

2.4 Noise

This subchapter of the EIR summarizes the Project's Acoustical Site Assessment Report (HELIX 2021c), contained in Appendix F, which was prepared in conformance with the County Guidelines for Determining Significance – Noise (County 2009a) and the County Report Format and Content Requirements – Noise (County 2009b).

2.4.1 Existing Conditions

2.4.1.1 *Noise Descriptors*

Noise has been defined as “unwanted sound.” Sound becomes “unwanted” when it interferes with normal activities, causes actual physical harm, or has adverse effects on health.

Sound-level values discussed in this subchapter are expressed in terms of decibels (dB). Sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA), which are adjusted to approximate the hearing sensitivity of humans. Time-averaged noise levels are referred to as “equivalent sound level” (L_{EQ}), which represents the average sound level over a given sample period. Unless a different time period is specified, L_{EQ} refers to a period of one hour.

The Community Noise Equivalent Level (CNEL) is the average of the intensity of a sound, with corrections made for time of day, and then averaged over 24 hours. The corrections are additions made to actual sound levels to account for increased human sensitivity to sound during the evening and night hours, when there is a decrease in the overall amount and loudness of noise generated, as compared to daytime hours. During these hours, sounds seem louder, and are weighted accordingly. The time-of-day corrections require the addition of 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and the addition of 10 dBA to sound levels at night from 10:00 p.m. to 7:00 a.m.

2.4.1.2 *Existing Noise Sources*

The dominant permanent noise source in the vicinity of the Project site is the traffic along Willow Glen Drive and Steele Canyon Road. Ambient noise from neighborhoods, ambient nature sounds, distant helicopter noise, and distant leaf blower noise can also be currently heard on the site.

2.4.1.3 *Existing Ambient Noise Levels*

To determine the existing noise environment, short-term ambient daytime noise measurements were conducted on Thursday, January 3, 2019 at eight different locations adjacent to or near the Project site, as shown on Figure 2.4-1, *Noise Measurement Locations*. The locations were chosen to be representative of the existing noise environments of general areas in proximity to the Project site containing NSLUs. Measurement locations included: M1, located on the eastern side of Steele Canyon Road, between Heatherwood Drive and Par 4 Drive; M2, located at the western terminus of Par 4 Drive; M3, located at the northern side of Willow Glen Drive, east of Muirfield Drive; M4, located at the western boundary of the Project site, approximately 500 feet south of Willow Glen Drive; M5, located in the existing parking lot of Cottonwood Golf Club, approximately 70 feet from the roadway centerline; M6, located at the northwestern side of Willow Glen Drive

near the eastern edge of the Project site boundary; M7, located at the southeastern side of Wind River Road between Sonett Street and Ryan Court; and M8, located at the southern edge of the Project site boundary, along Ivanhoe Ranch Road and east of Cottonwood View Drive. The measured noise levels were 75.7 dBA L_{EQ} at M1, 52.4 dBA L_{EQ} at M2, 77.2 dBA L_{EQ} at M3, 52.5 dBA L_{EQ} at M4, 65.3 dBA L_{EQ} at M5, 76.7 dBA L_{EQ} at M6, 52.4 dBA L_{EQ} at M7, and 55.5 dBA L_{EQ} at M8. See Table 5 in the Acoustical Site Assessment Report in Appendix F for additional details regarding the ambient noise measurements.

2.4.1.4 Existing Noise-sensitive Land Uses

Noise-sensitive land uses (NSLUs) include uses associated with indoor and/or outdoor activities that may be subject to stress and/or substantial interference from noise. NSLUs include any residence, hospital, school, hotel, resort, library, or other facilities where lower noise levels are an important attribute of the environment. NSLUs in the area include single-family residences to the north of the Project site across Willow Glen Drive, adjacent to the southern boundary of the Project site, near the northeast corner of the Project site, and near Steele Canyon Golf Course; Hilton Head County Park located 0.1 mile north of the Project site; the Adeona Healthcare facility located along Steele Canyon Road to the south of the Project site; and Jamacha Elementary School at the intersection of Steele Canyon Road and Jamul Drive south of the Project site.

2.4.1.5 Regulatory Setting

The Proposed Project's noise generation would be subject to noise-land use compatibility standards of the Noise Element in the General Plan at off-site residential properties and Noise Ordinance standards related to construction and operational noise levels at the Project site's property lines.

County of San Diego General Plan Noise Element

The County has adopted interior and exterior noise standards as part of the Noise Element in the General Plan for assessing the compatibility of land uses with noise impacts. For assessing noise impacts to sensitive residential land uses, the County standard is an exterior noise level (for usable outdoor space) of 60 dB CNEL or less and an interior noise standard of 45 dB CNEL for single-family homes. Applicable goals from the Noise Element are provided relative to land use compatibility, protection of noise-sensitive uses, and both transportation-related and non-transportation-related noise sources. Project consistency with these policies is addressed in Subchapter 3.1.7, *Land Use and Planning*, of this EIR, with additional detail provided in Appendix B, *Planning Analysis*.

County of San Diego Noise Ordinance

The purposes of the Noise Ordinance include controlling disturbing, offensive, and excessive noise, providing an environment in which noise is not detrimental to life, health, and enjoyment of property and "securing and promoting the public health, comfort, convenience, safety, welfare, prosperity, peace and quiet of the County of San Diego and its inhabitants" (County Code Sections 36.401[b], [d], and [e]). Compliance with Noise Ordinance limits would ensure that noise generated on the Project site would fall within the dB levels specified in the ordinance.

Section 36.404 of the County Noise Ordinance provides performance standards and noise control guidelines for determining and mitigating non-transportation (stationary) noise source impacts. According to County stationary source exterior noise standards, no person shall operate any source of sound at any location within the County or allow the creation of any noise on a property that causes the noise levels to exceed the exterior noise standards at the property boundary. County Code Section 36.404[e] states that the one-hour average sounds level limit applicable to extractive industries shall be 75 dBA at the property line regardless of the zone in which the extractive industry is located.

Section 36.408 of the Noise Ordinance prevents the operation of construction equipment between the hours of 7:00 p.m. and 7:00 a.m., or on a Sunday or holiday. In this case, 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 36.408 does allow the operation of construction equipment on a Sunday or holiday between the hours of 10:00 a.m. and 5:00 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in Sections 36.409 and 36.410.

Section 36.409 of the Noise Ordinance controls construction equipment noise and establishes a 75 dBA L_{EQ} standard averaged over a period of eight hours between 7:00 a.m. and 7:00 p.m. at the boundary line of the property where the noise source is being generated or any occupied property where noise is received during construction.

In addition to the general limitations on sound levels in Section 36.404, and excluding emergency work, Section 36.410 of the County Noise Ordinance sets sound level limitations on "impulsive" or "single event" noise of 82 dBA L_{MAX} at residential uses, and 85 dBA L_{MAX} for agricultural, commercial, or industrial uses. For public road projects, this is 85 dBA L_{MAX} and 90 dBA L_{MAX} , respectively.

