ACOUSTICAL SITE ASSESSMENT
661 BEAR VALLEY TENTATIVE SUBDIVISION MAP
ESCONDIDO, CA

Submitted to:

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INTRODUCTION AND DEFINITIONS

Existing Site Characterization

The proposed 661 Bear Valley Tentative Subdivision Map (APN's 237-131-01, 02) consists of approximately 40.9 gross acres, located in the North County Area of San Diego County in the City of Escondido, as shown in Figure 1 on the following page. Regional access to the site is obtained from Bear Valley Parkway as shown in Figure 2 on Page 3 of this report. Surrounding land uses consist of single-family residential lots, limited commercial uses, and undeveloped open space. These features, as well as the proposed site plan configuration, can be seen in Figure 3 on Page 4 of this report.

The project site resides as a fully disturbed land use (i.e., a past extractive/mining use), and currently has one single-family residential structure onsite. Elevations across the property range from approximately 530 feet to 675 feet above mean sea level (MSL).

Project Description

The 661 Bear Valley Tentative Subdivision Map would construct fifty five (55), approximately 10,000 square-foot, single family, single story residential lots as shown in Figure 4 on Page 5 of this report. The project would also include necessary roadway and drainage improvements as well as the dedication of approximately 1.2 acres for improvements to Bear Valley Parkway.

Acoustical Definitions and Theory

Sound waves are linear mechanical waves. They can be propagated in solids, liquids, and gases. The material transmitting such a wave oscillates in the direction of propagation of the wave itself. Sound waves originate from some sort of vibrating surface which alternatively compress the surrounding air on a forward movement, and expand it on a backward movement.

There is a large range of frequencies within which linear waves can be generated, sound waves being confined to the frequency range that can stimulate the auditory organs to the sensation of hearing. For humans, this range is from about 20 Hertz (Hz or cycles per second) to about 20,000 Hz. The air transmits these frequency disturbances outward from the source of the wave.

Noise can be represented as a superposition of periodic waves with a large number of components, and is defined as unwanted or annoying sound that interferes with, or disrupts, normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and is influenced by the type of noise, its perceived importance, the time of day, and the sensitivity of the individual hearing the sound.

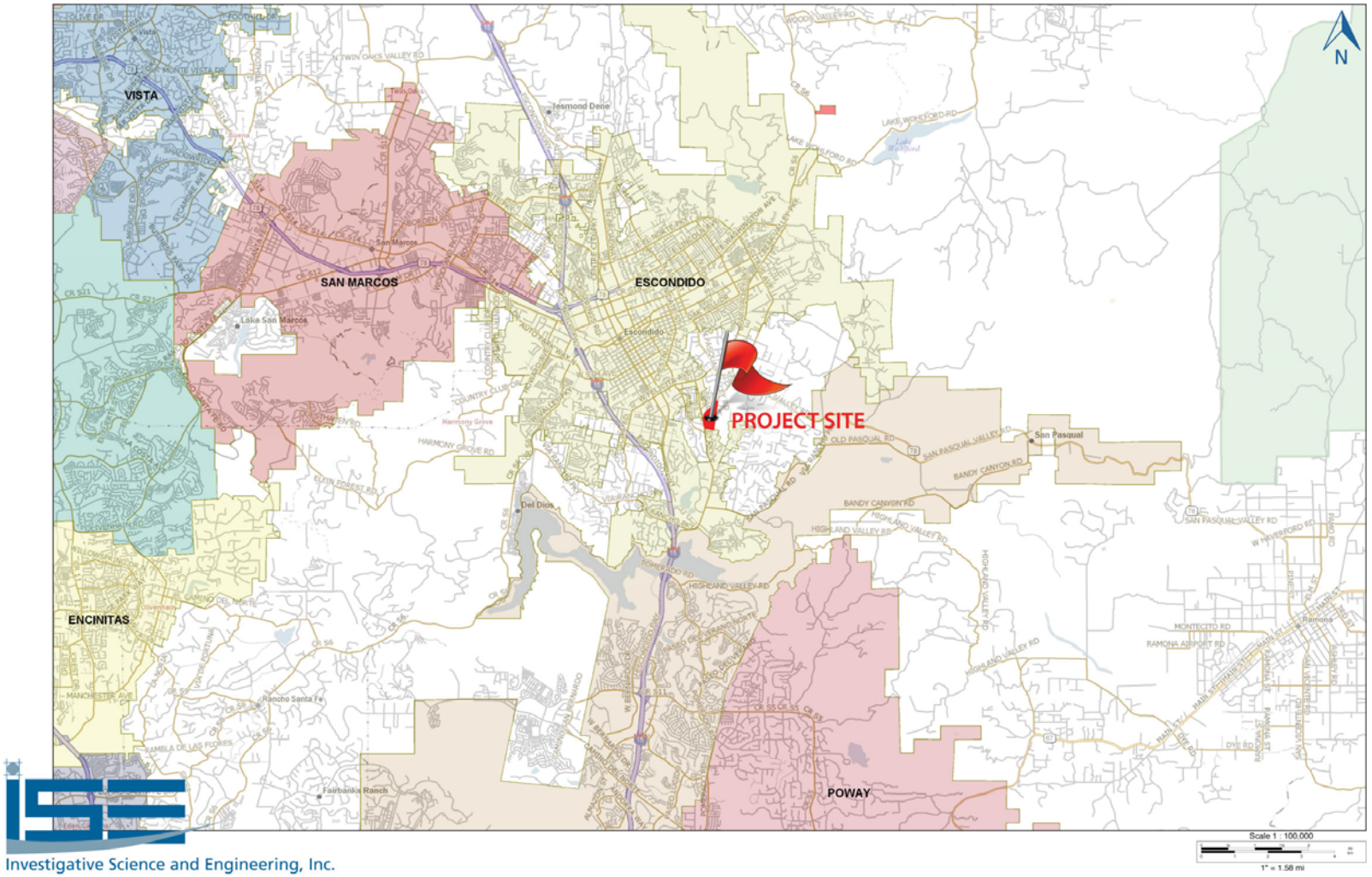

FIGURE 1: Project Study Area Vicinity Map (ISE 12/14)

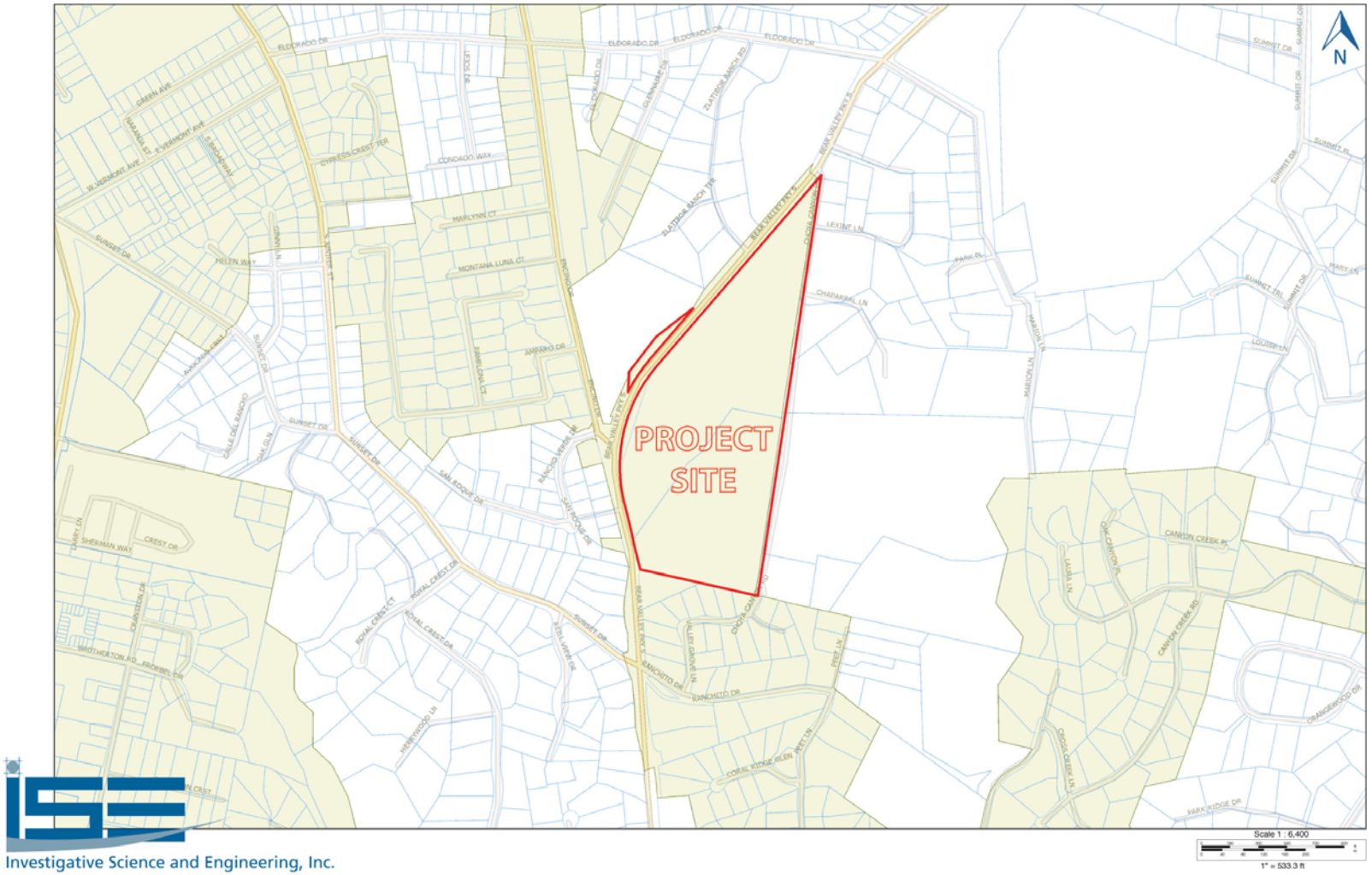

FIGURE 2: Project Study Area Parcel Map (ISE 12/14)

FIGURE 3: Aerial Image Showing 661 Bear Valley Development and Surrounding Uses (ISE 12/14)

FIGURE 4: Proposed 661 Bear Valley Site Development Map (Hunsaker & Associates 12/14)

The loudest sounds that the human ear can hear comfortably are approximately one trillion (or $1x10^{12}$) times the acoustic energy that the ear can barely detect. Because of this vast range, any attempt to represent the acoustic intensity of a particular sound on a linear scale becomes unwieldy. As a result, a logarithmic ratio, originally conceived for radio work, known as the decibel (dB), is commonly employed.[1]

A sound level of zero "0" dB is scaled such that it is defined as the threshold of human hearing, and would be barely audible to a human of normal hearing under extremely quiet listening conditions. Sound levels above 120 dB roughly correspond to the threshold of pain. The minimum change in sound level that the human ear can detect is approximately 3.0 dBA.[2] A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness.[3] A change in sound level of 10 dB actually represents an approximate 90 percent change in the sound intensity, but only about a 50 percent change in the perceived loudness. This is due to the nonlinear response of the human ear to sound.

As mentioned above, most of the sounds we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The intensities of each frequency add to generate the sound we hear. The method commonly used to quantify environmental sounds, consists of determining all of the frequencies of a sound according to a weighting system that reflects the nonlinear response characteristics of the human ear. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (or dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the Leq (or equivalent sound level) is used. Leq is the energy-mean A-weighted sound level during a measured time interval, and would be defined mathematically by the following continuous integral,

$$L_{eq} = 10Log_{10}\left[\frac{1}{T}\int_{0}^{T} SPL(t)^2\,dt\right]$$

[1] A unit used to express the relative magnitude of a sound wave. This level is defined as being equal to 20 times the common logarithm of the ratio of the pressure produced by a sound wave of interest, to a 'reference' pressure wave equal to 20 micro Pascal's (μPa) measured at a distance of 1 meter. 20 μPa is the smallest amount of pressure capable of producing the sensation of hearing in a human.

[2] Every 3 dB equates to a 50% drop (or increase) in wave strength; therefore a 6 dB drop/increase = a loss/increase of 75% of total signal strength and so on.

[3] This is a subjective reference based upon the nonlinear nature of the human ear.

In the previous expression, L_{eq} is the energy equivalent sound level, t is the independent variable of time, T is the total time interval of the event, and, SPL is the sound pressure level *re. 20 µPa*. Thus, L_{eq} is the 'equivalent' constant sound level that would have to be produced by a given source to equal the average of the fluctuating level measured. For most acoustical studies, the study interval is generally taken as one-hour and the abbreviation used is $L_{eq\text{-}h}$ or $L_{eq(h)}$; however, other time intervals are utilized depending on the jurisdictional preference.

To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10} and L_{90} are commonly used. They are the noise levels equaled or exceeded during 10 percent and 90 percent of a stated time. Sound levels associated with the L_{10} typically describe transient or short-term events, while levels associated with the L_{90} describe the steady state (or most prevalent) noise conditions. In addition, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum and minimum measured sound level (L_{max} and L_{min}) indicators. The L_{min} value obtained for a particular monitoring location is often called the *acoustic floor* for that location.

