Appendix H

Noise Technical Report

Noise Technical Report
for the
Breeze Townhomes Project

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
Caltrans	California Department of Transportation
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
ips	inches per second
Ldn	day–night average noise level
Leq	equivalent noise level over a given period
Lmax	sound energy level averaged over a specified time period
Ln	statistical sound level
MM	Mitigation Measure
PPV	peak particle velocity
proposed project	Breeze Townhome Project
RCNM	Roadway Construction Noise Model
ST	short-term noise measurement locations

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1 Introduction and Background

This technical noise report evaluates the potential noise impacts during construction and operation of the proposed Breeze Townhome Project (proposed project). The proposed project would be located on four lots, which include Assessor's Parcel Numbers (APNs) 152-121-06, 152-123-05, 152-123-20, and 152-320-11, in the City of Oceanside, California (Figure 1, Project Location). Land uses that generally surround the project site include a multi-family residential area with some single family residential intermixed to the north of the site; mobile homes in the valley to the south and southeast, an RV park to the southwest; with primarily single family residential across the valley further south, Oceanside Cemetery directly to the west with commercial uses further northwest; , and Ditmar Elementary School and single family residential further to the north across Oceanside Boulevard (Figure 2, Surrounding Land Uses).

Project Description

The proposed project involves the construction and operation of 34 residential units, including 2 detached residences and 32 attached townhomes on a vacant site. The total site area consists of 2.66 gross acres, although only 2.21 acres would be developed, after deducting the 0.45-acre land area for steep slopes deemed undevelopable under the City of Oceanside Zoning Ordinance. The proposed project would include seven buildings (two detached units and five attached townhome buildings), which would vary from two to three stories. The two detached homes would be located on the western side of the site, adjacent to an existing single-family home and the Oceanside Cemetery, while the remaining buildings vary from two to nine units per building, compatible with the adjacent multi-family residential development. The proposed project would incorporate 1.34 acres of open space and landscaping throughout the site as well as various recreational amenities (Figure 3, Site Plan). The proposed project would include 78 parking spaces, including 68 parking spaces for residents and an additional 10 guest parking spaces, and three separate on-site, underground stormwater vaults for hydromodification and flow detention. Street improvements proposed under the project include frontage improvements at the Ditmar/Godfrey intersection, the Nevada Street cul-de-sac, and Oceanside Boulevard, with minor off-site improvements for transition to existing street improvements.

Noise Characteristics

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound-pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud (Caltrans 2013a). A doubling of sound energy results in a 3-dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in decibels), frequency or pitch (measured in hertz, or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the statistical sound level (L_n), the day–night average noise level (L_{dn}), and the Community Noise Equivalent Level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a sound energy level averaged over a specified time period (typically no less than 15 minutes for environmental studies). L_{eq} is a single numerical value that represents the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors. L_{max} is the greatest sound level measured during a designated time interval or event.

Unlike the L_{eq} metrics, L_{dn} and CNEL metrics always represent 24-hour periods, usually on an annualized basis. L_{dn} and CNEL also differ from L_{eq} because they apply a time-weighted factor designed to emphasize noise events that occur during the evening and nighttime hours (when speech and sleep disturbance is of more concern). "Time weighted" refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding 5 dB, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is defined as 7:00 a.m. to 10:00 p.m., thus eliminating the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5–1 dB.

Vibration is the movement of mass over time. It is described in terms of frequency and amplitude and, unlike sound, there is no standard way of measuring and reporting amplitude. Vibration can be described in units of velocity (inches per second (ips)) or discussed in decibel units to compress the range of numbers required to describe vibration. Vibration impacts to buildings are generally discussed in terms of peak particle velocity (PPV) that describes particle movement over time (in terms of physical displacement of mass). For purposes of this analysis, PPV will be used to describe all vibration for ease of reading and comparison. Vibration can impact people, structures, and sensitive equipment (Caltrans 2013b). Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities. Next to pile driving, grading activity has the greatest potential for vibration impacts if large bulldozers, large trucks, or other heavy equipment are used. The maximum vibration level standard used by the California Department of Transportation (Caltrans) for the prevention of structural damage to typical residential buildings is 0.3 ips PPV (Caltrans 2013b).

SOURCE: SANGIS 2017

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Breeze Townhomes Noise Report

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SOURCE: SANGIS 2017

DUDEK

0 200 400 Feet

FIGURE 2

Surrounding Land Uses

Breeze Townhomes Noise Report

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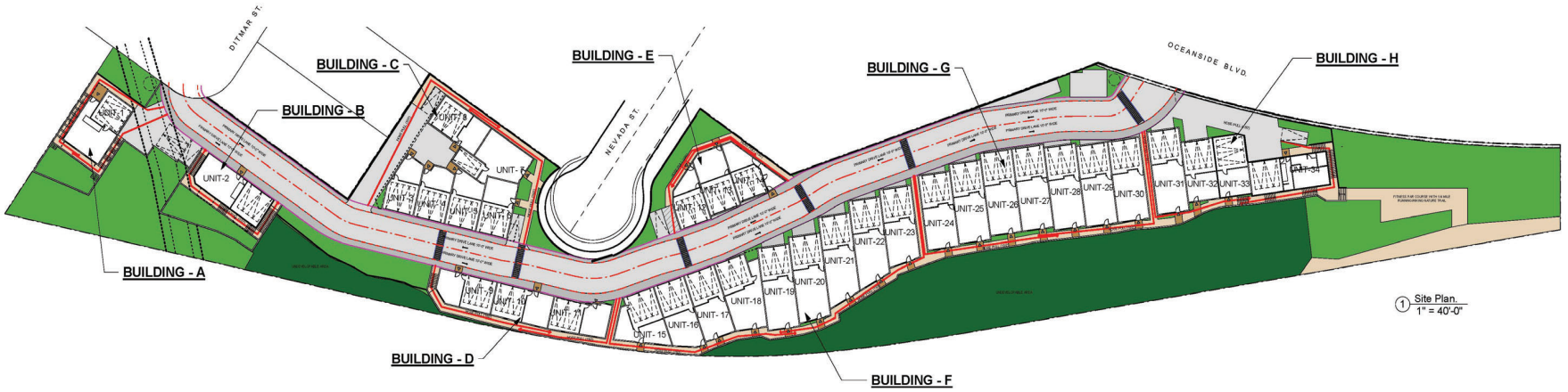

AREA LEGEND	
UNIT NO.	TOTAL (SQ-FT)
UNIT - 1	2710
UNIT - 2	3221
UNIT - 3	1810
UNIT - 4	1980
UNIT - 5	1984
UNIT - 6	1939
UNIT - 7	1693
UNIT - 8	2031
UNIT - 9	2016
UNIT - 10	2120
UNIT - 11	2060
UNIT - 12	1526
UNIT - 13	2170
UNIT - 14	2094
UNIT - 15	2476
UNIT - 16	2398
UNIT - 17	1531
UNIT - 18	1983
UNIT - 19	1853
UNIT - 20	1882
UNIT - 21	1907
UNIT - 22	1953
UNIT - 23	1678
UNIT - 24	1671
UNIT - 25	1747
UNIT - 26	1833
UNIT - 27	1833
UNIT - 28	1853
UNIT - 29	1782
UNIT - 30	1782
UNIT - 31	1852
UNIT - 32	2094
UNIT - 33	2087
UNIT - 34	3029
TOTAL	68,218

SITE DEVELOPMENT SUMMARY				
		AREA (SQ FT)	REQUIRED	PROVIDED
TOTAL PARCEL AREA		116,505	-	116,505
UNDEVELOPABLE AREA		20,013	-	20,013
NET DEVELOPABLE AREA		96,429	-	96,429
LOT COVERAGE		37,649	MAX.60%(69,903 SF)	32.3%(37,649 SF)
LANDSCAPE AREA		51,006	MIN. 15%(17,476 SF)	43.7%(51,006 SF)
COMMON AMENITY AREA		8,334	5,100 SF	8,334 SF
FRONT YARD LANDSCAPE AREA				
	OCEANSIDE BLVD.	3,368	MIN. 60%(2,021 SF)	60.09%(2,024 SF)
	DITMAR STREET	3,648	MIN. 60%(2,189 SF)	60.8%(2,221 SF)
	NEVADA STREET	711	MIN. 60%(427 SF)	11.2%(80 SF)

UNIT AND PARKING SUMMARY	
UNITS	34 = (18) 3 STORY (16) 2 STORY
PARKING STALLS	2 PER UNIT = 68 10 GUEST SPACES = 0.294 PER UNIT TOTAL = 78 SPACES
NUMBER OF STORIES	2 AND 3
HEIGHT	MAX. 35 FT
DENSITY	15.38 UNITS PER DEVELOPABLE ACRE

LEGEND

150' FIRE HOSE ACCESS AROUND BUILDING

SOLID WASTE LEGEND	
TRASH	
RECYCLE	
ORGANIC	

NOTE: ALL OUTDOOR LIGHTING SHALL MEET CHAPTER 39 OF THE CITY CODE (LIGHT POLLUTION ORDINANCE) AND SHALL BE SHIELDED APPROPRIATELY. OUTDOOR LIGHTING SHALL BE LOW EMISSION, SHIELDED AND DIRECTED AWAY FROM ALL PROPERTY LINES. A LIGHTING PLAN DETAILING FIXTURE TYPE, LUMEN TYPE (E.G. LED) AND MAXIMUM WATTAGE SHALL BE PROVIDED TO VERIFY COMPLIANCE AS PART OF THE BUILDING PERMIT PLAN SET.

