San Diego International Airport
Part 150 Update
Noise Compatibility Program

June 2010

SAN DIEGO INTERNATIONAL AIRPORT

SPONSOR'S CERTIFICATION

The Noise Compatibility Program (NCP) for San Diego International Airport is hereby submitted in accordance with Title 14 CFR Part 150. The Program was prepared with the best available information and is certified as true and complete to the best of my knowledge and belief.

The Noise Exposure Maps (NEMs) were submitted under separate cover in August 2009 and accepted by the FAA on November 10, 2009. The NCP is submitted in two volumes – the NCP documentation and the Appendices with background and supporting material.

The NCP was prepared in consultation with local public and planning agencies whose area or any portion of whose area of jurisdiction is within the CNEL contour depicted on the NEMs and might be affected by any recommended alternative measures. The consultation also included Federal and State officials having local oversight responsibility and regular aeronautic users of the airport. The proposed NCP measures are recommended by the San Diego County Regional Airport Authority and not by a consultant or other third party.

It is further certified that adequate opportunity has been afforded interested persons to submit their views, data, and comments concerning the correctness and adequacy of the NCP and the supporting documentation.

8 June 2010
Date of Signature

Thella F. Bowens
President/CEO
San Diego County Regional Airport Authority

This page intentionally left blank

TABLE OF CONTENTS

This page intentionally left blank

LIST OF FIGURES

LIST OF TABLES

This page intentionally left blank

1 INTRODUCTION

From a national historical perspective, the emphasis on aircraft noise compatibility planning began with the passing of the Airport Safety and Noise Abatement (ASNA) Act of 1979. This Act gave the Federal Aviation Administration (FAA) the authority to issue regulations on noise compatibility planning and provide a means for Federal funding for projects dedicated to improving the noise environment around an airport. These regulations became the impetus for publishing Title 14 of the Code of Regulations (CFR) Part 150. In 1990 the passage of the Airport Noise and Capacity Act (ANCA) established a national policy on aircraft noise with an emphasis on a phase out of the noisier aircraft types. ANCA also established by regulation (14 CFR Part 161, Notice and Approval of Airport Noise and Access Restrictions) a national program for reviewing airport noise and access restrictions on the operation of stage 2 and stage 3 aircraft.

As a result, Title 14 CFR Part 150 "Airport Noise Compatibility Planning"[1] (hereafter referred to as Part 150) sets forth standards for airport operators to use in documenting noise exposure in the airport environs and establishing programs to minimize noise-related land use incompatibilities. While participation in this program by an airport is strictly voluntary, over 250 airports have participated in this program which assists in standardizing noise analysis at a national level. Participation may provide access to Federal funding for implementation of any FAA-approved measure. A formal submission to the FAA under Part 150 includes two principal elements: (1) the Noise Exposure Maps (NEMs) and (2) the Noise Compatibility Program (NCP).

This volume presents the NCP documentation for San Diego International Airport, as required by the specific provisions of Part 150 Subpart B, Section 150.23, and Appendix B. A separate volume, "San Diego International Airport Part 150 Update Noise Compatibility Program Appendices", includes the Appendices referenced in the NCP documentation.

This chapter provides a historical perspective of the Part 150 at San Diego International Airport (Section 1.1), a brief summary of the location and setting (Section 1.2), an introduction to Part 150 (Section 1.3), a summary of project organization (Section 1.4), and a completed copy of the FAA NCP review checklist (Section 1.5).

1.1 Historical Perspective

San Diego International Airport (SAN) was dedicated as the San Diego region's municipal airport on August 28, 1928. On December 18, 1962, the San Diego Unified Port District (Port District) was created when the California Legislature approved State Senate Bill 41, which was certified by the San Diego County Board of Supervisors. Senate Bill 41 also granted ownership and operation of SAN to the newly created Port District.

In 2002 the California Legislature approved State Assembly Bill (AB) 93, the "San Diego County Regional Airport Authority Act". This bill created the San Diego County Regional Airport Authority (hereinafter "Airport Authority") as a local government authority with the responsibility for the operation of and planning for SAN. On January 1, 2003, the effective date of AB 93, the ownership and operation of SAN was transferred to the Airport Authority from the Port District.

[1] 14 CFR Part 150

This transfer shifted all planning responsibilities, including the preparation of any airport noise studies, to the Airport Authority.

The Airport Authority is governed by a nine-member Board whose members are chosen to represent all geographic areas of San Diego County. Board members are appointed, and include both elected officials and private citizens.

The Port District prepared the first and only approved SAN Part 150 study in 1988. The FAA completed its review of the original NEMs and found them in compliance with Part 150 requirements on January 30, 1989[2]. The FAA approved the NCP and published a "Record of Approval" (ROA) on June 5, 1991 (Appendix B). Subsequently, there were two FAA-approved revisions to the approved NCP prior to the creation of the Airport Authority:

- Revision 1, approved in FAA Record of Approval on May 11, 1995, considered one program element to sound attenuate five schools within the 65 dB Community Noise Equivalent Level (CNEL) noise contour.
- Revision 2, approved in FAA Record of Approval on June 17, 1998, considered two program elements: one to implement a sound attenuation program for residential units[3] located between the 65 and 75 dB CNEL contours and one to modify the structure of the Airport Noise Advisory Committee such that it could evaluate the Residential Sound Attenuation Program as it progresses.

The Airport Authority decided to update its 1991 Part 150 study to seek a balance between the airport's operational needs and the noise impacts that the airport's aircraft operations have on surrounding neighborhoods. An updated set of NEMs is necessary to clarify boundaries for SAN's Residential Sound Insulation Program, while evaluating the success of in-place NCP elements and exploring new NCP options that would refine how SAN moves forward in abating and mitigating aircraft noise to the maximum extent possible.

In 2007, the San Diego County Regional Airport Authority retained a consulting team to update the Part 150, including development and documentation of updated NEMs, comprehensive evaluation of NCP alternatives, and preparation of required NCP update documentation.

1.2 Project Location and Setting

San Diego International Airport (SAN) is a single runway, large hub commercial service airport located in an urban setting on approximately 661 acres of property. In 2008, SAN enplaned approximately 9,000,000 domestic and international passengers with approximately 222,000 aircraft operations.

The airport is situated in a bowl within the city limits of San Diego, California. Rising terrain on three sides and San Diego Bay on the south provide less than a 1.5 mile buffer. A nearby military airport (Naval Air Station North Island) further limits conventional arrival/departure options.

Aircraft arrivals and departures result in noise impacts to surrounding communities quantified by the Airport Authority's flight tracking and noise monitoring equipment. With 24 remote noise monitors strategically placed around the airport, SAN is the most noise-instrumented single-runway airport in

[2] Letter from FAA to Port District Director, January 30, 1989 (Appendix F in NEMs)

[3] Residential units include both single-family homes and individual living quarters in multi-family complexes.

the nation. The consequence of single runway operations at an airport with significant airspace management restrictions acts to project aircraft noise into the same communities day in and day out.

The San Diego International Airport Noise Impact Area, as defined by the CNEL 65 dB contour for the existing conditions (2009) NEM, contains approximately 1.03 square miles of residential real estate, or roughly 10,704 single and multi-family units and 25,904 individuals.

1.3 Part 150 Overview

14 CFR Part 150 sets forth a process for airport proprietors to follow in developing and obtaining FAA approval of programs to reduce or eliminate incompatibilities between aircraft noise and surrounding land uses. Part 150 prescribes specific standards and systems for:

- Measuring noise
- Estimating cumulative noise exposure
- Describing noise exposure (including instantaneous, single event and cumulative levels)
- Coordinating NCP development with local land use officials and other interested parties
- Documenting the analytical process and development of the compatibility program
- Submitting documentation to the FAA
- FAA and public review processes
- FAA approval or disapproval of the submission

As a result of applying these specific standards and systems, Part 150 includes two formal submissions to the FAA; the NEMs and the NCP.

1.3.1 Noise Exposure Maps

The NEMs describe the airport layout and operation, aircraft-related noise exposure, land uses in the airport environs, and the resulting noise/land use compatibility situation. Aircraft noise exposure is expressed in decibels (dB) in terms of the CNEL. Contours of equal CNEL values, similar to terrain contours of equal elevation, form the basis for evaluating the aircraft noise exposure to the community and noise compatibility. The NEMs must address two time frames: (1) data representing the year of submission (the "existing conditions") and (2) the fifth calendar year or later following the year of submission (the "forecast conditions"). The NEMs also address how the forecast operations will affect the compatibility of the land uses depicted.

The NEMs documentation was initially submitted to the FAA in April 2009. FAA comments were addressed and the documentation resubmitted to the FAA in August 2009. The NEMs[4] documentation were subsequently evaluated and accepted by the FAA as noted in the FAA "Acceptance of Noise Exposure Maps" letter of November 10, 2009 (Appendix C).

1.3.2 Noise Compatibility Program

The NCP provides a planning process for evaluating aircraft noise impacts and the costs and benefits of alternative noise abatement measures. It also engages the local planning authorities to review the policies toward managing the incompatible land uses now and in the future around the airport.

[4] San Diego County Regional Airport Authority, "San Diego International Airport, Part 150 Update, Noise Exposure Maps", August 2009.

Involving the public and local agencies, the NCP is essentially the total process used by the airport proprietor to propose a list of the actions to undertake to minimize existing and future incompatible noise/land uses. These actions may involve

- Changes to the physical layout of the airport
- Changes to airport and airspace use
- Changes to aircraft operations
- Review of land use administration practices for preventing incompatible uses or mitigating noise
- Review of noise management program practices

There are certain measures that must be considered for applicability and feasibility:

- Acquisition of land which includes overflight, easement, and development rights to ensure property use is compatible with airport operations
- Construction of barriers or shielding by sound insulating incompatible buildings
- Implementation of a preferential runway use
- Utilization of flight procedures to reduce noise from the source (aircraft) through actions such as flight track changes or aircraft performance profile adjustments
- Restriction of use of the airport by specific aircraft types, nighttime operations, etc.

The NCP documentation must recount the development of the program, including a description of all measures considered, the reasons that individual measures were accepted or rejected, how measures will be implemented and funded, and the predicted effectiveness of individual measures and the overall program. Public participation is a vital part of developing a program that will promote understanding, awareness, and an opportunity for involving the perspectives of the different jurisdictions and their constituents on the roles of the airport and the community with respect to aircraft noise compatibility. During this update, the Airport Authority maximized the opportunity for public stakeholder input and information dissemination. Details of this effort are discussed in Section 5.

Upon completion of the analyses and coordination, the NCP is submitted to the FAA for review and approval. The FAA reviews the NCP and approves or disapproves each recommended NCP measure on its merits and adherence to the national aviation policy. Upon receipt of the FAA's Record of Approval (ROA), the Airport Authority will begin implementation.

1.4 Roles and Responsibilities

Several groups had major roles in the development of the NCP, including the San Diego County Regional Airport Authority, the SAN Part 150 Noise Technical Advisory Group (NTAG), and the FAA.

1.4.1 San Diego County Regional Airport Authority

As the "airport operator", the San Diego County Regional Airport Authority has authority over the Part 150 update, including ultimate responsibility for determining the elements to include in the NCP when it is submitted to the FAA for review. The Airport Authority is responsible for implementation of adopted measures.

The Airport Authority retained a team of consultants to assist with the technical work required to fulfill Part 150 analysis and documentation requirements. Appendix D describes the composition of the consulting team and the general assignment of responsibilities among its members.

1.4.2 Part 150 Noise Technical Advisory Group

The Airport Authority established the Part 150 NTAG to ensure that a wide range of stakeholders is given official representation in the study process. The NTAG is a key element of the comprehensive public involvement program conducted over the course of the Part 150 update, as described in the following section and Section 5.1.

The NTAG was formed to provide varying perspectives and inputs to the NEMs and NCP development process. As a group, the primary emphases are creating an atmosphere of understanding, awareness, and working together to derive solutions to noise compatibility problems. Through an invitation from the Airport Authority and a voluntary participation process, the NTAG brings together representatives from a broad spectrum of entities with interest in the Part 150 update process and its products. These entities include: representatives of the affected communities in the airport's noise-impacted environs; government agencies with aviation and land use responsibilities; and private sector interests, particularly in the aviation industry.

The NTAG members are responsible for representing their constituents throughout the study process, to include commenting on the adequacy and accuracy of collected data, simplifying assumptions and technical analyses, and reporting back to their constituents. The NTAG also serves as a forum for the varied interest groups to discuss complex issues and share their differing perspectives on aircraft noise issues.

Section 5.1 discusses the NTAG process during the development of the SAN NCP.

1.4.3 Federal Aviation Administration

For the NEMs update, FAA responsibility includes a review and acceptance of the submission to determine the technical work, consultation and documentation comply with Part 150 requirements. The FAA must also approve non-standard modeling requests.

For an NCP update, the FAA has ultimate review authority over the NCP submitted under Part 150. The FAA's review of the NCP encompasses the details of technical documentation as well as broader issues of safety and constitutionality of recommended noise abatement alternatives. The final role of the FAA is to approve or disapprove (implementation for the purposes of Part 150) each measure proposed in the NCP.

FAA involvement includes participation by staff from at least three groups in the agency: (1) The Air Traffic Organization (ATO), (2) the Airports District Office (ADO), and (3) the Region.

- The Air Traffic Organization (ATO) includes the Air Traffic Controllers and support staff. **SAN's Air Traffic Control Tower** (ATCT) provides significant input in several areas, including: operational data from their files, judgment regarding safety and capacity effects of alternative noise abatement measures, and input on implementation requirements. The **Southern California TRACON** (Terminal Radar Approach Control) also provides input on air traffic issues to the extent that they might affect operational procedures and airspace issues at SAN and other affected airports.
- The FAA's **Los Angeles Airports District Office** (ADO) is responsible for determining if the NCP satisfies all requirements.
- The FAA's **Western Pacific Region** Airport Division Manager is responsible for final review of the NCP submission for adequacy in satisfying technical and legal requirements.

Prior to acceptance of the NEMs and approval of the NCP, the submitted documents go through an FAA Line-of-Business review, which includes Air Traffic, Flight Standards, Legal, Special Programs, Planning & Requirements, Flight Procedures and Regional Review.

1.5 Noise / Land Use Compatibility Guidelines

Part 150 provides the FAA's recommended guidelines for noise-land use compatibility evaluation. Table 1 of this document reproduces the FAA guidelines. Part 150 permits airports and local land use control jurisdictions to adopt land use compatibility criteria that differ from the guidelines reproduced in Table 1.[5]

These guidelines represent a compilation of the results of extensive scientific research into noise-related activity interference and attitudinal response. However, the Airport Authority recognizes the highly subjective nature of response to noise, and that special circumstances can affect individuals' tolerance. For example, a high non-aircraft background noise level can reduce the significance of aircraft noise, such as in areas constantly exposed to relatively high levels of traffic noise. Alternatively, residents of areas with unusually low background levels may find relatively low levels of aircraft noise annoying.

Community response may also be affected by expectation and experience. People may become accustomed to a level of exposure that guidelines indicate may be unacceptable, and changes in exposure may generate response that is far greater than that which the guidelines might suggest.

The cumulative nature of CNEL provides that the same level of noise exposure can be achieved in an essentially infinite number of ways. For example, a reduction in a small number of relatively noisy operations may be counterbalanced by a much greater increase in relatively quiet flights, with no net change in CNEL. Residents of the area may become annoyed by the increased frequency of operations, despite the maintenance of the noise status quo.

The Part 150 guidelines can be applied to the CNEL contours included in the NEMs to identify the potential types, degrees and locations of incompatibility. Measurement of the land areas and populations involved can provide a quantitative measure of impact that allows a comparison of at least the gross effects of existing or forecast operations.

Part 150 guidelines indicate that all land uses are compatible with aircraft noise at exposure levels below 65 CNEL. This limit is supported in a formal way by standards adopted by the U. S. Department of Housing and Urban Development (HUD). The HUD standards address whether sites are eligible for Federal funding support. These standards, set forth in Title 24 of the Code of Federal Regulations Part 51, define areas with DNL[6] exposure not exceeding 65 dB as acceptable for funding. Areas exposed to noise levels between 65 and 75 dB DNL are "normally unacceptable," and require special abatement measures and review. Those at 75 dB DNL and above are "unacceptable" except under very limited circumstances.

[5] Part 150 Appendix A, Table 1.

[6] DNL is the Day-Night Average Sound Level, which is equivalent to CNEL with the exception of not assessing a weighting factor for evening operations. The FAA accepts CNEL in place of DNL for studies conducted within California since the State has adopted the CNEL as the standard for assessing cumulative community noise exposure. DNL and CNEL are therefore interchangeable in the literature for use in California. For consistency in the NCP documentation, CNEL replaced DNL in Table 1.

Table 1 14 CFR Part 150 "Land Use Compatibility* with Yearly Day-Night Average Sound Levels"

Source: 14 CFR Part 150, Appendix A, Table 1

	Yearly Day-Night Average Sound Level, DNL, [or Community Noise Equivalent Level, CNEL], in dB (Key and notes on following page)					
Land Use	<65	65-70	70-75	75-80	80-85	>85
Residential Use						
Residential other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade--general	Y	Y	Y(2)	Y(3)	Y(4)	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

*****The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table 1

SLUCM: Standard Land Use Coding Manual.

Y (Yes): Land use and related structures compatible without restrictions.

N (No): Land use and related structures are not compatible and should be prohibited.

NLR: Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35: Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table 1

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often started as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30
(8) Residential buildings not permitted.

1.6 FAA Noise Compatibility Program Checklist

The FAA has developed checklists for their internal use in reviewing NEMs and NCP submissions. The FAA prefers that the Part 150 documentation include copies of the checklists. Table 2 presents a completed copy of the NCP checklist for the SAN NCP.

Table 2 Part 150 Noise Compatibility Program Checklist

Source: FAA/APP, Washington, DC, March 1989; updated 12/2007 and 2/2008

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST-PART I			
Airport Name: San Diego International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
I. SUBMITTING AND IDENTIFYING THE NCP:			
A. Submission is properly identified:			
1. 14 C.F.R. Part 150 NCP?	XX		Section 1, page 1
2. NEMs and NCP together?		XX	NEMs submitted in August 2009
3. Program revision? (To what extent has it been revised?)	XX		Section 1
B. Airport and Airport Sponsor's name are identified?	XX		Certification page iii
C. NCP is transmitted by airport sponsor's cover letter?	XX		Cover Letter To be added
II. CONSULTATION (including public participation): [150.23]			
A. Documentation includes narrative of public participation and consultation process?	XX		Section 5 and Appendices
B. Identification of consulted parties:	XX		
1. All parties in 150.23© consulted?	XX		Section 5, page 80
2. Public and planning agencies identified?	XX		Section 5, page 80
3. Agencies in 2., above, correspond to those affected by the NEM noise contours?	XX		Section 5, page 80
C. Satisfies 150.23(d) requirements by:			
1. Documentation shows active and direct participation of parties in B., above?	XX		Section 5 and Appendices
2. Active and direct participation of general public and opportunity to submit their views, data, and comments on the formulation and adequacy of the NCP?	XX		Section 5 and Appendices
3. Participation was prior to and during development of NCP and prior to submittal to FAA?	XX		Section 5 and Appendices
4. Indicates adequate opportunity afforded to all consulted parties to submit views, data, etc.?	XX		Section 5 and Appendices
D. Evidence is included there was notice and opportunity for a public hearing on the final NCP?	XX		Section 5 and Appendices KK, LL, MM, SS, TT
E. Documentation of comments:			
1. Includes summary of public hearing comments, if hearing was held?	XX		Appendices QQ, RR, VV, and WW
2. Includes copy of all written material submitted to operator?	XX		Appendices Y, RR, and WW
3. Includes operator's response/disposition of written and verbal comments?	XX		Appendices QQ, RR, VV, and WW
F. Is there written evidence from the appropriate office within the FAA that the sponsor received informal agreement to carry out proposed flight procedures?			N/A

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST-PART I			
Airport Name: San Diego International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
III. NOISE EXPOSURE MAPS: [150.23, B150.3; 150.35(f)] (This section of the checklist is not a substitute for the Noise Exposure Map checklist. It deals with maps in the context of the Noise Compatibility Program submission.)			
A. Inclusion of NEMs and supporting documentation:			
1. Map documentation either included or incorporated by reference?	XX		Section 2 Figures 1 & 2
2. Maps previously found in compliance by FAA?	XX		Appendix C November 10, 2009
3. FAA's compliance determination still valid?			
(a) Existing condition NEM represents conditions at the airport at the time of submittal of the NCP for FAA approval?	XX		Section 2
(b) Forecast condition NEM represents conditions at the airport at least 5 years into the future from the date of submittal of the NCP to the FAA for approval?	XX		Section 2
(c) Sponsor letter confirming elements (a) and (b), above, if date of submission is either different than the year of submittal of the previously approved NEMs or over 12 months from the date shown on the face of the NEM?	XX		Section 2
(d) If (a) through (c) cannot be validated, the NEMs must be redone and resubmitted as per 150.21.			
4. Does 180-day period have to wait for map compliance finding?		XX	NEMs accepted by FAA on November 10, 2009
B. Revised NEMs submitted with program: (Review using NEM checklist if map revisions included in NCP submittal. Report the applicable findings in the spaces below after a full review using the NEM checklist and narrative.)			
1. Revised NEMs included with program?		XX	NEMs accepted by FAA on November 10, 2009
2. Has airport sponsor requested in writing that FAA make a determination on the NEM(s), showing NCP measures in place, when NCP approval is made?		XX	
C. If program analysis uses noise modeling:			
1. INM, HNM, or FAA-approved equivalent?	XX		INM7.0a
2. Monitoring in accordance with A150.5?			N/A
D. One existing condition and one forecast-year map clearly identified as the official NEMs?	XX		Figure 1, Existing Conditions & Figure 2, Forecast Conditions
IV. CONSIDERATION OF ALTERNATIVES: [b150.7, 150.23(E)(2)]			
A. At a minimum, were the alternatives below considered, or if they were rejected was the reason for rejection reasonable and based on accurate technical information and local circumstances?			
1. Land acquisition and interests therein, including air rights, easements, and developmental rights?	XX		Section 4
2. Barriers, acoustical shielding, public building soundproofing	XX		LU-1, Section 3.2.4 Public building soundproofing
3. Preferential runway system	XX		Section 4.12
4. Voluntary flight procedures	XX		NA-1 Section 3.2.1, NA-2 Section 3.2.2, NA-3 Section3.2.3
5. Restrictions described in B150.7 (taking into account Part 161 requirements)			N/A
6. Other actions with beneficial impact not listed in the regulation	XX		Sections 3.2.1, 3.2.2, 3.2.3 NA-2, NA-3, LU-3

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST-PART I			
Airport Name: San Diego International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
7. Other FAA recommendations (see D, below)			N/A
B. Responsible implementing authority identified for each considered alternative?	XX		Section 3.2
C. Analysis of alternative measures:			
1. Measures clearly described?	XX		Section 3.2
2. Measures adequately analyzed?	XX		Section 3.2
3. Adequate reasoning for rejecting alternatives?	XX		Section 4
D. Other actions recommended by the FAA: As the FAA staff person familiar with the local airport circumstances, determine whether other actions should be added? (list separately, or on back, actions and describe discussions with airport sponsor to have them included prior to the start of the 180-day cycle. New measures recommended by the airport sponsor must meet applicable public participation and consultation with officials before they can be submitted to the FAA for action. See E.., below.)			N/A
V. ALTERNATIVES RECOMMENDED FOR IMPLEMENTATION: [150.23(e), B150.7©; 150.35(b), B150.5]			
A. Document clearly indicates:			
1. Alternatives that are recommended for implementation?	XX		Section 3.2
2. Final recommendations are airport sponsor's, not those of consultant or third party?	XX		Certification page iii
B. Do all program recommendations:			
1. Relate directly or indirectly to reduction of noise and noncompatible land uses? (Note: All program recommendations, regardless of whether previously approved by the FAA in an earlier Part 150 study, must demonstrate a noise benefit if the airport sponsor wants FAA to consider the measure for approval in a program update. See E., below.)	XX		Section 3.2
2. Contain description of each measure's relative contribution to overall effectiveness of the program?	XX		Section 3.2
3. Noise/land use benefits quantified to extent possible to be quantified? (Note: some program management measures cannot be readily quantified and should be described in other terms to show their implementation contributes to overall effectiveness of the program.)	XX		Section 3.2
4. Does each alternative include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?	XX		Section 3.2
5. Effects based on relevant and reasonable expressed assumptions?	XX		Section 3.2
6. Does the document have adequate supporting data that the measure contributes to noise/land use compatibility?	XX		Section 3.2
C. Analysis appears to support program standards set forth in 150.35(b) and B150.5?	XX		Section 3.2

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST-PART I			
Airport Name: San Diego International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
D. When use restrictions are recommended for approval by the FAA:			
1. Does (or could) the restriction affect Stage 2 or Stage 3 aircraft operations (regardless of whether they presently operate at the airport)? (If the restriction affects Stage 2 helicopters, Part 161 also applies.)			N/A
2. If the answer to D.1 is yes, has the airport sponsor completed the Part 161 process and received FAA Part 161 approval for a restriction affecting Stage 3 aircraft? Is the FAA's approval documented? For restrictions affecting only Stage 2 aircraft, has the airport sponsor successfully completed the Stage 2 analysis and consultation process required by Part 161 and met the regulatory requirements, and is there evidenced by letter from FAA stating this fact?			N/A
3. Are non-restrictive alternatives with potentially significant noise/compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions among all alternatives can be made?			N/A
4. Did the FAA regional or ADO reviewer coordinate the use restriction with APP-400 prior to making determination on start of 180-days?			N/A
E. Do the following also meet Part 150 analytical standards?			
1. Recommendations that continue existing practices and that are submitted for FAA re-approval? (Note: An airport sponsor does not have to request FAA re-approval if noise compatibility measures are in place from previously approved Part 150 studies. If the airport has implemented the measures as approved in the previous NCP, the measures may be reported and modeled as baseline conditions at the airport.)			N/A
2. New recommendations or changes proposed at the end of the Part 150 process?			N/A
F. Documentation indicates how recommendations may change previously adopted noise compatibility plans, programs, or measures?	XX		Section 3.2
G. Documentation also:			
1. Identifies agencies that are responsible for implementing each recommendation?	XX		Section 3.2
2. Indicates whether those agencies have agreed to implement?	XX		Section 3.2
3. Indicates essential government actions necessary to implement recommendations?	XX		Section 3.2
H. Timeframe:			
1. Includes agreed-upon schedule to implement alternatives?	XX		Section 3.2
2. Indicates period covered by the program?	XX		Section 3.2
I. Funding/Costs:			
1. Includes costs to implement alternatives?	XX		Section 3.2
2. Includes anticipated funding sources?	XX		Section 3.2

14 CFR PART 150 NOISE COMPATIBILITY PROGRAM CHECKLIST-PART I			
Airport Name: San Diego International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
VI. PROGRAM REVISION: [150.23(E)(9)**]** Supporting documentation includes provision for revision? (Note: Revision should occur when it is likely a change has taken place at the airport that will cause a significant increase or decrease in the DNL noise contour of 1.5 dB or greater over noncompatible land uses. See §150.21(d))	XX		PM-9 Section 3.2.18 and PM-10 Section 3.2.19

.

