

9 March 2022

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**Subject: Idaho-Maryland Mine Project, Nevada County, CA
Acoustical Comments on Draft Environmental Impact Report
Salter Project 22-0039**

Dear Laurel:

As requested, we reviewed Chapter 4.10 Noise and Vibration of the Draft Environmental Impact Report (DEIR) for the proposed mine project in Nevada County, CA. We also reviewed information in Appendices L (Noise and Vibration Study) and M (Blasting Report). This letter summarizes our review and comments.

EXECUTIVE SUMMARY

In our opinion, the DEIR does not sufficiently assess or mitigate potential noise impacts and, therefore, fails to protect the community from excessive noise. Our comments focus on the following issues:

1. In general, nighttime noise is not adequately addressed in the DEIR. It outright dismisses the potential for noise impacts due to sleep disturbance and inappropriately excludes this consideration from the analysis. The combination of nighttime industrial activities amongst a community that currently enjoys low ambient noise levels represents a significant risk for project noise to impact the community, annoy residents, and cause sleep disturbance. Additional details of likely impacts are outlined below.
2. Engineered fill operational noise is underestimated in Impact 4.10-2. This 5 to 6-year long activity could generate noise levels at least 10 to 18 dB higher than predicted in the DEIR. This is a significant deficiency in the impact analysis. As such, the project's noise levels could be 20 to 35 dB louder than current median/background ambient noise levels, causing a severe impact. In several cases, the DEIR analysis fails to address sensitive receptors located farther away from existing roadways that currently have a lower background noise.



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3. The DEIR fails to adequately analyze the project's impact from mineral processing operations because assumptions are made regarding conditions or constructions that would constitute notable "upgrades" to standard measures. However, these upgrades are not disclosed as being required to meet the County standards and reduce noise to a less than significant level. Without these upgraded measures, mineral processing noise could exceed the County noise standards. As currently written, the DEIR appears to "promise" an insignificant noise impact, but fails to include the controls, assurances, and appropriate mitigation to ensure this claim is actually achieved.
4. Blasting vibration impact is not adequately analyzed (see Impact 4.10-4). In our opinion, potentially subjecting residents to "strongly perceptible" and borderline "unpleasant" vibration on a regular basis for the rest of their lives should be considered a significant impact. In particular, the DEIR fails to include crucial guidance from the U.S. OSMRE Blasting Guidance Manual restricting blasting vibration during evening and nighttime hours. If blasting must be allowed at these sensitive times, the DEIR must also incorporate adequate mitigation with a notably stricter limit at all sensitive receptors.
5. The DEIR includes a claim anticipating a 20 dB reduction of blasting noise at the portal compared to the reference Sutter Gold mine project. However, this 20 dB claim is unsubstantiated. If this claim is in error, the community could be subject to excessive noise levels, up to 75 dBA, during blasting. This would be concerning during daytime hours, but a particularly egregious condition at night.

COMMENTS

#1 – Nighttime Noise Impact is Not Adequately Addressed

The DEIR states that "an evaluation of sleep disturbance is not warranted for this project." (DEIR, page 4.10-23, paragraph 2) However, the conditions of this project and the community certainly warrant a detailed analysis of nighttime noise and the potential for sleep disturbance. This project includes many operations that will occur at nighttime hours, including dewatering, indoor facility construction, truck loading/unloading and off-site hauling (from 6 to 7 am), mineralization processing above ground, and water treatment (DEIR, page 3-37). In addition, many of the nearby sensitive receptors are located away from notable sources of ambient noise, and thereby currently enjoy very low nighttime background noise levels between 30 dBA and 45 dBA (DEIR, Appendix L, Appendix B-1 within). The combination of nighttime industrial activities and low background/ambient noise levels represents a potentially significant risk and an undisclosed impact to the community, as it could annoy residents and cause sleep disturbance. A revised EIR should identify appropriate mitigation, including limitations on nighttime noise.

#2 – Engineered Fill Operation Noise is Underestimated (Impact 4.10-2)

Placement and compaction of engineered fill operations are expected to occur for at least 5 to 6 years at the two industrial sites. The DEIR assesses noise from bulldozer, grader, excavator, front-end loader, and compactor use. It assumed that noise from such activities would generate levels up to 85 dBA at a

distance of 50 feet from each source. It assumed this level for both average (L_{eq})¹ and maximum (L_{max})² levels. The analysis was performed using a SoundPlan computer noise model to estimate sound propagation away from the sites.

