TOPIC H: NOISE

Noise was included in the 1998 SOE report although no noise indicators were selected at that time. However, its inclusion was based on an increasing recognition and concern about the impacts of noise on human health and city livability. In Richmond, three categories of noise are recognized:

1) construction noise (e.g., from the development of new buildings or roads);
2) ambient noise which generally becomes more pronounced as the concentration of people in an area increases (e.g., from traffic, lawn mowers, music or commercial facilities that attract crowds); and
3) aircraft noise which predominantly affects people living near or under the airport flight paths.

The 2001 edition of the SOE report includes the indicator:

H1: Noise.

Both ambient noise and airport noise are discussed.

Indicator H1: Noise

INTRODUCTION

Why Should We Measure This Indicator?

While some level of noise is generally accepted as part of urban living, pervasive noise is detrimental to the health and well-being of residents. Among humans, excess noise can contribute to hearing loss, stress-related illnesses and interfere with learning and sleep patterns. Although many types of urban wildlife have shown an ability to adapt to noise, the long-term effects of noise on wildlife are not well understood.

Increased automobile and air traffic, and construction activities, combined with more people living in compact areas, will inevitably contribute to greater noise levels. It is, therefore, important to monitor noise levels to assess conditions, identify trends and determine whether management activities are being effective.

What is Being Measured?

This indicator measures three aspects of urban noise in Richmond:

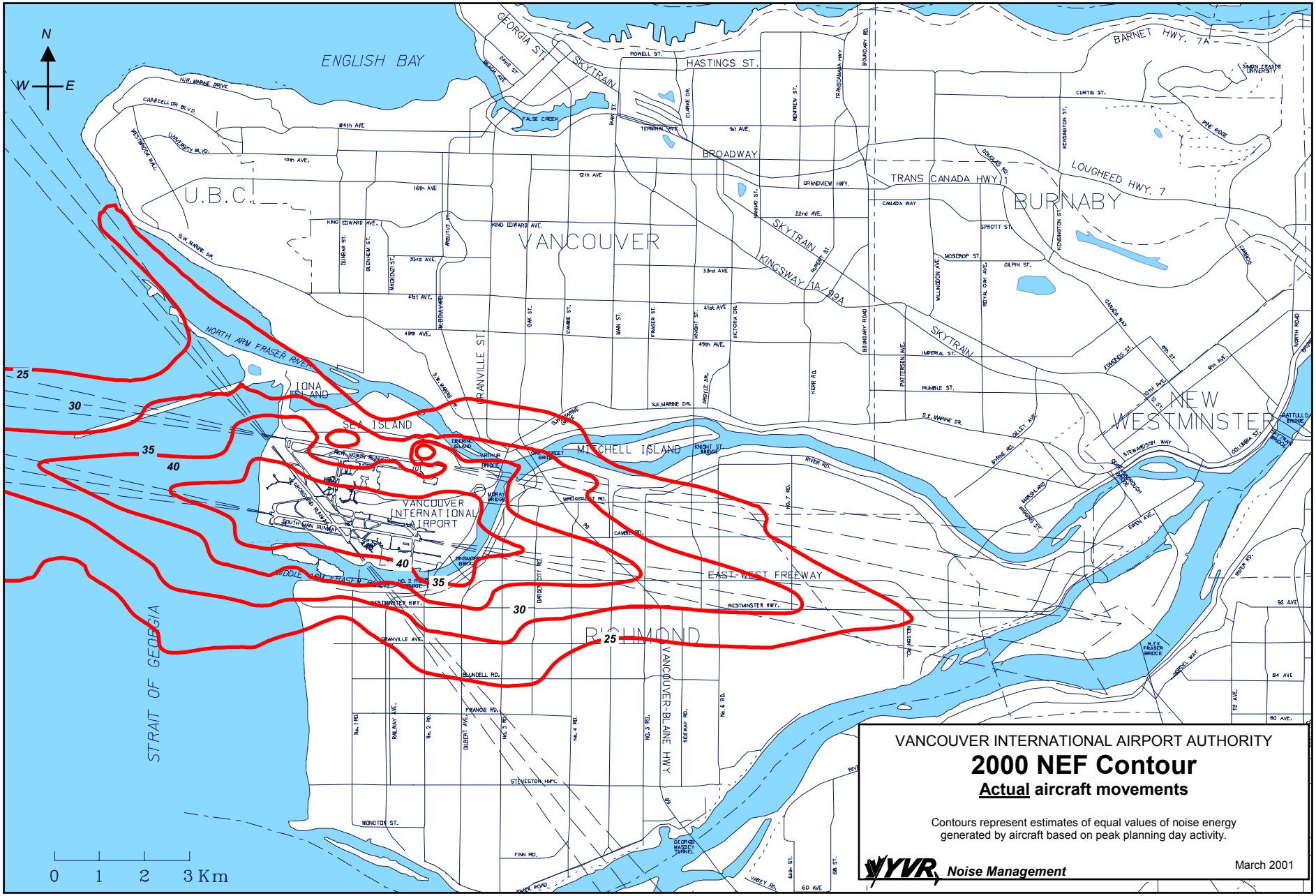
- **Annual Airport Noise Exposure Forecasts;**
- **Average Annual Noise Levels at Ambient Noise Monitoring Terminals; and**
- **Number of Noise Complaints.**