County of San Diego Standards for Sensitive Birds

Some studies, such as that completed by the Bioacoustics Research Team at the University of California, Davis Transportation Noise Control Center to study the environmental effects of transportation noise on endangered birds (1997), have concluded that 60 dBA is a single, simple criterion to use as a starting point for passerine impacts until more specific research is done, as noted in Significance Guideline 4.1.H in the County's Guidelines for the Determination of Significance for Biological Resources (County 2010a). Associated guidelines produced by the USFWS require that noise be limited to a level not to exceed an hourly limit of 60 dBA L_{EQ} or the average ambient noise level, whichever is greater, at the edge of habitat during the breeding season. Subchapter 2.1 addresses potential noise impacts to sensitive birds.

2.4.2 Analysis of Project Effects and Determination as to Significance

The analysis of Project effects and determination as to significance for operational noise levels, construction noise levels, and ground-borne vibration and noise levels are discussed below.

2.4.2.1 Excessive Noise Levels (Operational Noise)

Guidelines for the Determination of Significance

A significant direct noise impact would occur if Project implementation would:

1. Result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLUs to exterior or interior noise (including noise generated by the project, together with noise from roads, railroads, airports, heliports and all other noise sources) in excess of 60 dB CNEL or an increase of 10 dB CNEL over pre-existing noise in areas where ambient noise levels are 49 dB CNEL or less for exterior locations, or in excess of 45 dB CNEL in interior locations.
2. Result in a one-hour average noise levels in excess of 75 dBA L_{EQ} at the property line of the project site, per the County of San Diego Noise Ordinance (refer to Section 36.404(e)).

A 45 dB CNEL interior limit would be achieved if exterior locations achieve a 60 dB CNEL or less noise level, based on a typical attenuation of 15 dB by standard residential building construction. As such, the following analysis relies on the 60 dB CNEL exterior noise limit as the applicable threshold and does not analyze interior noise levels separately.

The project's mining operations would also generate elevated noise levels at adjacent land that contains potentially suitable habitat for nesting bird species. Noise effects would be considered potentially significant if noise levels generated during the project's operations exceed a level of 60 dBA L_{EQ} or ambient (whichever is greater) adjacent to sensitive nesting bird species such as coastal California gnatcatcher, least Bell's vireo, and raptors. Potential noise-related impacts to nesting bird species are addressed in Section 2.2, *Biological Resources*, of this EIR.

Guideline Source

The above guidelines are based on the County of San Diego Guidelines for Determining Significance for Noise (County 2009a). The criteria can be found in the County of San Diego General Plan Noise Element, and Section 36.404(e) of the County of San Diego Noise Ordinance.

Analysis

The Project would generate elevated noise levels during operation of its individual components that would have the potential to affect nearby NSLUs. Prominent operational noise sources would include processing plant activities (on-site haul truck loading and stationary plant machinery); excavation area grading activities, including vegetation clearing, topsoil removal, and stockpile creation (dozer); raw material extraction, including loading and transport activities (off-road equipment and conveyor belt); and on-road haul truck activities (up to 18 trucks per hour traveling west of the Project driveway along Willow Glen Drive). Processing plant activities would be in a constant location over the 10-year mining period. Grading and material extraction would occur sequentially for each subphase, and noise sources from each activity would not occur at the same time and location; however, because these activities may occur in proximity to one another when in adjacent subphase areas, grading activities and material excavation activities are analyzed as occurring simultaneously and thereby generating combined noise at nearby receptors. It is

important to note that because of the Project's proposed phased approach to mining operations, individual receivers surrounding the Project site would not be exposed to noise from the Project's most substantial noise generating activities (grading and material extraction) for the entire 10-year Project period. While the processing plant would be stationary, noise levels from operation of the processing plant would be below the applicable thresholds of 60 dB CNEL at nearby NSLUs and 75 dBA L_{EQ} at the Project site property line (as discussed in further detail below). Because equipment used for reclamation would be limited to a skid steer loader, which is a relatively small piece of equipment that does not generate substantial noise (approximately 65 dBA at 100 feet), noise levels from reclamation activities would be minimal and impacts associated with reclamation are not further analyzed.

Exterior Use Area Noise Impacts

Potential NSLUs immediately surrounding the Project site that would be subject to noise from the Project's mining operations include single-family residences, Hilton Head County Park, and the Adeona Healthcare facility. Due to the large number of residential properties adjacent to the Project site, surrounding residences were categorized into 11 different residential groups based on general location and anticipated proximity to the Project's various mining operations. For noise modeling, each group included one modeled receiver location that was estimated to be representative of the maximum noise levels that would be experienced by residences in that group. Additionally, Hilton Head County Park, the Adeona Healthcare facility, and four isolated single-family residences each included a receiver to estimate noise levels. Refer to Figure 2.4-2, *Receivers and Residential Groups*.

As shown in Table 2.4-1, *Mining Operation Noise Levels*, noise at modeled receiver locations within residential groups 1 through 5, 8, 10, and 11, as well as Isolated Residence 2, Isolated Residence 3, and the Adeona Healthcare facility would exceed the applicable 60 dB CNEL noise threshold and impacts to receivers in these areas would be potentially significant. Generally, the receiver locations that exceed the 60 dB CNEL limit are located near Project site areas where material extraction would occur. For the purpose of conservative analysis, extraction activities were modeled adjacent to receivers. Actual extraction activities during mining operations would not occur within these areas for the entire duration of the active mining phase. In addition, extraction activities were modeled to occur at-grade, while during actual mining operations a substantial amount of extraction would occur below-grade, thus providing noise attenuation between the equipment and off-site NSLUs. It can therefore be reasonably assumed that noise levels at a given receiver would not exceed the 60 CNEL threshold for the entire phase duration. However, because nine of the receiver locations exceed the applicable 60 dB CNEL limit, **noise impacts from mining activities to exterior use areas at NSLUs are conservatively assessed as potentially significant (Impact N-1).**

Property Line Noise Impacts

Noise levels at the Project site property line were calculated at two locations near the processing plant area adjacent to noise sources (refer to Figure 2.4-2). Due to the proximity of the noise sources, these two property line locations are anticipated to be subject to the highest property line noise levels of the Project site. One modeled location is at the property line adjacent to the screen plant and the other modeled location is at the property line adjacent to the haul truck loading area.

The calculated noise level at the location adjacent to the screen plant is 74.7 dBA and the calculated noise level at the location adjacent to the haul truck loading area is 71.4 dBA. Both are below the 75-dBA threshold, and so it is anticipated that noise levels along the entire Project site property line would be below the 75-dBA threshold. In addition, as shown in Table 2.4-1, noise levels at the receivers at residential groups 10 and 11, which are along the property line in proximity to mining excavation areas, would not exceed 75 dBA. Therefore, noise impacts at on-site property lines from the operation of the Project would be **less than significant**.

