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An Employee-Owned Company

July 28, 2021

Mr. Scott Murray
Greenlaw Partners
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Irvine, CA 92612

Reference: Noise Analysis for the Sweetwater Springs Triangular Parking Lot Project
(Project Number PDS2021-STP-21-019; RECON Number 9931-1)

Dear Mr. Murray:

The purpose of this report is to assess potential noise impacts from construction and operation of the Sweetwater Springs Triangular Parking Lot Project (project). This analysis was prepared in accordance with the County of San Diego (County) Guidelines for Determining Significance and Report Format and Content Requirements, Noise (County Noise Guidelines) (County of San Diego 2009).

- Project Common Name: Sweetwater Springs Triangular Parking Lot Project
- Project Numbers: PDS2021-STP-21-019
- Date: July 28, 2021
- County-approved Preparer: Jessica Fleming
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- Prepared for the County of San Diego (County)

1.0 Introduction

1.1 Project Description

The subject property is triangular shaped parcel located behind the industrial building located at 2500 Sweetwater Springs Boulevard, Spring Valley, California. The site is located southeast of the intersection of Sweetwater Springs Boulevard and Jamacha Boulevard. The site consists of approximately 2 acres of vacant land just northeast of a commercial property, south of a residential mobile home community, and east of a large open space preserve to the east. Figure 1 shows the regional location of the project site, and Figure 2 shows an aerial photograph of the project site and vicinity.

The site is zoned M58 (High Impact Industrial) and requires grading and surfacing of the lot for the proposed "automotive and equipment: fleet storage" use for the parking of approximately 69 delivery vans. No structures will be constructed, and no building signage will be required. Figure 3 shows the proposed site plan.

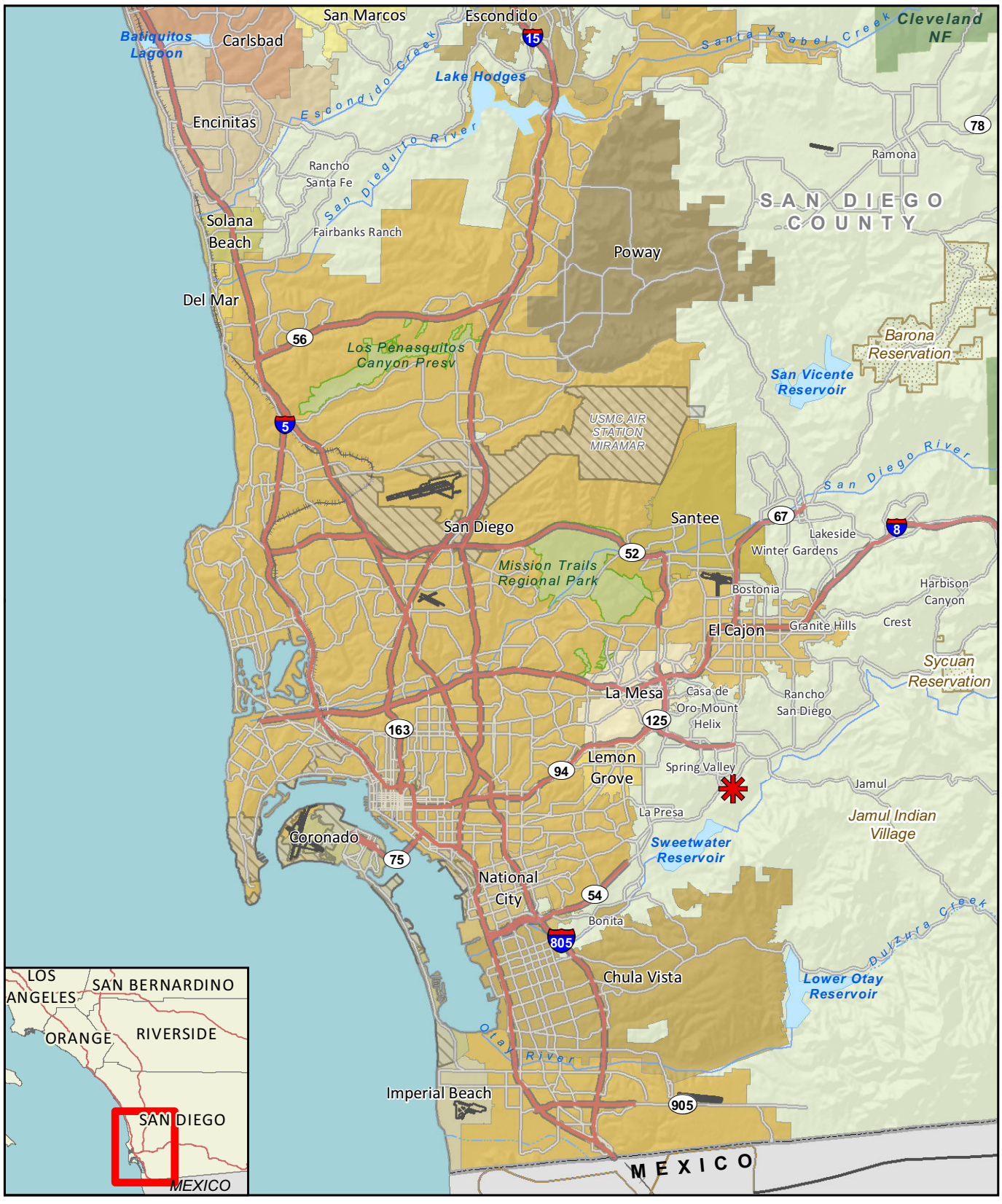

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FIGURE 1
Regional Location

Image Source: NearMap (flown April 2021)

