
APPENDIX I

NOISE AND VIBRATION MEMORANDUM

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MEMORANDUM

DATE: October 5, 2023

TO: Ejaz Ahmad, Planner, Department of Public Works and Planning
Development Services Division

FROM: J.T. Stephens, Principal / Noise and Vibration Specialist
Moe Abushanab, Noise Engineer

SUBJECT: Noise and Vibration Impact Analysis: S. Stamoules, Inc. Pistachio Processing Project
in the County of Fresno, California

INTRODUCTION AND PROJECT DESCRIPTION

This noise and vibration impact analysis has been prepared to evaluate the potential impacts associated with the proposed S. Stamoules, Inc. Pistachio Processing Facility Project (project) in Fresno County, California. This report is intended to satisfy the County of Fresno's (County) requirement for a project-specific noise and vibration impact analysis and examines the impacts of the proposed project to the existing noise-sensitive uses adjacent to the project site. To properly account for the impacts associated with the proposed project, existing noise levels are assessed based on noise measurement data gathered in the vicinity of the project site (July 27, 2023) and project-related noise and vibration levels generated are based on estimated construction equipment. Traffic volumes from the *Traffic Impact Study for the S. Stamoules, Inc. Pistachio Processing Facility Project*¹ and additional stationary sources on the project site were also evaluated.

Location and Description

The project site is located within one parcel (Assessor's Parcel Number [APN] 019-150-64S) and is approximately 98 acres in size; parcel APN 019-150-64S is currently under a Williamson Act contract. The project site is currently open farm ground and is not developed. The project site is located in western Fresno County, approximately 8 miles southwest of the City of Mendota. The project site is located in an agricultural area of Fresno County and is surrounded by orchards and row crops. The project site is bounded by farm fields and West Panoche Road to the south, West Panoche Road and farm fields to the east, and farm fields to the north and to the west. The San Luis Canal of the California Aqueduct is located approximately 0.6 mile to the west of the project site. Vehicular access to the project site is provided by West Panoche Road, and no public transportation routes are present in the vicinity of the project site. Figure 1 shows the project location, and Figure 2 provides an overview of the proposed site plan (all figures are provided in Attachment A).

¹ LSA. 2023. *Traffic Impact Study for S. Stamoules, Inc. Pistachio Processing Facility Project, Fresno County, California*. August.

METHODOLOGY

The evaluation of noise impacts associated with the proposed project includes the following:

- A determination of the short-term construction noise and vibration levels at off-site noise-sensitive uses and comparison to the County's General Plan and Municipal Code Ordinance requirements;
- A determination of the long-term noise levels at off-site noise-sensitive uses and comparison of those levels to the County's pertinent noise standards; and
- If necessary, a determination of required mitigation measures, such as noise barriers, to reduce long-term noise impacts from all sources.

CHARACTERISTICS OF SOUND

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave, resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent sensitive land uses.

Measurement of Sound

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units (e.g., inches or pounds), decibels are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) is 10 times more intense than 1 dB, 20 dB is 100 times more intense than 1 dB, and 30 dB is 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represent 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single-point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations), the sound decreases 3 dB for each doubling of distance in a hard site environment. Similarly, line sources with intervening absorptive vegetation or line sources that are located at a great distance to the receptor would decrease 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noises occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max} , which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. L_{max} is often used together with another noise scale or noise standards in terms of percentile noise levels in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level (i.e., half the time the noise level exceeds this level, and half the time it is less than this level). The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category is audible impacts, which refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160–165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas.

Table A lists full definitions of acoustical terms, and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of sound level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., the number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_{01} , L_{10} , L_{50} , L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period, respectively.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max} , L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time. It is usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.

Source 1: *Technical Noise Supplement* (Caltrans 2013)

Source 2: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

Caltrans = California Department of Transportation

FTA = Federal Transit Administration

Table B: Common Sound Levels and Their Noise Sources

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 ft		
	— 100 —	
Gas lawn mower at 3 ft		
	— 90 —	
Diesel truck at 50 ft at 50 mph		Food blender at 3 ft
	— 80 —	Garbage disposal at 3 ft
Noisy urban area, daytime		
Gas lawn mower, 100 ft	— 70 —	Vacuum cleaner at 10 ft
Commercial area		Normal speech at 3 ft
Heavy traffic at 300 ft	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast/recording studio
	— 10 —	

Source: *Technical Noise Supplement* (Caltrans 2013).

Caltrans = California Department of Transportation

dBA = A-weighted decibels

ft = feet

mph = miles per hour

CHARACTERISTICS OF VIBRATION

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may not be discernible. Typically, there is more adverse reaction to effects associated with the shaking of a building. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet (ft) of the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 ft (FTA 2018).² When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible.

² Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual – FTA Report No. .0123*. September.

It is assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from street traffic will not exceed the impact criteria; however, the construction of the project could result in ground-borne vibration that may be perceptible.

Ground-borne vibration has the potential to damage buildings. Although it is very rare for typical construction activities to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile driving to cause vibration of sufficient amplitudes to damage nearby buildings (FTA 2018).² Ground-borne vibration that may result in damage is usually measured in terms of peak particle velocity (PPV).

APPLICABLE NOISE STANDARDS

The applicable noise standards governing the project site include the criteria in the County's General Plan Health and Safety Element and the County of Fresno Municipal Code (FMC).

County of Fresno

General Plan Health and Safety Element

The Fresno County General Plan Health and Safety Element² includes noise policies to manage sources of noise and protect noise sensitive land uses. The General Plan provides the County's goals and policies related to noise. The County has identified the following goals and policies that are applicable to the project:

Goal HS-G: To protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum acceptable noise levels compatible with various land use designations; and to develop a policy framework necessary to achieve and maintain a healthful noise environment.