2.4.2.2 Temporary Increase in Ambient Noise (Construction Noise)

Guideline for the Determination of Significance

A significant direct noise impact would occur if Project implementation would:

3. Cause a temporary or periodic increase in ambient noise levels due to construction if noise from non-emergency construction activity exceeds 75 dBA for an eight-hour period between 7:00 a.m. and 7:00 p.m.; if impulsive noise exceeds 82 dBA L_{MAX} at an occupied residential use or 85 dBA L_{MAX} at an occupied agricultural, commercial, or industrial use; or if noise is generated between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, or any time on Sundays or holidays.

Guideline Source

The above guideline is based on the County of San Diego Guidelines for Determining Significance for Noise (County 2009a); specifically, Sections 36.408, 36.409, and 36.410 of the County of San Diego Noise Ordinance.

Analysis

Construction of the Project's site access roads, improvements on the south side of Willow Glen Drive, and processing plant, as well as associated installation of screening berms, the conveyor belt, and processing plant equipment prior to the commencement of mining operations would result in temporary increases in ambient noise levels. These construction activities would involve the use of heavy equipment. Equipment operating for these activities would be mobile across their respective work areas. The distances referenced below that are assumed for noise modeling for the site access road and processing plant construction activities are based on the estimated center point of the respective construction area footprints where mobile equipment would be operating over an eight-hour workday. Because construction of the Willow Glen Drive improvements would occur in a mobile and linear manner parallel to the property line on the opposite side of the roadway, construction equipment is assessed as occurring in a single location along the linear work area for a portion (assumed to be two hours) of an eight-hour workday before moving to another location along the construction alignment. No impulsive noise sources are anticipated to be used as part of the Project.

The loudest noise during construction of the primary site access road would occur from the simultaneous use of a dozer, loader, and dump truck. This would occur within the processing plant area, at an assumed average distance of 250 feet from the Project site property line and 500 feet from the nearest off-site occupied property over the course of an 8-hour workday. At 250 feet, a

dozer, loader, and dump truck would generate a noise level of 66.4 dBA L_{EQ} (8-hour), and at 500 feet a dozer, loader, and dump truck would generate a noise level of 60.4 dBA L_{EQ} (8-hour). The loudest noise during construction of the western site access road would also occur from the simultaneous use of a dozer, loader, and dump truck. This would occur at an assumed average distance of 100 feet from the Project site property line and 220 feet from the nearest off-site occupied property over the course of an 8-hour workday. At 100 feet a dozer, loader, and dump truck would generate a noise level of 74.4 dBA L_{EQ} (8-hour), and at 220 feet a dozer, loader, and dump truck would generate a noise level of 67.5 dBA L_{EQ} (8-hour). Noise from the access road construction would be less than the 75-dBA L_{EQ} (8-hour) limit and **impacts would be less than significant**.

The loudest noise during construction grading of the processing plant pad would occur from the use of a grader. This would occur at the processing plant area, at an assumed average distance of 250 feet from the Project site property line and 500 feet from the nearest off-site occupied property over the course of an 8-hour workday. At 250 feet a grader would generate a noise level of 67.0 dBA L_{EQ} (8-hour), and at 500 feet a grader would generate a noise level of 61.0 dBA L_{EQ} (8-hour). Noise from construction grading of the processing plant pad would be less than the 75-dBA L_{EQ} (8-hour) limit and **impacts would be less than significant**.

The loudest noise during construction of the Willow Glen Drive improvements is anticipated to occur from the simultaneous use a dozer, dump truck, and water truck and the individual use of a saw cutter. The use of this equipment would occur 50 feet from the property line on the opposite side of the roadway and 170 feet from the nearest off-site occupied property usable area, as measured from the portion of the improvement area closest to the off-site occupied property. For work at this location for a duration of two hours (before moving to another location along the linear construction work area), the simultaneous use of a dozer, dump truck, and water truck would generate a noise level of 73.8 dBA L_{EQ} (8-hour) at 50 feet and 63.2 dBA L_{EQ} (8-hour) at 170 feet, both of which are below the 75-dBA L_{EQ} (8-hour) limit. A saw cutter would generate a noise level of 76.6 dBA L_{EQ} (8-hour) at 50 feet and 66.0 dBA L_{EQ} (8-hour) at 170 feet. While noise from the saw cutter is estimated to exceed the 75-dBA L_{EQ} (8-hour) limit at the property line, the property line under consideration is at the edge of the roadway right-of-way (where there is no sidewalk) and consists of a steep bank that would not feasibly be used as open space. The County Noise Element (Table N-2, Noise Standards) defines “Private Usable Open Space” as “*usable* [emphasis added] open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies.” Based on the presence of a steep bank at the property line, no receptors would be present at this location and the area where noise the saw cutter is estimated to exceed the 75-dBA L_{EQ} (8-hour) limit would not qualify as usable space. Above the bank and at areas of the property where there is potential for receptors to be located, noise levels would be below the 75-dBA L_{EQ} limit. Noise levels at the actual usable areas of the property would be lower than those presented herein (66.0 dBA L_{EQ}) due to the bank that would provide noise attenuation.* Further, noise from the saw cutter would be limited to a very short duration (expected to be a total of two days for the Willow Glen Drive improvements). As such, potential construction noise impacts from the Willow Glen Drive improvements would be **less than significant**.

* The model used for this analysis (the Roadway Construction Noise Model) does not account for topographical shielding.

Project construction would also involve demolition of existing on-site structures. The loudest noise during the demolition phase of construction would occur from the use of a concrete saw. This would occur at the existing clubhouse and maintenance building, 250 feet from the Project site property line and 450 feet from off-site occupied properties. At 250 feet, a concrete saw would generate a noise level of 68.6 dBA L_{EQ} (8-hour), and at 450 feet a concrete saw would generate a noise level of 63.5 dBA L_{EQ} (8-hour). Noise from demolition would be less than the 75-dBA L_{EQ} (8-hour) limit and **impacts would be less than significant.**

Construction noise could potentially affect biological resources such as sensitive habitat for nesting birds. Analysis and mitigation for these impacts are discussed in Subchapter 2.1 of this EIR.

2.4.2.3 Combined Operation and Existing Ambient Noise

Guideline for the Determination of Significance

A significant direct noise impact would occur if Project implementation would:

4. Result in an increase of 3 dB CNEL over existing conditions when noise levels exceed 60 dB CNEL at any on- or off-site, existing, or reasonably foreseeable future NSLU.

Guideline Source

The above guideline is based on the County of San Diego Report Format and Content Requirements – Noise (County 2009b).

Analysis

There are nine NSLUs that would be potentially subject to combined noise associated with the proposed Project's operations (processing plant, grading, material extraction, and haul truck activities) and existing noise levels associated with traffic along Willow Glen Drive. These nine locations are residential groups 1 through 7, as well as at Hilton Head County Park and the isolated residence north of Willow Glen Drive (Isolated Residence 1). As shown in Table 2.4-2, *Existing Plus Unmitigated Project Noise Levels*, three of the NSLUs would experience an increase of 3 dB CNEL above existing conditions when noise levels exceed 60 dB CNEL. Specifically, residential group 1 would experience an increase of 4.2 dB CNEL and a noise level of 68.0 dB CNEL; residential group 2 would experience an increase of 3.0 dB CNEL and a noise level of 68.2 dB CNEL; and residential group 5 would experience an increase of 5.4 dB CNEL and a noise level of 64.8 dB CNEL (refer to Figure 2.4-2). The Project would result in an increase of 3 dB CNEL above existing conditions when noise levels exceed 60 dB CNEL at three NSLUs; therefore, **noise impacts associated with the combination of the Proposed Project's operations and existing noise levels associated with traffic along Willow Glen Drive would be considered potentially significant at these three locations (Impact N-2).** While the Project would result in noise level increases of greater than 3 dB CNEL at residential groups 6 and 7, Isolated Residence 1, and Hilton Head County Park, overall noise levels would remain below 60 dB CNEL and, therefore, no impact would occur.

