SECTION 2.4

NOISE

2.4 Noise

This recirculated Section 2.4, Noise, is based on a revised Noise Study (Dudek, January 2009) since distribution of the Draft EIR for the Merriam Mountains project in August 2007. The revised Noise Study is included as Appendix L to this EIR

The primary existing noise source at the site is traffic along I-15 and Deer Springs Road. The existing average daily traffic (ADT) volume is approximately 124,000 ADT along I-15 (LLG 2009). Deer Springs Road has an existing traffic volume of approximately 16,300 ADT adjacent to the site.

County Noise Criteria

The County of San Diego follows various noise policies and standards from the San Diego County General Plan Noise Element (County of San Diego 2006) and the County of San Diego Noise Ordinance (County of San Diego 2005).

County General Plan Noise Element and Planning Department Noise Criteria

The County of San Diego has established exterior noise guidelines in the "Noise Element" section of the County's adopted General Plan (County of San Diego 2006). These guidelines identify compatible exterior noise levels for various land use types. The maximum acceptable exterior noise level for residential development is 60 decibels (dB) community noise equivalent level (CNEL). The A-weighted scale measures noise levels corresponding to the human hearing-frequency response. All sound levels discussed in this report are A-weighted. This criterion is applied at outdoor noise-sensitive areas. In addition, the County requires that interior noise levels not exceed a 45 dB CNEL.

Applicable to this project, Chapter 4, Policy 4b, of the San Diego County General Plan Noise Element states:

> If the acoustical study shows that noise levels at any noise-sensitive land use will exceed CNEL equal to 60 dB, modifications shall be made to the development which reduce the exterior noise level to less than 60 dB CNEL and the interior noise level to less than 45 dB CNEL.
>
> If modifications are not made to the development in accordance with the above paragraph, the development shall not be approved unless a finding is made that there are specifically identified overriding social or economic considerations which warrant approval of the development without such modification: provided, however, if the acoustical study shows the sound levels for any noise-sensitive

> land use will exceed a 75 dB CNEL even with such modifications, the development shall not be approved irrespective of such social or economic considerations (County of San Diego 2006).

"*Development*" means any physical development, including but not limited to residences, commercial or industrial facilities, roads, civic buildings, hospitals, schools, airports, or similar facilities.

For single-family detached dwelling projects, "*exterior noise*" means noise measured at an outdoor living area that adjoins and is on the same lot as the dwelling, and that contains at least the following minimum area:

(i)	Net lot area up to 4,000 sq ft:	400 sq ft
(ii)	Net lot area 4,000 sq ft to 10 ac	10% of net lot area
(iii)	Net lot area over 10 ac:	1 ac.

For all other projects, "*exterior noise*" means noise measured at all exterior areas that are provided for Group or Private Usable Open Space purposes.

"*Group or Private Usable Open Space*" includes Group Usable Open Space, which means usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways, and Private Usable Open Space, which means usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies.

"*Noise-sensitive land use*" means any residence, hospital, school, hotel, resort, library, or any other facility where quiet is an important attribute of the environment.

The County of San Diego Department of Planning and Land Use (DPLU) also uses a noise criterion for evaluating off-site noise impacts from project-related traffic to residences or noise-sensitive areas. The County considers such impacts to be significant when they exceed 3 dB CNEL and either elevate noise levels above 60 dB CNEL or exceed a 3 dB increase above an already noisy existing condition (i.e., 60 dB CNEL). A 3 dB increase is generally considered to be the point of change in environmental noise that can just be detected by the human ear.

For areas with low ambient noise (less than 50 CNEL) a noise impact is also considered significant if project implementation will produce additional noise which will cause any on-site or off-site noise-sensitive area to experience an increase in noise of 10 dB CNEL or more.

Significance criteria for ground-borne vibration and noise are depicted in Table 2.4-1.

County Noise Ordinance Criteria

The County of San Diego uses a quantitative Noise Ordinance (San Diego County Code of Regulatory Ordinances, Section 36.404) to control excessive noise generated in the County (County of San Diego 2005). The Noise Ordinance limits are in terms of a 1-hour average sound level. The allowable noise limits depend upon the County's zoning district and time of day, as shown in Table 2.4-2. The majority of the project site would be zoned S-88, except for the commercial area, which would be zoned C-36, and the multifamily area, which would be zoned RM 22. The 1-hour average sound-level limits at a location between two zoning districts are the averages of the limits at the two zones. Thus, the noise-level limits between the C-36 and RM 22 zones would be required not to exceed 57.5 dB from 7:00 a.m. to 10:00 p.m. and 52.5 dB from 10:00 p.m. and 7:00 a.m. The S-88 zone would be located adjacent to both C-36 and RM 22. The noise-level limits between the C-36 and S-88 zones would be required not to exceed 55 dB from 7:00 a.m. to 10:00 p.m. and 50 dB from 10:00 p.m. to 7:00 a.m. In addition, if the measured ambient noise level exceeds the applicable limit noted above, the allowable 1-hour average noise levels shall be the ambient noise level (San Diego County Code of Regulatory Ordinances, Section 36.404.2).

Construction noise is also governed by the County of San Diego Noise Ordinance (San Diego County Code of Regulatory Ordinances, Section 36.409). Specifically, it shall be unlawful for any person to operate any construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday, excluding legal holidays for an 8-hour period when measured at the boundary line of the property where the noise source is located or any occupied property where the noise is being received.

In addition to the general limitations on sound levels summarized in Table 2.4-2 and the limitations on construction equipment previously described, the following additional sound-level limitations apply:

Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 2.4-3, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25% of the minutes in the measurement period.

Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 2.4-4,

when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25% of the minutes in the measurement period, as described in the note in Table 2.4-4. The maximum sound level depends on the use being made of the occupied property.

The County of San Diego Noise Ordinance Amendment Effective January 9, 2009, Section 36.423 a Variance from the Noise Ordinance for construction noise is subject to approval for a project applicant who proposes to perform nonemergency work on a public right-of-way, public transportation facility, or some other project for the benefit of the general public, who is unable to conform to the requirements of the Noise Ordinance, may apply to the County for a variance authorizing the person to temporarily deviate from the Noise Ordinance requirements.

City of San Marcos Noise Criteria

The City of San Marcos has established noise guidelines in the Noise Element of the City's General Plan. These guidelines identify compatible exterior noise levels for various land use types. The maximum allowable noise exposure varies depending on the land use. For example, new single-family residential, schools, and churches are subject to a maximum acceptable exterior noise level of 60 dB CNEL. Multifamily residential is subject to an outdoor noise level standard of 65 dB CNEL.

The City of San Marcos has not adopted specific road widening/extension significance thresholds for existing noise-sensitive land uses. For the purposes of this analysis, the noise impact is significant if the traffic noise level increase exceeds 3 dB CNEL and either elevates noise levels above the City’s noise criteria limits or exceeds a 3 dB increase above an already noisy existing condition (i.e., 60 dB CNEL for single-family residential, schools, and churches, or 65 dB CNEL for multifamily residential). A noise level change of 3 dB is generally considered to be a just perceptible change in environmental noise.

U.S. Fish and Wildlife Service (USFWS) Criteria

The USFWS typically requires that construction noise not exceed a 1-hour average noise level of 60 dB at biologically sensitive habitat areas (see Section 3.2 for an additional discussion).

2.4.1 Discussion of Existing Conditions Relating to Noise

Ambient Noise Monitoring

Noise measurements were conducted at the project site and nearby area to determine the existing noise level. The measurements were made using a calibrated Larson-Davis Laboratories Model 700 (S.N. 2132) integrating sound level meter and a Rion Model NA 27 Model (S.N. 701307).

The sound level meters were equipped with half-inch pre-polarized condenser microphones and pre-amplifiers. The sound-level meters meet the current American National Standards Institute standard for a Type 1 precision sound-level meter. The sound-level meters were positioned at a height of approximately 5 feet above the ground during the noise measurements.

Noise measurements were conducted on November 10 and 11, 2004; February 23, 2005; August 8, 2006; April 17 and 18, 2007; November 7, 2007; and December 10, 2008. Three long-term (24-hour) noise measurement and seven short-term (20-minute) noise measurements were made (short-term measurements were timed to include weekday daytime conditions). The noise-measurement locations are depicted as Sites 1A through 9 on Figure 2.4-1.

Site 1A was located at proposed Lot 1175 near Lawrence Welk Drive, approximately 650 feet from the center line of I-15. The view to I-15 in this area is generally blocked, due to intervening topography between the site and I-15. This location was selected because it is the closest of the estate lots to I-15, it has the greatest angle of view to the highway (an approximately 85° angle) in the general area, and was accessible. The measured noise level at Site 1A was 73 dB CNEL. The measured hourly average, maximum, and minimum sound levels at Site 1A are depicted in Table 2.4-5A. The 24-hour noise measurement started at 7:00 a.m. on April 17, 2007.

The 24-hour noise measurement at *Site 1B* was conducted starting at 3:00 p.m. on November 10 and 11, 2004, at proposed Lot 1178 along Lawrence Welk Drive. The view to I-15 in this area is generally blocked, due to intervening topography between the site and I-15 (approximate 20° angle of view of the highway). The measured noise level was 56 dB CNEL. The measured hourly average maximum and minimum sound levels at Site 1B are depicted in Table 2.4-5B.

Site 2 was located near proposed Lot 150. This area has a slight view of the highway (approximately 10°). The measured average noise level at Site 2 was 52 dB and is shown in Table 2.4-6A with the concurrent traffic volumes along I-15. Start time was at 2:45 p.m. on November 10, 2004.

Site 3 was located near proposed Lot 126. The location appears to have the greatest angle of view to I-15 for the single-family homes proposed along the eastern edge of the site in this general area (an approximately 40° angle of view of the highway). The measured average noise level was 61 dB. Start time was at 3:45 p.m. on November 10, 2004.

Site 4 was located at the eastern edge of proposed Neighborhood 1, Planning Area 3. This planning area is proposed for multifamily dwellings. The measurement location had an approximate 60° angle of view of I-15. The measured average noise level was 70 dB. Start time was at 2:35 p.m. on February 23, 2005.

Site 5 was near the proposed Meadow Park Lane. The intervening topography shielded the site from Deer Springs Road. The measured average noise level was 45 dB. Start time was at 3:30 p.m. on February 23, 2005.

Site 6 was adjacent to Deer Springs Road and had an unobstructed view to the road. The measured average noise level was 70 dB. Start time was at 2:20 p.m. on August 8, 2006.

Site 7 was adjacent to Deer Springs Road and had an unobstructed view to the road. The measured average noise level was 68 dB. Start time was at 1:45 p.m. on August 8, 2006.

Site 8 was approximately 45 feet from the center line of Deer Springs Road. The measured noise levels resulted in a CNEL of 74 dB. The measured hourly average, maximum, and minimum sound levels beginning at midnight on November 7, 2007, at Site 8 are depicted in Table 2.4-6B. As shown in the table, the peak noise hour (in terms of the hourly average sound level) occurred between 6 a.m. and 7.am. The remaining daytime hours were generally 1 to 3 dB less than the peak noise hour.

Site 9 was adjacent to Twin Oaks Valley Road and had an unobstructed view to the road. The measured average noise level was 66 dB.

Noise Modeling

The existing CNEL was calculated for Sites 1A through 4, based on the current traffic volume along the roads using Caltrans' SOUND32 noise model. The same traffic volume and vehicle composition ratios counted during the noise measurements were used to calibrate the model and to verify the input used in the noise model. The truck mix counts used along I-15 are estimated based on truck mix counts conducted along I-15 just north of Highway 76 for the Pala Mesa Highlands Project and the truck mix noted during the noise measurements along Deer Springs Road. The modeled values ranged from 0 to 4 dB more than the measured values. The greatest differences were at Sites 2 and 3. The modeled value was 4 dB higher than the measured value at Site 2 and 3 dB higher than the measured level at Site 3. These differences may be due to variables including atmospheric attenuation as well as increasing complexity as the source-to-receiver distance increases. Some references assume that atmospheric attenuation is approximately 1 dB/1,000 feet, which is about 0.5 dB/1,000 feet more than assumed by the noise model. Other factors that could affect the noise measurements include wind speed and direction and assumed road surface conditions. The primary input for the SOUND32 noise model to calculate the CNEL includes:

Vehicle Speed: 65 mph along I-15 (existing and future). This speed limit along I-15 is considered appropriate because the noise model results compared well with

the results of the noise measurements along I-15 with this modeled speed. Also, it should be noted that the posted speed limits are 70 mph for cars and medium trucks, and 55 mph for heavy trucks (i.e., 3-axles or more). 55 mph along Deer Springs Road (existing and future), 45 mph existing and 50 mph future along Twin Oaks Valley Road. These are the existing posted speed limits for the two-lane section and the existing adjacent improved four-lane section of Twin Oaks Valley Road.

Truck Mix: 2.6% medium trucks and 5.5% heavy trucks along I-15 and 2% medium trucks and 2% heavy trucks along Deer Springs Road and Twin Oaks Valley Road.

Existing ADT: 139,000 along I-15; 16,300 ADT along Deer Springs Road; 18,200 ADT to 20,200 ADT along Twin Oaks Valley Road.

Pavement Adj.: + 2 dB for I-15 (Portland cement concrete (PCC) pavement surface type).

CNEL: 14% of ADT is approximately equivalent to CNEL along I-15.
10% of ADT is approximately equivalent to CNEL along Deer Springs Road and Twin Oaks Valley Road.

The modeled existing CNEL is 73 dB at Site 1A, 57 dB at Site 1B, 60 dB at Site 2, 68 dB at Site 3, and 75 dB at Site 4. Noise modeling results are included in Attachment 2 of the noise study (Appendix L to this EIR). Noise modeling was not performed for Site 5 because there is minimal traffic in the area. The CNEL is estimated to be approximately 47 dB at Site 5. The modeled CNEL at Sites 6 and 7 are 73 dB and 71 dB, respectively. The modeled existing noise levels are 74 dB CNEL and 69 dB CNEL at Site 8 and at Site 9, respectively. The San Diego County General Plan Noise Element (County of San Diego 2006) states that the noise levels at any noise-sensitive areas should not exceed 75 dB CNEL. The noise level currently exceeds 75 dB CNEL adjacent to I-15.

2.4.2 Guidelines for the Determination of Significance

For purposes of this EIR, a noise impact would be considered significant if the project would result in:

1. Exposure of on-site, off-site, existing, or future noise-sensitive areas to noise (including road noise) in excess of 60 dB CNEL.

2. Exposure of a proposed on-site residence to CNEL of 45 dB or greater in a habitable interior room.

3. Exposure, on or off site, to existing noise-sensitive areas to noise 10 dB CNEL over existing noise levels and County of San Diego noise standards.

4. Noise at or beyond the property line generated by the project and exceeding the standards listed under the San Diego County Code of Regulatory Ordinances, Section 36.404, "Sound Level Limits": "Unless a variance has been applied for and granted, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the 8-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below, except that:

    a. Construction noise level limits shall be governed by the applicable San Diego County Code of Regulatory Ordinances Section 36.409

    b. Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit which authorizes the noise-generating use or activity, and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, then implementation and compliance with such noise mitigation measures shall be deemed to constitute compliance with this section."

5. Exposure of noise-sensitive land uses (Category 1, 2, or 3) to ground-borne vibration levels equal to or in excess of the ground-borne vibration and noise impact levels listed in Table 2.4-1.

Guideline Sources

The identified guidelines for determining significant noise impacts are based on: CEQA Guidelines Appendix G, the San Diego County General Plan Noise Element, the San Diego County Noise Ordinance (San Diego County Code of Regulatory Ordinances 36.404 and 36.409) criteria and USFWS noise criteria.

2.4.3 Analysis of Project Effects and Determination of Significance

Future traffic noise levels were calculated using Caltrans' SOUND32 traffic noise prediction model with California vehicle noise emission factors. Future year 2030 traffic volumes were used in the noise model for proposed land uses located on site.

I-15, Merriam Mountains Parkway, Deer Springs Road, and Meadow Park Lane would be the primary traffic noise sources affecting the site in the future. The future year 2030 traffic volume is projected to range to a maximum of approximately 248,000 ADT along I-15 (LLG 2009); up to 15,300 ADT along Merriam Mountains Parkway; up to 49,300 ADT along Deer Springs Road; and up to 8,200 ADT along Meadow Park Lane adjacent to the site (LLG 2009). In addition, commercial uses would be developed at the site.

The development of the project and the associated implementing actions are discussed in the following analysis of impacts from traffic, commercial uses, and construction activities.

Guideline 1: Exposure of On- and Off-Site Sensitive Receptors to Noise Exceeding 60 dB CNEL

On-Site Sensitive Receptors

As discussed in the following sections, the future noise levels at the project site would exceed 60 dB CNEL along I-15, Deer Springs Road, Merriam Mountains Parkway, and Meadow Park Lane. In addition, the future noise level would exceed 75 dB CNEL adjacent to I-15 and Deer Springs Road. The locations of the "worst-case" 60 and 75 dB CNEL noise contours are depicted in Figures 2.4-4A, 2.4-5A, 2.4-7, and 2.4-8. The noise contours are worst case and do not include the noise attenuation associated with any intervening topography, buildings, or other structures that may be located in the area.

Neighborhood 1

I-15. I-15 would generate a noise level of up to approximately 80 dB CNEL along the eastern edge of Neighborhood 1, Lot 4, where a multifamily development is proposed. A site plan has not been prepared for the proposed multifamily development, but the site plan will require all development to be pursuant to a design specific noise analysis that would require noise mitigation measures to comply with the County of San Diego's noise criteria, including outdoor noise-sensitive areas (i.e., private areas, including patios and balconies, and common-use areas). An 8- foot-high berm will be constructed along the eastern portion of Neighborhood 1, Planning Area 2, as shown on the Vesting Tentative Map. The distances between the top of the berm and the 75 dB and 60 dB CNEL first-floor noise contours would range up to approximately 20 feet and 400 feet, respectively. This was determined through the Vesting Tentative Map grading plan and calculated based on the worst-case distances for setback distances according to proposed grading. The distances between the top of the berm and the 75 dB CNEL second-floor and third-floor noise contours would be approximately 35 feet and 60 feet, respectively. These distances assume the construction of an 8-foot-high berm as shown on the Vesting Tentative Map and included as a Project Design Feature (see Chapter 8.0) to meet the requirements of the San Diego

County Noise Element mandate that new residential uses be located in areas of 75 dB or less (County of San Diego 2006). In the absence of mitigation measures to ensure proposed land uses would comply with the San Diego County Noise Element, Policy 4b, impacts would be significant (Impact-NOI-1).

The project also has been designed to avoid the 75 dB CNEL noise contour at the second- and third-floor levels. The location of the future first-floor 60 and 75 dB noise contours are depicted on Figure 2.4-2. In addition, the locations of the 75 dB CNEL noise contour for second- and third-floor levels are depicted on Figure 2.4-3.

Merriam Mountains Parkway. At Neighborhood 1, Lots 4 through 6 and 9 through 12, the future noise level would exceed 60 dB CNEL due to traffic noise from Merriam Mountains Parkway . Site plans have not been prepared for the variable residential lots. However, outdoor noise-sensitive areas located within approximately 320 feet of the center line of Merriam Mountains Parkway would require noise mitigation measures to comply with the San Diego County Noise Element Policy 4b; therefore, impacts to outdoor noise-sensitive areas at Neighborhood 1 would be significant (Impact NOI-1).

The distances to various future exterior noise contours are depicted in Table 2.4-7. The location of the future 60 dB CNEL and 75 dB CNEL noise contours along Merriam Mountains Parkway in Neighborhood 1 is depicted on Figures 2.4-4A and 2.4-4B. The noise contours reflect a "worst-case" potential and do not include the effects of shielding from buildings, terrain, or other barriers, which would reduce noise levels, and shield many of the proposed outdoor noise-sensitive areas from road noise.

Neighborhood 2

At Neighborhood 2, the future traffic volume along Meadow Park Lane would range up to approximately 8,200 ADT (LLG 2009). The future noise level would exceed 60 dB CNEL within approximately 100 feet of the center line of Meadow Park Lane, as depicted in Figures 2.4-5A and 2.4-5B. Condominium residential uses are proposed within Neighborhood 2. Site plans have not been prepared for these residential lots. However, outdoor noise-sensitive areas located within approximately 100 feet of the center line of Meadow Park Lane would exceed San Diego County's noise criteria (Impact NOI-1). In addition, variable residential Lots 15 through 25 would be located near Deer Springs Road. The future noise level would range up to approximately 75 dB CNEL at the closest lots. The building pads would be above Deer Springs Road and would reduce the noise level to 75 dB CNEL or less just beyond the edge of the variable residential (i.e., within 10 feet of the edge of the pads next to Deer Springs Road). Outdoor noise-sensitive areas located within approximately 1,500 feet of Deer Springs Road

could require noise mitigation measures. Impacts are considered to be significant (Impact NOI-1).

Neighborhoods 3, 4, and 5

Single-family homes are proposed within Neighborhoods 3, 4, and 5. Merriam Mountains Parkway and I-15 would generate noise levels in excess of 60 dB CNEL along portions of these neighborhood areas. The future traffic volume would range up to approximately 7,730 ADT at the single-family lots adjacent to Merriam Mountains Parkway (LLG 2009). The future noise level along Merriam Mountains Parkway would be approximately 60 dB CNEL at a distance of up to 180 feet from the center line of the road. The majority of the single-family lots next to Merriam Mountains Parkway would be located within the 60 dB CNEL noise contour (Figures 2.4-6A and 2.4-6B). Therefore the traffic noise at these locations would be significant (Impact NOI-2).

Lots 124 through 127 and 129 through 132 in Neighborhoods 3 and 4, Planning Area 1, would be next to I-15. The lots would be partially shielded by intervening topography from traffic noise along I-15. However, the future year 2030 noise level would exceed 60 dB CNEL at these lots. Therefore, the traffic noise impact at these lots would be significant (Impact NOI-2).

The remaining lots in Neighborhoods 3, 4, and 5 would not be exposed to future noise levels of 60 dB CNEL or more. Therefore, impacts would be less than significant.

Estate Lots

The Estate Lots 1175 through 1184 would be near I-15 and would be partially screened from traffic noise along I-15 by the intervening topography. As seen in the Specific Plan (Appendix C), all estate lots would be limited to one story due to zoning restrictions. The locations of the worst-case 60 and 75 dB CNEL noise contours are depicted in Figure 2.4-7. Without attenuation associated with any intervening topography, buildings, or other structures, the noise level would exceed 60 dB CNEL at Lots 1175 through 1177. Therefore, the traffic noise impact at these two lots would be significant (Impact NOI-2).

The Noise Element requires a certain amount of usable exterior area to comply with the standard. The net lot areas of Lots 1175 through 1177 are 8.27 ac, 5.01 ac, and 5.00 ac, respectively, so 10% exterior use area is required. Thus, the required usable outdoor area at the lots ranges from 0.500 ac to 0.827 ac.

The approximate location of the 75 dB CNEL noise contour for the first floor level is depicted on Figure 2.4-8. The noise contour includes the attenuation associated with intervening topography

based on field sound tests in the area, the noise at the proposed dwelling units would not exceed the 75 dB CNEL standard (Noise Element).

Commercial Uses

Commercial areas are proposed along the east side of Merriam Mountains Parkway near the intersection with Deer Springs Road (Neighborhood 1). On-site residential development at Neighborhood 1 is proposed next to the commercial area at Neighborhood 1. The commercial area would be zoned C-36 and the multifamily area would be zoned RM 22. The 1-hour average sound-level limits at a location between two zoning districts are the average of the two zones. Thus, the noise level limits between a C-36 and an RM 22 zone would not exceed 57.5 dB from 7:00 a.m. to 10:00 p.m. and 52.5 dB from 10:00 p.m. to 7:00 a.m. Sources of commercial noise typically include activities at loading and unloading docks and parking lots; heating, ventilation, and air conditioning equipment (HVAC); maintenance activities; and additional truck traffic along adjacent roads.

Noise levels associated with the commercial activities would vary depending on the number of delivery trucks, loading dock areas, and customer traffic generated by the commercial site. Similarly, HVAC equipment noise would vary depending on the number and types of equipment selected. Typical roof-top HVAC-packaged units generate noise levels of approximately 70 dB at 10 feet from the source. The commercial sites would have to be designed so that noise levels would comply with the County of San Diego Noise Ordinance and not result in significant noise impacts at adjacent proposed residential property boundaries. Commercial uses such as floral shops, mail box stores, gift stores, and deli restaurants can generally meet the sound level limits next to multifamily residential zones (RM 22) because these types of land uses generally do not require and/or allow semi-truck deliveries.

Commercial activities involving noise-sensitive uses, such as libraries, day care centers, and private schools, may be precluded in commercial areas. It is recognized that noise-sensitive commercial areas are only occupied for a portion of the day and, therefore, should not be exposed to noise levels greater than a 1-hour average sound level of 60 dB. The interior noise level, due to outside noise, should not exceed a 1-hour average sound level of 50 dB for interior noise levels in noise-sensitive rooms only occupied for part of the day (schools, libraries, or similar). Therefore, noise-sensitive outdoor usable areas that are exposed to noise levels greater than a 1-hour average sound level of 60 dB or rooms that exceed a 1-hour average sound level of 50 dB for interior uses due to traffic noise would be significant (Impact NOI-3). Please also refer to Guideline 2 for an additional discussion of County interior noise requirements.

Off-Site Sensitive Receptors

Existing Roads

The project would generate additional traffic noise along several existing roads in the area, including Twin Oaks Valley Road, Deer Springs Road, Buena Creek Road, Monte Vista Road, and I-15. With the exception of following locations (Mesa Rock Road between Deer Springs Road and North Centre City Parkway and Deer Springs Road between Sarver Lane and Twin Oaks Valley Road at Sensitive Receptor 18 (see Table 2.4-8B) the additional project-generated traffic would increase the noise along the adjacent roads by 3 dB or less in areas adjacent to the roadway, which does not substantially increase the existing noise level because it is generally considered to be the point of change in environmental noise that can just be detected by the human ear.

Mesa Rock Road between Deer Springs Road and North City Parkway: As seen in Table 2.4-8A, the noise level associated with traffic along Mesa Rock Road would increase by approximately 6 dB CNEL between Deer Springs Road and North Centre City Parkway. However, I-15 is directly to the east of Mesa Rock Road and is the primary noise source in the area with an existing traffic volume well more than 100,000 ADT (LLG 2009). The actual noise level increase at existing residences would be less than 3 dB CNEL because the traffic along I-15 will continue to be the primary noise source. Therefore, the noise level increase would be less than significant.

Deer Springs Road between Sarver Lane and Twin Oaks Valley Road: As seen in Table 2.4-8B, the noise level increase associated with traffic along Deer Springs Rod at sensitive receptor 18 would increase by approximately 4 dB CNEL. The project's noise contribution would be considered a direct impact (Impact NOI-5). It should be noted that as seen in Section 2.4.4 a near term cumulative with project impact has also been identified at this location.

The project would construct Meadow Park Lane, which would mostly occur on site, except for a short segment of the road located between the southern project limits and the planned Neighborhood 2, Planning Area 3. Meadow Park Lane would be constructed approximately 150 feet or more from the closest existing homes located west of the planned road. At this distance, the future noise level at buildout of the project would be approximately 57 dB CNEL or less. This noise level is below the County of San Diego's guideline of 60 dB CNEL and would not substantially exceed the existing noise level.

The existing-plus-project noise level increase associated with the additional traffic volume is depicted in Table 2.4-8A and 2.4-8B.

Guideline 2: Exposure of On-Site Residents to Interior Noise Impacts

Interior noise levels are generally regarded as 15 dB less than exterior noise levels, with open windows. As discussed under Guideline 1, residents in Neighborhoods 1 and 2 would be subject to future year 2030 exterior noise levels above 60 dB CNEL and, in some cases, exterior noise levels may exceed 75 dB CNEL; however, all proposed structures are proposed to be located outside the 75 dB CNEL. In addition, Neighborhoods 3 and 4 would exceed exterior levels of 60 dB CNEL. The reduction of 15 dB for interior levels would result in indoor noise levels above San Diego County's threshold of 45 dB CNEL (refer to Impact NOI-1 and NOI-2). These impacts would be significant (Impacts NOI-1 and NOI-2).

The proposed project includes a fire station within the commercial area of the proposed project (Neighborhood 1, Planning Area 1). Habitable rooms within the fire station are considered noise sensitive. Therefore, in the event interior noise levels at habitable rooms exceed a 1-hour average sound level of 45 dB CNEL, impacts would be significant (Impact NOI-4).

Guideline 3: Exposure of Existing Sensitive Receptors of 10 dB over Existing Levels

Noise-sensitive receptors include any residence, hospital, school, hotel, resort, library, or any other facility where quiet is an important attribute of the environment. Noise modeling was completed for permanent noise-sensitive receptors located both on the project site and for land uses adjacent to roadways that could be impacted due to an increase in vehicular trips (see Appendix L). No locations were identified that would expose sensitive receptors to an increase over 10 dB from existing levels; therefore, impacts would be less than significant.

Guideline 4: Exceedance of County Standards

Operational Activities

Future commercial uses may generate noise levels that exceed the property line sound level limits of the County of San Diego Noise Ordinance (San Diego County Code of Regulatory Ordinances, Title 3, Division 6, Chapter 4, Noise Abatement and Control). Adjacent to residential zoning (including S-88), the most stringent (day/night) 1-hour average sound level limits are required to be 57.5/52.5 dB, based on the assigned zones. The project also proposes a fire station to be constructed within the future commercial (Neighborhood 1, Planning Area 1). Typically, noise associated with a fire station results from the intermittent use of sirens and standby emergency generators and outdoor mechanical equipment (i.e., air conditioning units, exhaust fans, etc.). The fire station location within Neighborhood 1, Planning Area 1 has not been sited at this time. In the event that the fire station is proposed adjacent to multifamily uses, noise levels associated with outdoor equipment could exceed the County's Noise Ordinance

requirements, depending in part on the type and location of the equipment. If, in some cases, noise levels would exceed these standards, the impact would be significant (NOI-3).

Construction Activities

Construction Equipment

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, and the condition of the equipment. The average sound level of the construction activity also depends upon the amount of time that the equipment operates and the intensity of the construction, which would occur during San Diego County's allowable hours of operation.

Construction would involve several phases, including clearing and grubbing, grading, foundation construction, and finish construction. The typical noise level ranges for various pieces of construction equipment at a distance of 50 feet are depicted on Figure 2.4-9A. The average sound level at construction sites is typically less than the maximum noise level because the equipment operates in alternating cycles of full power and low power. In addition, the equipment rotates in various directions (i.e., noisiest side of the equipment to quieter sides of the equipment), and moves around the construction site, especially during clearing, grubbing, and grading activities. Thus, the average sound levels produced are less than the maximum level.

Typically, the greatest 8-hour average noise level occurs during clearing, grubbing, and grading activities. Construction equipment used during this construction phase typically includes scrapers, dozers, compactors, and water trucks. Based on noise measurements from similar construction equipment, the 1-hour average noise level during ground clearing and grading activities ranges from approximately 75 to 80 dB at 50 feet from the closest construction work area. Equipment operated during the noise measurements typically included six or more scrapers and dozers, and two or three water trucks, backhoes, loaders, blades, and pickup trucks.

Construction noise in a well-defined area typically weakens at approximately 6 dB per doubling of distance. The closest existing homes to the construction activities would be approximately 500 feet west of the estate lots, 100 feet south of the proposed intersection of Deer Springs Road and Merriam Mountains Parkway, and next to Meadow Park Lane. The 8-hour average noise level would be approximately 74 dB or less at the closest homes west of the estate lots and south of the proposed intersection of Deer Springs Road and Merriam Mountains Parkway during grading of the site. This assumes a direct line of sight from the receiver to the construction area. This noise level would comply with San Diego County's noise criteria at the homes. Construction noise would be less at other areas and during the later phases, such as foundation construction and framing.

Construction staging areas would be located within the project site. The maintenance of construction equipment is anticipated to occur as follows: staging areas during construction would be located within the project limits at the maximum distance from existing sensitive receptors to the extent feasible. Construction equipment repairs, such as re-fueling, air filter replacement, etc., would occur on site. However, any major repairs would be done at an off-site location. All equipment repairs would be completed within the staging areas and would be conducted during the Noise Ordinance's allowable hours and days of operation for construction.

Blasting and Noise

Blasting would be required at many areas at the site. Figure 1.1-20 illustrates the potential areas of the site where blasting would be necessary as part of the earthwork activities. Blasting would occur between 7:00 a.m. and 5:00 p.m. Construction blasting generates a maximum noise level of approximately 94 dB at a distance of 50 feet. This noise source level is used in this analysis because it provides a reasonable estimate of the construction blasting noise level. However, the noise level would vary depending on various factors, as more fully described below. The blast is generally perceived as a dull thud, rather than as a loud explosion.

Human Response to Blasting. Human response to blast vibration and air overpressures from blasting are difficult to quantify. Ground vibration and air overpressures can be experienced at levels that are well below those required to produce any damage to structures. The duration of the event and the frequency have an effect on human response. Events are of short duration, 1 to 2 seconds for millisecond-delayed blasts. Typically, the longer the event and the higher the frequency, the more adverse the effect on human response. Factors such as frequency of occurrence, fright or “startle factor level” of personal activity at the time of the event, health of the individual, time of day, orientation of the individual (standing up or lying down), the perceived importance of the blasting operation, and other political and economic considerations also affect human response.

There is not a direct connection between vibration levels and air overpressure levels, except as the particular levels apply to human response. In blasting, an increase in vibration can at times be accompanied by a decrease in air overpressures, and vice versa.

