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# APPENDIX G

Noise and Vibration Assessment

## Environmental Noise & Vibration Assessment

# SVY03A Data Center Campus

Hayward, California

BAC Job # 2023-081

Prepared For:

**David J. Powers & Associates, Inc.**

Attn: Desiree Dei Rossi
1736 Franklin Street, Suite 400
Oakland, CA 94612

Prepared By:

**Bollard Acoustical Consultants, Inc.**

Dario Gotchet

Dario Gotchet, Principal Consultant

September 8, 2023

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# Introduction

The proposed SVY03A Data Center Campus (project) is located at 26203 Production Avenue in the City of Hayward, California (APN's: 461-0085-016; 461-0085-052-01). Existing land uses in the immediate project vicinity include light industrial in all directions. The project site location with aerial imagery is shown in Figure 1. The proposed overall site plan, building roof plans, and generator yard plans are presented in Figures 2-6.

The site is currently developed as the Eden Park Business Park and consists of nine existing one-story buildings with a total combined square footage of approximately 167,471 sf. The project proposes the demolition of all existing buildings and the construction of a new three-story data center building (SVY03ADC1), a smaller one-story data center building (SVY03ADC2), a security building, an on-site project substation, and a PG&E switching station. The project also proposes the installation of backup generators (SVY03ABGF) and rooftop mechanical equipment (HVAC condensers and exhaust fans) to support both data center buildings (SVY03ADC1 and SVY03ADC2). Finally, the project proposes off-site infrastructure improvements consisting of the installation of underground telecommunications line in the streets adjacent to the project site.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise levels at existing noise-sensitive uses in the project vicinity, or if project-generated noise or vibration levels would exceed applicable federal, state, or local standards at nearby land uses.

# Noise and Vibration Fundamentals

## Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 7.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ($L_{eq}$). The $L_{eq}$ is the foundation of the day-night average noise descriptor, DNL (or $L_{dn}$), and shows very good correlation with community response to noise. DNL is based on the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

## Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, June 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

*Legend*

--- Project Area Boundary (Approximate)

SVY03A Data Center Campus
Hayward, California

Project Area

Figure 1

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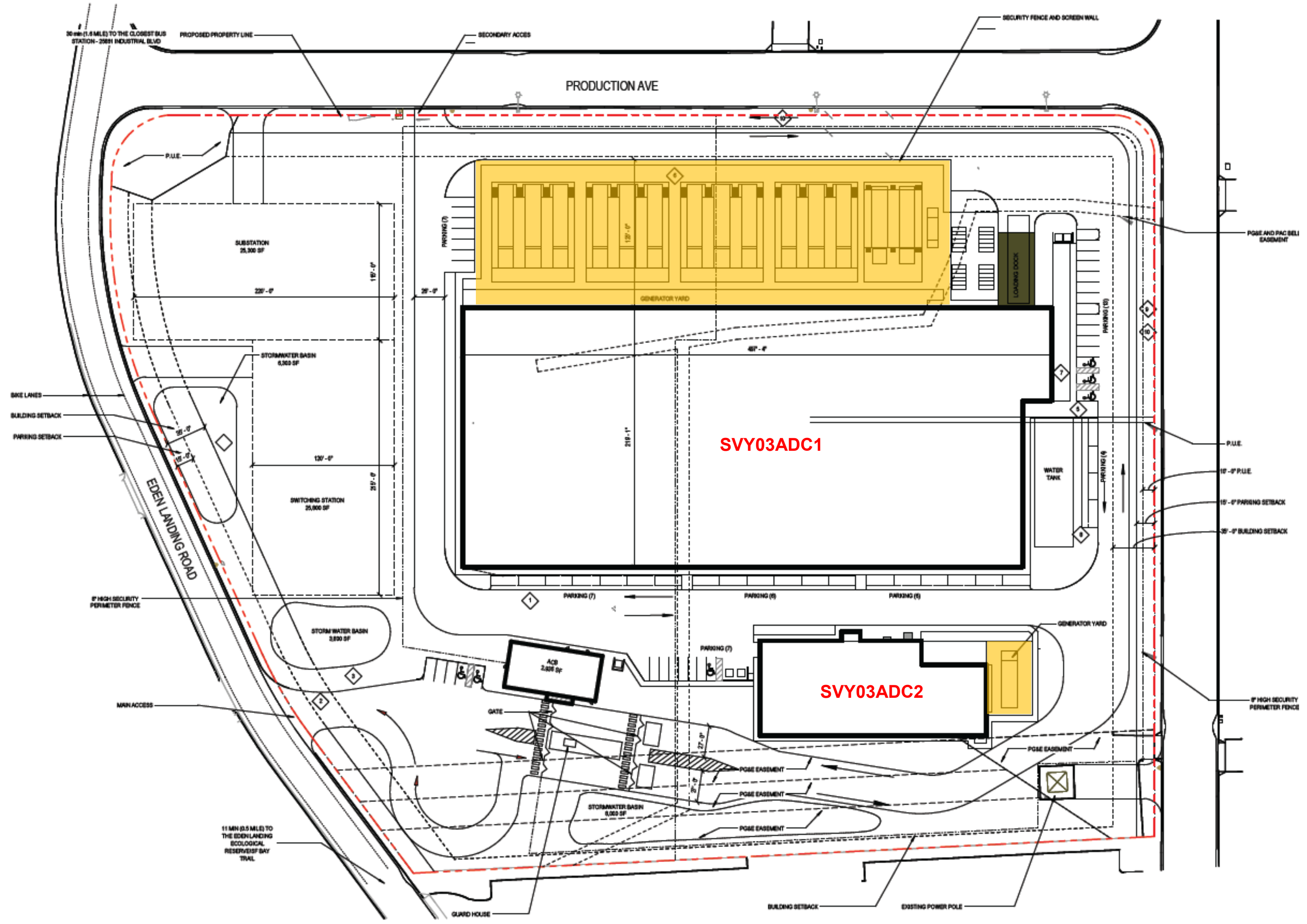

***Legend***

- - - - Project Area Boundary

🟨 Outdoor Generator Yards

N

Scale (Feet)

0 100 200

SVY03A Data Center Campus
Hayward, California

Project Overall Site Plan

**Figure 2**

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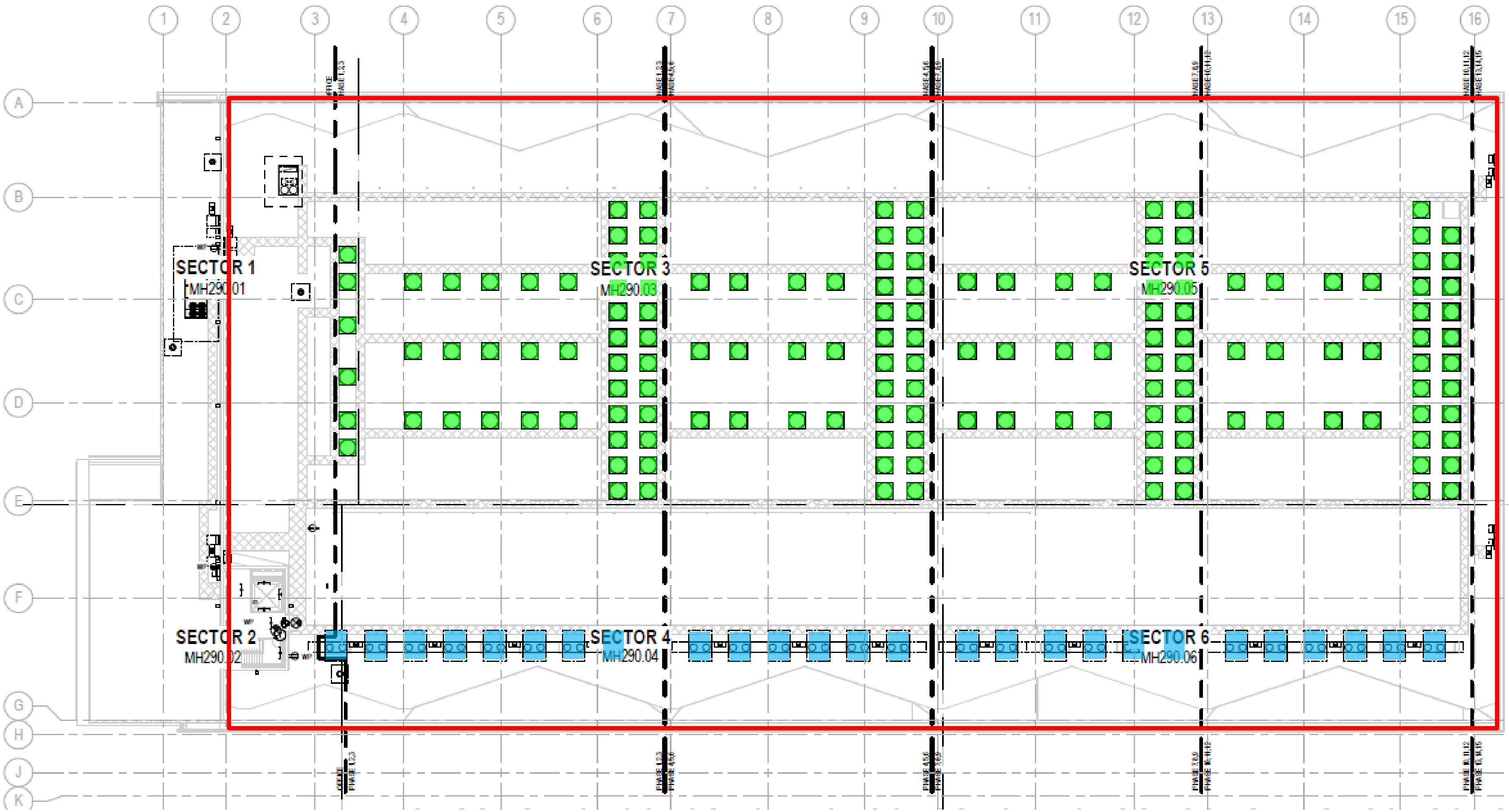
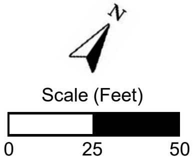


***Legend***

🟦 HVAC Condenser Units

🟩 Exhaust Fans

🟥 7' Parapet (Noise Barrier)



SVY03A Data Center Campus
Hayward, California

SVY03ADC1 – Mechanical Roof HVAC Plan

Figure 3

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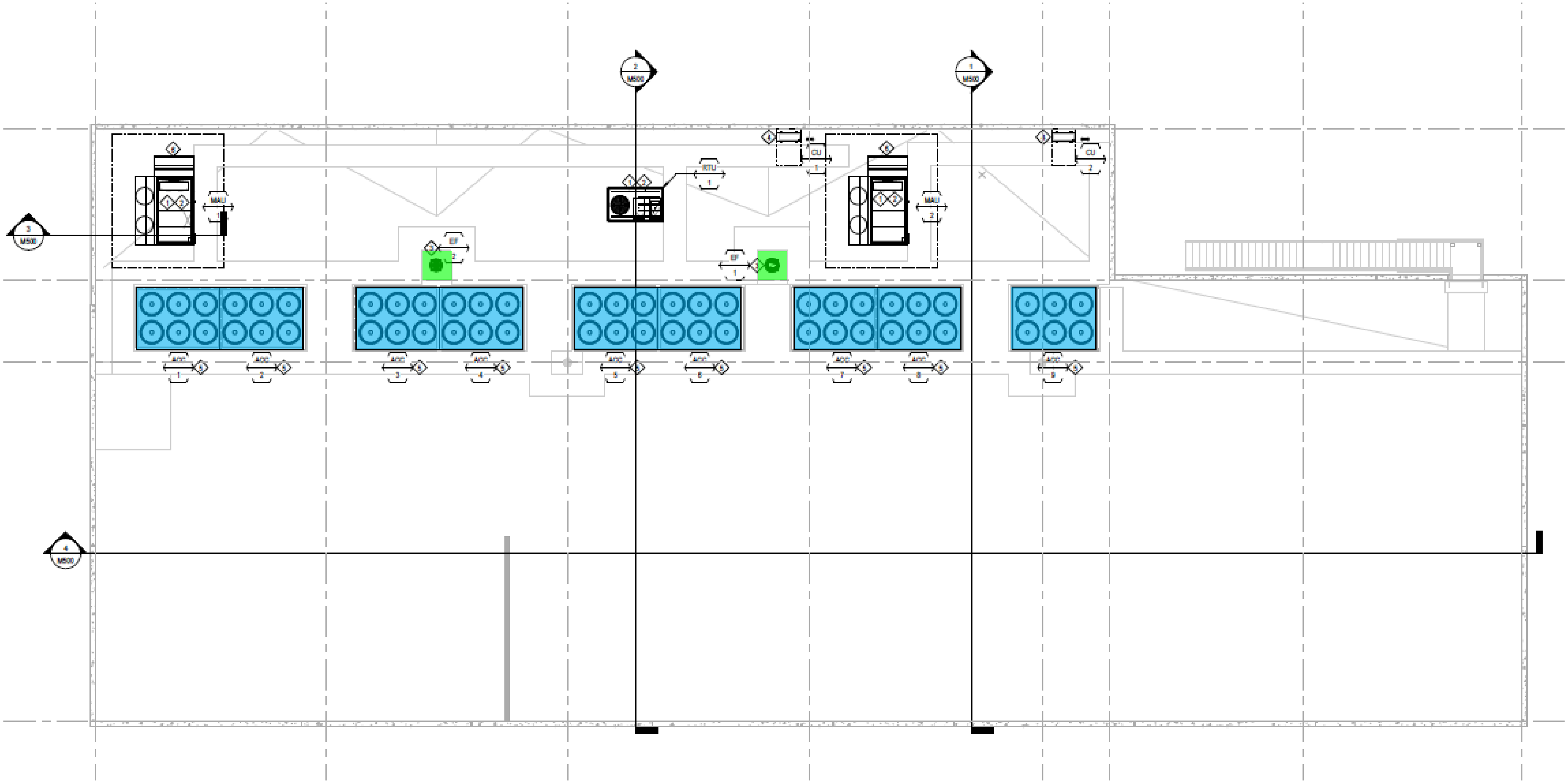
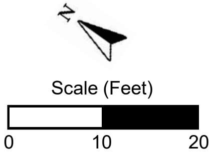


***Legend***

🟦 HVAC Condenser Units

🟩 Exhaust Fans



SVY03A Data Center Campus
Hayward, California

SVY03ADC2 – Mechanical Roof HVAC Plan

Figure 4

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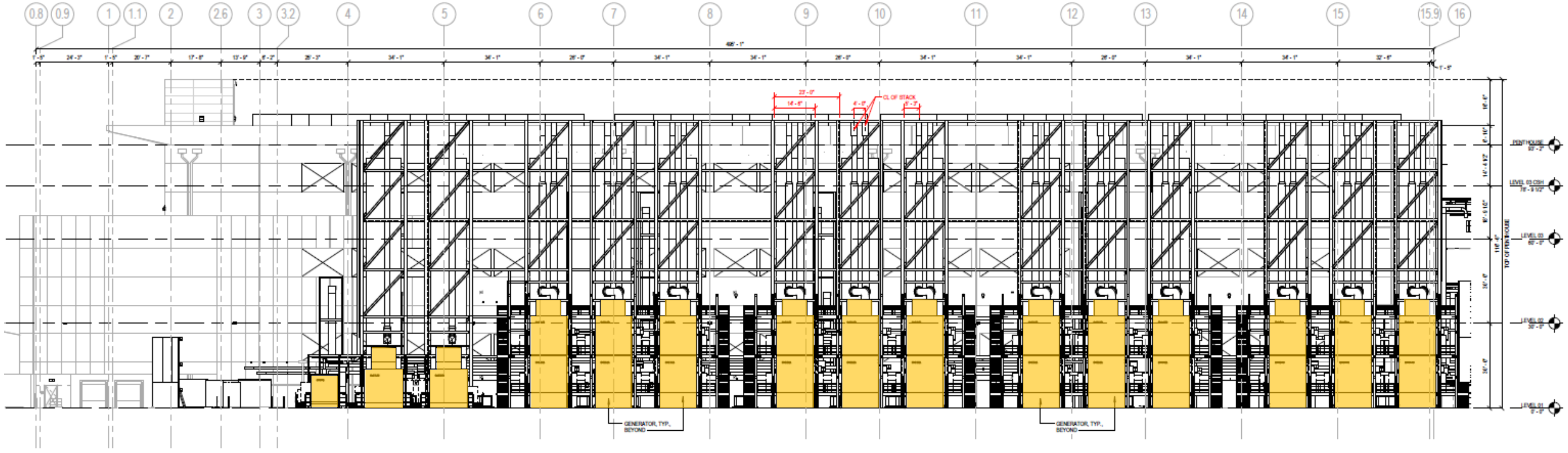

Generator Yard Elevation – South

***Legend***

| | |
|---|---|
| 🟨 | Emergency Generators |

Scale (Feet)

0 25 50

SVY03A Data Center Campus
Hayward, California

SVY03ADC1 – Generator Yard Elevations Plan

**Figure 5**

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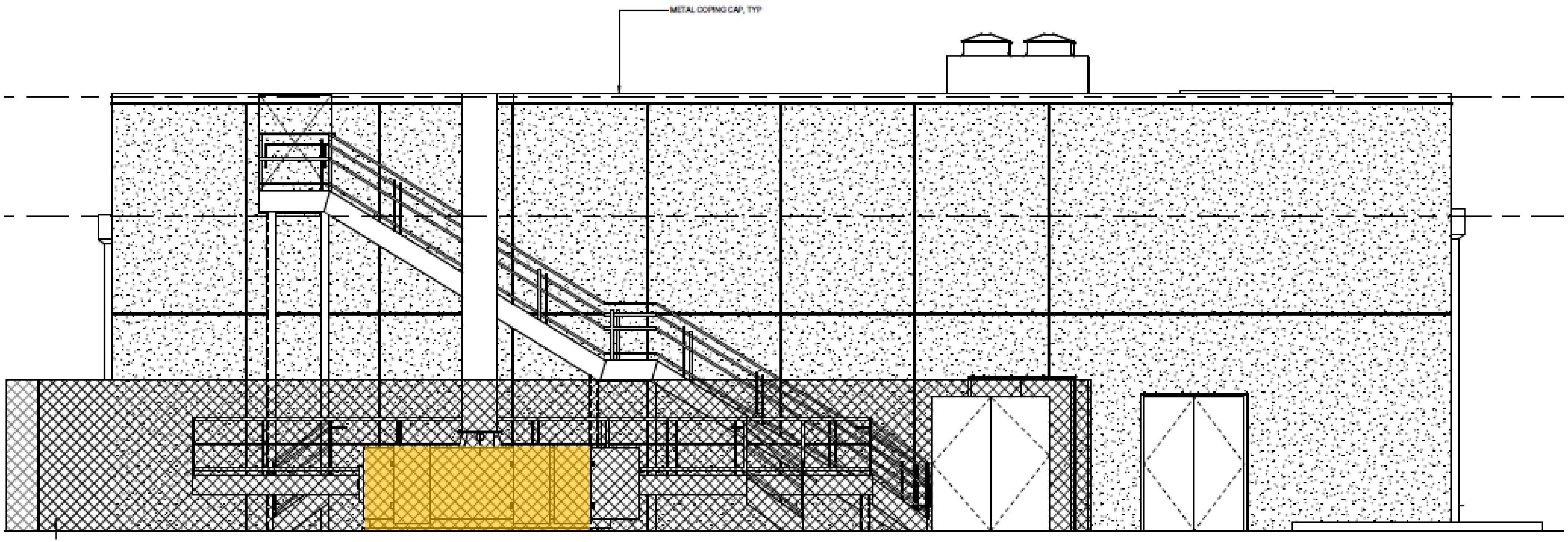

Generator Yard Elevation – East

***Legend***

🟨 Emergency Generator

Scale (Feet)
0 5 10

SVY03A Data Center Campus
Hayward, California

SVY03ADC2 – Generator Yard Elevations Plan

Figure 6

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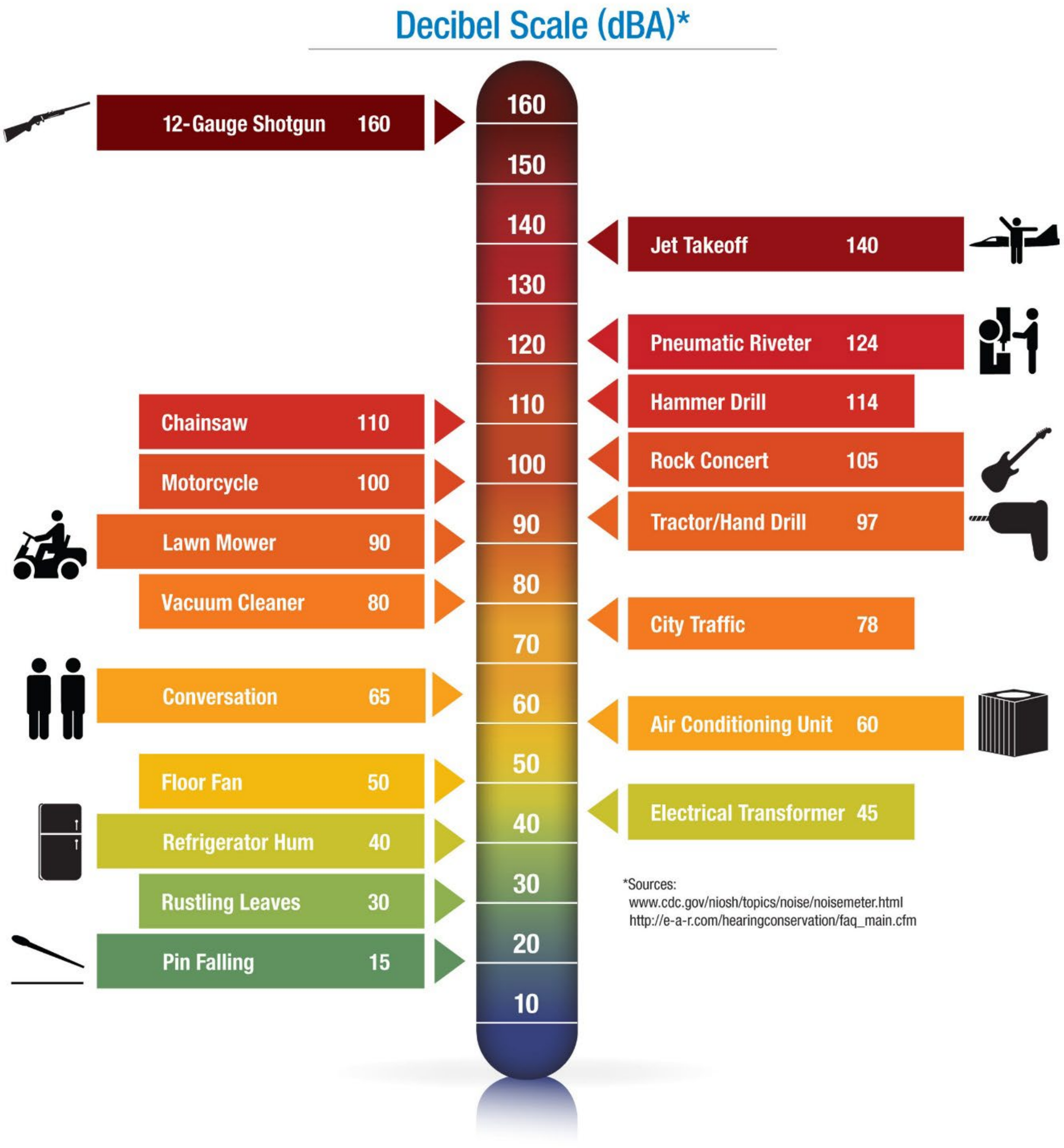
## Figure 7
## Noise Levels Associated with Common Noise Sources



*Sources:
www.cdc.gov/niosh/topics/noise/noisemeter.html
http://e-a-r.com/hearingconservation/faq_main.cfm

# Environmental Setting – Existing Ambient Noise and Vibration Environment

## Existing Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities. The nearest noise-sensitive land uses which would potentially be affected by the project have been identified as single-family residences to the east of the project. Existing industrial land uses are located within the immediate project vicinity but such uses are typically not considered to be noise-sensitive, but rather noise-generating.

