4.10 NOISE

4.10.1 INTRODUCTION

The Noise chapter of the EIR describes the existing noise environment in the project vicinity, and identifies potential impacts and mitigation measures related to the noise associated with the proposed project. The method by which the potential impacts are analyzed is discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant noise impacts to less-than-significant levels, if required. The Noise chapter is primarily based on the Environmental Noise Assessment prepared for the proposed project by Bollard Acoustical Consultants, Inc. (see Appendix L),[1] the Cache Creek Area Plan Update EIR,[2] the Yolo County General Plan,[3] and the Yolo County General Plan EIR.[4]

In response to the NOP, the County received comments related to Noise from a number of residents in the area. These commenters expressed that the Draft EIR should consider the following:

- Potential noise impacts to neighboring residences from mining operations and increased traffic (Resident);
- Noise impacts on the Monument Hill Memorial Park cemetery (Resident);
- Mining and processing noise impacts during hours outside of the regular hours of operation (Resident);
- Increased vibrations from on-site mining equipment and gravel trucks traveling on the roadways (Resident);
- Impacts on farm animals and handlers from increased noise (Resident);
- Outdoor events that could be impacted by noise pollution (Resident);
- Noise generation from truck back-up beepers, conveyor belts, and security alarms (Resident); and
- Compliance with hours of operation (Resident).

The CEQA Guidelines note that comments received during the NOP scoping process can be helpful in "identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating from detailed study issues found not to be important." (CEQA Guidelines Section 15083.) Neither the CEQA Guidelines nor Statutes require a lead agency to respond directly to comments received in response to the NOP, but they do require the comments be considered. Consistent with these requirements, these comments have been carefully reviewed and considered by Yolo County and are reflected in the analysis of impacts in this chapter. Appendix B includes all NOP comments received.

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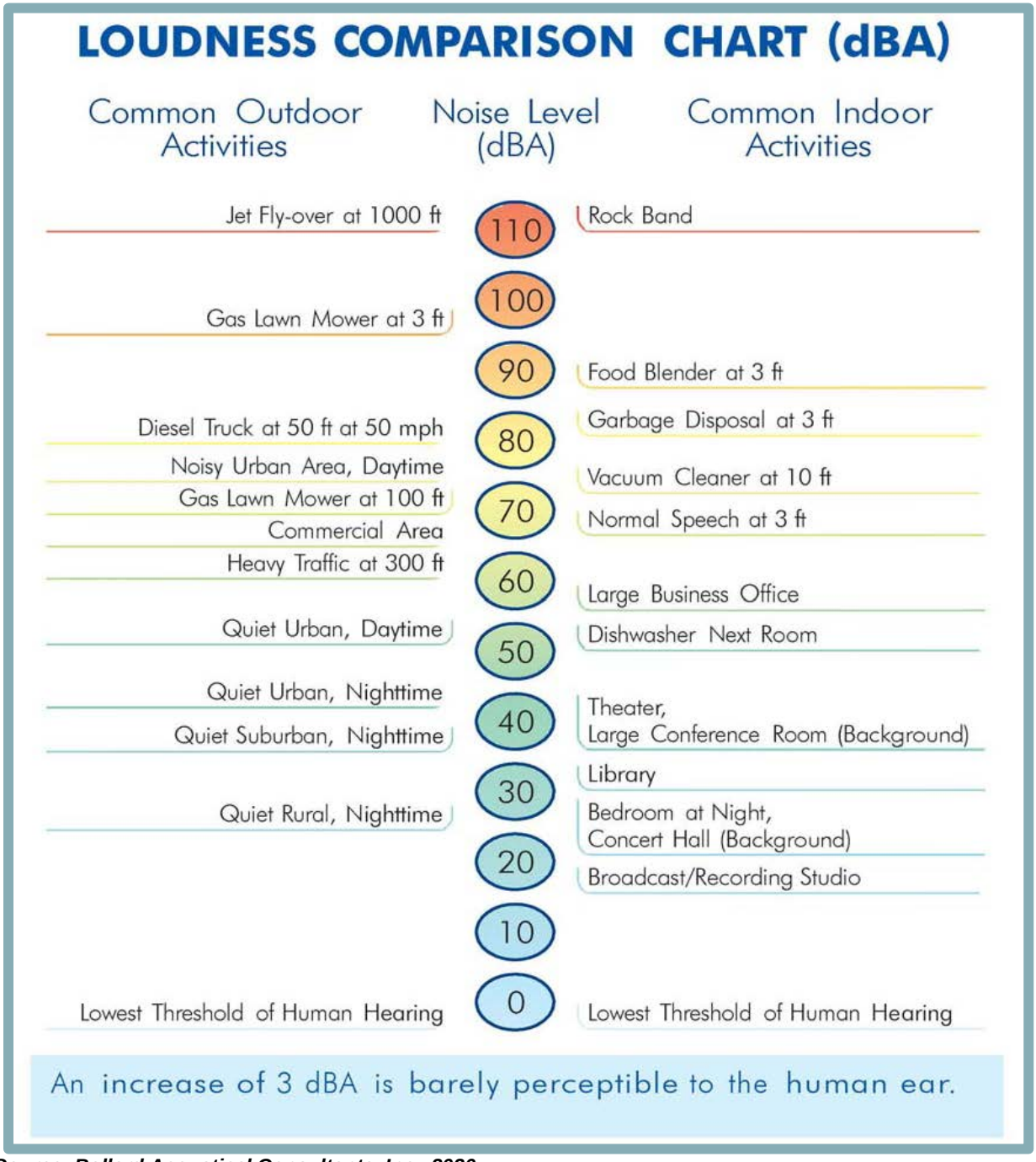
1 Bollard Acoustical Consultants, Inc. *Environmental Noise Assessment. Shifler Mining & Reclamation Project (BAC Job # 2018-202).* January 29, 2020.
2 Yolo County. *Cache Creek Area Plan Update Project, Final Environmental Impact Report. SCH# 2017052069*. December 2019.
3 Yolo County. *2030 Countywide General Plan*. November 10, 2009.
4 Yolo County. *Yolo County 2030 Countywide General Plan Environmental Impact Report. SCH# 2008102034*. April 2009.

Concepts and Terminology

Sound is measured by the decibel scale which uses the hearing threshold (20 micropascals) as a point of reference, defined as 0 decibels (dB). Changes in dB levels corresponds closely to human perception of relative loudness. Figure 4.10-1 below shows common noise sources associated with a range of decibel levels.

Figure 4.10-1
Noise Levels Associated with Common Noise Sources



Source: Bollard Acoustical Consultants, Inc., 2020.

The perceived loudness of sounds is dependent on numerous factors, including sound pressure level and frequency content. Within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighted network. A strong correlation exists between A-weighted sound levels (expressed as dBA) and community response to noise. Thus, the A-weighted sound level has become the standard tool for environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound. In addition, because of the logarithmic nature of the decibel scale, provided two sources of noise differ in intensity by at least 10 dB, their noise would not be additive. Two noise levels differing by 10 dB, which are added together, essentially equal the higher of the two noise levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average noise level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 dBl weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, L_{dn} tends to disguise short-term variations in the noise environment. With regard to increases in A-weighted noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1.0 dB cannot be perceived;
- Outside of the laboratory, a 3.0 dB change is considered a barely perceivable difference;
- A change in level of at least 5.0 dB is required before any noticeable change in human response would be expected; and
- A 10 dB change is subjectively heard as approximately a doubling in loudness, and would typically cause an adverse response.

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of approximately six dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

A street or roadway with moving vehicles (known as a “line” source), would typically attenuate at a lower rate, approximately 3.0 to 4.5 dB each time the distance doubles from the source, which

also depends on ground absorption. Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that would otherwise be attainable solely through increased distance.

4.10.2 EXISTING ENVIRONMENTAL SETTING

The following setting information provides an overview of noise and vibration, a discussion of effects of noise on people, existing receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

Description of Regional Environment

The project region is characterized primarily by continuous agricultural lands within a broad, alluvial valley surrounded by distant rolling hills. Cache Creek generally meanders west to east and runs into the Sacramento Valley, ending in a settling basin east of Woodland, eventually flowing into the Sacramento River. Regional topography is generally flat. Vegetation, other than agricultural crops, is primarily limited to grasslands and ornamental landscaping.

