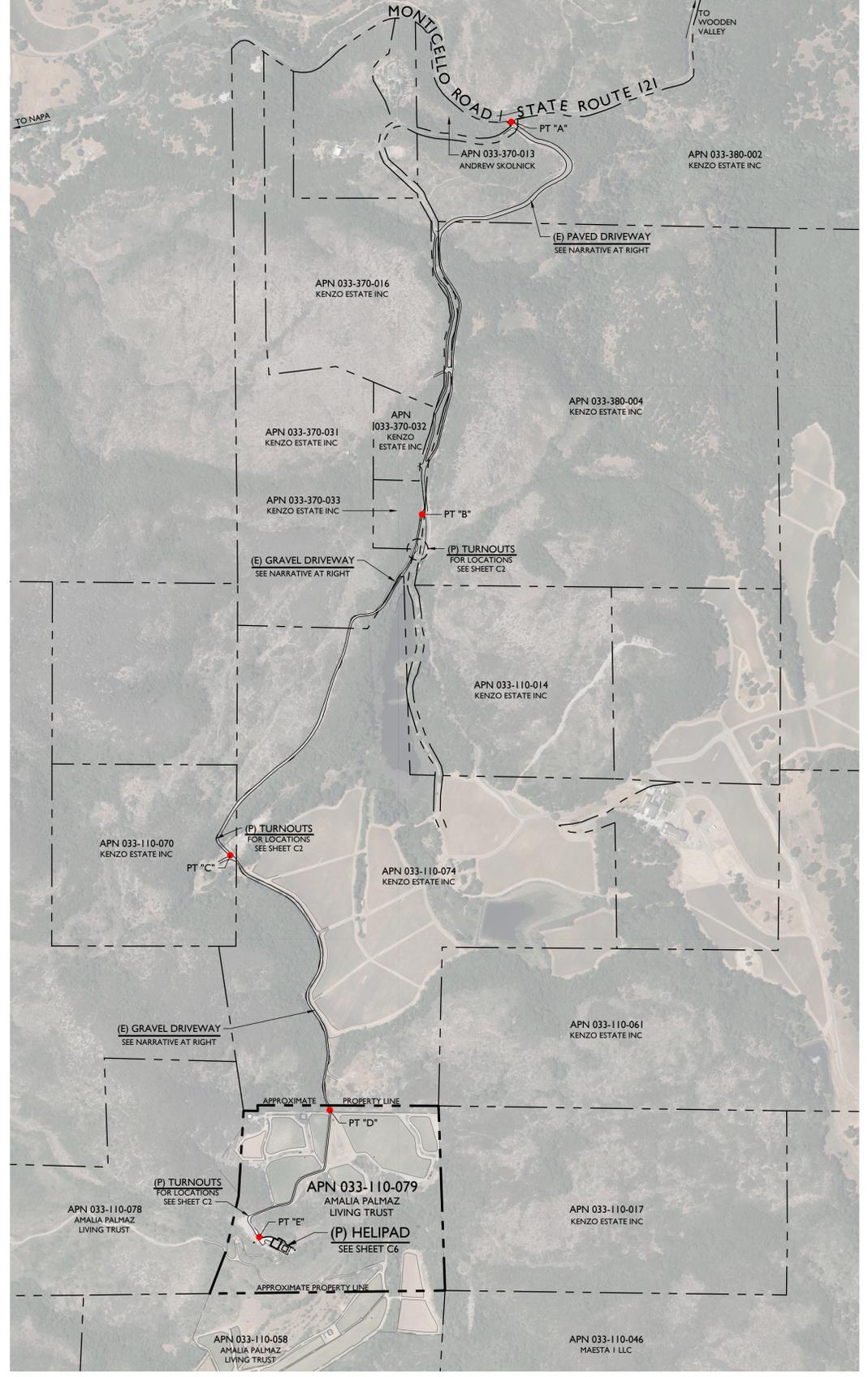
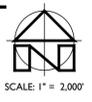


“E”

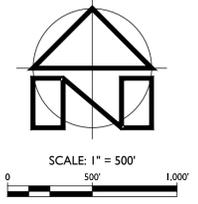
# Mount George Alternative Submittal Materials

# PALMAZ HELIPAD

## CONCEPTUAL SITE PLANS



**OVERALL SITE PLAN**  
SCALE: 1" = 500'



**DRIVEWAY CONDITIONS AND IMPROVEMENTS NARRATIVE:**

**POINT A TO POINT B:**  
THIS SECTION OF SHARED PRIVATE DRIVEWAY IS APPROXIMATELY 3,800 FEET LONG. THIS SECTION OF DRIVEWAY PROVIDES ACCESS TO THE KENZO WINERY AND OTHER PARCELS IN THE AREA WITH RESIDENCES AND VINEYARDS. THE DRIVEWAY IS PAVED WITH ASPHALT AND TOTAL PAVED WIDTH VARIES. A MINIMUM OF TWO 9 FOOT TRAVEL LANES AND TWO FEET OF SHOULDER ARE PROVIDED ALONG THE ENTIRE LENGTH AS REQUIRED BY NAPA COUNTY ROAD AND STREET STANDARDS FOR A "COMMON DRIVE". LONGITUDINAL SLOPES ARE LESS THAN 20% THROUGHOUT AND IN MANY AREAS ARE LESS THAN 10%. AN ADDRESS SIGN FOR THE HELIPAD SHALL BE POSTED AT THE EXISTING ENTRY GATE. NO IMPROVEMENTS ARE PROPOSED TO THIS SECTION OF DRIVEWAY.

**POINT B TO POINT C:**  
THIS SECTION OF SHARED PRIVATE DRIVEWAY IS APPROXIMATELY 3,100 FEET LONG. AT POINT B THIS BRANCH OF THE DRIVEWAY DIVERGES FROM THE PAVED DRIVEWAY AND THE ROADWAY SURFACE TURNS TO GRAVEL. AN ADDRESS SIGN WITH DIRECTIONAL ARROW SHALL BE INSTALLED AT THIS INTERSECTION TO DIRECT EMERGENCY VEHICLES TO THE HELIPAD BUILDING SITE. THE EXISTING GRAVEL DRIVEWAY WIDTH VARIES FROM APPROXIMATELY 10' TO 16' +. THIS SECTION OF DRIVEWAY PRIMARILY PROVIDES ACCESS TO ONE RESIDENCE LOCATED AT POINT C AND VINEYARDS LOCATED ON NEARBY PARCELS. LONGITUDINAL SLOPES ARE LESS THAN 16% THROUGHOUT AND IN MANY AREAS ARE LESS THAN 10%. AN ADDRESS SIGN WITH DIRECTIONAL ARROW FOR THE HELIPAD SHALL BE POSTED AT POINT C. THE FOLLOWING IMPROVEMENTS ARE PROPOSED FOR THIS SECTION OF DRIVEWAY TO MAKE IT COMPLY WITH THE REQUIREMENTS FOR A "SPECIAL PURPOSE ROAD" AS DEFINED ON PAGE 16 OF THE NAPA COUNTY ROAD AND STREET STANDARDS:

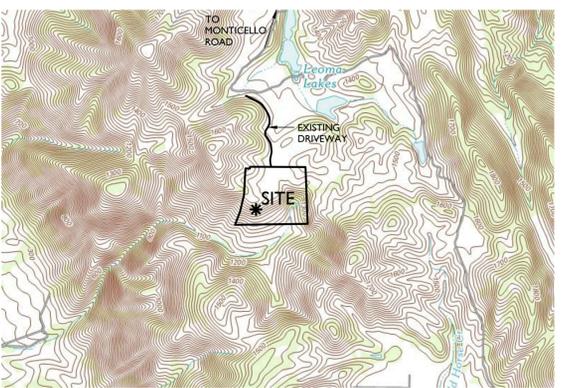
- SUPPLEMENT BASE ROCK THICKNESS IN 10 FOOT WIDE TRAVEL LANE AS NEEDED TO PROVIDE A MINIMUM OF 5" OF CLASS 2 AB COMPACTED TO 95%. IN AREAS WHERE ROADWAY IS ON BEDROCK BASE ROCK SECTION MAY BE REDUCED IF APPROVED IN ADVANCE BY THE GEOTECHNICAL ENGINEER. NO VEGETATION DISTURBANCE IS REQUIRED FOR THIS WORK.
- APPLY DOUBLE SEAL COAT TO 10' WIDE TRAVEL WAY ALONG ALL SECTIONS OF DRIVEWAY WITH LONGITUDINAL SLOPES IN EXCESS OF 5% PER NAPA COUNTY ROAD AND STREET STANDARDS DETAIL C-10.
- INSTALL TURNOUTS AT 400 FOOT MAX INTERVALS AND INTERVISIBLE PER NAPA COUNTY ROAD AND STREET STANDARDS DETAIL C-11 (SEE SHEETS C2 AND C3 FOR DETAILS).

**POINT C TO POINT D:**  
THIS SECTION OF SHARED PRIVATE DRIVEWAY IS APPROXIMATELY 2,200 FEET LONG AND TRAVERSES FROM THE RESIDENCE LOCATED AT POINT C TO THE GATE AT THE NORTH BORDER OF THE PALMAZ PROPERTY. AN ADDRESS SIGN WITH DIRECTIONAL ARROW SHALL BE INSTALLED AT THE GATE AT POINT D AND THE GATE SHALL BE OUTFITTED WITH A FIRE DEPARTMENT KNOX LOCK. THE EXISTING GRAVEL DRIVEWAY WIDTH VARIES FROM APPROXIMATELY 10' TO 20' +. THIS SECTION OF DRIVEWAY PRIMARILY PROVIDES ACCESS TO THE PALMAZ VINEYARDS AND VINEYARDS LOCATED ON ADJACENT PROPERTIES. LONGITUDINAL SLOPES ARE LESS THAN 10% THROUGHOUT AND IN MANY AREAS ARE LESS THAN 5%. THE FOLLOWING IMPROVEMENTS ARE PROPOSED FOR THIS SECTION OF DRIVEWAY TO MAKE IT COMPLY WITH THE REQUIREMENTS FOR A "SPECIAL PURPOSE ROAD" AS DEFINED ON PAGE 16 OF THE NAPA COUNTY ROAD AND STREET STANDARDS:

- SUPPLEMENT BASE ROCK THICKNESS IN 10 FOOT WIDE TRAVEL LANE AS NEEDED TO PROVIDE A MINIMUM OF 5" OF CLASS 2 AB COMPACTED TO 95%. IN AREAS WHERE ROADWAY IS ON BEDROCK BASE ROCK SECTION MAY BE REDUCED IF APPROVED IN ADVANCE BY THE GEOTECHNICAL ENGINEER. NO VEGETATION DISTURBANCE IS REQUIRED FOR THIS WORK.
- APPLY DOUBLE SEAL COAT TO 10' WIDE TRAVEL WAY ALONG ALL SECTIONS OF DRIVEWAY WITH LONGITUDINAL SLOPES IN EXCESS OF 5% PER NAPA COUNTY ROAD AND STREET STANDARDS DETAIL C-10.
- INSTALL TURNOUTS AT 400 FOOT MAX INTERVALS AND INTERVISIBLE PER NAPA COUNTY ROAD AND STREET STANDARDS DETAIL C-11 (SEE SHEETS C2 AND C3 FOR DETAILS).

**POINT D TO POINT E:**  
THIS SECTION OF PRIVATE DRIVEWAY IS APPROXIMATELY 1,400 FEET LONG AND TRAVERSES FROM THE GATE LOCATED AT POINT D THROUGH THE PALMAZ VINEYARDS ALONG EXISTING VINEYARD ROADS TO THE HELIPAD BUILDING SITE. SIGNS SHALL BE INSTALLED AT ALL FORKS IN THE VINEYARD ROADS TO DIRECT EMERGENCY VEHICLES TO THE HELIPAD SITE. THE EXISTING GRAVEL VINEYARD ROAD WIDTH VARIES FROM APPROXIMATELY 10' TO 20' +. THIS SECTION OF DRIVEWAY PRIMARILY PROVIDES ACCESS TO THE PALMAZ VINEYARDS. LONGITUDINAL SLOPES ARE GENERALLY LESS THAN 10% THROUGHOUT AND IN MANY AREAS ARE LESS THAN 5%. THE FOLLOWING IMPROVEMENTS ARE PROPOSED FOR THIS SECTION OF DRIVEWAY TO MAKE IT COMPLY WITH THE REQUIREMENTS FOR A "SPECIAL PURPOSE ROAD" AS DEFINED ON PAGE 16 OF THE NAPA COUNTY ROAD AND STREET STANDARDS:

- SUPPLEMENT BASE ROCK THICKNESS IN 10 FOOT WIDE TRAVEL LANE AS NEEDED TO PROVIDE A MINIMUM OF 5" OF CLASS 2 AB COMPACTED TO 95%. IN AREAS WHERE ROADWAY IS ON BEDROCK BASE ROCK SECTION MAY BE REDUCED IF APPROVED IN ADVANCE BY THE GEOTECHNICAL ENGINEER. NO VEGETATION DISTURBANCE IS REQUIRED FOR THIS WORK.
- APPLY DOUBLE SEAL COAT TO 10' WIDE TRAVEL WAY ALONG ALL SECTIONS OF DRIVEWAY WITH LONGITUDINAL SLOPES IN EXCESS OF 5% PER NAPA COUNTY ROAD AND STREET STANDARDS DETAIL C-10.
- INSTALL TURNOUTS AT 400 FOOT MAX INTERVALS AND INTERVISIBLE PER NAPA COUNTY ROAD AND STREET STANDARDS DETAIL C-11 (SEE SHEETS C2 AND C3 FOR DETAILS).



**LOCATION MAP**  
SCALE: 1" = 2,000'

**PROJECT INFORMATION**

**PROPERTY OWNER & APPLICANT:**  
AMALIA PALMAZ LIVING TRUST  
4031 HAGEN ROAD  
NAPA, CA 94558

**SITE ADDRESS:**  
NO SITUS

**ASSESSOR'S PARCEL NUMBER:**  
033-110-079

**PARCEL SIZE:**  
46.2± ACRES

**PROJECT SIZE:**  
0.8± ACRES

**ZONING:**  
AGRICULTURAL WATERSHED (AW)

**SHEET INDEX:**

C1	OVERALL SITE PLAN
C2	DRIVEWAY SITE PLAN
C3	DRIVEWAY TURNOUT PLANS
C4	DRIVEWAY PROFILE STA 48+00 TO STA 93+00
C5	DRIVEWAY PROFILE STA 93+00 TO STA 115+00 ±
C6	HELIPAD CONCEPTUAL GRADING PLAN AND STORMWATER CONTROL PLAN EXHIBIT

**FLOOD HAZARD NOTE:**

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 06055C0550E, EFFECTIVE SEPTEMBER 26, 2008, THE PROJECT SITE IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA.

**NOTES:**

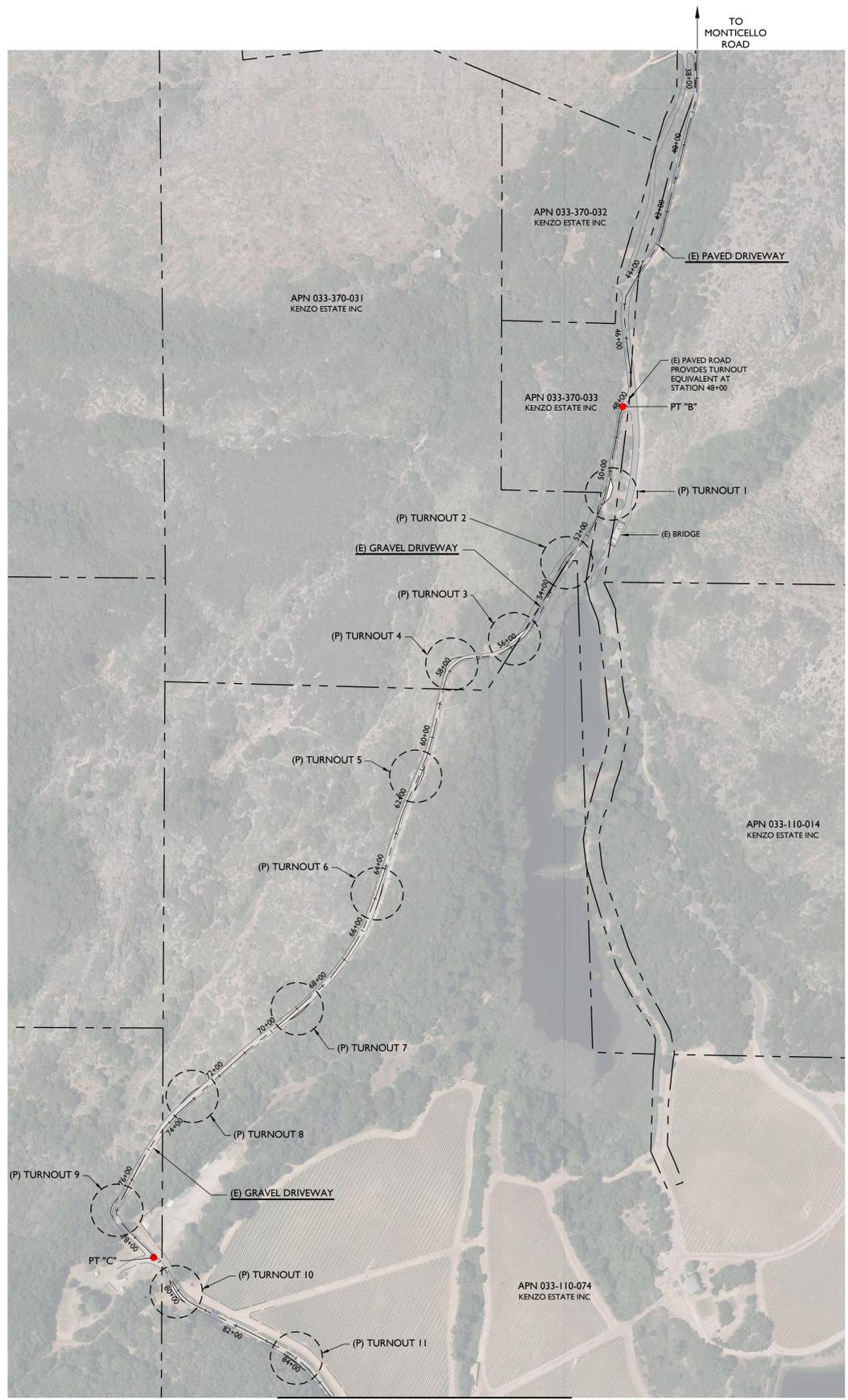
1. FADED BACKGROUND REPRESENTS EXISTING TOPOGRAPHIC FEATURES. TOPOGRAPHIC INFORMATION WAS TAKEN FROM THE "MAP OF TOPOGRAPHY OF A PORTION OF THE LANDS OF PALMAZ VINEYARDS" PREPARED BY ALBION SURVEYS, INC., DATED DECEMBER 31, 2015. APPLIED CIVIL ENGINEERING INCORPORATED ASSUMES NO LIABILITY REGARDING THE ACCURACY OR COMPLETENESS OF THE TOPOGRAPHIC INFORMATION.
2. AERIAL PHOTOGRAPHS WERE OBTAINED FROM THE SAN FRANCISCO ESTUARY INSTITUTE (SFEI) SAN FRANCISCO BAY AREA ORTHOPHOTOS DATABASE, DATED JUNE 2014 AND MAY NOT REPRESENT CURRENT CONDITIONS.
3. CONTOUR INTERVAL: ONE (1) FOOT, HIGHLIGHTED EVERY FIVE (5) FEET
4. BENCHMARK: NAVD 88
5. THE PROPERTY LINES SHOWN ON THESE PLANS DO NOT REPRESENT A BOUNDARY SURVEY. THEY ARE APPROXIMATE AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