2.4.2.4 Ground-borne Vibration/Noise

Guidelines for the Determination of Significance

A significant direct noise impact would occur if Project implementation would:

Result in the exposure of persons to ground-borne vibration equal to or in excess of Caltrans' (2020) distinctly perceptible human response threshold of 0.035 inch per second (in/sec) peak particle velocity (PPV) for steady state sources or 0.24 in/sec PPV for transient sources.

Guidelines Source

The above guidelines are based on the County's Guidelines for Determining Significance for Noise (2009a), and Caltrans' Transportation and Construction Vibration Guidance Manual (2020).

Analysis

Construction Vibration

The primary source of vibration during Project construction would be a vibratory roller that would likely be used for soil and/or asphalt compaction for the site access roads and Willow Glen Drive improvements. The western access road would be located closer to off-site residences than the primary access road. Due to its mobile nature of operations, the use of vibratory roller during construction of the western site access road would occur at an average distance, over the course of a workday, of 220 feet from the nearest off-site vibration-sensitive land use, which is the residence located across Willow Glen Drive. A vibratory roller creates approximately 0.210 in/sec PPV at a distance of 25 feet. At a distance of 220 feet, a vibratory roller would create a PPV of 0.016 in/sec.[†] This would be below the distinctly perceptible vibration annoyance potential criterion of 0.035 in/sec PPV as provided in the Caltrans' Transportation and Construction Vibration Guidance Manual (Caltrans 2020) for steady state sources. Use of a vibratory roller during construction of the proposed Willow Glen Drive improvements would occur approximately 170 feet from the nearest off-site occupied residence located across Willow Glen Drive, as measured from the portion of the Willow Glen Drive construction area closest to the residence. At a distance of 170 feet, a vibratory roller would create a PPV of 0.025 in/sec.,* which is also below the 0.035 in/sec PPV criterion; therefore, construction vibration impacts would be **less than significant**.

Operational Vibration

The most prominent source of vibration during mining operations would be the use of a low-profile haul truck or tractor-trailer for on-site transport of washed fines from the processing plant to backfill areas. Vibration levels from the low-profile haul truck or tractor-trailer were conservatively calculated using vibration levels of a larger dump truck, which would generate vibration levels of 0.076 in/sec PPV at 25 feet (Caltrans 2020). The Project's haul truck/tractor-

[†] Equipment PPV = Reference PPV * (25/D)ⁿ(in/sec), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receptor in feet, and n= 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2013.

trailer is assumed for analysis purposes to operate as close as 150 feet from off-site occupied residences. This is a conservative assumption because the Project would incorporate mining activity setbacks of 100 feet from residential properties. Considering this setback distance in combination with residential yard space and/or roadways between the Project's mining areas and residential dwelling units, use of a haul truck/tractor-trailer would likely occur at distances much greater than 150 feet from residential dwelling units. At a distance of 150 feet, the haul truck/tractor-trailer (conservatively modeled as a dump truck) would generate a vibration level of 0.010 in/sec PPV, which would be below the distinctly perceptible vibration annoyance potential criterion of 0.035 in/sec PPV as provided in Caltrans' Transportation and Construction Vibration Guidance Manual (Caltrans 2020) for steady state sources. It should be noted that although the haul truck/tractor-trailer's vibration level is compared against Caltrans' steady state source threshold, the haul truck/tractor-trailer would be mobile and would not represent a constant source of vibration for a given receptor.

Loaded trucks hauling material away from the Project site along Willow Glen Drive would also generate vibration as a result of the weight of the material. Residential dwellings along Willow Glen Drive are located as close as 100 feet from the travel lanes that would accommodate the project's loaded haul trucks. At a distance of 100 feet, a loaded truck would generate a vibration level of 0.016 in/sec PPV, which would be below the distinctly perceptible threshold. In addition, vibration events created by loaded haul trucks at any one residence would be infrequent and limited to durations of a few seconds as the trucks pass by. Vibration impacts from both on-site and off-site truck activity would be less than significant.

The screening machine located at the processing area would generate vibration during operation, but it would be over 800 feet from occupied properties and therefore would not subject these properties to substantial vibration, as manufactured earthborne vibrations attenuate rapidly with distance (Caltrans 2020). Specific vibration data for the screening machine are not available at this time. To provide a conservative analysis, vibration levels associated with a vibratory roller, which is considered a high vibration-generating machine, are considered. A vibratory roller generates a vibration level of 0.210 in/sec PPV at 25 feet (Caltrans). At a distance of 800 feet, a vibratory roller would generate a vibration level of 0.005 in/sec PPV which is well below the distinctly perceptible vibration potential criteria of 0.035 in/sec PPV (Caltrans 2020). In addition, the screening machine would be mounted in sand, which is a vibration-dampening medium. Therefore, the screening machine would not generate substantial vibration at off-site occupied properties, and operational vibration impacts would be **less than significant**.

2.4.2.5 Aircraft Noise

Guidelines for the Determination of Significance

A significant direct noise impact would occur if Project implementation would:

5. Expose people residing or working to excessive noise levels within 2 miles of a public or private airport.

Guidelines Source

The County does not have specific guidelines for determining the significance for aircraft noise; therefore, the above guideline is based on Appendix G of the CEQA Guidelines.

Analysis

There are no public or private airports within two miles of the Project site; therefore, the Proposed Project would not expose people residing or working to excessive aircraft noise, and impacts would be **less than significant**.

2.4.3 Cumulative Impact Analysis

2.4.3.1 Cumulative Noise Impacts

Guideline for Determination of Significance

A significant cumulative impact would occur if the Project would:

6. Result in the exposure of any NSLU to an increase of 10 dB CNEL over pre-existing noise levels resulting in a combined exterior noise level of 60 dB CNEL or greater or if the project would contribute to an increase of 3 dB CNEL over existing conditions in the existing plus project plus cumulative scenario if that total is above 60 dB CNEL. A “cumulatively considerable” project contribution to an identified significant cumulative noise impact would occur if the project contributes more than a 1 dBA increase to the cumulative noise level.

Guideline Source

The above guideline is based on the County of San Diego Guidelines for Determining Significance for Noise (County 2009a).

