Revised Supplemental FAR Part 150 Study

INTERNATIONAL AIRPORT/Boeing Field

>>> Barnard Dunkelberg & Company



King County International Airport Boeing Field

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November 2, 2004

Dennis Ossenkop Airports Division Federal Aviation Administration 1601 Lind Avenue, SW. Suite 315 Renton, WA 98055-4056

Dear Mr. Ossenkop:

Enclosed are five copies of the Final King County International Airport FAR Part 150 Noise Exposure Maps and Noise Compatibility Program. We are submitting these documents pursuant to FAR Part 150 and the applicable Federal Aviation Administration guidelines for approval. The documents contained herein are certified as to their accuracy as per the regulation. The recommendations contained in the document are those of the Sponsor and not the consultants. The five-year NEM is based on the recommended Runway Safety Area Project being implemented and the FAR Part 150 Land Use Guidelines were used to determine compatibility. Both the existing and future Noise Exposure Map contours were generated using the Integrated Noise Model, the latest version. The year of submission (2004) airport operation data is equivalent to the submitted existing condition Noise Exposure Map (2003), and the five-year forecast Noise Exposure Map (2008) is still reasonable.

This letter will also serve as notice that a Public Hearing was held on the entire King County International Airport FAR Part 150 Study in September 2002. The public was invited to attend and submit both written and verbal comments. All comments received, and a record of the Hearing, are the Appendix of the document. The King County Council adopted the Recommendations in October 2002.

Sincerely,

Robert I. Burke, AAE

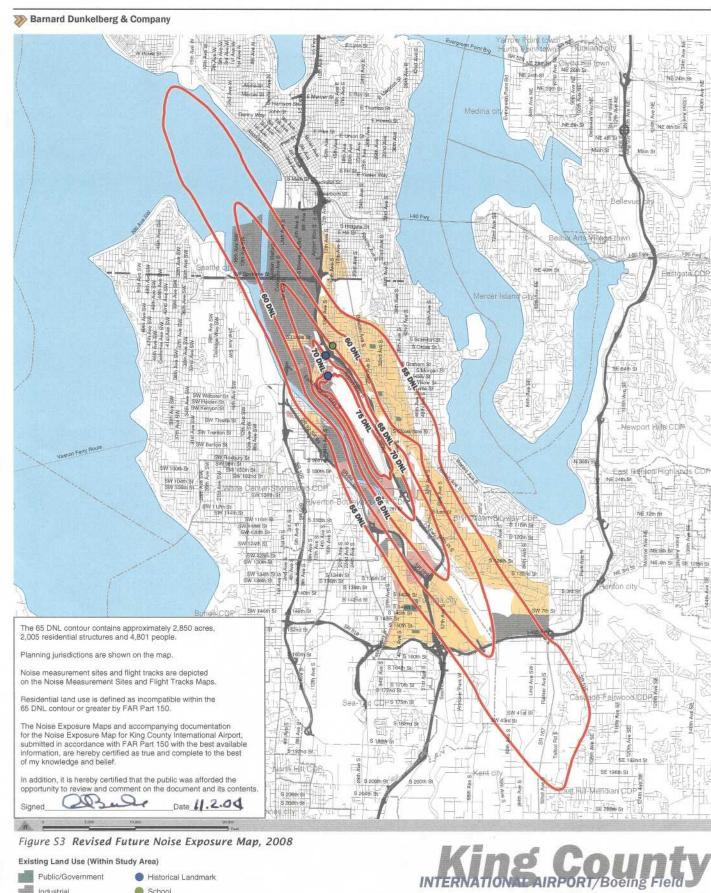
Airport Director

Enclosures

cc: Cayla Morgan, FAA

School

Residential Retail/Commercial FAR Part 150 Study



School

Industrial

Residential Retail/Commercial FAR Part 150 Study

Revised Supplemental FAR Part 150 Study

INTERNATIONAL AIRPORT/Boeing Field

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Supplemental Updated Information

Introduction

The original FAR Part 150 Study document went to Public Hearing on September 16, 2002. Since that time, due to the effects of September 11, 2001 and subsequent downturn in the numbers and types of aircraft operations, certain portions of the original document require updating. These areas include the forecasts of Aviation Activity, Land Use Analysis, Issues/Actions and Recommendations, and the Existing and Future Noise Exposure Maps.

