AtkinsRéalis

Final Report

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2022 Noise Exposure Contours Billy Bishop Toronto City Airport

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Executive Summary

The noise exposure contours for the Billy Bishop Toronto City Airport (the Airport) have been computed in accordance with Transport Canada's methodology (the methodology) for Noise Exposure Forecast (NEF), along with the surface area within contours.

The Tripartite Agreement (Agreement) imposes a limit on the expansion of the NEF contours. Sections 14 and 27 of the Agreement require that the 28 NEF contour does not expand beyond the official 25 NEF contour for 1990, except between points "X" and "Y". If the 28 NEF contour does expand beyond the official 25 NEF contour for 1990, aircraft movements have to be controlled in a way to bring back the 28 NEF contour within the official 25 NEF contour for 1990.

The analysis shows that the 28 NEF Contour for 2022, including helicopters in the calculation, does not expand beyond the official 25 NEF Contour for 1990.

When helicopters are excluded from the calculation, the NEF contours are slightly shrunken, and do not expand beyond the official 25 NEF Contour for 1990.

Table i shows the surface areas inside the noise contours.

NEF	Surface area (km^2)	
	With helicopters	**Without helicopters**
35 +	0.3	0.2
30 - 35	0.6	0.5
28 - 30	0.4	0.4
25 - 28	1.2	1.0
Total	**2.5**	**2.1**

1. Introduction

This document presents the noise contours for the year 2022 for the Billy Bishop Toronto City Airport (Airport).

Environmental noise or community noise, including airport activities, is not regulated by Canada's government, nevertheless Transport Canada's methodology (the methodology) is the standard for assessing the perceived noise in the vicinity of airports. This methodology is established across Canada and is used for this study. The interpretation of the results produced will be used to establish the magnitude (intensity of noise) and extent (surface area) of areas affected by airport noise.

2. Methodology

2.1 Metrics and parameters

The representation of noise generated by airport operations has been normalized by Transport Canada using Noise Exposure Forecast (NEF) contours. The NEF methodology is not by itself a forecast, but a noise calculation based either on a forecast of future movements or by actual movements. The noise contours for 2022, presented in this report, have been produced using the NEF methodology on the basis of actual movement data received from Transport Canada.

The index provided by the noise contours is used to show areas affected by airport noise. This single number rating is easy to interpret, but nevertheless, requires a complex evaluation process. It takes into account for each movement of the whole year, the type of aircraft, the runway used, the flight path, the flight distance, and the period of day. Note that the night period is defined from 10 p.m. to 7 a.m.

Flight distances and departure flight path directions have been determined according to geographic coordinates of destination airports drawn from Transport Canada database and specialized publications.

The "Air Traffic Designators" entitled TP 143 published by Transport Canada, specialized databases published by aeronautical sector companies, as well as internal corporate databases, have been used to determine the aircraft characteristics.

2.2 Method of calculation

NEF-Calc 2.0.6.1 software was used to produce the noise contours. It has been developed by the National Research Council for Transport Canada. Nef-Calc 2.0.6.1 processes operation-related data from airports and calculates noise levels for the receptor grid. Noise exposure contours are then drawn for the whole study area.

The software does not include sound data for the aircraft DASH-8 Q400. Noise and performance data of DASH-8-300 were used as surrogate. This hypothesis may have a major impact on the noise contours, especially considering that DASH-8 Q400 is the most represented aircraft in terms of the annual number of movements with 34% of all 2022 movements.

The NEF methodology developed by Transport Canada uses the parameter “Peak Planning Day”, which has been used to calculate the noise contours. The number of movements of the Peak Planning Day is estimated by averaging the seven busiest days of the three busiest months of the year. The detailed calculation of the Peak Planning Day is presented in Section 3.1.1. The calculated noise contours are representative of a near to worst case 24-hour period.

3. Noise contours

3.1 Calculation assumptions

The database of aircraft movements for 2022 for the Airport was used to calculate the Peak Planning Day. The composition of the fleet and the average annual runway use have also been computed from the aircraft movement database.

3.1.1 Calculation of peak planning day

Table 3-1 and **Table 3-2** present the results of the calculation of the Peak Planning Day for itinerant and local movements for 2022 for the Airport.

The number of movements of the Peak Planning Day is found to be 347 for itinerant movements and 204 for local movements. In comparison, the averages for 2022 are 206 for itinerant movements and 99 for local movements per day.

The number of circuits is half the number of local movements. A movement is either an arrival or a departure; overflights are excluded from the calculation. Overflights are flights transiting in the control zone of the control tower, going to another destination without landing at the airport. Since overflights have no real operation at the airport, they are excluded from the calculations. Local movements show much more daily variability than itinerant movements.

The calculation of the noise contours has been made for 347 itinerant movements and 204 local movements (102 circuits), with a total of 551 aircraft movements.

Helicopters accounted for 9,274 movements in 2022, of which 2,133 were runway operations, mostly Ornge flights using AgustaWestland AW139 helicopters, and 7,141 were helipad operations, mostly Heli Tours with Robinson R44 helicopters.

Excluding helicopter movements, the number of movements of the Peak Planning Day is found to be 295 for itinerant movements, and 204 for local movements. In comparison, the averages for 2022 are 181 for itinerant movements, and 99 for local movements per day.

