

## **Steele Peak Inaugural Trail**

### **Initial Study - Mitigated Negative Declaration (IS-MND)**

#### **Appendix D – Noise Technical Memorandum**



## MEMORANDUM

**To:** Riana Fisher, Riverside County Habitat Conservation Authority (RCHCA).  
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Seve Villalobos, Ruth Villalobos & Associates, Inc.  
**Date:** October 5, 2021  
**Subject:** Steele Peak Inaugural Trail Project – Noise Technical Memorandum

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### PURPOSE

The purpose of this technical memorandum is to evaluate potential short- and long-term term noise and groundborne vibration impacts as a result of the proposed Steele Peak Inaugural Trail Project (Project), located in the County of Riverside (County), California.

### PROJECT LOCATION

The Project site is in the unincorporated area of western Riverside County and just west of the City of Perris, but within the City of Perris Sphere of Influence. The site is regionally accessible from Interstate 215 to the east, Interstate 15 to the west, and Highway 74 to the south. It specifically lies approximately 0.10 mile northwest of the intersection of Forrest Road and San Jacinto Ave. The site is owned by the Riverside County Habitat Conservation Agency (RCHCA).

### EXISTING SITE CONDITIONS

RCHCA's original purpose was to develop, plan and execute the Stephen's Kangaroo Rat Habitat Conservation Plan (SKR HCP). The SKR HCP called for conserving 15,000 acres of occupied Stephen's Kangaroo Rat (SKR) habitat (Reserve). In order to acquire the requisite acreage, RCHCA assembled a 40,000-acre reserve system in western Riverside County comprised of local, State, and Federal land contributions. Once the reserve system was assembled, RCHCA established endowments for many of the larger reserves. The primary function of the trail is to facilitate a careful balance between ecosystem health and recreational access. The proposed Project site has been historically closed to the public and has been fenced and gated to prevent unauthorized access. As a result of this closure, an assortment of gates and fencing surround the property. Fencing has been illegally removed in many locations, where unauthorized access to the site has been gained. The proposed Project site and surrounding area has retained numerous, sporadic trails that are evident in aerial images as early as 1994, which was prior to RCHCA's creation. The presence of these numerous trails today suggests continued public use of the Reserve, where illegal public use of the Reserve has increased over the previous years. RCHCA continues to face frequent difficulties from illegal use of the Reserve, such as trash dumping, trail use and off-highway vehicle (OHV) use. These problems have resulted in areas of the Reserve not able to successfully provide habitat for SKR, which is the purpose of the Reserve.

Adjacent properties include low-density single-family homes abutting the proposed Project property, with horses on several larger properties, located along a portion of the proposed Project's northeast and southeast boundary. The site

consists of scenic rolling hills covered in a mix of native and invasive vegetation.

## **PROJECT DESCRIPTION**

The RCHCA has devoted a great deal of effort on a comprehensive solution to the difficulties facing the Reserve that responds to the needs of the community while maintaining relatively undisturbed conditions of the proposed Project area. RCHCA proposes to create a 1.2-mile sustainable trail loop with associated fencing and signage for the public to enjoy while preserving and restoring disturbed areas outside the proposed trail. The primary function of the trail is to facilitate a careful balance between ecosystem health and recreational access. The proposed Project would provide the first public access to natural open space with recreational opportunities within 7 miles for the community of Good Hope, a disadvantaged community. Good Hope is a census-designated place comprising 11.2 square miles west of the City of Perris in unincorporated Riverside County, with a population of 9,192 in 2010 (U.S Census). RCHCA is excited to propose the first recreational park opportunity where there are zero park acres and zero parks per thousand people in the area by using a small portion of the Reserve land. The proposed Project The proposed Project would be located on the eastern area of the Reserve and would be Americans with Disabilities Act (ADA) accessible. The eastern area of the Reserve provides the flattest area of the site and would be most accessible for a range of trail users.

