APPENDIX B

Noise Report

Ventura Yacht Club

Dock Replacement Project

Noise & Vibration

Technical Report

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A Noise and Vibration Data

1.0 INTRODUCTION

The purpose of this report is to evaluate the potential for noise and groundborne vibration impacts resulting from implementation of the proposed Ventura Yacht Club Dock Replacement Project (Project). This report includes an evaluation of potential impacts associated with substantial temporary and permanent increases in ambient noise levels in the vicinity of the Project Site; exposure of people in the vicinity of the Project Site to excessive noise or groundborne vibration levels; and whether exposure is in excess of standards established in the City's General Plan or Noise Ordinance. This report has been prepared by Impact Sciences, Inc., in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA).

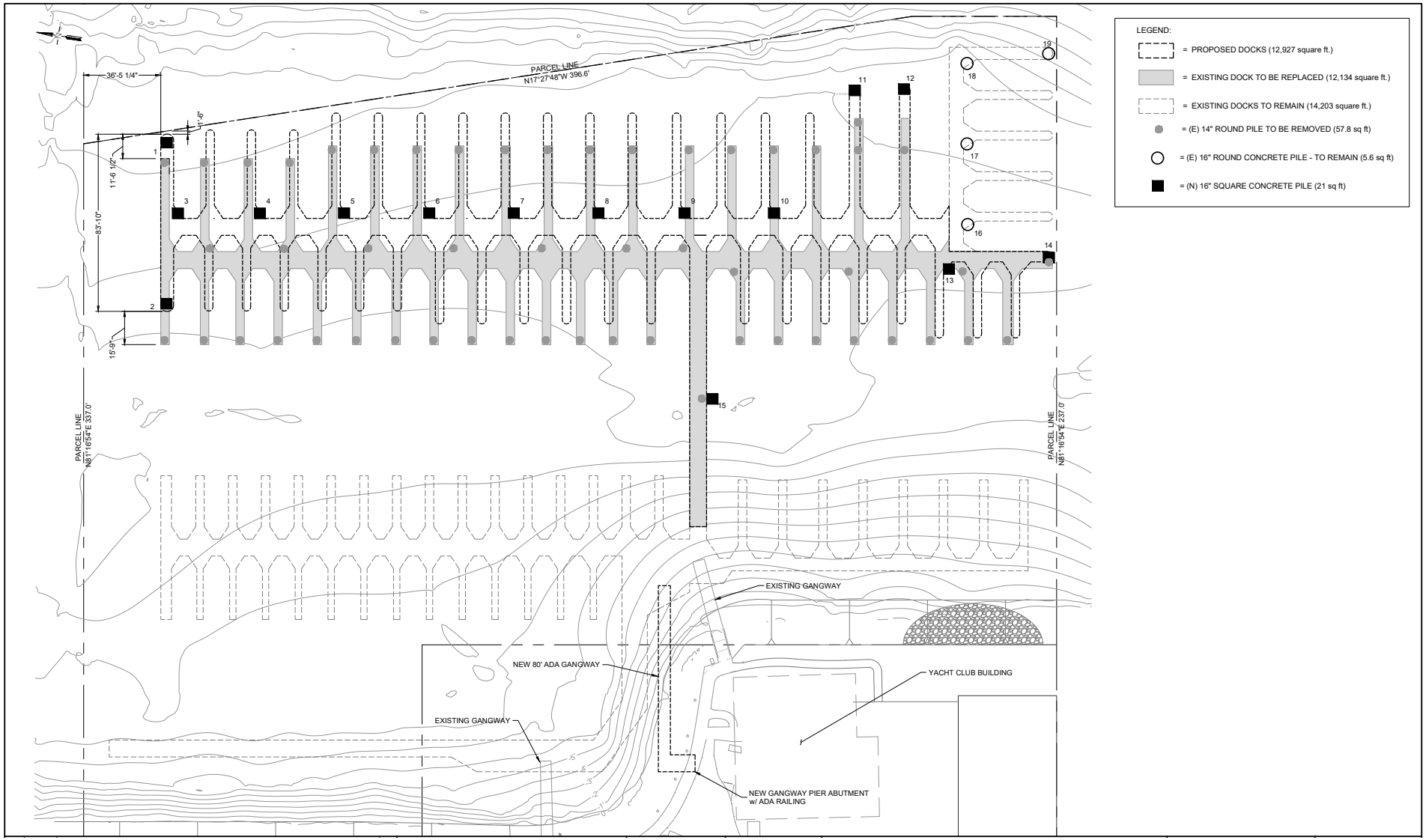
1.1 PROJECT LOCATION

The Project includes several improvements to the existing docks owned by and adjacent to the Ventura Yacht Club, located at 1755 Spinnaker Drive in the City of Ventura (Project Site) within an area known as the Ventura Harbor. The Project Site is within the greater Ventura Harbor, approximately 1.32 miles south of the Ventura Freeway (United States [U.S.] 101), and accessible by East Harbor Boulevard and Spinnaker Drive.

The Project Site is located within the Ventura Marina and is bounded by the Pacific Ocean to the north, commercial uses to the east and west, and open space to the south. Adjacent uses to the east and west include commercial uses such as a restaurant, and hotel along the marina's waterfront. Immediately to the south of the Project Site is Spinnaker Drive, which provides vehicular access to the Project Site. Regional access is provided via US-101 southbound. The Project Site includes the existing docks A through E of the Ventura Yacht Club, located directly south of the docks with an associated surface parking lot.

1.2 PROJECT DESCRIPTION

The Project would demolish and replace the existing main walkway of docks B and D, and their associated fingers, slips, and pilings with new docks and associated features that comply with the California Department of Boating and Waterways (DBAW) Guidelines for Marina Berthing Facilities standards. The Project would be outfitted with upgraded electrical and potable utility lines, and a Class II fire suppression system would be installed within the Ventura Yacht Club property and along the new docks. In addition, the Project would include a new abutment gangway that would be ADA-compliant. See **Figure 1, Project Site Plan**.



SOURCE: Bellingham Marine, 2022

FIGURE **1**

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Project Site Plan

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2.0 ENVIRONMENTAL SETTING

2.1 FUNDAMENTALS OF NOISE & VIBRATION

Noise

Noise is usually defined as unwanted sound that is an undesirable byproduct of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, and/or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). The human ear does not respond uniformly to sounds at all frequencies. For example, the human ear is less sensitive to low and high frequencies than medium frequencies, which more closely correspond with human speech. In response to the sensitivity of the human ear to different frequencies, the A-weighted noise level (or scale), which corresponds better with people's subjective judgment of sound levels, has been developed. This A-weighted sound level, referenced in units of dB(A), is measured on a logarithmic scale such that a doubling of sound energy results in a 3 dB(A) increase in noise level. Typically, changes in a community noise level of less than 3 dB(A) are not noticed by the human ear.[1] Changes from 3 to 5 dB(A) may be noticed by some individuals who are sensitive to changes in noise. A greater than 5 dB(A) increase is readily noticeable, while the human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound.

On the A-weighted scale, the range of human hearing extends from approximately 3 to 140 dB(A). **Table 1, A-Weighted Decibel Scale**, provides examples of A-weighted noise levels from common sources. Noise sources occur in two forms: (1) point sources, such as stationary equipment or individual motor vehicles; and (2) line sources, such as a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6 dB(A) for each doubling of distance from the source to the receptor at acoustically "hard" sites and 7.5 dB(A) at acoustically "soft" sites.[2] For example, if a noise source produces a noise level of 89 dB(A) at a reference distance of 50 feet, the noise level would be 83 dB(A) at a distance of 100 feet from the noise source, 77 dB(A) at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dB(A) over hard surfaces and 4.5 dB(A) over soft surfaces for each doubling of distance.

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1 California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf

2 Federal Highway Administration, *Highway Noise Fundamentals*, (1980) 97. Examples of "hard" or reflective sites include asphalt, concrete, and hard and sparsely vegetated soils. Examples of acoustically "soft" or absorptive sites include soft, sand, plowed farmland, grass, crops, heavy ground cover, etc.