Updated Forecasts

The operations that are used to generate the Existing Noise Exposure Map are typically related to the last 12-month period or calendar year prior to the beginning of the Study. Because of the events of 9/11, any national, local, or regional forecasts developed prior to this time are somewhat skewed. Thus, new forecasts have been generated to reflect a more accurate picture. The following table entitled, Summary of Airport Planning Forecasts, 2003-2023 presents revised forecasts as contained in the King County International Airport Aviation Activity Forecast Update and will be utilized as the basis for producing both the Existing and Future Noise Exposure Maps.

Table S1
SUMMARY OF AIRPORT PLANNING FORECASTS, 2003-2023
King County International Airport FAR Part 150 Supplemental Report

	Base Year	2008	2013	2018	2023
Air Carrier Aircraft ¹	8,982	10,968	12,531	14,094	16,658
Manufacturing	2,410	3,020	2,829	3,030	3,629
Air Cargo	4,802	5,813	6,945	7,822	9,030
Charter	1,770	2,135	2,757	3,242	3,999
Military Aircraft	2,766	3,000	3,000	3,000	3,000
AWACS	190	195	200	200	200
Variety of Types	2,576	2,805	2,800	2,800	2,800
Air Taxi Aircraft ²	50,456	57,225	63,638	70,052	76,466
Single-Engine	30,274	33,477	36,274	38,879	42,056
Multi-Engine	6,055	6,581	6,682	7,005	6,882
Turbo-prop	2,523	3,434	4,455	5,604	6,117
Jet	7,568	8,870	10,500	11,909	13,764
Helicopter	4,036	4,864	5,727	6,655	7,647
General Aviation Aircraft	236,258	251,398	267,509	284,652	302,893
Single-Engine	141,755	147,067	152,480	157,982	166,592
Multi-Engine	28,351	28,911	28,088	28,465	27,260
Turbo-prop	11,813	15,084	18,726	22,772	24,231
Jet	35,439	38,967	44,139	48,391	54,521
Helicopter	18,901	21,369	24,076	27,042	30,289
Total Annual Operations	298,462	322,591	346,678	371,798	399,017

Base Year refers to the 12-month time period July 2002 through June 30, 2002.

¹ Aircraft capable of carrying over sixty passengers that are being operated for commercial purposes, including those used for cargo purposes, such as wide-body aircraft utilized by UPS, and using a three letter designator (regardless of whether or not they actually are being utilized for passenger service).

² Composed of aircraft capable of seating less than 60 passengers, that are being utilized for commercial purposes (passengers, air freight, med-evac, etc), or which use a three letter company designator or "Tango". Commuter airline operations are also included in this assessment.

Fleet Mix

The fleet mix of aircraft that operate at the airport is an important element in terms of determining aircraft noise and the corresponding aircraft for input into the FAA's Integrated Noise Model (INM). The associated fleet mix for both the base year and the year 2008 can be seen in the following tables entitled, Aircraft Operations by INM Type, 2003 and Aircraft Operations by INM Type, 2008.

Table S2
AIRCRAFT OPERATIONS by INM TYPE, 2003
King County International Airport FAR Part 150 Supplemental Report