The aggregate of all community noise events are typically averaged into a single value known as the *Community Noise Equivalent Level* (CNEL). This descriptor is calculated by averaging all events over a specified time interval and applying a 5-dBA penalty to any sounds occurring between 7:00 p.m. and 10:00 p.m., and a 10-dBA penalty to sounds that occur during nighttime hours (i.e., 10 p.m. to 7 a.m.). This penalty is applied to compensate for the increased sensitivity to noise during the quieter nighttime hours. Mathematically, CNEL can be derived based upon the hourly L_{eq} values, via the following expression where, $L_{eq}(x)_i$ is the equivalent sound level during period *x* at time interval i, and n is the number of time intervals:

$$CNEL = 10Log_{10}\frac{1}{n}\sum_{i=1}^{n}\left(10^{\frac{Leq(day)_i}{10}} + 10^{\frac{Leq(evening+5)_i}{10}} + 10^{\frac{Leq(night+10)_i}{10}}\right)$$

ENVIRONMENTAL SIGNIFICANCE THRESHOLDS

City of Escondido Noise Regulations

The City of Escondido, through its Noise Element of the General Plan, has established criteria for compatibility of noise for various land uses as shown in Table 1 on Page 9 of this report. Sound levels up to 65 dBA CNEL are considered compatible with sensitive land uses.[4] Thus for the purposes of analysis, the project will be mitigated

[4] Under the Community Protection and Safety Noise Policy E1.2, a goal has been set to attempt to lower noise within outdoor residential areas to 60 dBA CNEL. It is noted that this is a design goal and not a General Plan Policy, and that mitigation to this level may not be feasible for every case. These standards are typically applied to areas within a proposed development that would be classified as "usable exterior space", such as rear and some side yards.

to the General Plan Policy level of 65 dBA CNEL with additional attention being placed on developing Best Mitigation Practices (BMP) to further reduce sound towards the 60 dBA CNEL goal.

State of California CCR Title 24

The California Code of Regulations (CCR), State Building Code, Part 2, Title 24, Appendix Chapter 35; "*Noise Insulation Standards for Multifamily Housing*" requires that multi-family dwellings, hotels, and motels located where the CNEL exceeds 60 dBA require an acoustical analysis showing that the proposed design will limit interior noise to less than 45 dBA CNEL for all residential spaces.[5] Worst-case noise levels, either existing or future, must be used. The City of Escondido has adopted the CCR Title 24 regulations for all types of residential dwellings.

City of Escondido Construction Noise Ordinance Regulations

Construction grading noise within the City of Escondido is regulated under Ordinance Section 17-238. The relevant parts are cited below.

- It shall be unlawful for any person, including the City of Escondido, to do any authorized grading at any construction site, except on Mondays through Fridays during a week between the hours of 7:00 a.m. and 6:00 p.m. and, provided a variance has been obtained in advance from the City Manager, on Saturdays from 10:00 a.m. to 5:00 p.m.
- For the purpose of this section, "grading" shall include, but not be limited to, compacting, drilling, rock crushing or splitting, bulldozing, clearing, dredging, digging, filling and blasting.
- In addition, any equipment used for grading shall not be operated so as to cause noise in excess of a one-hour sound level limit of 75 dB at any time when measured at or within the property lines of any property which is developed and used in whole or in part for residential purposes, unless a variance has been obtained in advance from the City Manager.

Thus for the purposes of analysis within this report, construction grading noise will have a threshold of significance of 75 dBA L_{eq-h} and be limited to the normal hours of 7:00 a.m. through 6:00 p.m. weekdays, and 10:00 a.m. to 5:00 p.m. on Saturday.

[5] This standard is also codified in the 2013 version of the California Code of Regulations, Title 24, Part 2, Volume 1, Chapter 12 – Interior Environment, Section 1207 et. seq.

TABLE 1: City of Escondido Land Use Compatibility Matrix

Land Use Category	Exterior Noise Level (CNEL) 55	60	65	70	75	80
Residential						
Transient Lodging, Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial, Professional						
Industrial, Manufacturing, Utilities, Agriculture						

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

CONDITIONALLY ACCEPTABLE - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

NORMALLY UNACCEPTABLE - New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with noise insulation features included in the design.

CLEARLY UNACCEPTABLE - New construction or development clearly should not be undertaken.

Source: City of Escondido, 2011

APPROACH AND METHODOLOGY

Field Acoustical Reconnaissance

Two independent monitoring locations were selected within the proposed 661 Bear Valley Tentative Subdivision Map for the purpose of determining the ambient baseline community noise levels during normal free-flow weekday traffic conditions. The instrumentation locations, denoted as Monitoring Locations ML 1 (near proposed project entrance), and ML 2 (near proposed Lot 46) are shown in Figure 5 on Page 12.

For the field monitoring effort, two Quest SoundPro SP-DL-2 ANSI Type 2 integrating sound level meters were used as the data collection devices. The meters were affixed to tripods five-feet above ground level, in order to simulate the noise exposure of an average-height human being and were calibrated in accordance with ANSI S1-4 1983 Type 2 and IEC 651 Type 2 standards.[6]

Photos of the test setup are provided in Figures 6a and –b starting on Page 13. Measurements were performed on December 22, 2014 between 12:00 p.m. and 1:00 p.m.

Construction Noise Impact Assessment Approach

Major construction noise emission generators expected within the project site would consist predominately of diesel-powered earthwork equipment required for grading activities, underground work, and surface paving. Construction noise present at the project site was based upon EPA recommended values, and past levels measured by ISE.[7]

Cumulative (i.e., worst case aggregate) noise levels were calculated for a range of expected emissions from proposed equipment at the closest sensitive receptor, under spherically-soft ground propagation conditions, and compared against the aforementioned City of Escondido Ordinance Section 17-238 thresholds.

Traffic Segment Impact Assessment Approach

The ISE *RoadNoise v2.5* traffic noise prediction model, which is based upon the Federal Highway Administration's RD-77-108 Noise Prediction Model with FHWA/CA/TL-87/03 noise emission factors, was used to calculate the increase in vehicular traffic noise levels, due to the proposed 661 Bear Valley Tentative Subdivision

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[6] All testing and calibration is performed by ISE's Acoustics and Vibration Laboratory using a LORAN-C and Rubidium atomic frequency and time standard traceable to National Institute of Standards & Technology (NIST). The time and frequency calibration signal has a long-term stability of 10^{-10}. Specifications for traceability can be obtained at *www.nist.gov*.

[7] Source: EPA PB 206717, Environmental Protection Agency, 12/31/71, "Noise from Construction Equipment and Operations"

Map, along all identified major servicing roadways.[8] The model assumed a 3.0-dBA loss per doubling of distance (DD) propagation rule, and a 95/3/2 mix of automobiles/midsize vehicles/trucks, thereby yielding a representative worst-case noise contour set.

Exterior Traffic Noise Impact Assessment Approach

The *Traffic Noise Model version 2.5* (TNM 2.5) based on FHWA-PD-96-010 and FHWA/CA/TL-87/03 standards was used to calculate future onsite vehicular traffic noise levels.[9] Currently, TNM 2.5 is the only noise-modeling program formally accepted for use within the State of California. Dominant input to the acoustical model included the following:

- The proposed site development plan (Source: Hunsaker & Associates, 4/15).
- A digitized line-of-sight representation of all major roadways affecting the project site under the worst-case future noise condition (i.e., Bear Valley Parkway).
- Future Average Daily Trips (ADT's) for the aforementioned roadway segments (Source: Traffic Impact Analysis: 661 Bear Valley – Escondido, CA, Linscott, Law & Greenspan, Engineers, 12/17/14).
- A traffic mix of 88.4% LDA/LDT, 6.4% MDT, 4.7% HDT, and 0.5% MCY in accordance with the Caltrans ITS Transportation Protocols (Source: Caltrans Traffic Data Branch, 3/09). [10]
- A peak hour traffic percentage of 8% of the ADT.[11]
- Receptor and topographic elevations (Source: USGS Digital Elevation Model).
- A composite pavement type, consisting of an average of Portland Cement Concrete (PCC) and Dense-Graded Asphaltic Concrete (DGAC) in accordance with TNM 2.5 test results (1998).

Modeled receptor areas consisting of useable space locations within the project footprint as well as exterior building façade points were sampled at various locations to determine the variation of all acoustic sources across, and affecting, the project site. It was assumed for the purposes of analysis that all units were single story.

[8] Source: Traffic Impact Analysis, 661 Bear Valley, Escondido, CA, LLG Engineers, 12/17/14.

[9] The components of the TNM model are supported by a scientifically founded and experimentally calibrated acoustic computation methodology. The database is made up of over 6,000 individual pass-by events measured at forty sites across the country.

[10] The Caltrans vehicle classifications are as follows: LDA = Light Duty Automobile, LDT = Light Duty Truck, MDT = Medium Duty Truck, HDT = Heavy Duty Truck, and MCY = Motorcycle.

[11] For values between approximately 8 and 12 percent, the energy-mean A-weighted sound level is equivalent to the CNEL.

FIGURE 5: Ambient Noise Monitoring Locations ML 1 and ML 2 (ISE 12/14)

FIGURE 6a: Ambient Noise Monitoring Location ML 1 (ISE 12/14)

FIGURE 6b: Ambient Noise Monitoring Location ML 2 (ISE 12/14)

FINDINGS AND RECOMMENDATIONS

Field Acoustical Reconnaissance Findings

The results of the field reconnaissance sound level monitoring are shown in Table 2 below with the field data record provided as attachment APP 1 to this report. The values for the equivalent sound level (L_{eq-h}), the maximum and minimum measured sound levels (L_{max} and L_{min}), and the statistical indicators L_{10} and L_{90}, are given for the monitoring location examined.

TABLE 2: Measured Ambient Sound Levels – 661 Bear Valley Tentative Subdivision Map

		One-Hour Noise Level Descriptors in dBA				
Location	**Start Time**	**L_{eq}**	**L_{max}**	**L_{min}**	**L_{10}**	**L_{90}**
ML 1	12:00 p.m.	66.0	77.1	37.5	69.6	48.7
ML 2	11:56 a.m.	54.2	61.4	43.0	56.7	49.3

Monitoring Location:

Location ML 1: Near Proposed Project Entrance. GPS: CA-VI 6314560.0, 1981114.1
Location ML 2: Near Proposed Lot 46. GPS: CA-VI 6314590.6, 1980688.2

Measurements performed by ISE on 12/22/14.

EPE = Estimated GPS Position Error = 8 ft.

Temperature = 75.0 °F. Relative Humidity = 42.5 %. Barometric Pressure = 29.65 in-Hg.

Measurements collected reflect the ambient daytime community sound levels in the vicinity of the proposed project site. As can be seen, the hourly average sound level (or L_{eq-h}) recorded over the monitoring period ranged between 54 to 66 dBA and was observed to be entirely due to traffic noise along Bear Valley parkway, and the relative separation distance from the roadway. These levels were found to currently be in compliance with the City's compatibility standards and consistent with the observed community setting.

Construction Noise Emission Levels

The estimated worst-case construction vehicle noise emissions are provided in Table 3 on the following page. Construction within the proposed project area would typically occur between the hours of 7:00 a.m. and 3:00 p.m. Monday through Friday. The nearest sensitive residential receptor line would be, at a minimum, approximately 150-feet from any construction activity centroid.

TABLE 3: Aggregate Construction Noise Levels – 661 Bear Valley Development Site

Equipment Type Model	Selected EPA Tier Level	Quantity Used (#)	Source Level at 50 Feet at Full Load (dBA)	Average Load Factor (%)	Duty Cycle (hrs/day)	Cumulative Effect at 50 Feet (dBA Leq_{8h})
Push Dozer D10T	3	2	75	40	8	74.0
Dozer D9R	3	1	70	50	8	67.0
Dozer D6T LGP	3	1	75	40	8	71.0
Scraper- 657G Tractor	3	2	80	30	4	74.8
Motor Grader 120K	3	2	70	50	8	70.0
Water Truck	3	1	70	40	8	66.0
Hydraulic Excavator 349EL	3	1	75	60	8	72.8
					Worst-Case Aggregate Sum @ 50 Ft. (Σ):	**80.2**
					Leq_{8h} at Receptor Area 150-Feet Distant:	**68.3**

Source: EPA PB 206717, Environmental Protection Agency, 12/31/71, "Noise from Construction Equipment and Operations"

As can be seen, predicted worst-case construction noise levels could be as high as 80.2 dBA Leq_{8h} at 50-feet, with a resultant receptor level of 68.3 dBA Leq_{8h} or less. This level is below the City of Escondido construction noise abatement threshold and is not expected to generate impacts, nor require remedial mitigation measures.

