4.11 NOISE

INTRODUCTION

This section evaluates the potential noise and vibration impacts associated with the Project. Specifically, the analysis describes the existing noise environment near the Project Site; estimates future noise and vibration levels at surrounding sensitive land uses resulting from construction and operation of the Project; identifies the potential for significant impacts; and provides mitigation to address significant impacts. The Project vehicle noise is calculated based on the traffic volumes identified in the Project Traffic Study. In addition, this section evaluates the potential cumulative noise and vibration impacts resulting from the Project with related projects and other future growth.

Noise calculation worksheets are included in **Appendix N,** and the Project Traffic Study is included in **Appendix O**.

ENVIRONMENTAL SETTING

Fundamentals of Sound

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters that describe the physical properties of sound waves. These properties include the rate of oscillation (frequency); the distance between successive troughs or crests, the speed of propagation; and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The unit of sound pressure expressed as a ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB). Sound or noise can vary in intensity by more than 1 million times within the range of human hearing. A logarithmic loudness scale similar to the Richter scale for earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all sound frequencies within the entire spectrum. Noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called A weighting, written as dBA. Further reference to decibels in this analysis should be understood to be A-weighted.

Alternatively, a statistical description of the sound level that is exceeded over some fraction of a given observation period can also be used to describe typical time-varying instantaneous noise. This is referred to as equivalent sound level, or Leq. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and nighttime hours, State law requires that an artificial decibel increment be added to quiet time noise levels. The 24-hour noise descriptor with a specified evening and nocturnal penalty is called the community noise equivalent level (CNEL). A similar metric called the day–night level, written as Ldn, is also commonly used. In practice, CNEL and Ldn are almost identical.

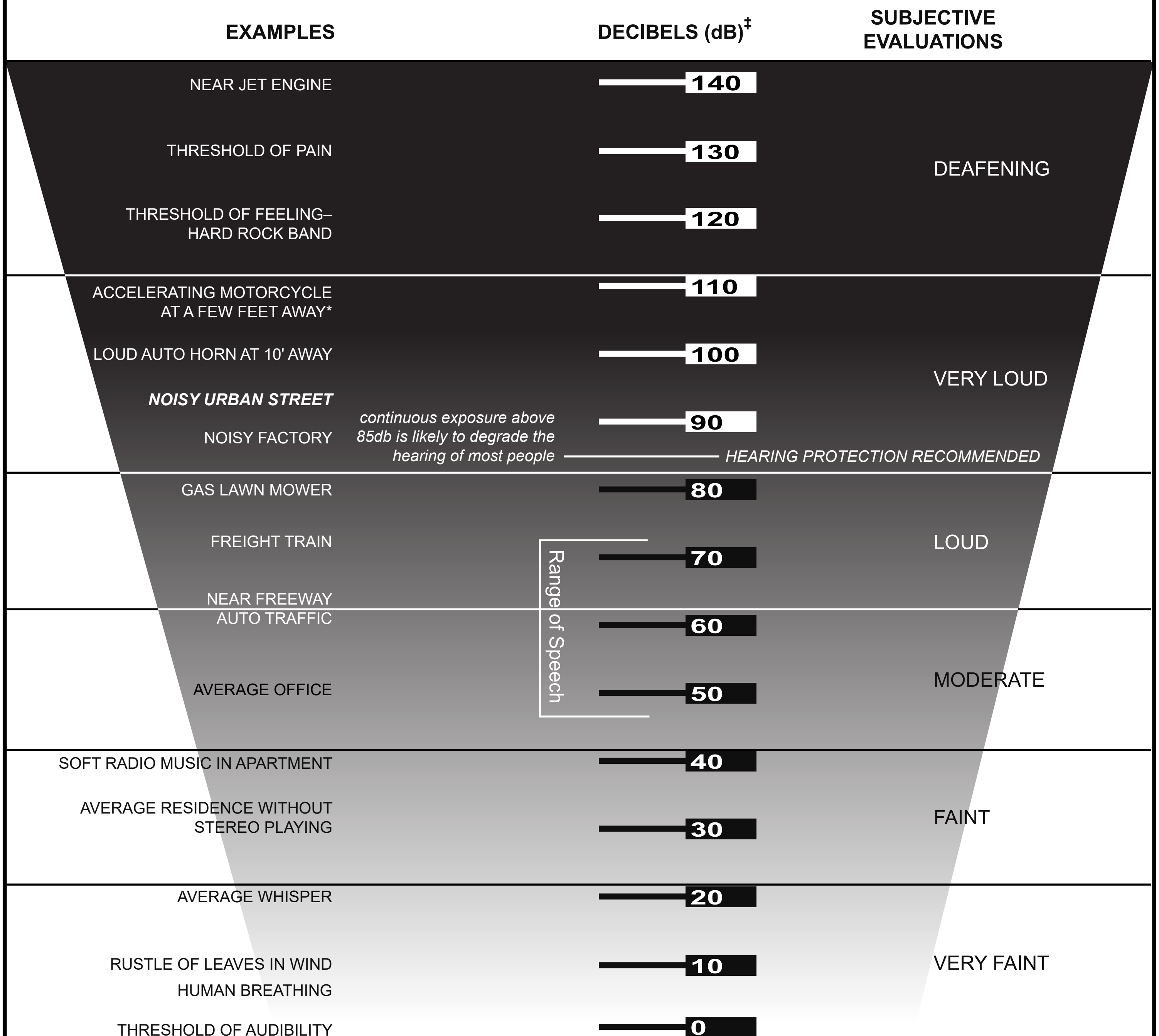
Table 4.11-1: Noise Descriptors provides a summary of the noise descriptors used to measure sound levels over different periods of time.

Table 4.11-1
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measure sound to a reference pressure.
A-weighted decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent sound level (Leq)	The sound level containing the same total energy as a time-varying signal over a given time period. The Leq is the value that expresses the time-averaged total energy of a fluctuating sound level. Leq can be measured over any time period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods.
Community noise equivalent level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments add 5 dBA for the evening, 7:00 PM to 10:00 PM, and add 10 dBA for the night, 10:00 PM to 7:00 AM. The 5 and 10 dB penalties are applied to account for increased noise sensitivity during the evening and nighttime hours. The logarithmic effect of adding these penalties to the 1-hour Leq measurements typically results in a CNEL measurement that is within approximately 3 dBA of the peak-hour Leq.[a]
Sound pressure level	Sound pressure is the force of sound on a surface area perpendicular to the direction of the sound. Sound pressure level is expressed in decibels.
Ambient noise	The level of noise that is all encompassing within a given environment, being usually a composite of sounds from many and varied sources near to and far from the observer. No specific source is identified in the ambient environment.

[a] *California Department of Transportation, Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol (Sacramento, California: November 2009), N51–N54.*

Noise sources can generally be categorized as one of two types: (1) point sources, such as stationary mechanical equipment; and (2) line sources, such as a roadway. In addition, noise can also be generated by mobile sources, such as trucks and construction equipment. Noise levels generated by a variety of activities, as shown in **Figure 4.11-1: Common Noise Levels.** As shown in this figure, noise levels up to 60 dBA are generally considered moderate by most people, with noise levels above 60 dBA considered loud.



** NOTE: 50' from motorcycle equals noise at about 2000' from a four-engine jet aircraft.*

‡NOTE: dB are "average" values as measured on the A–scale of a sound–level meter.

FIGURE **4.11-1**

Common Noise Levels

181-001-17

The noise level inside homes generally ranges from 30 to 45 dBA. The noise generated by speech ranges from 50 to 70 dBA. Of the typical noise events that occur in an urban environment, a loud horn from a car or a motorcycle accelerating can produce noise above 100 dBA.

Noise levels from a particular source decline as the distance to the receptor increases. Other factors, such as weather and reflecting or shielding, also help to lower intensity or reduce noise levels at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 6 dBA acoustically at “hard” locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 7.5 dBA at acoustically “soft” locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass).[1] When the noise source is a continuous line, such as vehicle traffic on a highway, sound levels decrease by about 3 dB for every doubling of distance.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, whereas a solid wall or berm reduces noise levels by 5 to 10 dBA. In addition, noise is substantially reduced from outdoor to indoor areas as a result of structural designs that attenuate noise. Windows are a common feature used by building occupants to control the effects of outdoor noise on interior noise levels. The exterior-to-interior reduction of noise for newer residential units is generally 20 dBA or more. The minimum attenuation of exterior-to-interior noise provided by typical structures in California is provided in **Table 4.11-2: Outside-to-Inside Noise Attenuation**.

Table 4.11-2
Outside-to-Inside Noise Attenuation

	Reduction in dBA	
Building Type	**Open Windows**	**Closed Windows**
Residences	17	25
Schools	17	25
Churches	20	30
Hospitals/Convalescent homes	17	25
Offices	17	25

Source: C. G. Gordon, et al., Highway Noise: A Design for Highway Engineers*, National Cooperative Highway Research Program Report 117 (Washington, DC: Transportation Research Board, 1971).*

1 United States Department of Transportation (DOT), Federal Transportation Authority (FTA), *Transit Noise and Vibration Impact Assessment* (2006), pp. 2-12 and 6-41, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf; DOT, *FHWA Highway Traffic Noise Analysis: Abatement Policy and Guidance* (December 2011), 10.

Fundamentals of Vibration

Vibration is commonly defined as an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root-mean-square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response to ground-borne vibration. The RMS vibration velocity level can be presented in inches per second (ips) or in vibration decibels (VdB, a decibel unit referenced to 1 microinch per second). Generally, ground-borne vibration generated by man-made activities (i.e., road traffic, construction activity) attenuates rapidly with distance from the source of the vibration.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as the operation of mechanical equipment, the movement of people, or the slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity, to 100 VdB, which is the threshold where minor damage can occur in fragile buildings.

Regulatory Framework

a. Federal

There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project. With regard to noise exposure and workers, the Office of Safety and Health Administration (OSHA) regulations safeguard the hearing of workers exposed to occupational noise. OSHA is responsible for the protection against the effects of noise exposure when sound levels exceed those, listed in **Table 4.11-3: Permissible Noise Exposures for Workers**, when measured on the A scale of a standard sound level meter at slow response.[2]

2 OSHA, "Occupational Noise Exposure," https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10625.

Table 4.11-3
Permissible Noise Exposures for Workers

Work Duration per Day (hours)	Sound level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

Source: Occupational Safety and Health Administration, "Occupational Noise Exposure," https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10625.

Federal Transit Administration Vibration Guidelines

The Federal Transit Administration (FTA) has published a technical manual, *Transit Noise and Vibration Impacts Assessment*, that provides ground-borne vibration impact criteria with respect to building damage during construction activities.[3] Building vibration damage is measured in PPV. According to the FTA guidelines, a vibration criterion of 0.20 PPV should be considered as the significant impact level for nonengineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber have a vibration damage criterion of 0.50 PPV based on the FTA guidelines.

The human reaction to various levels of vibration is highly subjective and varies from person to person. **Table 4.11-4: Ground-borne Vibration Criteria—Human Annoyance** shows the FTA's vibration criteria to evaluate vibration-related annoyance due to resonances of the structural components of a building. These criteria are based on extensive research that suggests humans are sensitive to vibration velocities in the range of 8 to 80 Hz.[4]

3 FTA, *Transit Noise and Vibration Impact Assessment*.
4 FTA, *Transit Noise and Vibration Impact Assessment.*

Table 4.11-4
Ground-borne Vibration Criteria—Human Annoyance

Land Use Category	Max Lv (VdB)	Description
Workshop	90	Distinctly felt vibration; appropriate to workshops and nonsensitive areas
Office	84	Felt vibration; appropriate to offices and nonsensitive areas
Residential: Daytime	78	Barely felt vibration; adequate for computer equipment
Residential: Nighttime	72	Vibration not felt, but ground-borne noise may be audible inside quiet rooms

Source: United States Department of Transportation, Federal Transportation Authority, Transit Noise and Vibration Impact Assessment *(May 2006).*
Note: For Max Lv (VdB), Lv is the velocity level in decibels as measured in 1/3 octave bands of frequency over the frequency ranges of 8 to 80 Hz

Structures amplify ground-borne vibration, and wood-frame buildings, such as typical residential structures, are more affected by ground vibration than are heavier buildings. The level at which ground-borne vibration is strong enough to cause architectural damage has not been determined conclusively. The most conservative estimates are reflected in the FTA standards, shown in **Table 4.11-5: Ground-borne Vibration Criteria—Architectural Damage**.[5]

Table 4.11-5
Ground-borne Vibration Criteria—Architectural Damage

Building Category	PPV (ips)	Lv (VdB)
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: United States Department of Transportation, Federal Transportation Authority, Transit Noise and Vibration Impact Assessment *(May 2006).*
Note: For Max Lv (VdB), Lv = the velocity level in decibels as measured in 1/3 octave bands of frequency over the frequency ranges of 8 to 80 Hz; VdB = vibration decibels; Hz = hertz; ips = inches per second.

