

FOCUSED CONSTRUCTION NOISE ANALYSIS

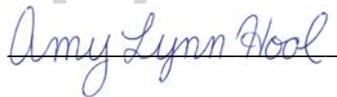
Jonathan Tentative Parcel Map
San Diego County Tentative Map 21208
Record ID: PDS2013-TPM-21208, Environmental Log No. PDS2013-ER-13-19-005

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Job #B31102N1

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EXECUTIVE SUMMARY

The proposed project, the Jonathan Tentative Parcel Map (Tentative Map 21208), consists of the division of a parcel into four single-family residential private lots. The project site is located near the intersection of Atlantis Street and Ivy Lane in the unincorporated community of Spring Valley, County of San Diego, California.

According to the County of San Diego, traffic and aircraft noise is not expected to be an issue at proposed residences in the current or future noise environments, as all proposed noise-sensitive land use and buildable area on site falls outside of the 60 CNEL traffic and aircraft noise contours. For this reason, traffic and aircraft noise have not been addressed within this noise report.

Temporary construction noise was calculated to determine the impact this activity will have on surrounding 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 dB 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. Section 36.410 of the Noise Ordinance provides noise level limits for impulsive noise, such as blasting or the use of equipment such as a rock crusher, pile driver, hoe ram, or drill rig. As no blasting or other impulsive construction activity will take place on site, the noise level limits within this section do not apply.

It is determined that typical construction activities will exceed the County of San Diego temporary construction noise limit of 75 dBA at the south, east, and west adjacent property lines. To control these impacts, an 8-foot high noise barrier should be used when grading activities are centered within 70 feet of a residential property line. General good practice measures should also be followed, 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 Map (TM 21208) approval. Its purpose is to assess noise impacts from construction activities to identify project features or requirements necessary to remain in compliance with County of San Diego noise regulations for temporary construction noise.

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 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 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, the Jonathan Tentative Parcel Map (TPM 21208) consists of the division of a parcel into four single-family residential private lots. The gross lot area for each lot is approximately 0.61 acres.

1.2 Environmental Settings and Existing Conditions

1.2.1 Project Location

The project site is located near the intersection of Atlantis Street and Ivy Lane in the unincorporated community of Spring Valley, County of San Diego, California. The Assessor's Parcel Number (APN) for the property is 578-050-19-00. 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 are also provided as Figures 2 through 4, respectively.

1.2.2 Existing Noise Conditions

Traffic noise is not considered to be significant at the project site, and therefore, traffic noise levels are not expected to exceed the 60 CNEL threshold of the County of San Diego. Additionally, the project site is not located within close proximity to an airport. For these reasons, no further analysis of traffic or aircraft noise is required at this time. Temporary construction noise is the focus of this analysis.

1.3 Methodology

Modeling of the outdoor noise environment for temporary construction noise is accomplished using Cadna Version 3.7, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project-specific information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

Existing topographical contours present on the preliminary grading plan of the project site were included in the Cadna noise prediction model. Contours from approximately 560 feet to 630 feet, by increments of 10 feet, were included. These are considered to be the only on-site permanent features that will affect the noise propagation of the existing and proposed noise sources to the adjacent property lines.

In order to validate the results of the Cadna noise prediction model, the noise impacts from the construction equipment were manually calculated as simple attenuation by distance considering equipment duty cycle. This was performed for one of the receiver locations at each noise-sensitive property line. These values were compared to those predicted by Cadna. The Cadna model includes additional attenuation due to intervening structures, topography, and ground absorption, to which the differences in modeled and calculated noise levels are attributed. This data is summarized in Table 1.

Table 1. Calculated Noise Levels for Model Comparison, Pad 1 Grading						
Noise Source	Receiver	Receiver Location	Approximate Distance from Source (ft)	Calculated Noise Level ² (dBA)	Cadna Model Noise Level ³ (dBA)	Difference (dB) ⁴
D8 Dozer, Water Truck ¹	R1	North PL ⁵	135	72.0	72.6	0.6
	R2	East PL	70	77.1	77.5	0.4
	R6	South PL	275	65.4	52.8	12.6 ⁴
	R8	West PL	210	67.6	67.7	0.1

¹40% duty cycle assumed for all equipment per FHWA document.

²Calculated as attenuation by distance only, $L_2 = L_1 - 20\log(d_2/d_1)$

³As predicted by Cadna model

⁴Differences between calculated and Cadna noise levels can be attributed to site topography and ground absorption.

⁵Nearest property line to the north across Ivy Lane

2.0 PROJECT-GENERATED AIRBORNE NOISE

2.1 Guidelines for the Determination of Significance

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.

Please refer to Appendix B: Pertinent Sections of the County of San Diego Noise Ordinance.

2.2 Potential General Construction Noise Impacts

2.2.1 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 (across Ivy Lane), south, east, and west.

Construction scheduling information was obtained from Elliott May, project engineer. Grading will be the first phase of construction, and will be accomplished using one Caterpillar D8 dozer, and a water truck. These pieces of equipment may be in use simultaneously. According to Mr. May, there will be no import or export, and thus no dump trucks will be present. Site grading will take approximately six weeks. No blasting or other impulsive construction activity is anticipated, and therefore, the noise limits set within Section 36.410 do not apply for this project. The plans also

show an access road on the project site, so construction noise associated with paving was also analyzed. Paving was assumed to include one paver and one roller.

Please refer to Table 2 for typical noise levels of construction equipment planned to be used on site, as described above.

Table 2. Typical Construction Equipment Noise Levels¹		
Noise Source	Duty Cycle (%)	Measured Noise Level (L_{MAX}) at 32.8 feet (dBA)
Dozer	40	81
Water Truck ²	40	87
Paver	50	77
Roller	20	77

¹Source: UK Department for Environment, Food, and Rural Affairs (DEFRA) Construction Noise Database, unless otherwise noted.

²Source: Wieland Associates, 1999.

Receivers to the north, south, east and west were calculated for each phase of construction. During the grading phase, it was assumed that both pieces of equipment would be operating simultaneously (considering duty cycle), spread out near the center of each lot. This method should account for the varying distance from source to receiver as equipment moves around the site. A separate grading noise model was created for each lot area, to account for varying noise exposure as grading activities are centered around different areas of the site. During the paving phase, a location along the roadway was chosen to model the construction equipment.

Noise levels for each phase of construction are shown in Table 3, with the worst-case noise level shown for each receiver. Detailed calculations can be found in Appendix C: Construction Equipment Noise Calculations. Graphical representations of source and receiver locations and noise contours are shown in Figures 5 through 9 for each calculated scenario.

Table 3. Temporary Construction Noise Levels at Neighboring Properties			
Phase	Equipment Used	Receiver Location	8-Hour Average Noise Level (dBA)
PHASE 1: GRADING (PAD 1)	D8 Dozer, Water Truck	North (R-1)	72.6
		East 1 (R-2)	77.5
		East 2 (R-3)	73.1
		East 3 (R-4)	62.2
		East 4 (R-5)	51.7
		South 1 (R-6)	52.8
		South 2 (R-7)	49.8
		West (R-8)	67.7

Table 3. Temporary Construction Noise Levels at Neighboring Properties			
Phase	Equipment Used	Receiver Location	8-Hour Average Noise Level (dBA)
PHASE 1: GRADING (PAD 2)	D8 Dozer, Water Truck	North (R-1)	72.9
		East 1 (R-2)	68.1
		East 2 (R-3)	63.3
		East 3 (R-4)	54.0
		East 4 (R-5)	45.3
		South 1 (R-6)	48.5
		South 2 (R-7)	51.1
		West (R-8)	76.6
PHASE 1: GRADING (PAD 3)	D8 Dozer, Water Truck	North (R-1)	59.9
		East 1 (R-2)	68.5
		East 2 (R-3)	73.7
		East 3 (R-4)	77.1
		East 4 (R-5)	72.5
		South 1 (R-6)	71.6
		South 2 (R-7)	60.5
		West (R-8)	65.6
PHASE 1: GRADING (PAD 4)	D8 Dozer, Water Truck	North (R-1)	60.1
		East 1 (R-2)	63.5
		East 2 (R-3)	65.2
		East 3 (R-4)	63.0
		East 4 (R-5)	53.9
		South 1 (R-6)	65.6
		South 2 (R-7)	74.7
		West (R-8)	76.7
PHASE 2: PAVING	Paver, Roller	North (R-1)	63.1
		East 1 (R-2)	60.1
		East 2 (R-3)	56.5
		East 3 (R-4)	49.0
		East 4 (R-5)	41.4
		South 1 (R-6)	43.1
		South 2 (R-7)	43.6
		West (R-8)	60.4

2.2.2 Design Considerations and Temporary Mitigation Measures

As shown above, noise levels from temporary construction are expected to exceed the County of San Diego eight-hour average equivalent noise limit of 75 dBA at nearby residential property lines to the south, west, and east during grading activity. For this reason, a temporary noise barrier should be used any time the center of the grading activity occurs within 70 feet of these residential property lines. The noise barrier should be a minimum of eight feet tall, and at least 160 feet in length. It should be placed such that the approximate center of the wall is aligned with the approximate center of grading activities. Mitigated noise levels were calculated with equipment at

each lot to show noise reduction provided by the wall. Mitigated noise levels are shown in Table 4, and sample wall configuration is shown in Figures 10 through 13.

Table 4. Mitigated Temporary Construction Noise Levels at Neighboring Properties			
Phase	Equipment Used	Receiver Location	8-Hour Average Noise Level (dBA)
PHASE 1: GRADING (PAD 1)	D8 Dozer, Water Truck	North (R-1)	72.6
		East 1 (R-2)	73.4
		East 2 (R-3)	70.3
		East 3 (R-4)	62.2
		East 4 (R-5)	51.7
		South 1 (R-6)	52.8
		South 2 (R-7)	49.8
		West (R-8)	67.7
PHASE 1: GRADING (PAD 2)	D8 Dozer, Water Truck	North (R-1)	72.9
		East 1 (R-2)	68.1
		East 2 (R-3)	63.3
		East 3 (R-4)	54.0
		East 4 (R-5)	45.3
		South 1 (R-6)	48.5
		South 2 (R-7)	51.1
		West (R-8)	68.2
PHASE 1: GRADING (PAD 3)	D8 Dozer, Water Truck	North (R-1)	59.9
		East 1 (R-2)	68.5
		East 2 (R-3)	64.2
		East 3 (R-4)	65.8
		East 4 (R-5)	62.1
		South 1 (R-6)	71.6
		South 2 (R-7)	60.5
		West (R-8)	65.6
PHASE 1: GRADING (PAD 4)	D8 Dozer, Water Truck	North (R-1)	60.1
		East 1 (R-2)	63.5
		East 2 (R-3)	65.2
		East 3 (R-4)	63.0
		East 4 (R-5)	53.9
		South 1 (R-6)	65.6
		South 2 (R-7)	74.7
		West (R-8)	66.1

The noise barrier should be solid and constructed of wood, 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. 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. Sound attenuation blankets may be used in place of a sound attenuation barrier, provided they have an STC rating of at least 18. If the above conditions are not met, the sound attenuation provided by the barrier may be inadequate.

For any project in which construction activity will take place near occupied residential property, the following "good practice" recommendations should also 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 receivers.

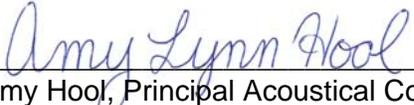
These general recommendations, in addition to the implementation of mitigation as described above and limiting construction equipment operation to the allowable hours detailed in the County of San Diego Noise Ordinance, will assist in maintaining the comfort of neighboring sensitive receivers during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

3.0 CONCLUSION

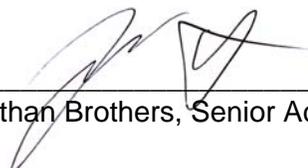
It is determined that typical construction activities will exceed the County of San Diego temporary construction noise limit of 75 dBA at the south, east, and west adjacent property lines. To control these impacts, an 8-foot high noise barrier should be used when grading activities are centered within 70 feet of a residential property line. General good practice measures should also be followed, 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.

4.0 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 Jonathan Tentative Parcel Map 21208, located in the unincorporated community of Spring Valley, County of San Diego, California. This report was prepared by Jonathan Brothers and Amy Hool.



