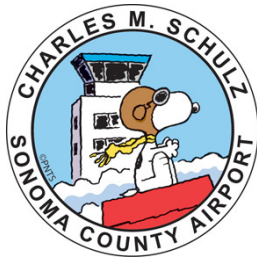


Runway Approach Protection Plan

Prepared for

Charles M. Schulz – Sonoma County Airport



Prepared by

**Mead
& Hunt**

March 26, 2013

Table of Contents

		Page
1.	INTRODUCTION	1
2.	EXISTING APPROACH PROTECTION POLICIES	2
	A. FAA POLICIES FOR APPROACH PROTECTION	2
	1. FAA Grant Assurances	2
	2. Airport Design Advisory Circular	2
	B. STATE POLICIES FOR APPROACH PROTECTION	3
	C. COUNTY AND AIRPORT POLICIES FOR APPROACH PROTECTION	3
	1. Safety and Airspace Protection Policies	3
	2. Noise-related Policies.....	8
3.	INTERIOR NOISE STANDARD	12
4.	TIMING OF NEW NOISE CONTOUR DEVELOPMENT	12
5.	POSSIBLE NOISE MITIGATION STRATEGIES	13
	A. SALES-RELATED ASSISTANCE	13
	B. ACOUSTICAL TREATMENT	14
	C. EASEMENT ACQUISITION	15
	D. OPERATIONAL MITIGATIONS	15

List of Tables

1	Parcels Proposed to be Acquired.....	4
2	Potential Noise-Affected Parcels.....	8

List of Figures

1	Parcels Impacted by Ultimate Airspace – North	5
2	Parcels Impacted by Ultimate Airspace – Southwest	6
3	Parcels Impacted by Ultimate Airspace – Southeast.....	7
4	2009 CNEL Contours	9
5	2030 CNEL Contours	10
6	Potential Parcels Impacted by Ultimate Noise.....	11

Runway Approach Protection Plan

Charles M. Schulz – Sonoma County Airport

March 26, 2013

1. INTRODUCTION

Policy AT-3f of the Air Transportation Element (ATE) of the Sonoma County General Plan requires development of a Runway Approach Protection Plan for the Charles M. Schulz – Sonoma County Airport (Airport). Currently, the Airport enjoys a high level of compatibility with neighboring land uses. The goal of the Approach Protection Plan is to ensure that the Airport maintains this high level of compatibility as activity levels increase and the mix of aircraft types using the Airport changes over time.

The first section of this Plan (Section 2) documents current Airport, County, State, and Federal Aviation Administration (FAA) policies and practices related to approach protection. It identifies properties anticipated to be impacted by noise based upon forecast increases in aircraft activity. The first section also documents properties identified for acquisition based upon safety criteria.

The second section of this Plan (Sections 3, 4, and 5) provides the policy guidance to support the approach protection goals identified in the Air Transportation Element. It begins with development of the interior noise standard that will be used as the threshold to determine when mitigation measures need to be implemented. The next chapter identifies the specific activity threshold that will trigger a review of policies in the future. Finally, measures and policies in place at other airports are evaluated for possible incorporation into this Plan. This evaluation focuses on actions that would reduce noise impacts on residential land uses in the vicinity of the Airport and to ensure compatible land uses adjacent to the Airport.

2. EXISTING APPROACH PROTECTION POLICIES

Approach protection policy guidance exists at local, state and federal levels of government. This section highlights the key sources of policy direction applicable to the Airport. A more expansive discussion of policies is contained in Appendix K of the Environmental Impact Report for the Airport Master Plan that was adopted in January 2012.

A. FAA POLICIES FOR APPROACH PROTECTION

1. FAA Grant Assurances

Certain obligations, known as grant assurances, must be agreed to when an airport accepts funds from the FAA's Airport Improvement Program. Several of these grant assurances address aspects of approach protection:

Hazard Removal and Mitigation – It [i.e., the airport owner] will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

This grant assurance is linked to the key federal guidance on airspace protection: Title 14 of the Code of Federal Regulations Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace. Part 77 defines the airspace surfaces that need to be protected. These airspace surfaces are shown in the Airspace Plan sheets in the Airport Layout Plan (ALP) set.

Compatible Land Use – It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

2. Airport Design Advisory Circular

The FAA's principal guidance on airport design is contained in Advisory Circular 15/5300-13A, *Airport Design*. Among the many policies are ones that direct the airport to exclude incompatible land uses from within the Runway Protection Zones (RPZs) located beyond the runway end. This Advisory Circular indicates that the airport should own the property within the RPZs and "it is desirable to clear the entire RPZ of all above-ground objects."

B. STATE POLICIES FOR APPROACH PROTECTION

California State Aeronautics Act

The State Aeronautics Act (PUC Section 21001 et seq.) contains the principal state regulatory guidance related to airports. The Act “provides for the right of flight over private property, unless conducted in a dangerous manner or at altitudes below those prescribed by federal authority.” The Act further indicates that “no use shall be made of the airspace above a property that would interfere with the right of flight, including established approaches to a runway.” The Act also authorizes Caltrans and local governments to protect the airspace defined in FAR Part 77. The Act further prohibits any person from constructing any structure or permitting any natural growth of a height that would constitute a hazard to air navigation as defined in FAR Part 77 unless a permit is first obtained from Caltrans.

C. COUNTY AND AIRPORT POLICIES FOR APPROACH PROTECTION

1. Safety and Airspace Protection Policies

Safety and airspace protection policies and related implementation policies are contained in the ATE and Airport Master Plan (including its associated Airport Layout Plan). ATE Objective AT-2.1 provides that:

The height and type of structures adjacent to airports should be restricted or marked so they will not constitute hazards to air navigation as per FAR Part 77 and FAA Order FAA Order 8260.3B – United States Standard for Terminal Instrument Procedures (TERPS).

ATE Policy AT-2a implements this objective by directing that Airport Land Use Commission (ALUC) policies relating to height of objects near the Airport be implemented unless specifically overridden by the County.