Analysis

Off-site Cumulative Noise Impacts

The potential for a cumulative noise impact can occur when noise from multiple projects combines to increase noise levels above thresholds. The noise levels from the combination of existing traffic noise levels, cumulative traffic noise levels, and unmitigated Project noise levels, shown in Table 2.4-3, *Existing Plus Cumulative Plus Unmitigated Project Noise Levels*, indicate that Project operations combined with cumulative project traffic noise would result in an increase of 3 dB CNEL or greater compared to existing conditions at receivers in residential groups 1, 2, 3, and 5, where noise levels would exceed 60 dB CNEL. Therefore, cumulative impacts would occur at these locations. Furthermore, because the Project would result in more than a 1 dBA increase over existing plus cumulative conditions at these same receiver locations, impacts are considered cumulatively considerable. **Cumulative off-site noise impacts are identified as cumulatively significant (Impact N-3).**

Cumulative Noise Impacts from Adjacent Cumulative Project Construction

Construction of the Ivanhoe Ranch project is proposed to occur immediately east of the northeastern portion of the Project site. As a result, residential group 9 would potentially be subject to simultaneous noise from the Project's mining operations and construction of the Ivanhoe Ranch project.[‡] It is conservatively assumed that a dozer and scraper would operate simultaneously at the Ivanhoe Ranch project site for earthwork activities and would represent the loudest construction activity. Based on the large area of the Ivanhoe Ranch site, these pieces of equipment would operate at varying distances from the receiver location at residential group 9. The distance from the receiver location to the center of the Ivanhoe Ranch site is approximately 2,300 feet; however, since large portions of earthwork would likely occur for extended periods of time closer to residential group 9 than 2,300 feet, for analysis purposes it is assumed that the equipment would operate at an average distance of 1,000 feet from the receiver at residential group 9. At a distance of 1,000 feet, a scraper and dozer would generate a noise level of 55.7 dBA L_{EQ} . It is assumed that construction activities for the Ivanhoe Ranch project would comply with the County construction noise ordinance hours of 7:00 a.m. to 7:00 p.m. Based on this, the calculated dB CNEL value at the modeled receiver in residential group 9 is 53.7 dB CNEL. Combined with the Project's unmitigated mining operation noise, the noise level at the receiver in residential group 9 would be 55.5 dB CNEL. Noise levels at the modeled receiver at residential group 9 would be below the applicable 60 dB CNEL threshold for residential uses. Therefore, **cumulative noise impacts from adjacent cumulative project construction are identified as less than significant.**

2.4.4 Significance of Impacts Prior to Mitigation

The following potentially significant impacts related to noise could occur with Proposed Project implementation without mitigation:

- Impact N-1** Noise levels could exceed the 60 dB CNEL maximum allowable noise level for 11 NSLUs surrounding the Project site: the Adeona Healthcare facility, Isolated Residence 2, Isolated Residence 3, and residential groups 1 through 5, 8, 10, and 11.
- Impact N-2** Project operations could cause an increase of 3 dB CNEL compared to existing conditions at three NSLUs where noise levels exceed 60 dB CNEL; these NSLUs are residential groups 1, 2, and 5.
- Impact N-3** Project operations combined with cumulative traffic noise could cause an increase of 3 dB CNEL compared to existing conditions at four NSLUs where noise levels would exceed 60 dB CNEL; these NSLUs are residential groups 1, 2, 3, and 5. Additionally, the Project could result in more than a 1 dBA increase over existing plus cumulative conditions at these locations, thus resulting in a cumulatively considerable impact.

[‡] Although Isolated Residences 3 and 4 were considered for impacts as a result of the Project's mining operations, these residences are located within the Ivanhoe Ranch project site and would therefore no longer be present if the Ivanhoe Ranch project is developed.

2.4.5 Mitigation

To decrease noise impacts associated with the Proposed Project, the following mitigation measure shall be implemented. The noise barrier requirements included in the following measures were determined through CadnaA modeling, which takes into account the topography of the Project site and surrounding areas.

M-N-1 Below-Grade Excavation and Noise Barriers: Raw material extraction equipment operating within 400 feet of off-site NSLU useable space areas shall be located at the lowest feasible elevation within the Project's excavation areas such that the topography shall provide noise attenuation to off-site properties. To achieve the lowest feasible elevation, initial at-grade excavation activities shall be performed at least 400 feet from off-site NSLU usable space areas, as indicated in Figures 2.4-3a-c, *Noise Barriers*. Following this initial excavation to the lowest feasible elevation, excavation can extend outward and toward the NSLUs while maintaining the lowest feasible elevation at the active working face where extraction equipment is operating.

For NSLUs located at residential groups 5 and 8 (as shown on Figure 2.4-2), as well as Isolated Residence 2, Isolated Residence 3, and the Adeona Healthcare facility, an 8-foot-high noise barrier, constructed to the specifications identified below, shall be provided between excavation activities and the off-site NSLUs, when excavation is occurring within 400 feet of each location. When mining activities are occurring at distances greater than 400 feet from a given receiver location, a barrier would not be required adjacent to that receiver location. The barriers shall be located as shown on Figures 2.4-3a-c and break the line-of-sight between the excavation activities and receivers. For the barriers adjacent to residential groups 5 and 8, the required barrier height (8 feet) shall be measured relative to the adjacent Project site property line elevation. If the barrier is constructed at a location with an elevation lower than that of the adjacent property line, the total barrier height would be greater than the required barrier height in order to provide adequate noise attenuation (e.g., if the barrier with a required height of 8 feet is to be located at a surface elevation 5 feet below the adjacent Project site property line elevation, the total barrier height would be 13 feet).

For NSLUs located at residential groups 1, 2, 3, 4, 10, and 11 (as shown on Figure 2.4-2), a 12-foot-high noise barrier, constructed to the specifications identified below, shall be provided between excavation activities and the off-site NSLUs, when excavation is occurring within 400 feet of each location. When mining activities are occurring at distances greater than 400 feet from a given receiver location, a barrier would not be required adjacent to that receiver location. The barriers shall be located as shown on Figures 2.4-3a-c and break the line-of-sight between the excavation activities and receivers. For the barriers adjacent to residential groups 1, 2, 3, and 4, the required barrier height (12 feet) shall be measured relative to the adjacent Project site property line elevation. If the barrier is constructed at a location with an elevation lower than that of the adjacent project site property line, the total barrier height would be greater than the required barrier

height in order to provide adequate noise attenuation (e.g., if the barrier with a required height of 12 feet is to be located at a surface elevation 5 feet below the adjacent project site property line elevation, the total barrier height would be 17 feet).

The noise barriers must be solid. They can be constructed of soil (in the form of a berm or stockpile), masonry, wood, plastic, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the walls. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot. Sheet metal of 18-gauge (minimum) may be used if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of wood with a thickness of at least one-inch, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated doorjamb. Stockpiles must be continuous and maintain the required height along their entire length.