SOURCE: Lightfoot Planning Group 2018

DUDEK

FIGURE 3

Site Plan

Breeze Townhomes Noise Report

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2 Regulatory Setting

Regulatory Setting

Federal

Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an 8-hour period (FTA 2018) when "detailed" construction noise assessments are performed to evaluate potential impacts to community residences surrounding a project. Although this FTA guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the State and local jurisdictional levels.

State

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations sets standards which new development in California must meet. According to Title 24, interior noise levels are not to exceed 45 dB CNEL for new multifamily residences, hotels, and other attached residences.

Title 24 also requires that an interior acoustical study demonstrating that interior noise levels due to exterior sources will be less than or equal to 45 CNEL be performed for affected multifamily structures and hotels that are exposed to exterior noise levels in excess of 60 CNEL.

California Department of Health Services Guidelines

The State Department of Health Services has developed guidelines of community noise acceptability for use by local agencies (OPR 2003). Selected relevant levels are listed here:

- Below 60 dBA CNEL: normally acceptable for low-density residential use
- 50 to 70 dBA: conditionally acceptable for low-density residential use
- Below 65 dBA CNEL: normally acceptable for high-density residential use and transient lodging
- 60 to 70 dBA CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational, and medical facilities.

The normally acceptable exterior noise level for transient lodging use is up to 65 dBA CNEL. Conditional acceptable exterior noise levels range up to 70 dBA CNEL for transient lodging.

California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual, the California Department of Transportation (Caltrans) recommends a vibration velocity threshold of 0.2 ips PPV (Caltrans 2013b) for assessing "annoying" vibration impacts to occupants of residential structures. Although this Caltrans guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the local jurisdictional level. Similarly, thresholds to

assess building damage risk due to construction vibration vary with the type of structure and its fragility, but tend to range between 0.3 ips and 0.4 ips PPV for typical residential structures (Caltrans 2013b).

Local

City of Oceanside Noise Level Compatibility Standards

The Noise Element of the City's General Plan (City of Oceanside 1974) establishes target maximum noise levels in the City. The Noise Element provides the following limitations on construction noise:

1. It should be unlawful for any person within any residential zone of 500 feet there from to operate any pile driver, power shovel, pneumatic, power hoist, or other construction equipment between 8:00 p.m. and 7:00 a.m. generating an ambient noise levels of 50 dBA at any property line unless an emergency exists.
2. It should be unlawful for any person to operate any construction equipment at a level in excess of 85 dBA at 100 feet from the source.
3. It should be unlawful for any person to engage in construction activities between 6:00 p.m. and 7:00 a.m. when such activities exceed the ambient noise level by 5 dBA. A special permit may be granted by the Director of Public Works if extenuating circumstances exist.

In addition, the Noise Element addresses nuisance noise and states that it should be unlawful for any person to make or continue any loud, unnecessary noise that causes annoyance to any reasonable person of normal sensitivity.

Transportation-Related Noise Standards

The City's Noise Element establishes a policy for exterior sensitive areas to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor areas and interior noise levels of less than 45 dBA CNEL as the "normally acceptable" level.

For interior noise, the Noise Element also establishes 45 dBA CNEL as the maximum acceptable level for habitable rooms when exterior noise levels are 60 dBA CNEL or more. If windows and doors are required to be closed to meet this standard, then mechanical ventilation (i.e., air conditioning) shall be included in the project design.

Noise Element Policies

- Noise levels shall not be so loud as to cause danger to public health in all zones except manufacturing zones where noise levels may be greater.
- Noise shall be controlled at the source where possible.
- Noise shall be intercepted by barriers or dissipated by space where other controls fail or are impractical.
- Noise levels shall be considered in any change to the Land Use and Circulation Elements of the General Plan.
- Noise levels of City vehicles, construction equipment, and garbage trucks shall be reduced to acceptable levels.

City of Oceanside Noise Ordinance

Chapter 38 of the Oceanside Municipal Code governs operational noise and contains the maximum one-hour average sound levels for various land uses for operational noise (Table 1) generated by sources within or affecting

each land use zone. The Noise Ordinance sets an allowed level for single-family and medium-density residential areas to 50 dBA L_{eq} from 7:00 a.m. to 9:59 p.m., and 45 dBA L_{eq} from 10:00 p.m. to 6:59 a.m. High density residential areas are limited to 55 dBA L_{eq} from 7:00 a.m. to 9:59 p.m. and 50 dBA L_{eq} form 10:00 p.m. to 6:59 a.m. In commercial zones, noise generation is limited to 65 dBA L_{eq} from 7:00 a.m. to 9:59 p.m. and 60 dBA L_{eq} form 10:00 p.m. to 6:59 a.m. Where two land use zones abut one another, the more restrictive noise limit is enforced along the common boundary between the two land uses.

Table 1. City of Oceanside Exterior Noise Standards

Zone	Applicable Limit (decibels)	Time Period
Residential Estate, Single-Family Residential, Medium Density Residential, Agricultural, Open Space	50 45	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
High Density, Residential Tourist	55 50	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Commercial	65 60	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Industrial	70 65	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Downtown	65 55	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.

Source: Oceanside Municipal Code, Section 38.12.

Construction activities are subject to Section 38.17 of the Noise Ordinance, which specifically prohibits the operation of any pneumatic or air hammer, pile driver, steam shovel, derrick, steam, or electric hoist, parking lot cleaning equipment or other appliance, the use of which is attended by loud or unusual noise, between the hours of 10:00 p.m. and 7:00 a.m.

Section 38.16 prohibits nuisance noise as recommended in the General Plan Noise Element. It is unlawful for any person to make, continue or cause to be made or continued, within the limits of the City of Oceanside, any disturbing, excessive, or offensive noise that causes discomfort or annoyance to reasonable persons of normal sensitivity.

City of Oceanside Engineering Manual

Construction noise in Oceanside is governed by the City Engineering Manual. Construction is normally limited to the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday.

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3 Existing Conditions

Noise measurements were conducted on and near the project site on February 19, 2019, to characterize the existing noise levels. Table 2 provides the location, date, and time the noise measurements were taken. The noise measurements were taken using a Rion NL-52 sound level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the sound level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Table 2. Measured Noise Levels

Receptor	Location/Address	Date	Time	L_{eq} (dBA)	L_{max} (dBA)
ST1	East of 1221 South Nevada Street Oceanside, California 92054	02.02.19	10:12–10:22 a.m.	56.5	63.3
ST2	West of 1226 South Ditmar Street Oceanside, California 92054	02.02.19	09:58–10:08 a.m.	56.3	71.4
ST3	East of 909 Oceanside Boulevard Oceanside, California 92054	02.02.19	10:25–10:35 a.m.	65.8	75.2
ST4	Southwestern Parking Lot of Cavalier Mobile Estates Oceanside, California 92054	02.02.19	10:38–10:48 a.m.	55.3	80.3

Source: Appendix A.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels; ST = short-term noise measurement locations.

