DRAFT INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

P24-0141

PROJECT NAME: 1160 Hacienda Drive Townhome Project

PROJECT LOCATION: 1160 Hacienda Drive, southwest of the intersection of Hacienda Drive and Pomelo Drive

APN: 166-440-27-00

PROJECT APPLICANT:
City Ventures
3121 Michelson Drive #150
Irvine, CA 92612
909-996-8585

LEAD AGENCY:
City of Vista
Community Development Department
Planning Division
200 Civic Center Drive, Vista, California 92084
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Chapter 1 – Introduction

CEQA Overview

The City of Vista (City) Planning Division has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) to evaluate the potential environmental consequences associated with the proposed 1160 Hacienda Drive Townhome Project ("proposed project" or "project"), which would include a Tentative Subdivision Map, Site Development Plan, and Condominium Housing Permit. As part of the permitting process, the proposed project is required to undergo an environmental review pursuant to the California Environmental Quality Act (CEQA). One of the main objectives of CEQA is to disclose to the public and decision makers the potential environmental effects of proposed activities. CEQA requires that the lead agency prepare an IS to determine the appropriate CEQA document needed. The City's Planning Division is the lead agency for the proposed project under CEQA.

Authority

The preparation of this IS/MND is governed by two principal sets of documents: CEQA (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). Specifically, the preparation of an IS and an MND is guided by the State CEQA Guidelines; Section 15063 describes the requirements for an IS, and Sections 15070–15073 describe the process and requirements for the preparation of an MND. Where appropriate and supportive to an understanding of the issues, reference will be made either to the CEQA statute or State CEQA Guidelines. This IS/MND contains all the contents required by CEQA, which includes a project description, a description of the environmental setting, potential environmental impacts, mitigation measures for any significant effects, consistency with plans and policies, and names of preparers.

Scope

This IS/MND evaluates the proposed project's effects on the following resource topics:

- aesthetics
- agriculture and forestry resources
- air quality
- biological resources
- cultural resources
- energy
- geology and soils
- greenhouse gas emissions
- hazards and hazardous materials
- hydrology and water quality
- land use and planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- transportation
- tribal cultural resources
- utilities and service systems
- wildfire
- mandatory findings of significance

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Chapter 2 – Environmental Setting and Project Description

Project Overview

The project proposes a Tentative Subdivision Map, Site Development Plan, and Condominium Housing Permit for the construction of seven buildings comprised of 63 multi-family residential units. The multi-family residential units would be constructed in a townhome style and would range from 1,323 square feet (SF) to 1,731 SF. The project site is 4.6 acres in size and is comprised of one parcel (Assessor's Parcel Number [APN] 166-440-27-00). The project would include a riparian buffer adjacent to Buena Vista Creek which would reduce the buildable area of the project site from 4.6 acres to 4.0 acres.

The majority of the project site has a General Plan land use designation of High Density Residential (HD) and the northeastern edge of the property containing Buena Vista Creek has a land use designation of Open Space (OS). The HD designation allows a residential density of up to 21 units per acre. The project site is zoned Multi-Family Residential (R-M), allowing up to 21 units per acre.

The project site is located at 1160 Hacienda Drive in the western portion of the City of Vista within San Diego County (County). See Figure 1, *Regional Location*. More specifically, the project site is located southwest of the intersection of Hacienda Drive and Pomelo Drive, east of the City's boundary with the City of Oceanside. State Route (SR-) 78 is approximately 150 feet north of the project boundary and multi-family residential uses are adjacent to the east, south, and west. Buena Vista Creek is adjacent to the site to the east and continues across Hacienda Drive to the west. Access would be provided by one driveway on Hacienda Drive. See Figure 2, *Aerial Photograph*.

Existing Environmental Setting

City of Vista

The City is a largely developed, predominantly low-density residential community located approximately seven miles inland from the Pacific Ocean in the northern portion of the County. Clusters of urbanizing higher density areas are scattered throughout the central portion of the City and along arterial roads. The City is located in the rolling topography of the western foothills of the San Marcos Mountains, with elevations ranging from approximately 200 feet to about 750 feet above mean sea level (amsl). Broad views are provided from various points throughout the City with some higher elevations offering vistas of the Pacific Ocean to the west. In addition to the topography of the mountains and hills, the City is vegetated from the low-level creek beds to the steep slopes of the foothills, which also provide some scenic attributes of the community. The City also has two major creeks that flow through its boundaries, Buena Vista Creek and Agua Hedionda Creek.

Project Site

The project site is currently comprised of dense vegetation in the northeast portion that is made up of tall, mature trees and bushes and grasses, scattered trees, with multiple dirt paths on the remainder of the site. The site was previously occupied by a single-family home and associated landscaping which were subsequently demolished and cleared in approximately 2003. The site has remained vacant since.

Elevations at the project site range from approximately 268 feet amsl along the northeastern border of the site within Buena Vista Creek to approximately 348 feet amsl in the south-central portion of the

site. The majority of the project site is dominated by a steep hill in the southern portion of the side with steep sides to the north, east, and west. The site has gentler slopes along the southeast portion and is mostly flat at the northwest side bordering Hacienda Drive. Buena Vista Creek is deeply incised and represents the lowest elevations of the property.

Surrounding Land Uses

Land uses surrounding the project site include Hacienda Drive and SR-78 to the north and multi-family residential uses to the east, south, and west. Single-family residential and commercial uses exist to the north of SR-78. Buena Vista Creek is adjacent to the site to the east and continues across Hacienda Drive to the west (see Figure 2). The closest school to the site is Breeze Hill Elementary School located at 1111 Melrose Way, approximately 0.7 miles southeast of the project site. The closest City fire station to the site is Vista Fire Department (VFD) Station No. 1 located at 175 North Melrose Drive, approximately 0.6 miles to the east. The closest police station to the site is the San Diego County Sheriff's Department Vista Station located at 325 South Melrose Drive #210, approximately 0.5 miles east of the project site. The nearest public airports to the project site are McClellan Palomar Airport and Oceanside Municipal Airport, each located approximately five miles south and northwest of the project site, respectively.

Proposed Project Description

The applicant seeks approval of a Tentative Subdivision Map, Site Development Plan, and Condominium Housing Permit for the construction of 63 multi-family residential units in seven buildings. The units would range from 1,323 SF to 1,731 SF. The total project building area would be 136,191 SF. The unit mix would be comprised of 6 two-bedroom units, 32 three-bedroom units, and 25 four-bedroom units. Each unit would be constructed in a townhome style and include private outdoor space in the form of either a deck or a porch which would range from 71 SF to 132 SF. The project would provide private patio areas, a common seating area, common social area, and a lookout point with benches. The common social area would include an event lawn, picnic tables, and barbecue. See Figure 3, *Site Plan*.

Access to the project would be provided via one driveway located on Hacienda Drive approximately 550 feet west of the intersection of Pomelo Drive and Hacienda Drive, which would connect to a drive aisle located along the perimeter of the site and between the residential buildings. Resident parking would be provided via two-car garages attached to the townhomes and guest parking would be provided by surface parking along the drive aisle on the eastern edge of the site. The two-car garages would account for 126 parking spaces and would be pre-wired for electric vehicle charging, while the surface parking area would account for 13 parking spaces and would include one Americans with Disabilities Act (ADA) space.

The project would include a riparian buffer adjacent to Buena Vista Creek which would reduce the buildable area of the project site from 4.6 acres to 4.0 acres. The project would include various hydromodification and pollutant control best management practices (BMPs) including a modular wetland system located in the eastern portion of the site near Buena Vista Creek, and a biofiltration basin and underground detention system in the northern portion of the site adjacent to Hacienda Drive.

The project's proposed 63 multi-family dwelling units, which provide a net density of 15.75 units per acre, would be consistent with the General Plan land use designation of HD (21 dwelling units/acre) and the zoning designation of R-M (21 dwelling units/acre).

The project would include improvements within Hacienda Drive. These include connections to existing storm drains and sewer manholes, relocations of storm drain inlets and resurfacing of the roadway. Along the north side of Hacienda Drive, improvements would include a new six-inch curb, gutter, and sidewalk extension.

Project construction activities would consist of site preparation, grading, installation of underground utilities, physical building construction, paving, and architectural coatings. Construction of the project is expected to take approximately 21 months. Site preparation would require the removal of approximately 12 truckloads of debris/vegetation. A net export of approximately 27,000 cubic yards of soil is anticipated during grading.

Construction Best Management Practices

The project would incorporate BMPs during construction to reduce emissions of fugitive dust. The San Diego County Air Pollution Control District (SDAPCD) Rule 55 – Fugitive Dust Control states that no dust and/or dirt shall leave the property line. SDAPCD Rule 55 requires the following (SDAPCD 2009):

(1) **Airborne Dust Beyond the Property Line:** No person shall engage in construction or demolition activity subject to this rule in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than three minutes in any 60-minute period.

(2) **Track-Out/Carry-Out:** Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall:

(i) be minimized by the use of any of the following or equally effective track-out/carry-out and erosion control measures that apply to the project or operation:

(a) track-out grates or gravel beds at each egress point;

(b) wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks;

(c) using secured tarps or cargo covering, watering, or treating of transported material; and

(ii) be removed at the conclusion of each workday when active operations cease, or every 24 hours for continuous operations. If a street sweeper is used to remove any track-out/carry-out, only PM_{10}-efficient (particulate matter less than 10 microns in diameter) street sweepers certified to meet the most current South Coast Air Quality Management District (SCAQMD) Rule 1186 requirements shall be used. The use of blowers for removal of track-out/carry-out is prohibited under any circumstances.

The control measures listed below are the BMPs that the project would incorporate for dust control and are included in the air emissions modeling:

- A minimum of two applications of water shall be applied during grading between dozer/grader passes;

- Paving, chip sealing, or chemical stabilization of internal roadways shall be applied after completion of grading;

- Grading shall be halted when winds exceed 25 miles per hour (mph);
- All exposed surfaces shall maintain a minimum soil moisture of 12 percent;
- Dirt storage piles shall be stabilized by chemical binders, tarps, fencing, or other erosion control; and
- Vehicle speeds shall be limited to 15 mph on unpaved roads.

Additional Approvals

Besides review under CEQA, the applicant and/or contractor of the proposed project would be required to obtain the following additional approvals and/or permits from the City: Site Development Plan, Right-of-Way Permit, Grading Permit, Landscape Construction Plan, and (eventually) Building Permits. These approvals require meeting certain Conditions of Project Approval prior to obtaining the required permits. In addition, before the Final (Subdivision) Map is recorded, all Conditions of Project Approval (which include the mitigation measures identified in this document) must be satisfactorily completed. Other public agency approvals are identified in Chapter 3.

Chapter 3 – Initial Study Environmental Checklist

Project Information

Project Title: 1160 Hacienda Drive Townhome Project

Lead Agency Name and Address: City of Vista
Community Development Department
Planning Division
200 Civic Center Drive
Vista, California 92084

CONTACT PERSON: Chris Winters, Senior Planner
(760) 643-5394

PROJECT LOCATION: Southwest of the intersection of Hacienda Drive and Pomelo Drive at 1160 Hacienda Drive in Vista, California.

PROJECT APPLICANT: City Ventures
3121 Michelson Drive #150
Irvine, CA 92612
909-996-8585

GENERAL PLAN DESIGNATION: HD (High Density Residential; 21 du/acre) and OS (Open Space)

ZONING DESIGNATION: R-M (Multi-Family Residential; 21 du/acre)

DESCRIPTION OF PROJECT: See Chapter 2, Proposed Project Description.

SURROUNDING LAND USES AND SETTING: See Chapter 2, Proposed Project Description.

OTHER PUBLIC AGENCY APPROVALS: The San Diego Regional Water Quality Control Board (RWQCB) is responsible for approving the Notice of Intent and a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the most recent National Pollutant Discharge Elimination System (NPDES) General Construction Activities Permit.

Environmental Factors Potentially Affected

Based upon the initial evaluation presented in the following IS, it is concluded that the proposed project would not result in significant adverse environmental impacts.

Environmental Determination

On the basis of the initial evaluation of the attached Initial Study:

☐ I find the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the project could have a significant effect on the environment there will not be a significant effect in this case because revisions in the project have been made or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Chris Waters — 12/10/2025

Signature Date

The signature below signifies that the applicant has read and accepts the mitigation measures detailed in the Mitigated Negative Declaration.

Applicant or Owner Date

Evaluation of Environmental Impacts

The following IS checklist provides an analysis of the proposed project's potential to result in significant adverse environmental impacts. Section 15063(c) of the Guidelines indicates that the purpose of an Initial Study is to:

1. Provide the Lead Agency ("City of Vista") with information to use as the basis for deciding whether to prepare an Environmental Impact Report (EIR) or Negative Declaration;

2. Enable an applicant or Lead Agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a Negative Declaration;

3. Assist the preparation of an EIR, if one is required, by:

    a) Focusing the EIR on the effects determined to be significant;

    b) Identifying the effects determined not to be significant;

    c) Explaining the reasons why potentially significant effects would not be significant; and,

    d) Identifying whether a program EIR, tiering, or another appropriate process can be used for analysis of the project's environmental effects.

4. Facilitate environmental assessment early in the design of a project.

5. Provide documentation of the factual basis for the finding in a Negative Declaration that a project will not have a significant effect on the environment.

6. Eliminate unnecessary EIRs.

7. Determine whether a previously prepared EIR could be used with the project.

Impact Terminology

The following terminology is used to describe the level of significance of impacts:

- A finding of *no impact* is appropriate if the analysis concludes that the project would not affect the particular topic area in any way.

- An impact is considered *less than significant* if the analysis concludes that it would not cause substantial adverse change to the environment and requires no mitigation.

- An impact is considered *less than significant with mitigation incorporated* if the analysis concludes that it would not cause substantial adverse change to the environment with the inclusion of environmental commitments that have been agreed to by the applicant.

- An impact is considered *potentially significant* if the analysis concludes that it could have a substantial adverse effect on the environment.

I. Aesthetics

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c. Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion

a. NO IMPACT. A scenic vista is generally defined as a public viewpoint that provides expansive or notable views of a highly valued landscape and is typically identified in planning documents, such as a community plan or general plan, but can also include locally known areas or locations where high-quality public views are available. According to the Vista General Plan Update 2030 Program EIR (General Plan EIR), based on general viewing areas, there are two main viewsheds in the City: the San Marcos Mountains to the east and northeast, and the canyons in the southwestern portion of the City. In accordance with these two viewsheds, the City has identified six public vantage points, which are a combination of routes and specific locations from which these viewsheds are most prominent (City 2011).

The project site is not located within one of the six public vantage points identified in the General Plan EIR. The nearest public vantage point is Public Vantage Point 1: Vista Village Drive Off-Ramp/SR-78, located approximately 0.9 miles east of the project site. According to the General Plan EIR, the vantage point from the SR-78 off-ramp at Vista Village Drive offers views of the City's ridgelines, hilly topography, and commercial and residential uses. At a distance of 0.9 miles, project implementation would not have a substantial adverse effect on views from this designated public vantage point. Additionally, the project site itself is not in a location where prominent views are available. Thus, the project would not have a substantial adverse effect on a scenic vista. No impact would occur.

b. NO IMPACT. There are no officially designated state scenic highways in the vicinity of the project site. The nearest state scenic highway is SR-52, which is approximately 25 miles south of the project site. The nearest eligible state scenic highway is SR-76, which is approximately 3.7 miles north of the project site. At this distance, project elements would not affect views from SR-76. Additionally, the City's General Plan does not identify any scenic roadways near the project site (City 2011). Therefore, the proposed project would not damage scenic resources within a state scenic highway. No impact would occur.

c. NO IMPACT. Public Resources Code 21071 defines the term "urbanized area" for the purpose of CEQA to mean an incorporated city that has a population of at least 100,000 persons or has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons. U.S. Department of Commerce Bureau of the Census (U.S. Census Bureau) data from 2021 indicates that the City has a population of 98,831 and the adjacent City of Oceanside has a population of 174,068 (U.S. Census Bureau 2021). The project site is within an urbanized area as defined by Public Resources Code 21071 and, therefore, is evaluated relative to applicable zoning and other regulations governing scenic quality.

The project site is zoned for multi-family residential uses, which is not indicative of a zoning to protect scenic resources. According to Vista Development Code Chapter 18.34, the R-M zone is intended for uses including, but not limited to, multiple dwellings, boardinghouses, and residential care homes. The project involves the construction of 63 multi-family residences and would be designed to adhere to the General Plan land use and community design goal of sharing common development patterns among neighborhoods.

Currently, the project site is vacant and is comprised of dense vegetation in the northeast portion that is made up of tall, mature trees and bushes and grasses, scattered trees, and multiple dirt paths and grasses on the remainder of the site. The project would transform the site into the proposed residential land uses while maintaining 0.6 acres of land use designated for open space. The project would provide landscaping with groundcover, shrubs, and mature trees that would contribute to improved visual quality of the site. Further, since the current multi-family residential zoning is not intended to protect scenic resources, the project would not conflict with applicable zoning and other regulations governing scenic quality. In addition, the project would meet the density, bulk, and height requirements of the zoning code. No impact would occur.

d. LESS THAN SIGNIFICANT IMPACT. There are two primary sources of light: light emanating from building interiors that passes through windows and light from exterior sources (e.g., street lighting, parking lot lighting, building illumination, security lighting, and landscape lighting). The introduction of light can be a nuisance by affecting adjacent areas and diminishing the view of the clear sky depending on the location of the light sources and their proximity to nearby light-sensitive areas. The project site is located in an area that is developed with residential land uses. The existing light sources in the project area include building lights, streetlights, and security lights.

The project would introduce residential lighting that would be similar to the existing residential lighting in surrounding neighborhoods. Such lighting would include security or ambiance lighting as well as light cast from the interior of the homes. Proposed lighting would be required to conform to the California Building Code (CBC), as well as Vista Development Code Section 18.58.260 which regulates lighting. Such adherence would require that the project equip outdoor lighting used for architectural or decorative purposes with automatic timing devices, fully shield or direct the lights towards the ground, and use lights that only emit the minimum amount of light necessary. Additionally, the proposed lighting would be similar to the existing project area lighting and would not introduce new and unique sources of light that would be substantial in relation to the existing lighting characteristics of the project area. Although the project would introduce new sources of light, the sources would be similar in nature to the surrounding land uses and the project would adhere to the applicable regulations. Therefore, the project would not create a new source of substantial light which would adversely affect views in the area. Impacts would be less than significant.

Glare impacts can occur because of artificial light or sunlight reflecting off a surface. Glare can create discomfort or present safety concerns. The project is to be constructed with primarily stucco facades which would not be a source of glare. Glass would be limited to windows and doors, typical of residential construction and no other highly reflective surfaces would be provided. The extent and

surface area of glass on the homes would not be at a scale to generate adverse glare effects. As such, the project would not create a new source of glare that would adversely affect views in the area. Impacts would be less than significant.

II. Agriculture and Forestry Resources

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non- forest use?	☐	☐	☐	☒

Discussion

a. No Impact. According to the Farmland Mapping and Monitoring Program of the California Department of Conservation (California Department of Conservation [DOC] 2020), the project site is classified as Other Land (land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres) and does not contain Prime Farmland or Farmland of Statewide Importance. Implementation of the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. No impact would occur.

b. No Impact. The Williamson Act is designed to prevent the premature and unnecessary conversion of open space lands and agricultural areas to urban uses and enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land for use as agricultural or related open space. As stated in item II.a, the project site is classified as Other Land where neither farmland nor agricultural resources are present. The Williamson Act is only applicable to parcels within an established agricultural preserve consisting of at least 20 acres of Prime Farmland, or at least 40 acres of land not designated as Prime Farmland. Additionally, it is not within an established agricultural preserve consisting of at least 20 acres of Prime Farmland or at least 40 acres of land not designated as Prime Farmland, and there is no Williamson Act contract that directs land use at the site. Further, the project site is zoned R-M and does not include any land zoned

for agricultural uses. Therefore, the project would not conflict with existing zoning for agricultural use or a Williamson Act contract. No impact would occur.

c. NO IMPACT. Public Resources Code Section 12220(g) defines "forest land" as land that can support ten percent native cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Based on this definition, no forest land occurs within or adjacent to the project site. Timberland is land, other than land owned by the Federal government and designated by the California Department of Forestry and Fire (CAL FIRE) Board of Forestry as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. The project site is currently vacant and is comprised of tall, mature trees, bushes, grasses, scattered trees, and multiple dirt paths and does not contain forestlands, timberlands, or timberland zoned Timberland Production. Moreover, there is no land zoned as forest land or timberland that exists within the project site or within its vicinity. Therefore, the proposed project would not conflict with existing zoning for forest land or timberland. No impact would occur.

d. NO IMPACT. As stated in item II.c, there is no land zoned as forest land or timberland that exists within the project site or its vicinity. The site has not been historically and is not currently used or planned to be used for forest land. As such, implementation of the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact would occur.

e. NO IMPACT. As stated in item II.a, the project site is in an area classified as Other Land by the DOC. According to the General Plan EIR, since no substantial areas of agricultural use occur within the majority of the General Plan planning area, the conversion of farmland to nonagricultural use would not occur (City 2011). Thus, the project would not result in the conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. No impact would occur.

III. Air Quality

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

The discussion below is summarized and based on the analysis and conclusions contained within the 1160 Hacienda Drive Townhome Project Air Quality and Greenhouse Gas Emissions Technical Report prepared for the project by HELIX Environmental Planning, Inc. (HELIX; 2025a). The report is included as Appendix A to this IS/MND.

Discussion

a. LESS THAN SIGNIFICANT IMPACT. The San Diego County Air Pollution Control District (SDAPCD) and San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for the attainment and maintenance of the ambient air quality standards in the San Diego Air Basin (SDAB). In addition, the SDAPCD relies on the State Implementation Plan (SIP), which is a series of comprehensive plans that describe how an area will attain the national ambient air quality standards (NAAQS), The SIP also includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. The regional air quality plan for San Diego County is SDAPCD's 2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County (Attainment Plan).

The two principal criteria for conformance to the Attainment Plan are (1) whether the project would result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards, and (2) whether the project would exceed the assumptions in the Attainment Plan.

The Attainment Plan relies on information from the California Air Resources Board (CARB) and SANDAG, including projected growth in the San Diego County, and mobile, area, and all other source emissions to project future emissions and determine from that the strategies necessary for the reduction of stationary source emissions through regulatory controls. CARB's mobile source emission projections and SANDAG's growth projections are based on population, employment and transportation trends, and land use plans developed by the local governments. Accordingly, projects that propose development that is consistent with the population and employment growth anticipated by these land use plans would be consistent with the Attainment Plan. If a project proposes development that results in growth greater than that anticipated in the adopted land use plans and SANDAG's growth projections upon which the Attainment Plan is based, the project may conflict with the Attainment Plan and could have a potentially significant impact on air quality. This situation would warrant further analysis to determine if the project would exceed the growth projections used in the Attainment Plan for the specific subregional area.

The project site is designated for multi-family housing in the City's General Plan and is zoned for a residential density of 21 du/acre. The project proposes a multi-family residential development with a density of 15.75 du/acre, which is below the 21 du/acre density allowed by the project site's land use designation and zoning. Therefore, the project would be consistent with the land use plans and growth projections upon which the Regional Air Quality Standards and Attainment Plan are based. As such, residential growth in the City as a result of the project, and the related changes in regional emissions, are accounted for in the SIP, which is crafted to bring the basin into attainment for all criteria pollutants. Additionally, as detailed in item III.b below, the project would not result in any construction or operational period emissions in exceedance of established thresholds. Therefore, the proposed project would not conflict with or obstruct implementation of the Attainment Plan. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. The project would generate criteria pollutants in the short-term during construction and the long-term during operation. To determine whether a project would result in a cumulatively considerable net increase in criteria pollutant emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation, the project's anticipated emissions were evaluated using the quantitative emission thresholds established by the SDAPCD.

Construction Emissions

The project's temporary construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2022.1. The results of the modeling of the project's construction emissions of criteria pollutants and ozone precursors are shown in Table AQ-1, *Maximum Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions for comparison with the SDAPCD thresholds. The complete CalEEMod output and methodology discussion is provided in Appendix A.

Table AQ-1
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Year	VOC*	NO_X*	CO*	SO_X*	PM_{10}*	$PM_{2.5}$*
2025	6.2	60.3	52.4	0.1	38.5	19.8
2026	1.1	8.9	13.4	<0.1	0.8	0.4
2027	39.5	9.3	14.5	<0.1	0.8	0.4
Maximum Daily Emissions	**39.5**	**60.3**	**52.4**	**0.1**	**38.5**	**19.8**
SDAPCD Thresholds	*137*	*250*	*550*	*250*	*100*	*67*
Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)
* Pollutant Emissions (pounds per day)
VOC = volatile organic compound; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides;
PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter;
SDAPCD = San Diego County Air Pollution Control District

As shown in Table AQ-1, the project's temporary construction-related criteria pollutant and precursor emissions would be below the SDAPCD's significance thresholds. Therefore, the project's construction activities would not result in a cumulatively considerable net increase of criteria pollutants that would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Impacts would be less than significant.

Operational Emissions

The project's long-term maximum daily and annual operational emissions were estimated using CalEEMod. The results of the modeling of the project's operational emissions of criteria pollutants and precursors are shown in Table AQ-2, *Operational Emissions*. The data are presented as the maximum anticipated daily emissions and annual emissions for comparison with the SDAPCD thresholds. The complete CalEEMod output and a thorough discussion on methodology is provided in Appendix A.

Table AQ-2
OPERATIONAL EMISSIONS

Source	VOC*	NO_X*	CO*	SO_X*	PM_{10}*	$PM_{2.5}$*
Daily Emissions (pounds per day)[2]						
Area	3.4	<0.1	3.6	<0.1	<0.1	<0.1
Energy	<0.1	0.3	0.1	<0.1	<0.1	<0.1
Mobile	1.8	1.3	12.3	<0.1	2.7	0.7
Total Project Emissions[1]	**5.3**	**1.6**	**16.0**	**<0.1**	**2.8**	**0.7**
SDAPCD Daily Thresholds	*137*	*250*	*550*	*250*	*100*	*67*
Exceed Daily Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Annual Emissions (tons per year)						
Area	0.6	<0.1	0.3	<0.1	<0.1	<0.1
Energy	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mobile	0.3	0.2	1.9	<0.1	0.4	0.1
Total Project Emissions[1]	**0.9**	**0.3**	**2.3**	**<0.1**	**0.4**	**0.1**
SDAPCD Annual Thresholds	*15*	*40*	*100*	*40*	*15*	*10*
Exceed Annual Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)
1 Totals may not sum due to rounding.
2 Winter emissions are very slightly higher for most substances.
VOC = volatile organic compound; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides;
PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter;
SDAPCD = San Diego County Air Pollution Control District

As shown in Table AQ-2, the project's long-term emissions of criteria pollutants and precursors would not exceed the SDAPCD daily or annual screening thresholds. Therefore, the project's operational activities would not result in a cumulatively considerable net increase of criteria pollutants that would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Impacts would be less than significant.

c. LESS THAN SIGNIFICANT IMPACT. Impacts to sensitive receptors are typically analyzed for operational period carbon monoxide (CO) hotspots and exposure to toxic air contaminants (TACs). An analysis of the project's potential to expose sensitive receptors to these pollutants is provided below.

Construction Diesel Particulate Matter Emissions

Implementation of the project would result in the use of heavy-duty construction equipment, haul trucks, on-site generators, and construction worker vehicles. These vehicles and equipment could generate the TAC diesel particulate matter (DPM). Generation of DPM from construction projects typically occurs in a localized area (e.g., at the project site) for a short period of time. Because construction activities and subsequent emissions vary depending on the phase of construction (e.g., grading, building construction), the construction-related emissions to which nearby receptors are exposed to would also vary throughout the construction period. During some equipment-intensive phases such as grading, construction-related emissions would be higher than other less equipment-intensive phases such as building construction. Concentrations of mobile-source DPM emissions are typically reduced by 70 percent at approximately 500 feet.

The dose (of TAC) to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed amount of emissions would result in higher health risks. Current models and methodologies for conducting cancer health risk assessments are associated with longer-term exposure periods (typically 30 years for individual

residents based on guidance from the Office of Environmental Health Hazard Assessment) and are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models and methodologies do not correlate well with the temporary and highly variable nature of construction activities. Cancer potency factors are based on animal lifetime studies or worker studies where there is long-term exposure to the carcinogenic agent. There is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime. Considering this information, the highly dispersive nature of DPM, and the fact that construction activities would occur at various locations throughout the project site for a limited duration, it is not anticipated that construction of the project would expose sensitive receptors to substantial DPM concentrations. Therefore, this impact would be less than significant.

Localized Carbon Monoxide Hotspots

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. Vehicle exhaust is the primary source of CO. In an urban setting, the highest CO concentrations are generally found within close proximity to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increases. Project-generated traffic has the potential of contributing to localized "hot spots" of CO off site. Because CO is a byproduct of incomplete combustion, exhaust emissions are worse when fossil-fueled vehicles are operated inefficiently, such as in stop-and-go traffic or through heavily congested intersections, where the level of service (LOS) is severely degraded.

The CARB also recommends evaluation of the potential for the formation of locally high concentrations of CO, known as CO hot spots. A CO hot spot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. To verify that the project would not cause or contribute to a violation of the 1-hour and 8-hour CO standards, an evaluation of the current vs. proposed average daily traffic volumes was conducted. The proposed project access point would be via Hacienda Drive. According to average daily traffic (ADT) volumes recorded by the City in 2017, the portion of Hacienda Drive between Providence Drive to the west and La Tortuga Drive to the east experiences 5,003 westbound trips and 5,609 eastbound trips per day, for a total of 10,612 ADT. The proposed project would result in an increase of 504 ADT, which would not be enough to substantially affect the roadway network. The project would not contribute to a CO hotspot and impacts would be less than significant.

d. LESS THAN SIGNIFICANT IMPACT. The State of California Health and Safety Code Sections 41700 and 41705, and SDAPCD Rule 51, prohibit emissions from any source whatsoever in such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public health or damage to property. Any unreasonable odor discernible at the property line of the project site will be considered a significant odor impact.

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations. The project, involving a residential development, would not include any of these uses nor are there any of these land uses in the project vicinity.

Emissions from construction equipment, such as diesel exhaust, and volatile organic compounds (VOCs) from architectural coatings and paving activities may generate odors; however, these odors would be temporary, intermittent, and not expected to affect a substantial number of people. Additionally, noxious odors would be confined to the immediate vicinity of construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any

level of air quality concern. Furthermore, short-term construction-related odors are expected to cease upon the drying or hardening of the odor-producing materials. Long-term operation of the project would not be a substantial source of objectionable odors. Therefore, the project would not create objectionable odors affecting a substantial number of people. Impacts would be less than significant.

IV. Biological Resources

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☒	☐	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

The discussion below is summarized and based on the analysis and conclusions contained within the Biological Resources Letter Report for the 1160 Hacienda Drive Townhome Project prepared by HELIX (HELIX 2025b). The report is included as Appendix B to this IS/MND.

Discussion

a. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. During biological surveys conducted on April 12, 2024, HELIX identified a total of 78 plant species in the study area, of which 44 (56 percent) are non-native species. A total of 48 animal species were observed or otherwise detected in the study area, including 11 invertebrate, 2 reptile, 31 bird, and 4 mammal species. One special-status plant species was observed in the study area: southern California black walnut (*Juglans californica*). In addition, one

special-status plant species was considered to have a moderate potential to occur on-site: thread-leaved brodiaea (*Brodiaea filifolia*). Three special-status animal species were observed in the study area: Cooper's Hawk (*Astur cooperii*), yellow warbler (*Setophaga petechia*), and Coronado skink (*Plestiodon skiltonianus interparietalis*). In addition, two special-status animal species that were not observed but are still considered to have a high potential to occur in the study area (characterized by suitable habitat and a historical record in the immediate vicinity of the survey area) are western red bat (*Lasiurus blossevillii*) and Crotch's bumble bee (*Bombus crotchii*).

As discussed above, the general biological surveys conducted in April 2024 detected the presence of one special-status plant species outside of the disturbance limits of the project: southern California black walnut. The project design would avoid impacts to the riparian habitat where this plant is located, and no impacts to this species would occur.

Marginally suitable habitat for least Bell's vireo (*vireo bellii pusillus*) occurs within the project site along Buena Vista Creek. Although the creek generally lacks the dense shrubs and multi-layered canopy this species prefers, patches of willows and dense understory vegetation are found within the creek and may provide suitable breeding habitat. As such, protocol surveys were conducted for least Bell's vireo in 2024 which determined that the species is absent from the site. Therefore, no direct or indirect impacts to this species would result from project implementation.

The project site contains and is adjacent to suitable nesting habitat for multiple common bird species, including raptors, protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game (CFG) Code. The project site also has high potential to support the western bluebird (*Sialia mexicana*), a North County Multiple Habitat Conservation Plan (MHCP) covered species. Potential nesting habitat is located in vegetated areas throughout the project site. Pursuant to the MBTA and CFG Code, the development of the proposed project could disturb or destroy active migratory bird nests if vegetation clearing occurs during the general bird nesting season (February 15 through September 15) and/or raptor nesting season (January 15 through July 15). Disturbance to or destruction of migratory bird nests, including sensitive species such as Cooper's hawk, yellow warbler, or western bluebird, if present, are in violation of the MBTA and CFG Code and are, therefore, considered to be a potentially significant impact. Implementation of mitigation measure BIO-1 would ensure that potential impacts to birds protected under the MBTA and CFG Code are less than significant.

Crotch's bumble bee has not been observed on-site; the nearest documented record of this species is approximately 1.4 miles to the southwest. The site contains approximately 3.75 acres of suitable coastal sage scrub (disturbed), native and non-native grasslands, and disturbed habitat that may provide suitable foraging, nesting, and overwintering habitat for this species. Because Crotch's bumble bee is a candidate for listing under the State Endangered Species Act, project impacts would potentially be considered significant. Potential impacts to this species are expected to be a result of habitat impacts and direct mortality to underground nesting or overwintering bumble bees. Habitat-based mitigation would result in no-net loss of habitat for this species. Additionally, implementation of mitigation measure BIO-2 would require pre-construction surveys to be conducted, and if any individuals were found, no impacts would be permitted to active nesting or overwintering sites until the California Department of Fish and Wildlife (CDFW) has been consulted and any additional measures recommended by CDFW have been implemented. These measures, along with implementation of BIO-3, would reduce the impacts to Crotch's bumble bee to less than significant.

As discussed above, the Coronado skink, a special-status animal species, was observed on the project site. The project would impact approximately 3.23 acres of suitable coastal sage scrub (disturbed), coast live oak woodland, native and non-native grasslands, and disturbed habitat for the species. Though the project would not adversely impact the local, long-term survival of the species, loss of potential habitat during construction would be a potentially significant impact. However, with

implementation of mitigation measure BIO-3, impacts to this species are considered less than significant.

In addition, the western red bat, a non-listed, special-status animal species, has the potential to occur on and in the immediate vicinity of the project site. Potential impacts on these species would be limited to temporary displacement of individuals during project construction. In addition, based on the quality and size of the habitat that could be impacted, the study area is not expected to support locally or regionally significant populations of this sensitive species. Therefore, impacts to the species would be considered less than significant.

Mitigation Measure

BIO-1 **Avoidance of Nesting Birds and Raptors.** To protect nesting birds, construction activities shall be conducted outside of the nesting season for nesting birds (February 15 through August 31 for general birds and January 15 through July 15 for raptors) if possible. If construction activities are needed during the nesting season, a qualified biologist shall conduct a pre-construction survey no more than three days before the start of work to search for nesting birds within the proposed work area and surrounding 500 feet, where feasible. If the surveys conclude there is no active nesting, the work shall resume as planned. However, if project activities are delayed or suspended for seven or more days during the breeding season, surveys shall be repeated before work proceeds. If the results of the survey identify nesting birds (including raptors), no-work disturbance buffers shall be implemented: 100 feet around non-listed active passerine (perching birds and songbirds) nests and 500 feet around active raptor nests. The buffers may be reduced, if appropriate, depending on factors such as nest location, substrate, and topography, and as directed by a qualified biologist. The reduction in no-work buffers shall be approved by the City before implementation. The buffers shall be respected and maintained until the end of the bird breeding season or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

BIO-2 **Crotch's Bumble Bee Conservation Measures.** Due to the presence of suitable habitat for Crotch's bumble bee within the project site, the following measures shall be implemented to reduce potential impacts to this species:

Pre-construction Surveys: Before initiation of construction activities (i.e., demolition, earthwork, clearing, and grubbing), a qualified biologist shall conduct pre-construction surveys for Crotch's bumble bee following the guidelines in CDFW *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (CDFW 2023); surveys being conducted in 2025. Three surveys, ideally spaced two to four weeks apart, shall be conducted during peak flight season (April through August) during optimal weather conditions (e.g., warm, sunny days between 65 and 90 degrees Fahrenheit). If the pre-construction surveys are negative, no further assessment shall be required, and construction activities shall be allowed to proceed without any further requirements. If Crotch's bumble bee occupied habitat is detected during the pre-construction surveys, the measures below shall be implemented. The measures below shall only be required if Crotch's bumble bee remains as a candidate state endangered species or is listed as a state endangered species at the time of project construction. If Crotch's bumble bee is delisted, the measures below shall not be required.

CESA Compliance: If Crotch's bumble bee is found to occur within the direct impact area of the project, then prior to issuance of a grading permit, it shall be demonstrated that CESA-required consultation with CDFW regarding the project's effects to Crotch's bumble bee occupied habitat has occurred, and, if take of Crotch's bumble bee is expected, that CDFW has authorized such take through an incidental take permit, as applicable. In addition, if an incidental take permit is issued for the project that covers Crotch's bumble bee, that document shall supersede any inconsistent measures provided in this report.

Compensatory Mitigation: If Crotch's bumble bee is found to occur within the direct impact area of the project, then permanent direct impacts to occupied Crotch's bumble bee habitat shall be offset through compensatory mitigation, which may include, but is not necessarily limited to, on-site or off-site habitat preservation, enhancement, restoration, and/or creation as stipulated in **BIO-3**. However, if an incidental take permit is issued for the project that covers Crotch's bumble bee, that document(s) shall supersede any measures and mitigation ratios provided in this report.

During Construction: If during vegetation removal and ground clearing activities an overwintering or dead Crotch's bumble bee is observed, activities shall immediately stop, and a 100-foot Environmentally Sensitive Area boundary will be erected. A Crotch's bumble bee approved qualified biologist will be notified and will evaluate the site. CDFW will be immediately notified thereafter for consultation and implementation of additional avoidance measures, as recommended by CDFW.

BIO-3 Habitat-Based Mitigation: To offset significant impacts to sensitive habitat types, the project applicant shall implement habitat-based mitigation for on- and/or off-site compensation through the preservation and/or purchase of Mitigation Bank Credits. Specifically, impacts to 0.22 acre of coast live oak woodland, 0.11 acre of disturbed Diegan coastal sage scrub, and 0.24 acre of valley needlegrass grassland shall be provided at a 3:1 ratio, and impacts to 2.42 acres of non-native grassland shall be provided at a 0.5:1 ratio. The mitigation acreage required shall be accomplished on-site through preservation of 0.30 acres of coast live oak woodland and 0.46 acre of non-native grassland or another location deemed acceptable by the City and Wildlife Agencies as well as through the purchase of Mitigation Bank credits. The bank credits shall be in-kind to the vegetation impacted or higher value habitat (i.e., non-native grassland is a lower value than coastal sage scrub), as approved by the City and/or Wildlife Agencies, as applicable. Before the issuance of a grading permit, the project applicant shall demonstrate to the City that appropriate Mitigation Bank credits have been acquired for the project. Overall, the preference order for the location of compensation shall be as follows: on-site, the Mitigation Bank in the City, and lands/Bank outside the City.

Before the issuance of a grading permit, a protective instrument, such as a biological open space easement or restrictive covenant, shall be recorded by the applicant over the habitat mitigation preservation areas where such a protective instrument does not already exist, unless otherwise not required. Unless already under management provided by a long-term management entity, these habitat mitigation areas for the project shall be subject to long-term management, as prescribed by a Resources Management Plan approved by the City and the Wildlife Agencies, as applicable.

b. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The existing vegetation communities on the project site include southern coast live oak riparian forest, coast live oak woodland, disturbed Diegan coastal sage scrub, valley needlegrass grassland, non-native grassland, eucalyptus woodland, and disturbed habitat. Sensitive vegetation communities/habitat types mapped in the project study area

include southern coast live oak riparian forest, coast live oak woodland, Diegan coastal sage scrub, valley needlegrass grassland, and non-native grassland.

As discussed further in item IV.c below, the project would not impact riparian habitat. However, project impacts to other sensitive natural communities would occur, which would be considered significant. As shown in Table BIO-1, *Proposed Project Impacts to Sensitive Natural Communities*, impacts to 0.11 acre of disturbed Diegan coastal sage scrub, 0.22 acre of coast live oak woodland, 0.24 acre of valley needlegrass grassland, and 1.13 acre of non-native grassland would be considered significant.

Table BIO-1
PROPOSED PROJECT IMPACTS TO SENSITIVE NATURAL COMMUNITIES[1]

VEGETATION COMMUNITY or HABITAT TYPE	Project Impacts (Acres)	Ratio[2]	Replacement Required (Acres)
Coast live oak woodland	0.22	3:1	0.66
Diegan coastal sage scrub - disturbed	0.11	3:1	0.33
Valley needlegrass grassland	0.24	3:1	0.72
Non-native grassland	1.13	0.5:1	0.57
TOTAL	**1.70**	**–**	**2.28**

Source: Appendix B
1 Reflects rounding to the nearest 0.01 acre.
2 Ratios prescribed by the MHCP.

Implementation of mitigation measure BIO-3 would reduce impacts to sensitive native communities to less than significant.

c. NO IMPACT. Potentially jurisdictional waters found on-site are limited to those associated with Buena Vista Creek, a deeply incised channel containing a variety of native and disturbed habitat, including coast live oaks, willows, and Mexican fan palm. During the time of the assessment in April 2024, the creek contained slowly flowing water and is likely a perennial stream fed by urban runoff. No additional waters or wetlands, including vernal pools, were identified during the preliminary assessment.

There is approximately 0.06 acre of potentially jurisdictional waters of the U.S./State on-site that would be subject to US Army Corps of Engineers regulation under Section 404 of the Clean Water Act and Regional water Quality Control Board jurisdiction pursuant to Clean Water Act Section 401. However, no impacts are proposed along Buena Vista Creek. In addition, there is approximately 0.32 acre of streambed and associated riparian habitat on the project site that would be under the potential jurisdiction of CDFW pursuant to Sections 1600-1603 of the CFG Code. Impacts to wetland communities, including freshwater marshes and vernal pools, are not anticipated to occur as a result of the project. No impact would occur.

d. NO IMPACT. Wildlife corridors connect isolated habitats and allow movement or dispersal of plant materials and animals. Local wildlife corridors allow access to resources such as food, water, and shelter within the framework of the wildlife's daily routine and life history. Regional corridors provide these functions over a larger scale and link two or more large habitat areas, allowing the dispersal of organisms and the consequent mixing of genes between populations. While the project site and adjacent native habitats support localized use by wildlife, particularly birds, the majority of the project site is surrounded by development and does not function as a wildlife corridor or habitat linkage for non-avian terrestrial wildlife. The project would not interfere with wildlife movement or impede the use of nursery sites. No impact would occur.

e. NO IMPACT. As discussed in item IV.c, the project would not result in significant impacts to riparian habitats or other natural communities, or wetlands identified by federal, state, regional, or local agencies, plans, policies, or regulations. In addition, as discussed in items IV.a, IV.b, and item IV.d, the project would result in less than significant impacts to biological resources that are protected by City or County policies, or approved local, regional, or state habitat conservation plans with the implementation of the identified mitigation measures, and the project site is not located within any known or reported local or regional wildlife corridors. Further, the project would be designed to comply with all approved local policies and ordinances. No impact would occur.

f. NO IMPACT. The project site occurs within the boundaries of the North County MHCP. The only Subarea Plan that has been approved and adopted within the North County MHCP is the City of Carlsbad MHCP Subarea Plan, also known as the Carlsbad Habitat Management Plan. The project occurs within the boundaries of the Vista Subarea, which does not currently have an approved or draft MHCP Subarea Plan. he City's General Plan, however, includes goals and policies to implement the provisions of the MHCP, and it is used as a basis for assessing projects within a regional context.

Within the MHCP, a portion of the project site includes a hardline Focused Planning Area (FPA) with a 90 to 100 percent conservation target, of which 0.04 acre of the 0.47-acre of hardline FPA within the property would be impacted. As such, the project would avoid 90.9 percent of the hardline FPA, which would be within the conservation targets of the FPA, and would not conflict with the provisions of the MHCP. Therefore, the project does not conflict with any adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

V. Cultural Resources

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

The discussion below is summarized and based on the findings contained within the Cultural Resources Study for the 1160 Hacienda Drive Project prepared by HELIX (HELIX 2024). The report is included as Appendix C of this IS/MND.

Discussion

a. NO IMPACT. In April 2024, HELIX conducted an updated records search at the South Coastal Information Center (SCIC) for the project site and a one-mile radius surrounding the project site, and the Native American Heritage Commission (NAHC) was contacted for a Sacred Lands File search. In addition, HELIX staff and a Native American monitor performed a field survey in April 2024.

The review of the records search information indicated that one cultural resource, a prehistoric campsite, has been previously recorded within the project site. However, the original 1958 site record indicated that the possibility of prior destruction of the resource was high, given the subsequent construction of a house and other disturbances on the site. In addition, there is no site record update on file for this resource at SCIC. The field survey was negative for cultural resources; however, ground visibility was very poor, and safety concerns prevented access to a portion of the property. A subsequent site visit identified scattered shell within the boundary of the previously recorded resource. A cultural resources testing program was conducted in October 2025 to test the site for the presence or absence of subsurface deposits and to determine site significance. The testing program included digging shovel test pits in a grid pattern within the project site to determine if abundant subsurface cultural material or deposits were discovered. The testing was conducted with a Luiseño Native American monitor. The results of the testing identified sparse subsurface materials, including precontact shell fragments and minimal lithic debitage, as well as building debris from a demolished, historic-aged residence; however, the soil was highly disturbed, and no unique or intact cultural material was identified. The resource does not meet the criteria for significance under CEQA and lacks integrity; therefore, it is recommended not significant and does not rise to the level of a historical resource, per CEQA. Thus, the project would not cause an impact to a historical resource pursuant to §15064.5. No impact would occur.

b. Less than Significant with Mitigation Incorporated. The Sacred Lands File search was positive for the presence of cultural resources within the project vicinity, and coordination with the San Luis Rey Band of Mission Indians (San Luis Rey Band) revealed the presence of two additional cultural resources near the project site. The San Luis Rey Band and Rincon Band of Luiseño Indians (Rincon) requested full-time archaeological and Native American monitoring during ground-disturbing construction activities and the reburial of any discovered cultural resources on site. As described in item V.a., subsurface testing was conducted in October 2025 which did not identify significant cultural or archaeological resources.

Despite the results of the October 2025 testing, there is the potential for unknown subsurface archaeological resources to be encountered during ground-disturbing activities, which may result in significant impacts. With implementation of Mitigation Measures CR-1 to CR-8 below, these impacts would be reduced to less than significant levels.

Mitigation Measures

CR-1 Prior to the issuance of a Grading Permit, the Applicant or Owner, and/or Contractor shall provide a written and signed letter to the City's Director of Community Development, stating that a Qualified Archaeologist and a Rincon Native American Monitor have been retained at the Applicant or Owner and/or Contractor's expense to implement the monitoring program, as described in the Tribal Monitoring & Cultural Resources Agreement (pre-excavation agreement). A copy of the letter shall be included in the Grading Plan Submittals for the Grading Permit.

CR-2 Prior to pulling project grading permits, the construction manager, a tribal representative from Rincon, a Traditionally Culturally Affiliated (TCA) consulting tribe, the archaeological representative, and the landowner/applicant if required, shall conduct a field meeting to review the process for controlled grading of P-37-000641 (CA-SDI-641). The discussion should include a review of the process, confirmation of what machinery will be used, what types of resources are present and/or expected, what will occur when/if buried resources are discovered, and who will notify the monitors at least 48 hours in advance of when grading is anticipated to begin within 50 feet (15 meters) of P- 37-000641 (CA-SDI-641). In general, light equipment such as a paddle wheel scraper or a blade excavator will incrementally remove

shallow layers of soil from the area containing (or believed to contain) cultural resources and/or buried resources as indicated on a map to be included in the Tribal Agreement (either the Long Term Preservation Plan or the Tribal Monitoring & Cultural Resources Agreement as appropriate) per CR-1. Monitors will be allowed to actively observe, including walking within a close but safe proximity to the equipment, the newly exposed soils for any evidence of buried resources. Should potential cultural items be identified, the controlled grading will cease while the tribal and archaeological monitors inspect the find and determine the best course of action for preservation or excavation, unless additional monitors are available to observe the controlled grading in another portion of the site. Once the evaluation and any potential treatment is complete, the equipment shall resume with shallow removal lifts. This process will continue until the entire area has been completed. Upon the concurrence of both the project archaeologist and the tribal representative, controlled grading may cease and, if applicable, mass grading may proceed. The controlled grading process shall be documented by the project archaeologist in the Phase IV Monitoring Report as required in CR-5.

CR-3 Cultural resource mitigation monitoring shall be conducted to provide for the identification, evaluation, treatment, and protection of any cultural resources that are affected by or may be discovered during the construction of the proposed project. The monitoring shall consist of the presence of a Qualified Archaeologist and a Rincon Native American Monitor for, but not limited to, any tree removal, demolition and/or removal of remnant foundations, pavements, abandonment and/or installation of infrastructure; grading or any other ground-disturbing or altering activities (note: all fill materials shall be absent of any and all cultural resources); and related off-site utility installations in Hacienda Drive, private driveways and/or streets. Other tasks of the monitoring program shall include the following:

- The requirement for cultural resource monitoring shall be noted on all applicable construction documents, including demolition plans, grading plans, etc.

- The Qualified Archaeologist and Native American Monitor shall attend all applicable preconstruction meetings with the Contractor and/or associated Subcontractors.

- The Qualified Archaeologist shall maintain ongoing coordination with the Native American monitor during all ground-disturbing or altering activities, as identified above.

- The Qualified Archaeologist and Native American monitor may halt ground disturbing activities if archaeological artifact deposits or cultural features are discovered. In general, ground-disturbing activities shall be directed away from these deposits or cultural features until a determination of potential significance is made, which shall be determined by the Qualified Archaeologist and the Native American monitor. Ground disturbing activities shall not resume until the Qualified Archaeologist, in consultation with the Native American representative, deems the cultural resource or feature has been appropriately documented and/or protected. At the Qualified Archaeologist's and Native American monitor's discretion, the location of ground-disturbing activities may be temporarily relocated elsewhere on the project site to avoid further disturbance of cultural resources.

- The avoidance and protection of discovered unknown and significant cultural resources and/or unique archaeological resources is the preferable mitigation for the proposed project. If avoidance is not feasible, a Data Recovery Plan must be developed in consultation with Rincon and may be authorized by the City as the Lead Agency under CEQA. If data recovery is required, then the affiliated Tribe(s) engaged in state

mandated consultation shall be notified and consulted in drafting and finalizing any such recovery plan.

CR-4 All soil from within the boundary of P-37-000641 (CA-SDI-641) must remain on the project site. If this is not feasible, all soil must be screened, with a Rincon Native American Monitor present, through 1/8 mesh screen to ensure all cultural materials will be recovered prior to export.

CR-5 Prior to the release of the Grading Bond, a Phase IV Monitoring Report and/or Evaluation Report, which describes the results, analysis, and conclusions of the cultural resource monitoring efforts (such as, but not limited to, a Research Design, Data Recovery Program, etc.) shall be submitted by the Qualified Archaeologist, along with the Native American monitor's notes and comments, to the City's Director of Community Development for approval.

CR-6 The landowner shall relinquish ownership of all cultural resources collected during the cultural resource monitoring conducted during ground-disturbing activities, and from any previous archaeological studies or excavations on the project site for respectful and dignified treatment and disposition to Rincon in accordance with the consulting Tribe's cultural and spiritual traditions. All cultural materials that are associated with burial and/or funerary goods will be repatriated to the Most Likely Descendant as determined by the Native American Heritage Commission per California Public Resources Code Section 5097.98.

CR-7 Isolated cultural items discovered in the project site shall be returned to the site at a location determined prior to issuance of grading permit. The location shall be identified on the final grading plans as an environmentally sensitive area to be deed-restricted in perpetuity, in a mutually agreed-upon location (agreed upon by Rincon and the Applicant/Owner). Prior to obtaining 100 percent occupancy permits, the Landowner/Applicant and Rincon shall complete a Long-Term Management Plan for the reburial area that shall describe the open space easement and shall document the relocation of P-37-000641 (CA-SDI-641) and will outline responsible actions to be taken by the Home Owners' Association (HOA) and Rincon including agreement on annual maintenance by a HOA or local agency, as an agreement by a landowner for care of cultural resources in perpetuity, etc.

CR-8 As specified by California Health and Safety Code Section 7050.5, if human remains are found on the project site during construction or during archaeological work, the person responsible for the excavation, or his or her authorized representative, shall immediately notify the San Diego County Medical Examiner's office by telephone. No further excavation or disturbance of the discovery or any nearby area reasonably suspected to overlie adjacent remains (as determined by the Qualified Archaeologist and/or the Native American monitor) shall occur until the Medical Examiner has made the necessary findings as to origin and disposition pursuant to Public Resources Code 5097.98. If such a discovery occurs, a temporary construction exclusion zone shall be established surrounding the area of the discovery so that the area would be protected (as determined by the Qualified Archaeologist and/or the Native American monitor), and consultation and treatment could occur as prescribed by law. As further defined by State law, the Medical Examiner would determine within two working days of being notified if the remains are subject to his or her authority. If the Medical Examiner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC would decide as to the Most Likely Descendent. If Native American remains are discovered, the remains shall be kept *in situ* ("in place"), or in a secure location in close proximity to where they were found, and the analysis of the remains shall only occur on-site in the presence of a Luiseño Native American monitor.

c. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The project site does not lie near any dedicated cemeteries. Although disturbance of human remains is unlikely, it is possible that construction activity could unearth previously unknown vestiges. This would be considered a potentially significant impact. However, implementation of Mitigation Measure CR-8 (above) would ensure that human remains were treated with dignity and as specified by law and would reduce impacts to less than significant levels.

VI. Energy

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Discussion

a. LESS THAN SIGNIFICANT IMPACT. Energy would be consumed for both construction and operation of the project. Energy consumed for project construction would primarily consist of fuels in the form of diesel and gasoline. Fuel consumption would result from the use of on-road trucks for the transportation of construction materials and water and from the use of off-road construction equipment. While construction activities would consume petroleum-based fuels, consumption of such resources would be temporary and would cease upon the completion of construction. The petroleum consumed during project construction would be typical of similar residential projects and would not require the use of new petroleum resources beyond those typically consumed in California annually for construction activities. In addition, as described in item VI.b below, Title 24 Building Efficiency Standards would apply to the project, requiring energy efficiency. The project would be constructed in accordance with the energy-efficiency standards contained in the CALGreen Building Standards, including the requirement for onsite solar electricity generation. Based on these considerations, construction of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources, and the impact would be less than significant.

During long-term operation of the project, energy would be consumed in the form of diesel and gasoline used by vehicles traveling to and from the project site; natural gas for heating and hot water; electricity required to source and treat water used by the project; and electricity used directly by the project. While the project would consume energy related to electricity, natural gas, water, and wastewater, because the project would be consistent with the General Plan growth projections, the energy use would be consistent with the energy projections for the state and the region. Therefore, the operation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. The 2022 Title 24 Building Energy Efficiency Standards include provisions applicable to all buildings, which are mandatory requirements for efficiency and design. The project would be consistent with the requirements of Title 24 through implementation of energy-reduction measures, such as energy efficient lighting and appliances, water efficient appliances and plumbing fixture, water efficient landscaping and irrigation, and the onsite generation of renewable

solar energy, as described above. Therefore, the project would not conflict with or obstruct with a state or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

VII. Geology and Soils

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv. Landslides?	☐	☐	☒	☐
b. Result in substantial soil erosion, or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

The discussion below is based on the Geotechnical Investigation prepared for the project by Alta California Geotechnical, Inc. (Alta; 2023) and the Addendum to the Geotechnical Investigation prepared by Alta (Alta 2024), which are included as Appendix D of this IS/MND.

Discussion

a-i. No Impact. Seismically induced surface or ground rupture occurs when movement on a fault deep within the earth breaks through to the surface as a result of seismic activity. Fault rupture almost always follows preexisting faults, which are zones of weakness. Sudden displacements are more damaging to structures because they are accompanied by shaking. Under the Alquist-Priolo

Earthquake Fault Zoning Act, which was passed in 1972, the California State Geologist identifies areas in the State that are at risk from surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Alquist-Priolo Earthquake Fault Zoning Act also requires the State Geologist to establish regulatory zones, known as Alquist-Priolo Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps that identify these zones.

According to the Geotechnical Investigation, the project site is not located within a California State Designated Earthquake Fault Zone and active faults are not known to exist within the site. Therefore, the potential for fault surface rupture on the project site is low. See Appendix D for additional details. No impact would occur.

a-ii. LESS THAN SIGNIFICANT IMPACT. As discussed in item VII.a-i above, there are no known active faults that cross the project site. However, there are several active faults that run throughout San Diego County. The project site is located on the mid-central portion of the Santa Ana sub-block, approximately 9.81 miles east of the Rose Canyon and Newport- Inglewood fault zones and 18.04 miles west of the Elsinore fault zone. Like most of southern California, the project site is within a seismically active area, and can therefore be subject to strong seismic ground motion.

The project would comply with the seismic design parameters outlined in the CBC, which provides requirements for earthquake safety based on factors such as occupancy type, the types of soils onsite, and the probable strength of ground motion. Compliance with the CBC would include the incorporation of: 1) seismic safety features to minimize the potential for significant effects as a result of earthquakes; 2) proper building footings and foundations; and 3) construction of the building structure so that it would withstand the effects of strong ground shaking. In addition, the City's Building Department would review the building plans through building plan checks, issuance of a building permit, and inspection of the residences during construction, which would ensure that all required CBC seismic safety measures are incorporated into the residences. Compliance with the CBC and the Building Department's review process, permit application, and inspection would reduce the potential for substantial impacts related to strong seismic ground shaking. Impacts would be less than significant.

a-iii. NO IMPACT. Liquefaction is a phenomenon in which a saturated cohesionless soil causes a temporary transformation of the soil to a fluid mass, resulting in a loss of support. Seismic agitation of relatively loose saturated sands, silty sands, and some silts can result in a buildup of pore pressure. If the pore pressure exceeds the overburden stresses, a temporary quick condition known as liquefaction can occur. Liquefaction effects can manifest in several ways including: 1) loss of bearing; 2) lateral spread; 3) dynamic settlement; and 4) flow failure. Lateral spreading has typically been the most damaging mode of failure. In general, the more recent that a sediment has been deposited, the more likely it will be susceptible to liquefaction.

According to the City of Vista General Plan 2030 EIR, most of the City is situated on bedrock with a thin veneer of soil/sediment where there is little to no potential for liquefaction (City 2011). As stated in the Geotechnical Investigation, based on the shallow bedrock comprising the project site, the potential for liquefaction onsite is considered negligible. The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. No impact would occur.

a-iv. LESS THAN SIGNIFICANT IMPACT. Figure PSFS-3, Slope Analysis, of the City of Vista General Plan 2030 indicates that the project site does contain slopes categorized as 15 to 25 percent and 25 to 40 percent, which could be susceptible to landslides (City 2012). However, the project would be required to comply with Vista Development Code Section 16.48, which requires that developments within or

near slopes apply slope stabilization measures, which include (but are not limited to): hydroseeding and use of erosion control blankets, silt fencing, fiber rolls, and gravel bags. Further, as required by the building permit process, the project would implement the recommendations contained in the Geotechnical Investigation (Appendix D) which includes an analysis of the project's cut and fill slope stability and measures to increase and maintain slope stability in relation to lot drainage, planting and irrigation of slopes, burrowing animals, and setback requirements adjacent to slopes in accordance with the CBC. Therefore, with compliance with Vista Development Code Section 16.48 and the recommendations contained in the project-specific Geotechnical Investigation, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. The project would convert vacant land comprised of dense vegetation, grasses, scattered trees, and dirt paths to residential development. Construction of the proposed project would involve a variety of heavy equipment associated with intensive earthwork, structural, and paving phases. Soil exposed by construction activities, such as excavation, could be subject to erosion if exposed to heavy rain, winds, or other storm events. The project applicant would be required to submit a Notice of Intent to the San Diego RWQCB for the preparation a SWPPP. Generally, a SWPPP demonstrates how water quality during and post construction would be maintained in accordance with mandated objectives. Often this is achieved by employing BMPs (see Section X, *Hydrology and Water Quality*). Many BMPs designed to protect water quality also serve to reduce soil erosion and loss of topsoil.

Specific BMPs may include the following:

- Preservation of existing vegetation within staging/parking areas where feasible.
- Covering stockpiled, excavated, and/or fill materials to reduce potential off-site sediment transport.
- Use of erosion control devices, such as straw wattles, mulch, mats, and/or geotextiles.
- Use of sediment controls to protect the site perimeter and prevent off-site sediment transport, including measures such as silt fencing, fiber rolls, gravel bags, temporary sediment basins, street sweeping, stabilized construction access points and sediment stockpiles, and use of properly fitted covers for sediment transport vehicles.
- Compliance with local dust control measures.
- Daily backfill, compaction, and/or covering of excavated pipeline trenches to minimize erosion potential.
- Paving of disturbed roadway areas as soon as feasible after completion of trenching.
- Regular inspection and maintenance of all erosion control and sediment catchment facilities to ensure proper function and effectiveness.

Further, required adherence to the City's Grading and Erosion Control Ordinance (Vista Development Code Chapter 17.56) ensures that certain measures or conditions, such as those that prevent erosion and siltation are included prior to the issuance of a grading permit. Once operational, the project site would transition from primarily vacant or undeveloped land to impermeable surfaces and landscaped areas, eliminating large areas of exposed soils that may be subject to erosion and sedimentation.

With implementation of required standard erosion control measures and storm water construction BMPs, construction-related erosion and sedimentation impacts would be less than significant. Additionally, once constructed, the project site would not include expansive areas of exposed soils that would contribute to erosion and sedimentation. Impacts would be less than significant.

c. NO IMPACT. As discussed in items VII.a-iii and VII.a-iv above, the project site would not be subject to risks associated with liquefaction, and risks associated with landslides would be considered less than significant with implementation of recommendations contained in the Geotechnical Investigation (Appendix D) and compliance with Vista Development Code Section 16.48. The Geotechnical Investigation concluded that based on the shallow bedrock on the project site and implementation of the recommendations in the Geotechnical Investigation related to removal and recompaction, the potential for loss of bearing, lateral spread, dynamic settlement, and flow failure onsite would be considered negligible. No impact would occur.

d. LESS THAN SIGNIFICANT IMPACT. The Geotechnical Investigation concluded that based on expansion index testing performed during the subsurface investigation, the majority of soils onsite are "very low" in expansion potential, although some "low" expansive material may be present. Therefore, the project would not create substantial direct or indirect risks to life or property due to being located on expansive soils. Impacts would be less than significant.

e. NO IMPACT. The proposed project would connect to the existing municipal wastewater system through local connections and does not involve the use of septic tanks or alternative wastewater disposal systems. No impact would occur.

f. LESS THAN SIGNIFICANT IMPACT. The Vista General Plan 2030 Update Draft PEIR defined levels of paleontological sensitivity (High, Moderate, Low, and Zero) for individual geologic formations within each of the City's neighborhoods. Based on the review of geologic literature and the subsurface investigation conducted by Alta for the Geotechnical Investigation, the project site was determined to be underlain by alluvium and cretaceous-age tonalite (Appendix D). The alluvium contained at the project site, which is within the Southwest Vista neighborhood, could be classified as older Quaternary alluvium as this occurs within the northwestern portion of the Southwest Vista neighborhood. Should the project site contain geologic deposits of older Quaternary alluvium, the site would be considered to have high paleontological sensitivity (City 2011). However, construction of the project's structures would be located primarily within the higher elevation areas of the site, outside of the alluvial areas. Impacts would be less than significant.

VIII. Greenhouse Gas Emissions

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

The discussion below is summarized and based on the analysis and conclusions contained within the 1160 Hacienda Drive Townhome Project Air Quality and Greenhouse Gas Emissions Technical Report prepared for the project by HELIX (HELIX; 2025a). The report is included as Appendix A to this IS/MND.

Discussion

a. LESS THAN SIGNIFICANT IMPACT. Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as greenhouse gases (GHGs) because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere. The GHGs defined under California's Assembly Bill 32 include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHG emissions to disperse around the globe. Because GHG emissions vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, because methane and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). Carbon dioxide equivalent (CO_2e) is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e. This analysis uses CalEEMod, which uses GWP ratios to calculate project-related CO_2e emissions (Appendix A).

The City developed an interim threshold to meet the statewide GHG emissions reduction target of 40 percent below 1990 levels by 2020 and be on track to meet the 80 percent below 1990 levels by 2050 target in accordance with Senate Bill 32 and Executive Order S-3-05. However, the City has not adopted guidance or revised thresholds to account for GHG reduction target beyond 2020. Therefore, this analysis compares the project's emissions to a reduced threshold corresponding to the Senate Bill 32 reduction target of emissions 40 percent below 1990 levels by 2030. Accordingly, a threshold reduced by 4.98 percent for each year between 2020 and 2030 would meet the mandates of Senate Bill 32. The first full year of operation for the project is anticipated to be 2028. Therefore, a threshold of 33.5 percent below the City threshold of 1,185 metric tons (MT) CO_2e per service population per year, or 787 MT, is used in this analysis.

The GHG emissions associated with long-term operation of the project were estimated using CalEEMod. The results of the modeling of the project's operational GHG emissions are shown in Table GE-1, *Operational Greenhouse Gas Emissions*. The data are presented as the maximum anticipated operational GHG emissions for the first full year of operation (2028) and compared to the City threshold (adjusted for the year 2028).

Table GE-1
OPERATIONAL GREENHOUSE GAS EMISSIONS

Source	Emissions (MT CO_2e/year)
Area	0.8
Energy	138.7
Vehicular (Mobile)	444.0
Solid Waste	14.6
Water and Wastewater	7.7
Refrigerants	0.2
Total Annual Emissions[1]	**605.9**
Amortized Construction Emissions	*23.6*
Total Amortized Construction + Operational Emissions	***629.5***
Adjusted Threshold	*787*
Exceed Threshold?	***No***

Source: CalEEMod (output data is provided in Appendix A)
[1] Totals may not sum due to rounding.
MT = metric ton; CO_2e = carbon dioxide equivalent

As shown in Table GE-1, the project's GHG emissions would be approximately 629.5 MT CO_2e per year, which is below the adjusted City threshold of 787 MT CO_2e per year. Therefore, the project would not generate GHG emissions that may have a significant impact on the environment, and the impact would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. As discussed in item VIII.a above, the project's GHG emissions would not exceed the City's threshold (adjusted for the year 2028) during construction and operation of the project. By achieving the City's threshold, the project would not conflict with the goals of the City's Climate Action Plan (CAP) and may be seen to exceed its fair share in achieving the state's reduction target. Additionally, the project would be consistent with measure T-3, Require EV Charging Stations at New Multi-Family and Commercial Developments, by complying with the 2022 Title 24 Part 6 and Part 11 (CALGreen) electric vehicle charging requirements. Furthermore, through compliance with Assembly Bill 341 and Chapter 13.17 of the Vista Municipal Code, the project would be consistent with CAP measure W-1, Reduce Solid Waste Disposal and Increase Recycling. The project would be constructed in accordance with the energy-efficiency standards, water reduction goals, and other "green" standards contained in the CALGreen Building Standards, including the requirement for onsite solar electricity generation. As such, the project would be consistent with local plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Therefore, the project would not conflict with applicable plans, policies, and regulations related to GHG emission reductions, and the impact would be less than significant.

IX. Hazards and Hazardous Materials

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Discussion

a. LESS THAN SIGNIFICANT IMPACT. Materials and waste are generally considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode, or generate vapors when mixed with water (reactivity). The term "hazardous material" is defined in the State Health and Safety Code (Chapter 6.95, Section 25501[o]) as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. Hazardous waste is defined as any hazardous material that is abandoned, discarded, or recycled, as defined in the State Health and Safety Code (Chapter 6.95, Section 25125). The transportation, use, and disposal of hazardous materials, as well as the potential releases of hazardous materials to the environment, are closely regulated through many state and federal laws.

During the project construction period, hazardous substances used to maintain and operate construction equipment (such as fuel, lubricants, adhesives, and solvents) would be present. The use of these materials could potentially result in significant impacts through accidental discharge associated with the use and storage of hazardous materials. The transport, use, and disposal of hazardous materials and/or wastes would be conducted in accordance with applicable federal and state laws. In addition, implementation of the proposed project would require conformance with the NPDES Construction General Permit, as described in Section VI, *Geology and Soils*. Specifically, this would entail implementation of a SWPPP to address the use of hazardous materials and the potential

discharge of contaminants including construction-related hazardous waste through the installation of appropriate BMPs. While specific BMPs would be determined during the SWPPP process, BMPs would include standard industry measures and guidelines contained in the NPDES Construction Permit and the Stormwater Best Management Practices Construction Handbook (California Stormwater Quality Association [CASQA] 2019). Based on implementation of appropriate BMPs, hazardous material impacts related to construction activities would be less than significant.

Operation of the proposed multi-family residences would include the storage and use of standard household hazardous materials and waste. Typical household hazardous materials associated with the residential land use could include cleaning products, paints, solvents, adhesives, other chemical materials used in building maintenance and interior improvements, automotive lubricants, small combustion engine fuels and lubricants, expired pharmaceuticals, mercury thermometers, sharp or used needles, and electronic wastes from household and car batteries. No special permits would be required for such limited use or disposal of common agents and products. Therefore, operation of the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. As discussed above in item IX.a, limited quantities of hazardous materials such as gasoline, diesel, oils, and lubricants may be required to operate the construction equipment. Construction activities would be short-term, and the use of these materials would cease once construction is complete. The hazardous substances used during construction would be required to comply with existing federal, state, and local regulations regarding the use and disposal of these materials. In the event of an accidental release during construction containment and clean up would be in accordance with existing applicable regulatory requirements.

Project operation would include the use of household hazardous materials and wastes onsite. Typical household hazardous materials associated with the residential land uses could include cleaning products, paints, solvents, adhesives, other chemical materials used in building maintenance and interior improvements, automotive lubricants, small combustion engine fuels and lubricants, expired pharmaceuticals, mercury thermometers, sharp or used needles, and electronic wastes from household and car batteries. The limited use of such products does not require a special permit. In the event of an accidental release during project operation, containment and clean up would be conducted in accordance with existing applicable regulatory requirements. As such, the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts would be less than significant.

c. NO IMPACT. The closest school to the project site is Breeze Hill Elementary School located at 1111 Melrose Way, approximately 0.7 miles southeast of the project site, and no additional school facilities are proposed within one-quarter mile of the project site. As such, the project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. No impact would occur.

d. LESS THAN SIGNIFICANT IMPACT. A search of environmental databases, including the State Water Resources Control Board (SWRCB) GeoTracker (SWRCB 2025) and the California Department of Toxic Substances Control (DTSC) EnviroStor (DTSC 2025), was conducted pursuant to Government Code Section 65962.5. According to the SWRCB GeoTracker database, there are no sites with a "open case" status on the project site or within the vicinity of the project site. The nearest open case is the Quarry Creek Cleanup Program Site located approximately 2.6 miles southwest of the project site. In addition, according to the DTSC EnviroStor database, there are no sites with an "active" status on the project site or within the vicinity of the project site. The nearest active site is the Vista Detention Facility Voluntary Cleanup site located approximately 0.5 miles southeast of the project site. Therefore, the

project would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public or the environment. Impacts would be less than significant.

e. NO IMPACT. The proposed project is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest public airports are McClellan Palomar Airport and Oceanside Municipal Airport, each located approximately five miles south and northwest of the project site, respectively. No impact would occur.

f. LESS THAN SIGNIFICANT IMPACT. During construction, slow-moving construction vehicles could interfere with emergency response to the site or emergency evacuation procedures. However, the City would require the preparation of a traffic control plan prior to the initiation of project construction activity that could disrupt traffic flow on City streets. In addition, the project conditions of approval would require that emergency access be maintained during construction.

Once operational, site access would be provided via a new driveway located on Hacienda Drive approximately 550 feet west of Pomelo Drive, which would function as a side-street stop-controlled intersection. Internal roadways on the project site would allow for a two-way flow of vehicle traffic and provide access to garages and surface parking. The project would be required to adhere to the design requirements as established by Vista Development Code Title 19 (Streets/Sidewalks) and the VFD. These standards ensure that private streets are properly sized and located to facilitate emergency vehicle access and the positioning of emergency response crews during emergencies.

The City participates in the County's Multi-Jurisdictional Hazard Mitigation Plan, which is implemented on a regional level and outlines the jurisdictional concerns, resources, and action items to ensure community-wide safety from both natural and man-made threats. At a project level, through adhering to the required municipal and development codes, including those that have been adopted to enact the CBC and the California Fire Code, ensure that the project would not interfere with the implementation of emergency response plans. Impacts would be less than significant.

g. LESS THAN SIGNIFICANT IMPACT. According to the Fire Hazard Severity Zone map prepared by CAL FIRE, the proposed project is not located within a very high fire hazard severity zone (VHFHSZ; CAL FIRE 2023). The project site is in a developed environment. There are no wildlands or open spaces immediately adjacent to the project site, which significantly reduces the risk of wildland fire damage to people and structures in the area. Further, the proposed project would adhere to the CBC, the California Fire Code, and the County of San Diego Fire Code, and plans for the project would be approved by the City Fire Marshal prior to construction to ensure compliance with applicable codes. Therefore, the proposed project is not anticipated to expose people or structures to wildland fires, and impacts would be less than significant.

X. Hydrology and Water Quality

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater	☐	☐	☒	☐

management of the basin?				
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site?	☐	☐	☒	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional resources of polluted runoff?	☐	☐	☒	☐
iv. Impede or redirect flood flows?	☐	☐	☒	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

The following discussion is based on the Drainage Study (Fuscoe Engineering, Inc. 2025a) and the Priority Development Project (PDP) Storm Water Management Plan (SWQMP; Fuscoe Engineering, Inc. 2025b), both prepared for the project by Fuscoe Engineering, Inc. In addition, a hydraulic analysis (Chang Consultants 2025) was prepared for the project

Discussion

a. LESS THAN SIGNIFICANT IMPACT. The proposed project includes the construction of 63 multi-family residences and associated infrastructure. As such, the proposed project would alter the site through grading and the addition of impervious surfaces, such as building roofs, paved drives, and access roads, that would alter the hydrological patterns of the site and could introduce new sources of water pollutants in site runoff. There is the potential for water pollutants to be generated in the short-term during construction activities and in the long term due to the permanent changes to the site. Construction related pollutants could include loose soils, liquid and solid construction materials and wastes, and accidental spills of concrete, fuels, and other materials. As an urban development, the proposed project would add typical, non-point-source pollutants to stormwater runoff, primarily due to runoff from impervious surfaces where a variety of pollutants can collect over time, such as driveways, streets, roofs, patios, and other paved surfaces. Landscaped areas could also generate water pollutants such as fertilizers and weed control agents, as well as green waste from landscape maintenance cuttings. The project would be required to implement and adhere to several measures to protect water quality and limit discharges as directed by and implemented through the preparation of various plans and adherence to established programs as discussed below.

The City is within the jurisdiction of the San Diego RWQCB, which is tasked with protecting the region's water quality objectives that meet the standards set forth in the Section 303 of the federal Clean Water Act as well as the state's Porter-Cologne Water Quality Act. The San Diego RWQCB designates beneficial uses of surface water and groundwater, sets qualitative and quantitative water quality

objectives that must be met to protect designated beneficial uses, and develops implementation programs to protect the regional water resources through its Water Quality Control Plan for the San Diego Basin (Basin Plan).

Additionally, the NPDES program regulates point source and non-point source pollutant discharges to surface waters. Municipalities are required to obtain permits for the water pollution generated by stormwater in their jurisdictions. These permits are known as municipal separate storm sewer system (MS4) permits. Because the proposed project's stormwater runoff would be discharged into the local municipal storm drain system, the project is required to demonstrate that it would be consistent with the standards established in the MS4 permit as encoded in Chapter 13.18 of the Vista Municipal Code (Stormwater Management and Discharge Control Program).

The project would adhere to the NPDES Construction General Permit during construction, which includes BMPs that serve to protect groundwater quality. To prevent water quality impacts due to construction-related stormwater pollutants, the project applicant would be required to develop a SWPPP, as stated in the Vista Municipal Code Section 12.16.112 (Construction Pollutant Reduction). The project SWPPP would detail BMPs, such as desilting basins or other temporary drainage or control measures as may be necessary to control construction-related pollutants. The City would not issue a grading permit for the project until the SWPPP has been submitted to and approved by the City (Vista Municipal Code Section 12.16.112[D]). Once the project is operational, a series of project design features, including a biofiltration basin, underground detention system, and modular wetlands, would serve to capture and treat runoff.

Therefore, the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. The project would increase a demand for potable water and non-potable water for irrigation. However, the improvements associated with the proposed project would not deplete groundwater supplies or interfere substantially with groundwater recharge. The project site is within a developed area serviced by the Vista Irrigation District (VID), and the project does not involve the use of groundwater during construction or operation. Therefore, the project would not substantially decrease groundwater supplies or impede sustainable groundwater management of the basin. Impacts would be less than significant.

c-i. LESS THAN SIGNIFICANT IMPACT. Under current conditions, a portion of the existing site drains east and north directly to the Buena Vista Creek, while a portion of the site drains north to Hacienda Drive where it is collected and conveyed via storm drain inlets to Buena Vista Creek .

The proposed project involves the construction of 63 multi-family residences, which would increase the impervious surface area at the site. Water quality treatment would be achieved through the modular wetland system or the biofiltration basin located near the north property line, while hydromodification would be achieved via the underground detention system. The proposed project conditions would maintain the existing drainage patterns to the maximum extent possible. The final outfall would remain as the adjacent Buena Vista Creek, and a brow ditch is proposed along the western property line to correct an existing issue of offsite runoff. Under the proposed project condition, the added impervious area would be treated and conveyed via an existing storm drain connection to the Buena Vista Creek culvert under Hacienda Drive. A portion of the regraded slope along the eastern project property line would retain its current flow pattern of sheet flowing to Buena Vista Creek.

Overall, the proposed conditions would not increase flow being discharged from the site. As the project would not result in a substantial change in the drainage patterns of the site, the project would not result in a substantial erosion. In addition, the installation of pervious surfaces and landscaping throughout the site in addition to the proposed biofiltration basin, detention system, and modular wetlands would prevent substantial erosion and siltation. Therefore, the project would not result in substantial erosion or siltation on or offsite. Impacts would be less than significant.

c-ii. LESS THAN SIGNIFICANT IMPACT. The proposed project site would transition from a vacant site to a developed site that would support a combination of impervious surfaces and landscaped conditions, which would increase the rate and amount of runoff. This increase in runoff would be addressed by the stormwater control project design features. As stated above in item X.a, a PDP SWQMP has been prepared for the project (Fuscoe Engineering, Inc. 2025b), and a SWPPP would be prepared as required under the NPDES Construction General Permit. Both the required SWPPP and PDP SWQMP would establish BMPs that would minimize impacts to existing drainage patterns of the area in a manner which would substantially increase the rate or amount of surface runoff, which would result in flooding on- or off-site.

The biofiltration basin, modular wetlands, and hydromodification designs would decrease surface runoff velocities, reducing the chances of flooding on- or off-site. Project runoff would be treated through the installation of a biofiltration basin, underground detention system, and modular wetlands. Flows would then be discharged to offsite infrastructure. With the project storm water and water quality infrastructure, site flow would mimic existing drainage conditions and would satisfy the hydromodification management requirements of the City's BMP Design Manual. As discussed in the Drainage Study prepared for the project, the proposed conditions would not increase flow being discharged from the site. Therefore, the project would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite. Impacts would be less than significant.

c-iii. LESS THAN SIGNIFICANT IMPACT. As stated above in item X.a, a SWPPP would be implemented for the proposed project which would establish BMPs that would minimize impacts to existing drainage patterns of the area. Additionally, as discussed in item X.c-ii, the Drainage Study found that project implementation would not result in a substantial adverse change in the existing drainage pattern at the site, and with the project related storm water infrastructure, rates and velocity of stormwater discharges would match pre-project conditions. Therefore, the project would not create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional resources of polluted runoff. Impacts would be less than significant.

c-iv. LESS THAN SIGNIFICANT IMPACT. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, the northeastern portion of the project site is located in an area identified as a Special Flood Hazard Area (Zone AE) and an area with a 0.2 percent Annual Chance Flood Hazard (Zone X; FEMA 2012). However, the hydraulic analysis prepared for the project concluded that FEMA's effective Buena Vista Creek floodplain and floodway mapping along the Vista Hacienda project have not been updated since the late 1970s. As such, the hydraulic analysis included an updated existing conditions analysis based on recent topography, the box culvert as-builts, and a site investigation. The report found that based on the updated analysis on the Buena Creek floodplain, the primary grading associated with the project's private road and biofiltration basin would be outside of the updated floodway. Additionally, although the project would result in an increase of impervious surfaces at the site, project implementation would not result in a substantial adverse effect on the drainage pattern at the site as discussed in item X.c-ii above. Therefore, the project would not impede or redirect flood flows. Impacts would be less than significant.

d. LESS THAN SIGNIFICANT IMPACT. As discussed in item X.c-iv, the updated floodway analysis included in the hydraulic analysis report found that the primary grading associated with the project's private road and biofiltration basin would be outside the updated floodway associated with Buena Vista Creek (Chang Consultants 2025) and would not result in a flooding hazard. Tsunamis are usually caused by displacement of the ocean flood causing large waves and are typically generated by seismic activity. The proposed project is located approximately 5.8 miles from the Pacific Ocean; therefore, a tsunami hazard is not present for the project site. A seiche is a standing wave in an enclosed or partly enclosed body of water. Seiches are normally caused by earthquake activity, and can affect harbors, bays, lakes, rivers, and canals. The nearest body of water, Calavera Lake, is approximately 1.7 miles away, which is too far to present impacts by a seiche event. Impacts related to floods, tsunamis, or seiches would be less than significant.

e. NO IMPACT. As stated above in item X.a, a SWPPP would be implemented for the proposed project. Additionally, the project would comply with all City storm water quality standards during construction and operation. Adhering to the BMPs and all storm water quality standards would minimize any potential negative impacts associated with hydrology and water quality. Additionally, according to the General Plan Update 2030 EIR, the buildout of the General Plan would not substantially interfere with groundwater recharge or groundwater supplies. Implementation of the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. No impact would occur.

XI. Land Use and Planning

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐

Discussion

a. NO IMPACT. The physical division of an established community typically refers to the construction of a linear feature, such as an interstate highway or railroad tracks, or removal of a means of access, such as a local road or bridge that would impact mobility within an existing community or between a community and outlying area. No new major supporting infrastructure facilities would need to be constructed and/or extended to the project site that could result in a physical disruption to an established land use or the local pattern of development. The project site is within an urban area developed primarily with residential uses. The proposed project includes the construction of 63 multi-family homes on a lot that is currently vacant within an area that is surrounded by residential land uses to the east, south, and west. The project is designed to adhere to the General Plan land use and zoning designation. Thus, the project would be consistent with the surrounding land uses and would not divide an established community. Therefore, the proposed project would not physically divide an established community. No impact would occur.

b. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The proposed project's consistency with the Vista General Plan 2030 (City 2012), the Vista Municipal Code and Vista Development Code, and other land use plans and policies is discussed below.