This page intentionally left blank

2 ACCEPTED NOISE EXPOSURE MAPS

As discussed in detail in the 2009 NEMs, the fundamental noise elements of NEMs are Community Noise Equivalent Level (CNEL) contours for existing and five-year forecast conditions, presented over base maps depicting the airport layout, local land use control jurisdictions, major land use categories, discrete noise-sensitive "receptors", and other information required by Part 150. Calendar year 2007 operations were to be used to form the basis for the representative operations of the existing condition for submittal in 2008. Due to the extended time in preparing documentation and obtaining the required approval for user-specified noise model inputs, the year of submission was 2009. The 12 months of operational data for calendar year 2008 were reviewed and compared to the original 2007 baseline in accordance with 14 CFR Part 150, Subpart B, §150.21. As documented in the NEMs, the operations and general aircraft fleet mix for 2007 were determined to be representative of the existing condition operations for the 2009 NEMs submittal. The Airport Authority submitted to the FAA in August 2009 the NEMs that contain CNEL contours for 2009 and 2014.

The complete NEMs document and copies of the FAA's evaluation are available for examination at the following locations:

- Federal Aviation Administration
  Los Angeles Airports District Office
  Western-Pacific Region Airports Division
  15000 Aviation Boulevard, Room 3000
  Lawndale, CA 90261

- San Diego County Regional Airport Authority
  Airport Noise Mitigation Department
  3rd Floor, Commuter Terminal
  3225 N. Harbor Dr.
  San Diego, CA 92101

This Chapter provides a summary of the 2009 NEMs document for reference purposes.

The development of NEMs required the use of an FAA approved methodology or computer program, which for this project was Version 7.0a of the Integrated Noise Model (INM). Measurements are used for comparison purposes and not to determine the aircraft noise exposure as documented with the CNEL contours.

The fundamental noise elements of NEMs are CNEL contours for existing and five-year forecast conditions: i.e., 2009 and 2014 in this update.

2.1 FAA-Accepted 2009 and 2014 Noise Exposure Maps

Figure 1 presents the existing condition NEM for 2009 operations. Figure 2 presents the forecast condition NEM for 2014 operations with the existing airport layout and the existing (1988) NCP. These figures reproduce Figures 2 and 3, respectively, from the August 2009 NEMs volume, which the FAA found in compliance with Part 150 requirements on November 10, 2009. They are included in this submission for reference purposes.

The figures present noise contours for 2009 and 2014 on a map depicting land uses in generalized Part 150 land use categories. The land uses are color-shaded on a parcel-by-parcel basis within the contours.

Consistent with Part 150 requirements, the figures also depict airport, municipal, and county boundaries, discrete noise-sensitive receptors (e.g., educational, hospitals, and houses of worship), and property.

As discussed in Section 2.4 the Airport Authority has used FAA's compatibility guidelines (as set forth in Part 150) for determination of land use compatibility in the development of NEMs. Table 1 of this document reproduces those guidelines. In addition, Section 2.4 identifies the potentially non-compatible land uses within the NEMs, based on those guidelines.

2.2 Noise Exposure Maps Dates

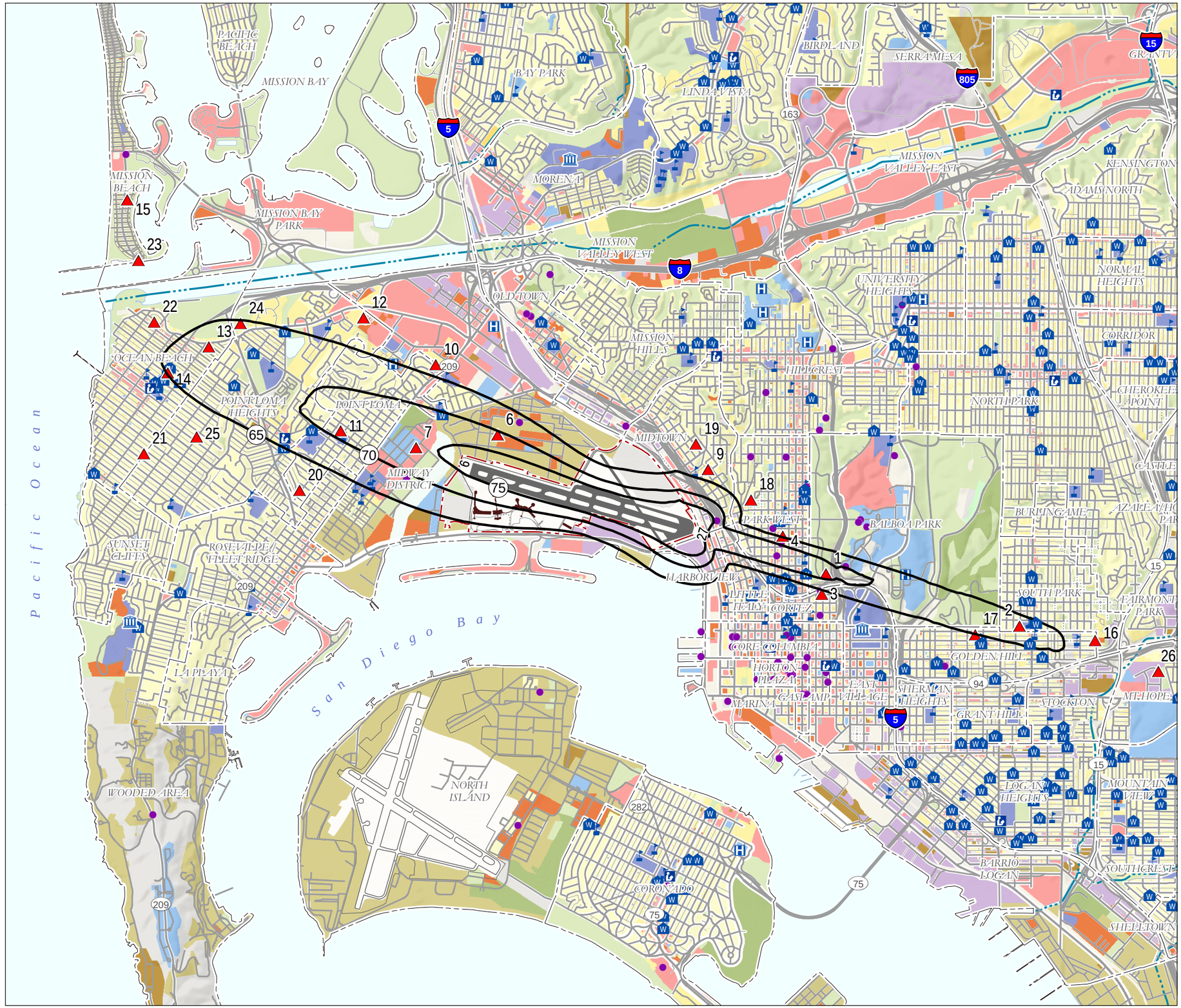
The 2009 existing condition NEM contained in Figure 1 of this volume was found in compliance with Part 150 requirements. As discussed in Section 2.1, the approved NEM accurately represents existing conditions as of the date of submission of this document. As also discussed in those sections, the forecast condition NEM presented as Figure 2 also accurately represents forecast conditions with the existing airport layout and existing NCP. The total number of aircraft operations for these two study years were 229,486 in 2009 and 251,360 forecast for 2014.

The 2009 and 2014 NEMs will continue to be used as accepted. However, consistent with Part 150 requirements, the Airport Authority will submit revised NEMs as necessary any time a change occurs in airport operations that would create any "substantial, new non-compatible land use"[7].

2.3 Noise Exposure Maps Public Consultation

As outlined in Part 150, a period of public consultation on the proposed NEMs is required. A full list of the meetings, meeting participants and minutes is included in the NEMs document.

[7] 14CFR Part 150, §150.21(d)



H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_1_Existing_2009_NEM.mxd

SAN DIEGO INTERNATIONAL AIRPORT

14 CFR Part 150 Update

Existing Condition (2009) Noise Exposure Map

Figure 1

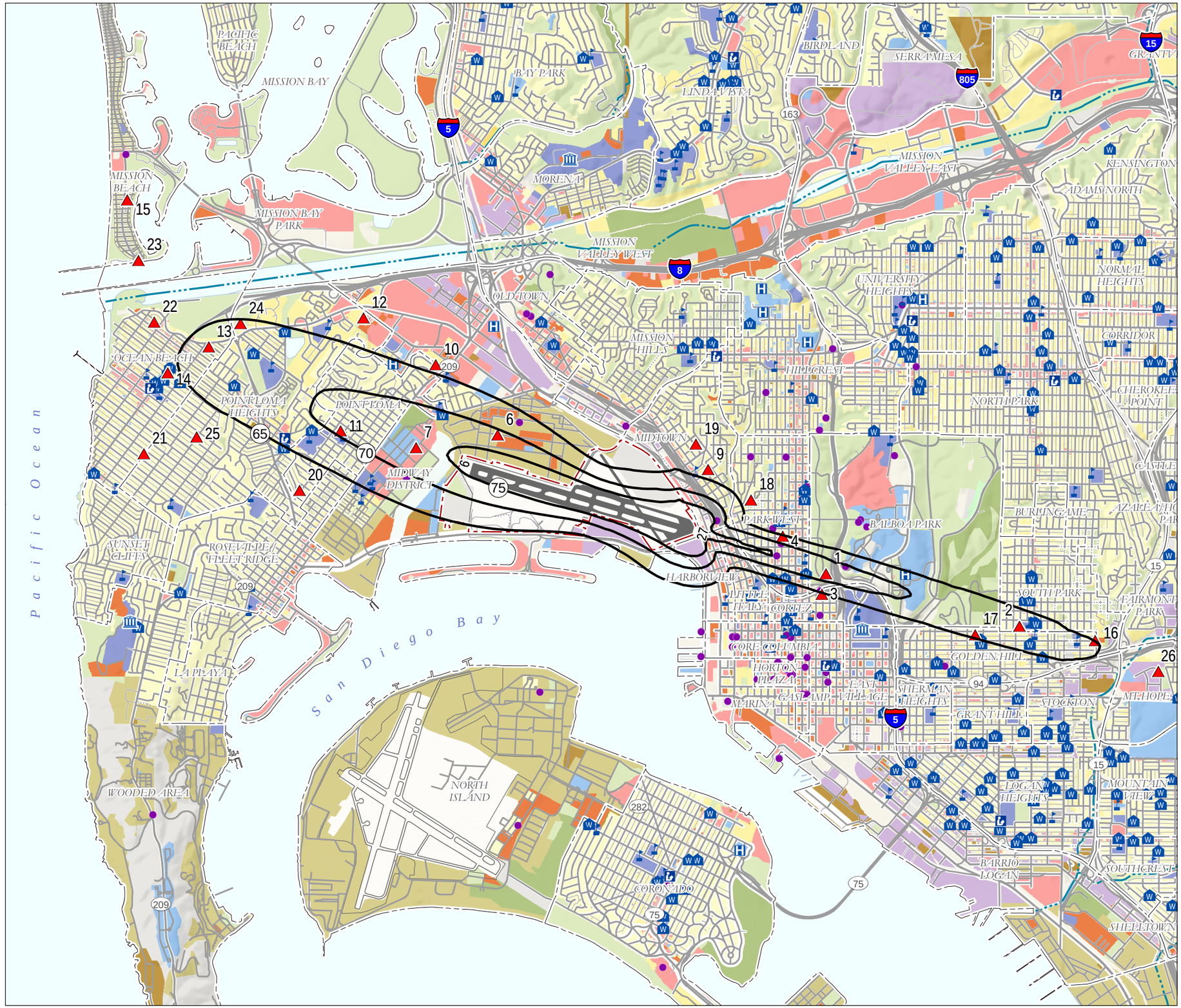
- CNEL Contours
- RMT Site Location
- Airport Property
- Roads
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- SAN Airport Runways
- River / Stream
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- National Register of Historic Places
- Library
- College / University

Accepted by FAA, 10 November 2009

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.



H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_2_Forecast_2014_NEM.mxd

SAN DIEGO INTERNATIONAL AIRPORT

14 CFR Part 150 Update

Forecast Condition (2014) Noise Exposure Map

Figure 2

- CNEL Contours
- RMT Site Location
- Airport Property
- Roads
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- SAN Airport Runways
- River / Stream
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Library
- Schools
- College / University
- Place of Worship
- National Register of Historic Places

Accepted by FAA, 10 November 2009

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

2.4 Land Uses with the Noise Exposure Maps

The objective of airport noise compatibility planning is to promote the compatible growth and development of airports with their surrounding communities. The Airport Authority land use guidelines adopted in its 1992 Comprehensive Land Use Plan (CLUP), now known as the Airport Land Use Compatibility Plan "ALUCP", are similar to the FAA's land-use compatibility guidelines, as set forth in 14 CFR Part 150, Appendix A, Table 1, which is reproduced in Section 1.5 of this document. As the table indicates, the FAA considers all land uses to be compatible with aircraft-related CNEL below 65 dB. The Airport Authority recommends sound attenuation to show that the interior levels of new residential units do not exceed 45 dB using the CNEL metric. Residential, hotels, churches, retirement homes, intermediate care facilities, hospitals, nursing homes, schools, preschools, and libraries are subject to the same criteria.

The NEMs base map depicts existing land uses, according to major categories identified in the Part 150 guidelines, including residential, commercial, military, industrial, and agriculture/parks. The "industrial" classification includes warehouse, light manufacturing, assembly and heavy commercial uses. Where industrial, office, and other commercial uses are intermixed, the figure indicates the most common use. With the exception of some development infill, it is expected that the land uses within the 65 CNEL will not change within the projected 5-year forecast.

As mentioned previously, Figure 1 and Figure 2 present the FAA-accepted NEMs for 2009 and 2014, respectively. The 2009 and 2014 CNEL contours are generally the same size and shape. However, the 2014 forecast anticipates increases in operations, and changes in aircraft types will cause changes to the extents of the contours to the east and west of SAN:

- increase slightly east of the airport near Runway 27 arrival flight paths due to increase in activity levels
- decrease slightly west of the airport near Runway 27 departure flight paths due to changes in aircraft fleet mix (fewer of the noisier aircraft are expected to be in operation in 2014)

There are currently 37 noise-sensitive public facilities and historic properties within the 65 CNEL associated with SAN's 2009 NEM; the 2014 forecast NEM also identifies 37 noise-sensitive public facilities and historic properties. The two lists are essentially the same, except as follows:

- Places within the 2009 NEM 65 CNEL contour but not within the 2014 NEM 65 CNEL contour (four places of worship – Bethany Lutheran, Elim Assembly of God, Holy Trinity Episcopal, and Point Loma Community Presbyterian).
- Places within the 2014 NEM 65 CNEL contour but not within the 2009 NEM 65 CNEL contour (one school - Golden Hill Elementary, two places of worship – Korean United Presbyterian Church of San Diego and Chapel of Happiness, and one historic place – San Diego Civic Center [County Admin]).

The number of non-residential noise sensitive receptors and the respective contour intervals are provided in Table 3 with a listing of each identified receptor in Table 4.

Table 3 Number of Non-Residential Sensitive Receptors within 2009 and 2014 CNEL Contours
Source: SDCRAA, HMMH

Noise Level, CNEL	2009				2014			
	Educational Facilities	Places of Worship	National Register of Historic Places	Other	Educational Facilities	Places of Worship	National Register of Historic Places	Other
65-70	11	12	4	3	13	10	4	3
70-75	2	2	2	1	1	2	3	1
75+	0	0	0	0	0	0	0	0
Total	13	14	6	4	14	12	7	4
Note: "Other" includes hospitals, libraries and other noise sensitive receptors.								

Table 4 Listing of Non-Residential Sensitive Receptors within 2009 and 2014 CNEL Contours
Source: SDCRAA, HMMH

Receptor	CNEL Contour Interval			
	2009		2014	
	65-70	70-75	65-70	70-75
Hospitals				
Sharp Cabrillo Hospital	X		X	
Naval Hospital Center San Diego	X		X	
Sharp Rees-Stealy Downtown San Diego		X		X
Library				
Point Loma/Hervey Branch	X		X	
Schools				
Barnard Elementary	X		X	
Correia Middle	X		X	
Dewey Elementary	X		X	
Loma Portal Elementary		X		X
High Tech Middle	X		X	
High Tech High	X		X	
Point Loma High		X	X	
Rock Academy	X		X	
St. Charles Borromeo Academy	X		X	
Einstein Academy	X		X	
Albert Einstein Academy Charter Middle	X		X	
Brooklyn Child Development Center	X		X	
Golden Hill Elementary			X	
San Diego High	X		X	
Places of Worship				
Bethany Lutheran	X			
Elim Assembly of God	X			
Holy Trinity Episcopal	X			
Point Loma Seventh Day Adventist	X		X	
Point Loma Community Presbyterian	X			
St. Charles Borromeo		X		X

Receptor	CNEL Contour Interval			
	2009		2014	
	65-70	70-75	65-70	70-75
Ocean Beach Congregation of Jehovah's Witnesses	X		X	
Korean United Presbyterian Church of San Diego			X	
Sixth Church of Christ Scientist of San Diego	X		X	
Rock Church	X		X	
Disciples Seminary Foundation	X		X	
First Presbyterian Church of San Diego	X		X	
Chapel of Happiness			X	
Horizon Christian Fellowship Park Chapel		X		X
Christ Church of San Diego	X		X	
Christ Corner Stone Church	X		X	
National Register of Historic Places				
Balboa Park	X		X	
Hawthorne Inn		X		X
San Diego Civic Center (County Admin)			X	
Ford Building	X			X
Marine Corps Recruit Depot (MCRD) Historic Dist	X		X	
Maj. Myles Moylan House		X		X
Naval Training Station (NTC)	X		X	
Notes: 1) X denotes location within the reference contour interval 2) No receptors in areas within CNEL 75 dB				

The listing of National Register of Historic Places is derived from http://www.nps.gov/nr/ and is current as of the end of year 2008.

Table 5 presents the estimated residential population within these contours. Residential population and housing unit count estimates for the 2009 and 2014 CNEL contour impacts were calculated using San Diego parcel data and U.S. Census 2000 data. Utilizing the smallest enumeration unit, Census block data, and Geographic Information Systems (GIS) tools, the contours were intersected with the Census block data for each CNEL noise contour interval (65-70, 70-75, >75). The resultant wholly or partially encompassed Census blocks were then used to determine the total population and total housing units within the impacted area. The results were then used to develop the population factor. Using the San Diego Graphic Information System (SANGIS) parcel coverage, parcel and unit counts were derived by selecting all single- and multi-family parcels that intersect each contour interval and summarizing the unit values in the respective database. These counts were then multiplied by the population factor to determine total population impacted.

Table 5 Estimated Residential Population within 2009 and 2014 CNEL Contours
Source: HMMH

Noise Level, CNEL	2009			2014		
	Estimated Population[8]	Estimated Single Family Houses	Estimated Multi-Family Housing Units	Estimated Population[5]	Estimated Single Family Houses	Estimated Multi-Family Housing Units
65-70	21,616	1,971	6,961	23,515	2,055	7,662
70-75	4,288	714	1,058	3,952	654	979
75+	0	0	0	450	10	176
Total	25,904	2,685	8,019	27,917	2,719	8,817

The increase in number of houses or units within the contours is based on increases in the noise contours and not new construction. GIS analysis of residential land use was also prepared to develop a more precise count of the number of residential units eligible for mitigation. The analysis also considered units previously mitigated through the Quieter Home Program within the specified CNEL values on the 2009 and 2014 contours. Table 6 presents the results of this analysis.

Table 6 Number of Single-Family Homes Eligible for Mitigation
Source: HMMH

Noise Level, CNEL	2009			2014		
	Previously Mitigated	Eligible for Mitigation	Total	Previously Mitigated	Eligible for Mitigation	Total
65-70	23	1,948	1,971	22	2,033	2,055
70-75	329	385	714	326	328	654
75+	0	0	0	4	6	10
Total	352	2,333	2,685	352	2,367	2,719
Note: Changes in "previously mitigated" numbers within CNEL contours are due to the slight changes in the contours; total (352) remains the same						

Table 7 presents an estimate of the number of units in multi-family complexes that would be eligible and within the specified CNEL contour levels.

Table 7 Number of Multi-Family Residential Units Eligible for Mitigation
Source: HMMH

Noise Level, CNEL	2009			2014		
	Previously Mitigated	Eligible for Mitigation	Total	Previously Mitigated	Eligible for Mitigation	Total
65-70	13	6,948	6,961	6	7,656	7,662
70-75	190	868	1,058	144	835	979
75+	0	0	0	53	123	176
Total	203	7,816	8,019	203	8,614	8,817
Note: Changes in "previously mitigated" numbers within CNEL contours are due to changes in the contours; total remains same						

[8] Population estimates assume 2.42 people per single-family house and per multi-family unit. Both estimates are from analysis of U.S. Census 2000 data.

3 NOISE COMPATIBILITY PROGRAM

The Airport Authority has an aggressive and proactive noise management program. With its forward-looking approach to define the noise effects on the surrounding communities and search for new solutions to long-standing challenges, the Airport Authority looked to build on that objective through this update to its NCP. With very little changes that can be brought on the majority of aircraft using SAN, the primary effort was placed on reviewing its existing program and requirements of its latest variance from the State[9] along with other possible changes that might enhance the relationship with its neighboring communities with regard to aircraft noise.

3.1 Measures from the Previous NCP

As discussed in Section 1.1, the FAA, as documented in the 1991 Record of Approval (ROA), reviewed 24 recommended noise mitigation measures and approved 19 measures for implementation. Three additional measures recommended in subsequent revisions to the NCP were also approved by the FAA in May 1995 and June 1998. Table 8 lists each of the 27 previous measures, FAA action, and the implementation status of each measure.