- Policy HS-G.1 The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.
- Policy HS-G.5 Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and project design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as soundwalls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the project.
- Policy HS-G.6 The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.

² Fresno County. 2000. *General Plan*. October 3.

- Policy HS-G.7 Where existing noise-sensitive uses may be exposed to increased noise levels due to roadway improvement projects, the County shall apply the following criteria to determine the significance of the impact:
 - a. Where existing noise levels are less than 60 dB L_{dn} at outdoor activity areas of noise-sensitive uses, a 5 dB L_{dn} increase in noise levels will be considered significant;
 - b. Where existing noise levels are between 60 and 65 dB L_{dn} at outdoor activity areas of noise-sensitive uses, a 3 dB L_{dn} increase in noise levels will be considered significant; and
 - c. Where existing noise levels are greater than 65 dB L_{dn} at outdoor activity areas of noise-sensitive uses, a 1.5 dB L_{dn} increase in noise levels will be considered significant.
- Policy HS-G.8 The County shall evaluate the compatibility of Proposed Projects with existing and future noise levels through a comparison to Chart HS-1, "Land Use Compatibility for Community Noise Environments."

County of Fresno Municipal Code

This project utilizes the County's noise control guidelines for determining and mitigating nontransportation or stationary noise source impacts from operations found in Section 8.40.040 of the FMC³. Table C summarizes the maximum acceptable noise levels. If existing measured ambient noise levels exceed the levels in Table C, then the limit becomes the existing ambient level. A penalty of 5 dBA shall be given to simple tone noise, noises consisting primarily of speech or music, or for recurring impulsive noises.

Section 8.40.060 exempts the following activities from the provisions of the County's municipal code:

- A. Activities conducted in public parks, public playgrounds, and public or private school grounds, including but not limited to school athletic and school entertainment events;
- B. Any mechanical device, apparatus or equipment used, related to or connected with emergency activities or emergency work;
- C. Noise sources associated with construction, provided such activities do not take place before six a.m. or after nine p.m. on any day except Saturday or Sunday, or before seven a.m. or after five p.m. on Saturday or Sunday;
- D. Noise sources associated with the maintenance of residential property provided such activities take place between the hours of six a.m. and nine p.m. on any day except Saturday or Sunday, or between the hours of seven a.m. and nine p.m. on Saturday or Sunday;
- E. Noise sources associated with agricultural activities on agricultural property;

³ Fresno County. 2023. *Municipal Code*. June 13.

F. Noise sources associated with a lawful commercial or industrial activity caused by mechanical devices or equipment, including air conditioning or refrigeration systems, installed prior to the effective date of this chapter; that this exemption shall expire on July 1, 1980;

G. Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities;

H. Noise sources associate with the drilling or redrilling of petroleum, gas, injection or water wells;

I. Noise sources associated with the collection of waste or garbage from property devoted to commercial or industrial uses;

J. Any activity to the extent regulation thereof has been preempted by state or federal law.

Table C: Exterior Noise Level Standards

Category	Cumulative Number of Minutes in Any 1-Hour Period	Noise Level Standards, dBA	
		Daytime (7:00 a.m.–10:00 p.m.)	Nighttime (10:00 p.m.–7:00 a.m.)
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Source: County of Fresno (2023).
dBA = A-weighted decibels

State of California Green Building Standards Code

The State of California's Green Building Standards Code (CALGreen) contains mandatory measures for nonresidential building construction in Section 5.507 on Environmental Comfort. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when nonresidential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, or other noise source. If the development falls within an airport or freeway 65 dBA CNEL noise contour, buildings shall be constructed to provide an interior noise level environment attributable to exterior sources that does not exceed an hourly equivalent level of 50 dBA L_{eq} in occupied areas during any hour of operation.

Federal Transit Administration

Although the County does not have daytime construction noise level limits for activities that occur within the specified hours of Section 18-63(b)(7), to determine potential CEQA noise impacts, construction noise was assessed using criteria from the Federal Transit Administration's (FTA)

Transit Noise and Vibration Impact Assessment Manual (FTA 2018) (FTA Manual).³ Table D shows the FTA's Detailed Assessment Construction Noise Criteria based on the composite noise levels per construction phase.

Table D: Detailed Assessment Daytime Construction Noise Criteria

Land Use	Daytime 1-hour L_{eq} (dBA)
Residential	80
Commercial	85
Industrial	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

dBA = A-weighted decibels

L_{eq} = equivalent continuous sound level

APPLICABLE VIBRATION STANDARDS

The following information provides standards to which potential vibration impacts will be compared.

Federal Transit Administration

Vibration standards included in the FTA Manual (2018) are used in this analysis for ground-borne vibration impacts on surrounding buildings.

The criteria for environmental impacts resulting from ground-borne vibration are based on the maximum levels for a single event. The County's Municipal Code does not include specific criteria for assessing vibration impacts associated with damage. Therefore, for the purpose of determining the significance of vibration impacts experienced at sensitive uses surrounding the project site, the guidelines within the FTA Manual have been used to determine vibration impacts (refer to Table E, below).

Table E: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

in/sec = inches per second

PPV = peak particle velocity

The FTA Manual guidelines show that a vibration level of up to 0.2 inches per second (in/sec) in PPV is considered safe for non-engineered timber and masonry buildings, which are the types of

³ Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual – FTA Report No. .0123*. September.

buildings located on properties adjacent to the project site. Accordingly, the 0.2 in/sec PPV threshold was used to evaluate vibration impacts at the nearest structures to the site.

