Memorandum

Date: January 2, 2025

To: Donald Verleur, Olive Crest

Cc: Eric Higuchi, Qtative

From: Vanessa Tucker, VCS Environmental

Subject: Results of a Biological Habitat Assessment at Olive Crest Housing Project, 3431 Mt. Vernon Ave, City of Riverside, County of Riverside, California

This memorandum provides the results of a biological habitat assessment conducted at Olive Crest Housing Project located at 3431 Mt. Vernon Ave in the City of Riverside, APN: 251-234-011 (Project site) located in Riverside County, California (Figures 1 and 2). As requested by Eric Higuchi of Qtative, VCS Environmental (VCS) conducted the biological habitat assessment at the Project site to document whether suitable habitat for special-status species exists at or in the vicinity of the approximately 3.37-acre Project site.

1.0 PROJECT LOCATION

The Project is located in the City of Riverside County, California. The Project site is located north of State Route (SR) 215. Access to the site is south of the intersection of Mount Vernon Avenue and West Shady Grove Drive (Figures 1 and 2). The Project is in Township 2 South, Range 4 West, Section 20 of the United States Geological Survey *Riverside East* 7.5-minute quadrangle.

2.0 PROJECT DESCRIPTION

The Project is proposing to develop eleven units (including one staff unit) clustered within the northwest portion of the site. Along with the cottages, several other project features will be developed including a multi—purpose room, shade structures, play area, water quality basin, fire access, and a parking lot.[i]

2.1 Current Conditions

Crest Community Church is located within the Project site and includes ornamental landscaping (trees and manicured lawn), as well as a parking lot for the church. The western portion of the Project site is composed of open, undeveloped land with a mini dirt bike track built within this

western portion. Project site is surrounded by residential areas to the north, east and west, and the BNSF railroad tracks to the south. The elevations on the Project site range from approximately 1,169 feet above mean sea level (MSL) to 1,174 feet above MSL.

3.0 FIELD SURVEY METHODS

A field survey was performed on September 14, 2023, by VCS biologists Vanessa Tucker and Cody Fees to conduct a plant and wildlife survey on the Project site (Table 1. Survey Conditions). During the survey, biologists assessed the existing habitat within the Project site, paying special attention to those areas that had the potential to provide suitable habitat for special status plant and wildlife species. A review of a previous biological report (Osprey Environmental Associates, 2020) on the Project site, reviews of historical aerial imagery (Google Earth, 2023), California Natural Diversity Database (CNDDB), Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) was also conducted.

Plant species were identified using plant field and taxonomical guides, such as The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al., 2012). All plant species encountered during the field survey were identified and recorded in field notes.

The general wildlife survey was conducted on foot and with binoculars within the Project site. The purpose of the general survey was to note those species observed, ascertain general site conditions, and identify habitat areas that could be suitable for special status wildlife species.

All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Signs of wildlife species including wildlife tracks, burrows, nests, scat and remains, were also recorded.

Table 1. Survey Conditions

Survey Date	Time	Surveyors	Weather Conditions
9/14/2023	0900-1000	Vanessa Tucker and Cody Fees	63°F, overcast, east 2 mph winds

4.0 RESULTS

4.1 Plants

No sensitive plant species were observed within the Project site. Several common native and non-native plant species were observed during the survey and are included in Table 2. The Project site was mostly dominated by non-native species consistent with highly disturbed habitats. The

native plant species observed were species that are highly adapted to human disturbance and environmental stressors (i.e., extreme heat).

Table 2. Plant Species Observed

Scientific Name	Common Name
Non-native	
Brassica nigra	black mustard
Convolvulus arvensis	field bindweed
Cynodon dactylon	Bermuda grass
Cyperus eragrotis	tall flat sedge
Latana camara	shrub verbena
Latuca serriola	prickly lettuce
Malva parvilflora	cheeseweed mallow'
Parkinsonia aculeata	Mexican palo verde
Salsola australis	Russian thistle
Schinus molle	Peruvian pepper tree
Schinus terebinthifolia	Brazilian pepper tree
Ulmus parvifolia	Chinese elm
Washingtonia robusta	Mexican fan palm
Native	
Croton setiger	turkey mullein
Daucus pusillus	American wild carrot
Erigeron canadensis	Canada horseweed
Fraxinus latifolia	Oregon ash

4.2 Wildlife

No special status wildlife was observed within the Project site during the survey. Several wildlife species were observed within the Project site and are presented in Table 3. Black harvester ant was observed within the Project site during the field survey. The black harvester ant is one of the two native California ant species that the coast horned lizard (*Phrynosoma blainvillii,* MSCHP-covered species, CDFW-species of conservation concern), consumes as part of their regular diet (California Herps, 2023). Therefore, there is potential for the MSHCP-covered coast horned lizard to be present within the Project site. Several fossorial mammal burrows were observed within the Project site, however no signs of burrowing owl (*Athene cunicularia*, MSHCP-covered species, CDFW-Species of Conservation Concern), such as eggshell fragments, tracks, feathers, cast pellets, or suitable burrows was observed. The Project site is within the MSHCP burrowing owl

survey overlay, therefore, a 30-day preconstruction survey will be required prior to project activities.

Table 3. Wildlife Species Observed

Scientific Name	Common Name
Invertebrates	
Latrodectus mactans	black widow
Veromessor pergandei	black harvester ant
Birds	
Aphelocoma californica	California scrub jay
Corvus corax	common raven
Haemorhous mexicanus	house finch
Melozone crissalis	California towhee
Mimus polyglottos	northern mockingbird
Streptopelia decaocto	Eurasian collared dove
Spinus psaltria	lessser goldfinch
Sayornis nigricans	black phoebe
Thryomanes bewickii	bewick's wren
Canis latrans	coyote
Mammals	
Equus asinus	American burro
Lepus sylvaticus	cottontail
Zenaida macroura	mourning dove

4.2.1 Critical Habitat

The United States Fish and Wildlife Service's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Project site occurs within any species designated critical habitat. No critical habitat occurs within or adjacent to the Project site, therefore no impacts are anticipated to occur to critical habitat.

5.0 BMPS, AVOIDANCE, AND PROTECTION MEASURE RECOMMENDATIONS

5.1 General BMPs Incorporated into the Project

The standard MSHCP BMPs from Appendix C of the MSHCP will be implemented in compliance with the MSHCP as appropriate. Key aspects of the BMPs are to use properly maintained equipment, properly implement and monitor BMPs to ensure that practicable measures are

being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint, avoid use of chemicals near sensitive areas, develop procedures for minimizing the likelihood of spills and to control sediment, ensure worker safety, and minimize impacts to wildlife.

5.2 Wildlife Avoidance and Protection Measures

As detailed above, a 30-day pre-construction survey shall be conducted for burrowing owl prior to project activities. As part of this survey, the biologist will also assess the property for any other sensitive resources, including but not limited to nesting birds and coast horned lizard within the Project site if special-status species are discovered, coordination with the City of Riverside may be required regarding appropriate measures to prevent direct impacts, which may include buffers, exclusionary fencing, passive relocation, etc.

Additionally, a nesting bird survey will be conducted within three days prior to work if work occurs during the nesting bird season (February 15 – September 1).

6.0 CONCLUSION

Please feel free to contact me with further questions at vtucker@vcsenvironmental.com or 949-231-9257.

ATTACHMENTS:

Figure 1	Regional Location Map
Figure 2	Vicinity Map
Figure 3	Project Site with 500’ Survey Buffer
Appendix A	Site Photographs
Appendix B	Osprey Environmental Associates, Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Burrowing Owl Survey Report for the Crest Community Church Housing Development, City of Riverside, California

7.0 REFERENCES

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition. University California Press, Berkeley.

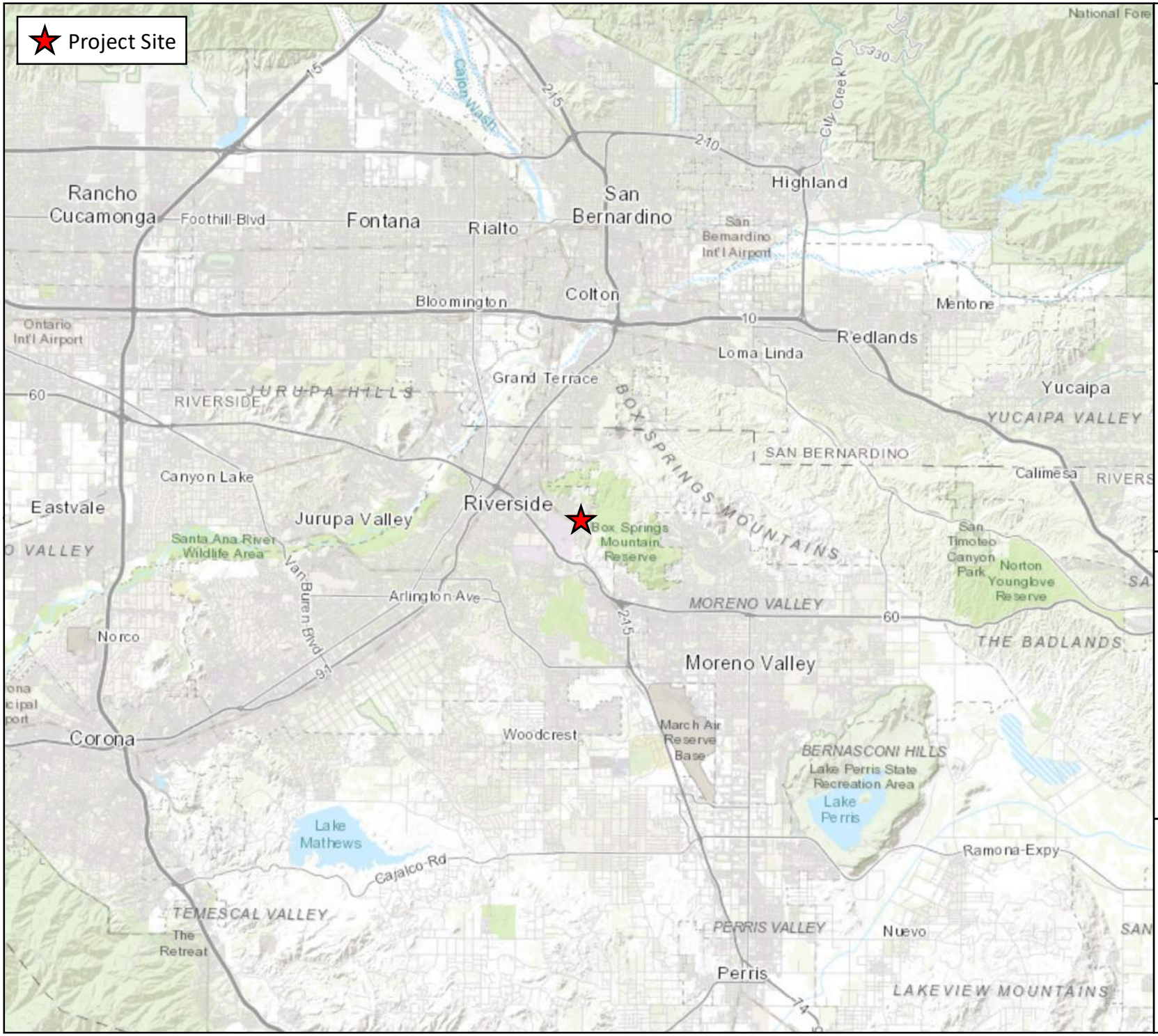
California Herps. 2023. Blainville's Horned Lizard - Phrynosoma blainvillii (californiaherps.com). Accessed on September 14, 2023.

Osprey Environmental Associates. 2020. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Burrowing Owl Survey Report for the Crest Community Church Housing Development, City of Riverside, California.

Sawyer, John O., Todd Keeler-Wolf, and Julie M. Evens. 2008. A Manual of California Vegetation. 2nd ed. California Native Plant Society and California Department of Fish and Game. Sacramento, Calif.

[i] A minor modification to the project description was made in 2024.

FIGURES



VCS Environmental
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Olive Crest