To be eligible for FAA grant funds, an airport must have an approved Airport Layout Plan (ALP). The ALP for the Airport has been periodically updated as part of updates of its Airport Master Plan. The January 2012 adoption of an updated Airport Master Plan by the Board of Supervisors included an update to the ALP. As required by FAA policies, the ALP set includes an Airport Property Map. The Airport Property Map documents those parcels that were acquired to support the operation and development of the Airport. FAA policies require protection of the airspace surrounding the airport and control of land within an airport’s Runway Protection Zones. Runway Protection Zones are trapezoidal shaped areas from ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground. ATE Policy AT-1f directs that:

Use the Airport Property Map contained in the Sonoma County Airport Master Plan and Airport Layout Plan and any future amendments thereof, for identification of parcels planned for acquisition to protect approach zones at the Charles M. Schulz – Sonoma County Airport.

The parcels to be acquired for safety and airspace protection are illustrated in **Figures 1 through 3**. Each graphic presents the parcels designated for acquisition, Runway Protection Zones, and the Part 77 approach surfaces. Information on each parcel can be found in **Table 1**. To maintain consistency, the parcel identifiers were retained from the Exhibit A in the approved ALP set.

Table 1. Parcels Proposed to be Acquired

Figure	Parcel Identifier	Assessor's Parcel Number	Acres	Designated Land Use (Sonoma County General Plan)	Observed Land Use
1	3	066-250-020	4.60	Diverse Agriculture	Open space
	5	066-250-022	0.38	Diverse Agriculture	Residence
	7	066-250-018	0.43	Diverse Agriculture	Residence
	8	066-250-017	0.43	Diverse Agriculture	Residence
	11	066-220-042	2.36	Diverse Agriculture	Open space
	16	164-160-002	0.11	Diverse Agriculture	Cemetery*
	17	164-160-002	20.77	Diverse Agriculture	Cemetery*
	25	164-170-007	0.66	Diverse Agriculture	Open space
	26	164-170-008	0.66	Diverse Agriculture	Residence
	27	164-170-009	1.00	Diverse Agriculture	Residence
	28	164-170-012	0.96	Diverse Agriculture	Residence
	29	164-170-013	0.84	Diverse Agriculture	Residence
	36	164-015-25	0.10	Diverse Agriculture	Open space
	37	164-015-025	1.10	Public / Quasi Public	Reservoir
3	43	059-200-002	2.52	Land Intensive Agriculture	Residence
	44	059-200-018	3.62	Land Intensive Agriculture	Residence
	45	059-200-018	10.54	Land Intensive Agriculture	Open space
2	46	057-070-043	27.11	Land Intensive Agriculture	Agriculture / pond
	47	057-070-044	23.86	Land Intensive Agriculture	Agriculture / pond
3	49	059-200-010	1.28	Land Intensive Agriculture	Residence
	53	057-110-003	4.47	Land Intensive Agriculture	Agriculture

* On this parcel, the development rights for uses other than as a cemetery will be acquired. The property will not be acquired in fee simple. An aviation easement will also be obtained as a part of the acquisition of development rights.

Current Airport policy is to acquire property through voluntary sale by the owner. The owners determine when they wish to sell the property. The sales price for a property is based upon formal appraisals to ensure that property owners receive fair market value. Relocation assistance is also provided in accordance with State and Federal laws.