Future Roadway Segment Noise Impacts

The results showing the effect of traffic noise increases on the various servicing roadway segments associated with the proposed 661 Bear Valley Tentative Subdivision Map are presented in Tables 4a through -f. The scenarios examined consisted of: Existing Conditions, Existing + Project Conditions, Cumulative Conditions, Cumulative + Project Conditions, General Plan Build out Conditions, and General Plan Build out + Project Conditions. A comparison matrix of these various scenarios is shown in Table 4g.

For each roadway segment examined, the worst case average daily traffic volume (ADT) and observed/predicted speeds are shown, along with the corresponding reference noise level at 50-feet (in dBA). Additionally, the line-of-sight distance from the roadway centerline to the 60-, 65, and 75 dBA CNEL contours are provided as an indication of the worst-case unobstructed theoretical traffic noise contour placement.

As can be seen, the worst-case traffic noise condition is expected to occur on Encino Drive west of Bear Valley by a worst case 0.4 dBA CNEL under the existing condition scenario. This level would be reduced to 0.2 dBA CNEL under the future General Plan scenario. This would not be deemed impactive, since no affected traffic segments are at, or above, the 3.0 dBA CNEL significance threshold.

TABLE 4a: Project Traffic Noise Conditions (Existing Conditions)

Roadway	Segment	LOS	ADT	Speed (MPH)	SPL	75 dBA CNEL Contour Distance in Feet	65 dBA CNEL Contour Distance in Feet	60 dBA CNEL Contour Distance in Feet
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	F	20,600	50	73.6	36	362	1,145
	Zlatibor Ranch Road to Encino Drive	F	20,110	50	73.5	35	354	1,119
	Encino Drive to Sunset Drive	F	21,770	50	73.8	38	379	1,199
	Sunset Drive to Las Palmas Avenue	F	30,600	50	75.3	54	536	1,694
	Las Palmas Avenue to Mary Lane	C	27,300	50	74.8	48	477	1,510
	Mary Lane to San Pasqual Road	D	29,430	50	75.1	51	512	1,618
Encino Drive	West of Bear Valley Parkway	A	1,420	35	58.6	1	11	36
Sunset Drive	West of Bear Valley Parkway	B	7,450	40	67.0	8	79	251

SPL values shown in dBA CNEL

TABLE 4b: Project Traffic Noise Conditions (Existing + Project Conditions)

Roadway	Segment	LOS	ADT	Speed (MPH)	SPL	75 dBA CNEL Contour Distance in Feet	65 dBA CNEL Contour Distance in Feet	60 dBA CNEL Contour Distance in Feet
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	F	20,721	50	73.6	36	362	1,145
	Zlatibor Ranch Road to Encino Drive	F	20,539	50	73.6	36	362	1,145
	Encino Drive to Sunset Drive	F	22,073	50	73.9	39	388	1,227
	Sunset Drive to Las Palmas Avenue	F	30,793	50	75.3	54	536	1,694
	Las Palmas Avenue to Mary Lane	D	27,465	50	74.8	48	477	1,510
	Mary Lane to San Pasqual Road	D	29,595	50	75.1	51	512	1,618
Encino Drive	West of Bear Valley Parkway	A	1,547	35	59.0	1	13	40
Sunset Drive	West of Bear Valley Parkway	B	7,560	40	67.1	8	81	256

SPL values shown in dBA CNEL

TABLE 4c: Project Traffic Noise Conditions (Cumulative Conditions)

Roadway	Segment	LOS	ADT	Speed (MPH)	SPL	75 dBA CNEL Contour Distance in Feet	65 dBA CNEL Contour Distance in Feet	60 dBA CNEL Contour Distance in Feet
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	F	25,880	50	74.6	46	456	1,442
	Zlatibor Ranch Road to Encino Drive	F	24,040	50	74.2	42	416	1,315
	Encino Drive to Sunset Drive	F	25,810	50	74.6	46	456	1,442
	Sunset Drive to Las Palmas Avenue	F	34,340	50	75.8	60	601	1,901
	Las Palmas Avenue to Mary Lane	D	31,670	50	75.4	55	548	1,734
	Mary Lane to San Pasqual Road	E	34,920	50	75.9	62	615	1,945
Encino Drive	West of Bear Valley Parkway	A	1,890	35	59.9	2	15	49
Sunset Drive	West of Bear Valley Parkway	B	7,650	40	67.1	8	81	256

SPL values shown in dBA CNEL

TABLE 4d: Project Traffic Noise Conditions (Cumulative + Project Conditions)

Roadway	Segment	LOS	ADT	Speed (MPH)	SPL	75 dBA CNEL Contour Distance in Feet	65 dBA CNEL Contour Distance in Feet	60 dBA CNEL Contour Distance in Feet
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	F	26,001	50	74.6	46	456	1,442
	Zlatibor Ranch Road to Encino Drive	F	24,469	50	74.3	43	426	1,346
	Encino Drive to Sunset Drive	F	26,113	50	74.6	46	456	1,442
	Sunset Drive to Las Palmas Avenue	F	34,533	50	75.8	60	601	1,901
	Las Palmas Avenue to Mary Lane	D	31,835	50	75.5	56	561	1,774
	Mary Lane to San Pasqual Road	E	35,085	50	75.9	62	615	1,945
Encino Drive	West of Bear Valley Parkway	A	2,017	35	60.1	2	16	51
Sunset Drive	West of Bear Valley Parkway	B	7,760	40	67.2	8	83	262

SPL values shown in dBA CNEL

TABLE 4e: Project Traffic Noise Conditions (General Plan Build Out Conditions)

Roadway	Segment	LOS	ADT	Speed (MPH)	SPL	75 dBA CNEL Contour Distance in Feet	65 dBA CNEL Contour Distance in Feet	60 dBA CNEL Contour Distance in Feet
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	E	35,470	50	75.9	62	615	1,945
	Zlatibor Ranch Road to Encino Drive	F	37,620	50	76.2	66	659	2,084
	Encino Drive to Sunset Drive	F	45,610	50	77.0	79	792	2,506
	Sunset Drive to Las Palmas Avenue	E	45,610	50	77.0	79	792	2,506
	Las Palmas Avenue to Mary Lane	E	44,590	50	76.9	77	774	2,449
	Mary Lane to San Pasqual Road	F	50,940	50	77.5	89	889	2,812
Encino Drive	West of Bear Valley Parkway	A	3,180	35	62.1	3	26	81
Sunset Drive	West of Bear Valley Parkway	C	8,300	40	67.5	9	89	281

SPL values shown in dBA CNEL

TABLE 4f: Project Traffic Noise Conditions (General Plan Build Out + Project Conditions)

Roadway	Segment	LOS	ADT	Speed (MPH)	SPL	75 dBA CNEL Contour Distance in Feet	65 dBA CNEL Contour Distance in Feet	60 dBA CNEL Contour Distance in Feet
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	E	35,899	50	76.0	63	629	1,991
	Zlatibor Ranch Road to Encino Drive	F	37,923	50	76.2	66	659	2,084
	Encino Drive to Sunset Drive	F	45,803	50	77.0	79	792	2,506
	Sunset Drive to Las Palmas Avenue	E	45,803	50	77.0	79	792	2,506
	Las Palmas Avenue to Mary Lane	E	44,755	50	76.9	77	774	2,449
	Mary Lane to San Pasqual Road	F	51,105	50	77.5	89	889	2,812
Encino Drive	West of Bear Valley Parkway	A	3,307	35	62.3	3	27	85
Sunset Drive	West of Bear Valley Parkway	C	8,410	40	67.5	9	89	281

SPL values shown in dBA CNEL

TABLE 4g: Project Traffic Noise Comparison (All Scenarios)

Roadway	Segment	Existing + Project *minus* Existing Conditions SPL	Cumulative + Project *minus* Cumulative Conditions SPL	General Plan + Project *minus* General Plan Conditions SPL
Bear Valley Parkway	Eldorado Drive to Zlatibor Ranch Road	0.0	0.0	0.1
	Zlatibor Ranch Road to Encino Drive	0.1	0.1	0.0
	Encino Drive to Sunset Drive	0.1	0.0	0.0
	Sunset Drive to Las Palmas Avenue	0.0	0.0	0.0
	Las Palmas Avenue to Mary Lane	0.0	0.1	0.0
	Mary Lane to San Pasqual Road	0.0	0.0	0.0
Encino Drive	West of Bear Valley Parkway	0.4	0.2	0.2
Sunset Drive	West of Bear Valley Parkway	0.1	0.1	0.0

SPL values shown in dBA CNEL

Future Traffic Noise Impacts to Proposed Development

Traffic noise affecting the proposed 661 Bear Valley Tentative Subdivision Map is currently, and would continue to be, the aggregation of surface street traffic along Bear Valley Parkway. This roadway has a maximum travel speed of 50 MPH. Thus, per the findings of the project traffic impact assessment, Bear Valley Parkway has a worst case (Future Build out with Project) average daily traffic (ADT) volume of 45,803 ADT.[12]

Given these traffic volumes, Table 5 below shows the proposed physical lot number and whether or not mitigation measures are indicated. The complete model runs are provided as Attachment APP 2 to this report. Based upon the findings, exterior noise levels within sensitive usable space areas of Lots 2 through 5 would exceed the City's 65 dBA CNEL noise abatement threshold and would require mitigation. The proposed mitigation plan, consisting of a perimeter block noise wall, is shown in Figure 7 on Page 27. Upon application of the mitigation plan, no residual exterior acoustical impacts are anticipated.

TABLE 5: Predicted Future Site Noise Levels – 661 Bear Valley Tentative Subdivision Map

Lot Number	Unmitigated Receptor Sound Levels in dBA	Mitigated Receptor Sound Levels in dBA	General Plan Exterior Mitigation Required?	CCR Title 24 Interior Mitigation Required?
1	63.9	60.6	-	yes
2	**65.0**	60.9	yes	yes
3	**65.2**	60.9	yes	yes
4	**66.4**	61.3	yes	yes
5	**71.0**	63.3	yes	yes
6	57.5	57.1	-	-
7	56.7	56.3	-	-
8	53.2	52.7	-	-
9	50.5	49.8	-	-
10	49.7	49.0	-	-
11	48.8	48.1	-	-
12	48.0	47.4	-	-
13	47.7	47.4	-	-
14	48.1	47.9	-	-
15	48.5	48.3	-	-
16	48.8	48.7	-	-
17	50.7	50.7	-	-
18	51.6	51.6	-	-

[12] This equates to the following peak hour estimates of traffic flow: LDA/LDT = 3239, MDT = 235, HDT = 172, UBUS = 1, and, MCY = 18.

TABLE 5 (cont.): Predicted Future Site Noise Levels – 661 Bear Valley Tentative Subdivision Map

Lot Number	Unmitigated Receptor Sound Levels in dBA	Mitigated Receptor Sound Levels in dBA	General Plan Exterior Mitigation Required?	CCR Title 24 Interior Mitigation Required?
19	52.2	52.1	-	-
20	52.9	52.9	-	-
21	50.1	50.0	-	-
22	49.9	49.9	-	-
23	47.9	47.9	-	-
24	47.4	47.5	-	-
25	46.4	46.4	-	-
26	44.6	44.4	-	-
27	43.1	43.1	-	-
28	45.3	45.2	-	-
29	46.8	46.7	-	-
30	47.7	47.6	-	-
31	46.0	45.9	-	-
32	46.6	46.5	-	-
33	50.5	50.5	-	-
34	50.3	50.2	-	-
35	50.5	50.5	-	-
36	51.6	51.6	-	-
37	52.8	52.8	-	-
38	53.7	53.7	-	-
39	54.8	54.8	-	-
40	55.9	55.8	-	-
41	56.1	56.1	-	-
42	58.3	58.3	-	-
43	56.9	56.9	-	-
44	54.1	54.1	-	-
45	52.8	52.8	-	-
46	50.2	49.3	-	-
47	49.4	48.7	-	-
48	52.6	52.3	-	-
49	55.1	54.9	-	-
50	54.3	53.8	-	-
51	55.2	54.7	-	-
52	56.4	55.9	-	-
53	55.7	55.2	-	-
54	52.5	51.4	-	-
55	54.2	53.8	-	-