Blasting could potentially occur in several hard rock areas. The sudden and intense airborne noise potential created by a blast could create adverse reactions for nearby sensitive receptors. Additionally, blasting could create local ground-borne vibrations. The character of the blast and ground vibrations would depend on factors such as type of soil/rock, type of explosive, amount of explosive used, depth of explosion and meteorological conditions. Drill-and-blast methods would generally consist of the following steps: (1) drilling a pattern of holes in a rock face and

loading the holes with explosives, (2) blasting the round and ventilating the blasting gasses, (3) mucking the blasted rock, and (4) installing initial ground support as needed.

Ground vibration is controlled by limiting the amount of energy released into the rock at a time. The energy is distributed through the rock to be blasted in the form of holes drilled into the rock. The holes are detonated in a progressive sequence that resembles slices of bread being removed from a loaf. One slice is removed to make room for the next slice, and so on. By controlling the number of holes detonated at one time, the amount of energy released can be controlled as well. This energy decays with distance from the blast.

By knowing the distance to the closest structure to protect, the amount of energy that can be released into the ground at any one delay period can be calculated without causing damage due to ground vibration.

These vibrations and accompanying noise can cause annoyance to the people living and working near a blasting operation. Careful calculations and placement of the explosives can control these adverse effects of blasting. This is a responsibility of the blaster.

The amount of explosives a blaster can use is based in part upon the distance to the nearest structure. The greater the distance, the more pounds per delay that can be used for the blast. However, that doesn’t mean the blaster will use all of the explosives allowed because the goal is to use only that amount necessary to accomplish the job. Some small blasting operations use only a few pounds of explosives and can be used to blast in close proximity to structures without causing damage.

Drilling would be necessary to bore holes for the blasting materials. Rock drills generate airborne noise levels of approximately 80 to 98 dB at a distance of 50 feet. Typically, drilling holes for a blasting pattern can last from several hours to several days. The period of time to drill per blast depends on several factors, including the number of holes, the depth of the holes, and the effort required to drill through the rock. No more than one to two blasts would occur in any one area per day because of the time required to drill the holes as well as to insert and connect the blasting materials. The closest existing homes to potential drilling and blasting areas would be located adjacent to proposed Meadow Park Lane. The closest home would be located approximately 150 feet away. Smaller blasting charges would be used in areas that are closer to existing homes. Existing homes would also be located adjacent to Deer Springs Road and would be subject to drilling and blasting noise during the widening of Deer Springs Road. Assuming drilling and blasting activities are conducted adjacent to the closest home, that the loudest drill operates continuously for eight hours, and two blasts are conducted, the 8-hour average noise level would be approximately 110 dB at the property line adjacent to the closest home. This noise level would exceed the significance guideline by 35 dB. The primary noise source would

be the drilling and not the blast, due to short duration of the blast compared to the ongoing drilling activity. The existing residences in this area would be subject to drilling and blasting noise for approximately 6 months. The drilling and blasting activity would be intermittent. After each blast, it would typically be several days to a couple of weeks before the next drilling and blasting sequence, so that the material can be removed from the excavation area.

The blast would be an impulsive noise event resulting in a maximum noise level of approximately 108 dB at the property line adjacent to the closest residence. As previously noted, no more than two blasts would occur in a day. The noise from the blast would comply with the County's impulsive noise standard because the number of blasts would not exceed 25% of the minutes in the 1-hour measurement period.

Rock Crushing/Processing

A portable rock-crushing and processing facility would be used at the site during these construction activities. The rock-crushing operation would begin with a front loader picking up and dumping the material into a primary crusher. The material would then be crushed, screened, and stacked in product piles, and then stockpiled next to the rock-crushing equipment. All material will be used on site. Electric power would most likely be provided by a diesel engine generator. Preliminarily, two rock-crushing locations have been identified at the site and would be located within Neighborhoods 3 and 5, as depicted in Figure 2.4-10. The closest existing home would be located more than 1,800 feet from the proposed rock-crushing areas. At this distance, the noise level associated with the rock-crushing activities would not be significant because the rock-crushing noise levels would be sufficiently attenuated by the distance between the rock-crushing activities and receptors, resulting in an hourly average sound level of less than 55 dB. In addition, there would be intervening topography that would shield adjacent homes from the rock-crushing facilities.

Construction Noise Impact at Future On-Site Residences

Construction would occur in five phases (Phases A through E), as previously depicted in Figure 1.1-20. The project would be phased so that the future closest occupied homes would be located approximately 600 feet from a rock-crushing facility. Based on noise measurements that have been conducted for portable rock-crushing operations, the activity would generate an 8-hour average noise level of approximately 80 dB at a distance of 100 feet from the primary crusher. Maximum noise levels associated with the primary crusher could reach approximately 88 dB at 100 feet. Assuming an eight-hour work day, the rock-crushing noise level at the closest project-occupied homes would be approximately 64 dB or less and would be less than significant. The maximum noise level associated with impulsive noise from the primary crusher would be 72 dB

or less at the closest property line for project occupied homes. This noise level would comply with the County's impulsive noise criteria.

Based on a preliminary site development schedule, the drilling and blasting activities would occur during the rough-grading activities at the site. Grading and blasting activities would begin at the southern portion of the project and continue north. Grading and blasting in Development Phase I would be completed prior to occupancy of units in Development Phase I, allowing for a distance buffer between occupied units and construction activities. The minimum distance buffer would be 100 feet during grading activities. Grading noise would be less than an 8-hour average noise level of 75 dB at the closest property line for project-occupied homes. A timeline of the phasing plan and anticipated occupancy in relationship to the ongoing grading, blasting, and drilling activities is shown in Table 2.4-9. The development phasing of the project and neighborhoods are shown in Figure 1.1-19.

The drilling and blasting area would be approximately 500 feet from the closest project-occupied homes (Figure 2.4-11). Assuming that the construction activity operates continuously for an 8-hour period, and assuming (in the worst case) that there is a direct line of sight from the drilling area to the closest future residents, the average noise level at the closest future home would be approximately 78 dB. This noise level would exceed San Diego County's 75 dB noise criteria (Impact NOI-6). Thus, the noise impact associated with the drilling and blasting activities is considered significant.

Construction Truck Traffic Noise

The grading for the project is designed to be balanced; thus, there would be no import or export of dirt. Trucks would deliver materials to the site. There would be a small percentage (less than 5%) increase in truck traffic as compared to the existing truck traffic in the area. The project's delivery trucks would generate less than 60 dB CNEL on the surrounding roads; noise impacts would be less than significant.

Construction Noise Associated with Off-Site Water and Sewer Pipelines

A water line would be installed off site, from west of the estate lots within Lawrence Welk Lane to Buckshot Lane. The pipeline construction would most likely be completed using open trench method within an existing access easement. Construction phases associated with the open-cut pipeline installation would include trenching, pipe laying, backfill/compacting and pavement reinstatement. The primary noise sources would most likely include an excavator/backhoe, loader, dump trucks, crew and delivery trucks, water truck, and roller compactor. There are two existing residences in the general vicinity of the water line, and there are no existing residences adjacent to the proposed sewer line.

The closest home to the water line is approximately 120 feet from the pipeline alignment (see Figure 2.4-12A). Based on noise measurements of trenching, pipe laying, paving and compacting activities, the average noise level would range up to approximately 70 to 75 dB at a distance of 50 feet. The resulting noise level would be less than 70 dB at the closest homes. The duration to complete any phase of the open trench phases of the project such as trenching, backfilling, etc., will vary, but would typically proceed at a rate of approximately 50 to 100 feet per day. The construction activities would comply with San Diego County's allowable hours and Noise Ordinance limits. Thus, the noise impact would be less than significant.

Off-site sewer lines would also be installed along a segment of Sarver Lane, and in Twin Oaks Valley Road from Del Roy Drive to Deer Springs Road (see Figure 2.4-12B). The closest existing homes along Sarver Lane would be located approximately 50 feet from the proposed sewer line. The exact location of the pipeline within Twin Oaks Valley Road is currently unknown. There would be no homes located in the County of San Diego that would be within 50 feet of the sewer pipeline. The construction activities are to comply with Title 3, Division 6, Chapter 4, Section 36.410 of the County's Code of Regulatory Ordinances when construction occurs within San Diego County's jurisdiction. There are approximately four homes located in the City of San Marcos that could be within approximately 40 feet of the sewer pipeline, depending on the exact sewer line alignment. When the construction equipment is operating, the existing residences could be disturbed by these activities. The City's Municipal Code limits construction activities to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, and on Saturdays 8:00 a.m. to 5:00 p.m. Construction activities at the site are expected to comply with the permitted hours of operation, and the construction noise would not exceed noise levels typically considered acceptable for construction activities. Therefore, the construction noise impact would be less than significant.

<u>Construction Noise Associated with Off-Site Road Improvements</u>

Off-site road improvements would be required along Deer Springs Road and Twin Oaks Valley Road from approximately 1,000 feet south of Cassou Road to I-15. In general, these roads would be widened from two to four lanes, and to six lanes near its intersection with I-15 with additional turning lanes where necessary. The primary noise sources would most likely include a scraper, graders, loaders, paver, heavy trucks, crew and delivery trucks, water trucks, and roller compactors.

In addition, improvements would be completed along Meadow Park Lane between Neighborhood 2, Planning Area 3 and the southern limits of the project site. Approximately six existing homes would be located adjacent to the proposed Meadow Park Lane alignment. The construction activities would generally be 150 or more feet from the closest homes. With the exception of the drilling and blasting activities discussed below, the average noise level

associated with the construction activities would be approximately 70 dB or less. These construction noise levels would result in a less-than-significant noise impact.

During construction operations, equipment moves to different locations and operates through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as survey measurements. Although maximum noise levels range up to 85 to 90 dBA, hourly average noise levels near the edge of the roadway, at locations where construction occurs, would be anticipated to be 65 to 75 dBA at a distance of 90 feet. Construction noise at the receptors adjacent to Deer Springs Road/Twin Oaks Valley Road would exceed ambient traffic noise levels and would likely be perceived as nuisance noise. Disturbance would be periodic and non-contiguous, and construction activities would be limited to the hours of 7 a.m. to 7 p.m. on weekdays and Saturdays in accordance with the County Noise Ordinance. When construction activities occur along Twin Oaks Valley Road, the construction activities would be limited to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, and 8:00 a.m. to 5:00 p.m. on Saturdays in accordance with the City of San Marcos Municipal Code.

Single-family residences, the Deer Springs Mobile Home Park, a school, a church, and the Golden Door are located adjacent to this segment of Deer Springs Road/Twin Oaks Valley Road. Based on existing available information, the majority of the existing residences along Deer Springs Road would be located 90 feet or more away from construction activity and would not be exposed to noise levels in excess of the County's 75 dBA 8-hour average noise level standard (see Figures 1.1-15A and 1.1-15B). Also, the closest noise-sensitive outdoor use areas known at the Golden Door would be at least 200 or more feet from the construction area. However, the County also considers construction noise impacts to noise-sensitive uses in commercial and industrial uses. The Golden Door has several buildings used for commercial purposes adjacent to Deer Springs Road. At these buildings, the 8-hour average noise level could range up to approximately 80 dB, which would exceed the County's construction Noise Ordinance criterion. This impact is regarded as significant (Impact NOI-7). In addition, near the intersection of Merriam Mountain Parkway and Deer Springs Road, the road-widening construction would extend within approximately 30 feet of several existing mobile home residences. At this distance, the combination of larger equipment, such as a scraper, grader, paving equipment, roller compactor and water truck, would generate an 8-hour average noise level of approximately 80 dB. In addition, four single-family homes along Deer Springs Road would be located within 90 feet of proposed construction activity and may be exposed to 8-hour average noise levels exceeding the County's 75 dBA standard. This impact is regarded as significant (Impact NOI-7).

The preliminary geotechnical information indicates that off-site drilling and blasting along Deer Springs Road could be necessary approximately 300 feet of existing sensitive receptors located near the proposed roadway alignment (see Figure 1.1-20). Assuming that the construction

activity operates continuously for an 8-hour period, and assuming (in the worst case) that there is a direct line of sight from the drilling area to existing residences, the resulting drilling and blasting hourly average noise levels are anticipated to exceed San Diego County's 75 dB or less at the property lines adjacent to noise-sensitive receptors (Impact NOI-6). Thus, the noise impact associated with the drilling and blasting activities is considered significant

Approximately 10 homes, a school, and a church are located adjacent to the proposed improvement area of Twin Oaks Valley Road located within the City of San Marcos (see Figure 1.1-16E). This segment of Twin Oaks Valley Road is flat, and portions of the road bed have already been mostly constructed, with only minor grading anticipated in this area. Based on the construction equipment and distance to the closest residences, the construction noise is anticipated to generate an average sound level during an 8-hour work day of 75 dB or less. When the construction equipment is operating, the existing residences could be disturbed by the activities. Construction activities are expected to comply with the permitted hours of operation, and the construction noise would not exceed noise levels typically considered acceptable for construction activities located within the City of San Marcos. Therefore, the construction noise impact would be less than significant.

Guideline 5: Ground-Borne Vibration Levels

The significance criteria previously identified in Table 2.4-1 for ground-borne vibration and noise impacts are primarily based on studies associated with rail rapid transit systems (FTA 2006). Ground-borne vibration and noise information related to construction activities has been collected by the Caltrans (Caltrans 2004). Information from Caltrans indicates that continuous vibrations with a peak particle velocity of approximately 0.1 in/sec begin to annoy people. However, vibration is very subjective, and some people may be annoyed at continuous vibration levels near the level of perception (or at approximately a peak particle velocity of .01 in/sec). Construction activities are not anticipated to result in continuous vibration levels that typically annoy people (less than 0.1 in/sec); therefore, impacts would be less than significant.

U.S. Bureau of Mines: The United States Bureau of Mines (USBM) has provided an impact guide in the area of structural and human response to vibration (1980 USBM RI 8507, "Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting"). The criteria are well accepted for all types of ground vibration and are based on the peak particle velocity of the receiving structure. The criteria are shown on Figure 2.4-9B. The potential for damage to residential structures is greater with low-frequency blast vibration (below 40 Hertz (Hz)) than with high-frequency blast vibration (40 Hz and above). For low-frequency blast vibration, a limit of 0.75 inches per second (in/sec) for modern drywall construction and 0.50

in/sec for older plaster-on-lath construction was proposed. For frequencies above 40 Hz, a limit of 2.0 in/sec for all types of construction was proposed.

The USBM also published a document regarding recommendations for maximum safe air overpressure levels for blasting (1980 USBM RI 8485, "Structure Response and Damage Produced by Airblast From Surface Mining"). The document recommends a maximum safe air overpressure of 134 dB (linear) for residential structures. The first occurrence of airblast damage is usually the breakage of poorly mounted windows at approximately 152 dB (linear) (Jones and Stokes 2004). The response and annoyance problem from airblast is probably caused primarily by wall and window rattling and the resulting secondary noises. Although these effects will not be entirely precluded by the recommended levels, the recommended levels are considered low enough to preclude damage to residential structures, but may not address the annoyance of individuals.

County of San Diego Blasting Permit: To conduct blasting, a blasting permit must be obtained from the County of San Diego prior to blasting (San Diego County Code of Regulatory Ordinances, Sec 35.37701.1). The permit is in accordance with the California Health and Safety Code requirements. The permit ensures that blasting is conducted in a safe manner. As part of the permit conditions, pre-blast notifications, pre-blast structure survey inspections for structures within 300 feet of the blast site, monitoring, and post-blast inspections are necessary.

Additional information regarding human response to blast vibrations can be found on the section titled *Human Response to Blasting* under the Blasting and Noise section above.

There are approximately 20 homes, the Deer Springs Mobile Home Park, and the Golden Door located within 600 feet of the potential blasting areas. There is insufficient information available at this time to perform specific calculations of the ground-borne vibration from the blasting, and these calculations are not required to be performed at this time. However, one of the most commonly accepted formulas for blast vibration prediction in use is shown below and is based on data gathered from a large number of blasts in various geological settings (Transportation and Construction Induced Vibration Guidance Manual, Jones & Stokes 2004).

The basic formula for predicting blast vibration is:

$$PPV = K (Ds) -1.6$$

Where:

PPV = peak particle velocity (inches per second)

Ds = square-root scaled distance (distance to receiver in feet divided by square root of charge weight in pounds)

K = a variable subject to many factors; upper and lower bounds are 242 and 24, respectively.

Most conventional blasts will fall between these bounds. Similarly, peak air overpressure can be calculated using the equation:

Peak air overpressure (in pounds per square inch (psi)) = K (Ds) –1.2

K = Combined intercepts at a Ds of 1 of 2.5 and 0.78, respectively for confined charges.

The resulting curves from these equations, representing the upper and lower bounds for typical down-hole blasting, are shown in Figures 2.4-13A and 2.4-13B. As illustrated in the figures, by simply varying the charge weight, the resulting vibration or air overpressure level can be significantly decreased or increased. For example, for a receiver at 150 feet, and with a charge weight of 50 pounds, the peak particle velocity would range between approximately 0.18 and 1.82 inches per second depending on such variables as confinement of energy, elastic moduli of the rock, spatial distribution of the energy sources, time of energy release or timing scatter, and coupling of the energy sources. For a receiver at 150 feet, and with a charge weight of 10 pounds, the peak particle velocity would range between approximately 0.05 and 0.50 inches per second. Using the same example, the peak air overpressure would range between approximately 123 and 134 dB (linear, not A-weighted) with a charge weight of 10 pounds. Thus, using a charge weight of 10 pounds the vibration from the blast would typically be perceived as distinctly to strongly perceptible, and the airblast would be perceived as mildly to distinctly unpleasant for a receiver at 150 feet. With this charge weight, the blast would not be anticipated to exceed the USBM limits for safe blasting. When more site-specific information is available, the blaster would design the blasts to not exceed the guidelines for blasting as identified on Figure 2.4-9B and to comply with the conditions of the County of San Diego's blasting permit.

The construction blasting vibration and noise levels would most likely be noticeable by receptors at nearby locations, but would not be a significant source of impact due to the infrequent nature of blasting operations, conformance with the County of San Diego's standard blasting permit requirements, and compliance with USBM Report of Investigation (RI) 8507 and RI 8485 criteria for safe levels of blasting.

Regarding potential property damage, structures in close proximity to the blasting area would be surveyed prior to any blasting and after the blasting. The contractor would verify the minimum

distance that a qualified blaster considers acceptable. If it is determined that blasting cannot be conducted in an area, the rock would be removed by alternative methods, such as the use of excavation equipment or dozers.

It should be noted that the San Diego County Water Authority (SDCWA) Administrative Code Article 7, Section 7.00.040 (h) prohibits blasting within 400 feet of an SDCWA facility, except as specifically permitted by the SDCWA and subject to all applicable local and state laws. The project would comply with this SDCWA requirement.

2.4.4 Cumulative Impact Analysis

The cumulative study area is the same as for the traffic analysis, and includes all 132 projects identified in Section 1.6. This area was chosen due to the distance, since projects within this area have the greatest potential to create cumulative impacts associated with long-term traffic noises.

Project-Generated Traffic

The near-term cumulative traffic noise impact would be significant along Buena Creek Road between Monte Vista Road and Twin Oaks Valley Road. The project would contribute 4,710 ADT along Buena Creek Road, between Monte Vista Drive and Twin Oaks Valley Road. The increase associated with near-term cumulative traffic would be approximately 4 dB CNEL along this road segment, as shown in Table 2.4-8A. The project's net contribution to the near-term cumulative noise level increase would be 1 dB CNEL. The project's portion of the cumulative noise impact would be cumulatively considerable. The existing 60 dB CNEL noise contour extends approximately 210 feet from the center line of Buena Creek Road. The existing-plus-project 60 dB CNEL noise contour would extend approximately 270 feet from the center line of Buena Creek Road. The existing-plus-project-plus-cumulative-projects 60 dB CNEL noise contour would extend approximately 360 feet from the center line of Buena Creek Road. The future noise levels would range between approximately 61 and 70 dB CNEL at the noise-sensitive areas of the residences located in this area. These distances assume that there is no shielding from intervening walls, topography, buildings, or other structures that would reduce the noise levels. While many of these homes are currently located behind intervening houses and topography that would shield the homes from traffic noise, the worst-case impact is to approximately 30 additional homes that would be exposed to noise levels greater than 60 dB CNEL at the existing-plus-project-plus-cumulative-projects condition. This impact would be significant and unavoidable (Impact NOI-8) because noise level increases would exceed a 3 dB increase, which is generally considered to be the point of change in environmental noise that can just be detected by the human ear.

The project would also widen and realign Deer Springs Road between Twin Oaks Valley Road and I-15 and widen Twin Oaks Valley Road south of Cassou Road to approximately 1,000 feet. Both Twin Oaks Valley Road and Deer Springs Road will be widened from two-lane roads to four-lane roads. Widening and realigning the road would result in some traffic lanes located closer to existing homes (see Figures 2.4-14A through 2.4-14E and Figure 2.4-15A). Noise modeling was completed to determine the noise level increase associated with the Deer Springs Road and Twin Oaks Valley Road widening and realignment for sensitive receptors located adjacent to these roads. The noise modeling evaluates potential impacts based on the Deer Springs Road/Twin Oaks Valley Road four-lane road widening design plans, which include the proposed center line alignment modification, lane widening, road elevation changes, and topography changes as well as the anticipated existing-plus-project-plus-cumulative traffic volumes (LLG 2009). These traffic volumes range from 33,360 to 49,960 ADT along Deer Springs Road and from 28,590 to 30,960 ADT along Twin Oaks Valley Road.

Deer Springs Road: Based on the road widening design plans the combination of the proposed physical road changes and road volume increases would increase the existing-plus-project-plus-cumulative noise level by 4 to 5 dB CNEL at five single-family residences along Deer Springs Road and six homes at the mobile home park adjacent to Deer Springs Road (see Figures 2.4-14A through 2.4-14E). The calculated existing and future noise levels along Deer Springs Road and Twin Oaks Valley Road are depicted in Table 2.4-8B. Deer Springs Mobile Home Park is represented by Receptors 1 through 4 as shown on Figure 2.4-14A). The five single-family residences are represented by Receptors 5, 14, 17, 18, and 19 as shown on Figures 2.4-14B through 2.4-14D). The project's net contribution to the near-term cumulative noise level increase would be 3 dB CNEL. The project's portion of the cumulative noise impact would be cumulatively considerable (Impact NOI-8).

The noise level increase at the outdoor use areas, and the group or private usable open space areas of the remaining residences and sensitive receptors, would be 3 dB CNEL or less. It should be noted that Sensitive Receptor 12 (see Figure 2.4-14B) is partially shielded from intervening topography, and this site is not considered a noise-sensitive receptor outdoor use area. In addition, at Sensitive Receptor 12, as well as Sensitive Receptors 16 and 20, the future Deer Springs Road alignment would result in projected traffic being placed farther away from the receptors than currently occurs with the existing alignment. Thus, the "equivalent lane distance" between these receptors and Deer Springs Road would increase in the future as compared to the existing conditions. The equivalent lane distance is the distance to a specific receiver from an imaginary single lane which acoustically represents a multilane highway or group of lanes, such as directional lanes.

The noise level associated with Mesa Rock Road would increase by approximately 6 dB between Deer Springs Road and North Centre City Parkway (see Table 2.4-8B). However, I-15 is directly to the east of Mesa Rock Road and is the primary noise source in the area, with an existing traffic volume well over 100,000 ADT. The actual noise level increase at existing residences would be less than 3 dB, because the traffic along I-15 will continue to be the primary noise source.

Twin Oaks Valley Road: The noise-sensitive land uses along Twin Oaks Valley Road include single-family residences, a school, and a church. The existing noise level at the noise-sensitive land uses adjacent to Twin Oaks Valley Road generally range from 63 to 68 dB CNEL. These noise levels exceed the City's 60 dB CNEL noise guideline. The existing-plus-project-plus-cumulative-project noise level is calculated to result in a noise level increase of 3 dB CNEL as compared to the existing noise level. The future noise level would continue to exceed a CNEL of 60 dB at the adjacent noise-sensitive land uses. However, the noise level increase associated with the cumulative project would be less than significant.

The 75 dB CNEL noise contour along the proposed Deer Springs Road alignment due to the existing-plus-project-plus-cumulative-projects traffic volume is shown in Figures 2.4-15B and 2.3-15C. As shown on the figure, the 75 dB CNEL noise contour is located nearly along the proposed right-of-way for the proposed 4-lane road improvements. The County of San Diego's Zoning requires minimum building setback distances from the center lines of roads. As a future 6-lane Prime Arterial, the minimum building setback distance within zones (R-R, A-70, A-72, S-80, S87, S-90, and S-92, with a lot size designator or 1 acre of larger) would be 91 feet from the center line of Deer Springs Road. The traffic 75 dB CNEL noise contour distance would be less than the minimum required building setback distance for a four-lane road. Therefore, the traffic noise associated with the project would not result in constraints to development of noise-sensitive off-site property due to the location of the 75 dB CNEL noise contour.

Construction Noise

As seen on Figure 1.6-1, cumulative projects in closest proximity to the project site and offsite improvements are located adjacent to Deer Springs road (cumulative projects 28, 29, 31 and 48). These projects include the TERI project (#48), the Pizzuto project (#31), the Walnut Grove Park project (#29) and the Discovery Valley Equestrian & Canine Center project (#28). Project #'s 28, 29 and 48 are located at our below the Sarver curve along flatter stretches of Deer Springs Road and earthmoving is expected to be limited for these projects. In the case of the TERI project (#48), it appears that clearing has already been completed and site work would include finish grading and construction of structures. In the case of the Walnut Grove Park and Discovery Valley Equestrian & Canine Center projects (#'s 28 and 29 respectively), both projects are located several hundred feet south of Deer Springs Road; Walnut Grove Park improvements appear to be completed and Discovery Valley Equestrian & Canine Center includes a new

building on an existing finished lot. Potential cumulative noise effects associated with these projects are expected to be minimal due to several factors: a) their location along the flatter portions of Deer Springs Road where less noise-generating earthwork would be needed; b) some clearing and grading activities appear to already be completed at the TERI and Walnut Grove Park sites, and c) remaining work appears to be limited to finish grading and building construction, generally these construction activities generate less noise than large earthmoving operations. Also, these activities are generally located farther away from the site boundaries, thus, providing a greater distance noise buffer.

The remaining applicable cumulative project, Pizutto (#31) is located north of the Sarver curve in a steeper area along Deer Springs Road and it is likely that somewhat substantial earthwork would be needed to implement this project. The project would include grading for site access as well as grading for site development. Should the Pizutto project be constructed before the Merriam project, site access grading would involve widening the existing Deer Springs Place for site access. Should the Merriam project be constructed first, Merriam would have completed the Meadow Park Lane access and Meadow Park Lane would provide access for Pizutto. In no case, would site access for the Pizutto and Merriam projects occur simultaneously. The only earthwork that could occur simultaneously with the Merriam construction activities would be lot grading for Pizutto. The Pizutto lots are topographically separated from the Merriam site development and from Deer Springs Road and noise generated by these combined construction activities, in the unlikely event they were to occur simultaneously, would be separated by existing topography. The intervening topography would physically shield the existing residences that are located between the two project sites. Thus, the topography would provide noise attenuation and noise generated by these construction activities, should they occur simultaneously, would not exceed the 75 dB eight-hour average sound level criteria established by the County Noise Ordinance. Cumulatively considerable noise impacts are not anticipated.

2.4.5 Growth-Inducing Impact

As discussed in Section 1.7 and Appendix S of this EIR, it can be estimated that the proposed project could accelerate construction of 720 dwelling units due to property owners wanting to build their land out to the maximum extent possible under the existing General Plan designation due to availability of the backbone infrastructure construction by the proposed project. This may increase the amount of ambient noise in the project area since additional dwelling units would result in additional construction and traffic-generated noise; however, the noise would not be greater than anticipated in the General Plan.

Project-Generated Traffic

It is expected that traffic generated by the 720 dwelling units (up to 8,640 trips assuming 12 trips/DU) would use Twin Oaks Valley Road and Deer Springs Road. This traffic is included in the cumulative and buildout volumes anticipated for these roadways in the existing General Plan, since the 720 units are included in the existing General Plan. As noted above, construction of these units could be accelerated as a result of backbone infrastructure put in place as part of the proposed project. Noise associated with these trips is already assumed as part of the forecast volumes for these roadways. The extent to which such noise would affect sensitive receptors is analyzed in Section 2.4, Noise, of this EIR for improvements to Deer Springs Road from Twin Oaks Valley Road to the I-15 interchange. Forecast volumes on Twin Oaks Valley Road north of Deer Springs Road are approximately 7,100 ADT, not a level that should affect sensitive receptors along that segment of Twin Oaks Valley Road. Nevertheless, each project would be analyzed in a project-specific noise impact analysis, and mitigation measures would be recommended to reduce potential impacts to less than significant. Therefore, it is anticipated that growth-inducing impacts would be less than significant.

Construction Noise

Construction noise is considered short term in nature, and each project would be required to comply with the County of San Diego Noise Ordinance with regard to construction noise. Construction noise is a short-term, somewhat intermittent event with noise typically occurring in localized areas and simultaneous construction events not normally occurring concurrently in relative close proximity to each other. Therefore, impacts would be less than significant.

Summary of Project Impacts

The following noise impacts have been identified:

NOI-1 The future traffic noise levels from Interstate-15, Deer Springs Road, Merriam Mountain Parkway, Deer Springs Road, and Meadow Parkway Lane would exceed the County of San Diego General Plan Noise Element standards at the following locations:

- Neighborhood 1, located near Merriam Mountains Parkway
- Neighborhood 1, located near I-15
- Neighborhood 2, located near Meadow Park Lane
- Neighborhood 2, located near Deer Springs Road.

NOI-2 The future traffic noise levels would exceed County of San Diego General Plan Noise Element at the following locations:

- Single-family lots adjacent to Merriam Mountains Parkway within Neighborhoods 3 through 5
- Lots 124 through 127 and 129 through 132 in Neighborhood 3, Planning Area 1, would be located adjacent to I-15.
- The Estate Lots noise level would exceed 60 dB CNEL at Lots 1175 and 1177 facing I-15.

NOI-3 Operational noise may exceed the County of San Diego Noise Ordinance Standards at commercial use areas.

NOI-4 Habitable rooms within the proposed fire station are considered noise sensitive and may exceed a 45 dB CNEL.

NOI-5 Project-generated traffic noise would be significant and exceed San Diego County's significance along Deer Springs Road between Sarver Lane and Twin Oaks Valley Road at Sensitive Receptor 18 (see Figure 2.4-14D).

NOI-6 Construction noise associated with drilling and blasting may exceed San Diego County's 75 dB noise criteria during construction activities.

NOI-7 The widening of Deer Springs Road may generate an 8-hour average noise level that would exceed 75 dB during construction activities.

NOI-8 Project-generated traffic would be cumulatively significant and exceed San Diego County's significance threshold for the following locations:

- Residences along Buena Creek Road Residences located within the Deer Springs Mobile Home Park (sensitive receptor 1 through 4) and five single-family homes (Sensitive Receptors 5, 14, 17, 18, and 19 (see Figures 2.4-14A through 2.4-14D)).

2.4.6 Mitigation Measures

Noise mitigation measures are discussed below for the on- and off-site traffic noise impacts, commercial uses, and construction activities as follows:

On-Site Traffic Noise Mitigation

Neighborhoods 1 and 2

To comply with the County of San Diego's exterior noise guideline, the proposed project would be required to reduce exterior noise levels at the usable open space areas of the residential building pads to a CNEL of 60 dB or less and interior living space noise levels to a CNEL of 45 dB. The construction of an 8-foot berm at the top of the I-15 slope is required to achieve adequate noise attenuation (see Figures 2.4-2 and 2.4-3).

The future year 2030 traffic noise at the multifamily lots at Neighborhood 1, Lot 4, adjacent to I-15 can be mitigated to 60 dB CNEL at the first floor level with private and common use area setbacks. The future year 2030 unmitigated 60 dB and 75 dB CNEL noise contours were previously depicted in Figure 2.4-2. At multifamily buildings with exposure to I-15, porches, balconies, or common usable space areas shall not be located on the north, south, or east sides of a multifamily building. If private balconies are proposed, they would most likely have to be located within the interior portion of the site and shielded by the multifamily buildings. Minimum building setback distances to the second- and third-floor levels to the 75 dB CNEL noise contour are shown on Figure 2.4-16. No buildings are to be located closer than these minimum setback distances to I-15 or the edge of the pad.

The future year 2030 traffic noise at the variable residential lots at Neighborhood 2, Lots 15 and 17, adjacent to Deer Springs Road can be mitigated to a 60 dB CNEL at the first-floor level by an 8-foot-high noise barrier at the edge of the building pad, along with private and common use area setbacks. The location of a potential noise barrier is depicted on Figure 2.4-17. With an 8-foot-high sound wall, the setback distance would be approximately 40 feet from the edge of the pad at Lot 15 and approximately 70 feet from the edge of the pad at Lot 17. If private balconies are proposed, they would most likely have to be located within the interior portion of the site shielded by the multifamily buildings. The future year 2030 unmitigated 60 dB and 75 dB CNEL noise contours were previously depicted in Figure 2.4-5A.

