NOISE STUDY

MELROSE + OCEANSIDE PLANNED DEVELOPMENT
City of Oceanside, CA

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GLOSSARY OF TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for night time noise. Typically LDN's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts to and from the proposed mixed-use development. The overall project site is comprised of approximately 70.6 acres of land located along the north side of Oceanside Boulevard / West Bobier Drive within the City of Oceanside. The Proposed project would be developed into three separate planning areas to include 276 multifamily residential units, 37 single family units 10,000 SF of office, and 10,000 SF of restaurant space. The project would also be designed to maximize pedestrian friendly access to existing transit services providing residents, visitors and workers direct connections to the surrounding community and regional area.

Transportation Noise Levels – Onsite

Based upon these findings, noise mitigation in the form of 6-foot to 7- foot barriers are necessary at the top of slope along Oceanside Boulevard and 6-foot barriers are needed along a portion of Melrose Drive for the units adjacent to roadways to comply with the City's' 65 dBA Noise standards. The barriers must be constructed of a non-gapping material consisting of masonry, ½ inch thick glass, earthen berm or any combination of these materials.

The City of Oceanside as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above 60 dBA CNEL in order to ensure a 45 dBA CNEL interior noise level. An interior noise assessment is required for the residential units along the roadways prior to the issuance of the first building permit once the architectural floor plans are available. This final report would identify the interior noise requirements to meet the City's established interior noise limit of 45 dBA CNEL.

Offsite Project Related Transportation Noise Levels

The Project does not create a direct noise increase of more than 3 dBA CNEL on any roadway segment. Therefore, the project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses. Therefore, the Project's contributions to off-site roadway noise increase would not be considered cumulatively considerable and would not cause any significant impacts.

Construction Noise Levels

None of the proposed construction equipment will exceed the City of Oceanside 85 dBA standard at 100 feet from the source. The project will meet the City of Oceanside's 85 dBA standard at 100 feet from the source for all proposed equipment and no impacts are anticipated. No impacts will occur and no mitigation measures are required.

Construction Vibration Levels

Given attenuation of vibration velocities with distance, the RMS vibration velocity and peak particle velocity at the nearest existing residence would be about 78 VdB and 0.03 inch per second, respectively. Based on the construction vibration human annoyance criterion of 80 VdB published by the FTA, the vibration levels for the construction activity on nearby residential structures will not be significant.

Operational Project Related Noise Levels

Based upon the operational noise levels none of the proposed noise sources are anticipated to exceed the property line standards at the surround property lines. Therefore, the proposed development related operational noise levels comply with the City's noise standards. No impacts are anticipated and no mitigation is required.

1.0 PROJECT INTRODUCTION

1.1 Purpose of this Study

The purpose of this Noise study is to determine noise impacts, if any, to the Project from off-site sources (i.e. vehicular traffic along adjacent roadways and the nearby railroad tracks) and impacts from the Project operations (i.e. traffic generated from Project). Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to reduce impacts to below a level of significance.

1.2 Project Location

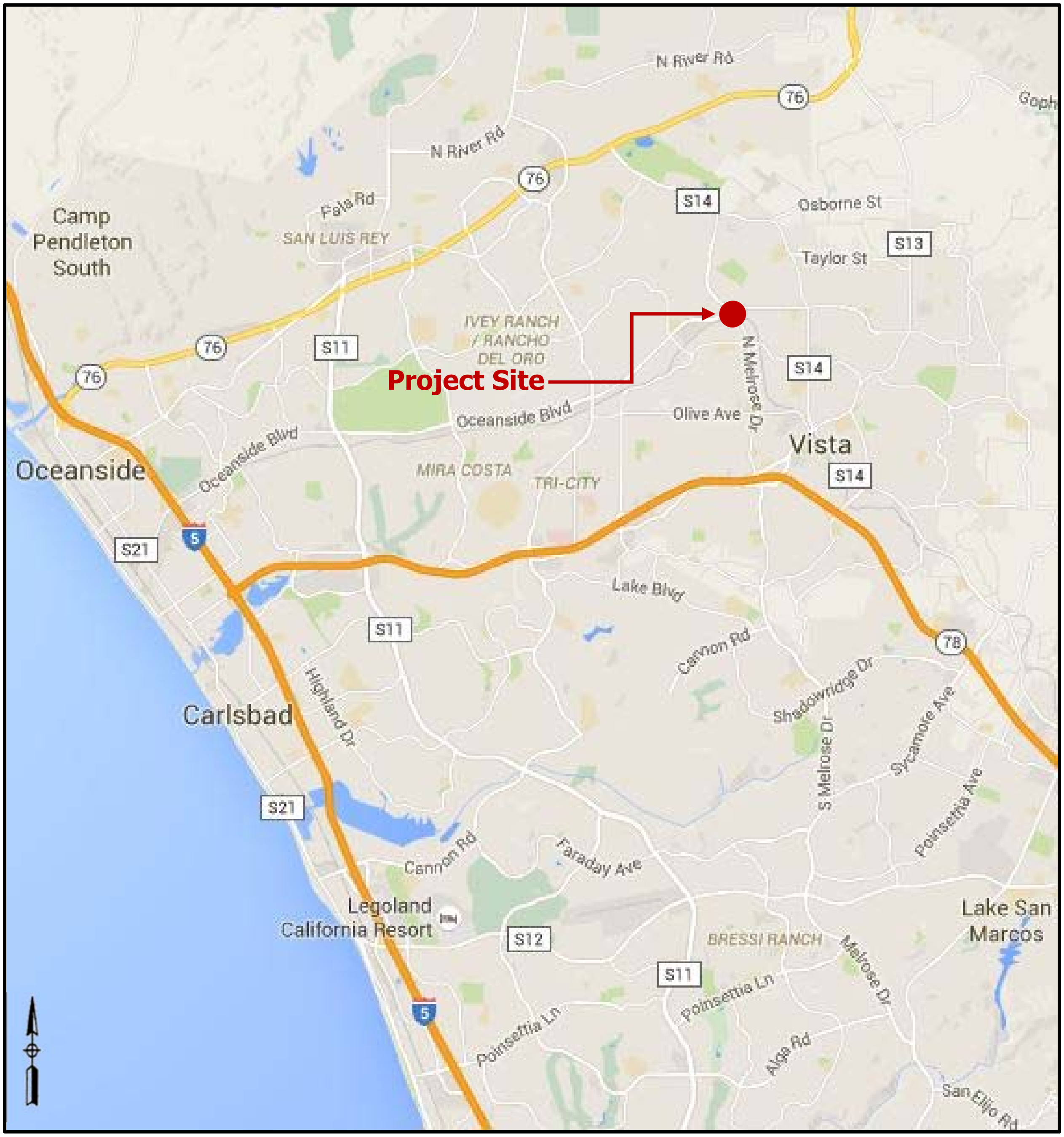
The Melrose+Oceanside site is located in the Peacock neighborhood within the east-central portion of the City of Oceanside. The overall project site is comprised of approximately 70.6 acres of land located along the north side of Oceanside Boulevard / West Bobier Drive (APNs: 159-090-51 and 161-030-19 & 20). The Plan area is bisected into eastern and western portions by North Melrose Drive. Sports Park Way is located along the eastern boundary of the Plan area providing access to the Vista Sports Park. Project access is proposed via Oceanside Boulevard, North Melrose Drive, and Sports Park Way (via West Bobier Drive). A general project vicinity map is shown in Figure 1–A on the following page.

1.3 Project Description

The Melrose+Oceanside Plan proposes a coordinated development of a variety of residential, office and restaurant uses within three separate Planning Areas (PAs) on approximately 37.7 gross developable acres across the project site. The proposed plan also designates the preservation of approximately 31.7 acres of natural open space comprising the northern-most portion of the site area and a small area east of Sports Park Way.

The Proposed project would be developed to include 276 multi-family and 37 single family residential units, 10,000 SF of office and 10,000 SF of restaurant space. More specifically, the project would construct 78 townhomes and both the office and restaurant space as part of PA-1, 37 single family residential units as part of PA-2 and 198 two and three-story multifamily units as part of PA-3. The project would also be designed to maximize pedestrian friendly access to existing transit services providing residents, visitors and workers direct connections to the surrounding community and regional area. A project development plan is shown on Figure 1-B on Page 3 of this report.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 8/15

Figure 1-B: Proposed Project Site Plan

2.0 ACOUSTICAL FUNDAMENTALS

2.1 Acoustical Fundamentals

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs, and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24-hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicles noise level is a combination of the noise produced by a vehicle's engine, exhaust, and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds, and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt, and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas, and vegetation. Alternately, fixed/point sources radiate outward uniformly as it travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source and blocking the noise transmission with barriers. Any or all of these methods may be required to reduce noise levels to an acceptable level. To be effective, a noise barrier must have enough mass to prevent significant noise transmission through it and high enough and long enough to shield the receiver from the noise source. A safe minimum surface weight for a noise barrier is 3.5 pounds/square foot (equivalent to 3/4-inch plywood), and the barrier must be carefully constructed so that there are no cracks or openings.

Barriers constructed of wood or as a wooden fence must have minimum design considerations as follows: the boards must be ¾ inch thick and free of any gaps or knot holes. The design must also incorporate either overlapping the boards at least 1 inch or utilizing a tongue-and-grove design for this to be achieved.

2.2 Vibration Fundamentals

Vibration is a trembling or oscillating motion of the ground. Like noise, vibration is transmitted in waves, but in this case through the ground or solid objects. Unlike noise, vibration is typically felt rather than heard. Vibration can be either natural as in the form of earthquakes, volcanic eruptions; or manmade as from explosions, or heavy machinery. Both natural and manmade vibration may be continuous, such as from operating machinery; or infrequent, as from an explosion.

As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized in three ways: displacement, velocity, and acceleration. Particle displacement is a measure of the distance that a vibrated particle travels from its original position and for the purposes of soil displacement is typically measured in inches or millimeters. Particle velocity is the rate of speed at which soil particles move in inches per second or millimeters per second. Particle acceleration is the rate of change in velocity with respect to time and is measured in inches per second or millimeters per second. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration. Table 2-1 shows the human reaction to various levels of peak particle velocity.

Vibrations also vary in frequency and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and usually occurring around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, it is less common, to measure traffic frequencies above 30 Hz.

Propagation of ground-borne vibrations is complicated and difficult to predict because of the endless variations in the soil through which the waves travel. There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by dropping an object into water. P-waves, or compression waves, are waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and special voids. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

Table 2-1: Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans, Division of Environmental Analysis, *Transportation Related Earthborne Vibration, Caltrans Experiences*, Technical Advisory, Vibration, TAV-02-01-R9601, 2002.