Four short-term noise measurement locations (ST) that represent existing sensitive receivers were selected on and near the project site. These locations are depicted as receivers ST1–ST4 on Figure 4, Noise Measurement and Modeling Locations. The measured energy-averaged (L_{eq}) and maximum (L_{max}) noise levels are provided in Table 1. The primary noise sources at the sites identified in Table 1 consisted of traffic along adjacent roadways; and the sounds of leaves rustling, and birdsong. As shown in Table 1, the measured sound levels ranged from approximately 55.3 dBA L_{eq} at ST4 to 65.8 dBA L_{eq} at ST3. Noise measurement data is also included in Appendix A, Noise Measurement Field Data.

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SOURCE: SANGIS 2017

DUDEK

0 200 400 Feet

FIGURE 4

Noise Measurement Locations

Breeze Townhomes Noise Report

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4 Thresholds of Significance

The following significance criteria are based on Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Impacts to noise would be significant if the proposed project would result in:

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

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

c. Expose people residing or working in the project area to excessive noise levels (for 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 2 miles of a public airport or public use airport).

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5 Impact Discussion

a) Would the project 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 applicable standards of other agencies?

Short-Term Construction

Less-Than-Significant with Mitigation. Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor.

Equipment that would be in use during construction would include, in part, graders, backhoes, rubber-tired dozers, loaders, cranes, forklifts, cement mixers, pavers, rollers, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 3. Note that the equipment noise levels presented in Table 3 are maximum noise levels. Typically, construction equipment operates in alternating cycles of full power and low power, producing average noise levels less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 3. Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (dBA at 50 Feet)
Air compressor	81
Backhoe	85
Concrete pump	82
Concrete vibrator	76
Crane	83
Truck	88
Dozer	87
Generator	78
Loader	84
Paver	88
Pneumatic tools	85
Water pump	76
Power hand saw	78
Shovel	82
Trucks	88

Source: DOT 2006.
Notes: dBA = A-weighted decibels.

The maximum noise levels at 50 feet for typical construction equipment would be 88 dBA for the equipment typically used for this type of development project, although the hourly noise levels would vary. Construction noise in a well-defined area typically attenuates at approximately 6 dB per doubling

of distance. Proposed project construction would take place both near and far from adjacent, existing noise-sensitive uses. For example, construction near the northern project site boundary would take place within approximately 10 feet of existing residences, but during construction of other proposed project components, construction would be approximately 90 feet away from noise-sensitive receptors. Most construction activities associated with the proposed project would occur at distances of approximately 90 feet or more from existing noise-sensitive uses, which represents activities both near and far from any one receiver, as is typical for construction projects.

The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the model was funded and promulgated by the Federal Highway Administration, the RCNM is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the RCNM consist of the receiver/land use types, the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of hours the equipment typically works per day), and the distance from the noise-sensitive receiver. No topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis.

Using the FHWA RCNM and construction information, the estimated noise levels from the major construction phases were calculated for the nearest noise-sensitive land use, as presented in Table 4. The detailed RCNM input and output values are provided in Appendix B.

Table 4. Construction Noise Modeling Summary Results

Construction Phase	L_{eq} (dBA)	
	Nearest Receiver 10 feet	*Acoustical Center 90 feet*
Site Preparation	89	79
Grading	88	79
Building Construction	88	76
Paving	90	80
Architectural Coating	88	69

Notes: Leq = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibel.

As presented in Table 4, the construction noise levels are predicted to be as high as 90 dBA L_{eq} at the nearest existing residences when Paving activities take place near the north project site boundary, approximately 10 feet away. Note that these estimated noise levels would only occur as heavy equipment is operated along the northern project site boundary, which will take place for a relatively short portion of the overall construction period.

On an average construction workday, heavy equipment will be operating sporadically throughout the project site and more frequently away from the northern edge of the site. At more typical distances

closer to the center of the project site (approximately 90 feet from the nearest existing residence), construction noise levels are estimated to range from approximately 69 dBA L_{eq} to 79 dBA L_{eq} at the nearest existing residence. The upper end of this range is less than 80 dBA L_{eq}, which the FTA recommends as a daytime threshold for construction noise exposure at a residential receptor.

Although nearby off-site residences would be exposed to elevated construction noise levels, the increased noise levels would typically be relatively short term. It is anticipated that construction activities associated with the proposed project would take place primarily within the allowable hours of the City of Oceanside (7:00 a.m. and 6:00 p.m. Monday through Friday). In the event that construction is required to extend beyond these times, extended hours permits would be required and would be obtained by the applicant.

If work were to occur outside of the allowable hours, annoyance or sleep disturbance could result from construction noise; also, due to the relatively limited distance to existing adjacent residences, construction noise annoyance could result even during daytime hours. However, since the predicted construction noise during allowable daytime hours would not exceed the aforementioned FTA guidance-based standard and would not be substantially higher than existing ambient daytime noise levels (as shown in Table 2), temporary construction-related noise impacts would be considered **less than significant**.

Long-Term Operational

Traffic Noise

Less-Than-Significant Impact. The proposed project would result in the creation of additional vehicle trips on local arterial roadways (i.e., Oceanside Boulevard and Coast Highway), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. Appendix C, Traffic Noise Modeling Input and Output, contains a spreadsheet with traffic volume data (average daily traffic) for Oceanside Boulevard. In particular, the proposed project would create additional traffic along Oceanside Boulevard, which according to the Traffic Impact Assessment prepared for the proposed project (LOS Engineering Inc. 2019) would add 272 average daily trips to the segment of Oceanside Boulevard adjacent to the project site.

Potential noise effects from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model version 2.5 (FHWA 2004). Information used in the model included the roadway geometry, existing (year 2019), existing plus project, existing plus cumulative without project, and existing plus cumulative plus project traffic volumes and posted traffic speeds. Noise levels were modeled at representative noise-sensitive receivers ST1 through ST4, as shown in Figure 3. ST1, ST2, and ST3 are generally representative of average setback distance for residences along Oceanside Boulevard, and ST4 is generally representative of average setback distance for residences at the mobile home park south of the project site boundary.

The City's Noise Element establishes a policy for exterior sensitive areas to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor areas and interior noise levels of less than 45 dBA CNEL as the "normally acceptable" level. However, existing levels from traffic

already exceed this threshold. For the purposes of this noise analysis, such impacts are considered significant when they cause an increase of 3 dB from existing noise levels. An increase or decrease in noise level of at least 3 dB is required before any noticeable change in community response would be expected (Caltrans 2013a). The receivers were modeled to be 5 feet above the local ground elevation. The noise model results are summarized in Table 5.

Table 5. Traffic Noise Modeling Results

Modeled Receiver No. – Description	Existing (2018) Noise Level (dBA CNEL)	Existing (2018) Plus Project Noise Level (dBA CNEL)	Existing Plus Cumulative without Project Noise Level (dBA CNEL)	Existing Plus Cumulative with Project Noise Level (dBA CNEL)	Maximum Project-Related Noise Level Increase (dB)
ST1	56.9	56.9	57.3	57.4	0.5
ST2	54.8	54.8	55.2	55.3	0.5
ST3	67.1	67.1	67.6	67.6	0.5
ST4	51.8	51.8	52.3	52.3	0.5

Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Table 5 shows that at all four listed representative receivers, the addition of proposed project traffic to the roadway network would result in an increase in the CNEL of less than 1 dB, which is below the discernible level of change for the average healthy human ear. Thus, a **less-than-significant impact** is expected for proposed project-related off-site traffic noise increases affecting existing residences in the vicinity.

Rail Noise

A railroad alignment (i.e., tracks) exists immediately south of the project site. Dudek captured noise levels of train events during ambient measurements ST2 and ST4 (Table 1). The rail traffic consists of a "Sprinter" commuter train that passes approximately every 15 min from 4:00 a.m. to 9:30 p.m. Monday through Friday. Table 1 shows that with rail events the average L_{eq} stays below the 65 dBA CNEL threshold for the outdoor areas. There is also a freight service on the line operated by BNSF Railway that runs approximately three times a week. This freight rail event occurs infrequently; therefore, its corresponding acoustical contribution to outdoor ambient community noise level over an entire diurnal period, described with metrics such as CNEL, would be modest and hence result in a **less-than-significant impact**.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2013b). Information from Caltrans indicates

that continuous vibrations with a PPV of approximately 0.2 ips is considered "annoying." For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet (DOT 2006).