2.4.6 Conclusion

Operation of the Proposed Project would have potentially significant noise impacts. As shown in Table 2.4-1, noise levels at 11 NSLUs (residential groups 1 through 5, 8, 10, and 11, Isolated Residence 2, Isolated Residence 3, and the Adeona Healthcare facility) may exceed the applicable 60-dB CNEL limit as a result of mining operations (Impact N-1), and therefore would require mitigation. Implementation of M-N-1 would require the construction of a 12-foot noise barrier for NSLUs at residential groups 1, 2, 3, 4, 10, and 11 between the excavation activities and the NSLUs when excavation is occurring within 400 feet of these locations, and the construction of an 8-foot barrier for NSLUs at Isolated Residence 2, Isolated Residence 3, the Adeona Healthcare facility, and residential groups 5 and 8 between excavation activities and the NSLUs when excavation is occurring within 400 feet of these locations. The noise barriers would be solid and would follow the strict provisions outlined in M-N-1 to ensure they attenuate noise.

In addition to the construction of the sound barriers, M-N-1 requires all raw material excavation equipment operating within 400 feet of off-site NSLU useable space areas to be located at the lowest feasible elevation within the Project's excavation areas to provide noise attenuation to off-site properties. This allows the topography to block noise from extraction activities occurring below grade at the active working face. Given the potential for groundwater throughout the Project site, excavation depths would average 20 feet bgs, with some areas outside the existing low-flow channel excavated to a maximum depth of 40 feet bgs. Areas identified for mining up to 40 feet bgs, as applicable based on the water table, are those that have not been previously disturbed by golf course development or previous excavation activities within subphases 1B, 1C, 2B, 2C, and the eastern portion of subphase 3A. To achieve the lowest feasible elevation, initial at-grade excavation activities would be performed at least 400 feet from off-site NSLU property lines. Once at the lowest feasible elevation at the initial excavation locations, material excavation would extend outward and toward the NSLUs while maintaining this lowest feasible elevation. The below grade excavation in combination with noise barriers would effectively break the line-of-sight

between the mining equipment and NSLUs, thus attenuating noise levels. As shown in Table 2.4-4, *Mitigated (8-foot Barrier) Mining Operation Noise Levels*, and Table 2.4-5, *Mitigated (12-foot Barrier) Mining Operation Noise Levels*, the noise modeling results indicate that the implementation of M-N-1 would reduce noise levels at residential groups 1 through 5, 8, 10, and 11, and Isolated Residence 2, Isolated Residence 3, and the Adeona Healthcare facility to below 60 dB CNEL. It is worth noting that due to the varying potential excavation depths across the site (average of 20 feet bgs with a maximum depth of 40 feet bgs, as mentioned above), the noise modeling conducted for the Project conservatively assumed a 10-foot excavation depth. Actual noise levels would likely be less than those presented in Tables 2.4-4 and 2.4-5 due to the increased noise attenuation achieved by the greater excavation depths than what was included in the model. As a result, noise impacts associated with the operation of the Proposed Project would be lowered to less than significant levels with mitigation.

Operation of the Proposed Project combined with existing traffic noise could cause a potentially significant cumulative noise impact. As shown in Table 2.4-2, three NSLUs (residential groups 1, 2, and 5) would experience an increase of 3 dB CNEL above existing conditions when noise levels exceed 60 dB CNEL (Impact N-2), and therefore would require mitigation. As stated above, implementation of M-N-1 would include, in addition to excavation at low elevations, the presence of a 12-foot noise barrier for residential groups 1 and 2, and an 8-foot barrier for residential group 5 between the NSLU and the excavation activities when excavation is occurring within 400 feet of these locations. As shown in Table 2.4-6, *Existing Plus Mitigated Project Noise Levels*, the noise modeling results indicate that implementation of M-N-1 would cause the increase in CNEL in residential groups 1, 2, and 5 to be below the 3 dB CNEL increase threshold in NSLU locations with a CNEL of 60 dB or higher. Implementation of M-N-1 would reduce noise levels at residential groups 1, 2, and 5 to meet noise level standards. Therefore, noise impacts associated with mitigated Project noise and existing traffic noise along Willow Glen Drive would be less than significant with mitigation.

The noise levels from the combination of existing conditions, cumulative noise levels, and unmitigated Project noise levels would have a potentially significant impact on residential groups 1, 2, 3, and 5. As shown in Table 2.4-3, the noise levels at these NSLUs would have the potential to increase by at least 3 dB CNEL over existing conditions in the existing plus Project plus cumulative scenario when the CNEL would exceed 60 dB CNEL. Furthermore, because the Project would result in more than a 1 dBA increase over existing plus cumulative conditions at these locations, impacts are considered cumulatively considerable (Impact N-3) and would require mitigation. As stated above, implementation of M-N-1 would include, in addition to excavation at low elevations, the presence of a 12-foot noise barrier for residential groups 1, 2, and 3, and an 8-foot barrier for residential group 5 between excavation activities and the off-site locations when excavation is occurring within 400 feet of those locations. As shown in Table 2.4-7, *Existing Plus Cumulative Plus Mitigated Project Noise Levels*, the noise modeling results indicate that implementation of M-N-1 would cause the increase in CNEL in residential groups 1, 2, 3, and 5 to be below the 3 dB CNEL increase threshold in locations with a CNEL of 60 dB or higher. Implementation of M-N-1 would lower noise levels at Isolated Residence 1 and residential groups 1, 2, 3, and 5 to meet noise level standards. Therefore, noise impacts associated with existing noise, cumulative traffic noise along Willow Glen Drive, and mitigated Project noise would be less than significant with mitigation.

For all of the above potential impacts, implementation of proposed mitigation measure M-N-1 would ensure compliance with the County Noise Element standards and Noise Ordinance and reduce noise impacts to less than significant levels.

**Table 2.4-1
MINING OPERATION NOISE LEVELS**

Receiver Area	Maximum Noise from Processing Plant (dBA/CNEL)	Maximum Noise from Material Extraction and Grading (dBA/CNEL)	Maximum Noise from On-road Haul Trucks (dBA/CNEL)	Maximum Combined Noise (dBA/CNEL)	Exceed 60 dB CNEL Limit?
Residential Group 1	35.2/29.9	69.6/65.8	56.5/50.8	69.8/ 65.9	Yes
Residential Group 2	39.0/33.7	68.7/64.9	58.5/52.8	69.1/ 65.2	Yes
Residential Group 3	40.0/34.7	68.5/64.7	58.3/52.6	68.9/ 65.0	Yes
Residential Group 4	45.8/41.1	68.1/64.3	58.5/52.8	68.6/ 64.6	Yes
Residential Group 5	49.9/44.8	67.0/63.2	54.1/48.4	67.3/ 63.4	Yes
Residential Group 6	46.3/40.9	46.5/42.7	35.8/30.1	49.6/45.0	No
Residential Group 7	49.6/44.3	52.5/48.7	37.9/32.2	54.4/50.1	No
Residential Group 8	44.2/38.9	66.1/62.3	26.6/20.9	66.1/ 62.3	Yes
Residential Group 9	50.6/45.2	53.1/49.3	36.3/30.6	55.1/50.8	No
Residential Group 10	48.7/43.9	70.3/66.5	38.6/32.9	70.3/ 66.5	Yes
Residential Group 11	38.5/33.2	73.7/69.9	42.9/37.2	73.7/ 69.9	Yes
Isolated Residence 1	58.2/52.8	61.0/57.2	45.9/40.2	62.9/58.6	No
Isolated Residence 2	37.1/31.9	64.9/61.1	30.5/34.8	64.9/ 61.1	Yes
Isolated Residence 3	37.2/32.0	66.1/62.3	34.4/28.7	66.1/ 62.3	Yes
Isolated Residence 4	42.4/37.2	58.0/54.2	40.0/34.3	58.2/54.3	No
Hilton Head County Park	36.0/30.8	55.6/51.8	40.9/35.2	55.8/51.9	No
ADEONA Healthcare	45.5/40.4	64.5/60.7	38.8/33.1	64.6/ 60.7	Yes