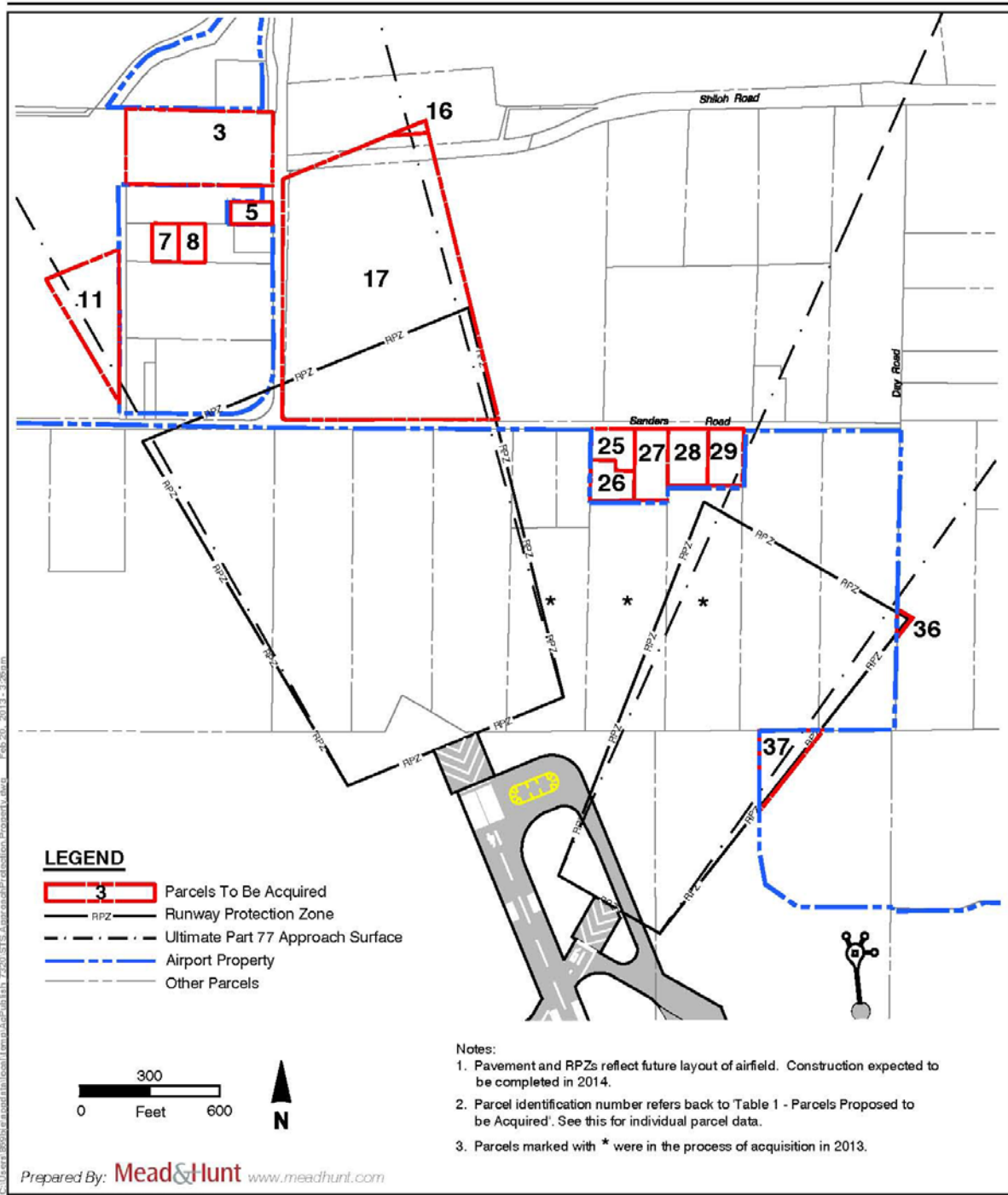


Figure 1

Parcels Impacted by Ultimate Airspace - North
Charles M. Schulz - Sonoma County Airport

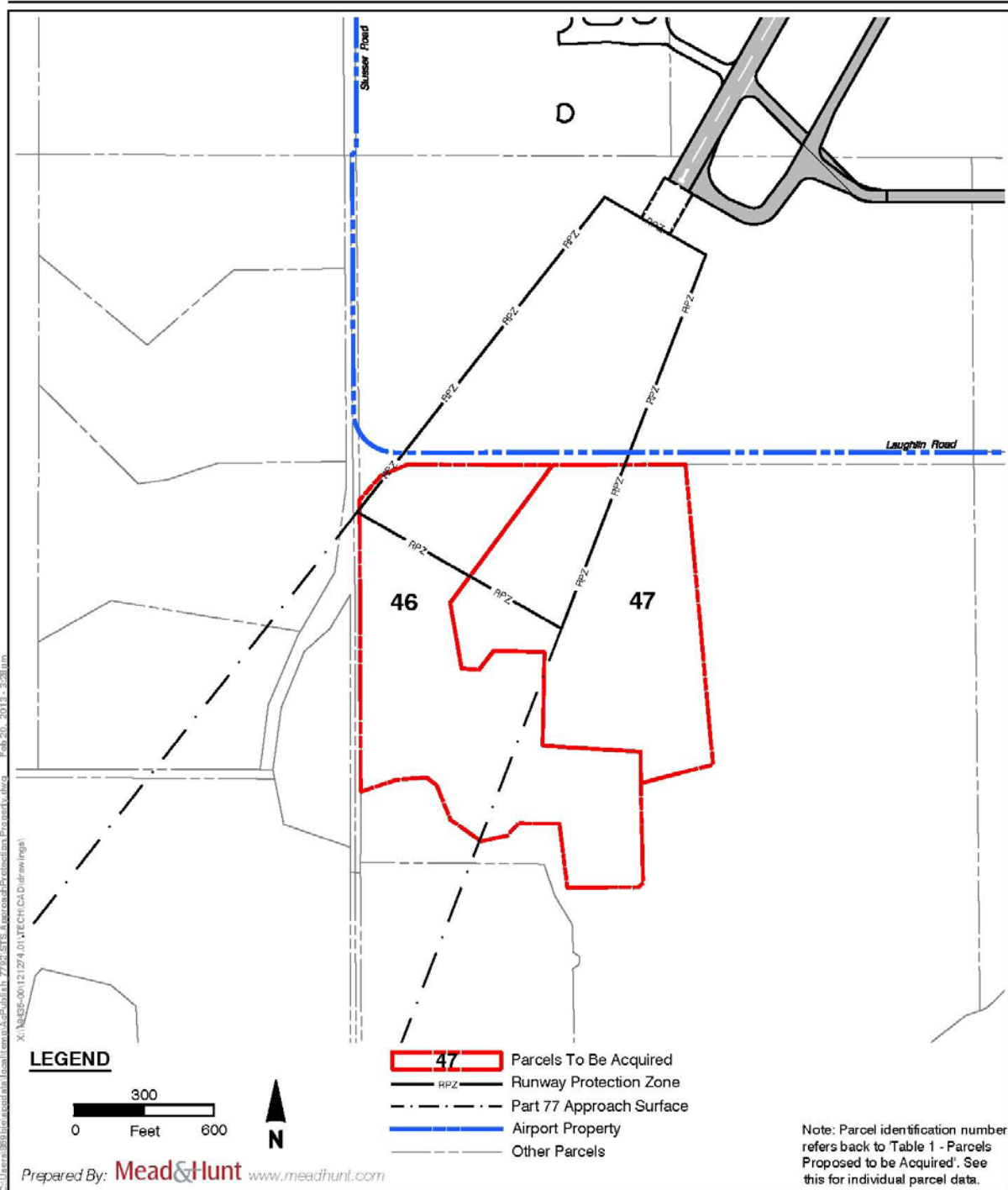


Figure 2

Parcels Impacted By Ultimate Airspace - Southwest
Charles M. Schulz - Sonoma County Airport