THRESHOLDS OF SIGNIFICANCE

Based on *Guidelines for the Implementation of the California Environmental Quality Act (CEQA)*, Appendix G, Public Resources Code, Sections 15000–15387, a project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and the goals of the community in which it is located.

The *State CEQA Guidelines* indicate that a project would have a significant impact on noise if it would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive ground-borne vibration or ground-borne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

The primary existing noise sources in the project area are transportation facilities, including Annedale, Newcomb Avenue, and Panoche Road.

In order to assess the existing noise conditions in the area, four short-term noise measurements were conducted at the project site on July 27, 2023. The locations of the noise measurements are shown on Figure 3, and the results are summarized in Table F. Noise measurement data are provided in Attachment B of this analysis.

Table F: Existing Noise Level Measurements

Location Number	Location Description	Time	Average Noise Level (L_{eq})
ST-1	Northeast corner of project site by power pole, approximately 45 ft from Newcomb Avenue centerline.	5:49 p.m. – 5:59 p.m.	36.1
ST-2	Near northern boundary of project site, approximately 1,300 ft from Newcomb Avenue centerline.	6:05 p.m. – 6:16 p.m.	33.9
ST-3	Center of project site, approximately 1,300 ft from Newcomb Avenue centerline and 1,260 ft away from ST-2.	6:19 p.m. – 6:29 p.m.	34.9

Table F: Existing Noise Level Measurements

Location Number	Location Description	Time	Average Noise Level (L _{eq})
ST-4	Near western boundary of project site, by pump and palm tree, approximately 850 ft away from Annedale centerline.	6:47 p.m. – 6:57 p.m.	40.6

Source: Compiled by LSA (October 2023).

dBA = A-weighted decibel(s)

ft = foot/feet

L_{eq} = equivalent continuous sound level

AIRCRAFT NOISE

The project site is approximately 12.3 miles south of Firebaugh Airport. Because the project site is not located within the 65 dBA CNEL and 60 dBA CNEL noise contours, no further analysis associated with aircraft noise impacts is necessary. Additionally, there are no helipads or private airstrips within 2 miles from the project area.

Sensitive Land Uses in the Project Vicinity

Certain land uses are considered more sensitive to noise than others are. Examples of these include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. The project site is mainly surrounded by active farmland. Land uses adjacent to the project site include the following:

- **Northeast:** Existing residential and agriculture-supporting uses.
- **Southeast:** Existing Pilibos Ranch.

The nearest sensitive receptors are:

- **Southeast:** Existing residential uses within the existing Pilibos Ranch, approximately 480 feet from the project site boundary.

PROJECT IMPACT ANALYSIS

The proposed project would result in short-term construction noise and vibration impacts and long-term mobile-source noise and vibration impacts as described below.

Short-Term Construction-Related Impact Analysis

Project construction would result in short-term noise and vibration. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of various types of construction noise and vibration would vary from 1 day to several weeks, depending on the phase of construction. The levels and types of impacts that may occur during construction are described below.

Construction Noise Analysis

Two types of short-term noise would occur during project construction, including: (1) equipment delivery and construction worker commutes; and (2) project construction operations.

The first type of short-term construction noise would result from the transport of construction equipment and materials to the project site and construction worker commutes. These transportation activities would incrementally raise noise levels on access roads leading to the site. It is expected that larger trucks used in equipment delivery would generate higher noise impacts than trucks associated with worker commutes. Although there would be a relatively high single-event noise-exposure potential causing intermittent noise nuisance (passing trucks at 50 ft would generate up to 84 dBA L_{max}), the effect on longer-term ambient noise levels would be small when compared to existing daily traffic volumes on Panoche Road. The results of the California Emissions Estimator Model (CalEEMod) for the proposed project indicate that during the grading phase, an additional 159 vehicles, consisting of worker and hauling trips, would be added to the roadway adjacent to the project site. Because the existing traffic volume on Panoche Road is more than 159, construction-related vehicle trips would not approach existing daily traffic volumes and traffic noise would not increase by 3 dBA CNEL. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during site preparation, grading, building construction, architectural coating, and paving on the project site. Construction is undertaken in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the project site. Therefore, the noise levels would vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table G lists the maximum noise levels recommended for noise impact assessments for typical construction equipment based on a distance of 50 ft between the construction equipment and a noise receptor. Typical operating cycles for these types of construction equipment may involve 1–2 minutes of full-power operation followed by 3–4 minutes at lower power settings.

Table G: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 ft
Compressor	100	81
Concrete Mixer	40	85
Concrete Pump	40	85
Crane	16	83
Dozer	40	80
Forklift	20	75
Front [End] Loader	40	79
Generator	100	78
Grader	8	85
Scraper	40	88
Welder	40	74

Sources: *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (USEPA 1971); *Roadway Construction Noise Model* (FHWA 2006).

ft = foot/feet

L_{max} = maximum instantaneous sound level

In addition to the reference maximum noise level, the usage factor provided in Table G is utilized to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10 \log(U.F.) - 20 \log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period

E.L. = Noise emission level of the particular piece of equipment at a reference distance of 50 ft

U.F. = Usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time

D = Distance from the receiver to the piece of equipment

Each piece of construction equipment operates as an individual point source. Utilizing the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq (composite) = 10 * \log_{10} \left(\sum_1^n 10^{\frac{Ln}{10}} \right)$$

Table H shows the composite noise levels of one piece of equipment type for each construction phase at a distance of 50 ft from the construction area. Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq \text{ (at distance } X) = Leq \text{ (at 50 feet)} - 20 * \log_{10} \left(\frac{X}{50} \right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA, while halving the distance would increase noise levels by 6 dBA.

