NOISE ANALYSIS REPORT

OTAY 250 – EAST OTAY BUSINESS PARK SPECIFIC PLAN AMENDMENT

County of San Diego, CA

March 2, 2017

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EXECUTIVE SUMMARY

The proposed Otay 250 – East Otay Business Park Specific Plan Amendment project would establish new mixed-use land-use categories on a 253.12-acre project site located generally at the northeastern corner of Otay Mesa Road and Harvest Road / State Route 125.

The project could result in the construction of noise-sensitive land uses on the project site. Because areas of the project site are located within the 65 dBA CNEL contour of an adjacent or project roadway, any proposed area including a noise-sensitive area must undergo a site-specific analysis to determine mitigation necessary to reduce the exterior noise level at the area to 65 dBA CNEL or below. Noise affecting the project site would be less than significant with mitigation incorporated.

Project-generated traffic noise impacts would be less than significant.

Project-generated operational noise impacts would be less than significant with mitigation incorporated.

Project construction noise impacts would be less than significant.

1.0 INTRODUCTION

This noise analysis report evaluates potential noise impacts to noise sensitive land uses (NSLUs) located within the Otay 250 – East Otay Business Park Specific Plan Amendment project site, potential project-related vehicular traffic noise impacts to offsite property, and potential construction noise impacts to offsite property.

1.1 Project Location and Description

The Project site is located within the East Otay Mesa Specific Plan (EOMSP) area and encompasses 253.13 acres of the 3,012.7-acre Specific Plan area, including 218.12 acres of lot area and 35.01 acres of right-of-way area. The EOMSP area is located in the unincorporated portion of southern San Diego County, within the Otay Subregional Plan area. The undeveloped Project site is generally east of State Route 125 (SR 125), north of Otay Mesa Road, west of Vann Centre Boulevard, and south of Zinser Road (Figures 1 and 2).

The Project proposes a Specific Plan Amendment (SPA) to the EOMSP to establish a new Mixed-Use Village Core area, which would allow for the establishment of a mix of employment, retail, and residential uses (Figure 3). Approval of the project would allow for the entitlement of a maximum of 3,158 dwelling units, 78,000 square feet of general commercial uses, and 765,000 square feet of employment uses, and approximately 51.3 acres of permanent biological open space.

The proposed Project would include construction of public streets within the Project boundary, including Sunroad Boulevard, Sunroad View Drive, Alejandro Drive, and extensions of Harvest Road and David Ridge Drive. All public Project roadways would include Class 2 bike lanes. Project roadways would be developed as a 4-lane Major Road (Sunroad Boulevard: Lone Star Road to Otay Mesa Road), 4-lane Collectors (Harvest Road: Sunroad Boulevard to Otay Mesa Road, Vann Centre Boulevard: Otay Mesa Road to Lone Star Road, and Zinser Road: west of Sunroad Boulevard), and 2-lane Collectors (David Ridge Drive: Sunroad Boulevard to Alta Road, and Zinser Road: Sunroad Boulevard to Lone Star Road).

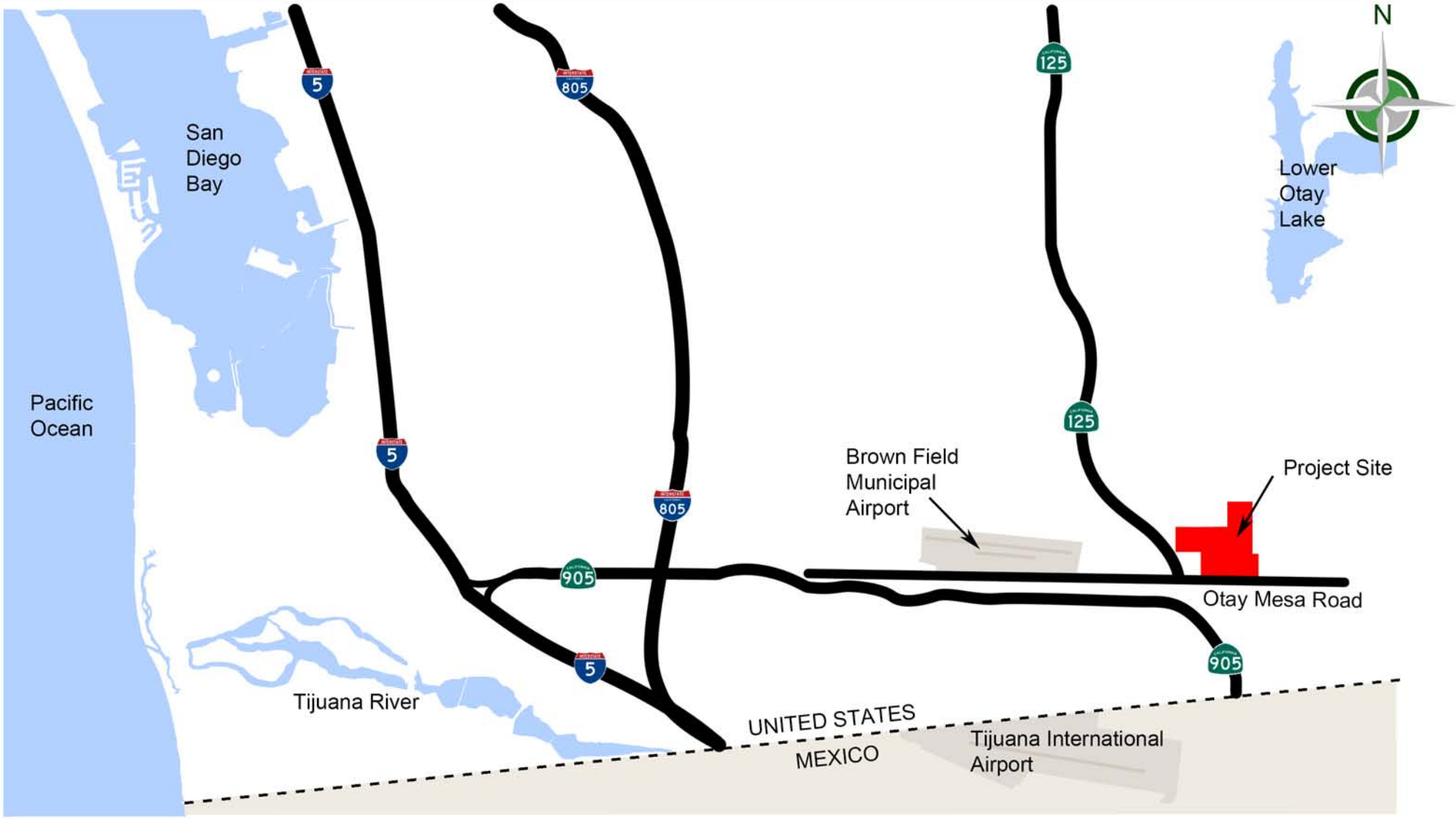

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FIGURE 1
Vicinity Map

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FIGURE 2
Noise Measurement Locations