Source: HELIX 2021c

CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel

Table 2.4-2
EXISTING PLUS UNMITIGATED PROJECT NOISE LEVELS

Receiver Area	CNEL Existing	CNEL Existing + Project	CNEL Increase	Direct Impact?¹
Residential Group 1	63.8	68.0	4.2	Yes
Residential Group 2	65.2	68.2	3.0	Yes
Residential Group 3	65.4	68.2	2.8	No
Residential Group 4	65.6	68.1	2.5	No
Residential Group 5	59.4	64.8	5.4	Yes
Residential Group 6	40.1	46.2	6.1	No ²
Residential Group 7	45.5	51.4	5.9	No ²
Isolated Residence 1	52.8	59.6	6.8	No ²
Hilton Head County Park	45.4	52.8	7.4	No ²

Source: HELIX 2021c

¹ A direct impact would occur if the Project results in an increase of 3 dB CNEL above existing conditions and noise levels exceed 60 dB CNEL.

² While the Project would result in noise level increases of greater than 3 dB CNEL, overall noise levels would remain below 60 dB CNEL; therefore, no impact would occur.

CNEL = Community Noise Equivalent Level

**Table 2.4-3
EXISTING PLUS CUMULATIVE PLUS UNMITIGATED PROJECT NOISE LEVELS**

Receiver Area	Existing CNEL	Existing + Cumulative CNEL	Existing + Cumulative + Project CNEL	Existing + Cumulative + Project Change from Existing	Existing + Cumulative + Project Cumulative Impact? ¹	Existing + Cumulative + Project Change from Existing + Cumulative	Cumulatively Considerable Impact? ²
Residential Group 1	63.8	64.1	68.1	4.3	Yes	4.0	Yes
Residential Group 2	65.2	65.5	68.4	3.2	Yes	2.9	Yes
Residential Group 3	65.4	65.7	68.4	3.0	Yes	2.7	Yes
Residential Group 4	65.6	65.9	68.3	2.7	No	2.4	No ³
Residential Group 5	59.4	59.5	64.9	5.5	Yes	5.4	Yes
Residential Group 6	40.1	40.2	46.2	6.1	No	6.0	No ³
Residential Group 7	45.5	45.6	51.4	5.9	No	5.8	No ³
Isolated Residence 1	52.8	52.8	59.6	6.8	No	6.8	No ³
Hilton Head County Park	45.4	45.7	52.8	7.4	No	7.1	No ³

Source: HELIX 2021c

¹ A cumulative impact would occur if the Project would cause: an increase of 10 dB CNEL over existing noise levels, resulting in a combined exterior noise level of 60 dB CNEL or greater; an increase of 3 dB CNEL over existing conditions in the existing plus Project plus cumulative scenario if that total is above 60 dB CNEL; or if the Project would cause interior noise levels in excess of 45 dB CNEL while also causing an increase at least 3 dB CNEL over existing conditions.

² A cumulatively considerable contribution to an identified cumulative impact would occur if the Project would add more than 1 dBA to the cumulative noise increase.

³ While the Project would cause a change from the Existing + Cumulative scenario that is greater than 1 dBA, no cumulative impact was identified so the Project's contribution is not cumulatively considerable.

CNEL = Community Noise Equivalent Level

Table 2.4-4
MITIGATED (8-FOOT BARRIER) MINING OPERATION NOISE LEVELS

Receiver Area	Maximum Noise from Processing Plant (dBA/CNEL)	Maximum Noise from Material Extraction and Grading (dBA/CNEL)	Maximum Noise from On-road Haul Trucks (dBA/CNEL)	Maximum Combined Noise (dBA/CNEL)	Exceed 60 dB CNEL Limit?
Residential Group 1	35.2/29.9	63.9/60.1	56.5/50.8	64.6/ 60.6	Yes
Residential Group 2	38.9/33.6	63.4/59.6	58.5/52.8	64.6/ 60.4	Yes
Residential Group 3	39.6/34.4	65.6/61.8	58.3/52.6	66.4/ 62.3	Yes
Residential Group 4	43.5/38.3	63.5/59.7	58.5/52.8	64.7/ 60.5	Yes
Residential Group 5	49.8/44.7	62.2/58.4	54.1/48.4	63.0/59.0	No
Residential Group 8	44.1/38.7	62.4/58.6	26.6/20.9	62.5/58.6	No
Residential Group 10	45.9/40.8	64.1/60.3	39.7/34.0	64.2/ 60.4	Yes
Residential Group 11	36.8/31.7	67.9/64.1	42.9/37.2	67.9/ 64.1	Yes
Isolated Residence 2	33.1/27.9	54.0/50.2	30.5/24.8	54.1/50.2	No
Isolated Residence 3	37.1/31.9	61.4/57.6	34.4/28.7	61.4/57.6	No
ADEONA Healthcare	43.1/38.0	57.2/53.4	38.8/33.1	57.4/53.6	No

Source: HELIX 2021c

CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel

**Table 2.4-5
MITIGATED (12-FOOT BARRIER) MINING OPERATION NOISE LEVELS**

Receiver Area	Maximum Noise from Processing Plant (dBA/CNEL)	Maximum Noise from Material Extraction and Grading (dBA/CNEL)	Maximum Noise from On-road Haul Trucks (dBA/CNEL)	Maximum Combined Noise (dBA/CNEL)	Exceed 60 dB CNEL Limit?
Residential Group 1	35.2/29.9	59.8/56.0	56.5/50.8	61.5/57.2	No
Residential Group 2	38.8/33.6	60.2/56.4	58.5/52.8	62.5/58.0	No
Residential Group 3	39.6/34.3	63.2/59.4	58.3/52.6	64.4/60.0	No
Residential Group 4	43.5/38.3	60.6/56.8	58.5/52.8	62.7/58.3	No
Residential Group 10	44.1/39.2	60.5/56.7	36.7/31.0	60.6/56.8	No
Residential Group 11	36.6/31.5	64.3/60.0	42.9/37.2	64.3/60.0	No

Source: HELIX 2021c

CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel

**Table 2.4-6
EXISTING PLUS MITIGATED PROJECT NOISE LEVELS**

Receiver Area	CNEL Existing	CNEL Existing + Project	CNEL Increase	Direct Impact? ¹
Residential Group 1	63.8	64.7	0.9	No
Residential Group 2	65.2	66.0	0.8	No
Residential Group 3 ²	65.4	66.5	1.1	No
Residential Group 4 ²	65.6	66.3	0.7	No
Residential Group 5	59.4	62.2	2.8	No

Source: HELIX 2021c

¹ A direct impact would occur if the Project results in an increase of 3 dB CNEL above existing conditions and noise levels exceed 60 dB CNEL.