3.0 SIGNIFICANCE THRESHOLDS AND STANDARDS

3.1 Transportation Related Noise

The City of Oceanside's Noise Element requires that all exterior sensitive areas shall limit noise exposure. For noise sensitive residential land uses, the City has adopted a policy which has established a "normally acceptable" exterior noise level goal of 65 dBA CNEL for the outdoor areas and an interior noise level of less than 45 dBA CNEL.

Interior noise levels should be mitigated to a maximum of 45 dBA CNEL in all habitual rooms when the exterior of the residence are exposed to levels of 60 dBA CNEL or more. If windows and doors are required to be closed to meet the interior noise standard, then mechanical ventilation shall be provided per City requirements.

3.2 Construction Noise and Vibration

The City of Oceanside Noise Element controls noise levels due to construction operations. It shall be unlawful for any person to operate construction equipment at any construction site, except as outlined in subsections (a) and (b) below:

(a) It shall be unlawful for any person to operate any construction equipment at a level in excess of 85 dBA at 100 feet from the source.

(b) It should be unlawful for any person to engage in construction activities between 6 PM and 7 AM 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.

The City of has not yet adopted vibration criteria. The United States Department of Transportation Federal Transit Administration (FTA) provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. For purposes of identifying potential project-related vibration impacts, the FTA criteria will be used. The human reaction to various levels of vibration is highly subjective. The upper end of the range shown for the threshold of perception, or roughly 65 VdB, may be considered annoying by some people. Vibration below 65 VdB may also cause secondary audible effects, such as a slight rattling of doors, suspended ceilings/fixtures, windows, and dishes, any of which may result in additional annoyance. Table 3-1 shows the FTA groundborne vibration and noise impact criteria for human annoyance.

Table 3-1: Groundborne Vibration and Noise Impact Criteria (Human Annoyance)

	Groundborne Vibration Impact Levels (VdB re 1 microinch/second)			Groundborne Noise Impact Levels (dB re 20 micropascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[4]	N/A[4]	N/A[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: United States Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment,* June 2006.

1 "Frequent Events" are defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

2 "Occasional Events" are defined as between 30 and 70 vibration events of the same source per day. Most commuter truck lines have this many operations.

3 "Infrequent Events" are defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines

4 This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

5 Vibration-sensitive equipment is not sensitive to groundborne noise.

In addition to the vibration annoyance standards presented above, the FTA also applies the following standards for construction vibration damage. Table 3-2 on the following page, structural damage is possible for typical residential construction when the peak particle velocity (PPV) exceeds 0.2 inch per second (in/sec). This criterion is the threshold at which there is a risk of damage to normal dwellings.

In the context of this analysis, the noise and vibration impacts associated with the construction operations and blasting operations will be conditioned to comply with the thresholds stated above. The potential noise and vibration impacts are analyzed separately below.

Table 3-2: Groundborne Vibration Impact Criteria (Structural Damage)

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

Source: United States Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment,* June 2006.

3.3 Operational Noise

Fixed sources and operational noise standards are governed by the City of Oceanside Noise Ordinance Section 38.12. Except for exempted activities and sounds as provided in this chapter or exempted properties as referenced in Section 38.15, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property in the applicable base district zone on which the sound is produced exceeds the applicable limits set forth below in Table 3-3.

Table 3-3: Operational Noise Level Limits

Base District Zone	7:00 a.m. to 9:59 p.m.	10:00 p.m. to 6:59 a.m.
(1) Residential Districts:		
RE (Residential Estate)	50	45
RS (Single-Family)	50	45
RM (Medium Density)	50	45
RH (High Density)	55	50
RT (Residential Tourist)	55	50
(2) C (Commercial)	65	60
(3) I (Industrial)	70	65
(4) D (Downtown)	65	55
(5) A (Agricultural)	50	45
(6) OS (Open Space)	50	45

In addition to the sound level limits established above, there are established sound level limits for PD (planned development) base district zones. For any residential land use within a PD zone, the sound level limit is that limit which would be otherwise applicable in the residential district zone (RE, RS, RM, RH or RT) corresponding to density of the residential development in that PD zone.

For any nonresidential land use within a PD zone, the sound level limit is that limit corresponding to the C (commercial) or I (industrial) zone which would be applicable to that use if not subject to the PD zone. For the purposes of this section, a land use shall be that use shown on a duly approved planned development plan or specific plan. When property lines form the joint boundary of two (2) base district zones, the sound level limit shall be the arithmetic mean of the limit applicable to each of the two (2) zones.

4.0 NOISE ENVIRONMENT

4.1 Existing Noise Environment Onsite

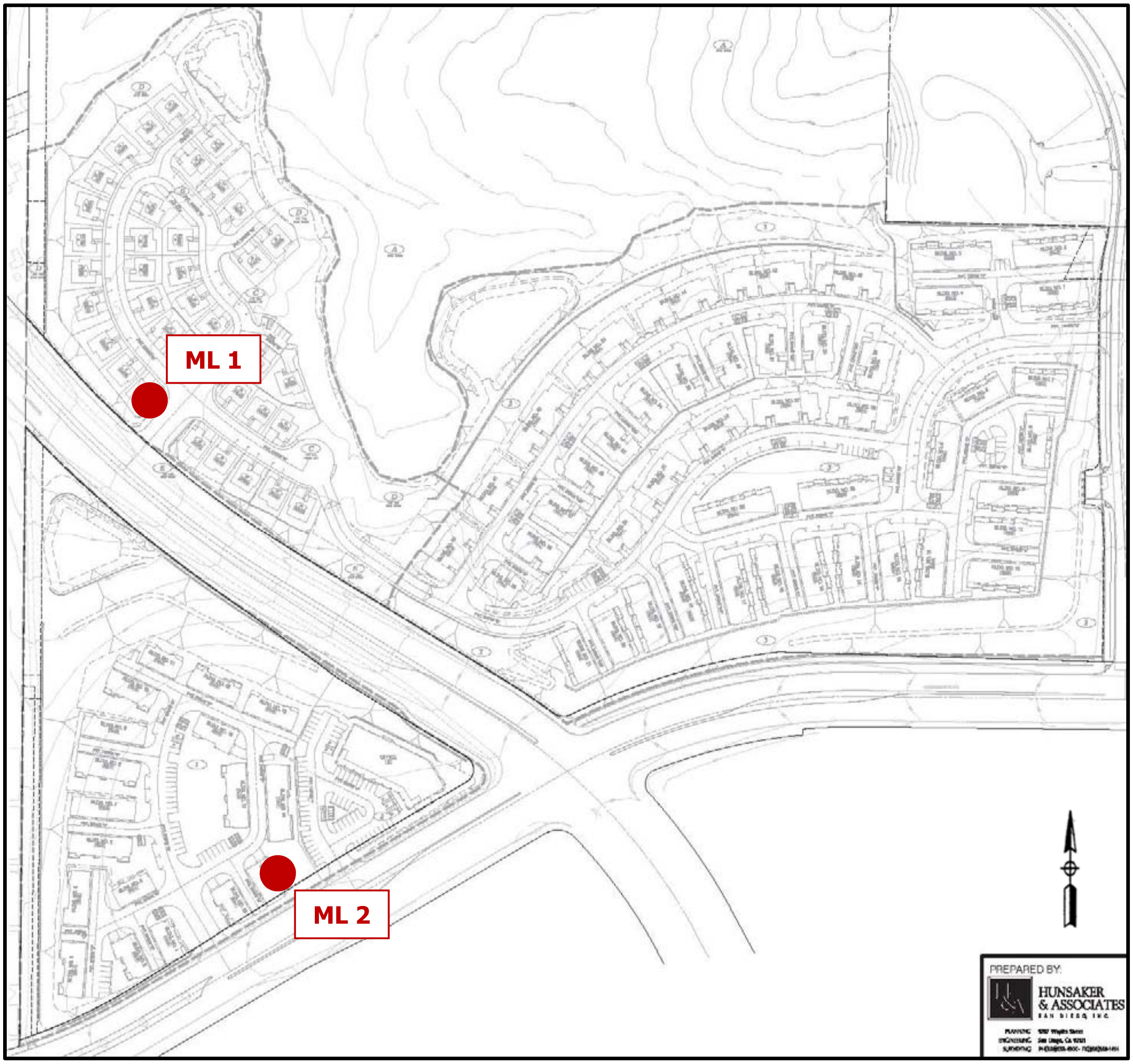
Noise measurements were taken August 10, 2015 in the morning hours using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

Monitoring location 1 (ML1) was located along Melrose Drive and Monitoring Location 2 (ML2) was located along Oceanside Boulevard. The result of the noise level measurements are presented in Table 4-1. The noise measurements were monitored for a time period of 15 minutes during normal traffic conditions. The existing noise levels in the project area consisted primarily of traffic from adjacent Melrose Drive and Oceanside Boulevard Avenue. The ambient Leq noise level measured in the area of the project during the morning hours was found to be roughly 63-67 dBA Leq. The statistical indicators Lmax, Lmin, L10, L50 and L90, are given for the monitoring location. As can be seen from the L90 data, 90% of the time the noise level is 50 dBA from Melrose Drive and 53 dBA from Oceanside Boulevard. The noise monitoring location is provided graphically in Figure 4-A on the following page. The Sprinter rail is located across Oceanside Boulevard and is depressed below the roadway several feet.

Table 4-1: Measured Ambient Noise Levels

Measurement Identification	Main Noise Source	Time	Noise Levels (dBA)					
			Leq	Lmin	Lmax	L10	L50	L90
M1	Melrose Drive	9:15–9:45 a.m.	63.2	45.9	72.7	64.5	59.0	50.0
M2	Oceanside Boulevard	9:15–9:45 a.m.	66.8	49.8	86.5	68.0	61.5	53.0
Source: Ldn Consulting, Inc. August 10, 2015								

Figure 4-A: Ambient Noise Monitoring Location



4.2 Onsite Roadway Noise

The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions (hard or soft) and the peak hour traffic volume. The peak hour traffic volumes along most roadways range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling purposes.

Table 4-2 presents the roadway parameters used in the analysis including the average daily traffic volumes, vehicle speeds and the hourly traffic flow distribution (vehicle mix) for the future Buildout conditions. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the Sound32 Model. A standard City traffic mix of 96/2/2 was utilized on all roadways. The modeled observer locations for the sampled units of the proposed project are presented in Figure 4-B.