5 FTA, *Transit Noise and Vibration Impact Assessment.*

b. State

State Noise Standards

The State of California has adopted noise compatibility guidelines for general land use planning. The types of land uses addressed by the State and the acceptable noise categories for each land use are included in the *State of California General Plan Guidelines* guidance document, which is published and updated by the Governor's Office of Planning Research.[6] The level of acceptability of the noise environment is dependent on the activity associated with the particular land use. Noise exposure for single-family uses is normally acceptable when the CNEL at exterior residential locations is equal to or below 60 dBA; conditionally acceptable when the CNEL is between 55 and 70 dBA; and normally unacceptable when the CNEL exceeds 70 dBA. These guidelines apply to noise sources such as vehicular traffic, aircraft, and rail movements.

An interior CNEL of 45 dB is mandated by the State of California Noise Insulation Standards Title 24 for 2016 Building Energy Efficiency Standards for multiple family dwellings and hotel and motel rooms.[7] Furthermore, projects must comply with the California Code of Regulations, Title 24 and Title 25 for California Building Code Interior and Exterior Noise Standards. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms in residential use, including single-family dwelling units. Because typical noise attenuation within residential structures with closed windows is at least 20 dB, an exterior noise exposure of 65 dB CNEL is generally the noise land-use compatibility guideline for new residential dwellings in California. Because commercial and industrial uses are not occupied on a 24-hour basis, the exterior noise exposure standard for less-sensitive land uses generally is somewhat less stringent.

The California Department of Education prepared the School Site Selection and Approval Guide. As indicated in the Education Code, Section 17251, and the California Code of Regulations, Title 5, Sections 14001 through 14012, outlines the powers and duties for the Department regarding school sites and the construction of school buildings. The California Department of Transportation considers sound at 50 dB near a school to be the point at which corrective action.[8]

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6 Governor's Office of Planning and Research, *State of California General Plan Guidelines* (2017), http://www.opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf.

7 California Code of Regulations, Public Resources Code, sec. 25402, 2016 Building Energy Efficient Standards, tit. 24, pt. 6, sec. T25–T28.

8 California Department of Education, *School Site Selection and Approval Guide* (December 28, 2017), https://www.cde.ca.gov/ls/fa/sf/schoolsiteguide.asp.

c. Local

City of Compton

General Plan Noise Element

The City's adopted 1991 General Plan includes a Noise Element.[9] This Element is a comprehensive program for noise control in the planning process and a tool for achieving and maintaining environmental noise levels compatible for land use. The Element includes goals and policies to help control noise through land use planning decisions and by developing measures to control nontransportation noise impacts.

The working Draft of the City's 2030 General Plan includes a Noise Element that is designed to address noise and land use compatibility.[10] The Noise Element includes standards that serve as a guide for considering the ambient noise environment when proposing a new development. The Noise Mitigation Plan identifies the City's goals for 2010 through 2030 as they relate to the effective control of noise in the City and sets the policies and programs for achieving them. The plan also identifies land use compatibility standards based on noise levels.

The City's noise standards correlate with land-use zoning classifications to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within a specified zone. The City has adopted local guidelines based in part on the community noise compatibility guidelines established by the California Department of Health Services for use in assessing the compatibility of various land-use types with a range of noise levels.[11] These guidelines are set forth in the City's Noise Element in terms of the CNEL. These include:

- Residential uses normally unacceptable in areas where the ambient noise levels exceed 70 dB CNEL; and residential uses are conditionally acceptable in areas where the ambient noise levels range between 60–70 dB CNEL.
- Commercial/professional office buildings and land uses are normally unacceptable in areas where the ambient noise levels exceed 75 dB CNEL and are conditionally acceptable within areas where the ambient noise levels range from 65 dB CNEL to 75 dB CNEL (for commercial/professional offices only).

Guidelines for the preparation and content of noise elements of general plans prepared by the former State Office of Noise Control have been incorporated into the State's General Plan Guidelines.[12] The City

9 City of Compton, *General Plan,* "Noise Element" (December 3, 1991).
10 City of Compton, *Draft 2030 Comprehensive General Plan Update Draft EIR* (April 2014), accessed November 2017, http://www.comptoncity.org/civicax/filebank/blobdload.aspx?blobid=27209.
11 California Department of Health Care Services, Systems of Care Division, Child Health and Disability Prevention Program, *Health Assessment Guidelines* (July 2016).
12 California Office of Planning and Research, *State of California General Plan Guidelines*.

of Compton Noise Element applies the guidelines; specifically, the City's Noise Element states that the following noise guidelines indicate compatibility of noise-sensitive land uses in areas subject to ambient noise levels ranging from 55 CNEL and 80 CNEL.

- Residential uses are normally unacceptable in areas where the ambient noise levels exceed 70 dBA CNEL; and residential uses are clearly or conditionally acceptable where the ambient noise level ranges between 55-70 dBA CNEL.
- Commercial/professional office buildings and land uses are normally unacceptable in areas where the ambient noise levels exceed 75 dB CNEL and are conditionally acceptable within areas where the ambient noise levels range from 65 to 75 dB CNEL (for commercial/professional offices only).
- Industrial uses are normally unacceptable in areas where the ambient noise levels exceed 80 dB CNEL; and are conditionally acceptable in areas where the ambient noise level ranges between 65-75 dB CNEL.
- Institutional land uses are normally unacceptable in areas where the ambient noise levels exceed 75 dB CNEL and are conditionally acceptable within areas where the ambient noise levels range from 65 to 75 dB CNEL.
- Schools, libraries, hospitals, and nursing homes are treated as noise-sensitive land uses, requiring acoustical studies within areas exceeding 60 dB CNEL.

Municipal Code

The Compton Municipal Code (CMC) regulates noise levels in the City by referencing the Los Angeles County Noise Control Ordinance.[13] The CMC makes it unlawful for any person to make any loud, unnecessary, and unusual noise that disturbs the peace or quiet of any neighborhood or causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

Construction noise in the City is regulated by 7-12.22 of the CMC. Specifically, the CMC states:

> *No person shall cause or permit any work to be done or do any work on the erection (including excavation), unless the noise caused thereby is confined within a building, or use any pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist, unless the noise caused thereby is confined within a building, other than between the hours of 7:00 a.m. and 7:00 p.m. on Monday through Saturday, except in cases of urgent necessity in the interest of public health and safety and then only with a permit from the*

13 City of Compton, Building and Safety, "Compton Municipal Codes, available at http://www.comptoncity.org/depts/building/default.asp.

> *Building Official. No such permit shall be granted for a period of more than three (3) days, but may be renewed from time to time so long as the emergency exists.*[14]

d. Other Noise Standards

American National Standards Institute

The American National Standards Institute (ANSI), along with efforts of the US Access Board and the Acoustical Society of America (ASA), created the ANSI S12.60-2002 standard, Acoustical Performance Criteria, Design Requirements and Guidelines for Schools.[15] Through specific design requirements and acoustical performance criteria, the standard creates a classroom environment that optimizes speech understanding. Compliance with the ANSI standard is voluntary, but many school districts and state and local agencies have adopted the standard as a part of their construction and renovation requirements for schools.

American Speech-Language-Hearing Association

In 2004, the American Speech-Language-Hearing Association's (ASHA's) Working Group on Classroom Acoustics recommended that an appropriate acoustical environment be established in all classrooms and learning spaces.[16] ASHA endorses the ANSI standard for classroom acoustics and recommends the following acoustical criteria:

1. Unoccupied classroom levels must not exceed 35 dBA.
2. The signal-to-noise ratio (the difference between the teacher's voice and the background noise) should be at least +15 dB at the child's ears.
3. Unoccupied classroom reverberation must not surpass 0.6 seconds in smaller classrooms or 0.7 seconds in larger rooms.

Existing Conditions

Existing Sources of Noise

The Project Site consists of the following components: (1) the existing CHS campus; (2) other District uses, consisting of the District's Facilities Service Center and Pupil Services, Enrollment Center, and Special Education offices; and (3) the acquisition area, including both the streets to be vacated and the 10 parcels

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14 Compton Municipal Code, ch. 7, Police Regulations, 7-12.22 Construction or Repairing of Buildings, Pile Drivers, Hoists, Steam Shovels.

15 United States Access Board, "About the Classroom Acoustics Rulemaking," https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/classroom-acoustics.

16 American Speech-Language-Hearing Association (ASHA), "American National Standard on Classroom Acoustics," https://www.asha.org/public/hearing/american-national-standard-on-classroom-acoustics/.

to be acquired. Description of the existing noise levels associated with each of these components is detailed below.

Existing CHS Campus

The CHS consists of eight primary buildings that include classrooms; a student store; a staff lounge; a counseling office; a professional development center; offices; a library; a cafeteria; a gym with male and female locker rooms; a student processing center; a college and career center; a truancy center and teen court; a freshman academy resource center; reading labs; and an administrative building with administrative offices, a family resource center, a testing center, and a 1,664-seat theater/auditorium. The CHS campus also includes numerous portable classrooms; a football field and 400-meter track field; tennis courts; baseball and softball fields; other outdoor multipurpose fields; and gathering areas, parking lots, and drive lanes. Noise emitted by the existing CHS Campus would include but not be limited to roadway traffic to and from school, school bells, HVAC systems, doors opening and closing in the parking lot and classrooms, and student activities.

Athletic Fields

The athletic fields on the existing CHS campus are currently utilized for nighttime events, or events that occur after school hours, of which would generate increased noise levels after normal school hours. Historically, the CHS campus hosts boys' and girls' soccer games from the mid-November through December months, with games occurring from 3:00 PM to 5:00 PM. In addition, the CHS campus hosts approximately 4 home football games from the August to November months, with games occurring from 5:00 PM to 7:30 PM. Some home games start at 7:00 PM and end by approximately 9:30 PM, with games ending no later than 10:00 PM. Existing noise generated from sporting events includes the traffic of crowds going to and from the event, lights, cheering, and half-time shows.

Existing Auditorium

Noise generated from the existing auditorium located within the administration building includes music associated with school assemblies, concerts, plays showcased by the school or the community, and related traffic from the crowds going to and from each event. Noise associated with these events is only temporary in nature; would comply with any local or State code or regulation, and, as mentioned above, would not typically generate noise after 10:00 PM.

Other District Uses

The southwest portion of the Project Site north of W. Alondra Boulevard also contains other District facilities and buildings not affiliated with the CHS campus, including the Pupil Services Center, Enrollment Center, and Special Education offices. The District Facilities Department also occupies two existing portable offices located within the north parking lot. Noise emitted by these uses includes roadway traffic to and from school; HVAC systems; doors opening and closing in the parking lot and classrooms; and student activities.