Amy Hool, Principal Acoustical Consultant

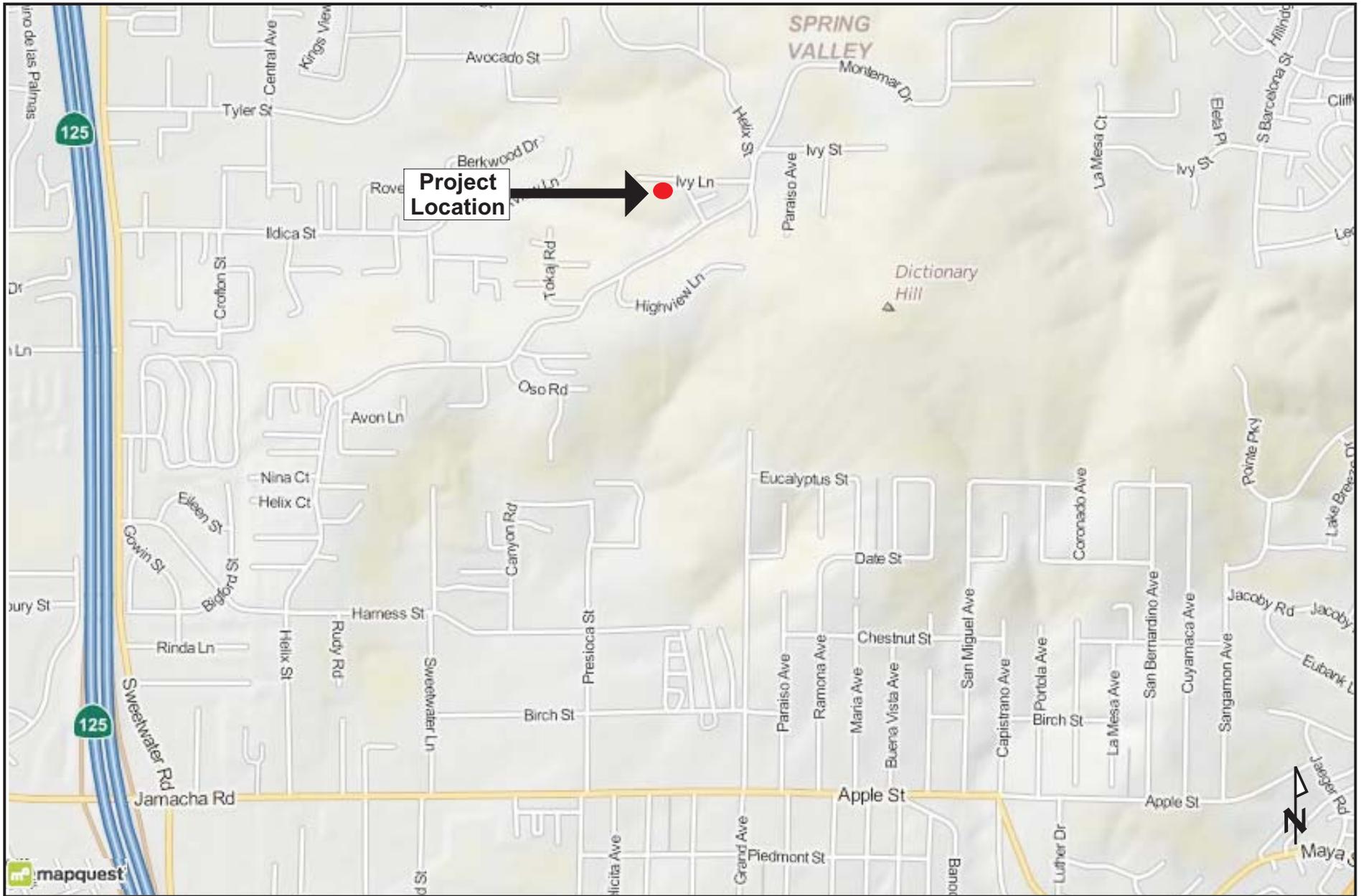


Jonathan Brothers, Senior Acoustical Consultant

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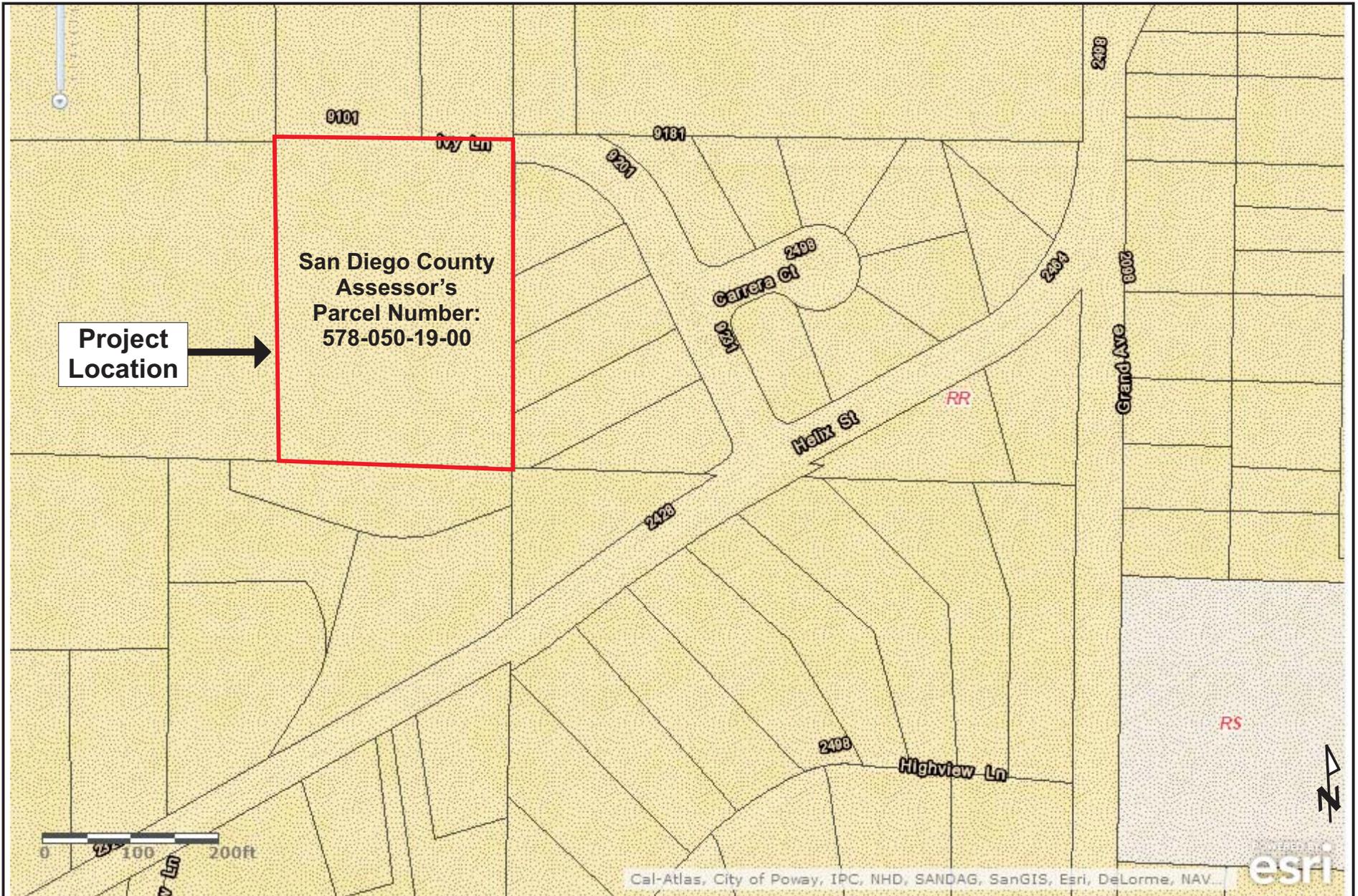
FIGURES



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Vicinity Map
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Figure 1



Eilar Associates, Inc.
 321 Willowspring Drive North
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Assessor's Parcel Map
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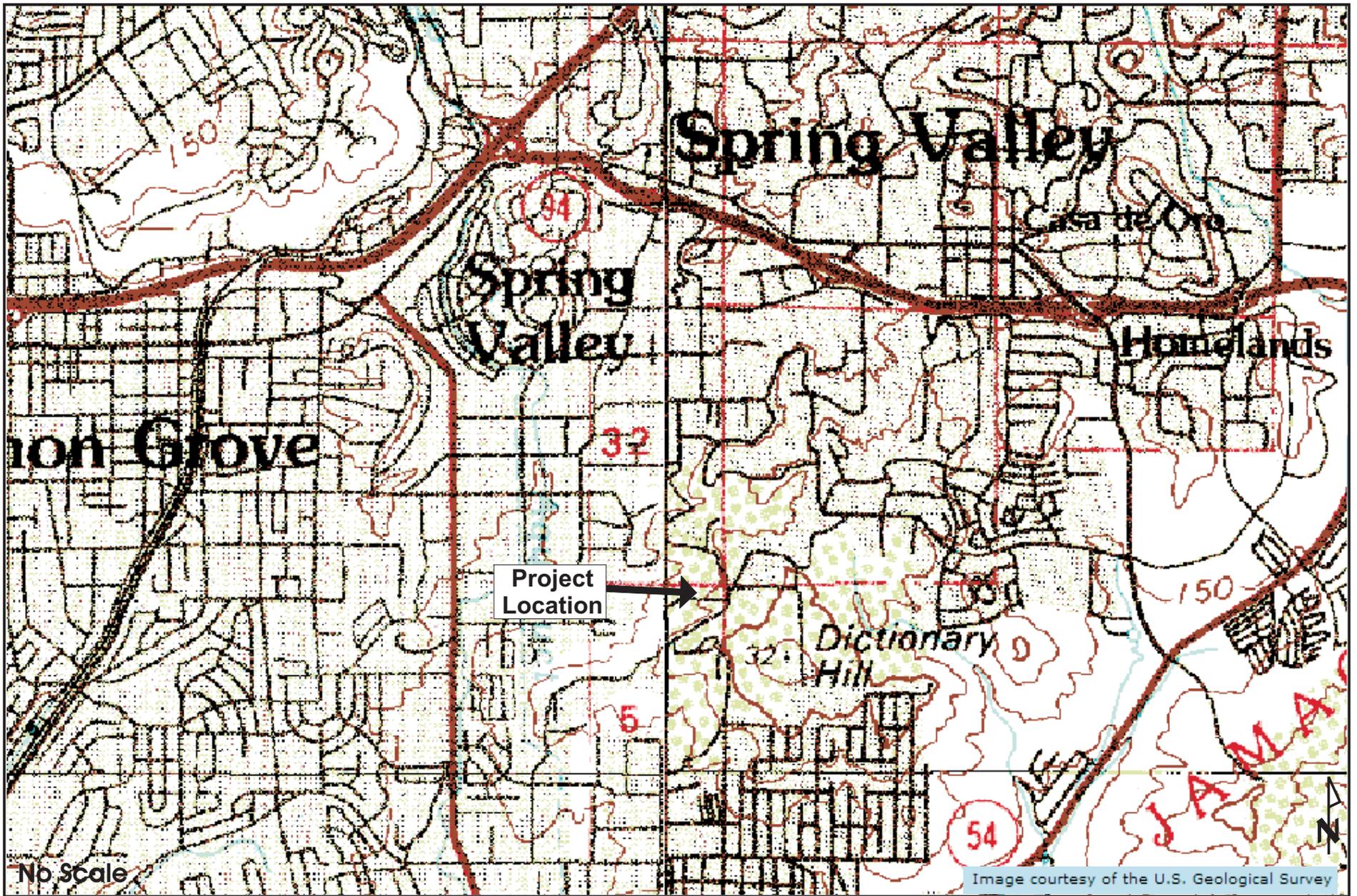
Figure 2



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Satellite Aerial Photograph
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Figure 3