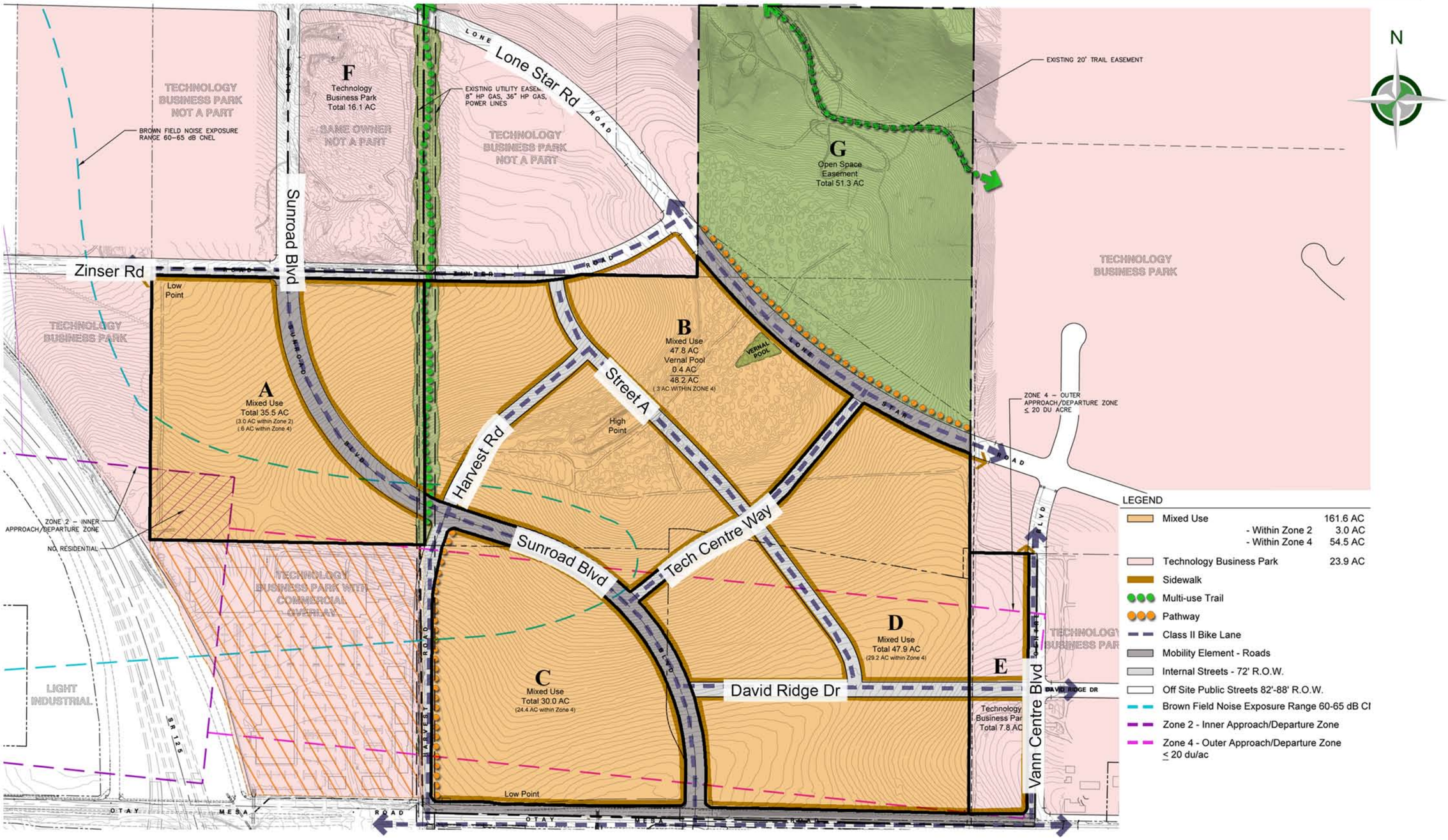

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FIGURE 3

Conceptual Land-Use and Circulation Plan

Discretionary Actions

Specific Plan Amendment – The Specific Plan Amendment proposes to add a new land use designation (*Mixed-Use Designation*) with three new emphases that allow for a mix of residential (*Residential Emphasis*), employment (*Employment Emphasis*), and retail uses (*Retail Emphasis*) for the approximately 253-acre Project area of the 3,012.7-acre Specific Plan area. The Specific Plan Designations would include a range of densities and a mix of uses across the Project area.

Subregional Plan Amendment – In addition to the Specific Plan Amendment, the Project would require an Amendment to the Otay Subregional Plan. The Project site is governed by the Otay Subregional Plan (Volume 1). The focus of the Subregional Plan is to promote industrial development in the Otay Mesa/International Border area with the Mexico region, and the plan describes the EOMSP as the planning framework for development in East Otay Mesa. The Project proposes to amend the Otay Subregional Plan in order to allow residential mixed-uses that will support the development of industrial uses in the area by providing live/work and commercial service opportunities.

Rezone – The Project site is zoned Specific Plan Area (S-88) with Technology Business Park and Commercial Overlay land use designations. The Project proposes to retain the S-88 zoning designation, but would change the land use designation and the regulatory site standards within the Specific Plan to Mixed-Use Residential Emphasis, Mixed-Use Employment Emphasis, and Mixed-Use Retail Emphasis, to allow for development of the project site as a Village Core. Each new land use designation consists of regulatory site standards specific to the use, and as described on page 108 of the Specific Plan. The County requires a Rezone when any of the regulatory site standards are changed.

Tentative Map – The Project site was approved for development in 2012 to subdivide the site into 55 lots. Tentative Map 5538 (TM 5538) consisted of 52 technology business park lots ranging in size from 1.8 acres to 5.3 acres, one lot for a sewer pump station, one storm water detention lot, and a 51.3-acre dedicated open space lot. A 0.41-acre lot within the subdivision is identified as an open space easement established for the protection of biological resources (vernal pools).

