2.5 Noise

This subchapter of the EIR summarizes the Project's Acoustical Analysis Report (HELIX 2017a), contained in Appendix G, which was prepared in conformance with the County Report Format and Content Requirements - Noise (County 2009b).

2.5.1 Existing Conditions

2.5.1.1 *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 dB to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and the addition of 10 dB to sound levels at night from 10:00 p.m. to 7:00 a.m.

2.5.1.2 *Existing Noise Sources*

The dominant permanent noise source in the vicinity of the Project site is the moderate traffic noise on Country Club Drive. Construction noise from the Harmony Grove Village site can also be currently heard on the site.

2.5.1.3 *Existing Ambient Noise Levels*

To determine the existing noise environment, two short-term daytime noise measurements were conducted on Tuesday, August 12, 2014 at two locations: the intersection of Country Club Drive and the proposed south Project entrance, and on site approximately 170 feet southeast of the first measurement. The measured noise level was 54.4 dBA L_{EQ} at the entrance, and 42.8 dBA L_{EQ} onsite. See Table 2-1 in the Acoustical Analysis Report in Appendix G for additional details regarding the two ambient noise measurements.

2.5.1.4 *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. Located to the west of the site, off Country Club Drive, Cordrey Drive, and Cordrey Lane, is a collection of single-family homes. Within some of these properties are equestrian facilities. Adjacent to the east are three currently occupied single-family homes (that access Country Club Drive through the Proposed Project site). To the north of the site is Escondido Creek and then Harmony Grove Road; to the south is the open space DDHP.

Additional surrounding land uses include the approved HGV project. HGV is currently under construction and will contain over 740 homes at buildout. Consistent with the Project TIA (Appendix D of this EIR), the Project's Acoustical Analysis Report (Appendix G of this EIR) conservatively assumed that the HGV project is occupied. All existing residential sites and all proposed on-site housing units associated with the Project would be considered sensitive noise receptors.

2.5.1.5 *Regulatory Setting*

The County addresses mobile, stationary and construction noise sources. In the context of the noise analysis, transportation (mobile) noise levels associated with the Proposed Project are regulated by goals and policies in the Noise Element in the County General Plan (outlined below). Both federal and County regulations address blasting. County Noise Ordinance Sections 36.404 and 36.409 govern operational (stationary) and construction noise levels, respectively.

Off-site impacts generally focus on transportation noise associated with increases in Project-related vehicular activity. Noise level increases and impacts attributable to development of a project are estimated by comparing the existing plus Project (i.e., "with project") traffic to the existing (i.e., "without project") traffic (refer to Subchapter 2.2 of this EIR for detailed traffic information).

Code of Federal Regulations (30 CFR 816.61-816.68)

Various aspects of blasting, including flyrock and airblast, are regulated by the Code of Federal Regulations (30 CFR 816.61-816.68). Section 816.67(b) specifies maximum levels for airblast; Section 816.67(c) specifies allowable distances for flyrock.

County of San Diego 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 transportation-related 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 CNEL or less for single-family homes, 65 CNEL or less for multi-family residential and passive park uses, and an interior noise standard of 45 CNEL for both housing types. 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.~~6~~5, *Land Use and Planning*, of this EIR.

Although the proposed HGV South Project could be subject to the County Noise Element Land Use Category B for multiple single-family residences within a single lot within Table 1-1, the analysis assumes Category A noise requirements for these proposed single-family residential units as a more restrictive noise assessment. The 60 CNEL is a higher standard than Category B and is applied to this Project and referenced throughout this Noise subchapter of the EIR.

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 to residential properties. 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. The Noise Ordinance sets an exterior noise limit for residential land uses adjacent to the property of 50 dBA L_{EQ} for daytime hours of 7:00 a.m. to 10:00 p.m. and 45 dBA L_{EQ} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m.

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 Consolidated Fire Code (SEC 96.1.5601.2)

Blasting activities are regulated by the County Consolidated Fire Code (County 2014a). Blasting is specifically addressed under SEC 96.1.5601.2. Regulations include a permit requirement before a person can conduct blasting, being approved by the Sheriff to conduct blasting operations, and specific hours that blasting may be performed.

Elfin Forest and Harmony Grove Community Plan

The Elfin Forest and Harmony Grove Community Plan includes provisions that address construction noise that may affect equestrian uses in the community (County 2011b). The rugged terrain in the San Dieguito Community can absorb or redirect the sound of the warning sirens used during construction blasting. The sudden blast noise and concussion can frighten horses

causing riders to fall and make riding horseback especially hazardous for area residents. In response, the Community Plan has established construction-related mitigation measures regarding sending out notices for blasting to avoid impacts to the horseback riders in the area.

County of San Diego Standards for Sensitive Birds

Some studies, such as that completed by the Bioacoustics Research Team (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 2.3 addresses potential noise impacts to sensitive birds.

2.5.2 Analysis of Project Effects and Determination as to Significance

The noise analysis presented below evaluates Project effects to on-site and off-site NSLUs associated with both on- and off-site roadway improvements and traffic.

2.5.2.1 *Transportation Noise Levels*

Guidelines for the Determination of Significance

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

1. Expose exterior on- or off-site, existing or reasonably foreseeable future NSLUs to noise (including road noise) in excess of 60 CNEL for single-family residential uses, 65 CNEL for multi-family residential and passive recreational park uses, or an increase of 10 CNEL or more over existing noise levels (if that noise level is less than 50 CNEL). For off-site uses, if existing conditions approach or exceed County standards, a direct impact would occur if the project more than doubles (increases by more than 3 CNEL) the existing noise level.

2. Expose interior on- or off-site, existing or reasonably foreseeable future, NSLUs to noise in excess of 45 CNEL. As above, for off-site uses, if existing conditions approach or exceed County standards, a direct impact would occur if the project more than doubles (increases by more than 3 CNEL) the existing noise level.

Guidelines Source

The above guidelines are based on the County's Guidelines for Determining Significance – Noise (2009b), as amended by the 2011 General Plan with regard to exterior standards for multi-family residential uses.