Construction of the proposed Project is expected to last approximately two months. Equipment that is expected to be used consists of motorized hand augers, hammering for fence posts (not pile driving), power drills and saws, skid-steer/bobcat, plate compactor, and flatbed trucks. It is anticipated that motorized augers and hammering would be used for approximately two weeks for installation of the fencing posts. The skid-steer/bobcat would be used periodically for the two months of construction as-needed. Flatbed trucks would only be on site four times over the construction period for material deliveries. Hand tools such as saws and drills would be used throughout construction.

The proposed trail would be open from sunrise to sunset. Operations of the Reserve area that is not part of the proposed trail would continue to follow existing operations. Maintenance of the proposed trails would occur on an as-needed basis and would most likely include activities such as: repair of broken fencing, trash pickup, response to vandalism, and signage repair. Maintenance of the trail and associated amenities would fall within the overall RCHCA general funds.

Day-to-day operations would be handled by a full-time patrol that would be present during the hours of operation. The patrol would help to encourage appropriate use of the site and discourage vandalism and off-roading. The gate to the parking area would be locked outside of hours of operation. Funding of the patrol would be through a non-wasting endowment that would be established prior to the development of the trail. The east-west connection between the proposed parking area and the proposed trails follows a row of Southern California Edison (SCE) utility poles. It is anticipated that trail access may be limited or closed due to maintenance activities for the SCE utility poles. These maintenance activities are anticipated to be infrequent and less than once per year.

## **FUNDAMENTALS OF SOUND AND ENVIRONMENTAL NOISE**

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner like the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is perceived to be twice as loud and 20 dBA higher is perceived to be four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound

intensity. Noise can be generated by several sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3 dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 dBA and about 7.5 dBA per doubling of distance.

There are several metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (Leq), represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. Noise exposure over a longer period is often evaluated based on the Day-Night Sound Level (Ldn). This is a measure of 24-hour noise levels that incorporates a 10-dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient noise conditions. Typical Ldn noise levels for light and medium density residential areas range from 55 dBA to 65 dBA. Similarly, Community Noise Equivalent Level (CNEL) is a measure of 24-hour noise levels that incorporates a 5-dBA penalty for sounds occurring between 7:00 p.m. and 10:00 p.m. and a 10-dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

## **FUNDAMENTALS OF ENVIRONMENTAL GROUND BORNE VIBRATION**

Sources of earth-borne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earthmoving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (inch-per-second) is used to evaluate construction-generated vibration for building damage and human complaints.

## **EXISTING NOISE SETTING**

### **Noise Sensitive Receptors**

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The nearest sensitive receptors are in the City of Perris Sphere of Influence and unincorporated County of Riverside. The nearest sensitive receptors are single-family residential uses located approximately 0.1 mile east of the proposed trail and single-family residential uses located approximately 0.1 mile south of the proposed trail. In addition, there is an outdoor event venue (Rock & Tree) located approximately 0.2-mile east of the trail construction area.

## Existing Ambient Noise Levels

Most of the existing noise in the Project area is generated from traffic along surrounding roadways including Forrest Road and San Jacinto Avenue. According to the City of Perris General Plan Noise Element, the Project site is located outside of the 64.1 dBA CNEL noise contour of Old Elsinore Road.

## Existing Stationary Noise Sources

The Project area is located within an open space area. The primary sources of stationary noise in the Project vicinity are residential-related activities (i.e., residential mechanical equipment, domestic animals, and residential parking areas). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

## REGULATORY SETTING

### State of California

#### *State Office of Planning and Research*

The State Office of Planning and Research's Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

### Local

#### *Riverside County*

##### *Riverside County General Plan*

The County adopted the Riverside County General Plan (County General Plan)<sup>1</sup> on December 8, 2015. The County General Plan Noise Element (County Noise Element)<sup>2</sup> includes numerous goals, policies, and programs to minimize adverse noise impacts.

