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October 24, 2017

Job #B70508N1

County of San Diego Planning & Development Services Attention: Emmet Aquino 5510 Overland Avenue, Suite 110 San Diego, California 92123

Subject: Response to Noise Issues for Nordahl Tentative Map, County of San Diego Record ID PDS2015-TM-5602, Environmental Log No. PDS2015-ER-08-008

This letter is in response to the County of San Diego's Planning & Development Services (PDS) comments for the Nordahl Tentative Map project (Record ID PDS2015-TM-5602). Comments are found in the project issue checklist and are dated October 13, 2017. These comments have been addressed in a revised version of the report, dated October 24, 2017, and this letter will reference the location of each comment response or requested changes in the revised report. Changes to the report are indicated using strikeout/underline format.

Italics are added to indicate County of San Diego staff comments.

<u>Noise</u>

- 14-3 Staff has reviewed the Acoustical Analysis Report dated June 5, 2017 prepared by Eilar Associates and submitted to the County on June 22, 2017. Staff has the following comments.
- 14-4. Were Lot 1 and Lot 15 modeled with just the pad edge? Would results with modeling the pad edge without the barrier conform to the 60 CNEL [Noise Element] requirement? Please clarify.

RESPONSE: The pad edges were not modeled in the noise model prepared for the original report, but have been added to the Traffic Noise Model in this iteration. Revised Traffic Noise Model input/output sheets are provided as Appendix B to the report, and conclusions have been updated throughout the report. The report states that Lot 15 would be able to achieve compliant noise impacts at 10% of the lot area with the pad edge alone, while Lot 1 would still require a sound barrier wall.

14-5. On Lot 1, please explain why the noise barrier is located at a lower elevation as it relates to the pad elevation of 767.5?

RESPONSE: As the owner of the project intends to sell the lots to individuals rather than developing as a whole, there are no currently proposed building footprints on which the location of outdoor use areas could be based. The actual pad of Lot 1 seemed small relative to the rest of the lot, which lead the consultant to speculate that the house could end

up taking up a large portion of this area, and therefore, could push any outdoor use areas encompassing 10% of the area off the pad itself. For this reason, receivers were placed off the pad. At the suggestion of the County of San Diego Noise Analyst, receivers have been relocated; however, it should be noted that the proposed driveway for the lot feeds directly into this area. For this reason, the report also maintains the statement that, due to the preliminary nature of the study, alternative mitigation measures may be proposed at the time of building permit application, at which point it would be known precisely where the house would be placed. Please refer to Sections 2.2.1.1 and 2.2.2.1 for additional details.

14-6. Do you think that additional receptors on the western portion of Lot 1 will be below 60 CNEL with the pad edge alone? Or a combination of the pad edge and barrier on Lot 15? Please clarify.

RESPONSE: The updated Traffic Noise Model containing the pad edge was calculated with relocated receivers for both Lots 1 and 15, and demonstrated that Lot 15 would be able to achieve the required noise-protected area without a barrier wall. Calculations show that Lot 1 would still require the incorporation of a sound barrier wall with a height of seven feet above pad elevation. Please refer to Sections 2.2.1.1 and 2.2.2.1 for additional details, and refer to Figure 7 for a graphic showing the proposed barrier wall at Lot 1 and updated receiver locations for Lots 1 and 15.

14-7 Utlimately, staff would like to know if the Lot 1 noise barrier is required to demonstrate 60 CNEL. Would modeling the pad edge and locating the receptors further away from the roadway help? Additionally, the noise barrier location in Lot 1 appears to be at a lower elevation to the Lot 1 pad which seems a bit unusual for its location. Please explain.

RESPONSE: Per the response to Comment 14-6, a seven-foot high barrier wall will still be required at Lot 1. The original noise barrier location has been justified in the response to Comment 14-5, but is now irrelevant due to the relocation of receivers and the barrier within the model. Please refer to Sections 2.2.1.1 and 2.2.2.1 and Figure 7 for more details.

14-8. Please show a noise protection easement on the TPM over Lots 1, 2, 14, and 15.

RESPONSE: As requested, the applicant will include the noise protection easement, as indicated on Figure 8 of the letter, on the TPM for the project. A statement has been added to Section 2.2.1.2 reiterating this requirement.

Please call if you have any questions or require additional information.

EILAR ASSOCIATES, INC.

Amy Hool Senior Acoustical Consultant

ACOUSTICAL ANALYSIS REPORT

Nordahl Major Subdivision 1217 Nordahl Road Escondido, California 92026

Record ID: PDS2015-TM-5602, Environmental Log No.:PDS2015-ER-15-08-008

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Job #B70508N1

Original Report: June 5, 2017 Second Iteration: October 24, 2017

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EXECUTIVE SUMMARY

The proposed project, the Nordahl Major Subdivision, consists of the subdivision of a 3.8-acre parcel into 15 residential lots and two common lots. The project site is located at 1217 Nordahl Road in the North County Metro Subregional Planning Area, within unincorporated County of San Diego, California. The project site is currently occupied by a single-family residence, which will be removed as a part of this project.

The primary noise source in the vicinity of the project site is automobile and truck traffic noise from Nordahl Road. Without mitigation, future exterior noise levels at the site will range from 40 CNEL where shielded by topography to 67 CNEL at the eastern edge of the project site. Future noise contours show that Lots 1 and 15 are anticipated to be exposed to noise levels greater than 60 CNEL at ground level in the future noise environment.

For lots with a net area between 4,000 square feet and 10 acres, the County of San Diego requires that at least 10% of the net lot area be protected from noise levels greater than 60 CNEL. An eightfoot / A seven-foot high sound barrier has been modeled at Lot 1 and a six-foot high sound barrier has been modeled at Lot 15 to demonstrate that achieving 60 CNEL at 10% of the net lot area is feasible. At the time of building permit application, alternate mitigation measures may be proposed, including the use of architectural features (the residential structure) as mitigation or the combination of the residential structure and a free-standing sound wall, provided the lot can still provide the required noise-protected area.

Building facade noise impacts to the first stories of residences on Lots 1 and 15 are expected to exceed 60 CNEL, and noise impacts at the potential second stories of residences on Lots 1, 2, 14, and 15 may exceed 60 CNEL as well. For this reason, an interior noise analysis will be required for any residences on Lots 1 and 15 and any two-story residences on Lots 2 and 14 as part of the conditions of approval. This analysis can be conducted upon completion of construction documents and prior to the issuance of building permits.

It is determined that typical construction activities will not exceed the County of San Diego temporary construction noise limit of 75 dBA at adjacent property lines during the construction activity. General good practice measures should be followed to ensure that noise levels remain below the County of San Diego construction noise limits, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego. With these recommendations, it is expected that construction equipment noise levels will be at or below an average eight-hour equivalent noise level of 75 dBA, in compliance with County of San Diego regulations.

1.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego for Tentative Parcel Map approval. Its purpose is to assess noise impacts from nearby roadway traffic and to identify project features or requirements necessary to achieve exterior noise levels of 60 CNEL or less at outdoor usable areas, in compliance with the County of San Diego noise regulations. Feasibility of interior noise mitigation and temporary construction noise impacts will also be addressed.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} , for a specified duration. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted average, where sound levels during evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN} , which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

1.1 Project Description

The proposed project, Nordahl Major Subdivision, consists of the division of a 3.8-acre parcel into 15 residential lots and two common lots. The net lot areas of the proposed parcels would range from 6,002 square feet to 9,709 square feet. The project site is currently occupied by a single-family residence, which will be removed as a part of this project. The subject site is currently zoned for residential use. Neighboring land use is primarily residential as is future land use. Please refer to project plans provided as Appendix A for more details.

1.2 Environmental Settings & Existing Conditions

1.2.1 Project Location

The project site is located on Nordahl Road between Pheasant Hill and Anka Lane in the North County Metro Subregional Planning Area, within unincorporated County of San Diego, California. The Assessor's Parcel Number (APN) for the property is 226-290-01-00. The property has an overall site area of approximately 3.8 acres. The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map of this area are also provided as Figures 2 through 4.

1.2.2 Existing Traffic Volumes

The primary noise source in the vicinity of the project site is automobile and truck traffic noise from Nordahl Road. No other noise source is considered significant.

Nordahl Road is a two-lane, two-way roadway, classified as a Major Road (4.1B) in the County Mobility Element, running north-south along the east boundary of the project site. The posted speed limit is 25 mph. The actual speed of vehicles traveling on Nordahl Road, in the vicinity of the project site, is estimated to be 35 mph. According to the SanDAG Series 12 Traffic Forecast for the year 2008, Nordahl Road, in the vicinity of the project site, currently carries a traffic volume of approximately 15,200 Average Daily Trips (ADT).

Truck percentages were not available for Nordahl Road, but based on neighboring and surrounding land use, roadway classification, professional experience and on-site observations, a truck percentage mix of 2.0% medium and 1.0% heavy trucks was used.

Without mitigation or proposed project structures, the project site is currently exposed to noise levels of 38 CNEL to 66 CNEL at ground level. The noise contours are irregularly shaped due to site topography. For a graphical representation of these contours, please refer to Figure 5: Site

Plan Showing Current Traffic CNEL Contours and Noise Measurement Location, and for additional information, please refer to Appendix B: Traffic Noise Model (TNM) Data and Results.

1.2.3 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the afternoon of Tuesday, September 30, 2014. The weather conditions were as follows: clear skies, low humidity, temperatures in the high 90's with winds from the south at 3-5 mph. A noise measurement was made on the eastern edge of the project site. The microphone position was approximately five feet above grade and approximately 20 feet from the centerline of Nordahl Road. Traffic volumes were recorded for automobiles, medium-size trucks, and large trucks during the measurement period. After a continuous 10-minute sound level measurement, there was no change in the L_{EQ} and results were then recorded. The measured noise level and related weather conditions are found below in Table 1. More information can be found in Appendix B: Traffic Noise Model (TNM) Data and Results.

Table 1. On-Site Noise Measurement Conditions and Results							
Date Tuesday, September 30, 2014							
Time	1:20 p.m 1:30 p.m.						
Conditions	Clear skies, winds from the south at 3-5 mph, temperature in the high 90's, low humidity						
Measured Noise Level	66.5 dBA L _{EQ}						

1.3 Methodology and Equipment

1.3.1 Field Measurement

Typically, a "one-hour" equivalent sound level measurement (L_{EQ} , A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. The vehicle counts are then converted to one-hour equivalent volumes by using the appropriate multiplier.

Other field data gathered includes measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This data was checked against the available maps and records.

1.3.2 Roadway Noise Calculation

The Traffic Noise Model, Version 2.5 program released by the U.S. Department of Transportation was used to calculate the future daytime average hourly noise level (HNL) at various locations at the project site. The daytime average hourly traffic volume is calculated as 0.058 times the ADT, based on the studies made by Wyle Laboratories (see reference). The HNL is equivalent to the L_{EQ} , and both are converted to the CNEL by adding 2.0 decibels, as shown in the Wyle Study.

Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required. Further explanation can be supplied on request.

Noise levels were calculated for the site using the methodology described above for the location, conditions, and traffic volumes counted during the noise measurements. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise level to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model. Adjustments are intended to account for site-specific differences, such as reflection and absorption, which may be greater or lesser than accounted for in the model.

The measured noise level of 66.5 dBA L_{EQ} was compared to the calculated (modeled) noise level of 64.9 dBA L_{EQ} , for the same conditions and traffic flow. According to the Federal Highway Administration's Highway Traffic Noise: Analysis and Abatement Guide (see reference), a traffic noise model is considered validated if the measured and calculated noise impacts differ by three decibels or less. No adjustment was deemed necessary to model future noise levels for this noise model as the difference between the measured and calculated levels was found to be less than three decibels. The Traffic Noise Model is assumed to be representative of actual traffic noise that is experienced on site. Please refer to Table 2 for further evaluation.

Table 2. Calculated versus Measured Traffic Noise Data									
Location	Calculated	Measured	Difference	Correction					
20 feet from Nordahl Road CL	64.9 dBA L _{EQ}	66.5 dBA L _{EQ}	1.6 dB	None Applied					

1.3.3 Formulas and Calculations

Decibel Addition

To determine the combined logarithmic noise level of two known noise source levels, the values are converted to the base values, added together, and then converted back to the final logarithmic value, using the following formula:

$$L_{C} = 10\log(10^{L1/10} + 10^{L2/10} + \text{K}\ 10^{LN/10})$$

where L_C = the combined noise level (dB), and L_N = the individual noise sources (dB).

Attenuation Due To Distance

Attenuation due to distance is calculated by the equation:

$$SPL_1 = SPL_2 - 20\log(\frac{D_2}{D_1})$$

where SPL_1 = Calculated sound pressure level at distance,

 SPL_2 = Known sound pressure level at known distance,

 D_1 = Distance from source to known sound pressure level, and

 D_2 = Distance from source to location of calculated sound pressure level.

This is identical to the more commonly used reference of 6 dB reduction for every doubling of distance. This equation does not take into account reduction in noise due to atmospheric absorption.

Hourly L_{EQ} Summation

To determine the hourly average noise levels (L_{EQ}) when the noise is created for less than the full hour, convert the logarithm values to the base energy value, multiply by the percentage of the hour that the noise occurs, and then convert the sum back to a logarithmic value. This is done with the following formula:

$$L_{EO} = 10\log(P_H \times 10^{L_P/10})$$

where P_H = the percent or fraction of the hour noise is created, and L_P = the partial hour noise level (dB).

1.3.4 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 720 Integrating Sound Level Meter, Type 2, Serial # 0311
- Larson Davis Model CA150 Calibrator, Serial # 2056
- Hand-bearing magnetic compass, microphone with windscreen, tripods
- Distance measurement wheel, digital camera

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI SI.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

2.0 NOISE SENSITIVE LAND USES AFFECTED BY AIRBORNE NOISE

2.1 Guidelines for the Determination of Significance

The County of San Diego Noise Element to the General Plan states that exterior noise levels at outdoor use areas of residential property should not exceed 60 CNEL. In the event that noise levels exceed 60 CNEL, mitigation must be proposed to bring noise levels into compliance. For lots with net areas ranging from 4,000 square feet to 10 acres, as is the case for all lots on this project site, at least 10% of the net lot area must be noise-protected. In addition, the interior noise levels of the on-site residences must not exceed 45 CNEL, as per the County of San Diego Noise Element as well as the State of California Building Code. Pertinent sections of the County of San Diego Noise Element are provided as Appendix C.

2.2 Potential Noise Impacts

2.2.1 Potential Build-out Noise Conditions & Impacts

The future traffic volume was determined using the San Diego County General Plan Update 2030 Planning Commission Recommended LOS and Volume Plot for the North County Metro area, provided by County Noise Specialist Emmet Aquino. According to Mr. Aquino, the adjusted forecasted volume should be used in the analysis. According to the map, the adjusted traffic volume for the year 2035 is expected to be 23,400 ADT for this section of Nordahl Road.

2.2.1.1 Exterior

The exterior noise impacts at the project site are primarily the result of automobile and truck traffic traveling on Nordahl Road. Without mitigation or proposed project structures, the project site will be exposed to noise levels of 40 CNEL to 67 CNEL at ground level in the future noise environment. The noise contours are irregularly shaped due to site topography. For a graphical representation of these contours, please refer to Figure 6: Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location, and for additional information, please refer to Appendix B: Traffic Noise Model (TNM) Data and Results. As shown on this graphic, the majority of Lots 1 and 15 will be contained within the 60 CNEL contour. The proposed locations of Lots 2 through 14 are shown to be entirely protected from noise levels exceeding 60 CNEL, and therefore, no additional analysis is required for exterior noise levels at these lots.

Noise levels have been evaluated at Lots 1 and 15, as these are the only lots that are within the ground level 60 CNEL contour. For each lot, four / a group of receivers have been placed that encompass at least 10% of the net lot area that must be noise-protected, per County Requirements. Calculations of future noise impacts consider the edges of the proposed pads on these lots.

Please refer to Table 3 for calculated unmitigated traffic noise levels at outdoor use areas. For a graphical representation of receiver locations, please refer to Figure 7.

	Table 3. Future Traffic CNEL at Proposed Outdoor Use Areas – Unmitigated										
Parcel	Net Area (sf)	Minimum Required Noise-Protected Area (sf)	Receiver #	Future Exterior Noise Level (CNEL)	Total Area Calculated (sf)						
			1-1	63 / <u>58</u>							
Lot 1	0.700	971	1-2	65 / <u>60</u>	972 (10%) /						
LOUI	9,709	971	971	1-3	64 / 61	<u>1,086 (11%)</u>					
			1-4	63							
			15-1	61 / <u>57</u>							
Lot 15	9 200	920	15-2	62 / <u>58</u>	838 (10%) /						
Lot 15	8,299	830	15-3	63 / <u>60</u>	<u>877 (11%)</u>						
			15-4	62 / <u>59</u>							

Noise levels are shown to exceed 60 CNEL at <u>a</u> calculated receiver <u>locations</u> / <u>location</u> for Lot 1 and 15. Mitigation will be required for these lots / this lot. <u>Lot 15 will be able to achieve noise impacts of 60 CNEL or less at 10% of the net lot area considering the topography of the site alone. All other lots are anticipated to receive sufficient noise attenuation due to topography, distance from</u>

the roadway, and the current configuration of the lots. Please refer to Section 2.2.2.1 for mitigation details.

2.2.1.2 Interior

The State of California and the County of San Diego require buildings to be designed in order to attenuate, control, and maintain interior noise levels to below 45 CNEL in habitable residential space. Current exterior building construction is generally expected to achieve at least 15 decibels of exterior-to-interior noise attenuation, with windows opened. Therefore, proposed project building structures exposed to exterior noise levels greater than 60 CNEL could be subject to interior noise levels exceeding the 45 CNEL noise limit for residential habitable space.