Figure 1

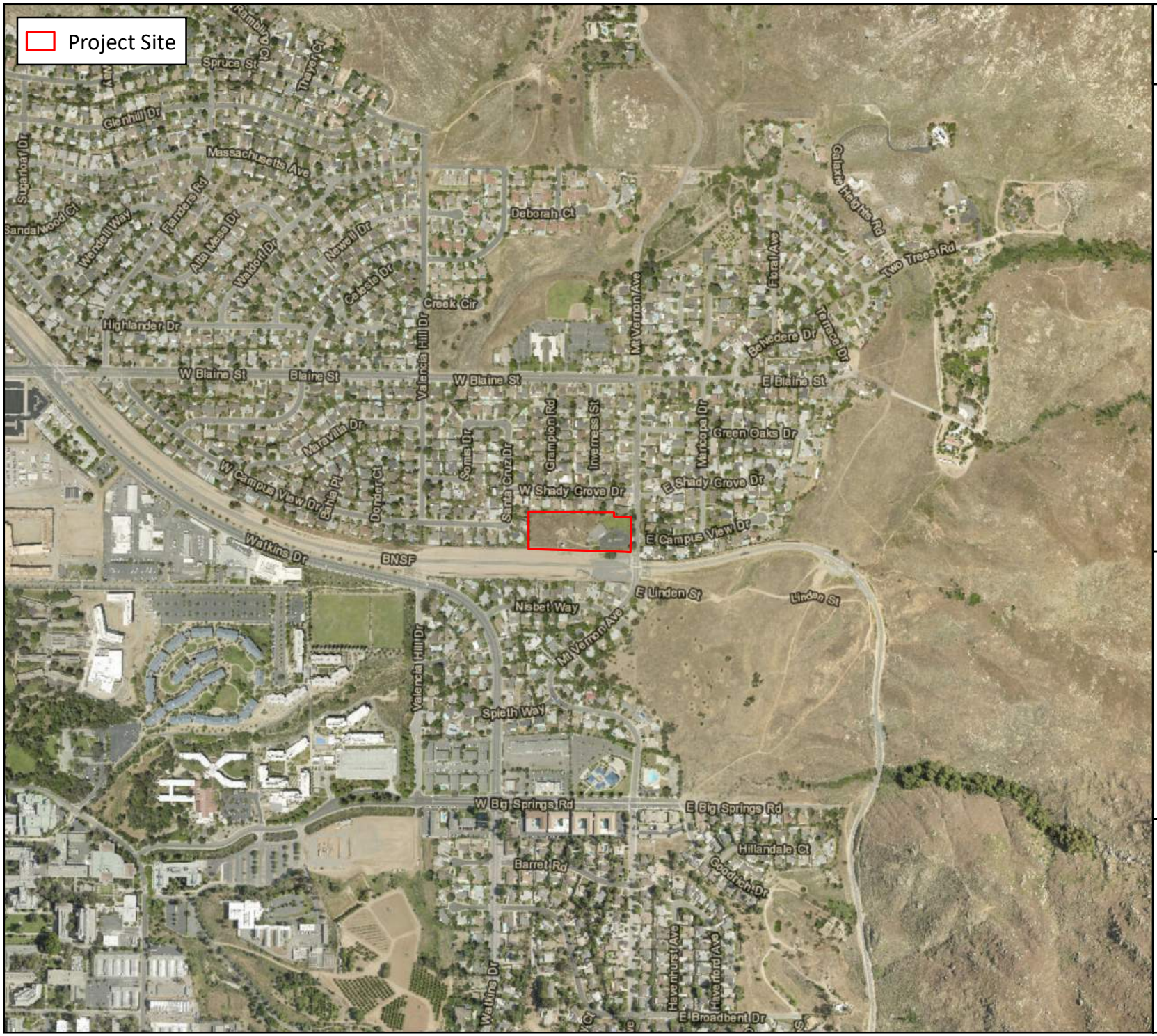
Regional Location Map

N
W E
S

0 10,000 20,000
Feet

1:250,000

Map Date: September 2023
Data Sources: ESRI, County Of Riverside



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Olive Crest

Figure 2

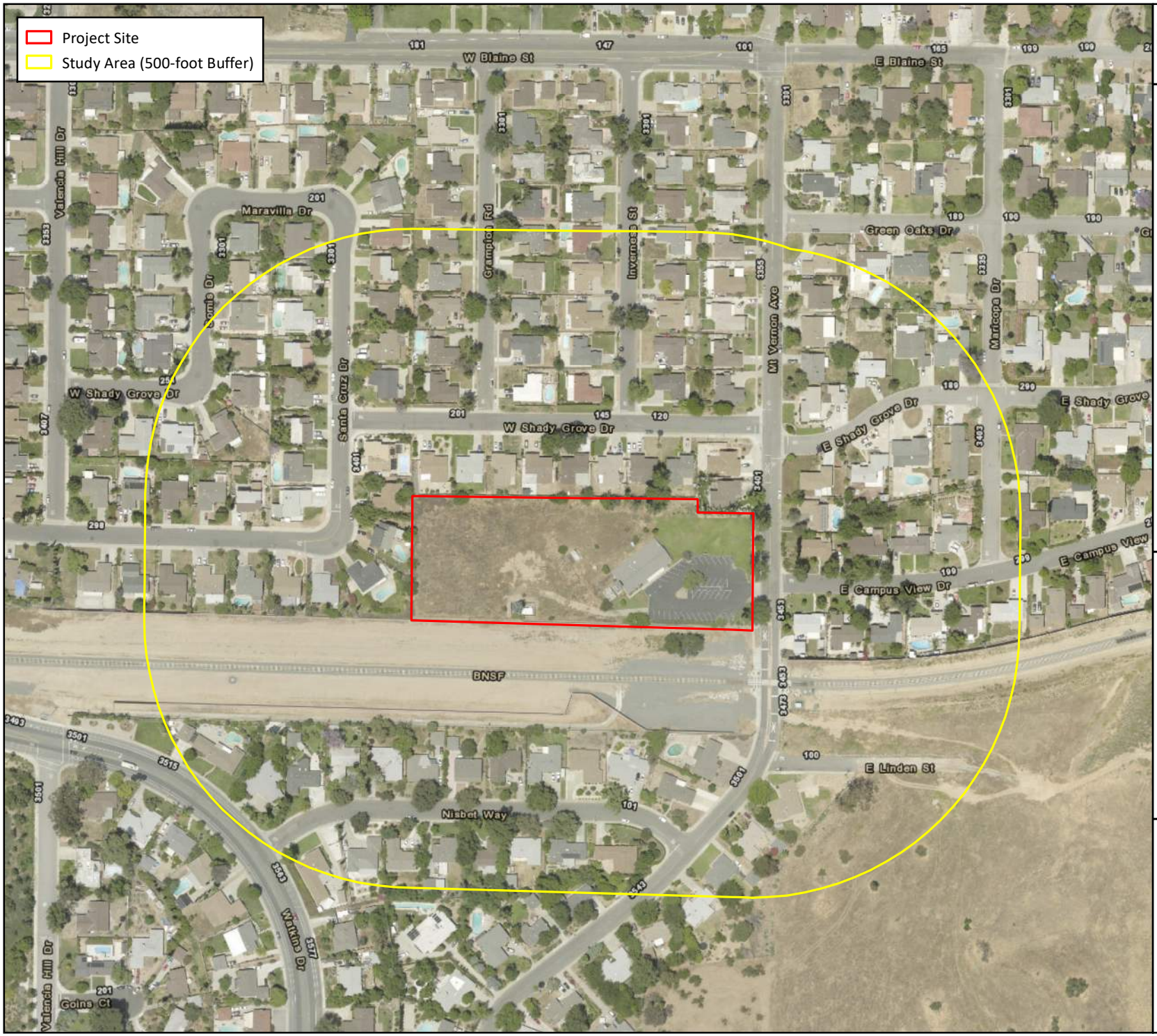
Vicinity Map

N
W E
S

0 450 900
Feet

1:10,000

Map Date: September 2023
Data Sources: ESRI, County Of Riverside



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Olive Crest

Figure 3

Project Site with
500' Survey Buffer

N
W E
S

0 125 250
Feet

1:3,000

Map Date: September 2023
Data Sources: ESRI, County Of Riverside

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

APPENDIX A

Site Photographs

Photo 1. North-east facing view of Project site depicting disturbed habitat.

Photo 2. North-west facing view of dirt bike track within the Project site.

Photo 3. South-facing view of Project site depicting disturbed habitat and church building**.**

Photo 4. East-facing view of Project site depicting lawn, disturbed habitat, and ornamental landscaping.

Photo 5. East-facing view of Project site depicting access road within disturbed habitat.

Photo 6. West-facing view of cellular phone tower within the Project site.

August 25, 2020

Andrew Woodard
Woodward Group
7223 Magnolia Ave
Riverside, California 92504

Subject: ***Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Burrowing Owl Survey Report for the Crest Community Church Housing Development, City of Riverside, California***

Dear Mr. Woodward:

This report documents the results of an MSHCP burrowing owl survey conducted for the Crest Community Church Housing Development Project (project). Specifically, this report describes (1) the methods used for conducting the burrowing habitat assessment and survey, (2) the results of the burrowing owl habitat assessment and survey, and (3) related additional requiments of the MSHCP burrowing owl species-specific conservation objectives.

Project Location and Description

The proposed project site is located at 3431 MT Vernon AVE, Riverside, CA 92507 (Figure 1, Regional Location). The proposed project is placed in Section 20, Township 2 South, Range 4 West of the U.S Geological Survey (USGS) Riverside-East 7.5-minute quadrangle. The centroid of the project site is located at 33°58'49.16" N, 117°18' 54.73" W, on Assessor Parcel Number (APN) 251-234-011.

The project proposes to develop several homes or cottages within the project footprint to provide safe and stable homes to seniors and young families who have experienced homelessness.

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on conservation of species and their associated habitats in Western Riverside County (MSHCP 2003). There are currently a 146 species of plants and animals of various federal and state listing statuses covered in the MSHCP. The MSHCP provides for the assembly of a Conservation Area consisting of Core Areas and Linkages for the conservation of Covered Species (MSHCP 2003).The Conservation Area is to be assembled from portions of the MSHCP Criteria Area, which consists of quarter-section Criteria Cells, each with specific criteria for species conservation within that cell. The MSHCP requires focused surveys for certain plant and animal species for project sites located within designated plant and animal survey areas when potential suitable habitat is present.

The proposed project is not located within an MSHCP Criteria Cell, however the proposed project is located within a pre-defined burrowing owl (*Athene cunicularia*) survey area. As such, the proposed project is required to adhere to burrowing owl Object 5 and Objective 6 per Appendix E of the MSHCP and the MSHCP Burrowing Owl Survey Instructions (2006).

Literature Review

An analysis of all pertinent and available data resources was conducted prior to initiating surveys to assess habitat suitability for burrowing owls within the project footprint and up to 150-meter buffer zone (herein referred to as the evaluation area). The following data resources were analyzed: the California Natural Diversity Database (CNDDB) (2020), the Riverside Conservation Authority (RCA) MSHCP Information Map (2020), aerial photography (Google Earth 2020), and USGS topographic data (2020).

Burrowing Owl Habitat Assessment – Step 1

On August 18th,2020, Osprey Environmental Associates (Osprey) biologist, Marshall Paymard, conducted a burrowing habitat assessment within the evaluation area in accordance with the MSHCP Burrowing Owl Survey Instructions (2006). The total evaluation area, including all suitable habitat located within 150-meters was assessed on foot. Areas that could not be accessed on foot were methodically and visually inspected with binoculars for burrowing owl habitat and sign (i.e. molted feathers, white-wash, pellets, prey remains, etc.). Per the MSHCP Burrowing Owl Survey Instructions (2006), burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrub lands, shrub lands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. All suitable habitat present in the evaluation area was mapped on a 200-foot scale orthomosaic map.

Results

The results from the habitat assessment indicated that suitable burrowing owl habitat is present within the evaluation area. Anthropogenic related disturbances such as vegetation management or mowing is evident within the evaluation area. As such, the habitat quality or suitability for burrowing owl is poor, as fossorial mammal presence is typically limited due to such existing disturbances. *Figure 2, Biological Resources* depicts all suitable burrowing owl habitat (i.e. non-native grassland and disturbed habitat) present in the evaluation area. Photographs of the evaluation area are provided in Attachment A.

Focused Burrow Survey – Step 2 (Part A)

On August 18th,2020, post completion of the burrowing owl habitat assessment, a focused burrow survey per the MSHCP Burrowing Owl Survey Instructions (2006) was conducted. The entire evaluation area was systematically surveyed by walking linear transects spaced at no more than 20-meters apart, allowing for 100% visual coverage of the ground surface. All burrows deemed suitable for burrowing owls (i.e. burrows containing >3-inch diameter entrances), surrogate burrows (i.e. man-made artificial structures), and burrowing owl sign was documented, if present. The survey was conducted during weather conditions conducive for detecting burrowing owls outside of their burrows as evident in Table 1.

Table 1. Survey Conditions

Survey Date	Time	Surveyor	Weather Conditions
8/18/2020	0600-0730	Marshall Paymard	76-77°F; 5% Cloud cover; 0-1 MPH winds;

Results

The results from the focused burrow survey indicated that no suitable burrows, suitable man-made artificial structures, or burrowing owl sign is present in the evaluation area. General wildlife species documented within the evaluation area or within the vicinity during the surveys included: Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), California towhee (*Pipilo crissalis*), American crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), lesser goldfinch (*Spinus psaltria*), and mourning dove (*Zenaida macroura*).

Conclusion

Burrowing owl habitat (i.e. non-native grassland and disturbed habitat) is present in the evaluation area. However, no detections of burrowing owl, suitable natural burrows, man-made structures, or burrowing owl sign were confirmed within the evaluation area. As such, no further focused burrowing owl surveys (i.e. Part B- Focused Burrowing Owl Surveys) are required for the proposed project.

However, per Appendix E Objective 6 of the MSHCP and the MSHCP Burrowing Owl Survey Instructions (2006), a pre-construction presence/absence survey for burrowing owl must be conducted within 30 days prior to ground disturbance to avoid potential direct take of burrowing owls.

Should you have any questions regarding this report or require additional information, please do not hesitate to contact me at (949) 356-8476 or mpaymard@ospreyenv.com

Sincerely,

Marshall Paymard

Osprey Environmental Associates, Inc.

Senior Biologist/Project Manager/UAV Pilot

Att.: Attachment A – Representative Photos

References

California Department of Fish and Wildlife (CDFW) .2020. Natural Diversity Data Base (CNDDB). California Department of Fish and Wildlife. Sacramento, California. Accessed August, 2020.

County of Riverside. 2006. Burrowing Owl Survey Instructions – Western Riverside Multiple Species Habitat Conservation Plan Area.

Google Earth. 2020. Aerial photograph. 1:200 scale.

Riverside County Integrated Project (RCIP) Multiple Species Habitat Conservation Plan(MSHCP), March 2004.

Riverside Conservation Authority (RCA). MSHCP Information Map Tool. http://wrcrca.maps.arcgis.com/apps/webappviewer/index.html?id=a73e69d2a64d41c29ebd3acd67467abd. Accessed August 2020.

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However, per Appendix E Objective 6 of the MSHCP and the MSHCP Burrowing Owl Survey Instructions (2006), a pre-construction presence/absence survey for burrowing owl must be conducted within 30 days prior to ground disturbance to avoid potential direct take of burrowing owls.

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Senior Biologist/Project Manager/UAV Pilot

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U.S Geological Survey (USGS). Topographical Maps. https://www.usgs.gov/core-science-systems/national-geospatial-program/topographic-maps. Accessed August 2020.

January 4, 2025

Tracy Fitzsimmons
Olive Crest Housing
555 Technology Court
Riverside, CA 92507

Subject: **City of Riverside Crest Cottages (3431 Mt. Vernon Avenue) Residential Project Health Risk Assessment (HRA) Technical Memorandum.**

Dear Ms. Fitzsimmons:

Vista Environmental has conducted an analysis to evaluate whether the proposed Crest Cottages at 3431 Mt. Vernon Avenue residential project (proposed project) would expose the residents to significant levels of toxic air contaminants (TACs) from diesel-powered trains operating on the BNSF and Metrolink Railroad that is adjacent to the south side of the project site. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the South Coast Air Quality Management District (SCAQMD) recommendations for quantification and evaluation of TAC emissions.

PURPOSE OF ANALYSIS

This HRA Memo has been prepared to determine the cancer and non-cancer risk impacts to the residents of the proposed project from diesel train emission created from the BNSF and Metrolink Railroad, per Planning Comment Item #38 d. A Health Risk Assessment, due to the proximity of the railroad that is provided in *Olive Crest Housing – 3431 Mt. Vernon Avenue – Planning Case DP-2023-00841 (Conceptual Development Review)*, prepared by the City of Riverside, June 21, 2023.

Thresholds of Significance Utilized in this Analysis

Any project with the potential to expose sensitive receptors to substantial levels of TACs would be deemed to have a potentially significant impact. A health risk is the probability that exposure to a TAC under a given set of conditions will result in an adverse health effect. The health risk is affected by several factors, such as the amount, toxicity, and concentration of the contaminant; meteorological conditions; distance from the emission sources to people; the distance between emission sources; the age, health, and lifestyle of the people living or working at a location; and the length of exposure to the toxic air contaminant.

The term “risk” usually refers to the chance of contracting cancer as a result of an exposure, and it is expressed as a probability: chances-in-a-million. The values expressed for cancer risk do not predict actual cases that will result from exposure to toxic air contaminants. Rather, they state a probability of contracting cancer over and above the background level and over a given exposure to toxic air contaminants. Since this analysis is limited to analyzing the health risks of the proposed residents and is not a part of CEQA, there are no specific thresholds of significance that directly apply to the proposed project.

In order to provide a conservative analysis, the SCAQMD CEQA level thresholds for TAC emission created by a project have been utilized to analyze the TAC impacts from the railroad to the proposed residential

uses. According to the SCAQMD CEQA Handbook, any project that has the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact:

- If the Maximum Incremental Cancer Risk is 10 in one million or greater; or
- Toxic air contaminants from the proposed project would result in a Hazard Index increase of 1 or greater.

PROJECT DESCRIPTION

Site Location and Study Area

The project site is located in the eastern portion of the City of Riverside (City) at 3431 Mt. Vernon Avenue. The project site is located on vacant land located behind the existing Crest Community Church and is bounded by single-family homes to the north, the Church and Mt. Vernon Avenue to the east, the BNSF and Metrolink Railroad to the south, and single-family homes to the west.

Proposed Project Description

The project is proposing to develop eleven units (including one staff unit) clustered within the northwest portion of the site. Along with the cottages, several other project features will be developed including a multipurpose room, shade structures, play area, water quality basin, fire access, and a parking lot. The site plan is shown in Figure 1.

TAC EMISSIONS MODELING PROCEDURES

The dispersion modeling utilized for analyzing the TAC emissions in this analysis has been based on the recommended methodology described in *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel idling Emissions for CEQA Air Quality Analysis* (SCAQMD HRA Guidance), prepared by SCAQMD, 2003, *Air Toxics Hot Spots Program Risk Assessment Guidelines* (OEHHA Guidelines), prepared by Office of Environmental Health Hazard, February 2015, and *Risk Assessment Procedures for Rules 1401, 1401.1 and 212* (SCAQMD Risk Assessment Procedures), prepared by SCAQMD, September 1, 2017. Important issues that affect the dispersion modeling include the following: 1) Model Selection, 2) Source Treatment, 3) Meteorological Data, and 4) Receptor Grid. Each of these issues is addressed below.

Model Selection

The AERMOD View Version 11.2.0 Model was used for all dispersion modeling. Key dispersion modeling options selected include the regulatory default option and urban modeling option for Riverside County with a population of 2,189,641[1]. Flagpole receptor height was set to 0 meters. AERMAP was run with a 7.5 minute USGS DEM Map of Riverside East, which covers the project site.

Meteorological Data

Meteorological data from the Riverside Airport Meteorological Station was selected for this modeling application. Meteorological data of years 2012 to 2016 was collected at the Azusa Station. The SCAQMD

[1] Obtained from: https://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance

processed the data for input to the model. The elevation of 245 meters was utilized for the Riverside Airport Station[2].

Receptor Locations

A grid receptor with 20 points was placed over the locations of the proposed homes. Figure 2 shows the locations of the sources and receptors modeled in the AERMOD model.

Railroad Locomotive Diesel Emissions Assumptions

The Railroad line that run adjacent to the south side of the project site are utilized for Metrolink commuter trains and freight trains. According to www.metrolinktrains.com the 91/Perris Valley Metrolink line adjacent to the project site has ten trains per day that pass the project site. According to the *Perris Valley Line Freight Study,* prepared by the Riverside County Transportation Commission, May 14, 2008, the BNSF runs up to four freight trains per day past the project site and the freight trains run at 20 mile per hour in the section that is near the project site. It has been estimated that the Metrolink trains run at 40 miles per hour in the vicinity of the project site.

Currently all of the Metrolink locomotives meet the Tier 4 emissions standards[3]. There is no specific data available for the tier level of the freight trains. In order to provide a conservative analysis they have been analyzed as Tier 2+ engines.

Locomotives Running Emissions

The locomotives engine specifications were obtained from *Health Risk Assessment for the Central Maintenance Facility*, prepared for Metrolink, November 2014, which found the Tier 4 Metrolink fleet had an average of 4,365 horsepower and at Notch 5, which is the typical engine power level for through line situations, the adjustment or load factor of the locomotives is 0.79. According to *Emission Factors for Locomotives,* prepared by the EPA, April 2009, Tier 2+ line haul locomotives produce 0.08 grams of PM10 per brake horsepower hour (bhp-hr) and Tier 4 locomotives produce 0.015 grams of PM10 per bhp-hr. This results in the four freight locomotives producing a total of 909 grams of PM10 per hour and the ten Metrolink trains producing 426 grams of PM10 per hour or an average of 95 grams of PM10 per hour per locomotive.

The locomotive running emissions were analyzed as a line volume source in AERMOD with a plume height of 5.6 meters, and a plume width of 4.0 meters, and a release height of 4.9 meters. A summary of the locomotive running emissions parameters are provided in Table A. The locomotive running emissions were determined by calculating the time each train takes to cross the length in meters of analyzed rail line and then multiplying that amount of time by the daily train operations and dividing it by 24 hours in order to determine the percent of daily running time. The daily running time was then multiplied by the emissions rate of 95 grams of DPM per hour. The emission rate was then converted to grams per second for use in the AERMOD model.