Table 8 Proposed NCP Measures from Previous NCP and FAA Action
Source: FAA ROA, 1991, 1995, 1998

Proposed Measure		FAA Action	Implementation Status
1	Prohibit aircraft generating more than 104 EPNdB at the FAR Part 36 takeoff measuring point from Lindbergh Field	Disapproved for purposes of Part 150	Implemented as part of Airport Use Regulations prior to Airport Noise and Capacity Act (ANCA) of 1990
2	Require each scheduled air carrier to operate an increasing percentage of Stage 3 aircraft at Lindbergh Field to a mandatory level of 100 percent-operating at Lindbergh Field by January 1, 1999	Disapproved pending submission of updated information to make an informed analysis	Not implemented. ANCA accomplished the objective of this measure on a national level
3	Prohibit departures at Lindbergh Field by all non-Stage 3 aircraft except for emergency and approved mercy flights between 2200 and 0700 Hours. Only Stage 3 may depart between 0630 and 0700 hours beginning January 1, 1989	Approved	Implemented as part of Airport Use Regulations prior to ANCA
4	Continue to prohibit departures by all aircraft except for emergency and approved mercy flights between 2330 and 0630 hours	Disapproved pending submission of updated information to make an informed analysis on the reasonableness of	Implemented as part of Airport Use Regulations prior to ANCA

[9] Department of Transportation, State of California, Matter of Noise Variance, OAH Case No. 2004120097, June 11, 2008 (See Appendix F).

Proposed Measure		FAA Action	Implementation Status
		the scope of the restriction to the reduction of noise	
5	Prohibit any scheduled air carrier from publishing or establishing gate departure times at Lindbergh Field: (a) for Stage 3 aircraft after 2315 hours and (b) for all other aircraft after 2145 hours	Disapproved	Implemented as part of Airport Use Regulations prior to ANCA
6	Prohibit above-idle static engine tests or engine run-ups at Lindbergh Field between 2330 and 0630 hours	Approved	Implemented as part of Airport Use Regulations prior to ANCA
7	The Port District (Airport Authority) has adopted and will enforce administrative penalties to deter noise abatement regulation violations	Disapproved	Implemented as part of Airport Use Regulations prior to ANCA
8	Establish a pilot evaluation program to perform sound attenuation construction at one public school, selected by the San Diego Unified School District, located within the 1988 65 CNEL noise contour. Evaluate the results of the "soundproofing" program to determine if the program should be expanded to other educational facilities	Approved	Implemented with Loma Portal Elementary sound attenuation and expanded the program to include additional educational facilities (see Measure 25)
9	Continue to urge the city of San Diego to prohibit incompatible land uses in terms of the operation of Lindbergh Field under the California Noise Standards	Approved	Implemented through involvement in developing Airport Land Use Compatibility Plan
10	The Port District (Airport Authority) will encourage the City of San Diego to conduct a formal review of its land use policies, regulations and practices as they affect Lindbergh Field to protect the ability of the airport to operate and to address land use restrictions in the vicinity of Lindbergh Field on uses that are or might be incompatible with airport operations	Approved	Implemented through actions to develop Airport Land Use Compatibility Plan
11	Develop a program to identify software and hardware necessary to upgrade the noise monitoring system to be able to identify single event noise by aircraft type and operator	Approved	Implemented. ANOMS installed in 1993, updated in 2004
12	Upon completion of the design program identified in Item 11 above, the Port District (Airport Authority) will submit an application to the FAA for assistance in the implementation of upgrading the noise monitoring system	Approved	Implemented through acquisition of ANOMS™
13	Develop, using the upgraded noise monitoring system, a data base concerning general aviation and "commuter" aircraft to determine any changing noise contribution	Approved	Implemented through implementation and integration of ANOMS™ and RealContours™

Proposed Measure		FAA Action	Implementation Status
	and what additional regulations may be necessary or appropriate		
14	Maintain the Port District's (Airport Authority's) noise advisory committee	Approved	Implemented with broad representation
15	Maintain existing noise information center at Lindbergh Field	Approved	Implemented
16	Maintain all public records relating to, or created by the operation of the noise information center for a period of at least two (2) years and make the records available for public inspection	Approved	Implemented per California Airport Noise Standards (Title 21)
17	The Port District (Airport Authority) will continue to employ a noise information officer	Approved	Implemented
18	The Noise Information Officer will meet on a regular basis with representatives from commercial airlines using Lindbergh Field to discuss noise problems, issues and/or potential solutions	Approved	Implemented
19	The Port District (Airport Authority) will deliver to each existing and future airline serving Lindbergh Field correspondence substantially in the form of Attachment "B" of the program statement	Approved as a voluntary measure	Implemented
20	The Port District (Airport Authority) will continue to provide to the County of San Diego, and will make available for public inspection and review, the noise and aircraft operations related information contained in the quarterly reports prepared by the District (Authority) pursuant to the California Noise Standards	Approved	Implemented as required by California Noise Standards (Title 21)
21	The Port District (Airport Authority) will expand the quarterly reports, beginning in the First Quarter of 1989, including information at Lindbergh Field concerning air carrier fleet mix, anticipated aircraft deliveries, operations activities, applications for fleet variances, and a summary of any enforcement activity taken during the quarterly period	Approved	Implemented through year 2000 when commercial fleet became 100% Stage 3
22	The Port District (Airport Authority) will cooperate with any program developed by the City of San Diego and the County of San Diego, to give public recognition to airport users who have conducted their operations at Lindbergh Field in a manner of substantial benefit to the people of San Diego. This cooperation does not obligate the Port District (Airport Authority) to expend funds in support of any program	Approved	Implemented with annual recognition

Proposed Measure		FAA Action	Implementation Status
23	The Port District (Airport Authority) will cooperate with the pending, federally-funded SANDAG airport site selection study and with any other studies conducted by public agencies in San Diego County concerning air service in the San Diego Region. This cooperation does not obligate the Port District (Airport Authority) to expend funds in support of any program	Approved	Implemented up through the 2006 county-wide vote on relocation
24	This FAR Part 150 Noise Compatibility Program will be revised by the Board of Port Commissioners for possible revisions, modifications, or amendments to the program no later than the fifth anniversary of the adoption of this program or sooner if significant changes in the fleet mix, operations, land use issues, or specific direction by the Board of Port Commissioners	Approved	Implemented in December 2007
25	Revision #1 –New Program Element 8.1 – Sound attenuate four public schools and one private school	Approved	Implemented
26	Revision #2 – New Program Element 8.2 – Residential Sound Attenuation Program	Approved	Implemented through Quieter Home Program
27	Revision #2 – Modify Program Element 14 – Modify structure of the Airport Noise Advisory Committee	Approved	Implemented with broad representation

3.2 Recommended Noise Compatibility Program Measures

The Airport Authority is recommending FAA approval for 19 noise compatibility program measures (summarized in Table 9) as a result of this Part 150 NCP update. The Airport Authority recommends three noise abatement measures, six land use measures and ten program management measures. Ten measures are continued or combined/modified from the original NCP, and nine measures are new. For all recommended NCP measures, FAA approval does not infer a commitment of Federal funding; submittal of grant requests is required for FAA review and approval of Federal funds.

Table 9 Recommended NCP Measures
Source: SDCRAA, HMMH, 2009

Proposed Measure		New or Revised Measure
NA-1	Over-the-bay departure route: Develop and implement a left turn (over the bay) departure procedure for Runway 27 to be used by aircraft less than 41,000 lbs max certificated takeoff weight that would normally be directed to 250-degree heading after takeoff.	New measure
NA-2	Continuous Descent Approach: Encourage the FAA and airlines operating at SAN to use CDAs for arrival to Runway 27.	New measure
NA-3	Early Turns on Departure Runway 27: Maintain westerly runway heading (275 degrees) or 290-degree heading for Runway 27 departures until one nautical mile off shore, weather, airspace, and safety permitting	New measure
LU-1	Non-residential sound insulation program: Sound attenuate eligible non-residential sensitive receptor buildings, such as schools and churches.	New measure. Previous measure implemented sound attenuation of five public schools and one private school.
LU-2	Residential sound insulation program: Sound attenuate eligible residential units.	Updates previous measures implemented through the Quieter Home Program
LU-3	Residential sound insulation program: Incorporate hill effects to identify eligible residential units in addition to Measure LU-2	New measure
LU-4	Prohibit new incompatible land uses: The Airport Authority will continue to urge the City of San Diego to prohibit new incompatible land use development within the SAN environs. For noise-sensitive land uses proposed for development within the CNEL 60 dB contour, the Airport Authority will continue to urge the City to obtain avigation easements and engineered structural designs that provide compatible interior noise levels per Table 1 of 14 CFR Part 150.	Expansion of previous similar measure (Measure 9)
LU-5	Compatibility planning process: The Airport Authority, in its role as the San Diego County Airport Land Use Commission, will continue to encourage City of San Diego participation in the compatibility planning process for SAN and will assist the City in reviewing and, as appropriate, modifying the City's plans, policies, and ordinances to best address airport	Revision of previous measure (Measure 10)

Proposed Measure		New or Revised Measure
	land use compatibility concerns.	
LU-6	Airport Land Use Commission (ALUC): The Airport Authority will continue to serve as the San Diego County Airport Land Use Commission in accordance with State law.	New measure
PM-1	Noise Information Office and Officer: Maintain adequate staff for the airport noise mitigation department	Revised measure. Combination of two previous measures (Measures 15 and 17)
PM-2	Noise and Operations Monitoring System (NOMS): Continue to maintain and improve the noise and operations monitoring system (NOMS) to assist in the acquisition, analyses, and reporting of the aircraft noise environment in the SAN environs.	New measure. Allows for upgrade of new capability from provider.
PM-3	Fly Quiet Program: Study, design and implement a Fly Quiet Program to assess how a change in air carrier and general aviation fleet mix and operational procedures could positively impact SAN noise contours.	New measure that expands upon Measure 22
PM-4	Airport Noise Advisory Committee (ANAC): Continue the airport noise advisory committee.	Combines and updates two previous measures (Measures 14 and 27)
PM-5	Communicate noise issues with airlines: The Director, Noise Mitigation will meet on a regular basis with representatives from commercial airlines general aviation operators using SAN to discuss noise problems, issues and/or potential solutions.	Updates and revises previous measure (Measure 18)
PM-6	Provide Airport Use Regulations to airlines: The Airport Authority will deliver to each existing and future airline serving SAN correspondence containing the Airport Use Regulations.	Updates previous measure (Measure 19)
PM-7	California quarterly noise reports: The Airport Authority will continue to provide to the County of San Diego, and will make available for public inspection and review, the noise and aircraft operations related information contained in the quarterly reports pursuant to the California Noise Standards.	Updates previous measure (Measure 20)
PM-8	Air service studies: The Airport Authority will cooperate with any study conducted by public agencies in San Diego County concerning air service in the San Diego Region. This cooperation does not obligate the Airport Authority to expend funds in support of any program.	Update to a previous measure (Measure 23)
PM-9	Update the Noise Exposure Maps (NEMs): The Airport Authority will compare the noise exposure contours contained in its quarterly noise reports to determine when the contours have changed sufficiently to warrant an update per 14 CFR Part 150.	New measure
PM-10	Update the Noise Compatibility Program: This 14 CFR Part 150 Noise Compatibility Program will be reviewed by the Airport Authority for possible revisions, modifications, or amendments to the program at such time as the Program requires update.	Updates previous measure (Measure 24)

3.2.1 NA-1 Develop and implement left turn "over-the-bay" departure route

This measure develops and implements a visual flight rules left turn "over the bay" departure path for Runway 27 for the intended use of aircraft that would normally be directed to a 250-degree heading after takeoff. These aircraft types are limited to single- or twin-engine propeller or turboprops that are now directed to fly a 250-degree heading for traffic spacing considerations. While this category of aircraft is not the primary source of noise for departing aircraft, removing any number of flights from overflying the western residential areas on departure provides the community relief from some aircraft noise. The San Diego Bay is an area of low density population in the SAN environs and with proper coordination may prove beneficial to normal SAN departure operations.

There currently are occasions when Air Traffic Control directs some aircraft to fly a similar route on an infrequent basis. As an example, Figure 3 shows radar flight tracks of three WestAir (PCM) Cessna 208 flights: one on the 250 heading, one flying south over Naval Air Station North Island (NZY), and one turning sharply east to a 110 heading. This measure would formalize the Airport Authority's desire for the Air Traffic Control Tower (ATCT) and Southern California TRACON (SCT) to send these aircraft on an immediate left turn as opposed to flying the 250 heading after takeoff.

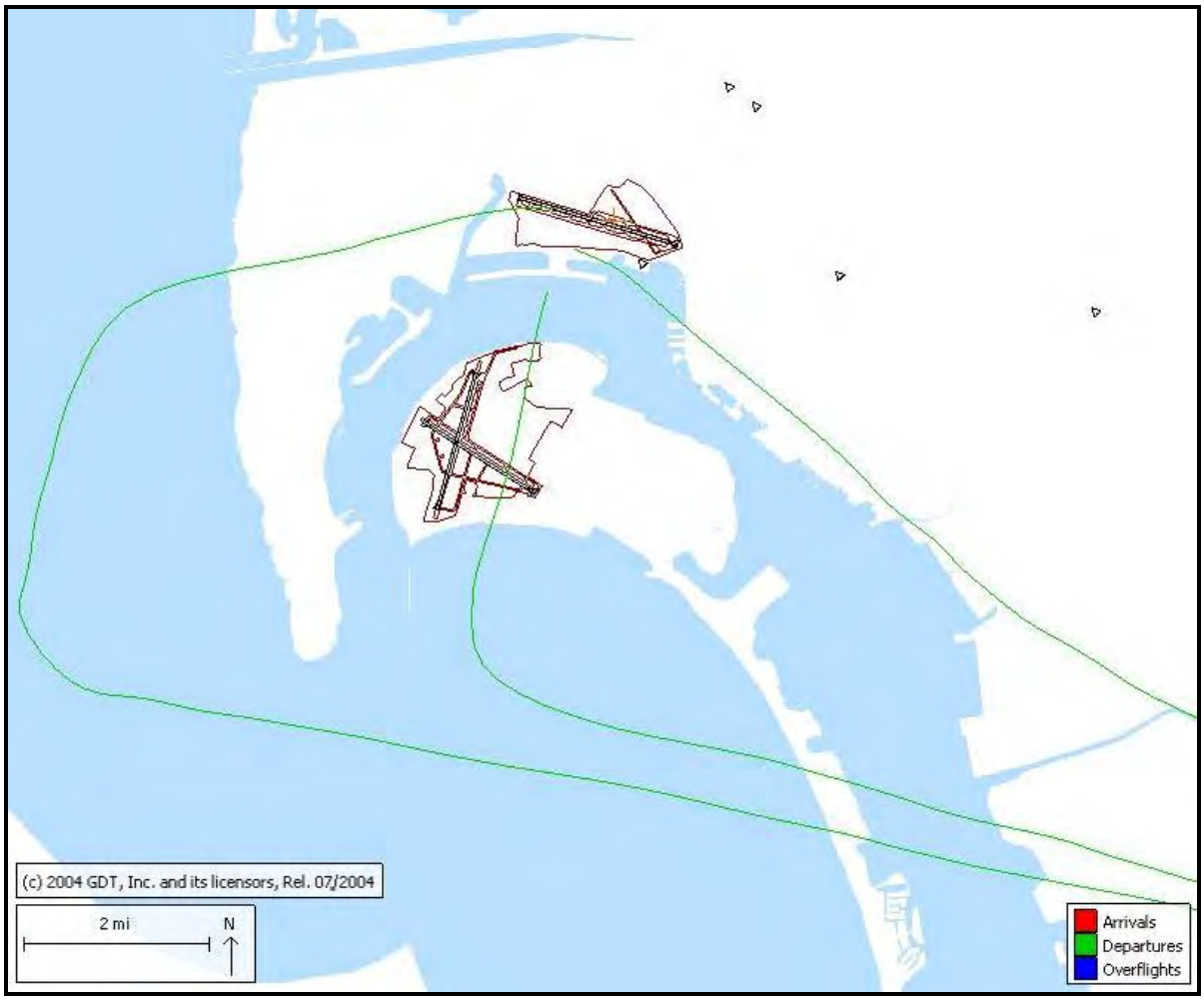


Figure 3 Example of Three WestAir C208 Flight Tracks

As this visual departure measure brings aircraft into the close proximity of NZY, it may require an increase in coordination between SAN and NZY. Areas to consider include the frequency of use of this flight procedure, possible delays in departures due to either NZY traffic or Southern California TRACON (SCT) workload, and other airspace issues.

For modeling purposes, a departure flight track was developed that turned to an approximate 110 heading immediately after departure. Figure 4 shows the depicted departure path. All single-engine and twin-engine piston and turboprop aircraft that could potentially use this departure were thus modeled on the left turn track rather than fly the 250 heading. The resulting CNEL contours were compared to the forecast contours (2014) to determine if there was a potential noise benefit in CNEL.

Figure 5 and Figure 6 reflect the minimal effects to the CNEL noise contours. There is no effect on the CNEL 65 dB contour where the aircraft would make their turn to fly to the east southeast. Thus, from a CNEL perspective, there would be no decrease in the overall affected population.

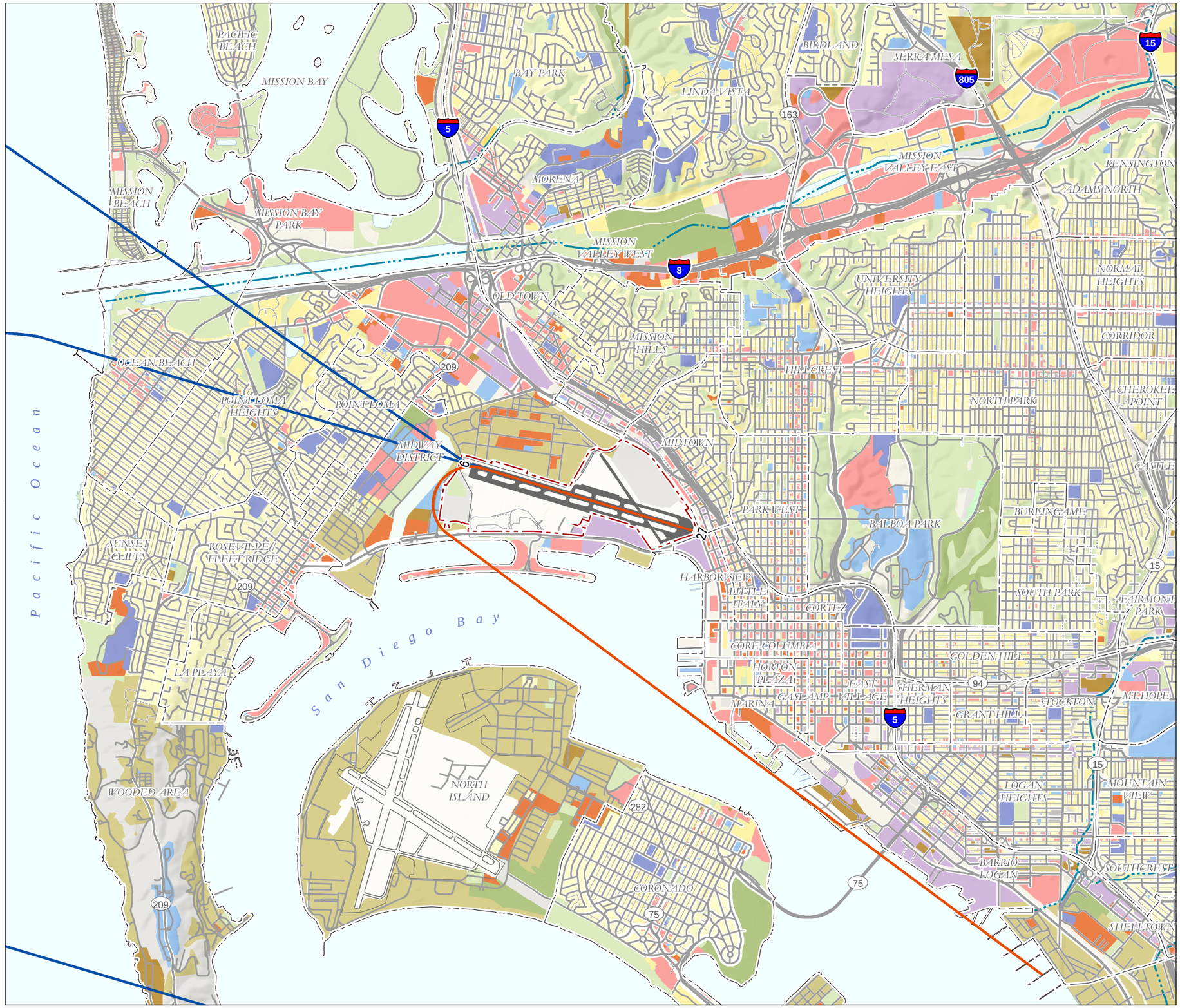
Hence, the benefit would include a less congested corridor for the remaining aircraft departing over the peninsula, would de-conflict the slower aircraft (enhancing arrival and departure sequencing) and would remedy a source of community annoyance.

Implementation status: This is a new measure although currently aircraft fly this route in limited numbers as directed by SAN ATCT.

Essential implementation actions and responsible entities: The Airport Authority will work with the FAA Air Traffic Control and NZY to further study and develop this departure procedure for expanded implementation for single- and twin-engine propeller aircraft. The FAA and NZY have not formally agreed to implement this measure prior to formal review of the NCP.

Anticipated costs and funding sources: The expected costs associated with the development and implementation of this procedure are all internal to the FAA (e.g., Air Traffic Organization) and other coordinating agencies. These costs to implement such a procedure within the FAA are unknown and do not require a Federal grant to implement.

Estimated schedule: The Airport Authority will begin working with FAA and NZY upon approval of this measure.



H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_4_Flight_Track_RW27_LT110Heading.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Runway 27 Departure Flight Tracks with Left Turn to 110 Heading

Figure 4

- Alternate Departure Flight Track
- Existing Departure Flight Tracks
- Airport Property
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- SAN Airport Runways
- Land Under Construction
- Vacant and Undeveloped Land
- Water

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of 2014 CNEL Contours and Early Left Turn Departure Alternative

Figure 5

- CNEL Contours - Early Left Turn Departure Alternative
- 2014 CNEL Contours
- RMT Site Location
- Airport Property
- Roads
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- SAN Airport Runways
- River / Stream
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

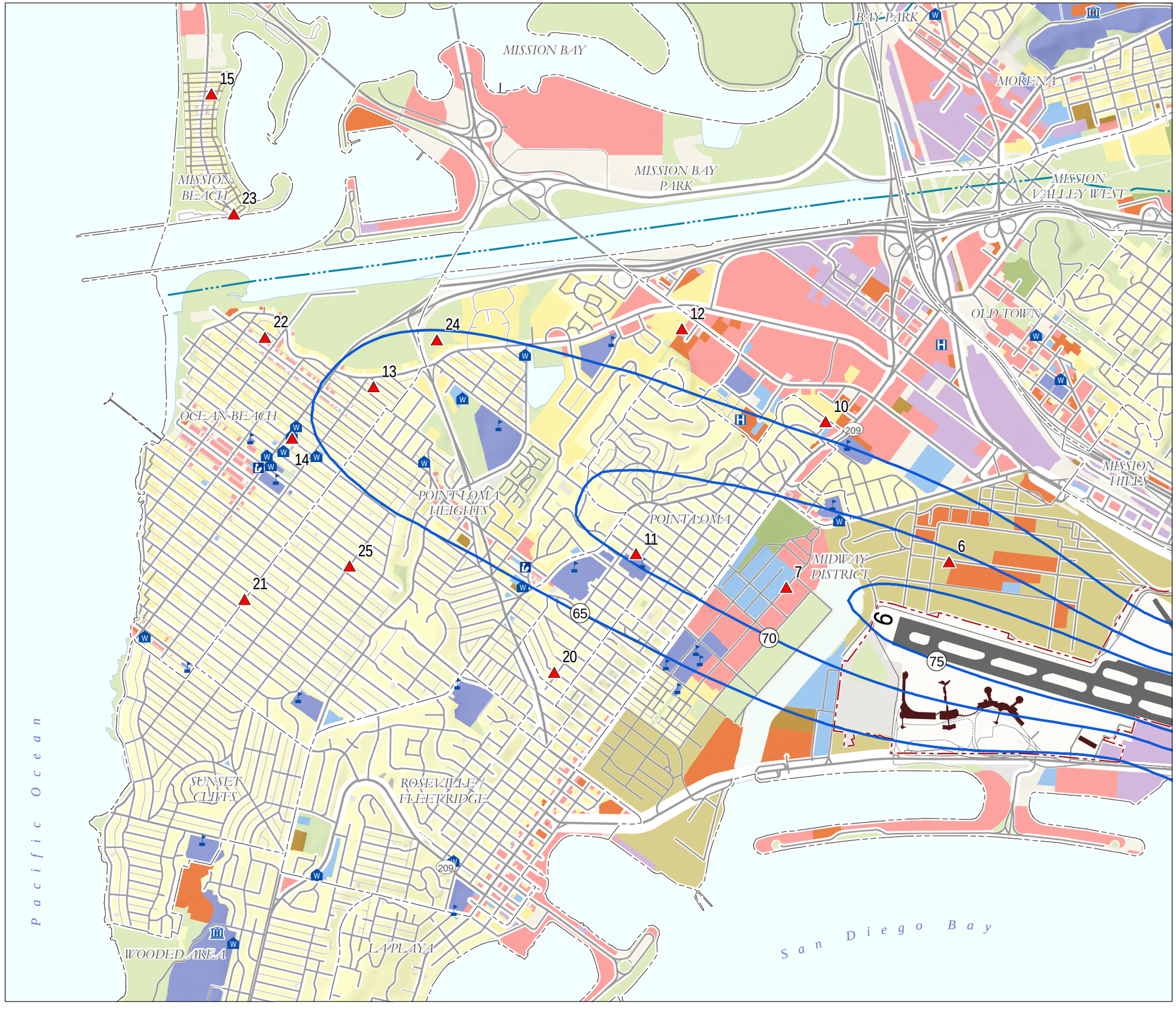
HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_5_2014_and_EaftTurn_Dep_Comparison.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of Westside 2014 CNEL Contours and Early Left Turn Departure Alternative

Figure 6



CNEL Contours - Early Left Turn Departure Alternative

2014 CNEL Contours

RMT Site Location

Airport Property

SAN Airport Runways

Roads

River / Stream

Single Family Residential

Multi-Family Residential

Mobile Home Parks

Hotel/Motel, Group Quarters

Commercial

Industrial

Agriculture

Parks

Golf Courses

Public Service

Schools

Military Use

Transportation/Communication/ Utilities

Land Under Construction

Vacant and Undeveloped Land

Water

Hospital

Schools

Place of Worship

Library

College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_6_2014_and_EarlyTurn_Dep_Enlarged.mxd

3.2.2 NA-2 Encourage the FAA and airlines operating at SAN to use continuous descent approaches for arrivals to Runway 27

A Continuous Descent Approach (CDA) or Optimized Profile Descent (OPD) is an approach procedure that that allows the aircraft to descend from altitude to the runway threshold with minimal changes in engine thrust or power settings. Aircraft on a CDA are generally configured with flaps and landing gear, airspeed, and approach angle prior to five miles from the runway. With this configuration, single-event noise benefits can generally be realized on the order of 3-5 dB beyond five miles. Thus any noise benefits are normally outside of the CNEL 65 dB contour. This means that there is no benefit from a perspective of land use compatibility as defined by Part 150 unless the airport were to adopt a different threshold of noise-land use compatibility.