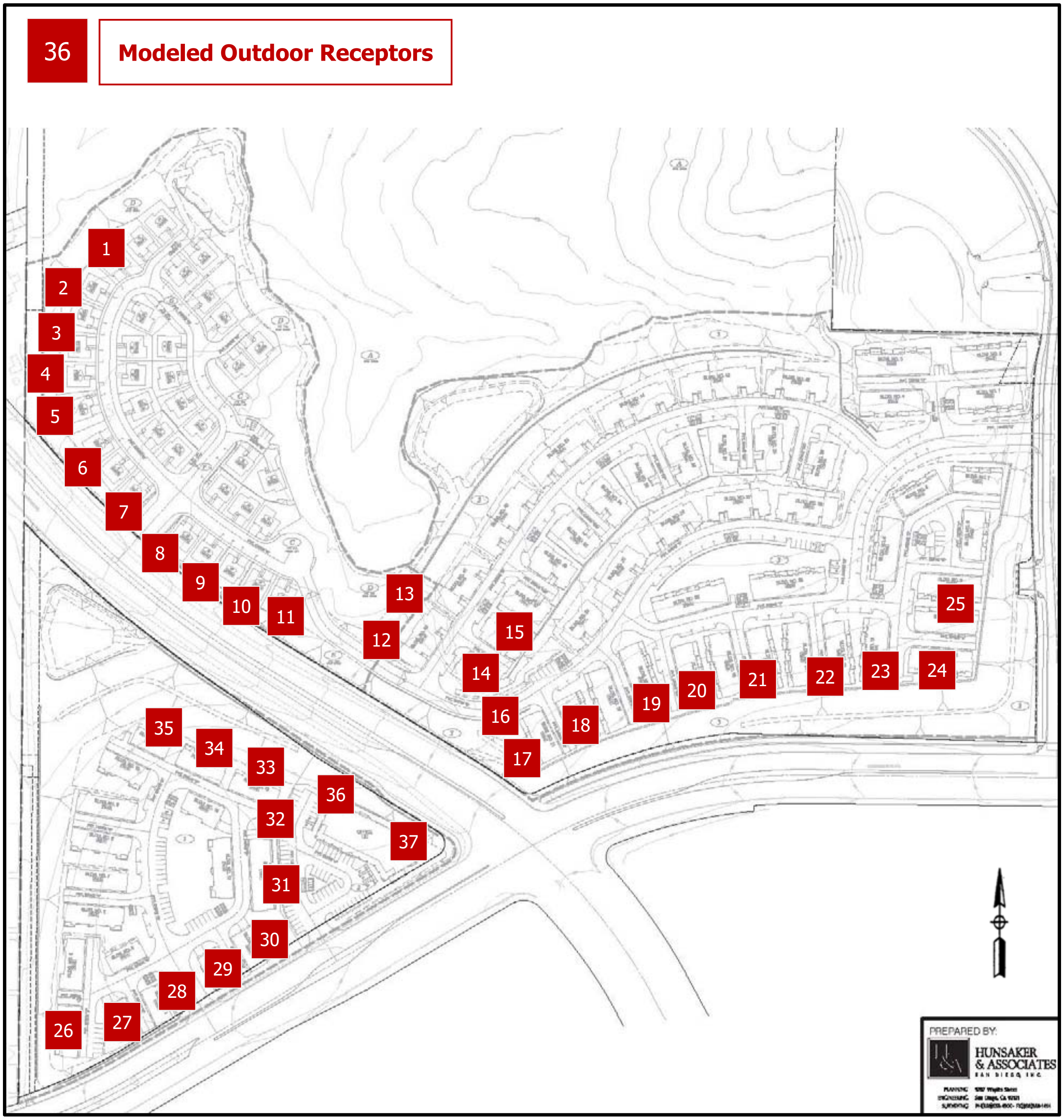
Table 4-2: Traffic Parameters

Roadway	Year	Average Daily Traffic (ADT)	Peak Hour Volume	Modeled Speeds (MPH)	Vehicle Mix %		
					Auto	Medium Trucks	Heavy Trucks
Melrose Drive	2030	37,860[1]	3,786	45	96	2	2
Oceanside Boulevard	2030	32,460[1]	3,246	50	96	2	2
Sports Park Way	2030	4,950[1]	495	25	96	2	2
[1] Source: Linscott, Law, & Greenspan Traffic Impact Analysis, 2015							

The required coordinate information necessary for the Sound32 traffic noise prediction model input was taken from the preliminary site plans provided by Hunsaker & Associates, 2016. To predict the future noise levels the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the receptor areas. Traffic was consolidated into a single lane for both directional flows of traffic on all roadways. The roadway segment were extended a minimum of 500 feet beyond the observer locations.

To evaluate the potential noise impacts on the proposed development, outdoor observers were placed five feet above the pad elevation and near the center of the use area. Building façade noise levels were also determined using a height of 5 feet above the pad elevations for ground level areas, 15 feet above the pad elevations for the second floor areas and 25 feet above the pads for the third floor.

Figure 4-B: Modeled Outdoor Receptor Locations



The modeling results are quantitatively shown in Table 4-3 below for the unmitigated and mitigated scenarios. Based upon these findings, noise mitigation in the form of 6-foot to 7- foot barriers are necessary at the top of slope along Oceanside Boulevard and 6-foot barriers are needed along a portion of Melrose Drive for the units adjacent to roadways to comply with the City's' 65 dBA Noise standards. The location and height of the required barriers are shown in Figure 4-C on the following page. The barriers will be constructed of a non-gapping material consisting of masonry, ½ inch thick glass, earthen berm or any combination of these materials. The S32 models input parameters and output files for the future conditions with and without mitigation are also provided in ***Attachment A***.

The City of Oceanside as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above 60 dBA CNEL in order to ensure a 45 dBA CNEL interior noise level. The lower and upper floor building facades were modeled to determine the anticipated worst case future noise levels at the building facades. Basic calculations show that a windows open condition will only reduce the interior noise levels 12-15 dBA CNEL and not provide adequate interior noise mitigation. A windows closed condition will typically reduce the interior noise levels 20-25 dBA CNEL if the windows are dual pane and have a minimum sound transmission class (STC) rating of 26.

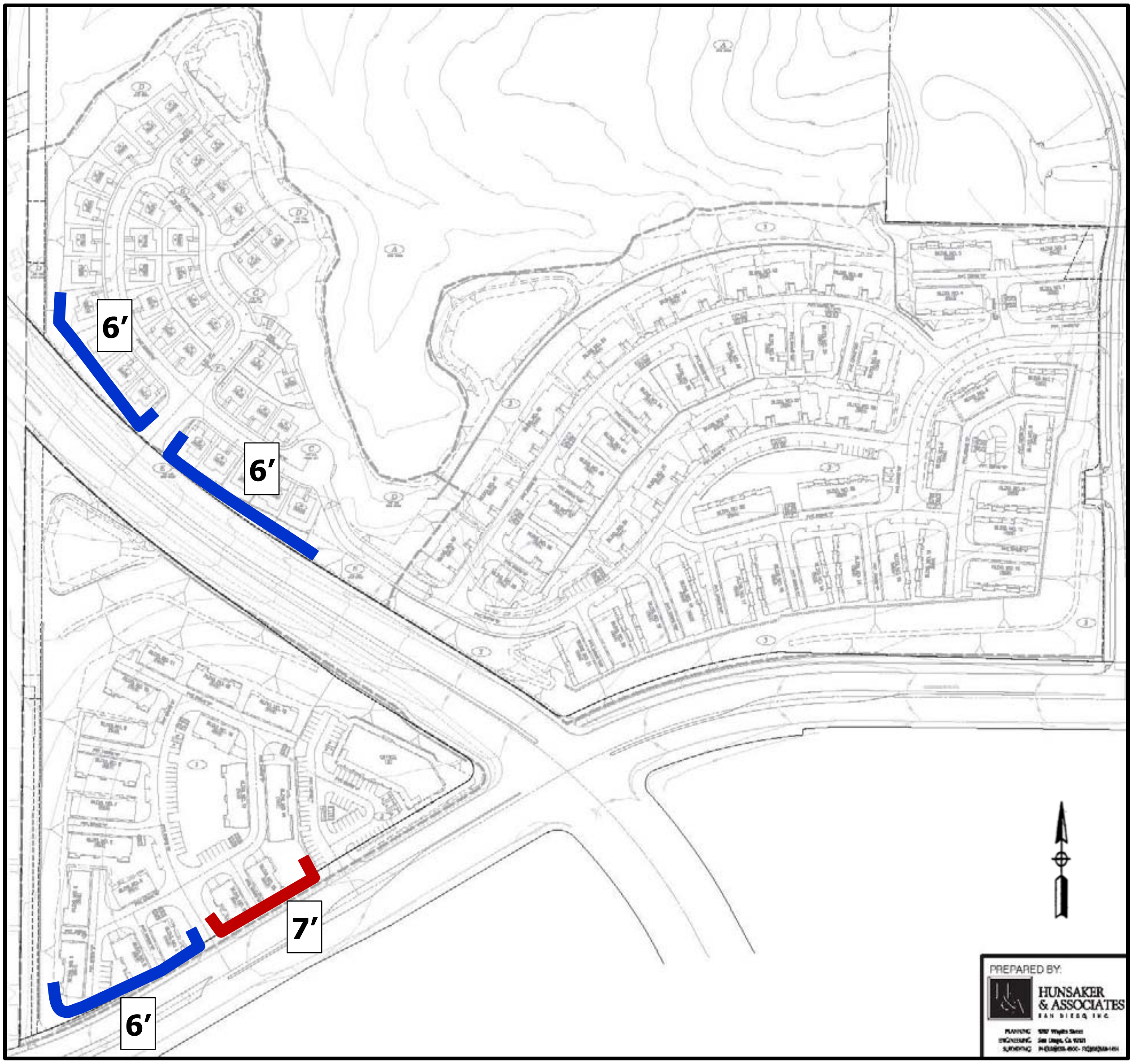
An interior noise assessment is required for the residential units along the roadways prior to the issuance of the first building permit once the architectural floor plans are available. This final report would identify the interior noise requirements to meet the City's established interior noise limit of 45 dBA CNEL. It should be noted; a closed window condition will be required necessitating a means of mechanical ventilation (e.g. air conditioning) along with upgraded windows for all sensitive rooms (e.g. bedrooms and living spaces).