[2] Obtained from: https://www.aqmd.gov/home/air-quality/meteorological-data/aermod-table-1
[3] Obtained from: https://www.masstransitmag.com/rail/vehicles/press-release/21153359/metrolink-metrolink-tier-4-locomotive-project-receives-environmental-certification

Table A – Locomotive Running Emissions used in the AERMOD Model

Train Type	Daily Operations[1]	Train Speed (MPH)	Length of Track Modeled (meters)	DPM Emission Rates[2] (grams/second)
Freight	4	20	1,247	1.71E-04
Metrolink	10	40		2.14E-04
Total	14			3.85E-04

Notes:
[1] 10 daily Metrolink trains obtained from www.metrolinktrains.com; and 4 freight trains obtained from RCTC, 2008.
[2] Emission rates obtained from Metrolink, 2014; EPA, 2009

IMPACT ANALYSIS

Health risks from TACs are twofold. First, TACs are carcinogens according to the State of California. Second, short-term acute and long-term chronic exposure to TACs can cause health effects to the respiratory system. Each of these health risks is discussed below.

Cancer Risks

According to the OEHHA Guidance (OEHHA, 2015) and *Risk Assessment Procedures for Rules 1401, 1401.1 and 212*, (SCAQMD, 2017), the cancer risk should be calculated using the following formula:

Cancer Risk = [Dose-inh (mg/(Kg-day)] * [Cancer Potency Factor (kg-day)/mg]*[1x10^6] * Age Sensitivity Factor * Fraction of Time at Home

$$\text{Dose-inh} = (C_{air} * DBR * A * EF * ED * 10^6) / AT$$

Where:

C_{air} [Concentration in air (µg/m^3)] = (Calculated by AERMOD Model)
DBR [Daily breathing rate (L/kg body weight – day)]
A [Inhalation absorption factor]
EF [Exposure frequency (days/year)]
ED [Exposure duration (years)]
10^6 [Micrograms to milligrams conversion]
AT [Average time period over which exposure is averaged in days]

The cancer risk parameters used in this evaluation for the proposed townhomes are shown in Table B.

Table B – Cancer Risk Calculation Parameters

Parameter	Operations		
	(3rd Trimester to 2 years)	(2 to 16 years)	(16 to 30 years)
Cancer Potency Factor (mg/kg-day) for DPM	1.1	1.1	1.1
Daily Breathing Rate (L/kg body weight-day)	1,009(1)	572	261
Inhalation Absorption Factor	1	1	1
Exposure Frequency (days/year)	350	350	350
Exposure Duration (years)	2.25	14	13.75
Age Sensitivity Factor	10	3	1
Fraction of Time at Home	1.0	1.0	1.0
Averaging Time[2] (days)	25,550	25,550	25,550
Potential Cancer Risk =	C_{air} * 342	C_{air} * 362	C_{air} * 39.5

Notes:
[1] Based on 95th percentile breathing rate of 361 for 3rd trimester for 3 months and 1,090 for 0 to 2 years for 24 months (OEHHA, 2015; SCAQMD, 2017).
[2] Based on a 70-year average lifetime (OEHHA, 2015; SCAQMD, 2017)

The Title 24 Part 6 standards require all homes to include positive static pressure forced air HVAC systems that are equipped with a high efficiency MERV 13 filter in the air intake for the HVAC system. According to *Status of Research on Potential Mitigation Concepts to Reduce Exposure to Nearby Traffic Pollution,* prepared by CARB, August 23, 2012, research has shown that homes with positive static pressure HVAC systems with MERV 13 air filters result in an 80 percent reduction in particulates when compared to outdoor levels of particulates. Table C provides a summary of the calculated diesel emission concentrations at the nearest sensitive receptors as well as the calculated cancer risk at the exterior of the proposed homes and at the interior of the proposed homes. The AERMOD printouts are attached to this Memo.

Table C – TAC Cancer Risks at Proposed Cottages

Location	Receptor Location		Annual PM10 Concentration (µg/m³)	Cancer Risk Per Million People[2]	
	X	Y		Exterior	Interior with MERV 13[3]
PMI[1]	470,826	3,760,014	0.0105	7.8	1.6
				SCAQMD Threshold	**10**
				Exceed Threshold?	**No**

Notes:
[1] The locations of the Point of Maximum Impact (PMI) is shown above in Figure 4.
[2] The residential cancer risk based on: C_{air} (3rd Tri to 2 year) * 342 + C_{air} (2 to 16 years) * 362 + C_{air} (16 to 20 years) * 39.5.
[3] The interior cancer risk was calculated by reducing the exterior cancer risk by 80 percent in order to account for MERV 13 filters.
Source: Calculated from ISC-AERMOD View Version 11.2.0.

The data provided in Table C shows that the cancer risk from DPM train emissions at the exterior of the most impacted home would be 7.8 per million persons and interior of the most impacted home would be 1.6 per million persons with MERV 13 filters that are a Title 24 Part 6 requirement. As such the cancer risk at the interior and exterior of the proposed homes would be below the SCAQMD's 10 per million

person threshold. Therefore, the cancer risk risks to residents at the proposed homes would be within the acceptable standards.

Non-Cancer Risks

In addition to the cancer risk from exposure to TAC emissions there is also the potential TAC exposure may result in adverse health impacts from acute and chronic illnesses, which are detailed below.

Chronic Health Impacts

Chronic health effects are characterized by prolonged or repeated exposure to a TAC over many days, months, or years. Symptoms from chronic health impacts may not be immediately apparent and are often irreversible. The chronic hazard index is based on the most impacted sensitive receptor from the proposed project and is calculated from the annual average concentrations of PM10. The relationship for non-cancer chronic health effects is given by the equation:

$$HI_{DPM} = C_{DPM} / REL_{DPM}$$

Where,

HI_{DPM} = Hazard Index; an expression of the potential for non-cancer health effects.
C_{DPM} = Annual average diesel particulate matter concentration in $\mu g/m^3$.
REL_{DPM}= Reference Exposure Level (REL) for diesel particulate matter; the diesel particulate matter concentration at which no adverse health effects are anticipated.

The REL_{DPM} is 5 $\mu g/m^3$. The Office of Environmental Health Hazard Assessment as protective for the respiratory system has established this concentration. As shown above in Table C, the AERMOD model found that the highest annual DPM concentration of 0.0105 $\mu g/m^3$ for DPM chronic non-cancer risk emissions. The resulting Hazard Index is:

$$HI_{DPM} = 0.0105 / 5 = 0.00209$$

The criterion for significance from the SCAQMD is a Chronic Hazard Index increase of 1.0 or greater. Therefore, the non-cancer chronic health risks to residents at the proposed homes would be within the acceptable standards.

Acute Health Impacts

Acute health effects are characterized by sudden and severe exposure and rapid absorption of a TAC. Normally, a single large exposure is involved. Acute health effects are often treatable and reversible. The acute hazard index is calculated from the maximum 24-hour concentrations of PM10 at the point of maximum impact (PMI), which has been calculated with the AERMOD model and the parameters detailed above. The relationship for non-cancer acute health effects is given by the equation:

$$AHI = C / AREL$$

Where,

AHI = Acute Hazard Index; an expression of the potential for non-cancer health effects.
C = Maximum hourly concentration of either PM10 in $\mu g/m^3$.
AREL = Acute Reference Exposure Level.

No acute risk has been found to be directly created from DPM, so there is no AREL assigned to DPM, however in order to provide an DPM equivalent AREL, the ARELs from all of the other TACs that are

emitted in diesel exhaust were added together based on their diesel weighting. This resulted in a diesel emission weighted equivalent AREL of 137 µg/m^3. The AERMOD model found that the highest 24-hour concentration at the PMI is 0.0178 µg/m^3 for DPM equivalent acute non-cancer risk emissions. The resulting Hazard Index is:

$$AHI = 0.0178 / 137 = 0.00013$$

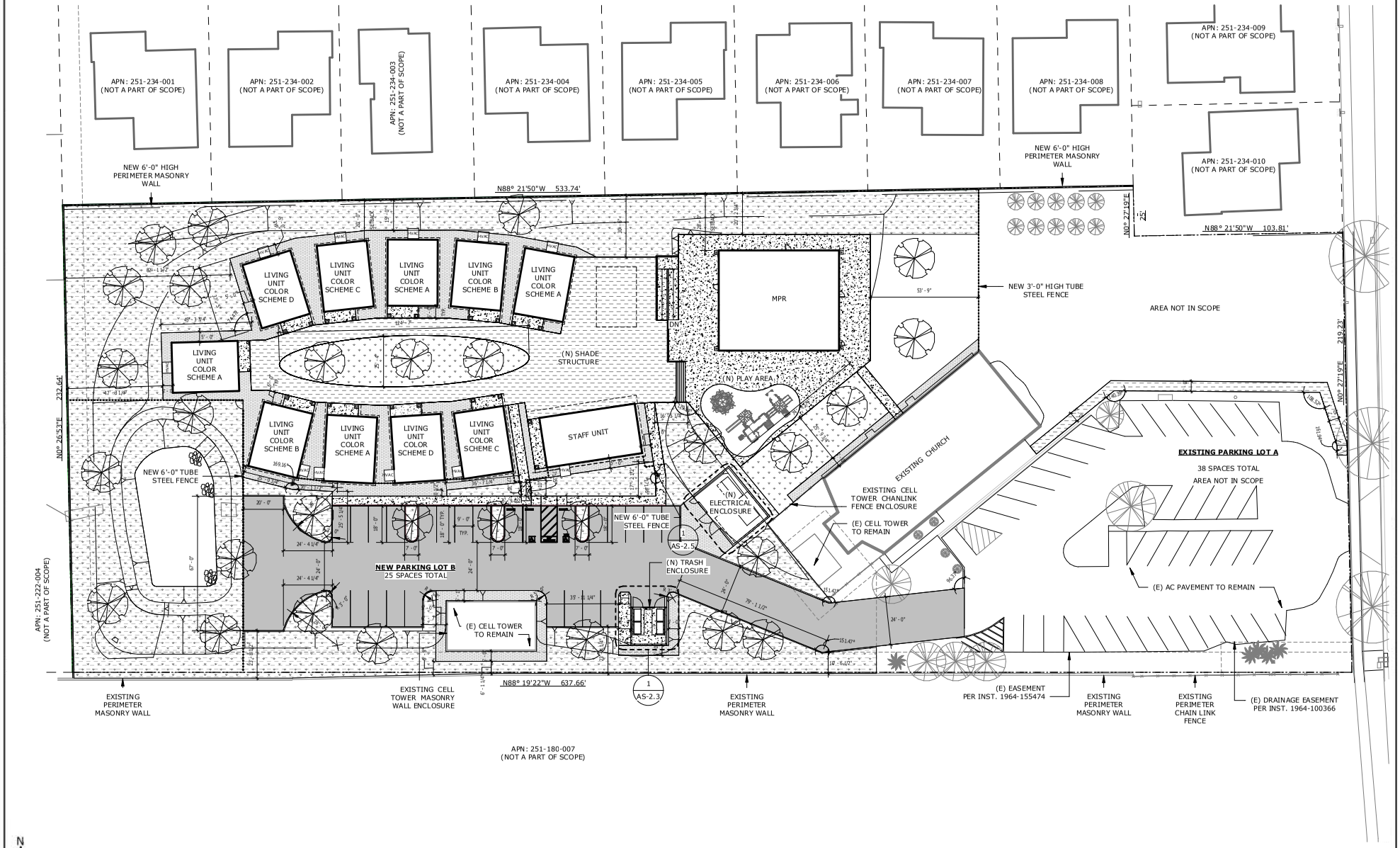
The criterion for significance from SCAQMD is an Acute Hazard Index increase of 1.0 or greater. Therefore, the non-cancer acute health risks to the residents at the proposed homes would be within the acceptable standards.

Please let me know if you have any questions or need additional information with regard to the above analysis. I can be reached at (949) 510-5355, or email me at greg@vistalb.com.

Sincerely,

Greg Tonkovich, AICP
Senior Analyst
Vista Environmental
949 510 5355

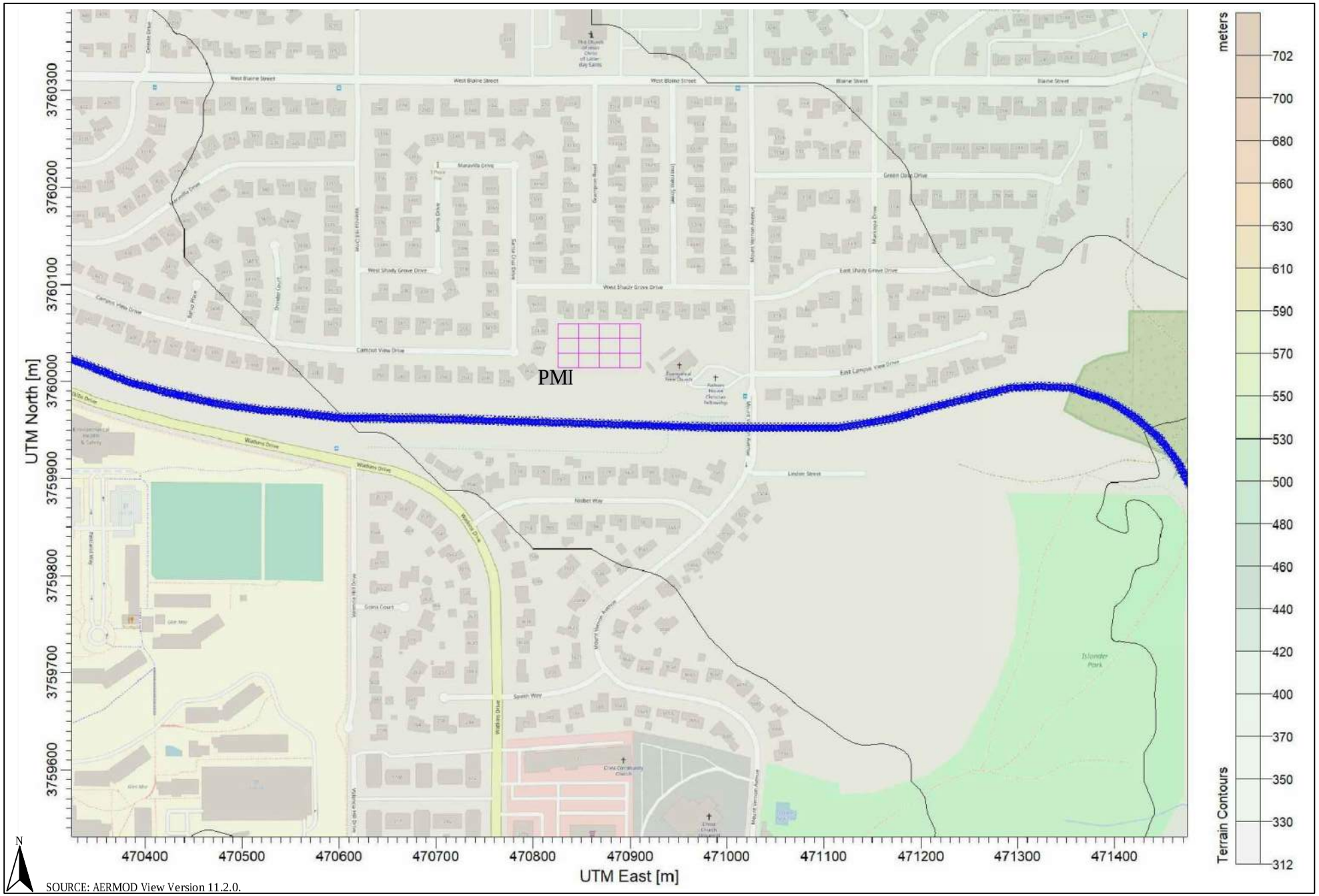
Encl.: Figure 1 Proposed Site Plan
Figure 2 AERMOD Source and Receptor Placement
AERMOD Model Printouts



SOURCE: Ruhnau Clarke Architects

VISTA ENVIRONMENTAL

Figure 1
Proposed Site Plan



SOURCE: AERMOD View Version 11.2.0.