Preliminary analysis of traditional CDA/OPD arrivals into SAN, shown in Figure 7, suggests that reductions up to 5 dB and greater are achievable in areas in the SAN arrival profile. The noise benefits would likely include less speech interference and fewer awakenings (using the new American National Standards Institute (ANSI) Standard for estimating awakenings[10]). In addition to the noise benefit, the use of CDA/OPD procedures at other airports has shown a reduction in aircraft fuel burn.

Therefore, the Airport Authority supports the development and implementation of CDA/OPD by working with the FAA and primary air carriers (passenger and cargo) to develop and implement these approach profiles at SAN as air traffic permits.

Implementation status: This is a new measure; however, the measure has been voluntarily implemented by a few operators at SAN.

Essential implementation actions and responsible entities: The Airport Authority will encourage the FAA and operators to develop and implement CDAs/OPDs as they are the sole responsible party for this encouragement. In order to implement such procedures as common practice, the FAA Flight Standards and Air Traffic will need to develop safe and efficient arrival procedures allowing the regular use of CDAs/OPDs at SAN. Airlines and other users of SAN will have responsibility to use these noise reducing and fuel savings procedures at SAN. The FAA and airlines have not formally agreed to implement this measure prior to formal review of the NCP.

Anticipated costs and funding sources: The expected costs associated with the development and implementation of this procedure are all internal to the FAA and coordinating agencies. These costs to implement such a procedure within the FAA are unknown and do not require a Federal grant to implement.

Estimated schedule: The Airport Authority will work with FAA and tenant air carriers to develop, implement and encourage the use of CDAs/OPDs upon approval of this measure.

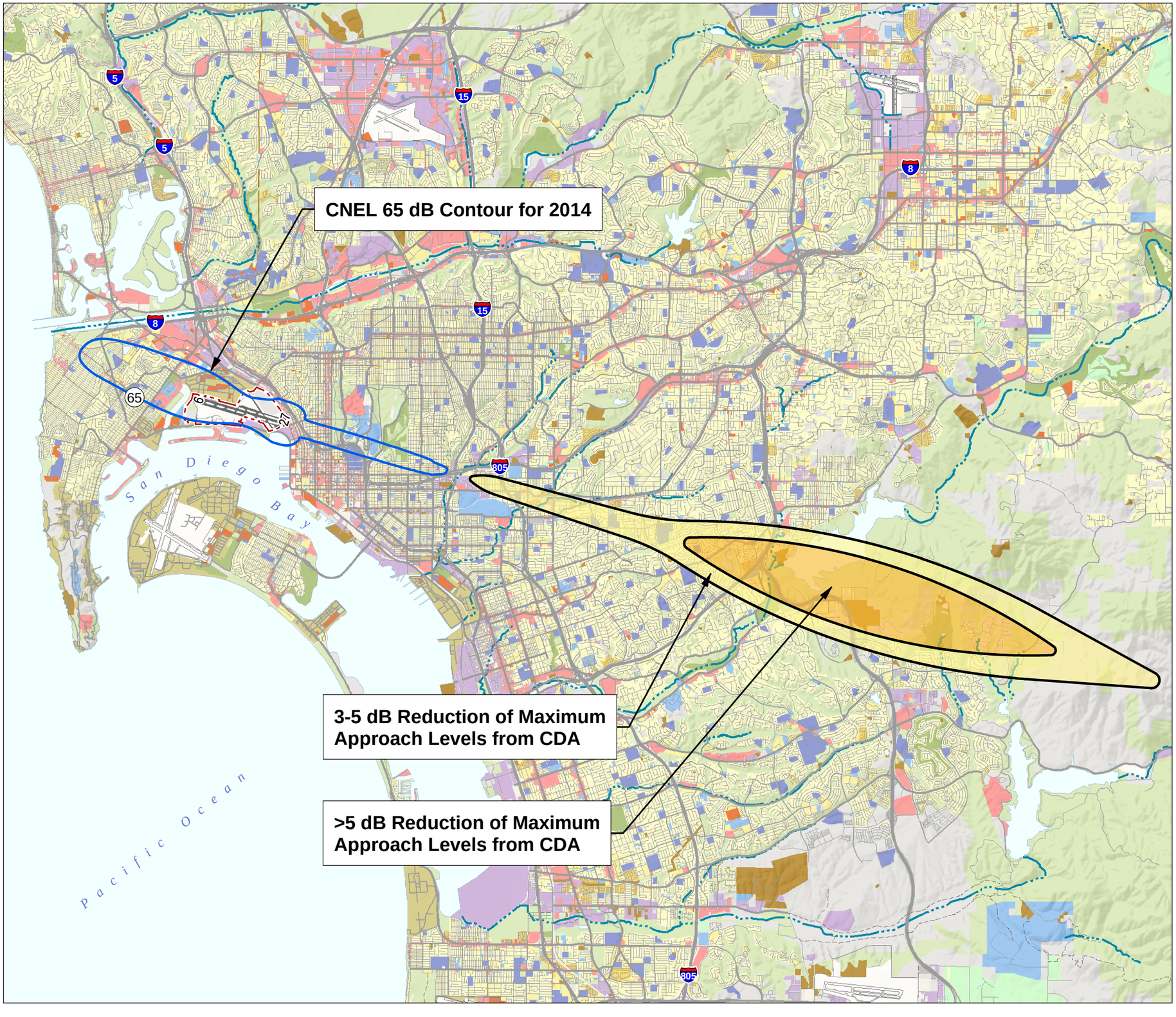
[10] ANSI/ASA S12.9-2008/Part 6, Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes.

This page intentionally left blank

SAN DIEGO INTERNATIONAL AIRPORT

Continuous Descent Approach Noise Reduction Contour and 2014 CNEL 65 dB Contour

Figure 7



- 3-5 dB SENEL Noise Reduction
- 5 dB or greater SENEL Noise Reduction
- 2014 CNEL 65 dB Contour
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2.5 5 Miles

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_7_CDA_Contour.mxd

3.2.3 NA-3 Maintain westerly runway heading (275 degrees) or 290-degree heading for Runway 27 departures until one and one half miles west of the shoreline, weather, airspace, and safety permitting

This new measure focuses on improving adherence to existing Southern California TRACON (SCT) procedures which maintain aircraft on the Runway 27 departure heading until west of the Pacific Coast. There are two primary departure headings for aircraft departing Runway 27 at SAN: (1) the 275-degree heading and (2) the 290-degree heading. The 275-degree heading departure is detailed in two Standard Instrument Departures (SID), Border Five and Poggi Two (Area Navigation [RNAV] departure). For both of these SIDs, the aircraft are to maintain a 275-degree heading (or, in the case of the RNAV departure profile, track 275-degrees) until at least one and one half miles west of the shoreline before continuing with the departure procedure. Likewise, the 290-degree heading departure is detailed in two SIDs, Lnsay Two and Peble Three, where the aircraft maintains a 290-degree heading until at least one and one half miles west of the shoreline before continuing with the departure procedure. These procedures are formalized in SCT 7232.2B, Section 14. Southbay Sector, 10-14-2. Sector Specific Duties and Responsibilities, b.(1) and (2)(a) and included in an email response from the FAA acting air traffic manager at SAN (Appendix G).

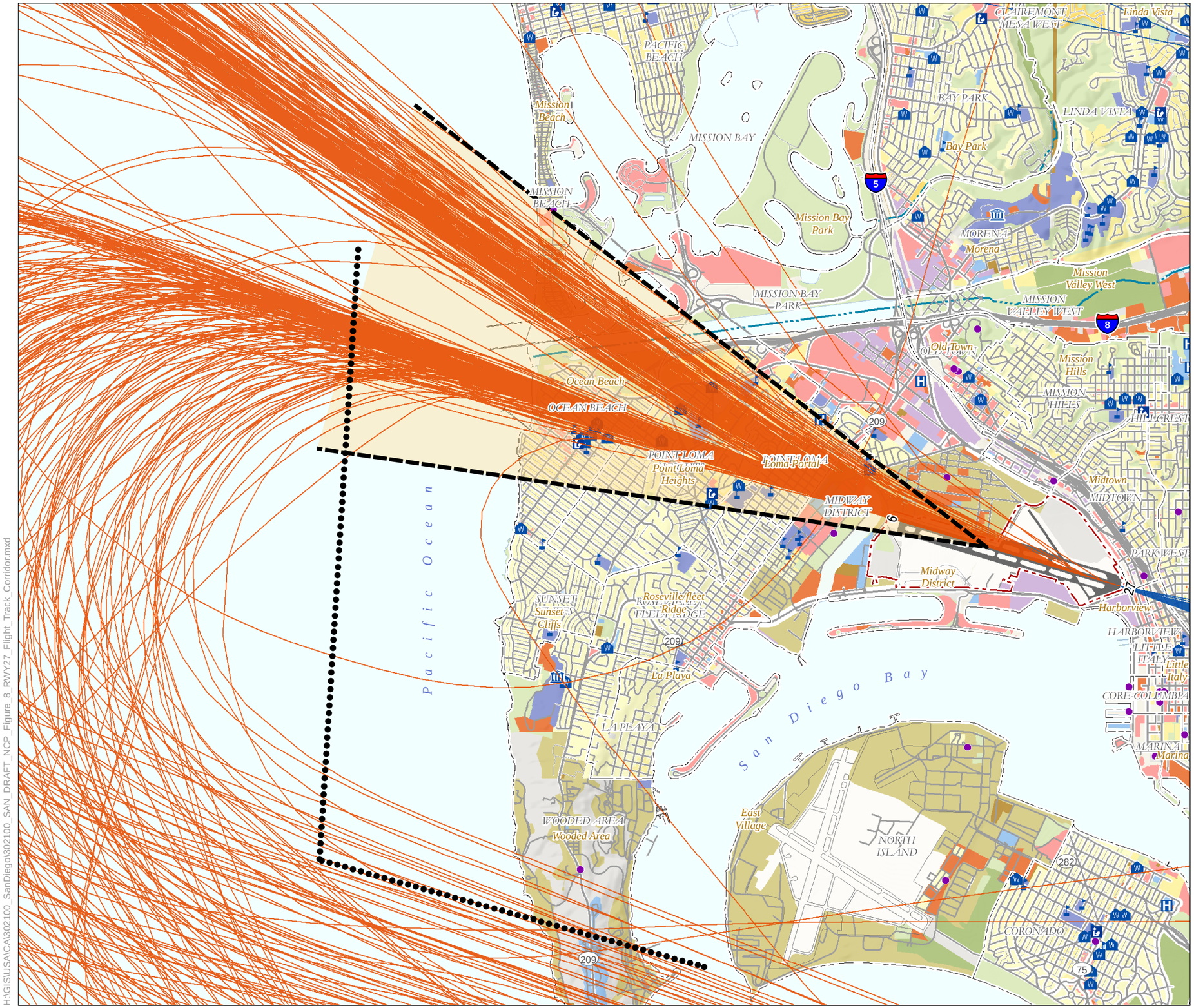
There are documented instances where aircraft turn off of the headings early and overfly residential areas that are not normally overflown. While the low volume of flights that turn early does not generally affect the CNEL 65 dB contours, the deviation flights generate a significant percentage of the monthly noise complaints from the communities. Some of the "early turns" are done under the control of either the FAA Air Traffic Control Tower (ATCT) or Southern California Air Traffic Control (SCT) to provide a safe and viable use of the airspace while others have no such justification. The Airport Authority has set up a program that tracks these early turns and reports them to the FAA for determination of procedural non-compliance.

Figure 8 shows the shaded "triangle" for the departure tracks that track aircraft turning early from the departure heading (triangle). The "L" gates (one mile from the coast) are used to detect aircraft that have not reached 6,000 feet altitude before turning back over the peninsula. On this particular day noted in Figure 8, there appear to be several aircraft to the north that have deviated from the triangle and one early turn to the south. Figure 9 shows an A320 departure on January 2, 2009 that turned early and crossed the "gates" prior to reaching 6,000 feet (color-coded flight track).

In various forums, community members have mentioned propeller aircraft deviations to the left of the departure zone, but the larger commercial jet aircraft are the source of most of the complaints. A review of the number and classification of complaints over the twelve-month period encompassing the fourth quarter of 2008 through the third quarter of 2009 provides a sense of community annoyance to aircraft making early turns on departure and flying "off their normal tracks." The total number of complaints received during this review period totaled 207 with 93 or approximately 45% attributed to early turns. With FAA approval of this measure and adherence to this procedure by SAN ATCT and SCT, weather, airspace, and safety permitting, the Airport Authority would expect up to 45% fewer complaints.

Statistics for these deviations are minimal due to the limited feedback provided SAN by the ATCT or SCT. Feedback on each deviation would provide an important information link for the community in understanding why a deviation occurred and may also provide a better perspective for the FAA controller in maintaining aircraft within an identified departure zone except under abnormal circumstances. The sole intent of this measure is to provide another vehicle for

discussing and educating airport operators regarding the noise sensitive communities surrounding SAN.



H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_8_RWY27_Flight_Track_Corridor.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Runway 27 Departure Corridor

Figure 8

- Departure Flight Track
- Arrival Flight Track
- Flight Track Departure Corridor
- Altitude Gates - 6,000'
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- National Register of Historic Places
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

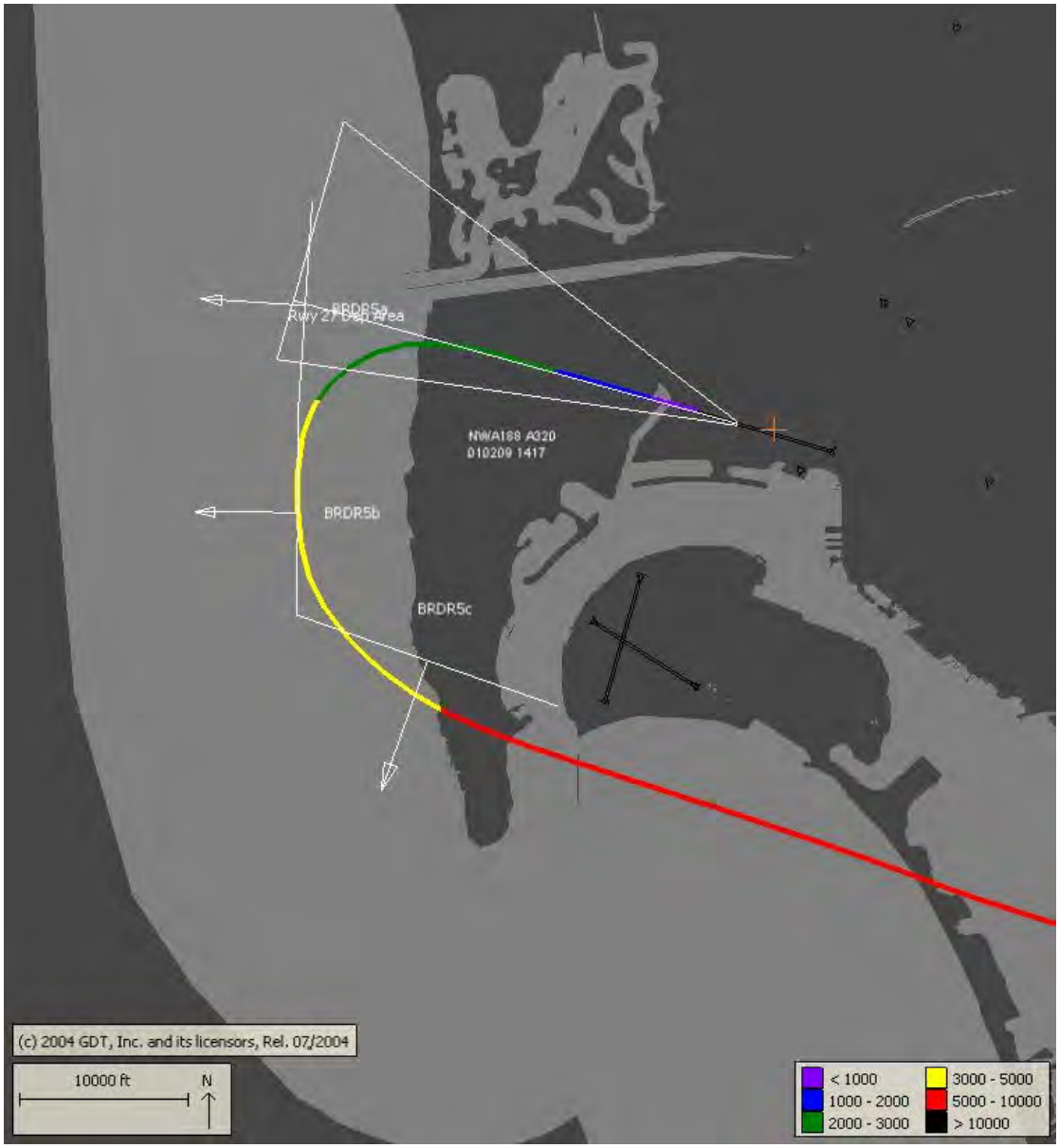


Figure 9 Example of Early Turn Deviation

Implementation status: This is a new measure for Part 150; however, the Airport Authority currently has a procedure to track those aircraft turning early from the prescribed headings and provides a report of deviations to the ATCT.

Essential implementation actions and responsible entities: The FAA will provide stricter control for all aircraft departing SAN Runway 27 to maintain the published headings except for deviations warranted due to weather, safety, or airspace requirements. All aircraft operators at SAN will have the responsibility to maintain compliance to published headings and FAA control. The Airport Authority will continue to track and report exceptions to the FAA for resolution. The Airport Authority will initiate a Memorandum of Understanding (MOU) with SCT to encourage this action that will ensure aircraft are far enough off shore to marginalize the noise for affected communities under their departure flight path.

Anticipated costs and funding sources: No costs are associated with this measure since this measure only enforces the prescribed departure procedures already in place at SAN.

Estimated schedule: Upon approval of this measure all responsible entities will increase their efforts to fulfill the intent of this measure and minimize exceptions for deviation. The Airport Authority will also take the required steps to develop the MOU.

3.2.4 LU-1 Sound attenuate eligible non-residential noise-sensitive receptor buildings

This new corrective measure alleviates the incompatibility of aircraft noise inside buildings by providing indoor environments where noise-sensitive uses can be conducted without interruption by aircraft noise. Sound attenuation treatment packages are provided to areas of noise-sensitive uses, such as classrooms and places of worship, to reduce the aircraft noise inside these areas to less than 45 dB equivalent sound level (Leq) over the expected duration of the noise-sensitive use. For example, a school may be in session between 8:00 a.m. and 4:00 p.m., which requires an interior Leq of no more than 45 dB over that 8-hour time frame. Participation in the sound attenuation program is voluntary for eligible property owners, as determined in the Airport Improvement Program (AIP) Handbook[11]. The Airport Authority requires the property owners to sign an avigation easement to participate in the Quieter Home Program (QHP) and receive acoustic treatment.

The previously implemented measures provided sound attenuation at five public and one private school. According to the NEMs, there are currently 37 noise-sensitive public facilities and historic properties within the noise exposure (CNEL 65 dB) associated with SAN operations; the 2014 forecast also identifies 37 noise-sensitive public facilities and historic properties. The number of non-residential noise-sensitive receptors and the respective contour intervals are provided in Table 10. Six of the educational facilities listed have been sound attenuated in the previous programs.

[11] FAA Order.5100.38C, "Airport Improvement Program Handbook," June 28, 2005

Table 10 Number of Non-Residential Sensitive Receptors within 2009 and 2014 CNEL Contours
Source: HMMH

Noise Level, CNEL	2009				2014			
	Educational Facilities	Places of Worship	National Register of Historic Places	Other	Educational Facilities	Places of Worship	National Register of Historic Places	Other
65-70	11	12	4	3	13	10	4	3
70-75	2	2	2	1	1	2	3	1
75+	0	0	0	0	0	0	0	0
Total	13	14	6	4	14	12	7	4
Note: "Other" includes hospitals, libraries and other noise sensitive receptors.								

Schools:

The Loma Portal Elementary School was selected by the San Diego Unified School District for the pilot program approved in the original Part 150. Upon completion of the sound attenuation construction, acoustical consultants measured interior sound levels that averaged 43 dB in the tested rooms, which is a 10 dB improvement. FAA guidelines recommend an interior of at most 45 dB and an improvement of at least 5 dB in terms of the noise level reduction. Both these goals were exceeded by the pilot program.

School staff concluded that the sound attenuation construction produced educational benefits by significantly reducing aircraft noise levels in the classrooms. To determine the ongoing benefits of this sound attenuation program, a snapshot of the hourly aircraft Leq recorded by RMT 11 (which is located on the property line of the school) was analyzed to determine the current interior sound levels in the tested rooms. For a typical day, the outdoor aircraft Leq varied between 66 and 72 dB during school hours (8:00 am – 4:00 pm). Applying the attained NLR after construction (34-41 dB) provides interior sound levels between 25 and 38 dB. Thus, this measure continues to be highly effective under the current aircraft operations and sound levels.

Based on the success of this pilot program, the Airport Authority expanded the program to five other schools within the CNEL 65 dB or higher contours: Brooklyn Elementary (now Albert Einstein Academy Charter Middle School), Correia Junior High (Middle), Barnard Elementary, Point Loma High, and St. Charles Borromeo Academy. The conclusions of the schools' staffs on the effectiveness of the program mirrored that previously reported for the pilot program.

Noise insulation, if approved in an airport sponsor's NCP, or if qualified as a school or hospital under Title 49 U.S.C., Section 47504 is eligible under the Airport Improvement Program (AIP). Eligible structures include residences (single family and multifamily), schools, hospitals, churches, and other incompatible structures identified in the sponsor's NCP and approved by the FAA as a project in the NCP.[12]

[12] FAA Order.5100.38C, "Airport Improvement Program Handbook," June 28, 2005

Other non-residential noise-sensitive buildings:

Churches [places of worship], concert halls, offices, and other structures identified as incompatible, and for which noise insulation has been recommended by the airport sponsor in its NCP and approved by the FAA, are also eligible. Careful evaluations on a case-by-case basis should also involve consultation with APP-520 and APP-600.[13]

The Airport Authority recommends including all non-residential noise-sensitive buildings as part of this measure. Some of the buildings may be determined ineligible based on criteria other than noise level. For those places identified, noise-sensitive uses must be clearly identified for each room eligible for sound attenuation.