The Project proposes a new Tentative Map for development of the Project site in accordance with the proposed Specific Plan Amendment. The proposed Tentative Map would subdivide the Project area. The project site is relatively flat and consists primarily of non-native vegetative grasslands. Earthwork is estimated to consist of 1,350,000 cubic yards of balanced cut and fill.

1.2 Environmental Noise Background

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound typically associated with human activity and that interferes with or disrupts normal activities. The human environment is characterized by a certain consistent noise level which varies with each area. This is called ambient noise. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, perceived importance of the noise and its appropriateness in the setting, time of day and type of activity during which the noise occurs, and sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in cycles per second, or hertz (Hz), whereas intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually as pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. The average person perceives a change in sound level of about 10 dB as a doubling (or halving) of the sound's loudness; this relation holds true for sounds of any loudness. Sound levels of typical noise sources and environments are provided in Table 1.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. A simple rule is useful, however, in dealing with sound levels. If a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example, 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB.

The normal human ear can detect sounds that range in frequency from about 20 Hz to 20,000 Hz. However, all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the range of 1,000 Hz to 4,000 Hz. This frequency dependence can be taken into account by applying a correction to each frequency range to approximate the human ear's sensitivity within each range. This is called A-weighting and is commonly used in measurements of community environmental noise. The A-weighted sound pressure level (abbreviated as dBA) is the sound level with the "A-weighting" frequency correction. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at Given Distance)	Noise Environment	A-Weighted Sound Level	Human Judgment of Noise Loudness (Relative to Reference Loudness of 70 Decibels*)
Military Jet Takeoff with Afterburner (50 ft)	Carrier Flight Deck	140 Decibels	128 times as loud
Civil Defense Siren (100 ft)		130	64 times as loud
Commercial Jet Take-off (200 ft)		120	32 times as loud **Threshold of Pain**
Pile Driver (50 ft)	Rock Music Concert Inside Subway Station (New York)	110	16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Gas Lawn Mower (3 ft)		100	8 times as loud **Very Loud**
Food Blender (3 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck (150 ft)	Boiler Room Printing Press Plant	90	4 times as loud
Garbage Disposal (3 ft)	Noisy Urban Daytime	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)	Commercial Areas	70	Reference Loudness **Moderately Loud**
Normal Speech (5 ft) Air Conditioning Unit (100 ft)	Data Processing Center Department Store	60	1/2 as loud
Light Traffic (100 ft)	Large Business Office Quiet Urban Daytime	50	1/4 as loud
Bird Calls (distant)	Quiet Urban Nighttime	40	1/8 as loud **Quiet**
Soft Whisper (5 ft)	Library and Bedroom at Night Quiet Rural Nighttime	30	1/16 as loud
	Broadcast and Recording Studio	20	1/32 as loud Just Audible
		0	1/64 as loud Threshold of Hearing

Source: Compiled by dBF Associates, Inc.

Because community noise fluctuates over time, a single measure called the Equivalent Sound Level (Leq) is often used to describe the time-varying character of community noise. The Leq is the energy-averaged A-weighted sound level during a measured time interval, and is equal to the level of a continuous steady sound containing the same total acoustical energy over the averaging time period as the actual time-varying sound. Additionally, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the Lmax and Lmin indicators, which represent the root-mean-square maximum and minimum noise levels obtained during the measurement interval. The Lmin value obtained for a particular monitoring location is often called the "acoustic floor" for that location.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. They are the noise levels equaled or exceeded during 10, 50, and 90 percent of a stated time, respectively. Sound levels associated with L10 typically describe transient or short-term events, whereas levels associated with L90 describe the steady-state (or most prevalent) noise conditions.

Community Noise Equivalent Level (CNEL) is an adjusted average A-weighted sound level for a 24-hour day. It is calculated by adding a 5-dB adjustment to sound levels during evening hours (7:00 p.m. to 10:00 p.m.) and a 10-dB adjustment to sound levels during nighttime hours (10:00 p.m. to 7:00 a.m.). These adjustments compensate for the increased sensitivity to noise during the typically quieter evening and nighttime hours. The CNEL is used by the State of California and the County of San Diego to evaluate land-use compatibility with regard to noise.

1.3 Environmental Setting and Existing Conditions

Many land uses are considered sensitive to noise. Noise sensitive land uses (NSLUs) are land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise, such as residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. Industrial and commercial land uses are generally not considered sensitive to noise. The existing sound level at any given location depends on the distance to a roadway, proximity to commercial and neighborhood noise sources, and intervening structures and topography.

The project site consists of undeveloped vacant land. Noise sources in the project area consist of vehicular traffic on Otay Mesa Road and SR 125, and aircraft associated with Brown Field Municipal Airport (SDM). The Tijuana International Airport (TIJ) is located in Tijuana, Mexico, at least two miles southwest of the site. The project site is located outside of the 60-dBA CNEL noise contour of TIJ.

In the project vicinity, Otay Mesa Road is a two-way 4-5-lane Major roadway carrying an existing (year 2015) Average Daily Traffic (ADT) volume of approximately 10,500 vehicles at a posted speed limit of 55 miles per hour (mph).

In the project vicinity, SR 125, or the South Bay Expressway, is a two-way 4-lane toll road originating/terminating at Otay Mesa Road. The northbound onramp and southbound offramp carry an existing (year 2012) ADT volume of approximately 2,850 / 3,000 vehicles, respectively [Caltrans 2015]. The ramps are assumed to operate at the 65 mph speed limit posted at the toll road entrance.

Brown Field Municipal Airport is a general aviation airport in the City of San Diego, approximately 3,600 – 4,600 feet west of the project. A portion of the project site is located within the 60-65-dBA CNEL noise contour [SDCALUC 2010], as shown on Figure 4.

Existing NSLUs in the project vicinity include multiple residences located approximately 1,000 – 1,500 feet north/northwest of the northern project boundary, and three residences – 6940, 6944, and 6948 Otay Mesa Road – along the north side of Otay Mesa Road, just east of the southeast boundary of the project. The residences at 6940, 6944, and 6948 Otay Mesa Road will be removed as part of TM 5568 RPL 1, approved August 2012.

Non-noise-sensitive land uses in the project vicinity include the Larkspur Energy Facility at the southeast corner of Otay Mesa Road and Harvest Road, the San Diego Business Park commercial land uses at the southeast corner of Otay Mesa Road and Sanyo Avenue, the Richard J. Donovan Correctional Facility (RJDCF) to the northeast, and the vacant parcels adjacent to the project site on the north, east, west, and across Otay Mesa Road to the south. The vacant parcels adjacent to the project site are generally designated for Technology Business Park use in the East Otay Mesa Specific Plan.