VISTA ENVIRONMENTAL

Figure 2
AERMOD Model Sources and Receptors Placement

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** AERMOD Input Produced by:
** AERMOD View Ver. 11.2.0
** Lakes Environmental Software Inc.
** Date: 11/6/2023
** File: C:\Vista Env\2023\23045 Riverside\AERMOD\TrainDPM\TrainDPM.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
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CO STARTING
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   TITLETWO PM10
   MODELOPT DFAULT CONC
   AVERTIME 24 PERIOD
   URBANOPT 2189641 Riverside_Co
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL TrainDPM.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = RAIL
** DESCRSRC BNSF and Metrolink Railroad
** PREFIX
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** Configuration = Adjacent
** Emission Rate = 0.000385
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** SZINIT = 2.60
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SRCPARAM L0000208     0.000001234      0.00      1.86      2.60
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SRCPARAM L0000261     0.000001234      0.00      1.86      2.60
SRCPARAM L0000262     0.000001234      0.00      1.86      2.60
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** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
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****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED TrainDPM.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE ..\RiversideAirportADJU\KRAL_V9_ADJU\KRAL_v9.SFC
   PROFFILE ..\RiversideAirportADJU\KRAL_V9_ADJU\KRAL_v9.PFL
   SURFDATA 3171 2012 Riverside_Airport
   UAIRDATA 3190 2012
   PROFBASE 245.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 24 ALL 1ST TrainDPM.AD\24H1GALL.PLT 31
   PLOTFILE PERIOD ALL TrainDPM.AD\PE00GALL.PLT 32
   SUMMFILE TrainDPM.sum
OU FINISHED
**
****************************************
** Project Parameters
****************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     11
** ZONEINX  0
**
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* AERMOD (22112 ): Riverside Crest Cottages - DPM Train Emissions                    11/06/23
* AERMET ( 16216):                                                                  17:55:24
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
*         PLOT FILE OF PERIOD VALUES AVERAGED ACROSS   0 YEARS FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF    20 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),2X,A6,2X,A8,2X,I8.8,2X,A8)
*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE      GRP       NUM HRS   NET ID
* ____________  ____________  ____________  _______  _______  _______  _______  _________  _________  ________
  470826.07000 3760013.95000       0.01045   356.10   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470847.32000 3760013.95000       0.01035   356.80   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470868.57000 3760013.95000       0.01026   357.50   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470889.82000 3760013.95000       0.01016   358.20   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470911.07000 3760013.95000       0.01011   358.20   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470826.07000 3760029.13000       0.00827   356.60   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470847.32000 3760029.13000       0.00821   357.30   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470868.57000 3760029.13000       0.00814   358.10   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470889.82000 3760029.13000       0.00807   358.80   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470911.07000 3760029.13000       0.00806   358.80   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470826.07000 3760044.31000       0.00680   357.10   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470847.32000 3760044.31000       0.00675   357.80   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470868.57000 3760044.31000       0.00669   358.60   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470889.82000 3760044.31000       0.00664   359.30   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470911.07000 3760044.31000       0.00664   359.40   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470826.07000 3760059.49000       0.00573   357.60   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470847.32000 3760059.49000       0.00568   358.40   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470868.57000 3760059.49000       0.00564   359.10   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470889.82000 3760059.49000       0.00560   359.80   939.00     0.00  PERIOD   ALL       00043848  UCART1
  470911.07000 3760059.49000       0.00558   360.30   939.00     0.00  PERIOD   ALL       00043848  UCART1
** CONCUNIT ug/m^3
** DEPUNIT g/m^2
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* AERMOD (22112): Riverside Crest Cottages - DPM Train Emissions 11/06/23
* AERMET (16216): PM10 17:55:24
* MODELING OPTIONS USED: RegDFAULT CONC ELEV URBAN ADJ_U*
* PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL
* FOR A TOTAL OF 20 RECEPTORS.
* FORMAT: (3(1X,F13.5),3(1X,F8.2),3X,A5,2X,A8,2X,A5,5X,A8,2X,I8)

* X	Y	AVERAGE CONC	ZELEV	ZHILL	ZFLAG	AVE	GRP	RANK	NET ID	DATE(CONC)
470826.07000	3760013.95000	0.01779	356.10	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470847.32000	3760013.95000	0.01759	356.80	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470868.57000	3760013.95000	0.01739	357.50	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470889.82000	3760013.95000	0.01720	358.20	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470911.07000	3760013.95000	0.01709	358.20	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470826.07000	3760029.13000	0.01437	356.60	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470847.32000	3760029.13000	0.01423	357.30	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470868.57000	3760029.13000	0.01408	358.10	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470889.82000	3760029.13000	0.01394	358.80	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470911.07000	3760029.13000	0.01389	358.80	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470826.07000	3760044.31000	0.01204	357.10	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470847.32000	3760044.31000	0.01194	357.80	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470868.57000	3760044.31000	0.01183	358.60	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470889.82000	3760044.31000	0.01173	359.30	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470911.07000	3760044.31000	0.01169	359.40	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470826.07000	3760059.49000	0.01036	357.60	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470847.32000	3760059.49000	0.01027	358.40	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470868.57000	3760059.49000	0.01019	359.10	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470889.82000	3760059.49000	0.01010	359.80	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924
470911.07000	3760059.49000	0.01004	360.30	939.00	0.00	24-HR	ALL	1ST	UCART1	13121924

** CONCUNIT ug/m^3
** DEPUNIT g/m^2

EBI Consulting
environmental | engineering | due diligence

Radio Frequency Emission Survey (Post-Construction)

Address:	3431 Mount Vernon Avenue Riverside, California 92507
Site Survey Date:	September 20, 2023
Report Date:	September 25, 2023

1. Introduction

The electromagnetic spectrum includes various forms of electromagnetic energy from extremely low frequency energy, with very long wavelengths, to x-rays and gamma rays, which have very high frequencies and short wavelengths. In between are radio waves, microwaves, infrared, visible light and ultraviolet, for example.

As depicted in Figure 1-1, the frequencies from AT&T Mobility's and T-Mobile's equipment emit non-ionizing energy. The effects of non-ionizing energy are non-cumulative. Non-ionizing energy can turn into heat, if absorbed. (By comparison, ionizing energy is generally cumulative and can cause chemical and biological changes).

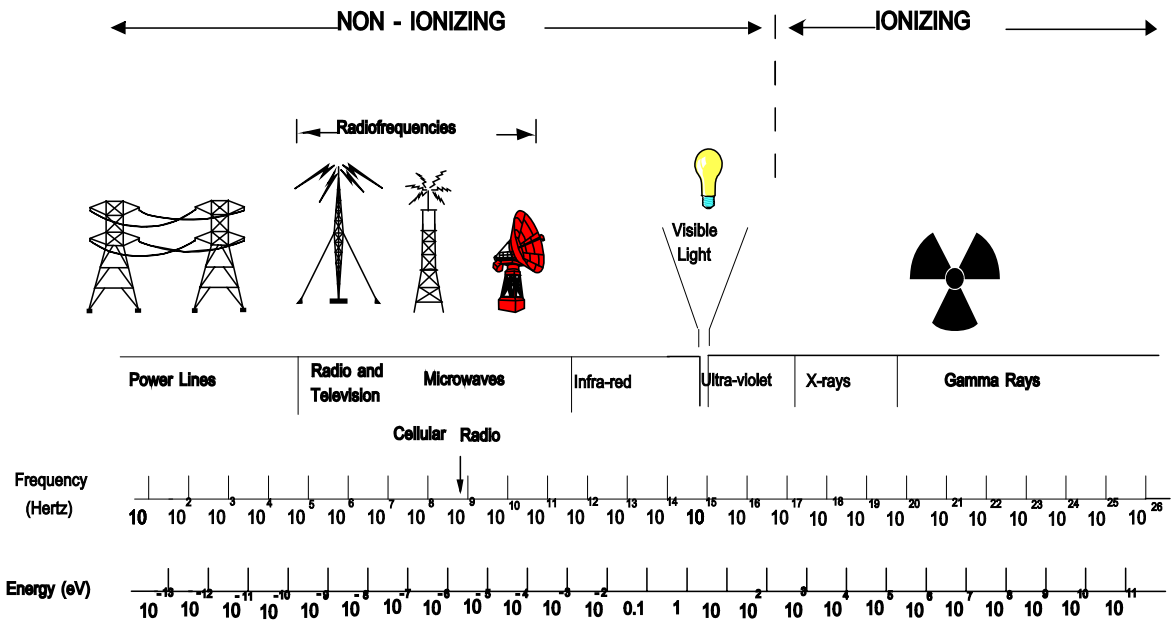


Figure 1-1.
(FCC OET Bulletin 56, Fourth Ed.)

AT&T Mobility and T-Mobile have installed RF transmitting antennas at the following location (the "wireless telecommunications facility"):

3431 Mount Vernon Avenue, Riverside, California 92507

Facility Type:	Monotree/Steeple
Access Restriction(s):	Locked Access Gates
RF Signage	
Type(s):	Yes; T-Mobile Caution, Guidelines, and Notice; AT&T Caution
Location:	T-Mobile Steeple Gate Perimeter/Access Door; AT&T 10' above base of Monotree
Facility Area Classification:	Uncontrolled (General Population)
Measurement Results	Based on FCC limits where areas above 100% of the applicable limit would require mitigation for compliance.
Max RF Level at Surrounding Street Level Around Site:	4.6200% of FCC General Population MPE limit
FCC Compliance Conclusion:	**The site is in compliance with FCC limits and guidelines.**

Table 1-1. Report Summary

EBI Consulting performed an RF emission survey of the RF environment surrounding the facilities installed by AT&T Mobility and T-Mobile at this location. The facility consists of a monotree telecommunications tower and antenna mounted in a church steeple. Access to the facility is restricted to authorized personnel and facility management.

AT&T Mobility and T-Mobile are licensed by the Federal Communications Commission ("FCC") to provide wireless communications services. As required by the FCC, wireless system operators perform an assessment of the potential human exposure to radio frequency emissions from transmitting antennas at the site.

The physical survey verified antenna placement and technical specifications for accurate recommendations to determine compliance with FCC guidelines. Antenna specifications presented herein are based on direct evidence from an antenna or transmitter cabinet, information from the site manager or building manager, information from the licensees, educated estimates by the field technician or a combination of some or all of these sources.

A survey was performed on September 20, 2023 to determine the RF emission levels present at the site. Measurements were performed on the areas considered accessible to the general population at ground level surrounding the tower and the telecommunications

facility.

To measure the RF emissions within the vicinity, EBI Consulting utilized a NARDA E Field Probe Model EA-5091 Standard Shaped probe S/N 1205, with a NARDA Electromagnetic Survey Meter Model NBM-550 S/N F-0403. Probe calibration was performed on November 14, 2022 with meter calibration performed on November 8, 2022.

2. Technical Specifications

Below in Table 2-1 are the technical specifications of the antennas located at the site. Physical verification was made to ensure technical specification accuracy. Antenna specifications presented herein are based on direct evidence from an antenna or transmitter cabinet, information from the site manager or building manager, information from the licensees, educated estimates by the field technician or a combination of some or all of these sources. “N/A” (not available) is used if any of the following information was not obtainable or verifiable to an acceptable certainty.

Ant #	Type	Height (Estimated Above Ground Level ft.)	Carrier
1	Panel	40	AT&T
2	Panel	40	AT&T
3	Panel	40	AT&T
4	Panel	40	AT&T
5	Panel	40	AT&T
6	Panel	40	AT&T
7	Panel	40	AT&T
8	Panel	40	AT&T
9	Panel	40	AT&T
10	Panel	40	AT&T
11	Panel	40	AT&T
12	Panel	40	AT&T
13	Panel	20	T-Mobile
14	Panel	20	T-Mobile
15	Panel	20	T-Mobile

Table 2-1. Technical Specifications

3. Photos

The following photos show the AT&T Mobility and T-Mobile wireless telecommunications facilities.

1.	Site Overview

3.	T-Mobile Steeple

2.	AT&T Monotree

4.	AT&T Caution Signage

5.	T-Mobile Perimeter Signage

8.	T-Mobile Access Door Signage

6.	AT&T Gate Signage

9.	T-Mobile Equipment

7.	T-Mobile Gate Signage

10.	Parking Lot

11.	Parking Lot/AT&T Vehicle Gate

14.	AT&T Broadcast West

12.	AT&T Broadcast North

15.	West View of Site

13.	AT&T Broadcast South

16.	NW View of Field/Site

17.	North View of Field/Site

20.	North/West Side Steeple

18.	View of West Steeple

21.	NE Grassy Field/Parking Lot

19.	N Church Field

22.	T-Mobile Broadcast North

23.	T-Mobile Broadcast South

26.	Center Field

24.	T-Mobile Broadcast East

27.	North/East Side Steeple

25.	T-Mobile Broadcast West

28.	West/South View Steeple

4. RF Survey

RF emission levels were assessed through direct measurements at the transmitter site using properly calibrated field probes. Due to the possibility that Electromagnetic Energy (“EME”) fields may exist over a wide frequency range within which the exposure limits vary, field measurements were performed with a meter equipped with a frequency shaped probe that can automatically weigh each field contribution according to its frequency.

5. FCC Policy on Human Exposure to RF Emissions

The FCC guidelines for human exposure to RF emissions were derived from the recommendations of two expert organizations, the National Council on Radiation Protection and Measurements ("NCRP") and the Institute of Electrical and Electronics Engineers ("IEEE"). The exposure guidelines are based on thresholds for known adverse effects and they incorporate an appropriate margin of safety. The federal health and safety agencies such as the Environmental Protection Agency ("EPA"), the Food and Drug Administration ("FDA"), the National Institute on Occupational Safety and Health ("NIOSH") and the Occupational Safety and Health Administration ("OSHA") have also been actively involved in monitoring and investigating issues related to RF exposure.

The FCC's Maximum Permissible Exposure ("MPE") limits are based on exposure limits (over a wide range of frequencies) recommended by the NCRP and the exposure limits developed by the IEEE and adopted by the American National Standards Institute ("ANSI"). The limits for localized absorption are based on the recommendations of both the ANSI/IEEE and the NCRP. The potential hazard associated with the RF electromagnetic fields is discussed in OET Bulletin No. 56 "Questions and Answers about the Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields". This document can be obtained on the FCC website at www.fcc.gov. The table and the graph below represent the FCC limits for both occupational and general population exposures to different radio frequencies:

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/ controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general public/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

General public/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

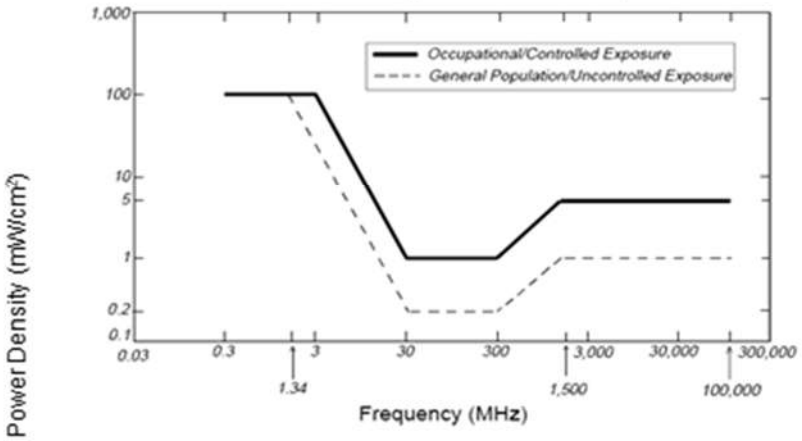
Table 1 and Figure 1 (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a

substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are “time-averaged” limits to reflect different durations resulting from controlled and uncontrolled exposures.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)
* Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



6. Discussion of Safety Criteria

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Energy levels associated with the RF radiations are not great enough to cause the ionization of atoms and molecules. “Ionization” is a process by which electrons are stripped from atoms and molecules. This process can produce molecular changes that can lead to damage in biological tissue including effects on DNA, the genetic material. This process requires interaction with high levels of electromagnetic energy. Those types of electromagnetic radiation with enough energy to ionize biological material include x-radiation and gamma radiation. Therefore, x-rays and gamma rays are examples of ionizing radiation (see Section 1 for additional information).

RF energy is a type of non-ionizing radiation. Other types of non-ionizing radiation include visible light, infrared radiation and other forms of electromagnetic radiation with relatively low frequencies. Often the term “radiation” is used to apply to ionizing radiation associated with nuclear power plants. Ionizing radiation should not be confused with the lower-energy, non-ionizing radiation with respect to possible biological effects.

The RF emissions from antennas used for wireless telecommunications typically result in exposure levels at the site that are well below the limits recommended by the FCC. These limits were adopted by the FCC based on the recommendations of expert organizations and endorsed by agencies of the Federal Government responsible for health and safety.

Other antennas, such as those used for radio and television broadcast transmissions, use power levels that are generally higher than those used for wireless antennas. Therefore, in some cases, there could be a potential for higher levels of exposure on the site. However, all broadcast stations are also required to demonstrate compliance with the FCC guidelines.

7. Field Measurements

7.1 Ground-Level Measurements

An RF emissions survey was performed at the wireless telecommunications facility. This survey included walking around the structure and noting the maximum average spatial readings encountered. The maximum value of the average spatial readings of RF emissions encountered on the ground was 4.6200% of the General Population standard.

See Appendix B for the layout depicting the actual readings (% of the FCC MPE General Population standard limit) at various locations at the site. Various measurements were taken to indicate the RF emissions levels that can be encountered by an individual who gains access near the structure.

8. Conclusion

Compliance with the FCC's rules on human exposure to RF emissions at wireless telecommunications facilities generally is determined by comparing actual measurements taken at the facility to the FCC's MPE limits.

The results of the instant survey indicate that the levels of RF emissions exposure do not exceed applicable FCC MPE limits. Based on FCC limits where areas above 100% of the applicable limit would require mitigation for compliance.

The highest level of RF emissions measured at ground level surrounding the structure was 4.6200% of the FCC's MPE limits based on the General Population standard. An uncontrolled/general population environment assumes that access to the facility is not generally restricted to authorized personnel and facility management and members of the general public will be able to access the wireless telecommunications facility.

