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○ ISSUE 9 | ○ VOLUME 1 | ○ 2011

# DEN Noise *report*

JANUARY 1, 2011 THROUGH MARCH 31, 2011

## Cumulative Results for the Period January 1, 2011 through March 31, 2011

The number of potential Class II NEPS violations registered between January 1<sup>st</sup> through March 31<sup>st</sup>, 2011 was zero. There were no Class II NEPS violations during the same period the previous year. Please see pages 4 and 6 for Denver International Airport (DEN) NEPS information. There was no potential 65 DNL noise contour violation for either time period, as the 65 DNL contour continued to be completely contained within the boundaries of the City and County of Denver (CCD). Please see page 5 for DEN contour map.

The number of households registering at least one complaint remained the same (15 households in 2011 vs. 15 in 2010). Five households registered a combined 95% of total complaints. The number of complaints increased during 2011 as compared to the same period in 2010 (556 vs. 430 in 2010).

The percentage of complaints increased in 2011 for Nighttime Aircraft Operations (10:00pm to 7:00am) to 12.6% of total complaints received compared to 7.4% in 2010. Please see pages 7 and 8 for complete complaint and operational data.





## DEN Airport Noise and Operations System

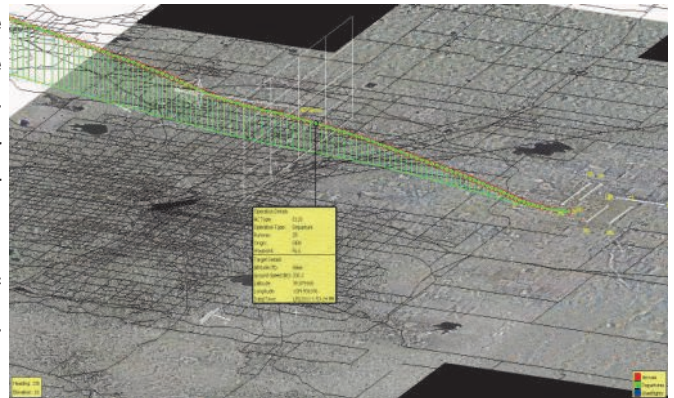


Remote Monitoring Terminal (RMT) with a weather collecting station.

The DEN Airport Noise and Operations Monitoring System (ANOMS) is a state-of-the-art computer system designed to enable the City and County of Denver to monitor aircraft noise in the vicinity of the airport. In addition to monitoring noise levels, the system calculates Noise Exposure Performance Standards. (NEPS) at 101 grid points in Adams County (see map on page 4 for NEPS locations).

The DEN ANOMS system monitors noise levels at 27 permanent and 4 portable noise monitoring terminals. These terminals are located throughout the Denver metro area (see map on page 4 for RMT locations).

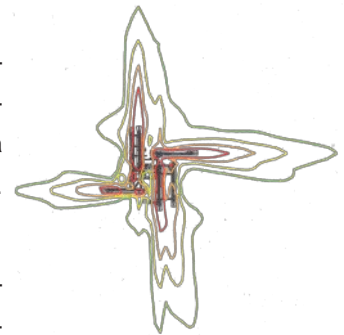
The system also records the movement of all aircraft in the vicinity of DEN by utilizing FAA air traffic control radar data. This makes it possible to match actual flights with noise events.



## ARTSMAP

ARTSMAP is a specially designed noise modeling program that automatically creates noise contours. ARTSMAP is designed to create contours from actual radar flight tracks that our office receives from the FAA ARTS system which is sent via modem, eliminating the need for manual data manipulation. The ARTSMAP software is installed on a computer in the Noise Abatement Office. The program analyzes, views, reports, and stores the data.

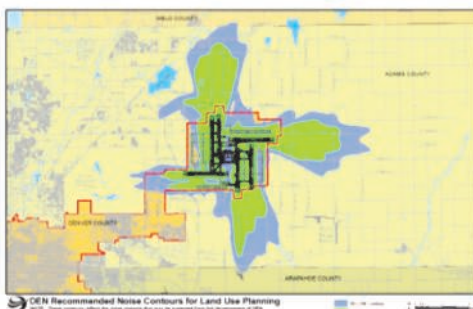
Currently, ARTSMAP is used at several major airports nationally. It allows the DEN Noise Abatement Office to perform noise data analysis, generate daily automated noise contours, receive detailed runway utilization, and airline fleet mix identification.



ARTSMAP Output

## Land Use and Zoning

Urban growth and development in the areas surrounding DEN, particularly non-compatible residential and other noise-sensitive land uses, is of utmost concern to the City and County of Denver.