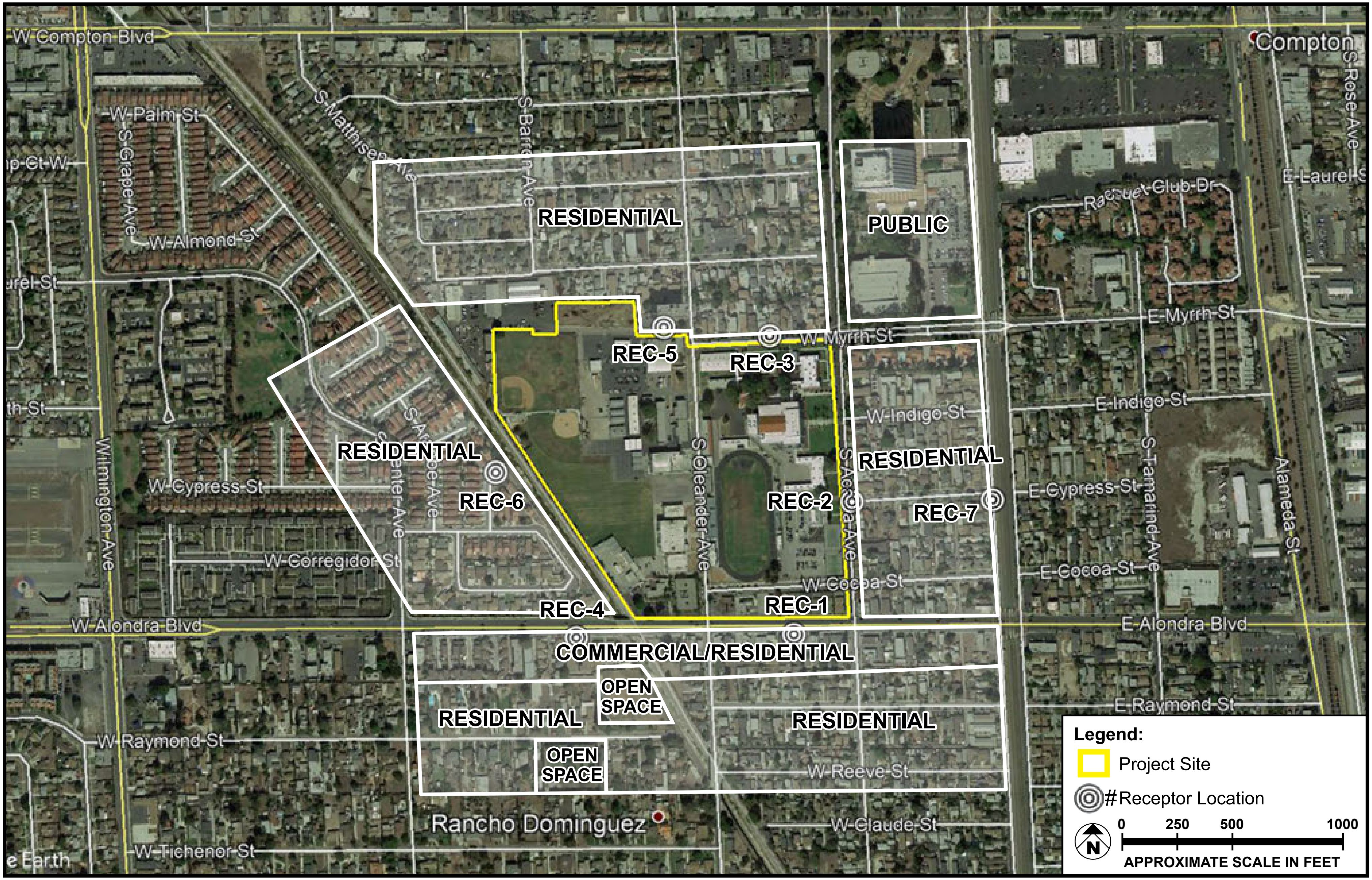
Acquisition Parcels

The 10 additional parcels immediately south of the existing campus are currently developed with one single-family residence, six multifamily residential buildings, a church, and a commercial car wash, for a total of approximately 20,300 square feet of existing uses. In addition, portions of W. Cocoa Street and S. Oleander Avenue are located to the north and west sides of these parcels. Noise emitted from the uses and users of these parcels and roadways include but are not limited to roadway traffic, HVAC systems, car doors opening and closing, and pedestrian activity.

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include schools, residences, hospital facilities, religious facilities, and open space/recreation areas where quiet environments are necessary for the enjoyment, public health, and safety of the community. Commercial and industrial uses are not considered noise- and vibration-sensitive uses.

Land uses surrounding the Project Site consist of single- and multifamily residential uses to the north, west, and east and a mix of residential and commercial to the south as shown, in **Figure 4.11-2: Sensitive Receptors**. In addition, **Table 4.11-6: Other Sensitive Receptors near the Project Site** shows the location and distance to each of the closest receptors that were noted during the field survey of the Project Site that were not just residential. Although these other receptors are near the Project Site, the analysis that follows is a "worst-case scenario" for the residences within 50 feet of the Project Site; therefore, the other uses would have less, or similar, of an impact from noise.



SOURCE: Google Earth - 2018

FIGURE **4.11-2**

Meridian Consultants

Sensitive Receptors

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Table 4.11-6
Other Sensitive Receptors near the Project Site

Location	Type of Use	Distance from Project Site (in feet)	Direction from Site
Raymond Street Park	Park	240	South
Doctor Walter R. Tucker Park	Park	760	West
530 W. Alondra Boulevard	Church	1,080	Southwest
157 E. Myrrh Street	Church	1,065	East
312 S. Oleander Avenue	Preschool	390	North
225 W. Alondra Boulevard	Daycare Center	50	East
425 S. Oleander Avenue	Senior Living Center	80	North

Source: Meridian Consultants LLC, Field Survey conducted by Gavin Heller, (November 14, 2017)

Noise Measurements

Existing noise levels around the Project Site were measured using a Larson-Davis Model 831 sound level meter, which satisfies the ANSI for general environmental noise measurement instrumentation and for Type 1 accuracy.[17] The sound level meter and microphone were mounted on a tripod 5 feet above the ground and equipped with a windscreen during all measurements. The sound level meter was set to "slow" time constant mode to record noise levels using the A-weighting filter network. Meteorological conditions during the measurement periods were favorable and representative of the typical conditions, with mostly clear skies, daytime temperatures ranging from 60° to 75° Fahrenheit, and wind speeds less than 5 miles per hour.

Existing noise sources within the City can be placed into five basic categories: (1) freeway noise (from the I-710, SR-91, and the I-105 freeways); (2) aircraft noise from both Compton Woodley Airport as well as aircraft over flights associated with landing approaches to Los Angeles International Airport; (3) traffic on local streets; (4) noise from railroad and light rail (the Blue Line) operations; and (5) noise from stationary sources. Existing noise levels at the Project Site and its vicinity are predominantly from vehicle noise generated on surface parking and nearby street traffic, specifically W. Alondra Boulevard to the south, S. Acacia Avenue to the east, and W. Myrrh Street to the north. In addition, the Metro Blue Rail Line runs east of the Project Site in a north–south direction.

17 ASHA, "American National Standard on Classroom Acoustics.".

The locations of each of the noise monitoring measurements are shown in **Figure 4.11-3: Noise Monitoring Locations.** Noise measurements and a description of each location are provided in **Table 4.11-7: Existing Noise Measurements.** These measurements are representative of typical ambient noise levels at nearby commercial and residential locations. As shown in **Table 4.11-7,** the existing ambient noise levels ranged from a low of 49.4 dBA at Site 6 to a high of 73.7 dBA at Site 4.

Table 4.11-7
Existing Noise Measurements

Site	Location	Land Use	Leq (10-minute)
Site 1	South of the Project Site; along W. Alondra Blvd. between S. Acacia Ave. and S. Oleander Ave.	Residential	72.3
Site 2	East of Project Site; intersection of S. Acacia Ave. and W. Cypress St.	Residential	67.4
Site 3	North of Project Site; along W. Myrrh St. between S. Oleander Ave. and S. Acacia Ave.	Residential	64.9
Site 4	South of the Project Site; along W. Alondra Blvd. between S. Central Ave. and S. Oleander Ave.	Residential	73.7
Site 5	North of Project Site; along W. Myrrh St. between S. Oleander Ave. and S. Acacia Ave.	Residential	67.4
Site 6	West of Project Site; end of Barron Ave.	Residential	49.4
Site 7	East of Project Site; intersection of W. Cypress St. and S. Willowbrook Ave.	Residential	63.6
Site 8	South of the Project Site; along W. Cocoa St. between S. Oleander Ave. and S. Acacia Ave.	Residential	63.8

Note: Measurements were taken on November 14, 2017.
*Source: Noise Measurement Datasheets contained in **Appendix N** of this EIR.*

Site 1 is located on W. Alondra Boulevard, south of the Project Site between S. Oleander Avenue and S. Acacia Avenue. This location is surrounded by a mix of commercial and single-family residential uses to the north, south, east, and west. Dominant noise sources at this site include vehicle traffic along W. Alondra Boulevard.

SOURCE: Google Earth - 2018

FIGURE **4.11-3**

Meridian Consultants

Noise Monitoring Locations

181-001-17

Site 2 is located at the intersection of S. Acacia Avenue and Cypress Street, immediately east of the Project Site. This location is surrounded by the existing CHS Campus to the west, and by single-family residential units to the north, south, and east. Dominant noise sources at this site include vehicle traffic along S. Acacia Avenue and school-related activity from the existing CHS Campus.

Site 3 is located on W. Myrrh Street between S. Oleander Avenue and S. Acacia Avenue, north of the existing CHS Campus. This location is surrounded single-family residential uses. Dominant noise sources at this site include vehicle traffic along W. Myrrh Street and S. Oleander Avenue and school-related activity from the existing CHS Campus.

Site 4 is located on W. Alondra Boulevard just west of Compton Creek. This location is surrounded by multifamily residential uses to the north, south, east, and west, and is located to the southwest of the existing CHS Campus. Dominant noise sources at this site include vehicle traffic along W. Alondra Boulevard.

Site 5 is located on the north portion of the existing CHS Campus near the location of the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices, which would be relocated to west of the intersection of W. Myrrh Street and S. Oleander Avenue. This location is surrounded by multifamily residential units to the north and east. Dominant noise sources at this site include light vehicle traffic along S. Oleander Avenue and W. Myrrh Street, and parking lot activity from the existing CHS Campus.

Site 6 is located west of the Project Site on Barron Avenue. This location is surrounded by single-family residential uses to the north, south, east, and west. Dominant noise sources at this site include light vehicle traffic along Barron Avenue and the surrounding roadway network.

Site 7 is located at the intersection of Willowbrook Avenue and Cypress Street, immediately west of the Metro Blue Rail Line. This location is surrounded by single- and multifamily residential units to the north, south, and west, and by the Metro Blue Rail Line to the east. Dominant noise sources at this site include noise generated by the Metro Blue Rail Line and light vehicle traffic along Willowbrook Avenue and Cypress Street.

Site 8 is located within the southern portion of the Project Site, along Cocoa Street between S. Oleander Avenue and S. Acacia Avenue. This location is surrounded by the existing CHS Campus to the north and by a mix of commercial uses and multifamily residential units to the along Cocoa Street. Dominant noise sources at this site include school-related activity from the existing CHS Campus, vehicle traffic along Cocoa Street, and pedestrian-related activity from the commercial uses.

Noise Modeling Along Adjacent Roadways

The existing ambient noise environment for the roadways was determined by calculating noise levels based on average daily trips determined in the traffic analysis for the proposed Project prepared by Raju Associates Inc.[18] The noise modeling effort was accomplished using the FHWA Highway Traffic Noise Model. The results of the noise modeling are provided in **Table 4.11-8: Estimated Existing Roadway Noise Levels.** As shown, roadway noise levels ranged from a low of 49.5 dBA CNEL at Alameda Street, south of E. Greenleaf Boulevard (Intersection 17), to a high of 65.6 dBA CNEL at W. Rosecrans Avenue, west of N. Acacia Avenue (Intersection 9).

Existing Vibration Levels

Based on field observations, the primary source of existing ground-borne vibration near the Project Site is vehicle traffic on local roadways. According to the FTA, typical road traffic-induced vibration levels are unlikely to be perceptible by people. Trucks and buses typically generated ground-borne vibration velocity levels of approximately 63 VdB (at 50 feet distance), and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. A vibration level of 72 VdB is above the 60 VdB level of perceptibility.