Existing developed land uses adjacent to the project site are identified in Figure 2.

Otay 250 - East Otay Business Park Specific Plan Amendment

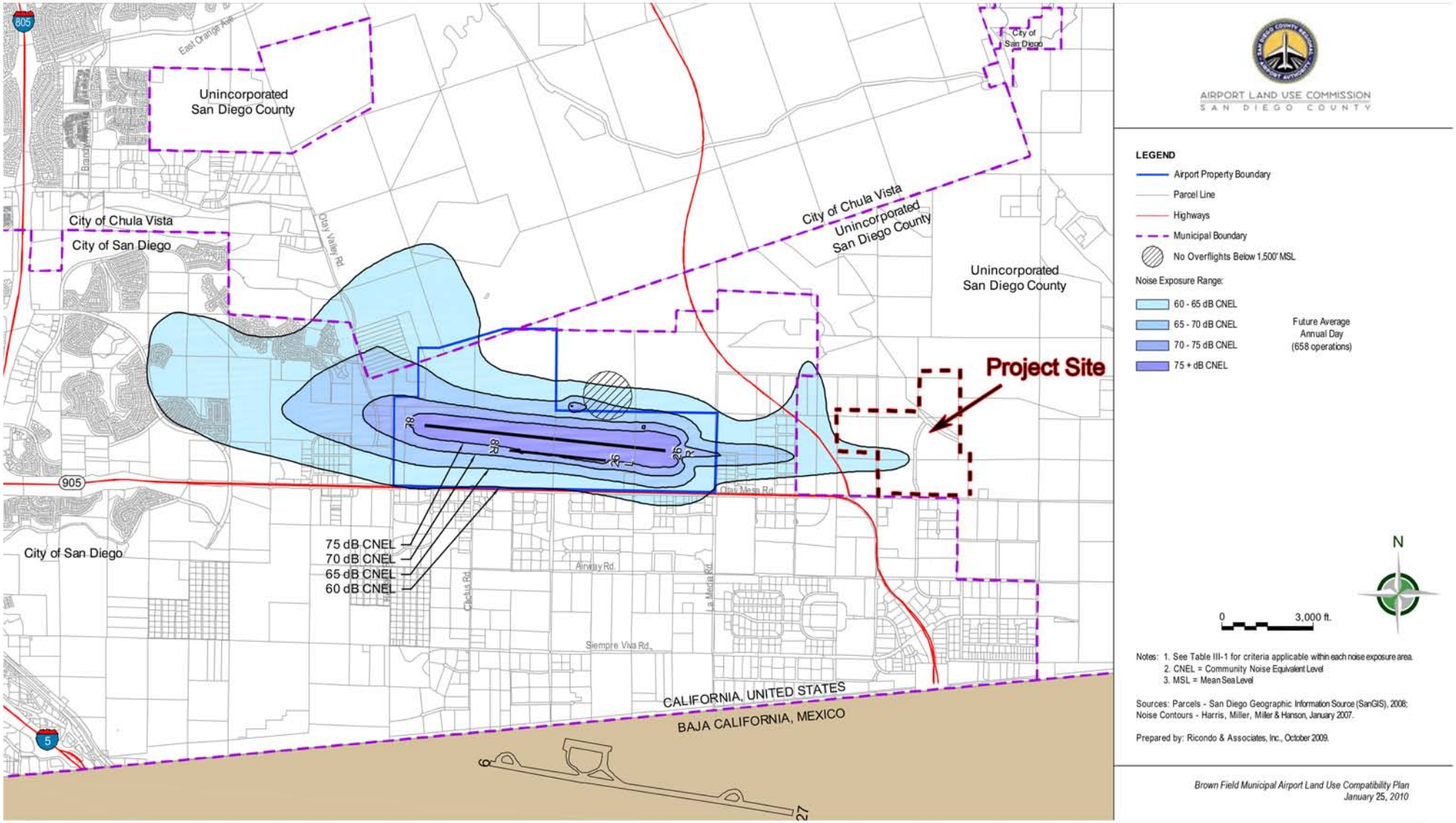

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FIGURE 4

Brown Field Municipal Airport Compatibility Policy Map

1.4 Methodology and Equipment

1.4.1 Noise Measuring Methodology and Procedures

Two sound level measurements were conducted during the afternoon peak traffic period to quantify the existing acoustical environment on the project site. A RION Model NA-28 American National Standards Institute (ANSI) Type 1 Integrating Sound Level Meter (SLM) was used as the data-collection device. The meter was mounted on a tripod roughly 5 feet above ground to simulate the average height of the human ear. The microphone was fitted with a windscreen. Weather conditions during the measurements were approximately 80°F, 65% relative humidity, 8 mph wind speed, and 50% cloud cover. The measurements were performed on Wednesday, July 15, 2015. The sound level meter was calibrated before the measurement period. Simultaneous traffic counts were conducted during the measurement periods. The measurement results are summarized in Table 2 and correspond to the locations depicted on Figure 2.

Table 2. Sound Level Measurements (dBA)

Measurement Location		Time	Leq	Lmin	Lmax	L10	L50	L90	Traffic (C / MT / HT / MC)
ML1	Southwest project site corner	3:30 p.m. – 3:50 p.m.	67.7	47.2	79.4	71.5	65.5	55.6	486 / 29 / 88 / 14
ML2	Southeast project site corner	4:00 p.m. – 4:20 p.m.	68.5	47.5	81.2	71.9	66.1	54.4	512 / 20 / 91 / 7

Notes:
Measurements conducted Wednesday, July 15, 2015.
C = cars, MT = medium trucks, HT = heavy trucks, MC = Motorcycles.
Additional noise sources included periodic aircraft to the north.
Measurements taken at approximately 75 feet from the centerline of Otay Mesa Road.

1.4.2 Noise Modeling Software

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5 was used to estimate traffic noise levels. The modeling effort considered the peak-hour traffic volume, average estimated vehicle speed, and estimated vehicle mix, i.e., percentage of cars, medium trucks, heavy trucks, buses, and motorcycles. Sound levels caused by line sources (i.e., variable or moving sound sources such as traffic) generally decrease at a rate of 3 to 4.5 dBA when the distance from the road is doubled, depending on the ground surface hardness between the source and the receiving property. The model assumed "hard soil" propagation conditions, which corresponds to a drop-off rate of 3 dBA per doubling of distance. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures (walls and buildings), barriers, and topography. The noise attenuating effects of changes in elevation, topography, and intervening structures were not included in the model. Therefore, the modeling effort is considered a worst-case representation of the roadway noise.