Calculations show that future noise levels exceed 60 CNEL at the ground level of Lots 1 and 15. Due to the topography of the site, noise levels were calculated at fifteen feet above grade to account for noise levels at facades of potential two-story residences to be located on site. The future second-story 60 CNEL traffic noise contour is shown graphically in Figure 8, and is shown to encompass Lots 1 and 15 and portions of Lots 2 and 14. A noise protection easement should be indicated on the tentative map in the location of this noise contour. Due to potentially high noise levels at future building facades, an exterior-to-interior analysis should be performed for any residences on Lots 1 and 15 and any two-story residences on Lots 2 and 14 at the time of building permit application. As all other lots are located outside of the ground level and second story 60 CNEL contours, an interior noise analysis is not anticipated to be needed for these lots.

2.2.2 Design Considerations & Mitigation Measures

2.2.2.1 Exterior

As Lot 1 and 15 were / was shown to be exposed to noise impacts of greater than 60 CNEL at 10% of the net lot area, mitigation eptions have / has been proposed that are / is expected to bring noise levels into compliance. An eight-foot / A seven-foot high sound attenuation barrier was modeled at Lot 1 and a six-foot high sound attenuation barrier was modeled at Lot 15 to determine the feasibility of meeting this noise requirement. At the time of building permit application, alternate mitigation measures may be proposed, including the use of architectural features (the residential structure) as mitigation or the combination of the residential structure and a free-standing sound wall, provided the lot can still provide the required noise-protected area. The evaluated sound barriers / barrier and receiver locations are shown in Figure 7.

	Table 4. Future Tra	affic CNEL at Propos	ed Outdoor Us	se Areas – Mitig	gated
Parcel	Net Area (sf)	Total Area Calculated (sf)	Receiver #	Future Exterior Noise Level (CNEL)	Mitigation
Lot 1	9,709	972 (10%) / <u>1,086 (11%)</u>	1-1 1-2 1-3 1-4	57 / <u>58</u> 52 / <u>60</u> 55 / <u>60</u> 60	8-foot / 7-foot high sound attenuation barrier
Lot 15	8,299	838 (10%)	15-1 15-2 15-3 15-4	57 59 56 56	6-foot high sound attenuation barrier

With the modeled sound attenuation barriers / barrier in place on Lot 1 and 15, noise levels are anticipated to comply with the County of San Diego requirement for 10% of the net lot area to be noise-protected. The sound attenuation barriers / barrier may be a single sound wall in design or a combination of a sound wall atop an earthen berm, provided the minimum height requirement above respective grade / pad elevation is fulfilled.

A sound wall should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least 7/8-inch thick or have a surface density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any gate(s) proposed to be constructed in a sound wall must be designed with overlapping closures. The gate(s) may be of ¾-inch or thicker wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

It should be noted that the barrier walls / wall shown in the attached figure have been modeled to show the feasibility of achieving compliance with County noise regulations. At the time of building permit application, alternate mitigation measures may be proposed, including the use of architectural features (the residential structure) as mitigation or the combination of the residential structure and a free-standing sound wall, provided the lots can still provide the required noise-protected area.

2.2.2.2 Interior

As detailed above, any residences on Lots 1 and 15 and any two-story residences on Lots 2 and 14 will require an interior noise analysis to determine mitigation measures necessary to achieve interior noise levels of 45 CNEL. An analysis can be prepared for these lots at the time of building permit application.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for Determination of Significance

The County of San Diego Municipal Code states that noise levels from stationary sources shall not exceed 55 dBA between the hours of 7 a.m. and 10 p.m. and 45 dBA between the hours of 10 p.m. and 7 a.m. at residential properties.

Section 36.409 of the County of San Diego Noise Ordinance states it is unlawful to operate construction equipment that exceeds an average sound level of 75 dBA for an eight-hour period, between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received. In addition, according to Section 36.408 of the ordinance, construction activities must be limited to the hours of 7 a.m. to 7 p.m., Monday through Saturday (except legal holidays). No construction activity is permitted on Sunday. Section 36.410 provides noise limits for impulsive noise, which is defined as a high peak noise level of short duration (one second or less). Impulsive activity includes blasting and the use of equipment such as a rock crusher, hoe ram, pile driver, or drill rig. Impulsive noise limits are provided for both residential and agricultural properties.

Pertinent sections of the County of San Diego Noise Ordinance are provided as Appendix C.

3.2 Potential Operational Noise Impacts

The only anticipated operational noise impact from the proposed project would be residential HVAC units. The units are anticipated to be small capacity, and are not expected to have a significant noise impact on any surrounding property. If needed, these noise sources can be evaluated at the time of building permit application.

3.3 Potential General Construction Noise Impacts

3.3.1 Potential Temporary Construction Noise Impacts without Mitigation

According to the County of San Diego Noise Ordinance, temporary construction noise must be adequately controlled at occupied properties. The occupied properties surrounding the site include receivers to the north, south, and west, as well as to the east, across Nordahl Road. Noise-sensitive receivers to the east are located at a greater distance from potential noise sources and therefore, will be exposed to less noise due to distance attenuation and shielding provided by intervening structures or topography.

Construction information was not available at the time this report was prepared, and therefore, was formulated using typical assumptions. According to project grading plans, there will be no import or export of material, and thus no dump trucks will be present. No impulsive activity is anticipated on site. The anticipated construction activities are shown in Table 5.

Table 5. Anticipated Construction Activities						
Scope of Work	Anticipated Large Equipment					
Grading/Excavation	Dozer, Backhoe					
Foundation	Concrete Mixer, Concrete Pump					
Framing/Construction	Air Compressor, Forklift					
Paving	Paver, Roller					

Please refer to Table 6 for typical noise levels of construction equipment expected to be used on site, as described above. All noise levels have been provided by the UK Department for Environment, Food and Rural Affairs (DEFRA).

Table 6. Typical Construction Equipment Noise Levels									
Noise Source	Calculated Noise Level (L _{MAX}) at 50 feet (dBA)								
Dozer	40	74							
Backhoe	40	64							
Concrete Mixer	40	74							
Concrete Pump	20	74							
Air Compressor	40	61							
Forklift	40	74							
Paver	50	71							
Roller	20	69							

Receivers on property lines to the north, south, east (across Nordahl Road), and west were calculated for the phases of construction listed above. The site was divided into three roughly equal areas and construction equipment noise sources were placed at the center of each area in order to account for the varying distance from source to receiver as equipment moves around the site.

Noise levels of construction at each of the locations described above are shown in Table 7. Detailed calculations can be found in Appendix D: Construction Equipment Noise Calculations. A graphical representation of source and receiver locations is provided as Figure 9.

Tal	Table 7. Temporary Construction Noise Levels at Neighboring Properties									
Phase	Equipment Used	Receiver Location	Distance to Receiver (ft)	8-Hour Average Noise Level (dBA)						
0 " /		C-1 North/C-2 South	96	64.8						
Grading/ Excavation	Dozer, Backhoe	C-3 East	175	59.6						
Excavation		C-4 West	142	61.4						
		C-1 North/C-2 South	96	66.1						
Foundation	Concrete Mixer, Concrete Pump	C-3 East	175	60.9						
	Concrete r ump	C-4 West	142	62.7						
,		C-1 North/C-2 South	96	64.6						
Framing/ Construction	Forklift, Air Compressor	C-3 East	175	59.4						
Construction	Compressor	C-4 West	142	61.2						
		C-1 North/C-2 South	96	63.3						
Paving	Paver, Roller	C-3 East	175	58.1						
		C-4 West	142	59.9						

3.3.2 Design Considerations and Temporary Mitigation Measures

As shown above, noise levels from temporary construction are expected to be in compliance with the County of San Diego eight-hour average equivalent noise limit of 75 dBA for on-site activity.

For any project in which construction activity will take place near occupied residential properties, the following "good practice" recommendations should be adhered to whenever possible:

- 1. Turn off equipment when not in use.
- 2. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.
- 3. Use equipment with effective mufflers.
- 4. Minimize the use of backup alarms.
- 5. Equipment staging areas should be placed at locations away from noise-sensitive (occupied) receivers.

These general recommendations, in addition to limiting construction equipment operation to the allowable hours detailed in the County of San Diego Noise Ordinance, will assist in maintaining the comfort of neighboring sensitive receivers during the construction of this site.

3.4 Potential Impulsive Noise Impacts

There is no anticipated need for impulsive construction activity on site, and therefore, this noise source has not been included in this analysis.

4.0 CONCLUSION

For lots with a net area between 4,000 square feet and 10 acres, the County of San Diego requires that at least 10% of the net lot area be protected from noise levels greater than 60 CNEL. An eightfoot / A seven-foot high sound barrier has been modeled at Lot 1 and a six-foot high sound barrier has been modeled at Lot 15 to demonstrate that achieving 60 CNEL at 10% of the net lot area is feasible. At the time of building permit application, alternate mitigation measures may be proposed, including the use of architectural features (the residential structure) as mitigation or the combination of the residential structure and a free-standing sound wall, provided the lot can still provide the required noise-protected area.

Building facade noise impacts to the first stories of residences on Lots 1 and 15 are expected to exceed 60 CNEL, and noise impacts at the potential second stories of residences on Lots 1, 2, 14, and 15 may exceed 60 CNEL as well. For this reason, an interior noise analysis will be required for any residences on Lots 1 and 15 and any two-story residences on Lots 2 and 14 as part of the conditions of approval. This analysis can be conducted upon completion of construction documents and prior to the issuance of building permits.

It is determined that typical construction activities will not exceed the County of San Diego temporary construction noise limit of 75 dBA at adjacent property lines during the construction activity. General good practice measures should be followed to ensure that noise levels remain below the County of San Diego construction noise limits, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego.

5.0 CERTIFICATION

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the proposed Nordahl Major Subdivision, located within the County of San Diego, California. This report was prepared by Jeff Russert and Amy Hool, and updated by Amy Hool and Jonathan Brothers.

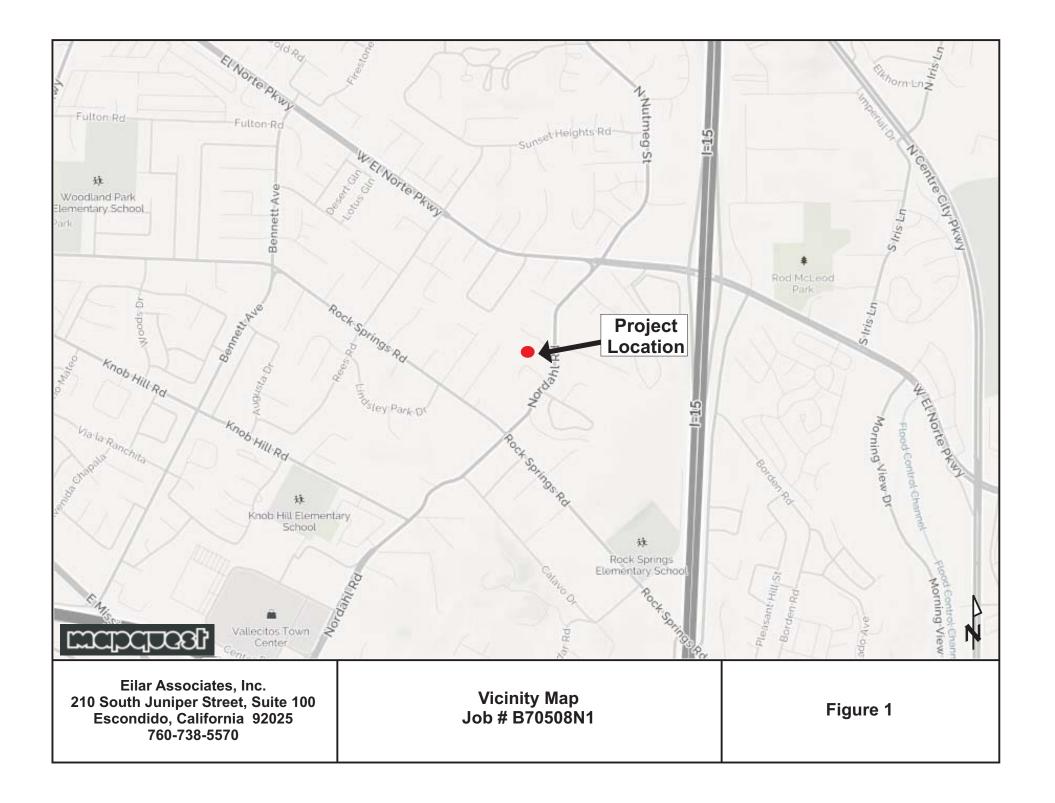
Jonathan Brothers, Principal Acoustical Consultant

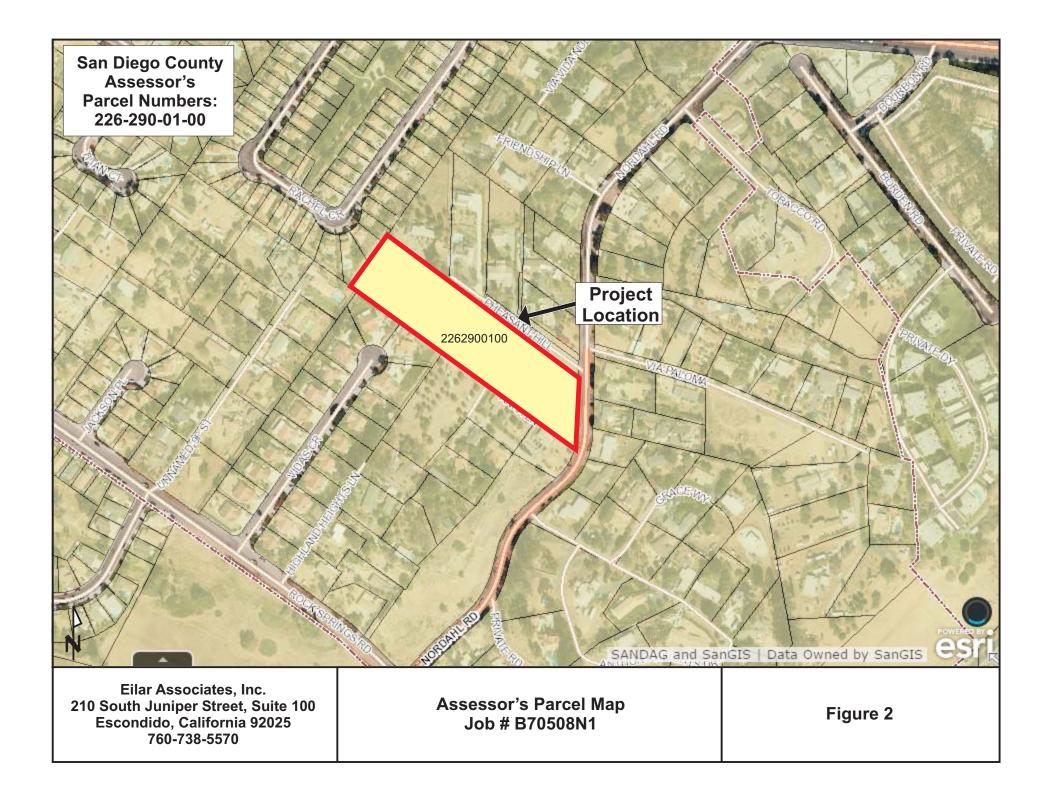
Amy Hool, Senior Acoustical Consultant

6.0 REFERENCES

- 1. 2016 California Building Code, Based on the 2015 International Building Code, Chapter 12, Section 1207 Sound Transmission Control.
- 2. Federal Highway Administration, Traffic Noise Model Version 2.5.
- 3. County of San Diego Noise Element to the General Plan.
- 4. County of San Diego Noise Ordinance.
- 5. Federal Highway Administration, Highway Traffic Noise: Analysis and Abatement Guide, December 2011.
- 6. UK Department for Environment, Food, and Rural Affairs (DEFRA) Construction Noise Database.
- 7. Wyle Laboratories, Development of Ground Transportation Systems Noise Contours for the San Diego Region, December 1973.