Table 3-1 Peak planning day with helicopters

Itinerant		Local	
Date	**Movements**	**Date**	**Movements**
August 5, 2022	383	July 26, 2022	254
August 12, 2022	379	July 19, 2022	230
August 10, 2022	355	July 22, 2022	230
August 19, 2022	348	July 4, 2022	220
August 18, 2022	345	July 15, 2022	220
August 28, 2022	344	July 7, 2022	214
August 14, 2022	342	July 8, 2022	194
July 15, 2022	380	October 4, 2022	216
July 7, 2022	365	October 5, 2022	204
July 22, 2022	364	October 29, 2022	196
July 29, 2022	362	October 11, 2022	194
July 8, 2022	348	October 1, 2022	192
July 17, 2022	341	October 12, 2022	188
July 3, 2022	333	October 21, 2022	172
June 30, 2022	359	August 16, 2022	240
June 10, 2022	351	August 5, 2022	212
June 13, 2022	335	August 24, 2022	196
June 3, 2022	333	August 28, 2022	192
June 2, 2022	322	August 27, 2022	174
June 23, 2022	306	August 19, 2022	170
June 14, 2022	301	August 18, 2022	170

Table 3-2 Peak planning day without helicopters

Itinerant		Local	
Date	**Movements**	**Date**	**Movements**
August 12, 2022	318	July 26, 2022	254
August 5, 2022	314	July 19, 2022	230
August 18, 2022	292	July 22, 2022	230
August 10, 2022	292	July 4, 2022	220
August 15, 2022	282	July 15, 2022	220
August 16, 2022	282	July 7, 2022	214
August 24, 2022	279	July 8, 2022	194
July 22, 2022	317	October 4, 2022	216
July 7, 2022	316	October 5, 2022	204
July 15, 2022	306	October 29, 2022	196
July 29, 2022	295	October 11, 2022	194
July 8, 2022	288	October 1, 2022	192
July 14, 2022	284	October 12, 2022	188
July 4, 2022	273	October 21, 2022	172
June 13, 2022	326	August 16, 2022	240
June 30, 2022	322	August 5, 2022	212
June 3, 2022	294	August 24, 2022	196
June 10, 2022	289	August 28, 2022	192
June 14, 2022	277	August 27, 2022	174
June 23, 2022	275	August 19, 2022	170
June 24, 2022	266	August 18, 2022	170

3.1.2 Fleet composition and runway use

The data on the composition of the fleet of all operations at the Airport in 2022 including helicopters is presented in **Appendix A**. The document TP 143 – Air Traffic Designators from Transport Canada, Transport Canada's aircraft registration database and commercial databases are the primary sources of information for the identification of aircraft types.

Figure 3-1 illustrates the configuration of runways, taken from the Canada Air Pilot. **Figure 3-2** and **Figure 3-2** summarize the composition of fleet and runway use for the airport in 2022, compiled from the itinerant movements database. Detailed data is presented in **Appendix B**.

The total number of movements in 2022 was 111,410, divided into 75,226 itinerant movements and 36,184 local movements.