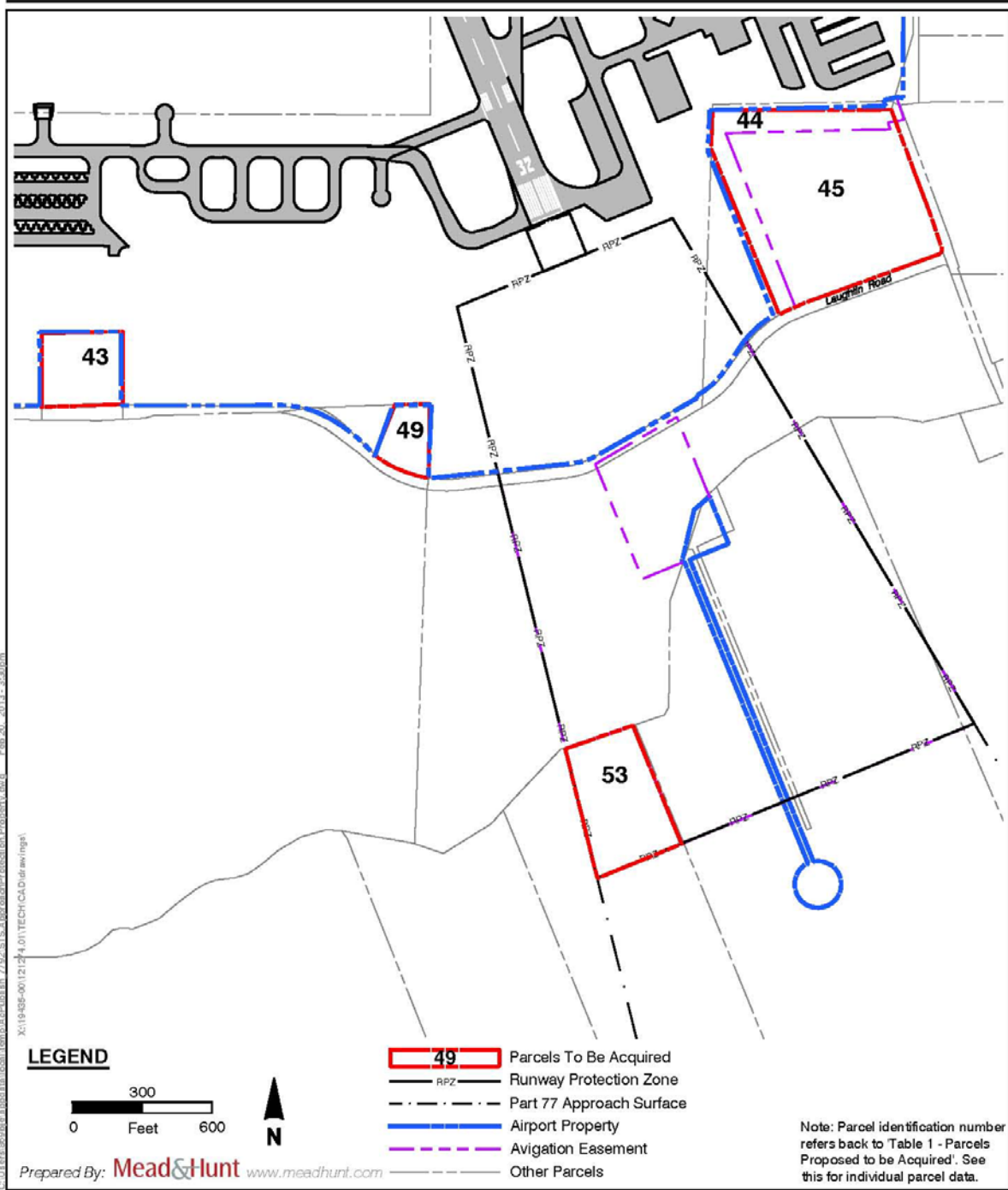


Figure 3

Parcels Impacted By Ultimate Airspace - Southeast

Charles M. Schulz - Sonoma County Airport

Atypically, three parcels needed for the current runway safety area project are being acquired through eminent domain. These parcels are marked with an asterisk in **Figure 1**. The 2015 Congressional mandate to resolve nonstandard runway safety areas at airports with airline service (such as the Airport) did not permit waiting until the owners wished to sell.

2. Noise-related Policies

ATE GOAL AT-3 provides the broad policy guidance on aviation noise effects:

Maintain compatibility of Airport operations with preservation of environmental quality in areas adjacent to Charles M. Schulz – Sonoma County Airport.

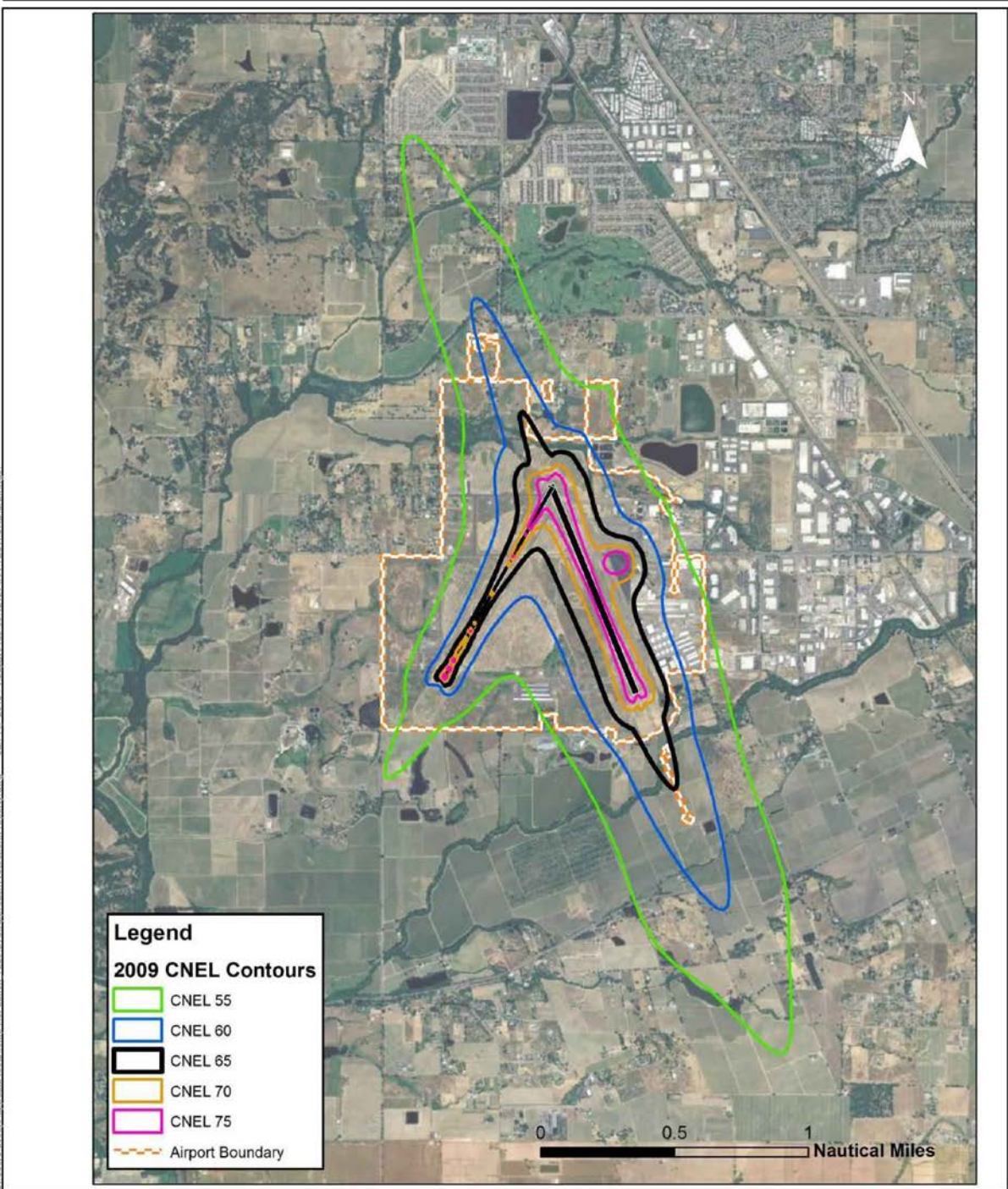
Policy AT-3f links achievement of the noise-related policy to this Approach Protection Plan:

Standards for interior noise levels for existing residences shall be established as part of the Approach Protection Plan. The Approach Protection Plan shall identify appropriate mitigations to be undertaken in the event noise standards are exceeded. These mitigations may include purchase assurance, acoustical treatment, and purchase of easements.

The Environmental Impact Report (EIR) approved to support adoption of the Airport Master Plan identified cumulative noise from aviation activity as a significant impact. The noise contours for existing (2009) activity are shown in **Figure 4**, and the noise contours for future activity on the ultimate runways (2030) are illustrated in **Figure 5**. The EIR identified areas that are forecast to receive a significant cumulative increase in noise before 2030. In this context, significance was defined as a 3 decibel increase in noise levels for areas between the 60 and 65 dB Community Noise Equivalent Level (CNEL) noise contours. Parcels identified with a potential for significant cumulative increase by 2030 are illustrated in **Figure 6**. Data for each parcel is detailed in **Table 2**. The seven parcels have a total of nine residential dwellings.

Table 2. Potential Noise-Affected Parcels

Figure	Parcel Identifier	Assessor’s Parcel Number	Acres	Designated Land Use	Observed Land Use
6	A	066-210-077	13.39	Rural Residential	Ag with residence
	B	066-210-078	9.96	Rural Residential	Ag with residence
	C	066-210-086	3.26	Rural Residential	Residence, small lot
	D	066-210-016	1.29	Rural Residential	Residence, small lot
	E	066-210-015	0.91	Rural Residential	Residence, small lot
	F	066-210-014	0.95	Rural Residential	Residence, small lot
	G	066-210-088	35.32	Diverse Agriculture	Ag with residence

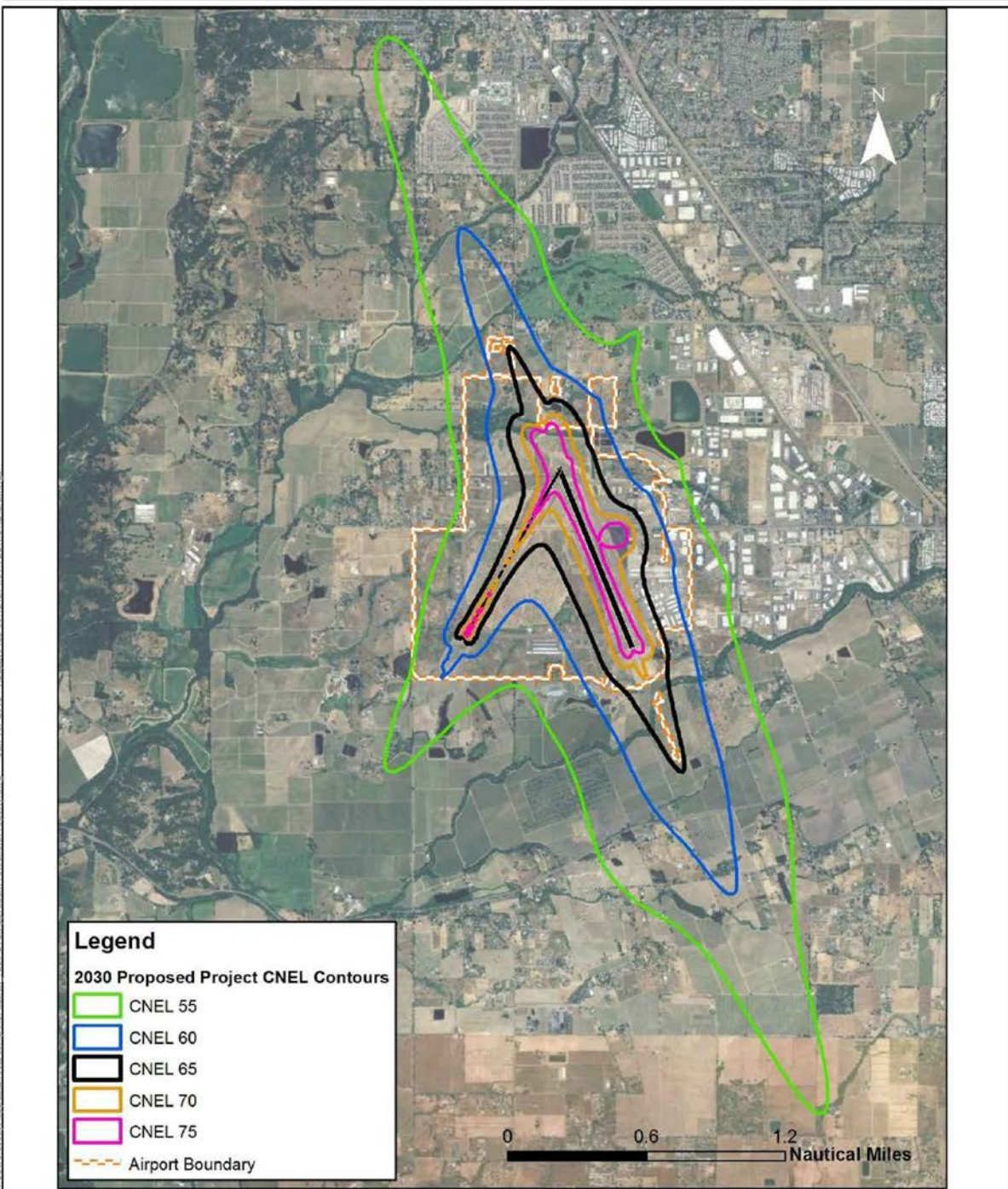


C:\Users\88014\appdata\local\temp\AutoCAD\72201\STS_Airport\Approach\Development_Property.dwg - Jan 18, 2015 - 1:28:04 PM