The Noise Office has developed noise contours surrounding the airport, inside which certain types of land uses are not recommended. The 65 Ldn noise contour (average decibel level with a 10 decibel penalty applied to nighttime operations) is a line inside which, under Federal guidelines, no residential development should occur.

The operational 65 Ldn noise contour for the airport, as created by ARTSMAP, is included in this report. However, for DEN, the 60 Ldn noise contour is used for compatible land use planning by the surrounding jurisdictions, in accordance with guidelines promulgated by the Denver Regional Council of Governments and the Denver/Adams County Intergovernmental Agreement. Additional mapping for DEN that includes the applicable noise contours is available upon request.



## DEN Noise Hotline Policy

The purpose of the DEN Noise Complaint Hotline is to provide an opportunity for individuals to express their concerns regarding noise generated by aircraft operating at DEN. Citizens are asked to leave their name, address and the date and time of their complaint on the hotline. Complaints are downloaded daily by our Noise Officers and then transcribed into the ANOMS system, where specific complaints can be matched to individual flight tracks. It is essential for all information to be entered correctly in order for the system to be effective.



Profanity will not be tolerated, and will result in the complaint not being registered. Any attempt to deliberately tie-up or abuse the Hotline may result in police action. Phone harassment is a state criminal offense and can carry a jail sentence and/or fine. Threats involving aircraft and/or the airport are a very serious matter and are a federal criminal offense. To make a threat, even jokingly, will result in a notification to the Denver Police Department and may involve an FBI investigation.

## Glossary of Terms

**Sound:** A rapid variation in air pressure, which is perceived by the ear and brain as sound.

**Noise:** Generally considered to be any sound, which is deemed undesirable by an individual.

**Decibel:** Sound is measured by its pressure or energy in terms of decibels. The decibel scale is logarithmic; when the decibel level increases by 6 dB, the measured sound is twice as loud.

**Noise Abatement:** A measure or action that minimizes the amount or impact of noise on the environs of an airport. Noise abatement measures include aircraft operating procedures and use or disuse of certain runways or flight tracks. These operating procedures are controlled by the FAA.

**A-Weighted Sound Level (dBA):** A type of sound level measurement which reduces the effect of very high and very low frequencies in order to mimic the response of the human ear. Nearly all aircraft sound level measurement is conducted using A-weighting.

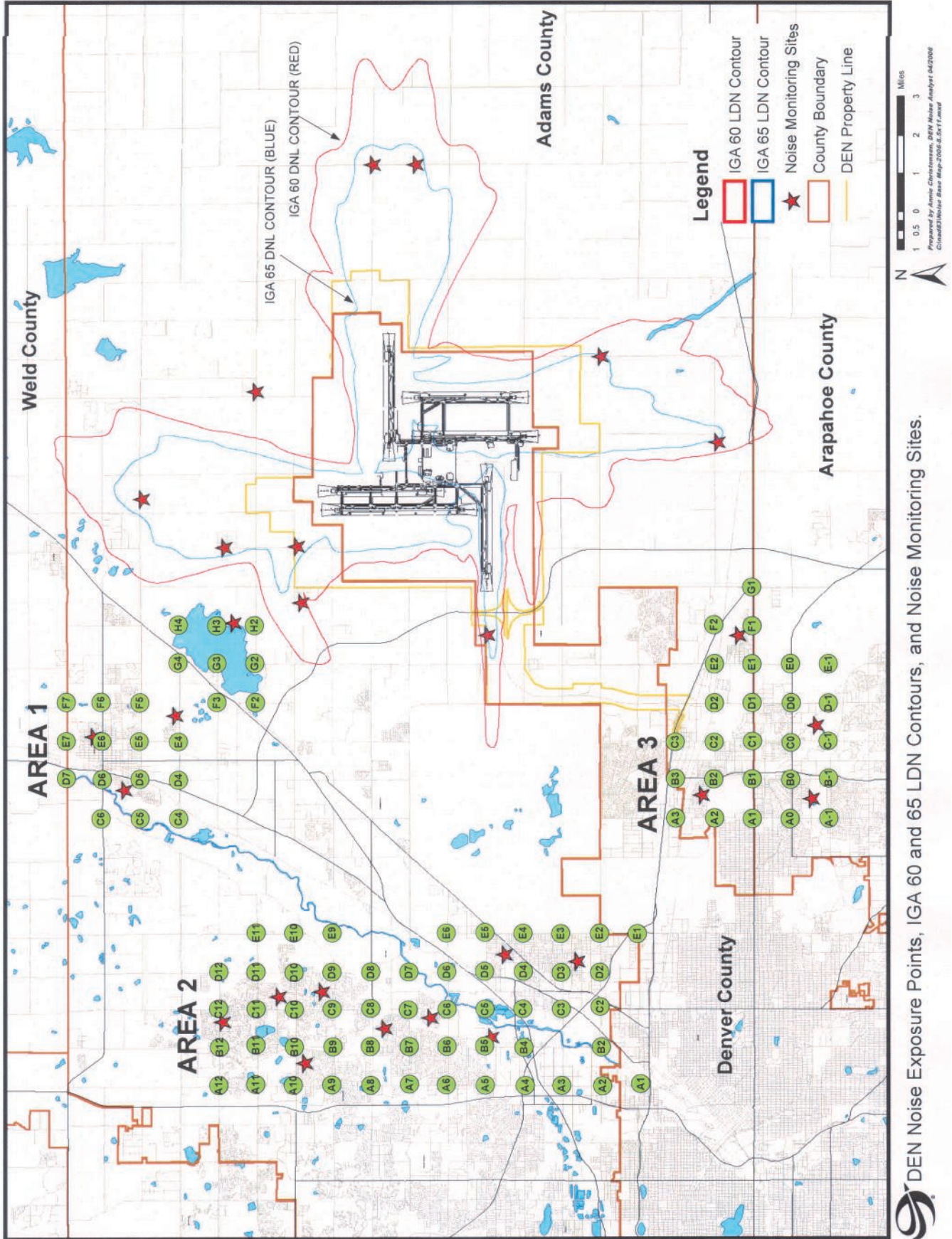
**Equivalent Continuous Sound Level (Leq):** A measurement of the average sound energy experienced over a period of time. This average sound level is expressed in decibels, and includes a notation of the period of time, which it covers (such as Leq (24) for an average of the sound level over a 24-hour period).

