MTS Clean Transit Advancement Campus Project

Noise Impact Report

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ACRONYMS AND ABBREVIATIONS

ACLUP	Airport Comprehensive Land Use Plan
ADT	average daily trips
ANSI	American National Standards Institute
APN	Assessor's Parcel Number
CadnaA	Computer Aided Noise Abatement
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of San Diego
CNEL	Community Noise Equivalent Level
CTAC	Clean Transit Advancement Campus
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
HVAC	heating, cooling, and air conditioning
Hz	Hertz
I-	Interstate
kHz	kilohertz
L_{DN}	Day Night sound level
L_{EQ}	time-averaged noise level
MHPA	Multi-Habitat Planning Area
mPa	micro Pascals
mph	miles per hour
MSCP	Multiple Species Conservation Plan
MTS	Metropolitan Transit System
NSLU	noise sensitive land use
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
SANDAG	San Diego Association of Governments
SDIA	San Diego International Airport
sf	square foot/feet
SPL	sound pressure level
SR	State Route

ACRONYMS AND ABBREVIATIONS (cont.)

TIS	Transportation Impact Study
TNM	Traffic Noise Model
USDOT	U.S. Department of Transportation

EXECUTIVE SUMMARY

This report presents an assessment of potential construction and operational noise impacts associated with the proposed San Diego Metropolitan Transit System (MTS) Clean Transit Advancement Campus (CTAC) Project (Project), a new bus division facility located near the intersection of Federal Boulevard and 47th Street in the City of San Diego. The proposed new bus division would entail the construction of a new bus maintenance facility building, charging facilities, bus wash facilities, equipment lift facilities, storage facilities, bus parking facilities, an administration and operations office building, employee parking, lighting improvements, security and camera improvements, stormwater improvements, utility relocations, and landscaping and irrigation improvements.

Project construction noise would not result in noise levels above applicable construction noise thresholds for off-site residential uses. However, the Multi-Habitat Planning Area (MHPA) is located adjacent to the Project site and construction noise could exceed noise limits related to the sensitive habitat. Mitigation measure NOI-1 would require a construction noise control plan to be prepared and implemented to reduce impacts related to the MHPA. Vibration impacts from construction would not exceed thresholds for sensitive receptors.

Operational traffic associated with operation of the Project would have a less than significant impact related to local thresholds and would have no impact related to the Federal Transit Administration impact thresholds. On-site operational noise may exceed City of San Diego noise generation limits and the noise limits for the MHPA. Therefore, mitigation measure NOI-2 would require an operational noise control plan to be prepared and implemented to decrease operational noise levels to acceptable levels. Operation of the Project would not result in significant vibration impacts.

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1.0 INTRODUCTION

This report analyzes potential noise and vibration impacts associated with the proposed San Diego Metropolitan Transit System (MTS) Clean Transit Advancement Campus (CTAC) Project (Project) and includes an evaluation of existing conditions in the Project vicinity and assessment of potential impacts associated with Project construction and operations.

The Project is a federal undertaking because the Federal Transit Administration (FTA) will be providing financial assistance. The FTA serves as the federal lead agency. MTS serves as the lead agency under California Environmental Quality Act (CEQA).

1.1 PROJECT LOCATION

MTS proposes to construct the CTAC Project (Project), a new bus division facility, located near the intersection of Federal Boulevard and 47th Street in the City of San Diego (City). See Figure 1, *Regional Location*. The Project site is north of Federal Boulevard and west of 47th Street, northeast of the interchange of Interstate (I-) 805 and State Route (SR) 94. The Project site is divided in two areas. The smaller section of the Project site, consisting of Assessor Parcel Number (APN) 541-611-2700, occurs on the eastern side, and the larger portion, consisting of APNs 541-611-0400, 3100, 3400, and 3500, occurs on the western side (Figure 2, *Aerial Photograph*).

1.1.1 General Plan Designation and Zoning

The existing site is developed with industrial land uses, including buildings and paved parking areas. The Project site has an "Industrial Employment" land use designation under the San Diego General Plan and is zoned as Industrial-Light (IL-3-1).

Parcels surrounding the Project site include sites zoned as open space to the north and west, industrial to the south, and commercial and residential uses to the east (Figure 3, *Zoning Map Overlay*). Portions of the open space north and west of the Project site are part of the City's Multi-Habitat Planning Area (MHPA), which contains sensitive habitat (Figure 2).

1.2 PROJECT DESCRIPTION

The existing buildings on site would be demolished and a new bus division facility would be constructed. The proposed new bus division would entail the construction of a new bus maintenance facility building, charging facilities, bus wash facilities, equipment lift facilities, storage facilities, bus parking facilities, an administration and operations office building, employee parking, lighting improvements, security and camera improvements, stormwater improvements, utility relocations, and landscaping and irrigation improvements. Access to the Project is proposed to be located at four driveways along the Federal Boulevard Project frontage. A new traffic signal would be installed at the western-most site driveway.

Proposed new buildings would include an approximately 155,000-square-foot (sf) maintenance facility, and an approximately 75,000-sf administration and operation office building including storage areas. The maintenance facility would consist of approximately 20 bus maintenance service bays, 2 bus wash lanes, 4 fare and servicing lanes, and 16 equipment lift bays (which could be a combination of portables and in ground). Charging facilities would include up to approximately 250 zero emission bus electric chargers. The new facility would include a total of about 120 administrative offices. The number of

employees at full buildout would include approximately 300 bus operators, 125 maintenance staff, and 150 administrative staff. The facility would operate seven days a week, 24 hours a day.

The new facility would also include asphalt or concrete surface and/or structured parking for approximately 250 buses, approximately 350 employee vehicles, and approximately 60 non-revenue vehicles (i.e., bus supervisor, relief, and maintenance vehicles). Buses would be able to park at night in employee areas and employee vehicles could utilize bus parking areas during the day. Parking facilities would encompass a total of approximately 136,000 sf.

Retaining walls would be constructed in some locations along the bus parking/charging lot. Proposed fencing would consist of a combination of block wall and/or chain link and would vary from approximately 6 to 12 feet depending on whether it was near the frontage or near adjacent properties. Proposed exterior lighting would be installed along the perimeter of the facility to ensure security and would be shielded or directional to minimize spill into adjacent properties and open space.

Utilities would be relocated, as required, and stormwater improvements would be constructed. Driveways would also be relocated and modified as required. The Project would also include irrigation and landscaping to visually enhance the streetscape.