Table 1
A-Weighted Decibel Scale

Typical A-Weighted Sound Levels	Sound Level (dB(A), Leq)
Threshold of Pain	140
Jet Takeoff at 100 Meters	125
Jackhammer at 15 Meters	95
Heavy Diesel Truck at 15 Meters	85
Conversation at 1 Meter	60
Soft Whisper at 2 Meters	35

Source: United States Occupational Safety & Health Administration, Noise and Hearing Conservation Technical Manual, 1999.

Sound levels also can be attenuated by man-made or natural barriers (e.g., sound walls, berms, and ridges), as well as elevational differences. Noise is most audible when traveling by direct line-of-sight, an interrupted visual path between the noise source and noise receptor. Barriers, such as walls or buildings that break the line-of-sight between the source and the receiver, can greatly reduce noise levels from the source since sound can only reach the receiver by diffraction. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Solid walls and berms may reduce noise levels by 5 to 10 dB(A) depending on their height and distance relative to the noise source and the noise receptor.[3] Sound levels may also be attenuated 3 dB(A) by a first row of houses and 1.5 dB(A) for each additional row of houses.[4] The minimum noise attenuation provided by typical structures in California is provided in **Table 2, Building Noise Reduction Factors**.

3 Federal Highway Administration, *Highway Noise Mitigation*, (1980) 18.

4 California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf

Table 2
Building Noise Reduction Factors

Building Type	Window Condition	Noise Reduction Due to Exterior of the Structure (dB(A))
All	Open	10
Light Frame	Ordinary Sash (closed)	20
	Storm Windows	25
Masonry	Single Glazed	25
	Double Glazed	35

Source: Federal Highway Administration, Highway Traffic Noise: Analysis and Abatement Guidance. December 2011.

Sound Rating Scales

Various rating scales approximate the human subjective assessment to the "loudness" or "noisiness" of a sound. Noise metrics have been developed to account for additional parameters, such as duration and cumulative effect of multiple events. Noise metrics are categorized as single event metrics and cumulative metrics, as summarized below.

In order to simplify the measurement and computation of sound loudness levels, frequency weighted networks have obtained wide acceptance. The A-weighted scale, discussed above, has become the most prominent of these scales and is widely used in community noise analysis. Its advantages are that it has shown good correlation with community response and is easily measured. The metrics used in this analysis are all based upon the dB(A) scale.

Equivalent Noise Level

Equivalent Noise Level (Leq) is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as several single event noise exposure level events during a given sample period. Leq is the "acoustic energy" average noise level during the period of the sample. It is based on the observation that the potential for noise annoyance is dependent on the total acoustical energy content of the noise. The equivalent noise level is expressed in units of dB(A). Leq can be measured for any period, but is typically measured for 15 minutes, 1 hour, or 24 hours. Leq for a 1-hour period is used by the Federal Highway Administration (FHWA) for assessing highway noise impacts. Leq for 1 hour is referred to as the Hourly Noise Level (HNL) in the California Airport Noise Regulations and is used to develop Community Noise Equivalent Level values for aircraft operations. Construction noise levels and ambient noise measurements in this section use the Leq scale.

Community Noise Equivalent Level

Community Noise Equivalent Level (CNEL) is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire day. The term "time-weighted" refers to the penalties attached to noise events occurring during certain sensitive periods. In the CNEL scale, 5 decibels (dB) are added to measured noise levels occurring between the hours of 7 P.M. and 10 P.M. For measured noise levels occurring between the hours of 10 P.M. and 7 A.M., 10 dB are added. These decibel adjustments are an attempt to account for the higher sensitivity to noise in the evening and nighttime hours and the expected lower ambient noise levels during these periods. Existing and projected future traffic noise levels in this section use the CNEL scale.

Day-Night Average Noise Level

The day-night average sound level (Ldn) is another average noise level over a 24-hour period. Noise levels occurring between the hours of 10 P.M. and 7 A.M. are increased by 10 dB. This noise is weighted to take into account the decrease in community background noise of 10 dB(A) during this period. Noise levels measured using the Ldn scale are typically similar to CNEL measurements.

Adverse Effects of Noise Exposure

Noise is known to have several adverse effects on humans, which has led to laws and standards being set to protect public health and safety, and to ensure compatibility between land uses and activities. Adverse effects of noise on people include hearing loss, communication interference, sleep interference, physiological responses, and annoyance. Each of these potential noise impacts on people is briefly discussed in the following narrative.

Hearing Loss

Hearing loss is generally not a community noise concern, even near a major airport or a major freeway. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry, very noisy work environments with long-term exposure, or certain very loud recreational activities (e.g., target shooting and motorcycle or car racing). The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dB(A) for 8 hours per day to protect from hearing loss (higher limits are allowed for shorter duration exposures). Noise levels in neighborhoods, even in very noisy neighborhoods, are not sufficiently loud enough to cause hearing loss.

Communication Interference

Communication interference is one of the primary concerns in environmental noise. Communication interference includes speech disturbance and intrusion with activities such as watching television. Noise can also interfere with communications such as within school classrooms. Normal conversational speech is in the range of 60 to 65 dB(A) and any noise in this range or louder may interfere with speech.

Sleep Interference

Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages, and cause awakening. Noise may even cause awakening that a person may or may not be able to recall.

Physiological Responses

Physiological responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, and other physical changes. Studies to determine whether exposure to high noise levels can adversely affect human health have concluded that, while a relationship between noise and health effects seems plausible, there is no empirical evidence of the relationship.

Annoyance

Annoyance is an individual characteristic and can vary widely from person to person. Noise that one person considers tolerable can be unbearable to another of equal hearing capability. The level of annoyance depends both on the characteristics of the noise (including loudness, frequency, time, and duration), and how much activity interference (such as speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Attitudes may also be affected by the relationship between the person affected and the source of noise, and whether attempts have been made to abate the noise.

Vibration

Vibration consists of waves transmitted through solid material. Groundborne vibration propagates from a source through the ground to adjacent buildings by surface waves. Vibration may comprise a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating and is measured in hertz (Hz). Most environmental vibrations consist of a composite, or “spectrum” of many frequencies, and are generally classified as broadband or random vibrations. The normal frequency range of most groundborne vibration that can be felt generally starts from a low frequency of less than one Hz to a high of about 200 Hz. Vibration is often measured in terms of the peak

particle velocity (PPV) in inches per second (in/sec) when considering impacts on buildings or other structures, as PPV represents the maximum instantaneous peak of vibration that can stress buildings. Because it is a representation of acute vibration, PPV is often used to measure the temporary impacts of short-term construction activities that could instantaneously damage-built structures. Vibration is often also measured by the root mean squared (RMS) because it best correlates with human perception and response. Specifically, RMS represents "smoothed" vibration levels over an extended period of time and is often used to gauge the long-term chronic impact of a Project's operation on the adjacent environment. RMS amplitude is the average of a signal's squared amplitude. It is most commonly measured in decibel notation (VdB).

Vibration energy attenuates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High frequency vibrations reduce much more rapidly than low frequencies, so that in the far-field from a source, the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, there is usually a ground-to-foundation coupling loss (i.e., the foundation of the structure does not move in sync with the ground vibration), but the vibration can also be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows or items on shelves, or the motion of building surfaces. At high levels, vibration can result in damage to structures.

Manmade groundborne vibration is generally limited to areas within a few hundred feet of certain types of construction activities, especially pile driving. Road vehicles rarely create enough groundborne vibration to be perceptible to humans unless the road surface is poorly maintained and there are potholes or bumps. If traffic induces perceptible vibration in buildings, such as window rattling or shaking of small loose items (typically caused by heavy trucks in passing), then it is most likely an effect of low-frequency airborne noise or ground characteristics. Human annoyance by vibration is related to the number and duration of events. The more events or the greater the duration, the more annoying it will be to humans.