INM Aircraft	FAR Stage	Da	aily Arrival	s	Daily De	partures	Daily Oper	ations	Annual Operations
Type		Day Night		Day	Night	Arrivals	Departures Total		· ·
GASEPF		82.53	14.56	82.53	14.56	97.09	97.09	194.18	70,877
GASEPV		82.53	14.56	82.53	14.56	97.09	97.09	194.18	70,877
BEC58P		34.03	4.81	34.03	4.81	38.84	38.84	77.67	28,351
CNA441		14.03	2.15	14.03	2.15	16.18	16.18	32.36	11,813
EAR25	2	6.30	1.61	6.30	1.61	7.90	7.90	15.81	5,770
CL600	3	5.25	0.90	5.25	0.90	6.15	6.15	12.30	4,488
SABR80	2	4.14	0.71	4.14	0.71	4.85	4.85	9.71	3,544
GIV	3	4.14	0.71	4.14	0.71	4.85	4.85	9.71	3,544
CIT3	3	4.86	0.51	4.86	0.51	5.37	5.37	10.73	3,918
LEAR35	3	12.42	2.14	12.42	2.14	14.56	14.56	29.13	10,632
MU3001	3	4.14	0.71	4.14	0.71	4.85	4.85	9.71	3,544
CVR580	,	0.37	0.71	0.37	0.71	0.63	0.63	1.27	463
		1.50	1.04	1.50	1.04	2.54	2.54	5.08	1,853
DHC6	2	0.97	0.67	0.97	0.67	1.64	1.64	3.27	1,194
LEAR25	3	3.53	2.45	3.53	2.45	5.98	5.98	11.97	4,369
LEAR35	3	22.09	3.80	22.09	3.80	25.89	25.89	51.78	18,901
DHC6			0.64	0.75	0.64	1.39	1.39	2.78	1,016
727EM2	3	0.75		0.73	0.04	0.54	0.54	1.08	396
74720B	3	0.29	0.25		0.23	2.00	2.00	4.00	1,459
757RR	3	1.09	0.91	1.09	0.60	1.32	1.32	2.63	961
A30062	3	0.71	0.60	0.71					480
DC870	3	0.36	0.30	0.36	0.30	0.66	0.66	1.32	212
A310	3	0.16	0.13	0.16	0.13	0.29	0.29	0.58	279
DC95HW	3	0.21	0.18	0.21	0.18	0.38	0.38	0.76	
707QN	3	0.16		0.16		0.16	0.16	0.31	114
737400	3	2.20		2.20		2.20	2.20	4.41	1,609
747400	3	0.01		0.01		0.01	0.01	0.02	8
757PW	3	0.69		0.69		0.69	0.69	1.37	501
767300	- 3	0.04		0.04		0.04	0.04	0.07	27
777200	3	0.21		0.21		0.21	0.21	0.42	152
DHC6		1.44	0.26	1.44	0.26	1.70	1.70	3.39	1,239
DHC8	1	0.41	0.07	0.41	0.07	0.48	0.48	0.97	354
MD83	3	0.21	0.04	0.21	0.04	0.24	0.24	0.48	177
GASEPV	1	36.37	5.10	36.37	5.10	41.47	41.47	82.94	30,274
DHC6	1	4.81	0.72	4.81	0.72	5.53	5.53	11.06	4,036
DHC8		0.24	0.04	0.24	0.04	0.28	0.28	0.57	206
CIT3	3	2.35	0.40	2.35	0.40	2.75	2.75	5.49	2,005
74720B	3	0.31		0.31		0.31	0.31	0.62	226
DHC8		2.63		2.63	~	2.63	2.63	5.26	1,918
GIIB	3	0.85		0.85		0.85	0.85	1.70	622
BEC58P		2.79	12.09		1.50	14.88	1.71	16.59	
TOTAL		342.08	73.36	339.29	62.77	415.44	402.27	817.71	298,462

Totals may not equal due to rounding.

Table S3
AIRCRAFT OPERATIONS by INM TYPE, 2008
King County International Airport FAR Part 150 Supplemental Report