² Although a direct impact was not identified for residential groups 3 or 4 under this threshold (refer to Table 2.4-2), a potentially significant impact was identified for residential groups 3 and 4 under the exterior use area noise threshold (Impact N-1) and residential groups 3 and 4 are therefore subject to mitigation measure M-N-1. Mitigated noise levels for residential groups 3 and 4 are presented here for informational purposes.

CNEL = Community Noise Equivalent Level

Table 2.4-7
EXISTING PLUS CUMULATIVE PLUS MITIGATED PROJECT NOISE LEVELS

Receiver Area	Existing CNEL	Existing + Cumulative CNEL	Existing + Cumulative + Project CNEL	Existing + Cumulative + Project Change from Existing	Existing + Cumulative + Project Cumulative Impact? ¹	Existing + Cumulative + Project Change from Existing + Cumulative	Existing + Cumulative + Project Cumulatively Considerable Impact? ²
Residential Group 1	63.8	64.1	64.9	1.1	No	0.8	No
Residential Group 2	65.2	65.5	66.2	1.0	No	0.7	No
Residential Group 3	65.4	65.7	66.7	1.3	No	1.0	No
Residential Group 4 ³	65.6	65.9	66.6	1.0	No	0.7	No
Residential Group 5	59.4	59.5	62.3	2.9	No	2.8	No ⁴

Source: HELIX 2021c

¹ A cumulative impact would occur if the Project would cause: an increase of 10 dB CNEL over existing noise levels, resulting in a combined exterior noise level of 60 dB CNEL or greater; an increase of 3 dB CNEL over existing conditions in the existing plus Project plus cumulative scenario if that total is above 60 dB CNEL; or if the Project would cause interior noise levels in excess of 45 dB CNEL while also causing an increase at least 3 dB CNEL over existing conditions.

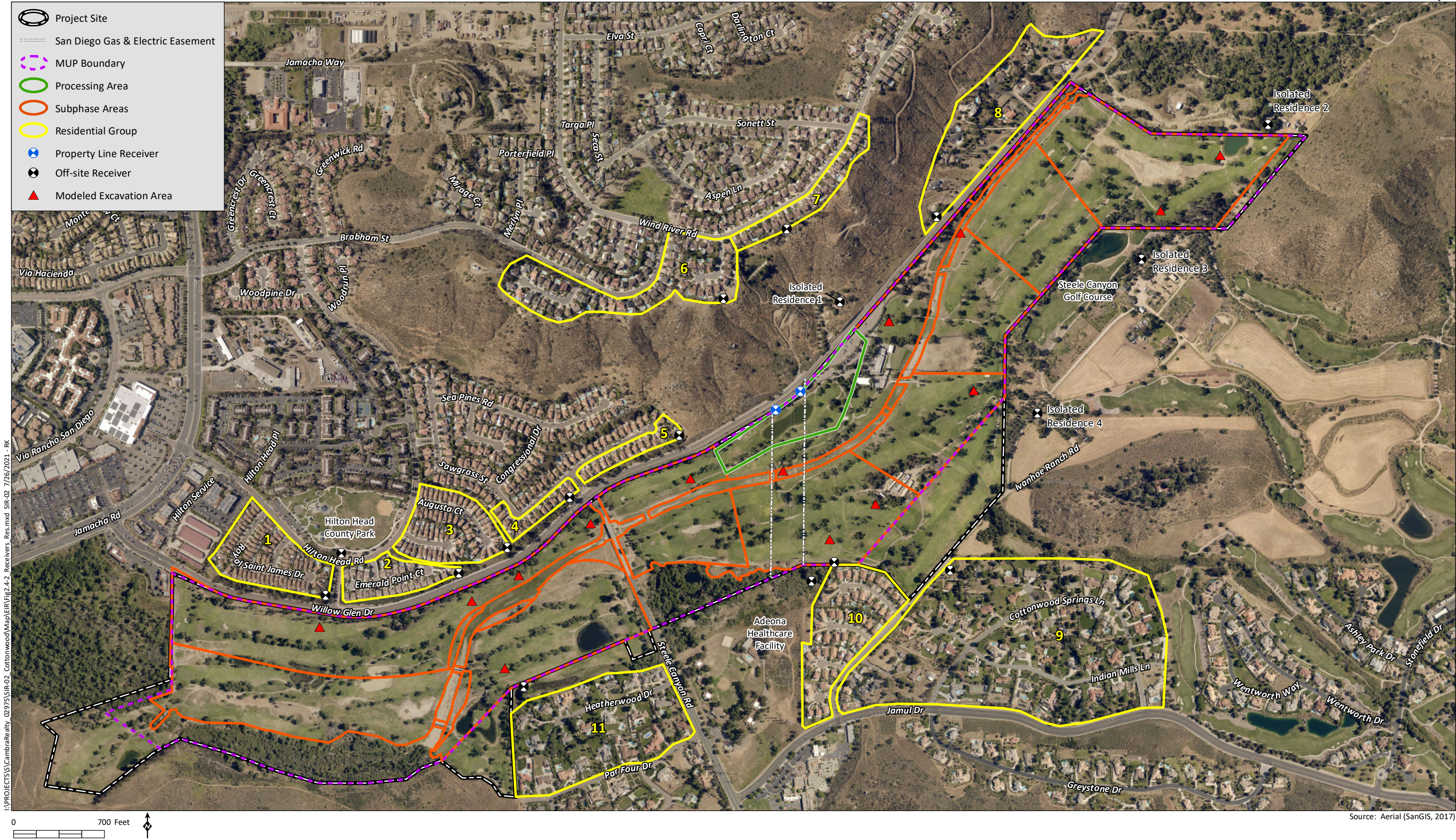
² A cumulatively considerable contribution to an identified cumulative impact would occur if the Project would add more than 1 dBA to the cumulative noise increase.

³ Although a direct impact was not identified for residential group 4 under this threshold (refer to Table 2.4-3), a potentially significant impact was identified for residential group 4 under the exterior use area noise threshold (Impact N-1) and residential group 4 is therefore subject to mitigation measure M-N-1. Mitigated noise levels for residential group 4 are presented here for informational purposes.

⁴ While the Project would cause a change from the Existing + Cumulative scenario that is greater than 1 dBA, no cumulative impact was identified so the Project's contribution is not cumulatively considerable.

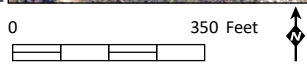
CNEL = Community Noise Equivalent Level



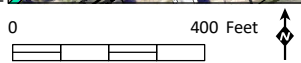




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Source: Aerial (SanGIS, 2017)

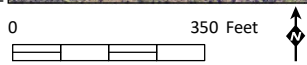


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Figure 2.4-3b



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Source: Aerial (SanGIS, 2017)