2.0 NOISE SENSITIVE LAND USES

2.1 Guidelines for the Determination of Significance

Project implementation will result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLU to exterior or interior noise (including noise generated from the project, together with noise from roads [existing and planned], railroads, airports, heliports and all other noise sources) in excess of any of the following:

A. Exterior Locations:

i. 60 dB (CNEL) †; or

ii. An increase of 10 dB (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(1) Net lot area up to 4,000 square feet: 400 square feet

(2) Net lot area 4,000 square feet to 10 acres: 10% of net lot area

(3) Net lot area over 10 acres: 1 acre

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

45 dB (CNEL) except for the following cases:

i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 50 decibels (A).

ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

† If any adopted community noise standard is more stringent than the exterior criterion of 60 decibels CNEL, the analysis of any related impacts due to this standard shall be considered a potential land use impact. The criteria listed in this document are still applicable in all environmental acoustical studies for compliance to CEQA.

2.2 County of San Diego General Plan Noise Element

The County of San Diego General Plan Noise Element was updated subsequent to the Guidelines for the Determination of Significance presented in Section 2.1 above. In the updated Noise Element, Table N-1 indicates that exterior noise levels up to 65 dBA CNEL are Acceptable at mixed-use (commercial / residential) land uses.

2.3 Potential Noise Impacts

2.3.1 Onsite Vehicular Traffic

The proposed project would potentially involve the creation of patios, playgrounds, outdoor dining areas, or other NSLUs. Because the site plans of the individual lots have not been prepared, these NSLUs could be located at any area of the project site.

TNM was used to estimate traffic noise levels on the project site. The future (year 2020) ADT volumes on project roadway segments were obtained from the TIA [LLG 2016] and supplemental documentation provided by the traffic engineer. The peak-hour volume was assumed to be 10% of the ADT. Roadway speeds were obtained from the County of San Diego – Public Road Standards, Table 2A or from a field survey. The vehicle mix on Otay Mesa Road was based on the traffic classification counts performed during the sound level measurements; on all other roadways, the vehicle mix was estimated based on past experience with similar projects. Table 3 shows the modeled roadway parameters and the noise levels from each roadway segment adjacent to or through the project site.

Without mitigation, traffic noise levels could exceed 65 dBA CNEL at onsite NSLUs.

2.3.2 Onsite Airport Noise

Brown Field Municipal Airport is a general aviation airport in the City of San Diego located west of the project. The Brown Field Municipal Airport 60-65-dBA CNEL noise contour extends into portions of Areas A, B, D, and F, as shown in Figure 5. Aircraft noise levels would not exceed 65 dBA CNEL at onsite NSLUs.

Table 3. Onsite Vehicular Traffic Sound Levels

Roadway Segment	Future ADT Volume (vehicles)	Roadway Classification	Design Speed (mph)	Distance in Feet	
				65 dBA CNEL	60 dBA CNEL
Harvest Road (vehicle mix: 96 / 2 / 2 / 0 / 0)					
Otay Mesa Road to Sunroad Boulevard	27,000	4-Lane Collector	40	195	615
Sunroad Boulevard to Street A	13,500	4-Lane Collector	40	110	315
Sunroad Boulevard (vehicle mix: 96 / 2 / 2 / 0 / 0)					
Otay Mesa Road to Lone Star Road	33,400	4-Lane Major	55	540	1615
Zinzer Road (vehicle mix: 96 / 2 / 2 / 0 / 0)					
West of Sunroad Boulevard	27,000	4-Lane Collector	40	195	615
Sunroad Boulevard to Lone Star Road	13,500	2-Lane Collector	40	100	265
Street A (vehicle mix: 98 / 1 / 1 / 0 / 0)					
David Ridge Road to Zinser Road	13,500	2-Lane Collector	40	100	265
David Ridge Road (vehicle mix: 98 / 1 / 1 / 0 / 0)					
Sunroad Boulevard to Vann Centre Boulevard	13,500	2-Lane Collector	40	100	265
Vann Centre Boulevard (vehicle mix: 98 / 1 / 1 / 0 / 0)					
Otay Mesa Road to Lone Star Road	27,000	4-Lane Collector	40	195	515
Tech Centre Way (vehicle mix: 98 / 1 / 1 / 0 / 0)					
Sunroad Boulevard to Lone Star Road	13,500	2-Lane Collector	40	100	265
Lone Star Road (vehicle mix: 96 / 2 / 2 / 0 / 0)					
Vann Centre Boulevard to Sunroad Boulevard	33,400	4-Lane Major	55	540	1,615
East of Sunroad Boulevard	50,000	4-Lane Major	55	815	2,530
Otay Mesa Road (vehicle mix: 79 / 5 / 14 / 2 / 0)					
SR 125 Ramps to Harvest Road	36,009	5-Lane Major	55	590	2,315
Harvest Road to Sanyo Avenue	14,258	4-Lane Major	55	305	915
Sanyo Avenue to Vann Centre Boulevard	16,200	2- Lane Local Collector	40	235	580

Note: Assumed vehicle mixes, reported in cars / medium trucks / heavy trucks / buses / motorcycles.

2.3.3 Off-Site Vehicular Traffic

The proposed project would generate additional traffic along existing roads in the project area. An analysis was conducted of the project's effect on traffic noise conditions. Existing-without-project traffic noise levels were compared to existing-with-project traffic noise levels. TNM was used to estimate sound levels at a general reference distance of 50 feet from the centerline of the nearest roadway. The existing and project-generated ADT volumes on project roadway segments were obtained from the TIA [LLG 2016]. It was assumed the existing roadway parameters would be unchanged. Table 4 shows the traffic noise levels along project roadways, without and with the project, respectively.

The addition of project traffic would increase existing noise levels by less than 3 dBA CNEL along 12 of the 18 roadway segments assessed. Sound level variations of less than 3 dBA are not detectable by the typical human ear.

The addition of project traffic would increase existing noise levels by 3 dBA CNEL or more along Otay Mesa Road between Piper Ranch Road and Vann Centre Boulevard, and along Enrico Fermi Drive between Otay Mesa Road and Siempre Viva Road. There are no NSLUs along Otay Mesa Road between Piper Ranch Road and Vann Centre Boulevard, or along Enrico Fermi Drive between Otay Mesa Road and Siempre Viva Road. An increase of 3 dBA CNEL or more would not occur along any roadway segment with an adjacent NSLU.