M-NOI-1a The zoning will require that a noise study evaluate traffic noise at the variable residential lots at Neighborhood 1, Lots 4 through 6 and 9 through 12, and at Neighborhood 2, Lots 15 through 25, when site plans are prepared. A "D1" designator for noise will be applied to Neighborhood 1, Planning Areas 1 and 2. Also, noise associated with commercial uses adjacent to residential uses shall be reviewed when site plans are prepared for the commercial uses, or if noise-sensitive uses are proposed for the commercial lots. General mitigation measures have been evaluated and have been determined to be feasible. However, specific measures cannot be determined at this time, as more specific project information

will be required. However, general mitigation measures will accomplish the following:

Setbacks – Locate usable open space areas beyond the 60 dB CNEL contour depicted in Table 2.4-7 for noise-sensitive uses adjacent to Merriam Mountains Parkway, Meadow Park Lane, I-15, and Deer Springs Road. Along I-15, the 60 dB noise contour at Neighborhood 1, Lot 4, was previously shown in Figure 2.4-2. In addition, no buildings are to be exposed to noise levels greater than 75 dB CNEL. Thus, no buildings are to be located closer than 20 feet (one story), 35 feet (two story), and 60 feet (three story) from the edge of the berm adjacent to I-15 at Neighborhood 1, Lot 4. At Neighborhood 2, no two-story or higher buildings are to be located closer than 100 feet from the center line of Deer Springs Road.

Noise barriers – Construct berms, noise walls, or a combination berm and noise wall to establish usable areas beyond the 60 dB CNEL contour, depicted in Table 2.4-7, for noise-sensitive uses adjacent to Merriam Mountains Parkway, Meadow Park Lane, I-15, and Deer Springs Road. An approximate 8- or 9-foot-high noise barrier may be required adjacent to Merriam Mountains Parkway, depending on the proximity of the outdoor noise-sensitive areas to the road.

Site and Architectural Design – Alternatively, to locate useable areas associated with I-15 at Neighborhood 1, Lot 4, the multifamily buildings could completely enclose three sides of any outdoor usable area from I-15 traffic noise.

M-NOI-1b Prior to approval of the grading and or improvement plans, the following specific note shall be placed on the grading and improvement plans regarding the construction of the 8-foot-high berm: “Prior to rough grading sign off, provide evidence to the satisfaction of the Director of Planning and Land Use that an 8-foot-high berm has been constructed along the eastern pad edge of Lot 5 of Planning Area 2 of Neighborhood 1 of the tentative map, constructed pursuant to an approved grading plan.” Evidence of the berm shall consist of the following: a signed, stamped statement from a California Registered Engineer or licensed surveyor and photographic evidence that the sound attenuation berm has been constructed and that the minimum pad elevation of 1065 AMSL is shown on the Tentative Map.

M-NOI-1c Pursuant to the approval of site plans for Lots 4 through 6, 9 through 12, and 15 through 25, inclusive, of Neighborhoods 1 and 2 of Tentative Map 5381RP1, the applicant shall:

- Complete, to the satisfaction of the Director of the DPLU, an acoustical analysis performed by a San-Diego-County-approved acoustical engineer, demonstrating that the present and anticipated future noise levels for the interior and exterior of the noise-sensitive land uses will not exceed the allowable sound level limit of the Noise Element of the San Diego County General Plan (County of San Diego 2006) (exterior (60 dB CNEL), interior (45 dB CNEL)). Analysis must demonstrate that noise generation does not exceed the property line sound level limits of Section 36.404 of the County of San Diego Noise Ordinance (County Code, Section 36.404). Future traffic noise level estimates must utilize a Level of Service "C" traffic flow for Merriam Mountains Parkway as a Boulevard and Deer Springs Road with a Prime Arterial classification, which are the designated General Plan Circulation Element buildout roadway classifications.

<u>Neighborhoods 3, 4, and 5</u>

M-NOI-2a Noise impacts shall be mitigated by constructing 6-foot-high barriers at single-family lots adjacent to Merriam Mountains Parkway. In addition, 6-foot-high barriers would be required at Neighborhood 3, Lots 124 through 127 and 129 through 132, to mitigate the traffic noise from I-15. The locations and barrier heights required to mitigate the future CNEL to 60 dB or less are depicted in Figures 2.4-18A and 2.4-18B. A summary of single-family lots requiring noise mitigation and the top-of-barrier elevations are provided in Table 2.4-10.

The noise barriers may be constructed as a wall, berm, or combination of both. The materials used in the construction of the barrier are required to have a minimum surface density of 3.5 lbs/sq ft. They may consist of masonry material, 5/8-inch-thick plexiglass, 1/4-inch-thick plate glass, or a combination of these materials. The barriers must be designed so there are no openings or cracks.

M-NOI-2b On the Final Map, the applicant shall grant to the County of San Diego a Noise Protection Easement over the entire area of Lots 26 through 49, 112 through 113, 124 through 127, 129 through 132, 209 through 235, 240, 244 through 248, 271 through 273, 281 through 287, 348 through 360, 618 through 629, and 1161 through 1177, inclusive, of Tentative Map 5381RP1 (Neighborhoods 3 through 5 and the Estates of the Merriam Mountain Specific Plan). This easement is for the mitigation of present and anticipated future excess noise levels from Merriam Mountains Parkway and I-15 on noise-sensitive land uses. The easement shall require, prior to the issuance of any building permit for any residential use within the noise protection easement, that the applicant:

- Complete, to the satisfaction of the Director of the DPLU, an acoustical analysis performed by a San-Diego-County-approved acoustical engineer, demonstrating that the present and anticipated future noise levels for the interior and exterior of the residential dwelling will not exceed the allowable sound level limit of the Noise Element of the San Diego County General Plan (County of San Diego 2006) (exterior (60 dB CNEL), interior (45 dB CNEL)). Future traffic noise level estimates must utilize a Level of Service "C" traffic flow on Merriam Mountains Parkway as a Rural Light Collector classification, which is the normally designated General Plan Circulation Element buildout roadway classification.
- Incorporate, to the satisfaction of the Director of the DPLU, the recommendations or mitigation measures of the acoustical analysis into the project design and building plans.

<u>Estate Lots</u>

M-NOI-2c Construct 6- to 10-foot-high barriers at Lots 1175 through 1177 adjacent to I-15. The locations and noise barrier heights required to mitigate the future CNEL required outdoor usable area to 60 dB or less are depicted in Figure 2.4-19.

M-NOI-2d Estate Lots shall be limited to one-story structures per the height restrictions included in the Specific Plan (see Appendix C).

Interior Noise Mitigation

M-NOI-2e An interior acoustical analysis would be required for the lots exposed to a CNEL greater than 60 dB prior to issuance of building permits, to ensure that the interior noise levels would not exceed a CNEL of 45 dB. If the interior noise study indicates interior standard is exceeded, then the homes/dwelling units will have air-conditioning or mechanical ventilation and sound-rated windows, to reduce noise to an acceptable level.

Therefore, an interior noise study shall be prepared for the following lots:

- Neighborhood 3, Lots 26 through 49, 112, 113, 124 through 132, 209 through 235, 240, 244 through 248, and 271 through 273
- Neighborhood 4, Lots 281 through 287, 348 through 360, and 618 through 629
- Neighborhood 5, Lots 1161 through 1174.

Commercial Development Operational Noise Mitigation

Commercial development noise could be mitigated by limiting the hours of operation, designing site plans to minimize areas of noise exposure to adjacent residences, selecting and locating HVAC equipment to comply with the County of San Diego Noise Ordinance, and/or constructing intervening noise barriers.

M-NOI-3a On each site plan, noise generation shall not exceed the allowable 1-hour average noise levels at the property line, as defined in Section 36.404 of the County of San Diego Noise Ordinance. For the boundary between the residential and commercial areas, the maximum allowable level would be 57.5 dB from 7:00 a.m. to 10:00 p.m. and 52.5 dB from 10:00 p.m. to 7:00 a.m.

M-NOI-3b On each commercial site plan a noise study shall be completed to the satisfaction of the Director of the DPLU that usable exterior areas shall not be exposed to noise levels greater than a peak 1-hour average sound level of 60 dB. Interior noise levels for noise-sensitive commercial uses, should not exceed a 1-hour average sound level of 50 dB due to outside noise (e.g., schools or libraries).

M-NOI-4 Complete, to the satisfaction of the Director of the DPLU, an acoustical analysis performed by a San-Diego-County-approved acoustical engineer, demonstrating that the present and anticipated future noise levels for the interior of noise-sensitive commercial land uses will comply with M-NOI-3b. The interior noise level, due to outside noise, should not exceed one-hour average sound level 50 dB for rooms that are usually occupied only a part of the day (schools, libraries, or similar). Also, the interior noise level within the habitable rooms of the fire station should not exceed 45 dB CNEL. Future traffic noise levels estimates must utilize a LOS “C” traffic flow for Merriam Mountains Parkway as a Boulevard and Deer Springs Road as a Prime Arterial classification, which are the designated General Plan Circulation Element buildout roadway classifications.

Off-Site Traffic Noise Mitigation

M-NOI-5 M-NOI-8 includes the construction of permanent noise barriers to reduce noise so that the noise level increase does not exceed the existing conditions or the significance threshold standards.

Construction Noise Mitigation

M-NOI-6a Mitigation measures include selecting a quieter rock drill, constructing a temporary noise barrier around the drill rig, reducing the number of drilling hours per day, increasing the setback distances between the property lines and drill rigs/blasting areas, or a combination of these four methods. A noise monitoring plan will be implemented to demonstrate that the following measures have been completed to the satisfaction of the County Director of DPLU.

- A rock drill with a lower noise level than the noisiest rock drills can be used with a corresponding smaller setback distance. For example, a drill rig that generates a noise level of 89 dB at 50 feet would require a minimum setback distance of 250 feet from the closest existing or project-occupied residence. Alternatively, based on the distances to the closest noise-sensitive receivers, quieter rock drills, such as a rock drill with a sound level of approximately 85 dB at 50 feet in the direction of the noise-sensitive receiver, would mitigate the noise impact at the property line adjacent to the closest noise-sensitive receptor to the drilling and blasting areas without the need for a temporary barrier.

- A temporary noise barrier located around the rock drill could also be used. The temporary noise barrier will be constructed by the project applicant when noise monitoring exceeds defined levels of significance. The height of the noise barrier would depend on several factors, including the rock drill noise level and the distance from and elevation of the drill rig relative to the receiver. Depending on various geometric and design factors, a temporary noise barrier could attenuate the drilling noise by approximately 5 to 15 dB. Assuming that a temporary noise barrier is constructed approximately 20 feet from the drill rig, that the property line adjacent to the closest receptor is 50 feet from the drill rig, and that the drill rig and receiver are at the same elevation, then a 14-foot-high noise barrier would mitigate the 8-hour average noise level to 75 dB at the property line.

  Where a noise barrier is deemed necessary, a minimum 12-foot-high noise barrier shall be constructed to reduce the noise level to an 8-hour average sound level of 75 dB or less at the property line of an occupied residence. A noise monitoring plan will be required if a noise barrier is located within 70 feet of the property line of an occupied residence. The noise barrier would be

temporary for approximately 6 months at any one location. Six months was selected as a conservative time frame because it is unlikely that any construction operation would be occurring for a longer duration in close proximity to a residence given the construction phasing plan.

The temporary barrier could be constructed of minimum 3/4-inch-thick plywood with R-11 fiberglass insulation batts attached to the interior of the panels. Alternatively, temporary portable barriers, made from a variety of materials, are available from various noise control manufacturers (e.g., Empire Acoustical Systems, Industrial Acoustics Company, and Kinetics Noise Control).

In addition, the proposed project would conduct blasting activities consistent with the requirements contained within a blasting permit for the County of San Diego and USBM. These items may include but not be limited to the following:

a. Pre-blast inspection of all structures within 300 feet of blasting site unless inspection is waved by the owner/occupant.

b. Identify the site and location of planned blasting and hours of operation (blasting to be conducted between 7:00 a.m. and 5:00 p.m. Monday through Saturday).

c. Notification of blasting activities to all property owners within 600 feet of the blasting area. This notification shall describe expected period and frequency with which the blasting shall occur and give a contact phone number for any questions or complaints. All complaints shall be responded to in a method deemed satisfactory to the County of San Diego Director of Planning.

d. Warning system information.

e. Compliance with local, state, and federal laws.

f. The blasting contractor shall monitor and record vibration and airblast for major blasts (as defined in Section 35.37701.2 of the County Code of Regulation Ordinances) within 600 feet, or minor blasts within 300 feet of residences and other occupied structures. If permission cannot be obtained to record at said location, recording shall be accomplished at some closer site in line with the structure. Specific locations, and distances where

airblast and vibration are measured, shall be documented in detail along with measured airblast and vibration amplitudes.

1. Blast vibration and airblast are to be within the recommended frequency-dependent limits contained in the USBM regulations as seen on Figure 2.4-9B at the location of any residential dwelling, business, public building, school, church, or community or institutional building outside the permit area. If blasting is found to exceed specified levels, blasting shall cease, and alternative blasting or excavation methods that result in the specified levels not being exceeded shall be employed.

2. All structures in the vicinity of the blasting area not listed above, such as water towers, pipelines, and other utilities etc., shall be protected from damage by the blaster on a case-by-case basis.

g. Pre-blast inspection reports shall be retained by the blaster and, upon a complaint of alleged damage, the blaster shall cause a copy of the report to be immediately filed with the Sheriff. A copy shall also be sent to any individual who is directly involved in the complaint, upon their request.

h. The blaster shall cause an approved inspector to conduct a post-blast inspection of all structures for which written complaints alleging blast damage have been received. A written report of such inspection shall be immediately filed with the Sheriff and delivered or sent to individuals directly involved in any alleged damage within sixty (60) days of receipt of a complaint.

i. A disclosure statement shall be provided to home buyers within the project site, stating that they will be exposed to noise from construction activities during the remaining phases of development.

M-NOI-6b Prior to approval of the grading and improvement plans for Tentative Map 5381RP1, the following specific conditions shall be placed:

Prior to the start or onset of drilling operations, provide a letter report to the satisfaction of the Director of the DPLU that certifies that a San-Diego-County-approved acoustical consultant has tested the rock drills to document that their on-site performance shall not exceed 89 dB at 50 feet or less. The report shall summarize the results of the sound test and method of compliance with the County of San Diego Noise Ordinance criteria (i.e., demonstrate that the rock

drilling would be located far enough from the property lines or that a temporary noise barrier around the drill would mitigate the 8-hour average noise level to 75 dB or less at the adjacent property lines). The report shall be approved by the County of San Diego prior to commencement of drilling. Occupancy shall be phased so that the closest occupied residence to a blasting or drilling area is located a minimum of 700 feet away as part of the grading plan permit process.

M-NOI-6c A disclosure statement shall be provided to home buyers within the project site, stating that they will be exposed to noise from construction activities during the remaining phases of development.

Off-Site Traffic and Construction Noise Mitigation for Deer Springs Road

M-NOI-7a A temporary noise barrier with a minimum height of 12 feet shall be placed adjacent to the mobile home park along the southern perimeter of construction activities within the existing right-of-way, to reduce to a sound level of 75 dB Leq or less (see Table 2.4-12A). The barrier shall be constructed with a minimum of 3/4-inch-thick plywood with R-11 fiberglass insulation batts attached to the interior of the panels. Alternatively, temporary portable barriers, made from a variety of materials, are available from various noise control manufacturers (i.e., Empire Acoustical Systems, Industrial Acoustics Company, and Kinetics Noise Control). The noise barrier should be installed just prior to Deer Springs Road grading activities adjacent to the mobile home park. The temporary barrier can be removed as soon as is practical after the grading has been completed, the 6-foot noise barrier (as shown on Figure 2.4-14A and described in M-NOI-8) shall be constructed.

M-NOI-7b Construct 10-foot-high temporary noise barriers adjacent to four residences as depicted on Figures 2.4-20A through 2.4-20D and the Golden Door Property where commercial structures are located (see Table 2.4-12A and 2.4-12B). The temporary noise barriers shall be constructed with a minimum of 0.75-inch-thick plywood with R-11 fiberglass insulation batts attached to the interior of the panels. Alternatively, temporary portable barriers, made from a variety of materials, are available from various noise control manufacturers (i.e., Empire Acoustical Systems, Industrial Acoustics Company, and Kinetics Noise Control). In addition, as soon as practical after initial grading adjacent to the sensitive receptors, the permanent noise barriers as shown on Figures 2.4-14A through 2.4-14E shall be constructed.

M-NOI-7c Residents and business owners fronting Deer Springs Road and Twin Oaks Valley Road shall be notified at least one week prior to grading operations when it will be within 300 feet of their property.

M-NOI-7d. Contractors shall be required to have and maintain mufflers of original equipment grade or better on all engines. This also applies to subcontractors with haul trucks.

M-NOI-8 Permanent noise barriers approximately 6 to 8 feet in height, at selected locations along Deer Springs Road, will reduce noise that affects identified sensitive receptors so that the noise level increase does not exceed the existing conditions or the significance threshold standards (see Tables 2.4-12A and 2.4-12B). The location of the noise barrier is based on preliminary road improvement design plans and is depicted on Figures 2.4-14A through 2.4-14E. The applicant will construct the required permanent noise barriers as part of the construction improvements along Deer Springs Road to reduce project and cumulative noise impacts to off-site receptors.

2.4.7 Conclusion

Table 2.4-13 provides a summary of noise impacts, proposed mitigation, and level of significance after mitigation.

The proposed project would result in future noise levels that would exceed the 60 dB CNEL threshold, due to the traffic noise at Neighborhood 1, Lots 4 through 6 and 9 through 12 near Merriam Mountains Parkway, and Neighborhood 2, Lots 15 through 25 near Meadow Park Lane and Deer Springs Road (Impact NOI-1). Mitigation measures M-NOI-1a through M-NOI-1c, require the project to complete an acoustical analysis demonstrating that the present and anticipated future noise levels for the interior and exterior of the noise-sensitive land uses will not exceed the allowable sound level limit of the Noise Element of the San Diego County GP. M-NO1-1a through M-NOI-1c, include construction of noise barriers, setbacks, placement of a Noise Protect Easement, architectural design features, noise protection easements, etc., would reduce exterior noise levels at the identified lots to less than 60 dB CNEL according to noise modeling and calculations. Therefore, the mitigation reduces impacts to less than significant.

The majority of the single-family lots adjacent to Merriam Mountains Parkway and Lots 124 through 127 and 129 through 132 in Neighborhoods 3 and 4 would exceed the 60 dB CNEL threshold (Impact NOI-2). Mitigation measures M-NOI-2a and M-NOI-2b, which include the construction of noise barriers at identified locations in addition to a Noise Protection Easement, would reduce interior and exterior noise levels to a level below significance.

The Estate Lots noise level would exceed 60 dB CNEL at Lots 1175 through 1177 (Impact NOI-2). Mitigation measures M-NOI-2c and M-NOI-2d, which include construction of noise barriers and that homes be limited to a single story, would reduce exterior noise levels to less than 60 dB CNEL according to noise modeling and calculations. Therefore, the mitigation reduces impacts to less than significant. Building plans for the homes must demonstrate that indoor noise levels not exceed a CNEL of 45 dB. Typically, with the windows open, the building shells of homes provide approximately 15 dB of noise attenuation. Through the incorporation of mitigation for exterior noise levels and measure M-NOI-2e, which requires an interior noise study to be completed based upon the building design, interior noise levels at identified lots will be reduced to a level below significance.

For noise created by proposed commercial development, exterior use areas that exceed a 1-hour average sound level of 60 dB or exceed 1-hour average sound level 50 dB for noise-sensitive interior uses, or exceed the property line requirements stated in the County of San Diego Noise Ordinance, would be considered a significant impact (Impact NOI-3). Mitigation measures M-NOI-3a and M-NOI-3b would include measures such as a “D1” zoning designator for the commercial lots, because noise modeling and calculations indicate that site design measures (i.e., noise barriers, setbacks, building orientation or a combination of these methods), can feasibly reduce impacts to a level below significance.

Habitable rooms within the fire station are considered noise sensitive. Therefore, in the event interior noise levels at habitable rooms exceed a 1-hour average sound level of 45 dB CNEL, impacts would be significant (Impact NOI-4). Mitigation measure M-NOI-4 would include an acoustical analysis demonstrating that the anticipated future noise levels for the interior of noise-sensitive land uses will comply with County requirements prior to occupancy of any structures.

As seen in Table 2.4-8B, the noise level increase associated with traffic along Deer Springs Rod at sensitive receptor 18 would increase by approximately 4 dB CNEL. The project’s noise contribution would be considered a direct impact (Impact NOI-5). With incorporation of mitigation measure M-NOI-8, noise modeling and calculations indicate that noise barriers would reduce noise levels to existing homes to a level below significance

The proposed project could result in a significant noise impact during construction activities if drilling and blasting activities occur within 700 feet of the existing or project-occupied residences (Impact NOI-6). Mitigation measures M-NOI-6a, M-NOI-6b, and M-NOI-6c would include construction of temporary noise barriers and construction equipment meeting certain specifications, which would reduce this impact to a level below significance according to the noise modeling and calculations found in the Noise Analysis.

During the widening of Deer Springs Road, the project would result in a short-term construction noise impact at approximately six existing residences located along the south side of Deer Springs Road near Merriam Mountains Parkway and four residences located along Deer Springs Road. In addition, the County also considers construction noise impacts during construction to non-noise-sensitive uses such as commercial and industrial uses. The Golden Door has several buildings used for commercial purposes adjacent to Deer Springs Road. At these buildings the 8-hour average noise level could range up to approximately 80 dB which would exceed the County's construction Noise Ordinance criterion. (Impact NOI-7). Noise impacts would primarily occur during grading when the roadbed is being prepared. The grading activities would occur for approximately 3 to 4 months. However, the time period of the significant construction noise impact would be substantially less than that at any one residence, because the equipment would operate with various load cycles and would be moving to different locations. After the roadbed grading is established, other road widening construction activities, such as base preparation and paving, would occur but would not generate significant construction noise impacts.

Mitigation measures M-NOI-7a through M-NOI-7d would include placing a temporary noise barrier adjacent to construction activities, in an attempt to reduce the noise levels during construction below a 8-hour average sound level of 75 dB or less; however, due to driveway openings and proximity to property lines the noise impacts are conservatively determined to remain significant and unavoidable during construction. The placement of a temporary noise barrier adjacent to the mobile home park and four single-family residences would reduce noise levels during construction for residences located within the mobile home park and along Deer Springs Road; however impacts would remain significant and unavoidable during construction.

Per the County of San Diego Noise Ordinance Amendment Effective January 9, 2009, Section 36.423 a Variance from the Noise Ordinance for construction noise is subject to approval for a person who proposes to perform non-emergency work on a public right-of-way, public transportation facility or some other project for the benefit of the general public, who is unable to conform to the requirements of the Noise Ordinance, may apply to the County for a variance authorizing the person to temporarily deviate from the Noise Ordinance requirements.

Therefore, the project applicant should apply for a noise variance per Section 36.423 of the County of San Diego Noise Ordinance Amendment effective January 9, 2009, A variance can be used for projects that propose to perform non-emergency work on a public right-of-way, public transportation facility or some other project for the benefit of the general public who is unable to conform to the requirements of the Noise Ordinance during construction. After the grading activities, construction of permanent noise barriers at identified locations (see Figures 2.4-14A

through 2.4-14E) would mitigate cumulative traffic noise impacts along Deer Springs Road to a level below significance (see Impact NOI-8).

The project would contribute 4,710 ADT along Buena Creek Road, which would add 1 dB to the near-term cumulative noise increase of 4 dB CNEL. This 4 dB CNEL cumulative noise level increase would exceed the significance threshold at the backyards of approximately 30 residences along Buena Creek Road between Monte Vista Drive and Twin Oaks Valley Road (Impact NOI-8). The future noise levels would range between approximately 61 and 70 dB CNEL at the noise-sensitive areas of these residences. These homes could not be mitigated with a noise barrier at the road because of such conditions as the homes being above the road or having driveway openings along Buena Creek Road that would limit the potential noise reduction. In addition, the feasibility of implementing this measure depends in part on obtaining permission from private property owners or San Diego County encroachment permits for noise mitigation within the Right-of-Way. Without these barriers, the cumulative traffic noise impact at Buena Creek Road (Impact NOI-8) is significant and unavoidable.

The widening of Deer Springs Road between Twin Oaks Valley Road and I-15 would result in some traffic lanes located closer to the existing mobile homes and single-family homes located along Deer Springs Road and proposed Merriam Mountains Parkway. The combination of the proposed physical road changes and road volume increases would increase the existing-plus-project-plus-cumulative noise level by up to 4 dB, resulting in a cumulatively considerable impact at these locations (Impact NOI-8). With incorporation of mitigation measure M-NOI-8, noise modeling and calculations indicate that noise barriers would reduce noise levels to existing homes to a level below significance (see Table 2.4-11). It should be noted that the sound wall depicted on Figure 2.4-14B for Sensitive Receptor 5 would be offset from this receiver location. This is because there is existing topography directly between the receptor location and Deer Springs Road that would continue to attenuate a portion of the traffic noise from this road. The sound wall would reduce some of the traffic noise west of this receptor site where the topography would not shield the receptor.

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TABLE 2.4-1
Guidelines of Significance for
Ground-Borne Vibration and Noise Effects1

Land Use Category	Ground-Borne Vibration Impact Levels (in/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations (research & manufacturing facilities with special vibration constraints).	0.0018[3]	0.0018[3]	Not applicable	Not applicable
Category 2: Residences and buildings where people normally sleep (hotels, hospitals, residences, & other sleeping facilities).	0.0040	0.010	35 dB	43 dB
Category 3: Institutional land uses with primarily daytime use (schools, churches, libraries, other institutions, & quiet offices).	0.0056	0.014	40 dB	48 dB
Concert halls, TV studios, and recording studios	0.0018	0.0018	25 dB	25 dB
Auditoriums	0.0040	0.010	30 dB	38 dB
Theaters	0.0040	0.010	35 dB	43 dB

Notes:

[1] Frequent Events are defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

[2] Infrequent Events are defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

[3] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[4] Vibration sensitive equipment is not sensitive to ground-borne noise.

[5] For historic buildings and ruins, the allowable upper limit for continuous vibration to structures is identified to be 0.056 in/sec rms. Transient conditions (single-event) would be limited to approximately twice the continuous acceptable value.

[6] For Categories 2 and 3 with occupied facilities, isolated events, such as blasting, are significant when peak particle velocity (PPV) exceeds 1 in/sec. Non-transportation vibration sources, such as impact pile drivers or hydraulic breakers, are significant when their PPV exceeds 0.1 in/sec. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in San Diego County.

TABLE 2.4-2
Sound Level Limits

Zone	Applicable Limit 1-Hour Average Sound Level (dB)		
	7:00 a.m. to 7:00 p.m.	7:00 p.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
R-S, RD, R-R, R-HM, A-70, A-72, S-80, S-81, S-87, S-90, S-92, R-V, and R-U use regulations with a density of less than 11 dwelling units per acre	50	50	45
R-RO, R-C, R-M, C-30, S-86, R-V, R-U, and V5 use regulations with a density of 11 or more dwelling units per acre	55	55	50
S-94, V4, and all other commercial zones	60	60	55
V1	60	55	55
V2	60	55	50
V3	70	70	65
M-50, M-52, and M-54	70	70	70
S-82, M 56, and M-58,	75	75	75
S88 (See S88 footnote below)			

Notes:

- If the measured ambient level exceeds the applicable limit noted above, the allowable 1-hour average sound level will be the ambient noise level. The ambient noise level will be measured when the alleged noise violation source is not operating.
- The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts, provided however, that the 1-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, will be 75 dB at the property line regardless of the zone where the extractive industry is actually located.

S88 zones are Specific Planning Areas which allow different uses. See County Noise Ordinance for specific information..

TABLE 2.4-3
Maximum Sound Level (Impulsive) Measured at Occupied Property

Occupied Property Use	Maximum Sound Level (dB)
Residential, village zoning, civic use	82
Agricultural, commercial, industrial use	85

TABLE 2.4-4
Maximum Sound Level (Impulsive) Measured at Occupied Property for Public Road Projects

Occupied Property Use	Maximum Sound Level (dB)
Residential, village zoning, civic use	85
Agricultural, commercial, industrial use	90

Note:
The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

TABLE 2.4-5A
Measured Hourly Average Sound Levels (dB)
(Site 1A)

Start Hour	Average Sound Level (dB)	Maximum Sound Level (dB)	Minimum Sound Level (dB)
0:00	61.5	72	45
1:00	60	69.5	40
2:00	59.5	68.5	39.5
3:00	61.5	70	45.5
4:00	66	75.5	52.5
5:00	71	75.5	63.5
6:00	72	79.5	66
7:00	71.5	76	68
8:00	70.5	76	64.5
9:00	68	75	63
10:00	68.5	75	58
11:00	66.5	81	58
12:00	67.5	75.5	59
13:00	66.5	73	59.5
14:00	66	73.5	59.5
15:00	67	80	60
16:00	68	74.5	63
17:00	68.5	78.5	64
18:00	66.5	73	61
19:00	66.5	72	58.5
20:00	65.5	71	59.5
21:00	65	71.5	58.5
22:00	64	74	52.5
23:00	62.5	72	50.5
CNEL	73		

TABLE 2.4-5B
Measured Hourly Average Sound Levels (dB)
(Site 1B)

Start Hour	Average Sound Level (dB)	Maximum Sound Level (dB)	Minimum Sound Level (dB)
0:00	45	59	38
1:00	43	54	37
2:00	44	57	36
3:00	46	58	36
4:00	50	60	39
5:00	54	62	48
6:00	54	66	48
7:00	52	64	43
8:00	49	61	43
9:00	49	67	42
10:00	49	69	39
11:00	49	73	41
12:00	46	62	40
13:00	47	75	40
14:00	52	76	41
15:00	50	61	40
16:00	50	67	40
17:00	52	65	40
18:00	51	64	46
19:00	51	64	47
20:00	50	62	44
21:00	49	64	43
22:00	49	62	41
23:00	46	57	39
CNEL	56		

TABLE 2.4-6A
Measured Noise Levels and Traffic Volumes

Site	Description	Date Time	Leq[1]	Cars	MT[2]	HT[3]
2	Approximately 1,800 ft to center line of I-15	11/10/04 2:45 to 3:05 p.m.	52	2,752	76	162
3	Approximately 1,150 ft from center line of I-15	11/10/04 3:45 to 4:05 p.m.	61	3,318	51	100
4	Approximately 430 ft to center line of I-15	2/23/05 2:35 to 2:55 p.m.	70	2,628	44	84
5	Sarver Lane near proposed Meadow Park Lane	2/23/05 3:30 to 3:50 p.m.	45	1	0	0
6	Approximately 45 ft to center line of Deer Springs Road	8/8/06 2:20 to 2:40 p.m.	70	278	5	4
7	Approximately 30 ft to center line of Deer Springs Road	8/8/06 1:45 to 2:05 p.m.	68	235	7	6
8	Approximately 65 feet to center line of Twin Oaks Valley Road	12/10/08 1:40 to 2:00 p.m.	66	272	5	5

Notes:
[1] Equivalent Continuous Sound Level (Time-Average Sound Level)
[2] Medium Trucks
[3] Heavy Trucks
Temperature 60° F, relative humidity 60%, 6 MPH west wind, clear sky (11/10/04)
Temperature 69° F, relative humidity 40%, 3 MPH, light and variable, cloudy sky (2/23/05)

TABLE 2.4-6B
Measured Hourly Average Sound Levels
(dB) (Site 8)

Start Hour	Average Sound Level (dB)	Maximum Sound Level (dB)	Minimum Sound Level (dB)
0:00	61	83	33
1:00	59	79	30
2:00	58	78	30
3:00	62	79	29
4:00	65	80	29
5:00	70	84	35
6:00	73	89	35
7:00	72	82	45
8:00	72	82	37
9:00	71	88	38
10:00	71	86	36
11:00	70	85	35
12:00	70	84	37
13:00	71	89	36
14:00	72	86	41
15:00	73	84	45
16:00	70	82	49
17:00	67	81	49
18:00	70	79	42
19:00	70	80	41
20:00	69	87	38
21:00	68	81	40
22:00	65	84	36
23:00	64	82	36
CNEL	74		

TABLE 2.4-7
Future CNEL Noise Contours and Traffic Data

Roadway	Lanes	Design Speed	Volume	Vehicle Mix			Distances from Center Line to CNEL Contours (ft)			
				Cars	MT	HT	75 dB	70 dB	65 dB	60 dB
Merriam Mountains Parkway										
N-5 to Meadow Park Lane	2	40	5,300	98.5%	1.0%	0.5%	R/W1	R/W1	45	120
Meadow Park Lane to N-3	2	40	6,040	98.5%	1.0%	0.5%	R/W1	R/W1	50	140
N-3 to N-1	4	40	7,730	98.5%	1.0%	0.5%	R/W1	R/W1	60	180
N-1 to Retail	4	40	15,300	98.5%	1.0%	0.5%	R/W1	R/W1	120	320
Retail to Deer Springs Road	4	40	13,770	98.5%	1.0%	0.5%	R/W1	R/W1	110	290
Meadow Park Lane										
Merriam Mountain Pkwy. to N-2	2	30	8,000	98.5%	1.0%	0.5%	R/W1	R/W1	R/W1	95
N-2 to Deer Springs Road	4	30	8,200	98.5%	1.0%	0.5%	R/W1	R/W1	R/W1	100
Deer Springs Road										
Meadow Park Lane to Merriam Mountain Pkwy.	4	55	45,100	96%	2%	2%	90	255	660	1,370
Merriam Mountain Pkwy. to Mesa Rock	4	55	49,300	96%	2%	2%	100	280	720	1,500