Table 4.11-8
Estimated Existing Roadway Noise Levels

Intersection No.	Roadway Segment	Existing Roadway Noise Level (dBA CNEL)
W. Rosecrans Avenue		
9	West of N. Acacia Avenue	65.6
9	East of N. Acacia Avenue	65.4
W. Compton Boulevard		
2	West of Wilmington Boulevard	62.7
2	East of Wilmington Boulevard	63.1
7	West of Oleander Avenue	64.6
7	East of Oleander Avenue	64.3
10	West of N. Acacia Avenue	61.9
10	East of N. Acacia Avenue	62.8
15	West of Alameda Street (West)	60.9
15	East of Alameda Street (West)	61.0
15	West of Alameda Street (East)	61.0
15	East of Alameda Street (East)	61.2

18 Raju Associates Inc., *Traffic Study for the Compton High School Reconstruction Project* (April 2018).

Intersection No.	Roadway Segment	Existing Roadway Noise Level (dBA CNEL)
Myrrh Street		
11	West of N. Acacia Avenue	55.4
11	East of N. Acacia Avenue	56.1
13	West of Willowbrook Avenue (West)	60.4
13	West of Willowbrook Avenue (East)	60.7
13	East of Willowbrook Boulevard (West)	60.6
13	East of Willowbrook Boulevard (East)	60.2
Alondra Boulevard		
1	West of Central Avenue	63.8
1	East of Central Avenue	64.0
3	West of Wilmington Avenue	64.2
3	East of Wilmington Avenue	64.7
6	West of S. Center Avenue	64.6
6	East of S. Center Avenue	64.8
8	West of S. Oleander Avenue	64.9
8	East of S. Oleander Avenue	64.5
12	West of N. Acacia Avenue	64.5
12	East of N. Acacia Avenue	64.3
14	West of Willowbrook Avenue (West)	64.1
14	East of Willowbrook Boulevard (West)	64.2
14	West of Willowbrook Avenue (East)	64.3
14	East of Willowbrook Boulevard (East)	64.2
16	West of Alameda Street (West)	64.0
16	East of Alameda Street (West)	64.0
16	West of Alameda Street (East)	64.0
16	East of Alameda Street (East)	64.0
18	West of Santa Fe Avenue	64.1
18	East of Santa Fe Avenue	64.2
19	West of S. Long Beach Boulevard	64.2
19	East of S. Long Beach Boulevard	64.6
Caldwell Avenue		
4	West of Wilmington Avenue	56.9
4	East of Wilmington Avenue	53.9
W. Greenleaf Boulevard		
5	West of Wilmington Avenue	60.6
5	East of Wilmington Avenue	62.3
17	West of Alameda Street (West)	60.8

Intersection No.	Roadway Segment	Existing Roadway Noise Level (dBA CNEL)
17	East of Alameda Street (West)	61.8
17	West of Alameda Street (East)	61.9
17	East of Alameda Street (East)	60.8
Central Avenue		
1	North of W. Alondra Boulevard	64.8
1	South of W. Alondra Boulevard	64.4
Wilmington Avenue		
2	North of W. Compton Boulevard	64.3
2	South of W. Compton Boulevard	64.3
3	North of W. Alondra Boulevard	64.5
3	South of W. Alondra Boulevard	64.3
4	North of Caldwell Avenue	64.3
4	South of Caldwell Avenue	64.3
5	North of W. Greenleaf Boulevard	62.9
5	South of W. Greenleaf Boulevard	63.4
S. Center Avenue		
6	North of W. Alondra Boulevard	53.7
6	South of W. Alondra Boulevard	50.3
S. Oleander Avenue		
7	North of W. Compton Boulevard	51.8
7	South of W. Compton Boulevard	55.6
8	North of W. Alondra Boulevard	53.4
8	South of W. Alondra Boulevard	53.8
S. Acacia Avenue		
9	South of W. Rosecrans Boulevard	52.5
10	North of W. Compton Boulevard	53.8
10	South of W. Compton Boulevard	57.6
11	North of W. Myrrh Street	57.7
11	South of W. Myrrh Street	56.6
12	North of W. Alondra Boulevard	55.4
12	South of W. Alondra Boulevard	51.1
S. Willowbrook Avenue		
13	North of W. Myrrh Street (West)	56.4
13	South of W. Myrrh Street (West)	55.8
13	North of W. Myrrh Street (East)	52.7
13	South of W. Myrrh Street (East)	51.4
14	North of W. Alondra Boulevard (West)	55.4

Intersection No.	Roadway Segment	Existing Roadway Noise Level (dBA CNEL)
14	South of W. Alondra Boulevard (West)	53.4
14	North of W. Alondra Boulevard (East)	51.3
14	South of W. Alondra Boulevard (East)	52.8
Alameda Street		
15	North of E. Compton Boulevard (West)	63.4
15	South of E. Compton Boulevard (West)	62.8
15	North of E. Compton Boulevard (East)	58.4
15	South of E. Compton Boulevard (East)	58.6
16	North of E. Alondra Boulevard (West)	63.8
16	South of E. Alondra Boulevard (West)	63.6
16	North of E. Alondra Boulevard (East)	58.9
16	South of E. Alondra Boulevard (East)	57.6
17	North of E. Greenleaf Boulevard (West)	63.6
17	South of E. Greenleaf Boulevard (West)	64.6
17	North of E. Greenleaf Boulevard (East)	57.5
17	South of E. Greenleaf Boulevard (East)	49.5
Santa Fe Avenue		
18	North of E. Alondra Boulevard	63.2
18	South of E. Alondra Boulevard	63.2
S. Long Beach Boulevard		
19	North of E. Alondra Boulevard	62.6
19	South of E. Alondra Boulevard	62.1

Source: Raju Associates Inc., Traffic Study for the Compton High School Reconstruction Project (January 2018).

Notes: Roadway noise model results are provided in ***Appendix N.*** *Roadway noise levels are modeled 75 feet from the center of the roadway.*

ENVIRONMENTAL IMPACTS

Methodology

Construction

Construction of the Project would require demolition, site clearing, grading, asphalt paving, building construction, and building finishing activities. These activities typically involve the use of heavy equipment, such as tractors, dozers, and cranes. While construction would be temporary, the use of these types of equipment would generate both steady state and episodic noise that would be heard both on and off the Project Site.

As mentioned previously, the City regulates noise by referencing to the Los Angeles County Noise Control Ordinance. Therefore, construction would be limited to between the hours of 7:00 AM and 7:00 PM, Monday through Saturday, except for infrequent activities such as concrete pours that must be completed within a single workday. No construction activity will occur on Sundays or holidays without a special construction permit. Standard construction best management practices include equipment will be properly muffled according to industry standards and will be in good working condition. Noise-generating equipment and staging areas will be located away from residences where feasible. Electric air compressors and similar power tools rather than diesel equipment will be used where feasible. Construction equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 30 minutes, unless otherwise more restrictive idling times are specified. Construction vehicles and equipment outfitted with back-up alarms shall utilize "smart back-up alarms" that will generate sound no more than 5 dB louder than the surrounding noise instead of fixed-decibel back-up alarms. Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow for surrounding residents to contact the job superintendent. If the superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action, and report the action to the reporting party.

Operation

Roadway Noise

Traffic noise levels were modeled using the FHWA Noise Prediction Model (FHWA-RD-77-108). This model calculates the average noise level in dBA CNEL along a given roadway segment based on traffic volumes, vehicle mix, posted speed limits, roadway geometry, and site conditions. The model calculates noise associated with a specific line source and the results characterize noise generated by motor vehicle traffic along the specific roadway segment. The model incorporates an alpha factor that characterizes the surface conditions of the area. An acoustically hard site uses an alpha factor of zero, while an acoustically soft site uses an alpha factor of 0.5. The greater the alpha factor, the greater the noise attenuates with increasing distance. Average vehicle noise rates utilized in the FHWA model have been modified to reflect average vehicle noise rates identified for California by Caltrans. According to data collected by Caltrans, California automobile noise is 0.8 to 1.0 dBA louder than national levels, while medium and heavy truck noise is 0.3 to 3.0 dBA quieter than national levels.[19] Roadway traffic data was obtained from the traffic impact study for the Project (see **Appendix O**). Noise levels were evaluated with respect to the following modeled traffic scenarios:

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19 Rudolf W. Hendriks, *California Vehicle Noise Emission Levels,* NTIS, FHWA/CA/TL-87/03 (1987).

- Existing Conditions (Year 2017)
- Existing (Year 2017) plus Project Conditions
- Future Conditions (Year 2023)
- Future (Year 2023) plus Project Conditions

Stationary Noise

Stationary point-source noise impacts were evaluated by identifying the noise levels generated by outdoor stationary noise sources such as rooftop mechanical equipment, outdoor recreational areas, parking areas, etc.; estimating the noise level from each noise source at surrounding residential property locations; and comparing such noise levels to ambient noise levels to determine significance. Operational noise levels were calculated for the hourly Leq from each noise source to surrounding sensitive receptors based on past field monitoring of similar uses conducted by Meridian Consultants or published noise references. Noise levels were then compared against the applicable exterior noise threshold.

Thresholds of Significance

To assist in determining whether the proposed Project would have a significant effect on the environment, the District finds the proposed Project may be deemed to have a significant impact related to noise if it would:

Threshold NOI-1: **Result in 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.**

Threshold NOI-2: **Be located adjacent to or near a major arterial roadway or freeway whose noise generation may adversely affect the educational program?**

Threshold NOI-3: **Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.**

Threshold NOI-4: **Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.**

Threshold NOI-5: **Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.**

Threshold NOI-6: **For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose students or staff to excessive noise levels.**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

Project Impact Analysis

Threshold NOI-1: **Result in 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.**

Reconstruction of CHS Campus

Construction Noise

Construction would take approximately 24 months and would occur through a phased development that is expected to begin in Spring 2021 and be completed by Summer 2023. For purposes of categorizing general construction noise, the Project construction activity for the proposed Project is described the following phases: (1) demolition, (2) site preparation, (3) grading, (4) building construction, (5) architectural coating, and (6) paving.

<u>On-site Construction Activities</u>

Construction activities that would occur during the construction phases would generate both steady-state and episodic noise that would be heard both on and off the Project Site. Typical maximum noise levels and duty cycles of representative types of equipment are presented in **Table 4.11-9: Typical Maximum Noise Levels for Construction Equipment.** Construction equipment noise would not be constant because of the variations of power, cycles, and equipment locations. For maximum noise events, this analysis considers equipment operating at the edge of the property line of the Project Site.

Table 4.11-9
Typical Maximum Noise Levels for Construction Equipment

Equipment Description	Noise Level at 50 feet (dBA)	Typical Duty Cycle (%)
Backhoe	78	40
Compressor (air)	78	40
Concrete/Industrial saw	90	20
Crane	81	16
Dozer	82	40
Excavator	81	40
Front end loader	79	40
Generator (more than 25 kVA)	81	50
Grader	85	40
Paver	77	50
Pneumatic tool	85	50
Pump	81	50
Scraper	84	40
Tractor	84	40

Source: U.S. DOT, FHWA Construction Equipment and Noise Level Ranges.
Note: kVA = kilovolt-ampere

Equipment estimates, and noise levels used for the analysis during the construction phases are representative of worst-case conditions because it is unlikely that all the equipment contained on the Project Site would operate simultaneously. Construction equipment operates at its nosiest levels for certain percentages of time during operation. Equipment such as excavators, graders, and loaders would operate at different percentages over the course of an hour.[20]

Noise levels generated by different types of construction equipment are shown in **Figure 4.11-4: Noise Levels of Typical Construction Equipment.** On-site construction noise is generated from standard construction equipment, including engine-powered construction equipment, high-pressure air compressors, mechanical and hydraulic transmission actuation systems, cooling fans, and mechanical equipment movement in general.