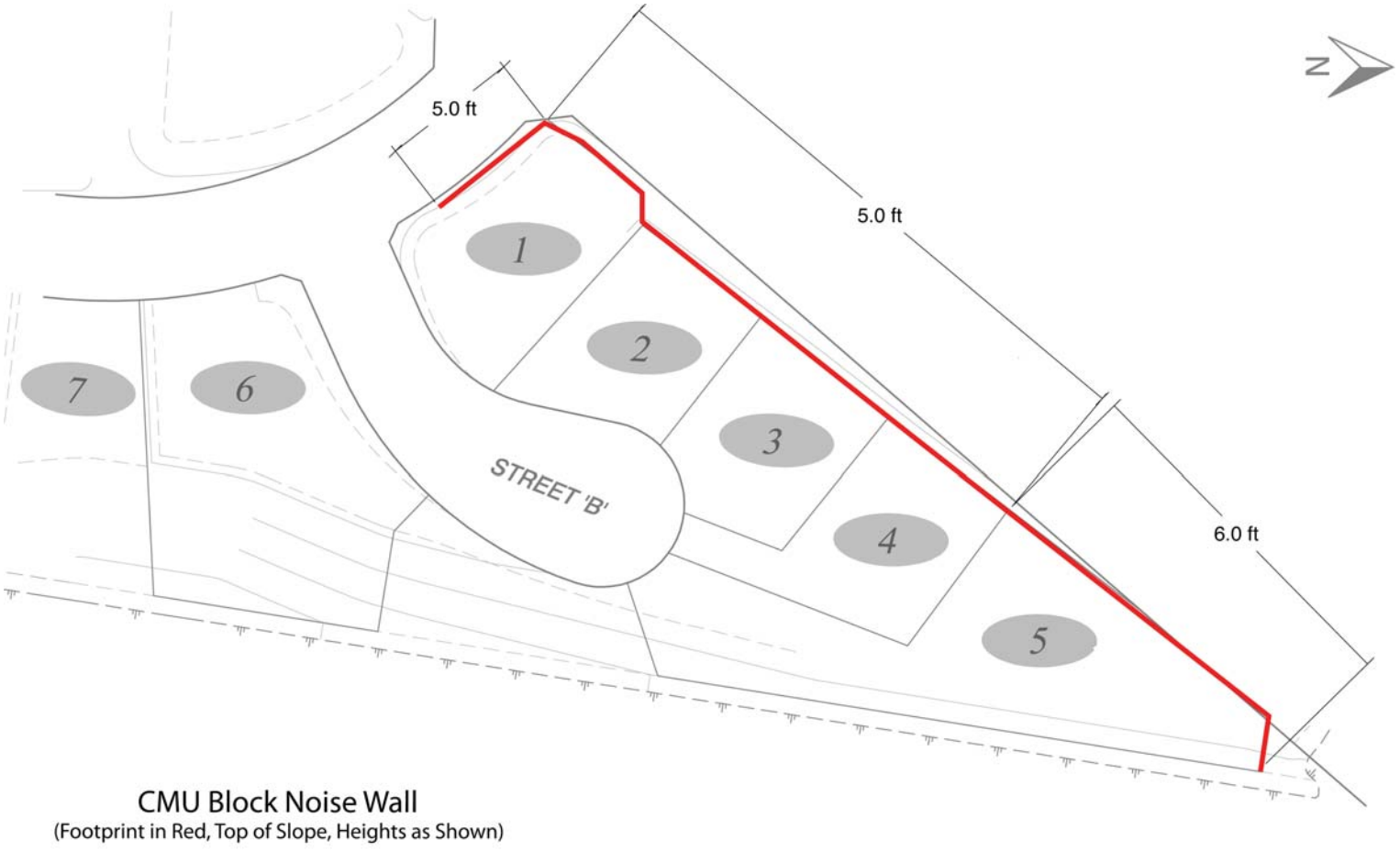

FIGURE 7: Proposed 661 Bear Valley Site Acoustical Mitigation Plan (ISE 4/15)

Finally, future onsite development would be exposed to noise levels in excess of the CCR Title 24 threshold of 60 dBA CNEL, as shown in Table 5 above, and would require mitigation consistent with the intent of this code. A structural interior acoustical study should be performed for each approved architectural design once plans are available for the purpose of determining appropriate door, window, and exterior wall assemblies.

CERTIFICATION OF ACCURACY AND QUALIFICATIONS

This report was prepared by Investigative Science and Engineering, Inc. (ISE), located at 1134 D Street, Ramona, CA 92065. The members of its professional staff contributing to the report are listed below:

Rick Tavares *(rtavares@ise.us)*	Ph.D. Civil Engineering M.S. Structural Engineering M.S. Mechanical Engineering B.S. Aerospace Engineering & Engineering Mechanics
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ISE affirms to the best of its knowledge and belief that the statements and information contained herein are in all respects true and correct as of the date of this report. Content and information contained within this report is intended only for the subject project and is protected under 17 U.S.C. §§ 101 through 810.

Should the reader have any questions regarding the findings and conclusions presented in this report, please do not hesitate to contact ISE at (760) 787-0016.

Approved as to Form and Content:

Rick Tavares, Ph.D.

Project Principal
Investigative Science and Engineering, Inc. (ISE)

APPENDICIES AND SUPPLEMENTAL INFORMATION

APP 1 – Field Reconnaissance Measurement Results

Monitoring Location ML 1

12/22/2014

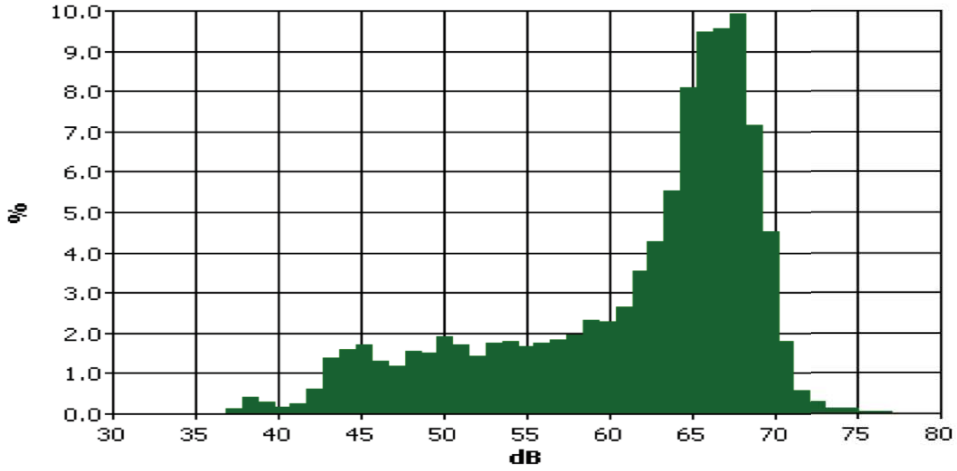
Information Panel

Name	ML 1
Start Time	Monday, December 22, 2014 12:00:54
Stop Time	Monday, December 22, 2014 13:00:51
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	66 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	C	Response	2	FAST

Statistics Chart



Statistics Table

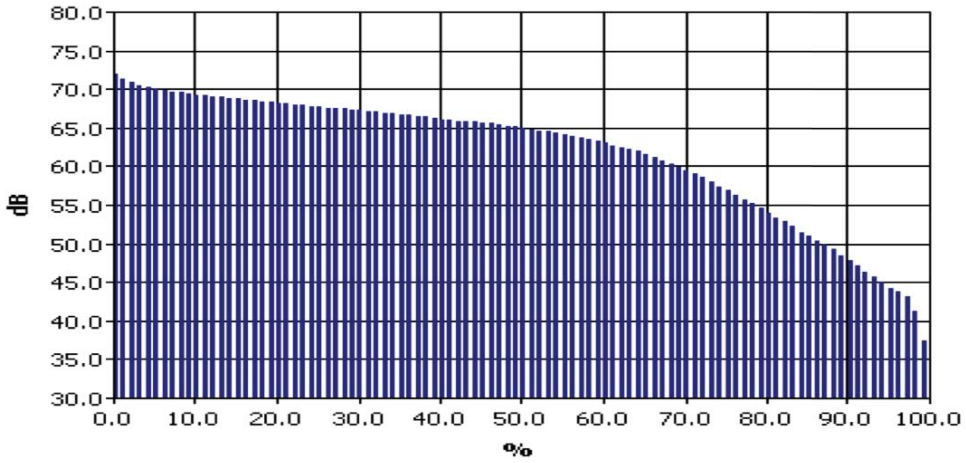
dB	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
38.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4
39.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
41.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
42.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.6
43.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	1.4
44.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	1.6
45.0	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	1.7
46.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.3
47.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.2
48.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	1.5
49.0	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.2	1.5
50.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.9
51.0	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.7
52.0	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	1.4
53.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.7
54.0	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8
55.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	1.7
56.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8

1

Statistics Table (cont'd)

dB	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
57.0	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8
58.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.0
59.0	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	2.3
60.0	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	2.3
61.0	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2.7
62.0	0.3	0.4	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.4	3.6
63.0	0.4	0.5	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	4.3
64.0	0.5	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.6	5.5
65.0	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	8.1
66.0	0.9	0.9	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	9.5
67.0	0.9	0.8	0.9	0.9	1.0	1.0	1.0	0.9	1.1	1.1	9.6
68.0	1.1	1.0	1.0	1.0	1.0	1.1	1.0	1.0	0.9	0.9	9.9
69.0	0.9	0.9	0.7	0.7	0.7	0.8	0.7	0.6	0.5	0.5	7.2
70.0	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.2	0.3	4.5
71.0	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	1.8
72.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.6
73.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
74.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
76.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Exceedance Chart



Exceedance Table

	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%		72.0	71.3	70.8	70.5	70.3	70.1	69.9	69.7	69.6
10%	69.4	69.3	69.2	69.0	68.9	68.8	68.7	68.6	68.5	68.4
20%	68.3	68.2	68.1	68.0	67.9	67.8	67.7	67.6	67.5	67.4
30%	67.3	67.2	67.1	67.0	66.9	66.8	66.7	66.6	66.5	66.4
40%	66.3	66.1	66.0	65.9	65.8	65.7	65.6	65.5	65.4	65.2
50%	65.1	65.0	64.8	64.6	64.5	64.3	64.1	63.9	63.7	63.5
60%	63.2	63.0	62.7	62.4	62.1	61.9	61.5	61.1	60.7	60.3
70%	59.8	59.4	59.0	58.5	58.0	57.4	56.9	56.3	55.7	55.2
80%	54.6	54.0	53.4	52.9	52.2	51.5	50.9	50.4	49.9	49.2
90%	48.5	47.9	47.1	46.3	45.6	45.0	44.3	43.7	43.1	41.2
100%	37.4									

Monitoring Location ML 2

12/22/2014

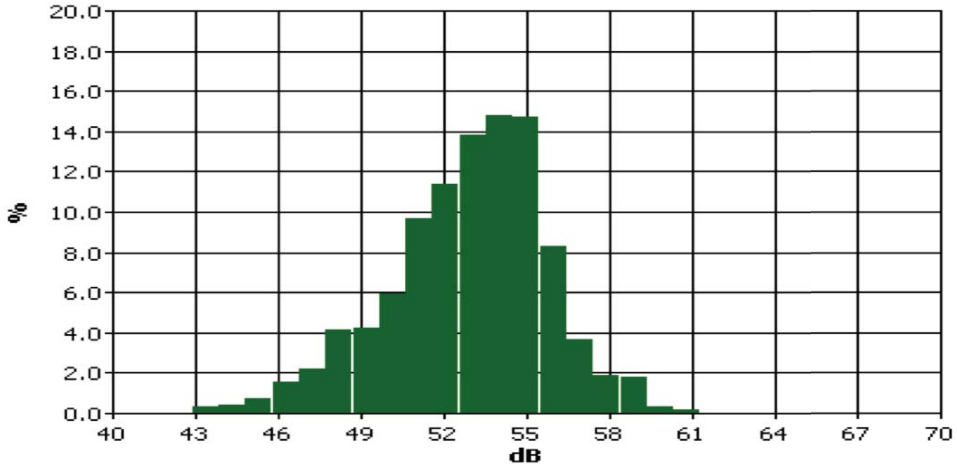
Information Panel

Name	ML 2
Start Time	Monday, December 22, 2014 11:56:45
Stop Time	Monday, December 22, 2014 12:56:00
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	54.2 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	A	Response	2	SLOW

