

Appendix E

Construction Noise Analysis

July 2, 2025

01705.00006.001

Christina Olson, P.E.
Engineering Services Manager
Vista Irrigation District
1391 Engineer Street
Vista, CA 92081

Subject: **Construction Noise Analysis for the AB Pipeline Replacement Project**

Dear Ms. Olson:

HELIX Environmental Planning, Inc. (HELIX) conducted an assessment of acoustical impacts for Vista Irrigation District's (District's) proposed AB Pipeline Replacement Project (project). This letter report provides the potential construction noise levels in accordance with applicable construction noise regulations and describes the mitigation measures required for compliance with the California Environmental Quality Act (CEQA).

PROJECT LOCATION AND DESCRIPTION

The project site is located in northern San Diego County (Figure 1, *Regional Location*). The project is located immediately east of Esplendido Avenue and west of Las Posas Road (Figure 2, *Aerial Photograph*). The project consists of the replacement of an existing District's water pipeline. Three potential alignments are being considered for replacing the District's existing AB pipeline. Each alignment option is located within both the City of San Marcos and unincorporated San Diego County.

Existing Alignment – replacement of the AB pipeline where it exists currently or immediately adjacent within a 20-foot-wide existing District utility easement for the AB pipeline.

SE10 Alternative Alignment – abandon current AB pipeline and construct a new pipeline north of the Existing Alignment along the northern boundary of the parcel. The SE10 Alternative Alignment would occur partially within a previously recorded, but not utilized District's 20-foot-wide utility easement and partially within the San Diego County Water Authority aqueduct easement.

Road Alternative Alignment – abandon current District pipeline and construct a new pipeline immediately north and outside of any District existing utility easements. This alignment would include the recording of a new 20-foot-wide utility easement.

Construction methods for all three alignment options would be identical. Construction activities would include clearing, grading, excavating, trenching, and backfilling. Blasting is not anticipated.

NOISE TERMINOLOGY

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} , and typically indicate a one-hour noise level unless a different time duration is specified.

REGULATORY SETTING

County of San Diego Code of Regulatory Ordinances – Noise Ordinance

Section 36.408, Hours of Operation of Construction Equipment

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

- a. Between the hours of 7:00 p.m. and 7:00 a.m.
- b. On a Sunday or holiday. For the purposes of this section, a holiday means January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, and December 25.

Section 36.409, Construction Noise

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 dB for eight hours, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

Section 36.410, Impulsive Noise

Section 36.410 provides additional limitations on construction equipment beyond Section 36.404 pertaining to impulsive noise. Section 36.410 states that except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 1, *County of San Diego Maximum Sound Levels (Impulsive)*, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period.

Table 1
COUNTY OF SAN DIEGO MAXIMUM SOUND LEVELS (IMPULSIVE)

Occupied Property Use	Decibels (dBA L_{MAX})
Residential, village zoning or civic use	82
Agricultural, commercial, or industrial use	85

Source: County of San Diego Municipal Code Section 36.410.
dBA = A-weighted decibel; L_{MAX} = maximum noise level.

The minimum measurement period for measurements conducted under Section 36.410 is one hour. During the measurement period, a measurement must be conducted every minute from a fixed location on an occupied property. The measurements must measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment, or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

City of San Marcos Municipal Code

Chapter 10.24 (Noise)

Chapter 10.24 of the San Marcos Municipal Code prohibits loud, annoying, or unnecessary noises. However, the Noise Ordinance does not specifically provide quantified property line noise level limits. Section 10.24.020 provides definitions for and examples of prohibited noise sources. Included in the list of prohibited noise sources are demolition and building construction activities that occur Monday through Friday before 7:00 a.m. and after 6:00 p.m. or on Saturdays before 8:00 a.m. or after 5:00 p.m. The noise ordinance does not include a quantified noise level limit for construction noise.

Chapter 17.32.180 (Grading Operation Restrictions)

City of San Marcos Municipal Code Section 17.32.180 addresses the time limits that apply to grading, extraction, and blasting between 7:00 a.m. and 4:30 p.m. Monday through Friday. Grading, extraction, or related earth moving is not allowed in the City on the weekends or holidays. The Municipal Code does not set noise limits on construction activities. Commonly, the City has utilized the County of San Diego's Noise Ordinance noise limit of 75 dBA for construction activities.

EXISTING CONDITIONS

One noise measurement was taken at the project site to document existing conditions. The project site is surrounded by single-family residences, as shown in Figure 2. A 15-minute measurement was taken using a Larson Davis 831 Sound Level Meter. The sound level meter was calibrated before the noise measurements to ensure accuracy.¹ The location for this measurement is provided in Figure 3, *Measurement Locations*. A noise level of 44.8 dBA L_{EQ} was recorded during the 15-minute measurement.

ASSUMPTIONS AND METHODOLOGY

Modeling of the exterior noise environment for this report was accomplished using the Roadway Construction Noise Model (RCNM; USDOT 2008). Construction equipment was modeled within the project site based on the reference construction equipment noise levels and percentage use data provided by the U.S. Department of Transportation (USDOT). Construction would require the use of equipment throughout the site for the full term of construction. Construction for the project would involve clearing/grubbing, grading, excavating, trenching, and backfilling.

¹ All sound level measurements conducted and presented in this report were made with a sound level meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4-1983 R2006). All instruments were maintained with National Institute of Standards and Technology traceable calibration per the manufacturers' standards.

The equipment required for each phase of construction is based on the assumptions provided by the project engineers and is shown in Table 2, *Construction Phases and Equipment*.