2A – The Brunswick Site

The DEIR lists predicted noise levels around the Brunswick Site in DEIR Table 4.10-14, compares the results to proposed daytime noise criteria and concludes that operational noise from engineered fill operations in this area would be less than significant. However, Salter performed basic calculations of one 85 dBA noise source (equal to the DEIR assumption that a machine would generate 85 dBA at a distance of 50 feet). We determined that the DEIR has significantly underestimated noise levels at the nearest receptors. We provide this comparison in Table 1 below.

Table 1. Comparison of DEIR predicted noise levels to noise levels from one construction noise source.

Receptor	Receptor Distance	DEIR Predicted Noise Levels (L_{eq} & L_{max} , Table 4.10-14)	Calculated Noise Level (dBA) from one 85 dBA source at the Receptor Distance	Delta (dB)
26	300	51	69	+18
24	350	50	68	+17
23	400	55	67	+11
22	500	52	65	+12
28	500	47	65	+17
27	600	46	63	+16
25	650	50	63	+11
21	700	47	62	+13
20	1000	46	59	+10
29	1200	40	57	+14
19	1300	40	57	+13

Comparing the levels listed above, it appears that the DEIR predictions are substantially underestimating the level of engineered fill operational noise that the surrounding community is expected to experience. Based on our review of the DEIR methodology, analysis descriptions, and commentary, we find no apparent reason for the discrepancy. For example, we would not expect noise to be further reduced at these nearest receptors from “shielding” by the terrain as they are located on the surrounding hillsides which overlook the Brunswick industrial area. In addition, noise levels could be even higher since multiple

¹ L_{eq} – The equivalent steady-state A-weighted sound level that, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period.

² L_{max} (Maximum Sound Level) – The maximum sound level for a specified measurement period of time as defined in ASTM E1686.

machines and activities are expected to operate simultaneously at the site. In our professional opinion, the DEIR analysis needs to be revised.

By underestimating the noise levels at sensitive receptors, the DEIR fails to identify and mitigate a significant noise impact. We compared the calculated noise levels from a single 85 dBA noise source to the DEIR criteria. Per Table 1 above, noise from a single 85 dBA source is expected to be between 57 dBA and 69 dBA at the 11 nearest receptors to the Brunswick Site (i.e., nearest the engineered fill area). The Daytime Noise Criteria for these receptors are between 53 dBA and 65 dBA (per DEIR Table 4.10-14). Many of the calculated noise levels from a single 85 dBA source exceed these criteria, by up to 14 dB. This is a significant increase over the criteria established in the DEIR. Therefore, we expect that an updated analysis would identify a significant impact and therefore require mitigation of the engineering fill operations that are expected to last for many years.

Furthermore, we compared the calculated noise levels from a single 85 dBA noise source to the ambient noise levels in the surrounding areas, particularly areas with lower background noise levels. The DEIR fails to pay special attention to these sensitive receptors. Away from the major roadway, ambient noise levels were measured to be approximately as follows (see DEIR Appendix L – Appendix B-6 for Monitoring Sites 1 through 4):

- L_{eq} : 60 dBA to 65 dBA (the hourly average noise level, includes intermittent noise)
- L_{50} : 40 dBA to 50 dBA (the median noise level; 50% of the hour noise is below this level)
- L_{90} : 35 dBA to 45 dBA (the “background” noise level)

The L_{eq} metric is the hourly average noise levels and includes the effect of intermittent noise, which appears to be the cause for the higher L_{eq} levels. However, the median and “background” ambient noise levels indicate that much of the time people experience notably lower noise levels (e.g., between those intermittent events). The median/ L_{50} noise levels indicate that people in the area enjoy quieter noise levels below 40 dBA to 50 dBA 50% of the time (specifically, 50% of each hour). Therefore, it is appropriate to review expected engineered fill operational noise levels in light of these lower ambient noise levels that people actually experience.

As stated above, noise from a single 85 dBA source is expected to be between 57 dBA and 69 dBA. Therefore, engineered fill operational noise could be approximately 20 to 30 dB louder than the median ambient noise levels of 40 to 50 dBA. Project noise could be up to 25 to 35 dB above “background” (L_{90}) ambient noise levels of 35 to 45 dBA. Based on our experience with community noise and commonly used thresholds of significance (e.g., a 5 dB increase), 20 to 35 dB increases in noise would be a severe noise impact. These levels would be perceived as more than 4 times as loud as the median ambient noise levels and would be expected to result in an aggressive community response and complaints. This should be taken into consideration in the DEIR analysis and further mitigation applied to reduce the expected noise impact on the nearby community from engineered fill operations.

