2.6 Noise

This section provides a summary of potential noise impacts associated with development in the proposed Specific Plan area based on the previous environmental analysis (1994 EIR, 2000 SEIR, and 2012 Addendum). This section also summarizes information from the *Noise Analysis Report* prepared by dBF Associates, Inc. (March 2, 2017) for the proposed Project, included as Appendix F of this SEIR, and analyzes the noise impacts generated by the Project, including short-term construction impacts, ground vibration and long-term operational impacts, and determines whether the Project would result in perceptible or significant increases in noise levels. Additionally, this section analyzes the noise compatibility of the Project site with surrounding land uses for any potential impacts.

One comment letter was received during the NOP scoping period that addressed noise (see Appendix A). This letter from Marathon Land and Cattle Company requested that the EIR analyze impacts to setbacks and restriction that would be opposed on neighboring properties due to proximity of residential receptors to the adjoining residential properties. It is outside the scope of the EIR to address development regulations of off-site properties. *The Noise Analysis Report* prepared for the proposed Project by dBF Associates (March 2, 2017) addresses Project-generated noise impacts on off-site noise sensitive land uses.

2.6.1 Existing Conditions

2.6.1.1 *Environmental Setting*

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 2.6-1, *Sound Levels of Typical Noise Sources and Noise Environments*.

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.

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.

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. 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). 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 off-ramp carry an existing (year 2012) ADT volume of approximately 2,850/3,000 vehicles, respectively. 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 to 4,600 feet west of the Project. A portion of the Project site is located within the 60 to 65 dBA CNEL noise contour, as shown on Figure 2.6-1, *Brown Field Municipal Airport Noise Compatibility Map*.

Existing noise sensitive land uses in the Project vicinity include multiple residences located approximately 1,000 to 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.

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 Business Park Specific Plan.

2.6.1.2 *Methodology*

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 five 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 degrees Fahrenheit (°F), 65 percent relative humidity, 8 mph wind speed, and 50 percent 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 2.6-2, *Sound Level Measurements,* and correspond to the locations depicted on Figure 2.6-1.

Noise Modeling Software

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.6 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.

2.6.1.3 *Regulatory Framework*

Due to the human health and quality of life concerns related to noise and noise pollution, Federal, State, and local agencies have established limits for community noise and occupational noise. These allowable sound level limits are based on psycho-acoustical and health considerations as well as socioeconomic and technical considerations. The County of San Diego has two principal noise regulations, the Noise Element of the General Plan and the Noise Ordinance. The following summarizes the salient aspects of these regulations and other regulations that apply to the proposed Project.

Federal

Federal Aviation Administration Standards

The Federal Aviation Association (FAA) establishes 65 dB CNEL as the noise standard associated with aircraft noise.

State

California Environmental Quality Act

CEQA requires lead agencies to consider noise impacts. Under CEQA, lead agencies are directed to assess conformance to locally established noise standards or other agencies' noise standards; measure and identify the potentially significant exposure of people to or generation of excessive ground borne vibration or noise levels; measure and identify potentially significant permanent or temporary increases in ambient noise levels; and measure and identify potentially significant impacts associated with air traffic.

California Noise Control Act

This section of the California Health and Safety Code finds that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

California Noise Insulation Standards

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for multi-family residential buildings (Title 24, Part 2, California Code of Regulations). Title 24 establishes standards for interior room noise (attributable to outside noise sources). The regulations also specify that acoustical studies must be prepared whenever a residential building or structure is proposed to be located near an existing or adopted freeway route, expressway, parkway, major street, thoroughfare, rail line, rapid transit line, or industrial noise source, and where such noise source or sources create an exterior CNEL (or Ldn) of 60 dB or greater. Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or Ldn) of at least 45 dB.

Local

San Diego County General Plan, Noise Element, (Chapter 8)

The Noise Element of the County of San Diego General Plan establishes limitations on sound levels to be received by NSLUs. New development may cause an existing NSLU to be affected by noise caused by the new development, or it may create or locate a NSLU in such a place that it is affected by noise. The Noise Element identifies airports and traffic on public roadways as the major sources of noise.