## Long-Term Ambient Noise Survey

The existing ambient noise environment within the project vicinity is defined primarily by noise from traffic on California State Route 92 (SR 92) to the north, and by industrial-related operations/activities. To generally quantify existing ambient noise environment within the project vicinity, BAC conducted long-term (96-hour) ambient noise level measurements at two (2) locations August 10-13, 2023. The long-term noise survey locations are shown in Figure 8. Photographs of the noise survey sites are provided in Appendix B.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to complete the long-term noise level survey. The meters were calibrated immediately before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4). The results of the long-term ambient noise survey are shown numerically and graphically in Appendices C and D (respectively) and are summarized in Table 1.

**Table 1**
**Summary of Long-Term Ambient Noise Survey Results August 10-13, 2023[1]**

| | | | Average Measured Hourly Noise Levels (dB)[3] | | | |
|---|---|---|---|---|---|---|
| | | | Daytime | | Nighttime | |
| **Survey Site[2]** | **Date** | **DNL (dB)** | **$L_{eq}$** | **$L_{max}$** | **$L_{eq}$** | **$L_{max}$** |
| LT-1: Southern end of project parcel | 8/10/23 | 64 | 63 | 75 | 55 | 72 |
| | 8/11/23 | 63 | 59 | 75 | 56 | 73 |
| | 8/12/23 | 60 | 58 | 71 | 53 | 69 |
| | 8/13/23 | 59 | 57 | 70 | 52 | 67 |
| LT-2: Adjacent to residence at 2796 Cook Place (APN: 456-0005-015) | 8/10/23 | 74 | 71 | 86 | 66 | 82 |
| | 8/11/23 | 74 | 72 | 91 | 67 | 83 |
| | 8/12/23 | 71 | 69 | 86 | 64 | 79 |
| | 8/13/23 | 70 | 67 | 82 | 62 | 81 |

[1] Detailed summaries of the noise monitoring results are provided in Appendices C and D.
[2] Long-term ambient noise monitoring locations are identified in Figure 8.
[3] Daytime hours: 7:00 AM to 10:00 PM | Nighttime hours: 10:00 PM to 7:00 AM

*Source: BAC 2023.*

Noise level measurements obtained at Site LT-1 are believed to be representative of the existing ambient noise level environment within the project vicinity, including adjacent industrial uses. Site LT-2 was specifically selected to be representative of the existing ambient noise level environment at the closest noise-sensitive uses to the project (residential adjacent to Industrial Boulevard), located approximately ½ mile east of the project area. As shown in Table 1, measured day-night average levels (DNL) and average measured hourly noise levels ($L_{eq}$ and $L_{max}$) were generally consistent at each individual site throughout the monitoring period (i.e., relatively small range of measured levels).

## Short-Term Ambient Noise Survey

A short-term (15-minute) ambient noise level survey was also conducted within the project vicinity. The short-term noise survey was conducted on August 9th, 2023, at the four locations shown in Figure 8 (Sites ST-1 through ST-4). The short-term noise measurement sites were specifically selected to be representative of the existing ambient noise level environment at adjacent industrial uses during daytime hours. Photographs of the short-term noise survey locations are provided in Appendix B.

A Larson-Davis Laboratories (LDL) Model 831 precision integrating sound level meter was used to complete the short-term noise level measurement survey. The meter was calibrated before use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy off the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4). The results of the short-term ambient noise level survey are presented in Table 2.

**Table 2**
**Summary of Short-Term Noise Survey Measurement Results – August 9th, 2023**

| | | Measured Noise Levels (dB) | |
|---|---|---|---|
| **Survey Site[1]** | **Time** | **Average, $L_{eq}$** | **Maximum, $L_{max}$** |
| ST-1: Northwest end of project parcel | 12:04 p.m. | 65 | 81 |
| ST-2: East end of project parcel | 12:26 p.m. | 59 | 77 |
| ST-3: Southeast end of project parcel | 12:47 p.m. | 57 | 78 |
| ST-4: West end of project parcel | 1:10 p.m. | 57 | 65 |

[1] Short-term noise survey locations are shown in Figure 8.

*Source: BAC 2023.*

The Table 2 data indicate that measured ambient noise levels were highest at Site ST-1. According to BAC staff, the elevated measured levels at site ST-1 were primarily attributed to traffic on SR 92 to the north, heavy truck passbys, and operations/activities at existing industrial uses.

## Short-Term Ambient Vibration Survey

To quantify existing vibration levels at the project site and at nearby industrial uses, BAC conducted short-term (15-minute) vibration measurements at the four locations identified in Figure

8 on August 9th, 2023 (Sites ST-1 through ST-4). Photographs of the vibration survey equipment and locations are provided in Appendix B.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the survey. The results are summarized in Table 3.

**Table 3**
**Summary of Short-Term Ambient Vibration Survey Results – August 9th, 2023**

| Survey Site[1] | Time | Measured Maximum Vibration Level (VdB) |
|---|---|---|
| ST-1: Northwest end of project parcel | 12:04 p.m. | 76 |
| ST-2: East end of project parcel | 12:26 p.m. | 75 |
| ST-3: Southeast end of project parcel | 12:48 p.m. | 75 |
| ST-4: West end of project parcel | 1:11 p.m. | 69 |

[1] Short-term vibration survey locations are shown in Figure 8.

*Source: BAC 2023.*

As shown in Table 3, measured maximum vibration levels within the project area ranged from 69 VdB to 76 VdB. According to BAC field observations, the highest measured vibration levels at the survey locations were attributed to heavy truck passbys on adjacent roadways.

***Legend***

– – – Project Area Boundary (Approximate)

● Long-Term Ambient Noise Level Survey Site (2)

● Short-Term Ambient Noise & Vibration Survey Site (4)

● Industrial/Residential Receiver

N

Scale (Feet)

0 250 500

SVY03A Data Center Campus

Hayward, California

Noise & Vibration Survey Sites

Figure 8

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# Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

## Federal

There are no federal noise or vibration criteria which would be directly applicable to this project. However, the City of Hayward does not currently have performance standards for groundborne vibration. As a result, the following federal noise criteria was applied to the project.

### Federal Transit Administration (FTA)

The City of Hayward does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the Federal Transit Administration (FTA) were applied to the project. The FTA criteria applicable to damage and annoyance from vibration typically associated with construction activities are presented in Tables 4 and 5.

**Table 4**
**FTA Criteria for Assessing Vibration Damage to Structures**

| Building Category | Level (VdB)[1] |
|---|---|
| I. Reinforced-concrete, steel or timber (no plaster) | 102 |
| II. Engineered concrete and masonry (no plaster) | 98 |
| III. Non-engineered timber and masonry buildings | 94 |
| IV. Buildings extremely susceptible to vibration damage | 90 |

[1] RMS velocity in decibels (VdB) re 1 micro-inch/second

*Source: 2018 Federal Transit Administration (FTA) Noise and Vibration Manual, Table 12-3.*

**Table 5**
**Groundborne Vibration Impact Criteria for General Assessment**

| Land Use Category | Impact Levels (VdB)<br>Frequent Events[a] | <br>Occasional Events[b] | <br>Infrequent Events[c] |
|---|---|---|---|
| Category 1: Buildings where vibration would interfere with interior ops. | 65[d] | 65[d] | 65[d] |
| Category 2: Residences and buildings where people normally sleep | 72 | 75 | 80 |
| Category 3: Institutional land uses with primarily daytime uses | 75 | 78 | 83 |

a. "Frequent Events" is defined as more than 70 vibration events of the same source per day.
b. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
c. "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.
d. This criterion limit is based on levels that are acceptable for most moderately-sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

*Source: 2018 Federal Transit Administration, Transit Noise Impact and Vibration Assessment, May 2006.*

## State of California

### California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

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 other applicable standards of other agencies.

B. Generation of excessive groundborne vibration or groundborne noise levels.

C. For a project 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, would the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

## Local

### 2040 Hayward General Plan

The Hazards Element of the 2040 Hayward General Plan contains the city's noise-related goals and policies. The specific policies which are generally applicable to this project are reproduced below:

### HAZ-8.2 Noise Study and Mitigation

The City shall require development projects in areas where they may be exposed to major noise sources (e.g., roadways, rail lines, and aircraft or other non-transportation noise sources) to conduct a project level environmental noise analysis. The noise analysis shall determine noise exposure and noise standard compatibility with respect to the noise standards identified in Table 6 (General Plan Table HAZ-1) and shall incorporate noise mitigation when located in noise environments that are not compatible with the proposed uses of the project. The City shall use Table 6 (General Plan Table HAZ-1) and (General Plan) Figure HAZ-1 to determine potential noise exposure impacts, noise compatibility thresholds, and the need for mitigation. The City shall determine mitigation measures based on project-specific noise studies, and may include sound barriers, building setbacks, the use of closed windows and the installation of heating and air conditioning ventilation systems and the installation of noise attenuating windows and wall/ceiling insulation.

**Table 6**
**Exterior Noise Compatibility Standards for Various Land Uses**

| Land Use Type | Highest Level of Exterior Noise Exposure that is "Normally Acceptable"[a], DNL[b] or CNEL[c] (dB) |
|---|---|
| Residential: Single-Family Homes, Duplex, Mobile Home | 60 |
| Residential: Townhomes and Multi-Family Apartments | 65 |
| Urban Residential Infill & Mixed-Use Developments[e] | 70 |
| Lodging: Motels and Hotels | 65 |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | 70 |
| Auditoriums, Concert Halls, Amphitheaters | Mitigation based on site-specific study |
| Sports Arena, Outdoor Spectator Sports | Mitigation based on site-specific study |
| Playgrounds, Neighborhood Parks | 70 |
| Golf Courses, Riding Stables, Water Recreation | 75 |
| Office Buildings: Business, Commercial, Professional | 70 |
| Industrial Manufacturing, Utilities, Agriculture | 75 |

[a] As defined in the State of California General Plan Guidelines 200, "Normally Acceptable" means that the specified land uses is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise mitigation. For projects located along major transportation corridors (major freeways, arterials, and rail lines) this "normally acceptable" exterior noise level may be exceeded for certain areas of the project site (e.g., the frontage adjacent to the corridor or parking areas) with the exception of primary open space areas.

[b] DNL is an average 24-hour noise measurement that factors day and night noise levels.

[c] CNEL is a weighted average of sound levels gathered throughout a 24-hour period.

[d] Urban residential infill would include all types of residential development within existing or planned urban areas (such as Downtown, The Cannery Neighborhood, and the South Hayward BART Urban Neighborhood) and along major corridors (such as Mission Boulevard).

[e] Mixed-Use Projects would include all mixed-use developments throughout the City of Hayward

*Source: 2040 Hayward General Plan, Table HAZ-1.*

### HAZ-8.3 Incremental Noise Impacts of Commercial and Industrial Development

The City shall consider the potential noise impacts of commercial and industrial developments that are located near residences and shall require noise mitigation measures as a condition of project approval.

### HAZ-8.4 Noise Mitigation and Urban Design

The City shall consider the visual impact of noise mitigation measures and shall require solutions that do not conflict with urban design goals and standards.

### HAZ-8.15 Airport Noise Evaluation and Mitigation

The City shall require project applicants to evaluate potential airport noise impacts if the project is located within the 60 dB CNEL contour line of the Hayward Executive Airport or Oakland International Airport (as mapped in the Airport Land Use Compatibility Plan). All projects shall be required to mitigate impacts to comply with the interior and exterior noise standards established by the Airport Land Use Compatibility Plan.

### HAZ-8.20 Construction Noise Study

The City may require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on those uses, to the extent feasible.

### HAZ-8.21 Construction and Maintenance Noise Limits

The City shall limit the hours of construction and maintenance activities to the less sensitive hours of the day (7:00 a.m. to 7:00 p.m. Monday through Saturday and 10:00 a.m. to 6:00 p.m. on Sundays and holidays).

### HAZ-8.22 Vibration Impact Assessment

The City shall require a vibration impact assessment for proposed projects in which heavy-duty construction equipment would be used (e.g., pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

<u>Hayward Municipal Code</u>

The provisions of the Hayward Municipal Code which would be most applicable to this project are reproduced below.

### 4-1.03.1 – Noise restriction by decibel.

b. Commercial and Industrial Property Noise Limits. Except for commercial and industrial property abutting residential property, no person shall produce or allow to be produced by human voice, machine, device, or any other combination of same, on commercial or industrial property, a noise level at any point outside of the property plane that exceeds seventy (70) dBA. Commercial and industrial property that abuts residential property shall be subject to the residential property noise limits set forth in subsections (a)(1) and (2).

### 4-1.03.4 – Construction and alteration of structures; landscaping activities.

Unless otherwise provided pursuant to a duly-issued permit or a condition of approval of a land use entitlement, the construction, alteration, or repair of structures and any landscaping activities, occurring between the hours of 10:00 a.m. and 6:00 p.m. on Sundays and holidays, and 7:00 a.m. and 7:00 p.m. on other days, shall be subject to the following:

a. No individual device or piece of equipment shall produce a noise level exceeding eighty-three (83) dBA at a distance of twenty-five (25) feet from the source. If the device or equipment is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close as possible to twenty-five (25) feet from the equipment.

b. The noise level at any point outside of the property plane shall not exceed eighty-six (86) dBA.

**4-1.03.5 – Categorical exemption.**

a. Generators Required for Medical Purposes; Power Outages: Noise from generators required for medical purposes or during power outages.

# Impacts and Mitigation Measures

## Thresholds of Significance

For the purposes of this assessment, a noise and vibration impact is considered significant if the project would result in:

- 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 other applicable standards of other agencies; or

- Generation of excessive groundborne vibration or groundborne noise levels; or

- For a project 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, would the project expose people residing or working in the project area to excessive noise levels.

The following criteria established by the Federal Transit Administration (FTA), Hayward General Plan, and Hayward Municipal Code were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise criteria presented in the Hayward General Plan or Municipal Code.

- A significant impact would be identified if project-generated activities would substantially increase noise levels at existing sensitive receptors in the vicinity. In terms of determining the temporary noise increase due to project on-site operations, demolition/construction activities, and off-site infrastructure improvements at existing sensitive receptors in the vicinity, an impact would occur if those activities would noticeably increase ambient noise levels above background levels at those locations. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For the analysis of noise level increases associated with project on-site operations, demolition/construction activities, and off-site infrastructure improvements at existing sensitive receptors, a noticeable increase in ambient noise levels is assumed to occur where those activities would result in an increase by 5 dB or more over existing ambient noise levels.

- A significant impact would be identified if project construction activities or proposed on-site operations would expose sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed applicable FTA vibration impact criteria presented in this report.

## Noise Impacts Associated with Project On-Site Operations

The project-generated on-site operations noise sources which are considered in this assessment consist of rooftop mechanical equipment (HVAC condensers and exhaust fans) and ground level emergency generators associated with the SVY03ADC1 and SVY03ADC2 buildings. The evaluation of potential noise impacts associated with the operation of each noise source is evaluated in the following impact discussions.

The following impact discussions include analyses of project operations noise at the closest industrial and residential land uses relative to applicable day-night average noise level (DNL) criteria contained in the Hayward General Plan (Table 6 of this report). In addition, the maximum ($L_{max}$) noise level criterion contained in Hayward Municipal Code Section 4-1.03.1 applicable to industrial uses was applied to project operations noise. In terms of determining the noise level increase due to on-site noise sources, an impact would occur if those sources would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For the following analyses of project operations noise sources, a noticeable increase in ambient noise levels is assumed to occur where noise levels are calculated to increase by 5 dB or more over existing ambient noise levels at the closest noise-sensitive uses.

### Impact 1: Rooftop Mechanical Equipment Noise (HVAC Condensers & Exhaust Fans)

<u>Rooftop Mechanical Equipment Noise Sources & Reference Sound Levels</u>

#### SVY03AD1 Building

According to provided site plans, the SVY03ADC1 building rooftop will have approximately 26 HVAC condenser units. Specifically, it is the understanding of BAC that the project proposes the installation of Trane Model TWE18044B (15-ton) condenser units. Based on manufacturer sound level data, the unit has a reference sound power level of 83 dB. The proposed locations of the rooftop HVAC condenser units are shown in the SVY03ADC1 mechanical roof HVAC plan, provided as Figure 3.

The site plans indicate that the SVY03ADC1 building rooftop will have approximately 152 upblast exhaust fans. Specifically, it is the understanding of BAC that the project proposes the installation of Greenheck Model AX-160-400-0619-C200 exhaust fans. According to equipment manufacturer sound level data provided to BAC, the reference sound power level for one unit is 98 dB. The proposed locations of the rooftop exhaust fans are shown in the SVY03ADC1 mechanical roof HVAC plan, provided as Figure 3.

#### SVY03AD2 Building

The project site plans indicate that the SVY03ADC1 building rooftop will have approximately 9 HVAC condenser units (with 6 fans per unit). Specifically, it is the understanding of BAC that the project proposes the installation of Vertiv Liebert Model MCV330 condenser units. According to provided equipment manufacturer sound level data, the reference sound power level for one unit at 100% fan speed is 94 dB. The proposed locations of the rooftop condenser units are shown in the SVY03ADC2 mechanical roof HVAC plan, provided as Figure 4.

The site plans indicate that the SVY03ADC2 building rooftop will have 2 upblast exhaust fans. Specifically, it is the understanding of BAC that the project proposes the installation of Greenheck Model AX-160-400-0619-C200 exhaust fans. According to equipment manufacturer sound level data provided to BAC, the reference sound power level for one unit is 98 dB. The proposed locations of the rooftop exhaust fans are shown in the SVY03ADC2 mechanical roof HVAC plan, provided as Figure 4.

### Rooftop Mechanical Equipment Noise Modeling Methodology

SoundPLAN Version 8.2 noise prediction model was utilized to project mechanical equipment (condensers and exhaust fans) noise levels from proposed rooftop locations. The SoundPLAN projections were calculated using a standard spherical spreading loss of -6 dB per doubling of distance from a stationary source. To account for shielding provided by intervening topography and structures, elevation data for the entire study area was input to the SoundPLAN model to create a 3-dimensional base map. Using aerial imagery and the project site plans, the SoundPLAN model inputs for both hard surfaces, soft surfaces, and vegetated areas were applied.

Because operation of the rooftop mechanical equipment would be a component of normal facility operations, the SoundPLAN modeling included consideration of noise exposure associated with all of proposed condensers and exhaust fans in operation concurrently. To calculate project rooftop mechanical equipment noise generation relative to the General Plan day-night average noise level descriptor (DNL), the number of hours the equipment is in operation must be known. For the purpose of this analysis, the SoundPLAN modeling included consideration of all proposed condensers and exhaust fans from both buildings in operation continuously (and concurrently) for a 24-hour period.

### Predicted Rooftop Mechanical Equipment Noise Level Exposure

The results from the SoundPLAN model projections at the nearest industrial and residential uses and project property lines are summarized in Tables 7-10, and are shown graphically in Figures 9-12 with noise contours.

The provided site plans indicate that a 7' parapet is proposed to be constructed along the perimeter of the SVY03DA1 building rooftop. Based on the proposed building design, shielding offsets were applied as appropriate in the SoundPLAN modeling of rooftop mechanical equipment noise levels from the SVY03DA1 building.