Analysis

The Traffic Noise Model (TNM) version 2.5 and Computer Aided Noise Abatement (CadnaA) version 4.2 modeling software were used to estimate the expected roadway noise impacts. CadnaA assists in the calculation, presentation, assessment and mitigation of noise exposure. It allows for the input of project-related information, such as noise source data, barriers, structures, and topography to create a detailed model, and uses the most up-to-date calculation standards to predict outdoor noise impacts. CadnaA traffic noise prediction is based on the data and methodology used in the TNM. The TNM calculates the daytime average hourly L_{EQ} from three-dimensional model inputs and traffic data. The TNM used in this analysis was developed from the Project's Computer Aided Design (CAD) files. Input variables included road alignment, elevation, lane configuration, area topography, existing and planned noise control features, projected traffic volumes, estimated truck composition percentages and vehicle speeds. The one-hour L_{EQ} noise level is used for the model's calculated noise output with the use of 10 percent of the ADT to represent peak-hour traffic. The one-hour L_{EQ} noise output is the equivalent to the CNEL (Caltrans 2009).

Exterior Traffic Noise Impacts

Exterior on-site noise levels were analyzed using the existing plus Project plus cumulative near-term) traffic volume forecasts from the TIA (LLG 2017).[1]

Near-term traffic scenarios provide the focus of analyses rather than long-term buildout scenarios (Year 2035) as traffic volumes are projected to be lower in the buildout scenarios due planned upgrades to the traffic network. These expected network changes would result in a greater dispersal of traffic than the near term. Therefore, the near-term conditions with higher traffic volumes (existing plus cumulative and existing plus Project plus cumulative) were modeled to provide a worst-case analysis.

On-site Receptors

Proposed Project modeling was conducted based on the information in Section 1.2 of this EIR.

The exterior noise levels were calculated for future on-site residences (receivers [R] R1 through R13) and three parks (R14, R15 and R16) nearest to Country Club Drive, as shown on Table 2.5-1, *Future Exterior On-site Noise Levels*. Although the parks are expected to be active recreational parks and therefore have a noise limit of 70 CNEL, they were conservatively assessed as passive recreational parks that would have a noise limit of 65 CNEL. Receiver locations can be seen in Figure 2.5-1, *Receiver and Required Sound Wall Locations*.

Modeling of the potentially affected outdoor use areas associated with the Proposed Project shows two single-family residential outdoor use areas (receivers R9 and R10) would be exposed to future exterior noise levels in excess of 60 CNEL with noise levels of 62 CNEL. This exceeds the County Noise Element most restrictive thresholds for single family residences which was

[1] Traffic volumes assumed 450 residential units. Per the TIA, 453 homes would only increase peak hour traffic by a few ADT. This would have a nominal effect on the analysis and would not change significance conclusions.

applied to this Project for multiple single-family residences within a single lot. Therefore, **impacts to on-site exterior use areas are assessed as potentially significant**. (**Impact N-1)**

Off-site Receptors

Similar to on-site conditions, additional traffic on area roadways would have the potential to affect off-site residences. The change in traffic roadway noise at any location is directly proportional to the change in traffic volume if the roadway alignments are unchanged and traffic speeds are constant. This allows a determination of the change in noise associated with the Project at any area from the traffic information.

Segments of Country Club Drive, Harmony Grove Road, and Harmony Grove Village Parkway were modeled for existing, existing plus Project, existing plus cumulative, and existing plus Project plus cumulative conditions (based upon data from the TIA), without consideration of topographic, vegetative, or structural shielding along the roadways. As shown in Table 2.5-2, *Existing and Project Traffic Noise Level Impacts*, noise levels 100 feet from the roadway centerline are projected to be between 57 and 61 CNEL with existing plus Project conditions as compared to the existing noise conditions modeled to be between 49 and 60 CNEL. One segment would increase noise levels above 60 CNEL, Harmony Grove Road to Citracado Parkway on Harmony Grove Village Parkway, with an increase from 60 CNEL to 61 CNEL. As the Project would not increase the noise level by more than 3 CNEL, however, **direct impacts to off-site receptors would be less than significant.**

Interior Traffic Noise Impacts

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. The County requires that interior noise levels not exceed 45 dB CNEL. Typically, with the windows closed, building shells provide approximately 15 dB CNEL of noise reduction. Therefore, rooms exposed to an exterior CNEL greater than 60 dB could result in an interior noise level greater than 45 dB CNEL.

On-site Receptors

As discussed above, the building façade noise levels represented by receivers R9 and R10 may exceed 60 CNEL (see Table 2.5-1). Given that traditional architectural materials are normally able to reduce exterior to interior noise by up to 15 dBA, interiors of the noted residences may exceed 45 CNEL. While noise levels on the ground floor of residences may sometimes be reduced via the installation of sound walls, where residential units have a second story, the upper story may also be exposed to noise in excess of 60 CNEL. Therefore, **interior noise impacts to on-site receptors are assessed as potentially significant**. **(Impact N-2)**

Off-Site Receptors

As discussed above, traditional architectural materials are normally able to reduce exterior to interior noise by up to 15 dBA. If the noise level at the exterior of a residence is above 60 CNEL, it may cause the interior noise level to be above the County standards of 45 CNEL. One roadway segment, Harmony Grove Road to Citracado Parkway on Harmony Grove Village Parkway, is modeled to be above 60 CNEL with the addition of Project traffic. However, the Project would

not increase the noise level by more than 3 CNEL; therefore, **interior direct impacts to off-site receptors would be less than significant.**

2.5.2.2 *Operational Noise Levels*

Guideline for the Determination of Significance

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

3. Generate non-construction noise that exceeds the standards listed in the San Diego County Code, Section 36.404, Sound Level Limits, at all property lines.

Guideline Source

The above guideline is based on the County's Guidelines for Determining Significance – Noise (2009b).

Analysis

Residential Air Conditioner Noise

Specific planning data for the Project's single-family and multi-family residential heating, ventilation, and air conditioning (HVAC) systems is not yet available; however, analysis using a typical larger-sized residential condenser mounted on ground level pads provides a worst-case modeling scenario to assess potential impacts. This unit typically generates a noise level of 56 dBA at a distance of 7 feet. Based on the site plan, the closest building to the property line would be the lot where receivers R9 and R10 are located, in the most westerly Project lots adjacent to Country Club Drive. At this lot, the pad is set back an approximate distance of 58 feet from the property line. Assuming that an HVAC system is 3 feet from the building, the minimum distance that the HVAC unit would be to the property line would be 55 feet. At this distance, the condenser would generate a noise level of 38 dBA, which does not exceed the County's nighttime allowable hourly limit of 45 dBA. Therefore, **noise impacts at on-site property lines from HVAC systems would be less than significant.**