General Plan 2030 Update

Circulation Element

As discussed in Section XVII, *Transportation/Traffic*, of this IS/MND, the Circulation Element of the Vista General Plan 2030 Update (City 2012) states that the City has established LOS D as the threshold for acceptable operating conditions in designated areas. In addition, if a roadway or intersection is currently operating at a capacity less than LOS, additional traffic will have a substantial effect if it adds more than an average two seconds of delay.

Although the project would result in an increase in traffic near the site, the roadways and intersections within the study area would not conflict with the City's established LOS goals. In addition to LOS, the General Plan Update 2030 Circulation Element contains several alternative transportation policies, including policies that can be implemented individually on a project-by-project basis, and policies that are programmatic. The project would be consistent with the Circulation Element policies by providing internal sidewalks, limiting drive access to main project roadways, and not providing pass through opportunities for vehicle traffic. See Section XVII, *Transportation/Traffic*, below for additional information. Therefore, the project would not conflict with the Circulation Element of the City's General Plan.

Healthy Vista Element

The Healthy Vista Element includes goals and policies that can improve community health by encouraging healthful behaviors and choices and providing more healthful options and opportunities for individuals. The project would include both public and private outdoor spaces, specifically 100 SF of private open space per dwelling unit and 125 SF of common open space per dwelling unit. The provision of public open spaces would increase community cohesion and encourage outdoor activity. The project would not conflict with the goals and policies outlined in the Healthy Vista Element of the City's General Plan.

Housing Element

The project's proposed 63 multi-family dwelling units, which provide a net density of 15.75 units per acre, would be consistent with the General Plan land use designation of HD (21 dwelling units/acre) and the zoning designation of R-M (21 dwelling units/acre). As such, the project would not require a General Plan Amendment or zone change to accommodate the residential land uses. Therefore, the project would not constitute a conflict with a land use plan adopted for the purposes of avoiding or mitigating an environmental effect and would be consistent with the City's Housing Element.

Land Use and Community Identity Element

The environmental goals and policies that apply to the proposed project are as follows:

LUCI Goal 2: Preserve and enhance the characteristics and features of neighborhoods that share common development patterns, topography, major streets, and zoning patterns.

LUCI Policy 2.4: Discourage subdivision design that disrupts the existing development pattern within established neighborhoods.

The design of the proposed project would maintain the existing residential character of the surrounding area. The homes would be multi-family similar to the surrounding neighborhood to the east, south, and west, and would not disrupt the existing pattern of development. Currently the site is vacant and

comprised of dense vegetation in the northeast portion that is made up of tall, mature trees and bushes and grasses, scattered trees, and multiple dirt paths on the remainder of the site. Conversely, the project would be a continuation of the denser residential development that occurs to the east, south, and west, creating a cohesive development pattern. In addition, the proposed residences would have a height of approximately 35 feet as measured to the rooftop. Therefore, the proposed development would be compatible and consistent with the Land Use and Community Identity Element of the City's General Plan 2030 Update.

Noise Element

The discussion below analyzes potential exterior/interior noise impacts after completion of the project as evaluated as part of the project Noise Assessment Study prepared by HELIX and included as Appendix E of this IS/MND.

Exterior Noise Levels: The City General Plan Noise Element provides exterior noise level limits for multi-family patios and balconies (with a depth of six feet or more). Because the project does not propose balconies and patios with depths of greater than six feet, the exterior noise level limits for outdoor area uses would not be applicable and noise impacts at the project balconies would be less than significant.

The project proposes an outdoor common area which includes a lawn, picnic tables, and barbecue grill. This space would be located between two of the proposed residential buildings. Modeling in this area indicates that noise levels would be approximately 60 CNEL (Refer to Figure 5 for common area location). This would be within the normally acceptable range of 65 CNEL for multi-family residential land uses.

Interior Noise Levels: Traditional architectural materials are conservatively estimated to attenuate noise levels by 15 CNEL; therefore, if exterior noise levels at a building façade exceed 60 CNEL, interior noise levels may exceed the 45 CNEL limit set forth in the City General Plan Noise Element for residential uses. Modeling using traffic conditions in the year 2035 was conducted using the Computer Aided Noise Abatement (CadnaA) to assess the noise levels that would affect the project's future residences. Future traffic noise levels at the site were based on ADT provided by the project's traffic consultant (CR Associates 2025). As shown on Figure 5 of Appendix E, noise levels at project buildings would exceed 60 CNEL. These locations are primarily those closest to traffic noise with a direct line-of-sight to the roadways. Figure 6 of Appendix E shows the rooms considered in the exterior-to-interior noise analysis. To ensure that the project's habitable rooms do not exceed 45 CNEL, mitigation measure LU-1 would be required.

Mitigation Measure

LU-1 **On-site Interior Noise Level Reduction**. For the project's Lot 1 and 2 habitable areas (both living rooms and bedrooms), measures shall be incorporated in the building design, described in construction documents, to reduce interior noise levels to 45 CNEL or less. To adequately reduce interior noise, the following measures may be included:

- Minimum exterior wall requirement of STC 46 with a construction of standard 3/8-inch exterior one coat stucco over 1.0-inch rigid R-4 insulation over 1/2-inch shear wall on 2x6 studs with 5/8-inch Type "X" Drywall.

- For the corner units in the northern-most proposed building closest to Hacienda Drive, minimum window rating of STC 29 with a vinyl frame window construction of dual glazing window thickness 1/8-inch and 1/2-inch air gap.

- For all other buildings minimum window rating of STC 28 with a vinyl frame window construction of dual glazing window thickness 1/8-inch and 1/2-inch air gap.

- Appropriate means of air circulation and provision of fresh air intake shall be incorporated to the affected units to allow windows to remain closed for so that acceptable levels of noise can be maintained on the interior.

With implementation of mitigation measure LU-1, the project would be consistent with the Noise Element of the City's General Plan.

Public Safety Element

The proposed project would be adequately served by existing public services and facilities. In addition, the project would be required to comply with the City's building and fire codes, the seismic regulations within the CBC, and state and federal regulations regarding the use and disposal of hazardous materials during construction and operation. Therefore, the project would be consistent with the Public Safety Element of the City's General Plan.

Resource Conservation and Sustainability Element

The applicable goals and policies that apply to the proposed project are as follows:

RCS Goal 2: Reduce GHG emissions from community activities and municipal facilities and operations within the City boundaries to support the State's efforts under Assembly Bill 32, Senate Bill 375, and other state and federal mandates, and to mitigate the community's contributions to global climate change.

RCS Policy 2.7: Through California Environmental Quality Act (CEQA) documents, evaluate and disclose the contribution new projects could have on climate change and require mitigation measures as appropriate.

RCS Goal 4: Preserve, protect, and enhance water quality in watersheds to which the City contributes storm water and urban runoff.

RCS Policy 4.6: Require the incorporation of Low Impact Development (LID) techniques in accordance with current storm water regulations to manage storm water and urban runoff, reduce runoff and pollution, reduce the footprint of development on each parcel, and assist in maintaining or restoring the natural hydrology of the site.

RCS Goal 12: Acknowledge, preserve, and protect the City's Native American heritage.

RCS Policy 12.2: In collaboration with NAHC and the San Luis Rey Band of Mission Indians, adopt procedures for protecting significant archeological features, and apply to projects requiring discretionary City approval.

RCS Policy 12.3: Ensure that the San Luis Rey Band of Mission Indians is notified of any proposed discretionary planning or grading applications affecting lands with potential archaeological resources.

The proposed project would be consistent with RCS Policy 2.7 and Goal 2 through the preparation of the Air Quality and Greenhouse Gas Emissions Technical Report (Appendix A) as described in Section VIII, *Greenhouse Gas Emissions*, which found that the project would not exceed GHG emissions thresholds. As described in Section X, *Hydrology and Water Quality*, the design of the proposed project

incorporates a number of LID techniques and facilities that meet RCS Policy 4.6 and Goal 4. The project would additionally be consistent with RCS Goal 12 and Policy 12.2 and 12.3, as the project would implement mitigation measures CR-1 through CR-8 which would require the protection and preservation of cultural resources through measures such as Native American monitoring. See Section V, *Cultural Resources*, for additional details. As such, the project would not conflict with the Resource Conservation and Sustainability Element of the City's General Plan.

Additional Land Use Plans and Policies

Habitat Conservation Plan or Natural Community Preservation Plan

The MHCP is a comprehensive, multiple jurisdictional planning program designed to develop an ecosystem preserve in northwestern San Diego County. Implementation of the regional preserve system is intended to protect viable populations of key sensitive plant and animal species and their habitats, while accommodating continued economic development and quality of life for residents of the north county region.

As discussed in Section IV, *Biological Resources*, the project site is located within the boundaries of the North County MHCP, specifically, the Vista subarea, which does not currently have an approved or draft MHCP Subarea Plan. The only Subarea Plan that has been approved and adopted within the North County MHCP is the City of Carlsbad MHCP Subarea Plan, also known as the Carlsbad Habitat Management Plan. The City's General Plan includes goals and policies to implement the provisions of the MHCP, and it is used as a basis for assessing projects within a regional context. A portion of the project site includes a hardline FPA with a 90 to 100 percent conservation target, of which 0.04 acre of the 0.47-acre of hardline FPA within the property would be impacted. The project would avoid 90.9 percent of the hardline FPA, which would be within the conservation targets of the FPA, and would not conflict with the provisions of the MHCP. See Appendix B for additional details. As such, the project would be consistent with the MHCP.

Zoning Ordinance

Per Vista Development Code Chapter 18.34, the project site has a zoning designation of Multi-Residential (R-M). The project's proposed 63 multi-family dwelling units, which provide a net density of 15.75 units per acre, would be consistent with the site's zoning designation of R-M, which allows for 21 dwelling units per acre. In addition, the project's proposed multi-family townhome development would be consistent with the permitted uses outlined in Vista Development Code Chapter 18.34. Therefore, the project would not conflict with the City's Zoning Ordinance.

Traffic Impact Analysis Guidelines

According to the City's Transportation Impact Analysis Guidelines, residential projects located in a VMT efficient area (15 percent or more below the regional average) would be presumed to have a less than significant VMT impact. As discussed in Section XVII, *Transportation/Traffic*, the project would be located in an area where the average VMT per capita is below 15 percent of the regional mean and is therefore identified as a VMT efficient area. As such, the project is presumed to have a less than significant VMT impact and would not require a detailed VMT analysis. As such, the project would be consistent with the City's Traffic Impact Analysis Guidelines.

Summary

With implementation of Mitigation Measures LU-1, the project would not conflict with any plan, policy, or regulation adopted for the purpose of avoiding an environmental impact. Therefore, impacts would be less than significant with mitigation incorporated.

XII. Mineral Resources

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

a. NO IMPACT. Mineral resources are commonly defined as a concentration or occurrence of natural, solid, inorganic, or fossilized organic material in or on the earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. Mineral resources can be categorized into three classes: fuel, metallic, and non-metallic. Fuel resources comprise coal, oil, and natural gas. Metals include such resources as gold, silver, iron, and copper. Lastly, non-metal resources include industrial minerals and construction aggregate. Industrial minerals include boron compounds, rare-earth elements, clays, limestone, gypsum, salt, and dimension stone. Construction aggregate includes sand and gravel, and crushed stone.

The Surface Mining and Reclamation Act of 1975 (SMARA) is the primary regulator for surface mining in the state. The act requires the state geologist (California Geological Survey) to identify all mineral deposits in the state and to classify them based on their significance. SMARA defines a mineral deposit as a naturally occurring concentration of minerals in amounts or arrangement that under certain conditions may constitute a mineral resource. The concentration may be of value for its chemical or physical characteristics. The classification of these mineral resources is a joint effort of the State and local governments. It is based on geologic factors and requires that the State Geologist classify the mineral resources area as one of the four Mineral Resource Zones (MRZs), Scientific Resource Zones (SZs), or Identified Resource Areas (IRAs), described below:

- MRZ-1: A Mineral Resource Zone where adequate information indicates that no significant mineral deposits are present or likely to be present.
- MRZ-2: A Mineral Resource Zone where adequate information indicates that significant mineral deposits are present, or a likelihood of their presence and development should be controlled.
- MRZ-3: A Mineral Resource Zone where mineral resource significance is undetermined.
- MRZ-4: A Mineral Resource Zone where there is insufficient data to assign any other MRZ designation.

- SZ Areas: Containing unique or rare occurrences of rocks, minerals, or fossils that are of outstanding scientific significance shall be classified in this zone.

- IRA Areas: County or State Division of Mines and Geology Identified Areas where adequate production and information indicate that significant minerals are present.

According to the Generalized Mineral Land Classification Map of Western San Diego County prepared by the California DOC Division of Mines and Geology, the project site is classified as MRZ-3 (DOC 1996). Therefore, the significance of mineral resources in the project region is undetermined. The General Plan EIR states that the potential for viable extraction of mineral resources within the MRZ-3 is limited due to the City's urbanized character. In addition, the City's General Plan does not identify the project site as a locally important mineral resource recovery site. Therefore, there would be no loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impact would occur.

b. No Impact. As stated above in item XII.a, the project area is not used for mineral extraction and is not known as a locally important mineral resource recovery site. Further, the project area is not delineated on any plan for mineral resource recovery uses. No impact would occur.

XIII. Noise

Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

The discussion below is summarized and based on the analysis and conclusions contained in the Noise Assessment Study prepared by HELIX (2025c) for the proposed project. The report is included as Appendix E to this IS/MND.

Discussion

a. Less than Significant with Mitigation Incorporated. Implementation of the project would result in an increase in noise during project construction and operation. Noise sensitive receptors (i.e., land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise) typically include residential dwellings, hotels, motels, hospitals, nursing homes, educational facilities and libraries. According to the Noise Assessment Study (Appendix E), sensitive receivers near the project site include multi-family residences to the west, south, and east.

Noise Thresholds and Standards

Rapid variations in ambient air pressure are perceived as sound by the human ear when they occur within certain limits. A decibel (dB) is a unit used to express the intensity of a sound wave. Since the human ear is not equally sensitive to all sound frequencies within the entire auditory spectrum, the dBA descriptor (or A-weighted sound level) is used because it factors sounds more heavily within the range of maximum human sensitivity to sound frequencies. Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the L_{EQ} (or equivalent sound level) is used. The minimum change in sound level that the human ear can detect is approximately three dBA. This increment is commonly accepted under CEQA as representing an impact threshold. This limit is also accepted by the City as the significance threshold to determine a proposed project's impact on the affected (existing) environment.

Applicable Noise Thresholds

The City has adopted the County of San Diego Noise Ordinance for the purpose of controlling excessive noise levels, including noise from construction activities.

Table N-1, *Applicable Exterior Property Line Noise Limits,* lists the applicable exterior property line noise limits.

Table N-1
APPLICABLE EXTERIOR PROPERTY LINE NOISE LIMITS

Zone	Time	Applicable Limit One-hour Average Sound Level (Decibels)
A-1, E-1, O, OSR R-1B, MHP	7:00 a.m. – 10:00 p. m. 10:00 p.m. – 7:00 a. m.	50 45
R-M	7:00 a.m. – 10:00 p.m. 10:00 p.m. – 7:00 a.m.	55 50
C-1, C-2, O-3, C-T, OP, M-U and Downtown Specific Plan	7:00 a.m. – 10:00 p.m. 10:00 p.m. – 7:00 a.m.	60 55
M-1, I-P, all areas of the Vista Business Park Specific Plan and Specific Plan 14	Any time	70

Source: Vista Municipal Code, Section 8.32
A-1 = Agricultural; C-1 and C-3 = Commercial; C-T = Commercial Transient; E-1 = Estate; I-P = Industrial; M-1 = Light Manufacturing; MHP = Mobile Home Park; M-U = Mixed Use; O = Open Space; O-3 = Office Park; OP = Office Professional; OSR = Open Space Residential; R-1 and R-1B = Single-family Residential; R-M = Multi-family Residential

Per the Vista Noise Ordinance, impacts would be significant if the project would generate noise levels at a common property line with the adjacent residential zones to the west, south and east that would exceed the following one-hour average exterior noise levels: 55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.

For traffic-related noise, impacts are considered significant in areas where traffic noise at single-family residential uses exceeds 65 CNEL and implementation of the project would result in an increase of the noise level by 3 CNEL or more.

Construction activity would be considered significant for nearby residences if it exceeds an 8-hour average exterior noise level of 75 dBA, or a maximum impulsive noise level of 82 dBA on an occupied residential use. The ordinance prohibits construction and building work between the hours of 7:00 p.m. and 7:00 a.m. of the next day, on Sundays, or on a holiday. Construction noise exceeding 10 dBA above ambient noise levels at nearby sensitive receptors would be considered a substantial increase.

Existing Noise Levels

Ambient Noise Levels

One measurement was taken for the ambient noise survey along the northern portion of the project site, approximately 50 feet south of Hacienda Drive. The measured noise level is shown in Table N-2 *Noise Measurement Results.*

Table N-2
NOISE MEASUREMENT RESULTS

Measurement 1	
Date:	April 25, 2024
Conditions:	Temperature: 61°F. Wind Speed: 10 mph. 54% humidity. Overcast.
Time:	2:58 p.m. – 3:13 p.m.
Location:	Along the northern boundary of the project site 50 feet south of Hacienda Drive.
Measured Noise Level:	69.1 dBA LEQ
Notes:	Ambient nature sounds. Noise primarily from traffic on SR-78, Hacienda Drive, and distant aircraft.

Source: Appendix E

Existing Traffic Levels

Project traffic volumes along Hacienda Drive were provided by CR Associates (CR Associates 2025). The project is anticipated to generate 504 ADT. Along Hacienda Drive, 50 percent of the project's traffic would travel east of the project driveway, and 50 percent would travel west.

Traffic for the nearby SR-78 freeway was provided by the SANDAG Transportation Forecast Information Center. The Traffic Forecast Information Center provides forecasted traffic information for roadways within the region. According to the Caltrans Traffic Census Program, SR-78 in the project vicinity carries approximately 5 percent trucks, consisting of approximately 2.5 medium trucks and 2.5 percent heavy trucks. Project-generated traffic would consist almost entirely of automobiles.

A conservative breakdown of 97 percent automobiles, 2 percent medium trucks, and 1 percent heavy trucks was used for modeling existing and future noise conditions on local roads in the vicinity of the project for all segments.

Future Noise Prediction Modeling

As discussed in the Noise Study (Appendix E), modeling of the exterior noise environment was accomplished using CadnaA version 2023. CadnaA is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project related information, such as noise source data, barriers, structures, and topography to create

a detailed CadnaA model, and uses the most up-to-date calculation standards to predict outdoor noise impacts. Peak-hour traffic volumes are estimated based on the assumption that approximately 10 percent of the average daily traffic would occur during a peak hour. The model-calculated one-hour L_{EQ} noise output is therefore approximately equal to the CNEL (Caltrans 2013).

Project construction noise was analyzed using the Roadway Construction Noise Model (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

Operational On-site Noise Generation

The project would include heating, ventilation, and air conditioning (HVAC) units at rooftop-level locations for each building. Specific locations and planning data for the future HVAC units are not available at this stage of project design. The modeling assumed that the HVAC unit would be a Carrier 38HDR060 split system condenser. A single unit typically generates a noise level of 56 dBA at a distance of seven feet.

Noise levels were calculated to be 25.4 dBA L_{EQ} at the northern property line, 34.1 dBA L_{EQ} at the western property line, 33.1 dBA L_{EQ} at the southern property line, and 30.7 dBA L_{EQ} at the eastern property line. Therefore, the project's stationary noise sources would not exceed the City's nighttime allowable hourly limit of 45 dBA. Impacts from the project's operational noise would be less than significant.

Operational Off-site Transportation Noise Generation

The project would generate vehicular traffic that would utilize Hacienda Drive and have the potential to result in increased noise levels at existing residences along the roadway. CadnaA software was used to calculate the noise levels for Existing and Existing + Project conditions for residences along Hacienda Drive. Existing and Existing + Project traffic noise levels presented in this analysis are based on traffic volumes from SANDAG and Caltrans sources, with project traffic volumes provided by CR Associates as further described above.

The results of this analysis for the CNEL at the nearest NSLUs to the roadway centerline of Hacienda Drive are shown below in Table N-3, *Off-site Traffic Noise Levels.* See Figure 4 of Appendix E for the receiver locations used in this analysis.

Table N-3
OFF-SITE TRAFFIC NOISE LEVELS

Roadway Segment	Distance to Hacienda Drive	CNEL (Existing)	CNEL (Existing + Project)	CNEL Change from Existing	Direct Impact[1]
Hacienda Drive					
R1	70 feet	71.3	71.3	0	No
R2	70 feet	75.8	75.8	0	No
R3	175 feet	67.2	67.2	0	No
R4	285 feet	69.7	69.7	0	No

Source: Appendix E

[1] A direct impact to off-site uses would occur if existing noise levels exceed 65 CNEL at single-family residences and the project more than doubles (increases by more than 3 CNEL) the existing noise level.

NSLU = noise sensitive land use; CNEL = Community Noise Equivalent Level

Impacts would be significant in areas where traffic noise at single-family residential uses both exceeds the 65 CNEL maximum noise level specified in the City's General Plan Noise Element and the project

results in a significant increase in noise levels, which is considered greater than a perceptible change of 3 CNEL over existing conditions. As shown in Table N-3, the project-generated traffic would not increase noise levels for nearby residences along Hacienda Drive. Therefore, the increase in traffic volumes generated by the project would not cause a perceptible increase in noise levels and noise impacts from project-generated traffic would be less than significant.

On-site Construction Noise Generation

Construction of the project would require site clearing, demolition of existing structures, grading, installation of underground utilities/infrastructure, construction of new buildings, paving, and architectural coating. The magnitude of the noise impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction would generate elevated noise levels that may disrupt nearby residences west, south, and east of the project site. Construction equipment would be continuously moving across the site, and equipment is not anticipated to be located at a single location during a typical workday. Therefore, construction equipment is modeled at an average distance of 100 feet from the nearest NSLUs. Table N-4, *Construction Equipment Noise Level*s, provides the 100-foot distance noise levels for equipment anticipated to be used for general construction activities.

Table N-4
CONSTRUCTION EQUIPMENT NOISE LEVELS

Unit	Percent Operating Time	L_{MAX} at 100 feet	dBA L_{EQ} at 100 feet
Backhoe	40	71.5	67.6
Compactor	20	77.2	70.2
Compressor	40	71.6	67.7
Concrete Mixer Truck	40	72.8	68.8
Concrete Pump Truck	20	75.4	68.4
Dozer	40	75.6	71.7
Dump Truck	50	70.4	66.5
Excavator	40	74.7	70.7
Front End Loader	40	73.1	69.1
Paver	50	71.2	68.2
Roller	20	74.0	67.0
Excavator/Loader/Dump Truck	40	74.7	73.9

Source: RCNM; USDOT 2008
L_{MAX} = maximum noise level; dBA = A-weighted decibel; L_{EQ} = equivalent sound level

Construction equipment would not all operate at the same time or location and would not be in constant use during the 8-hour operating day. Further, not all the pieces of equipment included in Table N-4 would be used within 100 feet off-site residences. An excavator, a grader, and dozer may be working on the site simultaneously but would not be working near one another at a given time due to the nature of their respective operations. An excavator, grader, and dozer were analyzed together for construction noise impacts due to their likelihood of being used in conjunction with one another.

Based on these assumptions, grading operations using an excavator, a grader, and a dozer at the nearest NSLU would be 77.6 dBA L_{EQ} (8 hour) at 100 feet (see Appendix B of Appendix E). Therefore, construction noise from this equipment was modeled to exceed the City noise ordinance limit of 75 dBA L_{EQ} (8-hour), and construction impacts would be significant without mitigation.

Mitigation Measure

NOI-1 **Construction Noise Management Plan.** Noise levels from project-related construction activities shall not exceed the noise limit specified in San Diego County Code Sections 36.408 and 36.409 of 75 dBA (8-hour average), when measured at the boundary line of the property where the noise is located or any occupied property where noise is being received. A Construction Management Plan that describes the measures included on the construction plans to ensure compliance with the noise limit shall be prepared by the project applicant and submitted to the City of Vista Planning Division for approval prior to issuance of the grading permit. The following measures may be included to reduce construction noise:

- Construction equipment to be properly outfitted and maintained with manufacturer-recommended noise-reduction devices.
- Diesel equipment to be operated with closed engine doors and equipped with factory-recommended mufflers.
- Mobile or fixed "package" equipment (e.g., arc-welders and air compressors) to be equipped with shrouds and noise control features that are readily available for that type of equipment.
- Electrically powered equipment to be used instead of pneumatic or internal-combustion powered equipment, where feasible.
- Unnecessary idling of internal combustion engines (e.g., in excess of 5 minutes) to be prohibited.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas to be located as far as practicable from noise sensitive receptors.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.
- No project-related public address or music system shall be audible at any adjacent sensitive receptor.
- Temporary sound barriers or sound blankets may be installed between construction operations and adjacent noise-sensitive receptors. Due to equipment exhaust pipes being approximately 7 to 8 feet above ground, a sound wall at least 10 feet in height above grade, to block the line-of-sight between project construction activities and residences along the northern, southern, and eastern property lines. These barriers would mitigate noise levels to within acceptable levels. To effectively reduce noise levels, the sound barrier should be constructed of a material with a minimum weight of two pounds per square foot with no gaps or perforations and remain in place until the conclusion of demolition, grading, and construction activities.
- The project applicant shall notify residences within 100 feet of the project's property line in writing within one week of any construction activity such as demolition, hard rock handling, concrete sawing, asphalt removal, and/or heavy grading operations. The notification shall describe the activities anticipated, provide dates and hours,

and provide contact information with a description of a complaint and response procedure.

- The on-site construction supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process for the affected resident shall be established prior to construction commencement to allow for resolution of noise problems that cannot be immediately solved by the site supervisor.

Construction Traffic Noise

It is anticipated that 2,009 round trips, or 1,005 one-way haul truck trips would be required for soil export over the course of 41 workdays during the grading phase of construction, which would equate to 49 one-way haul truck trips, or passes, per day. Over the course of an eight-hour construction day, it is assumed six haul truck trips would occur per hour. This daily traffic level associated with soil export is anticipated to be the highest daily traffic level associated with project construction.

The additional six construction trips were added to the existing traffic volumes on Hacienda Drive north of the project site. Using CadnaA, receivers were modeled at 50 feet from the roadway centerline (the approximate distance to the nearest single-family residential NSLUs), and construction haul trips were modeled as heavy trucks. As presented above in Table N-3 above, the modeled existing traffic noise level along this segment of Hacienda Drive is 71.3 CNEL. The addition of the project's haul truck trips during the grading phase of construction would increase noise levels to 71.4 CNEL, which represents a 0.1 CNEL increase. This would not be a perceptible increase and impacts from construction traffic noise to existing NSLUs would be less than significant.

b. Less than Significant Impact. A possible source of vibration during general project construction activities would be a vibratory roller, which may be used for compaction of soil beneath building foundations and could be used within 50 feet of the off-site residences west and south of the project site. Most usage of a vibratory roller, however, would occur at distances greater than 50 feet from any single residence due to the mobile nature of its use across the project site. A vibratory roller would create approximately 0.210 inch per second peak particle velocity (PPV) at a distance of 25 feet (Caltrans 2020). A 0.210 inch per second PPV vibration level would equal 0.098 inch per second PPV at a distance of 50 feet.[1] This would be lower than the structural damage impact to older structures of 0.5 inch per second PPV and the "strongly perceptible" impact for humans of 0.1 inch per second PPV. Additionally, off-site exposure to such ground-borne vibration would be temporary as it would be limited to the short-term construction period. Therefore, even though vibration may be perceptible at nearby residences, temporary impacts associated with the roller (and other potential equipment) would be less than significant.

c. Less than Significant Impact. The project is subject to some distant aircraft noise, though the site is not located near an active airport. The nearest airports are Oceanside Municipal Airport, located approximately 5.1 miles to the northwest and McClellan-Palomar Airport, located approximately 4.2 miles to the southwest. At these distances, no significant adverse effects related to airport noise would occur at the project site, and impacts would be less than significant.

[1] Equipment PPV = Reference PPV * $(25/D)^n$ (inches per second), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2013b.

XIV. Population and Housing

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a. LESS THAN SIGNIFICANT IMPACT. Growth inducing impacts are caused by those characteristics of a project that foster or encourage population and/or economic growth, such as new housing (direct) or creation of a new job center or the expansion of infrastructure to increase capacity (indirect).

The proposed project would directly add to the City's population by introducing 63 new multi-family residences. According to SANDAG's 2023 Population and Housing Estimates, the average household size in Vista is 3.01 people (SANDAG 2023). Applying this rate, an additional 63 residences could result in a population increase of approximately 190 people. Based on the City's estimated population of 100,113 (SANDAG 2023) the project would increase the City's population by 0.2 percent.

The City's General Plan designates the project site as HD and OS and is zoned as HD. The project would be consistent with the land use and zoning designations for the project site and would not require a General Plan Amendment or zone change. A Regional Housing Needs Assessment (RHNA) was prepared for the City in accordance with California law that requires local governments to facilitate and encourage the production of housing to accommodate population and employment growth. The 2021-2029 RHNA target for the City is 2,561 homes distributed among various income levels (City 2021). In an effort to achieve this goal, the City has recognized the potential for the project site to accommodate more dense residential land uses. Given that the project would be consistent with the designated land use and zoning for the site and would provide a portion of the RHNA allocation, it would not represent a significant impact due to unanticipated or unplanned growth. Direct impacts would be less than significant.

The project would not involve activities or features that would indirectly induce growth. Infrastructure would be extended to the site; however, this extension would be from the existing municipal facilities that serve the greater project area and would not involve the installation of any infrastructure that would expand capacity beyond the site. The project site, which is already surrounded by existing development including single-family residential and commercial uses to the north across SR-78 and multi-family residential uses to the east, south, and west, and would not provide any new or future potential to accommodate development beyond the site. Therefore, the project would not indirectly contribute to substantial growth. Indirect impacts would be less than significant.

b. NO IMPACT. The project site does not currently support any housing. Thus, the project would not displace any people. Therefore, the project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. No impact would occur.

XV. Public Services

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☒	☐

Discussion

a-i. LESS THAN SIGNIFICANT IMPACT. The proposed project would be served by the VFD. The closest City fire station to the site is VFD Station No. 1 located at 175 North Melrose Drive, approximately 0.6 miles to the east. The project would introduce approximately 190 residents to a previously vacant site, which would increase the demand for fire services. However, the project would be consistent with existing plans and zoning, so this would be a planned increase. In addition, the VFD currently provides fire protection services to the project area. Therefore, the project would not be adding new land to the jurisdiction of Station No. 1 that was not previously serviced.

The project does not represent a unique land use or type of construction that would require additional VFD resources, would not have a significant impact involving fire response times, and would not otherwise create a substantially greater need for fire protection services than already exists. The project applicant would be required to submit project plans to VFD for review and plan check approval with respect to applicable fire protection standards set forth in Chapter 16.04 of the Vista Development Code would be required prior to the issuance of building permits. Through this routine process, VFD would confirm that the project meets all applicable fire codes set forth by the State Fire Marshal and the City's building code, including sufficient fire flow and emergency access for fire engines and crews. While no new fire protection facilities would be required to serve the project, the project applicant would be required to contribute a Fire Protection Development Fee in accordance with the City's Fee Schedule for incremental increases in demand for fire protection services, which provide funding for future improvements by VFD. Such improvements would undergo separate environmental review at the time they are proposed.

Implementation of the proposed project may result in an increase in the demand for emergency services; however, the size and location of the project would not place an undue hardship on the VFD since they are presently servicing the areas surrounding the project site. Therefore, implementation of the proposed project would not exceed the capacity of the VFD to serve the site with existing fire protection services and resources. Impacts would be less than significant.

a-ii. LESS THAN SIGNIFICANT IMPACT. The San Diego County Sheriff's Department (SDCSD) provides police services to the City. The closest police station to the site is the SDCSD Vista Station located at 325 South Melrose Drive #210, approximately 0.5 miles east of the project site. The project would involve the construction of 63 multi-family residences on a vacant site which could generate an increase in demand for police protection services. However, the SDCSD currently provides police protection services to the site and the project would be consistent with existing plans and zoning for the site. Therefore, while the types of calls may differ from those that would occur with the existing land uses, the project would not be adding new land to the jurisdiction of SDCSD that was not previously serviced. Impacts would be less than significant.

a-iii. LESS THAN SIGNIFICANT IMPACT. The project includes the development of 63 multi-family residences, some of which may house school-aged children. The project site is located within the boundaries of VUSD, which serves grades pre-school through 12. The closest school to the site is Breeze Hill Elementary School located at 1111 Melrose Way, approximately 0.7 miles southeast of the project site.

As discussed in item XIV.a., the project would result in 190 new residents in the project area, some of which may be school-age children. There would be an increase in the demand for VUSD school services if the homes are ultimately occupied by people from outside the City or County. The VUSD Long Range Facilities Master Plan (VUSD 2023) states that overall enrollment across the district is projected to shrink by 11 percent from 17,698 student enrollment in 2021 to a projected 14,331 student enrollment in 2029. As such, available capacity is increasing across nearly all school sites (VUSD 2023).

Pursuant to California Education Code Section 17620 et seq. and Government Code Sections 65995(h) and 65996(b), the project would be required to pay the current statutory developer fee of $4.08 per square foot of residential construction as a condition of building permit approval (as of 2024). Payment of these fees would assist in funding VUSD's long-range plans. Senate Bill 50 states that the fees imposed by school districts shall constitute the exclusive method of considering and mitigating impacts on school facilities caused by a development project. Such payment shall provide "full and complete mitigation of the impacts of any legislative or adjudicative act…on the provision of adequate school facilities" (Government Code Section 65995(h)). Therefore, the proposed project would not result in the need for additional or altered schools, the construction of which could cause significant environmental impacts, and would not adversely impact performance objectives such as teacher-student ratios or capacities for schools in the area. Impacts would be less than significant.

a-iv. LESS THAN SIGNIFICANT IMPACT. The project would add 63 new residences, which would introduce new residents to the area that would likely use parks. The project residences would provide 100 SF of private open space per dwelling unit and 125 SF of common open space per dwelling unit. The project would provide private patio areas, a common seating area, common social area, and a lookout point with benches. The common social area would include an event lawn, picnic tables, and barbecue.

The closest public parks to the project site are Breeze Hill Park, located approximately 0.7 miles southeast of the project site, and Bub Williamson Park, located approximately 0.8 miles northwest of the project site. Although the Project would potentially increase the utilization of existing parks and recreational facilities within the City, the combination of proposed on-site recreational amenities and private open space, existing public park and recreational facilities in the project vicinity, and proposed future recreational facilities within the City would adequately serve future residents of the project site. Additionally, the project applicant would be required to contribute a Park Fee in accordance with the City's Fee Schedule for incremental increases in demand for public park facilities, which provide funding for future improvements to public park facilities by the City. Such improvements would undergo separate environmental review at the time they are proposed. Therefore, the construction of

63 dwelling units would not result in substantial adverse effects to the existing parks or require the construction of new parks. Impacts would be less than significant.

a-v. LESS THAN SIGNIFICANT IMPACT. Future residents of the developed project may occasionally visit other public facilities such as senior centers, community centers, pools, and libraries. Each of these facilities are intended to serve the general public. The added population from this project would have a less than significant impact on these types of facilities, as only a small percentage of the project's residents would visit a particular facility on a given day. The proposed project would not individually result in a need to construct new types of other public facilities.

XVI. Recreation

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

a. LESS THAN SIGNIFICANT IMPACT. To be conservative, if the population of the project site is comprised entirely of new residents to the City, the project would increase the City's population by approximately 190 persons. Additional residents generated by the project would likely increase demand for public parks. The closest public parks to the project site are Breeze Hill Park, located approximately 0.7 miles southeast of the project site, and Bub Williamson Park, located approximately 0.8 miles northwest of the project site.

A slight increase in demand on the existing public recreational resources could occur from the additional 190 residents that would be generated from the Project. However, impacts from the Project are anticipated to be minimal due to the inclusion of the proposed open space and recreational amenities on-site, and due to the number of existing park and recreation facilities that are in the vicinity of the Project. The slight increase in demand for public recreation facilities that could occur would be spread amongst the existing facilities. Therefore, the Project would not result in a substantial increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Impacts would be less than significant.

b. No Impact. The project would provide 100 SF of private open space per dwelling unit and 125 SF of common open space per dwelling unit. The project does not include formal recreational facilities (playgrounds, picnic areas, etc.) and would not require the construction of expansion of recreational facilities. No impact would occur.

XVII. Transportation/Traffic

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

CR Associated prepared a Local Transportation Study (LTS) for the proposed project in July 2024 (CR Associates 2025). The findings of the LTS are summarized herein.

Discussion

a. LESS THAN SIGNIFICANT IMPACT. A variety of plans, policies, and ordinances address transit, roadway, bicycle, and pedestrian facilities. Roadway segment capacity and LOS standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical attributes. Typically, however, the performance and LOS of a roadway segment is heavily influenced by the ability of an intersection to accommodate peak-hour volumes. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

Within the City and the San Diego region, intersection performance rather than roadway segment performance is considered a better indicator of poor traffic operations. The Circulation Element of the Vista General Plan 2030 Update states that the City has established LOS D as the threshold for acceptable operating conditions in designated areas (City 2012). In addition, if a roadway or intersection is currently operating at a capacity less than LOS D, additional traffic will have a substantial effect if it adds more than an average two seconds of delay (City 2012). As identified in the LTS, implementation of the project would not result in an increase of traffic that would conflict with the City's thresholds of acceptable operating conditions and thereby the City's General Plan Update 2030 Circulation Element in relation to vehicular traffic.

In addition to LOS, the General Plan Update 2030 Circulation Element contains several alternative transportation policies, including policies that can be implemented individually on a project-by-project basis, and policies that are programmatic. The project would be consistent with the Circulation Element policies by providing internal sidewalks, limiting drive access to main project roadways, and not providing pass through opportunities for vehicle traffic.

Transit service in the City is provided by the North County Transit District (NCTD). Within the project area, NCTD operates bus route 302 which travels between the Oceanside Transit Center and the Vista Transit Center along Vista Way in the project area. Route 302 has two transit stops approximately 300

feet north of the project site across SR-78. The project would not affect these existing bus operations or facilities.

Sidewalks are provided intermittently along Hacienda Drive. Contiguous, unobstructed sidewalk facilities exist along both sides of Hacienda Drive from South Emerald Drive to the project. Sidewalks are also located on Hacienda Drive fronting the project to Pomelo Drive. In addition, a contiguous sidewalk exists on the south side of Hacienda Drive from Pomelo Drive to South Melrose Drive. No sidewalk facilities exist on the north side of Hacienda Drive fronting the project site to South Melrose Drive. The project would not affect these existing pedestrian facilities and would add a curb/gutter and sidewalk along the northern edge of Hacienda Drive fronting the project.

A Class II bicycle facility exists along Hacienda Drive from South Emerald Drive to Pomelo Drive in both the eastbound and westbound directions in the vicinity of the project. No bicycle facilities are provided on Hacienda Drive between Pomelo Drive and South Melrose Drive. The project would not affect these existing bicycle facilities and would not preclude the implementation of future planned facilities.

Thus, the project would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. The LTS included a Project Information Form and Preliminary Screening Technical Memorandum, which utilized methodologies identified in the City's Transportation Impact Analysis Guidelines to determine if the project would be required to conduct a VMT analysis. According to the City's Transportation Impact Analysis Guidelines, residential projects located in a VMT efficient area (15 percent or more below the regional average) would be presumed to have a less than significant VMT impact. As discussed in the Preliminary Screening Technical Memorandum, the project would be located in an area where the average VMT per capita is below 15 percent of the regional mean and is therefore identified as a VMT efficient area. As such, the project is presumed to have a less than significant VMT impact and would not require a detailed VMT analysis. Impacts would be less than significant.

c. LESS THAN SIGNIFICANT IMPACT. There would be no hazardous design features or incompatible uses introduced by the project. The project would be a multi-family residential development that would be comparable to the surrounding land uses. Access to the project site would be provided via a new driveway located on Hacienda Drive approximately 550 feet west of Pomelo Drive, which would function as a side-street stop-controlled intersection with Hacienda Drive as the uncontrolled approach and the driveway as the stop-controlled approach. This driveway would include one inbound lane and one outbound lane. Internal roadways on the project site would allow for a two-way flow of vehicle traffic and provide access to garages and surface parking. All project circulation elements would be designed in accordance with City standards such as Vista Development Code Title 19 (Streets/Sidewalks). No unique roadway features, traffic patterns, or incompatible vehicles would be introduced as part of the development. Development of the proposed project would not increase traffic hazards due to incompatible uses that could affect existing traffic or circulation in the project area. Impacts would be less than significant.

d. LESS THAN SIGNIFICANT IMPACT. The proposed project would not result in significant impacts to emergency access. During construction of the project, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures in the event of an emergency (e.g., vehicles traveling behind the slow-moving truck). However, such trips would be brief and infrequent. Furthermore, as discussed in item IX.f., the City requires traffic control plans for any construction activity that will disrupt traffic flow on City streets and project conditions of approval would require that emergency access be maintained during construction. Once operational, as discussed

above in item XVII.c, access to the project site would be via a driveway off of Hacienda Drive which would be designed in accordance with City standards. In addition, the project would be designed to incorporate all required VFD standards to ensure adequate emergency access to the site and surrounding areas. Therefore, impacts related to emergency access would be less than significant.

XVIII. Tribal Cultural Resources

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Discussion

a-i. NO IMPACT. As discussed in item V.b, the Cultural Resources Study for the 1160 Hacienda Drive Project prepared by HELIX (Appendix C) for the project concluded that one cultural resource, a precontact campsite, has been previously recorded within the project site; however, the possibility of prior destruction of the resource was determined to be high, given the subsequent construction of a house and other disturbances on the site. No significance determination was indicated in the recorded site form for the resource, and no other cultural resources were identified. No impact would occur.

a-ii. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. HELIX contacted the NAHC for a Sacred Lands File search in April 2024. A response was received in May 2024 with a list of tribal contacts and positive results for Sacred Lands near the project area. The NAHC recommended specific outreach to the San Luis Rey Band and the La Jolla Band of Luiseño Indians (La Jolla Band). HELIX sent letters on May 22, 2024, to the tribal contacts provided by the NAHC and sent emails to the San Luis Rey and La Jolla Bands on May 15 and 16, 2024. The San Luis Rey Band responded on May 16, 2024, that they are aware of cultural resources near the project area and requested a meeting.

On May 22, 2024, HELIX met with a San Luis Rey Band Cultural Resources Specialist and a Saving Sacred Sites representative to discuss tribal knowledge of cultural resources in the project vicinity. In addition to the resources recorded in the SCIC records search results, the San Luis Rey Band Cultural

Resources Specialist and the Saving Sacred Sites representative provided details on two tribal cultural resources (TCRs) near the project. The details and location of these resources are confidential. They recommended full-time archaeological and Native American monitoring for ground-disturbing construction activities and requested on-site reburial of any precontact resources uncovered during construction. HELIX, the San Luis Rey Band, and the applicant undertook additional coordination to identify preliminary reburial locations within proposed landscape areas.

A HELIX archaeologist and Luiseño Native American monitor from the San Luis Rey Band conducted a cultural resources survey of the project site in April 2024, during which no cultural material was identified.

Rincon requested a meeting with HELIX and City staff on the project site, which was held on September 15, 2025. During the meeting, shell fragments were identified within the boundary of the previously recorded precontact campsite. Rincon requested a cultural resources testing program at the site. This testing was conducted by HELIX on October 8 and 9, 2025 and was monitored by a Rincon Native American Monitor. While sparse cultural material was identified, the site does not rise to the level of significance for listing in the California Register of Historical Resources or the local register, and, therefore, does not qualify as a historical resource per CEQA. Due to this, it does not qualify as a TCR per item II.a-i.

Nevertheless, due to the cultural significance of the region, the positive Sacred Lands File search, and information provided by the San Luis Rey Band and Rincon, there is potential to discover previously unknown TCRs at the project site. Implementation of mitigation measures CR-1 through CR-8 listed above in Section V, *Cultural Resources,* would reduce potential impacts to undiscovered TCRs to less than significant levels. Impacts are less than significant with mitigation.

In addition, based on consultation between the City and Rincon, the project would impact a TCR related to the cultural sensitivity of the area pursuant to Public Resources Code Section 5024.1. Mitigation measures TCR-1 through TCR-3 would be implemented to reduce this impact to less than significant levels.

MITIGATION MEASURES

TCR-1 Prior to obtaining 50 percent occupancy permits, the Landowner/Applicant shall provide a landscaping plan to include the addition of at least three coast live oaks (*Quercus agrifolia*) to the project site. The trees shall be spaced to allow for full maturity. In addition, the landscaping plan shall identify the planting of additional native trees and shrubs, such as laurel sumac (Malosma laurina) and elderberry (Sambucus mexicana), within the project's landscaped areas. The native plants identified in the landscaping plan shall be planted prior to 100 percent occupancy permits.

TCR-2 Prior to obtaining 50 percent occupancy permits, an interpretative sign shall be developed in consultation with the Rincon Band of Luiseño Indians (Rincon) to inform residents of the past history of this project site and region. The Landowner/Applicant will contact Rincon and jointly prepare one sign that will briefly describe the area as it relates to Rincon history. This will include area placenames and other important information about Luiseño ancestors that is appropriate for the community. The sign will display text in both English and Luiseño.

Prior to 100 percent occupancy permits, the interpretive sign shall be installed in a location accessible to residents and visitors to the site. Additional name signs will be prepared in both languages identifying native plant species within the landscaped areas. The Landowner/Applicant will cover all costs of sign production and installation. The City will be

notified and invited to attend the signage installation for verification that the measure is satisfied. Documentation of the signage efforts will be included in the Phase IV Monitoring Report completed by the Project archaeologist per CR-5.

TCR-3 Prior to obtaining 100 percent occupancy permits, the Landowner/Applicant and Rincon shall complete a Long-Term Management Plan for the reburial area that shall describe the open space easement and document the relocation of P-37-000641 (CA-SDI-641). The Long-Term Management Plan will outline responsible actions to be taken by the Home Owners' Association (HOA) and the TCA tribe(s) including requirements for annual maintenance by a HOA or local agency and agreement for care of cultural resources in perpetuity.

XIX. Utilities and Service Systems

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

a. LESS THAN SIGNIFICANT IMPACT. The project would add new residents to the area that would generate a demand for utility services as well as introduce new impervious surfaces that would increase the amount and rate of stormwater runoff.

The project would involve connections to the existing eight-inch water main owned and operated by Vista Irrigation District (VID) within Hacienda Drive. VID, as the water service provider for the site, would review the site plan in relation to VID's existing infrastructure and service obligations and would determine if the proposed water infrastructure configuration is suitable for a multi-family residential development of this size. In addition, the project site would include local connections to the existing

municipal sewer system. The project would include 4-inch sanitary sewer laterals at each building which would connect to new sanitary sewer manholes installed along the project's private drive which would then connect to existing 8-inch sewer mains in Hacienda Drive. A biofiltration basin would be installed in the northwest corner of the project site and a modular wetland system would be installed along the eastern boundary of the project site. Additional storm drain facilities would include a curb and gutter system.

Dry utilities that include electric, gas, and telecommunication infrastructure would also be extended to the site from existing infrastructure, including drainage improvements within Hacienda Drive. The existing SDG&E electrical transmission line pole located near the northeastern corner of the project would be protected in place. The existing utility facilities would have adequate capacity to support the proposed project. The project would not result in the need for new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunication facilities. Impacts would be less than significant.

b. Less than Significant Impact. Development of the project site, which is currently vacant, would increase the demand for water that is needed to serve the proposed 63 multi-family residences. Water service for the project would be provided by VID from existing infrastructure in Hacienda Drive. The project's proposed 8-inch water line would connect to the existing 8-inch water main in Hacienda Drive. VID is a member agency of the San Diego County Water Authority (SDCWA) and imports approximately 70 percent of its potable water from SDCWA, who in turn purchases water from the Metropolitan Water District of Southern California (MWD). The remaining 30 percent of VID's supply is from Lake Henshaw, which is fed through precipitation from the San Luis Rey watershed. Conservatively using the demand factor for single-family residential land use designation in VID's *Potable Water Master Plan* (VID 2018), the average daily demand of potable water for the proposed project would be approximately 16,790 gallons per day (gpd) (4.6 acres x 3,650 gpd per acre; VID 2018).

According to VID's 2020 Urban Water Management Plan (VID's UWMP; VID 2020), VID will use local water resources whenever possible; however, if there is a shortfall they would rely on SDCWA supplies. In the analysis of a normal water supply year, as described in VID's 2020 UWMP, SDCWA, MWD, and VID supplies were developed as planned and Senate Bill X7-7 conservation targets were achieved. Thus, no shortages are anticipated within VID's service area in a normal year through 2045. That would mean that VID's projected potable water supply would meet the entire projected Senate Bill X7-7 water demand of 21,728-acre feet in 2045. In the analysis of a single-dry year through 2045, VID's 2020 UWMP findings indicated that if SDCWA, MWD and VID supplies are developed as planned and Senate Bill X7-7 conservation targets are achieved, no shortages are anticipated within VID's service area. However, for multiple-dry year analyses, the conservative planning assumption used in VID's 2020 UWMP expects that MWD would allocate supplies to its member agencies. As a result, some level of shortage could be experienced. As stated above, when shortages occur in VID's resources, the SDCWA would use various measures to cover the shortfall.

On the local level, additional water conservation for new developments in the City is achieved through compliance with the Water Efficient Landscaping Ordinance in the Vista Development Code, Chapter 18.56. Prior to the provision of a grading permit, an Estimated Total Water Use Worksheet for the project would be required to be submitted in the application, which would have to be under the Maximum Applied Water Allowance established by the City.

As part of the Conditions of Approval for this project, proof of compliance with applicable VID emergency drought regulations regarding new development would be confirmed by appropriate staff during review of project plans and various inspections prior to the approval of a Certificate of Occupancy. Therefore, the project would have sufficient water supplies available to serve the project

and reasonably foreseeable future development during normal, dry and multiple dry years. Impacts would be less than significant.

c. LESS THAN SIGNIFICANT IMPACT. Based on the City's Sewer Master Plan Update (City 2017), the proposed project would be expected to generate approximately 11,799 gpd of wastewater based on the land use sewage flow generator factor for the proposed HD land use identified in the Sewer Master Plan (2,565 gpd per acre x 4.6 acres; City 2017). As described in item XIX.a, the project site would include local connections to the existing municipal sewer system. Wastewater from the project would be treated by the Encina Water Pollution Control Facility, which has a treatment capacity of 43.3 million gpd (City 2017). Wastewater generation from the proposed project would represent 0.03 percent of the total daily Encina facility treatment capacity and would therefore not exceed the capacity of the facility. As such, the project's contribution of wastewater would be sufficiently handled by the wastewater treatment provider. Impacts would be less than significant.

d. LESS THAN SIGNIFICANT IMPACT. Development of the project could result in a slight increase in domestic municipal solid waste generation due to the proposed residential land use on a previously vacant lot. The project would construct 63 multi-family residences, which would result in a population increase of approximately 190 people. However, the project would be conditioned to comply with Assembly Bill 939, which requires cities to divert 50 percent of solid waste to recycling programs and away from landfills. Solid waste generated by the proposed project would be hauled to Sycamore Landfill in San Diego, which has a permitted capacity of 5,000 tons per day and a remaining capacity of 99,477,838 cubic yards (California Department of Resources Recycling and Recovery 2025). This solid waste facility could accommodate the solid waste generated by the proposed project. Because the project's contribution would be negligible in terms of the remaining capacity of this landfill, impacts would be less than significant.

e. NO IMPACT. The proposed project would be conditioned to comply with all regulations related to solid waste such as the California Integrated Waste Management Act and City recycling programs; therefore, no impact would occur.

XX. Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Discussion

a. LESS THAN SIGNIFICANT IMPACT. The project site is not located in a state responsibility area or lands classified as VHFHSZ. The City participates in the County's Multi-Jurisdictional Hazard Mitigation Plan (County 2017). The proposed project would be included in this plan because the project site is located within the City limits. The project site is currently vacant and does not have a designated access point. With project implementation, site access would be provided via a driveway located on Hacienda Drive to the north of the project site.

As stated above in item IX.f, during construction, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures in the event of an emergency (e.g., vehicles traveling behind the slow-moving truck). However, such trips would be brief and infrequent, and access for emergency vehicles would be maintained. As a result, the project's construction impacts would be less than significant. Operation of the proposed project would involve an increase in traffic in and out of the project site due to the anticipated population growth at the site. However, project circulation elements would be required to adhere to the design requirements as established by Vista Development Code Title 19 (Streets/Sidewalks) and the VFD which would ensure adequate emergency access to the site and surrounding areas. Implementation of the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

b. LESS THAN SIGNIFICANT IMPACT. See also item IX.g above. According to the Fire Hazard Severity Zone maps prepared by CAL FIRE, the proposed project is not located within a VHFHSZ (CAL FIRE 2023). The project site is located in an urbanized environment. There are no wildlands immediately adjacent to the project site, which significantly reduces the risk of wildland fire damage to people and structures in the area. Additionally, implementation of the proposed project would not heighten wildfire risks, as it would include structures that would install standard fire safety features on a site that is almost entirely surrounded by urban uses. Further, the project would adhere to the CBC, California Fire Code, and County Fire Code. Therefore, the proposed project would not exacerbate wildfire risks due to slope, prevailing winds, and other factors, and any impacts related to exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire would be less than significant.

c. LESS THAN SIGNIFICANT IMPACT. The proposed project is located in an area developed with residential uses. The project would not involve the installation of fuel breaks, emergency water sources, or power lines. The project would involve the construction of connections to existing utilities, such as sewer, water, electricity, gas, and telecommunication facilities. Such utility connections would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. Therefore, impacts would be less than significant.

d. LESS THAN SIGNIFICANT IMPACT. The proposed project would occur within an area developed with residential land uses. As stated in item XX.b above, the proposed project would not exacerbate wildfire and would not expose project occupants to significant levels of pollutant concentrations from wildfire or the uncontrolled spread of a wildfire. Further, as discussed in Section VII, *Geology and Soils*, the project would result in less than significant impacts related to landslides and is not subject to flooding. Thus, the risk of people and structures experiencing significant risks such as downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes is negligible. As such, impacts would be less than significant.

XXI. Mandatory Finding of Significance

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?	☐	☐	☒	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. With the incorporation of mitigation measures identified in this IS/MND, the proposed project would not have the potential to degrade the quality of the environment, reduce the habitat of any sensitive plant or animal species, or eliminate important examples of California history or prehistory.

As discussed in Section IV, *Biological Resources*, the proposed project could result in significant temporary (direct) impacts to active bird nests on and off-site during the bird breeding season. However, Implementation of mitigation measure BIO-1 would ensure that potential impacts to birds protected under the MBTA and CFG Code are less than significant. In addition, the project could result in significant impacts to Crotch's bumble bee as a result of habitat impacts and direct mortality to underground nesting or overwintering bumble bees, and Coronado skink as a result of loss of potential habitat during construction. With implementation of mitigation measures BIO-2 and BIO-3, potential impacts to these special-status animal species would be reduced to below a level of significance.

As described in Section V, *Cultural Resources*, there a potential for unknown subsurface cultural resources/Tribal Cultural Resources, given the cultural significance of the region, the positive Sacred Lands File search, and information provided by the San Luis Rey Band of Mission Indians. Therefore, encountering unforeseen archaeological resources during ground-disturbing activities may result in significant impacts. With implementation of Mitigation Measures CR-1 to CR-8, these impacts would be reduced to less than significant levels.

As discussed in Section XVIII, *Tribal Cultural Resources*, through consultation between the City and the Rincon Band of Luiseño Indians, it was determined that the project would cause an impact to tribal

cultural resources related to the cultural sensitivity of the area. Mitigation Measures TCR-1 through TCR-3 would reduce this impact to less than significant.

b. LESS THAN SIGNIFICANT IMPACT. There are three projects considered in the cumulative analysis: (1) TTLC Melrose, which proposes the development of 34 single-family residences on 5.55 acres and includes a General Plan Amendment and Zone Change; (2) 2112 Sunset Drive Townhomes, which proposes the development of 34 condominium units on four acres and includes a General Plan Amendment and Zone Change; and (3) Camino Corto Apartments, which proposes the development of 24 multi-family units on a vacant 1.28 acre site. Each of these projects are within a one-mile radius of the proposed project.

Implementation of the proposed project would not result in individually limited, but cumulatively considerable significant impacts. As discussed under item III.b., the project's long-term emissions of criteria pollutants and precursors would not exceed the SDAPCD daily or annual screening thresholds. Therefore, the project's operational activities would not result in a cumulatively considerable net increase of criteria pollutants that would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Similarly, the project would have a less than significant impact in relation to GHG, which is inherently discussed in terms of cumulative impacts.

All resource topics associated with the project have been analyzed in accordance with CEQA Guidelines and found to pose no impact, less-than-significant impact, or less than significant with mitigation. Taken in sum with other projects in the area and the scale of the proposed project, impacts would not be cumulatively considerable. Therefore, impacts would be less than significant.

c. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The project would not consist of any uses or activities that would negatively affect any persons in the vicinity. In addition, all resource topics associated with the project have been analyzed in accordance with CEQA and the CEQA Guidelines and found to pose no impact, less-than-significant impact, or less than significant with mitigation. As discussed in Section IX, *Hazards and Hazardous Materials*, the project would not create a significant hazard to the public or the environment and impacts would be less than significant. As discussed in Section XI, *Land Use and Planning*, there is the potential for land use consistency conflicts in relation to noise impacts on future residents of the project site; however, with implementation of mitigation measure LU-1, potential impacts are reduced to less than significant. Consequently, the project would not result in any environmental effects that would cause substantial adverse effects on human beings directly or indirectly. Therefore, impacts would be less than significant with mitigation incorporated.

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Chapter 4 – References and List of Preparers

References

Section 15150 of the State CEQA Guidelines permits an environmental document to incorporate by reference other documents that provide relevant data. The documents listed below are hereby incorporated by reference. The pertinent material is summarized throughout this IS/MND where that information is relevant to the analysis of impacts of the proposed project. Referenced documents that are followed by a star (*) are on file and available for review at the City of Vista Planning Division office located at 200 Civic Center Drive, Vista. Referenced documents that are followed by a double star (**) are available on the City's web site at http://www.cityofvista.com/.

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Individuals and Organizations Consulted

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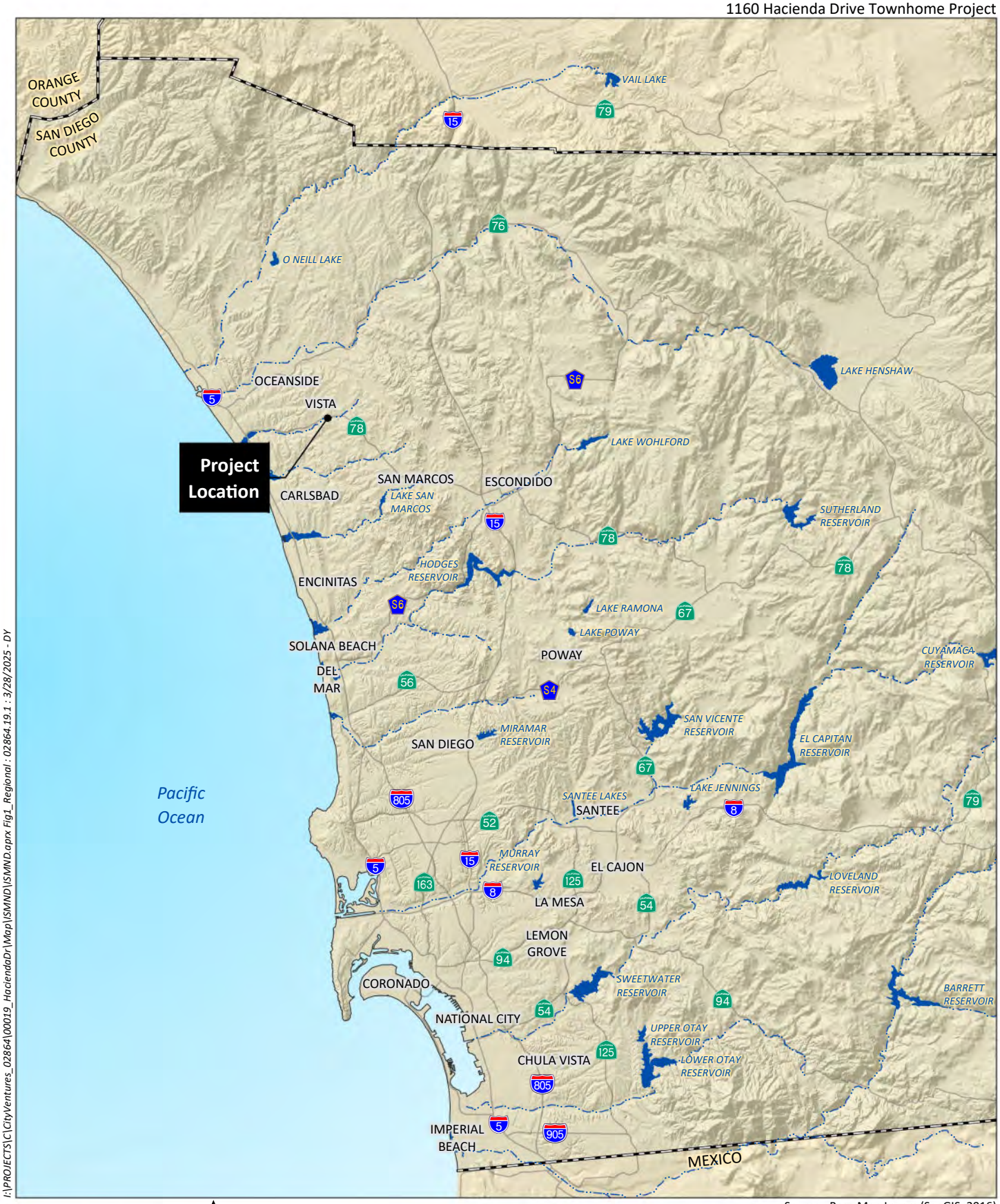
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ATTACHMENT A

FIGURES



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Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1



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Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Aerial Photograph

Figure 2



LEGEND

1. Project Entry with Enhanced Paving
2. Private Patio Area
3. Common Social Space
   - Colored PIP Concrete with Scorelines
   - Event Lawn
   - Picnic Tables with BBQ
4. Pedestrian Sidewalk
   - PIP Concrete with Natural Gray/Broom Finish
5. Parking Area
   - Asphalt Paving
6. Entry Node with Specimen Tree and Seating
7. Lookout Point with Enhanced Paving and Benches
8. Pedestrian Crossing with Enhanced Paving
9. Mailbox Cluster
10. Street Tree Planting
    - 24" box at 30' o.c.
    - Rhus Lancea (African Sumac) or Lagerstroemia Indica

LANDSCAPE ARCHITECT

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T: 949-366-6624
Contact: Niki Wu
Email: nwu@c2collaborative.com

Prior to project construction, I agree to submit a complete Landscape Construction Document Package that complies with the requirements of applicable ordinances, project Conditions of Approval, and substantial conformance with the approved Landscape Concept Plan. Should the ordinances be revised, plans may be subject to change.

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Source: (C2, 2025)

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Site Plan

Figure 3

IS/MND Appendix A

Air Quality, Greenhouse Gas Emissions, and Energy Technical Report

1160 Hacienda Drive Townhome Project

Air Quality and Greenhouse Gas Emissions Technical Report

April 2025 | 02864.00019.001

Submitted to:

City of Vista
Community Development Department
200 Civic Center Drive
Vista, CA 92084-6275

Prepared for:

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AAM	Annual Arithmetic Mean
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ACM	asbestos containing material
ADT	average daily trips
amsl	above mean sea level
APN	Assessor's Parcel Number
APS	alternative planning strategy
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBSC	California Building Standards Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEUS	California Commercial End Survey
CFR	Code of Federal Regulations
CH_4	methane
City	City of Vista
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
DPM	diesel particulate matter
EMFAC	Mobile Source Emissions Inventory
EO	Executive Order
EV	electric vehicle
ft	feet/foot

ACRONYMS AND ABBREVIATIONS (CONT.)

GHG	greenhouse gas
GWP	global warming potential
HD	High Density Residential
HFC	hydrofluorocarbon
H_2S	hydrogen sulfide
IPCC	Intergovernmental Panel on Climate Change
LBP	lead-based paint
LCFS	Low Carbon Fuel Standard
LOS	Level of Service
mg/m^3	milligrams per cubic meter
MMT	million metric tons
mph	miles per hour
MPOs	Metropolitan Planning Organizations
MT	metric tons
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NO_X	nitrogen oxides
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OS	Open Space
Pb	lead
PFC	perfluorocarbon
PM	particulate matter
PM_{10}	particulate matter less than 10 microns
$PM_{2.5}$	particulate matter less than 2.5 microns
ppm	parts per million
R-M	Multi-Family Residential
RAQS	Regional Air Quality Strategy
RASS	Residential Appliance Saturation Survey
ROG	reactive organic gas

ACRONYMS AND ABBREVIATIONS (CONT.)

RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_X	sulfur oxides
SR	State Route
TAC	toxic air contaminant
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

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EXECUTIVE SUMMARY

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts associated with the proposed 1160 Hacienda Drive Townhome Project (project) located in the City of Vista (City), California. The report evaluates the potential for criteria air pollutant and GHG emissions during the construction and operation of the project.

The proposed project involves the construction of 63 multi-family residential units on a 4.6-acre vacant lot. The project would be consistent with the site's zoning and land use designation and would not conflict with the San Diego Air Pollution Control District's (SDAPCD's) 2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County. Criteria pollutant and precursor pollutant emissions generated during project construction activities would not exceed the SDAPCD thresholds. Long-term operational emissions of criteria pollutants and precursors would not exceed the SDAPCD thresholds, and the impacts would be less than significant.

Construction and operation of the project would not expose sensitive receptors to substantial concentrations of toxic air contaminants (TACs), including diesel particulate matter (DPM) emissions from the use of construction equipment. The project's contribution to area traffic would not result in carbon monoxide (CO) hotspots. Impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be less than significant.

Neither construction activities nor long-term operation of the project would be a source of objectionable odors that would adversely affect a significant number of persons, and odor impacts would be less than significant.

Implementation of the project would result in GHG emissions of 629.5 metric tons (MT) of carbon dioxide equivalents (CO_2e) per year, including amortized construction and operational GHG emissions. The project's GHG emissions would be below the adjusted threshold of 787 MT CO_2e (the City project level screening threshold, adjusted to demonstrate progress toward the Senate Bill [SB] 32 GHG reduction mandates for the project's first full year of operation, 2028), and the GHG emissions impact would be less than significant. The project would not conflict with or obstruct implementation of GHG reduction plans, including the City's Climate Action Plan (CAP) and the California Air Resource Board's Climate Change Scoping Pan.

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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report analyzes potential air quality and greenhouse gas (GHG) emissions impacts associated with the proposed 1160 Hacienda Drive Townhome Project (project), which includes an evaluation of existing conditions in the project vicinity and an assessment of potential impacts associated with project construction and project operation. As appropriate, the analysis identifies measures that can be taken to avoid adverse air quality and GHG emissions impacts.

1.2 PROJECT LOCATION

The 4.6-acre project site (Assessor's Parcel Number [APN] 166-440-27-00) is located southwest of the intersection of Hacienda Drive and Pomelo Drive in the City of Vista (City), east of the City's boundary with the City of Oceanside. State Route (SR) 78 is to the north and multi-family residential uses are to the east, south, and west. Buena Vista Creek is adjacent to the site to the east and continues across Hacienda Drive to the west. See Figure 1, *Regional Location*, and Figure 2, *Project Vicinity*.

The existing site is vacant and contains grasses, scattered trees, and multiple dirt paths. The site contains a slope, and elevations range from 280 feet (ft) above mean sea level (amsl) to 340 ft amsl.

1.3 PROJECT DESCRIPTION

The proposed project involves the construction of 63 multi-family residential units. The homes would range from 1,336 square feet to 1,689 square feet. Access would be provided by one driveway on Hacienda Drive. Resident parking would be provided via two-car garages and surface parking along the complex's private drive. See Figure 3, *Site Plan*. The project site's density would be 63 units on 4 acres of the 4.6-acre site, which provides a net density of 15.75 units per acre.

The majority of the project site has a General Plan land use designation of High Density Residential (HD) and the northeastern edge of the property containing Buena Vista Creek has a land use designation of Open Space (OS). The HD designation allows a residential density of up to 21 units per acre. The project site is zoned Multi-Family Residential (R-M), allowing up to 21 units per acre.

1.4 CONSTRUCTION ACTIVITIES AND PHASING

Project construction activities would consist of site preparation, grading, installation of underground utilities, physical building construction, paving, and architectural coatings. Construction of the project would have a construction duration of approximately 21 months. Site preparation would require the removal of approximately 12 truckloads of debris/vegetation. A net export of approximately 27,000 cubic yards of soil is anticipated during grading.

1.4.1 Construction Best Management Practices

The project would incorporate best management practices (BMPs) during construction to reduce emissions of fugitive dust. San Diego Air Pollution Control District (SDAPCD) Rule 55 – Fugitive Dust

Control states that no dust and/or dirt shall leave the property line. SDAPCD Rule 55 requires the following (SDAPCD 2009):

(1) **Airborne Dust Beyond the Property Line**: No person shall engage in construction or demolition activity subject to this rule in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60-minute period.

(2) **Track-Out/Carry-Out**: Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall:

(i) be minimized by the use of any of the following or equally effective track-out/carry-out and erosion control measures that apply to the project or operation:

(a) track-out grates or gravel beds at each egress point;

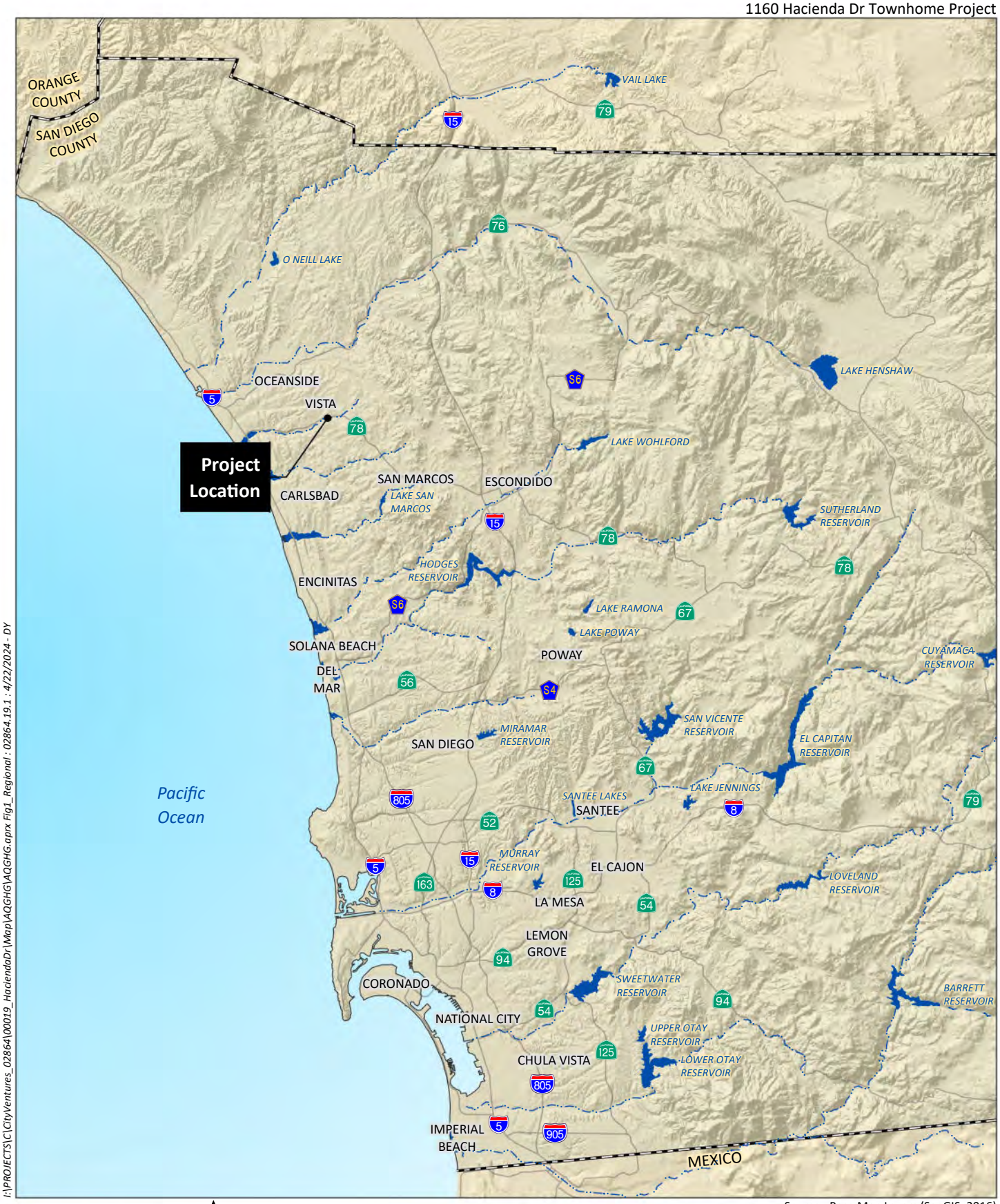
(b) wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks;

(c) using secured tarps or cargo covering, watering, or treating of transported material; and

(ii) be removed at the conclusion of each workday when active operations cease, or every 24 hours for continuous operations. If a street sweeper is used to remove any track-out/ carry-out, only PM_{10}-efficient (particulate matter less than 10 microns) street sweepers certified to meet the most current South Coast Air Quality Management District (SCAQMD) Rule 1186 requirements shall be used. The use of blowers for removal of track-out/carry-out is prohibited under any circumstances.

The control measures listed below are the BMPs that the project would incorporate for dust control and are included in the modeling:

- A minimum of two applications of water shall be applied during grading between dozer/grader passes;
- Paving, chip sealing, or chemical stabilization of internal roadways shall be applied after completion of grading;
- Grading shall be terminated if winds exceed 25 miles per hour (mph);
- All exposed surfaces shall maintain a minimum soil moisture of 12 percent;
- Dirt storage piles shall be stabilized by chemical binders, tarps, fencing, or other erosion control; and
- Vehicle speeds shall be limited to 15 mph on unpaved roads.



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Source: Base Map Layers (SanGIS, 2016)

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Regional Location

Figure 1



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Source: Aerial (SanGIS 2023)

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Project Vicinity

Figure 2



Source: (KTGY, 2025)

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HELIX Environmental Planning

Site Plan

Figure 3

2.0 AIR QUALITY

2.1 AIR QUALITY REGULATORY SETTING

The project site is located within the San Diego Air Basin (SDAB). Air quality in the SDAB is regulated by the U.S. Environmental Protection Agency (USEPA) at the federal level, by the California Air Resources Board (CARB) at the state level, and by the SDAPCD at the regional level.

2.1.1 Air Pollutant Descriptors and Terminology

2.1.1.1 Criteria Air Pollutants

Criteria pollutants are defined by state and federal law as a risk to the health and welfare of the general public. In general, criteria air pollutants include the following compounds:

- Ozone (O_3)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO_2)
- Particulate matter (PM), which is further subdivided:
  - Coarse PM, 10 microns or less in diameter (PM_{10})
  - Fine PM, 2.5 microns or less in diameter ($PM_{2.5}$)
- Sulfur dioxide (SO_2)
- Lead (Pb)

Criteria pollutants can be emitted directly from sources (primary pollutants; e.g., CO, SO_2, PM_{10}, $PM_{2.5}$, and lead), or they may be formed through chemical and photochemical reactions of precursor pollutants in the atmosphere (secondary pollutants; e.g., ozone, NO_2, PM_{10}, and $PM_{2.5}$). PM_{10} and $PM_{2.5}$ can be both primary and secondary pollutants. The principal precursor pollutants of concern are reactive organic gases ([ROGs] also known as volatile organic compounds [VOCs])[1] and nitrogen oxides (NO_X).

The descriptions of sources and general health effects for each of the criteria air pollutants are shown in Table 1, *Summary of Common Sources and Human Health Effects of Criteria Air Pollutants*, based on information provided by the California Air Pollution Control Officers Association ([CAPCOA] 2021). Specific adverse health effects on individuals or population groups induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables such as cumulative concentrations, local meteorology and atmospheric conditions, and the number and characteristics of exposed individuals (e.g., age, gender). Criteria pollutant precursors (ROG and NO_X) affect air quality on a regional scale, typically after significant delay and distance from the pollutant source emissions. Health effects related to ozone and NO_2 are, therefore, the product of emissions generated by numerous sources throughout a region. Emissions of criteria pollutants from vehicles traveling to or from the project site (mobile emissions) are distributed nonuniformly in location and time throughout the region,

[1] CARB defines and uses the term ROGs while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.

wherever the vehicles may travel. As such, specific health effects from these criteria pollutant emissions cannot be meaningfully correlated to the incremental contribution from the project.

Table 1
SUMMARY OF COMMON SOURCES AND HUMAN HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Pollutant	Major Man-Made Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to climate change and nutrient overloading, which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrogen oxides (NO_X) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles and dyes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Produced by power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and other sources.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned, when gasoline is extracted from oil, or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid, which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2021

2.1.1.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation

(a cough), runny nose, throat pain, and headaches. TACs may be carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For carcinogenic TACs, there is no level of exposure that is considered safe, and impacts are evaluated in terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is referred to as diesel particulate matter (DPM). Almost all DPM is 10 microns or less in diameter, and 90 percent of DPM is less than 2.5 microns in diameter (CARB 2024a). Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. In 1998, CARB identified DPM as a TAC based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM has a notable effect on California's population—it is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM (CARB 2024a).

Asbestos is a mineral fiber that naturally occurs in some rock and soil. Long-term exposure to airborne asbestos fibers has been linked to major health effects including lung cancer; mesothelioma, a rare form of cancer that is found in the thin lining of the lung, chest, abdomen, and heart; and asbestosis, a serious progressive, long-term, non-cancer disease of the lungs (USEPA 2024a). Because of its fiber strength and heat resistance, asbestos has been used in a variety of building construction materials for insulation and as a fire retardant, primarily in buildings constructed before 1979. Asbestos fibers may be released into the air by the disturbance of asbestos containing material (ACM) during renovation and demolition activities; or during earth disturbing activities in areas where naturally occurring asbestos (NOA) is present in the rock or soil. NOA is not likely to be present in the soil and rock of San Diego County (California Department of Conservation 2000).

Lead is a naturally occurring metallic element that is found in small amounts in the earth's crust. In addition to its status as a criteria pollutant, lead is listed as a TAC because, depending on the level and duration of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. There is also a probable link between lead exposure and kidney cancer, brain cancer (gliomas), and lung cancer (USEPA 2024b). Lead particulate matter can be emitted during demolition and renovation activities that disturb materials that contains lead-based paint (LBP), most typically found in structures built before 1978.

2.1.2 Federal Regulations

2.1.2.1 Clean Air Act

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to the health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several criteria pollutants, which are introduced above. Table 2, *Ambient Air Quality Standards*, shows the federal and state ambient air quality standards (AAQS) for these pollutants.

Table 2
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards Primary[1]	Federal Standards Secondary[2]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	Same as Primary
PM_{10}	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	Same as Primary
$PM_{2.5}$	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
CO	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
NO_2	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	–
	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
SO_2	1 Hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	–	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	No Federal Standards	No Federal Standards
Sulfates	24 Hour	25 µg/m^3	No Federal Standards	No Federal Standards
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	No Federal Standards	No Federal Standards
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)	No Federal Standards	No Federal Standards

Source: CARB 2016

[1] National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

[2] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

O_3 = ozone; ppm: parts per million; µg/m^3 = micrograms per cubic meter; PM_{10} = large particulate matter; AAM = Annual Arithmetic Mean; $PM_{2.5}$ = fine particulate matter; CO = carbon monoxide; mg/m^3 = milligrams per cubic meter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; km = kilometer; – = No Standard.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. CARB has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988 (CCAA), and has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are "nonattainment areas" for that pollutant. Effective July 2, 2021, the SDAB was classified as a Severe 15 nonattainment area for the 2015 8-hour NAAQS for ozone (USEPA 2021). The SDAB is an attainment area for the NAAQS for all other criteria pollutants including PM_{10} and $PM_{2.5}$. The SDAB is currently classified as a nonattainment area under the CAAQS for ozone, PM_{10}, and $PM_{2.5}$ (SDAPCD 2024a). Table 3, *San Diego Air Basin Attainment Status*, lists the federal and state attainment status of the SDAPCD for criteria pollutants.

Table 3
SAN DIEGO AIR BASIN ATTAINMENT STATUS

Pollutant	Federal Attainment Status	State of California Attainment Status
Ozone (1-hour)	(No federal standard)	Nonattainment
Ozone (8-hour)	Nonattainment	Nonattainment
Coarse Particulate Matter (PM_{10})	Nonattainment	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Attainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Lead	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified[1]	No Federal Standard
Visibility Reducing Particles	Unclassified[1]	No Federal Standard

Source: SDAPCD 2024a

[1] At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

2.1.3 State Regulations

2.1.3.1 California Clean Air Act

CARB has established the more stringent CAAQS for the seven criteria air pollutants listed above through the CCAA, and has also established CAAQS for additional pollutants, including sulfates, H_2S, vinyl chloride and visibility-reducing particles (see Table 2). Areas that do not meet the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. The SDAB is currently classified as a nonattainment area under the CAAQS for ozone (1-hour and 8-hour), PM_{10}, and $PM_{2.5}$ (SDAPCD 2024a). The current state attainment status for the SDAB is provided in Table 3, above.

CARB is the state regulatory agency with the authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The SDAPCD is responsible for developing and implementing the rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, developing of air quality management plans, and adopting and enforcing air pollution regulations for San Diego County.

2.1.3.2 State Implementation Plan

The CAA requires areas with unhealthy levels of ozone, inhalable particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop plans, known as State Implementation Plans (SIPs). SIPs are comprehensive plans that describe how an area will attain the NAAQS. The 1990 amendments to the CAA set deadlines for attainment based on the severity of an area's air pollution problem.

SIPs are not single documents—they are a compilation of new and previously submitted plans, programs (e.g., monitoring, modeling, permitting), district rules, state regulations and federal controls. Many of California's SIPs rely on a core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations and limits on emissions from consumer products. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB forwards the SIP revisions to the USEPA for approval and publication in the Federal Register. The Code of Federal Regulations (CFR) Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists the items that are included in the California SIP (CARB 2024b). At any one time, several California submittals are pending USEPA approval.

2.1.3.3 California Energy Code

California Code of Regulations (CCR) Title 24 Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results primarily in GHG emissions. The California Energy Code is discussed in further detail in Section 3, below.

