

Denver International Airport

Noise Release Study

February 28, 2000



City and County of Denver

INTRODUCTION

This Noise Release Study was prepared pursuant to Section 4.5.3 "Noise Studies" of the Intergovernmental Agreement dated April 21, 1988 between Adams County and the City & County of Denver related to the Denver International Airport ("airport"). Section 4.5.3 provides that the airport shall conduct a noise study complying in form with 14 CFR 150, subparts A and B, for the purpose of determining whether Noise Release Conditions have occurred with respect to land use in Adams County adjacent to the boundaries of the airport. This is the first study of this type by the airport under the terms of the Intergovernmental Agreement ("IGA").

Part 150 is a regulation promulgated under the Aviation Safety and Noise Abatement Act of 1979 (49 USC 2101 et seq) and addresses noise compatibility planning activities of operators of all public use airports. The Denver International Airport is a public use airport. Subpart A covers the general scope of Part 150 and its purpose and Subpart B covers the development of noise exposure maps and noise compatibility programs. The purposes and process of both subparts have been modified to comply with the objectives of the IGA as it relates to Noise Release Conditions as that term is defined within the IGA.

DENVER INTERNATIONAL AIRPORT STATISTICS

Denver International Airport is located approximately 17 miles northeast of downtown Denver. The airport and its access corridor occupy 53 square miles of land which had previously been used primarily for agricultural purposes.

DIA currently has five operating runways, each 12,000' long, with a sixth, 16,000' runway in the planning stages. The sixth runway is depicted as Runway 16R-34L on the Airport Layout Plan (see Figure 2) as approved by the Federal Aviation Administration on January 22, 1993. Construction of this runway is anticipated to occur within the next 5 years, therefore this study reflects noise modeling based on the existence of the sixth runway. The airport also currently has a 1.4 million square foot main terminal building, with three remote concourses of varying sizes. Both the airfield and the terminal/concourse complex can be expanded to accommodate future growth. DIA has been designed to ultimately support as many as 12 runways, as well as a doubling of the current size of the main terminal, and the construction of two additional concourses.

DIA opened on February 28, 1995, replacing Stapleton International Airport as Denver's primary commercial airport. DIA is served by a variety of domestic and international air carriers, and is the second largest hub for United Airlines. DIA is also the home and hub for Frontier Airlines. Passenger traffic at DIA has steadily increased since opening. In 1999, DIA handled over 38

million passengers, making it the 6th busiest airport in the United States. The number of aircraft operations has also grown. Approximately 500,000 aircraft takeoffs and landings were recorded in 1999.

LAND USES

The current land uses within the Adams County Noise Overlay Zone are agricultural and rural residential. Two residential subdivisions, Stonehouse Farms and a small part of Green Estates, lie within the Noise Overlay Zone (see Figure 1). The outside boundary of the Noise Overlay Zone was based on the projected 60 L_{dn} contour for the airport. Both subdivisions are now outside of the airport's operating 60 L_{dn} contour.

The Adams County 1999 Comprehensive Plan projects that the land uses around the airport will remain the same and states as a matter of policy that agricultural uses will be encouraged around DIA. See Future Land Use Map (Figure 6) developed by Adams County.

NOISE MEASUREMENT METHODOLOGY

For the purposes of this study, the City and County of Denver contracted with HNTB Corporation to prepare a set of Noise Exposure Maps. These maps illustrate the location of the 60 and 65 L_{dn} contour lines for the years 1998 and 2005.

HNTB prepared the contour maps using the FAA's Integrated Noise Model (INM). INM is a computer model which uses aircraft operations data, correlated with known acoustical information for each type of aircraft, to calculate noise contours. Contours for the 1998 base case were generated based upon actual 1998 DIA operations data. For the 2005 projection, HNTB used the 1998 data as well as forecasts of aircraft operations levels and fleet mix for the year 2005.

NOISE CONTOURS

Figures 3, 4, and 5 illustrate the location of the 60 & 65 L_{dn} noise contours for the years 1998 and 2005. The 2005 case is shown both with and without the projected 6th runway in place.