**Day Night Level (Ldn):** Also referred to as DNL. Similar to a Leq measurement, but is conducted over at least a 24-hour time span and includes a 10dB nighttime penalty. For an Ldn calculation, all noise that occurs at night (defined as 10:00 pm to 7:00 am) is artificially increased for the public's increased sensitivity to noise during these hours.

**Noise Contour:** A line surrounding an airport that encloses a geographic region, which is exposed to a particular Ldn level. These contour lines are nested in such a way that contours closer to the airport generally surround areas that experience higher noise levels than contours farther out. Annual Ldn contours are used to determine whether certain types of zoning or land uses are compatible with particular annual Ldn noise levels. 65 Ldn is considered by many federal agencies to be the level at which residential land use becomes incompatible.

**Remote Monitoring Terminal (RMT):** Consists of a noise level analyzer, a weatherproof microphone, a system controller, a power supply, and a dedicated telephone line to download noise data to the ANOMS system, all mounted in a weatherproof cabinet.



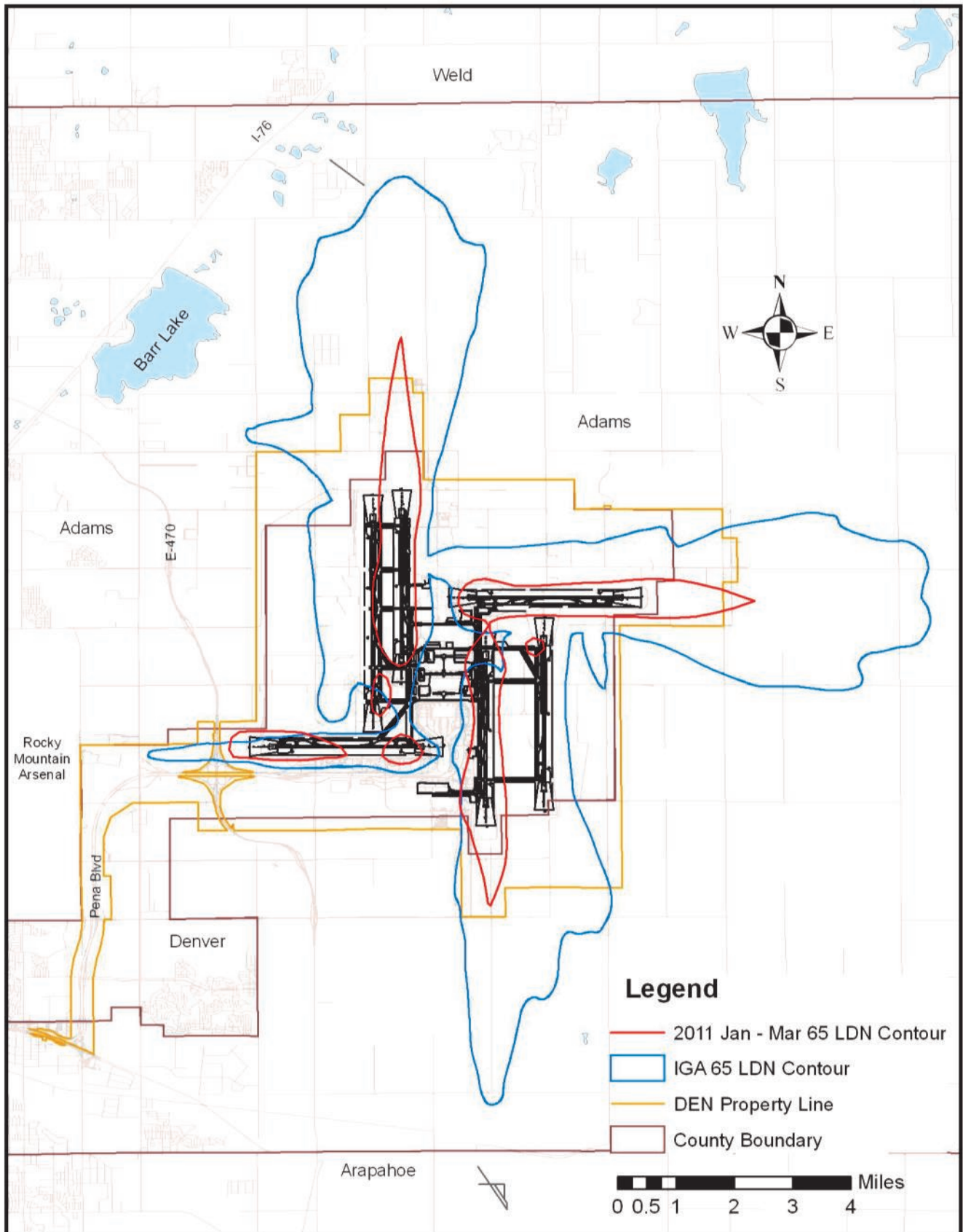


DEN Noise Exposure Points, IGA 60 and 65 LDN Contours, and Noise Monitoring Sites.