Statistics Chart



Statistics Table

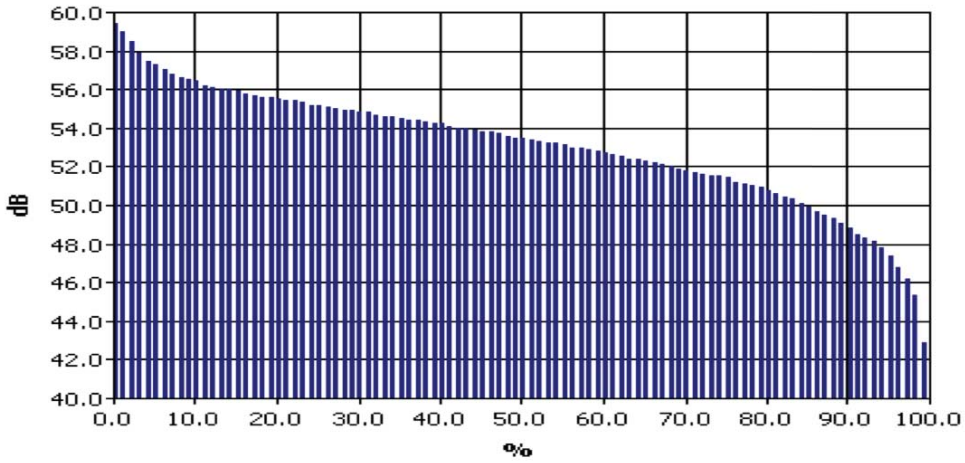
dB	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
44.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4
45.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8
46.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.5
47.0	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.3	2.2
48.0	0.3	0.3	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	4.2
49.0	0.4	0.2	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.5	4.2
50.0	0.6	0.6	0.5	0.5	0.6	0.7	0.6	0.6	0.6	0.7	6.0
51.0	0.9	1.0	0.8	0.8	0.9	1.0	1.1	1.1	1.1	1.0	9.7
52.0	1.2	0.9	1.0	1.2	1.3	1.2	1.1	1.1	1.3	1.1	11.4
53.0	1.1	1.4	1.5	1.4	1.3	1.4	1.4	1.3	1.4	1.5	13.8
54.0	1.5	1.4	1.6	1.5	1.5	1.5	1.3	1.3	1.5	1.7	14.8
55.0	1.8	1.5	1.2	1.6	1.6	1.5	1.5	1.4	1.3	1.3	14.7
56.0	1.1	1.1	1.0	1.0	0.9	0.7	0.7	0.8	0.6	0.5	8.3
57.0	0.5	0.4	0.5	0.4	0.4	0.3	0.4	0.3	0.3	0.2	3.6
58.0	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	1.8
59.0	0.3	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	1.8
60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
61.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
62.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1

Statistics Table (cont'd)

dB	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
67.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

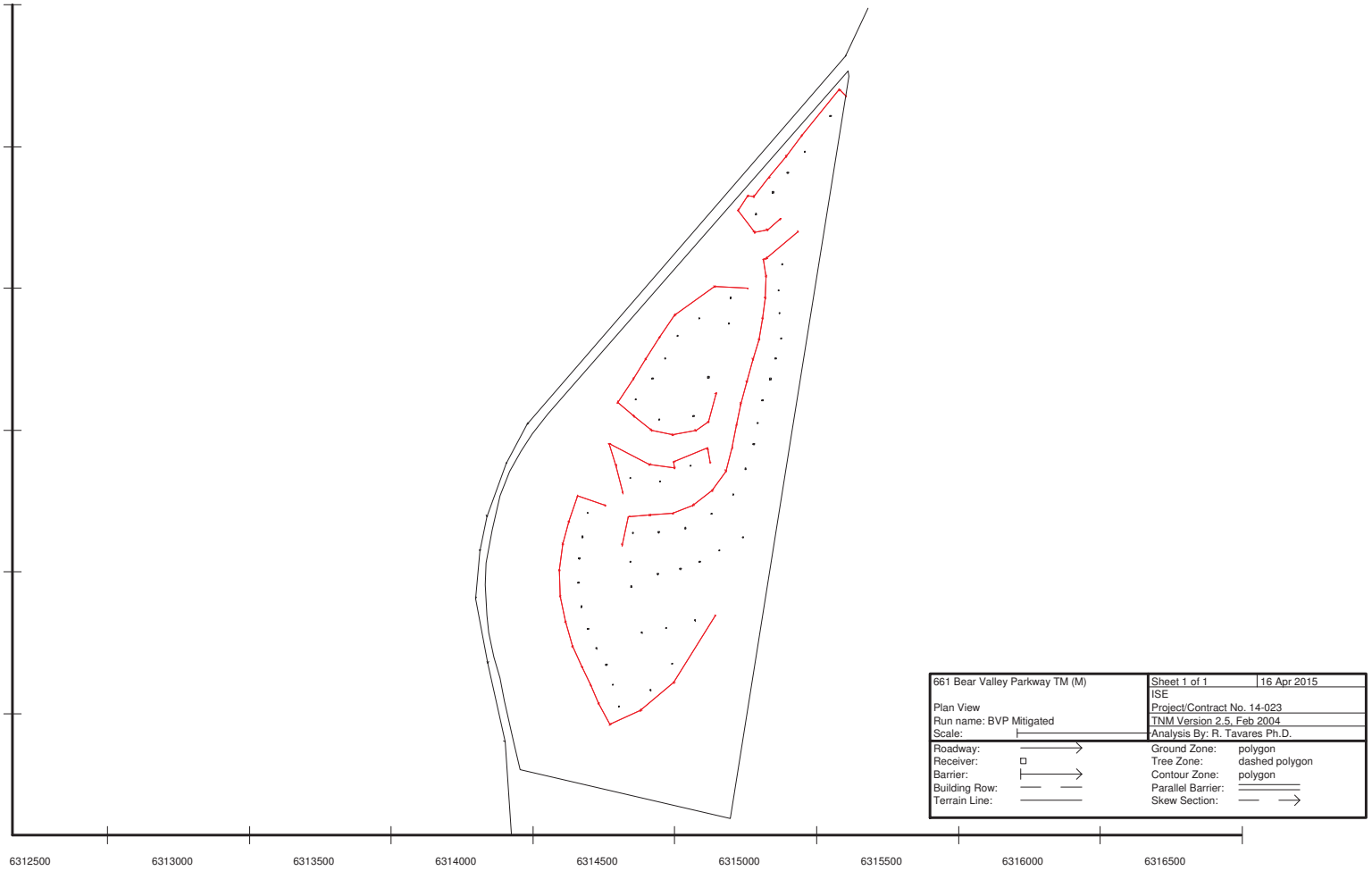
Exceedance Chart



Exceedance Table

	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%		59.4	59.0	58.5	57.9	57.5	57.3	57.0	56.8	56.6
10%	56.5	56.4	56.2	56.1	56.0	56.0	55.9	55.8	55.7	55.6
20%	55.6	55.5	55.4	55.4	55.3	55.2	55.2	55.1	55.0	54.9
30%	54.9	54.8	54.8	54.7	54.6	54.6	54.5	54.4	54.4	54.3
40%	54.2	54.2	54.1	54.0	54.0	53.9	53.8	53.8	53.7	53.6
50%	53.5	53.5	53.4	53.3	53.2	53.2	53.1	53.0	53.0	52.9
60%	52.8	52.7	52.6	52.5	52.4	52.4	52.3	52.2	52.1	52.0
70%	51.9	51.8	51.7	51.6	51.5	51.5	51.4	51.2	51.1	51.0
80%	50.9	50.8	50.6	50.4	50.3	50.1	49.9	49.7	49.5	49.3
90%	49.1	48.8	48.5	48.3	48.1	47.8	47.4	46.8	46.2	45.3
100%	42.9									

APP 2 – TNM Model Input/Output Data



INPUT: ROADWAYS 14-023

ISE
R. Tavares Ph.D.

16 April 2015
TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (U)

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	%		
BEAR VALLEY PARKWAY	30.0	BVP-1	52	6,315,177.0	1,981,991.0	630.90				Average	
		BVP-2	53	6,315,098.0	1,981,820.0	645.00				Average	
		BVP-3	54	6,313,977.0	1,980,525.0	577.80				Average	
		BVP-4	55	6,313,902.0	1,980,385.0	563.60				Average	
		BVP-5	56	6,313,834.0	1,980,198.0	555.10				Average	
		BVP-6	57	6,313,809.0	1,980,078.0	554.80				Average	
		BVP-7	58	6,313,796.0	1,979,910.0	547.70				Average	
		BVP-8	59	6,313,838.0	1,979,683.0	541.80				Average	
		BVP-9	60	6,313,898.0	1,979,405.0	532.70				Average	
		BVP-10	61	6,313,923.0	1,979,038.6	509.90					

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INPUT: TRAFFIC FOR LAeq1h Volumes 14-023

ISE 16 April 2015
R. Tavares Ph.D. TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (U)

Roadway Name	Points 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
BEAR VALLEY PARKWAY	BVP-1	52	3239	50	235	40	172	40	1	35	18	50	
	BVP-2	53	3239	50	235	40	172	40	1	35	18	50	
	BVP-3	54	3239	50	235	40	172	40	1	35	18	50	
	BVP-4	55	3239	50	235	40	172	40	1	35	18	50	
	BVP-5	56	3239	50	235	40	172	40	1	35	18	50	
	BVP-6	57	3239	50	235	40	172	40	1	35	18	50	
	BVP-7	58	3239	50	235	40	172	40	1	35	18	50	
	BVP-8	59	3239	50	235	40	172	40	1	35	18	50	
	BVP-9	60	3239	50	235	40	172	40	1	35	18	50	
	BVP-10	61											

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated 1

INPUT: RECEIVERS 14-023

ISE 16 April 2015
R. Tavares Ph.D. TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (U)

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
LOT 1	95	1	6,314,784.0	1,981,265.0		637.70	5.00	0.00	65	10.0	8.0 Y
LOT 2	96	1	6,314,843.0	1,981,342.0		644.40	5.00	0.00	65	10.0	8.0 Y
LOT 3	97	1	6,314,895.0	1,981,410.0		645.10	5.00	0.00	65	10.0	8.0 Y
LOT 4	98	1	6,314,956.0	1,981,484.5		645.80	5.00	0.00	65	10.0	8.0 Y
LOT 5	99	1	6,315,046.0	1,981,611.4		647.00	5.00	0.00	65	10.0	8.0 Y
LOT 6	100	1	6,314,875.5	1,981,088.6		639.50	5.00	0.00	65	10.0	8.0 Y
LOT 7	101	1	6,314,862.0	1,980,996.0		643.30	5.00	0.00	65	10.0	8.0 Y
LOT 8	102	1	6,314,866.0	1,980,915.0		645.50	5.00	0.00	65	10.0	8.0 Y
LOT 9	103	1	6,314,872.0	1,980,827.0		647.40	5.00	0.00	65	10.0	8.0 Y
LOT 10	104	1	6,314,852.0	1,980,757.0		648.30	5.00	0.00	65	10.0	8.0 Y
LOT 11	105	1	6,314,834.0	1,980,684.0		648.10	5.00	0.00	65	10.0	8.0 Y
LOT 12	106	1	6,314,806.0	1,980,609.0		646.50	5.00	0.00	65	10.0	8.0 Y
LOT 13	107	1	6,314,789.0	1,980,529.0		644.00	5.00	0.00	65	10.0	8.0 Y
LOT 14	108	1	6,314,775.0	1,980,454.0		639.00	5.00	0.00	65	10.0	8.0 Y
LOT 15	109	1	6,314,747.0	1,980,367.0		631.50	5.00	0.00	65	10.0	8.0 Y
LOT 16	110	1	6,314,703.0	1,980,277.0		624.00	5.00	0.00	65	10.0	8.0 Y
LOT 17	111	1	6,314,627.0	1,980,210.0		617.00	5.00	0.00	65	10.0	8.0 Y
LOT 18	112	1	6,314,535.0	1,980,158.0		610.00	5.00	0.00	65	10.0	8.0 Y
LOT 19	113	1	6,314,440.0	1,980,144.0		604.50	5.00	0.00	65	10.0	8.0 Y
LOT 20	114	1	6,314,349.0	1,980,142.0		600.50	5.00	0.00	65	10.0	8.0 Y
LOT 21	115	1	6,314,341.0	1,980,040.0		595.40	5.00	0.00	65	10.0	8.0 Y
LOT 22	116	1	6,314,344.0	1,979,952.0		596.50	5.00	0.00	65	10.0	8.0 Y