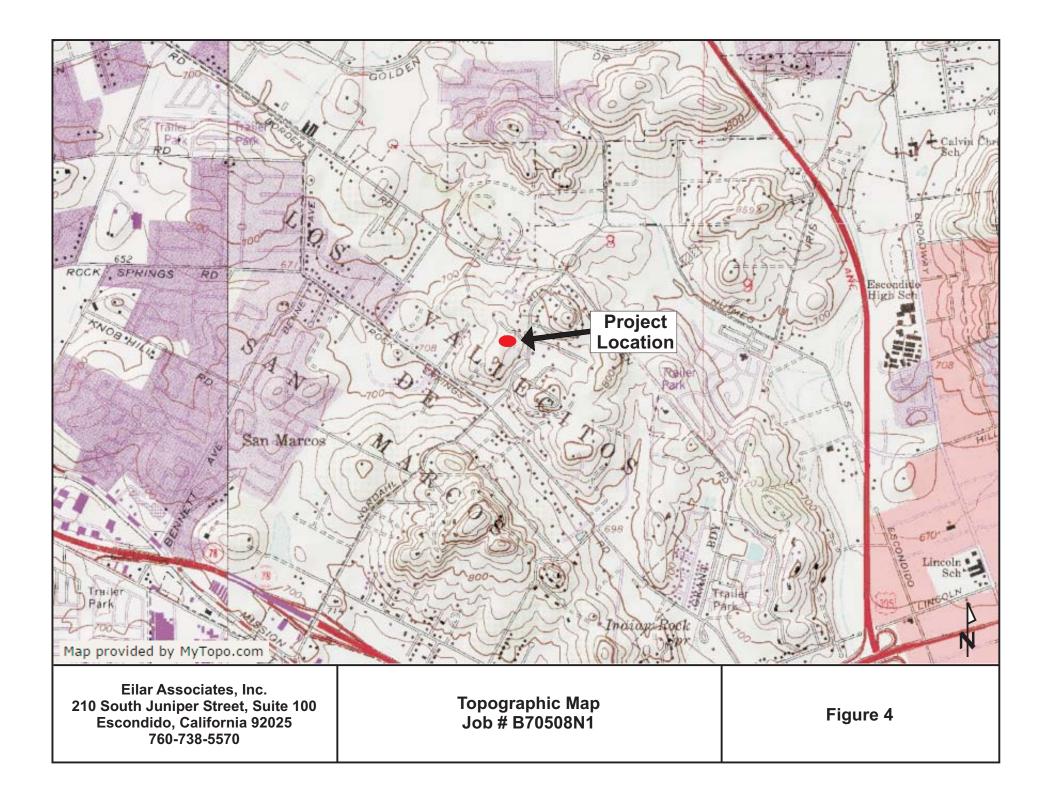


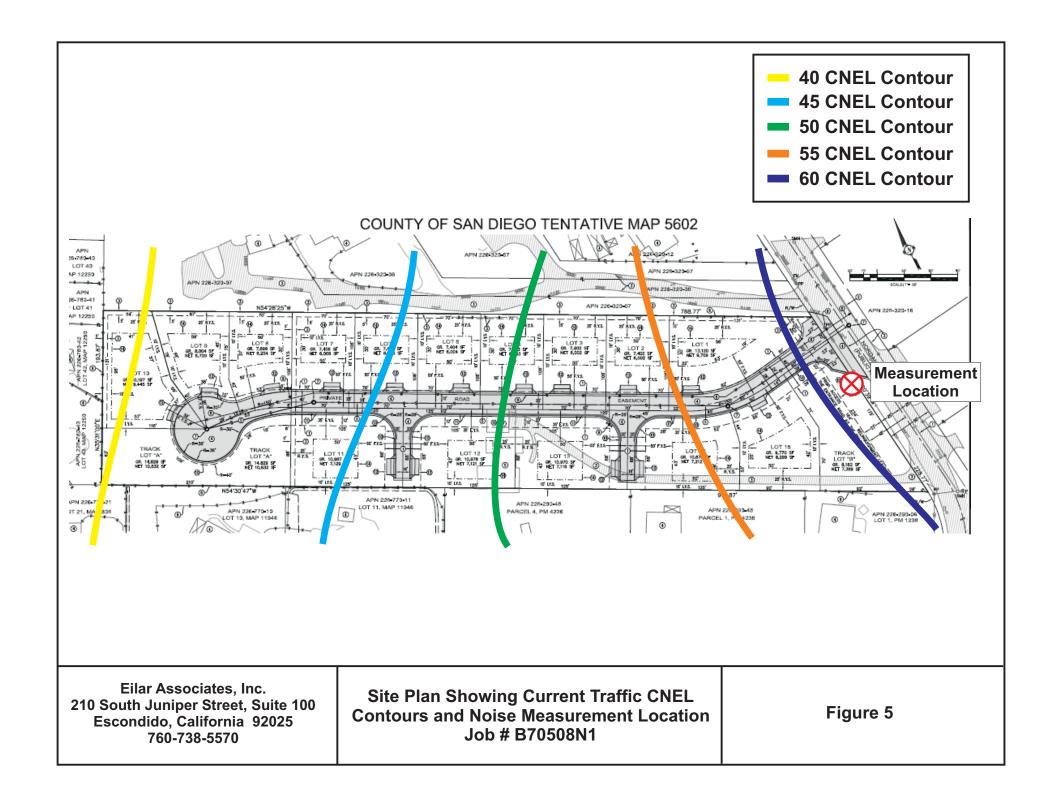


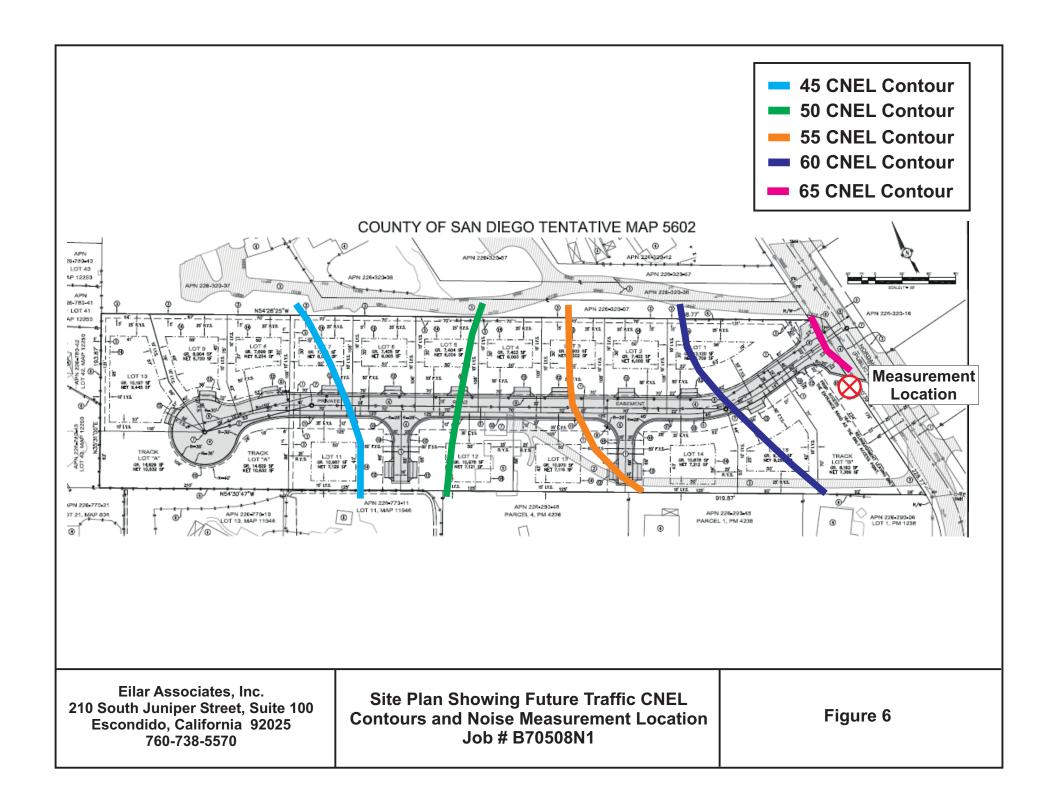
Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570

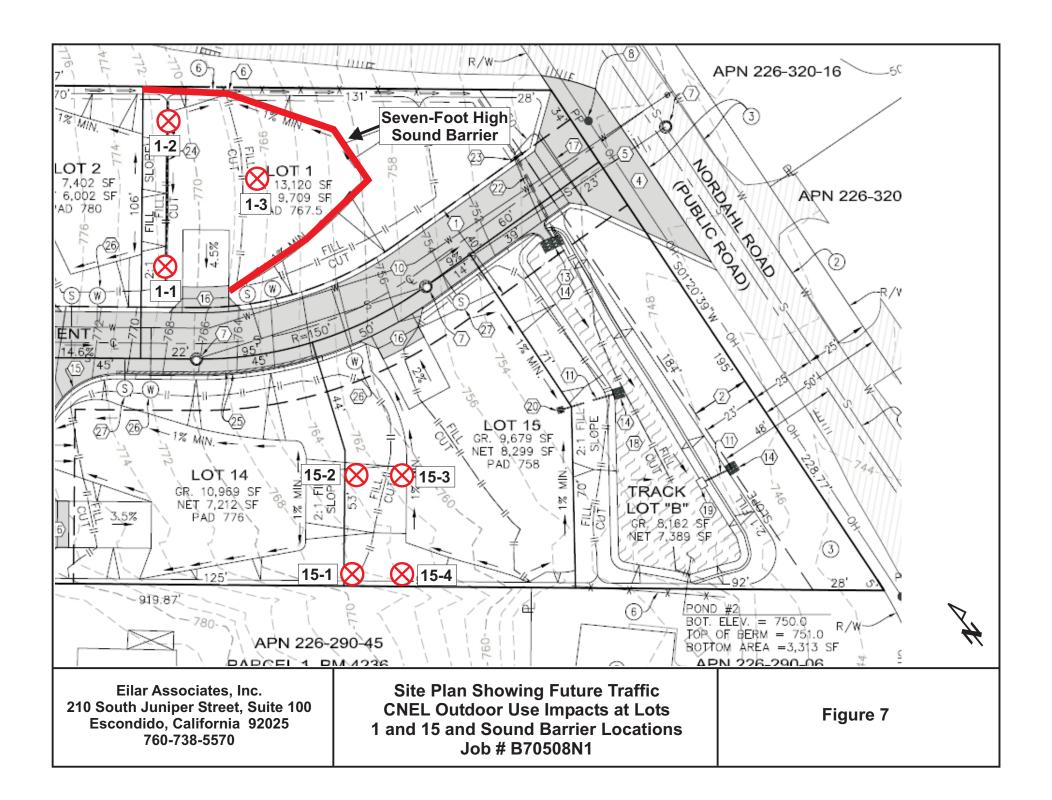
Satellite Aerial Photograph Job # B70508N1

Figure 3









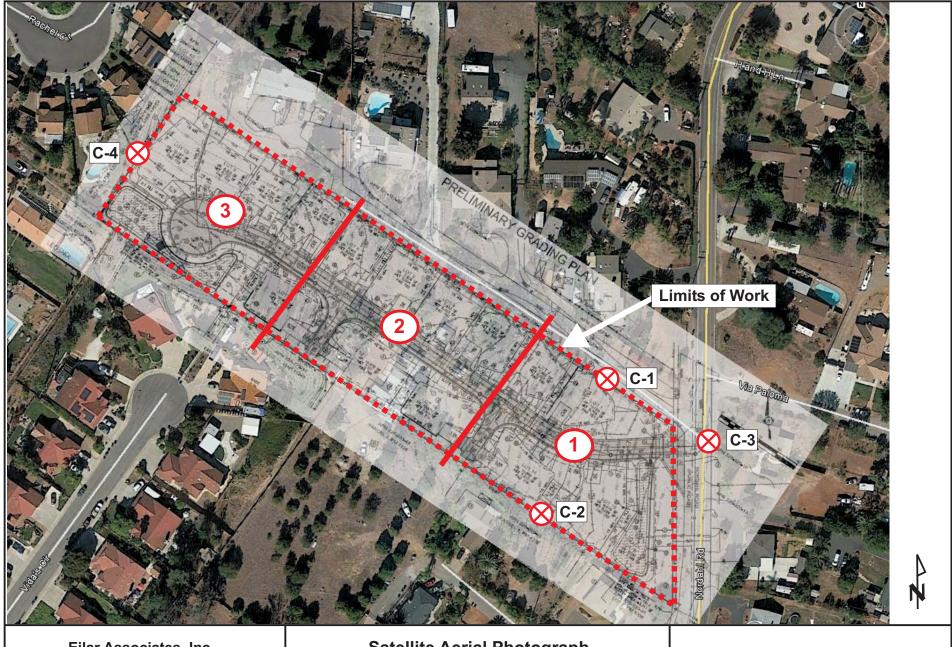
60 CNEL Contour (2nd Story)/ Noise Protection Easement



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570

Site Plan Showing Future 60 CNEL Traffic Noise Contour at Second Story Receivers Job # B70508N1

Figure 8

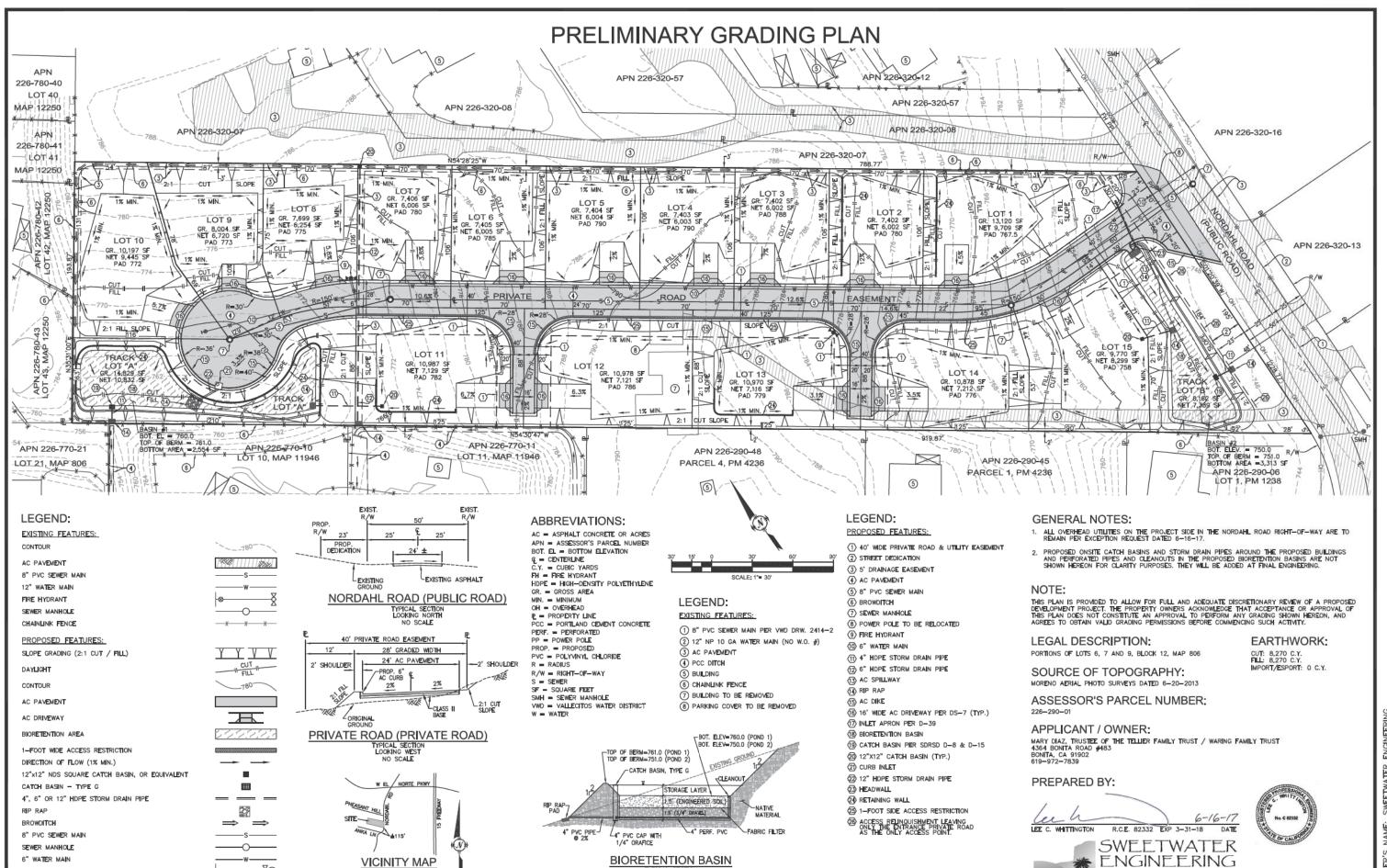


Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570 Satellite Aerial Photograph
Showing Construction Noise Source
and Receiver Locations
Job # B70508N1