Engine-powered construction equipment includes earthmoving equipment that is highly mobile, handling equipment that is partly mobile (such as forklifts and cantilevered crane loading platforms), and stationary equipment. Engine sound typically predominates, with exhaust noise normally being the major source,

20 DOT, Federal Highway Administration (FHWA), *Traffic Noise Model* (2006).

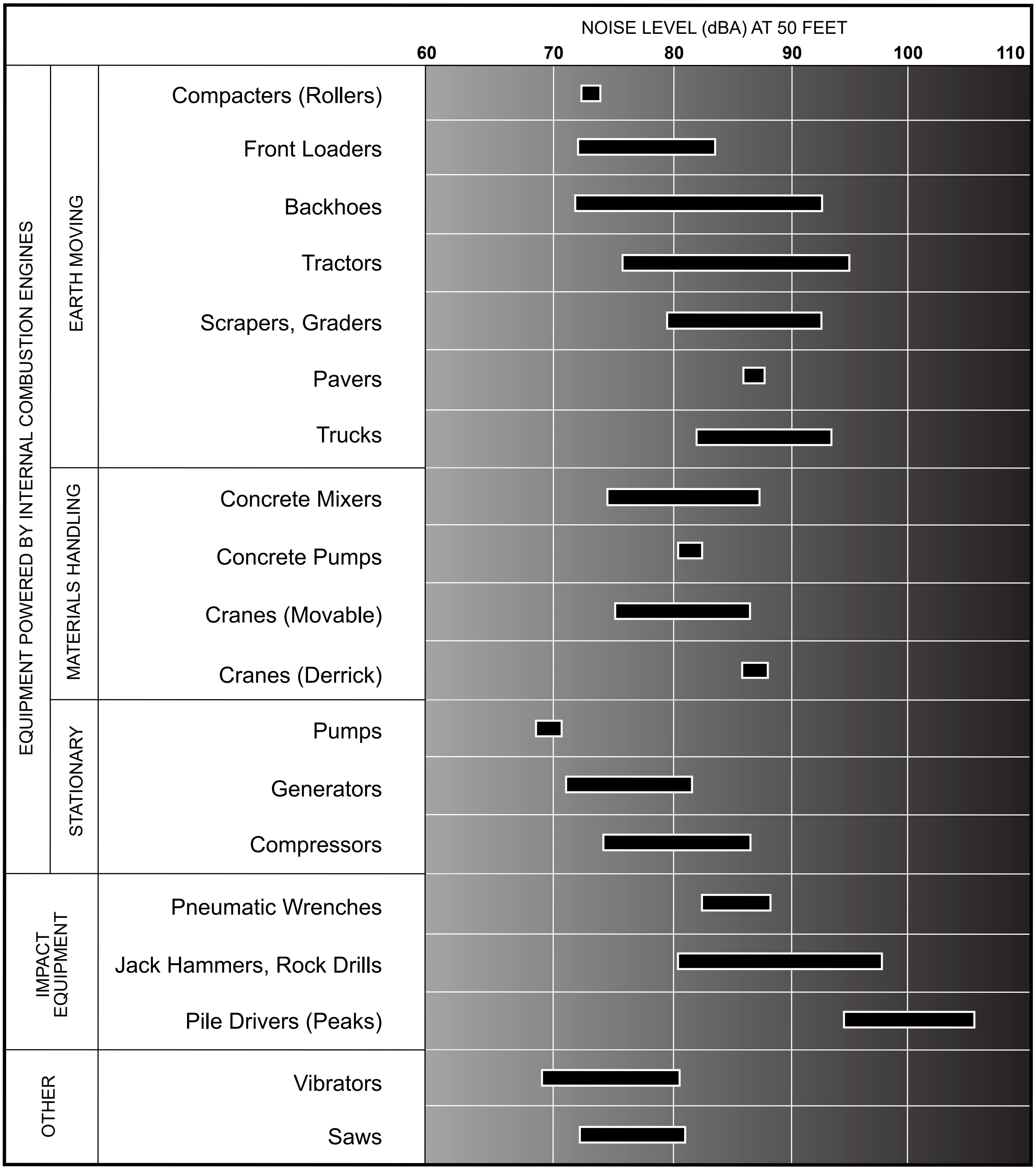
and inlet sound level and structural sound level being of secondary importance. The typical operating cycle of this equipment involves several minutes of full-power operation followed by several minutes at lower power. Construction of the Project would not include the use of pile drivers and vibratory rollers, which produce higher and more disturbing noise and vibration levels relative to other types of construction equipment.

Stationary equipment, such as air compressors and generators, generally run continuously at relatively constant power and speed, although sound levels may vary according to the work cycle (e.g., loading of earthen material or debris into haul trucks). Because construction activities occur throughout construction sites, and because these activities change as work progresses, construction typically has both spatial and temporal noise dimensions. Construction-related noises are usually of a temporary duration and can be relatively intermittent. On-site construction activities would increase the short-term noise level compared to existing conditions. Construction equipment with internal combustion engines would be the primary source of noise during Project construction.

Noise impacts would vary considerably depending on the type of equipment used, the duration of use, the capacity, and the relative location(s) on the Project Site. As such, the sound emissions from each piece of equipment would change throughout the course of each phase of construction. To present a conservative analysis, the estimated noise levels were calculated for a scenario in which operating equipment was emitting peak noise level. Spherically radiating noise point sources (e.g., a specific piece of construction equipment) are atmospherically attenuated by a factor of 6 dBA per doubling of distance, or about 20 dBA in 500 feet of propagation.

Construction noise can increase when multiple pieces of equipment are operating simultaneously close to each other. Because of the logarithmic nature of decibel addition, two equally loud pieces of equipment operating at the same time would be 3 dBA louder than either one individually. Three pieces of equipment operating simultaneously would be 5 dBA louder. Therefore, construction activities that last more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use would be considered a significant impact.

To present a conservative analysis, the estimated noise levels were calculated for a scenario in which all construction equipment was assumed to operate simultaneously and was assumed to be located at the construction area nearest to the affected receptors. The maximum construction noise levels would represent the loudest construction noise but would only occur for a relatively short duration and only intermittently during the workday.



Note: Based on limited available data samples.

SOURCE: United States Environmental Protection Agency, 1971, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1.

FIGURE **4.11-4**

Meridian Consultants

Noise Levels of Typical Construction Equipment

The City of Compton Municipal Code regulated noise levels in the City by referencing the Los Angeles County Noise Control Ordinance. The Ordinance permits construction activities during the hours of 7:00 AM to 7:00 PM, Monday–Friday, and 8:00 AM–5:00 PM on Saturday. No construction activities are permitted on Sundays or holidays. Consistent with the Ordinance, the Project would limit construction activities to the timeframe and days as stipulated in the City's Ordinance.

The noise levels at each noise measurement site, located at various distances from the construction activity are shown in **Table 4.11-10: Construction Noise Estimates**. It is important to note that construction noise levels for Site 8 were not analyzed because this site is located within the 10 acquisition parcels and would be within the Project Site. Construction equipment operates at its nosiest levels for certain percentages of time during operation.21 The construction noise estimates taken are based on the ambient noise measurements. The noise measurements are representative of the residential areas surrounding the Project Site to north, east, and south, which are the nearest sensitive receptors. The distance to these receptors from the Project Site boundary are then calculated and used for each of these locations. As shown in **Table 4.11-10**, the maximum exceedance for REC-1, REC-2, REC-3, REC-5, and REC-6 would reach 11.9, 21.6, 21.6, 20.0, and 33.6 dBA respectively, above the 5 dBA threshold for an increase in noise from construction activities. For REC-5 and REC-6, the construction noise for each phase of construction would reach a maximum of (1) 86.8 dBA for demolition, (2) 84.6 dBA for site preparation, (3) 89.0 dBA for grading, (4) 88.1 dBA for building construction, (5) 81.5 dBA for paving, and (6) 74.0 dBA for architectural coating. As such, construction noise would be more than 5 dBA for noise-sensitive receptors for these sites.

Impacts would be potentially significant impacts.

21 FHWA, *Traffic Noise Model*.

Table 4.11-10
Construction Noise Estimates

Receptor ID	Distance from Project Site (ft)	Estimated Construction Noise Levels by Phase, dBA						Ambient Noise Level, Leq (dBA)	Maximum Noise Exceedance, Leq (dBA)
		Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating		
Site 1	90	81.7	79.5	83.9	83.0	76.4	68.9	72.3	11.9
Site 2	50	86.8	84.6	89.0	88.1	81.5	74.0	67.4	21.6
Site 3	50	86.8	84.6	89.0	88.1	81.5	74.0	64.9	21.6
Site 4	215	74.1	72.0	76.3	75.4	68.8	61.4	73.7	4.5
Site 5	60	85.2	83.1	87.4	86.5	79.9	72.4	67.4	20.0
Site 6	100	80.8	78.6	83.0	82.1	75.4	68.0	49.4	33.6
Site 7	660	64.4	62.2	66.2	65.7	59.1	51.6	63.6	4.2
Site 8[a]	—	—	—	—	—	—	—	63.8	—

*Source: Refer to **Appendix N** for construction noise worksheets.*
Notes: dBA = A-weighted decibel; Leq = equivalent sound level.
[a] (-) denotes that the site is within the Project Site and therefore has no distance and is not evaluated.

Off-Site Construction Activities

In addition to on-site construction noise sources, materials delivery, concrete mixing, haul trucks (construction trucks) and construction worker vehicles would access the Project Site during the construction period. Typically, haul trucks generate higher noise levels than construction worker vehicles (e.g., heavier engine, heavier loads, and larger tires). The majority of off-site noise would be caused by construction haul and delivery trucks.

Each phase of construction would result in varying levels of intensity and numbers of construction personnel. Based on the construction schedule and CalEEMod standards for estimated air emissions, each phase of the Project would include approximately 15 worker roundtrips per day and 4,637 total hauling trips during demolition; 18 worker roundtrips per day during site preparation; 20 worker roundtrips per day during grading; 768 worker roundtrips per day and 300 vendor roundtrips per day during building construction; 154 worker roundtrips per day during architectural coating; and 15 worker roundtrips per days during paving.[22]

As shown in **Figure 4.11-2**, noise-sensitive uses (i.e., residences) are located immediately adjacent to the Project Site. Construction truck noise along the adjacent streets could reach 76 dBA when passing within

22 Derived from CalEEMod output tables contained in **Appendix C**.

50 feet of a sensitive receptor.[23] Although, noise generated by trucks is temporary, truck activity along the streets adjacent to the Project Site could exceed the ambient noise level by more than 5 dBA, which is the threshold of significance.

Noise impacts from off-site construction traffic would be potentially significant.

Operation Noise

Schools can generate noise from sports events, athletic fields, playgrounds, and parking lot activity. School projects could include features that have the potential to cause substantial noise increases at nearby receptors. Some Project components—such as a change in grade structure; the repair and replacement of building systems, such as flooring, windows, and roofing; and the installation of modular units—would not have the potential to generate substantial noise increases. However, some of the Project components—such as the new athletic fields and auditorium (evening or nighttime events); playgrounds; parking lots; or even the installation of lights on athletic fields, thereby introducing new nighttime events—would have the potential to cause a significant noise increase.

Schools are typically located in residential areas, and noise generated on both the weekdays (by physical education classes and sports programs and games) and weekends (by use of the fields by youth organizations) can elevate noise levels. A worst-case scenario for a noise-generating project would be a new football stadium. Events at a stadium can typically generate noise levels up to 71 dBA Lmax at about 350 feet from the field.[24] This could exceed the noise ordinance of the City of Compton, which is an increase of an intruding noise from the ambient noise level of an area by more than 5 dBA, where a new stadium is located.

Outdoor activities on public playgrounds and public or private school grounds, including but not limited to school athletic and school entertainment events, are typically exempt from jurisdictional municipal codes. The increase in ambient noise levels would have the potential to exceed municipal code standards. Noise associated with athletic events (e.g., cheering, people’s voices, lights) would not change

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23 FHWA, *Highway Traffic Noise: Analysis and Abatement Policy and Guidance,* FHWA-HEP-10-025 (June 2010; rev. December 2010 and December 2011); https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf.

24 Los Angeles Unified School District (LAUSD), *Final Environmental Impact Statement, School Upgrade Program,* State Clearinghouse No. 2013111046 (September 2015). Noise level data is refenced from LAUSD Program EIR that measured at a football game with attendance of approximately 4,500 total spectators at La Quinta High School on October 11, 2002. The stadium had aluminum bleachers with closed foot wells; the public address system was “partially localized” (i.e., a few speakers mounted on poles approximately 40 feet above the ground) pointing toward the bleachers on each side of the stadium. The noise measurement location was approximately 350 feet from the center of the field, to the side of the field and behind one set of bleachers.

substantially compared to existing conditions due to the minimal increase in the number of cars accessing the Project Site. In addition, the Project would have a lower capacity than the existing high school campus and would therefore any potential increase in noise would be negligible.

Furthermore, the Project would contribute a negligible increase in vehicle-related noise along adjacent roadways. Traffic generated by future development would result in an incremental increase in traffic noise along the local street system. Generally, a change in the ambient noise levels between 3 and 5 dBA is required to be perceptible under normal conditions. Because of the logarithmic character related to noise propagation, a doubling in traffic volumes is generally required to result in such a change. As shown in the Traffic Study and detailed below, there would not be a doubling of traffic volume. All noise levels from traffic associated with the new school would be consistent with existing vehicle-related noise levels and would not therefore not increase roadway noise volumes by more than 3 dBA CNEL.

Impacts would be less than significant.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site. As determined by the District, these existing uses would be accommodated within existing District facilities, at Cesar Chavez Continuation High School located at 12501 N. Wilmington in Compton. Cesar Chavez Continuation High School is currently used by only a few students who attend school at the actual site once a week for independent study work. Cesar Chavez Continuation High School is currently staffed by six individuals. The relocation of the District uses currently on the Project Site to the Cesar Chavez Continuation High School would occur during the spring of 2019.