The region is rural and sparsely populated, with urban development being primarily concentrated within small towns such as Capay, Esparto, and Madison. Rural residences, farm dwellings with various accessory and agricultural structures, and commercial uses sparsely dot the landscape. Roads provide interconnections between agricultural properties having various crops, such as row crops, orchards, and vineyards. Telephone and electricity poles frequently parallel the roadways throughout the region. Aggregate mining operations, inclusive of above-ground structures and equipment, are prevalent throughout the region, in particular, along the banks of Cache Creek, within the CCAP. boundaries. The major noise sources in the region are associated with transportation (i.e., vehicles traveling on the local and regional roadway network), and agricultural, mining, processing, and aircraft operations.

The majority of the land in the CCAP area, including the project site, is used for agriculture. Noise sources associated with agricultural activities include field and crop maintenance, hauling, and crop dusting from small aircraft. The noise from these sources mostly occurs within the confines of the agricultural fields, and is seasonal. A characteristic of agricultural noise is short periods of noisy activities separated by long periods of little or no noise-producing activities.

Mining operations and hauling consists of extracting sand and gravel aggregate material and transporting it to approved processing plants located along lower Cache Creek. Noise-generating equipment used in mining include bulldozers, loaders, scrapers, drag lines, and dredges. Aggregate material is generally transported to a processing plant by conveyors, but on-site haul trucks or scrapers are also used. The processing of aggregate material is typically done at a stationary processing plant within the boundaries of the mining site. Noise-producing activities include crushing, sorting and loading of aggregate materials. Noise generated during processing is considered fixed-source noise. Aggregate materials, once processed, are hauled from the processing plant to construction sites within and outside of Yolo County. Noise is generated on access roads, designated haul routes (County roads) and on SR 16 and I-505, as haul trucks travel to and from the plant sites. The noise from these linear sources includes noise emanating from all other vehicles using the roadways.

Description of Local Environment

Similar to the regional description, noise in the local vicinity is primarily characterized by vehicles, agricultural operations, mining operations, and small aircraft. These sources and associated noise levels are discussed below.

Existing Noise Sources and Ambient Noise Levels

The existing ambient noise environment in the immediate vicinity of the project site is defined primarily by vehicles traveling on local roads, as well as distant traffic noise, local agricultural operations, small aircraft operations associated with the Watts-Woodland Airport, and ongoing aggregate processing activity at the Teichert Woodland Plant located northeast of the site. To quantify the existing ambient noise environment at the nearest existing receptors, continuous noise level measurements at the locations designated in Figure 4.10-2 from May 29 to 30 of 2014 as part of the Environmental Noise Assessment. The monitoring survey represents 72 consecutive hours of ambient noise level data collected from five sites. Table 4.10-1 below presents a summary of the ambient noise level measurement results.

Table 4.10-1
Ambient Noise Measurement Results: Project Site

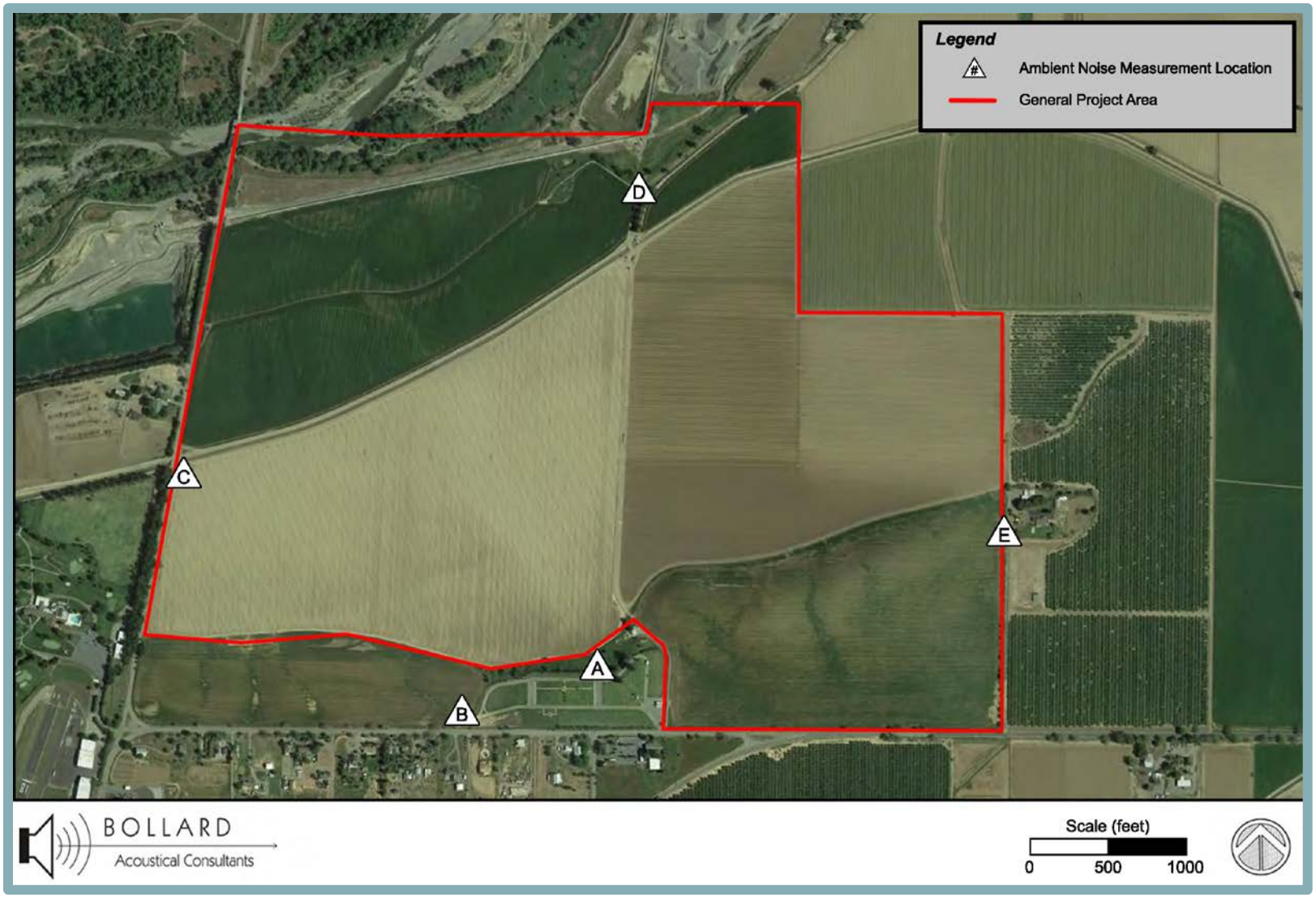
Site	Date	Daytime (7 AM to 10 PM) Noise Level (dB)		Nighttime (10 PM to 7 AM) Noise Level (dB)		
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{dn}
A	May 29	54	84	58	79	69
	May 30	56	90	49	88	61
	May 31	50	79	45	66	55
B	May 29	65	87	59	86	70
	May 30	66	89	57	86	59
	May 31	65	87	57	86	59
C	May 29	59	87	53	79	63
	May 30	61	93	51	81	65
	May 31	57	90	52	80	62
D	May 29	55	102	55	75	67
	May 30	47	76	42	71	51
	May 31	44	76	43	69	51
E	May 29	50	82	59	78	68
	May 30	50	80	47	79	55
	May 31	46	79	46	77	54

Source: Bollard Acoustical Consultants, Inc., 2020.

As shown in the table, noise levels at sites A, D, and E were considerably higher on May 29 than measurement results for May 30 or 31. BAC determined that the increase in ambient noise levels on May 29 was due to agricultural harvesting operations occurring on the project site during the morning of May 29. As indicated in the table, the lowest measured ambient noise conditions occurred at Sites D and E, which are close to the northern and eastern site boundaries, respectively, and set back a considerable distance from the nearest roadways.

To supplement the 2014 ambient noise survey, additional ambient noise level measurements were conducted on December 11, 2018.

Figure 4.10-2
Noise Measurement Locations: On-Site



Source: Bollard Acoustical Consultants, Inc., 2020.