Implementation status: This is a new measure.

Essential implementation actions and responsible entities: The Airport Authority will implement and manage a non-residential sound attenuation program through its Quieter Home Program Office.

Anticipated costs and funding sources: The Airport Authority will request Federal funding support on a case-by-case basis. The specific costs will be determined when a property owner applies for sound attenuation and the Airport Authority prepares a grant request for FAA AIP funds; the costs include eligibility determination, treatment design and construction. Given $1 million to $2 million cost estimates for "smaller" non-residential buildings, the Airport Authority estimates the total cost if all 29 potentially eligible buildings receive treatment at approximately $65 million. Up to 80% of these costs will be covered using FAA grant funding, as available, and the remainder from the San Diego County Regional Airport Authority.

Estimated schedule: Upon approval of the measure, the Airport Authority will set up the policies and procedures document for implementation of the non-residential sound attenuation program. Within this document will be a proposed schedule, but implementation will ultimately be determined as property owners apply for the program. For FAA estimation purposes, we have assumed the program will be ready after two years from approval and will sound attenuate one non-residential property per year.

3.2.5 LU-2 Sound attenuate eligible residential units

This corrective measure is a continuation of the existing Residential Sound Attenuation Program, given the name Quieter Home Program to provide interior noise levels compatible with normal indoor activities. Sound attenuation treatments typically include acoustical windows, doors and other treatments to reduce the penetration of aircraft noise into the living spaces. Participation in the Quieter Home Program is voluntary for those residential units[14] inside the FAA-approved CNEL 65 dB contour. The goals of the Quieter Home Program are to provide an interior aircraft noise environment not to exceed CNEL 45 dB indoors and provide a 5-dB Noise Level Reduction (NLR) improvement, which is generally noticeable. These goals continue to be met or exceeded as shown in the following table detailing the pilot program and phases 1 and 2.

[13] FAA Order 5100.38C, "Airport Improvement Program Handbook," June 28, 2005, Paragraph 812.d., p. 142.

[14] As identified in footnote 3: Residential units include both single-family homes and individual living quarters in multi-family complexes.

Table 11 Residential Sound Attenuation Program - Average Results by Phase

Phase	NLR (dB)	Interior CNEL (dB)	NLR Improvement (dB)
1 + Pilot	30	41	6
2	32	38	9
1+Pilot+2	31	40	7

Through January 1, 2009, the Quieter Home Program had completed sound attenuation in 900 residential units. Recently the Airport Authority has increased the pace of the Quieter Home Program to attenuate as many as 500 residential units per year as Federal grant funds warrant.

With the success of the Quieter Home Program, the Airport Authority expects to continue this program until all residential units within the CNEL 65 dB are compatible with the aircraft noise and/or they have obtained avigation easements. The Airport Authority intends to use the Forecast Conditions (2014) contour, as shown in Figure 2, for use in the Quieter Home Program.

Implementation status: As of January 1, 2009, the Program has treated over 900 residential units. Total FAA funding, including grants currently open, totals approximately $48 million. In recent months, the Program has increased the pace of the program to about 300-500 residential units per year. With approval of this Part 150 update and the FAA and Airport Authority continued funding support, this pace will continue as the most effective aircraft noise mitigation measure available to the airport.

Essential implementation actions and responsible entities: The Airport Authority will continue to manage the Program and offer treatments to those residential units eligible based on the CNEL 65 dB contour for the forecast year in the NEMs.

Anticipated costs and funding sources: There are about 10,000 unmitigated residential units remaining within the eligibility area (CNEL 65 dB) for the Program. Using a recent Quieter Home Program estimate, an average cost of $50,000 for the single-family units and $25,000 for the multi-family units to sound attenuate the residential units already completed, the total cost to complete the Program at SAN is estimated at approximately $331 million. Just over 80% of these costs will be covered using FAA grant funding, as available, and the remainder from the San Diego County Regional Airport Authority.

Estimated schedule: The Airport Authority will continue implementation of the Quieter Home Program with a schedule dependent on Federal grant funding and local share (Airport Authority) availability. Future NEM updates and/or changes to local development plans and zoning may change the number of eligible residential units. Currently the Quieter Home Program is proceeding at an accelerated rate of 300-500 residential units per year.

3.2.6 LU-3 Sound attenuate additional eligible residential units based on hill effects behind the start of takeoff

This corrective measure is an expansion of the existing Residential Sound Attenuation Program, given the name Quieter Home Program and referenced in LU-2 to provide interior noise levels compatible with normal indoor activities. As part of the initial process to develop NEMs, a supplemental measurement program and analysis were conducted on the aircraft noise effects due to the hill behind the start of takeoff and the resulting CNEL contours. Details of this effort are included in Appendix H. The “hill effects” involved the adjustment of the lateral attenuation applied in the FAA INM due to the hill creating a negative elevation angle to the start of takeoff on the runway. While the FAA understood the need to adjust the lateral attenuation applied in the

INM, the FAA disapproved the proposed adjustment to the NEMs. Thus, the hill effects adjustment was not included in the NEMs.

The FAA is currently reviewing this situation in the INM and conducting research to provide a solution within the modeling process. In a letter dated November 20, 2008 from Victor Globa of the FAA Airports District Office (ADO) in Los Angeles to Mr. Dan Frazee of the Airport Authority, the FAA stated:

"During the Noise Compatibility Program (NCP) review process the FAA would take into consideration the eligibility of mitigation for those homes identified as a result of the limitations in modeling lateral attenuation along the hillside." (Appendix I)

Therefore, the Authority includes this additional mitigation measure for the FAA to consider for eligibility in the NCP review process.

Lateral attenuation adjustment recommended for FAA approval in the NEM process was applied to the 2014 NEM CNEL contour, which was generated using INM 7.0a as shown in Figure 10. An estimate of the additional residential parcels and units was identified to quantify the number of additional residential units affected by the hill behind the start of takeoff at SAN. This estimate provides an additional 173 residential units above the number estimated for LU-2. Recognizing that the INM may under-predict in this and similar topographical conditions, the Airport Authority would use the Forecast Conditions (2014) NEM CNEL contour adjusted for the hill effects behind the start of takeoff to include these additional residential units in the mitigation efforts of the Quieter Home Program.

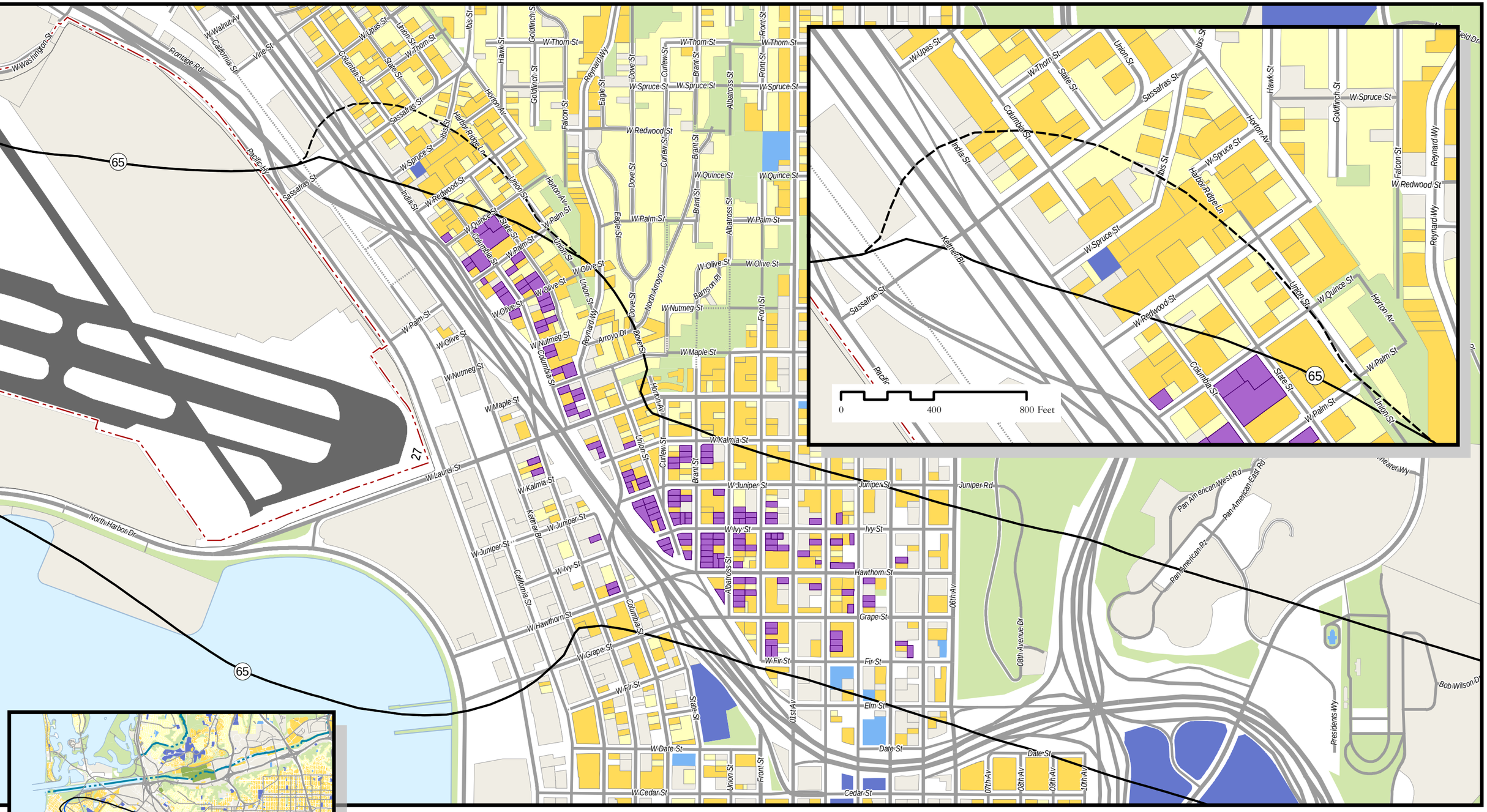
Implementation status: With approval of this Part 150 update and the FAA and Airport Authority funding support, this measure will be incorporated into the overall Quieter Home Program and implemented with future grant assurances.

Essential implementation actions and responsible entities: The Airport Authority will continue to manage the Program and offer treatments to those residential units eligible based on the hill effects adjusted 65 CNEL contour for the forecast year in the NEMs.

Anticipated costs and funding sources: There are about 173 unmitigated additional residential units within the adjusted eligibility area (CNEL 65 dB) for the Program. Using a recent Quieter Home Program estimate, an average cost of $50,000 for the single family units (38) and $25,000 for the multi-family units (135) to sound attenuate the residential units already completed, the total cost to complete these additional residential units is estimated at approximately $5.3 million. Just over 80% of these costs will be covered using FAA grant funding, as available, and the remainder from the San Diego County Regional Airport Authority.

Estimated schedule: The Airport Authority will implement this addition to the Quieter Home Program with a schedule dependent on Federal grant funding and local share (Airport Authority) availability. Future NEM updates and/or changes to local development plans and zoning may change the number of eligible residential units.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_10_2014_NEM_CNEL_w_wout_Hill_Effects.mxd



2014 CNEL 65 dB Contour with Hill Effects

2014 CNEL 65 dB Contour

Airport Property

Sound Insulated Parcels

Single Family Residential

Multi-Family Residential

Non-Residential

Educational Facility

Religious Facility

Parks

Golf

Water

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of 2014 CNEL 65 dB Contours with and without Hill Effects

Figure 10

HARRIS MILLER MILLER & HANSON INC.

3.2.7 LU-4 Urge the City of San Diego to prohibit new incompatible land use development

The Airport Authority will continue to urge the City of San Diego and all other jurisdictions[15] to prohibit new incompatible land use development within the San Diego International Airport (SAN) environs. FAA policy advises against new noise-sensitive development within the 65 dB CNEL and higher noise contours, and the State of California Noise Standards (Title 21) establishes the 65 dB CNEL as "the level of noise acceptable to a reasonable person residing in the vicinity of an airport…"[16] which implies that levels exceeding 65 dB CNEL are incompatible in noise-sensitive areas.

Since the SAN Part 150 NCP was adopted in 1991, the San Diego Association of Governments (SANDAG) developed a Comprehensive Land Use Plan (CLUP) establishing guidelines for development around SAN. The City of San Diego has also amended its zoning code and has been implementing an Airport Environs Overlay Zone (AEOZ) for SAN. This ordinance was in addition to the Airport Approach Overlay Zone (AAOZ) which the City adopted in 1985. The purpose of the AEOZ is to provide supplemental land use regulations for property surrounding SAN and other airports within the City of San Diego. The purpose of the AAOZ is to provide protection from encroachment into FAA-established approach paths at SAN by means of supplemental regulations for the surrounding property. The two ordinances also serve as the City's mechanism for implementation of land use compatibility policies ensuring that new development will comply with the requirements of Title 21, the guidelines of Table 1 of 14 CFR Part 150, and the guidelines within the CLUP (or 2004 adopted Airport Land Use Compatibility Plan [ALUCP]). For development of noise sensitive land uses within the 60 dB CNEL contour, the jurisdictions will obtain avigation easements.

As of early 2010, an update of the current ALUCP (successor to the CLUP) is underway by the Airport Authority in its capacity as the San Diego County Airport Land Use Commission (ALUC). This update is expected to continue and strengthen the compatibility policies of the current ALUCP. The ALUCP will take into account the standards established in 14 CFR Part 150 (Federal), as well as the requirements of California Title 21 (State). In conjunction with the adopted update of the ALUCP by the ALUC, the City expects to replace the SAN AEOZ and AAOZ with a new airport land use compatibility overlay zoning ordinance to enable more effective and efficient implementation of land use compatibility criteria that would be contained in the updated ALUCP.

Implementation status: This is a modification of the existing measure aimed at preventing incompatible development within the 65 dB CNEL contour at SAN. The Airport Authority believes it is partially implemented and will be more fully implemented with the expected ALUC adoption of the new SAN ALUCP and subsequent City adoption of an updated airport overlay zoning ordinance.

Essential implementation actions and responsible entities: The Airport Authority, through its obligations as the ALUC, will encourage the City and other jurisdictions to implement this

[15] Other jurisdictions may include the Port of San Diego, Department of Defense, and Centre City Development Corporation

[16] California Department of Transportation, Division of Aeronautics, "Title 21, Subchapter 6, Noise Standards", Article 1, §5006. Findings, March 10, 1990.

measure to prohibit new incompatible land uses in the airport environs. The City and other jurisdictions are ultimately responsible for the approval/disapproval of development requests through its permitting process. Although any deviations or amendments to the AEOZ or AAOZ are required to be submitted to the ALUC for a determination of consistency with ALUCP criteria, the City and other jurisdictions have the option under State law of overruling an ALUC finding of inconsistency and approving a development proposal.

Anticipated costs and funding sources: The Airport Authority is currently undertaking the ALUCP update and it is envisioned that no further cost beyond what is currently programmed will be required to implement this measure. The City and other jurisdictions will need to fund preparation of the zoning ordinance and land use plan amendments to implement the ALUCP.

Estimated schedule: Currently the ALUCP update is ongoing and will go to the Airport Authority Board, acting in its capacity as the ALUC, for approval. Once approved, the Airport Authority expects the City to address the compatibility criteria in its General Plan and community plans and incorporate the compatibility criteria into zoning ordinance so as to implement this measure.

3.2.8 LU-5 Continue to encourage City participation in the compatibility planning process

The Airport Authority, in its role as the San Diego County ALUC, will continue to encourage City participation in the compatibility planning process for SAN and will assist the City in reviewing and, as appropriate, modifying the City's plans, policies, and ordinances to best address airport land use compatibility concerns.

The City's continued active participation in preparation of the SAN ALUCP is essential both to ALUC adoption of the plan and to subsequent City implementation of the compatibility criteria. Part of the SAN compatibility planning process involves review of the City's General Plan, Community Plans, zoning ordinances, and other policy documents to assess whether they are consistent or conflict with ALUCP policies. ALUC and City policies both should be designed to ensure that new development near SAN does not result in compatibility conflicts.

Implementation status: This is a modification of the existing measure aimed at working cooperatively with the City to ensure land use compatibility in SAN planning processes.

Essential implementation actions and responsible entities: The Airport Authority, through its obligations as the ALUC, will encourage the City to participate in the compatibility planning process through the development and implementation of the ALUCP.

Anticipated costs and funding sources: The Airport Authority is currently undertaking the ALUCP update and it is envisioned that no additional costs will be required to implement this measure.

Estimated schedule: Currently the ALUCP update is on-going and will go to the Airport Authority Board, acting in its capacity as the ALUC, for approval. Once approved, the Airport Authority expects the City to incorporate the compatibility criteria into its general plan and other policy documents so as to implement this measure.

3.2.9 LU-6 Continue to serve as the San Diego County Airport Land Use Commission

The Airport Authority will continue to serve as the San Diego County Airport Land Use Commission in accordance with State law, which established the Airport Authority as the San Diego County ALUC effective in January 2003. The functions of the ALUC are directly supportive of the objectives of 14 CFR Part 150 in that both are, among other things, directed at preventing new land use development that would expose the public to high noise levels or that could adversely affect airport operations. In its capacity as the ALUC, the Airport Authority will pursue preparation and adoption of an Airport Land Use Compatibility Plan (ALUCP) for SAN, will update the plan as may be necessary in the future, and will utilize the plan to fulfill its duty to review local agencies' plans and development actions for compliance with noise compatibility measures.

Implementation status: This is a new NCP measure that is currently implemented by State law.

Essential implementation actions and responsible entities: No actions required as State law dictates that the Airport Authority shall act as the San Diego County ALUC.

Anticipated costs and funding sources: No costs associated with implementation.

Estimated schedule: This measure is fully implemented at this time.

3.2.10 PM-1 Maintain existing noise information department

This measure will maintain the existing noise information center at SAN. The noise information center is now known as the Airport Noise Mitigation Department with the expanded duties and tasks. It has become a vital link between the airport and the community on aircraft noise issues. The latest Noise Variance for the airport granted by the State of California, Department of Transportation, Division of Aeronautics, also stipulates the continuance of this Office[17]. Currently, four full-time employees, including the Director of Noise Mitigation, staff the office and provide public liaison as well as technical support to the ANOMS™ and GIS support. This office will continue operating as the principal office for receiving and responding to noise complaints from the public and interfacing with air carrier representatives, the noise-impacted community and airport users with respect to aircraft noise issues. This measure combines two previous measures of the original NCP (Measures 15 and 17) which were implemented by the Airport Authority.

Implementation status: The FAA previously approved this measure as two measures (one for the office and one for the noise officer) and the Airport Authority implemented. For simplicity, the Airport Authority is recommending this become a single measure, which is also implemented by default as the two measures this replaces were implemented.

Essential implementation actions and responsible entities: The Airport Authority will continue to maintain a noise mitigation department.

Anticipated costs and funding sources: The Airport Authority will continue to fund the operation of the noise mitigation department with internal funds.

Estimated schedule: Not applicable as this measure is fully implemented.

[17] Department of Transportation , State of California, Matter of Noise Variance, OAH Case No. 2004120097, June 11, 2008.

3.2.11 PM-2 Continue to maintain and improve the noise and operations monitoring system (NOMS)

Through the years the Airport Authority has developed an extensive permanent noise monitoring system that provides information used to validate the CNEL contours in accordance with Title 21 "the California Airport Noise Standards" of the Code of California Regulations. The noise monitoring system began with eight remote monitoring terminals (RMT) installed in 1974 along with a central processing unit and public information display board. In subsequent years, additional RMTs were added totaling 24 operational RMTs at the end of a 1983 upgrade. In the 1991 ROA, the FAA approved the SAN NCP measure to upgrade its noise monitoring system with software and hardware able to identify single event noise by aircraft type and operator. This resulted in the upgrade of the system software through installation of the Aircraft Noise and Operations Monitoring System (ANOMS™) provided and supported by Technology Integrated, Inc. along with the PASSUR flight tracking system provided by Megadata. In 2004, the Airport Authority began replacing its aging RMTs with the most reliable and technologically advanced noise monitors available. The installation of 25 Environmental Monitoring Units (EMU-2100), which were produced and installed by the Lochard Corporation, included upgrading all RMTs with wireless modem technology and reconfiguring 10 RMTs to new locations powered by solar energy. Subsequent to installation, RMT 5 was removed from service due to construction of a tall building very close to the monitor which blocked the solar panels and created a huge sound wall that resulted in higher than correct sound levels being reported. Thus, the system was reduced to 24 RMTs.

ANOMS™ collects noise, aircraft identification, weather, and complaint data; and correlates the data to the aircraft flight tracks to determine the noise measured from aircraft operations that generate noise events in excess of the minimum noise level "threshold" set at each of the RMTs. The aircraft correlated noise data is then used to calculate the aircraft noise exposure in terms of CNEL on a daily basis. It also identifies single-event aircraft noise levels by correlating aircraft radar data and flight tracks with the noise level recorded at each monitor site. This correlation provides information that enables the staff to respond to public comments on aircraft flights and to show the actual flight tracks and associated noise levels.

Despite all the capabilities of the existing NOMS, there are continuing improvements and new technologies emerging in this industry. New features, such as multilateration[18] systems, may improve on the accuracy and availability of the data and overcome any radar data limitations for an airport like SAN with its geographic location in a "bowl" among rising terrain on three sides. This measure to continue to maintain and improve the NOMS will ensure the Airport Authority stays up to date with modern technology and maintains a NOMS that will continue to provide the support to its noise compatibility program. Upon identification of a feature that will improve NOMS operation and its capability to monitor noise compatibility objectives, the Airport Authority would provide the necessary information and documentation to the FAA for review and grant consideration.

Implementation status: Since 1974, the Airport Authority (Port District) has monitored and reported the aircraft noise environment to adequately comply with Federal, State and local

[18] Multilateration is the process of locating an object by accurately computing the time difference of arrival of a signal emanating from the object at multiple (three or more) receivers. It could also involve the process of multiple synchronized transmitters locating a receiver by emanating a signal and measuring the time difference of arrival to the receiver.

regulations. The NOMS provides the backbone to the noise mitigation department and allows the Airport Authority to accurately report on aircraft noise and operations. When required, as history has shown, the Airport Authority will upgrade its NOMS as part of its continued implementation of the NOMS. This is a new measure.

Essential implementation actions and responsible entities: The Airport Authority will work with its current NOMS maintenance provider to maintain its required reporting and analyses tasks. As the NOMS ages and technology changes, it is likely the Airport Authority will be required to upgrade or add features to its NOMS. At such time, the Airport Authority will identify the requirement and submit it to the FAA for approval before beginning a procurement process to understand its requirements and select a vendor to provide the required elements.

Anticipated costs and funding sources: Replacing the existing NOMS today would cost between $1 million and $2 million. Adding features and/or upgrades to the NOMS is expected to cost between 10% and 100% of the replacement cost or $100,000 to $2 million. Up to 80% of these costs will be covered using FAA grant funding, as available, and the remainder from the San Diego County Regional Airport Authority.

Estimated schedule: Given that the Airport Authority recently upgraded its RMTs and they have one of the latest NOMS available as a spare, the anticipated time for a complete upgrade is in the five- to ten-year time frame. However, NOMS providers are continually researching and developing new features and capabilities that may improve the existing system. The Airport Authority may, therefore, add to its system prior to a full upgrade to better satisfy its noise compatibility program objectives.

3.2.12 PM-3 Design and implement a Fly Quiet Program

Currently, the SDCRAA administers an air carrier recognition program that publicly recognizes air carriers that operate without a single violation in a calendar year of the nighttime departure curfew, which restricts aircraft from departing SAN between 2330 and 0630 (Measure 22). The commendations to the air carriers consist of a framed acknowledgement plaque and mention, by name, in the airport's periodic community newsletter "Noise Matters" and to the Airport Noise Advisory Committee.

This recommended measure is intended to provide a web-based format, updated periodically, to display the results of a formal Fly Quiet Program implemented by the Airport Authority to better recognize all airport users' (air carrier, GA operators, etc.) achievements with all aspects of the SAN noise compatibility measures and better provide the community a thorough perspective of SAN aircraft operations. This supports one of the FAA's stated purposes of a noise compatibility program – "To bring together through public participation, agency coordination, and overall cooperation, all interested parties with their respective authorities and obligations, thereby facilitating the creation of an agreed upon noise abatement plan especially suited to the individual airport location while at the same time not unduly affecting the national air transportation system."[19]

In addition, this program may provide reliable feedback to local air traffic control (ATC) with accurate information pertaining to the compliance of established arrival and departure procedures. This may assist ATC in honing their procedures to obtain improved compliance, thus minimizing the noise impact to the surrounding communities.