2.0 ENVIRONMENTAL SETTING

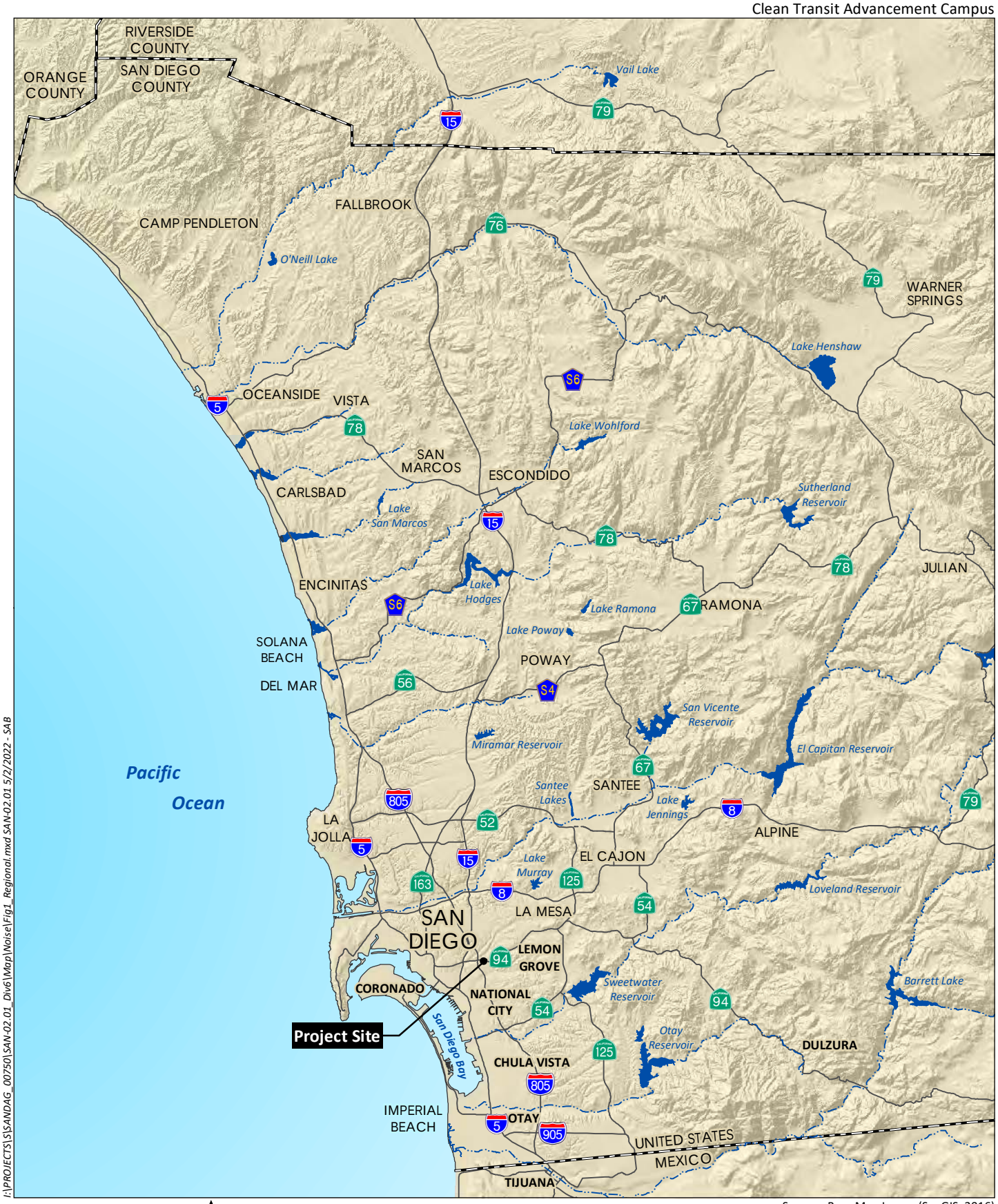
2.1 NOISE AND SOUND LEVEL DESCRIPTORS AND TERMINOLOGY

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and sound levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dBA weighting. This is similar to the Day Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. L_{10} is defined as the noise level exceeded for 10 percent of the measurement duration, L_{50} is the noise level exceeded for 50 percent of the measurement duration, and L_{90} is the noise level exceeded for 90 percent of the measurement duration. These metrics are used to express noise levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver contribute to the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz)



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0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