Notes:
[1] Within right-of-way
MT = Medium Trucks
HT = Heavy Trucks
N-5 Neighborhood 5

TABLE 2.4-8A
Off-Site Traffic Noise Level Increase

Street (Segment)	Exist. ADT	Existing w/Project ADT	CNEL Increase[1] (dB)	Near-Term Cumulative w/o Project ADT	Near-Term Cumulative w/Project ADT	CNEL Increase[2] (dB)	CNEL Increase[3] (dB)	Percent[4] (dB)
Deer Springs Road								
Twin Oaks Valley Rd. to Meadow Park Ln.	18,400	28,410	2	23,350	33,360	3	2	60
Meadow Park Ln. to Merriam Mt. Pkwy.	16,300	27,730	2	21,960	33,390	3	2	58
Merriam Mt. Pkwy. to Mesa Rock Rd.	16,300	35,440	3	21,830	40,970	4	3	68
Mesa Rock Rd. to I-15 SB Ramps	22,300	44,430	3	27,830	49,960	4	3	73
I-15 SB Ramps to I-15 NB Ramps	14,900	29,000	3	19,130	33,230	3	2	69
I-15 NB Ramps to Champagne	11,800	18,400	2	17,890	24,490	3	1	43
Mountain Meadow Road								
East of Champagne	7,200	9,820	1	13,030	15,650	3	1	24
Twin Oaks Valley Road								
West of Deer Springs Rd.	2,300	2,660	1	2,990	3,550	2	<1	25
Deer Springs Rd. to Buena Creek Rd.	18,200	25,930	1	25,230	30,960	2	1	54
Buena Creek Rd. to Cassou Rd.	18,200	22,540	1	24,250	28,590	2	1	36
Cassou Rd. to La Cienega Rd.	19,350	22,880	1	25,420	28,950	2	1	32
La Cienega Rd. to Windy Wy.	24,500	28,030	1	33,080	36,610	2	<1	25
Windy Wy. to Borden Rd.	24,500	28,030	1	32,770	36,300	2	<1	26
Borden Rd. to Richmar Ave.	30,000	32,570	<1	44,100	46,670	2	<1	13
Richmar Ave. to San Marcos Blvd.	28,300	30,870	<1	43,090	45,660	2	<1	12
San Marcos Blvd. to SR 78 WB Ramps	41,500	42,430	<1	60,310	70,240	2	<1	3
Buena Creek Road								
West of Monte Vista Dr.	10,900	13,470	1	16,430	19,000	2	1	26
Monte Vista Dr. to Twin Oaks Valley Rd.	10,600	15,310	2	17,840	23,650	4	1	28
Monte Vista Drive								
Foothill Dr. to Buena Creek Rd.	8,700	10,600	1	10,900	13,600	2	1	34
Champagne Blvd.								
Gopher Cyn. to Lawrence Welk Dr.	5,500	6,590	1	7,480	9,070	3	1	26
Lawrence Welk Dr. to Mt. Meadow Rd.	6,600	8,030	1	9,080	10,510	2	1	31
Mesa Rock Road								
Deer Springs Rd. to N. Centre City Pkwy.	900	3,730	6	1,030	3,860	6	6	91

Notes:
[1] Existing vs. existing-plus-project noise increase.
[2] Existing vs. near-term cumulative with project.
[3] Project contribution to near-term cumulative.
[4] Project decibel percentage contribution to near-term cumulative noise level increase.
Sound levels are rounded to the nearest whole dB CNEL.
Bold = Exceeds Significance Threshold

TABLE 2.4-8B
Existing and Future CNEL at Various Noise Receptor Locations Along Deer Springs Road and Twin Oaks Valley Road

Receptor	Existing	Existing + Project [1]	Noise Level Increase[2]	Existing + Cumulative[3]	Existing + Project + Cumulative[4]	Noise Level Increase[5]
1	63	66	3	64	67	4
2	64	67	3	66	68	4
3	66	69	3	68	70	4
4	67	70	3	68	71	4
5	64	67	3	65	68	4
6	66	68	2	67	69	3
7	65	67	2	66	68	3
8	60	60	0	61	61	1
9	59	60	1	61	61	2
10	62	62	0	63	63	1
11	61	62	1	63	63	2
12	68	69	1	69	70	2
13	62	64	2	63	65	3
14	69	72	3	70	73	4
15	65	65	0	66	66	1
16	71	71	0	72	72	1
17	62	65	3	64	66	4
18	62	66	4	63	67	5
19	63	66	3	64	67	4
20	66	68	2	67	69	3
21	65	67	2	67	68	3
22	64	66	3	66	67	3
23	65	67	2	67	68	3
24	68	70	2	70	71	3
25	63	65	2	64	66	3
26	67	69	2	68	70	3
27	66	68	2	67	69	3
28	68	70	2	69	71	3
29	63	65	2	64	66	3
30	66	68	2	67	69	3
31	65	67	2	66	68	3

Notes:
1 Existing Plus Project Traffic Volumes; 4-Lane Deer Springs Road
2 Existing vs. Existing Plus Project
3 Existing Plus Cumulative Project Traffic Volumes; Existing Deer Springs Road
4 Existing Plus Project Plus Cumulative Projects Traffic Volumes; 4-Lane Deer Springs Road
5 Existing vs. Existing Plus Project Plus Cumulative Projects
Bold = Exceeds Significance Threshold
N/A = Not Applicable
Sound levels rounded to the nearest whole dB CNEL
The existing + project, existing + project + cumulative noise levels incorporate the realignment and widening of Deer Springs Road

TABLE 2.4-9
Summary of On-Site Construction Phasing and Occupancy

Construction Phase	Residential Neighborhoods Anticipated to be Occupied	Year of First Occupancy	Distance from Grading to Closest Lot	Distance from Blasting/Drilling to Closest Lot	Distance from Rock Crushing to Closest Lot	Potentially Significant Noise Impact
A	None		N/A	N/A	N/A	No
B	Neighborhoods 1 and 2, PA 3	2009	150' (Neighborhood 2, PA 3)	500' (Neighborhood 2, PA 3)	1,800' (Neighborhood 1, PA 6)	Yes (blasting/drilling)
C	Neighborhoods 1 and 2	2011	300' (Neighborhood 2, PA 2)	500' (Neighborhood 2, PA 2)	1,500' (Neighborhood 2, PA 2)	Yes (blasting/drilling)
D	Neighborhoods 1, 2, 3, and 4	2013	100' (Neighborhood 4, PA 2	500' (Neighborhood 4, PA 2)	600' (Neighborhood 4, PA 2)	Yes (blasting/drilling)
E	Any	2015	>1 mile	>1 mile	>1 mile	No

Note:
PA = Planning Area

TABLE 2.4-10
Noise Barrier Mitigation Summary for Proposed Single-Family Homes

Neighborhood	Planning Area	Lot	Pad Elevation (ft)	Top of Barrier (ft)	Length of Return Wall (ft)	Unmitigated First Floor CNEL	Mitigated First Floor CNEL
3	2	26	1,251	1,257	85	65	60
3	2	27	1,253	1,259	NA	65	60
3	2	28	1,256	1,262	NA	65	60
3	2	29	1,258	1,264	NA	65	60
3	2	30	1,261	1,267	NA	65	60
3	2	31	1,264	1,270	NA	65	60
3	2	32	1,267	1,273	NA	65	60
3	2	33	1,270	1,276	NA	65	60
3	2	34	1,273	1,279	NA	65	60
3	2	35	1,276	1,282	NA	65	60
3	2	36	1,280	1,286	NA	65	60
3	2	37	1,283	1,289	NA	65	60
3	2	38	1,288	1,294	NA	65	60
3	2	39	1,292	1,298	NA	65	60
3	2	40	1,296	1,302	NA	65	60
3	2	41	1,299	1,305	NA	65	60
3	2	42	1,303	1,309	NA	65	60
3	2	43	1,307	1,313	NA	65	60
3	2	44	1,310	1,316	NA	66	60
3	2	45	1,312	1,318	NA	66	60
3	2	47	1,317	ROW	Varies	65	60
3	2	48	1,318	ROW	Varies	65	60
3	2	49	1,319	ROW	Varies	64	59
3	1	112	1,324	ROW	Varies	63	58
3	1	113	1,324	ROW	Varies	63	58
3	1	124	1,292	1,298	NA	68	60
3	1	125	1,291	1,297	NA	68	60
3	1	126	1,291	1,297	NA	68	60
3	1	127	1,291	1,297	NA	64	59
3	1	129	1,295	1,301	NA	64	59
3	1	130	1,284	1,290	NA	64	59
3	1	131	1,281	1,287	NA	64	59
3	1	132	1,279	1,285	NA	64	59
3	2	209	1,284	1,290	NA	61	56
3	2	210	1,285	1,291	NA	64	59
3	2	211	1,285	1,291	NA	64	59
3	2	212	1,286	1,292	NA	64	59

TABLE 2.4-10 (CONT.)

Neighborhood	Planning Area	Lot	Pad Elevation (ft)	Top of Barrier (ft)	Length of Return Wall (ft)	Unmitigated First Floor CNEL	Mitigated First Floor CNEL
3	2	213	1,287	1,293	NA	64	59
3	2	214	1,288	1,294	NA	64	59
3	2	215	1,289	1,295	NA	64	59
3	2	216	1,290	1,296	NA	64	59
3	2	217	1,291	1,297	NA	64	59
3	2	218	1,291	1,297	NA	64	59
3	2	219	1,292	1,298	NA	64	59
3	2	220	1,291	1,297	NA	64	59
3	2	221	1,291	1,297	NA	64	59
3	2	222	1,291	1,297	NA	64	59
3	2	223	1,290	1,296	NA	64	59
3	2	224	1,290	1,296	NA	64	59
3	2	225	1,289	1,295	NA	64	59
3	2	226	1,287	1,293	NA	63	58
3	2	227	1,286	1,292	NA	63	58
3	2	228	1,284	1,290	NA	63	58
3	2	229	1,282	1,288	NA	63	58
3	2	230	1,280	1,286	NA	63	58
3	2	231	1,277	1,283	NA	63	58
3	2	232	1,275	1,281	NA	63	58
3	2	233	1,273	1,279	NA	63	58
3	2	234	1,272	1,278	NA	63	58
3	2	235	1,271	1,277	NA	61	56
3	3	240	1,269	1,275	70	65	60
3	3	244	1,293	1,299	90	61	56
3	3	245	1,296	1,302	NA	61	56
3	3	246	1,299	1,304	NA	61	56
3	3	247	1,302	1,308	NA	61	56
3	3	248	1,304	1,310	60	61	56
3	3	271	1,277	1,283	NA	64	59
3	3	272	1,276	1,282	NA	64	59
3	3	273	1,275	1,281	60	64	59
4	2	281	1,245	1,251	NA	62	57
4	2	282	1,245	1,251	NA	62	57
4	2	283	1,245	1,251	NA	62	57
4	2	284	1,246	1,252	NA	62	57
4	2	285	1,247	1,253	NA	62	57
4	2	286	1,248	1,254	NA	62	57
4	2	287	1,249	1,255	NA	63	58
4	2	348	1,289	1,295	75	61	56
4	2	349	1,288	1,294	NA	61	56

TABLE 2.4-10 (CONT.)

Neighborhood	Planning Area	Lot	Pad Elevation (ft)	Top of Barrier (ft)	Length of Return Wall (ft)	Unmitigated First Floor CNEL	Mitigated First Floor CNEL
4	2	350	1,288	1,294	NA	61	56
4	2	351	1,287	1,293	NA	61	56
4	2	352	1,287	1,293	NA	61	56
4	2	353	1,286	1,292	NA	62	57
4	2	354	1,286	1,292	NA	62	57
4	2	355	1,285	1,291	NA	62	57
4	2	356	1,285	1,291	NA	62	57
4	2	357	1,284	1,290	NA	62	57
4	2	358	1,283	1,289	NA	62	57
4	2	359	1,284	1,290	NA	63	58
4	2	360	1,283	1,289	NA	61	56
4	2	618	1,238	1,244	70	66	60
4	2	619	1,237	1,243	NA	66	60
4	2	620	1,237	1,243	NA	66	60
4	2	621	1,236	1,242	NA	66	60
4	2	622	1,236	1,242	NA	65	60
4	2	623	1,235	1,241	NA	65	60
4	2	624	1,235	1,241	NA	63	58
4	2	625	1,235	1,241	NA	63	58
4	2	626	1,234	1,240	NA	63	58
4	2	627	1,234	1,240	NA	63	58
4	2	628	1,233	1,239	NA	64	59
4	2	629	1,233	1,239	NA	64	59
5	3	1161	1,301	1,307	NA	61	56
5	3	1162	1,304	1,310	NA	61	56
5	3	1163	1,306	1,312	NA	61	56
5	3	1164	1,309	1,315	NA	61	56
5	3	1165	1,312	1,318	NA	62	57
5	3	1166	1,315	1,321	NA	62	57
5	3	1167	1,318	1,324	NA	62	57
5	3	1168	1,321	1,327	NA	63	58
5	3	1169	1,324	1,330	NA	63	58
5	3	1170	1,327	1,333	NA	63	58
5	3	1171	1,330	1,336	NA	63	58
5	3	1172	1,333	1,339	NA	63	58
5	3	1173	1,336	1,342	NA	63	58

TABLE 2.4-10 (CONT.)

Neighborhood	Planning Area	Lot	Pad Elevation (ft)	Top of Barrier (ft)	Length of Return Wall (ft)	Unmitigated First Floor CNEL	Mitigated First Floor CNEL
5	3	1174	1,337	1,342	30	63	58
Estate	1	1175[1]	749	755 to 759	See Figure 2.4-19	75	60
Estate	1	1176	756	762 to 765	See Figure 2.4-19	73	60
Estate	1	1177	753	761	See Figure 2.4-19	72	60

Note:
[1] Refer to Figure 2.4-8 for the location of the unmitigated first floor contour 75 dBA CNEL. The 75 dbA CNEL contour for lot 1175 is located outside of the buildable pad area along the edge of the pad site.
Note: Right-of-Way noise contour would be located within the existing right-of-way.

TABLE 2.4-11
Existing and Future and Mitigated CNEL at Various Noise Receptor Locations Along Deer Springs Road

Receptor	Existing	Existing + Project[1]	Existing + Cumulative[3]	Existing + Project + Cumulative[4]	Noise Level Increase[5]	Mitigated Noise Level
1	63	66	64	67	4	63
2	64	67	66	68	4	64
3	66	69	68	70	4	67
4	67	70	68	71	4	67
5	64	67	65	68	4	67
14	69	72	70	73	4	69
17	62	65	64	66	4	64
18	62	66	63	67	5	65
19	63	66	64	67	4	65

Notes:
[1] Existing Plus Project Traffic Volumes; 4-Lane Deer Springs Road
[2] Existing Plus Cumulative Project Traffic Volumes; Existing Deer Springs Road
[3] Existing Plus Project Plus Cumulative Projects Traffic Volumes; 4-Lane Deer Springs Road
[4] Existing vs. Existing Plus Project Plus Cumulative Projects
[5] Existing Plus Project Plus Cumulative Projects
Bold = Exceeds Significance Threshold
N/A = Not Applicable
Sound levels rounded to the nearest whole dB CNEL
The existing + project, existing + project + cumulative and mitigated noise levels incorporate the realignment and widening of Deer Springs Road

TABLE 2.4-12A
Temporary Barrier Noise Attenuation at Deer Springs Mobile Home Park

	Cross-Section			
	A	B	C	D
Source to Barrier	10	10	10	10
Barrier to Receiver	40	30	40	70
Receiver Height	965	981	987	992
Source Height	976	995	999	1005
Barrier Elevation	966	984	986	994
Barrier Height	12	12	12	12
Barrier Attenuation	11	11	6	8
Mitigated Sound Level	≤75	≤75	≤75	≤75

Note: All distances in feet, elevations in feet AMSL

TABLE 2.4-12B
Temporary Barrier Noise Attenuation at Sites 14, 15, 16, 19 and "Golden Door"

	Cross-Section				
	Site 14	Site 15	Site 16	Site 19	Golden Door
Source to Barrier	25	25	25	25	25
Barrier to Receiver	45	45	45	45	25
Receiver Height	803	788	783	727	800
Source Height	800	800	792	731	819
Barrier Elevation	792	786	780	722	800
Barrier Height	10	10	10	10	10
Barrier Attenuation	6	5	5	7	5
Mitigated Sound Level	≤ 75	≤ 75	≤ 75	≤ 75	≤ 75

Note: All distances in feet, elevations in feet AMSL

TABLE 2.4-13
Summary of Impacts

Impact Number	Location	Significant and Unavoidable Condition	Mitigation Measure	Feasible	Level of Significance after Mitigation	Resulting Condition
NOI-1	Neighborhoods 1 and 2 residential: Lots 4 through 6, 9 through 12, 15 through 25, inclusive	NSLU located within an area where future noise levels could exceed a 75 dB CNEL exterior and 45 dB CNEL interior due to traffic along I-15, Merriam Mountains Parkway, Meadow Park Lane, and Deer Springs Road	M-NOI-1a through M-NOI-1d, which include the following: - Setbacks - Noise Barriers - Site and Architectural Design - 8-foot-tall berm - Require a future noise study to be prepared - "D" Designator	Yes	Less than Significant	Noise levels will be reduced to 60 dB CNEL or less for exterior and 45 dB CNEL for interior with implementation of mitigation measures M-NOI-1a through M-NOI-1d.
NOI-2	Neighborhoods 3, 4, 5 and Estate Lots: Lots 26 through 49, 112, 113, 209 through 235, 240, 244 through 248, 271 through 273, 281 through 287, 348 through 360, 618 through 629 and 1161 through 1177, inclusive	NSLU located within an area where future noise levels could exceed a 60 dB CNEL exterior and 45 dB CNEL interior due to traffic noise along Merriam Mountains Parkway and I-15	M-NO1-2a through M-NOI-2e, which include the following: - - Noise Barriers - - Noise Protection Easement - - Require a future noise study to be prepared	Yes	Less than Significant	Noise levels will be reduced to 60 dB CNEL or less for exterior and 45 dB CNEL for interior with implementation of mitigation measures M-NOI-2a through M-NOI-2e.
NOI-3	Neighborhood 1: Commercial Lots 1 through 4, inclusive	NSLU located within an area where future noise levels could exceed a 60 dB hourly Leq exterior or 50 dB hourly Leq interior or habitable rooms that exceed a 1-hour average sound level of 45 dB CNEL due to equipment and traffic noise along I-15, Merriam Mountains Parkway and Deer Springs Road. Also, equipment noise	M-NOI-3a and M-NOI-3b, which include the following: - - "D1" Designator	Yes	Less than Significant	Noise levels at identified property lines will be reduced to compliance with County of San Diego Noise Ordinance Section 36.404, and to exterior Leq less than or equal to 60 dB hourly Leq and interior Leq less than or equal to 50 dB interior with implementation of mitigation measures M-NOI-3a and M-NOI-3b.
NOI-4	Habitable rooms within the proposed fire station	Future interior noise levels may exceed a 45 dB CNEL.	M-NOI-4, which includes the following - Require a future noise study to be prepared	Yes	Less than Significant	Noise levels at identified property lines will be reduced to compliance with County of San Diego noise requirements of a 1-hour average sound level of 45 dB or less CNEL.

TABLE 2.4-13 (CONT.)

Impact Number	Location	Significant and Unavoidable Condition	Mitigation Measure	Feasible	Level of Significance after Mitigation	Resulting Condition
NOI-5	Sensitive Receptor 18 located along Deer Springs Road (see Figure 2.4-14D).	Noise levels could increase by 4 dB CNEL for Sensitive Receptor 18.	M-NOI-5, which includes the construction of a noise barrier along the ROW	Yes	Less than Significant	Noise levels at identified property lines will be reduced by at least 5 dB and not exceed the existing ambient noise level with implementation of mitigation measure M-NOI-5.
NOI-6	On-site and off-site construction drill use in each Neighborhood	Potential exposure to noise levels that could exceed greater than 75 dB hourly Leq within 250 ft of occupied property lines	M-NOI-6a through M-NOI-6c, which include the following: - - Temporary noise barriers - - Noise monitoring	Yes	Less than Significant	Hourly Leq would be reduced to less than or equal to 75 dB during construction with implementation of mitigation measures M-NOI-6a through M-NOI-6c.
NOI-7	Off-site construction of Deer Springs Road/widening improvements	80 dB 8-hour average Leq at six existing residential properties within the Deer Springs Mobile Home Park, five single-family residences, commercial uses, industrial uses and the Golden Door..	M-NOI-7A through M-NOI-7D, which include the construction of temporary noise barriers, noticing adjacent property owners, etc.	Yes	Significant Unavoidable.	8-hour average sound level of 75 dB or less; however due to driveway openings and proximity to property lines the noise impacts are conservatively determined to remain significant and unavoidable during construction 8-hour average
NOI-8	Off-site Buena Creek Road project-related traffic noise between Monte Vista Drive and Twin Oaks Valley Road	30 existing residences adjacent to Buena Creek road could be exposed to sound levels ranging from 61 to 70 dB CNEL.	Mitigation determined infeasible	No—The proposed mitigation measure, due to unavailable access due to ROW acquisition	Cumulatively Significant and Unavoidable	Impacts would be significant and unavoidable due to noise levels ranging from 61 to 70 dB CNEL from traffic along Buena Creek Road.
NOI-8	Off-site Deer Springs Road project-related traffic noise between Twin Oaks Valley Road and I-15	Noise levels could increase by 4 dB CNEL for several existing residences at an adjacent mobile home park and five single-family residences	M-NOI-8, which includes the construction of noise barriers along the ROW	Yes	Less than Significant	Noise modeling and calculations indicate that noise barriers would reduce noise levels to existing homes to a level below significance.

ROW = Right-of-Way
NSLU = Noise-Sensitive Land Use
Cum = Cumulatively

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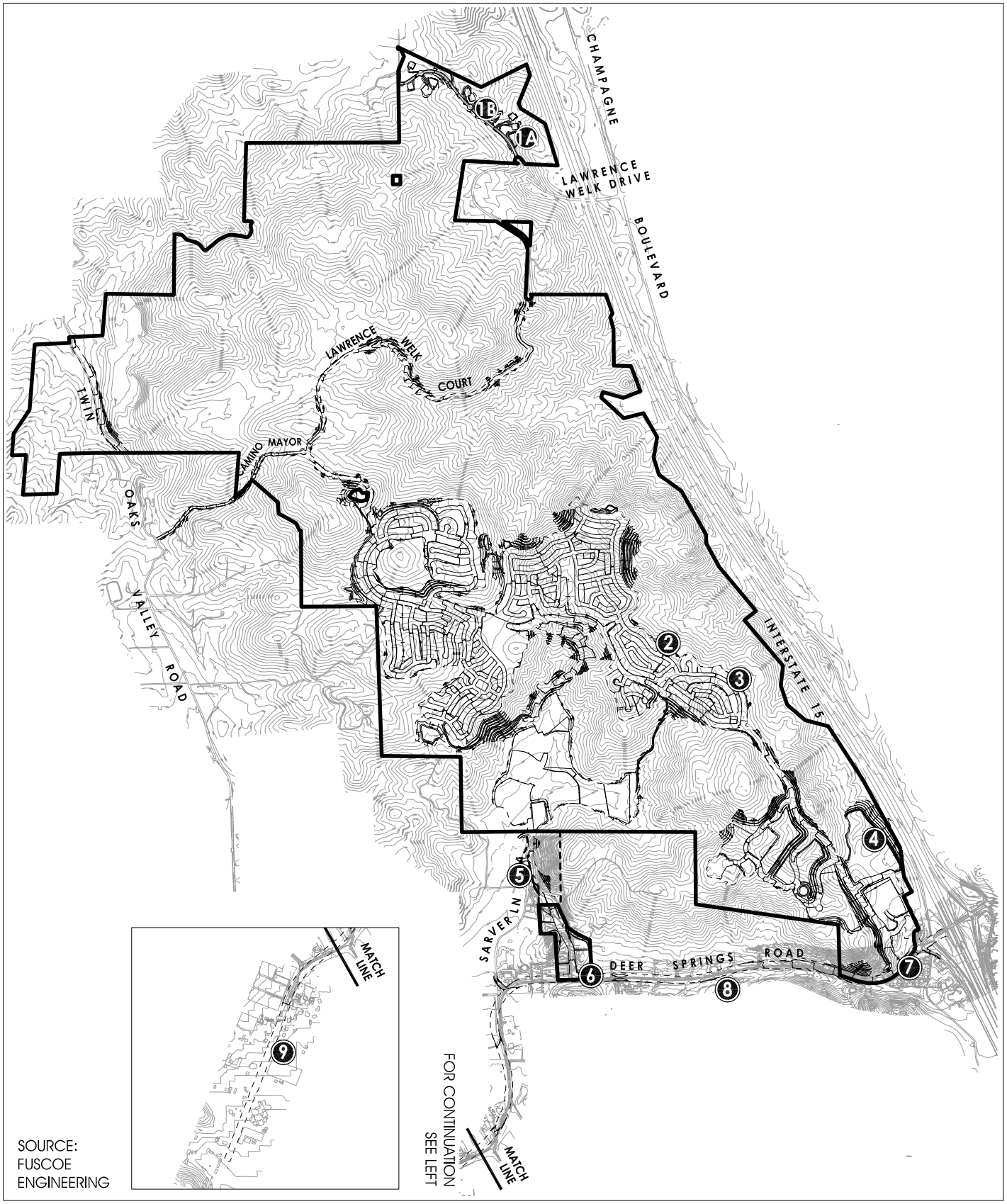


SOURCE:
FUSCOE
ENGINEERING

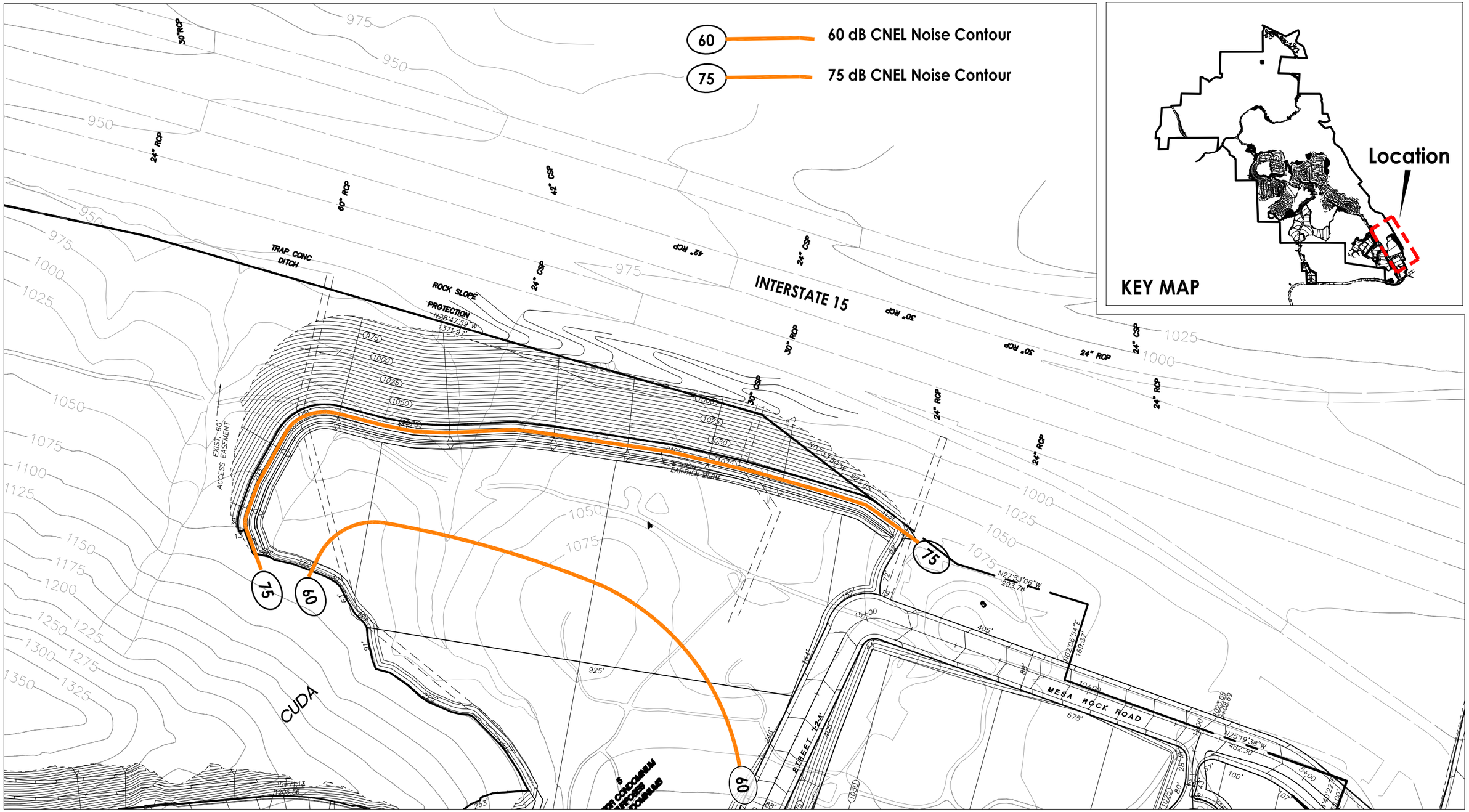
Noise Measurement Locations

FIGURE
2.4-1

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

2400 1200 0 2400
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

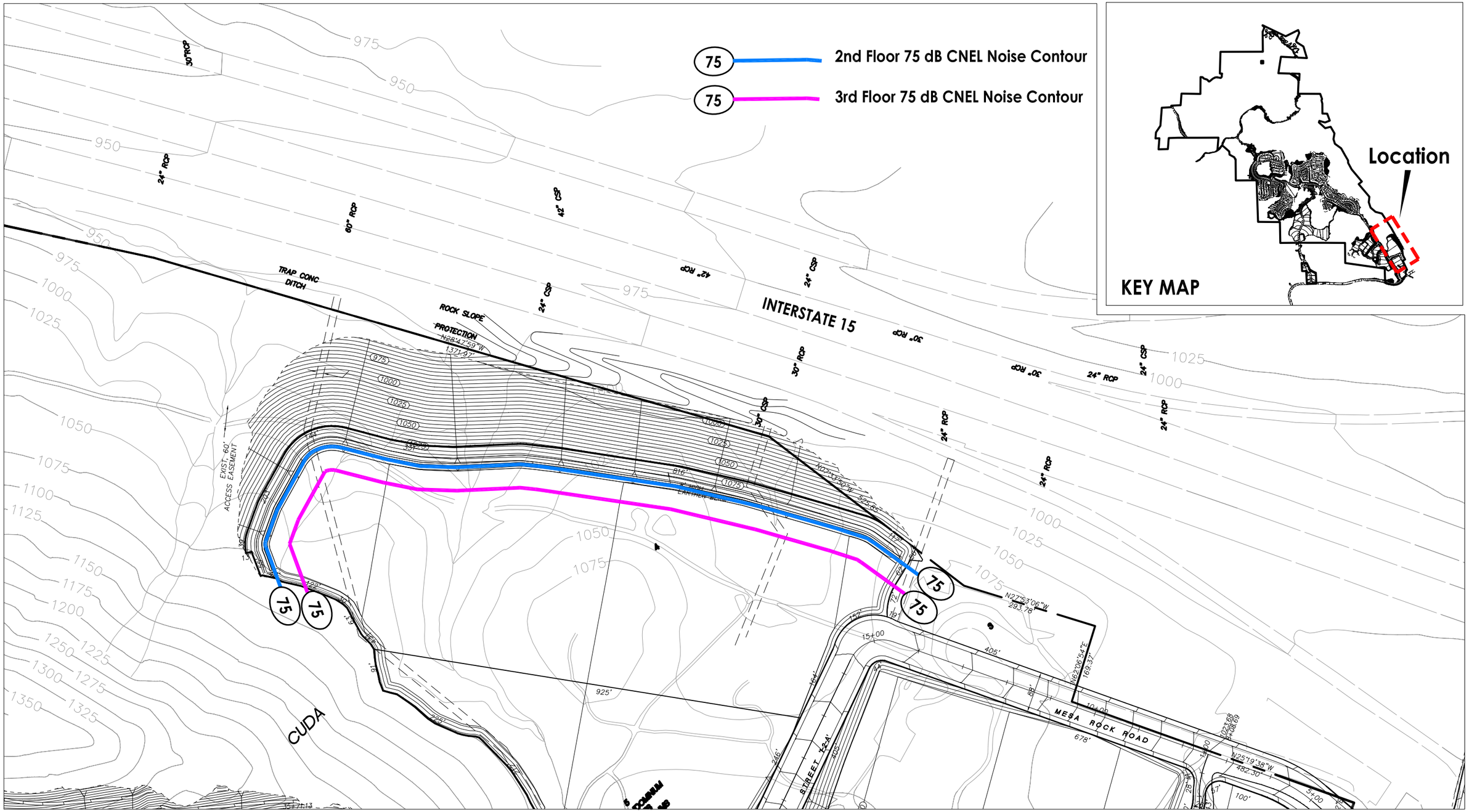
Future 1st Floor 60 & 75 dB CNEL Noise Contours - Neighborhood 1 (N1)