PREPARED UNDER THE DIRECTION OF:

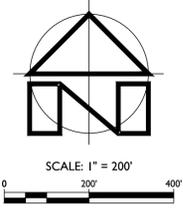


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**CHECKED BY:** MRM  
**DATE:** DECEMBER 22, 2016  
**REVISIONS:** BY:

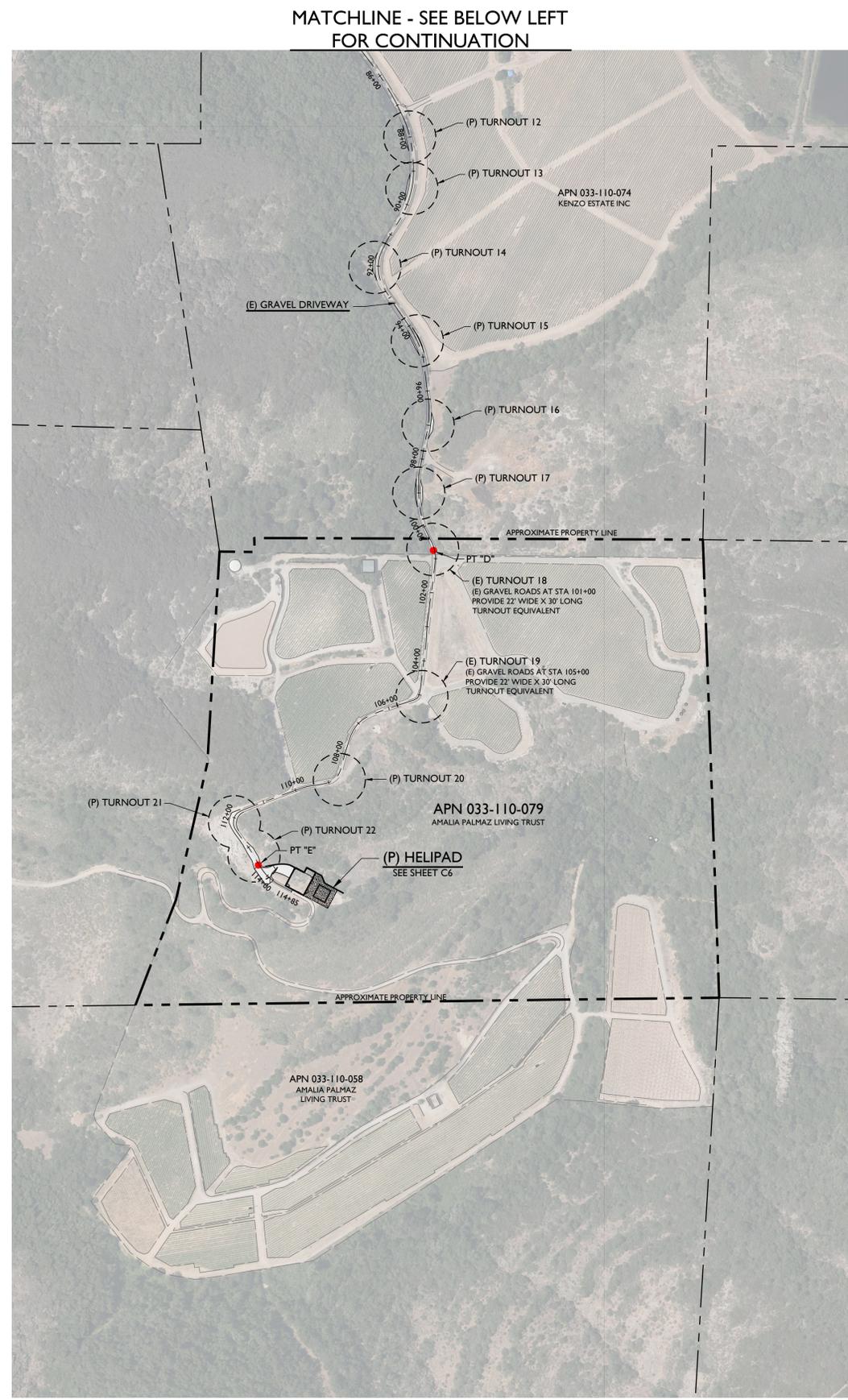
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**FILE:** 09-128CON\_OSP.DWG  
**ORIGINAL SIZE:** 24" X 36"  
**SHEET NUMBER:**



MATCHLINE - SEE ABOVE RIGHT FOR CONTINUATION



DRIVEWAY SITE PLAN  
SCALE: 1" = 200'



MATCHLINE - SEE BELOW LEFT FOR CONTINUATION

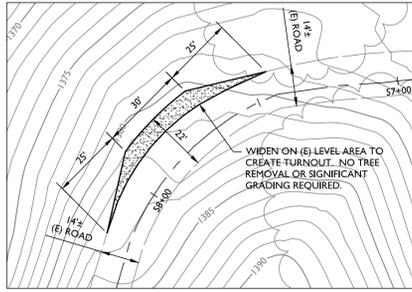
PALMAZ HELIPAD  
CONCEPTUAL SITE PLANS  
DRIVEWAY SITE PLAN

PREPARED UNDER THE DIRECTION OF:

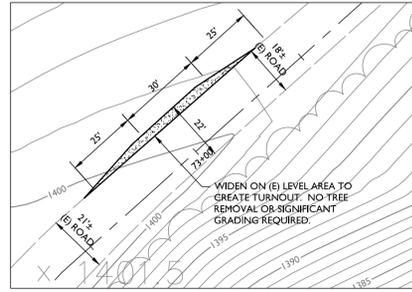


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REVISIONS: BY:

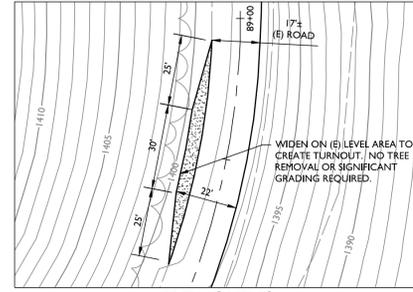
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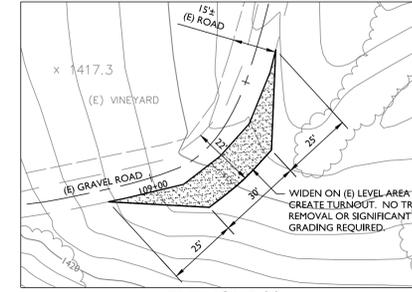
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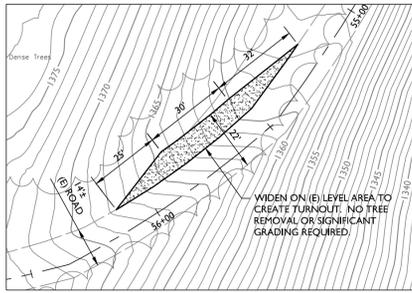
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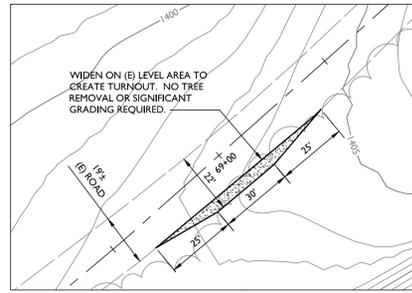
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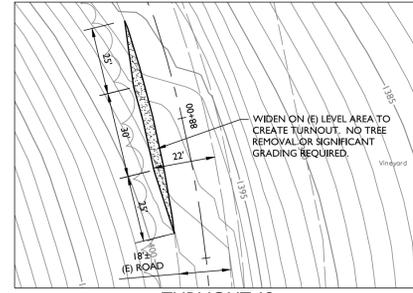
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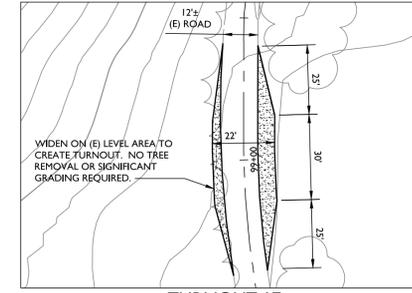
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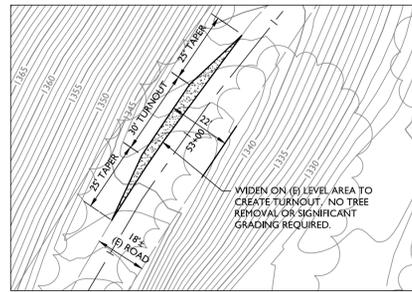
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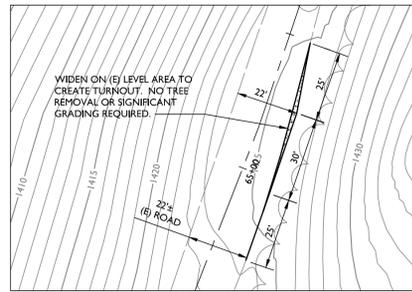
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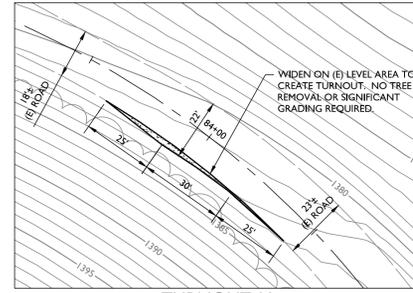
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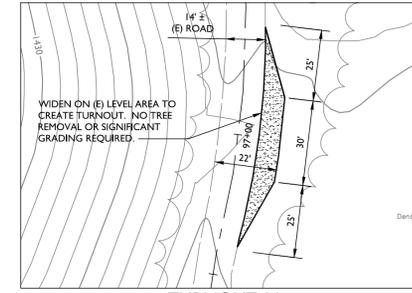
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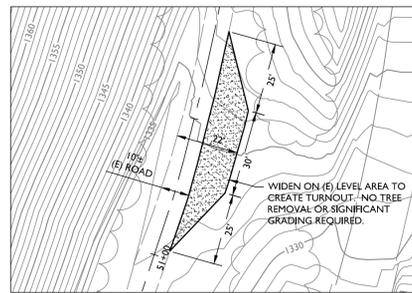
TURNOUT 6



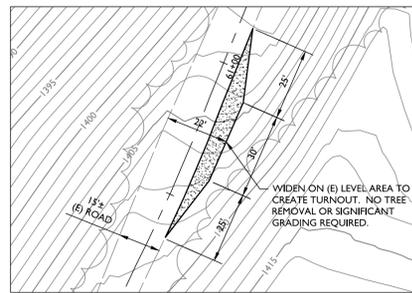
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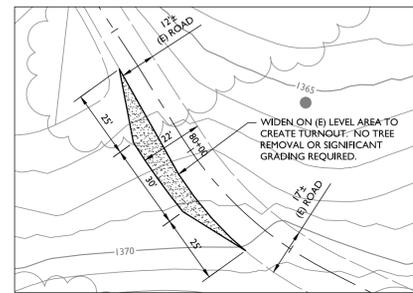
TURNOUT 16



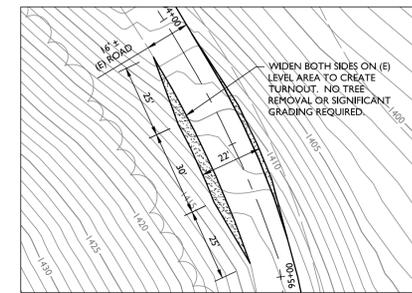
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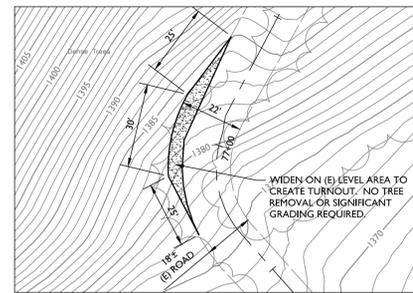
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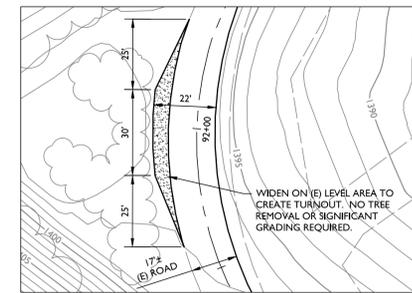
TURNOUT 10



TURNOUT 15



TURNOUT 9



TURNOUT 14

DRIVEWAY TURNOUT PLANS

SCALE: 1" = 30'

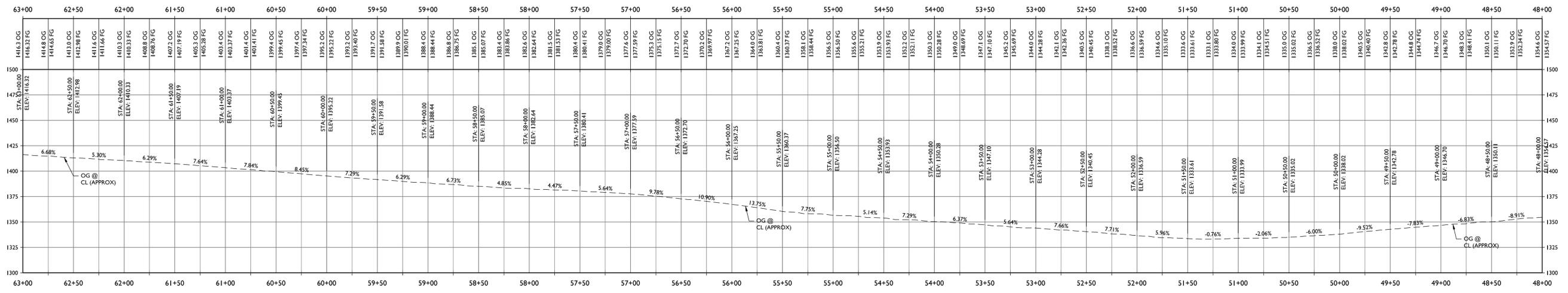
PALMAZ HELIPAD  
CONCEPTUAL SITE PLANS  
DRIVEWAY TURNOUT PLANS

PREPARED UNDER THE DIRECTION OF:

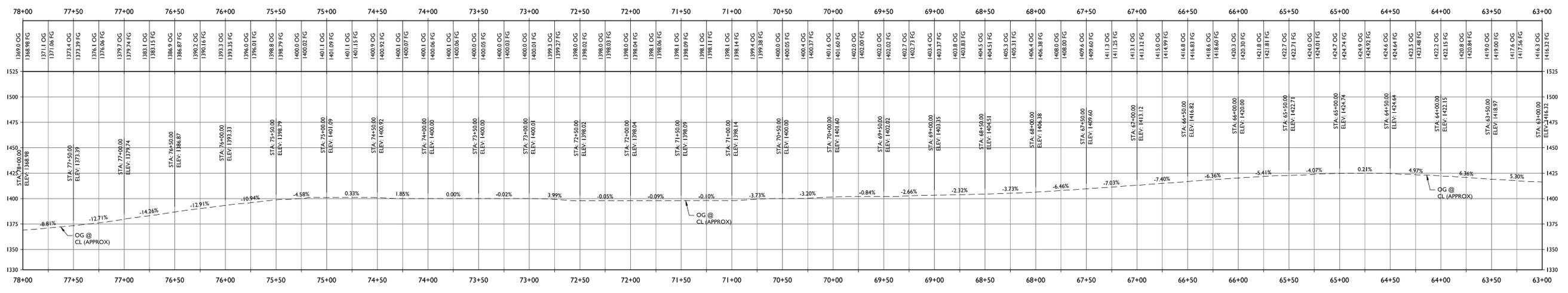


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CHECKED BY: MRM  
DATE: DECEMBER 22, 2016  
REVISIONS: BY:

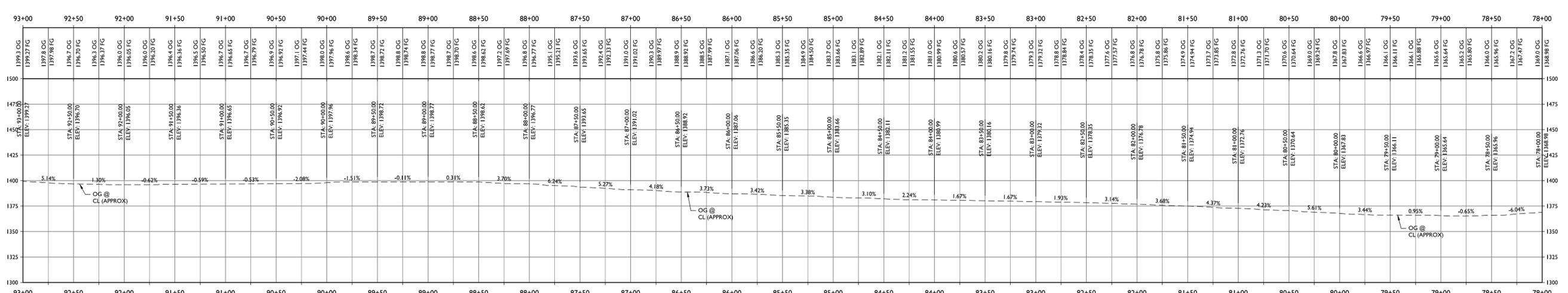
JOB NUMBER: 09-128  
FILE: TURNOUTS.DWG  
ORIGINAL SIZE: 24" X 36"  
SHEET NUMBER:



**DRIVEWAY PROFILE**  
**STA 48+00 TO STA 63+00**  
HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 50'



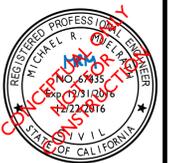
**DRIVEWAY PROFILE**  
**STA 63+00 TO STA 78+00**  
HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 50'



**DRIVEWAY PROFILE**  
**STA 78+00 TO STA 93+00**  
HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 50'

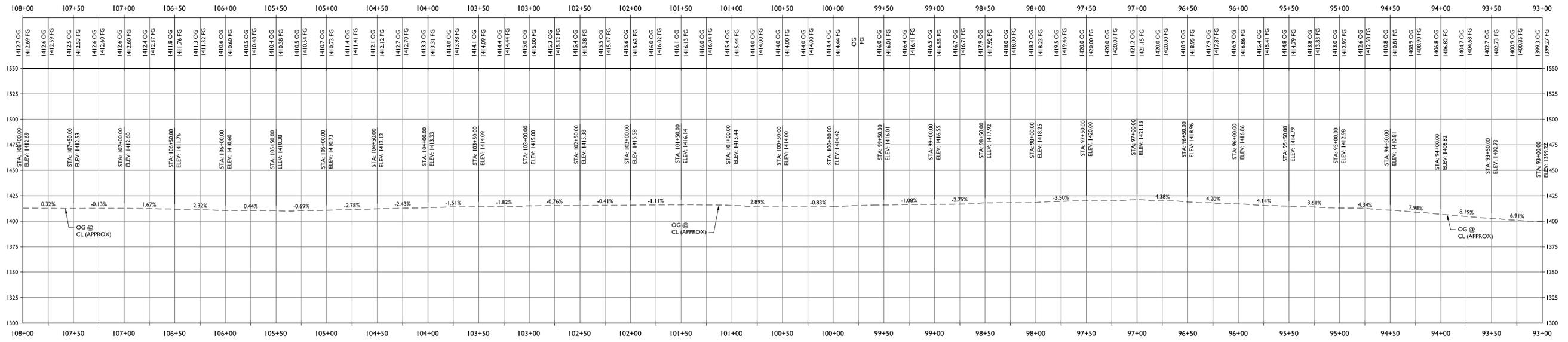
**PALMAZ HELIPAD**  
CONCEPTUAL SITE PLANS  
DRIVEWAY PROFILE STA 48+00 TO STA 93+00

PREPARED UNDER THE DIRECTION OF:

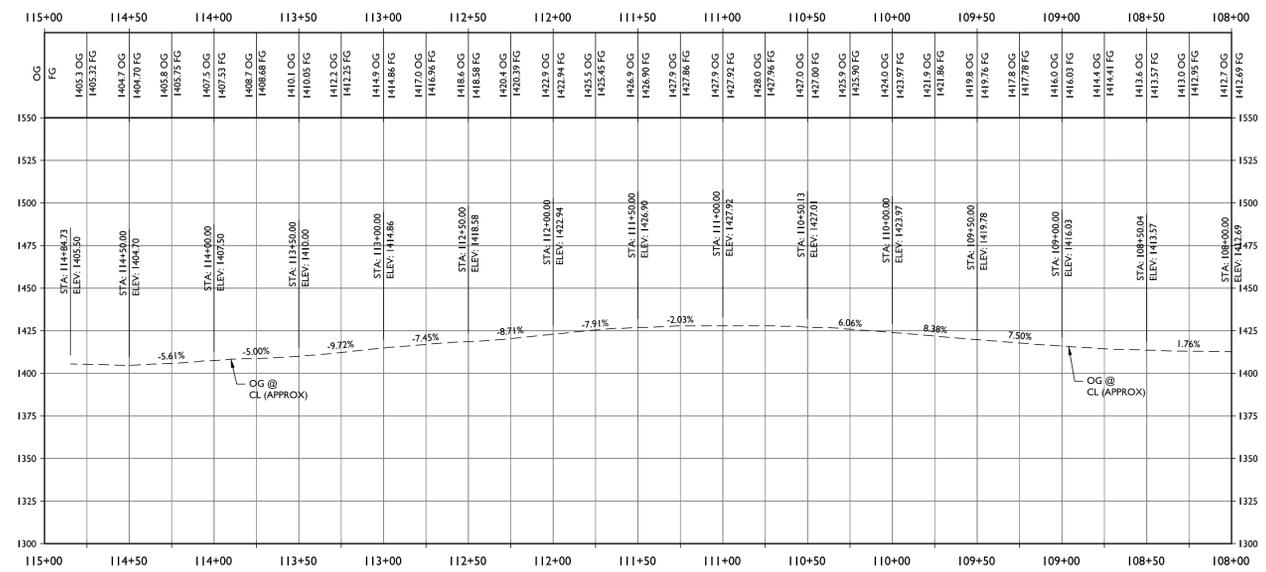


DRAWN BY: SMH  
CHECKED BY: MRM  
DATE: DECEMBER 22, 2016  
REVISIONS: BY:

JOB NUMBER: 09-128  
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ORIGINAL SIZE: 24" X 36"  
SHEET NUMBER:

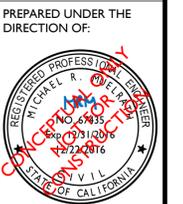


**DRIVEWAY PROFILE**  
**STA 93+00 TO STA 108+00**  
HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 50'



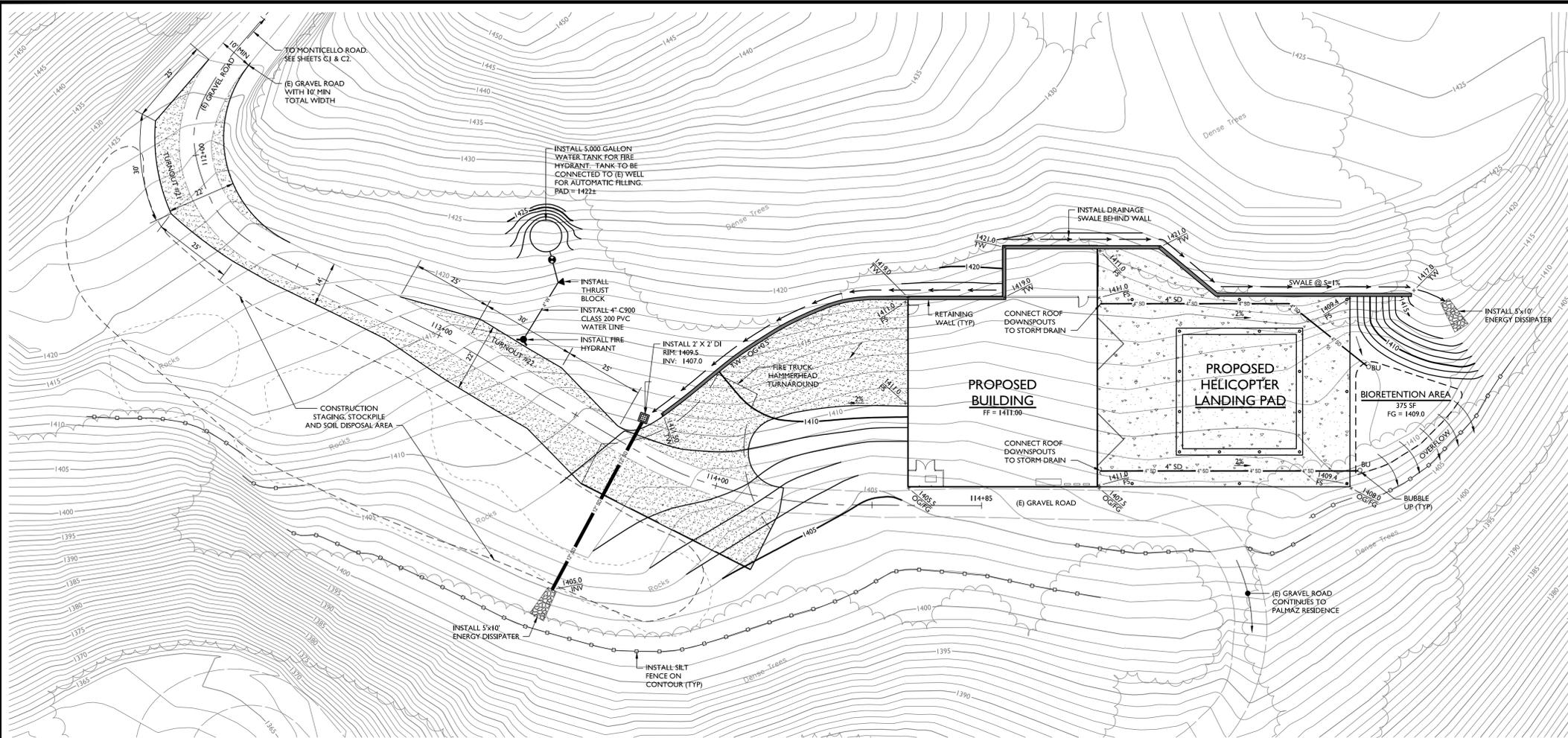
**DRIVEWAY PROFILE**  
**STA 108+00 TO STA 115+00**  
HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 50'

**PALMAZ HELIPAD**  
**CONCEPTUAL SITE PLANS**  
**DRIVEWAY PROFILE STA 93+00 TO 115+00**

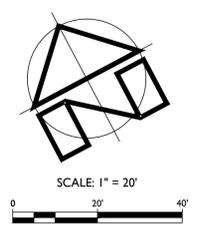


PREPARED UNDER THE DIRECTION OF:  
DRAWN BY: SMH  
CHECKED BY: MRM  
DATE: DECEMBER 22, 2016  
REVISIONS: BY:

JOB NUMBER: 09-128  
FILE: 09-128CONC\_P&P.DWG  
ORIGINAL SIZE: 24" X 36"  
SHEET NUMBER:



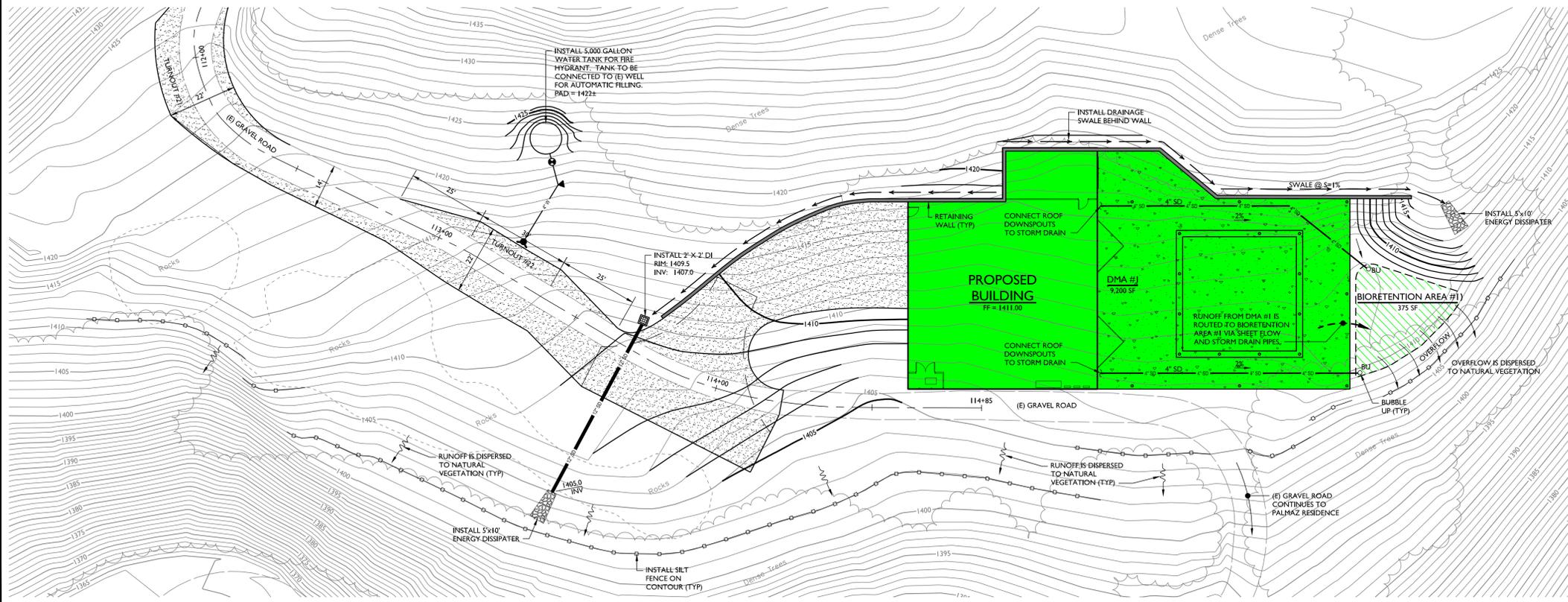
**HELIPAD CONCEPTUAL GRADING PLAN**  
SCALE: 1" = 20'



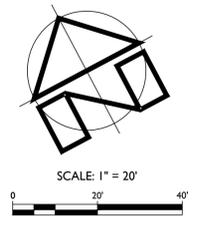
**GRADING QUANTITIES\***

CUT	1,375± CY
FILL	175± CY
NET**	1,200± CY (CUT)

\* THIS ESTIMATE IS PROVIDED AS A TOOL FOR THE REVIEWING AGENCIES TO EVALUATE THE ENVIRONMENTAL IMPACTS OF THE PROJECT. IT IS NOT INTENDED TO BE USED FOR CONSTRUCTION PURPOSES. CONTRACTOR IS TO PERFORM THEIR OWN EARTHWORK CALCULATIONS AND SHALL NOT USE THE ESTIMATES PRESENTED ABOVE. THIS ESTIMATE IS BASED ON IN PLACE VOLUMES AND DOES NOT INCLUDE FLUFF, SHRINKAGE, PAVING, AGGREGATES OR SELECT FILL VOLUMES.  
\*\* EXCESS CUT WILL BE MOVED TO THE SOIL DISPOSAL AREA SHOWN ON THIS PLAN.



**STORMWATER CONTROL PLAN EXHIBIT**  
SCALE: 1" = 20'



**PALMAZ HELIPAD**  
CONCEPTUAL SITE PLANS  
HELIPAD CONCEPTUAL GRADING PLAN

PREPARED UNDER THE DIRECTION OF:



DRAWN BY: SMH  
CHECKED BY: MRM  
DATE: DECEMBER 22, 2016  
REVISIONS: BY:

JOB NUMBER: 09-128  
FILE: DRIVEWAY SITE PLAN.DWG  
ORIGINAL SIZE: 24" X 36"  
SHEET NUMBER:

**Palmaz Private Helipad  
Napa County, California**

**Private Helipad Overflight and Noise Report**

**Prepared for Christian Palmaz**

**by**

**Mead & Hunt, Inc.**

**January 2016**

**1. OVERVIEW**

This Overflight and Noise Report examines the location, flight tracks, operations and noise impacts of a proposed private helipad located in an unincorporated area of Napa County, California. This Report will provide supporting documentation that is required by Napa County for approval of the helipad.

Christian Palmaz is a Napa County resident proposing to construct a private helipad in the County for personal use. The helipad will be constructed on property owned by the Palmaz family.

**2. PROJECT DESCRIPTION**

The proposed helipad is located on property owned by Palmaz. The property is located about 3.8 miles east-northeast of downtown Napa and east of the intersection of Hagen and Olive Tree Lane, in unincorporated Napa County. The proposed helipad site will be located on the top of the mountain ridge, about 1.5 miles northeast from the intersection of Hagen and Olive Tree Lane, and a mile northeast of the Palmaz residence. This location was proposed after an original location on the hillside near the Palmaz residence was studied. The helipad will be utilized by the Palmaz family for personal use.

The helipad is located on the mountain ridge on the east side of the Palmaz property for the primary reason of isolating helicopter activity to an uninhabited area. The area near the helipad is undeveloped, secluded, rural, wooded and steep in terrain. The location of the helipad and the proposed primary flight tracks are designed to keep helicopter activity away from established residences and limit impacts on the community.

The location of the helipad on the mountain ridge will allow Palmaz to operate the helicopter at a higher altitude. The helicopter will depart from a higher elevation, about 1,400 feet above mean sea level (MSL). During approach and departure, helicopters will be at a higher altitude over the ground with the hilltop site than would be the case with a site more down in the valley. That factored together with the greater horizontal distance to nearest noise-sensitive uses will mean less noise impacts. A vicinity map with the proposed Palmaz helipad is illustrated in **Figure 1**.

**FINDINGS AND SUMMARY**

This report was produced to help explain the helicopter operations and procedures that Palmaz will perform at the proposed helipad to help limit noise exposure. The drawings produced include the proposed flight tracks and noise contours for activity to and from the helipad. In summary, this report finds the following:

- The proposed helipad is for private and personal use. No commercial use will be permitted.

- Palmaz will be flying one of the quietest helicopters (Bell 429 GlobalRanger) in the industry.
- Palmaz will utilize widely recognized HAI guidance on how to fly to minimize operational noise as long as is safe and reasonable.
- Proposed flight paths will concentrate the greatest noise impacts within the confines of Palmaz property and avoid low altitude flight over neighboring property. The preferred flight tracks (arrivals/departures from/to the northwest and east) will keep the helicopter over Palmaz property while ascending and descending. The helicopter will reach cruising altitude over Palmaz property.
- Palmaz typically will travel between 1,000 and 1,500 feet above ground level. Most helicopters travel at 1,000 feet above ground level. This higher altitude will result in less of a noise impact.
- Palmaz will typically approach the helipad at a steeper angle of descent than what is typically seen and will allow Palmaz to fly at cruising altitude – at least 1,000 feet above ground level of the helipad – until the helicopter is over Palmaz property. Ascent and descent will be performed over Palmaz property. Most noise impacts occur during initial approach and departure. This will help confine noise impacts to Palmaz property.
- The project meets applicable Napa County ALUC and California Airport Land Use Planning Handbook criteria. Noise contours produced show no significant impacts to nearby residences. The 55, 60 and 65 CNEL contours do not extend beyond Palmaz property, and no dwellings are located within the 55 CNEL contour.
- The amount of operations per week is relatively small with minimal evening or night operations.
- The noise generated by the operation of the aircraft is comparable with common noise sources such as garden equipment, tractors, trucks and other ubiquitous noise sources, taking into account the very short duration of the aircraft noise event.
- The typical duration over which an approach or departure will be distinctly audible above ambient noise level will be only a few seconds. The helicopter will not be hovering over the helipad and it will not remain running on the ground before or after flight longer than essential for safety.