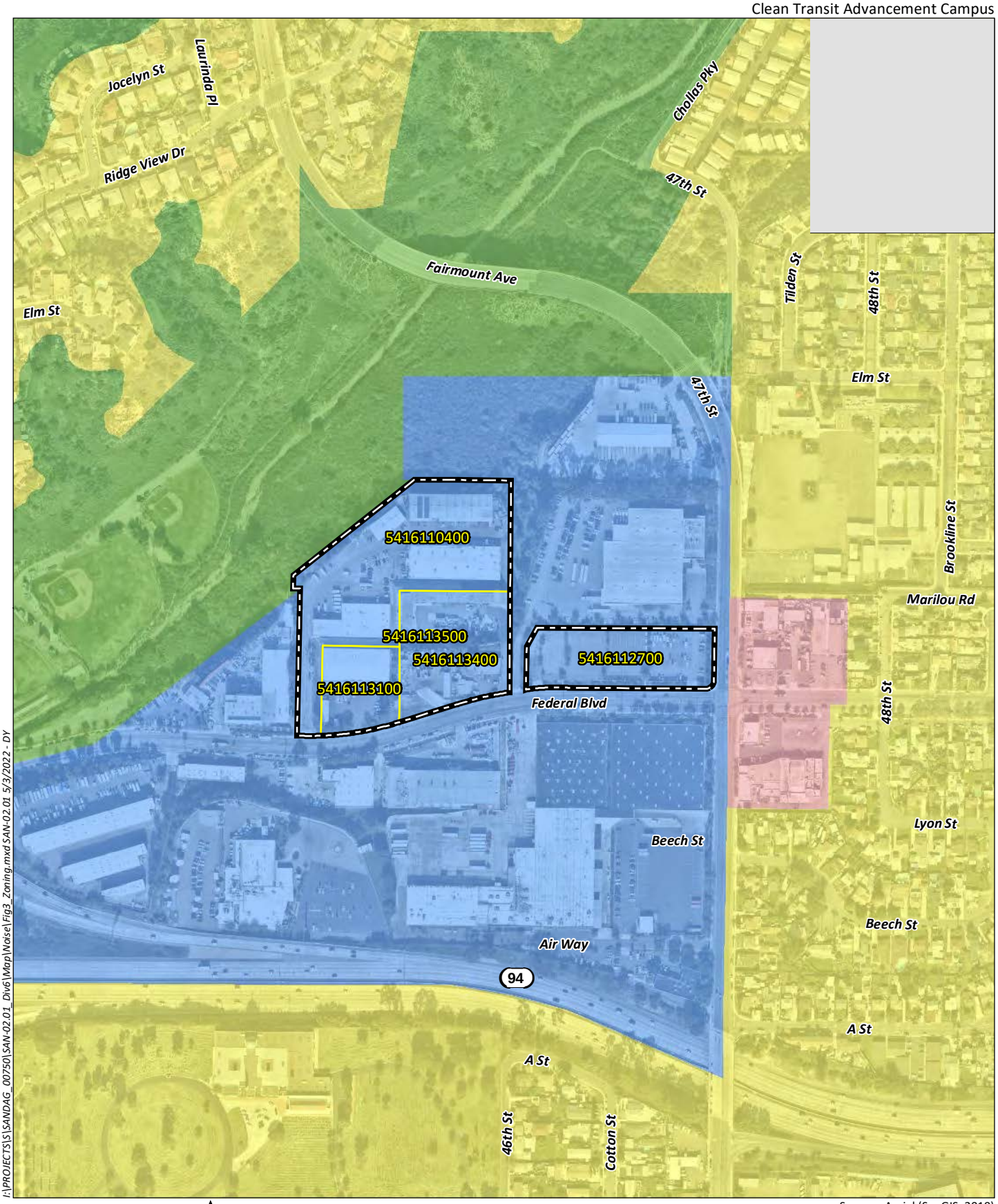
HELIX Environmental Planning

Regional Location

Figure 1

Aerial Photograph

Figure 2



Source: Aerial (SanGIS, 2019)

Zoning Map Overlay

Figure 3

(e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

The amplitude of pressure waves generated by a sound source determines the loudness of that source. A logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA units. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 micro Pascals (mPa).

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions.

2.2 NOISE AND VIBRATION SENSITIVE LAND USES

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, such as residential dwellings, schools, transient lodging (hotels), hospitals, educational facilities, and libraries. Industrial and commercial land uses are generally not considered sensitive to noise. NSLUs in the Project area include Webster Elementary School, approximately 200 feet northeast of the Project site, and residences located as close as approximately 350 feet to the east on 48th Street. Residences are also located along 47th Street, south of Federal Boulevard, about 400 feet from the Project site (see Figures 2 and 3).

In addition to land uses that are sensitive to noise, the Project site is adjacent to sensitive biological habitat within the MHPA, which contains species that can be sensitive to excessive noise.

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations (California Department of Transportation [Caltrans] 2013) are considered “vibration-sensitive.” The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. In addition, excessive levels of ground-borne vibration of either a regular or an intermittent nature can result in annoyance to residential uses or schools. Land uses in the Project area that are subject to annoyance from vibration include Webster Elementary School and residences to the east.

2.3 REGULATORY FRAMEWORK

Applicable federal, state, and local noise regulations for the proposed Project are provided below.

2.3.1 Federal

2.3.1.1 Federal Transit Administration

The Transit Noise and Vibration Impact Assessment Manual developed by the Federal Transit Administration (FTA) provides construction and operational noise and vibration level limits that are applicable to the proposed Project (FTA 2018).

Construction Noise Limits

The FTA provides construction noise criteria for residential, commercial, and industrial receiving land uses, provided in Table 1, *FTA Construction Noise Limits*.

Table 1
FTA CONSTRUCTION NOISE LIMITS

Land Use Zone	Daytime One-Hour (dBA L_{EQ})	Nighttime One-Hour (dBA L_{EQ})
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: FTA 2018
FTA = Federal Transit Administration; dBA = A-weighted decibels; L_{EQ} = time-averaged noise level

Operational Noise Limits

The FTA provides operational noise impact thresholds for three categories of NSLUs:

- Category 1 includes land uses in which quiet is an essential element, such as outdoor amphitheaters, outdoor pavilions, outdoor historical landmarks, recording studios, and concert halls.

- Category 2 includes residences and buildings where people sleep such as homes, hospitals, and hotels.

- Category 3 includes institutional land uses primarily used during the day and evening, such as schools, libraries, theaters, and churches.

Categories 1 and 3 are evaluated with the peak hour L_{EQ}, and Category 2 is evaluated utilizing the L_{DN}. The FTA's operational noise criteria are based on existing noise exposure (FTA 2018). The FTA categorizes the level of impact as No Impact, Moderate Impact, or Severe Impact. Definitions are provided below:

- No Impact: Project-generated noise is not likely to cause community annoyance. Noise projections in this range are considered acceptable by FTA and mitigation is not required.

- Moderate Impact: Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.

- Severe Impact: Project-generated noise in this range is likely to cause a high level of community annoyance. The project sponsor should first evaluate alternative locations/alignments to determine whether it is feasible to avoid severe impacts altogether. In densely populated urban areas, evaluation of alternative locations may reveal a trade-off of affected groups, particularly for surface rail alignments. Projects that are characterized as point sources rather than line sources often present greater opportunity for selecting alternative sites. This guidance manual

and FTA's environmental impact regulations both encourage project sites which are compatible with surrounding development when possible. If it is not practical to avoid severe impacts by changing the location of the project, mitigation measures must be considered.

For the purpose of this analysis, a significant impact would occur if operational noise levels exceed the Severe Impact FTA threshold for the applicable land use category. The FTA's noise level thresholds for transit projects are provided in Table 2, *Noise Levels for Defining Impacts for Transit Projects*.