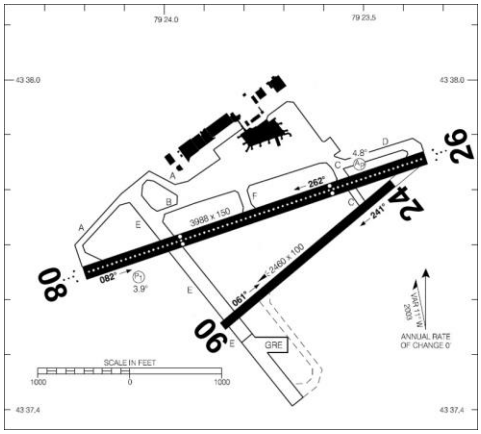

Figure 3-1 Runway identification

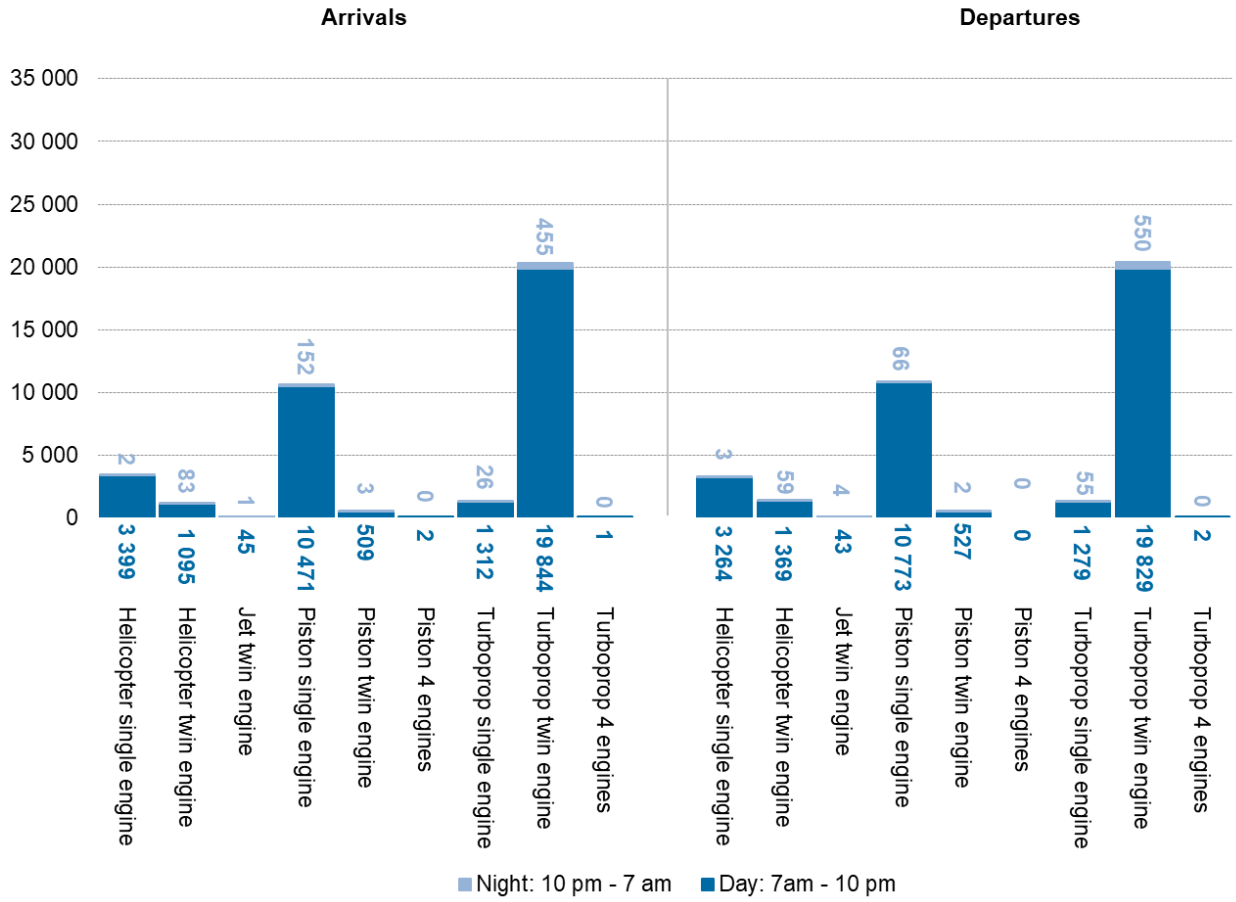

Figure 3-2 Summary of fleet composition

The movements during the night (10 p.m. to 7 a.m.) accounted for 1.5% of total movements in 2022. For the calculation of noise contours, using the methodology, each night-time movement is equivalent to 16.67 daytime movements. The 1,667 night-time movements recorded in 2022 are equivalent to 27,789 daytime movements. The night-time movements represent an important contribution to the noise contours.

Overall, DASH-8 Q400 is the most frequent aircraft at the Airport with 34% of all movements. The twin-engine turboprop category accounts for 37% of all movements. The proportion of movements in the single-engine piston aircraft category (mostly Cessna 150, 152, and 172) is 51%.

Figure 3-3 illustrates the summary of runway use and **Table 3-3** shows the runway use by aircraft category.

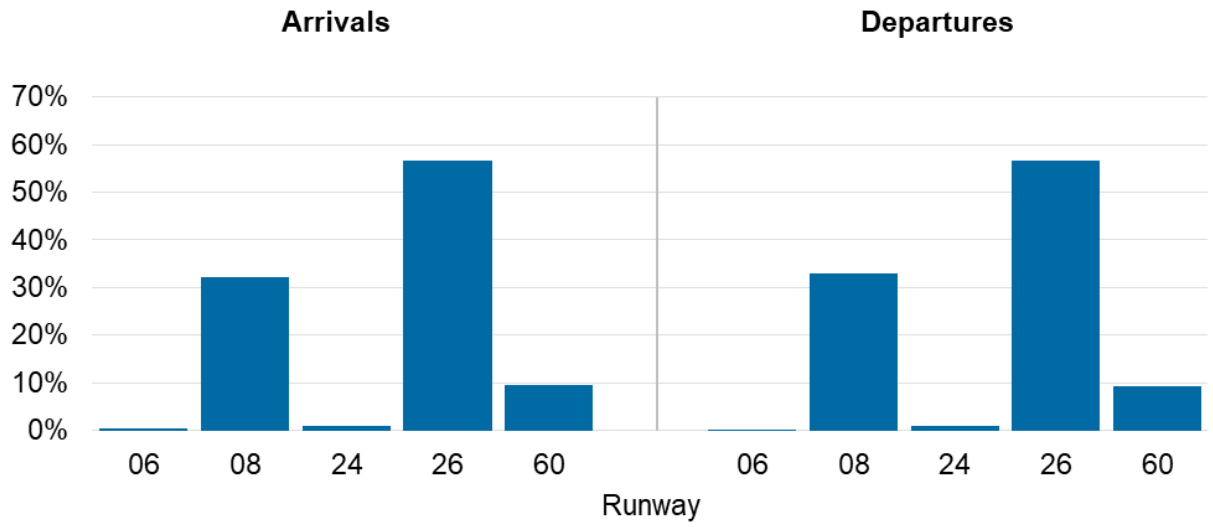

Figure 3-3 Summary of runway use

Table 3-3 Runway use by aircraft category

Runway	Global		Helicopters		Jets		Pistons		Turboprops	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
06	189	12	1	0	0	0	187	12	1	0
	0.5%	0.03%	0%	0.00%	0%	0%	2%	0.11%	0%	0%
08	12,060	12,458	364	437	21	21	4,118	4,337	7,557	7,663
	32%	33%	8%	9%	46%	45%	37%	38%	35%	35%
24	382	359	0	1	0	0	381	357	1	1
	1.0%	1%	0.0%	0%	0%	0%	3%	3%	0%	0.005%
26	21,191	21,433	636	694	25	26	6,451	6,662	14,079	14,051
	57%	57%	14%	15%	54%	55%	58%	59%	65%	65%
60	3,578	3,563	3,578	3,563	0	0	0	0	0	0
	10%	9%	78%	76%	0%	0%	0%	0%	0%	0%
Total	37,400	37,825	4,579	4,695	46	47	11,137	11,368	21,638	21,715
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 3-4 indicates the aircraft used in the represented categories defined in the calculation. Aircrafts with a small number of movements in 2022 are not shown in this table; they are listed in detail in **Appendix A**.

Table 3-4 Aircraft categories

Aircraft categories	Aircraft types
Helicopter single engine	Robinson R44, etc.
Helicopter twin engine	Agusta Westland AW139, etc.
Piston single engine	Cessna series 150/172, Grob G-115, etc.
Piston twin engine	Piper PA-23/31, etc.
Turboprop single engine	Pilatus PC-12, Cessna 208 Caravan, etc.
Turboprop twin engine	Dash 8-400, etc.
Jet twin engine	Dassault Falcon 20, etc.

3.1.3 Flight paths

Flight paths for departures, arrivals, and circuits have been modelled from information gathered from the Canada Air Pilot, the Restricted Canada Air Pilot, the Canada Flight Supplement, Porter Airlines, and NAV CANADA. The position of the landing site for Heli Tours helicopters was provided by Heli Tours and NAV CANADA provided information on helicopters flight paths.

Departure flight paths:

- Runway 08: right turn at waypoint LODRA (N43 38.31 W79 21.52), heading 090°.
- Runway 26: left turn at 800’ ASL, to waypoint EMDOS (N43 31.08 W79 19.28).

Approach slopes:

- Runways 06, 08, and 24: 3.5°;
- Runway 26: 3.5° or 3.98°.

Runways 24 and 26 have left-hand circuits while runways 06 and 08 have right-hand circuits.