RESULTS

Annual Airport Noise Exposure Forecasts

Noise Exposure Forecast (NEF) contours are mapped by the Vancouver International Airport Authority. These decibel contours describe the forecast noise levels in the area surrounding the airport. NEF contours for 2000 are presented in Figure 8a.

Figure 8a. Vancouver Airport Authority Noise Exposure Forecasts (2000)



Average Annual Noise Levels Recorded at Ambient Noise Monitoring Terminals

There are nine Noise Monitoring Terminals (NMT) in Richmond (Figure 8b) which are used to monitor ambient noise levels. This includes aircraft noise in addition to other contributing sources such as community noise sources, construction, motor vehicles, people, lawn mowers, barking dogs and aircraft. There are historic data, from each NMT, for daily, monthly and annual average noise levels measured in dBA (A-weighted decibels) (Figure 8c).

Average annual noise levels have remained relatively constant for the past six years for NMTs that are dominated by aircraft landing and take-off noise (e.g., Richmond International College, Airside Burkeville and West Sea Island). Greater variations in the measured noise levels at other stations farther from the airport are due to non-airport related activities such as traffic. Comparisons with noise levels recorded at NMTs located in other municipalities are shown in Figure 8d.

Figure 8b. Locations of Noise Monitoring Terminals in Richmond, Vancouver and Delta