Table 2
NOISE LEVELS FOR DEFINING IMPACTS FOR TRANSIT PROJECTS

Existing Noise Exposure (dBA)	Project Noise Impact Exposure (dBA)					
	Category 1 (L_{EQ} 1 hour) or Category 2 (L_{DN}) Sites	Category 1 (L_{EQ} 1 hour) or Category 2 (L_{DN}) Sites	Category 1 (L_{EQ} 1 hour) or Category 2 (L_{DN}) Sites	Category 3 (L_{EQ} 1 hour) Sites	Category 3 (L_{EQ} 1 hour) Sites	Category 3 (L_{EQ} 1 hour) Sites
L_{EQ} 1 hour or L_{DN}	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	<Ambient+10	Ambient+10 to 15	>Ambient+15	<Ambient+15	Ambient+15 to 20	>Ambient+20
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67
57	<57	57-62	>62	<62	62-67	>67
58	<57	57-62	>62	<62	62-67	>67
59	<58	58-63	>63	<63	63-68	>68
60	<58	58-63	>63	<63	63-68	>68
61	<59	59-64	>64	<64	64-69	>69
62	<59	59-64	>64	<64	64-69	>69
63	<60	60-65	>65	<65	65-70	>70
64	<61	61-65	>65	<66	66-70	>70
65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74

Existing Noise Exposure (dBA)	Project Noise Impact Exposure (dBA)					
	Category 1 (L_{EQ} 1 hour) or Category 2 (L_{DN}) Sites	Category 1 (L_{EQ} 1 hour) or Category 2 (L_{DN}) Sites	Category 1 (L_{EQ} 1 hour) or Category 2 (L_{DN}) Sites	Category 3 (L_{EQ} 1 hour) Sites	Category 3 (L_{EQ} 1 hour) Sites	Category 3 (L_{EQ} 1 hour) Sites
L_{EQ} 1 hour or L_{DN}	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

Source: FTA 2018

dBA = A-weighted decibels; L_{EQ} = time-averaged noise level; L_{DN} = Day Night sound level

Construction Vibration Limits

Potential impacts related to vibration during construction depend on the type of structure that is receiving the vibration. Table 3, *FTA Construction Vibration Damage Criteria*, includes the FTA's vibration criteria for vibration damage by building category.

Table 3
FTA CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building/Structural Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018
FTA = Federal Transit Administration; PPV= peak particle velocity; in/sec = inches per second

Operational Vibration Limits

Vibration criteria define limits for acceptable maximum root mean square vibration velocity level with a one-second averaging time at the floor of the receiving building in terms of a one-third octave band frequency spectrum. Band levels that exceed a particular criterion curve indicate an impact; and therefore, mitigation options should be evaluated considering the specific frequency range in which the treatment is most effective. Interpretation of the criteria are presented in Table 4, *Interpretation of Vibration Criteria for Detailed Vibration Analysis*.

Table 4
INTERPRETATION OF VIBRATION CRITERIA FOR DETAILED VIBRATION ANALYSIS

Criterion	Max Level[1] (VdB)	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20X).
Residential Night, Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power optical microscopes (100X) and other equipment of low sensitivity.
VC-A	66	Adequate for medium- to high-power optical microscopes (400X), microbalances, optical balances, and similar specialized equipment.
VC-B	60	Adequate for high-power optical microscopes (1000X) and inspection and lithography equipment to 3-micron line widths.
VC-C	54	Appropriate for most lithography and inspection equipment to 1-micron detail size.

Criterion	Max Level[1] (VdB)	Description of Use
VC-D	48	Suitable in most instances for the most demanding equipment, including electron microscopes operating to the limits of their capabilities.
VC-E	42	The most demanding criterion for extremely vibration-sensitive equipment.

Source: FTA 2018
[1] As measured in 1/3-octave bands of frequency over the frequency range 8 to 80 Hz.
VC = Vibration Criterion; VdB = root mean square vibration level

2.3.2 State

2.3.2.1 California Department of Health Services

In 1976, the California Department of Health Services published guidelines for the noise element of local general plans, which were last updated and published in 2017 (Office of Planning and Research 2017). These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{DN} ranges into up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows exterior L_{DN} ranges for two or more compatibility categories. For office and commercial land uses, L_{DN} values below 70 dBA are considered normally acceptable, while L_{DN} values of 67.5 to 77.5 dBA are categorized as conditionally acceptable.

These normally and conditionally acceptable L_{DN} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by a project. The guidelines are also employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 5, *California Department of Health Services Noise Guidelines*, summarizes these guidelines for the normally and conditionally acceptable L_{DN} exposures.

Table 5
CALIFORNIA DEPARTMENT OF HEALTH SERVICES NOISE GUIDELINES

Land Use Category	Normally Acceptable Community Noise Exposure (L_{DN} or CNEL)	Conditionally Acceptable Community Noise Exposure (L_{DN} or CNEL)
Residential – Low Density	50-60	55-70
Residential – High Density	50-65	60-70
Transient Lodging – Motels, Hotels	50-65	60-70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70
Auditoriums, Concert Halls, Amphitheaters	NA	50-70
Sports Arenas, Outdoor Spectator Sports	NA	50-75
Playgrounds, Neighborhood Parks	50-70	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	NA
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80

Source: Office of Planning and Research 2017
L_{DN} = Day Night sound level; CNEL = Community Noise Equivalent Level; NA = Not Applicable

2.3.2.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. Appendix G of the CEQA Statutes and Guidelines (Association of Environmental Professionals 2022) sets forth a series of suggested thresholds for determining a potentially significant impact. Under the thresholds suggested in Appendix G, the proposed Project could be considered to have significant noise and vibration impacts if it results in one or more of the following:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b) Generation of excessive groundborne vibration or groundborne noise levels.

c) Expose people residing or working in the Project area to excessive noise levels, for projects located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.

2.3.3 Local

2.3.3.1 City of San Diego Municipal Code, Chapter 5, Article 9.5, Division 4, §59.5.0404 Construction Noise

The City's Municipal Code sets forth limits for short-term construction noise:

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to

create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection (c) hereof, it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 dBA during the 12-hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection (b) of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

2.3.3.2 City of San Diego Municipal Code, Chapter 5, Article 9.5, Division 4, §59.5.0401, Sound Level Limits

The City of San Diego's Municipal Code, Chapter 5, Article 9.5, Division 4, section 59.5.0401 sets the following limits for exterior noise levels at property boundaries:

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit given in the following table (Table 6, *City of San Diego Exterior Noise Limits*), at any location in the City on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

Table 6
CITY OF SAN DIEGO EXTERIOR NOISE LIMITS

Land Use Zone	Time of Day	One-hour Average Sound Level (dBA)
Single Family Residential	7:00 a.m. to 7:00 p.m.	50
	7:00 p.m. to 10:00 p.m.	45
	10:00 p.m. to 7:00 a.m.	40
Multi-Family Residential (up to a maximum density of 1/2000)	7:00 a.m. to 7:00 p.m.	55
	7:00 p.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
All other Residential	7:00 a.m. to 7:00 p.m.	60
	7:00 p.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial	7:00 a.m. to 7:00 p.m.	65
	7:00 p.m. to 10:00 p.m.	60
	10:00 p.m. to 7:00 a.m.	60
Industrial or Agricultural	Anytime	75

Source: City of San Diego Municipal Code, Chapter 5, Article 9.5, Division 4, §59.5.0401, Sound Level Limits
dBA = A-weighted decibels

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Section 59.5.0404 of this article.