2.1.3.4 Toxic Air Contaminants

The Health and Safety Code (§39655, subd. (a)) defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the CAA (42 United States Code Sec. 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

2.1.4 Local Regulations

2.1.5 SDAPCD Attainment Plan

The SDAPCD and San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for the attainment and maintenance of the AAQS in the SDAB. The regional air quality plan for San Diego County is SDAPCD's 2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County (Attainment Plan; SDAPCD 2020). The Attainment Plan, which would be a revision to the SIP, outlines SDAPCD's plans and control measures designed to attain the NAAQS for ozone. For the attainment of the CAAQS, the SDAPCD must prepare an updated State Ozone Attainment Plan to identify possible new actions to further reduce emissions. Initially adopted in 1992, the Regional Air Quality Strategy (RAQS) identifies measures to reduce emissions from

sources regulated by the SDAPCD, primarily stationary sources such as industrial operations and manufacturing facilities. The RAQS is periodically updated to reflect updated information on air quality, emission trends, and new feasible control measures, and was last updated in 2023 (SDAPCD 2024b). These plans accommodate emissions from all sources, including natural sources, through implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the Attainment Plan and RAQS. The Attainment Plan and RAQS, in combination with local plans from all other California nonattainment areas with serious (or worse) air quality problems, are submitted to the CARB, which develops the SIP.

The Attainment Plan and RAQS rely on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County, to estimate future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County of San Diego. While SANDAG collaborates with the SDAPCD on the development of the portion of the SIP applicable to the SDAB, the SDAPCD is the lead agency. As such, the SDAPCD is responsible for projecting all future mobile source emissions (using CARB's mobile source emissions inventory EMFAC [CARB 2020]).

2.1.6 San Diego Air Pollution Control District Rules and Regulations

Future development pursuant to the project would be required to comply with SDAPCD Rules and Regulations which require the incorporation of BMPs during construction to reduce emissions of fugitive dust.

2.1.6.1 Rule 50 (Visible Emissions)

Particulate matter pollution impacts the environment by decreasing visibility (haze). These particles vary greatly in shape, size and chemical composition, and come from a variety of natural and manmade sources. Some haze-causing particles are directly emitted to the air such as windblown dust and soot. Others are formed in the air from the chemical transformation of gaseous pollutants (e.g., sulfates, nitrates, organic carbon particles) which are the major constituents of $PM_{2.5}$. These fine particles, caused largely by combustion of fuel, can travel hundreds of miles causing visibility impairment.

Visibility reduction is probably the most apparent symptom of air pollution. Visibility degradation is caused by the absorption and scattering of light by particles and gases in the atmosphere before it reaches the observer. As the number of fine particles increases, more light is absorbed and scattered, resulting in less clarity, color, and visual range. Light absorption by gases and particles is sometimes the cause of discolorations in the atmosphere but usually does not contribute very significantly to visibility degradation. Scattering by particulates impairs visibility much more readily. SDAPCD Rule 50 (Visible Emissions) sets emission limits based on the apparent density or opacity of the emissions using the Ringelmann scale (SDAPCD 1997).

2.1.6.2 Rule 51 (Nuisance)

SDAPCD Rule 51 (Nuisance) states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health

or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. The provisions of the rule do not apply to odors emanating from agricultural operations in the growing of crops or raising of fowls or animals (SDAPCD 1976).

2.1.6.3 Rule 55 (Fugitive Dust Control)

SDAPCD Rule 55 (Fugitive Dust Control) requires action be taken to limit dust from construction and demolition activities from leaving the property line. Similar to Rule 50 (Visible Emissions), Rule 55 (Fugitive Dust Control) places limits on the amount of visible dust emissions in the atmosphere beyond the property line. It further stipulates that visible dust on roadways as a result of track-out/carry-out shall be minimized through implementation of control measures and removed at the conclusion of each workday using street sweepers (SDAPCD 2009).

2.1.6.4 Rule 67.0.1 (Architectural Coatings)

Construction of development within the County is required to comply with SDAPCD Rule 67.0.1 (Architectural Coatings) which requires residential interior/exterior flat coatings to be less than or equal to 50 grams per liter VOC content and interior/exterior non-flat coatings to be less than or equal to 100 grams per liter VOC content (SDAPCD 2021).

2.2 AIR QUALITY EXISTING CONDITIONS

The project site is located in a generally suburban residential area 1.4 miles southwest of the City center. Topographically, there is a south-north trending slope situated in the south-central portion of the project site. Elevations on the project site range from 340 feet amsl at the top of the hill to 280 amsl at the northern edge of the property adjacent to Hacienda Drive. The project is currently vacant and contains grasses and scattered trees. Land uses surrounding the project site include multi-family residential development to the east, south, and west. To the north across Hacienda Drive is open space and SR 78. (see Figure 2).

2.2.1 Climate/Meteorology

The climate in southern California, including the SDAB, is controlled largely by the large-scale meteorological condition that dominates the west coast of the United States: a seasonally semi-permanent high-pressure cell centered over the northeastern Pacific Ocean, called the Pacific high, which keeps most storms from affecting the California coast. Areas within 30 miles of the coast in the San Diego region, including the project site, experience moderate temperatures and comfortable humidity.

Temperature inversion layers (inversions; layers of warmer air over colder air) affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). The highest air pollutant concentrations in the SDAB generally occur during inversions. During the summer, air quality problems in the SDAB are created due to the interaction between the ocean surface and the lower layer of the atmosphere, creating a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons (VOCs) and NO_X react under the strong, abundant sunlight in the San Diego region, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland,

toward the foothills. During the fall and winter, air quality problems are created due to CO and NO_X emissions. High NO_X levels usually occur during autumn or winter, on days with summer-like conditions.

The predominant wind direction in the vicinity of the project site is from the southwest and the average wind speed is approximately six mph (Iowa Environmental Mesonet 2023). The annual average maximum temperature in the project area is approximately 74 degrees Fahrenheit (°F), and the annual average minimum temperature is approximately 52°F. Total precipitation in the project area averages approximately 13 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer (Western Regional Climate Center 2016).

2.2.2 Existing Air Quality

The SDAPCD operates a network of ambient air monitoring stations throughout the San Diego region. The nearest air monitoring station closest to the project site is at Camp Pendleton/Oceanside, approximately 8 miles to the northwest. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. Countywide data reported to the USEPA for inclusion in the annual Air Quality Statistics Report are shown on Table 4, *Air Quality Monitoring Data*

Table 4
AIR QUALITY MONITORING DATA

Pollutant Standard	2021	2022	2023
Ozone (O_3)			
2nd Maximum concentration 1-hour period (ppm)	0.1	0.1	0.1
4th Maximum concentration 8-hour period (ppm)	**0.078**	**0.079**	**0.080**
Carbon Monoxide (CO)			
2nd Maximum concentration 1-hour period (ppm)	2.2	1.7	2.7
4th Maximum concentration 8-hour period (ppm)	1.3	1.2	2
Coarse Particulate Matter (PM_{10})			
2nd Maximum 24-hour concentration (µg/m³)	119	40	59
Annual mean (µg/m³)	42	23	22
Fine Particulate Matter ($PM_{2.5}$)			
98th Percentile 24-hour concentration (µg/m³)	24	17	20
Annual average (µg/m³)	11.2	8.9	9.7
Nitrogen Dioxide (NO_2)			
Maximum 1-hour concentration (ppm)	0.05	0.05	0.049
Annual average (ppm)	0.013	0.015	0.014

Source: USEPA 2024c
ppm = parts per million; µg/m³ = micrograms per cubic meter, * = insufficient data available.
Exceedances of a state standard are underlined. Exceedances of federal standards are in bold.

Monitoring data show exceedance of the state and federal ozone standards in each of the years sampled. Exceedance of the daily state PM_{10} standard occurred in 2021 and 2023. Exceedance of the annual state PM_{10} standard occurred in each of the three years sampled.

2.2.3 Sensitive Receptors

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children

under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005; OEHHA 2015). Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers.

The closest existing sensitive receptors to the project site are multi-family residences located adjacent to the project site to the east, south, and west. The closest existing school is Breeze Hill Elementary School, located at 1111 Melrose Way, approximately 0.7 mile southeast of the project site.

2.3 AIR QUALITY METHODOLOGY

Criteria pollutant emissions for project construction and operation were calculated using the California Emissions Estimator Model (CalEEMod), Version 2022.1. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. The model was developed for CAPCOA in collaboration with the California air districts. CalEEMod allows for the use of default data (e.g., emission factors, trip lengths, meteorology, source inventory) provided by the various California air districts to account for local requirements and conditions, and/or user-defined inputs. The calculation methodology and default input data used in CalEEMod can be found in the CalEEMod User's Guide Appendices (CAPCOA 2022). The input data and subsequent construction and operation emission estimates for the proposed project are discussed below. CalEEMod output files for the project are included in Appendix A of this report.

2.3.1 Construction Emissions

2.3.1.1 Construction Activities

Construction emissions were estimated based on the timeline provided by the project applicant, which assumes construction would begin in May 2025 and would be completed in February 2027, for a total construction period of approximately 21 months. The quantity, duration, and intensity of construction activity influence the amount of construction emissions and related pollutant concentrations that occur at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction activity is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix than assumed in CalEEMod, and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval).

Construction activities would include site preparation, grading, installation of underground utilities, physical building construction, paving, and architectural coatings. Construction is assumed to occur five days per week with equipment operating up to eight hours per day. The construction schedule assumed in the modeling is shown in Table 5, *Anticipated Construction Schedule.*

Table 5
ANTICIPATED CONSTRUCTION SCHEDULE

Construction Activity	Construction Period Start	Construction Period End	Construction Period Number of Working Days
Site Preparation	5/1/2025	5/8/2025	6
Grading	5/8/2025	7/3/2025	41
Utilities	7/3/2025	7/24/2025	16
Paving	8/1/2025	8/29/2025	21
Building Construction	8/1/2025	2/1/2027	392
Architectural Coatings	1/1/2027	2/1/2027	22

Source: City Ventures; CalEEMod

The modeling assumes default values for architectural coatings to comply with SDAPCD Rule 67, as described in Section 2.1.4, which limits the VOC content of architectural coatings to 50 g/L for flat coating and 100 g/L for non-flat coatings and pavement traffic marking. Interior paint was assumed to be flat coatings and exterior paint was assumed to be non-flat coatings. The modeling also assumes fugitive dust control in accordance with the SDAPCD Rule 55 and the BMPs, described in Section 1.4.1, specifically watering exposed areas twice per day, enforcing a 15-mph speed limit on unpaved surfaces, and maintaining a minimum moisture content of 12 percent for unpaved roads.

2.3.1.2 Construction Off-Road Equipment

Construction would require the use of heavy off-road equipment. Construction equipment estimates are based on default values in CalEEMod and information from the project developer. Table 6, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each stage of construction.

Table 6
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Equipment	Horsepower	Number	Hours/Day
Site Preparation			
Rubber Tired Dozers	367	2	8
Grading			
Excavators	36	1	8
Graders	148	3	8
Rubber Tired Dozers	367	3	8
Underground Utilities			
Excavators	36	1	8
Tractors/Loaders/Backhoes	84	1	8
Paving			
Cement and Mortar Mixers	10	2	6
Pavers	81	1	8
Paving Equipment	89	2	6
Rollers	36	2	6
Tractors/Loaders/Backhoes	84	1	8
Building Construction			
Cranes	367	1	7

Equipment	Horsepower	Number	Hours/Day
Forklifts	82	3	8
Generator Sets	14	1	8
Tractors/Loaders/Backhoes	84	3	7
Architectural Coating			
Air Compressors	37	1	6

Source: CalEEMod

2.3.1.3 Construction On-Road Trips

Worker commute trips and vendor delivery trips were modeled based on CalEEMod defaults. Worker trips are anticipated to vary between 5 and 65 trips per day, depending on construction activity. Haul truck trips were based on vegetation estimates from aerial images, and the grading plan cut/fill estimate. Approximately 12 total haul truck trips are anticipated during site preparation and 2,000 total haul truck trips during grading. The CalEEMod default worker, vendor and haul trip distances were used in the model.

2.3.2 Operational Emissions

2.3.2.1 Area Source Emissions

Area sources include emissions from landscaping equipment, the use of consumer products, the reapplication of architectural coatings for maintenance, and hearths. Emissions associated with area sources were estimated using the CalEEMod default values with the exception of hearths—the project will not include wood burning stoves or fireplaces, or natural gas fireplaces.

2.3.2.2 Energy Emissions

Development within the project would use electricity for lighting, heating and cooling. Natural gas and electricity will be supplied by San Diego Gas and Electric.

The gas-fired devices that may be utilized for the project include furnaces, hot water heaters, stoves, and ovens. As with all fossil fuel combustion, the substances emitted include greenhouse gases, criteria pollutants, and toxic substances.

Electricity generation typically entails the combustion of fossil fuels, including natural gas and coal, which is then transmitted to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant) and is included in the GHG analysis in Section 3, below.

2.3.2.3 Vehicular (Mobile) Sources

Operational emissions from mobile source emissions are associated with vehicle trip generation and trip length. Based on the project information form completed for the proposed project (Appendix B), the project would generate 504 average daily trips (ADT). The CalEEMod default trip distances and purposes were used in the modeling.

2.4 AIR QUALITY SIGNIFICANCE CRITERIA

Thresholds used to evaluate potential air quality and odor impacts are based on applicable criteria in the State's California Environmental Quality Act (CEQA) Guidelines Appendix G. A significant air quality and/or odor impact could occur if the implementation of the proposed project would:

- Conflict with or obstruct implementation of the San Diego Attainment Plan or applicable portions of the SIP; or
- Result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is non-attainment under an applicable NAAQS or CAAQS; or
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors adversely affecting a substantial number of people.

To determine whether the project would result in a cumulatively considerable net increase of PM_{10}, $PM_{2.5}$, or the ozone precursors NO_X and VOCs, emissions were evaluated based on the quantitative emission thresholds established by the SDAPCD. As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 for the preparation of Air Quality Impact Assessments (SDAPCD 2019).

For CEQA purposes, these screening criteria were used as numeric methods to determine if the project would result in a significant impact to air quality or an adverse effect on human health. The screening thresholds are shown in Table 7, *Screening-level Thresholds for Air Quality Impact Analysis*.

Table 7
SCREENING-LEVEL THRESHOLDS FOR AIR QUALITY IMPACT ANALYSIS

Pollutant	Total Emissions		
Construction Emissions (Pounds/Day)			
Respirable Particulate Matter (PM_{10})	100		
Fine Particulate Matter ($PM_{2.5}$)	67		
Oxides of Nitrogen (NO_X)	250		
Oxides of Sulfur (SO_X)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOCs)	137		
Operational Emissions			
	Pounds per Hour	**Pounds per Day**	**Tons per Year**
Respirable Particulate Matter (PM_{10})	---	100	15
Fine Particulate Matter ($PM_{2.5}$)	---	67	10
Oxides of Nitrogen (NO_X)	25	250	40
Oxides of Sulfur (SO_X)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	---	3.2	0.6
Volatile Organic Compounds (VOC)	---	137	15

Pollutant	Total Emissions
Toxic Air Contaminant Emissions	
Excess Cancer Risk	1 in 1 million 10 in 1 million with T-BACT
Non-Cancer Hazard	1.0

Source: SDAPCD 2019
T-BACT = Toxics-Best Available Control Technology

SDAPCD Rule 51 (Nuisance) prohibits emissions from any source whatsoever in such quantities of air contaminants or other material, which cause injury, detriment, nuisance, or annoyance to the public health or damage to property. It is generally accepted that the considerable number of persons requirement in Rule 51 is normally satisfied when 10 different individuals/households have made separate complaints within 90 days. Odor complaints from a "considerable" number of persons or businesses in the area would be a significant, adverse odor impact.

2.5 AIR QUALITY IMPACT ANALYSIS

2.5.1 Issue 1: Consistency with the Regional Air Quality Plan

The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for ozone. The Attainment Plan outlines SDAPCD's plans and control measures designed to attain the NAAQS for ozone. These plans accommodate emissions from all sources, including natural sources, through implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the CalEPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the Attainment Plan and RAQS.

The RAQS and Attainment Plan rely on information from CARB and SANDAG, including projected growth in the San Diego County, and mobile, area, and all other source emissions to project future emissions and determine from that the strategies necessary for the reduction of stationary source emissions through regulatory controls. CARB's mobile source emission projections and SANDAG's growth projections are based on population, employment and transportation trends, and land use plans developed by the local governments. Accordingly, projects that propose development that is consistent with the population and employment growth anticipated by these land use plans would be consistent with the RAQS and Attainment Plan. If a project proposes development that results in growth greater than that anticipated in the adopted land use plans and SANDAG's growth projections upon which the plans are based, the project may conflict with the RAQS and Attainment Plan and could have a potentially significant impact on air quality. This situation would warrant further analysis to determine if the project and the surrounding projects would exceed the growth projections used in the RAQS and Attainment Plan for the specific subregional area.

The project site is designated for multi-family housing in the City's General Plan and is zoned for a residential density of 21 du/ac. The project proposes a multi-family residential development with a density of 15.75 du/ac, which is below the 21 du/ac density allowed by the project site's land use designation and zoning. The project would be consistent with the land use plans and growth projections upon which the RAQS and Attainment Plan are based. As such, residential growth in the City as a result of the project, and the related changes in regional emissions, are accounted for in the SIP, which is crafted to bring the basin into attainment for all criteria pollutants. Additionally, as detailed in Section 2.5.2, below, the project would not result in any construction or operational period emissions in

exceedance of established thresholds. Therefore, the proposed project would not conflict with or obstruct implementation of the RAQS or Attainment Plan and impacts would be less than significant.

2.5.2 Issue 2: Cumulatively Considerable Net Increase of Nonattainment Criteria Pollutants

The project would generate criteria pollutants in the short-term during construction and the long-term during operation. To determine whether a project would result in a cumulatively considerable net increase in criteria pollutant emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation, a project's emissions are evaluated based on the quantitative emission thresholds established by the SDAPCD (as shown in Table 7).

2.5.2.1 Construction Criteria Pollutant and Precursor Emissions

The project's temporary construction emissions were estimated using CalEEMod as described in Section 2.3. The results of the modeling of the project's construction emissions of criteria pollutants and ozone precursors are shown in Table 8, *Maximum Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions for comparison with the SDAPCD thresholds. The complete CalEEMod output is provided in Appendix A to this report.

Table 8
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Year	Pollutant Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2025	6.2	60.3	52.4	0.1	38.5	19.8
2026	1.1	8.9	13.4	<0.1	0.8	0.4
2027	39.5	9.3	14.5	<0.1	0.8	0.4
Maximum Daily Emissions	**39.5**	**60.3**	**52.4**	**0.1**	**38.5**	**19.8**
SDAPCD Thresholds	*137*	*250*	*550*	*250*	*100*	*67*
Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod; USEPA AP-42 (output data is provided in Appendices A and B)
VOC = volatile organic compound; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides;
PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter;
SDAPCD = San Diego County Air Pollution Control District

As shown in Table 8, the project's temporary construction-related criteria pollutant and precursor emissions would be below the SDAPCD's significance thresholds. Therefore, the project's construction activities would not result in a cumulatively considerable net increase of criteria pollutants that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, and the impact would be less than significant.

2.5.2.2 Operation Criteria Pollutant and Precursor Emissions

The project's long-term maximum daily and annual operational emissions were estimated using CalEEMod as described in Section 2.3. The results of the modeling of the project's operational emissions of criteria pollutants and precursors are shown in Table 9, *Operational Emissions*. The data are presented as the maximum anticipated daily emissions and annual emissions for comparison with the SDAPCD thresholds. The complete CalEEMod output is provided in Appendix A to this report.

Table 9
OPERATIONAL EMISSIONS

Source	Pollutant Emissions					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Daily Emissions (pounds per day)[2]						
Area	3.4	<0.1	3.6	<0.1	<0.1	<0.1
Energy	<0.1	0.3	0.1	<0.1	<0.1	<0.1
Mobile	1.8	1.3	12.3	<0.1	2.7	0.7
Total Project Emissions[1]	**5.3**	**1.6**	**16.0**	**<0.1**	**2.8**	**0.7**
SDAPCD Daily Thresholds	*137*	*250*	*550*	*250*	*100*	*67*
Exceed Daily Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Annual Emissions (tons per year)						
Area	0.6	<0.1	0.3	<0.1	<0.1	<0.1
Energy	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mobile	0.3	0.2	1.9	<0.1	0.4	0.1
Total Project Emissions[1]	**0.9**	**0.3**	**2.3**	**<0.1**	**0.4**	**0.1**
SDAPCD Annual Thresholds	*15*	*40*	*100*	*40*	*15*	*10*
Exceed Annual Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)

[1] Totals may not sum due to rounding.

[2] Winter emissions are slightly higher for most substances.

VOC = volatile organic compound; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; SDAPCD = San Diego County Air Pollution Control District

As shown in Table 9 the project's long-term emissions of criteria pollutants and precursors would not exceed the SDAPCD daily or annual screening thresholds. Therefore, the project's operational activities would not result in a cumulatively considerable net increase of criteria pollutants that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, and the impact would be less than significant.

2.5.3 Issue 3: Impacts to Sensitive Receptors

Impacts to sensitive receptors are typically analyzed for operational period CO hotspots and exposure to TACs. An analysis of the project's potential to expose sensitive receptors to these pollutants is provided below.

2.5.3.1 Construction Diesel Particulate Matter Emissions

Implementation of the project would result in the use of heavy-duty construction equipment, haul trucks, on-site generators, and construction worker vehicles. These vehicles and equipment could generate the TAC DPM. Generation of DPM from construction projects typically occurs in a localized area (e.g., at the project site) for a short period of time. Because construction activities and subsequent emissions vary depending on the phase of construction (e.g., grading, building construction), the construction-related emissions to which nearby receptors are exposed to would also vary throughout the construction period. During some equipment-intensive phases such as grading, construction-related emissions would be higher than other less equipment-intensive phases such as building construction. Concentrations of mobile-source DPM emissions are typically reduced by 70 percent at approximately 500 feet (CARB 2005).

The dose (of TAC) to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed amount of emissions would result in higher health risks. Current models and methodologies for conducting cancer health risk assessments are associated with longer-term exposure periods (typically 30 years for individual residents based on guidance from OEHHA) and are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models and methodologies do not correlate well with the temporary and highly variable nature of construction activities. Cancer potency factors are based on animal lifetime studies or worker studies where there is long-term exposure to the carcinogenic agent. There is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime (OEHHA 2015). Considering this information, the highly dispersive nature of DPM, and the fact that construction activities would occur at various locations throughout the project site, it is not anticipated that construction of the project would expose sensitive receptors to substantial DPM concentrations. Therefore, this impact would be less than significant.

2.5.3.2 Localized Carbon Monoxide Hotspots

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. Vehicle exhaust is the primary source of CO. In an urban setting, the highest CO concentrations are generally found within close proximity to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increases. Project-generated traffic has the potential of contributing to localized “hot spots” of CO off site. Because CO is a byproduct of incomplete combustion, exhaust emissions are worse when fossil-fueled vehicles are operated inefficiently, such as in stop-and-go traffic or through heavily congested intersections, where the level of service (LOS) is severely degraded.

The CARB also recommends evaluation of the potential for the formation of locally high concentrations of CO, known as CO hot spots. A CO hot spot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. To verify that the project would not cause or contribute to a violation of the 1-hour and 8-hour CO standards, an evaluation of the current vs. proposed average daily traffic volumes was conducted. The proposed project access point would be via Hacienda Drive. According to average daily traffic volumes recorded by the City in 2017, the portion of Hacienda Drive between Providence Drive to the west and La Tortuga Drive to the east experiences 5,003 westbound trips and 5,609 eastbound trips per day, for a total of 10,612 ADT. The proposed project would result in an increase of 504 ADT, which would not be enough to substantially affect the roadway network. The Project would not contribute to a CO hotspot and impacts would be less than significant.

2.5.4 Issue 4: Odors

As discussed above, the State of California Health and Safety Code Sections 41700 and 41705, and SDAPCD Rule 51, prohibit emissions from any source whatsoever in such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public health or damage to property. Any unreasonable odor discernible at the property line of the project site will be considered a significant odor impact.

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations (SCAQMD 1993). The project, involving a residential development, would not include any of these uses nor are there any of these land uses in the project vicinity.

Emissions from construction equipment, such as diesel exhaust, and VOCs from architectural coatings and paving activities may generate odors; however, these odors would be temporary, intermittent, and not expected to affect a substantial number of people. Additionally, noxious odors would be confined to the immediate vicinity of construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern. Furthermore, short-term construction-related odors are expected to cease upon the drying or hardening of the odor-producing materials. Long-term operation of the project would not be a substantial source of objectionable odors. Therefore, the project would not create objectionable odors affecting a substantial number of people, and the impact would be less than significant.

3.0 GREENHOUSE GAS EMISSIONS

3.1 GHG SETTING

3.1.1 Climate Change Overview

Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as GHGs because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The temperature record shows a decades-long trend of warming, with the most recent ten-year period marking the warmest years on record since 1880 (National Aeronautics and Space Administration [NASA] 2024). The newest release in long-term warming trends announced 2023 ranked as the warmest year on record with an increase of 2.11 degrees Fahrenheit (°F) compared to the late 19th-century (1850-1900) preindustrial average (NASA 2024). GHG emissions from human activities are the most significant driver of observed climate change since the mid-20th century (United Nations Intergovernmental Panel on Climate Change [IPCC] 2021). The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a "high confidence" that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to preindustrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalents (CO_2e) by the year 2100 (IPCC 2021).

3.1.2 Greenhouse Gases

The GHGs defined under California's Assembly Bill (AB) 32 include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Carbon Dioxide. CO_2 is the most important and common anthropogenic GHG. CO_2 is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. The atmospheric CO_2 concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (about 280 ppm in 1750). As of March 2024, the CO_2 concentration exceeded 425 ppm (National Oceanic and Atmospheric Administration [NOAA] 2024).

Methane. CH_4 is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

Nitrous Oxide. N_2O is produced by both natural and human-related sources. N_2O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Hydrofluorocarbons. Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. Because hydrofluorocarbons destroy stratospheric ozone, their production was stopped as required by the 1989 Montreal Protocol.

Sulfur Hexafluoride. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHG emissions to disperse around the globe. Because GHG emissions vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, because methane and N_2O are approximately 29 and 273 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 29 and 771, respectively (CO_2 has a GWP of 1). CO_2e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e.

Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's Second Assessment Report. In 2007, IPCC updated the GWP values based on the latest science at the time in its Fourth Assessment Report (IPCC 2007). In 2013 and again in 2021, IPCC updated the GWP values based

on the latest science in its Fifth and Sixth Assessment Reports, respectively (IPCC 2013 and 2021). However, United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines for national inventories require the use of GWP values from the Fourth Assessment Report. To comply with international reporting standards under the UNFCCC, official emission estimates for California and the U.S. are reported using Fourth Assessment Report GWP values. Therefore, statewide and national GHG inventories have not yet updated their GWP values to the AR5 values.

By applying the GWP ratios, project related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a baseline. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 10, *Global Warming Potentials and Atmospheric Lifetimes*.

Table 10
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-134a	14	1,430
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC 2007
HFC: hydrofluorocarbon; PFC: perfluorocarbon

3.2 GHG REGULATORY FRAMEWORK

All levels of government have some responsibility for the protection of air quality, and each level (federal, State, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of air quality management.

3.2.1 Federal GHG Regulations

3.2.1.1 Federal Clean Air Act

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency* that CO_2 is an air pollutant, as defined under the CAA, and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO_2, CH_4, N_2O, HFC, PFC, and SF_6) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the USEPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA).

On June 30, 2022, the U.S. Supreme Court decision published in *West Virginia v. U.S. Environmental Protection Agency* overturned the USEPA's Clean Power Plan rule which cited Section 111(d) of the CAA for authority to set limits on CO_2 emissions from existing coal- and natural-gas-fired power plants. The

June 30, 2022 decision does not overturn the April 2, 2007 decision; however, it may limit the USEPA's authority to develop rules limiting GHG emissions without clear congressional authorization.

3.2.1.2 Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA worked together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. The USEPA established the first-ever national GHG emissions standards under the CAA, and the NHTSA established Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025.

In December 2021, USEPA issued a new rule formally adopting standards previously proposed in August 2021 for model years 2023 and 2024 and finalizing more stringent standards than previously proposed for model years 2025 and 2026. The rule assumes a 17 percent electric vehicle (EV) market penetration by 2026. Although this is a departure from the NHTSA CAFE standards, USEPA did coordinate with NHTSA during development of the new standards. On April 12, 2023, USEPA announced new, more ambitious proposed standards to further reduce harmful air pollutant emissions from light-duty and medium-duty vehicles starting with model year 2027. The proposal builds upon USEPA's final standards for federal GHG emissions standards for passenger cars and light trucks for model years 2023 through 2026 and leverages advances in clean car technology to result in benefits to Americans ranging from reducing climate pollution, to improving public health, to saving drivers money through reduced fuel and maintenance costs. The proposed standards would phase in over model years 2027 through 2032.

3.2.2 California GHG Regulations

There are numerous State plans, policies, regulations, and laws related to GHG emissions and global climate change. Following is a discussion of some of these plans, policies, and regulations that (1) establish overall State policies and GHG emission reduction targets; (2) require State or local actions that result in direct or indirect GHG emission reductions for the proposed project; and (3) require CEQA analysis of GHG emissions.

3.2.2.1 California Energy Code

CCR Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results in GHG emissions.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2022 Title 24 standards went into effect on January 1, 2023. The 2022 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The update particularly emphasizes heat pumps for space heating and water heating and extends the benefits of photovoltaic and battery storage systems and other demand flexible technology to work in combinations with heat pumps to enable California buildings to be

responsive to climate change. This Energy code also strengthens ventilation standards to improve indoor air quality. (California Energy Commission [CEC] 2022).

The standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards—the energy budgets—that vary by climate zone (of which there are 16 in California) and building type; thus, the standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

3.2.2.2 California Green Building Standards Code

The California Green Building Standards Code (CALGreen; CCR Title 24, Part 11) is a code with mandatory requirements for all nonresidential buildings (including industrial buildings) and residential buildings for which no other state agency has authority to adopt green building standards. The current 2022 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings went into effect on January 1, 2023 (California Building Standards Commission [CBSC] 2022).

The development of CALGreen is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

CALGreen contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

3.2.2.3 Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

3.2.2.4 Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that the CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

3.2.2.5 Senate Bill 375

Senate Bill (SB) 375, the Sustainable Communities and Climate Protection Act of 2008, supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPOs). CARB periodically reviews and updates the targets, as needed.

Each of California's MPOs must prepare a Sustainable Communities Strategy (SCS) as an integral part of its regional transportation plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. CARB must review the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional GHG targets. If the combination of measures in the SCS would not meet the regional targets, the MPO must prepare a separate alternative planning strategy (APS) to meet the targets. The APS is not a part of the RTP. Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline CEQA processing.

The SANDAG is San Diego's local MPO and has responded to the requirements of SB 375 with the preparation of a regional transportation plan/sustainable communities strategy. *The 2021 Regional Plan* (SANDAG 2021) is discussed in greater detail in Section 3.2.3, below.

3.2.2.6 Senate Bill 743

On September 27, 2013, California Governor Jerry Brown signed SB 743 into law and started a process that changes transportation impact analysis as part of CEQA compliance. These changes include the elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts for land use projects and plans in California. Further, parking impacts will not be considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service. According to the legislative intent contained in SB 743, these changes to current practice were necessary to balance the needs of congestion management more appropriately with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions.

3.2.2.7 Senate Bill 97

SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the State CEQA Guidelines for addressing GHG emissions, including the effects associated with transportation and energy consumption. The amendments became effective on March 18, 2010.

3.2.2.8 Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. The emission reduction

target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

3.2.2.9 Senate Bill 32 and Assembly Bill 197

As a follow-up to AB 32 and in response to EO-B-30-15, SB 32 was passed by the California legislature in August 2016 to codify the EO's California GHG emission reduction target of 40 percent below 1990 levels by 2030 and requires the State to invest in the communities most affected by climate change. AB 197 establishes a legislative committee on climate change policies to help continue the State's activities to reduce GHG emissions.

3.2.2.10 Assembly Bill 1279

Approved by Governor Newsom on September 16, 2022, AB 1279, *The California Climate Crisis Act*, declares the policy of the state to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter, and to ensure that by 2045, statewide anthropogenic GHG emissions are reduced to at least 85 percent below the 1990 levels. AB 1279 anticipates achieving these policies through direct GHG emissions reductions, removal of CO_2 from the atmosphere (carbon capture), and almost complete transition away from fossil fuels.

3.2.2.11 Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles (CARB 2024c). In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars (CARB 2024c).

3.2.2.12 Assembly Bill 341

The State legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the solid waste diversion target to 75 percent statewide. AB 341 requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The final regulation was approved by the Office of Administrative Law on May 7, 2012 and went into effect on July 1, 2012.

3.2.2.13 Executive Order S-01-07 – Low Carbon Fuel Standard

This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation

adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. As a result, CARB continues to implement the LCFS statewide.

3.2.2.14 California Air Resources Board: Climate Change Scoping Plan

The Scoping Plan is a strategy CARB develops and updates at least one every five years, as required by AB 32. It lays out the transformations needed across our society and economy to reduce emissions and reach our climate targets. The current 2022 Scoping Plan is the third update to the original plan that was adopted in 2008. The initial 2008 Scoping Plan laid out a path to achieve the AB 32 mandate of returning to 1990 levels of GHG emissions by 2020, a reduction of approximately 15 percent below business as usual. The 2008 Scoping Plan included a mix of incentives, regulations, and carbon pricing, laying out the portfolio approach to addressing climate change and clearly making the case for using multiple tools to meet California's GHG emissions targets.

The 2013 Scoping Plan assessed progress toward achieving the 2020 mandate and made the case for addressing short-lived climate pollutants. The 2017 Scoping Plan also assessed the progress toward achieving the 2020 limit and provided a technologically feasible and cost-effective path to achieving the SB 32 mandate of reducing GHGs by at least 40 percent below 1990 levels by 2030. On December 15, 2022, CARB approved the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan). The 2022 Scoping Plan lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels; further reductions in short-lived climate pollutants; support for sustainable development; increased action on natural and working lands to reduce emissions and sequester carbon; and the capture and storage of carbon (CARB 2022).

3.2.3 Regional GHG Policies and Plans

3.2.3.1 San Diego Association of Government's Regional Plan

SANDAG's 2021 Regional Plan (Regional Plan; SANDAG 2021) is the long-range planning document developed to address the region's housing, economic, transportation, environmental, and overall quality-of-life needs. The purpose is to provide direction and guidance on future regional growth (i.e., the location of new residential and non-residential land uses) and transportation patterns throughout the region. The Regional Plan is a 30-year plan that considers how the community will grow, where residents will live, and how residents and visitors will move around the region. It combines the RTP, SCS, and Regional Comprehensive Plan. As such, the Regional Plan must comply with specific state and federal mandates. These include an SCS, per SB 375, that achieves GHG emissions reduction targets set by the CARB; compliance with federal civil rights requirements (Title VI); environmental justice considerations; air quality conformity; and public participation.

3.2.4 Local Greenhouse Gas Plans

3.2.4.1 City of Vista Climate Action Plan

The City of Vista (City) has developed the Climate Action Plan (CAP) to address the issues of climate change as it relates to growth in the City, and to protect the environment for visitors and residents alike (City 2012). The CAP was adopted in December of 2013 and last updated in October of 2021 (City 2021).

The intent of the plan is to reduce traffic congestion and solid waste generation, improve air quality, increase safety for pedestrians and cyclists, and encourage more efficient use of energy and water. Additionally, this CAP requires meaningful GHG reductions by 2030, in accordance with the guidelines of SB 32, the Governor's EO S-3-05, and CEQA guidelines, which will help improve the quality of life in the City. The implementation of the CAP will also help lead agencies to assess cumulative impacts of a project and provide a means for future projects to address GHG impacts under CEQA. A lead agency may conclude that a project's GHG impact is not cumulatively significant if the project demonstrates consistency with the City's CAP (CEQA Guidelines Section 15183.5[h][3]), thereby reducing overall project costs.

Through the CAP, the City has established goals and policies that incorporate environmental responsibility into its daily management of residential, commercial and industrial growth, education, energy and water use, air quality, transportation, waste reduction, economic development and open space and natural habitats to further their commitment. The development of the 2013 CAP coincided with City's General Plan Update and included a community-wide emissions inventory calculated using the socioeconomic growth rates from the General Plan Update. The 2021 CAP provides the city with an updated GHG inventory and new and updated measures aimed at reducing GHG emissions citywide.

3.2.4.2 City of Vista Municipal Code

The City Municipal Code, Chapter 13.17, Construction and Demolition Debris Recycling, requires all construction, demolition, and remolded projects within the City, with a total project value equal to or greater than $75,000 to divert at least 50 percent of the total construction and demolition debris generated by the project via reuse or recycling (City 2011).

3.3 GHG EXISTING CONDITIONS

3.3.1 Worldwide and National GHG Inventory

In 2022, total anthropogenic GHG emissions worldwide were estimated at 49,400 million metric tons (MMT) of CO_2e emissions (Climate Watch 2024). The five largest emitting countries and the European Union, together account for about 63 percent of total global GHG emissions: China (29 percent), the United States (13 percent), the European Union (about 7 percent), India (7 percent), the Russian Federation (4.1 percent) and Japan (2.4 percent). These countries also have the highest CO_2 emission levels (Climate Watch 2024).

Per USEPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2022, total United States GHG emissions were approximately 6,341 MMT CO_2e in 2022 (USEPA 2024d). The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 79.8 percent of total GHG emissions (5,057 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 92.7 percent of CO_2 emissions in 2022 (4,690 MMT CO_2e). Relative to 1990, gross United States GHG emissions in 2022 were lower by 3.1 percent, down from a high of 15.2 percent above 1990 levels in 2007. Gross emissions increased from 2021 to 2022 by 0.3 percent (16.4 MMT CO_2e). Net emissions (i.e., including sinks) were 5,487 MMT CO_2e in 2022. Overall, net emissions increased by 1.3 percent from 2021 to 2022 and decreased by 16.6 percent from 2005 levels. Between 2021 and 2022, the increase in total greenhouse gas emissions was driven largely by an increase in CO_2 emissions from fossil fuel combustion across most end-use sectors due in part to

increased energy use from the continued rebound of economic activity after the height of the COVID-19 pandemic. (USEPA 2024d).

3.3.2 State GHG Inventories

CARB performed statewide inventories for the years 1990 to 2021, as shown in Table 11, *California State Greenhouse Gas Emissions by Sector*. The inventory is divided into six broad sectors of economic activity: agriculture, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO2e.

As shown in Table 11, statewide GHG source emissions totaled 431 MMT CO2e in 1990, 471 MMT CO2e in 2000, 449 MMT CO2e in 2010, and 381 MMT CO_2e in 2021. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

Table 11
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR

Sector	1990 Emissions (MMT CO_2e)	2000 Emissions (MMT CO_2e)	2010 Emissions (MMT CO_2e)	2021 Emissions (MMT CO_2e)
Agriculture and Forestry	18.9 (4%)	31.0 (7%)	33.7 (8%)	30.5 (8%)
Commercial	14.4 (3%)	14.1 (3%)	20.1 (4%)	22.88 (6%)
Electricity Generation	110.5 (26%)	105.4 (22%)	90.6 (20%)	61.01 (16%)
Industrial	105.3 (24%)	105.8 (22%)	101.8 (23%)	83.89 (22%)
Residential	29.7 (7%)	31.7 (7%)	32.1 (7%)	30.5 (8%)
Transportation	150.6 (35%)	183.2 (39%)	170.2 (38%)	148.71 (39%)
Unspecified Remaining	1.3 (<1%)	0.0 (0%)	0.0 (0%)	3.81 (1%)
TOTAL	**430.7**	**471.1**	**448.5**	**381.3**

Source: CARB 2007 and CARB 2024d
MMT = million metric tons; CO_2e = carbon dioxide equivalent

3.3.3 Regional GHG Inventory

A San Diego regional emissions inventory that was prepared by the University of San Diego (USD) Energy Policy Initiatives Center (EPIC) accounted for the unique characteristics of the region (USD EPIC 2023). The 2019 emissions inventory for Unincorporated San Diego County is presented in Table 12, *San Diego County GHG Emissions by Category*. The sectors included in this inventory are somewhat different from those in the statewide inventory. Similar to the statewide emissions, transportation related GHG emissions contributed the most countywide, followed by emissions associated with energy use.

Table 12
SAN DIEGO COUNTY GHG EMISSIONS BY CATEGORY

Emissions Category	2019 Emissions MMT CO_2e (% total)[1]
On-Road Transportation	1.33 (45%)
Electricity	0.60 (20%)
Natural Gas Consumption	0.48 (16%)
Solid Waste	0.19 (6%)

Emissions Category	2019 Emissions MMT CO_2e (% total)[1]
Agriculture	0.13 (4%)
Propane	0.12 (4%)
Off-Road Transportation	0.07 (2%)
Water	0.04 (1%)
Wastewater	0.02 (1%)
TOTAL	**2.98**

Source: USD EPIC 2023. Unincorporated County of San Diego 2019 Greenhouse Gas Emissions Inventory and Projections. Prepared by the University of San Diego School Energy Policy Initiatives Center (EPIC) and Ascent.
[1] Percentages may not total 100 due to rounding.
MMT = million metric tons; CO2e = carbon dioxide equivalent

A CAP was prepared for the City of Vista in 2012 and updated in 2021. The CAP includes the GHG emissions by sector for 2012 and the percent change from 2012 to 2014, as shown in Table 13, *City of Vista Emissions by Sector*.

Table 13
CITY OF VISTA GHG EMISSIONS BY SECTOR

Sector	2012 Emissions MMT CO_2e (% total)[1]	2013 Emissions MMT CO2e (% total)	2014 Emissions MMT CO2e (% total)
On-Road Transportation	0.297 (49%)	.297 (49%)	.296 (46%)
Electricity	0.185 (31%)	.177 (29%)	.155 (27%)
Natural Gas	0.082 (14%)	.086 (14%)	.075 (13%)
Off-road Transportation	0.017 (3%)	.017 (3%)	.016 (3%)
Solid Waste	0.014 (2%)	.015 (2%)	.015 (3%)
Waste	0.006 (1%)	.007 (1%)	.007 (1%)
Wastewater	0.003 (0.5%)	.003 (0.5%)	.003 (0.5%)
TOTAL	**0.603**	**0.602**	**0.567**
Percent Change from 2012	-	-0.17%	-5.97%

Source: City of Vista 2021 Climate Action Plan Appendix A
[1] Percentages may not total 100 due to rounding.
MMT = million metric tons; CO_2e = carbon dioxide equivalent

3.4 GHG METHODOLOGY

The project's GHG emissions were calculated using CalEEMod, as described in Section 2.3.

3.4.1 Construction GHG Emissions

Construction of the project would result in emissions of GHGs from the use of diesel-powered equipment, from worker vehicles traveling to and from the project site, and from trucks hauling material to and from the project site. The anticipated construction equipment and vehicle trips required for project construction are described in Section 2.3.

3.4.2 Operational GHG Emissions

3.4.2.1 Area Sources

This CalEEMod module estimates the GHG emissions that would occur from the use of hearths (e.g., wood or gas fireplaces and wood stoves), and landscaping equipment. This module also estimates emissions due to use of consumer products and architectural coatings that have VOCs; however, these sources do not emit GHGs. The project will not include wood burning or natural gas fireplaces or woodstoves.

The use of landscape equipment emits GHGs associated with the equipment's fuel combustion. CalEEMod estimates the number and type of equipment needed based on the number of summer days given the project's location as entered in the project characteristics module. The model defaults for landscaping equipment were assumed.

3.4.2.2 Vehicular (Mobile) Sources

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on the project information form completed for the proposed project (Appendix B), the project would generate 504 average daily trips. All CalEEMod default trip purposes and distances were used in the modeling.

3.4.2.3 Energy Sources

GHGs are emitted as a result of activities in buildings for which electricity and natural gas are used as energy sources. GHGs are generated during the generation of electricity from fossil fuels off-site in power plants. These emissions are considered indirect and are calculated in CalEEMod as associated with a building's operation.

Energy source emissions were calculated using CalEEMod default values, which are based on the CEC-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies, which identify energy use by building type and climate zone. Each land use type input to the land use module is mapped in the energy module to the appropriate CEUS and RASS building type.

3.4.2.4 Solid Waste Sources

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. CalEEMod determines the GHG emissions associated with disposal of solid waste into landfills. Portions of these emissions are biogenic. CalEEMod methods for quantifying GHG emissions from solid waste are based on the IPCC method using the degradable organic content of waste. Solid waste source emissions were calculated using CalEEMod default values.

3.4.2.5 Water and Wastewater Sources

The amount of water used, and wastewater generated, by a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat the water and wastewater. In addition to the indirect GHG emissions associated with energy use, wastewater treatment can directly emit methane and nitrous oxide.

CalEEMod uses default electricity intensity values for various phases of supplying and treating water from CEC's Refining Estimates of Water-Related Energy Use in California. The model estimates water/wastewater emissions by multiplying the total projected water/wastewater demand by the applicable water electricity intensities and by the utility intensity GHG factors. The default CalEEMod water use assumptions were used for the GHG emissions estimates.

3.4.2.6 Refrigerants

CalEEMod calculates GHG emissions associated with refrigerants (typically HFCs or blends of gases containing HFCs) which are emitted through leakage or maintenance from project refrigeration systems, freezers, and air conditioning systems. Refrigerant emissions were calculated using CalEEMod defaults.

3.5 GHG SIGNIFICANCE CRITERIA

Given the relatively small levels of emissions generated by a typical project in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, considering the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Thus, the potential for a significant GHG impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

The determination of significance is governed by CEQA Guidelines 15064.4, entitled "Determining the Significance of Impacts from Greenhouse Gas Emissions." CEQA Guidelines 15064.4(a) states, "[t]he determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to … [use a quantitative model or qualitative model]" (emphasis added). In turn, CEQA Guidelines 15064.4(b) clarifies that a lead agency should consider "Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project." Therefore, consistent with CEQA Guidelines 15064.4, the GHG analysis for the project appropriately relies upon a threshold based on the exercise of careful judgement and believed to be appropriate in the context of this particular project.

Following the methods described by the CAPCOA in their report entitled "CEQA & Climate Change," dated January 2008, the City conducted a review of projects within the City to determine a 90 percent capture rate. As identified in the City's *Interim Guidance Memorandum on Assessing GHG Emissions from Projects Subject to CEQA*, it was determined that a level of 1,185 metric tons (MT) CO_2e would capture 90 percent of the City's emissions that are attributable to development projects (City 2016).

The interim threshold was developed to meet the statewide GHG emissions reduction target of achieving 1990 emissions levels by 2020 and be on track to meet the 80 percent below 1990 levels by 2050 target in accordance with SB 32 and EO S-3-05. The City has not adopted guidance or revised thresholds to account for GHG reduction target beyond 2020. Therefore, this analysis compares the project's emissions to a reduced threshold corresponding to the SB 32 reduction target of emissions 40 percent below 1990 levels by 2030. Accordingly, a threshold reduced by 4.98 percent for each year between 2020 and 2030 would meet the mandates of SB 32. The first full year of operation for the project is anticipated to be 2028. Therefore, a threshold 33.5 percent below the City threshold of 1,185 MT CO_2e per service population per year, or 787 MT, is used in this analysis.

Neither the SDAPCD nor the City have adopted thresholds for determining the significance of a project's temporary construction GHG emissions. To be conservative in accounting for all the project's GHG emissions, the construction period emissions were amortized (i.e., averaged) over the anticipated 30-year lifespan of the project buildings and added to the project's operational emissions.

3.6 GHG IMPACT ANALYSIS

3.6.1 Issue 1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

3.6.1.1 Construction GHG Emissions

The project's temporary construction emissions were estimated using CalEEMod as described in Section 2.3. The results of the modeling of the project's GHG emissions shows that construction of the project would generate a total of 707.1 MT of CO_2e. Amortized (averaged) over the anticipated 30-year lifespan of the project, project construction GHG emissions would be 23.6 MT of CO_2e per year. The CalEEMod output is included as Appendix A to this report.

3.6.1.2 Operational GHG Emissions

The GHG emissions associated with long-term operation of the project were estimated using CalEEMod as described in Section 2.3 and Section 3.4. The results of the modeling of the project's operational GHG emissions are shown in Table 13, *Operational GHG Emissions*. The data are presented as the maximum anticipated operational GHG emissions for the first full year of operation (2028) and compared to the City threshold (adjusted for the year 2028). As shown in Table 13, the project's GHG emissions would be approximately 629.5 MT CO_2e per year, which is below the 2024 adjusted City threshold of 787 MT CO_2e per year. Therefore, the project would not generate GHG emissions that may have a significant impact on the environment, and the impact would be less than significant.

Table 14
OPERATIONAL GHG EMISSIONS

Source	Emissions (MT CO_2e/year)
Area	0.8
Energy	138.7
Vehicular (Mobile)	444.0
Solid Waste	14.6

Source	Emissions ($MT CO_2e$/year)
Water and Wastewater	7.7
Refrigerants	0.2
Total Annual Emissions[1]	**605.9**
Amortized Construction Emissions	*23.6*
Total Amortized Construction + Operational Emissions	*629.5*
2024 Adjusted Threshold	*787*
Exceed Threshold?	***No***

Source: CalEEMod, output data is provided in Appendix A

[1] Totals may not sum due to rounding.

MT = metric ton; CO_2e = carbon dioxide equivalent

3.6.2 Issue 2: Conflict with an applicable GHG reduction plan, policy, or regulation.

The project, by achieving the City's threshold, would not conflict with the goals of the City's CAP and may be seen to exceed its fair share in achieving the state's reduction target. The project would be consistent with measure T-3, Require EV Charging Stations at New Multi-Family and Commercial Developments, by complying with CALGreen electric vehicle (EV) charging requirements. Furthermore, through compliance with AB 341 and Chapter 13.17 of the City's Municipal Code, the project would be consistent with CAP measure W-1, Reduce Solid Waste Disposal and Increase Recycling. The project would be constructed in accordance with the energy-efficiency standards, water reduction goals, and other "green" standards contained in the 2022 Title 24 Part 6 and Part 11 (CALGreen) Building Standards, including the requirement for onsite solar electricity generation. As such, the project would be consistent with local plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Therefore, the project would not conflict with applicable plans, policies, and regulations related to GHG emission reductions, and the impact would be less than significant.

3.7 LIST OF PREPARERS

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Appendix A

CalEEMod Output

Hacienda Townhome Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Hacienda Townhome
Construction Start Date	5/1/2025
Operational Year	2028
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	20.2
Location	33.192567517383296, -117.26584053692804
County	San Diego
City	Vista
Air District	San Diego County APCD
Air Basin	San Diego
TAZ	6264
EDFZ	12
Electric Utility	San Diego Gas & Electric
Gas Utility	San Diego Gas & Electric
App Version	2022.1.1.22

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

Condo/Townhouse	63.0	Dwelling Unit	4.60	134,661	25,300	—	176	—

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.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.51	6.16	60.3	52.4	0.10	2.60	35.9	38.5	2.39	17.4	19.8	—	12,614	12,614	0.57	0.66	8.78	12,832
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.39	39.5	9.49	14.5	0.02	0.39	0.50	0.83	0.36	0.12	0.46	—	2,955	2,955	0.13	0.06	0.05	2,976
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.09	2.38	8.33	9.41	0.02	0.35	2.87	3.22	0.32	1.33	1.66	—	2,072	2,072	0.09	0.09	0.69	2,101
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.20	0.43	1.52	1.72	< 0.005	0.06	0.52	0.59	0.06	0.24	0.30	—	343	343	0.02	0.01	0.11	348

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	7.51	6.16	60.3	52.4	0.10	2.60	35.9	38.5	2.39	17.4	19.8	—	12,614	12,614	0.57	0.66	8.78	12,832
2026	1.28	1.07	8.89	13.4	0.02	0.35	0.43	0.77	0.32	0.10	0.42	—	2,777	2,777	0.12	0.06	1.88	2,798
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.34	1.13	9.49	13.3	0.02	0.39	0.43	0.82	0.36	0.10	0.46	—	2,765	2,765	0.12	0.06	0.05	2,785
2026	1.27	1.07	8.91	13.2	0.02	0.35	0.43	0.77	0.32	0.10	0.42	—	2,753	2,753	0.12	0.06	0.05	2,774
2027	1.39	39.5	9.34	14.5	0.02	0.33	0.50	0.83	0.30	0.12	0.42	—	2,955	2,955	0.13	0.06	0.05	2,976
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.09	0.90	8.33	9.10	0.02	0.35	2.87	3.22	0.32	1.33	1.66	—	2,072	2,072	0.09	0.09	0.69	2,101
2026	0.90	0.76	6.37	9.41	0.02	0.25	0.30	0.55	0.23	0.07	0.30	—	1,969	1,969	0.08	0.04	0.58	1,984
2027	0.09	2.38	0.58	0.91	< 0.005	0.02	0.03	0.05	0.02	0.01	0.03	—	185	185	0.01	< 0.005	0.05	186
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.20	0.16	1.52	1.66	< 0.005	0.06	0.52	0.59	0.06	0.24	0.30	—	343	343	0.02	0.01	0.11	348
2026	0.16	0.14	1.16	1.72	< 0.005	0.05	0.05	0.10	0.04	0.01	0.05	—	326	326	0.01	0.01	0.10	329
2027	0.02	0.43	0.11	0.17	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.6	30.6	< 0.005	< 0.005	0.01	30.8

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.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.36	5.28	1.50	16.0	0.03	0.05	2.71	2.76	0.05	0.69	0.74	29.4	3,938	3,968	3.16	0.13	9.35	4,095

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.99	4.93	1.58	11.8	0.03	0.05	2.71	2.76	0.05	0.69	0.74	29.4	3,793	3,823	3.16	0.14	1.18	3,945
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.93	4.88	1.45	12.4	0.03	0.05	2.40	2.44	0.05	0.61	0.65	29.4	3,510	3,539	3.15	0.13	4.21	3,660
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.35	0.89	0.26	2.25	0.01	0.01	0.44	0.45	0.01	0.11	0.12	4.86	581	586	0.52	0.02	0.70	606

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.99	1.84	1.14	12.3	0.03	0.02	2.71	2.74	0.02	0.69	0.71	—	3,065	3,065	0.15	0.12	8.38	3,113
Area	0.33	3.42	0.03	3.58	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	9.56	9.56	< 0.005	< 0.005	—	9.59
Energy	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	835	835	0.06	< 0.005	—	838
Water	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6
Waste	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Total	2.36	5.28	1.50	16.0	0.03	0.05	2.71	2.76	0.05	0.69	0.74	29.4	3,938	3,968	3.16	0.13	9.35	4,095
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.96	1.80	1.25	11.7	0.03	0.02	2.71	2.74	0.02	0.69	0.71	—	2,930	2,930	0.16	0.13	0.22	2,972
Area	0.00	3.11	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00

Energy	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	835	835	0.06	< 0.005	—	838
Water	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6
Waste	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Total	1.99	4.93	1.58	11.8	0.03	0.05	2.71	2.76	0.05	0.69	0.74	29.4	3,793	3,823	3.16	0.14	1.18	3,945
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.73	1.59	1.11	10.4	0.03	0.02	2.40	2.42	0.02	0.61	0.63	—	2,642	2,642	0.14	0.11	3.24	2,682
Area	0.16	3.27	0.02	1.77	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	4.71	4.71	< 0.005	< 0.005	—	4.73
Energy	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	835	835	0.06	< 0.005	—	838
Water	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6
Waste	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Total	1.93	4.88	1.45	12.4	0.03	0.05	2.40	2.44	0.05	0.61	0.65	29.4	3,510	3,539	3.15	0.13	4.21	3,660
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.32	0.29	0.20	1.91	< 0.005	< 0.005	0.44	0.44	< 0.005	0.11	0.11	—	437	437	0.02	0.02	0.54	444
Area	0.03	0.60	< 0.005	0.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.78	0.78	< 0.005	< 0.005	—	0.78
Energy	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	138	138	0.01	< 0.005	—	139
Water	—	—	—	—	—	—	—	—	—	—	—	0.70	4.68	5.38	0.07	< 0.005	—	7.71
Waste	—	—	—	—	—	—	—	—	—	—	—	4.16	0.00	4.16	0.42	0.00	—	14.6
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16	0.16
Total	0.35	0.89	0.26	2.25	0.01	0.01	0.44	0.45	0.01	0.11	0.12	4.86	581	586	0.52	0.02	0.70	606

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.29	1.92	18.2	15.0	0.03	0.80	—	0.80	0.73	—	0.73	—	2,756	2,756	0.11	0.02	—	2,765
Dust From Material Movement	—	—	—	—	—	—	13.5	13.5	—	6.79	6.79	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.04	0.03	0.30	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	45.3	45.3	< 0.005	< 0.005	—	45.5
Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.01	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.50	7.50	< 0.005	< 0.005	—	7.53
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.02	0.23	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	47.4	47.4	< 0.005	< 0.005	0.18	48.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.19	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	144	144	0.01	0.02	0.31	151
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.74	0.74	< 0.005	< 0.005	< 0.005	0.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.36	2.36	< 0.005	< 0.005	< 0.005	2.48
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.12	0.12	< 0.005	< 0.005	< 0.005	0.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.41

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.84	4.07	37.2	34.5	0.06	1.73	—	1.73	1.59	—	1.59	—	5,981	5,981	0.24	0.05	—	6,001

Dust From Material Movement	—	—	—	—	—	—	21.3	21.3	—	10.3	10.3	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.54	0.46	4.18	3.88	0.01	0.19	—	0.19	0.18	—	0.18	—	672	672	0.03	0.01	—	674
Dust From Material Movement	—	—	—	—	—	—	2.39	2.39	—	1.15	1.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.10	0.08	0.76	0.71	< 0.005	0.04	—	0.04	0.03	—	0.03	—	111	111	< 0.005	< 0.005	—	112
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.21	0.21	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.08	0.07	0.05	0.81	0.00	0.00	0.15	0.15	0.00	0.03	0.03	—	166	166	0.01	0.01	0.62	169
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.27	0.08	4.62	1.73	0.02	0.06	0.91	0.97	0.06	0.25	0.31	—	3,521	3,521	0.19	0.55	7.66	3,698

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17.8	17.8	< 0.005	< 0.005	0.03	18.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.54	0.19	< 0.005	0.01	0.10	0.11	0.01	0.03	0.03	—	396	396	0.02	0.06	0.37	415
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.94	2.94	< 0.005	< 0.005	< 0.005	2.98
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	65.5	65.5	< 0.005	0.01	0.06	68.7

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.13	0.95	9.10	11.4	0.02	0.39	—	0.39	0.36	—	0.36	—	2,190	2,190	0.09	0.02	—	2,198
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	1.13	0.95	9.10	11.4	0.02	0.39	—	0.39	0.36	—	0.36	—	2,190	2,190	0.09	0.02	—	2,198
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.34	0.28	2.73	3.41	0.01	0.12	—	0.12	0.11	—	0.11	—	656	656	0.03	0.01	—	658
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.06	0.05	0.50	0.62	< 0.005	0.02	—	0.02	0.02	—	0.02	—	109	109	< 0.005	< 0.005	—	109
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.20	0.18	0.14	2.10	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	430	430	0.02	0.01	1.61	437
Vendor	0.01	0.01	0.22	0.10	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	169	169	0.01	0.02	0.44	176
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	0.20	0.18	0.15	1.84	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	406	406	0.02	0.02	0.04	412
Vendor	0.01	0.01	0.23	0.11	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	169	169	0.01	0.02	0.01	176
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	0.06	0.05	0.05	0.56	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	123	123	0.01	< 0.005	0.21	125
Vendor	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	50.5	50.5	< 0.005	0.01	0.06	52.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	20.3	20.3	< 0.005	< 0.005	0.03	20.6

Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.36	8.36	< 0.005	< 0.005	0.01	8.73
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	0.90	8.55	11.3	0.02	0.34	—	0.34	0.32	—	0.32	—	2,190	2,190	0.09	0.02	—	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.90	8.55	11.3	0.02	0.34	—	0.34	0.32	—	0.32	—	2,190	2,190	0.09	0.02	—	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.77	0.64	6.11	8.09	0.01	0.25	—	0.25	0.23	—	0.23	—	1,564	1,564	0.06	0.01	—	1,569
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.14	0.12	1.11	1.48	< 0.005	0.04	—	0.04	0.04	—	0.04	—	259	259	0.01	< 0.005	—	260
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.19	0.16	0.13	1.96	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	422	422	0.02	0.01	1.48	428
Vendor	0.01	0.01	0.21	0.10	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	165	165	0.01	0.02	0.40	173
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	0.18	0.16	0.14	1.73	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	398	398	0.02	0.02	0.04	403
Vendor	0.01	0.01	0.22	0.10	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	166	166	0.01	0.02	0.01	173
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	0.13	0.11	0.10	1.25	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	287	287	0.01	0.01	0.45	291
Vendor	0.01	< 0.005	0.16	0.07	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	118	118	< 0.005	0.02	0.12	124
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.23	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47.5	47.5	< 0.005	< 0.005	0.08	48.2
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	19.6	19.6	< 0.005	< 0.005	0.02	20.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.04	0.87	8.13	11.3	0.02	0.31	—	0.31	0.28	—	0.28	—	2,190	2,190	0.09	0.02	—	2,197
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.07	0.05	0.51	0.71	< 0.005	0.02	—	0.02	0.02	—	0.02	—	137	137	0.01	< 0.005	—	138
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.01	0.09	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.7	22.7	< 0.005	< 0.005	—	22.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.16	0.14	1.63	0.00	0.00	0.38	0.38	0.00	0.09	0.09	—	391	391	0.02	0.02	0.03	397
Vendor	0.01	0.01	0.21	0.10	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	162	162	0.01	0.02	0.01	169
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.10	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	24.7	24.7	< 0.005	< 0.005	0.04	25.1
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.1	10.1	< 0.005	< 0.005	0.01	10.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	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	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.09	4.09	< 0.005	< 0.005	0.01	4.15
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.68	1.68	< 0.005	< 0.005	< 0.005	1.75
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.71	6.52	8.84	0.01	0.29	—	0.29	0.26	—	0.26	—	1,351	1,351	0.05	0.01	—	1,355
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	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.38	0.51	< 0.005	0.02	—	0.02	0.02	—	0.02	—	77.7	77.7	< 0.005	< 0.005	—	78.0
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	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.9	12.9	< 0.005	< 0.005	—	12.9
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	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.06	0.93	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	190	190	0.01	0.01	0.71	193
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.4	10.4	< 0.005	< 0.005	0.02	10.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.72	1.72	< 0.005	< 0.005	< 0.005	1.75
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	38.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.05	8.05	< 0.005	< 0.005	—	8.07
Architectural Coatings	—	2.31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.33	1.33	< 0.005	< 0.005	—	1.34
Architectural Coatings	—	0.42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.33	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	78.3	78.3	< 0.005	< 0.005	0.01	79.4

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.76	4.76	< 0.005	< 0.005	0.01	4.83
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.79	0.79	< 0.005	< 0.005	< 0.005	0.80
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Utilities Undergrounding (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.93	2.92	< 0.005	0.07	—	0.07	0.06	—	0.06	—	432	432	0.02	< 0.005	—	434
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.08	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.9	18.9	< 0.005	< 0.005	—	19.0

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.14	3.14	< 0.005	< 0.005	—	3.15
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	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	0.02	0.23	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	47.4	47.4	< 0.005	< 0.005	0.18	48.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.98	1.98	< 0.005	< 0.005	< 0.005	2.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	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	—	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	1.99	1.84	1.14	12.3	0.03	0.02	2.71	2.74	0.02	0.69	0.71	—	3,065	3,065	0.15	0.12	8.38	3,113
Total	1.99	1.84	1.14	12.3	0.03	0.02	2.71	2.74	0.02	0.69	0.71	—	3,065	3,065	0.15	0.12	8.38	3,113
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	1.96	1.80	1.25	11.7	0.03	0.02	2.71	2.74	0.02	0.69	0.71	—	2,930	2,930	0.16	0.13	0.22	2,972
Total	1.96	1.80	1.25	11.7	0.03	0.02	2.71	2.74	0.02	0.69	0.71	—	2,930	2,930	0.16	0.13	0.22	2,972
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.32	0.29	0.20	1.91	< 0.005	< 0.005	0.44	0.44	< 0.005	0.11	0.11	—	437	437	0.02	0.02	0.54	444
Total	0.32	0.29	0.20	1.91	< 0.005	< 0.005	0.44	0.44	< 0.005	0.11	0.11	—	437	437	0.02	0.02	0.54	444

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	420	420	0.02	< 0.005	—	421
Total	—	—	—	—	—	—	—	—	—	—	—	—	420	420	0.02	< 0.005	—	421
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	420	420	0.02	< 0.005	—	421
Total	—	—	—	—	—	—	—	—	—	—	—	—	420	420	0.02	< 0.005	—	421
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	69.5	69.5	< 0.005	< 0.005	—	69.7
Total	—	—	—	—	—	—	—	—	—	—	—	—	69.5	69.5	< 0.005	< 0.005	—	69.7

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	415	415	0.04	< 0.005	—	416
Total	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	415	415	0.04	< 0.005	—	416
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Condo/T	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	415	415	0.04	< 0.005	—	416
Total	0.04	0.02	0.33	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	415	415	0.04	< 0.005	—	416
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	68.7	68.7	0.01	< 0.005	—	68.9
Total	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	68.7	68.7	0.01	< 0.005	—	68.9

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	—	2.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.33	0.31	0.03	3.58	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.56	9.56	< 0.005	< 0.005	—	9.59
Total	0.33	3.42	0.03	3.58	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	9.56	9.56	< 0.005	< 0.005	—	9.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00

Consum Products	—	2.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.00	3.11	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	—	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.03	0.03	< 0.005	0.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.78	0.78	< 0.005	< 0.005	—	0.78
Total	0.03	0.60	< 0.005	0.32	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.78	0.78	< 0.005	< 0.005	—	0.78

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6
Total	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6
Total	—	—	—	—	—	—	—	—	—	—	—	4.24	28.3	32.5	0.44	0.01	—	46.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	0.70	4.68	5.38	0.07	< 0.005	—	7.71
Total	—	—	—	—	—	—	—	—	—	—	—	0.70	4.68	5.38	0.07	< 0.005	—	7.71

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0
Total	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0
Total	—	—	—	—	—	—	—	—	—	—	—	25.1	0.00	25.1	2.51	0.00	—	88.0

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	4.16	0.00	4.16	0.42	0.00	—	14.6
Total	—	—	—	—	—	—	—	—	—	—	—	4.16	0.00	4.16	0.42	0.00	—	14.6

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96	0.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16	0.16
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16	0.16

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	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	5/1/2025	5/8/2025	5.00	6.00	—
Grading	Grading	5/8/2025	7/3/2025	5.00	41.0	—
Building Construction	Building Construction	8/1/2025	2/1/2027	5.00	392	—
Paving	Paving	8/1/2025	8/29/2025	5.00	21.0	—
Architectural Coating	Architectural Coating	1/1/2027	2/1/2027	5.00	22.0	—
Utilities Undergrounding	Trenching	7/3/2025	7/24/2025	5.00	16.0	—

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	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	3.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	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	3.00	7.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42

Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	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
Utilities Undergrounding	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Utilities Undergrounding	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37

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	5.00	12.0	LDA,LDT1,LDT2
Site Preparation	Vendor	—	7.63	HHDT,MHDT
Site Preparation	Hauling	2.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	17.5	12.0	LDA,LDT1,LDT2
Grading	Vendor	—	7.63	HHDT,MHDT
Grading	Hauling	49.0	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	45.4	12.0	LDA,LDT1,LDT2
Building Construction	Vendor	6.73	7.63	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT

Paving	—	—	—	—
Paving	Worker	20.0	12.0	LDA,LDT1,LDT2
Paving	Vendor	—	7.63	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	9.07	12.0	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	7.63	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Utilities Undergrounding	—	—	—	—
Utilities Undergrounding	Worker	5.00	12.0	LDA,LDT1,LDT2
Utilities Undergrounding	Vendor	—	7.63	HHDT,MHDT
Utilities Undergrounding	Hauling	0.00	20.0	HHDT
Utilities Undergrounding	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

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	272,689	90,896	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00	48,400	6.00	0.00	—
Grading	0.00	27,000	123	0.00	—
Paving	0.00	0.00	0.00	0.00	0.20

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Condo/Townhouse	0.20	10%

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	589	0.03	< 0.005
2026	0.00	589	0.03	< 0.005
2027	0.00	589	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
Condo/Townhouse	461	513	396	167,601	3,455	3,842	2,964	1,255,634

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Condo/Townhouse	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
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)
272688.52499999997	90,896	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

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)
Condo/Townhouse	260,149	589	0.0330	0.0040	1,295,578

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Condo/Townhouse	2,213,384	462,107

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Condo/Townhouse	46.6	—

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
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Condo/Townhouse	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	8.38	annual days of extreme heat
Extreme Precipitation	3.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	11.8	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	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	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	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	N/A	N/A	N/A	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 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	35.2
AQ-PM	35.4
AQ-DPM	61.1
Drinking Water	25.3
Lead Risk Housing	23.4
Pesticides	65.8
Toxic Releases	17.2
Traffic	53.1
Effect Indicators	—
CleanUp Sites	58.2
Groundwater	30.9
Haz Waste Facilities/Generators	40.9
Impaired Water Bodies	43.8
Solid Waste	0.00
Sensitive Population	—
Asthma	24.6
Cardio-vascular	32.0
Low Birth Weights	80.3
Socioeconomic Factor Indicators	—

Education	38.1
Housing	56.0
Linguistic	—
Poverty	48.6
Unemployment	72.5

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	36.73809829
Employed	6.03105351
Median HI	29.47517002
Education	—
Bachelor's or higher	37.61067625
High school enrollment	26.24149878
Preschool enrollment	8.084178109
Transportation	—
Auto Access	76.73553189
Active commuting	1.039394328
Social	—
2-parent households	66.76504555
Voting	67.26549467
Neighborhood	—
Alcohol availability	63.05658925
Park access	81.35506224
Retail density	39.83061722

Supermarket access	57.65430515
Tree canopy	48.15860388
Housing	—
Homeownership	31.2074939
Housing habitability	62.09418709
Low-inc homeowner severe housing cost burden	33.77389965
Low-inc renter severe housing cost burden	75.43949698
Uncrowded housing	76.50455537
Health Outcomes	—
Insured adults	47.08071346
Arthritis	61.9
Asthma ER Admissions	75.4
High Blood Pressure	91.8
Cancer (excluding skin)	49.7
Asthma	34.7
Coronary Heart Disease	57.7
Chronic Obstructive Pulmonary Disease	33.2
Diagnosed Diabetes	75.2
Life Expectancy at Birth	62.0
Cognitively Disabled	5.5
Physically Disabled	71.5
Heart Attack ER Admissions	68.1
Mental Health Not Good	34.8
Chronic Kidney Disease	73.0
Obesity	53.5
Pedestrian Injuries	19.6
Physical Health Not Good	50.9

Stroke	51.7
Health Risk Behaviors	—
Binge Drinking	4.0
Current Smoker	28.0
No Leisure Time for Physical Activity	50.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	83.0
Elderly	38.5
English Speaking	46.0
Foreign-born	50.7
Outdoor Workers	56.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	53.8
Traffic Density	83.8
Traffic Access	23.0
Other Indices	—
Hardship	46.6
Other Decision Support	—
2016 Voting	75.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	47.0
Healthy Places Index Score for Project Location (b)	33.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No

Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
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	From site plan
Construction: Construction Phases	Lot is vacant, no demo phase as described in client info needs
Construction: Off-Road Equipment	CalEEMod defaults supplemented with client info
Construction: Paving	Asphalt assumed for parking stalls to produce conservative estimate
Construction: Trips and VMT	Information from client
Operations: Hearths	Assumed no wood or gas fireplaces in accordance with state law

Appendix B

Project Information Form

PROJECT INFORMATION FORM (PIF)

THE FOLLOWING IS TO BE COMPLETED BY THE PROJECT APPLICANT:

PROJECT INFORMATION FORM			
1.	PROJECT DESCRIPTION:	The 1160 Hacienda Drive project (the Project) proposes constructing 63 multi-family residential dwelling units.	
2.	PROJECT LOCATION:	The Project site is located at the southwest corner of the intersection of Pomelo Drive & Hacienda Drive (APN# 166-440-27-00), within the City of Vista.	
3.	LAND USE: Multi-Family Residential SIZE/DENSITY: 63 Dwelling Units		
4.	ZONING AND LAND USE CONSISTENT WITH ADOPTED GENERAL PLAN?	☒ Yes	☐ No
5.	PROJECT LOCATED IN TRANSIT PRIORITY AREA[1], SMART GROWTH AREA, OR LOW VMT AREA[2]?	☒ Yes	☐ No
6.	PROJECT TRIP GENERATION: 504 ADT	☐ < 200 ADT ☐ > 400 ADT ☒ ≥ 500 ADT ☐ ≥ 1,000 ADT ☐ ≥ 2,400 ADT	
ATTACHMENTS			
A.	PROJECT LOCATION MAP	☒ Attached	
B.	PROJECT TRIP DISTRIBUTION	☒ Attached	
C.	PROJECT TRIP ASSIGNMENT	☒ Attached	

1. Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).
2. Based on the most recent SANDAG SB 743 Screening Map. Example shown in Appendix B.

TO BE COMPLETED BY CITY STAFF AND RETURNED TO PROJECT APPLICANT

PROJECT STUDY REQUIREMENTS				
1)	Does the project require a CEQA VMT analysis? A. If yes, does the project require a SANDAG Model Run?	☐ Yes ☐ Yes	☐ No ☐ No	☐ Incomplete[(1)]
2a)	Does the project require a Local Transportation Study?	☐ Yes	☐ No	☐ Incomplete[(1)]
	OR			
2b)	Does the project require a Local Transportation Assessment?	☐ Yes	☐ No	☐ Incomplete[(1)]

(1) Incomplete application or additional information is needed to determine study requirements.

Scoping Information

The purpose of this memo is to document the scope of work for the VMT-based Traffic Impact Analysis (TIA) and LOS-based Local Transportation Study (LTS) for the 1160 Hacienda Drive project (the "Project"). The scope is based on the City of Vista's (the "City") Transportation Impact Analysis Guidelines (TIA Guidelines) (December 2020).

Project Description

The proposed development site is located south of Hacienda Drive, just west of Pomelo Drive in the City of Vista. The Project seeks to construct 63 multi-family dwelling units on a total of 7 buildings and parking garages provided for a total of 134 parking spaces.

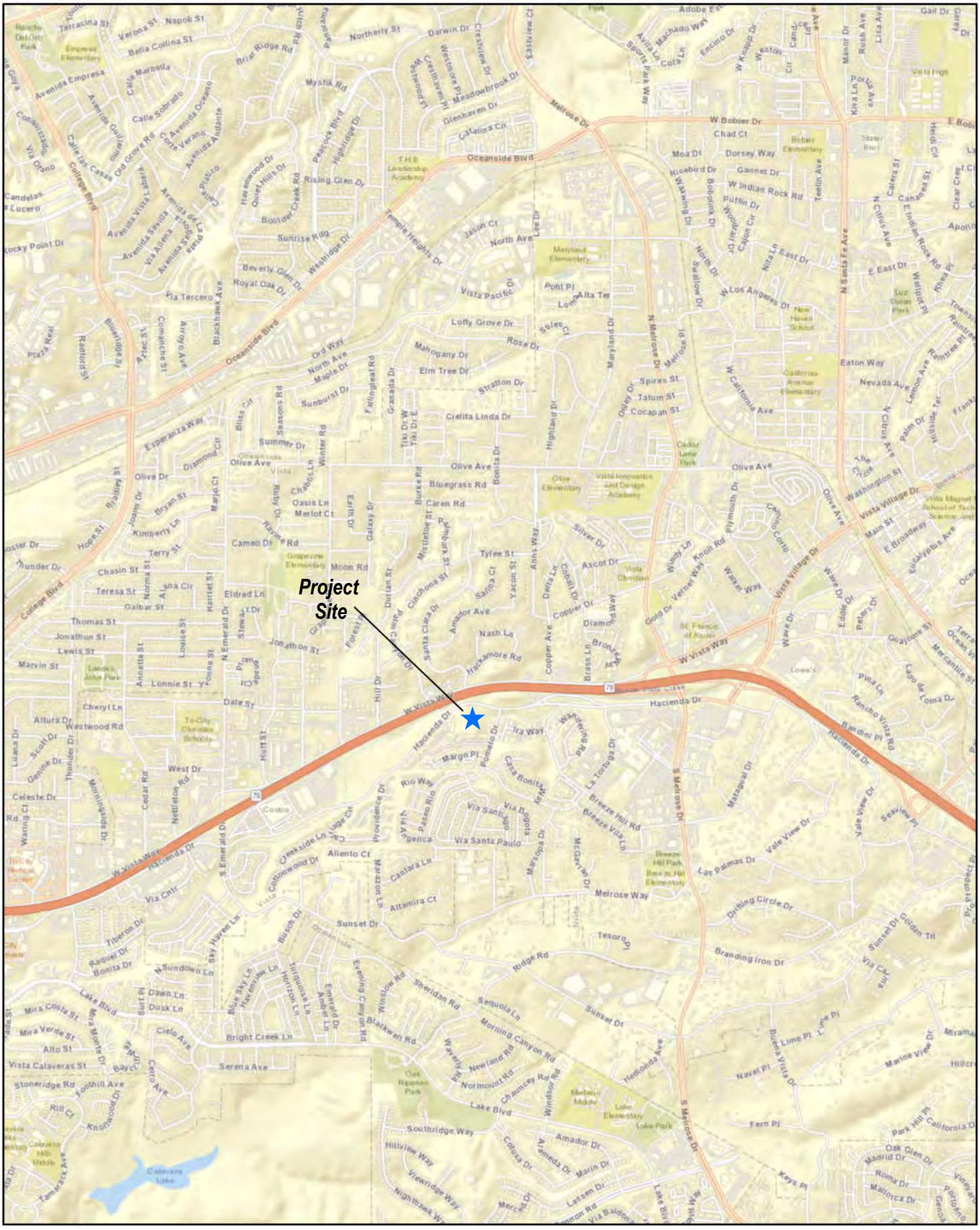
Access to the Project will be provided via a full-access side-street stop-controlled driveway situated along the southern side of Hacienda Drive, approximately 580 feet west of the intersection of Pomelo Drive and Hacienda Drive. **Figure 1** displays the Project's regional location. **Figure 2** displays the Project site plan.

VMT Analysis

Based on the SANDAG San Diego Region SB743 VMT Maps (ABM2+ / 2021 RP) for year 2016, shown in **Figure 3**, the Project is located in an area where the average VMT per Capita is 15.5 (81.7% of the region's average). Consistent with the City's TIA Guidelines, a residential project is presumed to have a less than significant VMT impact due to the project's characteristics and/or location if it meets the following:

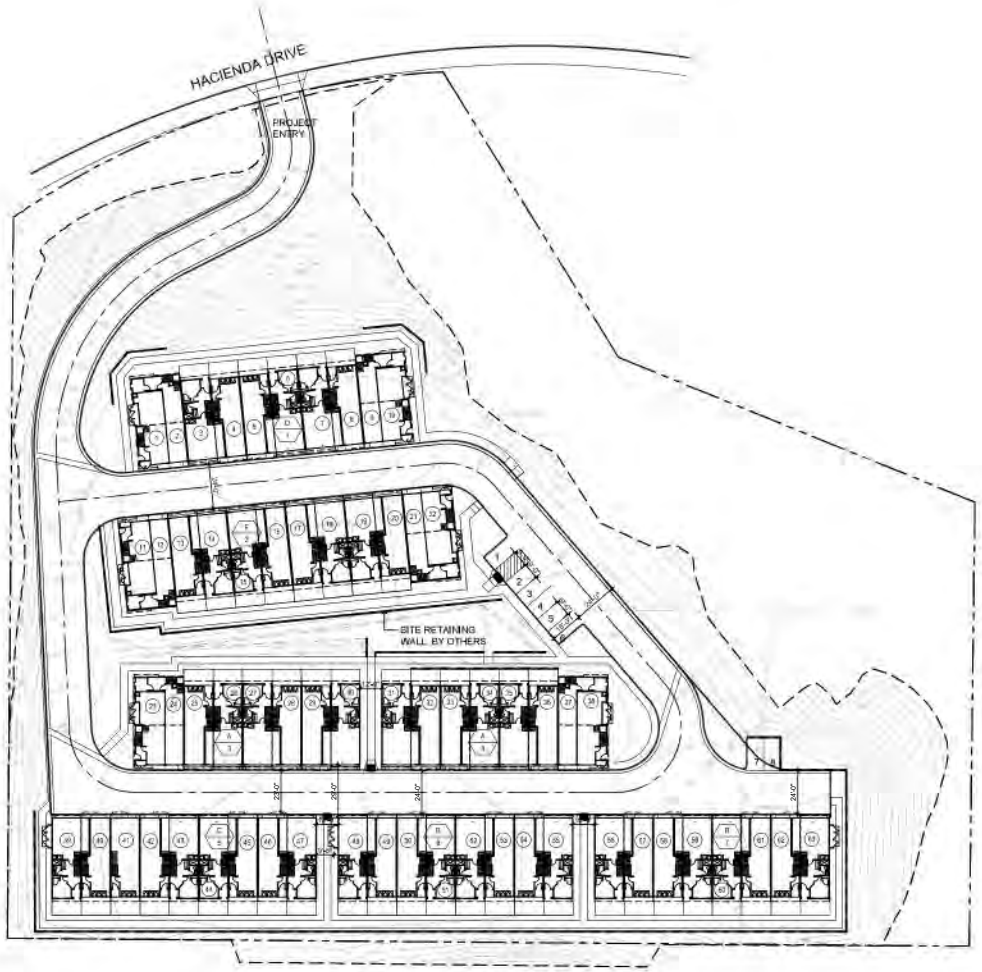
- Residential Project Located in a VMT Efficient Area: The project is a residential project located in a VMT efficient area (15% or more below the regional average) based on the applicable location-based screening map produced by SANDAG.

Based on the residential screening criteria, since the Project is located in an area where the average VMT per Capita is below 15% of the regional mean, the Project is located in a VMT efficient area, presumed to have a less-than significant transportation impact, and ***would not require a detailed VMT analysis***.



1160 Hacienda Drive
Project Information Form (PIF)

Figure 1
Project Regional Location



SITE AREA:	4.6 AC
RIPARIAN / PROTECTED HABITAT:	0.6 AC
DENSITY:	15.75 DU/AC
PARKING PROVIDED	
GARAGES (2-CAR):	126
OPEN SPACES	8
TOTAL:	134
OPEN SPACE	
COMMON:	±19,000 S.F.
PRIVATE UNIT	±100 S.F. PER

UNIT MIX SUMMARY

LEGEND	PLAN TYPE	DESCRIPTION	# OF UNITS	MIX	GROSS / UNIT	GARAGE / UNIT	DECK / PORCH
	PLAN 1	2 BD / 2.5 BA / TANDEM	8 UNITS	10%	1,331 SF	512 SF	58 SF
	PLAN 2	3 BD / 2.5 BA / TANDEM	8 UNITS	10%	1,444 SF	456 SF	121 SF
	PLAN 3	3 BD / 3 BA / TANDEM	25 UNITS	40%	1,461 SF	526 SF	183 SF*
	PLAN 3X	3 BD / 3 BA / TANDEM	1 UNITS	2%	1,461 SF	360 SF	183 SF
	PLAN 4	4 BD / 4 BA / SxS	25 UNITS	40%	1,681 SF	486 SF	120 SF
		TOTAL	85 UNITS	100%			

BUILDING AREA CALCULATIONS

BUILDING TYPE	PLEX	# OF BUILDINGS ON SITE	FLOOR AREA PER BLDG.	TOTAL BLDG. AREA ON SITE
COMPOSITE 'A'	8-PLEX	2 BUILDINGS	16,976 SF	33,952 SF
COMPOSITE 'B'	6-PLEX	2 BUILDINGS	17,364 SF	34,728 SF
COMPOSITE 'C'	6-PLEX	1 BUILDING	19,474 SF	19,474 SF
COMPOSITE 'D'	10-PLEX	1 BUILDING	21,081 SF	21,081 SF
COMPOSITE 'E'	12-PLEX	1 BUILDING	25,446 SF	25,446 SF
	GRAND TOTAL	7 BUILDINGS		134,681 SF

LEGEND

COMPOSITE TYPE
BUILDING NUMBER

UNIT NUMBER

ktgy Architecture | Branding Interiors | Planning 888.456.5849 ktgy.com

CITY VENTURES City Ventures 3121 Michelson Drive #150 Irvine, Ca. 92612

VISTA - HACIENDA VISTA, CA. # 2023-0483

SCHEMATIC DESIGN 02/09/2024

ARCHITECTURAL SITE PLAN

A1.10

1160 Hacienda Drive
Project Information Form (PIF)

C+R

Figure 2
Project Site Plan

Figure 3 - SANDAG VMT Screening Map Results



Local Transportation Study

In accordance with the City's TIA Guidelines, trip generation for the Project was developed utilizing SANDAG's *(not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002)*. **Table 1** displays the Project trip generation.