FIGURE
2.4-2

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

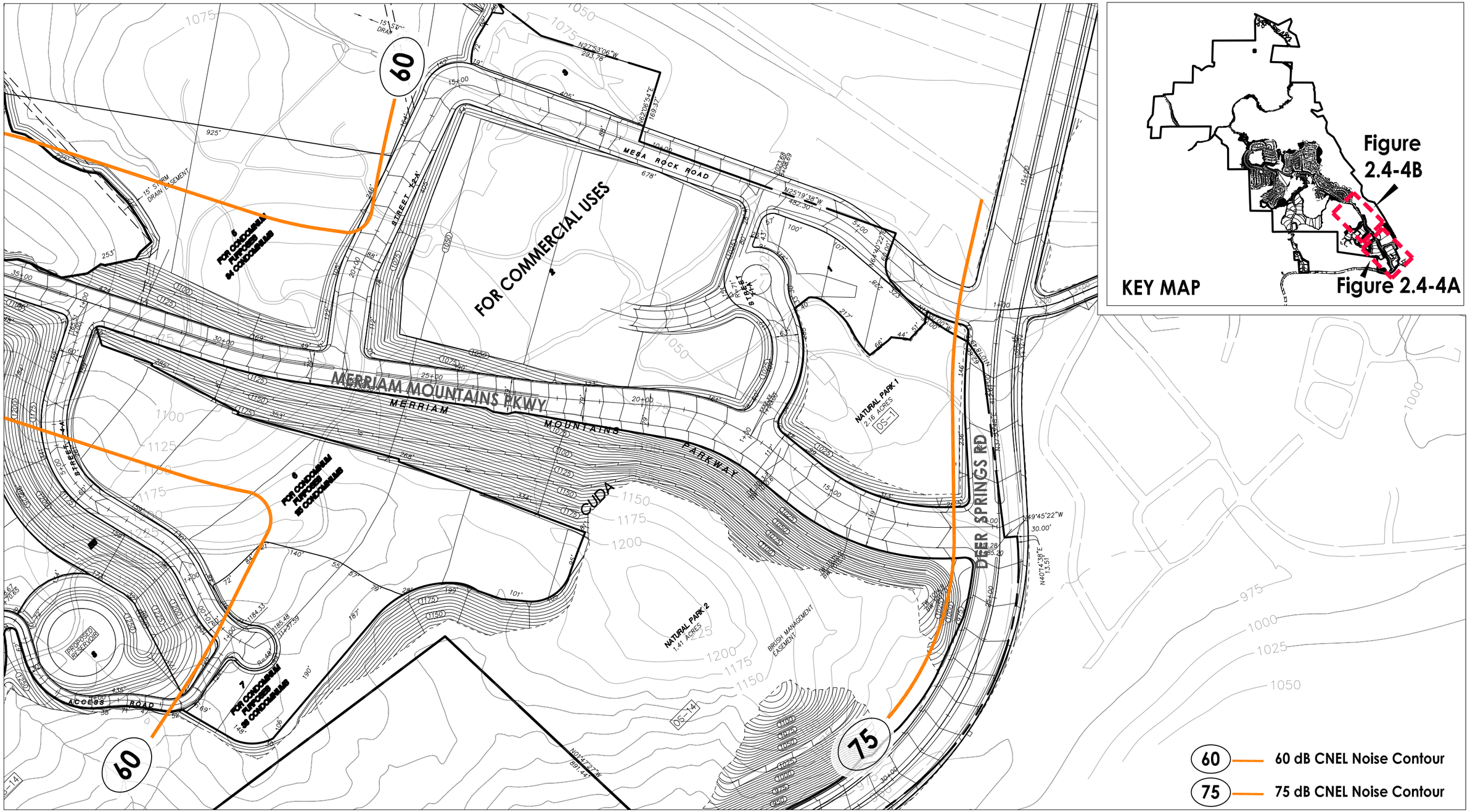
Future 2nd & 3rd Floor 75 dB CNEL Noise Contours - Neighborhood 1 (N1)

FIGURE
2.4-3

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



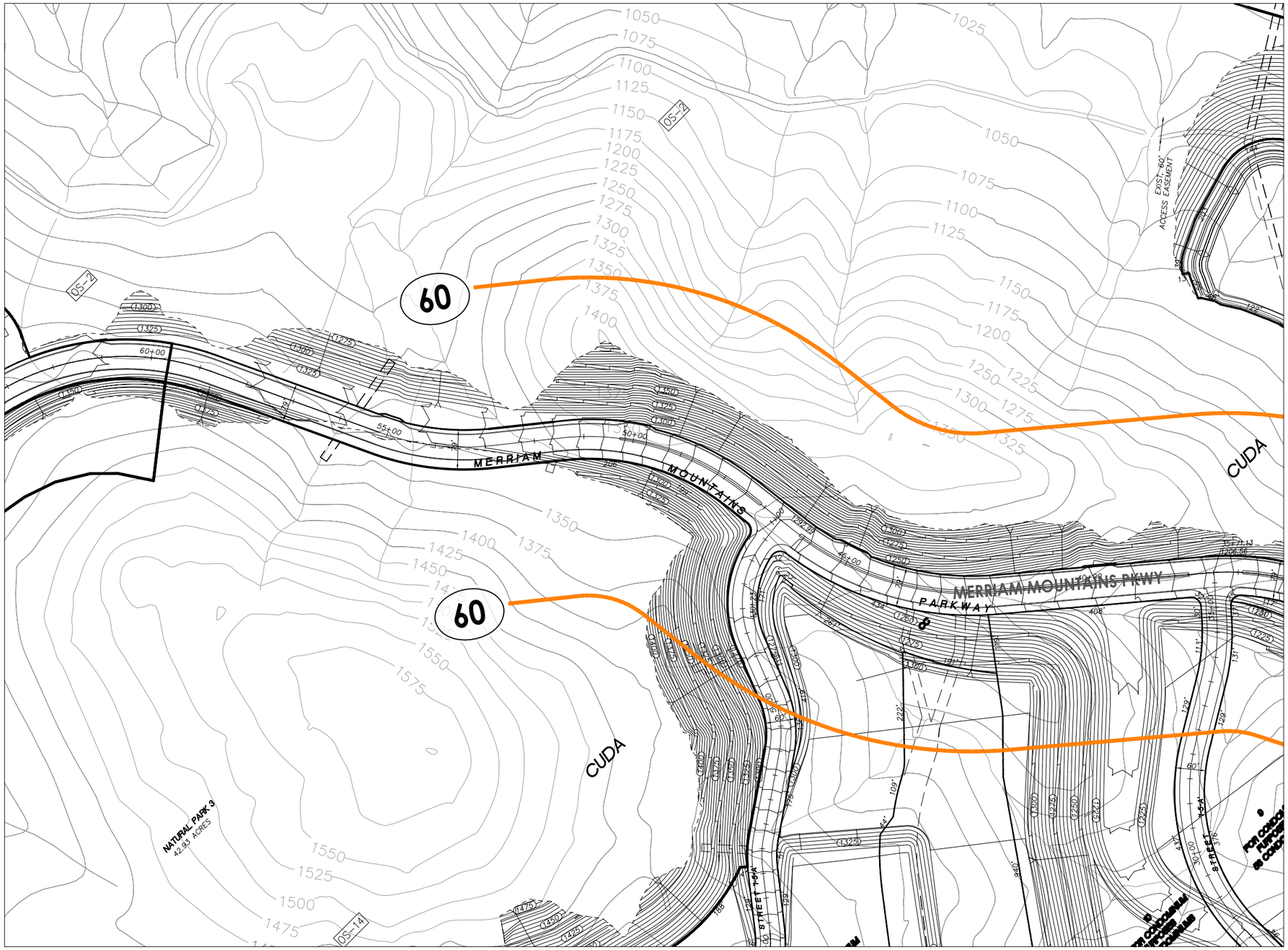
Future 60 & 75 dB CNEL Noise Contours: From Merriam Mountains Parkway and Deer Springs Road - Neighborhood 1 (N1)

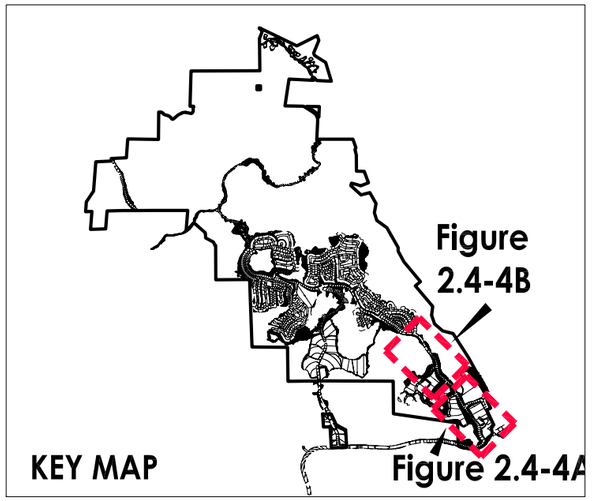
FIGURE 2.4-4A

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

220 110 0 220 FEET

N





60 — 60 dB CNEL Noise Contour

BASE SOURCE: FUSCOE ENGINEERING

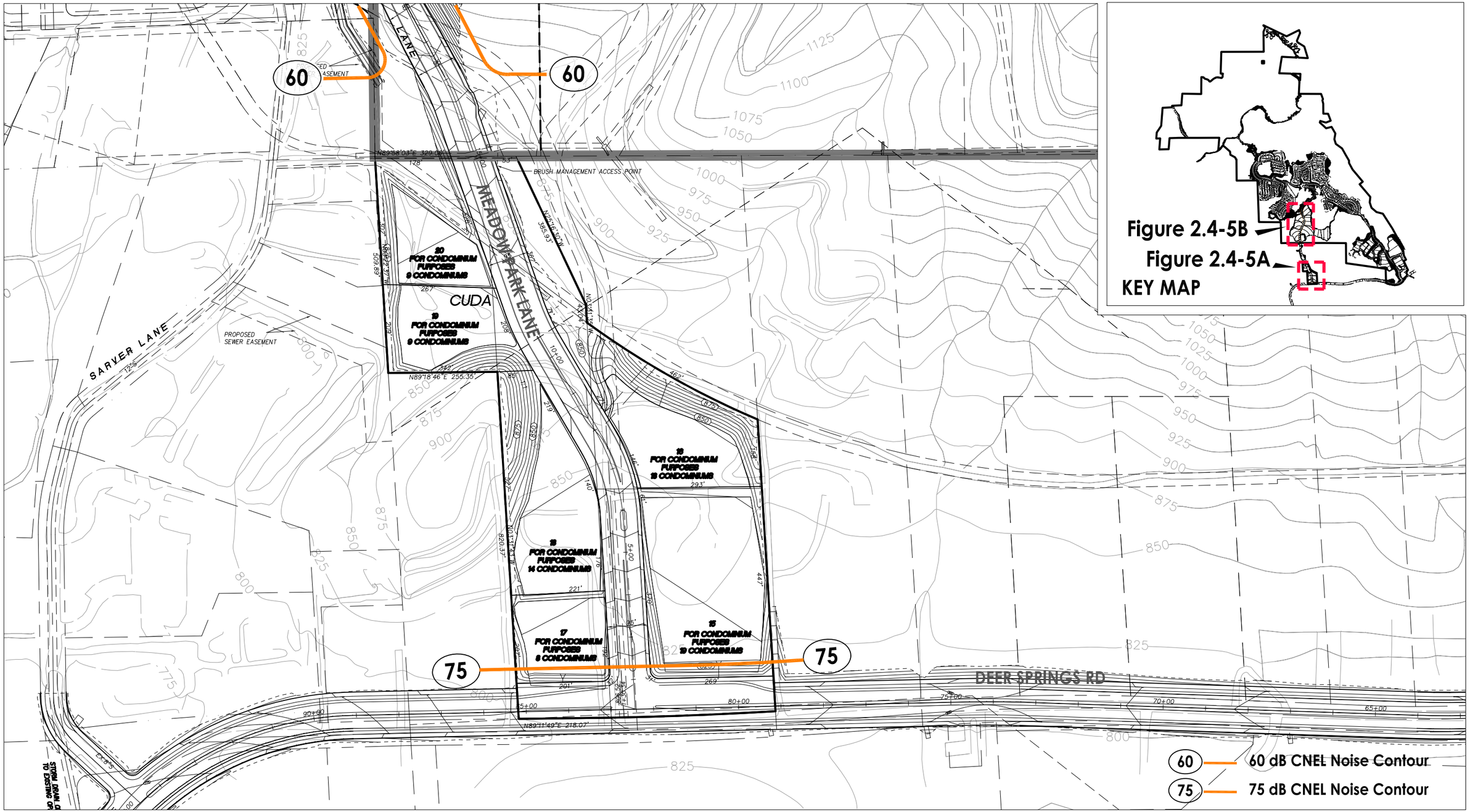
Future 60 dB CNEL Noise Contours: From Merriam Mountains Parkway and Deer Springs Road - Neighborhood 1 (N1)

FIGURE 2.4-4B

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

220 110 0 220
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

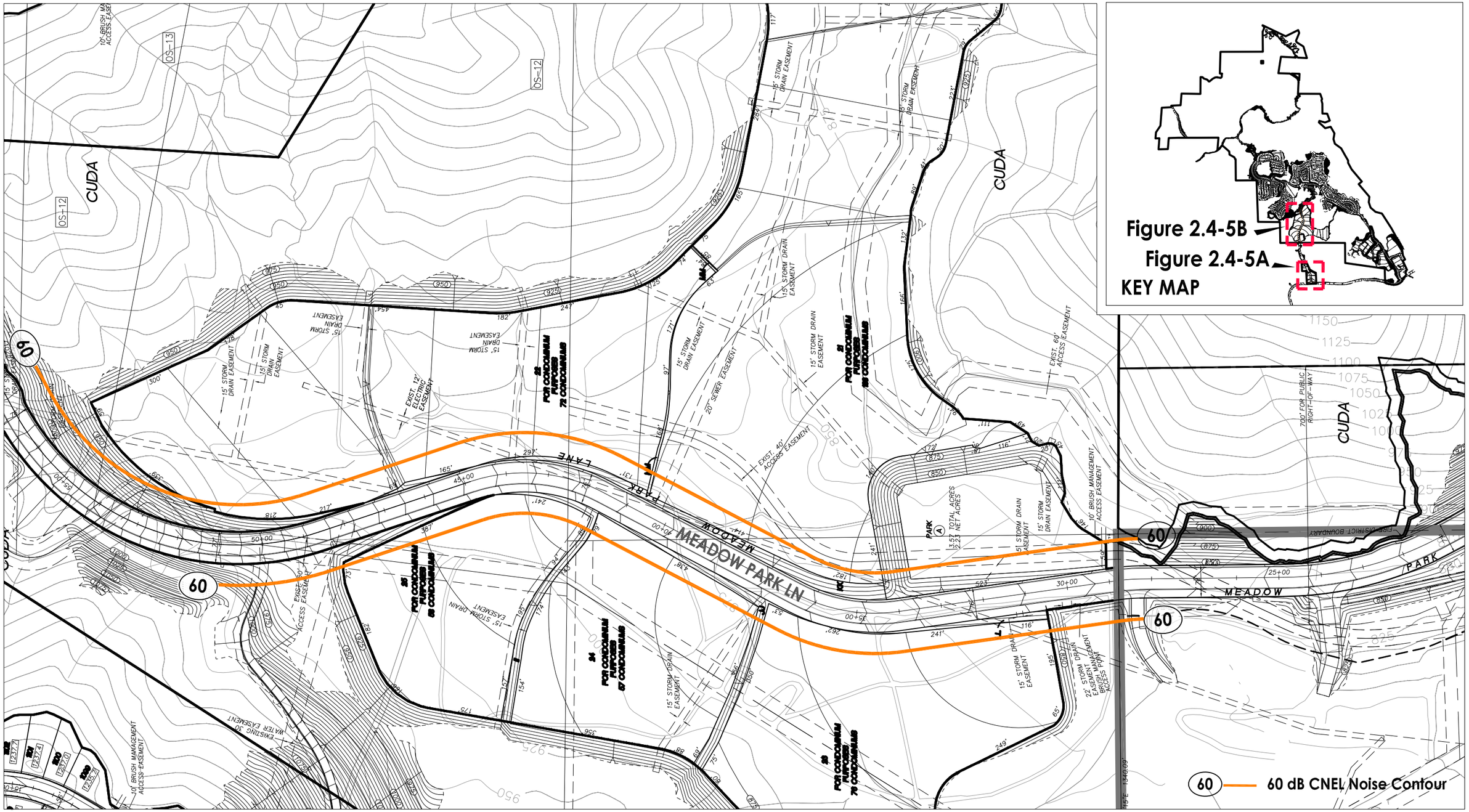
Future 60 & 75 dB CNEL Noise Contours - Neighborhood 2 (N2)

FIGURE 2.4-5A

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

220 110 0 220
FEET

N



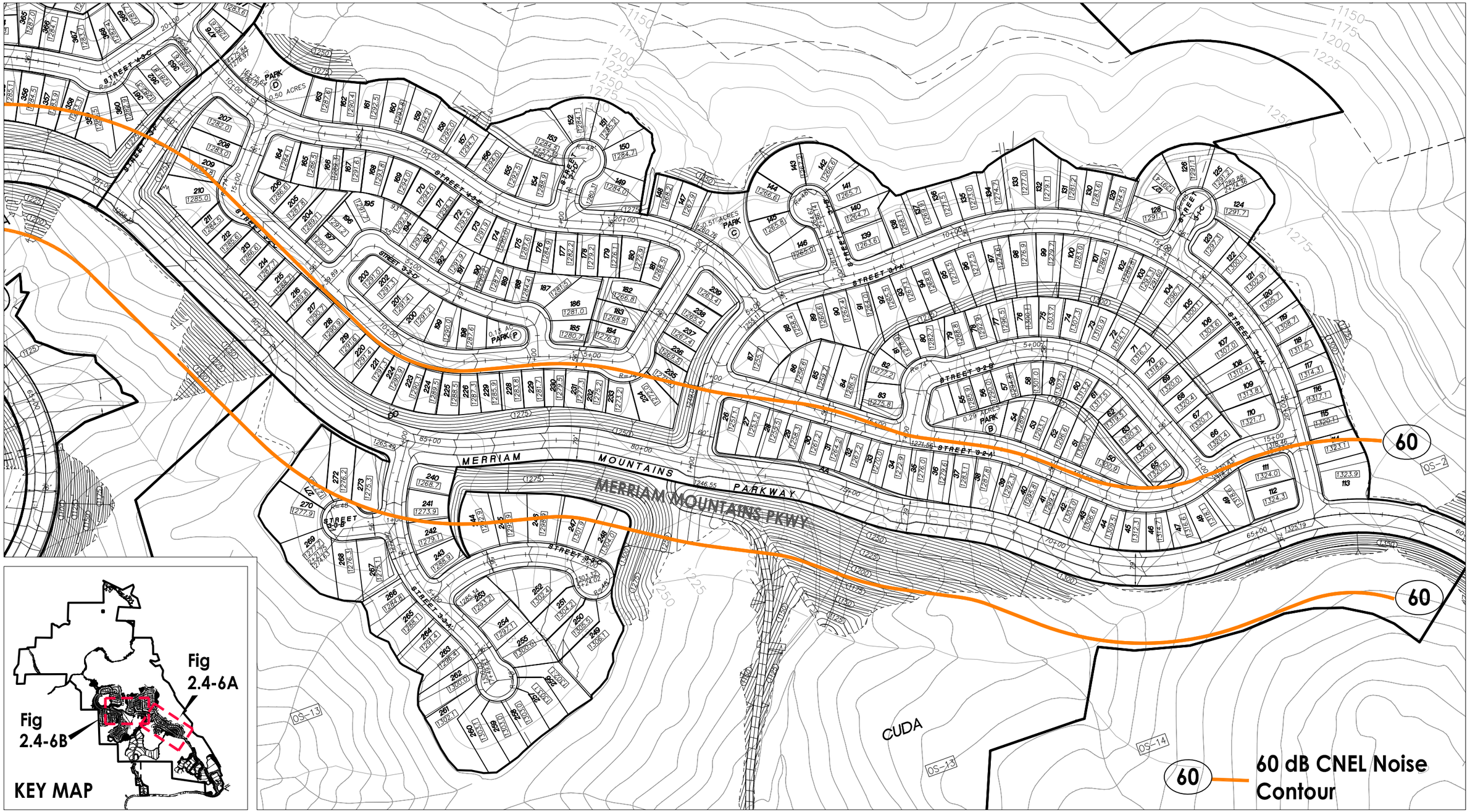
Future 60 dB CNEL Noise Contours - Neighborhood 2 (N2)

FIGURE
2.4-5B

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

220 110 0 220
FEET

N



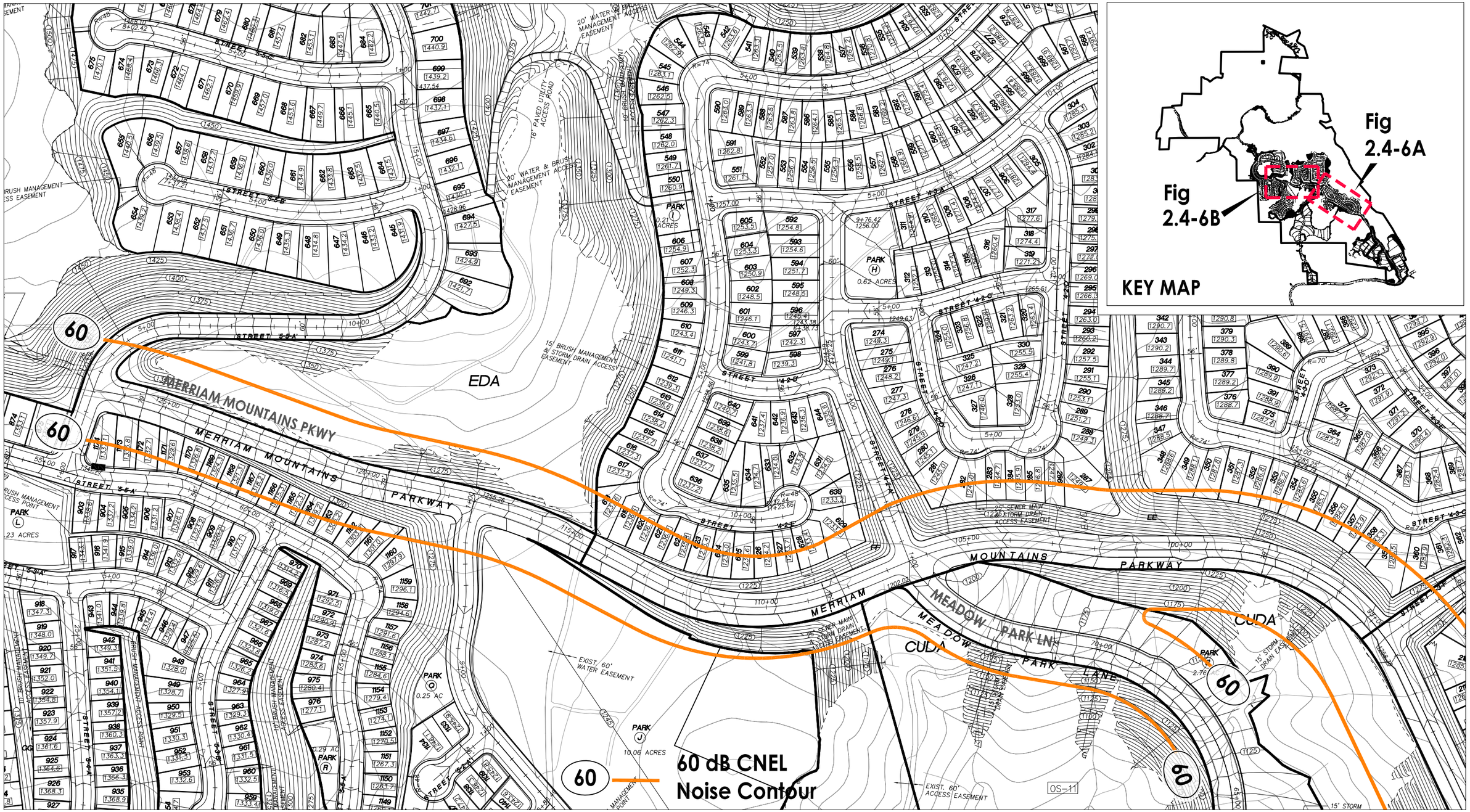
BASE SOURCE: FUSCOE ENGINEERING

Future 60 dB CNEL Noise Contours - Neighborhoods 3 & 4 (N3) (N4)

FIGURE 2.4-6A

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

220 110 0 220
FEET



BASE SOURCE: FUSCOE ENGINEERING

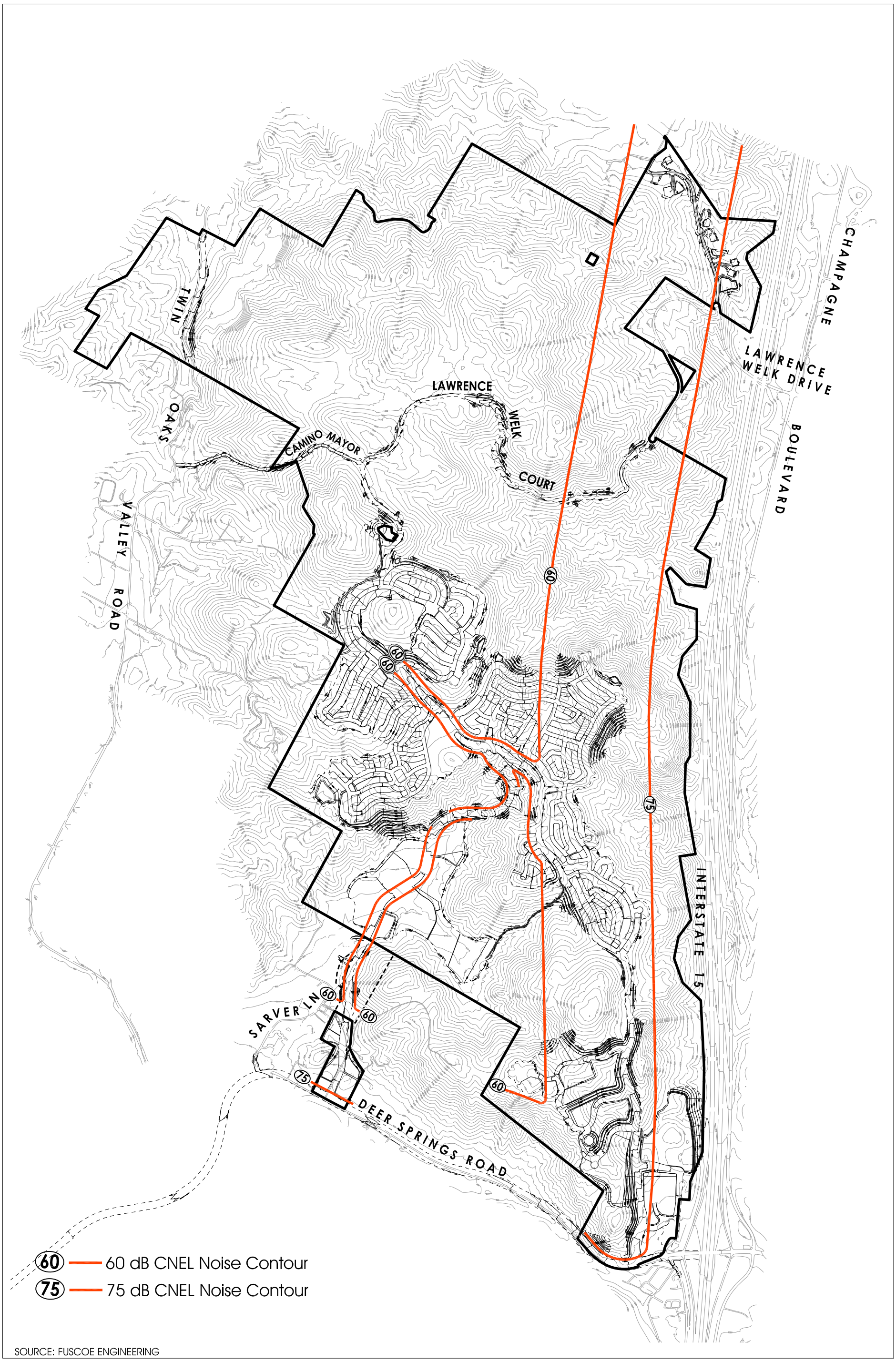
Future 60 dB CNEL Noise Contours - Neighborhoods 4 & 5 (N4) (N5)

FIGURE 2.4-6B

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

220 110 0 220
FEET

N



SOURCE: FUSCOE ENGINEERING

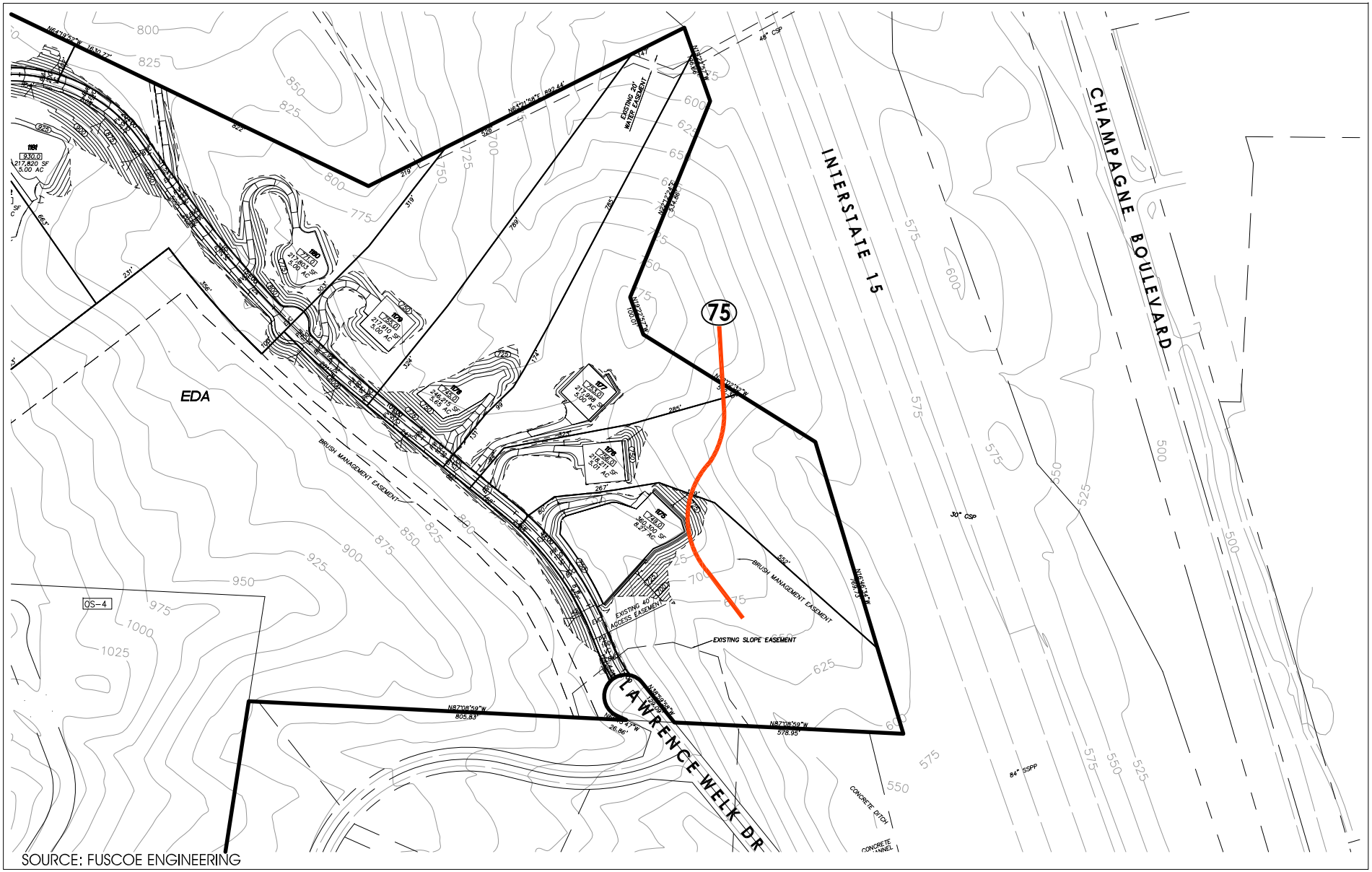
Worst-Case 60 & 75 dB CNEL Noise Contours