2.3.3.3 Multiple Species Conservation Program

The Multiple Species Conservation Program (MSCP) is a comprehensive habitat conservation planning program for southwestern San Diego County. A goal of the MSCP is to preserve a network of habitat and open space, thereby protecting biodiversity, while streamlining environmental permitting for development. Local jurisdictions, including the City of San Diego, implement their portions of the MSCP through subarea plans, which describe specific implementing mechanisms.

The City's MHPA represents a "hard line" preserve, in which boundaries have been specifically determined. The MHPA is the area within which the permanent MSCP preserve will be assembled and managed for its biological resources. The northwest edge of the Project site is approximately 110 feet away from the MHPA boundary, as shown on Figure 2.

As the MSCP's guidelines relate to noise, uses in or adjacent to the MHPA should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas, recreational areas, and any other use that may introduce noises that could impact or interfere with wildlife utilization of the MHPA. Excessively noisy uses or activities adjacent to breeding areas must incorporate noise reduction measures and be curtailed during the breeding season of sensitive species. Adequate noise reduction measures should also be incorporated for the remainder of the year.

2.3.3.4 City of San Diego Land Development Manual, Biology Guidelines

Noise mitigation may be required for significant noise impacts to certain avian species during their breeding season. If these species are present, then mitigation would be required if construction or

operational noise levels exceed 60 dBA, or the existing ambient noise level if already above 60 dBA during the breeding season. For California gnatcatcher habitat within the MHPA and occupied, construction or operational noise levels exceeding a one-hour average of 60 dBA, or the existing ambient noise level if already above 60 dBA during the breeding season is considered significant.

2.3.3.5 San Diego International Airport, Airport Land Use Compatibility Plan

The Project site is located in Review Area 2 of the San Diego International Airport's (SDIA's) Airport Land Use Compatibility Plan (ALUCP). However, the site is not within the ALUCP noise contours and no policies related to noise compatibility apply to the Project site. Therefore, no further analysis related to the Project and its consistency with the applicable ALUCP is contained in this Report.

2.4 EXISTING CONDITIONS

Existing noise surrounding the Project site is dominated by traffic noise due to the Project's proximity to Federal Boulevard and I-805 and SR 94. The nearest airport, SDIA, is located approximately four miles to the northwest. The site is not located within the airport's 60 CNEL noise contours (Airport Land Use Commission 2014). Surrounding industrial land uses also contribute to existing noise.

2.4.1 General Site Survey

Two short-term noise measurements, each of which were 15 minutes in length, were conducted during a site visit on April 27, 2022 (see Figure 2, *Aerial Photograph*). Measurements were taken at a height of five feet above the ground.

One measurement (M1) focused on the traffic noise levels of the Project vicinity. Specifically, M1 is located along Federal Boulevard (Figure 3). A traffic count was conducted at M1 to estimate the breakdown of heavy trucks (three or more axles), medium trucks (double tires/two axles), and automobiles along Federal Boulevard. Traffic counts for the timed measurement and the one-hour equivalent volume are shown in Table 7, *Recorded Traffic Volume and Vehicle Mix.*

Table 7
RECORDED TRAFFIC VOLUME AND VEHICLE MIX

Measurement	Roadway	Traffic	Autos	MT[1]	HT[2]
1	Federal Boulevard	15-minute count	56	2	0
		One-hour equivalent	224	8	0
		Percent	96.6%	3.4%	0%

[1] Medium Trucks (double tires/two axles)

[2] Heavy Trucks (three or more axles)

The second measurement (M2) focused on the ambient noise level at the boundary of the MHPA open space area north of the Project site. As direct site access was not available, the measurement was taken from the public use area west of the Project site (Figure 3).

The measured noise levels and related weather conditions for the ambient noise measurements are shown in Table 8, *Short-term Noise Measurement Results*.

Table 8
NOISE MEASUREMENT RESULTS

Measurement 1 – Traffic	
Date:	April 27, 2022
Conditions:	Temperature: 66°F. Wind Speed: 10 miles per hour (mph). 57% humidity. Sunny.
Time:	1:43 p.m. – 1:58 p.m.
Location:	Along the southern boundary of the Project site on Federal Boulevard, approximately 900 feet west of 47th Street and 40 feet north of the Federal Boulevard centerline.
Measured Noise Level:	63.8 dBA L_{EQ}
Notes:	Noise primarily from traffic on Federal Boulevard, nearby freeways, surrounding land uses, and distant aircraft.
Measurement 2 – Ambient	
Date:	April 27, 2022
Conditions:	Temperature: 66°F. Wind Speed: 10 mph. 57% humidity. Sunny.
Time:	2:17 p.m. – 2:32 p.m.
Location:	Approximately 550 feet west of Project site and 120 feet north of the Federal Boulevard centerline.
Measured Noise Level:	62.5 dBA L_{EQ}
Notes:	Noise dominated by freeway traffic and Federal Boulevard traffic.

2.4.2 Existing Traffic Noise Levels

The primary existing noise source in the Project area is traffic on the local roadways. The Federal Highway Administration Traffic Noise Model (TNM 2.5) was used to evaluate traffic-related noise conditions along the roadway segments in the Project vicinity. Traffic volumes for 2022 in the Project's Transportation Impact Study (TIS; VRPA Technologies, Inc. 2022) were used to assess the existing traffic noise impacts. Existing roadway CNEL levels are calculated based on 10 percent of average daily trips (ADT), which are the same as Peak Hour for the FTA criteria. A typical vehicle mix for Southern California was used. Table 9, *Existing Year (2022) Traffic Noise Levels*, provides the modeled traffic noise levels along the roadways in the vicinity of the Project site under the existing conditions. These noise levels represent conservative conditions, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn.