The Noise Element states that an acoustical study is required if it appears that a NSLU would be subject to noise levels of CNEL equal to 60 decibels (A) or greater. If that study confirms that greater than 60 dB CNEL would be experienced, modifications that reduce the exterior noise level to less than 60 dB CNEL and the interior noise levels to below 45 dB CNEL must be made to the development. If these modifications are not made, the development shall not be approved unless a finding is made that specific social or economic considerations warrant project approval; provided, that if the noise level would exceed 75 dB CNEL(A) even with such modifications, the development shall not be approved irrespective of such social or economic considerations.

"CNEL" is the Community Noise Equivalent Level, which is a 24-hour averaged measurement based upon the "(A)" or A-weighted sound levels, with certain penalties assigned to evening and nighttime noise, as described in Chapter 2 of the Noise Element. "Development" is defined as any physical development including but not limited to residences, commercial or industrial facilities, roads, civic buildings, hospitals, schools and airports. A "NSLU" is defined as any residence, hospital, school, hotel, resort, library, or any other facility where quiet is an important attribute of the environment. "Exterior Noise" means noise measured at an outdoor living area that meets specified minimum area requirements for single family detached dwelling projects, and for other projects it means noise measured at all exterior areas which are provided for group or private usable open space.

The Noise Element also contains policies relative to land use compatibility (N-1) and protection of noise-sensitive users (N-2). Land use compatibility goal N-1 states “A noise environment throughout the unincorporated County that is compatible with the land uses.” Policies that support this goal include the use of the Noise Compatibility Guidelines (Table N-1 of the General Plan) and the Noise Standards (Table N-2 of the General Plan) as a guide in determining the acceptability of exterior and interior noise for proposed land uses; the use of noise management strategies as higher priorities than construction of conventional noise barriers where noise abatement is necessary; a discouraging of the use of noise walls; incorporation of the noise standards of an adjacent jurisdiction into the evaluation of a proposed project when it has the potential to impact the noise environment of that jurisdiction; and to work with local and regional transit agencies and/or other jurisdictions, as appropriate, to provide services or facilities to minimize regional traffic noise and other sources of noise in the County.

Protection of noise sensitive uses goal N-2 states "A noise environment that minimizes exposure of noise sensitive land uses to excessive, unsafe, or otherwise disruptive noise levels." Policies that support this goal include requiring an acoustical study to identify inappropriate noise level where development may directly result in any existing or future noise sensitive land uses being subject to noise levels equal to or greater than 60 CNEL and require mitigation for sensitive uses in compliance with the noise standards listed in Table N-2 of the General Plan; and assure that in developments where the exterior noise level on patios or balconies for multi-family residences or mixed-use developments exceed 65 CNEL, a solid noise barrier is incorporated into the building design of the balconies and patios while still maintaining the openness of the patio or balcony.

The Noise Element includes special provisions for County road construction projects and interior noise levels in rooms that are usually occupied only a part of the day (schools, libraries, etc.).

County of San Diego Noise Ordinance

The County of San Diego Noise Ordinance establishes prohibitions for disturbing, excessive, or offensive noise, and provisions such as sound level limits for the purpose of securing and promoting the public health, comfort, safety, peace, and quiet for its citizens (Section 36.401 et. seq.). Planned compliance with sound level limits and other specific parts of the ordinance allows presumption that the noise is not disturbing, excessive, or offensive. Limits are specified depending on the zoning placed on a property (e.g., varying densities and intensities of residential, industrial and commercial zones). Where two adjacent properties have different zones, the sound level limit at a location on a boundary between two properties is the arithmetic mean of the respective limits for the two zones, except for extractive industries. It is unlawful for any person to cause or allow the creation of any noise that exceeds the applicable limits of the Noise Ordinance at any point on or beyond the boundaries of the property on which the sound is produced. Furthermore, the Noise Ordinance allows the County to grant variances from the noise limitations for temporary on-site noise sources, subject to terms and conditions intended to achieve compliance. Finally, the Noise Ordinance establishes additional noise limitations for operation of construction equipment.