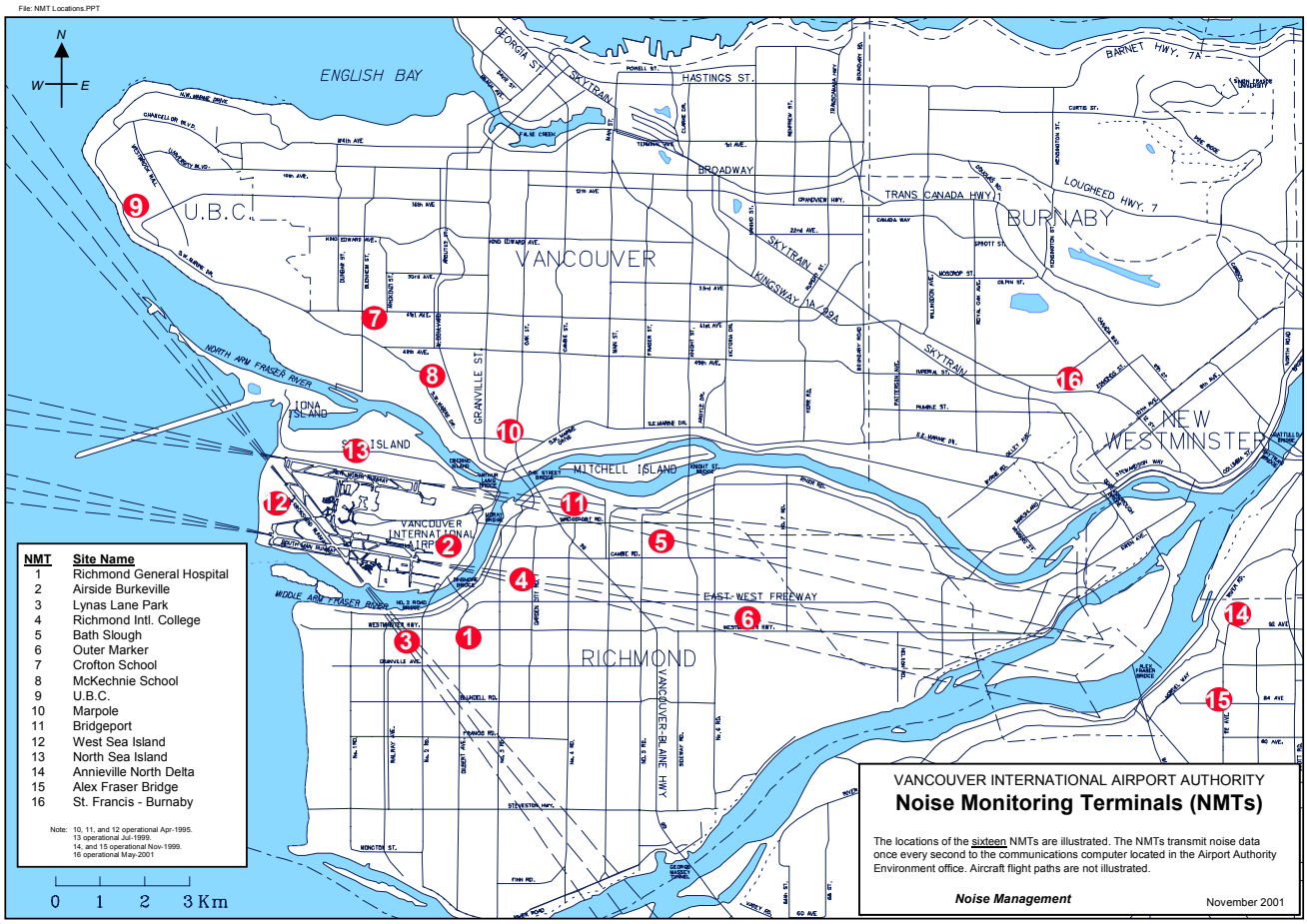


Figure 8c. Annual Average Noise Levels (dBA) at Richmond Noise Monitoring Terminals (NMT), 1995-1999