The short-term ambient noise level measurements were conducted at 18 locations, including eight locations on the Teichert Woodland Plant site and 10 representing the nearest existing receptors to both the Woodland Plant site and the project site. The 2018 ambient noise measurement sites are shown on Figure 4.10-3. The results of the additional ambient noise surveys are provided in Table 4.10-2.

Table 4.10-2
Ambient Noise Measurement Results: Woodland Plant Area

Site	Description	Noise Level		Noise Source / Notes
		L_{eq}	L_{max}	
1	300 feet south of recycle plant	70	72	Dozers, excavator, breaker, recycle plant.
2	250 feet west of recycle plant	70	71	Dozers, excavator, breaker, recycle plant.
3	300 feet east of rock plant	69	70	Main rock plant dominant – crushers/screens.
4	400 feet southwest of rock plant	68	74	Main rock plant dominant – crushers/screens.
5	600 feet northwest of rock plant	60	62	Rock plant dominant.
6	90 feet from asphalt plant – without burner	72	72	Asphalt plant bag house – burner not operating.
6	90 feet from asphalt plant – with burner	81	83	Entire asphalt plant.
7	150 feet from asphalt plant – partial shielding	73	75	Asphalt plant dominant but partially shielded.
8	Nearest residence to Woodland Plant site on County Road 20	52	56	Recycle conveyors dominant – main rock plant barely audible.
9	Next nearest residence to Woodland Plant site on Co. County Road	45	55	Distant background traffic – Teichert Woodland operations barely audible.
10	Corner of County Road 20 and County Road 96	67	83	Local traffic only – Teichert Woodland operations inaudible.
11	Residence 1,300 feet north of County Road 20 and County Road 96	41	50	Local traffic only – Teichert Woodland operations inaudible.
12	1,400 feet south of County Road 20 and County Road 96	41	50	Local traffic only – Teichert Woodland operations inaudible.
13	Residence adjacent to southeast corner of project site	44	49	Teichert Woodland plant audible in distance.
14	Monument Hill Memorial Park	42	44	Local traffic – Teichert Woodland plant barely audible.
15	Residence on west side of County Road 94 B adjacent to project site	39	43	Background traffic – Teichert Woodland plant inaudible.
16	Residence on County Road 94B, 3,300 feet west of rock plant	69	83	Background traffic – Teichert Woodland plant inaudible.
17	Residence on County Road 95, 5,000 feet north of rock plant	62	71	Background traffic – Teichert Woodland plant inaudible.

Source: Bollard Acoustical Consultants, Inc., 2020.

Figure 4.10-3
Noise Measurement Locations: Woodland Plant Area

Source: Bollard Acoustical Consultants, Inc., 2020.

Existing Traffic Noise Levels

The baseline traffic condition was developed using the average annual production over the ten-year period between 2004 and 2014. Such baseline traffic volumes are referred to hereafter as the "existing" condition.

Traffic volumes for existing conditions were obtained from the project traffic consultant. Truck percentages and vehicle speeds on the local area roadways were estimated from field observations.

Traffic noise levels are generally predicted at 50 feet from the centerline along each project-area roadway segment. The 50-foot distance was selected for analysis as this distance generally represents the closest residences to the centerlines of the roadways which will primarily be used by Teichert truck traffic. Sensitive receptors and other sensitive land uses may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the traffic noise analysis is believed to be representative of the experience of a majority of receptors located closest to the project-area roadway segments analyzed in the Environmental Noise Assessment.

Table 4.10-3 presents the existing traffic noise levels in terms of L_{dn} along each roadway segment, as well as the distances to existing traffic noise contours.

Table 4.10-3
Existing Traffic Noise Levels and Distances to Contours

Roadway	Segment	L_{dn} at 100 feet from Centerline	Distance to Contours (feet)		
			70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
CR 20	Woodland Entrance – CR 96	63	23	40	71
CR 20	CR 96 – CR 98	66	32	57	101
CR 98	I-5 – CR 20	68	40	72	128
CR 96	CR 20 – SR 16	63	23	41	73
SR 16	West of I-505	71	57	101	179
SR 16	I-505 – CR 94B	72	61	109	193
SR 16	CR 94B – CR 96	72	65	116	206

Source: Bollard Acoustical Consultants, Inc., 2020.

The Environmental Noise Assessment, included as Appendix L to this EIR, provides details regarding the Federal Highway Administration (FHWA) modeling, including the complete inputs and results. The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported are generally considered to be conservative estimates of noise exposure along the project-area roadways.

Existing Sensitive Receptors and Other Sensitive Land Uses

Certain land uses are more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and shielding from noise sources) and the type of activities typically involved. The Yolo County General Plan Action HS-A62 defines noise sensitive receptors as residentially designated land uses, hospitals, nursing/convalescent homes, and similar board and care facilities, hotels and lodging, schools and daycare centers, and neighborhood parks. As shown in Figure 3-5 of the Project Description chapter, the nearest

existing sensitive receptors to the project site are the residentially-zoned areas located south and southwest of the project site, as described below. Additional land uses in the area that may be sensitive to noise exposure are shown in Figure 4.10-4. The seven land uses identified on this figure and analyzed in the Noise Report are as follows, with a brief corresponding description:

- R1 – Farm dwelling east of the project site
- R2 – Monument Hill Memorial Park cemetery
- R3 – Residentially-zoned area to the south (zoned Rural Residential)
- R4 – Wild Wings Subdivision (zoned Low Density Residential)
- R5 – Yolo Fliers Golf Course
- R6 – Farm dwelling west of the project site
- R7 – Farm dwelling north of the project site

Receptor locations R1, R2, and R5 through R7, do not meet the General Plan definition of "sensitive receptor" but do fall within the requirements of Section 10-4.421 of the Off-Channel Surface Mining Ordinance (emphasis added):

> From 6:00 a.m. to 6:00 p.m., noise levels shall not exceed an average noise level equivalent (Leq) of eighty (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels shall not exceed an average noise level equivalent (Leq) of sixty (60) decibels (dBA) for any nearby off-site residences or other noise-sensitive land uses. From 6:00 p.m. to 6:00 a.m., noise levels shall not exceed an average noise level equivalent (Leq) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site. At no time shall noise levels exceed a community noise equivalent (CNEL) of sixty (60) decibels (dBA) for any existing residence or other noise-sensitive land use. **An existing residence shall be considered the property line of any residentially zoned area or, in the case of agricultural land, any occupied offsite residential structures.** Achieving the noise standards may involve setbacks, the use of quieter equipment adjacent to residences, the construction of landscaped berms between mining activities and residences, or other appropriate measures. (§ 1, Ord. 1190, eff. September 5, 1996)