Table H: Construction Noise Levels by Phase

Phase	Duration (days)	Equipment	Composite Noise Level at 50 ft (dBA L_{eq})	Distance to Sensitive Receptor (ft) ¹	Noise Level at Receptor (dBA L_{eq})
Site Preparation	50	3 dozers and 4 tractors	88	2,000	56
Grading	70	1 grader, 2 scrapers, 1 dozer, 3 tractors, and 1 excavator	89	2,000	57
Building Construction	740	1 crane, 3 forklifts, 1 generator set, 3 tractors, and 1 welder	86	2,000	54
Paving	50	2 pavers, 2 paving equipment, and 2 rollers	86	2,000	54
Architectural Coating	50	1 air compressor	74	2,000	42

Source: Compiled by LSA (2023).

¹ Distances are from the average location of construction activity for each phase, assumed to be the center of the project site.

Residential uses to the north are 30 feet from the edge of construction activity.

dBA L_{eq} = average A-weighted hourly noise level

ft = foot/feet

As presented above, Table H shows the construction phases, the expected duration of each phase, the equipment expected to be used during each phase, the composite noise levels of the equipment at 50 ft, the distance of the nearest sensitive receptor from the average location of construction activities (a distance of 2,000 ft from the center of the project site), and noise levels expected during each phase of construction. These noise level projections do not take into account intervening topography or barriers. Attachment C provides construction noise calculations.

It is expected that average noise levels during construction at the nearest sensitive receptor, the residential uses to the southeast, would approach 57 dBA L_{eq} during the grading phase, which would occur for a duration of approximately 70 days. Average noise levels during other construction phases would range from 42 dBA L_{eq} to 56 dBA L_{eq} . Noise levels at the nearest off-site commercial uses to the northeast would reach an average noise level of 55 dBA L_{eq} during the daytime hours. These predicted noise levels would only occur when all construction equipment is operating simultaneously; therefore, these noise levels are assumed to be conservative in nature.

Although the project construction-related short-term noise levels have the potential to be higher than the ambient noise in the project vicinity, construction noise would cease to occur once the project construction is completed. Furthermore, the construction-related noise levels would be below the 80 dBA L_{eq} and 85 dBA L_{eq} criteria established by FTA for residential and commercial uses, respectively. The project would be constructed in compliance with the requirements of the County's Noise Ordinance, which states that construction activities shall only occur between the hours of 6:00 a.m. and 9:00 p.m. on weekdays and between 7:00 a.m. and 5 p.m. on Saturdays and Sundays.

With incorporation of best business practices for noise reduction, the overall noise levels generated will be minimized, and construction noise impacts would be less than significant. No mitigation is required.

Construction Vibration Building Damage Potential

Ground-borne noise and vibration from construction activity would be low. Table I provides reference PPV values and vibration levels (in terms of VdB) from typical construction vibration sources at 25 ft. While there is currently limited information regarding vibration source levels specific to the equipment that would be used for the project, to provide a comparison of vibration levels expected for a project of this size, a large bulldozer would generate 0.089 PPV (in/sec) of ground-borne vibration when measured at 25 ft, based on the FTA Manual. As shown previously in Table E, it would take a minimum of 0.2 PPV (in/sec) to cause any potential building damage to non-engineered timber and masonry buildings.

Table I: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L _v at 25 ft	
	PPV (in/sec)	L _v (VdB) ¹
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

¹ RMS VdB re 1 μin/sec.

μin/sec = micro-inches per second

ft = foot/feet

FTA = Federal Transit Administration

in/sec = inches per second

L_v = velocity in decibels

PPV = peak particle velocity

RMS = root-mean-square

VdB = vibration velocity in decibels

The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would only be used at or near the project setback line). The formula for vibration transmission is provided below:

$$PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$$

The closest structures to the external construction activities are the residential uses to the southeast, which are within approximately 480 ft from the project's southeastern construction boundary. Using the reference data from Table I and the equation above, vibration levels are expected to approach 0.001 PPV in/sec at the nearest surrounding structures and would not exceed the 0.2 PPV in/sec damage threshold considered safe for non-engineered timber and masonry buildings. Vibration levels at all other buildings would be lower. Therefore, construction would not result in any vibration damage, and impacts would be less than significant.

Long-Term Off-Site Traffic Noise Impact Analysis

The guidelines included in the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77 108) were used to evaluate highway traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. Table J provides the traffic noise levels for the opening year with and without project scenarios. These noise levels represent the worst-case scenario, which assumes no shielding is provided between the traffic and the location where the noise contours are drawn.

The without and with project scenario traffic volumes were obtained from the *Traffic Impact Study for the S. Stamoules, Inc. Pistachio Processing Facility Project*. Attachment D provides the specific assumptions used in developing these noise levels and model printouts. Table J shows that the increase in project-related traffic noise would be no greater than 2.0 dBA. Noise level increases less than 3.0 dBA are not perceptible to the human ear. Therefore, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant and no mitigation measures are required.

Long-Term Operational Noise Impact Analysis

Adjacent off-site land uses would be potentially exposed to stationary-source noise impacts from the proposed operations activities. The harvest season is 45 days long and which time the machinery would be running at least 18 hours a day for a total of 810 hours. The process building will be a steel structure inside frame designed and 8-inch thick Insulated Metal Panels (IMP) for exterior walls and 6-inch interior walls. IMP walls are Thermal-Loc Mode SL-100 insulated panels with 1.25# expanded polystyrene core. The Sound Transmission Coefficient (STC) is estimated to be between 26 to 30.