2.2 NOISE SENSITIVE RECEPTORS

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The closest noise-sensitive receptors to the Project Site include: 1) Live aboard boats to the north at Oceans West Marina (approximately 65 feet); 2) Live aboard boats to the

southeast at Ventura Isle Marina (approximately 380 feet); 3) Multi-family residences to the northeast at Portside Ventura Harbor (approximately 400 feet); and 4) Live aboard boats to the east at Ventura West Marina (approximately 640 feet). See **Figure 2, Noise Monitoring and Sensitive Receptor Location Map.**

2.3 EXISTING CONDITIONS

Measured Ambient Noise Levels

To establish baseline noise conditions, existing noise levels were monitored at three locations in the vicinity of the Project Site. The locations of where the noise measurements were taken are depicted in **Figure 2, Noise Monitoring and Sensitive Receptor Location Map**. The noise survey was conducted in August 2022 using the Larson Davis SoundTrack LxT (Type 1) sound level meter, which conforms to industry standards set forth in ANSI S1.4-1983 (R2006) – Specification for Sound Level Meters/Type 1. This instrument was calibrated and operated according to the manufacturer's written specifications. At the measurement sites, the microphone was placed at a height of approximately five feet above grade. The results of the measurements are summarized in **Table 3, Existing Noise Levels in the Vicinity of the Project Site**. As shown in **Table 3**, the daytime ambient noise levels ranged from 49.5 dB(A) Leq to 52.5 dB(A) Leq in the vicinity the Project Site.

Table 3
Existing Noise Levels in the Vicinity of the Project Site

Noise Monitoring Locations	Primary Noise Sources	Noise Levels [dB(A)]		
		Leq	Lmin	Lmax
1. Oceans West Marina	General Harbor Activity, Parking Lot Traffic, Birds	49.5	45.0	58.1
2. Office and Recreational Area	Seals, Parking Lot Traffic, General Harbor Activity, Pedestrians	52.5	46.2	69.7
3. Portside Ventura Harbor	General Harbor Activity, Pedestrian Noises, Seals, Boats, Birds	49.5	45.7	63.6

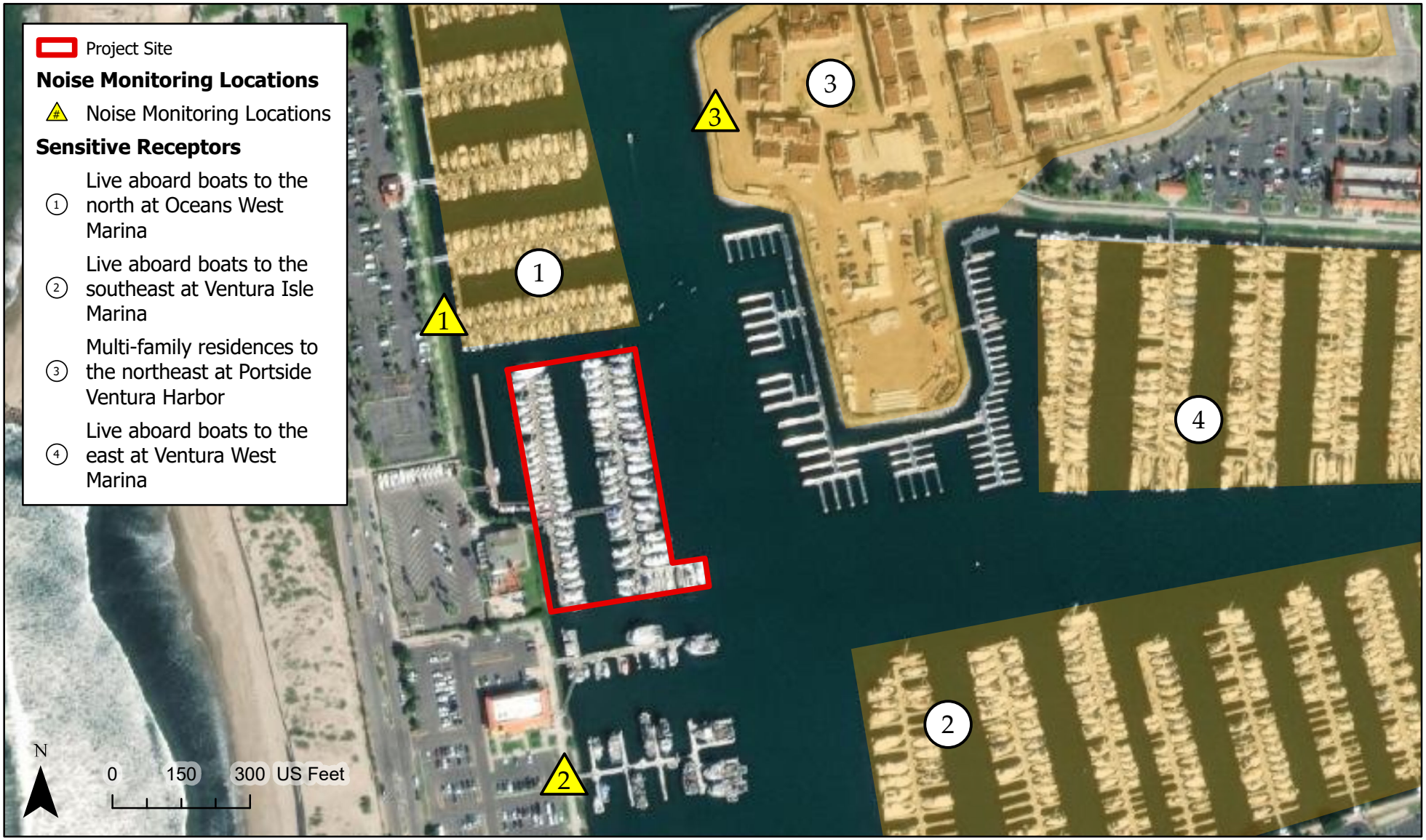
*Source: Impact Sciences, Inc., August 2022. See **Appendix A, Noise and Vibration Technical Data**.*

Existing Groundborne Vibration Levels

The main sources of groundborne vibration near the Project Site are heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, and transit buses) on local roadways. Trucks and buses typically generate

groundborne vibration velocity levels of around 63 VdB at 50 feet, and these levels could reach 72 VdB where trucks and buses pass over bumps in the road,. [5] In terms of PPV levels, a heavy-duty vehicle traveling at a distance of 50 feet can result in a vibration level of approximately 0.001 inch per second.

5 Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment Manual. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf



SOURCE: Esri, 2022

FIGURE 2

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Noise Monitoring and Sensitive Receptor Location Map

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3.0 REGULATORY FRAMEWORK

3.1 REGULATORY FRAMEWORK

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding noise and vibration at the federal, state, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Occupational Safety and Health Act of 1970
- Noise Control Act of 1972
- Federal Transit Administration Vibration Standards
- Office of Planning and Research Guidelines for Noise Compatible Land Use
- Caltrans Vibration/Groundborne Noise Standards
- City of San Buenaventura Municipal Code

Federal

Occupational Safety and Health Act of 1970

Under the Occupational Safety and Health Act of 1970 (29 U.S.C. §1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.[6]

Noise Control Act of 1972

Under the authority of the Noise Control Act of 1972, the United States Environmental Protection Agency (U.S. EPA) established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations (CFR) that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, U.S. EPA issued guidance levels for the protection of public health and welfare in residential areas of an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA. These guidance levels are not standards or regulations and were

6 United States Department of Labor. OSH Act of 1970. https://www.osha.gov/laws-regs/oshact/completeoshact. Accessed September, 2022.

developed without consideration of technical or economic feasibility. There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project. Moreover, the federal noise standards are not reflective of urban environments that range by land use, density, proximity to commercial or industrial centers, etc. As such, for purposes of determining acceptable sound levels to determine and evaluate intrusive noise sources and increases, this document utilizes the City of Ventura Noise Regulations, discussed below.

Federal Transit Administration Vibration Standards

There are no federal vibration standards or regulations adopted by any agency that are applicable to evaluating vibration impacts from activities associated with the Project. However, the Federal Transit Administration (FTA) has adopted vibration criteria for use in evaluating vibration impacts from construction activities. The vibration damage criteria adopted by the FTA are shown in **Table 4, Construction Vibration Damage Criteria.**

Table 4
Construction Vibration Damage Criteria

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

Source: FTA, Transit Noise and Vibration Impact Assessment Manual, 2018.