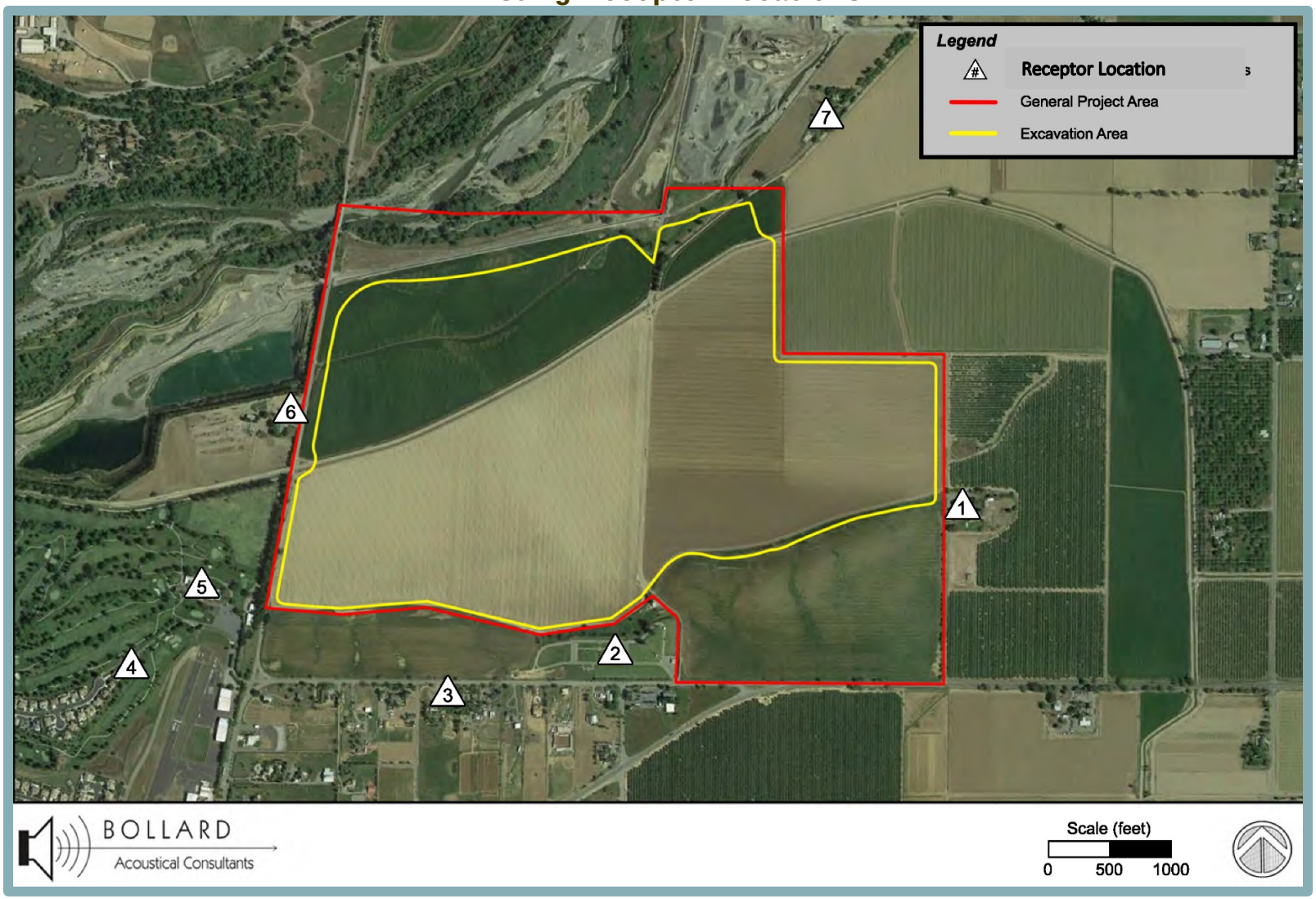
Vibration

While vibration is similar to noise, both involving a source, a transmission path, and a receiver, vibration differs from noise because noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration levels in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events.

Figure 4.10-4
Existing Receptor Locations



Source: Bollard Acoustical Consultants, Inc., 2020.

Table 4.10-4 indicates that the threshold for architectural damage to structures is 0.2 peak particle velocity in inches per second (in/sec PPV) and continuous vibrations of 0.1 in/sec PPV, or greater, would likely cause annoyance to some receptors.

Table 4.10-4
Effects of Vibration on People and Buildings

PPV		Human Reaction	Effect on Buildings
mm/sec	in/sec		
0.15 - 0.30	0.006 - 0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10 - 15	0.4 - 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

***Source:** Caltrans. Transportation Related Earthborne Vibrations (Caltrans Experiences) Technical Advisory, Vibration, TAV-04-01-R0201.* **January 23, 2004.**

Currently, the primary source of vibration in the project vicinity is haul truck traffic associated with existing operations at the Woodland Plant.

4.10.3 REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the review of noise under the CEQA process.

Federal Regulations

The following are the federal regulations relevant to noise.

OSHA Regulations

The federal Occupational Safety and Health Administration (OSHA) addresses back-up alarms in the following regulations:

- 29 CFR 1926.601(b)(4) – motor vehicles operating on an off-highway jobsite
- 29 CFR 1926.602(a)(9) – earthmoving equipment

Off-highway vehicles must have backup alarms that are "audible above the surrounding noise level." (29 CFR 1926.601(b)(4).) Earthmoving equipment must have backup alarms that are "distinguishable from the surrounding noise level" (29 CFR 1926.602(a)(9).)

Mine Safety and Health Administration Regulations

The federal Mine Safety and Health Administration (MSHA) addresses back-up alarms in 30 CFR 56.14132(b), which requires that self-propelled mobile equipment with an obstructed rear view have a back-up alarm that is "audible above the surrounding noise level." (30 CFR 56.14132(b).) This provision allows for nighttime only use of an automatic reverse-activated strobe light in-lieu of an audible reverse alarm.

Conveyor alarms are addressed in 30 CFR 57.14201, which provides:

a. When the entire length of the conveyor is visible from the starting switch, the conveyor operator shall visually check to make certain that all persons are in the clear before starting the conveyor.

b. When the entire length of the conveyor is not visible from the starting switch, a system which provides visible or audible warning shall be installed and operated to warn persons that the conveyor will be started. Within 30 seconds after the warning is given, the conveyor shall be started or a second warning shall be given.

State Regulations

The following are the State environmental laws and policies relevant to noise.

California Vehicle Code

The California Vehicle Code § 27000(d)(1) provides:

> A construction vehicle with a gross vehicle weight rating (GVWR) in excess of 14,000 pounds that operates at, or transports construction or industrial materials to and from, a mine or construction site, or both, shall be equipped with an automatic backup audible alarm that sounds on backing and is capable of emitting a sound audible under normal conditions from a distance of not less than 200 feet.

Cal/OSHA Regulations

The California Division of Occupational Safety and Health, known as "Cal/OSHA," is a division of the CDIR. The CDIR regulations (Cal. Code Regs., tit. 8, § 1592.) provide the following requirements for backup warning devices:

a. Every vehicle with a haulage capacity 2 ½ cubic yards or more used to haul dirt, rock, concrete, or other construction material shall be equipped with a warning device that operates automatically while the vehicle is backing. The warning sound shall be of such magnitude that it will normally be audible from a distance of 200 feet and will sound immediately on backing. In congested areas or areas with high ambient noise which obscures the audible alarm, a signaler, in clear view of the operator, shall direct the backing operation.

b. Those vehicles not subject to 1592(a) and operating in areas where their backward movement would constitute a hazard to employees working in the area on foot, and where the operator's vision is obstructed to the rear of the vehicle shall be equipped with an effective device or method to safeguard employees such as:

1) An automatic back-up audible alarm which would sound immediately on backing, or

2) An automatic braking device at the rear of the vehicle that will apply the safety brake immediately on contact with any obstruction to the rear, or

3) In lieu of 1 or 2 above, administrative controls shall be established such as:

   A) A spotter or flagger in clear view of the operator who shall direct the backing operation, or

   B) Other procedures which will require the operator to dismount and circle the vehicle immediately prior to starting a back-up operation, or

   C) Prohibiting all foot traffic in the work area.

4) Other means shall be provided that will furnish safety equivalent to the foregoing for personnel working in the area.

c. All vehicles shall be equipped with a manually operated warning device which can be clearly heard from a distance of 200 feet.

d. The operator of all vehicles shall not leave the controls of the vehicle while it is moving under its own engine power.

e. Hauling or earth moving operations shall be controlled in such a manner that equipment or vehicle operators know of the presence of rootpickers, spotters, lab technicians, surveyors, or other workers on foot in the areas of their operations.

Thus, vehicles with a hauling capacity of 2 ½ cubic yards or more are required to have a backup warning system that is capable of being heard at least 200 feet away. Vehicles not falling into that category have other options for backup warnings, including the use of a spotter.

Department of Industrial Relations Variance Procedures

An employer may apply to the California Department of Industrial Relations (CDIR)'s Occupational Safety and Health Standards Board for a permanent variance from a Cal/OSHA regulation by demonstrating by a preponderance of the evidence that an alternative program, method, practice, means, device, or process will provide equal or superior safety. (Cal. Labor Code § 143.)

Local Regulations

The following are the regulatory agencies and regulations pertinent to the proposed project on a local level.

Yolo County General Plan

The relevant goals and policies from the Yolo County General Plan related to noise are presented below.

Goal HS-7 Noise Compatibility. Protect people from the harmful effects of excessive noise.