# Figure 9

## DNL Contours, Condensing Units

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, DNL [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Receiver |
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ▨ | Proposed Building |

Scale

N

0 150 300 600 feet

BOLLARD
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# Figure 10

## $L_{max}$ Contours, Condensing Units

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, $L_{max}$ [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ▨ | Proposed Building |
| ⌐ ¬ | Project Property Line |

Scale

N

0 150 300 600
feet

BOLLARD
Acoustical Consultants

# Figure 11

## DNL Contours, Exhaust Fans

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, DNL [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Receiver |
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ⬛ | Proposed Building |

Scale

N

0 150 300 600
feet

BOLLARD
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# Figure 12

## $L_{max}$ Contours, Exhaust Fans

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, $L_{max}$ [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ▨ | Proposed Building |
| ⬚ | Area |

Scale

N

0 150 300 600 feet

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**Table 7**
**Predicted Condenser Unit Noise Exposure vs. General Plan DNL Standard**

| Receiver[1] | Land Use | Predicted Equipment Noise Level, DNL (dB)[2,3] | General Plan Noise Standard, DNL (dB)[4] |
|---|---|---|---|
| R1 | Industrial | 55 | **75** |
| R2 | Industrial | 41 | **75** |
| R3 | Industrial | 39 | **75** |
| R4 | Industrial | 44 | **75** |
| R5 | Industrial | 51 | **75** |
| R6 | Industrial | 60 | **75** |
| R7 | Industrial | 57 | **75** |
| R8 | Industrial | 61 | **75** |
| R9 | Residential | 28 | **60** |

[1] Receiver locations are shown in Figures 8 & 9.
[2] Predicted DNL noise levels reflect all proposed rooftop condensers at SVY03AD1 and SVY03AD2 buildings in operation continuously and concurrently.
[3] Predicted equipment noise levels with attenuation from 7’ rooftop parapet shielding at SVY03AD1 building.
[4] General Plan DNL standards applicable to industrial and single-family residential uses.

*Source: BAC 2023.*

**Table 8**
**Predicted Exhaust Fan Noise Exposure vs. General Plan DNL Standard**

| Receiver[1] | Land Use | Predicted Equipment Noise Level, DNL (dB)[2,3] | General Plan Noise Standard, DNL (dB)[4] |
|---|---|---|---|
| R1 | Industrial | 58 | **75** |
| R2 | Industrial | 56 | **75** |
| R3 | Industrial | 53 | **75** |
| R4 | Industrial | 52 | **75** |
| R5 | Industrial | 54 | **75** |
| R6 | Industrial | 57 | **75** |
| R7 | Industrial | 59 | **75** |
| R8 | Industrial | 61 | **75** |
| R9 | Residential | 48 | **60** |

[1] Receiver locations are shown in Figures 8 & 11.
[2] Predicted DNL noise levels reflect all proposed exhaust fans at SVY03AD1 and SVY03AD2 buildings in operation continuously and concurrently.
[3] Predicted equipment noise levels with attenuation from 7’ rooftop parapet shielding at SVY03AD1 building.
[4] General Plan DNL standards applicable to industrial and single-family residential uses.

*Source: BAC 2023.*

**Table 9**
**Predicted Condenser Unit Noise Exposure vs. Municipal Code $L_{max}$ Standard**

| Receiver[1] | Predicted Equipment Noise Level, $L_{max}$ (dB)[2,3] | Municipal Code Noise Standard, $L_{max}$ (dB)[4] |
|---|---|---|
| Project Property Line – North | 48 | **70** |
| Project Property Line – East | 33 | |
| Project Property Line – South | 51 | |
| Project Property Line – West | 54 | |

[1] Project property line shown in Figures 8 & 10.
[2] Predicted maximum levels from condensers at SVY03AD1 and SVY03AD2 buildings at project property lines.
[3] Predicted equipment noise levels with attenuation from 7' rooftop parapet shielding at SVY03AD1 building.
[4] Municipal Code industrial use maximum noise standard applied at project property line.

*Source: BAC 2023.*

**Table 10**
**Predicted Exhaust Fan Noise Exposure vs. Municipal Code $L_{max}$ Standard**

| Receiver[1] | Predicted Equipment Noise Level, $L_{max}$ (dB)[2,3] | Municipal Code Noise Standard, $L_{max}$ (dB)[4] |
|---|---|---|
| Project Property Line – North | 52 | **70** |
| Project Property Line – East | 48 | |
| Project Property Line – South | 46 | |
| Project Property Line – West | 55 | |

[1] Project property line shown in Figures 8 & 12.
[2] Predicted maximum levels from exhaust fans at SVY03AD1 and SVY03AD2 buildings at project property lines.
[3] Predicted maximum levels with attenuation from 7' rooftop parapet shielding at SVY03AD1 building.
[4] Municipal Code industrial use maximum noise standard applied at project property line.

*Source: BAC 2023.*

As indicated in Tables 7 and 8, noise exposure from project rooftop mechanical equipment (condensers and exhaust fans) is predicted to comply with applicable Hayward General Plan noise level standards at the closest industrial and residential uses (Receivers R1 through R9). In addition, Tables 9 and 10 data indicate that project rooftop mechanical equipment is predicted to satisfy the Hayward Municipal Code industrial maximum noise level limit at the project property lines.

Table 1 of this report contains the results from the BAC long-term ambient noise survey at Site LT-2, which is believed to be representative of the existing ambient noise environment at the closest noise-sensitive use to the project (single-family residence, Receiver R9). Using the average measured noise levels during the survey, ambient plus project rooftop mechanical equipment noise level increases were calculated at the closest residential use. According to the results from that exercise, project-generated increases in ambient day-night average noise levels at the closest residential use are calculated to range from less than 0.1 dB DNL to 0.1 dB DNL. The calculated increases in ambient noise levels cited above would be well below the applied increase significance criterion of 5 dB.

Because noise exposure from project rooftop mechanical equipment is predicted to satisfy applicable Hayward General Plan and Municipal Code noise level criteria at the closest industrial and residential uses, and because noise level exposure from those operations is not calculated to significantly increase ambient noise levels at the closest existing noise-sensitive uses (residential), this impact is identified as being ***less than significant.***

### Impact 2: Emergency Standby (Backup) Generator Noise

Emergency Generator Noise Source & Reference Sound Level

#### SVY03AD1 Building

According to provided site plans, a total of 27 emergency generators are proposed within a ground level outdoor generator yard on the east side of the SVY03ADC1 building. The site plans further indicate that 24 of the generators in the SVY03AD1 yard will be stacked 2-high, with the remaining 3 generators unstacked. It is the understanding of BAC that the selected generator models for the SVY03AD1 yard are Caterpillar Models 3516E (2.75 MW) and C32 (1.0 MW). According to information provided to BAC, the proposed Caterpillar Model 3516E generator has a reference sound level of 75 dB at a distance of 23 feet, including attenuation provided by an acoustic enclosure. For the purposes of this analysis, the C32 model generators were conservatively assumed to have the same reference sound level as the larger (louder) 3516E model. The locations of the proposed generators and equipment yard are shown in the SVY0ADC1 generator yard elevations plan, provided as Figure 5.

#### SVY03AD2 Building

The site plans indicate that one emergency generator is proposed within a ground level outdoor generator yard on the south side of the SVY03ADC2 building. It is our understanding that the selected generator model for the SVY03AD2 yard is Caterpillar Model 3512 (1.6 MW). For the purposes of this analysis, the Caterpillar Model 3512 model generator was conservatively assumed to have the same reference sound level as the larger (louder) 3516E model presented above (75 dB at 23 feet). The location of the proposed generator and equipment yard is shown in the SVY03AD2 generator yard elevations plan, provided as Figure 6.

Emergency Generator Noise Modeling Methodology

According to the project description, the backup emergency generators will be run for short periods for testing and maintenance purposes and otherwise will not operate unless there is a disturbance or interruption of the utility supply (i.e., power outages). The emergency generator testing and maintenance schedule will include operation of the equipment during daytime hours only for the testing scenarios shown in Table 11.

**Table 11**
**Proposed Emergency Generator Testing Schedule**

| Event | Frequency | Maximum Duration (min) | Maximum # of Engines Run Concurrently[1] | Maximum # of Generators Tested Per Day[1] | Typical Load Range |
|---|---|---|---|---|---|
| Readiness Testing | Monthly | 30 | 1 | 10 | 40% |
| Generator Maintenance & Testing | Annual | 60 | 1 | 8 | 25% for 30 min<br>50% for 30 min<br>100% for 1 hr |

[1] Information on the maximum number of engines tested concurrently and number per day was not contained in the project description. Inputs utilized for those fields are based on BAC's experience in previous data center projects involving emergency testing scenarios.

SoundPLAN Version 8.2 noise prediction model was utilized to project emergency generator noise levels from proposed on-site locations. The SoundPLAN projections were calculated using a standard spherical spreading loss of -6 dB per doubling of distance from a stationary source. To account for shielding provided by intervening topography and structures, elevation data for the entire study area was input to the SoundPLAN model to create a 3-dimensional base map. Using aerial imagery and the project site plans, the SoundPLAN model inputs for both hard surfaces, soft surfaces, and vegetated areas were applied.

It is the understanding of BAC that operation of all of the proposed generators would only occur during emergencies. Aside from emergency use, the provided emergency generator testing and maintenance schedule indicate that worst-case noise exposure from the generators would occur during the annual test. Specifically, the annual test scenario would consist of the operation of 1 generator at a time for the duration of 1 hour during daytime hours only, with up to 8 generators tested per day (i.e., up to 8 consecutive hours of generator testing in one day).

Pursuant to Hayward Municipal Code Section 4-1.03.5, noise from generators during power outages (i.e., nighttime hours) is exempt. To calculate project generator noise generation relative to the General Plan day-night average noise level descriptor (DNL), the SoundPLAN modeling included consideration of continuous operation of 1 generator at a time for the duration of 8 consecutive daytime hours (i.e., worst-case noise exposure from the annual testing scenario).

### Predicted Emergency Generator Noise Level Exposure

The results from the SoundPLAN model projections at the nearest industrial and residential uses and project property lines are summarized in Tables 12 and 13, and are shown graphically in Figures 13 and 14.

# Figure 13

## DNL Contours, Generators

SVY03A Data Center Campus
Hayward, California

Legend

Contour Scale, DNL [dBA]

| | | |
|---|---|---|
| 🟥 | >= | 70 |
| 🟧 | 65 - | 70 |
| 🟨 | 60 - | 65 |
| 🟩 | 55 - | 60 |

Objects

| | |
|---|---|
| ● | Receiver |
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ▨ | Proposed Building |

Scale

N

0 150 300 600
feet

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# Figure 14

## $L_{max}$ Contours, Generators

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, $L_{max}$ [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ■ | Proposed Building |
| ⬚ | Project Property Line |

Scale

N

0 150 300 600
feet

BOLLARD
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**Table 12**
**Predicted Emergency Generator Noise Exposure vs. General Plan DNL Standard**

| Receiver[1] | Land Use | Predicted Equipment Noise Level, DNL (dB)[2] | General Plan Noise Standard, DNL (dB)3 |
|---|---|---|---|
| R1 | Industrial | 37 | **75** |
| R2 | Industrial | 56 | **75** |
| R3 | Industrial | 58 | **75** |
| R4 | Industrial | 55 | **75** |
| R5 | Industrial | 56 | **75** |
| R6 | Industrial | 59 | **75** |
| R7 | Industrial | 57 | **75** |
| R8 | Industrial | 46 | **75** |
| R9 | Residential | 30 | **60** |

[1] Receiver locations are shown in Figures 8 & 13.
[2] Predicted DNL noise levels reflect the operation of 1 generator at a time for the duration of 8 hours during daytime hours, with up to 8 generators tested per day (i.e., up to 8 consecutive hours of generator testing in one day).
[3] General Plan DNL standards applicable to industrial and single-family residential uses.

*Source: BAC 2023.*

**Table 13**
**Predicted Emergency Generator Noise Exposure vs. Municipal Code $L_{max}$ Standard**

| Receiver[1] | Predicted Equipment Noise Level, $L_{max}$ (dB)[2] | Municipal Code Noise Standard, $L_{max}$ (dB)[3] |
|---|---|---|
| Project Property Line – North | 40 | **70** |
| Project Property Line – East | 65 | |
| Project Property Line – South | 64 | |
| Project Property Line – West | 65 | |

[1] Project property line shown in Figures 8 & 14.
[2] Predicted maximum noise levels from closest generators at SVY03AD1 and SVY03AD2 building yards.
[3] Municipal Code industrial use maximum noise standard applied at project property line.

*Source: BAC 2023.*

As shown in Table 12, noise level exposure associated with worst-case generator operations for testing and maintenance purposes (i.e., annual test) is predicted to satisfy applicable Hayward General Plan noise level criteria at the closest industrial and residential uses. Additionally, Table 13 data indicate that project generator operations would comply with the Hayward Municipal Code industrial maximum noise level limit at the project property lines.

Table 1 of this report contains the results from the BAC long-term ambient noise survey at Site LT-2, which is believed to be representative of the existing ambient noise environment at the closest noise-sensitive use to the project (single-family residence, Receiver R9). Using the average measured noise levels during the survey, ambient plus project emergency generator noise level increases were calculated at the closest residential use. According to the results from that exercise, project-generated increases in ambient day-night average noise levels at the closest residential use are calculated to be less than 0.1 dB DNL. The calculated increases in ambient noise levels cited above would be well below the applied increase significance criterion of 5 dB.

Because noise exposure from project emergency generators is predicted to satisfy applicable Hayward General Plan and Municipal Code noise level criteria at the closest industrial and residential uses, and because noise level exposure from those operations is not calculated to significantly increase ambient noise levels at the closest existing noise-sensitive uses (residential), this impact is identified as being ***less than significant.***

### Impact 3: Cumulative Noise from Mechanical Equipment & Generator Operations

The results from the SoundPLAN model projections of calculated cumulative (combined) noise levels from analyzed project equipment are summarized in Tables 14 and 15 and shown graphically in Figures 15 and 16.

# Figure 15

## DNL Contours, All Sources

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, DNL [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Receiver |
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ▨ | Proposed Building |

Scale

N

0 150 300 600
feet

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# Figure 16

## $L_{max}$ Contours, All Sources

SVY03A Data Center Campus
Hayward, California

### Legend

Contour Scale, $L_{max}$ [dBA]

| | |
|---|---|
| 🟥 | >= 70 |
| 🟧 | 65 - 70 |
| 🟨 | 60 - 65 |
| 🟩 | 55 - 60 |

Objects

| | |
|---|---|
| ● | Exhaust Fan / Condensing Unit |
| 🟥 | Generator |
| ⬜ | Proposed Building |
| ⬚ | Project Property Line |

Scale

N

0 150 300 600
feet

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## Table 14
## Calculated Cumulative Noise Levels vs. General Plan DNL Standard

| Receiver[1] | Land Use | Predicted Equipment Noise Levels, DNL (dB)[1] Condensers | Exhaust Fans | Generators | Calculated Cumulative, DNL (dB) | General Plan Standard, DNL (dB)[2] |
|---|---|---|---|---|---|---|
| R1 | Industrial | 55 | 58 | 37 | 60 | **75** |
| R2 | Industrial | 41 | 56 | 56 | 59 | **75** |
| R3 | Industrial | 39 | 53 | 58 | 59 | **75** |
| R4 | Industrial | 44 | 52 | 55 | 57 | **75** |
| R5 | Industrial | 51 | 54 | 56 | 59 | **75** |
| R6 | Industrial | 60 | 57 | 59 | 64 | **75** |
| R7 | Industrial | 57 | 59 | 57 | 63 | **75** |
| R8 | Industrial | 61 | 61 | 46 | 64 | **75** |
| R9 | Residential | 28 | 48 | 30 | 48 | **60** |

[1] Predicted equipment noise levels from Tables 7, 8 and 12.
[2] General Plan DNL standards applicable to industrial and single-family residential uses.

*Source: BAC 2023.*

## Table 15
## Calculated Cumulative Noise Levels vs. Municipal Code $L_{max}$ Standard

| Receiver[1] | Predicted Equipment Noise Levels, $L_{max}$ (dB)[1] Condensers | Exhaust Fans | Generators | Calculated Cumulative, $L_{max}$ (dB) | Municipal Code Standard, $L_{max}$ (dB)[2] |
|---|---|---|---|---|---|
| Project Property Line - North | 48 | 52 | 40 | 53 | **70** |
| Project Property Line - East | 33 | 48 | 65 | 65 | |
| Project Property Line - South | 51 | 46 | 64 | 65 | |
| Project Property Line - West | 54 | 55 | 65 | 66 | |

[1] Predicted equipment noise levels from Tables 9, 10 and 13.
[2] Municipal Code industrial maximum noise standard applied at project property line.

*Source: BAC 2023.*

Based on the data provided in Table 14, cumulative (combined) noise level exposure associated with project rooftop mechanical equipment and emergency generator operations is calculated to satisfy applicable Hayward General Plan DNL criteria at the closest industrial and residential uses. In addition, cumulative project operations noise levels are predicted to comply with the Hayward Municipal Code industrial maximum noise level limit at the project property lines (Table 15).

Table 1 of this report contains the results from the BAC long-term ambient noise survey at Site LT-2, which is believed to be representative of the existing ambient noise environment at the closest noise-sensitive use to the project (single-family residence, Receiver R9). Using the average measured noise levels during the survey, ambient plus cumulative project equipment noise level increases were calculated at the closest residential use. According to the results from that exercise, cumulative project-generated increases in ambient day-night average noise levels at the closest residential use are calculated to be less than 0.1 dB DNL. The calculated increases in ambient noise levels cited above would be well below the applied increase significance criterion of 5 dB.

Because noise exposure from cumulative (combined) project rooftop mechanical equipment and generator operations is calculated to satisfy applicable Hayward General Plan and Municipal Code noise level criteria at the closest industrial and residential uses, and because combined noise level exposure from those operations is not calculated to significantly increase ambient noise levels at the closest existing noise-sensitive uses (residential), this impact is identified as being ***less than significant.***

## Noise Impacts Associated with On-Site Project Demolition/Construction Activities

### Impact 4: On-Site Demolition/Construction Noise Level Exposure

During project demolition/construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point.

Table 16 includes the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project.

### Table 16
### Reference Noise Levels for Typical Demolition/Construction Equipment

| Equipment Description | Reference Noise Level at 50 Feet, $L_{max}$ (dB) |
|---|---|
| Air compressor | 80 |
| Backhoe | 80 |
| Ballast equalizer | 82 |
| Ballast tamper | 83 |
| Compactor | 82 |
| Concrete mixer | 85 |
| Concrete pump | 82 |
| Concrete vibrator | 76 |
| Crane, mobile | 83 |
| Dozer | 85 |
| Excavator | 85 |
| Generator | 82 |
| Grader | 85 |
| Impact wrench | 85 |
| Loader | 80 |
| Paver | 85 |
| Pneumatic tool | 85 |
| Pump | 77 |
| Saw | 76 |
| Scarifier | 83 |
| Scraper | 85 |
| Shovel | 82 |
| Spike driver | 77 |
| Tie cutter | 84 |
| Tie handler | 80 |
| Tie inserter | 85 |
| Truck | 84 |

*Source: 2018 FTA Noise and Vibration Impact Assessment Manual, Table 7-1.*

Hayward General Plan Policy HAZ-8.21 establishes construction-related operations limitations for the purposes of reducing noise impacts at noise-sensitive uses. Specifically, Policy HAZ-8.21 limits the hours of construction (and demolition) activities to the less sensitive hours of the day (7:00 a.m. to 7:00 p.m. Monday through Saturday and 10:00 a.m. to 6:00 p.m. on Sundays and holidays). It is reasonably assumed for the purpose of this analysis that all on-site project demolition/construction activities would occur pursuant to General Plan Policy HAZ-8.21, and would therefore be in compliance with this policy.

Hayward Municipal Code Section 4-1.03.4 states that, unless otherwise permitted, the construction, alteration, or repair of structures and any landscaping activities, occurring between the hours of 10:00 a.m. and 6:00 p.m. on Sundays and holidays, and 7:00 a.m. and 7:00 p.m. on other days, shall be subject to the following:

> -No individual device or piece of equipment shall produce a noise level exceeding eighty-three (83) dBA at a distance of twenty-five (25) feet from the source. If the device or equipment is

housed within a structure on the property, the measurement shall be made outside the structure at a distance as close as possible to twenty-five (25) feet from the equipment.

-The noise level at any point outside of the property plane shall not exceed eighty-six (86) dBA.

Noise from heavy equipment operations during on-site demolition/construction activities would add to the noise environment in the immediate vicinity of the work area. Based on the data shown in Table 16, noise levels from typical construction equipment can range from 76 dB $L_{max}$ to 85 dB $L_{max}$ at a reference distance of 50 feet. When projected to a distance of 25 feet, those equipment noise levels are calculated to range from 82 dB $L_{max}$ to 91 dB $L_{max}$. As mentioned previously, not all of the construction activities identified in Table 16 would be required of this project.

In terms of determining the temporary noise increase due to project-related demolition/construction activities, an impact would occur if construction activity would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For this analysis, a noticeable increase in ambient noise levels is assumed to occur where noise levels increase by 5 dB or more over existing ambient noise levels at the nearest noise-sensitive uses (residential).

The nearest residential use (Receiver R9) maintains a separation of approximately 2,900 feet from the project area. Based on the reference noise levels presented in Table 16, construction equipment noise levels are projected to range from 41 dB $L_{max}$ to 50 dB $L_{max}$ (calculated mean of 45 dB $L_{max}$) at a distance of 2,900 feet. Table 1 of this report contains the results from the BAC long-term ambient noise survey at Site LT-2, which is believed to be representative of the existing ambient noise environment at Receiver R9. Using the average maximum ($L_{max}$) noise levels measured during required construction hours (General Plan Policy HAZ-8.21), and the calculated mean of projected construction equipment maximum noise levels at Receiver R9, ambient plus project demolition/construction noise level increases were calculated. According to the results from that exercise, project-generated increases in ambient daytime maximum noise levels at Receiver R9 are calculated to be less than 0.1 dB $L_{max}$. The calculated increases in ambient noise levels cited above would be well below the applied increase significance criterion of 5 dB.

Based on the analysis provided above, project demolition/construction equipment/activities are not expected to result in generation of a substantial temporary or permanent increase in ambient noise levels at the closest existing noise-sensitive uses to the project area (residential). However, based on the reference sound level data for typical construction equipment provided in Table 16, on-site project demolition/construction equipment could potentially exceed the noise level limits identified in Municipal Code Section 4-1.03.4(a) and/or 4-1.03.4(b). As a result, this impact is identified as being **potentially significant**.