The FTA has also adopted standards associated with human annoyance for determining the groundborne vibration and noise impacts from ground-borne noise on the following three off-site land-use categories: Vibration Category 1 – High Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional.[7] The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep,

7 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.

such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but that still potentially involve activities that could be disturbed by vibration. The vibration thresholds associated with human annoyance for these three land-use categories are shown in **Table 5, Groundborne Vibration and Groundborne Noise Impact Criteria for General Assessment**. No thresholds have been adopted or recommended for commercial or office uses.

Table 5
Groundborne Vibration and Groundborne Noise Impact Criteria for General Assessment

Land Use Category	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[d]	65 VdB[d]	65 VdB[d]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

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 kind per day.
d This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.
Source: FTA, Transit Noise and Vibration Impact Assessment Manual, 2018.

State

Office of Planning and Research Guidelines for Noise Compatible Land Use

The State of California has not adopted statewide standards for environmental noise, but the Governor's Office of Planning and Research (OPR) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. California Government Code Section 65302 requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(f) requiring a noise element to be included in the general plan. The noise element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

Caltrans Vibration/Groundborne Noise Standards

The State of California has not adopted Statewide standards or regulations for evaluating vibration or groundborne noise impacts from land use development projects. Although the State has not adopted any

vibration standard, Caltrans recommends the following vibration thresholds that are more practical than those provided by the FTA.[8]

The state noise and vibration guidelines are to be used as guidance with respect to planning for noise, not standards and/or regulations to which a project must adhere.

Table 6
Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inch/sec)	
	Transient Sources[1]	Continuous/Frequent Intermittent Sources[2]
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Source: Table 19, Transportation and Construction Vibration Guidance Manual (Caltrans 2020).
1 Transient sources create a single, isolated vibration event, such as blasting or drop balls.
2 Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Local

City of San Buenaventura

San Buenaventura Municipal Code

Chapter 10.650 "Noise Control" of the San Buenaventura Municipal Code (SBMC) contains a number of regulations that would pertain to the Project's temporary construction activities and long-term operations.

8 Caltrans, Transportation and Construction Vibration Guidance Manual, 2020.

Sec. 10.650.130. – Designated Noise Zones.

Section 10.650.130 outlines designated noise zones, as well as exterior and interior noise level limits for these zones.

Assignment of noise zones.

Receiving properties are assigned to designated noise zones as follows:

- Designated noise zone I: Noise sensitive properties.
- Designated noise zone II: Residential properties.
- Designated noise zone III: Commercial properties.
- Designated noise zone IV: Industrial and agricultural properties.

Exterior noise levels.

- Noise zone exterior noise levels. The following exterior noise levels, unless otherwise specifically indicated, shall apply to all receiving properties within a designated noise zone for the purpose of establishing noise level limits in **Table 7, Noise Zone Exterior Noise Levels.**

Table 7
Noise Zone Exterior Noise Levels

	Designated Zone	Time Interval	Exterior Noise Levels (dBA)
Zone I	Noise sensitive properties	7 A.M. – 10 P.M.	50
		10 P.M. – 7 A.M.	45
Zone II	Residential properties	7 A.M. – 10 P.M.	50
		10 P.M. – 7 A.M.	45
Zone III	Commercial properties	7 A.M. – 10 P.M.	60
		10 P.M. – 7 A.M.	55
Zone IV	Industrial and agricultural	Anytime	70

Source: Sec. 10.650.130. B.1, SBMC

- Noise level limits. Unless otherwise provided in this article, no person shall operate or cause to be operated any source of sound at any location within the city, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level when measured on any receiving property to exceed the following noise level limits:

- The exterior noise levels for that land use, as specified in subsection B.1. above, for a total period of more than 30 minutes in any consecutive 60 minutes;
- The exterior noise levels plus five dB for a total period of more than 15 minutes in any consecutive 60 minutes;
- The exterior noise levels plus ten dB for a total period of more than five minutes in any consecutive 60 minutes; or
- The exterior noise levels plus 15 dB for a total period of more than one minute in any consecutive 60 minutes; or
- The exterior noise levels plus 20 dB for any period of time.

- Intrusive noise measurement duration. It shall be sufficient for the noise level limits in sections 2.(a), (b), (c) and (d), above, to be measured for no less than one minute of any portion of the periods stated in subsections 2.(a), (b), (c) and (d), provided that any witness to the intrusive noise can testify to the fact that the intrusive noise continued at the same level or greater level than the level measured by the enforcing officer for a period in excess of the period allowed in subsections 2.(a), (b), (c) and (d).
- Ambient noise level in excess of noise level limit. If the ambient noise level exceeds that permissible for any of the noise level limits in subsections (a), (b), (c) and (d) of subsection 2. above, the noise level limit shall be increased in five dB increments as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the noise level limit in subsection 2.(e) above, this limit shall be increased to the maximum ambient noise level.
- Boundary between different zones. If the measurement location is on a boundary between two different designated noise zones, the lower noise level limit applicable to the two zones shall apply.
- Content of intrusive noise. In the event the intrusive noise is judged by the enforcing officer to contain a steady, audible, pure tone such as a whine, screech or hum, or is an impulsive noise, or is a repetitive noise exceeding one second in duration or contains music or speech, the noise level limits set forth in subsection 2. above shall be reduced by five dB.

Sec. 10.650.150. – Special Noise Sources.

Section 10.650.150. prohibits noise-generating construction activities located within or adjacent to any residential zone from occurring between the hours of 8:00 P.M. one day and 7:00 A.M. of the next.

Construction of buildings and structures.

- Between the hours of 8:00 P.M. of one day and 7:00 A.M. of the next, no person adjacent to or within any residential zone in the city shall operate power construction equipment or tools or perform any outside construction or repair work on buildings or structures, or operate any pile driver, steam shovel, pneumatic hammer, steam or electric hoist or other construction device so as to create any noise which exceeds the noise level limits of this article. These specified construction activities are permitted between the hours of 7:00 A.M. and 8:00 P.M. The performance of emergency work is exempt from the provisions of this section.

- Home repairs and routine maintenance of personal property such as automobiles or boats is not considered construction.

- The planning commission and city council shall retain the right to impose more restrictive hours of construction upon any projects involving construction activity by adding appropriate conditions to the city's approval of subdivisions, planned development permits, conditional use permits, variances and other projects.

Sec. 10.650.160. – General Noise Regulations

Sec. 10.650.160 of the SBMC is a general noise standard prohibiting noise which unreasonably disturbs peace and quiet or causes discomfort or annoyance.

- Unlawful noise. Notwithstanding any other provision of this article, and in addition thereto, it shall be unlawful for any person to make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of ordinary or normal sensitivity residing in the area.

- Environmental factors. The environmental factors which may be considered in determining whether a violation of provisions of subsection A. exists includes, but is not limited to, the following:

    - The sound level of the intrusive noise.

    - The sound level of the ambient noise.

    - The proximity of the noise to residential sleeping facilities.

    - The nature and zoning of the area from which the noise emanates.

    - The number of persons affected by the alleged intrusive noise.

    - The time of day or night the noise occurs.

    - The duration of the noise and its tonal content.

    - Whether the noise in continuous, recurrent, or intermittent.

Notwithstanding any other provision of this chapter, and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, excessive, or unusual noise which unreasonably disturbs the peace and quiet or which causes discomfort or annoyance to any reasonable person of normal sensitiveness.

The factors which may be considered in determining whether such noise violates the provisions of this section shall include, but are not limited to, the following:

- The volume of the noise;

- The intensity of the noise;
- Whether the nature of the noise is usual or unusual;
- Whether the origin of the noise is natural or unnatural;
- The volume and intensity of the background noise, if any;
- The proximity of the noise to residential sleeping facilities;
- The nature and zoning of the area within which the noise emanates;
- The density of the inhabitation of the area within which the noise emanates;
- The time of the day or night the noise occurs;
- The duration of the noise;
- Whether the noise is recurrent, intermittent, or constant; and
- Whether the noise is produced by a commercial or noncommercial activity.