Groundborne vibration attenuates rapidly—even over short distances. And when groundborne vibration encounters a building foundation, a coupling loss occurs depending on the mass and design. For typical wood-framed houses, like those near the proposed project, this coupling loss is 5 vibration velocity decibels according to FTA guidance (FTA 2006). The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the western project boundary (that is 10 feet from the nearest receiving sensitive land use) the estimated vibration velocity level would be 0.19 ips and thus no greater than the annoyance threshold recommended by Caltrans. Therefore, vibration-induced annoyance to occupants of nearby existing homes would be **less than significant**.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, anticipated construction vibration associated with this proposed project would not yield levels that surpass this risk. Per Caltrans, the recommended PPV threshold for newer residential structures is 0.5 ips and 0.3 ips for older residential structures—both of which are less stringent that the aforementioned threshold to annoy occupants of such structures; thus vibration damage risk to nearby structures is considered **less than significant.**

Once operational, the proposed project would not be expected to feature major producers of groundborne vibration. Anticipated mechanical systems like heating, ventilation, and air-conditioning units are designed and manufactured to feature rotating (fans, motors) and reciprocating (compressors) components that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, vibration due to proposed project operation should be **less than significant**.

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?

Less-Than-Significant Impact. There are no private airstrips within the vicinity of the project site. The closest airport to the proposed project site is the Oceanside Municipal Airport, approximately 2.3 miles northeast of the site. According to the Airport Land Use Compatibility Plan Exhibit IV-10, Compatibility Data Map: Noise, the project site is not located within a noise exposure range of 60–75 dB CNEL and would therefore not expose people residing or working in the project area to excessive noise levels (San Diego County Regional Airport Authority 2010). Impacts would be **less than significant**.

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6 Mitigation Measures

Due to the lack of predicted significant impacts, no mitigation measures are required.

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7 Summary of Findings

This noise report was conducted for the proposed project. The results indicate that potential impacts during construction and operation would **be less than significant**. No further mitigation is required.

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8 References Cited

Caltrans (California Department of Transportation). 2013a. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013.

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Appendix A

Noise Measurement Field Data

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Field Noise Measurement Data

Record: 1130	
Project Name	*Breeze townhomes*
Observer(s)	*Connor Burke*
Date	*2019-02-19*

Instrument and Calibrator Information	
Instrument Name List	*(ENC) Rion NL-52*
Instrument Name	*(ENC) Rion NL-52*
Instrument Name Lookup Key	*(ENC) Rion NL-52*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name Lookup Key	*(ENC) LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Monitoring	
Record #	*1*
Site ID	*ST2*
Site Location Lat/Long	*33.184010, -117.366591*
Begin (Time)	*09:58:00*
End (Time)	*10:09:00*
Leq	*56.3*
Lmax	*71.4*
Lmin	*49.9*
Other Lx?	*L90, L50, L10*
L90	*51.6*
L50	*53.8*
L10	*58*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Distant traffic*
Other Noise Sources (Background)	*Birds, Distant Conversations / Yelling, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Description / Photos

Site Photos

Photo	
Comments / Description	*Facing north.*

Monitoring

Record #	*2*
Site ID	*ST1*
Site Location Lat/Long	*33.184579, -117.366017*
Begin (Time)	*10:12:00*
End (Time)	*10:22:00*
Leq	*56.5*
Lmax	*63.3*
Lmin	*53.3*
Other Lx?	*L90, L50, L10*
L90	*54.2*
L50	*56*
L10	*58.3*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Distant traffic from 5*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Description / Photos

Site Photos

Photo	
Comments / Description	*Facing northeast*

Monitoring

Record #	*3*
Site ID	*ST3*
Site Location Lat/Long	*33.185739, -117.365852*
Begin (Time)	*10:25:00*
End (Time)	*10:35:00*
Leq	*65.8*
Lmax	*75.2*
Lmin	*59.5*
Other Lx?	*L90, L50, L10*
L90	*61.1*
L50	*64.1*
L10	*68.7*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Source Info and Traffic Counts	
Number of Lanes	*4*
Lane Width (feet)	*10*
Roadway Width (feet)	*40*
Roadway Width (m)	*12.2*
Distance to Roadway (feet)	*40*
Distance to Roadway (m)	*12.2*
Distance Measured to Centerline or Edge of Pavement?	*Edge of Pavement*
Estimated Vehicle Speed (MPH)	*35*

Traffic Counts	
Vehicle Count Summary	*A 180, MT 2, HT 0, B 0, MC 0*
Select Method for Recording Count Duration	*Enter Manually*
Counting Both Directions?	*Yes*
Count Duration (minutes)	*10*
Vehicle Count Tally	
Select Method for Vehicle Counts	*Enter Manually*
Number of Vehicles - Autos	*180*
Number of Vehicles - Medium Trucks	*2*
Number of Vehicles - Heavy Trucks	*0*
Number of Vehicles - Buses	*0*
Number of Vehicles - Motorcyles	*0*

Description / Photos

Site Photos

Photo

Comments / Description	*Facing north.*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Monitoring

Record #	*4*
Site ID	*ST4*
Site Location Lat/Long	*33.184510, -117.365318*
Begin (Time)	*10:38:00*
End (Time)	*10:48:00*
Leq	*55.3*
Lmax	*80.3*
Lmin	*48.7*
Other Lx?	*L90, L50, L10*
L90	*50.3*
L50	*53.1*
L10	*55.5*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Distant traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic, Rustling Leaves*
Other Noise Sources Additional Description	*Rail noise from sprinter.*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	
Comments / Description	*Facing north towards breeze townhomes.*

Appendix B

Construction Noise Modeling Input and Output

Dudek
CB

25 February 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST2	2	1	56.3	54.8	66	-1.5	10	----	54.8	0.0	8	-8.0
ST1	3	1	56.5	56.9	66	0.4	10	----	56.9	0.0	8	-8.0
ST3	4	1	65.8	67.1	66	1.3	10	Snd Lvl	67.1	0.0	8	-8.0
ST4	5	1	55.3	51.8	66	-3.5	10	----	51.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 25 February 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
West Oceanside Dr	30.0	point1	1	781.1	682.3	0.00				Average	
		point2	2	1,341.0	1,084.3	0.00					
East Oceanside	30.0	point13	13	804.1	656.2	0.00				Average	
		point14	14	1,121.6	887.3	0.00				Average	
		point15	15	1,395.9	1,082.7	0.00					
South Vine St	20.0	point24	24	2,290.2	2,644.7	0.00				Average	
		point25	25	2,179.3	2,721.7	0.00				Average	
		point26	26	2,141.7	2,774.3	0.00				Average	
		point27	27	2,113.5	2,826.9	0.00					
North Vine	20.0	point28	28	2,297.7	2,678.5	0.00				Average	
		point29	29	2,233.8	2,717.9	0.00				Average	
		point30	30	2,190.6	2,751.7	0.00				Average	
		point31	31	2,145.5	2,819.4	0.00					
Nevada ST S of Oside	40.0	point32	32	1,638.2	1,244.3	0.00				Average	
		point33	33	1,796.1	1,022.6	0.00					
North Ditmar (S of Oside)	20.0	point34	34	1,596.1	802.1	0.00				Average	
		point35	35	1,403.1	1,070.8	0.00					
South Ditmar (S of Oside)	20.0	point36	36	1,573.2	802.1	0.00				Average	
		point37	37	1,388.8	1,057.9	0.00					
North Ditmar (N of Oside)	20.0	point38	38	1,356.0	1,125.1	0.00				Average	
		point39	39	960.0	1,706.9	0.00					
South Ditmar (N of Oside)	20.0	point40	40	1,341.7	1,120.8	0.00				Average	
		point41	41	952.9	1,691.1	0.00					
West Godfrey St	18.0	point42	42	992.9	373.3	0.00				Average	
		point43	43	1,570.4	793.5	0.00					