Wastewater Treatment and Water Reclamation Facility

WTWRF equipment would have the potential to create noise in excess of allowable limits. The piece of WTWRF equipment that would generate the most noise would be the standby diesel generator. The generator would produce noise levels ranging from 90 to 105 dBA at 23 feet, and thus noise levels exceeding 45 dBA (the nighttime allowable limit) could be experienced at distances of up to 23,000 feet (without consideration for other factors that could reduce this noise level). Therefore, **noise impacts at on-site property lines from the WTWRF are conservatively assessed as potentially significant. (Impact N-3)**

Center House/Limited Commercial Uses

The greatest source of noise from the Project's potential limited retail/commercial uses (e.g., limited lodging facilities, coffee shop/cafe) would be the HVAC equipment, which would

be similar to the residential HVAC equipment described above. Modeling assumed that the Center House would be set back 10 feet from the property line and that the condenser would be similar to a typical larger-sized residential condenser. This unit typically generates a noise level of 56 dBA at a distance of 7 feet. Based on the site plan, the closest building footprint within the Community Center to the property line is approximately 90 feet. Assuming that an HVAC system is 3 feet from the building, the minimum distance that the HVAC unit would be to the property line would be 87 feet. At this distance, the condenser would generate a noise level of 34 dBA, which does not exceed the County's nighttime allowable hourly limit of 45 dBA. Therefore, **noise impacts at on-site property lines from the Project's commercial uses would be less than significant.**

Parks

The parks expected to be the greatest noise generators would be the basketball court and the dog park. The loudest noise from the basketball court would be the sound of the basketball striking the backboard. The closest future residence (the multi-family residences to the south of the court) to one of the two backboards would be 100 feet. At single event of a ball hitting the backboard (0.2 second duration), averaged over the duration of one hour, would be approximately 42.4 dBA L_{EQ} at 5 feet, 22.4 dBA L_{EQ} at 50 feet, and 16.4 dBA L_{EQ} at 100 feet. Given the distance to the nearest residences, this would allow up to a total of approximately 23 minutes per hour of backstop noise, or 7,000 backboard hits, prior to exceedance of the County's 55 dBA L_{EQ} limit for multi-family residences. A professional basketball game typically has 150 to 200 field goal shots per one hour of play (Teamrankings.com 2016). With a similar amount of shots, recreational use of the Project's basketball court would result in substantially fewer than 7,000 backboard hits, and **noise impacts from the basketball court would be less than significant.**

The loudest noise from the dog park would be from dogs barking. The center of the dog park would be approximately 50 feet from the nearest future residences (the single-family on-site residences to the east). A single event of a dog in barking (0.2 second duration), averaged over the duration of one hour, would be approximately 42.4 dBA L_{EQ} at 5 feet, 22.4 dBA L_{EQ} at 50 feet, and 16.4 dBA L_{EQ} at 100 feet. Given the distances to the nearest residences, this would allow up to a total of 110 seconds per hour of barking, or 550 barks, at the dog park to not exceed the County's 50 dBA L_{EQ} limit for single-family residences. A reasonable assumption for the dog park during a busy day would be 20 dogs in the park, each with 10 barking events per hour, for a total of 200 barking events per hour. Therefore, under these assumptions, **the number of barks per hour would not cause an exceedance of County thresholds and impacts would be less than significant.**

2.5.2.3 *Construction Noise Levels*

<u>Guideline for the Determination of Significance</u>

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

4. Generate construction noise that exceeds the standards listed in the San Diego County Code, Section 36.409, Sound Level Limitations on Construction Equipment.

Guideline Source

The above guideline is based on the County's Guidelines for Determining Significance – Noise (2009b).

Analysis

Construction noise represents a short-term impact on the ambient noise levels, which may disrupt nearby noise sensitive receptors. The magnitude of the impact by construction would vary greatly depending upon factors such as the type of construction activity, type and specific model of the equipment, the condition of the equipment duration of each construction phase, distance between the noise source and receiver, and any intervening structures.

Construction would require heavy equipment during mass grading and off-site construction, such as utility installations, roadway widening, and bridge construction. For mass grading activities and roadway construction, the Project would require material excavation and/or fill, and portions of the site may experience difficult ripping. Potential equipment for these activities includes dozers, excavators, breakers, and a rock crusher. Blasting would likely be performed to assist with grading given the underlying geology of portions of the site. The necessity and extent of blasting would not be known until surface clearing is completed. Utility installations would require the digging of trenches using an excavator. For bridge construction, the Project may require pile driving or cast-in-drilled holes.

Project construction noise was analyzed using the Roadway Construction Noise Model (RCNM; U.S. Department of Transportation [DOT] 2008), which utilizes estimates of sound levels from standard construction equipment.

Construction noise could potentially affect biological resources such as sensitive habitat for nesting birds. Analysis and mitigation for these impacts are discussed in Subchapter 2.3 of this EIR.

On-site Effects

Mass grading and bridge construction, along with all of the loudest construction processes (specifically, the use of a dozer, excavator, rock crusher or blasting), would occur prior to the development of proposed on-site residences. The later phases of construction (building construction, parking lot paving, and architectural coatings) may occur simultaneously with a portion of the HGV South residences occupied in another area of the site. The final construction phase operations would occur at a minimum distance of 50 feet from future occupied HGV South residences. The loudest type of construction equipment used for building construction, paving, and architectural coatings would be a crane, paver, and air compressor, respectively. A crane, paver, and air compressor would generate noise levels of 72.6 dBA L_{EQ}, 73.7 dBA L_{EQ}, and 74.2 dBA L_{EQ} at 50 feet, respectively; these noise levels would be below the County's 75 dBA 8-hour average limit. Based on the types of construction activities that could occur once on-site residences are occupied, **impacts to on-site NSLUs would be less than significant.**

Off-site Effects

A dozer and an excavator may be working on site at the same time, but would not be working in close proximity to one another at a given time due to the nature of the respective operations. Therefore, a dozer and an excavator were analyzed for construction noise impacts in isolation.

It was assumed that a dozer and an excavator working on proposed grading areas would be in operation for 40 percent of a typical construction day at a distance of 100 feet from the nearest residences. The nearest residences to the proposed grading areas are adjacent to the western portion of the Project site. Over the course of a day, a dozer or excavator may be closer or farther than 100 feet from the nearest residence; however, a reasonable average is 100 feet.