Table 4-3: Traffic Related Exterior Noise Levels

Receptor Number	Receptor Location (Lot/Bldg#)	Unmitigated Noise Level (dBA CNEL)*	Barrier Heights (Feet)	Mitigated Noise Levels (dBA CNEL)*	Upper Floor Noise Level (dBA CNEL)*
1	PA 2 Lot 12	60	--	60	64
2	PA 2 Lot 11	61	--	61	65
3	PA 2 Lot 10	63	--	63	67
4	PA 2 Lot 8	65	--	65	68
5	PA 2 Lot 7	**67**	**6**	63	71
6	PA 2 Lot 5	**69**	**6**	65	72
7	PA 2 Lot 4	**70**	**6**	65	72
8	PA 2 Lot 40	**70**	**6**	65	72
9	PA 2 Lot 39	**67**	**6**	62	70
10	PA 2 Lot 38	**66**	**6**	61	68
11	PA 2 Lot 36	61	--	60	66
12	PA 3 Building 40	65	--	65	67
13	PA 3 Building 40	63	--	63	65
14	PA 3 Building 39	61	--	61	63
15	PA 3 Building 38	61	--	61	62
16	PA 3 Building 21	64	--	64	67
17	PA 3 Building 21	60	--	60	65
18	PA 3 Building 20	60	--	60	63
19	PA 3 Building 18	58	--	58	61
20	PA 3 Building 17	58	--	58	60
21	PA 3 Building 15	57	--	57	59
22	PA 3 Building 13	56	--	56	58
23	PA 3 Building 11	55	--	55	57
24	PA 3 Building 11	54	--	54	56
25	PA 3 Building 10	55	--	55	57
26	PA 1 Building 3	**67**	**6**	62	70
27	PA 1 Building 2	**70**	**6**	64	73
28	PA 1 Building 1	**72**	**6**	65	73
29	PA 1 Building 17	**72**	**7**	65	74
30	PA 1 Building 16	**72**	**7**	65	73
31	PA 1 Building 15	**67**	**7**	65	69
32	PA 1 Building 14	64	--	63	66
33	PA 1 Building 13	65	--	65	70
34	PA 1 Building 12	65	--	65	69
35	PA 1 Building 11	64	--	64	68

* Interior Noise Assessment required if residential façade noise level is above 60 dBA CNEL.

Figure 4-C: Noise Barrier Locations and Heights



4.3 Onsite Rail Line Noise

Based on the posted NCTD schedule for the Sprinter, the model assumed four Sprinter trains per hour during daytime hours (7:00 a.m. to 10:00 p.m.), and an average of 1.3 trains per hour during nighttime hours (10:00 p.m. and 7:00 a.m.). The AT&SF railroad passes the site area twice a day; it was assumed that these pass-bys occurred during nighttime hours. To represent worst-case conditions, the noise model did not take into account any intervening topography or buildings that would provide noise attenuation. Based on the CREATE model for the Sprinter and AT&SF trains, the combined railroad services 50 feet from the railroad tracks is 67 dBA Ldn (68 dBA CNEL).

The proposed Project is located over 220 feet from the rail line. Based on the CREATE model the Project would experience unshielded noise levels of 59 dBA CNEL or less at that distance. This is consistent with the observed noise levels during the site survey due to the topography (Sprinter line is depressed). The incorporation of the proposed 6 and 7-foot high barriers and the elevation offset will reduce the train noise at least 5 decibels at the receptors along the eastern portion of the site to 54 dBA CNEL. This noise reduction is based on the Create Railroad Noise Model developed by HMMH, Inc (2006). The 6 and 7-foot–high barriers must be constructed of a non-gapping material consisting of masonry, ½ inch thick glass, earthen berm or any combination of these materials. Figure 4-C above shows the location of the required barriers to bring future noise levels to the City of Oceanside 65 dBA CNEL exterior noise level standards for the proposed outdoor areas.

Therefore, the rail line noise levels will not exceed the City thresholds. Cumulatively, the rail line activities are well below the roadway noise levels and would not add to the overall transportation related findings. The buildings and outdoor areas located on the northern portions of the site will be reduced ever further due to the distance and shielding from the proposed structures. To be conservative, the modeling of the train noise does not account for the additional shielding from the proposed buildings.

4.4 Cumulative Noise Levels

Based on the exterior noise model for the roadway the worst-case exterior noise level at the outdoor use of Buildings 16 and 17 of Planning Area 1, depicted as R29 and R30 in Figure 4-B, in the southwestern portion of the site is 65 dBA CNEL. The train related activities at this same location was found to be 54 dBA CNEL with the incorporation of the proposed 6 and 7-foot barriers and the vertical and horizontal set-backs. The combination of the roadway and train activities was combined to determine the overall cumulative noise levels at the proposed outdoor use area.

Sound levels are logarithmic and so cannot be manipulated without being converted back to a linear scale. You must first antilog each number, add or subtract and then log them again in the following way.

$$L = 10 * Log \sum_{i}^{n} 10^{\frac{Li}{10}} \ or \ L = \ 10 * \ Log \ [10^{\frac{65}{10}} + \ 10^{\frac{54}{10}}]$$ **=65 dBA CNEL**

Adding the two noise sources yields a cumulative future noise level of 65 dBA CNEL at the project site. Therefore with the incorporation of the 6 and 7-foot-high barriers and the shielding of the proposed structures the project would meet the City's normally acceptable 65 dBA CNEL threshold for the transportation related activities.

As stated above, the City of Oceanside as part of its noise guidelines also states, consistent with Title 24 of the California Code of Regulations (CCR), a project is required to perform an interior assessment on the portions of a project site where building façade noise levels are above 60 dBA CNEL in order to ensure a 45 dBA CNEL interior noise level. As can be seen by the combination of the train and roadway noise levels all buildings were found to be above the 60 dBA CNEL threshold and therefore will require a final noise study be prepared prior to the issuance of the first building permit of each affected planning area. This final report would identify the interior noise requirements based upon final grading plans and building plans.

4.5 Offsite Project Related Transportation Noise Levels

The off-site project-related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December, 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level. A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level over many distances until the distance to the desired noise contour(s) are found.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt, and hard pack dirt, while soft site conditions exist in areas having slight grade changes, landscaped areas, and vegetation. Hard site conditions, to be conservative, were used to develop the identified noise contours and analyze noise impacts along all roadway segments. The future traffic noise model utilizes a typical, city of Oceanside vehicle mix of 96% Autos, 2% Medium Trucks, and 2% Heavy Trucks for all analyzed roadway segments. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA Model.

Community noise level changes greater than 3 dBA are often identified as audible and considered potential significant, while changes less than 1 dBA will not be discernible to local residents. In the range of 1 to 3 dBA, residents who are very sensitive to noise may perceive a slight change. There is no scientific evidence available to support the use of 3 dBA as the significance threshold; community noise exposures are typically over a long time period rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely greater than 1 dBA and 3 dBA appears to be appropriate for most people. For the purposes for this analysis, a direct roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if the project increases noise levels above an unacceptable noise level per the City's General Plan in the area adjacent to the roadway segment.

Direct Traffic Noise Impacts

To determine if direct off-site noise level increases associated with the development of the project will create noise impacts, the noise levels for the near term conditions were compared with the noise level increase from when the project is full built. Utilizing the project's traffic assessment (Source: Linscott, Law, & Greenspan, 2016), noise contours were developed for the following traffic scenarios:

Existing: Current day noise conditions without construction of the project.

Existing Plus Project: Current day noise conditions plus the completion of the project.

Existing vs. Existing Plus Project: Comparison of the project related noise level increases.

The noise levels and reference distances to the 65 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 4-4 for the Existing Scenario and in Table 4-5 for the Existing Plus Project Scenario. Table 4-6 presents the comparison of the Existing Year with and without Project related noise levels. The overall roadway segment noise levels will increase from 0.0 dBA CNEL to 0.6 dBA CNEL with the development of the project. Note that the values given do not take into account the effect of any noise barriers, structures, or topography that may affect roadway noise levels.

Table 4-4: Existing Noise Levels without Project

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	65 dBA CNEL Contour Distance (Feet)
State Route 76				
Town Center Drive to College Boulevard	43,500	55	77.6	920
College Boulevard to N. Santa Fe Avenue	50,000	55	78.3	1,058
N. Santa Fe Avenue to Guajome Lake Road	47,100	55	78.0	996
Oceanside Boulevard				
Avenida Del Oro to College Boulevard	30,600	55	76.1	647
College Boulevard to Temple Heights Drive	27,500	50	74.7	464
Temple Heights Drive to Catalina Circle	20,800	50	73.5	351
Catalina Circle to Planning Area 1 Access	19,700	50	73.2	333
Planning Area 1 Access to Melrose Drive	20,600	50	73.4	348
Melrose Drive to Sports Park Way	21,100	50	73.5	356
Bobier Drive				
Sports Park Way to N. Santa Fe Avenue	19,400	40	71.0	198
N. Santa Fe Avenue				
SR 76 to Mesa Drive	24,800	50	74.2	419
Mesa Drive to Melrose Drive	26,600	45	73.5	353
Melrose Drive to Osborne Street	19,100	45	72.0	253
Melrose Drive				
N. Santa Fe Avenue to Sagewood Drive	17,100	40	71.6	227
Sagewood Drive to Meadowbrook Drive	18,500	45	71.9	245
Meadowbrook Drive to Oceanside Boulevard	21,100	45	72.5	280
Oceanside Boulevard to North Avenue	28,000	45	72.6	286
North Avenue to Olive Avenue	28,300	40	72.6	289
Olive Avenue to W. Vista Way	35,800	40	73.6	366
W. Vista way to SR 78 EB Off-Ramp	36,900	40	73.8	377
SR 78 EB Off-Ramp to Hacienda Drive	33,600	40	73.4	344
Vista Way				
SR 78 WB On-Ramp to Melrose Drive	19,900	45	72.2	264
Melrose Drive to Vista Village Drive	19,600	40	71.0	200
[1] Source: Project Traffic study prepared by Linscott, Law, & Greenspan, 2016				

Table 4-5: Existing + Project Noise Levels

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	65 dBA CNEL Contour Distance (Feet)
State Route 76				
Town Center Drive to College Boulevard	43,910	55	77.7	929
College Boulevard to N. Santa Fe Avenue	50,610	55	78.3	1,071
N. Santa Fe Avenue to Guajome Lake Road	47,510	55	78.0	1,005
Oceanside Boulevard				
Avenida Del Oro to College Boulevard	30,970	55	76.2	655
College Boulevard to Temple Heights Drive	28,430	50	74.8	480
Temple Heights Drive to Catalina Circle	21,940	50	73.7	371
Catalina Circle to Planning Area 1 Access	22,420	50	73.8	379
Planning Area 1 Access to Melrose Drive	23,230	50	73.9	392
Melrose Drive to Sports Park Way	22,710	50	73.8	384
Bobier Drive				
Sports Park Way to N. Santa Fe Avenue	19,810	40	71.1	203
N. Santa Fe Avenue				
SR 76 to Mesa Drive	25,810	50	74.4	436
Mesa Drive to Melrose Drive	27,700	45	73.7	367
Melrose Drive to Osborne Street	19,220	45	72.1	255
Melrose Drive				
N. Santa Fe Avenue to Sagewood Drive	18,320	40	71.9	243
Sagewood Drive to Meadowbrook Drive	19,720	45	72.2	262
Meadowbrook Drive to Oceanside Boulevard	22,810	45	72.8	303
Oceanside Boulevard to North Avenue	29,300	45	72.8	300
North Avenue to Olive Avenue	29,560	40	72.8	302
Olive Avenue to W. Vista Way	36,900	40	73.8	377
W. Vista way to SR 78 EB Off-Ramp	37,140	40	73.8	380
SR 78 EB Off-Ramp to Hacienda Drive	33,840	40	73.4	346
Vista Way				
SR 78 WB On-Ramp to Melrose Drive	20,350	45	72.3	270
Melrose Drive to Vista Village Drive	20,050	40	71.1	205
[1] Source: Project Traffic study prepared by Linscott, Law, & Greenspan, 2016				