East Godfrey St	18.0	point44	44	995.8	361.8	0.00				Average	
		point45	45	1,574.7	782.1	0.00					
North Coast Hwy	30.0	point46	46	1,171.6	81.7	0.00				Average	
		point47	47	672.7	797.8	0.00				Average	
		point48	48	334.0	1,286.6	0.00					
S Coast Hwy	30.0	point49	49	1,127.8	90.3	0.00				Average	
		point50	50	420.2	1,109.4	0.00				Average	
		point51	51	311.6	1,262.3	0.00					
North Nevada St	35.0	point52	52	1,596.6	1,306.1	0.00				Average	
		point53	53	1,327.9	1,690.6	0.00					
West Oceanside Dr-2	30.0	point55	55	1,341.0	1,084.3	0.00				Average	
		point3	3	1,536.4	1,223.3	0.00				Average	
		point4	4	1,654.8	1,313.5	0.00				Average	
		point5	5	1,803.2	1,473.2	0.00				Average	
		point6	6	1,902.8	1,646.0	0.00				Average	
		point7	7	1,979.8	1,839.5	0.00				Average	
		point8	8	2,103.8	2,183.3	0.00				Average	
		point9	9	2,186.4	2,410.7	0.00				Average	
		point10	10	2,317.9	2,651.1	0.00				Average	
		point11	11	2,391.2	2,749.9	0.00				Average	
		point12	12	2,449.4	2,815.6	0.00					
East Oceanside-2	30.0	point56	56	1,395.9	1,082.7	0.00				Average	
		point16	16	1,649.5	1,266.8	0.00				Average	
		point17	17	1,790.4	1,407.7	0.00				Average	
		point18	18	1,935.1	1,638.8	0.00				Average	
		point19	19	2,034.6	1,905.6	0.00				Average	
		point20	20	2,190.6	2,332.0	0.00				Average	
		point21	21	2,258.2	2,467.3	0.00				Average	
		point22	22	2,342.7	2,619.5	0.00				Average	
		point23	23	2,470.5	2,799.8	0.00					

Appendix C

Traffic Noise Modeling Input and Output

Dudek **25 February 2019**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Oceanside Breeze**
RUN: **Existing**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
West Oceanside Dr	point1	1	725	40	15	40	7	40	0	0	0	0
	point2	2										
East Oceanside	point13	13	725	40	15	40	7	40	0	0	0	0
	point14	14	725	40	15	40	7	40	0	0	0	0
	point15	15										
South Vine St	point24	24	0	0	0	0	0	0	0	0	0	0
	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27										
North Vine	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29	0	0	0	0	0	0	0	0	0	0
	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31										
Nevada ST S of Oside	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33										
North Ditmar (S of Oside)	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35										
South Ditmar (S of Oside)	point36	36	0	0	0	0	0	0	0	0	0	0
	point37	37										
North Ditmar (N of Oside)	point38	38	0	0	0	0	0	0	0	0	0	0
	point39	39										
South Ditmar (N of Oside)	point40	40	0	0	0	0	0	0	0	0	0	0
	point41	41										

West Godfrey St	point42	42	0	0	0	0	0	0	0	0	0	0
	point43	43										
East Godfrey St	point44	44	0	0	0	0	0	0	0	0	0	0
	point45	45										
North Coast Hwy	point46	46	883	35	18	35	9	35	0	0	0	0
	point47	47	883	35	18	35	9	35	0	0	0	0
	point48	48										
S Coast Hwy	point49	49	883	35	18	35	9	35	0	0	0	0
	point50	50	883	35	18	35	9	35	0	0	0	0
	point51	51										
North Nevada St	point52	52	0	0	0	0	0	0	0	0	0	0
	point53	53										
West Oceanside Dr-2	point55	55	860	40	18	40	9	40	0	0	0	0
	point3	3	860	40	18	40	9	40	0	0	0	0
	point4	4	860	40	18	40	9	40	0	0	0	0
	point5	5	860	40	18	40	9	40	0	0	0	0
	point6	6	860	40	18	40	9	40	0	0	0	0
	point7	7	860	40	18	40	9	40	0	0	0	0
	point8	8	860	40	18	40	9	40	0	0	0	0
	point9	9	860	40	18	40	9	40	0	0	0	0
	point10	10	860	40	18	40	9	40	0	0	0	0
	point11	11	860	40	18	40	9	40	0	0	0	0
	point12	12										
East Oceanside-2	point56	56	860	40	18	40	9	40	0	0	0	0
	point16	16	860	40	18	40	9	40	0	0	0	0
	point17	17	860	40	18	40	9	40	0	0	0	0
	point18	18	860	40	18	40	9	40	0	0	0	0
	point19	19	860	40	18	40	9	40	0	0	0	0
	point20	20	860	40	18	40	9	40	0	0	0	0
	point21	21	860	40	18	40	9	40	0	0	0	0
	point22	22	860	40	18	40	9	40	0	0	0	0
	point23	23										

Dudek 25 February 2019
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST2	2	1	1,615.2	804.4	0.00	4.92	56.30	66	10.0	8.0	Y
ST1	3	1	1,743.8	1,008.8	0.00	4.92	56.50	66	10.0	8.0	Y
ST3	4	1	1,848.9	1,404.3	0.00	4.92	65.80	66	10.0	8.0	Y
ST4	5	1	2,002.5	1,010.2	0.00	4.92	55.30	66	10.0	8.0	Y

Dudek
CB

25 February 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST2	2	1	56.3	54.8	66	-1.5	10	----	54.8	0.0	8	-8.0
ST1	3	1	56.5	56.9	66	0.4	10	----	56.9	0.0	8	-8.0
ST3	4	1	65.8	67.1	66	1.3	10	Snd Lvl	67.1	0.0	8	-8.0
ST4	5	1	55.3	51.8	66	-3.5	10	----	51.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 25 February 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
West Oceanside Dr	30.0	point1	1	781.1	682.3	0.00				Average	
		point2	2	1,341.0	1,084.3	0.00					
East Oceanside	30.0	point13	13	804.1	656.2	0.00				Average	
		point14	14	1,121.6	887.3	0.00				Average	
		point15	15	1,395.9	1,082.7	0.00					
South Vine St	20.0	point24	24	2,290.2	2,644.7	0.00				Average	
		point25	25	2,179.3	2,721.7	0.00				Average	
		point26	26	2,141.7	2,774.3	0.00				Average	
		point27	27	2,113.5	2,826.9	0.00					
North Vine	20.0	point28	28	2,297.7	2,678.5	0.00				Average	
		point29	29	2,233.8	2,717.9	0.00				Average	
		point30	30	2,190.6	2,751.7	0.00				Average	
		point31	31	2,145.5	2,819.4	0.00					
Nevada ST S of Oside	40.0	point32	32	1,638.2	1,244.3	0.00				Average	
		point33	33	1,796.1	1,022.6	0.00					
North Ditmar (S of Oside)	20.0	point34	34	1,596.1	802.1	0.00				Average	
		point35	35	1,403.1	1,070.8	0.00					
South Ditmar (S of Oside)	20.0	point36	36	1,573.2	802.1	0.00				Average	
		point37	37	1,388.8	1,057.9	0.00					
North Ditmar (N of Oside)	20.0	point38	38	1,356.0	1,125.1	0.00				Average	
		point39	39	960.0	1,706.9	0.00					
South Ditmar (N of Oside)	20.0	point40	40	1,341.7	1,120.8	0.00				Average	
		point41	41	952.9	1,691.1	0.00					
West Godfrey St	18.0	point42	42	992.9	373.3	0.00				Average	
		point43	43	1,570.4	793.5	0.00					

East Godfrey St	18.0	point44	44	995.8	361.8	0.00				Average	
		point45	45	1,574.7	782.1	0.00					
North Coast Hwy	30.0	point46	46	1,171.6	81.7	0.00				Average	
		point47	47	672.7	797.8	0.00				Average	
		point48	48	334.0	1,286.6	0.00					
S Coast Hwy	30.0	point49	49	1,127.8	90.3	0.00				Average	
		point50	50	420.2	1,109.4	0.00				Average	
		point51	51	311.6	1,262.3	0.00					
North Nevada St	35.0	point52	52	1,596.6	1,306.1	0.00				Average	
		point53	53	1,327.9	1,690.6	0.00					
West Oceanside Dr-2	30.0	point55	55	1,341.0	1,084.3	0.00				Average	
		point3	3	1,536.4	1,223.3	0.00				Average	
		point4	4	1,654.8	1,313.5	0.00				Average	
		point5	5	1,803.2	1,473.2	0.00				Average	
		point6	6	1,902.8	1,646.0	0.00				Average	
		point7	7	1,979.8	1,839.5	0.00				Average	
		point8	8	2,103.8	2,183.3	0.00				Average	
		point9	9	2,186.4	2,410.7	0.00				Average	
		point10	10	2,317.9	2,651.1	0.00				Average	
		point11	11	2,391.2	2,749.9	0.00				Average	
		point12	12	2,449.4	2,815.6	0.00					
East Oceanside-2	30.0	point56	56	1,395.9	1,082.7	0.00				Average	
		point16	16	1,649.5	1,266.8	0.00				Average	
		point17	17	1,790.4	1,407.7	0.00				Average	
		point18	18	1,935.1	1,638.8	0.00				Average	
		point19	19	2,034.6	1,905.6	0.00				Average	
		point20	20	2,190.6	2,332.0	0.00				Average	
		point21	21	2,258.2	2,467.3	0.00				Average	
		point22	22	2,342.7	2,619.5	0.00				Average	
		point23	23	2,470.5	2,799.8	0.00					