2B – The Centennial Site

Our review of the DEIR’s analysis of engineered fill operations at the Centennial Site is similar to our findings for the Brunswick Site, see a summary in Table 2 below. Again, the DEIR appears to underestimate noise from these operations at the nearest sensitive receivers. In our opinion, the DEIR analysis is inadequate and needs to be revised.

Table 2. Comparison of DEIR predicted noise levels to noise levels from one construction noise source.

Receptor	Receptor Distance	DEIR Predicted Noise Levels (L_{eq} / L_{max} , Table 4.10-12)	Calculated Noise Level (dBA) from one 85 dBA source at the Receptor Distance	Delta over DEIR L_{eq} (dB)
1	500	54 / 61	64	+10
2	600	50 / 60	62	+12

In addition, it is worthy to note that the area with the greatest planned quantity of fill and elevation change at the Centennial Site is nearest these sensitive receptors (#1 and #2) to the north. We would expect there to be many times where activity, and noise, is focused in the northern portion of the site, close to sensitive receptors.

#3 – The DEIR Underestimates the Project’s Potential Noise Impact from Mining Operations (Impact 4.10-3)

In the analysis of several mining operational components, the DEIR assumes the implementation of several notable “upgrades” to standard measures. The DEIR concludes that mining operational noise would be below County standards and the project’s impact would be less than significant. The DEIR provides no evidence that these upgrades will be implemented in the design and construction of the mining facility. If the facility were to be constructed without these measures, the project’s noise would be higher than the DEIR discloses, and the project’s impacts could be significant. The DEIR should be revised to analyze the project’s noise impacts with and without these “upgrades.” It is also important to note that if this analysis were not to occur until after the project is approved and if noise was found to exceed the criteria, it would be challenging, time consuming, and possibly infeasible to add these measures after the fact. Meanwhile, the community would be impacted by excessive noise.

Examples of such assumed upgrades are listed below:

- The metal building enclosing noise generating activities, such as mineral processing, is quoted in the DEIR as having sound transmission loss ratings ranging from “31 dB at 125 Hz to 75 dB at 4,000 Hz. In addition, the metal building would have double doors (i.e., airlock) to prevent sound escaping when one set of exterior doors are open” (DEIR, page 4.10-38, paragraph 4). In the Noise and Vibration Study (DEIR, Appendix L), information on proposed metal building construction is provided (DEIR, Appendix L, Appendix page D-3 within). The construction options include systems with STC ratings between STC 21 and STC 54. The sound ratings quoted in the DEIR indicate that the analysis assumes

that the STC 54 construction will be used. This is the highest rating achievable by the example metal building system. The DEIR must disclose whether this highly sound isolating construction is needed to reduce noise from mineral processing to meet the County's noise standards.

- The ventilation fan(s) required for the mine will be very large industrial units. The DEIR assumes "the effects of a silencer providing comparable sound attenuation as the other industrial buildings proposed at the site" (DEIR, page 4.10-41, paragraph 1). The DEIR analysis implies that this silencer will provide more than 40 decibels of fan noise reduction. This would require the selection of a high-performance industrial fan silencer. The DEIR must disclose whether this high-performance silencer is needed to reduce ventilation fan noise to meet the County's noise standards.
- The project's water treatment noise attenuation assumptions are vague and unsubstantiated.
 - The primary noise source associated with the water treatment plant would be the pumps and the turbine aerator (DEIR, page 4.10-42). The DEIR quotes the Auburn California Wastewater Treatment Plant noise level of 50 dBA at a distance of 500 feet as the basis for its analysis (DEIR, page 4.10-43, paragraph 1). To generate 50 dBA at 500 feet, a single source of noise would also be generating a noise level of 90 dBA at a distance of 5 feet. However, the DEIR analysis of water treatment equipment noise is based on a noise level of 75 dBA inside the treatment plant (DEIR Appendix L, page 55, paragraph 5). It seems that either the assumed noise level of 75 dBA inside the plant is an error or the analysis is based on additional attenuating measures that are not disclosed in the DEIR. Therefore, either the DEIR analysis should be revised to account for accurate noise levels or The DEIR must disclose whether attenuation of pumps and turbine aerators is needed to reduce the noise to meet the County's noise standards.
 - The DEIR also states that the water treatment equipment "will be located inside a building providing a high degree of sound reduction" (DEIR Appendix L, page 55, paragraph 5). The DEIR must disclose whether this high-performance building enclosure is needed to reduce water treatment equipment noise to meet the County's noise standards.
- The DEIR appears to rely on specific assumptions regarding backup generators, including engine exhaust mufflers, sound isolating building construction, and radiator fan silencers, but the document does not identify the specific nature of this equipment. Nor does it identify the expected noise-attenuation of each piece of equipment.
- The DEIR does not provide the required information about the noise reducing enclosure for the mine compressor.
- The DEIR does not provide the required information about acoustical performance of the sound-isolating headframe building construction (to reduce "shaft skipping" noise).