Given that the relocated uses would be contained within already existing buildings, construction of new buildings is not warranted. These relocated uses would maintain the same operational uses as the existing and therefore would result in no change from their existing operational uses.

Impacts would be less than significant.

Threshold NOI-2: Be located adjacent to or near a major arterial roadway or freeway whose noise generation may adversely affect the educational program.

Reconstruction of CHS Campus

Roadway noise levels were forecasted to determine if the Project's vehicular traffic would result in a significant impact at off-site sensitive-receptor locations. Based on the distribution of traffic volumes, noise modeling (**Appendix N**) was conducted for the roadways analyzed in the Traffic Study **(Appendix O).** The increase in traffic resulting from implementation of the Project would increase the ambient noise levels at sensitive off-site locations in the Project vicinity. The off-site roadway noise was estimated using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108), which calculates the CNEL noise level for a particular reference set of input conditions based on site-specific traffic volumes, distances, speeds, and noise barriers.[25]

Table 4.11-11: Existing plus Project Roadway Noise Levels, illustrates the change in CNEL from existing traffic volumes and existing plus Project traffic volumes. The difference in traffic noise between Existing Conditions and Project Conditions represents the increase in noise attributable to Project build-out–related traffic. Generally, a change in the ambient noise levels of between 3.0 dB to 5.0 dB is required for there to be perceptible change under normal conditions. A doubling of traffic volume is generally required to result in such a change. As shown in **Table 4.11-11,** the estimated increase in off-site traffic noise levels compared to existing conditions would range from no increase at many locations (0.0 dBA) to an increase of 1.0 dBA at W. Myrrh Street west of N. Acacia Avenue (intersection no. 11), and would be below the 3 dBA CNEL significance threshold. The maximum estimated noise from traffic increases associated with the Project would be 65.7 dBA at W. Rosecrans Avenue west of N. Acacia Avenue (intersection no. 9); however, this would only be a 0.1 dBA increase over existing (2017) noise levels.

Furthermore, traffic generated by the Project will not represent a doubling of existing traffic volumes at any of the studied intersections.

Impacts would be less than significant.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site.

As stated earlier, the roadway volumes for the existing and the proposed relocated uses would be similar and, therefore, would not result in a significant increase in volume.

Impacts would be less than significant.

25 FHWA, *Traffic Noise Model* (June 28, 2017), https://www.fhwa.dot.gov/Environment/noise/traffic_noise_model/.

Table 4.11-11
Existing plus Project Roadway Noise Levels

Intersection No.	Roadway Segment	Existing (2017) Baseline (dBA CNEL)	Existing (2017) plus Project (dBA CNEL)	Increase in CNEL Due to Project (dBA CNEL)	Significant Impact (3 dBA CNEL)?
W. Rosecrans Avenue					
9	West of N. Acacia Avenue	65.6	65.7	0.1	No
9	East of N. Acacia Avenue	65.4	65.4	0.0	No
W. Compton Boulevard					
2	West of Wilmington Boulevard	62.7	62.9	0.2	No
2	East of Wilmington Boulevard	63.1	63.4	0.3	No
7	West of Oleander Avenue	64.6	64.9	0.3	No
7	East of Oleander Avenue	64.3	64.4	0.1	No
10	West of N. Acacia Avenue	61.9	62.0	0.1	No
10	East of N. Acacia Avenue	62.8	62.9	0.1	No
15	West of Alameda Street (West)	60.9	61.0	0.1	No
15	East of Alameda Street (West)	61.0	61.1	0.1	No
15	West of Alameda Street (East)	61.0	61.1	0.1	No
15	East of Alameda Street (East)	61.2	61.3	0.1	No
Myrrh Street					
11	West of N. Acacia Avenue	55.4	56.4	1.0	No
11	East of N. Acacia Avenue	56.1	56.5	0.4	No
13	West of Willowbrook Avenue (West)	60.5	60.7	0.2	No
13	East of Willowbrook Boulevard (West)	60.6	60.8	0.2	No
13	West of Willowbrook (East) Boulevard	60.5	60.6	0.1	No
13	East of Willowbrook Boulevard (East)	61.2	61.4	0.2	No
Alondra Boulevard					
1	West of Central Avenue	63.8	63.9	0.1	No
1	East of Central Avenue	64.0	64.1	0.1	No
3	West of Wilmington Avenue	64.2	64.4	0.2	No
3	East of Wilmington Avenue	64.7	64.9	0.2	No
6	West of S. Center Avenue	64.6	64.9	0.3	No
6	East of S. Center Avenue	64.8	65.1	0.3	No
8	West of S. Oleander Avenue	64.9	65.1	0.2	No
8	East of S. Oleander Avenue	64.5	64.7	0.2	No
12	West of N. Acacia Avenue	64.5	64.7	0.2	No
12	East of N. Acacia Avenue	64.3	64.4	0.1	No

Intersection No.	Roadway Segment	Existing (2017) Baseline	Existing (2017) plus Project	Increase in CNEL Due to Project	Significant Impact (3 dBA CNEL)?
		(dBA CNEL)			
14	West of Willowbrook Avenue (West)	64.1	64.2	0.1	No
14	East of Willowbrook Boulevard (West)	64.2	64.3	0.1	No
14	West of Willowbrook Boulevard (East)	64.3	64.4	0.1	No
14	East of Willowbrook Boulevard (East)	64.2	64.2	0.0	No
16	West of Alameda Street (West)	64.0	64.1	0.1	No
16	East of Alameda Street (West)	64.0	64.0	0.0	No
16	West of Alameda Street (East)	64.0	64.0	0.0	No
16	East of Alameda Street (East)	64.0	64.1	0.1	No
18	West of Santa Fe Avenue	64.1	64.1	0.0	No
18	East of Santa Fe Avenue	64.2	64.2	0.0	No
19	West of S. Long Beach Boulevard	64.2	64.2	0.0	No
19	East of S. Long Beach Boulevard	64.6	64.6	0.0	No
Caldwell Avenue					
4	West of Wilmington Avenue	56.9	56.9	0.0	No
4	East of Wilmington Avenue	53.9	53.9	0.0	No
W. Greenleaf Boulevard					
5	West of Wilmington Avenue	60.6	60.7	0.1	No
5	East of Wilmington Avenue	62.3	62.3	0.0	No
17	West of Alameda Street (West)	60.8	60.9	0.1	No
17	East of Alameda Street (West)	61.8	61.9	0.1	No
17	West of Alameda Street (East)	61.9	61.9	0.0	No
17	East of Alameda Street (East)	60.8	60.8	0.0	No
Central Avenue					
1	North of W. Alondra Boulevard	64.8	64.8	0.0	No
1	South of W. Alondra Boulevard	64.4	64.4	0.0	No
Wilmington Avenue					
2	North of W. Compton Boulevard	64.3	64.3	0.0	No
2	South of W. Compton Boulevard	64.3	64.3	0.0	No
3	North of W. Alondra Boulevard	64.5	64.6	0.1	No
3	South of W. Alondra Boulevard	64.3	64.3	0.0	No
4	North of Caldwell Avenue	64.3	64.3	0.0	No
4	South of Caldwell Avenue	64.3	64.4	0.1	No
5	North of W. Greenleaf Boulevard	62.9	63.0	0.1	No
5	South of W. Greenleaf Boulevard	63.4	63.4	0.0	No

Intersection No.	Roadway Segment	Existing (2017) Baseline	Existing (2017) plus Project	Increase in CNEL Due to Project	Significant Impact (3 dBA CNEL)?
			(dBA CNEL)		
S. Center Avenue					
6	North of W. Alondra Boulevard	53.7	53.7	0.0	No
6	South of W. Alondra Boulevard	50.3	50.5	0.2	No
S. Oleander Avenue					
7	North of W. Compton Boulevard	51.8	52.3	0.5	No
7	South of W. Compton Boulevard	55.6	56.3	0.7	No
8	North of W. Alondra Boulevard	53.4	53.7	0.3	No
8	South of W. Alondra Boulevard	53.8	53.8	0.0	No
S. Acacia Avenue					
9	North of W. Rosecrans Boulevard	0.0	0.0	0.0	No
9	South of W. Rosecrans Boulevard	52.5	52.7	0.2	No
10	North of W. Compton Boulevard	53.8	53.9	0.1	No
10	South of W. Compton Boulevard	57.6	58.0	0.4	No
11	North of W. Myrrh Street	57.7	58.0	0.3	No
11	South of W. Myrrh Street	56.6	57.2	0.6	No
12	North of W. Alondra Boulevard	55.4	56.4	1.0	No
12	South of W. Alondra Boulevard	51.1	51.5	0.4	No
S. Willowbrook Avenue					
13	North of W. Myrrh Street (West)	56.4	56.5	0.1	No
13	South of W. Myrrh Street (West)	55.8	55.9	0.1	No
13	North of W. Myrrh Street (East)	52.7	52.7	0.0	No
13	South of W. Myrrh Street (East)	51.4	51.4	0.0	No
14	North of W. Alondra Boulevard (West)	55.4	55.4	0.0	No
14	South of W. Alondra Boulevard (West)	53.4	53.6	0.2	No
14	North of W. Alondra Boulevard (East)	51.3	51.6	0.3	No
14	South of W. Alondra Boulevard (East)	52.8	53.0	0.2	No
Alameda Street					
15	North of E. Compton Boulevard (West)	63.4	63.5	0.1	No
15	South of E. Compton Boulevard (West)	62.8	62.8	0.0	No
15	North of E. Compton Boulevard (East)	58.4	58.4	0.0	No
15	South of E. Compton Boulevard (East)	58.6	58.6	0.0	No
16	North of E. Alondra Boulevard (West)	63.8	63.8	0.0	No
16	South of E. Alondra Boulevard (West)	63.6	63.6	0.0	No
16	North of E. Alondra Boulevard (East)	57.8	57.8	0.0	No
16	South of E. Alondra Boulevard (East)	56.5	56.5	0.0	No

Intersection No.	Roadway Segment	Existing (2017) Baseline	Existing (2017) plus Project	Increase in CNEL Due to Project	Significant Impact (3 dBA CNEL)?
			(dBA CNEL)		
17	North of E. Greenleaf Boulevard (West)	63.6	63.6	0.0	No
17	South of E. Greenleaf Boulevard (West)	64.6	64.6	0.0	No
17	North of E. Greenleaf Boulevard (East)	56.4	56.4	0.0	No
17	South of E. Greenleaf Boulevard (East)	48.4	48.4	0.0	No
Santa Fe Avenue					
18	North of E. Alondra Boulevard	63.2	63.2	0.0	No
18	South of E. Alondra Boulevard	63.2	63.2	0.0	No
S. Long Beach Boulevard					
19	North of E. Alondra Boulevard	62.6	62.6	0.0	No
19	South of E. Alondra Boulevard	62.1	62.1	0.0	No

Source: Raju Associates, Inc., Traffic Study for the Compton High School Reconstruction Project *(January 2018).*
Roadway noise model results are provided in ***Appendix N.***
Note: Roadway noise levels are modeled 75 feet from the center of the roadway.

Threshold NOI-3: Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Reconstruction of CHS Campus

Construction activities can generate varying degrees of ground vibration depending on the construction equipment and the methods employed. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels.

Vibration is typically noticed nearby when objects in a building generate noise from rattling windows or picture frames. The effect on buildings near a construction site varies depending on soil type, ground strata, and receptor building construction. The generation of vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight damage at the highest levels. For human annoyance, the criteria of 0.1 PPV ips is the level at which continuous vibration begins to annoy people. Small construction equipment generates vibration levels less than 0.1 PPV ips at 25 feet away. However; large equipment such as vibratory roller or pile driver would generate significant vibration at 25 feet. Although vibration dissipates quickly with distance, the maximum construction-related vibration level and close distance of residential units or classrooms, vibration may exceed the 0.1 PPV ips threshold for annoyance.

Construction would be site specific and would occur intermittently for varying periods of time. Grading and demolition activities typically generate the highest vibration levels. The threshold at which there is a risk of architectural damage to normal houses with plastered walls and ceilings is 0.2 ips. Construction equipment would be operated at different times of the day and at locations further from the nearest receptors.

The effect on buildings in the vicinity of a construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but ground-borne vibration and ground-borne noise can reach perceptible and audible levels in buildings that are close to the construction site. Construction, improvements, and renovation include demolition, excavation, grading, paving, and building construction may result in ground-borne vibrations that could be perceptible at adjacent uses or result in architectural damage of structures.