The only existing NSLUs in the project vicinity are the three residences – 6940, 6944, and 6948 Otay Mesa Road – along the north side of Otay Mesa Road, just east of the southeast boundary of the project. The addition of project traffic would increase existing noise levels by approximately 1.7 dBA CNEL at these residences. Because project traffic would not increase noise levels by 3 dBA or more at these residences, there would be no impact from offsite project vehicular traffic.

Table 4. Off-Site Traffic Noise Levels

Roadway Segment	Existing ADT (vehicles)	Existing + Project ADT (vehicles)	Project-Generated Noise Level Increase (dBA CNEL)
Otay Mesa Road			
West of Heritage Road	9,670	11,717	+ 0.8
Heritage Road to Cactus Road	8,260	10,990	+ 1.5
Cactus Road to Britannia Boulevard	8,710	11,781	+ 1.4
Britannia Boulevard to La Media Road	8,600	14,401	+ 2.2
La Media Road to Piper Ranch Road	15,560	30,575	+ 2.9
Piper Ranch Road to SR-125 Ramps	13,110	29,148	+ 3.5
SR-125 Ramps to Harvest Road	10,510	37,468	+ 5.8
Harvest Road to Sanyo Avenue	10,410	28,154	+ 4.3
Sanyo Avenue to Vann Centre Boulevard	10,410	20,647	+ 3.0
Vann Centre Boulevard to Enrico Fermi Drive	10,090	14,867	+ 1.7
Britannia Boulevard			
Otay Mesa Road to SR-905 Ramps	10,800	13,530	+ 1.0
Sanyo Avenue			
Otay Mesa Road to Airway Road	5,600	7,989	+ 1.5
Enrico Fermi Drive			
Otay Mesa Road to Airway Drive	4,180	8,275	+ 3.0
Airway Drive to Siempre Viva Road	3,200	6,954	+ 3.4
Airway Road			
Sanyo Avenue to Paseo del Las Americas	2,810	4,175	+ 1.7
La Media Road			
Otay Mesa Road to SR-905 Ramps	15,700	24,572	+ 1.9
Siempre Viva Road			
SR-905 Ramps to Paseo del Las Americas	18,800	23,577	+ 1.0
Paseo del Las Americas to Enrico Fermi Drive	11,400	14,812	+ 1.1

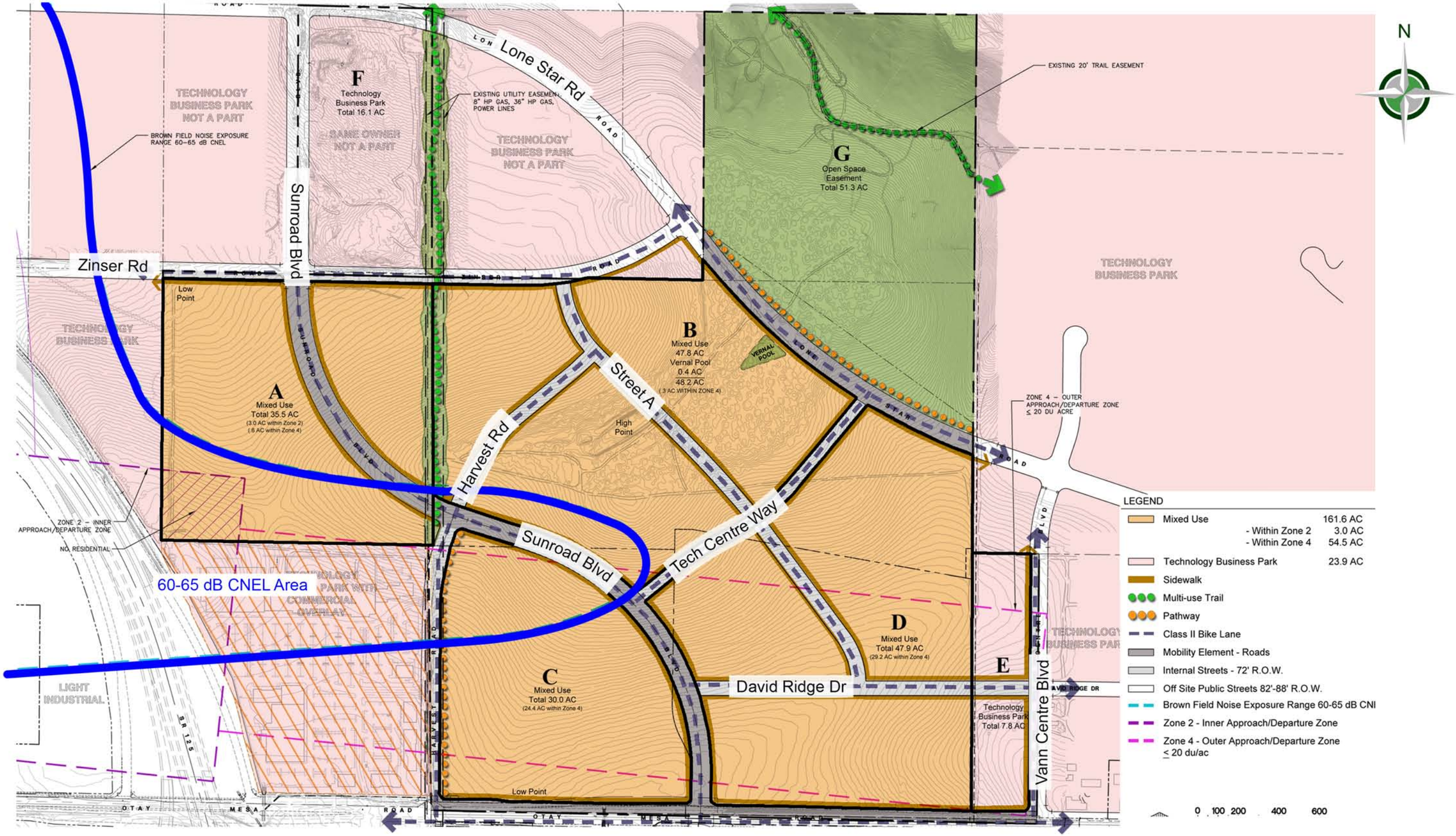

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FIGURE 5

60-65 dB CNEL Noise Contour from Brown Field Municipal Airport

2.3.4 Cumulative Off-Site Vehicular Traffic

The only NSLUs in the project vicinity that may be affected by cumulative off-site vehicular traffic are the three residences – 6940, 6944, and 6948 Otay Mesa Road – along the north side of Otay Mesa Road, just east of the southeast boundary of the project. The existing-with-project ADT on Otay Mesa Road, east of Vann Centre Boulevard, adjacent to the three residences, is 14,867 vehicles. The cumulative (year 2020 with project) ADT forecast on this segment is 5,943 vehicles [LLG 2016]. The reduction in ADT – 8,924 vehicles – results from changes in transportation pattern in the project vicinity.