Table 4-6: Existing vs. Existing + Project Noise Levels

Roadway Segment	Existing Noise Level @ 50-feet (dBA CNEL)	Existing + Project Noise Level @ 50-feet (dBA CNEL)	Difference (dBA CNEL)
State Route 76			
Town Center Drive to College Boulevard	77.6	77.7	0.1
College Boulevard to N. Santa Fe Avenue	78.3	78.3	0.0
N. Santa Fe Avenue to Guajome Lake Road	78.0	78.0	0.0
Oceanside Boulevard			
Avenida Del Oro to College Boulevard	76.1	76.2	0.1
College Boulevard to Temple Heights Drive	74.7	74.8	0.1
Temple Heights Drive to Catalina Circle	73.5	73.7	0.2
Catalina Circle to Planning Area 1 Access	73.2	73.8	0.6
Planning Area 1 Access to Melrose Drive	73.4	73.9	0.5
Melrose Drive to Sports Park Way	73.5	73.8	0.3
Bobier Drive			
Sports Park Way to N. Santa Fe Avenue	71.0	71.1	0.1
N. Santa Fe Avenue			
SR 76 to Mesa Drive	74.2	74.4	0.2
Mesa Drive to Melrose Drive	73.5	73.7	0.2
Melrose Drive to Osborne Street	72.0	72.1	0.0
Melrose Drive			
N. Santa Fe Avenue to Sagewood Drive	71.6	71.9	0.3
Sagewood Drive to Meadowbrook Drive	71.9	72.2	0.3
Meadowbrook Drive to Oceanside Boulevard	72.5	72.8	0.3
Oceanside Boulevard to North Avenue	72.6	72.8	0.2
North Avenue to Olive Avenue	72.6	72.8	0.2
Olive Avenue to W. Vista Way	73.6	73.8	0.2
W. Vista way to SR 78 EB Off-Ramp	73.8	73.8	0.0
SR 78 EB Off-Ramp to Hacienda Drive	73.4	73.4	0.0
Vista Way			
SR 78 WB On-Ramp to Melrose Drive	72.2	72.3	0.1
Melrose Drive to Vista Village Drive	71.0	71.1	0.1
[1] Source: Project Traffic study prepared by Linscott, Law, & Greenspan, 2016			

The Project does not create a direct noise increase of more than 3 dBA CNEL on any roadway segment. Therefore, the project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Cumulative Traffic Noise Levels

To determine if cumulative off-site noise level increases associated with the development of the Project and other planned or permitted projects in the vicinity will create noise impacts. The noise levels for the near-term Project Buildout and other planned and permitted projects were compared with the existing conditions. Utilizing the Project's traffic assessment (Source: Linscott, Law, & Greenspan, 2016) noise contours were developed for the following traffic scenarios:

Existing: Current day noise conditions without construction of the project.

Existing Plus Cumulative Projects Plus Project: Current day noise conditions plus the completion of the project and the completion of other permitted, planned projects or approved ambient growth factors.

Existing vs. Existing Plus Cumulative Plus Project: Comparison of the existing noise levels and the related noise level increases from the combination of the project and all other planned or permitted projects in the vicinity of the site.

The existing noise levels and reference distances to the 65 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 4-4 above for the Existing Scenario. The near-term cumulative noise conditions are provided in Table 4-7. No noise barriers or topography that may affect noise levels were incorporated in the calculations. Note that the values given do not take into account the effect of any noise barriers, structures, or topography that may affect roadway noise levels.

The overall cumulative roadway segment noise levels will increase from 0.1 dBA CNEL to 1.5 dBA CNEL with the development of the Project and all the cumulative projects as shown in Table 4-8 below. Therefore, the Project's contributions to off-site roadway noise increase would not be considered cumulatively considerable and would not cause any significant impacts.

Table 4-7: Existing + Near Term + Project Noise Levels

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	65 dBA CNEL Contour Distance (Feet)
State Route 76				
Town Center Drive to College Boulevard	47,970	55	78.1	1,015
College Boulevard to N. Santa Fe Avenue	53,750	55	78.6	1,137
N. Santa Fe Avenue to Guajome Lake Road	50,780	55	78.3	1,074
Oceanside Boulevard				
Avenida Del Oro to College Boulevard	37,610	55	77.0	796
College Boulevard to Temple Heights Drive	34,130	50	75.6	576
Temple Heights Drive to Catalina Circle	27,640	50	74.7	467
Catalina Circle to Planning Area 1 Access	27,520	50	74.7	465
Planning Area 1 Access to Melrose Drive	28,420	50	74.8	480
Melrose Drive to Sports Park Way	26,750	50	74.6	452
Bobier Drive				
Sports Park Way to N. Santa Fe Avenue	22,570	40	71.6	231
N. Santa Fe Avenue				
SR 76 to Mesa Drive	26,620	50	74.5	450
Mesa Drive to Melrose Drive	28,510	45	73.8	378
Melrose Drive to Osborne Street	19,290	45	72.1	256
Melrose Drive				
N. Santa Fe Avenue to Sagewood Drive	19,190	45	72.1	255
Sagewood Drive to Meadowbrook Drive	20,690	45	72.4	274
Meadowbrook Drive to Oceanside Boulevard	23,960	45	73.0	318
Oceanside Boulevard to North Avenue	33,240	40	73.3	340
North Avenue to Olive Avenue	31,970	40	73.2	327
Olive Avenue to W. Vista Way	38,890	40	74.0	398
W. Vista way to SR 78 EB Off-Ramp	38,520	40	74.0	394
SR 78 EB Off-Ramp to Hacienda Drive	34,440	40	73.5	352
Vista Way				
SR 78 WB On-Ramp to Melrose Drive	20,750	45	72.4	275
Melrose Drive to Vista Village Drive	20,250	40	71.2	207

[1] Source: Project Traffic study prepared by Linscott, Law, & Greenspan, 2016

Table 4-8: Existing vs. Near Term + Project Noise Levels

Roadway Segment	Existing Noise Level @ 50-feet (dBA CNEL)	Near Term + Project Noise Level @ 50-feet (dBA CNEL)	Difference (dBA CNEL)
State Route 76			
Town Center Drive to College Boulevard	77.6	78.1	0.5
College Boulevard to N. Santa Fe Avenue	78.3	78.6	0.3
N. Santa Fe Avenue to Guajome Lake Road	78.0	78.3	0.3
Oceanside Boulevard			
Avenida Del Oro to College Boulevard	76.1	77.0	0.9
College Boulevard to Temple Heights Drive	74.7	75.6	0.9
Temple Heights Drive to Catalina Circle	73.5	74.7	1.2
Catalina Circle to Planning Area 1 Access	73.2	74.7	1.5
Planning Area 1 Access to Melrose Drive	73.4	74.8	1.4
Melrose Drive to Sports Park Way	73.5	74.6	1.1
Bobier Drive			
Sports Park Way to N. Santa Fe Avenue	71.0	71.6	0.6
N. Santa Fe Avenue			
SR 76 to Mesa Drive	74.2	74.5	0.3
Mesa Drive to Melrose Drive	73.5	73.8	0.3
Melrose Drive to Osborne Street	72.0	72.1	0.1
Melrose Drive			
N. Santa Fe Avenue to Sagewood Drive	71.6	72.1	0.5
Sagewood Drive to Meadowbrook Drive	71.9	72.4	0.5
Meadowbrook Drive to Oceanside Boulevard	72.5	73.0	0.5
Oceanside Boulevard to North Avenue	72.6	73.3	0.7
North Avenue to Olive Avenue	72.6	73.2	0.6
Olive Avenue to W. Vista Way	73.6	74.0	0.4
W. Vista way to SR 78 EB Off-Ramp	73.8	74.0	0.2
SR 78 EB Off-Ramp to Hacienda Drive	73.4	73.5	0.1
Vista Way			
SR 78 WB On-Ramp to Melrose Drive	72.2	72.4	0.2
Melrose Drive to Vista Village Drive	71.0	71.2	0.2
[1] Source: Project Traffic study prepared by Linscott, Law, & Greenspan, 2016			

5.0 CONSTRUCTION NOISE LEVELS

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders, and scrapers and can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

Because the City of Oceanside does not have property line standards for construction, the City of San Diego 75 dBA Leq standard is utilized in the analysis. Division 4 of Article 9.5 of the City of San Diego Municipal Code addresses the limits of disturbing or offensive construction noise. The Municipal Code states that with the exception of an emergency, it should be unlawful to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

Using a point-source noise prediction model, calculations of the expected construction noise levels were completed. The essential model input data for these performance equations include the source levels of the equipment, source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day (also referred to as the duty-cycle), and any transmission loss from topography or barriers.

5.1 Potential Construction Noise Impact

Based on the EPA noise emissions, empirical data and the amount of equipment needed, worst-case noise levels from the construction equipment operations would occur during the base operations (grading/site preparation). The Planned Development and Mixed Use Plan identifies that grading will be balanced within each Planning Area in order to allow phased development while minimizing impacts across the Plan area. Due to physical constraints and normal site preparation operations, most of the equipment will be spread out over the site. Based upon the proposed site plan, the majority of the grading operations will occur more than 200 feet from the nearest property lines.

Therefore the worst-case noise condition would occur when the construction equipment is working in close proximity to each other at an average distance of approximately 200 feet from the property lines. The noise levels utilized in this analysis are shown in Table 5-1. The amount of time the equipment will be utilized over an 8-hour period at this distance from the property line is also given and factored into the average noise level calculations. This is referred to as the duty-cycle.

Table 5-1: Construction Noise Levels

Equipment Type	Quantity Used	Source @ 50 Feet (dBA)	Cumulative Noise Level @ 50 Feet (dBA)
Tractor/Backhoe/Loader	1	72	72.0
Dozer Cat	1	74	74.0
Grader	2	73	76.0
Water Trucks	2	70	73.0
Scraper	2	75	78.0
Cumulative Level			**82.2**
Distance to Sensitive Use			**115**
Noise Reduction due to Distance			**-7.2**
Property Line Noise Level			**74.9**

5.2 Construction Noise Conclusions

As can be seen in Table 5-1, none of the proposed equipment will exceed the City of Oceanside 85 dBA standard at 100 feet from the source. The project will meet the City of Oceanside's 85 dBA standard at 100 feet from the source for all proposed equipment and no impacts are anticipated. Accordingly, impacts will be less than significant and no mitigation measures are required.