Dudek **25 February 2019**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Oceanside Breeze**
RUN: **Existing + Project**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
West Oceanside Dr	point1	1	726	40	15	40	7	40	0	0	0	0
	point2	2										
East Oceanside	point13	13	726	40	15	40	7	40	0	0	0	0
	point14	14	726	40	15	40	7	40	0	0	0	0
	point15	15										
South Vine St	point24	24	0	0	0	0	0	0	0	0	0	0
	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27										
North Vine	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29	0	0	0	0	0	0	0	0	0	0
	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31										
Nevada ST S of Oside	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33										
North Ditmar (S of Oside)	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35										
South Ditmar (S of Oside)	point36	36	0	0	0	0	0	0	0	0	0	0
	point37	37										
North Ditmar (N of Oside)	point38	38	0	0	0	0	0	0	0	0	0	0
	point39	39										
South Ditmar (N of Oside)	point40	40	0	0	0	0	0	0	0	0	0	0
	point41	41										

West Godfrey St	point42	42	0	0	0	0	0	0	0	0	0	0
	point43	43										
East Godfrey St	point44	44	0	0	0	0	0	0	0	0	0	0
	point45	45										
North Coast Hwy	point46	46	883	35	18	35	9	35	0	0	0	0
	point47	47	883	35	18	35	9	35	0	0	0	0
	point48	48										
S Coast Hwy	point49	49	883	35	18	35	9	35	0	0	0	0
	point50	50	883	35	18	35	9	35	0	0	0	0
	point51	51										
North Nevada St	point52	52	0	0	0	0	0	0	0	0	0	0
	point53	53										
West Oceanside Dr-2	point55	55	869	40	18	40	9	40	0	0	0	0
	point3	3	869	40	18	40	9	40	0	0	0	0
	point4	4	869	40	18	40	9	40	0	0	0	0
	point5	5	869	40	18	40	9	40	0	0	0	0
	point6	6	869	40	18	40	9	40	0	0	0	0
	point7	7	869	40	18	40	9	40	0	0	0	0
	point8	8	869	40	18	40	9	40	0	0	0	0
	point9	9	869	40	18	40	9	40	0	0	0	0
	point10	10	869	40	18	40	9	40	0	0	0	0
	point11	11	869	40	18	40	9	40	0	0	0	0
	point12	12										
East Oceanside-2	point56	56	869	40	18	40	9	40	0	0	0	0
	point16	16	869	40	18	40	9	40	0	0	0	0
	point17	17	869	40	18	40	9	40	0	0	0	0
	point18	18	869	40	18	40	9	40	0	0	0	0
	point19	19	869	40	18	40	9	40	0	0	0	0
	point20	20	869	40	18	40	9	40	0	0	0	0
	point21	21	869	40	18	40	9	40	0	0	0	0
	point22	22	869	40	18	40	9	40	0	0	0	0
	point23	23										

Dudek 25 February 2019
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST2	2	1	1,615.2	804.4	0.00	4.92	56.30	66	10.0	8.0	Y
ST1	3	1	1,743.8	1,008.8	0.00	4.92	56.50	66	10.0	8.0	Y
ST3	4	1	1,848.9	1,404.3	0.00	4.92	65.80	66	10.0	8.0	Y
ST4	5	1	2,002.5	1,010.2	0.00	4.92	55.30	66	10.0	8.0	Y

Dudek
CB

25 February 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Cumulative
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST2	2	1	56.3	55.2	66	-1.1	10	----	55.2	0.0	8	-8.0
ST1	3	1	56.5	57.3	66	0.8	10	----	57.3	0.0	8	-8.0
ST3	4	1	65.8	67.6	66	1.8	10	Snd Lvl	67.6	0.0	8	-8.0
ST4	5	1	55.3	52.3	66	-3.0	10	----	52.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 25 February 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Cumulative

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
West Oceanside Dr	30.0	point1	1	781.1	682.3	0.00				Average	
		point2	2	1,341.0	1,084.3	0.00					
East Oceanside	30.0	point13	13	804.1	656.2	0.00				Average	
		point14	14	1,121.6	887.3	0.00				Average	
		point15	15	1,395.9	1,082.7	0.00					
South Vine St	20.0	point24	24	2,290.2	2,644.7	0.00				Average	
		point25	25	2,179.3	2,721.7	0.00				Average	
		point26	26	2,141.7	2,774.3	0.00				Average	
		point27	27	2,113.5	2,826.9	0.00					
North Vine	20.0	point28	28	2,297.7	2,678.5	0.00				Average	
		point29	29	2,233.8	2,717.9	0.00				Average	
		point30	30	2,190.6	2,751.7	0.00				Average	
		point31	31	2,145.5	2,819.4	0.00					
Nevada ST S of Oside	40.0	point32	32	1,638.2	1,244.3	0.00				Average	
		point33	33	1,796.1	1,022.6	0.00					
North Ditmar (S of Oside)	20.0	point34	34	1,596.1	802.1	0.00				Average	
		point35	35	1,403.1	1,070.8	0.00					
South Ditmar (S of Oside)	20.0	point36	36	1,573.2	802.1	0.00				Average	
		point37	37	1,388.8	1,057.9	0.00					
North Ditmar (N of Oside)	20.0	point38	38	1,356.0	1,125.1	0.00				Average	
		point39	39	960.0	1,706.9	0.00					
South Ditmar (N of Oside)	20.0	point40	40	1,341.7	1,120.8	0.00				Average	
		point41	41	952.9	1,691.1	0.00					
West Godfrey St	18.0	point42	42	992.9	373.3	0.00				Average	
		point43	43	1,570.4	793.5	0.00					

East Godfrey St	18.0	point44	44	995.8	361.8	0.00				Average	
		point45	45	1,574.7	782.1	0.00					
North Coast Hwy	30.0	point46	46	1,171.6	81.7	0.00				Average	
		point47	47	672.7	797.8	0.00				Average	
		point48	48	334.0	1,286.6	0.00					
S Coast Hwy	30.0	point49	49	1,127.8	90.3	0.00				Average	
		point50	50	420.2	1,109.4	0.00				Average	
		point51	51	311.6	1,262.3	0.00					
North Nevada St	35.0	point52	52	1,596.6	1,306.1	0.00				Average	
		point53	53	1,327.9	1,690.6	0.00					
West Oceanside Dr-2	30.0	point55	55	1,341.0	1,084.3	0.00				Average	
		point3	3	1,536.4	1,223.3	0.00				Average	
		point4	4	1,654.8	1,313.5	0.00				Average	
		point5	5	1,803.2	1,473.2	0.00				Average	
		point6	6	1,902.8	1,646.0	0.00				Average	
		point7	7	1,979.8	1,839.5	0.00				Average	
		point8	8	2,103.8	2,183.3	0.00				Average	
		point9	9	2,186.4	2,410.7	0.00				Average	
		point10	10	2,317.9	2,651.1	0.00				Average	
		point11	11	2,391.2	2,749.9	0.00				Average	
		point12	12	2,449.4	2,815.6	0.00					
East Oceanside-2	30.0	point56	56	1,395.9	1,082.7	0.00				Average	
		point16	16	1,649.5	1,266.8	0.00				Average	
		point17	17	1,790.4	1,407.7	0.00				Average	
		point18	18	1,935.1	1,638.8	0.00				Average	
		point19	19	2,034.6	1,905.6	0.00				Average	
		point20	20	2,190.6	2,332.0	0.00				Average	
		point21	21	2,258.2	2,467.3	0.00				Average	
		point22	22	2,342.7	2,619.5	0.00				Average	
		point23	23	2,470.5	2,799.8	0.00					