Project Boundary

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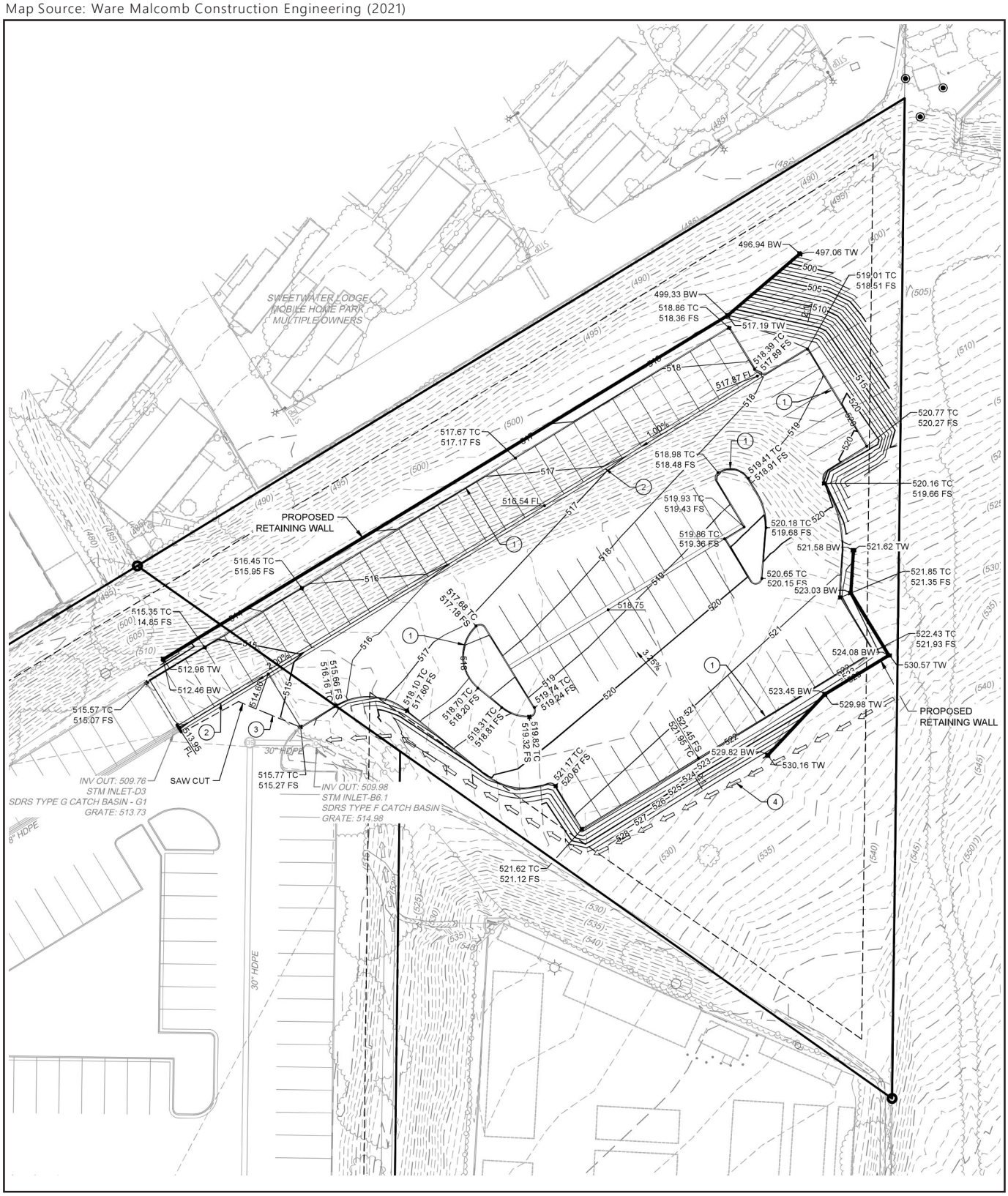
FIGURE 2

Project Location on Aerial Photograph

Map Source: Ware Malcomb Construction Engineering (2021)



CONSTRUCTION NOTES

1. CONSTRUCT 6" CURB PER SD RSD G-01.
2. CONSTRUCT PCC RIBBON GUTTER PER DETAIL 1, SHEET 9.
3. CONNECT TO EXISTING AC PAVEMENT PER DETAIL 2B, SHEET 9.
4. CONSTRUCT BROW DITCH PER SD RSD D-75.

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FIGURE 3
Site Plan

1.2 Environmental Settings and Existing Condition

1.2.1 Noise Terminology

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is generally defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in the extreme, hearing impairment.

The unit of measurement used to describe a sound, or noise, level is the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. A 10 dB increase represents a 10-fold increase in sound intensity, a 20 dB change is a 100-fold difference, 30 dB is a 1,000-fold increase, etc. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Additionally, in technical terms, sound levels are described as either a "sound power level" or a "sound pressure level," which while commonly confused are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power is the energy converted into sound by the source. The sound power level of the source is expressed as L_{pw}. Equipment sound power ratings are determined in an acoustics laboratory, usually by the manufacturer or an independent test lab. Testing facilities utilize specific standards and methods to promote data uniformity and allow objective comparisons across industries. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an ear drum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure.

The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, a method called "A-weighting" is used to filter noise frequencies that are not audible to the human ear. A-weighting approximates the frequency response of the average young ear when listening to most ordinary everyday sounds. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the "A-weighted" levels of those sounds. Therefore, the A-weighted noise scale is used for measurements and standards involving the human perception of noise. In this report, all noise levels are A-weighted and dB(A) is understood to identify the A-weighted decibel.

In addition to noise levels, the duration or exceedance of noise over time is also important for the assessment of potential noise disturbance. Average noise levels over a period of minutes or hours are usually expressed as dB(A) L_{eq}, or the equivalent noise level for that period. The period of time averaged may be specified; $L_{eq(3)}$ would be a 3-hour average; when no period is specified, a 1-hour average is assumed.

The timing of noise is also an important factor to consider in assessing potential noise impacts as noise levels that may be acceptable during the day may create disturbance during evening or nighttime hours. Community noise equivalent level (CNEL) is the energy average of the A-weighted sound levels occurring during a 24-hour period, with a 5 dB(A) penalty added to the sound levels occurring between 7:00 p.m. and 10:00 p.m. and 10 dB(A) added to the sound levels occurring between 10:00 p.m. and 7:00 a.m.

Human perception of noise has no simple correlation with acoustical energy. A sound power is the energy converted into sound by the source. The sound power level of a source is expressed as L_{pw}. The L_{pw} is used to estimate how far a noise will travel and to predict the sound pressure levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an ear drum or microphone.

The perception of noise is not linear in terms of dB(A) or in terms of acoustical energy. Two equivalent noise sources do not sound twice as loud as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dB(A), increase or decrease; that a change of 5 dB(A) is readily perceptible; and that an increase (decrease) of 10 dB(A) sounds twice (half) as loud (California Department of Transportation [Caltrans] 2013a).

From the source to the receiver, noise changes both in level and frequency spectrum. The most obvious change is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on the following important factors: ground absorption, atmospheric effects and refraction, shielding by natural and man-made features, noise barriers, diffraction, and reflection. For a point or stationary noise source, such as construction equipment, the attenuation or drop-off in noise level would be at least -6 dB(A) for each doubling of unobstructed distance between source and the receiver and could increase to -7.5 dB(A) depending on the acoustic characteristics of the intervening ground. For a linear noise source, such as vehicles traveling on a roadway, the attenuation or drop-off in noise level would be approximately -3 dB(A) for each doubling of unobstructed distance between source and the receiver and could increase to -4.5 dB(A) depending on the acoustic characteristics of the intervening ground.

A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features, such as hills and dense woods, as well as man-made features, such as buildings and walls, can significantly alter noise levels. Walls or berms are often specifically used to reduce or attenuate noise.

Noise-sensitive receptors are generally considered humans engaged in activities, or occupying land uses, that may be subject to the stress of significant interference from noise. Human activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. Land uses associated with noise sensitive human receptors include residential dwellings including mobile homes, hotels/motels, hospitals, nursing homes, educational facilities, and libraries. In addition to human receptors, protected animal species and their habitats may be considered sensitive noise receptors, especially during their breeding season.

1.2.2 Settings and Location

The 2.05-acre project site is zoned M58 (High Impact Industrial) and is currently undeveloped. The project site is surrounded by storage, warehouse, and industrial uses to the northwest, west, and south, residential uses to the north and northeast, and Multiple Species Conservation Program (MSCP) open space to the east.