The primary and most intensive vibration source associated with the development of the Project would be the use of earthmoving equipment during construction.

Expected equipment to be operated during construction and the vibration levels at varying distances are identified in **Table 4.11-12: Construction Vibration Levels Estimates**. The calculated vibration levels are based on a worst-case scenario assumption that all equipment operates simultaneously at the closest point to the receptor. The nearest affected structures, residential buildings across from the campus on S. Acacia Avenue on the east and W. Myrrh Street on the north, are approximately 50 feet away and could experience vibrations as great as 0.075 PPV ips, as shown in **Table 4.11-12.** Vibration levels would be below the threshold of 0.20 ips at off-site receptors.

Impacts related to vibration would be less than significant.

Table 4.11-12
Construction Vibration Levels Estimates

Equipment	Inches per Second PPV at Adjusted Distances						
	REC-1	REC-2	REC-3	REC-4	REC-5	REC-6	REC-7
	90 feet	50 feet	50 feet	215 feet	60 feet	100 feet	660 feet
Air compressors	0.013	0.032	0.032	0.004	0.024	0.011	0.001
Backhoes	0.023	0.057	0.057	0.006	0.043	0.020	0.001
Concrete/Industrial saws	0.003	0.006	0.006	0.001	0.005	0.002	0.000
Cranes	0.008	0.020	0.020	0.002	0.015	0.007	0.000
Dozers	0.031	0.075	0.075	0.008	0.057	0.027	0.002
Excavators	0.018	0.042	0.042	0.005	0.032	0.015	0.001
Forklift	0.031	0.075	0.075	0.008	0.057	0.027	0.002
Generator sets	0.003	0.006	0.006	0.001	0.005	0.002	0.000
Graders	0.010	0.025	0.025	0.003	0.019	0.009	0.001
Pavers	0.019	0.045	0.045	0.005	0.034	0.016	0.001
Rollers	0.006	0.014	0.014	0.002	0.011	0.005	0.000
Scrapers	0.017	0.040	0.040	0.004	0.030	0.014	0.001
Welders	0.006	0.014	0.014	0.002	0.011	0.005	0.000

Source: Office of Planning and Environment, Federal Transit Administration, Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06 (May 2006), 12-9.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site.

Given that the relocated uses would be contained within already existing buildings, construction of new buildings is not warranted. Therefore, construction vibration impacts would not occur.

No impacts would occur.

Threshold NOI-4: Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.

Reconstruction of CHS Campus

Noise Associated with School Activities

As discussed above, schools can generate noise from sports events, athletic fields, playgrounds, and parking lot activity. School projects could include features that have the potential to cause substantial noise increases at nearby receptors. Some Project components would not have the potential to generate substantial noise increases—for example, change in grade structure; repair and replacement of building systems, such as flooring, windows and roofing; and installation of modular units.

Daytime noise for school activities would consist of generated noise similar to that on the existing CHS campus. Noise emitted by the proposed CHS Campus would include but not be limited to roadway traffic to and from school, school bells, HVAC systems, doors opening and closing in the parking lot and classrooms, and student activities. These activities would take place to the extent of the Project Site consisting of 42 acres. As the campus would have a lower capacity and generate similar uses, impacts would be less than significant.

Events associated with the athletic fields would generate increased noise levels after normal school hours which generally occur in the late afternoon or early evenings, or at night. The proposed Project would maintain the same hours of operation of these events from existing conditions, with soccer games occurring from 3:00 PM to 5:00 PM, and football games starting as late as 7:00 PM and ending no later than 10:00 PM.

Noise generated from sporting events include the traffic of crowds going to and from the event, lights, cheering, and half-time shows. Noise levels of these are typically conditionally acceptable of 50–75 dBA for sporting events. These uses would generate similar noise levels as existing uses. The noise associated with these events are only temporary in nature. In addition, the Project would comply with any local or State codes or regulations, including the City's Noise Ordinance. Further analysis based on changes in traffic from after school events is included in the traffic-roadway noise section below.

Events associated with the proposed performing arts center would generate increased noise levels after normal school hours, typically in the early evening or at night. The District is anticipating that the proposed performing arts center would be utilized for up to 12 total events per year, 2 of which could be available for outside community events. A single community event would likely occur on a Friday or Saturday evening from 6:00 PM to 10:00 PM and would not conflict with any school events (such as sports programs or other events).

Noise generated from the proposed performing arts center would include but not be limited to the traffic of crowds going to and from the event, music from concerts, or plays showcased by the school. Typically, such noise is normally compatible with the 50–60 dBA range for auditorium/amphitheater uses.[26] These uses would generate similar noise levels as existing uses. The noise associated with these events are temporary in nature. Furthermore, the Project would comply with any local or State code or regulation, including the City's Noise Ordinance.

Impacts would be less than significant.

Traffic-Related Noise

The cumulative future noise conditions for Year 2023 within 75 feet of the Project roadway segments are provided in **Table 4.11-13: Future (2023) plus Project Noise Levels.** The difference in traffic noise between the cumulative (Year 2023) and Project build-out represents the increase in noise attributable to Project build-out–related traffic based on future traffic conditions with other related projects. The adopted General Plan states that the most effective method the City has to mitigate transportation noise is by reducing the noise impact through site planning and the design and construction of a noise barrier.[27] Furthermore, any new development would not result in any significant adverse noise impacts not already envisioned under the adopted General Plan.

Generally, a change in the ambient noise levels of between 3.0 dB to 5.0 dB is required for there to be perceptible change under normal conditions. A doubling of traffic volume is generally required to result in such a change.

As shown in **Table 4.11-13,** the estimated increase in off-site traffic noise levels as compared to existing conditions would range from a decrease at many locations (-0.6 dBA at S. Acacia Avenue north of W. Alondra Boulevard (intersection no. 12) to no increase (0.0 dBA) and, therefore, would be below the 3 dBA CNEL significance threshold. The maximum estimated noise from traffic increases associated with the Project would be 66.2 dBA at W. Rosecrans Avenue west of N. Acacia Avenue (intersection no. 9), which would be the same as existing (2017) noise levels.

As shown in the Traffic Study, the Project would reduce trips from the existing high school campus. The existing high school would have 6,468 trips, while the reconstruction of the high school would have 5,075 trips due to a lower student capacity. This would result in 1,393 less trips per day and thus less vehicle noise. These levels would be consistent with existing vehicle-related noise levels and would not increase

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26 City of Compton, *General Plan,* "Noise Element."
27 City of Compton, *General Plan,* "Noise Element."

roadway noise volumes by more than 3 dBA CNEL. As such, there would not be a substantial permanent increase in ambient noise levels in the Project vicinity.

Table 4.11-13
Future (2023) plus Project Noise Levels

Intersection No.	Roadway Segment	Future (2023) Baseline (dBA CNEL)	Future (2023) plus Project (dBA CNEL)	Increase in CNEL Due to Project	Significant Impact?
W. Rosecrans Avenue					
9	West of N. Acacia Avenue	66.2	66.2	0.0	No
9	East of N. Acacia Avenue	66.0	66.0	0.0	No
W. Compton Boulevard					
2	West of Wilmington Boulevard	63.3	63.2	-0.1	No
2	East of Wilmington Boulevard	64.0	63.8	-0.2	No
7	West of Oleander Avenue	65.5	65.3	-0.2	No
7	East of Oleander Avenue	65.0	64.9	-0.1	No
10	West of N. Acacia Avenue	62.5	62.4	-0.1	No
10	East of N. Acacia Avenue	63.4	63.3	-0.1	No
15	West of Alameda Street (West)	61.5	61.4	-0.1	No
15	East of Alameda Street (West)	61.6	61.5	-0.1	No
15	West of Alameda Street (East)	61.6	61.5	-0.1	No
15	East of Alameda Street (East)	61.7	61.7	0.0	No
Myrrh Street					
11	West of N. Acacia Avenue	57.3	56.6	-0.7	No
11	East of N. Acacia Avenue	57.1	56.8	-0.3	No
13	West of Willowbrook Avenue (West)	61.3	61.1	-0.2	No
13	East of Willowbrook Avenue (West)	61.3	61.1	-0.2	No
13	West of Willowbrook Avenue (East)	61.2	61.0	-0.2	No
13	East of Willowbrook Avenue (East)	60.9	60.8	-0.1	No
Alondra Boulevard					
1	West of Central Avenue	64.3	64.2	-0.1	No
1	East of Central Avenue	64.6	64.5	-0.1	No
3	West of Wilmington Avenue	64.9	64.8	-0.1	No
3	East of Wilmington Avenue	65.4	65.2	-0.2	No
6	West of S. Center Avenue	65.3	65.2	-0.1	No
6	East of S. Center Avenue	65.5	65.4	-0.1	No
8	West of S. Oleander Avenue	65.7	65.5	-0.2	No
8	East of S. Oleander Avenue	65.3	65.1	-0.2	No
12	West of N. Acacia Avenue	65.3	65.1	-0.2	No
12	East of N. Acacia Avenue	64.8	64.8	0.0	No
14	West of Willowbrook Avenue (West)	64.7	64.6	-0.1	No
14	East of Willowbrook Avenue (West)	64.7	64.7	0.0	No

Intersection No.	Roadway Segment	Future (2023) Baseline	Future (2023) plus Project	Increase in CNEL Due to Project	Significant Impact?
		(dBA CNEL)			
14	West of Willowbrook Avenue (East)	64.8	64.8	0.0	No
14	East of Willowbrook Avenue (East)	64.7	64.6	-0.1	No
16	West of Alameda Street (West)	64.5	64.4	-0.1	No
16	East of Alameda Street (West)	64.4	64.4	0.0	No
16	West of Alameda Street (East)	64.4	64.4	0.0	No
16	East of Alameda Street (East)	64.5	64.5	0.0	No
18	West of Santa Fe Avenue	64.5	64.5	0.0	No
18	East of Santa Fe Avenue	64.6	64.6	0.0	No
19	West of S. Long Beach Boulevard	64.6	64.6	0.0	No
19	East of S. Long Beach Boulevard	65.0	65.0	0.0	No
Caldwell Avenue					
4	West of Wilmington Avenue	57.2	57.2	0.0	No
4	East of Wilmington Avenue	54.1	54.1	0.0	No
W. Greenleaf Boulevard					
5	West of Wilmington Avenue	61.1	61.0	-0.1	No
5	East of Wilmington Avenue	62.7	62.7	0.0	No
17	West of Alameda Street (West)	61.3	61.2	-0.1	No
17	East of Alameda Street (West)	62.3	62.3	0.0	No
17	West of Alameda Boulevard (East)	62.3	62.2	-0.1	No
17	East of Alameda Boulevard (East)	61.2	61.1	-0.1	No
Central Avenue					
1	North of W. Alondra Boulevard	65.3	65.3	0.0	No
1	South of W. Alondra Boulevard	64.9	64.9	0.0	No
Wilmington Avenue					
2	North of W. Compton Boulevard	64.9	64.9	0.0	No
2	South of W. Compton Boulevard	64.9	64.8	-0.1	No
3	North of W. Alondra Boulevard	65.1	65.1	0.0	No
3	South of W. Alondra Boulevard	64.9	64.8	-0.1	No
4	North of Caldwell Avenue	64.8	64.8	0.0	No
4	South of Caldwell Avenue	64.9	64.8	-0.1	No
5	North of W. Greenleaf Boulevard	63.5	63.5	0.0	No
5	South of W. Greenleaf Boulevard	63.9	63.8	-0.1	No
S. Center Avenue					
6	North of W. Alondra Boulevard	54.2	54.1	-0.1	No
6	South of W. Alondra Boulevard	50.9	50.8	-0.1	No
S. Oleander Avenue					
7	North of W. Compton Boulevard	52.9	52.6	-0.3	No
7	South of W. Compton Boulevard	57.1	56.6	-0.5	No
8	North of W. Alondra Boulevard	54.2	54.0	-0.2	No
8	South of W. Alondra Boulevard	54.3	54.2	-0.1	No