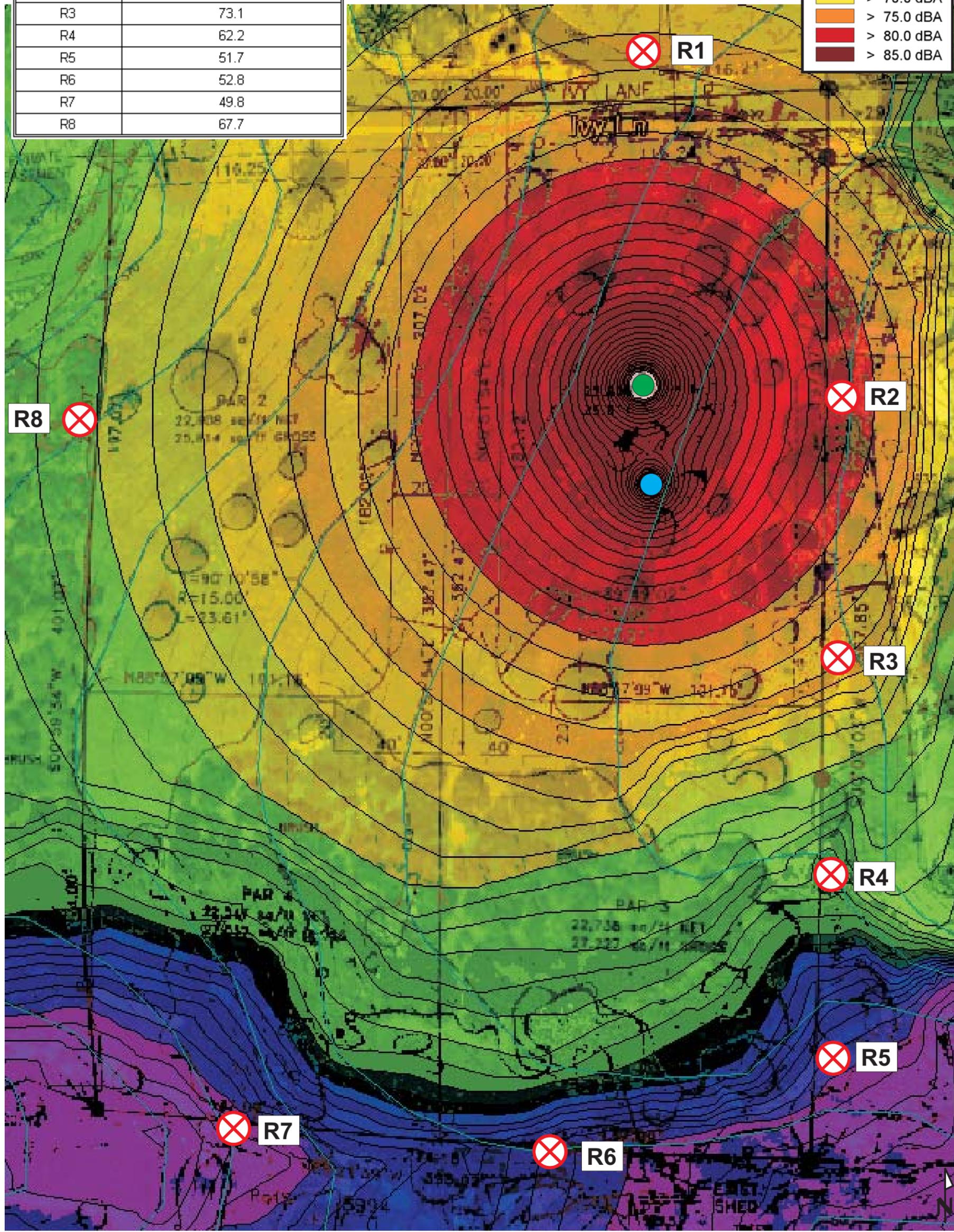
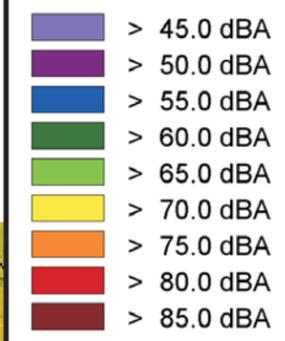
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Topographic Map
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Figure 4

Calculated Construction Noise Impacts	
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEQ)
R1	72.6
R2	77.5
R3	73.1
R4	62.2
R5	51.7
R6	52.8
R7	49.8
R8	67.7

● Dozer
● Water Truck



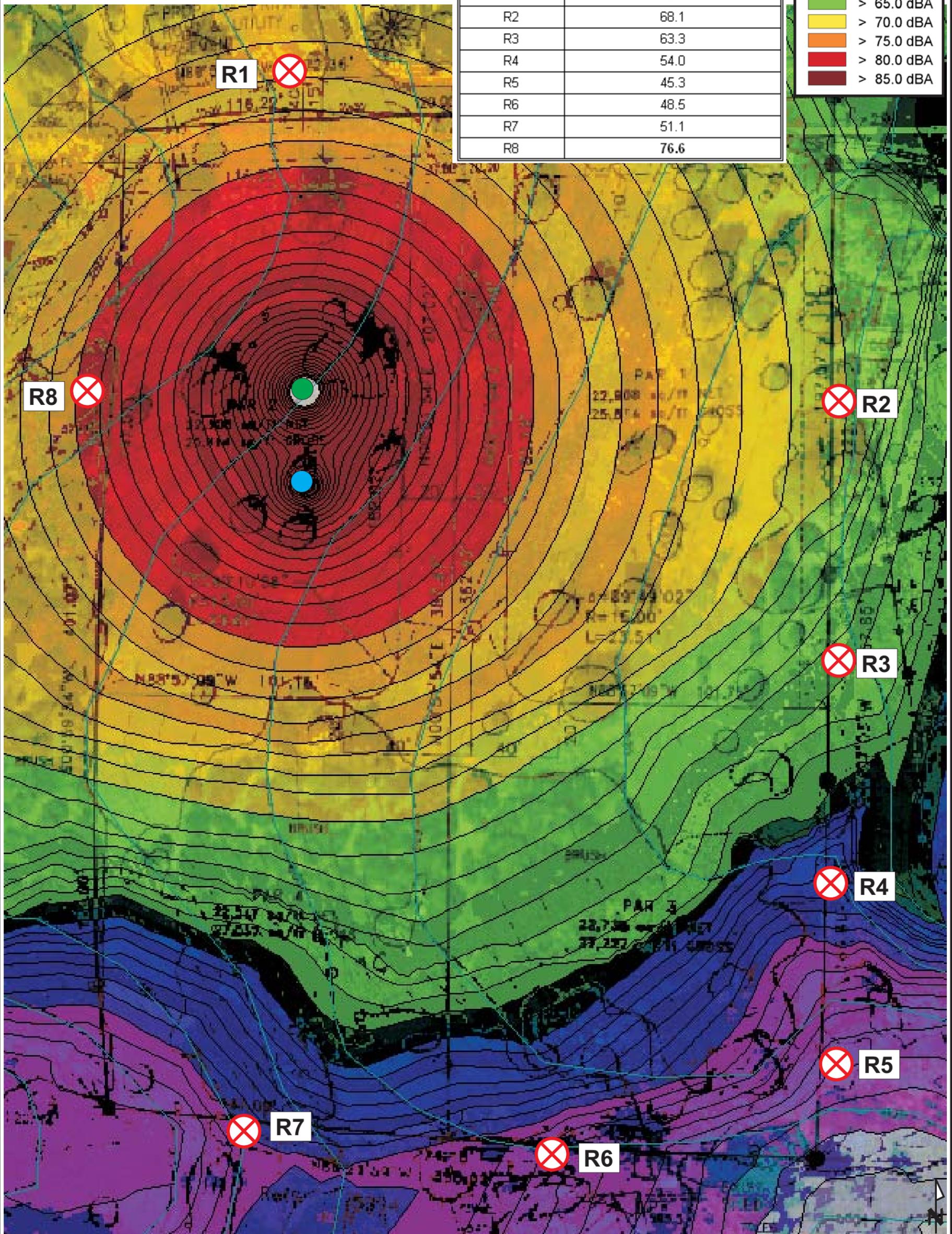
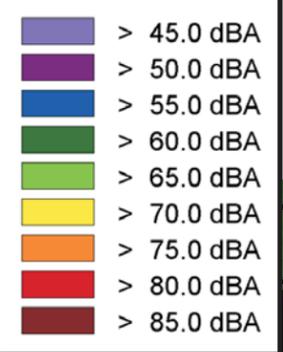
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Site Plan Showing Temporary Construction
 Noise Impacts, Grading Phase - Pad 1
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Figure 5

- Dozer
- Water Truck

Calculated Construction Noise Impacts	
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEO)
R1	72.9
R2	68.1
R3	63.3
R4	54.0
R5	45.3
R6	48.5
R7	51.1
R8	76.6



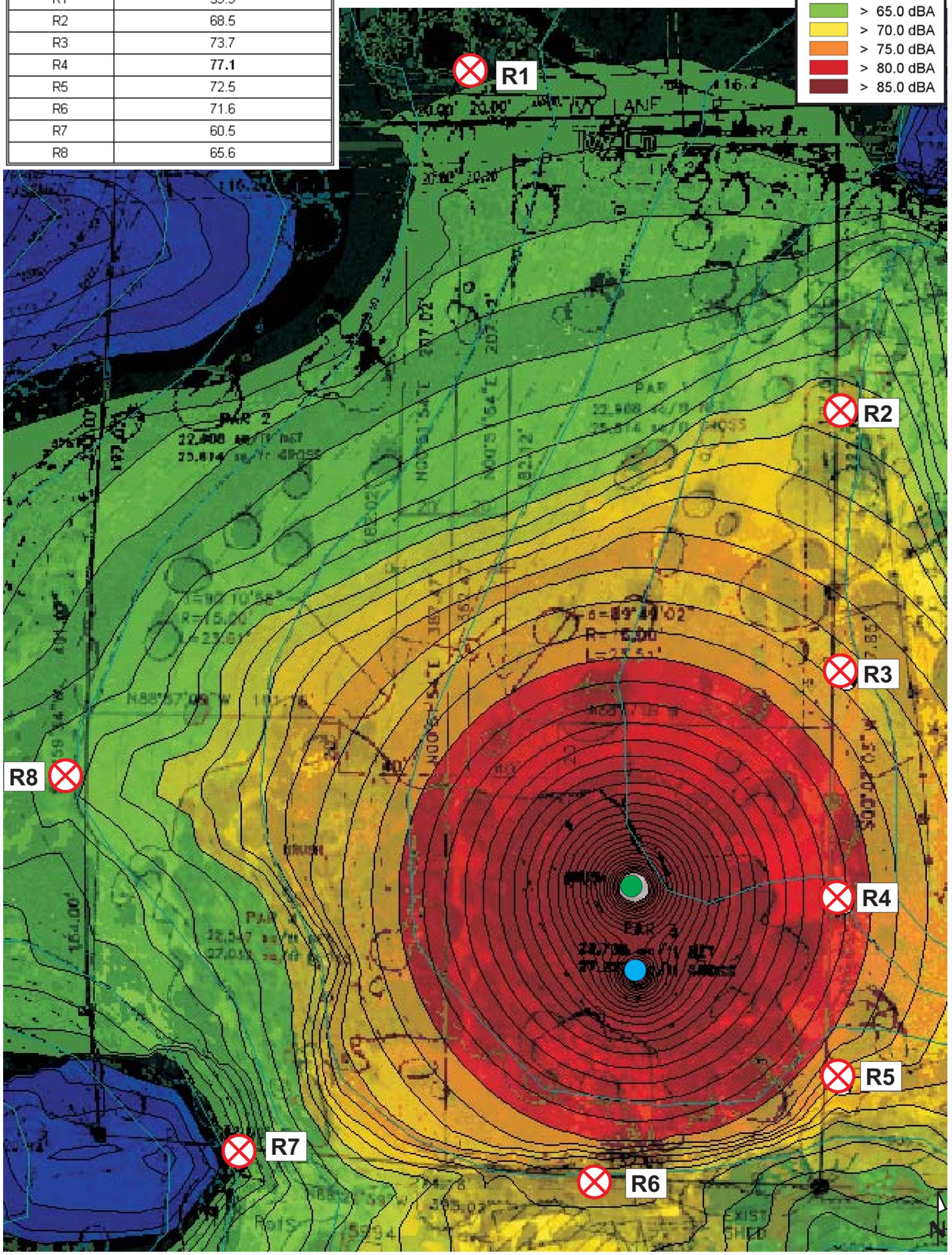
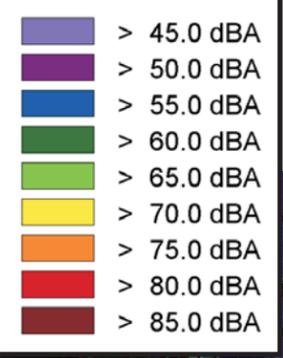
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Site Plan Showing Temporary Construction
 Noise Impacts, Grading Phase - Pad 2
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Figure 6

Calculated Construction Noise Impacts	
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEQ)
R1	59.9
R2	68.5
R3	73.7
R4	77.1
R5	72.5
R6	71.6
R7	60.5
R8	65.6