SOURCE: Landrum & Brown

Figure 4

2009 CNEL Contours
Charles M. Schulz - Sonoma County Airport



G:\Users\l8888\OneDrive\Local\Hanno\Ac\Public\18_7220\STS_Airproach\Protection_Protection.dwg - Jan 18, 2018 - 1:28:04 PM 0:00:00 1:21:24 0:17:54 CAD:dlm@hnp

SOURCE: Landrum & Brown

Figure 5

2030 CNEL Contours
Charles M. Schulz - Sonoma County Airport

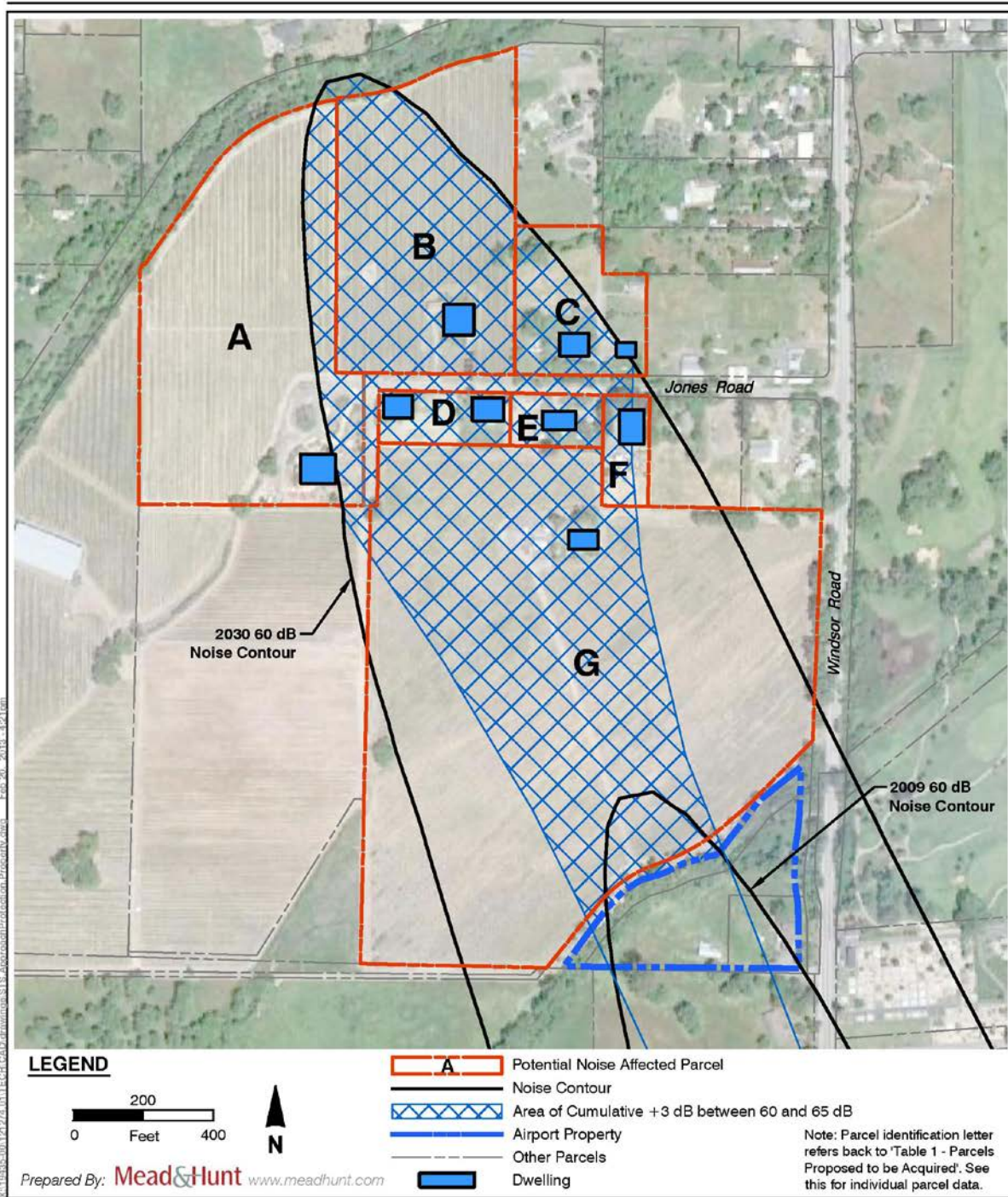


Figure 6

Potential Parcels Impacted By Ultimate Noise
Charles M. Schulz - Sonoma County Airport

3. INTERIOR NOISE STANDARD

As noted in Section 2, County General Plan Policy AT-3f requires establishment of standards for interior noise levels for existing residences as a part of this Approach Protection Plan. An interior noise standard for residential uses exposed to transportation-related noise, including airports, has already been established in the County's Noise Element. Policy NE-1b establishes an interior noise level for residential uses at 45 dB L_{dn} or less with windows and doors closed. This standard parallels that established under California Noise Standards Section 5014 (a)(2). This standard shall be used as the threshold to determine when noise mitigations described in Section 3 need to be considered.

