# SECTION 3.8
# NOISE

## 3.8.1 INTRODUCTION

This section analyzes the potential noise impacts of the Proposed Project and is based on the *Acoustical Assessment Report* (June 2010), prepared by DUDEK. The technical report is included in **Appendix 3.8** of this EIR.

## 3.8.2 METHODOLOGY

Ambient noise measurements were taken to quantify the existing daytime noise environment at the Project site. In order to assess the magnitude of change in the noise environment that would result from the Proposed Project, the anticipated noise and vibration levels associated with the proposed construction-related activities were obtained from (i) reports prepared by the Federal Transit Administration (FTA, 2006) and California Department of Transportation (Caltrans, 2004), and (ii) field data from files. Various assumptions regarding the hours of construction, types of construction equipment, duration of construction activities, etc., were based on information provided by SDSU. The noise level associated with traffic on selected roadways was determined using the ambient noise measurements and the Federal Highway Administration's TNM 2.5 Traffic Noise Prediction Model (FHWA, 2004). The noise modeling data is presented in Appendix B of **Appendix 3.8.**

### 3.8.2.1 Basic Noise Concepts

Community sound levels are measured in terms of the A-weighted sound level. The A-weighted scale measures sound levels corresponding to the human frequency response. All sound levels discussed in this section are A-weighted.

When evaluating the impact of noise on a community, it is necessary to use a noise scale that averages varying noise exposure over time and quantifies the results using a single number descriptor. Units of measurement applicable to this analysis are the equivalent continuous sound level ("Leq") and Community Noise Equivalent Level ("CNEL"). Leq is a single-number representing the fluctuating sound level, in decibels ("dB"), over a specified period of time. CNEL is a 24-hour, average, A-weighted sound level with ten dB added to noise events occurring during the nighttime hours (10:00 p.m. to 7:00 a.m.), and five dB added to the noise events occurring during the evening hours (7:00 p.m. to 10:00 p.m.). The five and ten dB additions account for increased noise sensitivity during the evening and nighttime hours.

**Table 3.8-1, Typical Sound Levels Measured in the Environment and Industry,** identifies various noise sources and their related attributes (e.g., sound level; noise environment; subjective impression).

**Table 3.8-1**
**Typical Sound Levels Measured in the Environment and Industry**

| Noise Level (dBA) | Common Outdoor Activities | Common Indoor Activities |
|---|---|---|
| – 110 – | | Rock band |
| | Jet fly-over at 1000 feet | |
| – 100 – | | |
| | Gas lawn mower at 3 feet | |
| – 90 – | | |
| | Diesel truck at 50 feet at 50 mph | Food blender at 3 feet |
| – 80 – | | Garbage disposal at 3 feet |
| | Noisy urban area, daytime | |
| – 70 – | Gas lawn mower, 100 feet | Vacuum cleaner at 10 feet |
| | Commercial area | Normal speech at 3 feet |
| – 60 – | Heavy traffic at 300 feet | |
| | | Large business office |
| – 50 – | Quiet urban daytime | Dishwasher next room |
| | | |
| – 40 – | Quiet urban nighttime | Theater, large conference room (background) |
| | Quiet suburban nighttime | |
| – 30 – | | Library |
| | Quiet rural nighttime | Bedroom at night, concert hall (background) |
| – 20 – | | |
| | | Broadcast/recording studio |
| – 10 – | | |
| | | |
| – 0 – | Lowest threshold of human hearing | Lowest threshold of human hearing |

*Source:* Caltrans, 1998.

### 3.8.3 EXISTING CONDITIONS

The primary noise source in the Project area is traffic along College Avenue, Montezuma Road and various access roads to the SDSU campus. Noise also is generated by students on campus and by people at various on-campus events (e.g., concerts; sporting events; etc.).

The Project site is not located in close proximity to an airport. The closest airport is Montgomery Field, which is approximately three miles northwest of the Project site. The Project site is subject to occasional overflights by helicopters, as well as commercial and general aviation aircraft. However, the Project site is not located within the 60 dB CNEL noise contour of any airport and is not subject to aircraft noise in excess of regulatory limits.

#### 3.8.3.1 Ambient Noise Levels

Noise measurements were conducted at the Project site to determine the existing noise level. The measurements were taken using a calibrated Larson-Davis Laboratories Model 700 (S.N. 2132) integrating sound level meter, which was equipped with a Type 2551, ½-inch, pre-polarized condenser microphone with pre-amplifier. When equipped with this microphone, the sound level meter meets the current American National Standards Institute standard for a Type 1 precision sound level meter. The sound level meter was positioned at a height of approximately five-feet above the ground.