3.2 Results

Figure 3-4 illustrates the Airport’s noise contours for 2022 actual movements including helicopters, along with the 1990 NEF contours. The 1990 NEF contours were prepared in April 1978 by the Canadian Air Transport Administration of the Ministry of Transport for the Canada Mortgage and Housing Corporation. The noise contours excluding helicopters are shown in **Figure 3-5**.

The Agreement imposes a limit on the expansion of NEF contours. Section 27 of the Agreement requires that the 28 NEF contour does not expand beyond the official 25 NEF contour for 1990, except between points “X” and “Y”. If the 28 NEF contour does expand beyond the official 25 NEF contour for 1990, aircraft movements have to be controlled in such a way to bring back the 28 NEF contour within the official 25 NEF contour for 1990.

The analysis shows that the 28 NEF Contour for 2022, including helicopters in the calculation, does not expand beyond the official 25 NEF Contour for 1990.

When helicopters are excluded from the calculation, the NEF contours are slightly shrunken, and do not expand beyond the official 25 NEF Contour for 1990.

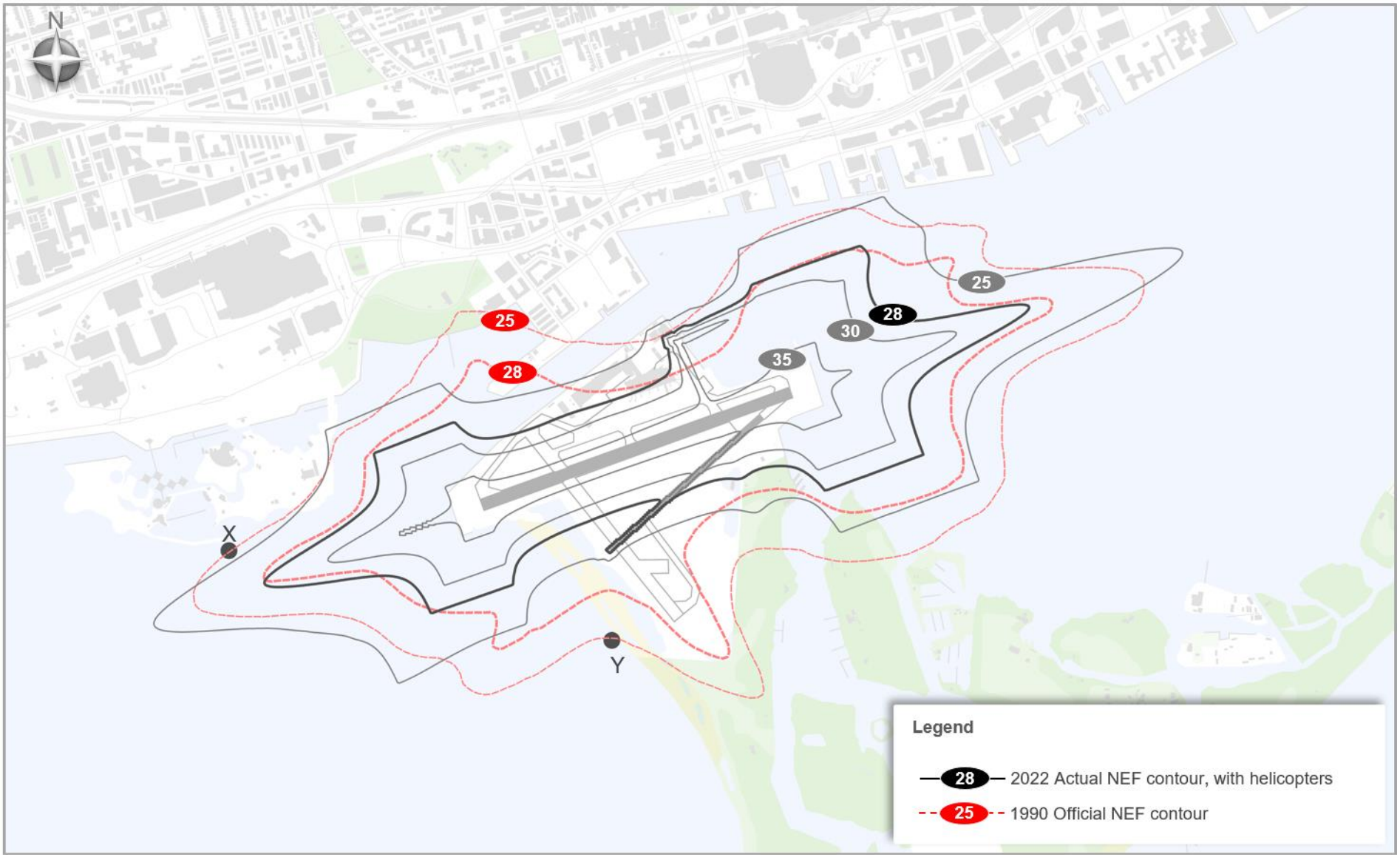

Figure 3-4 NEF contours with helicopters

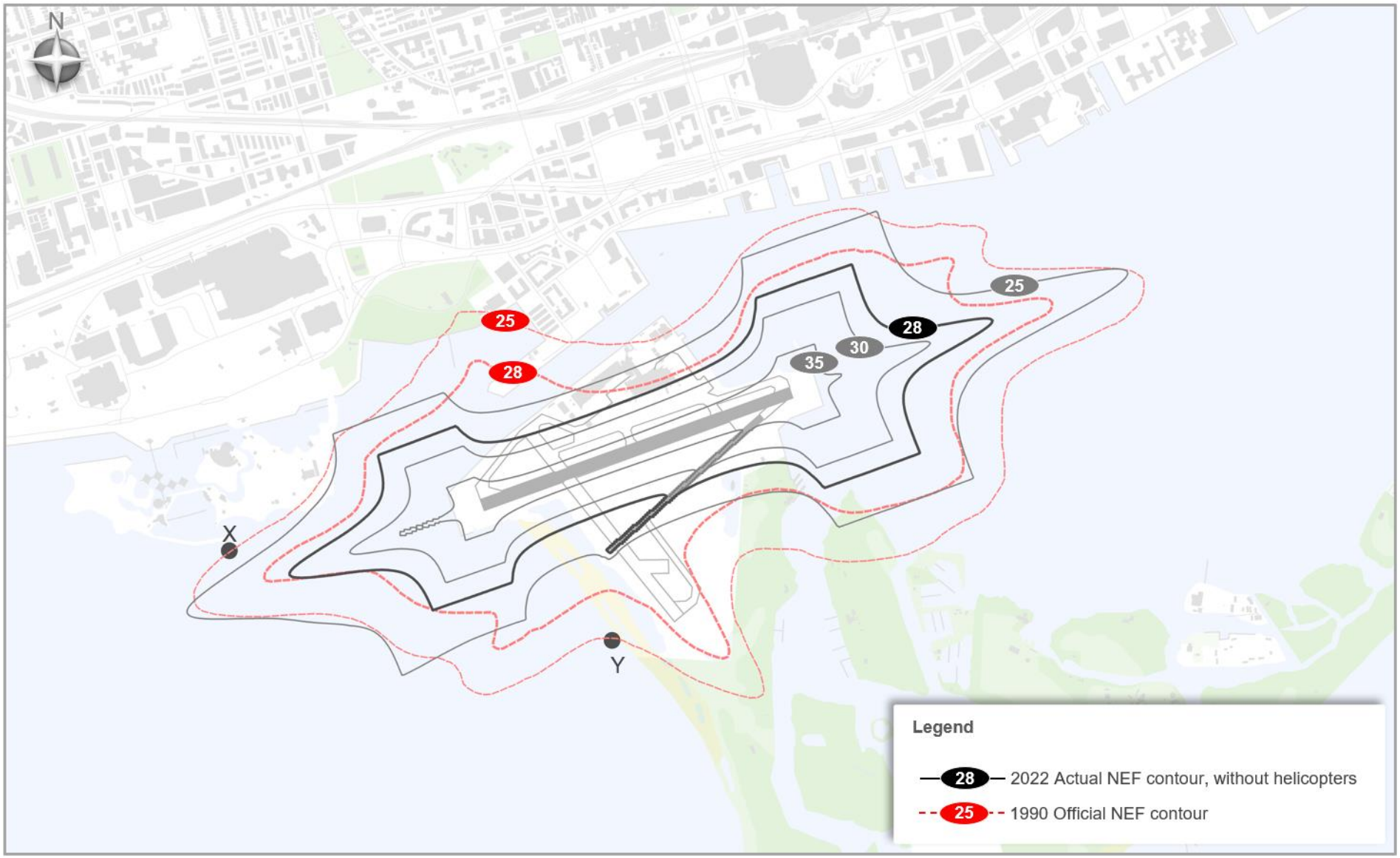

Figure 3-5 NEF contours without helicopters

Table 3-5 shows the surface area within the contours in 2022. It is the total surface area in each range of NEF values.

Table 3-5 Surface area (km^2)

NEF	Surface area (km^2)	