● Dozer
● Water Truck



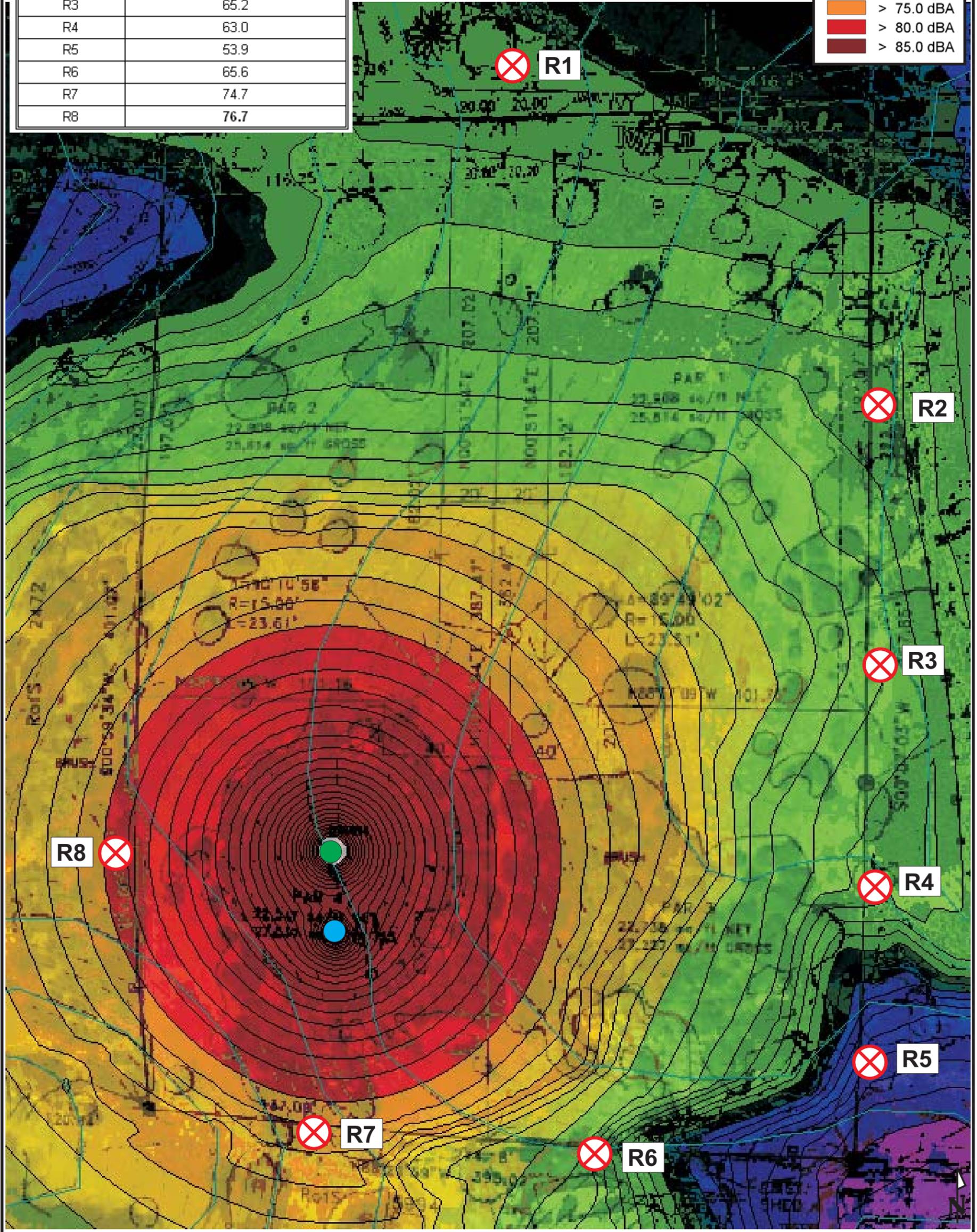
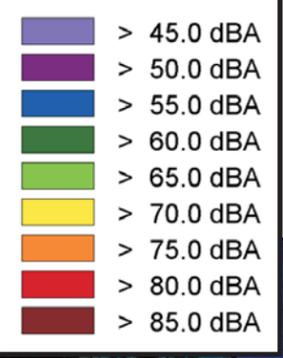
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Site Plan Showing Temporary Construction
 Noise Impacts, Grading Phase - Pad 3
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Figure 7

Calculated Construction Noise Impacts	
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEO)
R1	60.1
R2	63.5
R3	65.2
R4	63.0
R5	53.9
R6	65.6
R7	74.7
R8	76.7

● Dozer
● Water Truck



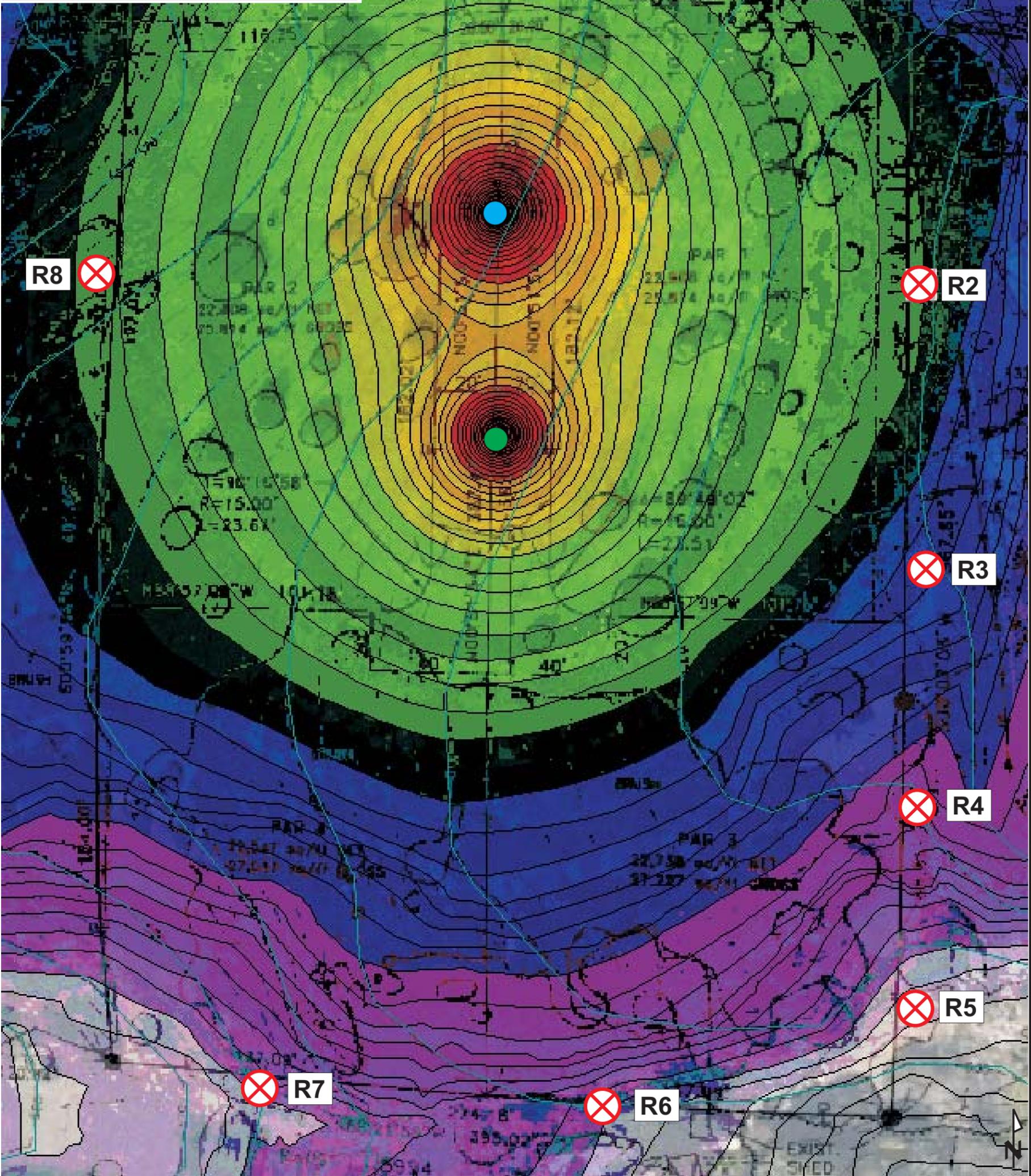
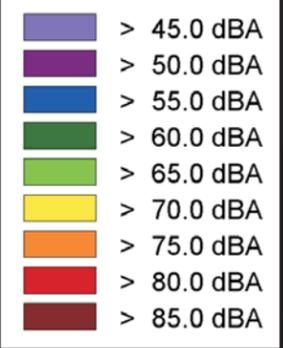
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Site Plan Showing Temporary Construction
 Noise Impacts, Grading Phase - Pad 4
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Figure 8

Calculated Construction Noise Impacts	
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEO)
R1	63.1
R2	60.1
R3	56.5
R4	49.0
R5	41.4
R6	43.1
R7	43.6
R8	60.4

● Paver
● Roller



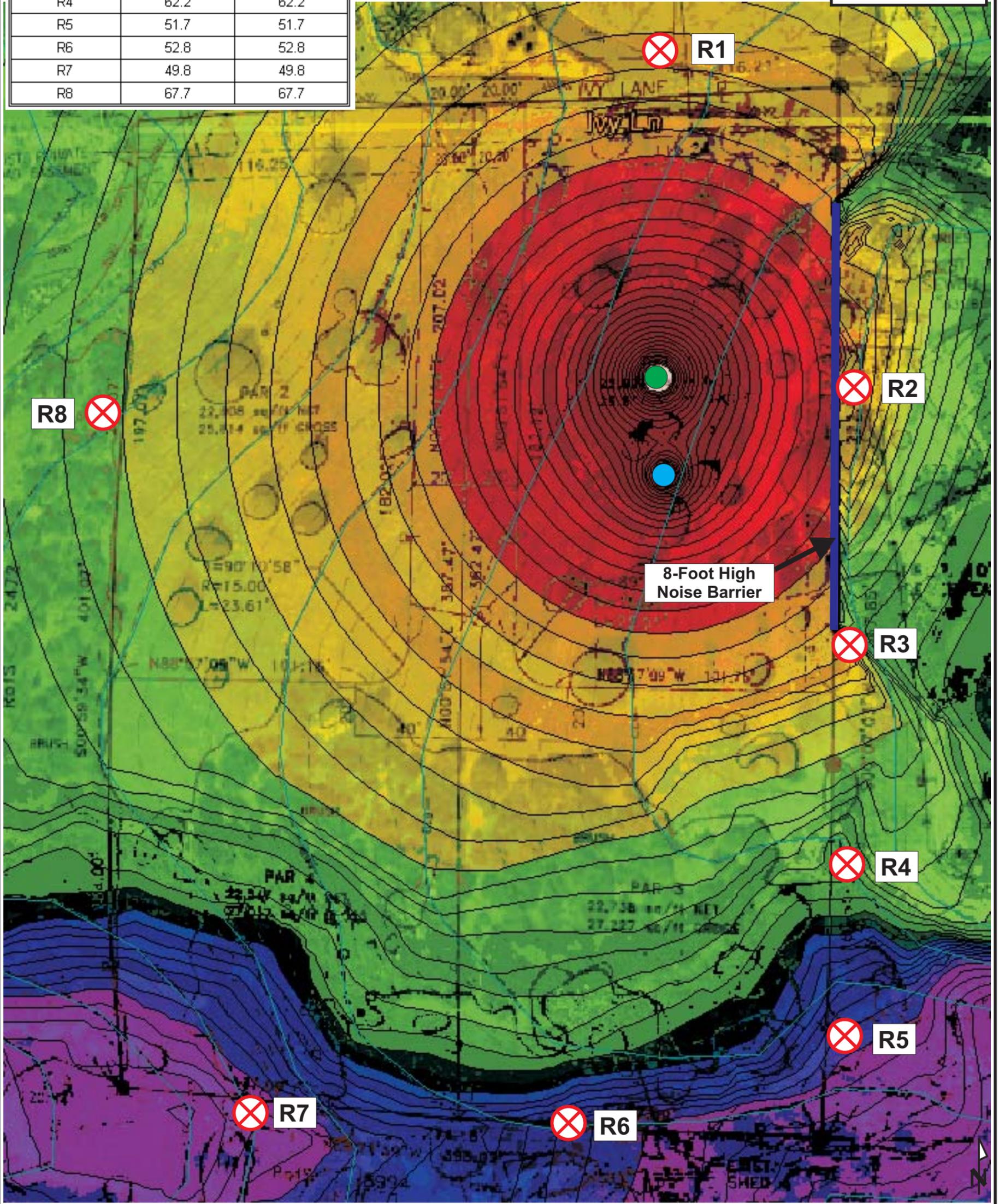
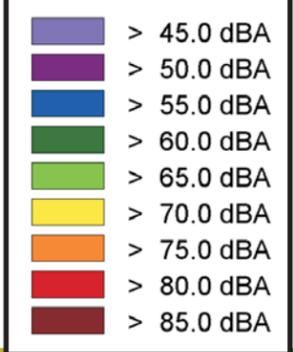
Eilar Associates, Inc.
 321 Willowspring Drive N.
 Encinitas, California 92024
 760-738-5570