The following County Noise Element policies are applicable to the Project:

**N 1.1:** Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

**N 1.3:** Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- Schools.
- Hospitals.
- Rest homes.

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<sup>1</sup> <https://planning.rctlma.org/General-Plan-Zoning/General-Plan>

<sup>2</sup> [https://planning.rctlma.org/Portals/14/genplan/general\\_Plan\\_2017/elements/OCT17/Ch07\\_Noise\\_120815.pdf?ver=2017-10-11-102104-080](https://planning.rctlma.org/Portals/14/genplan/general_Plan_2017/elements/OCT17/Ch07_Noise_120815.pdf?ver=2017-10-11-102104-080)

- Long Term Care Facilities
- Mental Care Facilities.
- Residential Uses.
- Libraries.
- Passive Recreation Uses.
- Places of Worship.

**N 1.5:** Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

**N 2.3:** Mitigate exterior and interior noises to the levels listed in Table N-2 below to the extent feasible, for stationary sources:

**Table N-2:  
Stationary Source Land Use Noise Standards<sup>1</sup>**

Land Use	Interior Standards	Exterior Standards
<i>Residential</i>		
10:00 p.m. to 7:00 a.m.	40 L <sub>eq</sub> (10 minute)	45 L <sub>eq</sub> (10 minute)
7:00 a.m. to 10:00 p.m.	55 L <sub>eq</sub> (10 minute)	65 L <sub>eq</sub> (10 minute)

<sup>1</sup> These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

**N 6.3:** Require commercial or industrial truck delivery hours be limited when adjacent to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits.

**N 6.4:** Restrict the use of motorized trail bikes, mini-bikes, and other off-road vehicles in areas of the county except where designated for that purpose. Enforce strict operating hours for these vehicles in order to minimize noise impacts on sensitive land uses adjacent to public trails and parks.

**N 9.3:** Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures.

**N 13.1:** Minimize the impacts of construction noise on adjacent uses within acceptable practices.

**N 13.2:** Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

**N 13.4:** Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

**N 14.5:** Consider the issue of adjacent residential land uses when designing and configuring all new, non-residential development. Design and configure on-site ingress and egress points that divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable.

**Vibration**

Per the Noise Element, Table N-3 (below), Human Reaction to Typical Vibration Levels, present the human reaction to various levels of peak particle velocity. Typical construction vibrations fall in the 10 to 30 Hz range and usually occur around 15 Hz. Traffic vibrations exhibit a similar range of frequencies. However, due to their suspension systems, city buses often generate frequencies around 30 Hz at high vehicle speeds. It is more uncommon, but possible, to measure traffic frequencies above 30 Hz.

**Table N-3:  
Human Reaction to Typical Vibration Levels**

Vibration Level Peak Particle Velocity (inches/second)	Human Reaction
0.0059-0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings
0.3937-0.5905	Vibrations considered unpleasant when continuously subjected and unacceptable by some walking on bridges

Source: Caltrans, 1992

**N 16.1:** Restrict the placement of sensitive land uses in proximity to vibration-producing land uses.

**N 16.2:** Consider the following land uses sensitive to vibration:

- Hospitals;
- Residential areas;
- Concert halls;
- Libraries;
- Sensitive research operations;
- Schools; and
- Offices

Riverside County Municipal Code

The Riverside County Noise Ordinance is contained within the Riverside County Municipal Code (County Municipal Code) Chapter 9.52, Noise Regulation<sup>3</sup>. The Noise Ordinance contains performance standards for the purpose of prohibiting unnecessary, excessive, and annoying noises from all sources subject to its police power. At certain levels, noises are detrimental to the health and welfare of the citizenry, and, in the public interests, such noise levels shall be systematically proscribed.

Chapter 9.52 – NOISE REGULATION

9.52.010 – Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

9.52.020 – Exemptions.

Sound emanating from sources that are exempt from the provisions of this chapter include facilities owned or operated by or for a governmental agency and the maintenance or repair of public properties. Therefore, the Project is exempt

<sup>3</sup> [https://library.municode.com/ca/riverside\\_county/codes/code\\_of\\_ordinances?nodeId=TIT9PUPEMOWE\\_CH9.52NORE](https://library.municode.com/ca/riverside_county/codes/code_of_ordinances?nodeId=TIT9PUPEMOWE_CH9.52NORE)

from the Riverside County Municipal Code Noise Regulation.