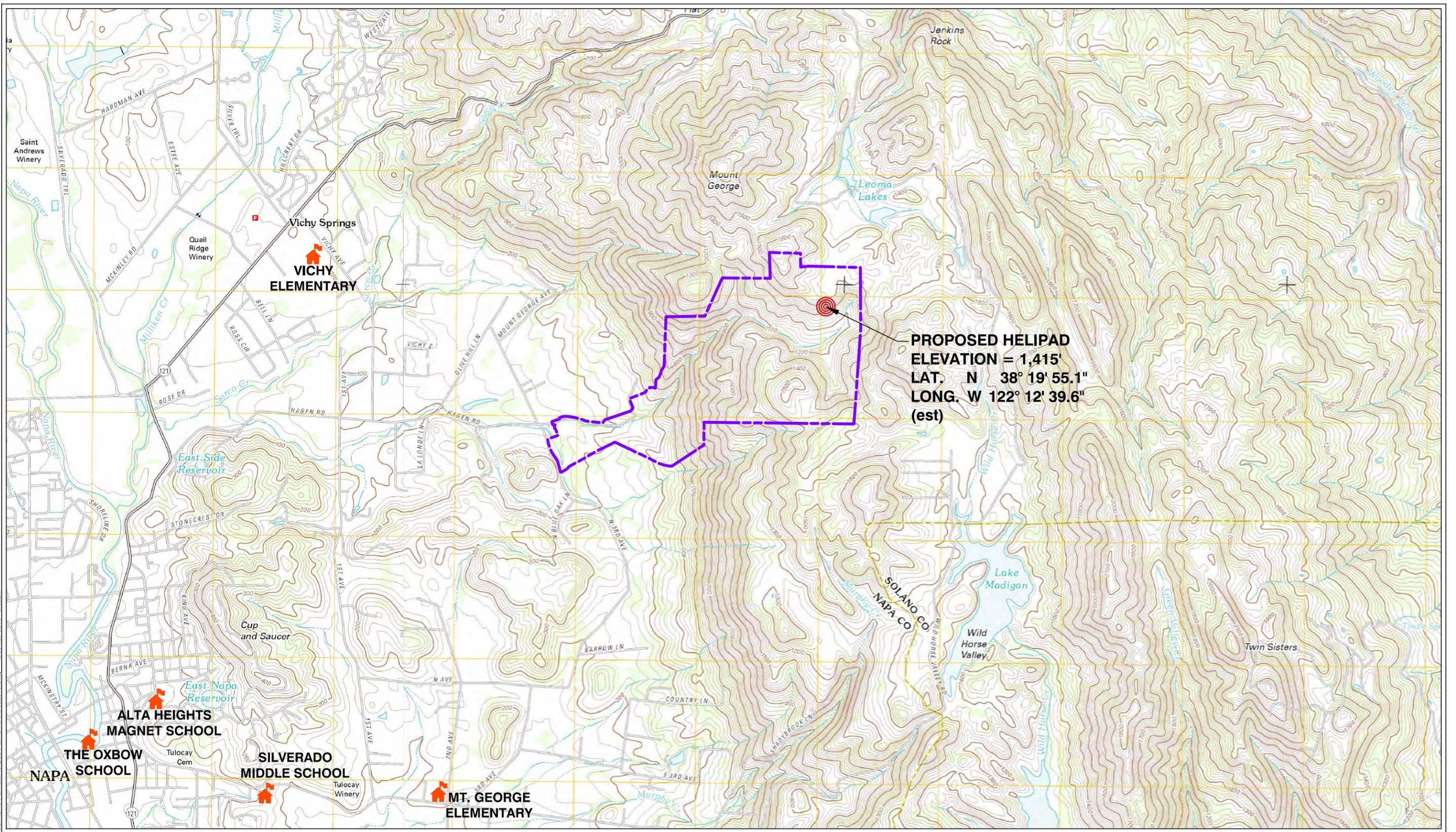
## STATE REQUIREMENTS

As a private helipad for personal use, the site is exempt from California Department of Transportation (CalTrans) permit requirements. According to Public Utilities Code (PUC) 21662 and California Code of Regulations (CCR) 3533, personal-use heliports in unincorporated areas which meet the requirements of Article 5 of CCR 3560 are exempt. Article 5 of the California Code of Regulations (CCR 3560) states:

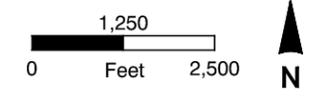
“[M]any design elements of Personal-Use heliports are at the discretion of the owner. However, the Department requires at least the following: 1) FATO [Final Approach and Takeoff Area] dimensions adequate to enable aircraft to operate safely, considering heliport location and the performance data of the most demanding aircraft to utilize the heliport. 2) The closest point of each FATO shall be at least 80 feet from the heliport property line. 3) If the heliport is identifiable as a heliport from the air, it shall be marked with the letters “PVT” in accordance with CCR 3554(a)(3). If a heliport lighting system is installed, it shall illuminate the required markings. The Department shall determine whether or not the heliport is identifiable from the air if there is a dispute.”

Design documents for the private helipad are being produced by Chaudhary & Associates Inc. The dimensions of the FATO, proximity to property lines, and pad markings are discussed in these plans and documents.

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**PROPOSED HELIPAD**  
**ELEVATION = 1,415'**  
**LAT. N 38° 19' 55.1"**  
**LONG. W 122° 12' 39.6"**  
**(est)**



-  Palmaz Property Line
-  Proposed Helipad Location
-  School

Prepared By: **Mead&Hunt** [www.meadhunt.com](http://www.meadhunt.com)

**Figure 1**

**Vicinity Map**  
 Palmaz Private Helipad

### **3. HELIPAD USAGE**

#### **ANTICIPATED ACTIVITY LEVELS**

Currently, Palmaz bases his helicopter at Napa County Airport (APC). Based on operation data to and from APC plus discussions with Palmaz, 4 arrivals and 4 departures per week are expected. It should be noted that operations may fluctuate based on many factors and should only be considered an average. Plus, these operations numbers should also be considered conservative for purposes of noise modeling, meaning the activity estimate is slightly overstated.

Factors that may contribute to a fluctuation in operations may include: weather, wind, visibility and cloud ceiling. Other factors may include Palmaz's personal schedule, such as taking the helicopter to a place for personal vacation and not returning for some time. The helicopter may also be non-operative for periods of time for regular maintenance. Operations during evening (7:00 PM – 10:00 PM) and night hours (10:00 PM – 7:00 AM) will be minimal. Based on current operational statistics from Palmaz, evening operations account for 6 percent of total operations, and night operations are 2 percent.

#### **DESIGN HELICOPTER**

To help minimize any potential noise and overflight impacts, Palmaz will be operating a Bell 429 Global Ranger (B429) helicopter. The B429 is a proven modern light twin helicopter. Key technologies are incorporated into the design of the B429 that help reduce noise.

The B429 has a 4-blade rotor system with soft-in-plane flex beams. The rotors are composite and have swept tips to help reduced noise. Bell has designed the B429 main rotor with carbon fiber blades enabling the shape to be optimized, providing enhanced performance and reduced noise. The tail rotor on the B429 is also a new design that helps improve performance while reducing noise. The tail rotor is configured with four blades. The rotor system is design by stacking two, two-blade rotors set at uneven intervals and running slower than other tail rotors, making the system quieter.

### **4. APPROACH AND DEPARTURE PATH REQUIREMENTS**

Although the high degree of maneuverability of helicopters gives them wide latitude in the choice of a flight path into and out of a heliport, establishment of a formal landing site requires that defined approach/departure paths be designated. The purpose for designation of these paths is to ensure that adequate airspace is, and will continue to be, available for safe operation of helicopters to and from the heliport. It is desirable, although not absolutely essential, that a heliport have two approach/departure paths separated by an arc of at least 135 degrees. The two most important aeronautical factors in design of the approach/departure paths are the direction of the prevailing wind and the location of potential obstructions.

#### **WIND SPEED AND DIRECTION**

As with fixed-wing aircraft, helicopter takeoffs and landings are easiest and most efficient when conducted into the wind. Unlike fixed-wing aircraft, helicopters need very little final approach distance into the wind; some 500 to 1,200 feet is preferable although they can get by with less if necessary.

Wind data from the nearby Napa County Airport indicate that the prevailing winds vary based on the season. Throughout most of the year, winds are out of the south-southwest. However, during winter months the winds are mostly out of the east and during spring months winds are mostly out of the west. The proposed approach and departure paths consider the prevailing wind when looking at approach and departure paths.

## OBSTACLE CLEARANCE

The standards for heliport approach/departure paths are set by Part 77 of the Federal Aviation Regulations (FAR), *Safe, Efficient Use, and Preservation of the Navigable Airspace*. These regulations establish a set of imaginary surfaces in the airspace around the heliport. In general, the heliport and its approach/departure paths should be designed so that no objects penetrate the FAR Part 77 surfaces. These surfaces are:

**Approach/Departure Surfaces** — These surfaces begin at the edge of the helipad, and slope upward one foot per every eight feet horizontally (8:1). The approach/departure surface length is 4,000 feet and the width at the outer end is 500 feet. The surface follows the approach path.

**Transitional Surfaces** — Transitional surfaces are situated along the sides of the helipad and approach surfaces. They slope upward one foot per every two feet horizontally (2:1) for a horizontal distance of 250 feet from the FATO and approach surface centerlines.

Since the helipad will be privately owned and operated, FAA and CalTrans permitting is not required and therefore no applicable airspace standards are required. However, it is noted these surfaces are imperative to overflight safety for the helicopter and nearby structures. These surfaces act as a guide when siting approach and departure surfaces for the Palmaz helipad.

## PREFERRED APPROACH AND DEPARTURE PATHS

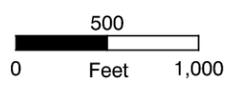
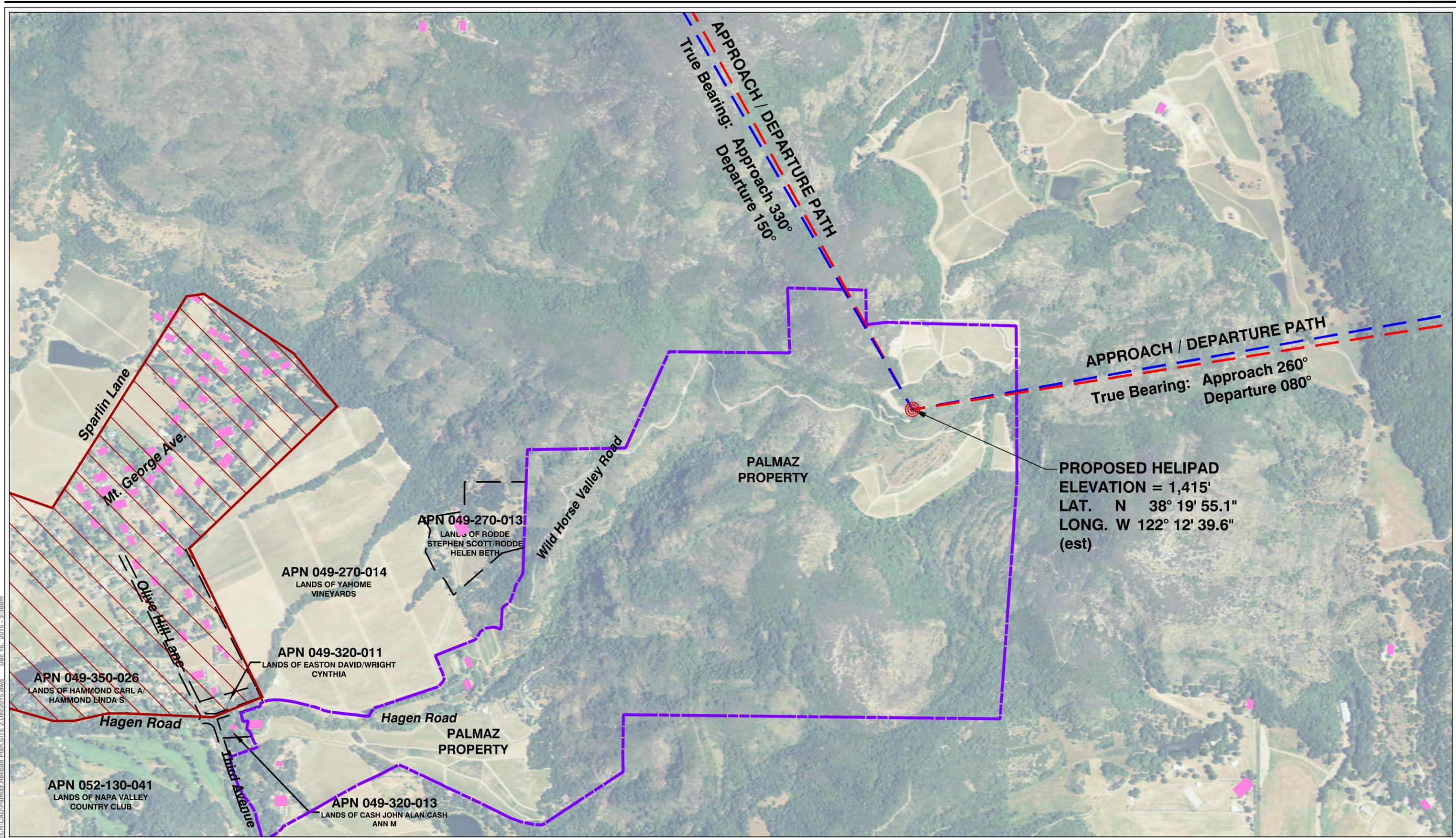
Besides wind and obstacle clearance, another important factor for preferred approach and departure paths is avoiding overflight of nearby residences. Helicopters are generally louder when arriving than when departing, since they are slowing down, blade configurations may change, and simply they are closer to the ground at a given distance from the helipad.

To take advantage of prevailing winds while avoiding direct residential overflight, the primary approach and departure paths project to the northwest and the east. These paths also consider terrain and primary flight corridors. The two primary approach and departure paths are illustrated in **Figure 2**, with residential units shown in pink. These paths are purposely positioned to help reduce the potential of overflight and noise disturbance on nearby residences.

Under ideal conditions, the paths illustrated will be followed for final descent on arrivals and initial ascent on departures. After Palmaz has reached flying altitude (generally 1,000 to 1,500 feet above helipad ground level – see next section), the helicopter will likely fly on a predetermined route to the destination. The altitude of 1,000 feet above ground level is a typical cruising altitude for other prominent helicopter operators, such as law enforcement, aeromedical operators, and state agencies.

## NO-FLY ZONE

Palmaz has voluntarily proposed a 'no-fly zone' to help reduce opportunities for overflight and noise impacts on residences to the northwest of his property. The no-fly zone will be avoided during approach to, and departure from the helipad when safe and reasonable flying conditions permit. If overflight of the area is necessary (when conditions dictate) Palmaz will remain at least 1,000 feet above ground level over the no-fly zone. The boundaries of the proposed no-fly zone are illustrated in **Figure 2**. The area is roughly bounded by Hagen Road, Vichy Avenue, La Grande Avenue and Olive Hill Lane, and includes the residences near Mt George Avenue.



- Approach Track
- Departure Track
- Dwelling Unit
- Palmaz Property Line
- Other Parcel Lines
- Proposed No Fly Zone (below 1,000' above ground level)

Figure 2

**Primary Flight Tracks**  
Palmaz Private Helipad

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## FLY NEIGHBORLY GUIDE

The Helicopter Association International (HAI) has published a *Fly Neighborly Guide* (second edition issued in 1993) to define a voluntary noise abatement program for helicopter pilots. This *Guide* recommends procedures on noise abatement and how to operate helicopters quietly. Among the recommendations:

- “Increasing the distance/separation from noise-sensitive areas is the most effective means of noise abatement.”
- “Takeoffs are reasonably quiet operations, but you can limit the total ground area exposed to helicopter sound by using a high rate-of-climb and making a smooth transition to forward flight.”
- “Maintaining an altitude as high as possible above the ground and flying at airspeeds consistent with minimum noise output, flight safety and [air traffic control] constraints is essential.”
- When commencing approach, begin descent at a rate of at least 200 fpm (feet per minute) before reducing airspeed, then reduce airspeed while increasing the rate of descent to 800-1000 fpm.

## STEEPER APPROACH AND DEPARTURE PROCEDURES

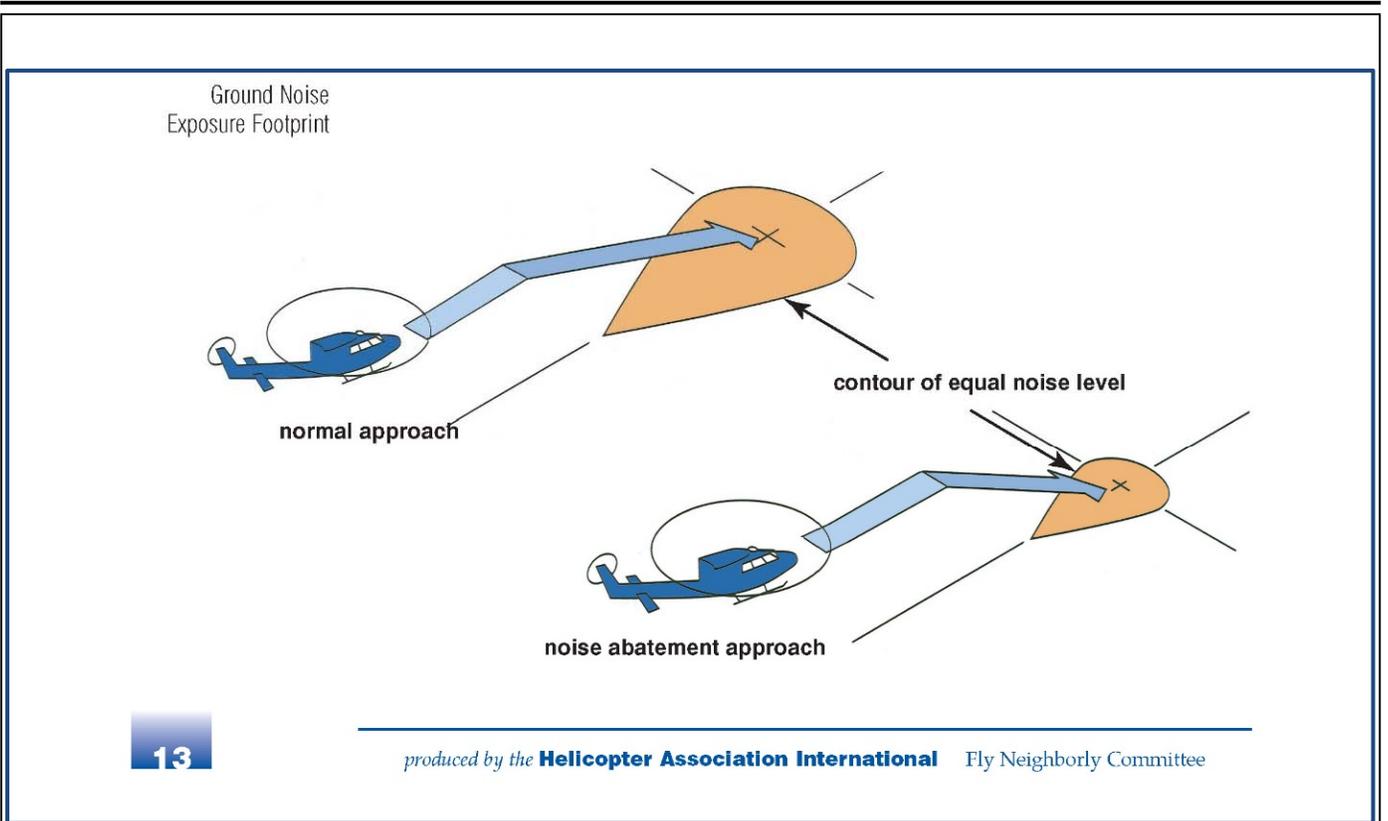
Utilization of the B429 will allow Palmaz to perform a Category A helicopter approach and departure more frequently. With a Category A profile, the helicopter will perform a steeper ascent and descent when taking off and landing than the recommended HAI procedures described above. The helicopter could ascend at 85 degrees until it is at altitude for level flight, usually 1,000 above ground level. The twin engine B429 will allow the utilization of a Category A helicopter approach and departure.