As currently written, the DEIR appears to "promise" a less-than-significant noise impact, but omits the controls, assurances, and appropriate mitigation to ensure this claim is actually achieved. Without requiring the aforementioned noise reducing measures, or assumed "upgrades," the DEIR fails to adequately protect the community from the potential for excessive noise.

#4 – Blasting Vibration Impact is Not Adequately Addressed (Impact 4.10-4)

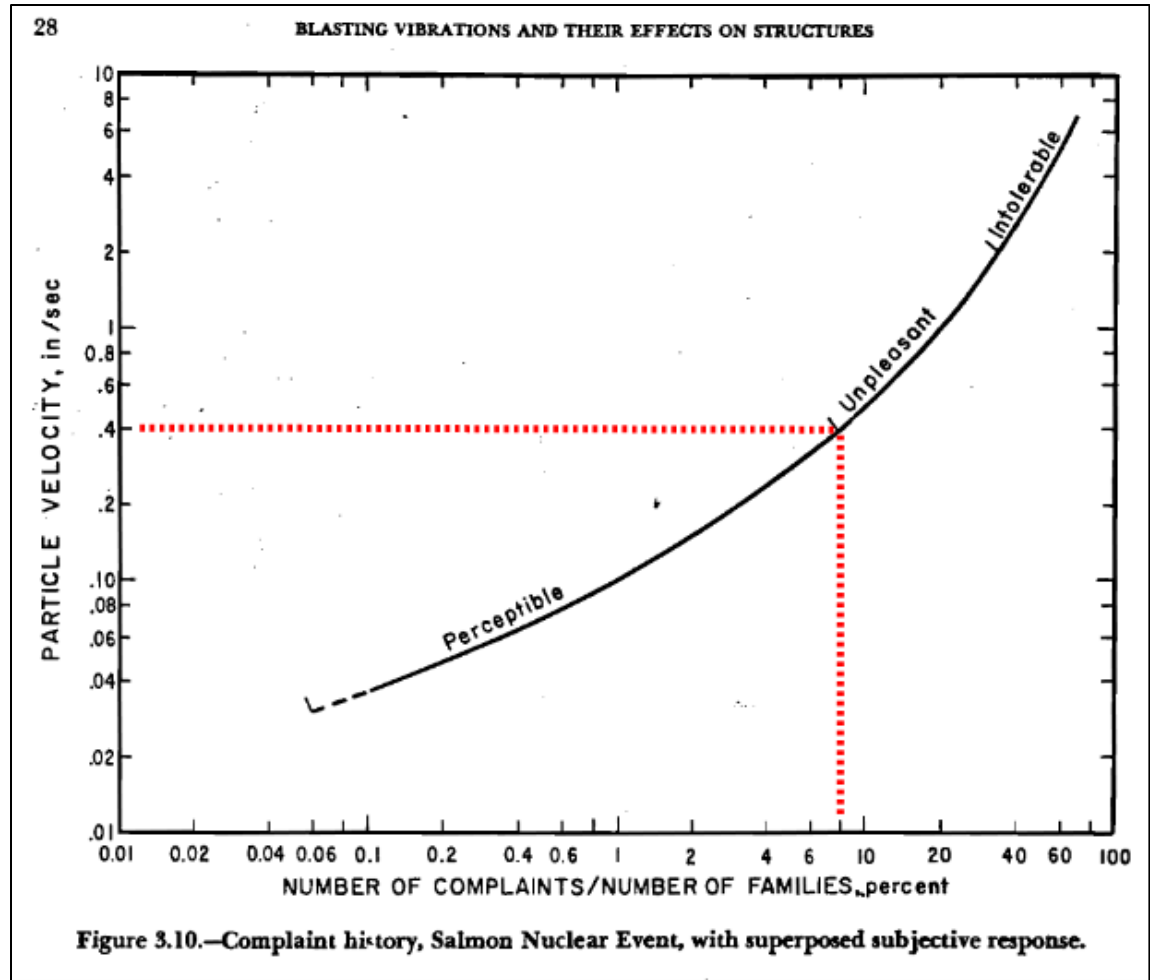
The DEIR and associated Blasting Report (DEIR, Appendix M) include lengthy discussions and analyses regarding blasting vibration purporting to show that vibration would be barely perceptible, as summarized below:

“Regular drift round blasting would be undetectable below 900 feet depth or distance, and would be barely perceivable at 500 feet depth. The largest longhole blasts, occurring once every three to four days on average, would be undetectable below 1,400 feet depth or distance from a receiver. The maximum ground vibration that the mine would produce to nearby receptors is 0.23 in/s PPV, which considers a rare scenario where a longhole blast occurs directly underneath a receptor at 500 feet depth. The maximum ground vibration of 0.23 in/s PPV is comparable to the vibration level from running a garbage disposal in a house...” (DEIR, page 4.10-58, paragraph 3)

In response, the DEIR incorporates a blasting vibration limit of 0.4 in/sec PPV with no restrictions regarding time of day. In our opinion, the DEIR does not adequately address blasting vibration and understates the project’s potential vibration impact for reasons provided below.

4A – Comments on the Blasting Vibration Limit

The 0.4 in/sec PPV vibration limit from the DEIR appears to be based primarily on a vibration study performed following an underground nuclear blast in Mississippi in 1964. The first concern is that human responses to this one blast may not be equal to the community response to ongoing perceptible and potentially unpleasant vibration over the 80-year lifespan of this project. Nevertheless, the DEIR references this study as it is described in Bulletin 656 titled “Blasting Vibrations and Their Effects on Structures” published by the U.S. Bureau of Mines (USBM) in 1971. The claim extracted from the USBM document is that “less than 8% of people would complain about blasting activities if the peak particle velocity (PPV) was below 0.4 in/sec.” (DIER, Appendix M, page 7, paragraph 3). However, the original chart this is drawn from provides additional context. Figure 3.10 from Bulletin 656 is provided below with dashed lines highlighting the DEIR proposed limit:



The proposed limit of 0.4 in/sec. PPV is characterized as clearly perceptible and borderline unpleasant. This description is supported by the Caltrans Transportation and Construction Vibration Guidance Manual (April 2020). Table 21 below, an excerpt from the Caltrans Manual, indicates that blasting vibration of 0.4 in/sec. would be considered “strongly perceptible.”

Table 21. Human Response to Blasting Ground Vibration

Average Human Response	PPV (in/sec)
Barely to distinctly perceptible	0.02–0.10
Distinctly to strongly perceptible	0.10–0.50
Strongly perceptible to mildly unpleasant	0.50–1.00
Mildly to distinctly unpleasant	1.00–2.00
Distinctly unpleasant to intolerable	2.00–10.00

The 0.4 in/sec. vibration limit might be appropriate in certain scenarios, such as a short-term event. However, this project involves ongoing mining operations for 80 years. In our opinion, potentially subjecting residents to “strongly perceptible” and borderline “unpleasant” vibration on a regular basis for the rest of their lives should be considered a significant impact. This is particularly true for evening and nighttime operations, which is the subject of our next comment.

4B – Comments on Nighttime Blasting Vibration

The DEIR suggests that the predicted “ground vibration of 0.23 in/s PPV is comparable to the vibration level from running a garbage disposal in a house...” (DEIR, page 4.10-58, paragraph 3). However, the DEIR would currently allow the project to conduct blasting and generate that vibration, equivalent to a garbage disposal, in the bedrooms of residents at night while they are trying to sleep. Despite the project’s on-going operations, the DEIR fails to require any restrictions on evening and nighttime blasting vibration operations. This is a serious deficiency of the DEIR.

The DEIR and the Blasting Study reference the U.S. Office of Surface Mining and Reclamation and Enforcement (OSMRE) standards to support their analysis. However, the DEIR fails to include crucial guidance from the OSMRE Blasting Guidance Manual (dated March 1987). In the “Citizen Interests” chapter of the OSMRE Manual the following notes on blasting times and schedules is provided:

“All blasting must take place during daylight hours unless more restrictive times are specified. If night-time blasting is approved by the regulatory authority, it must be based on evidence from the operator that the public will be protected from adverse noise and other impacts.” (OSMRE Blasting Guidance Manual, page 114, paragraphs 4 and 5)

The DEIR provides no evidence that the public will be protected from adverse effects from the project’s blasting operations. It provides no special consideration and therefore no additional restrictions on blasting vibration during evening and nighttime hours. In our opinion, potentially subjecting residents to “strongly perceptible” and borderline “unpleasant” vibration during evening and nighttime hours would be a significant impact on the community.