Figure 9

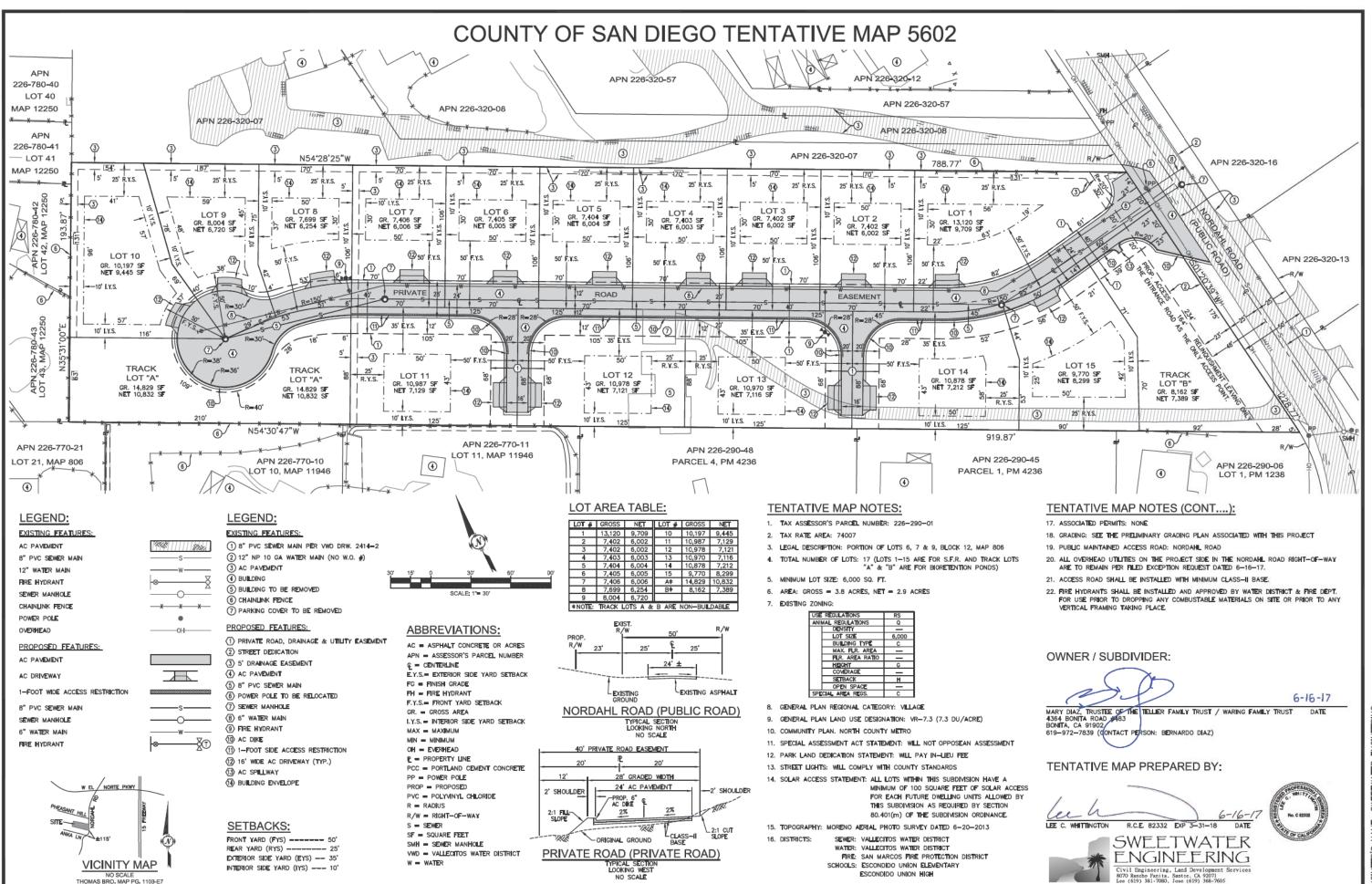
APPENDIX A

Project Plans



FIRE HYDRANT

ENGINEER'S NAME: SWEETWATER ENGINEERING PHONE NUMBER: 619-381-7080, 619-368-7605



ENGINEER'S NAME: SWEETWATER ENGINEERING PHONE NUMBER: 619-381-7080, 619-368-7605

APPENDIX B

Traffic Noise Model (TNM) Data and Results

NPUI. RUADWATS								D/030	JON I NOIGAIII	I F IVI		
Eilar Associates					22 May 201	7						
AH				TNM 2.5								
INPUT: ROADWAYS PROJECT/CONTRACT:	B70508N	1 Nordahl	TPM						pavement typ ghway agenc			
RUN:	Calibratio	n						of a differ	ent type with	the approv	al of FHW	A
Roadway		Points										
Name	Width	Name	No.	Coordinates	(pavement)	-		Flow Con	trol		Segment	
				X	Υ	Z		Control	Speed	Percent	Pvmt	On
								Device	Constraint	Vehicles Affected	Туре	Struct?
	ft			ft	ft	ft			mph	%		+
Nordahl	25.0	point11	11	-422.9	-904	.6	712.00		•		Average	
,		point10	10	-183.7	-542		730.00				Average	
		point9	9	-167.4	-497		730.00				Average	
		point8	8	-109.7	-399	.4	743.00				Average	+
		point7	7	33.8	-269	.0	743.00				Average	+
		point6	6	93.4	-155	.8	750.00				Average	
		point5	5	103.3	91	.5	758.00				Average	
		point4	4	105.6	178	.1	763.00				Average	
		point3	3	104.7	255	.7	773.00				Average	
		point2	2	115.9	531	.5	786.00				Average	
		point1	1	361.4	950	.7	780.00					
Roadway2	12.0	point12	12	9.6			741.00				Average	
		point13	13	-253.3			784.00					
Pheasant Hill 1	16.0	point20	20	101.4			758.00				Average	
		point21	21	-7.9			760.00					
Pheasant Hill 2	16.0	point22	22	-11.2			760.00				Average	
		point23	23	-62.8			770.00					
Pheasant Hill 3	16.0	point24	24	-66.6			770.00				Average	
		point25	25	-131.6			780.00					
Pheasant Hill 4	16.0	point26	26	-143.5			780.00				Average	<u> </u>
		point27	27	-352.1	402	.5	786.00					

INPUT: TRAFFIC FOR LAeq1h Volumes						В	70508N1	Norda	hl TPM			
Files Accepiates				22 May	, 2017							
Eilar Associates				22 May								
AH				TNM 2	.5 							
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	B70508N1 I	Nordahl T	PM									
RUN:	Calibration											
Roadway	Points											
Name	Name	No.	Segmen	ıt								
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	٧	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
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	point7	7								0 0		
	point6	6								0 0	_	
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	point4	4								0 0	_	
	point3	3								0 0		
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	point13	13										
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	point21	21									ļ .	
Pheasant Hill 2	point22	22		25	С	0	0	C) (0 0	0	0
	point23	23									ļ .	
Pheasant Hill 3	point24	24		25	С	0	0	C) (0 0	0	0
	point25	25										
Pheasant Hill 4	point26	26		25	С	0	0	C) (0 0	0	0
	point27	27										

INPUT: TERRAIN LINES B70508N1 Nor

IN OI. TERRAIN EINEO				
Eilar Associates			22 May 2017	
АН			TNM 2.5	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	B70508	3N1 Nordahl 1	PM	
RUN:	Calibra	ition		
Terrain Line	Points	<u> </u>		
Name	No.	Coordinates	(ground)	
		X	Υ	Z
		ft	ft	ft
Terrain Line1	1	-11.3	-89.6	750.00
	2	-23.3	-72.7	750.00
	3	-19.6	-63.7	750.00
	4	-6.4	-62.6	750.00
	5	4.9	21.7	750.00
	6	33.8	72.0	750.00
	7	49.2	70.0	750.00
	8	51.7	87.6	750.00
Terrain Line2	9	-80.2	-41.1	760.00
	10	-87.3	-26.8	760.00
	11	-78.3	-17.4	760.00
	12	-79.1	46.4	760.00
	13			760.00
	14		138.3	760.00
	15			760.00
	16			760.00
	17			760.00
Terrain Line3	18		2.0	770.00
	19		18.7	770.00
	20			770.00
	21			
	22		67.5	
	23		83.8	
	24		123.1	770.00
	25			770.00 770.00
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	28			770.00
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	30			770.00
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38 39 40 41 42 43 44	-155.6 -131.8 -126.1 -144.9 -274.9	188.4 219.1 248.3 275.8 38.3	780.00 780.00 780.00 780.00
40 41 42 43	-126.1 -144.9 -274.9	248.3 275.8	780.00
41 42 43	-144.9 -274.9	275.8	
42 43	-274.9		780.00
43		20 2	, •
		30.3	790.00
44	-289.9	65.5	790.00
	-300.3	105.8	790.00
45	-300.8	138.7	790.00
46	-305.5	165.0	790.00
47		189.5	790.00
	-276.3		790.00
49	-268.6	216.8	790.00
50	-221.9	212.4	790.00
51	-192.1	232.5	790.00
52	-191.2	247.3	790.00
53	-233.2	257.4	790.00
54	-266.9	248.5	790.00
55	-291.1		790.00
	-327.0	244.4	790.00
	-362.6	228.4	790.00
			790.00
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INPUT: TERRAIN LINES B70508N1 Nor

INPUI: IEKKAIN LINES				
	92	-353.8	411.6	786.00
	93	-395.2	450.8	786.00
	94	-446.9	474.0	786.00
	95	-477.3	475.8	786.00
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	97	-438.1	174.1	780.00
	98	-434.3	188.8	780.00
	99	-462.2	227.7	780.00
	100	-459.1	242.1	780.00
	101	-444.1	259.3	780.00
	102	-440.0	275.9	780.00
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	104	-425.3	322.6	780.00
	105	-431.2	346.7	780.00
	106	-425.6	366.5	780.00
	107	-425.6	384.7	780.00
	108	-430.6	393.7	780.00
	109	-434.7	410.7	780.00
	110	-448.1	423.8	780.00
	111	-489.8	440.7	780.00
	112	-615.4	525.0	780.00
Terrain Line10	113	-463.2	170.7	770.00
	114	-451.9	186.3	770.00
	115	-520.5	269.7	770.00
	116	-504.8	293.5	770.00
	117	-496.1	322.0	770.00
	118	-502.3	365.2	770.00
	119	-538.4	401.9	770.00
	120	-588.5	428.2	770.00
	121	-653.0	469.6	770.00
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Terrain Line11	123	-695.3	333.6	760.00
	124	-682.2	361.2	760.00
	125	-668.4	366.2	760.00
	126	-593.5	317.3	760.00
	127	-596.6	337.0	760.00
	128	-603.8	350.2	760.00
	129	-622.0	367.7	760.00
	130	-686.3	411.9	760.00
	131	-711.9	411.3	760.00
	132	-739.2	434.2	760.00
Terrain Line12	133	-718.8	347.7	750.00
	134	-724.2	368.0	750.00
	135	-736.1	373.1	750.00
	136	-742.3	388.4	750.00
	137	-760.8	400.6	750.00

INPUT: RECEIVERS								B70508N1	Nordahl T	PM	
Eilar Associates						22 May 20	17				
AH						TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	B705	08N1 N	ordahl TPM		'						
RUN:	Calib	ration									
Receiver											
Name	No.	#DUs	Coordinates	(ground)		Height	Input Sou	nd Levels a	and Criteria	ā	Active
			X	Υ	Z	above	Existing	Impact Cr	iteria	NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1		1 1	85.3	62.	1 759.0	0 4.92	2 0.00	66	10.0	8.0) Y

RESULTS: SOUND LEVELS

B70508N1 Nordahl TPM

										1		
						22 May 20	│ 017					
							d with TN	M 2.5				
	B70508	N1 Nordah	I TPM									
	Calibra	tion										
	INPUT	HEIGHTS					Average	pavement typ	e shall be use	ed unles	ss	
	90 dea	F. 50% RH							=			
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No.	#DUS		J		_		_					
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			Calculated	Crit'n	Calculate		Impact	LAeq1h	Calculated	Goal		ted
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		dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
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	# DUs	Noise Re	duction									
		Min	Ava	Max								
		dB	dB	dB								
	1	0.0	0	.0	0.0							
		0.0										
	0				0.0							
	No.	Calibra INPUT 90 deg No. #DUs	Calibration INPUT HEIGHTS 90 deg F, 50% RH No. #DUS Existing LAeq1h dBA 1 1 0.0 # DUS Noise Rec Min dB	No. #DUS Existing No Barrier LAeq1h Calculated	Calibration INPUT HEIGHTS 90 deg F, 50% RH	Calibration INPUT HEIGHTS 90 deg F, 50% RH	TNM 2.5 Calculate	B70508N1 Nordahl TPM Calibration INPUT HEIGHTS Average a State h of a diffe	B70508N1 Nordahl TPM Calibration INPUT HEIGHTS No. #DUs Existing No Barrier LAeq1h LAeq1h Calculated Crit'n Calculated Crit'n Sub'l Inc dBA dBA dBA dBA dB dB dB # DUs Noise Reduction Min Avg Max dB dBA dBB dB Calculated with TNM 2.5 Calculated with TNM 2.5 Calculated with TNM 2.5 Average pavement typ a State highway agency of a different type with description description	TNM 2.5 Calculated with TNM 2.5 B70508N1 Nordahl TPM Calibration INPUT HEIGHTS No. #DUs Existing No Barrier LAeq1h LAeq1h Calculated Crit'n Calculated Crit'n Sub'l Inc dBA dBA dBA dBA dB dB dB 1 1 0.0 64.9 66 64.9 10 64.9 0.0 # DUS Noise Reduction Min Avg Max dB dB dB dB	B70508N1 Nordahl TPM Calibration INPUT HEIGHTS No. #DUs Existing No Barrier LAeq1h LAeq1h Calculated Crit'n Calculated Crit'n Sub'l Inc MBA MBA MBA MBA MBA MBA MIn Avg Max Max MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MBA MB	B70508N1 Nordahl TPM Calibration INPUT HEIGHTS No. #DUs Existing LAeq1h LAeq1h Calculated Crit'n Calculated Crit'n Sub'l Inc Calculated Crit'n Sub'l Inc

22

INPUT: TRAFFIC FOR LAeq1h Volumes					1	В	70508N1	Norda	hl TM			
Eiler Accesiates				22 May	. 2047							
Eilar Associates				22 May								
AH				TNM 2	.5 							
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	B70508N1 I	Nordahl T	М									
RUN:	Current											
Roadway	Points											
Name	Name	No.	Segmen	it								
			Autos		MTruck		HTrucks	5	Buses		Motorcy	/cles
			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
Nordahl	point11	11	855	35	18	35	9	35	(0 0	0	0
	point10	10	855	35	18	35	9	35	(0	0	0
	point9	9	855	35	18	35	9	35	(0	0	0
	point8	8	855	35	18	35	9	35	(0	0	0
	point7	7	855							0	0	
	point6	6	855	35	18					0	0	0
	point5	5								0	0	
	point4	4	855							0	0	_
	point3	3								0	0	_
	point2	2	855	35	18	35	9	35	(0	0	0
	point1	1										
Roadway2	point12	12		0	0	0	0	0	(0	0	0
	point13	13										
Pheasant Hill 1	point20	20		25	0	0	0	0	(0	0	0
	point21	21										
Pheasant Hill 2	point22	22		25	0	0	0	0	(0	0	0
	point23	23										
Pheasant Hill 3	point24	24		25	0	0	0	0	(0	0	0
	point25	25										
Pheasant Hill 4	point26	26		25	0	0	0	0	(0	0	0
	point27	27										

INPUT: RECEIVERS								B70508N1	Nordahl T	'M	
Eilar Associates						22 May 20	017				
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PROJECT/CONTRACT:	B7050	8N1 N	ordahl TM		I						
RUN:	Curre										
Receiver											
Name	No.	#DUs	Coordinates (ground)		Height	Input Sou	nd Levels	and Criteri	a	Active
			X	Υ	Z	above	Existing	Impact Cr	iteria	NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft f	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	-37.3	-109.5	750.06	4.92	2 0.00	66	10.0	8.0) Y
Receiver3	3	1	-8.7	-42.7	754.98	4.92	2 0.00	66	10.0	8.0) Y
Receiver4	4	1	21.7	22.0	754.98	4.92	2 0.00	66	10.0	8.0	Y (
Receiver5	5	1	53.4	90.6	754.62	4.92	2 0.00	66	10.0	8.0) Y
Receiver6	6	1	87.3	164.8	747.24	4.92	2 0.00	66	10.0	8.0	Y (
Receiver7	7	1	-96.8	-70.0	761.54	4.92	2 0.00	66	10.0	8.0	Y (
Receiver8	8	1	-63.4	-6.2	763.18	4.92	2 0.00	66	10.0	8.0	Y (
Receiver9	9	1	-31.7	56.3	760.62	4.92	2 0.00	66	10.0	8.0	Y (
Receiver10	10	1	3.0	121.8	761.28	4.92	2 0.00	66	10.0	8.0	Y (
Receiver11	11	1	40.0	193.0	758.13	4.92	0.00	66	10.0	8.0	
Receiver12	12	1	-155.4	-31.0	772.89	4.92	0.00	66	10.0	8.0	Y
Receiver13	13	1	-120.7	31.1	771.28	4.92	0.00	66	10.0	8.0	Y
Receiver14	14	1	-90.3	92.7	769.97	4.92	0.00	66	10.0	8.0	Y
Receiver15	15		-54.2	157.9	770.23	4.92	0.00	66	10.0	8.0	
Receiver16	16	1	-17.8	229.5	769.45	4.92	0.00	66	10.0	8.0	Y (
Receiver17	17	1	-210.9	5.1	783.39	4.92	0.00	66	10.0	8.0	Y C
Receiver18	18			66.7	779.09				10.0	8.0	
Receiver19	19		-143.2	127.1	778.67	4.92	2 0.00	66	10.0	8.0	
Receiver20	20		-108.9	195.2					10.0	8.0	
Receiver21	21			261.6					10.0		
Receiver22	22	1	-268.8	45.0	792.02	4.92	2 0.00	66	10.0	8.0	
Receiver23	23	1	-233.8	101.9	787.03	4.92	2 0.00	66	10.0	8.0) Y

INPUT: RECEIVERS							В	70508N1 No	ordahl TM		
Receiver24	24	1	-198.8	162.6	787.16	4.92	0.00	66	10.0	8.0	Υ
Receiver25	25	1	-162.1	226.6	789.20	4.92	0.00	66	10.0	8.0	Υ
Receiver26	26	1	-123.3	295.0	777.52	4.92	0.00	66	10.0	8.0	Υ
Receiver27	27	1	-324.6	80.0	793.23	4.92	0.00	66	10.0	8.0	Υ
Receiver28	28	1	-287.9	141.3	792.31	4.92	0.00	66	10.0	8.0	Υ
Receiver29	29	1	-254.1	198.7	792.61	4.92	0.00	66	10.0	8.0	Υ
Receiver30	30	1	-217.4	260.5	793.13	4.92	0.00	66	10.0	8.0	Υ
Receiver31	31	1	-177.5	331.6	779.55	4.92	0.00	66	10.0	8.0	Υ
Receiver32	32	1	-386.9	121.6	793.23	4.92	0.00	66	10.0	8.0	Υ
Receiver33	33	1	-351.9	179.6	793.23	4.92	0.00	66	10.0	8.0	Υ
Receiver34	34	1	-314.2	235.9	793.23	4.92	0.00	66	10.0	8.0	Υ
Receiver35	35	1	-273.7	296.6	792.51	4.92	0.00	66	10.0	8.0	Υ
Receiver36	36	1	-233.8	366.6	782.01	4.92	0.00	66	10.0	8.0	Υ
Receiver37	37	1	-444.1	158.6	785.72	4.92	0.00	66	10.0	8.0	Υ
Receiver38	38	1	-408.1	215.9	791.82	4.92	0.00	66	10.0	8.0	Υ
Receiver39	39	1	-373.3	272.3	791.82	4.92	0.00	66	10.0	8.0	Υ
Receiver40	40	1	-333.4	337.0	791.23	4.92	0.00	66	10.0	8.0	Υ
Receiver41	41	1	-290.9	400.8	784.64	4.92	0.00	66	10.0	8.0	Υ
Receiver42	42	1	-502.3	197.2	773.19	4.92	0.00	66	10.0	8.0	Υ
Receiver43	43	1	-466.2	254.1	783.06	4.92	0.00	66	10.0	8.0	Υ
Receiver44	44	1	-430.2	310.1	784.37	4.92	0.00	66	10.0	8.0	Υ
Receiver45	45	1	-388.5	370.9	787.92	4.92	0.00	66	10.0	8.0	Υ
Receiver46	46	1	-347.3	434.2	787.29	4.92	0.00	66	10.0	8.0	Υ
Receiver47	47	1	-558.2	234.1	770.40	4.92	0.00	66	10.0	8.0	Υ
Receiver48	48	1	-521.0	291.0	773.58	4.92	0.00	66	10.0	8.0	Υ
Receiver49	49	1	-485.0	345.1	777.12	4.92	0.00	66	10.0	8.0	Υ
Receiver50	50	1	-446.1	407.5	784.14	4.92	0.00	66	10.0	8.0	Υ
Receiver51	51	1	-403.5	471.5	788.02	4.92	0.00	66	10.0	8.0	Υ
Receiver52	52	1	-612.9	270.2	767.71	4.92	0.00	66	10.0	8.0	Υ
Receiver53	53	1	-576.3	329.3	766.92	4.92	0.00	66	10.0	8.0	Υ
Receiver54	54	1	-541.3	381.8	773.12	4.92	0.00	66	10.0	8.0	Υ
Receiver55	55	1	-501.4	442.5	784.24	4.92	0.00	66	10.0	8.0	Υ
Receiver56	56	1	-459.3	504.8	782.18	4.92	0.00	66	10.0	8.0	Υ
Receiver57	57	1	-670.9	307.4	764.69	4.92	0.00	66	10.0	8.0	Υ
Receiver58	58	1	-634.3	364.3	764.98	4.92	0.00	66	10.0	8.0	Υ
Receiver59	59	1	-600.3	418.4	772.86	4.92	0.00	66	10.0	8.0	Υ