To determine the future noise impacts from project operations to the noise sensitive uses, a 3-D noise model, SoundPLAN, was used to incorporate the site topography as well as the shielding from the proposed processing building. Any equipment located within the processing building or within an enclosure is not expected to contribute to overall noise levels. The model incorporates the following stationary sources which are located outdoors:

- Three (3) Forsburgs Gravity Decks, assumed to operate 24 hours per day and could generate sound power levels (SPL) of up to 99.9 dBA SPL based on data provided in the SoundPLAN emission library for a 50 HP electric motor.
- Ten (10) Sukup Dryers and ten (10) future Sukup Dryers, assumed to operate 24 hours per day and could generate up to 99.9 dBA SPL based on data provided in the SoundPLAN emission library for a 50 HP electric motor.
- Five (5) Delivery trucks would arrive on site for loading and unloading activities. During this process, noise levels are associated with the truck engine noise, air brakes, and back-up alarms. These noise levels would occur for a shorter period of time (less than 5 minutes), which

generate a noise level of 76.3 dBA L_8 at 20 ft based on measurements taken by LSA⁴.

Based on the SoundPLAN results presented in Attachment E, Noise levels generated at the closest sensitive uses to the southeast will not exceed the County's daytime and nighttime noise standards of 50 dBA L_{eq} and 45 dBA L_{eq} . Therefore, the impact would be less than significant, and no noise reduction measures are required.

⁴ LSA Associates, Inc. (LSA). 2016. Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center. May.

Table J: Traffic Noise Levels Without and With Proposed Project—Cumulative

Roadway	Roadway Segment	Direction	Cumulative – Without Project		Cumulative – With Project		
			ADT	CNEL (dBA) 50 ft from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 ft from Centerline of Nearest Lane	Increase from Existing Conditions (dBA)
Panoche Road	North of Project Driveway	Northbound	1,100	54.8	1,270	55.4	0.6
		Southbound	240	48.2	380	50.2	2.0
	South of Project Driveway	Northbound	1,100	54.8	1,190	55.1	0.3
		Southbound	240	48.2	350	49.8	1.6

Source: Compiled by LSA (October 2023).

ADT = average daily traffic

CNEL= Community Noise Equivalent Level

dBA = A-weighted decibels

ft = foot/feet

Long-Term Ground-Borne Noise and Vibration from Vehicular Traffic

The proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Based on a reference vibration level of 0.076 in/sec PPV, structures more than 20 ft from the roadways that contain project trips would experience vibration levels below the most conservative standard of 0.12 in/sec PPV; therefore, vibration levels generated from project-related traffic on the adjacent roadways would be less than significant, and no mitigation measures are required.

Attachments: A: Figures
 B: Noise Measurement Data
 C: Construction Noise Calculations
 D: FHWA Traffic Noise Model Printout
 E: SoundPLAN Noise Model Printout

ATTACHMENT A

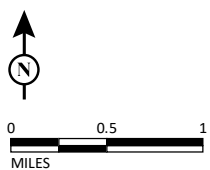
FIGURES



LEGEND

Project Site

FIGURE 1



SOURCE: Esri World Street Map.

I:\OPA2101-PTR\GIS\Maps\Project Description\Figure 3-1_Regional and Local Location.mxd (10/3/2023)