The decrease in vehicular traffic would reduce the traffic noise level at the three residences by approximately 4 dBA CNEL. No cumulative offsite noise impact would result from project vehicular traffic.

2.4 Mitigated Noise Impacts

2.4.1 Onsite

Proper site planning to reduce noise impacts should be considered for all NSLUs. Buildings can be oriented on a site in such a way as to use the site's noise attenuating features. By consideration of a site's size and shape, it is possible to eliminate noise impacts from vehicular traffic. Site planning techniques include locating areas of outdoor frequent use away from roadways, placing non-noise sensitive uses such as parking lots and utility areas between a noise source and receiver; and constructing a noise barrier such as a wall and earthen berm between a roadway and areas of outdoor frequent use. The effectiveness of a barrier depends upon factors such as the relative height of the barrier relative to the line-of-sight from the source to the receiver, the distance from the barrier to the source and to the receiver and the reflections of sound. To be effective, a barrier must block the line-of-sight from the source to the receiver. A barrier must also be of solid construction (i.e., masonry) without holes or gaps and be long enough to prevent sound from passing around the ends. Under the best of circumstances, a properly designed noise barrier can reduce noise by as much as 15 dBA. A site-specific acoustical analysis is required to determine the proper height and placement of a barrier and/or any other noise measures recommended within the analysis.

Because noise levels would exceed 60 dBA CNEL, the dedication of a Noise Protection Easement would be required. This Noise Protection Easement would require future noise analysis with subsequent discretionary permits.

Effective noise abatement measures are unique for each situation. The physical techniques to mitigate noise vary in their noise reduction capabilities. Factors to consider when evaluating potential noise mitigation include: the amount of noise reduction desired, situations where physical techniques would be most effective, and aesthetics. The following measures can be used to mitigate noise impacts:

Proper site planning to reduce noise impacts should be considered for all noise sensitive developments. Buildings can be oriented on a site in such a way as to exploit the site's noise attenuating features. By consideration of a site's natural topography, size and shape, it is often possible to reduce and possibly eliminate noise impacts from vehicular traffic and railroads. Site planning techniques include the following:

- Increasing the distance from the noise source to sensitive receptors by creation of setbacks;
- Placing non-noise sensitive uses such as parking lots and utility areas between the noise source and receiver;
- Orienting usable outdoor living space such as balconies, patios, and child play areas away from roadways;
- Construction of a noise barrier between the noise source and the receptor. The effectiveness of a barrier depends upon factors such as the relative height of the barrier relative to the line-of-sight from the source to the receiver, the distance from the barrier to the source and to the receiver and the reflections of sound. To be effective, a barrier must block the line-of-sight from the source to the receiver. A barrier must also be of solid construction (i.e., masonry) without holes or gaps and be long enough to prevent sound from passing around the ends.

A use-specific noise analysis would occur when individual lots seek approval of site and building plans from the County.

Because future exterior transportation noise levels may exceed 60 dBA CNEL at residential building façades, interior noise levels in habitable rooms could exceed the County of San Diego General Plan Noise requirement of 45 dBA CNEL.

The location of a building on its site, the arrangement of rooms, and the location of doors and windows all have a bearing on interior noise control. The sides of a building which face a roadway or other noise source should house those activities that can tolerate the greatest amount of noise. Noise-sensitive areas include bedrooms, living rooms and dens. Less noise sensitive areas may include kitchens and bathrooms. Hallways, closets and storage rooms are generally not noise-sensitive.

Indoor noise levels are controlled by the noise reduction characteristics of the building shell. In general, doors and windows are the acoustical weak link in a building. Therefore, careful consideration should be given to their placement. By limiting the number and size of these openings on the sides of the building exposed to noise, interior noise levels will be reduced.

Often it is necessary to allow for a closed window condition to control interior noise. When this occurs, an alternative means of ventilation such as heat pumps or forced air units is required to meet the California Building Code requirements. Heavy-pane or double-pane windows are frequently required to increase the sound insulation within a room. Doors facing a noise source should be solid-core and should be equipped with an appropriate gasket.

An interior noise analysis will be required for new residential development located in areas where future noise levels would exceed 60 dBA CNEL. The interior noise analysis should evaluate the proposed building shell (exterior wall, windows, and doors) to ensure that interior noise levels will not exceed 45 dBA CNEL. The analysis should be performed prior to obtaining a building permit. With the implementation of the findings of the interior noise analysis, interior noise levels in habitable rooms would be 45 dBA CNEL or below and comply with the County of San Diego General Plan Noise requirements. The project would result in a less than significant interior noise impact with project features incorporated in accordance with the interior noise analysis.

2.4.2 Offsite

No impacts were identified. No mitigation is necessary.

2.5 Conclusions

No building locations or outdoor use areas have been determined. However, the project could result in the construction of NSLUs on the project site. If any NSLU is located within the 65 dBA CNEL contour of any adjacent or project roadway, the area must undergo a site-specific analysis to determine mitigation necessary to reduce the noise level at the area to 65 dBA CNEL or below. Because noise levels would exceed 60 dBA CNEL, the dedication of a Noise Protection Easement would be required. This Noise Protection Easement would require future noise analysis with subsequent discretionary permits.

Offsite project-generated traffic noise increases would not result in a significant impact. No mitigation is necessary.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for the Determination of Significance

It shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property exceeds the applicable limits in Table 1 [reproduced herein as Table 5].

The project will generate airborne noise which, together with noise from all sources, will be in excess of either of the following:

Table 5. San Diego County Code Section 36.404, Sound Level Limits in Decibels (dBA)

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92 and RV and RU with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) RRO, RC, RM, S86, V5 and RV and RU with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S94, V4 and all commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1, V2 V1, V2 V1 V2 V3	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 55 50 70 65
M50, M52 and M54.	Anytime	70
S82, M56 and M58.	Anytime	75
S88 (see subsection (c) below)		

(a) If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(b) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone which the extractive industry is actually located.