Significance Thresholds

Noise Sensitive Land Uses

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.

San Diego County General Plan

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

Project-Generated Airborne Noise

San Diego County Code Noise Ordinance

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 2.6-3, *San Diego County Code Section 36.404, Sound Level Limits in Decibels*.

Section 36.408 Hours of Operation of Construction Equipment

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated construction equipment:

(a) Between 7 p.m. and 7 a.m.

(b) On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, the fourth Thursday in November, and December 25th. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations of sections 36.404 and 36.410.

Section 36.409: Sound Level Limitations on Construction Equipment

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.

2.6.2 Analysis of Project Effects and Determination as to Significance

2.6.2.1 *Guidelines for Determination of Significance*

Based on Appendix G of the CEQA Guideline, the Project would result in a significant impact to noise if the Project would result in:

a) The exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
b) The exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
e) The exposure of people residing or working in the project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport).
f) The exposure of people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).

2.6.2.2 *1994 East Otay Mesa Specific Plan EIR*

The 1994 EIR included an analysis of noise regulations and legislation pertinent at the time of adoption, as well as existing conditions and impacts related to the East Otay Mesa Specific Plan project. The 1994 EIR identified the following air quality impacts:

- Transportation noise
- Industrial/Commercial noise
- Other noise sources (landfill)
- Noise from interim land uses

Transportation noise sources included traffic, light rail transit (LRT) noise, and aircraft noise. Although traffic and aircraft noise remains applicable, LRT has not been constructed in the Project area. Interim land uses considered in the 1994 EIR were a State off-highway vehicle (OHV) park and the San Diego International Raceway. Neither of these uses currently exists in the Project area and are therefore not applicable.

Mitigation for transportation noise was general, with site-specific studies recommended for future projects. Aircraft noise mitigation avoided locating residential development where the projected CNEL noise contour for Brown Field exceeds 60 dB. Industrial/Commercial noise mitigation generally required thoughtful locating of uses based on compatibility, with site-specific studies recommended for future projects. Because the interim land uses do not exist, their mitigation is not applicable. Construction noise mitigation involves adherence to the San Diego County Noise Ordinance and special considerations where construction would occur within 1,500 feet of California gnatcatcher habitat. Due to the general nature of the majority of these mitigation measures and their broad application to the entire Specific Plan area, they are superseded by mitigation included within this section and are not applicable to the Project. The 1994 EIR mitigation measures are located on pages 4.8-31 through 4.8-33 of the 1994 EIR.

2.6.2.3 *2000 East Otay Mesa Specific Plan Sunroad Centrum SEIR*

Subsequent to adoption of the 1994 EIR, the 2000 SEIR was prepared for the Sunroad Centrum project. Because the Sunroad Centrum project would not propose any noise sensitive uses within the areas that exceed the County's noise standards and wildlife species expected to occur within traffic-related noise areas would not be considered noise sensitive, no noise-related impacts would occur. No mitigation measures were required with the 2000 SEIR.

2.6.2.4 *2012 Sunroad Otay Tech Centre Addendum*

In 2012, an Addendum was prepared for the Sunroad Otay Tech Centre. A project-specific noise study was prepared by Kimley-Horn and Associates (November 17, 2010). The noise analysis concluded that, although noise sensitive land uses were proposed with the Sunroad Otay Tech Centre project, future projects would site-specific noise analyses to determine mitigation necessary, if any, to make the noise levels consistent with the County Noise Element, Policy 4b, and County Noise Ordinance Section 36.404. Off-site direct and cumulative noise impacts to existing residences were considered less

than significant. Relative to temporary construction noise, the Tentative Map for the project would be conditioned to require the installation of the 24-foot-high temporary construction noise barrier or another acceptable noise reduction method as determined by a new noise analysis prepared at that time. No significant impacts would result and no mitigation is required.