Mitigation Impact 4:

**MM 4:** To ensure compliance with the construction-related noise criteria contained in Hayward Municipal Code Section 4-1.03.4, and to reduce the potential for annoyance at nearby land uses, the following measures should be incorporated into project on-site demolition/construction operations:

- All on-site project construction activities shall occur pursuant to the hours and days specified in Hayward General Plan Policy HAZ-8.21.
- All on-site project construction equipment/devices shall operate in compliance with Hayward Municipal Code Section 4-1.03.4(a) and 4-1.03.4(b).
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.

**Significance of Impact after Implementation of MM 4:** ***Less than Significant***

## Noise Impacts Associated with Project Off-Site Infrastructure Improvements

### Impact 5: Off-Site Infrastructure Improvement Noise Level Exposure

It is the understanding of BAC that the project proposes off-site infrastructure improvements in the form of installation of underground telecommunications line in the streets adjacent to the project site. During project infrastructure improvements, heavy equipment would be used for these activities, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Further, noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point.

As mentioned previously, Hayward General Plan Policy HAZ-8.21 establishes construction-related operations limitations for the purposes of reducing noise impacts at noise-sensitive uses. Specifically, Policy HAZ-8.21 limits the hours of construction (and demolition) activities to the less sensitive hours of the day (7:00 a.m. to 7:00 p.m. Monday through Saturday and 10:00 a.m. to 6:00 p.m. on Sundays and holidays). It is reasonably assumed for the purpose of this analysis that all off-site project infrastructure improvement activities would occur pursuant to General Plan Policy HAZ-8.21, and would therefore be in compliance with this policy.

Also previously discussed, Hayward Municipal Code Section 4-1.03.4 states that, unless otherwise permitted, the construction, alteration, or repair of structures and any landscaping activities, occurring between the hours of 10:00 a.m. and 6:00 p.m. on Sundays and holidays, and 7:00 a.m. and 7:00 p.m. on other days, shall be subject to the following:

> -No individual device or piece of equipment shall produce a noise level exceeding eighty-three (83) dBA at a distance of twenty-five (25) feet from the source. If the device or equipment is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close as possible to twenty-five (25) feet from the equipment.
>
> -The noise level at any point outside of the property plane shall not exceed eighty-six (86) dBA.

Noise from heavy equipment operations during off-site infrastructure improvements would add to the noise environment in the immediate vicinity of the work area. Noise levels for typical construction equipment were provided in Table 16 of **Impact 4**. Based on the data shown in Table 16, noise levels from typical construction equipment can range from 76 dB $L_{max}$ to 85 dB $L_{max}$ at a reference distance of 50 feet. When projected to a distance of 25 feet, those equipment noise levels are calculated to range from 82 dB $L_{max}$ to 91 dB $L_{max}$. As mentioned previously, not all of the construction activities identified in Table 16 would be required of this project.

In terms of determining the temporary noise increase due to project-related infrastructure improvements, an impact would occur if those activities would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. For this analysis, a noticeable increase in ambient noise levels is assumed to occur where noise levels increase by 5 dB or more over existing ambient noise levels at the nearest noise-sensitive uses (residential).

The nearest residential use (Receiver R9) maintains a separation of approximately 2,800 feet from the closest infrastructure improvement work area – assumed to be the intersection of Investment Boulevard and Production Avenue. Based on the reference noise levels presented in Table 16 of this report, construction equipment noise levels are projected to range from 41 dB $L_{max}$ to 51 dB $L_{max}$ (calculated mean of 46 dB $L_{max}$) at a distance of 2,800 feet. Table 1 of this report contains the results from the BAC long-term ambient noise survey at Site LT-2, which is believed to be representative of the existing ambient noise environment at Receiver R9. Using the average maximum ($L_{max}$) noise levels measured during required construction hours (pursuant to General Plan Policy HAZ-8.21), and the calculated mean of projected construction equipment maximum noise levels at Receiver R9, ambient plus project off-site infrastructure improvement noise level increases were calculated. According to the results from that exercise, project-generated increases in ambient daytime maximum noise levels at Receiver R9 are calculated to be less than 0.1 dB $L_{max}$. The calculated increases in ambient noise levels cited above would be well below the applied increase significance criterion of 5 dB.

Based on the analysis provided above, project off-site infrastructure improvement activities are not expected to result in generation of a substantial temporary or permanent increase in ambient noise levels at the closest existing noise-sensitive uses to the project area (residential). However, based on the reference sound level data for typical construction equipment provided in Table 16, off-site project infrastructure improvement activities could potentially exceed the noise level limits identified in Municipal Code Section 4-1.03.4(a) and/or 4-1.03.4(b). As a result, this impact is identified as being **potentially significant**.

Mitigation Impact 5:

**MM 5:** To ensure compliance with the construction-related noise criteria contained in Hayward Municipal Code Section 4-1.03.4, and to reduce the potential for annoyance at nearby land uses, the following measures should be incorporated into project off-site infrastructure improvement activities:

- All off-site infrastructure improvement operations/activities shall occur pursuant to the hours and days specified in Hayward General Plan Policy HAZ-8.21.
- All off-site infrastructure improvement equipment/devices shall operate in compliance with Hayward Municipal Code Section 4-1.03.4(a) and 4-1.03.4(b).
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used for off-site infrastructure improvements that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project off-site infrastructure improvement work area and road speed limits shall be established and enforced.

**Significance of Impact after Implementation of MM 5:** ***Less than Significant***

## Vibration Impacts Associated with On-Site Project Activities

### Impact 6: Demolition/Construction & On-Site Operations Vibration

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of those activities. The nearest off-site existing structures, identified as relatively newer engineered industrial buildings (not highly susceptible to damage by vibration), are located approximately 115 feet from where construction activities could occur within the project area.

Table 17 includes the range of vibration levels for equipment commonly used in general demolition/construction projects at a distance of 25 feet. The Table 17 data also include projected equipment vibration levels at a distance of 115 feet, representative of the closest identified off-site structures (industrial buildings).

**Table 17**
**Reference and Projected Demolition/Construction Equipment Vibration Source Amplitudes**

| | | Projected Maximum Vibration Level, VdB (rms)[1] |
|---|---|---|
| **Equipment** | **Reference Maximum Vibration Level at 25 feet, VdB (rms)** | **115 Feet (Industrial Buildings)** |
| Vibratory Roller | 94 | 62 |
| Hoe Ram | 87 | 62 |
| Large bulldozer | 87 | 62 |
| Loaded trucks | 86 | 61 |
| Jackhammer | 79 | 58 |
| Small bulldozer | 58 | <55 |

[1] RMS velocity in decibels (VdB) re 1 micro-inch/second.

*Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual and BAC calculations.*

As shown in Table 17, vibration levels generated from on-site demolition/construction activities are below the FTA threshold for damage to engineered structures (98 VdB) at a reference distance of 25 feet from those activities. In addition, the construction-related vibration levels shown in Table 17 are projected to be below the human threshold of perception (65 VdB) at the nearest off-site structure (industrial buildings across adjacent streets). Based on the analysis provided above, on-site demolition/construction within the project area is not expected to result in excessive groundborne vibration levels at nearby existing off-site structures.

Based on the results from short-term vibration measurements within the project area (Table 3 of this report), vibration levels ranged from 69 VdB to 76 VdB. After consideration of the setbacks proposed buildings would have from those measurement sites, vibration levels from existing sources would be substantially reduced at those locations. Based on the information above, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed industrial uses of the development.

Finally, it is the understanding of BAC that the project does not propose equipment that generates appreciable vibration. As a result, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at nearby existing off-site industrial uses.

Because vibration levels due to and upon the project are expected to be satisfactory relative to the applicable FTA vibration impact criteria for damage to structures and annoyance, this impact is considered to be ***less than significant***.

## Vibration Impacts Associated with Off-Site Project Infrastructure Improvements

### Impact 7: Off-Site Infrastructure Improvement Vibration

As mentioned previously, it is the understanding of BAC that the project proposes off-site infrastructure improvements in the form of installation of underground telecommunications line in the streets adjacent to the project site. During project off-site infrastructure improvements, heavy equipment would be used, which would generate localized vibration in the immediate vicinity of those activities. The nearest existing structures, identified as relatively newer engineered industrial buildings (not highly susceptible to damage by vibration), are located approximately 50 feet from where infrastructure improvement activities could occur (conservatively assumed to be the center of an adjacent street to the project area).

Vibration levels for typical construction equipment was provided in Table 17 of **Impact 6**. Based on the data shown in Table 17, vibration levels from typical construction equipment were shown to range from 58 VdB to 94 VdB at a reference distance of 25 feet. When projected to a distance of 50 feet (nearest industrial structures), those equipment vibration levels are calculated to range from 57 VdB to 76 VdB. As mentioned previously, it should be noted that not all of the equipment/activities identified in Table 17 would be required of this project component. Nonetheless, the projected off-site infrastructure improvement equipment vibration levels of 57 VdB to 76 VdB would be well below FTA thresholds for damage to engineered structures (98 VdB) at the nearest structures (industrial buildings). Based on the analysis provided above, off-site infrastructure improvement activities are not expected to result in excessive groundborne vibration levels at nearby existing off-site structures.

Because vibration levels due to project off-site infrastructure improvements are expected to be satisfactory relative to the applicable FTA vibration impact criteria, this impact is considered to be ***less than significant***.

## Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, the City of Hayward has policies that address existing/future conditions affecting the proposed project, which are discussed in the following section. Specifically, the following section includes an assessment of future Hayward Executive Airport and Oakland International Airport noise exposure at proposed industrial uses within the project area.

### Issue 1: Airport Noise at Proposed Industrial Uses

Pursuant to Hayward General Plan Policy HAZ-8.15, the city shall require project applicants to evaluate potential airport noise impacts if the project is located within the 60 dB CNEL contour line of the Hayward Executive Airport or Oakland International Airport.

The project site is located approximately 2 miles to the south of Hayward Executive Airport. In addition, Oakland International Airport is located approximately 7.5 miles north of the project area. According to Figure 3-2 of the Hayward Executive Airport (HWD) Land Use Compatibility Plan (provided as Appendix E-1 of this report), the project area is geographically located outside of the Oakland International Airport (OAK) influence area but located within the HWD influence area. In addition, Figure 3-3 of the Hayward Executive Airport (HWD) Land Use Compatibility Plan, provided as Appendix E-2 of this report, shows that the project area is located outside of the 60 dB CNEL noise contours for both OAK and HWD airports.

Based on the information above, and after consideration of the exterior to interior noise level reduction achieved within standard building construction (at least 25 dB with windows closed and approximately 15 dB with windows open), noise generated from normal aircraft operations at the Hayward Executive Airport and Oakland International Airport is not predicted to exceed the applicable Hayward General Plan exterior or interior noise level criteria at the proposed industrial uses of the development. As a result, this impact is identified as being ***less than significant***.

This concludes BAC's noise and vibration assessment for the SVY03 in Hayward, California. Please contact BAC at (530) 537-23285 or dariog@bacnoise.com if you have any comments or questions regarding this report.

## Appendix A
# Acoustical Terminology

| | |
|---|---|
| **Acoustics** | The science of sound. |
| **Ambient Noise** | The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study. |
| **Attenuation** | The reduction of an acoustic signal. |
| **A-Weighting** | A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response. |
| **Decibel or dB** | Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. |
| **CNEL** | Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging. |
| **Frequency** | The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz. |
| **IIC** | Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC. |
| **$L_{dn}$** | Day/Night Average Sound Level. Similar to CNEL but with no evening weighting. |
| **$L_{eq}$** | Equivalent or energy-averaged sound level. |
| **$L_{max}$** | The highest root-mean-square (RMS) sound level measured over a given period of time. |
| **Loudness** | A subjective term for the sensation of the magnitude of sound. |
| **Masking** | The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound. |
| **Noise** | Unwanted sound. |
| **Peak Noise** | The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level. |
| **$RT_{60}$** | The time it takes reverberant sound to decay by 60 dB once the source has been removed. |
| **STC** | Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC. |

***Legend***

A: LT-1: Facing southeast towards Investment Blvd
B: LT-2: Facing south along Industrial Blvd
C: ST-1: Facing north towards Eden Landing Rd
D: ST-2: Facing northeast towards Production Ave

○ Noise monitoring equipment

SVY03A Data Center Campus
Hayward, California

Photographs of Noise & Vibration Surveys

Appendix B-1

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***Legend***

A: ST-3: Facing south towards Investment Blvd
B: ST-4: Facing south towards Investment Blvd

○ Noise monitoring equipment

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Hayward, California

Photographs of Noise & Vibration Surveys

Appendix B-2

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# Appendix C-1
# Long-Term Ambient Noise Monitoring Results - Site 1
# SVY03A Data Center Campus - Hayward, California
# Thursday, August 10, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 52 | 67 | 49 | 47 |
| 1:00 AM | 50 | 75 | 46 | 45 |
| 2:00 AM | 49 | 67 | 46 | 45 |
| 3:00 AM | 50 | 71 | 45 | 43 |
| 4:00 AM | 52 | 74 | 46 | 44 |
| 5:00 AM | 54 | 69 | 51 | 47 |
| 6:00 AM | 60 | 83 | 56 | 51 |
| 7:00 AM | 63 | 77 | 58 | 50 |
| 8:00 AM | 63 | 87 | 51 | 46 |
| 9:00 AM | 57 | 70 | 49 | 45 |
| 10:00 AM | 60 | 77 | 49 | 45 |
| 11:00 AM | 73 | 88 | 53 | 48 |
| 12:00 PM | 57 | 78 | 54 | 50 |
| 1:00 PM | 58 | 72 | 55 | 53 |
| 2:00 PM | 58 | 75 | 57 | 55 |
| 3:00 PM | 59 | 70 | 58 | 55 |
| 4:00 PM | 59 | 70 | 59 | 57 |
| 5:00 PM | 60 | 77 | 59 | 57 |
| 6:00 PM | 59 | 74 | 58 | 57 |
| 7:00 PM | 59 | 69 | 59 | 57 |
| 8:00 PM | 58 | 75 | 58 | 56 |
| 9:00 PM | 60 | 73 | 59 | 57 |
| 10:00 PM | 58 | 67 | 56 | 54 |
| 11:00 PM | 55 | 71 | 54 | 52 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 73 | 57 | 63 | 60 | 49 | 55 |
| Lmax (Maximum) | 88 | 69 | 75 | 83 | 67 | 72 |
| L50 (Median) | 59 | 49 | 56 | 56 | 45 | 50 |
| L90 (Background) | 57 | 45 | 53 | 54 | 43 | 48 |

| | |
|---|---|
| Computed DNL (dB) | 64 |
| % Daytime Energy | 92% |
| % Nighttime Energy | 8% |

| | |
|---|---|
| GPS Coordinates | 37°37'31.59"N |
| | 122°7'11.67"W |

# Appendix C-2
# Long-Term Ambient Noise Monitoring Results - Site 1
# SVY03A Data Center Campus - Hayward, California
# Friday, August 11, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 57 | 81 | 54 | 52 |
| 1:00 AM | 54 | 76 | 53 | 51 |
| 2:00 AM | 53 | 67 | 53 | 51 |
| 3:00 AM | 54 | 69 | 53 | 51 |
| 4:00 AM | 58 | 74 | 54 | 52 |
| 5:00 AM | 57 | 78 | 54 | 51 |
| 6:00 AM | 56 | 73 | 54 | 51 |
| 7:00 AM | 57 | 75 | 55 | 53 |
| 8:00 AM | 56 | 73 | 53 | 50 |
| 9:00 AM | 58 | 77 | 55 | 51 |
| 10:00 AM | 57 | 70 | 53 | 51 |
| 11:00 AM | 56 | 73 | 53 | 51 |
| 12:00 PM | 58 | 79 | 55 | 52 |
| 1:00 PM | 58 | 74 | 56 | 53 |
| 2:00 PM | 59 | 76 | 58 | 57 |
| 3:00 PM | 60 | 79 | 58 | 56 |
| 4:00 PM | 60 | 74 | 59 | 57 |
| 5:00 PM | 62 | 75 | 61 | 59 |
| 6:00 PM | 61 | 85 | 60 | 58 |
| 7:00 PM | 60 | 74 | 59 | 57 |
| 8:00 PM | 58 | 75 | 57 | 55 |
| 9:00 PM | 57 | 69 | 56 | 54 |
| 10:00 PM | 57 | 68 | 56 | 54 |
| 11:00 PM | 56 | 71 | 55 | 53 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 62 | 56 | 59 | 58 | 53 | 56 |
| Lmax (Maximum) | 85 | 69 | 75 | 81 | 67 | 73 |
| L50 (Median) | 61 | 53 | 56 | 56 | 53 | 54 |
| L90 (Background) | 59 | 50 | 54 | 54 | 51 | 52 |

| | |
|---|---|
| Computed DNL (dB) | 63 |
| % Daytime Energy | 76% |
| % Nighttime Energy | 24% |

| | |
|---|---|
| GPS Coordinates | 37°37'31.59"N<br>122°7'11.67"W |

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# Appendix C-3
# Long-Term Ambient Noise Monitoring Results - Site 1
## SVY03A Data Center Campus - Hayward, California
## Saturday, August 12, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 54 | 70 | 51 | 49 |
| 1:00 AM | 53 | 77 | 49 | 47 |
| 2:00 AM | 50 | 70 | 47 | 46 |
| 3:00 AM | 48 | 64 | 48 | 46 |
| 4:00 AM | 53 | 77 | 48 | 46 |
| 5:00 AM | 52 | 69 | 48 | 47 |
| 6:00 AM | 53 | 67 | 50 | 48 |
| 7:00 AM | 54 | 72 | 49 | 45 |
| 8:00 AM | 53 | 74 | 46 | 45 |
| 9:00 AM | 56 | 75 | 53 | 50 |
| 10:00 AM | 56 | 67 | 54 | 52 |
| 11:00 AM | 55 | 69 | 53 | 50 |
| 12:00 PM | 55 | 69 | 53 | 51 |
| 1:00 PM | 57 | 72 | 56 | 54 |
| 2:00 PM | 57 | 68 | 56 | 54 |
| 3:00 PM | 57 | 69 | 56 | 55 |
| 4:00 PM | 59 | 70 | 58 | 56 |
| 5:00 PM | 61 | 82 | 59 | 57 |
| 6:00 PM | 59 | 73 | 59 | 57 |
| 7:00 PM | 60 | 70 | 60 | 58 |
| 8:00 PM | 59 | 75 | 59 | 56 |
| 9:00 PM | 58 | 67 | 58 | 56 |
| 10:00 PM | 57 | 65 | 57 | 55 |
| 11:00 PM | 54 | 67 | 52 | 51 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 61 | 53 | 58 | 57 | 48 | 53 |
| Lmax (Maximum) | 82 | 67 | 71 | 77 | 64 | 69 |
| L50 (Median) | 60 | 46 | 55 | 57 | 47 | 50 |
| L90 (Background) | 58 | 45 | 53 | 55 | 46 | 48 |

| | |
|---|---|
| Computed DNL (dB) | 60 |
| % Daytime Energy | 82% |
| % Nighttime Energy | 18% |

| | |
|---|---|
| GPS Coordinates | 37°37'31.59"N |
| | 122°7'11.67"W |

# Appendix C-4
# Long-Term Ambient Noise Monitoring Results - Site 1
# SVY03A Data Center Campus - Hayward, California
# Sunday, August 13, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 53 | 63 | 52 | 49 |
| 1:00 AM | 52 | 75 | 49 | 48 |
| 2:00 AM | 49 | 68 | 48 | 46 |
| 3:00 AM | 50 | 70 | 49 | 47 |
| 4:00 AM | 49 | 56 | 49 | 48 |
| 5:00 AM | 51 | 66 | 49 | 47 |
| 6:00 AM | 53 | 63 | 50 | 48 |
| 7:00 AM | 54 | 70 | 50 | 48 |
| 8:00 AM | 53 | 69 | 49 | 47 |
| 9:00 AM | 52 | 68 | 49 | 47 |
| 10:00 AM | 54 | 71 | 50 | 48 |
| 11:00 AM | 54 | 72 | 51 | 49 |
| 12:00 PM | 52 | 65 | 50 | 49 |
| 1:00 PM | 55 | 73 | 53 | 51 |
| 2:00 PM | 57 | 69 | 56 | 55 |
| 3:00 PM | 59 | 76 | 58 | 56 |
| 4:00 PM | 59 | 69 | 59 | 58 |
| 5:00 PM | 59 | 67 | 58 | 55 |
| 6:00 PM | 59 | 72 | 58 | 56 |
| 7:00 PM | 58 | 66 | 58 | 53 |
| 8:00 PM | 58 | 69 | 57 | 53 |
| 9:00 PM | 56 | 70 | 55 | 50 |
| 10:00 PM | 53 | 67 | 51 | 46 |
| 11:00 PM | 54 | 74 | 51 | 48 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 59 | 52 | 57 | 54 | 49 | 52 |
| Lmax (Maximum) | 76 | 65 | 70 | 75 | 56 | 67 |
| L50 (Median) | 59 | 49 | 54 | 52 | 48 | 50 |
| L90 (Background) | 58 | 47 | 52 | 49 | 46 | 47 |

| | |
|---|---|
| Computed DNL (dB) | 59 |
| % Daytime Energy | 83% |
| % Nighttime Energy | 17% |