(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the facility is located.

Section 36.407: Refuse Vehicles & Parking Lot Sweepers states:

> No person shall operate or allow to be operated, a refuse compacting, processing, or collection vehicle or a parking lot sweeper between the hours of 10 p.m. to 6 a.m., in or within 100 feet of a residential zone.

Section 36.409: Sound Level Limitations on Construction Equipment states:

> Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

3.2 Potential Operational Noise Impacts (Non-Construction Noise)

The proposed project would designate land use areas, as shown on Figure 3:

- Areas A, B, C, & D: Mixed Use, with areas of employment, retail, or residential emphasis;
- Area E: Technology Business Park; and
- Area G: Open Space Easement.

Area F, for Technology Business Park, is not a part of this project.

In general, noise sources associated with employment, retail, or technology business park land uses typically include truck deliveries, loading dock activities (including trash compactors), outdoor mechanical equipment (such as air compressors, pumps, fans and cooling towers) and maintenance activities such as parking lot sweepers and trash collection trucks. Other noise sources associated with these uses may include shop tools and forklifts.

Mechanical equipment plans, layouts, and operations have not been developed for this project. An analysis of potential impacts and mitigation measures will be performed when building plans and noise sources are sited. The noise levels generated by the project parcels would vary depending upon the specific use. Variables include: size of equipment, location and orientation of equipment, and number and location of loading docks, parking areas, etc. Although the exact noise levels generated cannot be specifically quantified at this time because of the many variables involved, typical noise levels associated with these land uses range from approximately 50-75 dBA Leq at 50 feet. Future applicants would submit site plans containing detailed use and sound level information to be evaluated in site-specific noise analyses. Mitigation measures could include mechanical equipment enclosures, parapet walls, noise barriers, etc.

3.2.1 Potential Operational Noise Restrictions on Adjacent Properties

The project properties are currently zoned S-88 and are for agricultural use; thus, the existing land uses adjacent to the project site are currently restricted to noise level limits of 50 dBA Leq from 7:00 a.m. to 10:00 p.m. and 45 dBA Leq from 10:00 p.m. to 7:00 a.m. at property lines.

The project would retain the S-88 zoning and would establish employment, retail, residential, technology business park, and open space land uses. Each of these proposed land uses have equal or higher allowable noise limits than the existing land use. The project would not require neighboring land uses to adopt a more restrictive property line noise standard.

3.3 Potential General Construction Noise Impacts

A grading plan and construction phasing plan has not been developed at this time; therefore, only a general estimate of construction noise levels can be provided. The primary noise from project construction would be from site preparation. Grading would require the use of heavy equipment such as bulldozers, loaders, and scrapers. No blasting would be necessary.

Construction of the project would generate a temporary increase in noise in the project area. The increase in noise level would be primarily experienced close to the noise source. The magnitude of the impact would depend on the type of construction activity, noise level generated by various pieces of construction equipment, duration of the construction phase, acoustical shielding and distance between the noise source and receiver.

Construction activity and delivery of construction materials and equipment would be limited to daytime hours (between 7:00 a.m. and 7:00 p.m.), Monday through Saturday.

This project would implement conventional construction techniques and equipment. Standard equipment such as scrapers, graders, backhoes, loaders, tractors, cranes, and miscellaneous trucks would be used for construction of most project facilities. Sound levels of typical construction equipment range from approximately 65 dBA to 95 dBA at 50 feet from the source (U.S. Environmental Protection Agency [U.S. EPA] 1971). Worst-case noise levels are typically associated with grading. Noise sources associated with grading of the proposed project, and associated noise levels, are shown in Table 6.

Table 6. Grading Noise Source Levels

Noise Source	Noise Level	Number
Bulldozer	85 dBA at 50 feet	1
Scraper	85 dBA at 50 feet	1
Backhoe	85 dBA at 50 feet	1
Water Truck	85 dBA at 50 feet	1
Roller	75 dBA at 50 feet	1

Acoustical calculations were performed to estimate worst-case noise from construction activity. The closest occupied property is the Larkspur Energy Facility approximately 1,300 feet south of the centroid of the site. The closest NSLU is the residential area approximately 1,000 feet northwest of the project site. It was assumed that one bulldozer, one scraper, one backhoe, one water truck, and one roller would operate continuously throughout the project site. No correction was applied for downtime associated with equipment maintenance, breaks, or similar situations. The calculations assumed point source acoustical characteristics. Using standard point source calculations, a combined level of 91 dBA Leq at 50 feet would attenuate to approximately 65 dBA Leq at 1,000 feet.

Because construction noise levels would be less than 75 dBA Leq (8 hours) at all occupied properties, there would be no impact from project construction. However, to minimize disturbances from construction activity, the following measures should be considered:

- Select equipment capable of performing the necessary tasks with the lowest sound level and the lowest acoustic height possible.
- Implement alternatives to the standard backup beepers as feasible. These alternatives include strobe lights or products such as the Brigade Electronics, Inc. Broadband Sound system, which is equally effective while generating a lower noise level.
- Use specially-quieted equipment, such as quieted and enclosed air compressors and properly-working manufacturer-recommended mufflers on all engines.
- Construct enclosures around noise-producing stationary sources such as generators used for night lighting.
- Perform construction vehicle maintenance off site or between 7:00 a.m. and 7:00 p.m.
- Place the laydown area as far as possible from the closest noise sensitive receptors.
- Limit the delivery of material (with the exception of concrete) to the hours between 7:00 a.m. and 7:00 p.m.

3.4 Conclusions

Construction noise would not result in a significant impact. No mitigation is necessary.

4.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

4.1 Noise Sensitive Land Uses

The project site would be dedicated with a Noise Protection Easement. Any proposed development including an NSLU would require a site-specific noise analysis. No design considerations were used.

4.2 Project Generated Airborne Noise

Site-specific noise analyses would be conducted for each proposed land use. Construction noise would not result in a significant impact. No mitigation is necessary. No design considerations were used.

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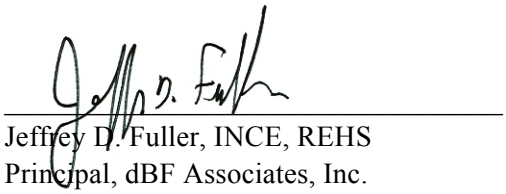
6.0 LIST OF PREPARERS



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