The purpose of Category A helicopter procedures is to operate the helicopter in such a manner that, if one engine fails at any time after takeoff or during landing, the helicopter can land safely and stop in the takeoff area, or climb out from the point of failure and attain stabilized single engine forward flight. With twin engines, the B429 is capable of performing the Category A approach and departure profile. The Category A profile would have the following positive impacts:

- Utilizing a Category A approach and departure will allow Palmaz to fly at cruising altitude – at least 1,000 feet above ground level – until the helicopter is over Palmaz property. Ascent and descent will be performed over Palmaz property. Most noise impacts occur during initial approach and departure. This will help confine noise impacts to Palmaz property.
- The B429 would be able to stay at least 1,500 feet above residences to the west and begin a steep descent over Palmaz property, helping limit noise impacts. The same is true for departures to the east: the B429 would ascend at a steep angle and be at least 1,000 feet above ground before leaving Palmaz property.

**Figure 3** below shows the Category A approach and departure profile that Palmaz will follow when landing and departing. Included in this Figure is a typical, more constant approach path that would produce more noise, and the Part 77 8:1 approach surface slope. **Figure 3** shows that Palmaz will keep his helicopter above 1,000 feet above ground level over his property, and descend / ascend at a steep rate that is *at least* consistent with HAI *Fly Neighborly Guide*, as presented above. Also included is the HAI produced graphic that shows the preferred steeper approach path that produces less noise than the constant rate approach.

These procedures ensure that helicopter noise will last for a matter of a minute or so with each takeoff or landing. Other noise sources that are common to Napa County include lawn mowers and leaf blowers. When these items are used in the area, they may be operated for up to 3 hours at a time, every other day.



(Source: HAI Fly Neighborly Guide, Figure 7, page 13)

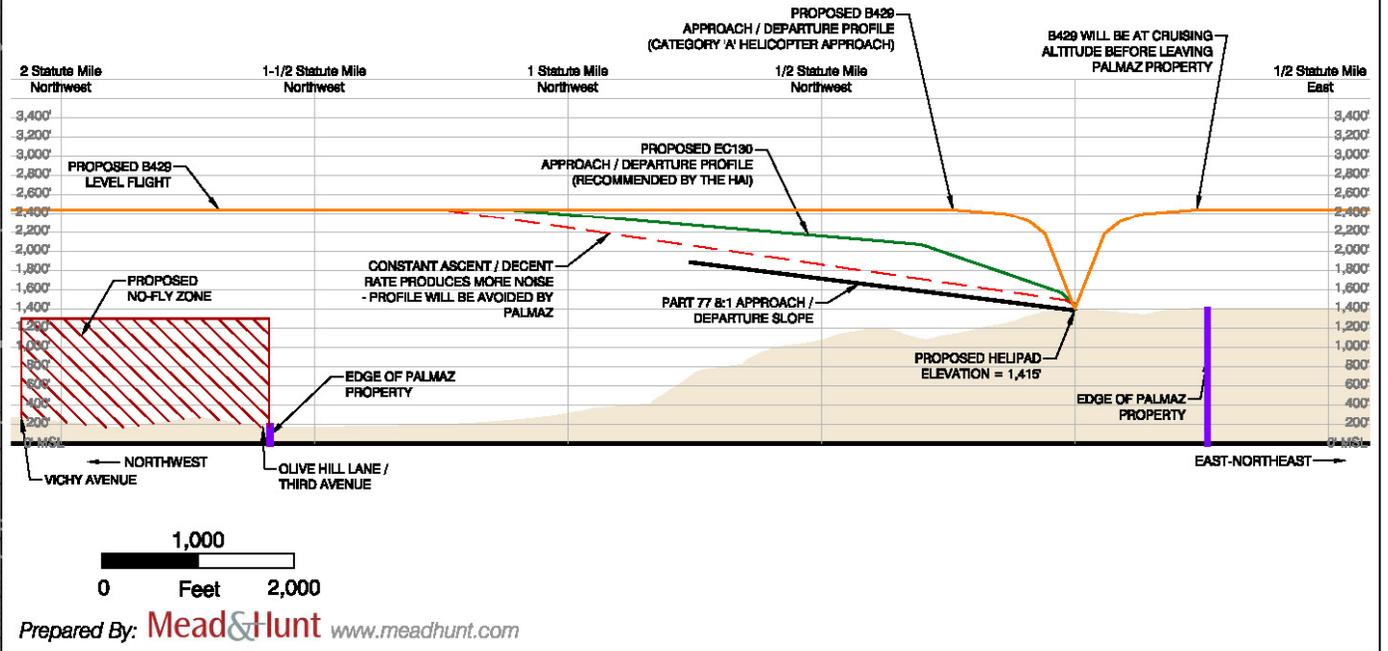


Figure 3

## Approach and Departure Profiles Palmaz Private Helipad

## 5. NOISE CONTOURS

This section details the noise impacts associated with helicopter activity to and from the proposed helipad at the Palmaz site. This section details the science behind aircraft and helicopter noise and introduces the three metrics commonly used to quantify aircraft noise. The three noise metrics are:

- Community Noise Equivalent Level, (CNEL) which measures total noise exposure over a 24-hour period, including ambient and background noise.
- Maximum Sound Level, (Lmax), which measures the loudest sound heard during a noise event
- Sound Exposure Level (SEL), which takes into account the loudness and duration of an event and measures the total noise exposure of that event.

### AIRCRAFT NOISE

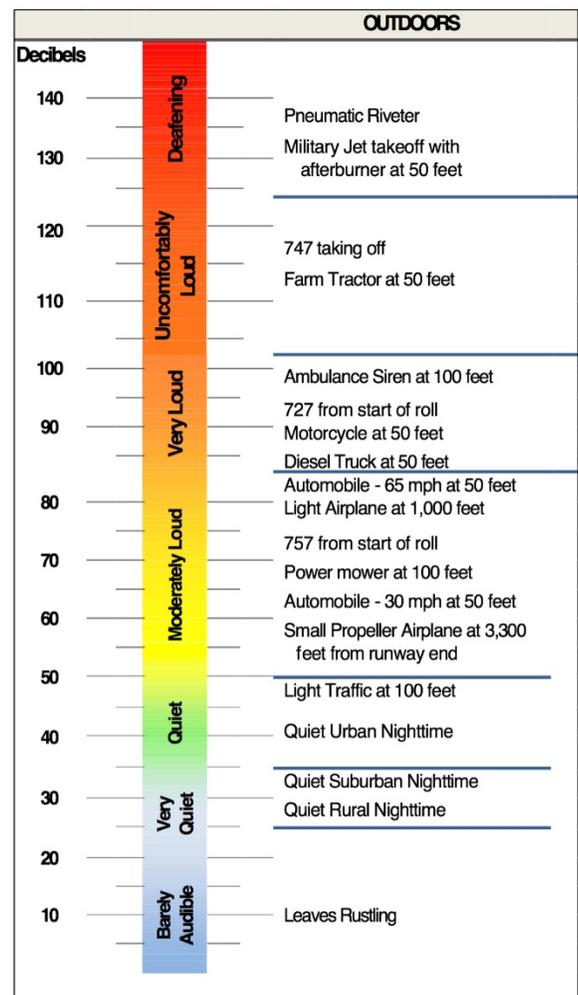
Of all the adverse effects related to aircraft activity, noise is arguably the most noticeable. To understand aircraft noise and its effects on people, it is important to understand the science of sound. Sound is a type of energy that travels in the form of a wave. Sound waves create minute pressure differences in the air that are recognized by the human ear or microphones. Sound waves can be measured using decibels (dB) to measure the amplitude or strength of the wave and Hertz (Hz) which measures the frequency or pitch of the wave.

The strength, or loudness, of a sound wave is measured using decibels on a logarithmic scale. The range of audibility of a human ear is 0 dB (threshold of hearing) to 140 dB (threshold of pain). The use of a logarithmic scale often confuses people because it does not directly correspond to the perception of relative loudness. A common misconception is that if two noise events occur at the same time, the result will be twice as loud. In reality, the simultaneous events will double the sound energy, but only result in a 3 dB increase in magnitude. For a sound event to actually be twice as loud as another, it must be 10 dB higher.

Scientific studies have shown that people do not interpret sound the same way a microphone does. For example, humans are biased and sensitive to tones within a certain frequency range. The A-weighted decibel scale was developed to correlate sound tones with the sensitivity of the human ear.

The A-weighted decibel is a “frequency dependent” rating scale which emphasizes the sound components within the frequency range where most speech occurs. This scale is illustrated in **Table 1, Approximate Decibel Level of Common Sound Sources**, which lists typical sound levels of common outdoor sound sources.

**Table 1: Approximate Decibel Level of Common Sound Sources**



When sound becomes annoying to people, it is generally referred to as noise. A common definition of noise is unwanted sound. One person may find higher levels of noise bearable, while others do not. Studies have also shown that a person will react differently to the same noise depending on that person’s activity at the time the noise is recognized, e.g., when that person is sleeping.

**COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)**

While the A-weighted decibel scale measures human perception of loudness, it does not account for the degree of annoyance based on the duration of a noise event or how often the event occurs. Characteristics of the noise also influence annoyance.

Noise generated by the operation of aircraft to, from, and around an airport (or in this case, a heliport) is generally measured in terms of cumulative noise levels of all aircraft operations. Cumulative noise level metrics provide a single measure of the average sound levels in decibels for any point near an airport or heliport when exposed over the course of a day. A variety of cumulative noise level metrics have been formulated to provide a single measure of continuous or multiple noise events over time. In California, the metric used is the Community Noise Equivalent Level. The CNEL metric recognizes that frequent medium-intensity noise events are more bothersome than less frequent high-intensity noises events.

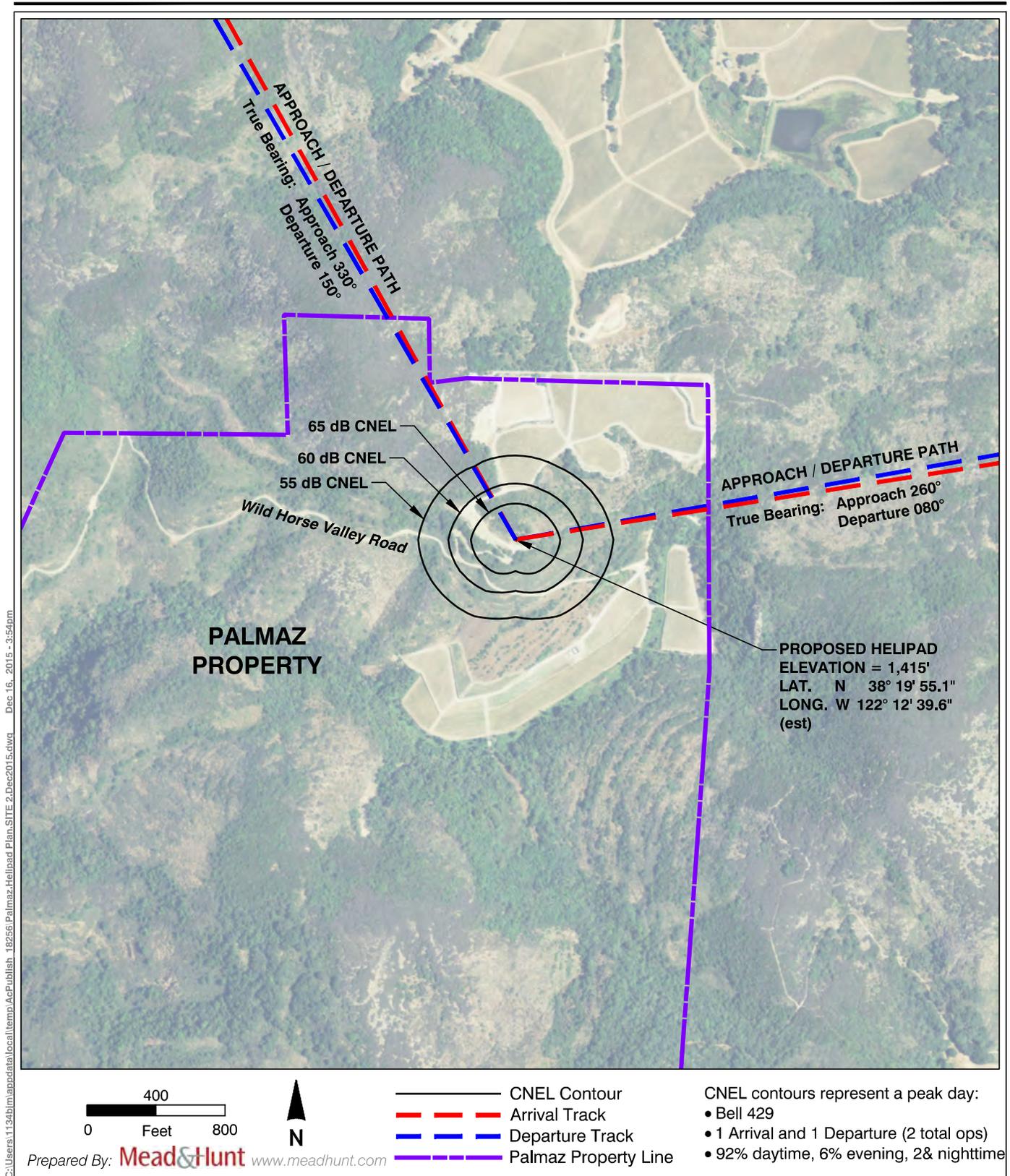
The CNEL penalizes any activity that takes place in the evening (7:00 PM – 10:00 PM) by increasing the decibel level by approximately 5 dB, and in the nighttime (10:00 PM – 7:00 AM) by increasing the decibel level by 10 dB. Since the decibel scale uses a base-10 logarithm, each evening operation is equal to 5 daytime operations, and each nighttime operation is equivalent to 10 daytime operations. The rationale for this adjustment is based on the reduced ambient noise at these times, and thus the increase in human sensitivity. A summary of effects that noise has on people was developed by the Federal Interagency Committee on Noise (FICAN) in 1992.

The FAA’s Integrated Noise Model (INM) 7.0d was used to generate the CNEL noise contours for the proposed helipad. The resulting contours are illustrated in **Figure 4**. The INM is developed by the FAA and is the standard model for computer analysis of aircraft noise. Operational data is required for input into the INM for the program to generate the contours includes: the specific helicopter model and number of operations, the time of day that helicopters operate, and the direction of approach and departure flight tracks. **Table 2** details the input data used to generate noise contours for a peak day: 1 departure and 1 arrival. Note this is greater than average day activity (0.6 arrivals and 0.6 departures). Flight tracks are distributed evenly (to/from east and to/from northwest) to provide a more conservative CNEL contour.

**Table 2: Helipad Operations INM Inputs**

Helicopter Type		Operation	Flight Track	Operation Totals			Total Daily Operations	Total Weekly Operations
Helicopter	INM Code or Sub			Day Operations	Evening Operations	Night Operations		
Bell 429 Global Ranger	B429	Arrival	From East	0.46	0.03	0.01	(Peak Day)	(Average Week)
	B429	Arrival	From NW	0.46	0.03	0.01		
	B429	Departure	To East	0.46	0.03	0.01		
	B429	Departure	To NW	0.46	0.03	0.01		
<b>Totals</b>				<b>1.84</b>	<b>0.12</b>	<b>0.04</b>	<b>2.0</b>	<b>8</b>

As discussed previously, CNEL contours illustrate the cumulative average of noise exposure over a 24-hour period, based on the type of helicopter and amount of operations. The CNEL metric is what is required in California when CEQA documents are prepared. It is also the required metric for measuring noise levels at airports and inclusion in land use compatibility plans. **Figure 4** shows that 55, 60 and 65 CNEL contours remain on Palmaz property and no dwelling unit is located within the 55 CNEL contour.



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Figure 4

## CNEL Noise Contours Palmaz Private Helipad

### **MAXIMUM A-WEIGHTED NOISE LEVEL (LMAX)**

CNEL noise analysis is the FAA standard for measuring noise at airports and for CEQA documents. It measures impacts over an average 24-hour period. For operations at a heliport with sporadic operations, like what is proposed by Palmaz, the CNEL contours are small, as illustrated in **Figure 4**.