	With helicopters	**Without helicopters**
35 +	0.3	0.2
30 - 35	0.6	0.5
28 - 30	0.4	0.4
25 - 28	1.2	1.0
Total	**2.5**	**2.1**

4. Conclusion

The 2022 noise exposure contours for the Airport have been computed in accordance with Transport Canada methodology. The surface area within contours was also compiled. These contours cover a total area of 2.5 square kilometers (km^2) including helicopters, and 2.1 km^2 excluding helicopters. The NEF 28 contour covers an area of 1.3 km^2 including helicopters, and 1.1 km^2 excluding helicopters.

The 28 NEF contour for 2022, including helicopters, does not expand beyond the official 25 NEF contour for 1990, the limit set by the Agreement for the expansion of the NEF contour.

When helicopters are excluded from the calculation, the NEF contours are slightly shrunken, and do not expand beyond the official 25 NEF Contour for 1990.

5. Bibliography

INTERNATIONAL CIVIL AVIATION ORGANIZATION, International Standards and Recommended Practices, Annex 16 to the Convention on International Civil Aviation, Environmental Protection, Volume 1 - Aircraft Noise, 8th edition, 2017.

TRANSPORT CANADA, Aviation Group, “NEF micro computer system user manual”, June 1990, TP 6907.

TRANSPORT CANADA, “Land Use Planning in the Vicinity of Airports”, 9th edition, 2013/14, TP 1247.

TRANSPORT CANADA, “Air Traffic Designators”, TP 143, 2009.

FAA, U.S. Department of transportation, Advisory Circular, “Noise Levels for U.S. Certificated and Foreign Aircraft”, 2001.