#5 – Claim Regarding 20 dB Reduction of Blasting Noise at Portal is Unsubstantiated

To evaluate potential noise impacts from blasting noise, the DEIR evaluates noise measurements conducted by Bollard Acoustical Consultants at the Sutter Gold underground mine in Amador County. Those measurements found blasting noise to be 75 dBA, on average, at a distance of 200 feet from the mine portal (DEIR, page 4.10-44, paragraph 5). However, to translate those findings to the Brunswick site of the project, the author assumes that noise at the project site would be reduced by 20 dB compared to the Sutter Gold mine (DEIR, page 4.10-44, paragraph 6). Other than mentioning the difference in orientation and size of the portal, this claim of 20 dB noise reduction is unsubstantiated. Twenty decibels of noise reduction is a substantial change in noise emission. Without further data or evidence to back up this 20 dB claim, the DEIR cannot simply assume these lower noise levels. The DEIR Noise Study states the following:

“If the 75 dBA L_{\max} level collected at Sutter Gold is conservatively reduced by 20 dB to assess blasting noise impacts at the Brunswick site, worst-case maximum noise levels at the nearest receptors would range from 52 to 57 dBA L_{\max} on average.” (DEIR, Appendix L, page 58, paragraph 4)

However, without the unsubstantiated 20 dB of reduction, blasting noise at the nearest sensitive receptors would be between 72 and 77 dBA. As stated above and in the DEIR, ambient median and “background” noise levels at many sensitive receptors is between 35 dBA and 50 dBA. Thus, the blasting noise could be substantially above the ambient noise levels, by approximately 25 to 40 dB. We would expect such an event to be considered a disturbance, likely resulting in complaints, particularly at night when sleep disturbance would be expected.

The DEIR noise study should be revised to provide evidence for the substantial claim that blasting noise levels at the Brunswick site would be 20 dB quieter than the referenced Sutter Gold mine project. Such a claim must be explained for the public to review and have confidence in the findings of the DEIR. If the claim cannot be substantiated, the potential blasting noise must be adequately mitigated to avoid community disturbance from the excessive noise.

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Should you have any questions, please call.

Best,

SALTER



Jeremy L. Decker, PE
Vice President

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RESUME

Jeremy Decker, PE
Vice President



Mr. Decker has been an acoustical consultant with Salter since 2005. His areas of expertise include environmental noise studies, municipal master planning and noise control policies, architectural noise control, room acoustics, mechanical system noise and vibration reduction, and vibration analyses. He has consulting experience in the development and peer review of environmental noise impact analyses for public, industrial, and other commercial projects.

Project Experience

- Cottonwood Sand & Gravel Mine DEIR Peer Review, San Diego County, CA
- Decker Island Mine, Solano County, CA
- Kern County Oil & Gas DEIR/FEIR/SEIR Peer Review, Kern County, CA
- Southern California International Gateway FEIR Peer Review, Long Beach, CA
- Bay Delta Conservation Plan/California WaterFix FEIR Peer Review, CA
- Redondo Beach Power Plant Noise Impact Peer Review, Redondo Beach, CA
- Caldecott Tunnel 4th Bore Noise Impact Study, East Bay Area, CA
- Kaneohe/Kailua Sewer Tunnel Construction Noise Study, Kailua, HI
- Warner Ranch DEIR Peer Review, San Diego County, CA
- Gateway Valley Construction Noise Impact Study, Orinda, CA
- San Francisco Fire Dept. Water Supply Facility, San Francisco, CA
- FedEx Distribution Center Noise Impact Studies, Various Cities, CA, AZ, TN
- NRG Cogeneration Facility Noise Impact Study, San Francisco, CA
- Fivepoint Amphitheater Noise Impact Study, Irvine, CA
- Kaiser Permanente Construction Noise Study, Oakland, CA
- Saltworks Site EIR, Redwood City, CA
- Egbert Data Center EIR, San Francisco, CA
- Saranap Village EIR, Walnut Creek, CA
- Fresno General Plan Update and EIR, Fresno, CA
- Daly City General Plan Update and EIR, Daly City, CA

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