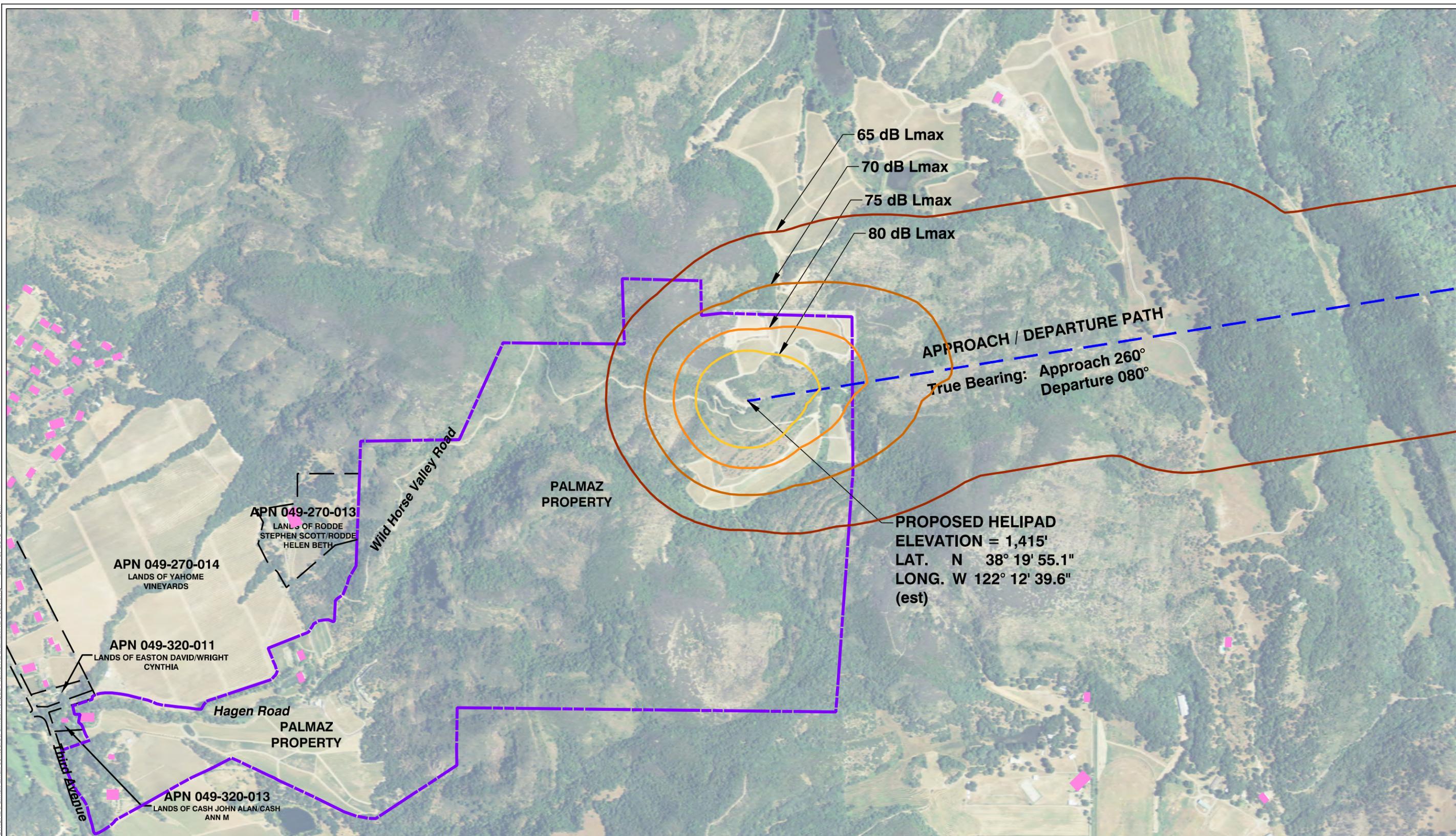
Other metrics are used to depict noise impacts from a single helicopter operations. To help describe noise from a single event, the Maximum A-weighted noise level (Lmax) metric was devised. Noise levels from a single event usually vary over time. For instance, a helicopter will sound faint to begin with, then get louder as it moves closer and reach a peak noise energy level as it passes close. As the helicopter moves away from the receptor, the sound energy will decrease. The Lmax metric describes a noise event by the maximum sound level exposed at a specific location. Lmax only describes one dimension of a noise event – the maximum noise energy experienced. This is different from a cumulative noise metric, like CNEL that accounts for events that may be of short duration or extended periods. The Lmax metric must be used to analyze any potential impacts to noise-sensitive receptors, according to the Napa County Noise Code Regulations.

Lmax noise levels for approach and departure operations on each primary flight track are illustrated in **Figures 5 through 8**.

For operations to the east (**Figures 5 and 6**) the 75 dB Lmax contours are mostly contained on Palmaz property. Noise from departures to the east show the 70 dB contour extending off of Palmaz property for less than 1,000 feet. For approaches from the east, the 70 dB contour extends about 4,000 feet off Palmaz property. For each of these operations, no noise receptors (residences) are located within the 70 dB contour.

Operations to the northwest (**Figures 7 and 8**) produce Lmax noise contours similar to those to the east. The 75 dB contour is contained to Palmaz property. For departures to the northwest, the 75 dB contour extends off Palmaz property for about 500 feet and, for arrivals, the 70 dB contour extends off Palmaz property about 3,500 feet. For both scenarios, there are no residences or sensitive noise receptors within the 70 dB Lmax contour.

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65 dB Lmax  
 70 dB Lmax  
 75 dB Lmax  
 80 dB Lmax

APPROACH / DEPARTURE PATH  
 True Bearing: Approach 260°  
 Departure 080°

PROPOSED HELIPAD  
 ELEVATION = 1,415'  
 LAT. N 38° 19' 55.1"  
 LONG. W 122° 12' 39.6"  
 (est)

APN 049-270-013  
 LANDS OF RODDE  
 STEPHEN SCOTT/RODDE  
 HELEN BETH

APN 049-270-014  
 LANDS OF YAHOME  
 VINEYARDS

APN 049-320-011  
 LANDS OF EASTON DAVID/WRIGHT  
 CYNTHIA

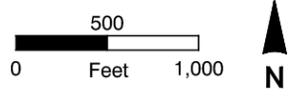
APN 049-320-013  
 LANDS OF CASH JOHN ALAN/CASH  
 ANN M

Wild Horse Valley Road

PALMAZ  
 PROPERTY

Hagen Road  
 PALMAZ  
 PROPERTY

Third Avenue

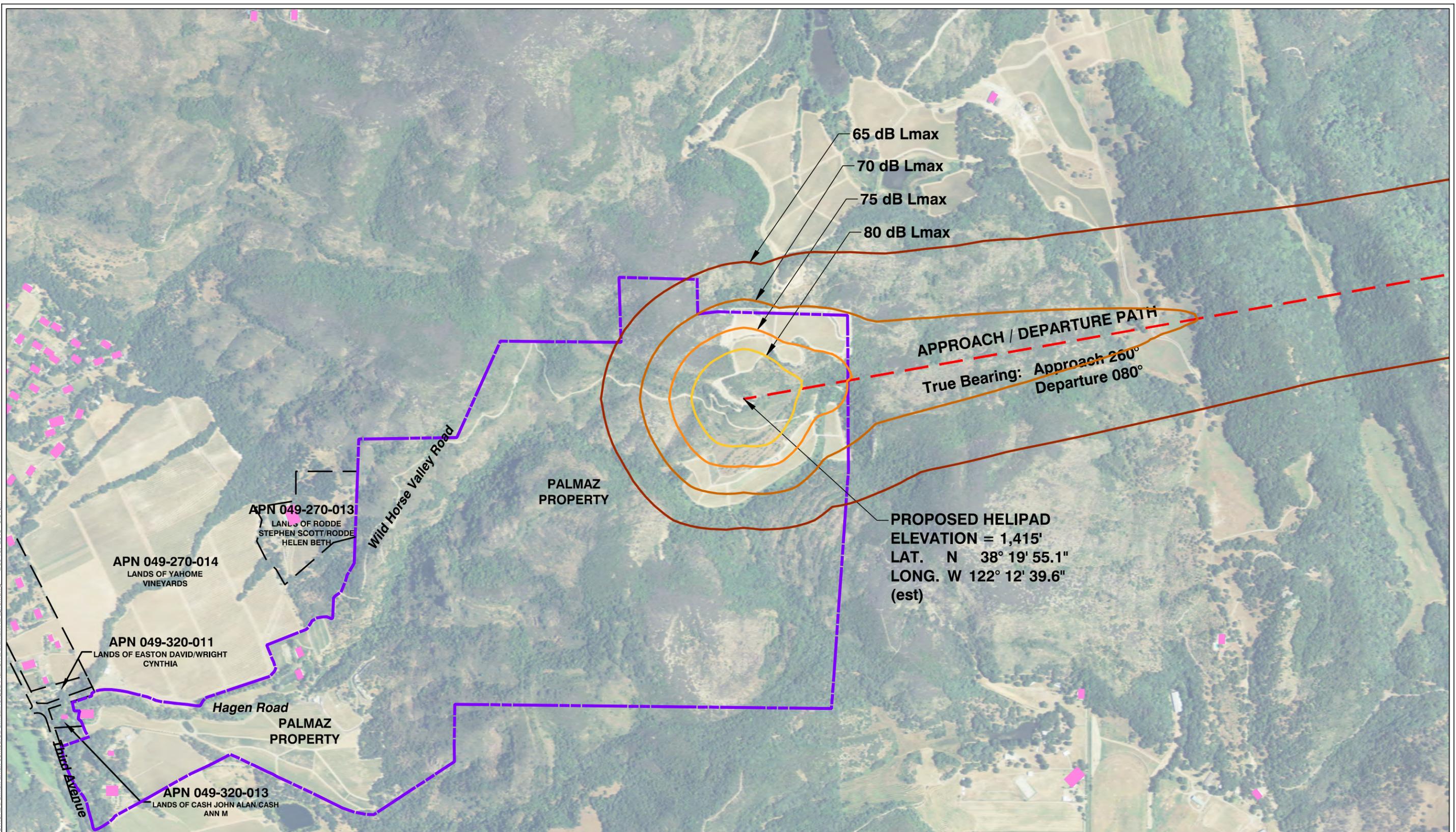


- Departure Track
- Palmaz Property Line
- Other Parcel Lines
- Dwelling Unit
- 65 Lmax Contour
- 70 Lmax Contour
- 75 Lmax Contour
- 80 Lmax Contour

Figure 5

**Lmax - B429 - Depart to East**  
 Palmaz Private Helipad

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65 dB Lmax  
 70 dB Lmax  
 75 dB Lmax  
 80 dB Lmax

APPROACH / DEPARTURE PATH  
 True Bearing: Approach 260°  
 Departure 080°

PROPOSED HELIPAD  
 ELEVATION = 1,415'  
 LAT. N 38° 19' 55.1"  
 LONG. W 122° 12' 39.6"  
 (est)

APN 049-270-013  
 LANDS OF RODDE  
 STEPHEN SCOTT/RODDE  
 HELEN BETH

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 LANDS OF YAHOME  
 VINEYARDS

APN 049-320-011  
 LANDS OF EASTON DAVID/WRIGHT  
 CYNTHIA

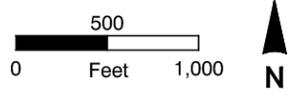
APN 049-320-013  
 LANDS OF CASH JOHN ALAN/CASH  
 ANN M

Wild Horse Valley Road

PALMAZ  
 PROPERTY

Hagen Road  
 PALMAZ  
 PROPERTY

Third Avenue



--- Approach Track

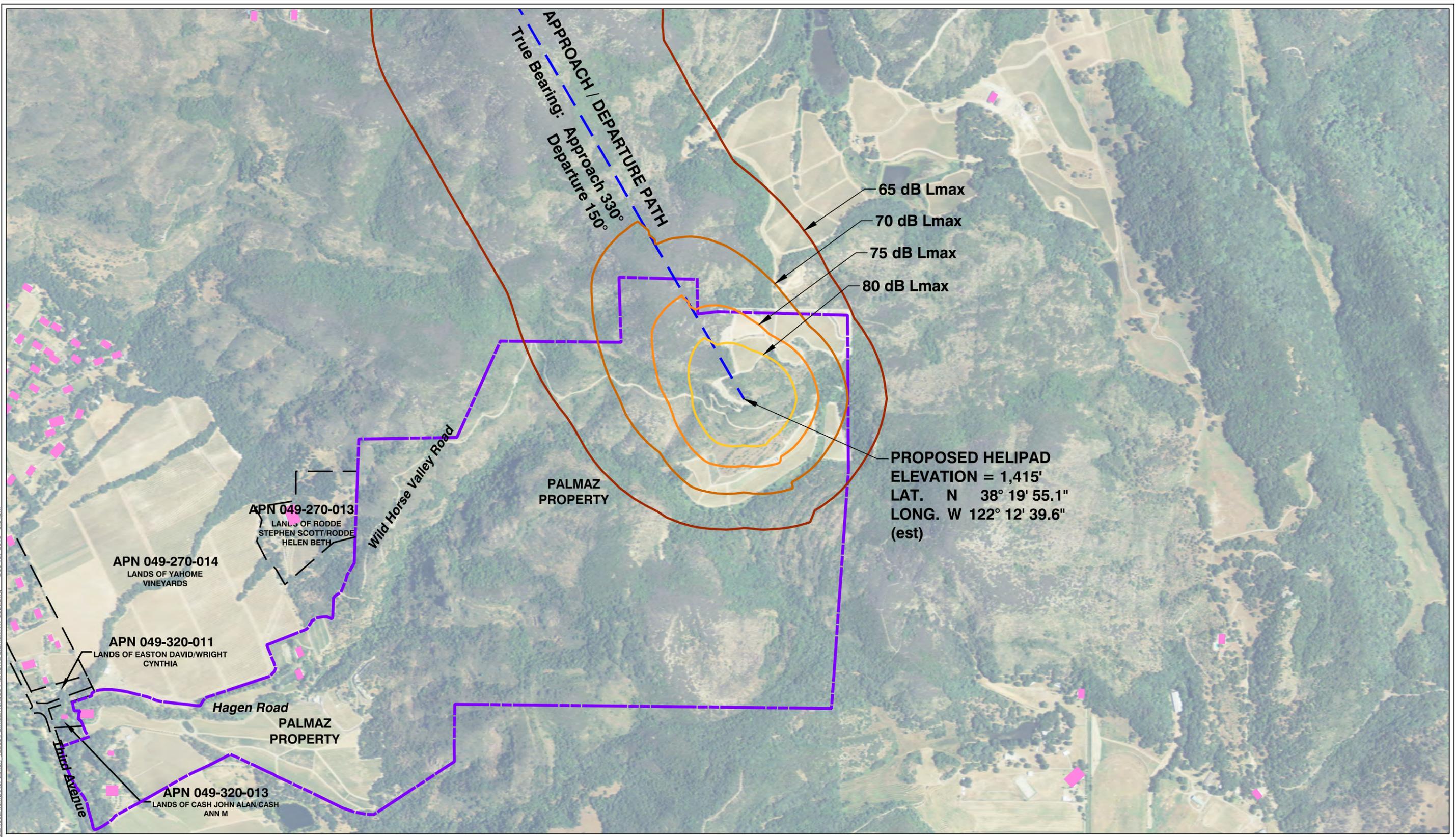
--- Palmaz Property Line  
 --- Other Parcel Lines  
 ■ Dwelling Unit

--- 65 Lmax Contour  
 --- 70 Lmax Contour  
 --- 75 Lmax Contour  
 --- 80 Lmax Contour

Figure 6

**Lmax - B429 - Approach from East**  
 Palmaz Private Helipad

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65 dB Lmax  
 70 dB Lmax  
 75 dB Lmax  
 80 dB Lmax

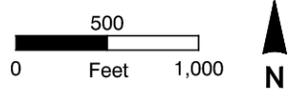
PROPOSED HELIPAD  
 ELEVATION = 1,415'  
 LAT. N 38° 19' 55.1"  
 LONG. W 122° 12' 39.6"  
 (est)

APN 049-270-013  
 LANDS OF RODDE  
 STEPHEN SCOTT/RODDE  
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APN 049-270-014  
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APN 049-320-011  
 LANDS OF EASTON DAVID/WRIGHT  
 CYNTHIA

APN 049-320-013  
 LANDS OF CASH JOHN ALAN/CASH  
 ANN M

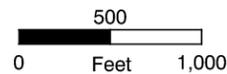
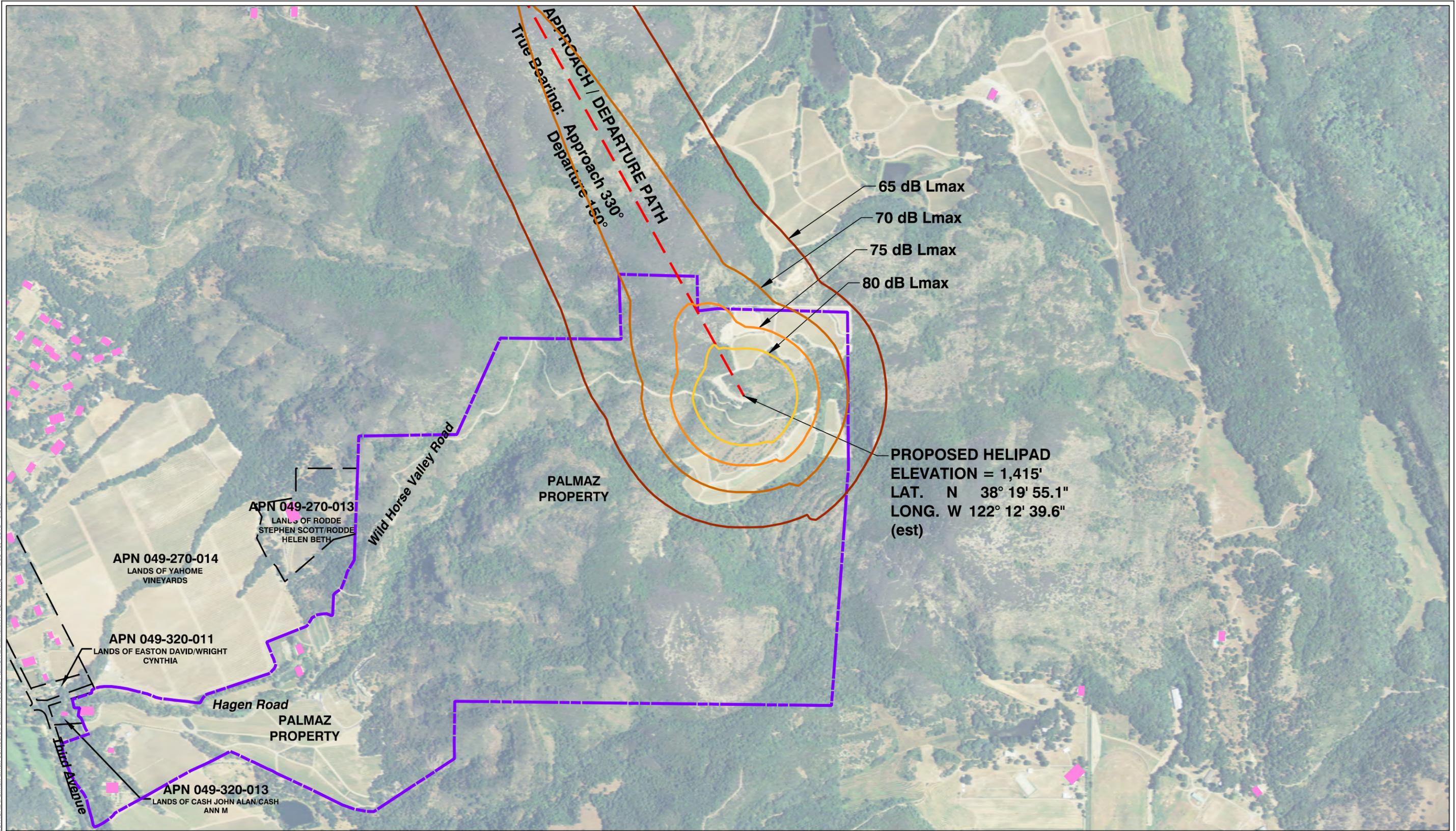


- - - Departure Track
- - - Palmaz Property Line
- - - Other Parcel Lines
- Dwelling Unit
- 65 Lmax Contour
- 70 Lmax Contour
- 75 Lmax Contour
- 80 Lmax Contour

Figure 7

**Lmax - B429 - Depart to NW**  
 Palmaz Private Helipad

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--- Approach Track

--- Palmaz Property Line  
--- Other Parcel Lines  
■ Dwelling Unit

--- 65 Lmax Contour  
--- 70 Lmax Contour  
--- 75 Lmax Contour  
--- 80 Lmax Contour

Figure 8

Lmax - B429 - Approach from NW  
Palmaz Private Helipad

## **SOUND EXPOSURE LEVEL (SEL)**

Like the Lmax metric, the sound exposure level (SEL) describes noise energy from a single event. However, the SEL metric measures the total noise energy produced during an event. SEL accounts for both the loudness of an event and its duration. The SEL metric is expressed as a steady noise level with a one-second duration that includes the same amount of noise energy as the actual longer duration. In simple terms, the SEL metric packs the entire noise event into one second. Thus, for any event lasting longer than one second, the SEL will always be higher than the Lmax.