2.6.2.5 *Proposed Project*

Guideline for the Determination of Significance:

> *Would the proposed Project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*
>
> *Would the proposed Project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

Potential Noise Impacts to On-site NSLUs

On-site 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 Traffic Impact Analysis (TIA) prepared for the proposed Project by LLG (provided as Appendix K of this SEIR) and supplemental documentation provided by the traffic engineer. The peak-hour volume was assumed to be ten percent 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 2.6-4, *On-site Vehicular Traffic Sound Levels*, 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 60 dBA CNEL at the façades of on-site NSLUs and 65 dBA CNEL at proposed exterior NSLUs (**Impact N-1**) without mitigation, traffic noise levels could exceed the interior noise levels of 45 dBA CNEL (**Impact N-2**).

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 Project TIA. It was assumed the existing roadway parameters would be unchanged. Table 2.6-5, *Off-site Traffic Noise Levels*, shows the traffic noise levels along Project roadways, without and with the Project, respectively. As shown in Table 2.6-5, 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 off-site Project vehicular traffic.

Potential Operational Noise Impacts

The proposed Project would establish new mixed-use land use categories within the Specific Plan area, which would allow for employment, retail, and residential emphasis within the Specific Plan area. The Project would designate land use areas:

- Areas A, B, C, D: Mixed Use;
- Area E: Technology Business Park;
- Area G: Open Space Easement.

(Area F – Technology Business Park – is not a part of the proposed Project.)

In general, noise sources associated with these land use typically includes 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 would 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 level generated cannot be specifically

quantified at this time because of many variables involved, typical noise levels associated with these land uses range from approximately 50 to 75 dBA Leq at 50 feet from the source. Development within the Specific Plan Amendment area would require project-specific Site Plan review as individual development proposals come forward. Details regarding use and sound level information would be analyzed as part of site-specific noise analyses to determine if noise impacts would occur that require mitigation measures, such as mechanical equipment enclosures, parapet walls, noise barriers, etc., would be implemented in accordance with the site-specific noise study conclusions (**Impact N-3**).

Potential Operational Noise Restrictions on Adjacent Properties

The Project site is currently zoned S-88 and 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 S88 zone is based on the existing use, which is agricultural. As stated above, agriculture is subject to the most restrictive 45 dBA requirement, the same requirement for residences. With and without the Project, the 45 dBA requirement would continue to apply to site.

The Project would retain the S-88 zoning and would establish mixed-use, technology, 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.

Guideline for the Determination of Significance:

> *Would the proposed Project result in the substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

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 (USEPA 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 2.6-6, *Grading Noise Source Levels*.

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.

Guideline for the Determination of Significance:

> *Would the proposed Project result in the exposure of persons to or generation of excessive groundbourne vibration or groundbourne noise levels?*

The proposed Project includes amendments to land use policy documents, a rezone, and a tentative map. No physical development proposals are included within this Project, beyond site grading and infrastructure/roadway installation. As such, no development that could result in groundbourne vibration or noise would occur. Future development projects would implement construction of the proposed Project, which would require site-specific analysis of project noise impacts, including vibration and grounbourne noise.

Guideline for the Determination of Significance:

> *Would the proposed Project result in the exposure of people residing or working in the project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport)?*
>
> *Would the proposed Project result in the exposure of people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip)?*

The proposed Project is not located within the vicinity of a private airstrip. 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 to 65 dBA CNEL noise contour extends into portions of Areas A, B, D, and F, as shown in Figure 2.6-2, *60 to 65 dBA CNEL Noise Contour from Brown Field Municipal Airport*. Aircraft noise levels would not exceed 65 dBA CNEL at on-site NSLUs; therefore, impacts relative to a public airport would be less than significant.

2.6.3 Cumulative Impact Analysis

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 + Project) ADT forecast is 5,943 vehicles (LLG 2016). The 8,924 reduction in ADT is the result of changes in the transportation pattern in the Project vicinity.

The decrease in vehicular traffic would reduce the sound level at the three residences by approximately 4 dBA CNEL. No cumulative off-site noise impact would result from Project vehicular traffic.