Table 1 – Project Trip Generation

Land Use	Units	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	Trips	Split	In	Out	%	Trips	Split	In	Out
Multi-Family (6- 20 DU/Acre)	63 DU	8/DU	504	8%	41	2:8	9	32	10%	51	7:3	36	15

Source: CR Associates (2024)

As shown, the Project is anticipated to generate approximately 504 daily trips, including 41 (9-in/32-out) trips during the AM peak hour and 51 (36-in/15-out) trips during the PM peak hour. Since the Project will generate more than 400 average daily trips and is consistent with the City of Vista Adopted General Plan, a Local Transportation Study (LTS) would be required.

Project Trip Distribution & Assignment

The project trip distribution was developed based on the geographical location of the Project, characteristics of the proposed and surrounding land uses, and big data from Replica[1]. Based on the Project's trip generation and distribution, daily projects trips and AM/PM peak hour trips were assigned to the adjacent roadway network. **Figure 4** displays the Project trip distribution. **Figure 5** displays the Project trip assignment.

Project Study Area

Based on the Project's trip generation, distribution, and assignment, and the City's TIA Guidelines, the following facilities will be studied in the LTS:

Roadway Segments

- Hacienda Drive, between S Emeral Drive and Costco Driveway
- Hacienda Drive, between Costco Driveway and Project Driveway
- Hacienda Drive, between Project Driveway and Pomelo Drive
- Hacienda Drive, between Pomelo Drive and S Melrose Drive

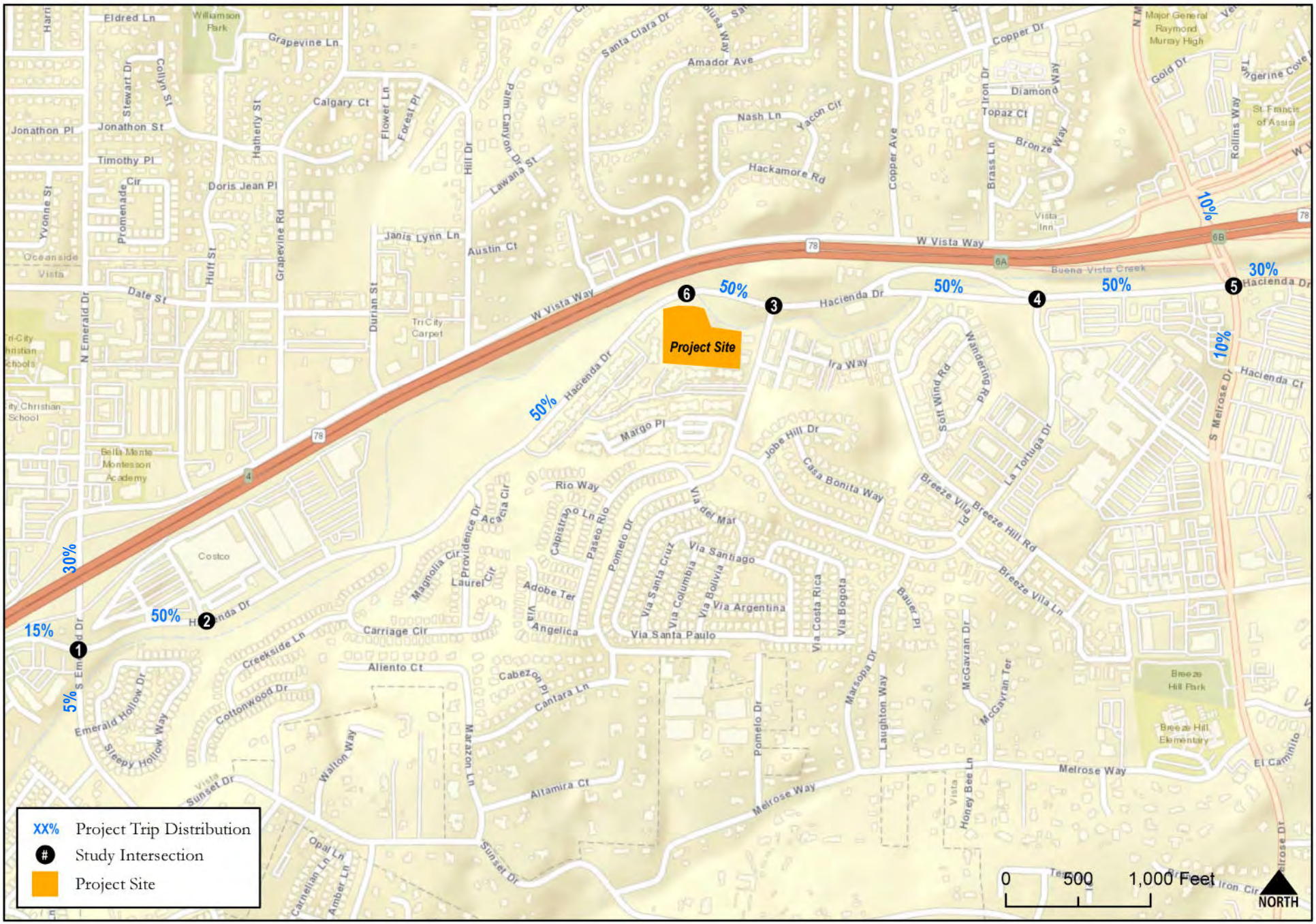
Intersections

1. S Emerald Drive & Hacienda Drive (Signalized)
2. Costco Driveway & Hacienda Drive (Signalized)
3. Pomelo Drive & Hacienda Drive (AWSC)
4. La Tortuga Drive & Hacienda Drive (Signalized)
5. S Melrose Drive & Hacienda Drive (Signalized)
6. Project Driveway & Hacienda Drive (SSSC)

Notes:
AWSC = All-Way Stop Controlled
SSSC = Side-Street Stop-Controlled

Figure 6 displays the project study area.

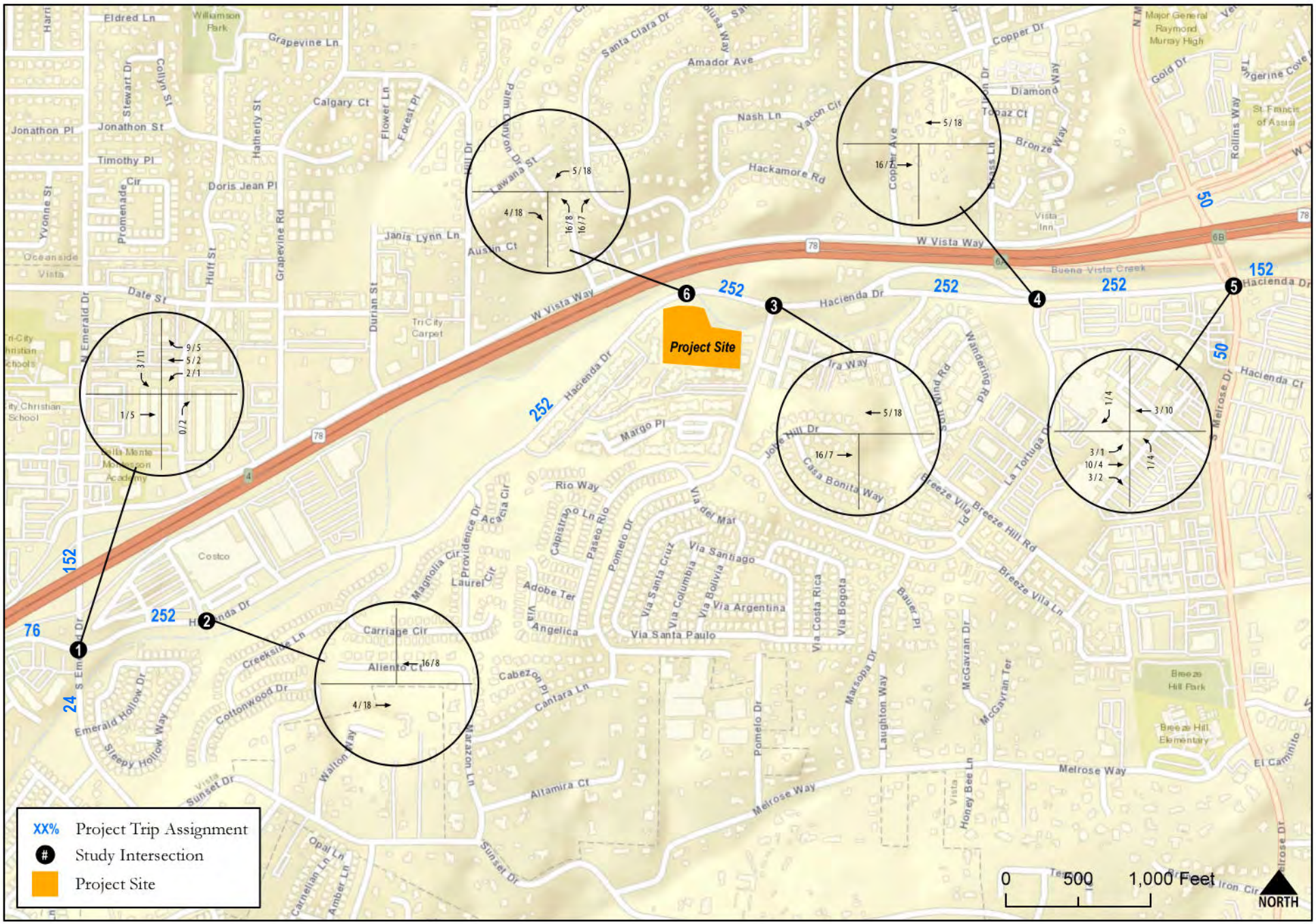
[1] Replica is a data provider that produces large-scale models to represent mobility throughout the United States. For more information, please visit the following: https://replicahq.com/



1160 Hacienda Drive
Project Information Form (PIF)

C+R

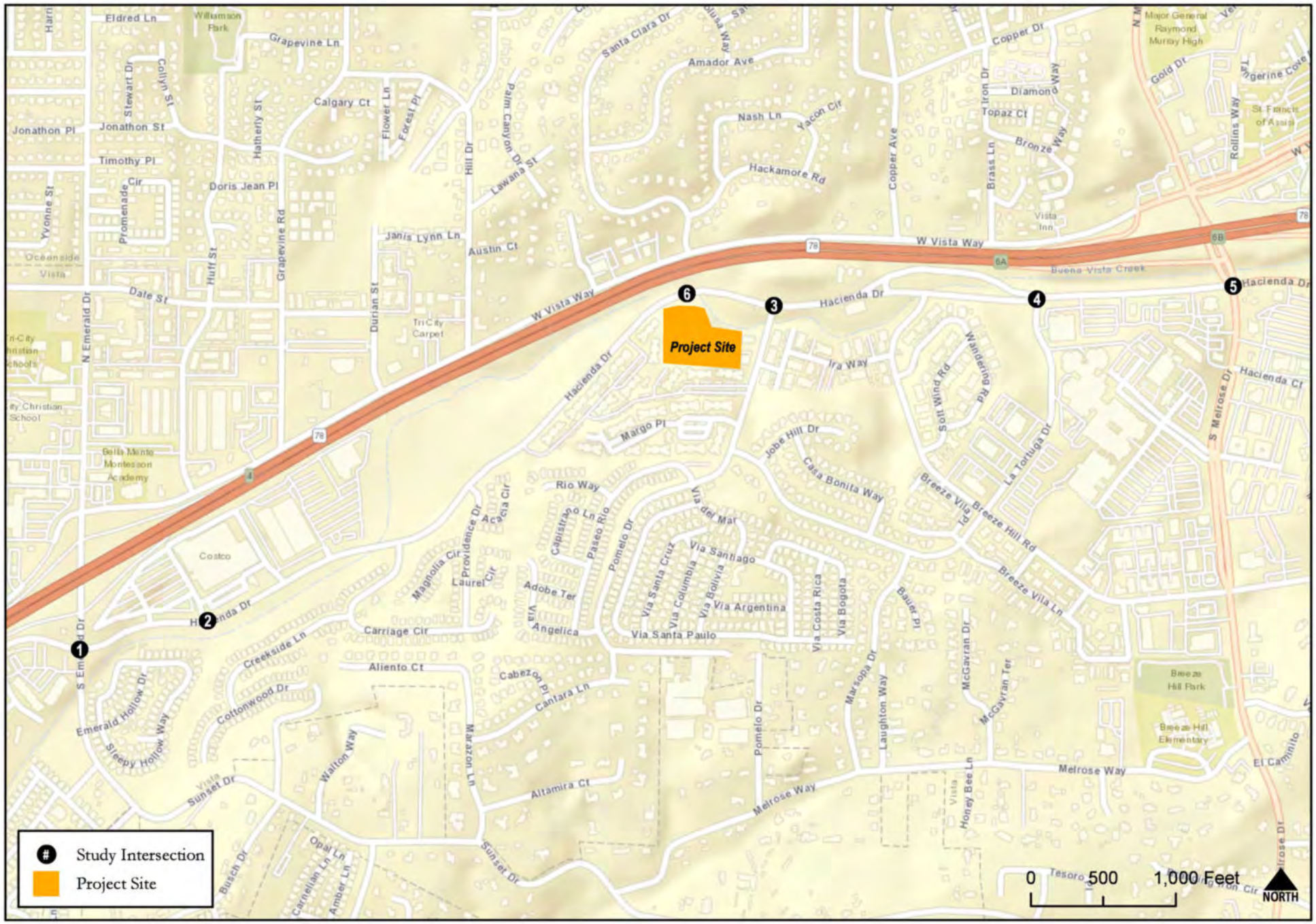
Figure 4
Project Trip Distribution



1160 Hacienda Drive
Project Information Form (PIF)

C+R

Figure 5
Project Trip Assignment



1160 Hacienda Drive
Project Information Form (PIF)

C+R

Figure 6
Project Study Area

Study Scenarios

In accordance with the City's TIA Guidelines, the following scenarios will be included:

- Existing Conditions
- Existing with Project Conditions
- Near-Term Conditions
    - Background traffic will be determined by first applying a 1% annual growth factor to existing traffic volumes. If City staff provide a list of nearby approved or pending development projects anticipated to be constructed by the Project's opening year (2026), traffic volumes for those cumulative projects will also be included as background traffic.
- Near-Term with Project Conditions

IS/MND Appendix B

Biological Resources Letter Report

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.helixepi.com

April 10, 2025 02864.00019.001

Eric Miller, Sr. Development Manager
City Ventures, Inc.
3121 Michelson Drive, Suite 150
Irvine, California 92612
909.996.8585 | emiller@cityventures.com

Subject: Biological Resources Letter Report for the 1160 Hacienda Drive Townhome Project

Dear Mr. Miller:

At the request of City Ventures, Inc. (project proponent), HELIX Environmental Planning, Inc. (HELIX) completed this biological resources technical study for the 1160 Hacienda Drive Townhome Project (project). The project proposes the construction of a 63-unit multifamily residential development in the City of Vista (City), San Diego County, California. The project would provide townhomes with attached garages, an access driveway, biofiltration basin, and underground water detention system. The project would be constructed on an approximately 4.6-acre site, with 4.0 acres used for development. The remaining 0.6 acres would not be developed. The purpose of this report is to document the existing biological conditions within the study area and provide an analysis of potential impacts on sensitive biological resources with respect to local, state, and federal policy. The study area is approximately 4.7 acres and includes the approximately 4.6-acre property and approximately 0.1 acre of off-site impacts. This report provides the biological resources technical documentation necessary for review under the California Environmental Quality Act (CEQA) by the City.

PROJECT LOCATION

The project site is in the City of Vista, California, east of Interstate 5 and south of State Route 78 (Figure 1, *Regional Location*). The project site occurs in Section 26, Township 11 South, and Range 4 West of the San Luis Rey U.S. Geological Survey 7.5-minute quadrangle map (Figure 2, *USGS Topography*). Specifically, the project site is located southwest of the intersection of Hacienda Drive and Pomelo Drive and is bordered by Buena Vista Creek to the northeast (Figure 3, *Aerial Photograph*). The project site is within Assessor Parcel Number 166-440-27-00.

The project site is located within the boundaries of the North County Multiple Habitat Conservation Plan (MHCP), specifically, the Vista subarea (AMEC 2003). Within the MHCP, the northeastern portion of the site along Buena Vista Creek is located within a Focused Planning Area (FPA) hardline reserve (Figure 4, *Regional Context*).

METHODS

Literature Review

Before conducting the field surveys, HELIX reviewed relevant maps, databases, and literature pertaining to biological resources known to occur within the project vicinity. Recent and historical aerial imagery (Google 2024; Historic Aerials 2024), topographic maps (USGS 2020), soils maps (Natural Resource Conservation Service 2020), and other maps of the project site and vicinity were reviewed to obtain information on the natural environmental setting. In addition, a query of sensitive species and habitats within a two-mile radius of the project was conducted, including the following databases: the California Natural Diversity Database (CNDDB; California Department of Fish and Wildlife [CDFW] 2024a-c), the California Native Plant Society (CNPS) Electronic Inventory (CNPS 2024). Additionally, HELIX conducted a review of pertinent information from USFWS, SanBIOS, CalFlora, and the North County MHCP. Previous biological reports (Dudek 2023) for the project site were also reviewed in preparation for this report.

General Biological Survey

HELIX biologists Shawn Carroll and Kenui Moliterno conducted a general biological survey on April 12, 2024, of the approximately 4.6-acre project site and 0.1-acre off-site impact areas, which together constitute the 4.7-acre study area (Table 1, *Survey Information*). The survey included mapping existing vegetation communities, evaluating the potential for sensitive plant and animal species to occur, and identifying other potentially sensitive biological resources associated with the project site, such as aquatic resource areas (e.g., waterways, wetlands, etc.) and sensitive vegetation communities. Vegetation was mapped on a 1"=120' scale aerial photograph.

The survey was performed on foot, with the aid of binoculars and a Global Positioning System (GPS) unit. Plant and animal species observed or otherwise detected within the study area were recorded in the field during the surveys. Animal identifications were made by direct, visual observation or indirectly by detection of calls, burrows, tracks, or scat. Plant identifications were made in the field or in the lab through comparison with voucher specimens or photographs. Lists of plants and animal species detected during the surveys were recorded directly in the field and are presented in Attachment A, *Plant Species Observed for the 1160 Hacienda Drive Townhome Project,* and Attachment B, *Animal Species Observed or Detected for the 1160 Hacienda Drive Townhome Project*. The locations and quantities of special-status plant and animal species were mapped, if observed or otherwise detected. The project site and off-site improvement areas were examined for evidence of potential jurisdictional aquatic resources. Areas outside of the study area but within 100 feet were evaluated for adjacency context purposes only.

Rare Plant Surveys

Special-status plant species are those listed as federally threatened or endangered by the USFWS; State listed as threatened or endangered or considered sensitive by the CDFW; and/or are CNPS California Rare Plant Rank (CRPR) species, as recognized in the CNPS Inventory of Rare and Endangered Vascular Plants of California and consistent with the CEQA Guidelines. Due to the potential occurrence for thread-leaved brodiaea (*Brodiaea filifolia*; Federal threatened, State endangered, CRPR 1B.1, MHCP Narrow Endemic), rare plant surveys were conducted on May 8 and June 6, 2024 by HELIX biologists Shawn Carroll and Kenui Moliterno (Table 1). The surveys focused on the project impact area as well as the

proposed open space adjacent to the stream along the eastern border of the property. The surveys were conducted on foot for all accessible areas within the project site except for areas with steep slopes (i.e., the banks of Buena Vista Creek). Physically inaccessible areas were surveyed visually with the aid of binoculars. Plant identifications were made in the field or in the lab through comparison with voucher specimens or photographs. If present, observed special-status plant species were mapped using a hand-held GPS unit and/or on an aerial photograph. Special-status plant species were also searched for opportunistically during other surveys, and biologists recorded their numbers and locations when observed.

Least Bell's Vireo Surveys

HELIX biologists Shawn Carroll, Kenui Moliterno, Miki Kern, and Shelly Vogel conducted eight breeding season surveys for least Bell's vireo (*Vireo bellii pusillus*) at least 10 days apart between April 25 and July 30, 2024 (Table 1), following the USFWS *Least Bell's Vireo Survey Guidelines* (USFWS 2001). The vireo survey area consisted of potential least Bell's vireo riparian habitat present along Buena Vista Creek within the project site. The survey was conducted by walking along the edges of, as well as within, potential least Bell's vireo habitat while listening for least Bell's vireo vocalizations and while viewing birds with the aid of binoculars. All least Bell's vireo locations, along with other special-status species locations (and those of the brown-headed cowbird [*Molothrus ater*], a nest parasite) observed or detected during the survey, were recorded via a GPS unit or mapped on an aerial photograph, if present.

Crotch's Bumble Bee Surveys

Crotch's bumble bee (*Bombus crotchii*) surveys will be conducted in spring 2025 in accordance with CDFW's *Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species* (CDFW 2023). A habitat assessment was conducted by HELIX senior scientist on April 9, 2025 (Table 1) and will be followed by three surveys within suitable nesting, foraging, and overwintering habitat for this species. The survey area encompasses approximately 3.74 acres of potential Crotch's bumble bee habitat within the project site, including Diegan coastal sage scrub – disturbed, valley needlegrass grassland, non-native grassland, and coast live oak woodland. Surveys will be conducted by slowly walking meandering transects that incorporate patches of floral resources throughout the survey area, accounting for potential Crotch's bumble bee nesting locations, pollen and nectar sources, and foraging bumble bee activity. Survey routes will be arranged to provide complete coverage of the survey area with the potential for occupancy by Crotch's bumble bee. Surveys will be non-capture and will be conducted using binoculars and a camera to aid in insect detection and later identification. If detected, photographs will be taken of *Bombus* species encountered during the surveys. University of California, Riverside, bumble bee expert Dr. Douglas Yanega will confirm the species identification through the non-capture photographs.

Table 1
SURVEY INFORMATION

Survey Type	Survey Date	Biologist(s)	Time (Start/End)	Weather Conditions (Start/Stop)
General Biology	04/12/2024	Shawn Carroll Kenui Moliterno	0900/1230	55°F, wind 2-4 mph, 100% clouds 63°F, wind 6-8 mph, 100% clouds
Least Bell's Vireo	04/25/2024	Shawn Carroll	1000/1145	62°F, wind 2-6 mph, 100% clouds 63°F, wind 4-7 mph, 100% clouds
Least Bell's Vireo	05/08/2024	Shawn Carroll	0945/1107	65°F, wind 1-2 mph, 5% clouds 68°F, wind 1-2 mph, 0% clouds
Rare Plant	5/8/2024	Shawn Carroll	1107/1250	68°F, wind 1-2 mph, 0% clouds 72°F, wind 1-2 mph, 0% clouds
Least Bell's Vireo	05/21/2024	Shawn Carroll	1016/1119	64°F, wind 2-4 mph, 100% clouds 66°F, wind 2-4 mph, 40% clouds
Least Bell's Vireo	06/06/2024	Shawn Carroll Kenui Moliterno	0845/0954	64°F, wind 3-6 mph, 100% clouds 67°F, wind 5-8 mph, 100% clouds
Rare Plant	06/06/2024	Shawn Carroll Kenui Moliterno	0954/1119	67°F, wind 5-8 mph, 100% clouds 69°F, wind 5-8 mph, 100% clouds
Least Bell's Vireo	06/28/2024	Shawn Carroll	0800/0910	61°F, wind 0-1 mph, 0% clouds 82°F, wind 0-3 mph, 0% clouds
Least Bell's Vireo	07/09/2024	Shelly Vogel	0700/0800	67°F, wind 3-7 mph, 30% clouds 67°F, wind 3-7 mph, 30% clouds
Least Bell's Vireo	07/19/2024	Shelly Vogel	0700/0740	58°F, wind 0-1 mph, 0% clouds 78°F, wind 1-3 mph, 0% clouds
Least Bell's Vireo	07/30/2024	Miki Kern	0910/1025	67°F, wind 1-3 mph, 15% clouds 70°F, wind 1-3 mph, 0% clouds
Crotch's Bumble Bee Habitat Assessment	04/08/2024	Shawn Carroll	1045/1144	63°F, wind 2-4 mph, 0% clouds 64°F, wind 2-4 mph, 0% clouds

Preliminary Jurisdictional Assessment

The project site was examined for evidence of potential jurisdictional aquatic resources during the general biological survey. Potential jurisdictional aquatic resources include waters of the U.S. and wetlands regulated by the U.S. Army Corps of Engineers (USACE) pursuant to the Clean Water Act (CWA) Section 404; waters of the State regulated by the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act (Porter-Cologne); and/or streambed and riparian habitat regulated by the CDFW pursuant to Sections 1600 et seq. of the California Fish and Game Code (CFG Code).

Before beginning fieldwork, HELIX reviewed aerial photographs (1"= 100' scale), topographic maps and data (1"= 100' scale), and National Wetlands Inventory maps to assist in determining the location of potential jurisdictional areas in the project site. Areas generally characterized by depressions, drainage features, and riparian and wetland vegetation were evaluated. Field conditions observed within the survey area indicated that the preliminary assessment was sufficient to identify all waters and wetlands and that a complete jurisdictional assessment would not be necessary because the project has been designed to completely avoid potentially jurisdictional aquatic features.

Survey Limitations

Noted animal species were identified by direct observation, vocalizations, or the observance of scat, tracks, or other signs. However, the lists of species identified are not necessarily comprehensive accounts of all species that utilize the study area, as species that are nocturnal, secretive, or seasonally restricted may not have been observed. Those species that are of special status and have the potential to occur in the study area, however, are still addressed in this report.

Nomenclature

The nomenclature for this report follows Baldwin et al. (2012) for scientific names of plants, and Holland (1986) and Oberbauer (2008) for vegetation communities. Animal nomenclature follows the North American Butterfly Association (2017) for butterflies, the Society for the Study of Amphibians and Reptiles (SSAR 2021) for reptiles and amphibians, the American Ornithological Society (2023) for birds, and Bradley et al. (2017) for mammals. Sensitive plant and animal statuses are from the CDFW's CNDDB (2024a-c).

ENVIRONMENTAL SETTING

Existing Conditions

Regional Context

The project site is located within the boundaries of the North County MHCP, specifically, the Vista subarea (AMEC 2003). The North County MHCP is a comprehensive, multiple jurisdictional planning program, designed to develop an ecosystem preserve in northwestern San Diego County. The North County MHCP is divided into sub-regional plans, with the City of Carlsbad HMP being the only approved and adopted sub-regional plan for the MHCP.

The City does not currently have an approved or draft MHCP Subarea Plan, and because the City is mostly developed, it is not actively pursuing approval of a Subarea Plan, nor is there an implementing agreement for the MHCP. The City's General Plan, however, includes goals and policies to implement the provisions of the MHCP, and it is used as a basis for assessing projects within a regional context. Proposed project consistency with the MHCP is not required for site development; however, it has been HELIX's experience that the City will include project consistency with the MHCP as part of their environmental review process. Adequate mitigation must occur in the form of preservation or restoration/creation of biological resources within designated habitat preserve areas or as approved by the City. Within the Draft Vista Subarea Plan, a "hardline" conservation area, which is also considered an MHCP FPA, is identified along the northeastern portion of the site along Buena Vista Creek.

While no USFWS Critical Habitat occurs within the site, Critical Habitat for the coastal California gnatcatcher (*Polioptila californica californica*) is located immediately north/northwest of the site on the north side of Hacienda Drive, partly overlapping with the Buena Vista Creek Ecological Reserve (Figure 4). The project site is incorporated within the boundaries of the City limits and is considered under the jurisdiction of the City. Furthermore, the City is the Lead Agency reviewing the project under CEQA.

Disturbance

HELIX reviewed historic aerial photographs dating from 1938 to 2020 (NETR Online 2024). These records show that the property was undisturbed until the period of 1946 to 1953, when a small home and associated orchard were built on the site. The home was expanded in the following decades until it was eventually demolished before 2005. Subsequently, the property appears to have been disturbed by periodic vegetation control.

Topography and Soils

Elevations at the project site range from approximately 268 feet above mean sea level (AMSL) along the northeastern border of the site within Buena Vista Creek to approximately 348 feet AMSL in the south-central portion of the site. The majority of the project site is dominated by a steep hill in the southern portion of the side with steep sides to the north, east, and west (Figure 2). The site has gentler slopes along the southeast portion and is mostly flat at the northwest side bordering Hacienda Drive. Buena Vista Creek is deeply incised and represents the lowest elevations of the property.

Three soil types have been mapped on the project site: Fallbrook sandy loam (FaE2), 15 to 30 percent slopes, eroded; Salinas clay loam (SbA), 0 to 2 percent slopes; and Greenfield sandy loam (GrA), 0 to 2 percent slopes (Natural Resource Conservation Service [NRCS] 2024; Figure 5, *Soils*).

Vegetation Communities

Vegetation communities/habitat types that occur in the study area are presented in Table 2, *Existing Vegetation/Habitat Types*, below and reflected on Figure 6, *Vegetation and Sensitive Resources*. The community/land cover classifications are from the Holland classification system (Holland 1986) as modified by Oberbauer (2008).

Table 2
EXISTING VEGETATION COMMUNITIES AND LAND COVER TYPES

Vegetation Community/Land Cover Type	On-site acres[2]	Off-site acres[2]	Total
Southern coast live oak riparian forest	0.33	--	0.33
Coast live oak woodland	0.52	--	0.52
Diegan coastal sage scrub – disturbed	0.11	--	0.11
Valley needlegrass grassland	0.24	--	0.24
Non-native grassland (including broadleaf-dominated)	2.87	--	2.87
Eucalyptus woodland	0.58	--	0.58
Developed		0.08	0.08
TOTAL	4.64	0.08	4.72

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Rounded to the nearest 0.01 for upland communities.

Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest is an open to locally dense, evergreen, sclerophyllous, riparian woodland that is dominated by coast live oak (*Quercus agrifolia*). This community appears to be richer in herbs and poorer in understory shrubs than other riparian communities. Southern coast live oak riparian

forest occurs on fine-grained alluvial soils on the floodplains along large streams in the canyons and valleys of coastal southern California (Holland 1986). Associated species include toyon (*Heteromeles arbutifolia*), Mexican elderberry (*Sambucus mexicana*), spreading snowberry (*Symphoricarpos mollis*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), and poison oak (*Toxicodendron diversilobum*).

Approximately 0.33 acre of southern coast live oak riparian forest occurs within the project site along Buena Vista Creek. The community is dominated by coast live oak with scattered arroyo willow (*Salix lasiolepis*) and non-native Mexican fan palm (*Washingtonia robusta*). One sensitive tree species, southern California black walnut (*Juglans californicus*), was observed within this community during the general biological survey.

Coast Live Oak Woodland

Coast live oak woodland is an open to dense evergreen woodland or forest community, dominated by coast live oak that may reach a height of 35-80 feet. The shrub layer consists of toyon, Mexican elderberry, spreading snowberry (*Symphoricarpos mollis*), fuchsia-flowered gooseberry (*Ribes speciosum*), and poison oak. A dense herbaceous understory is dominated by miner's lettuce (*Claytonia perfoliata* var. *perfoliata*) and chickweed (*Stellaria media*).

Approximately 0.52 acre of coast live oak woodland occurs within the project site on the lower portion of the hillside facing Buena Vista Creek.

Diegan Coastal Sage Scrub – Disturbed

Coastal sage scrub is one of the two major shrub types that occur in southern California, occupying xeric sites characterized by shallow soils (the other is chaparral). Diegan coastal sage scrub may be dominated by a variety of species depending on soil type, slope, and aspect. Typical species found within Diegan coastal sage scrub include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), and black sage (*Salvia mellifera*). Disturbed Diegan coastal sage scrub contains many of the same shrub species as undisturbed Diegan coastal sage scrub but has a higher proportion (above 25 percent) of non-native species.

Within the project site, 0.11 acre of Diegan coastal sage scrub is dominated by California sagebrush with small numbers of black sage, white sage (*Salvia apiana*), and lemonade berry (*Rhus integrifolia*).

Valley Needlegrass Grassland

Valley needlegrass grassland is a community dominated by perennial bunchgrasses such as purple needle grass (*Stipa pulchra*) with annual and perennial forbs such as common goldenstar (*Bloomeria crocea*) and California blue-eyed grass (*Sisyrinchium bellum*). Almost all of the native grasslands in California have been displaced by non-native grasslands, dominated by introduced annual species. Native grasslands occur throughout California as small, isolated islands.

Species in this community within the project site include purple needlegrass, blue-eyed grass, and southern checkerbloom (*Sidalcea sparsifolia*). Approximately 0.24 acre of native grassland occurs within the project site.

Non-Native Grassland (Including Broadleaf-dominated)

Non-native grassland is a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered native annual forbs. This association occurs on gradual slopes with deep, fine-textured, usually clay soils. Characteristic species include oats (*Avena* sp.), red brome (*Bromus rubens*), ripgut (*B. diandrus*), ryegrass (*Festuca* sp.), and mustard (*Brassica* sp.). Most of the annual introduced species that dominate the species and biomass within the non-native grassland originated from the Mediterranean region, an area with a long history of agriculture and a climate similar to California. These two factors, in addition to intensive grazing and agricultural practices in conjunction with severe droughts, contributed to the successful invasion and establishment of these species and the replacement of native grasslands with an annual-dominated non-native grassland (Jackson 1985).

Species in this vegetation community within the project site include foxtail brome (*Bromus madritensis*), ripgut brome, Italian rye grass (*Festuca perennis*), and oats. Natives found within this community include lupines (*Lupinus* sp.) and deerweed (*Acmispon glaber*) as well as scattered individual native perennials including California sagebrush and white sage. Within the broadleaf-dominated subset of this community, non-native forbs are dominated by crown daisy (*Glebionis coronaria*) as well as shortpod mustard (*Hirschfeldia incana*). Approximately 2.87 acres of non-native grassland occur within the project site.

Eucalyptus Woodland

Eucalyptus woodland is dominated by eucalyptus (*Eucalyptus* sp.), an introduced species that has often been planted purposely for wind-blocking, ornamental, and hardwood production purposes. Most groves are monotypic with the most common species being either the blue gum (*Eucalyptus globulus*) or red gum (E*. camaldulensis* ssp. *obtusa*). The understory within well-established groves is usually very sparse due to the closed canopy and allelopathic nature of the abundant leaf and bark litter. If sufficient moisture is available, this species becomes naturalized and is able to reproduce and expand its range. The sparse understory offers only limited wildlife habitat; however, as wildlife habitat, these woodlands provide excellent nesting sites for a variety of raptors, including red-shouldered hawks (*Buteo lineatus*). During winter migrations, a large variety of warblers may be found feeding on the insects that are attracted to the eucalyptus flowers. Eucalyptus trees with active raptor nests are considered sensitive.

Eucalyptus woodland covers approximately 0.58 acre of the project site. The majority of this community within the project site are overhanging from adjacent properties with ornamental plants or leaf litter below, although there are several patches of eucalyptus scattered throughout the property.

Developed

Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident due to a large amount of debris or other materials being placed upon it may also be considered developed land. Approximately 0.08 acre of developed land occurs off-site as paved areas or landscaped areas associated with the residential development south of the project site.

Plants

HELIX identified a total of 78 plant species in the study area, of which 44 (56 percent) are non-native species (Attachment A) during surveys in 2024 and 2025.

Animals

A total of 48 animal species were observed or otherwise detected in the study area during the biological surveys, including 11 invertebrate, two reptile, 31 bird, and four mammal species (Attachment B).

Sensitive Biological Resources

Sensitive Natural Communities

Sensitive natural communities include land that supports unique vegetation communities or the habitats of rare or endangered species or subspecies of animals or plants as defined by Section 15380 of the CEQA Guidelines.

Sensitive vegetation communities/habitat types mapped in the study area include southern coast live oak riparian forest, coast live oak woodland, Diegan coastal sage scrub, valley needlegrass grassland, and non-native grassland (including broadleaf-dominated). Eucalyptus woodland is not considered sensitive under CEQA.

Special-Status Plant and Animal Species

Special-Status Plant Species

Special-status plant species are those listed as federally threatened or endangered by the USFWS; State listed as threatened or endangered or considered sensitive by the CDFW; and/or are California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) species, as recognized in the CNPS Inventory of Rare and Endangered Vascular Plants of California and consistent with the CEQA Guidelines.

Special-Status Plant Species Observed

One special-status plant species was observed in the study area. The species is described below and is shown on Figure 6.

Southern California black walnut (*Juglans californica*)
Listing: --/--; CRPR 4.2; CA Endemic
Distribution: Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura counties
Habitat: This tree grows between 20 and 50 feet tall in open savannah, often in habitat best-labeled walnut woodland. May be more tolerant of clay soils than most native trees and shrubs. Shows a preference for deep alluvial soils with high water-retention capacity and tends to grow in creek beds, alluvial terraces, and north-facing slopes.
Status on-site: One southern California black walnut was observed along the edge of Buena Vista Creek, outside of the proposed impact area.

Special-Status Plant Species with Potential to Occur

Special-status plant species known from within two miles of the site or included on the MHCP Narrow Endemic list were analyzed for their potential to occur within the project site (Attachment C, *Special-Status Plant Species Evaluated for Potential to Occur*). One special-status plant species, thread-leaved brodiaea, was considered to have moderate potential to occur on-site based on the initial biological survey; therefore, focused rare plant surveys were conducted. Based on the negative rare plant survey results, thread-leaved brodiaea is not expected to occur on-site. None of the plant species analyzed are anticipated to occur on-site due to the lack of appropriate soils, habitat, elevation, and/or known occurrences in the vicinity.

Special-Status Animal Species

Special-status animal species are those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS, and considered sensitive animals by the CDFW. The following special-status animal species were observed in the study area during the 2024 surveys.

Special-Status Animal Species Observed or Otherwise Detected

Three special-status animal species were observed in the study area. The species are described below and shown on Figure 6.

Cooper's Hawk (*Astur cooperii*)
Status: CDFW Watch List
Distribution: In California, breeds from Siskiyou County south to San Diego County and eastwards to Owens Valley at elevations below 9,000 feet.
Habitat(s): Forests, riparian areas, and more recently, suburban and urban areas. Nests within dense woodlands and forests and isolated trees in open areas.
Status on-site: One Cooper's hawk was detected flying over the project site. Suitable nesting habitat occurs within the project site, and this species may utilize the project site and surrounding areas for foraging; however, no large nests suitable for use by Cooper's hawks were observed within or adjacent to the project site.

Yellow Warbler (*Setophaga petechia*)
Status: CDFW Species of Special Concern
Distribution: Common to locally abundant species breeding throughout California at elevations below 8,500 feet; excluding most of the Mojave Desert and all of the Colorado Desert.
Habitat(s): Breeds in riparian areas dominated by willows (*Salix* spp.) and cottonwoods (*Populus* spp.) near rivers, streams, lakes, and wet meadows. Also breeds in montane shrub and conifer forests in higher-elevation areas.
Status on-site: One yellow warbler was detected singing from the northeastern portion of the site along Buena Vista Creek. Suitable nesting habitat for this species occurs within the riparian trees along Buena Vista Creek.

Coronado Skink (*Plestiodon skiltonianus interparietalis*)
Status: CDFW Watch List
Distribution: Southwestern California from Los Angeles County south into northwestern Baja California, Mexico; also occurs on several islands off the Pacific coast, including Los Coronados Islands
Habitat: Grasslands, coastal sage scrub, open chaparral, oak woodland, and coniferous forests, usually under rocks, leaf litter, logs, debris, or in the shallow burrows it digs (Zeiner et al. 1988)
Status on-site: One juvenile Coronado skink was incidentally observed along the former driveway in the northern portion of the project site in May 2024 (Figure 6).

Special-Status Animal Species with Potential to Occur

Special-status animal species that were not observed but may have the potential to occur in the study area are listed in Attachment D, *Special-Status Animal Species Evaluated for Potential to Occur*. The western red bat (*Lasiurus blossevillii*) was not observed but is still considered to have a high potential to occur in the study area (characterized by suitable habitat and a historical record in the immediate vicinity of the survey area). The least Bell's vireo was also considered to have high potential to occur in the study area based on the initial biological survey; therefore, protocol surveys were conducted. Based on the negative protocol survey results, the least Bell's vireo is not expected to occur on-site. Finally, Crotch's bumble bee was considered to have moderate potential to occur on-site based on the initial biological survey; therefore, protocol surveys are being conducted in the 2025 flight season.

Western Red Bat (*Lasiurus blossevillii)*
Listing: --/CDFW Species of Special Concern
Distribution: Western California south to Mexico
Habitat: Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. Possible association with intact riparian habitat (particularly willows, cottonwoods, oaks, walnuts, and sycamores).
Status on-site: None were observed within the project site.

Crotch's bumble bee (*Bombus crotchii*)
Status: State Candidate for Endangered
Distribution: Coastal California east to the Sierra-Cascade crest and south into Mexico
Habitat: Grassland and scrub habitats with sufficient nectar resources, especially plants in the genera *Antirrhinum*, *Asclepias*, *Chaenactis*, *Clarkia*, *Dendromecon*, *Eriogonum*, *Eschscholzia*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia.* Nests are underground and commonly consist of abandoned rodent nests.
Status on-site: None were observed within the project site, but this species may occur within grassland and coastal scrub habitats within the project site. A habitat assessment conducted on April 9, 2025, found several of the bees' preferred nectar resources and suitable nesting and overwintering resources on-site.

Nesting Birds and Raptors

The project site, including staging areas, contains and is adjacent to suitable nesting habitat for multiple common bird species, including raptors, protected under the Migratory Bird Treaty Act (MBTA) and CFG Code. The project site also has high potential to support the western bluebird (*Sialia mexicana*), an MHCP covered species. Potential nesting habitat is located in vegetated areas throughout the project site.

Jurisdictional Waters and Wetlands

In the context of this assessment, jurisdictional waters and wetlands include waters of the U.S., including wetlands, regulated by the USACE pursuant to CWA Section 404; waters of the State regulated by the RWQCB pursuant to Section 401 of the CWA and State Porter-Cologne Water Quality Control Act; and streambed and riparian habitat regulated by the CDFW pursuant to Sections 1600 et seq. of CFG Code.

Potentially jurisdictional waters found on-site are limited to those associated with Buena Vista Creek, a deeply incised channel containing a variety of native and disturbed habitat, including coast live oaks, willows, and Mexican fan palm. During the time of the assessment, the creek contained slowly flowing water and is likely a perennial stream fed by urban runoff. No additional waters or wetlands, including vernal pools, were identified during the preliminary assessment.

Waters of the U.S./State

There is approximately 0.06 acre of potentially jurisdictional waters of the U.S./State on-site that would be subject to USACE regulation under Section 404 of the CWA and RWQCB jurisdiction pursuant to CWA Section 401. The limits of waters of the U.S./State and the determination of wetland versus non-wetland waters could be confirmed through a jurisdictional delineation if impacts were proposed in this area; however, no impacts are proposed along Buena Vista Creek (Figure 7, *Vegetation and Sensitive Resources/Impacts*).

Streambed and Riparian Habitat

There is approximately 0.32 acre of streambed and associated riparian habitat on the project site that would be under the potential jurisdiction of CDFW pursuant to Sections 1600-1603 of the CFG Code (Figure 7).

Wildlife Corridors and Linkages

Wildlife corridors connect isolated habitats and allow movement or dispersal of plant materials and animals. Local wildlife corridors allow access to resources such as food, water, and shelter within the framework of the wildlife's daily routine and life history. For example, animals can use these corridors to travel between their riparian breeding habitats and upland burrowing habitats. Regional corridors provide these functions over a larger scale and link two or more large habitat areas, allowing the dispersal of organisms and the consequent mixing of genes between populations. A corridor is a specific route that is used for the movement and migration of species; it may be different from a linkage in that it represents a smaller or narrower avenue for movement. A linkage is an area of land that supports or contributes to the long-term movement of animals and genetic exchange by providing live-in habitat that connects to other habitat areas. Many linkages occur as stepping-stone linkages that are made up of a fragmented archipelago arrangement of habitat over a linear distance.

Important corridors and linkages have been identified on a local and regional scale throughout the North County MHCP (AMEC Earth & Environmental et al. 2003). The planning objectives of most corridors and linkages in western San Diego County include establishing a connection between the northern and southern regional populations of the coastal California gnatcatcher, in addition to facilitating movement and connectivity of habitat for large mammals and riparian bird species. The

project site is not identified as a regional wildlife corridor under the North County MHCP. A portion of the site is identified as an FPA area reflecting proposed hardline conservation under the MHCP and Draft Vista Subarea Plan (Figure 4).

USFWS critical habitat for the coastal California gnatcatcher is recorded immediately northwest of the site at the Buena Vista Creek Ecological Reserve. However, the disturbed Diegan coastal sage scrub habitat on-site is small and isolated, rendering it unsuitable for coastal California gnatcatcher.

Although the riparian habitat on-site is contiguous with off-site upstream habitats within the proposed FPA for hardline conservation, the habitats on-site are constrained in function by existing development (notably culverts upstream at Pomelo Drive and downstream at Hacienda Drive and fenced residential developments to the east, south, and west). Potential wildlife travel within or adjacent to the site is currently hampered by existing development beyond the project site, including the residential developments, Hacienda Drive, and further north, State Route 78. Given the difficulty posed by crossing through existing development and crossing major roads and highways, the site is not expected to serve as a regional wildlife corridor that would be used by large mammals. However, birds may access the habitat as they can fly over the existing barriers surrounding the site to use areas of habitat. Based on the lack of habitat connectivity and marginal quality of habitat on-site, limited wildlife movement is also presumed within and adjacent to Buena Vista Creek on-site and would likely be limited to urban wildlife species such as raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and striped skunk (*Mephitis mephitis*). Although there is a hydrologic connection from Buena Vista Creek to the Buena Vista Lagoon to the south, physically there is no surface connection or habitat continuity that would provide a corridor for wildlife movement.

APPLICABLE REGULATIONS

Based on the findings of this report, activities affecting the biological resources determined to exist or have the potential to exist within the project site could be subject to the federal, state, and local regulations discussed below.

Federal

Federal Endangered Species Act

The Federal Endangered Species Act (ESA) (7 United States Code [USC] 136; 16 USC 460 et seq. [1973]) extends legal protection to plants and animals listed as endangered or threatened by the USFWS and gives authorization to the USFWS to review proposed federal actions to assess potential impacts to species listed as endangered or threatened. The ESA generally prohibits the "taking" of a federally listed species and adverse modification of designated critical habitat.

"Taking" of a threatened or endangered species is deemed to occur when an intentional or negligent act or omission results in any of the following actions: "to harass, harm, pursue, hunt, shoot, kill, trap, capture, or collect, or attempt to engage in any such conduct." Such acts may include significant habitat modification or degradation if they result in death or injury. Likewise, import, export, interstate, and foreign commerce of listed species are all prohibited. Sections 7 and 10 of the ESA allow "incidental take" of a listed species via a federal or private action, respectively, through formal consultation with

the USFWS. In lieu of a separate Section 10a Permit, an applicant may be included in a local Habitat Conservation Plan.

Migratory Bird Treaty Act

All migratory bird species that are native to the United States or its territories are protected under the federal MBTA as amended under the Migratory Bird Treaty Reform Act of 2004 (Federal Record [FR] Doc. 05-5127). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, USFWS places restrictions on disturbances allowed near active nests.

Clean Water Act

The USACE regulates impacts to waters of the U.S. under Section 404 of the CWA (33 USC 401 et seq.; 33 USC 1344; USC 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 Code of Federal Regulations [CFR] Part 323). The purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all waters of the U.S. A federal CWA Section 404 Permit would be required for a project to place fill in waters of the U.S. Projects impacting waters of the U.S. can be permitted on an individual basis or be covered under one of several approved nationwide permits. Individual permits are assessed individually based on the type of action, amount of fill, etc. Individual permits typically require substantial time (often longer than one year) to review and approve, while nationwide permits are pre-approved if a project meets appropriate conditions. Residential development that impacts up to half an acre of non-tidal waters of the U.S. may be authorized under CWA Section 404 Nationwide Permit 29. A CWA Section 401 Water Quality Certification administered by the RWQCB must be issued before the issuance of a Section 404 Permit.

State

California Environmental Quality Act

Primary environmental legislation in California is found in the CEQA and its implementing guidelines (State CEQA Guidelines), requiring that projects with potential adverse effects or impacts on the environment undergo environmental review. Adverse impacts to the environment are typically mitigated as a result of the environmental review process in accordance with laws and regulations.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in ESA and the section of the CFG Code dealing with rare or endangered plants and animals. CEQA Guideline Section 15380(d) allows a public agency to undertake a review to determine whether a significant effect would occur on species that have not yet been listed by either the USFWS or CDFW (i.e., species of concern). Thus, if warranted under special circumstances, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as formally protected.

Pursuant to the requirements of CEQA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species.

California Fish and Game Code

The CFG Code regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as lakes and streams. Section 1600 et seq. of the CFG Code includes definitions and provisions for the protection of lake and streambed resources. The CDFW requires notification for any activity that could result in an alteration of lake or streambed resources. Pursuant to CFG Code Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code or any regulation made pursuant thereto. Raptors (birds of prey) and owls and their active nests are protected by CFG Code Section 3503.5, which states that it is unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird unless authorized by the CDFW. In common practice, CDFW places timing restrictions on the clearing of potential nesting habitat (e.g., vegetation), as well as restrictions on disturbances allowed near active raptor nests.

Natural Communities Conservation Planning Act

The Natural Communities Conservation Planning (NCCP) program is a cooperative effort to protect habitats and species. It began under the State's NCCP Act of 1991, legislation broader in its orientation and objectives than the CESA or FESA. These laws are designed to identify and protect individual species that have already declined significantly in number. The NCCP Act of 1991 and the associated Southern California Coastal Sage Scrub NCCP Process Guidelines (1993), Southern California Coastal Sage Scrub NCCP Conservation Guidelines (1993), and NCCP General Process Guidelines (1998) have been superseded by the NCCP Act of 2003, which was amended most recently in 2012 (CDFW 2012).

SIGNIFICANCE OF PROJECT IMPACTS AND PROPOSED MITIGATION

For the purpose of evaluating potential project effects (i.e., impacts) and as prescribed by the Issues in CEQA Appendix G Section IV Biological Resources, the proposed project would result in a significant impact if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the USFWS or CDFW;

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by USFWS or CDFW;

3. Have a substantial adverse effect on federally protected wetlands as defined by Clean Water Act Section 404 (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

4. Interfere substantially with the movement of any native resident, migratory fish, or wildlife species, or established native resident or migratory wildlife corridors; or impede the use of native wildlife nursery sites;

5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan.

The significance of impacts to biological resources present, or those with the potential to occur, was determined based on the sensitivity of the resource and the extent of the anticipated impacts. For certain highly sensitive resources (e.g., a federally listed species), impacts would be significant. Conversely, other resources that are of low sensitivity (e.g., species with a large, locally stable population in the County but declining elsewhere) could sustain some impact with a less than significant effect. Analyses of project impacts to biological resources are discussed in detail below.

IMPACTS

This section describes potential direct and indirect effects (impacts) on biological resources associated with the proposed project. Direct impacts are immediate impacts and typically result in permanent removal. Indirect impacts are actions by the project that are not direct removal of resources but affect the surrounding resources either as a secondary effect of the direct impacts (e.g., construction noise, runoff, nighttime lighting, fugitive dust, etc.) or as the cause of degradation of a biological resource over time (e.g., edge/adjacency effects). The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes longer to become apparent.

Approximately 3.51 acres of the 4.64-acre site would be directly impacted by the project as a result of mass grading and residential development. Additionally, 0.08 acre of off-site road and infrastructure improvements/connections with existing public infrastructure and grading are incorporated as part of the project impacts. Overall, the project's direct impact footprint includes areas of grading and ground disturbance (Figure 8, *Vegetation and Sensitive Resources Impacts)*. Further details regarding potential direct and indirect impacts to biological resources from the proposed project are discussed below.

Issue 1 – Sensitive Species

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

Issue 1 Analysis of Project Effects

Special-status Plants

No impact.

Southern California Black Walnut

The general biological surveys conducted in April 2024 detected the presence of one special-status plant species outside of the disturbance limits of the project: southern California black walnut. Southern California black walnut is a CRPR List 4.2 plant species, which includes watch list plants of limited distribution and are fairly threatened in California. Since the project design would avoid impacts to the riparian habitat where this plant is located, no impacts to this species would occur.

Special-status Animals

Less than Significant Impact with Mitigation Incorporated.

Least Bell's Vireo

Marginally suitable habitat for this species occurs within the project site along Buena Vista Creek. Although the creek generally lacks the dense shrubs and multi-layered canopy this species prefers, patches of willows and dense understory vegetation are found within the creek and may provide suitable breeding habitat. Protocol surveys were conducted for least Bell's vireo in 2024 and determined that the species is absent from the site; therefore, there will be no direct or indirect impacts to this species.

Nesting Birds

Pursuant to the MBTA and CFG Code, the development of the proposed project could disturb or destroy active migratory bird nests if vegetation clearing occurs during the general bird nesting season (February 15 through September 15) and/or raptor nesting season (January 15 through July 15). Disturbance to or destruction of migratory bird nests, including sensitive species such as Cooper's hawk, yellow warbler, or western bluebird, if present, are in violation of the MBTA and CFG Code and are, therefore, considered to be a potentially significant impact. Implementation of mitigation measure **BIO-1** would ensure that potential impacts to birds protected under the MBTA and CFG Code are less than significant.

Crotch's Bumble Bee

Crotch's bumble bee has not been observed on-site; the nearest documented record of this species is approximately 1.4 miles to the southwest (CDFW 2025). The study area contains approximately 3.75 acres of suitable coastal sage scrub (disturbed), coast live oak woodland, valley needlegrass grasslands, and non-native grasslands that may provide suitable foraging, nesting, and overwintering habitat for this species. Because Crotch's bumble bee is a candidate for listing under the State Endangered Species Act, project impacts to 2.99 acres of suitable habitat would potentially be considered significant. Potential impacts to this species are expected to be a result of habitat impacts and direct mortality to underground nesting or overwintering bumble bees. Habitat-based mitigation would mitigate for the loss of habitat for this species. Additionally, implementation of mitigation measure **BIO-2** would require pre-construction surveys to be conducted, and if any individuals were found, no impacts would be permitted to active nesting or overwintering sites until CDFW has been consulted and any additional measures recommended by CDFW have been implemented. These

measures, along with implementation of **BIO-3**, habitat-based mitigation, would reduce the impacts to Crotch's bumble bee to less than significant.

Other Special-status Animals

One additional non-listed, special-status animal species was incidentally observed on site: Coronado skink (CDFW Watch List). The project would impact approximately 3.23 acres of suitable coastal sage scrub (disturbed), valley needlegrass grassland, and non-native grassland (including broadleaf-dominated for the species. Though the project would not adversely impact the local, long-term survival of the species, loss of potential habitat during construction would be a potentially significant impact. However, with implementation of mitigation measure BIO-3, habitat-based mitigation, impacts to this species are considered less than significant.

One other non-listed, special-status animal species has the potential to occur on and in the immediate vicinity of the project site: western red bat (*Lasiurus blossevillii*; CDFW Species of Special Concern). Potential impacts on these species would be limited to temporary displacement of individuals during project construction; in addition, based on the quality and size of the habitat that could be impacted, the study area is not expected to support locally or regionally significant populations of this sensitive species. Therefore, impacts to the species would be considered less than significant.

Issue 1 Mitigation Measures

BIO-1 **Avoidance of Nesting Birds and Raptors.** To protect nesting birds, construction activities shall be conducted outside of the nesting season for nesting birds (February 15 through August 31 for general birds and January 15 through July 15 for raptors) if possible. If construction activities are needed during the nesting season, a qualified biologist shall conduct a pre-construction survey no more than three days before the start of work to search for nesting birds within the proposed work area and surrounding 500 feet, where feasible. If the surveys conclude there is no active nesting, the work shall resume as planned. However, if project activities are delayed or suspended for seven or more days during the breeding season, surveys shall be repeated. If the results of the survey identify nesting birds (including raptors), no-work disturbance buffers shall be implemented: 100 feet around non-listed active passerine (perching birds and songbirds) nests and 500 feet around active raptor nests. The buffers may be reduced, if appropriate, depending on factors such as nest location, substrate, and topography, and as directed by a qualified biologist. The reduction in no-work buffers shall be approved by the City before implementation. The buffers shall be respected and maintained until the end of the bird breeding season or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

BIO-2 **Crotch's Bumble Bee Conservation Measures.** Due to the presence of suitable habitat for Crotch's bumble bee within the project site, the following measures shall be implemented to reduce potential impacts to this species:

Pre-construction Surveys: Before initiation of construction activities (i.e., demolition, earthwork, clearing, and grubbing), a qualified biologist shall conduct pre-construction surveys for Crotch's bumble bee following the guidelines in CDFW *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (CDFW 2023; surveys being

conducted in 2025). Three surveys, ideally spaced two to four weeks apart, shall be conducted during peak flight season (April through August) during optimal weather conditions (e.g., warm, sunny days between 65 and 90 degrees Fahrenheit). If the pre-construction surveys are negative, no further assessment shall be required, and construction activities shall be allowed to proceed without any further requirements. If Crotch's bumble bee occupied habitat is detected during the pre-construction surveys, the measures below shall be implemented. The measures below shall only be required if Crotch's bumble bee remains as a candidate state endangered species or is listed as a state endangered species at the time of project construction. If Crotch's bumble bee is delisted, the measures below shall not be required.

CESA Compliance: If Crotch's bumble bee is found to occur within the direct impact area of the project, then prior to issuance of a grading permit, it shall be demonstrated that CESA-required consultation with CDFW regarding the project's effects to Crotch's bumble bee occupied habitat has occurred, and, if take of Crotch's bumble bee is expected, that CDFW has authorized such take through an incidental take permit, as applicable. In addition, if an incidental take permit is issued for the project that covers Crotch's bumble bee, that document shall supersede any inconsistent measures provided in this report.

Compensatory Mitigation: If Crotch's bumble bee is found to occur within the direct impact area of the project, then permanent direct impacts to occupied Crotch's bumble bee habitat shall be offset through compensatory mitigation, which may include, but is not necessarily limited to, on-site or off-site habitat preservation, enhancement, restoration, and/or creation as stipulated in **BIO-3**. However, if an incidental take permit is issued for the project that covers Crotch's bumble bee, that document(s) shall supersede any measures and mitigation ratios provided in this report.

During Construction: If during vegetation removal and ground clearing activities an overwintering or dead Crotch's bumble bee is observed, activities shall immediately stop, and a 100-foot Environmentally Sensitive Area boundary will be erected. A Crotch's bumble bee approved qualified biologist will be notified and will evaluate the site. CDFW will be immediately notified thereafter for consultation and implementation of additional avoidance measures, as recommended by CDFW.

Issue 2 – Sensitive Natural Communities

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?

Issue 2 Analysis of Project Effects

Less than Significant Impact with Mitigation Incorporated.

The project would not impact riparian habitat, but project impacts to other sensitive natural communities would occur, which would be considered significant. Specifically, impacts to 0.11 acre of disturbed Diegan coastal sage scrub, 0.22 acre of coast live oak woodland, 0.24 acre of valley needlegrass grassland, and 1.13 acre of non-native grassland would be considered significant (Table 2,

Proposed Project Impacts to Sensitive Natural Communities). Implementation of mitigation measure **BIO-3** would reduce impacts to sensitive native communities to less than significant.

Impacts to disturbed habitat, eucalyptus woodland, and developed land are not considered significant, and, therefore, do not require mitigation.

Table 3
PROPOSED PROJECT IMPACTS TO SENSITIVE NATURAL COMMUNITIES[1]

VEGETATION COMMUNITY or HABITAT TYPE	Project Impacts (Acres)	Ratio[2]	Replacement Required (Acres)
Coast live oak woodland	0.22	3:1	0.66
Diegan coastal sage scrub - disturbed	0.11	3:1	0.33
Valley needlegrass grassland	0.24	3:1	0.72
Non-native grassland (including Broadleaf-dominated)	2.42	0.5:1	1.21
TOTAL	**2.99**	**--**	**2.92**

[1] Reflects rounding to the nearest 0.01 acre.
[2] Ratios prescribed by the MHCP.

Issue 2 Mitigation Measures

BIO-3 **Habitat-Based Mitigation:** To offset significant impacts to sensitive habitat types, the project applicant shall implement habitat-based mitigation for on- and/or off-site compensation through the preservation and/or purchase of Mitigation Bank Credits. Specifically, impacts to 0.22 acre of coast live oak woodland, 0.11 acre of disturbed Diegan coastal sage scrub, and 0.24 acre of valley needlegrass grassland shall be provided at a 3:1 ratio, and impacts to 2.42 acres of non-native grassland (including Broadleaf-dominated) shall be provided at a 0.5:1 ratio. The mitigation acreage required shall be accomplished on-site through preservation of 0.30 acres of coast live oak woodland and 0.46 acre of non-native grassland or another location deemed acceptable by the City and Wildlife Agencies as well as through the purchase of Mitigation Bank credits. The bank credits shall be in-kind to the vegetation impacted or higher value habitat (i.e., non-native grassland is a lower value than coastal sage scrub), as approved by the City and/or Wildlife Agencies, as applicable. Before the issuance of a grading permit, the project applicant shall demonstrate to the City that appropriate Mitigation Bank credits have been acquired for the project. Overall, the preference order for the location of compensation shall be as follows: on-site, the Mitigation Bank in the City, and lands/Bank outside the City.

Before the issuance of a grading permit, a protective instrument, such as a biological open space easement or restrictive covenant, shall be recorded by the applicant over the habitat mitigation preservation areas where such a protective instrument does not already exist, unless otherwise not required. Unless already under management provided by a long-term management entity, these habitat mitigation areas for the project shall be subject to long-term management, as prescribed by a Resources Management Plan approved by the City and the Wildlife Agencies, as applicable.

Issue 3 – Wetlands

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Issue 3 Analysis of Project Effects

No impact. Impacts to wetland communities, including freshwater marshes and vernal pools, are not anticipated to occur as a result of the project. Therefore, no mitigation measures are required.

Issue 3 Mitigation Measures

No measures are required or proposed.

Issue 4 – Wildlife Movement and Nursery Sites

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Issue 4 Analysis of Project Effects

No impact. While the project site and adjacent native habitats support localized use by wildlife, particularly birds, the majority of the project site is surrounded by development and does not function as a wildlife corridor or habitat linkage for non-avian terrestrial wildlife. The project would not interfere with wildlife movement or impede the use of nursery sites. Therefore, no mitigation measures are required.

Issue 4 Mitigation Measures

No mitigation is required.

Issue 5 – Local Policies and Ordinances

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Issue 5 Analysis of Project Effects

No impact. The project will be designed to comply with all approved local policies and ordinances.

Issue 5 Mitigation Measures

No mitigation is required.

Issue 6 – Adopted Conservation Plans

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?

Issue 6 Analysis of Project Effects

No Impact. The project site occurs within the boundaries of the North County MHCP. The only Subarea Plan that has been approved and adopted within the North County MHCP is the City of Carlsbad MHCP Subarea Plan, also known as the Carlsbad Habitat Management Plan. The project occurs within the boundaries of the Vista Subarea, which does not currently have an approved or draft MHCP Subarea Plan.

A portion of the project site includes a hardline FPA with a 90 to 100 percent conservation target, of which 0.04 acre of the 0.47-acre of hardline FPA within the property would be impacted. As such, the project would avoid 90.9 percent of the hardline FPA targeted for conservation and would not conflict with the provisions of the MHCP.

Therefore, the project does not conflict with any adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

Issue 6 Mitigation Measures

No mitigation is required.

CLOSING

We appreciate the opportunity to provide you with this letter report. Please do not hesitate to contact me at (619) 462-1515 or ShawnC@helixepi.com, or Project Manager Jason Runyan at JasonR@helixepi.com if you have any questions or require further assistance.

Sincerely,

Shawn Carroll
Senior Scientist

Attachments:

Figure 1: Regional Location
Figure 2: USGS Topography
Figure 3: Aerial Photograph
Figure 4: Regional Context
Figure 5: Soils
Figure 6: Vegetation and Sensitive Resources
Figure 7: Vegetation and Sensitive Resources/Impacts
Attachment A: Plant Species Observed for the 1160 Hacienda Drive Townhome Project
Attachment B: Animal Species Observed or Detected for the 1160 Hacienda Drive Townhome Project
Attachment C: Special-Status Plant Species Observed or with Potential to Occur for the 1160 Hacienda Drive Townhome Project
Attachment D: Special-Status Animal Species Observed or with Potential to Occur for the 1160 Hacienda Drive Townhome Project

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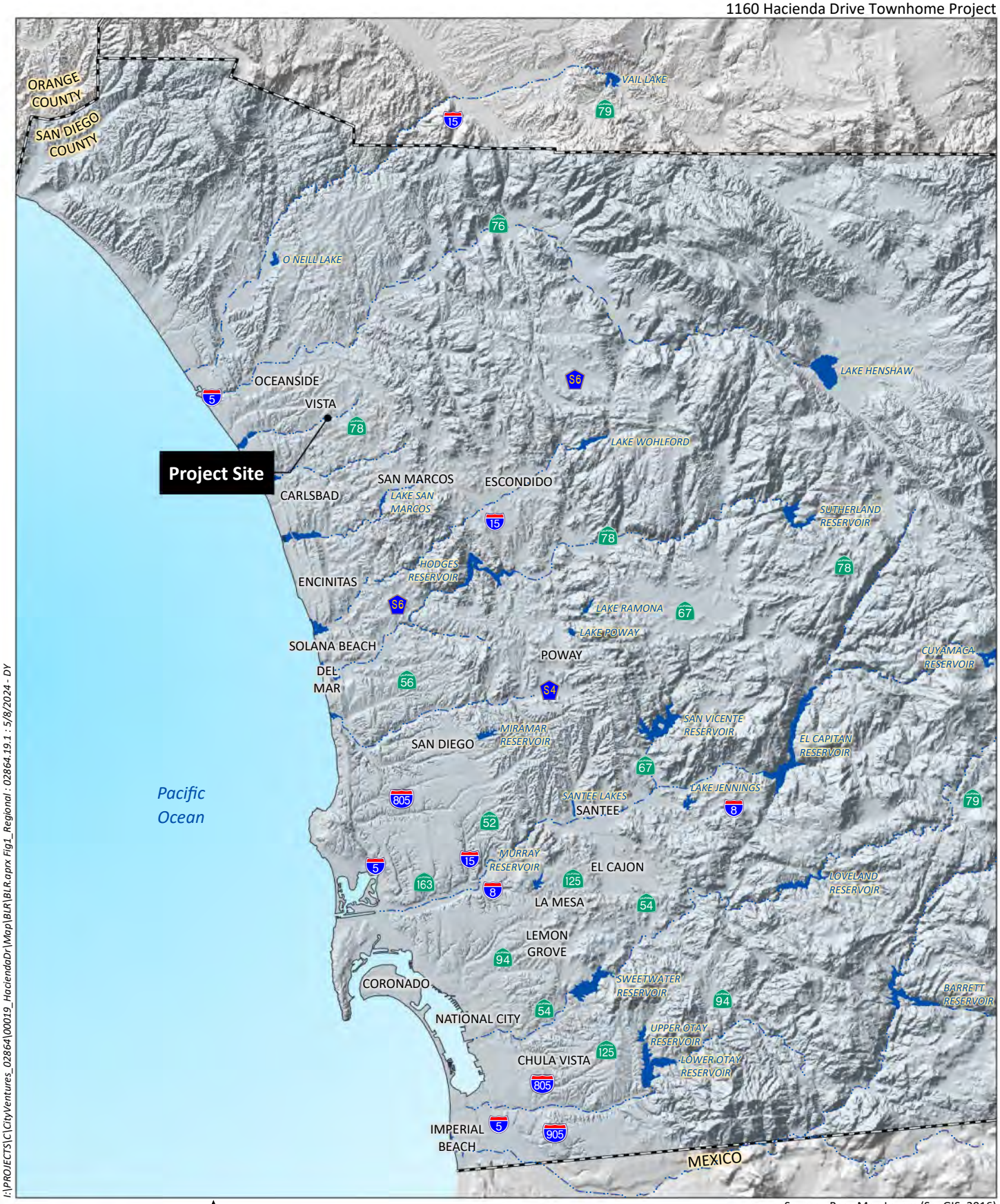
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Figures



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\BLR\BLR.aprx Fig1_Regional : 02864.19.1 : 5/8/2024 - DY

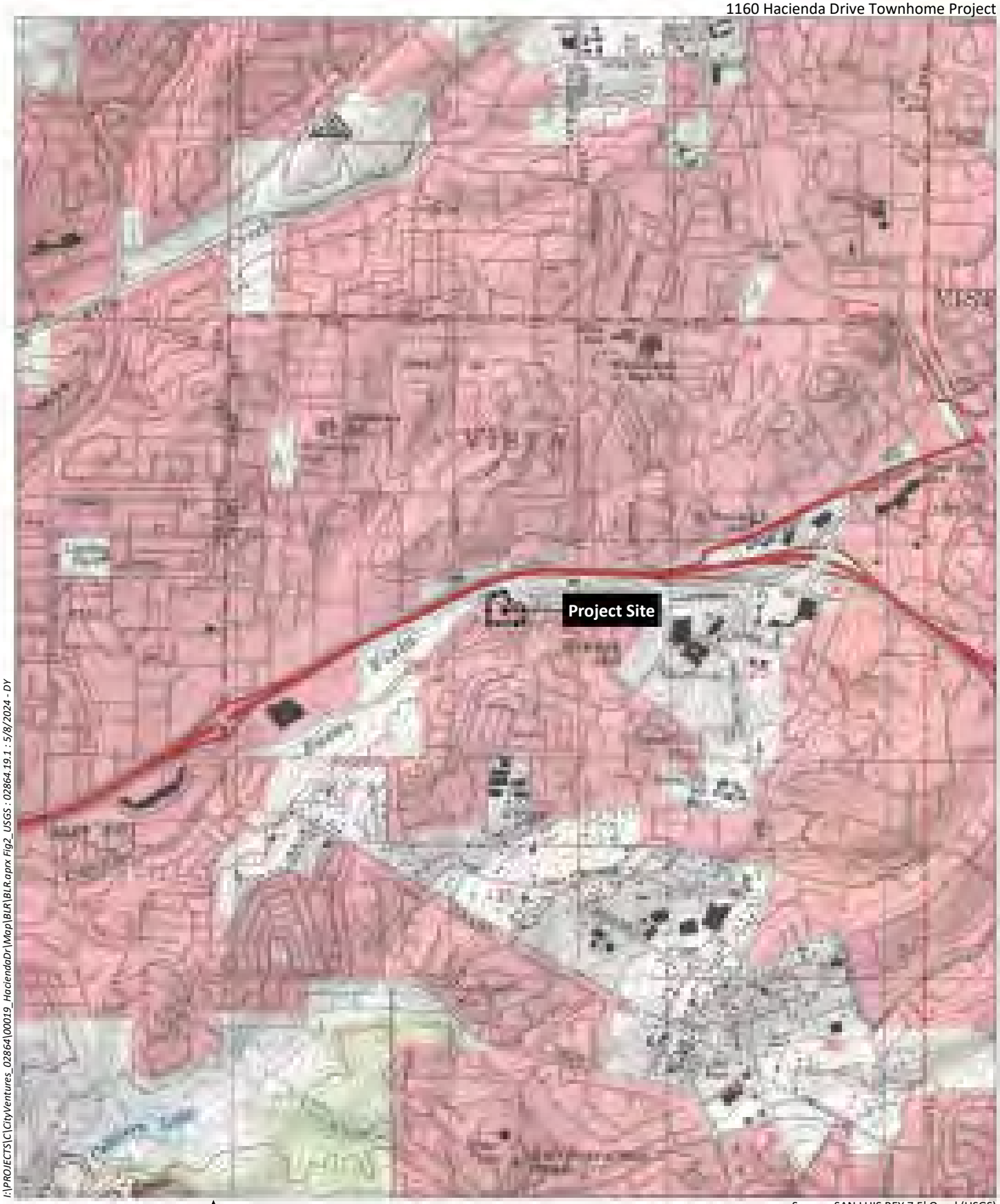
0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Mxp\BLR\BLR.aprx Fig2_USGS : 02864.19.1 : 5/8/2024 - DY

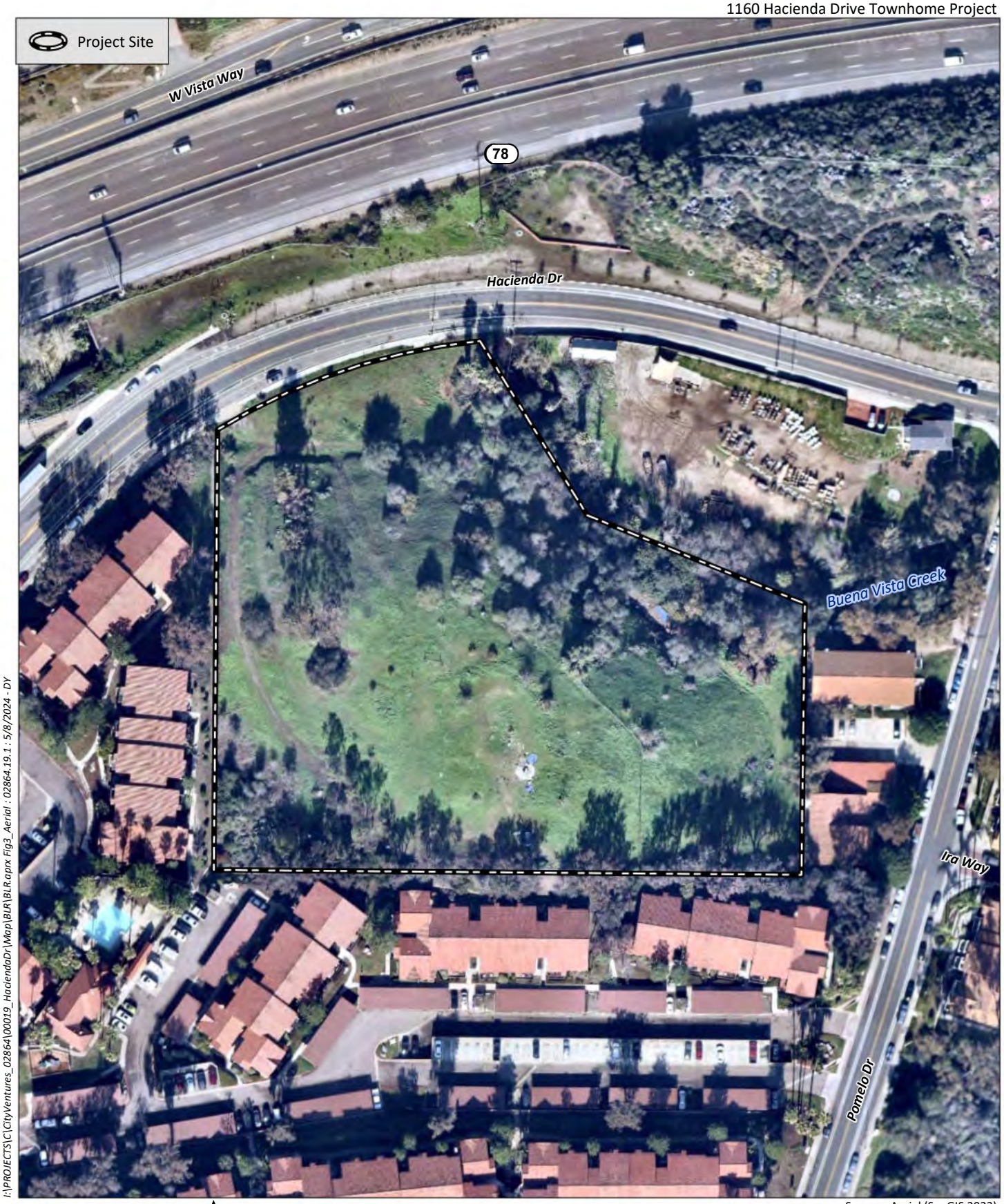
0 2,000 Feet

Source: SAN LUIS REY 7.5' Quad (USGS)

HELIX

USGS Topography

Figure 2



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\BLR\BLR.aprx Fig3_Aerial : 02864.19.1 : 5/8/2024 - DY

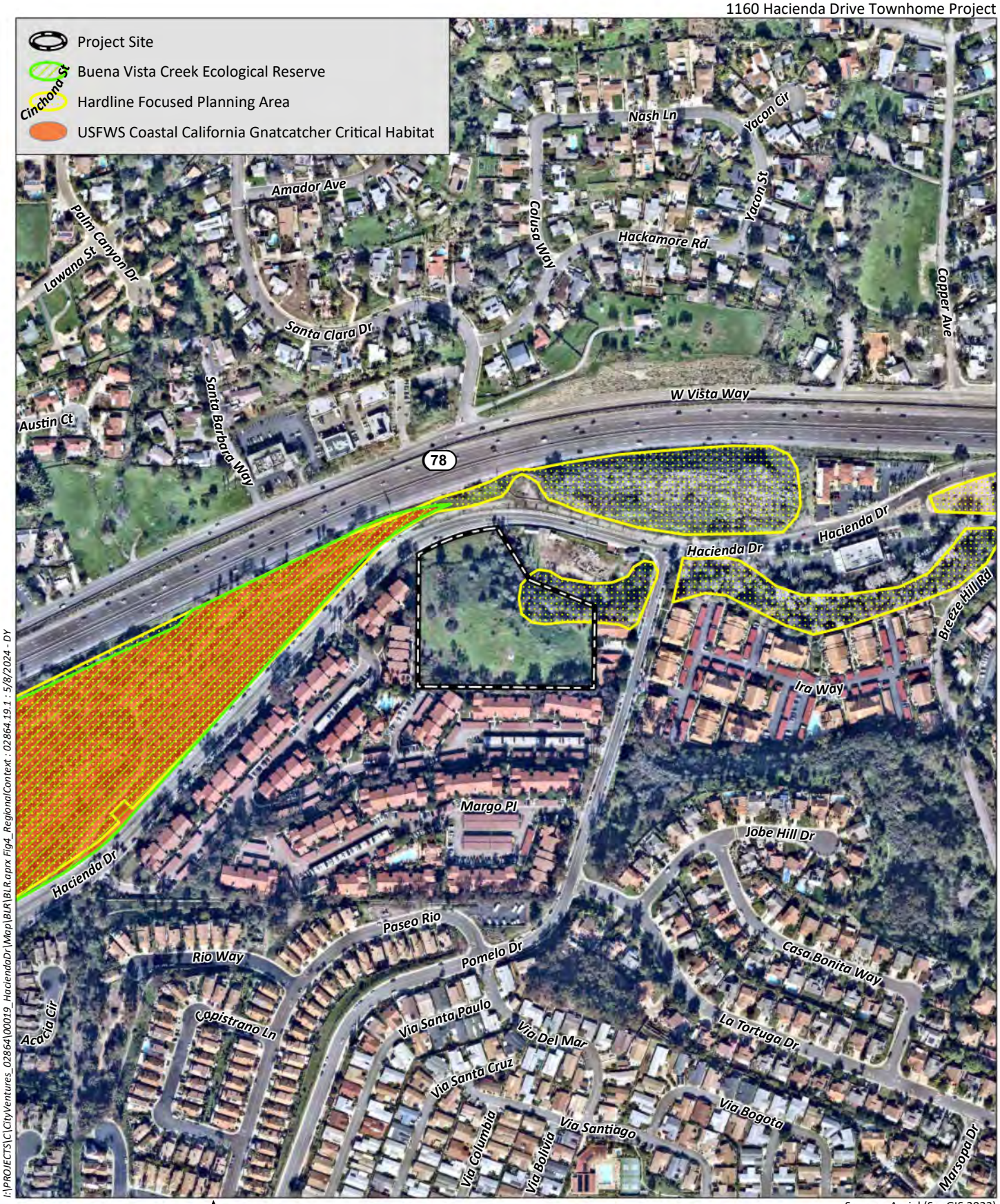
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Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Aerial Photograph

Figure 3



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\BLR\BLR.aprx Fig4_RegionalContext : 02864.19.1 : 5/8/2024 - DY

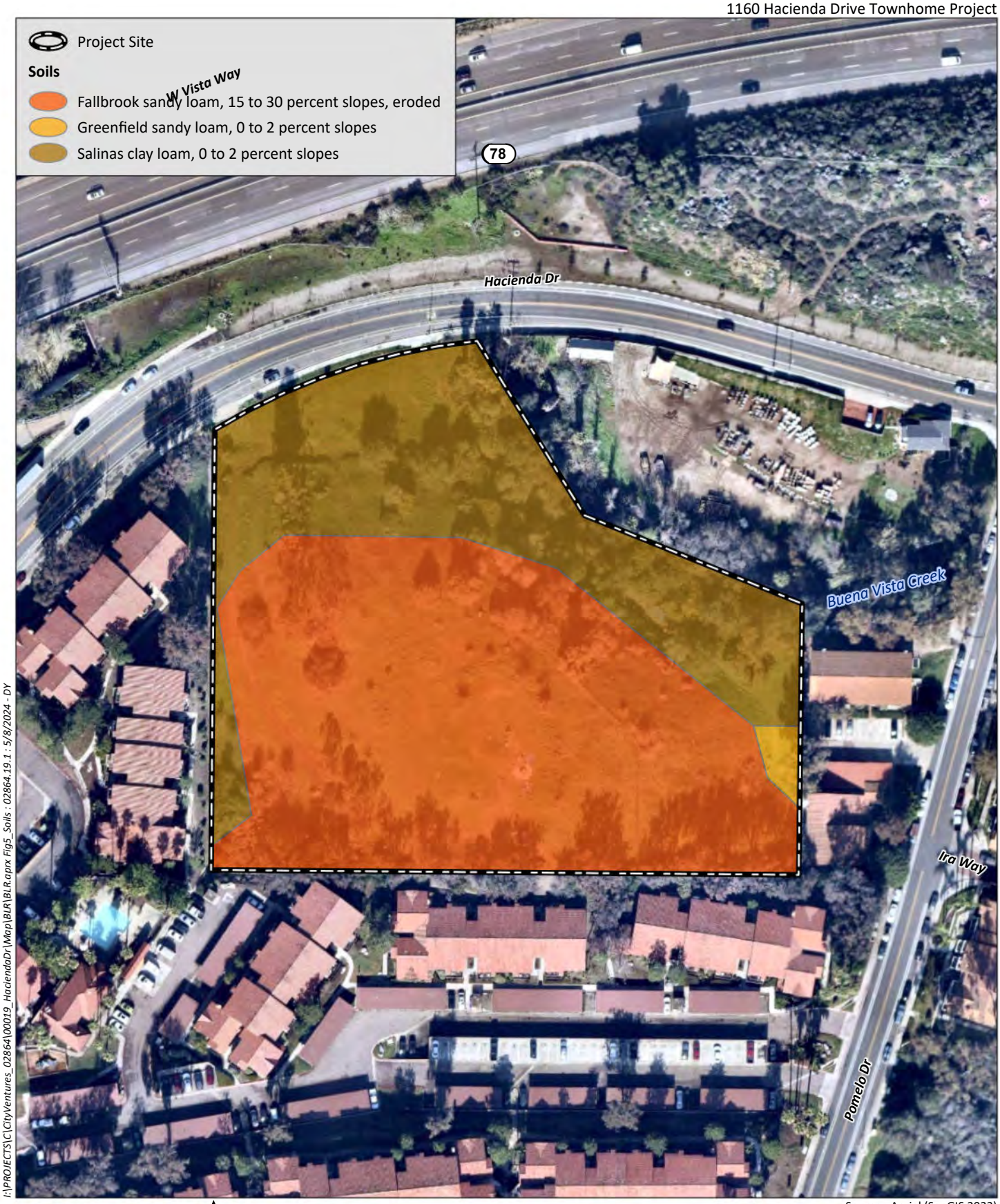
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Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Regional Context