| | |
|---|---|
| GPS Coordinates | 37°37'31.59"N<br>122°7'11.67"W |

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# Appendix C-5
# Long-Term Ambient Noise Monitoring Results - Site 2
# SVY03A Data Center Campus - Hayward, California
# Thursday, August 10, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 63 | 86 | 55 | 49 |
| 1:00 AM | 61 | 80 | 49 | 43 |
| 2:00 AM | 61 | 77 | 49 | 44 |
| 3:00 AM | 64 | 78 | 53 | 44 |
| 4:00 AM | 65 | 81 | 57 | 49 |
| 5:00 AM | 69 | 80 | 66 | 54 |
| 6:00 AM | 72 | 85 | 70 | 59 |
| 7:00 AM | 72 | 88 | 71 | 64 |
| 8:00 AM | 73 | 98 | 71 | 63 |
| 9:00 AM | 71 | 84 | 69 | 59 |
| 10:00 AM | 70 | 89 | 68 | 57 |
| 11:00 AM | 70 | 82 | 69 | 57 |
| 12:00 PM | 70 | 81 | 68 | 58 |
| 1:00 PM | 71 | 89 | 69 | 61 |
| 2:00 PM | 72 | 88 | 70 | 64 |
| 3:00 PM | 71 | 86 | 70 | 64 |
| 4:00 PM | 72 | 83 | 71 | 66 |
| 5:00 PM | 72 | 83 | 70 | 65 |
| 6:00 PM | 72 | 96 | 69 | 63 |
| 7:00 PM | 71 | 93 | 68 | 63 |
| 8:00 PM | 68 | 80 | 66 | 61 |
| 9:00 PM | 67 | 78 | 65 | 61 |
| 10:00 PM | 67 | 87 | 63 | 58 |
| 11:00 PM | 64 | 81 | 59 | 54 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 73 | 67 | 71 | 72 | 61 | 66 |
| Lmax (Maximum) | 98 | 78 | 86 | 87 | 77 | 82 |
| L50 (Median) | 71 | 65 | 69 | 70 | 49 | 58 |
| L90 (Background) | 66 | 57 | 62 | 59 | 43 | 50 |

| | |
|---|---|
| Computed DNL (dB) | 74 |
| % Daytime Energy | 83% |
| % Nighttime Energy | 17% |

| | |
|---|---|
| GPS Coordinates | 37°37'48.47"N<br>122°6'32.49"W |

# Appendix C-6
# Long-Term Ambient Noise Monitoring Results - Site 2
# SVY03A Data Center Campus - Hayward, California
# Friday, August 11, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 64 | 83 | 58 | 52 |
| 1:00 AM | 61 | 76 | 56 | 50 |
| 2:00 AM | 63 | 82 | 57 | 51 |
| 3:00 AM | 63 | 82 | 55 | 50 |
| 4:00 AM | 66 | 84 | 60 | 51 |
| 5:00 AM | 69 | 81 | 65 | 57 |
| 6:00 AM | 72 | 92 | 69 | 59 |
| 7:00 AM | 73 | 100 | 70 | 62 |
| 8:00 AM | 72 | 80 | 70 | 63 |
| 9:00 AM | 73 | 98 | 70 | 63 |
| 10:00 AM | 73 | 101 | 68 | 59 |
| 11:00 AM | 71 | 91 | 68 | 59 |
| 12:00 PM | 71 | 86 | 69 | 60 |
| 1:00 PM | 71 | 90 | 69 | 61 |
| 2:00 PM | 71 | 86 | 70 | 64 |
| 3:00 PM | 72 | 89 | 70 | 65 |
| 4:00 PM | 73 | 101 | 70 | 65 |
| 5:00 PM | 72 | 86 | 71 | 66 |
| 6:00 PM | 74 | 101 | 69 | 64 |
| 7:00 PM | 71 | 95 | 68 | 63 |
| 8:00 PM | 68 | 79 | 65 | 60 |
| 9:00 PM | 67 | 90 | 64 | 59 |
| 10:00 PM | 67 | 85 | 63 | 58 |
| 11:00 PM | 65 | 85 | 60 | 56 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 74 | 67 | 72 | 72 | 61 | 67 |
| Lmax (Maximum) | 101 | 79 | 91 | 92 | 76 | 83 |
| L50 (Median) | 71 | 64 | 69 | 69 | 55 | 60 |
| L90 (Background) | 66 | 59 | 62 | 59 | 50 | 54 |

| | |
|---|---|
| Computed DNL (dB) | 74 |
| % Daytime Energy | 84% |
| % Nighttime Energy | 16% |

| | |
|---|---|
| GPS Coordinates | 37°37'48.47"N<br>122°6'32.49"W |

# Appendix C-7
# Long-Term Ambient Noise Monitoring Results - Site 2
# SVY03A Data Center Campus - Hayward, California
# Saturday, August 12, 2023

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 63 | 82 | 56 | 50 |
| 1:00 AM | 62 | 78 | 53 | 46 |
| 2:00 AM | 61 | 77 | 51 | 45 |
| 3:00 AM | 62 | 79 | 52 | 45 |
| 4:00 AM | 63 | 80 | 54 | 48 |
| 5:00 AM | 64 | 78 | 56 | 51 |
| 6:00 AM | 66 | 84 | 60 | 53 |
| 7:00 AM | 68 | 93 | 63 | 54 |
| 8:00 AM | 68 | 89 | 65 | 54 |
| 9:00 AM | 69 | 82 | 66 | 56 |
| 10:00 AM | 69 | 80 | 66 | 57 |
| 11:00 AM | 71 | 99 | 66 | 58 |
| 12:00 PM | 68 | 81 | 66 | 58 |
| 1:00 PM | 69 | 85 | 66 | 60 |
| 2:00 PM | 69 | 87 | 67 | 61 |
| 3:00 PM | 69 | 84 | 66 | 61 |
| 4:00 PM | 71 | 98 | 67 | 62 |
| 5:00 PM | 69 | 83 | 67 | 62 |
| 6:00 PM | 69 | 79 | 67 | 62 |
| 7:00 PM | 69 | 88 | 66 | 62 |
| 8:00 PM | 67 | 88 | 64 | 60 |
| 9:00 PM | 66 | 80 | 63 | 59 |
| 10:00 PM | 65 | 78 | 62 | 58 |
| 11:00 PM | 63 | 79 | 59 | 54 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 71 | 66 | 69 | 66 | 61 | 64 |
| Lmax (Maximum) | 99 | 79 | 86 | 84 | 77 | 79 |
| L50 (Median) | 67 | 63 | 66 | 62 | 51 | 56 |
| L90 (Background) | 62 | 54 | 59 | 58 | 45 | 50 |

| | |
|---|---|
| Computed DNL (dB) | 71 |
| % Daytime Energy | 85% |
| % Nighttime Energy | 15% |

| | |
|---|---|
| GPS Coordinates | 37°37'48.47"N<br>122°6'32.49"W |

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# Appendix C-8
## Long-Term Ambient Noise Monitoring Results - Site 2
## SVY03A Data Center Campus - Hayward, California
## Sunday, August 13, 2023

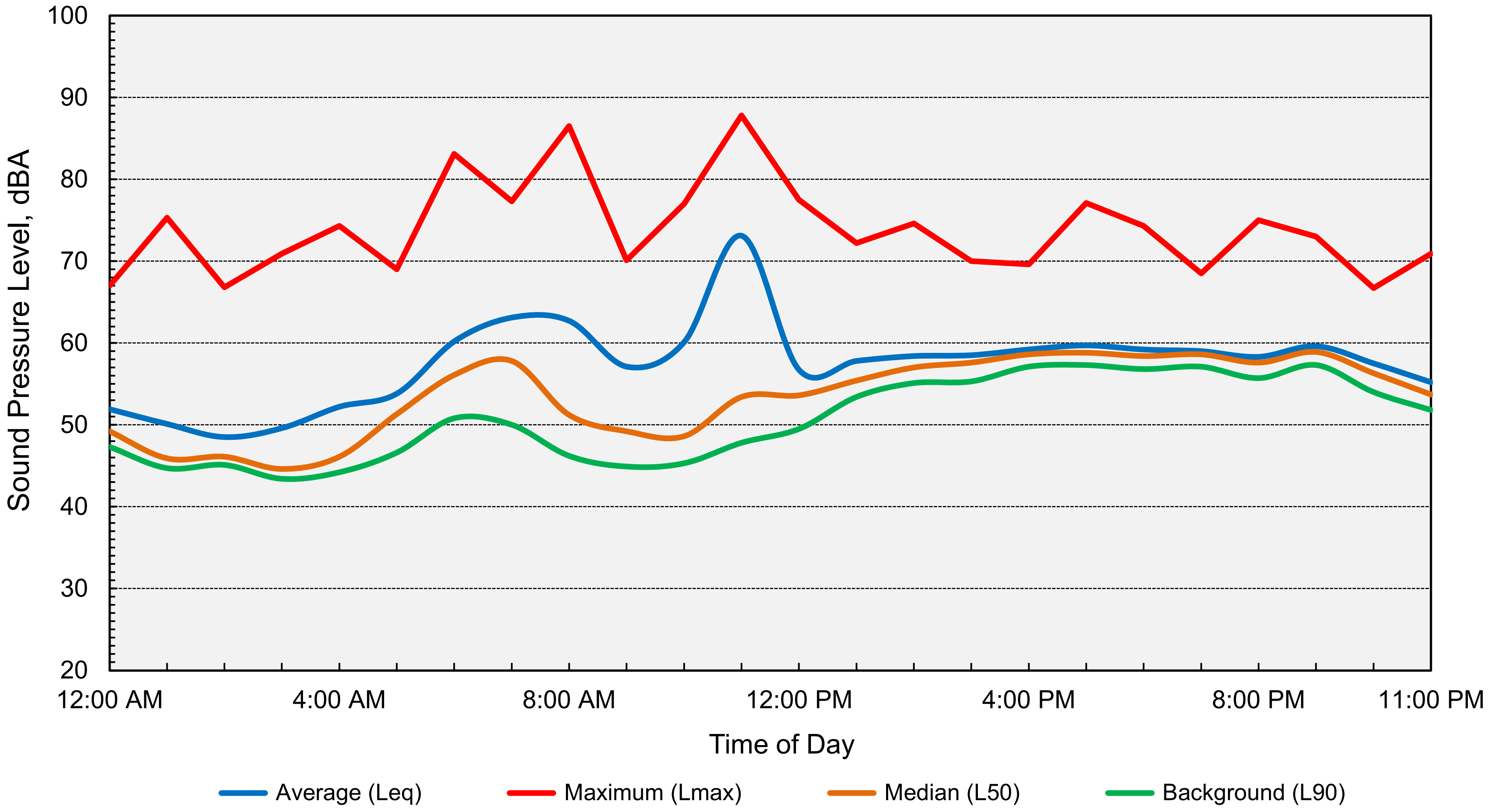
| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 12:00 AM | 63 | 83 | 57 | 51 |
| 1:00 AM | 60 | 79 | 54 | 48 |
| 2:00 AM | 61 | 88 | 52 | 45 |
| 3:00 AM | 59 | 79 | 52 | 46 |
| 4:00 AM | 60 | 77 | 51 | 45 |
| 5:00 AM | 61 | 79 | 52 | 46 |
| 6:00 AM | 64 | 79 | 57 | 50 |
| 7:00 AM | 65 | 78 | 60 | 53 |
| 8:00 AM | 66 | 78 | 61 | 53 |
| 9:00 AM | 67 | 81 | 63 | 54 |
| 10:00 AM | 68 | 85 | 65 | 55 |
| 11:00 AM | 68 | 85 | 64 | 55 |
| 12:00 PM | 67 | 81 | 63 | 54 |
| 1:00 PM | 67 | 77 | 64 | 58 |
| 2:00 PM | 68 | 89 | 65 | 59 |
| 3:00 PM | 68 | 83 | 65 | 61 |
| 4:00 PM | 68 | 85 | 66 | 62 |
| 5:00 PM | 68 | 81 | 66 | 61 |
| 6:00 PM | 68 | 88 | 66 | 61 |
| 7:00 PM | 67 | 78 | 64 | 57 |
| 8:00 PM | 66 | 80 | 63 | 58 |
| 9:00 PM | 65 | 89 | 61 | 56 |
| 10:00 PM | 64 | 87 | 59 | 54 |
| 11:00 PM | 61 | 79 | 57 | 52 |

| | Statistical Summary | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 68 | 65 | 67 | 64 | 59 | 62 |
| Lmax (Maximum) | 89 | 77 | 82 | 88 | 77 | 81 |
| L50 (Median) | 66 | 60 | 64 | 59 | 51 | 54 |
| L90 (Background) | 62 | 53 | 57 | 54 | 45 | 49 |

| | |
|---|---|
| Computed DNL (dB) | 70 |
| % Daytime Energy | 85% |
| % Nighttime Energy | 15% |

| | |
|---|---|
| GPS Coordinates | 37°37'48.47"N<br>122°6'32.49"W |

# Appendix D-1
## Long-Term Ambient Noise Monitoring Results - Site 1
## SVY03A Data Center Campus - Hayward, California
## Thursday, August 10, 2023



**Computed DNL = 64 dB**

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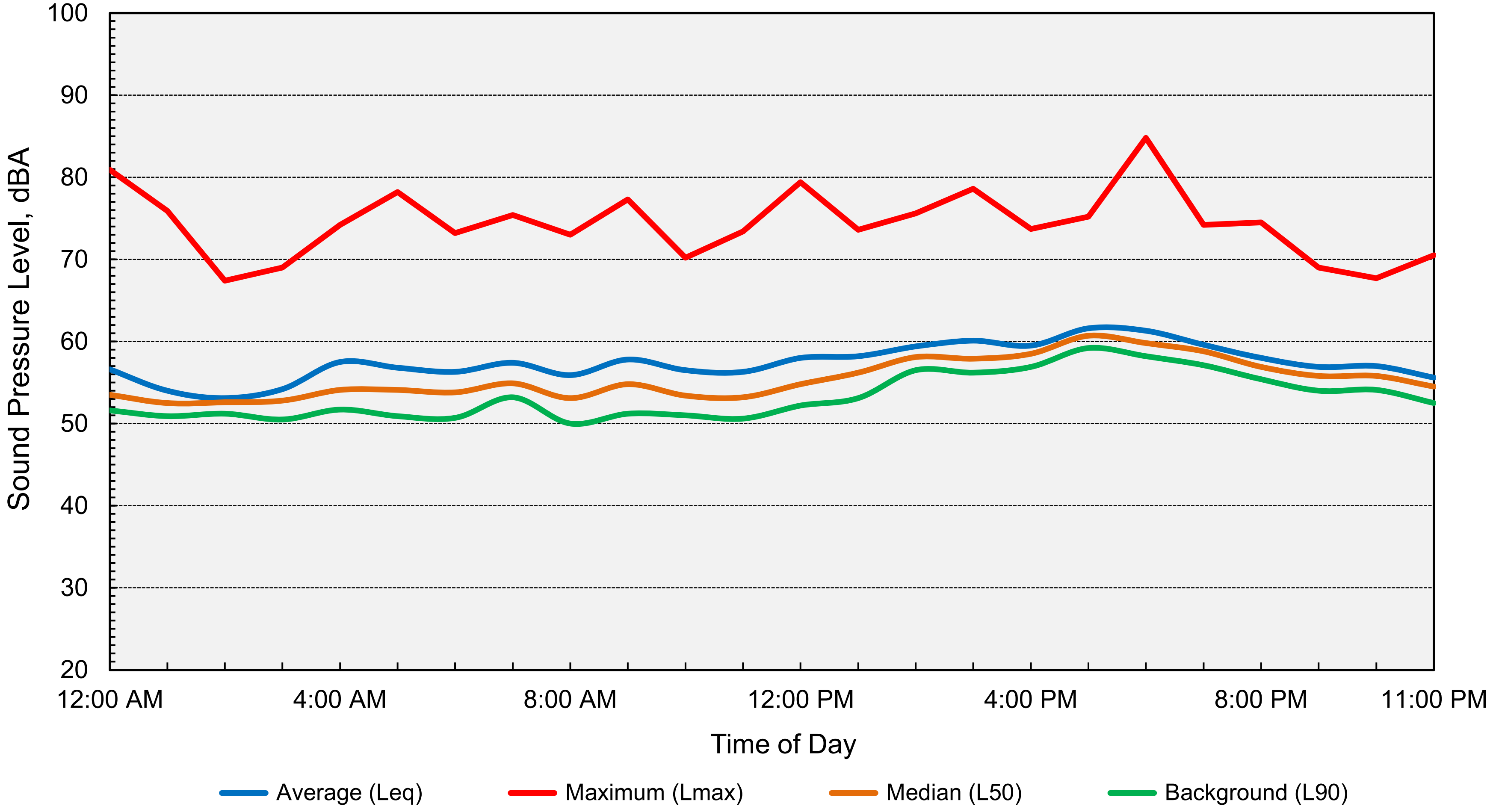
# Appendix D-2
## Long-Term Ambient Noise Monitoring Results - Site 1
## SVY03A Data Center Campus - Hayward, California
## Friday, August 11, 2023



**Computed DNL = 63 dB**

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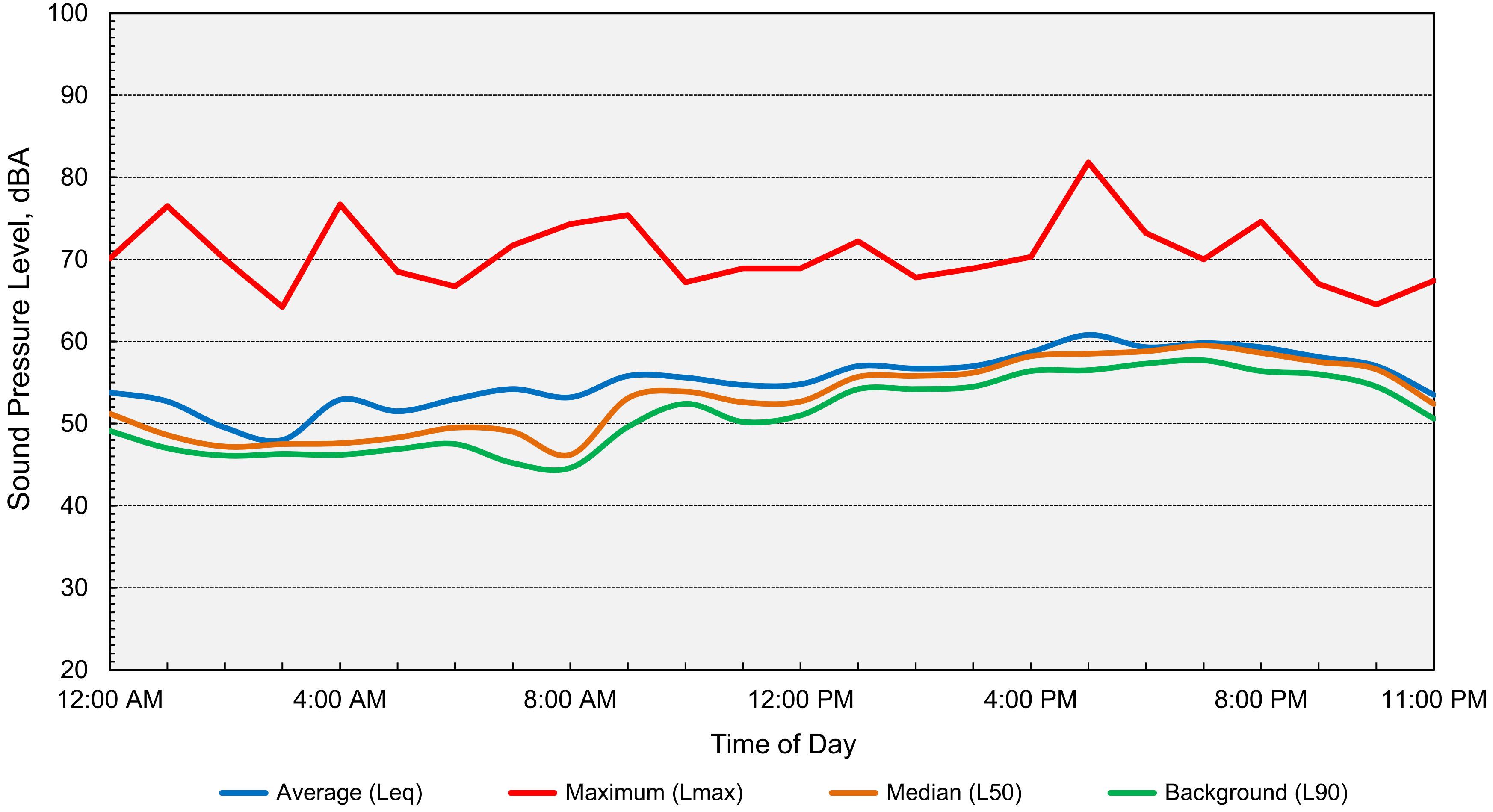
# Appendix D-3
# Long-Term Ambient Noise Monitoring Results - Site 1
# SVY03A Data Center Campus - Hayward, California
# Saturday, August 12, 2023



**Computed DNL = 60 dB**

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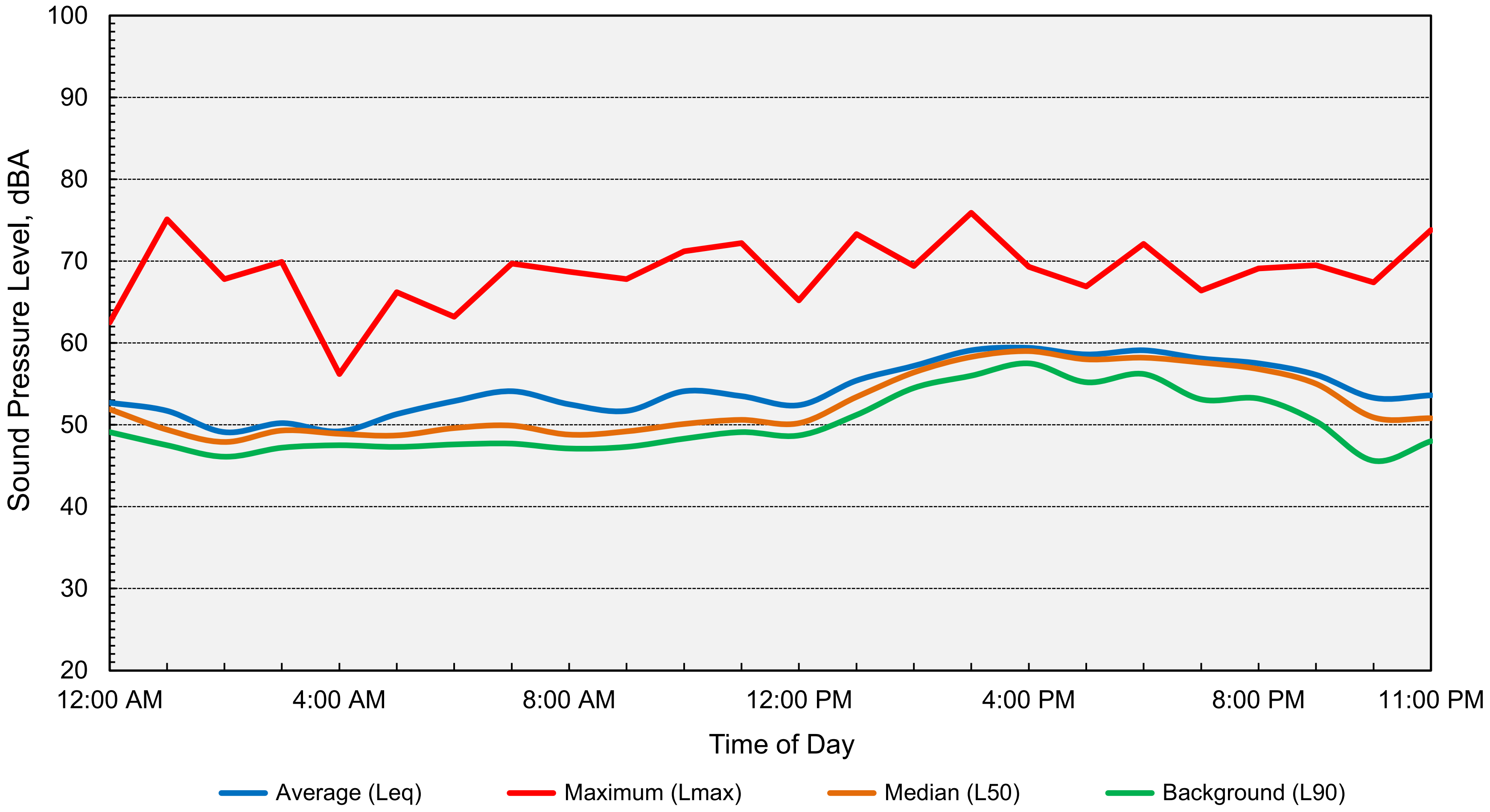
## Appendix D-4
## Long-Term Ambient Noise Monitoring Results - Site 1
## SVY03A Data Center Campus - Hayward, California
## Sunday, August 13, 2023