# DEN 65 LDN Contour



**DEN January 1 - March 31, 2011 Contour**



# DEN / Adams County IGA NEPS Values

Area 2 January 1 through March 31, 2011			
Grid Points	IGA Annual Leq (24)	Calculated Leq (24)	Difference Leq
A,1	38.6	36.7	-2.0
A,2	37.6	37.5	-0.1
A,3	42.3	38.4	-3.9
A,4	45.3	38.8	-6.5
A,5	43.9	38.4	-5.5
A,6	37.5	36.1	-1.4
A,7	37.7	35.9	-1.8
A,8	36.5	37.2	0.7
A,9	36.3	38.3	2.0
A,10	37.6	37.2	-0.4
A,11	39.2	35.5	-3.7
A,12	41.2	34.5	-6.7
B,2	39.5	38.0	-1.5
B,4	42.5	39.8	-2.8
B,5	43.1	39.5	-3.6
B,6	39.0	37.0	-2.0
B,7	39.0	37.0	-2.0
B,8	38.0	38.4	0.4
B,9	38.3	39.3	1.0
B,10	39.0	37.8	-1.2
B,11	40.4	36.2	-4.2
B,12	42.6	35.4	-7.2
C,2	41.0	38.5	-2.5
C,3	43.3	39.4	-3.9
C,4	43.5	40.6	-2.9
C,5	43.4	40.7	-2.7
C,6	43.3	37.8	-5.5
C,7	43.3	37.9	-5.4
C,8	42.6	39.8	-2.8
C,9	42.2	40.2	-2.0
C,10	41.6	38.2	-3.4
C,11	42.5	36.5	-6.0
C,12	44.3	35.7	-8.6
D,2	41.7	39.3	-2.4
D,3	46.2	39.8	-6.4
D,4	48.4	41.5	-6.9
D,5	48.2	42.1	-6.1
D,6	46.2	38.6	-7.6
D,7	44.2	38.9	-5.3
D,8	43.7	41.2	-2.6
D,9	43.1	40.7	-2.4
D,10	44.9	37.9	-7.0
D,11	44.5	36.2	-8.3
D,12	45.1	35.6	-9.6
E,1	42.4	39.3	-3.1
E,2	42.2	40.3	-2.0
E,3	46.7	40.3	-6.4
E,4	51.2	42.3	-8.9
E,5	51.0	43.5	-7.5
E,6	44.6	39.5	-5.1
E,9	43.1	40.7	-2.4
E,10	43.1	37.4	-5.7
E,11	46.1	36.0	-10.1