The noise measurements were conducted on April 29, 2009. The noise measurement locations are depicted as Sites 1 and 2 on **Figure 3.8-1, Noise Measurement Locations**. These sites were selected to provide an unobstructed view to Montezuma Road (Site 1) and College Avenue (Site 2).

The measured average noise levels and the concurrent traffic volumes along the roads are depicted in **Table 3.8-2, Measured Noise Level and Traffic Volumes**. The measured average noise level (Leq) was 68 dB at Site 1, and 69 dB at Site 2. The existing noise level (CNEL) is approximately 70 dB CNEL at Site 1 along Montezuma Road, and 71 dB CNEL at Site 2 along College Avenue.


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**Figure 3.8-1**

**Noise Measurement Locations**

**Table 3.8-2**
**Measured Noise Level and Traffic Volumes**

| Site | Description | Date Time | $L_{eq}$[1] | CNEL[2] | Cars | MT[3] | HT[4] |
|---|---|---|---|---|---|---|---|
| 1 | Approximately 50 feet to the centerline of Montezuma Road | 4/29/09 1:15 pm - 1:45 pm | 68 dB | 70 | 874 | 17 | 6 |
| 2 | Approximately 50 feet to the centerline of College Avenue | 4/29/09 2:05 pm - 2:35 pm | 69 dB | 71 | 1018 | 19 | 12 |

Notes:
[1] Equivalent Continuous Sound Level (Time-Average Sound Level)
[2] Community Noise Equivalent Level
[3] Medium Trucks
[4] Heavy Trucks

## 3.8.4 THRESHOLDS OF SIGNIFICANCE

The following significance criteria from Appendix G of the CEQA Guidelines were used to determine the significance of the Proposed Project's noise impacts. The Appendix G criteria provide that a significant impact would result if:

(a) Persons are exposed to or the project generates noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

(b) Persons are exposed to or the project generates 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 would occur.

(d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project would occur.

(e) A project is 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, and would, therefore, expose people residing or working in the project area to excessive noise levels.

(f) A project is located within the vicinity of a private airstrip and the project would expose people residing or working n the project area to excessive noise levels.

### 3.8.4.1 City of San Diego Noise Criteria

The Project site is located within the City of San Diego. The City has established noise criteria within its General Plan and Municipal Code, as summarized further below. As a state agency, CSU/SDSU is not required to comply with local standards. However, for information purposes only, the analysis presented in this section considers the City's local noise standards.

**City of San Diego General Plan Noise Element Guidelines:** The City's General Plan Noise Element identifies compatible exterior noise levels for various land use types. (City of San Diego, 2008a.) The maximum allowable noise exposure varies depending on the land use. The maximum acceptable exterior noise level for residential uses and other noise-sensitive uses (including kindergarten through Grade 12 schools; libraries; hospitals; day care facilities; hotels; motels) is 65 dB CNEL. Exterior noise levels are considered compatible up to 75 dB CNEL at higher education institutions. New single and multi-family residences also are required to meet an interior noise level of 45 dB CNEL within habitable rooms. (This is consistent with the State of California's adoption of 45 dB CNEL as the maximum acceptable interior environmental noise level for new attached residential facilities (i.e., dormitories, multi-family homes, hotels, etc.).)

**City of San Diego Municipal Code Noise Standards:** The City's noise ordinance contains quantitative noise standards to reduce excessive noise within the City. (City of San Diego 2008b.) The noise level limits are defined in terms of a one-hour average sound level. The allowable noise level limits depend upon the land use and time of day.