5.3 Construction Vibration Findings

The nearest vibration-sensitive uses are the residences located 50 feet or more from the proposed construction. The anticipated construction equipment will be spread out over the site working in different portion of the site as needed. For example: a single dozer may be utilized near the project boundary while the other equipment is working on the opposite side of the site. Table 5-2 lists the average vibration levels that would be experienced at the nearest vibration sensitive land uses from the temporary construction activities. Vibration levels were assessed at a distance of 50 feet to be conservative.

Table 5-2: Vibration Levels from Construction Activities (Residential Receptors)

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS Velocity at 25 Feet (in/sec)	Approximate Velocity Level at 50 Feet (VdB)	Approximate RMS Velocity at 50 Feet (in/sec)
Small bulldozer	58	0.003	49.0	0.0011
Jackhammer	79	0.035	70.0	0.0124
Loaded trucks	86	0.076	77.0	0.0269
Large bulldozer	87	0.089	78.0	0.0315
		FTA Criteria	80	0.2
		Significant Impact?	**No**	**No**
[1] PPV at Distance D = PPVref x $(25/D)^{1.5}$				

The FTA has determined vibration levels that would cause annoyance to a substantial number of people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). Project construction activities would result in PPV levels below the FTA's criteria for vibration induced structural damage. Therefore, project construction activities would not result in vibration induced structural damage to residential buildings near the demolition and construction areas. The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential uses. Construction activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby residential uses. Therefore, vibration impacts would be less than significant.

5.4 Vibration Findings

Given attenuation of vibration velocities with distance, the RMS vibration velocity and peak particle velocity at the nearest existing residence would be about 78 VdB and 0.03 inch per second, respectively. Based on the construction vibration human annoyance criterion of 80 VdB published by the FTA, the vibration levels for the construction activity on nearby residential structures will not be significant.

6.0 OPERATIONAL NOISE LEVELS

This section examines the potential stationary noise source levels associated with the development and operation of the proposed project. Noise from a fixed or point source drops off at a rate of 6 dBA for each doubling of distance. Which means a noise level of 70 dBA at 5-feet would be 64 dBA at 10-feet and 58 dBA at 20-feet. A review of the proposed project indicates that noise sources such as residential activities, parking lot activities and mechanical ventilation system (HVAC) are the primary sources of stationary noise.

6.1 Property Line Noise Levels

The required sound levels at a Project's property boundary depend on the time of day and the land use zone. The Project site is zoned both residential and commercial. The commercial zone (C) allows an equivalent one-hour sound level of 65 dBA Leq-h between 7 A.M. and 9:59 P.M. and 60 dBA from 10 P.M. to 6:59 A.M at the property lines. The existing and proposed residential uses allow an equivalent one-hour sound level of 50 dBA Leq-h between 7 A.M. and 9:59 P.M. and 45 dBA from 10 P.M. to 6:59 A.M at the property lines. When two joint boundaries differ in zoning the City of Oceanside Noise Ordinance utilizes the arithmetic mean of the two standards. The section will analyze the noise levels at the property line to determine the worst case noise levels, any impacts and necessary mitigation solutions, if needed.

Parking Lots

Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale. However, the instantaneous sound levels generated by a car door slamming and engine starting up may be an annoyance to adjacent sensitive receptors. The estimated maximum noise levels associated with parking lot activities typically range from 60-65 dBA and are short term. The project parking spaces would not generate a significant amount of noise related activities.

It should be noted that parking lot noise are instantaneous noise levels compared to noise standards, which are averaged over time. As a result, actual noise levels over time resulting from parking lot activities would be far lower. Therefore, the proposed parking would not expose nearby sensitive receptors to substantial noise levels and impacts will be less than significant.

Mechanical Ventilation

Typically, mechanical equipment (HVAC) noise is 50-55 dBA at 50 feet from the source. HVAC units would be included on the roof of the proposed office building and would be shielded by a mechanical screen and/or the roof parapet, which would further reduce the noise. The noise from the HVAC units would meet the City's Noise Standards at the nearest existing and proposed residents. Additionally, mechanical ventilation system will cycle on and off throughout the day and impacts from mechanical equipment would be less than significant.

Residential Activities

Noise generated from residential uses is generally from sources such as amplified music, barking dogs, and landscape maintenance equipment that may be disturbing to other residents. Noise impacts are more likely to occur in the more densely developed areas of the project site where residences would be closer together and neighbors would be more likely to hear a neighbor's dog or music. Section 38.16 of the Oceanside Municipal Code prohibits nuisance noise at any time which causes discomfort or annoyance to reasonable persons of normal sensitivity. Compliance with the noise ordinance would limit exposure to excessive nuisance noise. The Oceanside Police Department enforces the nuisance noise provisions of the noise ordinance. Additionally, nuisance noises would be different from each other in kind, duration, and location, so that the overall effects would be separate and in most cases would not affect the receptors at the same time. Instances of nuisance noise would be addressed on an individual case basis by the Oceanside Police Department. Therefore, nuisance noise from the proposed residences would be less than significant.

The project site would be landscaped; therefore, regular maintenance would be required. Maintenance activities would include the use of mowers, trimmers, and blowers, which would result in intermittent short-term temporary noise increases. Maintenance activities are permitted uses and would be subject to the daytime one-hour Leq noise limits in residential neighborhoods. Maintenance equipment would not be operating at any one location for more than a few minutes and it is not likely that the equipment would be operating all at the same time. Due to the limited amount of time the equipment would be operating in one location. Therefore, operation of maintenance equipment would generally not exceed the hourly noise level limit at adjacent residential receptors and no impacts are anticipated.

6.2 Conclusions

Based upon the operational noise levels none of the proposed noise sources are anticipated to exceed the property line standards at the surround property lines. Therefore, the proposed development related operational noise levels comply with the City's noise standards. Impacts would be less than significant and no mitigation is required.

7.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the noise and vibration environment and impacts within and surrounding the proposed Melrose+Oceanside Mixed Use development. The information contained in this report was based on the best available data at the time of preparation.

DRAFT

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Date March 1, 2016

ATTACHMENT A

FUTURE EXTERIOR NOISE MODEL INPUT AND OUTPUT FILES

MELROSE OCEANSIDE - GROUND LEVEL UNMITIGATED
T-PEAK HOUR TRAFFIC CONDITIONS, 1
3635 , 45 , 76 , 45 , 76 , 45
T-PEAK HOUR TRAFFIC CONDITIONS, 2
3116 , 50 , 65 , 50 , 65 , 50
T-PEAK HOUR TRAFFIC CONDITIONS, 3
475 , 25 , 10 , 25 , 10 , 25
L-MELROSE DRIVE, 1
N,186,2060,320,
N,264,1909,317,
N,433,1667,318,
N,615,1465,330,
N,802,1296,350,
N,988,1168,370,
N,1363,938,408,
N,1461,866,416,
N,1593,728,422,
N,1707,551,420,
L-OCEANSIDE BLVD, 2
N,147,288,392,
N,371,294,398,
N,564,339,406,
N,715,405,412,
N,938,536,420,
N,1131,651,420,
N,1339,774,416,
N,1557,896,418,
N,1709,950,424,
N,1843,975,430,
N,1969,983,436,
N,2401,978,454,
N,2738,984,462,
L-SPORTS PARK, 3
N,2430,1950,399,
N,2441,1883,402,
N,2438,1814,405,
N,2432,1754,408,
N,2425,1665,414,
N,2424,1570,422,
N,2424,1434,434,
N,2432,1270,448,
N,2435,1120,454,
N,2432,980,454,
B-PA2-NORTH, 1 , 2 , 0 ,0
606.,1676,341,341,
605.,1664,341,341,
605.,1631,341,341,
628.,1600,341,341,
673.,1542,342,342,
707.,1499,342,342,
708.,1499,343,343,
734.,1463,343,343,
746.,1462,343,343,
772.,1487,343,343,
B-PA2-SOUTH, 2 , 2 , 0 ,0
813.,1425,345,345,LOT 40
806.,1416,345,345,LOT 40
808.,1389,345,345,LOT 40
833.,1369,349,349,LOT 40
834.,1368,349,349,LOT 39
877.,1335,353,353,LOT 39
878.,1334,353,353,LOT 38
925.,1300,359,359,LOT 38
B-EAST SLOPE 1, 3 , 2 , 0 ,0
925.,1300,359,359,
941.,1289,360,360,
1002.,1241,368,368,
1030.,1223,370,370,
1130.,1162,380,380,
1318.,1047,400,400,
1429.,976,410,410,
1459.,954,413,413,

1501.,950,417,417,
1564.,978,420,420,
B-EAST SLOPE 2, 4 , 2 , 0 ,0
1564.,978,420,420,
1675.,1015,425,425,
1789.,1041,430,430,
1905.,1054,435,435,
2021.,1055,440,440,
2249.,1052,450,450,
2391.,1051,454,454,
2393.,1232,450,450,
2388.,1362,440,440,
2384.,1599,420,420,
B-PA1-WEST, 5 , 2 , 0 ,0
596.,519,423,423,
594.,465,423,423,
621.,446,423,423,
718.,484,422,422,
819.,535,422,422,
827.,540,422,422,
836.,551,422,422,
830.,563,422,422,
B-WEST SLOPE 1, 6 , 2 , 0 ,0
731.,1072,416,416,
766.,1087,416,416,
846.,1049,416,416,
852.,1045,417,417,
946.,1004,417,417,
951.,1000,417,417,
1033.,966,417,417,
1061.,967,418,418,
1099.,944,419,419,
1111.,947,419,419,
B-WEST SLOPE 2, 7 , 2 , 0 ,0
1111.,947,419,419,
1245.,882,419,419,
1250.,873,419,419,
1312.,845,419,419,
1313.,831,419,419,
1136.,720,419,419,
B-PA 1 WALL 1, 8 , 2 , 0 ,0
596.,506,423,423,
594.,465,423,423,
621.,446,423,423,
718.,484,422,422,
819.,535,422,422,
827.,540,422,422,
836.,551,422,422,
822.,579,422,422,
B-PA 1 WALL 2, 9 , 2 , 0 ,0
1040.,692,421,421,
1056.,667,421,421,
900.,574,421,421,
889.,591,421,421,
R, 1 , 65 ,10
698,1938,344.,PA2-12
R, 2 , 65 ,10
649,1882,344.,PA2-11
R, 3 , 65 ,10
623,1819,344.5,PA2-10
R, 4 , 65 ,10
619,1715,345.5,PA2-8
R, 5 , 65 ,10
624,1639,346.,PA2-7
R, 6 , 65 ,10
695,1526,347.,PA2-5
R, 7 , 65 ,10
731,1481,348.,PA2-4
R, 8 , 65 ,10
825,1395,350.,PA2-40
R, 9 , 65 ,10
869,1363,351.,PA2-39