2005 Ventura General Plan Noise Element

The City of Ventura General Plan contains a Noise Element providing guidance for the control of noise to protect residents, workers, and visitors from potentially adverse noise impacts. Its primary goal is to control long-term noise impacts to preserve acceptable noise environments for all types of land uses. For this, the Element contains goals and policies designed to guide City decision-making. However, the Noise Element's goals and policies address issues that would have little to no relevance to the Project at hand, such as noise levels for residences, highway sound walls, updates to the City's Noise Ordinance, etc.

Table 8
State of California Noise/Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure (dB, L_{dn} or CNEL)						
	55	60	65	70	75	80	
Residential - Low Density Single-Family, Duplex, Mobile Homes							
Residential - Multi-Family							
Transient Lodging - Motels Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable - New construction or development should generally not be undertaken.

Source: California Office of Planning and Research, General Plan Guidelines - Noise Element Guidelines (Appendix C), 2003.

4.0 NOISE ANALYSIS

4.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the *California Environmental Quality Act (CEQA) Guidelines*, the Project could have a significant noise and vibration impact if it would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project Site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive ground-borne vibration or ground-borne noise levels; and
- 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 *State CEQA Guidelines* do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." Thus, in terms of construction-related vibration impacts on buildings, please refer to Table 7, previously, which identifies Caltrans' vibration damage potential threshold criteria. These thresholds are used in this analysis to evaluate potential groundborne vibration impacts associated with building damage.

In terms of groundborne vibration impacts associated with human annoyance, this analysis uses the FTA's vibration impact thresholds for sensitive buildings, residences, and institutional land uses under conditions where there are a frequent number of events per day, which would provide for the most conservative vibration analysis. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations, 72 VdB at residences and buildings where people normally sleep, and 75 VdB at other institutional buildings.[9] The 65 VdB threshold applies to typical land uses where vibration would interfere with interior operations, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. The 72 VdB threshold applies to all residential land uses and any buildings where people sleep, such as hotels and hospitals. The 75 VdB threshold applies to institutional land uses such as

9 Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment Manual. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

The State CEQA Guidelines do not define the levels at which operational noise would be considered substantial increases. Thus, for purposes of this analysis, the Project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dB(A) if the total ambient noise levels without the Project exceed the City's General Plan exterior noise standards, or any 5 dB(A) or greater noise increase when total ambient noise levels without the Project are within the City's General Plan exterior noise standards.

4.2 METHODOLOGY

Noise levels associated with project-related construction activities were calculated using the FHWA Roadway Construction Noise Model (RCNM). Noise levels were compared to the City's noise ordinance which includes provisions regarding construction noise levels.

4.3 IMPACT ANALYSIS

Impact NOI-1 **Would the Proposed Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project Site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? *(Less than Significant).***

Construction Impacts

Construction of the Project would require the use of heavy equipment to demolish and replace the existing main walkway of docks B and D, and their associated fingers, slips, and pilings with new docks and associated features that comply with the California Department of Boating and Waterways (DBAW) Guidelines for Marina Berthing Facilities standards. The proposed dock replacement would be outfitted with upgraded electrical and potable utility lines, and a Class II fire suppression system would be installed within the Ventura Yacht Club property and along the new docks. In addition, the Project would include a new abutment gangway that would be ADA-compliant. Construction activities could also involve the use of smaller power tools, generators, and other sources of noise. During each stage of construction, several types of equipment potentially could be operating concurrently and noise levels would vary based on the amount of equipment in operation and the location of the activity. The FHWA RCNM has compiled data regarding the noise-generating characteristics of specific types of construction equipment and typical construction activities.

With the use of the RCNM, as detailed in **Appendix A** to this report,[10] the construction noise levels forecasted for the sensitive receptors are presented in **Table 9, Estimated Exterior Construction Noise at Sensitive Receptors.** Noise levels would diminish notably with distance from the construction site at a rate of 6 dB(A) per doubling of distance (noise from stationary or point sources is reduced by about 6 dB(A) for every doubling of distance at acoustically hard locations). For example, a noise level of 86 dB(A) Leq measured at 50 feet from the noise source to the receptor would decline to 80 dB(A) Leq at 100 feet from the source to the receptor and fall by another 6 dB(A) Leq to 74 dB(A) Leq at 200 feet from the source to the receptor. These noise attenuation rates assume a flat and unobstructed distance between the noise generator and the receptor. Intervening structures and vegetation would further attenuate (reduce) the noise. Furthermore, it should be noted that increases in noise levels at sensitive receptors during construction would be intermittent and temporary and would not generate continuously high noise levels.

The Project's greatest noise impact overall would be associated with the replacement of docks B and D, which would require a specialized marine-operating pile driver to insert guide piles. Though it is not yet known the specific make and model of the pile driver that would be used, the Project would use hydraulic guided pile jetting, with minimal impact pile driving. Hydraulic pile drivers can produce average peak noise levels of 65 dBA L_{eq} at a reference distance of 50 feet.[11] Impact pile drivers can produce average peak noise levels of 107 dBA Leq at a similar reference distance.[12] While the Project would predominantly use hydraulic guided pile jetting, for a conservative analysis, the reference noise level of impact pile drivers was used to model the Project's construction noise impacts. The Project's peak noise levels during construction are shown in Table 9, Estimated Exterior Construction Noise at Noise Monitoring Locations & Sensitive Receptors.

10 Project construction noise levels were calculated based on the Project's anticipated mix of construction equipment with the FHWA RCNM Version 1.1.

11 County of Ventura, Construction Noise Threshold Criteria and Control Plan, July 2010.

12 County of Ventura, Construction Noise Threshold Criteria and Control Plan, July 2010.

Table 9
Estimated Exterior Construction Noise at Noise Monitoring Locations & Sensitive Receptors

Sensitive Receptors	Distance to Project Site (feet)	Existing Monitored Daytime Ambient Noise Levels [dB(A) Leq]	Estimated Peak Construction Noise Levels [dB(A)]	Peak Noise Level Increase
1. Live aboard boats to the north at Oceans West Marina	65	49.5	99.0	49.5
2. Live aboard boats to the southeast at Ventura Isle Marina.	380 feet	49.5	83.7	34.2
3. Multi-family residences to the northeast at Portside Ventura Harbor	400 feet	49.5	83.2	33.7
4. Live aboard boats to the east at Ventura West Marina	640 feet	52.1	79.1	27

[a] *See **Figure 2, Noise Monitoring and Sensitive Receptor Location Map.***
*Source: Impact Sciences, Inc., September 2022. See **Appendix A** to this report.*

While the sensitive receptors located in proximity to the Project Site would experience an increase in construction-related noise levels, the City does not have specific limitations on construction noise levels. Instead, construction noise is regulated by limiting construction activity to the less noise-sensitive daytime hours. Specifically, Project construction, including pile driving and other noise-generating activities would occur at the Project Site between the hours of 7:00 AM and 8:00 PM in accordance with the City's Noise Ordinance (Section 10.650.150(D) of the SBMC). As the City permits construction related noise to occur during these hours, the Project's construction related noise impacts would be less than significant when they occur between 7:00 AM and 8:00 PM. Therefore, the Project would comply with the City's Noise Ordinance and impacts with respect to construction noise would be less than significant.

Operational Noise

Today, the Ventura Yacht Club utilizes five docks (docks A, B, C, D, and E) within the Harbor. Currently, several slip fingers within docks B and D have either reached or exceeded their expected 40-year service life. As such, the slip fingers are in need of repair and replacement. Further, the existing docks currently do not provide features that comply with the American Disabilities Act (ADA) and are inaccessible for patrons with disabilities. The Project is limited to waterside improvements and would not remove or alter the existing layout of docks A, C, and E. The proposed replacement and reconfiguration of docks B and D would result in a dock layout that would be similar to the existing dock layout. The Project would decrease the number of current slips in docks B and D from 41 to 40 slips. Accordingly, the Project would decrease the overall number of existing slips in docks A through E from 84 to 83 slips.

Thus, the Project would not increase the intensity of the Ventura Yacht Club's usage. Due to the nature of the Project, operations are not expected to generate any additional vehicles to the Project area. Vehicle access to and from the Project Site will remain the same. There would be no change in ambient noise levels from traffic to and from the Project Site. For these reasons, operational noise levels would be no greater than existing conditions, and operational noise impacts would be **less than significant**.