9. Certification

This report was prepared for AT&T Mobility and serves as certification for compliance of the existing AT&T Mobility telecommunications facility. The analysis and information provided herein is based on applicable FCC regulations concerning RF safety and the control of human exposure to RF emissions. The information and analysis contained in this report are accurate and complete to the best knowledge and belief of the undersigned.

Survey Completed by:

Barry Barsamian September 20, 2023

Barry Barsamian
RF-EME Specialist
EBI Consulting

Report Prepared by:

Barry Barsamian September 25, 2023

Barry Barsamian
RF-EME Specialist
EBI Consulting

Appendix A

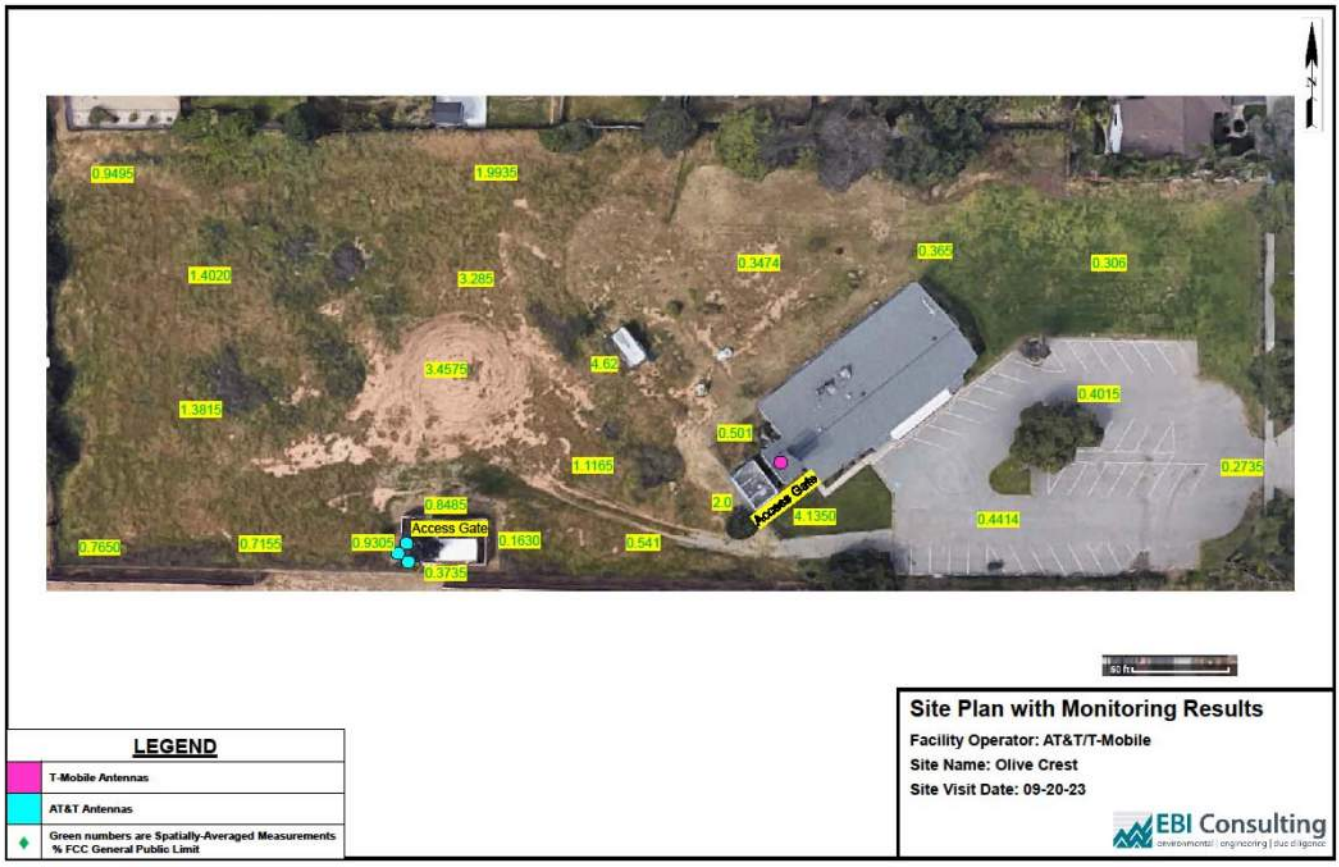
References

- FCC OET Bulletin 65 “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields,” (Edition 97-01, dated August 1997).
- FCC OET Bulletin 56 “Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields,” (Fourth Edition, dated August 1999).
- FCC “Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation”, ET Docket 93-62, Report and Order, FCC 96-326, adopted August 1, 1996. 61 Federal Register 41006 (1996).
- Federal Communications Commission (FCC), Telecommunication Act of 1996, Title VII, Section 704, Facilities Siting; Radio Frequency Emissions Standards.
- National Council on Radiation Protection and Measurements (NCRP), “Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields”, NCRP Report No. 119, 1993.
- American National Standards Institute (ANSI), “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE C95.1-1992 (previously issued as IEEE C95.1-1991).
- American National Standard Institute (ANSI), “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, (300 kHz to 100 GHz), ANSI C95.1-1982.

Appendix B

Field Measurements and Site Layout

% FCC MPE	Transmitting Direction of Antennas up to 200'	Spatial Averages
Location Reference	**% Occupational MPE**	**% General Population MPE**
Tree Base North	0.1697	0.8485
Tree Base South	0.0747	0.3735
Tree Base East	0.0326	0.1630
Tree Base West	0.1861	0.9305
Steeple Base South	0.8270	4.1350
Steeple Base North	0.1002	0.5010
Steeple Base West	0.4000	2.0000
Center Field, 50' from AT&T/100' from T-Mobile	0.6915	3.4575
Center #2	0.9240	**4.6200**
West 50'	0.1431	0.7155
West 100'	0.1530	0.7650
NW Field Corner	0.1899	0.9495
North Field Edge	0.3987	1.9935
West Church	0.2233	1.1165
NE Grassy Field	0.0612	0.3060
Parking Lot North	0.0803	0.4015
Parkng Lot South	0.0883	0.4414
Parking Lot East	0.0547	0.2735
NW Field	0.2804	1.4020
NE Field	0.7057	3.5285


0.9495
1.9935
1.4020
3.285
0.3474
0.365
0.306
3.4575
4.62
1.3815
0.4015
0.501
1.1165
0.2735
0.8485
Access Gate
2.0
4.1350
0.4414
0.7650
0.7155
0.9305
0.1630
0.541
0.3735
Access Gate
50 ft
LEGEND
T-Mobile Antennas
AT&T Antennas
Green numbers are Spatially-Averaged Measurements
% FCC General Public Limit
Site Plan with Monitoring Results
Facility Operator: AT&T/T-Mobile
Site Name: Olive Crest
Site Visit Date: 09-20-23
EBI Consulting

VISTA ENVIRONMENTAL

October 15, 2024

Tracy Fitzsimmons
Olive Crest Housing
555 Technology Court
Riverside, CA 92507

Subject: **City of Riverside Crest Cottages (3431 Mt. Vernon Avenue) Residential Project Noise Technical Memorandum.**

Dear Ms. Fitzsimmons:

Vista Environmental has conducted an analysis to evaluate whether the proposed Crest Cottages at 3431 Mt. Vernon Avenue residential project (proposed project) would expose the residents to significant noise levels from trains operating on the BNSF and Metrolink Railroad that is adjacent to the south side of the project site. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.).

PURPOSE OF ANALYSIS

The *Olive Crest Housing – 3431 Mt. Vernon Avenue – Planning Case DP-2023-00841 (Conceptual Development Review)*, prepared by the City of Riverside, June 21, 2023, Planning Comment 38.f. states the following:

> The project site is located within the 65 and 70 CNEL noise contours, per Figure N-7 of the General Plan. Therefore, per MM Noise 1 and MM Noise 3 of the General Plan, a Nosie and Vibration Study is required to evaluate possible impacts and to recommend suitable project design features (or mitigation) consistent with Title 24 regulations and the City's Noise Code. Advisory: Per Figure N-10 of the General Plan, the 65 and 70 CNEL noise contours are considered "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.

As such, this analysis has been prepared to determine the noise impacts to the proposed homes and if the noise levels at the proposed homes would exceed the Normally Acceptable limit of below 65 dBA CNEL.

PROJECT DESCRIPTION

Site Location and Study Area

The project site is located in the eastern portion of the City of Riverside (City) at 3431 Mt. Vernon Avenue. The project site is located on vacant land located behind the existing Crest Community Church and is bounded by single-family homes to the north, the Church and Mt. Vernon Avenue to the east, the BNSF and Metrolink Railroad to the south, and single-family homes to the west.

There is currently a concrete masonry unit (cmu) wall located between the project site and the BNSF and Metrolink Railroad on the south side of the project site. The majority of the wall is approximately 10 feet high, however there is an approximately 95 foot long section located behind the existing cell tower near

the middle of the project site that is approximately 5 feet high. It should be noted that the noise contours provided in Figure N-7 2025 Railroad Noise from the General Plan did not account for this or any other sound wall in the noise contour modeling.

Proposed Project Description

The project is proposing to develop ten living unit cottages plus a staff unit for a total of 11 residential units clustered within the northwest portion of the site, with the southernmost homes proposed to be as near as 200 feet north of the Railroad. Along with the cottages, several other project features will be developed including a multi-purpose room, a shade structure, central gathering area, , water quality basin, fire access, and a parking lot. The site plan is shown in Figure 1.

MEASURED NOISE LEVELS

In order to determine the ambient noise levels at the proposed homes, two long-term (24-hour) noise measurements were recorded between 12:10 p.m. on Wednesday October 18, 2023 and 12:14 p.m. on Thursday, October 19, 2023. The results of the noise level measurements are presented in Table A. Table A shows the Leq, Lmax, and CNEL, based on the entire measurement time as well as the minimum and maximum L_{eq} averaged over 1-hour intervals. The locations of the Noise Measurements are shown in Figure 2 and a graph of the 24-hour noise measurements is shown in Figure 3 that is attached to this Memo and the noise monitoring data printouts are attached to this Memo.

Table A – Existing (Ambient) Noise Level Measurements

Site No.	Site Description	Average (dBA L_{eq})		1-hr Average (dBA L_{eq}/Time)		Average[3] (dBA CNEL)
		Daytime[1]	Nighttime[2]	Minimum	Maximum	
1	Located near the middle of the project site and directly north of the existing cell tower on the project site.	47.7	49.9	41.6 11:21 a.m.	54.3 2:02 a.m.	56.2
2	On a power pole located approximately in the middle of the west property line.	45.3	45.0	38.8 11:49 p.m.	50.4 4:21 p.m.	51.6

Notes:
[1] Daytime defined as 7:00 a.m. to 10:00 p.m. (Section 7.25.010 of the Municipal Code)
[2] Nighttime define as 10:00 p.m. to 7:00 a.m. (Section 7.25.010 of the Municipal Code)
[3] The 24-hour average dBA CNEL is calculated by taking the hourly Leq values and adding a penalty of 5 dB during the evening hours of 7 to 10 pm and adding a 10 dB penalty during the nighttime hours of 10 pm to 7 am.
Source: Noise measurements taken between Wednesday, October 18 and Thursday, October 19, 2023.

IMPACT ANALYSIS

In order to determine if the proposed homes would exceed the City's Normally Acceptable limit of below 65 dBA CNEL from Figure N-10 of the General Plan, noise measurements were taken on the project site and are detailed above in Table A. As shown in Table A, the noise level on the project site in the area where the proposed homes will be constructed ranges between 51.6 and 56.2 dBA CNEL, which is within the Normally Acceptable standard for new homes. It should be noted that there is an existing sound wall between the Railroad and the project site and this section of the Railroad has been designated as a "Quiet Zone", where the nearby Railroad crossing at Mt Vernon Avenue has been upgraded to provide gates that

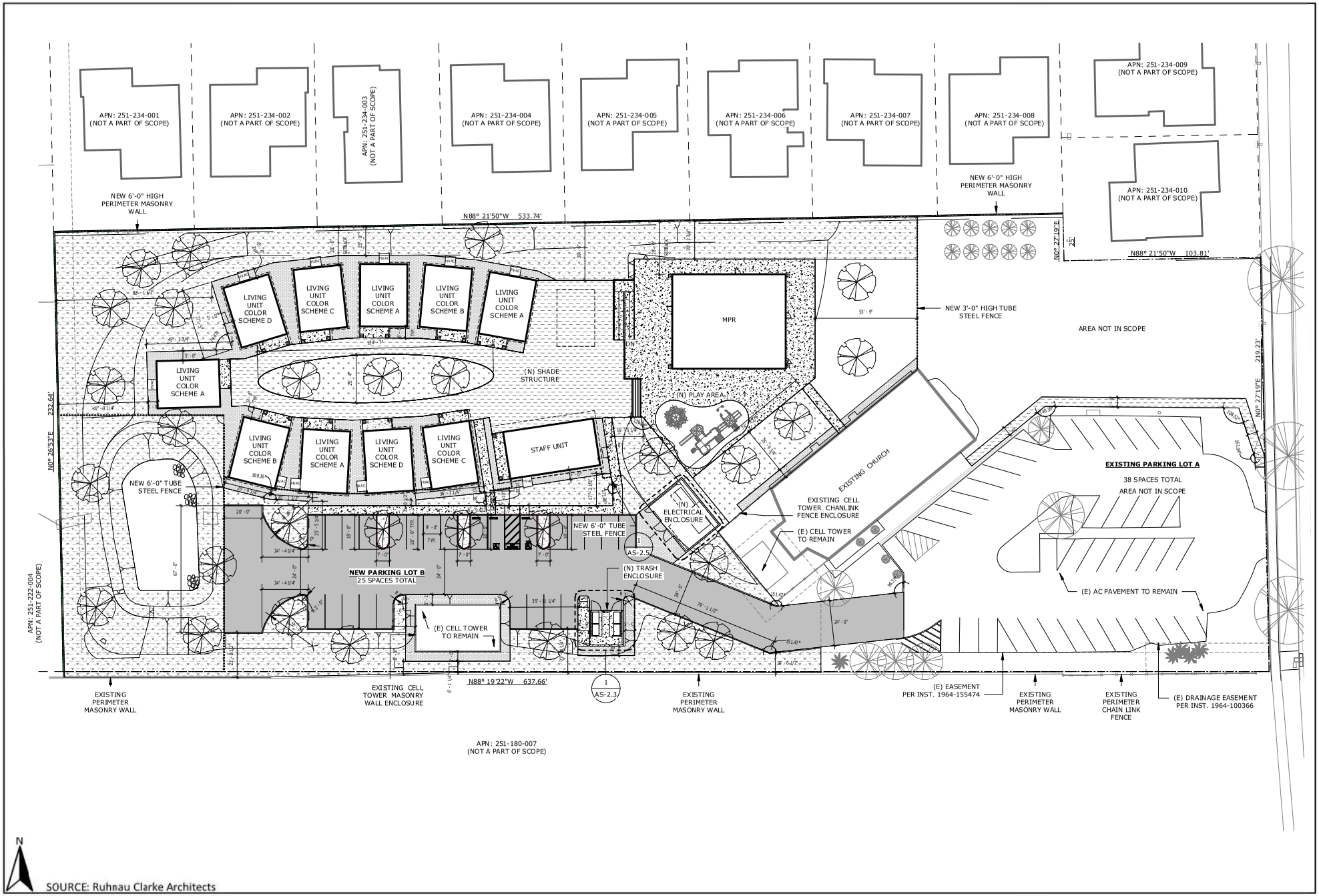
restrict both vehicles and pedestrians from crossing when a train approaches, which minimizes the use of train horns in the vicinity of the project site. Therefore, the noise impacts to residents of the proposed homes would be within the acceptable standards.

Please let me know if you have any questions or need additional information with regard to the above analysis. I can be reached at (949) 510-5355, or email me at greg@vistalb.com.

Sincerely,

Greg Tonkovich, INCE
Senior Analyst
Vista Environmental
949 510 5355

Encl.: Figure 1 Proposed Site Plan
Figure 2 Field Noise Measurement Locations
Figure 3 Field Noise Measurements Graph
Noise Measurements Printouts



SOURCE: Ruhnau Clarke Architects

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Figure 1
Proposed Site Plan

SOURCE: Riverside County Map My County Version 10.

