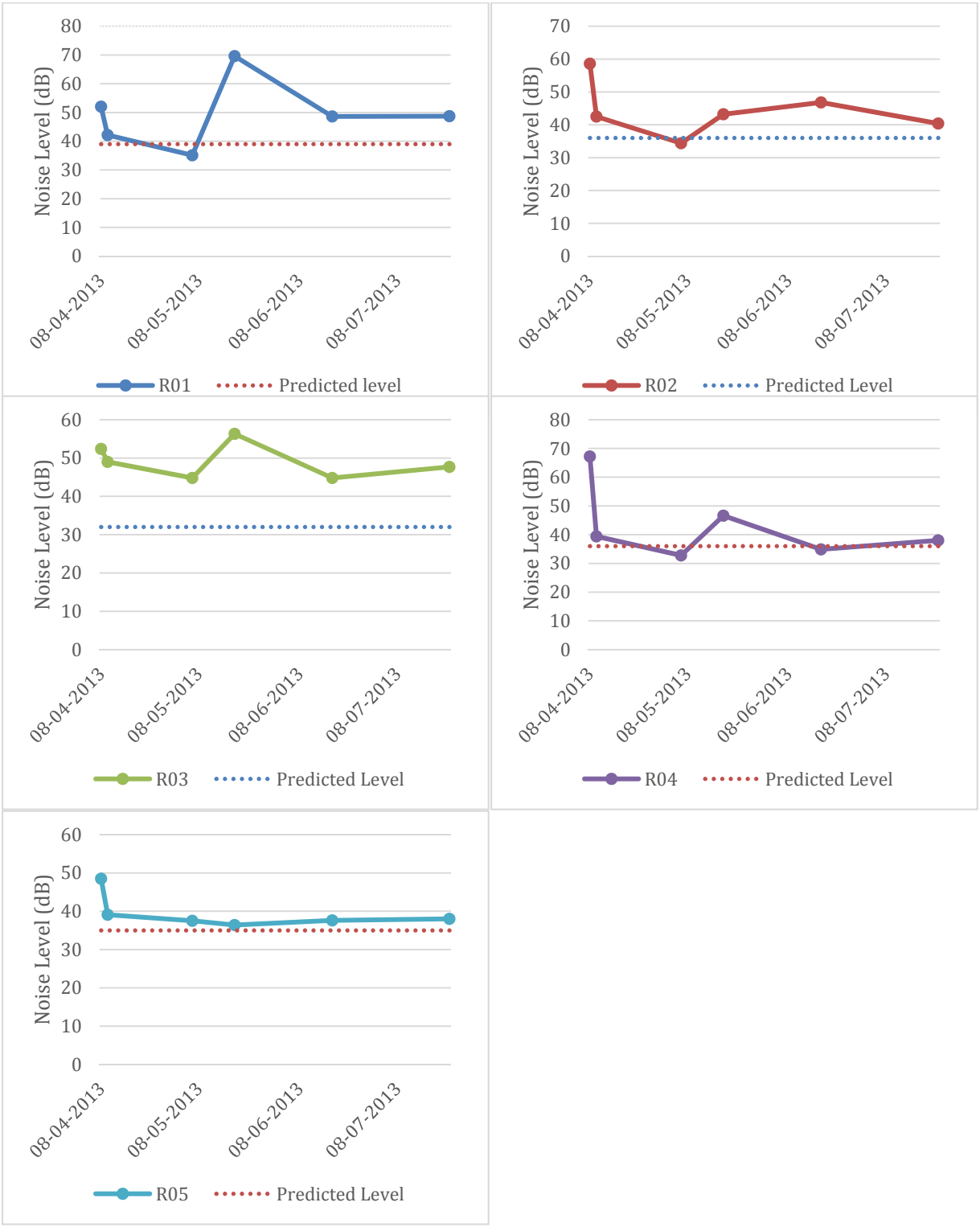


Figure 2 Keno Noise Monitoring Data

APPENDIX A

KENO NOISE MONITORING DATA

Keno Noise Monitoring Data

Date	Location	Time	Temp (°C)	Wind	Precipitation	DBA	Observations
08-04-2013	R01	12:26	2	Windy SSE	None	52.0	
08-04-2013	R02	12:05	2	Windy SSE	None	58.6	
08-04-2013	R03	11:45	2	Windy SSE	None	52.4	
08-04-2013	R04	11:25	2	Windy SSE	None	67.2	A dog barked 2 times
08-04-2013	R05	11:04	2	Windy SSE	None	48.5	
10-04-2013	R01	11:33	-6	Light SSW	None	42.1	
10-04-2013	R02	13:00	-6	Light SSW	None	42.5	
10-04-2013	R03	12:40	-6	Light SSW	None	49.0	Doors slamming. People talking
10-04-2013	R04	12:20	-6	Light SSW	None	39.4	
10-04-2013	R05	12:00	-6	Light SSW	None	39.1	
06-05-2013	R01	15:30	2	Wind West	None	35.1	Backup alarm at Onek. Tarps flapping in wind
06-05-2013	R02	15:30	2	Slight breeze	None	34.4	
06-05-2013	R03	15:30	2	Windy	None	44.8	Dog barking. Boart truck
06-05-2013	R04	15:30	2	Slight breeze	None	32.8	
06-05-2013	R05	15:30	2	Slight breeze	None	37.5	Dog barking
19-05-2013	R01	10:25	-2	Light (<10km/h) N	Light snow	69.6	Creek flowing loud. Squirrels making noise. Tarp flapping. Volvo going by on the BKR
19-05-2013	R02	10:10	-2	Light (<10km/h) E	Light snow	43.2	Creek flowing below. A few birds chirping. Boart pickup went by
19-05-2013	R03	9:55	-2	Light (<10km/h) E	Light snow	56.3	A few birds. Talking and trucks in town in the distance. Water truck went by