INPUT: RECEIVERS						B70508N1 Nordahl TM					
Receiver60	60	1	-557.1	481.3	784.41	4.92	0.00	66	10.0	8.0	Υ
Receiver61	61	1	-518.3	540.4	773.65	4.92	0.00	66	10.0	8.0	Υ
Receiver62	62	1	-722.3	341.3	753.50	4.92	0.00	66	10.0	8.0	Υ
Receiver63	63	1	-687.3	400.4	764.98	4.92	0.00	66	10.0	8.0	Υ
Receiver64	64	1	-653.4	452.9	772.86	4.92	0.00	66	10.0	8.0	Υ
Receiver65	65	1	-616.2	515.8	783.78	4.92	0.00	66	10.0	8.0	Υ
Receiver66	66	1	-573.5	574.8	765.84	4.92	0.00	66	10.0	8.0	Υ
Receiver67	67	1	-778.9	381.1	746.61	4.92	0.00	66	10.0	8.0	Υ
Receiver69	69	1	-745.8	437.6	761.93	4.92	0.00	66	10.0	8.0	Υ
Receiver70	70	1	-712.7	487.9	765.02	4.92	0.00	66	10.0	8.0	Υ
Receiver72	72	1	-674.8	552.7	766.56	4.92	0.00	66	10.0	8.0	Υ
Receiver73	73	1	-639.0	618.1	755.77	4.92	0.00	66	10.0	8.0	Υ

B70508N1 Nordahl TM

RESULTS: SOUND LEVELS							B/USU8IN1	Nordani	I IVI			
Eilar Associates							22 May 20	17				
AH							TNM 2.5	17				
							Calculate	d with TN	M 2.5			
RESULTS: SOUND LEVELS							Jaioalato		2.0			
PROJECT/CONTRACT:		B70508	N1 Nordah	I TM								
RUN:		Curren	t									
BARRIER DESIGN:			HEIGHTS					Average	pavement type	shall be use	d unless	5
								_	ighway agency			
ATMOSPHERICS:		90 deg	F, 50% RH						erent type with			
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier		<u></u>	
			LAeq1h	LAeq1h		Increase over	existing	Туре	Calculated	Noise Reduc	tion	
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculate
							Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	57.8	66	57.8	3 10		57.8	0.0		8 -
Receiver3	3	3 1	0.0	60.2	66	60.2	10		60.2	0.0	1	8 -
Receiver4	4	1	0.0	61.5	66	61.5	10		61.5	0.0	1	8 -
Receiver5	5	5 1	0.0	63.5	66	63.5	10		63.5	0.0	,	8 -
Receiver6	6	5 1	0.0	56.1	66	56.1	10		56.1	0.0		8 -
Receiver7	7	′ 1	0.0	55.5	66	55.5	10		55.5	0.0	,	8 -
Receiver8	8		0.0	57.5	66	57.5	10		57.5	0.0	,	8 -
Receiver9	9		0.0						58.6			8 -
Receiver10	10								60.2			8 -
Receiver11	11		0.0						60.9			8 -
Receiver12	12		0.0						54.1			8 -
Receiver13	13		0.0						55.9			8 -
Receiver14	14								56.8			8 -
Receiver15	15		0.0						58.1			8 -
Receiver16	16		0.0						58.5			8 -
Receiver17	17								53.1	0.0		8 -
Receiver18	18								54.0			8 -
Receiver19	19						_		55.3			8 -
Receiver20	20		0.0						56.6			8 -
Receiver21	21								55.9			8 -
Receiver22	22		0.0						51.7			8 -
Receiver23	23		0.0						52.0			8 -
Receiver24	24								53.4			8 -
Receiver25	25	5 1	0.0	54.8	66	54.8	10		54.8	0.0	1	8 -

RESULTS: SOUND LEVELS						B70508N1	Nordahl TI	М			
Receiver26	26	1 0.0	53.2	66	53.2	10		53.2	0.0	8	-8.0
Receiver27	27	1 0.0	49.4	66	49.4	10		49.4	0.0	8	-8.0
Receiver28	28	1 0.0	50.5	66	50.5	10		50.5	0.0	8	-8.0
Receiver29	29	1 0.0	51.5	66	51.5	10		51.5	0.0	8	-8.0
Receiver30	30	1 0.0	52.6	66	52.6	10		52.6	0.0	8	-8.0
Receiver31	31	1 0.0	51.0	66	51.0	10		51.0	0.0	8	-8.0
Receiver32	32	1 0.0	47.0	66	47.0	10		47.0	0.0	8	-8.0
Receiver33	33	1 0.0	48.1	66	48.1	10		48.1	0.0	8	-8.0
Receiver34	34	1 0.0	48.7	66	48.7	10		48.7	0.0	8	-8.0
Receiver35	35	1 0.0	50.4	66	50.4	10		50.4	0.0	8	-8.0
Receiver36	36	1 0.0	49.1	66	49.1	10		49.1	0.0	8	-8.0
Receiver37	37	1 0.0	42.6	66	42.6	10		42.6	0.0	8	-8.0
Receiver38	38	1 0.0	45.4	66	45.4	10		45.4	0.0	8	-8.0
Receiver39	39	1 0.0	46.2	66	46.2	10		46.2	0.0	8	-8.0
Receiver40	40	1 0.0	48.0	66	48.0	10		48.0	0.0	8	-8.0
Receiver41	41	1 0.0	47.8	66	47.8	10		47.8	0.0	8	-8.0
Receiver42	42	1 0.0	39.4	66	39.4	10		39.4	0.0	8	-8.0
Receiver43	43	1 0.0	41.4	66	41.4	10		41.4	0.0	8	-8.0
Receiver44	44	1 0.0	42.7	66	42.7	10		42.7	0.0	8	-8.0
Receiver45	45	1 0.0	44.9	66	44.9	10		44.9	0.0	8	-8.0
Receiver46	46	1 0.0	45.8	66	45.8	10		45.8	0.0	8	-8.0
Receiver47	47	1 0.0	39.0	66	39.0	10		39.0	0.0	8	-8.0
Receiver48	48	1 0.0	38.9	66	38.9	10		38.9	0.0	8	-8.0
Receiver49	49	1 0.0	39.0	66	39.0	10		39.0	0.0	8	-8.0
Receiver50	50	1 0.0	43.0	66	43.0	10		43.0	0.0	8	-8.0
Receiver51	51	1 0.0	43.8	66	43.8	10		43.8	0.0	8	-8.0
Receiver52	52	1 0.0	38.9	66	38.9	10		38.9	0.0	8	-8.0
Receiver53	53	1 0.0	37.3	66	37.3	10		37.3	0.0	8	-8.0
Receiver54	54	1 0.0	39.5	66	39.5	10		39.5	0.0	8	-8.0
Receiver55	55	1 0.0	42.2	66	42.2	10		42.2	0.0	8	-8.0
Receiver56	56	1 0.0	42.3	66	42.3	10		42.3	0.0	8	-8.0
Receiver57	57	1 0.0	38.4	66	38.4	10		38.4	0.0	8	-8.0
Receiver58	58	1 0.0	37.5	66	37.5	10		37.5	0.0	8	-8.0
Receiver59	59	1 0.0	38.7	66	38.7	10		38.7	0.0	8	-8.0
Receiver60	60	1 0.0	41.8	66	41.8	10		41.8	0.0	8	-8.0
Receiver61	61	1 0.0	40.7	66	40.7	10		40.7	0.0	8	-8.0
Receiver62	62	1 0.0	36.8	66	36.8	10		36.8	0.0	8	-8.0
Receiver63	63	1 0.0	37.5	66	37.5	10		37.5	0.0	8	-8.0
Receiver64	64	1 0.0	39.4	66	39.4	10		39.4	0.0	8	-8.0
Receiver65	65	1 0.0	40.5	66	40.5	10		40.5	0.0	8	-8.0
Receiver66	66	1 0.0	39.5	66	39.5	10		39.5	0.0	8	-8.0

RESULTS: SOUND LEVELS

B70508N1 Nordahl TM

Receiver67	67	1	0.0	35.8	66	35.8	10	 35.8	0.0	8	-8.0
Receiver69	69	1	0.0	36.8	66	36.8	10	 36.8	0.0	8	-8.0
Receiver70	70	1	0.0	36.0	66	36.0	10	 36.0	0.0	8	-8.0
Receiver72	72	1	0.0	38.5	66	38.5	10	 38.5	0.0	8	-8.0
Receiver73	73	1	0.0	39.6	66	39.6	10	 39.6	0.0	8	-8.0
Dwelling Units		# DUs	Noise Rec	duction							
			Min	Avg	Max						
			dB	dB	dB						
All Selected		70	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						

INPUT: TRAFFIC FOR LAeq1h Volumes	П		1		1	В	70508N1	Norda	hl TPM			
Eilar Associates				22 May	, 2017							
				TNM 2							-	
AH				I NIVI Z	.ວ 							
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	B70508N1	Nordahl T	PM									
RUN:	Future											
Roadway	Points											
Name	Name	No.	Segmen	it								
			Autos		MTruck	S	HTrucks	;	Buses		Motorcy	cles
			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
Nordahl	point11	11	1316	35	27	35	14	35	0	0	0	0
	point10	10	1316	35	27	35	14	35	0	0	0	0
	point9	9	1316	35	27	35	14	35	0	0	0	0
	point8	8	1316	35	27	35	14	35	0	0	0	0
	point7	7	1316	35	27	35	14	35	0	0	0	0
	point6	6	1316	35	27	35	14	35	0	0	0	0
	point5	5	1316			35	14			0	0	0
	point4	4	1316			35	14	35	0	0	0	0
	point3	3								0	0	
	point2	2	1316	35	27	35	14	35	0	0	0) C
	point1	1										
Roadway2	point12	12		0	0	0	0	0	0	0	0	0
	point13	13										
Pheasant Hill 1	point20	20		25	0	0	0	0	0	0	0	0
	point21	21										
Pheasant Hill 2	point22	22		25	0	0	0	0	0	0	0	0
	point23	23										
Pheasant Hill 3	point24	24		25	0	0	0	0	0	0	0	0
	point25	25										
Pheasant Hill 4	point26	26		25	0	0	0	0	0	0	0	0
	point27	27										

B70508N1 Nordahl TPM

REGGET G. GGGRE ELVELG			1			1	2.0000.11	TTO: dain				
Eilar Associates							22 May 20	17				
AH							TNM 2.5	11				
All							Calculate	d with TN	IM 2 5			
RESULTS: SOUND LEVELS							Calculate		IIVI Z.J			
PROJECT/CONTRACT:		B70508	N1 Nordah	ITPM								
RUN:		Future	ivi ivoluali	1 11 141								
BARRIER DESIGN:			HEIGHTS					Average	pavement type	e chall he use	d unless	•
BARRIER BESIGN.		1141 01	IILIGIIIG						nighway agenc			
ATMOSPHERICS:		90 dea	F, 50% RH						erent type with	-		
		ou deg	1,0070111			_		Or a anno	The type with		· · · · · · ·	
Receiver	N 1 -	"DII-	-	N - D'					West Damis			
Name	No.		Existing	No Barrier		•		-	With Barrier			
			LAeq1h	LAeq1h	0:41	Increase over	, -	Type	Calculated	Noise Reduc	1	Calaulatad
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated
							SubTinc					minus
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	Goal dB
			-	-	-					-		
Receiver1	1						_		59.7			8 -8.0
Receiver3	3		0.0						62.0			8 -8.0
Receiver4	4		0.0						63.3			8 -8.0
Receiver5	5		0.0						65.4			8 -8.0
Receiver6	6		0.0						58.0			8 -8.0
Receiver7	7		0.0						57.4			8 -8.0
Receiver8	8		0.0						59.3			8 -8.0
Receiver9	9		0.0				_		60.4	-		8 -8.0
Receiver10	10		0.0				_		62.0	-		8 -8.0
Receiver11	11		0.0						62.8			8 -8.0
Receiver12	12		0.0						56.0			8 -8.0
Receiver13			0.0				_		57.7			8 -8.0
Receiver14	14		0.0						58.7			
Receiver15 Receiver16	15 16		0.0						59.9 60.4			8 -8.0
Receiver 16	17								55.0			8 -8.0
Receiver 17 Receiver 18	18		0.0						55.8			8 -8.0
Receiver19	19		0.0						57.2			8 -8.0
Receiver 19 Receiver 20	20			_			_		58.4			8 -8.0
Receiver21	21		0.0						57.6			8 -8.0
Receiver22	22								53.6			8 -8.0
Receiver23	23		0.0						53.0			8 -8.0
Receiver24	24						_		55.3			8 -8.0
Receiver25	25								56.7			8 -8.0

RESULTS: SOUND LEVELS						B70508N1	Nordahl TI	PM			
Receiver26	26	1 0.0	55.0	66	55.0			55.0	0.0	8	-8.0
Receiver27	27	1 0.0	51.3	66	51.3	10		51.3	0.0	8	-8.0
Receiver28	28	1 0.0	52.4	66	52.4	10		52.4	0.0	8	-8.0
Receiver29	29	1 0.0	53.4	66	53.4	10		53.4	0.0	8	-8.0
Receiver30	30	1 0.0	54.2	66	54.2	10		54.2	0.0	8	-8.0
Receiver31	31	1 0.0	52.6	66	52.6	10		52.6	0.0	8	-8.0
Receiver32	32	1 0.0	48.9	66	48.9	10		48.9	0.0	8	-8.0
Receiver33	33	1 0.0	50.0	66	50.0	10		50.0	0.0	8	-8.0
Receiver34	34	1 0.0	50.5	66	50.5	10		50.5	0.0	8	-8.0
Receiver35	35	1 0.0	52.1	66	52.1	10		52.1	0.0	8	-8.0
Receiver36	36	1 0.0	50.6	66	50.6	10		50.6	0.0	8	-8.0
Receiver37	37	1 0.0	44.4	66	44.4	10		44.4	0.0	8	-8.0
Receiver38	38	1 0.0	47.2	66	47.2	10		47.2	0.0	8	-8.0
Receiver39	39	1 0.0	48.0	66	48.0	10		48.0	0.0	8	-8.0
Receiver40	40	1 0.0	49.5	66	49.5	10		49.5	0.0	8	-8.0
Receiver41	41	1 0.0	49.1	66	49.1	10		49.1	0.0	8	-8.0
Receiver42	42	1 0.0	41.3	66	41.3	10		41.3	0.0	8	-8.0
Receiver43	43	1 0.0	43.3	66	43.3	10		43.3	0.0	8	-8.0
Receiver44	44	1 0.0	44.5	66	44.5	10		44.5	0.0	8	-8.0
Receiver45	45	1 0.0	46.5	66	46.5	10		46.5	0.0	8	-8.0
Receiver46	46	1 0.0	47.3	66	47.3	10		47.3	0.0	8	-8.0
Receiver47	47	1 0.0	40.9	66	40.9	10		40.9	0.0	8	-8.0
Receiver48	48	1 0.0	40.8	66	40.8	10		40.8	0.0	8	-8.0
Receiver49	49	1 0.0	40.8	66	40.8	10		40.8	0.0	8	-8.0
Receiver50	50	1 0.0	44.8	66	44.8	10		44.8	0.0	8	-8.0
Receiver51	51	1 0.0	45.5	66	45.5	10		45.5	0.0	8	-8.0
Receiver52	52	1 0.0	40.8	66	40.8	10		40.8	0.0	8	-8.0
Receiver53	53	1 0.0	39.2	66	39.2	10		39.2	0.0	8	-8.0
Receiver54	54	1 0.0	41.4	66	41.4	10		41.4	0.0	8	-8.0
Receiver55	55	1 0.0	44.0	66	44.0	10		44.0	0.0	8	-8.0
Receiver56	56	1 0.0	44.1	66	44.1	10		44.1	0.0	8	-8.0
Receiver57	57	1 0.0	40.2	66	40.2	10		40.2	0.0	8	-8.0
Receiver58	58	1 0.0	39.3	66	39.3	10		39.3	0.0	8	-8.0
Receiver59	59	1 0.0	40.6	66	40.6	10		40.6	0.0	8	-8.0
Receiver60	60	1 0.0	43.6	66	43.6	10		43.6	0.0	8	-8.0
Receiver61	61	1 0.0	42.6	66	42.6	10		42.6	0.0	8	-8.0
Receiver62	62	1 0.0	38.6	66	38.6	10		38.6	0.0	8	-8.0
Receiver63	63	1 0.0	39.3	66	39.3	10		39.3	0.0	8	-8.0
Receiver64	64	1 0.0	41.3	66	41.3	10		41.3	0.0	8	-8.0
Receiver65	65	1 0.0	42.4	66	42.4	10		42.4	0.0	8	-8.0
Receiver66	66	1 0.0	41.3	66	41.3	10		41.3	0.0	8	-8.0