[19] 14 CFR Part 150, Section B150.1, "Scope and purpose".

A number of airports have successfully designed and implemented such programs including San Francisco International Airport in California, which have resulted in air carriers striving to be recognized and learning what they must do to succeed with noise abatement at the airport. These programs have become one of many tools that airports and ATC use to help inform the operators of the existing noise abatement programs and inform the public to the successes.

This measure is intended to design and implement the Fly Quiet Program; however, the Airport Authority has already begun to develop ideas about potential elements of their Program, which include:

- current fleet mix by aircraft operator (air carrier, GA operator) vs. ideal fleet mix for SAN
- number of total departures by aircraft operators vs. scheduled operations that may be impacted by the nighttime departure curfew
- number of total departures by aircraft operators vs. number of departures that deviated from IFR departure procedures
- number of total 275-degree heading departures by aircraft operators vs. number of 275-degree heading departures from aircraft likely equipped with satellite-based navigation equipment compared to number of RNAV departures
- number of community complaints in last reporting period by aircraft operator
- number of flight cancellations by aircraft operator for the sole purpose of compliance to the nighttime curfew.

The design will:

- analyze these elements along with others that may surface in the interim
- determine a scoring mechanism to rate each element
- determine a weighting mechanism to provide a relative importance to each element
- develop a rating scheme to rank order each aircraft operator
- develop an implementation and reporting plan to disseminate the information to the various interested stakeholders.

Another key aspect of the Fly Quiet Program will be to provide noise information to the General Aviation and Military aircraft that occasionally use the airport. Some of the possible ideas will be to expand upon the "pilot information handout" to make it more user friendly, to conduct briefings with pilot and user groups, such as the Aircraft Owners and Pilots Association (AOPA), Helicopter International Association (HIA), and National Business Aviation Association (NBAA), and to upgrade the Authority's website to provide these users with the information on how to use the airport as quietly as possible.

Implementation status: This is a new measure.

Essential implementation actions and responsible entities: Airport Authority staff with support from consultants as needed, will design a metrics-based Fly Quiet Program to adequately and periodically recognize aircraft operators that enhance compliance with the noise abatement procedures and take extra steps to further mitigate aircraft noise exposure to the surrounding communities.

Anticipated costs and funding sources: The estimated cost to design and implement a Fly Quiet Program is estimated between $50,000 and $250,000, depending on the number of metrics/elements tracked in the Program. Program design and implementation is FAA grant

eligible under AIP if the FAA approves the program measure. Therefore, the cost of design and implementation is expected to be shared between the FAA (up to 80%) and the Airport Authority.

Estimated schedule: Upon receiving the Record of Approval (ROA) from the FAA, the Airport Authority expects to begin the design and implementation of the Fly Quiet Program within 6 to 12 months. The design may be completed within 12 months and then implementation to follow in 6 to 12 months. Therefore, full implementation of the SAN Fly Quiet Program is expected within two to three years of receiving the ROA.

3.2.13 PM-4 Maintain the Airport Noise Advisory Committee (ANAC)

The Airport Noise Advisory Committee has proven to be an effective tool for communicating among the local communities, stakeholders, airport staff, and operators. This has resulted in a better understanding of the airport operations and the noise effects experienced around the airport. This committee is recognized as being essential in the monitoring of various airport noise mitigation efforts as well as bringing the community representatives together to get a broader perspective of the airport's role in the area. This measure combines two previous measures – Measures 14 and 27.

Implementation status: Updates and combines previously implemented measures.

Essential implementation actions and responsible entities: The Airport Authority will maintain the ANAC as currently implemented and may make modifications to membership and meeting agendas, frequency of meetings, etc. as deemed appropriate.

Anticipated costs and funding sources: The ongoing costs to maintain the ANAC is the responsibility of the Airport Authority and will require no Federal funding through a grant.

Estimated schedule: Not applicable as this measure is fully implemented.

3.2.14 PM-5 The noise information officer will meet on a regular basis with representatives from commercial airlines and general aviation

With the constant turnover in airline and FBO personnel, the Director, Airport Noise Mitigation, has met with airline representatives on a regular ongoing basis to provide information on the noise program at SAN. This education and awareness effort has increased the understanding of the noise effects on the local communities and the actions needed to limit these effects based on airport procedures and use regulations.

Implementation status: Updates previously implemented measure – Measure 18.

Essential implementation actions and responsible entities: The Airport Authority Director, Airport Noise Mitigation will continue to meet periodically with air carrier, air cargo and general aviation representatives.

Anticipated costs and funding sources: The Airport Authority has sole responsibility for the continuation of this measure and its funding and will require no Federal funding through a grant.

Estimated schedule: Not applicable as this measure is fully implemented.

3.2.15 PM-6 Deliver Airport Use Regulations to each airline

This action was initiated in 1990; subsequent scheduled air carriers receive this information from the Airport Authority's Real Estate Department when they sign their contract with the Airport Authority. Additionally, they sign for and receive a copy of the SAN Airport Rules and Restrictions, which contain, as an Appendix, Airport Use Regulations that spell out noise restrictions. The Airport Noise Mitigation Department stays in contact with air carriers through participation at the monthly Station Managers' Meeting and direct contact with air carrier corporate headquarters staff. These communication paths have proven effective in relating the SAN noise abatement program and receiving input from the air carrier tenants.

Implementation status: Continues previously implemented measure –Measure 19.

Essential implementation actions and responsible entities: The Airport Authority will continue to deliver Airport Use Regulations to each airline.

Anticipated costs and funding sources: The Airport Authority has sole responsibility for the continuation of this measure and its funding and will require no Federal funding through a grant.

Estimated schedule: Continues previously implemented measure.

3.2.16 PM-7 Continue to provide noise and aircraft operations information in the quarterly noise reports

In accordance with the California Noise Standards, Title 21, the Airport Authority regularly prepares and delivers to the State its quarterly noise reports. The quarterly reports contain:

- Aircraft noise measurement data including quarterly and annual CNEL data
- Aircraft operations
- Quarterly operations survey over a three-day period
- Summary of monthly aircraft noise complaints
- Summary of noise complaints for the quarter
- Listing of enforcement actions for the time-of-day restriction for operators as recommended by the Curfew Violation Review Panel
- Update of the Residential Sound Attenuation Program for in-process and completed residential units
- Meeting minutes and current roster of Airport Noise Advisory Committee during the quarter
- Various supporting appendices

Quarterly reports are posted on the Airport Authority website, www.san.org , and made available for public inspection and review. This extremely detailed data listing provides the public an inside look at the airport's operation with respect to aircraft noise.

Implementation status: Continues previously implemented measure – Measure 20.

Essential implementation actions and responsible entities: The Airport Authority will continue to provide quarterly noise reports for the foreseeable future.

Anticipated costs and funding sources: The Airport Authority has sole responsibility for the continuation of this measure and its funding and will require no Federal funding through a grant.

Estimated schedule: Not applicable as this measure is fully implemented.

3.2.17 PM-8 Cooperate with public agencies concerning air service

The Airport Authority will provide the appropriate level of cooperation on any future public studies regarding the regional air service.

Potential sites for relocating San Diego International Airport were under continuous study from 2001 to a County-wide election in 2006. The effort began with the Air Transportation Action Program, a joint prospect of the San Diego Association of Governments and the Port District, and continued as the Airport Site Selection Program (ASSP). The ASSP was conducted by the Airport Authority as part of the California legislative requirement to conduct a comprehensive study of all potential airport sites and solutions to meet the region's air transportation needs through the year 2030. Seventy-two potential sites for relocating San Diego International Airport were evaluated, and five sites were selected to undergo a comprehensive detailed alternatives analysis for the purpose of developing a recommendation for a new airport location. A recommendation for future joint-use of Marine Corps Air Station (MCAS) Miramar was presented to the people of San Diego County as a ballot measure for a county-wide (non-binding) vote in November 2006 and did not pass.

Additional collaboration with local government has been mandated by State legislation which requires that the Airport Authority prepare and present a Regional Aviation Strategic Plan (RASP). Senate Bill 10, passed in 2007, mandated that the Airport Authority, in collaboration with the San Diego Association of Governments (SANDAG), prepare a RASP to identify workable strategies to improve the performance of the regional airport system in San Diego County. Providing air transportation is essential to the transportation needs and economic growth of the San Diego County region. Each airport's aviation capabilities and resources will be carefully considered to ensure maximum efficiency and utilization. The Airport Authority has launched a two-year process to develop long-range recommendations for all of the county's civilian airports with the goal of improving the performance of the regional airport system. The RASP will provide input to SANDAG's next update of the Regional Transportation Plan (RTP) in 2011.

Implementation status: Continuation of previous measure with revisions – Measure 23.

Essential implementation actions and responsible entities: The Airport Authority will provide the appropriate level of cooperation on any future public studies regarding the regional air service.

Anticipated costs and funding sources: The Airport Authority has sole responsibility for the continuation of this measure and its funding and will require no Federal funding through a grant.

Estimated schedule: Senate Bill 10 requires that the RASP be completed by June 30, 2010. It is not known at this time whether additional future studies will be completed and, if so, when.

3.2.18 PM-9 Revise the Noise Exposure Map

Accurate and up-to-date noise exposure maps provide data for the Airport Authority to use to focus limited noise mitigation resources and noise abatement efforts, such as enforcement of its Airport Use Regulations, where appropriate. The Airport Authority will compare the FAA-approved NEMs on a quarterly basis with the noise exposure contours prepared for and delivered to the State in compliance with its Variance and the Title 21 Noise Regulations. When the size and/or shape of the noise exposure contours have changed substantially, as defined in 14 CFR Part 150, §150.21(d), to reduce or include additional incompatible land uses within the SAN

environs, the Airport Authority will update the NEMs to reflect the existing and five-year forecast conditions. In addition, if and when the Airport Authority approves a change to the operations at SAN that likely change the size and/or shape of the noise exposure contours in the future (within the five-year time frame), the Airport Authority will update the NEMs to reflect this expected change to the forecast conditions.

Implementation status: With the approval of the 2009/2014 NEMs submitted to the FAA, the NEMs are currently up to date. The Airport Authority will next update the NEMs when, as described above, it determines a need. This is a new measure.

Essential implementation actions and responsible entities: The Airport Authority will monitor the quarterly noise report contours they prepare to meet Title 21 of the State of California Noise Regulations and determine when an update of the NEMs is required per guidance in 14 CFR Part 150 Regulations.

Anticipated costs and funding sources: The quarterly reporting is completed using Airport Authority funds as part of maintaining compliance with Title 21 and the noise mitigation department. At such time an update of the NEMs is required, the Airport Authority will apply for a Federal grant to help fund the update. Estimated total cost of the revision is $200K-$500K.

Estimated schedule: It is indeterminate as to when a future update will be required, but subsequent updates are expected to be completed upon receiving a Federal grant.

3.2.19 PM-10 Revise the Noise Compatibility Program

14 CFR Part 150, Section 150.23(e)(9) states that the NCP must provide for revising the program if made necessary by a revision of the NEMs. Not all revisions require an NCP update; for example, if changes in contour size or shape alter the number of compatible parcels contained within the adopted noise contours but the program is otherwise unaffected, an update of the NEMs may be submitted independent of an NCP update. However, if significant changes are identified that result in a large addition of incompatible land uses, or new elements are required to achieve land use compatibility, a revision to the NCP may be indicated.

Implementation status: With the issuance of the Record of Approval based on the FAA's review of this Noise Compatibility Program, the NCP is current and up to date. The Airport Authority will next update the NCP when it determines elements of the approved NCP are no longer effective or determines elements need to be added or changed to benefit its noise compatibility program at SAN.

Essential implementation actions and responsible entities: As the Airport Authority monitors the need for updating the NEMs, they will also determine whether the NCP elements require updates to preserve and improve aircraft noise compatibility in the SAN environs.

Anticipated costs and funding sources: The cost to monitor the need for an NCP update rests with the Airport Authority as part of maintaining its noise mitigation department. At such time an NCP update is required, the Airport Authority will apply for a Federal grant to help fund the update. Estimated total cost of the revision is $500K-$750K.

Estimated schedule: It is indeterminate as to when the update is required, but the update is expected to be completed within two years of receiving the Federal grant to complete the update.

4 NOISE COMPATIBILITY PROGRAM MEASURES CONSIDERED BUT NOT RECOMMENDED

Throughout the course of this study the Airport Authority, NTAG, and public reviewed those measures that were included in the previous NCP to determine their implementation status and applicability to the overall noise compatibility program. In addition and in accordance with §150.23(e)(2) of 14 CFR Part 150, the aforementioned groups reviewed several alternative measures that were considered for the NCP but rejected after analysis and consideration. A review of these measures follows with the appropriate analysis results.

Due to the successful completion of measures from the 1998 NCP, the Airport Authority recommends the following eight measures be closed and are not included for recommendation in this NCP:

- Airline Fleet 100% Stage 3
- Pilot Program for Sound Attenuation of Schools
- Sound Attenuate Four Public Schools and One Private School
- Upgrade NOMS to Include Single Event Noise
- Submit FAA Grant Application for NOMS Upgrade
- Develop Database in NOMS for General Aviation and Commuter Aircraft
- Expand California-Required Quarterly Noise Reports
- Modify ANAC Structure

The Airport Authority also recommends updating the following measure with the Fly Quiet Program measure:

- Give Public Recognition to Airport Users Who Conducted Their Operations in a Manner Beneficial to the People of San Diego

In accordance with §B150.7 (b) (1) of 14 CFR Part 150, the Airport Authority reviewed its position on land acquisition to determine if this would be an appropriate strategy. With approximately 10,000 parcels and over 20,000 residents within the CNEL 65 dB contour, acquisitions of land or interests therein are neither practical nor tenable. Based on the cost and political liability, the Airport Authority has determined this not to be a viable option.

The following sections provide new measures considered, but ultimately not recommended for inclusion in the NCP.

4.1 Require the Use of "John Wayne Airport-Like" Noise Abatement Departure Profiles (NADP) for Aircraft Departing Runway 27

The current State of California noise variance for the San Diego County Regional Airport Authority to operate SAN (effective July 11, 2008) required a study to model the potential noise effects if commercial aircraft were to use Noise Abatement Departure Profiles (NADP) as allowed under FAA Advisory Circular (AC) 91-53A. The Airport Authority decided to include this in the Part 150 NCP as an alternative measure for evaluation.

Under the guidance of the Airport Authority, the consultant team developed aircraft departure profiles similar to those flown at John Wayne Airport (SNA) in adjacent Orange County.

4.1.1 Background and Procedures

The published NADP's implemented at SNA require aircraft to use a full power takeoff and drastically cut power once the aircraft has reached 800-1,000 feet above the airfield, and continue the power reduction until the aircraft is beyond the Pacific Ocean shoreline.

A full power takeoff at SAN (Runway 27) would increase noise behind the start-of-takeoff roll and negatively impact those residential areas at the expense of potentially reducing noise exposure to the west of the airport under the departure path. Therefore, the Airport Authority directed an evaluation of a modified SNA NADP that incorporates a de-rated thrust takeoff (rather than a full power takeoff), followed by a drastic power reduction (akin to SNA) when the aircraft reaches 800 feet above the airfield and continue the power reduction until the aircraft is beyond the Pacific Ocean shoreline.

With the assistance of Boeing, the departure profiles in the FAA Integrated Noise Model, Version 7.0a (INM), were modified for most aircraft weighing over 75,000 pounds to the profile identified in the FAA AC 91-53A as "Close-in NADP". This profile

- initiates a thrust cutback at an altitude of not less than 800 feet above the airport elevation (AFE) prior to initiating flaps or slats retraction
- maintains no less than the thrust level necessary to maintain the takeoff path engine-inoperative climb gradient
- coordinates pitch-over rate and thrust reduction to allow indicated airspeed to decay no more than 5 knots below the all-engine target climb speed
- maintains speed and thrust to altitude of 3,000 feet AFE

The consultant team selected a single day from the operations data that, when modeled, closely approximated the existing annual CNEL contours. These contours represent the baseline contours for comparison to the alternative measure. The INM was then used to develop CNEL contours for this measure and provide a comparison to the baseline contours.

4.1.2 Evaluation Results

As shown in Figure 11 and Figure 12, the largest change in CNEL is in the area of the CNEL 70 dB contour, as would be expected from a "close-in NADP". The CNEL differences are both along and to the side of the flight paths. Farther to the west the reduction is only slight due to the higher altitudes of the normal profiles when compared to the AC 91-53A profiles.

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of CNEL Contours for Existing Conditions and Noise Abatement Departure Profile Alternative

Figure 11

- CNEL Contours - Existing Conditions
- CNEL Contours - Noise Abatement Departure Profile Alternative
- RMT Site Location
- Airport Property
- Roads
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- SAN Airport Runways
- River / Stream
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_11_NA_NADP_Comparison.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of Westside CNEL Contours for Existing Conditions and Noise Abatement Departure Profile Alternative

Figure 12

- CNEL Contours - Existing Conditions
- CNEL Contours - Noise Abatement Departure Profile Alternative
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_12_NA_NADP_Enlarged.mxd

4.1.3 Advisory Group and Public Comments on this Measure

The feasibility and implementation of this measure was discussed at length at the Noise Technical Advisory Group meetings with the general consensus being that this would not be appropriate for SAN. There were several reasons given that included safety, compliance with AC 91-53A, standardization, economics, little noise benefit, air traffic control impacts, and increased emissions.

- Safety: The air carrier representatives consider the "Close-in" procedure as one that puts the aircraft close to the edge of the flying envelope. With the proposed power cutback at 800 feet above the field elevation the margin of safety above aircraft stall speed is reduced providing for a higher likelihood of stall in any unusual weather condition, i.e., down drafts, wind shears, and turbulence. In addition, with the loss of an engine at cutback power reduction the aircraft could be placed in a tenuous stall condition.
- Compliance with AC 91-53A "Noise Abatement Departure Profiles"[20]: AC 91-53A limits the number of NADPs for a particular aircraft type to two. Some airlines already have two NADPs: a close-in profile for use at SNA and a distant profile that is used at most other airports. Implementing a third NADP, which is different than the one used at SNA, would be in direct violation of the AC. For the same safety reasons stated previously, some airlines are opposed to the profile at SNA but realize the mandate to use this profile was implemented prior to the enactment of the Airport Noise and Capacity Act of 1990.
- Flight Crew Standardization: Flight standardization is a factor in that pilots are comfortable flying consistent procedures or NADPs such that the familiarity, repetition, and consistency result in increased performance when flying a NADP precisely as designed. Training in fewer profiles or procedures makes for simpler and safer flights.
- Economic Benefit: In discussion with the airlines, the close-in profile is more costly in time and fuel. Mandating this NADP would have an adverse impact on the airline especially with the aircraft configured with extended flaps for longer periods of time.
- Noise Benefit: The modeled noise contours show a benefit "close-in' in the range of 1-2 dB. For demonstration purposes, the Airport Authority used its SoundScapes program to compare the standard and noise abatement departure profiles at SAN for several representative aircraft. NTAG members listened to the sounds for each profile and were barely able to distinguish between the two profiles for each aircraft type. Studies done at other airports have shown little to no benefit by replacing the "distant" with the "close-in" NADP. Therefore, from a noise benefit perspective of the resident, it doesn't provide the benefit that noise mitigation through sound-proofing can provide.
- Air Traffic Control Impacts: With a single-runway operation at SAN and slower than normal departures, the airspace limitations would become more prevalent and require additional separation for aircraft departures and arrivals thereby possibly causing delays and reducing the operational capacity of the airport. This also would increase the air traffic controller's workload.
- Increased Emissions: With the aircraft flying slower and lower on the "close-in" NADP compared to the standard departure profile, the aircraft would remain over the noise-impacted area longer and emissions may have a greater impact on the "footprint" and provide more negative effects on the area's air quality.

[20] Federal Aviation Administration Advisory Circular 91-53A, "Noise Abatement Departure Profiles", July 22, 1993, Section 7.c.

4.1.4 Conclusions

Considering the evaluation results and comments and the additional costs to aircraft operations, safety, air quality, and the likelihood that the FAA would oppose this measure based on the requirement previously discussed regarding FAA AC 91-53A, the Airport Authority did not recommend this measure for further study or implementation.

4.2 Implement a Preferential Runway Use Program for Aircraft Arrivals between 2330 and 0630 Hours (During the Departure Curfew)

The long-standing curfew at SAN prohibits all non-exempted[21] aircraft departures between 2330 and 0630 hours. There is no curfew for arrivals; therefore, a small number of arrivals (approximately four per night) occur during the departure curfew hours. These arrivals are primarily air cargo flights generally scheduled to arrive in the 0400 to 0600 time frame. Three of the four arrivals originate in the eastern U.S. and normally land to the west on Runway 27; the fourth originates in Oakland, CA and normally, weather and winds permitting, flies down the coast and lands to the east on Runway 9. This one flight is the source of some complaints to the west of the airport; therefore, an analysis was conducted to determine if there is a need for a preferred runway use during these "curfew hour" arrivals.

4.2.1 Background and Procedures

To determine the sensitivity of the noise exposure contours to the nighttime arrivals, three scenarios were examined and evaluated in terms of CNEL and potential for sleep awakenings:

- All aircraft arrive Runway 9
- All aircraft arrive Runway 27
- Aircraft arrive without a preferential runway use program (existing, no change)

The initial evaluation of each scenario used a single day of flight tracks and aircraft that closely approximated the modeled annual average day in CNEL contour and measured noise levels at the remote monitoring terminals (RMT). This approach allowed the adjustment of all arrivals between 2330 and 0630 hours on the selected day to the runway scenario alternative. Of particular interest was the cargo arrival to Runway 9 generally between 0400 and 0430 several days a week. A representative track for this aircraft when it arrives on Runway 27 was added to the typical day RealContours data for evaluating the "all Runway 27" scenario.

The evaluation involved generating modified CNEL contour sets for each of the two proposed preferential runway use programs to compare to the existing CNEL contour set. Because this is a nighttime program, the potential of awakenings was determined from the complete nighttime operations using the Federal Interagency Committee on Aviation Noise (FICAN) recommended procedure, ANSI standard ANSI/ASA S12.9-2008 / Part 6[22]. A comparison of the three scenarios

[21] Exempted flights include "any aircraft operation at the airport which is conducted in an emergency situation or to any mercy flight or military flight of necessity". Airport Use Regulations.

[22] ANSI/ASA S12.9-2008/Part 6, Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes.

was conducted to further understand the potential benefits and impacts of a preferential nighttime runway use program at SAN.

4.2.2 Evaluation Results

The CNEL contours shown in Figure 13 through Figure 16 compare the existing annual-average day, which includes the one nighttime arrival from the west, to the two preferential runway cases. As shown, with all the 2330 to 0630 arrivals using Runway 9 as the preferential runway the contours extend slightly to the west and are slightly smaller to the east. With this designation, the aircraft arriving from the east would fly an extended downwind south of the airport similar to what is flown when visibility or weather dictates the use of Runway 9. This would add time and fuel burn for these aircraft which would normally land to the west. With all the 2330 to 0630 arrivals using Runway 27 as the preferential runway the contours show very little to no change except at the very tips of the CNEL 65 dB contour. The one existing aircraft that generally lands to the east would follow the same flight path and profile as other aircraft arriving from the north and west to land on Runway 27.

A population and parcel estimation analysis for the preferential runway cases is shown in Table 12.

Table 12 Comparison of Affected Residential Units for the Nighttime Preferential Runway Alternatives and the Existing Runway Use
Source: HMMH

Contour Interval	Single-Family Units	Multi-Family Units	Estimated Population
Existing Runway Use			
CNEL 65-70 dB	1,956	6,759	21,090
CNEL 70-75 dB	672	934	3,887
> CNEL 75dB	0	0	0
Total	**2,628**	**7,693**	**24,977**
Runway 9 Preferential Runway			
CNEL 65-70 dB	1,947	7,081	21,848
CNEL 70-75 dB	705	912	3,913
> CNEL 75dB	0	0	0
Total	**2,652**	**7,993**	**25,761**
Runway 27 Preferential Runway			
CNEL 65-70 dB	1,963	6,724	21,023
CNEL 70-75 dB	657	905	3,780
> CNEL 75dB	0	0	0
Total	**2,620**	**7,629**	**24,803**
Note: Based on representative annual average day that closely approximated NEM			

To quantify the effects of either of these procedures beyond the CNEL contours, an analysis was undertaken to determine potential awakenings based on the referenced ANSI standard and looking at both sound-insulated and non-sound-insulated properties. Table 13 shows the population potentially awakened for the nighttime arrivals for the existing annual average day (AAD), Runway 9 preferential runway, and Runway 27 preferential runway. As potential awakenings go beyond the CNEL 65 dB contour, the significant difference in awakenings for Runway 9 and Runway 27 or the existing AAD is due primarily to the presence of the ocean approximately 4 miles from the end of the runway for approaches to Runway 9.