Intersection No.	Roadway Segment	Future (2023) Baseline	Future (2023) plus Project	Increase in CNEL Due to Project	Significant Impact?
		(dBA CNEL)			
S. Acacia Avenue					
9	South of W. Rosecrans Boulevard	53.1	53.1	0.0	No
10	North of W. Compton Boulevard	54.4	54.2	-0.2	No
10	South of W. Compton Boulevard	58.6	58.3	-0.3	No
11	North of W. Myrrh Street	58.6	58.4	-0.2	No
11	South of W. Myrrh Street	57.9	57.5	-0.4	No
12	North of W. Alondra Boulevard	57.3	56.7	-0.6	No
12	South of W. Alondra Boulevard	51.9	51.8	-0.1	No
S. Willowbrook Avenue					
13	North of W. Myrrh Street (West)	56.8	56.7	-0.1	No
13	South of W. Myrrh Street (West)	56.4	56.3	-0.1	No
13	North of W. Myrrh Street (East)	53.0	53.0	0.0	No
13	South of W. Myrrh Street (East)	51.9	51.9	0.0	No
14	North of W. Alondra Boulevard (West)	55.7	55.7	0.0	No
14	South of W. Alondra Boulevard (West)	54.0	53.9	-0.1	No
14	North of W. Alondra Boulevard (East)	52.3	52.0	-0.3	No
14	South of W. Alondra Boulevard (East)	53.6	53.4	-0.2	No
Alameda Street					
15	North of E. Compton Boulevard (West)	63.9	63.9	0.0	No
15	South of E. Compton Boulevard (West)	63.3	63.3	0.0	No
15	North of E. Compton Boulevard (East)	58.8	58.8	0.0	No
15	South of E. Compton Boulevard (East)	58.9	58.9	0.0	No
16	North of E. Alondra Boulevard (West)	64.3	64.3	0.0	No
16	South of E. Alondra Boulevard (West)	64.1	64.0	-0.1	No
16	North of E. Alondra Boulevard (East)	59.4	59.4	0.0	No
16	South of E. Alondra Boulevard (East)	57.9	57.9	0.0	No
17	North of E. Greenleaf Boulevard (West)	64.1	64.1	0.0	No
17	South of E. Greenleaf Boulevard (West)	65.1	65.1	0.0	No
17	North of E. Greenleaf Boulevard (East)	57.8	57.8	0.0	No
17	South of E. Greenleaf Boulevard (East)	49.5	49.5	0.0	No
Santa Fe Avenue					
18	North of E. Alondra Boulevard	63.6	63.6	0.0	No
18	South of E. Alondra Boulevard	63.6	63.6	0.0	No
S. Long Beach Boulevard					
19	North of E. Alondra Boulevard	63.0	63.0	0.0	No
19	South of E. Alondra Boulevard	62.5	62.5	0.0	No

Source: Raju Associates Inc., Traffic Study for the Compton High School Reconstruction Project *(January 2018).*
Notes: Roadway noise model results are provided in ***Appendix N.*** *Roadway noise levels are modeled 75 feet from the center of the roadway.*

In addition, the Traffic Study prepared an analysis for after school events on six signalized intersections near the school. After school events at the new performing arts center, stadium, and pool have the potential to increase noise impacts on the surrounding roadways during after school hours and weekends. None of the six roadway segments studied in the evening peak hour doubled in volume and therefore noise would not result in a 3 dBA CNEL increase from existing conditions. In addition, due to the few number of events and the limited nature of such events, the noise impacts would be similar to those of that of existing events. Therefore, any such increase in noise impacts would be negligible.

Impacts would be less than significant.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site.

Given that the relocated uses would be contained within already existing buildings, construction of new buildings is not warranted. These relocated uses would maintain the same operational uses as the existing and therefore would result in minimal change from their existing operational uses.

Impacts would be less than significant.

Threshold NOI-5: Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.

Reconstruction of CHS Campus

The noise levels at each noise measurement site, located at various distances from the construction activity are shown in **Table 4.11-10**. The construction noise estimates taken are based on the ambient noise measurements. The noise measurements are representative of the residential areas surrounding the Project Site to north, east, and south, which are the nearest sensitive receptors. The distance to these receptors from the Project Site boundary are then calculated and used for each of these locations. As shown in **Table 4.11-10**, the maximum exceedance for REC-2, REC-3, REC-5, and REC-6 would reach 21.6, 21.6, 20.0, and 33.6 dBA respectively. For REC-5 and REC-6, the construction noise for each phase of construction would reach a maximum of (1) 86.8 dBA for demolition, (2) 84.6 dBA for site preparation, (3) 89.0 dBA for grading, (4) 88.1 dBA for building construction, (5) 81.5 dBA for paving, and (6) 74.0 dBA for architectural coating. Therefore, impacts would be potentially significant.

As shown above, potentially significant impacts would occur, and mitigation is needed.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site. These relocated uses would be demolished as part of the Project.

Given that the relocated uses would be contained within already existing buildings, construction of new buildings is not warranted. These relocated uses would maintain the same operational uses as the existing and therefore would result in minimal change from their existing operational uses.

Impacts would be less than significant.

Threshold NOI-6: **For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose students or staff to excessive noise levels.**

Reconstruction of CHS Campus

The Project Site is located approximately 0.4 miles to the east of the Compton/Woodley Airport. The Airport has several runways and operates an average of 181 takeoff landings per day. As shown in the City's Noise Element, the 65 CNEL contour does not extend to the Project Site.[28] As such, the Project is not anticipated to expose people to excessive noise levels associated with airport sues.

Impacts would be less than significant.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site. These relocated uses would be demolished as part of the Project.

These relocated uses would maintain the same operational uses as the existing and therefore would result in minimal change from their existing operational uses. Therefore, would have the same analysis discussed as part of the Project

Impacts would be less than significant

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28 City of Compton, *General Plan,* "Noise Element," Exhibit 9-2: Compton Airport Noise Contours.

CUMULATIVE IMPACTS

As discussed in **Section 3.0: Environmental Setting**, a number of related development projects are proposed for sites within the City, which also contains the Project Site. The proposed Project, in combination with these related projects, would increase development in the City. **Table 3.0-2, Related Projects**, identifies 15 related development projects that are proposed for sites near the Project Site. The nearest related project (Related Project No. 6) is located at 1378 W. Compton Boulevard, approximately 0.8 miles west of the Project Site.

Construction Noise

The nearest related project (Related Project No. 6) is located approximately 0.8 miles to the west of the Project Site. It is possible that some construction activities at the Project Site and Related Project No. 6 could overlap. However, due to the distance and intervening structures separating the related project and the Project Site, noise levels would have attenuated to approximate ambient noise at receptors located between the two projects. Specifically, as the Project's construction noise was calculated to exceed the City's threshold at different sites (see **Table 4.11-10**) and noise attenuates 6 dBA with each doubling of distance, it is expected that by 660 feet from the site, noise from Project construction would not be noticeable. This would be the same for the related projects. For REC-5 and REC-6, the construction noise for each phase of construction would reach a maximum of 1) 86.8 dBA for demolition, 2) 84.6 dBA for site preparation, 3) 89.0 dBA for grading, 4) 88.1 dBA for building construction, 5) 81.5 dBA for paving, and 6) 74.0 dBA for architectural coating. As previously shown in **Table 4.11-10**, the maximum exceedance for REC-2, REC-3, REC-5, and REC-6 would reach 21.6, 21.6, 20.0, and 33.6 dBA respectively and impacts would be potentially significant. Therefore, the Project's contribution to a cumulative increase in construction noise experienced at nearby sensitive receptors would be cumulatively considerable.

In addition to the cumulative impacts from on-site construction activities, off-site construction traffic would have the potential to result in cumulative noise impacts if traffic for the related projects and the Project utilize the same haul route. It is expected that trucks associated with Project construction and nearby related projects would be directed along Alondra Boulevard, which has higher ambient noise levels and larger daily trip volumes than residential neighborhood streets. Although construction of the related projects and the Project could overlap, they would still not contribute a substantial increase in trip volume along Alondra Boulevard such that ambient noise levels would be substantially affected.

As such, the noise impacts from construction would not be cumulatively considerable.

Construction Vibration

As previously indicated, ground-borne vibration decreases rapidly with increase in distance. Potential vibration impacts due to construction activities are generally limited to buildings/structures that are located in close proximity to the construction site, specifically within 100 feet from heavy construction equipment. As noted, the nearest related project, Related Project No. 6, is approximately 0.8 miles west of the Project Site. Given that distance between projects, cumulative vibration impacts associated with potential concurrent on-site construction activities from development of the Project and the related projects would not be cumulatively considerable.

It is possible that some of the related projects construction activities could overlap and utilize the same haul route along Alondra Boulevard, causing cumulative vibration impacts. The nearest affected structures, residential buildings across from the campus on Acacia Avenue on the east and Myrrh Street on the north, are approximately 50 feet away and could experience vibrations as great as 0.075 PPV ips, as shown in **Table 4.11-12.** Vibration levels would be below the threshold of 0.20 ips at off-site receptors.

Vibration impacts from construction would not be cumulatively considerable.

Operational Noise

As mentioned above, potential noise impacts due to construction activities are generally limited to buildings/structures that are located in close proximity to the construction site, specifically within 100 feet from heavy construction equipment. Due to distance (approximately 0.8 miles), buildings and structures in between, and the fact that sound attenuates by 6 dBA for each doubling of distance it is unlikely that noise from the closest related project would add to the operational noise from the Project to create a significant cumulative noise impact.

Noise impacts from operation would not be cumulatively considerable.

Roadway Noise

As shown in the City's Noise Element, the 65 CNEL contour does not extend to the Project Site, but it is within the future 60 CNEL contour for the western portion of the site.[29] As provided in **Table 4.11-13,** the difference in traffic noise between the cumulative (Year 2023) and Project build-out represents the increase in noise attributable to Project build-out–related traffic based on future traffic conditions with the addition of related projects. As shown in **Table 4.11-13,** the estimated increase in off-site traffic noise

29 City of Compton, *General Plan,* "Noise Element," Exhibit 9-2.

levels as compared to existing conditions would be below the 3 dBA CNEL significance threshold. Furthermore, traffic generated by the Project will not represent a doubling of existing traffic volumes.

Roadway noise impacts would not be cumulatively considerable.

MITIGATION MEASURES

The following noise attenuation measures shall be utilized to reduce potential significant noise impacts from construction to less than significant.

MM N-1: The construction contractor shall prepare a noise control plan, which shall be submitted to the District for review and approval prior to the start of work. The noise control plan shall include the noise attenuation measures listed in **Mitigation Measure MM N-2** at a minimum.

The construction contractor shall designate a “noise disturbance coordinator. The noise disturbance coordinator shall be responsible for responding to any local complaints about construction noise.

Signage shall be posted at the perimeter of the Project Site providing a telephone number for individuals to contact the noise disturbance coordinator with any noise complaints. Signage shall also include:

- Construction hours on site and at all site entrances noting allowable workdays, and
- The phone number of the District representative and the job superintendent.

Prior to the start of work, notices shall be provided to residential units within 500 feet of the construction site.

The noise disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures such that the complaint is resolved.

All noise complaints received will also be logged and provided to the District with 24 hours of receipt.

If the District or the job superintendent receives a complaint, they shall investigate, take appropriate corrective action, and report the action taken to the reporting party.

MM N-2: For all construction-related activities, noise-attenuation techniques as outlined in the noise control plan shall be employed as needed to ensure that noise remains less than significant.

The following noise-attenuation techniques shall be incorporated into contract specifications to reduce the impact of construction noise:

- Maintain construction equipment in good working condition and is properly muffled according to industry standards.
- Identify and locate staging areas and construction worker parking areas such that noise-generating construction equipment are located away from sensitive uses, where feasible.
- Schedule high noise-producing activities between the hours of 7:00 AM and 7:00 PM on weekdays to minimize disruption on sensitive uses. No construction shall be permitted on Sundays or any of the holidays listed in the Compton Municipal Code.
- Identify and implement noise attenuation measures, which may include but are not limited to temporary noise barriers or noise blankets around stationary construction noise sources.
- Use electric air compressors and similar power tools rather than diesel equipment, where feasible.
- All stationary construction equipment (e.g., air compressors, generators, impact wrenches, etc.) shall be operated at least 100 feet away from residential uses and shall be shielded with temporary sound barriers, sound aprons, or sound skins.
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 30 minutes.
- The Construction Manager, upon observation of excessive noise occurring near adjacent residences or upon receipt of a complaint about excessive noise shall modify operations to reduce number of pieces of equipment operating near noise-sensitive receptors or operating concurrently as feasibly possible unless the modification would prevent completion of the task.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

With the implementation of identified mitigation, potential impacts would be reduced to less than significant.