Single-family residences are located adjacent to the western and eastern boundaries of the Proposed Project. The noise ordinance limits for low-density residential development require that the one-hour average noise level not exceed 50 dB between the hours of 7:00 a.m. to 7:00 p.m.; 45 dB between 7:00 p.m. and 10:00 p.m.; and 40 dB between 10:00 p.m. and 7:00 a.m. The City's noise ordinance limits are summarized in **Table 3.8-3, City of San Diego Municipal Code Noise Limits.**

**Table 3.8-3**
**City of San Diego Municipal Code Noise Limits**

| Land Use Zone | Time Of Day | One-Hour Average Sound Level (dB) |
|---|---|---|
| 1) Single-Family Residential | 7 a.m. to 7 p.m. | 50 |
| | 7 p.m. to 10 p.m. | 45 |
| | 10 p.m. to 7 a.m. | 40 |

Table 3.8-3
City of San Diego Municipal Code Noise Limits

| Land Use Zone | | Time Of Day | One-Hour Average Sound Level (dB) |
|---|---|---|---|
| 2) | Multi-Family Residential (Up to a maximum density of 1/2000) | 7 a.m. to 7 p.m.<br>7 p.m. to 10 p.m.<br>10 p.m. to 7 a.m. | 55<br>50<br>45 |
| 3) | All Other Residential | 7 a.m. to 7 p.m.<br>7 p.m. to 10 p.m.<br>10 p.m. to 7 a.m. | 60<br>55<br>50 |
| 4) | Commercial | 7 a.m. to 7 p.m.<br>7 p.m. to 10 p.m.<br>10 p.m. to 7 a.m. | 65<br>60<br>60 |
| 5) | Industrial or Agricultural | Anytime | 75 |

The criteria identified in **Table 3.8-3** also are applicable to stationary equipment, such as mechanical equipment.

The City's noise ordinance also regulates construction-related activity. Construction-related activity is allowed Monday through Saturdays from 7:00 a.m. to 7:00 p.m. However, the construction-related activities are not to exceed an average sound level greater than 75 dB during the 12-hour time period from 7:00 a.m. to 7:00 p.m. at or beyond the property lines of any residential-zoned property.

Based on the above, the City's General Plan and noise ordinance were utilized to develop the following project-specific thresholds of significance:

*Traffic:*

A significant noise impact would result if the Proposed Project would increase the existing noise level by three dB or more in areas where the existing noise level exceeds 65 dB CNEL.

A significant noise impact would result if the Proposed Project would exceed the City's General Plan 65 dB CNEL exterior noise criteria at an outdoor use area of proposed residential uses.

A significant noise impact would result if the Proposed Project would exceed the State's interior 45 dB CNEL for multi-family dwelling units.

*Stationary Uses:*

A significant noise impact would result if the stationary equipment generates noise levels exceeding the City's noise ordinance criteria.

*Temporary Construction Noise:*

A significant noise impact would result if temporary construction noise impacts exceed 75 dB for 12 hours within a 24-hour period at residences.