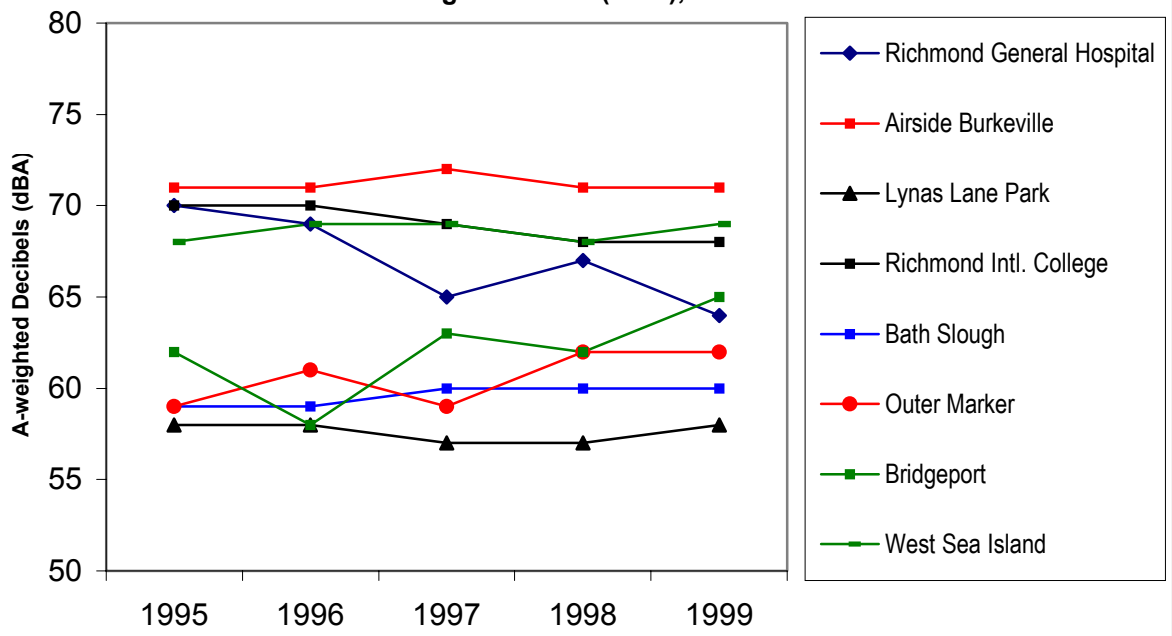
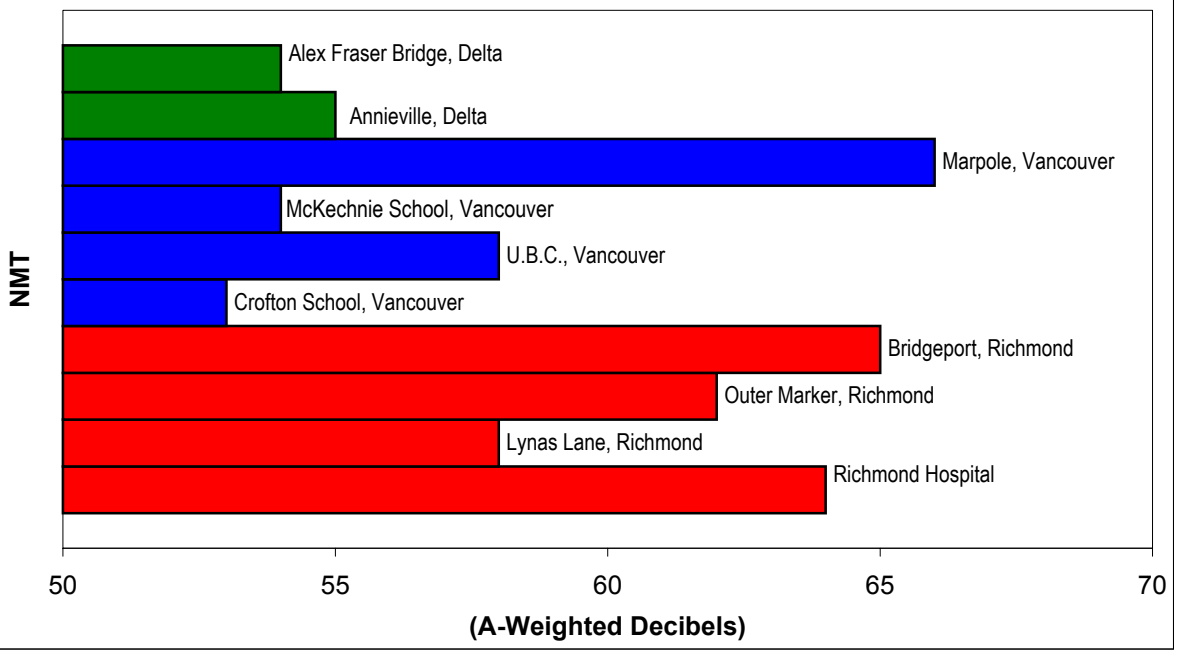


Figure 8d. Noise Levels at Selected Noise Monitoring Terminals (NMT) in Richmond, Vancouver and Delta for 1999



In addition to ambient noise levels, the Vancouver International Airport Authority also monitors single-event noise levels due to specific types of aircraft activities such as take-offs and landings. The Airport Authority reports their findings in their annual report on noise management which is available on-line at www.yvr.ca.

Number of Airport and Ambient Noise Complaints

In 2000, the Vancouver International Airport Authority reported 281 noise related complaints from Richmond residents (Table 8a). This is a significant decrease from previous years. For example, there were over 5000 noise-related complaints reported in 1997 from Richmond residents.

Richmond Health Services started recording noise complaint data on a monthly basis beginning in 2000. During that year, a total of 365 noise complaints were received (Table 8b). Cited in these complaints were sources of residential noise associated with loud stereos, bands practising, swimming pool pumps, and car and security alarms. Complaints grouped into the commercial category most often involved industrial equipment.

Construction noise complaints, resulting from both residential and commercial sources, were identified separately (Table 8b) as they have traditionally been one of the most common causes of noise complaints in the community.

