

NORTH DELTA – SUNSHINE HILLS

INTRODUCTION:

This report summarizes the results from the deployment of the portable noise monitor in North Delta (the Sunshine Hills area) during the month of July 2010. The monitoring site, located at Firehall Hall No. 5 (specifically #11720 - 64TH Avenue), was selected in consultation with Corporation of Delta staff. The measurements were obtained using a portable noise monitoring terminal located on the roof of the Firehall.

The goal of the portable noise monitoring program is to obtain objective data and assess aircraft noise levels in the community. This data is used to augment measurements collected by the network of 20 fixed noise monitoring terminals located throughout the Lower Mainland and connected to the airport's [Aircraft Noise & Operations Monitoring System](#).

TYPICAL AIRCRAFT OPERATIONS OVER THE AREA:

Figures 1 and 2 illustrate the monitoring location in North Delta (Sunshine Hills) in relation to radar flight tracks during a typical four hour period (10AM-2PM) of westerly operations ([runway 26 active](#)) and easterly operations ([runway 08 active](#)) at Vancouver International Airport (YVR). The GREEN tracks represent YVR departures, the RED tracks represent YVR arrivals, and the YELLOW tracks represent aircraft operating from other airports in the region. During the month of July 2010, there were approximately 24,000 runway and 4,500 non-runway (float plane and helicopter) operations at YVR.