Site Plan Showing Temporary Construction
 Noise Impacts, Paving Phase
 Job #B31102N1

Figure 9

Calculated Construction Noise Impacts		
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEQ)	
	Unmitigated	Mitigated
R1	72.6	72.6
R2	77.5	73.4
R3	73.1	70.3
R4	62.2	62.2
R5	51.7	51.7
R6	52.8	52.8
R7	49.8	49.8
R8	67.7	67.7

● Dozer
● Water Truck



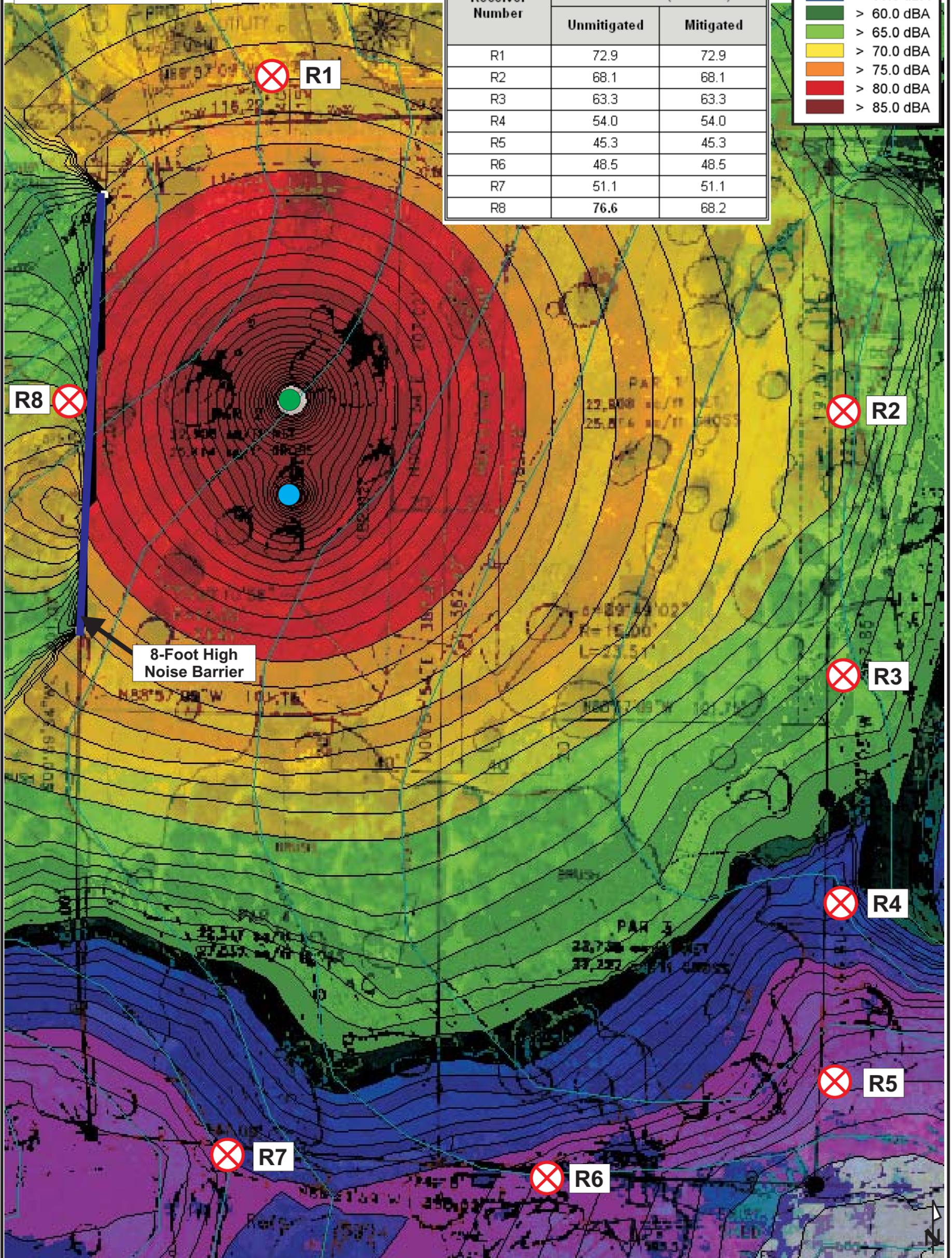
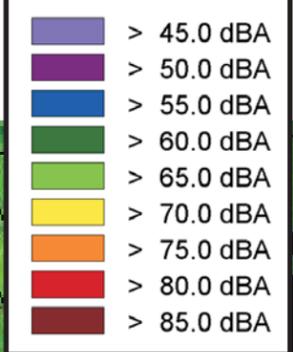
Eilar Associates, Inc.
 321 Willowspring Drive N.
 Encinitas, California 92024
 760-738-5570

Site Plan Showing Mitigated Temporary
 Construction Noise Impacts,
 Grading Phase - Pad 1
 Job #B31102N1

Figure 10

- Dozer
- Water Truck

Calculated Construction Noise Impacts		
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEQ)	
	Unmitigated	Mitigated
R1	72.9	72.9
R2	68.1	68.1
R3	63.3	63.3
R4	54.0	54.0
R5	45.3	45.3
R6	48.5	48.5
R7	51.1	51.1
R8	76.6	68.2



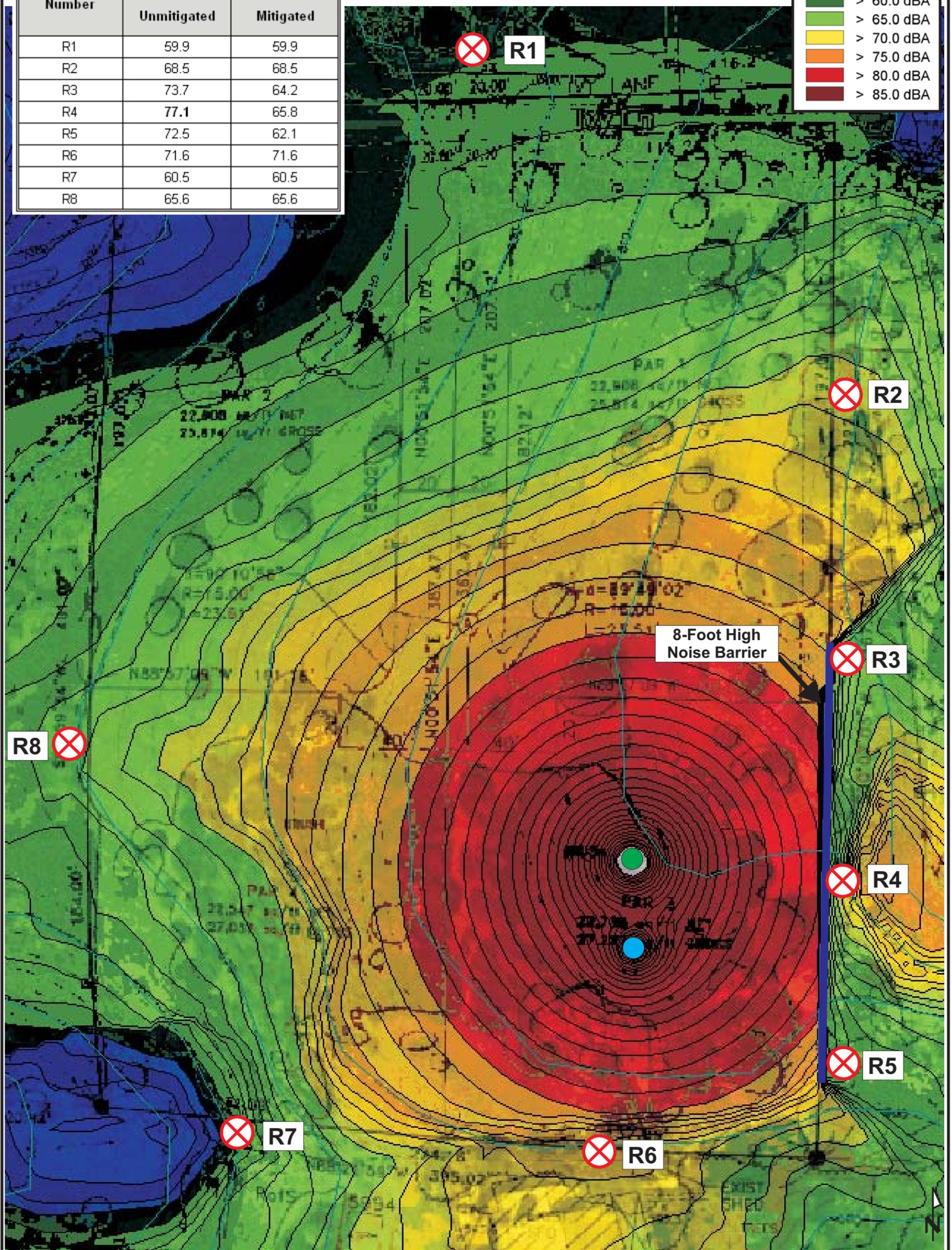
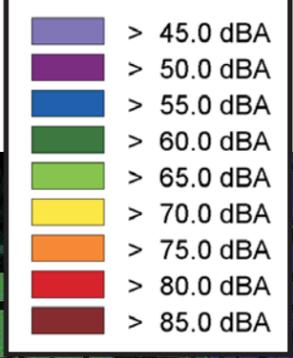
Eilar Associates, Inc.
 321 Willowspring Drive N.
 Encinitas, California 92024
 760-738-5570

Site Plan Showing Mitigated Temporary
 Construction Noise Impacts,
 Grading Phase - Pad 2
 Job #B31102N1

Figure 11

Calculated Construction Noise Impacts		
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEO)	
	Unmitigated	Mitigated
R1	59.9	59.9
R2	68.5	68.5
R3	73.7	64.2
R4	77.1	65.8
R5	72.5	62.1
R6	71.6	71.6
R7	60.5	60.5
R8	65.6	65.6

● Dozer
● Water Truck



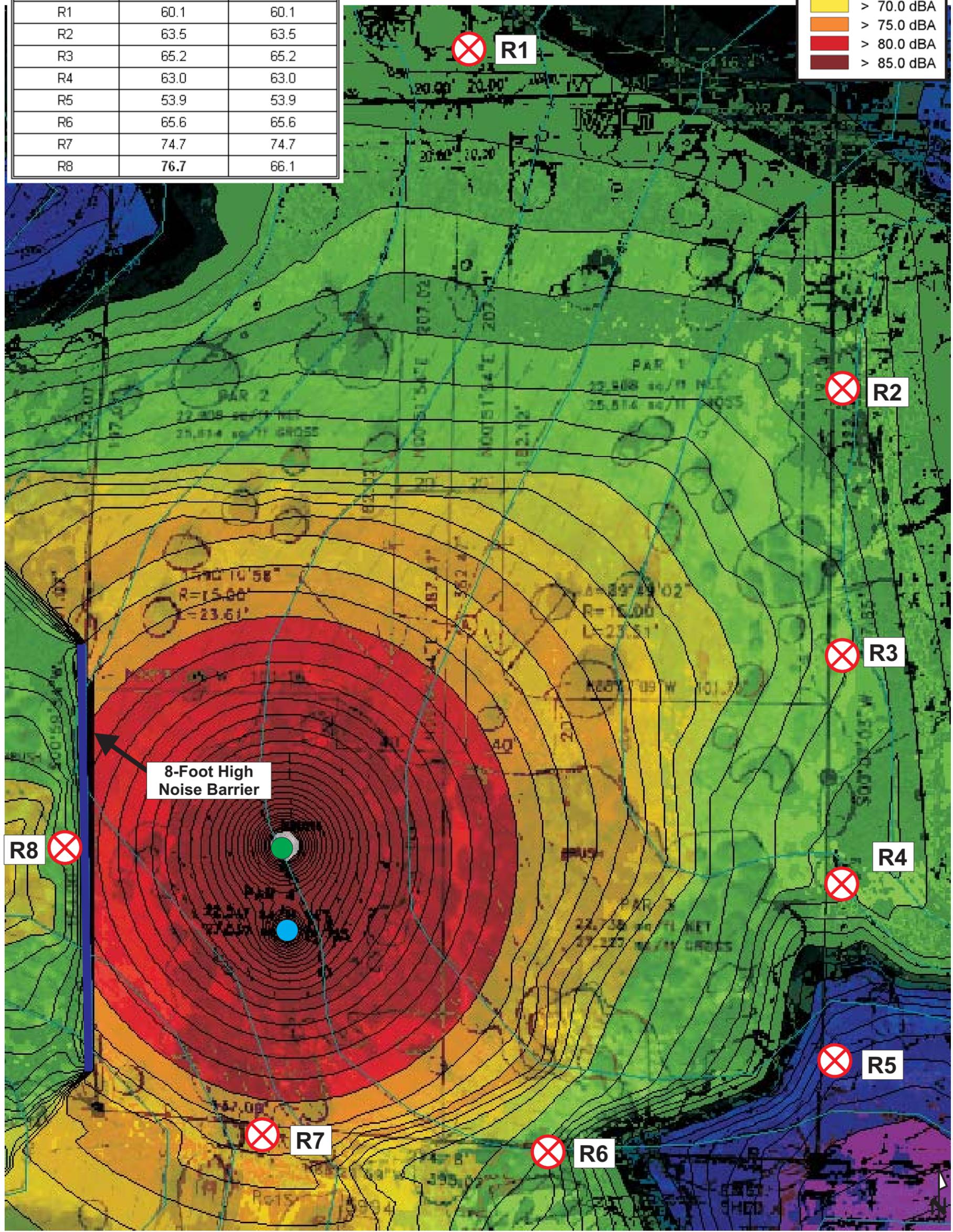
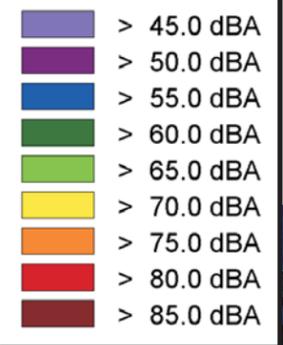
Eilar Associates, Inc.
 321 Willowspring Drive N.
 Encinitas, California 92024
 760-738-5570