## 3.8.5 PROJECT IMPACTS

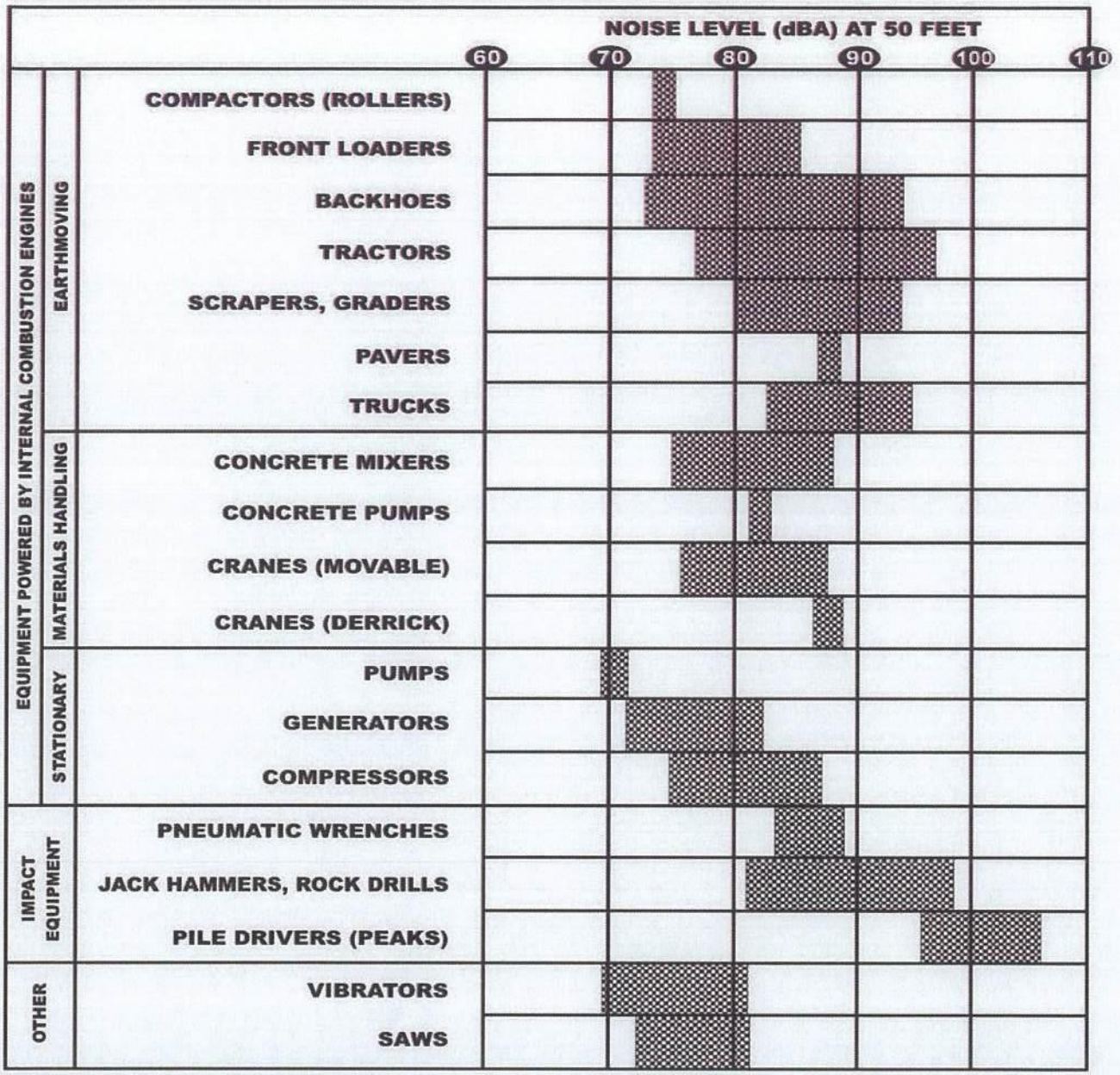
### 3.8.5.1 Construction-Related Noise and Vibration

***Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

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

Construction-related activities for the Proposed Project would be limited to the City of San Diego's allowable hours of operation. The noise levels generated by construction equipment would vary depending upon factors such as the equipment type and model (e.g., graders, scrapers, backhoes, loaders, cranes, dozers, water trucks, jack hammers, portable generators and air-compressors, and miscellaneous trucks), operation being performed (e.g., demolition, clearing and grubbing, grading, foundation construction, and finish construction), and condition of the equipment. The average sound level of the construction-related activity also depends upon the amount of time that the equipment operates and the intensity of the construction during that time period. Further, the construction contractor may mobilize more than one crew, and each of these crews may be in a different location and affect different receptors.

The maximum noise level ranges for various pieces of construction equipment at a distance of 50 feet are depicted in **Figure 3.8-2, Typical Construction Equipment Noise Generation Levels.** The maximum noise levels at 50 feet would range from approximately 65 to 90 dB for the type




**NOTE: Based on limited available data samples.**

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

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**Figure 3.8-2**

**Typical Construction Equipment Noise Generation Levels**

of equipment normally used for this type of project. Construction noise in a well-defined area typically attenuates at approximately six dB per doubling of distance.

The closest off-site existing residences are located along Hardy Avenue west of proposed Building 1, along the south side of Montezuma Road across from proposed Building 7, and along the west side of the Project site adjacent to proposed Buildings 6 and 7. (See **Figure 3.8-1.**) On-campus housing also is located east of the Project site and adjacent to proposed Buildings 4 and 5. At the residences located west of proposed Buildings 1, 6 and 7, and on-campus housing adjacent to proposed Buildings 4 and 5, the noise level may exceed the City's 75 dB noise level criterion. Therefore, construction activities at the Project site could (i) expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, or (ii) result in a substantial temporary or periodic increase in existing ambient noise levels. This would be a potentially significant impact.

***Would the project expose persons to or generate excessive groundborne vibration or groundborne noise levels?***

The heavier pieces of construction equipment used at the Project site could include bulldozers, graders, loaded trucks, water trucks, pavers, and cranes. Groundborne vibration and noise information related to construction activities has been collected by the California Department of Transportation (Caltrans, 2004), and indicates that continuous vibrations with a peak particle velocity of approximately 0.1 inches/second begin to annoy people. Groundborne vibration is typically attenuated over short distances. While vibration is very subjective and some people may be annoyed at continuous vibration levels near the level of perception (or approximately a peak particle velocity of .01 inches/second), construction-related activities are not anticipated to expose persons to or generate excessive groundborne vibration or noise levels. Therefore, potential impacts under this criterion would be less than significant.