INM Aircraft	FAR Stage	Da	aily Arrivals		Daily De	epartures	Daily Opera	ations	Annual Operations
Тре		Day	Night	Day	Night	Arrivals	Departures	Total	
GASEPF		85.62	15.11	85.62	15.11	100.73	100.73	201.46	73,538
GASEPV	4.7	85.62	15.11	85.62	15.11	100.73	100.73	201.46	73,536
BEC58P		38.27	6.50	38.27	6.50	44.77	44. 77	89.54	32,682
CNA441		38.27	6.50	38.27	6.50	44.77	44.77	89.54	32,682
CIT3	3	11.28	1.95	11.28	1.95	13.23	13.23	26.46	9,658
CL600	3	2.86	0.49	2.86	0.49	3.36	3.36	6.71	2,450
GIIB	2	1.79	0.31	1.79	0.31	2.10	2.10	4.19	1,531
GIV	3	1.50	0.26	1.50	0.26	1.75	1.75	3.51	1,280
LEAR25	2	2.42	0.42	2.42	0.42	2.84	2.84	5.68	2,074
LEAR35	3	22.93	3.96	22.93	3.96	26.89	26.89	53.77	19,626
MU3001	3	2.74	0.47	2.74	0.47	3.22	3.22	6,43	2,348
CVR580		2.75	1.91	2.75	1.91	4.66	4.66	9.32	3,403
DHC6		10.95	7.61	10.95	7.61	18.55	18.55	37.11	13,545
LEAR25	2	1.62	1.13	1.62	1.13	2.75	2.75	5.50	2,007
LEAR35	3	0.84	0.59	0.84	0.59	1.43	1.43	2.86	1,046
727EM2	3	0.91	0.77	0.91	0.77	1.68	1.68	3.37	1,229
74720B	3	0.36	0.30	0.36	0.30	0.66	0.66	1.31	479
757RR	3	1.30	1.10	1.30	1.10	2.40	2.40	4.81	1,755
A30062	3	0.07	0.06	0.07	0.06	0.13	0.13	0.26	94
DC870	3	1.23	1.04	1.23	1.04	2.28	2.28	4.55	1,661
DC8QN	3	0.19	0.16	0.19	0.16	0.35	0.35	0.70	256
DC95HW	3	0.25	0.21	0.25	0.21	0.46	0.46	0.92	338
DC8QN	3	0.20		0.20		0.20	0.20	0.39	143
737400	3	2.76		2.76		2.76	2.76	5.52	2,016
747400	3	0.01		0.01		0.01	0.01	0.03	10
757PW	3	0.86		0.86		0.86	0.86	1.72	627
767300	3	0.05		0.05		0.05	0.05	0.09	34
777200	3	0.26		0.26		0.26	0.26	0.52	190
DHC6	3	1.98	0.36	1.98	0.36	2.34	2.34	4.68	1,708
DHC8		0.50	0.09	0.50	0.09	0.58	0.58	1.17	427
GASEPV		28.34	4.81	28.34	4.81	33.15	33.15	66.29	24,196
DHC6	1	6.53	1.11	6.53	1.11	7.64	7.64	15.28	5,576
DHC8		2.18	0.37	2.18	0.37	2.55	2.55	5.10	1,863
LEAR35	3	6.54	1.11	6.54	1.11	7.65	7.65	15.30	5,584
74720B	3	0.34		0.34		0.34	0.34	0.67	245
DHC8		2.85		2.85		2.85	2.85	5.70	2,081
GIIB	. 3	0.92		0.92		0.92	0.92	1.85	674
TOTAL		368.09	73.80	368.09	73.80	441.90	441.90	883.80	322,591

Totals may not equal due to rounding.

Updated Noise Exposure Maps

The Updated Existing Noise Exposure Map is presented in the following figure entitled, REVISED EXISTING NOISE EXPOSURE MAP, 2003. The following table, Table S4, EXISTING NOISE EXPOSURE MAP LAND USE WITH EXISTING LAND USE, 2003, presents the number of people, housing units, schools, and historic sites, along the number of acres of each specific land use type. It is of interest to note, the number of individuals in this updated contour is significantly larger than that reflected in the original Part 150 document due to the fact that the existing 1999 noise contours utilized population data based on 1990 U.S. Census information and this revised contour reflects the population produced as part of the 2000 Census.