Site Plan Showing Mitigated Temporary
 Construction Noise Impacts,
 Grading Phase - Pad 3
 Job #B31102N1

Figure 12

Calculated Construction Noise Impacts		
Receiver Number	8-Hour Average Equipment Noise Level (dBA LEO)	
	Unmitigated	Mitigated
R1	60.1	60.1
R2	63.5	63.5
R3	65.2	65.2
R4	63.0	63.0
R5	53.9	53.9
R6	65.6	65.6
R7	74.7	74.7
R8	76.7	66.1

● Dozer
● Water Truck



Eilar Associates, Inc.
 321 Willowspring Drive N.
 Encinitas, California 92024
 760-738-5570

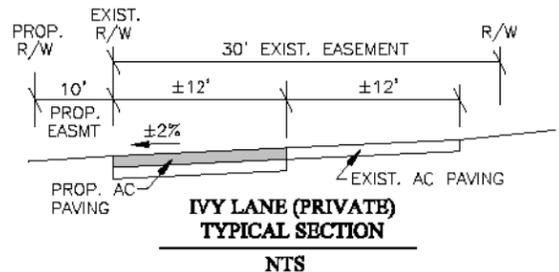
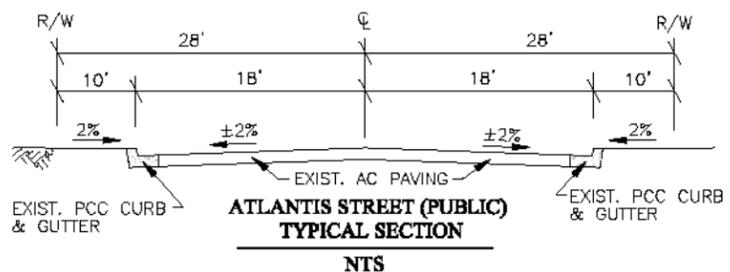
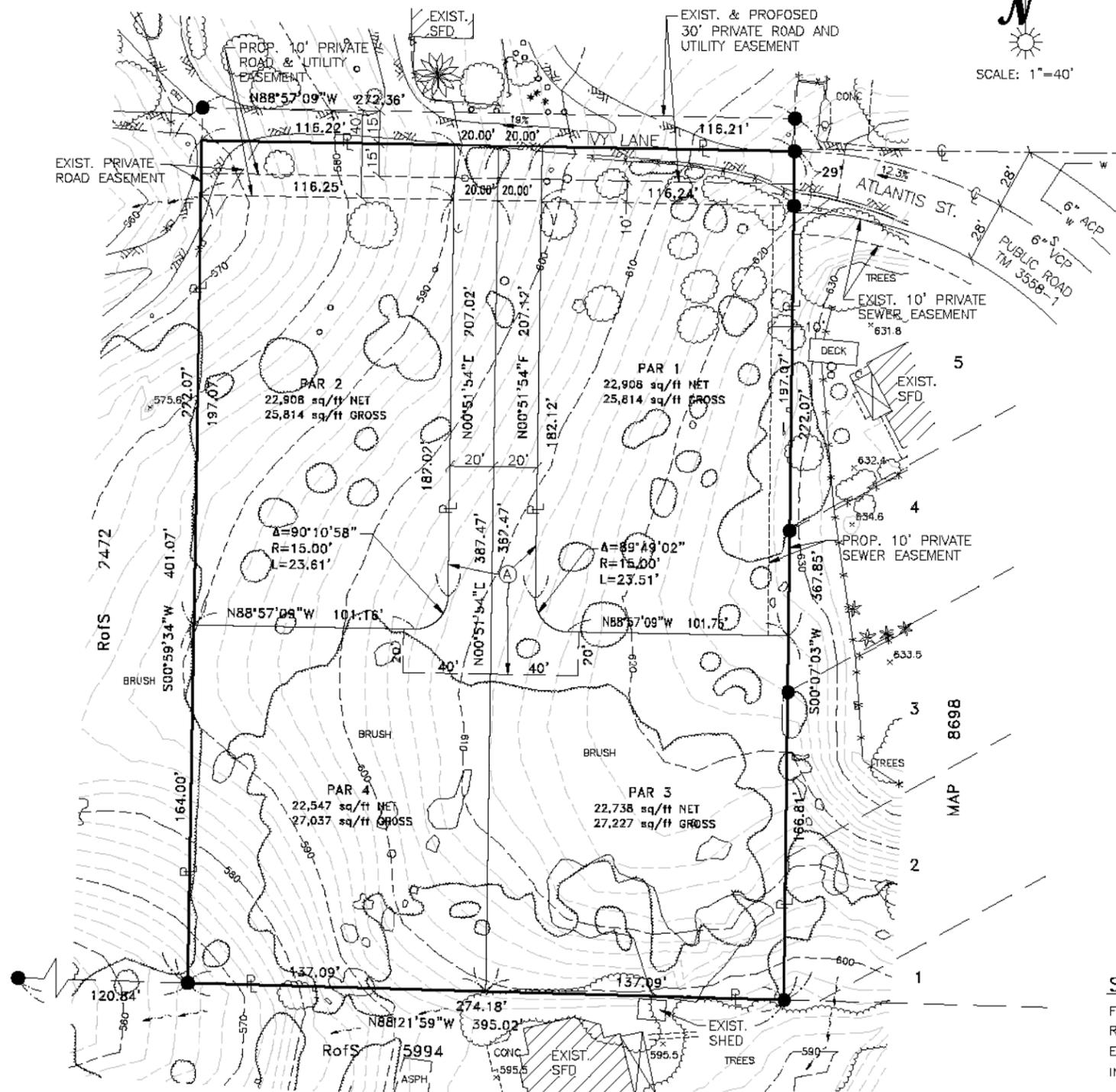
Site Plan Showing Mitigated Temporary
 Construction Noise Impacts,
 Grading Phase - Pad 4
 Job #B31102N1

Figure 13

APPENDIX A

Project Plans

PRELIMINARY TENTATIVE PARCEL MAP



OWNERS CERTIFICATE

I CERTIFY THAT I AM THE RECORD OWNER, AS SHOWN ON THE LATEST EQUALIZED COUNTY ASSESSMENT, OF THE PROPERTY SHOWN ON THE TENTATIVE MAP. ALL OF MY CONTIGUOUS OWNERSHIP WITHIN AND BEYOND THE BOUNDARIES OF THE PARCEL MAP IS SHOWN. THE BASIS OF CREATION OF LOTS IN MY OWNERSHIP (e.g. PARCEL MAP, FINAL MAP, CERTIFICATE OF COMPLIANCE, RECORDED DEED BEFORE 2-1-1972) IS INDICATED ON THE TENTATIVE PARCEL MAP. I UNDERSTAND THAT PROPERTY IS CONSIDERED AS CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS, OR RAILROAD RIGHT-OF-WAY. "FREEWAY: AS DEFINED IN SECTION 23.5 OF THE STREETS AND HIGHWAY CODES, SHALL NOT BE CONSIDERED AS ROADS OR STREETS.

I FURTHER CERTIFY THAT I WILL NOT, BY THIS APPLICATION, CREATE OR CAUSE TO BE CREATED, OR WILL NOT HAVE PARTICIPATED IN THE CREATION OF MORE THAN FOUR PARCELS ON CONTIGUOUS PROPERTY UNLESS SUCH CONTIGUOUS PARCELS WERE CREATED BY A MAJOR SUBDIVISION. FOR PURPOSES OF THIS CERTIFICATION, THE TERM "PARTICIPATED" MEANS HAVING COOPERATED WITH OR ACTED IN A PLANNING, COORDINATING, OR DECISION-MAKING CAPACITY IN ANY FORMAL, OR INFORMAL ASSOCIATION, OR PARTNERSHIP, FOR THE PURPOSE OF DIVIDING REAL PROPERTY. I CERTIFY UNDER PERJURY THAT THE FORGOING IS TRUE AND CORRECT.

EXECUTED THIS 13 DAY OF AUGUST AT SAN DIEGO, CALIFORNIA

08-13-13
DATE

LEGEND

- EXIST. SPOT ELEVATION ——— X 3508.0
- EXIST. PROPERTY BOUNDARY ——— P ———
- EXIST. CONTOUR ———
- EXIST. STRUCTURE ———
- PROP. PROPERTY LINE ——— P ———
- CENTER LINE ——— C ———
- EXIST. WIRE FENCE ——— X X X
- EXIST. ASPHALT PAVING ———
- EXIST. 8" SEWER ——— S ——— S
- EXIST. 8" WATER ——— W ——— W
- EXIST. GAS ——— GAS ——— GAS
- EXIST. CURB AND GUTTER ———
- FOUND PROPERTY MONUMENT ——— ●

EASEMENT NOTE:

- (A) PROP. EASEMENT TO THE SAN MIGUEL CONSOLIDATED FIRE PROTECTION DISTRICT FOR FIRE APPARATUS TURN-A-ROUND



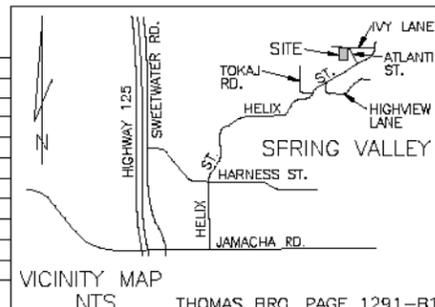
SETBACKS:

- FRONT YARD (FYS) ——— 50'
- REAR YARD (RYS) ——— 40'
- EXTERIOR SIDE YARD (EYS) — 35'
- INTERIOR SIDE YARD (ISYS) — 10'

MAP PREPARED

DATE: _____
REVISION #1: _____

TAX RATE AREA	83390
USE REGULATIONS	RR
ANIMAL REGULATIONS	J
DENSITY	—
LOT SIZE	0.5 AC
BUILDING TYPE	C
MAX. FLR. AREA	—
FLR. AREA RATIO	—
HEIGHT	G
COVERAGE	—
SETBACK	G
OPEN SPACE	—
SPECIAL AREA REGS.	C



VICINITY MAP
NTS
THOMAS BRO. PAGE 1291-B1

APPLICANT/OWNER

PANWEBSTER INVESTMENTS INC.
2445 BRANT STREET #511
SAN DIEGO, CA 92101
PHONE: (310) 871-6806

POWER

SDG&E

TELEPHONE

AT&T

A.P.N.