#### 3.8.5.2 Off-Site Traffic Noise

***Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?***

At build-out, the Proposed Project would generate a net traffic volume increase over existing volumes. (See **Section 3.12, Transportation/Circulation and Parking.**) The majority of the increased traffic volumes would be along College Avenue and Montezuma Road. As shown in **Table 3.8-4, Off-Site Traffic Noise Level Increase**, at Project build-out (2015), the additional

project traffic, in combination with cumulative traffic, would increase the noise along the adjacent roads by one dB CNEL or less. Therefore, the Proposed Project would not result in a substantial increase in ambient noise levels in the Project vicinity above existing levels, and near-term impacts would be less than significant.

**Table 3.8-4**
**Off-Site Traffic Noise Level Increase**

| Street (Segment) | Existing ADT | Project Build-Out (2015) ADT | CNEL Increase [1] (dB) | Long-Term (2030) Without Project ADT | CNEL Increase [2] (dB) | Long-Term (2030) With Project ADT | CNEL Increase[3] (dB) |
|---|---|---|---|---|---|---|---|
| **College Avenue** | | | | | | | |
| Canyon Crest to Zura | 44,000 | 45,933 | <1 | 76,140 | 2 | 76,815 | 2 |
| Zura to Montezuma Rd | 30,000 | 31,689 | <1 | 56,040 | 3 | 56,715 | 3 |
| Montezuma to El Cajon Bl. | 29,100 | 33,336 | <1 | 40,200 | 1 | 40,495 | 1 |
| **Montezuma Road** | | | | | | | |
| Collwood Bl to 55th St | 30,600 | 34,832 | 1 | 33,850 | <1 | 34,495 | <1 |
| 55th St to College Ave | 26,100 | 31,662 | 1 | 35,010 | 1 | 35,565 | 1 |
| College to Catoctin Dr | 14,800 | 18,757 | 1 | 28,800 | 3 | 29,050 | 3 |

Notes:
[1] Project build-out (2015) noise levels relative to existing levels
[2] Long-term (2030) noise levels without Project relative to existing levels
[3] Long-term (2030) noise levels with Project relative to existing levels

With respect to long-term (2030) impacts, as shown on **Table 3.8-4**, year 2030 traffic noise levels would increase up to three dB CNEL over existing levels along portions of College Avenue and Montezuma Road without Project traffic. As also shown on **Table 3.8-4**, with Project traffic, the increase in long-term CNEL levels over existing levels would be essentially the same as without Project traffic. Therefore, the noise level increase associated with the Proposed Project in the long-term would be minimal and the Project's impacts on long-term noise levels less than significant.

### 3.8.5.3 On-Site Traffic Noise

***Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

The Proposed Project would include noise-sensitive uses (i.e., residential student apartments) that would be exposed to traffic noise. The potential impacts to each residential building are evaluated below.

#### 3.8.5.3.1 Buildings 1, 2, 4 and 5

Proposed Buildings 1, 2, 4, and 5 would consist of mixed-use retail/student housing with ground-floor retail and upper-floor residential student apartments. Buildings 1 and 5 primarily would be exposed to traffic noise along College Avenue. Based on the results of the traffic noise modeling, the future noise level would range up to approximately 72 dB CNEL at the facades of Buildings 1 and 5. (See EIR **Appendix 3.8**, Appendix B, Noise Modeling Data.) Buildings 2 and 4 would be exposed to traffic noise along College Avenue and Montezuma Road, and the future noise level would range up to approximately 74 dB CNEL at these building facades. (*Ibid.*) Exterior usable space areas are not proposed; therefore, the exterior noise impact would be less than significant.

The State requires that interior noise levels not exceed 45 dB CNEL within habitable rooms of multi-family dwelling units. Proposed buildings 1, 2, 4 and 5 would be exposed to noise levels greater than 60 dB CNEL. Therefore, the noise level within the student apartments could result in an interior CNEL greater than 45 dB. In summary, the Proposed Project may expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; this is a potentially significant impact.