19-05-2013	R04	9:30	-2	Light (<10km/h) E	Light snow	46.6	Lots of birds calling and a woodpecker pecking close by
19-05-2013	R05	8:55	-2	Light (<10km/h) E	Light snow	36.4	A few birds and a squirrel chirping
18-06-2013	R01	16:25	22	Light (<10km/h) S	None	48.6	Creek flowing. Leaves rustling
18-06-2013	R02	16:10	22	Light (<10km/h) S	None	46.8	Volvo on BKR. 2 vehicles drove past. Gusts of wind rustling trees. Chainsaw nearby in town
18-06-2013	R03	15:55	22	Light (<10km/h) S	None	44.8	People talking and walking close by. 2 Vehicles driving through town and 1 driving by
18-06-2013	R04	15:40	21	Light (<10km/h) S	None	34.9	Wind rustling leaves. Birds calling
18-06-2013	R05	14:55	21	Light (<15km/h) S	None	37.6	Wind rustling leaves. Volvo on the BKR
24-07-2013	R01	11:07	23	light (<20km/h) S	None	48.7	Leaves rustling. Creek nearby. Birds chirping
24-07-2013	R02	10:55	23	light (<10km/h) S	None	40.4	Three vehicles driving nearby. Leaves rustling
24-07-2013	R03	10:43	23	light (<10km/h) S	None	47.7	Backup alarm at Mill. Leaves rustling. Someone in town hammering. Two vehicles drove by
24-07-2013	R04	10:30	23	light (<10km/h) SE	None	38.0	Backup alarm at Mill. Mill crusher. Leaves rustling. Car drove by twice. Car on Silver Trail
24-07-2013	R05	10:14	23	Calm	None	38.0	Backup alarm at Mill. Volve down BKR. Mill crusher

*All readings are taken using an Extech integrating sound level datalogger model 407780 to measure DBA for 10 min.