**Computed DNL = 59 dB**

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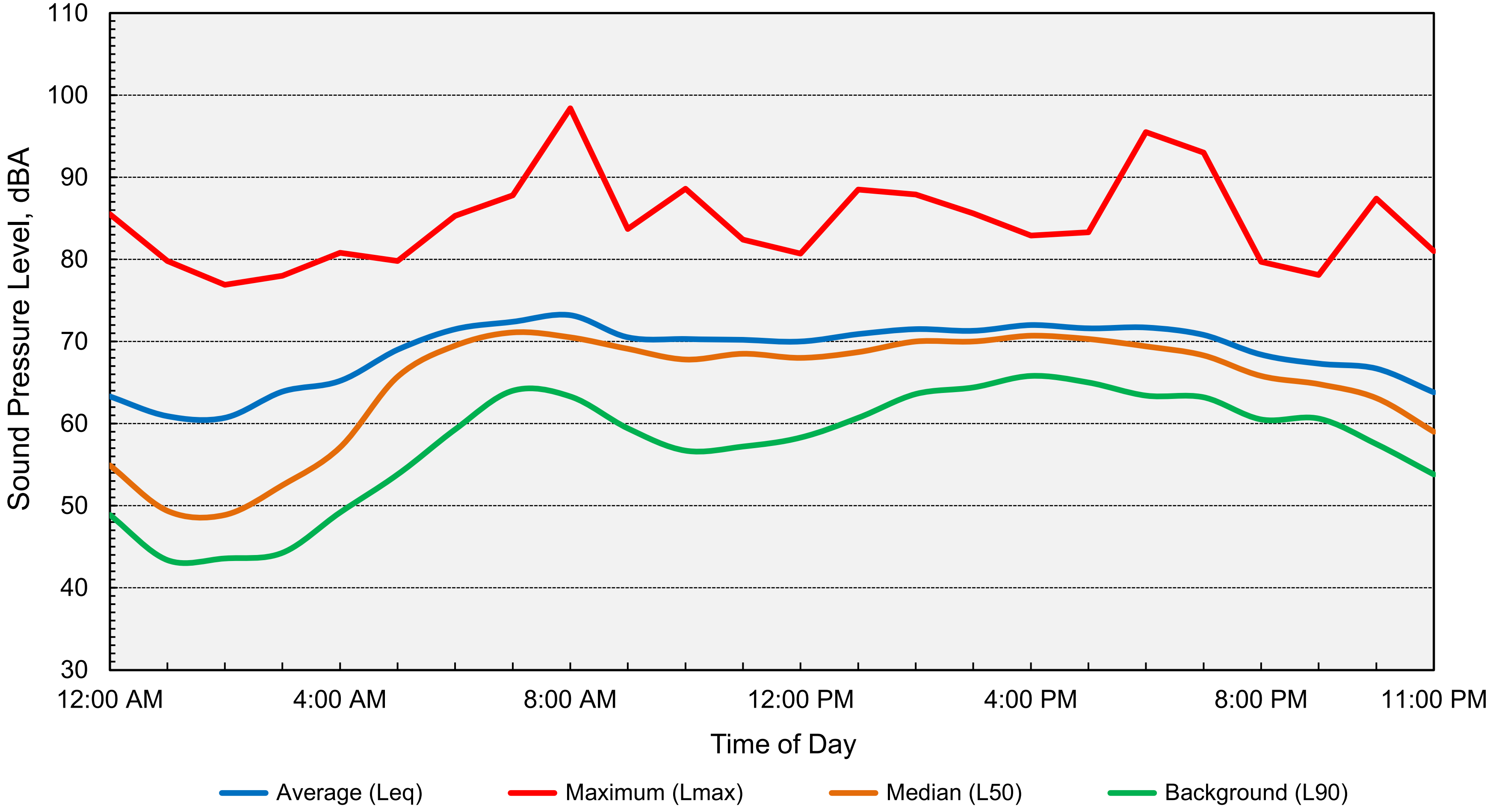
# Appendix D-5
## Long-Term Ambient Noise Monitoring Results - Site 2
## SVY03A Data Center Campus - Hayward, California
## Thursday, August 10, 2023



**Computed DNL = 74 dB**

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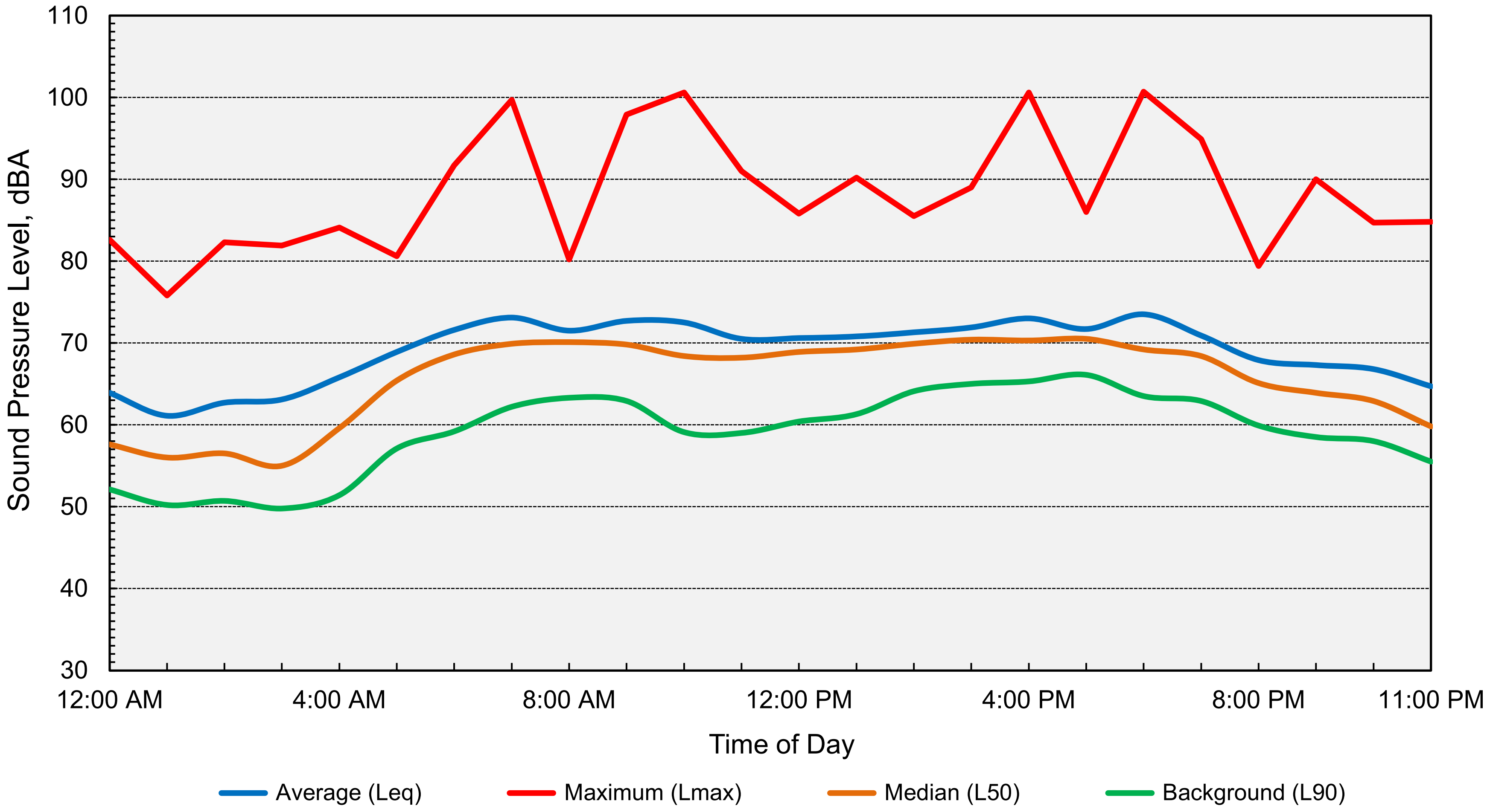
## Appendix D-6
## Long-Term Ambient Noise Monitoring Results - Site 2
## SVY03A Data Center Campus - Hayward, California
## Friday, August 11, 2023



**Computed DNL = 74 dB**

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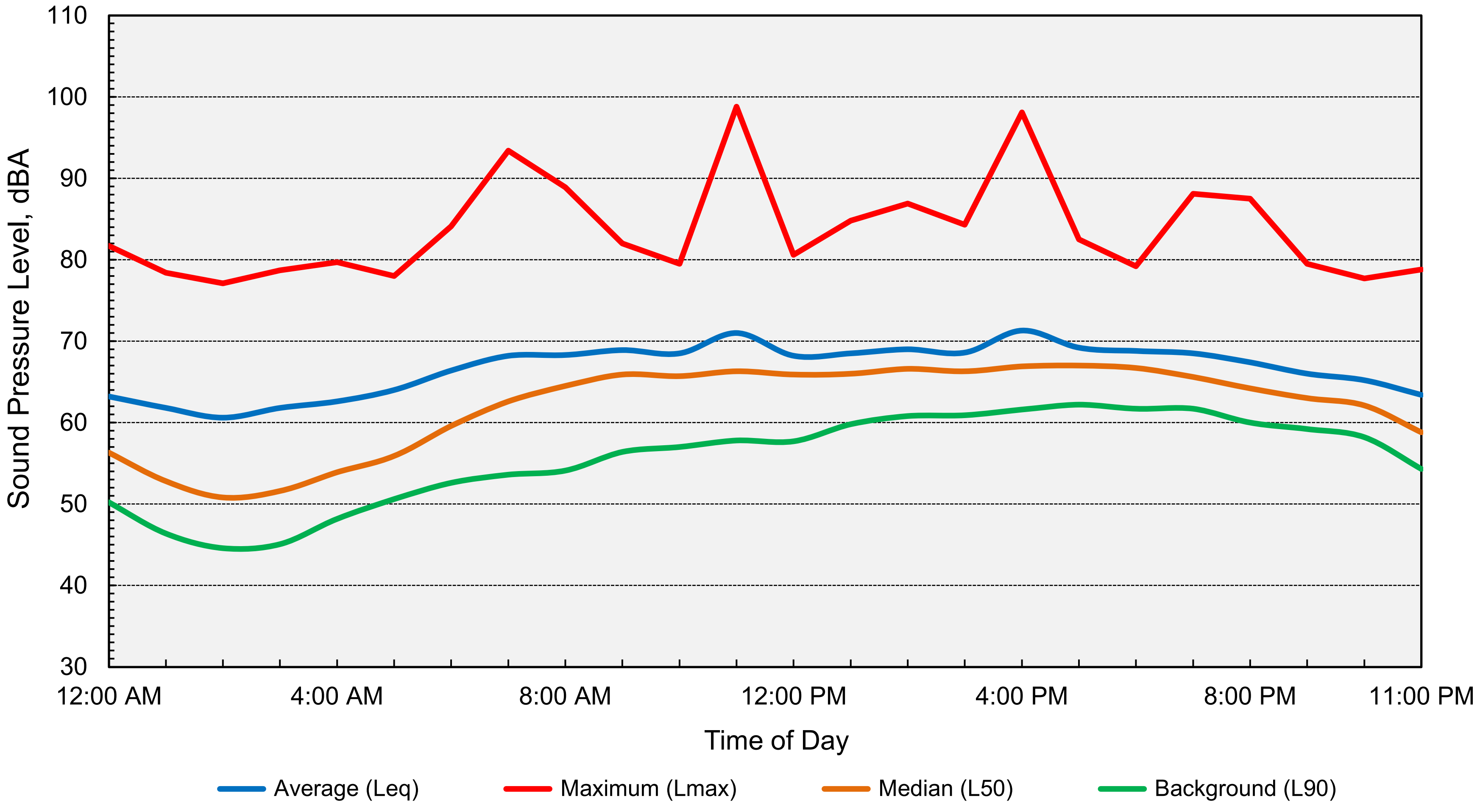
# Appendix D-7
## Long-Term Ambient Noise Monitoring Results - Site 2
## SVY03A Data Center Campus - Hayward, California
## Saturday, August 12, 2023



**Computed DNL = 71 dB**

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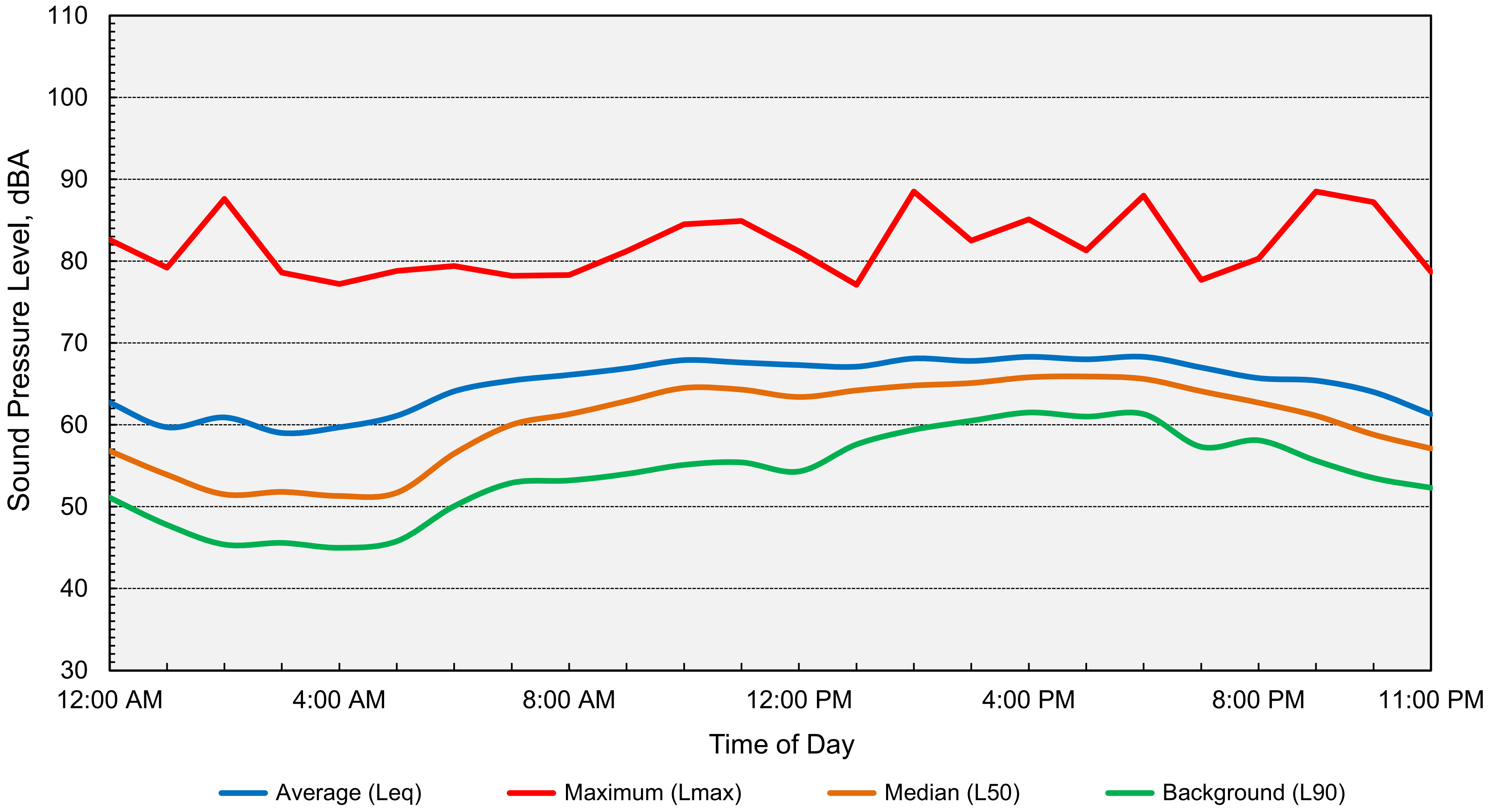
# Appendix D-8
# Long-Term Ambient Noise Monitoring Results - Site 2
# SVY03A Data Center Campus - Hayward, California
# Sunday, August 13, 2023



**Computed DNL = 70 dB**

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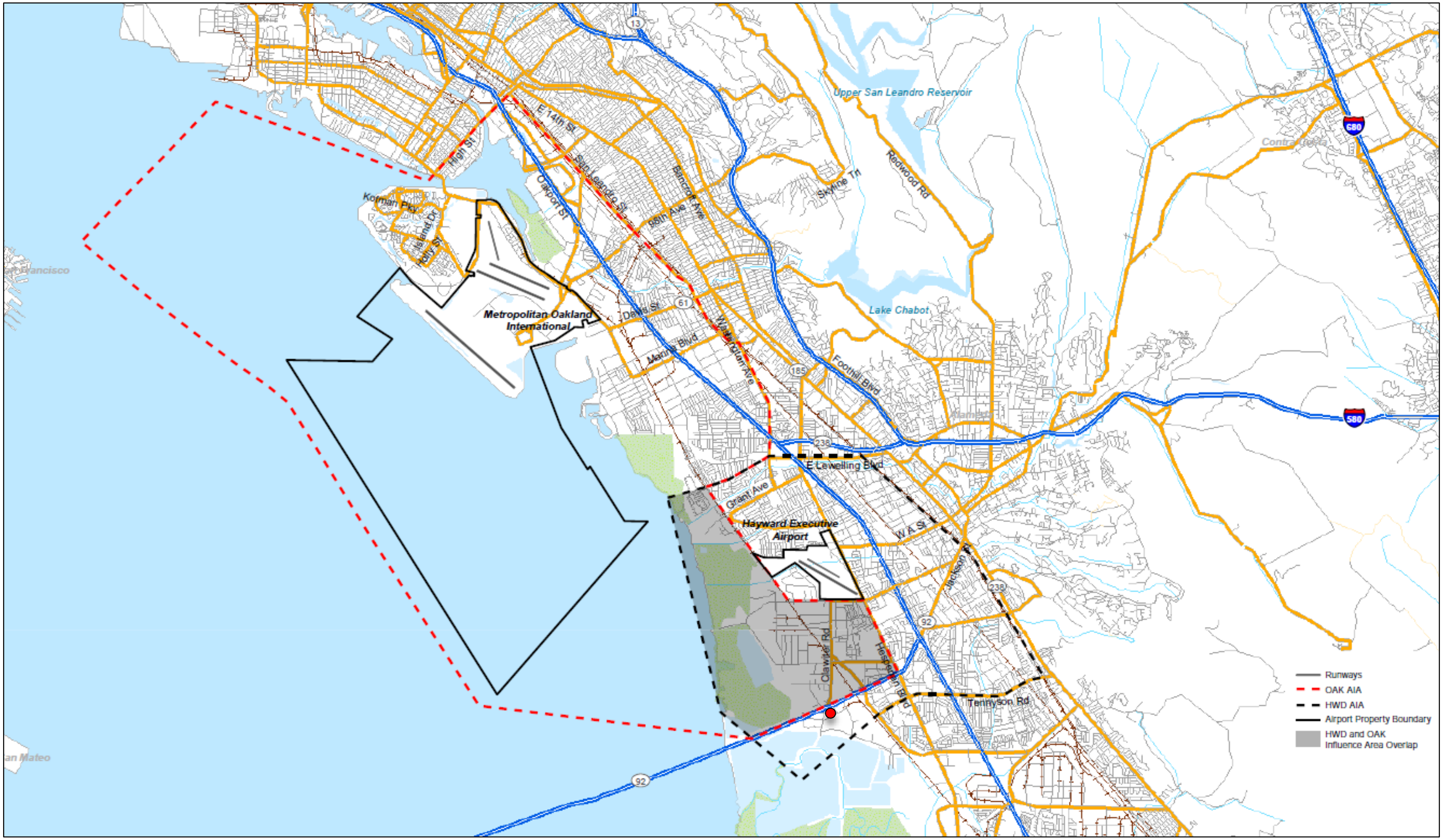

***Legend***

● Project Area

N

Scale (miles)