Policy HS-7.1	Ensure that existing and planned land uses are compatible with the current and projected noise environment. However, urban development generally experiences greater ambient (background) noise than rural areas. Increased density, as supported by the County in this General Plan, generally results in even greater ambient noise levels. It is the County's intent to meet specified indoor noise thresholds, and to create peaceful backyard living spaces where possible, but particular ambient outdoor thresholds may not always be achievable. Where residential growth is allowed pursuant to this general plan, these greater noise levels are acknowledged and accepted, notwithstanding the guidelines in Figure HS-7 [of the General Plan].
Policy HS-7.3	Protect important agricultural, commercial, industrial, and transportation uses from encroachment by land uses sensitive to noise and air quality impacts.
Policy HS-7.5	Minimize the impact of noise from transportation sources including roads, rail lines, and airports on nearby sensitive land uses.
Policy HS-7.8	Encourage local businesses to reduce vehicle and equipment noise through fleet and equipment modernization and retrofits, use of alternative fuel vehicles, and installation of mufflers or other noise reducing equipment.
Action HS-A62	Regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of noise to the following sensitive receptors: residentially designated land uses; hospitals, nursing/convalescent homes, and similar board and care facilities; hotels and lodging; schools and day care centers; and neighborhood parks. Home occupation uses are excluded.

Yolo County Off-Channel Surface Mining Ordinance

With respect to the noise compatibility of surface mining projects, the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) provides specific standards, reproduced below as follows:

> Section 10-4.421. Noise: General standard
>
> From 6:00 a.m. to 6:00 p.m., noise levels shall not exceed an average noise level equivalent (Leq) of eighty (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels shall not exceed an average noise level equivalent (Leq) of sixty (60) decibels (dBA) for any nearby off-site residences or other noise-sensitive land uses. From 6:00 p.m. to 6:00 a.m., noise levels shall not exceed an average noise level equivalent (Leq) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site. At no time shall noise levels exceed a community noise equivalent (CNEL) of sixty (60) decibels (dBA) for any existing residence or other noise-sensitive land use. An existing residence shall be considered the property line of any residentially zoned area or, in the case of agricultural land, any occupied offsite residential structures. Achieving the noise

standards may involve setbacks, the use of quieter equipment adjacent to residences, the construction of landscaped berms between mining activities and residences, or other appropriate measures. (§ 1, Ord. 1190, eff. September 5, 1996)

Section 10-4.422. Noise: Sonic safety devices

If mining occurs within fifteen-hundred (1500) feet of residences, equipment used during nighttime activities shall be equipped with non-sonic warning devices (e.g. infrared) consistent with the California Office of Safety Hazard Administration (Cal OSHA) regulations. This may include fencing of the area to avoid pedestrian traffic, adequate lighting of the area, and placing an observer in clear view of the equipment operator to direct backing operations. If appropriate, prior to commencement of operations without sonic warning devices, operators shall file a variance request with the California OSHA Standards Board showing that the proposed operation would provide equivalent safety to adopted safety procedures, including sonic devices. This regulation applies to all sonic safety devices in use at the mining site, including sonic warnings on conveyors.

Section 10-4.423. Noise: Traffic

Operators shall provide acoustical analysis for future truck and traffic noise associated with the individual operations along County roadways identified as experiencing significant impacts due to increased traffic noise. The study shall identify noise levels at adjacent noise-sensitive receptors and ways to control the noise to the "normally acceptable" goal of a CNEL of sixty (60) dB and reduce the increase over existing conditions to five (5) dBA or less. Typical measures that can be employed include the construction of noise barriers (wood or masonry), earthen berms, or re-routing of truck traffic.

4.10.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to noise and vibration. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, are also presented.

Standards of Significance

The significance criteria used for this analysis were developed from Appendix G of the CEQA Guidelines, and applicable policies and regulations of Yolo County. A noise impact is considered significant if the proposed project would:

- 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 groundborne vibration or groundborne noise levels;
- 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 two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or
- Cause a significant environmental impact due to a conflict with applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating noise impacts.

Consistent with the CCAP Update FEIR (pg. 4.10-8), for the purpose of this analysis, a substantial temporary or permanent increase would occur if the activities resulting from implementation of the

proposed project would generate noise in excess of the standards in the Off-Channel Surface Mining Ordinance, described in Section 10-4.421 of the Ordinance.

Impacts Found Less-than-Significant in Initial Study

The Initial Study prepared for the proposed project (see Appendix A) determined that implementation of the proposed project would result in a less-than-significant impact related to aircraft noise. Therefore, the following impact is not discussed further in this EIR:

- 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 two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or

Noise Effects on Domestic Livestock

Current research indicates that there are no government policies or widely accepted guidelines with regard to noise criteria for animals. However, information is provided in technical literature and has been reviewed for the proposed project.

The noise goals provided in this chapter are based on human response and annoyance factors and, as such, are not necessarily applicable to livestock. However, it is recognized that sudden noise has the potential to startle or upset domestic livestock and pets.

Based on a comment received during the public review period for the Notice of Preparation for the project, the project's predicted operational noise levels upon the livestock is discussed below.

Research into the effects of noise on livestock, poultry and domestic animals has been primarily limited to noise from military aircraft overflights and sonic booms. Literature on the effects of aircraft noise and sonic booms on animals indicates that effects vary from species to species. Adverse effects have been found in a few studies but have not been reproduced in other similar studies. Some studies report that the effects of aircraft noise on animals is uncertain, though behavioral responses to military overflights have been noted. However, many studies suggest that some species appear to adjust to some forms of sound disturbance. Given that mining has been ongoing within the project region for over 100 years, mining-related noise is a component of existing conditions. As such, wildlife within the project vicinity is likely acclimated to noise associated with mining operations. According to a study prepared by the U.S. Department of the Interior, the effects of noise and sonic booms on various species of domestic livestock appear to become negative effects at sound pressure levels above 90 decibels.[5] Levels above 90 dB would be substantially greater than the sound pressure levels that would be experienced from the Teichert Shifler operation. The proposed mining activity would involve primarily involve use construction-type machinery and is not anticipated to include blasting or other high-intensity noise sources. Therefore, adverse noise-related impacts to domestic livestock are not expected.

[5] U.S. Department of the Interior. *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis*. June 1988. Available at: https://www.nonoise.org/library/animals/litsyn.htm#3.1.1%20Domestic%20Livestock. Accessed June 23, 2020.

Method of Analysis

Below are descriptions of the methodologies utilized to measure background and ambient noise and estimate future traffic noise, construction noise, and vibration associated with the project. Further modeling details and calculations are provided in Appendix L to this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

All noise measurements were conducted using Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4)

Baseline (i.e., existing) traffic conditions for the existing Woodland and Esparto Plants were developed using the average annual production over the previous ten-year period. Calculating the baseline traffic conditions based on the average annual production of the previous ten-year period accounts for the typical variation in demand for aggregate materials, including periods of high and low production and, thus, provides a realistic representation of existing conditions. In the subject analysis the use of this average is conservative as it covers a period of depressed economic activity associated with emergence from the Great Recession of the late 2000's.

BAC evaluated traffic noise levels for existing traffic conditions using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108), which is based on the Calveno reference noise factors for automobiles, medium trucks, and heavy trucks and takes into consideration metrics such as vehicle speed, volume, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. The existing traffic on roadways within the vicinity of the project site was categorized for noise purposes into automobiles, medium duty trucks (two axles), and heavy-duty trucks (three or more axles). Heavy truck volumes in the immediate project vicinity primarily consist of agricultural, commercial, and aggregate industry trucks. Truck traffic associated with ongoing operations at the Teichert Woodland Plant and other associated operations was estimated based on past trip generation data from the facility.

In addition to the traffic volumes obtained for existing conditions, traffic volumes were also provided by the traffic consultant for the Existing Plus Project (existing traffic volumes plus volumes from the proposed project) and Cumulative Plus Project (traffic from reasonably foreseeable development plus traffic from the proposed project) scenarios. The scenarios are discussed in further detail in Section 4.12, Transportation and Circulation, of this EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to noise and vibration is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.10-1 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. The impact would be *significant.*

The primary sources of noise associated with proposed project would be heavy-duty equipment operation associated with excavation of overburden material, as well as traffic noise associated with haul truck traffic on local roadways. In addition, the project could indirectly result in increased noise generation at the existing Teichert Woodland Plant.