Table S4
EXISTING NOISE EXPOSURE MAP WITH EXISTING LAND USE, 2003
King County International Airport FAR Part 150 Supplemental Report

Land Use	DNL 55 Contour	DNL 60 Contour	DNL65 Contour	DNL70 Contour	DNL75 Contour
Residential	4,182 Ac	1,915 Ac	490 Ac	82 Ac	7 Ac
People	53,021	17,670	5,230	890	60
Housing Units	19,673	6,910	2,140	400	20
Schools 1	3	2	1	0	0
Historic Sites ²	2	2	2	2	0
Fire Stations	2	2	2	0	0
Commercial/Retail	557 Ac	437 Ac	198 Ac	93 Ac	3 Ac
Manufacture	3,322 Ac	1,984 Ac	863 Ac	356 Ac	108 Ac
Other	8,299 Ac	2,483 Ac	1,386 Ac	717 Ac	438 Ac
Total Acres	16,360 Ac	6,819 Ac	2,937 Ac	1,248 Ac	556 Ac

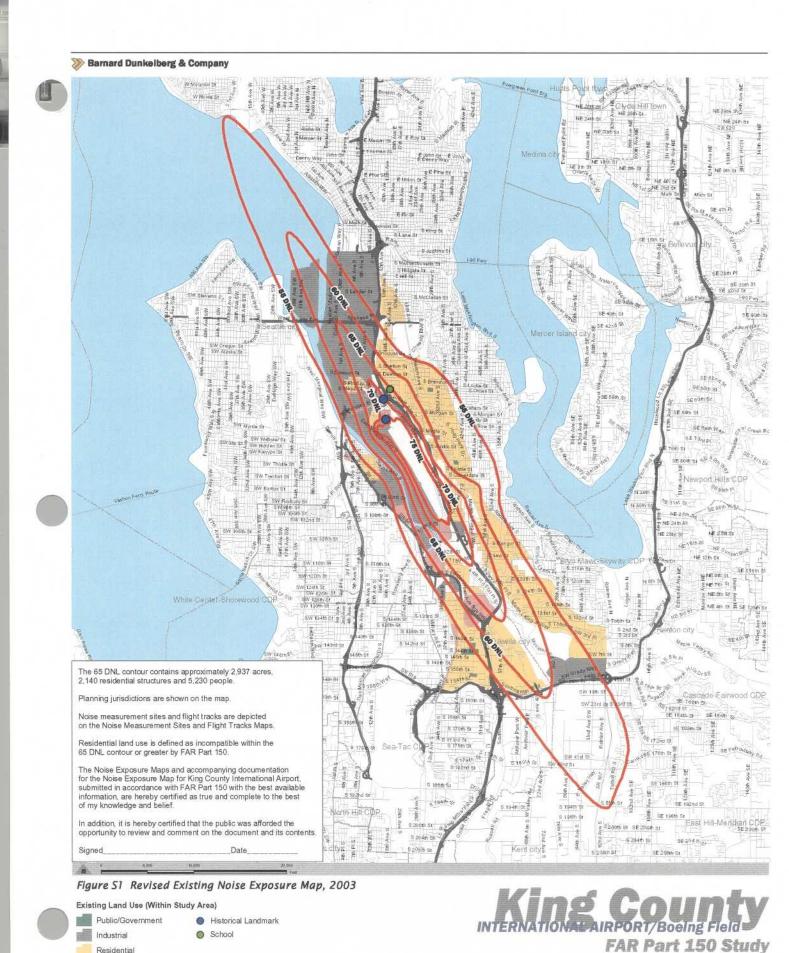
Source: Aerial Photography, 2000 U.S. Census Data, BDC Analysis.

¹ Cleveland High School.

Total figures for each contour are cumulative. The figures for the larger contours contain the area-within the smaller contours.

Other includes Airport, Public, Transportation Right-of-Way, etc.

² Historic Sites refer to the Georgetown Steam Plant and the Old Georgetown City Hall.



Retail/Commercial

The updated Future Base Case Noise Exposure Map is presented in the following figure, Figure S2, REVISED FUTURE BASE CASE NOISE EXPOSURE MAP, 2008. The following table, Table S5, FUTURE BASE CASE NOISE EXPOSURE MAP WITH EXISTING LAND USE, 2008 presents the number of acres of different land use types within the Future Noise Exposure Map contours, as well as the number of people, housing units, schools, and historic sites.