Each of the contour lines encloses a geographic region within which the same average annual sound level (due to aircraft) exists. These levels are expressed in terms of a measurement unit called L_{dn} (also sometimes referred to as DNL). These L_{dn} levels represent the average annual

aircraft-produced sound exposure within each contour line. Additionally, the L_{dn} metric includes a 10 decibel weighting factor which is applied to any events which occur during the nighttime hours, defined for this purpose as 10:00 pm to 7:00 am.

It should be noted that the 1998 L_{dn} contours depicted in Figure 3 may not be identical to the contours contained in the DIA Noise Abatement Office's 1998 annual noise report. The Integrated Noise Model (INM) was used to calculate the contours for the Noise Release Study, while the contours in the 1998 Annual Report were calculated by a program called ARTSMAP. INM is limited in the number of individual aircraft flight paths it can use in the calculation process and is designed primarily to predict future aircraft noise. ARTSMAP calculates noise based upon thousands of actual radar flight tracks and is not very useful for predicting future noise.

LAND USE IMPACTS 2005

The projections for 2005 indicate that less land will lie within the operating 60 L_{dn} of the airport therefore the impact of aircraft noise on land area will be reduced compared to the original projections of the Federal Environmental Impact Statement. In addition, both Stonehouse Farms and Green Estates remain outside the 60 L_{dn} contour. It should be noted, however, that the FEIS projections were based on the airport operating at full capacity with 12 runways, therefore the current contour of the Noise Overlay Zone should be maintained until full build-out of the airport.