## ***City of Perris***

### ***Perris General Plan***

The City of Perris adopted the Perris General Plan and certified the Environmental Impact Report on August 27, 2013.<sup>4,5</sup> The Perris General Plan Noise Element (Perris Noise Element)<sup>6</sup> includes land use compatibility standards developed based on recommended parameters from the State Office of Planning and Research. Using the land use compatibility guidelines, Perris has established interior and exterior noise standards. Perris' land use compatibility standards are based on the existing or intended future use of the property. Application of the noise standards vary on a case-by-case basis according to location, development type, and associated noise sources. These standards (expressed in Leq) for stationary noise sources are designed to protect noise-sensitive land uses adjacent to stationary sources from excessive noise. The City's Exhibit N-1, Land Use/Noise Compatibility Guidelines (below) summarizes maximum allowable noise standards for various land use types, which represent acceptable noise levels at exterior spaces of the sensitive receptor.

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<sup>4</sup> <https://www.cityofperris.org/home/showpublisheddocument/455/637203139709070000>

<sup>5</sup> <https://www.cityofperris.org/home/showpublisheddocument/457/637203139714030000>

<sup>6</sup> <https://www.cityofperris.org/home/showpublisheddocument/461/637203139725000000>

**Exhibit N-1  
Land Use/Noise Compatibility Guidelines**

Land Use Category	Community Noise Equivalent Level (CNEL) or Day-Night Level (Ldn), dB						
	55	60	65	70	75	80	85
Residential- Low-Density Single-Family, Duplex, Mobile Homes							
Residential- Multi-Family							
Commercial- Motels, Hotels, Transient Lodging							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Amphitheaters, Concert Hall, Auditorium, Meeting Hall							
Sports Arenas, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Rec., Cemeteries							
Office Buildings, Business, Commercial, Professional, and Mixed-Use Developments							
Industrial, Manufacturing Utilities, Agriculture							

**Nature of the noise environment where the CNEL or Ldn level is:**

**Below 55 dB**  
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

**55-65 dB**  
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

**65-75 dB**  
Very noisy urban areas near arterials, freeways or airports.

**75+ dB**  
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

 **Normally Acceptable**

Specific land use is satisfactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements

 **Conditionally Acceptable**

New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

 **Normally Unacceptable**

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

 **Clearly Unacceptable**

New construction or development should generally not be undertaken.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

Source: State of California, Department of Health, City of Monterey Park.

Perris has established non-transportation-related noise standards of 80 dBA hourly Leq (Leq[h]) for daytime hours (7:00 a.m. to 10:00 p.m.) and 60 dBA Leq[h] for nighttime hours (10:00 p.m. to 7:00 a.m.), and land use compatibility noise standards of up to 70 dBA Ldn for outdoor activity areas and 70 dBA Ldn for interior spaces for institutional land uses.

The Perris Noise Element also includes numerous goals, policies, and programs to minimize adverse noise impacts on

residents and people who come to Perris for work and entertainment, and to preserve a quality noise environment for Perris residents. The City of Perris is exposed to several noise sources, including traffic, train movements, and periodic occurrences such as construction and aircraft overflights. The following goals and policies from the Perris Noise Element are applicable to the Project.

**Goal I: Land Use Siting:** Future land uses compatible with Projected noise environments

**Policy 1.A**

The State of California Noise/Land Use Compatibility Criteria shall be used in determining land use compatibility for new development.

**Implementation Measures**

**I.A.1** All new development proposals will be evaluated with respect to the State Noise/Land Use Compatibility Criteria. Placement of noise sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the “Normally Unacceptable” range and prohibited within areas exposed to “Clearly Unacceptable” noise ranges.

Perris Municipal Code

The City of Perris Noise Ordinance is contained within the Perris Municipal Code (Perris Municipal Code) Chapter 7.34, Noise Control<sup>7</sup>. The Noise Ordinance contains performance standards for the purpose of prohibiting unnecessary, excessive, and annoying noises from all sources subject to its police power. At certain levels, noises are detrimental to the health and welfare of the citizenry, and, in the public interests, such noise levels shall be systematically proscribed.