Based on these assumptions, the highest impact level for a dozer and excavator at the adjacent property boundary is 71.7 dBA L_{EQ} and 70.7 dBA L_{EQ}, respectively. These levels do not exceed the County's 8-hour noise level limits of 75 dBA L_{EQ}. Therefore, **impacts from the operation of a dozer and excavator are considered less than significant.**

A hydraulically operated impact hammer attached to a tracked excavator is commonly called a breaker, and is used to reduce large boulders to a more manageable size. If blasting is to occur, leftover boulders may be large enough for a breaker to be used at the project site. Breakers create an impulsive noise that is regulated by the 75 dBA 8-hour average requirement, and the maximum impulsive noise level requirement of 82 dBA L_{MAX}. A breaker generates a one-hour L_{EQ} of 80 dBA at a distance of 50 feet. Assuming a noise attenuation rate of 6 dBA per doubling of distance, noise levels from the breaker would reduce to 75 dBA L_{EQ} at a distance of 90 feet. If a breaker is operated within 125 feet, the maximum noise level would be above the County's impulsive noise threshold of 82 dBA L_{MAX}. Therefore, **impulsive noise impacts from the operation of a breaker would be potentially significant. (Impact N-4)**

To minimize materials exportation and importation, a rock crusher, consisting of an impact crusher and a jaw crusher, may be utilized. This crushing would reduce the material to a size and type that would be appropriate for use in foundation and other land use development at the Project site. It was assumed that the impact crusher and jaw crusher, as well as a top load feeder to deposit the material into the crusher, would be in operation for 100 percent of the day when the crusher is needed. The combined noise levels from this equipment would be 89 dBA L_{EQ} at a distance of 50 feet, and the noise level would attenuate to 75 dBA at a distance of 250 feet. Therefore, if a rock crusher is used within 250 feet to the nearest residence, the noise level would exceed the County's 8-hour noise level limits of 75 dBA L_{EQ}, and **impacts from a rock crusher would be potentially significant. (Impact N-5)**

With regard to blasting, a full blasting analysis cannot be done until after the site is cleared of all surface material (including any rippable material) to expose the specific type of material to be blasted, the extent of the area of blasting, and until the required blasting charge type is known. Blasting is probable, however, in the northeastern and western portions of the site due to the underlying granitic rocks (Geocon Incorporated [Geocon] 2015a). There are residences adjacent to the Project site in both of these areas; a conservative estimate of their distances from potential blasting areas is 200 feet. This evaluation is based on a reasonable minimum blast size and its closest allowable off-site residential distance based on available standards. As the blast charge

size is increased, so is the allowable distance to prevent residential structural damage. As described under Section 1.2.2, the Project's blasting assumptions allow for up to three blasting operations per week and a blasting management plan that would be implemented to comply with all applicable local, State, and federal rules and regulations.

Blasting has three separate types of potential impacts: flyrock, vibration, and airblast. Flyrock consists of debris (smaller and potentially larger chunks of rock) ejected from the blast. Outside the immediate area of the blast itself, flyrock is potentially the most dangerous portion of blasting. In terms of vibration, both air and ground vibrations create waves that disturb the material in which they travel. When these waves encounter a structure, they cause it to shake and may cause structural damage. Ground vibrations enter the house through the foundation. An airblast is a pressure wave that creates a push (positive pressure) and pull (negative pressure) effect; it may be audible (noise) or inaudible (concussion). A blast occurring outside of a residence may be heard inside because of the audible noise; however, noise has little impact on the structure. The concussion wave causes the structure to shake and rattle, and can break windows at higher pressure levels.

Flyrock would not be allowed at the site, beyond the direct area of the blast, under any circumstances. Proper blast planning is required by both the Code of Federal Regulations (30 CFR 816.61-816.68) and County Consolidated Fire Code (SEC 96.1.5601.2). Proper blast planning would therefore be implemented, and no further analysis is provided with regard to flyrock. Similarly, an analysis of airblast is not provided in this report because airblast is regulated by the limits from the Code of Federal Regulations, which are provided in Appendix G to this EIR. The Project would be required to conform to these standards.

The minimum distance from any blast for this site should be 200 feet for the control of ground borne vibration impacts to the closest residences. The basic planning for blasting charge weight limits at distances greater than 200 feet from an off-site structure does not provide final project-specific analysis for allowable blasting charges, nor is it intended to limit the blasting company to this as a minimum distance or maximum or minimum charge weights. This planning analysis is provided as general guidance and is not intended to provide final blasting planning for any specific blast.

Because Project-specific details regarding blasting operations are not available at this time, **impacts to off-site residences and other land uses are conservatively assessed as significant. (Impact N-6)**

The Elfin Forest and Harmony Grove Community Plan requires community-specific procedures for blasting due to the frequent horseback riding in the area. The loud blast noise and pressure wave from blasting can frighten horses, causing riders to fall. Many residences in the vicinity have stables or similar facilities for horses. In addition, many visitors use the area for horseback riding, including the Del Dios Highlands trail that passes within 0.5 mile of the Project site. The construction best management practices for blasting described in Table 1-2 of this EIR would be implemented to minimize impacts to horses and horseback riders. As mentioned previously, the Project off-site improvements are conservatively assumed to include construction of a new bridge over Escondido Creek, implementation of a third lane within Country Club Drive from

Harmony Grove Road to the southern Project entrance, and installation of utilities within Country Club Drive and Harmony Grove Road.

Pile driving may be used to construct the bridge. The nearest currently occupied residence to where bridge construction would take place is approximately 1,200 feet to the southwest. The nearest potential residence (part of the HGV project) would be approximately 500 feet to the north of where the bridge construction will take place. The Harmony Grove Village project residences are currently under construction and may be in use by the start of bridge construction.

Noise from pile driving may be audible at the Harmony Grove Equestrian Park and Harmony Grove Community Park (currently being developed), although the County construction noise limits apply to occupied residential property only, and the Project includes construction best management practices to avoid potential adverse effects to park users as described in Table 1-2.

Assuming a standard assumption of operation for 20 percent of a typical construction day, a pile driver has a 74.3 dBA L_{EQ} at 500 feet and a 66.7 dBA L_{EQ} at 1,200 feet. The 75 dBA L_{EQ} noise contour would be at approximately 460 feet. Therefore, **impacts from pile driving to off-site residences would be less than significant.** The reader is referred to Section 2.3 of this EIR for information on potential noise impacts to sensitive birds.