**Figures 9 through 12** illustrate SEL contours for arrivals and departures on each primary flight track. Noise impacts are greater on approaches, as is shown with larger contours. The 85 dB SEL contour is generally contained on Palmaz property in each scenario. The 80 dB SEL contour extends off Palmaz property about 5,000 feet for both approach scenario. However no residences are located within the 80 dB SEL contours.

The SEL is generally accepted by FICAN and others as suitable for the assessment of the potential for sleep disturbance. FICAN suggests that 10 percent of the population will be awakened by a single noise event of 80 dB SEL. A conservative estimate is 15 dB noise reduction from outside to inside a residence and at least 20 dB with windows closed. This means 10 percent of the population will be awakened within the 95 dB SEL contour.

No residences are located within the 80, 85, 90 or 95 dB SEL contours in the 4 scenarios. Operations by the Palmaz helicopter will likely have an extremely low probability of sleep disturbance.

## **6. NOISE IMPACT ANALYSIS**

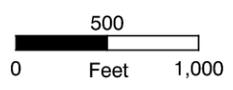
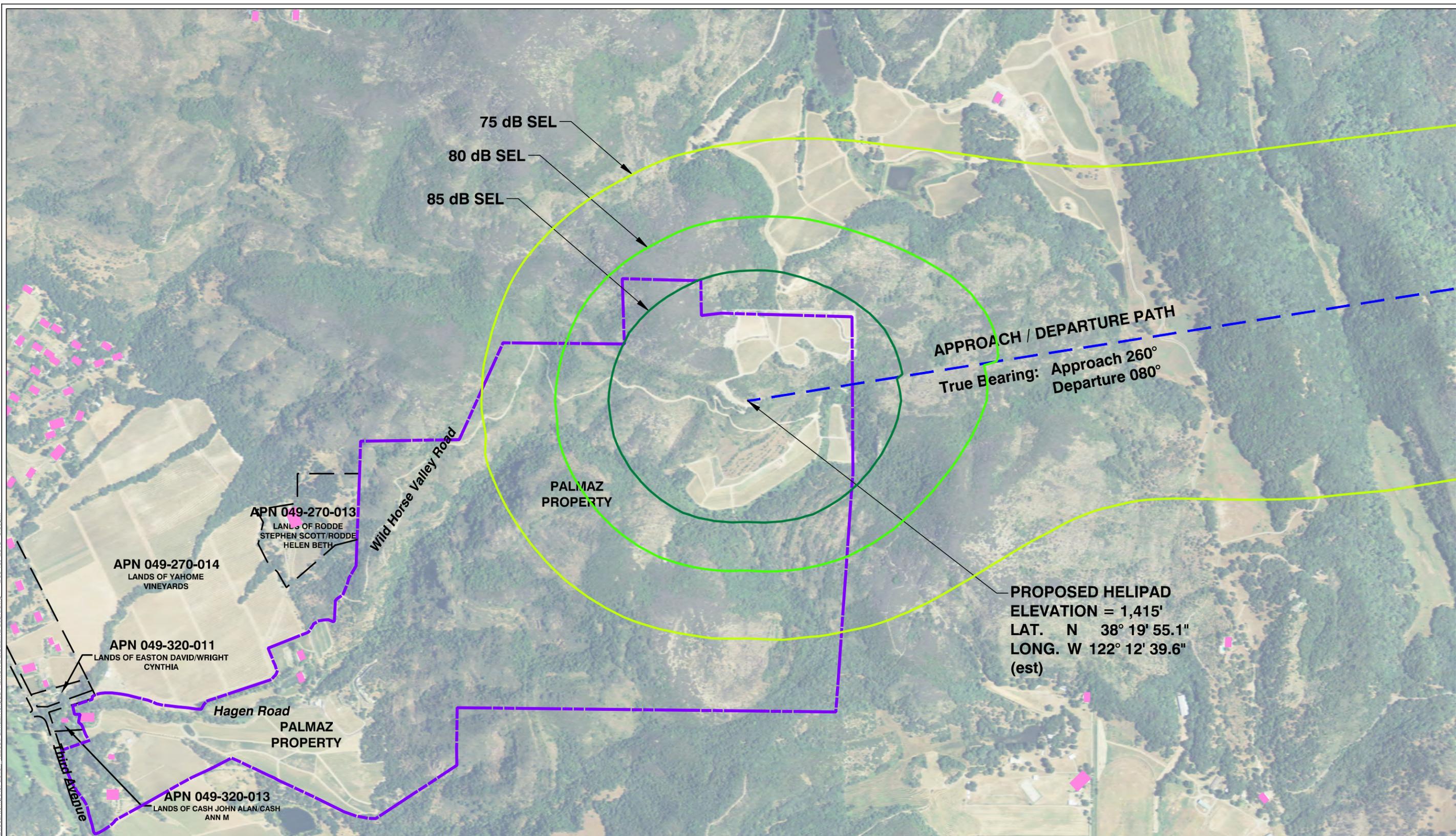
Noise impacts from helicopter operations to and from the proposed helipad were originally quantified by using the Community Noise Equivalent Level (CNEL) metric, which was developed by the State of California as a way to measure cumulative aircraft noise.

The County has previously requested that information be supplied to show that the helipad would comply with Noise Code Regulations in Section 8.16 of the Napa County General Plan.

Mead & Hunt notes, however, that it is questionable as to whether the County Noise Code Regulations, or at least some aspects of them, apply to the proposed helipad. To the extent that the regulations would function to regulate helicopter operations or the amount of noise that the operations would generate, any local controls are preempted by federal regulations. Less clear is the extent to which the local regulations can be used to determine whether to permit or deny construction of the helipad in the first place. This is a legal question that this Report does not attempt to answer.

For background information purposes, this Section begins with a summary of federal regulations of aircraft operations and noise and the court cases that have defined the limitation of local regulations for that purpose. The relationship of activity at the proposed Palmaz helipad to Napa County Regulations the Napa County Airport Land Use Compatibility Plan standards are then analyzed. Local schools are examined to determine if any will be affected by helicopter operations. Finally, voluntary noise mitigation procedures Palmaz will utilize are described.

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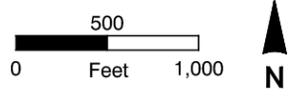
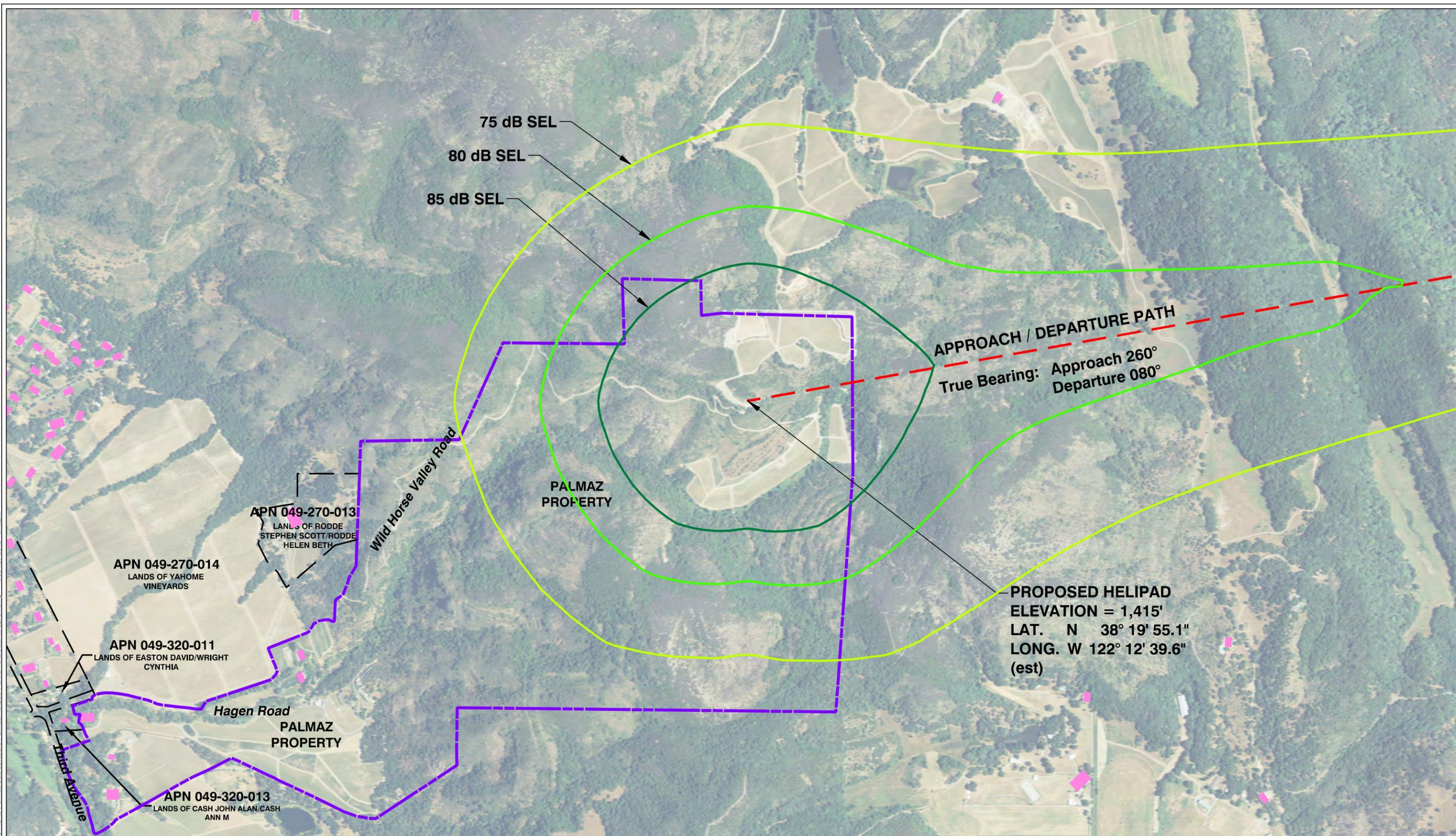


- Departure Track
- Palmaz Property Line
- Other Parcel Lines
- Dwelling Unit
- 75 SEL Contour
- 80 SEL Contour
- 85 SEL Contour

Figure 9

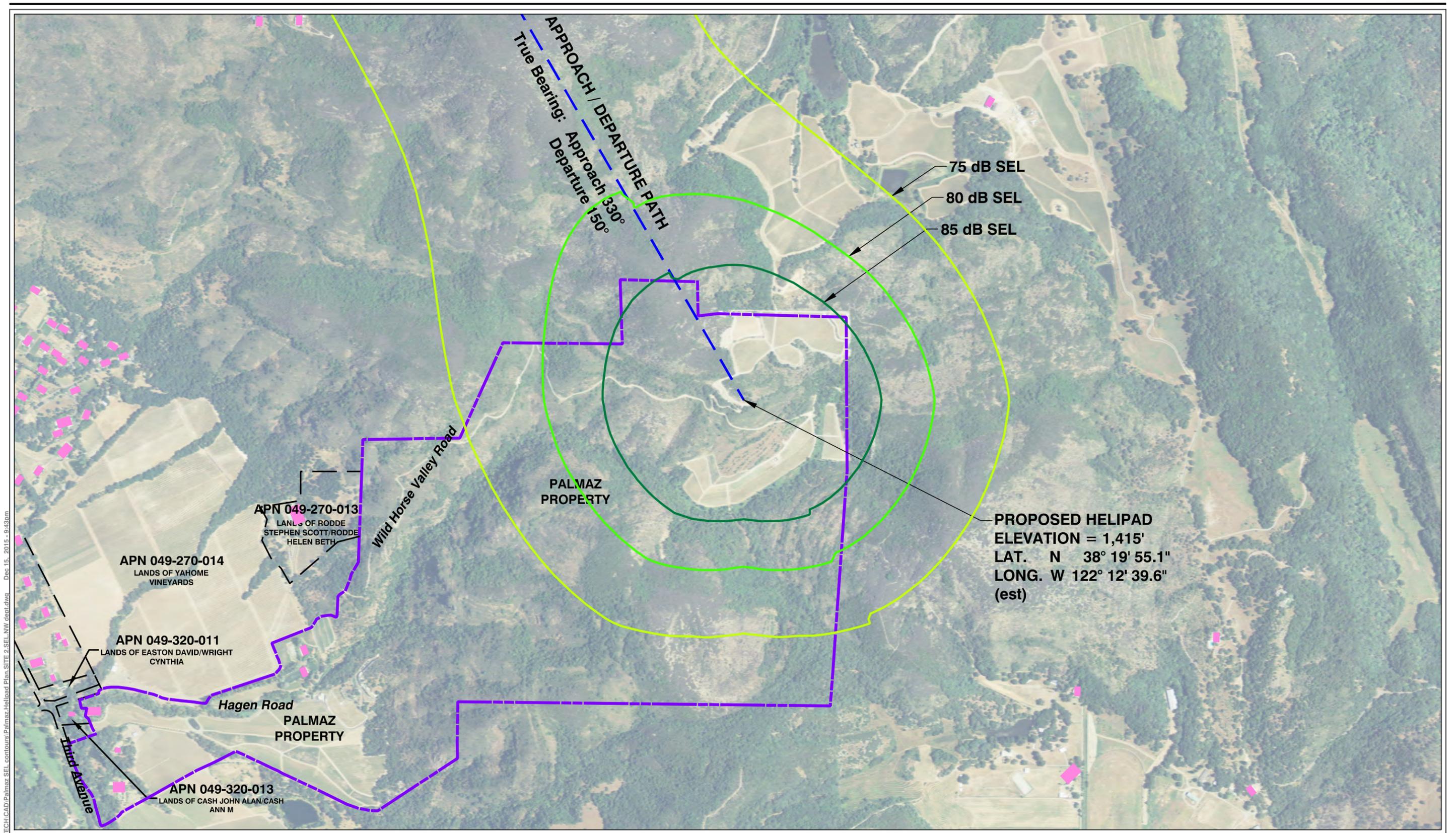
**SEL - B429 - Depart to East**  
Palmaz Private Helipad

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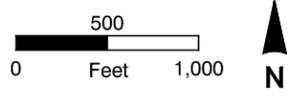


- - - Approach Track
- - - Palmaz Property Line
- - - Other Parcel Lines
- Dwelling Unit
- 75 SEL Contour
- 80 SEL Contour
- 85 SEL Contour

**Figure 10**  
**SEL - B429 - Approach from East**  
 Palmaz Private Helipad



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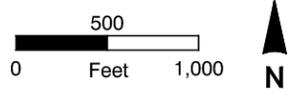
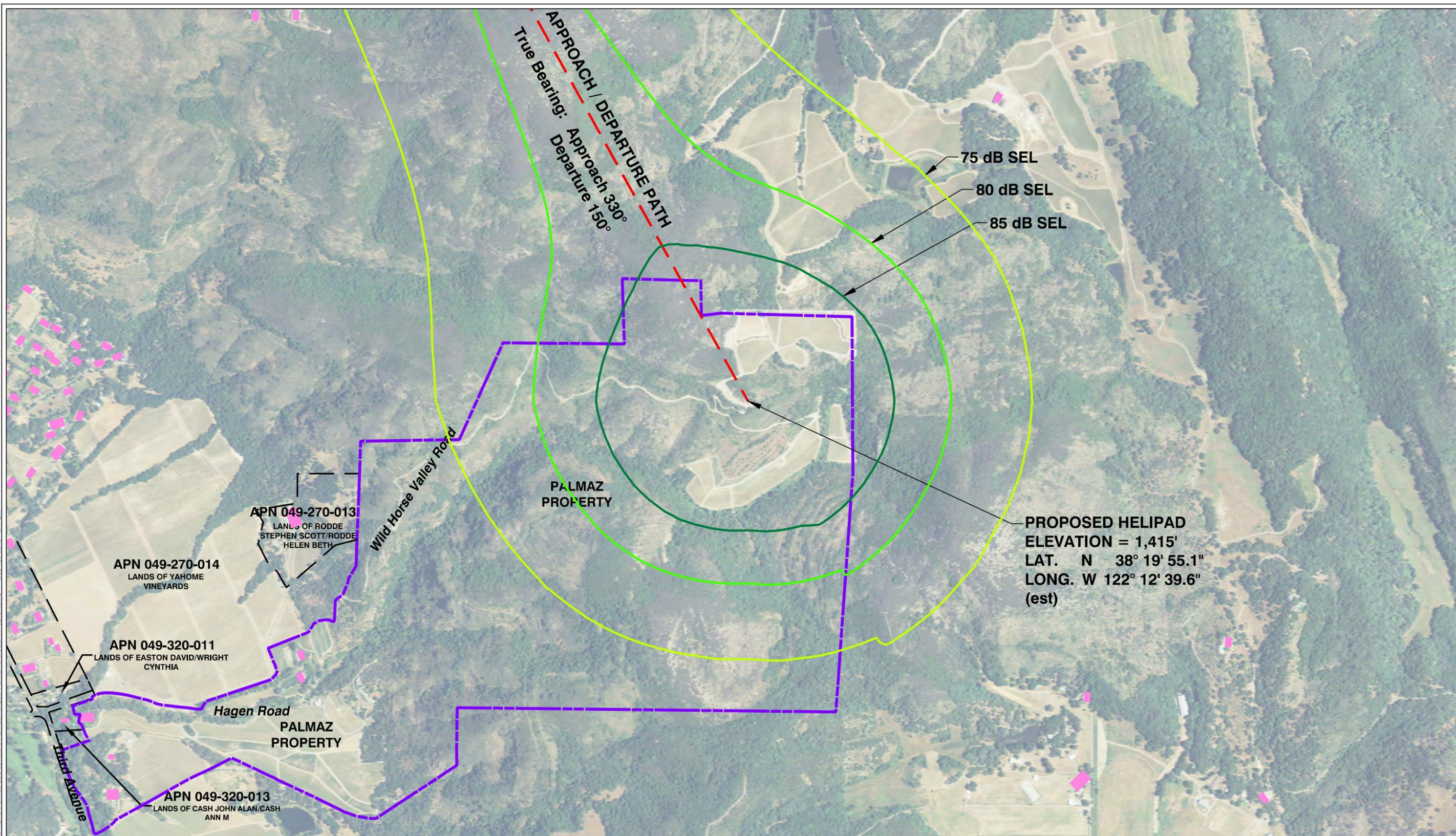
- Departure Track
- Palmaz Property Line
- Other Parcel Lines
- Dwelling Unit
- 75 SEL Contour
- 80 SEL Contour
- 85 SEL Contour