Figure 4



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\BLR\BLR.aprx Fig5_Soils : 02864.19.1 : 5/8/2024 - DY

0 120 Feet

Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Soils

Figure 5



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\BLR\BLR.aprx Fig6_Vegetation : 02864.19.1 : 4/9/2025 - DY

0 120 Feet

Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Vegetation and Sensitive Resources

Figure 6



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\BLR\BLR.aprx Fig7_VegImps : 02864.19.1 : 4/9/2025 - DY

0 120 Feet

Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Vegetation and Sensitive Resources/Impacts

Figure 7

Attachment A

Plant Species Observed for the 1160 Hacienda Drive Townhome Project

Family	Scientific Name*,†	Common Name
Adoxaceae	*Sambucus nigra*	black elderberry
Agavaceae	*Agave attenuata**	foxtail agave
Aizoaceae	*Malephora crocea**	coppery mesembryanthemum
Anacardiaceae	*Malosma laurina*	laurel sumac
	Rhus integrifolia	lemonade berry
	*Schinus molle**	Peruvian pepper tree
	*Schinus terebinthifolius**	Brazilian pepper tree
	Toxicodendron diversilobum	poison oak
Apiaceae	*Foeniculum vulgare**	fennel
Arecaceae	*Washingtonia robusta**	Mexican fan palm
Asteraceae	*Artemisia californica*	coastal sage brush
	Baccharis pilularis	coyote brush
	*Carduus pycnocephalus**	Italian thistle
	*Centaurea melitensis**	tocalote
	*Glebionis coronaria**	crown daisy
	Heterotheca grandiflora	telegraph weed
	Isocoma menziesii	white flowered goldenbush
	Pseudognaphalium californicum	Ladies' tobacco
	Pseudognaphalium stramineum	cottonbatting plant
	*Sonchus asper**	prickly sow thistle
	*Sonchus oleraceus**	sow thistle
Bignoniaceae	*Jacaranda mimosifolia**	black poui
Boraginaceae	*Amsinckia menziesii*	Menzies' fiddleneck
Brassicaceae	*Hirschfeldia incana**	mustard
	*Lepidium didymum**	lesser swine-cress
	*Raphanus sativus**	wild radish
Cactaceae	*Opuntia ficus-indica**	mission cactus
Caryophyllaceae	*Silene gallica**	common catchfly
Convolvulaceae	*Calystegia macrostegia*	island morning glory
Crassulaceae	*Crassula connata*	sand pygmy weed
	*Crassula ovata**	jade plant
Cucurbitaceae	*Marah macrocarpa*	chilicothe
	Cucurbita foetidissima	coyote gourd
Euphorbiaceae	*Euphorbia peplus**	petty spurge
	*Ricinus communis**	castor bean
Fabaceae	*Acmispon glaber*	deerweed
	Acmispon micranthus	small flowered lotus
	Lupinus bicolor	miniature lupine
	Lupinus truncatus	blunt leaved lupine
	*Medicago polymorpha**	California burclover
	*Melilotus indicus**	annual yellow sweetclover
Fagaceae	*Quercus agrifolia*	coast live oak
	Quercus berberidifolia	inland scrub oak
Geraniaceae	*Erodium botrys**	big heron bill
	*Geranium dissectum**	cutleaf geranium
Grossulariaceae	*Ribes speciosum*	fuchsia flowered gooseberry
Juglandaceae	*Juglans californica*†	southern California black walnut

Family	Scientific Name*,†	Common Name
Lamiaceae	*Marrubium vulgare**	white horehound
	Salvia apiana	white sage
	Salvia mellifera	black sage
Malvaceae	*Malva parviflora**	cheeseweed
	Sidalcea sparsifolia	southern checkerbloom
Montiaceae	*Claytonia* sp.	miner's lettuce
Myrsinaceae	*Lysimachia arvensis**	scarlet pimpernel
Myrtaceae	*Eucalyptus citriodora**	lemon scented gum
Nyctaginaceae	*Bougainvillea* sp.*	bougainvillea
Oxalidaceae	*Oxalis pes-caprae**	bermuda buttercup
Plantaginaceae	*Keckiella cordifolia*	heart leaved keckiella
Poaceae	*Bromus diandrus**	ripgut brome
	*Bromus hordeaceus**	soft chess
	*Bromus madritensis**	foxtail chess
	*Cynodon dactylon**	bermuda grass
	*Festuca myuros**	rattail sixweeks grass
	*Festuca perennis**	Italian rye grass
	*Hordeum murinum**	foxtail barley
	Phalaris sp.*	canary grass
	Stipa pulchra	purple needle grass
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat
Pteridaceae	*Pellaea andromedifolia*	coffee cliffbrake
Rosaceae	*Prunus* sp.*	plum
Rubiaceae	*Galium aparine*	cleavers
Rutaceae	*Citrus* sp.*	tangerine
Salicaceae	*Salix gooddingii*	Gooding's willow
	Salix lasiolepis	arroyo willow
Solanaceae	*Datura wrightii*	western jimsonweed
	*Nicotiana glauca**	tree tobacco
Themidaceae	*Dipterostemon capitatus*	blue dicks
Urticaceae	*Urtica urens**	annual stinging nettle

* Non-native

† Sensitive

Attachment B

Animal Species Observed or Detected for the 1160 Hacienda Drive Townhome Project

Order	Family	Scientific Name	Common Name
INVERTEBRATES			
Coleoptera	Coccinellidae	*Coccinella septempunctata*	seven-spot ladybird
Hymenoptera	Apidae	*Anthophora californica*	California digger bee
		Apis mellifera	western honeybee
		Bombus melanopygus	black-tailed bumble bee
		Bombus vosnesenskii	yellow-faced bumble bee
		Xylocopa sonorina	valley carpenter bee
Lepidoptera	Erebidae	*Estigmene acrea*	salt marsh moth
		Orgyia vetusta	western tussock moth
	Hesperiidae	*Lon melane*	umber skipper
	Nymphalidae	*Nymphalis antiopa*	mourning cloak
	Pieridae	*Pontia protodice*	checkered white
VERTEBRATES			
Reptiles			
Squamata	Phrynosomatidae	*Sceloporus occidentalis*	western fence lizard
Squamata	Scincidae	*Plestiodon skiltonianus interparietalis*†	Coronado skink
Birds			
Accipitriformes	Accipitridae	*Astur cooperi*†	Cooper's hawk
		Buteo jamaicensis	red-tailed hawk
Apodiformes	Trochilidae	*Calypte anna*	Anna's hummingbird
		Selasphorus sasin	Allen's hummingbird
Columbiformes	Columbidae	*Zenaida macroura*	mourning dove
Falconiformes	Falconidae	*Falco sparverius*	American kestrel
Passeriformes	Aegithalidae	*Psaltriparus minimus*	bushtit
	Bombycillidae	*Bombycilla cedrorum*	cedar waxwing
	Cardinalidae	*Piranga ludoviciana*	western tanager
	Corvidae	*Aphelocoma californica*	California scrub-jay
		Corvus brachyrhynchos	American crow
	Estrildidae	*Lonchura punctulata*	scaly-breasted munia
	Fringillidae	*Haemorhous mexicanus*	house finch
		Spinus psaltria	lesser goldfinch
	Icteridae	*Icterus cucullatus*	hooded oriole
		Molothrus ater	brown-headed cowbird
	Mimidae	*Mimus polyglottos*	northern mockingbird
	Parulidae	*Leiothlypis celata*	orange-crowned warbler
		Setophaga coronata	yellow-rumped warbler
		Setophaga petechia†	yellow warbler
	Passerellidae	*Melospiza melodia*	song sparrow
		Melozone crissalis	California towhee
		Pipilo maculatus	spotted towhee
		Spizella passerina	chipping sparrow
	Troglodytidae	*Thryomanes bewickii*	Bewick's wren
		Troglodytes aedon	house wren
	Tyrannidae	*Empidonax difficilis*	western flycatcher
		Sayornis nigricans	black phoebe
		Tyrannus vociferans	Cassin's kingbird
	Vireonidae	*Vireo huttoni*	Hutton's vireo

Order	Family	Scientific Name	Common Name
Piciformes	Picidae	*Dryobates nuttallii*	Nuttall's woodpecker
Mammals			
Carnivora	Canidae	*Canis latrans*	coyote
Lagomorpha	*Leporidae*	*Sylvilagus audubonii*	desert cottontail
Rodentia	Geomyidae	*Thomomys bottae*	Botta's pocket gopher
	Sciuridae	*Otospermophilus beecheyi*	California ground squirrel

† Sensitive

Attachment C

Special-Status Plant Species Observed or with Potential to Occur for the 1160 Hacienda Drive Townhome Project

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Acanthomintha ilicifolia	San Diego thornmint	FT/SE CRPR 1B.1 MHCP Covered NE	Annual herb. Occurs in chaparral, coastal scrub, valley, and foothill grassland vernal pools supported by clay soils. Elevation: below 3,281 feet (1,000 meters). Flowering period: April–June.	**None.** Clay soils are mapped on site; however, there are no vernal pools on-site and the species was not detected during surveys.
Adolphia californica	California adolphia	-- / -- CRPR 2B.1	Perennial shrub. Most often found in coastal scrub but occasionally occurs in peripheral chaparral habitats, particularly hillsides near creeks on clay soils. Found in San Diego County. Flowering period: December to May. Elevation: 30 to 2,430 feet (10 to 740 meters).	**Presumed absent.** Suitable coastal sage scrub habitat present on-site, but this perennial shrub would have been observed during biological surveys and was not detected.
Atriplex coulteri	Coulter's saltbush	-- / -- CRPR 1B.2	Perennial herb. Occurs on alkaline or clay soils within coastal dunes, coastal bluffs, coastal sage scrub, and grasslands. Found along the coastal regions from Santa Luis Obispo County south to San Diego County, western portions of San Bernardino and Riverside counties, and the Channel Islands. Flowering period: March to October. Elevation: below 1,510 feet (460 meters).	**Presumed absent.** Suitable coastal sage scrub habitat present on-site, but this perennial species would have been observed during surveys and was not detected.
Bloomeria clevelandii	San Diego goldenstar	-- / -- CRPR 1B.1 NE	Perennial bulbiferous herb. Occurs in valley grasslands and coastal scrub, particularly near mima mound topography or in the vicinity of vernal pools, on clay soils. Found in Riverside and San Diego counties. Flowering period: April to May. Elevation: 160 to 1,525 feet (50 to 465 meters).	**Not expected.** Suitable grassland and coastal scrub habitat occurs on-site, but no mima mounds or vernal pools occur.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Brodiaea filifolia	Thread-leaved brodiaea	FT / SE CRPR 1B.1 NE	Perennial herb. Often associated with vernal pools. Also occurs within playas, grasslands, coastal scrub, openings in chaparral, and cismontane woodland; often on clay soils. Found in Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. Flowering period: March to June. Elevation: 80 to 3,675 feet (25 to 1,120 meters).	**Not expected**. Suitable grassland and coastal sage scrub habitat present on-site, and this species is known to occur within 0.5 mile of the project site. However, the site does not support vernal pools, and the history of disturbance on-site reduces the potential for this species. Rare plant surveys conducted during the blooming period for this species were negative.
Ceanothus verrucosus	Wart-stemmed ceanothus	-- / -- CRPR 2B.2 MHCP Covered	Perennial shrub. Found on rocky slopes within chaparral, particularly southern maritime chaparral. Found in Riverside and San Diego counties. Flowering period: December to May. Elevation: below 1,245 feet (380 meters).	**Not expected.** Suitable rocky slopes and chaparral habitat not found on-site. This perennial shrub would have been observed during surveys and was not detected.
Centromadia pungens ssp. *laevis*	Smooth tarplant	-- / -- CRPR 1B.1	Annual herb. Occurs on alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland. Found in San Bernardino, Los Angeles, Riverside, and San Diego counties. Flowering Period: April to September. Elevation: below 2,100 feet (640 meters).	**Presumed absent**. Coastal sage scrub and riparian woodland are found on-site, but the soils are not alkaline.
Comarostaphylis diversifolia ssp. *diversifolia*	Summer holly	-- / -- CRPR 1B.2 MHCP Covered	Perennial shrub. Occurs in chaparral and cismontane woodland. Found in Santa Barbara, Orange, Riverside, and San Diego counties. Flowering period: April to June. Elevation: 95 to 2,590 feet (30 to 790 meters).	**Presumed absent.** Suitable habitats do not occur on-site, and the site present outside of the known elevation for the species. This perennial shrub would have been observed during surveys.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Convolvulus simulans	Small-flowered morning-glory	-- / -- CRPR 4.2	Annual herb. Occurs on clay soils and serpentinite seeps in openings within chaparral, coastal scrub, and native grassland. Found within the San Francisco Bay area, San Joaquin Valley, western Sierra Nevada foothills, along the coast of southern California, the Channel Islands, and the western Transverse and Peninsular Ranges. Flowering period: April to June. Elevation: 95 to 2,430 feet (30 to 740 meters).	**Not expected.** Suitable grassland and coastal sage scrub habitat present on-site, but clay soils are limited in the heavily disturbed site. The species was not detected during surveys.
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	-- / -- CRPR 1B.1 MHCP Covered NE	Perennial herb. Found on sandy soils and disturbed areas within southern maritime chaparral, coastal sage scrub, and coastal bluffs. Found in San Diego County. Flowering Period: May to September. Elevation: 45 to 490 feet (15 to 150 meters).	**Not expected.** Suitable sandy soils are not found on-site, and this perennial species was not detected during surveys.
Dichondra occidentalis	Western dichondra	-- / -- CRPR 4.2	Perennial herb. Found among rocks and shrubs within grasslands, coastal sage scrub, chaparral, and oak woodlands. Often proliferates on recently burned slopes. Found along the coastal regions from San Luis Obispo County south to San Diego County. Flowering period: March to July. Elevation: 165 to 1,640 feet (50 to 500 meters).	**Presumed absent.** Suitable coastal sage scrub and sandy soils present on-site, but this perennial species would have been observed during surveys.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	-- / -- CRPR 1B.1 NE	Perennial herb succulent. Grows on open, rocky slopes, often on serpentine or clay dominated soils in coastal sage scrub and valley grassland communities. Found along the coast from San Luis Obispo south to San Diego County. Flowering period: April to June. Elevation: 15 to 1,475 feet (5 to 450 meters).	**Presumed absent.** Suitable coastal sage scrub present on-site, but this perennial species would have been observed during surveys.
Dudleya viscida	Sticky dudleya	-- / -- CRPR 1B.2	Perennial herb. Occurs in rocky areas within coastal bluffs, coastal sage scrub, chaparral, and woodlands. Grows primarily on very steep north-facing slopes. Found in Orange, Riverside, and San Diego counties. Flowering period: May to June. Elevation: 30 to 1,805 feet (10 to 550 meters).	**Presumed absent.** Suitable coastal sage scrub present on-site, but this perennial species would have been observed during surveys.
Eryngium aristulatum var. *parishii*	San Diego button celery	FE / SE CRPR 1B.1 NE	Annual or perennial herb. Grows in vernal pools and other mesic areas, such as marshes. Found in Los Angeles, Orange, Riverside, and San Diego counties. Flowering period: April to June. Elevation: 65 to 2,035 feet (20 to 620 meters).	**None.** No vernal pool habitat on-site.
Euphorbia misera	Cliff spurge	-- / -- CRPR 2B.2 MHCP Covered	Perennial shrub. Found in rocky areas of coastal bluffs, coastal sage scrub, and Mojave desert scrub. Found in Riverside, Orange, and San Diego counties and the Channel Islands. Flowering period: December to August. Elevation: 30 to 1,640 feet (10 to 500 meters).	**None.** Coastal bluffs and rocky soils are not present on-site.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Ferocactus viridescens	San Diego barrel cactus	-- / -- CRPR 2B.1 MHCP Covered	Perennial (stem succulent) shrub. Grows in sandy to rocky areas within chaparral, valley grassland and coastal sage scrub communities. Found in San Diego County. Flowering period: May to June. Elevation: 5 to 492 feet (3 to 450 meters).	**Presumed absent.** Suitable grassland and coastal sage scrub present on-site, but this perennial species would have been observed during surveys.
Harpagonella palmeri	Palmer's grapplinghook	-- / -- CRPR 4.2	Annual herb. Grows on clay soils within openings of grasslands, coastal sage scrub, and chaparral. Found in Los Angeles, Orange, San Diego, and Riverside counties. Flowering Period: March to May. Elevation: 65 to 3,135 feet (20 to 955 meters).	**Not expected.** Suitable grassland and coastal sage scrub habitat present on-site, but clay soils are not limited and the species would have been detected during surveys.
Hazardia orcuttii	Orcutt's hazardia	-- / ST CRPR 1B.1 MHCP Covered NE	Perennial shrub. Often grows on clay soils within coastal sage scrub and southern maritime chaparral. Found in San Diego County. Flowering period: August to October. Elevation: 260 to 280 feet (80 to 85 meters).	**Presumed absent.** A marginally suitable habitat for this species present on-site; a small patch of chamise is present within the Diegan coastal sage scrub in the southeastern portion of the site. However, this perennial species was not detected during surveys.
Hordeum intercedens	Vernal barley	-- / -- CRPR 3.2	Annual herb. Occurs in vernal pools, alkaline flats, and dry, saline streambeds. Also found in saline flats and depressions within grasslands. Found in the San Joaquin Valley, South Coast and Peninsular Ranges, San Jacinto Mountains, and southern coast of California. Flowering period: March to June. Elevation: below 3,280 feet (1,000 meters).	**Not expected.** Marginally suitable coastal sage scrub habitat present on-site, but this species was not detected during surveys.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Isocoma menziesii var. *decumbens*	Decumbent goldenbush	-- / -- CRPR 1B.2	Perennial shrub. Occurs in sandy soil and disturbed areas on the inland side of dunes, hillsides, and arroyos within coastal sage scrub and chaparral. Found in along the coast of southern California, Peninsular Ranges, and Channel Islands. Flowering period: July to November. Elevation: below 656 feet (200 meters).	**Presumed absent.** Suitable coastal sage scrub present on-site, but this perennial species would have been observed during surveys.
Iva hayesiana	San Diego marsh-elder	-- / -- CRPR 2B.2 MHCP Covered	Perennial herb. Found in alkaline flats, depressions, and streambanks within wetland habitats in San Diego County. Flowering period: April to October. Elevation: 30 to 1,640 feet (10 to 500 meters).	**Presumed absent.** Suitable intermittent streambed present on-site, but this perennial species would have been observed during surveys.
Juglans californica	Southern California black walnut	-- / -- CRPR 4.2	Perennial tree. Grows in alluvial soils within coastal sage scrub, chaparral, riparian woodlands, and cismontane woodlands. Found along the southern California coast from Monterey County south to San Diego County and east into western Transverse and Peninsular Ranges, including San Jacinto and San Gabriel Mountains. Flowering period: March to August. Elevation: 165 to 2,955 feet (50 to 900 meters).	**Present**. This species was observed within along the banks of Buena Vista Creek during surveys.
Juncus acutus ssp. *leopoldii*	Southwestern spiny rush	-- / -- CRPR 4.2	Perennial herb. Found in Found along the coastal regions from San Luis Obispo County south to San Diego County. Flowering period: May to June. Elevation: below 984 feet (300 meters).	**Presumed absent.** Alkaline areas, marsh, and dunes are not present on-site. Perennial species would have been observed during surveys.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	-- / -- CRPR 4.3	Annual herb. Grows in openings of sage scrub and chaparral at the coastal and foothill elevations throughout California. Typically observed in relatively dry, exposed locales rather than beneath a shrub canopy. Also, found in disturbed areas. Flowering period: March to June. Elevation: below 9,186 feet (2,800 meters).	**Not expected.** Suitable coastal sage scrub present on-site, but the species would have been observed during surveys.
Leptosyne maritima	Sea dahlia	-- / -- CRPR 2B.2	Perennial herb. Occurs within coastal scrub and coastal bluffs scrub in San Diego County. Flowering period: March to May. Elevation: below 490 feet (150 meters).	**Not expected.** Suitable coastal sage scrub present on-site, but this perennial species would have been observed during surveys.
Lycium californicum	California box-thorn	-- / -- CRPR 4.2	Perennial shrub. Occurs within coastal bluff and coastal sage scrub along the immediate coast. Found along the coast from Los Angeles County south to San Diego County, and the Channel Islands. Flowering period: March to August. Elevation: below 495 feet (150 meters).	**Not expected.** Suitable coastal sage scrub present on-site, but this perennial species would have been observed during surveys.
Microseris douglasii ssp. *platycarpha*	Small-flowered microseris	-- / -- CRPR 4.2	Annual herb. Found on clay soils within coastal sage scrub, woodlands, and grasslands. Often near vernal pools or serpentine outcrops. Found in Los Angeles, Orange, Riverside, and San Diego counties and the Channel Islands. Flowering period: March to May. Elevation: 49 to 3,510 feet (15 to 1,070 meters).	**Not Expected**: Suitable grassland and coastal sage scrub habitat present on-site, but clay soils are not mapped and species would have been detected during surveys.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Myosurus minimus ssp. *apus*	Little mousetail	-- / -- CRPR 3.1 MHCP Covered NE	Annual herb. Occurs in alkaline vernal pools within native grassland. Flowering period: March to June. Found within San Joaquin Valley south to San Diego County and east to western Riverside and San Bernardino counties. Elevation: 65 to 2,100 feet (20 to 640 meters).	**None.** Vernal pool habitat not present on-site.
Navarretia fossalis	Spreading navarretia	FT / -- CRPR 1B.1 MHCP Covered NE	Annual herb. Occurs in vernal pools, vernal swales, roadside depressions, playas, marshes and swamps, and chenopod scrub. Population size is strongly correlated with rainfall. Depth of pool appears to be a significant factor as this species is rarely found in shallow pools. Found in the Mojave Desert, desert mountains, Channel Islands, and the Transverse and Peninsular Ranges. Flowering period: April to June. Elevation: 98 to 4,265 feet (30 to 1,300 meters).	**None.** Vernal pool habitat not present on-site.
Ophioglossum californicum	California adder's-tongue	-- / -- CRPR 4.2	Perennial herb. Grows on the marginals of vernal pools and mesic areas within grasslands and chaparral. Found within the Sacramento and San Joaquin Valleys, Sierra Nevada and Peninsular Ranges, and along the central and southern coasts. Flowering period: January to June. Elevation: 195 to 1,725 feet (60 to 525 meters)	**None.** Vernal pool habitat not present on-site.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Pentachaeta aurea ssp. *aurea*	Golden-rayed pentachaeta	-- / -- CRPR 4.2	Annual herb. Occurs in grassy areas within coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, riparian woodland. Found within Riverside and San Diego counties. Flowering period: March to July. Elevation: 260 to 6,100 feet (80 and 1,850 meters).	**Presumed absent.** Suitable coastal scrub and riparian woodland are found on-site, but this species was not detected during surveys.
Quercus dumosa	Nuttall's scrub oak	-- / -- CRPR 1B.1 MHCP Covered	Perennial shrub. Occurs on sandy or clay loam soils near the coast within coastal scrub, chaparral, cismontane woodland, and riparian woodland. Found along the coast, San Jacinto Mountains, and Peninsular Ranges of southern California. Flowering period: March to May. Elevation: below 1,310 feet (400 meters).	**Presumed absent.** Suitable clay loam soils, coastal scrub, and riparian woodland are found on-site, but this perennial species would have been observed during the surveys.
Selaginella cinerascens	Ashy spike-moss	-- / -- CRPR 4.1	Perennial herb. Grows in sunny spots or under shrubs within coastal sage scrub and chaparral. Often associated with "red clay" soils. Found in coastal regions from southern Los Angeles County south to San Diego County. Flowering period: none. Elevation: below 1,804 feet (550 meters).	**Presumed absent.** Sage scrub habitat is extremely limited and red clay soils do not occur on-site.
Sidalcea neomexicana	Salt spring checkerbloom	-- / -- CRPR 2B.2	Perennial herb. Occurs within alkaline springs and marshes, and playas. Found within Mojave Desert and desert mountains, and along the coast and Transverse and Peninsular Ranges of southern California. Flowering period: March to June. Elevation: 50 to 5,020 feet (15 to 1,530 meters).	**None.** Suitable alkaline springs and marshes and playa habitat are not found on-site.

Scientific Name	Common Name	Status	Habitat, Ecology and Life History	Potential to Occur
Sphenopholis interrupta ssp. *californica*	Baja California oatgrass	-- / -- CRPR 1B.1	Annual grass-like herb. Grows on friable clay lenses in dense coastal chaparral. Thought to be extinct but rediscovered near Carlsbad in 2020. Prior to this discovery, there were only two representative specimens from Baja, Mexico, both from 1886.	**Not expected.** Clay lenses and dense coastal chaparral are not found on-site.

1 Listing codes as follows: F = Federal; S = State of California; E = Endangered; T = Threatened; CE = Candidate Endangered; R = Rare

CRPR = California Native Plant Society Rare Plant Rank: 1A – presumed extirpated in California and either rare or extinct elsewhere; 1B – rare, threatened, or endangered in California and elsewhere; 2A – presumed extirpated in California, but more common elsewhere; 2B – rare, threatened, or endangered in California, but more common elsewhere; 3 – more information needed; 4 – watch list for species of limited distribution. Extension codes: .1 – seriously endangered; .2 – moderately endangered; .3 – not very endangered.

MHCP Covered: Proposed as a Covered Species under the Draft North County Multiple Habitat Conservation Program (MHCP). NE = Listed as a Narrow Endemic Species under the Draft North County Species MHCP.

2 Potential to Occur is assessed as follows: **None**: There are no present or historical records of the species occurring on or in the immediate vicinity (i.e., as defined by the 2 mile search radius) of the study area and the diagnostic habitats and soils associated with the species do not occur on or in the immediate vicinity of the project; **Not Expected**: There are no present or historical records of the species occurring on or in the immediate vicinity of the study area. Suitable habitat not present on site; or suitable habitat is present; but the species would have been observed during focused surveys for the species. **Low**: Suitable habitat is present in the study area and a historical record of the species occurs in the immediate vicinity but existing conditions such as elevation, soils, density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, and/or isolation substantially reduce the possibility that the species may occur; **Moderate**: The diagnostic habitats associated with the species occur on or in the immediate vicinity of the study area, but there is not a recorded occurrence of the species within the immediate vicinity. Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity; **High**: Suitable habitat occurs in the study area and the species has been recorded recently on or in the immediate vicinity but the species was not observed during project surveys; **Present**: The species was observed during biological surveys for the project and is assumed to occupy the study area; Presumed Absent: Species would be visible all year and would have been observed if present.

Attachment D

Special-Status Animal Species Observed or with Potential to Occur for the 1160 Hacienda Drive Townhome Project

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
INVERTEBRATES				
Bombus crotchii	Crotch's bumble bee	-- / SCE	Found throughout southwestern California from the Central Valley south to the U.S./Mexico border. Inhabits open grasslands and scrub habitats. Primarily nests underground and forages on a wide variety of flowers, but a short tongue renders it best suited to open flowers with short corollas. Most commonly observed on flowering species in the Fabaceae, Asteraceae, and Lamiaceae families. Occurrence has also been linked to habitats containing *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia*, and *Salvia* genera.	**Moderate**. Suitable grassland and scrub habitats as well as forage plants occur on-site. However, this species has not been recorded in the immediate vicinity of the site and was not detected during project surveys.
Danaus plexippus	monarch	FC/-- (Pop. 1 – California overwintering population)	Population west of the Rocky Mountains migrates to, and overwinters, along the coast of central and southern California. Inhabits a wide variety of open habitats including fields, meadows, marshes, and roadsides and roosting on wind-protected tree groves (such as eucalyptus [*Eucalyptus* spp.], Monterey pine [*Pinus radiata*], and cypress [*Hesperocyparis* sp.]), with nectar and water sources nearby. Breeds in areas that have a suitable abundance of the species' larval host plant, milkweed (*Asclepias* sp.).	**Low.** While the species may use the site for foraging, no milkweed host plants were observed on-site and the few eucalyptus trees on-site do not provide adequate wind protection for overwintering.
Euphydryas editha quino	Quino checkerspot butterfly	FE / --	Occurs in California from western Riverside County southwards to southern San Diego County. Inhabits open and sparsely vegetated areas that contain larval host plant species (principally dot-seed plantain [*Plantago erecta*], woolly plantain [*Plantago patagonia*] but also Coulter's snapdragon [*Antirrhinum coulterianum*], Chinese houses [*Collinsia* spp.], and rigid bird's beak [*Cordylanthus rigidus*]) and nectar sources. Often found on rounded hilltops, ridgelines, and occasionally rocky outcrops. Occurs within a wide range of open-canopied habitats including vernal pools, sage scrub, chaparral, grassland, and open oak and juniper woodland communities.	**None**. The project site does not contain suitable open, sparsely vegetated habitat for this species, and no host plants have been documented within the project site.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
VERTEBRATES				
Amphibians				
Anaxyrus californicus	arroyo toad	FE / -- -- / SSC	Inhabits low gradient, medium to large streams and rivers with intermittent and perennial flow in coastal and desert drainages of central and southern California. Breeding habitat specialists that require slow-moving streams composed of sandy soils with sandy streamside terraces. In some areas, may occupy first-order streams, although most populations inhabit second-sixth-order streams that have extensive braided channels and sediment deposits of sand, gravel, or pebbles that are occasionally redistributed by flooding. Utilizes shallow pools (at least 1-inch deep) for breeding, egg-laying, and tadpole development. Vulnerable to habitat destruction and alteration due to changes in hydrology, including construction of dams and water diversions, and further impacted by the presence of non-native predators such as American bullfrog (*Lithobates catesbeianus*).	**None**. The Project site does not contain suitable habitat for this species; Buena Vista Creek is deeply incised and does not contain sandy soils or sandy streamside terraces.
Spea hammondii	western spadefoot toad	-- / -- -- / SSC MHCP Covered	Occurs from northern California southward to San Diego County, west of the Sierra Nevada at elevations below 4,500 feet. Terrestrial species requiring temporary pools for breeding. Suitable upland habitats include coastal sage scrub, chaparral, and grasslands. Most common in grasslands with vernal pools or mixed grassland-coastal sage scrub areas. Breeds in temporary pools formed by heavy rains but may also be found in riparian habitats with suitable water resources. Breeding pools must lack exotic predators such fish, bullfrogs, and crayfish for the species to successfully reproduce. Estivates in burrows within upland habitats adjacent to potential breeding sites.	**Not Expected.** Marginal suitable habitat occurs on-site associated with the creek and adjacent non-native grassland and coastal sage scrub. However, there are no breeding pools on-site and this species was not detected during project surveys.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Reptiles				
Actinemys pallida	southwestern pond turtle	-- / SSC MHCP Covered	In California, occurs in most major coast-facing drainages below 4,700 feet from the San Francisco Bay area south to San Diego County, including the Mojave River (San Bernardino County) and Andreas Canyon (Riverside County). Habitat generalist that occurs within many types of aquatic habitats from freshwater to brackish environments and permanent to intermittent waterbodies. Inhabits creeks, slow moving rivers, marshes, ponds, lakes, reservoirs, vernal pools, canals and even sewage treatment plants. Prefers habitats with slow flowing water, particularly where basking sites (such as rocks, downed logs, or emergent vegetation), deep water retreats, and egg laying areas are readily available. Leaves water and travels to surrounding upland habitats to nest, over-winter, and aestivate.	**Low**. Suitable aquatic and upland habitats occur within Buena Vista Creek, but basking sites are limited.
Thamnophis hammondii	two-striped garter snake	-- / -- -- / SSC	Found in California from Monterey County south along the coast to San Diego County at elevations below 7,000 feet. Commonly inhabits perennial and intermittent streams with rocky beds bordered by riparian habitats dominated by willows (*Salix* spp.) and other dense vegetation. Has also been found in stock ponds, and other artificially created aquatic habitats, if bordered by dense vegetation and potential prey, such as amphibians and fish, are present.	**Low**. Suitable aquatic habitat occurs within Buena Vista Creek, but the creek does not have a rocky shore and is not dominated by willows.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Phrynosoma blainvillii	Blainville's horned lizard	-- / -- -- / SSC	In California, predominately occurs from Kern County south to San Diego County, west of the desert at elevations below 8,000 feet. Inhabits a wide variety of vegetation types including sagebrush scrub, chaparral, grasslands, forests, and woodlands but is restricted to areas with suitable sandy, loose soils with open areas for basking. Diet primarily composed of native harvester ants (*Pogonmyrmex* spp.) and are generally excluded from areas invaded by Argentine ants (*Linepithema humile*).	**Not expected**. While the project site contains non-native grasslands and very small patches of coastal sage scrub habitat, it is isolated by development and roads which likely has prevented the persistence of this species in the project site.
Plestiodon skiltonianus interparietalis	Coronado skink	-- / -- -- / WL	Occurs in coastal and inland portions of southern San Diego County; though can occur up into Riverside County where it intergrades with Skilton's skink (*Plestiodon skiltonianus skiltonianus*). Suitable habitats include grassland, woodlands, pine forests, and chaparral, especially in open sunny areas such as clearings and edges of creeks or rivers. Prefers rocky areas near streams with lots of vegetation but can also be found in areas away from water. Occasionally seen foraging in leaf litter but more commonly found underneath surface objects, such as bark or rocks, where it lives in extensive burrows.	**Present.** This species was incidentally observed in May 2024 during biological surveys within native grassland habitat onsite.
Birds				
Astur cooperi	Cooper's hawk	-- / -- -- / WL MHCP Covered	In California, breeds from Siskiyou County south to San Diego County and eastwards to Owens Valley at elevations below 9,000 feet. Inhabits forests, riparian areas, and more recently suburban and urban areas. Nests within dense woodlands and forests and isolated trees in open areas.	**Present.** This species was observed on-site during previous surveys and observed flying over the site during surveys in 2024. This species may use the site for foraging and nesting.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	-- / -- -- / WL MHCP Covered	Year-round resident of southwestern California occurring from Santa Barbara County south to San Diego County at elevations below 5,000 feet. Generally found on moderate to steep slopes vegetated with grassland, coastal sage scrub, and chaparral. Prefers areas with California sagebrush (*Artemisia californica*) but generally absent from areas with dense stands of coastal sage scrub.	**Low. Marginally** suitable habitat for this species occurs in limited areas on-site; however, this species primarily prefers chaparral habitat. This species has been recorded in the immediate vicinity of the site but was not detected during project surveys.
Athene cunicularia	burrowing owl	-- / -- BCC / SSC	Found from central California east to the Mojave Desert and south to coastal San Diego County. Primarily a grassland species that prefers areas with level to gentle topography and well-drained soils. Also occupies agricultural areas, vacant lots, and pastures. Requires underground burrows for nesting and roosting that are typically dug by other species such as the California ground squirrel (*Spermophilus beecheyi*). Will also utilize natural rock cavities, debris piles, culverts, and pipes for nesting and roosting.	**Low.** Non-native grasslands and fossorial mammals are present on-site; however, the site is hilly and grassland habitat is limited, which may preclude use of the site by this species. This species has not been recorded in the immediate vicinity of the site and was not detected during project surveys.
Icteria virens	yellow-breasted chat	-- / -- BCC / SSC MHCP Covered	In California, occurs as a migrant and summer resident breeding from the coastal regions in northern California, east of the Cascades, and throughout the central and southern portions of the state. Breeds in early successional riparian habitats with well-developed shrub layer and an open canopy nesting on the borders of streams, creeks, rivers, and marshes.	**Not expected**. Riparian habitat on-site is late successional and does not contain a well-developed shrub layer or open canopy.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Ixobrychus exilis	least bittern	-- / -- -- / SSC	Primarily a summer resident in California breeding in the Sacramento Valley, San Joaquin Valley, Central Valley, Salton Sink, lower Colorado River Valley, and coastal Orange and San Diego counties. Occurs year-round in the southern California. Inhabits freshwater and brackish marshes with dense, tall growths of aquatic or semiaquatic vegetation such as cattails, sedges (*Carex* ssp.), bulrush (*Schoenoplectus* spp.), and arrowhead (*Sagittaria* ssp.) interspersed with clumps of woody vegetation and open water, although they also occasionally occur in salt marshes. Breeds in low-lying areas associated with large rivers, ponds, lakes, and estuaries and is largely absent from higher elevations.	**None**. Suitable marsh habitat is not found on-site.
Laterallus jamaicensis coturniculus	California black rail	-- / ST -- / FP	In California, breeds in the Sacramento-San Joaquin River delta, San Francisco Bay area, Bolinas Lagoon and Tomales Bay in Marin County, Morro Bay in San Luis Obispo County, White Slough in San Joaquin County, the Salton Sea in Imperial County, and the Lower Colorado River Valley. Inhabits salt and freshwater marshes and wet meadows. Associated with pickleweed (*Salicornia* ssp.), bulrush (*Scirpus* spp.), alkali heath (*Frankenia salina*), and cordgrass (*Spartina* ssp.). Requires dense cover of upland vegetation in tidal areas for protection when rails must leave marsh habitats during high tide events.	**None**. Suitable salt and freshwater marshes and wet meadows are not found within the project site.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Plegadis chihi	white-faced ibis	-- / -- -- / WL MHCP Covered	Uncommon summer resident in sections of southern California, rare visitor in the Central Valley, and local wintering visitor along coast. In San Diego County, two nesting colonies have been documented at Guajome Lake and at a pond along the San Luis Rey River located near Keys Canyon. Prefers to feed in fresh emergent wetlands, shallow lacustrine waters, muddy ground of wet meadows, and irrigated or flooded pastures and croplands. Nests in dense, fresh emergent wetland.	**None**. Suitable wetland habitat and meadow habitat does not occur on-site.
Polioptila californica californica	coastal California gnatcatcher	FT / -- -- / SSC MHCP Covered	Year-round resident of California occurring from Ventura County south to San Diego County, and east to the western portions of San Bernardino and Riverside Counties. Typically occurs in arid, open sage scrub habitats on gently slopes hillsides to relatively flat areas at elevations below 3,000 feet. Composition of sage scrub in which gnatcatchers are found varies though California sagebrush (*Artemisia californica*) present as dominant or co-dominant species. Mostly absent from areas dominated by black sage (*Salvia mellifera*), white sage (*Salvia apiana*), or lemonade berry (*Rhus integrifolia*), though may occur more regularly in inland regions dominated by black sage.	**Not expected**. While the site contains patches of coastal sage scrub, they are small and isolated from occupied habitat in the region.
Rallus obsoletus levipes	light-footed Ridgway's rail	FE / SE -- / FP MHCP Covered	One of six recognized subspecies occurring as a resident in coastal salt marshes and lagoons from Santa Barbara County south to Baja California. The species is found primarily in tall, dense cordgrass and occasionally pickleweed (*Salicornia* ssp.) in the low marsh zone. Also found in freshwater marshes in winter.	**Not Expected.** Suitable marsh and maritime habitats do not occur on site.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Setophaga petechia	yellow warbler	-- / SSC	Common to locally abundant species breeding throughout California at elevations below 8,500 feet; excluding most of the Mojave Desert and all of the Colorado Desert. Breeds in riparian areas dominated by willows (Salix spp.) and cottonwoods (Populus spp.), near rivers, streams, lakes, and wet meadows. Also breeds in montane shrub and conifer forests in higher elevation areas.	**Present.** This species was observed within the riparian forest along Buena Vista Creek during surveys in 2024.
Sialia mexicana	western bluebird	MHCP Covered	Common year-round resident throughout California but absent from the higher mountains and eastern deserts. Breeds in open woodlands, riparian habitats, grasslands, and farmlands. Nests and roosts in cavities of trees and snags, often in holes previously created by woodpeckers, and nest boxes. Winters in a wider variety of habitats.	**High**. Suitable woodland, riparian, and grassland habitats are found on-site.
Vireo bellii pusillus	least Bell's vireo	FE / SE -- / -- MHCP Covered	In California, breeds along the coast and western edge of the Mojave Desert from Santa Barbara County south to San Diego County, and east to Inyo, San Bernardino, and Riverside Counties. Breeding habitat consists of early to mid-successional riparian habitat, often where flowing water is present, but also found in dry watercourses within the desert. A structurally diverse canopy and dense shrub cover is required for nesting and foraging. Dominant species within breeding habitat includes cottonwood (*Populus* spp.) and willows (*Salix* spp.) with mule fat (*Baccharis salicifolia*), oaks (*Quercus* ssp.), and sycamore (*Platanus racemosa*), and mesquite (*Prosopis* spp.) and arrowweed (*Pluchea sericea*) within desert habitats. Can be tolerant of the presence of non-native species such as tamarisk (*Tamarix* spp.).	**Not expected**. In the project site, Buena Vista Creek consists of a mixture of native riparian trees including willows and oak, but dense shrub and multi-layered canopy is limited to patches along the creek. Protocol surveys conducted in 2024 did not detect this species on-site.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Mammals				
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	-- / -- -- / SSC MHCP Covered	Occurs throughout southwestern California from western Riverside County to northern Baja California at elevations below 6,000 feet. Inhabits coastal sage scrub, grasslands, and chaparral communities, and generally exhibits a strong microhabitat affinity for moderately gravelly and rocky substrates. Forages for seeds from California sagebrush, California buckwheat, lemonade berry, and grasses under shrub and tree canopies, or around rock crevices.	**Low.** Coastal sage scrub and grasslands present on-site, but no gravelly or rocky soils on-site. This species has not been recorded in the immediate vicinity of the site and was not detected during project surveys.
Dipodomys stephensi	Stephens' kangaroo rat	FT / ST -- / -- MHCP Covered	Occurs in southern California within the San Jacinto Valley, western Riverside County, and southwestern San Bernardino County, and northwestern San Diego county at elevations between 180 to 4,100 feet. Inhabits native to open grasslands and sparse coastal sage scrub (less than 30 percent cover) on relatively flat or gently sloping ground with loose, friable, well-drained soil. Dominant species include native and non-native herbaceous species such as filaree (*Erodium* spp.), non-native grasses (*Bromus* ssp.), California sagebrush (*Artemisia californica*), and California buckwheat (*Eriogonum fasciculatum*).	**None**. Suitable grassland habitat is found on-site, but the site has steep topography that this species generally avoids.
Lasiurus blossevillii	western red bat	-- / SSC	In California, locally common occurring from Shasta County south to San Diego County and west of the Cascade and Sierra Nevada Ranges and deserts. Mainly occurs in riparian woodlands populated by willows, cottonwoods, sycamores, and oak trees but can be found in non-native vegetation such as tamarisk, eucalyptus, and orchards. Primarily roosts in trees preferring heavily shaded areas which are open underneath.	**High**. Suitable stands of riparian and eucalyptus woodlands are found on-site. This species may use the site for foraging as well as roosting.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Lasiurus xanthinus	western yellow bat	-- / -- -- / SSC	Occurs from southern California from in Los Angeles, San Bernardino, and San Diego Counties. In San Diego, commonly found in Anza-Borrego Desert but is also established west of the desert within rural to suburban areas including Escondido, Vista, Ramona, Lakeside, El Cajon, and La Mesa. Roosts primarily on dead palm frond skirts of native and non-native fan palms but has also been observed in cottonwoods and yuccas. Occurs within a variety of habitats where palms are present including desert riparian, desert washes, palm oasis, cottonwood-willow riparian forest, and developed areas.	**Low**. Suitable non-native palms located along Buena Vista Creek may provide roosting sites.
Odocoileus hemionus	mule deer	-- / -- MHCP Covered	Found throughout California lacking from only completely urbanized areas and the desert floor. Distribution determined by vegetation type, water availability, and quality and quantity of foraging habitat. Inhabits a wide array of habitats from grasslands, meadows, coastal sage scrub, chaparral, riparian and montane forests. Crepuscular activity and movements are along routes that provide the greatest amount of protective cover.	**Not expected**. The site contains suitable habitat for this species but is completely surrounded by development.

Scientific Name	Common Name	Status	Habitat Associations	Potential to Occur
Perognathus longimembris pacificus	Pacific pocket mouse	FE / -- -- / SSC	Historically occurred in coastal southern California from Los Angeles County south to San Diego County. Current distribution is within one mile of the coast with three known populations still present: Dana Point Headlands (Orange County, San Mateo Creek (northern San Diego County), and Camp Pendleton (southern San Diego County). Occurs on fine-grained, sandy or gravelly substrates in coastal strand, coastal dunes, river alluvium, and coastal sage scrub growing on marine terraces.	**Low.** Suitable coastal sage scrub habitat for this species present on-site. There is historical record of this species in the immediate vicinity of the site, but has been extirpated and species is only known to occur north of the site on the Camp Pendleton Marine Installation.

[1] Listing codes are as follows: F = Federal; S = State of California; E = Endangered; T = Threatened; CE = Candidate Endangered; R = Rare; BCC = Federal Bird of Conservation Concern; SSC = State Species of Special Concern; FP = State Fully Protected; WL = Watch List

MHCP Covered: Proposed as a Covered Species under the Draft North County Multiple Habitat Conservation Program (MHCP). NE = Listed as a Narrow Endemic Species under the Draft North County Species MHCP.

[2] Potential to Occur is assessed as follows: **None**: Species is so limited to a particular habitat that it cannot disperse on its own, and habitat suitable for its establishment and survival does not occur in the study area; **Not Expected**: There are no present or historical records of the species occurring on or in the immediate vicinity of the study area. The species moves freely and might disperse through or across the study area, but suitable habitat for residence or breeding does not occur; **Low**: Suitable habitat is present in the study area and there is a historical record of the species in the project vicinity, but no sign of the species was observed during surveys. Existing conditions such as elevation, species composition, density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, and/or isolation may substantially reduce the possibility that the species may occur; **Moderate**: Diagnostic habitats associated with the species occur on or adjacent to the study area, but there is not a recorded occurrence of the species within the immediate vicinity. Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity; **High**: Suitable habitat associated with the species occurs in the study area and the species has been recorded recently on or near the project, but was not observed during biological surveys; **Present**: The species was observed during biological surveys for the project and is assumed to occupy the study area.

IS/MND Appendix C

Cultural Resources Study

HELIX Environmental Planning, Inc.
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June 11, 2024 02864.00019.001

Eric Miller, Sr. Development Manager
City Ventures, LLC
3121 Michelson Drive, Suite 150
Irvine, California 92612

Subject: Cultural Resources Study for the 1160 Hacienda Drive Project

Dear Mr. Miller:

HELIX Environmental Planning, Inc. (HELIX) was contracted to conduct a cultural resources study for the 1160 Hacienda Drive Project, located in the City of Vista (City), in San Diego County, California. HELIX performed background research including a record search and archival study, conducted a field survey, and requested a review of the Sacred Lands File from the Native American Heritage Commission (NAHC) for the proposed project site and surrounding area. One archaeological site was recorded within the project area in 1958; however, no evidence of this resource was found during the current field survey. Based on our research, the project has the potential to affect known and unidentified cultural resources. An archaeological and Native American monitoring program is recommended for the project; avoidance, treatment, or mitigation measures would be developed and implemented in the event of an inadvertent discovery.

PROJECT LOCATION AND DESCRIPTION

The project site is in the City of Vista, in northwestern San Diego County (Figure 1, *Regional Location*). The project site is located east of Interstate 5 and south of State Route (SR) 78, immediately south of Buena Vista Creek, within Section 26 of Township 11 South, Range 4 West on the San Luis Rey U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *USGS Topography*). The project is located immediately south of Hacienda Drive and west of Pomelo Drive, within Assessor's Parcel Number (APN) 166-440-27-00 (Figure 3, *Aerial Photograph*). The project proposes to construct a 4.6-acre residential development with a total of 63 units.

METHODS

HELIX obtained a record search of the project area and a one-mile radius from the South Coastal Information Center (SCIC) on April 17, 2024. Reports of previous cultural resources studies covering the project site or adjacent areas, and site forms for cultural properties were reviewed to assess the existence of, or potential for, cultural properties to be present within the project area.

The NAHC was contacted by HELIX for a Sacred Lands File search on April 15, 2024, and HELIX sent outreach letters to the applicable tribes on May 22, 2024.

A field survey was conducted by HELIX archaeologist Michael Tapia and Luiseño Native American Monitor Logovi'I Saolo'I from Saving Sacred Sites (representing the San Luis Rey Band of Mission Indians) on April 19, 2024. The project area was surveyed by walking parallel transects spaced 5 to 10 meters apart where the terrain allowed.

RESULTS

Records Search

The records search results indicated a total of 89 cultural resources studies have been previously completed within one mile of the project area; a list of these studies is provided as Attachment A to this letter report. Of these, two overlap the project area (Table 1, *Previous Studies Overlapping the Project Area*). These two studies, a historic resources survey for the City of Vista (SD-11228; Marben-Laird Associates 1987) and a cultural resources evaluation for the Vista and Buena Sanitation District 2007 Sewer Master Plan Update (SD-11524; Rosenberg et al. 2007), were both large overviews of the project area and the surrounding vicinity that did not include fieldwork. The additional studies within the search radius include field survey reports, cultural resource evaluation and impact assessments, Phase II testing reports, Phase III data recovery reports, environmental impact reports, historic property survey reports, constraints analyses, monitoring reports, and historic resource nomination forms. Records search results, including maps, can be found in Attachment B (Confidential, bound separately). Although not included in the records search from SCIC, an archaeological survey of the entire Buena Vista Creek watershed was undertaken in the late 1950s, resulting in the recording of a number of resources in the project vicinity and along the whole of Buena Vista Creek, as well as a synthesis of these resources and their relationships to one another and the broader archaeological landscape (Wallace 1960).

Table 1
PREVIOUS STUDIES OVERLAPPING THE PROJECT AREA

Report No. (SD-)	Report Title	Author, Date
SD-11228	Historic Resource Survey, a Project of the City of Vista, California	Marben-Laird Associates, 1987
SD-11524	A Cultural Resources Evaluation for the Vista and Buena Sanitation District 2007 Sewer Master Plan Update	Rosenberg et al., 2007

The records search results also indicated that 31 cultural resources have been previously recorded within one mile of the project area, only one of which had been recorded within the project area (Table 2, *Cultural Resources Recorded Within One Mile of the Project Area*). One resource, P-37-000641 (CA-SDI-641), is mapped as being within the project area and is discussed in further detail below.

Table 2
CULTURAL RESOURCES RECORDED WITHIN ONE MILE OF THE PROJECT AREA

Resource Number (P-37-)	Resource Number (CA-SDI-	Age and Resources Present	Description	Recorder, Date
P-37-000637	CA-SDI-637	Prehistoric campsite	Consisting of manos and hammerstone(s)	Wallace, 1958
P-37-000638	CA-SDI-638	"Picture Hill" prehistoric campsite	Campsite consisting of a bedrock milling outcrop; an artifact scatter including lithics, shell, manos, metates, and Tizon Brown Ware ceramic sherds; midden; three petroglyphs/pictographs (painted and pitted)	Wallace, 1958; Hedges, 1977; Ezell, 1978;
P-37-000639	CA-SDI-639	Prehistoric campsite	Campsite consisting of bedrock milling features including mortars; ground stone including manos, polishing stones, and pestles; other tools including hammerstones, scrapers, and choppers; and ceramic sherds	Wallace, 1958
P-37-000640	CA-SDI-640	Prehistoric campsite	Artifacts included choppers, hammerstones, and a portable metate fragment; no features recorded	Wallace, 1958
P-37-000641	CA-SDI-641	Prehistoric campsite	Artifacts included manos, a portable metate, hammerstones, a pestle fragment, choppers, and a mortar fragment; shell scatter present	Wallace, 1958
P-37-000642	CA-SDI-642	Prehistoric campsite	Artifacts included manos and portable metates	Wallace, 1958
P-37-000643	CA-SDI-643	Prehistoric campsite	Artifacts included manos, portable metate fragments, pestles, and hammerstones	Wallace, 1958
P-37-000644	CA-SDI-644	Multi-component site	Prehistoric component consisted of lithic tools, debitage, hammerstones, and ground stone; the historic component consisted of glass bottles, metal hardware, ceramic tile fragments, concrete fragments, butchered cow bone, and lumber	Wallace, 1958; Serr and Hoffman, 2011; Bietz and Castells, 2019
P-37-000645	CA-SDI-645	Prehistoric campsite	One metate and reportedly a mortar (not observed at the time of recordation); shell noted in area	Wallace, 1959

Resource Number (P-37-)	Resource Number (CA-SDI-	Age and Resources Present	Description	Recorder, Date
P-37-006841	CA-SDI-6841	Prehistoric campsite	Campsite consisted of midden, shell, and debitage fragments	Fink and Hightower. 1978
P-37-008246	CA-SDI-8246	Prehistoric campsite	Campsite consisted of midden, shell, and artifacts including debitage, lithic tools, and Tizon Brownware ceramic sherds	Dittmar, 1980
P-37-024932	CA-SDI-16502	Prehistoric habitation site	Consisted of marine shell, bedrock milling features, cupules, ceramic sherds, faunal bone, and a possible human burnt bone fragment	Strudwick, McLean, and Russell, 2003; Robbins-Wade, 2012
P-37-025144	N/A	Historic single-family residence	1940s single-family tract home	Marvin, 2003
P-37-025145	N/A	Historic single-family residence	1920s single-family craftsman style residence	Marvin, 2003
P-37-025146	N/A	Historic single-family residence	1940s single-family tract home	LSA Associates, Inc., 20023
P-37-025147	N/A	Historic single-family residence/commercial building	1940s single-family tract home that was converted into a preschool	LSA Associates, Inc., 20023
P-37-025148	N/A	Historic commercial building	1940s commercial building; demolished	LSA Associates, Inc., 20023
P-37-025149	N/A	Historic single-family residence	1940s single-family tract home	LSA Associates, Inc., 20023
P-37-025150	N/A	Historic single-family residence	1940s single-family tract home	LSA Associates, Inc., 20023
P-37-025151	N/A	Historic barn	1920s barn on private property	LSA Associates, Inc., 20023
P-37-025152	N/A	Historic single-family residence	1950s single-family tract home	LSA Associates, Inc., 20023
P-37-025153	N/A	Historic single-family residence/commercial building	1950s single-family residence refurbished for commercial use	LSA Associates, Inc., 20023
P-37-025154	N/A	Historic single-family residence/commercial building	1950s single-family residence refurbished for commercial use	LSA Associates, Inc., 20023

Resource Number (P-37-)	Resource Number (CA-SDI-	Age and Resources Present	Description	Recorder, Date
P-37-036287	N/A	Prehistoric isolate	Isolated metavolcanic flake	Falvey and Herrera, 2016
P-37-036288	N/A	Historic single-family residence and historic trash scatter	1950-1960s ranch style residence with associated historic glass, ceramic, and butchered bone scatter	Falvey and Herrera, 2016
P-37-036621	CA-SDI-22123	Historic trash scatter	Mid-twentieth century glass and ceramic scatter	Garrison and Ellis, 2017
P-37-036622	N/A	Historic single-family residence	Early to mid-twentieth century single-family tract home	Garrison and Ellis, 2017
P-37-036623	N/A	Historic single-family residence	1930s-1940s single-family tract home	Garrison and Ellis, 2017
P-37-038561	N/A	Historic single-family residence	1930s vernacular house	Reinicke, 2019
P-37-038601	N/A	Historic road	Historic road	Castells, 2019
P-37-039086	N/A	Prehistoric isolate	Isolated lithic debitage	Pigniolo, 2020

P-37-000641 (CA-SDI-641)

Recorded in 1958 by Wallace, P-37-000641 (CA-SDI-641) was described as a large campsite with associated ground stone and lithic artifacts, mapped within the current project area. While little information is recorded on the site form regarding the location of the site itself, the form did note that there was a house on site and that the possibility of destruction was considerable (Wallace 1958). The site record has not been updated since the original 1958 recording. Wallace's (1960) Buena Vista Creek Watershed survey report noted manos, a pestle, a mortar, a metate, hammerstones, and a chopper at the site (Wallace 1960:Table 1). Animal bone was not noted at CA-SDI-641, nor were any temporally diagnostic artifacts; the site was not addressed individually in the survey report, and it was not one of the sites subject to testing (Wallace 1960).

Other Archival Research

Various additional archival sources were consulted by HELIX, including historic topographic maps and aerial imagery. These include aerials from 1938, 1946, 1953, 1964, 1978, 1982, 1988, 1994, and 2005 (NETR Online 2024), and several historic USGS topographic maps, including the 1898 Oceanside (1:62,500), the 1942 Ocean Side (1:62,500), and the 1948, 1968, 1975, and 1997 San Luis Rey (1:24,000) topographic maps (USGS n.d.). The purpose of this research was to identify historic structures and land

use in the area, as well as changes in the landscape over time that may have affected archaeological visibility or the integrity of cultural resources.

The earliest available topographic map – the 1893 Oceanside (1:62,500) map – depicts the project area as an undeveloped, hilly region with the Buena Vista Creek running east-west to the north. Few structures are located within the general area. The subsequent 1942 Ocean Side (1:62,500) and 1948 San Luis Rey (1:24,000) map show the beginning of the development of the region; SR 78 is recorded in its original alignment, and several new roads and structures are seen in the area. It is not until the 1968 San Luis Rey (1:24,000) topographic map that major development is seen. This map depicts SR 78 in its current alignment, as well as several neighborhoods in the area. Additionally, this map shows a single structure within the project area. The following 1975 and 1997 maps show the region developing, with numerous new roads and structures in the area (USGS n.d.).

The aerial photographs of the region show this development; the area is sparsely populated in the 1938 aerial photograph, and the 1946 photograph shows newly planted orchards to the east (NETR Online 2024). The house recorded by the 1968 San Luis Rey map is first seen in the 1953 aerial photograph – a driveway is seen running south to the house from Hacienda Drive, and several trees are planted surrounding the house. The 1964 and 1978 aerial photographs show the landscaped property, as well as the new alignment of several roads in the area. The construction of Hacienda Drive is visible on the 1988 aerial photograph, and by the time the 2005 aerial photograph was taken, the house had been demolished, and the area had been cleared of vegetation.

Geologically, the project area is underlain by tonalite dating to the mid-Cretaceous (Kennedy and Tan 2007). Three soil series are present within the project area; of these three, the Fallbrook series is the most abundant, followed by the Salinas series and the Greenfield series (Bowman 1973; Natural Resources Conservation Service 2024). The Fallbrook series consists of well-drained, moderately deep to deep sandy loams formed from granodiorite; the Salinas series consists of well-drained and moderately well-drained loams washed from other soil series; finally, the Greenfield series consists of well-drained, very deep sandy loams derived from granitic alluvium (Bowman 1973).

Sacred Lands File Search

HELIX contacted the NAHC in April 2024 for a Sacred Lands File search. They responded on May 15, 2024, with a list of tribal contacts and positive results for Sacred Lands near the project area. The NAHC recommended specific outreach to the San Luis Rey Band of Mission Indians (San Luis Rey Band) and the La Jolla Band of Luiseño Indians (La Jolla Band). HELIX sent letters on May 22, 2024, to the tribal contacts provided by the NAHC and sent emails to the San Luis Rey and La Jolla Bands on May 15 and 16, 2024. The San Luis Rey Band responded on May 16, 2024, that they are aware of cultural resources near the project area and are requesting a meeting. As of the date of this report, no additional responses have been received. If additional responses are received, they will be forwarded to the lead agency.

On May 22, 2024, HELIX project manager Nikki Falvey met with San Luis Rey Band Cultural Resources Specialist Cami Mojado and Saving Sacred Sites representative PJ Stoneburner to discuss tribal knowledge of cultural resources in the project vicinity. In addition to the resources recorded in the SCIC records search results, Ms. Mojado and Mr. Stoneburner provided details on two additional tribal cultural resources near the project. The details and location of these resources are confidential. They recommended full-time archaeological and Native American monitoring for ground-disturbing

construction activities and requested on-site reburial of any prehistoric resources uncovered during construction. HELIX, the San Luis Rey Band, and the client undertook additional coordination to identify preliminary reburial locations within proposed landscape areas. Native American correspondence is located in Attachment C (Confidential, bound separately).

Field Survey

HELIX archaeologist Michael Tapia and Native American Monitor Logovi'I Saolo'I from Saving Sacred Sites surveyed the project site on April 19, 2024. The project area was surveyed in parallel transects spaced 5 to 10 meters apart. Ground visibility was very poor, with dense vegetation covering the soil (Plates 1-3). Vegetation included dense grasses, cacti, palm trees, eucalyptus, castor bean plants, vines, and mustard plants. A dirt trail along the western perimeter allowed for moderate ground visibility. The northeastern corner of the property was not surveyed due to safety concerns from an unleashed dog and a homeless encampment.



Plate 1. Overview of project area, view east.



Plate 2. Overview of project area, view north.



Plate 3. Overview of dirt trail noted within the project area, view to the east.

No previously unidentified cultural resources were observed, nor were any resources associated with site P-37-000641 observed.

CONCLUSIONS AND RECOMMENDATIONS

The review of the records search information indicated that one cultural resource, a prehistoric campsite, has been previously recorded within the project site, although the original 1958 site record indicated the possibility of destruction of the site was high, given a house and other disturbances. There is no site record update on file for this resource at SCIC. The field survey was negative for cultural resources; however, ground visibility was very poor, and safety concerns prevented access to a portion of the property.

The Sacred Lands File search was positive for the presence of cultural resources within the project vicinity, and coordination with the San Luis Rey Band of Mission Indians revealed the presence of two additional cultural resources near the project site. The San Luis Rey Band requested full-time archaeological and Native American monitoring during ground-disturbing construction activities and the reburial of any discovered cultural resources on site.

Based on these factors, there is a potential for previously recorded and previously unidentified cultural resources on the project site. The implementation of an archaeological and Native American monitoring program is recommended which would include attendance by an archaeologist and a Native American monitor at a preconstruction meeting, as well as monitoring of ground-disturbing activities by an archaeologist and Native American monitor. The archaeologist and the Native American monitor would have the authority to temporarily halt or redirect ground-disturbing activities in the event of an inadvertent discovery. If cultural material is encountered during monitoring, the archaeological Principal Investigator and the Native American representative from the Monitoring tribe would work with the project applicant and City staff to develop and implement appropriate avoidance, treatment, or mitigation measures to mitigate these impacts to less than significant.

If you have any questions, please contact Nikki Falvey at NikkiF@helixepi.com or at (619) 462-1515 extension 240.

James Turner, M.A., RPA
Senior Archaeologist

Nikki Falvey
Cultural Resources Project Manager

Attachments:

Figure 1: Regional Location
Figure 2: USGS Topography
Figure 3: Aerial Photograph

A: List of Reports within One Mile of Project Area
B: Records Search Summary and Maps (confidential, bound separately)
C: Native American Correspondence (confidential, bound separately)

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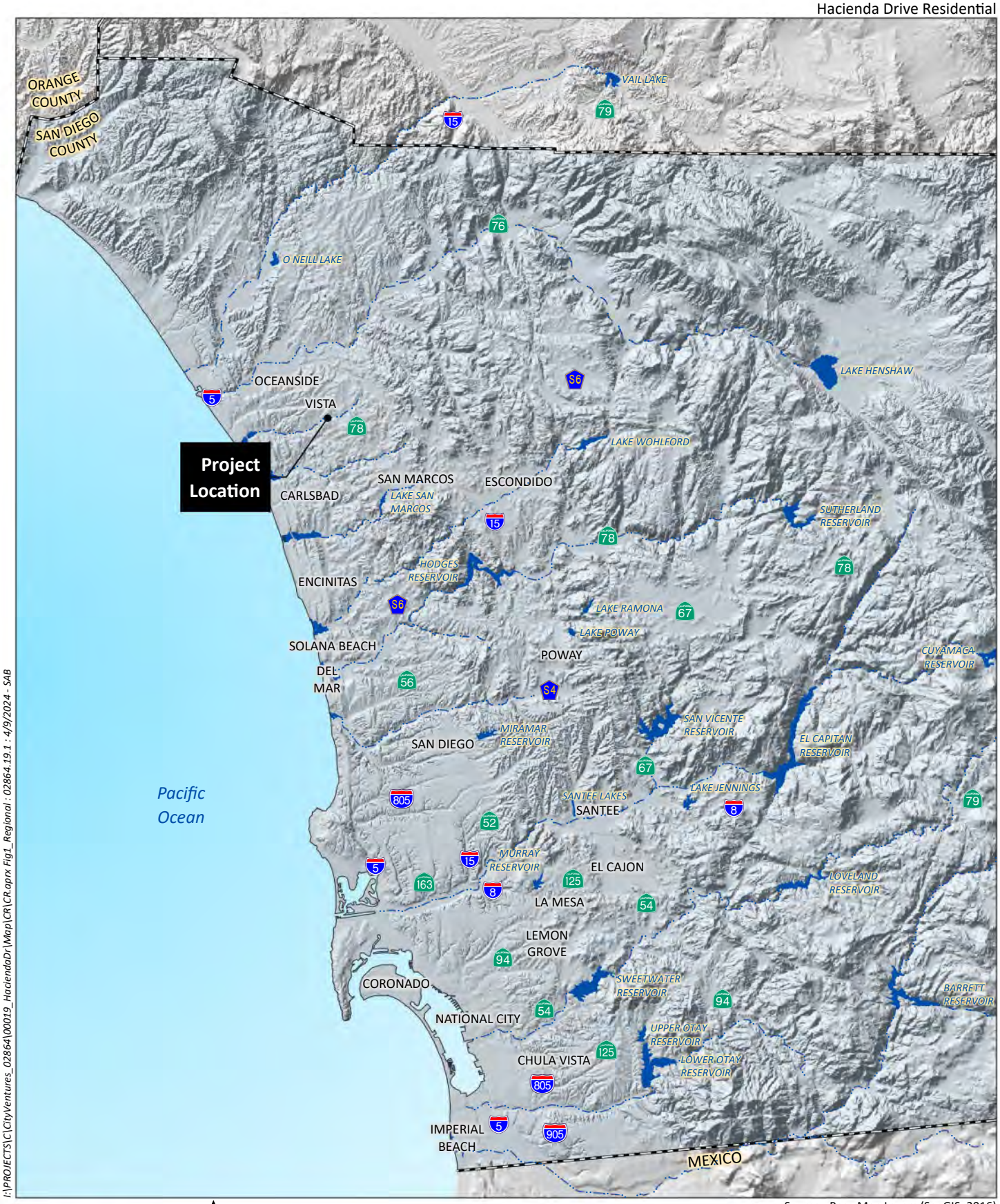
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Wallace, William J.
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Figures



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\CR\CR.aprx Fig1_Regional : 02864.19.1 : 4/9/2024 - SAB

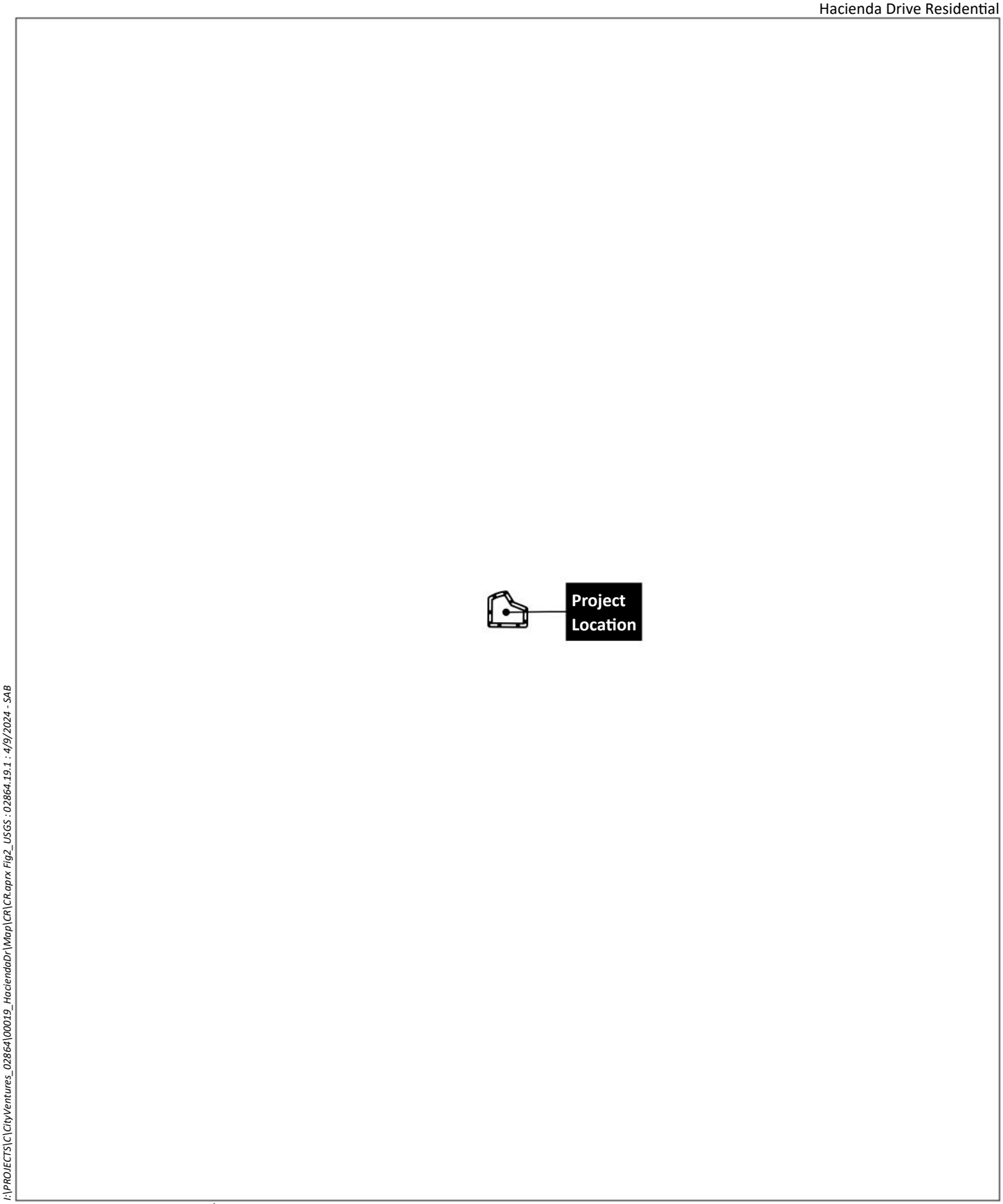
0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\CR\CR.aprx Fig2_USGS : 02864.19.1 : 4/9/2024 - SAB

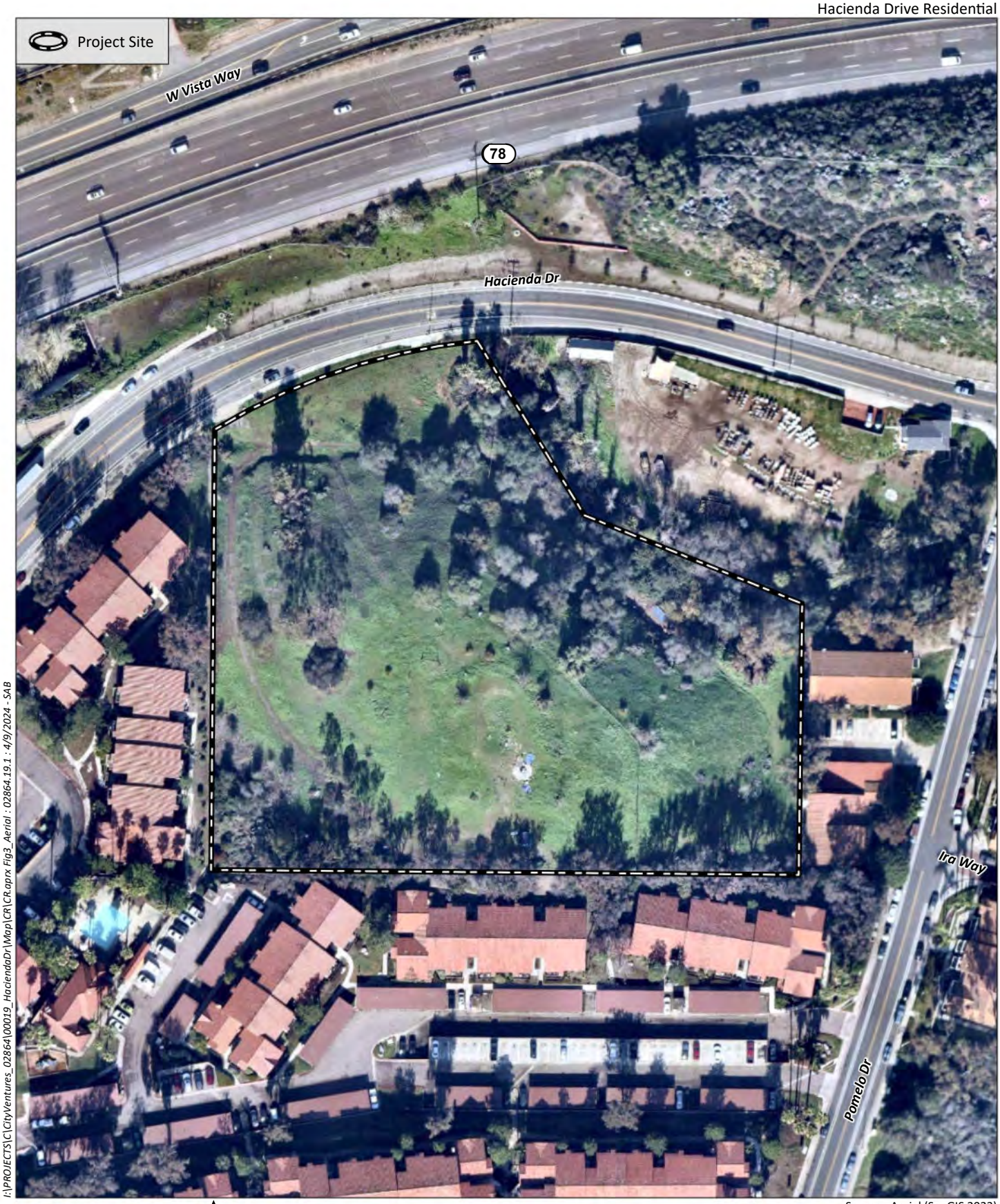
0 2,000 Feet

Source: SAN LUIS REY 7.5' Quad (USGS)

HELIX Environmental Planning

USGS Topography

Figure 2



I:\PROJECTS\C\CityVentures_02864\00019_HaciendaDr\Map\CR\CR.aprx Fig3_Aerial : 02864.19.1 : 4/9/2024 - SAB