578-050-19

AVERAGE SLOPE

20.34%

LEGAL DESCRIPTION

POR NW1/4 OF NE1/4 OF NE1/4 OF SEC 5-17-1W

ADDITIONAL REQUIREMENTS

N/A

SPECIAL ASSESSMENT ACT STATEMENT

THIS PROJECT DOES NOT REQUIRE A SPECIAL ASSESSMENT ACT.

REGIONAL CATEGORY

VILLAGE

LAND USE

RR

TOPOGRAPHY

MORENO AERIAL PHOTO SURVEY

ASSOCIATED PERMITS

GRADING

PUBLICLY MAINTAINED ACCESS ROAD

ATLANTIS STREET

WATER

HELIX WATER DISTRICT

SEWER

SPRING VALLEY

FIRE

SAN MIGUEL FIRE PROTECTION DISTRICT

TOTAL AREA

2.43 AC

DESIGN SPEED

20 MPH

AVERAGE LOT SIZE

0.61 AC

OPEN SPACE EASEMENT (PROPOSED)

N/A

COMMUNITY/SUB-REGIONAL PLAN AREA

SPRING VALLEY

SCHOOL DISTRICTS

LA MESA - SPRING VALLEY

GROSSMONT HIGH

PRESENT & PROPOSED ZONING

RR

PRESENT & PROPOSED USE RESIDENTIAL

SOLAR NOTE:

ALL PARCELS WITHIN THIS SUBDIVISION HAVE A MINIMUM OF 100 SQ. FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING UNIT ALLOWED BY THIS SUBDIVISION.

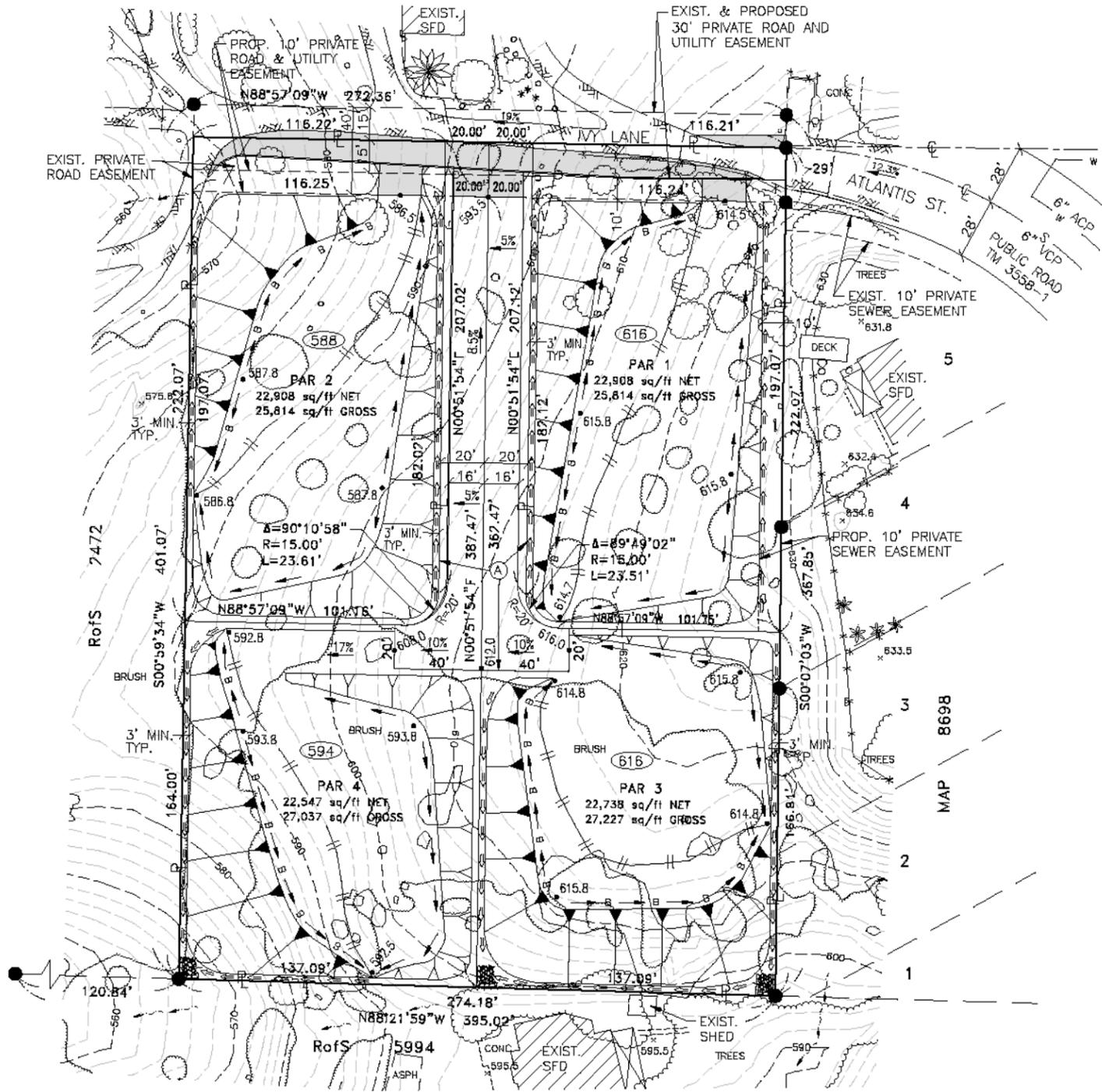
MAY ENGINEERING & SURVEYING

12222 A WOODSIDE AVE. #237, LAKESIDE,
CALIFORNIA 92040 PH. (619) 463- 8580
FAX. (619) 561-3897

ENGINEER OF WORK

Elliott M. May
ELLIOTT M. MAY R.C.E. 18592 DATE 08-13-13

PRELIMINARY GRADING PLAN FOR CEQA



LEGEND

- EXIST. SPOT ELEVATION ——— X 3508.0
- EXIST. PROPERTY BOUNDARY ——— P ———
- EXIST. CONTOUR ———
- EXIST. STRUCTURE ———
- PROP. PROPERTY LINE ———
- CENTER LINE ———
- PROP. FLOW LINE ———
- EXIST. WIRE FENCE ———
- EXIST. ASPHALT PAVING ———
- EXIST. 8" SEWER ———
- EXIST. 8" WATER ———
- PROP. SEWER ———
- PROP. WATER ———
- PROP. GAS ———
- PROP. GRASS LINED BROW DITCH ———
- PROP. PAD ELEVATION ——— (816)
- PROP. AC PAVEMENT ———
- CONSTR. AC DRIVEWAY ———
- PROP. SPOT ELEVATION ——— ● 47.00
- CUT SLOPES 1-1/2:1 ———
- FILL SLOPES 2:1 ———
- PROP. D-40 ROCK OUTLET ———
- EXIST. FLOW LINE ———
- PROP. 1.0' EARTH BERM ———
- FOUND PROPERTY MONUMENT ——— ●

EASEMENT NOTE:

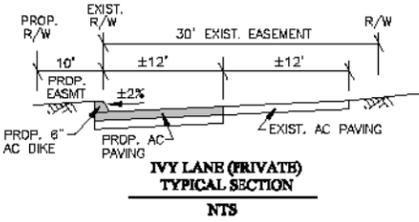
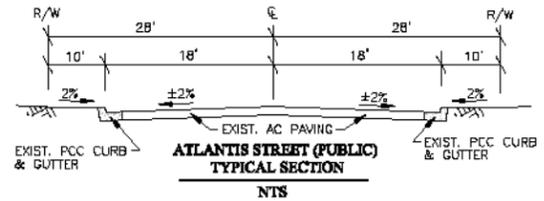
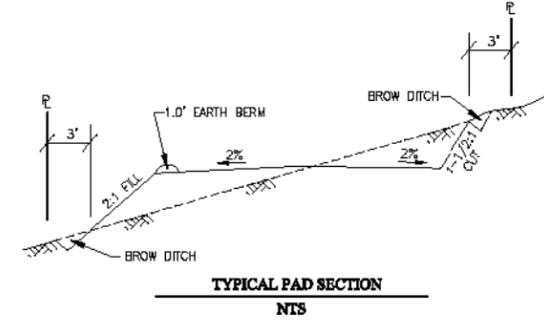
- (A) PROP. EASEMENT TO THE SAN MIGUEL CONSOLIDATED FIRE PROTECTION DISTRICT FOR FIRE APPARATUS TURN-A-ROUND

APPLICANT/OWNER
 PANWEBSTER INVESTMENTS INC.
 2445 BRANT STREET #511
 SAN DIEGO, CA 92101
 PHONE: (310) 871-6806

SOLAR NOTE:
 ALL PARCELS WITHIN THIS SUBDIVISION HAVE A MINIMUM OF 100 SQ. FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING UNIT ALLOWED BY THIS SUBDIVISION.

POWER
 SDG&E
TELEPHONE
 AT&T
 A.P.N.
 578-050-19
AVERAGE SLOPE
 20.34%

LEGAL DESCRIPTION
 FOR NW1/4 OF NE1/4 OF NE1/4 OF SEC 5-17-1W
ADDITIONAL REQUIREMENTS
 N/A
SPECIAL ASSESSMENT ACT STATEMENT
 THIS PROJECT DOES NOT REQUIRE A SPECIAL ASSESSMENT ACT.
REGIONAL CATEGORY
 VILLAGE
LAND USE
 RR
TOPOGRAPHY
 MORENO AERIAL PHOTO SURVEY
ASSOCIATED PERMITS
 GRADING
 PUBLICLY MAINTAINED ACCESS ROAD
 ATLANTIS STREET
WATER
 HELIX WATER DISTRICT
SEWER
 SPRING VALLEY
FIRE
 SAN MIGUEL FIRE PROTECTION DISTRICT
TOTAL AREA
 2.43 AC
DESIGN SPEED
 20 MPH
AVERAGE LOT SIZE
 0.61 AC
OPEN SPACE EASEMENT (PROPOSED)
 N/A
COMMUNITY/SUB-REGIONAL PLAN AREA
 SPRING VALLEY
EARTHWORK
 CUT: 5740 C.Y. FILL: 5740 C.Y.
 IMPORT: 0 C.Y. EXPORT: 0 C.Y.
 MAX. FILL HEIGHT: 28' MAX CUT HEIGHT: 19'



SETBACKS:

- FRONT YARD (FYS) ——— 50'
- REAR YARD (RYS) ——— 40'
- EXTERIOR SIDE YARD (EYS) — 35'
- INTERIOR SIDE YARD (IYS) — 10'

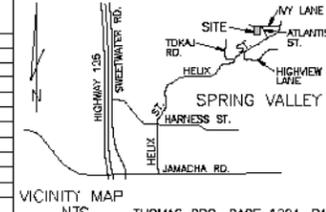
MAP PREPARED

DATE: _____
 REVISION #1: _____

KVA # _____
 E.R. LOG NO. _____
 TPM _____



TAX RATE AREA	B3399
USE REGULATIONS	RR
ANIMAL REGULATIONS	J
DENSITY	—
LOT SIZE	0.5 AC
BUILDING TYPE	C
MAX. FLR. AREA	—
FLR. AREA RATIO	—
HEIGHT	G
COVERAGE	G
SETBACK	G
OPEN SPACE	—
SPECIAL AREA REGS.	C



MAY ENGINEERING & SURVEYING
 12222 A WOODSIDE AVE. #237, LAKESIDE,
 CALIFORNIA 92040 PH. (619) 463-8580
 FAX. (619) 561-3897

ENGINEER OF WORK

 ELLIOTT M. MAY R.C.E. 18592 DATE 08-13-13

APPENDIX B

Pertinent Sections of the County of San Diego Noise Ordinance

(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 [36.404](#) and the limitations on construction equipment in section [36.409](#), 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 [Table 36.410A](#), 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 [Table 36.410A](#) 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 [Table 36.410B](#), 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 [Table 36.410B](#) 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 C

Construction Equipment Noise Calculations

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: Dozer
Receiver: North

Noise Source

Noise Level (dBA) 81 at 32.8 feet

Distances

Source Elevation 615 feet at 6 feet above grade
Receiver Elevation: 610 feet at 5 feet above grade
Source to Receiver Distance: 160 feet

Path Calculation

Source to Receiver Direct Path Distance: 160 feet

Sound Pressure Level

67.2 at 160 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 63.2

Summation

Number of Sources: 2
Level during 8 hour day: 72.0

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: **Water Truck**
Receiver: North

Noise Source

Noise Level (dBA) 87 at 32.8 feet

Distances

Source Elevation 615 feet at 5 feet above grade
Receiver Elevation: 610 feet at 5 feet above grade
Source to Receiver Distance: 125 feet

Path Calculation

Source to Receiver Direct Path Distance: 125 feet

Sound Pressure Level 75.4 at 125 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 71.4