The following sections of the Perris Municipal Code are applicable to the proposed Project.

**CHAPTER 7.34. – NOISE CONTROL**

**Sec. 7.34.010. – Declaration of policy.**

Excessive Noise levels are detrimental to the health and safety of individuals. Noise is considered a public nuisance, and the City discourages unnecessary, excessive or annoying noises from all sources. Creating, maintaining, causing, or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by the provisions of the ordinance codified in this chapter is a public nuisance and shall be punishable as a misdemeanor.

**Sec. 7.34.050. - General prohibition.**

- (a) It unlawful for any person to willfully make, cause or suffer, or permit to be made or caused, any loud excessive or offensive noises or sounds which unreasonably disturb the peace and quiet of any residential neighborhood or which are physically annoying to persons of ordinary sensitivity or which are so harsh, prolonged, or unnatural or unusual in their use, time or place as to occasion physical discomfort to the inhabitants of the city, or any section thereof. The standards for dBA noise level in section 7.34.040 shall apply to this section. To the extent that the noise created causes the noise level at the property line to exceed the ambient noise level by more than 1.0 decibels, it shall be presumed that the noise being created also is in violation of this section.
- (b) The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists should include, but not be limited to, the following:
  - (1) The level of the noise;

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<sup>7</sup> [https://library.municode.com/ca/perris/codes/code\\_of\\_ordinances?nodeId=COOR\\_TIT7HEWE\\_CH7.34NOCO](https://library.municode.com/ca/perris/codes/code_of_ordinances?nodeId=COOR_TIT7HEWE_CH7.34NOCO)

- (2) Whether the nature of the noise is usual or unusual;
- (3) Whether the origin of the noise is natural or unnatural;
- (4) The level of the ambient noise;
- (5) The proximity of the noise to sleeping facilities;
- (6) The nature and zoning of the area from which the noise emanates and the area where it is received;
- (7) The time of day or night the noise occurs;
- (8) The duration of the noise; and
- (9) Whether the noise is recurrent, intermittent or constant.

#### **Sec. 7.34.060. - Construction noise.**

It is unlawful for any person between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays to erect, construct, demolish, excavate, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. Construction activity shall not exceed 80 dBA in residential zones in the city.

#### **CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) THRESHOLDS**

The environmental analysis in this memorandum is patterned after the Initial Study Checklist recommended by the CEQA Guidelines. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a Project may have a significant adverse impact related to noise and vibration if it would do any of the following:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact NOI-1);
- Generation of excessive groundborne vibration or groundborne noise levels (refer to Impact NOI- 2); and/or
- For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels (refer to Impact NOI-3).

#### **IMPACT ANALYSIS**

**NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

***Less Than Significant Impact.*** It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels or based on studies of the ability of people to sleep, talk, or work under various noise conditions. However, all such studies recognize that individual responses vary considerably. Standards usually address the needs of most of the general population.

As stated above, the Project site is within the unincorporated County of Riverside, and the nearest sensitive receptors are in the unincorporated County of Riverside and the City of Perris Sphere of Influence area. Therefore, regulations controlling unnecessary, excessive, and annoying noise from the County's and City's Municipal Codes and General Plans are applicable to the Project.

#### **Construction Noise Impacts**

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction. Noise generated by construction equipment, such as excavators, can reach high levels. During construction, exterior noise

levels could affect residential uses in the vicinity of the Project site. Specifically, Project construction could occur directly adjacent to existing single-family residences to the east/southeast of the construction area (residential area along the west side of Forrest Road would have post and rail fence construction at the perimeter between residential and Steel Peak Reserve boundaries.

Construction of the proposed Project would occur in a single phase over approximately 2 months. Construction equipment that will be used is not heavy equipment, but consists of motorized hand augers, hammering for fence posts (not pile driving), power drills and saws, skid-steer/bobcat, plate compactor, and flatbed trucks. It is anticipated that motorized augers and hammering would be used for approximately two (2) weeks for installation of the fencing posts. The skid-steer/bobcat would be used periodically for the two (2) months of construction as-needed. Flatbed trucks would only be on site four times over the construction period for material deliveries. Hand tools such as saws and drills would be used throughout construction.