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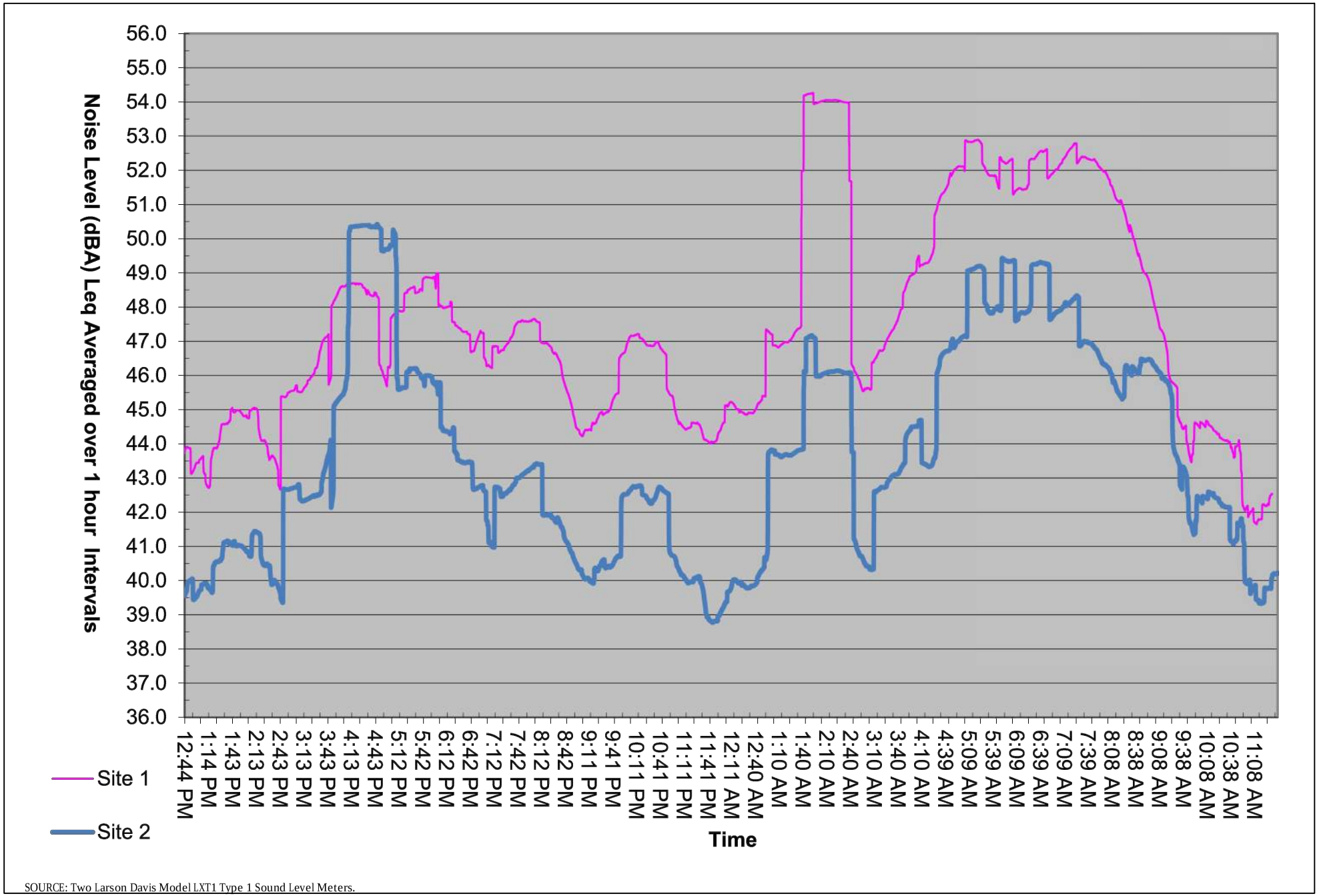
Figure 2
Field Noise Measurement Locations



SOURCE: Two Larson Davis Model LXT1 Type 1 Sound Level Meters.

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Figure 3
Field Noise Measurements Graph

Site 1 - Near Middle of Project Site. North of Cell Tower

October 18, 2023 12:10:53 PM Leq Daytime = 47.7
Sampling Time = 1 sec Freq Weighting=A Leq Nighttime = 49.9
Record Num = 86403 CNEL(24hr)= 56.2
Leq = 48.7 Ldn(24hr)= 56.1
Min = 36.2 Min Leq hr at 11:21 AM 41.6
Max = 79.4 Max Leq hr at 2:02 AM 54.3

Site 1 - Near Middle of Project Site. North of Cell Tower

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
66.7	12:10:53		66.7	66.7
62.9	12:10:54		62.9	62.9
66.4	12:10:55		66.4	66.4
64.6	12:10:56		64.6	64.6
70.0	12:10:57		70.0	70.0
74.9	12:10:58		74.9	74.9
71.7	12:10:59		71.7	71.7
69.0	12:11:00		69.0	69.0
66.5	12:11:01		66.5	66.5
63.3	12:11:02		63.3	63.3
69.0	12:11:03		69.0	69.0
67.8	12:11:04		67.8	67.8
68.2	12:11:05		68.2	68.2
72.9	12:11:06		72.9	72.9
69.9	12:11:07		69.9	69.9
65.8	12:11:08		65.8	65.8
61.8	12:11:09		61.8	61.8
57.9	12:11:10		57.9	57.9
54.4	12:11:11		54.4	54.4
52.4	12:11:12		52.4	52.4
50.4	12:11:13		50.4	50.4
51.0	12:11:14		51.0	51.0
55.3	12:11:15		55.3	55.3
56.8	12:11:16		56.8	56.8
56.3	12:11:17		56.3	56.3
54.9	12:11:18		54.9	54.9
55.8	12:11:19		55.8	55.8
59.3	12:11:20		59.3	59.3
59.9	12:11:21		59.9	59.9
57.6	12:11:22		57.6	57.6
58.1	12:11:23		58.1	58.1
57.8	12:11:24		57.8	57.8
57.8	12:11:25		57.8	57.8
55.2	12:11:26		55.2	55.2
54.9	12:11:27		54.9	54.9
57.9	12:11:28		57.9	57.9
59.7	12:11:29		59.7	59.7
57.3	12:11:30		57.3	57.3
62.7	12:11:31		62.7	62.7
60.8	12:11:32		60.8	60.8
61.2	12:11:33		61.2	61.2
57.4	12:11:34		57.4	57.4
54.0	12:11:35		54.0	54.0
64.6	12:11:36		64.6	64.6
65.4	12:11:37		65.4	65.4
61.4	12:11:38		61.4	61.4
57.7	12:11:39		57.7	57.7
55.5	12:11:40		55.5	55.5
54.5	12:11:41		54.5	54.5
51.8	12:11:42		51.8	51.8
51.2	12:11:43		51.2	51.2
54.6	12:11:44		54.6	54.6
56.9	12:11:45		56.9	56.9
63.1	12:11:46		63.1	63.1
60.5	12:11:47		60.5	60.5
63.4	12:11:48		63.4	63.4
63.5	12:11:49		63.5	63.5
59.6	12:11:50		59.6	59.6
60.0	12:11:51		60.0	60.0
57.1	12:11:52		57.1	57.1
54.7	12:11:53		54.7	54.7
52.0	12:11:54		52.0	52.0
56.2	12:11:55		56.2	56.2
59.2	12:11:56		59.2	59.2
55.6	12:11:57		55.6	55.6
57.8	12:11:58		57.8	57.8
57.9	12:11:59		57.9	57.9
56.1	12:12:00		56.1	56.1
56.1	12:12:01		56.1	56.1
56.6	12:12:02		56.6	56.6
54.2	12:12:03		54.2	54.2
51.7	12:12:04		51.7	51.7
49.0	12:12:05		49.0	49.0
46.6	12:12:06		46.6	46.6
50.5	12:12:07		50.5	50.5
52.8	12:12:08		52.8	52.8
51.8	12:12:09		51.8	51.8
52.4	12:12:10		52.4	52.4
55.6	12:12:11		55.6	55.6
51.8	12:12:12		51.8	51.8
49.2	12:12:13		49.2	49.2
48.2	12:12:14		48.2	48.2
45.3	12:12:15		45.3	45.3
45.8	12:12:16		45.8	45.8
46.0	12:12:17		46.0	46.0
43.6	12:12:18		43.6	43.6
42.5	12:12:19		42.5	42.5
44.9	12:12:20		44.9	44.9
47.0	12:12:21		47.0	47.0
58.4	12:12:22		58.4	58.4
58.5	12:12:23		58.5	58.5
61.0	12:12:24		61.0	61.0
58.4	12:12:25		58.4	58.4
54.8	12:12:26		54.8	54.8
51.0	12:12:27		51.0	51.0
48.0	12:12:28		48.0	48.0
45.6	12:12:29		45.6	45.6
43.9	12:12:30		43.9	43.9
43.0	12:12:31		43.0	43.0
42.1	12:12:32		42.1	42.1
41.3	12:12:33		41.3	41.3
41.1	12:12:34		41.1	41.1
41.1	12:12:35		41.1	41.1
41.2	12:12:36		41.2	41.2
40.8	12:12:37		40.8	40.8
40.1	12:12:38		40.1	40.1
40.0	12:12:39		40.0	40.0
39.9	12:12:40		39.9	39.9
39.9	12:12:41		39.9	39.9
39.9	12:12:42		39.9	39.9
40.0	12:12:43		40.0	40.0
40.2	12:12:44		40.2	40.2
40.5	12:12:45		40.5	40.5
40.4	12:12:46		40.4	40.4
40.1	12:12:47		40.1	40.1
39.9	12:12:48		39.9	39.9
39.8	12:12:49		39.8	39.8
39.6	12:12:50		39.6	39.6
39.4	12:12:51		39.4	39.4
39.5	12:12:52		39.5	39.5
39.6	12:12:53		39.6	39.6
39.6	12:12:54		39.6	39.6
39.8	12:12:55		39.8	39.8
40.0	12:12:56		40.0	40.0
40.0	12:12:57		40.0	40.0
39.9	12:12:58		39.9	39.9
39.7	12:12:59		39.7	39.7
39.7	12:13:00		39.7	39.7
39.7	12:13:01		39.7	39.7
39.5	12:13:02		39.5	39.5
39.5	12:13:03		39.5	39.5
39.5	12:13:04		39.5	39.5
39.6	12:13:05		39.6	39.6
39.5	12:13:06		39.5	39.5
39.6	12:13:07		39.6	39.6
40.0	12:13:08		40.0	40.0
40.8	12:13:09		40.8	40.8
40.9	12:13:10		40.9	40.9
41.8	12:13:11		41.8	41.8
42.4	12:13:12		42.4	42.4
42.7	12:13:13		42.7	42.7
41.5	12:13:14		41.5	41.5
40.7	12:13:15		40.7	40.7
40.5	12:13:16		40.5	40.5
41.0	12:13:17		41.0	41.0
42.1	12:13:18		42.1	42.1
40.9	12:13:19		40.9	40.9
40.0	12:13:20		40.0	40.0
39.6	12:13:21		39.6	39.6
39.8	12:13:22		39.8	39.8
40.1	12:13:23		40.1	40.1
40.5	12:13:24		40.5	40.5
40.1	12:13:25		40.1	40.1
39.9	12:13:26		39.9	39.9
39.5	12:13:27		39.5	39.5
39.4	12:13:28		39.4	39.4
39.1	12:13:29		39.1	39.1
39.4	12:13:30		39.4	39.4
40.2	12:13:31		40.2	40.2
40.9	12:13:32		40.9	40.9
42.0	12:13:33		42.0	42.0
45.0	12:13:34		45.0	45.0
45.0	12:13:35		45.0	45.0
43.6	12:13:36		43.6	43.6
43.6	12:13:37		43.6	43.6
43.1	12:13:38		43.1	43.1
42.8	12:13:39		42.8	42.8
43.7	12:13:40		43.7	43.7
42.1	12:13:41		42.1	42.1
42.4	12:13:42		42.4	42.4

Site 2 - On Power Pole on West Side of Project Site

October 18, 2023 12:14:09 PM Leq Daytime = 45.3
Sampling Time = 1 sec Freq Weighting=A Leq Nighttime = 45.0
Record Num = 86403 CNEL(24hr)= 51.6
Leq = 45.2 Ldn(24hr)= 51.5
Min = 32.9 Min Leq hr at 11:49 PM 38.8
Max = 76.9 Max Leq hr at 4:21 PM 50.4

Site 2 - On Power Pole on West Side of Project Site

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
53.5	12:14:09		53.5	53.5
50.5	12:14:10		50.5	50.5
56.6	12:14:11		56.6	56.6
54.8	12:14:12		54.8	54.8
50.7	12:14:13		50.7	50.7
47.2	12:14:14		47.2	47.2
45.7	12:14:15		45.7	45.7
50.5	12:14:16		50.5	50.5
59.8	12:14:17		59.8	59.8
72.7	12:14:18		72.7	72.7
76.9	12:14:19		76.9	76.9
76.2	12:14:20		76.2	76.2
72.1	12:14:21		72.1	72.1
68.0	12:14:22		68.0	68.0
63.8	12:14:23		63.8	63.8
59.5	12:14:24		59.5	59.5
55.5	12:14:25		55.5	55.5
51.5	12:14:26		51.5	51.5
51.7	12:14:27		51.7	51.7
54.2	12:14:28		54.2	54.2
62.7	12:14:29		62.7	62.7
61.6	12:14:30		61.6	61.6
58.6	12:14:31		58.6	58.6
59.7	12:14:32		59.7	59.7
59.0	12:14:33		59.0	59.0
58.0	12:14:34		58.0	58.0
56.9	12:14:35		56.9	56.9
54.8	12:14:36		54.8	54.8
54.0	12:14:37		54.0	54.0
52.4	12:14:38		52.4	52.4
51.0	12:14:39		51.0	51.0
54.1	12:14:40		54.1	54.1
55.3	12:14:41		55.3	55.3
63.5	12:14:42		63.5	63.5
67.2	12:14:43		67.2	67.2
63.2	12:14:44		63.2	63.2
59.7	12:14:45		59.7	59.7
56.0	12:14:46		56.0	56.0
52.3	12:14:47		52.3	52.3
50.6	12:14:48		50.6	50.6
59.6	12:14:49		59.6	59.6
68.8	12:14:50		68.8	68.8
64.6	12:14:51		64.6	64.6
62.0	12:14:52		62.0	62.0
60.2	12:14:53		60.2	60.2
56.3	12:14:54		56.3	56.3
54.6	12:14:55		54.6	54.6
58.0	12:14:56		58.0	58.0
53.9	12:14:57		53.9	53.9
50.0	12:14:58		50.0	50.0
47.6	12:14:59		47.6	47.6
63.5	12:15:00		63.5	63.5
71.7	12:15:01		71.7	71.7
67.5	12:15:02		67.5	67.5
63.4	12:15:03		63.4	63.4
60.1	12:15:04		60.1	60.1
57.1	12:15:05		57.1	57.1
55.8	12:15:06		55.8	55.8
54.6	12:15:07		54.6	54.6
52.6	12:15:08		52.6	52.6
49.9	12:15:09		49.9	49.9
49.2	12:15:10		49.2	49.2
53.4	12:15:11		53.4	53.4
55.7	12:15:12		55.7	55.7
76.0	12:15:13		76.0	76.0
72.2	12:15:14		72.2	72.2
68.0	12:15:15		68.0	68.0
64.0	12:15:16		64.0	64.0
61.0	12:15:17		61.0	61.0
59.7	12:15:18		59.7	59.7
56.2	12:15:19		56.2	56.2
53.7	12:15:20		53.7	53.7
59.0	12:15:21		59.0	59.0
57.9	12:15:22		57.9	57.9
59.0	12:15:23		59.0	59.0
61.8	12:15:24		61.8	61.8
61.2	12:15:25		61.2	61.2
57.7	12:15:26		57.7	57.7
56.6	12:15:27		56.6	56.6
56.8	12:15:28		56.8	56.8
53.1	12:15:29		53.1	53.1
51.7	12:15:30		51.7	51.7
48.4	12:15:31		48.4	48.4
45.7	12:15:32		45.7	45.7
45.4	12:15:33		45.4	45.4
48.2	12:15:34		48.2	48.2
47.1	12:15:35		47.1	47.1
44.8	12:15:36		44.8	44.8
43.7	12:15:37		43.7	43.7
43.3	12:15:38		43.3	43.3
41.7	12:15:39		41.7	41.7
39.5	12:15:40		39.5	39.5
38.0	12:15:41		38.0	38.0
37.1	12:15:42		37.1	37.1
36.9	12:15:43		36.9	36.9
37.1	12:15:44		37.1	37.1
39.4	12:15:45		39.4	39.4
39.4	12:15:46		39.4	39.4
45.6	12:15:47		45.6	45.6
45.7	12:15:48		45.7	45.7
45.4	12:15:49		45.4	45.4
46.4	12:15:50		46.4	46.4
43.5	12:15:51		43.5	43.5
41.0	12:15:52		41.0	41.0
39.6	12:15:53		39.6	39.6
44.3	12:15:54		44.3	44.3
43.3	12:15:55		43.3	43.3
42.7	12:15:56		42.7	42.7
40.6	12:15:57		40.6	40.6
39.3	12:15:58		39.3	39.3
38.6	12:15:59		38.6	38.6
38.7	12:16:00		38.7	38.7
38.4	12:16:01		38.4	38.4
37.7	12:16:02		37.7	37.7
37.3	12:16:03		37.3	37.3
37.4	12:16:04		37.4	37.4
37.4	12:16:05		37.4	37.4
37.0	12:16:06		37.0	37.0
36.9	12:16:07		36.9	36.9
36.8	12:16:08		36.8	36.8
41.8	12:16:09		41.8	41.8
51.3	12:16:10		51.3	51.3
47.4	12:16:11		47.4	47.4
43.8	12:16:12		43.8	43.8
40.9	12:16:13		40.9	40.9
39.2	12:16:14		39.2	39.2
38.0	12:16:15		38.0	38.0
37.4	12:16:16		37.4	37.4
37.5	12:16:17		37.5	37.5
38.3	12:16:18		38.3	38.3
38.6	12:16:19		38.6	38.6
39.1	12:16:20		39.1	39.1
40.3	12:16:21		40.3	40.3
41.9	12:16:22		41.9	41.9
40.8	12:16:23		40.8	40.8
40.8	12:16:24		40.8	40.8
40.7	12:16:25		40.7	40.7
41.4	12:16:26		41.4	41.4
42.3	12:16:27		42.3	42.3
44.1	12:16:28		44.1	44.1
44.0	12:16:29		44.0	44.0
42.5	12:16:30		42.5	42.5
40.7	12:16:31		40.7	40.7
42.3	12:16:32		42.3	42.3
43.3	12:16:33		43.3	43.3
42.0	12:16:34		42.0	42.0
41.1	12:16:35		41.1	41.1
43.4	12:16:36		43.4	43.4
42.0	12:16:37		42.0	42.0
41.0	12:16:38		41.0	41.0
41.5	12:16:39		41.5	41.5
41.4	12:16:40		41.4	41.4
41.5	12:16:41		41.5	41.5
40.8	12:16:42		40.8	40.8
39.8	12:16:43		39.8	39.8
39.6	12:16:44		39.6	39.6
40.0	12:16:45		40.0	40.0
41.4	12:16:46		41.4	41.4
42.4	12:16:47		42.4	42.4
41.2	12:16:48		41.2	41.2
40.3	12:16:49		40.3	40.3
39.4	12:16:50		39.4	39.4
39.3	12:16:51		39.3	39.3
39.1	12:16:52		39.1	39.1
39.3	12:16:53		39.3	39.3
39.1	12:16:54		39.1	39.1
38.9	12:16:55		38.9	38.9
39.1	12:16:56		39.1	39.1
38.8	12:16:57		38.8	38.8
38.8	12:16:58		38.8	38.8