Table S5
FUTURE BASE CASE NOISE EXPOSURE MAP WITH EXISTING LAND USE, 2008
King County International Airport FAR Part 150 Supplemental Report

Land Use	DNL 55 Contour	DNL 60 Contour	DNL65 Contour	DNL70 Contour	DNL75 Contour
Residential	4,087 Ac	1,804 Ac	449 Ac	68 Ac	4 Ac
People	52,177	16,322	4,790	784	35
Housing Units	19,652	6,469	2,001	357	12
Schools	3	1	1 1	0	0
Historic Sites ²	2	2	2	2	0
Fire Stations	2	2	2	0	0
Commercial/Retail	557 Ac	429 Ac	192 Ac	85 Ac	1 Ac
Manufacture	3,286 Ac	1,963 Ac	842 Ac	326 Ac	95 Ac
Other	9,248 Ac	2,450 Ac	1,367 Ac	47 Ac	206 Ac
Total Acres	17,178 Ac	6,646 Ac	2,850 Ac	526 Ac	306 Ac

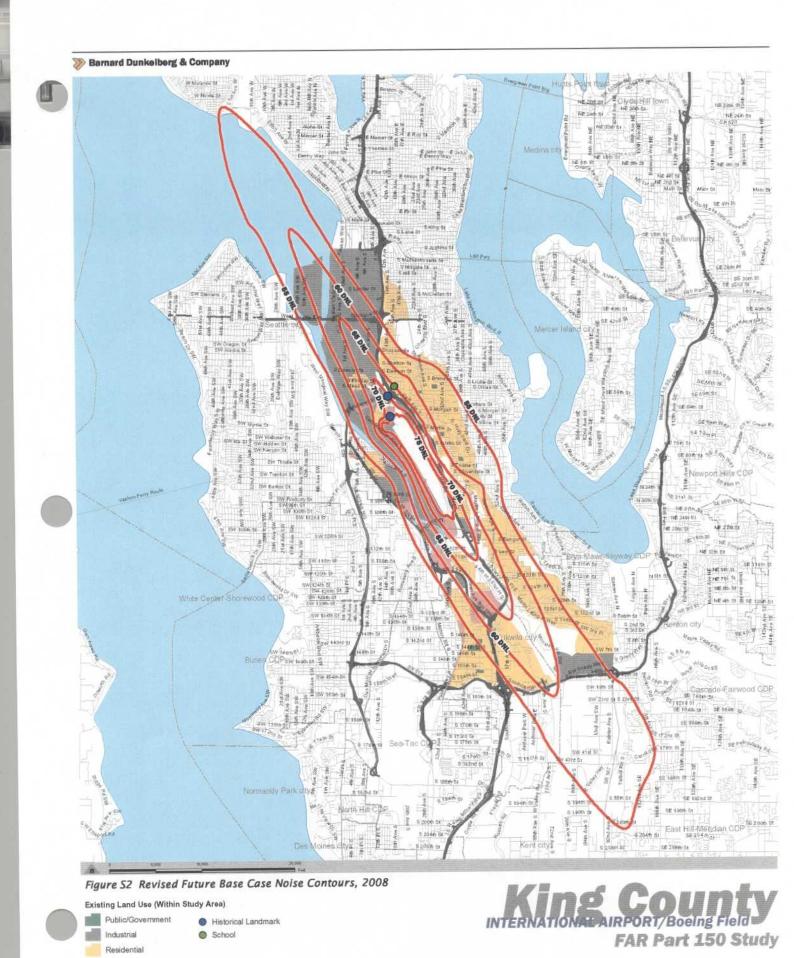
Source: Aerial Photography, 2000 U.S. Census Data, BDC Analysis.

Total figures for each contour are cumulative. The figures for the larger contours contain the area-within the smaller contours

Other includes Airport, Public, Transportation Right-of-Way, etc.