2.6.4 Significance of Impacts Prior to Mitigation

The following significant impact related to noise would occur with Project implementation:

Impact N-1: Implementation of the proposed Project may result in traffic noise levels that could exceed 60 dBA CNEL at the façade of on-site NSLUs and the traffic could

exceed 65 dBA CNEL at exterior NSLUs.

Impact N-2: Implementation of the proposed Project may result in traffic noise levels exceeding the interior noise level of 45dBA CNEL.

Impact N-3: Implementation of the proposed Project may result in on-going operational noise levels exceeding the County Code Noise Ordinance, Section 36.404.

2.6.5 Mitigation

In order to mitigate potential Project impacts to on-site NSLUs (Impact N-1), the following mitigation is required:

M-N-1: 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 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 and aircraft overflight contours;
- 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.

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

In order to mitigate potential traffic noise level impacts where interior noise levels would exceed 45 dBA (Impact N-2), the following mitigation is required:

M-N-2: An interior noise analysis shall be required for new residential development located in areas where future noise levels would exceed 60 dBA CNEL. The interior noise analysis shall evaluate the proposed building shell (exterior wall, windows, and doors) to ensure that interior noise levels will not exceed 45 dBA CNEL. The analysis shall 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 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.

In order to mitigate the potential on-going operational noise impacts (Impact N-3), the following mitigation is required:

M-N-3: A use-specific noise analysis shall occur when individual lots seek approval of site and building plans as part of future site plan reviews. This may include noise measures consisting of:

- Limiting size of equipment
- Specific equipment location, orientation and layout design to increase screening
- Mechanical equipment enclosures, parapet walls, noise barriers

- Any other similar noise reducing noise design and feature

2.6.6 Conclusion

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 structure is located within the 60 dBA CNEL contour and/or any exterior NSLU is located within the 65 dBA CNEL contour, the area must undergo a site-specific analysis to determine mitigation necessary to reduce the noise level at the exterior area to 65 dBA CNEL or below. Additionally, the analysis would determine measures necessary to reduce the interior noise level to 45 dBA CNEL. Because noise levels would exceed 60 dBA CNEL (**Impact N-1**), the dedication of a Noise Protection Easement would be required. This Noise Protection Easement would require future noise analysis with subsequent discretionary permits. Additionally, mitigation M-N-1 would reduce these impacts to below a level of significance.

Off-site Project-generated traffic noise increases would not result in a significant impact. No mitigation is necessary.

In order to comply with General Plan Goal N-2, mitigation measure M-N-3 includes the requirement of use-specific noise analyses for site-specific developments proposed in the future as a result of the SPA. This General Plan goal and resultant mitigation measure include examples of measures that would meet this goal, including limiting size or equipment, specific equipment location and orientation, noise barriers, and other similar noise reducing design elements and features. The proposed Project would be consistent with this General Plan goal and no additional mitigation is required.

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

TABLE 2.6-1. *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.

TABLE 2.6-2. *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.

TABLE 2.6-3. *SAN DIEGO COUNTY CODE SECTION 36404, SOUND LEVEL LIMITS IN DECIBLES (dBA)*

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92, RV, and RU with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
(2) RRO, RC, RM, S86, FB-V5, RV and RU with a General Plan land Use Designation density of 10.9 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
(3) S94, FB-V4, AL-V2, AL-V1, AL-CD, RM-V5, RM-V4, RM-V3, RM-CD, and all commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
(4) FB-V1, FB-V2, RM-V1, RM-V2	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
FB-V1, RM-V2	10 p.m. to 7 a.m.	55
FB-V2, RM-V1	10 p.m. to 7 a.m.	50
FB-V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
(5) M50, M52 and M54	Anytime	70
(6) S82, M56, and M58	Anytime	75
(7) S88 (see subsection (c) below)		

(c) S88 zones are Specific Planning Areas which allow 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.

TABLE 2.6-4. *ON-SITE 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.