Area 1 January 1 through March 31, 2011			
Grid Points	IGA Annual Leq (24)	Calculated Leq (24)	Difference Leq
C,4	44.2	36.2	-8.0
C,5	36.7	34.6	-2.1
C,6	36.0	33.6	-2.4
D,4	41.1	35.8	-5.3
D,5	34.2	34.8	0.6
D,6	36.0	34.4	-1.6
D,7	41.4	35.0	-6.4
E,4	38.3	35.1	-3.2
E,5	34.8	35.2	0.4
E,6	36.7	34.0	-2.7
E,7	41.4	33.7	-7.7
F,2	51.7	39.3	-12.5
F,3	43.7	36.0	-7.7
F,5	37.3	33.5	-3.8
F,6	38.5	33.2	-5.4
F,7	42.1	33.5	-8.6
G,2	51.2	39.9	-11.3
G,3	42.1	35.5	-6.6
G,4	40.2	33.5	-6.7
H,2	50.1	40.4	-9.7
H,3	46.0	35.5	-10.5
H,4	46.1	34.0	-12.1

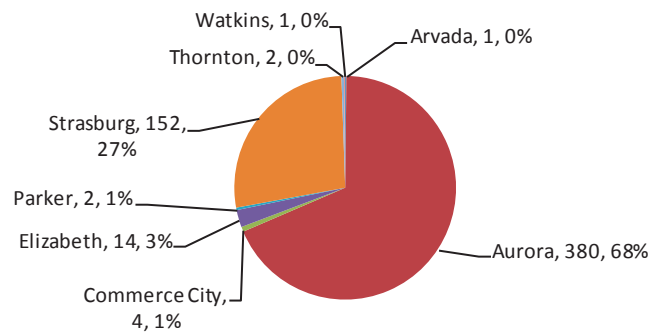
Area 3 January 1 through March 31, 2011			
Grid Points	IGA Annual Leq (24)	Calculated Leq (24)	Difference Leq
A,-1	38.9	33.2	-5.8
A,0	39.6	33.3	-6.3
A,1	43.2	34.0	-9.3
A,2	45.7	35.0	-10.8
A,3	45.6	36.2	-9.4
B,-1	37.9	32.9	-5.0
B,0	39.2	33.2	-6.0
B,1	42.6	33.7	-8.9
B,2	45.8	34.6	-11.2
B,3	45.7	35.7	-10.0
C,-1	36.7	33.2	-3.5
C,0	37.1	33.2	-3.9
C,1	39.5	33.6	-5.9
C,2	44.8	34.2	-10.6
C,3	46.5	35.3	-11.2
D,-1	32.6	33.2	0.6
D,0	33.3	33.1	-0.2
D,1	37.3	32.8	-4.5
D,2	43.0	33.2	-9.8
E,-1	31.4	32.6	1.2
E,0	33.1	31.8	-1.4
E,1	36.2	31.9	-4.3
E,2	40.6	32.6	-8.0
F,1	36.5	32.7	-3.8
F,2	39.4	33.5	-5.9
G,1	42.5	34.3	-8.2



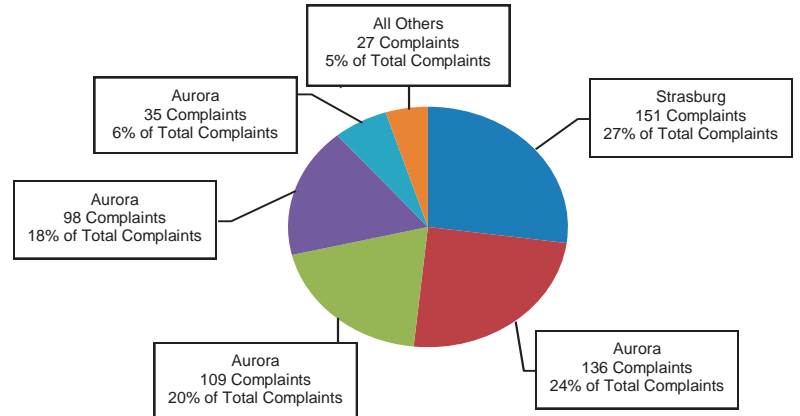
## January 1 - March 31, 2011 Noise Complaint Calls by Community\*

Community*	No. of Calls 2011	No. of Callers 2011	No. of Calls 2010	No. of Calls 2009
Arvada	1	1	0	0
Aurora	380	5	257	24
Brighton	0	0	0	1
Commerce City	4	2	0	3
Denver	0	0	0	8
Elizabeth	14	1	18	1
Hudson	0	0	2	1
Parker	2	2	34	5
Strasburg	152	2	113	45
Thornton	2	1	0	0
Watkins	1	1	5	14
Westminster	0	0	1	2
<b>Overall Total</b>	<b>556</b>	<b>15</b>	<b>430</b>	<b>104</b>