An alternative to a pile driver to construct the bridge would be to use cast-in-drilled-holes. This would involve using a track-mounted drill to bore the hole and then a cement truck and pumper to plug the hole with concrete. Construction of the bridge using cast-in-drilled holes has a 56.7 dBA L_{EQ} at 500 feet and 49.1 dBA L_{EQ} at 1,200 feet, the nearest potentially occupied residences to the bridge as identified in the previous paragraph. Therefore, **impacts to nearby residences from cast-in-drilled holes would be less than significant.**

For roadway widening, it is likely that a dozer would first be used to break up the current roadway, and then subsequent work would be performed with material export and import through dump trucks, road graders, water trucks, and if drainage systems are to be installed, excavators. It is possible that a dump truck and loader or a dump truck and excavator would be in operation at the same time; otherwise, each piece of equipment is expected to be operated in isolation. As a conservative measure, a dozer, the loudest piece of equipment to be used, and a dump truck were modeled to be working simultaneously. At 80 feet, a dozer and a loader would create a noise level of 75 dBA L_{EQ}. The nearest residence is a minimum of 200 feet from where the widening would occur. Therefore, **noise levels from the dozer at the residence would be lower than the County limit and impacts would be less than significant.**

Utility installations could include normal trenching activities to install an 8-inch sewer line, 12- and 8-inch water lines, 8-inch recycled water lines, and/or a 5-foot sewer corridor at an assumed depth not to exceed 6 feet. This would involve the use of a small- to medium-sized excavator and medium-sized loader. The closest utility line to a NSLU would be the 8-inch recycled water line that would involve trenching within 50 feet of single-family homes alongside Country Club Drive to the west of the Project. Assuming normal excavation duration, the excavator or backhoe and loader would not be expected to be in front of any single home for more than two hours. At a worst-case potential distance of 25 feet from the nearest property line distance for two hours of an eight-hour day, the average noise level would be expected to be

73.6 dBA L_{EQ}. Thus, **noise levels from off-site utility installations would be lower than the County limit, and impacts would be less than significant.**

2.5.2.4 *Ground-borne Vibration/Noise*

Guidelines for the Determination of Significance

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

5. Subject residences to:

    a. Ongoing ground-borne vibration levels of 0.0040 inches per second root mean square from frequent events, or 0.010 inches per second (in/sec) root mean square (rms) for occasional or infrequent events; and/or

    b. Ongoing ground-borne noise levels of 35 dB re micro Pascals for frequent events or 43 dB re micro Pascals for occasional or infrequent events.

6. Subject residences to vibration from isolated events (e.g., blasting) with peak particle velocity exceeding one inch per second.

Guidelines Source

The above guidelines are based on the County's Guidelines for Determining Significance – Noise (2009b).

Analysis

Construction vibration for the Proposed Project may be caused by pile driving, a vibratory roller, or blasting (discussed above). Pile driving could be required for the bridge footings as part of the Escondido Creek bridge construction; a vibratory roller may be used to achieve soil compaction as part of the foundation construction (and possibly for on-site driveways at a later time).

The County provides for the use of the Caltrans standards (2004) for construction vibration impacts of 0.4 in/sec peak particle velocity (PPV) (a "severe" impact) in the footnotes of Table 4 (Guideline for Determining the Significance of Ground-borne Vibration and Noise Impacts) of the County of San Diego Guidelines for the Determination of Significance, Noise.

A vibratory roller is expected to be used within 50 feet of the nearest occupied residence. It would create approximately 0.210 in/sec PPV at a distance of 25 feet. Using the Caltrans criterion of 0.4 in/sec PPV, the approximately 0.210 in/sec PPV vibration impact would be less than what is considered a "severe" impact. Therefore, although vibration may be perceptible by nearby residences, **temporary impacts associated with the vibratory roller would be less than significant.**

An off-site source of vibration may be pile driving from the off-site bridge construction. As discussed above, the nearest residence would be approximately 500 feet to the north from the bridge construction. At this distance, a pile driver would create approximately 0.0382 in/sec PPV

(see Appendix G for detailed calculations), which is below the Caltrans criterion of 0.4 in/sec PPV. Therefore, **vibration impacts to occupied residences from pile driving would be less than significant.**

2.5.3 Cumulative Impact Analysis

2.5.3.1 *Cumulative Off-site Traffic Noise Impacts*

Cumulative on-site traffic noise levels were already taken into account to assess on-site receptors as part of Section 2.5.2.1. Therefore, the following analysis focuses on potential cumulative off-site impacts.

Guideline for the Determination of Significance

A significant cumulative impact would occur if the Project would:

7. Considerably contribute to a cumulative scenario that would result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLU, to: (1) an increase of 10 dB (CNEL) over pre-existing noise levels of less than 50 dB CNEL resulting in a combined exterior noise level of 60 dB CNEL or greater; (2) an increase of 3 dB CNEL in existing plus project plus cumulative conditions if that total is above 60 dB CNEL; or (3) interior noise in excess of 45 dB CNEL. A "cumulatively considerable" project contribution to an identified significant cumulative noise impact would occur if the project would contribute more than a one dB increase.

Guideline Source

This guideline is based on the County's Report Format and Content Requirements – Noise (2009b).

Analysis

Exterior

The cumulative noise study area includes other projects affecting the same roads impacted by the Proposed Project. Cumulative traffic impacts to exterior off-site noise levels were analyzed based on existing, existing plus cumulative, and existing plus Project plus cumulative conditions. Note that, as described previously, Year 2035 traffic volumes are lower than near-term traffic volumes due to traffic network changes. For this reason, the near-term conditions were modeled to provide a worst-case analysis.

As shown on Table 2.5-3, *Cumulative Traffic Noise Level Impacts*, one segment is identified as having a significant cumulative exterior noise impact. Country Club Drive, from Auto Park Way to Hill Valley Drive, would result in an increase of three CNEL compared to existing conditions. The Project, however, would not contribute more than one dBA to the cumulative increase in traffic noise along this segment of Country Club Drive. Therefore, **the Project's contribution to cumulative traffic exterior noise impacts would not be cumulatively considerable and are identified as less than significant.**

Interior

A significant cumulative interior impact would occur if the Project's noise increase yields interior noise levels in excess of 45 CNEL while also causing an increase at least 3 CNEL over existing conditions. One segment is identified as having a significant cumulative interior impact according to this standard. Country Club Drive, from Auto Park Way to Hill Valley Drive, would result in an increase of three CNEL compared to existing conditions. The Project, however, would not contribute more than 1 dBA to the cumulative noise increase. Therefore, **the Project's contribution to cumulative traffic-related interior noise impacts would not be cumulatively considerable and are identified as less than significant.**

2.5.3.2 *Cumulative Stationary Noise Source Impacts*

Guideline for the Determination of Significance

A significant cumulative impact would occur if the Project would:

8. Generate non-construction noise that exceeds the standards listed in the San Diego County Code, Section 36.404, Sound Level Limits, at all property lines.