APPENDICES

Appendix A. Fleet Composition

Aircraft	D1*	D2*	D3*	D4*	MTOW	Manufacturer	Model	Equivalent	Number
A109	L	2	T	R	3,000	AGUSTA	A-109, Power	B222	7
A139	M	2	T	R	6,400	AGUSTAWESTLAND	AW-139	BH12/CH135MAN	2,553
AA1	L	1	P	F	1,000	AMERICAN	AA-1 Yankee, Trainer, Tr2	GASEPF	2
AA5	L	1	P	F	1,000	AMERICAN	AA-5 Traveler	GASEPF	56
AC11	L	1	P	R	2,000	ROCKWELL	112, 114 Commander, Alpine Commander	RWCM14	9
AR11	L	1	P	F	1,000	AERONCA	11 Chief	GASEPF	2
AS50	L	1	T	F	3,000	AEROSPATIALE	AS-350/550 Ecureuil, Astar, SuperStar, Fennec	AS350	15
AS55	L	2	T	F	3,000	AEROSPATIALE	AS-355/555 Ecureuil 2, TwinStar, Fennec	B222	13
B06	L	1	T	F	2,000	BELL	206A/B/L, 406, LongRanger (CH-139 JetRanger)	BH06MAN	82
B190	M	2	T	R	8,000	BEECH	1900 Airliner (C-12J)	BEC190	102
B212	L	2	T	F	6,000	BELL	212, Twin Two-Twelve (UH-1N, Twin Huey)	BH12/CH135MAN	1
B222	L	2	T	R	4,000	BELL	222	BH12/CH135MAN	4
B350	M	2	T	R	6,000	BEECH	B300 Super King Air 350	DHC6	539
B377	M	4	P	R	67,000	BOEING	Stratocruiser	DC6	2
B429	L	2	T	F	3,175	BELL	GlobalRanger	B222	4
B430	L	2	T	R	5,000	BELL	430	B222	2
BE10	L	2	T	R	6,000	BEECH	100 King Air (U-21F)	BEC100	827
BE19	L	1	P	F	1,000	BEECH	19 Musketeer Sport, Sport	GASEPF	5
BE20	L	2	T	R	6,000	BEECH	200, 1300 Super King Air, Commuter (C-12A)	BEC200	197
BE23	L	1	P	F	2,000	BEECH	23 Musketeer, Sundowner	GASEPF	12
BE24	L	1	P	R	2,000	BEECH	24 Musketeer Super, Sierra	GASEPF	11
BE30	M	2	T	R	7,000	BEECH	300 Super King Air	BEC300	34
BE33	L	1	P	R	2,000	BEECH	33 Bonanza (E-24)	BEC33	4
BE35	L	1	P	R	2,000	BEECH	35 Bonanza	GASEPV	32
BE36	L	1	P	R	2,000	BEECH	36 Bonanza	GASEPV	56
BE55	L	2	P	R	3,000	BEECH	55 Baron (T-42)	BEC55	4

Aircraft	D1*	D2*	D3*	D4*	MTOW	Manufacturer	Model	Equivalent	Number
BE58	L	2	P	R	3,000	BEECH	58 Baron	BEC58	30
BE60	L	2	P	R	4,000	BEECH	60 Duke	BEC60	6
BE76	L	2	P	R	2,000	BEECH	76 Duchess	BEC76	2
BE95	L	2	P	R	2,000	BEECH	95 Travel Air	BEC58P	2
BE9L	L	2	T	R	5,000	BEECH	90, A90-E90 King Air (T-44, VC-6)	BEC90	141
BL8	L	1	P	F	2,000	BELLANCA	8 Decathlon, Scout	GASEPF	42
BRAV	L	1	P	F	600	TECNAM	P2004 Bravo	GASEPF	2
C140	L	1	P	F	1,000	CESSNA	140	CNA150	2
C150	L	1	P	F	1,000	CESSNA	150, A150, Commuter, Aerobat	CNA150	21,292
C152	L	1	P	F	1,000	CESSNA	152, A152, Aerobat	CNA152	2,541
C170	L	1	P	F	1,000	CESSNA	170	CNA170	4
C172	L	1	P	F	2,000	CESSNA	172, P172, R172, Skyhawk, Cutlass (T-41)	CNA172	22,311
C175	L	1	P	F	2,000	CESSNA	175, Skylark	GASEPV	5
C177	L	1	P	F	2,000	CESSNA	177, Cardinal	CNA177	8
C180	L	1	P	F	2,000	CESSNA	180, Skywagon 180 (U-17C)	CNA180	19
C182	L	1	P	F	2,000	CESSNA	182, Skylane	CNA182	381
C185	L	1	P	F	2,000	CESSNA	185, A185 Skywagon, Skywagon 185 (U-17A/B)	CNA185	126
C206	L	1	P	F	2,000	CESSNA	206, P206, T206, TP206, (Turbo) Super Skywagon	CNA206	382
C207	L	1	P	F	2,000	CESSNA	207 (Turbo) Stationair	CNA207	5,150
C208	L	1	T	F	4,000	CESSNA	208 Caravan 1, (Super)Cargomaster (C-98, U-27)	CNA208	553
C210	L	1	P	R	2,000	CESSNA	210, T210, (Turbo)Centurion	CNA210	14
C240	L	1	P	F	1,600	CESSNA	TTx Model T240	GASEPV	8
C310	L	2	P	R	3,000	CESSNA	310, T310 (U-3, L-27)	CNA310	83
C337	L	2	P	R	2,000	CESSNA	337, M337 (Turbo)Super Skymaster (O-2)	CNA337	28
C340	L	2	P	R	3,000	CESSNA	340	CNA340	31
C414	L	2	P	R	3,000	CESSNA	414, Chancellor	CNA414	10

Aircraft	D1*	D2*	D3*	D4*	MTOW	Manufacturer	Model	Equivalent	Number
C421	L	2	P	R	4,000	CESSNA	421, Golden Eagle, Executive Commuter	CNA421	16
C441	L	2	T	R	5,000	CESSNA	441 Conquest, Conquest 2	CNA441	24
C72R	L	1	P	R	2,000	CESSNA	172RG Cutlass RG	GASEPV	6
C77R	L	1	P	R	2,000	CESSNA	177RG Cardinal RG	CNA17B	2
C82R	L	1	P	R	2,000	CESSNA	R182, TR182 (Turbo)Skylane RG	CNA182	4
CH7B	L	1	P	F	2,000	BELLANCA	7GCBC/KCAB Citabria	BLCH10	5
CL60	M	2	J	R	15,000	CANADAIR	CL-600/601/604 Challenger (CC-144)	CL600	1
COL3	L	1	P	F	1,500	Lancair	LC40-550FG	BEC58P	3
COL4	L	1	P	F	1,633	CESSNA AIRCRAFT CO.	400 Corvalis TT	BEC58P	51
CRJ2	M	2	J	R	24,000	CANADAIR	RJ-200 Regional Jet	CLREGJ	1
DA40	L	1	P	F	1,800	DIAMOND AIRCRAFT IND INC	DA 40	GASEPF	229
DA42	L	2	P	R	1,700	DIAMOND	DA42	GASEPV	25
DA62	L	2	P	R	2,300	DIAMOND	DA62	BEC58P	10
DH2T	L	1	T	F	3,000	DE HAVILLAND	DHC-2 Mk3 Turbo Beaver	CNA441	2
DH8A	M	2	T	R	16,000	DE HAVILLAND	DHC-8-100 Dash 8 (E-9, CT-142, CC-142)	DHC8	4
DH8C	M	2	T	R	20,000	DE HAVILLAND	DHC-8-300 Dash 8	DHC830	5
DH8D	M	2	T	R	26,000	DE HAVILLAND	DHC-8-400 Dash 8	DHC830	37,861
DHC2	L	1	P	F	3,000	DE HAVILLAND	DHC-2 Mk1 Beaver (U-6, L-20)	DHC2	101
DHC7	M	4	T	R	20,000	DE HAVILLAND	DHC-7 Dash 7 (O-5, EO-5)	DHC7	3
DV20	L	1	P	F	1,000	DIAMOND	DA-20/22, DV-20 Katana, Speed Katana	GASEPF	2
EC30	L	1	T	F	2,400	EUROCOPTER	EC130B4	AS350	29
FA10	M	2	J	R	9,000	DASSAULT	Falcon 10, Mystere 10	FAL10	15
FA20	M	2	J	R	15,000	DASSAULT	Falcon 20, Mystere 20 (T-11, TM-11)	FAL20	38
G115	L	1	P	R	2,000	GROB	G-115A/B/C/D/E, Bavarian (Heron, Tutor)	GASEPF	1,356
G44	L	2	P	A	3,000	GRUMMAN	G-44 Widgeon (J4F)	BEC58P	2