FIGURE 2.4-7

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

1500 750 0 1500
FEET

N



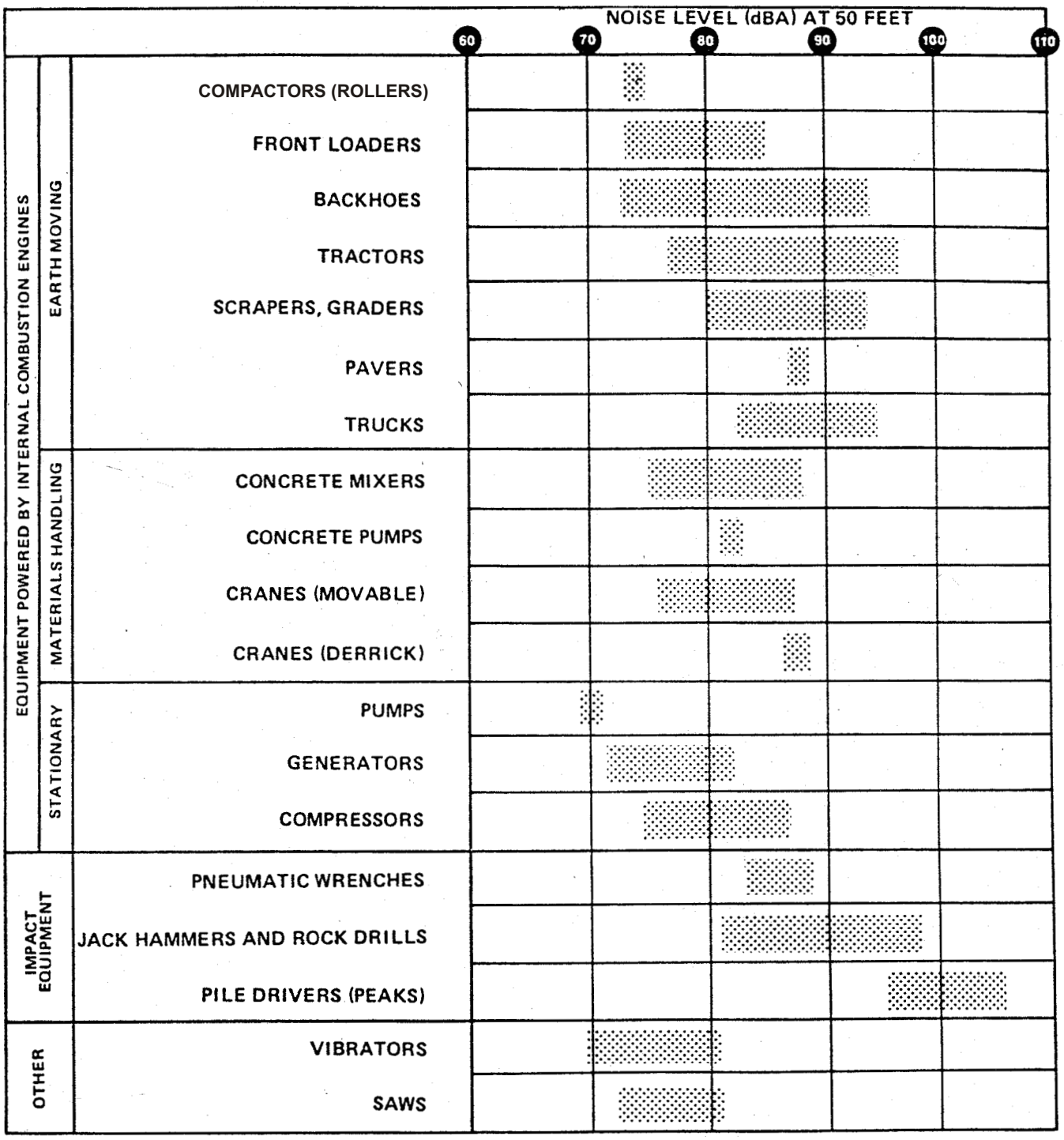
Future 1st Floor 75 dB CNEL Noise Contour at Estate Lots

FIGURE
2.4-8

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

350 175 0 350
FEET

N

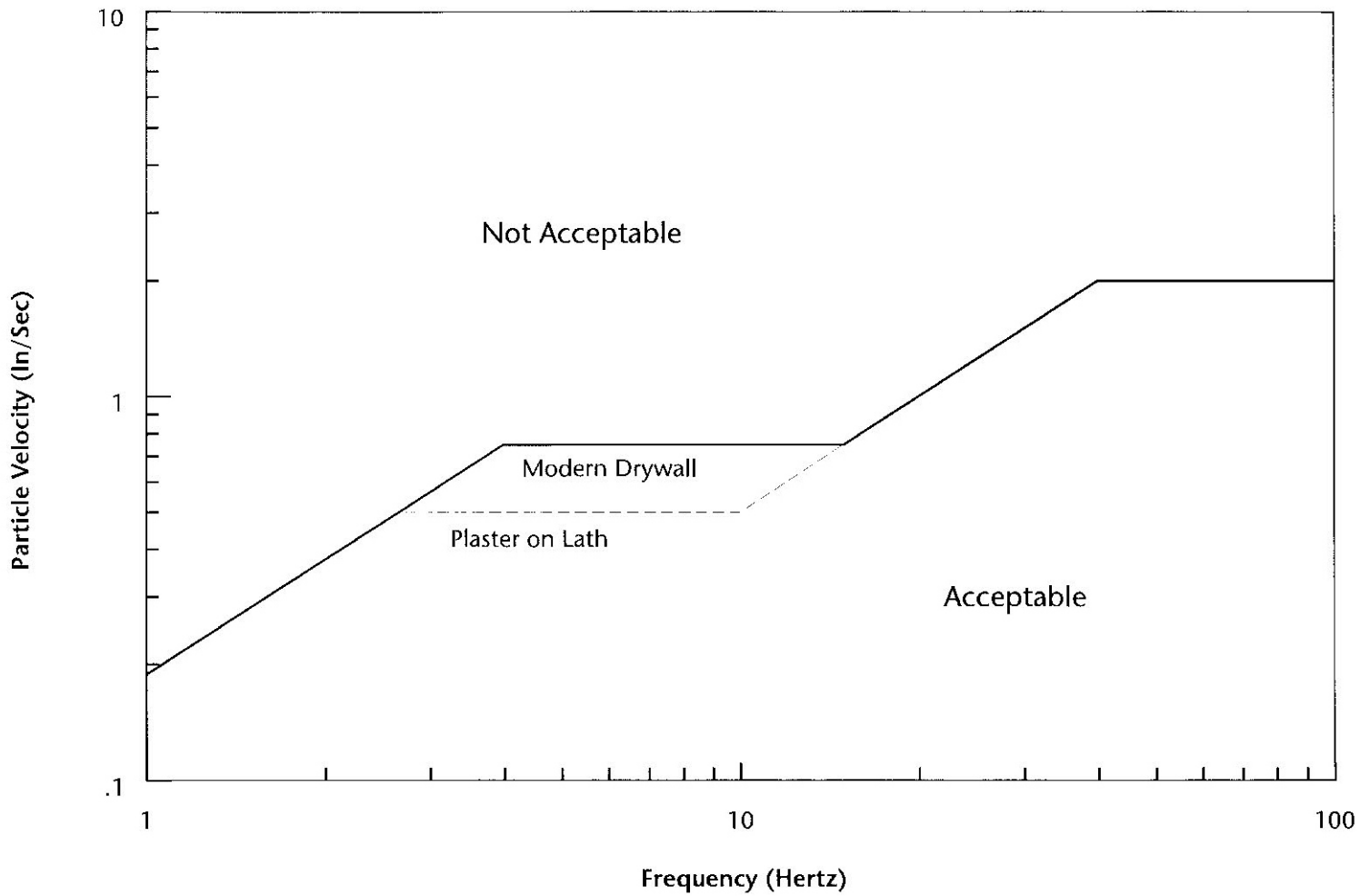


SOURCE: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

Typical Construction-Equipment Noise Levels

FIGURE 2.4-9A

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

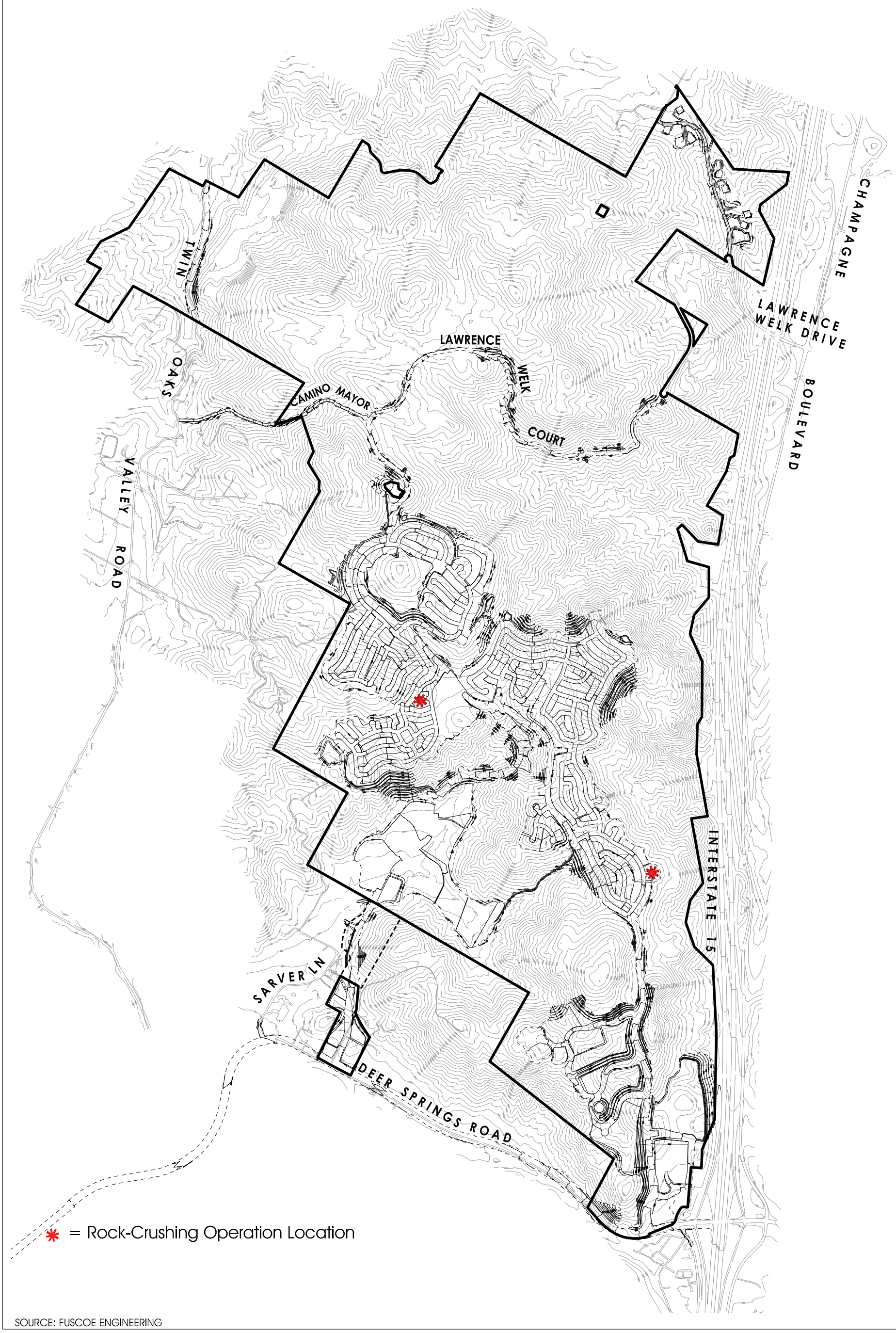


Source: U.S. Bureau of Mines

RI8507 Alternative Blasting Level Criteria

FIGURE
2.4-9B

MERRIAM MOUNTAINS SPECIFIC PLAN EIR



SOURCE: FUSCOE ENGINEERING

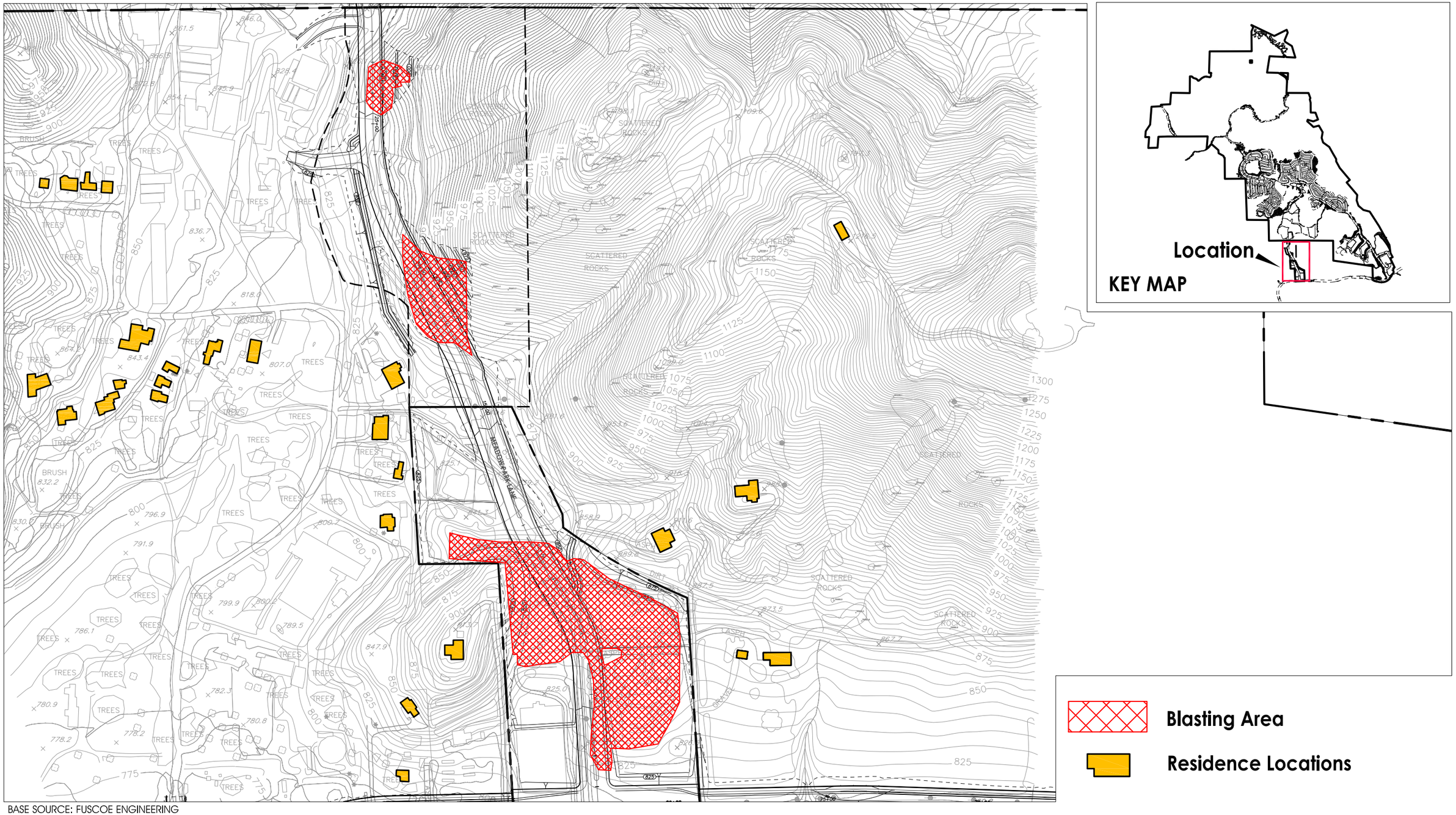
Locations of Rock-Crushing Operations

FIGURE
2.4-10

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

1500 750 0 1500
FEET

N



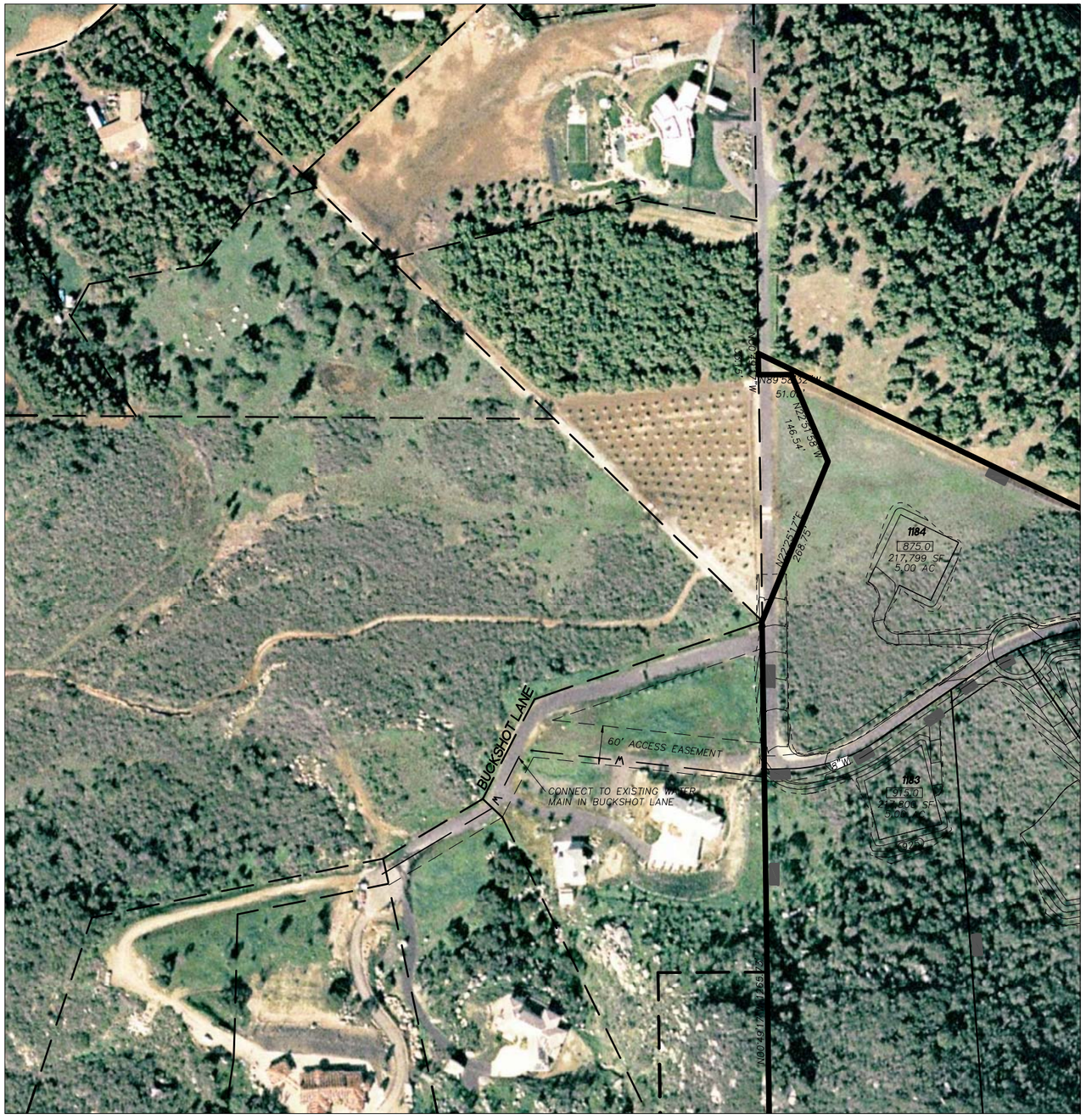
BASE SOURCE: FUSCOE ENGINEERING

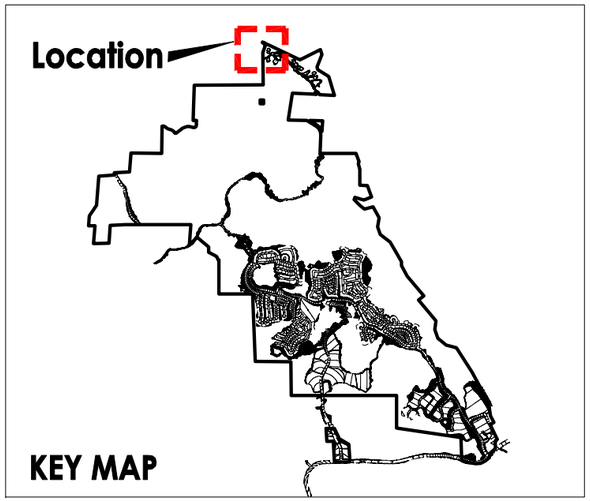
Off-Site Residences near Blasting Area

FIGURE
2.4-11

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

300 150 0 300
FEET





BASE SOURCE: FUSCOE ENGINEERING

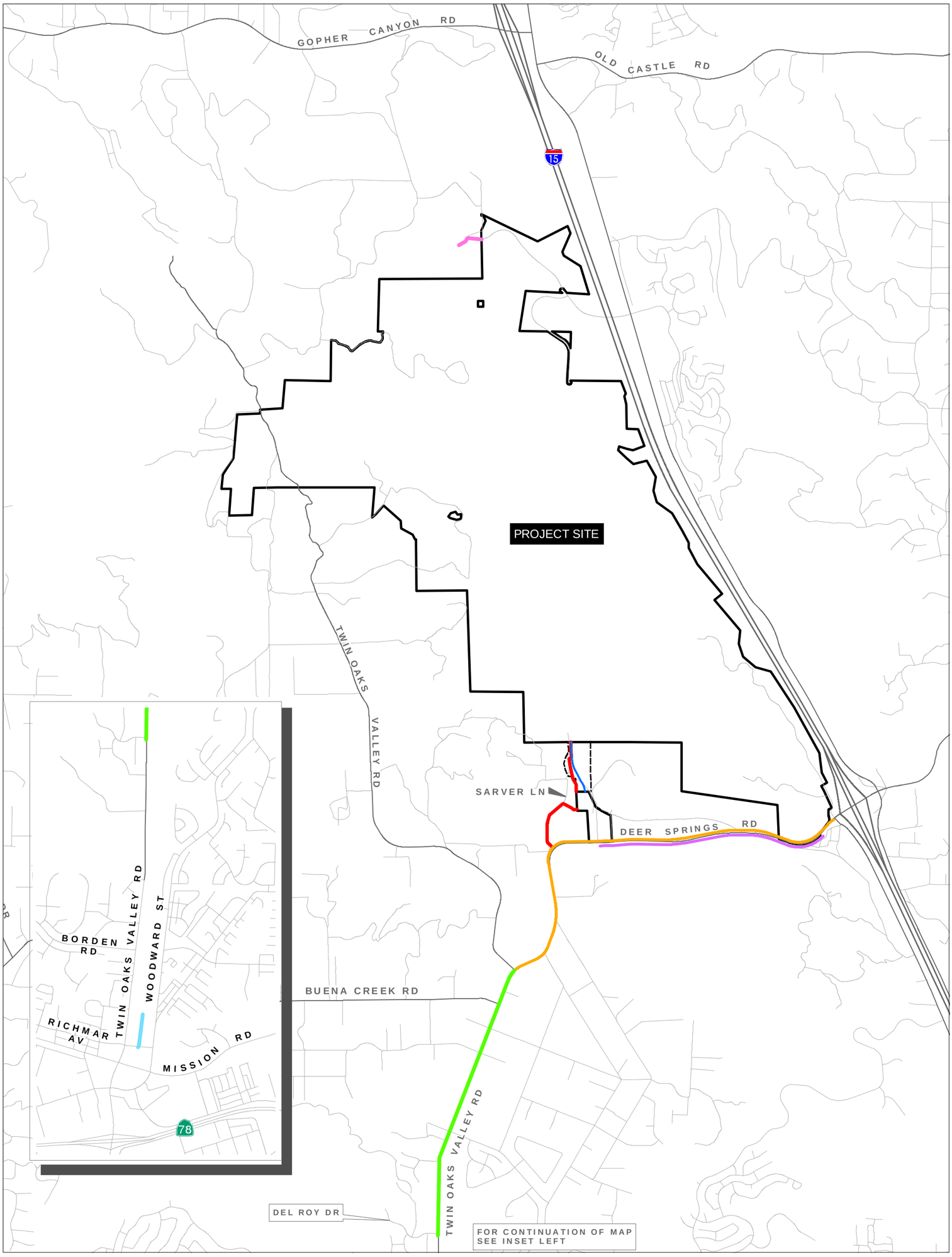
Off-Site Residences adjacent to Off-Site Water Line

FIGURE
2.4-12A

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



Legend

- Project Site
- Off-Site Easement Access

Off-Site Water & Sewer Items:

- Item 1. Water extension in Buckshot Lane to existing main.
- Item 2. Off-site water in Deer Springs Road (located within identified limits of grading for off-site improvements)
- Item 3. Off-site water in Meadow Park Lane
- Item 4. Off-site sewer in Sarver Lane & Meadow Park Lane.
- Item 5. Off-site sewer in Twin Oaks Valley Road from Del Roy Drive to Deer Springs Road.
- Item 6. Off-site sewer in Deer Springs Road (located within identified limits of grading for off-site improvements)
- Item 7. Off-site sewer upsizing from existing 18-Inch line to 21-Inch line.