0 120 Feet

Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Aerial Photograph

Figure 3

Attachment A

List of Reports within One Mile of Project Area

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-00192	NADB-R - 1120192; Voided - BERRYS 40	1978	Berryman, Stanley R.	Archaeological Field Investigation: Adult Mobile Home Park in Vista	Archaeological consulting and Technology	
SD-00296	NADB-R - 1120296; Voided - BULL 34	1973	Bull, Charles S. and Paul H. Ezell	An Archaeological Impact Statement for A. F. Anzlover of Centurion International.	California State University, San Diego	
SD-00359	NADB-R - 1120359; Voided - CARRICO98	1975	Carrico, Richard	Archaeolocal Survey of the TMI Project	WESTEC Services, Inc.	
SD-00547	NADB-R - 1120547; Voided - CUPPLES 45	1976	Cupples, Sue Ann	Archaeological Survey Report: Crowley Heights, Vista, California	Sue Ann Cupples	
SD-00574	NADB-R - 1120574; Voided - CARRILLO04	1979	Carrillo, Charles and Charles Bull	McMillin North Pointe: Archaeological Studies of SDM W 2133, Oceanside, California	Recon	
SD-00690	NADB-R - 1120690; Voided - FINK 42	1975	Fink, Gary R.	Archaeological Survey for the Proposed Vista Center Addition, Vista, California	San Diego County Engineer Department	37-000644
SD-00708	NADB-R - 1120708; Voided - CHACE 66	1981	Chace, Paul G.	An Archaeological and Paleontological Survey of the Miller Property in the City of Vista, California (Assessor's Parcel No. 163-022-14) (E81-12 P.C. 81-011 TPM4) (Job No. 65-80)	Paul G. Chace and Associates	
SD-00746	NADB-R - 1120746; Voided - CHACE 03	1977	Chace, Paul G.	An Archaeological Survey of the Buena Vista Creek Relief Trunk Sewer Line, in the City of Vista, California (E-77-89)	Paul G. Chace & Associates	37-000638, 37-000639, 37-000640, 37-000641, 37-000642, 37-000643, 37-000644, 37-000647, 37-000648, 37-000650, 37-000651
SD-00814	NADB-R - 1120814; Voided - LAYLANDER8	1981	Laylander, Don	An Archaeological Assessment of the Bradley Property Near Escondido, County of San Diego.	Paul G. Chace & Associates	37-008463
SD-01014	NADB-R - 1121014; Voided - GALLEGO34	1987	Gallegos, Dennis and Andrew Pigniolo	Cultural Resource Survey of the Proposed South Melrose Drive Street Improvements, Vista, California	WESTEC Services, Inc.	
SD-01016	NADB-R - 1121016; Voided - GALLEGOS32	1987	Gallegos, Dennis and Andrew Pigniolo	Cultural Resource Survey of the Mar Vista OV1 Trunk Sewer Line, Vista, California	WESTEC Services, Inc.	
SD-01023	NADB-R - 1121023; Voided - GALLEGOS25	1986	Gallegos, Dennis and Dayle Cheever	Cultural Resource Survey of the Barsby Trunk Line and Melrose Way Sewer, Vista, California	WESTEC Services, Inc.	
SD-01089	NADB-R - 1121089; Voided - FRANKLIN 3	1979	Franklin, Randy L. and Richard L. Carrico	An Arcaheological Survey for the Proposed Calvin Leung Mobile Home Park, Oceanside, California.	WESTEC Services, Inc.	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-01194	NADB-R - 1121194; Voided - HECTOR 71	1989	Hector, Susan and McMillan Davis	Cultural Resources Survey of the Hacienda Drive Commercial Centers Vista, California	RECON	
SD-01329	NADB-R - 1121329; Voided - PIGNIOLO11	1989	Pigniolo, Andrew	Cultural Resource Investigation: Site SDi-6835 (W-1895) Within the Palomar Airport Center Project Area.	WESTEC Services, Inc.	37-006835
SD-01336	NADB-R - 1121336; Voided - PIGNIOLO 4	1986	Pigniolo, Andrew and Dennis Gallegos	Cultural Resource Survey of the St. Croix Villas Project, Oceanside, California.	WESTEC Services, Inc.	
SD-01502	NADB-R - 1121502; Voided - WADE 1	1986	Wade, Sue A.	Archaeological Testing of SDM-W-413, SDM-W-2131, and SDM-W-2132 Oak Riparian Park City of Oceanside, California	RECON	
SD-01672	NADB-R - 1121672; Voided - WALKERC 06	1980	Walker, Carol J. and Charles S. Bull	An Archaeological Test Investigation of Seven Cultural Resources for Leisure Village Oceanside	RECON	
SD-01874	NADB-R - 1121874; Voided - HECTOR 39	1984	Hector, Susan	Archaeological Survey of Vista Point	RECON	
SD-02012	NADB-R - 1122012; Voided - ENGLEHOR02	1980	Englehorn, Curtis Scott	Draft Focused Environmental Impact Report for the House of Mazada Property	Curtis Scott Englehorn	
SD-02294	NADB-R - 1122294; Other - CITY OF VISTA PC-14-042; Voided - SMITHB 206	1991	SMITH, BRIAN F.	ARCHAEOLOGICAL SURVEY OF THE VISTA CENTRE PROJECT	BRIAN F. SMITH AND ASSOCIATES	37-011629
SD-02694	NADB-R - 1122694; Voided - MOONEY 09	1993	MOONEY, BRIAN and JOHN COOK	ARCHAEOLOGICAL SURVEY REPORT FOR A PORTION OF ADAMS STREET WIDENING PROJECT IN THE CITY OF CARLSBAD, CALIFORNIA	BRAIN F. MOONEY & ASSOCIATES	
SD-03075	NADB-R - 1123075; Voided - CARRICO166	1995	CARRICO, RICHARD, ANDREW PIGNIOLO, BRIAN GLENN, and KATHLEEN CRAWFORD	HISTORIC PROPERTY SURVEY REPORT FOR THE STATE ROUTE 78 CORRIDOR ENHANCEMENT PROJECT II-SD-78, P.M. 5.3-9.8, 965100, CITY OF VISTA, CALIFORNIA	ODGEN ENVIRONMENTAL AND ENERGY SERVICES CO., INC.	37-013009
SD-03528	NADB-R - 1123528; Other - AFFINIS JOB NO. 1261; Voided - GROSS 41	1998	GROSS, G. TIMOTHY and RUTH C. ALTER	ARCHAEOLOGICAL TESTING OF A PORTION OF SDI-14,809, AN ARCHAEOLOGICAL SITE ON A SEGMENT OF THE SOUTH AGUA HEDIONDA TRUNK SEWER CARLSBAD, CALIFORNIA	CARLSBAD MUNICIPAL WATER DISTRICT	37-016317
SD-04110	NADB-R - 1124110; Voided - WHITEHOU09	1990	John Whitehouse	A Cultural Resource Survey of the Melrose and Hacienda Commercial Center, City of Vista, California	RECON	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-04111	NADB-R - 1124111; Voided - SEEMAN01	1982	Larry Seeman	Draft Environmental Impact Report Revised Parks and Recreation Element, Carlsbad, California	Larry Seeman	
SD-04308	NADB-R - 1124308; Voided - WESTEC55	1979	WESTEC SERVICES, INC. and R.L. FRANKLIN	AN ARCHAEOLOGICAL SURVEY FOR THE PROPOSED CALVIN LUENG MOBILE HOME PARK, OCEANSIDE, CA	WESTEC	
SD-04360	NADB-R - 1124360; Voided - ERCE16	1991	ERC	TESTING AND DATA RECOVERY FOR LATE PERIOD OCCUPATION SITES CA-SDI-635 AND CA-SDI-636 CALAVERA HEIGHTS, CARLSBAD, CA	ERC	
SD-04806	NADB-R - 1124806; Voided - STRUDWICK5	1994	STRUDWICK, IVAN H.	HISTORICAL/ARCHAEOLOGICAL SURVEY REPORT FOR THE MOFFATT PARCEL AGUA HEDIONDA LAGOON, CARLSBAD, CALIFORNIA	GALLEGOS AND ASSOCIATES	37-019009
SD-04835	NADB-R - 1124835; Voided - CORUM68	1982	CORUM, JOYCE	SUMMARY REPORT FOR AN ARCHAEOLOGICAL TEST EXCAVATION AT SITE CA-SDI-9473, OCEANSIDE, CA. 11-SD-78 P.M. O.O/3.1	JOYCE CORUM	37-009473
SD-06803	NADB-R - 1126803; Voided - PIGNIOL117	1986	PIGNIOLO, ANDREW	Cultural Resource Survey of the St. Croix Villas Project, Oceanside	WESTEC Services	
SD-07274	NADB-R - 1127274; Voided - CARRICO254	1995	CARRICO, RICHARD	Historic Property Survey Report for the State Route 78 Corridor Enhancement Project 11-SD-78, P.M. 5.3-9.8, 965100 City of Vista, California	Ogden Environmental and Energy Services	37-013009
SD-07412	NADB-R - 1127412; Other - AFFINIS JOB 1662; Voided - GILETTIA03	2002	GILETTI, ANDREW	EMERALD RIDGE-ARCHAEOLOGY	AFFINIS ENV. SERVICES	
SD-07466	NADB-R - 1127466; Voided - ERCE 06	1991	ERCE	CULTURAL RESOURCE TESTING PROGRAMS FOR SDI-4922, 1923, 1925, 4927, 11941, 11942, 11943, 12125 CALAVERA LAKE, CARLSBAD, CA	ERCE	37-004922, 37-004923, 37-004925, 37-004927, 37-011941, 37-011942, 37-011943, 37-012125
SD-08746	NADB-R - 1128746; Voided - APRA32	1979	ADVANCE PLANNING AND RESEARCH AND ASSOCIATES	AN ARCHAEOLOGICAL REPORT SUBMITTED TO CITY OF OCEANSIDE, CALIFORNIA , BROADMOOR-OCEANSIDE SUBDIVISION PHASE II ARCHAEOLOGIC REPORT FOR ARCHAEOLOGICAL SITE TMI-4 OCEANSIDE, CALIFORNIA	APRA	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-08755	NADB-R - 1128755; Voided - FLOWER08	1981	FLOWER, DOUGLAS and LINDA ROTH	ARCHAEOLOGICAL INVESTIGATIONS OF SOUTH RIDGE TRAILS OCEANSIDE, CALIFORNIA SDM-W-2130, SDM-W-2135, SDM-W-2137	FLOWER AND ROTH ENVIRONMENTAL CONSULTANTS	
SD-08883	NADB-R - 1128883; Other - 1830; Voided - MURRAY01	2003	MURRAY, MATT and MARY ROBBINS-WADE	VIA LAS ROSAS ARCHAEOLOGY	AFFINIS	37-025195, 37-025196
SD-08965	NADB-R - 1128965; Voided - MCLEAND03	2003	MC LEAN, DEBORAH K. B.	ARCHAEOLOGICAL SURVEY REPORT WEST VISTA WAY WIDENING, CITY OF VISTA, SAN DIEGO COUNTY, CALIFORNIA	LSA ASSOCIATES, INC	37-024932
SD-09171	NADB-R - 1129171; Other - 1938; Voided - ROBBINS120	2004	ROBBINS-WADE, MARY	DURIAN STREET MULTI-FAMILT PROJECT - ARCHAEOLOGY	AFFINIS ENVIRONMENTAL SERVICES	
SD-09291	NADB-R - 1129291; Other - Affinis Job No. 1944; Voided - ROBBIN128	2004	Robbins-Wade, Mary	Buie Condominium Project- Archaeology (Affinis Job No. 1944)	Mary Robbins-Wade	
SD-09610	NADB-R - 1129610; Other - 2053; Voided - ROBBIN 143	2005	Robbins-Wade, Mary	Diamond Homes Tentative Subdivision Map-Archaeology (Affinis Job No. 2053)	Affinis Environmental Services	
SD-09654	NADB-R - 1129654; Voided - KYLE 309	2005	Kyle,Carolyn	Cultural Resource Constraint Analysis for the Lake Calavera Trails Project City of Carlsbad, California	Kyle Consulting	37-004922, 37-004930, 37-005793, 37-011941, 37-011942, 37-011943, 37-012145
SD-09766	NADB-R - 1129766; Voided - ROBBIN149	2005	Robbins-Wade, Mary	Archaeological Resources Survey, West Vista Way Medical Office Project, Vista, San Diego County, California	Affinis Environmental Services	37-024932
SD-09767	NADB-R - 1129767; Other - 2053; Voided - ROBBIN150	2005	Robbins-Wade, Mary and Matt Sivba	Diamond Homes Tentative Subdivision Map-Archaeological (Affinis Job No. 2053)	Affinis Environmental Services	
SD-09904	NADB-R - 1129904; Voided - TANIGC01	2004	Taniguchi, Christeen and Wayne Bonner	Indirect APE Historic Architectural Assessments for Cingular Telecommunications Faciltiy Candidate SG 103-01(Emerald Drive Row), Emerald Drive, Oceanside, California	Michael Brandman Associates	
SD-09935	NADB-R - 1129935; Voided - AISLIM11	2004	Aislin-Kay, Marnie and Christeen Taniguchi	Records Search Results for Cingular Telecommunications Facility Candidate SD-965-12 (Breeze Hill Park), 900 South Melrose Drive, Vista, San Diego County, CA	Michael Brandman and Associates	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-09994	NADB-R - 1129994; Voided - MURRAM02	2006	Murray, Matt and Robbins-Wade, Mary	Via Centre Office Park Archaeological Survey (Job No. 2088)	Affinis Environmental Services	
SD-10028	NADB-R - 1130028; Voided - TANIGC05	2004	TANIGUCHI, CHRISTEEN and WAYNE BONNER	RECORDS SEARCH AND SITE VISIT RESULTS FOR CINGULAR WIRELESS FACILITY CANDIDATE SG-103-01 (EMERALD DRIVE ROW) EMERALD DRIVE, OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA.	MICHAEL BRANDMAN ASSOCIATES	
SD-10062	NADB-R - 1130062; Voided - ECKHAW23	1975	Eckhardt, William	Archaeological Survey for TMI Oceanside Property	Westec Services Inc	
SD-10551	NADB-R - 1130551; Voided - ARRINGT01	2006	ARRINGTON, CINDY	CULTURAL RESOURCES FINAL REPORT OF MONITORING AND FINDINGS FOR THE QWEST NETWORK CONSTRUCTION PROJECT, STATE OF CALIFORNIA	SWCA ENVIRONMENTAL CONSULTANTS	
SD-10791	NADB-R - 1130791; Voided - BRANDES69	1984	BRANDES, RAYMOND and RICK ALEXANDER	NOMINATION FORM FOR THE CHARLES A. BRAUN HOUSE/ WILLARD AND SUSAN MICHLIN HOUSE	SOURCEPOINT	
SD-11228	NADB-R - 1131228; Voided - MARBENL01	1987	MARBEN-LAIRD ASSOCIATES	HISTORIC RESOURCE SURVEY, A PROJECT OF THE CITY OF VISTA, CALIFORNIA	MARBEN-LAIRD ASSOCIATES	
SD-11524	NADB-R - 1131524; Voided - ROSENBE12	2007	ROSENBERG, SETH A., ADRIANE DORRLER, and BRIAN F. SMITH	A CULTURAL RESOURCES EVALUATION FOR THE VISTA AND BUENA SANITATION DISTRICT 2007 SEWER MASTER PLAN UPDATE	BRIAN F. SMITH AND ASSOCIATES	
SD-11707	NADB-R - 1131707; Voided - TUMA20	2008	TUMA, MICHAEL W., CAPRICE D. HARPER, and SUSAN UNDERBRINK	ARCHAEOLOGICAL SURVEY, TESTING, AND EVALUATION OF THREE BEDROCK MILLING FEATURE SITES, AND EVALUATION OF ONE BUILT ENVIRONMENT RESOURCE FOR THE STONEMARK ESTATES PROJECT IN UNINCORPORATED SAN DIEGO COUNTY, CALIFORNIA	SWCA ENVIRONMENTAL CONSULTANTS	37-029301, 37-029302, 37-029303, 37-029304, 37-029305, 37-029306
SD-12039	NADB-R - 1132039; Voided - GALLEGO341	2007	GUERRERO, MONICA and DENNIS R. GALLEGOS	CULTURAL RESOURCES MONITORING REPORT FOR THE NORTH COUNTY TRANSIT DISTRICT (NCTD) SPRINTER RAIL PROJECT OCEANSIDE TO ESCONDIDO, CALIFORNIA	GALLEGOS & ASSOCIATES	37-012095, 37-012096, 37-012097, 37-015576, 37-015595

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-12233	NADB-R - 1132233; Voided - GARDNJ31	2009	GARDNER, JILL	CULTURAL RESOURCES MONITORING FOR THE SDG&E GAS PIPELINE ACCESS ROAD GRADING AT CALAVERA HILLS, CARLSBAD, SAN DIEGO COUNTY, CALIFORNIA	ASM AFFILIATES	
SD-13262	NADB-R - 1133262; Voided - YORKAND10	2010	YORK, ANDREW L.	ARCHAEOLOGICAL TESTING AND EVALUATION OF ARCHAEOLOGICAL DEPOSITS AT THE PROPOSED WIRE MOUNTAIN ROAD INTERCHANGE (MILCON P-1040), MARINE CORPS BASE CAMP PENDLETON	AECOM	37-014052, 37-030535, 37-031408, 37-031409, 37-031410, 37-031411, 37-031412
SD-13283	NADB-R - 1133283; Voided - RUSTONR01	2011	RUSTON, RACHEL S.	CULTURAL RESOURCES REVIEW AND RECORDS SEARCHES FOR LINE 3010 OPERATIONS & MAINTENANCE POTHOLING AND PHASE I & 2 PIPELINE INTEGRITY/ RETROFIT ACTIVITIES	ASM AFFILIATES	37-000608, 37-000611, 37-000689, 37-005369, 37-014133
SD-13296	NADB-R - 1133296; Voided - LOFTUSS28	2011	LOFTUS, SHANNON	AT&T SITE NS0015 OAK RIPARIAN PART LTE 4585 1/2 LAKE BOULEVARD OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA 92056	ACE ENVIRONMENTAL, LLC	
SD-13633	NADB-R - 1133633; Voided - BLOTNER09	2010	BLOTNER, NICOLE	ETS #20554, CULTURAL RESOURCES MONITORING FOR THE GAS GRID 3010-10 PROJECT, CARLSBAD, SAN DIEGO COUNTY, CALIFORNIA	HDR/ E2M	37-004925, 37-004927, 37-005793
SD-13868	NADB-R - 1133868; Voided - HOFFR02	2012	HOFFMAN, ROBIN D.	PHASE II ARCHAEOLOGICAL INVESTIGATION OF SITE CA-SDI-644, FOR THE PROPOSED CALIFORNIA HIGHWAY PATROL OCEANSIDE REPLACEMENT FACILITY PROJECT, VISTA, COUNTY OF SAN DIEGO, CALIFORNIA	ICF INTERNATIONAL	37-000644
SD-13972	NADB-R - 1133972; Voided - ROBBINS370	2002	ROBBINS-WADE, MARY	EMERALD RIDGE	AFFINIS	
SD-14069	NADB-R - 1134069; Voided - NIGHAS94	2011	NI GHABHLAIN, SINEAD	CULTURAL AND HISTORICAL RESOURCE STUDY FOR THE CITY OF OCEANSIDE GENERAL PLAN- CIRCULATION ELEMENT UPDATE PROGRAM ENVIRONMENTAL IMPACT REPORT (PEIR)	ASM AFFILIATES, INC.	37-005130, 37-005508, 37-011687, 37-014227, 37-015694, 37-027452, 37-028351

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SD-14081	NADB-R - 1134081; Voided - NIGHAS101	2009	NI GHABHLAIN, SINEAD	CULTURAL AND HISTORICAL RESOURCES SURVEY FOR THE DOWNTOWN VISTA SPECIFIC PLAN UPDATE PROGRAM ENVIRONMENTAL IMPACT REPORT	ASM AFFILIATES, INC.	37-000647, 37-015575, 37-028777
SD-14251	NADB-R - 1134251; Voided - SANKAJ03	2013	SANKA, JENNIFER M.	PHASE I CULTURAL RESOURCES ASSESSMENT DIGITAL MESSAGING BOARDS PROJECT CITY OF VISTA, SAN DIEGO COUNTY, CALIFORNIA	ATKINS	
SD-14701	NADB-R - 1134701; Voided - KYLE353	2005	KYLE, CAROLYN E.	CULTURAL RESOURCE CONSTRAINT ANALYSIS FOR THE LAKE CALAVERA TRAILS PROJECT CITY OF CARLSBAD, CALIFORNIA	KYLE CONSULTING	37-000636, 37-004918, 37-004919, 37-004920, 37-004921, 37-004922, 37-004923, 37-004924, 37-004925, 37-004926, 37-004927, 37-004929, 37-004930, 37-005431, 37-005793, 37-006841, 37-008408, 37-011941, 37-011942, 37-011943, 37-012145
SD-14886	NADB-R - 1134886; Voided - LOFTUSS132	2013	LOFTUS, SHANNON	CULTURAL RESOURCE RECORDS SEARCH AND SITE SURVEY AT&T SITE NS0016 OCEAN HILLS COUNTRY CLUB 1298 NAVEL PLACE VISTA, SAN DIEGO COUNTY, CALIFORNIA 92081	ACE ENVIRONMENTAL, LLC	
SD-15876	NADB-R - 1135876	2014	Carrie D. Wills and Sarah A. Williams	CULTURAL RESOURCE RECORDS SEARCH AND SITE VISIT RESULTS FOR VERIZON WIRELESS CANDIDATE 'HACKMORE DRIVE', LOCATED AT 1455 WEST VISTA WAY, VISTA, SAN DIEGO COUNTY, CALIFORNIA	First Carbon Solutions	
SD-15898	; NADB-R - 1135998	2015	Mary Robbins-Wide	BELLE MENTE CHARTER SCHOOL ARCHAEOLOTICAL MONITORING	Helix Environmental	
SD-16052	NADB-R - 1136052	2014	Don C. Perez	CULTURAL RESOURCES SURVEY OLIVE SD / ENSITE #17897 (270231) 1505 OLIVE AVENUE VISTA, SAN DIEGO COUNTY, CALIFORNIA 92083 SE1/4 NW1/4 S23 T11S R4W	EBI Consulting	
SD-16560	NADB-R - 1136560	2015	CASTELLS, SHELBY GUNDERMAN	CULTURAL RESOURCES STUDY FOR THE PRESIDIO VISTA PROJECT, CITY OF VISTA, SAN DIEGO COUNTY, CALIFORNIA	ASM Affiliates	
SD-16603	NADB-R - 1136603	2016	MCMANN, KELLY	777 ANNS WAY, VISTA, SAN DIEGO COUNTY, CALIFORNIA 92083	AEI Consultants	

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SD-16857	NADB-R - 1136857	2016	FOGAL, MARISA D.C.	ELIGIBILITY EVALUATION OF VISTA HIDDEN VALLEY APARTMENTS IN VISTA, CALIFORNIA FOR SECTION 106 REVIEW	Calfornia Housing Finance Agency	
SD-16991	NADB-R - 1136991	2016	WILSON, STACIE	EMERALD DRIVE PROJECT (PRD P16-0232) - CULTURAL RESOURCES SURVEY	HELIX Environmental Planning	37-036287, 37-036288
SD-17123	NADB-R - 1137123	2017	SMITH, BRIAN F.	CULTURAL RESOURCES MONITORING REPORT FOR THE VISTA CREEKSIDE APARTMENTS PROJECT, CITY OF VISTA, SAN DIEGO COUNTY, CALIFORNIA	Brian F. Smith & Associates	
SD-17135	NADB-R - 1137135	2015	CORDOVA, ISABEL	ARCHAEOLOGICAL SURVEY FOR POLE BRUSHING PROJECT, VARIOUS LOCATIONS, SAN DIEGO COUNTY, CALIFORNIA (SDG&E ETS# 29109, PANGIS PROJECT# 1401.07)	PanGIS	37-004496, 37-004847, 37-006823, 37-008195, 37-009701, 37-013502, 37-024551, 37-026442, 37-031057, 37-034564, 37-034565, 37-034566, 37-034567, 37-034568, 37-034569, 37-034570, 37-034571, 37-034572, 37-034573, 37-034574
SD-17149	NADB-R - 1137149	2017	GARRISON, ANDREW J. and J.R.K. Stropes	CULTURAL RESOURCES STUDY FOR THE VALENCIA DRIVE PROJECT, CITY OF VISTA, SAN DIEGO COUNTY, CALIFORNIA	Brian F. Smith & Associates	37-036621, 37-036622, 37-036623
SD-17233	NADB-R - 1137233; Submitter - BCR Project No. SYN1622	2017	BRUNZELL, DAVID	SAN DIEGO 129 PROJECT, SAN DIEGO COUNTY, CALIFORNIA (BCR CONSULTING PROJECT NO. SYN1622)	BCR Consulting LLC	
SD-17235	NADB-R - 1137235; Submitter - BCR Project No. SYN1620	2017	BRUNZELL, DAVID	T-MOBILE PUC PROJECT 365239, SAN DIEGO COUNTY, CALIFORNIA (BCR CONSULTING PROJECT NO. SYN1620)	BCR Consulting LLC	
SD-17341	NADB-R - 1137341	2017	ROBBINS-WADE, MARY and NICOLE FALVEY	SOUTH MELROSE SELF-STORAGE PROJECT - CULTURAL RESOURCES SURVEY	HELIX ENVIRONMENTAL PLANNING	
SD-17437	NADB-R - 1137437	2015	WADE, SUE	EMERALD RIDGE: CULTURAL RESOURCES SURVEY	HERITAGE RESOURCES	
SD-17468	NADB-R - 1137468	2015	WADE, SUE	VERIZON HACKMORE DRIVE/1455 W. VISTA WAY TELECOMMUNICATION FACILITY, PC8-259): CULTURAL RESOURCE MONITORING	HERITAGE RESOURCES	
SD-18324	NADB-R - 1138324	2019	ROBBINS-WADE, MARY and CATHERINE A. WRIGHT	CULTURAL RESOURCES SURVEY, OLIVE AVENUE 15-LOT TSM/ANX PROJECT, CITY OF VISTA, SAN DIEGO COUNTY, CALIFORNIA	HELIX ENVIRONMENTAL PLANNING, INC.	37-038561

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SD-18543	NADB-R - 1138543	2020	PIGNIOLO, ANDREW	CULTURAL RESOURCES MONITORING REPORT FOR THE STORQUEST VISTA PROJECT, CITY OF VISTA	LAGUNA MOUNTAIN ENVIRONMENTAL, INC.	
SD-18688	NADB-R - 1138688	2020	JORDAN, AMY	ARCHAEOLOGICAL MONITORING FOR THE SDG&E LINE EASEMENT CLEARANCE, SAN DIEGO COUNTY, CALIFORNIA (SDG&E ETS # 45980.01, ASM PROJECT #23008.11)	ASM AFFILIATES	37-004927, 37-005793
SD-19029	NADB-R - 1139029	2020	O'CONNOR, JOHN	SUMMARY OF CULTURAL RESOURCES MONITORING FOR THE VISTA VILLAGE DRIVE TRUNK SEWER PROJECT, CIP 8212, CITY OF VISTA, SAN DIEGO COUNTY	ECORP CONSULTING, INC.	
SD-19236	NADB-R - 1139236	2018	DANIELS, JAMES T.	CULTURAL RESOURCES STUDY FOR SUNROAD PLAZA PROJECT, CALIFORNIA	ASM AFFILIATES, INC.	
SD-19540	NADB-R - 1139540	2021	PIGNIOLO, ANDREW	CULTURAL RESOURCES MONITORING REPORT FOR THE HACIENDA RETAIL PROJECT AND PARKING LOT, CITY OF VISTA, CALIFORNIA	LAGUNA MOUNTAIN ENVIRONMENTAL, INC.	37-039086
SD-19972	NADB-R - 1139972	2022	MONTIFOLCA, KESHIA and MAKAYLA MURILLO	CULTURAL RESOURCES INVENTORY REPORT FOR THE VISTA MELROSE RESIDENTIAL PROJECT, CITY OF VISTA, CALIFORNIA	DUDEK	

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Geotechnical Investigation

ALTA CALIFORNIA
GEOTECHNICAL INC.

170 North Maple Street, Suite 108
Corona, CA 92880
www.altageotechnical.com

CITY VENTURES
3121 Michelson Drive, Suite 150
Irvine, California 92612

October 26, 2023
Project No. 1-0500

Attention: Mr. Eric Miller

Subject: ***GEOTECHNICAL INVESTIGATION***
1160 Hacienda Drive, Arroyo Vista Project
City of Vista, San Diego County, California

References: See Appendix

Dear Mr. Miller:

Presented herein is Alta California Geotechnical, Inc.'s (Alta) geotechnical investigation for the proposed residential development at 1160 Hacienda Drive, in the City of Vista, San Diego County, California. This report is based on Alta's recent subsurface investigation, laboratory testing, and a review of the referenced reports.

Included in this report are:

- Discussion of the site geotechnical conditions.
- Bulk/shrink factors.
- Rock rippability.
- Recommendations for remedial and site grading, including unsuitable soil removals and rock disposal.
- Geotechnical site construction recommendations.
- Preliminary foundation design parameters.
- Infiltration analysis.

If you have any questions or should you require any additional information, please contact the undersigned at (951) 509-7090. Alta appreciates the opportunity to provide geotechnical consulting services for your project.

Sincerely,
Alta California Geotechnical, Inc.

YOUSSEF F. HIJAZI
Engineering Geology Associate

Reviewed By:

SCOTT A. GRAY/RGE 2857
Reg. Exp.: 12-31-24
Registered Geotechnical Engineer
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1.0 INTRODUCTION

The following report presents Alta's findings, conclusions, and geotechnical recommendations for the proposed residential development at 1160 Hacienda Drive located in the City of Vista, San Diego County, California.

1.1 Purpose

The purpose of this report is to examine the existing geotechnical conditions and evaluate their impacts on the proposed development depicted on the accompanying conceptual site plan. This report is suitable for submittal to governing agencies and for use as a bid document.

1.2 Scope of Work

Alta's Scope of Work for this geotechnical investigation included the following:

- Review of the referenced literature, maps, and aerial photos (Appendix A).
- Site geologic mapping.
- Excavating, logging, and sampling of ten (10) backhoe test pits to approximately 5 to 10 feet below existing grade (Appendix B).
- Performing an infiltration study in one (1) 5-foot deep trench to provide an assessment of the infiltration characteristics of the onsite soil and their impact on storm water disposal.
- Commission of three (3) seismic refraction transverses to provide excavation characteristics down to depths of necessary bedrock undercuts.
- Conducting laboratory testing on samples obtained during our investigation (Appendix C).
- Evaluating engineering geologic and geotechnical engineering data, including laboratory data, to develop recommendations for site remedial grading, import soil, foundations and utilities.
- Preparing this report and accompanying exhibits.

1.3 Report Limitations

The conclusions and recommendations in this report are based on the information generated during this investigation and our review of the referenced reports. The materials adjacent to or beneath those observed may have different characteristics than those observed, and no representations are made as to the quality or extent of the materials not observed.

2.0 PROJECT DESCRIPTION

2.1 Site Location and Existing Conditions

The approximately ±5.0-acre site is located at 1160 Hacienda Drive, south of W Vista Way in the City of Vista, California. The site is bounded to the east, west, and south by private properties and to the north by Hacienda Drive. The property has moderate changes in topography, gradually increasing in elevation from the edges of the site towards the center. The site has dense vegetation mostly on the northeast portion that is made up of tall, mature trees and tall, wide bushes. Review of vintage air photos dating back to 1938 indicates that the site remained vacant until 1953, when a private residential property was built and remained until 2003, when it appears to have been removed. The site has remained vacant since (Historic Aerials, 2023).

2.2 Proposed Development

Alta anticipates that the site will be redeveloped into a residential development. Alta anticipates that conventional cut-and-fill grading techniques will be used to develop the site for the support of wood-frame construction with shallow foundations and reinforced concrete slabs-on-grade, and associated improvements.

3.0 SITE INVESTIGATION

3.1 Current Subsurface Investigation

Alta conducted a subsurface investigation on September 21st of 2023, consisting of ten (10) backhoe excavated test pits to a maximum depth of 10 feet below existing grade (Appendix B.)The locations of the exploratory excavations are shown on Plate 1 and the logs are presented in Appendix B.

A P-wave seismic refraction survey was conducted on October 11th, 2023 by GEOVision with the purpose of determining rippability of the Green Valley Tonalite bedrock within the site. Data from the survey was collected along three seismic refraction tranverses and results are presented in Appendix B.

Laboratory testing was performed on bulk samples obtained during the field investigation. A brief description of the laboratory test procedures and the test results are presented in Appendix C.

3.2 Infiltration Testing

It is Alta's understanding that the project may utilize infiltration systems for storm water disposal. Details of the system are not known at this time.

Infiltration testing was conducted in one (1) 5-foot deep test pit. The testing was performed in general conformance with the County of San Diego WQMP specifications. The test well was presoaked for more than 24 hours prior to testing. During testing, the water level readings were recorded every 10 or 25 minutes until the readings stabilized.

The data was then adjusted to provide an infiltration rate utilizing the Porchet Method. The resulting field infiltration rates, with no factor of safety, are summarized below in Table 3-1. Recommendations for infiltration BMP design are presented in Section 6.5.

Table 3-1 Summary of Infiltration Testing (No Factor of Safety)	
Test Designation	P-1
Approximate Depth of Test	5 feet
Final Time Interval	30 minutes
Tested Infiltration Rate	0.3 inches per hour

4.0 GEOLOGIC CONDITIONS

4.1 Geologic and Geomorphic Setting

Regionally, the site is located in the Peninsular Ranges geomorphic province, which characterizes the southwest portion of Southern California. The Peninsular Ranges province is composed of plutonic and metamorphic rock, lesser amounts of Tertiary volcanic and sedimentary rock, and Quaternary drainage in-fills and minor sediment veneers. The Peninsular Ranges are divisible into northwest-trending sub-blocks that extend south into Baja California and terminate to the north against the Transverse Ranges province.

4.2 Stratigraphy

Based on Alta's review of geologic literature and our subsurface investigation the project site is underlain by alluvium and cretaceous-age tonalite (Kennedy, 2007). The approximate distribution of the geologic units is shown on the enclosed Plate 1. The following is a brief description of the units encountered during this investigation.

4.2.1 Alluvium (Map symbol Qal)

The alluvial deposits encountered during the investigation were generally clayey sands that are dark brown to brown in color, very fine to medium grained, in a slightly moist, and medium dense condition throughout the majority of the site to a maximum depth explored of 10.0 feet.

4.2.2 **Green Valley Tonalite** (Map symbol Kt(gv))

The mid-Cretaceous-age Tonalite is a coarse grained, very dense and hard rock, light to dark gray in color (Kennedy, 2007). The Tonalite unit encountered during the investigation was mostly found in a moderately weathered condition, tan to gray in color, medium to coarse grained, and medium dense.

4.3 Geologic Structure

4.3.1 Tectonic Framework

Jennings (1985) defined eight structural provinces within California that have been classified by predominant regional fault trends and similar fold structure. These provinces are in turn divided into blocks and sub-blocks that are defined by "major Quaternary faults". These blocks and sub-blocks exhibit similar structural features. Within this framework, the subject site is located within Structural Province I, which is controlled by the dominant northwest trend of the San Andreas Fault and is divided into two blocks, the Coast Range Block and the Peninsular Range Block. The Peninsular Ranges Block, on which this site is located, is characterized by parallel, northwest trending faults that exhibit right lateral dip-slip movement. These faults are terminated by the Transverse Ranges block to the north. These northwest trending faults divide the Peninsular Range block into eight sub-blocks. The site is located in the mid-central portion of the Santa Ana sub-block, one of the eight sub-blocks, which is bound on the east by the Elsinore-Whittier fault zone and on the west by Newport-Inglewood fault zone.

4.3.2 Regionally Mapped Active Faults

Several large, active fault systems, including the Newport-Inglewood and Elsinore faults, occur in the region surrounding the subject site. These fault systems have been studied extensively and in a large part control the geologic structure of southern California.

4.3.3 Geologic Structure

Based upon our site investigation and literature review, the onsite bedrock is Cretaceous-age Green Valley Tonalite and is not folded, or faulted.

4.4 Groundwater

Groundwater was not encountered during Alta's recent investigation. Relevant groundwater well data is not available for the project.

4.5 Earthquake Hazards

The subject site is located in southern California, which is a tectonically active region. The type and magnitude of seismic hazards affecting a site are dependent on the distance to the causative fault and the intensity and magnitude of the seismic event. The seismic hazard may be primary, such as surface rupture and/or ground shaking, or secondary, such as liquefaction and/or ground lurching.

4.5.1 Local and Regional Faulting

The site is located on the mid-central portion of the Santa Ana sub-block, approximately 9.81 miles east of the Rose Canyon and Newport-Inglewood fault zones and 18.04 miles west of the Elsinore fault zone (USGS, 2008). The subject site is not located within a California State Designated Earthquake Fault Zone (CGS, 2018).

4.5.2 Seismicity

Ground shaking hazards caused by earthquakes along other active regional faults exist. The 2022 California Building Code requires use-modified spectral accelerations and velocities for most structural designs. Seismic design parameters using soil profile types identified in the 2022 California Building Code are presented in Section 7.3.

4.5.3 Surface Rupture

Active faults are not known to exist within the project and a review of Special Publication 42 indicates the site is not within a California State designated earthquake fault zone. Accordingly, the potential for fault surface rupture on the subject site is low.

4.5.4 Liquefaction

Seismic agitation of relatively loose saturated sands, silty sands, and some silts can result in a buildup of pore pressure. If the pore pressure exceeds the overburden stresses, a temporary quick condition known as liquefaction can occur. Liquefaction effects can manifest in several ways including: 1) loss of bearing; 2) lateral spread; 3) dynamic settlement; and 4) flow failure. Lateral spreading has typically been the most damaging mode of failure.

In general, the more recent that a sediment has been deposited, the more likely it will be susceptible to liquefaction. Other factors that must be considered are groundwater, confining stresses, relative density, and the intensity and duration of seismically induced ground shaking.

Based on the shallow bedrock and the removal/recompaction recommendations presented herein, the potential for liquefaction onsite is considered negligible.

4.5.5 Dry Sand Settlement

Dry sand settlement is the process of non-uniform settlement of the ground surface during a seismic event. Based on our subsurface investigation and our removal/recompaction recommendations, the potential for onsite dry sand settlement is anticipated to be negligible.

5.0 ENGINEERING PROPERTIES AND ANALYSIS

5.1 Materials Properties

Presented herein is a general discussion of the engineering properties of the onsite materials that will be encountered during construction of the proposed project. Descriptions of the soil (Unified Soil Classification System) are presented on the boring logs in Appendix B.

5.1.1 Excavation Characteristics

Based on the data provided from the subsurface investigation, it is our opinion that excavation characteristics across the site vary. The upper portions of the bedrock onsite possess favorable excavation characteristics such that conventional equipment can be utilized, however, deeper excavations into the bedrock will encounter very slow production rates and likely refusal. The results of the seismic refraction survey have been utilized in this study to characterize bedrock rippability.

The following comments reflect Alta's understanding of the rippability interpretation of the subsurface data. The contractor should interpret the data based on their experience. For the seismic refraction survey (Appendix B) in the bedrock, and predicated on a Caterpillar D8R, P-wave velocities of 4,000 ft/sec or slower are considered rippable. Velocities of up to 5,500 ft/sec are considered marginally rippable if the rock is sufficiently jointed or fractured. Blasting may be more cost-effective in

marginally rippable rock due to production rates, equipment wear, etc. Velocities greater than 5,500 ft/sec generally indicate blasting.

It is our understanding that design cuts of up to 39-feet may be required in the center of the site, with utilities extending up to 10-feet below finished grade. Seismic line 2 appears to indicate that there may be corestones present within the bedrock. As such, it appears localized blasting may be required in portions of the site for efficient excavation, although this shall be verified by the grading contractor.

It has been Alta's experience that several factors and combinations thereof determine production rates and therefore, dictate the need for blasting. These factors include: 1) fracture pattern; 2) frequency of quartz-rich granitic intrusions; 3) the regularity of rippable/non-rippable contacts; 4) equipment type and condition; and 5) skill of equipment operators. Additionally, it can be expected that a variable range of conditions will ultimately be encountered. The contractors and/or bidders should evaluate the available data in consideration of the equipment to be utilized, the production schedules desired, the availability of rock disposal areas (Section 6.2.2), and logistical considerations. The contractor should take into account the existing developments around the site when determining the suitability for blasting.

5.1.2 Compressibility

The alluvium and upper, highly weathered portions of the bedrock are considered compressible and unsuitable to support the proposed improvements. Recommended removal depths are presented in Section 6.1.2.

5.1.3 Hydro-Consolidation

Hydro-consolidation is the effect of introducing water into soil that is prone to collapse. Upon loading and initial wetting, the soil structure and apparent strength are altered resulting in almost immediate settlement. That settlement can have adverse impacts on engineered structures, particularly in areas where it is manifested differentially. Differential settlements are typically associated with differential wetting, irregularities in the subsurface soil conditions, or irregular loading patterns.

Based on the very dense nature of the bedrock onsite and our remedial grading recommendations, the potential for hydro-collapse onsite is nil upon the completion of the recommended unsuitable soil removals.

5.1.4 Expansion Potential

Based on expansion index testing performed during our subsurface investigation (Appendix C), the majority of soils onsite are “very low” in expansion potential (0≤EI≤20, Appendix C) when tested per ASTM D: 4829, although some “low” expansive material may be present.

5.1.5 Earthwork Adjustments

The values presented in Table 5-1 are deemed appropriate for estimating purposes and may be used in an effort to balance earthwork quantities. As is the case with every project, contingencies should be made to adjust the earthwork balance when grading is in-progress and actual conditions are better defined.

TABLE 5-2 Earthwork Adjustment Factors		
Geologic Unit	**Adjustment Factor Range**	**Average**
Alluvium (Qal)	Shrink 12% to 16%	14%
Bedrock (Kg) Rippable	Bulk 0 to 4%*	2%*
Blasting	Bulk 10 to 20%*	15%*

* Bulking factors are partially dependent on the contractor (e.g. equipment; capability & methodology for ripping; blasting pattern, etc.)

5.1.6 Chemical Analyses

Chemical testing was performed on samples of material underlying the proposed site during our subsurface investigation. Soluble sulfate test results indicate that the soluble sulfate concentrations of the soils tested are classified as negligible (Category S0) per ACI 318-14.

Negligible chloride levels were detected in the onsite soils. Based on laboratory results of soluble sulfate, chloride, and pH testing as presented in Appendix C, the onsite soils are classified as "non-corrosive" to buried metals and concrete (Caltrans, 2022). Additional discussions on corrosion are presented in Section 7.9. Corrosion tests results are presented in Appendix C.

5.2 Engineering Analysis

Presented below is a general discussion of the engineering analysis methods that were utilized to develop the conclusions and recommendations presented in this report.

5.2.1 Bearing Capacity and Lateral Earth Pressures

Ultimate bearing capacity values were obtained using the graphs and formula presented in NAVFAC DM-7.1. Allowable bearing was determined by applying a factor of safety of at least 3 to the ultimate bearing capacity. Static lateral earth pressures were calculated using

Rankine methods for active and passive cases. If it is desired to use Coulomb forces, a separate analysis specific to the application can be conducted.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on Alta's findings during our subsurface investigation, the laboratory test results, our staff's previous experience in the area, it is Alta's opinion that the development of the site is feasible from a geotechnical perspective. Presented below are recommendations that should be incorporated into site development and construction plans.

6.1 Remedial Grading Recommendations

All grading shall be accomplished under the observation and testing of the project geotechnical consultant in accordance with the recommendations contained herein and the City of Vista criteria.

6.1.1 Site Preparation

Vegetation, construction debris, and other deleterious materials are unsuitable as structural fill material and should be disposed of offsite prior to commencing grading/construction. Any septic tanks, seepage pits or wells should be abandoned as per the County of San Diego Department of Health Services.

6.1.2 Unsuitable Soil Removals

Presented below are the unsuitable soil removal recommendations for the onsite geologic units. Removal bottoms should be observed by the Project Geotechnical Consultant to make a final determination that suitable, competent soils have been exposed. Removals should be completed as per Plate G-1 and G-2 (Appendix F). In general, removals shall expose competent bedrock.

6.1.2.1 Alluvium (Map symbol Qal)

Alluvium is not suitable for support of the proposed engineered fills. As such, it is anticipated that this unit will require complete removal prior to fill placement. It is anticipated that removal depths in this unit will range from five (5) to fifteen (15) feet, with possible deeper localized areas. The removal bottoms shall expose competent bedrock.

6.1.2.2 Bedrock (map symbols Kg(gv))

The uppermost portions of the bedrock are highly weathered and partially mantled by topsoils and as such, are not suitable for the support of the proposed fills. This material should be completely removed prior to the placement of compacted fill. Removal depths are estimated to range from two (2) to five (5) feet with possibly deeper localized areas.

6.1.3 Over-Excavation of Building Pads

Footings for structures should be underlain by a minimum of two (2) feet of compacted fill. Within building pads where unsuitable soil removals do not provide the minimum depth of compacted fill, or where design grades and/or remedial grading activities create cut/fill transitions, the cut and shallow fill portions of the building pads should be over-excavated during grading and replaced with compacted fill.

6.1.4 Over-Excavation of Street Areas in Rock

Alta recommends undercutting underground utility and storm drain zones that fall within bedrock areas in order to facilitate the construction of these improvements. Specific recommendations for street undercuts should be made when rough grading and improvement plans become

available. As noted in Section 6.2.9.2, utilization of oversized rock as backfill may not be feasible in trench backfills.

6.2 General Earthwork Recommendations

6.2.1 Compaction Standards

All fill shall be compacted to a minimum relative compaction of 90 percent, as determined by ASTM Test Method: D-1557. Fill material should be moisture conditioned to optimum moisture or above, and as generally discussed in Alta's Earthwork Specification Section presented in Appendix E. Compaction shall be achieved with the use of sheepsfoot rollers or similar kneading type equipment. Mixing and moisture conditioning will be required in order to achieve the recommended moisture conditions.

6.2.2 Over-Sized Rock Disposal Requirements and Logistics

Alta recommends limiting the maximum rock particle size to the zones shown on Plate G-12 (Appendix F). Variances to the rock hold-down requirements should be approved by the owner, geotechnical consultant and governing agency.

Placement of rock fills should be performed under the observation and testing of a geotechnical consultant with experience in this type of operation. Rock fills should be placed as rock blankets and/or rock windrows and/or individual rock burial as per the details provided on Plates G-13, -14 and 15 (Appendix F).

The grading contractor should consider the amount of available rock disposal volume afforded by the design when excavation techniques and grading logistics are developed. Rock disposal techniques should be

discussed and approved by the geotechnical consultant prior to implementation.

Onsite disposal of the over-sized rock generated during the undercuts may present logistical challenges. It is the responsibility of the contractor to dispose of any over-sized rock per the recommendations outlined in this section and as per Plates G-12, -13, -14 and -15 (Appendix F). Thus, the contractor should also consider the volumes of over-sized materials to be created by design undercuts and reserve suitable volumes within the design fill mass (and possible utility trench backfill). Alternatively, crushing of particles to comply with the recommendations in this report or offsite rock disposal and corresponding import of rock-free fill would be an acceptable grading method. Any import soils would require approval as per Section 6.2.8 of this report.

6.2.3 Groundwater/Seepage

It is anticipated that groundwater will not be encountered during construction. It is possible that perched water conditions could be encountered depending on the time of year construction occurs.

6.2.4 Documentation of Removals

All removal/over-excavation bottoms should be observed and approved by the project Geotechnical Consultant prior to fill placement. Consideration should be given to surveying the removal bottoms and undercuts after approval by the geotechnical consultant and prior to the placement of fill. Staking should be provided in order to verify undercut locations and depths.

6.2.5 Treatment of Removal Bottoms

At the completion of removals/over-excavation, the exposed removal bottom should be ripped to a minimum depth of eight (8) inches, moisture-conditioned to above optimum moisture content and compacted in-place to the project standards.

6.2.6 Fill Placement

After removals, scarification, and compaction of in-place materials are completed, additional fill may be placed. Fill should be placed in eight-inch bulk maximum lifts, moisture conditioned to optimum moisture content or above, compacted and tested as grading/construction progresses until final grades are attained.

6.2.7 Mixing

Mixing of materials may be necessary to prevent layering of different soil types and/or different moisture contents. The mixing should be accomplished prior to and as part of compaction of each fill lift.

6.2.8 Import Soils

Import soils should consist of clean, structural quality, compactable materials similar to the on-site soils and should be free of trash, debris or other objectionable materials. The Project Geotechnical Consultant should be notified not less than 72 hours in advance of the locations of any soils proposed for import. Import sources should be sampled, tested, and approved by the Project Geotechnical Consultant prior to the utilization of the soils onsite. The Project Civil Engineer should include these requirements on plans and specifications for the project.

6.2.9 Utility Trenches

6.2.9.1 Excavation

Utility trenches should be supported, either by laying back excavations or shoring, in accordance with applicable OSHA standards. In general, existing site soils are classified as Soil Types “B” and "C" per OSHA standards. Upon completion of the recommended removals and re-compaction, the artificial fill will be classified as Soil Type "B". It is anticipated that perched water will not be encountered during excavation. The Project Geotechnical Consulting should be consulted if geologic conditions vary from what is presented in this report.

6.2.9.2 Backfill

Trench backfill should be compacted to at least 90 percent of maximum dry density as determined by ASTM D-1557. Onsite soils will not be suitable for use as bedding material but will be suitable for use in backfill provided oversized materials are removed. No surcharge loads should be imposed above excavations. This includes spoil piles, lumber, concrete trucks, or other construction materials and equipment. Drainage above excavations should be directed away from the banks. Care should be taken to avoid saturation of the soils. Compaction should be accomplished by mechanical means. Jetting of native soils will not be acceptable.

Utilization of oversized rock in utility trench backfill may be limited depending on governing agency requirements. This may require the backfill material to be screened prior to placement.

Under-slab trenches should also be compacted to project specifications. If select granular backfill (SE > 30) is used, compaction by flooding will be acceptable.

6.2.10 Fill Slope Construction

Fill slopes should be overfilled to an extent determined by the contractor, but not less than two (2) feet measured perpendicular to the slope face, so that when trimmed back to the compacted core a minimum 90 percent relative compaction is achieved.

Compaction of each fill lift should extend out to the temporary slope face. Back-rolling during mass filling at intervals not exceeding four (4) feet in height is recommended, unless more extensive overfilling is undertaken.

As an alternative to overfilling, fill slopes may be built to the finish slope face in accordance with the following recommendations:

- Compaction of each fill lift should extend to the face of the slopes.
- Back-rolling during mass grading should be undertaken at intervals not exceeding four (4) feet in height. Back-rolling at more frequent intervals may be required.
- Care should be taken to avoid spillage of loose materials down the face of any slopes during grading. Spill fill will require complete removal prior to compaction, shaping, and grid rolling.
- At completion of mass filling, the slope surface should be watered, shaped, and compacted by track walking with a D-8 bulldozer, or equivalent, such that compaction to project standards is achieved to the slope face.

Proper seeding and planting of the slopes should follow as soon as practical to inhibit erosion and deterioration of the slope surfaces. Proper moisture control will enhance the long-term stability of the finish slope surface.

6.2.11 Backcut Stability

Temporary backcuts, if required during unsuitable soil removals, should be made no steeper than 1:1 without review and approval of the geotechnical consultant. Flatter backcuts may be necessary where geologic conditions dictate and where minimum width dimensions are to be maintained.

Care should be taken during remedial grading operations in order to minimize risk of failure. Should failure occur, complete removal of the disturbed material will be required.

In consideration of the inherent instability created by temporary construction backcuts for removals, it is imperative that grading schedules are coordinated to minimize the unsupported exposure time of these excavations. Once started, these excavations and subsequent fill operations should be maintained to completion without intervening delays imposed by avoidable circumstances. In cases where five-day workweeks comprise a normal schedule, grading should be planned to avoid exposing at-grade or near-grade excavations through a non-work weekend. Where improvements may be affected by temporary instability, either on or offsite, further restrictions such as slot cutting, extending workdays, implementing weekend schedules, and/or other requirements considered critical to serving specific circumstances may be imposed.

6.2.12 Subsurface Drainage

Canyon subdrains (6-inch and 8-inch) are not anticipated on this project, however, this shall be reviewed as plans for the project become available.

6.3 Slope Stability

The following is a discussion of slope stability onsite.

6.3.1 Fill Slopes

It is anticipated that fill slopes on the project will be designed at a slope ratio of 2:1 (horizontal:vertical) or flatter. Fill slopes, when properly constructed with onsite materials, are expected to be grossly stable as designed. Stability calculations shall be performed when plans are available.

Skin-fill slope conditions should be avoided. If these conditions exist or are created during grading, they should be evaluated. Typical remediation for skin fill conditions are shown on Plate G-11 (Appendix E).

6.3.2 Cut Slopes

Alta anticipates that 2:1 cut slopes will be primarily excavated in the bedrock and will be grossly stable. This shall be verified by calculations when plans are available. All cut slopes should be observed during grading by the Project Geotechnical Consultant. If adverse bedding, fracture or joint patterns, or other unstable geological conditions are exposed, or if the slope face is “over-shot” to such an extent that the slope is not surficially stable, then cut slopes may need to be replaced with a drained stabilization fill, as generally depicted on Plates G-8, G-9 and G-10 in Appendix F.

For fill over cut slopes, the cut slope portion should be evaluated prior to the placement of fill. Fill over cut slopes should be constructed in general conformance with Plate G-7.

6.4 Storm Water Infiltration Systems

From a geotechnical perspective, allowing storm water to infiltrate the onsite soil in concentrated areas increases the potential for settlement, liquefaction, and water-related damage to structures/improvements, such as wet slabs or pumping subgrade, and should be avoided where possible. If infiltration systems are required on this site, care should be taken in designing systems that control the storm water as much as possible.

Preliminary infiltration testing was conducted at the site as part of this investigation, and the methodology is discussed in 3.2. The resulting infiltration rates for P-1 were calculated to be 0.3-inches per hour. The results do not include a factor of safety.

Groundwater was not encountered during our investigation. Based on the infiltration rates and dense nature of the underlying bedrock onsite, infiltration-type WQMP's are may not feasible for project. Further testing may be warranted based on the design. The Project Geotechnical Consultant should review the final WQMP design prior to construction.

6.5 Boundary Conditions

The site is bounded to the east, west, and south by private properties and to the north by Hacienda Drive. Construction of retaining/screen walls along these boundaries may require additional geotechnical recommendations concerning unsuitable soil removals and foundation design parameters. Boundary conditions for the project should be reviewed by the Project Geotechnical Consultant as the design progresses.

7.0 DESIGN CONSIDERATIONS

7.1 Structural Design

It is anticipated that multi-story wood-framed residential structures with slab on-grade and shallow foundations will be constructed. Upon the completion of

rough grading, finish grade samples should be collected and tested in order to provide specific recommendations as they relate to the individual building pads. These test results and corresponding design recommendations should be presented in a final rough grading report. Final slab and foundation design recommendations should be made based upon specific structure sitings, loading conditions, and as-graded soil conditions.

It is anticipated that the majority of onsite soils will possess "very low" to "low" expansion potential when tested in general accordance with ASTM Test Method D: 4829. For budgeting purposes, the following foundation design requirements for a range of potential expansion characteristics are presented.

7.1.1 Foundation Design

Foundations may be preliminary designed based on the values presented in Table 7-1 below.

Table 7-1
Foundation Design Parameters*

Allowable Bearing	2000 lbs/ft^2 (assuming a minimum embedment depth and width of 12 inches)
Lateral Bearing	250 lbs/ft^2 at a depth of 12 inches plus 250 lbs/ft^2 for each additional 12 inches of embedment to a maximum of 2000 lbs/ft^2.
Sliding Coefficient	0.30
Settlement	Static Settlement – 0.5 inch in 40 feet Dynamic Settlement – 0.5 inch in 40 feet

*These values may be increased as allowed by Code to resist transient loads such as wind or seismic. Building code and structural design considerations may govern depth and reinforcement requirements and should be evaluated.

7.1.2 Conventional Foundation Systems

Based on the onsite soils conditions and information supplied by the CBC 2022, conventional foundation systems may be designed in accordance with Tables 7-1 and 7-2.

TABLE 7-2 CONVENTIONAL FOUNDATION DESIGN PARAMETERS	
Expansion Potential	***Very Low to Low***
Soil Category	I
Design Plasticity Index	12
Minimum Footing Embedment	12 inches*
*The minimum footing embedments presented herein are based on expansion indexes. The structural engineer should determine minimum embedments based on the number of floors supported by the footings, the structural loading, and the requirements of the latest California Building Code.	
Minimum Footing Width	12-inches-The structural engineer should determine the minimum footing width based on loading and the latest California Building Code.
Minimum Footing Reinforcement	No. 4 rebar, one (1) on top, one (1) on bottom
Minimum Slab Thickness	4 inches (actual)
Minimum Slab Reinforcement	No. 3 rebar spaced 18 inches on center, each way
Under-Slab Requirement	See Section 7.2
Slab Subgrade Moisture	Minimum of 110 percent of optimum moisture to a depth of 12 inches prior to placing concrete.
Footing Embedment Adjacent to Swales and Slopes	If exterior footings adjacent to drainage swales are to exist within five (5) feet horizontally of the swale, the footing should be embedded sufficiently to assure embedment below the swale bottom is maintained. Footings adjacent to slopes should be embedded such that at least five- (5) feet is provided horizontally from edge of the footing to the face of the slope.
Garages	A grade beam reinforced continuously with the garage footings shall be constructed across the garage entrance, tying together the ends of the perimeter footings and between individual spread footings. This grade beam should be embedded at the same depth as the adjacent perimeter footings. A thickened slab, separated by a cold joint from the garage beam, should be provided at the garage entrance. Minimum dimensions of the thickened edge shall be six (6) inches deep. Footing depth, width and reinforcement should be the same as the structure. Slab thickness, reinforcement and under-slab treatment should be the same as the structure.

7.1.3 Post-Tensioned Slabs/Foundation Design Recommendations

Post-tensioned slabs for the project may be designed utilizing the parameters presented in Tables 7-1 and 7-3. The parameters presented herein are based on methodology provided in the Design of Post-Tensioned Slabs-On-Ground, Third Edition, by the Post-Tensioning Institute, in accordance with the 2022 CBC.

TABLE 7-3
POST-TENSION SLAB DESIGN PARAMETERS

Category	Expansion Potential	Minimum Embedment*	Edge Lift		Center Lift	
			Em (ft)	Ym (inch)	Em (ft)	Ym (inch)
I	Very Low to Low	12 inches	5.4	0.61	9.0	0.26
Slab Subgrade Moisture						
Category I	Minimum 110% of optimum moisture to a depth of 12 inches prior to pouring concrete					
Embedment* The minimum footing embedments presented herein are based on expansion indexes. The structural engineer should determine minimum embedments based on the number of floors supported by the footings, the structural loading, and the requirements of the latest California Building Code. If mat slabs are utilized, alternate embedment depths can be provided.						
Moisture Barrier A moisture barrier should be provided in accordance with the recommendations presented in Section 7.2						
The parameters presented herein are based on procedures presented in the Design of Post-Tensioned Slabs-On-Ground, Third Edition. No corrections for vertical barriers at the edge of the slab, or for adjacent vegetation have been assumed. The design parameters are based on a Constant Suction Value of 3.9 pF.						

7.2 Moisture Barrier

A moisture and vapor retarding system should be placed below the slabs-on-grade in portions of the structure considered to be moisture sensitive and should be capable of effectively preventing the migration of water and reducing the transmission of water vapor to acceptable levels. Historically, a 10-mil plastic membrane, such as Visqueen, placed between two to four inches of clean sand, has been used for this purpose. The use of this system or other systems can be considered, at the discretion of the designer, provided the system reduces the vapor transmission rates to acceptable levels.

7.3 Seismic Design

The site class was determined based on the subsurface investigation and published geologic maps in the area in general conformance with Chapter 20 of ASCE 7-16. Based on density of the relatively shallow underlying bedrock, a Site Class of C was selected. Utilizing this information, the computer program ATC Hazards by Location and ASCE 7-16 criterion, the spectral response accelerations

that can be utilized for the project are presented in Table 7-4. These parameters should be verified by the structural engineer. Additional parameters should be determined by the structural engineer based on the Occupancy Category of the proposed structures.

TABLE 7-4 Seismic Ground Motion Values
2019 CBC and ASCE 7-16

Parameter	*Value*
Site Class	C
Site Latitude	33.1926
Site Longitude	-117.2656
Spectral Response Acceleration Parameter, S_S	0.921
Spectral Response Acceleration Parameter, S_1	0.34
Site Coefficient, F_a	1.2
Site Coefficient, Fv	1.5
MCE Spectral Response Acceleration Parameter, S_{MS}	1.106
MCE Spectral Response Acceleration Parameter, S_{M1}	0.51
Design Spectral Response Acceleration Parameter, S_{DS}	0.737
Design Spectral Response Acceleration Parameter, S_{D1}	0.34
Peak Ground Acceleration, PGA_M	0.48

7.4 Fence and Garden Walls

Block walls, if used, should be embedded a minimum of 2 feet below the lowest adjacent grade. Construction joints (not more than 20 feet apart) should be included in the block wall construction. Side yard walls should be structurally separated from the rear yard wall.

7.5 Footing Excavations

Soils from the footing excavations should not be placed in slab-on-grade areas unless properly compacted and tested. The excavations should be cleaned of all loose/sloughed materials and be neatly trimmed at the time of concrete placement.

7.6 Retaining Wall Design

Retaining walls should be founded on compacted fill and should be backfilled with granular soils that allow for drainage behind the wall. Foundations may be designed in accordance with the recommendations presented in Table 7-2, above. Unrestrained walls, free to rotate at least 0.001 radians, may be designed to resist lateral pressures imposed by a fluid with a unit weight determined in accordance with the Table 7-5 below. The table also presents design parameters for restrained retaining walls. These parameters may be used to design retaining walls that may be considered as restrained due to the method of construction or location (corner sections of unrestrained retaining walls).

TABLE 7-5
Equivalent Fluid Pressures for 90% Compacted Fill

Backfill	Active Pressure (psf/ft)	At-Rest Pressure (psf/ft)
Level	35	55

Per the requirements of the CBC, the seismic force acting on the retaining walls with backfill exceeding 6-feet in height may be resolved utilizing the formula 10H2 lb/lineal ft (H=height of the wall). This force acts at approximately 0.6H above the base of the wall (inverted triangle). The seismic value can be converted as required by the retaining wall engineer. Retaining walls should be designed in general accordance with Section 1807A.2 of the 2019 CBC.

- Restrained retaining walls should be designed for “at-rest” conditions, utilizing at-rest pressure.
- The design loads presented in the above table are to be applied on the retaining wall in a horizontal fashion and as such friction between wall and retained soils should not be allowed in the retaining wall analyses.
- Additional allowances should be made in the retaining wall design to account for the influence of construction loads, temporary loads, and possible nearby structural footing loads.
- Select backfill should be granular, structural quality backfill with a Sand Equivalent of 20 or better and an ASCE Expansion Index of 20 or less. The backfill must encompass the full active wedge area. The upper one foot of backfill should be comprised of native on-site soils (see Plate A).
- The wall design should include waterproofing (where appropriate) and backdrains or weep holes for relieving possible hydrostatic pressures. The backdrain should be comprised of a 4-inch perforated PVC pipe in a 1 ft. by 1 ft., ¾-inch gravel matrix, wrapped with a geofabric. The backdrain should be installed with a minimum gradient of 2 percent and should be outletted to an appropriate location.
- No backfill should be placed against concrete until minimum design strengths are achieved.

It should be noted that the allowable bearing and lateral bearing values presented in Table 7-1 are based on level conditions at the toe. Modified design parameters can be presented for retaining walls with sloping condition at the toe. Other conditions should be evaluated on a case-by-case basis.

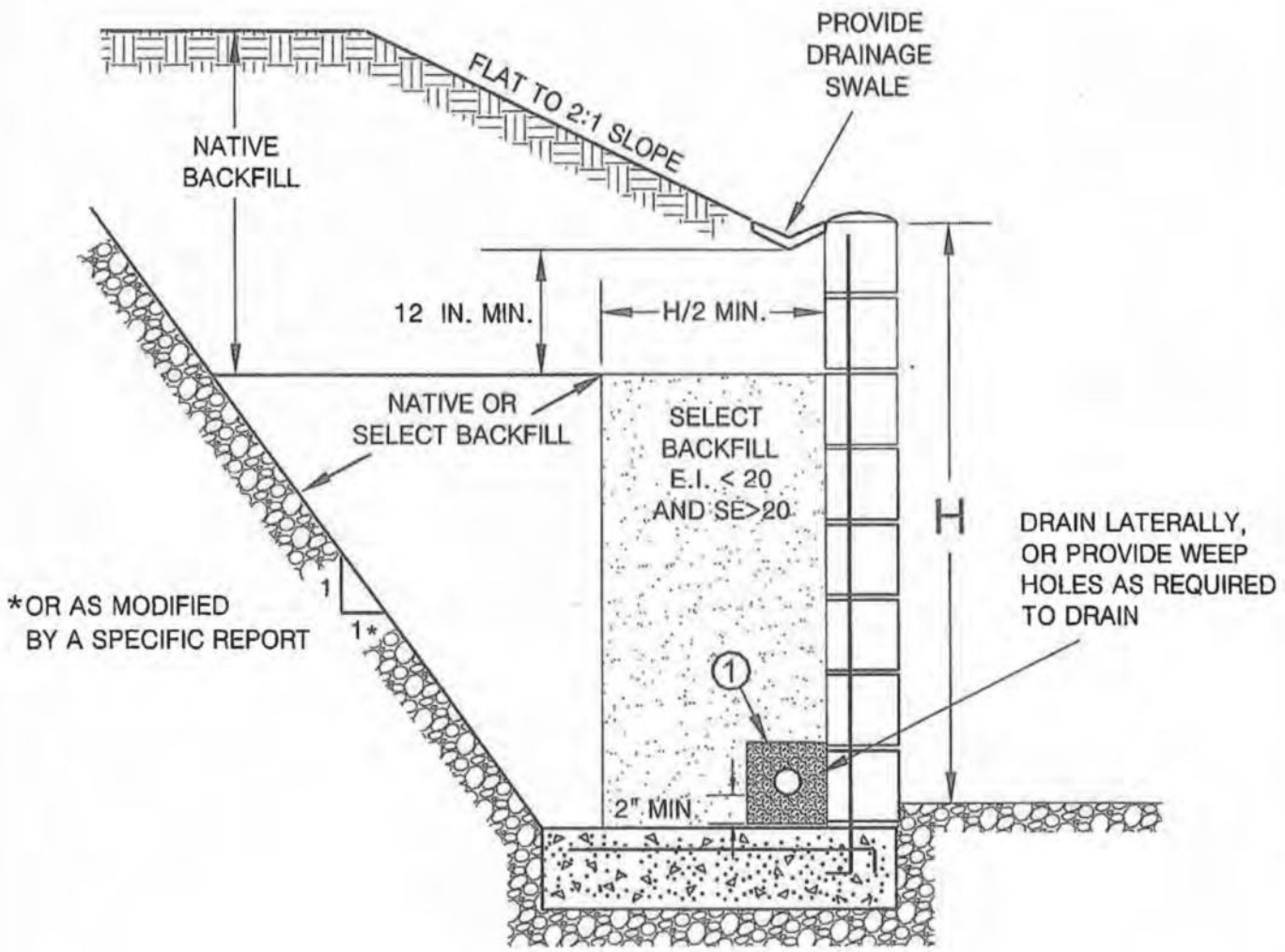
7.7 Exterior Slabs and Walkways

Exterior concrete slabs and walkways should be designed and constructed in consideration of the following recommendations.

7.7.1 Subgrade Compaction

The subgrade below exterior concrete slabs should be compacted to a minimum of 90 percent relative compaction as determined by ASTM Test Method: D 1557.

RETAINING WALL BACKFILL DETAIL



(1)

PIPE: 4-INCH PERFORATED PVC, SCHEDULE 40, SDR35 OR APPROVED ALTERNATE MINIMUM 8 PERFORATIONS (1/4-IN. DIA.) PER LINEAL FT. IN BOTTOM HALF OF PIPE

ROCK: MINIMUM VOLUME OF 1 CU. FT. OF 3/4-IN. MAX. ROCK PER. LINEAL FOOT OF PIPE, OR APPROVED ALTERNATE

FILTER FABRIC: MIRAFI 140 FILTER FABRIC OR APPROVED EQUIVALENT

7.7.2 Subgrade Moisture

The subgrade below concrete slabs should be moisture conditioned to a minimum of 110 percent of optimum moisture content prior to concrete placement.

7.7.3 Concrete Slab Thickness

Concrete flatwork and driveways should be designed utilizing four-inch minimum thickness.

7.7.4 Concrete Slab Reinforcement

Utilization of reinforcement for flatwork and driveways is subject to a cost/benefit analysis for the developer. Reinforcement will decrease the amount of cracking that may occur in flatwork, however, planning for occasional repairs may be more cost effective. The majority of the soils onsite are classified as very low in expansion potential. Consideration should be given to reinforcing flatwork with irregular (non-square/rectangular) shapes.

7.7.5 Control Joints

Weakened plane joints should be installed on walkways at intervals of approximately eight feet. Exterior slabs should be designed to withstand shrinkage of the concrete.

7.8 Concrete Design

As stated in Section 5.1.6, negligible concentrations of sulfates were detected in the onsite soils. Therefore, the use of sulfate resistant concrete is not required per ACI 318-14 at this time. Post-grading conditions should be evaluated, and final recommendations made at that time.

7.9 Corrosion

Based on preliminary testing, the onsite soils are not considered corrosive to buried metal objects per Caltrans standards. Buried ferrous metals should be protected against the effects of corrosive soils in accordance with the manufacturer's recommendations. Typical measures may include using non-corrosive backfill, protective coatings, wrapping, plastic pipes, or a combination of these methods. A corrosion engineer should be consulted if specific design recommendations are required by the improvement designer.

Per ACI 318-14, an exposure class of C1 would be applicable to metals encased in concrete (rebar in footings) due to being exposed to moisture from surrounding soils. Per Table 19.3.2.1 of ACI 318-14, the requirements for concrete with an exposure class of C1 are a minimum compressive strength of 2500 psi and a maximum water-soluble chloride ion content in concrete of 0.30 (percent by weight of cement).

7.10 Pavement Design

Pavement sections for the proposed streets shall be designed based on laboratory testing conducted on samples taken from the soil subgrade. Preliminarily, based on an assumed R-Value of 30, the pavement may be designed utilizing the sections presented in Table 7-6. These sections should be verified upon the completion of grading, based on R-Value testing. The ultimate pavement section design for public streets is under the City of Vista purview.

Table 7-6
Preliminary Pavement Sections

Traffic Index	Pavement Section Options OR	
5.0	3-inch AC on 6-inch AB	4-inch AC on 4-inch AB
5.5	3-inch AC on 7-inch AB	4-inch AC on 5-inch AB
6.0	3.5-inch AC on 7.5-inch AB	4-inch AC on 6.5-inch AB
AC-Asphalt Concrete AB-Caltrans Class II Base		

Construction of the streets should be accomplished in accordance with the current criteria of the City of Vista. Prior to the placement of base material, the subgrade should be suitably moisture conditioned, processed and compacted to a minimum 95 percent of the laboratory maximum density (ASTM: D 1557) to at least twelve (12) inches below subgrade. After subgrade compaction, the exposed grade should then be "proof"-rolled with heavy equipment to ensure the grade does not "pump" and is verified as non-yielding. Aggregate base material should be placed on the compacted subgrade and compacted in-place to a minimum 95 percent of the laboratory standard obtained per ASTM: D 1557.

7.11 Site Drainage

Positive drainage away from the proposed structures should be provided and maintained. Roof, pad, and lot drainage should be collected and directed away from the structures toward approved disposal areas through drainage terraces, gutters, down drains, and other devices. Design fine grade elevations should be maintained through the life of the structure or if design fine grade elevations are altered, adequate area drains should be installed in order to provide rapid discharge of water, away from structures.

8.0 LOT MAINTENANCE

Ongoing maintenance of the improvements is essential to the long-term performance of structures and slopes. As such, the owners must implement certain maintenance procedures. The attached "Maintenance and Improvement Considerations" presented in the Appendix D should be reviewed for issues related to drainage, slopes, maintenance, backyard improvements, etc. The following recommendations should also be implemented.

8.1 Lot Drainage

Roof, pad and lot drainage should be collected and directed away from structures and slopes and toward approved disposal areas. Design fine grade elevations should be maintained through the life of the structure or if design fine grade elevations are altered, adequate area drains should be installed in order to provide rapid discharge of water, away from structures and slopes. Residents should be made aware that they are responsible for maintenance and cleaning of all drainage terraces, down drains, and other devices that have been installed to promote structure and slope stability.

8.2 Burrowing Animals

Residents or owners should undertake a program for the elimination of burrowing animals. This should be an ongoing program in order to maintain slope stability.

9.0 FUTURE PLAN REVIEWS

This report represents a geotechnical review of the tract map. As the project design progresses, site specific geologic and geotechnical issues need to be considered in the design and construction of the project. Consequently, future plan reviews may be necessary. These reviews may include reviews of:

- Grading Plans
- Foundation plans
- Utility Plans

These plans should be forwarded to the Project Geotechnical Consultant for review.

10.0 CLOSURE

10.1 Geotechnical Review

For the purposes of this report, multiple working hypotheses were established for the project, utilizing the available data and the most probable model is used for the analysis. Future information collected during the proposed grading

operations is intended to evaluate the hypothesis and as such, some of the assumptions summarized in this report may need to be changed. Some modifications of the grading recommendations may become necessary, should the conditions encountered in the field differ from the conditions hypothesized in this report.

Plans and sections of the project specifications should be reviewed by Alta, to evaluate conformance with the intent of the recommendations contained in this report. If the project description or final design varies from that described in herein, Alta must be consulted regarding the applicability of the recommendations contained herein and whether any changes are required. Alta accepts no liability for any use of its recommendations if the project description or final design varies and Alta is not consulted regarding the alterations.

10.2 Limitations

This report is based on the following: 1) the project as presented on the attached plan; 2) the information obtained from the subsurface investigation at the approximate locations indicated on the plans included herein; and 3) from the information presented in the referenced reports. The findings and recommendations are based on the results of the subsurface investigation, laboratory testing, and office analysis combined with an interpolation and extrapolation of conditions between and beyond the subsurface excavation locations. However, the materials adjacent to or beneath those observed may have different characteristics than those observed, and no precise representations are made as to the quality or extent of the materials not observed. The results reflect an interpretation of the direct evidence obtained. Work performed by Alta has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession currently practicing in the same locality under similar conditions. No

other representation, either expressed or implied, and no warranty or guarantee is included or intended.

The recommendations presented in this report are based on the assumption that an appropriate level of field review will be provided by a geotechnical consultant who is familiar with the design and site geologic conditions. That field review shall be sufficient to confirm that geotechnical and geologic conditions exposed during grading are consistent with the geologic representations and corresponding recommendations presented in this report.

The conclusions and recommendations included in this report are applicable to the specific design of this project as discussed in this report. They have no applicability to any other project or to any other location and any and all subsequent users accept any and all liability resulting from any use or reuse of the data, opinions, and recommendations without the prior written consent of Alta.

Alta has no responsibility for construction means, methods, techniques, sequences, procedures, safety precautions, programs in connection with the construction, acts or omissions of the CONTRACTOR or any other person performing any of the construction, or for the failure of any of them to carry out the construction in accordance with the final design drawings and specifications

APPENDIX A

REFERENCES

APPENDIX A

Selected References

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APPENDIX B

Subsurface Investigation

APPENDIX B

Subsurface Investigation

Alta's subsurface investigation consisted of excavating, logging, and sampling ten (10) backhoe test pits. Details of the subsurface investigation are presented in Table B-1. The approximate locations of the exploratory excavations are shown on the accompanying Plate 1 and the Geotechnical Logs are attached.

TABLE B-1
SURFACE INVESTIGATION DETAILS

Equipment	Range of Depths	Sampling Methods	Sample Locations
Backhoe	Up to 10 feet	1. Bulk Samples	1. Bulk-Select Depths

Project No.	1-0500
Date Excavated	9/21/23
Logged by	YH
Equipment	Backhoe

TABLE I

LOG OF TEST PITS

Test Pit No.	Depth (ft.)	USCS	Description
T-1	0.0-10.0	SC	**ALLUVIUM** (Qal): CLAYEY SAND, very fine to fine grained, dark brown, slightly moist, medium dense. Roots in top 2.0 feet. Trace clay 6.0 feet to 10.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-2	0.0-4.0	SC	**ALLUVIUM** (Qal): CLAYEY SAND, very fine to fine grained, dark brown to brown, slightly moist, medium dense, some pebbles. Roots in top 2.0 feet. TOTAL DEPTH: 4.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-3	0.0-10.0	SC	**ALLUVIUM** (Qal): CLAYEY SAND, very fine to fine grained, dark brown, slightly moist, medium dense. Roots in top 2.0 feet. Trace cobbles from 3.0 feet to 10.0 feet. Some pebbles from 5.0 feet to 10.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-4	0.0-10.0	SP	**ALLUVIUM** (Qal): SAND, very fine to medium grained, dark brown, slightly moist, medium dense. Few boulders in top 2.0 feet. Some pebbles at 4.0 feet. Trace cobbles at 4.0 feet. Trace clay at 4.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-5	0.0-10.0	SM	**GREEN VALLEY TONALITE** (Kt(gv)): SILTY SAND, very fine to fine grained, red to brown, slightly moist, medium dense. Some clay in top 2.0 feet. Roots in top 2.0 feet. Color changes to tan to brown at 4.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-6	0.0-10.0	SP	**GREEN VALLEY TONALITE** (Kt(gv)): SAND, very fine to fine grained, brown, dry, medium dense. Roots from top 1 foot to 5.0 feet. Damp at 2.0 feet. Very fine to medium grained sand at 5.0 feet. Some gravel at 5.0 feet. Color changes to gray to brown at 7.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-7	0.0-10.0	SP	**GREEN VALLEY TONALITE** (Kt(gv)): SAND, very fine to fine grained, dark brown, dry, medium dense. Roots from top 2.0 feet to 7.0 feet. Becoming damp starting at 2.0 feet. Very fine to medium grained sand at 5.0 feet. Color changes to gray to tan at 7.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-8	0.0-10.0	SM	**GREEN VALLEY TONALITE** (Kt(gv)): SILTY SAND, very fine to fine grained, tan to brown, slightly moist, medium dense. Roots in top 2.0 feet. Color changes to gray to tan at 6.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-9	0.0-10.0	SM	**GREEN VALLEY TONALITE** (Kt(gv)): SILTY SAND, very fine to fine grained, tan to brown, slightly moist, medium dense. Roots in top 2.0 feet. Color changes to gray to tan at 6.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

Test Pit No.	Depth (ft.)	USCS	Description
T-10	0.0-10.0	SM	**GREEN VALLEY TONALITE** (Kt(gv)): SILTY SAND, very fine to fine grained, brown, slightly moist, medium dense. Roots found in top 2.0 feet. Trace clay in top 2.0 feet. Very fine to medium grained sand at 3.0 feet. Color changes to gray to brown at 3.0 feet. TOTAL DEPTH: 10.0 FEET NO GROUNDWATER ENCOUNTERED NO CAVING OBSERVED

TABLE B-2

In-Situ Density Testing

Date	Test Location	Depth (ft)	Moisture (%)	Wet Density (pcf)	Dry Density (pcf)	USCS Soil Type	% Saturation
9-21-23	T-1	1	6.4	113.1	106.3	SC	31
9-21-23	T-1	3	7.9	116.0	107.5	SC	39
9-21-23	T-1	5	11.6	128.5	115.1	SC	72
9-21-23	T-1	7	11.3	120.6	108.4	SC	58
9-21-23	T-2	2	6.9	106.8	99.9	SC	28
9-21-23	T-3	1	11.2	127.5	114.7	SC	68
9-21-23	T-3	3	14.6	134.7	117.5	SC	97
9-21-23	T-3	5	7.9	144.0	133.5	SC	90
9-21-23	T-3	7	9.0	121.1	111.1	SC	50
9-21-23	T-4	2	5.1	118.4	112.7	SP	29
9-21-23	T-4	4	9.0	110.8	101.7	SP	38
9-21-23	T-4	6	9.5	109.4	99.9	SP	39
9-21-23	T-5	2	7.1	114.6	107.0	SM	35
9-21-23	T-5	4	5.8	110.9	104.9	SM	27
9-21-23	T-5	5	5.0	122.5	116.7	SM	32
9-21-23	T-6	1	7.0	114.6	107.1	SP	35
9-21-23	T-6	3	7.7	110.9	103.0	SP	34
9-21-23	T-6	5	5.0	122.5	116.7	SP	32
9-21-23	T-6	7	4.5	120.9	115.7	SP	28
9-21-23	T-7	1	6.8	122.3	114.5	SP	41
9-21-23	T-7	3	8.0	128.5	119.0	SP	55
9-21-23	T-7	5	9.5	117.7	107.5	SP	47
9-21-23	T-7	7	7.9	113.6	105.3	SP	37
9-21-23	T-8	2	3.8	106.9	103.0	SM	17
9-21-23	T-8	4	3.8	113.1	109.0	SM	20
9-21-23	T-8	6	4.1	118.2	113.5	SM	24
9-21-23	T-9	1	2.3	115.9	113.3	SM	13
9-21-23	T-9	3	3.4	125.5	121.4	SM	25
9-21-23	T-9	5	2.1	111.9	109.6	SM	11
9-21-23	T-9	7	3.1	104.7	101.6	SM	13
9-21-23	T-10	2	3.3	104.2	100.9	SM	14
9-21-23	T-10	4	5.9	117.6	111.0	SM	32
9-21-23	T-10	5	6.2	120.9	113.8	SM	37

GEOVision
geophysical services

REPORT

SEISMIC REFRACTION SURVEY

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GEO*Vision* Project No. 23343

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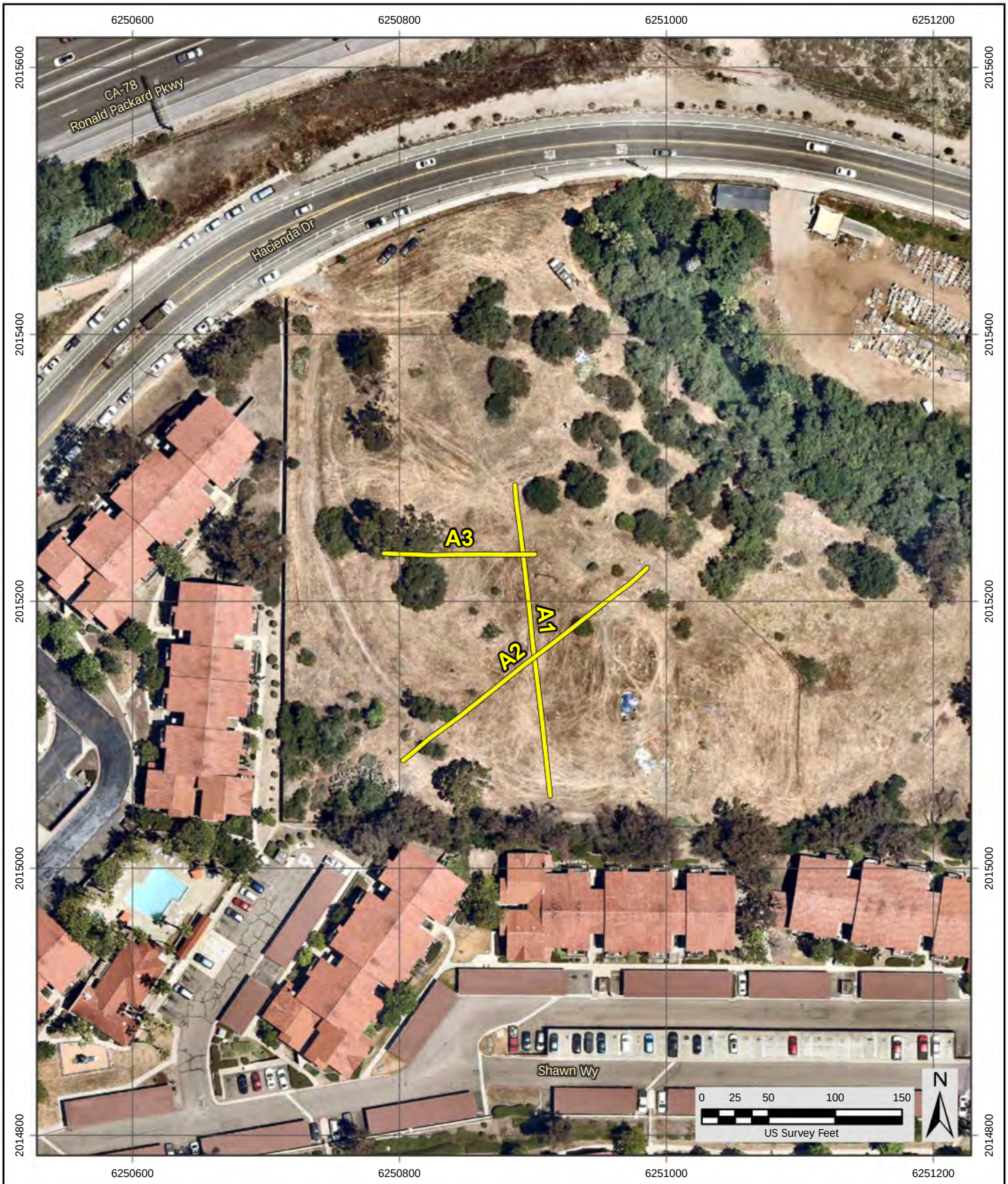
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1 INTRODUCTION

A P-wave seismic refraction survey was conducted at the property located at 1160 Hacienda Drive, Vista, California on October 11, 2023. The purpose of this investigation was to determine the rippability of the Green Valley tonalite bedrock at the site to a depth of 30 feet. P-wave seismic refraction data were acquired along three profiles, designated as Arrays 1 to 3 (Figure 1).

Depending on the degree of weathering, jointing, etc., granitic rock may broadly be characterized as rippable using a Caterpillar D8R, D9R, and D10R ripper at P-wave velocities less than 5,800, 6,800, and 7,200 ft/s, respectively (Caterpillar, 2018). Granitic rock is expected to be marginally rippable by a D8R, D9R, and D10R between a P-wave velocity of 5,800 and 8,000 ft/s, 6,800 and 8,000 ft/s, and 7,200 and 8,500 ft/s, respectively, and nonrippable at higher seismic velocities (Caterpillar, 2018).

The following sections include a discussion of equipment and field procedures, methodology, data processing, and results of the geophysical survey.



Seismic Refraction Line

Date:	10/17/2023
GV Project:	23343
Developed by:	C Xiong
Drawn by:	T Rodriguez
Approved by:	A Martin
File Name:	GV_23343

FIGURE 1
SITE MAP

SITE LOCATED AT 1160 HACIENDA DR
VISTA, CALIFORNIA

PREPARED FOR
ALTA CALIFORNIA GEOTECHNICAL, INC.

Notes:
Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Base map source: Nearmap (5-2023)

2 METHODOLOGY

Detailed discussions of the seismic refraction method can be found in Telford et al. (1990), Dobrin and Savit (1988), and Redpath (1973).

When conducting a seismic survey, acoustic energy is input to the subsurface by an energy source such as a sledgehammer impacting a metallic plate, weight drop, vibratory source, or explosive charge. The acoustic waves propagate into the subsurface at a velocity dependent upon the elastic properties of the material through which they travel. When the waves reach an interface where the density or velocity changes significantly, a portion of the energy is reflected to the surface and the remainder is transmitted into the lower layer. Where the velocity of the lower layer is higher than that of the upper layer, a portion of the energy is also critically refracted along the interface. Critically refracted waves travel along the interface at the velocity of the lower layer and continually refract energy back to the surface. Receivers (geophones) laid out in linear array on the surface record the incoming refracted and reflected waves. The seismic refraction method involves analysis of the travel times of the first energy to arrive at the geophones. These seismic first arrivals are from either the direct wave (at geophones close to the source) or critically refracted waves (at geophones further from the source).

Analysis of seismic refraction data depends upon the complexity of the subsurface velocity structure. If the subsurface target is planar then the slope intercept method (Telford et al., 1990) can be used to model multiple horizontal or dipping planar layers. A minimum of one end shot is required to model horizontal layers and reverse end shots are required to model dipping planar layers. If the subsurface target is undulating (i.e. bedrock valley) then layer based analysis routines such as the generalized reciprocal method (Palmer, 1980 and 1981, Lankston and Lankston, 1986 and Lankston, 1990); reciprocal method (Hawkins, 1961) also referred to as the ABC method; Hales' method (Hales, 1958); delay time method (Wyrobek, 1956 and Gardner, 1967); time-term inversion (Scheidegger and Willmore, 1959); plus-minus method (Hagedoorn, 1959); and wavefront method (Rockwell, 1967) are preferred to model subsurface velocity structure. These methods generally require a minimum of 5 shot points per spread (end shots, off end shots and a center shot). If subsurface velocity structure is complex and cannot be adequately modeled using layer-based modeling techniques (e.g., complex weathering profile in bedrock, numerous lateral velocity variations), then Monte Carlo or tomographic inversion techniques (Zhang and Toksoz, 1998; Schuster and Quintus-Bosz, 1993) are required to model the seismic refraction data. These techniques require a high shot density; typically, every 3 to 6 stations/geophones.

Errors in seismic refraction models not associated with errors in first arrival data can be caused by blind zones, hidden layers, and lateral velocity variability. A blind zone is a geologic layer with a lower seismic velocity than the overlying layer and, therefore, does not give rise to a seismic refraction. This type of layer, therefore, cannot be recognized or modeled and depths to underlying layers would be overestimated. The presence of blind zones will cause errors in depth averaged seismic velocity or slowness.

A hidden layer is a layer with a velocity increase, but of sufficiently small thickness relative to the velocities of overlying and underlying layers, that refracted arrivals do not arrive at the geophones before those from the deeper, higher velocity layer. Because the seismic refraction method generally only involves the interpretation of first arrivals, a hidden layer cannot be

recognized or modeled and depths to underlying layers would be underestimated. However, it can be demonstrated that the presence of hidden layers does not cause significant errors in depth averaged seismic velocity or slowness, such as the average velocity of the upper 100 ft. A subsurface velocity structure that increases as a function of depth rather than as discrete layers, will also cause depths to subsurface refractors to be underestimated, in a manner very similar to that of the hidden layer problem.

Lateral velocity variability within a layer that is not characterized by the modeling scheme utilized for analysis will also result in depth errors to underlying layers. Additionally, at sites with steeply dipping or highly irregular bedrock surfaces, out-of-plane refractions (refractions from structures to the side of the line rather than from beneath the line) may severely complicate modeling. Tomographic inversion techniques can often resolve the complex velocity structures associated with hidden layers, velocity gradients and lateral velocity variations. However, in the event of an abrupt increase in velocity at a geologic horizon, the velocity model generated using tomographic inversion routines will smooth the horizon with velocity being underestimated at the interface and possibly overestimated at depth.

3 EQUIPMENT AND FIELD PROCEDURES

Seismic refraction equipment used during this investigation consisted of one or two Geometrics Geode 24-channel signal enhancement seismographs, 10 Hz vertical geophones, seismic cables with 10-foot spaced connectors, piezo hammer switches, and a 20-lb sledgehammer with an aluminum strike plate, and a 240-lb accelerated weight drop (AWD).