Aircraft	D1*	D2*	D3*	D4*	MTOW	Manufacturer	Model	Equivalent	Number
GA7	L	2	P	R	2,000	GRUMMAN AMERICAN	GA-7 Cougar	GA7	2
GA8	L	1	P	F	1,800	GIPPSAERO	GA8 Airvan	CNA206	8
GLAS	L	1	P	F	1,088	STODDARD-HAMILTON	(INDICATIF SUPPRIMÉ EN 2005) Glasair	GASEPF	12
HMBD	L	1	P	F	1,000	HOMEBUILT	Homebuilt	GASEPF	4
HUSK	L	1	P	F	1,000	CHRISTEN	A-1 Husky	GASEPV	4
KODI	M	1	T	F	3,290	Quest kodiak	Kodiak aircraft	CNA20T	16
LA25	L	1	P	A	2,000	LAKE	LA-250/270 (Turbo)Renegade, Seawolf, Seafury	GASEPF	2
LA4	L	1	P	A	2,000	LAKE	LA-4/200, Buccaneer	LA42	26
LGEZ	L	1	P	F	350	Rutan	Long-EZ (kit)	GASEPF	12
LNC4	L	1	P	R	2,000	LANCAIR	Lancair 4	GASEPV	11
LNCE	L	1	P	F	1,451	LANCAIR	Lancair ES	GASEPV	4
M20P	L	1	P	R	2,000	MOONEY	M-20, M-20A-J/L/R (non-turbocharged)	M20J	108
M20T	L	1	P	R	2,000	MOONEY	M-20K/M, Bravo, Encore (turbocharged)	M20K	6
MU2	L	2	T	R	5,000	MITSUBISHI	MU-2, Marquise, Solitaire (LR-1)	MU2	365
P06T	L	2	P	R	1,200	TECNAM	P-2006T	GASEPV	2
P180	L	2	T	R	6,000	PIAGGIO	P-180 Avanti	SD330	30
P208	L	1	P	F	600	TECNAM	P-2008	GASEPF	2
P210	L	1	P	R	2,000	CESSNA	P210 Pressurized Centurion	CNA206	16
P28A	L	1	P	F	2,000	PIPER	PA-28-140/150/160/180 Archer, Cadet, Cherokee	PA28CA	662
P28B	L	1	P	F	2,000	PIPER	PA-28-201T/235/236 Cherokee, Dakota	PA28CA	95
P28R	L	1	P	R	2,000	PIPER	PA-28R-180/200/201 Cherokee Arrow, Turbo Arrow	PA28CA	86
P28T	L	1	P	R	2,000	PIPER	PA-28RT Arrow 4, Turbo Arrow 4	PA28CA	4
P32R	L	1	P	R	2,000	PIPER	PA-32R Cherokee Lance, Saratoga SP, Turbo	GASEPV	16

Aircraft	D1*	D2*	D3*	D4*	MTOW	Manufacturer	Model	Equivalent	Number
P32T	L	1	P	R	2,000	PIPER	PA-32RT Lance 2, Turbo Lance 2	GASEPV	5
P46T	L	1	T	R	2,000	PIPER	PA-46T Malibu Meridian	PA46	139
P51	L	1	P	R	5,000	NORTH AMERICAN	P-51, F-51, A-36 Mustang	GASEPV	2
PA18	L	1	P	F	1,000	PIPER	PA-18 Super Cub (L-18C, L-21, U-7)	PA18	2
PA22	L	1	P	F	1,000	PIPER	PA-22 Tri-Pacer, Caribbean, Colt	PA22CO	8
PA24	L	1	P	R	2,000	PIPER	PA-24 Comanche	PA24	35
PA27	L	2	P	R	3,000	PIPER	PA-23-235/250 Aztec, Turbo Aztec (U-11)	PA23AZ	1,606
PA30	L	2	P	R	2,000	PIPER	PA-30/39 Twin Comanche, Turbo Twin Comanche	PA30	50
PA31	L	2	P	R	4,000	PIPER	PA-31/31P Navajo, Chieftain, Mojave, T-1020	PA31	153
PA32	L	1	P	F	2,000	PIPER	PA-32 Cherokee Six, Saratoga, Turbo Saratoga	GASEPV	21
PA34	L	2	P	R	3,000	PIPER	PA-34 Seneca	PA34	32
PA38	L	1	P	F	1,000	PIPER	PA-38 Tomahawk	PA38	316
PA44	L	2	P	R	2,000	PIPER	PA-44 Seminole, Turbo Seminole	PA44	4
PA46	L	1	P	R	2,000	PIPER	PA-46 Malibu, Malibu Mirage	PA46	85
PAY3	L	2	T	R	6,000	PIPER	PA-42-720 Cheyenne 3	CNA441	2
PC12	L	1	T	R	5,000	PILATUS	PC-12, Eagle	CNA20T	1,955
PIVI	L	1	P	F	1,000	PIPISTEL	Virus SW	GASEPF	2
PTS2	L	1	P	F	1,000	PITTS	S-2 Special	GASEPF	14
R44	L	1	P	F	2,000	ROBINSON	R-44 Astro	HU30	6,502
R66	L	1	T	F	1,225	Robinson	R66	BH06MAN	40
RELI	L	1	P	F	2,000	STINSON	SR, V-77 Reliant (AT-19)	GASEPF	1
RV10	L	1	P	F	1,200	VAN'S	RV-10	GASEPV	10
RV14	L	1	P	F	900	VAN'S	RV-14	GASEPV	1
RV4	L	1	P	F	1,000	VAN'S	RV-4	GASEPF	3
RV6	L	1	P	F	1,000	VAN'S	RV-6	GASEPF	14
RV7	L	1	P	F	815	VAN'S	RV-7	GASEPV	3