¹ Cleveland High School.

² Historic Sites refer to the Georgetown Steam Plant and the Old Georgetown City Hall.



Retail/Commercial

Updated Issues/Actions and Recommendations

This section, the Issues/Actions and Recommendations portion of the supplemental report, has been updated to reflect changes in the Recommendations that have occurred since the Public Hearing, due to implementation of a specific Recommendation, or other changed circumstances. This section will also present the recommended Noise Abatement Plan, which includes the Issues to be addressed, the Actions/Recommendations to be taken to address those Issues, the Responsible Parties involved for implementing those Actions and Recommendations, the Airport action to be taken, the Time Frame for implementation, and the Effectiveness of each. This section also recommends a Noise Exposure Map that should be used for the basis of the Noise Abatement Plan.

A recommended implementation schedule and sequence, in both narrative and graphic form, indicating the roles and responsibilities of the many parties involved in the Noise Compatibility Program for King County International Airport will be presented in a subsequent chapter. In addition, as part of the primary Part 150 document, the recommendations referring to Operations Review and Part 150 Updates and Establishing/Continuing an Advisory Committee have been withdrawn, as these duties have now become an inherent responsibility of the County.

Future Noise Exposure Map

The aircraft-generated noise contours used to identify areas eligible for various mitigation programs are the Future Noise Exposure Contours for King County International Airport. These contours represent the aircraft activity forecast for the next five years and includes the assumption that the Airport Master Plan will be adopted, with the proposed runway shift implemented. Although there are several recommendations that will reduce the size of the noise contours if they are implemented, the Future Noise Exposure Map contours reflect the largest number of structures eligible for noise mitigation programs, thus providing various options to the largest number of people. The following table presents the number of people, the number of residential units and other noise sensitive structures within the King County International Airport Future Noise Exposure Map contours.

The Revised Future Noise Exposure Map is illustrated on Figure S3, REVISED FUTURE NOISE EXPOSURE MAP, 2008. Similar to the Revised Existing Noise Contour, the generation of this contour involved using the updated version of the INM model that allows for more sideline generated noise. In addition, as previously mentioned, this contour accounts for the programmed runway extension at some time during the planning period. The specific noise abatement recommendations are contained on the pages following the Future Noise Exposure Map. They are categorized as Amended

Actions and New Actions for each specific noise abatement recommendation. The Amended Actions are those Actions which the Airport currently has in place but are recommended for some changes and the New Actions are those which would be implemented for the first time. Some are administrative in nature while others are land use or operational in nature. Table S6 shows the number of people, housing units and acres of land uses within the revised Future Noise Exposure Map Contours.

Table S6
FUTURE NOISE EXPOSURE MAP WITH EXISTING LAND USE, 2008
King County International Airport FAR Part 150 Supplemental Report

Land Use	DNL 55 Contour	DNL 60 Contour	DNL65 Contour	DNL70 Contour	DNL75 Contour			
Residential	4,090 Ac	1,807 Ac	449 Ac	68 Ac	4 Ac			
People	52,031	16,358	4,801	772	34			
Housing Units	19,655	6,483	2,005	347	12			
Schools	3	1	1 1	0	0			
Historic Sites ²	2	2	2	2	0			
Fire Stations	2	2	2	0	0			
Commercial/Retail	557 Ac	429 Ac	192 Ac	83 Ac	1 Ac			
Manufacture	3,279 Ac	1,963 Ac	820 Ac	323 Ac	95 Ac			
Other	9,219 Ac	2,384 Ac	1,368 Ac	684 Ac	425 Ac			
Total Acres	17,145 Ac	6,583 Ac	2,829 Ac	1,158 Ac	525 Ac			

Source: Aerial Photography, 2000 U.S. Census Data, BDC Analysis.

Total figures for each contour are cumulative. The figures for the larger contours contain the area-within the smaller contours.

Other includes Airport, Public, Transportation Right-of-Way, etc.

¹ Cleveland High School.

² Historic Sites refer to the Georgetown Steam Plant and the Old Georgetown City Hall.