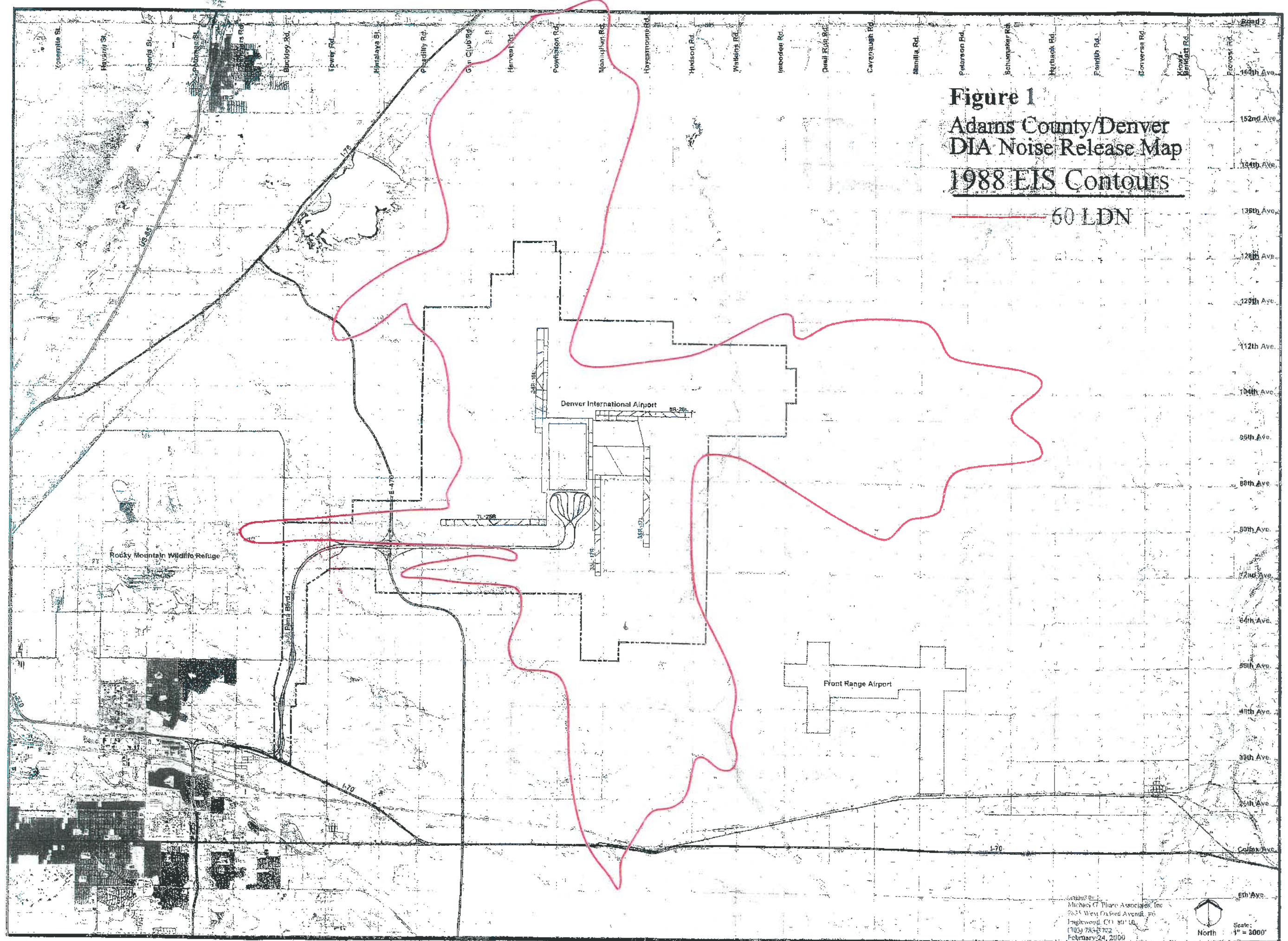


Figure 1
Adams County/Denver
DIA Noise Release Map
1988 EIS Contours

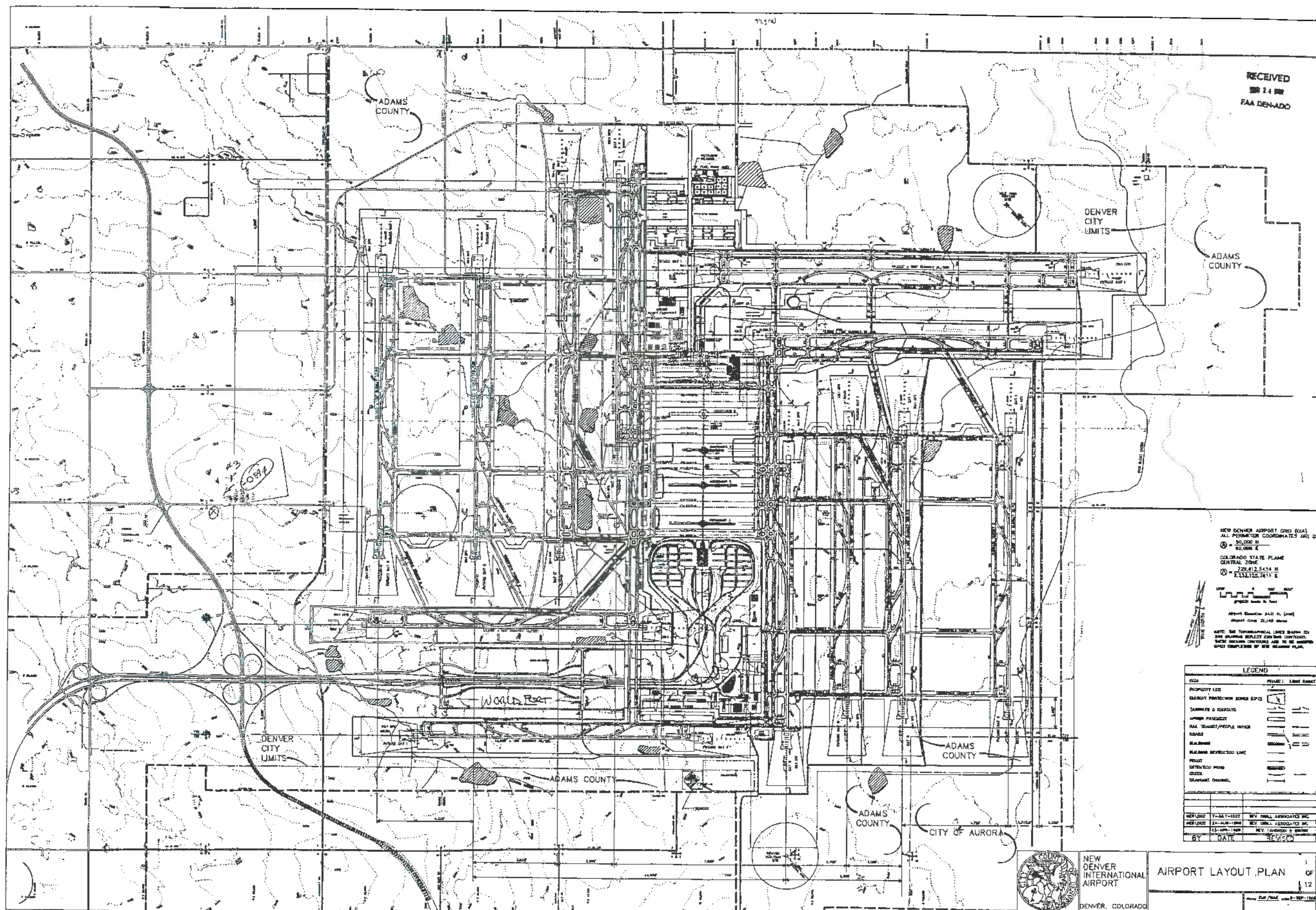
— 60 LDN

Michael G. Flare Associates, Inc.
 2635 West Oxford Avenue, #0
 Englewood, CO 80110
 (303) 784-8722
 February 24, 2000

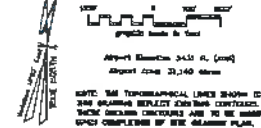


Scale:
 1" = 3000'

RECEIVED
SEP 24 1966
FAA DENVER



NEW DENVER AIRPORT GRID (GMA)
ALL PERMITS COORDINATES ARE GMA
① = 50,000 ft
② = 40,000 ft
COLORADO STATE PLANE
CENTRAL ZONE
720 812.5424 ft
③ = 233120.7415 ft



NOTE: ALL TOPOGRAPHICAL LINES SHOWN ON THIS DRAWING REFLECT 1960 BENCH MARKS. THESE BENCH MARKS SHOULD BE RECHECKED UPON COMPLETION OF THE AIRPORT PLAN.

LEGEND	
SYMBOL	DESCRIPTION
[Symbol]	PROPERTY LINE
[Symbol]	EXISTING PAVEMENT ZONES (PZ)
[Symbol]	TAXIWAYS & OBSTACLES
[Symbol]	APRON PARKING
[Symbol]	RAIL TRAVEL/PEOPLE MOVER
[Symbol]	ROADS
[Symbol]	ADAMS REVERTIBLE LANE
[Symbol]	PROTECT
[Symbol]	DETACHED ROAD
[Symbol]	CRACK
[Symbol]	SEWERAGE CHANNEL

REVISED	11-24-1966	REV. ORRILL ASSOCIATES INC.
REVISED	12-14-1966	REV. ORRILL ASSOCIATES INC.
REVISED	12-14-1966	REV. JACOBSON & BROWN
BY	DATE	REVISED