4. TIMING OF NEW NOISE CONTOUR DEVELOPMENT

One of the specific tasks of this Approach Protection Plan is to define the threshold at which new noise contours should be prepared to determine whether the potentially noise-affected parcels fall within the 60 dB CNEL noise contour. The computer modeling used to create the contours includes a large number of variables such as: number of annual operations by type of aircraft, time of day of operations, flight tracks, and height of aircraft above the ground. However, none of this data is routinely collected. It must be developed each time the noise contours are to be produced. To be of value, the threshold used to trigger preparation of new noise contours must be directly related to generation of aircraft noise and based upon a source of routinely collected data. The only factor that meets these criteria is the aircraft operations counts made by the FAA air traffic control staff based at the Airport. An aircraft operation is either a landing or takeoff. Therefore, the total number of annual aircraft operations as reported by the FAA's air traffic control staff will be used as the metric for determining when new noise contours should be prepared.

As was noted earlier, a significant noise impact for the area of concern has been defined as a 3 dB change between the 60 and 65 dB CNEL noise contours. The residence within the area of concern that is nearest the runway end has a current CNEL level of about 59 dB. The noise level will have significantly changed when the CNEL will have increased 3 dB to 62 dB. Mathematically, a doubling of aircraft operations will cause a 3 dB increase in CNEL as long as the mix of aircraft types and distribution of operations remains constant. The 2009 contours were based upon 78,497 annual operations. Doubling this activity level would increase the annual operations to 156,994. Therefore, the threshold for development of new noise contours for the Airport should be established as 156,994 annual operations as calculated by the air traffic control tower staff. When the volume of annual aircraft operations reaches this threshold, new noise contours should be prepared to determine whether any residences within the area of concern lie within the 60 CNEL contour. These updated noise contours should be based upon updated information on the mix of aircraft types and distribution of operations. Based upon the Master Plan forecasts, this volume of activity will be reached by 2022.

5. POSSIBLE NOISE MITIGATION STRATEGIES

The potential future noise impacts on the parcels identified in **Figure 6** are linked to forecast growth in aircraft operations at the Airport. The Airport Master Plan forecasts anticipated total annual operations increasing from 78,497 in 2010 to 173,785 by 2030. As noted in the prior section, the noise impact is defined by the growth in cumulative noise levels as expressed in CNEL noise contours. In defining the range of potentially useful mitigation measures, it is important to understand the factors that do not contribute to this noise contour:

- Helicopter operations—Helicopter flight tracks do not pass near the area of concern.
- Ground operations by aircraft—Taxiing, use of auxiliary power units, and run-up operations by aircraft were not modeled.
- Ground support equipment—Ground power units and other aircraft support equipment were not modeled.
- Motor vehicle traffic—Although motor vehicle traffic noise was evaluated, it is not part of these noise contours.

Therefore, only measures that address the operations of fixed-wing aircraft and the affected residences have been considered.

Should future noise studies establish the need for noise mitigation measures, Policy AT-3f specifically provides that appropriate mitigation measures may include purchase assurance, acoustical treatment, and purchase of easements. Based upon the source of the impact, the nature of operations at the Airport, and the experience of other airports, the following additional measures have been identified for consideration:

- Sales-related assistance
- Operational mitigations

A. SALES-RELATED ASSISTANCE

Purchase assurance, sales assurance, transaction assistance and fee simple acquisition with demolition of the residence are four options that can be utilized in voluntarily selling property to the Airport at fair market value. The four methods can be described as follows:

Purchase Assurance—Under Purchase Assurance, a property that fails to sell within a specified time period is purchased by the Airport and then resold for continued residential use. The Airport purchases the property at the appraised fair market value “as is” subject to airport noise. Typically, noise insulation is provided and the property is then listed and sold subject to the Airport’s easement.

Sales Assurance—Under Sales Assurance, the appraised fair market value of the homeowner’s residence is guaranteed on a timely market sale, however, the Airport does not acquire the property. Should the property sell for less than the appraised value, the selling owner is compensated for the short fall by the Airport. Property is appraised at its current fair market value “as is” subject to airport

noise. The property is listed and sold subject to the Airport's easement that is conveyed to the Airport at sale of the property, contingent upon payment of the short fall to the seller.

Transaction Assistance—Transaction assistance generally involves an agreement by the Airport sponsor to pay certain costs associated with the sale of residential property. Allowable costs should generally be limited to the real estate sales commission (consult with APP-600 for other allowable transaction costs). The property is listed and sold subject to the Airport's easement that is conveyed to the Airport at the assisted sale of the property.

Acquisition with demolition—Under this measure, the Airport would acquire the property and demolish the residence. The property could then be either retained or sold to a private party with the limitation that no residences or noise sensitive uses would be permitted on the property. The land could be used for agricultural purposes or similar compatible uses.

Conclusion—All four of these measures are appropriate to consider if the properties in the area of concern are found to be noise impacted in the future. Transaction assistance would be the least expensive to implement while acquisition with demolition would be the most expensive. The tradeoffs among these alternatives can be considered at the time the impacts are evaluated.

B. ACOUSTICAL TREATMENT

Acoustical treatment includes a range of possible modifications to the residences to reduce indoor noise levels. Modifications could include:

- Replacement of doors and windows
- Insulation of walls or attic
- Installation of air conditioning
- Improvements to exhaust vents

There are limitations to the potential value of acoustical treatment. First, they do not affect outdoor noise levels. So if the principal concern of the residents is the impacts on outdoor activities, this would be of no value. Additionally, acoustical improvements are only of value if the windows are closed. To the extent that the residents wish to use natural ventilation (due to cost or energy conservation concerns, or simply personal preference), the value of the improvements is reduced. Depending upon the age of the residence and the original construction methods, it may not be feasible to make effective acoustical modifications to a specific residence.

Acoustical treatments are most effective in moderating the effects of a relatively constant noise source. In the context of airports, this means a steady stream of aircraft with similar noise characteristics. This is not the case at the Airport. Depending upon the time of day, day of the week, and month of the year, there will be breaks in overflights lasting from minutes to hours. This has the effect of making individual overflights more noticeable even if the acoustical treatment has reduced the measurable sound level as intended. The annoyance response to an aircraft overflight is a highly subjective personal response. It is not simply a matter of speech or sleep interference.

Conclusion—Acoustical treatment is a measure that should be considered where appropriate. However, it may not offer sufficient value to be appropriate for implementation. A specialist in acoustical treatment of residences should be retained to evaluate the applicability of this measure on a case by case basis.