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R, 10 , 65 ,10
912,1333,352.,PA2-38
R, 11 , 65 ,10
1013,1280,353.,PA2-36
R, 12 , 65 ,10
1224,1213,379.,PA3-B40
R, 13 , 65 ,10
1266,1274,378.,PA3-B40
R, 14 , 65 ,10
1396,1169,378.,PA3-B39
R, 15 , 65 ,10
1447,1250,377.,PA3-B38
R, 16 , 65 ,10
1455,1075,395.,PA3-B21
R, 17 , 65 ,10
1488,1009,395.,PA3-B21
R, 18 , 65 ,10
1591,1059,396.,PA3-B20
R, 19 , 65 ,10
1716,1100,398.,PA3-B18
R, 20 , 65 ,10
1794,1117,400.,PA3-B17
R, 21 , 65 ,10
1926,1147,401.,PA3-B15
R, 22 , 65 ,10
2058,1155,403.,PA3-B13
R, 23 , 65 ,10
2192,1170,403.,PA3-B11A
R, 24 , 65 ,10
2271,1167,403.,PA3-B11B
R, 25 , 65 ,10
2280,1280,403.,PA3-B10
R, 26 , 65 ,10
608,479,427.,PA1-B3
R, 27 , 65 ,10
726,503,426.,PA1-B2
R, 28 , 65 ,10
818,548,426.,PA1-B1
R, 29 , 65 ,10
901,595,425.,PA1-B17
R, 30 , 65 ,10
988,650,425.,PA1-B16
R, 31 , 65 ,10
1001,728,423.,PA1-B15
R, 32 , 65 ,10
989,877,423.,PA1-B14
R, 33 , 65 ,10
989,972,421.,PA1-B13
R, 34 , 65 ,10
897,1010,422.,PA1-B12
R, 35 , 65 ,10
799,1057,421.,PA1-B11
R, 36 , 65 ,10
1118,931,424.,OFFICE
R, 37 , 65 ,10
1267,827,424.,OFFICE
D, 4.5
ALL,ALL
K,-3
2  ,1,2,3,4,5,6,7,8,9,10,11,33,34,35
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
MELROSE OCEANSIDE - GROUND LEVEL UNMITIGATED

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	PA2-12	65.	10.	59.7
2	PA2-11	65.	10.	61.4
3	PA2-10	65.	10.	63.1
4	PA2-8	65.	10.	65.4
5	PA2-7	65.	10.	67.2
6	PA2-5	65.	10.	69.4
7	PA2-4	65.	10.	70.0
8	PA2-40	65.	10.	70.1
9	PA2-39	65.	10.	67.4
10	PA2-38	65.	10.	65.5
11	PA2-36	65.	10.	60.8
12	PA3-B40	65.	10.	64.8
13	PA3-B40	65.	10.	63.2
14	PA3-B39	65.	10.	61.3
15	PA3-B38	65.	10.	60.7
16	PA3-B21	65.	10.	63.5
17	PA3-B21	65.	10.	60.3
18	PA3-B20	65.	10.	60.0
19	PA3-B18	65.	10.	58.4
20	PA3-B17	65.	10.	57.6
21	PA3-B15	65.	10.	56.5
22	PA3-B13	65.	10.	55.7
23	PA3-B11A	65.	10.	54.9
24	PA3-B11B	65.	10.	53.9
25	PA3-B10	65.	10.	55.2
26	PA1-B3	65.	10.	67.1
27	PA1-B2	65.	10.	70.2
28	PA1-B1	65.	10.	71.8
29	PA1-B17	65.	10.	72.0
30	PA1-B16	65.	10.	71.7
31	PA1-B15	65.	10.	66.8
32	PA1-B14	65.	10.	63.6
33	PA1-B13	65.	10.	65.4
34	PA1-B12	65.	10.	64.7
35	PA1-B11	65.	10.	64.2
36	OFFICE	65.	10.	68.2
37	OFFICE	65.	10.	71.9

MELROSE OCEANSIDE - GROUND LEVEL MITIGATED
T-PEAK HOUR TRAFFIC CONDITIONS, 1
3635 , 45 , 76 , 45 , 76 , 45
T-PEAK HOUR TRAFFIC CONDITIONS, 2
3116 , 50 , 65 , 50 , 65 , 50
T-PEAK HOUR TRAFFIC CONDITIONS, 3
475 , 25 , 10 , 25 , 10 , 25
L-MELROSE DRIVE, 1
N,186,2060,320,
N,264,1909,317,
N,433,1667,318,
N,615,1465,330,
N,802,1296,350,
N,988,1168,370,
N,1363,938,408,
N,1461,866,416,
N,1593,728,422,
N,1707,551,420,
L-OCEANSIDE BLVD, 2
N,147,288,392,
N,371,294,398,
N,564,339,406,
N,715,405,412,
N,938,536,420,
N,1131,651,420,
N,1339,774,416,
N,1557,896,418,
N,1709,950,424,
N,1843,975,430,
N,1969,983,436,
N,2401,978,454,
N,2738,984,462,
L-SPORTS PARK, 3
N,2430,1950,399,
N,2441,1883,402,
N,2438,1814,405,
N,2432,1754,408,
N,2425,1665,414,
N,2424,1570,422,
N,2424,1434,434,
N,2432,1270,448,
N,2435,1120,454,
N,2432,980,454,
B-PA2-NORTH, 1 , 2 , 0 ,0
606.,1676,341,347,
605.,1664,341,347,
605.,1631,341,347,
628.,1600,341,347,
673.,1542,342,348,
707.,1499,342,348,
708.,1499,343,349,
734.,1463,343,349,
746.,1462,343,349,
772.,1487,343,349,
B-PA2-SOUTH, 2 , 2 , 0 ,0
813.,1425,345,351,LOT 40
806.,1416,345,351,LOT 40
808.,1389,345,351,LOT 40
833.,1369,349,355,LOT 40
834.,1368,349,355,LOT 39
877.,1335,353,359,LOT 39
878.,1334,353,359,LOT 38
925.,1300,359,365,LOT 38
B-EAST SLOPE 1, 3 , 2 , 0 ,0
925.,1300,359,359,
941.,1289,360,360,
1002.,1241,368,368,
1030.,1223,370,370,
1130.,1162,380,380,
1318.,1047,400,400,
1429.,976,410,410,
1459.,954,413,413,

1501.,950,417,417,
1564.,978,420,420,
B-EAST SLOPE 2, 4 , 2 , 0 ,0
1564.,978,420,420,
1675.,1015,425,425,
1789.,1041,430,430,
1905.,1054,435,435,
2021.,1055,440,440,
2249.,1052,450,450,
2391.,1051,454,454,
2393.,1232,450,450,
2388.,1362,440,440,
2384.,1599,420,420,
B-PA1-WEST, 5 , 2 , 0 ,0
596.,519,423,423,
594.,465,423,423,
621.,446,423,423,
718.,484,422,422,
819.,535,422,422,
827.,540,422,422,
836.,551,422,422,
830.,563,422,422,
B-WEST SLOPE 1, 6 , 2 , 0 ,0
731.,1072,416,416,
766.,1087,416,416,
846.,1049,416,416,
852.,1045,417,417,
946.,1004,417,417,
951.,1000,417,417,
1033.,966,417,417,
1061.,967,418,418,
1099.,944,419,419,
1111.,947,419,419,
B-WEST SLOPE 2, 7 , 2 , 0 ,0
1111.,947,419,419,
1245.,882,419,419,
1250.,873,419,419,
1312.,845,419,419,
1313.,831,419,419,
1136.,720,419,419,
B-PA 1 WALL 1, 8 , 2 , 0 ,0
596.,506,423,429,
594.,465,423,429,
621.,446,423,429,
718.,484,422,428,
819.,535,422,428,
827.,540,422,428,
836.,551,422,428,
822.,579,422,428,
B-PA 1 WALL 2, 9 , 2 , 0 ,0
1040.,692,421,428,
1056.,667,421,428,
900.,574,421,428,
889.,591,421,428,
R, 1 , 65 ,10
698,1938,344.,PA2-12
R, 2 , 65 ,10
649,1882,344.,PA2-11
R, 3 , 65 ,10
623,1819,344.5,PA2-10
R, 4 , 65 ,10
619,1715,345.5,PA2-8
R, 5 , 65 ,10
624,1639,346.,PA2-7
R, 6 , 65 ,10
695,1526,347.,PA2-5
R, 7 , 65 ,10
731,1481,348.,PA2-4
R, 8 , 65 ,10
825,1395,350.,PA2-40
R, 9 , 65 ,10
869,1363,351.,PA2-39

```
R, 10 , 65 ,10
912,1333,352.,PA2-38
R, 11 , 65 ,10
1013,1280,353.,PA2-36
R, 12 , 65 ,10
1224,1213,379.,PA3-B40
R, 13 , 65 ,10
1266,1274,378.,PA3-B40
R, 14 , 65 ,10
1396,1169,378.,PA3-B39
R, 15 , 65 ,10
1447,1250,377.,PA3-B38
R, 16 , 65 ,10
1455,1075,395.,PA3-B21
R, 17 , 65 ,10
1488,1009,395.,PA3-B21
R, 18 , 65 ,10
1591,1059,396.,PA3-B20
R, 19 , 65 ,10
1716,1100,398.,PA3-B18
R, 20 , 65 ,10
1794,1117,400.,PA3-B17
R, 21 , 65 ,10
1926,1147,401.,PA3-B15
R, 22 , 65 ,10
2058,1155,403.,PA3-B13
R, 23 , 65 ,10
2192,1170,403.,PA3-B11A
R, 24 , 65 ,10
2271,1167,403.,PA3-B11B
R, 25 , 65 ,10
2280,1280,403.,PA3-B10
R, 26 , 65 ,10
608,479,427.,PA1-B3
R, 27 , 65 ,10
726,503,426.,PA1-B2
R, 28 , 65 ,10
818,548,426.,PA1-B1
R, 29 , 65 ,10
901,595,425.,PA1-B17
R, 30 , 65 ,10
988,650,425.,PA1-B16
R, 31 , 65 ,10
1001,728,423.,PA1-B15
R, 32 , 65 ,10
989,877,423.,PA1-B14
R, 33 , 65 ,10
989,972,421.,PA1-B13
R, 34 , 65 ,10
897,1010,422.,PA1-B12
R, 35 , 65 ,10
799,1057,421.,PA1-B11
R, 36 , 65 ,10
1118,931,424.,OFFICE
R, 37 , 65 ,10
1267,827,424.,OFFICE
D, 4.5
ALL,ALL
K,-3
2  ,1,2,3,4,5,6,7,8,9,10,11,33,34,35
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
MELROSE OCEANSIDE - GROUND LEVEL MITIGATED

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	PA2-12	65.	10.	59.5
2	PA2-11	65.	10.	61.2
3	PA2-10	65.	10.	62.9
4	PA2-8	65.	10.	64.9
5	PA2-7	65.	10.	62.6
6	PA2-5	65.	10.	64.6
7	PA2-4	65.	10.	65.2
8	PA2-40	65.	10.	65.3
9	PA2-39	65.	10.	62.0
10	PA2-38	65.	10.	61.2
11	PA2-36	65.	10.	60.2
12	PA3-B40	65.	10.	64.8
13	PA3-B40	65.	10.	63.1
14	PA3-B39	65.	10.	61.2
15	PA3-B38	65.	10.	60.6
16	PA3-B21	65.	10.	63.5
17	PA3-B21	65.	10.	60.3
18	PA3-B20	65.	10.	59.9
19	PA3-B18	65.	10.	58.3
20	PA3-B17	65.	10.	57.5
21	PA3-B15	65.	10.	56.5
22	PA3-B13	65.	10.	55.6
23	PA3-B11A	65.	10.	54.9
24	PA3-B11B	65.	10.	53.8
25	PA3-B10	65.	10.	55.2
26	PA1-B3	65.	10.	62.3
27	PA1-B2	65.	10.	64.1
28	PA1-B1	65.	10.	64.9
29	PA1-B17	65.	10.	64.7
30	PA1-B16	65.	10.	65.1
31	PA1-B15	65.	10.	65.3
32	PA1-B14	65.	10.	63.0
33	PA1-B13	65.	10.	65.3
34	PA1-B12	65.	10.	64.6
35	PA1-B11	65.	10.	64.1
36	OFFICE	65.	10.	68.1
37	OFFICE	65.	10.	71.9