NEW DENVER INTERNATIONAL AIRPORT
DENVER, COLORADO

AIRPORT LAYOUT PLAN 1 OF 12

Figure 2

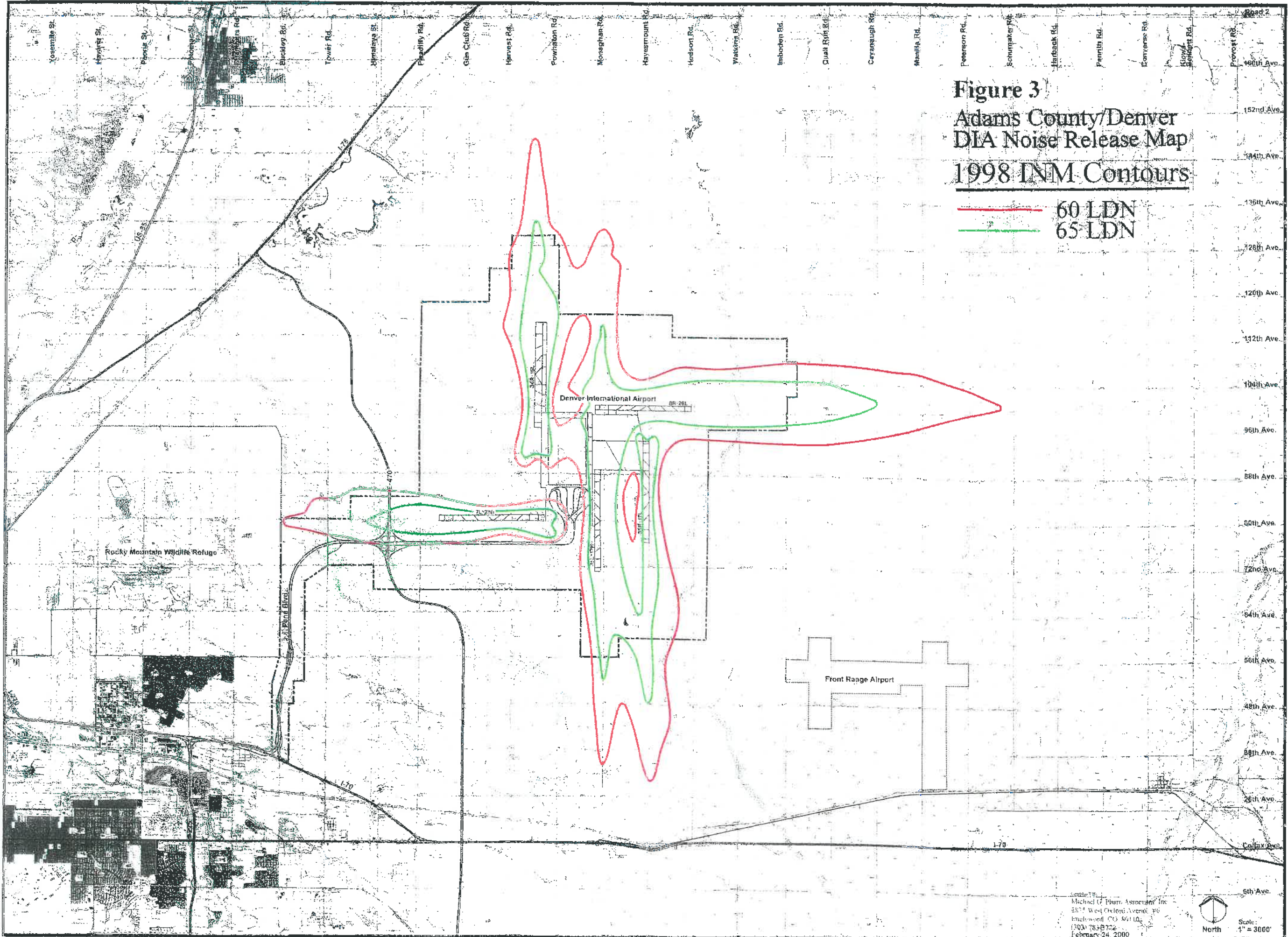


Figure 3
Adams County/Denver
DIA Noise Release Map
1998 INM Contours

— 60 LDN
 — 65 LDN

Michael G. Pharr Associates, Inc.
 2877 West Oxford Avenue, PO
 Englewood, CO 80110
 (303) 781-0722
 February 24, 2000

North
 Scale:
 1" = 3000'