TABLE 2.6-5. *OFF-SITE TRAFFIC NOISE LEVELS (DIRECT IMPACTS)*

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

TABLE 2.6-6. *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

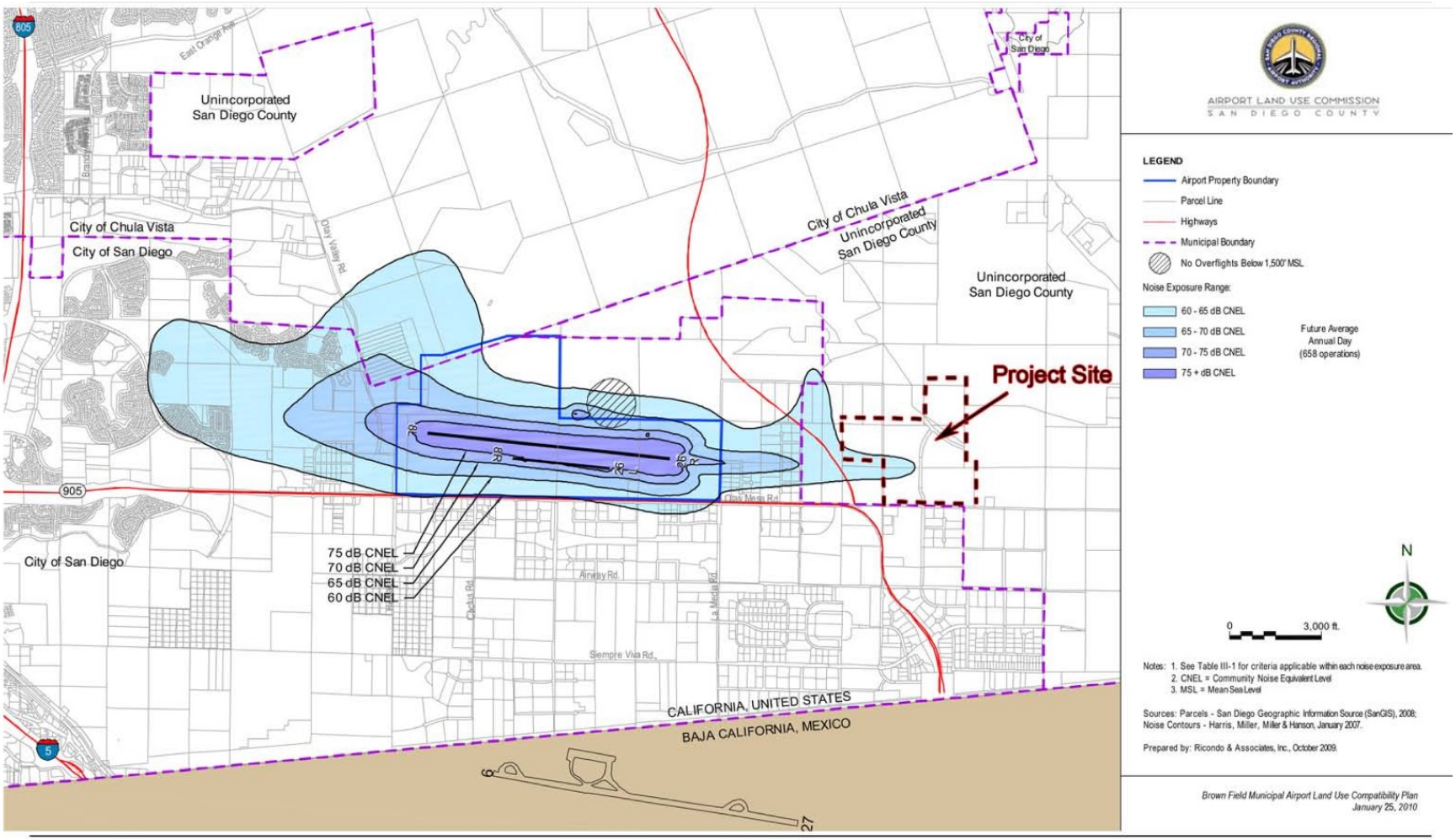