S. Stamoules, Inc. Pistachio Processing Facility Project
Fresno County, California
Regional and Local Location

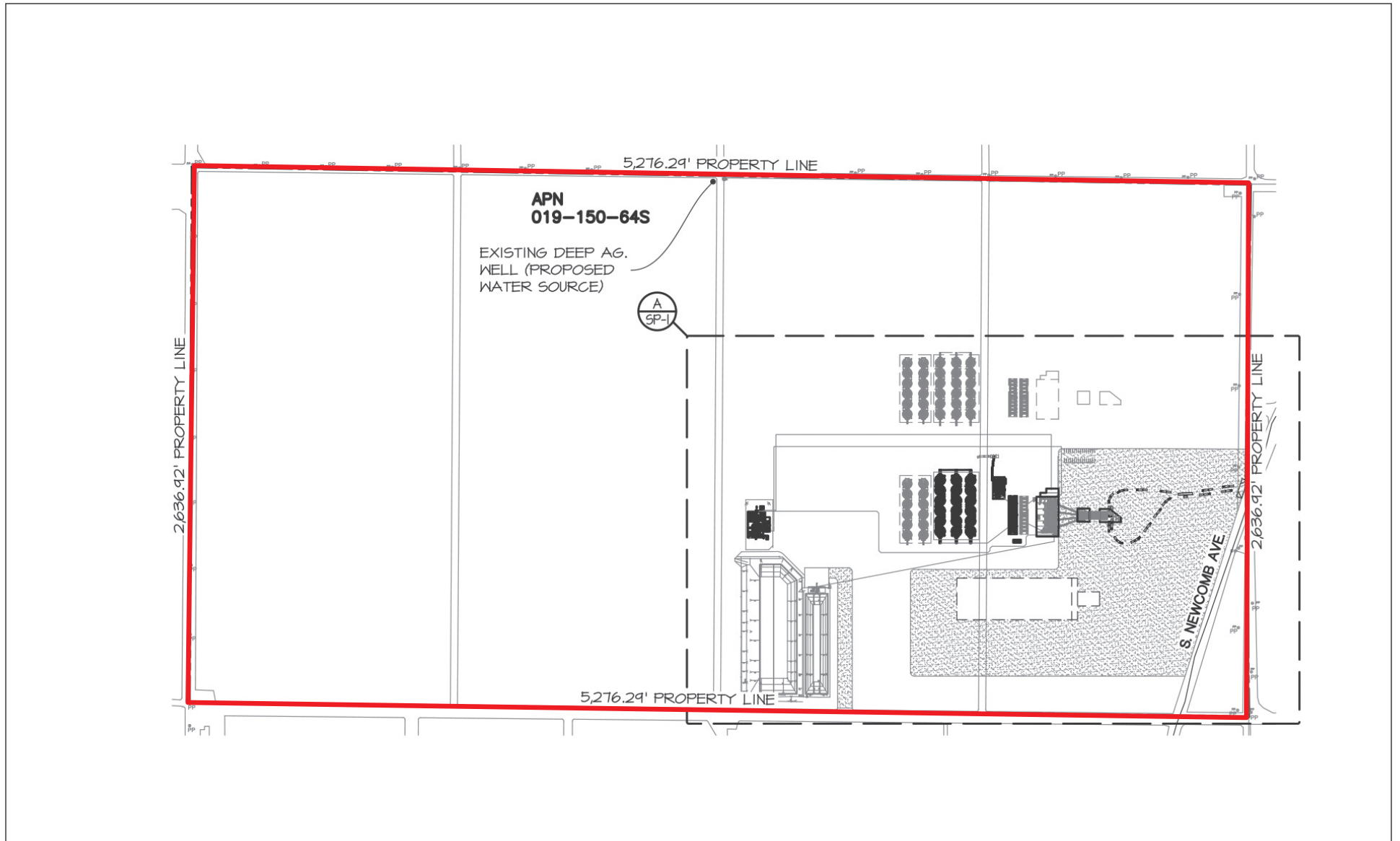


FIGURE 2

LSA



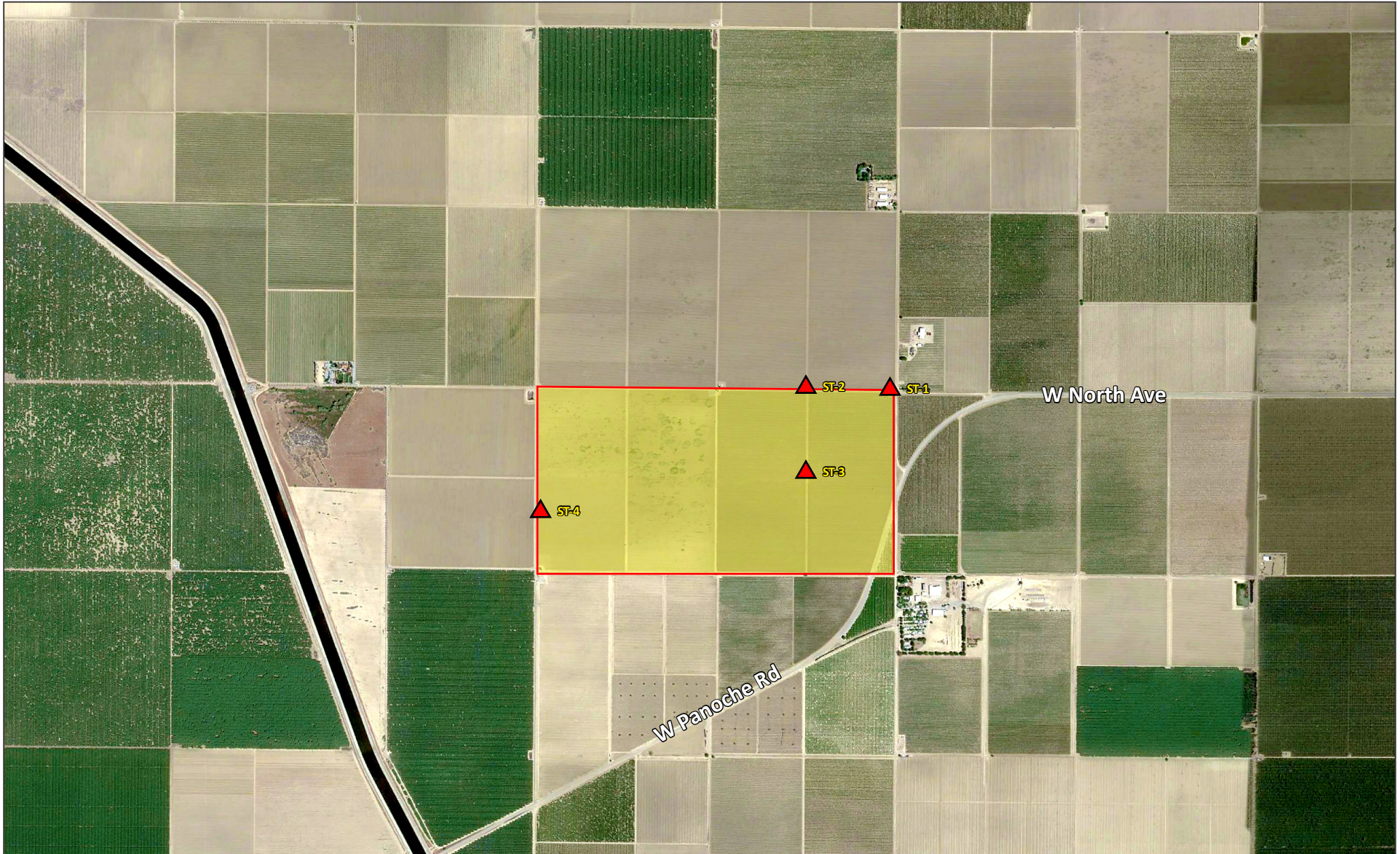
NOT TO SCALE

 Project Site Boundary

S. Stamoules, Inc. Pistachio Processing Facility Project
Project Site Plan

SOURCE: Engel & Company, 2020

FREProjects:\CFF2201 OPA Pistachio\PRODUCTS\Project Description\Figures\Figure 3-3.ai (10/3/2023)



ATTACHMENT B

NOISE MEASUREMENT DATA

Noise Measurement Survey

Project Number: CFF2201
Project Name: Stamoules Inc

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-1 Date: 7/27/23 Time: From 5:49 p.m. To 5:59 p.m.