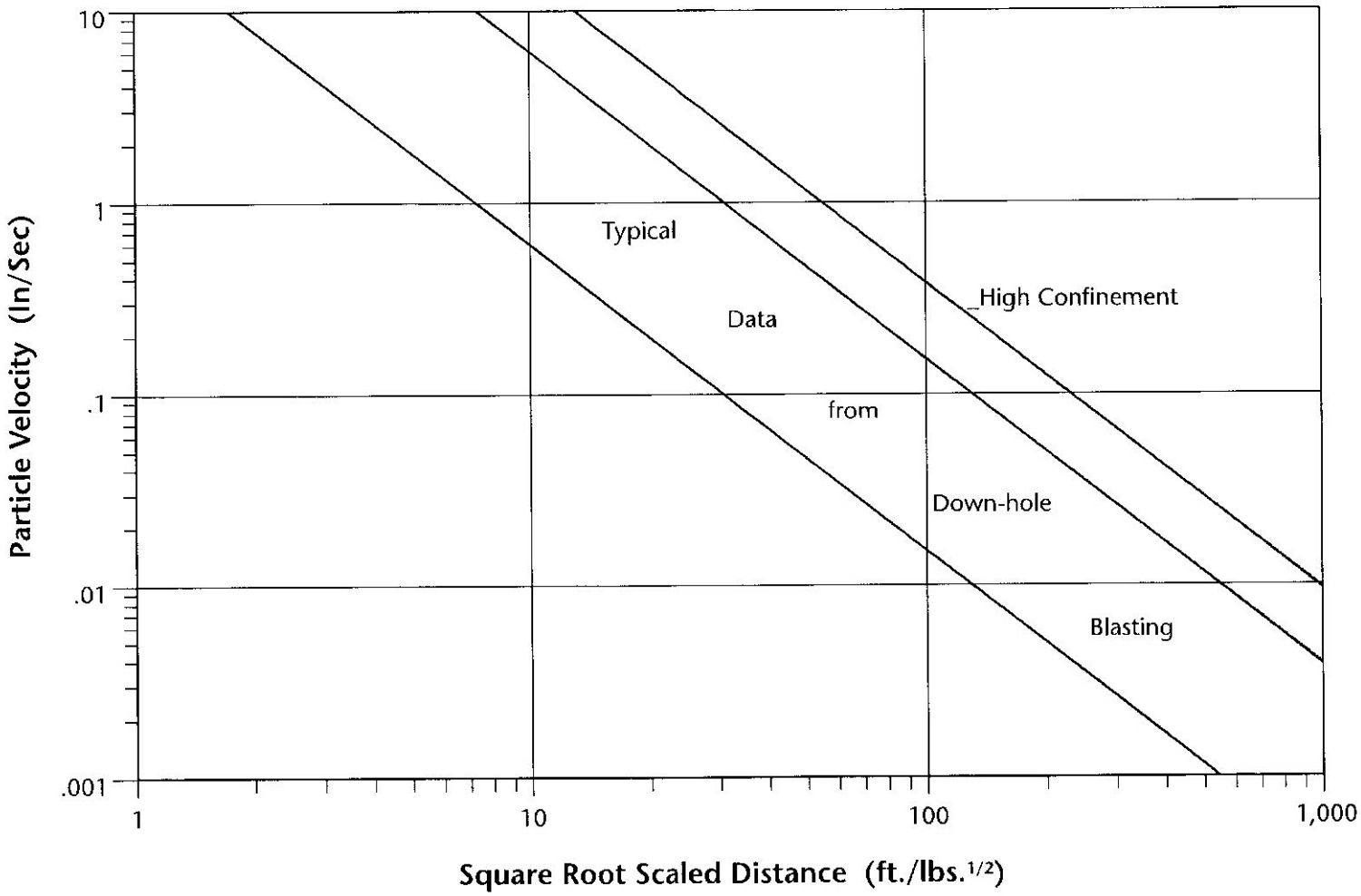
Off-Site Water & Sewer Lines

FIGURE 2.4-12B

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

0 1,250 2,500 5,000
Feet

N

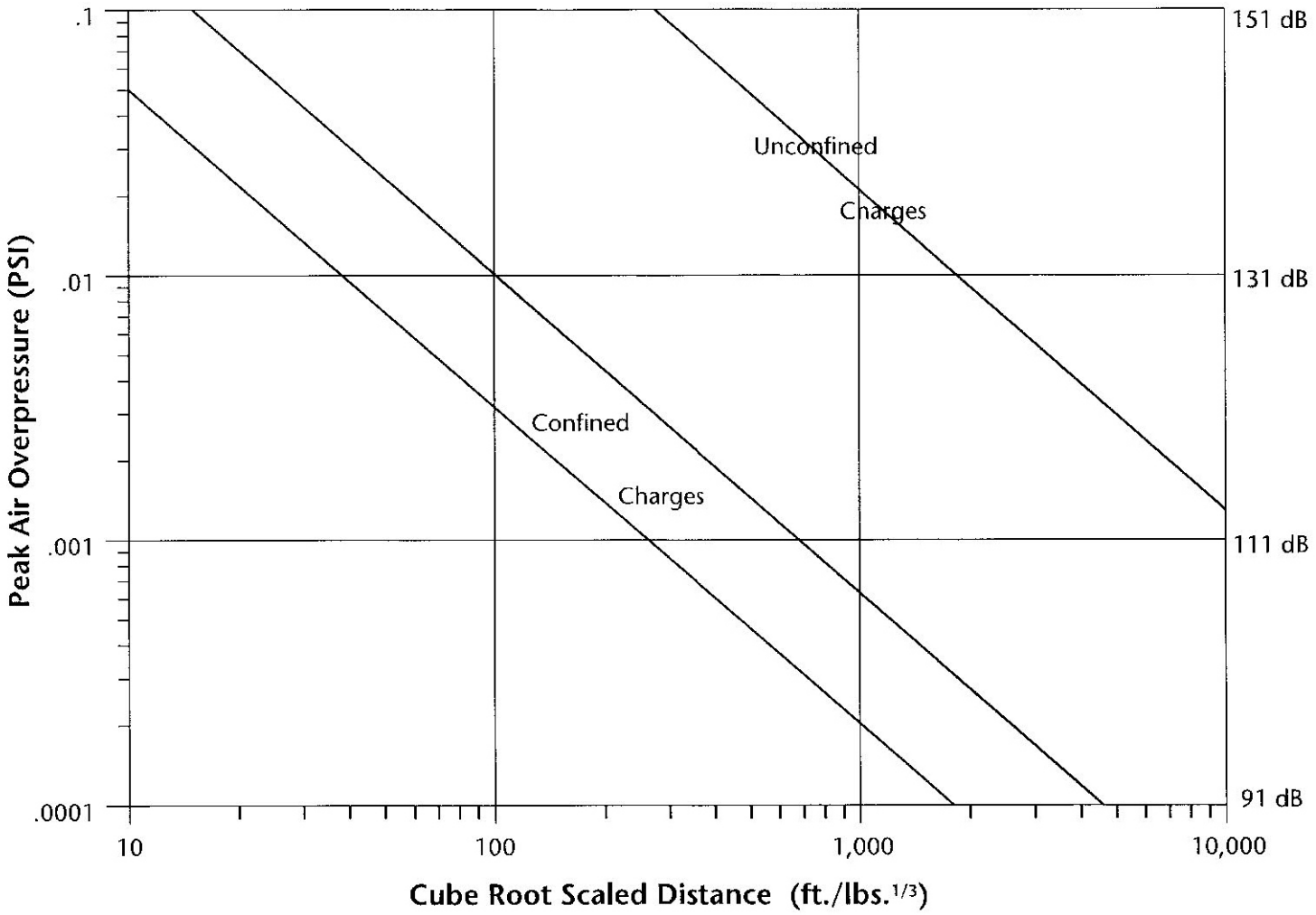


Source: Jones & Stokes

Blast Vibration Prediction Curves

FIGURE
2.4-13A

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

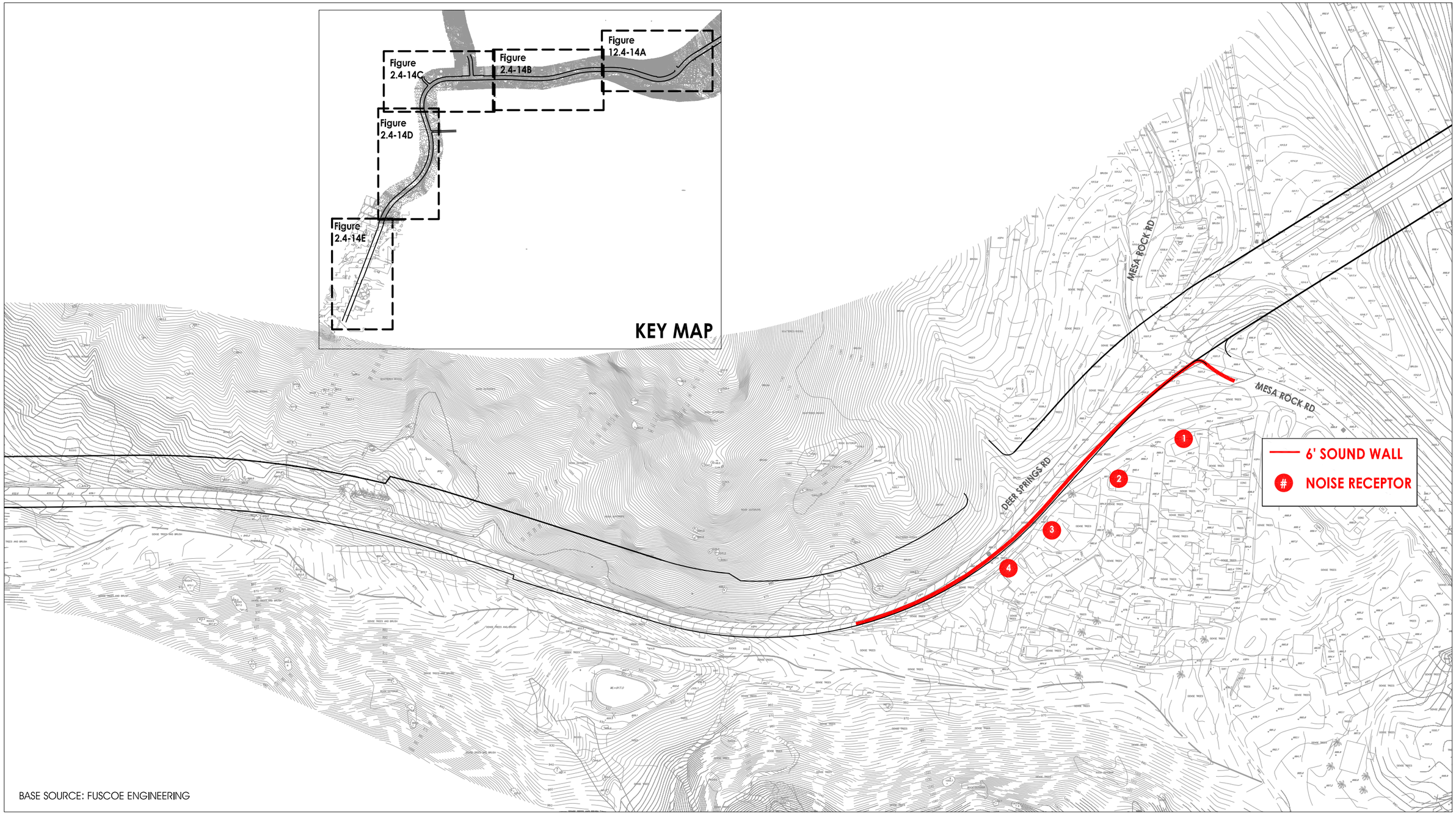


Source: Jones & Stokes

Blast Air Overpressure Prediction Curves

FIGURE
2.4-13B

MERRIAM MOUNTAINS SPECIFIC PLAN EIR



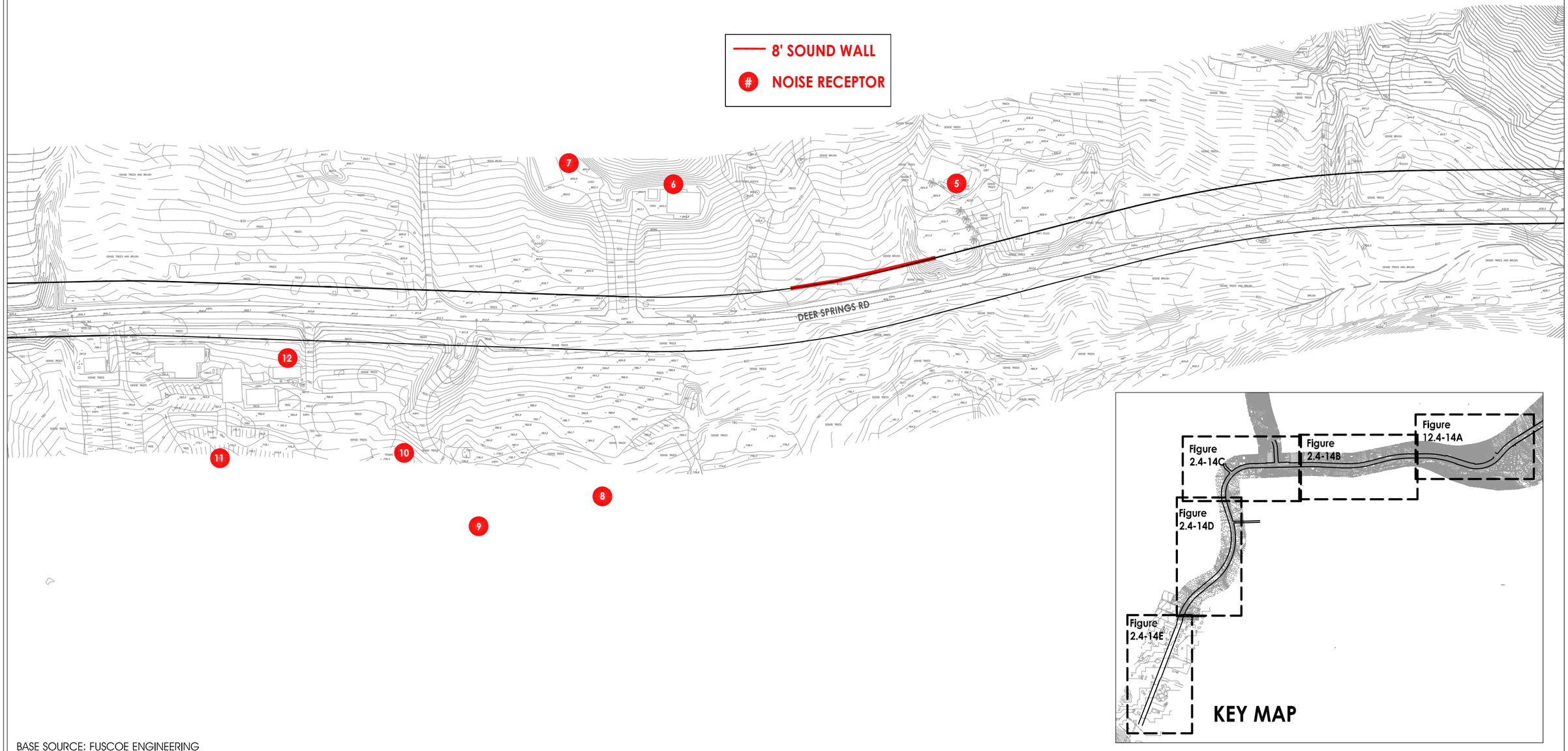
Noise Receptors, Preliminary Noise Barrier Heights & Locations

FIGURE
2.4-14A

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

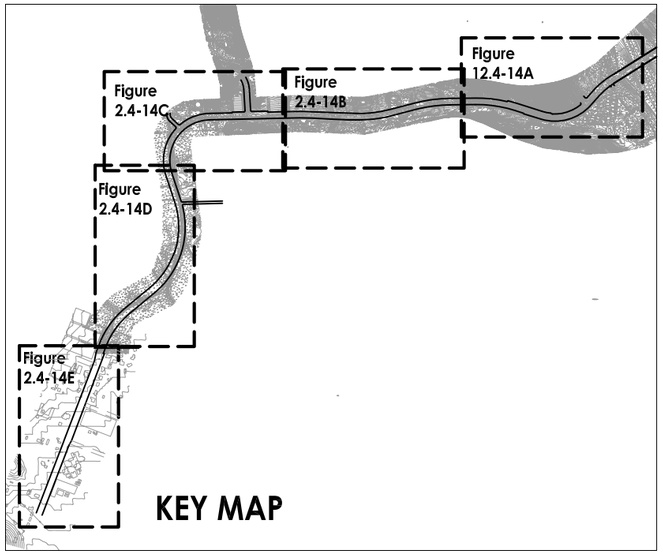
Noise Receptors, Preliminary Noise Barrier Heights & Locations

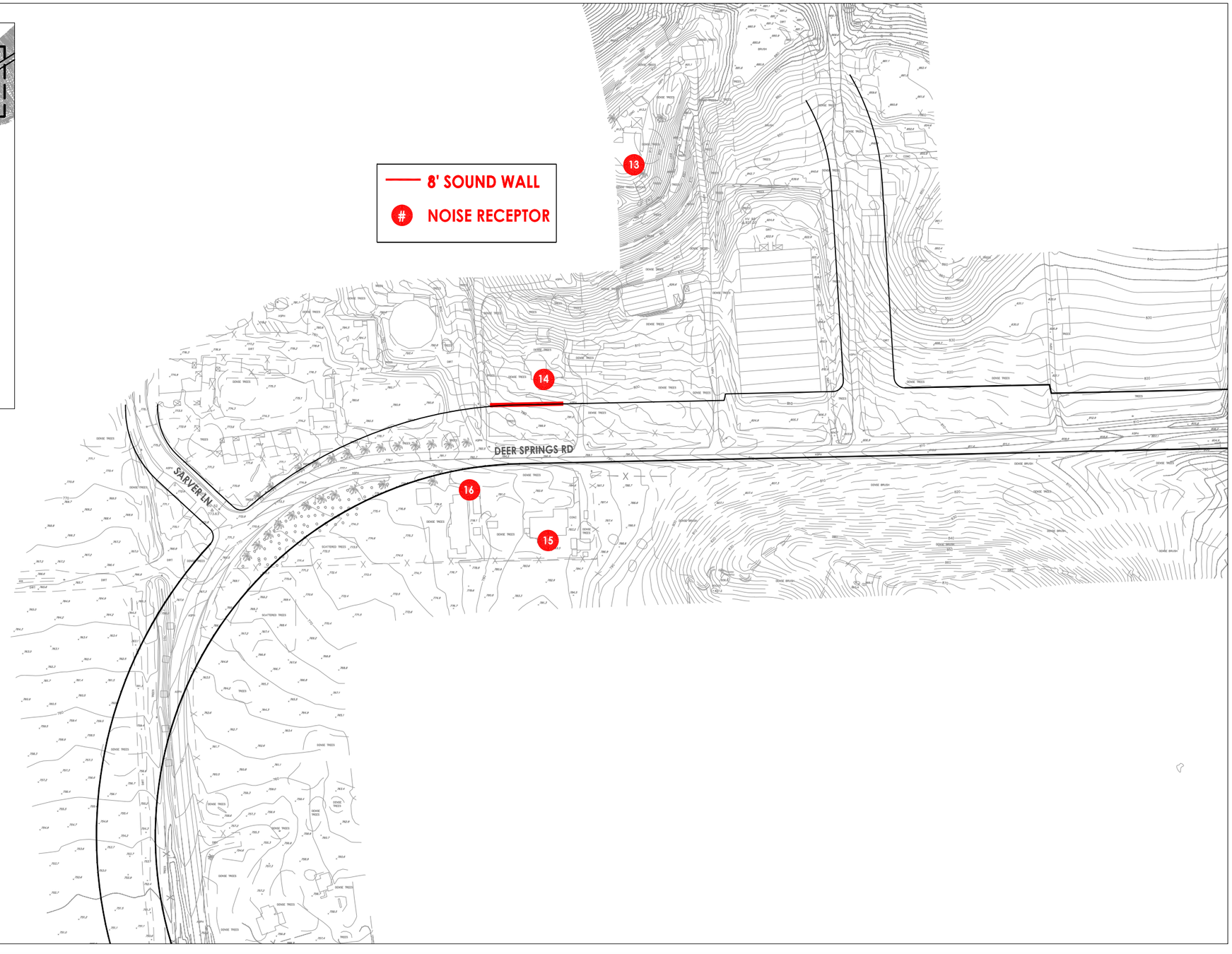
FIGURE
2.4-14B

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N





BASE SOURCE: FUSCOE ENGINEERING

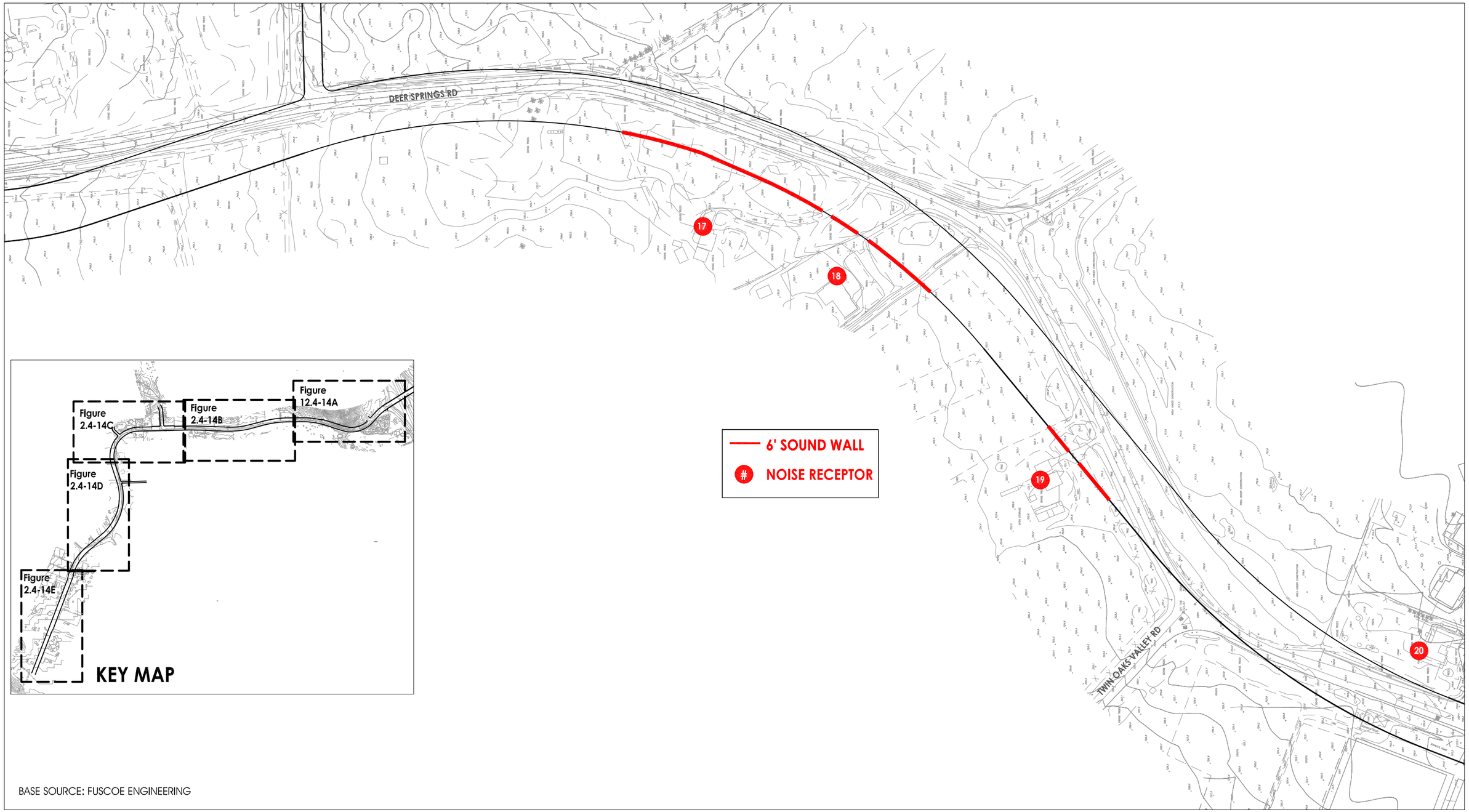
Noise Receptors, Preliminary Noise Barrier Heights & Locations

FIGURE
2.4-14C

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

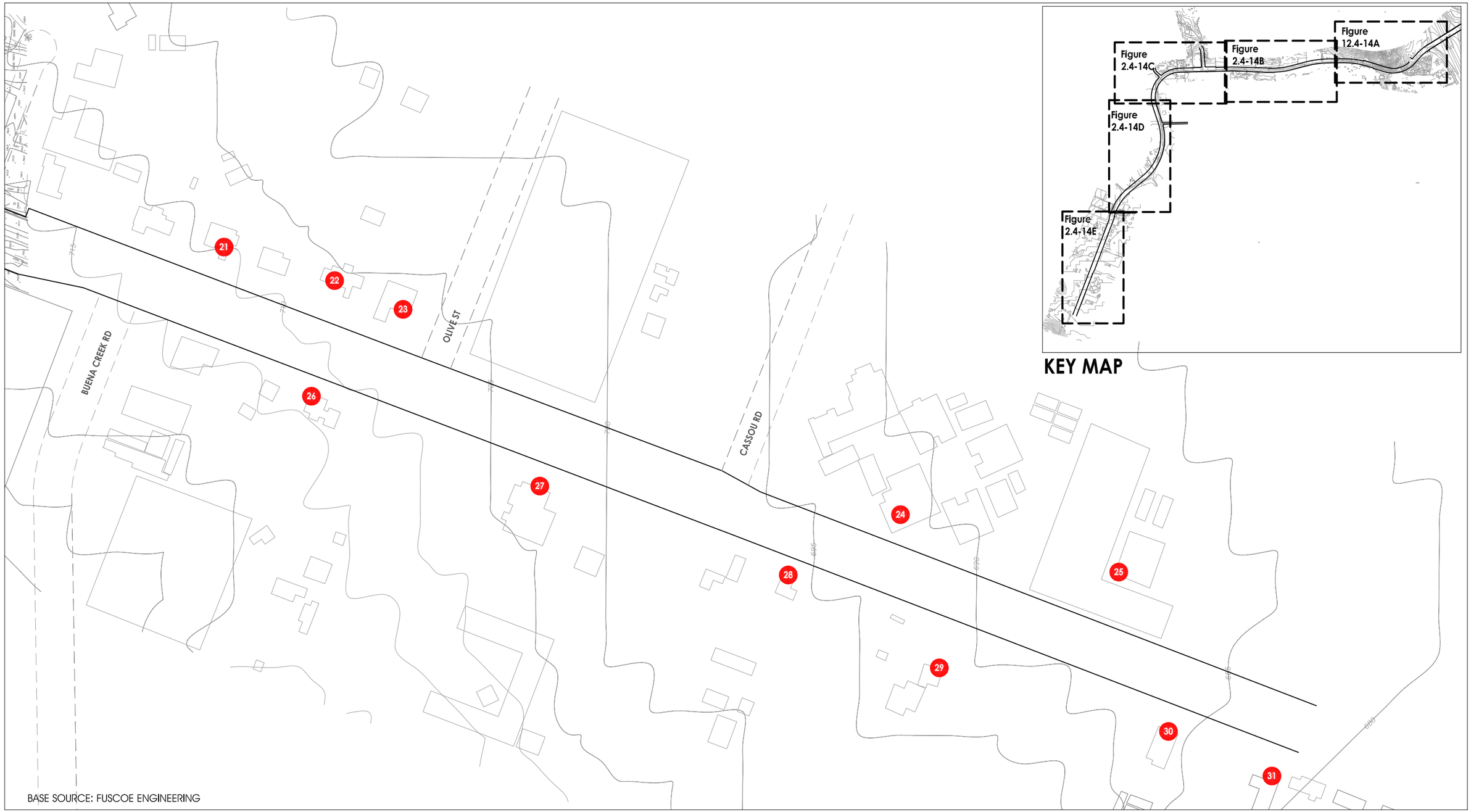
Noise Receptors, Preliminary Noise Barrier Heights & Locations

FIGURE
2.4-14D

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



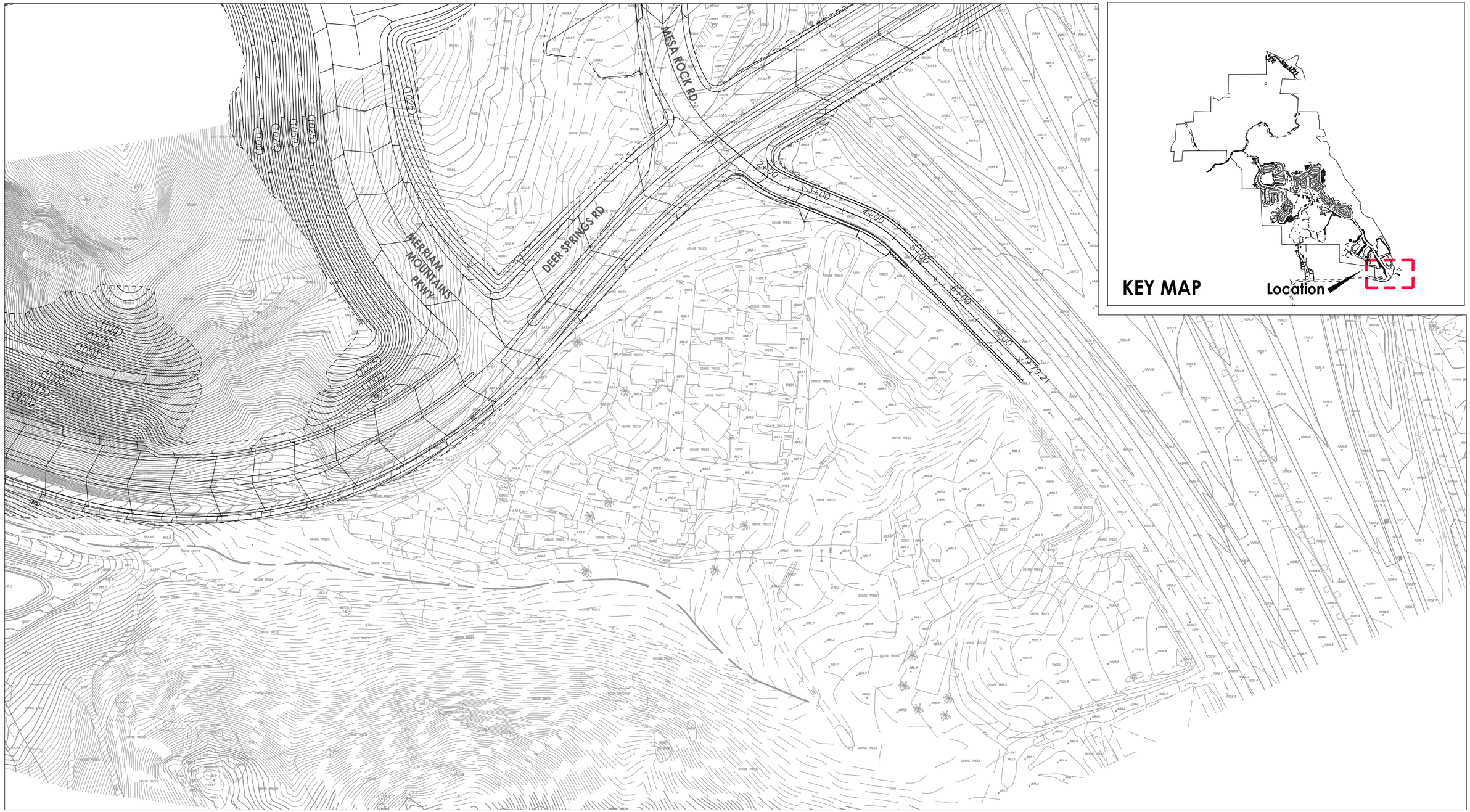
Noise Receptor Locations

FIGURE
2.4-14E

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

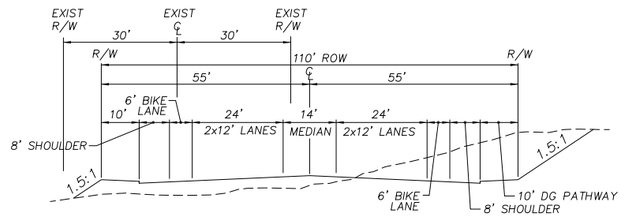
Existing Residences adjacent to Deer Springs Road Improvements

FIGURE
2.4-15A

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

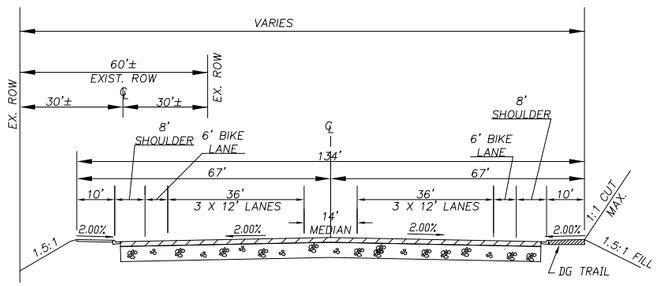
160 80 0 160
FEET

N



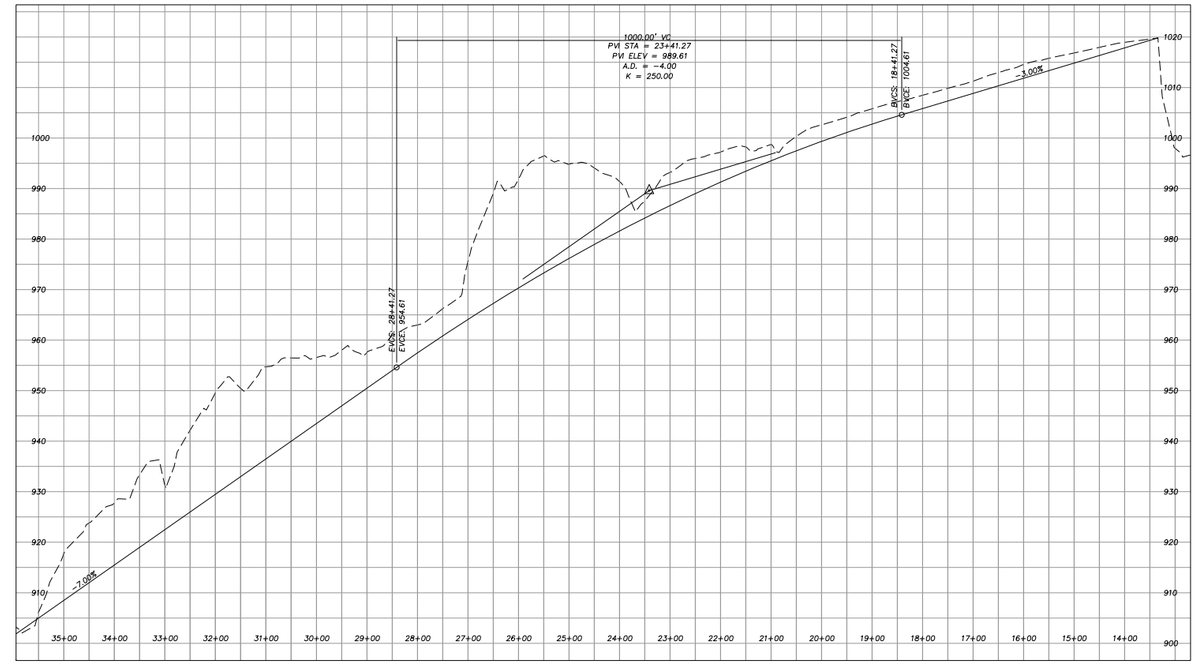
TYPICAL 4-LANE SECTION - DEER SPRINGS ROAD

NOT TO SCALE



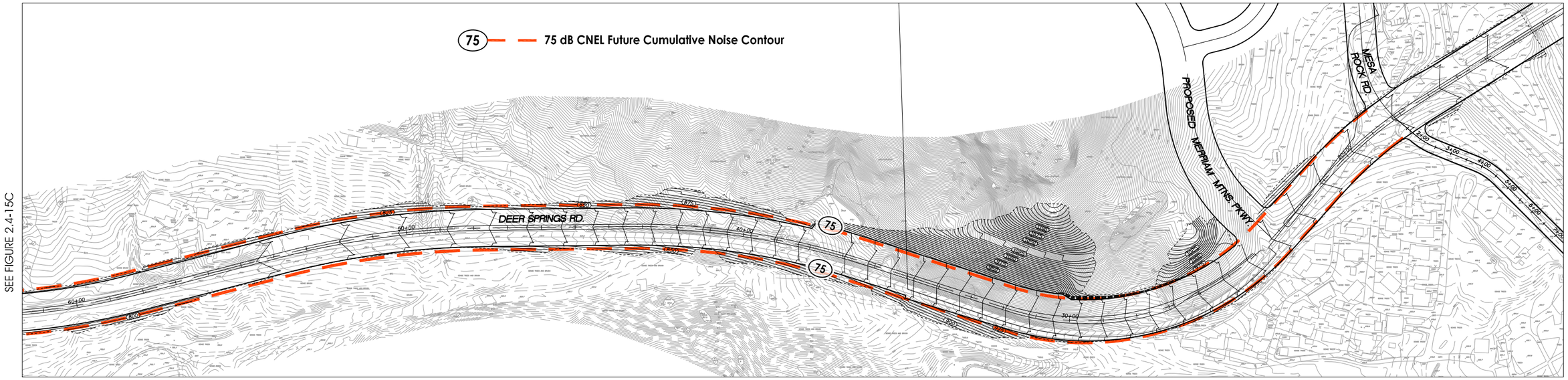
TYPICAL 6-LANE SECTION - DEER SPRINGS ROAD

NOT TO SCALE



PROFILE - DEER SPRINGS ROAD

HORIZ. SCALE: 1" = 150' VERT. SCALE: 1" = 15'



BASE SOURCE: FUSCOE ENGINEERING

DEER SPRINGS ROAD - PLAN VIEW

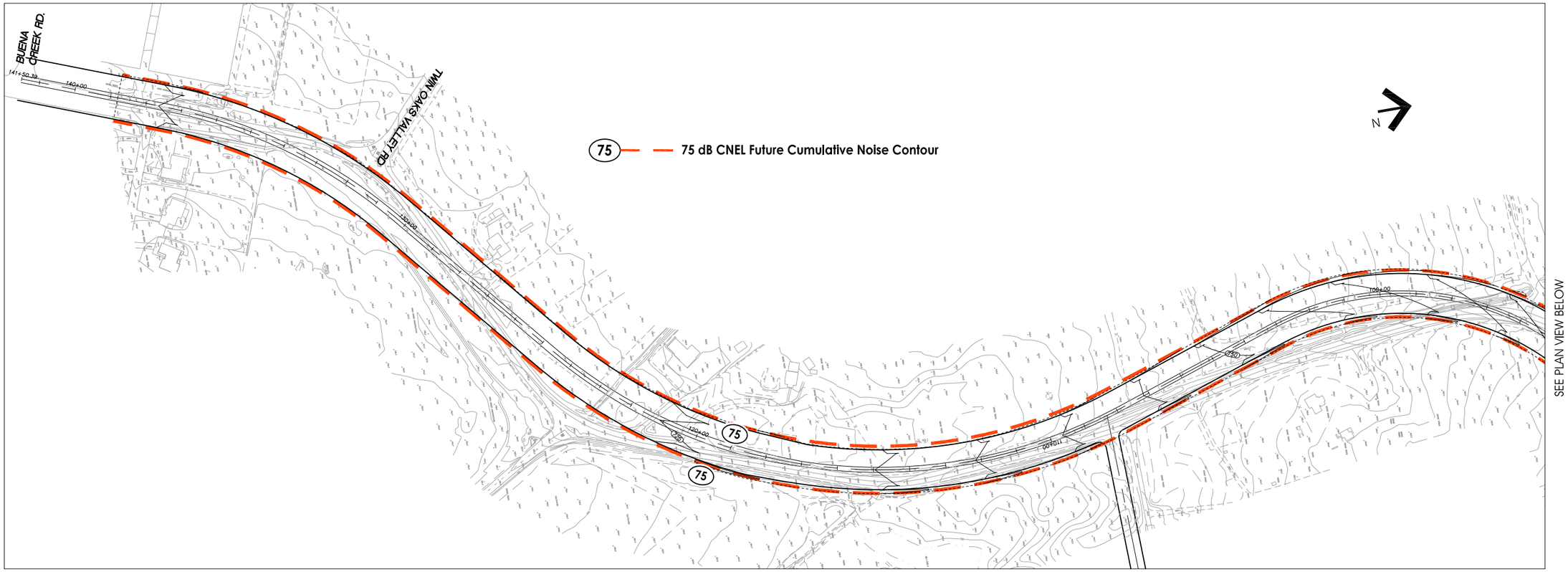
Future (Existing + Project + Cumulative Projects) 75 dB CNEL Noise Contours

FIGURE
2.4-15B

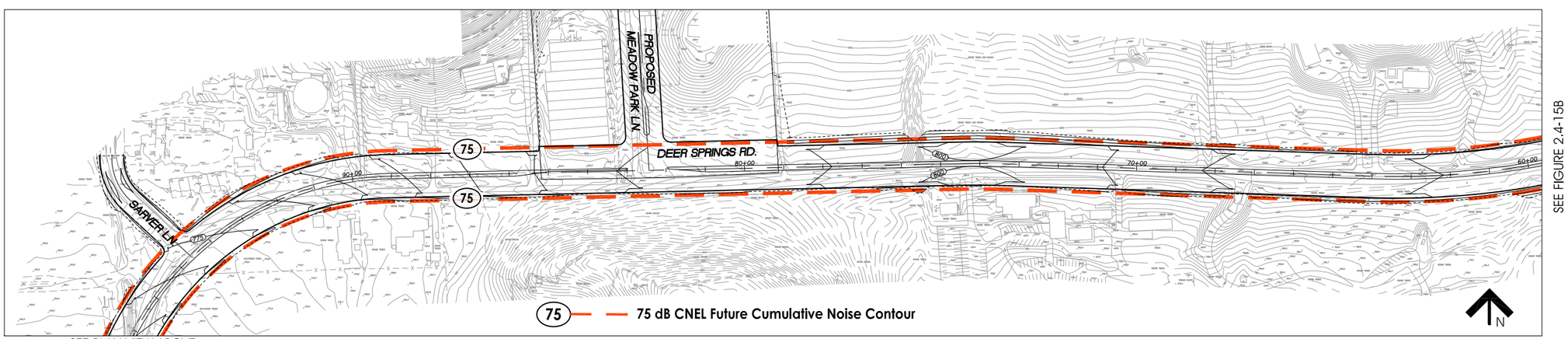
MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