RESULTS: SOUND LEVELS

B70508N1 Nordahl TPM

Receiver67	67	1	0.0	37.7	66	37.7	10	 37.7	0.0	8	-8.0
Receiver69	69	1	0.0	38.7	66	38.7	10	 38.7	0.0	8	-8.0
Receiver70	70	1	0.0	37.8	66	37.8	10	 37.8	0.0	8	-8.0
Receiver72	72	1	0.0	40.4	66	40.4	10	 40.4	0.0	8	-8.0
Receiver73	73	1	0.0	41.5	66	41.5	10	 41.5	0.0	8	-8.0
Dwelling Units		# DUs	Noise Rec	duction							
			Min	Avg	Max						
			dB	dB	dB						
All Selected		70	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						

INPUT: TERRAIN LINES B70508N1 Nor

IN OI. TERRAIN EINEO				
Eilar Associates			24 October 2	017
AH			TNM 2.5	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	B70508	3N1 Nordahl 1	PM	1
RUN:	Future	(County Com	ments) Unmi	tigated
Terrain Line	Points			
Name	No.	Coordinates	(around)	
		X	Y	Z
		ft	ft	ft
Terrain Line1	1	-11.3	-89.6	750.00
Terrain Eine i	2			750.00
	3			750.00
	4		-62.6	
	5		21.7	750.00
	6		72.0	750.00
	7	49.2	70.0	
	8		87.6	
Terrain Line3	18		2.0	770.00
Torrain Emiles	19		18.7	770.00
	20			770.00
	21	-146.3		
	22		67.5	
	23		83.8	
	24		123.1	770.00
	25			
	26			770.00
	27	-70.9		
	28	-60.7	221.4	
	29	-59.8	230.8	
	30	-51.8	245.7	770.00
Terrain Line4	31	-222.0	64.3	780.00
	32	-219.5	77.8	780.00
	33	-215.4	80.0	780.00
	34	-207.3	114.8	780.00
	35	-198.2	134.8	780.00
	36	-181.3	157.1	780.00
	37	-163.4	169.9	780.00
	38	-155.6	188.4	780.00
	39	-131.8	219.1	780.00
	40	-126.1	248.3	780.00
	41	-144.9	275.8	780.00
Terrain Line5	42	-274.9	38.3	790.00
	43	-289.9	65.5	790.00
	44	-300.3	105.8	790.00
	45	-300.8	138.7	790.00
	46	-305.5	165.0	790.00

IIII OI. IEKKAIII EIIIEO				
	47	-289.8	189.5	790.00
	48	-276.3	199.8	790.00
	49	-268.6	216.8	790.00
	50	-221.9	212.4	790.00
	51	-192.1	232.5	790.00
	52	-191.2	247.3	790.00
	53	-233.2	257.4	790.00
	54	-266.9	248.5	790.00
	55	-291.1	245.6	790.00
	56	-327.0	244.4	790.00
	57	-362.6	228.4	790.00
	58	-382.8	200.8	790.00
	59	-379.0	170.5	790.00
	60	-408.8	129.1	790.00
Terrain Line7	67	-427.8	149.3	788.00
	68	-413.0	166.3	788.00
	69	-415.2	194.8	788.00
	70	-395.2	213.9	788.00
	71	-387.0	229.9	788.00
	72	-361.3	260.3	788.00
	73	-356.6	279.1	788.00
	74	-341.6	289.7	788.00
	75	-302.4	286.9	788.00
	76	-266.4	274.4	788.00
	77	-219.4	277.5	788.00
	78	-207.8	265.3	788.00
	79	-175.2	256.5	788.00
Terrain Line8	80	-432.5	147.2	786.00
	81	-419.0	165.6	786.00
	82	-424.3	202.3	786.00
	83	-412.7	225.5	786.00
	84	-387.7	259.0	786.00
	85	-381.7	279.4	786.00
	86	-354.1	316.0	786.00
	87	-346.0	320.1	786.00
	88	-342.5	351.4	786.00
	89	-328.7	364.6	786.00
	90	-330.0	378.1	786.00
	91	-356.0	397.8	786.00
	92	-353.8	411.6	786.00
	93	-395.2	450.8	786.00
	94	-446.9	474.0	786.00
	95	-477.3	475.8	786.00
Terrain Line9	96	-447.2	157.5	780.00
	97	-438.1	174.1	780.00
	98	-434.3	188.8	780.00
	99	-462.2	227.7	780.00
	100	-459.1	242.1	780.00

INPUT: TERRAIN LINES B70508N1 Nor

INPUI: TERRAIN LINES				
	101	-444.1	259.3	780.00
	102	-440.0	275.9	780.00
	103	-425.9	307.6	780.00
	104	-425.3	322.6	780.00
	105	-431.2	346.7	780.00
	106	-425.6	366.5	780.00
	107	-425.6	384.7	780.00
	108	-430.6	393.7	780.00
	109	-434.7	410.7	780.00
	110	-448.1	423.8	780.00
	111	-489.8	440.7	780.00
	112	-615.4	525.0	780.00
Terrain Line10	113	-463.2	170.7	770.00
	114	-451.9	186.3	770.00
	115	-520.5	269.7	770.00
	116	-504.8	293.5	770.00
	117	-496.1	322.0	770.00
	118	-502.3	365.2	770.00
	119	-538.4	401.9	770.00
	120		428.2	
		-588.5		770.00
	121	-653.0	469.6	770.00
Tamain Line 44	122	-667.8	474.0	770.00
Terrain Line11	123	-695.3	333.6	760.00
	124	-682.2	361.2	760.00
	125	-668.4	366.2	760.00
	126	-593.5	317.3	760.00
	127	-596.6	337.0	760.00
	128	-603.8	350.2	760.00
	129	-622.0	367.7	760.00
	130	-686.3	411.9	760.00
	131	-711.9	411.3	760.00
	132	-739.2	434.2	760.00
Terrain Line12	133	-718.8	347.7	750.00
	134	-724.2	368.0	750.00
	135	-736.1	373.1	750.00
	136	-742.3	388.4	750.00
	137	-760.8	400.6	750.00
Terrain Line13	138	-75.8	-52.9	758.00
	146	-40.2	-78.8	758.00
	139	-1.5	-20.3	758.00
	140	-0.1	40.7	758.00
Terrain Line14	141	-83.2	90.5	767.50
-	142	-35.8	92.7	767.50
	143	-16.1	96.0	767.50
	144	-15.2	119.3	767.50
		10.4	110.0	, , , , , , ,
	147	-38.0	148.6	767.50

INPUT: RECEIVERS								B70508N	l Nordahl	TPM		
Eilar Associates						24 Octobe	er 2017					
АН						TNM 2.5						
INPUT: RECEIVERS												
PROJECT/CONTRACT:	B7050	08N1 No	ordahl TPM									
RUN:	Futur	e (Cour	nty Comments	s) Unmitigate	d							
Receiver												
Name	No.	#DUs	Coordinates	(ground)		Height	Input Sou	nd Levels	and Crite	ria	Δ	Active
			X	Υ	Z	above	Existing	Impact Cı	riteria	NR	ir	n
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	С	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB		
151	127	1	-112.9	-24.9	758.00	4.92	0.00	66	6 10	0.0	8.0	
152	128	3 1	-89.6	7.8	758.00	4.92	0.00	66	6 10	0.0	8.0	
153	129) 1	-71.6	-5.2	758.00	4.92	0.00	66	6 10	0.0	8.0	
154	130) 1	-94.3	-37.6	758.00	4.92	0.00	66	6 10	0.0	8.0	
11	132	2 1	-99.4	114.8	767.50	4.92	0.00	66	6 10	0.0	8.0	Υ
12	133	3 1	-62.3	164.3	767.50	4.92	0.00	66	3 10	0.0	8.0	Υ
13	134	1	-52.9	119.9	767.50	4.92	0.00	66	3 10	0.0	8.0	Υ

RESULTS: SOUND LEVELS			_				B70508N1	Nordahl T	PM			
Eilar Associates							24 Octobe	r 2017				
							_	2017				
AH							TNM 2.5	1				
550111 TO 6011N15 51/51 6							Calculated	a with INI	/I 2.5			
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:			N1 Nordah									
RUN:				omments) Un	mitigated			_				
BARRIER DESIGN:		INPUT	HEIGHTS					_	pavement type			
									ighway agenc	-		
ATMOSPHERICS:		90 deg	F, 50% RH					of a diffe	rent type with	approval of F	HWA.	
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over	existing	Туре	Calculated	Noise Reduc	tion	
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
151	127	1	0.0	55.4	66	55.4	. 10		55.4	0.0	8	-8.0
152	128	1	0.0	56.1	66	56.1	10		56.1	0.0	3	-8.0
153	129	1	0.0	57.7	66	57.7	10		57.7	0.0	3	-8.0
154	130	1	0.0	56.5	66	56.5	10		56.5	0.0	3	-8.0
11	132	1	0.0	56.1	66	56.1	10		56.1	0.0	3	-8.0
12	133	1	0.0	58.3	66	58.3	10		58.3	0.0	3	-8.0
13	134	1	0.0	58.9	66	58.9	10		58.9	0.0	3	-8.0
Dwelling Units		# DUs	Noise Red	duction								
			Min	Avg	Max							
			dB	dB	dB							
All Selected		7	0.0	0.0	0.0							
All Impacted		C	0.0	0.0	0.0							
All that meet NR Goal		C	0.0	0.0	0.0)						

INPUT: BARRIERS B70508N1 Nordahl TPM

							_									_	_	
Eilar Associates					24 Octo	ber 201	7											
AH					TNM 2.	5												
INPUT: BARRIERS																		
PROJECT/CONTRACT:	B7050	08N1 Nor	rdahl TP	M														
RUN:	Futur	e (Count	y Comm	ents) Mi	tigated													
Barrier									Points									
Name	Type	Height		If Wall	If Berm	1		Add'tnl	Name	No.	Coordinates	(bottom)	,	Height	Segment			
		Min	Max	\$ per	\$ per	Тор	Run:Rise	\$ per			Х	Υ	Z	at	Seg Ht Per	urbs	On	Importar
				Unit	Unit	Width		Unit						Point	Incre- #Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment			tions?
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft			ft	ft	ft	ft	ft			
Lot 1 wall	W	0.00	99.99	0.00				0.00	point18	18	-83.3	91.4	767.50	2.13	0.00) ()	
									point19	19	-34.6	93.8	767.50	2.13	0.00) ()	
									point20	20	-17.5	96.5	767.50	2.13	0.00) ()	
									point21	21	-16.3	119.6	767.50	2.13	0.00) ()	
									point22	22	-38.7	147.8	767.50	2.13	0.00) ()	
									point23	23	-68.2	173.3	767.50	2.13				

RESULTS: SOUND LEVELS				-		B70508N1	Nordahl T	PM			
							004=				
Eilar Associates						24 Octobe	er 2017				
АН						TNM 2.5					
						Calculated	d with TNI	/I 2.5			
RESULTS: SOUND LEVELS											
PROJECT/CONTRACT:	B70508	N1 Nordah	ITPM								
RUN:	Future	(County Co	omments) Mit	igated							
BARRIER DESIGN:	INPUT	HEIGHTS					Average	pavement type	shall be use	d unless	
							a State h	ighway agenc	y substantiate	s the use	•
ATMOSPHERICS:	90 deg	F, 50% RH					of a diffe	rent type with	approval of F	HWA.	
Receiver											
Name No.	#DUs	Existing	No Barrier					With Barrier			
		LAeq1h	LAeq1h		Increase over	existing	Туре	Calculated	Noise Reduc	tion	
			Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
						Sub'l Inc					minus
											Goal
		dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
11 132	2 1	0.0	55.8	66	55.8	10		55.8	0.0		8 -8.0
12	3 1	0.0	57.8	66	57.8	10		57.8	0.0		-8.0
13	1 1	0.0	58.2	66	58.2	10		58.2	0.0		-8.0
Dwelling Units	# DUs	Noise Red	duction								
		Min	Avg	Max							
		dB	dB	dB							
All Selected	3	0.0	0.0	0.0							
All Impacted	C	0.0	0.0	0.0							
All that meet NR Goal	0	0.0	0.0	0.0							

INPUT: RECEIVERS	·	1						B70508N1	Nordahl T	<u>РМ</u>	
Files Associates						00 May 0	047				
Eilar Associates						22 May 20	J17				
AH						TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	B7050	8N1 N	ordahl TPM		1						
RUN:	Future)									
Receiver											
Name	No.	#DUs	Coordinates (ground)		Height	Input Sou	nd Levels	and Criteri	a	Active
			X	Y	Z	above	Existing	Impact Cr	iteria	NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft f	t	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	-37.3	-109.5	750.06	15.00	0.00	66	10.0	8.0	0 Y
Receiver3	3	1	-8.7	-42.7	754.98	15.00	0.00	66	10.0	8.0	0 Y
Receiver4	4	1	21.7	22.0	754.98	15.00	0.00	66	10.0	8.0	0 Y
Receiver5	5	1	53.4	90.6	754.62	15.00	0.00	66	10.0	8.0	0 Y
Receiver6	6	1	87.3	164.8	747.24	15.00	0.00	66	10.0	8.0	0 Y
Receiver7	7	1	-96.8	-70.0	761.54	15.00	0.00	66	10.0	8.0	
Receiver8	8	1	-63.4	-6.2	763.18	15.00	0.00	66	10.0	8.0	
Receiver9	9	1	-31.7	56.3	760.62	15.00	0.00	66	10.0	8.0	
Receiver10	10			121.8							
Receiver11	11		40.0	193.0						8.0	
Receiver12	12			-31.0							
Receiver13	13		-	31.1	771.28						
Receiver14	14			92.7	769.97						
Receiver15	15			157.9							
Receiver16	16			229.5							
Receiver17	17			5.1	783.39						
Receiver18	18			66.7	779.09						
Receiver19	19			127.1	778.67						
Receiver20	20			195.2							
Receiver21	21			261.6							
Receiver22	22			45.0	792.02	15.00	0.00	66	10.0	8.0	
Receiver23	23	1	-233.8	101.9	787.03	15.00	0.00	66	10.0	8.0	0 Y