Dudek **25 February 2019**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Oceanside Breeze**
RUN: **Existing + Cumulative**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
West Oceanside Dr	point1	1	801	40	17	40	8	40	0	0	0	0
	point2	2										
East Oceanside	point13	13	801	40	17	40	8	40	0	0	0	0
	point14	14	801	40	17	40	8	40	0	0	0	0
	point15	15										
South Vine St	point24	24	0	0	0	0	0	0	0	0	0	0
	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27										
North Vine	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29	0	0	0	0	0	0	0	0	0	0
	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31										
Nevada ST S of Oside	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33										
North Ditmar (S of Oside)	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35										
South Ditmar (S of Oside)	point36	36	0	0	0	0	0	0	0	0	0	0
	point37	37										
North Ditmar (N of Oside)	point38	38	0	0	0	0	0	0	0	0	0	0
	point39	39										
South Ditmar (N of Oside)	point40	40	0	0	0	0	0	0	0	0	0	0
	point41	41										

West Godfrey St	point42	42	0	0	0	0	0	0	0	0	0	0
	point43	43										
East Godfrey St	point44	44	0	0	0	0	0	0	0	0	0	0
	point45	45										
North Coast Hwy	point46	46	925	35	19	35	10	35	0	0	0	0
	point47	47	925	35	19	35	10	35	0	0	0	0
	point48	48										
S Coast Hwy	point49	49	925	35	19	35	10	35	0	0	0	0
	point50	50	925	35	19	35	10	35	0	0	0	0
	point51	51										
North Nevada St	point52	52	0	0	0	0	0	0	0	0	0	0
	point53	53										
West Oceanside Dr-2	point55	55	968	40	20	40	10	40	0	0	0	0
	point3	3	968	40	20	40	10	40	0	0	0	0
	point4	4	968	40	20	40	10	40	0	0	0	0
	point5	5	968	40	20	40	10	40	0	0	0	0
	point6	6	968	40	20	40	10	40	0	0	0	0
	point7	7	968	40	20	40	10	40	0	0	0	0
	point8	8	968	40	20	40	10	40	0	0	0	0
	point9	9	968	40	20	40	10	40	0	0	0	0
	point10	10	968	40	20	40	10	40	0	0	0	0
	point11	11	968	40	20	40	10	40	0	0	0	0
	point12	12										
East Oceanside-2	point56	56	968	40	20	40	10	40	0	0	0	0
	point16	16	968	40	20	40	10	40	0	0	0	0
	point17	17	968	40	20	40	10	40	0	0	0	0
	point18	18	968	40	20	40	10	40	0	0	0	0
	point19	19	968	40	20	40	10	40	0	0	0	0
	point20	20	968	40	20	40	10	40	0	0	0	0
	point21	21	968	40	20	40	10	40	0	0	0	0
	point22	22	968	40	20	40	10	40	0	0	0	0
	point23	23										

Dudek 25 February 2019
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Cumulative

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST2	2	1	1,615.2	804.4	0.00	4.92	56.30	66	10.0	8.0	Y
ST1	3	1	1,743.8	1,008.8	0.00	4.92	56.50	66	10.0	8.0	Y
ST3	4	1	1,848.9	1,404.3	0.00	4.92	65.80	66	10.0	8.0	Y
ST4	5	1	2,002.5	1,010.2	0.00	4.92	55.30	66	10.0	8.0	Y

Dudek
CB

25 February 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Project + Cumulative
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST2	2	1	56.3	55.3	66	-1.0	10	----	55.3	0.0	8	-8.0
ST1	3	1	56.5	57.4	66	0.9	10	----	57.4	0.0	8	-8.0
ST3	4	1	65.8	67.6	66	1.8	10	Snd Lvl	67.6	0.0	8	-8.0
ST4	5	1	55.3	52.3	66	-3.0	10	----	52.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 25 February 2019
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Project + Cumulative

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
West Oceanside Dr	30.0	point1	1	781.1	682.3	0.00				Average	
		point2	2	1,341.0	1,084.3	0.00					
East Oceanside	30.0	point13	13	804.1	656.2	0.00				Average	
		point14	14	1,121.6	887.3	0.00				Average	
		point15	15	1,395.9	1,082.7	0.00					
South Vine St	20.0	point24	24	2,290.2	2,644.7	0.00				Average	
		point25	25	2,179.3	2,721.7	0.00				Average	
		point26	26	2,141.7	2,774.3	0.00				Average	
		point27	27	2,113.5	2,826.9	0.00					
North Vine	20.0	point28	28	2,297.7	2,678.5	0.00				Average	
		point29	29	2,233.8	2,717.9	0.00				Average	
		point30	30	2,190.6	2,751.7	0.00				Average	
		point31	31	2,145.5	2,819.4	0.00					
Nevada ST S of Oside	40.0	point32	32	1,638.2	1,244.3	0.00				Average	
		point33	33	1,796.1	1,022.6	0.00					
North Ditmar (S of Oside)	20.0	point34	34	1,596.1	802.1	0.00				Average	
		point35	35	1,403.1	1,070.8	0.00					
South Ditmar (S of Oside)	20.0	point36	36	1,573.2	802.1	0.00				Average	
		point37	37	1,388.8	1,057.9	0.00					
North Ditmar (N of Oside)	20.0	point38	38	1,356.0	1,125.1	0.00				Average	
		point39	39	960.0	1,706.9	0.00					
South Ditmar (N of Oside)	20.0	point40	40	1,341.7	1,120.8	0.00				Average	
		point41	41	952.9	1,691.1	0.00					
West Godfrey St	18.0	point42	42	992.9	373.3	0.00				Average	
		point43	43	1,570.4	793.5	0.00					

East Godfrey St	18.0	point44	44	995.8	361.8	0.00				Average	
		point45	45	1,574.7	782.1	0.00					
North Coast Hwy	30.0	point46	46	1,171.6	81.7	0.00				Average	
		point47	47	672.7	797.8	0.00				Average	
		point48	48	334.0	1,286.6	0.00					
S Coast Hwy	30.0	point49	49	1,127.8	90.3	0.00				Average	
		point50	50	420.2	1,109.4	0.00				Average	
		point51	51	311.6	1,262.3	0.00					
North Nevada St	35.0	point52	52	1,596.6	1,306.1	0.00				Average	
		point53	53	1,327.9	1,690.6	0.00					
West Oceanside Dr-2	30.0	point55	55	1,341.0	1,084.3	0.00				Average	
		point3	3	1,536.4	1,223.3	0.00				Average	
		point4	4	1,654.8	1,313.5	0.00				Average	
		point5	5	1,803.2	1,473.2	0.00				Average	
		point6	6	1,902.8	1,646.0	0.00				Average	
		point7	7	1,979.8	1,839.5	0.00				Average	
		point8	8	2,103.8	2,183.3	0.00				Average	
		point9	9	2,186.4	2,410.7	0.00				Average	
		point10	10	2,317.9	2,651.1	0.00				Average	
		point11	11	2,391.2	2,749.9	0.00				Average	
		point12	12	2,449.4	2,815.6	0.00					
East Oceanside-2	30.0	point56	56	1,395.9	1,082.7	0.00				Average	
		point16	16	1,649.5	1,266.8	0.00				Average	
		point17	17	1,790.4	1,407.7	0.00				Average	
		point18	18	1,935.1	1,638.8	0.00				Average	
		point19	19	2,034.6	1,905.6	0.00				Average	
		point20	20	2,190.6	2,332.0	0.00				Average	
		point21	21	2,258.2	2,467.3	0.00				Average	
		point22	22	2,342.7	2,619.5	0.00				Average	
		point23	23	2,470.5	2,799.8	0.00					

Dudek **25 February 2019**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Oceanside Breeze**
RUN: **Existing + Project + Cumulative**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
West Oceanside Dr	point1	1	802	40	17	40	8	40	0	0	0	0
	point2	2										
East Oceanside	point13	13	802	40	17	40	8	40	0	0	0	0
	point14	14	802	40	17	40	8	40	0	0	0	0
	point15	15										
South Vine St	point24	24	0	0	0	0	0	0	0	0	0	0
	point25	25	0	0	0	0	0	0	0	0	0	0
	point26	26	0	0	0	0	0	0	0	0	0	0
	point27	27										
North Vine	point28	28	0	0	0	0	0	0	0	0	0	0
	point29	29	0	0	0	0	0	0	0	0	0	0
	point30	30	0	0	0	0	0	0	0	0	0	0
	point31	31										
Nevada ST S of Oside	point32	32	0	0	0	0	0	0	0	0	0	0
	point33	33										
North Ditmar (S of Oside)	point34	34	0	0	0	0	0	0	0	0	0	0
	point35	35										
South Ditmar (S of Oside)	point36	36	0	0	0	0	0	0	0	0	0	0
	point37	37										
North Ditmar (N of Oside)	point38	38	0	0	0	0	0	0	0	0	0	0
	point39	39										
South Ditmar (N of Oside)	point40	40	0	0	0	0	0	0	0	0	0	0
	point41	41										