### Total Calls by Community



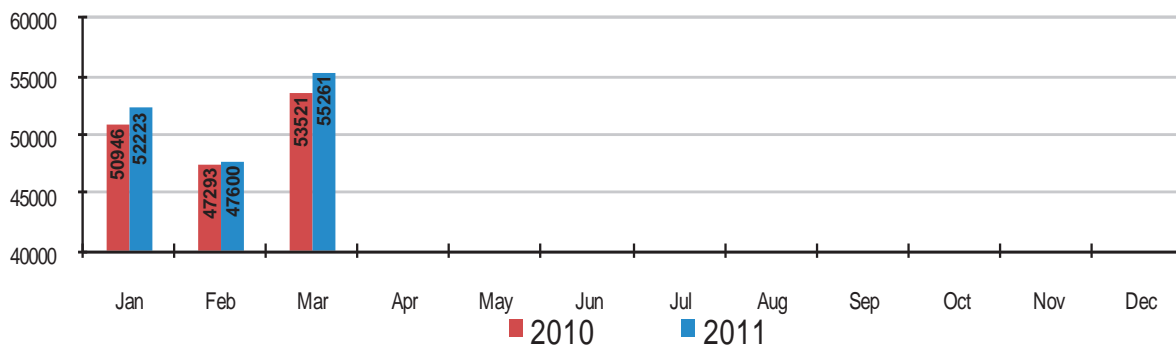
### Top Five Complainants Vs. All Others



## Monthly Comparison: 2011 Noise Complaint Calls - Daytime vs. Nighttime

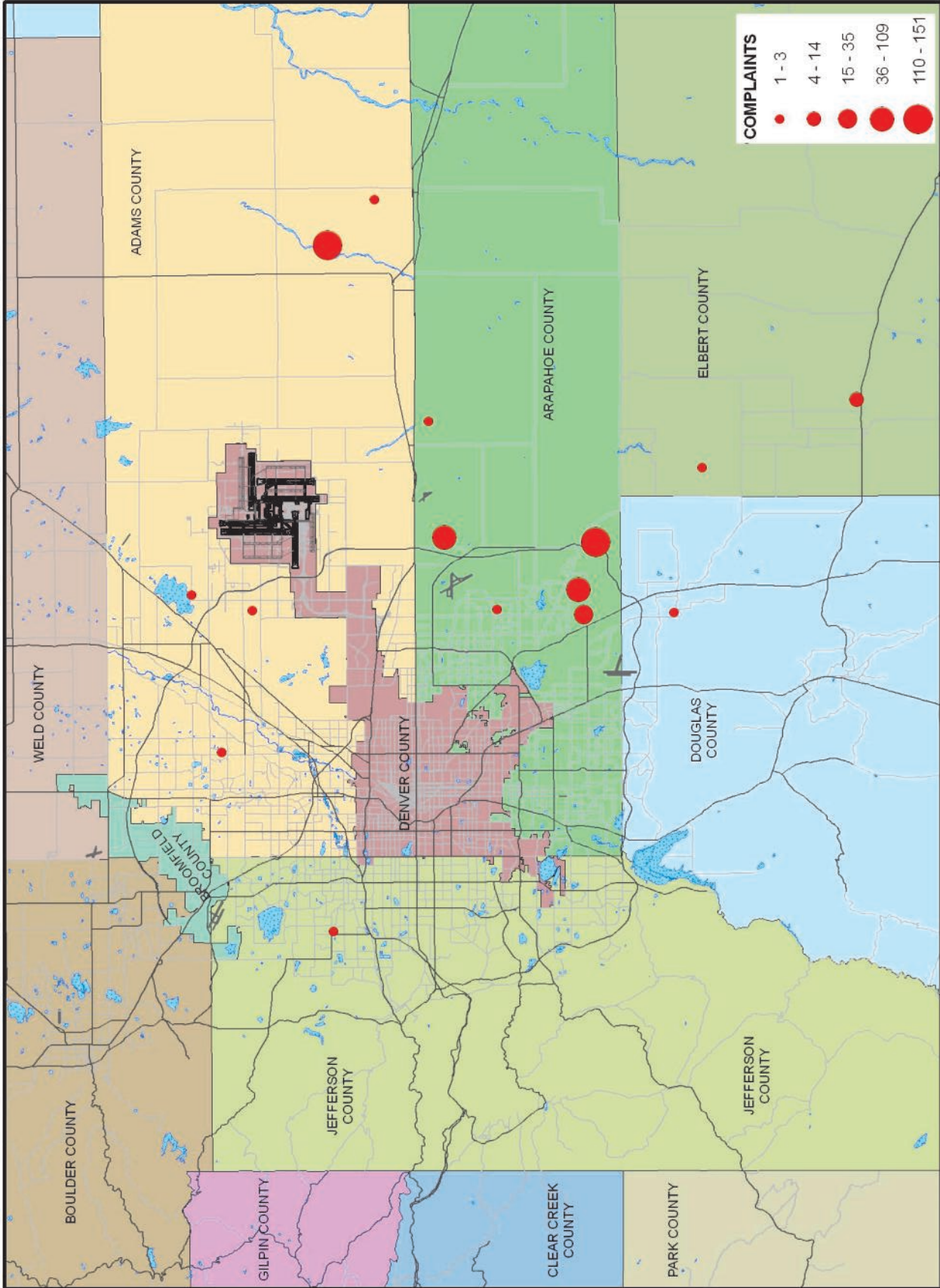
Time Complaint Received	January	February	March	April	May	June	July	August	September	October	November	December	2011 Total
Day Hours (7:00 am to 9:59 pm)	163	94	229										486
Night Hours (10:00 pm to 6:59 am)	15	28	27										70
<b>Total</b>	<b>178</b>	<b>122</b>	<b>256</b>										<b>556</b>