```
MELROSE OCEANSIDE - SECOND LEVEL MITIGATED
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 3635 , 45 , 76 , 45 , 76 , 45
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 3116 , 50 , 65 , 50 , 65 , 50
T-PEAK HOUR TRAFFIC CONDITIONS, 3
 475 , 25 , 10 , 25 , 10 , 25
L-MELROSE DRIVE, 1
N,186,2060,320,
N,264,1909,317,
N,433,1667,318,
N,615,1465,330,
N,802,1296,350,
N,988,1168,370,
N,1363,938,408,
N,1461,866,416,
N,1593,728,422,
N,1707,551,420,
L-OCEANSIDE BLVD, 2
N,147,288,392,
N,371,294,398,
N,564,339,406,
N,715,405,412,
N,938,536,420,
N,1131,651,420,
N,1339,774,416,
N,1557,896,418,
N,1709,950,424,
N,1843,975,430,
N,1969,983,436,
N,2401,978,454,
N,2738,984,462,
L-SPORTS PARK, 3
N,2430,1950,399,
N,2441,1883,402,
N,2438,1814,405,
N,2432,1754,408,
N,2425,1665,414,
N,2424,1570,422,
N,2424,1434,434,
N,2432,1270,448,
N,2435,1120,454,
N,2432,980,454,
B-PA2-NORTH, 1 , 2 , 0 ,0
606.,1676,341,347,
605.,1664,341,347,
605.,1631,341,347,
628.,1600,341,347,
673.,1542,342,348,
707.,1499,342,348,
708.,1499,343,349,
734.,1463,343,349,
746.,1462,343,349,
772.,1487,343,349,
B-PA2-SOUTH, 2 , 2 , 0 ,0
813.,1425,345,351,LOT 40
806.,1416,345,351,LOT 40
808.,1389,345,351,LOT 40
833.,1369,349,355,LOT 40
834.,1368,349,355,LOT 39
877.,1335,353,359,LOT 39
878.,1334,353,359,LOT 38
925.,1300,359,365,LOT 38
B-EAST SLOPE 1, 3 , 2 , 0 ,0
925.,1300,359,359,
941.,1289,360,360,
1002.,1241,368,368,
1030.,1223,370,370,
1130.,1162,380,380,
1318.,1047,400,400,
1429.,976,410,410,
1459.,954,413,413,
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1501.,950,417,417,
1564.,978,420,420,
B-EAST SLOPE 2, 4 , 2 , 0 ,0
1564.,978,420,420,
1675.,1015,425,425,
1789.,1041,430,430,
1905.,1054,435,435,
2021.,1055,440,440,
2249.,1052,450,450,
2391.,1051,454,454,
2393.,1232,450,450,
2388.,1362,440,440,
2384.,1599,420,420,
B-PA1-WEST, 5 , 2 , 0 ,0
596.,519,423,423,
594.,465,423,423,
621.,446,423,423,
718.,484,422,422,
819.,535,422,422,
827.,540,422,422,
836.,551,422,422,
830.,563,422,422,
B-WEST SLOPE 1, 6 , 2 , 0 ,0
731.,1072,416,416,
766.,1087,416,416,
846.,1049,416,416,
852.,1045,417,417,
946.,1004,417,417,
951.,1000,417,417,
1033.,966,417,417,
1061.,967,418,418,
1099.,944,419,419,
1111.,947,419,419,
B-WEST SLOPE 2, 7 , 2 , 0 ,0
1111.,947,419,419,
1245.,882,419,419,
1250.,873,419,419,
1312.,845,419,419,
1313.,831,419,419,
1136.,720,419,419,
B-PA 1 WALL 1, 8 , 2 , 0 ,0
596.,506,423,429,
594.,465,423,429,
621.,446,423,429,
718.,484,422,428,
819.,535,422,428,
827.,540,422,428,
836.,551,422,428,
822.,579,422,428,
B-PA 1 WALL 2, 9 , 2 , 0 ,0
1040.,692,421,428,
1056.,667,421,428,
900.,574,421,428,
889.,591,421,428,
R, 1 , 65 ,10
698,1938,354.,PA2-12
R, 2 , 65 ,10
649,1882,354.,PA2-11
R, 3 , 65 ,10
623,1819,354.5,PA2-10
R, 4 , 65 ,10
619,1715,355.5,PA2-8
R, 5 , 65 ,10
624,1639,356.,PA2-7
R, 6 , 65 ,10
695,1526,357.,PA2-5
R, 7 , 65 ,10
731,1481,358.,PA2-4
R, 8 , 65 ,10
825,1395,360.,PA2-40
R, 9 , 65 ,10
869,1363,361.,PA2-39

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R, 10 , 65 ,10
912,1333,362.,PA2-38
R, 11 , 65 ,10
1013,1280,363.,PA2-36
R, 12 , 65 ,10
1224,1213,389.,PA3-B40
R, 13 , 65 ,10
1266,1274,388.,PA3-B40
R, 14 , 65 ,10
1396,1169,388.,PA3-B39
R, 15 , 65 ,10
1447,1250,387.,PA3-B38
R, 16 , 65 ,10
1455,1075,405.,PA3-B21
R, 17 , 65 ,10
1488,1009,405.,PA3-B21
R, 18 , 65 ,10
1591,1059,406.,PA3-B20
R, 19 , 65 ,10
1716,1100,408.,PA3-B18
R, 20 , 65 ,10
1794,1117,410.,PA3-B17
R, 21 , 65 ,10
1926,1147,411.,PA3-B15
R, 22 , 65 ,10
2058,1155,413.,PA3-B13
R, 23 , 65 ,10
2192,1170,413.,PA3-B11A
R, 24 , 65 ,10
2271,1167,413.,PA3-B11B
R, 25 , 65 ,10
2280,1280,413.,PA3-B10
R, 26 , 65 ,10
608,479,437.,PA1-B3
R, 27 , 65 ,10
726,503,436.,PA1-B2
R, 28 , 65 ,10
818,548,436.,PA1-B1
R, 29 , 65 ,10
901,595,435.,PA1-B17
R, 30 , 65 ,10
988,650,435.,PA1-B16
R, 31 , 65 ,10
1001,728,433.,PA1-B15
R, 32 , 65 ,10
989,877,433.,PA1-B14
R, 33 , 65 ,10
989,972,431.,PA1-B13
R, 34 , 65 ,10
897,1010,432.,PA1-B12
R, 35 , 65 ,10
799,1057,431.,PA1-B11
R, 36 , 65 ,10
1118,931,434.,OFFICE
R, 37 , 65 ,10
1267,827,434.,OFFICE
K,-3
2  ,1,2,3,4,5,6,7,8,9,10,11,33,34,35
C,C
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TITLE:
MELROSE OCEANSIDE - SECOND LEVEL MITIGATED

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	PA2-12	65.	10.	63.8
2	PA2-11	65.	10.	65.3
3	PA2-10	65.	10.	66.7
4	PA2-8	65.	10.	68.3
5	PA2-7	65.	10.	70.6
6	PA2-5	65.	10.	71.8
7	PA2-4	65.	10.	72.2
8	PA2-40	65.	10.	72.2
9	PA2-39	65.	10.	69.7
10	PA2-38	65.	10.	68.2
11	PA2-36	65.	10.	65.9
12	PA3-B40	65.	10.	67.1
13	PA3-B40	65.	10.	64.9
14	PA3-B39	65.	10.	63.3
15	PA3-B38	65.	10.	62.3
16	PA3-B21	65.	10.	66.6
17	PA3-B21	65.	10.	65.3
18	PA3-B20	65.	10.	63.0
19	PA3-B18	65.	10.	61.1
20	PA3-B17	65.	10.	60.3
21	PA3-B15	65.	10.	59.1
22	PA3-B13	65.	10.	58.1
23	PA3-B11A	65.	10.	57.1
24	PA3-B11B	65.	10.	56.2
25	PA3-B10	65.	10.	57.4
26	PA1-B3	65.	10.	69.9
27	PA1-B2	65.	10.	72.8
28	PA1-B1	65.	10.	73.3
29	PA1-B17	65.	10.	73.5
30	PA1-B16	65.	10.	72.9
31	PA1-B15	65.	10.	68.6
32	PA1-B14	65.	10.	66.4
33	PA1-B13	65.	10.	69.6
34	PA1-B12	65.	10.	68.9
35	PA1-B11	65.	10.	68.4
36	OFFICE	65.	10.	71.6
37	OFFICE	65.	10.	74.5