Excavation Noise

As part of the proposed project, removal of the overburden on the site would be accomplished using scrapers, motor graders and bulldozers. Following removal of overburden, aggregate materials would primarily be mined using scrapers until the water table is reached. The scrapers would dump directly over a grate which feeds the conveyor system used to transport material to the Teichert Woodland Plant. At the depths at which groundwater is reached, an excavator or dragline would be used to extract the aggregate resource. The excavator would fill haul trucks, which would dump directly over the grate feeding the conveyor system. Water trucks would be used to control dust generated by the proposed mining operations. The proposed mining process would be similar to methods currently employed by Teichert at other sites supplying the Woodland Plant, as well as Teichert's Esparto operations. The hours of operation at the proposed mining site would be limited to 6:00 AM to 6:00 PM, Monday through Saturday. Occasional 24-hour operations to fulfill contract requirements would be allowed within the regulations established in OCSMO Section 10-4.421. Woodland Plant hours of operation are permitted from 6:00 AM to 6:00 PM, Monday through Friday. For the months of August, September, and October, Plant hours may be extended to 10:00 PM (Monday through Friday) and 6:00 AM to 6:00 PM Saturday and/or Sunday subject to compliance with Section 10-4.421 of the Mining Ordinance.

It should be noted that, in addition to excavation noise associated with the proposed mining activities, excavation would occur prior to mining for Moore Canal relocation purposes, and post mining, for future reclamation activities at the project site. However, excavation noise associated with pre- and post-mining activities would be less intensive compared to during mining activities.

To quantify the noise generation associated with the proposed excavation activities, BAC relied on reference noise level data collected at various Teichert excavation areas in recent years, including the Teichert Esparto Plant; such data is summarized in Table 4.10-5 below. The reference noise level measurements utilized to establish the levels presented in 4.10-6 included all aspects of the equipment operations. Specifically, the measurements included scrapers loading and unloading material, loaded and empty scraper passbys, excavators loading trucks and conveyors, movement of excavators (including backward movement with warning beepers), and haul truck passbys (loaded and unloaded), truck load dumps, and trucks moving in reverse (with backup warning beepers). As a result, the 4.10-6 data is considered to be representative of all noise-

generating aspects of the mobile heavy earthmoving equipment which will be utilized at the Shifler excavation areas, including the use of backup warning devices.

The hourly average noise emissions of the excavation activities are dependent on the amount of time within the hour that the particular noise sources are present. For example, scrapers and haul trucks transferring aggregates between the excavation area and conveyors would only be in the immediate vicinity of a property line near an existing noise-sensitive receptor or other sensitive land use for a relatively small percentage of the hour.

Aerial imagery was used to scale the distances from the nearest proposed excavation activities at the project site to the seven above-described noise receptor locations closest to the project site. A sound level decay rate of 6 dB per doubling of distance was used to project noise from the project site to the nearest receptors. An additional offset of -1.5 dB per doubling of distance between the noise source and receptor was applied to account for atmospheric absorption and excess ground attenuation. Furthermore, a -5 dB offset was applied to noise generated by excavator/haul truck operations as that equipment would not be utilized until the dry-pit mining with scrapers was completed and the excavation operations recessed into the pit area.

Table 4.10-5
Reference Noise Levels for Excavation Equipment and Operations

Equipment/Operation	L_{max} at 100 feet	L_{eq} at 100 feet	Distance to 60 dB L_{eq} Contour (feet)
Conveyors	60/70[1]	57	71
Self-Elevating Scrapers	90	75	560
Excavator	80	70	320
Haul Trucks	80	70	350

[1] Following conveyor startup, noise generated by conveyor belts is fairly steady-state (not time varying). As a result, the maximum and average noise levels generated by conveyors while in operation are relatively similar (60 dBA vs 57 dBA). Maximum noise levels generated by conveyor startup alarms are typically 10 dB higher, so as to be audible over background noise. However, the duration of the conveyor alarms is limited, and does not affect the average noise generation of the conveyor system. The 70 dBA maximum shown above is due to the conveyor start-up alarms.

Source: Bollard Acoustical Consultants, Inc., 2020, based on reference noise level data collected at various Teichert operations.

Table 4.10-6 shows the distances between the nearest excavation locations on the project site and project-area receptors, along with the predicted noise levels associated with proposed excavation activities at such receptors.

Table 4.10-6
Projected Noise Levels at Nearest Receptors – On-Site Mining Operations

Receptor	Distance (feet)	Noise Level (L_{eq}, dB)		
		Scraper	Excavator / Haul Truck	Conveyor
1	300	65	53	42
2	300	60	48	37
3	600	59	47	36
4	1,500	49	37	26
5	500	60	48	37
6	300	65	53	42
7	1,000	54	42	31

Source: Bollard Acoustical Consultants, Inc., 2015.

The noise levels predicted for scraper operations assume worst-case operations at existing ground elevation. As the depth of excavation increases, shielding of scraper operations by the intervening pit walls would result in considerably lower noise levels at the nearest receptors than indicated in Table 4.10-6.

The conveyor start-up alarms would generate brief periods of elevated maximum noise levels, estimated to be approximately 10 dB higher than the average noise levels shown in Table 4.10-6. The range of maximum noise levels associated with conveyor startup alarms would range from approximately 36 to 52 dB L_{max} at the nearest sensitive receptors and other sensitive land uses, which is both well below applicable noise standards and the existing maximum noise level exposure at such receptors/land uses.

The Table 4.10-6 data indicate that, at the project site boundaries, noise levels would comply with the 80 dB L_{eq} standard established by Section 10-4.421 of the OCSMO. With the exception of the existing farm dwellings located to the west and east of the site (Receptors 1 and 6), noise generation associated with on-site mining activities would comply with the OCSMO 60 dB L_{eq} standard for residences. However, initial overburden removal operations using self-elevating scrapers could result in average noise levels of up to 65 dB L_{eq} at the farm dwellings represented by Receptors 1 and 6. Therefore, the project could result in new exceedances of the County's applicable 60 dB L_{eq} noise standard at such receptors. In addition, during early phases of excavation, when operations are occurring above-grade, the proposed project could conflict with the 65 dB L_{eq} standard from 6:00 PM to 6:00 AM, as measured from the project boundaries (established by OCSMO Section 10-4.421), if operations were to occur during these nighttime hours. Therefore, the proposed project could result in a significant impact related to excavation at the mining pit.

While the proposed excavation would not exceed the noise standards used in this analysis at the Monument Hill Memorial Park cemetery (see 'R2' in Table 4.10-6 above), the Noise Study recommends ongoing communication between Teichert and Monument Hill representatives to identify feasible methods for minimizing potential noise intrusion during services.

The following discussion is provided with respect to the recommended reverse-activated strobe lights identified in Mitigation Measure 4.10-1(b) below.

Federal Preemption

A recent California Supreme Court case, *Solus Industrial Innovations, LLC v. Superior Court*, 4 Cal.5th 316 (2018), addressed the issue of whether Cal/OSHA regulations were preempted by federal OSHA regulations. The court held that federal OSHA does not preempt unfair competition and consumer protection claims based on worker safety and health violations of Cal/OSHA regulations. The court reasoned that OSHA was not intended to preempt state regulation of worker health and safety. Rather, OSHA was intended to serve as the "floor" for those states that do not have such regulations. Under OSHA, federal law does not preempt state authority when: 1) there is no federal standard or 2) there is a state plan for occupational safety and health that has been approved at the federal level. California, through Cal/OSHA, has a state plan for occupational safety and health that has been approved by the federal Secretary of Labor. For this reason, the court concluded that Cal/OSHA regulations were not preempted by OSHA.

Applicable Regulations

Given the fact that Cal/OSHA regulations are not preempted by OSHA, the applicable regulations with respect to back-up warning alarms would appear to be the Cal/OSHA regulations, MSHA regulations, and the California Vehicle Code provision discussed above. All of these statutes and/or regulations require the use of an audible alarm with one exception. The use of a non-audible strobe light during nighttime hours is allowed under MSHA regulations, but not under Cal/OSHA regulations or the California Vehicle Code.