Table 13 Population Potentially Awakened by Nighttime Arrivals to SAN
Source: HMMH, ANSI/ASA S12.9-2008/Part 6

Existing AAD	Runway 9 Preferential	Runway 27 Preferential
4,636	1,659	5,360
Note: Based on representative annual average day that closely approximated NEM		

In effect, this measure shifts noise from one runway approach end to the other. Shifting of noise from one area that is normally exposed to the noise of approaching aircraft to another that is not normally exposed is generally against the policy followed by the Airport Authority when implementing noise mitigation measures.

4.2.3 Advisory Group and Public Comments on this Measure

The feasibility and implementation of this measure was discussed at the Noise Technical Advisory Group meetings. The general perception was that it was probably in the best interest to refrain from designating a nighttime preferential runway based on the information presented. As it is the pilot in command of the aircraft who is responsible for any decisions affecting the safety of the aircraft and considering the wind and weather conditions, a voluntary program would not result in significant decreases in population affected by aircraft noise. The runway currently used is generally based on where the flights originated and that pattern would be expected to remain if there were an increase in nighttime flights. Most agreed that the aircraft are looking to minimize flight times and fuel burn or costs and thus look to approach and land in the most expeditious manner. In addition, shifting noise from one area to another is not aligned with Airport Authority policy.

4.2.4 Conclusions

Considering the potential for change to annoyance and awakenings, due to the shifting of aircraft operations and noise, as well as the potential additional costs to aircraft operations (increase fuel consumption) and emissions, the Airport Authority did not recommend this measure for further study or implementation.

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of CNEL Contours for Existing Conditions and All Nighttime Curfew Arrivals to Runway 9

Figure 13

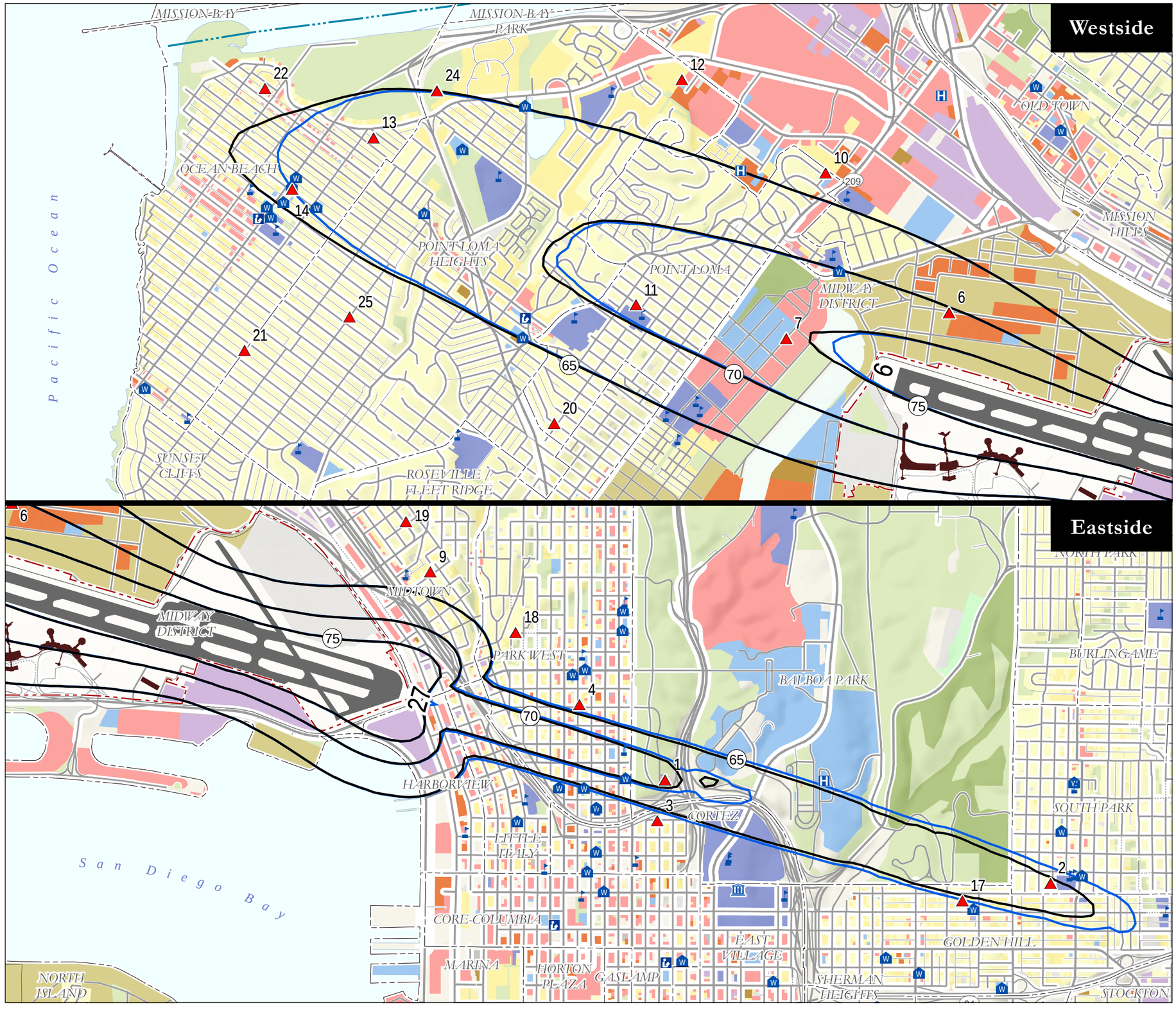
- CNEL Contours - Existing Conditions
- CNEL Contours - Nighttime Curfew Arrivals to Runway 09
- RMT Site Location
- Airport Property
- Roads
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- SAN Airport Runways
- River / Stream
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_13_NA_Night_Rwy9_Comparison.mxd



SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of East and Westside CNEL Contours for Existing Conditions and All Nighttime Curfew Arrivals to Runway 9

Figure 14

- CNEL Contours - Existing Conditions
- CNEL Contours - Nighttime Curfew Arrivals to Runway 9
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_14_NA_Night_Rwy9_Enlarged.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of CNEL Contours for Existing Conditions and All Nighttime Curfew Arrivals to Runway 27

Figure 15

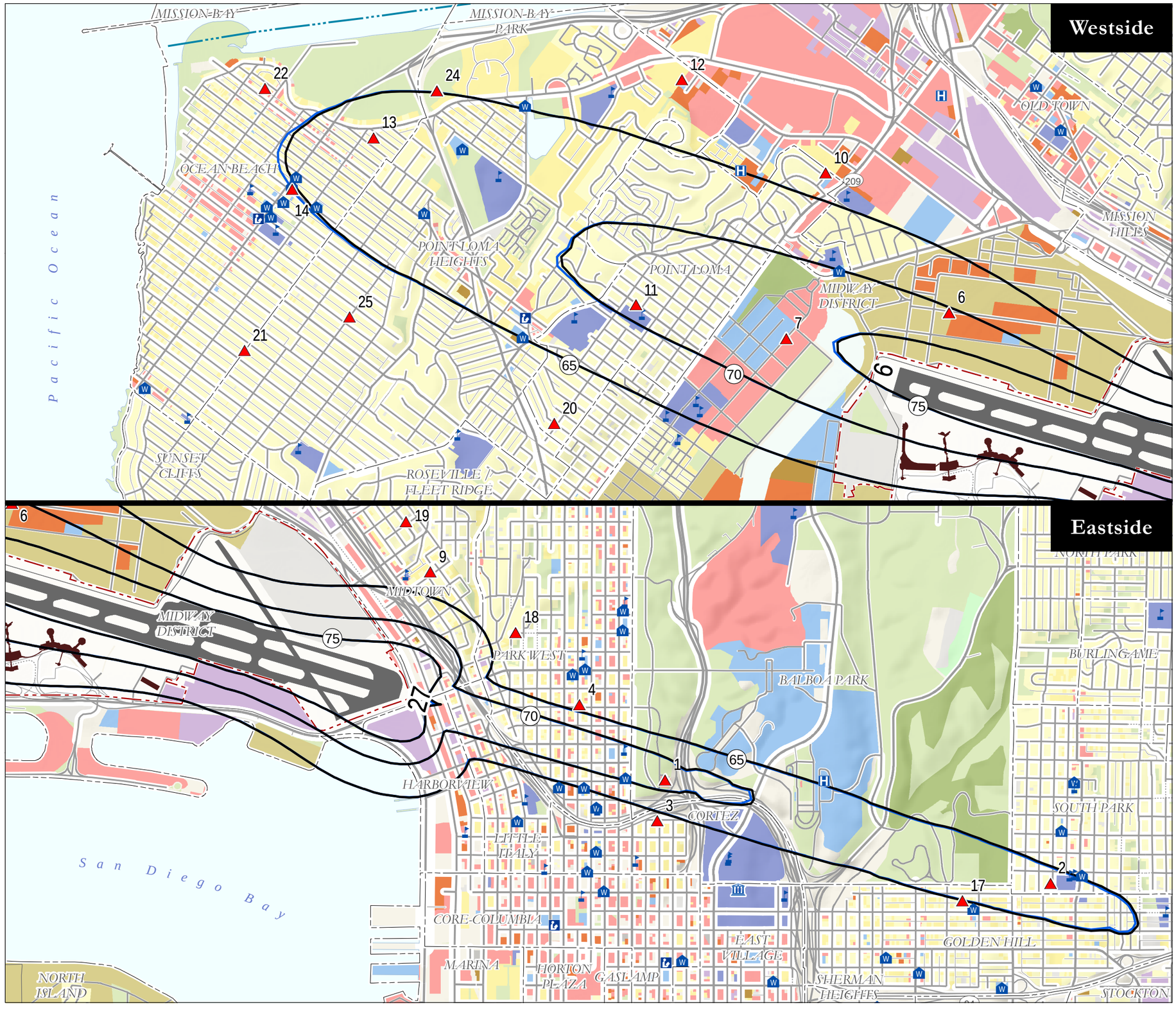
- CNEL Contours - Existing Conditions
- CNEL Contours - Nighttime Curfew Arrivals to Runway 27
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Library
- Schools
- College / University
- Place of Worship

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_15_NA_Night_Rwy27_Comparison.mxd



SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of East and Westside CNEL Contours for Existing Conditions and All Nighttime Curfew Arrivals to Runway 27

Figure 16

- CNEL Contours - Existing Conditions
- CNEL Contours - Nighttime Curfew Arrivals to Runway 27
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_16_NA_Night_Rwy27_Enlarged.mxd

4.3 Implement an RNAV Departure Procedure on Runway 27 for 290-degree Heading

Area Navigation (RNAV) procedures help pilots precisely fly established routes in aircraft equipped with satellite navigation systems. Designated waypoints of the departure flight path are provided in latitude and longitude and precisely define the route of flight. When flying a compass heading, the aircraft's actual ground track can vary due to changing winds aloft thereby presenting the possibility of a slightly different ground track for each flight. Using RNAV procedures, the defining waypoint coordinates are programmed into the flight management system and the aircraft flies the defined track independent of the winds at altitude. This results in the aircraft flying a "tight" corridor in contrast to the dispersal over a larger area when flying a compass heading.

4.3.1 Background and Procedures

SAN currently has an FAA-approved RNAV departure procedure POGGI TWO (Figure 17) for aircraft departing Runway 27 using the 275-degree (or extended runway centerline) heading. This procedure provides for less aircraft dispersion over the ground due to changing wind patterns and velocity as the aircraft are flying an actual track versus a constant heading. This potential measure would implement a similar RNAV departure for the aircraft turning to the 290-degree heading after departure from Runway 27 currently displayed in the PEBLE THREE Departure (Figure 18).

Radar data was reviewed to determine those aircraft that currently have this capability, determine how well the 275-degree heading departure track is flown using Required Navigation Performance (RNP), and evaluate the noise effects of this procedure on the existing 290-degree heading flight path. In a presentation to the Airport Authority, the FAA provided data that indicated approximately 95% of the 275-degree heading departures use the RNP. Reviewing a few days of radar data using a proprietary program found approximately 55% of the departures appeared to be flying the RNP. As a conservative estimate, this same percentage (55%) was applied to the aircraft departing on the 290-degree heading using the PEBLE THREE Departure for reference.

The initial evaluation used a single day of flight tracks and aircraft that closely approximated the modeled annual average day CNEL contour and measured noise levels at the remote monitoring terminals (RMT). To represent the RNAV procedure, a navigation fix was placed along the Oceanside VORTAC 170-degree radial at the approximate location where the aircraft would initiate a turn from the 290-degree track to the northwest to proceed to MELDY and PEBLE Intersections. Aircraft flight track dispersion was "tightened" around the primary flight track similar to that shown in radar data for the 275-degree heading departure. The operations were modeled and a comparison made with aircraft using the RNAV procedures on the 290-degree track and the standard operations modeled for the baseline.

4.3.2 Evaluation Results

The RNAV departure for the 290-degree heading has very little influence on the noise contour whether 55% or 100% of the aircraft departing on the 290-degree heading precisely follow this instrument procedure. As shown in Figure 19 through Figure 22, the CNEL 65 dB contour differences are minimal when compared to the existing flight procedures.

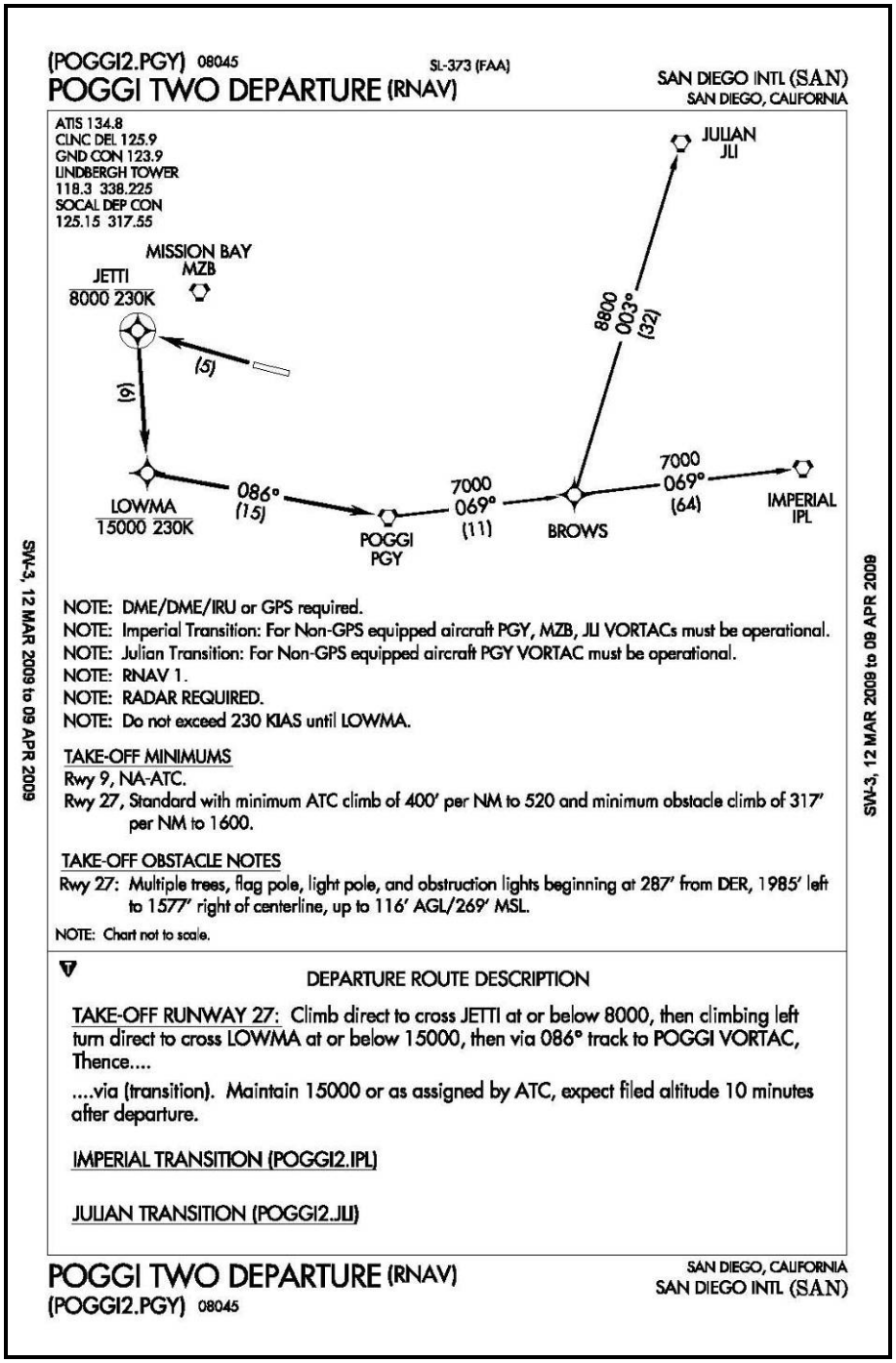


Figure 17 POGGI TWO RNAV Departure

.

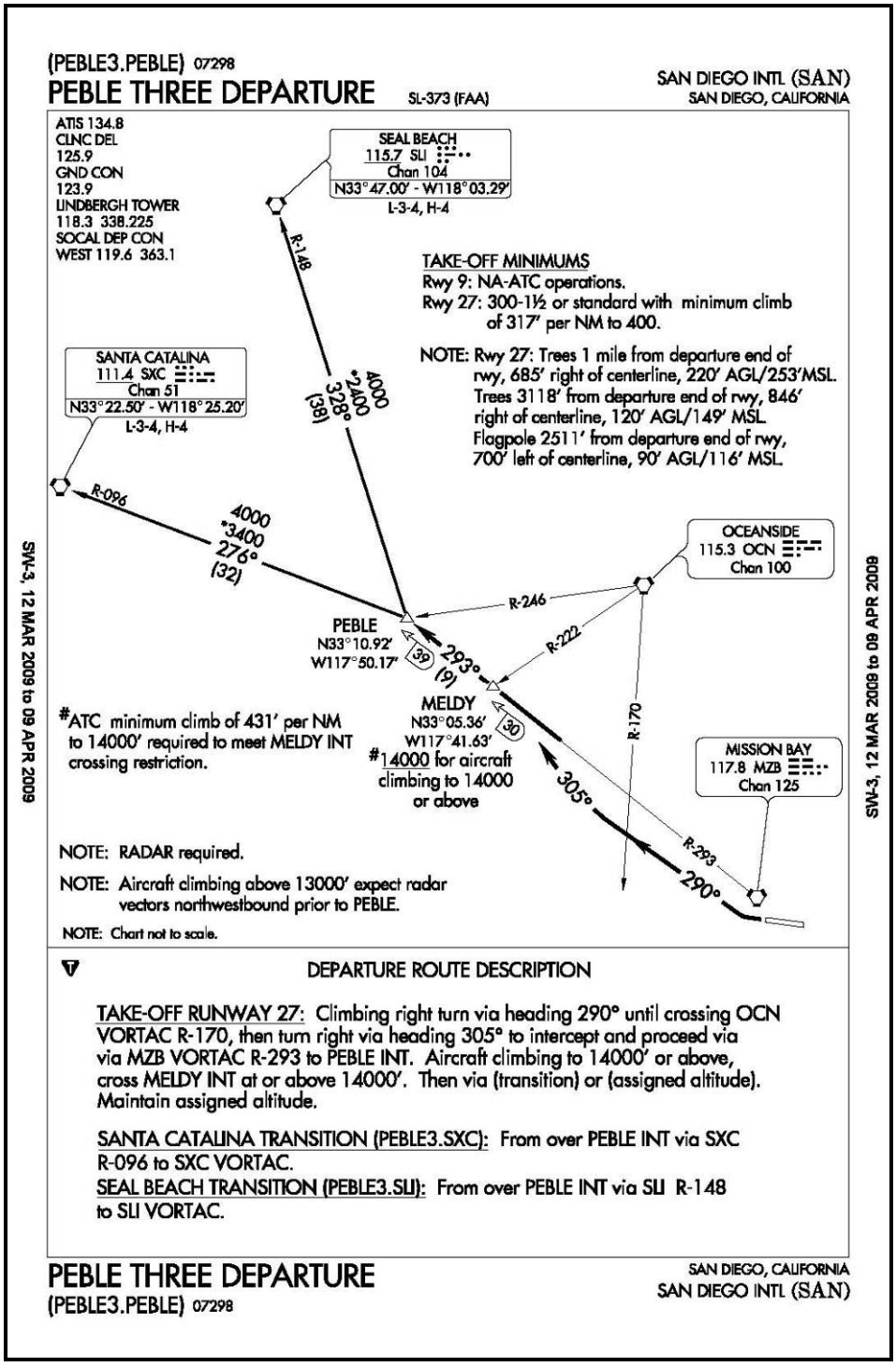


Figure 18 PEBLE THREE Departure

This page intentionally left blank

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of CNEL Contours for Existing Conditions and 290 Heading RNAV Departure Alternative (55%)

Figure 19

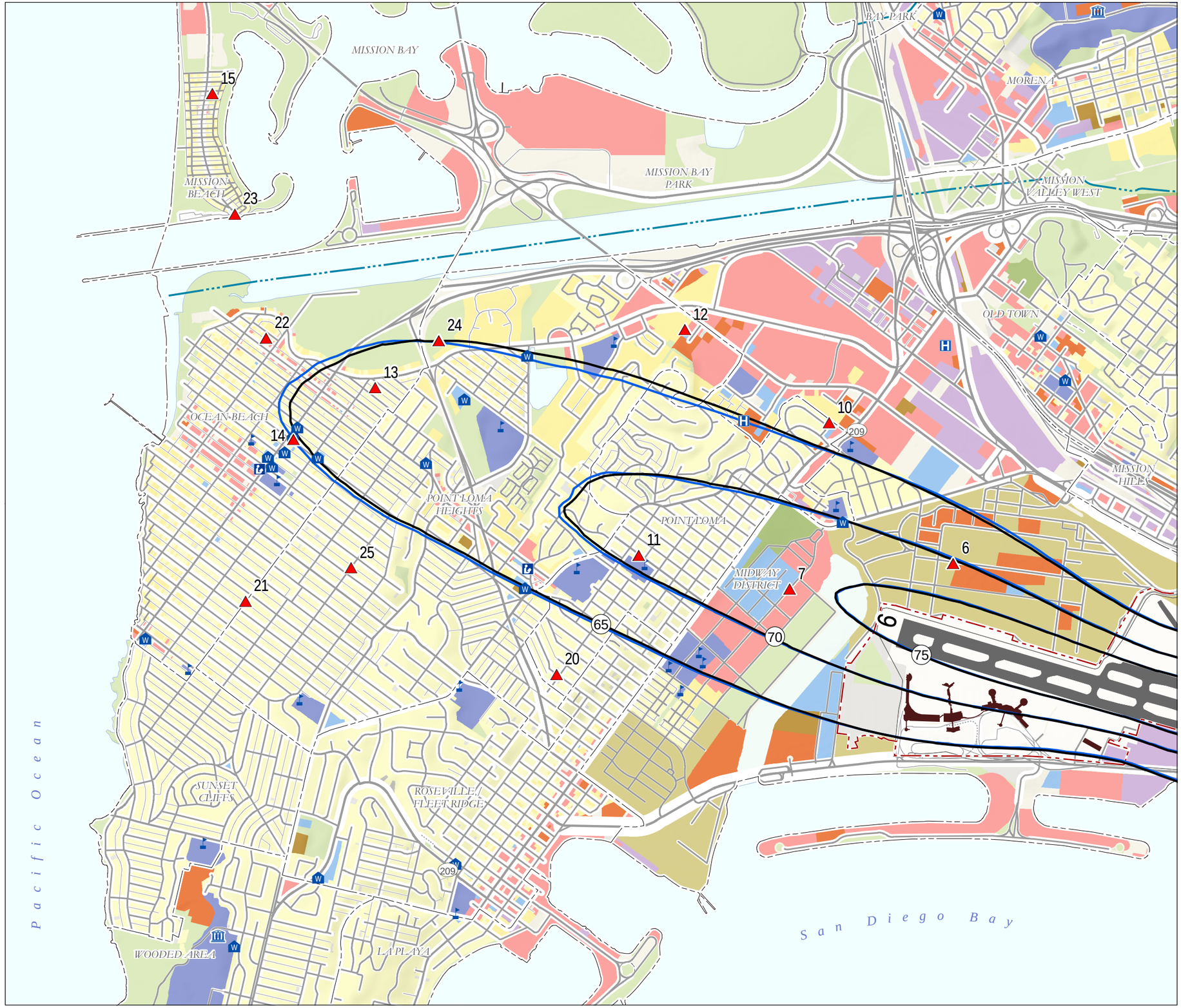
- CNEL Contours - Existing Conditions
- CNEL Contours - 290 Degree Departure Heading RNAV Alternative
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Library
- Schools
- College / University
- Place of Worship

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_19_NA_290_HEADING_55%_Comparison.mxd



H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_20_NA_290_HEADING_55%_Enlarged.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of Westside CNEL Contours for Existing Conditions and 290 Heading RNAV Departure Alternative (55%)

Figure 20

- CNEL Contours - Existing Conditions
- CNEL Contours - 290 Degree Departure Heading RNAV Alternative
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of CNEL Contours for Existing Conditions and 290 Heading RNAV Departure Alternative (100%)

Figure 21

- CNEL Contours - Existing Conditions
- CNEL Contours - 290 Degree Departure Heading RNAV Alternative
- RMT Site Location
- Airport Property
- Roads
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- SAN Airport Runways
- River / Stream
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_21_NA_290_HEADING_100%_Comparison.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of Westside CNEL Contours for Existing Conditions and 290 Heading RNAV Departure Alternative (100%)

Figure 22

- CNEL Contours - Existing Conditions
- CNEL Contours - 290 Degree Departure Heading RNAV Alternative
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Schools
- Place of Worship
- Library
- College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_22_NA_290_HEADING_100%_Enlarged.mxd

4.3.3 Advisory Group and Public Comments on this Measure

While it was generally agreed that the new RNAV procedure may be beneficial in narrowing aircraft flight dispersions, the overall sense was to not move forward with a recommendation to advance RNAV as a noise abatement measure under Part 150.