## Monthly Comparison: 2010 Total Operations vs. 2011 Total Operations

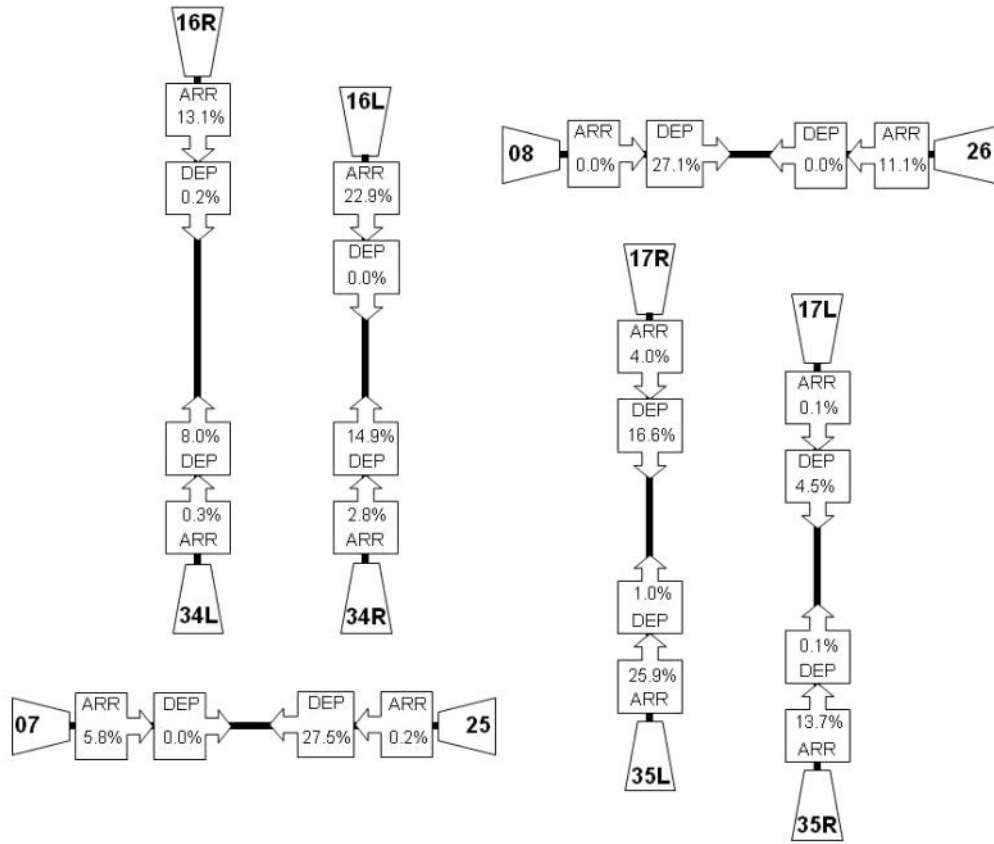




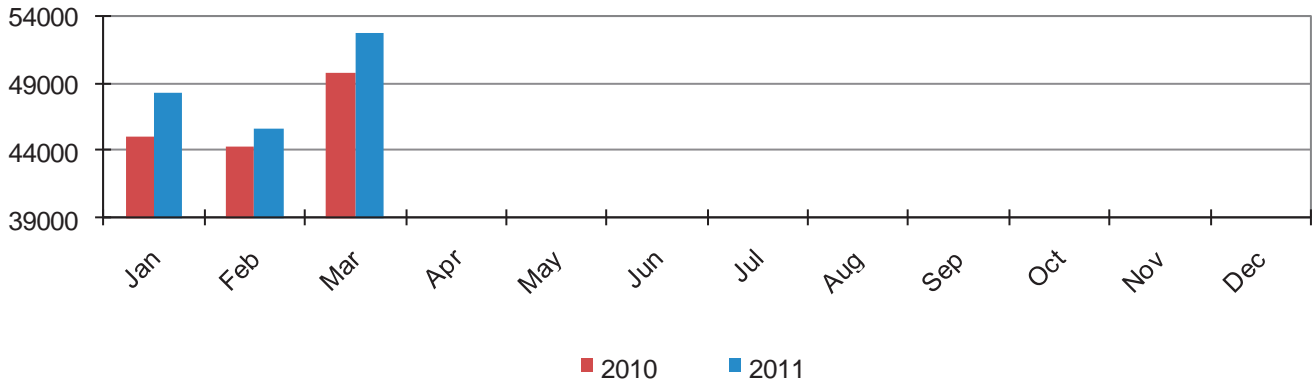
# DEN Complaint Location Map



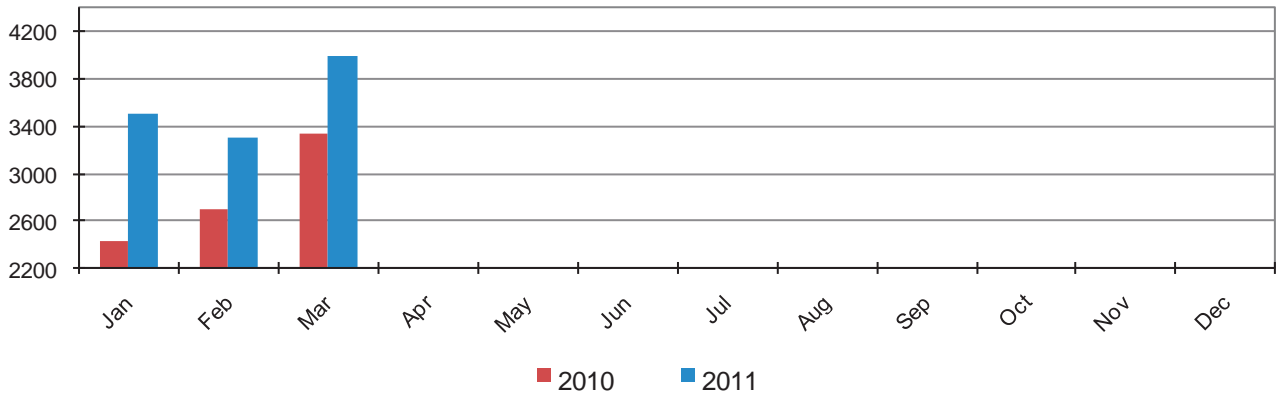
JANUARY 1 - MARCH 31, 2011 DEN NOISE COMPLAINTS



**2010 vs. 2011 DEN Daytime Arrivals & Departures**



**2010 vs 2011 DEN Nighttime Arrivals & Departures**





## Denver International Airport Kicks Off 2011 with Passenger Growth

**DENVER, CO — March 11, 2011 Press Release**

The first month of 2011 got off to a promising start at Denver International Airport (DIA) with a reported total of 3,928,196 passengers traveling through the facility in January. The figure represents a four percent increase over the 3,776,133 travelers who used the airport during the same month last year. DIA recently announced that

2010 was a record-breaking year with more than 52 million passengers flying in and out of the nation's fifth-busiest airport.

"The first month of the year is typically a slower time for travel, so an increase of more than 150,000 passengers from January 2010 to January 2011 is significant," Aviation Manager Kim Day said. "We continue to feel optimistic that the positive growth trend DIA has seen over the course of the last year indicates economic stabilization throughout the aviation industry."

January also brought a 2.5 percent increase in flight operations, which rose from 50,946 in 2010, to 52,223 in 2011. Cargo saw an increase of 2.6 percent with 43,843,283 pounds of total cargo handled in January 2011, compared to 42,743,710 pounds during the same month last year. The complete January 2010 traffic report will be available at: <http://business.flydenver.com/stats/traffic/index.asp>.

**NEED MORE INFORMATION?**



Visit [business.flydenver.com](http://business.flydenver.com) for more information regarding DIA's Noise Abatement Program.

There you will find very helpful information including; FAQs, Annual Reports, land use maps and much more.



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