Table 9
EXISTING YEAR (2022) TRAFFIC NOISE LEVELS

Roadway Segment	ADT	Centerline to 70 CNEL/ Peak dBA	Centerline to 65 CNEL/ Peak dBA	Centerline to 60 CNEL/ Peak dBA	CNEL/Peak dBA 50 ft from Centerline of Outermost Lane
Federal Boulevard (West of 47th Street)	5,400	22 feet	80 feet	245 feet	65.3
Federal Boulevard (East of 47th Street)	9,000	45 feet	130 feet	365 feet	67.4
47th Street (North of Federal Blvd)	9,000	22 feet	88 feet	230 feet	65.0
47th Street (South of Federal Blvd)	15,700	40 feet	130 feet	370 feet	67.4

Source: VRPA Technologies, Inc. 2022; TNM 2.5
ADT = average daily trips; CNEL = Community Noise Equivalent Level; ft = feet

3.0 ANALYSIS METHODOLOGY AND ASSUMPTIONS

3.1 METHODOLOGY AND EQUIPMENT

The following equipment was used to measure existing noise levels at the Project site:

- Larson Davis System LxT Integrating Sound Level Meters
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter

The sound level meter was field calibrated immediately prior to the noise measurements to ensure accuracy. All measurements were made with a meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI SI.4 1983 R2001). All instruments were maintained with National Bureau of Standards traceable calibration per the manufacturers' standards.

Modeling of the exterior noise environment for this report was accomplished using two computer noise models: Computer Aided Noise Abatement (CadnaA) version 2022 and TNM version 2.5. CadnaA is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project related information, such as noise source data, barriers, structures, and topography to create a detailed CadnaA model, and uses the most up-to-date calculation standards to predict outdoor noise impacts.

Project construction noise was analyzed using the Roadway Construction Noise Model (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

3.2 ASSUMPTIONS

3.2.1 Construction

Construction would require the use of equipment throughout the site for the full term of construction. Precise grading and construction plans were not available at the time of this analysis; therefore, this analysis is based on construction assumptions provided by MTS. Construction is estimated to take 18 months and start in July 2024. General Project construction activities would include demolition of existing development, site clearing and preparation, grading, building/equipment construction, paving, and architectural coatings.

The Project's anticipated construction schedule was determined from input provided by MTS. Table 10, *Anticipated Construction Schedule*, shows the anticipated construction schedule for Project construction. Construction was assumed to begin in July 2024 and continue through the end of December 2025 with all construction activities occurring sequentially.

Table 10
ANTICIPATED CONSTRUCTION SCHEDULE

Construction Activity	Construction Start	Construction End
Demolition	7/1/2024	7/26/2024
Site Preparation	7/27/2024	8/9/2024
Grading	8/10/2024	9/27/2024
Building Construction	9/28/2024	10/27/2025
Paving	10/28/2025	11/24/2025
Architectural Coatings	11/25/2025	12/22/2025

Construction would require heavy equipment during these various construction activities. Construction equipment estimates are based on defaults for the Project type. Table 11, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each stage of construction. The most intensive construction noise would be during site demolition and site grading activities.

Table 11
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment	Number
Demolition	Concrete/Industrial Saw	1
	Excavator	3
	Rubber Tired Dozer	2
Site Preparation	Rubber Tired Dozer	3
	Tractor/Loader/Backhoe	4
Grading	Excavator	2
	Grader	1
	Rubber Tired Dozer	1
	Scraper	2
	Tractor/Loader/Backhoe	2

Construction Activity	Equipment	Number
Building Construction	Crane	1
	Forklift	3
	Generator Set	1
	Tractor/Loader/Backhoe	3
	Welder	1
Paving	Paver	2
	Paving Equipment	2
	Roller	2
Architectural Coating	Air Compressor	1

Project construction would involve the demolition of approximately 113,000 sf of industrial buildings generating approximately 16,100 tons of debris to be hauled off-site.

3.2.2 Operation

The operational noise sources associated with the proposed Project include operation of the bus maintenance and charging facilities, bus wash, and administrative offices. In addition, noise would be generated by the vehicle trips associated with the Project. Based on the TIS prepared for the Project (VRPA Technologies, Inc. 2022), the Project would generate 2,090 ADT; this was broken down as 1,590 ADT by employees and 500 ADT by buses. The facility is subject to local and federal noise regulations. As such, the opening year (2026) traffic noise is analyzed under FTA impact thresholds which utilize peak hour levels.

Bus trips related to the Project would include electric buses, which are not currently available in the TNM. Therefore, modeling assumes standard diesel bus engines, which are louder than the electric buses that would be part of the Project. As such, the following provides a conservative analysis of noise generation related to buses.

4.0 IMPACTS

4.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE AND CONDITIONS OF APPROVAL

The Project would result in a significant noise impact related to the FTA Significance Thresholds if the construction or operation of the Project would exceed the noise limits provided in Table 1 and the "Severe Impact" limits in Table 2 (FTA 2018). Significant vibration impacts would occur if construction or operation of the Project would exceed the vibration limits provided in Table 3 or Table 4 (FTA 2018).

MTS has not adopted thresholds for use in CEQA documents where they are the lead agency. In the absence of MTS adopted thresholds, this analysis relies on the City (2020) approved guidelines for determining significance, which are based on Appendix G of the CEQA Guidelines.

Based on the City guidelines, the Project would have a significant noise impact if it would:

1. Result in temporary construction noise that exceeds:

    a. 75 dBA L_{EQ} (12 hour) at the property line of a residentially-zoned property from 7:00 a.m. to 7:00 p.m. If construction work is to occur outside of the hours of 7:00 a.m. to 7:00 p.m., the City's property line noise limits (as identified in Table 6) would be the significance threshold. Therefore, for construction during the evening and nighttime hours, a significant noise impact would occur if the Project's construction noise exceeds 45 dBA L_{EQ} (12 hour) from 7:00 p.m. to 10:00 p.m. or 40 dBA L_{EQ} (12 hour) from 10:00 p.m. to 7:00 a.m. at the property line of a single-family residential zone.

    b. 60 dBA L_{EQ} or the average ambient noise level, whichever is greater, at the edge of sensitive biological habitat during the breeding season.

2. Subject vibration-sensitive land uses to construction-related ground-borne vibration from continuous/frequent intermittent construction sources (such as impact pile drivers, vibratory pile drivers, and vibratory compaction equipment) that exceeds the vibration criterion of 0.3 inch per second peak particle velocity (PPV), as specified by the FTA for engineered buildings (2018).