1.2.3 Existing Noise Conditions

Existing noise levels in the vicinity of the project site were measured on June 9, 2021, using one Larson-Davis Model LxT, Type 1 Integrating Sound Level Meter, serial number 3829. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Interval Period	1 minute
Time History Period:	5 seconds

The meter was calibrated before measurement. The meter was set 5 feet above the ground level for each measurement. The weather was partly cloudy with a temperature of approximately 70 degrees Fahrenheit and a slight breeze during the measurement period. Figure 4 shows the noise measurement locations. Noise measurement data is provided in Attachment 1.

Image Source: NearMap (flown April 2021)

Measurement Location

Project Boundary

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FIGURE 4

Noise Measurement Locations

Measurement 1 was located at the eastern property line, and Measurement 2 was located at the northwestern property line approximately 30 feet from the nearest residential unit. The main sources of noise during the measurement periods were distant vehicle traffic and aircraft flyovers. Other sources of noise included a barking dog, bird vocalizations, and breeze in the trees. Noise levels were measured for 15 minutes at each location. The average measured noise levels were 48.4 and 46.5 dB(A) L_{eq} at measurement locations 1 and 2, respectively.

Table 1 summarizes the measured noise levels.

Table 1
Noise Measurements

Measurement	Location	Time	Main Noise Sources	L_{eq}
1	Eastern property line	12:11 p.m. – 12:26 p.m.	Distant traffic and aircraft flyovers	48.4
2	Northwestern property line, 30 feet from nearest residence	12:43 p.m. – 12:58 p.m.		46.5

NOTE: Noise measurement data is contained in Attachment 1.
L_{eq} = equivalent noise level

1.3 Methodology

Noise level predictions and contour mapping for construction and on-site noise sources were developed using noise modeling software, SoundPLAN Essential, version 4.1 (Navcon Engineering 2018). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at 5 feet above ground elevation, which represents the average height of the human ear. Noise levels were modeled at the adjacent residential receivers (Receivers 1 through 10) and at the adjacent habitat (Receivers 11 through 15).

1.3.1 Project Operation

The noise source on the project site after completion of construction would include vehicle parking activities, including vans traveling to and from parking spaces, and brief noise instances associated with parking such as opening and closing car doors, engines starting, and backup alarms. The vans would only be active on-site during two periods in the morning and the evening, and would not be continuous throughout the day. Employees would arrive in the morning to retrieve their van, load, and continue on their delivery route throughout the day, and then return in the evening to park the van. The parking lot was modeled as an area source in SoundPLAN assuming that each parking space would having a parking movement in the same hour. The parking lot noise source in SoundPLAN does not include noise due to backup alarms. Delivery van backup alarms generate a noise level of 78 dB(A) at 20 feet (Cecile Felsher, NV5, phone call with author, June 8, 2021). Backup alarms were also modeled as an area source distributed over the parking lot area assuming a van would back out of each parking space in the same hour. Parking activities would only occur during the daytime hours. The would be no other operational noise sources associated with the project.

1.3.2 Project Construction

Project construction activities would include grading and paving. Project construction noise would be generated by diesel engine-driven construction equipment used for site preparation and grading, building construction, loading, unloading, and placing materials and paving. Diesel engine-driven trucks also would bring materials to the site and remove the soils from excavation.

Construction equipment with a diesel engine typically generates maximum noise levels from 70 to 95 dB(A) L_{eq} at a distance of 50 feet (Federal Highway Administration [FHWA] 2006 and 2008, Federal Transit Authority 2006). During construction, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Table 2 summarizes typical construction equipment noise levels and duty cycles.

Noise levels were modeled for both grading and paving activities. Grading noise levels were modeled assuming the simultaneous operation of a dozer and an excavator, for a total sound power level of 115.7 dB(A) L_{pw}. Paving noise levels were modeled assuming the simultaneous operation of a paver and roller for a total sound power level of 113.9 dB(A) L_{pw}. Noise levels were modeled as an area source over the footprint of the project.

Table 2
Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Auger Drill Rig	85	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	85	20%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 kilovolt amps or less)	70	50%
Generator (more than 25 kilovolt amps)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
Impact Pile Driver (diesel or drop)	95	20%
In situ Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Roller	74	40%
Scraper	85	40%
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%

SOURCE: Federal Highway Administration 2006 and 2008; Federal Transit Authority 2006.
dB(A) L_{eq} = A-weighted decibels average noise level

2.0 Project-Generated Airborne Noise

2.1 Guidelines for Determination of Significance

2.1.1 Operation

The County Noise Ordinance, Section 36.404, sets limits on the noise levels generated from one property to another, such as from mechanical equipment. It is unlawful for a person to cause or allow noise generated on a particular property to exceed the 1-hour average sound level, at any point on or beyond the boundaries of the property, as shown in Table 3.

Table 3
County of San Diego Noise Ordinance Sound Level Limits

Zone	Applicable Hours	Sound Level Limit dB(A) L_{eq}
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92, RV, and RU with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) RRO, RC, RM, S86, V5, RV and RU with a General Plan Land Use Designation density of 10.9 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S-94, V4 and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1 V2 V1 V2 V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 55 50 70 65
(5) M-50, M-52, and M-54	Anytime	70
(6) S82, M56 and M58	Anytime	75
(7) S88 (see subsection (c) below)		

SOURCE: County Noise Ordinance, Section 36.404.
dB(A) L_{eq} = A-weighted decibels average noise level
Notes:
(a) Except as provided in section 36.409, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise
(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.
(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 3 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 3, subsection (1) apply to property with a residential, agricultural, or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.
(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.
(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.
(f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond 6 feet from the boundary of the easement upon which the facility is located.

The surrounding industrial properties are zoned M58, the surrounding residential uses are zoned RMH11 and RMH8 (Residential Mobile Home), and the open space to the east is zoned RV (Residential Variable). The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. Therefore, the applicable limits between the project site and the adjacent residential uses are 62.5 dB(A) L_{eq} during the daytime hours and 60 dB(A) L_{eq} during the nighttime hours.

2.1.2 Construction

Section 36.409 states:

> Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause the construction equipment to be operated, exceeding an average sound level of 75 dB(A) for an 8-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 states:

> 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 4, 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 4 are as described in the County Zoning Ordinance.

Table 4
[County Noise Ordinance Table 3.6410A]
Maximum Sound Level (Impulsive) Measured at Occupied Properties for Public Road Projects

Occupied Property Use	Noise Level [dB(A)]
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85
dB(A) L_{eq} = A-weighted decibels	

> (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 5, 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 5 are as described in the County Zoning Ordinance.

Table 5 [County Noise Ordinance Table 3.6410B] Maximum Sound Level (Impulsive) Measured at Occupied Properties	
Occupied Property Use	Noise Level [dB(A)]
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90
dB(A) L_{eq} = A-weighted decibels	

(c) The minimum measurement period for any measurements conducted under this section shall be 1 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.

2.1.3 Biological Guidelines

The eastern boundary of the project site is coincident with the boundary of an open space preserve, the San Diego National Wildlife Refuge. The site is located within the Metro-Lakeside Jamul Segment of the South County MSCP Subarea Plan. The habitat is suitable for the coastal California gnatcatcher (*Polioptila californica californica*). Nesting birds may be adversely affected by high noise levels through either interference with nest-tending activities and/or interference or "masking" of auditory communication. Generally, during the breeding season of federally endangered species, noise levels are required by the County to be less than 60 decibels dB(A) L_{eq} or the ambient noise level, whichever is greater. The coastal California gnatcatcher breeding season occurs from March 1 to August 15.