West Godfrey St	point42	42	0	0	0	0	0	0	0	0	0	0
	point43	43										
East Godfrey St	point44	44	0	0	0	0	0	0	0	0	0	0
	point45	45										
North Coast Hwy	point46	46	926	35	19	35	10	35	0	0	0	0
	point47	47	926	35	19	35	10	35	0	0	0	0
	point48	48										
S Coast Hwy	point49	49	926	35	19	35	10	35	0	0	0	0
	point50	50	926	35	19	35	10	35	0	0	0	0
	point51	51										
North Nevada St	point52	52	0	0	0	0	0	0	0	0	0	0
	point53	53										
West Oceanside Dr-2	point55	55	977	40	20	40	10	40	0	0	0	0
	point3	3	977	40	20	40	10	40	0	0	0	0
	point4	4	977	40	20	40	10	40	0	0	0	0
	point5	5	977	40	20	40	10	40	0	0	0	0
	point6	6	977	40	20	40	10	40	0	0	0	0
	point7	7	977	40	20	40	10	40	0	0	0	0
	point8	8	977	40	20	40	10	40	0	0	0	0
	point9	9	977	40	20	40	10	40	0	0	0	0
	point10	10	977	40	20	40	10	40	0	0	0	0
	point11	11	977	40	20	40	10	40	0	0	0	0
	point12	12										
East Oceanside-2	point56	56	977	40	20	40	10	40	0	0	0	0
	point16	16	977	40	20	40	10	40	0	0	0	0
	point17	17	977	40	20	40	10	40	0	0	0	0
	point18	18	977	40	20	40	10	40	0	0	0	0
	point19	19	977	40	20	40	10	40	0	0	0	0
	point20	20	977	40	20	40	10	40	0	0	0	0
	point21	21	977	40	20	40	10	40	0	0	0	0
	point22	22	977	40	20	40	10	40	0	0	0	0
	point23	23										

Dudek 25 February 2019
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Oceanside Breeze
RUN: Existing + Project + Cumulative

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST2	2	1	1,615.2	804.4	0.00	4.92	56.30	66	10.0	8.0	Y
ST1	3	1	1,743.8	1,008.8	0.00	4.92	56.50	66	10.0	8.0	Y
ST3	4	1	1,848.9	1,404.3	0.00	4.92	65.80	66	10.0	8.0	Y
ST4	5	1	2,002.5	1,010.2	0.00	4.92	55.30	66	10.0	8.0	Y

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/25/2019
Case Description: Oceanside Breeze_Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Receiver 10'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	10	0
Scraper	No	40		83.6	50	0
Grader	No	40	85		80	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Backhoe	91.5	87.6	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A
Grader	80.9	76.9	N/A	N/A	N/A	N/A	N/A
Total	91.5	88.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Acoustical Center 90'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	90	0
Scraper	No	40		83.6	90	0
Grader	No	40	85		90	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Backhoe	72.5	68.5	N/A	N/A	N/A	N/A	N/A
Scraper	78.5	74.5	N/A	N/A	N/A	N/A	N/A

Grader		79.9	75.9	N/A	N/A	N/A	N/A	N/A
	Total	79.9	78.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/25/2019
Case Description: Oceanside Breeze_Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 10'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	10	0
Front End Loader	No	40		79.1	50	0
Dozer	No	40		81.7	80	0
Grader	No	40	85		90	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Backhoe		91.5	87.6	N/A	N/A	N/A	N/A	N/A
Front End Loader		79.1	75.1	N/A	N/A	N/A	N/A	N/A
Dozer		77.6	73.6	N/A	N/A	N/A	N/A	N/A
Grader		79.9	75.9	N/A	N/A	N/A	N/A	N/A
	Total	91.5	88.2	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Acoustical Center 90'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	90	0
Front End Loader	No	40		79.1	90	0
Dozer	No	40		81.7	90	0
Grader	No	40	85		90	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Backhoe		72.5	68.5	N/A	N/A	N/A	N/A	N/A
Front End Loader		74	70	N/A	N/A	N/A	N/A	N/A
Dozer		76.6	72.6	N/A	N/A	N/A	N/A	N/A
Grader		79.9	75.9	N/A	N/A	N/A	N/A	N/A
	Total	79.9	78.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/25/2019
Case Description: Oceanside Breeze_Building Construction

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 10'	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	10	0
Man Lift	No	20		74.7	25	0
Man Lift	No	20		74.7	50	0
Generator	No	50		80.6	50	0
Backhoe	No	40		77.6	75	0
Welder / Torch	No	40		74	75	0
Welder / Torch	No	40		74	90	0
Welder / Torch	No	40		74	90	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Crane		94.5	86.6	N/A	N/A	N/A	N/A	N/A
Man Lift		80.7	73.7	N/A	N/A	N/A	N/A	N/A
Man Lift		74.7	67.7	N/A	N/A	N/A	N/A	N/A
Generator		80.6	77.6	N/A	N/A	N/A	N/A	N/A
Backhoe		74	70.1	N/A	N/A	N/A	N/A	N/A
Welder / Torch		70.5	66.5	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68.9	64.9	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68.9	64.9	N/A	N/A	N/A	N/A	N/A

	Total	94.5	87.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Acoustical Center 90'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	90	0
Man Lift	No	20		74.7	90	0
Man Lift	No	20		74.7	90	0
Generator	No	50		80.6	90	0
Backhoe	No	40		77.6	90	0
Welder / Torch	No	40		74	90	0
Welder / Torch	No	40		74	90	0
Welder / Torch	No	40		74	90	0

		Calculated (dBA)		Results		Noise Limits (dBA)		
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Crane		75.4	67.5	N/A	N/A	N/A	N/A	N/A
Man Lift		69.6	62.6	N/A	N/A	N/A	N/A	N/A
Man Lift		69.6	62.6	N/A	N/A	N/A	N/A	N/A
Generator		75.5	72.5	N/A	N/A	N/A	N/A	N/A
Backhoe		72.5	68.5	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68.9	64.9	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68.9	64.9	N/A	N/A	N/A	N/A	N/A
Welder / Torch		68.9	64.9	N/A	N/A	N/A	N/A	N/A
	Total	75.5	76.4	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/25/2019
Case Description: Oceanside Breeze_Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 10'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	10	0
Backhoe	No	40		77.6	25	0
Compressor (air)	No	40		77.7	50	0
Paver	No	50		77.2	50	0
Roller	No	20		80	75	0
Roller	No	20		80	75	0
All Other Equipment > 5 HP	No	50	85		90	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Concrete Mixer Truck	92.8	88.8	N/A	N/A	N/A	N/A	N/A
Backhoe	83.6	79.6	N/A	N/A	N/A	N/A	N/A
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A
Roller	76.5	69.5	N/A	N/A	N/A	N/A	N/A
Roller	76.5	69.5	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	79.9	76.9	N/A	N/A	N/A	N/A	N/A
Total	92.8	89.9	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Acoustical Center 90'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	90	0
Backhoe	No	40		77.6	90	0
Compressor (air)	No	40		77.7	90	0
Paver	No	50		77.2	90	0
Roller	No	20		80	90	0
Roller	No	20		80	90	0
All Other Equipment > 5 HP	No	50	85		90	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Concrete Mixer Truck	73.7	69.7	N/A	N/A	N/A	N/A	N/A

Backhoe		72.5	68.5	N/A	N/A	N/A	N/A	N/A
Compressor (air)		72.6	68.6	N/A	N/A	N/A	N/A	N/A
Paver		72.1	69.1	N/A	N/A	N/A	N/A	N/A
Roller		74.9	67.9	N/A	N/A	N/A	N/A	N/A
Roller		74.9	67.9	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		79.9	76.9	N/A	N/A	N/A	N/A	N/A
	Total	79.9	79.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/25/2019
Case Description: Oceanside Breeze_Architectural Coating

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 10'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	10	0

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)	91.6	87.7	N/A	N/A	N/A	N/A	N/A
Total	91.6	87.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Acoustical Center 90'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	90	0

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	Night

Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)		72.6	68.6	N/A	N/A	N/A	N/A	N/A
	Total	72.6	68.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.