It is unknown whether the Occupational Safety and Health Standards Board would grant a variance from the requirement of an audible alarm for a non-audible warning device. The applicant for the variance would be required to demonstrate that the alternative warning device will provide equal or superior safety to an audible backup alarm. Moreover, such a variance would not exempt an operator from the California Vehicle Code provision that requires an audible alarm on all construction vehicles with a GVWR of over 14,000 pounds.

Traffic Noise

As part of the proposed project, Teichert is proposing to transfer the annual production allotment from the Teichert Esparto operation to the Shifler site. The Teichert Esparto operation was approved in December 1996 for a total of 25.88 million tons (22.0 million tons sold) over a maximum 30-year period at an annual rate not to exceed 1,176,471 tons mined (1.0 million tons sold) per year. Teichert is requesting that it be allowed to transfer its annual production allotment from the Teichert Esparto operation to the Shifler site once mining at the Teichert Esparto site has been completed or the Teichert Esparto mining permit expires (January 1, 2028), whichever occurs first.

Table 4.10-7 shows the comparison between the existing and projected traffic noise levels with implementation of the proposed project. As shown in the table, the noise level increases projected to occur under Existing Plus Project conditions would be

below the 5.0 dB threshold established by the County's OCSMO. Therefore, a less-than-significant impact would occur related to traffic noise.

Table 4.10-7
Existing Plus Project Traffic Noise Levels

Roadway	Segment	Noise Level (L_{dn}, dB) at 50 Feet from Roadway Centerline			
		Existing	Existing Plus Project	Change	Substantial Increase?
CR 20	Woodland Entrance – CR 96	63.1	67.7	4.6	No
CR 20	CR 96 – CR 98	66.1	68.7	2.6	No
CR 98	I-5 – CR 20	68.2	70.1	1.9	No
CR 96	CR 20 – SR 16	63.3	65.3	2.0	No
SR 16	West of I-505	71.1	71.1	0.1	No
SR 16	I-505 – CR 94B	71.7	72.1	0.4	No
SR 16	CR 94B – CR 96	72.3	72.7	0.4	No

Source: Bollard Acoustical Consultants, Inc., 2020.

Teichert Woodland Plant Processing Noise

The proposed project does not include any changes to the existing Woodland Plant. However, once excavation and processing operations have ceased at the Teichert Esparto site, the Esparto Plant equipment would be relocated to the Woodland Plant to replace the older Woodland Plant equipment. In addition, one additional crusher and two additional screens would likely be required to accommodate the increase in plant capacity from 1.2 million tons per year to 2.2 million tons per year occurring as a result of the proposed project.

Noise level measurements conducted at the Woodland Plant site in December 2018 and at the Esparto Plant site in August of 2019 indicate that the aggregate processing plant noise generation is very similar at the two sites.

With the additional crusher and two additional screens, the noise generation of the processing plant equipment is predicted to be approximately one to two dB higher than the existing noise generation of the Esparto Plant aggregate processing equipment. However, the area preliminarily identified for the location of the Esparto processing plant equipment, once relocated to the Woodland Plant site, is generally farther away from the nearest residences than the existing Woodland Plant equipment (see Figure 3-7). According to the Noise Study prepared for the proposed project, the net effect of the slight increase in plant noise generation resulting from the additional crusher and screen and the increased distance to the nearest residences would likely be negligible. In addition, the project would not increase asphalt production levels at the Woodland Plant; asphalt production was assumed to remain at existing levels.

The exact location and type of equipment to be relocated to the Woodland Plant has not yet been finalized by the applicant. Therefore, the potential exists for the relocated equipment to increase noise levels in excess of the estimates presented above. While unlikely, in the event the increased Woodland Plant output results in increased noise

levels in the immediate vicinity of the Woodland Plant, or extended hours of operation, a significant impact could occur.

Reclamation and Post-Reclamation Noise

Noise associated with reclamation of the mining site is addressed in the analysis of Excavation Noise above. Noise associated with use of the project site and other dedicated properties post-reclamation would be similar to existing conditions. Reclamation of portions of the site to a total of 117 acres of agricultural land will result in noise generation similar to existing conditions on the site and in the agricultural surroundings. Reclamation of portions of the site to open water lake and habitat will also be similar to existing conditions in that in-channel areas of Cache Creek have been and continue to be used for recreational purposes. Following proposed future dedication of the Shifler In-Channel, Shifler Lake, Schwarzgruber, and Woodland Plant properties, future uses would include public recreation, trails, open water, and protected habitat. Noise generated by users of these future facilities would be similar to existing uses and compatible with surrounding uses.

Conclusion

Based on the above, traffic noise associated with the proposed project would not conflict with any of the applicable noise standards established by the County's OCSMO. However, initial overburden removal operations using self-elevating scrapers could result in new exceedances of the County's applicable 60 dB L_{eq} noise standard at Receptors 1 and 6. In addition the relocation of processing equipment to the Woodland Plant could result in increased noise levels associated with plant operations. Thus, a ***significant*** impact could occur related to the generation of a substantial 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.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.10-1(a) would reduce hourly noise exposure to 60 dB L_{eq} or less at the Receptors 1 and 6, located east and west of the project site, respectively. In addition, Mitigation Measure 4.10-1(b) would ensure that noise levels associated with processing activities at the Woodland Plant would be reduced to at or below the existing ambient noise levels shown in Table 4.10-2 above. Thus, the above impact would be reduced to a *less-than-significant* level.

4.10-1(a) *The following language shall be included as a condition of approval on the Mining Permit for the proposed project, to the satisfaction of the Yolo County Department of Community Services:*

- *Initial scraper operations occurring within 300 feet of the project site boundary near Receptors 1 or 6 (as identified in Figure 4.10-4 of this EIR) shall be limited to 15 minutes per hour;*

  OR

- *An earth berm or other form of noise barrier shall be constructed along 300 feet of the eastern and western site boundaries nearest to Receptors 1 and 6. The barrier shall be a minimum of eight feet in height relative to the existing ground elevation.*

In addition, the Mining Permit shall be conditioned with the following language, to the satisfaction of the Yolo County Department of Community Services, to further reduce the potential for annoyance associated with proposed excavation activities:

- *Excavation activities occurring within 560 feet of an existing residence shall be limited to the hours of 6:00 AM to 6:00 PM until such time as the excavation equipment has recessed in the pit a sufficient depth to no longer be visible from the nearest residences.*
- *Teichert shall coordinate with Monument Hill Memorial Park cemetery representatives on an ongoing basis to determine when funeral services are scheduled to occur at the cemetery, and shall limit on-site operations during such services. Alternatively, Teichert may initiate communication with Monument Hill Memorial Park representatives to identify other feasible methods for minimizing potential noise intrusion during services.*

4.10-1(b) *A noise survey shall be conducted following the installation and operation of any new equipment which will be required to increase processing capacity of the Woodland Plant. The results of the noise survey shall be submitted to the Yolo County Department of Community Services within two months of the new equipment being brought online. In the event that the survey results indicate the additional equipment has resulted in a substantial increase in processing plant noise emissions (in excess of 5 dB), the equipment causing the substantial increase shall cease operation until the following noise mitigation options shall be implemented, as appropriate, to reduce the overall increase in plant noise levels to less than 5 dB at the nearest residences:*

- *Construct localized noise barriers adjacent to ground level equipment determined to be responsible for substantial increases in ambient noise levels.*
- *Suspend acoustic curtains adjacent to elevated equipment determined to be responsible for substantial increases in ambient noise levels.*
- *Line new conveyor transfer points and hoppers with heavy urethane linings.*
- *Utilize urethane screens in new screen decks.*
- *Utilize automatic reverse-activated strobe lights in lieu of audible backup beeper devices for any new mobile equipment,*

if the applicant can obtain a variance from Cal/OSHA. If a variance cannot be obtained, then utilize MHSA-approved broad-band backup warning devices for any new mobile equipment rather than the traditional tonal back-up beeper devices.

- *Ensure that all internal combustion engines which may be required to drive new equipment is equipped with appropriate mufflers.*

4.10-2 Generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant*.

Yolo County does not have specific policies or standards pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events.

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table 4.10-8 shows the typical vibration levels produced by common construction equipment.