Construction noise is difficult to quantify because of the many variables involved, including the specific equipment types, size of equipment used, percentage of time each piece is in operation, condition of each piece of equipment, and number of pieces that would operate on the site. Construction equipment produce maximum noise levels when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power. Typical construction equipment noise levels were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide<sup>8</sup> for the equipment to be used for this project with the exception of the skid-steer/bobcat which is a smaller piece of machinery than a front end loader, but as the noise level for this equipment is not provided in the reference the larger noise level for front end loader is referenced/used. The noise levels listed represent the A-weighted maximum sound level (Lmax), measured at a distance of 50 feet from the construction equipment.

- Ground/Plate Compactor - 80 dBA
- Flat Bed Truck - 84 dBA
- Front End Loader - 80 dBA

As outlined above, as the Project would result in sound emanating from facilities owned or operated by or for a governmental agency and the maintenance or repair of public properties, it is exempt from the Riverside County Municipal Code Noise Regulation. And per the Perris Municipal Code, it is unlawful for any person between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays to erect, construct, demolish, excavate, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. Construction activity shall not exceed 80 dBA in residential zones in the city. Construction activities would occur between 7:00 a.m. and 3:30 p.m. during weekdays, which would be consistent with the County's construction hour limits (between 7:00 a.m. and 7:00 p.m. Mondays through Fridays), and City of Perris' construction hour limits (between 7:00 a.m. and 6:00 p.m. Mondays through Fridays).

The proposed construction staging area, where the flat bed trucks will be used to deliver fencing materials and equipment, is located much greater than 50 feet from the nearest residences to the north and south along Forrest Road and due to the distance from these houses would not exceed 80 dBA at these locations. The proposed trail alignment where fencing will be installed and ground/plat compactor and small skid steer/bobcat equipment used (smaller and not as loud as a front end loader used for reference), is also much greater than 50 feet from the nearest houses on Forrest Road, even at it closest point to them. Therefore, the equipment used to install fencing along the trail alignment would not exceed 80 dBA at the closest residences.

Fencing will also be installed along the Reserve's eastern boundary and frontage of Forrest Road, up to and adjacent to

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<sup>8</sup> FHWA Roadway Construction Noise Model User's Guide, Final Report, January 2006.

[http://www.gsweventcenter.com/Draft\\_SEIR\\_References/2006\\_01\\_Roadway\\_Construction\\_Noise\\_Model\\_User\\_Guide\\_FHWA.pdf](http://www.gsweventcenter.com/Draft_SEIR_References/2006_01_Roadway_Construction_Noise_Model_User_Guide_FHWA.pdf)

residences along Forrest Road, and would not be at a distance greater than 50 feet. However, as the fence installation along Forrest Road would include equipment such as ground/plate compactor, front end loader and hand tools with noise levels of 80 dBA or less, fence installation would not exceed 80 dBA at these nearby residences and potential construction noise impacts are less than significant.

### **Long-Term Operational Noise Impacts**

Once operational, the Project would minimally generate additional vehicular trips because more people would be driving to the proposed Project area for recreational use of the trail. A slight increase in traffic on Forrest Road may occur because the proposed parking lot, located at the end of Forrest Road and beginning of the landfill driveway, is limited to 10 spaces. There would be increased foot traffic of trails users walking from the parking lot through the 1.2-mile trail loop. However, noise generated by trail users, talking while walking if in groups of 2 people or more, would not be significant and would occur during daytime hours. Accordingly, the proposed Project would not contribute to a substantial permanent or temporary increase in ambient noise levels in the Project vicinity above existing conditions. Therefore, potential impacts regarding long-term operational noise would be less than significant.

**Mitigation Measures:** No mitigation is required.

### **NOI-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

**Less Than Significant Impact.**

#### **Construction Vibration Impacts**

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of some heavy-duty construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures, including activities with use of heavy equipment such as graders, earthmovers, pile drivers, etc.

The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Manual<sup>9</sup> identifies various vibration damage criteria for different building classes.