Guideline Source

This guideline is based on the County's Report Format and Content Requirements – Noise (2009b).

Analysis

No known planned future projects are within a sufficient distance to affect the future residences at the Proposed Project site. A residence is currently under construction that abuts the eastern portion of the Project site; however, it is likely this residence would be occupied before the first Project residences are occupied, and therefore its construction noise would not affect on-site NSLUs. Further, operational noise impacts are typically assessed on a case-by-case basis and all future development would be subject to the limits within the County noise ordinance. As a result, **cumulative impacts associated with stationary noise sources are identified as less than significant.**

2.5.3.3 *Cumulative Construction Noise and Vibration Impacts*

Guideline for the Determination of Significance

A significant cumulative impact would occur if the Project would:

9. Generate non-construction noise that exceeds the standards listed in the San Diego County Code, Section 36.404, Sound Level Limits, at all property lines.

Guideline Source

This guideline is based on the County's Report Format and Content Requirements – Noise (2009b).

Analysis

While there may be construction projects in the general vicinity of the Proposed Project (e.g., HGV), it is likely that construction on these projects would be completed before the Proposed Project is under construction, and no other potential projects in the immediate vicinity are known. Therefore, it is unlikely that other projects would contribute additional construction noise and vibration to potentially affected residential properties located adjacent to the Proposed Project.

2.5.4 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 most restrictive 60 CNEL maximum allowable noise level for two single-family residences that are located in the westernmost portion of the Project site that face Country Club Drive.

Impact N-2 The second stories of the two residential units identified for Impact N-1 may be exposed to noise in excess of 60 CNEL; given a typical exterior to interior attenuation of 15 CNEL, the interior noise levels of these residents may be exposed to noise levels that exceed the 45 CNEL threshold.

Impact N-3 WTWRF equipment would have the potential to create noise in excess of allowable limits. The piece of WTWRF equipment that would generate the most noise would be the standby diesel generator. The generator would produce noise levels ranging from 90 to 105 dBA at 23 feet, and thus noise levels of 45 dBA (the night-time allowable limit) could be experienced at distances of up to 23,000 feet.

Impact N-4 If a breaker operates within 125 feet of the nearest NSLU, the noise level would exceed the County's impulsive noise limit of 82 dBA L_{MAX}.

Impact N-5 If a rock crusher operates within 250 feet of the nearest NSLU, the noise level would exceed the County's 8-hour noise level limits of 75 dBA L_{EQ}.

Impact N-6 Because Project-specific details regarding blasting operations are not available at this time, impacts to off-site residences are conservatively assessed as significant.

2.5.5 Mitigation

On-site Exterior Noise

M-N-1 On-Site Noise Barriers: Noise levels at exterior use areas for the proposed residences identified as R9 and R10 on Figure 2.5-1 shall be reduced to the most restrictive County Noise Element threshold of 60 CNEL or below. Noise reduction for on-site exterior traffic noise impacts, which could lead to interior noise impacts, could be accomplished through on-site noise barriers. One 5-foot-high sound wall along the northern perimeter of the affected lot would be installed, with approximately 20-foot long return walls along the western perimeter of the western residence (R9) and the eastern perimeter of the eastern residence (R10).

The sound attenuation fence or wall must be solid. It can be constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least 1-inch total thickness or have a density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic ⅜ of an inch thick or thicker may be used on the upper portion, if it is desirable to preserve a view. 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 1-inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated doorjambs.

On-site Interior Noise

M-N-2 Exterior-to-Interior Noise Analysis: In accordance with standard County requirements, additional exterior-to-interior noise analysis shall be conducted for the residential units identified as R9 and R10 (where exterior noise levels may exceed 60 CNEL within the second stories) to demonstrate that interior levels do not exceed 45 CNEL. The information in the analysis shall include wall heights and lengths, room volumes, window and door tables typical for a building plan, as well as information on any other openings in the building shell. With this specific building plan information, the analysis shall determine the predicted interior noise levels at the planned on-site buildings. If predicted noise levels are found to be in excess of 45 CNEL, the report shall identify architectural materials or techniques that could be included to reduce noise levels to 45 CNEL in habitable rooms. Standard measures such as glazing with Sound Transmission Class (STC) ratings from 22 to 60, as well as walls with appropriate STC ratings (34 to 60), should be considered.

Appropriate means of air circulation and provision of fresh air would be provided to allow windows to remain closed for extended intervals of time so that acceptable interior noise levels can be maintained. The mechanical ventilation system would

meet the criteria of the International Building Code (Chapter 12, Section 1203.3 of the 2001 California Building Code).

On-site Operational Noise

M-N-3 WTWRF Final Design Noise Shielding: The WTWRF shall be enclosed by a solid 6-foot high wall. Final design for the WTWRF and the noise wall shall demonstrate that exterior noise levels generated from all stationary WTWRF equipment combined shall not exceed the one-hour exterior noise level of 45 dBA L_{EQ} at the property line.

The Applicant shall be required to provide a final noise impact analysis as part of the facilities design submittal package for the WTWRF and noise wall prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the County 45 dBA L_{EQ} property line nighttime limit completed to the satisfaction of the County PDS.

Construction Noise

M-N-4 Breaker Equipment Operation Limit: If a breaker is required as part of Project construction, then it shall not generate maximum noise levels that exceed 82 dBA L_{MAX} when measured at the property line for 25 percent of a one-hour period, or be used within 125 feet of the property line for any occupied residence. Material that would require a breaker shall be moved a minimum distance of 125 feet from the nearest residence.

M-N-5 Rock Crusher Operation Limit: If a rock crusher is required as part of Project construction, then it shall not be used within 250 feet of the property line for any occupied residence until a temporary noise barrier or berm is constructed at the edge of the development footprint or around the piece of equipment to reduce noise levels below 75 dBA L_{EQ} at the property line for the occupied residences. If a barrier or berm is used, decibel output will be confirmed by a County-approved noise specialist. Otherwise, a rock crusher shall be moved a minimum distance of 250 feet from the nearest residence before use.