300 150 0 300
FEET

N



DEER SPRINGS ROAD – PLAN VIEW Station 97+00 to Station 139+00



SEE PLAN VIEW ABOVE

DEER SPRINGS ROAD – PLAN VIEW Station 60+00 to Station 97+00

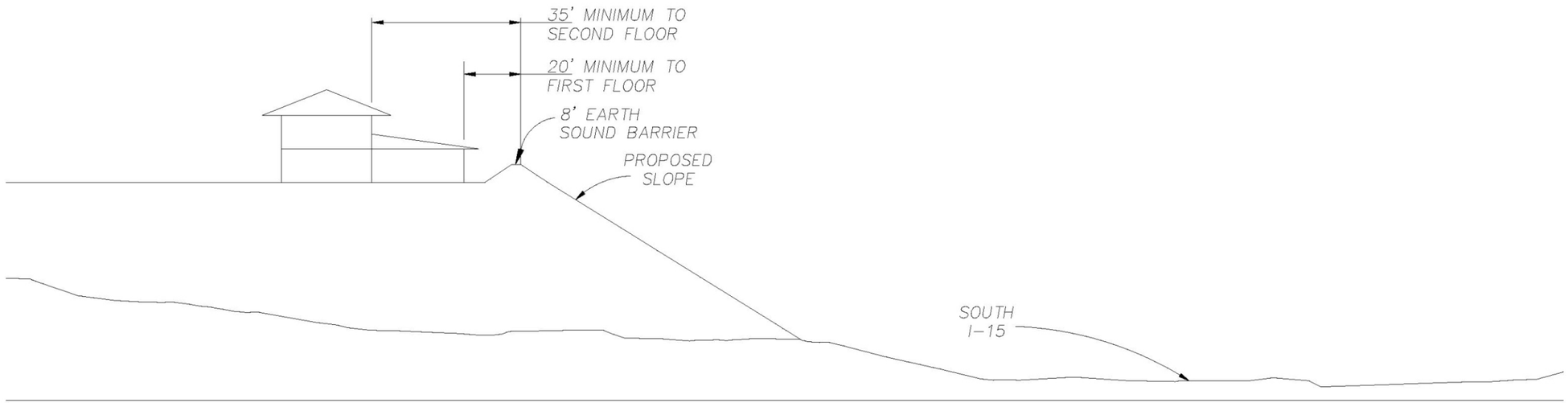
BASE SOURCE: FUSCOE ENGINEERING

Future (Existing + Project + Cumulative Projects) 75 dB CNEL Noise Contours

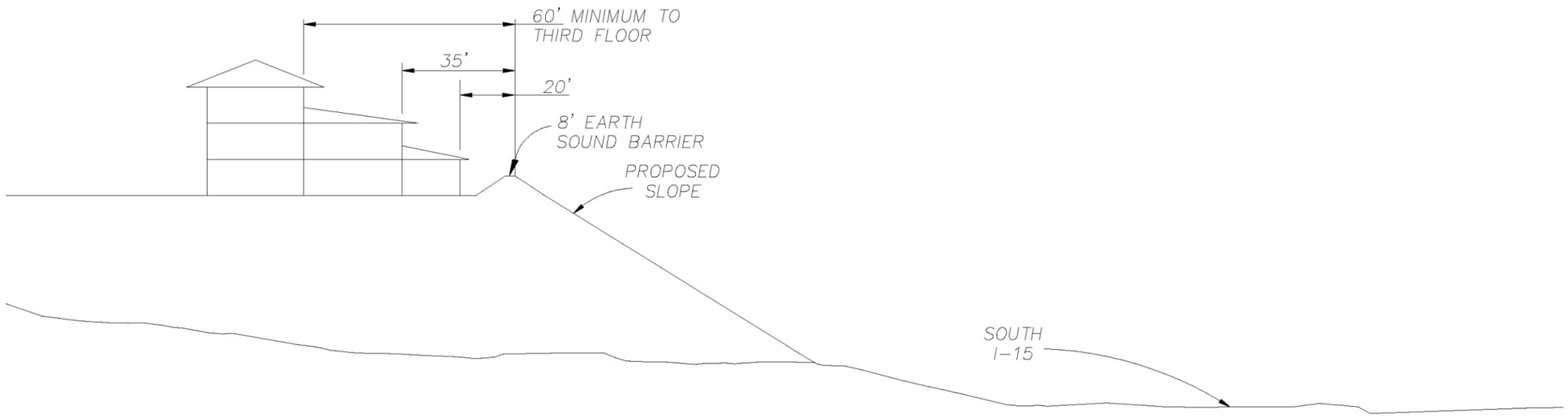
FIGURE 2.4-15C

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

300 150 0 300
FEET



2 Story, Section A-A
Neighborhood 1, Planning Area 2



3 Story, Section A-A
Neighborhood 1, Planning Area 2

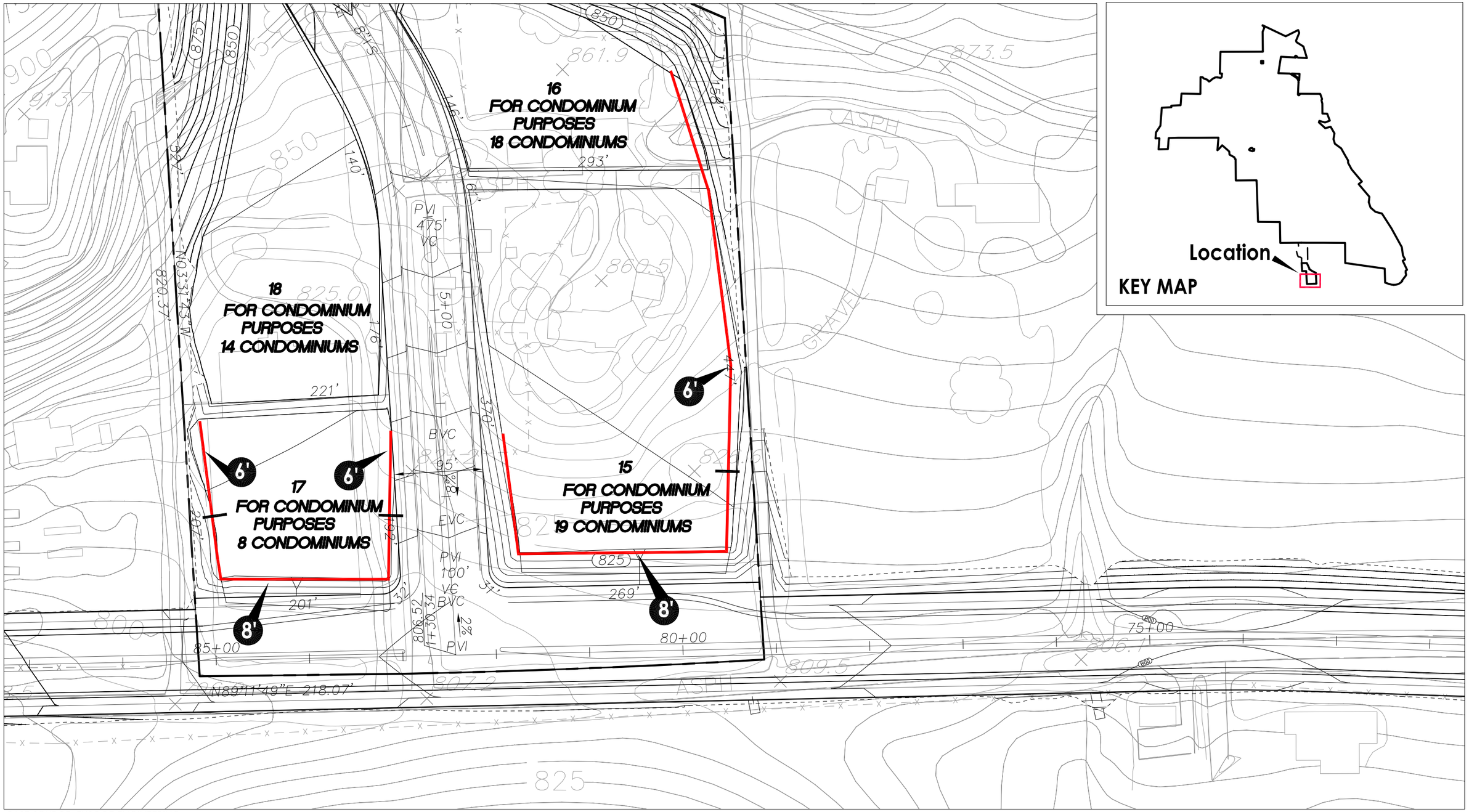
D1-Designator Noise Setback Standard

Second- and Third-Floor Building Setback Distances - Neighborhood 1, Planning Area 2

FIGURE
2.4-16

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

N



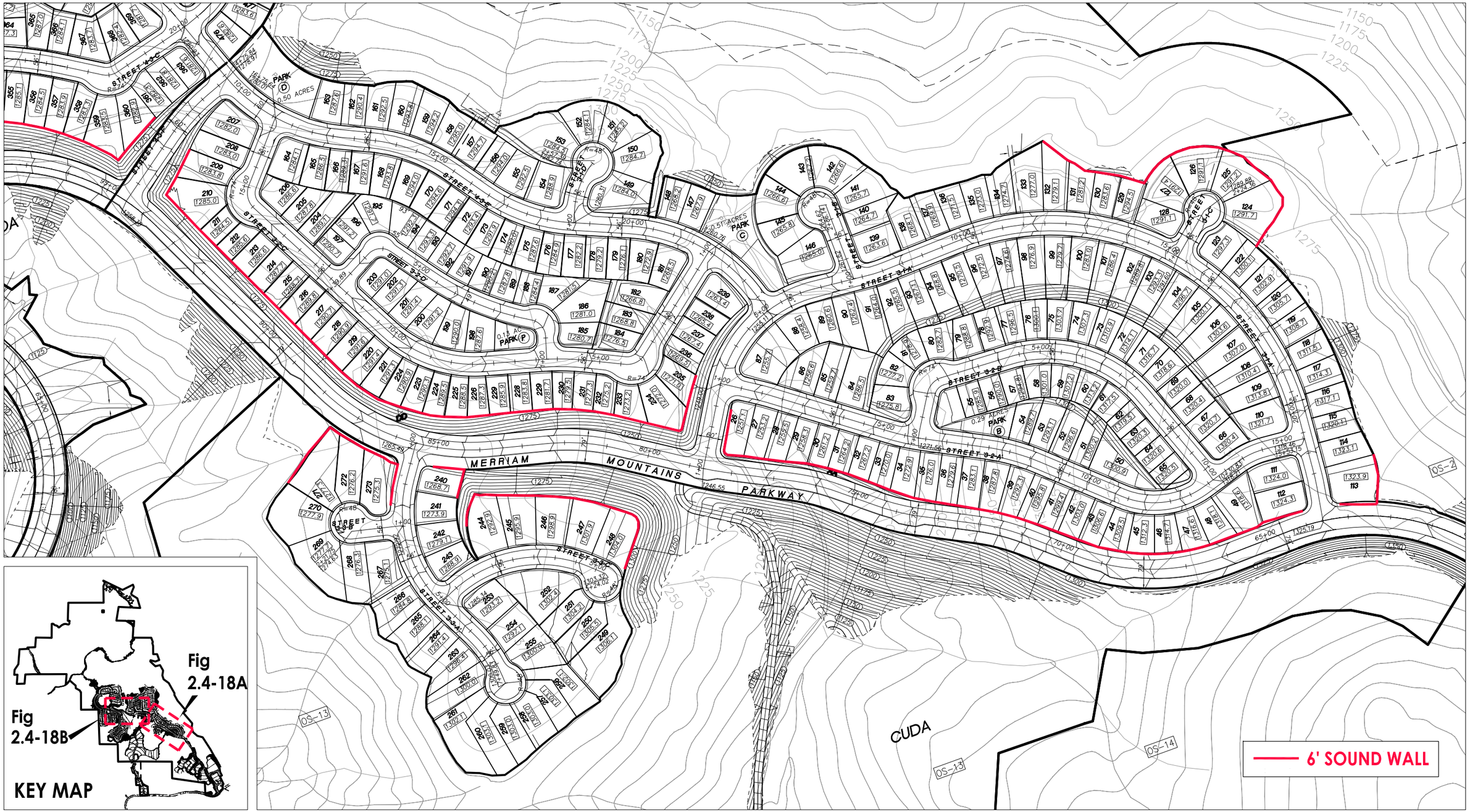
BASE SOURCE: FUSCOE ENGINEERING

Noise Barrier Heights & Locations - Neighborhood 2 (N2)

FIGURE
2.4-17

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

100 50 0 100
FEET



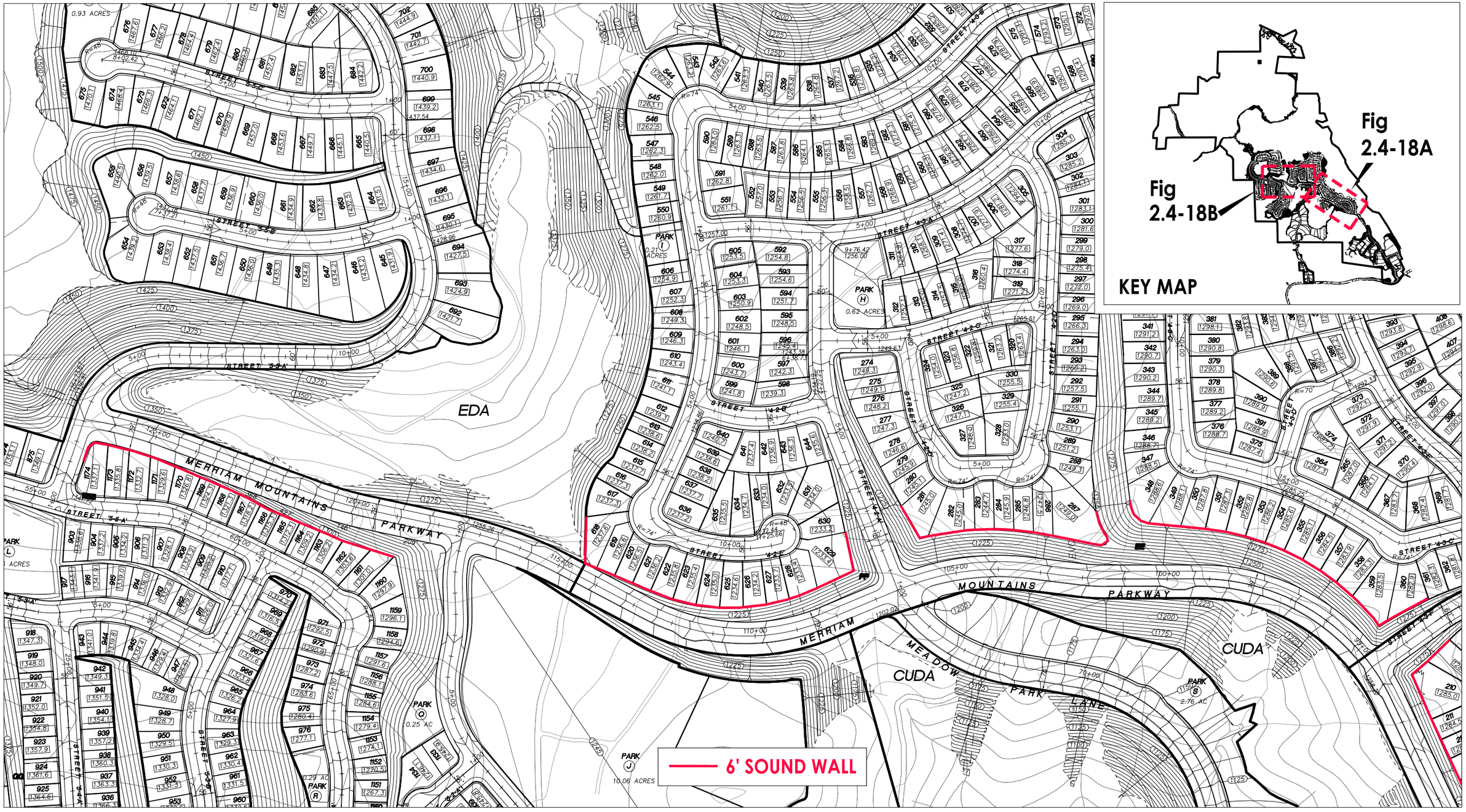
BASE SOURCE: FUSCOE ENGINEERING

Noise Barrier Heights & Locations - Neighborhoods 3 & 4 (N3) (N4)

FIGURE 2.4-18A

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

220 110 0 220
FEET



BASE SOURCE: FUSCOE ENGINEERING

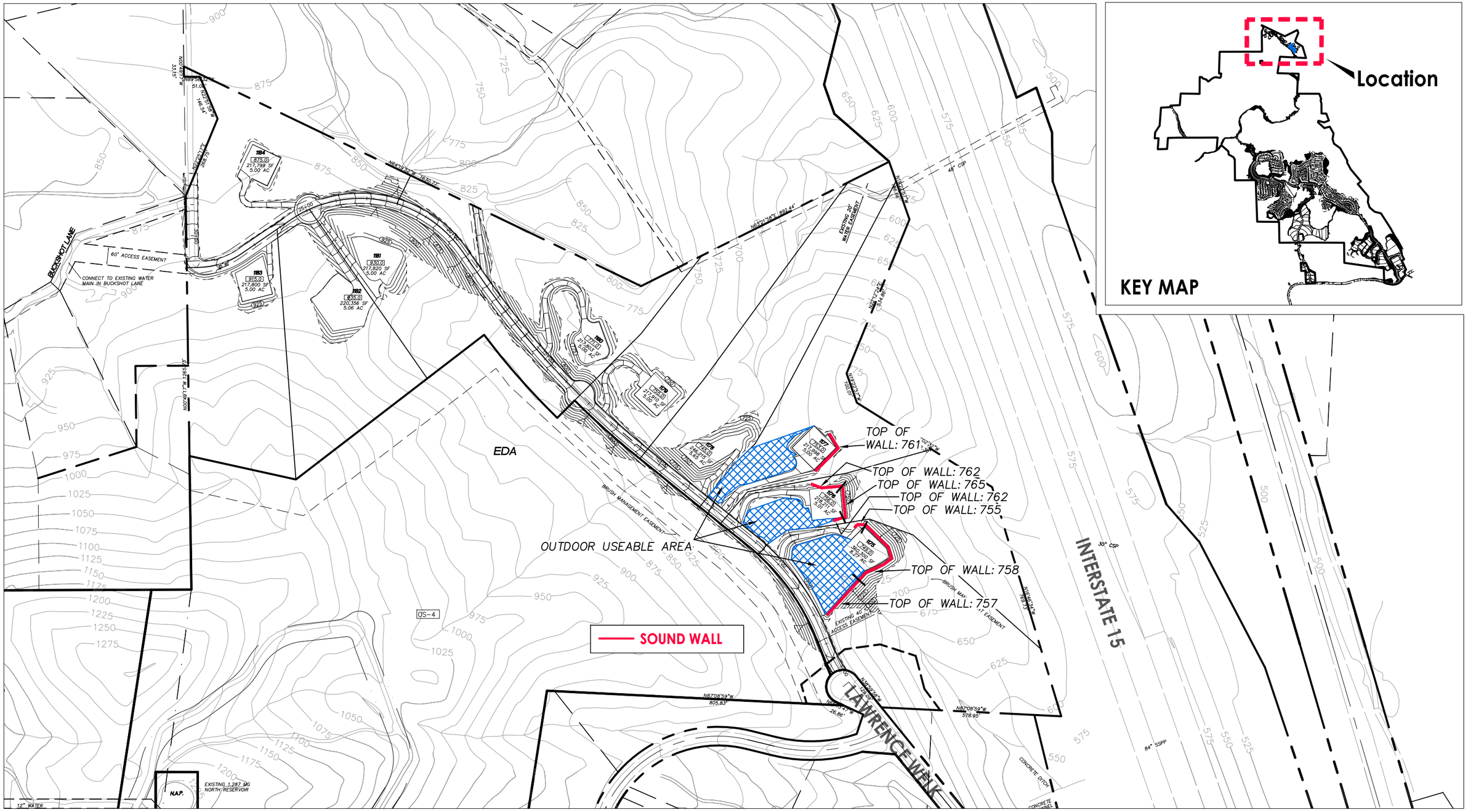
Noise Barrier Heights & Locations - Neighborhoods 4 & 5 (N4) (N5)

FIGURE
2.4-18B

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

220 110 0 220
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

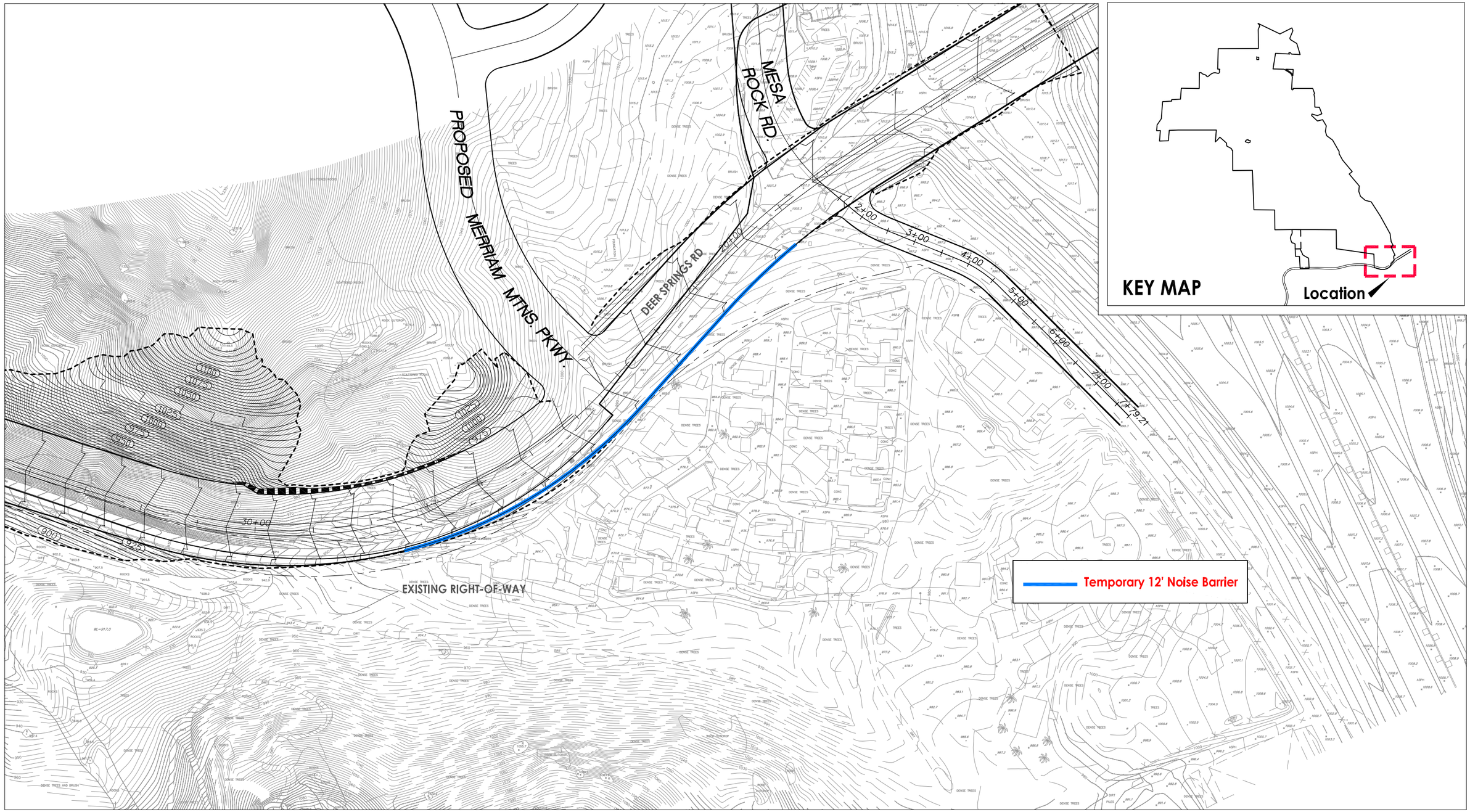
Noise Barrier Heights & Locations - Estate Lots

FIGURE
2.4-19

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

300 150 0 300
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

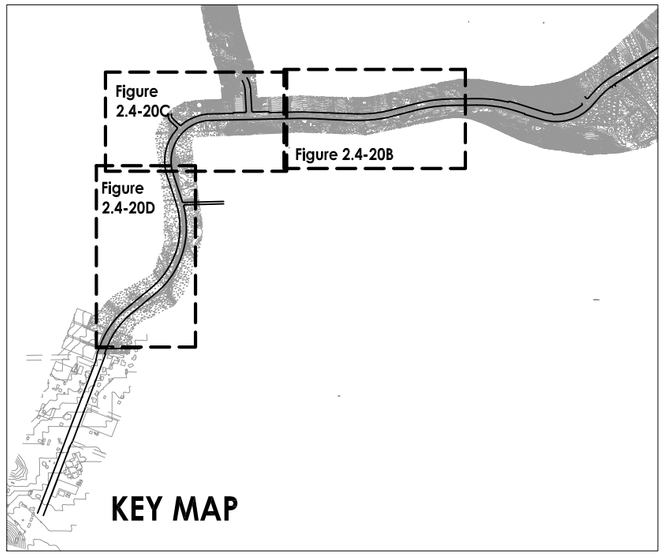
Preliminary Temporary Noise Barrier Height & Location

FIGURE
2.4-20A

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

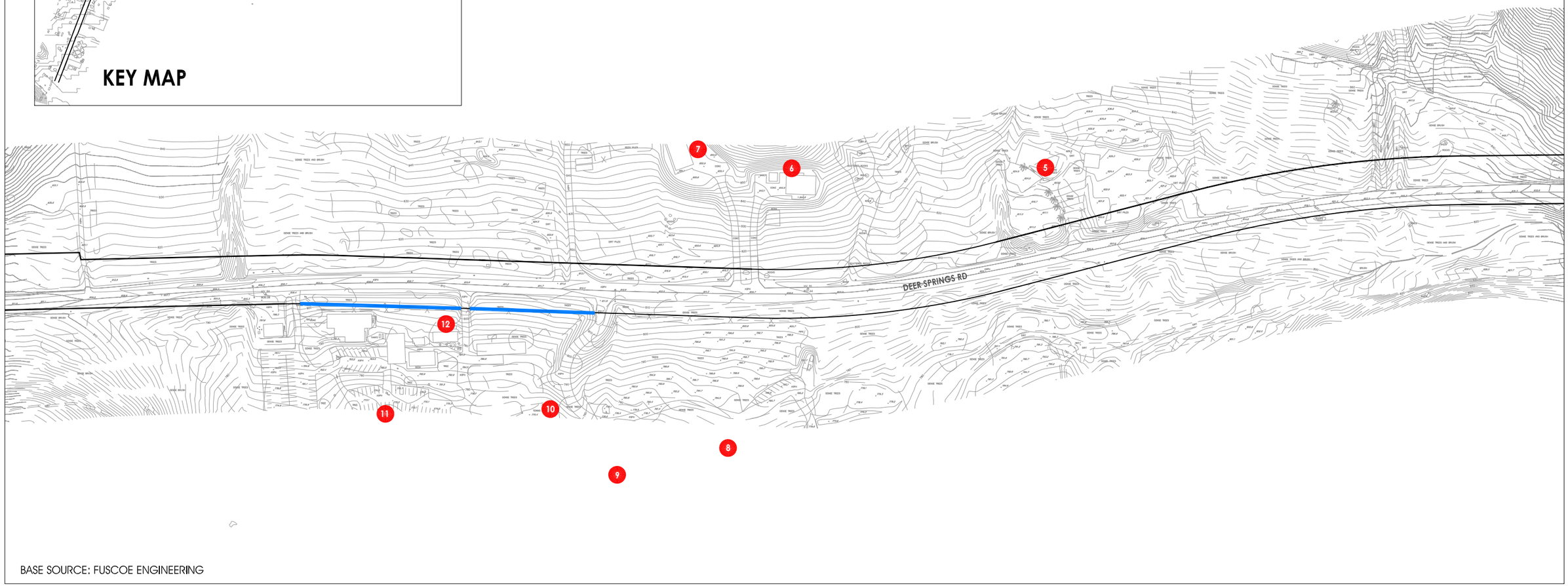
160 80 0 160
FEET

N



10' TEMPORARY SOUND WALL

NOISE RECEPTOR



BASE SOURCE: FUSCOE ENGINEERING

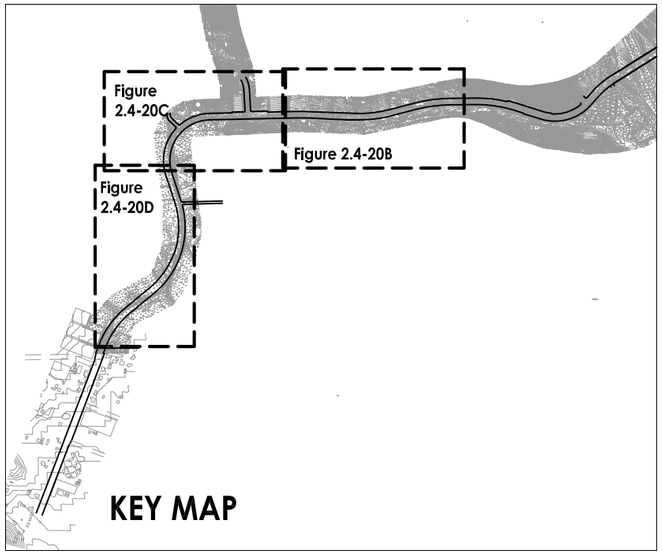
Preliminary Temporary Noise Barrier Heights & Locations

FIGURE
2.4-20B

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



BASE SOURCE: FUSCOE ENGINEERING

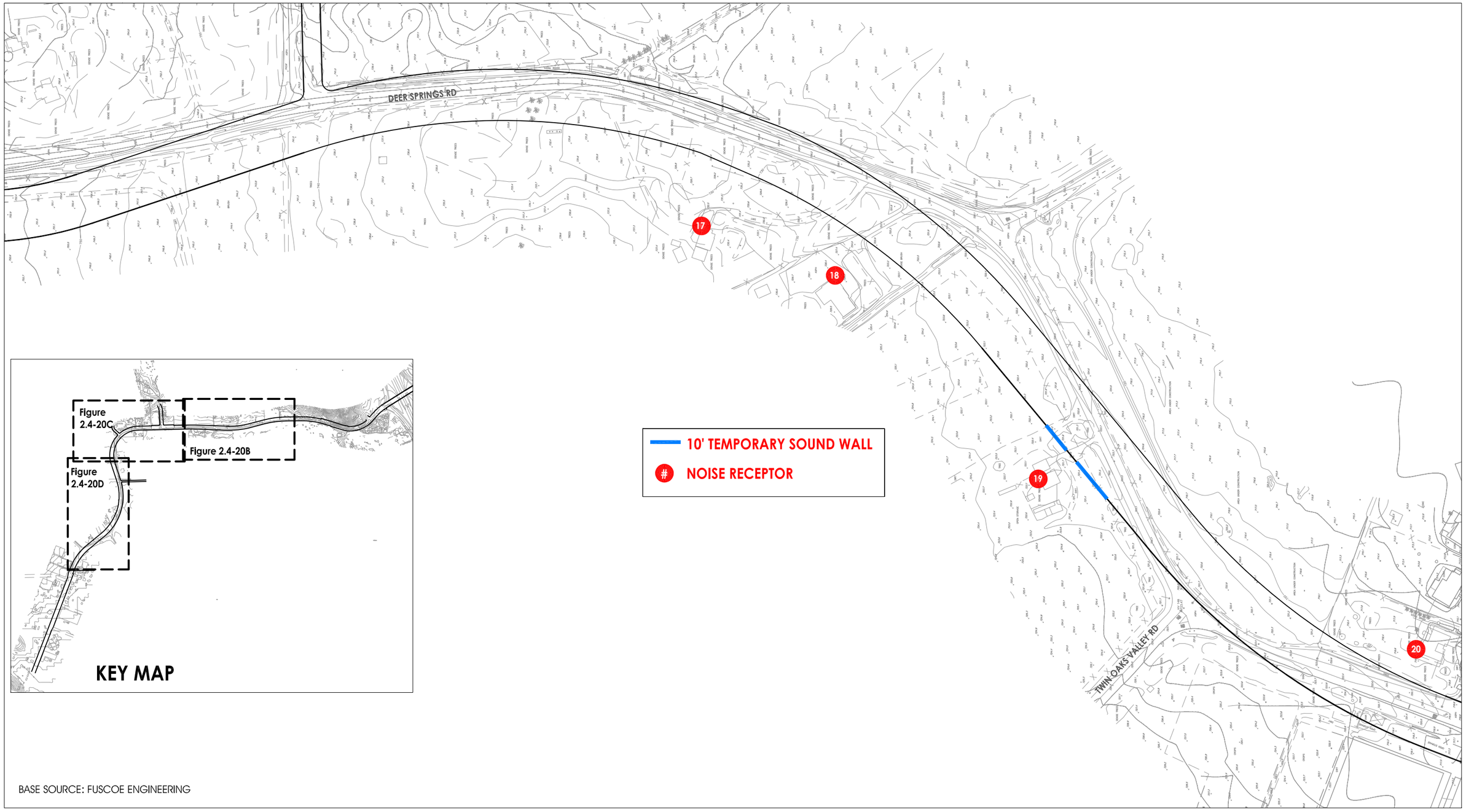
Preliminary Temporary Noise Barrier Heights & Locations

FIGURE
2.4-20C

MERRIAM MOUNTAINS
SPECIFIC PLAN EIR

200 100 0 200
FEET

N



Preliminary Temporary Noise Barrier Heights & Locations

FIGURE 2.4-20D

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

200 100 0 200
FEET

N