Site Location: Located northeast corner of project site by power pole, approximately 45 feet from Newcomb Avenue centerline.

Primary Noise Sources: Constant pump noise from property across
Faint vehicle traffic noise

Measurement Results:

	dBA
L _{eq}	36.1
L _{max}	43.1
L _{min}	33.9
L _{peak}	98.0
L ₂	39.2
L ₈	37.5
L ₂₅	36.6
L ₅₀	35.7
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	13.1
Average Wind Velocity (mph)	6.4
Temperature (F)	96.5
Relative Humidity (%)	21.0
Comments:	

Comments: Windy conditions

Traffic Description:

Roadway	# Lanes	Speeds	NB/EB Counts			SB/WB Counts		
			Auto	MT	HT	Auto	MT	HT

Location Photo:



Noise Measurement Survey

Project Number: CFF2201
Project Name: Stamoules Inc

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-2 Date: 7/27/23 Time: From 6:05 p.m. To 6:16 p.m.

Site Location: Located near northern boundary of project site, approximately 1,300 feet from Newcomb Avenue centerline.

Primary Noise Sources: Faint vehicle traffic noise

Measurement Results:

	dBA
L _{eq}	33.9
L _{max}	45.5
L _{min}	25.3
L _{peak}	100.9
L ₂	40.3
L ₈	37.6
L ₂₅	34.5
L ₅₀	32.1
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	13.1
Average Wind Velocity (mph)	6.4
Temperature (F)	96.5
Relative Humidity (%)	21.0
Comments:	

Comments: Windy conditions

Traffic Description:

Roadway	# Lanes	Speeds	NB/EB Counts			SB/WB Counts		
			Auto	MT	HT	Auto	MT	HT

Location Photo:



Noise Measurement Survey

Project Number: CFF2201
Project Name: Stamoules Inc

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-3 Date: 7/27/23 Time: From 6:19 p.m. To 6:29 p.m.

Site Location: Located center of project site, approximately 1,300 feet from Newcomb Avenue centerline and 1,260 feet away from ST-2

Primary Noise Sources: Faint vehicle traffic noise on Panoche Road.

Measurement Results:

	dBA
L _{eq}	34.9
L _{max}	44.3
L _{min}	25.7
L _{peak}	103.3
L ₂	41.0
L ₈	38.7
L ₂₅	35.4
L ₅₀	33.4
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	13.1
Average Wind Velocity (mph)	6.4
Temperature (F)	96.5
Relative Humidity (%)	21.0
Comments:	

Comments: Windy conditions

Traffic Description:

Roadway	# Lanes	Speeds	NB/EB Counts			SB/WB Counts		
			Auto	MT	HT	Auto	MT	HT

Location Photo:



Noise Measurement Survey

Project Number: CFF2201
Project Name: Stamoules Inc

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-4 Date: 7/27/23 Time: From 6:47 p.m. To 6:57 p.m.

Site Location: Located near western boundary of project site, by pump and palm tree, approximately 850 feet away from Annedale centerline.

Primary Noise Sources: Faint vehicle traffic noise

Measurement Results:

	dBA
L _{eq}	40.6
L _{max}	45.4
L _{min}	33.5
L _{peak}	104.4
L ₂	44.1
L ₈	43.0
L ₂₅	41.7
L ₅₀	40.3
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	13.1
Average Wind Velocity (mph)	6.4
Temperature (F)	96.5
Relative Humidity (%)	21.0
Comments:	

Comments: Windy conditions

Traffic Description:

Roadway	# Lanes	Speeds	NB/EB Counts			SB/WB Counts		
			Auto	MT	HT	Auto	MT	HT

Location Photo:



ATTACHMENT C

CONSTRUCTION NOISE CALCULATIONS

Construction Calculations

Phase: Site Preparation

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Tractor	4	84	40	50	0.5	84	86
Dozer	3	82	40	50	0.5	82	83
Combined at 50 feet						86	88
Combined at Receptor 2000 feet						54	56

Phase: Grading

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Grader	1	85	40	50	0.5	85	81
Scraper	2	84	40	50	0.5	84	83
Dozer	1	82	40	50	0.5	82	78
Tractor	3	84	40	50	0.5	84	85
Excavator	1	81	40	50	0.5	81	77
Combined at 50 feet						90	89
Combined at Receptor 2000 feet						58	57
Combined at Receptor 2400 feet						57	55

Phase: Building Construction

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Crane	1	81	16	50	0.5	81	73
Man Lift	3	75	20	50	0.5	75	73
Generator	1	81	50	50	0.5	81	78
Tractor	3	84	40	50	0.5	84	85
Welder / Torch	1	74	40	50	0.5	74	70
Combined at 50 feet						87	86
Combined at Receptor 2000 feet						55	54

Phase: Paving

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Paver	2	77	50	50	0.5	77	77
All Other Equipment > 5 HP	2	85	50	50	0.5	85	85
Roller	2	80	20	50	0.5	80	76
Combined at 50 feet						87	86
Combined at Receptor 2000 feet						55	54