M-N-6 Blasting Measures: The following measures would be implemented to reduce impacts from blasting:

- The number of blasts would be limited to three blasting events per week.
- The Project would also include a blasting management plan due to the blasting that is likely to occur on site. All blast planning must be done by a San Diego County Sheriff approved blaster, with the appropriate San Diego County Sheriff blasting permits, in compliance with the County Consolidated Fire Code Section 96.1.5601.2 (County 2014a), and all other applicable local, state, and federal permits, licenses, and bonding. The blasting contractor or owner must conduct all notifications, inspections, monitoring, and major or minor blasting requirements planning with seismograph reports, as necessary.

- If boulders must be reduced in size with blasting within 200 feet of the closest residence, the use of chemical expansion via a chemical cracking agent shall be performed instead.

2.5.6 Conclusion

The Proposed Project would have limited on-site noise impacts from traffic that are potentially significant. Specifically, noise levels for two single-family residences (receivers R9 and R10; see Figure 2.5-1) may exceed 60 CNEL (Impact N-1), and would require exterior use area noise control. Implementation of M-N-1 would include a 5-foot-high sound wall that would reduce noise levels at the units to below 60 CNEL and therefore to below a level of significance. This mitigation would reduce impacts to less than significant levels because the noise modeling results indicate the noise attenuation provided by the walls would be adequate to comply with exterior noise standards of the Noise Element. As shown on Table 2.5-4, the 62 CNEL noise levels identified for these receptors would drop to 55 and 56 CNEL, respectively, well within the 60 CNEL threshold.

Since the two on-site residences noted above would experience exterior noise in excess of 60 CNEL, it is possible that interior noise would exceed the 45 CNEL threshold (Impact N-2). Implementation of M-N-2 includes an exterior-to-interior analysis that shall be conducted for the two residential units noted above (including wall heights and lengths, room volumes, window and door tables typical for a building plan, as well as information on any other openings in the building shell). With this specific building plan information, the analysis shall determine the predicted interior noise levels at the planned on-site buildings. If predicted noise levels are found to be in excess of 45 CNEL, the report shall identify architectural materials or techniques to reduce noise levels to 45 CNEL in habitable rooms, and be implemented through the final building plans. With implementation of this mitigation measure, interior noise levels would be assured to be no greater than 45 CNEL and impacts to on-site interior noise would be less than significant. This mitigation measure would reduce impacts to less than significant because architectural measures have been demonstrated to be effective and feasible through modeling and the noise levels would be reduced to below the Noise Element standard of 45 CNEL.

The preliminary plans for the WTWRF include an equipment building and noise wall that would likely reduce noise levels to allowable limits; however, the design has not yet been finalized to demonstrate compliance with the County noise ordinance (Impact N-3). M-N-3 would ensure a final design for the WTWRF that would achieve sufficient noise attenuation to below County limits; therefore, impacts would be less than significant. In order to ensure compliance of the WTWRF with applicable noise regulations, a final noise impact analysis is required as part of the facilities design submittal package for the WTWRF. The final noise impact analysis prepared by a County-approved noise consultant shall demonstrate compliance with the County 45 dBA L_{EQ} property line nighttime limit. The report shall be completed to the satisfaction of the County PDS. This mitigation would reduce impacts to less than significant because the conditions of approval of the MUP would ensure that the standard would be attained through appropriate equipment/ structural noise barriers and proper installation as provided in final design as reflected in the report.

Noise levels associated with a breaker and a rock crusher (Impacts N-4 and N-5) could potentially result in significant impacts to off-site residences. With implementation of M-N-4, breaker noise levels would not exceed the County's impulsive noise level limit as the breaker would not be operated within 125 feet of the nearest Slowed implementation of M-N-5, rock crusher noise levels would not exceed the County's 8-hour noise level limit as the breaker would not be operated within 250 feet of the nearest NSLU. Through these mitigation measures, impacts from construction noise levels would be less than significant. On site monitors will ensure compliance.

Blasting may occur during Project construction (Impact N-6). Implementation of M-N-6 would provide proper measures, such as implementation of a blasting management plan and limiting the number of blasting events, so that impacts from blasting would be less than significant.

For all of the above measures, ~~I~~implementation of the proposed mitigation measures would ensure compliance with the County Noise Element standards and Noise Ordinance property line limits and reduce noise to less than significant levels.

Table 2.5-1
FUTURE EXTERIOR ON-SITE NOISE LEVELS

Receiver Name	Land Use	Noise Levels with No Wall (CNEL)
R1	Single-family residential	60
R2	Single-family residential	60
R3	Single-family residential	60
R4	Single-family residential	59
R5	Single-family residential	57
R6	Single-family residential	56
R7	Single-family residential	55
R8	Single-family residential	55
R9	**Single-family residential**	**62**
R10	**Single-family residential**	**62**
R11	Single-family residential	60
R12	Multi-family residential	59
R13	Multi-family residential	58
R14	Passive park	64
R15	Passive park	61
R16	Passive park	60

Note: Noise levels in table are for the existing plus Project plus cumulative (near term) condition; receivers that exceed applicable noise limits (60 CNEL for single-family residential, 65 CNEL for multi-family residential, or 65 CNEL for passive recreational parks) are bolded; all numbers have been rounded down to the nearest whole number per County standard practice.

Table 2.5-2
EXISTING AND PROJECT TRAFFIC NOISE LEVEL IMPACTS

Roadway Segment	CNEL @ 100 feet			
	Existing	Existing + Project	Change from Existing	Direct Impact[1]
Country Club Drive				
Auto Park Way to Hill Valley Drive	59	60	1	No
Hill Valley Drive to Kauana Loa Drive	59	60	1	No
Kauana Loa Drive to Harmony Grove Village Parkway	56	58	2	No
Harmony Grove Village Parkway to Harmony Grove Road	55	57	2	No
Harmony Grove Road to Cordrey Drive	49	58	9	No
Harmony Grove Road				
Wilgen Drive to Country Club Drive	59	59	0	No
Country Club Drive to Harmony Grove Village Parkway	59	60	1	No
Harmony Grove Village Parkway to Kauana Loa Drive	58	59	1	No
Kauana Loa Drive to Enterprise Street	59	59	0	No
Harmony Grove Village Parkway				
Harmony Grove Road to Citracado Parkway	60	61	1	No

[1] If existing conditions approach or exceed County standards, a direct impact to off-site uses would occur if the project more than doubles (increases by more than 3 CNEL) the existing noise level.