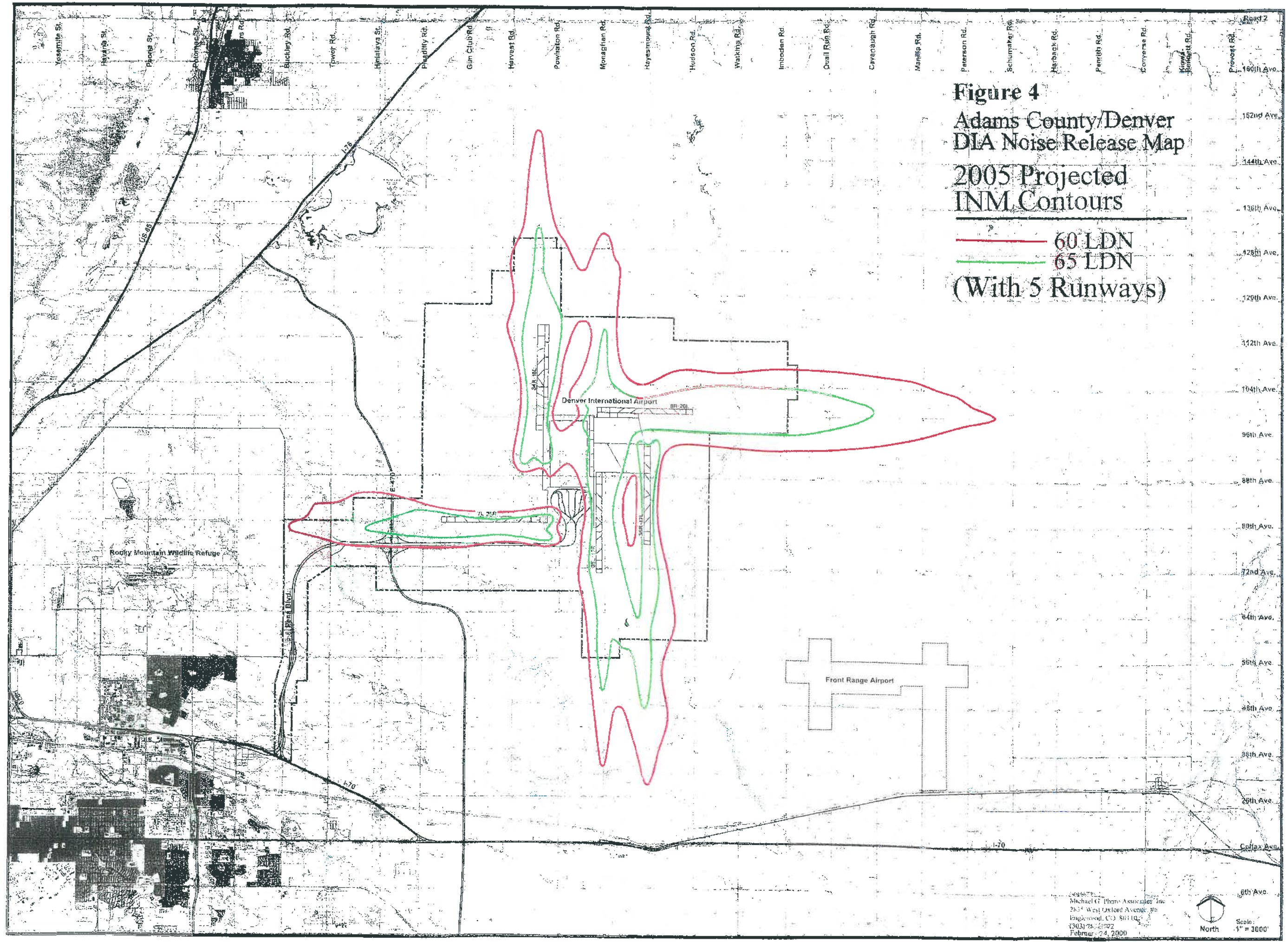


Figure 4
Adams County/Denver
DIA Noise Release Map
2005 Projected
INM Contours
 ——— 60 LDN
 ——— 65 LDN
(With 5 Runways)

Michael G. Pharo Associates, Inc.
 2835 West Oxford Avenue, #8
 Englewood, CO 80110
 (303) 781-1592
 February 24, 2000

North
 Scale:
 1" = 3000'