3. Result in or create a significant permanent increase in the existing noise levels that creates an exceedance of local standards. For the purposes of this analysis, a significant increase would be greater than a perceptible change (3 dBA) over existing conditions that creates an exceedance of City standards, the generation of noise levels at a common property line that exceed the limits shown in Table 6, or operational noise that exceeds 60 dBA L_{EQ} or the average ambient noise level, whichever is greater, at the edge of sensitive biological habitat.

4.2 CONSTRUCTION

4.2.1 Construction Noise

Construction of the proposed Project would require the use of heavy equipment that may be periodically audible at off-site locations. Noise levels would fluctuate, depending on the construction activity, equipment type, and distance between noise source and receiver. Additionally, noise from construction equipment would vary dependent on the construction phase and the number and type of equipment in use at any given time. Although the Project site would be adjacent to the MHPA, at times equipment may be in use over 1,000 feet from the MHPA boundary. For the purposes of this analysis, construction equipment is assumed to be located approximately 110 feet away from the MHPA. The nearest residential uses to the Project site are located on 48th street, 350 feet east of the easternmost portion of the Project site. Table 12, *Construction Noise Levels by Phase*, shows the anticipated construction noise levels for the proposed Project.

Table 12
CONSTRUCTION NOISE LEVELS BY PHASE

Phase	Equipment Type	Equipment L_{MAX} at 50 feet	Composite L_{EQ} at 50 feet	Composite L_{EQ} at 110 and 350 feet[1]
Demolition	Concrete/Industrial Saw	89.6	84.6	77.8/67.7
	Excavator	80.7		
	Rubber Tired Dozer	81.7		
Site Preparation	Tractor/Loader/Backhoe	79.1	79.1	72.3/62.2
	Rubber Tired Dozer	81.7		
Grading	Rubber Tired Dozer	81.7	85.0	78.1/68.1
	Tractor/Loader/Backhoe	77.6		
	Grader	85.0		
	Excavator	80.7		
	Scraper	81.7		
Building Construction	Crane	80.6	83.7	76.8/66.8
	Forklift	80.6		
	Tractor/Loader/Backhoe	77.6		
	Generator	80.6		
	Welder	80.6		
Paving	Paver	77.2	77.2	70.4/60.3
	Roller	66.6		
	Paving Equipment	77.2		
Architectural Coating	Air Compressor	80.6	77.6	70.7/60.7

Source: USDOT 2008

[1] 110 feet is the shortest distance to the MHPA boundary, 350 is the distance to the nearest residential land uses

Due to their likelihood of working in close proximity to one another, it was conservatively assumed that all equipment needed for grading would be in operation simultaneously at 110 feet from the edge of the MHPA during the breeding season. With a typical operation for 40 percent of an hour. At a distance of 110 feet, if used simultaneous near the edge of habitat, these pieces of equipment could generate an hourly combined average noise level of 78.1 dBA L_{EQ}. The use of construction equipment during the demolition and grading would therefore potentially exceed the allowable 60 dBA L_{EQ} and existing ambient noise levels at the edge of the MHPA. Removal of the pavement for existing foundations may also be required. This is considered to have a potentially significant impact at the edge of the MHPA.

Temporary sound attenuation barriers consisting of a single, solid sound wall, with a height of 12 feet at the northern edge of the Project site that borders the MHPA area would bring the Project into compliance with MHPA noise regulations during construction activity. The sound attenuation barriers would need to be constructed of commercial noise control materials with a manufacturer's laboratory test rating such as noise control blankets or solid materials such as masonry, wood, plastic, fiberglass, steel, hay bales or a combination of those materials meeting Sound Transmission Class 22 specifications. To meet industry noise control standards, the noise control barrier would not contain cracks or gaps through or below the installation. Any seams or cracks must be filled, caulked or overlapped.

At a distance of 350 feet, the loudest noise levels during construction are projected at 68.1 dBA L_{EQ} at residential locations, which would not exceed the City's 75 dBA L_{EQ} daytime limit. Construction is not planned to occur during evening and weekend hours. Construction noise generation would have a less than significant impact related to nearby residences.

As shown, the noise levels would not exceed the FTA's 90 dBA L_{EQ} daytime construction noise threshold for residential land uses or 100 dBA L_{EQ} construction noise threshold for commercial or industrial land uses. Therefore, impacts related to construction noise are considered less than significant compared to the FTA thresholds.

4.2.2 Construction Traffic Noise

Project construction would require haul trucks to bring and remove material to the site. The demolition phase is anticipated to have the highest daily traffic level due to the material being hauled off-site. It is anticipated that 805 truck trips (1,610 one-way trips) would be required to haul 16,100 tons of debris off-site over the course of 20 workdays during the demolition phase of construction. This would equate to approximately 80 one-way haul truck trips, or passes, per day. Over the course of an eight-hour construction day, it is assumed ten haul truck trips would occur per hour.

A general rule of thumb is that a doubling in noise, a 3 dBA increase, would be considered a significant increase. Existing traffic levels, shown on Table 9, range from 5,500-16,000 ADT, which translates to approximately 550-1,600 peak hour trips. Since the Project would result in ten additional truck trips per hour during construction, the Project would not result in a doubling in noise and would not cause a 3 dBA increase in existing noise levels along these roadways. Therefore, impacts from construction traffic noise would be less than significant.

4.2.3 Construction-related Vibration

Construction of the proposed Project would include the use of a vibratory compaction roller and has the potential to result in temporary vibration impacts to structures and humans. Based on the potential site locations, compaction activities would not occur closer than 50 feet to the nearest off-site structures. Other construction activities would be less intensive than compaction and would produce less vibration. Therefore, vibration levels from compaction are considered conservative for the Project construction. Operation of a vibratory compactor would create approximately 0.21 inch per second PPV at a distance of 25 feet. At 50 feet, the compactor would create 0.098 PPV.[1] This would be lower than what is considered the damage criteria of 0.3 inch per second PPV for engineered concrete and masonry structures by the FTA (FTA 2018). Therefore, although a vibratory roller may be perceptible to nearby human receptors, temporary impacts associated with the roller and other potential equipment would be less than significant.

4.2.4 Mitigation Measures

NOI-1 **MHPA Construction Noise Control Plan**. A Project construction noise control plan shall be prepared when Project construction details are available to provide plans for compliance with the MHPA maximum noise limit of 60 dBA L_{EQ} or the existing ambient noise level. This plan shall be approved by MTS and implemented by the construction contractor.

[1] Equipment PPV = Reference PPV * $(25/D)^n$ (in/sec), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2013.