Table 2
CONSTRUCTION PHASES AND EQUIPMENT

Construction Phase	Equipment
Clearing/Grubbing	Pickup Truck
	Rubber Tired Dozers
	Tractors/Loaders/Backhoes
	Dump Truck
Grading	Pickup Truck
	Rubber Tired Dozers
	Tractors/Loaders/Backhoes
	Dump Truck
Excavating	Pickup Truck
	Rubber Tired Dozers
	Dump Truck
Trenching	Pickup Truck
	Rubber Tired Dozers
	Dump Truck
Backfilling	Pickup Truck
	Rubber Tired Dozers
	Dump Truck
	Compactor

For the purposes of this analysis, the construction noise limits set by the County of San Diego are used as the threshold for significance. Noise levels would be restricted to 75 dBA L_{EQ} (8-hour) between the hours of 7:00 a.m. and 7:00 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

CONSTRUCTION NOISE ASSESSMENT

The anticipated construction equipment provided in Table 2 was modeled in RCNM. The model considered a pickup truck, a dump truck, a dozer, a compactor, and a backhoe to operate continuously and simultaneously at a single location. Exceedances of the construction noise limit of 75 dBA L_{EQ} (8-hour) for construction activities for any project alternative would occur within the setback distance provided in Table 2, *Construction Equipment Setback Distances*.

Table 3
CONSTRUCTION EQUIPMENT SETBACK DISTANCE – ALL PROJECT ALTERNATIVES

Project Alternative	Threshold at NSLU (dBA L_{EQ} 8-hour)	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold (feet)
Existing Alignment	75	Residential	110
Road Alternative Alignment	75	Residential	110
SE10 Alternative Alignment	75	Residential	110

Source: RCNM; USDOT 2008

dBA = A-weighted decibel; L_{EQ} = time-averaged noise level

Figure 4, *Construction Setback Distance - Existing Alignment*, Figure 5, *Construction Setback Distance – Road Alternative Alignment*, Figure 6, *Construction Setback Distance – SE10 Alternative Alignment* display the setback distances where construction noise levels are expected to exceed the 75 dBA L_{EQ} (8-hour) noise limit under each project alternative. If a residence is located within the setback distance, mitigation measures would be required. Construction noise minimization measures provided in mitigation measure NOI-1 as well as other sound control methods to reduce the noise levels to the specified limits.

MITIGATION MEASURES

NOI-1

Construction Noise Management Plan. Noise levels from project-related construction activities shall not exceed the noise limit specified in San Diego County Code Section 36.408 and 36.409 of 75 dBA (8-hour average), when measured at the boundary line of the property where the noise is located or any occupied property where noise is being received. A Construction Management Plan describing the measures shall be included on the construction plans to ensure compliance with the noise limit. The plan shall be prepared by the project applicant for approval prior to issuance of the grading permit. The following measures may be included to reduce construction noise:

- Construction equipment to be properly outfitted and maintained with manufacturer-recommended noise reduction.
- Diesel equipment to be operated with closed engine doors and equipped with factory-recommended mufflers.
- Mobile or fixed “package” equipment (e.g., arc-welders and air compressors) to be equipped with shrouds and noise control features that are readily available for that type of equipment.
- Electrically powered equipment to be used instead of pneumatic or internal-combustion powered equipment, where feasible.
- Unnecessary idling of internal combustion engines (e.g., in excess of 5 minutes) to be prohibited.

- Material stockpiles and mobile equipment staging, parking, and maintenance areas to be located as far as practicable from noise sensitive receptors.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.
- No project-related public address or music system shall be audible at any adjacent sensitive receptor.
- Temporary sound barriers or sound blankets may be installed between construction operations and adjacent noise-sensitive receptors. Due to equipment exhaust pipes being approximately 7 to 8 feet above ground, a sound wall at least 8 feet in height above grade, to block the line-of-sight between project construction activities and residences along the northern and western property lines. These barriers would mitigate noise levels to within acceptable levels. To effectively reduce noise levels, the sound barrier should be constructed of a material with a minimum weight of two pounds per square foot with no gaps or perforations and remain in place until the conclusion of construction activities.
- The project applicant shall notify residences within 100 feet to the project's property line in writing within one week of any construction activity. The notification shall describe the activities anticipated, provide dates and hours, and provide contact information with a description of a complaint and response procedure.
- The on-site construction supervisor shall have the responsibility to receive and resolve noise complaints. A clear appeal process for the affected resident shall be established prior to construction commencement to allow for resolution of noise problems that cannot be immediately solved by the site supervisor.

CONCLUSION

Project construction would generate temporarily elevated noise levels. The project would be required to reduce construction noise levels to the County's construction noise limits. With the implementation of the additional requirements included as part of NOI-1 for a temporary noise barrier, the project would comply with the County's 75 dBA (8-hour L_{EQ}) limit and impacts would be less than significant.

Sincerely,

Jafar Al-Khalaf
Senior Noise Specialist

Jason Runyan
Senior Project Manager

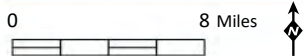
Attachments:

- Figure 1: Regional Location
- Figure 2: Aerial Photograph
- Figure 3: Noise Measurement Location
- Figure 4: Construction Setback Distance – Existing Alignment
- Figure 5: Construction Setback Distance – Road Alternative Alignment
- Figure 6: Construction Setback Distance – SE10 Alternative Alignment

REFERENCES

U.S. Department of Transportation (USDOT). 2008. Roadway Construction Noise Model. Version 1.1.
December 8.

Figures



HELIX
Environmental Planning

Figure 1

I:\PROJECTS\1\Visitation\District_01705\00006_AB Pipeline Replacement\CEQA\Doc\Map\Noise\NoiseMap.aprx Fig3_NoiseMeasurement : 01705.6.1 : 7/31/2025 - SAB