C. EASEMENT ACQUISITION

Easements are a way of conferring limited property rights. An avigation easement would be the optimum choice in this situation, but an overflight easement is also a potential choice. Both are discussed below. Under this measure, the Airport would acquire an easement through purchase. The property owner would be offered fair market value for any easement conveyed to the Airport. The value of the easement would be established through a formal appraisal.

Avigation easement—An avigation easement grants the right of overflight with its associated impacts (i.e., noise, fumes, particulates, smells). Additionally, it limits the heights of objects on the property and grants the easement owner (i.e., the County) the right to enter the property to remove, mark or light an object that penetrates protected airspace. Given that these properties are one mile from the runway, objects over 100 feet in height would be permitted. So this is not much of a limitation.

Overflight easement—This form of easement grants only the right of overflight with its associated impacts, without providing any grant of the airspace over the property or the right of entry.

Conclusion—Neither easement would change the noise impacts to the affected property. So this option would not be mitigation in the physical sense. However, it would provide compensation to the property owner for the impact. Given the wide variation in a person's response to noise, this could be an acceptable mitigation for some property owners. This option should be among those that are considered if the properties in the area of concern become impacted by airport noise.

D. OPERATIONAL MITIGATIONS

Four operational measures have been identified as possible mitigations for forecast noise impacts:

- Modifications to flight paths
- Continuous descent approach
- Designation of a preferential runway
- Increasing the altitude of aircraft over the area of concern

While each of these measures offers the potential to directly reduce the noise experienced in the area of concern, it is important to understand that the Airport does not have the authority to implement any of these measures directly. The FAA has authority over aircraft in flight. So this agency would have to approve any of these operational measures before they could be implemented. The potential viability and value of each measure is discussed below.

Modifications to flight paths—Shifting the path of flight by aircraft would directly affect the noise contours. So where this is possible, it can have a profound effect on noise impacts beneath existing flight paths. The difficulty with the area of concern is that it is only one mile from the end of the runway. Small aircraft landing on Runway 14 (if they are not making a straight-in landing from the north) will typically be making their final turn to line up with the extended runway centerline just south of the area of concern. If multiple aircraft are in the landing pattern, small aircraft will make this turn over the area of concern or further north. To the extent physically possible, given traffic volumes, small aircraft will pass south of the area of concern. There is no ability to increase the number of aircraft using this flight path; it is a function of the volume of traffic and the direction from which the aircraft is arriving. Larger aircraft (i.e., turboprops and jets) make their final turn north of the area of concern and will fly the final segment along the extended runway centerline. So, essentially, all large aircraft landing on Runway 14 will pass over the area of concern. Due to the speed and size of these larger aircraft, an earlier turn is not possible. Therefore, there are no opportunities to modify arrival flight paths in areas that would reduce noise impacts to the area of concern.

Most departures are on either Runway 14 (to the south) or Runway 19 (to the southwest). Those departures on Runway 32 may pass over the area of concern depending upon the destination of the aircraft. Even the largest aircraft using the Airport may turn west prior to reaching the area of concern when following the standard instrument departure towards the Point Reyes VOR (a navigational aid). The other standard instrument departure from Runway 32 requires aircraft to follow the extended runway centerline until reaching Healdsburg. Under visual conditions, departures by all sizes of aircraft with destinations north, east or south of the Airport will commonly begin turning towards the east before reaching the area of concern. The only aircraft directly overflying the area of concern are either traveling to the northwest or making a delayed turn towards its destination. With the concurrence of the FAA, it would be possible to designate the area of concern as a noise sensitive area. However, for the large majority of departures on Runway 32, this would have the effect of directing traffic over the large numbers of residences located north and northeast of the Airport. This would be undesirable from a public policy perspective.

Continuous descent approach—The FAA's NextGen program will include creation of GPS-based approach procedures that have the aim of simultaneously reducing aircraft fuel consumption and noise impacts on communities near airports. It is principally applicable to operations by jet aircraft used in scheduled passenger and cargo flights. A continuous descent approach is one procedure that might have a high noise reduction benefits at the Airport. A continuous descent approach defines a relatively steep (3°) approach procedure that permits aircraft to transition from enroute altitudes to a landing without the need to change power settings. It works best in relatively low activity situations. The noise benefits principally occur beyond five miles from a runway end, where conventional approaches commonly require multiple changes in power settings. Within five miles, standard practice is already for jets to be established on a 3° approach. Given this, it is concluded that a continuous descent approach to Runway 14 would not offer noise-reduction benefits for the targeted residences. However, this approach would offer potential benefits to other area residents and aircraft operators, and should be considered for these other benefits.

Designation of a preferential runway—Some airports designate a runway to be used when wind conditions make it feasible to do so. Even under calm wind conditions, the preferential runway is to

be used. Although a preferential runway has not been formally designated at the Airport, operationally, Runways 14 and 19 are favored by users. This is likely due to the safety and efficiency benefits that accrue by being able to depart aircraft on Runway 14 and 19. Given that the Airport already has a preferential runway system that aim departures away from the area of concern, formal designation of a preferential runway would not confer any additional noise reduction benefit.

Increasing the altitude of aircraft over the area of concern—If it were possible to have aircraft at greater altitude when passing over the area of concern, noise levels would be reduced. The area of concern is only about one mile from the proposed runway end. This close to the runway end, it is not possible to change the altitude of landing aircraft enough to make a meaningful reduction in noise levels. The current VASI (a visual landing aid) and the GPS-based nonprecision approach procedure both use a 3° approach slope. It might be possible with FAA approval to raise the approach slope to 3.5°. However, this is too small of a change to make a significant change in the noise contours.

There is no effective way to increase the altitude of aircraft departing over the area of concern due to its proximity to the Airport. For safety reasons, all pilots are taught to rapidly gain altitude immediately following a takeoff. So there is no effective way to increase the altitude of aircraft beyond what is already occurring. Where the site further from the Airport, pilots could be requested to maintain their original rate of climb until passing it. However, this is not an option when the site is only a mile from the runway end.

Conclusion—None of these four operational measures offer any potential to reduce the noise contours over the area of concern. They can be eliminated from further consideration.

X:\19435-00\121274.01\TECH\reports\STS AppPro v3 3-26-13.FINAL.docx