4.2.5 Significance of Impacts After Mitigation

With implementation of mitigation measure NOI-1, a construction noise control plan that reduces construction noise levels at the MHPA boundary to 60 dBA L_{EQ} or existing noise levels, impacts would be less than significant.

4.3 OPERATION

4.3.1 On-site Operational Noise Sources

This proposed Project would involve the maintenance and storage of electric buses and associated office buildings. At slow speeds (10 mph or less) which would be typical of bus movement at the Project site, the bus noise would be nearly imperceptible with only low-level noise from the buses' air conditioning and air compressors.

Stationary operational noise from stationary sources would occur at exterior building locations around the proposed Project site. Known or probable site noise sources include large power supply transformer(s) for the bus charging systems; building rooftop heating, cooling, and air conditioning (HVAC) systems; maintenance air compressors and impact wrenches; wash facilities and blow-off dryers; and a backup power generator to maintain bus charging in the event of a power outage.

Estimated noise levels for these units at 50 feet are summarized in Table 13, *Operational Stationary Noise Generation at 50 Feet*.

Table 13
OPERATIONAL STATIONARY NOISE GENERATION AT 50 FEET

Noise Source	Exterior Noise Level at 50 feet (dBA)
Transformer	52.7
HVAC (per unit)	50.2
Impact Wrench (short-term use)	85
Air Compressor	65
Bus Washer and Dryer	85
Backup Power Generator (Class II Noise Control Enclosure)	71

The operational sources have the potential to create noise in excess of both the MHPA noise limit of 60 dBA L_{EQ} or existing ambient noise levels and the City's industrial exterior noise limit of 75 dBA L_{EQ} (day and night) at the property boundary. The potential noise impacts from site operations are considered potentially significant.

4.3.2 Operational Traffic Noise Impacts

An opening year of 2026 was analyzed in the Project's TIS. Table 14, *Project Traffic Noise Levels*, summarizes the increases in noise that would occur with the addition of Project-related traffic on Federal Boulevard and 47th Street.

Table 14
OPENING YEAR + PROJECT TRAFFIC NOISE LEVELS

Street	Opening Year + Project ADT	Centerline to 70 CNEL/ Peak dBA	Centerline to 65 CNEL/ Peak dBA	Centerline to 60 CNEL/ Peak dBA	Opening Year (No Project) CNEL/Peak dBA 50 ft from Centerline of Outermost Lane	Opening Year + Project CNEL/Peak dBA 50 ft from Centerline of Outermost Lane	Change
Federal Boulevard (West of 47th St)	6,620	34 feet	100 feet	295 feet	65.8	66.3	0.5
Federal Boulevard (East of 47th St)	11,470	55 feet	170 feet	450 feet	67.8	68.3	0.5
47th Street (North of Federal Blvd)	10,250	25 feet	85 feet	260 feet	65.3	65.6	0.3
47th Street (South of Federal Blvd)	18,180	44 feet	155 feet	425 feet	67.7	68.1	0.4

Source: VRPA Technologies, Inc. 2022; TNM 2.5
ADT = average daily trips; CNEL = Community Noise Equivalent Level; ft = feet

As shown in Table 14, the greatest Project-related traffic noise level increase would be 0.5 dBA for the analyzed roadway segments when all Project components are operational, which would not exceed the perceptible threshold of 3 dBA. Therefore, the Project would not result in a substantial increase in ambient noise levels, and impacts related to local standards would be less than significant under Project conditions.

FTA thresholds consider NSLUs in evaluating operational traffic noise. The portion of Federal Boulevard west of 47th Street consists of industrial uses, which are not considered noise-sensitive by FTA thresholds. The northern portion 47th Street borders the nearby school, a Category 3 site, while the southern portion of 47th Street and eastern portion of Federal Boulevard border residential properties, which are Category 2 sites. Impact thresholds are provided in Table 2 and are based on land use category and existing noise levels. Table 15, *Peak Hour Project Traffic Noise Levels,* provides a comparison of Project-generated traffic noise and the applicable FTA thresholds. All noise levels are rounded up to the nearest whole number in accordance with FTA guidance (2018).

Table 15
PEAK HOUR PROJECT TRAFFIC NOISE LEVELS

Roadway	Existing Peak Hour Noise Level (dBA)[1]	Project Peak Hour Noise Level[1] (dBA)	FTA Impact Threshold of No Impact	FTA Impact Threshold of Moderate Impact	FTA Impact Threshold of Severe Impact	Impact Level
Federal Boulevard (East of 47th Street)	68	59	<63	63-68	>68	No Impact
47th Street (North of Federal Boulevard)	65	54	<66	66-71	>71	No Impact
47th Street (South of Federal Boulevard)	68	58	<63	63-68	>68	No Impact

Source: FTA 2018; TNM 2.5

[1] Noise level 50 feet from centerline of outermost lane, rounded to the nearest decibel. Noise levels represent both peak hour L_{EQ} (applicable to Category 3 thresholds) and L_{DN} (applicable to Category 2 thresholds).

dBA = A-weighted decibels; L_{EQ} = time-averaged noise level; FTA = Federal Transit Administration

As shown in Table 15, Project-generated noise near NSLUs would be within the no impact category of the applicable threshold on the analyzed roadway segments. Therefore, the Project would have no impact related to the FTA thresholds for operational noise generation.

4.3.3 Operational Vibration

The proposed Project does not include operational components that would generate substantial vibration. FTA guidance does not require further vibration analysis for Projects that involve rubber-tire vehicles and do not include indoor operation, roadway irregularities, or vibration sensitive research facilities. The proposed Project meets these criteria and does not require further analysis related to FTA vibration thresholds based on the minimal possibility of vibration impact. Vibration generated by the proposed Project would be below a level of significance. Therefore, operational vibration impacts would be less than significant.

4.3.4 Mitigation Measures

NOI-2 **Stationary Equipment Noise Control Plan**. A Project Operational Noise Control Plan, which reduces operational noise to 60 dBA or existing ambient noise levels at the MHPA boundary and to 75 dBA at surrounding industrial property lines, shall be prepared and submitted for approval with the final Project plans for the building permits. Required noise reduction measures may include sound barriers around the Project site or around individual pieces of equipment. MTS shall approve and implement this plan.

4.3.5 Significance of Impacts After Mitigation

With implementation of mitigation measure NOI-2, an operational noise control plan that reduces noise levels at the MHPA boundary and surrounding property lines to comply with applicable regulations, impacts would be less than significant.

5.0 LIST OF PREPARERS

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