Receiver25	INPUT: RECEIVERS							В7	0508N1 No	rdahl TPM		
Receiver26	Receiver24	24	1	-198.8	162.6	787.16	15.00	0.00	66	10.0	8.0	Υ
Receiver27 27 1 -324.6 80.0 793.23 15.00 0.00 66 10.0 8.0 Receiver28 28 1 -287.9 141.3 792.31 15.00 0.00 66 10.0 8.0 Receiver29 29 1 -254.1 198.7 792.61 15.00 0.00 66 10.0 8.0 Receiver30 30 1 -217.4 260.5 793.13 15.00 0.00 66 10.0 8.0 Receiver30 30 1 -377.5 331.6 779.55 15.00 0.00 66 10.0 8.0 Receiver31 31 1 -177.5 331.6 779.55 15.00 0.00 66 10.0 8.0 Receiver32 32 1 -386.9 121.6 793.23 15.00 0.00 66 10.0 8.0 Receiver33 33 1 -386.9 121.6 793.23 15.00 0.00 66 10.0 8.0 Receiver34 34 1 -341.2 235.9 179.6 793.23 15.00 0.00 66 10.0 8.0 Receiver34 34 1 -341.2 235.9 793.23 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -273.7 296.6 792.51 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -273.8 366.6 782.01 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -233.8 366.6 782.01 15.00 0.00 66 10.0 8.0 Receiver38 38 1 -408.1 215.9 791.62 15.00 0.00 66 10.0 8.0 Receiver38 38 1 -408.1 215.9 791.62 15.00 0.00 66 10.0 8.0 Receiver39 39 1 -373.3 272.3 791.62 15.00 0.00 66 10.0 8.0 Receiver30 39 1 -373.3 272.3 791.62 15.00 0.00 66 10.0 8.0 Receiver30 39 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver30 39 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.2 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver41 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver41 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver46 48 1 -541.3 381.8 777.12 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver46 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 340.1 777.12 15.00 0.00 66 10.0 8.0 Receiver45 51 -451.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver45 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15	Receiver25	25	1	-162.1	226.6	789.20	15.00	0.00	66	10.0	8.0	Υ
Receiver28	Receiver26	26	1	-123.3	295.0	777.52	15.00	0.00	66	10.0	8.0	Υ
Receiver29 29 1 -254.1 198.7 792.61 15.00 0.00 66 10.0 8.0 Receiver30 30 1 -217.4 260.5 793.13 15.00 0.00 66 10.0 8.0 Receiver31 31 1 -177.5 331.6 779.55 15.00 0.00 66 10.0 8.0 Receiver32 32 1 -386.9 121.6 793.23 15.00 0.00 66 10.0 8.0 Receiver33 33 1 -351.9 179.6 793.23 15.00 0.00 66 10.0 8.0 Receiver34 34 1 -314.2 235.9 793.23 15.00 0.00 66 10.0 8.0 Receiver35 35 1 -273.7 296.6 792.51 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -233.8 366.6 782.01 15.00 0.00 66 10.0 8.0 Receiver37 37 1 -444.1 155.6 785.7 15.00 0.00 66 10.0 8.0 Receiver37 37 1 -444.1 155.6 785.7 15.00 0.00 66 10.0 8.0 Receiver39 38 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver41 44 1 -430.2 310.1 784.64 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.92 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 77.04 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 786.2 15.00 0.00 66 10.0 8.0 Receiver52 52 52 1 -501.4 442.5 784.24 15.00	Receiver27	27	1	-324.6	80.0	793.23	15.00	0.00	66	10.0	8.0	Υ
Receiver30 30 1 -217.4 260.5 793.13 15.00 0.00 66 10.0 8.0 Receiver31 31 1 -177.5 331.6 779.55 15.00 0.00 66 10.0 8.0 Receiver32 32 1 -386.9 121.6 793.23 15.00 0.00 66 10.0 8.0 Receiver34 34 1 -314.2 235.9 793.23 15.00 0.00 66 10.0 8.0 Receiver35 35 1 -273.7 296.6 792.51 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -233.8 366.6 782.01 15.00 0.00 66 10.0 8.0 Receiver37 37 1 -444.1 158.6 785.72 15.00 0.00 66 10.0 8.0 Receiver38 38 1 -408.1 158.6 795.2 15.00 0.00 <td>Receiver28</td> <td>28</td> <td>1</td> <td>-287.9</td> <td>141.3</td> <td>792.31</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver28	28	1	-287.9	141.3	792.31	15.00	0.00	66	10.0	8.0	Υ
Receiver31	Receiver29	29	1	-254.1	198.7	792.61	15.00	0.00	66	10.0	8.0	Υ
Receiver32 32 1 -386.9 121.6 793.23 15.00 0.00 66 10.0 8.0 Receiver33 33 1 -351.9 179.6 793.23 15.00 0.00 66 10.0 8.0 Receiver34 34 1 -314.2 235.9 793.23 15.00 0.00 66 10.0 8.0 Receiver36 35 1 -273.7 296.6 792.51 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -233.8 366.6 782.01 15.00 0.00 66 10.0 8.0 Receiver37 37 1 -444.1 158.6 785.72 15.00 0.00 66 10.0 8.0 Receiver38 38 1 -473.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.82 15.00 0.00 <td>Receiver30</td> <td>30</td> <td>1</td> <td>-217.4</td> <td>260.5</td> <td>793.13</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver30	30	1	-217.4	260.5	793.13	15.00	0.00	66	10.0	8.0	Υ
Receiver33	Receiver31	31	1	-177.5	331.6	779.55	15.00	0.00	66	10.0	8.0	Υ
Receiver34	Receiver32	32	1	-386.9	121.6	793.23	15.00	0.00	66	10.0	8.0	Υ
Receiver35 35 1 -273.7 296.6 792.51 15.00 0.00 66 10.0 8.0 Receiver36 36 1 -233.8 366.6 782.01 15.00 0.00 66 10.0 8.0 Receiver37 37 1 -444.1 158.6 785.72 15.00 0.00 66 10.0 8.0 Receiver38 38 1 -408.1 215.9 791.82 15.00 0.00 66 10.0 8.0 Receiver39 39 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 <td>Receiver33</td> <td>33</td> <td>1</td> <td>-351.9</td> <td>179.6</td> <td>793.23</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver33	33	1	-351.9	179.6	793.23	15.00	0.00	66	10.0	8.0	Υ
Receiver36	Receiver34	34	1	-314.2	235.9	793.23	15.00	0.00	66	10.0	8.0	Υ
Receiver37 37 1 -444.1 158.6 785.72 15.00 0.00 66 10.0 8.0 Receiver38 38 1 -408.1 215.9 791.82 15.00 0.00 66 10.0 8.0 Receiver39 39 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 66 10.0 8.0 Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 <td>Receiver35</td> <td>35</td> <td>1</td> <td>-273.7</td> <td>296.6</td> <td>792.51</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver35	35	1	-273.7	296.6	792.51	15.00	0.00	66	10.0	8.0	Υ
Receiver38 38 1 -408.1 215.9 791.82 15.00 0.00 66 10.0 8.0 Receiver39 39 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 66 10.0 8.0 Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 <td>Receiver36</td> <td>36</td> <td>1</td> <td>-233.8</td> <td>366.6</td> <td>782.01</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver36	36	1	-233.8	366.6	782.01	15.00	0.00	66	10.0	8.0	Υ
Receiver39 39 1 -373.3 272.3 791.82 15.00 0.00 66 10.0 8.0 Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 66 10.0 8.0 Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 <td>Receiver37</td> <td>37</td> <td>1</td> <td>-444.1</td> <td>158.6</td> <td>785.72</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver37	37	1	-444.1	158.6	785.72	15.00	0.00	66	10.0	8.0	Υ
Receiver40 40 1 -333.4 337.0 791.23 15.00 0.00 66 10.0 8.0 Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 66 10.0 8.0 Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 <td>Receiver38</td> <td>38</td> <td>1</td> <td>-408.1</td> <td>215.9</td> <td>791.82</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver38	38	1	-408.1	215.9	791.82	15.00	0.00	66	10.0	8.0	Υ
Receiver41 41 1 -290.9 400.8 784.64 15.00 0.00 66 10.0 8.0 Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 66 10.0 8.0 Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 <td>Receiver39</td> <td>39</td> <td>1</td> <td>-373.3</td> <td>272.3</td> <td>791.82</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver39	39	1	-373.3	272.3	791.82	15.00	0.00	66	10.0	8.0	Υ
Receiver42 42 1 -502.3 197.2 773.19 15.00 0.00 66 10.0 8.0 Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 <td>Receiver40</td> <td>40</td> <td>1</td> <td>-333.4</td> <td>337.0</td> <td>791.23</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver40	40	1	-333.4	337.0	791.23	15.00	0.00	66	10.0	8.0	Υ
Receiver43 43 1 -466.2 254.1 783.06 15.00 0.00 66 10.0 8.0 Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -612.9 <td>Receiver41</td> <td>41</td> <td>1</td> <td>-290.9</td> <td>400.8</td> <td>784.64</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver41	41	1	-290.9	400.8	784.64	15.00	0.00	66	10.0	8.0	Υ
Receiver44 44 1 -430.2 310.1 784.37 15.00 0.00 66 10.0 8.0 Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 <td>Receiver42</td> <td>42</td> <td>1</td> <td>-502.3</td> <td>197.2</td> <td>773.19</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver42	42	1	-502.3	197.2	773.19	15.00	0.00	66	10.0	8.0	Υ
Receiver45 45 1 -388.5 370.9 787.92 15.00 0.00 66 10.0 8.0 Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 <td>Receiver43</td> <td>43</td> <td>1</td> <td>-466.2</td> <td>254.1</td> <td>783.06</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver43	43	1	-466.2	254.1	783.06	15.00	0.00	66	10.0	8.0	Υ
Receiver46 46 1 -347.3 434.2 787.29 15.00 0.00 66 10.0 8.0 Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 <td>Receiver44</td> <td>44</td> <td>1</td> <td>-430.2</td> <td>310.1</td> <td>784.37</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver44	44	1	-430.2	310.1	784.37	15.00	0.00	66	10.0	8.0	Υ
Receiver47 47 1 -558.2 234.1 770.40 15.00 0.00 66 10.0 8.0 Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 <td>Receiver45</td> <td>45</td> <td>1</td> <td>-388.5</td> <td>370.9</td> <td>787.92</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver45	45	1	-388.5	370.9	787.92	15.00	0.00	66	10.0	8.0	Υ
Receiver48 48 1 -521.0 291.0 773.58 15.00 0.00 66 10.0 8.0 Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 <td>Receiver46</td> <td>46</td> <td>1</td> <td>-347.3</td> <td>434.2</td> <td>787.29</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver46	46	1	-347.3	434.2	787.29	15.00	0.00	66	10.0	8.0	Υ
Receiver49 49 1 -485.0 345.1 777.12 15.00 0.00 66 10.0 8.0 Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 <td>Receiver47</td> <td>47</td> <td>1</td> <td>-558.2</td> <td>234.1</td> <td>770.40</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver47	47	1	-558.2	234.1	770.40	15.00	0.00	66	10.0	8.0	Υ
Receiver50 50 1 -446.1 407.5 784.14 15.00 0.00 66 10.0 8.0 Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 <td>Receiver48</td> <td>48</td> <td>1</td> <td>-521.0</td> <td>291.0</td> <td>773.58</td> <td>15.00</td> <td>0.00</td> <td>66</td> <td>10.0</td> <td>8.0</td> <td>Υ</td>	Receiver48	48	1	-521.0	291.0	773.58	15.00	0.00	66	10.0	8.0	Υ
Receiver51 51 1 -403.5 471.5 788.02 15.00 0.00 66 10.0 8.0 Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver49	49	1	-485.0	345.1	777.12	15.00	0.00	66	10.0	8.0	Υ
Receiver52 52 1 -612.9 270.2 767.71 15.00 0.00 66 10.0 8.0 Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver50	50	1	-446.1	407.5	784.14	15.00	0.00	66	10.0	8.0	Υ
Receiver53 53 1 -576.3 329.3 766.92 15.00 0.00 66 10.0 8.0 Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver51	51	1	-403.5	471.5	788.02	15.00	0.00	66	10.0	8.0	Υ
Receiver54 54 1 -541.3 381.8 773.12 15.00 0.00 66 10.0 8.0 Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver52	52	1	-612.9	270.2	767.71	15.00	0.00	66	10.0	8.0	Υ
Receiver55 55 1 -501.4 442.5 784.24 15.00 0.00 66 10.0 8.0 Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver53	53	1	-576.3	329.3	766.92	15.00	0.00	66	10.0	8.0	Υ
Receiver56 56 1 -459.3 504.8 782.18 15.00 0.00 66 10.0 8.0 Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver54	54	1	-541.3	381.8	773.12	15.00	0.00	66	10.0	8.0	Υ
Receiver57 57 1 -670.9 307.4 764.69 15.00 0.00 66 10.0 8.0	Receiver55	55	1	-501.4	442.5	784.24	15.00	0.00	66	10.0	8.0	Υ
	Receiver56	56	1	-459.3	504.8	782.18	15.00	0.00	66	10.0	8.0	Υ
Receiver58 58 1 -634.3 364.3 764.98 15.00 0.00 66 10.0 8.0	Receiver57	57	1	-670.9	307.4	764.69	15.00	0.00	66	10.0	8.0	Υ
	Receiver58	58	1	-634.3	364.3	764.98	15.00	0.00	66	10.0	8.0	Υ
Receiver59 59 1 -600.3 418.4 772.86 15.00 0.00 66 10.0 8.0	Receiver59	59	1	-600.3	418.4	772.86	15.00	0.00	66	10.0	8.0	Υ

INPUT: RECEIVERS							ı	B70508N1 N	ordahl TPI	М	
Receiver60	60	1	-557.1	481.3	784.41	15.00	0.00	66	10.0	8.0	Υ
Receiver61	61	1	-518.3	540.4	773.65	15.00	0.00	66	10.0	8.0	Υ
Receiver62	62	1	-722.3	341.3	753.50	15.00	0.00	66	10.0	8.0	Υ
Receiver63	63	1	-687.3	400.4	764.98	15.00	0.00	66	10.0	8.0	Υ
Receiver64	64	1	-653.4	452.9	772.86	15.00	0.00	66	10.0	8.0	Υ
Receiver65	65	1	-616.2	515.8	783.78	15.00	0.00	66	10.0	8.0	Υ
Receiver66	66	1	-573.5	574.8	765.84	15.00	0.00	66	10.0	8.0	Υ
Receiver67	67	1	-778.9	381.1	746.61	15.00	0.00	66	10.0	8.0	Υ
Receiver69	69	1	-745.8	437.6	761.93	15.00	0.00	66	10.0	8.0	Υ
Receiver70	70	1	-712.7	487.9	765.02	15.00	0.00	66	10.0	8.0	Υ
Receiver72	72	1	-674.8	552.7	766.56	15.00	0.00	66	10.0	8.0	Υ

618.1

755.77

15.00

0.00

66

10.0

8.0

Υ

-639.0

73

Receiver73

B70508N1 Nordahl TPM

			1				2.0000.11	110.44					
Eilar Associates							22 May 20	17					
AH							_ 22 May 20 TNM 2.5	11					
АП							Calculate	d with TNA	125				
RESULTS: SOUND LEVELS							Calculate	u with tinn	n 2.5				
PROJECT/CONTRACT:		DZOEGO	N1 Nordah	LTDM									
		-	N'i Nordan	II I PIVI									
RUN:		Future	LIFIGUITO					.					
BARRIER DESIGN:		INPUI	HEIGHTS						pavement typ				
ATMOSPHERICS:		00 dos	E 600/ DU	•					ghway agenc	-		ie	
		90 deg	F, 50% RH	l	-	+		or a differ	rent type with	approval of F	TOVA.		
Receiver													
Name	No.		Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h	Î.	Increase over	, -	Туре	Calculated	Noise Reduc	ction		
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculate	∌d
							Sub'l Inc					minus	
												Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
Receiver1	1		0.0	61.8	66	61.8	10		61.8	0.0)	8	-8.0
Receiver3	3	1	0.0	62.6	66	62.6	10		62.6	0.0)	8	-8.0
Receiver4	4	1	0.0	63.9	66	63.9	10		63.9	0.0)	8	-8.0
Receiver5	5	1	0.0	65.8	66	65.8	10		65.8	0.0)	8	-8.0
Receiver6	6	1	0.0	69.4	66	69.4	10	Snd Lvl	69.4	0.0)	8	-8.0
Receiver7	7	1	0.0	59.8	66	59.8	10		59.8	0.0)	8	-8.0
Receiver8	8	1	0.0	60.5	66	60.5	10		60.5	0.0)	8	-8.0
Receiver9	9	1	0.0	61.4	66	61.4	10		61.4	0.0)	8	-8.0
Receiver10	10	1	0.0	62.8	66	62.8	10		62.8	0.0)	8	-8.0
Receiver11	11		0.0	64.5	66	64.5	10		64.5	0.0)	8	-8.0
Receiver12	12		0.0	58.4	66	58.4	10		58.4	0.0)	8	-8.0
Receiver13	13	1	0.0	58.8	66	58.8	10		58.8	0.0)	8	-8.0
Receiver14	14	1	0.0	59.6	66	59.6	10		59.6	0.0)	8	-8.0
Receiver15	15	1	0.0	60.7	66	60.7	10		60.7	0.0)	8	-8.0
Receiver16	16	1	0.0	61.7	66	61.7	10		61.7	0.0)	8	-8.0
Receiver17	17	1	0.0	56.9	66	56.9	10		56.9	0.0)	8	-8.0
Receiver18	18	1	0.0	57.4	66	57.4	10		57.4	0.0)	8	-8.0
Receiver19	19		0.0				_		58.1			8	-8.0
Receiver20	20		0.0	59.0	66	59.0	10		59.0	0.0)	8	-8.0
Receiver21	21		0.0	59.8			10		59.8	0.0)	8	-8.0
Receiver22	22	1	0.0	55.6	66	55.6	10		55.6	0.0)	8	-8.0
Receiver23	23	1	0.0	56.1	66	56.1	10		56.1	0.0)	8	-8.0
Receiver24	24		0.0	56.8	66	56.8	10		56.8	0.0)	8	-8.0
Receiver25	25	1	0.0	57.5	66	57.5	10		57.5	0.0)	8	-8.0

RESULTS: SOUND LEVELS		B70508N1 Nordahl TPM									
Receiver26	26	1 0.0	58.0	66	58.0	10		58.0	0.0	8	-8.0
Receiver27	27	1 0.0	54.0	66	54.0	10		54.0	0.0	8	-8.0
Receiver28	28	1 0.0	54.8	66	54.8	10		54.8	0.0	8	-8.0
Receiver29	29	1 0.0	55.5	66	55.5	10		55.5	0.0	8	-8.0
Receiver30	30	1 0.0	56.1	66	56.1	10		56.1	0.0	8	-8.0
Receiver31	31	1 0.0	56.7	66	56.7	10		56.7	0.0	8	-8.0
Receiver32	32	1 0.0	52.1	66	52.1	10		52.1	0.0	8	-8.0
Receiver33	33	1 0.0	52.8	66	52.8	10		52.8	0.0	8	-8.0
Receiver34	34	1 0.0	53.5	66	53.5	10		53.5	0.0	8	-8.0
Receiver35	35	1 0.0	54.5	66	54.5	10		54.5	0.0	8	-8.0
Receiver36	36	1 0.0	54.8	66	54.8	10		54.8	0.0	8	-8.0
Receiver37	37	1 0.0	49.4	66	49.4	10		49.4	0.0	8	-8.0
Receiver38	38	1 0.0	51.1	66	51.1	10		51.1	0.0	8	-8.0
Receiver39	39	1 0.0	51.8	66	51.8	10		51.8	0.0	8	-8.0
Receiver40	40	1 0.0	52.7	66	52.7	10		52.7	0.0	8	-8.0
Receiver41	41	1 0.0	53.1	66	53.1	10		53.1	0.0	8	-8.0
Receiver42	42	1 0.0	45.6	66	45.6	10		45.6	0.0	8	-8.0
Receiver43	43	1 0.0	47.6	66	47.6	10		47.6	0.0	8	-8.0
Receiver44	44	1 0.0	48.5	66	48.5	10		48.5	0.0	8	-8.0
Receiver45	45	1 0.0	50.3	66	50.3	10		50.3	0.0	8	-8.0
Receiver46	46	1 0.0	51.2	66	51.2	10		51.2	0.0	8	-8.0
Receiver47	47	1 0.0	44.7	66	44.7	10		44.7	0.0	8	-8.0
Receiver48	48	1 0.0	45.1	66	45.1	10		45.1	0.0	8	-8.0
Receiver49	49	1 0.0	45.4	66	45.4	10		45.4	0.0	8	-8.0
Receiver50	50	1 0.0	47.9	66	47.9	10		47.9	0.0	8	-8.0
Receiver51	51	1 0.0	49.2	66	49.2	10		49.2	0.0	8	-8.0
Receiver52	52	1 0.0	44.1	66	44.1	10		44.1	0.0	8	-8.0
Receiver53	53	1 0.0	43.3	66	43.3	10		43.3	0.0	8	-8.0
Receiver54	54	1 0.0	44.5	66	44.5	10		44.5	0.0	8	-8.0
Receiver55	55	1 0.0	46.7	66	46.7	10		46.7	0.0	8	-8.0
Receiver56	56	1 0.0	47.5	66	47.5	10		47.5	0.0	8	-8.0
Receiver57	57	1 0.0	42.9	66	42.9	10		42.9	0.0	8	-8.0
Receiver58	58	1 0.0	42.1	66	42.1	10		42.1	0.0	8	-8.0
Receiver59	59	1 0.0	43.9	66	43.9	10		43.9	0.0	8	-8.0
Receiver60	60	1 0.0	46.1	66	46.1	10		46.1	0.0	8	-8.0
Receiver61	61	1 0.0	45.9	66	45.9			45.9	0.0	8	-8.0
Receiver62	62	1 0.0	40.9	66	40.9	10		40.9	0.0	8	-8.0
Receiver63	63	1 0.0	42.1	66	42.1	10		42.1	0.0	8	-8.0
Receiver64	64	1 0.0	44.2	66	44.2	10		44.2	0.0	8	-8.0
Receiver65	65	1 0.0	45.1	66	45.1	10		45.1	0.0	8	-8.0
Receiver66	66	1 0.0	44.6	66	44.6	10		44.6	0.0	8	-8.0