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated 1

INPUT: RECEIVERS **14-023**

LOT 23	117	1	6,314,437.0	1,979,996.0	598.30	5.00	0.00	65	10.0	8.0	Y
LOT 24	118	1	6,314,517.0	1,980,015.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 25	119	1	6,314,585.0	1,980,040.0	601.10	5.00	0.00	65	10.0	8.0	Y
LOT 26	120	1	6,314,654.0	1,980,079.0	602.40	5.00	0.00	65	10.0	8.0	Y
LOT 27	121	1	6,314,737.0	1,980,127.0	603.00	5.00	0.00	65	10.0	8.0	Y
LOT 28	122	1	6,314,569.0	1,979,833.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 29	123	1	6,314,466.0	1,979,806.0	598.30	5.00	0.00	65	10.0	8.0	Y
LOT 30	124	1	6,314,381.0	1,979,790.0	596.50	5.00	0.00	65	10.0	8.0	Y
LOT 31	125	1	6,314,488.0	1,979,681.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 32	126	1	6,314,412.0	1,979,588.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 33	127	1	6,314,300.0	1,979,530.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 34	128	1	6,314,279.0	1,979,606.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 35	129	1	6,314,256.0	1,979,677.0	599.50	5.00	0.00	65	10.0	8.0	Y
LOT 36	130	1	6,314,221.0	1,979,735.0	598.60	5.00	0.00	65	10.0	8.0	Y
LOT 37	131	1	6,314,191.0	1,979,804.0	597.70	5.00	0.00	65	10.0	8.0	Y
LOT 38	132	1	6,314,168.0	1,979,882.0	596.80	5.00	0.00	65	10.0	8.0	Y
LOT 39	133	1	6,314,158.0	1,979,967.0	596.00	5.00	0.00	65	10.0	8.0	Y
LOT 40	134	1	6,314,161.0	1,980,052.0	595.20	5.00	0.00	65	10.0	8.0	Y
LOT 41	135	1	6,314,172.0	1,980,128.0	594.40	5.00	0.00	65	10.0	8.0	Y
LOT 42	136	1	6,314,189.0	1,980,212.0	595.80	5.00	0.00	65	10.0	8.0	Y
LOT 43	137	1	6,314,340.0	1,980,334.0	599.50	5.00	0.00	65	10.0	8.0	Y
LOT 44	138	1	6,314,444.0	1,980,322.0	604.80	5.00	0.00	65	10.0	8.0	Y
LOT 45	139	1	6,314,552.0	1,980,378.0	622.00	5.00	0.00	65	10.0	8.0	Y
LOT 46	140	1	6,314,616.0	1,980,690.0	656.50	5.00	0.00	65	10.0	8.0	Y
LOT 47	141	1	6,314,563.0	1,980,554.0	658.40	5.00	0.00	65	10.0	8.0	Y
LOT 48	142	1	6,314,443.0	1,980,541.0	658.40	5.00	0.00	65	10.0	8.0	Y
LOT 49	143	1	6,314,359.0	1,980,612.0	658.40	5.00	0.00	65	10.0	8.0	Y
LOT 50	144	1	6,314,419.0	1,980,686.0	657.90	5.00	0.00	65	10.0	8.0	Y
LOT 51	145	1	6,314,463.0	1,980,757.0	656.50	5.00	0.00	65	10.0	8.0	Y
LOT 52	146	1	6,314,507.0	1,980,837.0	653.50	5.00	0.00	65	10.0	8.0	Y
LOT 53	147	1	6,314,582.5	1,980,898.4	652.00	5.00	0.00	65	10.0	8.0	Y
LOT 54	148	1	6,314,687.0	1,980,880.0	647.00	5.00	0.00	65	10.0	8.0	Y
LOT 55	149	1	6,314,693.0	1,980,970.0	643.00	5.00	0.00	65	10.0	8.0	Y

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated **2**

INPUT: BARRIERS **14-023**

ISE
R. Tavares Ph.D.

16 April 2015
TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (U)

Barrier Name	Type	Height Min	Height Max	If Wall $ per Unit Area	If Berm $ per Unit Vol.	Top Width	Run:Rise	Add'tnl $ per Unit Length	Points Name	No.	Coordinates (bottom) X	Y	Z	Height at Point	Segment Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
SLOPE EDGE 1	W	0.00	99.99	0.00				0.00	SE1-1	28	6,315,100.5	1,981,680.9	647.00	0.00	0.00	0	0		
									SE1-2	93	6,315,076.5	1,981,702.8	647.00	0.00	0.00	0	0		
									SE1-3	29	6,314,943.0	1,981,540.0	645.80	0.00	0.00	0	0		
									SE1-4	30	6,314,889.0	1,981,469.0	645.10	0.00	0.00	0	0		
									SE1-5	31	6,314,829.0	1,981,393.0	644.40	0.00	0.00	0	0		
									SE1-6	32	6,314,775.0	1,981,326.0	644.40	0.00	0.00	0	0		
									SE1-7	33	6,314,753.0	1,981,329.0	637.70	0.00	0.00	0	0		
									SE1-8	34	6,314,720.0	1,981,278.0	637.70	0.00	0.00	0	0		
									SE1-9	35	6,314,778.0	1,981,201.0	637.70	0.00	0.00	0	0		
									SE1-10	36	6,314,824.0	1,981,210.0	637.70	0.00	0.00	0	0		
									SE1-11	37	6,314,870.0	1,981,248.0	637.70	0.00					
SLOPE EDGE 2	W	0.00	99.99	0.00				0.00	SE2-1	38	6,314,932.0	1,981,204.0	639.50	0.00	0.00	0	0		
									SE2-2	39	6,314,819.0	1,981,108.0	639.50	0.00	0.00	0	0		
									SE2-3	40	6,314,808.0	1,981,106.0	639.50	0.00	0.00	0	0		
									SE2-4	41	6,314,818.0	1,981,044.0	643.30	0.00	0.00	0	0		
									SE2-5	42	6,314,815.0	1,980,968.0	645.50	0.00	0.00	0	0		
									SE2-6	43	6,314,806.0	1,980,895.0	647.40	0.00	0.00	0	0		
									SE2-7	44	6,314,794.0	1,980,822.0	648.30	0.00	0.00	0	0		
									SE2-8	45	6,314,771.0	1,980,753.0	648.10	0.00	0.00	0	0		
									SE2-9	46	6,314,750.0	1,980,674.0	646.50	0.00	0.00	0	0		
									SE2-10	47	6,314,728.0	1,980,595.0	644.00	0.00	0.00	0	0		
									SE2-11	48	6,314,714.0	1,980,520.0	639.00	0.00	0.00	0	0		
									SE2-12	49	6,314,700.0	1,980,440.0	631.50	0.00	0.00	0	0		
									SE2-13	50	6,314,676.0	1,980,359.0	624.00	0.00	0.00	0	0		
									SE2-14	51	6,314,628.0	1,980,290.0	617.00	0.00	0.00	0	0		
									SE2-15	52	6,314,560.0	1,980,239.0	610.00	0.00	0.00	0	0		
									SE2-16	53	6,314,489.0	1,980,209.0	604.50	0.00	0.00	0	0		
									SE2-17	54	6,314,408.0	1,980,204.0	600.50	0.00	0.00	0	0		
									SE2-18	55	6,314,334.0	1,980,199.0	600.50	0.00	0.00	0	0		
									SE2-19	56	6,314,310.0	1,980,097.0	600.50	0.00					
SLOPE EDGE 3	W	0.00	99.99	0.00				0.00	SE3-1	57	6,314,639.0	1,979,851.0	600.00	0.00	0.00	0	0		
									SE3-2	58	6,314,493.0	1,979,613.0	600.00	0.00	0.00	0	0		
									SE3-3	59	6,314,376.0	1,979,516.0	600.00	0.00	0.00	0	0		
									SE3-4	60	6,314,268.0	1,979,466.0	600.00	0.00	0.00	0	0		
									SE3-5	61	6,314,228.0	1,979,542.0	600.00	0.00	0.00	0	0		

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated **1** **16 April 2015**

INPUT: BARRIERS **14-023**

						SE3-6	62	6,314,200.0	1,979,606.0	599.50	0.00	0.00	0	0
						SE3-7	63	6,314,169.0	1,979,670.0	598.60	0.00	0.00	0	0
						SE3-8	64	6,314,136.0	1,979,742.0	597.70	0.00	0.00	0	0
						SE3-9	65	6,314,111.0	1,979,828.0	596.80	0.00	0.00	0	0
						SE3-10	66	6,314,094.0	1,979,920.0	596.00	0.00	0.00	0	0
						SE3-11	67	6,314,090.0	1,980,011.0	595.20	0.00	0.00	0	0
						SE3-12	68	6,314,102.0	1,980,104.0	594.40	0.00	0.00	0	0
						SE3-13	69	6,314,124.0	1,980,182.0	595.80	0.00	0.00	0	0
						SE3-14	70	6,314,155.0	1,980,273.0	595.80	0.00	0.00	0	0
						SE3-15	71	6,314,254.0	1,980,237.0	595.80	0.00			
SLOPE EDGE 4	W	0.00	99.99	0.00	0.00	SE4-1	72	6,314,621.0	1,980,389.0	622.00	0.00	0.00	0	0
						SE4-2	73	6,314,612.0	1,980,440.0	622.00	0.00	0.00	0	0
						SE4-3	74	6,314,494.0	1,980,392.0	622.00	0.00	0.00	0	0
						SE4-4	75	6,314,497.0	1,980,369.0	604.80	0.00	0.00	0	0
						SE4-5	76	6,314,407.0	1,980,383.0	599.50	0.00	0.00	0	0
						SE4-6	77	6,314,265.0	1,980,457.0	599.50	0.00	0.00	0	0
						SE4-7	78	6,314,291.0	1,980,378.0	599.50	0.00	0.00	0	0
						SE4-8	79	6,314,314.0	1,980,282.0	599.50	0.00			
SLOPE EDGE 5	W	0.00	99.99	0.00	0.00	SE5-1	80	6,314,755.0	1,981,002.0	643.00	0.00	0.00	0	0
						SE5-2	81	6,314,636.0	1,981,010.0	652.00	0.00	0.00	0	0
						SE5-3	82	6,314,497.0	1,980,909.0	653.50	0.00	0.00	0	0
						SE5-4	83	6,314,442.0	1,980,830.0	656.50	0.00	0.00	0	0
						SE5-5	84	6,314,394.0	1,980,754.0	657.90	0.00	0.00	0	0
						SE5-6	85	6,314,350.0	1,980,684.0	658.40	0.00	0.00	0	0
						SE5-7	86	6,314,295.0	1,980,601.0	658.40	0.00	0.00	0	0
						SE5-8	87	6,314,353.0	1,980,553.0	658.40	0.00	0.00	0	0
						SE5-9	88	6,314,415.0	1,980,503.0	658.40	0.00	0.00	0	0
						SE5-10	89	6,314,491.0	1,980,487.0	658.40	0.00	0.00	0	0
						SE5-11	90	6,314,572.0	1,980,504.0	658.40	0.00	0.00	0	0
						SE5-12	91	6,314,616.0	1,980,534.0	656.50	0.00	0.00	0	0
						SE5-13	92	6,314,642.0	1,980,634.0	656.50	0.00			

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated **2** **16 April 2015**

RESULTS: SOUND LEVELS 14-023

ISE
R. Tavares Ph.D.

16 April 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (U)
BARRIER DESIGN: INPUT HEIGHTS

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

ATMOSPHERICS: 68 deg F, 50% RH

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
LOT 1	95	1	0.0	63.9	65	63.9	10		----	63.9	0.0	8	-8.0
LOT 2	96	1	0.0	65.0	65	65.0	10		Snd Lvl	65.0	0.0	8	-8.0
LOT 3	97	1	0.0	65.2	65	65.2	10		Snd Lvl	65.2	0.0	8	-8.0
LOT 4	98	1	0.0	66.4	65	66.4	10		Snd Lvl	66.4	0.0	8	-8.0
LOT 5	99	1	0.0	71.0	65	71.0	10		Snd Lvl	71.0	0.0	8	-8.0
LOT 6	100	1	0.0	57.5	65	57.5	10		----	57.5	0.0	8	-8.0
LOT 7	101	1	0.0	56.7	65	56.7	10		----	56.7	0.0	8	-8.0
LOT 8	102	1	0.0	53.2	65	53.2	10		----	53.2	0.0	8	-8.0
LOT 9	103	1	0.0	50.5	65	50.5	10		----	50.5	0.0	8	-8.0
LOT 10	104	1	0.0	49.7	65	49.7	10		----	49.7	0.0	8	-8.0
LOT 11	105	1	0.0	48.8	65	48.8	10		----	48.8	0.0	8	-8.0
LOT 12	106	1	0.0	48.0	65	48.0	10		----	48.0	0.0	8	-8.0
LOT 13	107	1	0.0	47.7	65	47.7	10		----	47.7	0.0	8	-8.0
LOT 14	108	1	0.0	48.1	65	48.1	10		----	48.1	0.0	8	-8.0
LOT 15	109	1	0.0	48.5	65	48.5	10		----	48.5	0.0	8	-8.0
LOT 16	110	1	0.0	48.8	65	48.8	10		----	48.8	0.0	8	-8.0
LOT 17	111	1	0.0	50.7	65	50.7	10		----	50.7	0.0	8	-8.0
LOT 18	112	1	0.0	51.6	65	51.6	10		----	51.6	0.0	8	-8.0
LOT 19	113	1	0.0	52.2	65	52.2	10		----	52.2	0.0	8	-8.0
LOT 20	114	1	0.0	52.9	65	52.9	10		----	52.9	0.0	8	-8.0
LOT 21	115	1	0.0	50.1	65	50.1	10		----	50.1	0.0	8	-8.0
LOT 22	116	1	0.0	49.9	65	49.9	10		----	49.9	0.0	8	-8.0
LOT 23	117	1	0.0	47.9	65	47.9	10		----	47.9	0.0	8	-8.0
LOT 24	118	1	0.0	47.4	65	47.4	10		----	47.4	0.0	8	-8.0