4.3.4 Conclusions

Considering the negligible noise benefit, the Airport Authority did not recommend this measure for further study or implementation. If the FAA decides to implement an RNAV procedure for the 290-heading departure at SAN, based on the results of this analysis, the Airport Authority would not object for aircraft noise reasons.

4.4 Develop and Implement a 310-degree Heading for Runway 27 Departures along with an RNAV Procedure for Aircraft Adherence

A standard process in noise abatement is to find areas of lower density population and derive flight paths that place aircraft over these lower density areas to reduce the number of people exposed to aircraft noise. In reviewing the land uses to the west of SAN, the Airport Authority recommended investigating another flight path that has aircraft turning further right than the 290-degree heading and flying a 310-degree heading. This would take the aircraft further to the north and possibly fly over more commercially-zoned areas than those under the 275- and 290-degree headings.

4.4.1 Background and Procedures

SAN has two departure headings for Runway 27; the 275-degree heading is generally for those aircraft with destinations to the east of SAN, while the 290-degree heading is generally for those aircraft with destinations to the north. As discussed in the previous section, aircraft flying a constant heading have flight or ground paths that are affected by winds aloft. This causes the aircraft tracks to spread over more of the ground affecting more of the local populace. As an alternative, the Airport Authority was interested in exploring other ground tracks for different aircraft headings that might affect fewer people. Based on current land uses and aircraft operating characteristics, it was determined that a 310 heading might accomplish this objective.

An RNAV flight track was developed based on the PEBLE THREE Departure (Figure 23) for aircraft normally on the 290-degree heading that would turn to an approximate 310-degree heading soon after takeoff (Figure 24). At a designated fix location in the vicinity of the San Diego River Floodway, the aircraft would turn westerly flying over the uninhabited river bed until past the coast and then reestablish the existing 290-degree heading departure enroute to PEBLE Intersection. Radar data were reviewed to determine those aircraft that currently fly the 290-degree heading and prototypical flight tracks were developed for the 310-degree heading. The identified aircraft were then placed on the new tracks, modeled, and the resulting CNEL contours were compared to the existing noise contours. As in the previous measures, the initial evaluation used a single day of flight tracks and aircraft that closely approximated the modeled annual average day CNEL contour and measured noise levels at the remote monitoring terminals.

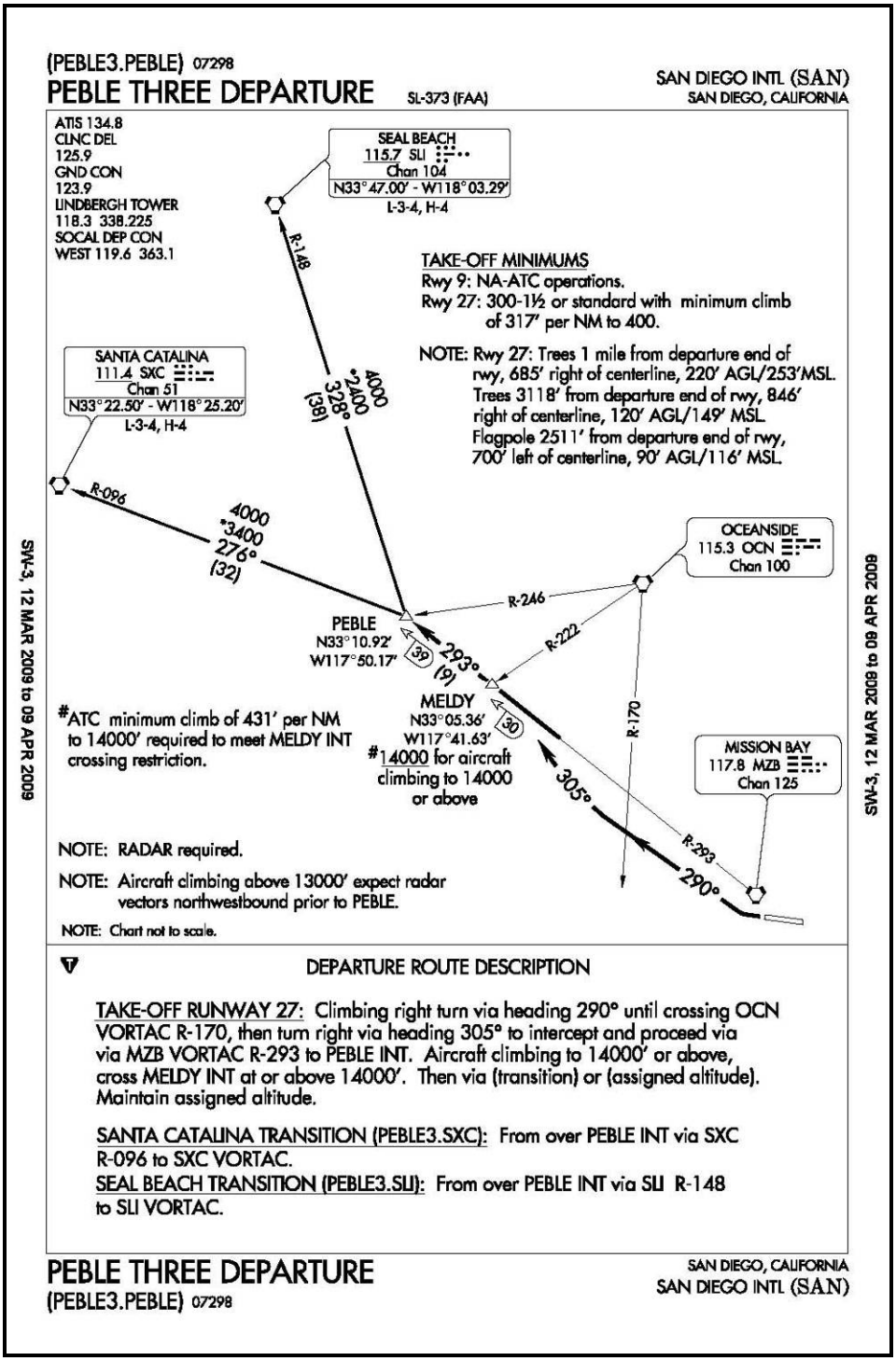


Figure 23 PEBLE THREE Departure

SAN DIEGO INTERNATIONAL AIRPORT

Runway 27 Departure Flight Tracks with Right Turn to 310 Heading

Figure 24

- Alternate Departure Flight Track
- Existing Departure Flight Tracks
- Airport Property
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- SAN Airport Runways
- Land Under Construction
- Vacant and Undeveloped Land
- Water

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_24_FTrack_Alt_LT310Heading.mxd

4.4.2 Evaluation Results

As shown in Figure 25 and Figure 26, the CNEL 65 and 70 dB contours bulged out to the north somewhat while drawing slightly closer in on the western extents. Thus, some residential units within the existing CNEL 65 dB contour were now outside the contour while some additional new residential units were now included within the contour. Analysis of census data and the available parcel data for the airport environs provided the population within the new 310-degree heading CNEL contour intervals. The estimated population was computed based on a census population factor of 2.42 people per parcel unit. The results of that analysis are shown in Table 14.

Table 14 Comparison of Affected Residential Units for the 310 Heading Departure
Source: HMMH

Contour Interval	Single-Family Units	Multi-Family Units	Estimated Population
Heading 310			
CNEL 65-70 dB	2145	7138	22465
CNEL 70-75 dB	529	655	2865
> CNEL 75 dB	22	299	777
Total	**2696**	**8092**	**26107**
Heading 290			
CNEL 65-70 dB	2081	7206	22475
CNEL 70-75 dB	652	670	3199
> CNEL 75 dB	22	299	777
Total	**2755**	**8175**	**26451**
Note: Based on representative annual average day that closely approximated NEM			

The table shows a slight reduction in the affected population for the new heading but amounts to a shift in the noise from one population sector to another.

4.4.3 Advisory Group and Public Comments on this Measure

The NTAG agreed to not include this measure in the Part 150 submittal. The concerns were that the new procedure would potentially subject new residents (in Mission Beach, Pacific Beach, La Jolla) as well as outdoor activities and high assembly areas such as Sea World, Mission Bay Park, and the San Diego Sports Arena to aircraft overflight noise. Additionally, concerns were raised regarding future residential development of properties in this area not currently impacted by the CNEL 65 dB contour or related airport land use restrictions. Also, NTAG members discussed possible altitude restrictions due to the close proximity to other local airports and the existing VFR corridor, as well as the airspace structure for SAN arrivals from the north. There would also be possible delays due to each SAN departure requiring a "manual release" with additional controller workload.

Public comments raised similar concerns about the change in departure heading with respect to exposing additional residents to aircraft noise, both multi-family residential and in business and commercial gathering areas. Comments also pointed out that an active noise mitigation program was underway in the current affected area and this "shift" would bring more multi-family residential units into the affected area increasing the required funding to sound attenuate those additional units.

4.4.4 Conclusions

Considering the comments from the NTAG and Public and the minimal noise benefit due to the shifting of operations to the north, the Airport Authority did not recommend this measure for further study or implementation.

SAN DIEGO INTERNATIONAL AIRPORT

Comparison of CNEL Contours for Existing Conditions and 310 Heading Departure Alternative

Figure 25

- CNEL Contours - Existing Conditions
- CNEL Contours - 310 Degree Departure Heading Alternative
- RMT Site Location
- Airport Property
- SAN Airport Runways
- Roads
- River / Stream
- Single Family Residential
- Multi-Family Residential
- Mobile Home Parks
- Hotel/Motel, Group Quarters
- Commercial
- Industrial
- Agriculture
- Parks
- Golf Courses
- Public Service
- Schools
- Military Use
- Transportation/Communication/ Utilities
- Land Under Construction
- Vacant and Undeveloped Land
- Water
- Hospital
- Library
- Schools
- College / University
- Place of Worship

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 4,000 8,000 Feet

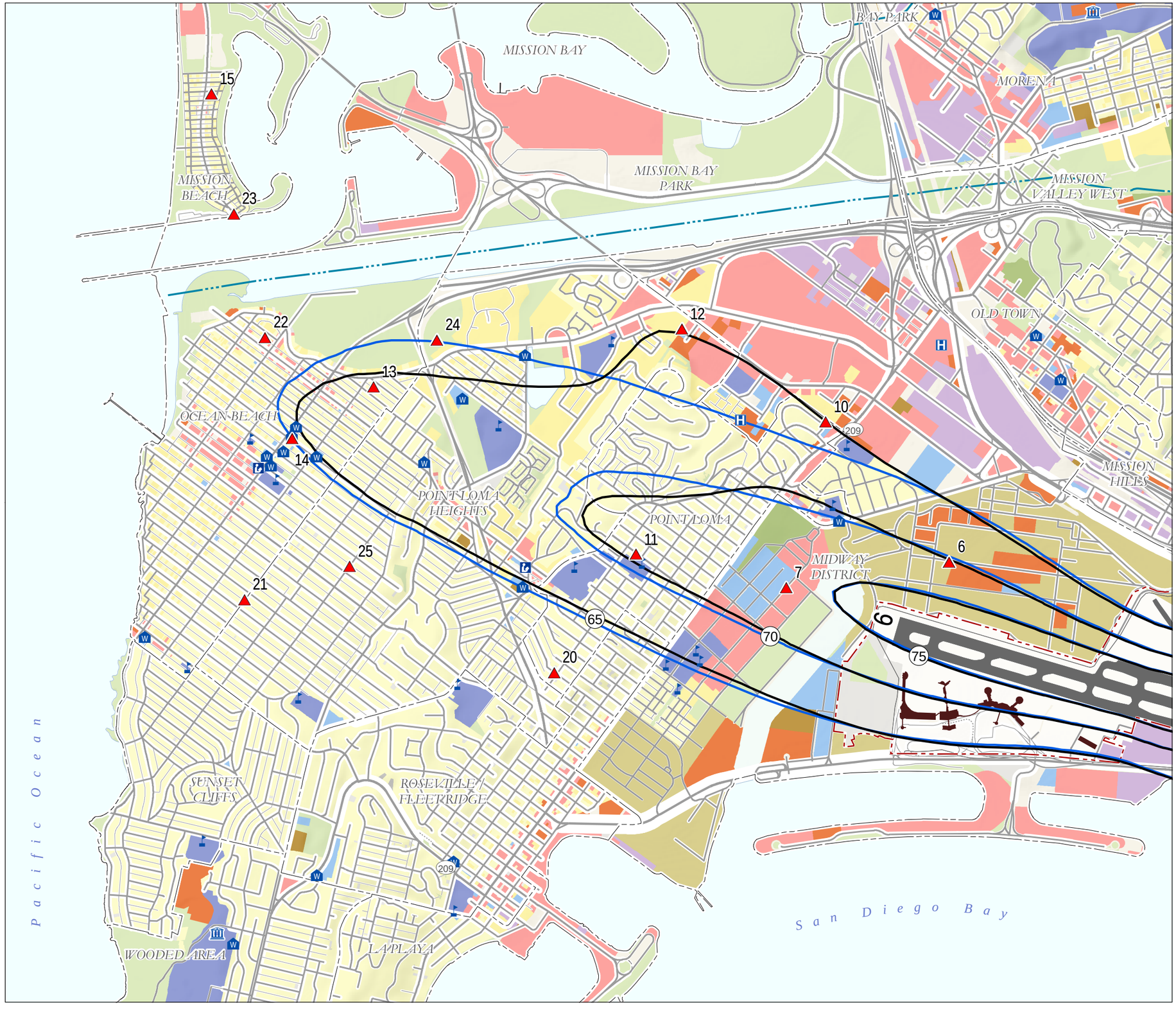
HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_25_NA_310_HEADING_Comparison.mxd

SAN DIEGO INTERNATIONAL AIRPORT

Expanded Comparison of Westside CNEL Contours for Existing Conditions and 310 Heading Departure Alternative

Figure 26



CNEL Contours - Existing Conditions

CNEL Contours - 310 Degree Departure Heading Alternative

RMT Site Location

Airport Property

SAN Airport Runways

Roads

River / Stream

Single Family Residential

Multi-Family Residential

Mobile Home Parks

Hotel/Motel, Group Quarters

Commercial

Industrial

Agriculture

Parks

Golf Courses

Public Service

Schools

Military Use

Transportation/Communication/ Utilities

Land Under Construction

Vacant and Undeveloped Land

Water

Hospital

Schools

Place of Worship

Library

College / University

Data Sources: San Diego International Airport; San Diego Association of Governments (SANDAG); City of San Diego and County of San Diego (SanGIS); Environmental Systems Research Institute, Inc. (ESRI),

0 2,000 4,000 Feet

HARRIS MILLER MILLER & HANSON INC.

H:\GIS\USA\CA\302100_SanDiego\302100_SAN_DRAFT_NCP_Figure_26_NA_310_HEADING_Enlarged.mxd

5 PUBLIC CONSULTATION

The Airport Authority is conducting this Part 150 update with extensive consultation with all members of the airport public, including potentially affected residents of the airport environs, airport users, fixed based operators, pilots, and local, State, and Federal officials. The public consultation process exceeds Part 150 requirements.

The Airport Authority and its consultants used several mechanisms in pursuing these external consultations, through the full study process:

- Six meetings of the Part 150 Noise Technical Advisory Group
- Three Community Information Workshops, with the last including a public hearing
- A second public hearing to ensure complete opportunity for public comment
- A study website to provide up-to-date information and progress
- A toll-free phone number for the public to provide their comments and ask questions
- Periodic project newsletters provided in the Airport Authority's "Noise Matters" newsletter (Appendices U and JJ)
- General communications throughout the study process with officials of government agencies having jurisdiction over land in the airport environs, and over airport operations

5.1 Noise Technical Advisory Group

A noise technical advisory group (NTAG) was formed as part of the public participation component of the Part 150 Study. The NTAG is comprised of representatives of communities surrounding the airport, representatives of government agencies with an interest in the airport or airport noise, representatives of the airlines and general aviation groups, and other interested stakeholders. Table 15 lists the NTAG membership. NTAG members represent their respective constituencies, provide input on the NEM, and review and make recommendations regarding the NCP.

The study included six meetings of this group. The first meeting to introduce the Part 150 update was January 24, 2008 and the second meeting was June 26, 2008. At the June 26, 2008 meeting the NTAG reviewed the draft NEM preliminary results without the document and provided comments. A third NTAG meeting held on September 18, 2008 focused on the NCP in an attempt to keep the project moving forward while discussions were held regarding non-standard NEMs modeling. The fourth meeting of the NTAG on January 15, 2009 presented the draft NEMs for review and comment along with preliminary analyses of previously identified potential NCP measures. On May 21, 2009 the fifth NTAG meeting was held to review a comprehensive memo on the recommended measures for the NCP. The final measures were discussed and comments provided by NTAG members to assist in preparing the draft NCP. On January 14, 2010, the sixth and final NTAG was held to review and make any final inputs to the draft NCP. Table 16 summarizes NTAG meeting dates and topics. Committee members helped disseminate information on the study to the noise-impacted community and aviation industry and solicit their input.

Appendix K through Appendix T and Appendix Z through Appendix II present copies of background material, minutes, and sign-in sheets from each meeting, for public participation efforts related to the NCP element of the Part 150 update process.

Table 15 Noise Technical Advisory Group Members

Airport Authority	Paul Webb
Consultant HMMH CommuniQuest Mead & Hunt	Eugene Reindel Robert Behr Christine Eberhard Ken Brody
Community	Shane Finneran, Ocean Beach Suhail Khalil, Point Loma William Keaton, Midway Planning David Caldwell, Golden Hill Luke Vinci, Center City Advisory Committee Hirsch Gottschalk, Uptown Planners
FAA	Jeff Tittle, Air Traffic Control Tower Jim McNamara, Flight Standards District Office Victor Globa, Los Angeles Airports District Office
CALTRANS Aeronautics Division	Betsy Eskridge
U.S. Navy	Sheila Donovan
U.S. Marine Corps (MCRD)	Cliff Myers
City of San Diego	Tait Galloway, Planning Mike Tussey, Airports
Centre City Development Corp.	Brad Richter
San Diego County	John Bennett, Land Use Peter Drinkwater, Airports
Port of San Diego	John Helmer
San Diego Unified School District	Jim Watts
Airport Advisory Committee	Doug Eatros
Airport Land Use Commission	Sandi Sawa
Airport Noise Advisory Committee	Tait Galloway
Air carriers	Billy Self, Air carrier representative
Air Cargo carriers	Doug Eatros, Federal Express
General Aviation	Daniel Burkhart, National Business Aviation Association

Table 16 Noise Technical Advisory Group Meetings

Date	NTAG Update Topics
January 24, 2008	NTAG Meeting No. 1 - Introduced Project Team, established committee operations and expectations, provided tentative meeting schedule, reviewed previous studies and purpose of update, and reviewed upcoming agenda. Information included in NEMs document.
June 26, 2008	NTAG Meeting No. 2 – Discussed progress of NEMs and draft preliminary results. Information included in NEMs document.
September 18, 2008	NTAG Meeting No. 3 – Discussed previously adopted NCP measures and possible alternatives to study .
January 15, 2009	NTAG Meeting No. 4 – Presented the Draft NEMs for review and comment. Presented the initial analysis of NCP alternatives.
May 21, 2009	NTAG Meeting No. 5 – Presented Technical Memo that detailed noise compatibility measures considered for implementation. Reviewed NCP measures, both existing and new, that were recommended for implementation
January 14, 2010	NTAG Meeting No. 6 – Presented Draft NCP for review and comments before finalizing document for submittal to the FAA.

5.2 Community Information Meetings and Other Stakeholder Opportunities to Comment

The study included Community Information Workshops to ensure that every interested party had the opportunity to obtain information on the study process and progress. The meetings were held in a workshop format, with a time-certain briefing, to permit the general public to ask specific questions to study team members. Table 17 summarizes the information presented and discussed at the meetings.

Table 17 Community Information Workshops Content

Date	Topics
June 26, 2008	Community Information Workshop No. 1 - Provided forum for individual comments, questions, and discussion with consultant team on the presentation of the draft NEMs. Information included in NEMs document.
March 10, 2009	Community Information Workshop No. 2 – Provided forum for individual comments, questions, and discussion with consultant team on the presentation of the updated draft NEMs prior to submittal to the FAA and preliminary analyses on noise abatement measures under consideration for the NCP.
January 14, 2010	Community Information Workshop No. 3/Public Hearing – Provided forum and opportunity for public review and comment on Draft NCP before finalizing for submittal to the FAA.
May 13, 2010	Second Community Public Hearing - Provided additional forum and opportunity for public comment on Draft NCP before finalizing for submittal to the FAA.

Appendix V through Appendix Y present the materials related to the second Community Information Workshop.

Appendix KK through Appendix RR present the materials related to the third Community Information Workshop/Public Hearing.

Appendix SS through Appendix WW present the materials related to the second Community Public Hearing.

5.3 Project Newsletters

In April 2008, the Airport Authority placed information regarding the study progress in their periodical publication "Noise Matters", which is mailed to over 38,000 residents in the SAN Noise Impact Area. The newsletter contained general information about the study process and provided a link to the study website as well as a toll free telephone line for any inquiries from community members or airport tenants (See NEMs document). A follow-up publication in March 2009, included in Appendix U, provided additional information on the progress of the NEMs. In January 2010 a third publication, included in Appendix JJ, provided information with regard to the NCP study including measures recommended for the program.

5.4 Public and Planning Agency Consultation

Part 150 Section A150.123 requires that the NCP provide active and direct participation of the public and planning agencies with jurisdiction within the CNEL 65 dB noise contours. Those agencies having land use jurisdiction within the CNEL 65 dB contours primarily include the City of San Diego, Port of San Diego, Department of Defense, and Centre City Development Corporation. Table 15 lists members of those jurisdictions' planning staffs included in the Noise Technical Advisory Group to provide the consultation required under 14 CFR Part 150, Subpart B, §150.23 (d).

5.5 Other Public Input Received During the Study Process

Appendices Y, RR and WW present copies of written public input received during the study process, prior to submission of this document to the FAA. Appendix J provides the toll-free phone log regarding comments on the NCP.

5.6 Opportunity of Public Hearing

At the third public workshop, the Airport Authority provided a court recorder and afforded the public the opportunity to provide comments on the Part 150 study. These recorded public comments are submitted with this NCP documentation along with the Airport Authority's responses and can be found in Appendix QQ. A second public hearing with a court recorder was held in May 2010 to further ensure a full opportunity for public comment. Appendix SS through Appendix WW presents the copies of the notices and the recorded public comments with Airport Authority responses.

SAN DIEGO COUNTY
REGIONAL AIRPORT AUTHORITY