FIGURE 2.6-1. ***BROWN FIELD MUNICIPAL AIRPORT NOISE COMPATIBILITY MAP***

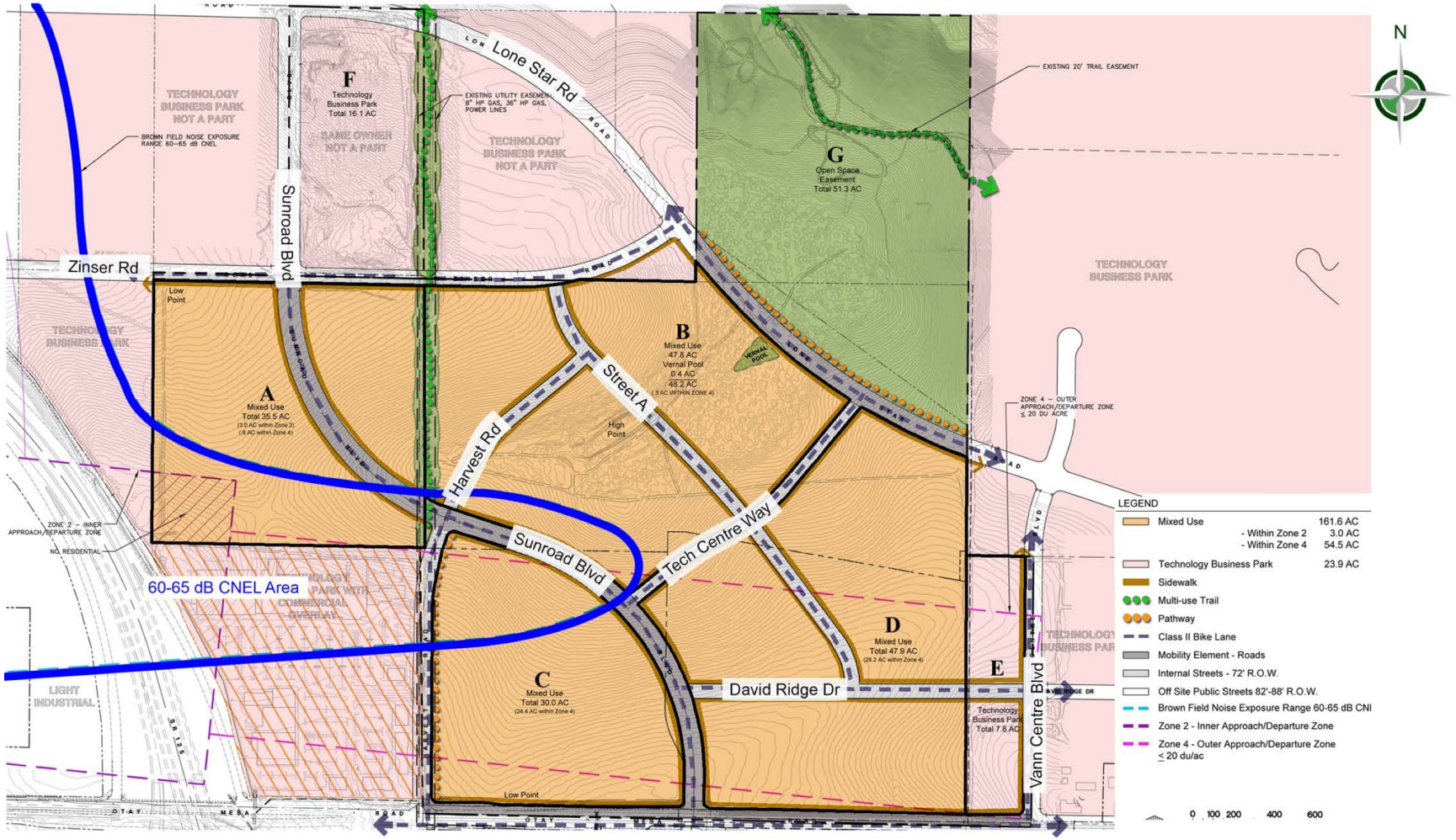

FIGURE 2.6-2. ***60 TO 65 DBA CNEL NOISE CONTOUR FROM BROWN FIELD MUNICIPAL AIRPORT***