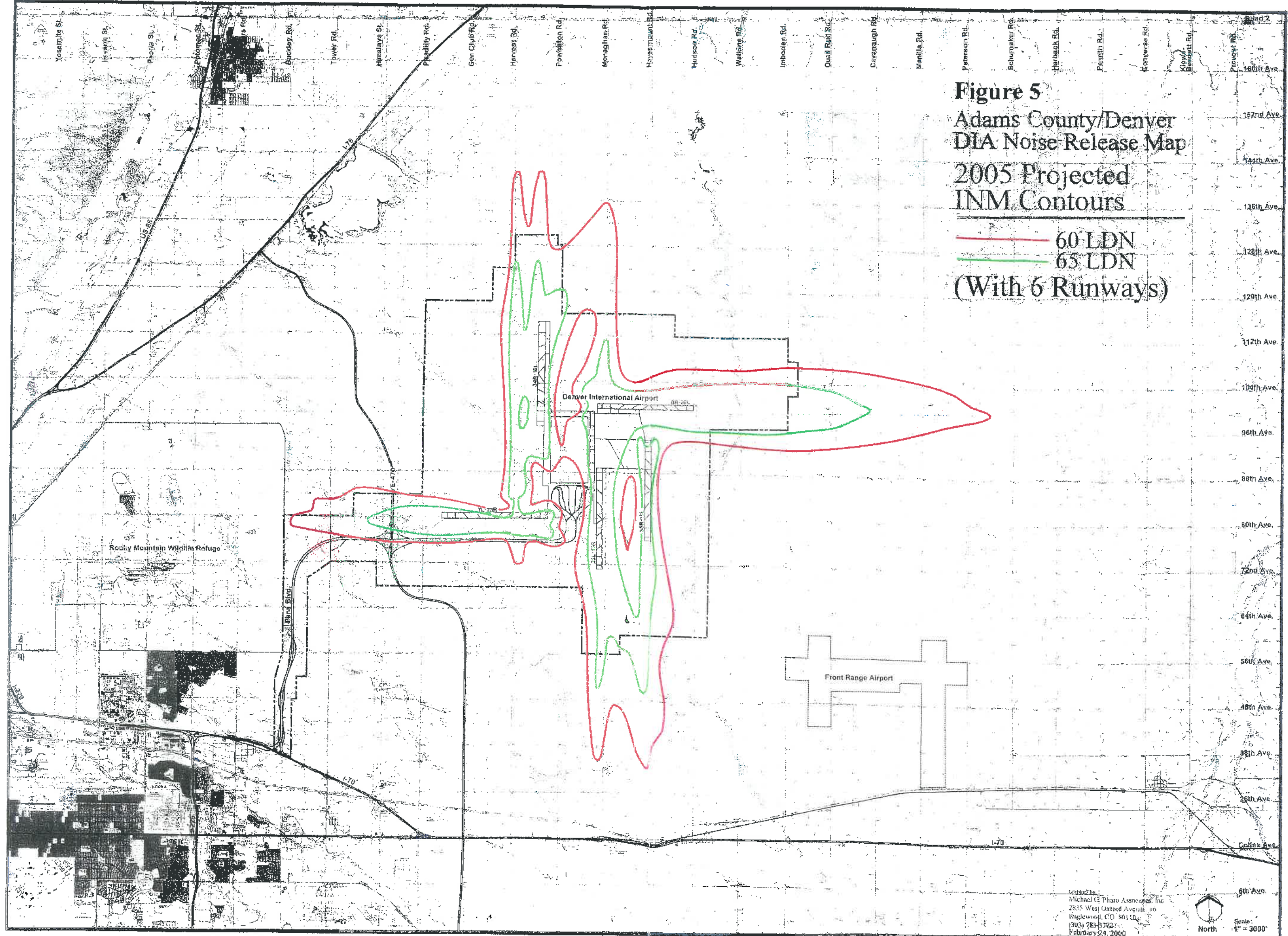
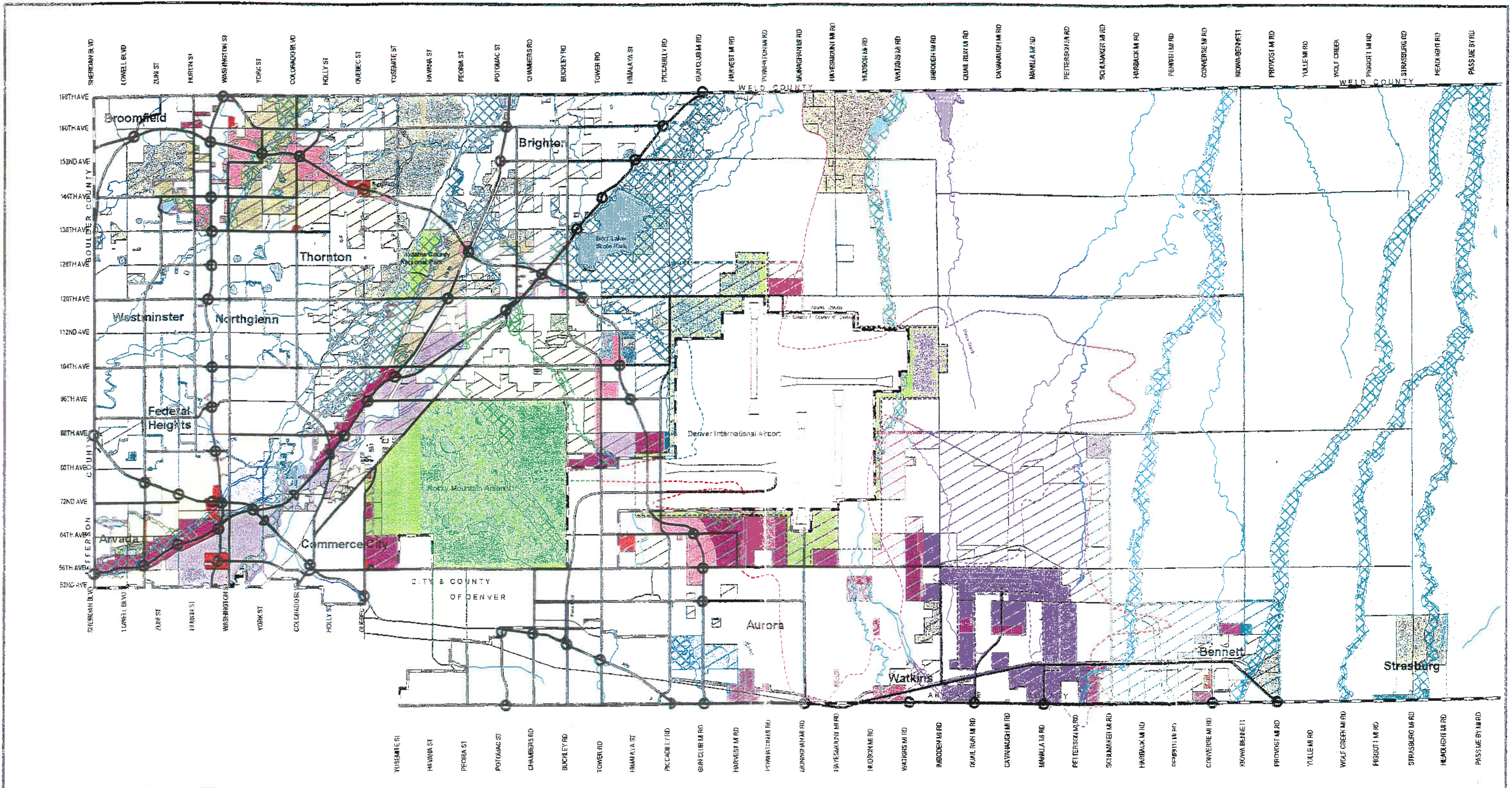


Figure 5
Adams County/Denver
DIA Noise Release Map
2005 Projected
INM Contours
 ——— 60 LDN
 ——— 65 LDN
(With 6 Runways)

Prepared by:
 Michael G. Pharo Associates, Inc.
 2835 West Oxford Avenue, #6
 Englewood, CO 80110
 (303) 785-5702
 February 24, 2000

North
 Scale:
 1" = 3000'



Adams County
Comprehensive Plan

Prepared by
Planning and Development Department



1"=15,000'

Legend

- | | | |
|--------------------|-------------------------------|------------------------------|
| Estate Residential | Agriculture | Public |
| Residential | Mixed Use / Employment | Municipal Limits |
| Activity Center | Low Intensity Mixed Use | Municipal Growth Areas |
| Commercial | Natural Resource Conservation | Interchanges |
| Industrial | Parks and Open Space | 60 Ldn Airport Noise Contour |

Future Land Use Map

January, 1999