Measurement Report

Report Summary

Meter's File Name	LxT_Data.001	Computer's File Name	SLM_0004671_LxT_Data_001.37.ldbin
Meter	LxT1		
Firmware	2.404		
User	GT	Location	
Description	Riverside Crest Cottages		
Note	Near Middle of Project Site, directly north of cell tower		
Start Time	2023-10-18 12:10:53	Duration	24:00:00.0
End Time	2023-10-19 12:10:53	Run Time	24:00:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	48.7 dB		
LAE	98.0 dB	SEA	--- dB
EA	707.9 µPa²h		
EA8	236.0 µPa²h		
EA40	1.2 mPa²h		
LZS_{peak}	117.1 dB	2023-10-18 12:48:05	
LAS_{max}	79.9 dB	2023-10-19 02:22:05	
LAS_{min}	36.1 dB	2023-10-19 11:34:33	
LA_{eq}	48.7 dB		
LC_{eq}	61.2 dB	LC_{eq} - LA_{eq}	12.5 dB
LAI_{eq}	51.9 dB	LAI_{eq} - LA_{eq}	3.2 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	48.7 dB		--- dB		--- dB	
$L_{S(max)}$	79.9 dB	2023-10-19 02:22:05	--- dB		--- dB	
$L_{S(min)}$	36.1 dB	2023-10-19 11:34:33	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		117.1 dB	2023-10-18 12:48:05

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	52.4 dB
LAS 10.0	51.2 dB
LAS 33.3	46.8 dB
LAS 50.0	45.2 dB
LAS 66.6	43.9 dB
LAS 90.0	41.1 dB

Measurement Report

Report Summary

Meter's File Name	LxT_Data.001	Computer's File Name	SLM_0006082_LxT_Data_001.42.ldbin
Meter	LxT1		
Firmware	2.404		
User	GT	Location	
Description	Riverside Crest Cottages		
Note	On Power Pole on West Side of Project Site		
Start Time	2023-10-18 12:14:09	Duration	24:00:00.0
End Time	2023-10-19 12:14:09	Run Time	24:00:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	45.2 dB		
LAE	94.6 dB	SEA	--- dB
EA	317.3 µPa²h		
EA8	105.8 µPa²h		
EA40	528.9 µPa²h		
LZS_{peak}	114.8 dB	2023-10-18 12:15:13	
LAS_{max}	79.0 dB	2023-10-18 12:14:19	
LAS_{min}	32.9 dB	2023-10-19 10:43:55	
LA_{eq}	45.2 dB		
LC_{eq}	57.7 dB	LC_{eq} - LA_{eq}	12.5 dB
LAI_{eq}	51.2 dB	LAI_{eq} - LA_{eq}	6.0 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	45.2 dB		--- dB		--- dB	
$L_{S(max)}$	79.0 dB	2023-10-18 12:14:19	--- dB		--- dB	
$L_{S(min)}$	32.9 dB	2023-10-19 10:43:55	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		114.8 dB	2023-10-18 12:15:13

Overloads	Count	Duration
	0	0:00:00.0

Statistics

LAS 5.0	47.6 dB
LAS 10.0	46.0 dB
LAS 33.3	42.0 dB
LAS 50.0	40.5 dB
LAS 66.6	39.3 dB
LAS 90.0	36.9 dB

VISTA ENVIRONMENTAL

September 12, 2024

Tracy Fitzsimmons
Olive Crest Housing
555 Technology Court
Riverside, CA 92507

Subject: **City of Riverside – Crest Cottages (3431 Mt. Vernon Avenue) Residential Project Air Quality and Greenhouse Gas Emissions Technical Memorandum.**

Dear Ms. Fitzsimmons:

Vista Environmental has conducted an analysis to evaluate whether the proposed Crest Cottages at 3431 Mt. Vernon Avenue residential project (proposed project) would cause significant air quality or greenhouse gas impacts. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the South Coast Air Quality Management District (SCAQMD) recommendations for quantification of emissions and evaluation of potential air quality and greenhouse gas impacts.

Site Location and Study Area

The project site is located in the eastern portion of the City of Riverside (City) at 3431 Mt. Vernon Avenue. The project site is located on vacant land located behind the existing Crest Community Church and is bounded by single-family homes to the north, the Church and Mt. Vernon Avenue to the east, the BNSF and Metrolink Railroad to the south, and single-family homes to the west.

Nearby Sensitive Receptors

The nearest sensitive receptors to the project site are the single-family homes to the north and west that are located as near as 20 feet from the project site.

Project Description

The proposed project would disturb approximately 1.92 acres of the 3.43 acre property and would develop 10 residential cottages that are each 825 square feet, a staff unit that is 2,100 square feet, and a multipurpose room that is 3,100 square feet. There would also be a new 24 space and 13,407 square foot asphalt paved parking lot, 6,291 square feet of concrete paved areas, 8,251 square feet of permeable paved areas, and 53,805 square feet of landscaped area.

Thresholds of Significance

Regional Air Quality

To estimate if the proposed parking lot may adversely affect the air quality in the region, the SCAQMD has prepared the CEQA Air Quality Handbook (SCAQMD 1993) to provide guidance to those who analyze the air quality impacts of proposed projects. The SCAQMD CEQA Air Quality Handbook states that any project in the Air Basin with daily emissions that exceed any of the identified significance thresholds should be considered as having an individually and cumulatively significant air quality impact. For the purposes of

this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the SCAQMD significance thresholds identified in Table A.

Table A – SCAQMD Regional Criteria Pollutant Emission Thresholds of Significance

	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SOx	PM10	PM2.5
Construction	75	100	550	150	150	55
Operation	55	55	550	150	150	55

Source: http://www.aqmd.gov/ceqa/handbook/signthres.pdf

Local Air Quality

Project-related construction and operational air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significant Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. SCAQMD has also provided Final Localized Significance Threshold Methodology (LST Methodology), July 2008, which details the methodology to analyze local air emission impacts. The LST Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5.

The Look-Up Tables include site acreage sizes of 1-acre, 2-acres and 5-acres. The total area disturbed by the proposed project is approximately 1.92 acres, which is closest to the 2-acre project site shown in the Look-Up Tables that has been utilized in this analysis. As detailed above, the project site is located in Air Monitoring Area 23, which covers Metropolitan Riverside County. The nearest sensitive receptors to the project site are single-family homes located as near as 20 feet (6.1 meters) to the north and west of the project site. According to LST Methodology, any receptor located closer than 25 meters (82 feet) shall be based on the 25-meter thresholds. Table B below shows the NOx, CO, PM10, and PM2.5 for both construction and operational activities.

Table B – SCAQMD Local Air Quality Thresholds of Significance

	Allowable Emissions[1] (pounds/day)			
Activity	NOx	CO	PM10	PM2.5
Construction	170	883	7	4
Operation	170	883	2	1

Notes:
[1] The nearest sensitive receptors to the project site are single-family homes located as near as 20 feet (6.1 meters) north and west of the project site. According to SCAQMD methodology, all receptors closer than 25 meters are based on the 25-meter threshold.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for two acre in Air Monitoring Area 23, Metropolitan Riverside County.

Greenhouse Gas Emissions

The City of Riverside has adopted the Riverside Restorative Growthprint Climate Action Plan (Climate Action Plan), October 2014. The Climate Action Plan sets out actions to increase energy efficiency and reduce GHG emissions. Since the Climate Action Plan does not provide any quantitative GHG emissions thresholds for new development projects within the City, the SCAQMD GHG emissions thresholds have been utilized in this analysis.

In order to identify significance criteria under CEQA for development projects, SCAQMD initiated a Working Group, which provided detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual threshold of 3,000 $MTCO_2e$ for all land use projects. Therefore, the proposed project would be considered to create a significant cumulative GHG impact if the proposed project would exceed the annual threshold of 3,000 $MTCO_2e$.

Project Impacts

Short-Term Construction-Related Air Quality Impacts

Construction of the proposed project would create air emissions from the use of construction equipment as well as from fugitive dust generated from the movement of dirt onsite. Construction of the proposed project is anticipated to start around June 2025 and would take approximately ten months to complete.

The criteria air pollution impacts created by the proposed project have been analyzed through use of CalEEMod Version 2022.1.1.28. CalEEMod is a computer model published by the California Air Pollution Control Officers Association (CAPCOA) for estimating air pollutant and GHG emissions. The CalEEMod 2022.1 program uses the EMFAC2021 computer program to calculate the emission rates specific for the South Coast Air Basin portion of Riverside County for employee, vendor and haul truck vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy equipment operations. EMFAC2021 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles.

The construction activities for the proposed project are anticipated to include site preparation and grading approximately 1.92 acres, building construction of the structures, paving of the parking areas and hardscaped areas, and application of architectural coatings. The CalEEMod model has been utilized to calculate the construction-related emissions from the proposed project and the input parameters utilized in this analysis have been detailed in Section 8.1. The daily construction-related criteria pollutant emissions from the proposed project is shown below in Table C.

Table C – Construction-Related Criteria Pollutant Emissions

Season and Year of Construction	Maximum Daily Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Summer 2025	1.56	14.1	15.3	0.02	2.62	1.51
Winter 2025	1.08	9.01	10.3	0.02	0.39	0.32
Winter 2026	1.03	8.63	10.2	0.02	0.36	0.28
Summer 2026	9.32	8.62	10.3	0.02	0.36	0.28
Maximum Daily Construction Emissions	**9.32**	**14.1**	**15.3**	**0.02**	**2.62**	**1.51**
SCQAMD Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
SCAQMD Local Thresholds[1]	**--**	**170**	**883**	**--**	**7**	**4**
Exceeds Thresholds?	No	No	No	No	No	No

Notes:
[1] The nearest sensitive receptor to the project site are single-family homes located as near as 20 feet (6.1 meters) north and west of the project site. According to SCAQMD methodology, all receptors closer than 25 meters are based on the 25-meter threshold. Calculated from SCAQMD's Mass Rate Look-up Tables for two acres in Air Monitoring Area 23, Metropolitan Riverside County.
Source: CalEEMod Version 2022.1.

Table C shows that none of the analyzed criteria pollutants would exceed either the regional or local emissions thresholds during construction of the proposed project. Therefore, a less than significant regional or local air quality impact would occur from construction of the proposed project.

Long-Term Operational Air Quality Impacts

The proposed project would consist of operation of the proposed housing complex. The proposed project would generate air emissions from area sources, energy usage, and from project-generated vehicle trips.

The operations-related criteria air quality impacts created by the proposed project have been analyzed through use of the CalEEMod model. It should be noted that since cottages is not a land use option in CalEEMod, the most intensive residential land use in CalEEMod of single-family housing was utilized, in order to provide a worst-case analysis. CalEEMod calculates maximum daily emissions for the summer and winter periods. The worst-case summer or winter VOC, NOx, CO, SO_2, PM10, and PM2.5 daily emissions created from the proposed project's long-term operations are summarized below in Table D and the CalEEMod emissions printouts are attached to this letter.

Table D – Operations-Related Criteria Pollutant Emissions

Emissions Source	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO_2	PM10	PM2.5
Mobile Sources[1]	0.41	0.36	3.08	0.01	0.65	0.17
Area Sources[2]	0.50	0.03	2.17	<0.01	0.16	0.16
Energy Usage[3]	0.01	0.10	0.04	0.01	0.01	0.01
Total Operational Emissions	**0.92**	**0.49**	**5.29**	**0.02**	**0.82**	**0.34**
SCAQMD Regional Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
SCAQMD Local Thresholds[4]	**--**	**170**	**883**	**--**	**2**	**1**
Exceeds Thresholds?	No	No	No	No	No	No

Notes:
[1] Mobile sources consist of emissions from vehicles and road dust.
[2] Area sources consist of emissions from consumer products, architectural coatings, and landscaping equipment. No fireplaces or woodstoves will be installed and were set to zero in CalEEMod.
[3] Energy usage consists of emissions from natural gas usage.
[4] The nearest sensitive receptors to the project site are single-family homes located as near as 20 feet (6.1 meters) north and west of the project site. According to SCAQMD methodology, all receptors closer than 25 meters are based on the 25-meter threshold. Calculated from SCAQMD's Mass Rate Look-up Tables for two acres in Air Monitoring Area 23, Metropolitan Riverside County
Source: CalEEMod Version 2022.1

The data provided in Table D above shows that none of the analyzed criteria pollutants would exceed either the regional or local emissions thresholds during operation of the proposed project. Therefore, a less than significant regional and local air quality impacts would occur from operation of the proposed project.

Generation of Greenhouse Gas Emissions

The proposed project would result in the construction and operation of a residential housing complex. The proposed project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, off-road equipment, waste disposal, water usage, and construction equipment. The project's GHG emissions have been calculated with the CalEEMod model and the results is shown below in Table E.

Table E – Project Related Greenhouse Gas Annual Emissions

	Greenhouse Gas Emissions (Metric Tons per Year)			
Category	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Mobile Sources[1]	117	0.01	0.01	119
Area Sources[2]	0.56	<0.01	<0.01	0.61
Energy Usage[3]	44.1	<0.01	<0.01	44.3
Water and Wastewater[4]	1.82	0.01	<0.01	2.30
Solid Waste[5]	091	0.09	0.00	3.19
Refrigeration[6]	--	--	--	0.02
Construction[7]	6.16	<0.01	<0.01	6.17
Proposed Project Total GHG Emissions	**171**	**0.11**	**0.01**	**176**
SCAQMD Draft Threshold				**3,000**
Exceed Threshold?				No

Notes:
[1] Mobile sources consist of GHG emissions from vehicles.
[2] Area sources consist of GHG emissions from consumer products, architectural coatings, and landscaping equipment.
[3] Energy usage consists of GHG emissions from electricity and natural gas usage.
[4] Water includes GHG emissions from electricity used for transport of water and processing of wastewater.
[5] Solid Waste includes the CO_2 and CH_4 emissions created from the solid waste placed in landfills.
[6] Refrigeration includes GHG emissions from refrigerants in air conditioning units.
[7] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.
Source: CalEEMod Version 2022.1.

The data provided in Table E above shows that the proposed project would create 176 $MTCO_2e$ per year. According to the SCAQMD's threshold of significance, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations would exceed 3,000 $MTCO_2e$ per year. Therefore, a less than significant generation of greenhouse gas emissions would occur from development of the proposed project. Impacts would be less than significant.

Please let me know if you have any questions or need additional information with regard to the above analysis. I can be reached at (949) 510-5355, or email me at greg@vistalb.com.