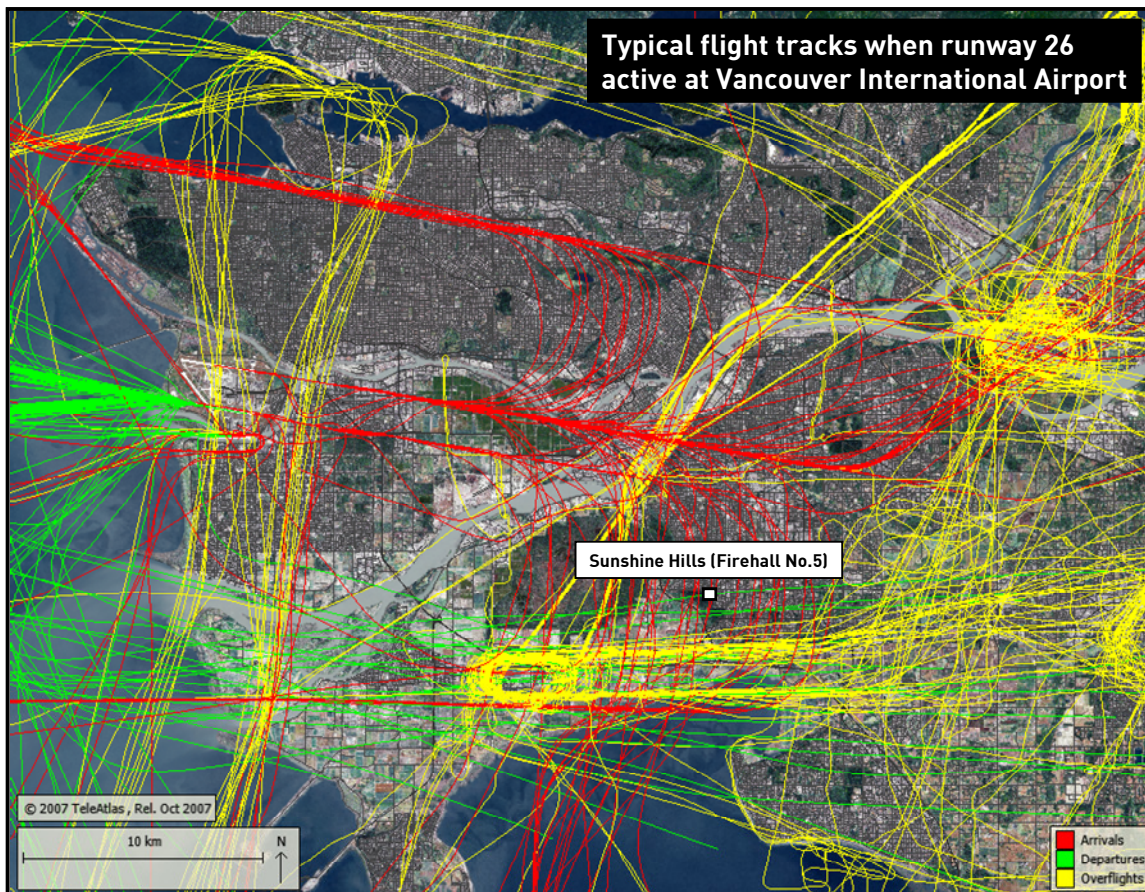


FIGURE 1

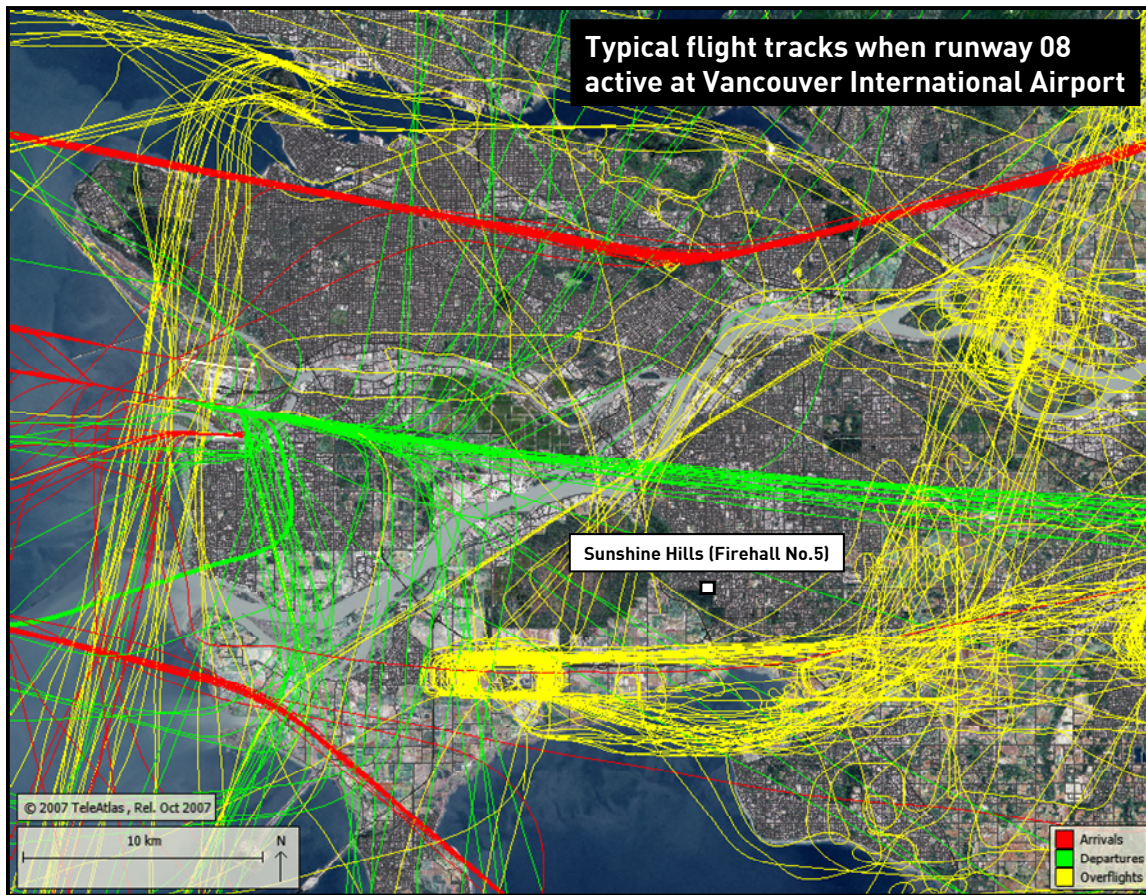


FIGURE 2

MONITORING RESULTS:

Noise Events

A noise event is captured when the sound level and duration exceed a predefined threshold. In the case of the measurements at North Delta (Sunshine Hills), the event threshold was set at 65 dBA during the day (7AM-10PM), and 55 dBA during the night (10PM-7AM), and the event time duration was set at 10 seconds. The sound thresholds were set according to the ambient background noise level, and the lower threshold at night accounts for the lower ambient background noise.

Noise events can be either aircraft or non-aircraft related. Noise events caused by aircraft are correlated to the associated flight operation using the radar data supplied by air traffic control (NAV CANADA). This allows the contribution of aircraft noise to be determined in relation to other community noise sources.

During the 31-day monitoring period, a total of 3,878 noise events were measured at the site. Of these 3,878 noise events, 32 (less than 1%) were related to aircraft and the remainder were associated with other community noise sources. The majority of community noise events were associated with vehicle traffic. A summary of the 3,878 noise events is provided in the table below.