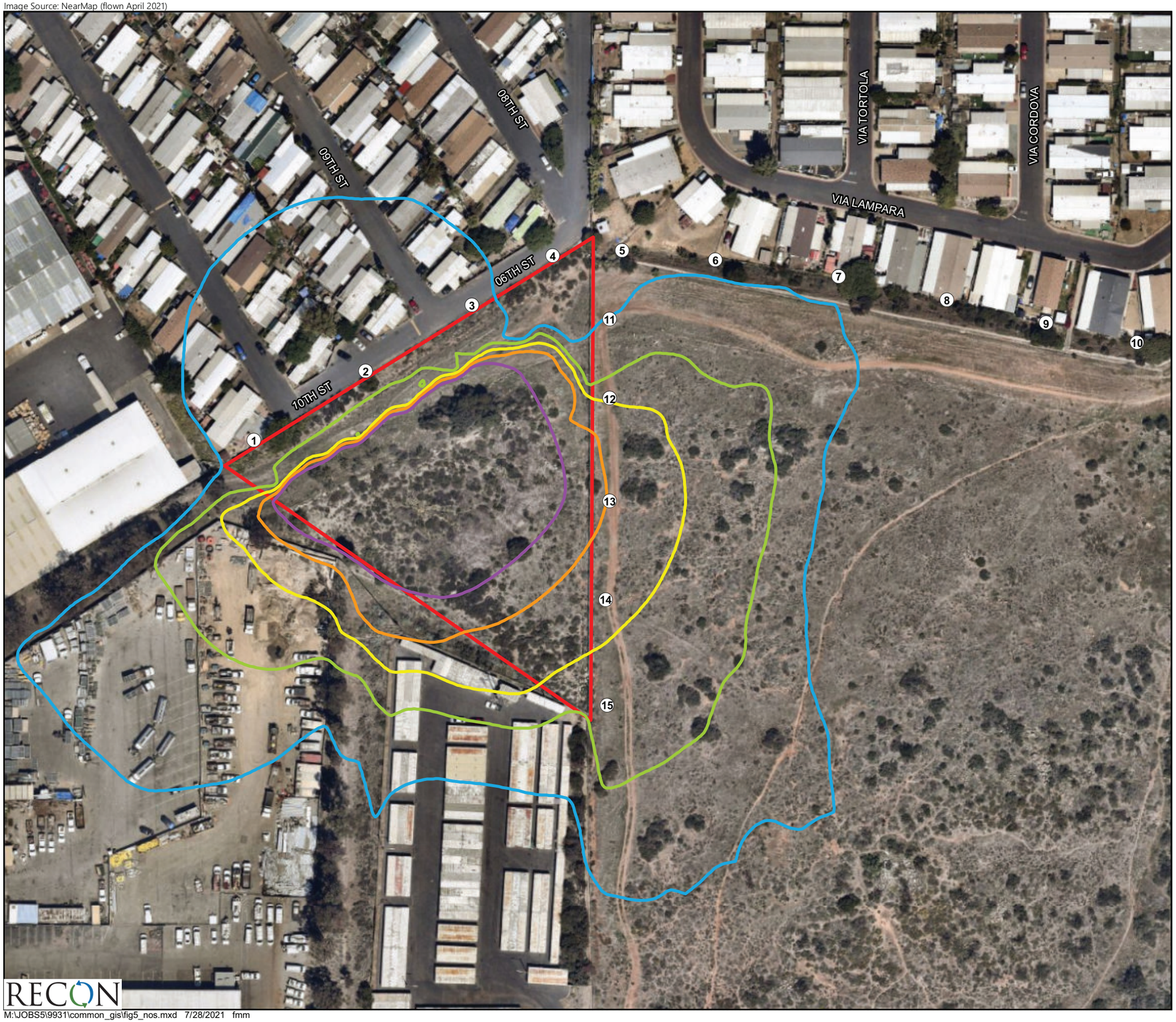
2.2 Potential Operational Noise Impacts (Non-Construction Noise)

2.2.1 Potential Build-out Noise Conditions without Mitigation

Once operational, the primary noise sources on-site would include parking activities and backup alarms. Using the on-site noise source parameters discussed in Section 1.3.1, noise levels were modeled at a series of 15 receivers located at the adjacent residential properties and the adjacent open space. On-site noise modeled during the daytime hours only. There would be no nighttime activity on the project site.

Figure 5 shows the on-site generated noise contours along with the modeled receivers. SoundPLAN data is included in Attachment 2. Future projected noise levels are summarized in Table 6.

Image Source: NearMap (flown April 2021)



Project Boundary

Receivers

Operational Noise

45 dB(A) L_{eq}

50 dB(A) L_{eq}

55 dB(A) L_{eq}

60 dB(A) L_{eq}

65 dB(A) L_{eq}

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FIGURE 5
Operational Noise Contours

Table 6 Operational Noise Levels		
Receiver	Use (Zone)	Parking and Backup Alarm Noise Level [dB(A) L_{eq}]
1	Residential (MHR)	46
2	Residential (MHR)	48
3	Residential (MHR)	46
4	Residential (MHR)	42
5	Residential (MHR)	40
6	Residential (MHR)	36
7	Residential (MHR)	32
8	Residential (MHR)	29
9	Residential (MHR)	29
10	Residential (MHR)	29
11	Open Space (RV)	45
12	Open Space (RV)	55
13	Open Space (RV)	60
14	Open Space (RV)	57
15	Open Space (RV)	53
dB(A) L_{eq} = A-weighted decibels equivalent noise level		

As shown, noise levels at the adjacent residential receivers would range from 29 to 48 dB(A) L_{eq} and would not exceed the applicable noise ordinance limits. Additionally, noise levels at the adjacent habitat would range from 45 to 60 dB(A) L_{eq} and would not exceed 60 dB(A) L_{eq}. Therefore, impacts due to noise generated on the project site would be less than significant. Additionally, as noted previously, the vans would only be active on-site during two periods in the morning and the evening, and would not be continuous throughout the day.