Sincerely,

Greg Tonkovich

Greg Tonkovich, AICP
Senior Analyst
Vista Environmental
949 510 5355

Encl.: CalEEMod Model Printouts

Crest Cottages (3431 Mt Vernon Ave) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Crest Cottages (3431 Mt Vernon Ave)
Construction Start Date	6/2/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	14.2
Location	33.980363600863484, -117.31545744683706
County	Riverside-South Coast
City	Riverside
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5492
EDFZ	11
Electric Utility	City of Riverside
Gas Utility	Southern California Gas
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	11.0	Dwelling Unit	1.28	13,450	35,825	—	36.0	—

Parking Lot	24.0	Space	0.31	0.00	8,625	—	—	—
Other Non-Asphalt Surfaces	14.5	1000sqft	0.33	0.00	9,355	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.32	14.1	15.3	0.02	2.62	1.51	2,596	0.11	0.02	0.58	2,606
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.08	9.01	10.3	0.02	0.39	0.32	1,889	0.08	0.02	0.01	1,897
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.49	3.31	3.76	0.01	0.17	0.13	687	0.03	0.01	0.05	690
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.60	0.69	< 0.005	0.03	0.02	114	< 0.005	< 0.005	0.01	114
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	150	55.0	—	—	—	—	—
Unmit.	No	No	No	No	No	No	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	150	55.0	—	—	—	—	—

Unmit.	No	No	No	No	No	No	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2025	1.56	14.1	15.3	0.02	2.62	1.51	2,596	0.11	0.02	0.52	2,606
2026	9.32	8.62	10.3	0.02	0.36	0.28	1,891	0.08	0.02	0.58	1,900
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2025	1.08	9.01	10.3	0.02	0.39	0.32	1,889	0.08	0.02	0.01	1,897
2026	1.03	8.63	10.2	0.02	0.36	0.28	1,887	0.07	0.02	0.01	1,895
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2025	0.40	3.31	3.76	0.01	0.17	0.13	687	0.03	0.01	0.05	690
2026	0.49	1.94	2.34	< 0.005	0.08	0.07	427	0.02	0.01	0.03	429
Annual	—	—	—	—	—	—	—	—	—	—	—
2025	0.07	0.60	0.69	< 0.005	0.03	0.02	114	< 0.005	< 0.005	0.01	114
2026	0.09	0.35	0.43	< 0.005	0.02	0.01	70.7	< 0.005	< 0.005	0.01	71.0

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.92	0.46	5.30	0.01	0.82	0.33	1,079	0.87	0.04	2.73	1,115
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.84	0.48	4.22	0.01	0.82	0.33	1,032	0.87	0.04	0.16	1,065
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.74	0.46	3.23	0.01	0.65	0.18	993	0.71	0.04	1.21	1,024
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.14	0.08	0.59	< 0.005	0.12	0.03	164	0.12	0.01	0.20	169
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	150	55.0	—	—	—	—	—
Unmit.	No	No	No	No	No	No	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	150	55.0	—	—	—	—	—
Unmit.	No	No	No	No	No	No	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	—	—	—	—	—	3,000
Unmit.	—	—	—	—	—	—	—	—	—	—	No

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.41	0.34	3.08	0.01	0.65	0.17	762	0.03	0.03	2.63	776
Area	0.50	0.03	2.17	< 0.005	0.16	0.16	34.1	0.18	< 0.005	—	38.5
Energy	0.01	0.10	0.04	< 0.005	0.01	0.01	266	0.02	< 0.005	—	267
Water	—	—	—	—	—	—	11.0	0.09	< 0.005	—	13.9
Waste	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2

Refrig.	—	—	—	—	—	—	—	—	—	0.10	0.10
Total	0.92	0.46	5.30	0.01	0.82	0.33	1,079	0.87	0.04	2.73	1,115
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.38	0.36	2.63	0.01	0.65	0.17	716	0.03	0.04	0.07	728
Area	0.45	0.02	1.55	< 0.005	0.16	0.16	32.5	0.18	0.00	—	36.9
Energy	0.01	0.10	0.04	< 0.005	0.01	0.01	266	0.02	< 0.005	—	267
Water	—	—	—	—	—	—	11.0	0.09	< 0.005	—	13.9
Waste	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2
Refrig.	—	—	—	—	—	—	—	—	—	0.10	0.10
Total	0.84	0.48	4.22	0.01	0.82	0.33	1,032	0.87	0.04	0.16	1,065
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.37	0.36	2.66	0.01	0.63	0.16	707	0.03	0.04	1.11	719
Area	0.36	0.01	0.53	< 0.005	0.01	0.01	3.37	0.01	< 0.005	—	3.67
Energy	0.01	0.10	0.04	< 0.005	0.01	0.01	266	0.02	< 0.005	—	267
Water	—	—	—	—	—	—	11.0	0.09	< 0.005	—	13.9
Waste	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2
Refrig.	—	—	—	—	—	—	—	—	—	0.10	0.10
Total	0.74	0.46	3.23	0.01	0.65	0.18	993	0.71	0.04	1.21	1,024
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.07	0.07	0.49	< 0.005	0.12	0.03	117	0.01	0.01	0.18	119
Area	0.07	< 0.005	0.10	< 0.005	< 0.005	< 0.005	0.56	< 0.005	< 0.005	—	0.61
Energy	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	44.1	< 0.005	< 0.005	—	44.3
Water	—	—	—	—	—	—	1.82	0.01	< 0.005	—	2.30
Waste	—	—	—	—	—	—	0.91	0.09	0.00	—	3.19
Refrig.	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	0.14	0.08	0.59	< 0.005	0.12	0.03	164	0.12	0.01	0.20	169

3. Construction Emissions Details

3.1. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.31	12.1	12.1	0.02	0.56	0.52	2,065	0.08	0.02	—	2,072
Dust From Material Movement	—	—	—	—	1.63	0.78	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.07	< 0.005	< 0.005	< 0.005	11.3	< 0.005	< 0.005	—	11.4
Dust From Material Movement	—	—	—	—	0.01	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	1.87	< 0.005	< 0.005	—	1.88
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.58	0.00	0.10	0.02	106	< 0.005	< 0.005	0.39	107
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.54	< 0.005	< 0.005	< 0.005	0.55
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.09	< 0.005	< 0.005	< 0.005	0.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.51	14.1	14.5	0.02	0.64	0.59	2,455	0.10	0.02	—	2,463
Dust From Material Movement	—	—	—	—	1.84	0.89	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.15	0.16	< 0.005	0.01	0.01	26.9	< 0.005	< 0.005	—	27.0
Dust From Material Movement	—	—	—	—	0.02	0.01	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	4.45	< 0.005	< 0.005	—	4.47
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.77	0.00	0.13	0.03	141	0.01	< 0.005	0.52	143
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	1.44	< 0.005	< 0.005	< 0.005	1.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.24	< 0.005	< 0.005	< 0.005	0.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	8.95	10.0	0.02	0.33	0.30	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	8.95	10.0	0.02	0.33	0.30	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37	3.06	3.44	0.01	0.11	0.10	617	0.03	0.01	—	619
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.56	0.63	< 0.005	0.02	0.02	102	< 0.005	< 0.005	—	102
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.31	0.00	0.05	0.01	55.8	< 0.005	< 0.005	0.21	56.7
Vendor	< 0.005	0.04	0.01	< 0.005	0.01	< 0.005	36.0	< 0.005	0.01	0.10	37.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.23	0.00	0.05	0.01	51.3	< 0.005	< 0.005	0.01	52.0
Vendor	< 0.005	0.04	0.01	< 0.005	0.01	< 0.005	36.0	< 0.005	0.01	< 0.005	37.7

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.02	< 0.005	17.8	< 0.005	< 0.005	0.03	18.0
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	12.3	< 0.005	< 0.005	0.02	12.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	2.95	< 0.005	< 0.005	0.01	2.99
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.04	< 0.005	< 0.005	< 0.005	2.14
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.01	8.57	9.96	0.02	0.29	0.27	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.01	8.57	9.96	0.02	0.29	0.27	1,801	0.07	0.01	—	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	1.78	2.07	< 0.005	0.06	0.06	374	0.02	< 0.005	—	375
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.04	0.32	0.38	< 0.005	0.01	0.01	61.9	< 0.005	< 0.005	—	62.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.28	0.00	0.05	0.01	54.6	< 0.005	< 0.005	0.18	55.4
Vendor	< 0.005	0.04	0.01	< 0.005	0.01	< 0.005	35.4	< 0.005	0.01	0.10	37.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.22	0.00	0.05	0.01	50.2	< 0.005	< 0.005	< 0.005	50.8
Vendor	< 0.005	0.04	0.01	< 0.005	0.01	< 0.005	35.4	< 0.005	0.01	< 0.005	37.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.01	< 0.005	10.5	< 0.005	< 0.005	0.02	10.7
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	7.34	< 0.005	< 0.005	0.01	7.70
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	1.75	< 0.005	< 0.005	< 0.005	1.77
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.22	< 0.005	< 0.005	< 0.005	1.27
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.47	4.41	6.48	0.01	0.18	0.17	991	0.04	0.01	—	995
Paving	0.08	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.12	0.18	< 0.005	0.01	< 0.005	27.2	< 0.005	< 0.005	—	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	4.50	< 0.005	< 0.005	—	4.51
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.90	0.00	0.16	0.04	172	0.01	0.01	0.58	175
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	4.40	< 0.005	< 0.005	0.01	4.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.73	< 0.005	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	0.02	134	0.01	< 0.005	—	134
Architectural Coatings	9.20	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	3.66	< 0.005	< 0.005	—	3.67
Architectural Coatings	0.25	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.61	< 0.005	< 0.005	—	0.61
Architectural Coatings	0.05	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.06	0.00	0.01	< 0.005	10.9	< 0.005	< 0.005	0.04	11.1

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.05	< 0.005	< 0.005	< 0.005	0.05
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.41	0.34	3.08	0.01	0.65	0.17	762	0.03	0.03	2.63	776
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.41	0.34	3.08	0.01	0.65	0.17	762	0.03	0.03	2.63	776
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.38	0.36	2.63	0.01	0.65	0.17	716	0.03	0.04	0.07	728
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.38	0.36	2.63	0.01	0.65	0.17	716	0.03	0.04	0.07	728
Annual	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.07	0.07	0.49	< 0.005	0.12	0.03	117	0.01	0.01	0.18	119
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.07	0.07	0.49	< 0.005	0.12	0.03	117	0.01	0.01	0.18	119

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	126	0.01	< 0.005	—	127
Parking Lot	—	—	—	—	—	—	14.6	< 0.005	< 0.005	—	14.6
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	141	0.01	< 0.005	—	142
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	126	0.01	< 0.005	—	127
Parking Lot	—	—	—	—	—	—	14.6	< 0.005	< 0.005	—	14.6
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	141	0.01	< 0.005	—	142
Annual	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	20.9	< 0.005	< 0.005	—	21.0
Parking Lot	—	—	—	—	—	—	2.41	< 0.005	< 0.005	—	2.42
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	23.4	< 0.005	< 0.005	—	23.5

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.10	0.04	< 0.005	0.01	0.01	125	0.01	< 0.005	—	126
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.10	0.04	< 0.005	0.01	0.01	125	0.01	< 0.005	—	126
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.10	0.04	< 0.005	0.01	0.01	125	0.01	< 0.005	—	126
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.10	0.04	< 0.005	0.01	0.01	125	0.01	< 0.005	—	126
Annual	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	20.8	< 0.005	< 0.005	—	20.8
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	20.8	< 0.005	< 0.005	—	20.8

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.13	0.02	1.55	< 0.005	0.16	0.16	32.5	0.18	0.00	—	36.9
Consumer Products	0.29	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.06	0.01	0.62	< 0.005	< 0.005	< 0.005	1.67	< 0.005	< 0.005	—	1.67
Total	0.50	0.03	2.17	< 0.005	0.16	0.16	34.1	0.18	< 0.005	—	38.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.13	0.02	1.55	< 0.005	0.16	0.16	32.5	0.18	0.00	—	36.9

Consumer Products	0.29	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	—	—	—	—	—	—	—	—	—	—
Total	0.45	0.02	1.55	< 0.005	0.16	0.16	32.5	0.18	0.00	—	36.9
Annual	—	—	—	—	—	—	—	—	—	—	—
Hearths	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	0.37	< 0.005	0.00	—	0.42
Consumer Products	0.05	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	< 0.005	0.08	< 0.005	< 0.005	< 0.005	0.19	< 0.005	< 0.005	—	0.19
Total	0.07	< 0.005	0.10	< 0.005	< 0.005	< 0.005	0.56	< 0.005	< 0.005	—	0.61

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	9.14	0.09	< 0.005	—	12.0
Parking Lot	—	—	—	—	—	—	0.89	< 0.005	< 0.005	—	0.90
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.97	< 0.005	< 0.005	—	0.97
Total	—	—	—	—	—	—	11.0	0.09	< 0.005	—	13.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	9.14	0.09	< 0.005	—	12.0
Parking Lot	—	—	—	—	—	—	0.89	< 0.005	< 0.005	—	0.90
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.97	< 0.005	< 0.005	—	0.97
Total	—	—	—	—	—	—	11.0	0.09	< 0.005	—	13.9
Annual	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	1.51	0.01	< 0.005	—	1.99
Parking Lot	—	—	—	—	—	—	0.15	< 0.005	< 0.005	—	0.15
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.16	< 0.005	< 0.005	—	0.16
Total	—	—	—	—	—	—	1.82	0.01	< 0.005	—	2.30

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	5.50	0.55	0.00	—	19.2
Annual	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	0.91	0.09	0.00	—	3.19
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	0.91	0.09	0.00	—	3.19

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	0.10	0.10
Total	—	—	—	—	—	—	—	—	—	0.10	0.10
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	0.10	0.10
Total	—	—	—	—	—	—	—	—	—	0.10	0.10
Annual	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	0.02	0.02

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	7/1/2025	7/3/2025	5.00	2.00	—
Grading	Grading	7/4/2025	7/9/2025	5.00	4.00	—
Building Construction	Building Construction	7/10/2025	4/16/2026	5.00	200	—
Paving	Paving	4/17/2026	5/1/2026	5.00	10.0	—
Architectural Coating	Architectural Coating	5/2/2026	5/16/2026	5.00	10.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	3.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	18.5	LDA,LDT1,LDT2

Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	3.96	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	1.18	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.79	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction

Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	27,236	9,079	0.00	0.00	1,683

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	1.88	0.00	—
Grading	—	—	4.00	0.00	—
Paving	0.00	0.00	0.00	0.00	0.77

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	0.12	0%
Parking Lot	0.31	100%
Other Non-Asphalt Surfaces	0.33	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	873	0.03	< 0.005
2026	0.00	873	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	104	105	94.1	37,448	902	911	817	325,139
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	11
Conventional Wood Stoves	0
Catalytic Wood Stoves	0

Non-Catalytic Wood Stoves	1
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
27236.25	9,079	0.00	0.00	1,683

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	102,732	449	0.0330	0.0040	391,207
Parking Lot	11,829	449	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	449	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	447,412	694,260
Parking Lot	0.00	136,756

Other Non-Asphalt Surfaces	0.00	148,330

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	10.2	—
Parking Lot	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	26.3	annual days of extreme heat
Extreme Precipitation	2.65	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	1.71	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	98.7
AQ-PM	79.0

AQ-DPM	35.1
Drinking Water	77.4
Lead Risk Housing	49.6
Pesticides	0.00
Toxic Releases	53.9
Traffic	84.0
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	7.35
Impaired Water Bodies	0.00
Solid Waste	0.00
Sensitive Population	—
Asthma	67.0
Cardio-vascular	75.4
Low Birth Weights	61.9
Socioeconomic Factor Indicators	—
Education	31.7
Housing	60.9
Linguistic	59.8
Poverty	70.4
Unemployment	79.7

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	43.82137816

Employed	11.03554472
Median HI	49.40331066
Education	—
Bachelor's or higher	76.02977031
High school enrollment	100
Preschool enrollment	37.95714102
Transportation	—
Auto Access	34.87745413
Active commuting	90.85076351
Social	—
2-parent households	28.35878352
Voting	29.69331451
Neighborhood	—
Alcohol availability	71.70537662
Park access	60.07955858
Retail density	25.45874503
Supermarket access	44.69395611
Tree canopy	55.89631721
Housing	—
Homeownership	44.89926857
Housing habitability	56.55075067
Low-inc homeowner severe housing cost burden	80.57230848
Low-inc renter severe housing cost burden	21.09585525
Uncrowded housing	79.21211344
Health Outcomes	—
Insured adults	73.78416528
Arthritis	60.6
Asthma ER Admissions	28.1

High Blood Pressure	50.4
Cancer (excluding skin)	42.8
Asthma	55.1
Coronary Heart Disease	63.8
Chronic Obstructive Pulmonary Disease	59.8
Diagnosed Diabetes	80.8
Life Expectancy at Birth	60.1
Cognitively Disabled	10.2
Physically Disabled	21.7
Heart Attack ER Admissions	34.2
Mental Health Not Good	62.3
Chronic Kidney Disease	79.8
Obesity	61.1
Pedestrian Injuries	19.6
Physical Health Not Good	69.2
Stroke	64.5
Health Risk Behaviors	—
Binge Drinking	26.9
Current Smoker	59.6
No Leisure Time for Physical Activity	63.5
Climate Change Exposures	—
Wildfire Risk	47.4
SLR Inundation Area	0.0
Children	87.9
Elderly	33.4
English Speaking	72.0
Foreign-born	24.6
Outdoor Workers	78.9

Climate Change Adaptive Capacity	—
Impervious Surface Cover	74.9
Traffic Density	84.4
Traffic Access	23.0
Other Indices	—
Hardship	49.2
Other Decision Support	—
2016 Voting	51.9

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0
Healthy Places Index Score for Project Location (b)	46.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification

Land Use	Project would disturb 1.92 acres and would contain 53,805 sq ft of landscaped area spread proportionally between each land use. The 11 homes and MPR would total 13,450 sq ft of building space that was analyzed under single-family housing
Construction: Construction Phases	No Demolition
Operations: Hearths	No fireplaces or woodstoves