Mitigation Measures

None required

Impact NOI-2 **Would the Proposed Project result in the generation of excessive groundborne vibration or groundborne noise levels?** ***(Less than Significant).***

Based on the assumptions described previously for construction noise impacts, vibration levels associated with Project construction were estimated for the nearby sensitive receptors and are shown below in **Table 10, Vibration Levels at Off-Site Sensitive Uses from Project Construction.**

Table 10
Vibration Levels at Off-Site Sensitive Uses from Project Construction

Sensitive Uses Off-Site[a]	Distance to Project Site (ft.)	Receptor Significance Threshold RMS (VdB)	Estimated RMS (VdB)
1. Live aboard boats to the north at Oceans West Marina	65	72	60
2. Live aboard boats to the southeast at Ventura Isle Marina.	380 feet	72	37
3. Multi-family residences to the northeast at Portside Ventura Harbor	400 feet	72	36
4. Live aboard boats to the east at Ventura West Marina	640 feet	72	30

[a] *See **Figure 2**, **Noise Monitoring and Sensitive Receptor Location Map.***
Source:
*Impact Sciences, Inc., August 2022. See **Appendix A** to this report*
Caltrans, Transportation and Construction Vibration Guidance Manual, 2020.

With respect to vibration impacts associated with building damage, there are no existing buildings susceptible to vibration damages in proximity to the Project Site. The nearest off-site building is the two-story building located more than 200 feet from the Project Site at 1691 Spinnaker Drive. The building appears to best fit the description of the modern industrial/commercial building classification identified in Caltrans' *Transportation and Construction Vibration Guidance Manual, 2020* (see Table 6 previously). As shown

therein, the applicable threshold for this type of structure is 0.50 PPV (in/sec). At a distance of 200 feet, the Project's construction activities would generate maximum vibration levels of 0.009 PPV. As such, the Project would not have the potential to generate vibration levels that would result in building damages and these impacts would be **less than significant**.

With respect to vibration impacts associated with human annoyance, the Project's construction activities would generate maximum vibration levels of 60 VdB, which would be below the FTA threshold of 72 VdB at residences and buildings where people normally sleep. As such, the Project would not have the potential to generate vibration levels that would result in human annoyance and these impacts would be **less than significant**.

Impact NOI-3 **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? (No Impact).**

The Project Site is not located within the vicinity of a private airstrip or an airport land use plan and is not located within 2 miles of a public airport or public-use airport. The nearest airport is the Oxnard Airport, which is 6.1 miles away from the Project Site. Therefore, no impacts with respect to airstrip or airport related noise would occur and no further analysis is required.

5.0 REFERENCES

California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf

Caltrans, *Transportation and Construction Vibration Guidance Manual*, 2020.

Federal Highway Administration, *Highway Noise Fundamentals*, (1980) 97.

Federal Highway Administration, *Highway Noise Mitigation*, (1980) 18.

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.

Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment Manual. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

RCNM Version 1.1., 2022

United States Department of Labor. OSH Act of 1970. https://www.osha.gov/laws-regs/oshact/completeoshact . Accessed September, 2022.

IMPACT SCIENCES

APPENDIX A

Noise and Vibration Data

NOISE MONITORING FIELD REPORT

Site Map

Project Name: Ventura Yacht Club

Monitoring Location: Ventura Marina Vest 11

Date: 8/17/2022 Site Number: 1

Measured By: Annalie Sarrieddine

Measurement Start Time: 11:40

Measurement End Time: 11:55

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: Lxt_Data 166

Primary Noise Sources: General Harbor Activity, Parking lot traffic, Birds

Data Summary

Noise Scale	Noise Level (dBA)
L_{eq}	49.5
L_{max}	58.1
L_{min}	45.0

Other Noise Sources During Monitoring

1. Pedestrians walking & talking Time: 11:49
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:

IMPACT SCIENCES

Measurement Report

Report Summary

Meter's File Name	LxT_Data.166.s	Computer's File Name	LxT_0005667-20220817 114057-LxT_Data.166.ldbin
Meter	LxT1 0005667	Firmware	2.302
User		Location	
Job Description			
Note			

Start Time	2022-08-17 11:40:57	Duration	0:15:00.0		
End Time	2022-08-17 11:55:57	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2022-08-17 09:00:37	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	49.5 dB		
LAE	79.0 dB	SEA	--- dB
EA	8.9 µPa²h		
EA8	285.2 µPa²h		
EA40	1.4 mPa²h		
LA_{peak}	93.5 dB	2022-08-17 11:52:46	
LAS_{max}	58.1 dB	2022-08-17 11:55:21	
LAS_{min}	45.0 dB	2022-08-17 11:45:42	
LA_{eq}	49.5 dB		
LC_{eq}	65.5 dB	LC_{eq} - LA_{eq}	16.0 dB
LAI_{eq}	51.8 dB	LAI_{eq} - LA_{eq}	2.3 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

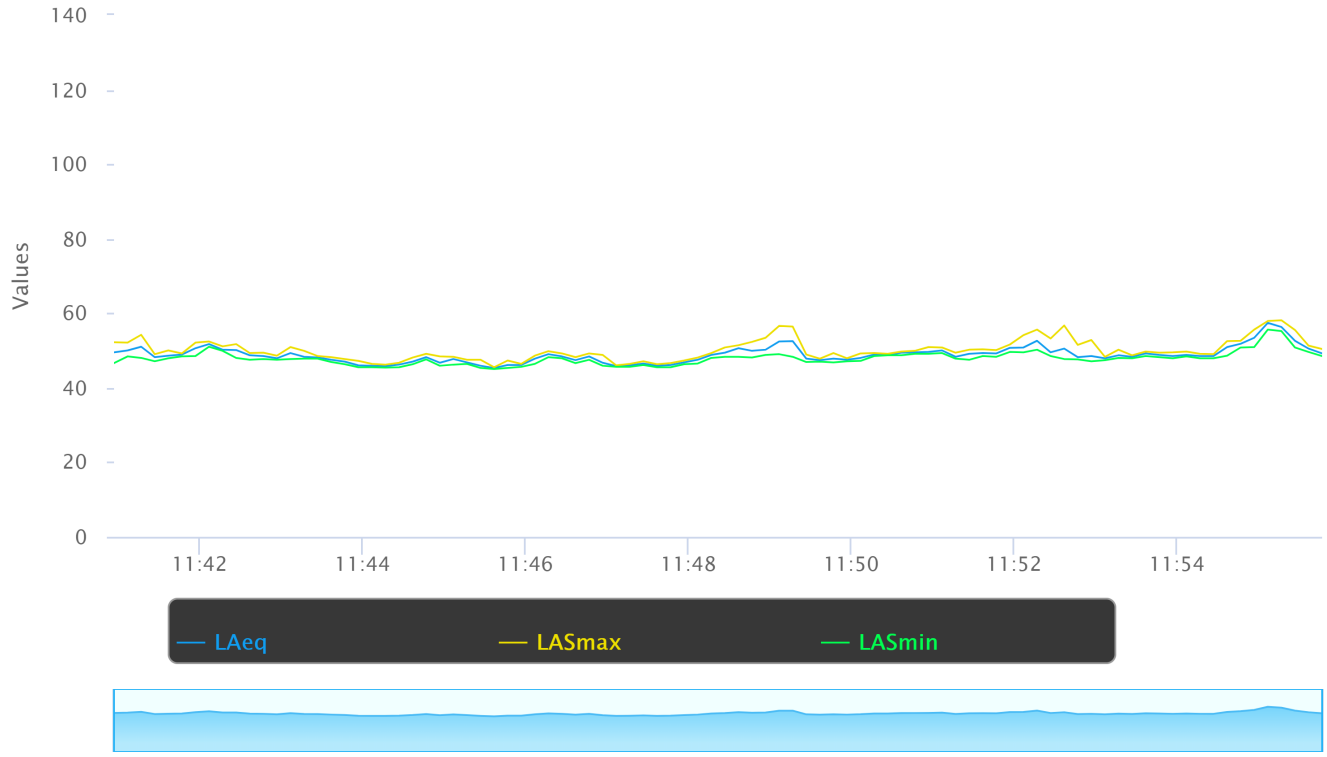
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	49.5 dB		65.5 dB		--- dB	
$Ls_{(max)}$	58.1 dB	2022-08-17 11:55:21	--- dB	None	--- dB	None
$LS_{(min)}$	45.0 dB	2022-08-17 11:45:42	--- dB	None	--- dB	None
$L_{Peak(max)}$	93.5 dB	2022-08-17 11:52:46	--- dB	None	--- dB	None