#### 3.8.5.3.2 Buildings 6 and 7

Proposed Buildings 6 and 7 would be student apartments. Based on the results of the traffic noise modeling, the future noise level would range up to approximately 71 dB CNEL at the façade of Building 7, and 60 dB CNEL at the façade of Building 6. (See EIR **Appendix 3.8**, Appendix B, Noise Modeling Data.) The exterior noise level would be less than 65 dB CNEL at the exterior usable space areas for Building 7 (exterior usable areas do not include residential front yards). (*Ibid.*) Therefore, the exterior noise impact would be less than significant.

With respect to interior noise levels, Proposed Building 7 would be exposed to noise levels greater than 60 dB CNEL. Therefore, Building 7 could result in an interior CNEL greater than 45 dB. In summary, the Proposed Project may expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; this is a potentially significant impact.

#### 3.8.5.4 Outdoor Mechanical Equipment

***Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

Outdoor mechanical equipment, such as heating, ventilation and air conditioning ("HVAC") units, could be mounted on roofs or at the ground level of the buildings. The noise levels generated by this equipment would vary, but typically range from approximately 45 to 55 dB at a distance of 50 feet.

Existing land uses located adjacent to the proposed buildings could be exposed to HVAC equipment noise. Thus, there is a potential that the outdoor mechanical equipment noise level would expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; this is a potentially significant impact.

#### 3.8.5.5 Other Noise Impacts

***For a project that is 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 project expose people residing or working in the project area to excessive noise levels?***

***For a project that is located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?***

As noted above, the Project site is not located in close proximity to an airport. The closest airport is Montgomery Field, which is located approximately three miles northwest of the site. The Project site is subject to occasional overflights by helicopters, as well as commercial and general aviation aircraft. However, the campus is not located within the 60 dB CNEL noise contour of any airport and is not subject to aircraft noise in excess of regulatory limits. Therefore, the Proposed Project would not expose people residing or working in the Project area to excessive noise levels associated with aircraft.

### 3.8.6 CUMULATIVE IMPACTS

Construction noise impacts primarily affect the areas immediately adjacent to the construction site. Thus, although construction activities may occur simultaneously at several areas on campus and in the surrounding community, the increased noise would not result in significant cumulative impacts.

The Proposed Project's traffic-related impacts would result in a one dB or less increase along the adjacent roadways. Therefore, the increase in noise associated with cumulative traffic would not be cumulatively considerable and is less than significant.

### 3.8.7 MITIGATION MEASURES

The following mitigation measures are recommended to reduce the identified impacts to a level below significant:

**NOI-1** During construction of the Plaza Linda Verde project, CSU/SDSU, or its designee, shall comply with the City of San Diego's noise ordinance criteria relative to construction activities. Therefore, construction-related activities shall be conducted between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday; construction is prohibited on Sunday and legal holidays. In order to minimize construction-related noise and ensure that the 12-hour average sound level does not exceed 75 dB at any residence, CSU/SDSU, or its designee, shall:

- Locate noisy equipment as far as possible from the Project site boundaries and occupants of buildings.
- Install stationary equipment in enclosures.
- Equip all construction equipment, fixed or mobile, with properly operating and maintained muffler exhaust systems.
- Locate stockpile and vehicle staging areas as far as practical from residences and occupants of buildings.
- Use quieter (i.e., typically smaller) pieces of equipment while working immediately adjacent to the existing residences located west of proposed Buildings 1, 6 and 7 and the on- campus housing adjacent to proposed Buildings 4 and 5.

**NOI-2** Prior to construction of Buildings 1, 2, 4, 5 and 7, CSU/SDSU, or its designee, shall conduct an interior noise study to ensure that following construction the interior noise level is mitigated to 45 dB CNEL or less. The noise study may suggest implementation of various noise abatement strategies, such as sound-rated windows and air-conditioning or mechanical ventilation.

**NOI-3** During the planning and design phase, CSU/SDSU, or its designee, shall prepare mechanical equipment plans and evaluate those plans to ensure that outdoor mechanical equipment noise will not exceed the City of San Diego's noise ordinance standards for commercial and residential uses at adjacent properties. The mechanical equipment plans may identify measures, such as selecting quieter types of equipment, constructing rooftop equipment screen walls/parapets or locating the equipment within the interior portion of the sites, in order to ensure compliance with the noise ordinance.

### 3.8.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of the recommended mitigation measures, any potentially significant noise-related impacts would be reduced to a level below significant.