The locations of the seismic refraction profiles were established by Alta California Geotechnical, Inc. Arrays 1 and 2 consisted of 48 geophones spaced 5 feet apart for line lengths of 235 feet. Array 3 consisted of 24 geophones spaced 5 feet apart for a line length of 115 feet. All geophone and shot point locations along each line were measured using a 300-foot tape measure. Elevations along each seismic refraction line were surveyed using a Trimble R10 GPS system with CenterPoint RTX real-time differential corrections.

Source locations included end shots at each end geophone, multiple off-end shot locations with a maximum offset of 55 ft as space permitted, and interior shot locations at nominal 30 ft (Arrays 1 and 2) or 20 ft (Array 3) intervals for a total of 11 to 13 source locations per line. The AWD or 20-lb sledgehammer was used as the energy source for all source locations. A hammer switch mounted on the hammer was used to trigger the seismograph upon impact with the aluminum plate. The final seismic record at each shot point was the result of stacking 8 to 12 shots to increase the signal to noise ratio. All seismic records were stored on a laptop computer. Data acquisition parameters, file names, and other observations were recorded on a field log, which is retained in project files.

4 DATA REDUCTION AND MODELING

The first step in data processing consisted of picking the arrival time of the first energy (first arrival) received at each geophone for each shot point. The first arrivals on each seismic record are either a direct arrival from a compressional (P) wave traveling in the uppermost layer or a refracted arrival from a subsurface interface where there is a velocity increase. First-arrival times were selected using the manual picking routines in the SeisImager™ software suite (Geometrics, Inc.). These first-arrival times were saved in an ASCII file containing shot location, geophone locations, and associated first-arrival time. Errors in the first-arrival times were variable with error generally increasing with distance from the shot point. Elevations for each geophone location were calculated from the GPS data.

Seismic refraction data were then modeled using the tomographic analysis technique available in the SeisImager™ Plotrefa software package. Refraction tomography techniques are often able to resolve complex velocity structure (e.g., velocity gradients) that can be observed in bedrock weathering profiles. Layer-based modeling techniques such as the GRM are more applicable to characterize geologic structure that exhibits layering (e.g., low velocity sediments over high velocity rock). It should be noted, however, that tomographic modeling techniques will generate a velocity model with a gradual increase in velocity with depth even though an abrupt velocity increase may be present.

Tomographic analysis was conducted as outlined in the following steps. A smooth velocity gradient initial model was developed covering the expected velocity range in weathered rock at the site. The initial model had 18 layers with the top of the bottom layer at a depth related to the effective depth of investigation of the model. Velocity ranges were also set to values outside of the starting model minimum and maximum. The velocity models were extended to permit the use of off-end shot points during the inversion, as applicable. A minimum of 10 iterations of non-linear raypath inversion were then implemented to model the seismic data. The starting model parameters were then adjusted, as necessary, and the modeling process repeated until an acceptable fit between observed and calculated first arrival data was achieved.

The final tomographic velocity models for the seismic line were exported as ASCII files and imported into the Golden Software Surfer® mapping system where the velocity model was gridded, contoured, and annotated for presentation.

5 DISCUSSION OF RESULTS

The P-wave seismic refraction models for Arrays 1, 2, and 3 are presented as Figures 2 to 4, respectively. A color scheme with blue-cyan, green-orange, and red-magenta representing low, intermediate, and high P-wave velocities, respectively, and velocity contours at 500 ft/s intervals are used to display the seismic velocity model. The depth of investigation is about 50 ft for Arrays 1 and 2 and 35 ft for Array 3.

Tomographic inversion techniques will typically model a gradual increase in seismic velocity with depth even if an abrupt velocity contact is present. Velocity gradients are, however, common in weathered rock geologic environments, such as the project site.

The P-wave velocity model for Array 1 (Figure2) indicates that there is a thin sediment layer at the surface with P-wave velocity in the 1,000 to 2,000 ft/s range. P-wave velocity increases with depth from 2,000 ft/s at a depth of 2 to 5 ft to 3,500 ft/s at a depth of about 20 to 50 ft in what is likely very intensely weathered (decomposed) rock. Intensely weathered rock with P-wave velocity reaching a maximum velocity of 4,000 to 4,500 ft/s at a nominal depth of 50 ft underlies the decomposed rock unit.

The P-wave velocity model for Array 2 (Figure 3) indicates that there is a thin sediment layer at the surface with P-wave velocity in the 1,000 to 2,000 ft/s range. The sediment layer is underlain by decomposed rock with P-wave velocity increasing with depth from 2,000 ft/s at a depth of 3 to 9 ft to 3,500 ft/s at a depth of about 10 to over 50 ft. The thickest sequence of decomposed rock is located between the northeastern half of the line. Intensely weathered rock with P-wave velocity reaching a maximum velocity of 4,000 to 5,000 ft/s at a nominal depth of 25 to over 50 ft underlies the decomposed rock unit.

The P-wave velocity model for Array 3 (Figure 4) indicates that there is a thin sediment layer at the surface with P-wave velocity in the 1,000 to 2,000 ft/s range. The sediment layer is underlain by decomposed rock with P-wave velocity increasing with depth from 2,000 ft/s at a depth of 3 to 5 ft to 3,500 ft/s at a depth of about 15 to over 35 ft.

Granitic bedrock is expected to be rippable by a Caterpillar D8R, or larger, ripper to a depth of 50 ft in the vicinity of Arrays 1 and 2 and over 35 ft in the vicinity of Array 3.

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Project No: 23343
Date: OCT 20, 2023
Drawn By: A MARTIN
Approved By:
R:\GVProjects\2023\23343 ALTA\Report\Figure 2.cdr

FIGURE 2
ARRAY 1 P-WAVE SEISMIC REFRACTION MODEL

1160 HACIENDA DRIVE
VISTA, CALIFORNIA

PREPARED FOR
ALTA CALIFORNIA GEOTECHNICAL, INC.

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Date: OCT 20, 2023
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R:\GVProjects\2023\23343 ALTA\Report\Figure 3.cdr

FIGURE 3
ARRAY 2 P-WAVE SEISMIC REFRACTION MODEL

1160 HACIENDA DRIVE
VISTA, CALIFORNIA

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R:\GVProjects\2023\23343 ALTA\Report\Figure 4.cdr

FIGURE 4
ARRAY 3 P-WAVE SEISMIC REFRACTION MODEL

1160 HACIENDA DRIVE
VISTA, CALIFORNIA

PREPARED FOR
ALTA CALIFORNIA GEOTECHNICAL, INC.

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7 CERTIFICATION

All geophysical data, analysis, interpretations, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by a **GEO***Vision* California Professional Geophysicist.

Reviewed and approved by,



10/20/2023

Antony J. Martin — Date
California Professional Geophysicist, P. Gp. 989
GEO*Vision* Geophysical Services

* This geophysical investigation was conducted under the supervision of a California Professional Geophysicist using industry standard methods and equipment. A high degree of professionalism was maintained during all aspects of the project from the field investigation and data acquisition, through data processing, interpretation, and reporting. All original field data files, field notes, observations, and other pertinent information are maintained in the project files and are available for the client to review for a period of at least one year.

  A professional geophysicist's certification of interpreted geophysical conditions comprises a declaration of his/her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, or ordinances

APPENDIX C

Laboratory Testing

LABORATORY TESTING

The following laboratory tests were performed on representative samples in accordance with the applicable latest standards or methods from the ASTM, California Building Code (CBC) and California Department of Transportation.

Classification

Soils were classified with respect to the Unified Soil Classification System (USCS) in accordance with ASTM D-2487 and D-2488.

Maximum Density/Optimum Moisture

The maximum dry density and optimum moisture content of two representative bulk samples were evaluated in accordance with ASTM D-1557. The results are summarized in Table C.

Particle Size Analysis

Modified hydrometer testing was conducted to aid in classification of the soil. The results of the particle size analysis are presented in Table C.

Expansion Index Tests

Two (2) expansion index tests were performed to evaluate the expansion potential of typical on-site soil. Testing was carried out in general conformance with ASTM Test Method D-4829. The results are presented in Table C.

Chemical Analyses

Chemical testing was performed on two select samples. The results of this test (sulfate content, resistivity, chloride content and pH) is presented on Table C.

TABLE C
SUMMARY OF LABORATORY TEST DATA
P.N. 1-0500

Boring/Pit No.	Depth (Feet)	Soil Description	Group Symbol - Unified Soil Classification System	Maximum Dry Density		Direct Shear	Grain Size Analysis				Expansion Index	Sulfate Content (%)	Consolidation	Other Tests Remarks
				Maximum Density (pcf)	Optimum Moisture (%)		Gravel (% + No. 4 Screen)	% Sand	%Silt (0.074 to 0.005mm)	% Clay (-0.005 mm)				
T-5	2	Reddish Brown Silty Sand Qal	SM	128.3	9.8	-	0	82	15	3	0	0.006	-	Min. Resistivity: 8,396 OHM-CM Chloride: 95ppm PH: 8.08
T-6	3	Brown Sand Kt-gv	SP	122.5	11.8	-	0	92	5	3	0	0.004	-	Min. Resistivity: 11,550 OHM-CM Chloride: 35ppm PH: 8.56

Alta California Geotechnical, Inc.

APPENDIX D

Maintenance and Improvement Considerations

MAINTENANCE AND IMPROVEMENT CONSIDERATIONS

General

Owners purchasing property must assume a certain degree of responsibility for improvements and for maintaining conditions around their home. Of primary importance from a geotechnical standpoint are maintaining drainage patterns and minimizing the soil moisture variation below all improvements. Such design, construction and owner maintenance provisions may include:

- Employing contractors for improvements who design and build in recognition of local building codes and specific site soils conditions.
- Establishing and maintaining positive drainage away from all foundations, walkways, driveways, patios, and other improvements.
- Avoiding the construction of planters adjacent to structural improvements. Alternatively, planter sides/bottoms can be sealed with an impermeable membrane and drained away from the improvements via subdrains into approved disposal areas.
- Sealing and maintaining construction/control joints within concrete slabs and walkways to reduce the potential for moisture infiltration into the subgrade soils.
- Utilizing landscaping schemes with vegetation that requires minimal watering. Watering should be done in a uniform manner, as equally as possible on all sides of the foundation, keeping the soil "moist" but not allowing the soil to become saturated.
- Maintaining positive drainage away from structures and providing roof gutters on all structures with downspouts that are designed to carry roof runoff directly into area drains or discharged well away from the foundation areas.
- Avoiding the placement of trees closer to the proposed structures than a distance of one-half the mature height of the tree.
- Observation of the soil conditions around the perimeter of the structure during extremely hot/dry or unusually wet weather conditions so that modifications can be made in irrigation programs to maintain relatively uniform moisture conditions.

Sulfates

Owners should be cautioned against the import and use of certain inorganic fertilizers, soil amendments, and/or other soils from offsite sources in the absence of specific information relating to their chemical composition. Some fertilizers have been known to leach sulfate compounds into soils and increase the sulfate concentrations to potentially detrimental levels.

Site Drainage

- The owners should be made aware of the potential problems that may develop when drainage is altered through construction of hardscape improvements. Ponded water, drainage over the slope face, leaking irrigation systems, overwatering, or other conditions which could lead to ground saturation must be avoided.
- No water should be allowed to flow over the slopes. No alteration of pad gradients should be allowed that would prevent pad and roof runoff from being directed to approved disposal areas.
- Drainage patterns have been established at the time of the fine grading should be maintained throughout the life of the structure. No alterations to these drainage patterns should be made unless designed by qualified professionals in compliance with local code requirements and site-specific soils conditions.

Slope Drainage

- Residents should be made aware of the importance of maintaining and cleaning all interceptor ditches, drainage terraces, down drains, and any other drainage devices, which have been installed to promote slope stability.
- Subsurface drainage pipe outlets may protrude through slope surfaces and/or wall faces. These pipes, in conjunction with the graded features, are essential to slope and wall stability and must be protected in-place. They should not be altered or damaged in any way.

Planting and Irrigation of Slopes

- Seeding and planting of the slopes should be planned to achieve, as rapidly as possible, a well-established and deep-rooted vegetal cover requiring minimal watering.
- It is the responsibility of the landscape architect to provide such plants initially and of the residents to maintain such planting. Alteration of such a planting scheme is at the resident's risk.
- The resident is responsible for proper irrigation and for maintenance and repair of properly installed irrigation systems. Leaks should be fixed immediately.
- Sprinklers should be adjusted to provide maximum uniform coverage with a minimum of water usage and overlap. Overwatering with consequent wasteful runoff and serious ground saturation must be avoided.
- If automatic sprinkler systems are installed, their use must be adjusted to account for seasonal and natural rainfall conditions.

Burrowing Animals

- Residents must undertake a program to eliminate burrowing animals. This must be an ongoing program in order to promote slope stability.

Owner Improvement

Owner improvements (pools, spas, patio slabs, retaining walls, planters, etc.) should be designed to account for the terrain of the project, as well as expansive soil conditions and chemical characteristics. Design considerations on any given lot may need to include provisions for differential bearing materials, ascending/descending slope conditions, bedrock structure, perched (irrigation) water, special geologic surcharge loading conditions, expansive soil stresses, and long-term creep/settlement.

All owner improvements should be designed and constructed by qualified professionals utilizing appropriate design methodologies, which account for the on-site soils and geologic conditions. Each lot and proposed improvement should be evaluated on an individual basis.

Setback Zones

Manufactured slopes maybe subject to long-term settlement and creep that can manifest itself in the form of both horizontal and vertical movement. These movements typically are produced as a result of weathering, erosion, gravity forces, and other natural phenomenon. A setback adjacent to slopes is required by most building codes, including the California Building Code. This zone is intended to locate and support the residential structures away from these slopes and onto soils that are not subject to the potential adverse effects of these natural phenomena.

The owner may wish to construct patios, walls, walkways, planters, swimming pools, spas, etc. within this zone. Such facilities may be sensitive to settlement and creep and should not be constructed within the setback zone unless properly engineered. It is suggested that plans for such improvements be designed by a professional engineer who is familiar with grading ordinances and design and construction requirements. In addition, we recommend that the designer and contractor familiarize themselves with the site specific geologic and geotechnical conditions on the specific lot.

APPENDIX E

Earthwork Specifications

ALTA CALIFORNIA GEOTECHNICAL, INC.
EARTHWORK SPECIFICATIONS

These specifications present the generally accepted standards and minimum earthwork requirements for the development of the project. These specifications shall be the project guidelines for earthwork except where specifically superseded in preliminary geology and soils reports, grading plan review reports or by the prevailing grading codes or ordinances of the controlling agency.

A. GENERAL

1. The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications.

2. The project Geotechnical Engineer and Engineering Geologist, or their representatives, shall provide observation and testing services, and Geotechnical consultation for the duration of the project.

3. All clearing, grubbing, stripping and site preparation for the project shall be accomplished by the Contractor to the satisfaction of the Geotechnical Engineer/Engineering Geologist.

4. It is the Contractor's responsibility to prepare the ground surface to receive fill to the satisfaction of the Geotechnical Engineer and to place, spread, mix, moisture condition, and compact the fill in accordance with the job specifications and as required by the Geotechnical Engineer. The Contractor shall also remove all material considered by the Geotechnical Engineer to be unsuitable for use in the construction of engineered fills.

5. The Contractor shall have suitable and sufficient equipment in operation to handle the amount of fill being placed. When necessary, equipment will be shut down temporarily in order to permit the proper preparation of fills.

B. PREPARATION OF FILL AREAS

1. Excessive vegetation and all deleterious material should be disposed of offsite as required by the Geotechnical Engineer.

   Existing fill, soil, alluvium or rock materials determined by the Geotechnical Engineer as being unsuitable for placement in compacted fills shall be removed and hauled from the site. Where applicable, the Contractor may obtain the

approval of the Soils Engineer and the controlling authorities for the project to dispose of the above described materials, or a portion thereof, in designated areas onsite.

After removal of the deleterious materials have been accomplished, earth materials deemed unsuitable in their natural, in-place condition, shall be removed as recommended by the Geotechnical Engineer/Engineering Geologist.

2. Upon achieving a suitable bottom for fill placement, the exposed removal bottom shall be disced or bladed by the Contractor to the satisfaction of the Geotechnical Engineer. The prepared ground surfaces shall then be brought to the specified moisture content mixed as required, and compacted and tested as specified. In localities where it is necessary to obtain the approval of the controlling agency prior to placing fill, it will be the Contractor's responsibility to contact the proper authorities to visit the site.

3. Any underground structure such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines or other structures not located prior to grading are to be removed or treated in a manner prescribed by the Geotechnical Engineer and/or the controlling agency for the project.

C. **ENGINEERED FILLS**

1. Any material imported or excavated on the property may be utilized as fill, provided the material has been determined to be suitable by the Geotechnical Engineer. Deleterious materials shall be removed from the fill as directed by the Geotechnical Engineer.

2. Rock or rock fragments less than twelve inches in the largest dimension may be utilized in the fill, provided they are not placed in concentrated pockets and the distribution of the rocks is approved by the Geotechnical Engineer.

3. Rocks greater than twelve inches in the largest dimension shall be taken offsite, or placed in accordance with the recommendations of the Geotechnical Engineer in areas designated as suitable for rock disposal.

4. All materials to be used as fill, shall be tested in the laboratory by the Geotechnical Engineer. Proposed import materials shall be approved by the Geotechnical Engineer 48 hours prior to importation.

5. The fill materials shall be placed by the Contractor in lifts, that when compacted, shall not exceed six inches. Each lift shall be spread evenly and shall be

thoroughly mixed to achieve a near uniform moisture condition and a uniform blend of materials.

All compaction shall be achieved at or above the optimum moisture content, as determined by the applicable laboratory standard. The Contractor will be notified if the fill materials are too wet or too dry to achieve the required compaction standard.

6. When the moisture content of the fill material is below the limit specified by the Geotechnical Engineer, water shall be added and the materials shall be blended until a uniform moisture content, within specified limits, is achieved. When the moisture content of the fill material is above the limits specified by the Geotechnical Engineer, the fill materials shall be aerated by discing, blading, mixed with dryer fill materials, or other satisfactory methods until the moisture content is within the specified limits.

7. Each fill lift shall be compacted to the minimum project standards, in compliance with the testing methods specified by the controlling governmental agency, and in accordance with recommendations of the Geotechnical Engineer.

   In the absence of specific recommendations by the Geotechnical Engineer to the contrary, the compaction standard shall be the most recent version of ASTM:D 1557.

8. Where a slope receiving fill exceeds a ratio of five-horizontal to one-vertical, the fill shall be keyed and benched through all unsuitable materials into sound bedrock or firm material, in accordance with the recommendations and approval of the Geotechnical Engineer.

9. Side hill fills shall have a minimum key width of 15 feet into bedrock or firm materials, unless otherwise specified in the soil report and approved by the Geotechnical Engineer in the field.

10. Drainage terraces and subdrainage devices shall be constructed in compliance with the ordinances of the controlling governmental agency and/or with the recommendations of the Geotechnical Engineer and Engineering Geologist.

11. The Contractor shall be required to maintain the specified minimum relative compaction out to the finish slope face of fill slopes, buttresses, and stabilization fills as directed by the Geotechnical Engineer and/or the governing agency for the project. This may be achieved by either overbuilding the slope and cutting

back to the compacted core; by direct compaction of the slope face with suitable equipment; or by any other procedure which produces the required result.

12. The fill portion of fill-over-cut slopes shall be properly keyed into rock or firm material; and the fill area shall be stripped of all soil or unsuitable materials prior to placing fill.

    The design cut portion of the slope should be made first and evaluated for suitability by the Engineering Geologist prior to placement of fill in the keyway above the cut slope.

13. Pad areas in cut or natural ground shall be approved by the Geotechnical Engineer. Finished surfaces of these pads may require scarification and recompaction, or over excavation as determined by the Geotechnical Engineer.

D. CUT SLOPES

1. The Engineering Geologist shall observe all cut slopes and shall be notified by the Contractor when cut slopes are to be started.

2. If, during the course of grading, unforeseen adverse or potentially adverse geologic conditions are encountered, the Engineering Geologist and Soil Engineer shall investigate, analyze and make recommendations to remediate these problems.

3. Non-erodible interceptor swales shall be placed at the top of cut slopes that face the same direction as the superjacent, prevailing drainage.

4. Unless otherwise specified in specific geotechnical reports, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

5. Drainage terraces shall be constructed in compliance with the ordinances of the controlling governmental agencies, and/or in accordance with the recommendations of the Geotechnical Engineer or Engineering Geologist.

E. GRADING CONTROL

1. Fill placement shall be observed and tested by the Geotechnical Engineer and/or his representative during grading.

   Field density tests shall be made by the Geotechnical Engineer and/or his representative to evaluate the compaction and moisture compliance of each fill lift. Density tests shall be conducted at intervals not to exceed two feet of fill

height. Where sheepsfoot rollers are used, the fill may be disturbed to a depth of several inches. Density determinations shall be taken in the compacted material below the disturbed surface at a depth determined by the Geotechnical Engineer or his representative.

2. Where tests indicate that the density of any layer of fill, or portion thereof, is below the required relative compaction, or improper moisture content is in evidence, that particular layer or portion thereof shall be reworked until the required density and/or moisture content has been attained. Additional fills shall not be placed over an area until the previous lift of fill has been tested and found to meet the density and moisture requirements for the project and the previous lift is approved by the Geotechnical Engineer.

3. When grading activities are interrupted by heavy rains, fill operations shall not be resumed until field observations and tests by the Geotechnical Engineer indicate the moisture content and density of the fill are within the specified limits.

4. During construction, the Contractor shall properly grade all surfaces to maintain good drainage and prevent the ponding of water. The Contractor shall take remedial action to control surface water and to prevent erosion of graded areas until such time as a permanent drainage and erosion devices have been installed.

5. Observation and testing by the Geotechnical Engineer and/or his representative shall be conducted during filling and compacting operations in order that he will be able to state in his opinion that all cut and filled areas are graded in accordance with the approved specifications.

6. Upon the completion of grading activities and after the Geotechnical Engineer and Engineering Geologist have finished their observations of the work, final reports shall be submitted. No further excavation or fill placement shall be undertaken without prior notification of the Geotechnical Engineer and/or Engineering Geologist.

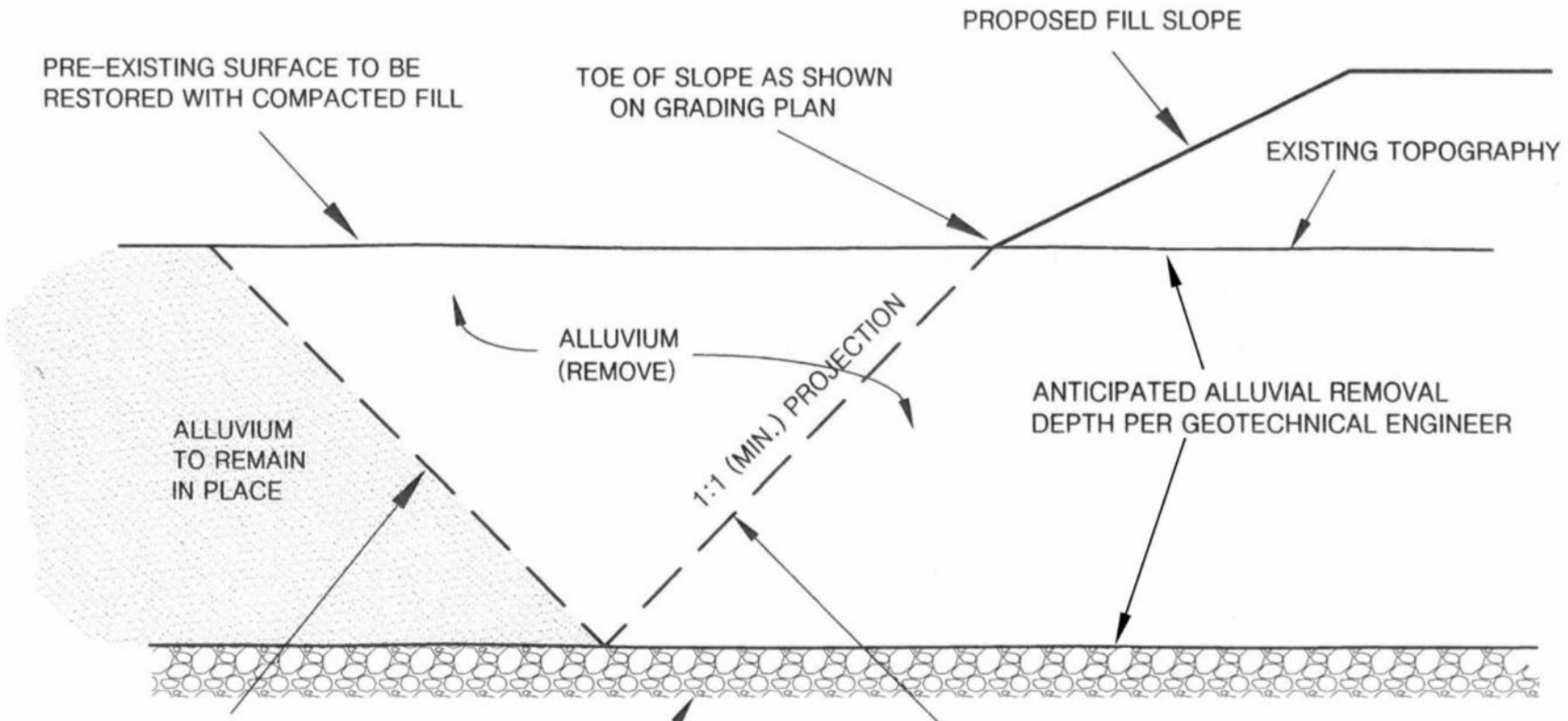
F. **FINISHED SLOPES**

All finished cut and fill slopes shall be planted and irrigated and/or protected from erosion in accordance with the project specifications, governing agencies, and/or as recommended by a landscape architect.

APPENDIX F

Grading Details

DETAIL FOR FILL SLOPE TOEING OUT ON FLAT ALLUVIATED CANYON

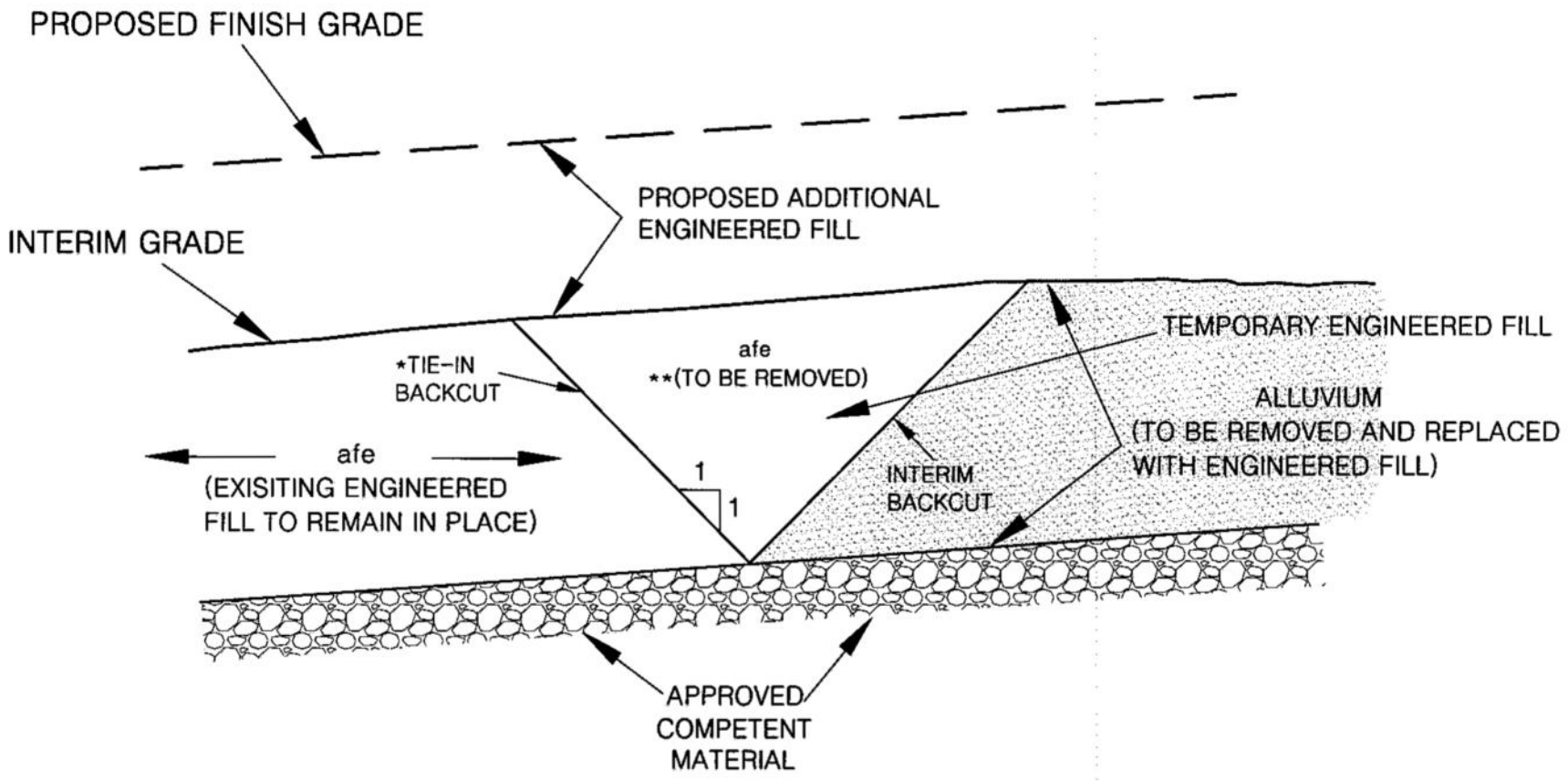


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VER. 3/12

PLATE G-1

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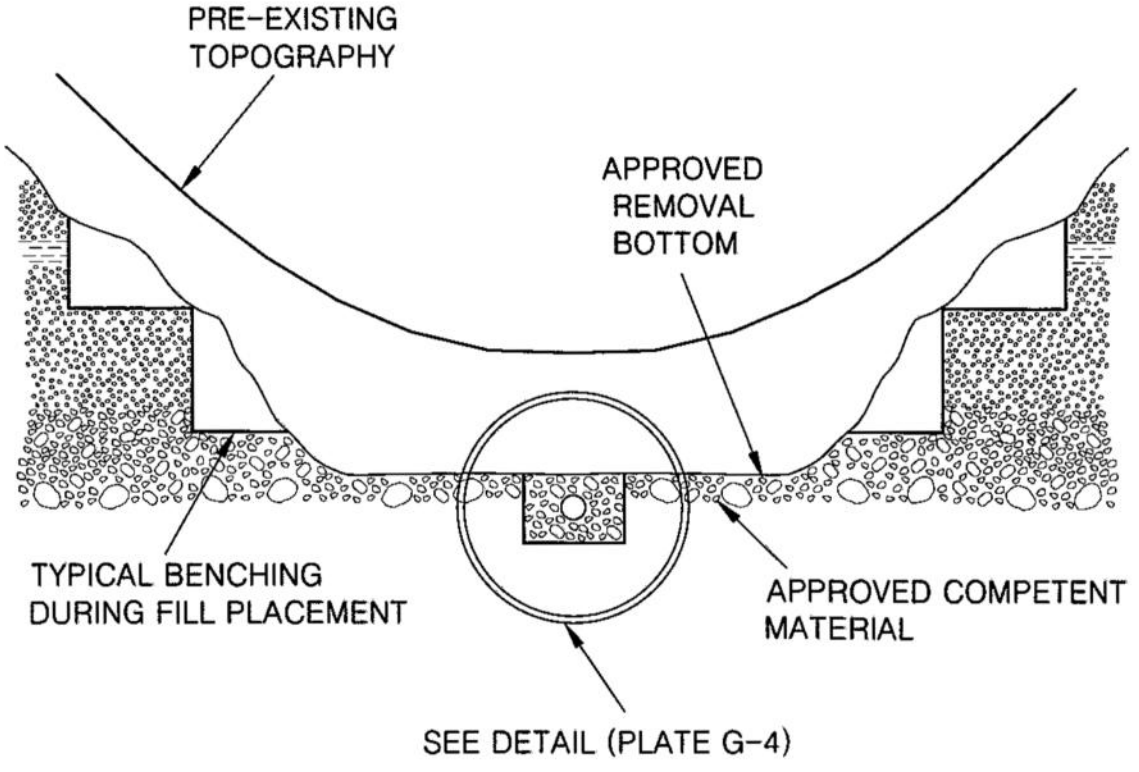
REMOVAL ADJACENT TO EXISTING FILL



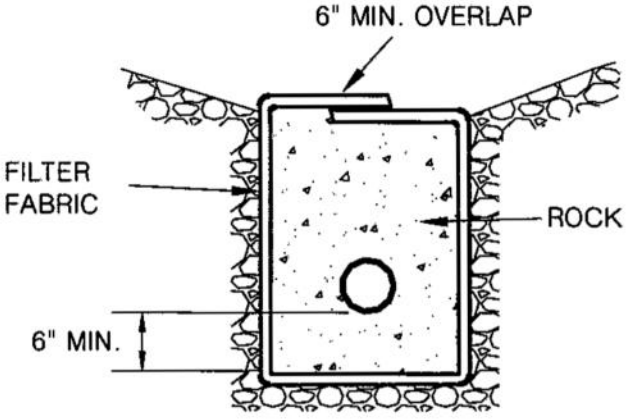
*INITIATE 1:1 TIE-IN BACKCUT TO INTERCEPT TOE OF INTERIM BACKCUT

**AS PART OF TIE-IN FOR ADDITIONAL ENGINEERED FILL

CANYON SUBDRAIN



CANYON SUBDRAIN DETAIL



PERFORATED PIPE SURROUNDED WITH ROCK AND FILTER FABRIC

ROCK: MIN. VOLUME OF 9 CU.FT. PER LINEAR FT. OF 3/4 IN. MAX. ROCK

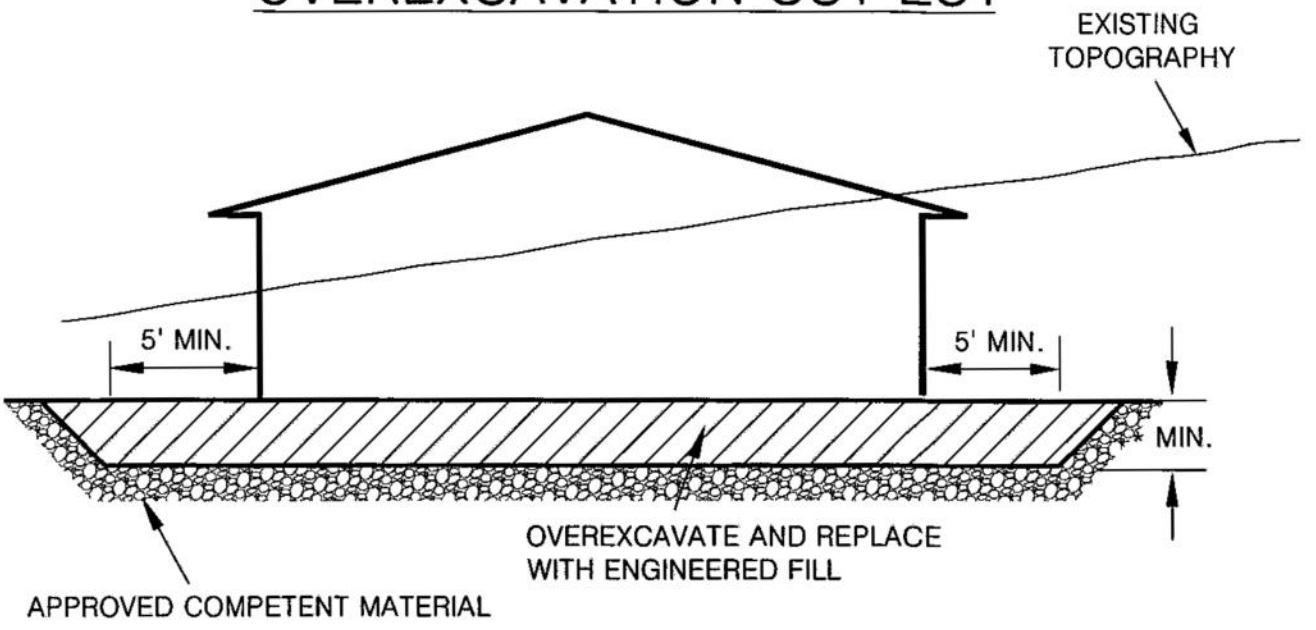
PIPE: 6 IN. ABS OR PVC PIPE WITH A MINIMUM OF 8 PERFORATIONS (1/4-IN. DIA.) PER LINEAL FT. IN BOTTOM HALF OF PIPE ASTM D2751, SDR 35, OR ASTM D3034 OR ASTM D1527, SCHD. 40 ASTM D1785, SCHD. 40

FILTER FABRIC: MIRAFI 140 FILTER FABRIC OR APPROVED EQUIVALENT

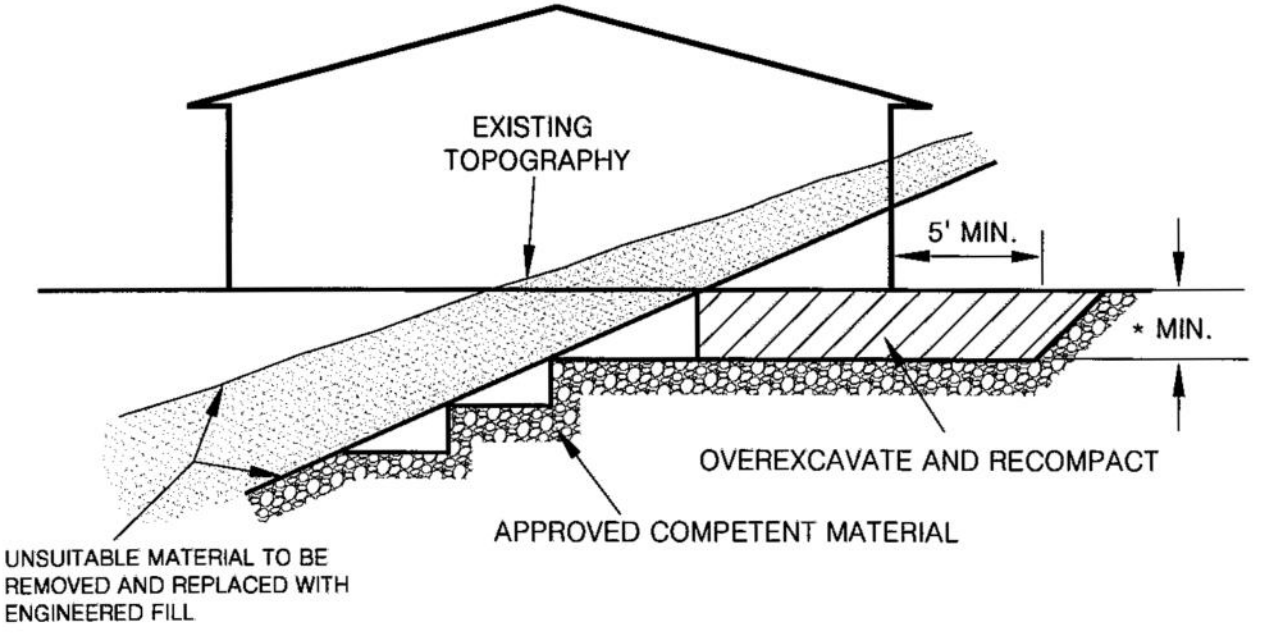
NOTES:

1. FOR CONTINUOUS RUN IN EXCESS OF 500. FT USE 8 IN. DIA. PIPE
2. ENGINEERED FILL PLACED BELOW DRAINS SHALL BE COMPACTED TO 93% OF THE LABORATORY MAXIMUM DRY DENSITY (ASTM:D1557)

OVEREXCAVATION CUT LOT



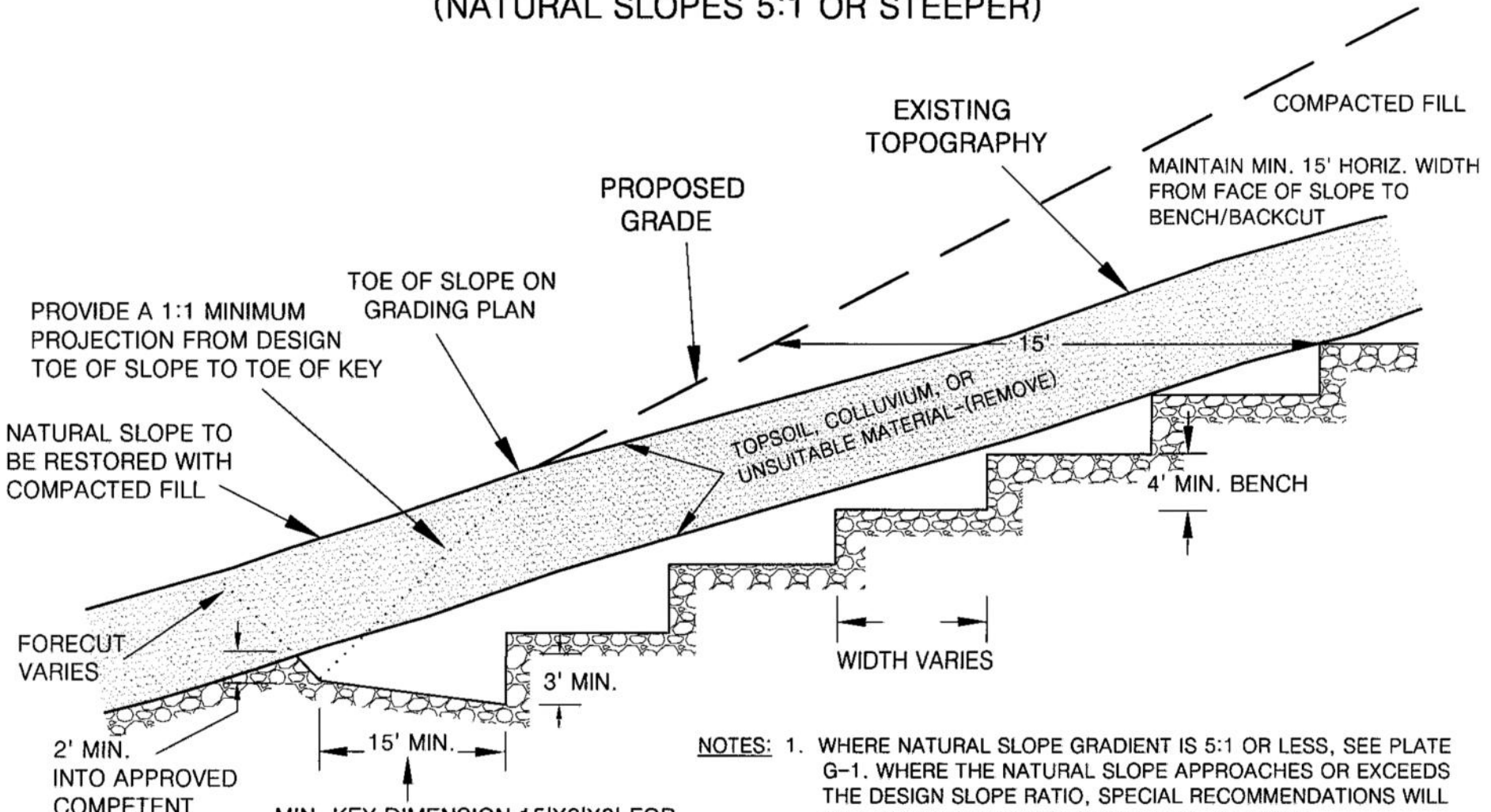
CUT-FILL LOT (TRANSITION)



*NOTE ALL BUILDING PADS SHALL BE OVER EXCAVATED TO A MINIMUM OF 1/3 OF THE MAXIMUM DEPTH OF FILL BELOW THE BUILDING PAD TO A MAXIMUM OF 17 FEET (SEE PLATE G-16)

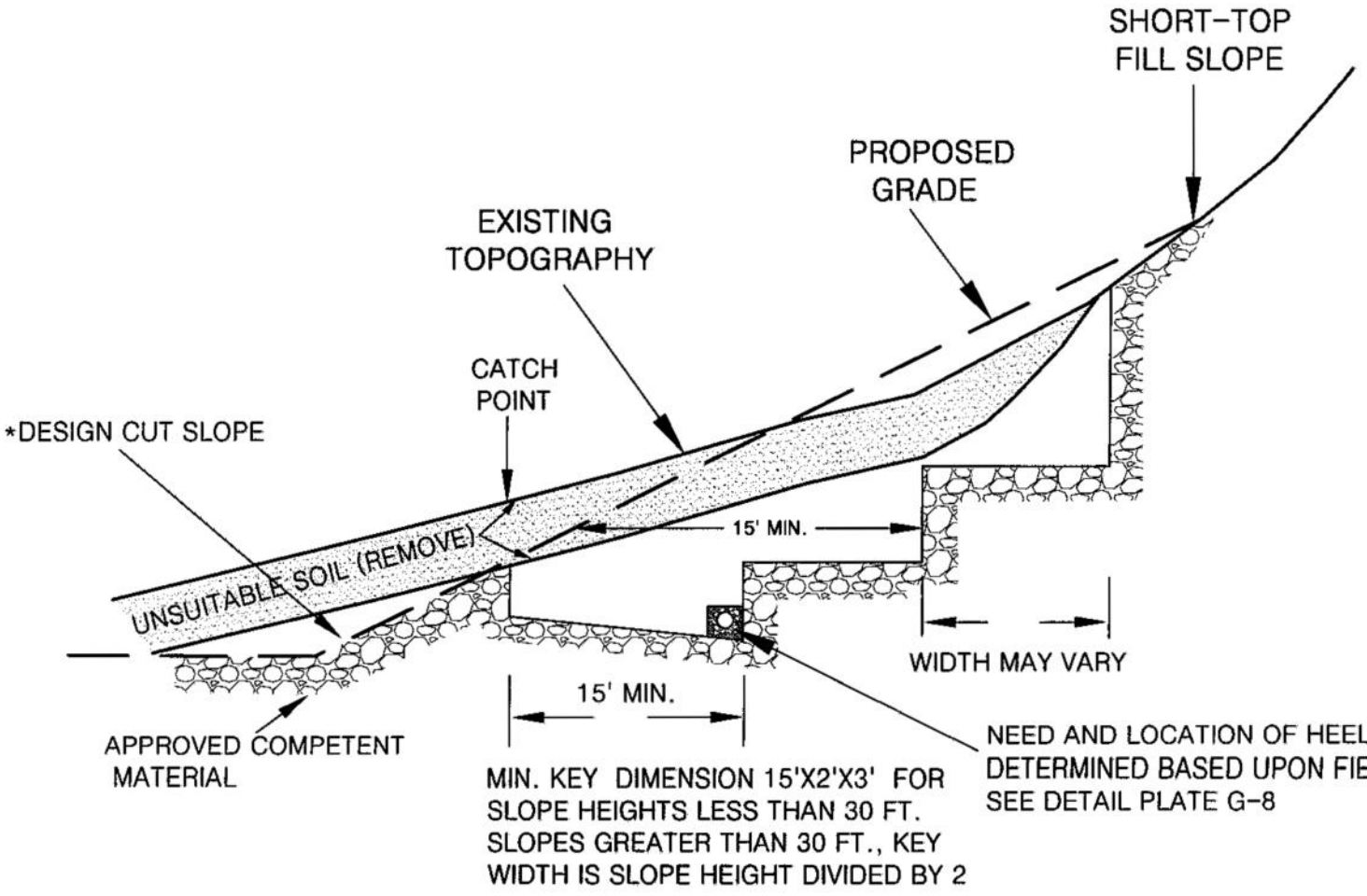
SIDE HILL SLOPE FILL DETAIL

(NATURAL SLOPES 5:1 OR STEEPER)



NOTES:
1. WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, SEE PLATE G-1. WHERE THE NATURAL SLOPE APPROACHES OR EXCEEDS THE DESIGN SLOPE RATIO, SPECIAL RECOMMENDATIONS WILL BE PROVIDED BY THE GEOTECHNICAL ENGINEER.
2. THE NEED FOR AND PLACEMENT OF DRAINS WILL BE DETERMINED BY THE GEOTECHNICAL ENGINEER OR GEOLOGIST BASED UPON EXPOSED FIELD CONDITIONS.

FILL OVER CUT SLOPE DETAIL

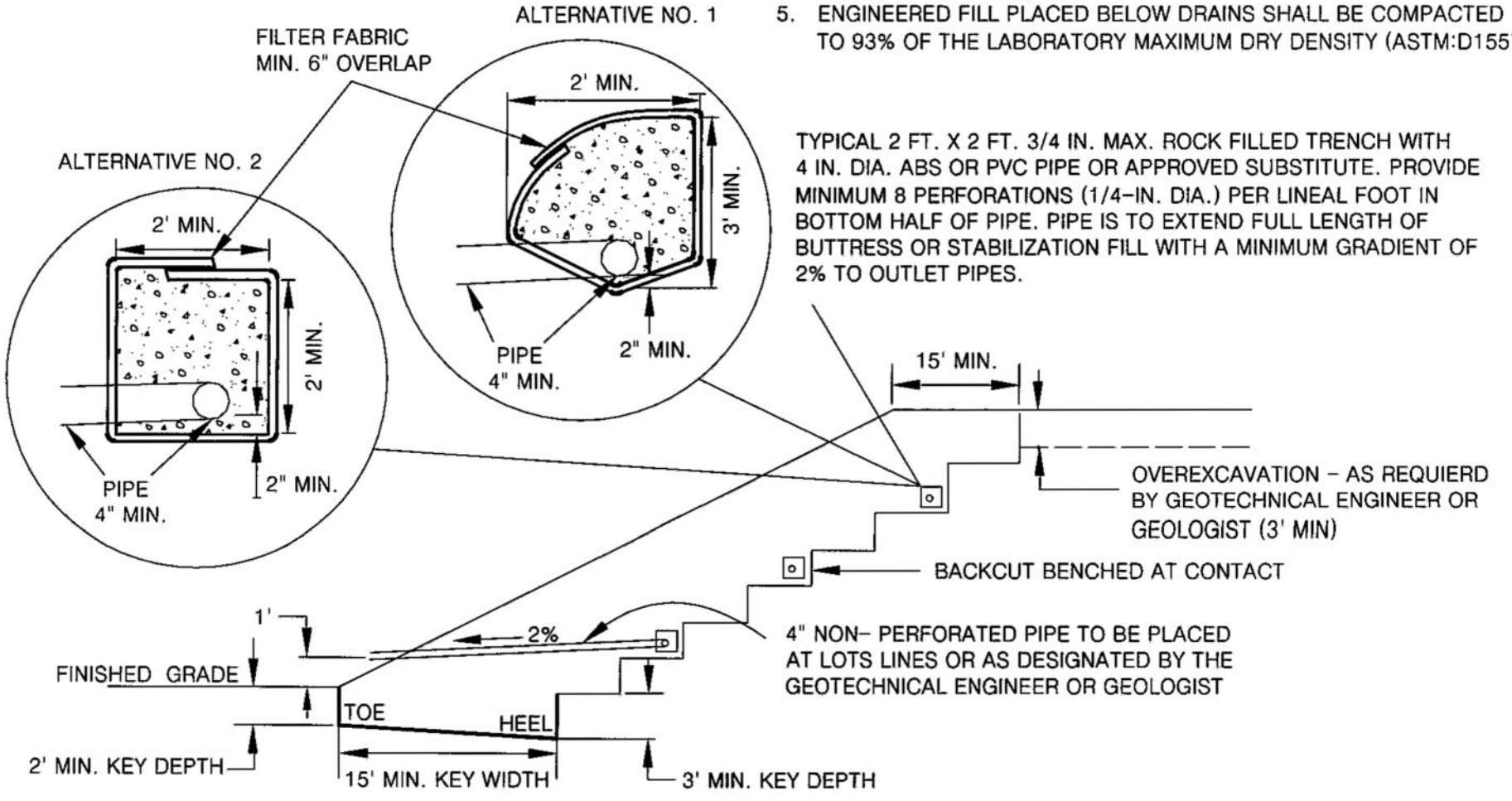


*THE CUT PORTION OF THE SLOPE SHOULD BE EXCAVATED AND EVALUATED BY THE ENGINEERING GEOLOGIST/GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTING THE FILL SLOPE

STABILIZATION/BUTTRESS FILL BACKDRAIN

NOTE:

1. ASTM D2751, SDR 35, OR ASTM D3034 OR ASTM D1527, SCHD. 40 ASTM D1785, SCHD. 40
2. SOLID PIPE OUTLETS TO BE PROVIDED EVERY 100 FT. AND JOINED TO PERFORATED BACKDRAIN PIPE WITH "L" OR "T"s. MIN. 2% GRADIENT.
3. GRAVEL TRENCH TO BE FILLED WITH 3/4 IN. MAXIMUM ROCK
4. THE NECESSITY FOR UPPER TIER BACKDRAINS SHALL BE DETERMINED IN THE FIELD BY THE GEOTECHNICAL ENGINEER OR GEOLOGIST. UPPER TIER OUTLETS SHOULD DRAIN INTO PAVED TERRACE DRAINS.
5. ENGINEERED FILL PLACED BELOW DRAINS SHALL BE COMPACTED TO 93% OF THE LABORATORY MAXIMUM DRY DENSITY (ASTM:D1557)



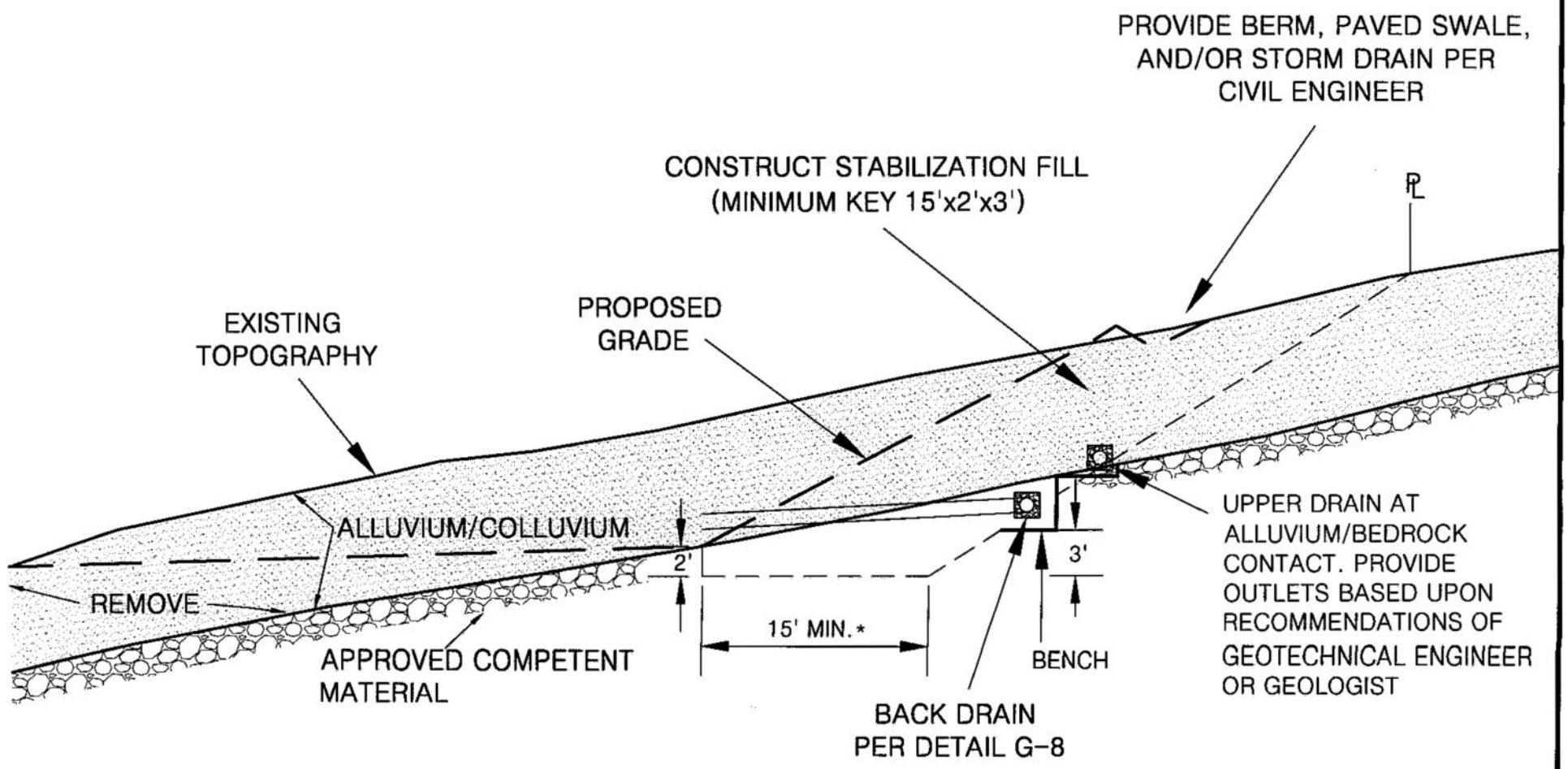
ALTA CALIFORNIA GEOTECHNICAL, INC.
VER. 3/12

PLATE G-8

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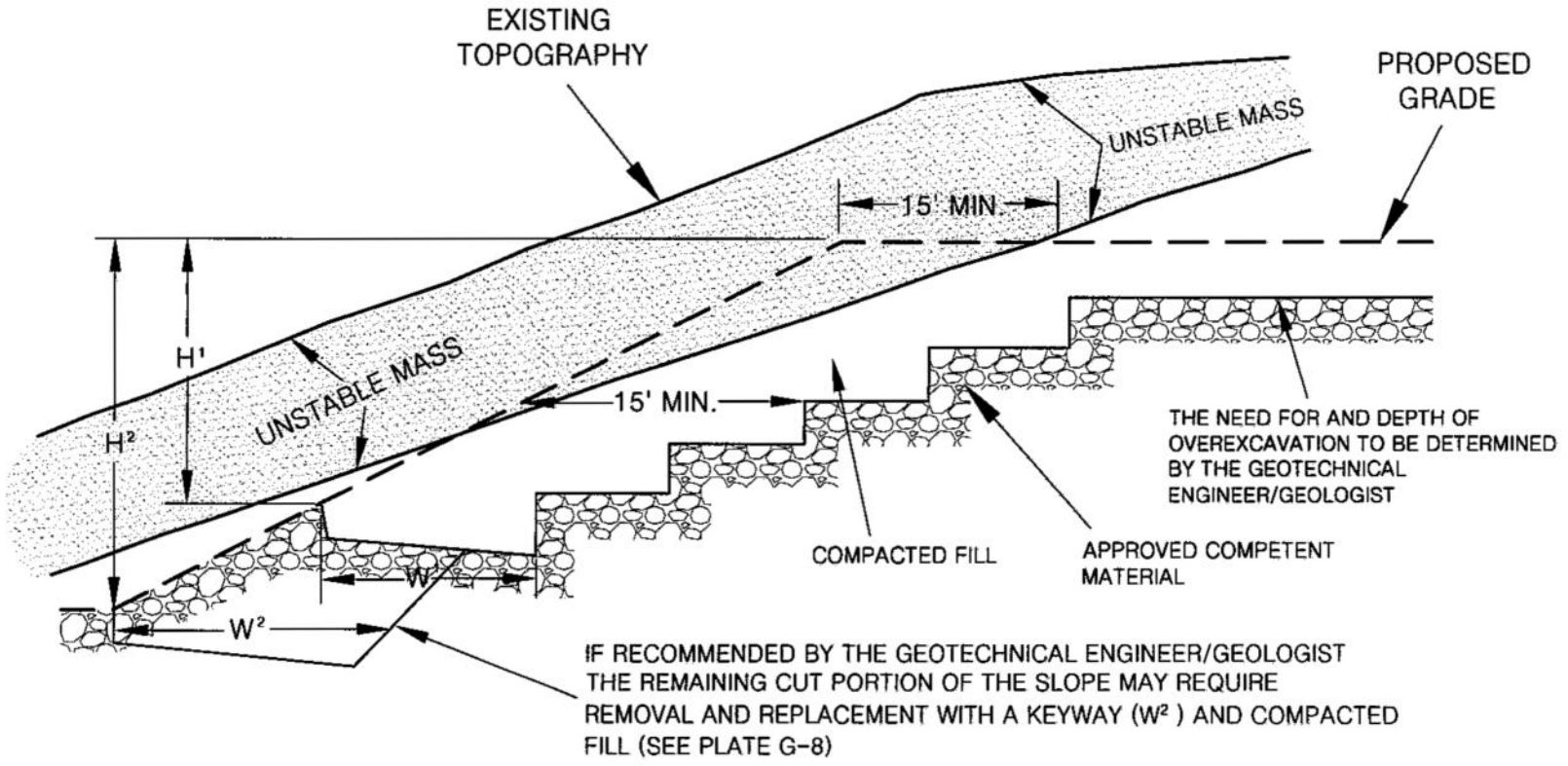
STABILIZATION FILL

(UPSLOPE ALLUVIATED AREA)



* FOR SLOPE HEIGHTS LESS THAN 30 FT. SLOPES GREATER THAN 30 FT., KEY WIDTH IS SLOPE HEIGHT DIVIDED BY 2

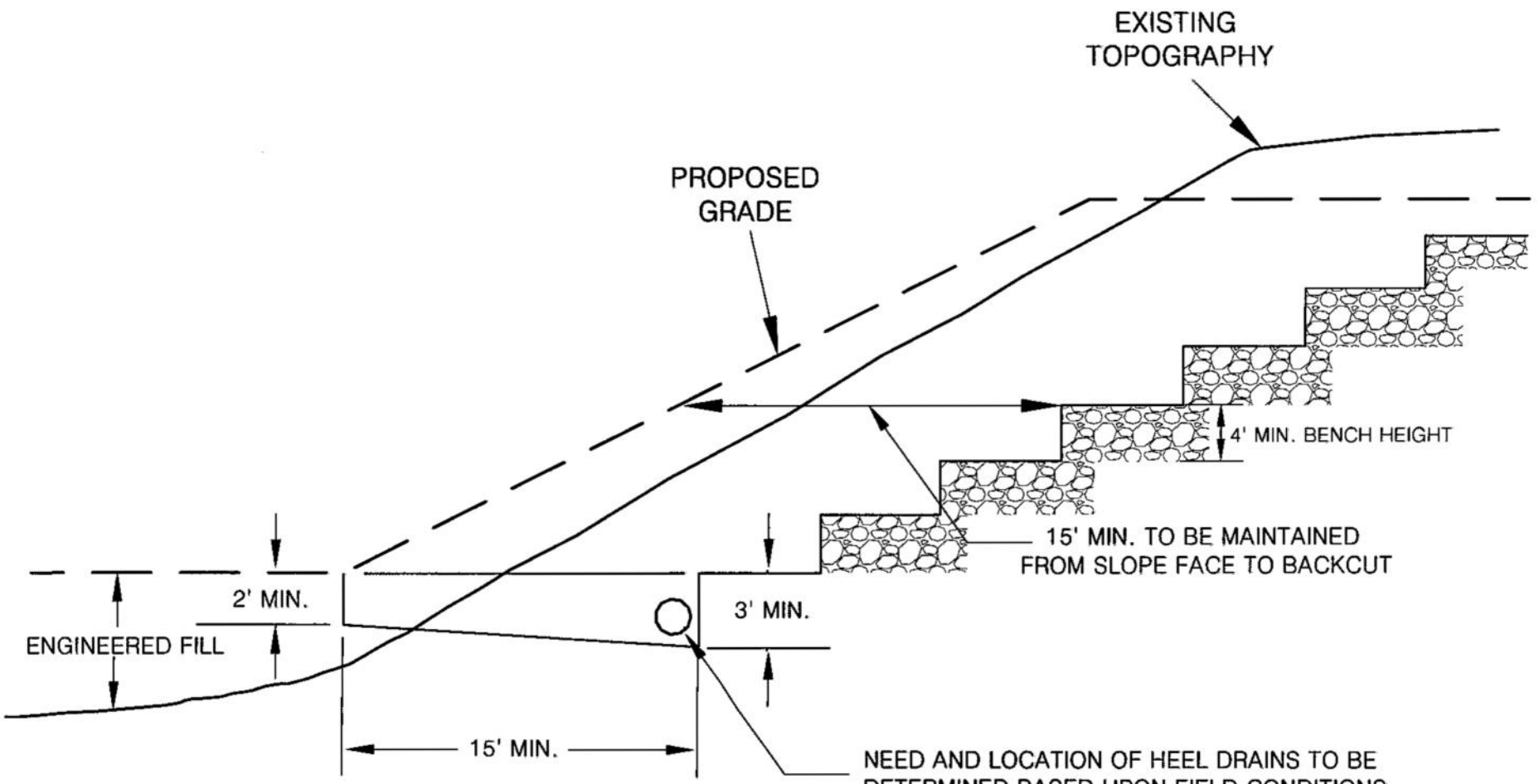
SELECTIVE GRADING DETAIL FOR STABILIZATION FILL
UNSTABLE MATERIAL EXPOSED IN PORTION OF CUT SLOPE



NOTES: 1. BACKDRAINS ARE NOT REQUIRED UNLESS SPECIFIED.

2. "W" SHALL BE EQUIPMENT WIDTH (15') FOR SLOPE HEIGHT LESS THAN 25 FEET. FOR SLOPES GREATER THAN 25 FEET, "W" SHALL BE DETERMINED BY THE PROJECT GEOTECHNICAL ENGINEER/GEOLOGIST. AT NO TIME SHALL "W" BE LESS THAN H/2.

SKIN FILL SLOPE OVER NATURAL GROUND

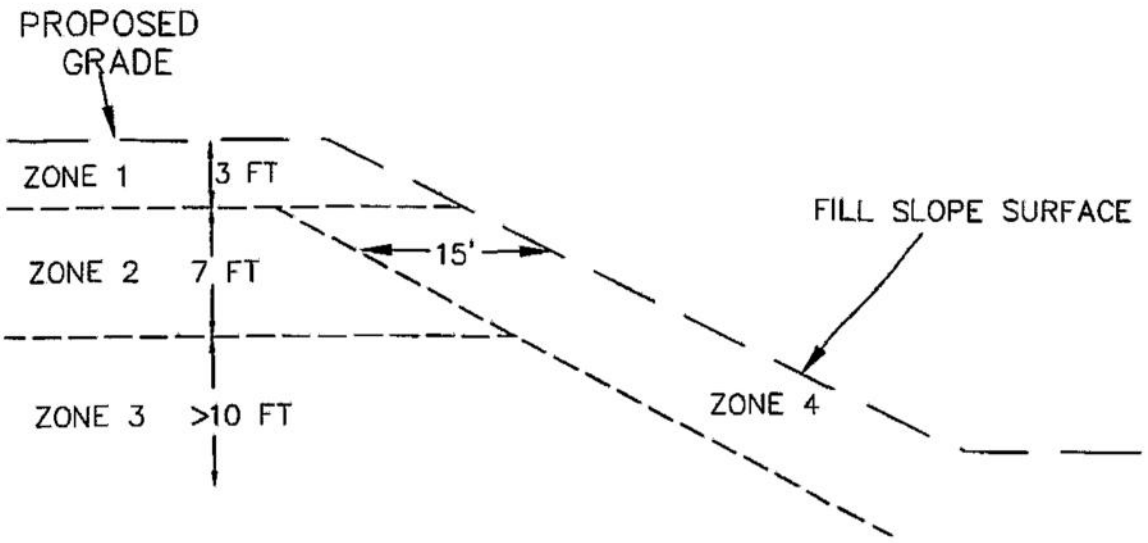


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VER. 1/18

PLATE G-11

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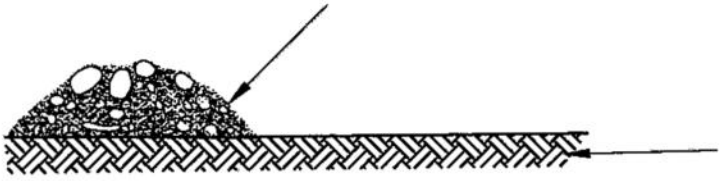
DETAIL FOR MAXIMUM PARTICLE DIMENSION



ZONE	DEPTH	PARTICLE MAX. DIMENSION	PLACEMENT METHOD
1	0-3 ft.	≤1.0 ft.	STANDARD OR CONVENTIONAL COMPACTION METHODS (SEE EARTHWORK SPECIFICATIONS)
2	3-10 ft.	≤2.0 ft.	ROCK BLANKETS (SEE PLATE G-13)
3	>10 ft.	≤8.0 ft.	ROCK BLANKETS (PLATE G-13) ROCK WINDROW (PLATE G-14) INDIVIDUAL ROCK BURIED (PLATE G-15)
4	15 HORIZONTAL FEET FROM FILL SLOPE FACE	≤1.0 ft.	STANDARD OR CONVENTIONAL COMPACTION METHODS (SEE EARTHWORK SPECIFICATIONS)

ROCK BLANKET DETAILS

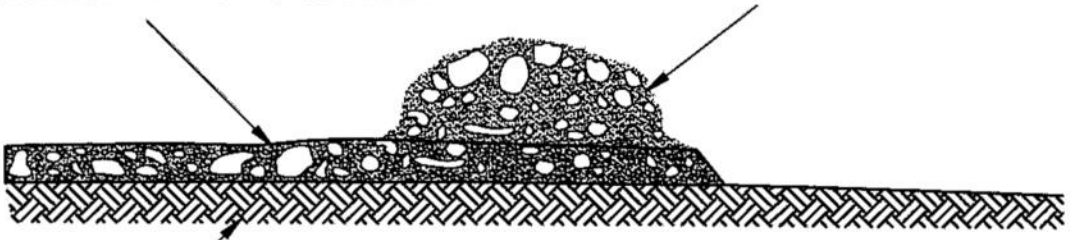
LOOSE PILE 1
LOOSE, DUMPED ROCK, GRAVEL AND SAND MIXTURE REMOVE FRAGMENTS LARGER THAT 2 FEET FOR ISOLATED BURIAL (PLATE G-15) OR WINDROW (PLATE G-10)



APPROVED BOTTOM, OR TOP OF PREVIOUSLY APPROVED BLANKET FILL

COMPACT PILE 1
SPREAD LOOSE PILE FORWARD WITH HEAVY TRACKED DOZER (D-8 OR LARGER). HEAVILY WATER, TRACK, AND APPLY ADDITIONAL SAND AND GRAVEL AS NECESSARY TO FILL VOIDS AND CREATE A DENSE MATRIX OF ROCK, COBBLES, GRAVEL AND SAND (2 FOOT MAXIMUM THICKNESS)

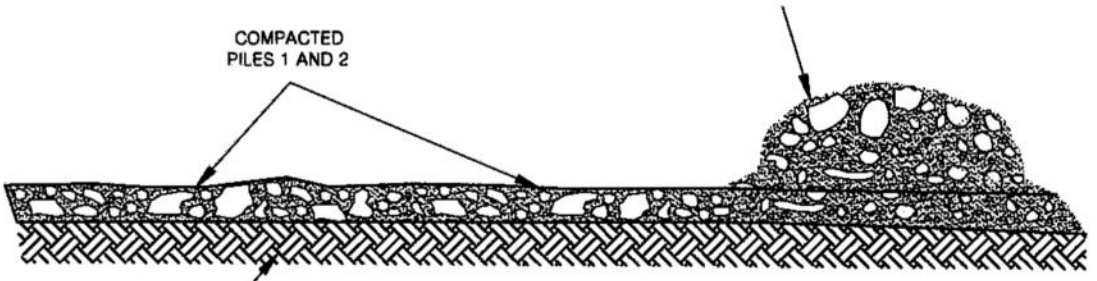
LOOSE PILE 2
DUMP SUCCESSIVE PILES OF LOOSE ROCK, GRAVEL AND SAND MIXTURE ON FORWARD EDGE OF PREVIOUSLY COMPACTED LIFT WITH TRUCKS AND/OR SCRAPERS. USE PREVIOUS LIFT TO ACCESS AND FURTHER COMPACT PILE 1.



APPROVED BOTTOM, OR TOP OF PREVIOUSLY APPROVED BLANKET FILL

LOOSE PILE 3
DUMP SUCCESSIVE PILES OF LOOSE ROCK, GRAVEL AND SAND MIXTURE ON FORWARD EDGE OF PREVIOUSLY COMPACTED LIFT WITH TRUCKS AND/OR SCRAPERS. USE PREVIOUS LIFT TO ACCESS AND FURTHER COMPACT EXISTING BLANKET.

COMPACTED PILES 1 AND 2

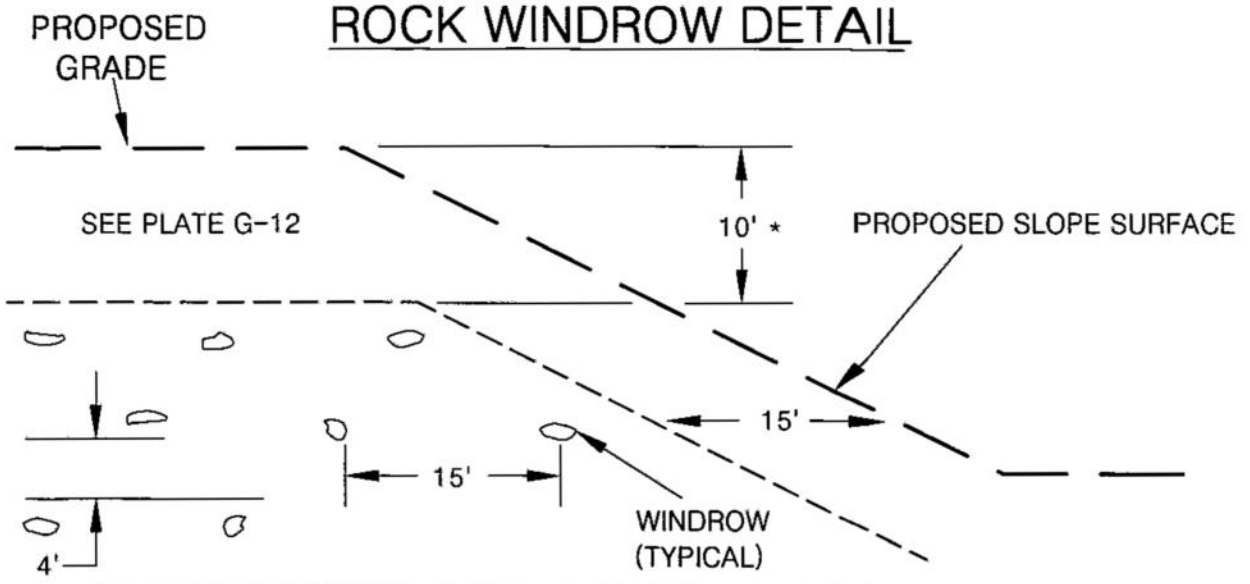


APPROVED BOTTOM, OR TOP OF PREVIOUSLY APPROVED BLANKET FILL

OBSERVATION TESTING AND APPROVAL PROCEDURES

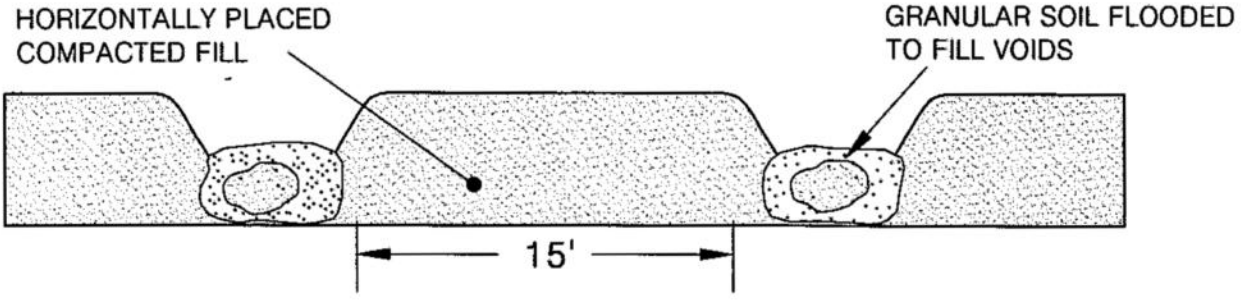
OBSERVE EQUIPMENT. SCRAPERS AND TRUCKS SHOULD BE FULLY SUPPORTED ON BLANKET WITHOUT SIGNIFICANT YIELDING. EXCAVATE TEST/OBSERVATION PITS TO CONFIRM EXISTENCE OF MIXTURE OF VARIOUS PARTICLE SIZES, WITHOUT SIGNIFICANT VOIDS, AND FORMING A DENSE, COMPACTED FILL MATRIX. TEST BY ASTM D1556, D2922 AND/OR D3017 WHEN APPROPRIATE. RECORD LIMITS AND ELEVATION OF BLANKET. ALL FILL AND COMPACTION OPERATIONS TO BE CONDUCTED UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER. SUBSEQUENT LIFTS TO BE APPLIED ONLY AFTER OBSERVATION AND CONFIRMATION OF SUITABILITY OF FILL AND RELEASE BY THE GEOTECHNICAL ENGINEER. BLANKETS TO BE CONSTRUCTED IN ACCORDANCE WITH PLATE G-12.

ROCK WINDROW DETAIL



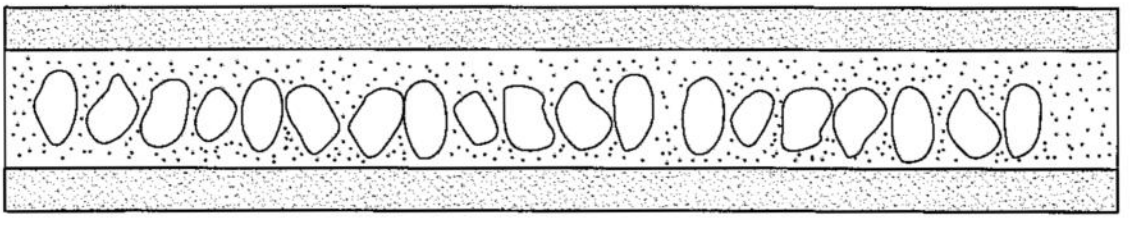
NOTE: OVERSIZED MATERIAL SHOULD BE REMOVED FROM THE 15' CLEAR ZONES WITH SPECIAL EQUIPMENT, SUCH AS A ROCK RAKE, PRIOR TO PLACING THE NEXT FILL LIFT.
*VARIANCES TO THE ABOVE ROCK HOLD DOWN MAY BE GRANTED SUBJECT TO APPROVAL BY THE OWNER, GEOTECHNICAL ENGINEER, AND GOVERNING AGENCY

TYPICAL WINDROW DETAIL (END VIEW)

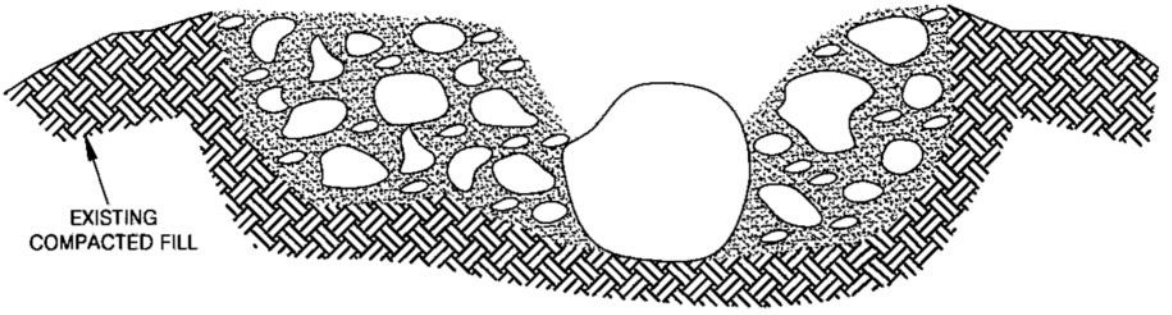


NOTE: COMPACTED FILL SHALL BE BROUGHT UP TO A HIGHER ELEVATION ALONG EACH WINDROW SO GRANULAR SOIL CAN BE FLOODED IN A "TRENCH CONDITION".

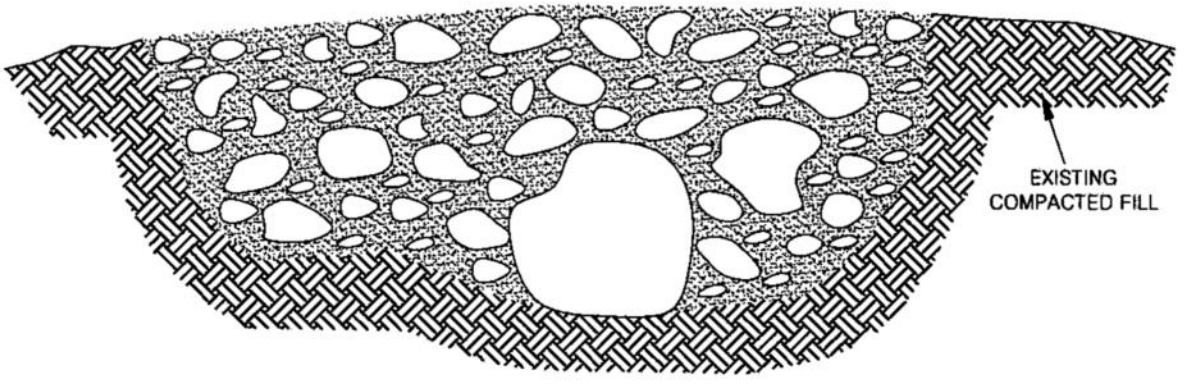
PROFILE VIEW



ISOLATED ROCK BURIAL DETAILS

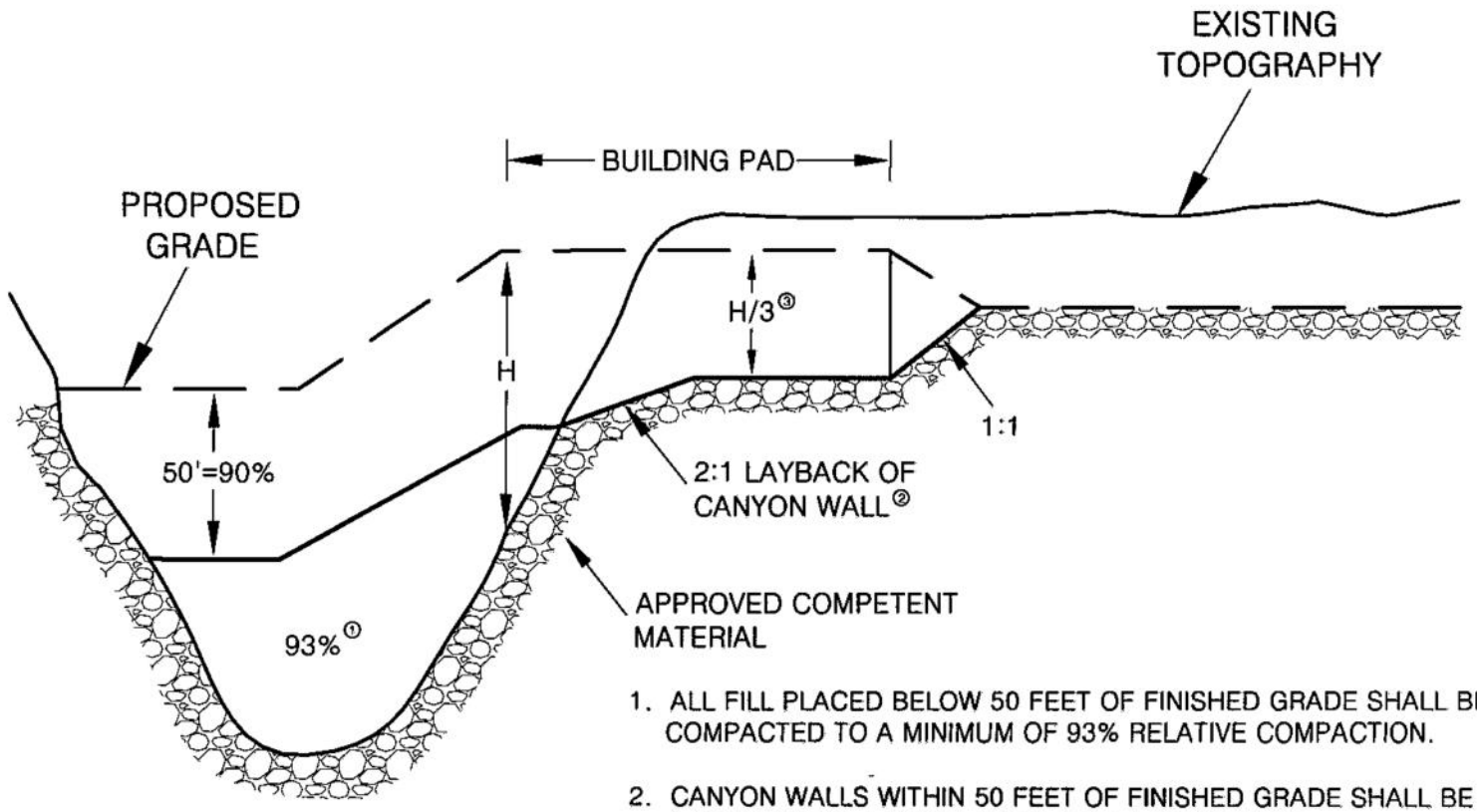


EXCAVATE HOLE INTO EXISTING FILL PRISM, PLACE BOULDER (< 8 feet in maximum dimension) INTO EXISTING COMPACTED FILL. SURROUND WITH SAND, GRAVEL, COBBLES AND WATER HEAVILY. TRACK WITH D8 OR LARGER EQUIPMENT UNTIL RESULTING FILL FULLY SUPPORTS EQUIPMENT. OBSERVE AND/OR TEST IN ACCORDANCE WITH ASTM D1556, D2922 OR D3017. ROCKS LARGER THAN 8 FEET SHALL BE FURTHER REDUCED IN SIZE BY SECONDARY BREAKING.