Number of Noise Events	3,878	Community Events	3,846		
		Aircraft Events	32	YVR aircraft	32
				Non-YVR aircraft	0

Figure 3 categorizes the 3,878 noise events according to the maximum sound level (Lmax) measured during the event and illustrates a comparison of typical indoor and outdoor sound levels, for example a sound level of 70 dBA is equivalent to a vacuum cleaner at 10 feet.

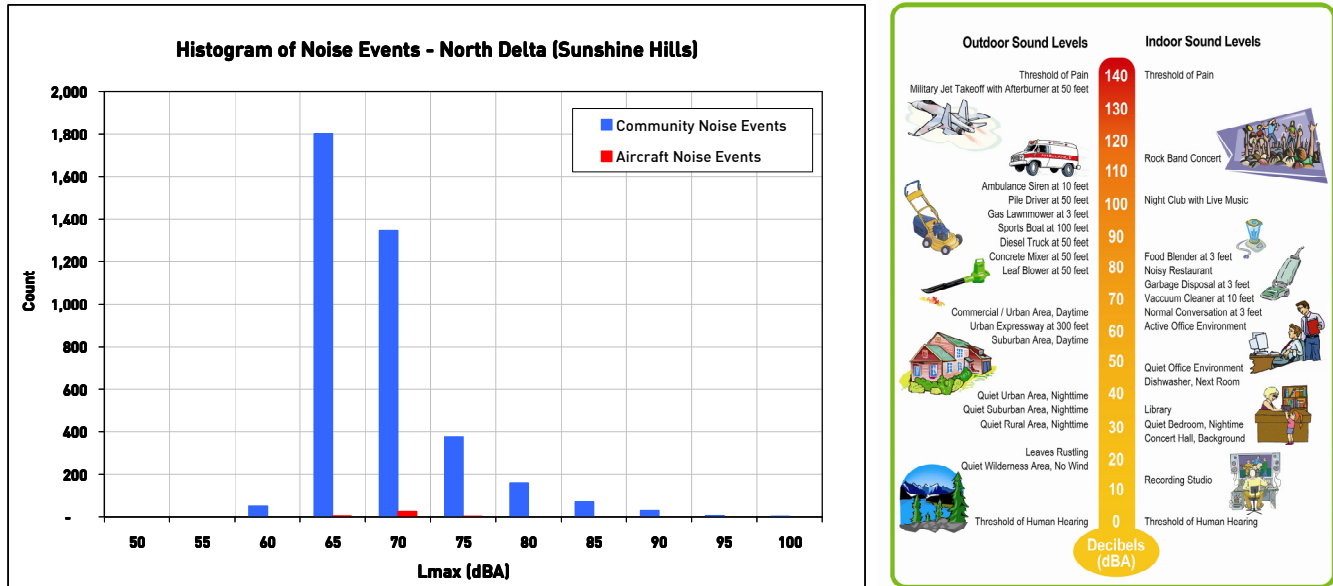


FIGURE 3

Leq and Aircraft DNL

The total equivalent continuous sound pressure level (Leq) at the site during the monitoring period was determined to be 59.6 dBA. The Leq related specifically to the 32 aircraft events was determined to be 29.0 dBA; therefore, aircraft did not contribute significantly to the noise environment at this site over the monitoring period.

The measured aircraft related day-night average sound level (DNL) at this site was determined to be 38.5 dBA. This is significantly lower than the DNL level of 65 dBA that the US Federal Aviation Administration has defined as the threshold of significant aviation noise exposure.

DEFINITIONS:

Maximum Sound Level (Lmax)

The Lmax is maximum sound level measured during a noise event.

Equivalent Continuous Sound Pressure Level (Leq)

The Leq is widely used as an index for noise and is defined as the steady-state sound level that has the same energy as the fluctuating community noise over a given time interval.

Aircraft Day-Night Average Sound Level (DNL)

The aircraft DNL is a daily average noise metric in which events occurring at night (between 10PM and 7AM) are penalized by 10 dBA. This night-time weighting treats one nighttime noise event as equivalent to 10 day-time events of the same magnitude, and is intended to account for the greater community annoyance with night-time noise.

The US Federal Aviation Agency has guidelines for compatible land uses and environmental sound levels based on the DNL metric. These guidelines are found in the Airport Noise Compatibility Program, found in Part 150 of the Federal Aviation Regulations. The FAA has identified a DNL of 65 dBA as the threshold level of aviation noise which is deemed as significant.