Table 8a. Noise Complaints Received by the Airport, 1997-2000

Year	Complaints from Richmond Residents	Total Complaints Received	Percentage of Complaints from Richmond
1997	5182	7194	72.0
1998	2588	3673	70.5
1999	1057	2039	51.8
2000	281	579	48.5

Table 8b. Noise Complaints Received by Richmond Health Services, 2000

Complaint Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	12	6	9	15	18	13	8	24	14	13	11	9	152
Residential Construction	4	3	7	4	4	9	7	3	8	4	5	4	62
Commercial	7	7	10	12	17	11	23	7	9	16	14	9	142
Commercial Construction	1	2	0	1	2	0	0	0	0	0	0	3	9
Total	**24**	**18**	**26**	**32**	**41**	**33**	**38**	**34**	**31**	**33**	**30**	**25**	**365**

DISCUSSION

What is Happening?

Ambient noise levels in some areas of Richmond (e.g., Bridgeport) have increased in recent years while in other areas a decrease or limited change has been found. Complaints due to airport noise have decreased significantly since 1997. However, the proportion of complaints coming from Richmond residents has been close to 50% or higher for the past four years indicating that Richmond is affected by airport noise more than other nearby municipalities.

Noise complaints made to the City tend to be more frequent during the summer. This may be due in part to longer daylight hours, open windows and doors, and more boisterous warmer weather activities. Noise-producing activities, such as construction, may also start earlier and/or extend later in the day during the summer.

Existing City Programs

Noise is regulated in Richmond through provisions of the Public Health Protection By-law No. 6989. Health Services staff respond to all noise complaints that are addressed by this by-law with the exceptions of party noise and barking dogs (these complaints are referred to the RCMP and SPCA, respectively).

Managing aircraft noise falls under the jurisdiction of the Vancouver International Airport Authority. However, both the City and the Airport Authority are involved in developing strategies to mitigate aircraft noise. Options for mitigation include placing restrictions of night-time flights and runway use, the phasing out of older, noisier aircraft, and the development of noise management plans. Additionally, the City uses restrictive covenants in high noise impact areas to require acoustical engineering assessments and the sound-proofing of buildings. The development of new residential units is also discouraged in these areas.

Richmond and the Region

Noise Monitoring Terminals (NMT) are located in Richmond, Vancouver and North Delta. With the exception of Marpole in Vancouver, noise levels at selected Richmond NMTs are higher on average than in other areas (Figure 8d). This is likely due to Richmond's proximity to the airport, the number of vehicles on the roads, and major construction activities in recent years.

THE FUTURE

Targets and Influences

The Airport Authority has defined reference thresholds for single-event noise levels that vary according to the surrounding ambient environment. Thresholds are typically between 65-70 dBA for daytime events (7:00am-10:00pm) and between 55-60 dBA for night-time.

The City's Pubic Health Protection Bylaw establishes a maximum noise level of 55 dBA during the day and 45 dBA during the night for 'quiet zones' (e.g., residential). However, airport noise is exempt from this by-law.

Although the number of complaints gives some indication of community reaction to noise, complaint data must be reviewed with caution due to inherent subjectivities. People have different tolerances to noise and those

tolerances may vary as a result of factors ranging from what they are doing to how they are feeling when the noise disturbance occurs.

What Can Citizens Do?

Citizens can report noise disturbances to the City or the Airport Authority. There are also steps you can take to protect your hearing and reduce the level of noise around you and your neighbours.

- Have your hearing tested if you sense a problem.
- Install noise insulating features in your home.
- Wear ear protection if you work in a high-noise area.
- Be courteous to your neighbours – avoid loud activities or the use of motorized equipment during early morning or evening hours.
- Make sure your car and home alarm systems are well-maintained and do not inadvertently sound.

SUMMARY

Mixed Results

Ambient noise levels have remained relatively constant for the past six years in areas of Richmond that are dominated by airport-related noise. In other locations, noise levels have been more variable and are the result of non-airport related activities such as vehicle traffic, construction, people, barking dogs and motorized equipment. On average, noise levels in Richmond are higher than in other areas.

In 2000, the Vancouver Airport Authority reported 281 noise-related complaints from Richmond residents representing 48.5% of the total complaints received that year. This is a significant decrease from previous years. An additional 365 noise complaints were recorded by the City that were attributed to residential and commercial sources of noise, including construction related activities. These trends represent Mixed Results.