Prepared By: **Mead&Hunt** [www.meadhunt.com](http://www.meadhunt.com)

Figure 11

**SEL - B429 - Depart to NW**  
 Palmaz Private Helipad

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- Approach Track
- Palmaz Property Line
- Other Parcel Lines
- Dwelling Unit
- 75 SEL Contour
- 80 SEL Contour
- 85 SEL Contour

**Figure 12**  
**SEL - B429 - Approach from NW**  
 Palmaz Private Helipad

## FEDERAL REGULATIONS

State and federal courts have held that federal regulations preempt local jurisdictions with regard to noise restrictions for aircraft. The overriding court decision that has been upheld on multiple occasions is *City of Burbank v. Lockheed Air Terminal, Inc.* (1973). In September 2009, the FAA released *FAA Airport Compliance Manual - Order 5190.6B*, which continues supporting that federal preemption. *Order 5190.6B* states:

- “The federal government has preempted ... the regulation of aircraft noise at its source.”
- “State and local governments may protect their citizens through land use controls.”
- “The federal government has the authority and responsibility to control aircraft noise by the regulation of source emissions, by flight operational procedures, and by management of the air traffic control system and navigable airspace in ways that minimize noise impact on residential areas, consistent with the highest standards of safety and efficiency.”
- “Airport sponsors are primarily responsible for planning and implementing action designed to reduce the effect of noise on residents of the surrounding area. Such actions include optimal site location, improvements in airport design, noise abatement ground procedures, land acquisition, and restrictions on airport use that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce.”

The major court case that is cited in subsequent case law for upholding that federal regulations preempt local jurisdictions is the Supreme Court's opinion in *City of Burbank v. Lockheed Air Terminal, Inc.*, [411 U.S. 624, 36 L. E.d. 2d 547, 93 S. Ct. 1854 (1973)]. The Court stated that, due to the pervasive nature of federal regulation of aircraft noise, the FAA (in conjunction with the Environmental Protection Agency) has full control over aircraft noise, therefore preempting state and local regulation.

Historically, the courts have upheld the sovereignty of the FAA by allowing aircraft traffic needs to be met over environmental concerns. Airports and heliports are required to study and analyze the impacts of aircraft traffic and create noise contour maps. Courts have followed the lead of the Burbank decision and held that states or municipalities may not utilize their police powers to attempt to regulate noise by altering flight patterns. Courts have also uniformly struck down attempts by local governments to regulate the noise of aircraft.

This was recently tested in Burbank. In a special election in October 2001, Measure A was passed by voters, which would put into effect a nighttime curfew and limit flights at the Burbank-Glendale-Pasadena Airport before any expansion of the airport was started. In summary, the Court found that the City of Burbank could not use municipal curfews to impose noise regulations on aircraft operations.

## NAPA COUNTY NOISE CODE REGULATIONS

Disregarding the question of federal preemption, four sections of the Napa County Noise Code Regulations that are relevant to the proposed helipad are addressed directly below.

### 8.16.040 - General noise restrictions designated.

- A. *Notwithstanding any other provision of this chapter, and in addition thereto, it is unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.*
- B. *The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to the following:*
1. *The sound level of the objectionable noise;*
  2. *The sound level of the ambient noise;*
  3. *The proximity and timing of the noise in relation to residential sleeping facilities and normal sleeping hours;*
  4. *The nature and zoning of the area within which the noise emanates;*
  5. *The number of persons affected by the noise source;*
  6. *The time of day or night the noise occurs;*
  7. *The duration of the noise and its tonal or musical content;*
  8. *Whether the noise is continuous, recurrent or intermittent;*
  9. *Whether the noise is produced by a commercial or noncommercial activity.*
- (Ord. 777 § 1 (part), 1984: prior code § 5813)*

Discussion: Mead & Hunt understands that this section is intended to outline general characteristics of a land use's noise impacts that are of interest to the County in reviewing a project proposal. The specific criteria by which a proposal would be evaluated are contained in the separate sections that follow. The general noise characteristics of the proposed Palmaz helipad are described in detail in Section 2, 3 and 4 above.

**8.16.060 - Interior noise standards.**

- A. *Maximum Permissible Dwelling Interior Sound Levels. The interior noise standards for residential dwelling units generated by noise sources outside the dwelling unit, as presented in Table 8.16.060 shall apply, unless otherwise specifically indicated, within all such dwelling units.*

Table 8.16.060

**INTERIOR NOISE LIMITS**

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Residential	10 p.m. — 7 a.m.	55
		7 a.m. — 10 p.m.	60

- B. *No person shall operate or cause to be operated within a dwelling unit any source of sound or allow the creation of any noise which causes the noise level, when measured inside a neighboring receiving dwelling unit, to exceed:*
1. *The noise standard as specified in Table 8.16.060 above for a cumulative period of more than five minutes in any hour; or*
  2. *The noise standard plus five dB for a cumulative period of more than one minute in any hour; or*
  3. ***The noise standard plus ten dB or the maximum measured ambient, for any period of time.***

*(Ord. 777 § 1 (part), 1984: prior code § 5816)*

**Discussion:**

It is alleged that section 3 does apply to paragraph A above. It is also assumed that Section B is not applicable since the helicopter will not be operated ‘within a dwelling unit’ as written.

Helicopter overflight operations are generally short noise events that last less than one minute. Therefore, only Item 3 above is applicable here. The County standard for residential interior noise limits is 70 dB Lmax (60 dB + 10 dB) during the day, and 65 dB Lmax (55 dB + 10 dB) at nighttime, as measured from inside.

Industry standards indicate a typical mobile home has an average exterior-to-interior noise level reduction (NLR) of approximately 15 dB with windows closed and wood frame buildings constructed to meet current standards for energy efficiency typically have an average NLR of approximately 20 dB with windows closed (source: California Airport Land Use Planning Handbook).

Using a conservative exterior-to-interior NLR of 10 dB would raise the County standard to 75 dB Lmax at nighttime. **Figures 5 through 8** show that no residences are located within the 75 dB contour. Therefore, the helipad and noise generated from the operations of the helicopter pass the interior noise limit test. Nonetheless, night operations (10 p.m. – 7 a.m.) will be extremely rare.

**8.16.070 - Exterior noise limits.****A. Maximum Permissible Sound Levels by Receiving Land Use.**

1. *The noise standards for the various categories of land use identified by the noise control officer, as presented in Tables 8.16.060 and 8.16.070 shall, unless otherwise specifically indicated, apply to all such property within a designated zone.*
2. *No person shall operate, or cause to be operated, any source of sound at any location within the unincorporated area of the county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:*
  - a. *The noise standard for that land use as specified in Table 8.16.070 for a cumulative period of more than thirty minutes in any hour; or*
  - b. *The noise standard plus five dB for a cumulative period of more than fifteen minutes in any hour; or*
  - c. *The noise standard plus ten dB for a cumulative period of more than five minutes in any hour; or*
  - d. *The noise standard plus fifteen dB for a cumulative period of more than one minute in any hour;*
  - e. ***The noise standard plus twenty dB or the maximum measured ambient level, for any period of time.***
3. *If the measured ambient noise level differs from that permissible within any of the first four noise limit categories above, the allowable noise exposure standard shall be the ambient noise level.*
4. *If the measurement location is on a boundary between two different zones, the sound level limit applicable to the quieter noise zone shall apply.*
5. *Wherever possible, the ambient noise level shall be measured at the same location along the property line utilized in subsection (A)(2) with the alleged offending noise source inoperative. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period sufficient to measure the ambient noise level, the ambient noise level may be determined by traveling away from the noise source to a point where a steady-state decibel reading is achieved. If this test is not possible, the noise level measured while the source is in operation shall be compared directly to the noise level standards.*

- B. Correction for Character of Sound.** *In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech, the standard limits set forth in Tables 8.16.060 and 8.16.070 shall be reduced by five dB, but not lower than forty-five.*

Table 8.16.070

**EXTERIOR NOISE LIMITS**

(Levels not to be exceeded more than 30 minutes in any hour)

Receiving Land Use Category	Time Period	Noise Level (dBA) Noise Zone Classification <sup>1</sup>		
		Rural	Suburban	Urban
Residential	10 p.m. — 7 a.m.	45	45	50
Single and double	7 a.m. — 10 p.m.	50	55	60
Residential multiple and country	10 p.m. — 7 a.m.	45	50	55
Commercial	7 a.m. — 10 p.m.	50	55	60
	10 p.m. — 7 a.m.		60	
	7 a.m. — 10 p.m.		65	
Industrial, including wineries	Anytime	75		

1. The classification of different areas of the county in terms of environmental noise zones shall be determined by the NCO, based upon assessment of county noise survey data. Industrial noise limits are intended primarily for use at the boundary of industrial zones rather than for noise reduction within the zone.

**Discussion:**

As discussed with interior noise limit section, helicopter operations are short noise events that last less than one minute. Therefore, the provision of Paragraph 2.e can be applied, thus increasing limits in the table by 20 dB. At rural residences, the County standard for daytime exterior noise limits is 70 dB Lmax (50 dB + 20 dB) and 65 dB Lmax (45 dB + 12 dB) at nighttime. **Figures 5 through 8** show that no residences are located within the 70 dB contour. Therefore, the helipad and noise generated from the operations of the helicopter pass the exterior noise limit daytime test.

Nighttime standards apply (10pm-7am) when people are generally not outside, but rather sleeping indoors. Helicopter noise passes the interior noise limit test in the preceding section, and discussion about sleep disturbance is provided in the Sound Exposure Level discussion above.

Any helicopter flying at altitude will exceed these nighttime standards. Also, most other traffic noise (automobile, truck, lawnmower) will likely meet or exceed the 65 dB Lmax threshold for exterior noise at nighttime. Palmaz will not likely be operating at nighttime hours.

**8.16.080 - Specific types of noise prohibited.**

- A. *Noise Disturbances Prohibited. No person shall unnecessarily make, continue or cause to be made or continued any noise disturbance.*
- B. *Specific Prohibitions. The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:*
- C. *Powered Motor Vehicles. Operating or permitting the operation of powered model vehicles so as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of subsection (A) of Section 8.16.060 or subsection (A) of Section 8.16.070*

Discussion: For the reasons of federal preemption, it is doubtful that this section can be applied to the helipad. Nevertheless, a discussion of the relevant data is included in the preceding two sections.

## NAPA COUNTY AIRPORT LAND USE COMPATIBILITY PLAN

In accordance to California law, Napa County established the Napa County Airport Land Use Commission (ALUC) which subsequently adopted the Airport Land Use Compatibility Plan (ALUCP) for the County. The ALUCP establishes criteria and policies that the ALUC uses in determining land use plans and proposed development in the vicinity of the public-use airports located within the County. These criteria principally include height limitations and restrictions on types of land uses.

The Napa County ALUCP primarily follows the *California Division of Aeronautics Airport Land Use Planning Handbook* when setting forth policies and criteria. The ALUCP looks at four categories when determining land use impacts and compatibility: noise, hazards to flight (clear airspace), safety on the ground (limiting people below flight paths), and overflights (annoyance from regular activity above).

Within the ALUCP, guidance is provided for the approval of new public airports or heliports. Since the proposed Palmaz helipad is a private helipad not within any city limits, it is not subject to Caltrans Heliport Permit requirements and thus also does not need ALUC approval. However, for land use permit purposes, these guidelines may still be observed by the County of Napa to determine if any non-conforming land uses are located nearby and if the helipad would be allowed if it was public use.

The Napa County ALUCP states: "In reviewing proposals for new airports and heliports, the Commission shall focus on the noise, safety, overflight, and height limit impacts upon surrounding land uses.... The review shall examine the relationships between existing and planned land uses in the vicinity of the proposed airport or heliport and the impacts that the proposed facility would have upon these land uses. Questions to be considered should include:

- Would the existing or planned land uses be considered incompatible with the airport or heliport if the latter were already in existence?
- What measures are included in the airport or heliport proposal to mitigate the noise, safety, overflight, and height restriction impacts on surrounding land uses? Such measures might include: (1) location of flight tracks so as to minimize the impacts; (2) other operational procedures to minimize impacts; (3) acquisition of property interests (fee title or easements) on the impacted land."

The proposed flight tracks have been positioned away from established residences, operations procedures will be utilized that follow a steep approach and departure profile, and Palmaz owns the property the helipad will be located on, with at least a 1,000-foot buffer from the helipad to the property edge.

It should be noted again that the CNEL metric is used to quantify noise for land use compatibility plans in California. The Napa ALUCP considers the maximum CNEL acceptable for most residential uses within the vicinity of airports to be 55 decibels. As viewed in **Figure 4**, the 55 CNEL contour is contained on Palmaz property. No dwelling units are located within the 55 CNEL contour, therefore this passes the ALUCP noise test.

As previously discussed, maximum effort will be taken to follow a flight path that is on a bearing to the east and northwest (see **Figure 2**). By following these tracks, the helicopter will limit overflight of residential land uses. These measures follow ALUCP guidance on mitigating overflight, thus increasing safety.

## SCHOOLS

Napa County requested this report “address any safety and noise issues related to schools that fall under or within close proximity to the proposed flight paths.”

Five schools were found to be “under or within close proximity to the proposed flight paths.” The schools are listed in **Table 3** below and illustrated on **Figure 1**.

**Table 3: Schools in Vicinity**

School	Distance From Proposed Helipad	Direction From Proposed Helipad
Vichy Elementary	2.5 (statute miles)	West
Mt George Elementary	3.1 sm	South-southwest
Silverado Middle School	3.8 sm	Southwest
Alta Heights Magnet School	3.9 sm	Southwest
Oxbow School	4.3 sm	Southwest

- Each of these schools are a significant distance away from the proposed helipad. The closest school – Vichy Elementary – is located in the No Fly Zone Palmaz has proposed.
- No schools are located under either of the primary approach and departure paths.
- Each of these schools is significantly outside the range of CNEL, Lmax and SEL contours illustrated in the Figures.
- The helicopter using the proposed helipad will not be ascending or descending near any schools.
- It is expected the helicopter using the Palmaz helipad will be at cruising altitude of at least 1,000 feet above ground level when flying above or near any schools. The altitude of 1,000 feet above ground level is considered the normal cruising altitude for helicopters. Other helicopters that may overfly these schools would also be at this altitude.

Based on these findings, the proposed helipad and associated activity will have no significant effect on noise or safety at schools within proximity to the proposed flight paths.

## VOLUNTARY NOISE MITIGATION

This Report has found that operations to and from the proposed Palmaz helipad would not create a significant noise impact on neighboring land use, as defined by the FAA and supplemented through state land use criteria.

Generally, the FAA regards a maximum day-night average sound level above 65 dB as incompatible with residential land use. This Report found that the 65 dB CNEL contour does not extend beyond property owned by Palmaz. Therefore, the helipad passes the federal test for noise impacts.

Additionally, the helipad meets applicable Napa County Airport Land Use Commission (ALUC) and California Handbook criteria for noise impacts. The ALUC’s purpose is to protect the airport from incompatible land uses, as opposed to mitigating noise through limiting airport operations. The CNEL contours produced show no significant impacts to nearby residences. The 55, 60 and 65 dB CNEL contours do not leave Palmaz property. No dwelling unit is located within the 55 dB CNEL contour.

In addition to operations not creating a significant impact based on FAA standards and state land use criteria, Palmaz has indicated he will perform noise abatement procedures:

- The selected location of the helipad is in an undeveloped and isolated area. Helicopter landing and departing activities will be limited to this isolated area.
- Palmaz owns the property the helipad will be located on, with at least a 1,000-foot buffer from the helipad to the property edge.
- Palmaz will utilize widely recognized Helicopter Association International guidance on how to fly to minimize operational noise as long as is safe and reasonable.
- Proposed flight paths will concentrate the greatest noise within the confines of Palmaz property and avoid low altitude flight over neighboring property. The preferred flight tracks will keep the helicopter over Palmaz property to the west of the helipad.
- Palmaz typically will travel between 1,000 and 1,500 feet above ground level. Most helicopters travel at 1,000 feet above ground level. This higher altitude will result in less of a noise impact.
- Palmaz will typically approach the helipad at a steeper angle of descent than what is typically seen. These procedures reduce noise impacts and are in accordance with HAI fly quietly procedures. The same is true of departures – Palmaz will depart at a steeper angle than what is typical. This practice also reduces noise impacts.

The FAA does recommend that noise abatement procedures be performed when safe and efficient to do so to help minimize noise impacts on nearby land uses. With these practices, Palmaz expects to avoid any significant noise impacts to nearby residences from helicopter operations.