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated 1 16 April 2015

RESULTS: SOUND LEVELS **14-023**

LOT 25	119	1	0.0	46.4	65	46.4	10	----	46.4	0.0	8	-8.0
LOT 26	120	1	0.0	44.6	65	44.6	10	----	44.6	0.0	8	-8.0
LOT 27	121	1	0.0	43.1	65	43.1	10	----	43.1	0.0	8	-8.0
LOT 28	122	1	0.0	45.3	65	45.3	10	----	45.3	0.0	8	-8.0
LOT 29	123	1	0.0	46.8	65	46.8	10	----	46.8	0.0	8	-8.0
LOT 30	124	1	0.0	47.7	65	47.7	10	----	47.7	0.0	8	-8.0
LOT 31	125	1	0.0	46.0	65	46.0	10	----	46.0	0.0	8	-8.0
LOT 32	126	1	0.0	46.6	65	46.6	10	----	46.6	0.0	8	-8.0
LOT 33	127	1	0.0	50.5	65	50.5	10	----	50.5	0.0	8	-8.0
LOT 34	128	1	0.0	50.3	65	50.3	10	----	50.3	0.0	8	-8.0
LOT 35	129	1	0.0	50.5	65	50.5	10	----	50.5	0.0	8	-8.0
LOT 36	130	1	0.0	51.6	65	51.6	10	****	51.6	0.0	8	-8.0
LOT 37	131	1	0.0	52.8	65	52.8	10	----	52.8	0.0	8	-8.0
LOT 38	132	1	0.0	53.7	65	53.7	10	----	53.7	0.0	8	-8.0
LOT 39	133	1	0.0	54.8	65	54.8	10	----	54.8	0.0	8	-8.0
LOT 40	134	1	0.0	55.9	65	55.9	10	----	55.9	0.0	8	-8.0
LOT 41	135	1	0.0	56.1	65	56.1	10	****	56.1	0.0	8	-8.0
LOT 42	136	1	0.0	58.3	65	58.3	10	----	58.3	0.0	8	-8.0
LOT 43	137	1	0.0	56.9	65	56.9	10	----	56.9	0.0	8	-8.0
LOT 44	138	1	0.0	54.1	65	54.1	10	----	54.1	0.0	8	-8.0
LOT 45	139	1	0.0	52.8	65	52.8	10	----	52.8	0.0	8	-8.0
LOT 46	140	1	0.0	50.2	65	50.2	10	----	50.2	0.0	8	-8.0
LOT 47	141	1	0.0	49.4	65	49.4	10	----	49.4	0.0	8	-8.0
LOT 48	142	1	0.0	52.6	65	52.6	10	----	52.6	0.0	8	-8.0
LOT 49	143	1	0.0	55.1	65	55.1	10	----	55.1	0.0	8	-8.0
LOT 50	144	1	0.0	54.3	65	54.3	10	----	54.3	0.0	8	-8.0
LOT 51	145	1	0.0	55.2	65	55.2	10	----	55.2	0.0	8	-8.0
LOT 52	146	1	0.0	56.4	65	56.4	10	----	56.4	0.0	8	-8.0
LOT 53	147	1	0.0	55.7	65	55.7	10	----	55.7	0.0	8	-8.0
LOT 54	148	1	0.0	52.5	65	52.5	10	----	52.5	0.0	8	-8.0
LOT 55	149	1	0.0	54.2	65	54.2	10	----	54.2	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min dB	**Avg dB**	**Max dB**
All Selected	55	0.0	0.0	0.0
All Impacted	4	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

C:\TNM25\Bear Valley Parkway TM\BVP Unmitigated **2** **16 April 2015**

INPUT: ROADWAYS 14-023

ISE
R. Tavares Ph.D.

16 April 2015
TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (M)

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	%		
BEAR VALLEY PARKWAY	30.0	BVP-1	52	6,315,177.0	1,981,991.0	630.90				Average	
		BVP-2	53	6,315,098.0	1,981,820.0	645.00				Average	
		BVP-3	54	6,313,977.0	1,980,525.0	577.80				Average	
		BVP-4	55	6,313,902.0	1,980,385.0	563.60				Average	
		BVP-5	56	6,313,834.0	1,980,198.0	555.10				Average	
		BVP-6	57	6,313,809.0	1,980,078.0	554.80				Average	
		BVP-7	58	6,313,796.0	1,979,910.0	547.70				Average	
		BVP-8	59	6,313,838.0	1,979,683.0	541.80				Average	
		BVP-9	60	6,313,898.0	1,979,405.0	532.70				Average	
		BVP-10	61	6,313,923.0	1,979,038.6	509.90					

C:\TNM25\Bear Valley Parkway TM\BVP Mitigated 1 16 April 2015

INPUT: TRAFFIC FOR LAeq1h Volumes 14-023

ISE 16 April 2015
R. Tavares Ph.D. TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (M)

Roadway Name	Points 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
BEAR VALLEY PARKWAY	BVP-1	52	3239	50	235	40	172	40	1	35	18	50	
	BVP-2	53	3239	50	235	40	172	40	1	35	18	50	
	BVP-3	54	3239	50	235	40	172	40	1	35	18	50	
	BVP-4	55	3239	50	235	40	172	40	1	35	18	50	
	BVP-5	56	3239	50	235	40	172	40	1	35	18	50	
	BVP-6	57	3239	50	235	40	172	40	1	35	18	50	
	BVP-7	58	3239	50	235	40	172	40	1	35	18	50	
	BVP-8	59	3239	50	235	40	172	40	1	35	18	50	
	BVP-9	60	3239	50	235	40	172	40	1	35	18	50	
	BVP-10	61											

C:\TNM25\Bear Valley Parkway TM\BVP Mitigated 1 16

INPUT: RECEIVERS 14-023

ISE 16 April 2015
R. Tavares Ph.D. TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (M)

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
LOT 1	95	1	6,314,784.0	1,981,265.0	637.70	5.00	0.00	65	10.0	8.0	Y
LOT 2	96	1	6,314,843.0	1,981,342.0	644.40	5.00	0.00	65	10.0	8.0	Y
LOT 3	97	1	6,314,895.0	1,981,410.0	645.10	5.00	0.00	65	10.0	8.0	Y
LOT 4	98	1	6,314,956.0	1,981,484.5	645.80	5.00	0.00	65	10.0	8.0	Y
LOT 5	99	1	6,315,046.0	1,981,611.4	647.00	5.00	0.00	65	10.0	8.0	Y
LOT 6	100	1	6,314,875.5	1,981,088.6	639.50	5.00	0.00	65	10.0	8.0	Y
LOT 7	101	1	6,314,862.0	1,980,996.0	643.30	5.00	0.00	65	10.0	8.0	Y
LOT 8	102	1	6,314,866.0	1,980,915.0	645.50	5.00	0.00	65	10.0	8.0	Y
LOT 9	103	1	6,314,872.0	1,980,827.0	647.40	5.00	0.00	65	10.0	8.0	Y
LOT 10	104	1	6,314,852.0	1,980,757.0	648.30	5.00	0.00	65	10.0	8.0	Y
LOT 11	105	1	6,314,834.0	1,980,684.0	648.10	5.00	0.00	65	10.0	8.0	Y
LOT 12	106	1	6,314,806.0	1,980,609.0	646.50	5.00	0.00	65	10.0	8.0	Y
LOT 13	107	1	6,314,789.0	1,980,529.0	644.00	5.00	0.00	65	10.0	8.0	Y
LOT 14	108	1	6,314,775.0	1,980,454.0	639.00	5.00	0.00	65	10.0	8.0	Y
LOT 15	109	1	6,314,747.0	1,980,367.0	631.50	5.00	0.00	65	10.0	8.0	Y
LOT 16	110	1	6,314,703.0	1,980,277.0	624.00	5.00	0.00	65	10.0	8.0	Y
LOT 17	111	1	6,314,627.0	1,980,210.0	617.00	5.00	0.00	65	10.0	8.0	Y
LOT 18	112	1	6,314,535.0	1,980,158.0	610.00	5.00	0.00	65	10.0	8.0	Y
LOT 19	113	1	6,314,440.0	1,980,144.0	604.50	5.00	0.00	65	10.0	8.0	Y
LOT 20	114	1	6,314,349.0	1,980,142.0	600.50	5.00	0.00	65	10.0	8.0	Y
LOT 21	115	1	6,314,341.0	1,980,040.0	595.40	5.00	0.00	65	10.0	8.0	Y
LOT 22	116	1	6,314,344.0	1,979,952.0	596.50	5.00	0.00	65	10.0	8.0	Y

C:\TNM25\Bear Valley Parkway TM\BVP Mitigated 1 16

INPUT: RECEIVERS **14-023**

LOT 23	117	1	6,314,437.0	1,979,996.0	598.30	5.00	0.00	65	10.0	8.0	Y
LOT 24	118	1	6,314,517.0	1,980,015.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 25	119	1	6,314,585.0	1,980,040.0	601.10	5.00	0.00	65	10.0	8.0	Y
LOT 26	120	1	6,314,654.0	1,980,079.0	602.40	5.00	0.00	65	10.0	8.0	Y
LOT 27	121	1	6,314,737.0	1,980,127.0	603.00	5.00	0.00	65	10.0	8.0	Y
LOT 28	122	1	6,314,569.0	1,979,833.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 29	123	1	6,314,466.0	1,979,806.0	598.30	5.00	0.00	65	10.0	8.0	Y
LOT 30	124	1	6,314,381.0	1,979,790.0	596.50	5.00	0.00	65	10.0	8.0	Y
LOT 31	125	1	6,314,488.0	1,979,681.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 32	126	1	6,314,412.0	1,979,588.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 33	127	1	6,314,300.0	1,979,530.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 34	128	1	6,314,279.0	1,979,606.0	600.00	5.00	0.00	65	10.0	8.0	Y
LOT 35	129	1	6,314,256.0	1,979,677.0	599.50	5.00	0.00	65	10.0	8.0	Y
LOT 36	130	1	6,314,221.0	1,979,735.0	598.60	5.00	0.00	65	10.0	8.0	Y
LOT 37	131	1	6,314,191.0	1,979,804.0	597.70	5.00	0.00	65	10.0	8.0	Y
LOT 38	132	1	6,314,168.0	1,979,882.0	596.80	5.00	0.00	65	10.0	8.0	Y
LOT 39	133	1	6,314,158.0	1,979,967.0	596.00	5.00	0.00	65	10.0	8.0	Y
LOT 40	134	1	6,314,161.0	1,980,052.0	595.20	5.00	0.00	65	10.0	8.0	Y
LOT 41	135	1	6,314,172.0	1,980,128.0	594.40	5.00	0.00	65	10.0	8.0	Y
LOT 42	136	1	6,314,189.0	1,980,212.0	595.80	5.00	0.00	65	10.0	8.0	Y
LOT 43	137	1	6,314,340.0	1,980,334.0	599.50	5.00	0.00	65	10.0	8.0	Y
LOT 44	138	1	6,314,444.0	1,980,322.0	604.80	5.00	0.00	65	10.0	8.0	Y
LOT 45	139	1	6,314,552.0	1,980,378.0	622.00	5.00	0.00	65	10.0	8.0	Y
LOT 46	140	1	6,314,616.0	1,980,690.0	656.50	5.00	0.00	65	10.0	8.0	Y
LOT 47	141	1	6,314,563.0	1,980,554.0	658.40	5.00	0.00	65	10.0	8.0	Y
LOT 48	142	1	6,314,443.0	1,980,541.0	658.40	5.00	0.00	65	10.0	8.0	Y
LOT 49	143	1	6,314,359.0	1,980,612.0	658.40	5.00	0.00	65	10.0	8.0	Y
LOT 50	144	1	6,314,419.0	1,980,686.0	657.90	5.00	0.00	65	10.0	8.0	Y
LOT 51	145	1	6,314,463.0	1,980,757.0	656.50	5.00	0.00	65	10.0	8.0	Y
LOT 52	146	1	6,314,507.0	1,980,837.0	653.50	5.00	0.00	65	10.0	8.0	Y
LOT 53	147	1	6,314,582.5	1,980,898.4	652.00	5.00	0.00	65	10.0	8.0	Y
LOT 54	148	1	6,314,687.0	1,980,880.0	647.00	5.00	0.00	65	10.0	8.0	Y
LOT 55	149	1	6,314,693.0	1,980,970.0	643.00	5.00	0.00	65	10.0	8.0	Y

INPUT: BARRIERS **14-023**

ISE
R. Tavares Ph.D.