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 0.0	--- dB
LAS 0.0	--- dB
LAS 10.0	51.3 dB
LAS 33.3	49.1 dB
LAS 66.7	47.9 dB
LAS 90.0	46.1 dB

Time History



NOISE MONITORING FIELD REPORT

Site Map

Project Name: Ventura - Yacht Club

Monitoring Location: Ventura Harbor

Date: 8/17/22 Site Number: 2

Measured By: Annalie Sarrieddine

Measurement Start Time: 12:08

Measurement End Time: 12:23

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: Lxt_Data167

Primary Noise Sources: Seals, Parking lot traffic, General Harbor Activity, Pedestrians on the sidewalk, Birds

Data Summary

Noise Scale	Noise Level (dBA)
L_{eq}	52.5
L_{max}	69.7
L_{min}	46.2

Other Noise Sources During Monitoring

1. Truck in the Parking Lot Time: 12:14
2. Boat Music (playing softly) Time: 12:18
3. Time:
4. Time:
5. Time:

Additional Notes:

Foot traffic, Active Harbor with boats and kayaking, busy parking lot

IMPACT SCIENCES

Measurement Report

Report Summary

Meter's File Name	LxT_Data.167.s	Computer's File Name	LxT_0005667-20220817 120827-LxT_Data.167.ldbin
Meter	LxT1 0005667	Firmware	2.302
User		Location	
Job Description			
Note			

Start Time	2022-08-17 12:08:27	Duration	0:15:00.0		
End Time	2022-08-17 12:23:27	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2022-08-17 09:00:37	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	52.5 dB		
LAE	82.0 dB	SEA	--- dB
EA	17.8 µPa²h		
EA8	569.0 µPa²h		
EA40	2.8 mPa²h		
LA_{peak}	86.7 dB	2022-08-17 12:23:07	
LAS_{max}	69.7 dB	2022-08-17 12:23:08	
LAS_{min}	46.2 dB	2022-08-17 12:11:34	
LA_{eq}	52.5 dB		
LC_{eq}	67.9 dB	LC_{eq} - LA_{eq}	15.4 dB
LAI_{eq}	55.5 dB	LAI_{eq} - LA_{eq}	3.0 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

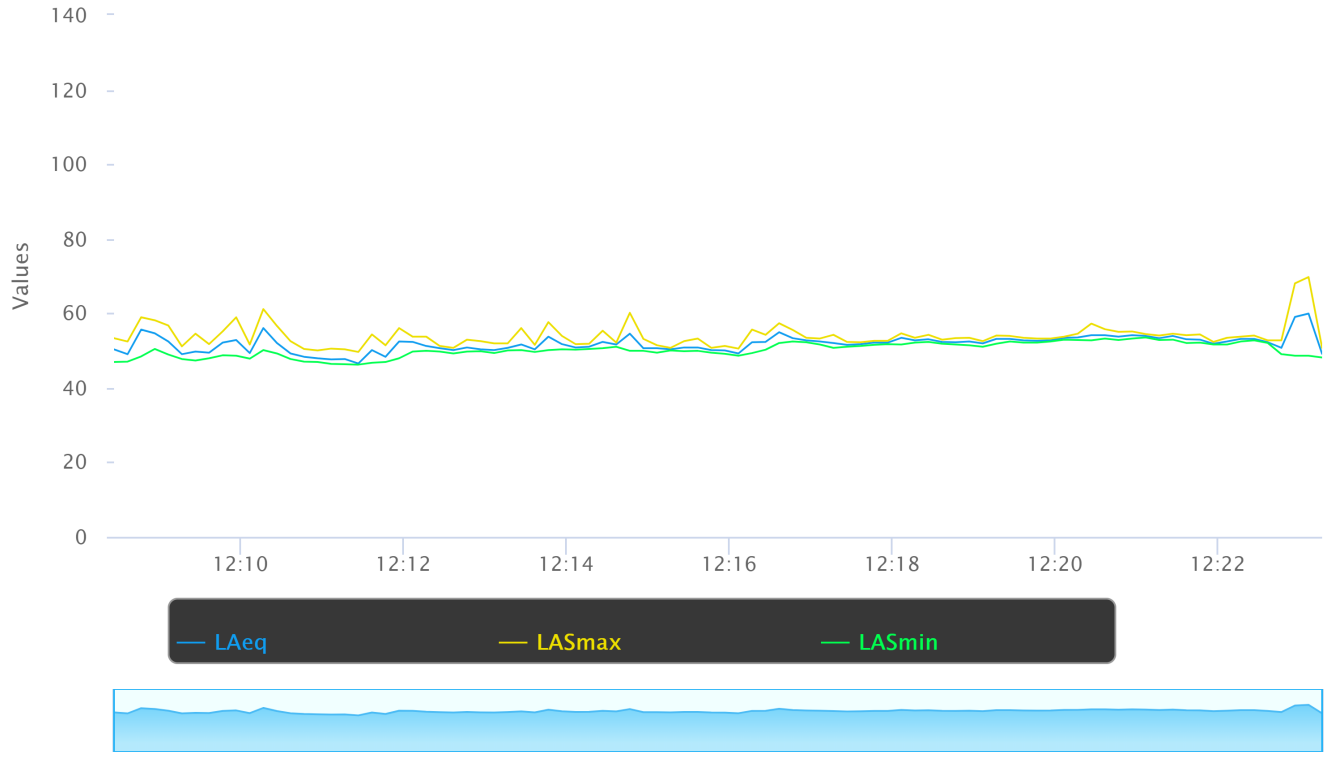
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	52.5 dB		67.9 dB		--- dB	
$Ls_{(max)}$	69.7 dB	2022-08-17 12:23:08	--- dB	None	--- dB	None
$LS_{(min)}$	46.2 dB	2022-08-17 12:11:34	--- dB	None	--- dB	None
$L_{Peak(max)}$	86.7 dB	2022-08-17 12:23:07	--- dB	None	--- dB	None

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 0.0	--- dB
LAS 0.0	--- dB
LAS 10.0	53.9 dB
LAS 33.3	52.6 dB
LAS 66.7	50.6 dB
LAS 90.0	48.6 dB

Time History



NOISE MONITORING FIELD REPORT

Site Map

Project Name: Ventura Yacht Club

Monitoring Location: Ventura Harbor Portside

Date: 8/17/2022 Site Number: 3

Measured By: Annalie Sarrieddine

Measurement Start Time: 12:38

Measurement End Time: 12:53

Total Measurement Time: 15 min.