Table 2.5-3
CUMULATIVE TRAFFIC NOISE LEVEL IMPACTS

Roadway Segment	E	E + C	E + P + C				
	CNEL @ 100 ft.	CNEL @ 100 ft.	CNEL @ 100 ft.	Change from Existing[1]	Cumulative Impact[2]	Change from E + C[1]	Cumulatively Considerable Contribution[3]
Country Club Drive							
Auto Park Way to Hill Valley Drive	59	61	62	3	**Yes**	1	No
Hill Valley Drive to Kauana Loa Drive	59	60	61	2	No	1	No
Kauana Load Drive to Harmony Grove Village Pkwy	56	59	60	4	No	1	No
Harmony Grove Village Pkwy to Harmony Grove Road	55	57	58	3	No	1	No
Harmony Grove Road to Cordrey Drive	49	49	58	9	No	9	No
Harmony Grove Road							
Wilgen Drive to Country Club Drive	59	61	61	2	No	0	No
Country Club Drive to Harmony Grove Village Pkwy	59	60	61	2	No	1	No
Harmony Grove Village Pkwy to Kauana Loa Drive	58	60	60	2	No	0	No
Kauana Loa Drive to Enterprise Street	59	61	61	2	No	0	No
Harmony Grove Village Parkway							
Harmony Grove Road to Citracado Pkwy	60	62	62	2	No	0	No

Note: Surrounding street segments that do not have residences/NSLUs adjacent to them were not included in this analysis, as impacts to NSLUs would not occur;
E = Existing; E + C = Existing + Cumulative (near term); E + P + C = Existing + Project + Cumulative (near term)

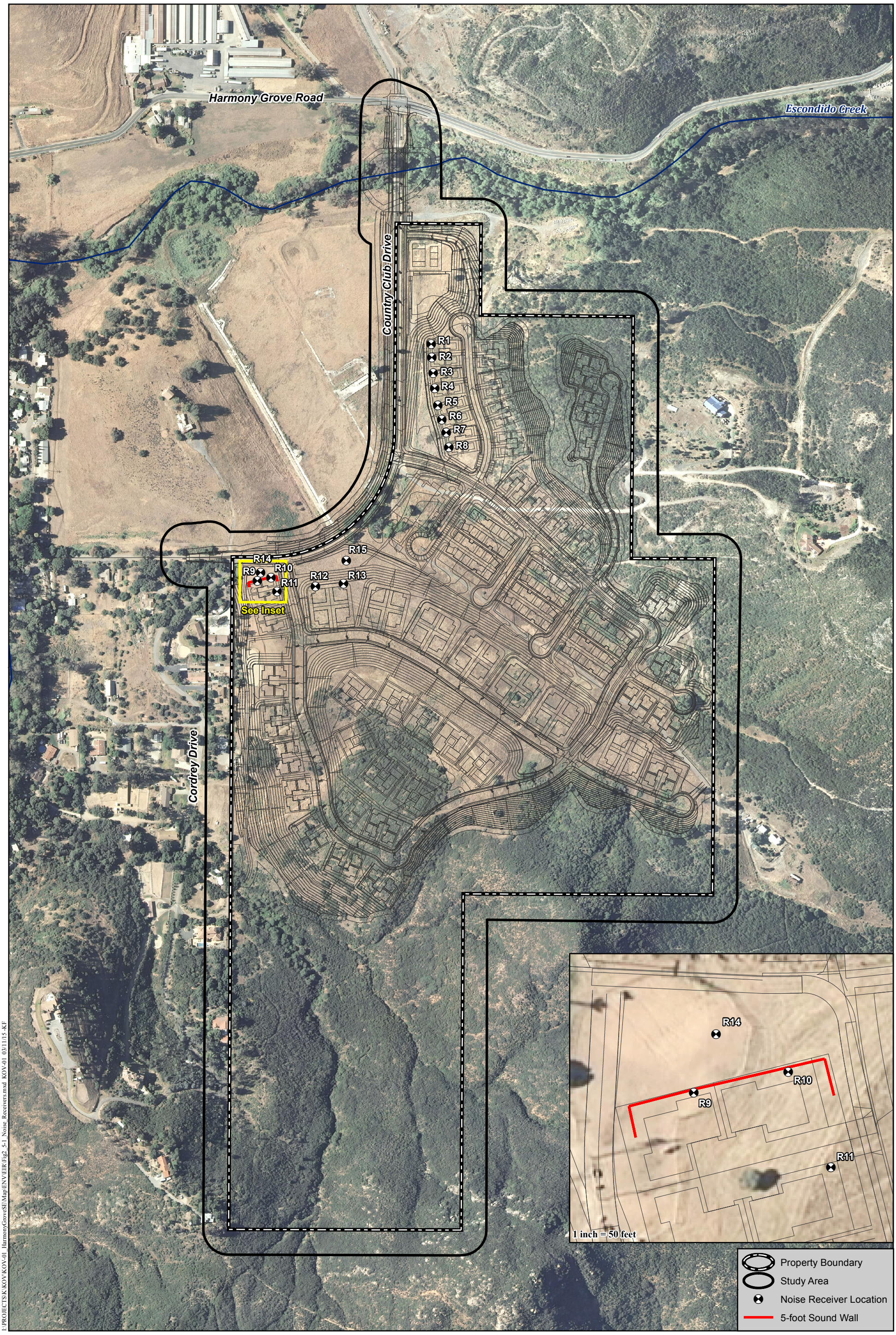
[1] Results have been rounded down to nearest whole number per County standard practice.

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

[3] A cumulatively considerable contribution to the cumulative impact would occur if the Project adds *more than* 1 dBA to the cumulative noise increase.

Table 2.5-4 FUTURE EXTERIOR ON-SITE NOISE LEVELS WITH SOUND BARRIER		
Receiver Name	**Noise Levels with No Wall (CNEL)**	**Noise Levels with Wall (CNEL)**
R9	**62**	**55**
R10	**62**	**56**

THIS PAGE INTENTIONALLY LEFT BLANK



I:\PROJECTS\K\KOV\KOV-01_HarmonyGroveSE\Map\ENV\EIR\Fig2_5-1_Noise_Receivers.mxd KOV-01 03/11/15 -KF

Receiver and Required Sound Wall Locations

HARMONY GROVE VILLAGE SOUTH

HELIX Environmental Planning

0 350 Feet

Figure 2.5-1