2.2.2 Design Considerations and Mitigation Measures

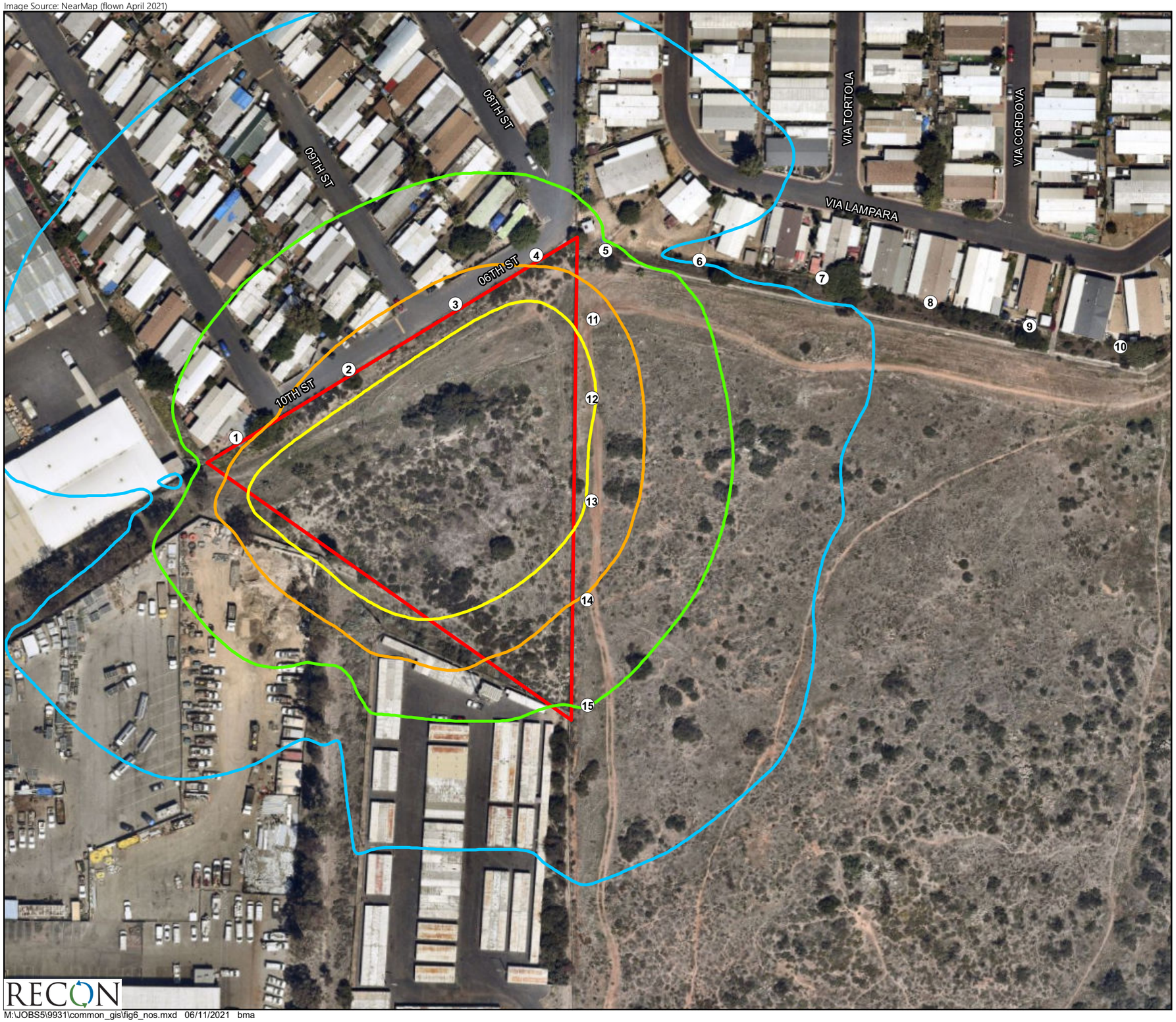
On-site generated noise impacts would be less than significant; therefore, no mitigation would be required.

2.3 Potential General Construction Noise Impacts

2.3.1 Potential Temporary Construction Noise Impacts without Mitigation

Noise associated with project construction would potentially result in short-term impacts to surrounding properties. To reflect the nature of grading and paving activities, equipment was modeled as an area source distributed over the project footprint. The total sound energy of the area source was modeled with the simultaneous operation of a dozer and excavator during the grading phase, and a paver and roller during the paving phase. Noise levels were modeled at a series of 15 receivers located at the adjacent residential properties and the adjacent habitat. The results are summarized in Table 7. Modeled receiver locations and construction noise contours for the grading and paving phases are shown on Figures 6 and 7, respectively. SoundPLAN data is contained in Attachment 3.

Image Source: NearMap (flown April 2021)



Project Boundary

Receivers

Construction Noise - Grading

60 dB(A) L_{eq}

65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

0 Feet 100

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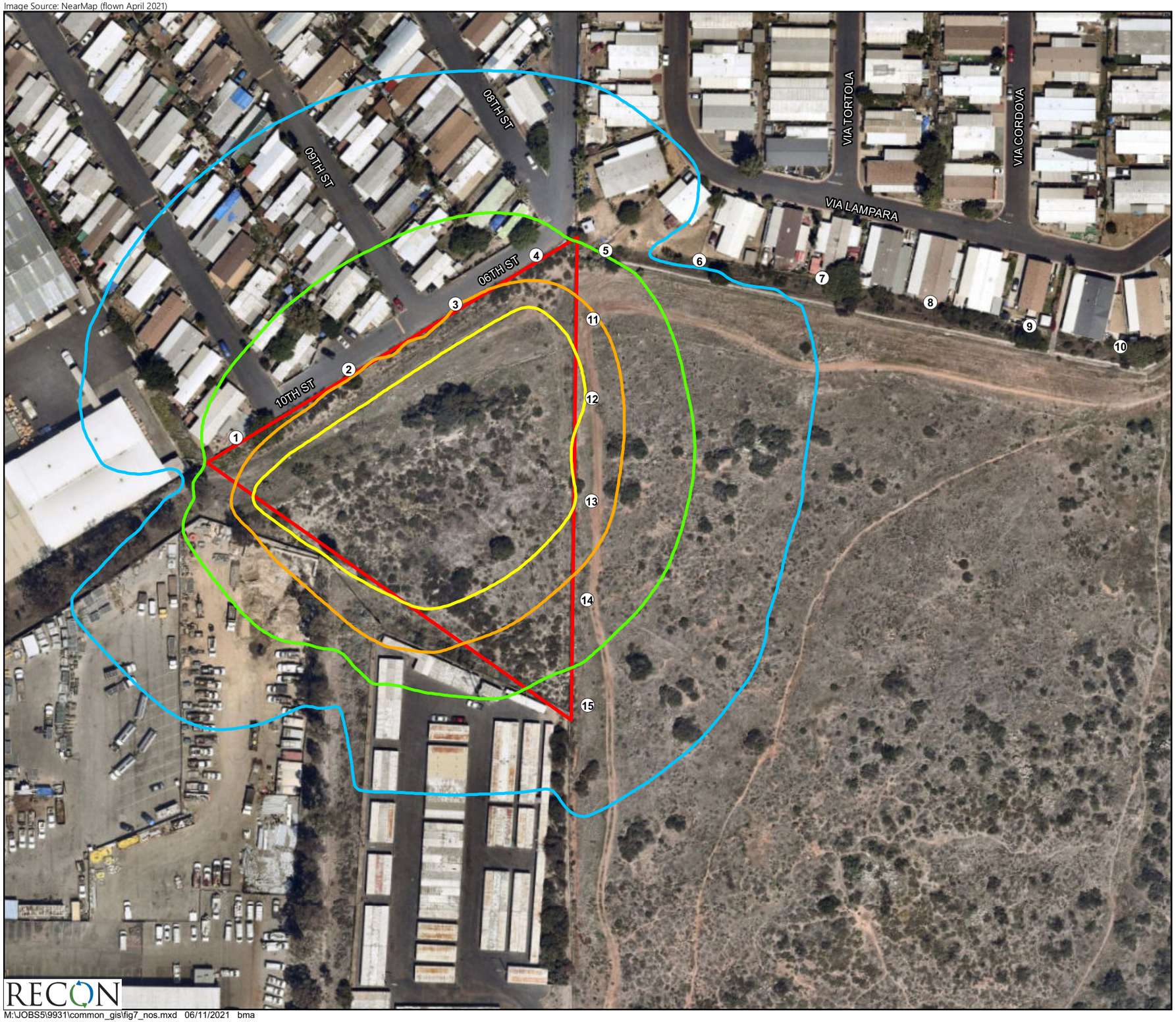
FIGURE 6