Aircraft	D1*	D2*	D3*	D4*	MTOW	Manufacturer	Model	Equivalent	Number
RV8	L	1	P	F	815	VAN'S	RV-8	GASEPF	2
RV9	L	1	P	F	793	VAN'S	RV9/9A	GASEPF	4
S108	L	1	P	F	2,000	STINSON	108 Voyager, Station Wagon	GASEPF	2
S76	L	2	T	R	5,000	SIKORSKY	S-76, H-76, AUH-76, Spirit, Eagle (HE-24)	S76	22
SKIM	L	1	P	A	2,000	COLONIAL	C-2	GASEPV	25
SPIT	L	1	P	F	2,300	Vickers Supermarine	Spitfire	BEC58P	1
SR20	L	1	P	F	2,000	CIRRUS	SR-20	GASEPF	46
SR22	L	1	P	F	1,500	CIRRUS	SR22	GASEPF	533
SW3	M	2	T	R	6,000	FAIRCHILD SWEARINGEN	SA-226TB, SA-227TT Merlin 3	SAMER3	1
SW4	M	2	T	R	7,000	FAIRCHILD SWEARINGEN	Merlin 4C, Metro2/2A, Metro 3, Metro 3A, Expediter, Merlin 23, 4	SAMER4	521
T6	L	1	P	R	4,000	NORTH AMERICAN	T-6, AT-6, BC-1, SNJ, Texan, Harvard	GASEPF	4
TBM7	L	1	T	R	3,000	SOCATA	TBM-700	CNA441	85
TBM8	L	1	T	R	7,400	Socata	TBM850	CNA441	32
TBM9	L	1	T	R	3,300	SOCATA	TBM 900	CNA441	29
TRIN	L	1	P	R	2,000	SOCATA	TB-20/21 Trinidad	GASEPF	4
TS60	L	2	P	R	2,900	PIPER	Aero Star 601P	BEC58P	2
UF10	L	1	P	F	500	URBAN AIR	Samba XXL	GASEPF	2
ULAC	L	1	P	F	500	ULTRA LIGHT	Ultra Light	GASEPF	4
VTUR	L	1	P	F	900	QUESTAIR	Venture	GASEPV	2
WW24	M	2	J	R	11,000	IAI	1124 Westwind, Westwind 1/2, Sea Scan	IA1124	38
YK50	L	1	P	R	1,000	YAKOVLEV	Yak-50	GASEPV	7
Z42	L	1	P	F	2,000	ZLIN	Z-42/142/242	GASEPV	2

*D1: Weight:
L – light
M – medium
H – heavy

*D2: Number of engines

*D3: Engine type:
P – pistons
T – turboprops
J – jets

*D4: Landing gear:
F – fixed
R – removable
A – amphibious

Appendix B. Summary of Movements

Fleet summary of itinerant movements

Aircraft	Arrivals			Departures			Total
	Day	Night	Total	Day	Night	Total	
Helicopter single engine	3,399	2	3,401	3,264	3	3,267	6,668
Helicopter twin engine	1,095	83	1,178	1,369	59	1,428	2,606
Jet twin engine	45	1	46	43	4	47	93
Piston single engine	10,471	152	10,623	10,773	66	10,839	21,462
Piston twin engine	509	3	512	527	2	529	1,041
Piston 4 engines	2	0	2	0	0	0	2
Turboprop single engine	1,312	26	1,338	1,279	55	1,334	2,672
Turboprop twin engine	19,844	455	20,299	19,829	550	20,379	40,678
Turboprop 4 engines	1	0	1	2	0	2	3
Total	**36,678**	**722**	**37,400**	**37,086**	**739**	**37,825**	**75,225**

- Day: 7 a.m. - 10 p.m.
- Night: 10 p.m. - 7 a.m.

Runway use - Arrivals

Aircraft	06		08		24		26		60	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Helicopter single engine			6					1	3,393	1
Helicopter twin engine		1	321	37			595	40	179	5
Jet twin engine			21				24	1		
Piston single engine	186		3,876	77	380		6,029	75		
Piston twin engine	1		163	1	1		344	2		
Piston 4 engines			1				1			
Turboprop single engine	1		448	5	1		862	21		
Turboprop twin engine			6,979	125			12,865	330		
Turboprop 4 engines							1			
Total	**188**	**1**	**11,815**	**245**	**382**	**0**	**20,721**	**470**	**3,572**	**6**

Runway use - Departures

Aircraft	06		08		24		26		60	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Helicopter single engine			4				6	1	3,254	2
Helicopter twin engine			403	30	1		658	29	307	
Jet twin engine			20	1			23	3		
Piston single engine	11		4,140	30	356		6,266	36		
Piston twin engine	1		165	2	1		360			
Turboprop single engine			434	16	1		844	39		
Turboprop twin engine			7,027	185			12,802	365		
Turboprop 4 engines			1				1			
Total	**12**	**0**	**12,194**	**264**	**359**	**0**	**20,960**	**473**	**3,561**	**2**

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