This evaluation uses the FTA architectural damage threshold for continuous vibrations at engineered concrete and masonry buildings of 0.2 inch-per-second PPV. As the nearest structures to Project construction areas are residential structures, this threshold is considered appropriate. The vibration produced by construction equipment is illustrated in Table 3, Typical Vibration Levels for Construction Equipment.

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<sup>9</sup> [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf)

Table 3  
Typical Vibration Levels for Construction Equipment

Equipment	Reference peak particle velocity at 25 feet (inch-per-second)	Approximate peak particle velocity at 65 feet (inch-per-second) <sup>1</sup>	Approximate peak particle velocity at 150 feet (inch-per-second) <sup>1</sup>
Loaded trucks	0.076	0.018	0.005
Notes:			
1. Calculated using the following formula: PPV equip = PPVref x (25/D) <sup>1.5</sup>			
where: PPV (equip) = the peak particle velocity in inch-per-second of the equipment adjusted for the distance			
PPV (ref) = the reference vibration level in inch-per-second from Table 7-4 of the FTA Transit Noise and Vibration Impact Assessment Manual			
D = the distance from the equipment to the receiver			
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.			

The Riverside County Municipal Code does not have requirements related to vibration regulations. Construction activities such as blasting, pile driving, and extensive grading are typical sources of groundborne vibration. However, these activities are not anticipated to be necessary during Project construction because the Project includes only minor surficial grading and installation of fencing, signage, etc. The only construction equipment with potential vibrational impacts to the residences would be the loaded flat bed trucks for delivery of materials and ground/plat compactor. The ground/plat compactors to be used are hand held machines and can be rented for home improvement projects, and would not exceed the vibration potential of loaded flat bed trucks. As shown in Table 3, the trucks' vibrational output would be well below the 0.2 inch-per-second PPV where potential vibrational damage could occur. Furthermore, the trucks' vibrational output would not be continuous or stationary, and, thus, would not significantly impact the residential structures. Overall, due to the short-term nature of these impacts at the closest sensitive receptors (residences along Forrest Road where fence installation will occur at the property line between the Preserve and the residences), construction related groundborne vibrational impacts will be less than significant.

### Long-Term Operational Vibration Impacts

Operation of proposed Project would not introduce any new vibration-generating sources. The Project proposes a 1.2-mile trail loop with associated fencing, signage, and off-site parking. Once operational, the Project would change from lands closed to the public to a limited publicly opened recreational trail. The Project would not result in long-term operational vibration impacts.

***Mitigation Measures:*** No mitigation is required.

**NOI-3 For a project within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

***Less Than Significant Impact.*** The public airport nearest to the project site is the Perris Valley Airport located approximately 4 miles southeast of the project site. According to the Riverside County Airport Land Use Commission (ALUC), the project is not located within the Perris Valley Airport Influence area. However, according to the Riverside ALUC, the project site is located within the March Air Reserve Base/Inland Port Airport (MARB/IPA) Land Use Compatibility Plan (LUCP) Airport Influence Area Zone E: Other Airport Environs. Zone E is a low noise impact zone beyond the MARB/IPA 55-CNEL contour which may cause intrusive noise levels to some outdoor activities due to

occasional overflights. Furthermore, Zone E is a low safety and airspace protection risk because it is within outer or occasionally used portions of flight corridors. Due to the site's low risk of airport-related noise impacts, this project poses a less than significant impact to contributing to excessive noise in the vicinity.

**Mitigation Measures:** No mitigation required.

## REFERENCES

### Documents

1. California Department of Transportation, *Transportation Related Earthborne Vibrations*, 2002.
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3. City of Perris, *Perris Municipal Code*, Chapter 7.34, Noise Control.
4. County of Riverside, *Riverside County General Plan*, August 2020.
5. County of Riverside, *Riverside County Municipal Code*, Chapter 9.52, Noise Regulation.
6. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.
7. Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.
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9. U.S. Department of Transportation, *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, updated August 24, 2017,  
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### Websites / Programs

- Google Earth, 2021.  
STAC Climate Control, 2021.