16 April 2015
TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (M)

Barrier Name	Type	Height Min	Height Max	If Wall $ per Unit Area	If Berm $ per Unit Vol.	Top Width	Run:Rise	Add'tnl $ per Unit Length	Points Name	No.	Coordinates (bottom) X	Y	Z	Height at Point	Segment Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
SLOPE EDGE 1	W	0.00	99.99	0.00				0.00	SE1-1	28	6,315,100.5	1,981,680.9	647.00	6.00	0.00	0	0		
									SE1-2	93	6,315,076.5	1,981,702.8	647.00	6.00	0.00	0	0		
									SE1-3	29	6,314,943.0	1,981,540.0	645.80	5.00	0.00	0	0		
									SE1-4	30	6,314,889.0	1,981,469.0	645.10	5.00	0.00	0	0		
									SE1-5	31	6,314,829.0	1,981,393.0	644.40	5.00	0.00	0	0		
									SE1-6	32	6,314,775.0	1,981,326.0	644.40	5.00	0.00	0	0		
									SE1-7	33	6,314,753.0	1,981,329.0	637.70	5.00	0.00	0	0		
									SE1-8	34	6,314,720.0	1,981,278.0	637.70	5.00	0.00	0	0		
									SE1-9	35	6,314,778.0	1,981,201.0	637.70	0.00	0.00	0	0		
									SE1-10	36	6,314,824.0	1,981,210.0	637.70	0.00	0.00	0	0		
									SE1-11	37	6,314,870.0	1,981,248.0	637.70	0.00					
SLOPE EDGE 2	W	0.00	99.99	0.00				0.00	SE2-1	38	6,314,932.0	1,981,204.0	639.50	0.00	0.00	0	0		
									SE2-2	39	6,314,819.0	1,981,108.0	639.50	0.00	0.00	0	0		
									SE2-3	40	6,314,808.0	1,981,106.0	639.50	0.00	0.00	0	0		
									SE2-4	41	6,314,818.0	1,981,044.0	643.30	0.00	0.00	0	0		
									SE2-5	42	6,314,815.0	1,980,968.0	645.50	0.00	0.00	0	0		
									SE2-6	43	6,314,806.0	1,980,895.0	647.40	0.00	0.00	0	0		
									SE2-7	44	6,314,794.0	1,980,822.0	648.30	0.00	0.00	0	0		
									SE2-8	45	6,314,771.0	1,980,753.0	648.10	0.00	0.00	0	0		
									SE2-9	46	6,314,750.0	1,980,674.0	646.50	0.00	0.00	0	0		
									SE2-10	47	6,314,728.0	1,980,595.0	644.00	0.00	0.00	0	0		
									SE2-11	48	6,314,714.0	1,980,520.0	639.00	0.00	0.00	0	0		
									SE2-12	49	6,314,700.0	1,980,440.0	631.50	0.00	0.00	0	0		
									SE2-13	50	6,314,676.0	1,980,359.0	624.00	0.00	0.00	0	0		
									SE2-14	51	6,314,628.0	1,980,290.0	617.00	0.00	0.00	0	0		
									SE2-15	52	6,314,560.0	1,980,239.0	610.00	0.00	0.00	0	0		
									SE2-16	53	6,314,489.0	1,980,209.0	604.50	0.00	0.00	0	0		
									SE2-17	54	6,314,408.0	1,980,204.0	600.50	0.00	0.00	0	0		
									SE2-18	55	6,314,334.0	1,980,199.0	600.50	0.00	0.00	0	0		
									SE2-19	56	6,314,310.0	1,980,097.0	600.50	0.00					
SLOPE EDGE 3	W	0.00	99.99	0.00				0.00	SE3-1	57	6,314,639.0	1,979,851.0	600.00	0.00	0.00	0	0		
									SE3-2	58	6,314,493.0	1,979,613.0	600.00	0.00	0.00	0	0		
									SE3-3	59	6,314,376.0	1,979,516.0	600.00	0.00	0.00	0	0		
									SE3-4	60	6,314,268.0	1,979,466.0	600.00	0.00	0.00	0	0		
									SE3-5	61	6,314,228.0	1,979,542.0	600.00	0.00	0.00	0	0		

C:\TNM25\Bear Valley Parkway TM\BVP Mitigated **1** **16 April 2015**

INPUT: BARRIERS **14-023**

						SE3-6	62	6,314,200.0	1,979,606.0	599.50	0.00	0.00	0	0
						SE3-7	63	6,314,169.0	1,979,670.0	598.60	0.00	0.00	0	0
						SE3-8	64	6,314,136.0	1,979,742.0	597.70	0.00	0.00	0	0
						SE3-9	65	6,314,111.0	1,979,828.0	596.80	0.00	0.00	0	0
						SE3-10	66	6,314,094.0	1,979,920.0	596.00	0.00	0.00	0	0
						SE3-11	67	6,314,090.0	1,980,011.0	595.20	0.00	0.00	0	0
						SE3-12	68	6,314,102.0	1,980,104.0	594.40	0.00	0.00	0	0
						SE3-13	69	6,314,124.0	1,980,182.0	595.80	0.00	0.00	0	0
						SE3-14	70	6,314,155.0	1,980,273.0	595.80	0.00	0.00	0	0
						SE3-15	71	6,314,254.0	1,980,237.0	595.80	0.00			
SLOPE EDGE 4	W	0.00	99.99	0.00	0.00	SE4-1	72	6,314,621.0	1,980,389.0	622.00	0.00	0.00	0	0
						SE4-2	73	6,314,612.0	1,980,440.0	622.00	0.00	0.00	0	0
						SE4-3	74	6,314,494.0	1,980,392.0	622.00	0.00	0.00	0	0
						SE4-4	75	6,314,497.0	1,980,369.0	604.80	0.00	0.00	0	0
						SE4-5	76	6,314,407.0	1,980,383.0	599.50	0.00	0.00	0	0
						SE4-6	77	6,314,265.0	1,980,457.0	599.50	0.00	0.00	0	0
						SE4-7	78	6,314,291.0	1,980,378.0	599.50	0.00	0.00	0	0
						SE4-8	79	6,314,314.0	1,980,282.0	599.50	0.00			
SLOPE EDGE 5	W	0.00	99.99	0.00	0.00	SE5-1	80	6,314,755.0	1,981,002.0	643.00	0.00	0.00	0	0
						SE5-2	81	6,314,636.0	1,981,010.0	652.00	0.00	0.00	0	0
						SE5-3	82	6,314,497.0	1,980,909.0	653.50	0.00	0.00	0	0
						SE5-4	83	6,314,442.0	1,980,830.0	656.50	0.00	0.00	0	0
						SE5-5	84	6,314,394.0	1,980,754.0	657.90	0.00	0.00	0	0
						SE5-6	85	6,314,350.0	1,980,684.0	658.40	0.00	0.00	0	0
						SE5-7	86	6,314,295.0	1,980,601.0	658.40	0.00	0.00	0	0
						SE5-8	87	6,314,353.0	1,980,553.0	658.40	0.00	0.00	0	0
						SE5-9	88	6,314,415.0	1,980,503.0	658.40	0.00	0.00	0	0
						SE5-10	89	6,314,491.0	1,980,487.0	658.40	0.00	0.00	0	0
						SE5-11	90	6,314,572.0	1,980,504.0	658.40	0.00	0.00	0	0
						SE5-12	91	6,314,616.0	1,980,534.0	656.50	0.00	0.00	0	0
						SE5-13	92	6,314,642.0	1,980,634.0	656.50	0.00			

C:\TNM25\Bear Valley Parkway TM\BVP Mitigated **2** **16 April 2015**

RESULTS: SOUND LEVELS 14-023

ISE
R. Tavares Ph.D.

16 April 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 14-023
RUN: 661 Bear Valley Parkway TM (M)
BARRIER DESIGN: INPUT HEIGHTS

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

ATMOSPHERICS: 68 deg F, 50% RH

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
LOT 1	95	1	0.0	60.6	65	60.6	10	----		60.6	0.0	8	-8.0
LOT 2	96	1	0.0	60.9	65	60.9	10	----		60.9	0.0	8	-8.0
LOT 3	97	1	0.0	60.9	65	60.9	10	----		60.9	0.0	8	-8.0
LOT 4	98	1	0.0	61.3	65	61.3	10	----		61.3	0.0	8	-8.0
LOT 5	99	1	0.0	63.3	65	63.3	10	----		63.3	0.0	8	-8.0
LOT 6	100	1	0.0	57.1	65	57.1	10	----		57.1	0.0	8	-8.0
LOT 7	101	1	0.0	56.3	65	56.3	10	----		56.3	0.0	8	-8.0
LOT 8	102	1	0.0	52.7	65	52.7	10	----		52.7	0.0	8	-8.0
LOT 9	103	1	0.0	49.8	65	49.8	10	----		49.8	0.0	8	-8.0
LOT 10	104	1	0.0	49.0	65	49.0	10	----		49.0	0.0	8	-8.0
LOT 11	105	1	0.0	48.1	65	48.1	10	----		48.1	0.0	8	-8.0
LOT 12	106	1	0.0	47.4	65	47.4	10	----		47.4	0.0	8	-8.0
LOT 13	107	1	0.0	47.4	65	47.4	10	----		47.4	0.0	8	-8.0
LOT 14	108	1	0.0	47.9	65	47.9	10	----		47.9	0.0	8	-8.0
LOT 15	109	1	0.0	48.3	65	48.3	10	----		48.3	0.0	8	-8.0
LOT 16	110	1	0.0	48.7	65	48.7	10	----		48.7	0.0	8	-8.0
LOT 17	111	1	0.0	50.7	65	50.7	10	----		50.7	0.0	8	-8.0
LOT 18	112	1	0.0	51.6	65	51.6	10	----		51.6	0.0	8	-8.0
LOT 19	113	1	0.0	52.1	65	52.1	10	----		52.1	0.0	8	-8.0
LOT 20	114	1	0.0	52.9	65	52.9	10	----		52.9	0.0	8	-8.0
LOT 21	115	1	0.0	50.0	65	50.0	10	----		50.0	0.0	8	-8.0
LOT 22	116	1	0.0	49.9	65	49.9	10	----		49.9	0.0	8	-8.0
LOT 23	117	1	0.0	47.9	65	47.9	10	----		47.9	0.0	8	-8.0
LOT 24	118	1	0.0	47.5	65	47.5	10	----		47.5	0.0	8	-8.0

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RESULTS: SOUND LEVELS **14-023**

LOT 25	119	1	0.0	46.4	65	46.4	10	----	46.4	0.0	8	-8.0
LOT 26	120	1	0.0	44.4	65	44.4	10	----	44.4	0.0	8	-8.0
LOT 27	121	1	0.0	43.1	65	43.1	10	----	43.1	0.0	8	-8.0
LOT 28	122	1	0.0	45.2	65	45.2	10	----	45.2	0.0	8	-8.0
LOT 29	123	1	0.0	46.7	65	46.7	10	----	46.7	0.0	8	-8.0
LOT 30	124	1	0.0	47.6	65	47.6	10	----	47.6	0.0	8	-8.0
LOT 31	125	1	0.0	45.9	65	45.9	10	----	45.9	0.0	8	-8.0
LOT 32	126	1	0.0	46.5	65	46.5	10	----	46.5	0.0	8	-8.0
LOT 33	127	1	0.0	50.5	65	50.5	10	----	50.5	0.0	8	-8.0
LOT 34	128	1	0.0	50.2	65	50.2	10	----	50.2	0.0	8	-8.0
LOT 35	129	1	0.0	50.5	65	50.5	10	----	50.5	0.0	8	-8.0
LOT 36	130	1	0.0	51.6	65	51.6	10	----	51.6	0.0	8	-8.0
LOT 37	131	1	0.0	52.8	65	52.8	10	----	52.8	0.0	8	-8.0
LOT 38	132	1	0.0	53.7	65	53.7	10	----	53.7	0.0	8	-8.0
LOT 39	133	1	0.0	54.8	65	54.8	10	----	54.8	0.0	8	-8.0
LOT 40	134	1	0.0	55.8	65	55.8	10	----	55.8	0.0	8	-8.0
LOT 41	135	1	0.0	56.1	65	56.1	10	----	56.1	0.0	8	-8.0
LOT 42	136	1	0.0	58.3	65	58.3	10	----	58.3	0.0	8	-8.0
LOT 43	137	1	0.0	56.9	65	56.9	10	----	56.9	0.0	8	-8.0
LOT 44	138	1	0.0	54.1	65	54.1	10	----	54.1	0.0	8	-8.0
LOT 45	139	1	0.0	52.8	65	52.8	10	----	52.8	0.0	8	-8.0
LOT 46	140	1	0.0	49.3	65	49.3	10	----	49.3	0.0	8	-8.0
LOT 47	141	1	0.0	48.7	65	48.7	10	----	48.7	0.0	8	-8.0
LOT 48	142	1	0.0	52.3	65	52.3	10	----	52.3	0.0	8	-8.0
LOT 49	143	1	0.0	54.9	65	54.9	10	----	54.9	0.0	8	-8.0
LOT 50	144	1	0.0	53.8	65	53.8	10	----	53.8	0.0	8	-8.0
LOT 51	145	1	0.0	54.7	65	54.7	10	----	54.7	0.0	8	-8.0
LOT 52	146	1	0.0	55.9	65	55.9	10	----	55.9	0.0	8	-8.0
LOT 53	147	1	0.0	55.2	65	55.2	10	----	55.2	0.0	8	-8.0
LOT 54	148	1	0.0	51.4	65	51.4	10	----	51.4	0.0	8	-8.0
LOT 55	149	1	0.0	53.8	65	53.8	10	----	53.8	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min dB	**Avg dB**	**Max dB**
All Selected	55	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

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INDEX OF IMPORTANT TERMS