Construction Noise Contours - Grading

Image Source: NearMap (flown April 2021)



Project Boundary

Receivers

Construction Noise - Paving

60 dB(A) L_{eq}

65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

0 Feet 100

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FIGURE 7

Construction Noise Contours - Paving

Table 7 Construction Noise Levels			
Receiver	Use (Zone)	Grading Noise Level [dB(A) L_{eq}]	Paving Noise Level [dB(A) L_{eq}]
1	Residential (MHR)	69	67
2	Residential (MHR)	71	69
3	Residential (MHR)	72	70
4	Residential (MHR)	69	67
5	Residential (MHR)	65	63
6	Residential (MHR)	57	55
7	Residential (MHR)	51	49
8	Residential (MHR)	48	46
9	Residential (MHR)	48	46
10	Residential (MHR)	48	47
11	Open Space (RV)	72	71
12	Open Space (RV)	75	74
13	Open Space (RV)	74	72
14	Open Space (RV)	70	68
15	Open Space (RV)	65	63
dB(A) L_{eq} = A-weighted decibels equivalent noise level			

As shown, construction noise levels are not anticipated to exceed 75 dB(A) L_{eq} at the adjacent residential properties. Although the existing adjacent residences would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. As construction activities associated with the project would comply with noise level limits from the County's Noise Ordinance, temporary increases in noise levels from construction activities would be less than significant at the adjacent residential uses.

However, construction noise levels at the adjacent habitat are projected to exceed 60 dB(A) L_{eq}, therefore, impacts to nesting coastal California gnatcatchers would be potentially significant during the breeding season without mitigation.

Further, blasting is not anticipated for the proposed project; however, should blasting occur, then monitoring would be required if done within 225 feet from an occupied noise sensitive land use. Blasting shall not exceed 0.1 inch per second (in/sec) peak particle velocity (PPV) at the nearest occupied residence in accordance with County Noise Guidelines Section 4.3. In addition, all blasting activities would comply with the requirements of the Sheriff's Department.

2.3.2 Design Considerations and Temporary Mitigation Measures

Construction activities from the loudest activities are not predicted to exceed County construction noise level limits at any property line or any property with an occupied structure; thus, no impacts are anticipated to occur and no mitigation measures are required for the adjacent residential uses. However, avoidance measures would be required to reduce potential construction noise impacts at the adjacent habitat. The Biological Resources Letter Report prepared for the project outlines the following avoidance measure (RECON 2021).

Coastal California gnatcatcher (federally listed threatened; California Department of Fish and Wildlife Species of Special Concern; County of San Diego Group 1; MSCP covered species) is known from the adjacent open space preserve to the east and this same adjacent land is mapped within federal critical habitat for this species. Direct impacts and indirect noise impacts to nesting coastal California gnatcatchers in the adjacent off-site habitat may

occur if vegetation clearing, grubbing, grading, or construction is conducted during this species nesting season of March 1 to August 15 (County of San Diego 2010). Therefore, avoidance measures, which will be implemented by the applicant, are discussed below and are expected to avoid direct impacts and reduce the potential indirect impacts to a level of less than significant.

- To avoid impacts to coastal California gnatcatcher, grading, brush clearing, and all other construction within 300 feet of the edge of the site should be conducted between August 16 and February 28. However, if construction must occur between April 15 and September 1, the following actions would be required:

- A qualified biologist shall conduct a pre-construction clearance survey for nesting birds within suitable adjacent habitat to determine whether avian species are nesting within 300 feet of the construction area.

- If coastal California gnatcatcher are nesting within 300 feet of the construction boundary, construction activity should be avoided within 300 feet of the active nest, if possible. If construction must occur within 300 feet of an active nest temporary sound barriers may be required or grading may be restricted in construction areas near the nest site to reduce noise levels. Temporary sound barriers must be placed within the project footprint and not in the habitat. In addition, an acoustician shall measure noise levels during construction activities at the edge of the project footprint near the occupied habitat closest to the nest. Generally, noise levels are required by the County to be less than 60 dB averaged over a one-hour period on an dB(A) scale (i.e., 1 hour L_{eq}/dB[A]) or the ambient noise level, whichever is greater.

- If no coastal California gnatcatcher are observed nesting within 300 feet of the project boundary, no grading or construction restrictions associated with coastal California gnatcatcher would apply. No restrictions are required for this species outside its nesting season.

3.0 Groundborne Vibration and Noise Impacts

3.1 Guidelines for Determination of Significance

Exposure of noise sensitive land uses to groundborne vibration and noise arising from operations related to, but not limited by, materials handling, blasting, transportation corridors, railroads, and extractive industries would be significant. Table 8 summarizes the County's guidelines for assessing groundborne vibration and noise impacts. For residential uses, the impact level is 0.0040 for frequent events, defined as 70 events per day, and the impact level is 0.010 for occasional or infrequent events, defined as fewer than 70 events per day. These impact levels typically apply to rapid transit and commuter rail as well as the industries listed above. However, the project does not propose any major, new, or expanded infrastructure such as mass transit, highways or major roadways or intensive extractive industry that could generate excessive groundborne vibration or groundborne noise levels on-site or in the surrounding area. However, construction equipment could produce groundborne vibration. As noted in footnote (6), non-transportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch in/sec PPV. Based on this guidance, vibration impacts would be significant if the level exceeds 0.1 at the nearest noise sensitive land uses.

Table 8
Guidelines for Determining the Significance of Groundborne Vibration and Noise Impacts

Land Use Category	Groundborne Vibration Impact Levels (in/sec RMS)		Groundborne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations (research & manufacturing facilities with special vibration constraints)[6]	0.0018[3]	0.0018[3]	Not applicable[4,5]	Not applicable[4,5]
Category 2: Residences and buildings where people normally sleep (hotels, hospitals, residences, & other sleeping facilities)[6]	0.0040	0.010	35 dB(A)	43 dB(A)
Category 3: Institutional land uses with primarily daytime use (schools, churches, libraries, other institutions, & quiet offices)[6]	0.0056	0.014	40 dB(A)	48 dB(A)

SOURCE: County of San Diego 2009.
in/sec = inches per second; RMS = root mean square; dB = decibels; re = relative

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

[2] "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

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

[4] Vibration-sensitive equipment is not sensitive to groundborne noise.

[5] There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 13 gives criteria for acceptable levels of groundborne vibration and noise for these various types of special uses.