Noise Meter Model: Larson Davis Soundtrack LxT Calibration: 94.0 (dBA)

Meter Setting: A-Weighted Sound Level (SLOW)

Session File Name: Lxt - Data 168

Primary Noise Sources: General Harbor & Pedestrian noises, Sea lions in the distance, boats, Flock of birds

Data Summary

Noise Scale	Noise Level (dBA)
L_{eq}	49.5
L_{max}	63.6
L_{min}	45.7

Other Noise Sources During Monitoring

1. Flock of Birds Time: 12:52
2. _____ Time: _____
3. _____ Time: _____
4. _____ Time: _____
5. _____ Time: _____

Additional Notes:
General walking / talking noises

IMPACT SCIENCES

Measurement Report

Report Summary

Meter's File Name	LxT_Data.168.s	Computer's File Name	LxT_0005667-20220817 123840-LxT_Data.168.ldbin
Meter	LxT1 0005667	Firmware	2.302
User		Location	
Job Description			
Note			

Start Time	2022-08-17 12:38:40	Duration	0:15:00.0		
End Time	2022-08-17 12:53:40	Run Time	0:15:00.0	Pause Time	0:00:00.0
Pre-Calibration	2022-08-17 09:00:37	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	49.5 dB		
LAE	79.0 dB	SEA	--- dB
EA	8.9 µPa²h		
EA8	285.2 µPa²h		
EA40	1.4 mPa²h		
LA_{peak}	86.7 dB	2022-08-17 12:52:20	
LAS_{max}	63.6 dB	2022-08-17 12:49:17	
LAS_{min}	45.7 dB	2022-08-17 12:42:51	
LA_{eq}	49.5 dB		
LC_{eq}	66.6 dB	LC_{eq} - LA_{eq}	17.1 dB
LAI_{eq}	52.6 dB	LAI_{eq} - LA_{eq}	3.1 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

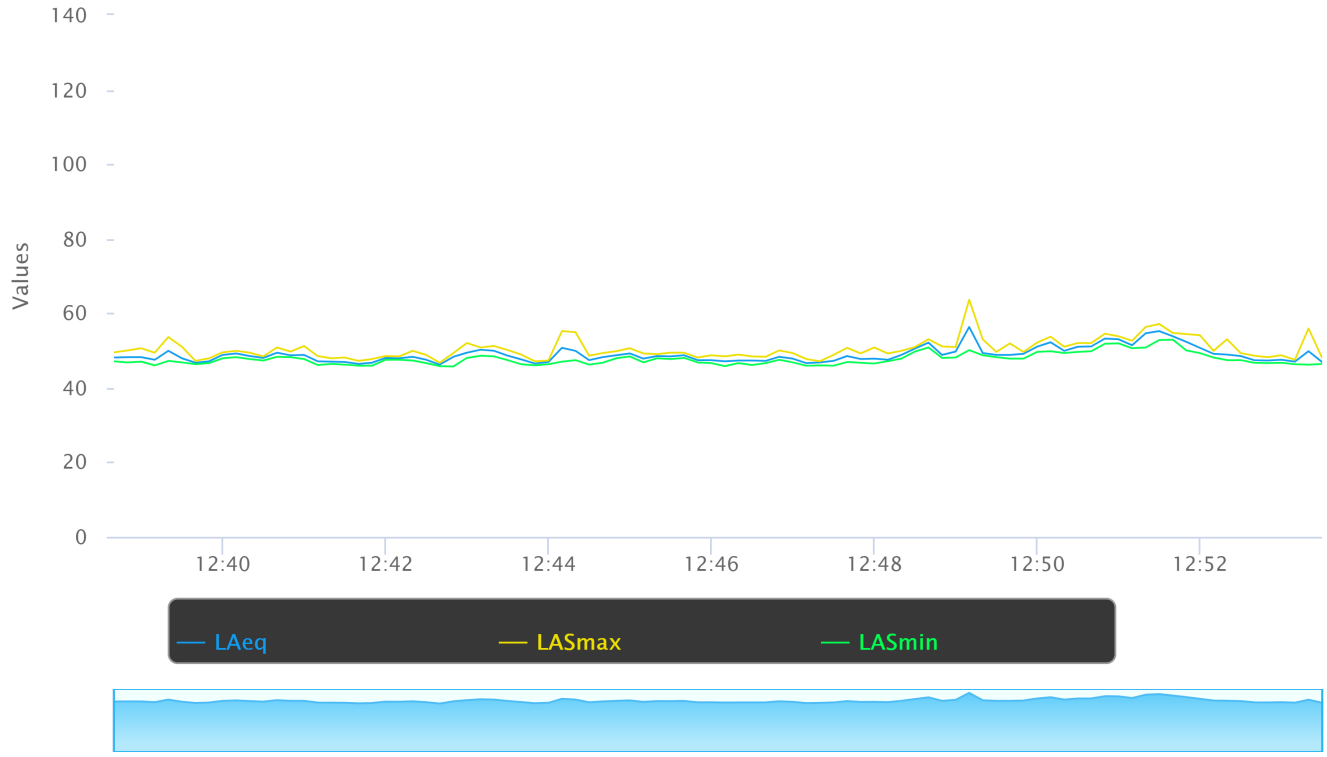
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	49.5 dB		66.6 dB		--- dB	
$Ls_{(max)}$	63.6 dB	2022-08-17 12:49:17	--- dB	None	--- dB	None
$LS_{(min)}$	45.7 dB	2022-08-17 12:42:51	--- dB	None	--- dB	None
$L_{Peak(max)}$	86.7 dB	2022-08-17 12:52:20	--- dB	None	--- dB	None

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 0.0	--- dB
LAS 0.0	--- dB
LAS 10.0	51.6 dB
LAS 33.3	49.0 dB
LAS 66.7	47.6 dB
LAS 90.0	46.7 dB

Time History



Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/28/2022
Case Description: Ventura Yacht Club Dock Replacement

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Live aboard boats t	Residential	49.5	49.5	49.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Impact Pile Driver	Yes	20		101.3	65	0

Results

Calculated (dBA)			
Equipment		*Lmax	Leq
Impact Pile Driver		99	92
	Total	99	92

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Live aboard boats t	Residential	49.5	49.5	49.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Impact Pile Driver	Yes	20		101.3	380	0

Results

Calculated (dBA)			
Equipment		*Lmax	Leq
Impact Pile Driver		83.7	76.7
	Total	83.7	76.7

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-family resider	Residential	49.5	52.1	52.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Impact Pile Driver	Yes	20		101.3	400	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Impact Pile Driver	83.2	76.2
Total	83.2	76.2

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Live aboard boats t	Residential	52.1	52.1	52.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Impact Pile Driver	Yes	20		101.3	640	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Impact Pile Driver	79.1	72.1
Total	79.1	72.1

*Calculated Lmax is the Loudest value.

Live aboard boats to the north at Oceans West Marina

Ref=	Reference vibration level (PPV)	
RefD=	Reference distance for Reference vibration level (Feet)	

Vibration PPV

Ref=	0.2	Based on type of equipment
RefD=	25	
D=	65	Distance from equipment to sensitive receptor
Equip=	0.048	

Annoyance VdB

Ref=	72	Based on type of equipment
RefD=	25	
D=	65	Distance from equipment to sensitive receptor
Equip=	60	

Peak demolition vibration based on utilizing an Impact Pile Driver.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

	0	Multi-family residences to the northeast at Portside Ventura Harbor	
Ref=	Reference vibration level (PPV)		
RefD=	Reference distance for Reference vibration level (Feet)		
	Vibration PPV		
	Ref=	0.2	Based on type of equipment
	RefD=	25	
	D=	400	Distance from equipment to sensitive receptor
	Equip=	0.003	
	Annoyance VdB		
	Ref=	72	Based on type of equipment
	RefD=	25	
	D=	400	Distance from equipment to sensitive receptor
	Equip=	36	

Peak demolition vibration based on utilizing an Impact Pile Driver.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

Live aboard boats to the southeast at Ventura Isle Marina.

Ref= Reference vibration level (PPV)

RefD= Reference distance for Reference vibration level (Feet)

Vibration PPV

Ref=	0.2	Based on type of equipment
RefD=	25	
D=	380	Distance from equipment to sensitive receptor
Equip=	0.003	

Annoyance VdB

Ref=	72	Based on type of equipment
RefD=	25	
D=	380	Distance from equipment to sensitive receptor
Equip=	37	

Peak demolition vibration based on utilizing an Impact Pile Driver.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.

	0	Live aboard boats to the east at Ventura West Marina	
Ref=	Reference vibration level (PPV)		
RefD=	Reference distance for Reference vibration level (Feet)		
	Vibration PPV		
	Ref=	0.2	Based on type of equipment
	RefD=	25	
	D=	640	Distance from equipment to sensitive receptor
	Equip=	0.002	
	Annoyance VdB		
	Ref=	72	Based on type of equipment
	RefD=	25	
	D=	640	Distance from equipment to sensitive receptor
	Equip=	30	

Peak demolition vibration based on utilizing an Impact Pile Driver.

Source: FTA Tranist Noise and Vibration Impact Assessment, 2006.