0 1.5

## SVY03A Data Center Campus

Hayward, California

Hayward Executive Airport & Oakland International Airport Influence Area Overlap

## Appendix E-1

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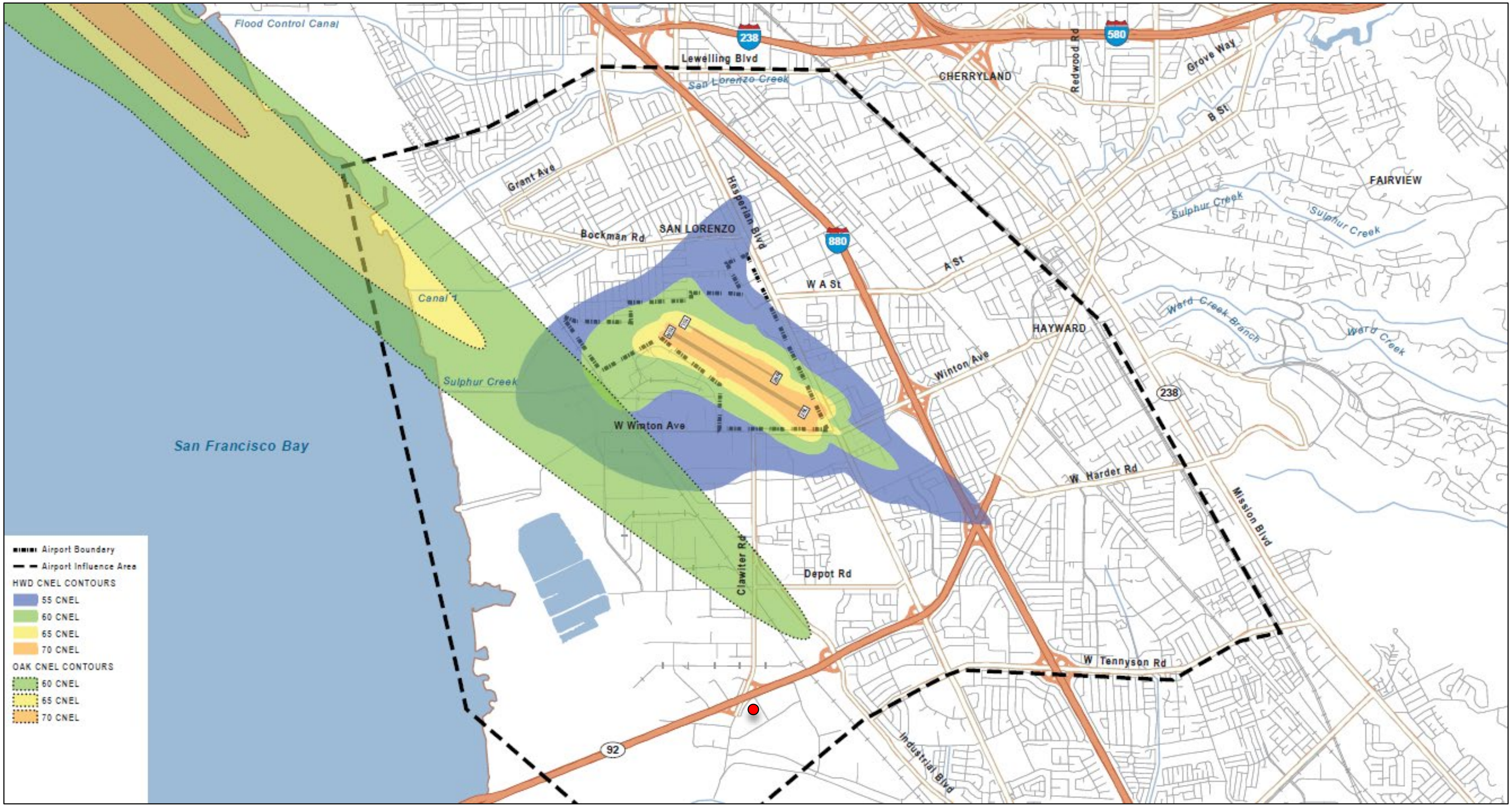

***Legend***

● Project Area

N

Scale (miles)

0 0.5

SVY03A Data Center Campus
Hayward, California

Hayward Executive Airport & Oakland International Airport Noise Contours

Appendix E-2

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# APPENDIX H

## Transportation Impact Assessment

Kimley»Horn

# MEMORANDUM

To: Scott Galati
DayZen, LLC

From: Mike Mowery, P.E. and Elizabeth Chau, P.E.
Kimley-Horn and Associates, Inc.

Date: September 5, 2023

Subject: STACK Hayward Data Center Transportation Impact Analysis

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Stack Infrastructure is proposing to demolish the existing nine (9) buildings and construct a data center within the Eden Landing Business Park in Hayward, California (City). This memorandum summarizes the assumptions, methodology, and results of a transportation impact analysis (TIA) conducted for the Project to identify any potential traffic operational implications.

## Project Description

The Project is located at 3401-3475 Investment Boulevard in Hayward, California. The project consists of redeveloping the existing 205,556 square feet of industrial uses and construct a 328,036 square feet of data center use. Note that proposed use consists of 310,600 square foot of data center with two supporting office buildings (14,500 square feet and 2,936 square feet). A site plan, dated August 2023, for the Project is included as **Attachment A**.

Similar to other data centers, the data center will be operational 24-hours, 7-days a week. **Table 1** summarizes the anticipated headcount of personnel and visitors that would be on-site throughout a typical day. It is anticipated that on an average day there will be approximately 45 people at the building throughout the day, with 7-38 people in the building at the same time.

*Table 1: Anticipated Average Daily Headcount*

| Type | Daily Persons | Persons Per Shift |
|---|---|---|
| Employees | 25 | 3-22[1] |
| Security | 8 | 4 |
| Visitors | 12 | 0-12 |
| **Total** | **45** | **7-38** |

[1] Operational staff work in two shifts: day (22 employees) and graveyard (3 employees)

## Transportation Impact Analysis

Kimley-Horn conducted a transportation impact analysis which evaluated the Project's potential effect relating to transportation operations. The transportation analysis evaluated the following:

- Trip Generation
- VMT Analysis
- Local Transportation Analysis (LTA)
    - Multimodal Operations
    - Site Plan Accesses and Design Review

It should be noted that as of July 1, 2020, the state of California has fully adopted a change in the California Environmental Quality Act (CEQA) significant impact methodology for transportation impacts to use vehicle miles traveled (VMT) as opposed to level of service (LOS) via State Bill 743 (SB 743). To address this change, the City of Hayward developed and adopted the *City of Hayward Transportation Impact Analysis Guidelines*, dated December 2020. This analysis is based on the City's updated transportation impact analysis guidelines.

## Trip Generation

A trip generation analysis was conducted to determine the change in the number of trips the project will generate. The trip generation was determined based on average rates from the Institute of Transportation Engineer's (ITE) publication, *Trip Generation Manual, 11th Edition*. The ITE *Trip Generation Manual, 11th Edition* is a standard reference used by jurisdictions throughout the country for the estimation of trip generation potential of proposed projects. This manual provides trip rates based on land use. For the existing land uses, ITE Land Use 130: Industrial Park was used to estimate the trip generation for the existing buildings part of the Eden Landing Business Park. Building sizes for the existing buildings part of the Eden Landing Business Park are provided in **Attachment B**. Note, **Attachment B** provides the size of the ground level floor area, whereas many existing buildings have a second level, therefore the sizes of the second level were estimated based on measurements made from aerial imagery.

For the proposed land use, ITE Land Use 160: Data Center for the data center building was used to estimate the trip generation. It is anticipated that the two on-site office spaces will have same trip generation characteristic as the data center building and are included as data center land use. **Table 2** presents the trip generation for the project. The project is expected to generate net -368 daily trips, net -34 trips in the AM peak hour, and net -40 trips in the PM peak hour.

*Table 2: Project Trip Generation*

| ITE Land Use Code | Land Use | Size | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Rate | In% | Out% | Rate | In% | Out% |
| 130 | Industrial Park | 1,000 Sq Ft | 3.37 | 0.34 | 0.81 | 0.19 | 0.34 | 0.22 | 0.78 |
| 160 | Data Center | 1,000 Sq Ft | 0.99 | 0.11 | 0.55 | 0.45 | 0.09 | 0.30 | 0.70 |

| Scenario | ITE Land Use Code | Land Use | Size | Units | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Total | In | Out | Total | In | Out |
| Existing | 130 | Industrial Park | 205.556 | 1,000 Sq Ft | 693 | 70 | 57 | 13 | 70 | 15 | 55 |
| Proposed | 160 | Data Center | 328.036 | 1,000 Sq Ft | 325 | 36 | 20 | 16 | 30 | 9 | 21 |
| **Total Net New Trips (Proposed – Existing)** | | | | | **-368** | **-34** | **-37** | **3** | **-40** | **-6** | **-34** |

Source: ITE Trip Generation, 11th Edition

*Note:*

*Existing square footage is based on combination of ground floor areas from existing plans and second level estimates from existing aerials.*

*Proposed land use includes two (2) on-site office buildings.*

# VMT Analysis

## VMT SCREENING

The City's *Transportation Impact Analysis Guidelines* provides guidance on when a project may be exempt from performing VMT analysis if the project meets at least one screening criteria based on:

- Small Infill Projects
- Local Serving Retail
- Local Serving Public Facilities
- Location-Based Screening for Residential Projects
- Location-Based Screening for Office Projects
- Location-Based Screening for Industrial Projects
- Location-Based Screening for Affordable Housing Projects

Project information was evaluated to determine if the Project would be exempt from a VMT analysis and is summarized in **Table 3**. Based on current project information given for this analysis, a VMT analysis **is** required for the data center use. Detailed evaluation for each criterion is discussed in the following sections.

*Table 3: Project CEQA Screening*

| CEQA Land Use Screening Criteria | Project Exempt? |
|---|---|
| Small Infill Projects | No |
| Local Serving Retail | N/A |
| Local Serving Public Facilities | N/A |
| Location-Based Screening for Residential Projects | N/A |
| Location-Based Screening for Office Projects | N/A |
| Location-Based Screening for Industrial Projects | No |
| Location-Based Screening for Affordable Housing Projects | N/A |

### Small Project

Small projects are defined as projects that generate fewer than 110 average daily trips. This equates to 10,000 square feet of office, 15 single-family homes, or 25 multi-family homes. As shown in **Table 2**, the proposed use exceeds the 110 daily trips threshold.

### Local Serving Retail Project

Local Serving Retail Projects are defined as project that are of 50,000 square feet or less or retail land use. The project does not include any retail land uses; therefore, this criterion does not apply.

### Local Serving Public Project

Local Serving Public Projects are projects such as fire stations, passive parks, public utilities, and other similar facilities. The project does not include any of these uses; therefore, this criterion does not apply.

## Location-Based Screening for Residential, Office, Industrial, and Affordable Housing Projects

These four screening criteria assume projects in areas of VMT and/or within half mile of a major transit stop or corridor and includes low VMT-supporting features will produce low VMT per capita/employee. This screening may apply for the following project characteristics:

- Project located either:
    - Within ½-mile of an existing major transit stop
    - Residential or office projects in an area with low (below the threshold) VMT per capital/employee  and in an area with planned growth
    - Industrial projects in an area with below average VMT per employee and in an area with planned growth
- Density/FAR
    - Office projects with a minimum gross floor area ratio (FAR) of 0.75
    - Residential projects with a minimum density of 35 units/acre
    - If project is located in an area with zoning with less than 0.75 FAR or fewer than 35 units/acre, the maximum FAR or unit/acre density allowed must be used
- Parking
    - No more than the minimum number of parking spaces required
    - In cases where there is no minimum required and maximum is identified, no more than the maximum number of parking spaces
- Does not replace affordable residential units
- Consistent with Plan Bay Area

Based on **Table 4**, the Project does not satisfy this criterion due to FAR being less than 0.75. Note the project is in an IP zoning, which has a maximum FAR of 0.80.

*Table 4: Location-Based Screening*

| Location-Based Screening Criteria | Satisfied Criteria? | Notes |
|---|---|---|
| Location | Yes | See **Figure 1** |
| Density/FAR | No | FAR=0.65 |
| Parking | Yes | Project is providing 63 spaces where 1,317 is required |
| Replacing affordable residential units? | Yes | Project is not replacing any residential units |
| Consistent with Plan Bay Area | Yes | Proposed use is allowed with current zoning |

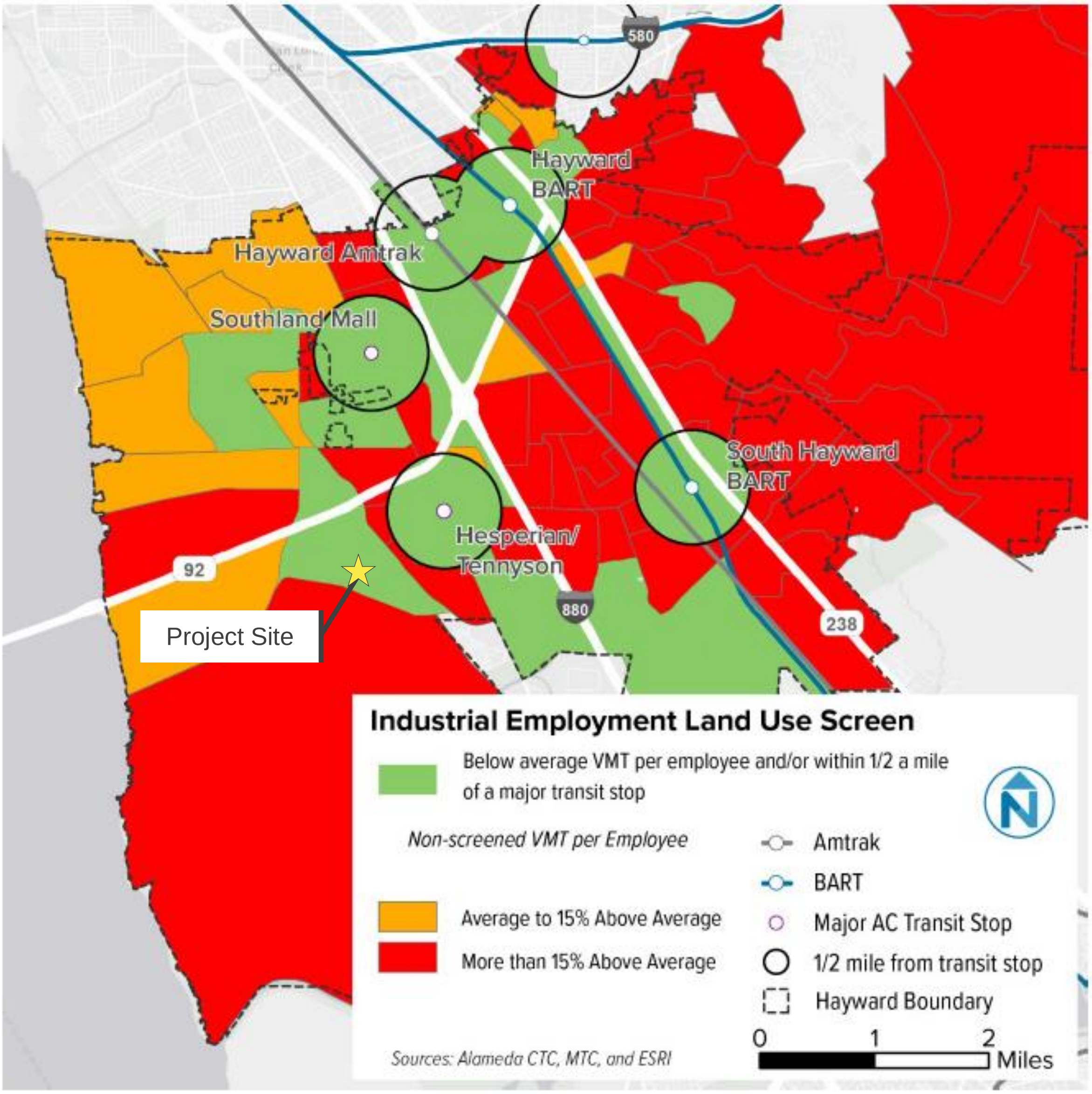


*Figure 1: CEQA Transportation Screening Map for Industrial Projects (Figure 6 from City of Hayward Transportation Impact Analysis Guidelines)*

## VMT ANALYSIS

Since the Project did not satisfy any VMT criteria, a VMT analysis was conducted for the Project to determine if Project's VMT would exceed City's Adopted threshold. For Employment – Industrial, the threshold of significance is the existing regional average VMT per employee[1].

**Table 5** summarizes the results of the VMT analysis. Alameda County Transportation Commission (Alameda CTC) developed maps and tables that provide VMT per Employee at traffic analysis zone (TAZ) in Alameda County. The map for VMT per Employee (**Attachment C**) was utilized to determine the VMT for the Project. The map indicates that the Project VMT and County Average VMT are 14.94 and 15.90 VMT per employee, respectively. The Project VMT is less than County Average VMT, which results in a less than significant impact.

*Table 5: VTA VMT Estimation*

| | VMT per Worker |
|---|---|
| Project VMT | 14.94 |
| County Average VMT | 15.90 |

*Source: Alameda CTC VMT Map – Central Planning Area*

## Local Transportation Analysis

Kimley-Horn conducted a local transportation analysis (LTA) which includes the following:

- Vehicle Operations
- Multimodal Operations
- Site Plan Access and Design Review

### VEHICLE OPERATIONS

The trip generation calculations (shown in **Table 2**) resulted in a decrease of daily, AM peak hour, and PM peak hour trips compared to the existing development. It is anticipated that the Project will not increase the delay at any surrounding intersections.

### MULTIMODAL OPERATIONS

The Project's site plan (**Attachment A)** was revied to evaluate the Project's connection with nearby transit, bicycle and pedestrian facilities. In addition, a review was conducted to determine if the Project would conflict with any existing pedestrian, bicycle, transit plans.

---

[1] Figure 8 from City of Hayward Transportation Impact Analysis Guidelines, December 2020.

## Transit

Employees or visitors of the site may utilize transit services provided by Alameda-Contra Costa Transit District (AC Transit). AC Transit primarily provides bus service throughout Alameda county and Contra-Costa county with connections to other transit services in the area. Currently there are no bus routes that operate within walking distance (0.25 mile or 1320 feet) of the Project site.

The closest operating route is Route 86 operates along Depot Road and industrial Boulevard in the vicinity of the Project. Route 86 operates from 4 AM to 12 AM with a headway of 35 minutes. The nearest bus stop (approximately 1-mile walking distance) to the project is located on the south side of Depot Road, approximately 90 feet east of Clawiter Road. This stop is curbside, which has the potential to block one lane of traffic, however two eastbound travel lanes are provided so traffic can divert around a parked bus.

Overall, the Project will not change the sidewalk frontage area where the stop is located and therefore will not change or conflict with the existing transit system.

## Pedestrian

There is currently a sidewalk of northwest side of Eden Landing Drive. Sidewalks are not currently provided along the project frontage, or along the surrounding street network. In the future, Clawiter Road is planned to have enhanced pedestrian facilities and act as a pedestrian collector per the *2020 Bicycle and Pedestrian Master Plan* for the City of Hayward.

The Project does not conflict with the *2020 Bicycle and Pedestrian Master Plan* for the City of Hayward, therefore the Project is not anticipated to cause any pedestrian-related deficiencies

## Bicycle

Bicyclists may access the project through the existing bikeway facilities throughout the City of Hayward. Per the *2020 Bicycle and Pedestrian Master Plan*, the City designates Class I bicycle facilities as Multi-Use Path, Class II facilities as Bicycle Lane/Buffered Bicycle Lane, Class III bicycle facilities as Bicycle Boulevard/Bicycle Route, and Class IV bicycle facilities as Separated Bikeway.

There is an existing Class II bike route along Eden Landing Drive which provides access to the Project. Additionally, a partial Class II bike Route has been implemented along Clawiter Road, and per the *2020 Bicycle and Pedestrian Master Plan*, Clawiter Road is envisioned to be a Class II bicycle lane/buffered bicycle lane in the future.

Overall, the Project will not cause any bicycle-related deficiencies and will not conflict with the City's *2020 Bicycle and Pedestrian Master Plan*.

## SITE PLAN ACCESS AND DESIGN REVIEW

Kimley-Horn qualitatively reviewed the site plan (**Attachment A**) for on-site vehicular access, circulation, and parking for overall safety access and parking considerations.

### Site Access

Vehicles will primarily access the site from the driveway on Eden Landing Road. In order to enter the site, vehicles must pass through a security gate. Prior to the security gate, there is enough space for vehicles and truck to turn if vehicles are denied access to the stie. There is another access point on Production Avenue, but it is anticipated to be closed the majority of the time and only be used for transporting equipment or in cases of emergencies.

For pedestrian traffic, sidewalks are generally not provided in the vicinity of the Project site, but sidewalks are provided on-site from the parking lots to the office buildings. Bicyclists may access the site through Class II bicycle lane along Eden Landing Road and planned bicycle lanes along Clawiter Road. There is currently no transit service located within walking distance (0.25 mile) of the site. Pedestrian and transit riders are anticipated to be able to use the future sidewalk along Clawiter Road proposed as part of the *2020 Bicycle and Pedestrian Master Plan* for the City of Hayward.

Overall, the Project does not conflict with any pedestrian, bicycle, or transit plans and the review of the site plan is not anticipated to cause any vehicle, pedestrian, or bicycle access deficiencies.

### Site Circulation

Site circulation evaluated, reviewed truck turning movement exhibit (**Attachment D**) produced from the design team. The exhibit evaluates if a WB-62 could utilize either driveways or maneuver throughout the site. **Attachment D** illustrates that WB-62 can enter and maneuver the site from the Eden Landing Road driveway. Also if needed a WB-62 can make a U-turn in the area prior to the security gate. **Attachment D** shows a conflict with the WB-62-wheel path for the Production Avenue access point. It is recommended to modify curbs to accommodate truck traffic.

### Vehicle Parking

**Table 6** summarizes the parking requirements for the Project based on requirements stated in the Hayward Municipal Code for total and accessible parking.