[6] For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds 0.1 inch per second. Nontransportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans and will be used to evaluate these continuous or transient sources in the County of San Diego.

3.1.1 Potential Groundborne Vibration and Noise Impacts without Mitigation

Construction activities produce varying degrees of ground vibration, depending on the equipment and methods employed. While ground vibrations from typical construction activities very rarely reach levels high enough to cause damage to structures, special consideration must be made when sensitive or historic land uses are near the construction site (Caltrans 2013b). The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving. However, the project would not require pile driving. Further, blasting is not anticipated for the proposed project; however, should blasting occur, then monitoring would be required if done within 225 feet from an occupied noise sensitive land use. Each blast shall be monitored and recorded with an air-blast overpressure monitor and groundborne vibration accelerometer that is located outside the closest residence to the blast. Blasting shall not exceed 0.1 in/sec PPV at the nearest occupied residence, in accordance with County's Noise Guidelines, Section 4.3. Where potential exceedance of the County Ordinance is identified, the applicant shall not continue any blasting activities until the blast drilling and monitoring plan is prepared and submitted to the County, which identify mitigation measures shown to effectively reduce noise and vibration levels (e.g., altering orientation of blast progression, increased delay between charge detonations, presplitting) to be implemented to comply with the noise level limits of the County's Noise Ordinance, Sections 36.409 and 36.410. In addition, all blasting activities would comply with the requirements of the Sheriff's Department.

On-site construction equipment that would cause the most noise and vibration would be associated with site grading. According to the Caltrans, vibration levels associated with the use of bulldozers range from approximately 0.003 to 0.089 in/sec PPV at 25 feet. The closest occupied residential structure is located approximately 60 feet from the project footprint, and storage structures are located approximately 50 feet from the project footprint. There are no structures within 25 feet of the construction area. A vibration level of 0.089 in/sec PPV at 25 feet would attenuate to 0.034 in/sec PPV at 60 feet. Therefore, vibration levels at not anticipated to exceed 0.1 in/sec PPV. Groundborne vibration impacts during project construction would be less than significant. The project does not include any operational sources of vibration.

3.1.2 Design Considerations and Mitigation Measures

Should blasting occur, then monitoring would be required if done within 225 feet from an occupied noise sensitive land use. Each blast shall be monitored and recorded with an air-blast overpressure monitor and groundborne vibration accelerometer that is located outside the closest residence to the blast. Blasting shall not exceed 0.1 in/sec PPV at the nearest occupied residence, in accordance with County's Noise Guidelines, Section 4.3.Where potential exceedance of the County Ordinance is identified, the applicant shall not continue any blasting activities until the blast drilling and monitoring plan is prepared and submitted to the County, which identify mitigation measures shown to effectively reduce noise and vibration levels (e.g., altering orientation of blast progression, increased delay between charge detonations, presplitting) to be implemented to comply with the noise level limits of the County's Noise Ordinance, Sections 36.409 and 36.410. In addition. In addition, all blasting activities would comply with the requirements of the Sheriff's Department. All other groundborne vibration impacts would be less than significant; therefore, no further mitigation would be required.

4.0 Conclusion

The proceeding analysis provides an evaluation of noise impacts to the adjacent properties due to construction and operation of the project. Construction noise levels are not anticipated to exceed 75 dB(A) L_{eq} at the adjacent properties. As construction activities associated with the project would comply with noise level limits from the County's Noise Ordinance, temporary increases in noise levels from construction activities would be less than significant at the adjacent residential uses. However, construction noise levels at the adjacent habitat are projected to exceed 60 dB(A) L_{eq}, therefore, impacts to nesting coastal California gnatcatchers would be potentially significant during the breeding season without mitigation. As outlined in the avoidance measure in Section 2.3.2, if construction activities must take place during the coastal California gnatcatcher breeding season (March 1 to August 15), a pre-construction survey will be conducted to determine if the species is present within the adjacent 300-feet from the project. If present, an acoustician shall work with the County to implement noise attenuation devices (e.g., noise walls), noise monitoring, and/or other methods to reduce noise levels at the edge of occupied habitat to coastal California gnatcatcher to a level of less than significant.

Once operational, on-site sources of noise would include parking activities and backup alarms. On-site generated noise levels at the adjacent residential properties are not anticipated to exceed the applicable Noise Ordinance limits. Additionally, noise levels at the adjacent habitat are not projected to exceed 60 dB(A) L_{eq}. On-site generated noise impacts would less than significant.

Lastly, due to the distance between the construction area and the nearest structures, groundborne vibration levels due to on-site construction activities would be less than significant.

If you have any questions about the results of this analysis, please contact me at jfleming@reconenvironmental.com or (619) 308-9333 extension 177.

Sincerely,

Jessica Fleming
Noise Specialist

JLF:jg

cc: Dean Navarro, Greenlaw Partners
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5.0 Certification

The following is a list of preparers, persons, and organizations involved with the noise assessment.

RECON Environmental, Inc.
Jessica Fleming, County-approved Noise Consultant
Lee Sherwood, Environmental Project Director
Benjamin Arp, GIS Specialist
Jennifer Gutierrez, Production Specialist

6.0 References Cited

California Department of Transportation (Caltrans)
2013a Technical Noise Supplement. November.

2013b Transportation and Construction Vibration Guidance Manual. September.

Federal Highway Administration (FHWA)
2006 Roadway Construction Noise Model User's Guide. FHWA-HEP-05-054, SOT-VNTSC-FHWA-05-01. Final Report. January.

2008 Roadway Construction Noise Mode, V1.1. Washington, DC.

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San Diego, County of
2009 Guidelines for Determining Significance and Report Format and Content Requirements, Noise. January 27.

2010 Guidelines for Determining Significance. Biological Resources, Land Use and Environment Group. Department of Planning and Land Use. Department of Public Works. Fourth Revision. September 15.

ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

Sweetwater Springs Triangular Parking Lot Project
Noise Measurement Data

Summary

File Name on Meter	LxT_Data.006.s
File Name on PC	LxTse_0003829-20210609 120556-LxT_Data.006.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2021-06-09 12:05:56
Stop	2021-06-09 12:21:29
Duration	00:15:32.9
Run Time	00:15:14.7
Pause	00:00:18.2
Pre-Calibration	2021-06-09 12:03:28
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.0 dB

	A	C	Z
Under Range Peak	**78.3**	75.3	80.3 dB
Under Range Limit	**26.1**	25.3	32.1 dB
Noise Floor	16.3	16.2	22.1 dB

Results

L_{Aeq}	48.4	
LAE	78.0	
EA	7.051 µPa²h	
$L_{Apeak\ (max)}$	2021-06-09 12:13:49	85.0 dB
L_{ASmax}	2021-06-09 12:06:46	63.6 dB
L_{ASmin}	2021-06-09 12:14:05	40.8 dB
SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
L_{Apeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
L_{Apeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
L_{Apeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	48.4	48.4	-99.9	48.4	48.4	-99.9	-99.9	dB

L_{Ceq}	64.2 dB	
L_{Aeq}	48.4 dB	
L_{Ceq} - L_{Aeq}	15.8 dB	
L_{AIeq}	51.8 dB	
L_{Aeq}	48.4 dB	
L_{AIeq} - L_{Aeq}	3.4 dB	