Phase: Architectural Coating

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Compressor (air)	1	78	40	50	0.5	78	74
Combined at 50 feet						78	74
Combined at Receptor 2000 feet						46	42

Sources: RCNM

¹ - Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

ATTACHMENT D

FHWA TRAFFIC NOISE MODEL PRINTOUT

TABLE Cumulative - Without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: North of Project Driveway - Northbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumulative -
Without Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1100 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS			
	75.51	12.57	9.34
M-TRUCKS			
	1.56	0.09	0.19
H-TRUCKS			
	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.80

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	68.1

TABLE Cumulative - Without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: North of Project Driveway - Southbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumulative -
Without Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 240 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 48.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	0.0

TABLE Cumulative - Without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: South of Project Driveway - Northbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumulative -
Without Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1100 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.80

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	68.1

TABLE Cumulative - Without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: South of Project Driveway - Southbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumulative -
Without Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 240 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 48.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	0.0

TABLE Cumilative - With Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: North of Project Driveway - Northbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumilative -
With Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1270 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.43

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	74.4

TABLE Cumilative - With Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: North of Project Driveway - Southbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumilative -
With Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 380 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 50.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	0.0

TABLE Cumilative - With Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: South of Project Driveway - Northbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumilative -
With Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1190 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.15

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	71.4

TABLE Cumilative - With Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/04/2023

ROADWAY SEGMENT: South of Project Driveway - Southbound

NOTES: S. Stamoules, Inc. Pistachio Processing Project - Cumilative -
With Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 350 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 20 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 49.83

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	0.0

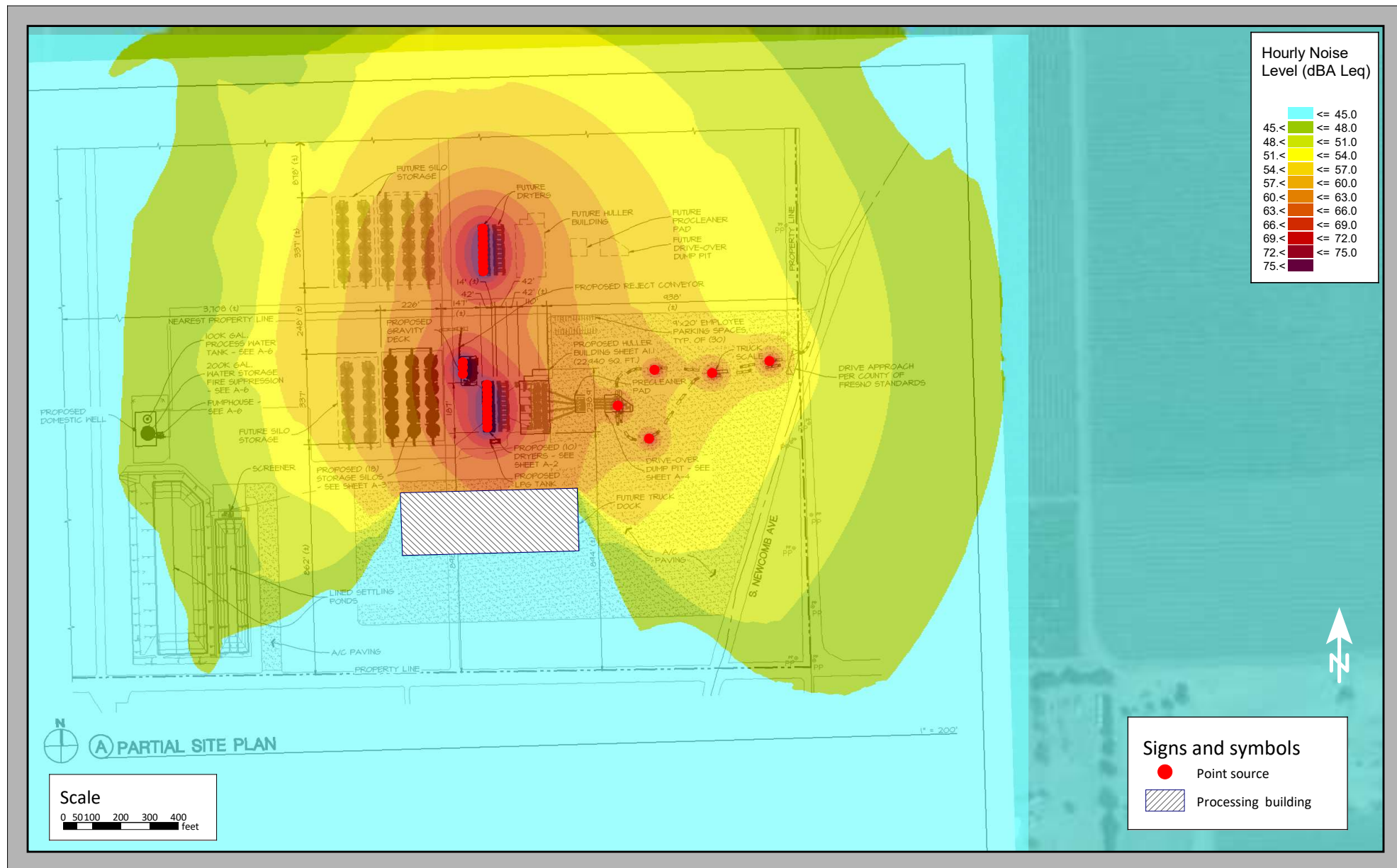
ATTACHMENT D

SOUNDPLAN NOISE MODEL PRINTOUT

S. Stamoules, Inc. Pistachio Processing

Project No. CFF2201

Project Operational Noise Levels





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