The municipal code does not have requirements specifically for data center, therefore correspondence with City staff advised the requirements in Section 10-2.350 for office use be used. Office uses require one (1) parking space per 250 square feet of gross floor area, which would equate to a combined total 1,317 spaces. The site plan proposes a total of 63 parking spaces, which is 1,254 space deficient from the Code's requirements.

Providing the 1,317 spaces per Hayward Municipal Code would result in excess parking spaces, due to the anticipated parking demand. As previously discussed, the data center is expected to have approximately 7 to 38 people on-site during the same period. The highest number of total daily employees is 38 persons, which is less than the proposed 63 spaces. Therefore, the proposed 58 spaces can accommodate the anticipated parking demand.

*Table 6: City Parking Requirements*

| Building | Size | Total Spaces | | | ADA Spaces | | |
|---|---|---|---|---|---|---|---|
| | | Required Spaces[1] | Provided Spaces | Sufficient (+) / Deficient (-) | Required Spaces[2] | Provided Spaces | Sufficient (+) / Deficient (-) |
| A | 310,600 SF | 1,243 | 44 | -1,199 | 23 | 2[3] | -21 |
| B | 15,400 SF | 62 | 6 | -56 | 3 | 2 | -1 |
| C | 2,936 SF | 12 | 13 | +1 | 1 | 1[3] | 0 |
| **TOTAL** | | **1,317** | **63** | **-1,254** | **27** | **5** | **-22** |

[1] *One (1) space per 250 square feet of gross floor area.*

[2] *1-25 Required Space: One (1) ADA space; 51-75 Required Spaces: three (3) spaces for; 1,001 Over Required Spaces: 20 spaces plus 1 each 100, or fraction thereof over 1,001.*

[3] *Will provide one (1) van accessible space.*

### *Accessible Vehicle Parking*

**Table 6** summarizes the accessible vehicle parking for the Project based on requirements stated in Section 10-2.710. The number of accessible vehicle parking is based on the number of required parking spaces. The combined total required ADA parking spaces is 27 spaces. The site plan proposes a total of 5 ADA parking spaces, which is 22 spaces deficient from the Code's requirements. Note the Project is providing 5 ADA spaces, which exceeds Code's requirements of 3 spaces based on 63 parking spaces. Section 10-2-720 requires that one in every eight accessible spaces be van accessible. The Project will be providing two (2) van accessible spaces, which exceeds the City's requirement of one (1) space.

### *Electrical Vehicle Parking*

**Table 7** summary the electrical vehicle parking requirements. CALGreen requires, for 51-75 provided parking spaces, 13 EV capable spaces, where 3 are EVCS, 1 accessible, and 1 van accessible. The Project will provide 16 EV capable spaces, where 3 are EVSC, 1 accessible, and 1 van accessible which satisfies CALGreen requirements.

*Table 7: Electrical Vehicle Parking Requirements*

| Type | CALGreen | | |
|---|---|---|---|
| | Required Spaces | Provided Spaces | Sufficient (+) / Deficient (-) |
| EV ADA Stall - Regular | 1 | 1 | 0 |
| EV ADA Stall - Van | 1 | 1 | 0 |
| EV Capable | 13 | 16 | +3 |
| EVSC | 3 | 3 | 0 |

### Bicycle Parking

The Project proposes short-term and long-term bicycle parking. For short-term parking, there will be a bicycle rack located on the southwest corner of Building C that can accommodate two (2) bicycles. Long-term bicycle lockers for three (3) bicycles will be located in the secure area near the southeast corner of Building C.

## Conclusion

A transportation impact analysis (TIA) was conducted to determine the Project's potential effect relating to transportation operation. The TIA included a trip generation analysis, VMT analysis, and local transportation analysis (LTA). Based on the traffic analysis found that the Project would have a less than significant impact and would not create any significant Project-caused deficiencies. Key finding of analysis are summarized below.

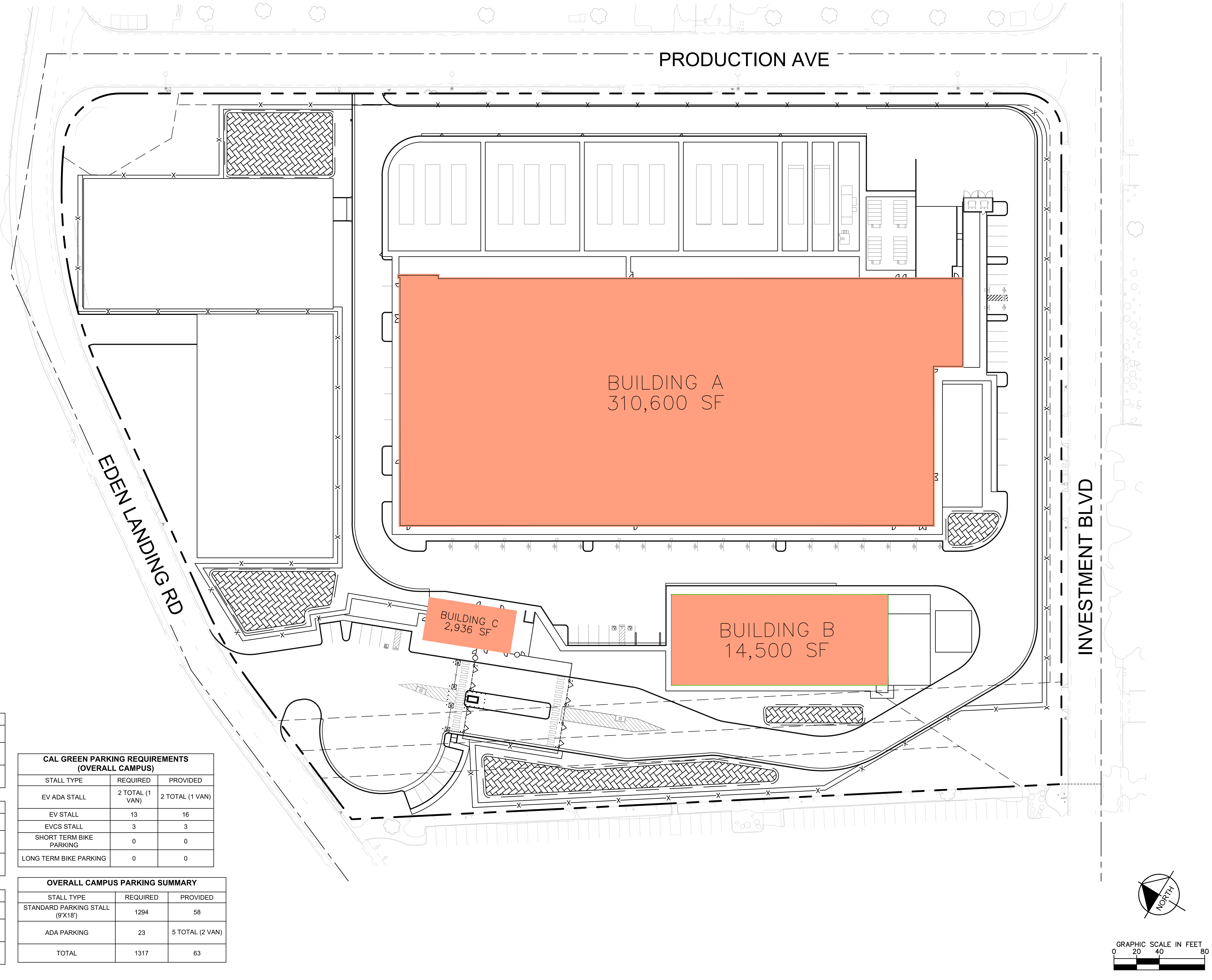
The trip generation calculations resulted in the Project generating net -368 daily trips, net -34 trips in the AM peak hour, and net -40 trips in the PM peak hour.

A VMT analysis using the Alameda County Transportation Commission VMT maps resulted in the Project VMT being lower than the County Average VMT, which indicates that the Project is expected to have a less than significant impact.

The LTA evaluated multimodal operation, as well as site access and design review. Multimodal operation evaluation, found that the Project would not result in any pedestrian, bicycle, or transit-related deficient. Site access evaluated determined there was adequate access for all modes (vehicle, pedestrian, and bicycle). Truck turning exhibits for the site shows that a WB-62 can enter and maneuver from the Eden Landing Road driveway, however there is potential conflict for WB-62 entering the Production Avenue access point. It is recommended that he Production Avenue access be widen to accommodate truck traffic. Parking evaluation would that the proposed parking (63 spaces) is less than City's requirements (1,317 spaces). However, providing 1,317 spaces would result in excess parking since the estimated parking demand ranges from 7 to 38 vehicles and can be accommodated by the proposed 63 parking spaces.

*Attachment A – Site Plan*
*Attachment B – Site Plan for Existing Building*
*Attachment C – VMT Map*
*Attachment D – Truck Turning Movement Exhibit*

# *Attachment A – Site Plan*



## PARKING SUMMARY

| REQUIRED PARKING - BUILDING A | | |
|---|---|---|
| USE | REQUIRED | PROVIDED |
| DATA CENTER 310,600 SF | 1 STALL PER 250 SF (1243 STALLS) | 44 |
| ADA | 23 | 2 TOTAL (1 VAN) |

| REQUIRED PARKING - BUILDING B | | |
|---|---|---|
| USE | REQUIRED | PROVIDED |
| OFFICE 15,400 SF | 1 STALL PER 250 SF (62 STALLS) | 6 |
| ADA | 3 | 2 TOTAL |

| REQUIRED PARKING - BUILDING C | | |
|---|---|---|
| USE | REQUIRED | PROVIDED |
| OFFICE 15,400 SF | 1 STALL PER 250 SF (12 STALLS) | 13 |
| ADA | 1 | 1 VAN |

| CAL GREEN PARKING REQUIREMENTS (OVERALL CAMPUS) | | |
|---|---|---|
| STALL TYPE | REQUIRED | PROVIDED |
| EV ADA STALL | 2 TOTAL (1 VAN) | 2 TOTAL (1 VAN) |
| EV STALL | 13 | 16 |
| EVCS STALL | 3 | 3 |
| SHORT TERM BIKE PARKING | 0 | 0 |
| LONG TERM BIKE PARKING | 0 | 0 |

| OVERALL CAMPUS PARKING SUMMARY | | |
|---|---|---|
| STALL TYPE | REQUIRED | PROVIDED |
| STANDARD PARKING STALL (9'X18') | 1294 | 58 |
| ADA PARKING | 23 | 5 TOTAL (2 VAN) |
| TOTAL | 1317 | 63 |

# PROJECT SVY03

CITY OF HAYWARD
CALIFORNIA

# SITE PLAN

KHA PROJECT
DATE
8/17/2023
SCALE AS SHOWN
DESIGNED BY
DRAWN BY
CHECKED BY

Kimley»Horn
© 2023 KIMLEY–HORN AND ASSOCIATES, INC.
4637 CHABOT DRIVE, SUITE 300, PLEASANTON, CA 94588
PHONE: 925–398–4840 FAX: 925–398–4849
WWW.KIMLEY–HORN.COM

| No. | REVISIONS | DATE | BY |
|---|---|---|---|

SHEET NUMBER
1

# Attachment B – Site Plan for Existing Building


BUILDING AREA=29,800 SF
BUILDING AREA=22,927 SF
BUILDING AREA=15,400 SF
BUILDING AREA=17,136 SF
BUILDING AREA=13,552 SF
BUILDING AREA=16,974 SF
BUILDING AREA=22,804 SF
BUILDING AREA=16,908 SF
BUILDING AREA=11,970 SF

# *Attachment C – VMT Map*

# Vehicle Miles Traveled Per Employee
# Central Planning Area

### Central Planning Area Average (Target -15%): 19.2 (16.3)
### Alameda County Average (Target -15%): 15.9 (13.5)

Data Source: Alameda Countywide Travel Model, Plan Bay Area 2040 version, May 2019

Vehicle miles traveled (VMT) = home-based trips (home-based work, school, shopping/errands, social/recreation) at transportation analysis zone (TAZ) containing residence site

VMT also includes estimates of non-home trips generated by residents at the non-residential end of the home-based trip (e.g. lunch trips from workplace)

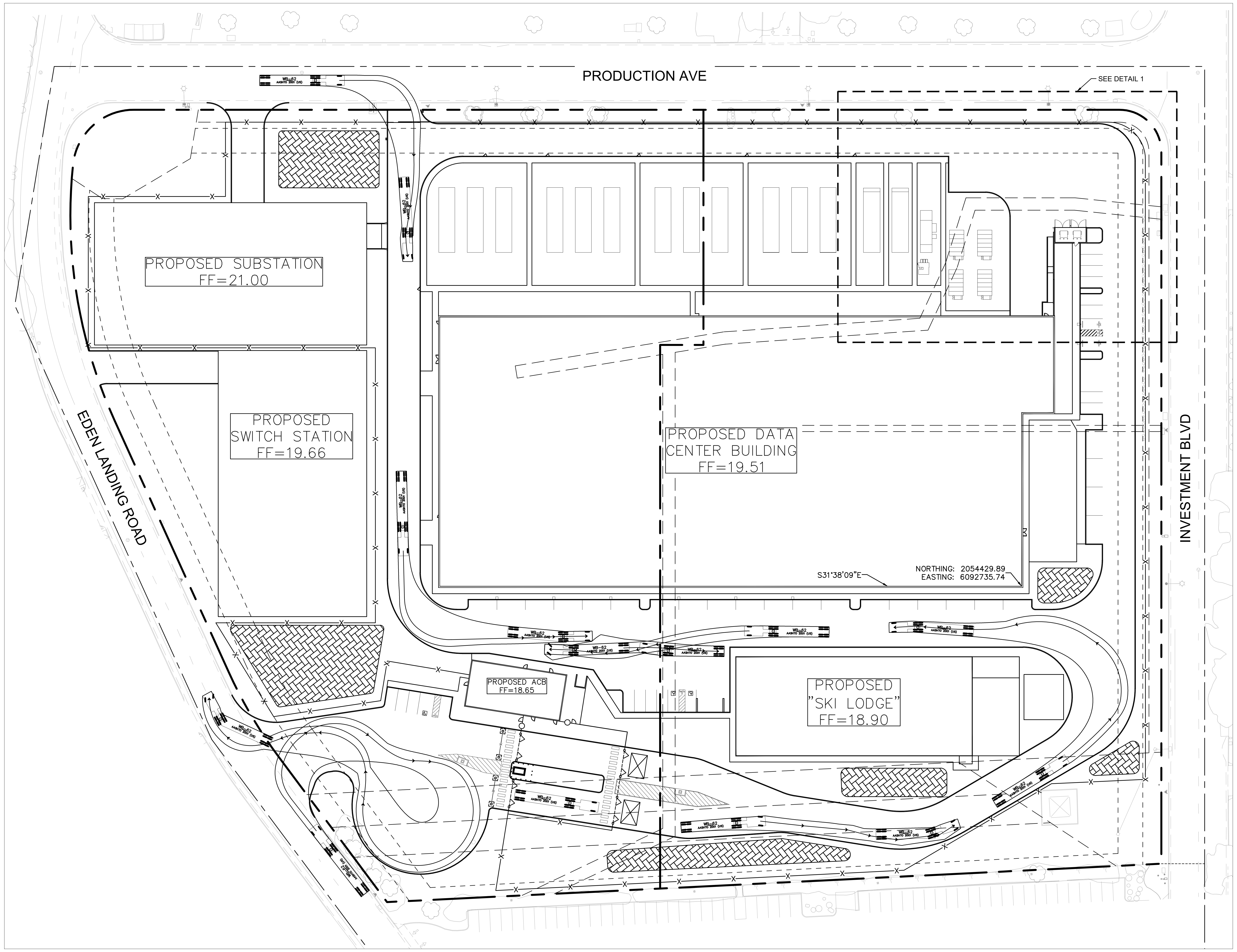
VMT per capita = home-based VMT at residence TAZ divided by total population in TAZ

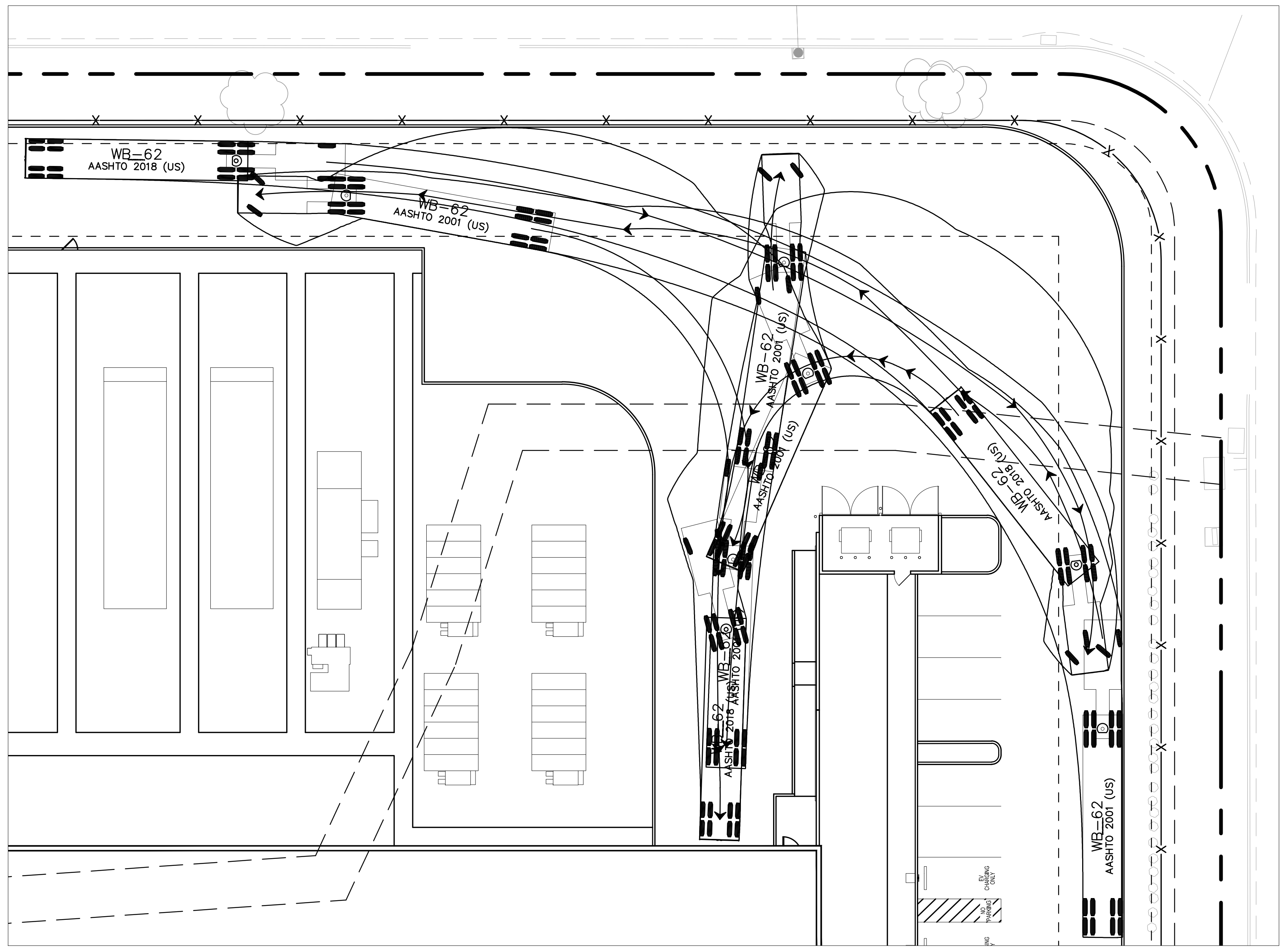
VMT includes all travel within 9-county Bay Area plus San Joaquin County plus estimates of travel distances beyond the 10-county model area

TAZs with zero values (white) did not have population in the 2020 model

ALAMEDA
County Transportation Commission

# *Attachment D – Truck Turning Movement Exhibit*

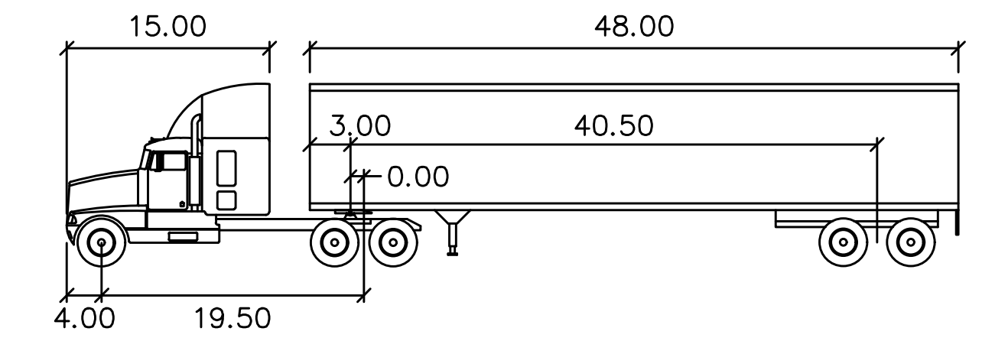




DETAIL 1

## LEGEND

- PROPERTY LINE
- RIGHT OF WAY LINE
- BUILDING SETBACK LINE
- EASEMENT LINE



WB-62

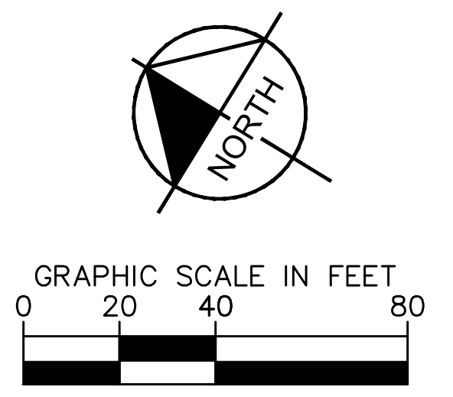
feet

| | | | |
|---|---|---|---|
| Tractor Width | : 8.00 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 8.50 | Steering Angle | : 28.4 |
| Tractor Track | : 8.00 | Articulating Angle | : 70.0 |
| Trailer Track | : 8.50 | | |

TRUCK PROFILE

# TRUCK TURN EXHIBIT

AUGUST 2023



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Kimley»Horn