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	48.4		64.2			
$L_{S(max)}$	63.6	2021/06/09 12:06:46				
$L_{S(min)}$	40.8	2021/06/09 12:14:05				
$L_{Peak(max)}$	85.0	2021/06/09 12:13:49				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA5.00	53.5 dB
LA10.00	48.7 dB
LA33.30	44.9 dB
LA50.00	44.1 dB
LA66.60	43.5 dB
LA90.00	42.3 dB

Sweetwater Springs Triangular Parking Lot Project
Noise Measurement Data

Summary	
File Name on Meter	LxT_Data.007.s
File Name on PC	LxTse_0003829-20210609 123756-LxT_Data.007.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2021-06-09 12:37:56
Stop	2021-06-09 12:55:45
Duration	00:17:49.8
Run Time	00:15:00.5
Pause	00:02:49.3
Pre-Calibration	2021-06-09 12:03:28
Post-Calibration	None
Calibration Deviation	---

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.0 dB

	A	C	Z
Under Range Peak	**78.3**	75.3	80.3 dB
Under Range Limit	**26.1**	25.3	32.1 dB
Noise Floor	16.3	16.2	22.1 dB

Results		
L_{Aeq}	46.5	
LAE	76.1	
EA	4.501 µPa²h	
$L_{Apeak\ (max)}$	2021-06-09 12:39:50	77.4 dB
L_{ASmax}	2021-06-09 12:39:50	56.5 dB
L_{ASmin}	2021-06-09 12:47:57	41.0 dB
SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
L_{Apeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
L_{Apeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
L_{Apeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	46.5	46.5	-99.9	46.5	46.5	-99.9	-99.9	dB

L_{Ceq}	61.8 dB	
L_{Aeq}	46.5 dB	
L_{Ceq} - L_{Aeq}	15.3 dB	
L_{AIeq}	51.0 dB	
L_{Aeq}	46.5 dB	
L_{AIeq} - L_{Aeq}	4.4 dB	

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L_{eq}	46.5		61.8			
$L_{S(max)}$	56.5	2021/06/09 12:39:50				
$L_{S(min)}$	41.0	2021/06/09 12:47:57				
$L_{Peak(max)}$	77.4	2021/06/09 12:39:50				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics	
LA5.00	50.6 dB
LA10.00	48.9 dB
LA33.30	46.4 dB
LA50.00	45.3 dB
LA66.60	44.5 dB
LA90.00	43.4 dB

ATTACHMENT 2

SoundPLAN – Operational Noise

9931 Sweetwater Springs Triangular Parking Lot Project
SoundPLAN Data - Operation

		Level	Frequency spectrum [dB(A)]								Corrections		
Source name	Reference	Leq1	63	125	250	500	1	2	4	8	Cwall	CI	CT
		dB(A)	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	dB(A)	dB(A)	dB(A)
Backup Beeper	Lw/unit	-	74.1	84.1	91.1	97.1	100.1	101.1	101.1	99.1	-	-	-

9931 Sweetwater Springs Triangular Parking Lot Project
SoundPLAN Data - Operation

Name	Parking lot type	Low noise trolleys	Size	Movements per hour Leq1	Road surface	Separated method	Lw,ref dB(A)
Parking Lot	Visitors and staff	-	69 Parking bays	1	Asphaltic driving lanes	no	85.8

9931 Sweetwater Springs Triangular Parking Lot Project
SoundPLAN Data - Operation

No.	Coordinates X	Y	Height	Noise Level
	meters		meters	dB(A)
1	503428.05	3620758.47	150.15	46.3
2	503462.18	3620779.64	149.58	47.6
3	503494.73	3620799.75	149.55	45.9
4	503519.33	3620814.83	149.59	41.9
5	503540.50	3620816.42	151.27	40.4
6	503569.07	3620813.51	151.43	35.7
7	503606.64	3620808.48	152.10	31.5
8	503639.72	3620801.33	153.28	29.8
9	503670.08	3620794.26	154.01	29.0
10	503697.86	3620788.30	154.94	28.9
11	503536.73	3620795.45	155.23	45.2
12	503536.73	3620771.24	158.55	54.9
13	503536.73	3620739.89	163.95	59.8
14	503535.54	3620709.72	167.96	56.7
15	503535.93	3620677.58	171.30	52.9

Source name			Noise Level Leq dB(A)
1	1.Fl	46.3	
Backup Beeper			46.0
Parking Lot			34.8
2	1.Fl	47.6	
Backup Beeper			47.3
Parking Lot			36.3
3	1.Fl	45.9	
Backup Beeper			45.6
Parking Lot			35.1
4	1.Fl	41.9	
Backup Beeper			41.5
Parking Lot			31.7
5	1.Fl	40.4	
Backup Beeper			39.9
Parking Lot			30.7
6	1.Fl	35.7	
Backup Beeper			35.2
Parking Lot			25.9
7	1.Fl	31.5	
Backup Beeper			31.0
Parking Lot			21.8
8	1.Fl	29.8	
Backup Beeper			29.3
Parking Lot			20.5
9	1.Fl	29.0	
Backup Beeper			28.5
Parking Lot			19.8
10	1.Fl	28.9	
Backup Beeper			28.4
Parking Lot			19.7
11	1.Fl	45.2	
Backup Beeper			44.9
Parking Lot			34.1
12	1.Fl	54.9	
Backup Beeper			54.7
Parking Lot			39.3
13	1.Fl	59.8	
Backup Beeper			59.7
Parking Lot			43.8
14	1.Fl	56.7	
Backup Beeper			56.6
Parking Lot			40.0
15	1.Fl	52.9	
Backup Beeper			52.8
Parking Lot			36.4

ATTACHMENT 3

SoundPLAN – Construction Noise

9931 Sweetwater Springs Triangular Parking Lot Project
SoundPLAN Data - Construction

		Level		Corrections		
Source name	Reference	Grading	Paving	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Construction	Lw/unit	115.7	113.9	-	-	-

9931 Sweetwater Springs Triangular Parking Lot Project
SoundPLAN Data - Construction

No.	Coordinates X	Y	Height	Noise Level Grading	Paving
	meters		meters	dB(A)	
1	503428.05	3620758.47	150.15	68.9	67.1
2	503462.18	3620779.64	149.58	71.2	69.4
3	503494.73	3620799.75	149.55	71.8	70.0
4	503519.33	3620814.83	149.59	68.7	66.9
5	503540.50	3620816.42	151.27	65.2	63.4
6	503569.07	3620813.51	151.43	57.2	55.4
7	503606.64	3620808.48	152.10	50.5	48.7
8	503639.72	3620801.33	153.28	47.8	46.0
9	503670.08	3620794.26	154.01	47.6	45.8
10	503697.86	3620788.30	154.94	48.3	46.5
11	503536.73	3620795.45	155.23	72.4	70.6
12	503536.73	3620771.24	158.55	75.5	73.7
13	503536.73	3620739.89	163.95	74.2	72.4
14	503535.54	3620709.72	167.96	69.7	67.9
15	503535.93	3620677.58	171.30	65.1	63.3