RESULTS: SOUND LEVELS

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Receiver67	67	1	0.0	39.8	66	39.8	10	 39.8	0.0	8	-8.0
Receiver69	69	1	0.0	41.3	66	41.3	10	 41.3	0.0	8	-8.0
Receiver70	70	1	0.0	41.4	66	41.4	10	 41.4	0.0	8	-8.0
Receiver72	72	1	0.0	42.9	66	42.9	10	 42.9	0.0	8	-8.0
Receiver73	73	1	0.0	43.2	66	43.2	10	 43.2	0.0	8	-8.0
Dwelling Units		# DUs	Noise Red	duction							
			Min	Avg	Max						
			dB	dB	dB						
All Selected		70	0.0	0.0	0.0						
All Impacted		1	0.0	0.0	0.0						
All that meet NR Goal		0	0.0	0.0	0.0						

APPENDIX C

Pertinent Sections of the County of San Diego Noise Element to the General Plan and Noise Ordinance



Noise Effects

Noise has a significant effect on quality of life. An individual's reaction to a particular noise depends on many factors such as the source of the noise, its loudness relative to the background noise level, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community. Because of the nature of the human ear, a sound must be about ten dB greater than the reference sound to be judged as twice as loud. In general, a three dB change in community noise levels is perceivable, while one to two dB changes generally are not perceived. Although the reaction to noise may vary, it is clear that noise is a significant component of the environment, and excessively noisy conditions can affect an individual's health and well-being. The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on a community can be organized into six broad categories: noise-induced hearing loss; interference with communication; effects on sleep; effects on performance and behavior; extra-auditory health effects; and annoyance.

Noise Standards

Noise exposure criteria are incorporated into land use planning to reduce future conflicts between noise and land use. This is achieved by specifying acceptable noise exposure ranges for various land uses throughout the County. The County uses the Noise Compatibility Guidelines listed in Table N-1 (Noise Compatibility Guidelines) to determine the compatibility of land use when evaluating proposed development projects.

The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments. For example, a commercial project would be evaluated differently than a residential project in a rural area or a mixed-use project in a more densely developed area of the County.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table N-2 (Noise Standards). For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken.

COUNTY OF SAN DIEGO

Tab	Table N-1 Noise Compatibility Guidelines											
	Land Use Category		55	6		or Noi 6		vel (CNEL)		75	75	
A	Residential—single family residences, mobile homes, senior housing, convalescent homes											80
В	Residential—multi-family residences, mixed-use (commercial/residential)											
С	Transient lodging—motels, hotels, resorts											
D*	Schools, churches, hospitals, nursing homes, child care facilities											
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries											
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation											
G*	Office\professional, government, medical\dental, commercial, retail, laboratories											
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair											
	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.											
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.											
	UNACCEPTABLE—New construction or dev	elopment sh	all not	be und	lertake	n.						

^{*} Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.



Table N-2 Noise Standards Note

- 1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
- 2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
- 3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).
- 4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: (i) for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; (iii) for lots over 10 acres in area, the exterior area shall include 1 acre.
- 5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
- 6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
- 7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
- 8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
- 9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

In addition, the County has adopted community noise control standards as part of the County's Noise Abatement and Control Ordinance (County Code of Regulatory Ordinances, Title 3, Division 6, Chapter 4) and provides guidance for implementation of the County's noise policies and ordinance in the County's *California Environmental Quality Act* (CEQA) Guidelines for Determining Significance for Noise. The Noise Ordinance defines limits for activities that generate excessive noise and sets noise level limits for land uses. The County's CEQA significance guidelines provide guidance on the use of the General Plan Noise Element and the County Noise Abatement and Control Ordinance when considering the environmental impact of noise exposure to high or excessive noise levels.

(Amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.408. HOURS OF OPERATION OF CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

- (a) Between 7 p.m. and 7 a.m.
- (b) On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.409. SOUND LEVEL LIMITATIONS ON CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

(Amended by Ord. No. 9700 (N.S.), effective 2-4-05; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.410. SOUND LEVEL LIMITATIONS ON IMPULSIVE NOISE.

In addition to the general limitations on sound levels in section <u>36.404</u> and the limitations on construction equipment in section <u>36.409</u>, the following additional sound level limitations shall apply:

(a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in <u>Table 36.410A</u>, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in <u>Table 36.410A</u> are as described in the County Zoning Ordinance.

TABLE 36.410A. MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in <u>Table 36.410B</u>, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in <u>Table 36.410B</u> are as described in the County Zoning Ordinance.

TABLE 36.410B. MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA) FOR PUBLIC ROAD PROJECTS

OCCUPIED PROPERTY USE	dB(A)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

(Added by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.411. CONTAINERS AND CONSTRUCTION MATERIAL.

It shall be unlawful for any person to handle, transport, or cause to be handled or transported in any public place, any container or any construction material in such a way as to create a disturbing, excessive, or offensive noise as defined in section 36.402 of this chapter.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.412. SIGNAL DEVICE FOR FOOD TRUCKS.

No person shall operate or cause to have operated or used any sound signal device other than sound-amplification equipment attached to a motor vehicle wagon or manually propelled cart from which food or any other items are sold which emits a sound signal more frequently than once every ten minutes in any one street block and with a duration of more than ten seconds for any single emission. The sound level of this sound signal shall not exceed 90 decibels at 50 feet from the point of the noise source.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.413. MULTIPLE FAMILY DWELLING UNITS.

Notwithstanding any other provision of this chapter it shall be unlawful for any person to create, maintain or cause to be maintained any sound within the interior of any multiple family dwelling unit which causes the noises level to exceed those limits set forth below in another dwelling unit:

TABLE 36.413
ALLOWABLE INTERIOR NOISE LEVEL

Type of Land Use	Hours		Allowable Interior Noise Level (dBA		
		No Time	1 min in 1 hour	5 min in 1 hour	
Multifamily	10 pm- 7 am	> 45	40	35	
Residential	7 am-10 pm	> 55	50	35	

(> greater than)

APPENDIX D

Construction Equipment Noise Calculations

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Dozer Receiver: North/South - Grading **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 96 feet Path Calculation Source to Receiver Direct Path Distance: 96 feet **Sound Pressure Level** 68.3 96 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2 Level during 8 hour day: 64.8

Noise Attenuation by Distance Calculation

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Backhoe

Receiver: North/South - Grading

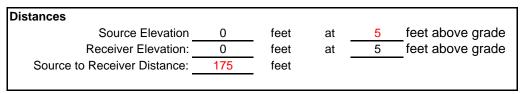
				=
Noise Source				
Noise Level (dBA) 64	at	50	feet	
Distances				
Source Elevation 0	feet	at	5	feet above grade
Receiver Elevation: 0	feet	at	5	feet above grade
Source to Receiver Distance: 96	feet	•		-
Path Calculation				
Source to Receiver Direct Path Distan	nce: <u>96</u>	feet		
Sound Pressure Level 58.	3 at	96	feet	1
Hours of Use: 8				
Duty Cycle (%): 40)			
Level During 8 Hour day: 54.	4			

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Dozer Receiver: East - Grading **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 175 feet Path Calculation Source to Receiver Direct Path Distance: 175 feet **Sound Pressure Level** 63.1 175 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: 59.1 Summation Number of Sources: 2

Level during 8 hour day: 59.6

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Backhoe
Receiver: East - Grading

Noise Source					
	Noise Level (dBA)	64	at	50	feet



Path Calculation		
Source to Receiver Direct Path Distance: _	175	feet

Sound Pressure Level	53.1	at	175	feet
Hours of Use:	8			
Duty Cycle (%):	40	='		
Level During 8 Hour day:	49.1	_		
· -		_		

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Dozer Receiver: West - Grading **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ___ feet above grade feet feet above grade Receiver Elevation: 0 feet Source to Receiver Distance: 142 feet Path Calculation Source to Receiver Direct Path Distance: 142 feet **Sound Pressure Level** 64.9 142 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2

Level during 8 hour day: 61.4

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Backhoe

Receiver: West - Grading

Noise Source					
	Noise Level (dBA) _	64	at	50	feet

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 142 feet

Path Calculation

Source to Receiver Direct Path Distance: ____142___ feet

Sound Pressure Level 54.9 at 142 feet

Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 51.0

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: **Concrete Mixer** Receiver: North/South - Foundation **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 96 feet Path Calculation Source to Receiver Direct Path Distance: 96 feet **Sound Pressure Level** 68.3 96 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2 Level during 8 hour day: 66.1

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017

Source: Concrete Pump

Receiver: North/South - Foundation

				_
Noise Source				
Noise Level (dBA)74	at	50	feet	
Distances				
Source Elevation 0	feet	at	5	feet above grade
Receiver Elevation: 0	feet	at	5	feet above grade
Source to Receiver Distance: 96	feet	-		_
Path Calculation				
Source to Receiver Direct Path Distance: _	96	feet		
Sound Pressure Level 68.3	at	96	feet	1
Hours of Use: 8				
Duty Cycle (%):				
Level During 8 Hour day: 61.3				

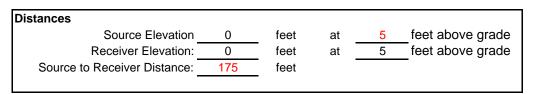
Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 **Concrete Mixer** Source: Receiver: East - Foundation **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 175 feet Path Calculation Source to Receiver Direct Path Distance: 175 feet **Sound Pressure Level** 63.1 175 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: 59.1 Summation Number of Sources: 2

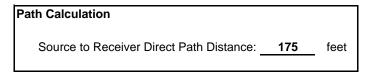
Level during 8 hour day: **60.9**

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Concrete Pt

Source: Concrete Pump
Receiver: East - Foundation

Noise Source					
	Noise Level (dBA) _	74	_ at	50	feet





Sound Pressure Level	63.1	at	175	feet
Hours of Use:	8			
Duty Cycle (%):	20			
Level During 8 Hour day:	56.1	_		
· · -		_		

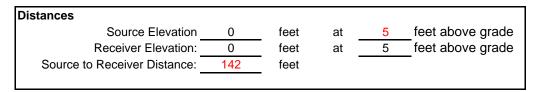
Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Concrete Mixer Receiver: West - Foundation **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 142 feet Path Calculation Source to Receiver Direct Path Distance: 142 feet **Sound Pressure Level** 64.9 142 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2

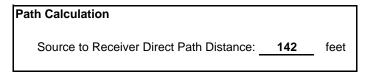
Level during 8 hour day: 62.7

Job: Nordahl Job #: B70508N1 Date: 6/5/2017

Source: Concrete Pump
Receiver: West - Foundation

Noise Source					
	Noise Level (dBA) _	74	_ at	50	feet





Sound Pressure Level	64.9	at	142	feet
Hours of Use:	8	=		
Duty Cycle (%):	20	=		
Level During 8 Hour day:	57.9	_		
· · -		-		

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Forklift Receiver: North/South - Framing **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 96 feet Path Calculation Source to Receiver Direct Path Distance: 96 feet **Sound Pressure Level** 68.3 96 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2 Level during 8 hour day: **64.6**

Source to Receiver Distance:

Job: Nordahl Job #: B70508N1 Date: 6/5/2017

Source: Air Compressor

Receiver: North/South - Framing

Noise Sour	ce					7
	Noise Level (dBA)	61	_ at	50	feet	
Distances						
Diotailoco	Source Elevation	0	feet	at	5	feet above grade
	Receiver Elevation:	0	feet	at	5	feet above grade

feet

Path Calculation

Source to Receiver Direct Path Distance: ____96 ___ feet

Sound Pressure Level	55.3	at	96	feet
Hours of Use:	8	='		
Duty Cycle (%):	40	=		
Level During 8 Hour day:	51.4	_		
· · -		_		

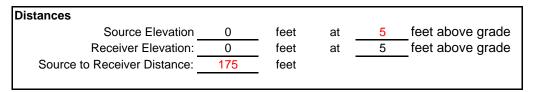
Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Forklift Receiver: East - Framing **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 175 feet Path Calculation Source to Receiver Direct Path Distance: 175 feet **Sound Pressure Level** 63.1 175 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: 59.1 Summation Number of Sources: 2

Level during 8 hour day: 59.4

Job: Nordahl Job #: B70508N1 Date: 6/5/2017

Source: Air Compressor Receiver: East - Framing

Noise Source					
	Noise Level (dBA) _	61	at	50	feet



Path Calculation

Source to Receiver Direct Path Distance: ____175___ feet

Sound Pressure Level	50.1	at	175	feet
Hours of Use:	8	_		
Duty Cycle (%):	40	_		
Level During 8 Hour day:	46.1	_		
		_		

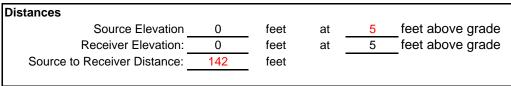
Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Forklift Receiver: West - Framing **Noise Source** Noise Level (dBA) 74 at 50 feet Distances Source Elevation ___ feet above grade feet feet above grade Receiver Elevation: 0 feet Source to Receiver Distance: 142 feet Path Calculation Source to Receiver Direct Path Distance: 142 feet **Sound Pressure Level** 64.9 142 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2

Level during 8 hour day: 61.2

Job: Nordahl Job #: B70508N1 Date: 6/5/2017

Source: Air Compressor Receiver: West - Framing

Noise Source					
	Noise Level (dBA) _	61	at	50	feet



Path Calculation		
Source to Receiver Direct Path Distance: _	142	feet

Sound Pressure Level	51.9	at	142	feet
Hours of Use:	8	_		
Duty Cycle (%):	40			
Level During 8 Hour day:	48.0	_		

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Paver Receiver: North/South - Paving **Noise Source** Noise Level (dBA) 71 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 96 feet Path Calculation Source to Receiver Direct Path Distance: 96 feet **Sound Pressure Level** 65.3 96 feet Hours of Use: 8 Duty Cycle (%): **50** Level During 8 Hour day: 62.3 Summation Number of Sources: 2

Level during 8 hour day: 63.3

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Roller

Receiver: North/South - Paving

				_
Noise Source				
Noise Level (dBA)69	at	50	feet	
Distances				
Source Elevation 0	feet	at	5	feet above grade
Receiver Elevation: 0	feet	at	5	feet above grade
Source to Receiver Distance: 96	feet	-		-
Path Calculation		1		
Source to Receiver Direct Path Distance: _	96	_ feet		
Sound Pressure Level 63.3	o.t	06	foot	٦
	at	96	feet	
Hours of Use: 8				
Duty Cycle (%):				
Level During 8 Hour day: 56.3				

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Paver Receiver: East - Paving **Noise Source** Noise Level (dBA) 71 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 175 feet Path Calculation Source to Receiver Direct Path Distance: 175 feet **Sound Pressure Level** 60.1 175 feet Hours of Use: 8 Duty Cycle (%): Level During 8 Hour day: Summation Number of Sources: 2

Level during 8 hour day: 58.1

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Roller

Receiver: East - Paving

Noise Source					
	Noise Level (dBA)	69	at	50	feet

Distances					
Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	175	feet			_

Path Calculation		
Source to Receiver Direct Path Distance: _	175	feet

Sound Pressure Level	58.1	at	175	feet
Hours of Use:	8			
Duty Cycle (%):	20	='		
Level During 8 Hour day:	51.1	_		
· · -		_		

Noise Attenuation by Distance Calculation Job: Nordahl Job #: B70508N1 Date: 6/5/2017 Source: Paver Receiver: West - Paving **Noise Source** Noise Level (dBA) 71 at 50 feet Distances Source Elevation ____ feet above grade feet Receiver Elevation: 0 feet above grade feet Source to Receiver Distance: 142 feet Path Calculation Source to Receiver Direct Path Distance: 142 feet **Sound Pressure Level** 61.9 142 feet Hours of Use: 8 Duty Cycle (%): **50** Level During 8 Hour day: 58.9 Summation Number of Sources: 2

Level during 8 hour day: 59.9

Job: Nordahl
Job #: B70508N1
Date: 6/5/2017
Source: Roller

Receiver: West - Paving

Noise Source					
	Noise Level (dBA) _	69	at	50	feet
	<u> </u>				

Distances					
Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	142	feet			
_		_			

Path Calculation		
Source to Receiver Direct Path Distance: _	142	feet

Sound Pressure Level	59.9	at	142	feet
Hours of Use:	8	_		
Duty Cycle (%):	20	='		
Level During 8 Hour day:	52.9	=		
		_		