RELATIVE COMPACTION VS. DEPTH

CANYON WALL LAY BACK
DIFFERENTIAL FILL OVEREXCAVATION DETAILS



1. ALL FILL PLACED BELOW 50 FEET OF FINISHED GRADE SHALL BE COMPACTED TO A MINIMUM OF 93% RELATIVE COMPACTION.

2. CANYON WALLS WITHIN 50 FEET OF FINISHED GRADE SHALL BE LAID BACK TO A SLOPE RATIO OF 2:1 OR FLATTER.

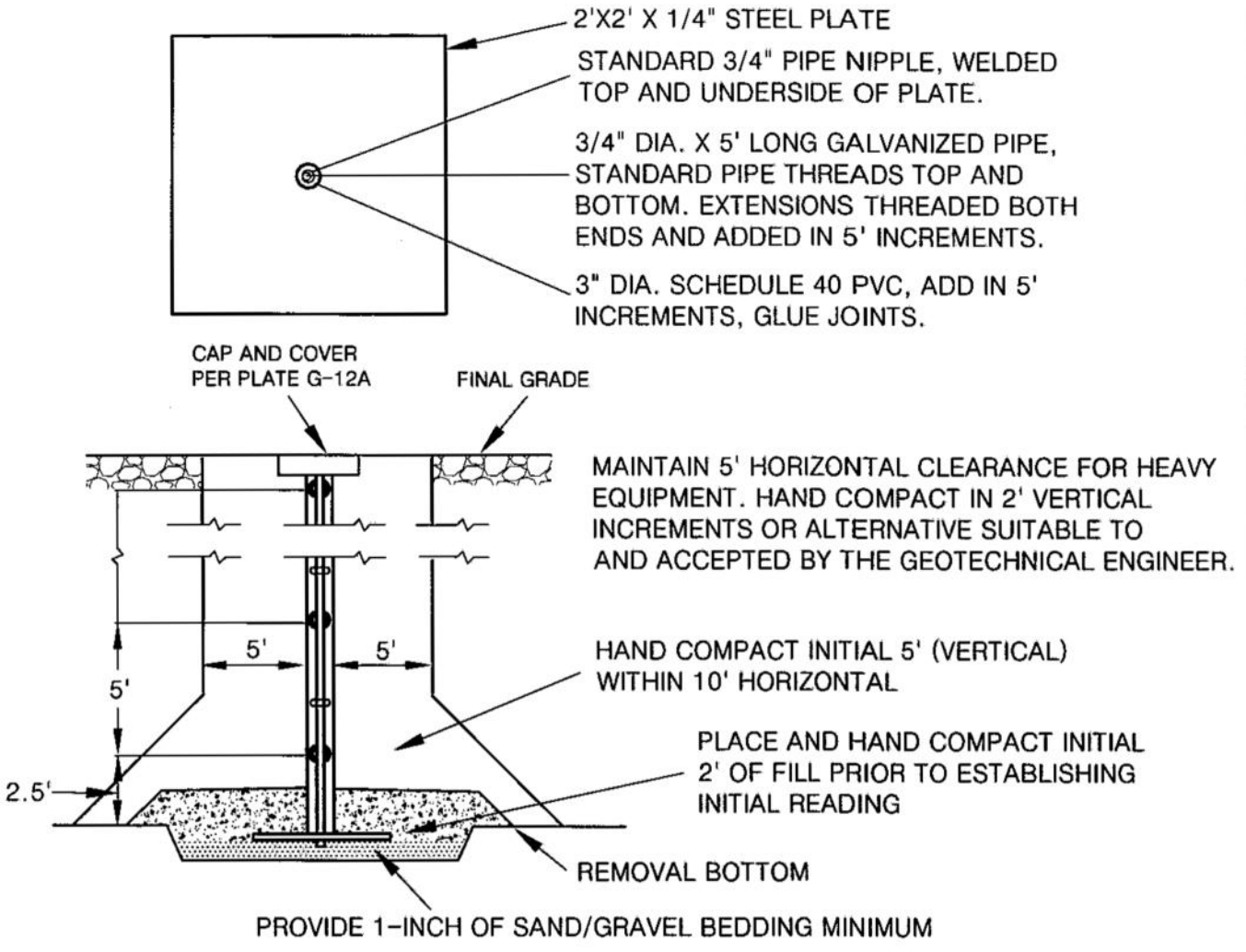
3. ALL BUILDING PADS SHALL BE OVER EXCAVATED TO A MINIMUM OF 1/3 OF THE MAXIMUM DEPTH OF FILL BELOW THE BUILDING PAD TO A MAXIMUM OF 17 FEET.

4. IF THE 2:1 LAY BACK OF THE CANYON WALL IS IMPRACTICAL, THEN AS AN ALTERNATIVE THE INCREASED COMPACTION STANDARDS IN NOTE 1 SHOULD BE EXTENDED UP TO H/3 AND THE LAY BACK WILL NOT BE REQUIRED.

ALTA CALIFORNIA GEOTECHNICAL, INC.
VER. 3/12

PLATE G-16

SETTLEMENT PLATE DETAIL



NOTES:

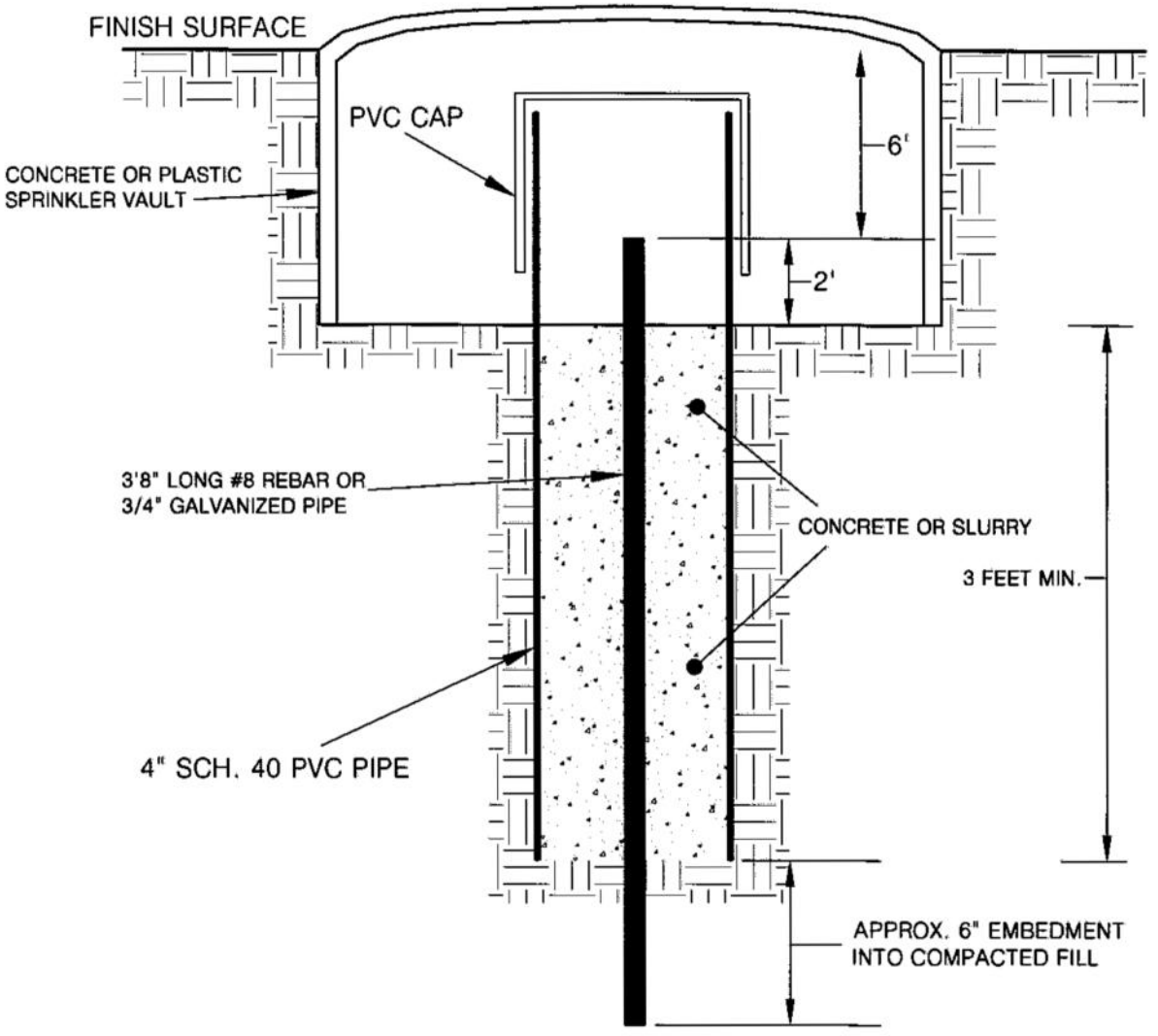
1) LOCATIONS OF SETTLEMENT PLATES SHALL BE CLEARLY MARKED AND READILY VISIBLE (RED FLAGGED) TO EQUIPMENT OPERATORS.

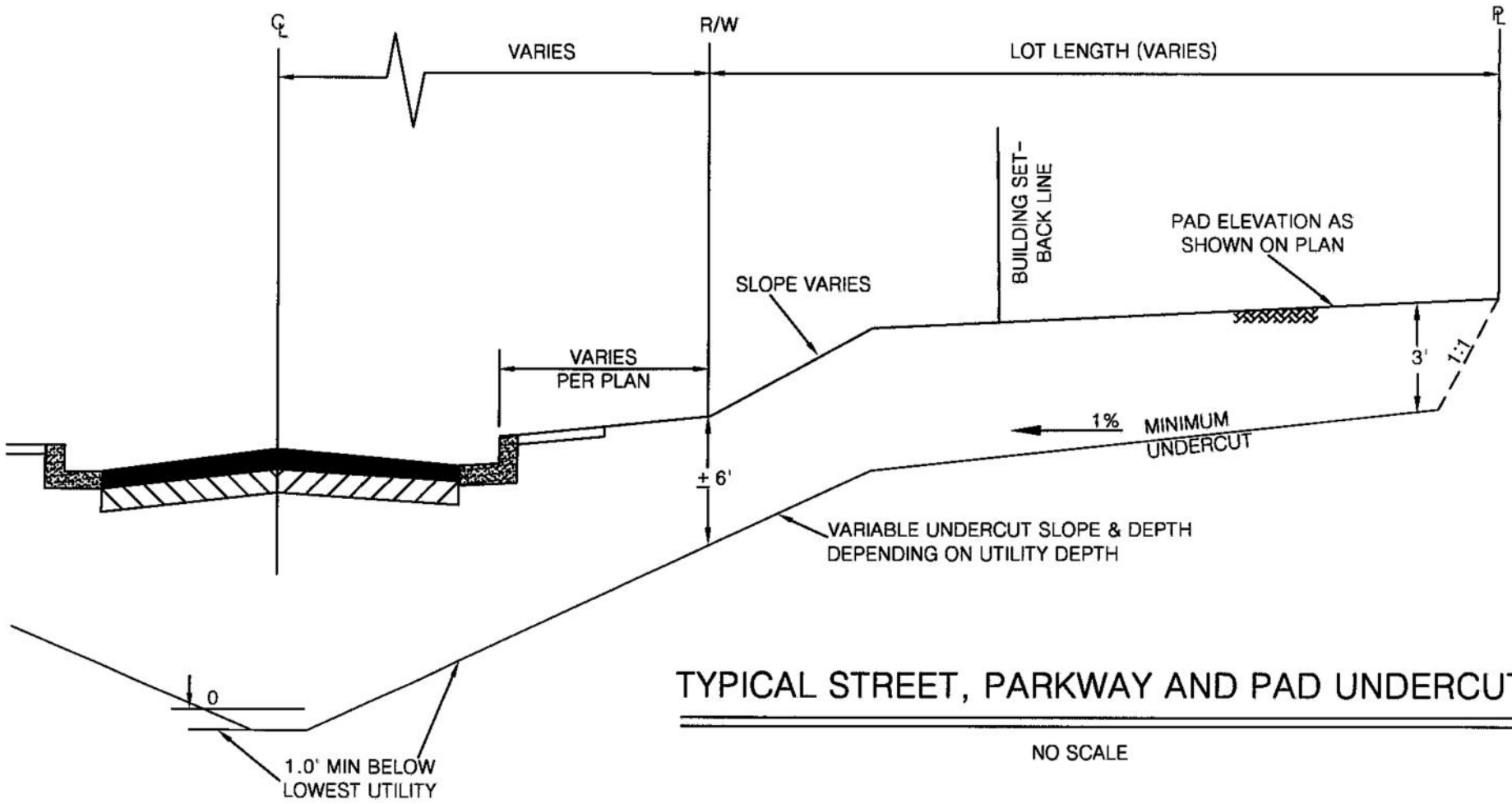
2) CONTRACTOR SHALL MAINTAIN 10' HORIZONTAL CLEARANCE FOR HEAVY EQUIPMENT WITHIN 5' (VERTICAL) OF PLATE BASE. FILL WITHIN CLEARANCE AREA SHALL BE HAND COMPACTED TO PROJECT SPECIFICATIONS OR COMPACTED BY ALTERNATIVE APPROVED BY THE GEOTECHNICAL ENGINEER.

3) AFTER 5' (VERTICAL) OF FILL IS IN PLACE, CONTRACTOR SHALL MAINTAIN 5' HORIZONTAL EQUIPMENT CLEARANCE. FILL IN CLEARANCE AREA SHALL BE HAND COMPACTED (OR APPROVED ALTERNATIVE) IN VERTICAL INCREMENTS NOT TO EXCEED 2 FEET.

4) IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE OR EXTENSION RESULTING FROM EQUIPMENT OPERATING WITHIN PRESCRIBED CLEARANCE AREA, CONTRACTOR SHALL IMMEDIATELY NOTIFY GEOTECHNICAL ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATE AND EXTENSION RODS TO WORKING ORDER.

SURFACE SETTLEMENT MONUMENT DETAIL





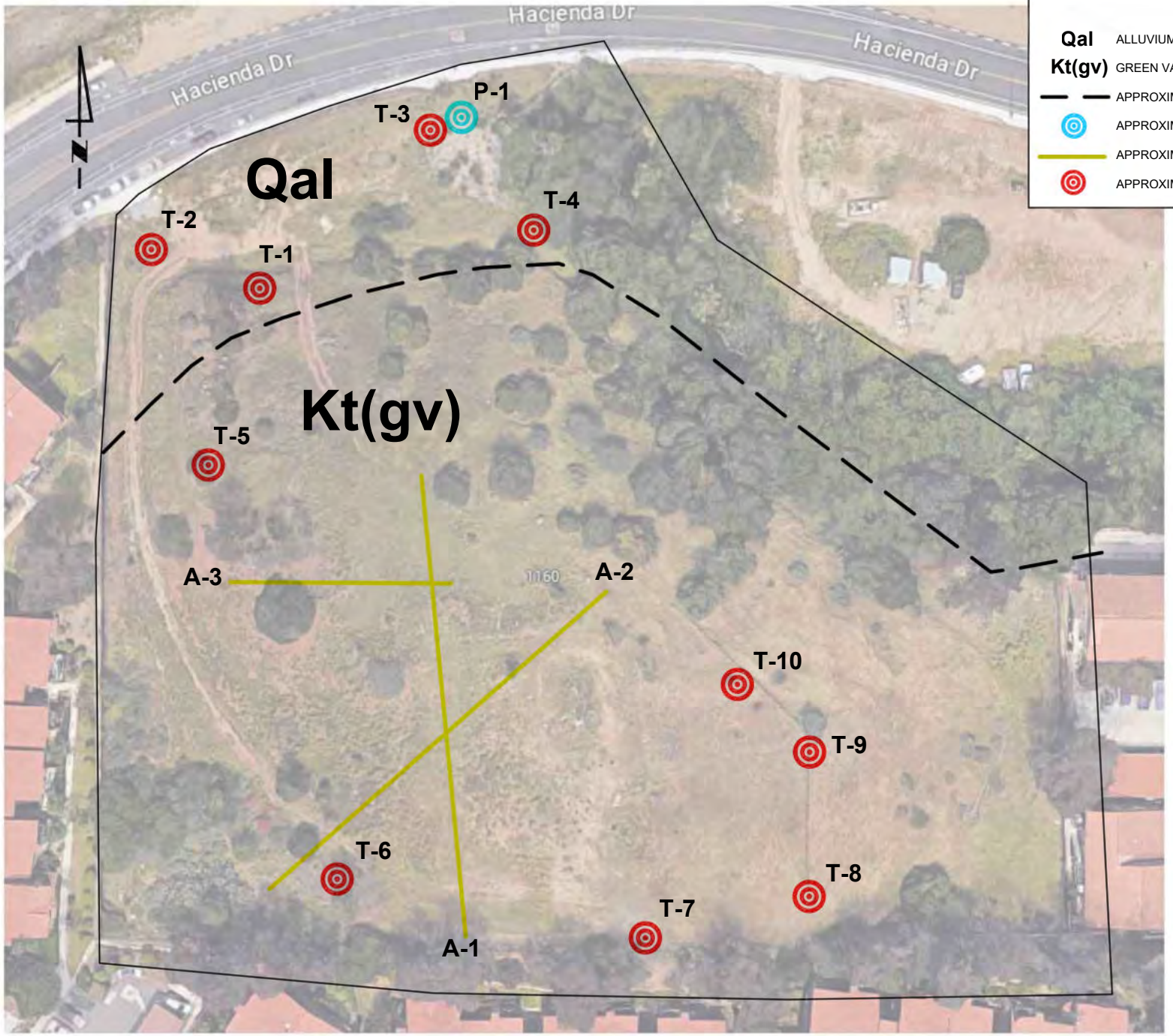
TYPICAL STREET, PARKWAY AND PAD UNDERCUT

NO SCALE

ALTA CALIFORNIA GEOTECHNICAL, INC .
VER. 3/13

PLATE G-19

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LEGEND

Qal	ALLUVIUM
Kt(gv)	GREEN VALLEY TONALITE
	APPROXIMATE GEOLOGIC CONTACT
	APPROXIMATE LOCATION OF INFILTRATION TEST
	APPROXIMATE LOCATION OF SEISMIC REFRACTION LINE
	APPROXIMATE LOCATION OF TEST PIT

PLATE 1

ALTA CALIFORNIA GEOTECHNICAL, INC.
170 N. MAPLE STREET, STE 108, CORONA, CA 92880
TELEPHONE: (951) 509-7090
PROJECT NUMBER: 1-0500
DATE: Oct. 26, 2023

ALTA CALIFORNIA
GEOTECHNICAL INC.

170 North Maple Street, Suite 108
Corona, CA 92880
www.altageotechnical.com

CITY VENTURES
3121 Michelson Drive, Suite 150
Irvine, California 92612

June 21, 2024
Project No. 1-0500

Attention: Mr. Eric Miller

Subject: **ADDENDUM TO GEOTECHNICAL INVESTIGATION**
1160 Hacienda Drive, Arroyo Vista Project,
City of Vista, San Diego County, California

Reference: Alta California Geotechnical, Inc., 2023, Geotechnical Investigation, 1160 Hacienda Drive, Arroyo Vista Project, City of Vista, San Diego County, California, dated October 26, 2023 (Project No. 1-0500).

Dear Mr. Miller:

Presented herein is Alta California Geotechnical, Inc's (Alta) addendum to our geotechnical investigation for the proposed development located at 1160 Hacienda Drive, the Arroyo Vista Project, located in the City of Vista, San Diego County, California. We prepared a geotechnical investigation for the site in October of 2023 (Reference). Presented herein is a discussion of the proposed development.

PROPOSED DEVELOPMENT

Based on a review of Conceptual Grading Plans provided by Fuscoe Engineering (plot date April 26, 2024), the proposed development consists of seven (7), three-story multi-family residential structures and associated infrastructure improvements. The max fill slope proposed is a 2:1 slope approximately 26 feet tall, located in the northern portion of the site. The max cut slope proposed is a 3:1 slope approximately 14 feet tall, located in the eastern portion of the site. An updated geotechnical map utilizing the conceptual grading plan is presented as Plate 1. A cross-section is presented as Plate 2. Once available, rough grading plans will be reviewed and additional recommendations will be provided as needed.

Alta appreciates the opportunity to provide you with geotechnical consulting services. If you have any questions or should you require any additional information, please contact the undersigned at (951) 509-7090.

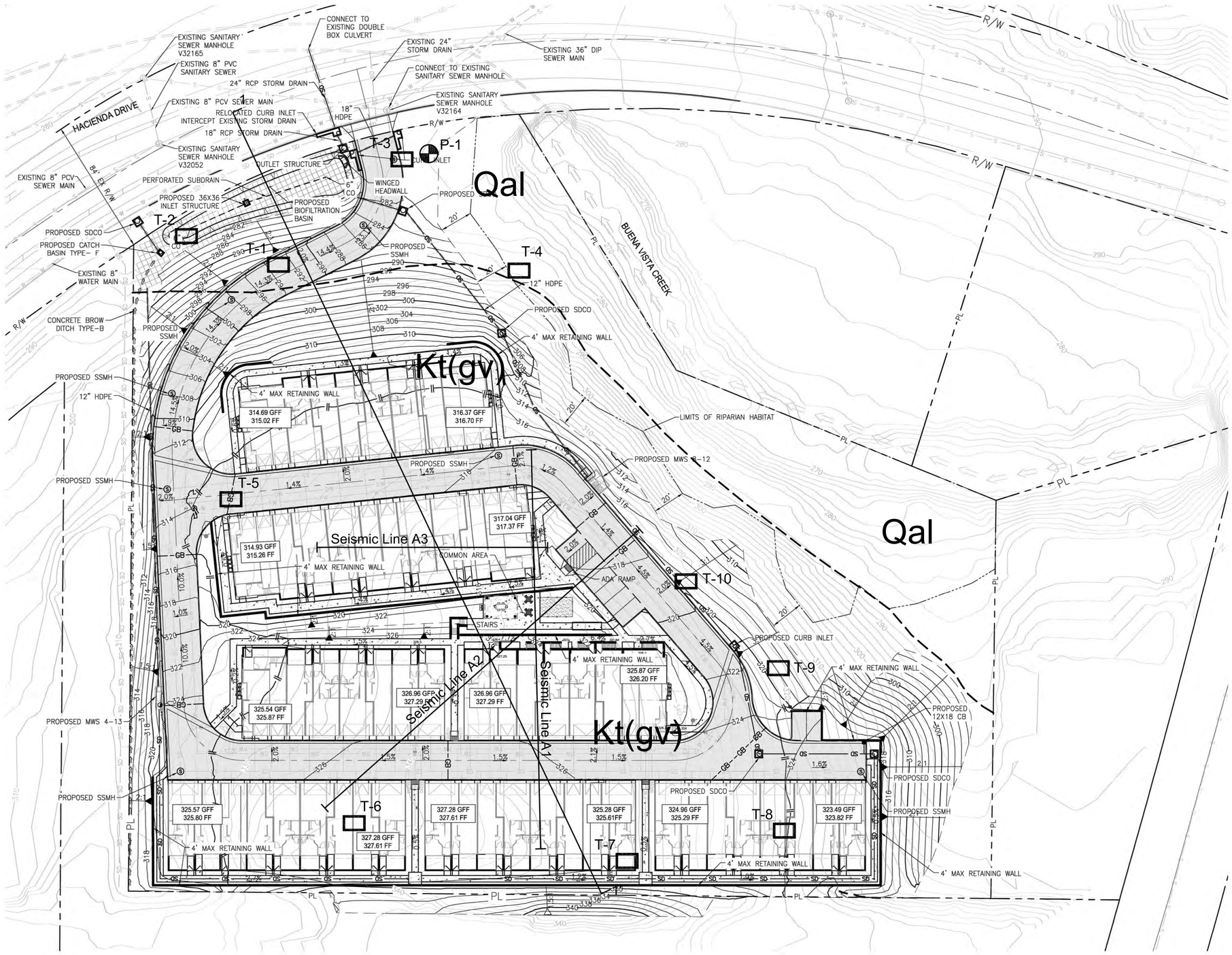
Respectfully submitted,
Alta California Geotechnical, Inc

LOGAN A. MARQUETTE
Civil Engineering Associate

SCOTT A. GRAY/RGE 2857
Reg. Exp.: 12-31-24
Registered Geotechnical Engineer
President

Distribution: (1) Addressee

SAG: 1-0500, June 21, 2024 (Addendum to Geotechnical Investigation, 1160 Hacienda Drive, Vista)



PROJECT LEGEND

- EXISTING PROPERTY/ROW LINE
- CENTERLINE
- LIMITS OF RIPARIAN HABITAT
- DAYLIGHT LINE
- PROPOSED CONTOURS (35)
- EXISTING CONTOUR (35)
- GRADE BREAK (GB)
- SURFACE SLOPE (0.0% MIN)
- PROPOSED RETAINING WALL
- CUT SLOPE (TOP / TOE)
- FILL SLOPE (TOP / TOE)
- PROPOSED SANITARY SEWER (SS)
- PROPOSED SANITARY SEWER MANHOLE (S)
- PROPOSED DOMESTIC WATER (DW)
- PROPOSED DOMESTIC WATER METER (WM)
- PROPOSED DOMESTIC WATER BACKFLOW
- PROPOSED IRRIGATION WATER SERVICE (IW)
- PROPOSED IRRIGATION WATER METER (WM)
- PROPOSED IRRIGATION WATER BACKFLOW
- PROPOSED FIRE MAIN (FW)
- PROPOSED FIRE HYDRANT
- PROPOSED FIRE BACKFLOW
- PROPOSED WATER VALVE
- PROPOSED SINGLE CURB
- PROPOSED CURB AND GUTTER
- ADA RAMP
- PROPOSED STORM DRAIN (SD)
- PROPOSED PERFORATED PIPE
- PROPOSED CURB INLET
- PROPOSED STORM DRAIN CLEAN OUT
- PROPOSED HEAD WALL
- PROPOSED BIOFILTRATION BASIN
- RAINSTORE3 UNDERGROUND DETENTION SYSTEM

LEGEND

Qal	ALLUVIUM
Kt(gv)	GREEN VALLEY TONALITE
	APPROXIMATE GEOLOGIC CONTACT
T-1	APPROXIMATE LOCATION OF TEST PIT
P-1	APPROXIMATE LOCATION OF INFILTRATION TEST
Seismic Line A3	APPROXIMATE LOCATION OF SEISMIC REFRACTION LINE
1 1'	APPROXIMATE LOCATION OF CROSS SECTION 1-1'

PLATE 1

ALTA CALIFORNIA GEOTECHNICAL, INC.
170 N. MAPLE STREET, STE 108, CORONA, CA 92880
TELEPHONE: (951) 509-7090
PROJECT NUMBER: 1–0500 DATE: June 2024

VISTA HACIENDA

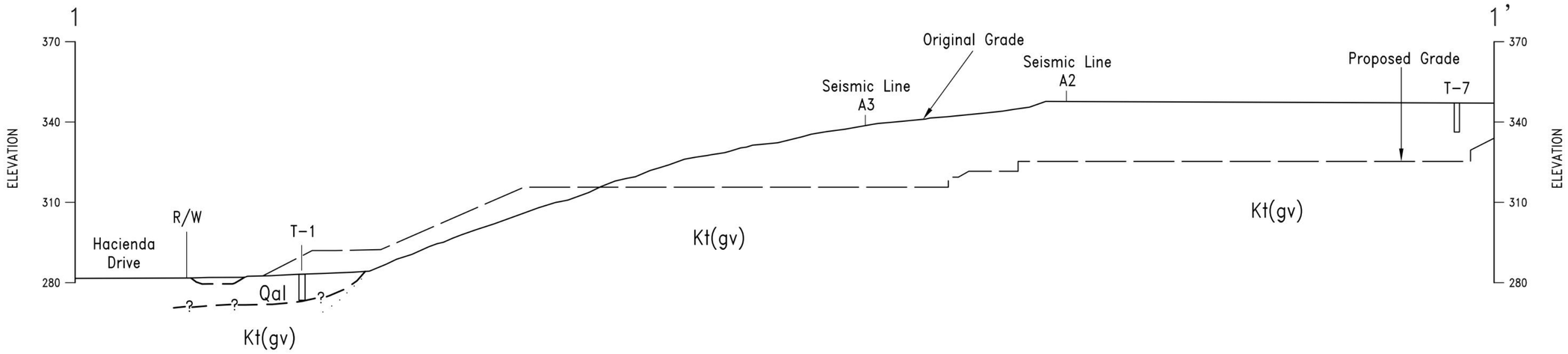
CONCEPTUAL GRADING PLAN

REVISIONS					
NO.	INIT.	DATE	DESCRIPTION	APP'D	DATE

FUSCOE ENGINEERING
FULL CIRCLE THINKING®
6390 Greenwich Dr Suite 170 San Diego, Ca 92122
858.554.1500 fuscoe.com

JOB NO. 1076–004
DRAWN BY: DK
SHEET 3 OF 8

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See Plate 1 for Legend

PLATE 2

ALTA CALIFORNIA GEOTECHNICAL, INC.
170 N. MAPLE STREET, STE 108, CORONA, CA 92880
TELEPHONE: (951) 509-7090
PROJECT NUMBER: 1-0500 **D-TE: June 2024**

IS/MND Appendix E

Noise Assessment Study

1160 Hacienda Drive Townhome Project

Noise Assessment Study

April 2025 | 02864.00019.001

Submitted to:

City of Vista
Community Development Department
200 Civic Center Drive
Vista, CA 92084-6275

Prepared for:

City Ventures
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Prepared by:

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ACRONYMS AND ABBREVIATIONS

ADT	average daily traffic
AMSL	above mean sea level
ANSI	American National Standards Institute
APN	Assessor's Parcel Number
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Vista
CNEL	Community Noise Equivalent Level
CY	cubic yard
dB	decibel
dBA	A-weighted decibel
HVAC	heating, ventilation, and air conditioning
Hz	Hertz
kHz	kilohertz
L_{DN}	Day-Night level
L_{EQ}	equivalent sound level
LLG	Linscott, Law and Greenspan, Engineers
L_{MAX}	maximum noise level
mPa	micro-Pascals
mph	miles per hour
NSLU	noise-sensitive land use
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
SPL	sound pressure level
STC	Sound Transmission Class
S_{WL}	sound power level
USDOT	U.S. Department of Transportation

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EXECUTIVE SUMMARY

This report presents an assessment of potential noise impacts associated with the proposed 1160 Hacienda Drive Townhome Project (project) located in the City of Vista (City), California. The project is located on a 4.6-acre vacant lot and involves the construction of 63 multi-family residential units. The project site is located south of State Route 78 southwest of the corner of Pomelo Drive and Hacienda Drive.

Anticipated construction activities would generate temporary elevated noise levels for nearby residences to the west, south and east. Mitigation measure NOI-1 would reduce construction noise impacts to less than significant levels. Construction would not generate substantial vibration.

Operational noise impacts would be less than significant. The project's heating, ventilation, and air conditioning (HVAC) systems would not exceed allowable City limits within the noise ordinance at the nearest property lines. The project would add traffic to nearby roadways, but transportation noise impacts to off-site land uses would be less than significant.

The project does not propose balconies and patios with depths of greater than 6 feet, the exterior noise level limits for outdoor area uses would not be applicable and noise impacts at the project balconies would be less than significant without mitigation. The outdoor common area would not be exposed to noise levels higher than the normally acceptable limit of 65 CNEL set in the City General Plan.

Through incorporation of mitigation measure NOI-2, which relates to exterior wall and window construction, interior noise levels would not exceed the applicable interior 45 CNEL limit for residential uses.

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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report analyzes potential noise and vibration impacts associated with the proposed 1160 Hacienda Drive Townhome Project (project). The analysis includes a description of existing conditions in the project vicinity and an assessment of potential impacts associated with project implementation. Analysis within this report addresses the relevant issues listed in the Noise and Land Use sections of Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

1.2 PROJECT LOCATION

The 4.6-acre project site (Assessor's Parcel Number [APN] 166-440-27-00) is located southwest of the intersection of Hacienda Drive and Pomelo Drive in the City of Vista (City), east of the City's boundary with the City of Oceanside. State Route (SR) 78 is to the north and multi-family residential uses are to the east, south, and west. Buena Vista Creek is adjacent to the site to the east and continues across Hacienda Drive to the west. See Figure 1, *Regional Location*, and Figure 2, *Project Vicinity*.

The existing site is vacant and contains grasses, scattered trees, and multiple dirt paths. The site contains a slope and elevations range from 280 feet (ft) above mean sea level (AMSL) to 340 ft AMSL.

1.3 PROJECT DESCRIPTION

The proposed project involves the construction of 63 multi-family residential units on a four-acre portion of the project site. The remaining 0.6 acres would be undeveloped as open space. The homes would range from 1,323 square feet to 1,731 square feet. Access would be provided by one driveway on Hacienda Drive. Resident parking would be provided via two-car garages and surface parking along the complex's private drive. The project proposes an common social area which includes a lawn, picnic tables, and barbecue grill. See Figure 3, *Site Plan*.

The majority of the project site has a General Plan land use designation of High Density Residential (HD) and the northeastern edge of the property containing Buena Vista Creek has a land use designation of Open Space (OS). The HD designation allows a residential density of up to 21 units per acre. The project site is zoned Multi-Family Residential (R-M), allowing up to 21 units per acre.

1.4 NOISE AND SOUND LEVEL DESCRIPTORS AND TERMINOLOGY

1.4.1 Descriptors

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dBA weighting. This is similar to the Day Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise

levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

1.4.2 Terminology

1.4.2.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

1.4.2.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

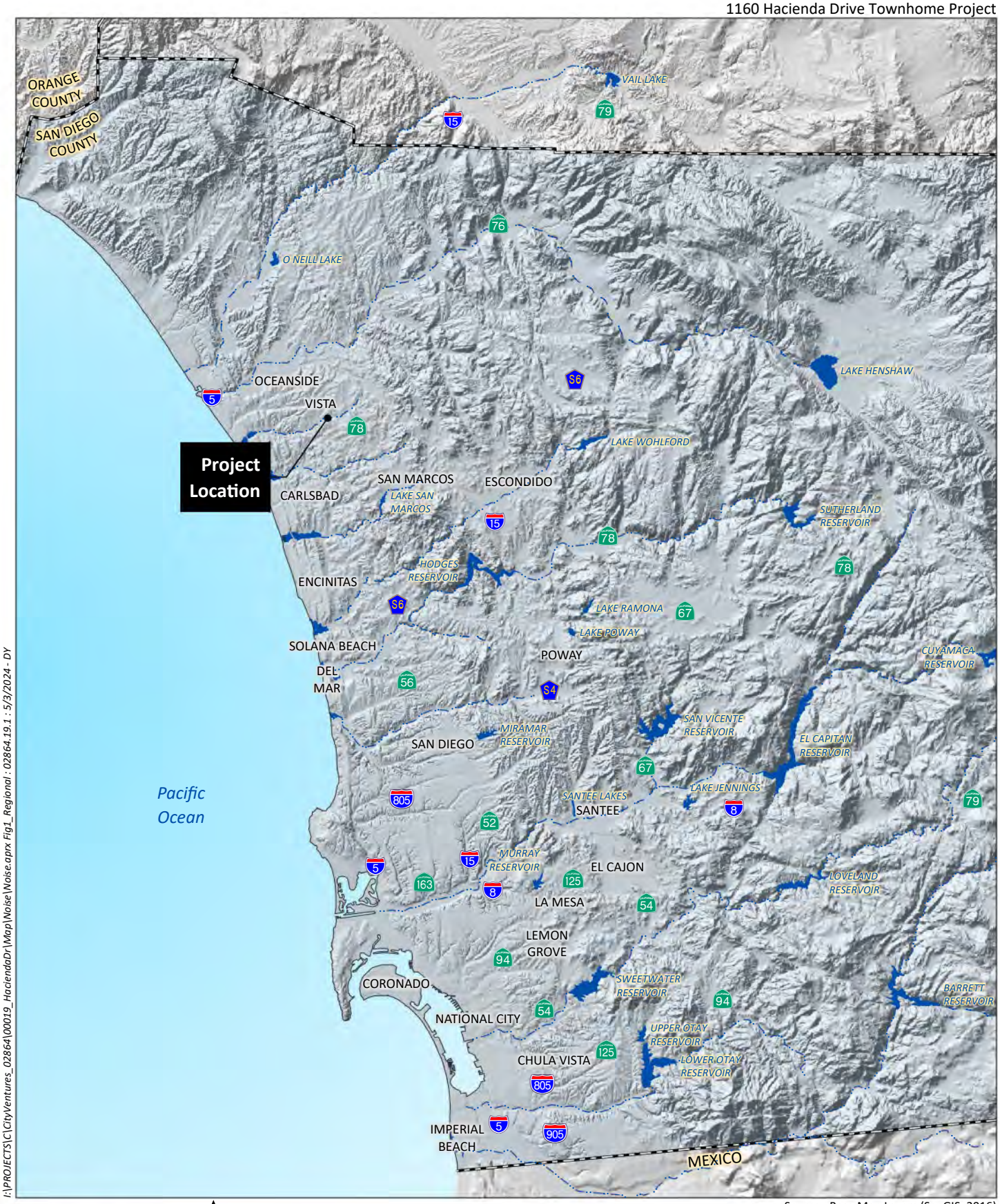
Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this wide range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 mPa.

1.4.2.3 Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through standard arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than from one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dBA—rather, they would combine to produce 73 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dBA louder than one source.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1 dBA changes in sound levels, when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000 Hz to 8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dBA are generally not perceptible. It is widely accepted, however, that people begin to detect



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0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1



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0 200 Feet

Source: Aerial (SanGIS 2023)

HELIX Environmental Planning

Project Vicinity

Figure 2



Source: (KTGY, 2025)

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HELIX Environmental Planning

Site Plan

Figure 3

sound level increases of 3 dB in typical noisy environments. Further, a 5 dBA increase is generally perceived as a distinctly noticeable increase, and a 10 dBA increase is generally perceived as a doubling of loudness.

No known studies have directly correlated the ability of a healthy human ear to discern specific levels of change in traffic noise over a 24-hour period. Many ordinances, however, specify a change of 3 CNEL as the significant impact threshold. This is based on the concept of a doubling in noise energy resulting in a 3 dBA change in noise, which is the amount of change in noise necessary for the increase to be perceptible to the average healthy human ear.

1.5 NOISE AND VIBRATION-SENSITIVE LAND USES

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, including residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. Noise receptors are individual locations that may be affected by noise. NSLUs in the project vicinity include multi-family residences to the west, south, and east.

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations (Federal Transit Administration [FTA] 2018) are considered "vibration-sensitive." The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. In addition, excessive levels of ground-borne vibration of either a regular or an intermittent nature can result in annoyance to residential uses or schools. Vibration-sensitive land uses in the project area include the nearby multi-family residences.

1.6 REGULATORY FRAMEWORK

1.6.1 California Noise Control Act

The California Noise Control Act is a section within the California Health and Safety Code that describes excessive noise as a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

1.6.2 City of Vista General Plan, Noise Element

The Noise Element of the City's General Plan includes a noise/land use compatibility matrix for assessing the suitability of different categories of planned land uses based on exterior noise level exposure (Table NE-3 from the City General Plan; City 2012). For the project's land use (high density), the Noise Element specifies exterior noise levels up to 65 CNEL as normally acceptable and up to 70 CNEL is conditionally acceptable. Noise levels exceeding 70 CNEL are generally unacceptable for multi-family residential uses.

In addition, the City defines specific maximum noise levels that shall not be exceeded for both interior and exterior use areas. A proposed project shall not generate noise levels that exceed these standards. The City limits interior noise levels to 45 CNEL for single-family residential development. Table 1, *Interior and Exterior Noise Guidelines*, provides limits for various types of land uses.

Table 1
INTERIOR AND EXTERIOR NOISE GUIDELINES

Land Use	Maximum Noise Level (L_{DN} or CNEL, dBA) Interior[1,2]	Maximum Noise Level (L_{DN} or CNEL, dBA) Exterior
Residential – Single Family, Multi-family, Duplex	45	65[3]
Residential – Nursing Homes, Hospital	45	65[3]
Private Offices, Church Sanctuaries, Libraries, Board Rooms, Conference Rooms, Theaters, Auditoriums, Concert Halls, Meeting Halls, etc.	45	-
Schools	45	65[4]
General Offices, Reception, Clerical, etc.	50	-
Bank Lobby, Retail Store, Restaurant, Typing Pool, etc.	60	-
Manufacturing, Kitchen, Warehousing, etc.	65	-
Parks, Playgrounds, etc.	-	65[4]
Golf Courses, Outdoor Spectator Sports, Amusement Parks, etc.	-	70[4]

Source: City 2012

1 Noise standard with windows closed. Mechanical ventilation shall be provided per UBC requirements to provide a habitable environment.

2 Indoor environment excluding bathrooms, toilets, closets, and corridors.

3 Outdoor environment limited to rear yard of single-family homes, multi-family patios and balconies (with a depth of 6 feet or more) and common recreation areas.

4 Outdoor environment limited to playground areas, picnic areas, and other areas of frequent human use.

L_{DN}=Day-Night Level; CNEL=Community Noise Equivalent Level; dBA=A-weighted decibel

1.6.3 City of Vista Noise Ordinance (Municipal Code, Chapter 8.32, Noise Control)

Sections 8.32.010 through 8.32.060 of the City of Vista Municipal Code pertain to City noise requirements and enforcement of violations. The City has adopted the County of San Diego Noise Ordinance for the purpose of controlling excessive noise levels, including noise from construction activities.

Table 2, *Applicable Exterior Property Line Noise Limits,* lists the applicable exterior property line noise limits. This table is specific to the City of Vista and replaces the table in Section 36.404 of the County of San Diego noise ordinance. It is unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level at any point on or beyond the boundaries of the property exceeds these limits. The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones.

Table 2
APPLICABLE EXTERIOR PROPERTY LINE NOISE LIMITS

Zone	Time	Applicable Limit One-hour Average Sound Level (Decibels)
A-1, E-1, O, OSR	7:00 a.m. – 10:00 p. m.	50
R-1B, MHP	10:00 p.m. – 7:00 a. m.	45
R-M	7:00 a.m. – 10:00 p.m.	55
	10:00 p.m. – 7:00 a.m.	50
C-1, C-2, O-3, C-T, OP, M-U and Downtown Specific Plan	7:00 a.m. – 10:00 p.m.	60
	10:00 p.m. – 7:00 a.m.	55
M-1, I-P, all areas of the Vista Business Park Specific Plan and Specific Plan 14	Any time	70

Source: City 2014
A-1 = Agricultural; C-1 and C-3 = Commercial; C-T = Commercial Transient; E-1 = Estate; I-P = Industrial; M-1 = Light Manufacturing; MHP = Mobile Home Park; M-U = Mixed Use; O = Open Space; O-3 = Office Park; OP = Office Professional; OSR = Open Space Residential; R-1 and R-1B = Single-family Residential; R-M = Multi-family Residential

The project site will be zoned R-M (Multi-family residential). Neighboring parcels to the south, east and west are zoned R-M, and the parcel to the northeast is zoned C-2 (Commercial).

The adopted County of San Diego Noise Ordinance also stipulates controlling construction noise. San Diego County Code Sections 36.408 and 36.409, Construction Equipment, state that, except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

A. Between 7:00 p.m. and 7:00 a.m.

B. On Sunday or a holiday. For the purposes of this section, a holiday means January 1, the last Monday in May, July 4, the first Monday in September, December 25, and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10:00 a.m. and 5:00 p.m. at the person's residence or for the purpose of construction of a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limits in Sections 36.409 and 36.410.

C. Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 dBA for an 8-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

Section 36.410 of the County of San Diego's ordinance provides additional limitation on construction equipment beyond Section 36.404 pertaining to impulsive noise. Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 3*, Maximum Sound Levels (Impulsive)*, when measured at the

boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period.

Table 3
MAXIMUM SOUND LEVELS (IMPULSIVE)

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

Source: County of San Diego Municipal Code Section 36.410

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

2.0 ENVIRONMENTAL SETTING

2.1 SURROUNDING LAND USES

Land uses surrounding the project site include multi-family residential development to the east, south, and west. To the north across Hacienda Drive is open space and SR-78. See Figure 2 for nearby land uses.

2.2 EXISTING NOISE ENVIRONMENT

The existing noise environment is dominated by traffic noise from SR-78 and Hacienda Drive. The project is subject to some distant aircraft noise, though the site is not located near an active airport. The nearest airports are Oceanside Municipal Airport, located approximately 5 miles to the northwest, and McClellan-Palomar Airport, located approximately 4.3 miles to the south.

2.2.1 Ambient Noise Survey

One measurement was taken for the ambient noise survey along the northern portion of the project site, approximately 50 feet south of Hacienda Drive. The measured noise levels are shown in Table 4, *Noise Measurement Results.* Measurement location is shown in Figure 2.

DRAFT

Table 4
NOISE MEASUREMENT RESULTS

	Measurement 1
Date:	April 25, 2024
Conditions:	Temperature: 61°F. Wind Speed: 10 mph. 54% humidity. Overcast.
Time:	2:58 p.m. – 3:13 p.m.
Location:	Along the northern boundary of the project site 50 feet south of Hacienda Drive.
Measured Noise Level:	69.1 dBA L_{EQ}
Notes:	Ambient nature sounds. Noise primarily from traffic on SR 78, Hacienda Drive, and distant aircraft.

3.0 ANALYSIS, METHODOLOGY, AND ASSUMPTIONS

3.1 METHODOLOGY

3.1.1 Ambient Noise Survey

The following equipment was used to measure existing noise levels at the project site:

- Larson Davis LxT Noise Meter
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter

The sound level meter was field-calibrated immediately prior to the noise measurements to ensure accuracy. All sound level measurements conducted and presented in this report were made with a sound level meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI SI.4-1983 R2006). All instruments were maintained with National Institute of Standards and Technology traceable calibration per the manufacturers' standards.

3.1.2 Noise Modeling Software

Modeling of the exterior noise environment for this report was accomplished using Computer Aided Noise Abatement (CadnaA) version 2023. CadnaA is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project related information, such as noise source data, barriers, structures, and topography to create a detailed CadnaA model, and uses the most up-to-date calculation standards to predict outdoor noise impacts.

Peak-hour traffic volumes are estimated based on the assumption that approximately 10 percent of the average daily traffic would occur during a peak hour. The one-hour L_{EQ} noise level is calculated utilizing peak-hour traffic. Peak hour L_{EQ} can be converted to CNEL using the following equation, where $L_{EQ}(h)pk$ is the peak hour L_{EQ}, P is the peak hour volume percentage of the average daily trips (ADT), d and e are divisions of the daytime fraction of ADT to account for daytime and evening hours, and N is the nighttime fraction of ADT:

$$CNEL = L_{EQ}(h)pk + 10log10\ 4.17/P + 10log10(d + 4.77e + 10N)$$

The model-calculated one-hour L_{EQ} noise output is therefore approximately equal to the CNEL (Caltrans 2013).

Project construction noise was analyzed using the Roadway Construction Noise Model (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

3.2 ASSUMPTIONS

3.2.1 Construction

Construction would require the use of equipment throughout the site for the full term of construction. General project construction activities would include site preparation, grading, installation of underground utilities, physical building construction, paving, and architectural coatings. The most prominent noise-generating standard construction equipment anticipated to be used on the site includes dozers, excavators, graders, backhoes, cement and mortar mixers, pavers, rollers, cranes, forklifts, generators, and air compressors.

Grading of the site would require approximately 27,000 cubic yards (CY) of export, which is anticipated to be exported via 2,009 one-way haul truck trips over the course of 41 days. Approximately 49 one-way truck trips are anticipated per day, or 6 trucks per hour, would be required (HELIX Environmental Planning 2024).

3.2.2 Operations

The proposed project's operational noise sources are anticipated to include heating, ventilation, and air conditioning (HVAC) systems and vehicular traffic.

3.2.2.1 Heating, Ventilation, and Air Conditioning Units

The analysis assumes that the buildings would use a typical to larger-sized residential condenser mounted on rooftop-level pads. The unit used in this analysis is a Carrier 38HDR060 split system condenser (see Appendix A, *Carrier 38HDR060 Split System Condenser*). The manufacturer's noise data is provided below in Table 5, *Carrier HDR060 Condenser Noise*.

Table 5
CARRIER HDR060 CONDENSER NOISE

Noise Levels in Decibels[1] (dB) Measured at Octave Frequencies							Overall Noise Level in A-weighted Scale (dBA)[1]
125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	
63.0	61.5	64.0	66.5	66.0	64.5	55.5	72.0

[1] Sound Power Level (S_{WL})
KHz = kilohertz

3.2.2.2 Vehicular Traffic

Project traffic volumes along Hacienda Drive were provided by CR Associates (CR Associates; 2024). The project is anticipated to generate 504 ADT. Along Hacienda Drive, 50 percent of the project's traffic

would travel east of the project driveway, and 50 percent would travel west. Table 6, *Existing and Future Traffic Volumes*, summarizes the ADT data used in the traffic noise modeling.

Table 6
EXISTING AND FUTURE TRAFFIC VOLUMES

Roadway Segment	Existing (2025) ADT	Project ADT	Existing (2025) + Project ADT	Future (2035) + Project ADT
Hacienda Drive				
West of Pomelo Drive	10,300	252	10,552	10,652
East of Pomelo Drive	8,800	252	9,052	8,852
West of Providence Drive	6,900	252	7,152	6,952
Pomelo Drive				
Hacienda Drive to La Tortuga Drive	7,500	N/A	7,500	7,300
SR-78				
Westbound	60,700	N/A	60,700	67,600
Eastbound	59,000	N/A	59,000	69,200
W Vista Way				
Hill Drive to Melrose SR-78 Westbound Ramp	13,500	N/A	13,500	13,800

Source: CR Associates 2024, SANDAG 2020
N/A – not applicable

Traffic for the nearby SR-78 freeway was provided by the San Diego Association of Government (SANDAG) Transportation Forecast Information Center (TFIC). The TFIC provides forecasted traffic information for roadways within the region. According to the Caltrans Traffic Census Program (2022) , SR-78 in the project vicinity carries approximately 5 percent trucks, consisting of approximately 2.5 medium trucks and 2.5 percent heavy trucks. Project-generated traffic would consist almost entirely of automobiles. Caltrans traffic data was only available for 2022, therefore the 2022 vehicle distributions were used in this analysis.

A conservative breakdown of 97 percent automobiles, 2 percent medium trucks, and 1 percent heavy trucks was used for modeling existing and future noise conditions on local roads in the vicinity of the project for all segments.

3.3 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, implementation of the project would result in a significant adverse impact if it would:

Threshold 1: *Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Vista General Plan or noise ordinance.*

Per the Vista Noise Ordinance, impacts would be significant if the project would generate noise levels at a common property line with the adjacent residential zones to the west, south and east that would exceed the following one-hour average exterior noise levels: 55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.

For traffic-related noise, impacts are considered significant in areas where traffic noise at single-family residential uses exceeds 65 CNEL and implementation of the project would result in an increase of the noise level by 3 CNEL or more.

Construction activity would be considered significant for nearby residences if it exceeds an 8-hour average exterior noise level of 75 dBA, or a maximum impulsive noise level of 82 dBA on an occupied residential use. The ordinance prohibits construction and building work between the hours of 7:00 p.m. and 7:00 a.m. of the next day, on Sundays, or on a holiday. Construction noise exceeding 10 dBA above ambient noise levels at nearby sensitive receptors would be considered a substantial increase.

Threshold 2: *Generate excessive ground-borne vibration or ground-borne noise levels.*

Excessive ground-borne vibration would occur if construction-related ground-borne vibration exceeds the "strongly perceptible" vibration annoyance potential criteria for human receptors of 0.1 inch per second peak particle velocity (PPV) or the damage potential criteria to relatively old residential structures 0.5 inch per second PPV for continuous/frequent intermittent construction sources (such as impact pile drivers, vibratory pile drivers, and vibratory compaction equipment), as specific by Caltrans (2020).

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

Excessive noise exposure is defined as noise levels that exceed the standards in the City General Plan Noise Element for the associated land use.

Threshold 4: *Noise compliance for new uses.*

Future land uses would be compliant with the City General Plan Noise Element if the project's residential exterior use areas are exposed to noise levels below 65 CNEL and interior noise levels below 45 CNEL.

4.0 IMPACTS

4.1 ISSUE 1: EXCESSIVE NOISE LEVELS

Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Vista General Plan or noise ordinance.

4.1.1 Operational On-site Noise Generation

The project would include HVAC units at rooftop-level locations for every building. Specific locations and planning data for the future HVAC units is not available at this stage of project design. Further, as mentioned in Section 3.2.2.1, modeling assumed that the HVAC unit would be a Carrier 38HDR060 split system condenser. A single unit typically generates a noise level of 56 dBA at a distance of 7 feet.

Noise levels were calculated to be 25.4 dBA L_{EQ} at the northern property line, 34.1 dBA L_{EQ} at the western property line, 33.1 dBA L_{EQ} at the southern property line, and 30.7 dBA L_{EQ} at the eastern property line. Therefore, the project's stationary noise sources would not exceed the City's nighttime

allowable hourly limit of 45 dBA; therefore, impacts from the project's operational noise would be less than significant.

4.1.2 Operational Off-site Transportation Noise Generation

The project would generate vehicular traffic that would utilize Hacienda Drive and have the potential to result in increased noise levels at existing residences along the roadway. CadnaA software was used to calculate the noise levels for Existing and Existing + Project conditions for residences along Hacienda Drive. As noted in the assumptions, Existing and Existing + Project traffic noise levels presented in this analysis are based on traffic volumes from SANDAG and Caltrans sources, with project traffic volumes provided by CR Associates (2024). Refer to Table 7 for the forecasted ADT data for existing and project-added traffic volumes.

The results of this analysis for the CNEL at the nearest NSLUs to the roadway centerline of Hacienda Drive are shown below in Table 7, *Off-site Traffic Noise Levels.* Figure 4, *Noise Measurement Location and Modeled Transportation Noise Receivers* shows the receiver locations used in this analysis.

Table 7
OFF-SITE TRAFFIC NOISE LEVELS

Roadway Segment	Distance to Hacienda Drive	CNEL (Existing)	CNEL (Existing + Project)	CNEL Change from Existing	Direct Impact[1]
Hacienda Drive					
R1	70 feet	71.3	71.3	0	No
R2	70 feet	75.8	75.8	0	No
R3	175 feet	67.2	67.2	0	No
R4	285 feet	69.7	69.7	0	No

[1] A direct impact to off-site uses would occur if existing noise levels exceed 65 CNEL at single family residences and the project more than doubles (increases by more than 3 CNEL) the existing noise level.

NSLU = noise sensitive land use; CNEL = Community Noise Equivalent Level

Impacts would be significant in areas where traffic noise at single-family residential uses exceeds the 65 CNEL maximum noise level specified in the City's General Plan Noise Element and implementation of the project results in a significant increase in noise levels, which is considered greater than a perceptible change of 3 CNEL over existing conditions. As shown in Table 8, the project-generated traffic would not increase noise levels for nearby residences along Hacienda Drive. Therefore, the increase in traffic volumes generated by the project would not cause a perceptible increase in noise levels and noise impacts from project-generated traffic would be less than significant.

4.1.3 On-site Construction Noise Generation

Construction of the project would require site clearing, demolition of existing structures, grading, installation of underground utilities/infrastructure, construction of new buildings, paving, and architectural coating. The magnitude of the noise impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction would generate elevated noise levels that may disrupt nearby residences west, south, and east of the project site. Construction equipment would be continuously moving across the site, and equipment is not anticipated to be located at a single location

during a typical workday. Therefore, construction equipment is modeled at an average distance of 100 feet from the nearest NSLUs. Table 8, *Construction Equipment Noise Levels*, provides the 100-foot distance noise levels for equipment anticipated to be used for general construction activities.

Table 8
CONSTRUCTION EQUIPMENT NOISE LEVELS

Unit	Percent Operating Time	L_{MAX} at 100 feet	dBA L_{EQ} at 100 feet
Backhoe	40	71.5	67.6
Compactor	20	77.2	70.2
Compressor	40	71.6	67.7
Concrete Mixer Truck	40	72.8	68.8
Concrete Pump Truck	20	75.4	68.4
Dozer	40	75.6	71.7
Dump Truck	50	70.4	66.5
Excavator	40	74.7	70.7
Front End Loader	40	73.1	69.1
Paver	50	71.2	68.2
Roller	20	74.0	67.0
Excavator/Loader/Dump Truck	40	74.7	73.9

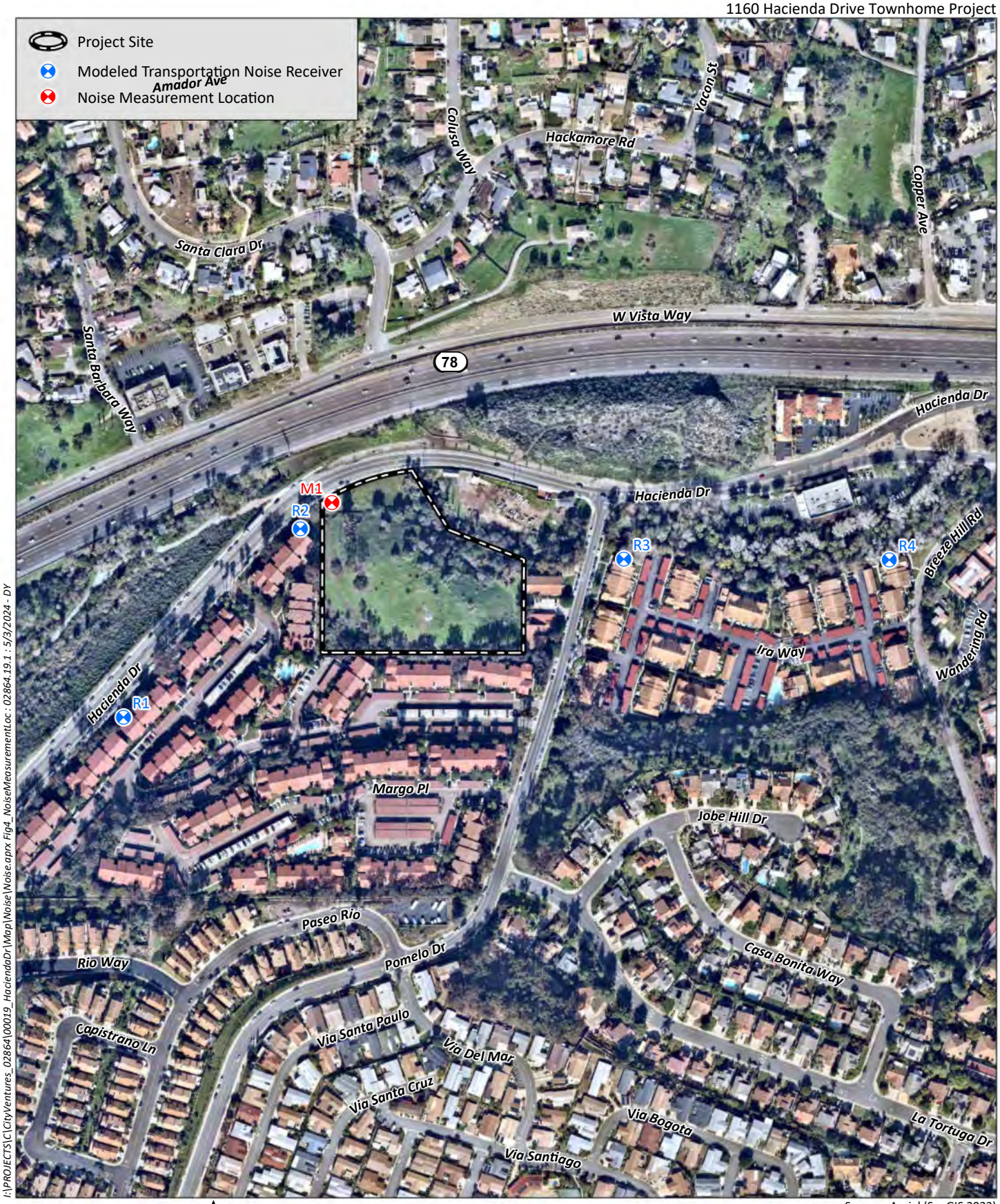
Source: RCNM; USDOT 2008
L_{MAX} = maximum noise level; dBA = A-weighted decibel; L_{EQ} = equivalent sound level

Construction equipment would not all operate at the same time or location and would not be in constant use during the 8-hour operating day. Further, not all the pieces of equipment included in Table 9 would be used within 100 feet off-site residences. An excavator, a grader, and dozer may be working on the site simultaneously but would not be working near one another at a given time due to the nature of their respective operations. An excavator, grader, and dozer were analyzed together for construction noise impacts due to their likelihood of being used in conjunction with one another.

Based on these assumptions, grading operations using an excavator, a grader, and a dozer at the nearest NSLU would be 77.6 dBA L_{EQ} at 100 feet (see Appendix B, *Construction Noise Modeling Outputs*). Therefore, construction noise from this equipment was modeled to exceed the noise ordinance limit defined in Threshold 4 of 75 dBA L_{EQ} (8-hour).

NOI-1 **Construction Noise Management Plan.** Noise levels from project-related construction activities shall not exceed the noise limit specified in San Diego County Code Sections 36.408 and 36.409 of 75 dBA (8-hour average), when measured at the boundary line of the property where the noise is located or any occupied property where noise is being received. A Construction Management Plan that describes the measures included on the construction plans to ensure compliance with the noise limit shall be prepared by the project applicant and submitted to the City of Vista Planning Division for approval prior to issuance of the grading permit. The following measures may be included to reduce construction noise:

- Construction equipment to be properly outfitted and maintained with manufacturer-recommended noise-reduction devices.



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0 350 Feet

Source: Aerial (SanGIS 2023)

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Noise Measurement Location and Modeled Transportation Noise Receivers

Figure 4

- Diesel equipment to be operated with closed engine doors and equipped with factory-recommended mufflers.

- Mobile or fixed "package" equipment (e.g., arc-welders and air compressors) to be equipped with shrouds and noise control features that are readily available for that type of equipment.

- Electrically powered equipment to be used instead of pneumatic or internal-combustion powered equipment, where feasible.

- Unnecessary idling of internal combustion engines (e.g., in excess of 5 minutes) to be prohibited.

- Material stockpiles and mobile equipment staging, parking, and maintenance areas to be located as far as practicable from noise sensitive receptors.

- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.

- No project-related public address or music system shall be audible at any adjacent sensitive receptor.

- Temporary sound barriers or sound blankets may be installed between construction operations and adjacent noise-sensitive receptors. Due to equipment exhaust pipes being approximately 7 to 8 feet above ground, a sound wall at least 10 feet in height above grade, to block the line-of-sight between project construction activities and residences along the northern, southern, and eastern property lines. These barriers would mitigate noise levels to within acceptable levels. To effectively reduce noise levels, the sound barrier should be constructed of a material with a minimum weight of two pounds per square foot with no gaps or perforations and remain in place until the conclusion of demolition, grading, and construction activities.

- The project applicant shall notify residences within 100 feet of the project's property line in writing within one week of any construction activity such as demolition, hard rock handling, concrete sawing, asphalt removal, and/or heavy grading operations. The notification shall describe the activities anticipated, provide dates and hours, and provide contact information with a description of a complaint and response procedure.

- The on-site construction supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process for the affected resident shall be established prior to construction commencement to allow for resolution of noise problems that cannot be immediately solved by the site supervisor.

4.1.4 Construction Traffic Noise

As discussed in Section 3.2.1., it is anticipated that 2,009 round trips, or 1,005 one-way haul truck trips would be required for soil export over the course of 41 workdays during the grading phase of construction, which would equate to 49 one-way haul truck trips, or passes, per day. Over the course of

an eight-hour construction day, it is assumed six haul truck trips would occur per hour. This daily traffic level associated with soil export is anticipated to be the highest daily traffic level associated with project construction.

The additional six construction trips were added to the existing traffic volumes on Hacienda Drive north of the project site. Using CadnaA, receivers were modeled at 50 feet from the roadway centerline (the approximate distance to the nearest single family residential NSLUs), and construction haul trips were modeled as heavy trucks. As presented above in Table 8 of Section 4.1.2, the modeled existing traffic noise level along this segment of Hacienda Drive is 71.3 CNEL. The addition of the project's haul truck trips during the grading phase of construction would increase noise levels to 71.4 CNEL, which represents a 0.1 CNEL increase. This would not be a perceptible increase and impacts from construction traffic noise to existing NSLUs would be less than significant.

4.2 ISSUE 2: EXCESSIVE VIBRATION

Would the project expose persons to or generate excessive ground-borne vibration or noise levels?

4.2.1 Construction Vibration

A possible source of vibration during general project construction activities would be a vibratory roller, which may be used for compaction of soil beneath building foundations and could be used within 50 feet of the off-site residences west and south of the project site. Most usage of a vibratory roller, however, would occur at distances greater than 50 feet from any single residence due to the mobile nature of its use across the project site. A vibratory roller would create approximately 0.210 inch per second PPV at a distance of 25 feet (Caltrans 2020). A 0.210 inch per second PPV vibration level would equal 0.098 inch per second PPV at a distance of 50 feet.[1] This would be lower than the structural damage impact to older structures of 0.5 inch per second PPV and the "strongly perceptible" impact for humans of 0.1 inch per second PPV. Additionally, off-site exposure to such ground-borne vibration would be temporary as it would be limited to the short-term construction period. Therefore, even though vibration may be perceptible at nearby residences, temporary impacts associated with the roller (and other potential equipment) would be less than significant.

4.2.2 Operational Vibration

As a residential development, the project would not generate excessive ground-borne vibration during operations; therefore, no impacts would occur.

4.3 ISSUE 3: AIRPORT NOISE EXPOSURE

Would the project expose people residing or working in the project area to excessive noise from a nearby public use airport or private airstrip?

[1] Equipment PPV = Reference PPV * $(25/D)^n$ (inches per second), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2013b.

4.3.1 Aircraft Noise

The project is subject to some distant aircraft noise, though the site is not located near an active airport. The nearest airports are Oceanside Municipal Airport, located approximately 5.1 miles to the northwest and McClellan-Palomar Airport, located approximately 4.2 miles to the southwest. At these distances, no effects related to airport noise would occur at the project site, and impacts would be less than significant.

4.4 ISSUE 4: NOISE COMPLIANCE FOR NEW USES

4.4.1 Interior Noise Levels

Traditional architectural materials are conservatively estimated to attenuate noise levels by 15 CNEL; therefore, if exterior noise levels at a building façade exceed 60 CNEL, interior noise levels may exceed the 45 CNEL limit set forth in the City General Plan Noise Element for residential uses. Modeling using traffic conditions in the year 2035 was conducted using CadnaA to assess the noise levels that would affect the project's future residences. Refer to Table 7 for ADT used to model future traffic noise levels at the site. As shown on Figure 5, *Project Façades Exceeding 60 CNEL*, noise levels at project buildings would exceed 60 CNEL. These locations are primarily those closest to traffic noise with a direct line-of-sight to the roadways. Figure 6, *Exterior-to-Interior Title 24 Analyzed Rooms* shows the rooms considered in the exterior-to-interior noise analysis. To ensure that the project's habitable rooms do not exceed 45 CNEL, mitigation measure NOI-2 would be required.

NOI-2 **On-site Interior Noise Level Reduction**. For the project's Lot 1 and 2 habitable areas (both living rooms and bedrooms), the following measures shall be incorporated in the design of the project to reduce interior noise levels to 45 CNEL or less:

- Minimum exterior wall requirement of STC 46 with a construction of standard 3/8-inch exterior one coat stucco over 1.0-inch rigid R-4 insulation over 1/2-inch shear wall on 2x6 studs with 5/8-inch Type "X" Drywall.
- For the corner units in the northern-most proposed building closest to Hacienda Drive, minimum window requirement of STC 29 with a vinyl frame window construction of dual glazing window thickness 1/8-inch and 1/2-inch air gap.
- For all other buildings minimum window requirement of STC 28 with a vinyl frame window construction of dual glazing window thickness 1/8-inch and 1/2-inch air gap.
- Appropriate means of air circulation and provision of fresh air intake shall be incorporated in the project to allow windows to remain closed for extended intervals of time so that acceptable levels of noise can be maintained on the interior.
- Buildings shall provide mechanical ventilation in accordance with the 2019 California Mechanical Code.

4.4.2 Exterior Noise Levels

The City General Plan Noise Element provides exterior noise level limits for multi-family patios and balconies (with a depth of 6 feet or more). Because the project does not propose balconies and patios with depths of greater than 6 feet, the exterior noise level limits for outdoor area uses would not be applicable and noise impacts at the project balconies would be less than significant without mitigation.

The project proposes an outdoor common area which includes a lawn, picnic tables, and barbecue grill. This space would be located between two of the proposed residential buildings. Modeling in this area indicates that noise levels would be approximately 60 CNEL (Refer to Figure 5 for common area location). This would be within the normally acceptable range of 65 CNEL for multi-family residential land uses.

5.0 LIST OF PREPARERS

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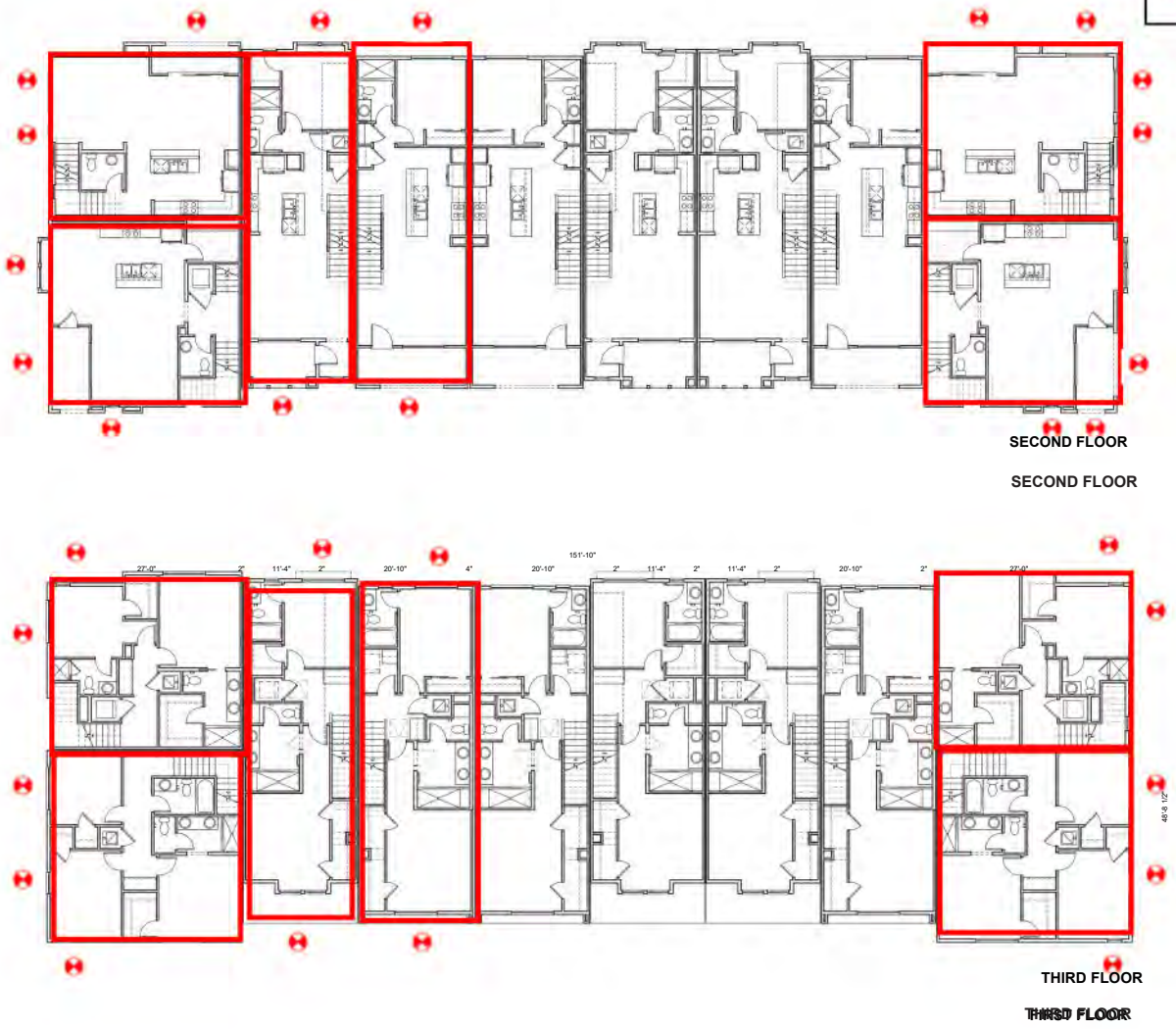
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Source: KTGY 2024

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Project Façades Exceeding 60 CNEL

Figure 5



Source: KTGY 2024

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Exterior-to-Interior Title 24 Analyzed Rooms

Figure 6

6.0 REFERENCES

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DRAFT

Appendix A

Carrier 38HDR060 Split System Condenser

38HDR
Performance™ Series Air Conditioner with Puron® Refrigerant
1–1/2 to 5 Nominal Tons

Carrier
turn to the experts

Product Data



Puron
the environmentally sound refrigerant

Performance SERIES

Carrier's Air Conditioners with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 38HDR has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows you to make a responsible decision in the protection of the earth's ozone layer.

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. Refer to the combination ratings in the Product Data for system combinations that meet Energy Star® guidelines.

NOTE: **Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.**

INDUSTRY LEADING FEATURES / BENEFITS

Energy Efficiency

- 13 - 15 SEER/10.9 - 12.5 EER

Sound

- Levels as low as 68 dBA

Design Features

- New aesthetics
- Small footprint, same as old model and "stackable"
- WeatherArmor™ cabinet
  - — All steel cabinet construction
  - — Baked on powder paint
  - — Mesh coil guard

Reliability, Quality and Toughness

- Scroll compressor
- Crankcase Heater standard on sizes 030-060
- Factory-supplied filter drier
- High pressure switch
- Low pressure switch
- Line lengths up to 250' (76.2 m)
- Low ambient operation (down to -20°F/-28.9°C) with low ambient accessories.

MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12	13
N	N	A	A	A/N	N	N	N	A/N	A/N	A/N	N	N
3	8	H	D	R	0	1	8	A	0	0	3	0
Product Series	HDR = Horizontal Discharge Condensing Unit			Cooling Capacity				Variations	Open	Open	Voltage	Minor Series
38=AC/HP	Major Model			1,000 Btuh Nominal				A=Standard	0=Not Defined	0=Not Defined	3=208/230–1 5=208/230–3 6=460/3	0, 1, 2...

Puron™
the environmentally sound refrigerant

AHRI CERTIFIED
www.ahridirectory.org

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

Certified System™
ISO 9001
QMI-SAI Global

c UL us

ENERGY STAR

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow all manufacturing refrigerant charging and air flow instructions. **Failure to confirm proper charge and air flow may reduce energy efficiency and shorten equipment life.**

PHYSICAL DATA

UNIT 38HDR	018	024	030	036	048	060
NOMINAL CAPACITY (Tons)	1.5	2.0	2.50	3.0	4.0	5.0
OPERATING WEIGHT lb (kg)	155 (70.3)	180 (81.6)	200 (90.7)	218 (98.9)	284 (128.8)	294 (133.4)
REFRIGERANT TYPE	R–410A					
METERING DEVICE	TXV					
CHARGE lb (kg)	6.3 (2.86)	6.0 (2.73)	8.7 (3.95)	8.7 (3.95)	11.5 (5.23)	12.0 (5.45)
COMPRESSOR						
Type	Scroll					
Oil Charge (POE – oz)	25.0	25.0	25.0	25.0	42.0	42.0
Crankcase Heater (watts)	—	—	40	40	40	40
OUTDOOR FAN						
Rpm/Cfm	840/1720	840/1720	850/3900	850/3900	850/3900	850/3900
Diameter in. (mm)	18 (457)	18 (457)	24 (610)	24 (610)	24 (610)	24 (610)
No. Blades	3	3	3	3	3	3
Motor hp (w)	1/8 (93)	1/8 (93)	1/4 (187)	1/4 (187)	1/4 (187)	1/4 (187)
OUTDOOR COIL						
Face Area (sq ft)	5.8	7.3	12.1	12.1	14.1	14.1
No. Rows	2	2	2	2	2	2
FPI	20	20	20	20	20	20
HIGH PRESSURE SWITCH						
Cut–In (psig) Cutout (psig)	420 ± 25 650 ± 10	420 ± 25 650 ± 10	420 ± 25 650 ± 10	420 ± 25 650 ± 10	420 ± 25 650 ± 10	420 ± 25 650 ± 10
LOW PRESSURE SWITCH						
Cut–In (psig) Cutout (psig)	45 ± 25 20 ± 5	45 ± 25 20 ± 5	45 ± 25 20 ± 5	45 ± 25 20 ± 5	45 ± 25 20 ± 5	45 ± 25 20 ± 5
REFRIGERANT LINES						
Connection Type	Sweat					
Max. Liquid Line* (in.) OD	3/8	3/8	3/8	3/8	3/8	3/8
Rated Vapor Line† (in.) OD	5/8	5/8	3/4	3/4	7/8	1–1/8**
CONTROLS						
Control Voltage‡	24 vac					
System Voltage	208/230 v	208/230 v	208/230 v	208/230 v, Single and 3 Phase, 460 v, 3 Phase		
FINISH	Gray					

* See *Liquid Line Sizing For Cooling Only Systems with Puron Refrigerant* tables.

† Units are rated with 25 ft (7.6 m) of lineset length. See *Vapor Line Sizing and Cooling Capacity Loss* table when using other sizes and lengths of lineset.

‡ 24 v and a minimum of 40 va is provided in the fan coil unit.

** Vapor connection size is 7/8 inch.

FPI – Fins Per Inch

POE – Polyol Ester

ELECTRICAL DATA

38HDR UNIT SIZE	V–PH–Hz	VOLTAGE RANGE*		COMPRESSOR		OUTDOOR FAN MOTOR			MIN CKT AMPS	FUSE/CKT BKR AMPS
		Min	Max	RLA	LRA	FLA	NEC Hp	kW Out		
018–31	208/230–1–60	187	253	9.0	48.0	0.8	0.125	0.09	12.1	20
024–32	208/230–1–60	187	253	13.5	58.3	0.8	0.125	0.09	17.7	25
030–31	208/230–1–60	187	253	14.1	73.0	1.5	0.250	0.19	19.1	30
036–31	208/230–1–60	187	253	14.1	77.0	1.5	0.250	0.19	19.1	30
	208/230–3–60	187	253	9.2	71.0	1.5	0.250	0.19	13.0	20
	460–3–60	414	506	5.6	38.0	0.8	0.250	0.19	7.9	10
048–32	208/230–1–60	187	253	19.9	109.0	1.5	0.250	0.19	26.4	40
	208/230–3–60	187	253	13.1	83.1	1.5	0.250	0.19	17.9	25
	460–3–60	414	506	6.1	41.0	0.8	0.250	0.19	8.4	15
060–32	208/230–1–60	187	253	26.4	134.0	1.5	0.250	0.19	34.5	60
	208/230–3–60	187	253	16.0	110.0	1.5	0.250	0.19	21.5	30
	460–3–60	414	506	7.8	52.0	0.8	0.250	0.19	10.6	15

* Permissible limits of the voltage range at which the unit will operate satisfactorily

FLA – Full Load Amps

HACR – Heating, Air Conditioning, Refrigeration

LRA – Locked Rotor Amps

NEC – National Electrical Code

RLA – Rated Load Amps (compressor)

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit. All motors/compressors contain internal overload protection.

Complies with 2007 requirements of ASHRAE Standards 90.1

A-WEIGHTED SOUND POWER (dBA)

Unit Size	Standard Rating (dBA)	Typical Octave Band Spectrum (dBA) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
018–31	68	52.0	57.5	60.5	63.5	60.5	57.5	46.5
024–32	69	57.5	61.5	63.0	61.0	60.0	56.0	45.0
030–31	72	56.5	63.0	65.0	66.0	64.0	62.5	57.0
036–31	72	65.0	61.5	63.5	65.0	64.5	61.0	54.5
048–32	72	58.5	61.0	64.0	67.5	66.0	64.0	57.0
060–32	72	63.0	61.5	64.0	66.5	66.0	64.5	55.5

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–VOLTAGE, SERIES	REQUIRED SUBCOOLING °F (°C)
018–31	12 (6.7)
024–32	12 (6.7)
030–31	12 (6.7)
036–31	12 (6.7)
048–32	12 (6.7)
060–32	12 (6.7)

Appendix B

Construction Noise Modeling Outputs

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/2/2024
Case Description: 1160 Hacienda Drive Townhome Project - Construction Noise Analysis

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R1	Residential	75	75	75

			Equipment		
			Spec	Actual	Receptor
	Impact		Lmax	Lmax	Distance
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)
Excavator	No	40		80.7	100
Grader	No	40	85		100
Dozer	No	40		81.7	100

	Results Calculated (dBA)	
Equipment	*Lmax	Leq
Excavator	74.7	70.7
Grader	79	75
Dozer	75.6	71.7
Total	79	77.6

*Calculated Lmax is the Loudest value.