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: Dozer
Receiver: East

Noise Source
Noise Level (dBA) <u>81</u> at <u>32.8</u> feet

Distances
Source Elevation <u>615</u> feet at <u>6</u> feet above grade
Receiver Elevation: <u>628</u> feet at <u>5</u> feet above grade
Source to Receiver Distance: <u>76</u> feet

Path Calculation
Source to Receiver Direct Path Distance: <u>77</u> feet

Sound Pressure Level	<u>73.6</u>	at	<u>77</u>	feet
Hours of Use:	<u>8</u>			
Duty Cycle (%):	<u>40</u>			
Level During 8 Hour day:	<u>69.6</u>			

Summation
Number of Sources: <u>2</u>
Level during 8 hour day: <u>77.1</u>

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: **Water Truck**
Receiver: East

Noise Source	
Noise Level (dBA)	<u>87</u> at <u>32.8</u> feet

Distances	
Source Elevation	<u>615</u> feet at <u>5</u> feet above grade
Receiver Elevation:	<u>628</u> feet at <u>5</u> feet above grade
Source to Receiver Distance:	<u>70</u> feet

Path Calculation	
Source to Receiver Direct Path Distance:	<u>71</u> feet

Sound Pressure Level	<u>80.3</u> at <u>71</u> feet
Hours of Use:	<u>8</u>
Duty Cycle (%):	<u>40</u>
Level During 8 Hour day:	<u>76.3</u>

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: Dozer
Receiver: South

Noise Source
Noise Level (dBA) <u>81</u> at <u>32.8</u> feet

Distances
Source Elevation <u>615</u> feet at <u>6</u> feet above grade
Receiver Elevation: <u>600</u> feet at <u>5</u> feet above grade
Source to Receiver Distance: <u>252</u> feet

Path Calculation
Source to Receiver Direct Path Distance: <u>253</u> feet

Sound Pressure Level	<u>63.3</u>	at	<u>253</u>	feet
Hours of Use:	<u>8</u>			
Duty Cycle (%):	<u>40</u>			
Level During 8 Hour day:	<u>59.3</u>			

Summation
Number of Sources: <u>2</u>
Level during 8 hour day: <u>65.4</u>

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: **Water Truck**
Receiver: South

Noise Source	
Noise Level (dBA)	<u>87</u> at <u>32.8</u> feet

Distances	
Source Elevation	<u>615</u> feet at <u>5</u> feet above grade
Receiver Elevation:	<u>600</u> feet at <u>5</u> feet above grade
Source to Receiver Distance:	<u>288</u> feet

Path Calculation	
Source to Receiver Direct Path Distance:	<u>288</u> feet

Sound Pressure Level	<u>68.1</u> at <u>288</u> feet
Hours of Use:	<u>8</u>
Duty Cycle (%):	<u>40</u>
Level During 8 Hour day:	<u>64.1</u>

Noise Attenuation by Distance Calculation

Job: **TPM 21208**
Job #: **B31102N1**
Date: **11/14/2013**
Source: **Dozer**
Receiver: **West**

Noise Source

Noise Level (dBA) 81 at 32.8 feet

Distances

Source Elevation 615 feet at 6 feet above grade
Receiver Elevation: 580 feet at 5 feet above grade
Source to Receiver Distance: 215 feet

Path Calculation

Source to Receiver Direct Path Distance: 218 feet

Sound Pressure Level

64.5 at 218 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 60.6

Summation

Number of Sources: 2
Level during 8 hour day: 67.6

Noise Attenuation by Distance Calculation

Job: TPM 21208
Job #: B31102N1
Date: 11/14/2013
Source: **Water Truck**
Receiver: West

Noise Source

Noise Level (dBA) 87 at 32.8 feet

Distances

Source Elevation 615 feet at 5 feet above grade
Receiver Elevation: 580 feet at 5 feet above grade
Source to Receiver Distance: 212 feet

Path Calculation

Source to Receiver Direct Path Distance: 215 feet

Sound Pressure Level 70.7 at 215 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 66.7

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Cadna Noise Model - Sound Levels														
Name	ID	Type		Oktave Spectrum (dB)										Source
			Weight	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	DZ	Lw (c)		116	105	107	104	103	109	93	87	111.7	117.8	Defra
Water Truck	WT	Lw (c)		105.6	109.5	107.6	112.8	116.5	114	106.5	95.5	119.7	120.5	Wieland
Paver	PV	Lw (c)		103	108	105	103	102	101	98	91	107.5	112.3	Defra
Roller	RO	Lw (c)		115	115	109	101	101	101	98	92	108	118.8	Defra

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Cadna Noise Model - Point Sources - Grading, Pad 1										
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time	
		Day	Type	Value		X	Y	Z	Day	Night
		(dBA)			(m)	(m)	(m)	(m)	(min)	(min)
Water Truck	WT	119.7	Lw	WT	1.52	157.76	184.44	189.16	24	0
Dozer	DZ	111.7	Lw	DZ	1.83	158.6	173.2	190.5	24	0

Cadna Noise Model - Point Sources - Grading, Pad 2										
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time	
		Day	Type	Value		X	Y	Z	Day	Night
		(dBA)			(m)	(m)	(m)	(m)	(min)	(min)
Water Truck	WT	119.7	Lw	WT	1.52	118.07	184.23	181.32	24	0
Dozer	DZ	111.7	Lw	DZ	1.83	118.07	173.62	183.27	24	0

Cadna Noise Model - Point Sources - Grading, Pad 3										
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time	
		Day	Type	Value		X	Y	Z	Day	Night
		(dBA)			(m)	(m)	(m)	(m)	(min)	(min)
Water Truck	WT	119.7	Lw	WT	1.52	155.87	129.63	190.19	24	0
Dozer	DZ	111.7	Lw	DZ	1.83	156.18	119.75	189.6	24	0

Cadna Noise Model - Point Sources - Grading, Pad 4										
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time	
		Day	Type	Value		X	Y	Z	Day	Night
		(dBA)			(m)	(m)	(m)	(m)	(min)	(min)
Water Truck	WT	119.7	Lw	WT	1.52	116.6	131.52	184.62	24	0
Dozer	DZ	111.7	Lw	DZ	1.83	116.91	121.85	183.87	24	0

Cadna Noise Model - Point Sources - Paving										
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time	
		Day	Type	Value		X	Y	Z	Day	Night
		(dBA)			(m)	(m)	(m)	(m)	(min)	(min)
Paver	PV	107.5	Lw	PV	1.52	135.79	190.67	184.05	30	0
Roller	RO	108	Lw	RO	1.83	135.93	167.4	187.02	12	0

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Cadna Noise Model -Unmitigated Noise Levels at Receivers - Grading, Pad 1					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	72.6	1.52	158.06	222.17	186.5
R2	77.5	1.52	180.02	183.15	193.33
R3	73.1	1.52	179.94	153.26	193.35
R4	62.2	1.52	179.56	127.85	190.54
R5	51.7	1.52	179.31	107.27	185.89
R6	52.8	1.52	146.75	96.86	184.45
R7	49.8	1.52	111.13	99.11	178.79
R8	67.7	1.52	93.48	180.66	177.89

Cadna Noise Model -Unmitigated Noise Levels at Receivers - Grading, Pad 2					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	72.9	1.52	116.34	220.95	179.03
R2	68.1	1.52	180.02	183.15	193.33
R3	63.3	1.52	179.94	153.26	193.35
R4	54.0	1.52	179.56	127.85	190.54
R5	45.3	1.52	179.31	107.27	185.89
R6	48.5	1.52	146.75	96.86	184.45
R7	51.1	1.52	111.13	99.11	178.79
R8	76.6	1.52	93.36	184.23	177.09

Cadna Noise Model -Unmitigated Noise Levels at Receivers - Grading, Pad 3					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	59.9	1.52	137.56	222	182.86
R2	68.5	1.52	180.02	183.15	193.33
R3	73.7	1.52	179.94	153.26	193.35
R4	77.1	1.52	179.56	127.85	190.54
R5	72.5	1.52	179.31	107.27	185.89
R6	71.6	1.52	151.8	96.44	184.37
R7	60.5	1.52	111.13	99.11	178.79
R8	65.6	1.52	91.89	142.64	181.25

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Cadna Noise Model -Unmitigated Noise Levels at Receivers - Grading, Pad 4					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	60.1	1.52	137.56	222	182.86
R2	63.5	1.52	180.02	183.15	193.33
R3	65.2	1.52	179.94	153.26	193.35
R4	63.0	1.52	179.56	127.85	190.54
R5	53.9	1.52	179.31	107.27	185.89
R6	65.6	1.52	146.75	96.86	184.45
R7	74.7	1.52	114.49	98.9	179.91
R8	76.7	1.52	92.1	131.1	180.19

Cadna Noise Model -Unmitigated Noise Levels at Receivers - Paving					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	63.1	1.52	136.35	220.95	182.57
R2	60.1	1.52	180.02	183.15	193.33
R3	56.5	1.52	179.94	153.26	193.35
R4	49.0	1.52	179.56	127.85	190.54
R5	41.4	1.52	179.31	107.27	185.89
R6	43.1	1.52	146.75	96.86	184.45
R7	43.6	1.52	111.13	99.11	178.79
R8	60.4	1.52	93.36	184.23	177.09

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Cadna Noise Model - Barriers						
Name	ID	Height	Coordinates			
		(m)	X	Y	Z	Ground
			(m)	(m)	(m)	(m)
Pad 1 Wall	BA_1	2.44	178.42	205.02	191.98	189.54
			178.09	155.67	194.18	191.74
Pad 2 Wall	BA_2	2.44	94.21	158.42	181.69	179.25
			97.04	207.59	174.81	172.37
Pad 3 Wall	BA_3	2.44	178.16	153.72	194.11	191.67
			177.91	147.64	193.62	191.18
			177.91	139.47	193.07	190.63
			177.83	134.38	192.27	189.83
			177.66	128.38	191.46	189.02
			177.49	120.12	189.82	187.38
			177.24	112.79	188.42	185.98
Pad 4 Wall	BA_4	2.44	177.16	104.45	186.45	184.01
			93.87	154.49	181.89	179.45
			94.08	147.56	182.45	180.01
			94.08	139.57	182.45	180.01
			94.29	130.33	181.34	178.9
			94.5	120.45	179.49	177.05
			94.71	112.47	177.25	174.81
			94.71	106.17	175.8	173.36

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Cadna Noise Model -Mitigated Noise Levels at Receivers - Grading, Pad 1					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	72.6	1.52	158.06	222.17	186.5
R2	73.4	1.52	180.02	183.15	193.33
R3	70.3	1.52	179.94	153.26	193.35
R4	62.2	1.52	179.56	127.85	190.54
R5	51.7	1.52	179.31	107.27	185.89
R6	52.8	1.52	146.75	96.86	184.45
R7	49.8	1.52	111.13	99.11	178.79
R8	67.7	1.52	93.48	180.66	177.89

Cadna Noise Model - Mitigated Noise Levels at Receivers - Grading, Pad 2					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	72.9	1.52	116.34	220.95	179.03
R2	68.1	1.52	180.02	183.15	193.33
R3	63.3	1.52	179.94	153.26	193.35
R4	54.0	1.52	179.56	127.85	190.54
R5	45.3	1.52	179.31	107.27	185.89
R6	48.5	1.52	146.75	96.86	184.45
R7	51.1	1.52	111.13	99.11	178.79
R8	68.2	1.52	93.36	184.23	177.09

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Cadna Noise Model -Mitigated Noise Levels at Receivers - Grading, Pad 3					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	59.9	1.52	137.56	222	182.86
R2	68.5	1.52	180.02	183.15	193.33
R3	64.2	1.52	179.94	153.26	193.35
R4	65.8	1.52	179.56	127.85	190.54
R5	62.1	1.52	179.31	107.27	185.89
R6	71.6	1.52	151.8	96.44	184.37
R7	60.5	1.52	111.13	99.11	178.79
R8	65.6	1.52	91.89	142.64	181.25

Cadna Noise Model - Mitigated Noise Levels at Receivers - Grading, Pad 4					
Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
R1	60.1	1.52	137.56	222	182.86
R2	63.5	1.52	180.02	183.15	193.33
R3	65.2	1.52	179.94	153.26	193.35
R4	63.0	1.52	179.56	127.85	190.54
R5	53.9	1.52	179.31	107.27	185.89
R6	65.6	1.52	146.75	96.86	184.45
R7	74.7	1.52	114.49	98.9	179.91
R8	66.1	1.52	92.1	131.1	180.19