Table 4.10-8
Vibration Levels for Various Construction Equipment

Type of Equipment	Peak Particle Velocity @ 25 feet (in/sec)	Peak Particle Velocity @ 50 feet (in/sec)
Large Bulldozer	0.089	0.029
Loaded Trucks	0.076	0.025
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.029
Jackhammer	0.035	0.011

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006.

Mining and reclamation activities associated with the proposed project would include operation of heavy-duty off-road equipment within the project site, as well as haul truck traffic on local roadways. While the equipment shown in the table above does not include all equipment that could be used as part of the proposed project, the associated vibration levels are representative of the vibration intensities anticipated for the project.

As shown in the table, all the equipment types listed, including loaded haul trucks, would produce vibration levels well below the Caltrans standard of 0.20 in/sec at which vibrations cause damage to buildings, as well as the 0.10 in/sec threshold at which

vibrations may cause annoyance to some receptors. Furthermore, the haul trucks associated with the proposed project would be routed through designated haul truck routes that already experience haul truck traffic associated with the Esparto Plant and the Woodland Plant. As a result, the project would not substantially increase haul truck vibrations relative to existing conditions.

At the eastern project site boundary, the proposed mining activities would be located 70 feet or more from the property line of the nearest existing residence. At the western boundary, the mining activities would be located approximately 115 feet or more from the nearest residential property lines. At these distances, vibration levels associated with the project would be further reduced relative to the values shown in Table 4.10-8. Therefore, vibrations associated with the proposed mining and reclamation activities are not predicted to cause damage to existing buildings or cause adverse impacts to residential receptors.

Based on the above, the proposed project would not generate excessive groundborne vibration or groundborne noise levels, and impacts would be considered ***less than significant***.

Mitigation Measure(s)
None required.

4.10-3 Cause a significant environmental impact due to a conflict with applicable plans, policies, and regulations adopted for the purpose of mitigating noise impacts. Based on the analysis below, the impact is *less than significant*.

Table 4.10-9 below provides an analysis of the proposed project's consistency with applicable policies and regulations that have been adopted for the purpose of avoiding or mitigating environmental effects related to noise and vibration. It should be noted that consistency with other standards in the SMARA, the County Zoning Ordinance, and the SMRO that are specific to land use and planning issues are discussed in Chapter 4.9, Land Use and Planning, of this EIR. As shown in Table 4.10-9, the proposed project would be generally consistent with applicable standards related to noise and vibration. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

Table 4.10-9
Consistency with Applicable Standards

Policy / Regulation	Consistency Discussion
Yolo County General Plan	
Policy HS-7.1 Ensure that existing and planned land uses are compatible with the current and projected noise environment. However, urban development generally experiences greater ambient (background) noise than rural areas. Increased density, as supported by the County in this General Plan, generally results in even greater ambient noise levels. It is the County's intent to meet specified indoor noise thresholds, and to create peaceful backyard living spaces where possible, but particular ambient outdoor thresholds may not always be achievable. Where residential growth is allowed pursuant to this general plan, these greater noise levels are acknowledged and accepted, notwithstanding the guidelines in Figure HS-7 [of the General Plan].	See Impact 4.10-1. With implementation of mitigation, the noise level increases occurring as a result of the proposed project would not conflict with applicable General Plan standards. Therefore, the project would be consistent with this policy.
Policy HS-7.3 Protect important agricultural, commercial, industrial, and transportation uses from encroachment by land uses sensitive to noise and air quality impacts.	Per the CCAP, the project site has been anticipated for off-channel mining uses. Given that the proposed project is consistent with the CCAP, and would not introduce new sensitive receptors to the project area, the project would be consistent with this policy.
Policy HS-7.5 Minimize the impact of noise from transportation sources including roads, rail lines, and airports on nearby sensitive land uses.	See discussion of compatibility with OCSMO Section 10-4.421 below.
Policy HS-7.8 Encourage local businesses to reduce vehicle and equipment noise through fleet and equipment modernization and retrofits, use of alternative fuel vehicles, and installation of mufflers or other noise reducing equipment.	See Impact 4.10-1. With implementation of mitigation, the noise level increases occurring as a result of the proposed project would not conflict with applicable General Plan standards. Therefore, the project would be consistent with this policy.
Action HS-A62 Regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of noise to the following sensitive receptors: residentially designated land uses; hospitals, nursing/convalescent homes, and similar board and care facilities; hotels and lodging; schools and day care centers; and neighborhood parks. Home occupation uses are excluded.	See Impact 4.10-1. With implementation of mitigation, the noise level increases occurring as a result of the proposed project would not result in significant noise level increases at the nearest receptors. Therefore, the project would be consistent with this policy.
Off-Channel Mining Plan	
None applicable.	
Off-Channel Surface Mining Ordinance	
Section 10-4.421 From 6:00 a.m. to 6:00 p.m., noise levels shall not exceed an average noise level equivalent (L_{eq}) of	See Impact 4.10-1. At the project site boundaries, the proposed project would not conflict with the 80 dB L_{eq} standard established by the OCSMO.

(Continued on next page)

Table 4.10-9
Consistency with Applicable Standards

Policy / Regulation	Consistency Discussion
eighty (80) decibels (dBA) measured at the property boundaries of the site. However, noise levels shall not exceed an average noise level equivalent (L_{eq}) of sixty (60) decibels (dBA) for any nearby off-site residences or other noise-sensitive land uses. From 6:00 p.m. to 6:00 a.m., noise levels shall not exceed an average noise level equivalent (L_{eq}) of sixty-five (65) decibels (dBA) measured at the property boundaries of the site. At no time shall noise levels exceed a community noise equivalent (CNEL) of sixty (60) decibels (dBA) for any existing residence or other noise-sensitive land use. An existing residence shall be considered the property line of any residentially zoned area or, in the case of agricultural land, any occupied offsite residential structures. Achieving the noise standards may involve setbacks, the use of quieter equipment adjacent to residences, the construction of landscaped berms between mining activities and residences, or other appropriate measures. (§ 1, Ord. 1190, eff. September 5, 1996)	Mitigation Measures 4.10-1(a) and 4.10-1(b) would ensure that project noise levels at the existing residential receptors in the project vicinity would comply with the 60 dB L_{eq} noise threshold established by OCSMO Section 10-4.421. Therefore, the project would be consistent with this policy.
Section 10-4.422 If mining occurs within fifteen-hundred (1500) feet of residences, equipment used during nighttime activities shall be equipped with non-sonic warning devices (eg. infrared) consistent with the California Office of Safety Hazard Administration (Cal OSHA) regulations. This may include fencing of the area to avoid pedestrian traffic, adequate lighting of the area, and placing an observer in clear view of the equipment operator to direct backing operations. If appropriate, prior to commencement of operations without sonic warning devices, operators shall file a variance request with the California OSHA Standards Board showing that the proposed operation would provide equivalent safety to adopted safety procedures, including sonic devices. This regulation applies to all sonic safety devices in use at the mining site, including sonic warnings on conveyors.	Mitigation Measure 4.10-1(b) requires the use of reverse-activated strobe lights (i.e., non-sonic warning devices), if the project applicant can obtain a variance from the California Division of Occupational Safety and Health (CAL/OSHA), consistent with Section 143 of the California Labor Code. Per Section 143(a), "Any employer may apply to the board for a permanent variance from an occupational safety and health standard, order, special order, or portion thereof, upon a showing of an alternate program, method, practice, means, device, or process which will provide equal or superior safety for employees." Thus, the project is consistent with this regulation.
Section 10-4.423 Operators shall provide acoustical analysis for future truck and traffic noise associated with the individual operations along County roadways identified as experiencing significant impacts due to increased traffic noise. The study shall identify noise levels at adjacent noise sensitive receptors and ways to control the noise to the "normally acceptable" goal of a L_{dn} of sixty (60) dB and reduce the increase over existing conditions to five	See Table 4.10-7. Noise level increases projected to occur under Existing Plus Project conditions would be below the 5.0 dB threshold established by the OCSMO.

(Continued on next page)

Table 4.10-9
Consistency with Applicable Standards

Policy / Regulation	Consistency Discussion
(5) dBA or less. Typical measures that can be employed include the construction of noise barriers (wood or masonry), earthen berms, or re-routing of truck traffic.	